

# TECHNICAL MANAGEMENT TEAM

**BOR:** Tony Norris / John Roache

**BPA:** John Wellschlager / Nic Lane

**NOAA-F:** Paul Wagner

**USFWS:** David Wills / Steve Haeseker

**OR:** Ron Boyce

**WA:** Cindy LeFleur

**ID:** Russ Kiefer

**MT:** Jim Litchfield

**COE:** Cindy Henriksen / Cathy Hlebechuk

## TMT MEETING

Wednesday January 11, 2006 0900 - 1200 hours

1125 N.W. Couch Street, Suite 4A34  
Portland, Oregon 97208

Conference call line: 503-808-5190

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

## AGENDA

1. Welcome and introductions.
2. Review Minutes
  - i. [\[Minutes 2005\]](#) 
  - ii. [\[Minutes 2006\]](#) 
3. BPA TBL Presentation on effect of summer spill on transmission stability.
  - i. [\[NW Transmission System Bottlenecks and Impacts of 2005 Summer Operation - Mike Viles\]](#)
  - ii. [\[NW Transmission System Bottlenecks and Impacts of 2005 Summer Operation - Mike Viles\]](#) 
4. January Final Water Supply Forecasts, precipitation data and climate predictions.
  - i. [\[Grand Coulee water supply forecast\]](#)
  - ii. [\[Lower Granite water supply forecast\]](#)
  - iii. [\[The Dalles water supply forecast\]](#)
  - iv. [\[Columbia Basin water supply forecast\]](#)
  - v. [\[Monthly precipitation map\]](#)
  - vi. [\[Water year precipitation map\]](#)
  - vii. [\[Climate forecasts\]](#)
5. Chum.
  - i. [\[REVISED 2005 Ives Island Chum Spawning Summary - January 09, 2006 - Rick Kruger\]](#) 
6. Status of litigation.
  - i. [\[SalmonRecovery.gov\]](#)
7. Water Management Plan and Fall/Winter Update comments.
  - i. [\[Draft November 29, 2005\]](#) 
8. Operations Review
  - a. Reservoirs

- b. Fish
  - c. Power System
  - d. Water Quality
9. Other

- Set agenda for next meeting **January 25, 2006.** [\[Calendar 2006\]](#) 

*Questions about the meeting may be referred to Cathy Hlebechuk at (503) 808-3942, or Cindy Henriksen at (503) 808-3945*



# MEMORANDUM

## Oregon Department of Fish and Wildlife

**Date:** January 9, 2005

**To:** FPAC

**From:** Rick Kruger

**Subject:** REVISED 2005 Ives Island Chum Spawning Summary

The first live chum were observed in the Ives Island area on October 28<sup>th</sup> (Table 1), however, no redds were observed until November 15<sup>th</sup>, the latest initiation of spawning in at least the last eight years. The peak of spawning activity is considered to have occurred between the peak number of live fish observed, December 2<sup>nd</sup>, and the peak number of redds observed on December 6<sup>th</sup>, with new redds observed until December 22<sup>nd</sup>. Daytime tailwater water surface elevations were relatively constant at 11.5 ft and no chum redds were observed at higher elevations or were determined to have been dewatered.

Overall, the 2005 chum spawning run began and peaked a later than most recent runs, but otherwise was about in the middle of the pack, based on population estimates, except for the extremely larger run in 2002 (Figure 1). A formal population estimate is not yet available for 2005, so a preliminary estimate was made based on a regression between total carcass counts and corresponding population estimates ( $P = 0.001$ ,  $R^2 = 0.997$ ). This preliminary 2005 estimate is 413 fish. Run timing and population estimates for previous years are presented in Table 2.

**Table 1. Ives Island Spawning Ground Survey Results, 2005.**

12/29/05

12/29/2005 ODFW Update

Date	<u>Redds</u>			<u>Lives</u>			<u>Deads</u>			
	Fall Chinook	Chum	Coho	Fall Chinook	Chum	Coho	Fall Chinook	Chum	Coho	
10/4/2005	0	0	0	5	0	0	0	0	0	
10/7/2005	1	0	0	19	0	0	0	0	0	
10/11/2005	8	0	0	4	0	1	3	0	1	
10/14/2005	22	0	0	13	0	2	0	0	0	
10/18/2005	8	0	0	14	0	1	1	0	0	
10/21/2005	8	0	0	18	0	5	0	0	1	
10/25/2005	18	0	0	71	0	7	2	0	0	
10/28/2005	35	0	0	37	1	16	7	0	3	
11/1/2005	10	0	0	35	0	2	4	0	0	
11/4/2005	22	0	6	101	1	20	3	0	4	
11/8/2005	93	0	1	261	0	8	15	0	0	
11/10/2005	165	0	0	302	8	0	48	1	11	
<b>*11/15/2005</b>	<b>319</b>	<b>5</b>	<b>0</b>	<b>505</b>	<b>43</b>	<b>8</b>	<b>73</b>	<b>0</b>	<b>6</b>	
11/18/2005	179	43	0	264	63	6	164	13	15	
11/22/2005	Windy conditions prohibited access to river, no counts.									
11/29/2005	43	9	0	60	65	2	73	12	12	
<b>*12/02/2005</b>	<b>168</b>	<b>75</b>	<b>0</b>	<b>39</b>	<b>122</b>	<b>1</b>	<b>423</b>	<b>62</b>	<b>19</b>	
12/6/2005	147	101	0	9	78	0	41	42	4	
12/9/2005	15	61	0	1	74	0	59	47	1	
12/13/2005	4	22	0	6	58	1	0	6	0	
12/16/2005	Windy conditions, etc. prohibited access to river, no counts.									
12/21/2005	29	74	0	5	17	0	0	3	0	
12/22/2005	0	9	0	0	12	0	22	19	1	
12/29/2005	0	0	0	0	0	0	2	1	0	
	Total						940	206	78	

\*CHF peak spawning occurred 11/15. Spawning began 10/7 and ended 12/22.

\*chum peak spawning occurred approx.12/2. Spawning began 11/15 and ended 12/22.

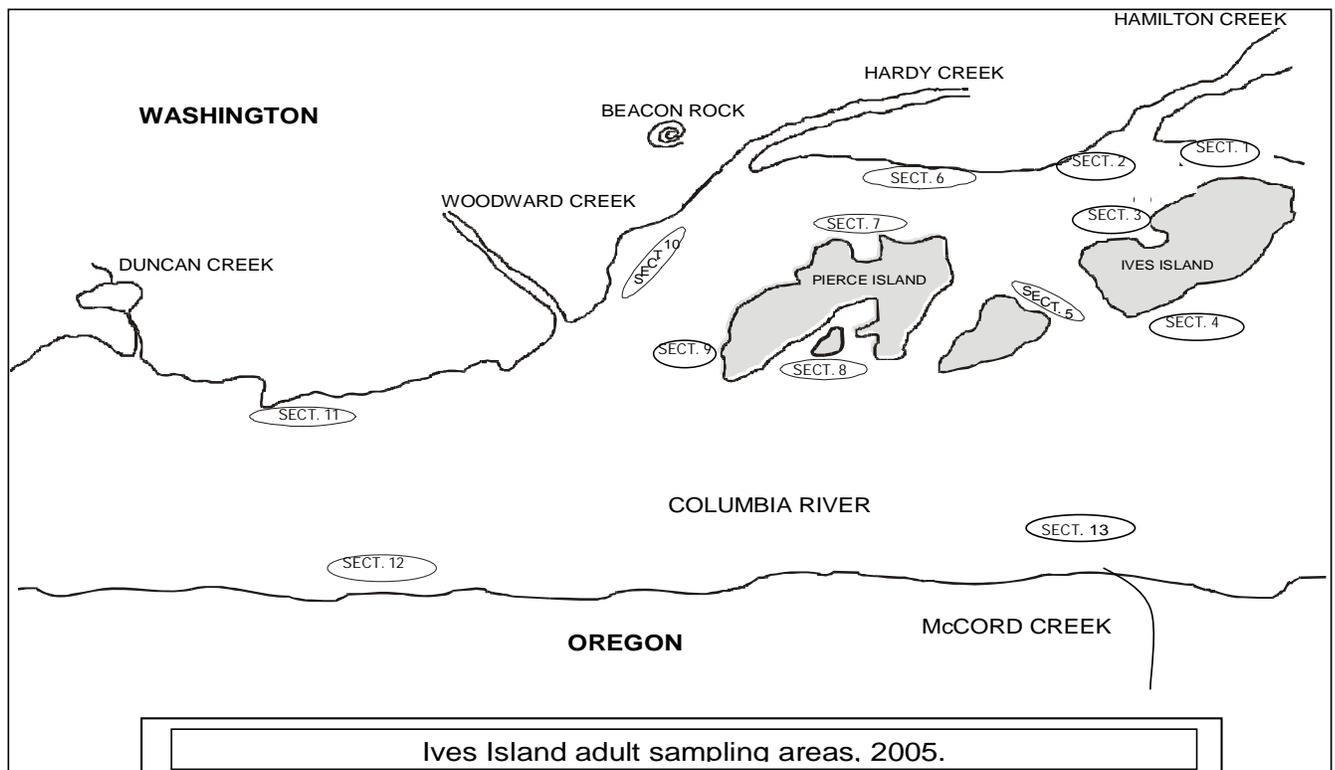


Figure 1. Timing and peak of chum spawning, based on population estimates

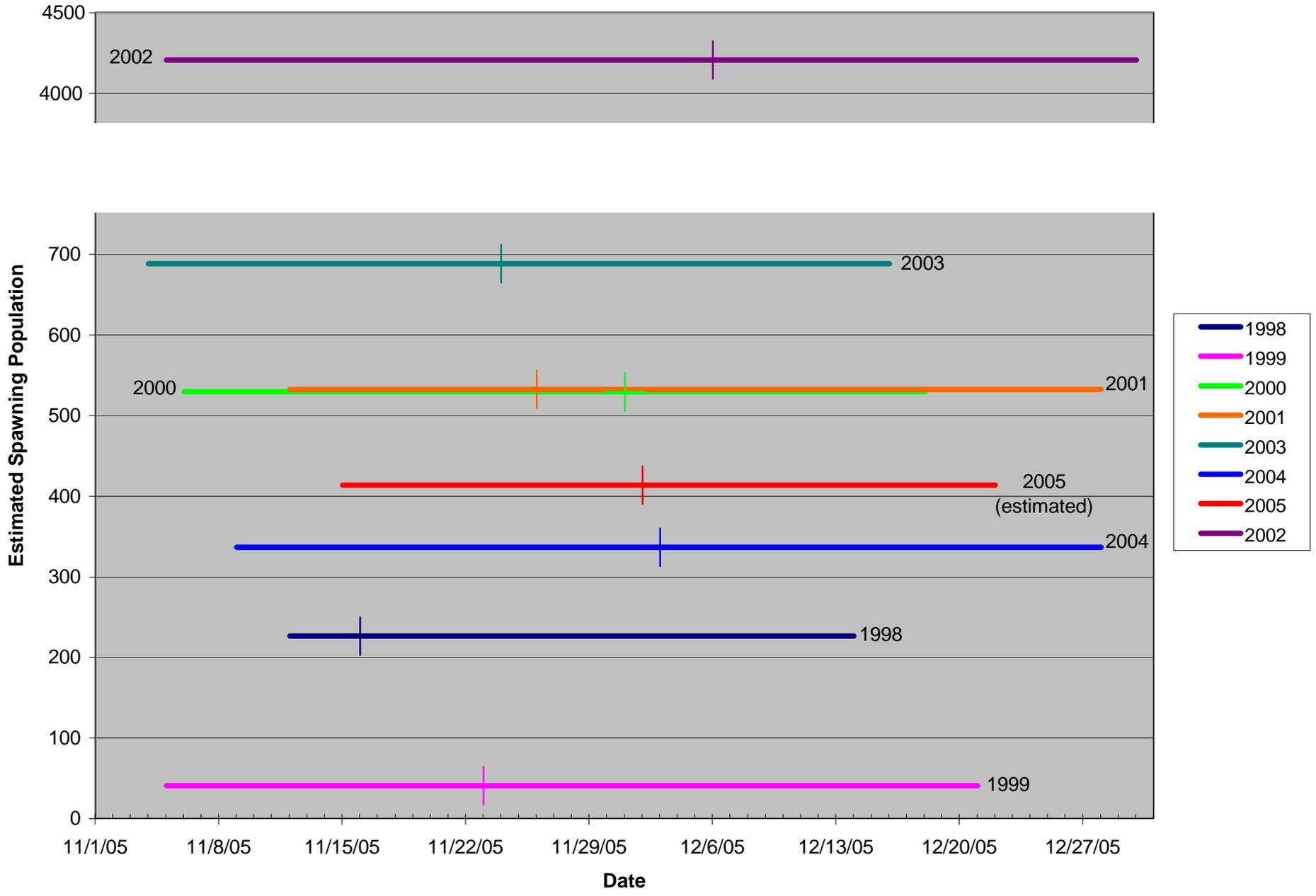


Table 2. Summary of chum population parameter estimates and tagging since 1998-1999.

Parameters and tagging	Contract Year							
	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006
Chum Salmon at Ives Island								
Count at Bonneville Dam	43	38	58	72	326	77	118	128
Peak redd counts	47	29	95	180	776	164	148	101
Peak live fish count	110	40	215	239	1015	281	99	122
Spawner population size	226	40	529	532	4232	688	336	
Spawning ground M:F (%)	39:61	25:75	56:44	42:58	48:52	39:61	48:52	
Age composition (% age 2, 3, 4, 5)	9-73-17-1	0-58-42-0	0-30-65-5	0-53-44-3	0-34-62-4	0-4-85-11	0-30-54-16	
Onset of Spawn	12-Nov	5-Nov	6-Nov	12-Nov	5-Nov	4-Nov	9-Nov	15-Nov
Peak Spawn	16-Nov	23-Nov	1-Dec	26-Nov	6-Dec	24-Nov	3-Dec	2-Dec
End of Spawn	14-Dec	21-Dec	18-Dec	28-Dec	30-Dec	NA	28-Dec	22-Dec
Begin Emergence	29-Mar	3-Feb	15-Feb	29-Jan	27-Jan	22-Feb	4-Feb	
Peak Emergence	28-Apr	13-Mar	26-Mar	25-Feb	1-Mar	25-Mar	21-Mar	
End of Emergence	4-May	8-Apr	9-Apr	31-Mar	6-Apr	15-Apr	2-May	

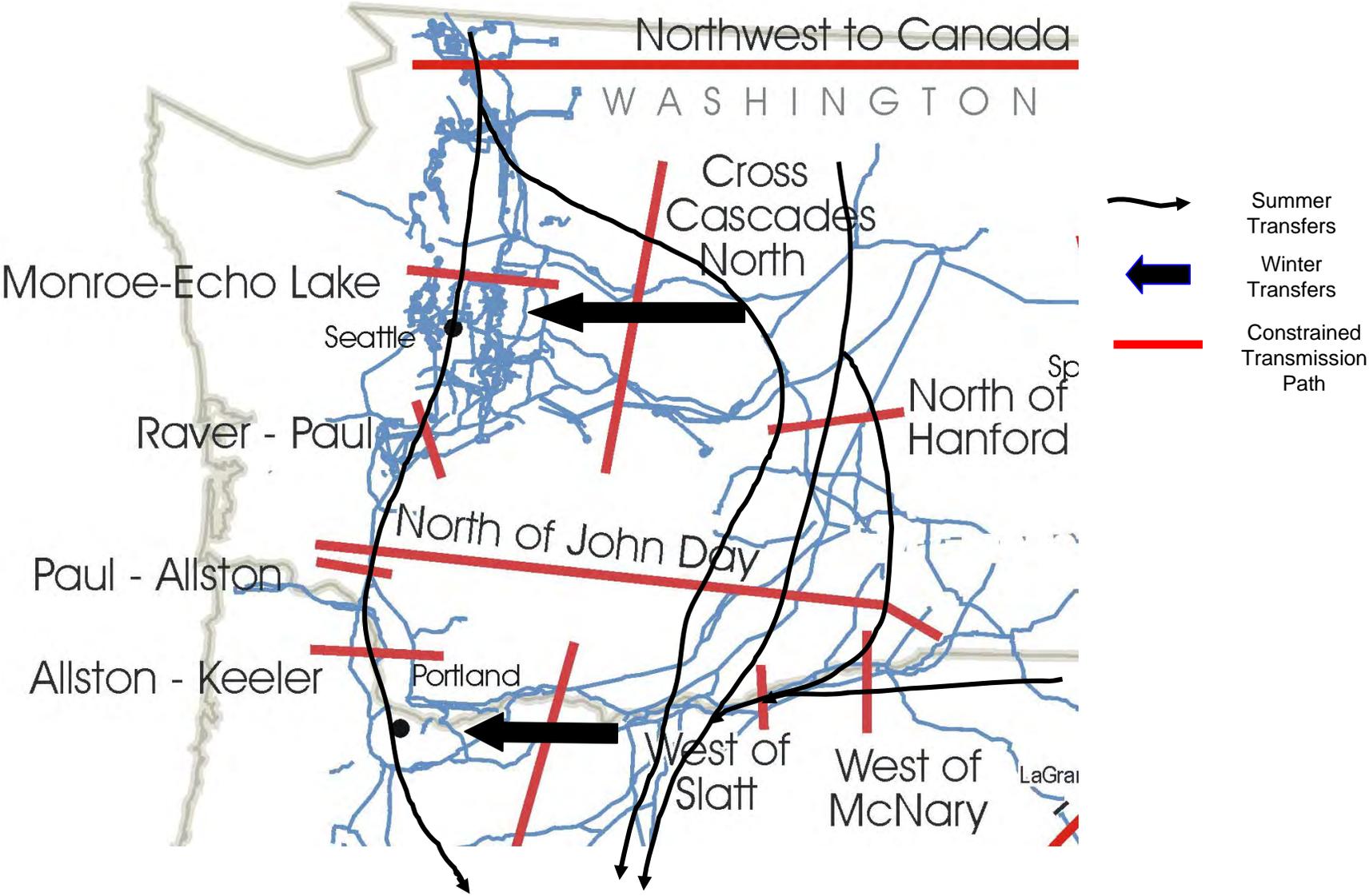
# **NW Transmission System Bottlenecks and Impacts of 2005 Summer Operation**

**BPA Transmission Business Line  
Mike Viles  
January 2006**

# Transmission Loading Characteristics

- NW load peaks in Winter
  - Heaviest power flows are east to west
- California peaks in Summer
  - Heaviest power flows are north to south

# Figure 1: NW Paths & Seasonal Direction of Powerflow



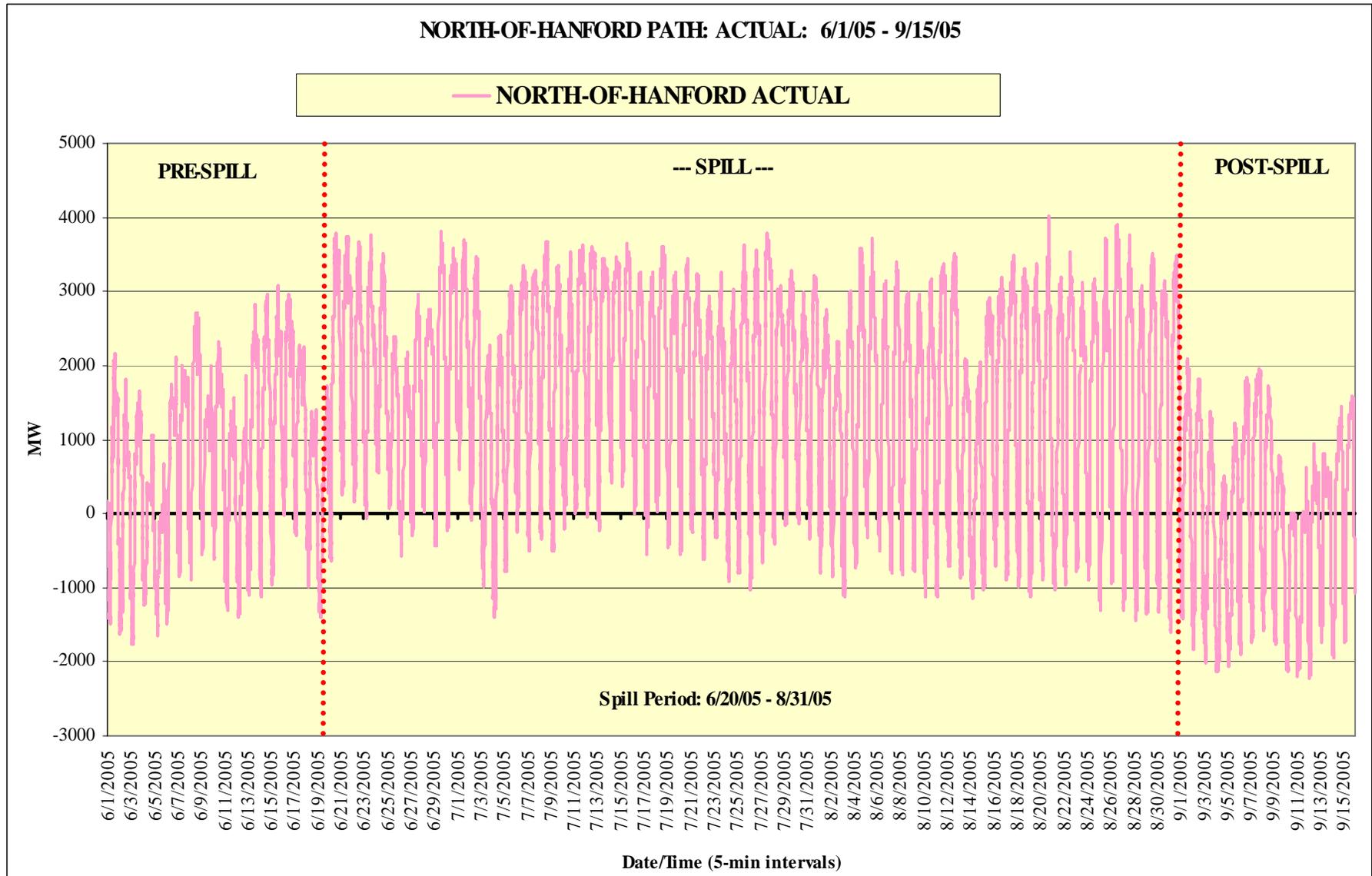
# Summer 2005 Problem Areas

- North of Hanford Path
  - Monitors flow of power on two 500-kV lines on eastside of Cascade Mountains.
- Paul-Allston Path
  - Monitors flow of power on two 500-kV lines between Olympia and Longview.
- Allston-Keeler Path
  - Monitors flow on one 500-kV line between Longview and Portland

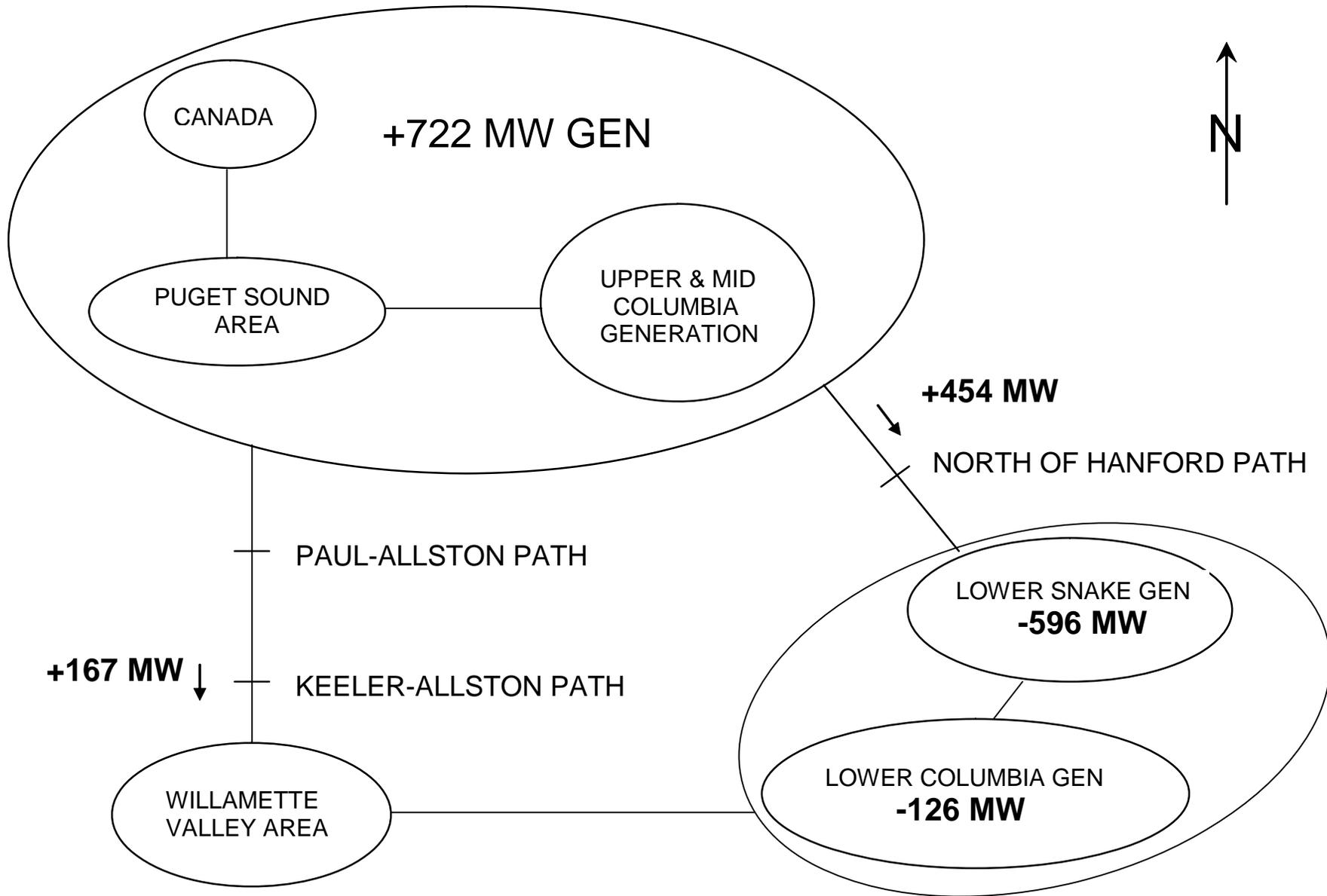
# **Transmission Impacts of Increased Spill on Lower Snake and Lower Columbia Projects**

- Reducing generation on the Lower Snake and Lower Columbia plants:
  - Increases North to South flow across problem paths (see next 2 slides)
  - Reduce transfer capability from NW to California

# Figure 2: North of Hanford Flow



**Figure 3: Peak Generation Changes between 6/17/05 & 6/21/05**

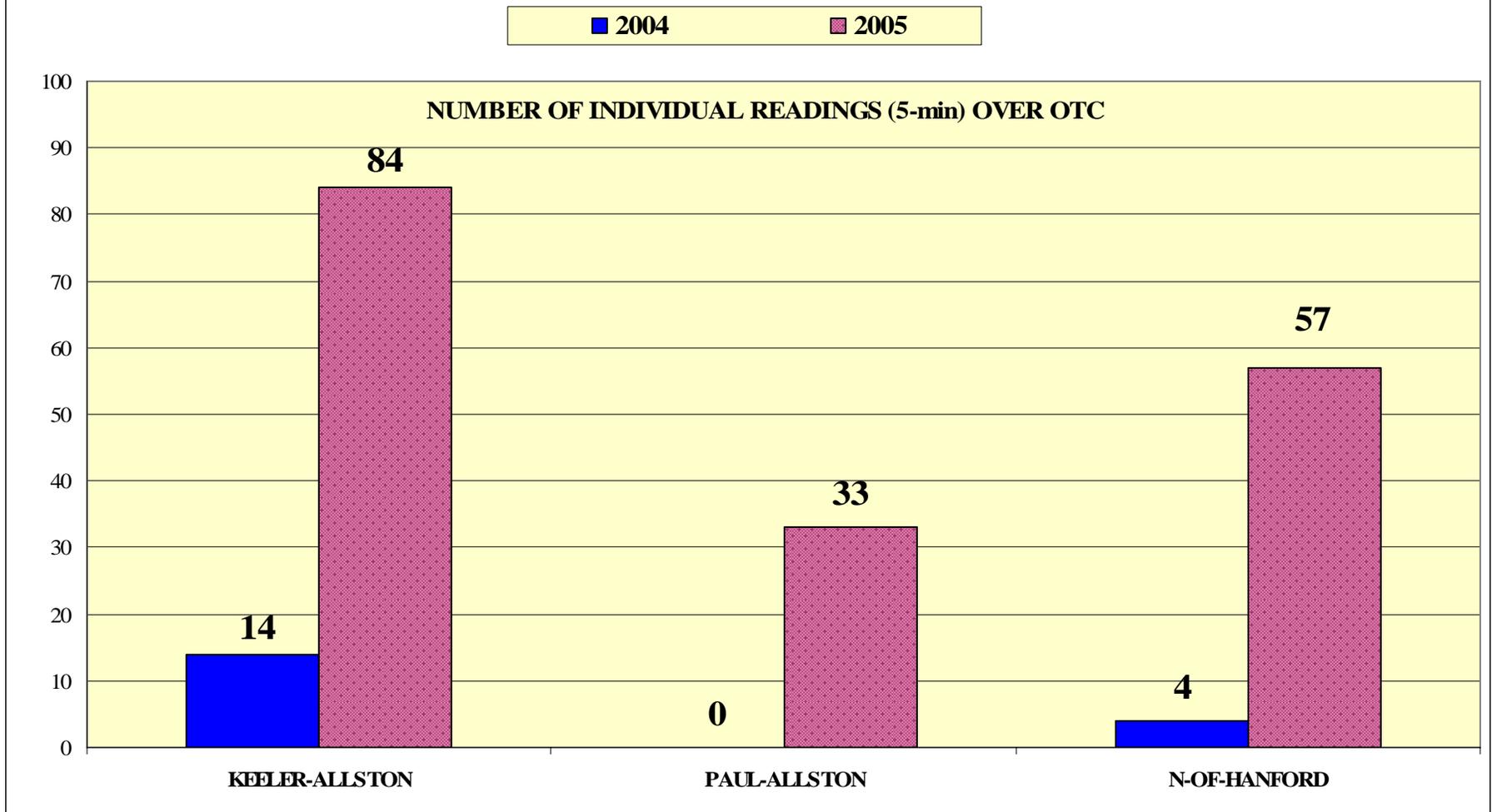


**SUMMER 2005 INCREASED SPILL OPERATIONS RESULTED IN GREATLY INCREASED POWER FLOW FROM NORTH TO SOUTH OVER KEY CONSTRAINED TRANSMISSION PATHS**

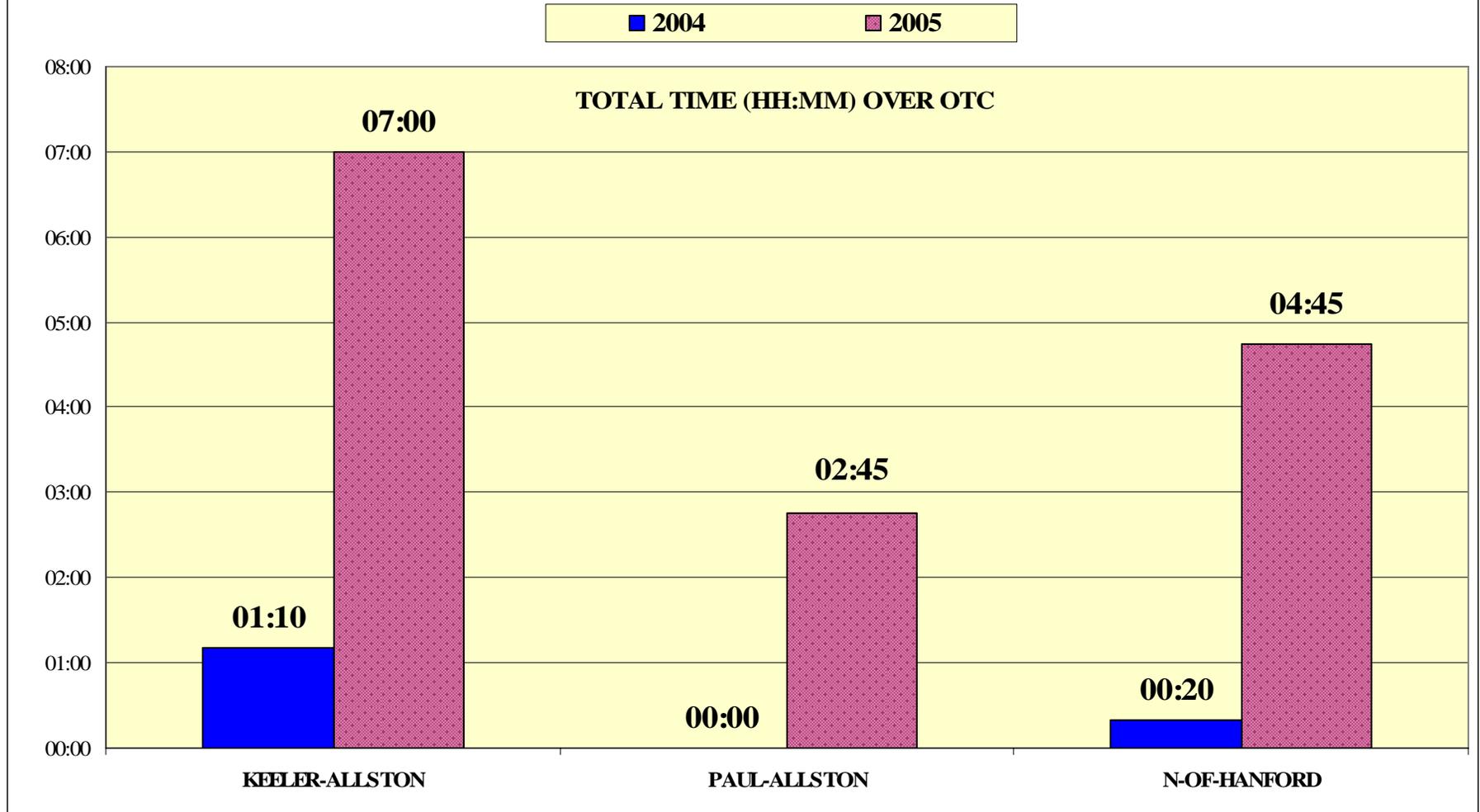
# Problems

- Exceeding the Operational Transfer Capability (OTC) of these paths
  - Operating above an OTC creates risk of unreliable system response to critical contingences
  - WECC requires that the actual flow on these paths get below the OTC within 30 minutes
  - Amount of OTC excursions and time above OTC was significantly higher in Summer 2005 than Summer 2004

**FIGURE 4: PATH FLOWS OVER OTC (JUN-AUG 04 & 05)**



**FIGURE 5: TIME ABOVE OTC (JUN-AUG 04 & 05)**



# Response to OTC Excursions

- In August 2005 there were 29 periods when the OTC of one of these paths was exceeded for at least 5 minutes (Table 1)
- 20 of these OTC excursions required dispatcher action to reduce the flow on the path (Table 2)
- In some cases, the dispatcher action is significant

**TABLE 1: OTC EXCURSIONS IN AUGUST 2005**

<b>EVENT</b>	<b>PATH</b>	<b>START EXCURSION</b>	<b>EXCURSION DURATION (mm:ss)</b>	<b>EXCURSION MAX MW OVER OTC</b>
1	Paul-Allston	04-Aug-05 10:57:00	05:00	14.2
2	Paul-Allston	04-Aug-05 11:04:50	12:50	75.6
3	Paul-Allston	04-Aug-05 11:53:00	06:10	57.3
4	Keeler-Allston	04-Aug-05 13:55:50	06:00	43.2
5	Keeler-Allston	04-Aug-05 16:46:40	08:20	12.8
6	Keeler-Allston	04-Aug-05 17:13:10	06:40	17.0
7	Paul-Allston	05-Aug-05 09:50:10	30:00	122.1
8	Keeler-Allston	05-Aug-05 13:09:20	20:40	36.4
9	Keeler-Allston	06-Aug-05 16:22:30	<b>05:50</b>	<b>227.9</b>
10	Paul-Allston	09-Aug-05 11:57:30	08:30	51.7
11	Paul-Allston	12-Aug-05 10:16:30	28:40	55.1
12	Paul-Allston	12-Aug-05 10:59:00	05:10	23.6
13	Paul-Allston	12-Aug-05 11:06:50	25:10	46.8
14	Paul-Allston	17-Aug-05 10:06:30	07:20	46.3
15	North-of-Hanford	20-Aug-05 17:54:40	<b>07:30</b>	<b>359.0</b>
16	Keeler-Allston	25-Aug-05 14:04:00	16:00	30.9
17	Keeler-Allston	25-Aug-05 15:10:10	12:40	38.3
18	Paul-Allston	26-Aug-05 09:55:50	17:50	73.8
19	Keeler-Allston	26-Aug-05 12:42:20	15:00	55.9
20	North-of-Hanford	26-Aug-05 12:54:50	28:30	220.6
21	Keeler-Allston	26-Aug-05 13:03:00	20:10	61.3
22	Keeler-Allston	26-Aug-05 13:27:10	17:50	72.7
23	North-of-Hanford	26-Aug-05 13:27:50	18:50	147.7
24	North-of-Hanford	26-Aug-05 14:00:00	20:20	146.4
25	Keeler-Allston	26-Aug-05 14:02:20	10:30	36.0
26	North-of-Hanford	26-Aug-05 14:27:10	18:00	109.0
27	North-of-Hanford	26-Aug-05 15:11:30	24:10	73.3
28	North-of-Hanford	27-Aug-05 16:26:00	09:40	73.3
29	Keeler-Allston	27-Aug-05 16:28:10	06:50	20.2

Shaded times indicate simultaneou problems on multiple paths

**BOLD** Indicates excursion caused by line outage

**TABLE 2: DISPATCHER ACTIONS**

TABLE 2: DISPATCHER ACTIONS					BPA DISPATCHER ACTIONS			
EVENT	PATH	START EXCURSION	EXCURSION DURATION (mm:ss)	EXCURSION MAX MW OVER OTC	A. BYPASS SERIES CAPACITORS (# bypassed)	B. REQUEST PHASE SHIFTER OPERATION	C. PBL GENERATION REDISPATCH	D. CURTAIL SCHEDULES
2	Paul-Allston	04-Aug-05 11:04:50	12:50	75.6	Yes (4)		140 MW UC to LC	106 MW
4	Keeler-Allston	04-Aug-05 13:55:50	06:00	43.2	Yes (4)			
6	Keeler-Allston	04-Aug-05 17:13:10	06:40	17.0			200 MW UC to LC	
7	Paul-Allston	05-Aug-05 09:50:10	30:00	122.1	Yes (4)		300 MW UC to LC	191 MW
8	Keeler-Allston	05-Aug-05 13:09:20	20:40	36.4	Yes (4)		140 MW UC to LC	182 MW
10	Paul-Allston	09-Aug-05 11:57:30	08:30	51.7	Yes (4)	100 MW W to E		
11	Paul-Allston	12-Aug-05 10:16:30	28:40	55.1	Yes (4)	50 MW W to E	200 MW UC to LC	345 MW
13	Paul-Allston	12-Aug-05 11:06:50	25:10	46.8		100 MW W to E		110 MW
14	Paul-Allston	17-Aug-05 10:06:30	07:20	46.3	Yes (4)	Yes	200 MW UC to LC	400 MW
16	Keeler-Allston	25-Aug-05 14:04:00	16:00	30.9			200 MW UC to LC	222 MW
17	Keeler-Allston	25-Aug-05 15:10:10	12:40	38.3			100 MW UC to LC	72 MW
18	Paul-Allston	26-Aug-05 09:55:50	17:50	73.8	Yes (4)	50 MW W to E	200 MW UC to LC	356 MW
19	Keeler-Allston	26-Aug-05 12:42:20	15:00	55.9	Yes (4) / No (4)	100 MW W to E	Not Available	286 MW
20	North-of-Hanford	26-Aug-05 12:54:50	28:30	220.6	No (4)			
21	Keeler-Allston	26-Aug-05 13:03:00	20:10	61.3				450 MW
22	Keeler-Allston	26-Aug-05 13:27:10	17:50	72.7				300 MW
25	Keeler-Allston	26-Aug-05 14:02:20	10:30	36.0				
26	North-of-Hanford	26-Aug-05 14:27:10	18:00	109.0				300 MW
27	North-of-Hanford	26-Aug-05 15:11:30	24:10	73.3			Declined	
28	North-of-Hanford	27-Aug-05 16:26:00	09:40	73.3			200 MW	

Shaded times indicate simultaneous problems on multiple paths

Definitions: UC = Upper Columbia, LC = Lower Columbia

# Summary

- Increased spill changes generation patterns and increased north to south flow on the NW transmission system
- The transmission system was operated “closer to the edge” in summer 2005 than summer 2004 (i.e., significantly more OTC excursions)
- OTC excursions can result in significant dispatcher action to control

# **COLUMBIA RIVER REGIONAL FORUM**

## **TECHNICAL MANAGEMENT TEAM**

January 11, 2006

### **FACILITATOR'S SUMMARY NOTES ON FUTURE ACTIONS**

Facilitator: Donna Silverberg

Notes: Robin Harkless

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.

#### **Comments on Notes**

No comments on the December TMT notes were provided at this time.

#### **BPA Transmission Business Line**

John Wellschlager introduced Mike Viles and stated the objective of the presentation was to share the operational challenges BPA faced Summer 05 as a result of the court-ordered spill. He said the intent was not to make a political statement. Mike Viles, BPA Transmission Business Line, provided a presentation on operation challenges to the power system in 2005 as a result of the summer spill program. He explained that while winter load is typically higher, summer peaks in California require heavy north to south power flows which causes stress on the NW power system. Specific to 2005, summer problem areas were at North of Hanford, Paul-Allston, and Allston-Keeler. Increased spill created challenges with north to south power flow. There is a limit to how much power can be generated on a specific line, and there are rules set forth by the Western Electricity Coordinating Council about exceeding the operational transfer capability (OTC) –the amount of power that can be operated on a specific line. Exceeding the OTC, especially if for more than 30 minutes, causes a risk of unreliable system response. OTC excursions and time above OTC was much higher in the summer of 2005 than in '04. 20 of the 29 incidents that were above OTC required dispatcher action, and in some cases, significant action was taken. “Actions” included: bypassing series capacitors, requesting phase shifter operations, PBL generation re-dispatch, and curtailing schedules.

In summary, the summer of 2005 showed an increase in generation and north to south flow on the NW transmission system; the system operated at a higher risk for unreliable system response, and it required significant dispatcher action to control.

Question: What future actions is TBL considering to address some of the lessons learned from 2005? TBL will look at constraining schedules to decrease problems and at adding new transmission lines (which will be challenging from a political, financial and temporal perspective). Cathy Hlebechuk, COE, noted that the Emergency Protocols in the WMP speak to options as well.

BPA was commended for the success of operating the system with the challenges they faced in

the summer of 2005, and it was noted that there will be more time this year to plan for summer operations in 2006.

### **January Water Supply Forecast**

Harold Opitz, National Weather Service, provided information on precipitation forecasts for 2006. Precipitation was above normal from October-early January in some parts, and slightly below normal to the north. Forecasts to date are as follows: Grand Coulee, 92% of normal; Lower Granite, 105%; and The Dalles, 94%. Many areas at this time are showing normal snow pack but Harold suggested it is too soon to assess snow pack. With a large error band at this point, the forecasts are informative but should be used with caution. Volume and shape are uncertain. Finally, Harold offered that the 90 day climate forecast is leaning toward colder temperatures and no big changes in precipitation.

Cathy Hlebechuk provided the COE's forecasts. The Libby April-August is 87.8%, with a January 31 target elevation of 2426.7'. Dworshak April-July forecast is 98%, targeting 1524.2' by the end of January. Hungry Horse is at 100%, so minimum flows are 900 cfs, and Columbia Falls minimum flows are 3500 cfs to meet bull trout needs. Additional information on objectives for the operation can be found in the WMP and the Bull Trout BiOp.

### **Chum**

Ron Boyce, ODFW, reported on chum spawning population estimates and run timing at Ives Island. Numbers for 2005 are similar to the previous 8 years, around 400 redds. Timing started a bit late but ended on time relative to previous years. No redds were observed above 11.5' as of yesterday, 1/10. Joe Scalicky is plotting the latest information and will post the information on the TMT website.

The latest trends have shown fewer chum in the system. ODFW will be tracking this to try to understand the trend, and will develop a brood table and share it with TMT at a future meeting.

Chum spawning at Hamilton Springs has ended; numbers and timing were similar to 2004. Hardy recently was too water-logged to do surveys, but likely spawning has ended and numbers are similar to 2004.

**ACTION:** Ron will share a brood table at the next TMT meeting, including a summary of the hatchery program and error bounds around the numbers.

### **Status of Litigation**

Information on the 2004 BiOp remand can be found at [www.salmonrecovery.gov](http://www.salmonrecovery.gov). Judge Redden has ordered spill on the Lower Columbia from April 10-June 30 and July 1-August 31; and on the Snake from April 3-June 20 and June 21-August 31. MOP operations will continue and the COE will continue to operate to the upper rule curve. The Action Agencies are putting together an Implementation Plan similar to last year's based on the Judge's orders. This will be added to the 2006 WMP. The plan will undergo an internal review before being shared with the public; Cathy Hlebechuk will provide a status update at the next TMT meeting.

Question: Does the order provide flexibility through the TMT to seek regional consensus and perform adaptive management? This will be clarified at the next TMT meeting.

### **Water Management Plan Fall/Winter Update**

Drafts of the Fall/Winter update and WMP are on the TMT web page. The COE will make some minor changes to the plan, notify TMT when the new draft is on the web for a final review, and the team will finalize the document at the next TMT meeting.

### **Operations Review**

*Reservoirs* – Hungry Horse is at 3590’ and operating to meet Columbia Falls minimums. Grand Coulee is at 1288.6’, near full. Libby is at 2411.4’ and operating at minimum flow, targeting 2426.7’ by the end of January. Dworshak is at 1529.3’, targeting a 1540.7’ end of January flood control elevation.

Wire rope removal work has begun at The Dalles at bays 1-9, causing a reduction in spillway capacity. Between now and March 2, 6 bays are out of service; three will be back on by April 10 for spring spill, and the other three will be back on by May 15.

Work to install flow deflectors at Chief Joseph has begun and expects to be completed by November 2008.

Lower Snake dredging began in December ’05; work will continue 24-hours a day, 7 days a week, until completion which is expected by the end of February this year. This will allow for MOP operations this spring. Water is being monitored for ammonia, dissolved oxygen, ph and turbidity and so far no impact from the dredging has been found. The project is 40% complete.

*Fish* – Kokanee survival estimates were at 9% as predicted with the higher lake level in the winter of 2004-05. Predation by lake trout and rainbow trout is posing a challenge to the fish. IDFG is hoping to develop and use a decision tree to determine Lake Pend Oreille operations for this year. If it is a dry year, there will likely be a lower lake level. IDFG hopes to have the decision tree complete by spring.

*Power system* – Nothing to report at this time.

*Water quality* – Nothing to report at this time.

**TMT Meeting Schedule:** TMT meetings were scheduled for February 1 and 22, March 8 and 22, and April 5 and 19. These dates are subject to change. Check the TMT web page for updates.

Wednesday, February 1 agenda items include:

- Chum Information
- Litigation Update – Status of Implementation Plan
- WMP Fall/Winter Update

# Technical Management Team Meeting Notes

January 11, 2006

## ***1. Greetings and Introductions.***

Today's meeting of the Technical Management Team was chaired by Cathy Hlebechuk and facilitated by Donna Silverberg. The following is a summary (not a verbatim transcript) of the topics discussed and decisions made at this meeting. Anyone with questions or comments about these notes should contact Hlebechuk at 503-808-3942.

## ***2. BPA Transmission Business Line Presentation on Effect of Summer Spill on System Stability.***

The objective of this presentation is to share the operational challenges we faced this past summer as a result of the court-ordered spill program, said John Wellschlager; the intent is not to make a political statement. He introduced Mike Viles, a TBL engineer, who led this presentation, titled "NW Transmission System Bottlenecks and Impacts of 2005 Summer Operation." Using the overhead projector, Viles touched on the following major topics:

- Transmission loading characteristics – NW load peaks in winter; California peaks in summer
- NW paths and seasonal direction of power flow (map). During the summer, the primary flow of power is north to south.
- Summer 2005 problem areas – North of Hanford path (two 500-kV lines east of the Cascades), Paul-Allston path (two 500 kV lines between Olympia and Longview), Allston-Keeler path
- Transmission impacts of increased spill on Lower Snake and Lower Columbia projects – reduced generation at the Lower Snake and Lower Columbia plants, increases north to south flow across problem paths, reduces the transfer capability from the Northwest to California.
- North of Hanford path – actual power flows, June 1-September 15, in MW
- Peak generation changes between June 17 and June 21, 2005 (flow chart) – summer 2005 increased spill operations resulted in greatly increased power flow from north to south over key constrained transmission paths
- Problems: exceeding the Operational Transfer Capability (OTC) of these tasks. Operating above an OTC creates risk of unreliable system response to critical contingencies. WECC requires that the actual flow on these paths gets below the OTC within 30 minutes. The amount of OTC excursions and time above OTC was significantly higher in summer 2005 than in summer 2004.
- Path flows over OTC, June-August 2004 vs. June-August 2005 (bar chart) – 174 individual five-minute readings total in 2005, compared to 18 in 2004.
- Time above OTC, by path, 2004 vs. 2005 – much longer durations in 2005.
- Response to OTC excursions – in August 2005, there were 29 periods when the OTC of one of these paths was exceeded for at least five minutes; 20 of those OTC excursions required the dispatcher to take action to reduce the flow on the path. In some cases, the dispatcher action was significant.
- OTC excursions and response actions, in August 2005 (table).
- Dispatcher actions, August 2005 (table).
- Summary: increased spill changes generation patterns and increased north to south flow on the NW transmission system; the transmission system was operated “closer to the edge” in summer 2005 than in summer 2004 (i.e., significantly more OTC excursions); OTC excursions can result in significant dispatcher action to control.

Hlebechuk noted that Appendix 1 of the Water Management Plan, Emergency Protocols, addresses handling of emergencies.

This was very informative, but as we look ahead, what is BPA doing to define potential remedial actions, given the fact that summer spill is likely to continue in the future? Rich Domingue asked. Further information will help us, as will the Schultz-Wahtoma line, which was completed in November, Viles replied.

Additional transmission lines could help improve the situation, but the reality is, new transmission lines are very complex, very expensive, and no one wants one in their back yard, Wellschlager added.

In the Water Management Plan emergency protocols, there is a list of actions to be taken if transmission system emergencies occur, said Hlebechuk. I would like to commend BPA for the job you did last summer, under difficult conditions, said Russ Kiefer; with the additional transmission system capacity, a little more water and the slightly reduced spill planned in 2006, hopefully, things will be a little easier for you this summer.

### ***3. January Final Water Supply Forecasts, Precipitation Data and Climate Predictions.***

Harold Opitz from the River Forecast Center led this presentation, touching on the following major points:

- Monthly precipitation, December 2005: 130% of normal+ across the majority of the basin; above-average everywhere else except parts of Canada
- Seasonal accumulated precipitation, October 1-January 9 – again, well above average over most of the Columbia Basin
- Columbia, Grand Coulee, forecasts for water year 2006 – 57.8 MAF, 92% of average
- Lower Granite forecasts for water year 2006 – 31.6 MAF or 105% of average, January-July
- The Dalles forecasts for water year 2006 – 101 MAF, or 94% of average, January-July

As the rain keeps coming here, is precipitation likely to increase on the east side? Paul Wagner asked. We are obtaining snow pack on the east side, with higher value than we've seen for the past several years, Opitz replied.

Moving on to the Climate Prediction Center's 90-day forecasts, Opitz said conditions are currently ENSO-neutral but leaning toward a weak La Niña – colder than average, with equal chances of above-average or below-average precipitation – as we move into the spring. It's too early to make any predictions about what might happen in April, May and June, however, Opitz said. I would add that it's still very early in the season, said Wellschlager – if we get a warming trend, a lot of what we're seeing now could melt.

Hlebechuk noted that much of today's discussion focused on the volume of the predicted 2006 runoff; she reminded the group, however, that the shape of the runoff is just as important as its volume, from a flood control perspective.

Hlebechuk and Norris then presented information on the current Libby, Dworshak and Hungry Horse forecasts.

- Libby: 5.48 MAF, or 87.8% of normal, January 31 elevation target: 2426.7 feet
- Dworshak: 2.6 MAF, 98% of normal.
- Hungry Horse: 100% of normal, with a Columbia Falls minimum flow of 3.5 Kcfs

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

Ron Boyce said the first live chum were seen at the Ives Island area on October 28. No redds were observed until November 15. Contrary to what we thought previously, the 2005 chum spawning population at Ives Island, just over 400, is about average for the last five years. Spawning started a bit late but ended at about the normal time, said Boyce. Kyle Dittmer noted that 2005's was the latest onset of chum spawning in the historical record. Tributary spawning numbers have not yet been tabulated, but will be presented at a future TMT meeting, added Boyce. In response to a question, Boyce and Wills said they have not heard of any redds being deposited above the 11.5-foot level.

Any idea why the number of spawners has declined from 4,200+ in 2002 to the numbers we're seeing now, in the 400-500 range? Dittmer asked. We don't know why that trend has occurred, but we are concerned, Boyce replied. A similar trend has been observed in the tributaries, he added. Are most of your spawners two- and three-ocean fish? Larry Beck asked. Three- and four-year-olds, primarily, Boyce replied, although we don't have that data for this year. In response to a question, LeFleur said most adult returns from the banner 2002 spawning year would be expected to return in 2005 (as two-ocean fish) and 2006 (as three-ocean fish).

In response to another question, Wills said spawning is now over in Hamilton Springs; Hardy Creek has been too full of water for the survey crews to access. However, it is believed that spawning has ended in that system as well. The 2005 spawner numbers are roughly similar in both Hamilton Springs and Hardy Creek to what they were in 2004.

It was agreed to have a further chum discussion at the next TMT meeting.

#### **5. Status of Litigation.**

Hlebechuk noted that a complete list of declarations is now available via the [www.salmonrecovery.gov](http://www.salmonrecovery.gov) website. The judge has ordered us to spill beginning April 3 in the Lower Snake, and April 10 in the Lower Columbia, Hlebechuk said. Spill in both systems will continue through August 31, with continued MOP and URC operations. The action agencies are preparing a spill

implementation plan, based on the judge's opinion, which will become a part of the WMP. When the spill management plan will be available for review is unknown at this time,

How much flexibility is there for the TMT to conduct adaptive management by consensus, given the court order? Kiefer asked. What if conditions turn dry, the river gets hot, and it becomes advantageous to alter the river operation from the one ordered by the court? I don't think there is much flexibility, given the specificity of Judge Redden's order, said Wellschlager. We could approach the plaintiffs as a group, but the effective timeline for such negotiations might be problematic.

## ***6. Water Management Plan and Fall/Winter Update Comments.***

Hlebechuk said the drafts are out there for review; she said the Corps is in the process of filling in some of the blanks. Few, if any, comments have been received to date. There is also a spring/summer update draft available, but it is probably premature to discuss it. Do we need to sit down and talk about what needs to change in the WMP, because of the litigation? Silverberg asked. We can discuss that, said Hlebechuk; in the interim, I would ask that any comments be submitted by next week so we can finalize the WMP and the fall/winter update at our next meeting.

## ***7. Operations Review.***

Norris said Hungry Horse is currently at elevation 3590, operating to meet the Columbia Falls minimum. The elevation is 1288.6 feet at Grand Coulee, currently, which is very full for this time of year.

Hlebechuk said Libby is at 2411.4 feet, currently, releasing minimum flow, with 2426.7 feet the January 31 target. Dworshak is at 1529.3 feet, targeting 1540.7 on December 31. Operationally, the Dalles wire rope replacement work is going on right now – bays 1-9. This reduces spillway capacity to 630 Kcfs, with total project capacity of 800 Kcfs+. Six bays will be out of service until March 3; all six should be back on line by early April. Bays 7-9 will be on-line by mid-May. The flow deflector in-water work will start this month at Chief Joseph Dam; that work will be completed by May 2008. We cannot spill while the contractor is in the water.

Dredging work began in December at the Lower Snake projects and should be completed by the end of February, Hlebechuk said; the navlock approaches at Lower Granite and Lower Monumental have already been done. The contractor is working 24 hours a day, seven days a week. All projects will be able to operate at MOP once that work is completed. A variety of water quality parameters are being monitored in conjunction with the dredging project, including turbidity. Overall, they're about 40% done with the dredging project, she added.

Wagner said there is little to report, from a fish perspective. Kiefer said he has some good news – the estimated kokanee fry survival percentage in Lake Pend Oreille was about 9%, which is very good. The bad news is that we’re having a hard time getting those fry past the lake trout/rainbow trout/bull trout predation bottleneck, Kiefer said, adding that his recollection is that there were about 120,000 kokanee spawners this year. Do you know what the Lake Pend Oreille winter elevation is likely to be next year? Hlebechuk asked. Not yet – everyone’s been pretty overwhelmed with the BiOp remand, Kiefer replied. The plan is to develop a decision tree that will help us make that determination, he added; we’d like to get it done before the spring migration season if possible.

Wellschlager said there is nothing to report, from a power system perspective – the system is moving a lot of water, currently.

**8. Next TMT Meeting Date.**

The next meeting of the Technical Management Team was set for Wednesday, February 1. Meeting summary prepared by Jeff Kuechle, BPA contractor.

**TMT Participant List  
January 11, 2006**

<b>Name</b>	<b>Affiliation</b>
Cathy Hlebechuk	COE
Kyle Dittmer	CRITFC
Larry Beck	COE
Tim Heizenrater	PPM
John Wellschlager	BPA
Tony Norris	USBR
Donna Silverberg	Facilitation Team
Nic Lane	BPA
Dan Spear	BPA
Robin Harkless	Facilitation Team
Tom Haymaker	PNGC

Mike Viles	BPA
Russ Kiefer	IDFG
Jim Adams	COE
Paul Wagner	NMFS
Russ George	WMCI
Cindy LeFleur	WDFW
Ron Boyce	ODFW
David Wills	USFWS
Paul Koskie	COE
Ruth Burris	PGE
Todd Cook	PPM
Guy Fielding	COE
Rich Domingue	NMFS
Barry Espenson	CBB
Don Coffee	Snohomish PUD
Lee Garnett	OPB
Bruce MacKay	Cnsultant
Lee Corum	PNUCC
Scott Bettin	BPA
Tom Le	PSE
Richelle Beck	D. Rohr & Associates
Shane Scott	PPC
Mike Buchko	Powerex
Harold Opitz	RFC

# TECHNICAL MANAGEMENT TEAM

**BOR:** Tony Norris / John Roache

**BPA:** John Wellschlager / Nic Lane

**NOAA-F:** Paul Wagner

**USFWS:** David Wills / Steve Haeseker

**OR:** Ron Boyce

**WA:** Cindy LeFleur

**ID:** Russ Kiefer

**MT:** Jim Litchfield

**COE:** Cindy Henriksen / Cathy Hlebechuk

## TMT MEETING

Wednesday February 01,2006 0900 - 1200 hours

1125 N.W. Couch Street, Suite 4A34  
Portland, Oregon 97208

Conference call line: 503-808-5190

**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 Donna Silverberg with any issues or concerns they would like to see addressed.  
Please e-mail her at [dsilverberg@cnnm.net](mailto:dsilverberg@cnnm.net) or call her at (503) 248-4703.*

## AGENDA

1. Welcome and introductions.
2. Review Minutes
  - i. [\[Minutes 2005\]](#) 
  - ii. [\[Minutes 2006\]](#) 
3. Status of The Dalles spillbay cable replacement (Lance Helwig, Corps)
  - i. [\[The Dalles Dam Cables - Power Point Slide\]](#)
  - ii. [\[The Dalles Dam Cables - PDF File Version\]](#) 
4. Status of Bonneville Corner Collector PIT tag work (Don Erickson, Corps)
  - i. [\[Bonneville 2nd Powerhouse Corner Collector PIT Tag Detection System Project - Power Point Slide\]](#)
  - ii. [\[Bonneville 2nd Powerhouse Corner Collector PIT Tag Detection System Project - PDF File Version\]](#) 
5. Spring Creek Hatchery Release
6. Chum
7. Status of litigation
8. Water Management Plan
  - i. [\[Finalize Fall Winter Update\]](#)
9. Operations Review
  - a. Reservoirs
  - b. Fish
  - c. Power System
  - d. Water Quality
10. Other
  - Set agenda for next meeting **February 22, 2006.** [\[Calendar 2006\]](#) 

**Bonneville 2<sup>nd</sup> Powerhouse  
Corner Collector PIT Tag  
Detection System Project**

**Bonneville Power Administration and  
U.S. Army Corps of Engineers –  
Portland District**

# B2CC PIT Tag Project

- PIT Tags – Small electronic devices inserted into fish
- PIT – Passive Integrated Transponder
- PIT Tag Program – Purpose is to evaluate which routes fish take to bypass our dams, evaluate survivability, and provide regional fish managers with smolt to adult return information
- PIT tags can be used for both juvenile and adult fish
- B2 Corner Collector purpose is to bypass juvenile salmon past Bonneville Dam

# B2CC PIT Tag Project

- Project Purpose: Install a PIT tag detection system in the flume of the B2 corner collector
- Project Goals:
  - Reliable
  - Cost Effective
  - Maintainable
  - Accurate

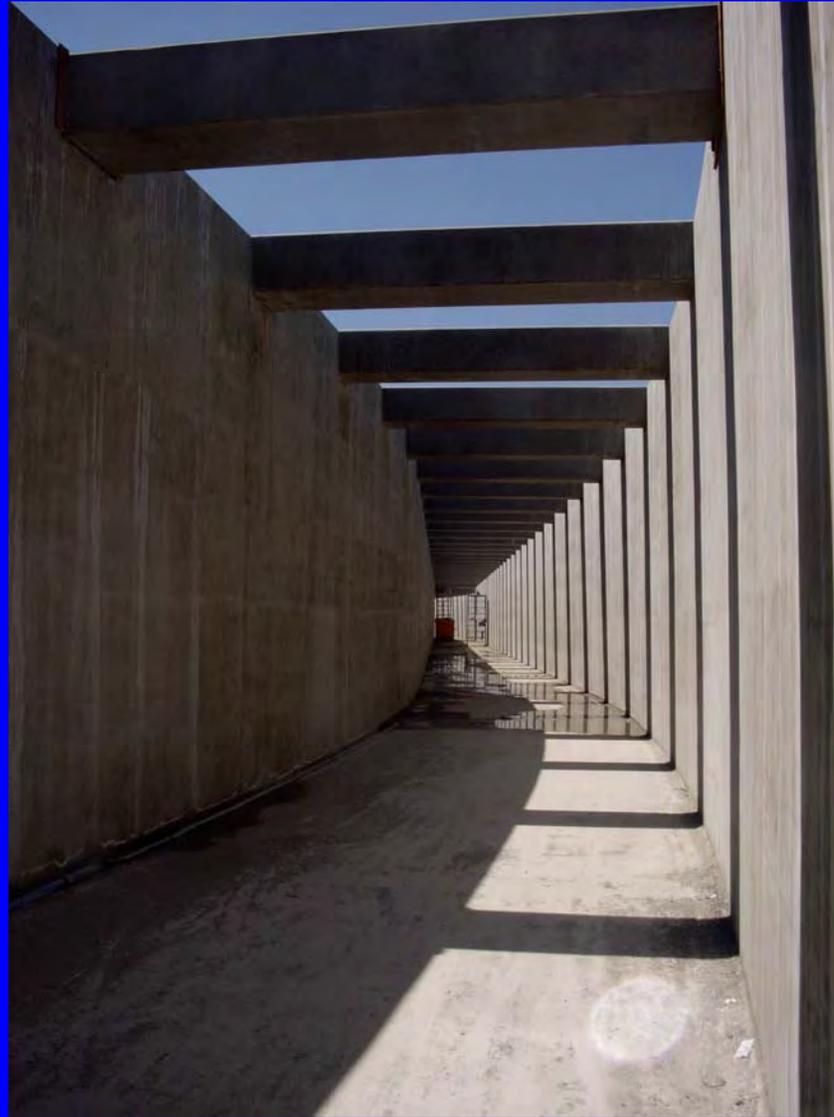
# B2CC PIT Tag Project

- BPA is responsible for supplying the antenna array and supporting electronics
- The Corps is responsible for providing the supporting infrastructure

# B2CC PIT Tag Project



# B2CC PIT Tag Project



# B2CC PIT Tag Project

- Initial biological testing indicates that 30%-35% of yearling and sub-yearling salmon and 71% of steelhead transit Bonneville 2<sup>nd</sup> Powerhouse via the corner collector
- Nearly 100% of fish that are diverted by the corner collector survive
- This is a high priority project with regional fish managers

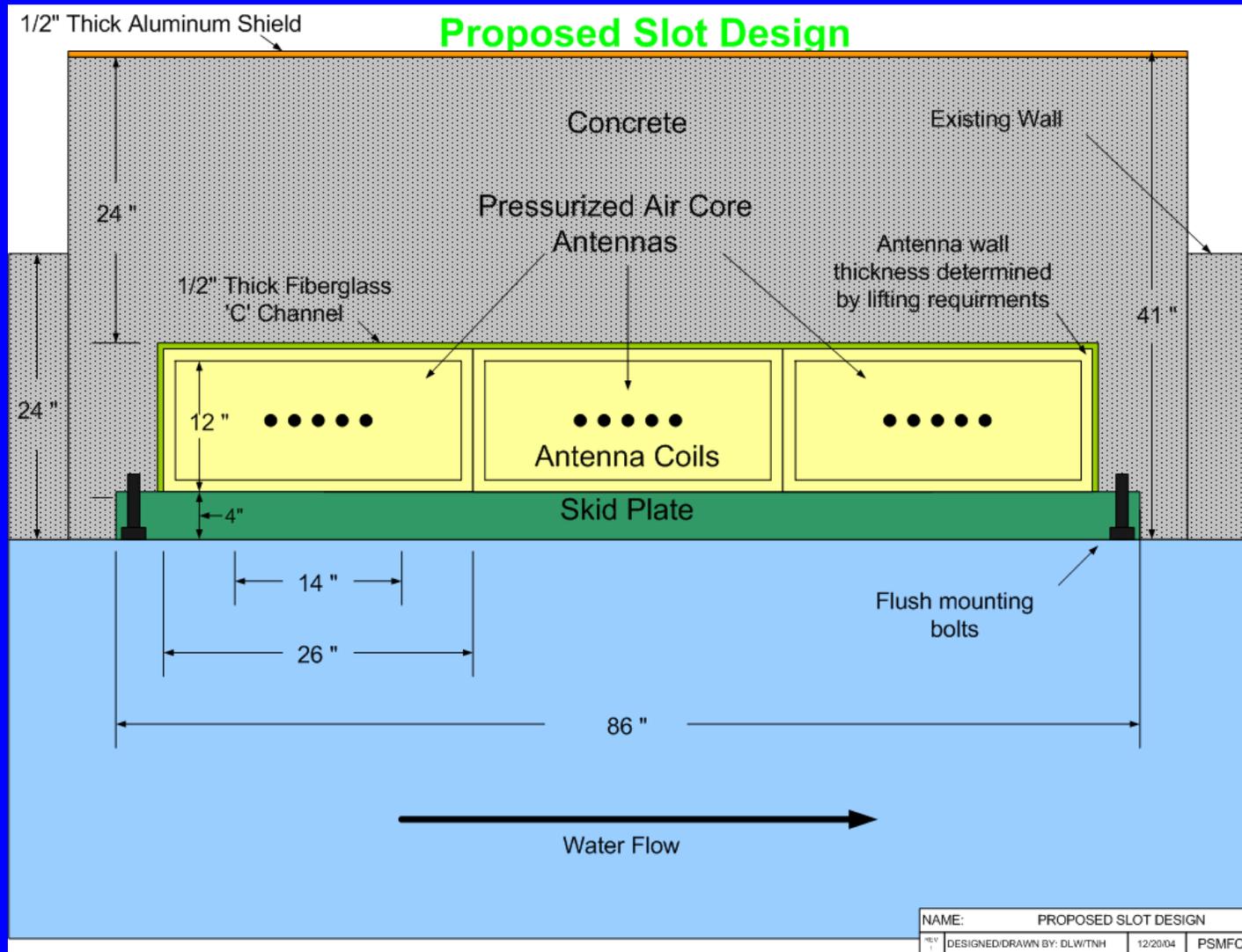
# B2CC PIT Tag Project

- Current Design
  - Install a single antenna array
  - Antenna array consists of three pressurized air core antennas inside a waterproof, composite structure
  - The antenna array fits in a slotted concrete support structure and the antenna array can be removed, repaired, and replaced if necessary

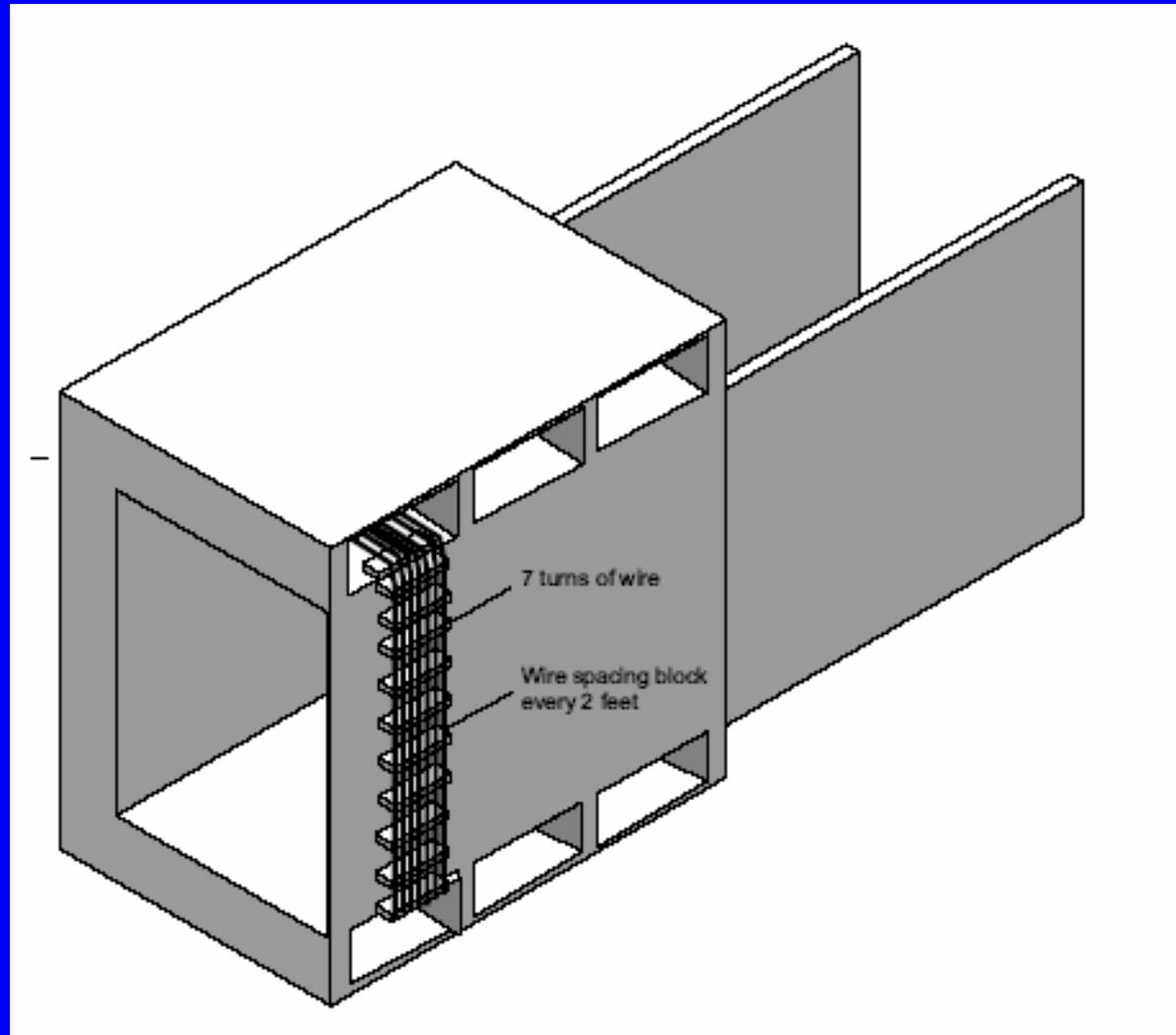
# B2CC PIT Tag Project

- Current Design
  - The flume can be operated without the antenna array installed
  - Address hydraulic concerns regarding rising water depths in the flume

# B2CC PIT Tag Project



# B2CC PIT Tag Project

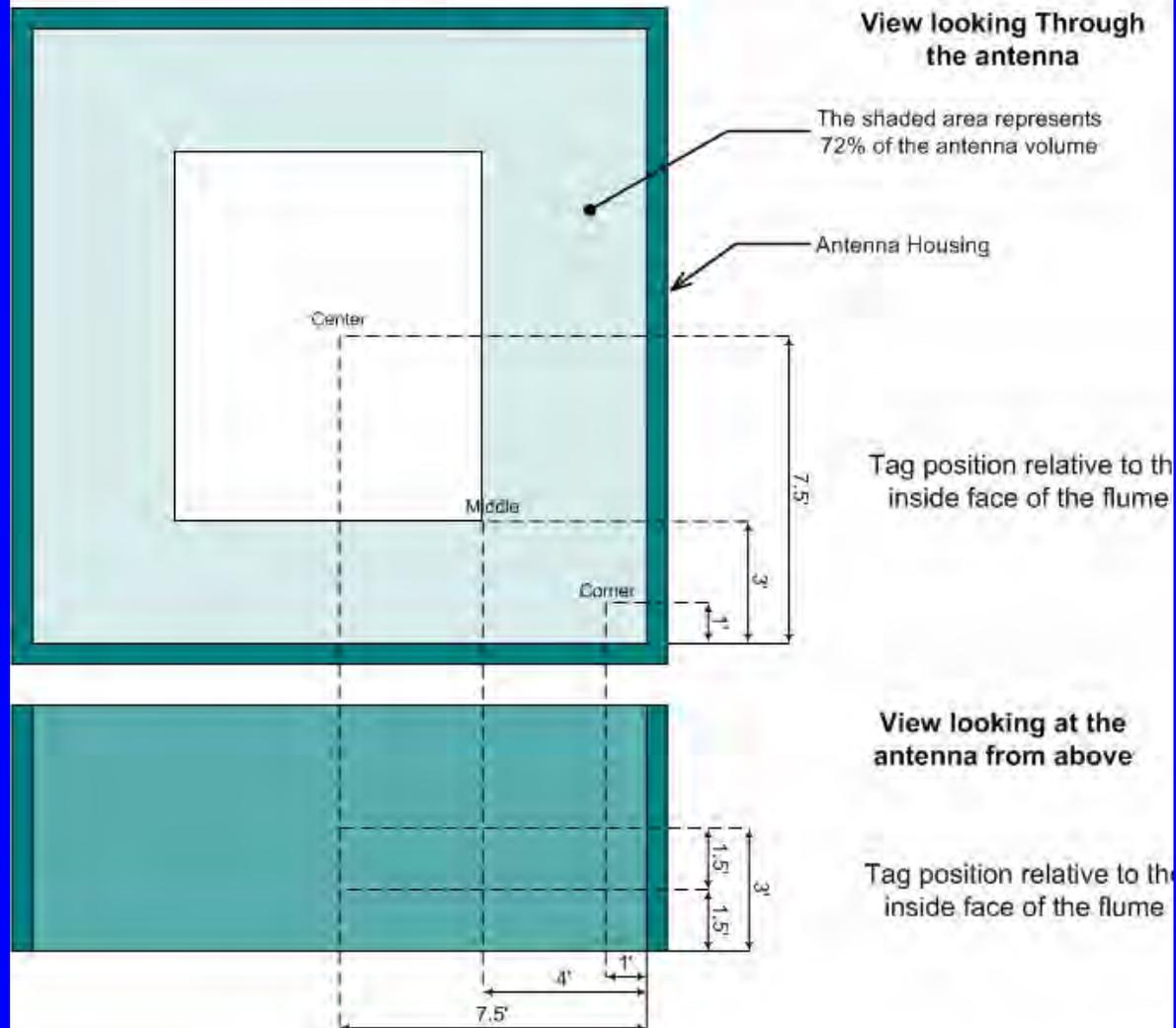


# B2CC PIT Tag Project

- The required detection efficiency is 60% of PIT tagged fish transiting the flume
- Detection efficiency is a function of location, orientation, and collisions

# B2CC PIT Tag Project

## SGL Tag Reading Efficiency within the 15' x 15' B2CC Antenna Volume



# B2CC PIT Tag Project

**17' x 17' Antenna that has a 15' x 15' Flume Opening**

	0° oriented tags						30° oriented tags					
Corner	100	100	100	100	100	100	100	100	100	100	100	100
Middle	93	99	100	100	99	93	84	99	100	100	99	84
Center	16	62	57	57	62	16	14	19	32	32	19	14
Middle	93	99	100	100	99	93	84	99	100	100	99	84
Corner	100	100	100	100	100	100	100	100	100	100	100	100

# B2CC PIT Tag Project



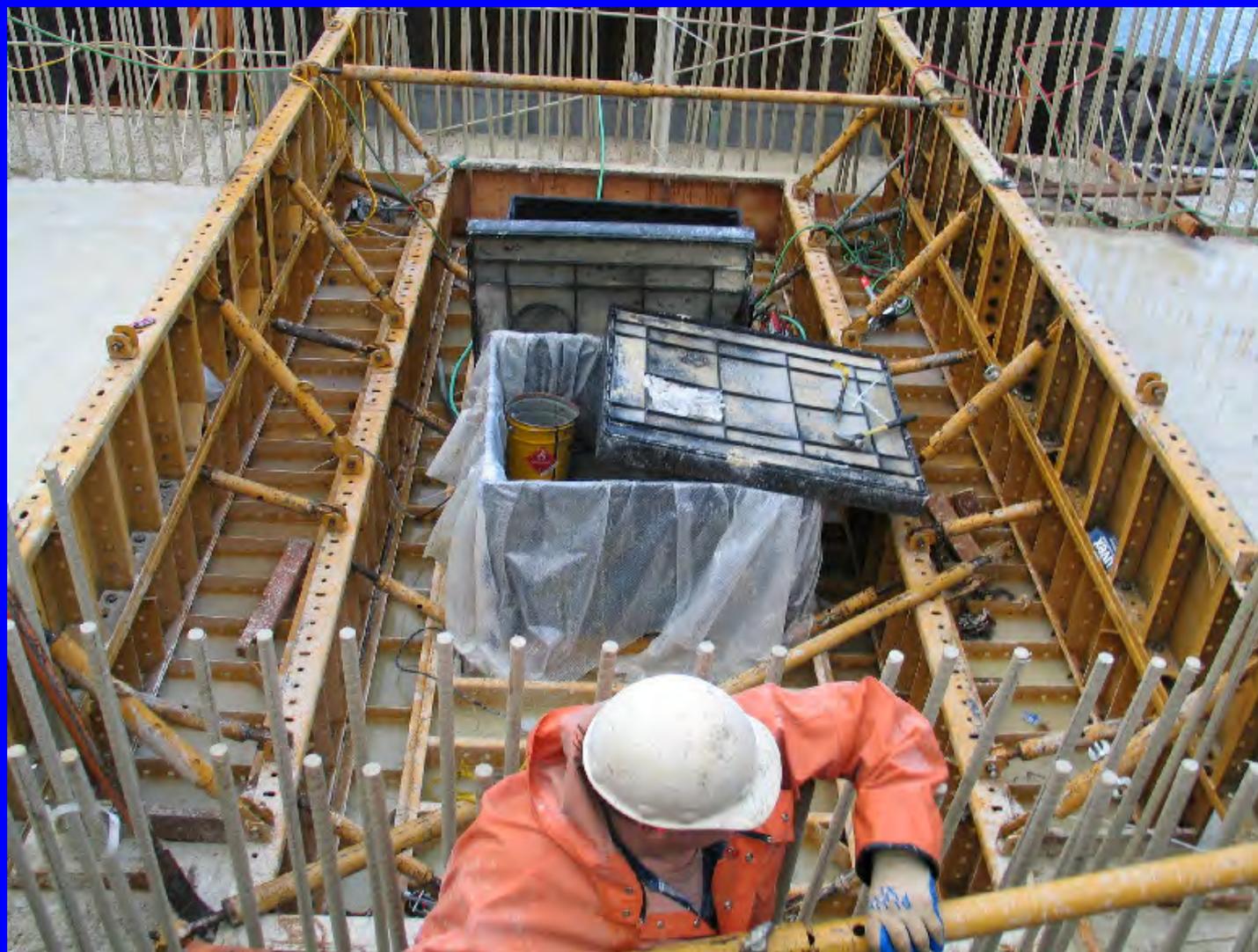
# B2CC PIT Tag Project



# B2CC PIT Tag Project



# B2CC PIT Tag Project



# B2CC PIT Tag Project



# B2CC PIT Tag Project

ACTIVITY	DATE
Open Corner Collector for Spring Creek Hatchery Release	March 2, 2006
Install Antenna Array	March 8, 2006
Antenna Array Operational	April 10, 2006
Operate Flume	April - August 2006

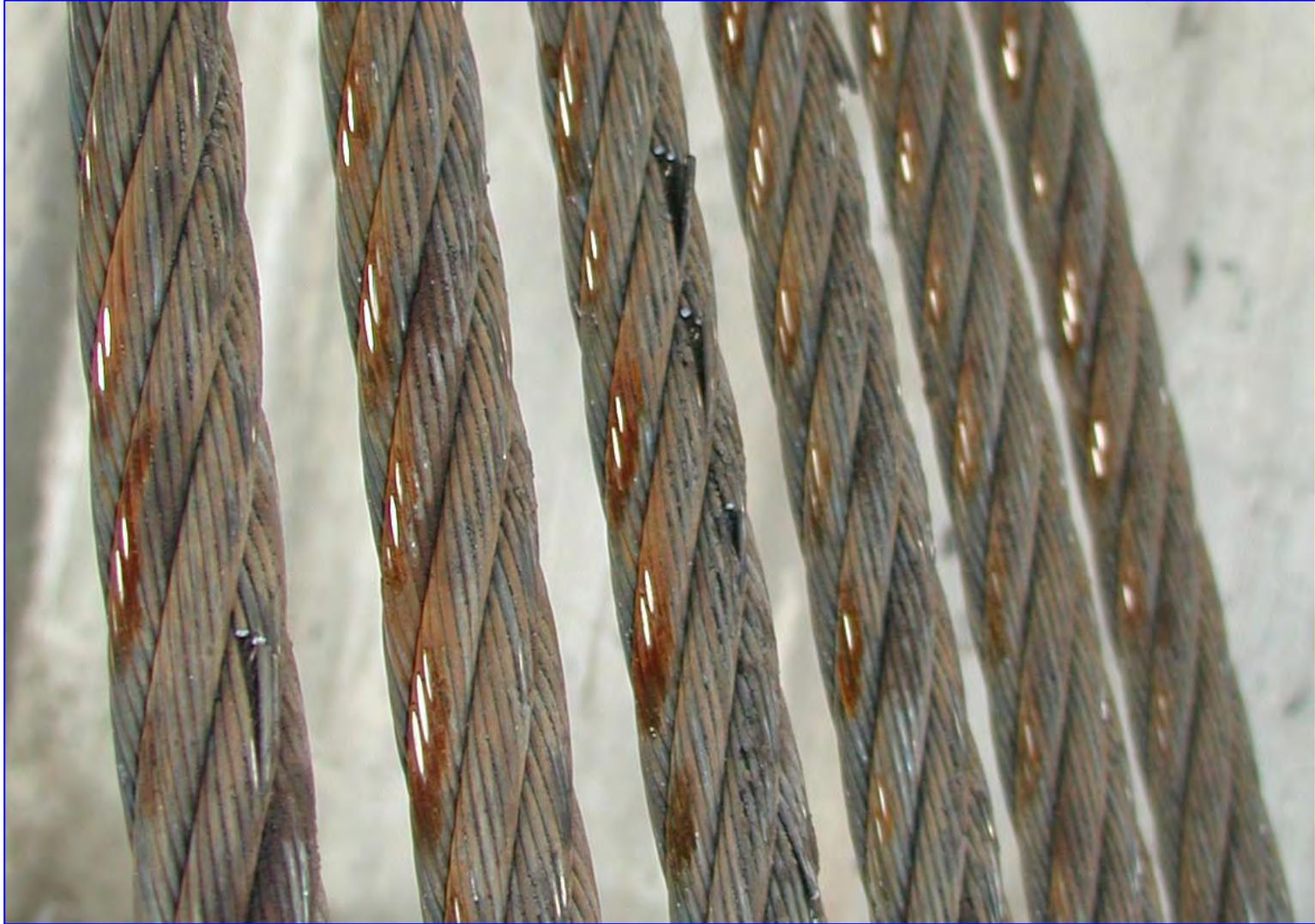
# B2CC PIT Tag Project

- Questions?

# The Dalles Dam



## TDA Wire Rope Replacement – severed strands



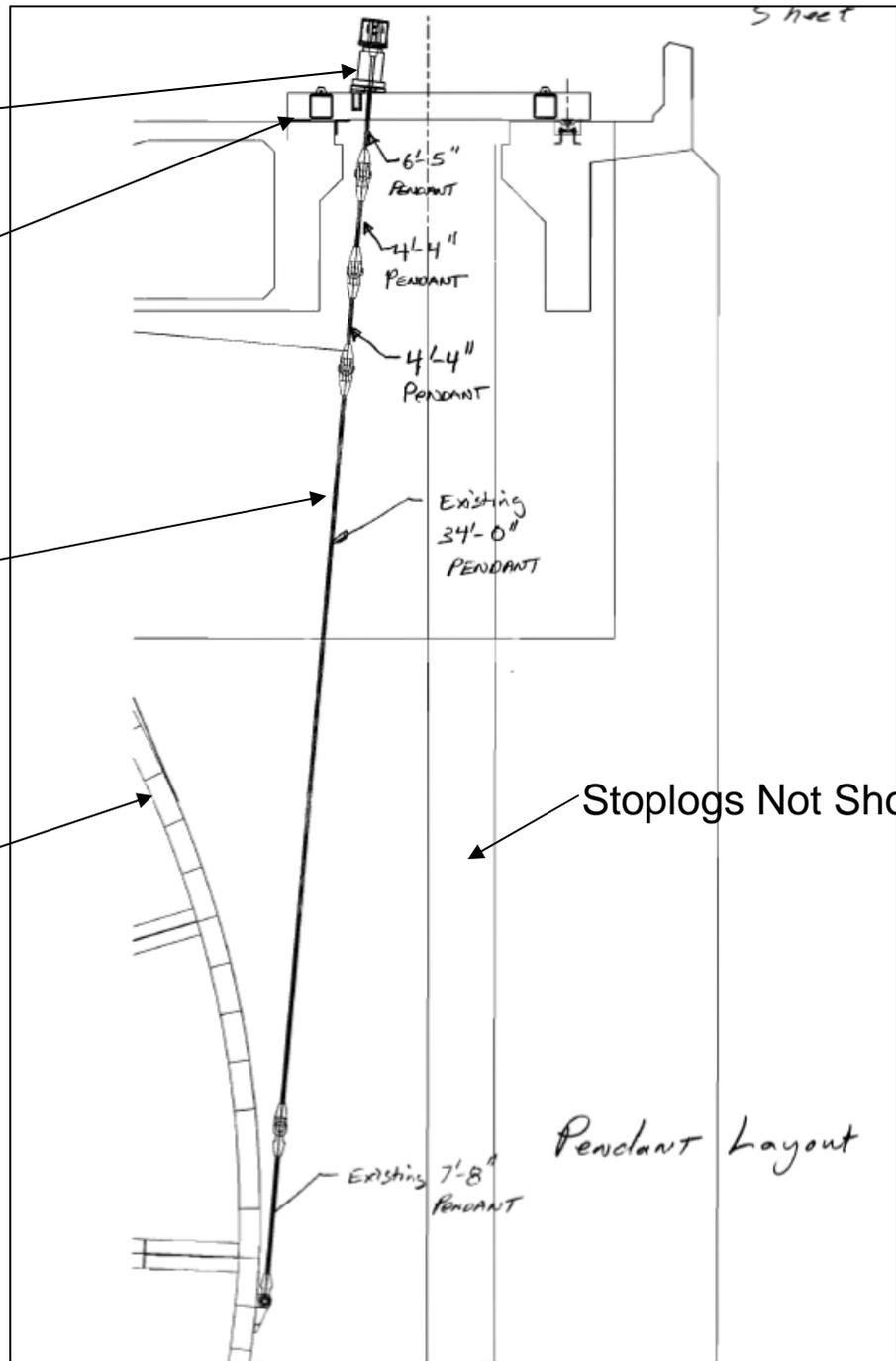
New Jacking assembly

Pendant frames used in 2005

Pendants

Spillgate (typ.)

Pendants – Jacking frame layout to raise gates to dewater bay







# **COLUMBIA RIVER REGIONAL FORUM**

## **TECHNICAL MANAGEMENT TEAM**

February 1, 2006

### **FACILITATOR'S SUMMARY NOTES ON FUTURE ACTIONS**

Facilitator: Donna Silverberg

Notes: Robin Harkless

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.

#### **Comments on Notes**

No comments on the January 11 TMT notes were provided at this time.

#### **Status of The Dalles Spill Bay Cable Replacement**

Lance Helwig, COE, provided an update on work scheduled to replace wire ropes and drums in spill bays at The Dalles. A 2003 inspection found severed strands on wire ropes at bays 1-11 and bay 13. All exceeded the industry standard 'retirement criteria', and in 2005 reached a point, in danger of catastrophic failure, that they could no longer be used for normal operations. A temporary fix was provided: pendants were used to create a fixed opening at the bays needed to create 40% spill per the 2004 BiOp. 'Moderate success' was attained; as the season continued, it became more difficult to meet 40% spill.

A longer term fix is now being implemented. In December 2005, a contract was put out, funded jointly by BPA and the COE, to repair bays 1-9. Contractors are on schedule to replace wire ropes and drums at bays 1-6 and have them operable by April 4; and do replacement work for bays 7-9 and have them operable by May 15.

Question: How often are the gates adjusted? Daily, to maintain 40% spill. One issue arose with bay 6, where dewatering was a problem. The solution was to use pendant frames to jack up the gates and dewater the bay. It proved successful – the bay was dewatered on 1/31 and did not impact the schedule.

An update on the status of work at The Dalles will be shared at the 2/22 TMT meeting.

#### **Status of B2 Corner Collector Pit Tag Program**

Don Erickson, COE, reported that a PIT tag detection device will be installed in the flume of the B2 corner collector (B2CC) this spring. 30-35% of yearling and subyearling salmon, and 71% of steelhead use the corner collector to pass Bonneville dam, and nearly 100% of those fish survive. The PIT tag system is 15' x 15' and is a state of the art system. When the B2CC was originally designed in 1999 - 2000, technology was such that such a large system could not be designed. However, the engineers designed the B2CC with the knowledge that in the not too distant future technology would be

advanced enough to add such a system. Construction joints were designed and built into the B2CC so walls were easily removed to accommodate the PIT tag detection system this year. Don described the design of the system, an antenna array that lines the corner collector. His presentation can be found linked to today's TMT agenda. The COE required a detection efficiency of 60% of pit-tagged fish passing through the corner collector. Detection is impacted by location, orientation and collisions of the fish.

### **Schedule**

- March 2: Open the CC for the Spring Creek hatchery release
- March 8: Install the antenna array
- April 10: Antenna array is operational
- April-August 2006: Operate the antenna array.

With new and bigger technology for the detection device, detection should improve. PIT tag technology has also improved. It was noted that the technology came along more quickly than was anticipated.

There will be an update on the status of the B2 corner collector PIT tag program at the 2/22 TMT meeting.

### **Spring Creek Hatchery Release**

Dave Wills, USFWS, reported that marking of Spring Creek hatchery fish is going well, and is expected to be completed ahead of schedule, by 2/17. The fish are in the best condition they have been for a long time, and Dave encouraged folks to check out the facility. 7.5 million fish are being marked for the March release. A full flow bypass pit detector is being installed to detect fish bypassing the system when the hatchery program is not being implemented. They are on schedule for to release the fish on March 2, but installation of the bypass detector might require a 1-2 day delay. An SOR will be submitted as early as the next TMT meeting, 2/22.

### **Chum Update**

TMT welcomed Rick Kruger, ODFW, as a new representative on the TMT. Rick reported that no new information on chum was available at today's meeting. ODFW will share a scale analysis (with distribution err, per request) when it has been completed. Cindy LeFleur, WDFW, reported that 49 adults were taken for hatchery supplementation.

### **Status of Litigation**

The collaborative process continues. An ISAB review of the new COMPAS model was released last week. COMPAS was developed to replace the SYMPAS model, and incorporates seasonal change factors and in-river late mortality estimates. The ISAB review can be found on [www.salmonrecovery.gov](http://www.salmonrecovery.gov) .

### **Water Management Plan**

The action agencies are working on the 2006 WMP. The emergency protocols have been revised. The latest draft of the Fall/Winter update is on the TMT web page; TMT will

review the draft Fall/Winter update and come prepared to finalize this document at the 2/22 TMT meeting.

### **Operations Review**

*Reservoirs* – Libby is at 2412.3', and 24' below the end of January flood control elevation established by the January final water supply forecast. Dworshak is at 1539.8', less than a foot below the end of January flood control elevation, 1540.7'. Outflows at the project have increased to target 1529.7' at the end of February. The February final water supply forecast is expected out in the next week. Albeni Falls is at 2055.4' Chief Joseph flow deflector work is scheduled to begin in February. Snake River flows are at 40 kcfs. Dredging on the Snake will be completed in February. The Willamette River is high, affecting tailwater elevations at Bonneville. Grand Coulee is at 1277.5'. Hungry Horse is at 3541'; the BOR ramped up discharges at Hungry Horse, to 5kcfs, based on their internal water supply forecast – discharges could go up further depending on the final forecast.

*Fish* – Nothing to report at this time.

*Power system* – The system is working to keep the Bonneville tailwater down.

*Water quality* – Nothing to report at this time.

### **TMT Meeting Schedule**

TMT meetings are scheduled for February 22, March 8 and 22, and April 5 and 19. These dates are subject to change. Check the TMT web page for updates.

*Wednesday, February 22* agenda items include:

- Chum Information Update
- WMP Fall/Winter Update
- Spring Creek Hatchery Release SOR
- Status of Bonneville Corner Collector and full flow bypass PIT tag detection system
- COE Flood Control Study Review
  - Cathy Hlebechuk emailed the link to the COE's draft 'Reconnaissance Report'; the comment period ends March 13
- Status of Lower Snake Dredging
- Status of The Dalles Spill Bay Work

## Technical Management Team Meeting

February 1, 2006

### **1. Greetings and Introductions.**

The February 1 meeting of the Technical Management Team was chaired by Cathy Hlebechuk and facilitated by Donna Silverberg, who welcomed everyone to today's meeting and led a round of introductions. The following is a summary (not a verbatim transcript) of the topics discussed and decisions made at this meeting. Anyone with questions or comments should contact Hlebechuk at 503-808-3942.

## ***2. Status of The Dalles Spillway Cable Replacement.***

Lance Helwig briefed the TMT on the status of the Corps spill gate hoist wire rope replacement project at The Dalles Dam. Using a series of PowerPoint slides, he touched on the following topics:

Background – a 2003 inspection discovered that there were severed strands in the wire ropes in bays 1-11 and 13, all exceeding the industry standard retirement criteria. By 2005, the ropes had deteriorated further, to the point that they were in danger of catastrophic failure and could no longer be used for normal operations.

- In 2005, the Corps developed a temporary solution by using pendants to create fixed spill gate openings, in an effort to allow The Dalles to spill 40% as required by the 2004 BiOp. The operation was only moderately successful; it became more and more difficult to meet the 40% spill requirement as the season progressed.
- The Corps is now implementing a longer-term solution. In December 2005, the Corps and BPA issued a joint contract to repair Bays 1-9. The contractor is on schedule to replace the wire ropes and drums on Bays 1-6, and to have those spill bays operational, by April 4. Similar work is also proceeding on bays 7-9; these spill bays are scheduled to be operational by May 15.
- The Dalles Dam wire rope replacement – severed strands (photograph)
- Diagram showing the new jacking assembly, the pendant frames used in 2005, the pendants and spill gates
- Other photographs showing the new jacking assembly in action

There is one issue, said Helwig – part of this work included stoplog repair to allow dewatering. We were having some problems dewatering Bay 6. The way it works is that you stack 10 stoplogs on top of each other, then open the spillway gate. There is a “seeding head” on the stoplog seals; the contractor had to cut the wire ropes to get them out of there. The cables in bays 1-9 have been cut, which makes it rather difficult to lift the gates. We thought the contractor could pump it out, but he couldn't get the seeding head going. Last week, then, we went to our contingency plan, and went back to our roots – our pendant plates using four 150-ton jacks. The crew at The Dalles worked all weekend to get that built; on Tuesday morning, we jacked the gates up, and Bay 6 is now dewatered –

it worked beautifully, without impacting the contractor. We now know we have a process that will work on the other bays, Helwig said.

### **3. Status of Bonneville Corner Collector.**

Don Erickson of the Corps led this presentation. He touched on the following topics:

- Bonneville 2 corner collector PIT-tag project: overview
- Purpose and goals: install a PIT-tag detector in the flume of the B2 corner collector. Goals include making this device reliable, cost-effective, maintainable and accurate.
- A joint project between the Corps and BPA
- Initial biological testing indicates that 30-35% of yearling and subyearling salmon and 71% of steelhead transit Bonneville 2<sup>nd</sup> powerhouse via the corner collector. Nearly 100% of the fish diverted by the corner collector survive. This is a high-priority project for regional fish managers.
- B2 corner collector: current design – a single antenna array with three pressurized air core antennas inside a waterproof composite structure. The array fits in a slotted concrete support structure and can be removed, repaired and replaced, if necessary.
- B2 corner collector and antenna array – cross-section
- B2 corner collector PIT-tag detection efficiency – required detection efficiency is 60% of PIT-tagged fish transiting the flume; efficiency is a function of location, orientation and collisions
- PIT-tag detection efficiency – lab testing results
- Photographs of the effects of recent flood events at Bonneville on PIT-tag detection array installation
- Photographs of antenna installation and use of non-metallic rebar
- Bonneville 2 corner collector installation schedule: open corner collector for Spring Creek hatchery release on March 2; install antenna array beginning March 8; antenna operational by April 8.

In response to a question, Erickson said the typical flow through the corner collector is 4.5 Kcfs-5 Kcfs. And the detection technology itself is better and more sensitive? Dan Spear asked. That's correct, Erickson replied. The tag technology itself has also improved – it's a combination, added David Wills. And are you thinking of installing another antenna to get more resolution in the middle of the channel? Hlebechuk asked. Possibly – we'll be looking closely at the results we get this spring and evaluating that, Erickson replied.

Why wasn't this detector installed when we originally built the corner collector? John Wellschlager asked. Because of doubts about the technology – we didn't think we could meet the 60% detection goal, Erickson replied. That's correct – the technology didn't exist at the time we were building the corner collector, but we knew it was coming. Lance Helwig explained the corner

collector was designed with construction joints to allow easy installation of the detector at a later date when technology had improved for the detector.

#### **4. Spring Creek Hatchery Release.**

We still don't have a formal SOR, said Wills, but fish marking is going very well. The crews are very good this year, and we expect to finish marking by February 17. The marking includes adipose fin-clipping all fish to be released and coded-wire tagging a subset of the release. The fish are in the best condition we've seen in a long time -- they are big and healthy. The hatchery is looking forward to the March 2 release date, he said. Wills encouraged anyone who may be interested to visit Spring Creek Hatchery to observe the marking process.

Basically, all of the raceways are full, Wills said; the April and May release groups won't be marked until the previous month's group is released. There are maximum density requirements we have to abide by, so everything is kind of linked together, he explained.

One other potential issue is the fact that people may or may not realize that the full-flow bypass PIT-tag detector is also being installed in the Bonneville bypass system, Wills said. Once that is installed, we'll be able to get detections even when there is no one in the juvenile facility. They are installing that now and have cut out a section of steel pipe to replace it with non-ferrous material. Until that full-flow pipe can be watered up, the screen cannot be installed and the juvenile facility cannot be used. The work is supposed to be complete by March 2, but I have been told that we may need to delay the March 2 release by a day or two, Wills said – we'll keep our fingers crossed that everything comes together.

In response to a question, Wills said half of this year's Spring Creek brood will be released in March; the remaining half will be evenly split between the April and May release groups, each a progressively larger size at release. In response to another question, Hlebechuk said there are currently four units out of service at Bonneville, which means that powerhouse capacity at the project is somewhat constrained.

#### **5. Chum.**

There is little new to report on chum, said Rick Kruger; we're still working on our scale/age analysis for the 2005 run. There was a question about the error distribution around the population estimate, Wellschlager noted. I don't know what that is at the moment, Kruger replied – I'll find out. One other question was how many chum were taken for the hatchery supplementation/direct adult planting program, said Cindy LeFleur; the answer to that question was 49 adults

in 2005. In response to another question from Hlebechuk, Kruger said the vast majority of returning chum are three- and four-year-olds. In response to another question, Kruger said the offspring of the huge 2002 chum spawning year would have returned as three-year-olds this fall; the four-year-olds from the 2002 brood year will be returning in the fall of 2006. And why was 2002 such a banner year? Wagner asked. In all likelihood, it had more to do with ocean conditions than it did with the chum themselves, Kruger replied, adding that, as soon as the scale/age data is available on the 2005 chum spawners, he will provide it to the TMT.

## ***6. Status of Litigation.***

The collaborative process is still underway, and the number of work groups grows every day, Tony Norris said – other than that, there is little to report on the litigation front. The new passage model, COMPAS, which will replace SYMPAS, is now available via the [www.salmonrecovery.gov](http://www.salmonrecovery.gov) website, Russ Kiefer noted; one thing the model will be able to do is to take into account seasonal changes, such as the proportion of in-river vs. transported fish. The model also attempts to take into account delayed mortality among the various groups, Kiefer said. We're hoping that it will be a better model that will help us make better decisions, he added.

## ***7. 2006 Water Management Plan.***

Hlebechuk said she is currently working on the 2006 Water Management Plan and the 2006 Implementation Plan. The emergency protocols appendix has been updated. The fall/winter update is now in pretty good shape, and I would like to finalize it as soon as possible, Hlebechuk said. It was agreed to finalize the fall/winter update at the next TMT meeting. And are you still looking for agency comments on the fall/winter update? Kyle Dittmer asked. Yes – I would like to finalize it as soon as possible, Hlebechuk replied.

## ***8. Operations Review.***

Hlebechuk said Libby was at 2412.3 feet last night. Based on the January final forecast, we were 24 feet below the project's January 31 flood control elevation, she noted. Dworshak was at elevation 1539.8 last night, slightly below the project's January 31 flood control FC elevation. Dworshak outflows have been increased to target elevation 1529.7 feet by the end of February. The February final forecast will be available some time next week; we expect the Dworshak forecast to be about the same, and for the Libby forecast to go up, Hlebechuk said. Albeni Falls is at 2055.4 feet, currently. The Chief Joseph flow deflector work is expected to start later this month. With respect to the Snake River projects, river flow is about 40 Kcfs currently; the dredging work is supposed to be done by the end of February. As we've heard, they're working on the B2 corner collector; they have difficulty working when the tailwater elevation

is above 21 feet, as it is today due to high flows from the Willamette. The contractor has to stop work when the tailwater elevation hits 23 feet. The Willamette has been running hard all month, she said.

Tony Norris said the current elevation at Grand Coulee is 1277.5; Hungry Horse is at elevation 3541 feet. Discharge is being ramped up at Hungry Horse in response to Reclamation's most recent internal water supply forecast. Right now we're targeting 5 Kcfs outflow; once the final forecast water supply forecast comes out in the next week or so, we will likely increase outflow further, to 7 Kcfs-8 Kcfs. Powerhouse capacity at Hungry Horse is limited to 340 kW at Hungry Horse due to limited transmission capability.

With respect to fish, Wagner said there is little to report, currently. Wellschlager said the only power system issue of note is the effort to keep the tailwater elevation down at Bonneville to facilitate work on the corner collector.

Wills noted that there is now a draft recon report on the Corps' system flood control study available via the [www.salmonrecovery.gov](http://www.salmonrecovery.gov) website; that is a very important report, he said, and any comments are due by February 13.

#### **9. Next TMT Meeting Date.**

The next Technical Management Team meeting was set for Wednesday, February 22. Meeting summary prepared by Jeff Kuechle, BPA contractor.

#### **Technical Management Team Participant List February 1, 2006**

<b>Name</b>	<b>Affiliation</b>
Donna Silverberg	Facilitation Team
Cathy Hlebechuk	COE
David Wills	USFWS
Russ Kiefer	IDFG
Laura Hamilton	COE
Paul Wagner	NOAA Fisheries
Tony Norris	USBR
Cindy LeFleur	WDFW
John Wellschlager	BPA
Kyle Dittmer	CRITFC

Robin Harkless	Facilitation Team
Dan Spear	BPA
Shane Scott	PPC
Tim Heizenrater	PPM
Tom Haymaker	PNGC
Rick Kruger	COE

# TECHNICAL MANAGEMENT TEAM

**BOR:** Tony Norris / John Roache

**BPA:** John Wellschlager / Dan Spear

**NOAA-F:** Paul Wagner

**USFWS:** David Wills / Steve Haeseker

**OR:** Ron Boyce / Rick Kruger

**WA:** Cindy LeFleur

**ID:** Russ Kiefer

**MT:** Jim Litchfield

**COE:** Cindy Henriksen / Cathy Hlebechuk

## TMT MEETING

Wednesday February 22,2006 0900 - 1200 hours

1125 N.W. Couch Street, Suite 4A34  
Portland, Oregon 97208

Conference call line: 503-808-5190

**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 Donna Silverberg with any issues or concerns they would like to see addressed.  
Please e-mail her at [dsilverberg@cnnm.net](mailto:dsilverberg@cnnm.net) or call her at (503) 248-4703.*

## AGENDA

1. Welcome and introductions.
2. Review Minutes
  - i. [\[Minutes 2005\]](#) 
  - ii. [\[Minutes 2006\]](#) 
3. Columbia River System Flood Control Review Recon report (Lonnie Mettler, Corps)
  - i. [\[Power Point Slide\]](#)
  - ii. [\[PDF Format\]](#) 
4. Dworshak flood control shift to Grand Coulee (desired by Salmon Managers?)
5. Spring Creek Hatchery Release, SOR 2006-01
  - i. [\[Spill at Bonneville Dam for the March Spring Creek Hatchery Release - #2006-01\]](#) 
6. 2006 Columbia River fall Chinook forecasts (Cindy LeFleur)
  - i. [\[COLUMBIA RIVER FALL CHINOOK 2006 PRESEASON FORECASTS - Feb-09-2006\]](#)
7. Chum
8. Status of litigation
9. Water Management Plan
  - i. [\[Finalize Fall Winter Update\]](#)
  - ii. [\[Appendix 1, Emergency Protocols\]](#) [\[Salmon Managers emergency operations recommendations\]](#)
10. Status of Fish Transport Permit from NOAA
11. Status of Lower Snake dredging
12. Status of Bonneville Corner Collector and full flow bypass PIT tag detection system
13. Status of Ice Harbor spillway deflector injury testing balloon tag study
14. Spill at The Dalles during wire rope replacement
15. Operations Review

- a. Reservoirs
  - b. Fish
  - c. Power System
  - d. Water Quality
16. Other

- Set agenda for next meeting **March 08, 2006.** [\[Calendar 2006\]](#) 

*Questions about the meeting may be referred to Cathy Hlebechuk at (503) 808-3942, or Cindy Henriksen at (503) 808-3945*

## COLUMBIA RIVER FALL CHINOOK 2006 PRESEASON FORECASTS

Stock Group	2006 February Forecasts	2005 Actual Returns	2005 February Forecasts
Lower River Hatchery - LRH	55,800	78,300	74,100
Lower River Wild - LRW	16,600	16,800	20,200
Bonneville Pool Hatchery - BPH	50,000	93,100	114,100
Upriver Bright - URB	253,900	268,700	352,200
Bonneville Upriver Bright - BUB	29,700	52,700	47,100
Pool Upriver Bright - PUB	58,600	45,300	42,300
<b>Columbia River Total</b>	<b>464,600</b>	<b>554,900</b>	<b>650,000</b>

### 2006 Forecasts

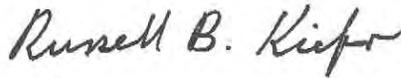
- ❖ LRH - About half of recent five year average, and less than the ten year average.
- ❖ LRW - Similar to last year's return. Similar to the ten year average.
- ❖ BPH - About half of last years return and one half of the ten year average.
- ❖ URB - Strong return. Similar to last year's actual return. Slightly greater than recent ten year average.
- ❖ BUB - About half of last year's actual return. Slightly less than the recent 10 year average.
- ❖ PUB - Good return. Greater than 10-year average.
- ❖ Total forecast of 464,600 Columbia River fall chinook is similar to the recent 10-year average return.

February 9, 2006  
Washington Department of Fish and Wildlife  
*U.S. v Oregon* Technical Advisory Committee Sub-group

# *Fish Passage Advisory Committee*

## MEMORANDUM

TO: Cathy Hlebechuk, COE  
Tony Norris, USBOR  
John Wellschlager, BPA



FROM: Russ Kiefer, Chairman  
Fish Passage Advisory Committee

DATE: February 21, 2006

RE: **FPAC Technical Recommendations on FCRPS  
Operations for Short Term Power System Instabilities**

### General

- Any departure from FCRPS BiOp river operations as modified by court order should only be used to accommodate short-term power system reliability emergencies and are the last step(s) to be taken to maintain power system stability.
  - The TMT members will be notified when a short-term emergency operation occurs.
  - Short-term emergency is defined as up to half a day of emergency operations (12 hours).
  - A TMT meeting should be convened for emergency operations that are expected to continue for greater than 12 hours, in order to discuss alternatives and opportunities to offset impacts to fish survival.
- These proposed Group 3 actions are negating actions called for in the biological opinion as modified by court order and will likely reduce fish survival.
- Should an emergency occur that requires utilizing these Group 3 actions; BPA, the Corps of Engineers and the Bureau of Reclamation will work with the salmon managers to identify and establish offsets if needed.

- The Action Agencies will make best efforts to utilize this list in sequence unless, in a specific emergency situation, they are unable to address the emergency using the same sequence in the list.
1. Request tailwater violation at BON
  2. Reduce spill at BON to 50 kcfs while maintaining B2 corner collector operation
  3. Increase generation at MCN to operation outside 1% up to 14 kcfs per turbine unit
  4. Reduce spill at LWG to 19 kcfs (RSW + 11-12 kcfs of training spill)
  5. Reduce spill at IHR to RSW operation (approximately 19 kcfs)
  6. Reduce spill at LGS to 20 kcfs
  7. Reduce spill at LWG to 9 kcfs (RSW + 2-3 kcfs of training spill)
  8. Reduce spill at LWG to 0
  9. Reduce spill at LGS to 0
  10. Reduce spill at LMN to 0
  11. Reduce spill at John Day to 30%
  12. Reduce spill at MCN to 20% of flow
  13. Reduce spill at BON to 0
  14. Reduce spill at IHR to 0
  15. Reduce spill at MCN to 0
  16. Reduce spill at JD to 0
  17. Reduce spill at TD to 30% while maintaining sluiceway operation.



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# **System Flood Control Review: Regional Agency Review Briefing**

**Lonnie Mettler  
Northwestern Division**



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# Current Action

Prior to proceeding to the Feasibility Study, the Corps is asking the region to review and provide support for further actions. It is important the region understand the significant commitment required not only in the time it will take to answer some very critical questions on the benefits of flow to improved fish passage, but also the costs associated with doing so.



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# Recommendation

- **Federal Interest**
- **Set of Actions to Satisfy Objectives**
- **Regional Support**



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# Background GUIDANCE

- **2000 Biological Opinion (NMFS)**
- **Senate Committee Language – 2003**
- **Updated Proposed Action - 2004 (Action Agencies)**
- **Revised 2004 Biological Opinion (NMFS)**



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# Background

## PURPOSE AND SCOPE

- Consider potential modifications to Columbia River flood control operations
- Consider how possible modifications would benefit Columbia River ecosystem
- Continue to maintain acceptable levels of protection from damaging floods
- Continue to recognize all project purposes



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# Assumptions

- **Initiation of Feasibility Study dependent on favorable agency review & congressional notification**
- **Biological benefits linked to attaining flow objectives for fish**
- **FS alternatives will involve change in reservoir regulation to include Canadian storage regulation**
- **All authorized project uses will be fully considered when formulating alternatives**



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# Assumptions

(continued)

- **New flood damage curves will need to be developed**
- **Potential structural and/or operational modifications can be made at operating facilities or elsewhere in the basin to offset some if not all the increased flood risk**
- **Acceptable levels of flood control may need to be redefined**



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# Assumptions

(continued)

- A non-Federal sponsor will not be identified
- Funding for conducting a Feasibility Study will be cost shared through hydropower rate payer contributions
- Proposed work is compatible with other ongoing efforts in the region
- FS will be phased



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# Phased Approach

## Phase I

**FOCUS:** Is there water available to achieve environmental benefits needed for the fisheries?

**ACTIVITIES:** Hydrological Evaluations, Limited Economic/Engineering Evaluations, Limited Environmental Studies



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# Phased Approach

## Phase II

**FOCUS:** Do the environmental benefits justify the costs associated with changes to the flood control system?

**ACTIVITIES:** Hydrology/Hydraulic Evaluations, Economic/Engineering Studies, Environmental Studies to Refine Environmental Benefits, Limited Cost Estimates, Fish/Wildlife Coordination



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# Phased Approach

## Phase III

**FOCUS:** Are there environmental benefits that can be achieved with investment and low risk of failure to flood control system? What early action measures can be recommended?

**ACTIVITIES:** Preparation of Interim Feasibility Report. Continuation of studies to finalize results and make a recommendation.



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# Phased Approach

## Phase IV

**FOCUS: Complete Feasibility Report and Environmental Impact Statement on a Preferred Alternative?**

**ACTIVITIES: Prepare Final Feasibility Report and EIS, conducted public hearings, seek Congressional authorization and appropriations to begin implementation of Preferred Alternatives.**



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# Timeline

- **Submit Reconnaissance Report – Summer 2006**
- **Complete Project Management Plan – Spring 2007**
- **Initiate Feasibility Study – Spring 2007**
- **Complete Feasibility Study – Fall of 2012**



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# Summary



Prior to proceeding to the Feasibility Study, the Corps is asking the region to review and provide support for further actions. It is important the region understand the significant commitment required not only in the time it will take to answer some very critical questions on the benefits of flow to improved fish passage, but also the costs associated with doing so.

# **COLUMBIA RIVER REGIONAL FORUM**

## **TECHNICAL MANAGEMENT TEAM**

February 22, 2006 Meeting and  
Updates on the IT/TMT Call on 2/24 & the 2/27 TMT Call

### **FACILITATOR'S SUMMARY NOTES ON FUTURE ACTIONS**

Facilitator: Donna Silverberg

Notes: Robin Harkless

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.

#### **Comments on Notes**

No comments on the February facilitator notes or official minutes were provided at this time.

#### **Columbia River System Flood Control Review Recon Report**

Lonnie Mettler, COE, presented a power point on the COE's Reconnaissance Report for a system flood control study. The report has been out for review since early February, and the closing date for comments is March 13. See TMT notes below for write up  
A report on the COE's Flood Control Study is also on the agenda for the March 2<sup>nd</sup> IT meeting.

#### **Dworshak Flood Control Shift to Grand Coulee**

The COE asked the salmon managers about their preference for shifting flood control to Grand Coulee from Dworshak. This issue was discussed at an FPAC meeting, and the salmon managers do support the shift. This will not likely pose any issues until March – the COE will provide models incorporating the shift at the March 8 TMT meeting.

**Update:** During a conference call on February 27, Russ Kiefer, chair of FPAC, reported that FPAC would like to review data at their conference call on February 28, and that he would share the ‘official recommendation’ from FPAC about whether to shift flood control from Dworshak to Grand Coulee, with Cathy Hlebechuk following that discussion. He will also share the recommendation at the March 8 TMT meeting.

#### **Spring Creek Hatchery Release, SOR 2006-1**

(Note: TMT was not able to reach resolution on SOR 2006-1 during today's meeting. The following description was taken directly from a memo sent to the IT to aid in their discussion about the SOR, which occurred via a conference call on 2/24.)

#### **Issue Elevated from TMT to IT** **Wednesday February 22, 2006**

**ISSUE:** Policy level involvement is needed to clarify whether or not spill should be utilized in the 2006 Spring Creek Hatchery release scheduled for March 2, 2006. Due to prior agreements

at the policy level, the technical group was unable to resolve the question listed at the end of this memo.

**BACKGROUND:**

“In an e-mail from Greg Delwiche (BPA) on February 26, 2004 to Witt Anderson (COE) and Bill Shake (USFWS), an agreement was reached in support of a two-treatment evaluation in which the effectiveness of spill, as compared to operation of the new B2 corner collector (B2CC), was to be evaluated for two release groups of tule smolts from Spring Creek National Fish Hatchery in March 2004.

The parties agreed to "... a committment (sic) to no spill for March Spring Creek releases in 2005 and 2006 .....unless we see significant (sic) problems with the new B2 corner collector, in which case we will revisit 2005 and 2006 operations for the March hatchery release." The Service “commitment” to no spill in 2005 and 2006 was predicated on the fact that the B2CC would be available and functional for the March release in 2005 and 2006 and that its efficiency at moving fish over the dam would be similar to the spillway operations.

The hydroacoustic evaluation of fish passage in March 2004 (Table 2, Ploskey et al. 2005) provided indications that the B2CC operation may not be comparable to past spill operations in fish passage efficiency (FPE) and FPE goals established for the region are not being achieved. Fish passage efficiency is defined as the proportion of fish passing the dam via routes other than turbine passage. An 85 % FPE goal was established at Bonneville Dam in the 1984 amendments to the Columbia Basin Fish and Wildlife Program by the Northwest Power Planning Council (NWPPC 1984), now called the Northwest Power and Conservation Council (NPCC). This goal was established before the first salmonids in the Columbia Basin were listed under the ESA in 1992. The 1995 FCRPS BiOp (NMFS 1995) established a spill program to pass 80% of downstream migrants through non-turbine routes, or an FPE of 80%. The first ESA listing of a salmonid in the Columbia Basin was in 1992.

The 2004 evaluation indicated that the FPE for Spring Creek fish during the operational periods for “spill only” (50,000 cfs, actual spill 24,000cfs) and “B2CC only” were 54% and 45%, respectively, both below the goal of 85% FPE and a difference of 9% between operational tests. The spill passage efficiency (SPE), defined as the proportion of the total test population passed by the specific operational mode, for the “spill only” operation was 23%, and the SPE for the “B2CC only” operation was 17%. It was revealed after the 2004 operation that a spill gate calibration error (that had existed for years) resulted in false readings for the amount of spill. The corrected spill level was actually about 24,000 cfs.”

*(Excerpt from SOR #2006-1, page 4. Please also see the table on the same page for further information. We were unable to successfully transfer the table from the PDF file)*

**Question for IT: Does the difference in the Fish Passage Efficiency noted in the 2004 hydroacoustic test results pose a “significant problem” which warrants spill this year?**

There was not agreement about this at the technical level and a request was made to elevate the issue for policy level consideration.

(Note: The technical difference is 9% FPE. The first adult survival numbers will not be known until fall 2006 or later).

This issue statement was agreed to by those present at today's TMT meeting and prepared by the facilitation team for IT's review and resolution on Friday, February 24, 2006.

**UPDATE:** During the **IT call 2/24**, parties to the SOR including USFWS, WDFW, ODFW, NOAA and CRITFC recommended that the Fish Passage Efficiency metric be used to determine how to implement operations for the Spring Creek hatchery release. They went on to say that given the 9% FPE difference between the spillway and corner collector, spill would be the best operation to support the fish. WA and CRITFC stressed the importance of these Spring Creek hatchery stock for fishing interests and expressed concern with the unknowns around putting the juveniles through the system without spill.

The COE agreed that the Spring Creek hatchery stock is very important as a mitigation stock and shared a desire to implement an operation that supports the fish. However, the COE thinks that past numbers of system passage with and without spill suggests that operating the corner collector with no spill would be the most appropriate operation for this year. This, combined with the prior agreement to not spill this year, leads them to a no spill operation. BPA agreed with the COE and the BOR had no position.

**ACTION:** The COE will implement the operation with no spill. TMT was asked to confer on Monday with the specifics of the operation. While there was not agreement on the issue, it was not elevated to the regional executives.

#### **2006 Columbia River Fall Chinook Forecasts**

The 2006 forecast for Fall Chinook is 464,000 which indicates a continuing downward trend. The numbers will be updated as the season progresses, and Cindy LeFleur, WDOE, will report on the forecasts to TMT.

#### **Water Management Plan**

Comments on the full 2006 plan are welcome. The COE anticipated finalizing the Fall/Winter update this afternoon as discussed at February 1 meeting. TMT was requested to provide any final input to the Fall/Winter update by the end of today, which COE would include in the final plan. It was recognized the update would be revised as new forecasts were developed monthly. The salmon managers provided a revised Category 3 emergency protocols list, which the action agencies accepted, but for one minor change: the word 'Transmission' in the title will be changed to 'System'. This document will be posted to the TMT web page.

#### **Status of Fish Transport Permit from NOAA**

Paul Wagner reported that NOAA is currently reviewing a proposal from the COE to extend its fish transport permit by one year. Language in the new BiOp would also reflect this change, in effect extending the permit for the life of the BiOp. A suggestion was made that NOAA and the COE need to ensure this discussion is happening during discussions of the remand.

### **Status of Lower Snake Dredging**

Cathy Hlebechuk, COE, reported that in-water dredging work in the Lower Snake is expected to be completed in February, and the COE expects to operate the Lower Snake projects at MOP this spring.

### **Status of Bonneville Corner Collector/Pit Tag Detection System**

The corner collector and pit tag detection system work at Bonneville is on schedule and expected to be operating with screens in place and full flow bypass for the March 2 Spring Creek hatchery release.

### **Ice Harbor Balloon Tag Study**

The Walla Walla District COE will be conducting a study in March to determine fish injury from deflector actions at different tailwater elevations. The test will be conducted March 5-8 and 13-23, with a pre-test on March 1 and 2. The COE is coordinating the test through FFDRWG and with the other action agencies. They will be using the Hep-Raz model for this test at all of the Lower Snake projects.

### **Spill at the Dalles During Wire Rope Replacement**

As follow-up from the last TMT meeting, Cathy Hlebechuk, reported that because there will be limitations to spilling through bays 7-9 during wire rope replacement, if total flow exceeds 315 kcfs, other bays will need to be used to meet 40% spill at The Dalles per the BiOp. The COE is coordinating with FPOM and FFDRWG to determine the most appropriate bays through which to provide spill, if necessary. Bays 7-9 will come back on line, one at a time, April 10-May 15.

NOAA suggested that splitting spill between different bays may not provide a benefit to the fish, so posed an alternative option: reduce the volume of spill if necessary. There will be further discussion of this issue at the March 8 TMT meeting.

**ACTION:** Cathy Hlebechuk will provide an issue paper on this matter to the TMT for review prior to the next meeting.

### **Operations Review**

*Reservoirs* – Grand Coulee was at elevation 1261.5'. Hungry Horse was at 3532' and drafting 7.5 kcfs, expecting to ramp down to 4 kcfs soon. Libby was at 2411.3' with an end of February flood control elevation target of 2412.1'. Dworshak was at 1525.9' and targeting 1524.2' end of February elevation; the project was releasing 8 kcfs. Bonneville released 165-195 cfs over the past week.

*Fish* – Nothing to report at this time.

*Power system* – Nothing to report at this time.

*Water quality* – Nothing to report at this time.

### **TMT Meeting Schedule**

TMT meetings are scheduled for March 8 and 22, and April 5 and 19. These dates are subject to change. Check the TMT web page for updates.

*Wednesday, March 8* agenda items include:

- Update/Recommendation on The Dalles Spill
- Update on Spring Creek Hatchery Release
- Chum Information
- Fall Chinook Forecasts
- COE Modeling of possible Flood Control Shift to Grand Coulee

### **Other**

Tony Norris, BOR, reported that the Lake Roosevelt Forum will be held on April 17-18, with an opportunity for work group meetings on Wednesday, April 19. Links to the sessions and registration can be found at [www.lrf.org](http://www.lrf.org).

## Technical Management Team Meeting

February 22, 2006

### ***1. Greetings and Introductions.***

Today's Technical Management Team meeting was chaired by Cathy Hlebechuk and facilitated by Donna Silverberg. the following is a summary (not a verbatim transcript) of the topics discussed and decisions made at this meeting. Anyone with questions or comments about these notes should contact Hlebechuk at 503-808-3936.

### ***2. Columbia River System Flood Control Review Recon Report.***

Lonnie Mettler led this presentation, noting that the Corps' recon-level system flood control review report has been available since early February; comments on the report are due to the Corps by March 13. He said the purpose of the report is to gauge the level of regional interest in proceeding to the next phase of the flood control study. Mettler touched on the following topics:

- Recommendations: establish the federal interest in conducting the study, set actions to satisfy objectives, gauge regional support
- The flood control study evolved from the 2000 BiOp; in 2003, Senate committee language directed the Corps to use CRFM funds to initiate a recon-level study. The litigation on the 2004 BiOp also provided some impetus to conduct this study. there is regional interest in continuing the study.
- Purpose and scope: consider potential modifications to Columbia River flood control operations; consider how possible modifications would benefit the Columbia River ecosystem; continue to maintain acceptable levels of protection from damaging floods; continue to recognize all project purposes.
- Assumptions: The initiation of the feasibility study is dependent on favorable agency review and Congressional notification; biological benefits are linked to attaining flow objectives for fish; FS alternatives will involve change in reservoir regulation to include Canadian storage regulation; all authorized project uses will be fully considered when formulating alternatives
- New flood damage curves will need to be developed; potential structural and/or operational modifications can be made at operating facilities or elsewhere in the basin to offset some if not all of the increased flood risk. Acceptable levels of flood control may need to be re-assessed. A non-federal sponsor will not be identified; funding for the feasibility study will be cost-shared through hydropower ratepayer contributions.
- Phased approach: Phase I will focus on whether there is water available to achieve environmental benefits needed for the fisheries. Activities include hydrological evaluation, limited economic/engineering evaluations, limited environmental studies, most model-based
- Phase II will focus on whether the environmental benefits justify the costs associated with changes to the flood control operation.
- Phase III will focus on whether there are environmental benefits that can be realized in a cost-effective manner.
- Phase IV will involve the completion of the feasibility report and the EIS on the preferred alternative.
- Timeline: submit recon-level report by summer 2006; complete the project management plan by the spring of 2007; initiate the feasibility study by the spring of 2007; complete the feasibility study by fall 2012.
- Summary: prior to proceeding to the feasibility study, the Corps is asking the region to review and provide support for further actions. It is important that the region understand the significant commitment required not only in the time it will take to answer some very critical questions on the benefits of flow to improved fish passage, but also the costs associated with doing so.

In response to a question, Mettler said the current estimate of the cost of the system flood control study is about \$30 million; the source of funding will

likely be the CRFM program. The group devoted a few minutes of discussion to how that \$30 million would be allocated among the four phases of the study process.

Does it take Congressional action to change flood control operations? Paul Wagner asked. Yes, Mettler replied – that is especially true given the increased development that has taken place in the flood plain throughout the Columbia River basin. One of the questions we're going to have to answer is, what is an acceptable level of flood control today? Mettler said. Tony Norris added that the Corps' current goal, when they compute the initial control flow, is 200 Kcfs. My understanding is similar, said John Wellschlager – that 200 Kcfs is actually below what the BiOp calls for in terms of fish flow, so there is a bit of a disconnect there. Also, in recent years, people have been encroaching on the flood plain, so our calculations about where that flood plain lies will have to be re-done. That is a question that, ultimately, will have to be addressed, Mettler agreed – we're going to have to look at a range of alternatives, and investigate what can be implemented, feasibly.

In response to a question from Hlebechuk, Mettler said the Corps would normally seek a non-federal partner to help fund this type of study, but will not do so in this case. In response to another question, Mettler said many of the anticipated biological benefits associated with changing flood control operations would accrue during average and below-average water years.

How will you handle comments from some of the key players, such as Reclamation and NMFS? Norris asked. Until we see what your issues and concerns are, our intent is to summarize those in a separate attachment, rather than re-writing the report, Mettler said. If some meetings are needed to discuss significant issues, we can schedule some face-to-face meetings to discuss them, he added. Bear in mind that this is just a recon-level report – it isn't a decision document. Don't forget tribal consultation, said Kyle Dittmer. Or the people who will be paying for the study – Bonneville ratepayers, said Tom Haymaker. How have you reached out to those ratepayers? To date, we haven't, Mettler replied – again, this is just a recon-level report, not a decision document.

When was the most recent flood control study done? Dan Spear asked. There was a study that looked at possible flow at The Dalles, and the impacts to flood damage reduction, Mettler replied; however, it didn't address the benefits, or other projects in the system. I believe that study was completed in 1996 or 1997, he added. What if the studies indicate that actions need to be taken to provide adequate flood control that are actually detrimental to fish – will that be considered? Haymaker asked. Yes, Mettler replied – there will likely be hundreds of alternatives identified, and it won't be possible to study them all in detail. Our intent is to focus on the alternatives that potentially benefit both fish and flood control, he said.

### ***3. Dworshak Flood Control Shift to Grand Coulee.***

Hlebechuk said the Corps was wondering whether the salmon managers are interested in a Dworshak-Grand Coulee flood control shift in 2006. Yes, Russ Kiefer replied – the salmon managers do feel that would be desirable in 2006. So noted, Hlebechuk said – we'll discuss the actual operation at the next TMT meeting.

#### **4. Spring Creek Hatchery Release, SOR 2006-01.**

David Wills provided an overview of this SOR. It requests the following specific operations:

- No operation of unscreened units at PH2 and follow the turbine operating priority in the Fish Passage Plan
- Operate PH2 as the first priority. Fully load PH2 before operating PH1
- Operate turbine units within 1% peak efficiency
- Operate juvenile and adult facilities according to criteria
- Beginning March 3, operate Bonneville to maintain a minimum 14.5-foot tailwater elevation. This elevation is sufficient to allow 50 Kcfs spill while maintaining a maximum TDG level of 105% at the chum redds in the Ives Island complex and at Multnomah Creek
- Beginning March 3, monitor sub-samples at the Hamilton Island juvenile monitoring facility. When this subsampling indicates that large numbers of subyearling chinook have reached Bonneville Dam, contact the RCC to begin spill and B2CC operation.
- Operate for five days at 50 Kcfs spill and B2CC operation, or to an estimated 95% fish passage index, whichever comes first.
- At no time exceed 120% TDG measured at the downstream Warrendale gauge, or 115% at the Camas/Washougal gauge.
- Request that the action agencies use the flexibility in the system to accomplish this SOR without jeopardizing the April 10 flood control rule curve elevations called for in the Biological Opinion.

The group devoted a few minutes of discussion to the nuances of this SOR, and to the empirical information underlying the specific operations it calls for. Hlebechuk said the Corps does not support spilling in 2006 because there was an agreement between COE, USFWS and BPA that there would be no spill in 2005 or 2006. We feel that agreement is still in place, and do not believe there was an agreement to compare spillway vs. B2CC survival, she said. The agreement Cathy is referencing was hammered out between Bill Shake of the Fish and Wildlife Service, Greg Delwiche of BPA and Witt Anderson of the Corps, Wellschlager added. Hlebechuk said another reason the Corps does not support this SOR is because the Corps does not see the same problems with corner collector performance the Fish and Wildlife Service does.

Wellschlager said BPA recommends elevating this issue to the IT, given the fact that it is a policy-level issue. It sounds as though you're saying it is a question of policy based on the language of the agreement, rather than a disagreement about the technical information, Wills observed. That's part of it, Wellschlager replied – we have an agreed-upon operation; if the salmon managers want to change that operation, they will need to elevate it.

Ultimately, it was agreed to elevate this issue for IT decision, probably at an emergency call this Friday; it was further agreed that the policy question boils down to whether or not the agreement between the Corps, Bonneville and the Fish and Wildlife Service clearly says there will be no spill in 2006, even if data indicate a problem with the performance of the corner collector alone. The question to IT was eventually framed as follows: "Should spill be utilized in the 2006 Spring Creek Hatchery release?" The background information can be found on page 4 of the SOR. "In light of this agreement, is this problem significant enough – does the difference in fish passage efficiency noted in the 2004 hydroacoustic test results, 9 percent – warrant spill in 2006, or was the intent of the agreement to preclude spill under any circumstances in 2006?" Silverberg said she will contact the IT to see when they will be available to consider this question.

In response to a question, Wills reminded the group that the 2004 Spring Creek Hatchery March release of 7.5 million fish was split into two release groups – one that was passed using the corner collector alone, and the other that passed Bonneville via spill. The three-year-olds from those release groups will return in the fall of 2006; once those return data are available, there will be more information about the relative performance of the two release groups. Wellschlager noted that the above-referenced agreement was predicated on Bonneville's willingness to provide spill in support of the 2004 Spring Creek release – the agreement was that Bonneville's ratepayers would essentially "pay up front" in 2004, with the understanding that there would be no Spring Creek spill provided in 2005 or 2006.

##### ***5. 2006 Columbia River Fall Chinook Forecasts.***

Wills said Cindy LeFleur presented this information at last week's FPAC meeting; essentially, the 2006 numbers predict a dramatic downward trend in fall chinook returns, primarily due to uncertainties about ocean conditions. The 2006 pre-season forecast is now 464,600 fish, down from a 2005 return of 554,900 and a 2005 pre-season forecast of 650,000 fish. LeFleur's numbers note that most of the discrepancy between the 2005 pre-season forecast and actual return was found in the upriver bright component of the run – the pre-season forecast was 352,400 fish, while the actual return was 268,700 fish. Wellschlager noted that the fact that the Bonneville Pool Hatchery component of the run is predicted to be only about half of the 10-year average in 2006 is a pretty strong indicator

that ocean conditions are to blame, because those fish only have to pass one dam to reach the hatchery.

## **6. Chum.**

Rick Kruger said there is nothing new to report on chum at today's meeting; he said he will provide the results of the scale analysis year class breakdown at the next TMT meeting.

## **7. Status of Litigation.**

Hlebechuk said there is nothing new to report on this topic at today's meeting.

## **8. 2006 Water Management Plan.**

Hlebechuk said there is little change to the Water Management Plan; the Corps is still waiting for comments and the Implementation Plan. She said she had hoped to finalize the fall/winter update at today's meeting, as discussed at the February 1 TMT meeting, noting that she still needs to update some of the numbers based on the most recent forecast data. Wills said he doesn't believe he has any significant comments on the fall/winter update; it would probably be OK to finalize it at today's meeting. COE anticipated finalizing the Fall/Winter update this afternoon. TMT was requested to provide any final input to the Fall/Winter update by the end of today, which COE would include in the final plan. It was recognized the update would be revised as new forecasts were developed monthly. Hlebechuk said she will be adding the category 3 list Russ Kiefer provided yesterday to the emergency protocols list.

## **9. Status of Fish Transport Permit from NOAA.**

The Corps sent in the request for the one-year transport permit extension, Hlebechuk said; Paul Wagner is working on it. I am, Wagner said; typically it's a five-year permit cycle. This year, given the remand process, we're reviewing it as a one-year proposal. The new BiOp will eventually extend the permit for five to 10 years, he added. In the process, the remand will essentially function as a public review of the transport program. I'll be making sure the people who are working on the remand understand that, Wagner added.

## **10. Status of Lower Snake Dredging.**

The dredging is going well, Hlebechuk said; the in-water work window ends in February, and our expectation is that we'll be able to operate the Lower Snake projects at MOP this spring.

### **11. Status of B2 Corner Collector and Full-Flow Bypass PIT Detection System.**

This work is coming along well, Hlebechuk said; BPA was able to provide the tailwater elevations needed to complete the work by March 2. The screens will also be installed by March 2, and the full-flow bypass will be operational. Everything is looking good, she said.

### **12. Status of Ice Harbor Spillway Deflector Injury Testing Balloon Tag Study.**

Jim Cain said this test is scheduled for March; its purpose is to determine fish injury, if any, under three different spillway operations. The testing will take place from March 5-8 and March 13-23. It will be necessary to use some reservoir storage from all four Lower Snake dams to produce the various tailwater elevations needed for the test; McNary forebay will need to be drafted to about elevation 336 to produce the lowest tailwater elevation at Ice Harbor. It was agreed that the salmon managers will communicate any concerns they may have to the Corps.

### **13. Spill at The Dalles During Wire Rope Replacement.**

Hlebechuk said that, at the last TMT meeting, Lance Helwig described the wire rope replacement for bays 1-9; all of these bays will be available for spill by May 15. There will be some limitations on spilling in bays 1-7; if flows exceed 315 Kcfs during that period, in order to spill 40% of total river flow, spill will need to occur at other bays. If that occurs, we will coordinate that operation with FPOM and the salmon managers, Hlebechuk said. Gary Fredricks suggested that we reduce the percentage of spill if that occurs, said Wagner; that would be NOAA Fisheries' technical recommendation. We will coordinate further, through whatever process or venue is appropriate, if total river flow exceeds the threshold prior to May 15, he added. We will revisit this topic at the March 8 TMT meeting, Silverberg said.

Does Gary's recommendation also apply once bays 1-9 are available? Hlebechuk asked. Yes – he wants to see spill confined to the north side of the dam, Wagner replied. Hlebechuk said she has an issue paper on this topic which she will distribute to further inform the discussion at the March 8 TMT meeting.

Norris said the Lake Roosevelt Forum will be meeting on April 17 and 18 this year; [www.lrf.org](http://www.lrf.org) is the website for those who wish to sign up and view the presentation topics. It may be possible to hold a TMT meeting in conjunction with the Forum on Wednesday, April 19, if the group so desires, Norris said. It was agreed that this is unlikely.

### **14. Operations Review.**

Norris said Grand Coulee is currently at elevation 1261.5 feet; Hungry Horse is at 3532 feet and drafting. Hungry Horse is currently releasing 7.5 Kcfs, but will be ramping down to 4 Kcfs by some time next week. Hlebechuk said Libby is currently at elevation 2411.3, targeting elevation 2412.1 by February 28. The project is at minimum outflow and drafting slowly. Dworshak is at 1525.9 feet, drafting gradually toward its February 28 flood control elevation of 1524.2 feet. The project is releasing 5 Kcfs-7 Kcfs, currently. Bonneville has been releasing 165 Kcfs-195 Kcfs over the last week.

Wagner said there is nothing new to report on the fish front at today's meeting. Wellschlager said there are no power system issues to report; Adams said there are no current water quality problems in the system.

**15. Next TMT Meeting Date.**

The next meeting of the Technical Management Team was set for Wednesday, March 8. Meeting summary prepared by Jeff Kuechle, BPA contractor.

**TMT PARTICIPANT LIST  
February 22, 2006**

<b>Name</b>	<b>Affiliation</b>
David Wills	USFWS
John Wellschlager	BPA
Dan Spear	BPA
Kyle Dittmer	CRITFC
Shane Scott	S. Scott Consulting
Tim Heizenrater	PPM
Donna Silverberg	Facilitation Team
Robin Harkless	Facilitation Team
Cathy Hlebechuk	COE
Jim Adams	COE
Rick Kruger	ODFW
Tony Norris	USBR
Tom Haymaker	PNGC
Paul Wagner	NOAAF

Russ George	WMCI
Lee Corum	PNUCC
John Anasas	BPA
Laura Orr	COE
Lonnie Mettler	COE
Todd Cook	PPM
Ruth Burris	PGE
Don Faulkner	COE
Russ Kiefer	IDFG
Kevin Nordt	Mid-Cs
Don Coffee	
Margaret Filardo	FPC
David Benner	FPC
Nic Lane	Congressional Research Service
Mark Bagdovitz	FWS
Lance Elias	PPL
Bruce MacKay	Consultant
Tom Le	PSE
Richelle Beck	D. Rohr & Associates
Jim Cain	COE

# TECHNICAL MANAGEMENT TEAM

**BOR:** Tony Norris / John Roache

**BPA:** John Wellschlager / Dan Spear

**NOAA-F:** Paul Wagner

**USFWS:** David Wills / Steve Haeseker

**OR:** Ron Boyce / Rick Kruger

**WA:** Cindy LeFleur

**ID:** Russ Kiefer

**MT:** Jim Litchfield

**COE:** Cindy Henriksen / Cathy Hlebechuk

## TMT CONFERENCE CALL

**Monday February 27, 2006 1400 - 1500 hours**

**1125 N.W. Couch Street, Suite 4A34  
Portland, Oregon 97208**

**Conference call line: 503-808-5190**

**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 Donna Silverberg with any issues or concerns they would like to see addressed.  
Please e-mail her at [dsilverberg@cnmm.net](mailto:dsilverberg@cnmm.net) or call her at (503) 248-4703.*

## AGENDA

1. Welcome and introductions.
2. Spring Creek Hatchery release/B2 Corner Collector (B2CC) operations - B2CC start date and duration
  - a. [\[SOR #2006-01 February 16, 2006\]](#) 
  - b. [\[Passage Timing Data for Spring Creek NFH\]](#) 
3. Dworshak/Grand Coulee flood control shift
4. Other

*Questions about the meeting may be referred to Cathy Hlebechuk at (503) 808-3942, or Cindy Henriksen at (503) 808-3945*

**Passage Timing Data for Spring Creek NFH**

SMP Combined Sub-Yearling Index Counts

DAILY NUMBERS

	<u>Day</u>	<u>2005</u>	<u>2004b</u>	<u>2004a</u>	<u>2003</u>	<u>2002</u>	<u>2000</u>	<u>1999</u>	<u>1998</u>	<u>1996</u>
release	-----	35					47	23	50	112
start	1	33				847	139		67	322,727
	2	8,924	50,260	20,825	256,056	17,434	1,228	270,179	68,537	123,436
	3	387,479	242,411	173,388	62,621	367,558	516,102	18,237	97,799	20,297
	4	264,004	52,319	123,449	16,830	187,981	1,104,556	18,197	29,807	8,726
	5	89,485	18,647	26,718	5,861	158,610	47,187	5,315	11,368	1,819
	6	29,584	7,230	4,464	940	11,607	22,308	1,355	9,790	546
	7	13,558	7,322	6,740	1,148	5,645	7,019	1,197	3,740	341
	8	6,037	4,644	3,678	708	3,718	7,286	394	2,211	457
	9	6,785	3,829	2,331	576	1,672	3,236	177	1,261	243
	10	2,846	6,186	2,310	745	2,624	2,275	184	809	208
	11	2,898	5,976		386	756	2,108	445	676	66
Sum		811,633	398,824	363,903	345,871	758,452	1,713,444	315,680	226,065	478,866

DAILY %

	<u>Day</u>	<u>2005</u>	<u>2004b</u>	<u>2004a</u>	<u>2003</u>	<u>2002</u>	<u>2000</u>	<u>1999</u>	<u>1998</u>	<u>1996</u>
release	-----									
start	1	0.00%	0.00%	0.00%	0.00%	0.11%	0.01%	0.00%	0.03%	67.39%
	2	1.10%	12.60%	5.72%	74.03%	2.30%	0.07%	85.59%	30.32%	25.78%
	3	47.74%	60.78%	47.65%	18.11%	48.46%	30.12%	5.78%	43.26%	4.24%
	4	32.53%	13.12%	33.92%	4.87%	24.78%	64.46%	5.76%	13.19%	1.82%
	5	11.03%	4.68%	7.34%	1.69%	20.91%	2.75%	1.68%	5.03%	0.38%
	6	3.64%	1.81%	1.23%	0.27%	1.53%	1.30%	0.43%	4.33%	0.11%
	7	1.67%	1.84%	1.85%	0.33%	0.74%	0.41%	0.38%	1.65%	0.07%
	8	0.74%	1.16%	1.01%	0.20%	0.49%	0.43%	0.12%	0.98%	0.10%
	9	0.84%	0.96%	0.64%	0.17%	0.22%	0.19%	0.06%	0.56%	0.05%
	10	0.35%	1.55%	0.63%	0.22%	0.35%	0.13%	0.06%	0.36%	0.04%
	11	0.36%	1.50%	0.00%	0.11%	0.10%	0.12%	0.14%	0.30%	0.01%
Sum		100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

CUMULATIVE %

	<u>Day</u>	<u>2005</u>	<u>2004b</u>	<u>2004a</u>	<u>2003</u>	<u>2002</u>	<u>2000</u>	<u>1999</u>	<u>1998</u>	<u>1996</u>
release	-----									
start	1	0.00%	0.00%	0.00%	0.00%	0.11%	0.01%	0.00%	0.03%	67.39%
	2	1.10%	12.60%	5.72%	74.03%	2.41%	0.08%	85.59%	30.35%	93.17%
	3	48.84%	73.38%	53.37%	92.14%	50.87%	30.20%	91.36%	73.61%	97.41%
	4	81.37%	86.50%	87.29%	97.00%	75.66%	94.66%	97.13%	86.79%	99.23%
	5	92.40%	91.18%	94.64%	98.70%	96.57%	97.42%	98.81%	91.82%	99.61%
	6	96.04%	92.99%	95.86%	98.97%	98.10%	98.72%	99.24%	96.15%	99.73%
	7	97.71%	94.83%	97.71%	99.30%	98.84%	99.13%	99.62%	97.81%	99.80%
	8	98.46%	95.99%	98.72%	99.51%	99.33%	99.56%	99.74%	98.79%	99.89%
	9	99.29%	96.95%	99.37%	99.67%	99.55%	99.74%	99.80%	99.34%	99.94%
	10	99.64%	98.50%	100.00%	99.89%	99.90%	99.88%	99.86%	99.70%	99.99%
	11	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

	<u>CC only</u>	<u>CC only</u>	<u>Spill only</u>						
Avg Q	143.5	137.0	166.1	160.4	170.9	206.7	253.6	188.1	332.3
Spill Q	0.0	0.0	25.0	27.0	52.0	96.3	150.1	28.6	129.1
Op Days	2	4	4	2	3	7	7	10	8
95% Day	6	7	5	4	5	4	4	6	3

Average number of days for the 95% passage average 4.89 days

# COLUMBIA RIVER REGIONAL FORUM

## TECHNICAL MANAGEMENT TEAM

February 27, 2006 Meeting and

### FACILITATOR'S SUMMARY NOTES ON FUTURE ACTIONS

Facilitator: Donna Silverberg

Notes: Robin Harkless

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

TMT Call 2/27: Specifics of the operation were discussed during a TMT conference call on Monday, 2/27 and the operation was planned as follows:

- The Spring Creek hatchery release will occur at 10:00 am on Thursday, March 2.
- The COE will open the B2 Corner Collector at 7:00 am on Friday, March 3. This will allow time for debris to flush out of the collector before the fish arrive, an estimated 24-30 hours after the release.
- Operation of the corner collector will continue for five days, or until 95% of the fish have passed the dam, whichever occurs sooner.
- The Bonneville tailwater will be held as close as possible to a flat 14.5' in order to monitor TDG on Friday. Cathy Hlebechuk, Dave Wills, John Wellschlager and Paul Wagner will discuss a tailwater elevation for Bonneville (possibly reduced from 14.5') during a conference call on Friday at 3:30 pm, based on observed TDG below Bonneville.
- Cathy Hlebechuk, Dave Wills, John Wellschlager and Paul Wagner will have a call on Monday, March 6, to look at the percentage of fish passed and whether or not the operation can end sooner than the planned five days. If they see a need to convene the other TMT members, Cathy will send an email notice to TMT.
- There will be an update on the above operations at the March 8 TMT meeting.

## Technical Management Team Conference Call Notes

February 27, 2006

## ***1. Greetings and Introductions.***

Today's Technical Management Team conference call was chaired by Cathy Hlebechuk and facilitated by Donna Silverberg. The following is a summary (not a verbatim transcript) of the topics discussed and decisions made during this call. Anyone with questions or comments about these notes should contact Hlebechuk at 503-808-3942.

## ***2. Operations in Support of 2006 Spring Creek Hatchery Release.***

As you're aware, this topic was discussed at last week's TMT meeting; it was also discussed at an IT conference call, Silverberg said. David Wills said no new SOR has been submitted. The fish will be released this Thursday; we request that the corner collector begin operating this Friday, and continue to operate for five full days. The goal is to operate the corner collector until the 95% passage point is reached, Wills said; if that occurs before the five days is up, we'll be happy to discuss curtailing the operation sooner. Any delay in the release of the fish would be detrimental, however, Wills added.

Hlebechuk asked what time the fish will be released on Thursday. Some time prior to noon, Wills replied. The earlier the better, said John Wellschlager. Based on the current forebay gas levels, I think we'll be in pretty good shape, Wills observed. Rudd Turner said he had just spoken with Dennis Schwartz; Bonneville project personnel would prefer to begin corner collector operation as early as possible on Friday, because there is some accumulated trash in the forebay, and they want to pass it through the corner collector prior to the arrival of the fish. We would like to begin watering up about 7 am, said Schwartz; that will give the cul-de-sac area four or five hours to clear of debris before the fish arrive. I don't believe that will hinder your planned release timing, he added.

And you will begin monitoring gas as soon as the corner collector operation begins? Silverberg asked. Yes – we'll be monitoring at the chum redd sites, as we've done in previous years, Wills replied.

Various TMT participants said that, in their view, a couple of hours will be more than adequate to free the forebay of debris. Wellschlager noted that river flows are expected to pick up later this week, because of recent precipitation events, so the fish may arrive at Bonneville somewhat faster than the 24-30 hours post-release that was observed in 2005. We would certainly prefer to have the flow pattern established before the fish begin arriving in large numbers, Wills said – we'll rely on the Corps' estimate of how long it will take to move that debris out of there. I would say a minimum of two hours, maybe three, said Schwartz.

So is the Corps comfortable with allowing a three-hour window for the debris to leave? Silverberg asked. Yes, was the reply. If the corner collector is OK for fish passage by 10 am on Friday, where does that put the release timing on Thursday? Turner asked. The fish will be released by noon on Thursday, Wills replied. Schwartz added that he will personally be inspecting the corner collector early on Thursday, before the corner collector is watered up. The contractor has guaranteed that he will finish his work by late Thursday night, Schwartz added.

The only other thing to discuss is whether the TMT should touch base on Friday to discuss the TDG levels at the redd sites, with an eye toward reducing the tailwater depth below 14.5 feet, said Wellschlager. We'll put that on the schedule, Silverberg said. Wellschlager added that the action agencies will do their best to hold Bonneville's tailwater depth as close to 14.5 feet as possible in the interim, although there will be some sort of operating range associated with that depth.

Wills noted that the Fish Wildlife Service is pretty sure the corner collector operation will need to continue at least five days, beginning this Friday. Typically, in recent years, after five days, we've seen around 90-91 percent cumulative passage, so five days is probably a minimum, in terms of the duration of the corner collector operation, Wills added. Bonneville is OK with specifying five days or 95 percent cumulative passage, whichever comes first, Wellschlager said. And is the Corps OK with that as well? Silverberg asked. I'm not sure, Turner said – my understanding is that the contractor who is installing the high-flow PIT detector has used up all of his "float" days, so if the corner collector operation continues an extra day, that could delay the completion of the high-flow PIT detector, unless the contractor is ahead of schedule, which he is not, currently. I just want the TMT to be aware that there could be a slight delay in the completion of that work, and the date by which we can start using the corner collector later this spring, Schwartz said. Currently, the corner collector is scheduled to be operational by April 9, Schwartz added. The Corps is OK with five days of corner collector operation, or 95 percent cumulative passage, whichever occur first, Hlebechuk said.

It was agreed that a TMT subgroup consisting of Wellschlager, Wills, Wagner and Hlebechuk, rather than the full TMT, will convene on Friday afternoon and Monday afternoon to discuss the status of the Spring Creek operation, including cumulative passage numbers and TDG data from the chum redds. The full TMT will be alerted via email if significant problems are seen.

Russ Kiefer said that, at last week's TMT meeting, he had said that the salmon managers support a Dworshak-Grand Coulee flood control shift in 2006; it turns out that I spoke prematurely, he said. Several FPAC members have expressed a desire to discuss a 2006 swap in more detail he said; once FPAC revisits that topic at its next meeting, I will inform the TMT of FPAC's recommendation, Kiefer said.

With that, today's conference call was adjourned. Meeting summary prepared by

Jeff Kuechle, BPA contractor.

**TMT Participant List  
February 27, 2006**

<b>Name</b>	<b>Affiliation</b>
Cathy Hlebechuk	COE
Gary Fredricks	NOAAF
David Wills	USFWS
Paul Wagner	NOAAF
Cindy LeFleur	WDFW
Kyle Dittmer	CRITFC
Bob Heinith	CRITFC
John Wellschlager	BPA
Dan Spear	BPA
Donna Silverberg	Facilitation Team
Jim Litchfield	Montana
Rudd Turner	COE
Russ Kiefer	

# TECHNICAL MANAGEMENT TEAM

**BOR:** Tony Norris / John Roache

**BPA:** John Wellschlager / Dan Spear

**NOAA-F:** Paul Wagner

**USFWS:** David Wills / Steve Haeseker

**OR:** Ron Boyce / Rick Kruger

**WA:** Cindy LeFleur

**ID:** Russ Kiefer

**MT:** Jim Litchfield

**COE:** Cindy Henriksen / Cathy Hlebechuk

## TMT MEETING

Wednesday March 08, 2006 0900 - 1200 hours

1125 N.W. Couch Street, Suite 4A34  
Portland, Oregon 97208

Conference call line: 503-808-5190

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

## AGENDA

1. Welcome and introductions.
2. Review Minutes
  - i. [\[Minutes 2005\]](#) 
  - ii. [\[Minutes 2006\]](#) 
3. Priest Rapids Operation - Russell Langshaw
  - i. [\[Priest Rapids Operation Data Feb-13-06 to Mar-05-06\]](#) 
4. Fish spill % at The Dalles when flows are high
  - i. [\[Spill Limitations at The Dalles Dam for 2006 Due to Spillway Wire Rope Replacement.\]](#) 
5. Spring Creek hatchery
6. Chum
  - i. Scale analysis (split between 3 and 4 year olds)
  - ii. Error bounds of redd counts
7. March Final Water Supply Forecast
8. Dworshak shifted flood control elevations
  - i. [\[Summary of DWR Shift to GCL\]](#) 
9. Status of litigation
10. Water Management Plan comments
  - i. [\[Finalize Fall Winter Update\]](#) 
  - ii. [\[Appendix 1, Emergency Protocols\]](#)   
[\[Salmon Managers emergency operations recommendations\]](#) 
11. Operations Review
  - a. Reservoirs
  - b. Fish
  - c. Power System
  - d. Water Quality
12. Other
  - Set agenda for next meeting **March 22, 2006.** [\[Calendar 2006\]](#) 

*Questions about the meeting may be referred to Cathy Hlebechuk at (503) 808-3942, or Cindy Henriksen at (503) 808-3945*

	<b>DWR Local FC (Maximum Shifted Elevation)</b>	<b>DWR System FC</b>	<b>GCL System FC</b>
Feb-28	Feb Final: 1523.3 ft	Feb Final: 1524.2 ft	Feb Final: 1290.0 ft
Mar-31	Feb Final: 1526.1 ft Mar Final: 1532.4 ft	Feb Final: 1511.0 ft Mar Final: 1520.4 ft	Feb Final: 1255.5 ft Mar Final: 1265.0 ft*
Apr-15	Feb Final: 1534.5 ft Mar Final: 1541.3 ft	Feb Final: 1498.9 ft Mar Final: 1509.1 ft	Feb Final: 1238.5 ft Mar Final: 1246.7 ft*
Apr-30	NA	Feb Final: 1520.9 ft Mar Final: 1526.3 ft	Feb Final: 1225.7 ft Mar Final: 1232.7 ft*
	<b>February Final</b>	<b>March Final</b>	
	DWR: 2707 KAF (102%)	DWR: 2612 KAF (99%)	
	GCL: 58480 KAF (97%)	GCL: 58480 KAF (97%)*	

\*Elevations and Volume for GCL based on Early Bird Forecast

**Summary of DWR Shift to GCL:**

	<b>GCL*</b>	<b>DWR</b>
Mar-31	1262.7 ft	1532.4 ft
Apr-15	1239.7 ft	1541.3 ft
Apr-30	1232.7 ft	1526.3 ft

\*Elevations for GCL based on Early Bird Forecast  
and are subject to change.

Priest Rapids Operations					Days	Band	Was it	Comments
Date	Ave.Q	Min.Q	Max.Q	Prog.Q	Delta	constraint	met?	If NO, reason why.
2/13	106.1	81.1	126.2	112.8	45.1	40	N	increasing flows on Monday
2/14	116.3	99.3	129.2	119.7	29.9	40	Y	
2/15	128.5	114.6	134.9	107.3	20.3	40	Y	
2/16	112.1	107.1	123.9	116.1	16.8	30	Y	
2/17	128.9	102.8	135.9	131.8	33.1	40	Y	
2/18	146.2	109.8	161.2	133.4	51.4	30	N	inflows exceeded estimates by 26 kcfs on Saturday
2/19	127.9	121.2	135.8	106.6				
Week Ave	123.7			118.2	32.8			
2/20	114.1	95.0	121.9	119.1	26.9	40	Y	
2/21	121.2	93.6	133.3	121.5	39.7	40	Y	
2/22	101.9	85.4	114.8	112.1	29.4	40	Y	
2/23	125.4	115.9	136.2	122.4	20.3	40	Y	
2/24	135.4	117.8	146.5	120.1	28.7	40	Y	
2/25	118.8	109.4	121.8	101.3	37.7	30	N	inflows exceeded estimates by 17 kcfs on Saturday
2/26	92.4	84.1	106.8	84.5				
Week Ave	115.6			111.6	29.0			
2/27	91.7	86.3	100.8	103.4	14.5	40	Y	
2/28	113.7	92.7	144.4	120.1	51.7	30	N	inflows increased late in the day at the same time that we were preparing for a line outage Wednesday morning
3/1	124.5	109.1	145.6	76.7	36.5	40	Y	
3/2	88.7	85.8	102.2	100.8	16.4	20	Y	
3/3	99.5	89.9	102.2	121.7	12.3	30	Y	
3/4	103.1	99.7	104.0	98.7	19.2	20	Y	
3/5	89.0	84.8	97.4	57.1				
Week Ave	101.5			96.9	26.3			

## **Spill Limitations at The Dalles Dam for 2006 Due to Spillway Wire Rope Replacement.**

1. Spillway wire ropes at The Dalles Dam are being replaced on Bays 1-9 in 2006. The schedule for this replacement is shown in Table 1. By the start of the spill-for-fish season, spillbays 1-6 will be available. By May 15, bays 7-9 will be completed and available for use. Bays 10, 11, and 13 will not be repaired in 2006 and will not be available for use due to unsafe wire ropes. Bays 12, and 14-22 will be operable in 2006.
2. A limit of 21 kcfs spill per bay was set when developing spill patterns for fish passage. This threshold is based on physical model results, which show that baffle blocks become exposed at this spill level, and balloon-tag studies which showed higher injury and mortality at this spill level. Spill patterns developed for the spillwall configuration were designed to provide the best downstream egress conditions, minimize stilling basin retention time, and remain below the 21 kcfs per bay threshold. To do this, spill is concentrated to the north, with the majority of spill occurring in bays 1-6. When river flow rises above 315 kcfs, spill begins to add south of the spillwall (due to reaching the threshold level in bays 1-6), starting at Bay 7 and working south as river flow continues to rise.
3. A decision needs to be made on how to spill this year: maintain 40% spill, even when that means departing from the spill pattern, or maintain the spill pattern, even if at times we are spilling less than 40% of the total river discharge. Table 1 shows the number of spillbays required to meet 40% spill at increasing total river flows. Based on flow forecasts for 2006, it is possible that there will be times where 40% spill cannot be achieved using the spill pattern in the Fish Passage Plan. To maintain 40% spill, it may be necessary to spill on the south side of the spillway (Bays 14-22) at high river flows. This would create a poor tailrace egress condition for spillway-passed fish. The alternative is to spill less than 40% when river flow rises above the levels indicated in the table below
5. After May 15th when we have all 9 bays back and we can contain 450 Kcfs the likelihood of not being able to meet 40% spill using the fish passage spill pattern is extremely small - 5% based on mean daily flow. Power peaking most likely increases the likelihood to 10% but only for a 1 week period. Outside of that one week period the likelihood is extremely small. There is a greater probability that we will exceed the capacity of the fish spill pattern during completion of bays 7-9 (10 April – 15 May), particularly during power peaking. Much will depend on the shape of spring runoff. The first forecast for the start of spill season will be available at the end of February and these numbers can be updated based on forecasted information versus the hydrograph.

### **Table 1.**

<b>Spill Bays</b>	<b>Date Available</b>	<b>Highest total river Q where spillway can meet 40%</b>
1-6	10 April	315
1-7	20 April	360
1-8	30 April	405
1-9	15 May	450

4. Based on 2005 results, spill levels in the 25-33% range resulted in spillway passage efficiency (SPE) of 75.4% for yearling chinook, compared to an SPE of 81.6% at the 40-45% spill range. Given the relatively small difference in SPE, and the anticipated short duration and small magnitude of reductions below 40% spill, the COE recommends maintaining the FPP spill pattern in 2006, and reducing spill percentage rather than spilling through bays 14-22 to meet 40% spill. We believe the poor tailrace egress conditions created by spilling from bays 14-22 would reduce spillway survival and more than offset any increase in SPE realized by spilling 40%.

# **COLUMBIA RIVER REGIONAL FORUM**

## **TECHNICAL MANAGEMENT TEAM**

March 8, 2006 Meeting

### **FACILITATOR'S SUMMARY NOTES ON FUTURE ACTIONS**

Facilitator: Donna Silverberg

Notes: Robin Harkless

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.

#### **Comments on Notes**

No comments on the February facilitator notes or official minutes were provided at this time.

#### **Priest Rapids Operation**

Russell Langshaw, Grant County PUD, provided an update on Priest Rapids protection flows over the past three weeks. Due to increases in flows, the band width constraints were not met on two days during week one, one on the weekend, and one weekend day during week two. With this observed weekend trend, Grant County is working to improve communication with upstream operators. A TMT salmon manager commented that the need for the band is to avoid fluctuations rather than meet a target flow.

**ACTION:** Russ will include timeframes for all deviations from band width constraints in his briefings to the TMT at future meetings.

#### **Fish Spill Percentage at The Dalles**

A handout was provided and can be found as an attachment to today's agenda. It describes the spill limitations that will exist at The Dalles during wire rope replacement work in from April 10-May 15. The COE suggested that it is unlikely that this work will result in any impact to meeting 40% at The Dalles, but if necessary, the COE asked for a recommendation from the salmon managers on alternative operations, if necessary : Spill to 40% through different bays, or spill less than 40% ?

The salmon managers were concerned with language in the document about 'power peaking', which BPA said would be more appropriately described as 'following load' and necessary to run the river.

All TMT members shared an objective of getting the fish safely through the system. The salmon managers recommended that if necessary, The Dalles spill at less than 40% rather than spill through alternative bays. They will develop a contingency plan (to discuss with the action agencies) for reviewing (and quantifying, if possible) impacts from an alternative operation, and discussing offsets if a negative impact is found.

### **Spring Creek Hatchery Release**

Dave Wills, USFWS, reported that approximately 7.6 million fish were released from the Spring Creek hatchery on Thursday, March 2. The COE opened the B2 corner collector at 7:00 am on Friday, March 3 and the project was operated to 14.5' tailwater. After looking at tidal influences and TDG effects over the chum, a subgroup of the TMT agreed to lower the tailwater to 12.5' on Friday afternoon. Operation of the corner collector continued until Tuesday, March 7, when it was determined that 95% of the fish passed the dam. BPA expressed appreciation to NOAA and USFWS for its collaborative efforts on this.

### **March Final Water Supply Forecast**

Cindy Henriksen, COE, shared the March final forecasts: The Dalles Jan-July forecast is 107 MAF (lower than previously); Libby is at 6.35 MAF (102% of normal); The Dworshak forecast is 99% of normal and Lower Granite is 82% of normal. Tony Norris shared the BOR's water supply forecasts: Grand Coulee is down by 8 MAF; Hungry Horse is down by 80 KAF, resulting in operations of 3.5 kcfs flows at Hungry Horse and 900 cfs at Columbia Falls.

### **Dworshak Shifted Flood Control**

As follow-up from the last TMT meeting, the COE provided a summary of flood control elevations with a shift from Dworshak to Grand Coulee:

- March 31: Grand Coulee 1262.7'; Dworshak 1532.4'.
- April 15: Grand Coulee 1239.7', Dworshak 1541.3'.
- April 30: Grand Coulee 1232.7', Dworshak 1526.3'.

The BOR coordinated with upriver tribes in support of the shift. The salmon managers and other TMT members supported the shift as well. The COE is on track to meet the March 31 flood control elevation targets.

### **Water Management Plan Comments**

The Fall/Winter update will be finalized with the latest water supply forecast information from the BOR. The emergency protocols will be updated to include the latest recommendations from the salmon managers, finalized and attached to the WMP.

### **Operations Review**

*Reservoirs* – Grand Coulee was at elevation 1253.7'. Hungry Horse was at 3528.4', and reduced outflows to 2 kcfs. The Libby water supply forecast is 6.35 MAF, so operators will target a 2404' flood control elevation by the end of March. Outflows have been increased to 9 kcfs to meet this target. Dworshak is at 1527' with outflows at 4.7 kcfs and the end of March shifted elevation at 1532'. Lower Granite flows have been 45-50 kcfs. McNary flows have been 130-155 kcfs. The Bonneville tailwater is being operated to 11.5'.

*Fish* – 24,000 subyearling chinook smolts were counted on 3/8. On 3/2, Oregon and Washington PFMF sampling found more yearling chinook than normal for this time. Many sea lions have been observed in the river below Bonneville.

*Power system* – Nothing to report at this time.

*Water quality* – TDG levels at Warrendale have reached up to 107%, and temperatures are at 39-41°.

### **TMT Meeting Schedule**

TMT meetings are scheduled for March 22, and April 5 and 19. These dates are subject to change. Check the TMT web page for updates.

*Wednesday, March 22* agenda items include:

- Update/Recommendation on The Dalles Spill
- Priest Rapids update
- HYSSR/ESP Runs

### ***1. Greetings and Introductions.***

Today's meeting of the Technical Management Team was chaired by Cindy Henriksen and facilitated by Donna Silverberg. The following is a summary (not a verbatim transcript) of the topics discussed and decisions made at this meeting. Anyone with questions or comments about these notes should contact Henriksen at 503-808-3945.

### ***2. Priest Rapids Operation.***

Russell Langshaw said an update on Priest Rapids operations, containing the detailed numbers outlined in his presentation, is available via hot-link from today's agenda on the TMT homepage. We've been in protection flows for about three weeks, he said; emergence was somewhat early this year. Langshaw went briefly through the daily delta and band constraint information for the past three weeks at Priest Rapids.

Are things being worked out, in terms of the weekend estimates and exceedences? Paul Wagner asked. All we can do is set up according to the flow estimates we receive, Langshaw replied; if actual flows exceed the estimates, there isn't much we can do about that. I can appreciate that, especially early in the season, it may be difficult to get accurate estimates, but is there communication on the need for better estimates? Wagner asked. Our operators have communicated the need for more accurate estimates, Langshaw replied; we're working on that.

The group devoted a few minutes to the reason for the exceedences seen so far this season, as well as potential changes in operations to help the operators avoid future exceedences and the time-frames and durations in which the exceedences have occurred. Langshaw said he will provide information on

the time of day/duration issue at the next TMT meeting. We're currently at 661 temperature units from the end of spawning at Vernita Bar, Langshaw added; weekend operations will begin once we reach 800 TUs. We're accumulating about 5 TUs per day, currently, he said.

### ***3. Fish Spill at The Dalles When Flows Are High.***

Henriksen said this is a follow-on discussion from last meeting; a handout describing the spill limitations at The Dalles during wire rope replacement is available via hot-link from today's agenda on the TMT homepage. With respect to the total river flow from April 10-May 15, the availability of bays 7-9 will be limited, she said. If total river flow exceeds 450 Kcfs before May 15, the question to the salmon managers is, do you want to spill less than 40% of total river flow, or add other spillways, such as 14-22, in addition to bays 1-6, despite the fact that those additional bays may not provide the best egress conditions, in order to maintain 40% spill?

Russ Kiefer said the salmon managers have discussed this issue; we did notice, in the information provided by the Corps, that power peaking increases the likelihood that this situation could occur, he said. One thought we had is that we should not be power peaking if we're going to be creating a fish survival problem greater than that identified in the plans this year. In our view, good spillway passage and survival is more important than the percentage or volume of spill provided. Good passage and survival through 40% spill via the optimal spill bays is our preference, he said; we would like to identify some offsets if spill occurs outside those parameters.

I believe the question is, if unusually high flows occur between now and May 15, what should the Corps do – spill less than 40% of total river flow, or go to other spill bays? Silverberg said. First off, do the action agencies plan to do power peaking at The Dalles and put us into that tough choice? Kiefer asked. I believe you're thinking of power peaking as an arbitrary choice, said John Wellschlager – a more accurate term is "following load." It is impossible to flatten out flows for a variety of reasons – shaping at upstream projects, for one. What I think I'm hearing from you is that power peaking is an arbitrary thing we can just turn off, he said. That's not what I'm saying, Kiefer replied – I'm asking the action agencies to minimize power peaking as much as reasonably possible within the constraints you face.

Flows of 315 Kcfs are pretty substantial, said Wagner – is it more or less likely that load following would occur when flows are that high? Less likely, Wellschlager replied – there is a low likelihood that load following would need to occur if flows are that high. I would add that, if you reduce or eliminate load following at one project, we will need to increase it at another, he said.

If we do find ourselves in this situation, the salmon managers would recommend dropping spill at The Dalles below 40% while continuing to spill through bays 1-6, but explore offsets to make up for that deficit, Kiefer said. I think offsets are reasonable when you can quantify the impacts, Wellschlager replied, but I don't think you can quantify those impacts in this case. The plan says to provide 40% spill, Kiefer replied; if we can't do that safely, then we're detrimentally impacting smolts. Spilling 40% of total river flow through the identified spill bays is the objective for safe smolt passage, Kiefer said – if we don't meet that objective, we will be putting more fish through the powerhouse. I would think we would want to provide more spill elsewhere in order to offset that impact, he said.

Henriksen reiterated that this situation is unlikely to occur; if it does occur, it would likely last for only a few hours of a day. How can you quantify that type of impact, she said, so that an appropriate offset can be calculated? The objective is to get the fish downstream as safely as possible, David Wills replied – during the six weeks when the gates are being re-hung, our ability to provide optimal passage conditions may be compromised. If that does occur, we would like the opportunity to review the operation, come to an understanding about the impacts, and address any potential offsets in the future, he said. It may not be possible to do that, if the river is really churning, Wellschlager said – it may not be possible to provide additional spill, in real time, at another project, if TDG levels are already being exceeded.

Wagner suggested that the group revisit this topic in the unlikely event that these extremely high flows occur prior to May 15, rather than attempting to stake out detailed positions at today's meeting. I think the salmon managers can identify, over the next month, some recommended offsets in the unlikely event that this occurs, Kiefer added. We would then request that, if it does occur, these offsets be implemented in real-time. We will have more discussion on this topic as the season unfolds, Silverberg said.

#### ***4. Spring Creek Hatchery Update.***

We released 7.6 million smolts from Spring Creek Hatchery last Thursday morning, said Wills; corner collector operation began Friday morning. We agreed on a Bonneville tailwater elevation of 14.5 feet over the weekend while we took TDG and depth measurements at the Multnomah Creek and Ives Island spawning sites, Wills said; what we found was that there was minimal tidal effect at those sites. We then had a conference call, on Friday, and agreed that we could reduce the tailwater elevation to 12.5 feet, he said. TDG levels were in the 104-106% range. TDG levels subsequently crept upward, to about 107.5%; because of the lower flows, I wanted to make sure we still had adequate coverage over the redds, Wills said. On Sunday, we saw a fluctuation of about two feet due to tidal influence.

The bottom line is that the Sunday survey found that depth compensation over the redds was adequate, said Wills; we then had a conference call on Tuesday morning, at which it was determined that the 95% point of passage had been reached. The counts Tuesday morning showed more than 96% passage had occurred. We then agreed to close down the corner collector operation on Tuesday morning as a result of the count information, Wills said. Wellschlager said the action agencies appreciated the hard work on the part of the states and the Fish and Wildlife Service in monitoring and coordinating the corner collector operation.

#### **5. *Chum.***

Conversation on this topic was deferred to the next TMT meeting.

#### **6. *March Final Water Supply Forecast.***

Henriksen said the March final water supply forecast was posted to the TMT website yesterday. At The Dalles, the March final January-July forecast is 107 MAF, about average, down 4 MAF from the February final forecast. For Grand Coulee, said Norris, for the April-September period, the forecast fell 8 MAF from February to March, but the January-July forecast dropped less than 1 MAF. The March final forecast at Libby is 6.35 MAF, 102% of average, said Henriksen; the March final at Dworshak is 2.62 MAF, 99% of average, down slightly from the February final. Lower Granite's April-July forecast is now 109% of average, which puts the spring seasonal objective at 100 Kcfs. Hungry Horse's March final forecast dropped slightly, by 80 kaf, from the February final, said Norris.

#### **7. *Dworshak Shifted Flood Control Operations.***

Henriksen said this agenda item is informational in nature, to update the numbers based on the March final forecast. She noted that a handout on this topic is available via hot-link from today's agenda on the TMT homepage. She noted that this is not final information, as the Grand Coulee water supply forecast being used for this calculation was the mid-month forecast, not the final water supply forecast. Under a shift operation, Dworshak's end-of-March and April 15 flood control elevations would be somewhat higher than they would have been, while Grand Coulee's flood control elevations would be lower by an equivalent volume to maintain system flood control space.

Wills said the salmon managers are still in favor of doing a Dworshak-Grand Coulee flood control shift in 2006; however, some additional coordination is needed with the upriver tribes. We wanted to see this information before making a concrete recommendation, said Kiefer; now that we have the March final water supply forecast, the salmon managers can have a more substantive discussion, and develop a recommendation. Norris said Reclamation is generally

in favor of the Dworshak-Grand Coulee flood control shift; it's a good operation, he said, and makes sense all around. From the Corps' perspective, we did plan to operate to the shifted flood control elevations; given the fact that it's already March 8, we're on track to continue to fill toward elevation 1532, the higher, shifted March 31 flood control elevation at Dworshak, she said.

### ***8. Status of Litigation.***

Norris said there is really nothing to report on this topic at today's meeting; negotiations and work on the remand are ongoing. It was agreed to change the title of this agenda item to "Status of Remand" in the future. The next quarterly report is due to the court on April 3.

### ***9. Water Management Plan Comments.***

The only remaining item to be added to the fall/winter update is Reclamation's final forecast, said Norris; that has now been sent to the Corps. We'll get that incorporated, Henriksen said. Henriksen also distributed the most recent version of the emergency protocols from Appendix 1 of the Water Management Plan; the group briefly discussed them.

### ***10. Operations Review.***

Norris said Grand Coulee is at elevation 1253.7, currently; Hungry Horse is at 3528.4 feet and releasing 2 Kcfs. Libby's March final forecast is 6.35 MAF, which puts its March 31 flood control elevation at 2404 feet. The current project elevation is 2411, so outflow has been increased to 9 Kcfs, to get down to that flood control elevation. Dworshak is at elevation 1527, currently with 4.7 Kcfs outflow; its March 31 shifted flood control target elevation is 1532 feet, so the Corps will be re-examining outflow from that project to achieve that elevation. The flow at Lower Granite is in the 45-50 Kcfs range, currently; at McNary, about 130-155 Kcfs; at Bonneville, project operators are now maintaining the normal 11.5 foot tailwater elevation.

Wills said the current STP run shows Grand Coulee at 1255 feet at the end of March, its shifted elevation. That is based on the early-bird forecast, Henriksen replied; the goal will be to shoot for the April 10 elevation.

From the fish perspective, Wagner said the Spring Creek fish have now passed Bonneville. There are other fish out there, Wills said; field crews have found quite a few – dozens of -- unclipped yearling chinook in recent days. That is a surprisingly high number for this early in the season, Wills said. Sea lions are already plentiful at Bonneville, and they're already eating well – mostly sturgeon, he added. It was noted that a news report showed that sea lion C404 entering one of the Bonneville fish ladders through the bars of the sea lion exclusion device. The group briefly discussed the 2006 sea lion harassment program; in

response to a question, Wagner said lethal take of marine mammals can only be done by the states, not the federal agencies.

Wellschlager said there are currently no power system issues to report. Jim Adams reported that TDG levels at Warrendale averaged about 105% during the corner collector operation, other than one brief period when they reached 107%.

**11. Next TMT Meeting Date.**

The next meeting of the Technical Management Team was set for Wednesday, March 22. Meeting summary prepared by Jeff Kuechle, BPA contractor. [1.5 hours]

**Technical Management Team Participant List  
March 8, 2006**

<b>Name</b>	<b>Affiliation</b>
Donna Silverberg	Facilitation Team
Cindy Henriksen	COE
Tony Norris	USBR
Paul Wagner	NOAAF
Russ Kiefer	IDFG
David Wills	USFWS
Paul Koskie	COE
John Wellschlager	BPA
Robin Harkless	Facilitation Team
Don Faulkner	COE
Tim Heizenrater	PPM
Kevin Nordt	Mid-Cs
Dan Spear	BPA
Scott Boyd	COE
Ruth Burris	PPL
Kyle Dittmer	CRITFC
Russ Langshaw	GCPUD

Russ George	WMCI
Shane Scott	Consultant
Bill Crampton	CBB
Brenda henderson	BPA
Bruce MacKay	Consultant
Richelle Beck	D. Rohr & Associates
Mike Buchko	Powerex
Tom Lorz	CRITFC

# TECHNICAL MANAGEMENT TEAM

**BOR:** Tony Norris / John Roache

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## TMT MEETING

Wednesday March 22, 0900 - 1200 hours

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Portland, Oregon 97208

Conference call line: 503-808-5190

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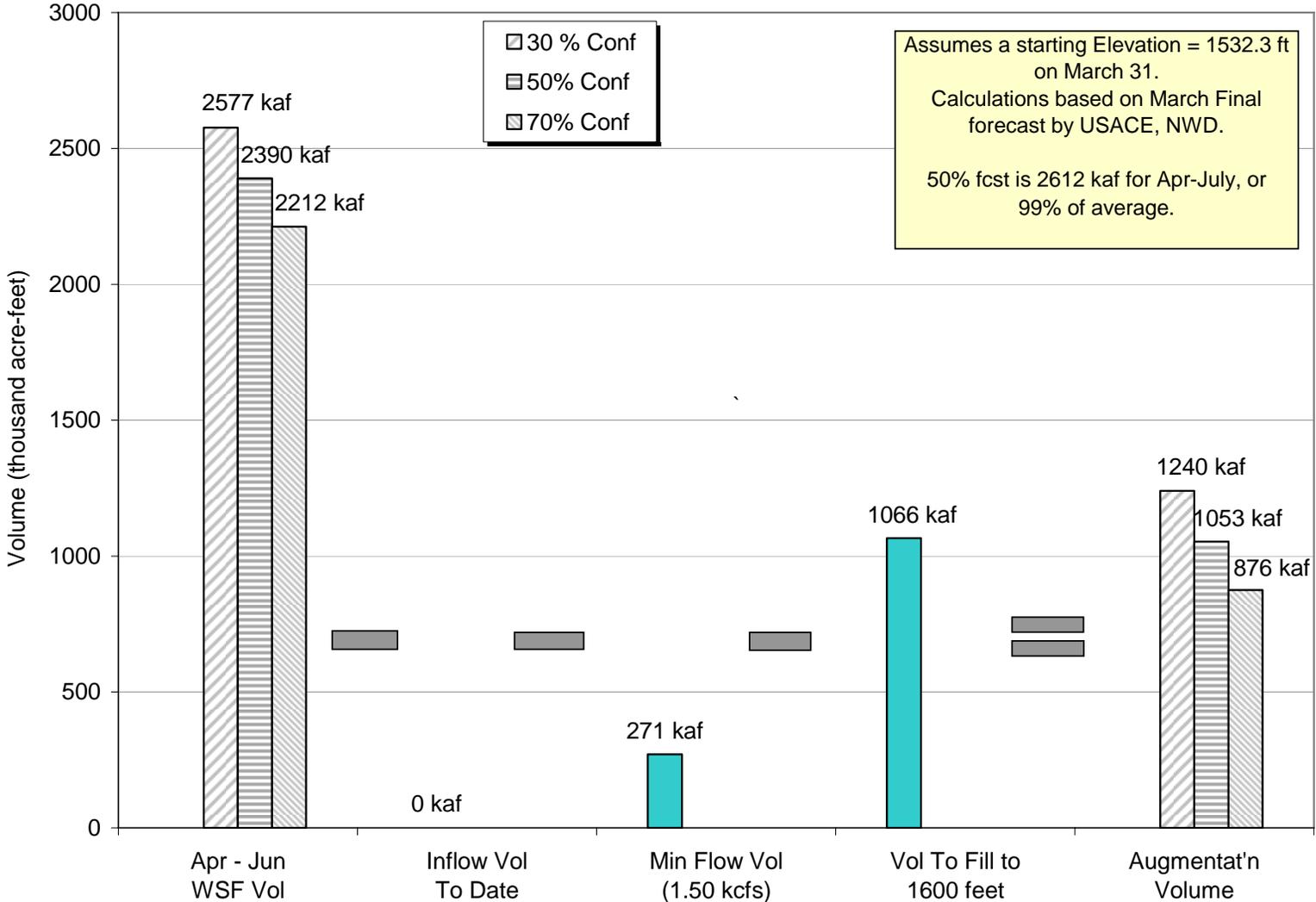
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## AGENDA

1. Welcome and introductions.
2. Review Minutes
  - i. [\[Minutes 2005\]](#) 
  - ii. [\[Minutes 2006\]](#) 
3. Priest Rapids Update
  - i. [\[Update on Priest Rapids operations\]](#) 
4. Diving Operations/hydrophone installation on the Snake River
5. John Day transformer update
  - i. [\[JOHN DAY T-1 FAILURE STATUS REPORT - 21 MARCH 2006\]](#) 
6. HYSSR/ESP Runs
7. Flow Augmentation volumes
  - i. [\[Volumes at Dworshak 1 April Through 30 June\]](#) 
8. Update/Recommendation on the Dalles Spill
9. Minimum Operating Pool operations
10. Status of remand
11. Water Management Plan
  - i. [\[Water Management Plan - 2006\]](#) 
12. Operations Review
  - a. Reservoirs
  - b. Fish
  - c. Power System
  - d. Water Quality
13. Other
  - Set agenda for next meeting **April 5, 2006.** [\[Calendar 2006\]](#) 

*Questions about the meeting may be referred to Cathy Hlebechuk at (503) 808-3942, or Cindy Henriksen at (503) 808-3945*

Volumes at Dworshak  
1 April Through 30 June



Hydroacoustic Transducer installations

Date	LGR Dives	LGR Screens	LGR Spill	LGO Dives	LGO Screens	LGO Spill
3/27/2006					Units 1 & 2?	
3/28/2006					Unit 6	
3/29/2006					Units 5 & 4	
3/30/2006					Unit 3 & ?	
3/31/2006						
4/1/2006						
4/2/2006						
4/3/2006	RSW & Unit 6	Unit 6				
4/4/2006	Units 5 & 4	Units 5 & 4				
4/5/2006	Units 3 & 1	Units 3 & 1				
4/6/2006			Bays 2 - 4			
4/7/2006			Bays 5 - 8			
4/8/2006						
4/9/2006						
4/10/2006						
4/11/2006				Units 1 & 2		
4/12/2006				Units 3 & 4		Bays 1 - 4
4/13/2006				Units 5 & 6		Bays 5 - 8
4/14/2006						

CENWP-OD-D

DATE: 21 MARCH 2006

SUBJECT: JOHN DAY T-1 FAILURE STATUS REPORT

1. Currently JD has assembled a technical team of folks from Engineering, HT&E, and JD electrical maintenance to assess the following:
  - A. Analyze what happened (i.e. cause of failure)
  - B. Assess what has been damaged; and then
  - C. Develop our options.
2. Known:
  - A. John Day's T-1 bank of transformers suffered a fault to ground on 2 March 2006.
  - B. We have 3 damaged (all 3 phases) low side bushings, downstream, Oregon side. Very probable that the adjacent 3 bushings are also damaged.
  - C. We have damage to the Isophase busing between the breakers and the low side bushings.
  - D. Post failure testing, to date, have produced some unfavorable results.
3. Plan:
  - A. Ongoing work:
    - a) We are continuing initial electrical testing to determine the health of electrical components.
    - b) We have set up a purchase request for seven new replacement bushings. Currently it is in NWP contracting
    - c) Working to acquire three temporary replacement bushings from NWW.
    - d) We are Coordinating with BPA for oil handling, storage & processing + SFRA testing. We are attempting to acquire assistance from BPA under the existing MOA for maintenance and repairs (Contract No. 01TX-10379) between the Corps and BPA.
    - e) [We are inspecting and cleaning the isophase bus between the breakers and the low side bushings.](#)
  - B. Near Future Work:
    - a) Will need to Partially drain T-1 phase A, B & C transformers.
    - b) Replace faulted bushings with temporary replacements.
    - c) Finish electrical tests on Y winding.
    - d) Evaluate test results.
4. Test result will allow us to better understand our options. We are continuing to evaluate possible scenarios to support fish passage. We will continue to keep folks apprised of our finding and bring everyone together to work through possible options.

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Kimberley C. Oldham  
Maintenance Manager/Assistant OPM  
John Day Project

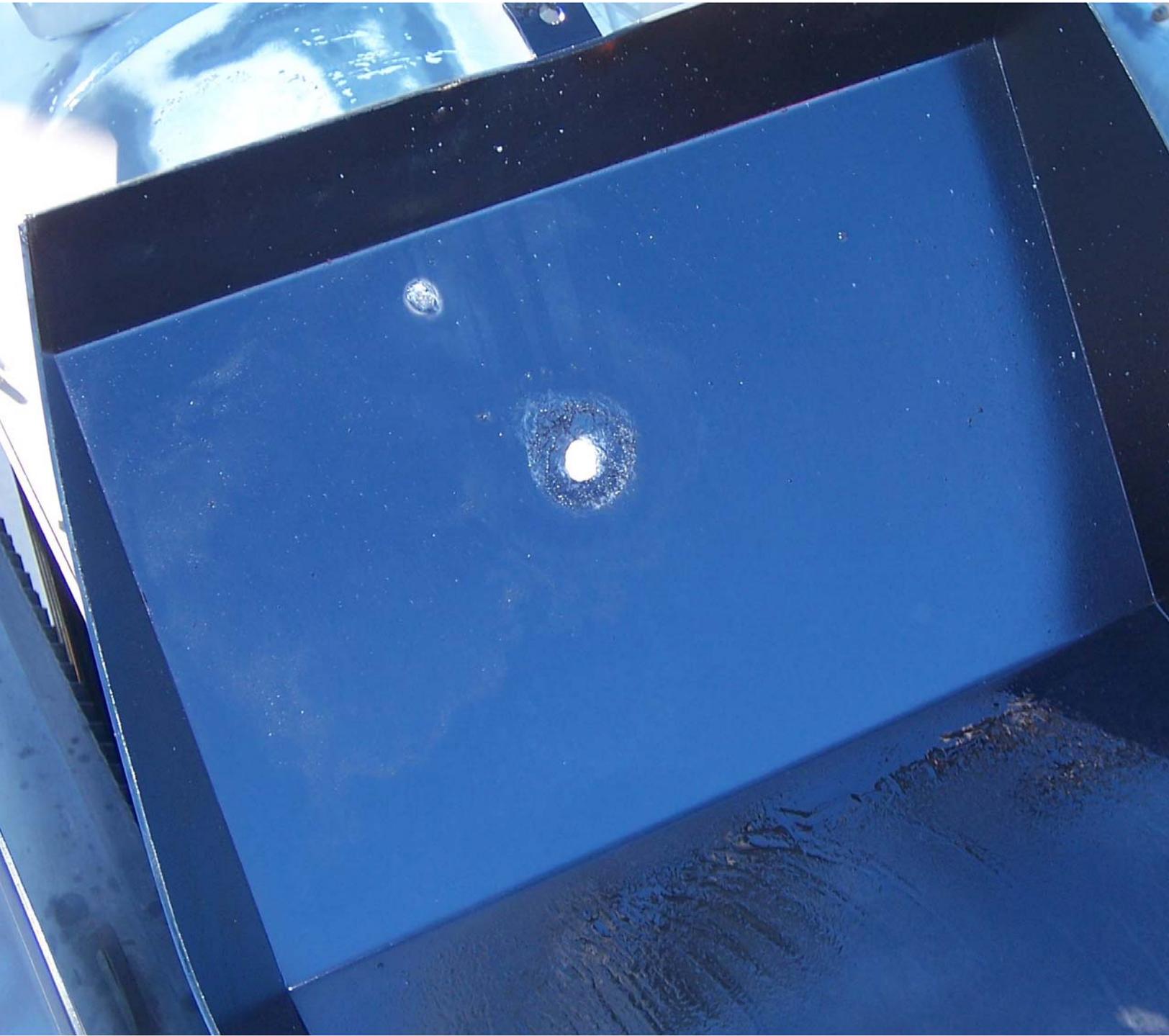


# John Day T-1 Transformer Incident

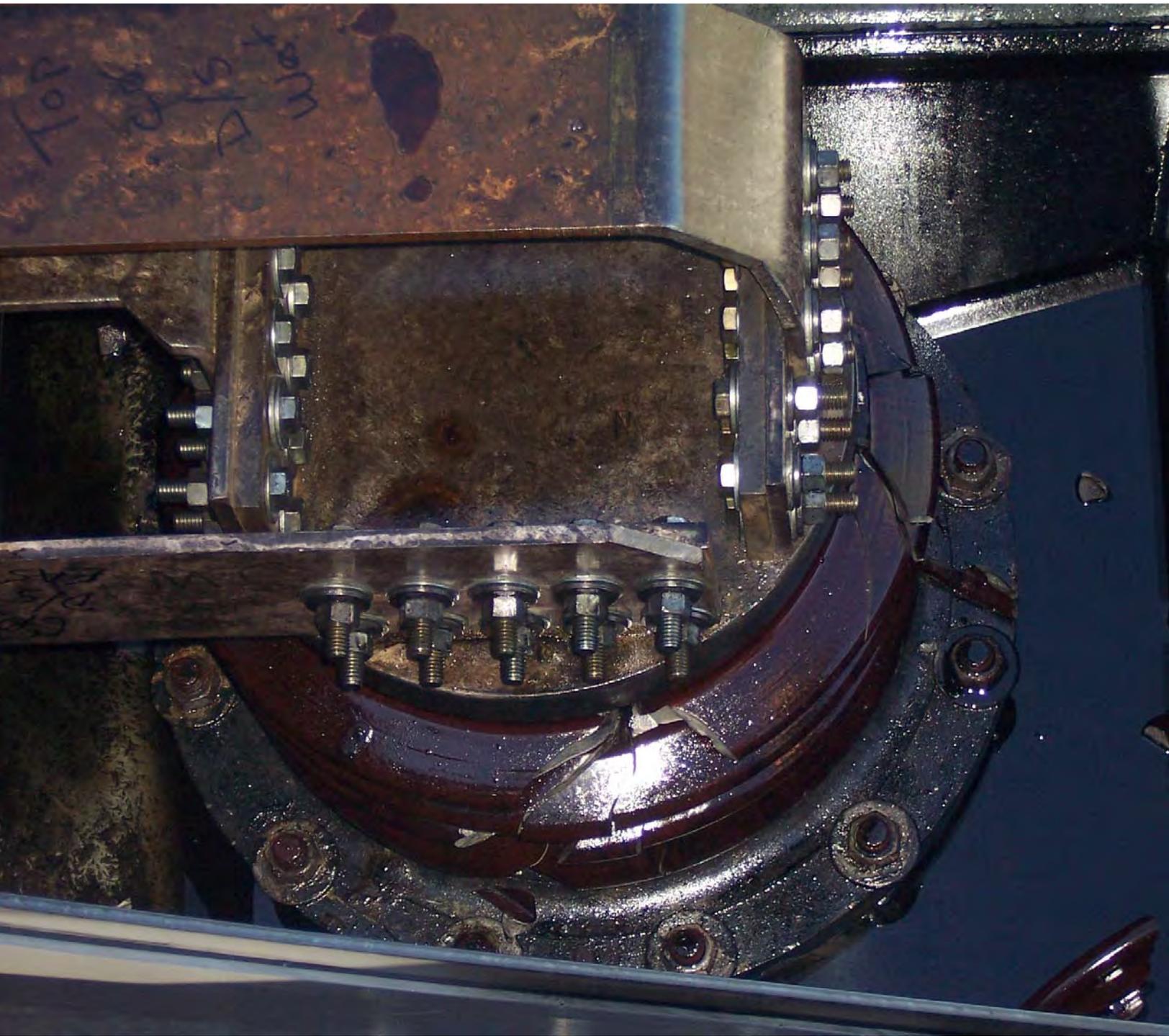
March 2, 2006



**Photo 1: 15 kV Low Side Bushing (Phase A)**



**Photo 2: Phase A Bushing Cover**



**Photo 3: 15 kV Low Side Bushing (Phase C)**



**Photo 4: Isophase Bus on 6th Floor**

Priest Rapids Operations					Days	Band	Was it	Comments
Date	Ave.Q	Min.Q	Max.Q	Prog.Q	Delta	constr	met?	If NO, reason why.
6-Mar	86.6	74.7	98.8	121.7	24.1	40	Y	
7-Mar	111.9	103.0	125.1	99.7	22.1	30	Y	
8-Mar	103.5	91.5	113.5	91.3	22.0	30	Y	
9-Mar	98.6	74.6	138.5	95.7	63.9	30	N	inflows increased late - PRD discharge was increased to prevent overflow
10-Mar	112.3	95.1	133.4	111.8	38.3	40	Y	
11-Mar	103.2	98.2	106.5	86.0				
12-Mar	89.3	88.2	90.6	61.0	18.3	20	Y	
Week Ave	100.8			95.3	34.1			
13-Mar	78.0	73.6	88.7	106.8	15.1	30	Y	
14-Mar	90.9	75.0	132.4	92.4	57.4	30	N	Operator error
15-Mar	102.4	92.7	105.3	100.4	12.6	30	Y	
16-Mar	94.0	83.1	107.3	86.9	24.2	30	Y	
17-Mar	83.4	75.9	94.9	76.9	19.0	20	Y	
18-Mar	85.8	74.4	94.2	82.5				
19-Mar	82.9	75.1	91.1	52.5	19.8	20	Y	
Week Ave	88.2			85.5	25.7			

## DIVING OPERATIONS / HYDROPHONE INSTALLATION ON THE SNAKE RIVER

It should be noted that at NO time is the Corps asking for a reduction in spill or for spill to be turned off – just redistributing between bays to accommodate diving activities at unit 6 (LGR and LGO) and the RSW (LGR). I have not included any details on unit outages because they are not expected to affect the spill amount or pattern.

These spill changes are necessary due to calibration of hydroacoustic equipment not being done in time to install before spill season.

April 3 – need to move all 20K spill at Lower Granite to bays 4 – 8 to accommodate transducer installation at unit 6 and the RSW. There will be NO reduction in spill, merely a different pattern. Hours of spill pattern change will be approximately 0630 to 1700.

April 4 – Don't plan on any changes to spill pattern, but may need several hours with all spill in bays 4 – 8 at Lower Granite if we don't finish work at RSW and unit 6 on 3<sup>rd</sup>. There will be NO reduction in spill.

April 6 – 7 – need individual spillbays (2 thru 8) off at Lower Granite, one at a time, for approximately 1 – 2 hours for installation of pole mounted hydroacoustic transducers. Will increase spill in some other bay to make up. This will NOT reduce spill, merely different pattern.

April 12 – need individual spillbay 1 – 4 off at Little Goose, one at a time, for approximately 1 – 2 hours for installation of pole mounted hydroacoustic transducers. Will increase spill in some other bay to make up. This will NOT reduce spill, just a different pattern.

April 13 – need individual spillbays 5 – 8 off at Little Goose, one at a time, for approximately 1 – 2 hours for installation of pole mounted hydroacoustic transducers. Will increase spill in some other bay to make up. This will NOT reduce spill, just a different pattern.

April 13 – need spillbays 1 – 4 off for installation of transducer in unit 6, for probably 2 – 4 hours. This will NOT reduce spill, just a different pattern.

# COLUMBIA RIVER REGIONAL FORUM

## TECHNICAL MANAGEMENT TEAM

March 22, 2006 Meeting

### FACILITATOR'S SUMMARY NOTES ON FUTURE ACTIONS

Facilitator: Donna Silverberg

Notes: Robin Harkless

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.

#### **Priest Rapids Operation**

Russell Langshaw, Grant County PUD, provided an update on Priest Rapids protection flows over the past two weeks. Information requested at the last TMT meeting about the duration of time outside band widths was not available today, but will be at the next meeting. The weekly average flow for March 6-12 was 100.8 kcfs; the band width was not met on March 9 due to an increase in flows late that day. The weekly average for March 13-19 was 88.2 kcfs; the band width was not met on March 14 due to an operator error. The PUD is working to improve communication as well as educate the individual dispatcher to minimize future band width deviations at the project. A comment was made that the band width deviations (fluctuations) are detrimental to the fish, and there is frustration that the operation is not as tight as it could be. Russell said the PUD shares this frustration and is working to improve the situation. Real-time information on Priest Rapids flows can be found at [www.nwd-wc.usace.army.mil/report/projdata.htm](http://www.nwd-wc.usace.army.mil/report/projdata.htm). At this point, the PUD expects to begin weekend protection flows around the first weekend in April.

**ACTION:** Russell will include timeframes for all deviations from band width constraints in his briefings to the TMT at future meetings.

#### **Hydrophone Installation on the Snake River**

Materials have not been delivered to Walla Walla District on time to do hydrophone installation work on the Snake River prior to spill. The COE is having internal discussions about potential impacts to spill on the Snake River. Cathy Hlebechuk, COE, will share information with TMT as it is available.

#### **John Day Transformer Update**

Don Faulkner, COE, shared that a ground fault occurred on March 2 at John Day. Tests have revealed more extensive damage to the transformer than previously thought. Replacement 'bushings' will allow the COE to do further damage analysis tests, and more will be known in the next month. A question was asked about whether the transformer could be replaced. It is possible, and at this point, the experts say it would not be as feasible or efficient to replace than to repair damages to the transformer.

Don shared that the current thinking is that late summer is the EARLIEST that 2 of the 4 units could be functioning and there is a possibility none will be back by then. Don noted there are a lot of rumors floating around about when the units will be back. There will be an update and presentation to TMT by the John Day project on the analysis at the April 5 TMT meeting.

### **Flow Augmentation Volumes**

Cathy Hlebechuk shared the STP flow augmentation forecast for Dworshak April-July, based on the March final water supply forecast. With a 30-70% confidence, the flow augmentation is forecasted at 876-1240 kaf. HYSSR/ESP models will be available at the next TMT meeting.

### **Update/Recommendation on The Dalles Spill**

John Wellschlager, BPA, reported that there is a very small likelihood that flows would reach volumes great enough to impact 40% spill operations at The Dalles during wire rope replacement work in April and May of this year, based on historically similar conditions.

The salmon managers requested that, in the unlikely event that an operation is required that deviates from the BiOp, the action agencies implement offset spill by extending spill at John Day by a couple hours or more so long as TDG levels are not exceeded. After a caucus, the action agencies said they do not support providing any offset spill. They could spill 40% at The Dalles through bays other than 1-4, rather than reduce spill in the unlikely event that river flows exceed that which could be spilled through bays 1-4 during wire rope replacement work. Hourly spill percentages for The Dalles can be found on the COE's website.

### **MOP Operations**

Cathy Hlebechuk noted that the court ordered the start of spill on the Lower Snake to be on April 3. BPA requested the Action Agencies discuss this further before finalizing the date. Cathy said she would e-mail the salmon managers after a final determination had been made. The salmon managers said they needed this information before submitting their request for MOP implementation

It was noted that a new consideration this year will be for Lyons Ferry fall chinook hatchery fish, who were ESA-listed in June 2005. The first release of these fish is the end of March, putting them in the Lower Snake in early April during the start of spill and MOP operations.

**ACTION:** After receiving confirmation of start of spill date, the salmon managers will discuss fish needs this year relative to MOP operations, and will develop an SOR and discuss it with TMT prior to the start of spill (April 3).

**ACTION:** Paul Wagner, NOAA, offered that transportation operations this year are planned to begin on April 20. He will clarify and share more specifics about this at the 4/5 TMT meeting.

### **Status of the BiOp Remand**

A quarterly report will be shared with Judge Redden on April 3; TMT will receive a presentation on this report at the April 5 TMT meeting.

### **Water Management Plan**

Language from the salmon managers on the Emergency Protocols will be inserted in the Fall/Winter update, per coordination between Cathy Hlebechuk (COE) and Paul Wagner (NOAA), and the WMP Fall/Winter Update will be finalized at the 4/5 TMT meeting. The latest draft of the full Plan will be posted on the TMT web page later this week. The COE is working on a draft Spring/Summer Update.

### **Operations Review**

*Reservoirs* – Grand Coulee was at elevation 1253'. Hungry Horse was at 3527'. Libby was at elevation 2407', with a 2404' end of March target, releasing 9 kcfs. Dworshak was at 1530' and releasing 1.5 kcfs to reach an end of March shifted elevation of 1532.4' (without the shift, the target was 1509.1'). Ice Harbor flows have averaged 51 kcfs since March 1. Bonneville flows have averaged 165 kcfs. There will be no shift at Brownlee this year; the current elevation is 2031' and targeting 2036.5' end of March, outflows were 33 kcfs.

The Spill Implementation Plan will be available on the web as an appendix to the Fish Passage Plan, and also included in the Quarterly report to the judge.

*Fish* – Paul Wagner reported that adults are starting to show up in the system, but very few at this point. Typically they arrive around the 3<sup>rd</sup> week in April.

*Power system* – The system is setting up for spring spill operations.

*Water quality* – Four TDG gauges are being installed at Little Goose and Lower Monumental.

### **TMT Meeting Schedule**

TMT meetings are scheduled for April 5 and 19. These dates are subject to change. Check the TMT web page for updates.

*Wednesday, April 5* agenda items include:

- Priest Rapids update
- Update on hydrophone installation on the Snake River
- HYSSR/ESP Runs
- John Day Transformer presentation/update
- BiOp Remand quarterly report presentation
- Finalize WMP Fall/Winter Update – Emergency Protocols
- Seal Lions report
- Operations update

# TECHNICAL MANAGEMENT TEAM

**BOR:** Tony Norris / John Roache

**BPA:** John Wellschlager / Dan Spear

**NOAA-F:** Paul Wagner

**USFWS:** David Wills / Steve Haeseker

**OR:** Ron Boyce / Rick Kruger

**WA:** Cindy LeFleur

**ID:** Russ Kiefer

**MT:** Jim Litchfield

**COE:** Cindy Henriksen / Cathy Hlebechuk

## TMT CONFERENCE CALL

Wednesday March 29, 1100 - 1200 hours

**\*\* NOTE DIFFERENT TIME \*\***

1125 N.W. Couch Street, Suite 4A34  
Portland, Oregon 97208

Conference call line: 503-808-5190

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Please MUTE your Phone**

**NOTE: This is a conference call.**

**If you wish to come to the building, please call Cindy Henriksen.**

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

## AGENDA

1. Welcome and introductions.
2. Start of MOP Operations
  - [\[MOP Operation in the Snake River - SOR #2006-2 -March 28, 2006\]](#) 
  - Transducer installation at Lower Granite and Little Goose
3. Other
  - Set agenda for next meeting **April 5, 2006.** [\[Calendar 2006\]](#) 

*Questions about the meeting may be referred to Cathy Hlebechuk at (503) 808-3942, or Cindy Henriksen at (503) 808-3945*

# COLUMBIA RIVER REGIONAL FORUM

## TECHNICAL MANAGEMENT TEAM

March 29, 2006 Conference Call

### FACILITATOR'S SUMMARY NOTES ON FUTURE ACTIONS

Facilitator: Donna Silverberg

Notes: Robin Harkless

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.

#### **SOR 2006-2**

Russ Kiefer, IDFG, spoke on behalf of the salmon managers, who put forth SOR 2006-2 regarding the start of MOP operations on the Lower Snake River. They requested that the action agencies begin drafting to MOP operations when spill is initiated at the projects on April 3. Drafting to MOP increases water velocity by increasing the flows and reducing the cross-sectional area of the reservoirs, this will likely stimulate the fish to migrate. The salmon managers' request that this stimulus for fish migration occur at the same time the preferred spillway passage route becomes available.

Cindy Henriksen, COE, responded that while the projects are currently operating at full operating range (3-5') and fluctuating to maximize power possibilities, many of the projects are fluctuating to below the top range, closer to MOP. It was also noted that to implement MOP at all the projects on the same day would require a lot of water to be moved in one day. The salmon managers clarified that the intent of their request to begin MOP operations on April 3 was to initiate the operation during, but not sooner than, the start of spill. (So that any additional water moving through the reservoirs in shifting to MOP would occur after the start of spill.)

The COE proposed the following operation:

- *At Ice Harbor and Lower Monumental, begin on April 3 to narrow the operating range to 2', and operate to MOP on April 4.*
- *At Little Goose and Lower Granite, narrow to a 4' operating range on April 3, a 3' range on April 4, a 2' range on April 5 and operate to MOP on April 6. (The salmon managers supported this recommendation, with a request that it maximizes fish benefits and minimizes power fluctuations. They did not support refill at any of the projects during this time.)*

Scott Bettin, BPA, responded that he heard what the salmon managers' interests are and stated that BPA will incorporate this into the way the Snakes are drafted but noted that initiating MOP operations at the same time as spill operations are not required or specified in the BiOp or court order. BPA plans on operating to the criteria agreed to in the meeting.

### **Transducer Installation at Little Goose and Lower Granite**

Tim Wik, Walla Walla COE, described transducer installation work slated to begin in April at Lower Granite and Little Goose that will impact spill patterns, but not spill volumes.

Little Goose installation will occur on April 11-13 during which time there will be divers in the water. Safety concerns will require four of eight bays to be shut off. During the day on April 13, spill will be implemented to the volume specified in the court order, as a flat pattern through the four available bays. Lower Granite installation work will occur on April 3 at the RSW and unit 6, requiring bays 1-4 to be shut off that day and possibly into April 4. 20 kcfs will be spilled through bays 5-8 during that time. On April 6-7, installation will occur in the spillways, requiring spill to be turned off at individual bays for 1-2 hours. The make-up volume will be spilled through a different bay.

**ACTION:** Tim will send an email to TMT with specifications about the installation work at the two projects, and will coordinate further on spill patterns with Gary Fredericks (NOAA), Bill Hevlin (NOAA), and Rick Kruger (ODFW).

# TECHNICAL MANAGEMENT TEAM

**BOR:** Tony Norris / John Roache

**BPA:** John Wellschlager / Dan Spear

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**OR:** Ron Boyce / Rick Kruger

**WA:** Cindy LeFleur

**ID:** Russ Kiefer

**MT:** Jim Litchfield

**COE:** Cindy Henriksen / Cathy Hlebechuk

## TMT MEETING

**Wednesday March 08, 2006 0900 - 1200 hours**  
**1125 N.W. Couch Street, Suite 4A34**  
**Portland, Oregon 97208**  
**Conference call line: 503-808-5190**

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## AGENDA

1. Welcome and introductions.
2. Review Minutes
  - i. [\[Minutes 2005\]](#) 
  - ii. [\[Minutes 2006\]](#) 
3. Priest Rapids Operation - Russell Langshaw
  - i. [\[Priest Rapids Operation Data Feb-13-06 to Mar-05-06\]](#) 
4. Fish spill % at The Dalles when flows are high
  - i. [\[Spill Limitations at The Dalles Dam for 2006 Due to Spillway Wire Rope Replacement.\]](#) 
5. Spring Creek hatchery
6. Chum
  - i. Scale analysis (split between 3 and 4 year olds)
  - ii. Error bounds of redd counts
7. March Final Water Supply Forecast
8. Dworshak shifted flood control elevations
  - i. [\[Summary of DWR Shift to GCL\]](#) 
9. Status of litigation
10. Water Management Plan comments
  - i. [\[Finalize Fall Winter Update\]](#) 
  - ii. [\[Appendix 1, Emergency Protocols\]](#)   
[\[Salmon Managers emergency operations recommendations\]](#) 
11. Operations Review
  - a. Reservoirs
  - b. Fish
  - c. Power System
  - d. Water Quality
12. Other
  - Set agenda for next meeting **March 22, 2006.** [\[Calendar 2006\]](#) 

*Questions about the meeting may be referred to Cathy Hlebechuk at (503) 808-3942, or Cindy Henriksen at (503) 808-3945*

# TECHNICAL MANAGEMENT TEAM

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**WA:** Cindy LeFleur

**ID:** Russ Kiefer

**MT:** Jim Litchfield

**COE:** Cindy Henriksen / Cathy Hlebechuk

## TMT MEETING

Wednesday April 5, 2006, 0900 - 1200 hours

1125 N.W. Couch Street, Suite 4A34  
Portland, Oregon 97208

Conference call line: 503-808-5190

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## AGENDA

1. Welcome and introductions.
2. Review Minutes
  - i. [\[Minutes 2005\]](#) 
  - ii. [\[Minutes 2006\]](#) 
3. Priest Rapids Update
  - i. [\[Priest Rapids Operations\]](#) 
4. Bonneville Second Powerhouse Corner Collector Operation
  - i. [\[TMT update on the progress of installing the B2 CC pit tag antenna\]](#) 
5. Sea lion update
  - i. [\[PINNIPED DETERRENTS AT BONNEVILLE DAM 2005-2006 Fisheries\]](#) 
  - ii. [\[Pinnipeds in the Columbia\]](#) 
  - iii. [\[Pinnipeds in the Columbia - Power Point Slide\]](#)
6. John Day transformer update
  - i. [\[JOHN DAY T-1 FAILURE STATUS REPORT - 3 APRIL 2006\]](#) 
7. John Day Spill Operations
  - i. [\[Spill Operations at John Day - SOR #2006-03 - April 4, 2006\]](#) 
8. Second Quarterly Report and Implementation Plan
  - i. [\[2004 BiOp Remand Remand of the NOAA Fisheries 2004 Biological Opinion on the Federal Columbia River Power System\]](#)
9. HYSSR/ESP Runs
  - i. [\[Summary of 03 Apr 2006 ESP HYSSR Model Runs 5-Apr-06\]](#) 
10. Flow Augmentation volumes
  - i. [\[Volumes at Dworshak - 1 April Through 30 June\]](#) 
  - ii. [\[Dworshak Augmentation Volumes ESP inflows and 4 April Water Supply Forecast\]](#) 
11. Spring / Summer Update
  - i. [\[Spring / Summer Update to the 2006 Water Management Plan\]](#) 
12. Operations Review
  - a. Reservoirs
  - b. Fish
  - c. Power System

d. Water Quality

13. Other

- Set agenda for next meeting **April 19, 2006.** [\[Calendar 2006\]](#) 

*Questions about the meeting may be referred to Cathy Hlebechuk at (503) 808-3942, or Cindy Henriksen at (503) 808-3945*

## **TMT update on the progress of installing the B2 CC pit tag antenna**

As has been the case from the inception of this project the Action Agencies have been keeping the region up to speed on the ambitious schedule to compress a two year project into one. The progress to date has been amazing. Though few thought the schedule was possible, the corner collector PIT tag Antenna was placed in the channel on March 23. Slayden Construction Company will be turning it over to Digital Angel (DA) on Friday April 7. Digital Angel, the antenna manufacturer, will then be responsible for the electronics testing and calibration of the antenna, initially in the dry. A tentative schedule of 10 days has been outlined. Because of the uncertainties associated with testing this first of its kind antenna it is impossible to say, at this time, whether the 10 day schedule is sufficient. The Corps and BPA feel that this testing is a very necessary task to assess and correctly calibrate this system. Once dry testing has been completed short 4-6 hour wet tests will need to occur. This will require Bonneville Project to open and close the B2CC a few times prior to when it goes operational for the season.

**Assumptions:**

- \* Streamflows are from the 28 Mar ESP run, which uses current basin conditions combined with 44 historical weather patterns (temperatures and precipitation) to produce 44 ESP hydrographs for 2006.
- \* Flood control is varied each year to correspond to the runoff volume in ESP.
- \* Grand Coulee operates to flood control April 15. Coulee tries to meet 135,000 cfs April 16 through June 30. In June the project refills to 1290 ft in all years. Summer lake targets are 1285.0 ft in July and 1280 ft in August.
- \* Hungry Horse operates April - May for a controlled refill by 30 June and meets minimum flow of 3,500 cfs at Columbia Falls. The project drafts to 3540 ft by 31 Aug.
- \* Brownlee operates to flood control elevations in April refills in June (2077 ft) and drafts some in July - August.
- \* Dworshak operates for flood control in April, targeting full in June and drafting to 1534 ft by 31 Aug.
- \* Libby operates on minimum flow or VARQ flood control Apr - May, targets full in June with while meeting the sturgeon pulse volume appropriate for each ESP year. Libby drafts to 2439 ft by 31 Aug, while meeting bull trout minimum flows (which vary each year).

**Results:**

Priest Rapids Meets the Following Flow Objectives:

Month	Occurrences out of 44 Years	Average Flow for 44 Years (kcfs)	Flow Objective (kcfs)
Apr 15	44	123	70
Apr 30	35	166	135
May	44	205	135
Jun	43	181	135

Lower Granite Meets the Following Flow Objectives:

Month	Occurrences out of 44 Years	Average Flow for 44 Years (kcfs)	Flow Objective (kcfs)
Apr 15	3	89	101
Apr 30	23	107	101
May	37	117	101
Jun	41	119	85
Jul	28	60	54
Aug 15	0	37	54
Aug 31	0	34	54

Bonneville Meets Flow Objectives of 125 kcfs in Apr:

Month	Occurrences out of 44 Years	Average Flow for 44 Years (kcfs)
Apr 15	44	235
Apr 30	44	296

McNary Meets the Following Flow Objectives:

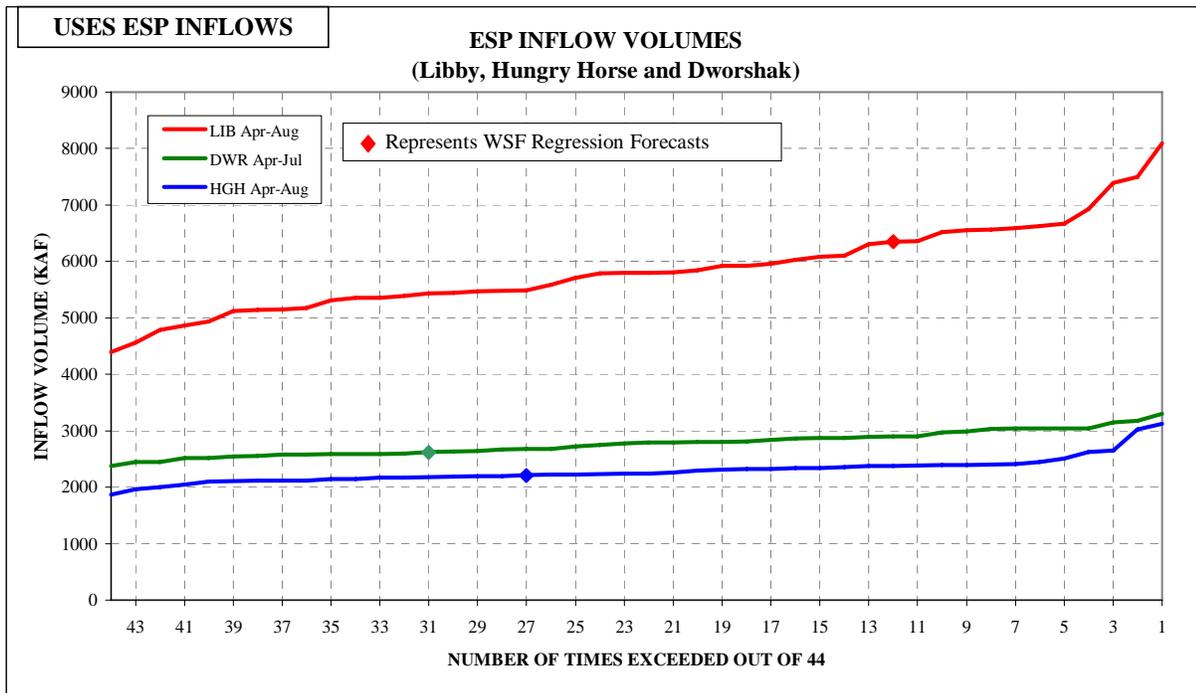
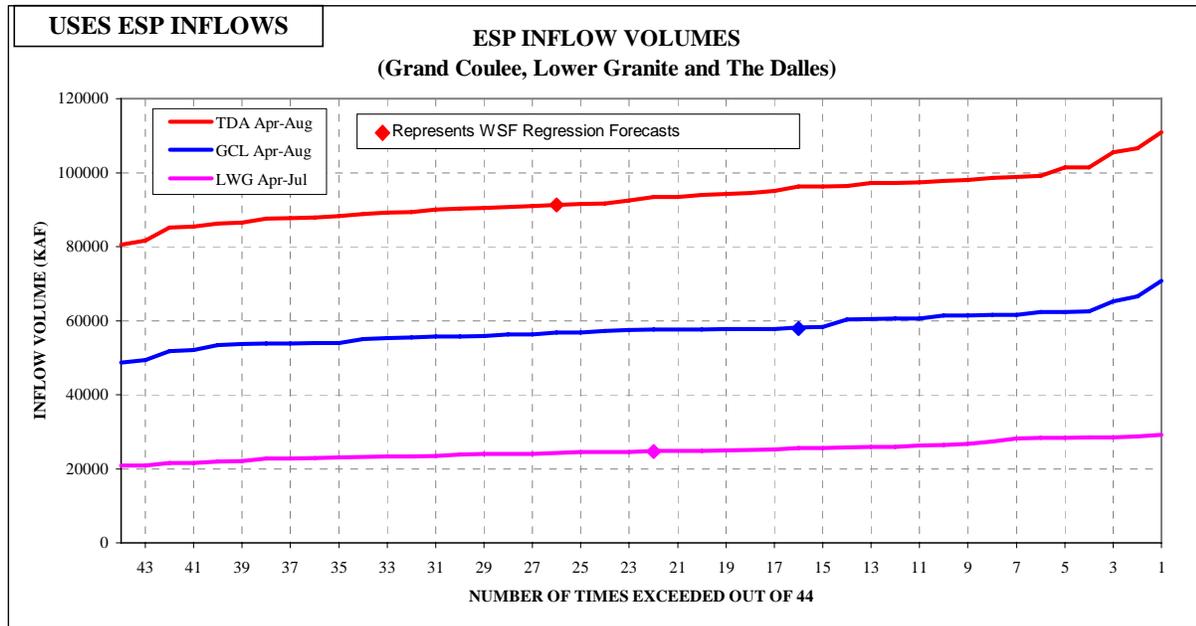
Month	Occurrences out of 44 Years	Average Flow for 44 Years (kcfs)	Flow Objective (kcfs)
Apr 30	25	274	257
May	41	324	257
Jun	37	309	257
Jul	32	225	200
Aug 15	1	151	200
Aug 31	0	136	200

Projects Refill to within 1 foot of full by 30 June:

Month	Occurrences out of 44 Years	Average Elevation on 30 Jun for 44 Years
Libby	27	2457
Hungry Horse	44	3560
Grand Coulee	44	1290
Dworshak	44	1600

Period Average Flows (kcfs):

	FEB 1-28	MAR 1-31	APR 1-15	APR 16-30	MAY 1-31	JUN 1-30	JUL 1-31	AUG 1-15	AUG 16-31
LIB	4.0	7.6	4.6	5.9	13.9	13.3	25.4	16.1	15.2
HGH	5.4	2.0	9.9	9.2	4.2	6.3	6.3	4.9	8.1
GCL	103	84	118	155	182	154	145	104	94
PRD	112	95	123	166	205	181	159	111	99
DWR	6.7	3.7	13.0	16.3	8.2	2.0	11.0	11.0	11.0
BRN	29	32	39	40	29	27	16	14	14
LWG	45	51	89	107	117	119	60	37	34
MCN	162	149	219	274	324	309	225	151	136
TDA	170	156	232	291	338	320	229	154	140
BON	177	165	235	296	343	325	232	157	142



Volume Comparison Table (ESP versus Regression) - March Final:

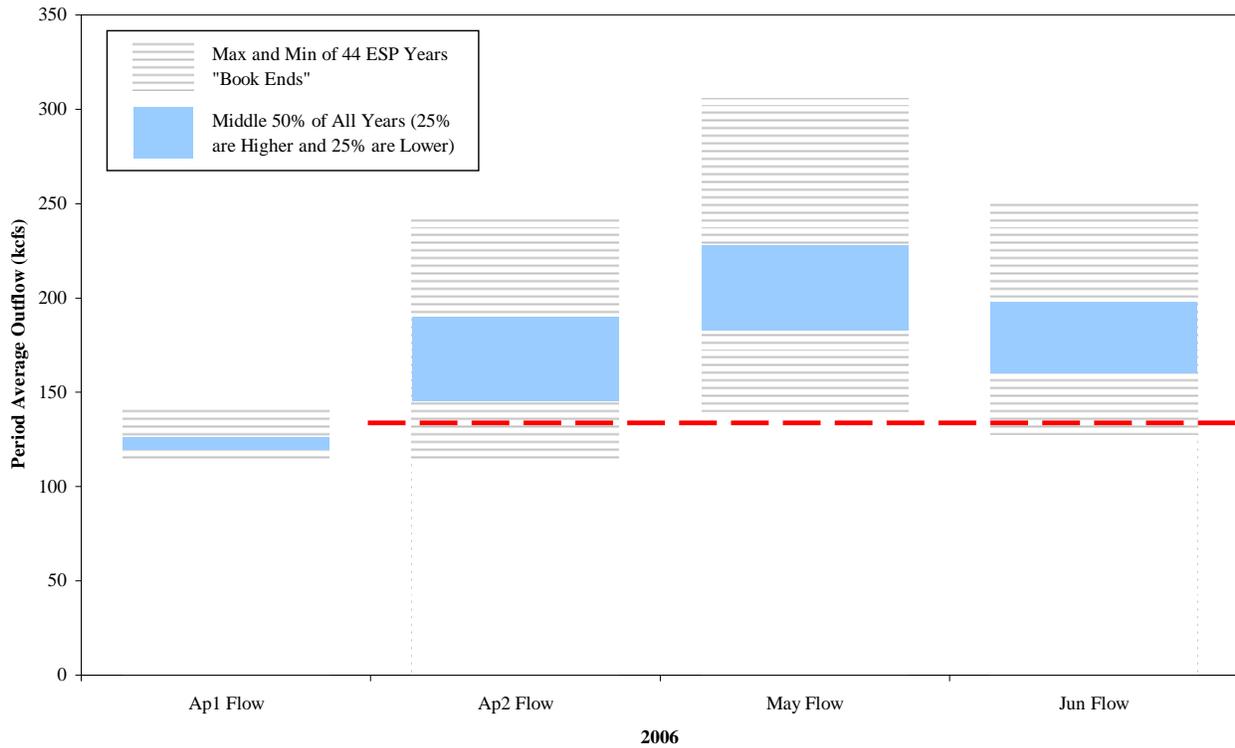
Forecast Period	Official WSF (Regression)			ESP Volumes				
	Volume (kaf)	Percent of Average	30 year Average (kaf)	10% Exceedance Probability	30% Exceedance Probability	50% Exceedance Probability	70% Exceedance Probability	90% Exceedance Probability
Grand Coulee	57900	96%	60290	62300	60300	57600	55700	53500
Lower Granite	24700	115%	21550	28400	25700	24700	23500	22100
The Dalles	91200	98%	93090	100700	96500	93000	90000	86300
Hungry Horse *	2209	107%	2070	2490	2360	2240	2180	2100
Libby **	6350	102%	6248	6620	6090	5800	5420	4980
Dworshak **	2612	99%	2645	3040	2870	2780	2610	2530

\* USBR Official Forecast

\*\* Corps Official Forecast

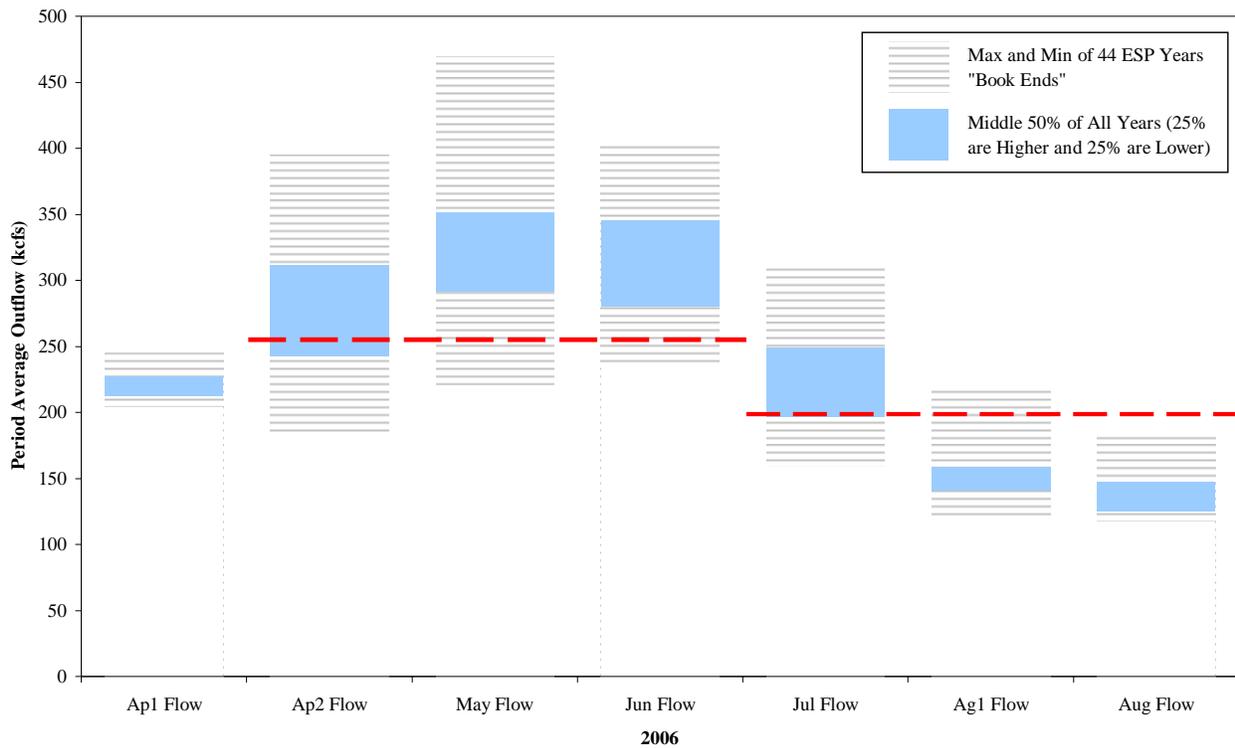
**USES ESP INFLOWS**

**PRIEST RAPIDS ESP HYSSR RESULTS  
MONTHLY OUTFLOW PROJECTIONS**



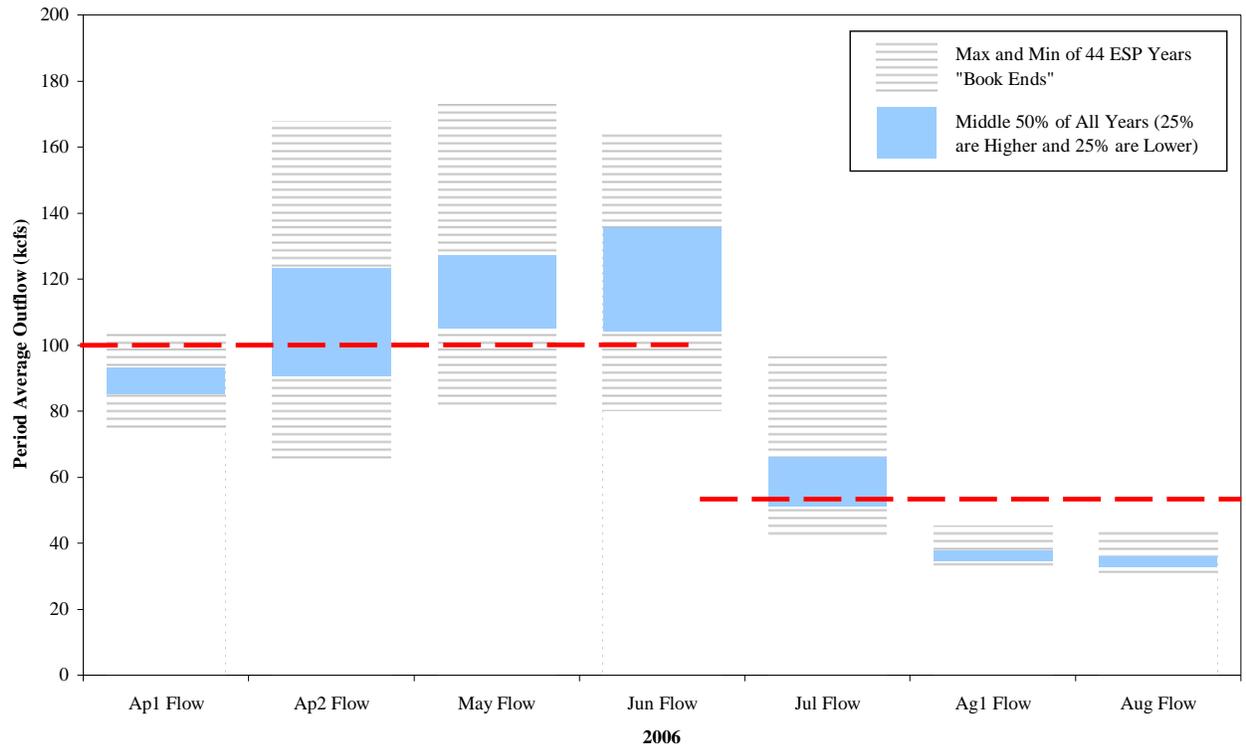
**USES ESP INFLOWS**

**MCNARY ESP HYSSR RESULTS  
MONTHLY OUTFLOW PROJECTIONS**



# USES ESP INFLOWS

## LOWER GRANITE ESP HYSSR RESULTS MONTHLY OUTFLOW PROJECTIONS



Summary of March Final 2006 QADJ Model Runs

4-Apr-06

**Assumptions:**

- \* Streamflows were adjusted to the March Final Water Supply Forecast for the period of April thru August of 91.2 MAF at The Dalles (98% of average) and shaped 69 different ways based on observed historical runoff.
- \* Starting elevations are forecasted March 31, 2005 elevations.
- \* Grand Coulee operates to meet a minimum flow of 70,000 cfs at Priest Rapids in April while operating to flood control. Coulee tries to meet 135,000 cfs in May and June. In June the project refills to at 1290 ft in all years. Summer lake targets are 1286.0 ft in July and 1280 ft in August.
- \* Hungry Horse operates April - May for a controlled refill by 30 June and meets minimum flow of 3,500 cfs at Columbia Falls. The project drafts to 3540 ft by 31 Aug.
- \* Brownlee operates to flood control elevations through April, fill to 2077 ft by 30 June and drafts some in July - August.
- \* Dworshak augments up to 13,000 cfs in April, while not drafting below flood control end of April. Project targets full by 30 June and drafts in July and August to 1534 ft by 31 Aug.
- \* Libby operates on minimum flow or VARQ flood control Apr - May, targets full in June with a minimum flow of 8,400 in May and 18,600 cfs out in June for sturgeon, based on a Tier 3 sturgeon pulse. Libby drafts to 2439 ft by 31 Aug, with a minimum bull trout flow of 8,000 cfs.

**Results:**

Priest Rapids Meets the Following Flow Objectives:

Month	Occurrences out of 69 Years	Average Flow for 69 Years (kcfs)	Flow Objective (kcfs)
Apr 15	65	97	70
Apr 30	40	151	135
May	65	156	135
Jun	69	186	135

Lower Granite Meets the Following Flow Objectives:

Month	Occurrences out of 69 Years	Average Flow for 69 Years (kcfs)	Flow Objective (kcfs)
Apr 30	31	97	100
May	51	112	100
Jun	57	110	84
Jul	32	53	53
Aug 15	0	40	53
Aug 31	0	36	53

Bonneville Meets Flow Objectives of 125 kcfs in Apr:

Month	Occurrences out of 69 Years	Average Flow for 69 Years (kcfs)
Apr 15	69	205
Apr 30	69	263

McNary Meets the Following Flow Objectives:

Month	Occurrences out of 69 Years	Average Flow for 69 Years (kcfs)	Flow Objective (kcfs)
Apr 30	31	246	257
May	32	265	257
Jun	58	300	257
Jul	57	228	200
Aug 15	2	171	200
Aug 31	2	167	200

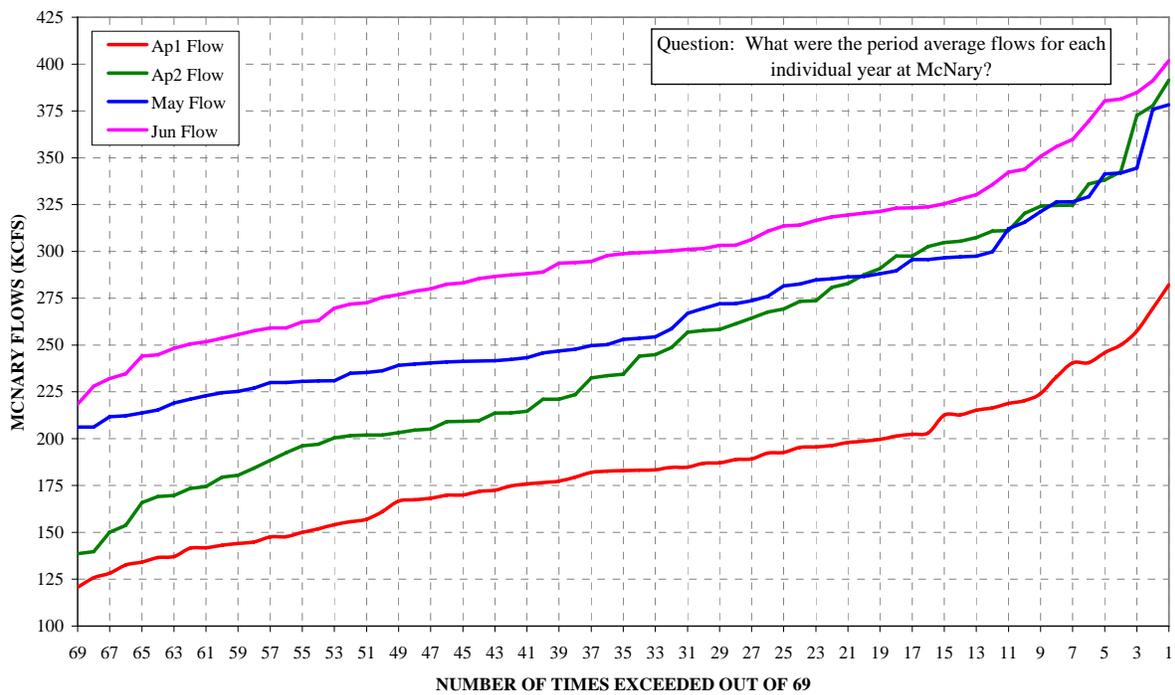
Projects Refill to within 1 ft by 30 June:

Month	Occurrences out of 69 Years	Average Elevation on 30 Jun for 69 Years
Libby	32	2455
Hungry Horse	69	3560
Grand Coulee	69	1290
Dworshak	69	1600

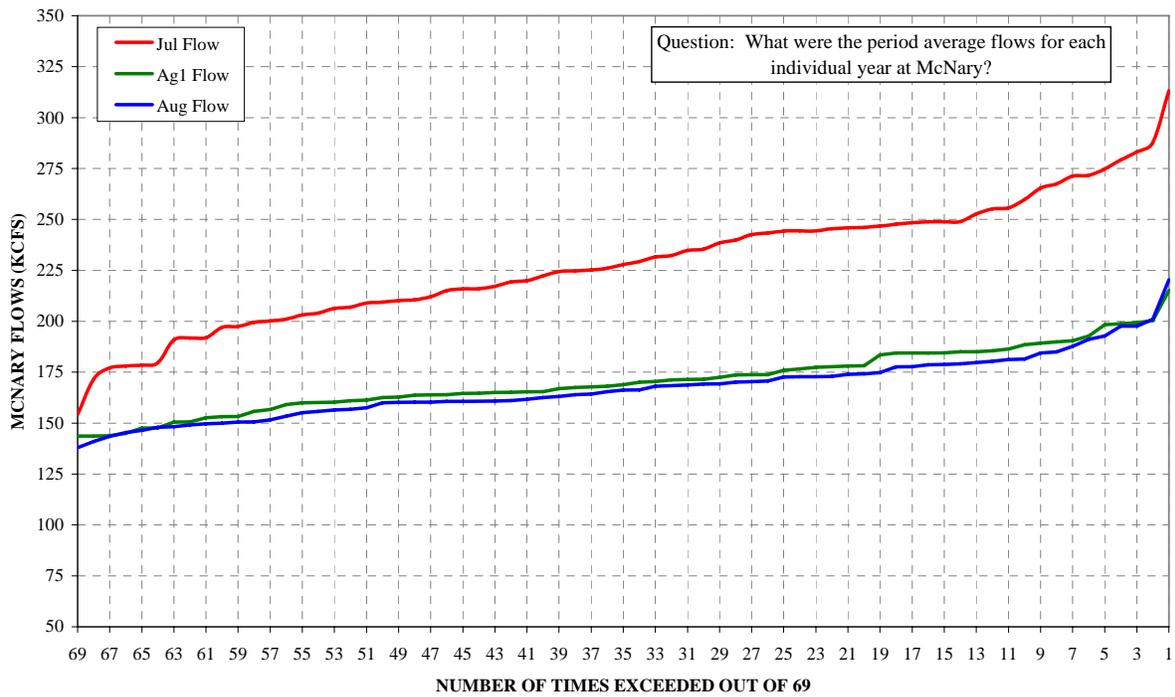
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HGH	5.4	2.0	6.5	9.9	1.5	9.4	7.3	6.0	4.6
GCL	103	84	87	133	123	144	150	115	120
PRD	112	95	97	151	156	186	170	127	128
DWR	6.7	3.7	13.0	9.5	4.9	6.2	11	12	11
BRN	29	32	34	35	25	26	18	19	18
LWG	45	51	84	97	112	110	53	40	36
MCN	162	149	184	246	265	300	228	171	167
TDA	170	156	199	257	268	300	229	173	169
BON	177	165	205	263	272	302	232	175	172

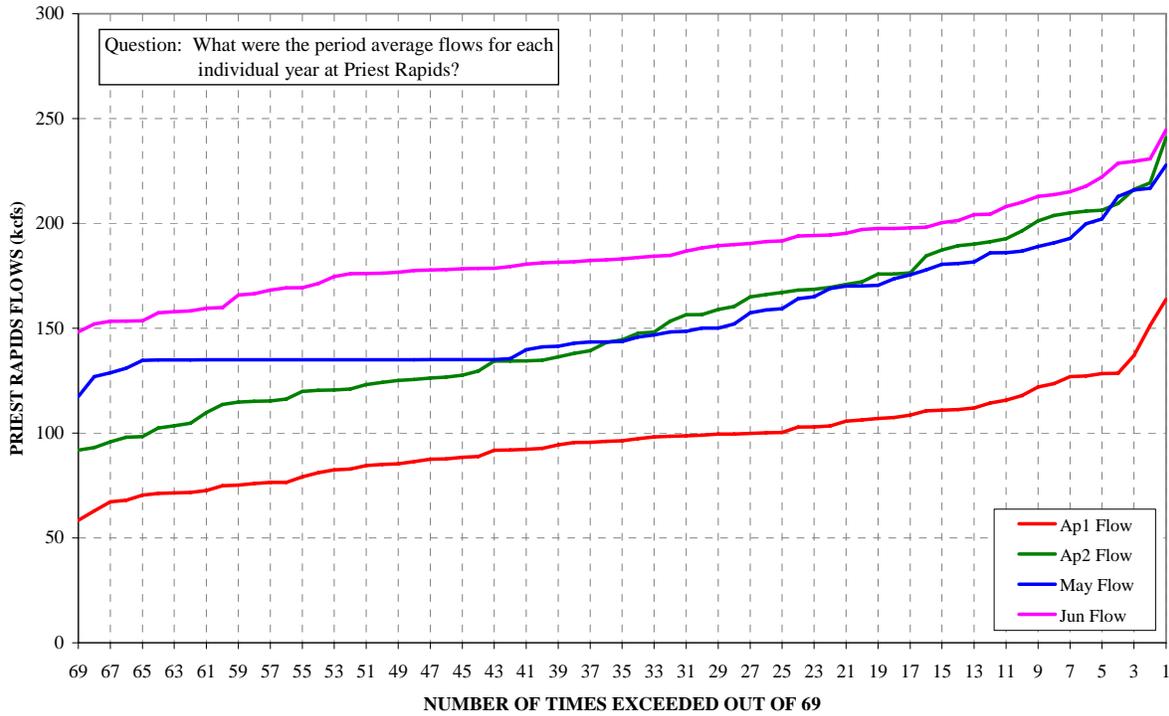
**MCNARY OUTFLOW  
APRIL - JUNE AVERAGES**



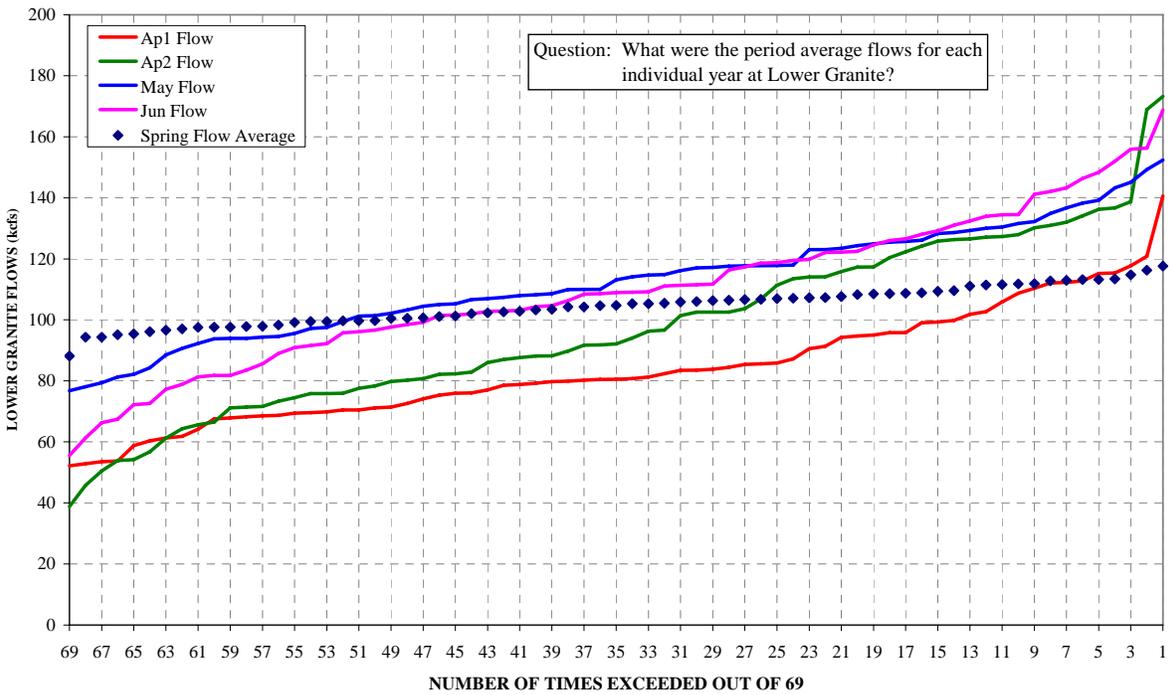
**MCNARY OUTFLOW  
JUL-AUG AVERAGES**



### PRIEST RAPIDS APRIL - JUNE FLOWS



### LOWER GRANITE APRIL - JUNE FLOWS



CENWP-OD-D

DATE: 3 APRIL 2006

SUBJECT: JOHN DAY T-1 FAILURE STATUS REPORT

1. Currently JD has assembled a technical team of folks from Engineering, HT&E, and JD electrical maintenance to assess the following:
  - A. Analyze what happened (i.e. cause of failure)
  - B. Assess what has been damaged; and then
  - C. Develop our options.
2. Known:
  - A. John Day's T-1 bank of transformers suffered a fault to ground on 2 March 2006.
  - B. We have 3 damaged (all 3 phases) low side bushings, downstream, Oregon side. Very probable that the adjacent 3 bushings are also damaged.
  - C. We have damage to the Isophase busing between the breakers and the low side bushings.
  - D. Post failure testing, to date, have produced some unfavorable results.
3. Plan:
  - A. Ongoing work:
    - a) We are continuing initial electrical testing to determine the health of electrical components – **Update: Have completed all the testing we can perform until the 3 damaged bushings are replaced with the temporary bushings from NWW.**
    - b) We have set up a purchase request for seven new replacement bushings. Currently it is in NWP contracting – **Update: Delivery Date is tentative Aug 06.**
    - c) Working to acquire three temporary replacement bushings from NWW – **Update: Bushings on-site April 5 2006.**
    - d) We are Coordinating with BPA for oil handling, storage & processing + SFRA testing. We are attempting to acquire assistance from BPA under the existing MOA for maintenance and repairs (Contract No. 01TX-10379) between the Corps and BPA. – **Update: Have developed a SOW for TBL to do this work. Preparing the funds and scheduling mobilization (Target - end of April).**
    - e) We are inspecting and cleaning the isophase bus between the breakers and the low side bushings – **Update: This work is continuing.**
  - B. Near Future Work: **This is work will be executed in coordination with TBL assistance (Target end of April).**
    - a) Will need to partially drain T-1 phase A, B & C transformers.
    - b) Replace faulted bushings with temporary replacements from NWW.
    - c) Finish electrical tests on Y winding.

- d) Evaluate test results. **NOTE: The critical path for returning T-1 to service will be determined by the inspection results of the three phase transformers.**

Kimberley C. Oldham  
Maintenance Manager/Assistant OPM  
John Day Project  
CENWP-OD-D

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Kimberley C. Oldham  
Maintenance Manager/Assistant OPM  
John Day Project  
CENWP-OD-D

# Pinnipeds in the Columbia

- ODFW has been capturing and marking sea lions at Astoria since 1997,
- Hot brand, “C” for Columbia and 5” tall numbers,
- Radio tagged some.
- Trying to learn about foraging behavior, abundance, activities and patterns of movement,
- Haven’t figured out much yet.

# Pinnipeds at Willamette Falls

- First observed sea lions in 1997,
- Small proportion of salmon taken (<1/2%)
- In low steelhead years, 4 - 5%,
- Easy to observe fish taken, must bring to surface to eat.
- In 2002, sea lions began moving to Bonneville,
- Animals seen at WF now seen at BON,

# Pinniped Deterrents Below Bonneville Dam

- About 50 animals consistently observed, recognized by hot brands,
- Section 109 of MMPA allows non-lethal hazing of nuisance animals,
- WA / OR / NMFS started hazing in 2005,
- Explosive charges and Acoustic Devices,
- Effective deterrents on naïve animals,
- Less effective the less naïve animals become.

# 2006 State / Federal Hazing

- WA / OR / NMFS joint program,
- Started April 2<sup>nd</sup>, continues through May,
- BRZ to 11 miles downstream,
- Zigzag back and forth across river,
- Set off cracker shells and seal bombs,
- Continuously repeated during daylight hours,
- 4 days on / 4 days off,
- Coordinated with Corps hazing at dam.

# More Drastic Measures

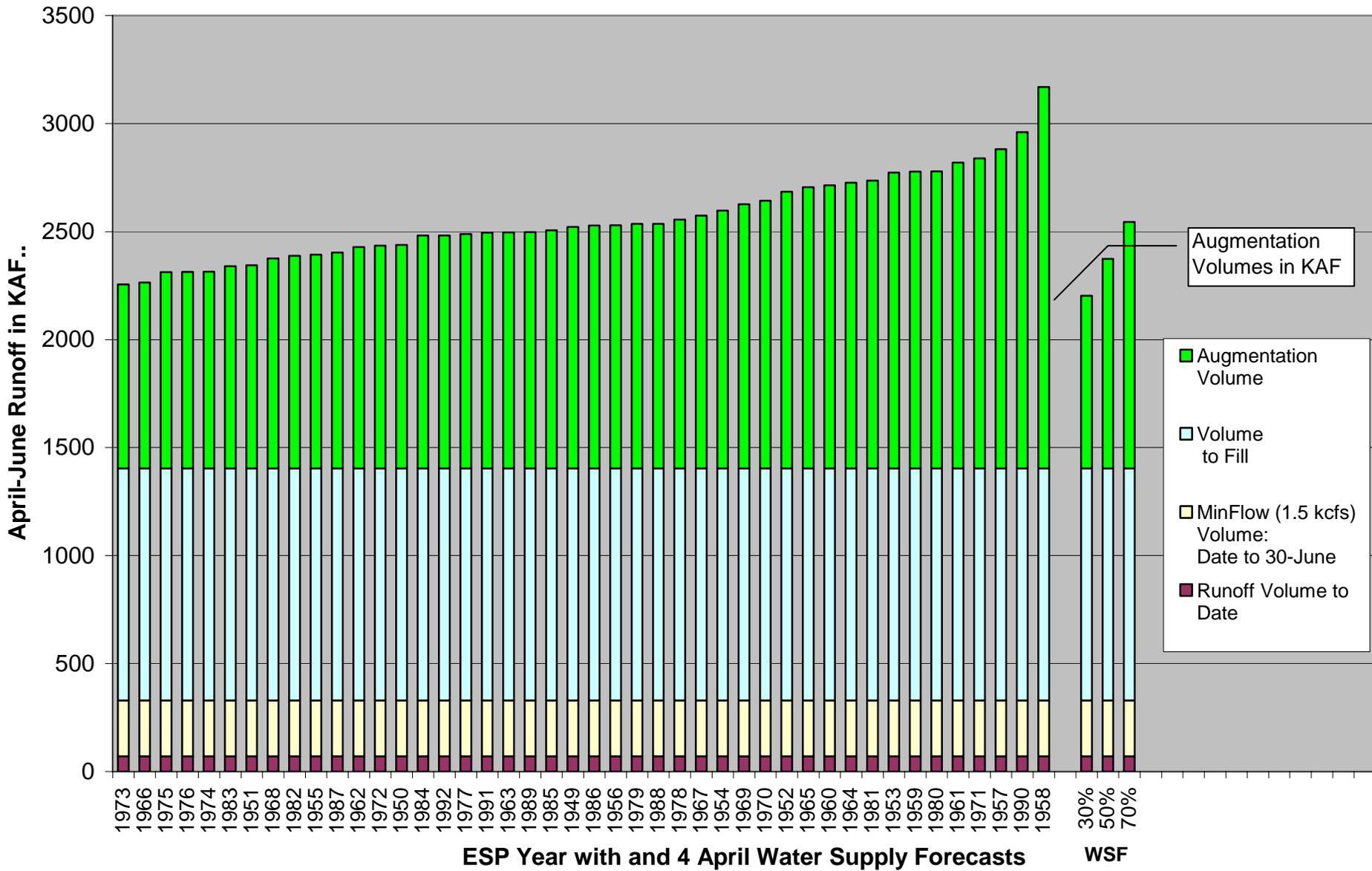
- Section 120 added to MMPA to deal with Ballard Locks problems,
- Allows lethal take under carefully controlled circumstances,
- Complicated, bureaucratic process, takes years,
- Only applies to listed salmon species, not to sturgeon.

# Section 120 Exception

- Requires individual animals to be identifiable (hot brands),
- Must show significant negative impact on listed species,
- Request submitted to Sec. of Commerce,
- Task Force established, broad representation,
- TF determines measures, not necessarily lethal removal,
- WA / OR working on letter of request, expect to submit late-summer 2006.

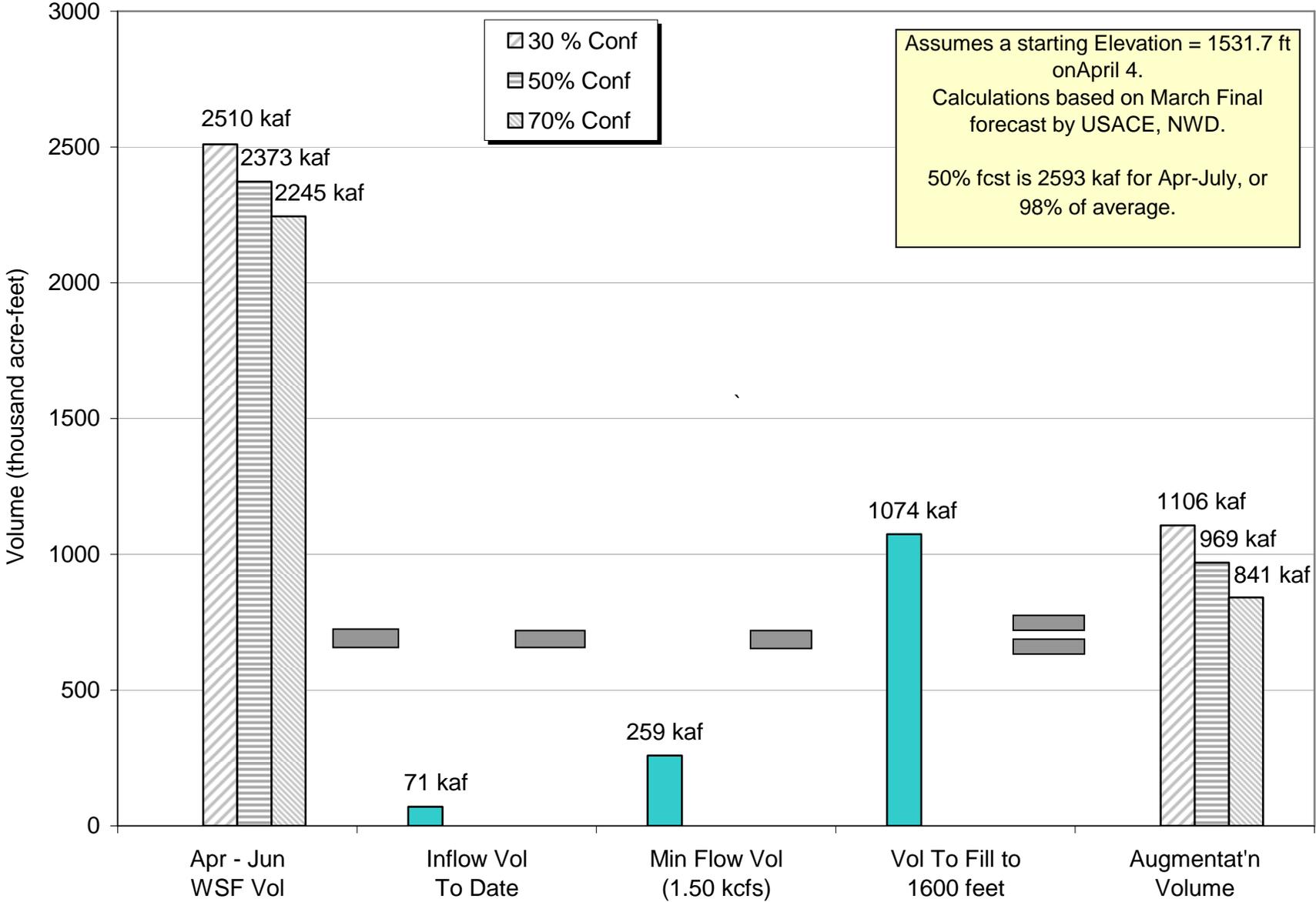
# Dworshak Augmentation Volumes ESP inflows and 4 April Water Supply Forecast

Observed data through **4-Apr**



Volumes at Dworshak  
1 April Through 30 June

Assumes a starting Elevation = 1531.7 ft on April 4.  
Calculations based on March Final forecast by USACE, NWD.  
50% fcst is 2593 kaf for Apr-July, or 98% of average.



Priest Rapids Operations				Prog.Q	Days Delta	Band constraint	Was it met?	Comments If NO, reason why.
Date	Ave.Q	Min.Q	Max.Q					
20-Mar	97.3	81.2	118.8	93.8	37.6	30	Y	Increasing flows on Monday
21-Mar	122.2	102.4	132.9	103.1	30.5	30	Y	Within margin of error (0.5 kcfs)
22-Mar	102.3	80.7	106.5	102.8	25.8	30	Y	
23-Mar	88.2	78.2	95.4	89.7	17.2	30	Y	
24-Mar	90.9	81.8	95.8	87.5	14.0	30	Y	
25-Mar	83.3	70.6	104.9	84.0				Inflows exceeded estimates by 18 kcfs on Saturday and 19 kcfs on Sunday
26-Mar	89.3	86.6	97.0	65.2	34.3	20	N	
Week Ave	96.2			89.4	25.0			
27-Mar	83.2	72.4	102.8	96.5	30.4	30	Y	Within margin of error (0.4 kcfs)
28-Mar	72.6	70.8	74.0	58.6	3.2	20	Y	
29-Mar	82.0	73.7	101.3	80.3	27.6	30	Y	
30-Mar	101.9	91.8	107.7	100.5	15.9	30	Y	
31-Mar	97.0	90.1	118.1	97.4	28.0	30	Y	
1-Apr	94.4	89.6	96.1	89.0				
2-Apr	94.2	89.9	97.7	93.8	8.1	30	Y	
Week Ave	89.3			88.0	21.0			



US Army Corps  
of Engineers®  
Portland District

# PINNIPED DETERRENTS AT BONNEVILLE DAM 2005-2006

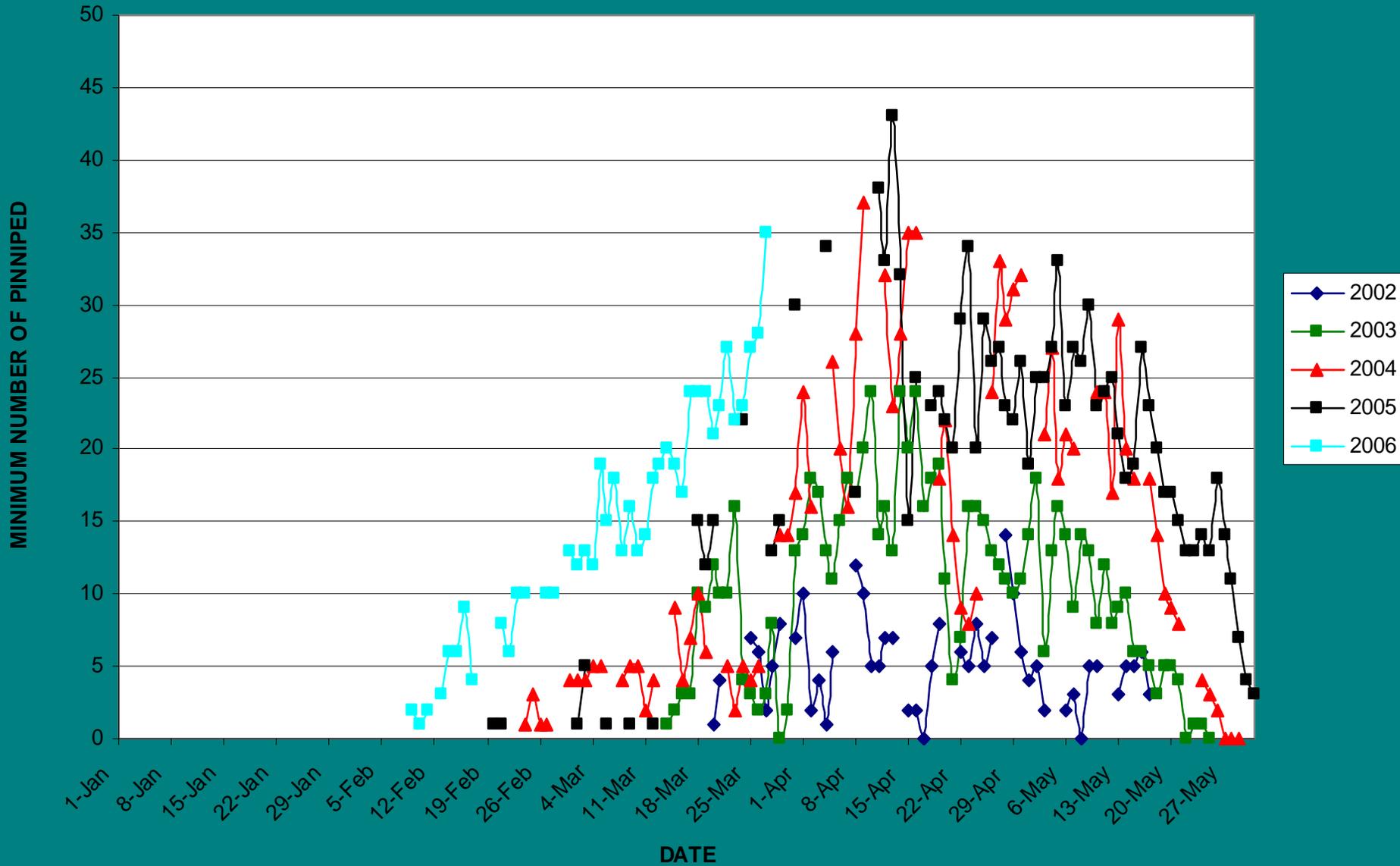
Fisheries Field Unit



# GOALS OF STUDY

- Seasonal timing, abundance of Pinnipeds
- Estimate # adult salmonids consumed (and other fish)
- Pinnipeds behavior within/between years
- **Explore methods to deter pinniped presence and predation on salmon**

# MINIMUM NUMBER OF PINNIPEDS PRESENT PER DAY AT BONNEVILLE DAM, 2002-2006





**PREDATION  
IMPACTS**

**AT**

**BONNEVILLE**

**DAM**



# Estimate of the Number and Percent of Salmonids Caught by Pinnipeds at Bonneville Dam from 1 January to 31 May

YEAR	TOTAL HOURS OBSERVED	ESTIMATED SALMON CAUGHT	TOTAL SALMONIDS PASSING BONNEVILLE	PERCENT TAKE
<b>2002</b>	<b>734</b>	<b>1,010</b>	<b>284,733</b>	<b>0.4%</b>
<b>2003</b>	<b>1,440</b>	<b>2,329</b>	<b>217,185</b>	<b>1.1%</b>
<b>2004</b>	<b>553</b>	<b>3,533</b>	<b>186,804</b>	<b>1.9%</b>
<b>2005</b>	<b>1,109</b>	<b>2,920+</b>	<b>82,006</b>	<b>3.4%</b>

# PREY SPECIES OBSERVED TAKEN FEB 10- MAR 27, 2006

<b>Unknown Salmonid</b>	<b>33</b>
<b>Chinook</b>	<b>34</b>
<b>Steelhead</b>	<b>167</b>
<b>Sturgeon</b>	<b>233</b>
<b>Other</b>	<b>19</b>
<b>Unknown Fish</b>	<b>166</b>



# UNPRECEDENTED STURGEON TAKE BY STELLERS



# STURGEON OBSERVED TAKEN BY SIZE BELOW BONNEVILLE DAM, FEB 10 - MAR 27, 2006

<u>&lt;2'</u>	<u>2-3'</u>	<u>3-4'</u>	<u>4-5'</u>	<u>5-6'</u>	<u>6-7'</u>	<u>&gt;7'</u>	<u>???</u>	<u>SUM</u>
9	36	48	56	25	6	1	52	233

# 2005 – ENTERED FISHWAYS



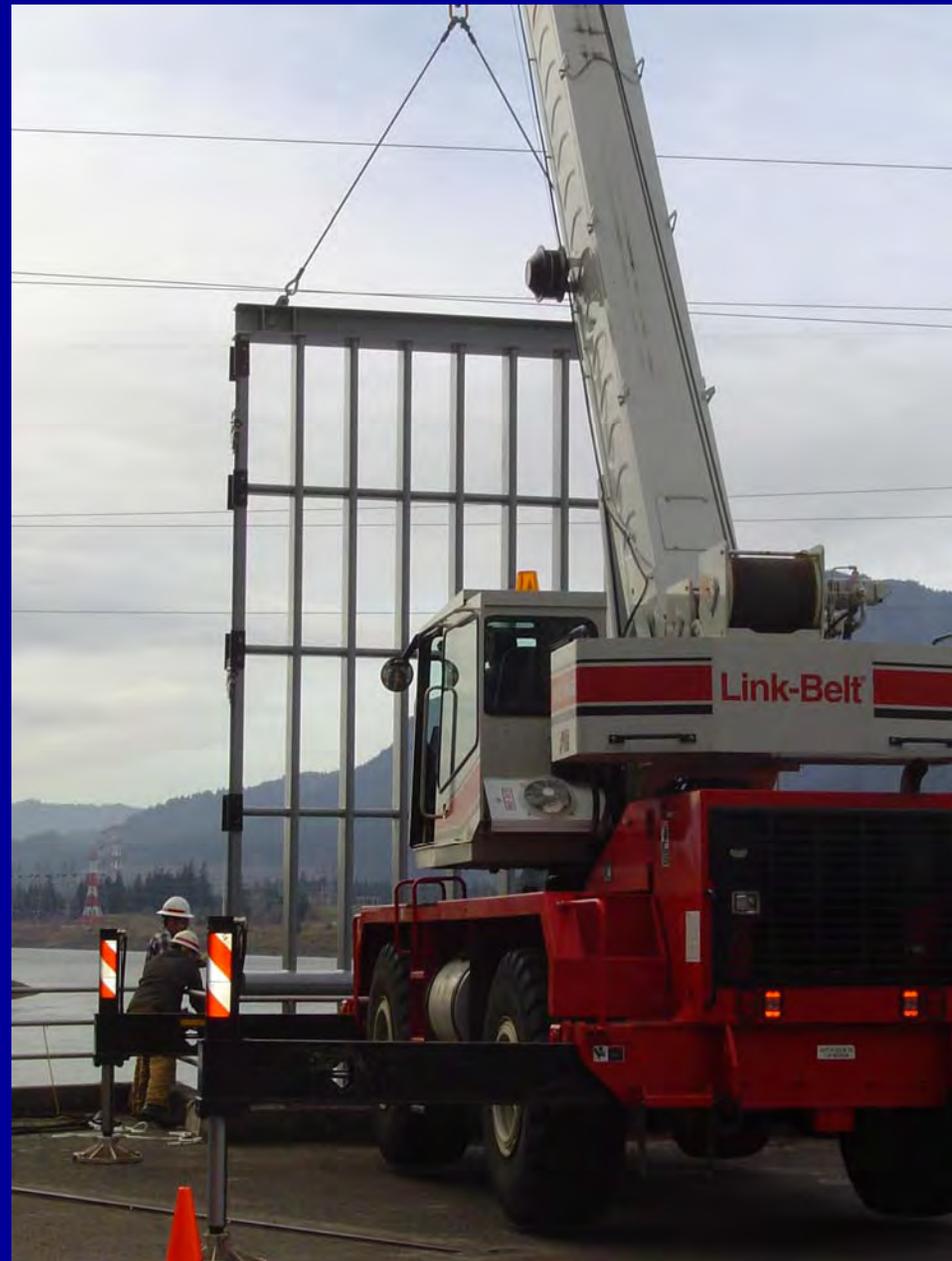
# ACTION FOR 2006

- Evaluate deterrent actions on abundance and predation:
  1. Exclusion gates
  2. Acoustics
  3. Harassment

# DETERRENTS (SLEDS)



- 8 MAIN FISHWAY ENTRANCES
- 12 ENTRANCE OPENINGS
- 24 SECTIONS
- VARY 10'-15' WIDE
- VARY 30-36' HIGH (2 SECTIONS)
- WEIGH OVER 10,000 LBS EACH SECTION
- GAP SPACE 15 3/8"
- GATES TO REMAIN IN PLACE THROUGH MAY
- COST OVER \$1 MILLION





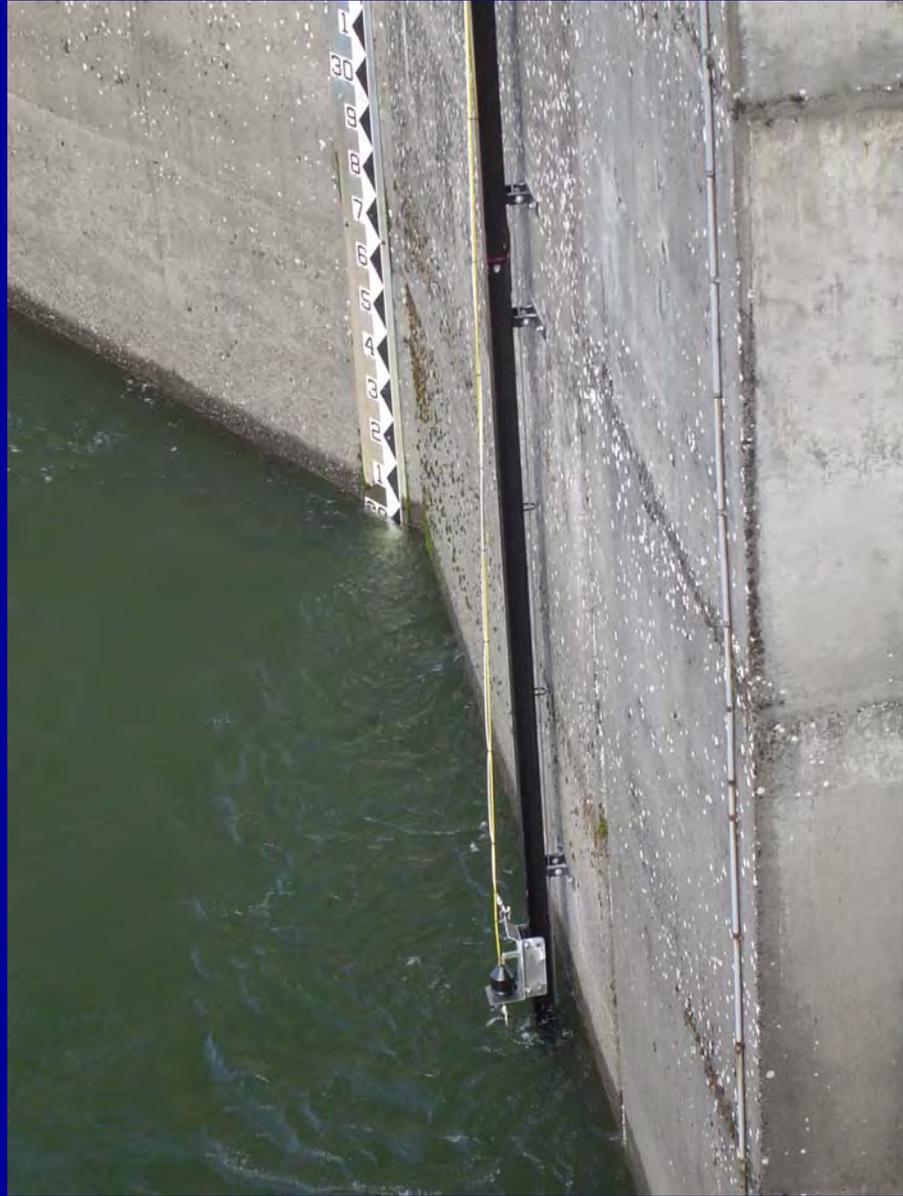
**EARLY IN  
SEASON  
C404 ABLE  
TO PASS  
THROUGH  
SLEDS**



# DETERRENTS (ACOUSTICS)

- Acoustic projectors deployed per each main fishway entrance  
(15 kHz, 205 dB range – should have no impact to any fish other than possibly shad – Popper, 2005). U of I to Monitor w/RT Fish









# DETERRENTS (HAZING)

- USDA/WS agents to harass using above water pyrotechnics and rubber bullets only, shore-based only, to chase off all haul out sites on project and when within ~100' of fishway entrances.



# HAZING OFF HAUL OUT SITES





# HAULING OUT IN 2006 NOW INCLUDES STELLERS





- U OF I WILL EVALUATE FISH PASSAGE THROUGH SLEDS WITH 360 RADIO TAGGED SPRING CHINOOK

# TEST

(**ABUNDANCE AND PREDATION**)

- DAYS OF **ACOUSTICS ON** AND **ACTIVE HARASSMENT**

VS

- DAYS OF **ACOUSTICS OFF** AND **NO HARASSMENT**

(RANDOM BLOCK DESIGN, 21 REPLICATES, 2 DAYS EACH TREATMENT – 0.05 ALPHA, POWER 80% -

BASED ON 2002-2005 DATA, SHOULD BE ABLE TO DETECT A 50% CHANGE IN DAILY PINNIPED ABUNDANCE AND PREDATION RATES)

# RESULTS THROUGH 6 OF 21 BLOCKS

ACOUSTICS AND HAZING	TOTAL PROJECT TAKE	PRESENCE W/IN 100' OF FW	TAKE W/IN 100' OF FW ENTRANCE
ON	82	2163	27
OFF	85	2442	24

# ADDITIONAL HAZING EFFORT

- NOAA/ODFW/WDFW  
– WILL BE  
ACTIVELY HAZING A  
COUPLE MILES  
BELOW BONN  
BEGINNING APRIL  
THROUGH END OF  
MAY



# CURRENT AND FUTURE PURSUITS

- STATES ARE ACTIVELY PURSUING LETHAL TAKE PERMIT FOR NUSANCE ANIMALS (C404).
- TRIBES ARE ACTIVELY PURSUING SUBSISTANCE HUNTING PERMIT FOR SEA LIONS.
- NMFS/ODFW/WDFW/COE ACTIVELY PURSUING POTENTIAL TO TRAP AND HOLD/TRANSFER C404 TO ????

**Mmmmm! Salmon!**  
**QUESTIONS?**



# COLUMBIA RIVER REGIONAL FORUM

## TECHNICAL MANAGEMENT TEAM

April 5, 2006 Meeting

### FACILITATOR'S SUMMARY NOTES ON FUTURE ACTIONS

Facilitator: Donna Silverberg

Notes: Robin Harkless

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 Minutes**

No comments on the notes were shared at this time.

#### **Sea Lion Update**

Robert Stansell, COE, shared information with TMT about the status of sea lion issues at and below Bonneville. The COE is exploring methods to deter the pinnipeds from preying on salmon, including exclusion gates (SLED's), acoustics and harassment. The sea lions have shown up earlier and in larger numbers this year. They were responsible for 3.4% take of the total run in 2005, compared to .4% in 2002. From February 10 to March 27, over 200 sturgeon have been taken, which is unprecedented. More stellars are staying at Bonneville, which is also unusual. NOAA, ODFW, and WDFW began active hazing downstream below Bonneville in early April to try to deter the animals from getting near the dam. The states are pursuing a lethal take permit; tribes are pursuing a subsistence hunting permit, and NMFS, Oregon, Washington and the COE are looking into holding/transport permits. If the Secretary of Commerce approves a lethal taking permit, a task force would be put together to determine the right approach for implementing this permit. As more is known about the actions being taken to acquire permits, information will be shared at TMT.

#### **Bonneville Second Powerhouse Corner Collector Operation**

Dennis Schwartz, COE, shared with TMT that a pit tag detection antenna has been installed at the B2 CC, and the COE needs to complete testing of this new device. Because of an influx of water into the system in February, the whole construction and testing schedules were delayed. The COE would like to pursue completion of the 10 day test which could require going beyond the April 10 start of spill date. The COE requested a 4-7 day extension (April 14-17) to allow time to complete the dry test.

A question was asked about what information would be missing with a shorter test. From the COE's perspective, because this is a new device and is being tested after installation for the first time, doing a full analysis will lead to better calibration as well as better biological testing in the future.

NOAA agreed to a short extension through Friday April 14 with a check in on Wednesday, April 12 to assess the progress of the testing. NOAA did not support delaying start up of the corner collector at Bonneville any further at this point but would reevaluate its position based on the April 12 report. USFWS said hatchery releases are expected around April 12 or 13, so urged the COE to complete the test and open the corner collector as quickly as possible. Oregon had some concerns and was not prepared to fully comment at this time. Idaho said April 10 spill start was a compromised date and that delaying the start of spill would negatively impact the fish – the Idaho representative did not object to extending the test to April 14, but requested that TMT revisit the situation next week to determine how to proceed. Washington and Montana supported Idaho's suggestion.

**ACTION:** There will be a TMT conference call on Wednesday, April 12, to discuss the status of the dry test, fish counts and how to move forward from there. The COE will share information with the salmon managers about the impacts of a shorter test.

### **Lower Granite Hydrophone Diving**

Cathy Hlebechuk explained that Lower Granite would operate with two units on April 5 and 6 to accommodate divers doing hydrophone tests. Elevation ranges were 733-735' on April 5 and 733-734' on April 6. With 92 kcfs flows coming through the system, the gas cap would be exceeded in order to meet the above ranges. The salmon managers offered that a TDG exceedance up to 125% for this short period of time would be acceptable, but that if TDG exceeded 125%, they recommended the COE pond the additional water and release it at night.

### **John Day Transformer Update**

Kim Oldham, COE, shared the latest information about the John Day T-1 outage that occurred on March 2. Three temporary replacement bushings were brought in by Walla Walla District, arriving on-site today (April 5). This will allow additional tests, and once the tests are completed, the COE will better understand the extent of the damage and the critical path for returning T-1 to service. At this point, 7 replacement bushings have been ordered, due to arrive sometime around August. The best case scenario would be to replace the bushings and have the transformer back in service in September. Some overhaul work will be done while the system is down, but this will not impede the timeframe or work to get the system back into service. The current capacity is about 20-22 kcfs per unit at full load, with 11 units available.

### **John Day Spill Operations, SOR 2006-3**

In response to the T-1 outage at John Day, the salmon managers put forward a request to spread the 60% nighttime spill level out over a 24-hour period (30% over 24 hours) to aid in juvenile and adult migration until repairs are completed or other operations arranged. Units 1-4 at the project have been studied and found to be preferred passage routes for fish. Without units 1-4 in service, the salmon managers anticipate an eddy will form at the juvenile bypass outfall and they believe that spreading spill over 24 hours would aid in safer migration. Modeling of passage given the current structural condition is not available, and while recognizing the proposed operation is a deviation from the court-ordered spill pattern, the salmon managers felt this would be the best operation from a biological perspective.

The Corps said Judge Redden's opinion, AA declarations and the Spill Implementation Plan clearly state 0 daytime 60% nighttime spill commence April 10. Since the SOR was first given to them the afternoon before, the Corps has not had a chance to review the request from a biological basis. Corps policy guidance is to implement 0/60% and recommended Salmon Managers and AA biologists observe fish conditions. If adverse conditions result in negative fish impacts, TMT could then make a recommendation to change operations. The COE added that they want to make an operational decision that is legally and biologically sound. Questions remained regarding the process for moving forward in the event a consensus was reached to recommend a change in spill patterns from the court ordered operation.

**ACTION:** A conference call was scheduled for Wednesday, April 12 at which TMT will discuss this issue further. As next steps, TMT members agreed to consult with their legal and policy advisors about if and when to take a recommendation to the Judge or other appropriate processes. The COE will share the SOR with their biological experts for them to review. Cathy Hlebechuk agreed to raise the process questions at the 4/6 IT meeting.

**UPDATE:** This issue was discussed at IT on Thursday, April 6. Following that meeting, further off-line discussion between COE, NOAA and others led to agreement to implement the 0/60% operation starting Monday, April 10 and for AA and Salmon Manager biologists to discuss the operation and monitor conditions.

### **Second Quarterly Report and 2006 Fish Passage Implementation Plan**

Eric Braun, COE, reported that a quarterly report was shared with Judge Redden on April 3, and is available on [www.salmonrecovery.gov](http://www.salmonrecovery.gov). The report includes an update on collaborations relative to the remand, resolution for observer status, the federal position to extend the remand, and expiration of BPA's contract for the Fish Passage Center. A spill implementation plan was submitted on March 31, also available on the website, that includes Judge Redden's specific order and declarations from General Martin and Rock Peters, COE.

### **HYSSR/ESP Runs**

Julie Amman, COE, shared inflow forecasts on current conditions. Details about the assumptions that went into the models are included in the links to this agenda item on the TMT page.

**ACTION:** TMT members will share suggestions with the COE for alternative scenarios for input to the model (e.g. additional flows in June at Dworshak).

### **Flow Augmentation Volumes**

Bar and ESP models of augmentation volumes for Dworshak were shared, and can be found linked to the agenda item on the TMT page. The COE will add models for Libby and Hungry Horse at the next TMT meeting.

### **Spring/Summer Update**

The Spring/Summer update of the WMP is on the web and available for comment. TMT will discuss the draft at the April 19 TMT meeting.

## **Operations Review**

*Reservoirs* – Libby was at 2403.7', with 6.2 kcfs outflows. Dworshak was at 1531.7', with full load out targeting 1526.3' end of April flood control elevation. Inflows at Lower Granite were at 92 kcfs due to increases at Brownlee. John Day and Lower Monumental will require flexibility with spill patterns to accommodate safe navigation. Any changes will be short-term (minutes). McNary unit 6 will operate outside 1% for about a day, as part of a long-term upgrading plan. McNary began spilling on 4/3. Bonneville released 219 kcfs on 4/4. Hungry Horse was at elevation 3526', increasing outflows to meet flood control. The 4/10 flood control target is 3523.5', 3522' on 4/15, and 3518' on 4/30.

The Grand Coulee shifted flood control was 1248.4' on April 10. With Grand Coulee draft rate limitations the actual target is now 1250.5'. Grand Coulee was currently at 1252'. The end of April target is 1233.4'.

*Fish* – Rick Kruger, ODFW, reported that scale analysis data for chum will be available in about a month; Washington and Oregon are coordinating efforts on this. It will be added to a TMT agenda in May. To date, 149 chum juveniles have been counted; this number is lower than usual. Temperature information forecasts the end of emergence around the end of April, but it could be later with so few juveniles seen at this point. Oregon and USFWS will look more closely at the data and share insights at the next TMT meeting. Lower Granite yearling chinook are in the thousands; the run is earlier than normal. Steelhead numbers are strong, also in the thousands at Lower Granite. Few adults have been observed at Bonneville at this point. Kokanee and sockeye counts out of Dworshak reservoir at Lower Granite are mostly kokanee at this point.

*Power system* – Nothing to report.

*Water quality* – Jim Adams, COE, shared that 90 kcfs inflows at Lower Granite would result in 57 kcfs spill through each turbine, producing about 121% TDG. 117% TDG was expected at Little Goose in the upcoming few days; the COE will monitor this.

*Other* – Kyle Dittmer, CRITFC, shared a flyer for a free lecture, "Wind Energy Meteorology", to be held in Portland on 4/25. All are welcome to attend.

## **TMT Meeting Schedule**

TMT meetings are scheduled for April 12 (conference call) and 19. These dates are subject to change. Check the TMT web page for updates.

*Wednesday, April 12 CONFERENCE CALL* agenda items include:

- Bonneville PH 2 corner collector operations
- SOR 2006-3/John Day spill operations

*Wednesday, April 19* agenda items include:

- Priest Rapids update
- HYSSR/ESP runs

- WMP Spring/Summer update
- Operations review: spill, chum numbers, Upper Snake flow augmentation

## Technical Management Team Meeting

April 5, 2006

### **1. Greetings and Introductions.**

Today's Technical Management Team meeting was chaired by Cathy Hlebechuk and facilitated by Donna Silverberg. The following is a summary (not a verbatim transcript) of the topics discussed and decisions made at this meeting. Anyone with questions or comments about these notes should contact Hlebechuk at 503-808-3942.

### **2. Priest Rapids Update.**

Paul Wagner said there was one violation of the flow band constraint, on March 26. Grant County PUD is taking this violation very seriously, he said, and has taken steps to ensure that it does not recur.

### **3. Bonneville Second Powerhouse Corner Collector Operation.**

Dennis Schwartz said the high-flow PIT-tag detector antenna has now been installed in the B2 corner collector; the system is now ready to be watered up. The system has been tested, but additional "dry testing" is needed. The preliminary dry testing phase was supposed to take 10 days; however, a week of construction time was lost during February due to high precipitation and instream flow.

We've made up about four of those days, said Schwartz, but we're still about three days behind. Spill was supposed to begin at Bonneville on April 10, but we would like to be able to continue our dry testing for as long as it takes, said Schwartz – I don't think it will take more than four days past the 10<sup>th</sup> to complete the dry testing. During this process, the corner collector will need to be opened and closed several times in order to create a calibration grid; given the high priority and expense of this system, we would like to request four additional days of testing, if needed, in order to be sure the system performs effectively, said Schwartz. It could take less time, and it could take more, added Scott Bettin – we won't really know until we start testing, but the important thing is to get it right. Schwartz added that the contractor for this work, Digital Angel, is aware of the tight time-frame for completing this work and has agreed to work 20-hour days until the system is up and running.

What do we gain if we do this testing early – how is this going to help us next year? Tom Lorz asked. This is like the first car ever built – you have to turn it on and see if it works, Bettin replied. What if it doesn't work? Lorz asked – if there's a big problem, that will lead to delays in future PIT-tag work. That's what we're trying to circumvent, Schwartz replied – we want to see what this thing will do. They can only do so much preliminary testing back in Minnesota; we need to see how it performs on-site, under actual conditions. the goal is a better biological test in 2007.

The group devoted a few minutes of discussion to this topic; there was general agreement that there are few juvenile fish passing Bonneville, currently. Four extra days probably won't be a big deal at this point, but I wouldn't want to see any additional delay in corner collector operation, said Gary Fredricks. David Wills said the Fish and Wildlife Service agrees. Russ Kiefer expressed disappointment that the PIT-tag detection system won't be ready on time; once again, the fish have to suffer because we can't do our jobs, he said. However, Idaho agreed to convene a TMT conference call on this topic next Wednesday, April 12; at that time, the group will review the current status of this project, and make a decision as to how much additional testing time may be needed. It was further agreed to take a look at current fish passage data and the impacts of non-operation of the corner collector at that meeting.

#### ***4. Sea Lion Update.***

Robert Stansell gave the group an update on the sea lion situation at Bonneville Dam this spring. He put up a series of overheads, titled "Pinniped Deterrents at Bonneville Dam," touching on the following topics:

- Objectives
- Seasonal distribution, 2002-2006 (the sea lions are arriving earlier, and in larger numbers, each year)
- Predation impacts at Bonneville Dam
- Minimum number of pinnipeds present per day at Bonneville Dam – up to 39 per day, and the salmon run has yet to arrive
- Estimate of the number and percent of salmonids caught by pinnipeds at Bonneville Dam – chinook, steelhead, sturgeon, other, unknown fish – only 18 chinook have passed Bonneville to date, and more than 70 have been taken by sea lions in the Bonneville tailrace. More than 200 sturgeon have been taken by sea lions to date, some more than 6 feet in length
- Actions for 2006: exclusion gates, acoustics and harassment – pyrotechnics and rubber bullets
- 8 main fishway entrances at Bonneville Dam, blocked off with “SLEDS” with openings 15 3/8 inches wide; total cost \$1 million+. SLEDS are in place at all gates now.
- Early in the season, C404 was able to pass through the SLEDS. He is currently in the Washington-side fish ladder; it is believed he is entering through the floating orifice gates. Steps are being taken to close that entrance to sea lion entry.
- Acoustic deterrents are also being used; they have an effective range of 100 feet in calm unaerated water. They are painfully loud within 30 feet, but do not affect salmon. C404 seems likewise unaffected – a determined animal who knows a good food source is available is not deterred.
- Harassment is also being used – pyrotechnic devices, rubber bullets, high-pressure hoses.
- Endangered Stellar sea lions are showing up in unusually large numbers, and are starting to haul out at Bonneville, the first time this behavior has been seen.
- U of I will be evaluating fish passage through the SLEDS with 360 radio-tagged spring chinook.
- Project personnel will also be evaluating sea lion abundance and predation during days of acoustics on and active harassment vs. days of acoustics off and no harassment. So far, sea lion take and presence seems little-affected by acoustics and harassment.
- The Corps is evaluating the possibility of moving C404 to a Seaworld-type facility; no takers so far.
- ODFW and WDFW have begun active boat hazing below Bonneville; so far, little impact has been seen.
- The states and tribes are also actively pursuing a lethal take permit through Section 120; it is a lengthy process (2+ years). In the meantime, the Corps is planning to try to trap C404 with a floating barge trap.

Rick Kruger described the ongoing sea lion predation on sturgeon at Bonneville as a very serious problem, from Oregon’s perspective. John Wellschlager noted that it is disheartening, to say the least, for the region to

spend huge sums to improve passage conditions at the dams, only to see the sea lions have such a significant impact.

### ***5. John Day Transformer Update.***

Kimberly Oldham updated the TMT on the current status of the John Day transformers. We're continuing to try to find the cause of the failure and to assess the damage, she said; once that process is completed we can outline potential fixes. We know we had a fault-to-ground that damaged three bushings on the Oregon side. We have completed all the testing we can perform until we replace the three damaged bushings. To do that, we have to draw down the oil in the three transformers, she said; we're working on a scope of work as we speak, get the funds in place and get the repairs underway by the end of April. Each transformer will need to be completely drawn down and visually inspected before it can be placed back in service.

We have seen some abnormal test results so far, Oldham said; if more than one transformer is damaged, we do not have additional spare phases in stock. We don't yet have a critical path to a return-to-service date, she added. If the damage is limited, would return to service by the end of May be possible? Wagner asked. No, Oldham replied – it will be early September before these repairs can be completed, in the best-case scenario. We're doing everything we can to expedite this work, she added, but nothing is certain at this point. In response to a question, Oldham said the Corps will complete its normally-scheduled six-year maintenance/overhaul work on at least two of the units while the units are off-line; however, this work will not delay the return of these units to service.

The bottom line is that 11 units are still in service at John Day, with a hydraulic capacity of about 242 Kcfs at full load (the high end of 1% peak efficiency).

### ***6. John Day Spill Operations.***

Russ Kiefer said the salmon managers are concerned about the fact that the south shore ladder at John Day passes the most fish; without those units in operation, a dead area will be created that will make it more difficult for adult salmonids to find and use the ladder. The adult return forecast is low this year anyway, he said; this is only going to increase the negative impact. We need to figure out the best way to mitigate the adult and juvenile impacts at John Day Dam, within the economic constraints we face, Kiefer said; the salmon managers believe the best solution is to go to 30 percent spill at John Day, 24 hours a day.

We realize that this is different than what is in the court order, currently, Kiefer said; however, I am confident that if we can reach regional consensus that this is the best solution, given the mechanical situation at John Day Dam in 2006,

Judge Redden will not oppose this change. Kiefer submitted SOR 2006-03, outlining this requested change in operations. Wagner said NOAA Fisheries supports this SOR.

The group devoted a few minutes of discussion to SOR 2006-03. Wellschlager noted that the action agencies are under court order and cannot deviate from the court-ordered spill operation until otherwise instructed by Judge Redden. The SOR discusses the concern that an eddy may form, he said; however, we don't know for a fact that the eddy will materialize. He suggested that it may make sense to monitor the situation to see whether the eddy does in fact appear, given the fact that the change from zero daytime spill and 60 percent spill at night to 30 percent spill 24 hours a day will cost Bonneville ratepayers an estimated \$2-\$4 million.

Various salmon managers reiterated that, given the mechanical situation at John Day, they do not support waiting to see whether or not the eddy actually appears – in their best professional judgement, 30 percent spill 24 hours a day is the best operation for fish passage in 2006. I would add that, in these low-run years, every surviving fish becomes more critical, Wagner said. In response to a question, Wagner said NOAA's lawyers are not yet aware that a change may be needed to the court-ordered spill operation.

It was agreed that the various TMT representatives will discuss this issue with the biological, policy and legal personnel within their agencies, and will continue to explore the best way to reach regional consensus and move forward. It was further agreed that this is a highly time-sensitive issue, which needs to be resolved as soon as possible. Kiefer added that he is not comfortable with any more delay than is absolutely necessary; he suggested that the TMT send a letter to Judge Redden expressing the consensus support of the salmon management agencies for this change in operation. Wellschlager said that, in his opinion, this would be inappropriate; it is up to the Corps, as the action agency charged with implementing the spill operation, to request this change in operation.

Hlebechuk said the Corps wants to do the right thing here; however, they need a little more time to evaluate the biology merit of the proposed change in operation. Jim Litchfield said his understanding is that any of the parties in the lawsuit can have their lawyers start this process by communicating with the other parties in the remand, and suggested that this would be the most expeditious path forward.

Ultimately, it was agreed that the Corps will consult with their biologists on the merits of the operation and research the process for making this type of adjustment to the court-ordered operations, and will bring their findings for discussion at tomorrow's IT meeting.

## **7. Second Quarterly Report and Implementation Plan.**

Eric Brown said the second remand report was filed with the court on April 3; it is available from the salmonrecovery.gov website. The 2006 Fish Passage Implementation Plan, which includes spill operations, was also submitted to the court, and is also available from the salmonrecovery.gov website.

Brown briefly reviewed the contents of the quarterly report (please see the full text of this document for details), touching on the activities of the policy work group, the expiration of BPA's contract with the Fish Passage Center, and the current status of steps 1-7 in the remand process. In response to a question, Brown said this is a federal government report, not a Corps report.

Brown also reviewed the 2006 Fish Passage Implementation Plan, dated March 31; it comprehensively describes the plans for fish passage at all eight FCRPS dams, including the plans to spill as ordered by the court. It also includes the planned research at each of the projects, emergency protocols and adaptive management provisions, which may have some applicability to the John Day SOR discussed earlier in today's agenda.

## **8. HYSSR/ESP Runs.**

Julie Ammann reviewed the April 3 ESP HYSSR runs, the first of the year. In general, she said 2006 is shaping up to be a good water year; according to HYSSR, at Priest Rapids, the April 15, April 30, May and June flow objectives would be met in virtually all of the 44 historic runoff shapes modeled. At Lower Granite, the picture looks like this:

Month	Occurrence out of 44 years	Average flow for 44 years (Kcfs)	Flow objective (Kcfs)
April 15	3	89	100
April 30	23	107	100
May	37	117	100
June	41	119	85
July	28	60	54
August 1-15	0	37	54
August 16-31	0	34	54

Ammann also shared a series of ESP inflow volume graphs for the eight FCRPS projects (please refer to the hot-link from today’s agenda on the TMT homepage for details). She also provided the following March final volume comparisons:

Grand Coulee: 5.79 MAF (Apr-Aug), 96% of average  
 Lower Granite: 2.47 MAF, (Apr-Jul), 115% of average  
 The Dalles: 91.2 MAF (Apr-Aug), 98% of average  
 Hungry Horse: 2.2 MAF (Apr-Aug), 107% of average  
 Libby: 6.3 MAF (Apr-Aug), 102% of average  
 Dworshak: 2.6 MAF (Apr-Jul), 99% of average

Ammann also provided this table of period average flows, by project:

Project	April 1-15	April 16-30	May 1-31	June 1-30	July 1-31	August 1-15	August 16-30
LIB	4.6	5.9	13.9	13.3	25.4	16.1	15.2
HGH	9.9	9.2	4.2	6.3	6.3	4.9	8.1
GCL	118	155	182	154	145	104	94
PRD	123	166	205	181	159	111	99
DWR	13	16.3	8.2	2	11	11	11
BRN	39	40	29	27	16	14	14
LWG	89	107	117	119	60	37	34
MCN	219	274	324	309	225	151	136
TDA	232	291	338	320	229	154	140
BON	235	296	343	325	232	157	142

**9. Flow Augmentation Volumes.**

Ammann also provided a series of bar charts and ESP volume “spaghetti plots” for Dworshak, showing the current elevation, the volume to fill, the current water supply forecast and the expected flow augmentation volume given the 44 historic water years modeled. The bottom line is that we will be releasing more than minimum flow from Dworshak in 2006, Ammann said; how much more won’t be known until a little later in the season.

**10. Spring/Summer Update.**

Hlebechuk said the Corps is awaiting comments on the newly-released spring/summer update; she asked that any comments be submitted at the next TMT meeting on April 19.

### **11. Operations Review.**

Hlebechuk said Libby is at elevation 2403.7 feet, releasing 6.2 Kcfs, drafting slightly. Dworshak is currently at elevation 1531.7 feet, releasing full load; the April 30 flood control elevation at that project is 1526.3 feet, and that's what the Corps is shooting for. Lower Granite was releasing 74 Kcfs yesterday; Brownlee increased its outflow yesterday by 20 Kcfs, so there is now 92 Kcfs passing Lower Granite.

At John Day and Lower Monumental, there are navigation spill changes when traffic occurs, as has been the case in the past, Hlebechuk said. That occurs for safety reasons, she explained. McNary unit 6 is being tested outside the 1% range for one day on Sunday, as part of the longterm McNary update effort.

Spill started at McNary yesterday, said Hlebechuk; the project is spilling 53-119 Kcfs, depending on hourly flow. The project is currently releasing up to 258 Kcfs of total river flow; four units are currently out of service at the project, although two of those units will be back in service by this weekend. Bonneville outflow was 219 Kcfs yesterday.

At Hungry Horse, said Tony Norris, the current elevation is about 3526 feet; discharge has increased to 4.25 Kcfs to draft the project toward 3523.5 feet, its April 10 flood control elevation. The April 30 flood control target is 3518 feet at Hungry Horse. Grand Coulee is currently at elevation 1252 feet and drafting toward its shifted flood control elevation of 1250.5 feet on April 10. We're bumping up against draft rate limits at Grand Coulee, said Norris; we have a lot of water to move to reach that April 10 target. The bottom line is that you can expect to see high flows at Priest Rapids through the end of April, because we need to draft Grand Coulee by about 20 feet – to 1233.4 feet – by April 30.

Moving on to fish, Wills said spill is scheduled to begin April 10 at the Lower Columbia projects. He said the Fish and Wildlife Service does not see a problem with spill and TDG for chum below Bonneville. Kruger said ODFW has this year's scale analysis data for the chum and will bring that information to a future TMT meeting. Wills said chum seining counts to date are 149 juvenile chum, compared to 1,300+ for this date last year. In other words, we're lagging behind last year's emergence timing, Wills said. Based on temperature unit data alone, the end of emergence would be April 15, he added; however, actual emergence, as measured by seining, seems to be lagging somewhat behind. There is more flow in the river this year, which may be reducing the effectiveness of seining, Wagner observed.

Wagner said current juvenile passage numbers are being posted daily; there are already thousands of juveniles showing up at Lower Granite. Juvenile salmon are also showing up in large numbers at John Day. We're also seeing thousands of juvenile steelhead showing up at Lower Granite, he said. Very few adult spring chinook have passed Bonneville to date – less than 10 fish per day, 54 fish year-to-date. About 3,100 adult steelhead have passed Bonneville to date, Wagner added.

Jim Adams reported that TDG levels are creeping upward at the Lower Snake projects; TDG levels in the Little Goose forebay are expected to reach 117% within the next few days.

### **12. Next TMT Meeting Date.**

The next meeting of the Technical Management Team was set for Wednesday, April 19. Meeting summary prepared by Jeff Kuechle, BPA contractor. [Meeting went until 12:30]

### **TMT Participant List April 5, 2006**

<b>Name</b>	<b>Affiliation</b>
Donna Silverberg	Facilitation Team
Cathy Hlebechuk	COE
Jim Litchfield	Montana
Julie Ammann	COE
Kyle Dittmer	CRITFC
Kevin Nordt	Mid-Cs
Robin Harkless	facilitation Team
Jim Adams	COE
Scott Boyd	COE
Glenn Traeger	Avista
Dan Spear	BPA
Russ Kiefer	IDFG
David Wills	USFWS
John Wellschlager	BPA

Tony Norris	USBR
Paul Wagner	NMFS
Robert Stansell	COE
Bernard Platt	COE
Tim Heizenrater	PPM
Todd Cook	PPM
Don Faulkner	COE
Mike Buchko	Powerex
Dave Statler	NPT
Margaret Filardo	FPC
Dave Benner	FPC
Barry Espensen	CBB
Jim Gaspard	BC Hydro
Rick Kruger	ODFW
Scott Bettin	BPA
Lance Elias	PPL
Bruce MacKay	Consultant
Gary Fredricks	NOAA
Tom Lorz	CRITFC
Cindy LeFleur	WDFW

# TECHNICAL MANAGEMENT TEAM

**BOR:** Tony Norris / John Roache

**BPA:** John Wellschlager / Dan Spear

**NOAA-F:** Paul Wagner

**USFWS:** David Wills / Steve Haeseker

**OR:** Rick Kruger / Ron Boyce

**WA:** Cindy LeFleur

**ID:** Russ Kiefer

**MT:** Jim Litchfield

**COE:** Cindy Henriksen / Cathy Hlebechuk

## TMT MEETING

Wednesday April 5, 2006, 0900 - 1200 hours  
1125 N.W. Couch Street, Suite 4A34  
Portland, Oregon 97208  
Conference call line: 503-808-5190

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 Donna Silverberg with any issues or concerns they would like to see addressed.  
Please e-mail her at [dsilverberg@cnmw.net](mailto:dsilverberg@cnmw.net) or call her at (503) 248-4703.*

## AGENDA

1. Welcome and introductions.
2. Review Minutes
  - i. [\[Minutes 2005\]](#) 
  - ii. [\[Minutes 2006\]](#) 
3. Priest Rapids Update (timeframe with deviation)
4. Sea Lion Update
5. John Day transformer update
6. Second Quarterly Report and Implementation Plan
7. HYSSR/ESP Runs
8. Flow Augmentation volumes
9. Water Management Plan - Final Emergency Protocol Appendix 1
10. Operations Review
  - a. Reservoirs
  - b. Fish
  - c. Power System
  - d. Water Quality
11. Other
  - Set agenda for next meeting **April 17, 2006.** [\[Calendar 2006\]](#) 

*Questions about the meeting may be referred to Cathy Hlebechuk at (503) 808-3942, or Cindy Henriksen at (503) 808-3945*

# TECHNICAL MANAGEMENT TEAM

**BOR:** Tony Norris / John Roache

**BPA:** John Wellschlager / Dan Spear

**NOAA-F:** Paul Wagner

**USFWS:** David Wills / Steve Haeseker

**OR:** Rick Kruger / Ron Boyce

**WA:** Cindy LeFleur

**ID:** Russ Kiefer

**MT:** Jim Litchfield

**COE:** Cindy Henriksen / Cathy Hlebechuk

## TMT CONFERENCE CALL

Wednesday April 12, 2006, 1000 - 1100 hours

1125 N.W. Couch Street, Suite 4A34  
Portland, Oregon 97208

Conference call line: 503-808-5190

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

**NOTE: This is a conference call.**

**If you wish to come to the building, please call Cathy Hlebechuk.**

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

## AGENDA

1. Welcome and introductions.
2. Bonneville Second Powerhouse Corner Collector - progress on electronics testing and calibration of the antenna, initially in the dry. Discussion of [fish numbers](#) and when to start operation of B2CC. [\[B2CC Antenna Update\]](#) 
3. [The Dalles Dam Spillway Limitations](#)
4. Default operation during high flows.
5. Other
  - Set agenda for next meeting **April 19, 2006.** [\[Calendar 2006\]](#) 

*Questions about the meeting may be referred to Cathy Hlebechuk at (503) 808-3942, or Cindy Henriksen at (503) 808-3945*

The B2CC antennae contractor is currently ahead of schedule and is planning to be finished with testing by COB Wednesday April 12th at 1700hrs. Our current plan is to open the B2CC Wednesday afternoon but if testing stretches a little we plan to open the B2CC by start of business early the morning of Thursday April 13th. Before Wednesday's meeting I will send you a spreadsheet detailing the Dam Survival data that Gary Fredricks wanted to see that outlines Dam survival with the B2CC closed. We will present model runs for spill levels of between 120-140K with river flow ranging from 300-350K with the B2CC closed. With current spill levels at BON are between 120-140K and I think we are easily making up for the loss of keeping the B2CC closed for 2 additional days. I also wanted to remind folks that the B2CC was operated for a 24 hour period from 0800 Monday morning through 10 am this morning for our last wet test. Also attached is the Juvenile counts for BON's B2 JBS counts from last week. We still continue to have very low numbers of fish especially Steelhead that are aided most by B2 operation.

# COLUMBIA RIVER REGIONAL FORUM

## TECHNICAL MANAGEMENT TEAM

April 12, 2006 Conference Call

### FACILITATOR'S SUMMARY NOTES ON FUTURE ACTIONS

Facilitator: Robin Harkless

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.

#### **BON PH2 Corner Collector**

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## **TMT Meeting Schedule**

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- HYSSR/ESP runs
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April 12, 2006

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Tom Le	PSE
Robin Harkless	Facilitation Team
Mike Buchko	Powerex
David Wills	USFWS
Tony Norris	USBR
Russ Kiefer	IDFG
Kyle Dittmer	CRITFC
Lance Helwig	COE
Richelle Beck	D. Rohr & Associates
Dennis Schwartz	COE
Cathy Hlebechuk	COE
Scott Bettin	BPA
Paul Wagner	NOAAF
John Wellschlager	BPA

# COLUMBIA RIVER REGIONAL FORUM

## TECHNICAL MANAGEMENT TEAM

April 12, 2006 Conference Call

### FACILITATOR'S SUMMARY NOTES ON FUTURE ACTIONS

Facilitator: Robin Harkless

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Richelle Beck	D. Rohr & Associates
Dennis Schwartz	COE
Cathy Hlebechuk	COE
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Paul Wagner	NOAAF
John Wellschlager	BPA

# TECHNICAL MANAGEMENT TEAM

**BOR :** Tony Norris / John Roache                      **BPA :** John Wellschlager / Dan Spear  
**NOAA-F:** Paul Wagner                                      **USFWS :** David Wills / Steve Haeseker  
**OR :** Rick Kruger / Ron Boyce                              **ID :** Russ Kiefer  
**WA :** Cindy LeFleur    **MT :** Jim Litchfield

**COE:** Cindy Henriksen / Cathy Hlebechuk

## TMT MEETING

Wednesday April 19, 2006, 0900 - 1200 hours

1125 N.W. Couch Street, Suite 4A34  
Portland, Oregon 97208

Conference call line: 503-808-5190

**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 Donna Silverberg with any issues or concerns they would like to see addressed.  
Please e-mail her at [dsilverberg@cnnm.net](mailto:dsilverberg@cnnm.net) or call her at (503) 248-4703.*

## AGENDA

1. Welcome and introductions.
2. [\[Review Minutes 2006\]](#) 
3. Priest Rapids update
  - o [\[0405 Priest Rapids update\]](#) 
  - o [\[0419 Priest Rapids updatex\]](#) 
4. Navigation below Lower Granite
  - o [\[SOR #2006-NAV-01\]](#) 
5. Snake River transportation
  - o [\[SOR #2006-05\]](#) 
6. [\[Spring/summer update - Draft 18 April 2006\]](#) 
7. Flow Augmentation volumes
  - o [\[Dworshak Augmentation Volumes ESP inflows and 1 April Water Supply Forecast\]](#) 
  - o [\[Volumes at Libby 1 April Through 30 June\]](#) 
  - o [\[Volumes at Hungry Horse 1 April Through 30 June\]](#) 
8. Operations Review
  - o Reservoirs
    - BPR Upper Snake
    - Corps - default high flow operation
  - o Fish
    - Chum numbers
  - o Power System
  - o Water Quality

- [\[Project Operations Update April 12 - April 19, 2006\]](#) 

9. Other

- Set agenda for next meeting **May 03, 2006.** [\[Calendar 2006\]](#) 

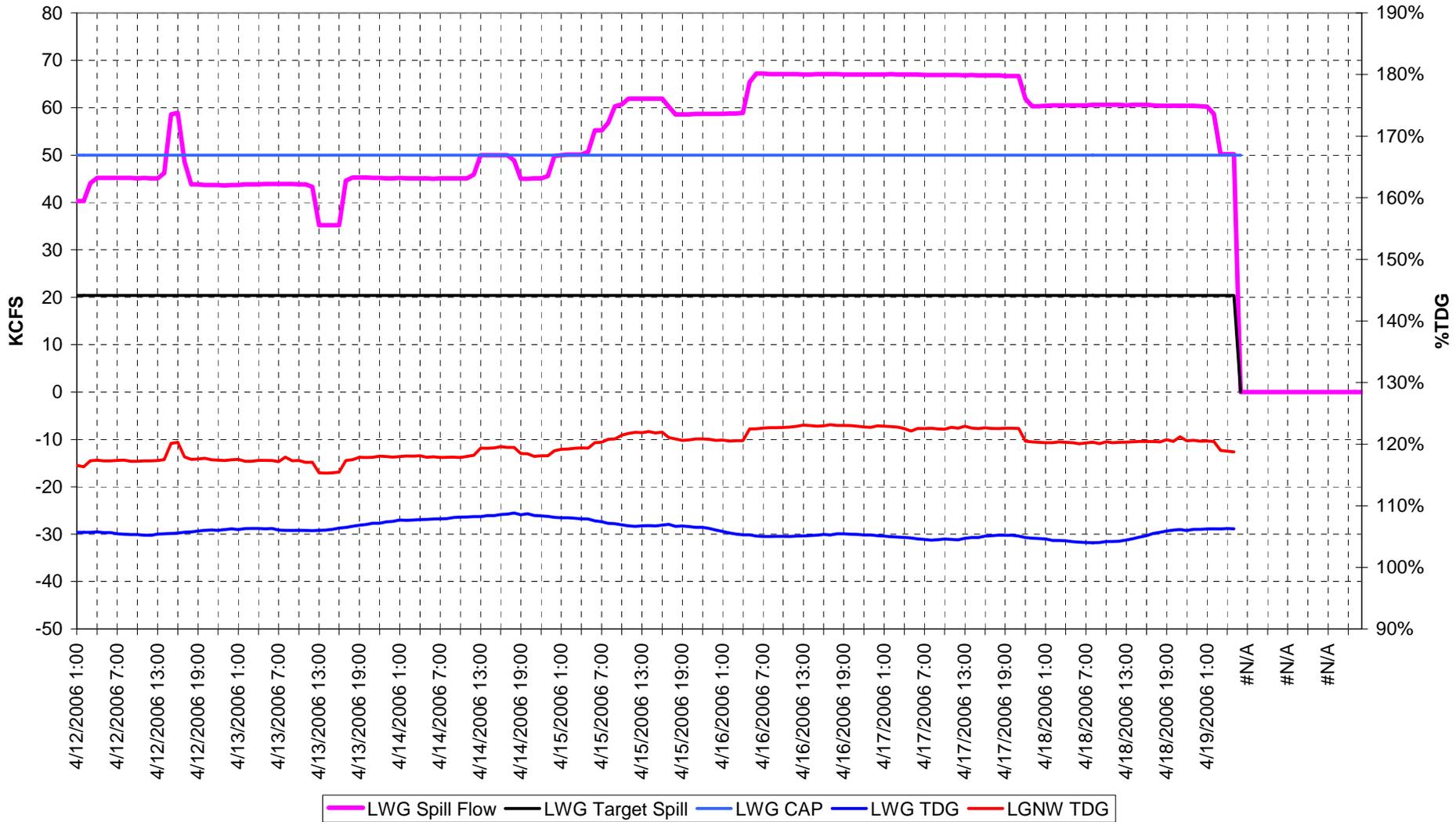
*Questions about the meeting may be referred to Cathy Hlebechuk at (503) 808-3942, or Cindy Henriksen at (503) 808-3945*

# **Project Operations Update**

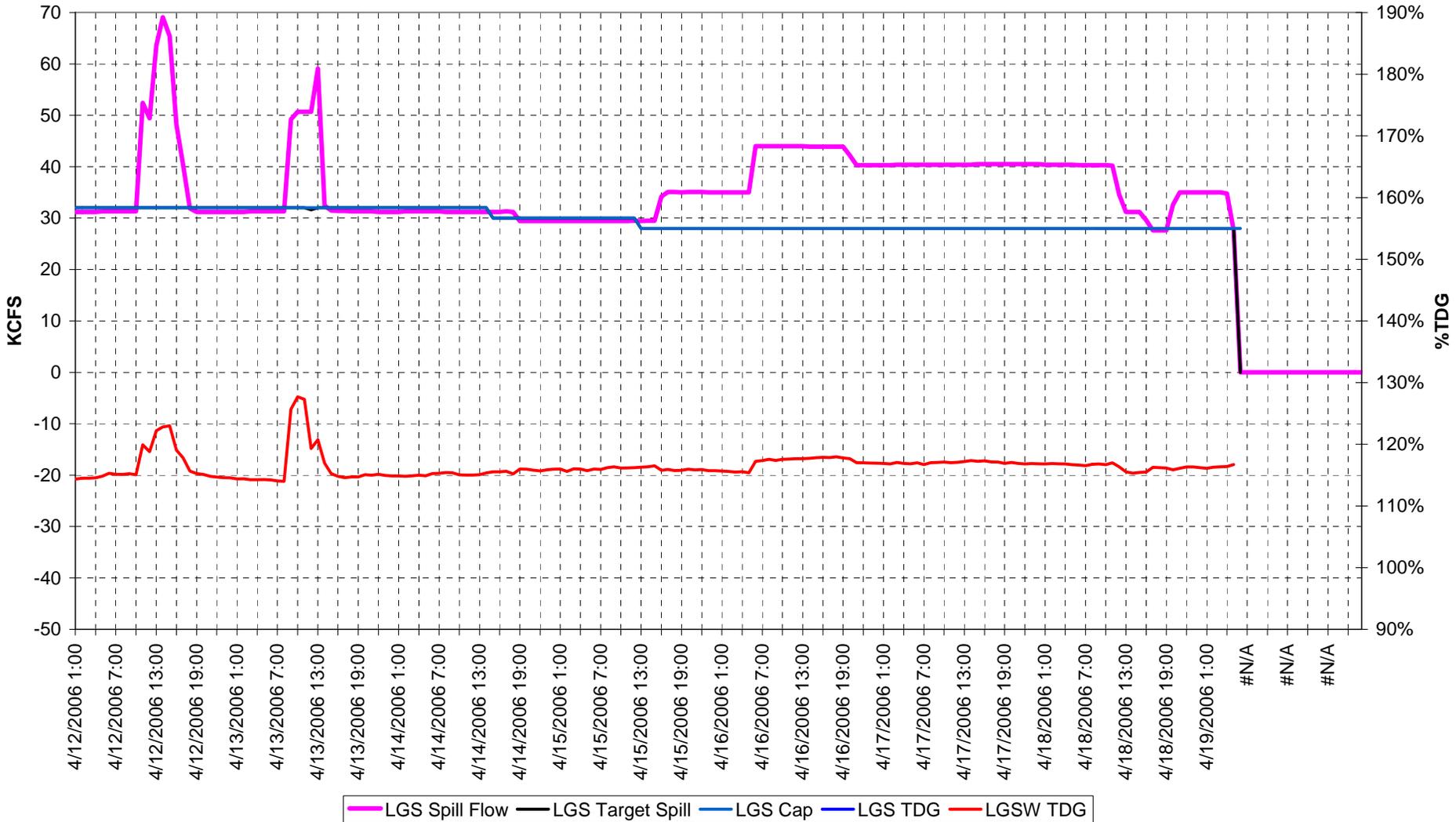
## **April 12 - April 19, 2006**

**for the Technical Management  
Team meeting 19 April 2006**

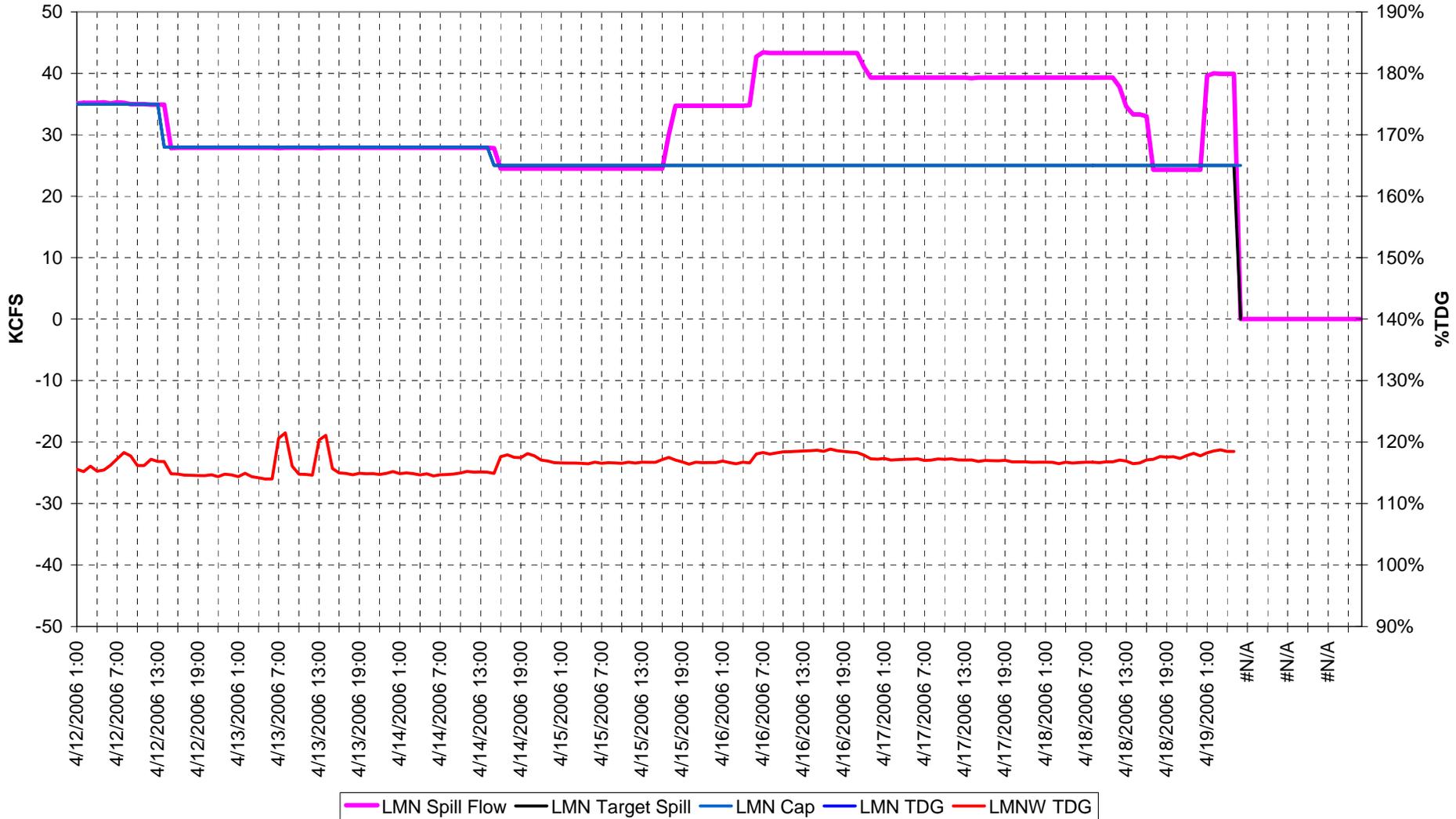
# LWG SPILL HOURLY



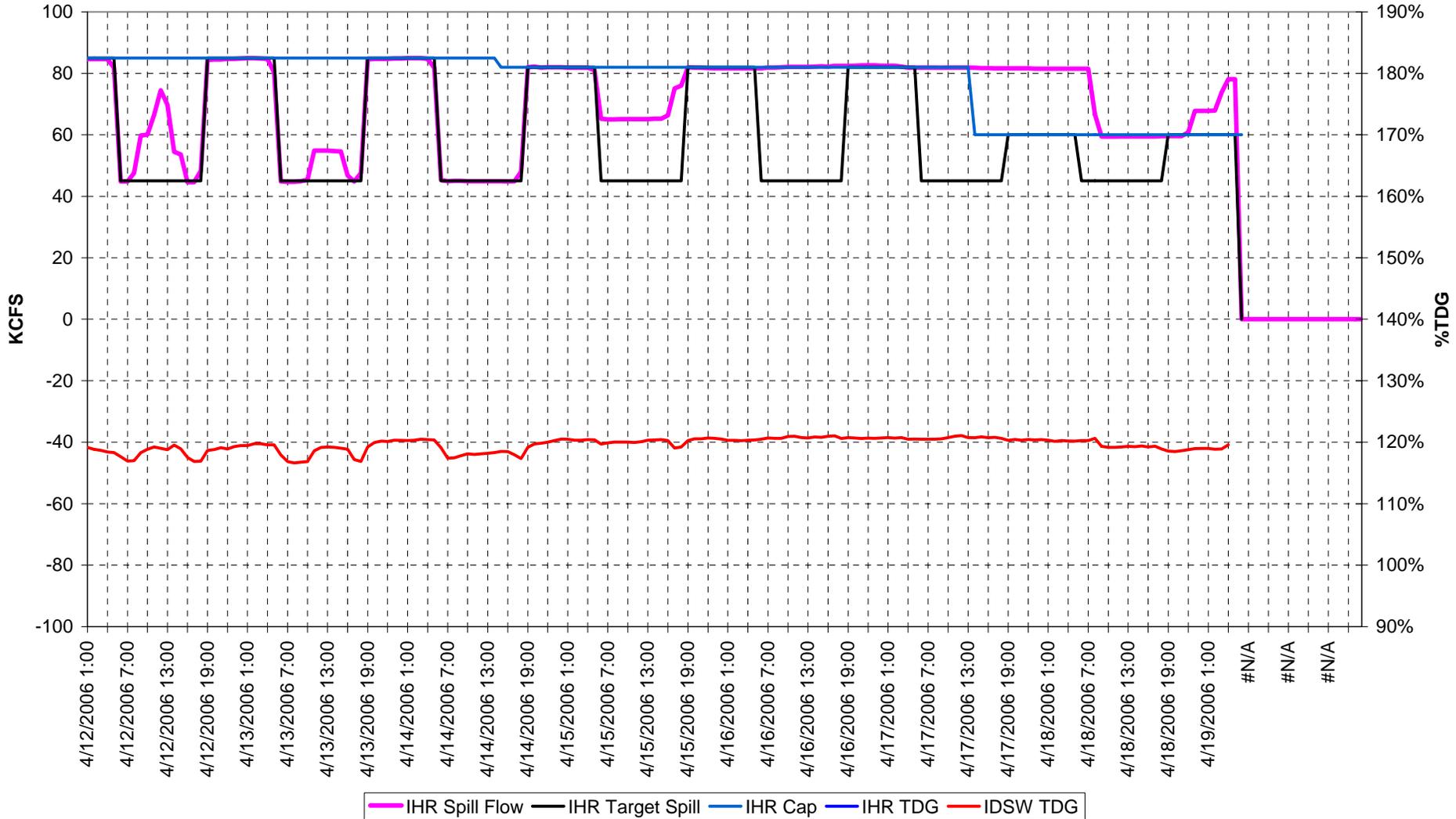
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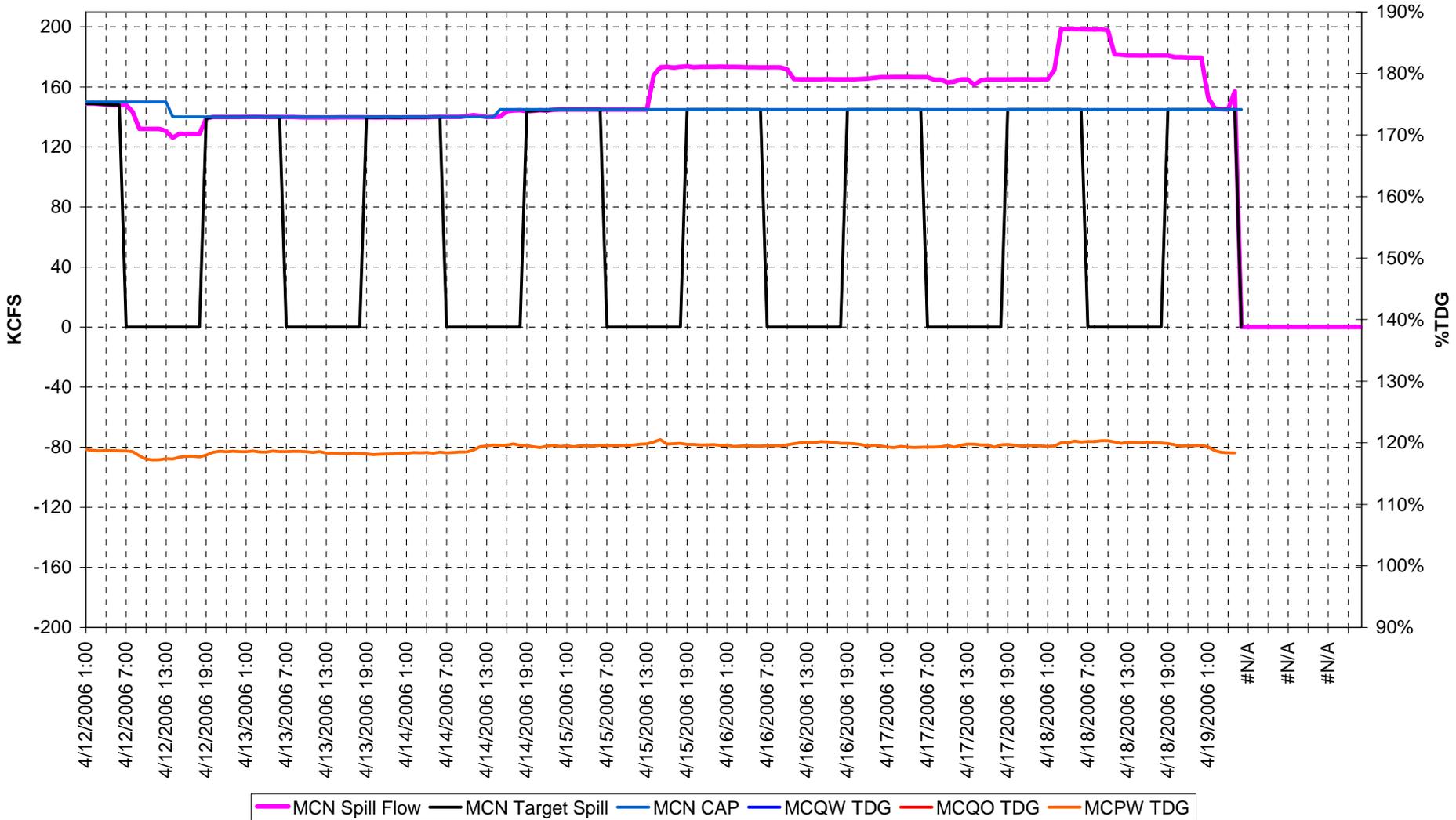
# LMN SPILL HOURLY



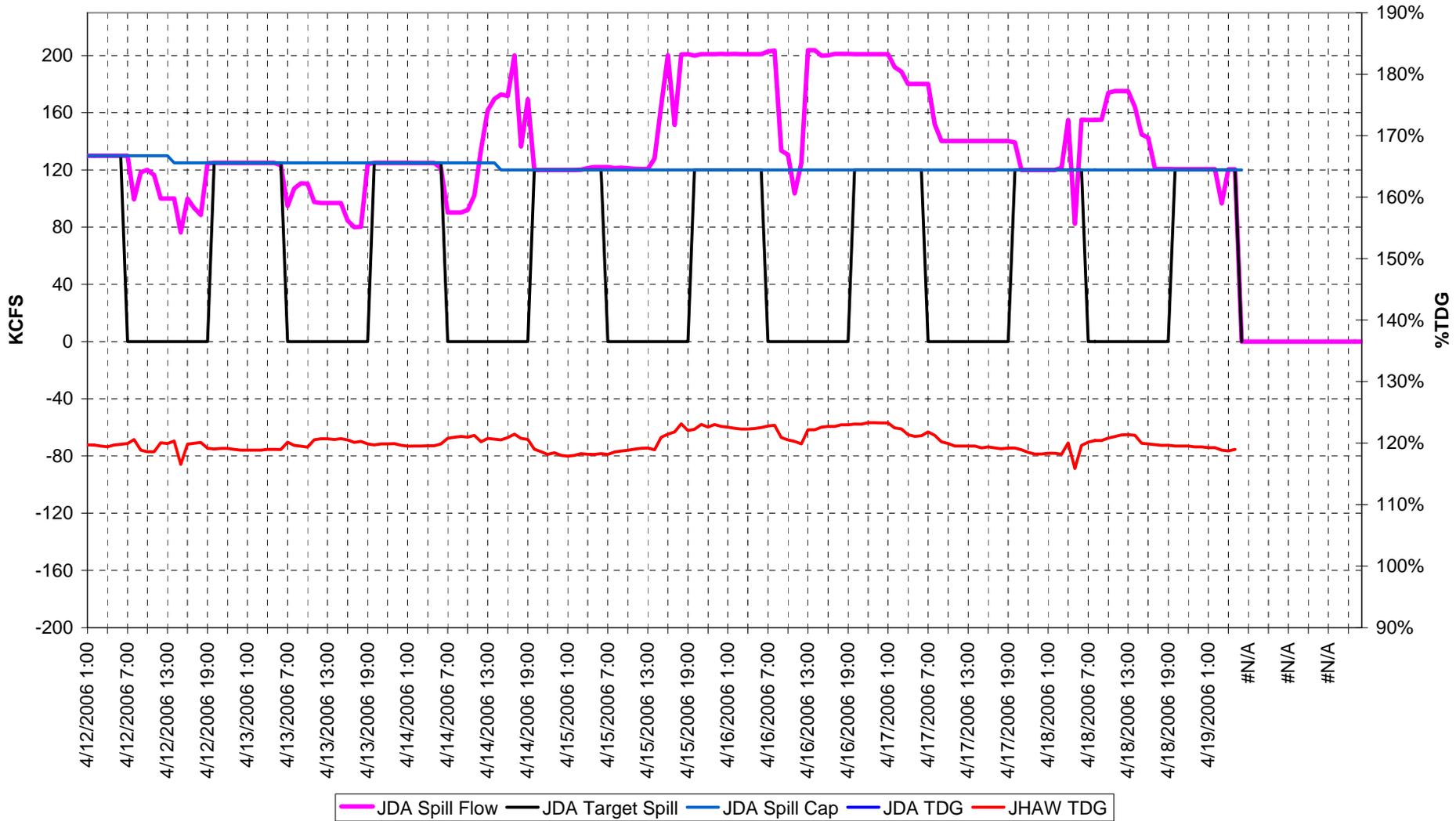
# IHR SPILL HOURLY



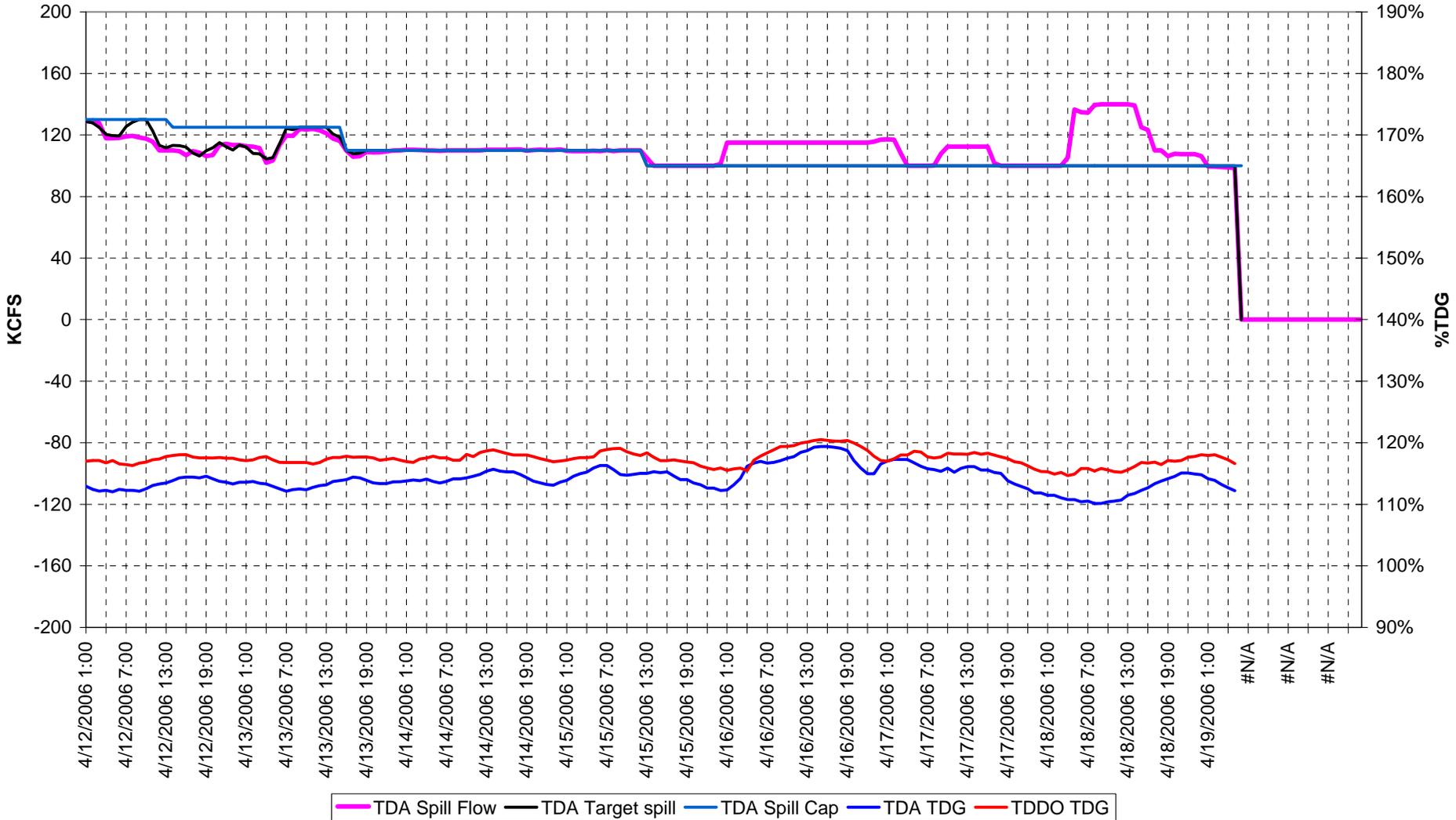
# MCN SPILL HOURLY



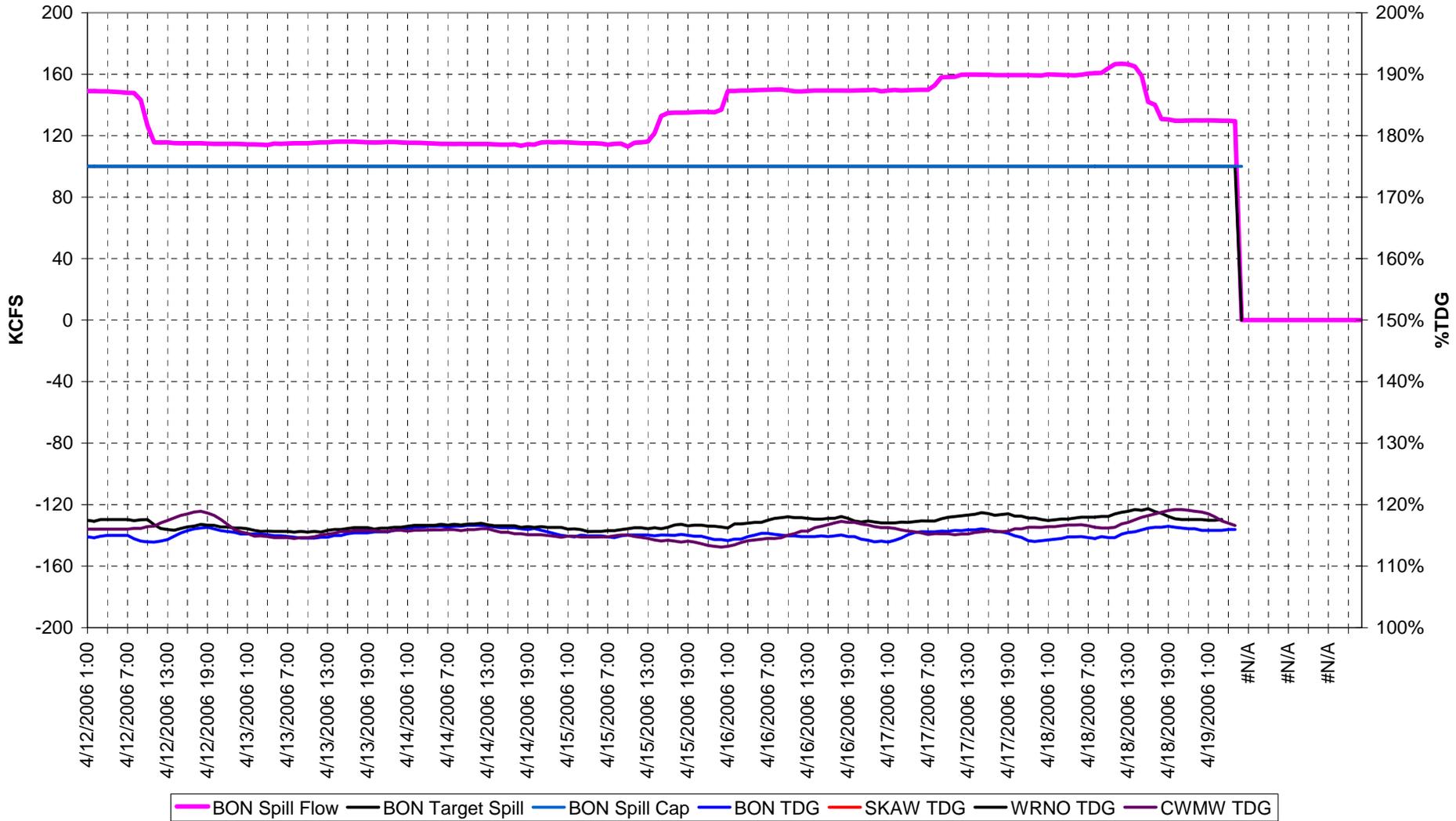
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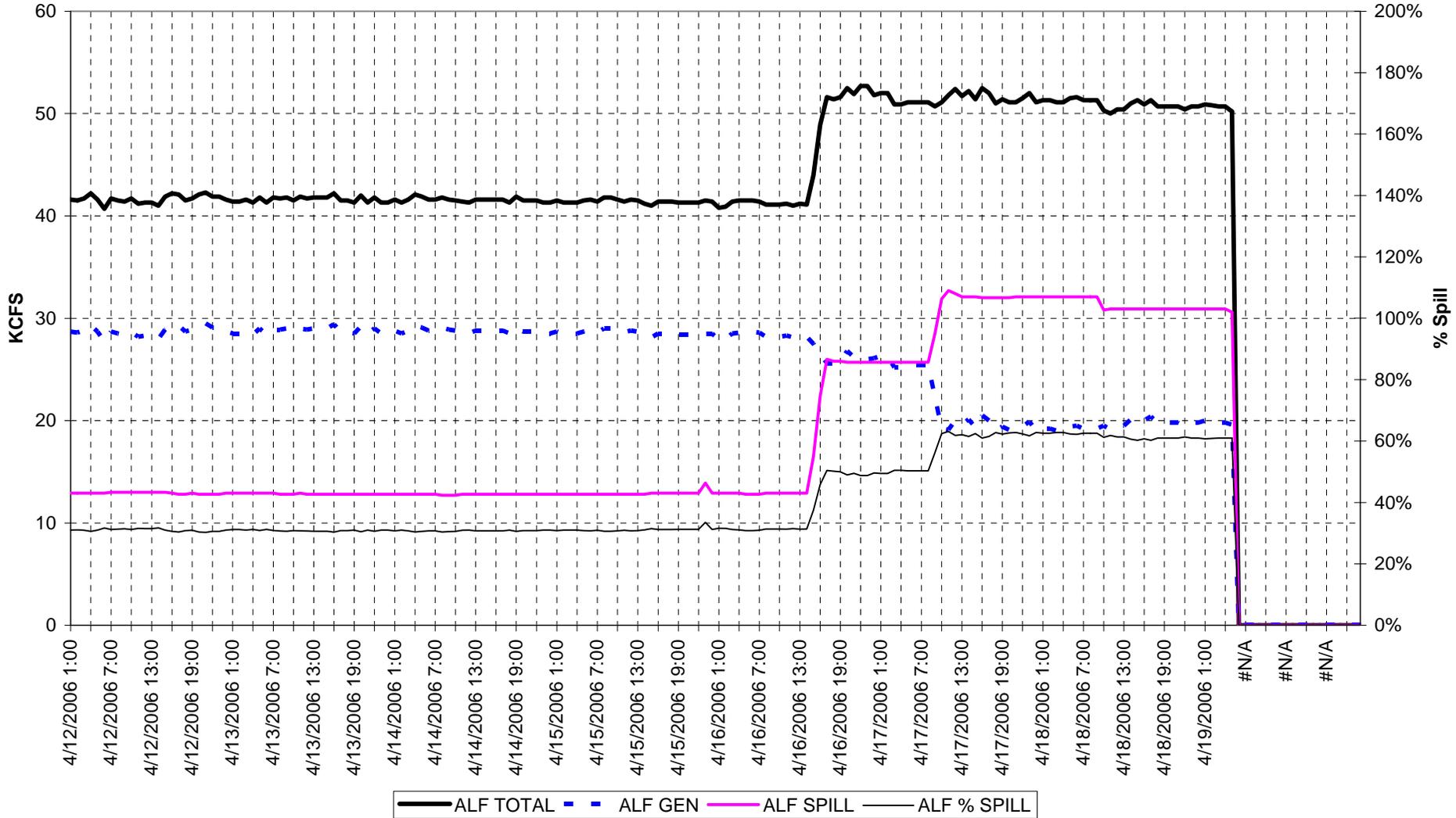
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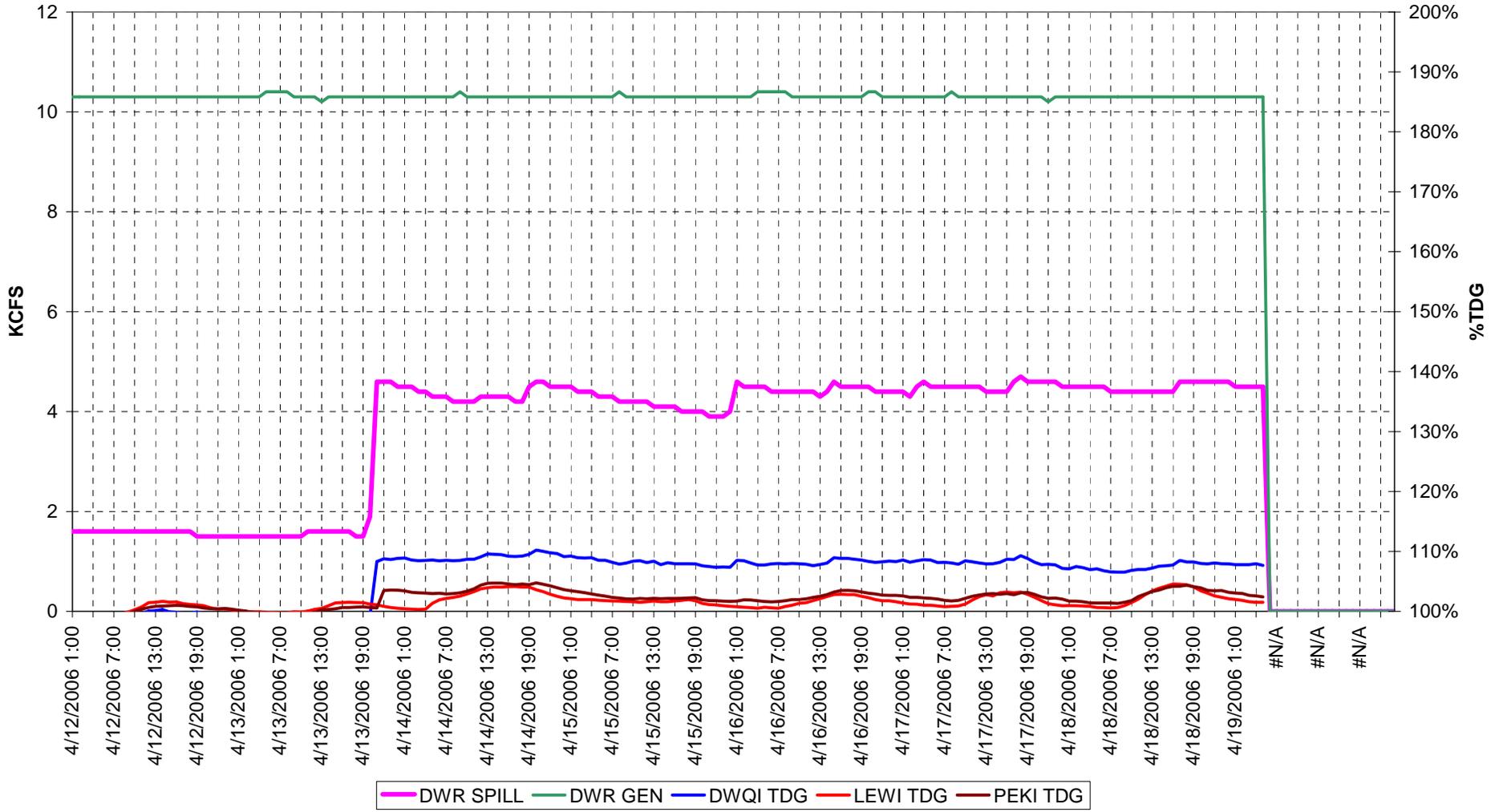


# ALF FLOW HOURLY



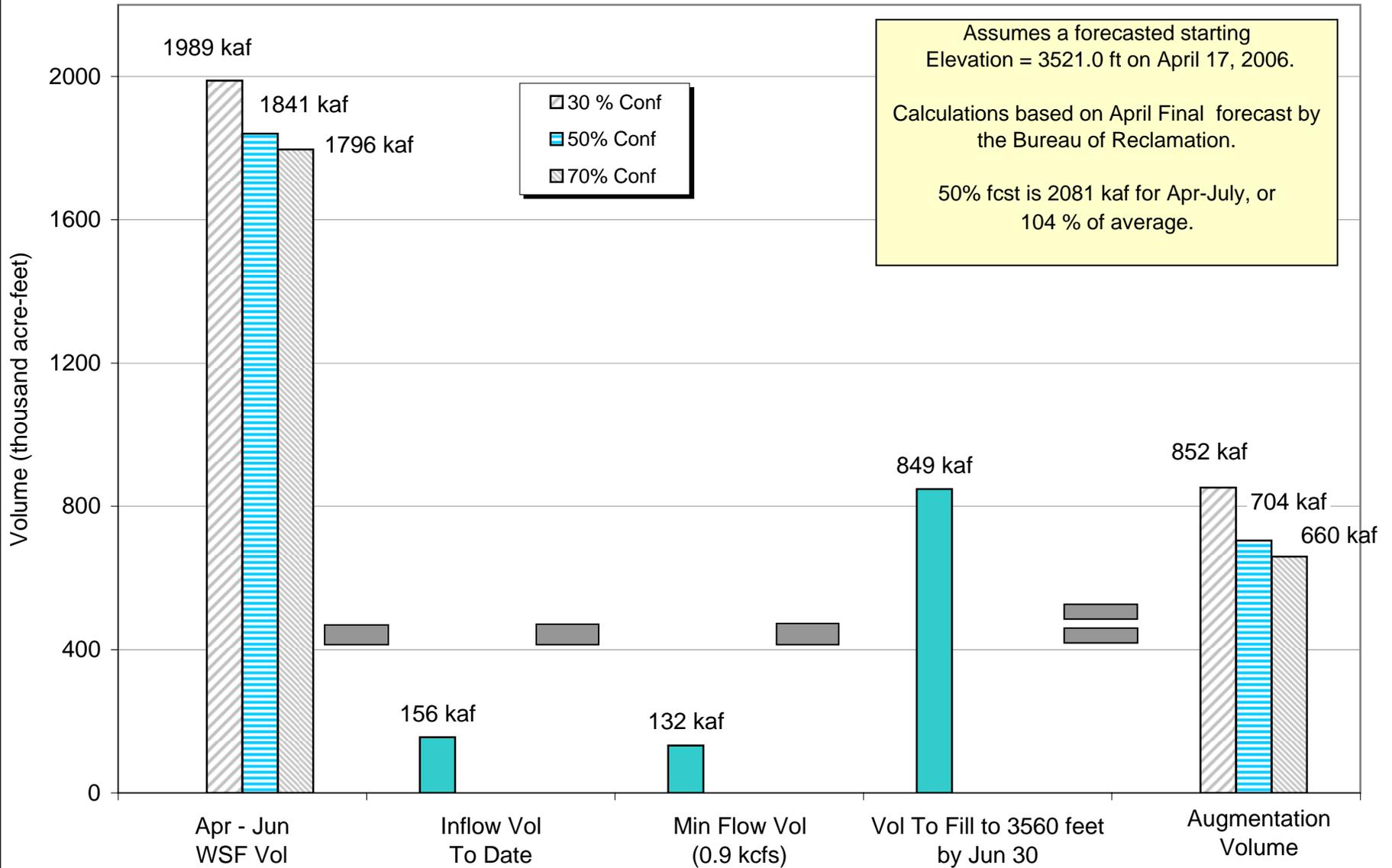
TDG ~ 104-106%

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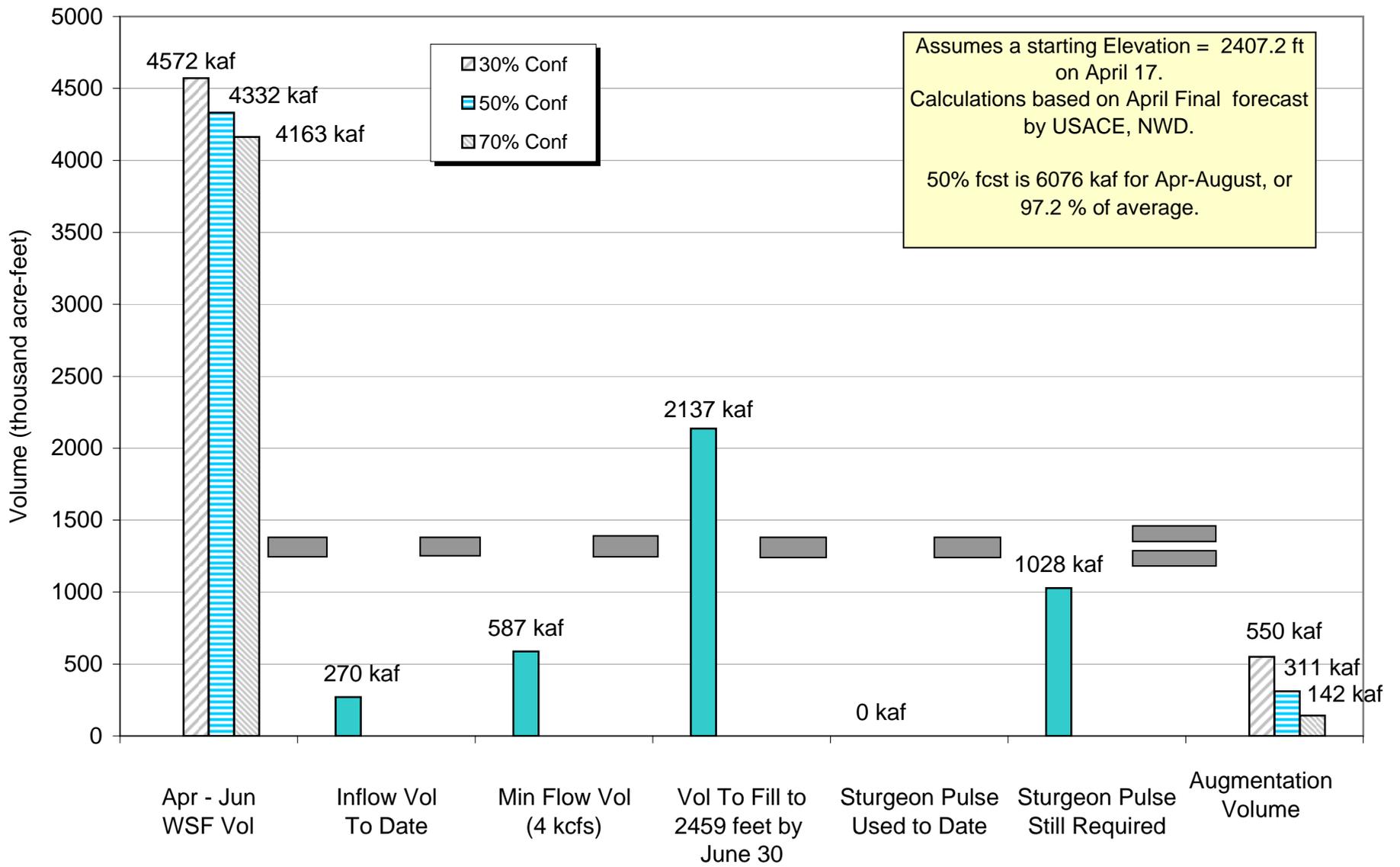


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### Volumes at Hungry Horse 1 April Through 30 June



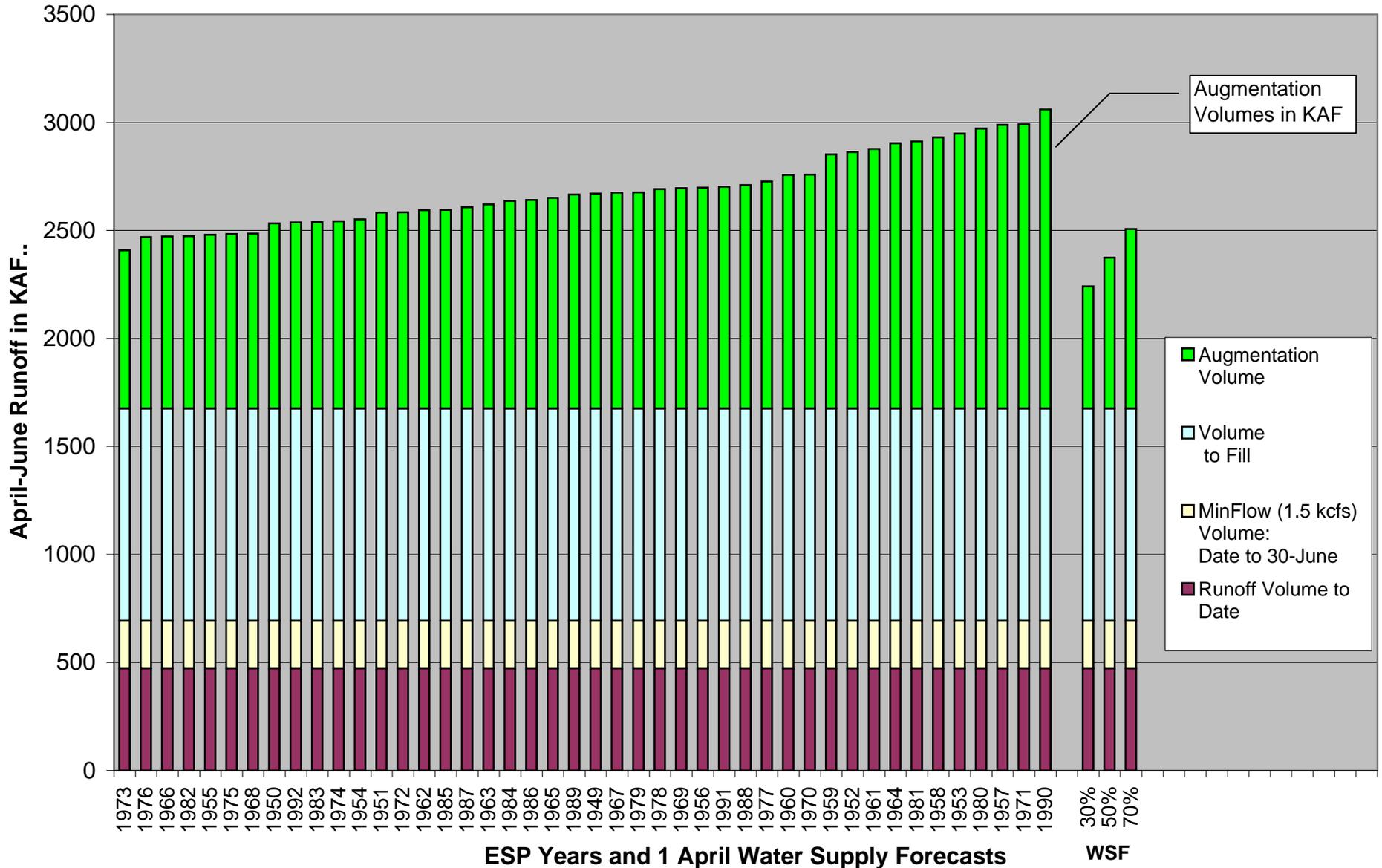
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Priest Rapids Operations								Comments
Date	Ave.Q	Min.Q	Max.Q	Prog.Q	Days Delta	Band constraint	Was it met?	If NO, reason why.
3-Apr	107.8	93.9	117.2	23.3	30	82.6	Y	
4-Apr	117.3	92.6	131.2	38.6	40	116.3	Y	
5-Apr	121.3	102.9	135.4	32.5	40	122.9	Y	
6-Apr	123.7	109.3	139.9	30.6	40	115.0	Y	
7-Apr	125.3	113.8	146.0	32.2	30	108.7	N	Within margin of error (2.2 kcfs)
8-Apr	113.9	98.7	129.2			124.9		Inflows exceeded estimates by 17 kcfs on Saturday and 5 kcfs on Sunday
9-Apr	152.0	129.3	160.1	61.4	30	112.2	N	
Week Ave	123.0			31.4		118.5		
10-Apr	138.8	122.4	153.1	30.7	40	124.6	Y	
11-Apr	135.4	124.5	153.2	28.7	40	135.9	Y	
12-Apr	152.9	124.0	171.7	47.7	60	148.1	Y	
13-Apr	165.5	134.6	213.5	78.9	60	154.1	N	Inflows exceeded capacity - spill prevented overflow
14-Apr	175.2	164.0	202.4	38.4	60	165.4	Y	
15-Apr	181.9	162.3	213.7			165.6		
16-Apr	173.0	164.6	178.8	51.4	60	168.6	Y	
Week Ave	160.4			44.9		167.1		

# Dworshak Augmentation Volumes ESP inflows and 1 April Water Supply Forecast

Observed data through **17-Apr**



## **COLUMBIA RIVER REGIONAL FORUM**

### **TECHNICAL MANAGEMENT TEAM**

April 19, 2006 Meeting

#### **FACILITATOR'S SUMMARY NOTES ON FUTURE ACTIONS**

Facilitator: Donna Silverberg

Notes: Robin Harkless

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.

#### **Priest Rapids Update**

Russell Langshaw, Grant County PUD, provided an update on Priest Rapids flows. For the week of April 3-9, the average flow was 123 kcfs. The band constraint was missed on April 7 and over the weekend, because inflows exceeded what was estimated. For the week of April 10-16, the weekly average flow was 160.4 kcfs. Flow fluctuations exceeded the bandwidth constraint on April 13, due to inflows exceeding capacity. The weekend protection flow operation is in its third weekend, with one more to go. Conditions were at 933 temperature units from the end of spawning, with the end of emergence expected in the next 9-10 days. Russell will provide another update at the May 3 TMT meeting.

#### **Navigation Below Lower Granite**

John Pigott, on behalf of the Towboaters Association, put forth SOR 2006-NAV-01. It requests spill reduction at Lower Granite when stream flows exceed 75 kcfs, to provide safe conditions for tow vessels and operators as they exit the lock heading downstream of the project. The recommended operation would require intervals of approximately 20 minutes of reduced spill (when spill reaches 75 kcfs) up to 5-6 times per week. John noted that the towboaters have taken safety precautions already, by reducing their barges on each boat from 4 to 2.

Russ Kiefer, IDFG, responded that safety takes first precedent, and that the preference would be to operate using the RSW and a basic training spill pattern if navigation problems require a spill reduction. Oregon, Montana and Washington supported Russ's suggestion. Walla Walla COE offered support for the request as well. The CRITFC representative needed to coordinate with staff on this. The COE clarified that a high safety risk situation would require COE operators to shut off spill at the project to allow for safe passage.

#### **Snake River Transportation**

SOR 2006-5 was submitted by the salmon managers and supported by the NMFS Science Center to address transportation operations at the Snake River projects. According to the court order, transportation was scheduled to begin on April 20 at Lower Granite, Little Goose and Lower Monumental. The salmon managers requested that Little Goose transport be delayed until April 24 and Lower Monumental transport be delayed until April 28. Based on travel time data, this shift would support in-river migration of juvenile spring chinook passing the dams.

A number of technical questions were raised by TMT members: *What impact would this operation have on steelhead?* Paul Wagner, from NOAA Fisheries, responded that given the cool temperatures, relatively high turbidity, and the fact that this is early in the migration period this operation should pose little risk to steelhead. *How did the salmon managers come up with the 4-day lag period estimate?* Real-time pit tag data, on individual fish moving from project to project, was used. The Fish Passage Center has a pit tag report on this. *Was TDG data considered in the technical discussions?* Russ Keifer, IDFG, responded that the salmon managers looked into this and found that TDG levels were not high enough to pose problems for in-river fish, and recognized the need to include TDG as a biological consideration.

The COE and BPA responded that it would be useful to see more detailed biological information and an explanation that supports the request, which deviates from the court order's specified transportation operations. In principle, both agencies supported the recommendation. The Corps noted this recommendation pertains to this year only under current conditions and does not set a precedent for future years.

**Next Steps:** A technical consensus was reached at TMT that supported moving forward with the request. Parties in support included NOAA, Oregon, Idaho, Washington, Montana, BPA, BOR, COE, Nez Perce and CRITFC. The following next steps were discussed:

- The Fish Passage Center will post the pit tag report with biological information supporting the recommendation to its website, and share it with the COE.
- Paul Wagner, Russ Kiefer and Rudd Turner will draft clarifying biological language including responses to questions that came up during the TMT discussion and pros and cons of the operation.
- Mark Eames (NOAA legal counsel) and other attorneys are coordinating on legal aspects of this request. If the parties to the litigation agree to move forward, the recommendation will be shared with the Judge during a status update hearing on April 21. The COE will check with its attorneys on the feasibility of implementing the operation, from a legal perspective.
- The COE planned to begin barging at Lower Granite on April 20. Operating flexibility exists to continue with the court ordered spill (begin collecting and barging at all projects on April 20) or to implement the recommendation in SOR 2006-5 (wait to collect and barge fish at Little Goose and Lower Monumental until next week). The COE added that they support the recommended operation for this year only, and that this would not set a precedent for future years.
- Cathy Hlebechuk, COE, will send email updates to the TMT as progress is made on the issue.

**UPDATE:** Cathy sent an email to TMT with the following update on April 20: *As a follow-up to the SOR and discussions at the April 19 TMT meeting, late yesterday afternoon Paul Wagner provided a memorandum to the Corps about the Biological rationale for implementing a staggered start of transportation from the Lower Snake River projects. This morning Corps attorneys coordinated with the Department of Justice who sent Judge Redden a letter notifying the court of TMT consensus of this operation. Attached to the letter was Paul's memorandum. Accordingly, the Corps is implementing the staggered transport operation.*

### **WMP Spring/Summer Update**

A draft of the Spring/Summer update of the WMP is on the TMT web page. Changes were made based on comments sent in already, e.g. Grand Coulee operations were modified to delete the extended drum gate maintenance work requiring the project to remain at or below 1255'. Tony Norris reminded TMT the project tries to do drum gate maintenance work every year but last year the project had an extended outage because routine maintenance work hadn't been done for a while due to the low water supply forecasts and shallow flood control drafts. The COE plans to finalize the document at the May 3 TMT meeting, so TMT members were asked to review the document, send comments to the COE and come prepared to finalize it at that meeting.

### **Flow Augmentation Volumes**

Cathy Hlebechuk, COE, share the latest flow augmentation graphs. All 44 Dworshak ESP volumes were higher than the April final forecast and therefore, all ESP years are showing more flow augmentation volume than the April (50% confidence) final forecast. This means the ESP model is forecasting higher than the water supply forecast regression equations. The group acknowledged different model and forecasting methods have different methodologies and results. The Libby April-June flow augmentation forecast, using the April final water supply forecast, showed 142 kaf with 70% confidence, 311 kaf with 50% confidence, and 550 kaf with 30% confidence. Hungry Horse showed 660 kaf with 70% confidence; 704 kaf with 50% confidence, and 852 kaf with 30% confidence. Tony Norris, BOR, commented that the Hungry Horse model shows the likelihood discharge above minimum until April 30, and volumes to refill at the end of June.

The COE welcomed ideas for improving the forecasting tools. One suggestion was to put the graphs into the context of current operations to help the viewer understand how the volumes would be used.

**ACTION:** The flow augmentation item will be added to the 'Operations Review'/Reservoirs update for future agendas.

### **Operations Review**

*Reservoirs* – Hungry Horse was at elevation 3520.4' and releasing full load, 11 kcfs. The April 30 flood control target was 3518'. Grand Coulee was at 1241.3', with inflows at 142 kcfs. The BOR was deviation request of the April 30 flood control target to 1233.4' was approved to avoid spill. Libby was operating at minimum outflows and at elevation 2407.5'. Albeni Falls was releasing 51 kcfs and at elevation 2055.5'. Dworshak was at 1538.1', with 15 kcfs out. Dworshak deviation was approved also. Lower Granite was releasing 152 kcfs. Hells Canyon was releasing 80 kcfs. The McNary weekly average flows were at 320 kcfs, Priest Rapids flows averaged 120 kcfs, and Bonneville averaged 292 kcfs. Dave Statler, Nez Perce, shared that Hells Canyon flows are high and that this may provide good conditions for migrants coming out of Lower Granite.

The salmon managers made an informal request that when big changes occur due to high flows, the COE coordinate with the smolt monitoring program so the program can adjust its work schedule (e.g. gas bubble monitoring). Also, the COE was urged to look at biological data when making spill changes if high levels of spill are required and there is time and flexibility to do so.

The COE informed TMT that they are trying to follow the Spill Priority list that is included in the Fish Passage Plan.

*Fish* – Rick Kruger, ODFW, reported that chum peak emergence occurred during the first week in April. Seining numbers are low. End of emergence is forecasted around the last week of April and could go into early May. Responding to a request for information about age distribution, Rick said there were 20 age 3, 96 age 4 and 13 age 5 adult carcasses counted.

Paul Wagner reported on juveniles. Yearling chinook numbers at Lower Granite and Little Goose were climbing. Steelhead numbers were starting to pick up. Sockeye numbers are likely mostly kokanee, and the numbers were low. As for adults, only 33 spring chinook were observed, indicating a late migration this year.

Cindy LeFleur, WDFW, proposed removing some of the sea lion exclusion devices (SLED's) on the Washington side to find out if this was causing a delay in the adult migration. She suggested making a change on the following Monday, April 24.

**ACTION:** TMT supported a test and suggested that further discussion occur between FPOM and members of a small group that has been focusing on marine mammal issues. A conference call should be coordinated in the next day or two to discuss how the test could be done, followed by a recommendation from FPOM to the COE. An update will be shared with TMT on the results of the discussions.

*Water quality* – Jim Adams, COE, shared a review of spill operations and TDG at individual projects. His slides can be found on the TMT web page linked to the agenda for today's meeting.

At The Dalles, the spill cap limited spill to below 30% due to higher TDG levels in the Bonneville forebay. CRITFC suggested that The Dalles is a sensitive project for juveniles and asked whether spill could be spread through bay 8 to reduce TDG concerns downstream and increase spill to get closer to the court-ordered spill level?

**ACTION:** Bernard Klatt, COE, will set up an FPOM call to discuss this request and if agreement is reached, FPOM will make a recommendation to the COE to change the spill pattern at The Dalles. A follow up email will be sent to TMT with the results of that discussion.

Suggestions were shared with Jim Adams to improve the TDG graphs: Include a 115% TDG line and include the downstream forebay TDG percentage. Jim said these changes are being made and will be posted to the web.

### **TMT Meeting Schedule**

*Wednesday, May 3* agenda items include:

- Finalize WMP Spring/Summer Update
- Navigation Update
- Priest Rapids Update
- Snake River Transportation Update

- Update on Fish Migration – SLED removal test
- John Day T-1 Outage Update
- Operations Review: Chum counts/error bounds, Upper Snake flow augmentation
- Sturgeon Pulse?

## Technical Management Team Meeting Notes

April 19, 2006

### ***1. Greetings and Introductions.***

Today's meeting of the Technical Management Team was chaired by Cathy Hlebechuk and facilitated by Dona Silverberg. The following is a summary (not a verbatim transcript) of the topics discussed and decisions made at this meeting. Anyone with questions or comments about these notes should contact Hlebechuk at 503-808-3942.

### ***2. Priest Rapids Update.***

Russ Langshaw said that, for the week of April 3, average Priest Rapids discharge was 107.8 Kcfs; the flow band constraint was exceeded on April 9. What happened was that inflows exceeded estimates, and the project was full, he explained. The maximum flow occurred at 3 am Saturday, so once we reached the maximum, the delta was only 21.1 Kcfs, he said.

For the week of April 10, said Langshaw, the flow band constraint was exceeded on April 13 due to increasing flows; spill was necessary to prevent overflow of the project. How many weekends are we into the weekend protection program now? Paul Wagner asked. Last weekend was the third week, so we have one more, Langshaw replied; we're now 933 temperature units into the program; 1,400 are required before the program ends, which should be achieved approximately nine or ten days from today. It sounds as though we'll hear from you at least one more time here at TMT, said Silverberg.

### ***3. Navigation Below Lower Granite.***

Prior to today's meeting, the action agencies received SOR 2006-NAV-01. This SOR, supported by the Columbia River Towboat Association, requests the following specific operations:

- This SOR recommends that the special operation of the Lower Granite spillways, to accommodate outmigrating salmonids, be modified to allow for a more navigation-friendly spill pattern and the reduction or cessation of spill, for the period of time it takes a vessel to depart the lock and clear the obstructing point of land, on the north shore, approximately half a mile below the dam. This is estimated to be approximately 20 minutes.

John Piggott said this SOR is intended to be implemented whenever total river flow exceeds 75 Kcfs at Lower Granite Dam. We're getting an increasing number of near-miss reports, vessels having difficulty clearing the point of land about half a mile below Lower Granite, he explained. The fact that Lower Granite is at MOP severely restricts the ability of the towboats to accelerate coming out of the lock, he explained – there is only a foot of clearance between the bottom of the barge and the sill of the navlock. We're concerned that we're going to see a boat driven onto that point of land if we don't get some kind of spill abatement while the tows leave the dam – it's a safety issue, Piggott said.

If it is indeed a big safety issue, the project on its own has the prerogative to go to zero spill, Hlebechuk said. Are you having problems entering the lock? Hlebechuk asked. The downstream exit is more problematic, but entering is difficult as well, Piggott replied. And is it possible that some sort of spill reduction might be required even if flows are below 75 Kcfs? Hlebechuk asked. It's possible, Piggott replied but we are only requesting spill reduction if flows are above 75 kcfs. He added that the Towboat Association has already reduced its loading by limiting tows to two barges; we're leaving two of our usual four barges at Wilma, then returning upstream to get them once the first two are past Lower Granite, Piggott added – in other words, we're doing what we can to accommodate your needs. In response to a question, Piggott said there are approximately 5-6 lockages per week at Lower Granite.

In response to another question from Wagner, Piggott said he is unsure whether it will be necessary to completely stop spill during lockages, or whether a reduction in spill would be adequate. Maybe what we can do is to try to do that first, and see whether that will create safer conditions. Clearly human safety trumps spill for fish passage, said Kiefer; perhaps we could try a spill reduction, to RSW spill plus reasonable training spill, about 18 Kcfs, during lockages and see whether conditions improve for the towboat operators. If not, we can further reduce or eliminate spill, Kiefer said. I would think that would be sufficient, Piggott said.

After a few minutes of further discussion, no TMT objections were raised to the spill reduction at Lower Granite during lockages, to RSW plus training spill, for a total of 18-20 Kcfs spill. Kyle Dittmer said he will need to check with the CRITFC managers before agreeing to this operation, but added that he does not believe CRITFC will have any objections.

#### **4. Snake River Transportation.**

Prior to today's meeting, the action agencies received SOR 2006-5. This SOR, supported by USFWS, IDFG, ODFW, WDFW, NOAA Fisheries, the Nez Perce Tribe, the Shoshone-Bannock Tribes and CRITFC, requests the following specific operations:

- According to the court order, transportation is to begin at the Snake River transportation sites on April 20. Delay initiation of transportation of juvenile salmonids until April 24 at Little Goose and April 28 at Lower Monumental.

Kiefer provided an overview of this SOR and its justification. The full text is available via hot-link from today's agenda on the TMT homepage; please refer to this document for further details. Kiefer noted that there is an upcoming conference with Judge Redden, at which this operation will be discussed; if we can achieve regional consensus that this is the preferred operation, that would be helpful, in the context of the litigation, he said.

Litchfield said that, according to the data he has seen, this operation would benefit spring/summer chinook more than steelhead. That is true, but there are fewer steelhead traveling through the system at this time, Kiefer said. Steelhead do, in general, show a higher benefit from transportation, but that benefit increases as we move farther into the season, Wagner added – we don't see increased risk to steelhead if this operation is implemented.

The group reviewed the most recent smolt monitoring data from the Fish Passage Center; it was noted that steelhead numbers have increased significantly at the Lower Snake projects in the last few days. Turner noted that the SOR contains no biological information on which to base a decision to change action agencies' implementation plan; there appears to be some contradictory information, with respect to the passage index information. At Lower Granite, there is a surface collection system; it isn't really appropriate to compare passage indices at different projects, Margaret Filardo said. We were not sampling 24 hours a day at Little Goose until April 16, because we were not yet collecting fish. It's difficult to compare timing at Little Goose and Lower Granite, unless you go to the PIT-tag data, Filardo said. Early in the season, fish tend to take a little more time, due to physiological and temperature differences, she said – travel times tend to be longer. When you put all of that data together, that's where the Lower Granite-Lower Monumental estimate of 8.5 days came from.

We have had our technical folks look at the PIT-tag data, and they have informed us that the travel time for the individual fish we can track is 8.5 days between Lower Granite and Lower Monumental, Kiefer said. Are you questioning that? All I'm saying is that, if we're being asked to change the implementation plan, we need to understand the biological information that would justify such a

change, Turner said. We can send you the PIT-tag report on which this request is based, Kiefer said. That might be helpful, said Turner. There were 118 hatchery chinook and 84 wild chinook in the PIT-tag group, Filardo added; again, their travel time was about eight days between Lower Granite and Lower Monumental. I would add that it isn't really true to say that there is no biological information associated with this SOR, said Dave Statler – if the action agencies want to see the details of the salmon managers' calculations, that's fine.

Jim Litchfield noted that, in the context of the current legal situation, it is incumbent on the region's decision-makers to build a careful record of any decisions made or any requested change in operations – I think that's all the Corps is saying, he said. Frankly, this SOR is somewhat thin, in terms of biological justification, Litchfield said.

John Wellschlager said that, while Bonneville is not opposed to what the salmon managers are proposing in this SOR, they are also sympathetic to the Corps' request for more biological justification. The salmon managers have been exchanging information on this issue for a couple of weeks, and you're all completely comfortable with this information. We're not questioning your data or its validity, he said – we're just saying that, in the context of a post-lawsuit world, we need a little more data so that we can cross all of our Ts and dot all of our Is.

Ultimately, Silverberg said that, what she had heard is that BPA and the Corps agree in principal to this request, but need to be very careful to understand the biological justification. It was agreed that, immediately after this meeting, Kiefer, Wagner and Turner will draft a statement clarifying the biological justification underlying this request for the benefit of the court. We also discussed the process for any change to the implementation plan, which would include a discussion of any pros and cons, a thorough vetting with all parties to the lawsuit, and a clear statement of any requested change in operations, she said.

There is some uncertainty about whether it will be possible to accomplish this in time for Friday's meeting with Judge Redden, Silverberg said; the next question was, is there TMT consensus that this change is warranted? After a few minutes of discussion, TMT consensus was achieved on this issue as all TMT members, including the action agencies, supported it, with the proviso that additional biological justification will be provided. It was agreed that Hlebechuk will email the TMT to let them know what the next steps are.

In terms of operations, it was agreed that the Corps will begin collecting fish for transport at Lower Granite tomorrow, but will hold off collection at the other Lower Snake projects pending the outcome of this issue. Hlebechuk said she will check with Corps legal staff to ensure that there are no serious issues with this change in planned operations.

Litchfield noted that TDG levels are very high at Lower Granite, currently; he asked whether the salmon managers have taken that into account in their request. We have looked at the biological monitoring, and have seen no serious signs of gas bubble disease, Kiefer replied – we'll include that in our discussion of the pros and cons of this operation.

The Corps supports this SOR in principal, but I want to make clear that it applies to this year only, under current conditions, and does not set a precedent for future years, Hlebechuk said.

### ***5. Spring/Summer Update Update.***

Hlebechuk asked whether the other TMT participants had had a chance to review the most recent draft of the Spring/Summer Update; she noted that it contains a number of changes. I would like to finalize it at the next TMT meeting on May 3, she added.

### ***6. Flow Augmentation Volumes.***

Hlebechuk directed the group's attention to the most recent ESP model runs, which continue to run higher than the water supply forecast estimate. The flow augmentation volume graphs are available via hot-link from today's agenda on the TMT homepage; please refer to these documents for full details of the current forecast. These graphs show runoff volume to date, volume to fill, volume needed to provide minimum outflow, and the estimated volume of flow augmentation water available, given a 30 percent, 50 percent and 70 percent probability of refill in 2006, based on conditions seen during 44 historic water years. These volumes ranged from about 500 kaf to about 800 kaf.

The next forecast was for Libby; given 30 percent, 50 percent and 70 percent confidence of refill in 2006, the available flow augmentation volume was estimated at 550 kaf, 311 kaf and 142 kaf, respectively, based on the most recent runoff volume forecast. In other words, there isn't going to be a lot of flow augmentation volume available from Libby this year, Hlebechuk said. At Hungry Horse, said Tony Norris, assuming a 900 cfs mid-month flow, the current estimate is that there will be between 660 kaf and 842 kaf available for flow augmentation from Hungry Horse in 2006, above that minimum discharge.

### ***7. SLEDS at Bonneville.***

Cindy LeFleur said WDFW would like to see some of the sea lion exclusion devices (SLEDS) removed from the Washington side of Bonneville Dam; there are indications that the fish may be reluctant to pass through the SLEDS. Something is delaying the migration, she said, and I wanted to have some discussion of the possibility of removing at least a couple of the SLEDS.

The group devoted a few minutes of discussion to this topic; Bernard Platt of the Corps said there is a technical group that meets regularly to discuss the SLEDS, including state, tribal and federal agencies. Hlebechuk said she will give LeFleur contact information for the marine mammal technical group, which would be the body that would actually make a recommendation to the Corps. And you would like to see this change made very soon? Silverberg asked. Yes, LeFleur replied. FPOM would actually be the group that would make a recommendation to the Corps to take the SLEDS out, another participant observed. Perhaps the FPOM folks and the marine mammal technical group should talk, Silverberg said.

Gary Fredricks said NOAA Fisheries has not seen evidence that there are a lot of spring chinook holding in the tailrace, but it might be worth considering removing one or two of the SLEDS from the downstream entrances at PH2, for perhaps a day, to see if a burst of salmon passage occurs. One problem is that the project would have to rent a crane to get those out, he said. We will discuss that possible test with FPOM tomorrow or Friday, Fredricks said, adding that this is the point in the season when adult passage numbers would normally increase dramatically. We'll have to try to sort out that fact from what we might expect to see if the fish have been piling up in the tailrace. He added that there have not been large numbers of observations of sea lion predation in recent days; in fact, many of the sea lions have left, apparently because they're bored, he said. Fredricks said he will coordinate a conference call to bring together representatives from FPOM and the marine mammal technical group to discuss this issue. There was general agreement that TMT supports this approach.

## ***8. Operations Review.***

Norris said he hasn't yet heard final numbers, but based on the April final forecast, his guess is that it should be possible to achieve what is allowed under the settlement, either 427 kaf or 487 kaf, in terms of Upper Snake flow augmentation. We won't know until we see what the irrigators actually offer up, he said. At Hungry Horse, the current elevation is 3520, down from the flood control objective of 3521 on April 15. The project is releasing full load – about 11 Kcfs – and drafting as much as possible; that will likely continue until project elevation nears 3518, the April 30 flood control objective. Inflows to the project are on the rise, and refill could be somewhat tricky, given the transmission limitations at that project this year.

At Grand Coulee, the current elevation is 1241.3 feet; inflows are creeping up, to about 142 Kcfs, Norris continued. The April 10 flood control target at Grand Coulee was 1248.4, originally, but that was subsequently recalculated to just over elevation 1250. We were actually at 1249.9 on that date, he said. Current Priest Rapids flows are about 180 Kcfs, Norris added. We're having a tough time drafting toward Grand Coulee's April 30 flood control elevation; we'll be at about 1233 feet, then at elevation 1229 by May 5, to avoid spill at Grand Coulee, he said – we had to request a deviation from the flood control objective to avoid spill

and conflict with the draft rate limitations at that project. We can draft about one foot per day at Grand Coulee, he added.

Hlebechuk said Libby is releasing minimum discharge; the project is at elevation 2407.5 feet and filling slightly to achieve its April 30 flood control elevation. Libby's runoff volume forecast went down slightly between March and April, but is still about 98 percent of average. Albeni Falls is at elevation 2055.5 feet and releasing 51 Kcfs, up from 17 Kcfs on April 1. This is bringing a ton of water into Grand Coulee, she said. The current elevation is 1538 feet at Dworshak and the project is releasing 15 Kcfs, up to the gas cap. We, too, requested and received a flood control deviation from the Corps for that project, she added; Dworshak will be above its end of April flood control target.

Lower Granite is currently releasing 146 Kcfs, Hlebechuk said, up from 73 Kcfs on April 3. Hells Canyon is releasing 80 Kcfs. Since April 3, the average flow at Lower Granite has been 123 Kcfs. Yesterday's day-average flow was 355 Kcfs at McNary; the spill season started on April 10 at the Lower Columbia projects. At Priest Rapids, the average flow for the period of April 1-18 was 142 Kcfs, with 176 Kcfs yesterday. At Bonneville, yesterday's average discharge was 370 Kcfs; the April month-average is 292 Kcfs to date. John Day is operating in the 262.5-264 range, the elevation at which irrigation can occur.

Kiefer said the salmon managers understand that this is a high-flow year, sometimes requiring swift adjustments to the spill program. When significant changes occur to the spill operations, we would ask that they coordinate those changes with the smolt monitoring program personnel, Kiefer said, so that they can adjust work schedules to be sure they get the most up-to-date GBD information following those changes. We will certainly do so to the greatest extent possible, Wellschlager replied.

Hlebechuk said she wanted to revise her default high-flow operation, as discussed at the last TMT meeting. We have the spill priority list, and try to follow that, she explained; we will plan on staying within 1 percent peak efficiency. It would be a nightmare, logistically, to try to go outside 1 percent. What we plan on doing is to use the spill priority list, and staying within 1 percent, in short, she said.

Moving on to fish, Rick Kruger said the peak of chum emergence occurred the first week in April. The number of chum fry seined this year is the third-lowest since 1999, although high water may be affecting the efficacy of our sampling effort, he said. Our current prediction is that emergence could be over as soon as the end of April, and as late as the third week in May, he said. I also have some age information on the carcasses recovered from the Ives/Pierce Island spawning area: 20 age 3, 96 age 4 and 13 age 5 fish, based on scale analysis, Kruger said. The proportion of age 3 fish was larger in the earlier years of the chum program, Kruger added.

Wagner said that, in terms of the juvenile passage numbers, at Lower Granite, decent numbers have been seen throughout April, and they're climbing. There are good numbers at Little Goose as well, although the numbers are lower at Lower Monumental, in terms of yearling chinook. there are good yearling chinook numbers at the Lower Columbia projects as well. Steelhead numbers are also climbing at both the Lower Snake and Lower Columbia projects. Kiefer said that, with respect to sockeye numbers, very large numbers of kokanee were seen at Dworshak in 2005; typically, the Redfish Lake sockeye don't arrive until later. In all likelihood, the sockeye we're counting in the Snake, currently, are actually from the Dworshak kokanee population, Kiefer said.

With respect to adult counts, the highest daily count we've seen to date at Bonneville is 33 fish, dismal for this time of year, said Wagner. Steelhead passage is near the 10-year average for this date. We hope the chinook are still out there, and will begin arriving soon, Wagner said; at this point, however, there is a lot of concern about the spring chinook run.

Wellschlager said there are no power system problems to report; the system is being operated for power production, and to achieve flood control targets. Moving on to water quality, Jim Adams reviewed the current flow, spill and TDG data for the Corps project; this data is available via hot-link from today's agenda on the TMT homepage. Adams noted that, since the spill season began, spill volumes have, in general, significantly exceeded the court-ordered spill volumes. Numerous water quality exceedences have occurred due to high flows throughout the system. Adams noted that spill is occurring at both Albeni Falls and Dworshak, currently.

The Corps also provided a brief update on the wire rope replacement effort at The Dalles; bay 8 is now available and work on bay 9 will be finished no later than Monday, April 22.

**9. Next TMT Meeting Date.**

The next Technical Management Team meeting was set for Wednesday, May 3. Meeting summary prepared by Jeff Kuechle, BPA contractor.

**TMT Participant List  
April 19, 2006**

Name	Affiliation
Scott Bettin	BPA
Tom Le	PSE
Jim Adams	COE

Cathy Hlebechuk	COE
Ann Glassley	COE
Paul Wagner	NOAAF
Margaret Filardo	FPC
Tony Norris	USBR
Donna Silverberg	Facilitation Team
David Wills	USFWS
Jim Litchfield	Montana
John Wellschlager	BPA
Rick Kruger	ODFW
Russ Kiefer	IDFG
Rudd Turner	COE
Don Faulkner	COE
Tim Heizenrater	PPM
Todd Cook	PPM
Dan Spear	BPA
Dave Statler	NPT
Russ George	WMCI
Robin Harkless	Facilitation Team
Kyle Dittmer	CRITFC
John Piggott	Col. R. Towboat Assoc.
Bill Crampton	CBB
Cindy LeFleur	WDFW
Dave Benner	FPC
Richelle Beck	D. Rohr & Associates
John Coffee	Snohomish PUD
Russ Langshaw	Grant PUD
Glenn Traeger	Avista

Mike Buchko	Powerex
Tom Lorz	CRITFC
Dave Statler	NPT
Gary Fredricks	NOAAF

# TECHNICAL MANAGEMENT TEAM

<b>BOR :</b>	<i>Tony Norris / John Roache</i>	<b>BPA :</b>	<i>John Wellschlager / Dan Spear</i>
<b>NOAA-F:</b>	<i>Paul Wagner</i>	<b>USFWS :</b>	<i>David Wills / Steve Haeseker</i>
<b>OR :</b>	<i>Rick Kruger / Ron Boyce</i>	<b>ID :</b>	<i>Russ Kiefer</i>
<b>WA :</b>	<i>Cindy LeFleur</i>	<b>MT :</b>	<i>Jim Litchfield</i>
<b>COE:</b> <i>Cindy Henriksen / Cathy Hlebechuk</i>			

## TMT MEETING

Wednesday May 03, 2006, 0900 - 1200 hours

1125 N.W. Couch Street, Suite 4A34  
Portland, Oregon 97208

Conference call line: 503-808-5190

**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 Donna Silverberg with any issues or concerns they would like to see addressed.  
Please e-mail her at [dsilverberg@cnnm.net](mailto:dsilverberg@cnnm.net) or call her at (503) 248-4703.*

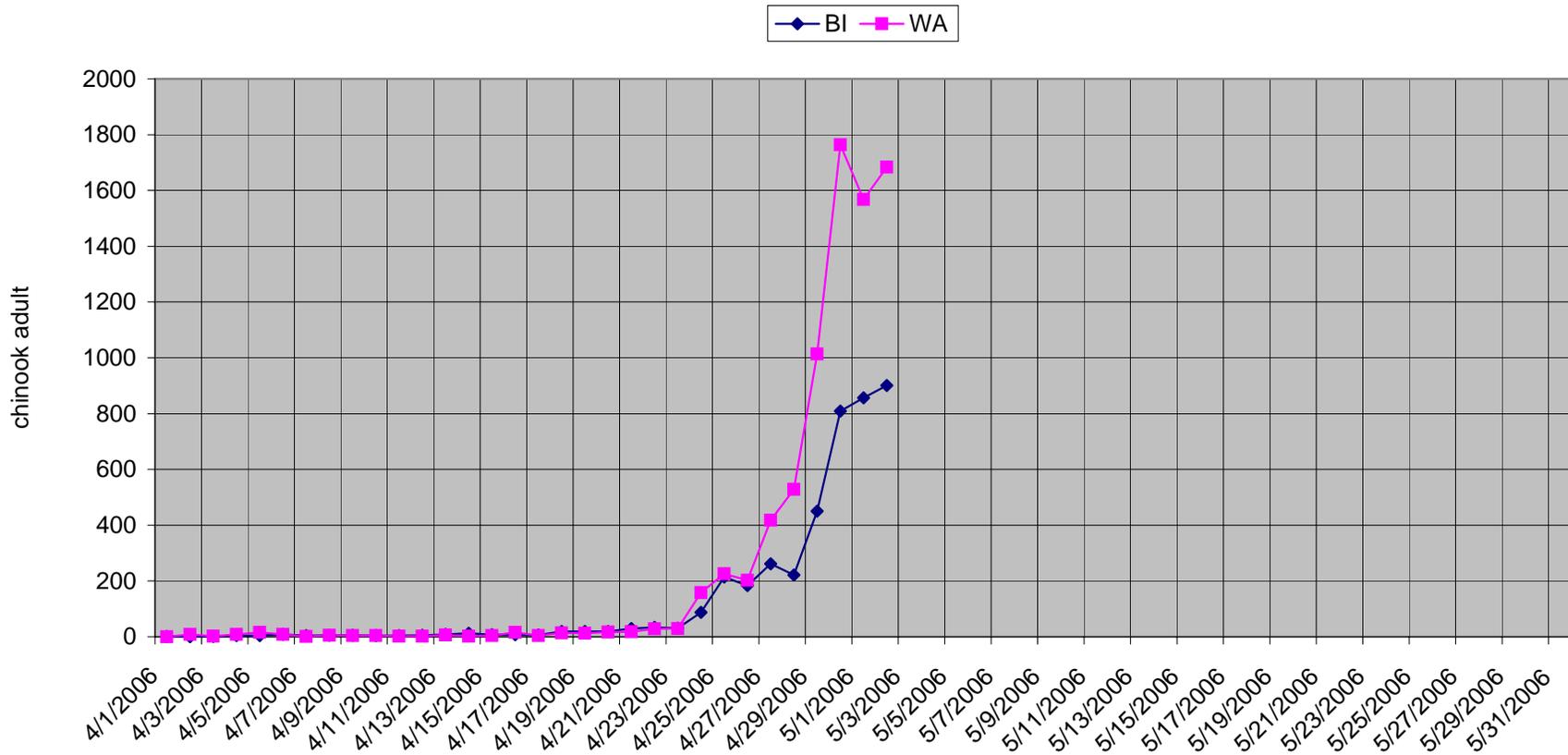
## AGENDA

1. Welcome and introductions.
2. [\[Review Minutes 2006\]](#) 
3. Priest Rapids update
  - [\[0503 Priest Rapids Operations\]](#) 
4. Finalize Spring/Summer Update
  - [\[Spring / Summer Update to the 2006 Water Management Plan - Draft 3 May 2006\]](#) 
5. HYSSR/ESP Runs
  - [\[Summary of 01 May 2006 ESP HYSSR Model Runs Draft 3 May 2006\]](#) 
6. Operations Review
  - Reservoirs
    - Lower Granite Navigation Problem
    - Upper Snake
    - Flow Augmentation Volumes
      - [\[Volumes at Hungry Horse - 1 April Through 30 June\]](#) 
      - [\[Volumes at Libby - 1 April Through 30 June\]](#) 
      - [\[Dworshak Augmentation Volumes ESP inflows and 1-May Water Supply Forecast\]](#) 
    - Dworshak inflows
      - [\[Dworshak Inflows ESP Daily Flows Exceedance Plot with Max/Min of Historic Average Monthly Flows\]](#) 
      - [\[Dworshak ESP Inflows - Daily Box-Whiskers Plot\]](#) 
    - Fish
      - Transport

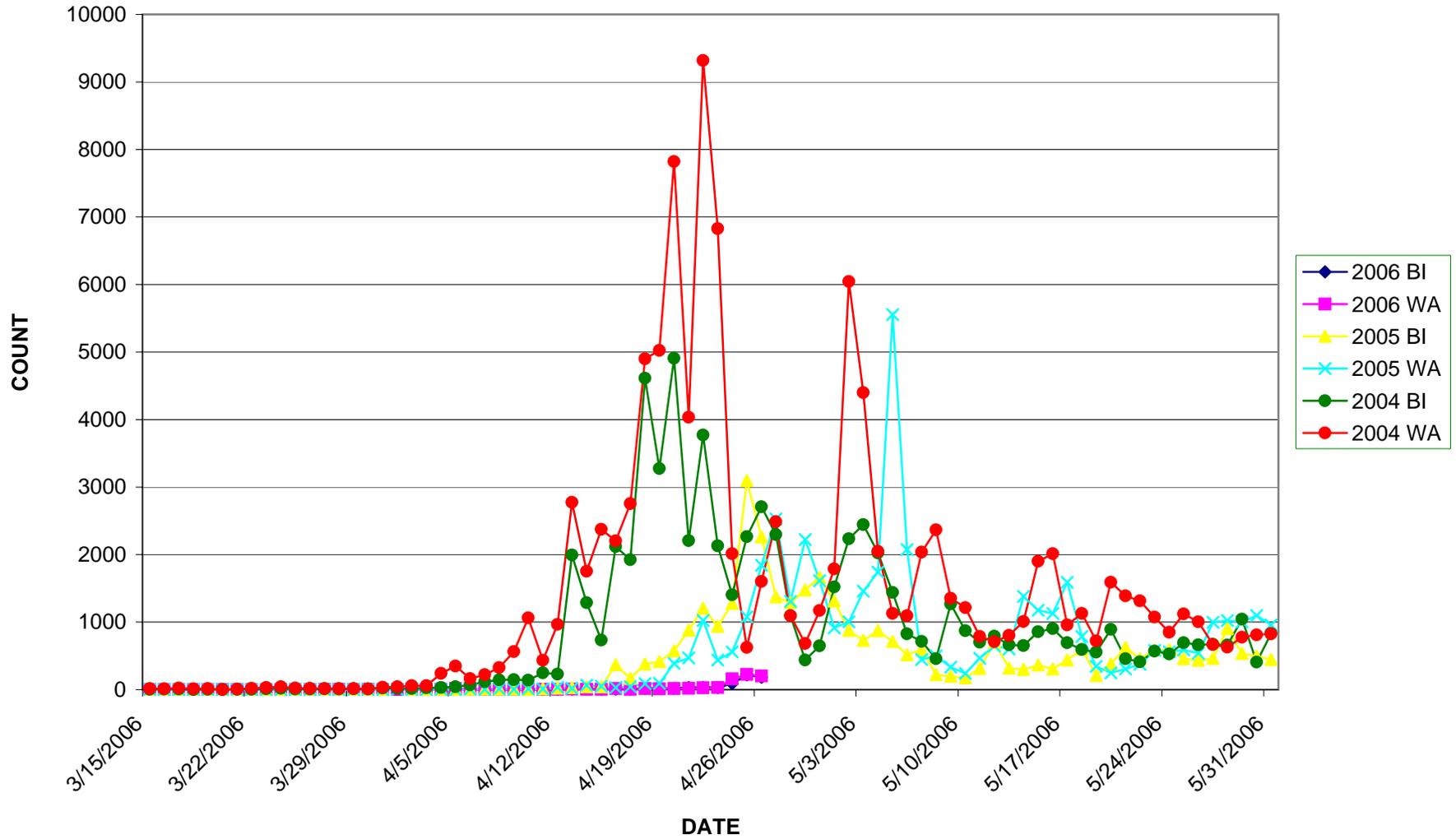
- John Day Spill
- Chum update including error bounds on chum counts
- Sturgeon pulse
- Fish Migration - SLED
  - [\[Summary #1 of Radiotelemetry data for Chinook salmon at Bonneville Dam Date: 1 May 2006\]](#) 
  - [\[CHINOOK COUNTS AT BONNEVILLE DAM, 2005, 2006, AND 1994-2004 AVERAGE\]](#) 
  - [\[BRADFORD ISLAND AND WASHINGTON SHORE CHINOOK COUNTS AT BONNEVILLE DAM, 2004-2006\]](#) 
  - [\[Bonneville - 2006\]](#) 
- Power System
  - John Day T-1 outage
- Water Quality
  - [\[Project Operations Update 26 April - 3 May\]](#) 
- Other
  - Set agenda for next meeting **May 17, 2006.** [\[Calendar 2006\]](#) 

*Questions about the meeting may be referred to Cathy Hlebechuk at (503) 808-3942, or Cindy Henriksen at (503) 808-3945*

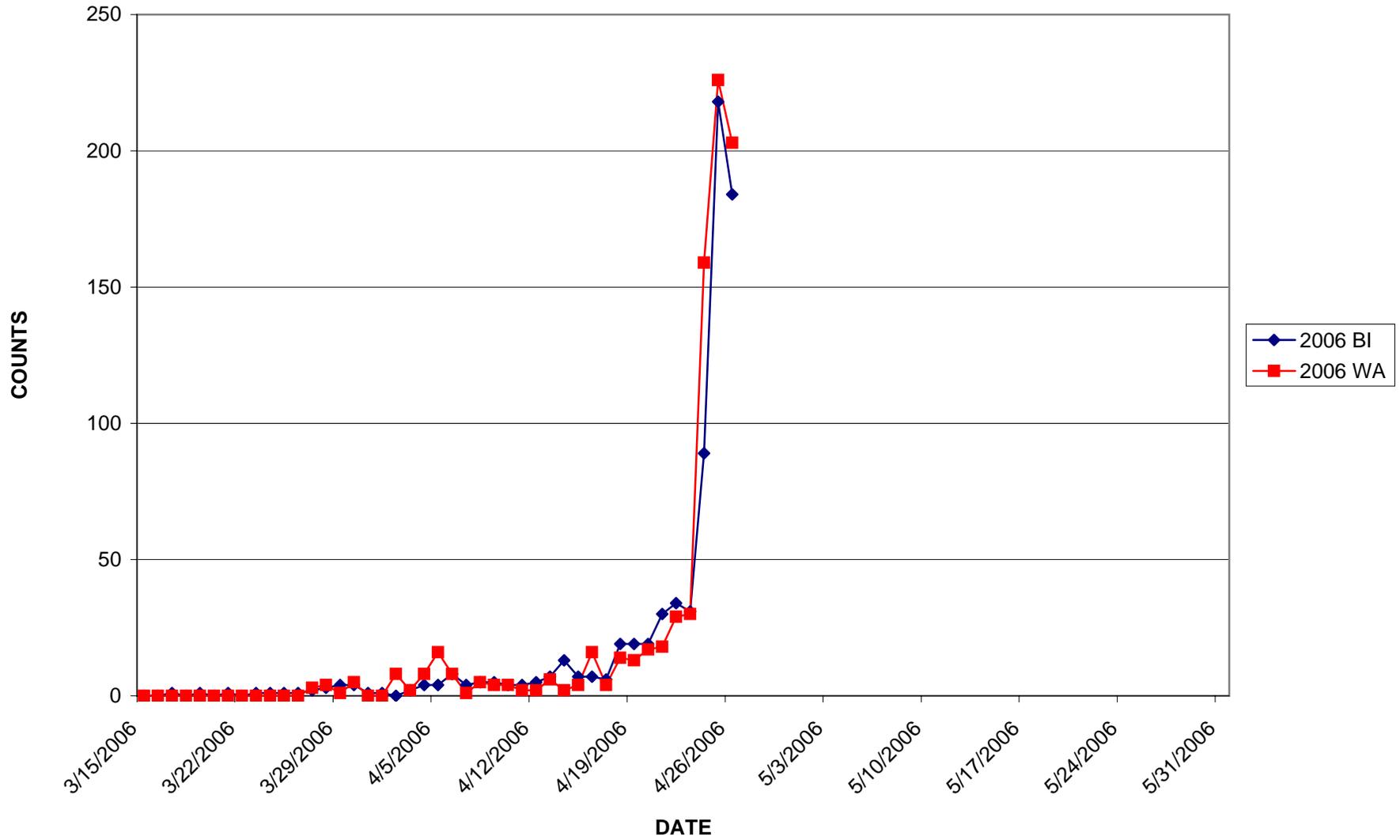
Bonneville - 2006



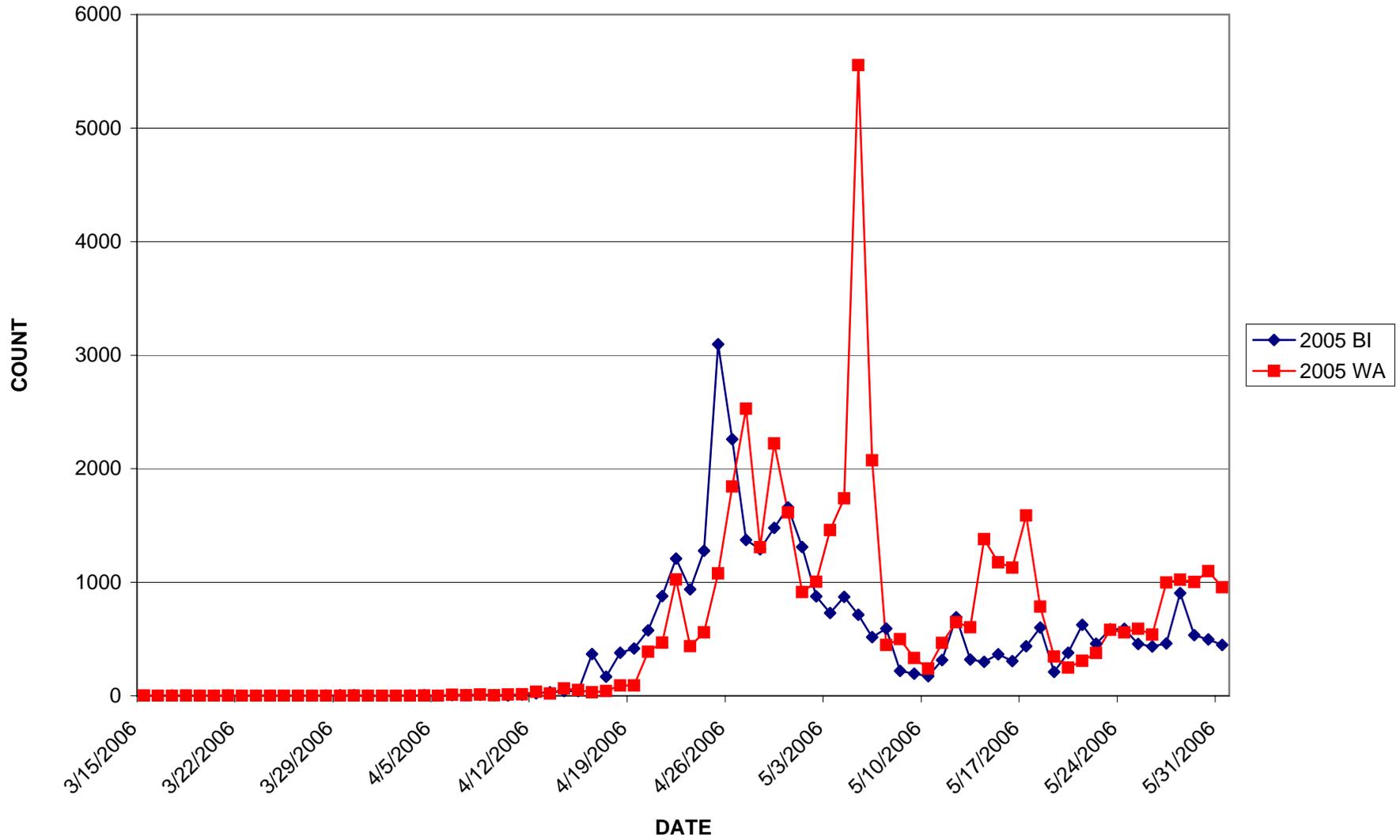
### BRADFORD ISLAND AND WASHINGTON SHORE CHINOOK COUNTS AT BONNEVILLE DAM, 2004-2006



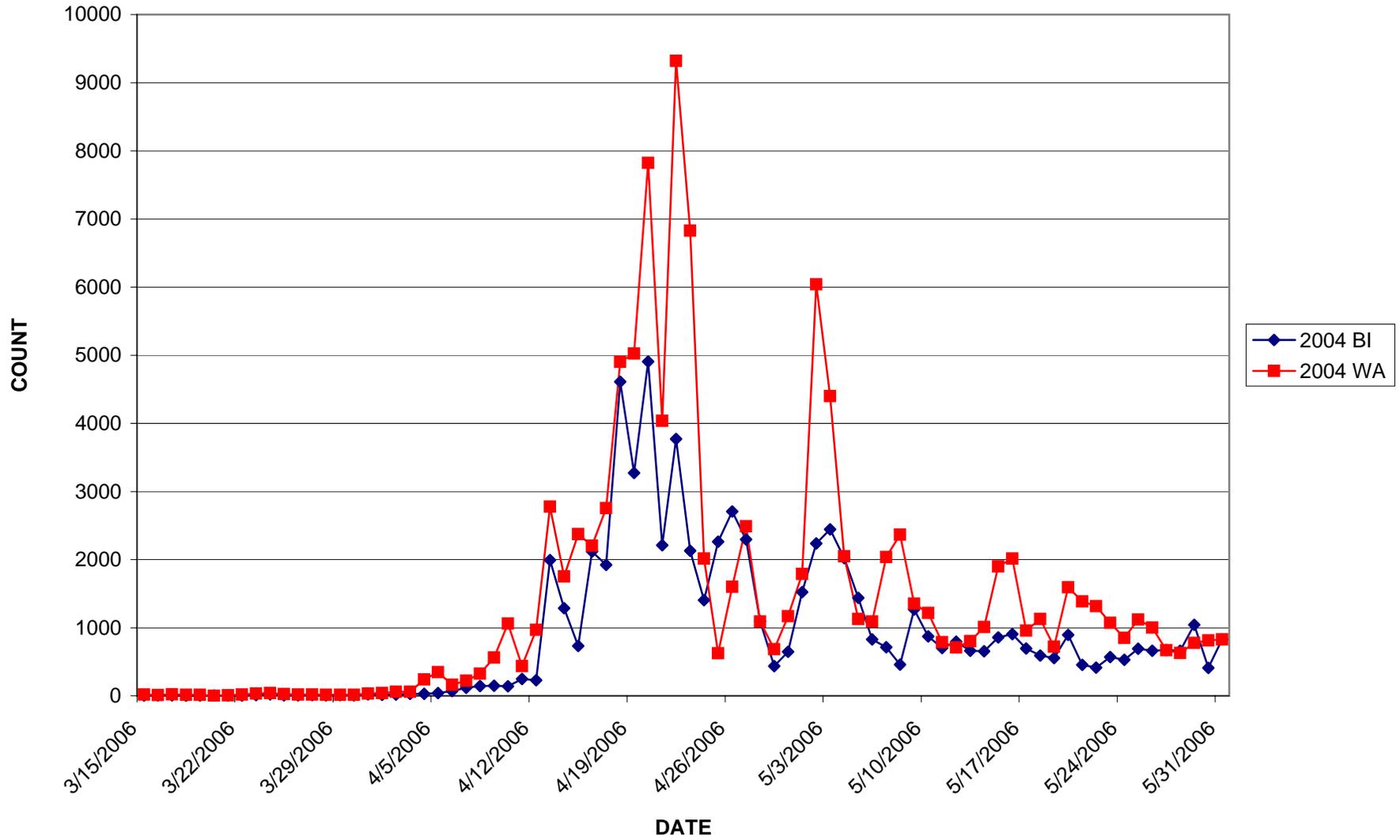
### 2006 CHINOOK COUNTS BONNEVILLE DAM



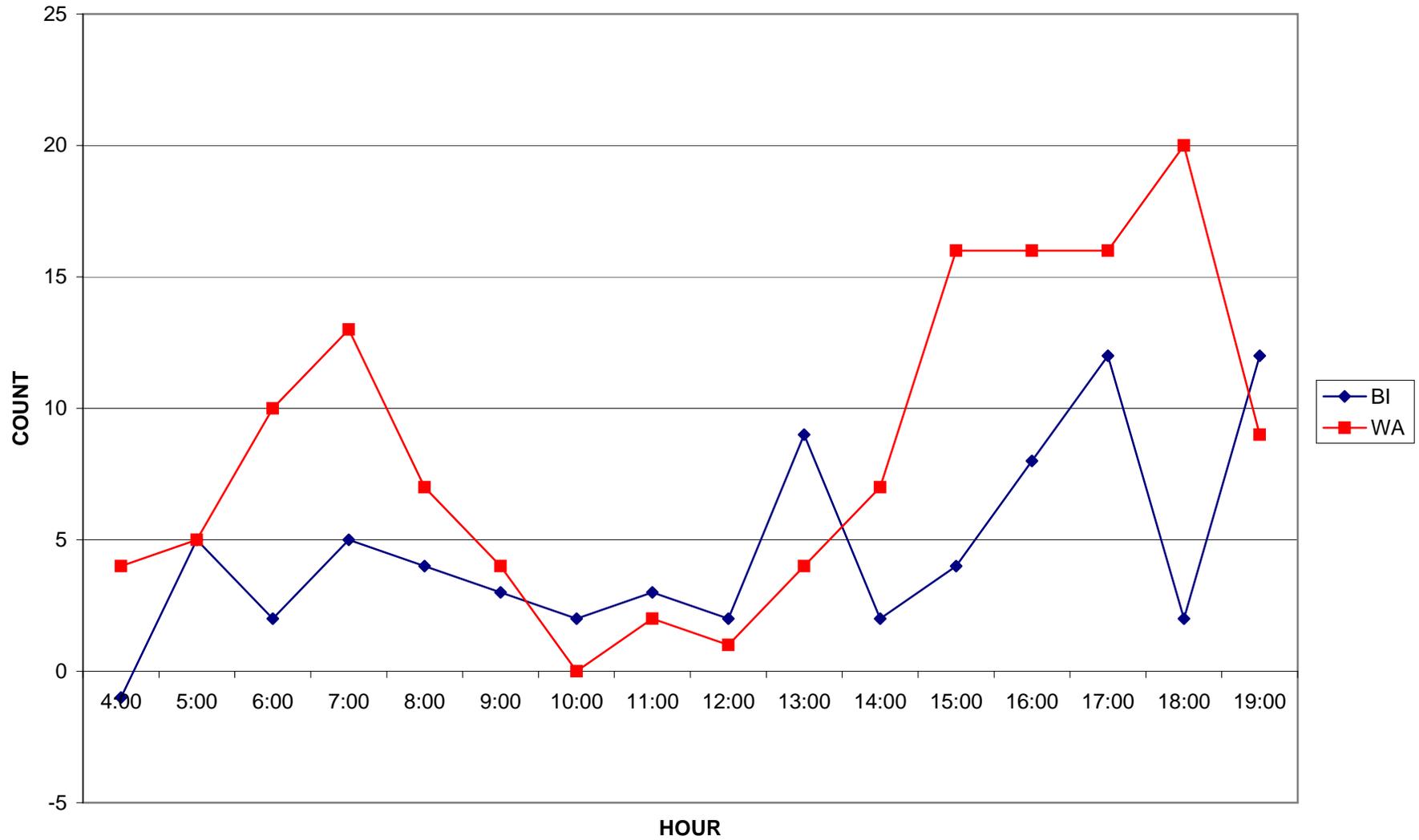
### 2005 CHINOOK COUNTS AT BONNEVILLE



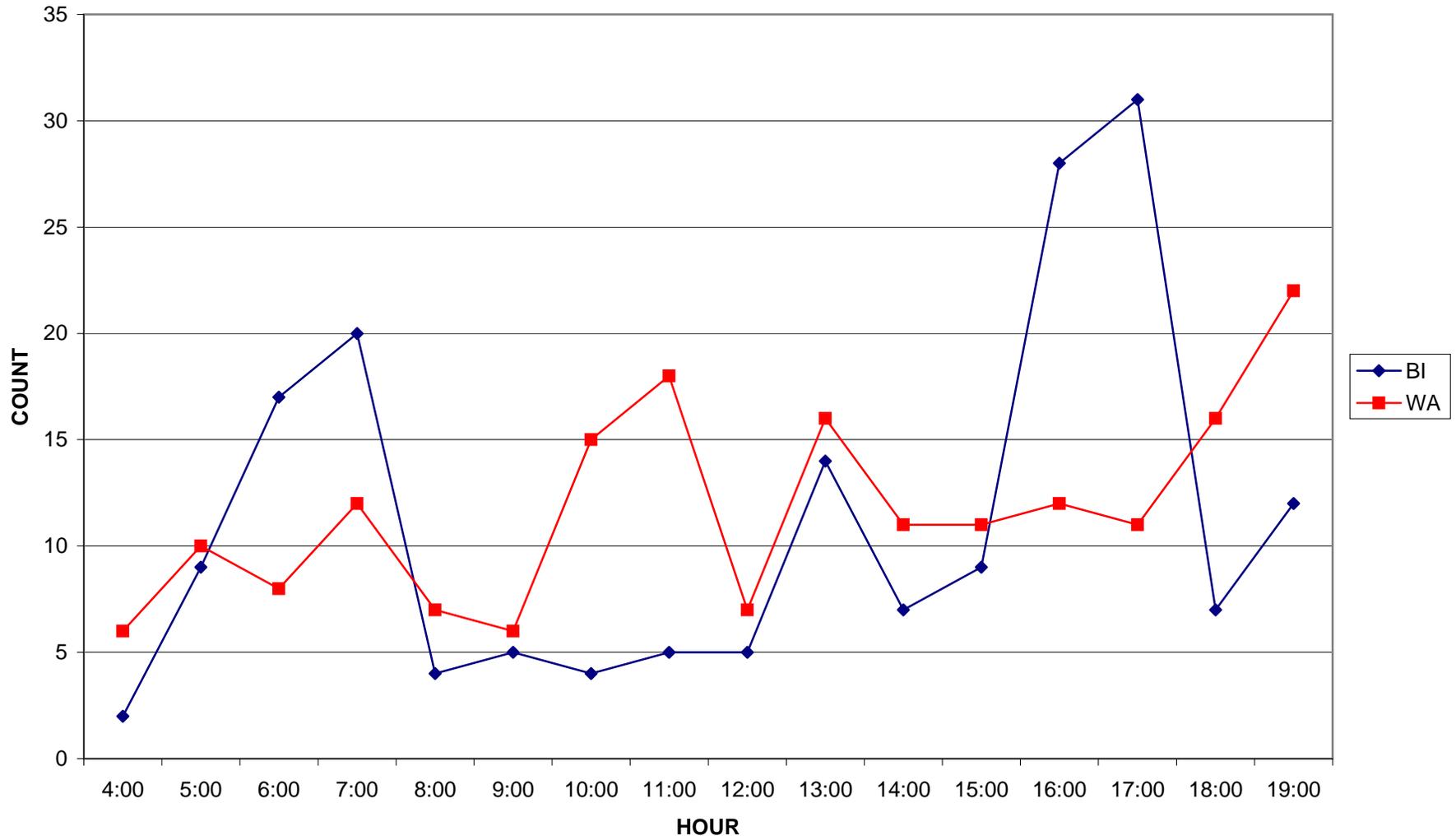
### 2004 CHINOOK COUNTS AT BONNEVILLE



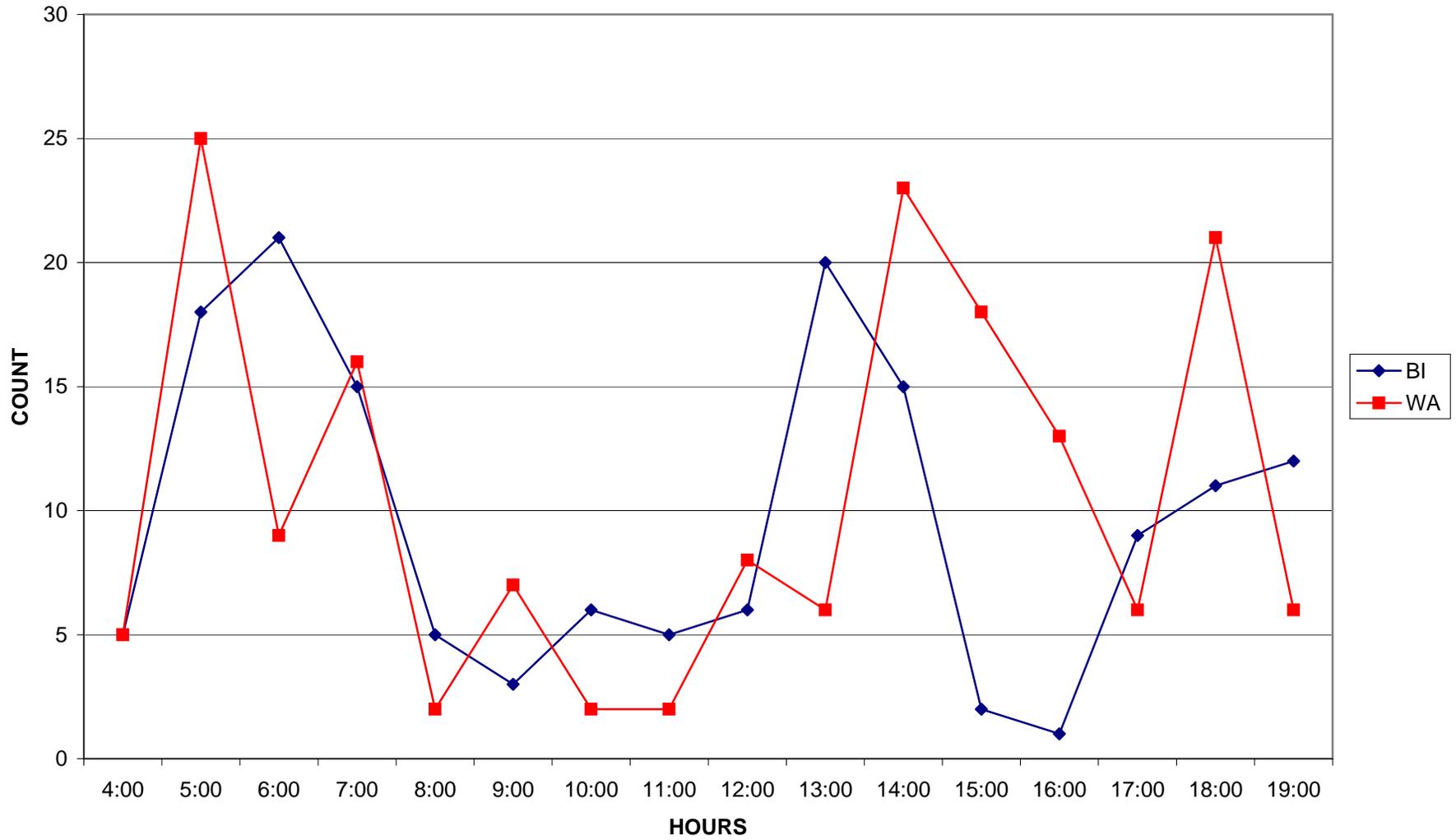
**HOURLY CHINOOK COUNTS (RAW), BONNEVILLE, 4/24/06**  
**SLEDS PULLED 11:00h**  
**TYPICAL TIME FROM ENTRY TO COUNT STATION ABOUT 2 HOURS**



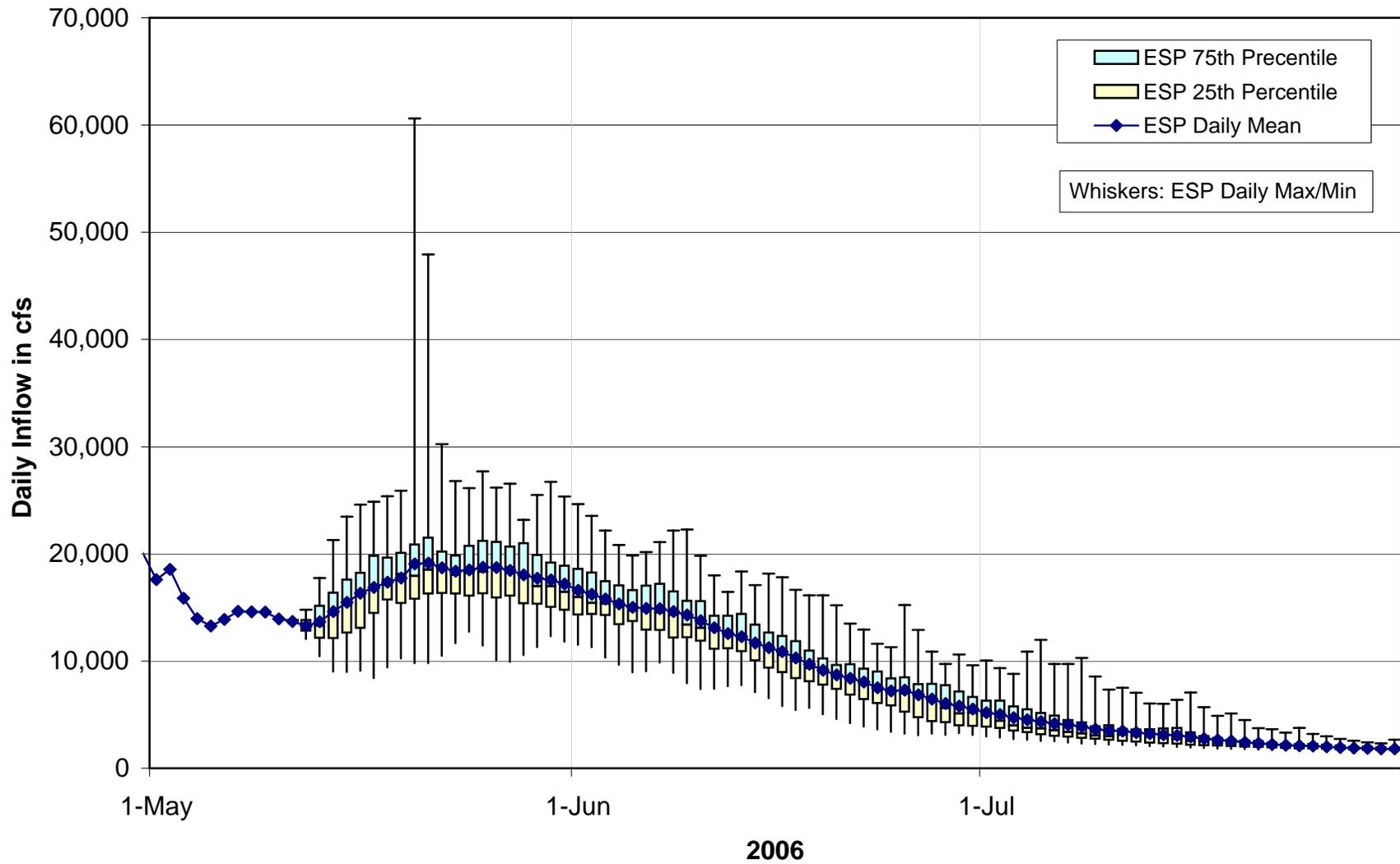
**HOURLY CHINOOK COUNTS (RAW), BONNEVILLE 4/25/06  
2 SLEDS OUT AT WASHINGTON SHORE**



**CHINOOK HOURLY COUNTS BONNEVILLE 4/26/06**  
**SLEDS PUT BACK IN BY 1200 NOON**



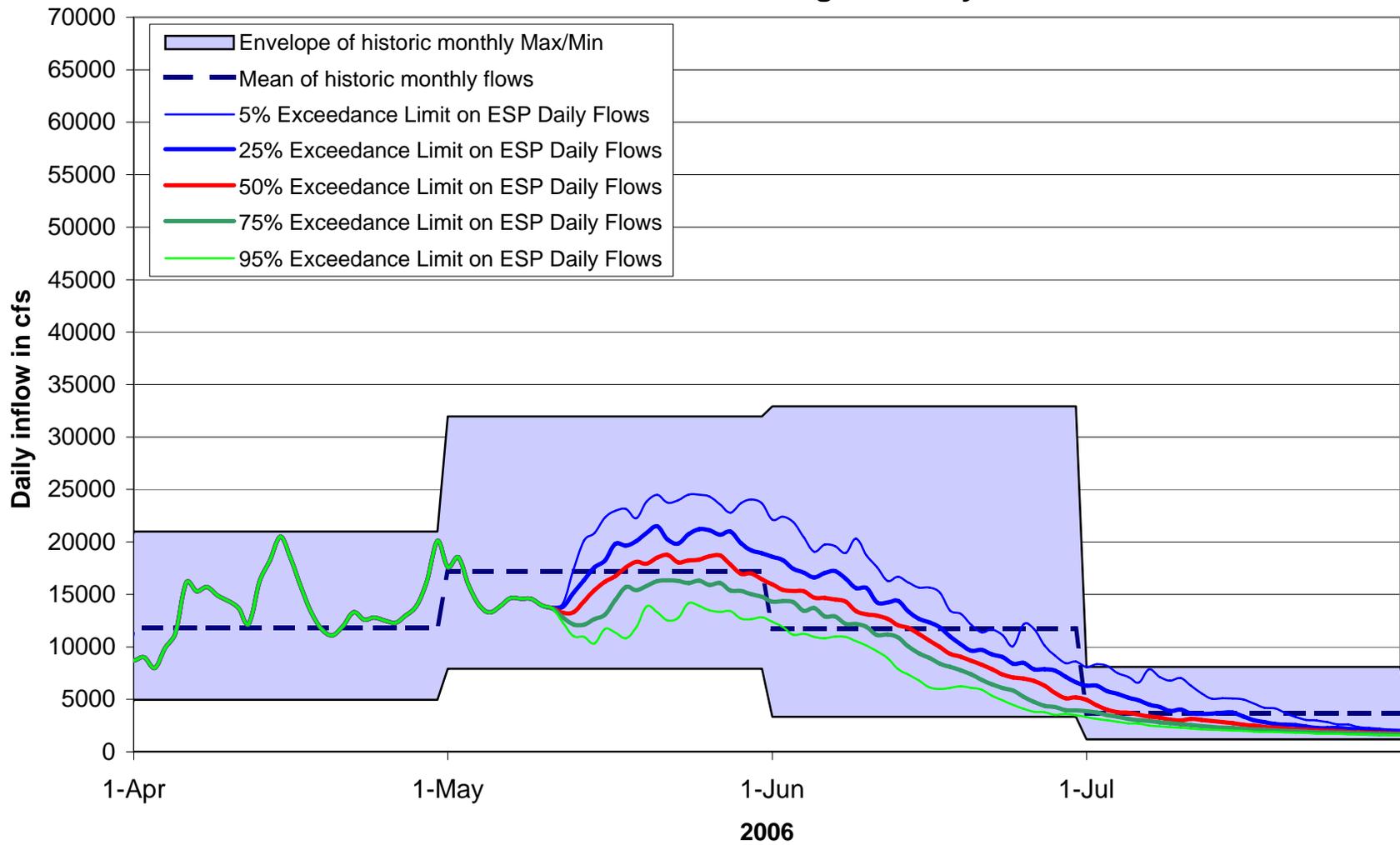
## Dworshak ESP Inflows - Daily Box-Whiskers Plot



# Dworshak Inflows

## ESP Daily Flows Exceedance Plot

### with Max/Min of Historic Average Monthly Flows



Summary of 01 May 2006 **ESP HYSSR** Model Runs

3-May-06

**Assumptions:**

- \* Streamflows are from the 25 Apr ESP run, which uses current basin conditions combined with 44 historical weather patterns (temperatures and precipitation) to produce 44 ESP hydrographs for 2006.
- \* Flood control is based on the April Final.
- \* Grand Coulee operates to flood control May 31. Coulee tries to meet 135,000 cfs at Priest Rapids in June, while drafting no lower than 1287 ft by June 30 to meet the target. Summer lake targets are 1285.0 ft in July and 1280 ft in August.
- \* Hungry Horse operates May and June for a controlled refill by 30 June and meets minimum flow of 3,500 cfs at Columbia Falls. The project drafts to 3540 ft by 31 Aug.
- \* Brownlee operates for flood control in May and refills in June to 2077 ft, and drafts some in July - August.
- \* Dworshak operates for flood control in May targeting full in June and drafting to 1534 ft by 31 Aug.
- \* Libby increases in May to meet a 1 MAF sturgeon pulse and targets full in June. Libby drafts to 2439 ft by 31 Aug, while meeting bull trout minimum flows of 8,000 cfs.

**Results:**

Priest Rapids Meets the Following Flow Objectives:

Month	Occurrences out of 44 Years	Average Flow for 44 Years (kcfs)	Flow Objective (kcfs)
May	44	183	135
Jun	37	163	135

Lower Granite Meets the Following Flow Objectives:

Month	Occurrences out of 44 Years	Average Flow for 44 Years (kcfs)	Flow Objective (kcfs)
May	44	132	100
Jun	44	118	84
Jul	22	55	54
Aug 15	0	35	54
Aug 31	0	36	54

McNary Meets the Following Flow Objectives:

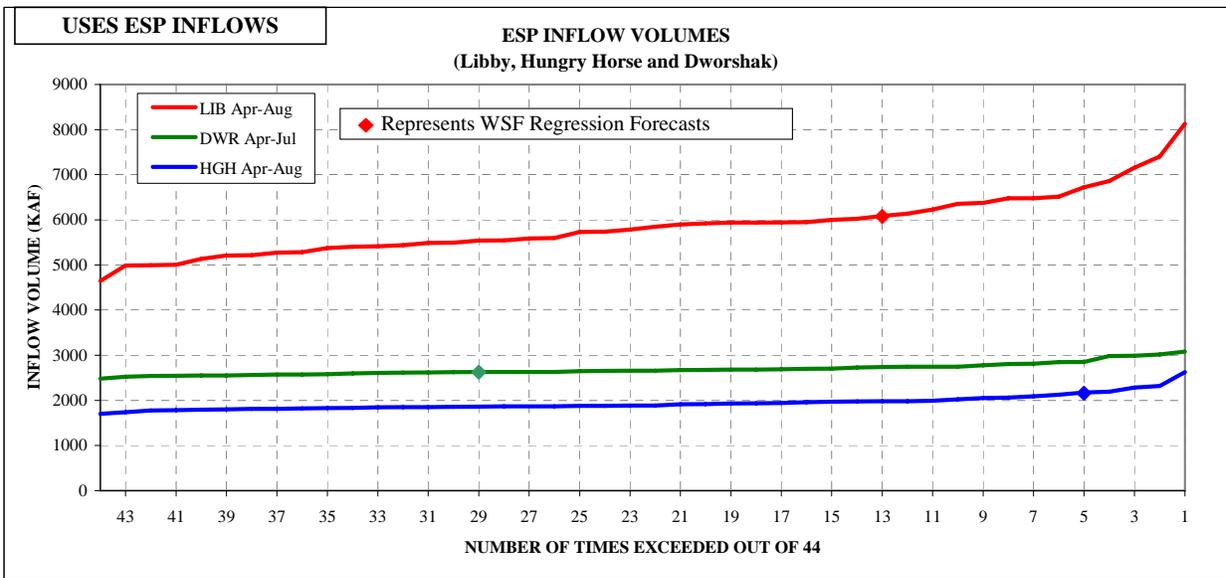
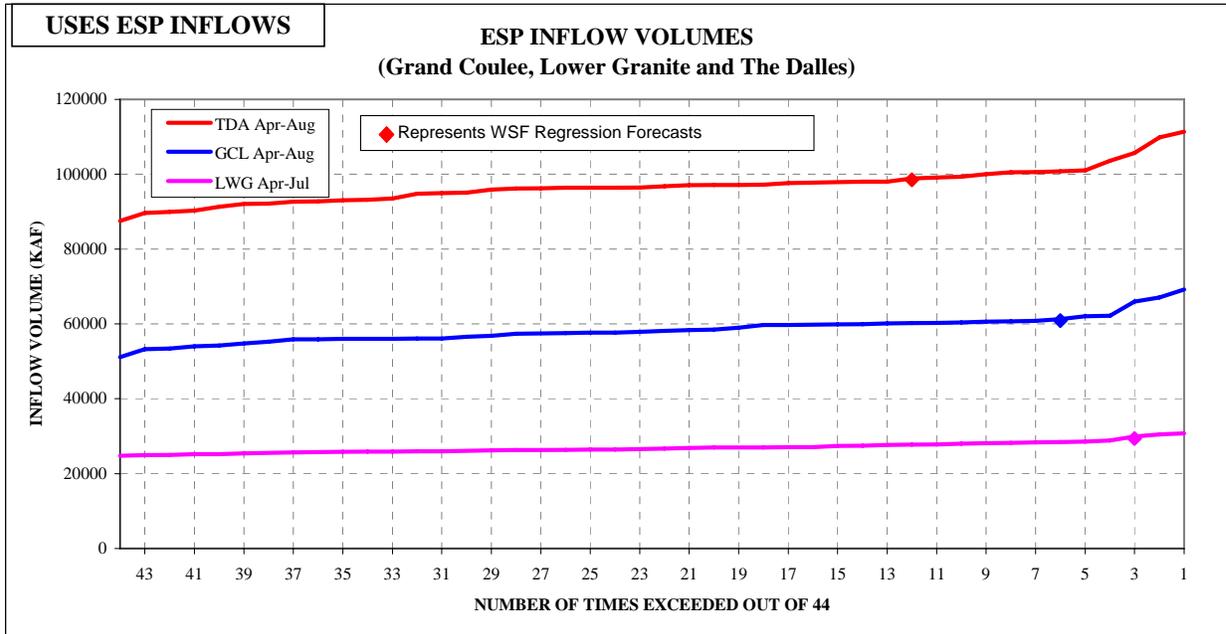
Month	Occurrences out of 44 Years	Average Flow for 44 Years (kcfs)	Flow Objective (kcfs)
May	41	321	260
Jun	36	288	260
Jul	30	215	200
Aug 15	0	137	200
Aug 31	0	132	200

Projects Refill to within 1 foot of full by 30 June:

Month	Occurrences out of 44 Years	Average Elevation on 30 Jun for 44 Years
Libby	28	2456
Hungry Horse	31	3559
Grand Coulee	37	1290
Dworshak	43	1600

Period Average Flows (kcfs):

	OBS FEB 1-28	OBS MAR 1-31	OBS APR 1-30	FCST MAY 1-31	FCST JUN 1-30	FCST JUL 1-31	FCST AUG 1-15	FCST AUG 16-31	FCST SEP 1-30
LIB	4.0	7.6	4.6	12.3	18.3	22.4	16.2	15.0	7.5
HGH	5.4	2.0	9.2	4.7	1.8	6.3	5.8	4.5	1.6
GCL	103	84	141	161	138	143	92	90	70
PRD	112	95	156	183	163	155	98	94	74
DWR	6.7	3.7	12.8	6.4	4.5	10.1	10.1	12.6	4.5
BRN	29	32	64	44	29	15	14	14	14
LWG	45	51	123	132	118	55	35	36	27
MCN	162	149	291	321	288	215	137	132	102
TDA	170	156	292	342	300	219	140	136	106
BON	177	165	308	347	305	222	142	138	108



Volume Comparison Table (ESP versus Regression) - May Earlybird:

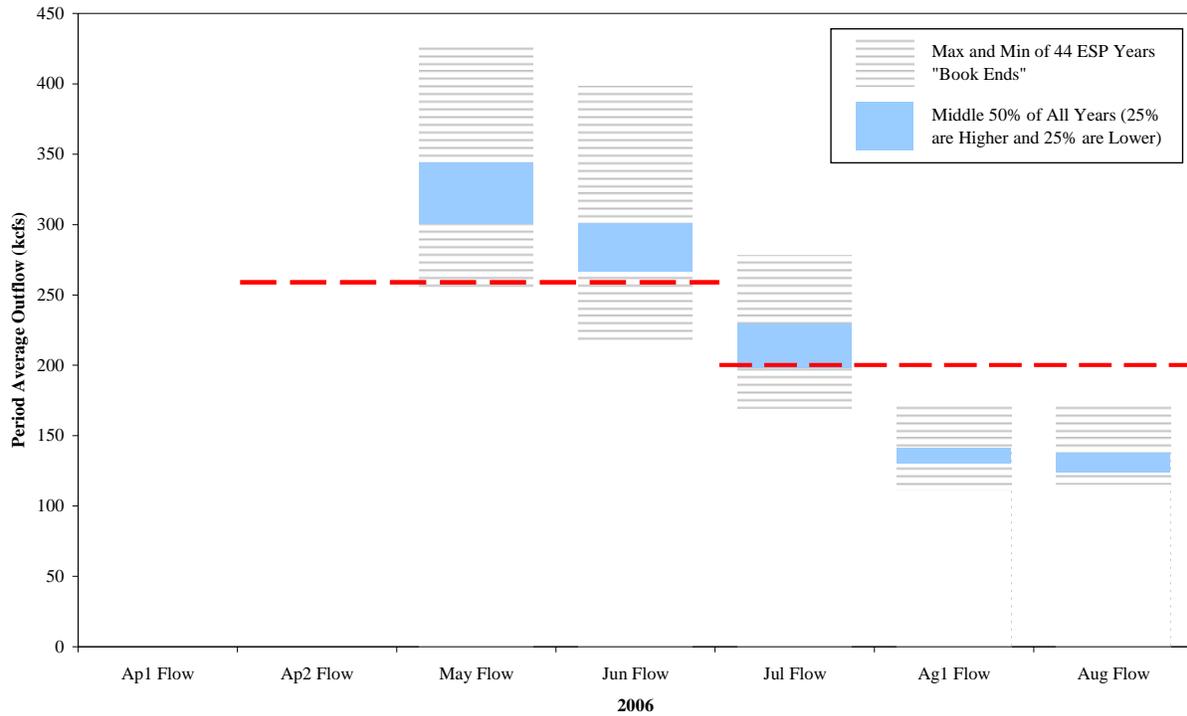
Forecast Period	Official WSF (Regression)			ESP Volumes				
	Volume (kaf)	Percent of Average	30 year Average (kaf)	10% Exceedance Probability	30% Exceedance Probability	50% Exceedance Probability	70% Exceedance Probability	90% Exceedance Probability
Grand Coulee	60900	101%	60290	61800	59900	58000	56100	54400
Lower Granite	29400	136%	21550	28500	27500	26600	26000	25300
The Dalles	98500	106%	93090	101000	98100	96600	94900	91500
Hungry Horse *	2157	104%	2070	2160	1980	1880	1850	1790
Libby **	6076	97%	6248	6500	6010	5780	5470	5150
Dworshak **	2626	99%	2645	2840	2710	2660	2620	2550

\* USBR Official Forecast (April Final)

\*\* Corps Official Forecast (April Final for Libby, May Final for Dworshak)

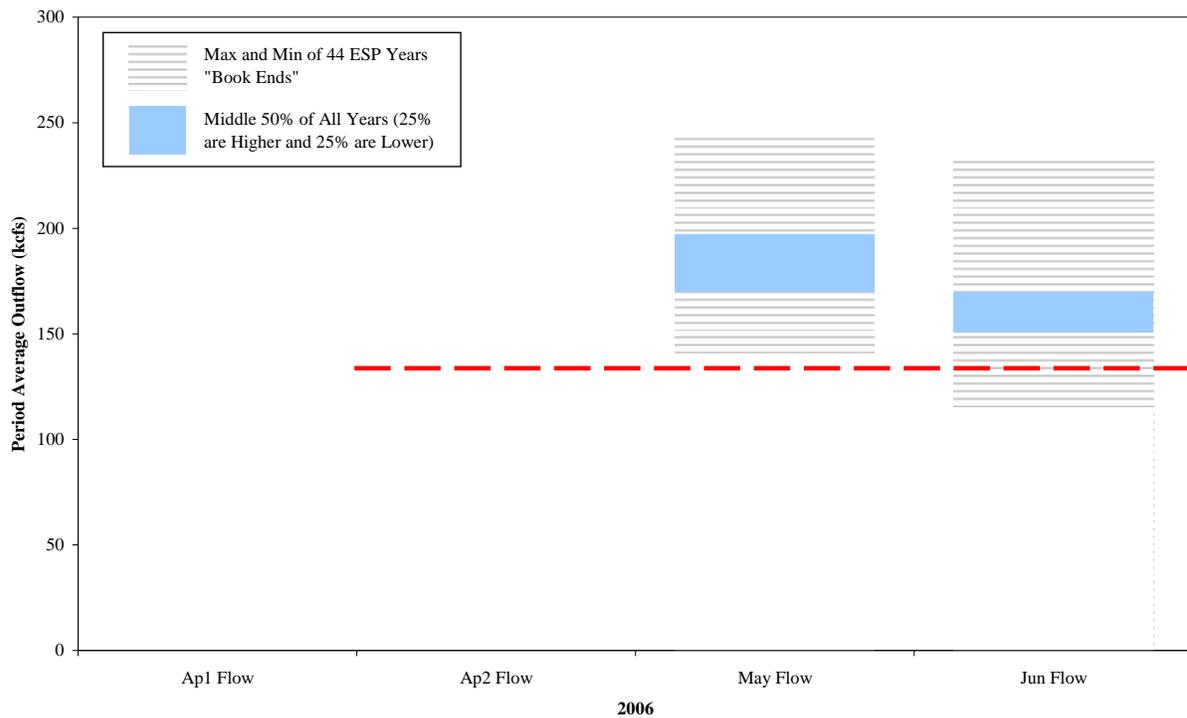
**USES ESP INFLOWS**

**MCNARY ESP HYSSR RESULTS  
MONTHLY OUTFLOW PROJECTIONS**



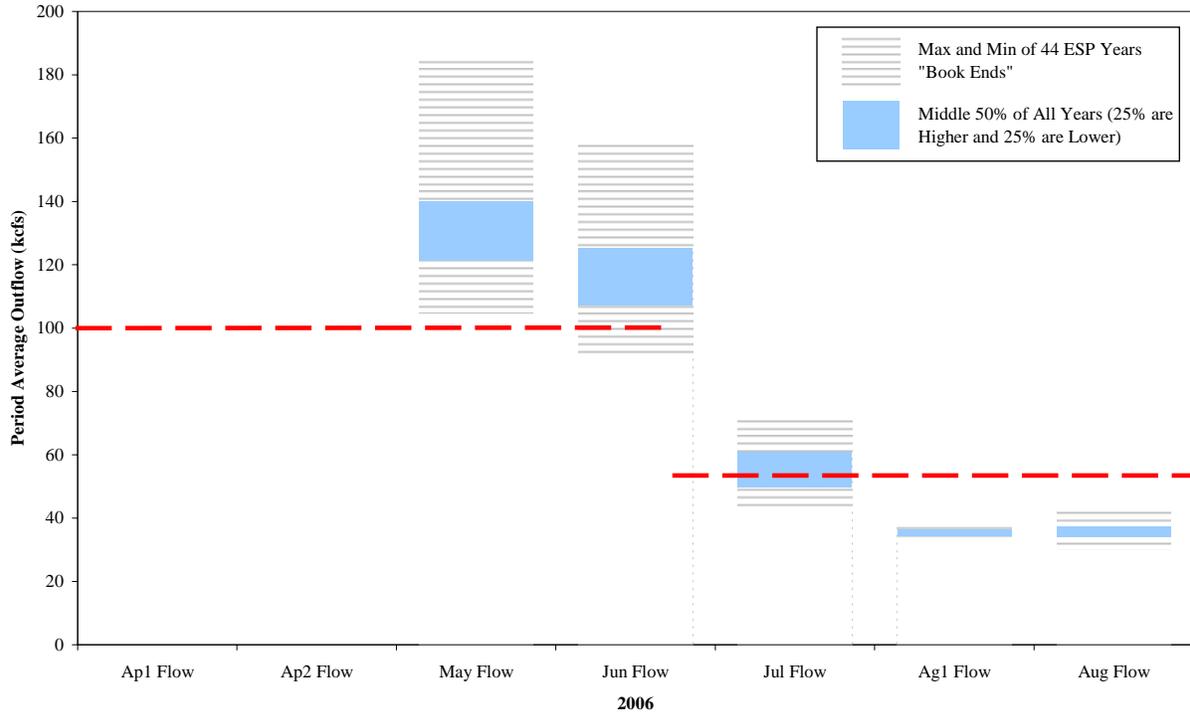
**USES ESP INFLOWS**

**PRIEST RAPIDS ESP HYSSR RESULTS  
MONTHLY OUTFLOW PROJECTIONS**

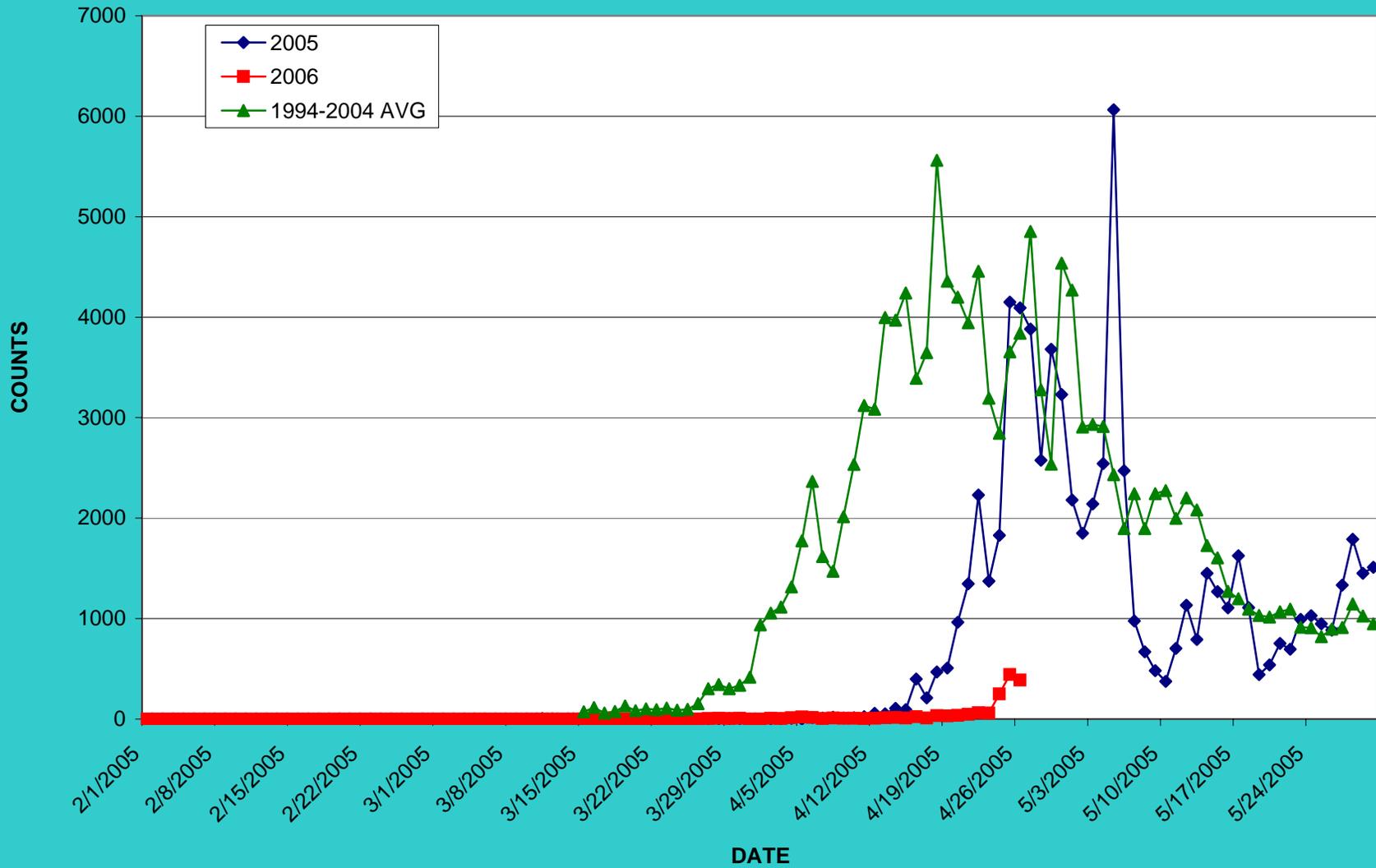


**USES ESP INFLOWS**

**LOWER GRANITE ESP HYSSR RESULTS  
MONTHLY OUTFLOW PROJECTIONS**



### CHINOOK COUNTS AT BONNEVILLE DAM, 2005, 2006, AND 1994-2004 AVERAGE



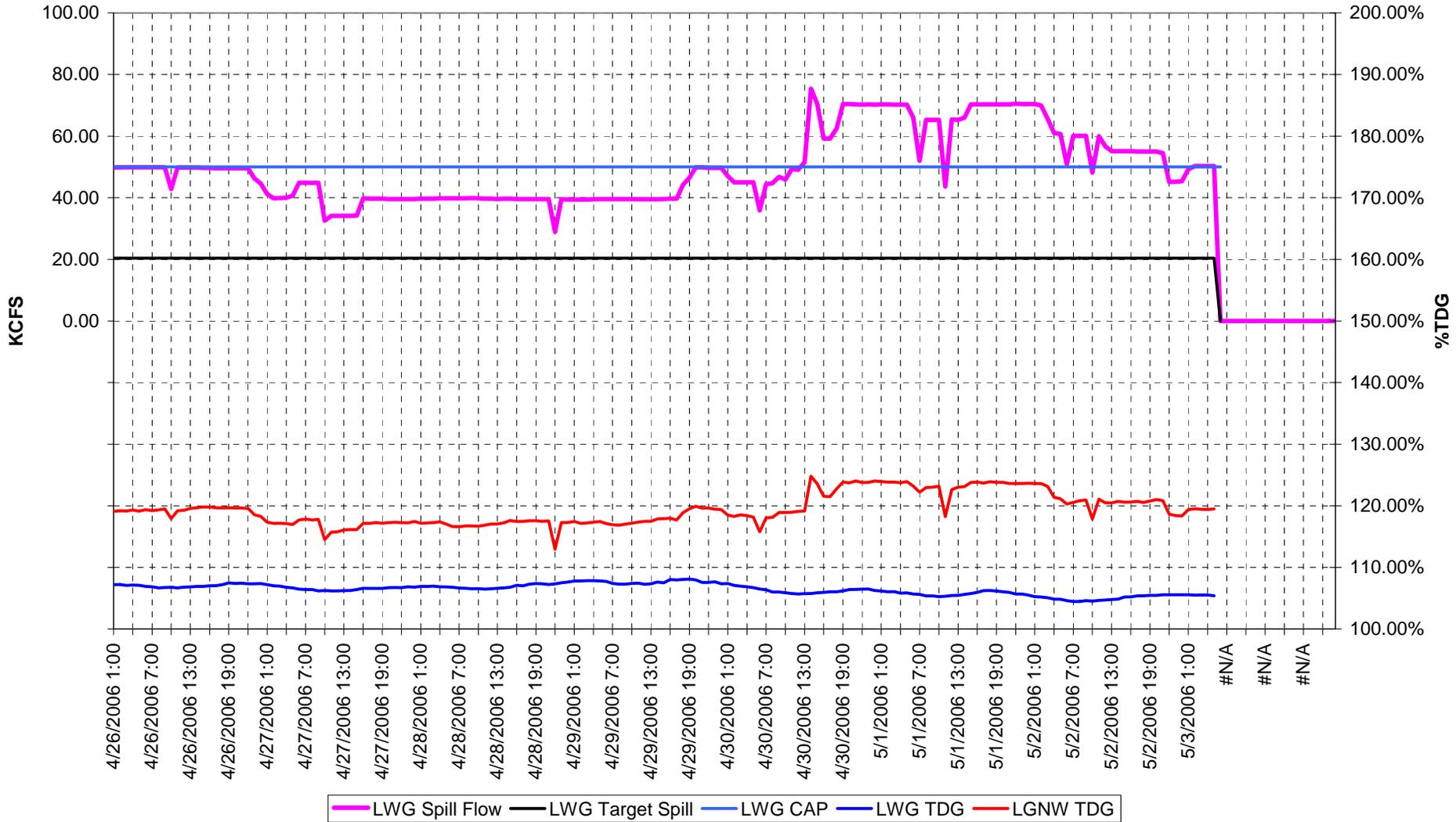
# Project Operations Update

26 April - 3 May

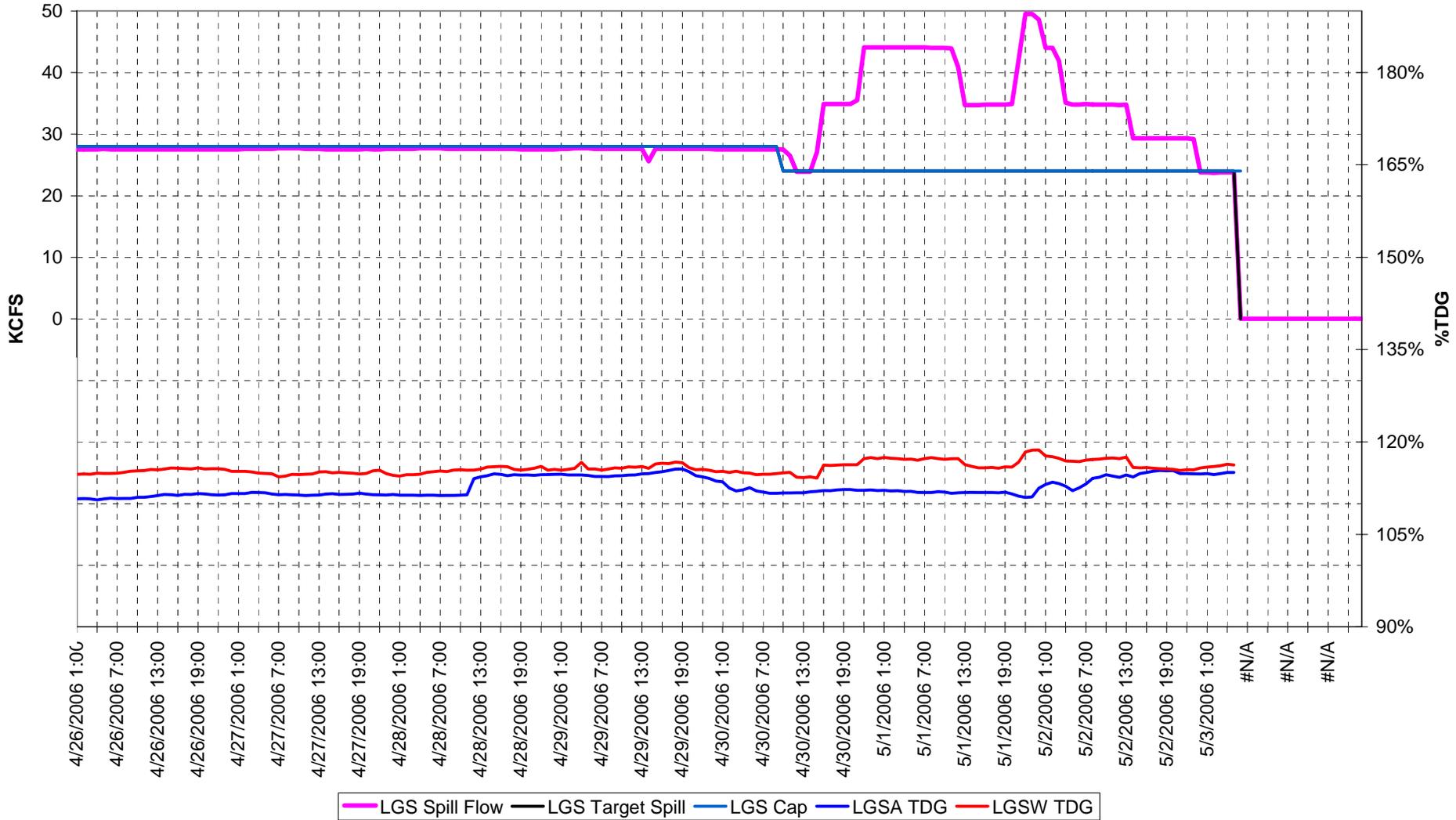
# High 12-hr Average %TDG

Date	Monitoring Stations (full list)																	
	LWG	LGNW	LGSA	LGSW	LMNA	LMNW	IHRA	IDSW	MCNA	MCPW	JDY	JHAW	TDA	TDDO	BON	CCIW	WRNO	CWMW
Gas Cap %	115	120	115	120	115	120	115	120	115	120	115	120	115	120	115	120	120	115
04/03/2006	102.5	112.5	103.0	112.4	102.7	116.2	103.0	116.1	104.4	114.9	105.7	105.5	105.5	105.8	105.4	122.5	105.5	105.2
04/04/2006	102.6	113.9	102.4	112.1	104.4	115.9	106.3	116.4	104.5	112.3	105.7	105.7	105.5	105.6	106.2	120.6	106.9	108.0
04/05/2006	104.4	118.4	104.0	112.6	110.4	116.6	112.8	119.3	106.5	119.5	106.5	113.4	106.0	108.1	106.0	115.6	106.5	107.4
04/06/2006	102.2	115.7	107.7	114.6	109.3	116.7	112.6	122.0	104.2	119.1	104.1	115.5	105.0	110.0	104.5	118.7	108.0	106.1
04/07/2006	104.0	121.7	109.3	117.2	113.0	118.2	113.0	120.9	105.7	119.0	105.1	119.6	106.8	112.2	109.1	121.7	113.6	110.3
04/08/2006	105.6	118.0	111.3	117.1	115.5	118.0	113.4	119.0	107.2	118.9	105.6	111.8	107.7	112.3	110.6	120.4	113.0	111.9
04/09/2006	106.2	117.9	113.9	118.0	114.9	118.1	114.3	119.5	108.6	119.1	107.5	119.4	106.2	109.6	110.9	119.4	112.7	112.4
04/10/2006	106.9	118.9	113.9	118.0	117.5	118.5	115.2	119.4	108.6	119.5	109.9	120.5	111.1	116.6	108.6	121.4	112.5	111.9
04/11/2006	106.7	117.4	114.1	119.1	116.8	118.1	115.5	118.9	109.7	121.7	111.9	120.3	113.3	117.0	114.6	124.1	117.4	115.3
04/12/2006	105.9	118.0	112.5	118.3	117.8	116.7	115.8	119.1	110.6	118.7	112.5	120.0	114.0	117.7	115.7	123.4	117.4	117.9
04/13/2006	106.8	117.7	112.3	119.0	117.1	115.7	119.8	110.3	118.6	112.7	120.3	113.8	117.6	115.5	119.4	116.2	115.7	115.7
04/14/2006	108.5	118.9	114.0	115.7	118.9	116.9	116.5	120.0	111.0	119.5	114.8	120.9	114.8	118.2	116.5	120.1	116.7	115.9
04/15/2006	107.5	121.4	112.2	116.2	115.7	116.8	115.3	120.5	109.6	119.8	114.8	121.8	115.4	118.3	115.0	123.2	116.5	114.8
04/16/2006	105.4	123.0	111.1	117.7	0.0	118.5	112.9	120.8	108.8	119.9	113.0	123.0	118.5	120.0	115.0	124.5	117.8	116.7
04/17/2006	105.0	122.7	112.1	117.1	115.1	117.2	113.1	120.8	109.5	119.6	111.1	121.2	116.4	118.2	115.8	124.5	118.3	116.0
04/18/2006	105.6	120.5	112.9	116.7	116.2	117.4	114.2	120.0	110.7	120.1	109.2	120.5	113.7	117.0	116.1	123.9	118.6	118.5
04/19/2006	108.3	120.9	115.1	117.4	117.6	118.3	116.5	119.5	113.4	120.0	112.2	119.8	114.6	117.5	116.8	123.5	117.7	117.9
04/20/2006	109.5	119.8	115.8	117.7	118.6	118.1	117.6	119.9	116.6	120.4	114.6	121.6	115.3	118.2	117.1	123.2	118.2	118.2
04/21/2006	109.2	116.5	114.9	116.0	118.1	120.5	116.6	118.3	116.4	119.6	115.0	119.6	114.8	117.4	114.8	120.3	116.1	115.5
04/22/2006	107.1	114.6	112.0	115.1	115.2	121.9	114.9	118.1	114.2	118.7	114.6	119.2	113.8	117.4	114.3	123.5	115.3	114.4
04/23/2006	105.5	116.5	109.4	115.2	115.0	121.1	115.2	118.2	114.6	118.5	114.1	120.2	114.3	117.9	115.5	123.1	115.3	113.9
04/24/2006	105.8	118.7	107.7	115.1	113.8	118.3	114.1	119.3	114.5	120.2	113.0	122.4	115.6	117.8	116.8	121.4	116.6	115.6
04/25/2006	107.1	119.7	109.5	114.7	113.8	117.7	113.6	118.9	115.4	119.7	112.9	120.0	120.1	121.0	116.9	119.5	117.0	117.3
04/26/2006	107.3	119.6	111.5	115.6	114.0	120.3	113.7	118.9	115.0	120.7	112.4	119.2	113.9	117.0	118.1	121.5	117.9	116.1
04/27/2006	106.8	117.4	111.6	115.1	114.2	117.0	113.1	118.2	114.7	120.2	113.1	120.0	114.7	117.6	114.2	119.6	116.0	116.6
04/28/2006	107.2	117.4	114.6	115.8	115.8	117.6	114.4	117.8	116.0	118.1	115.6	119.1	115.5	118.2	117.2	119.6	117.1	116.7
04/29/2006	107.9	118.8	115.0	116.2	116.6	117.9	115.8	117.6	116.5	116.4	115.9	118.1	114.6	---	117.0	119.9	116.6	115.8
04/30/2006	106.6	123.0	112.4	116.3	113.9	117.6	113.3	118.2	113.1	117.4	113.4	116.4	113.2	---	111.4	120.4	113.1	113.5
05/01/2006	106.0	123.8	112.0	117.6	114.2	118.4	113.3	120.6	111.6	119.8	112.3	116.6	112.5	115.0	111.5	122.5	114.3	112.0
05/02/2006	105.4	121.6	115.0	117.3	115.2	117.7	113.4	119.9	112.4	120.3	109.5	121.2	116.3	120.4	114.3	122.9	117.6	116.3

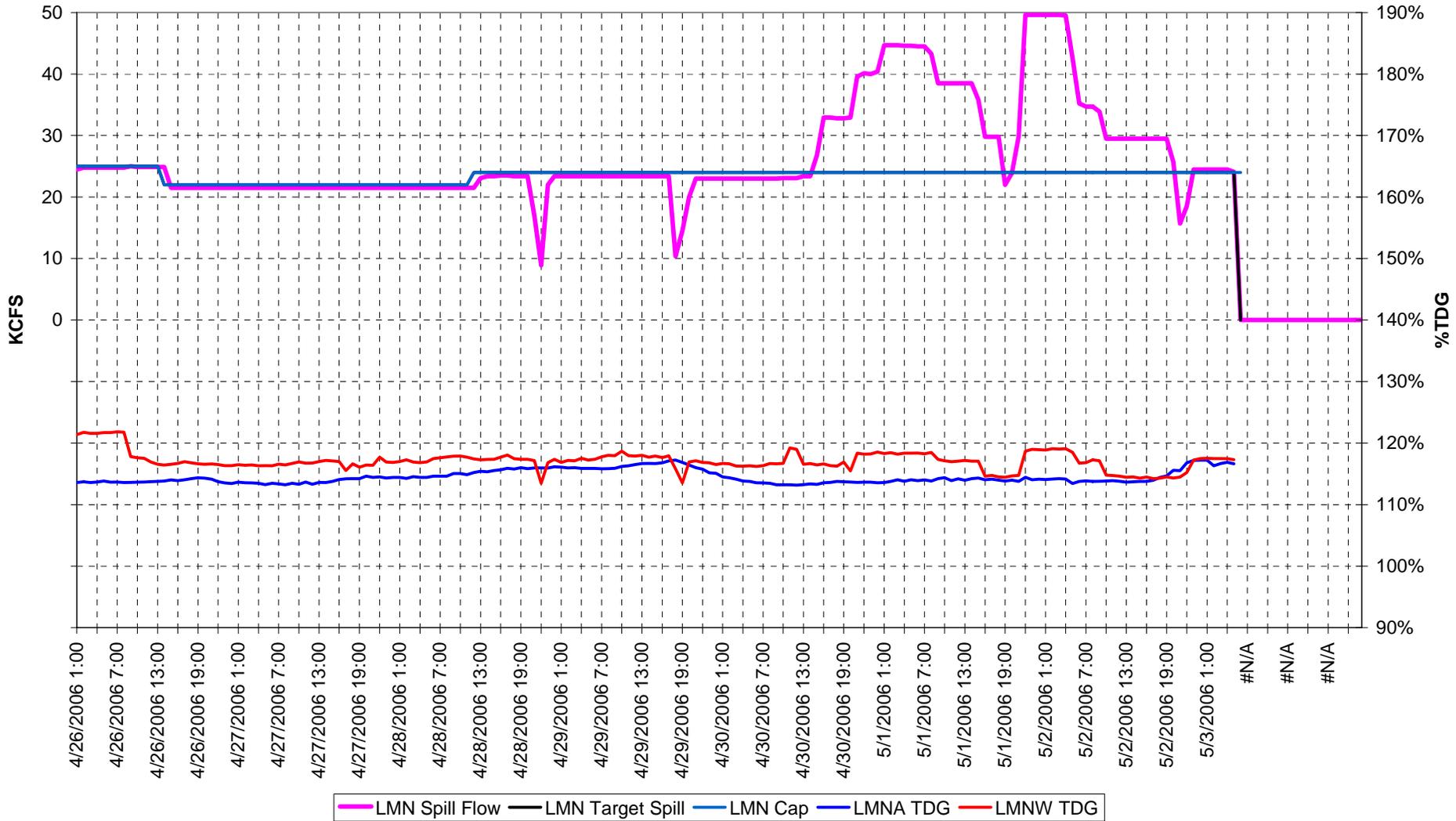
# LWG SPILL HOURLY



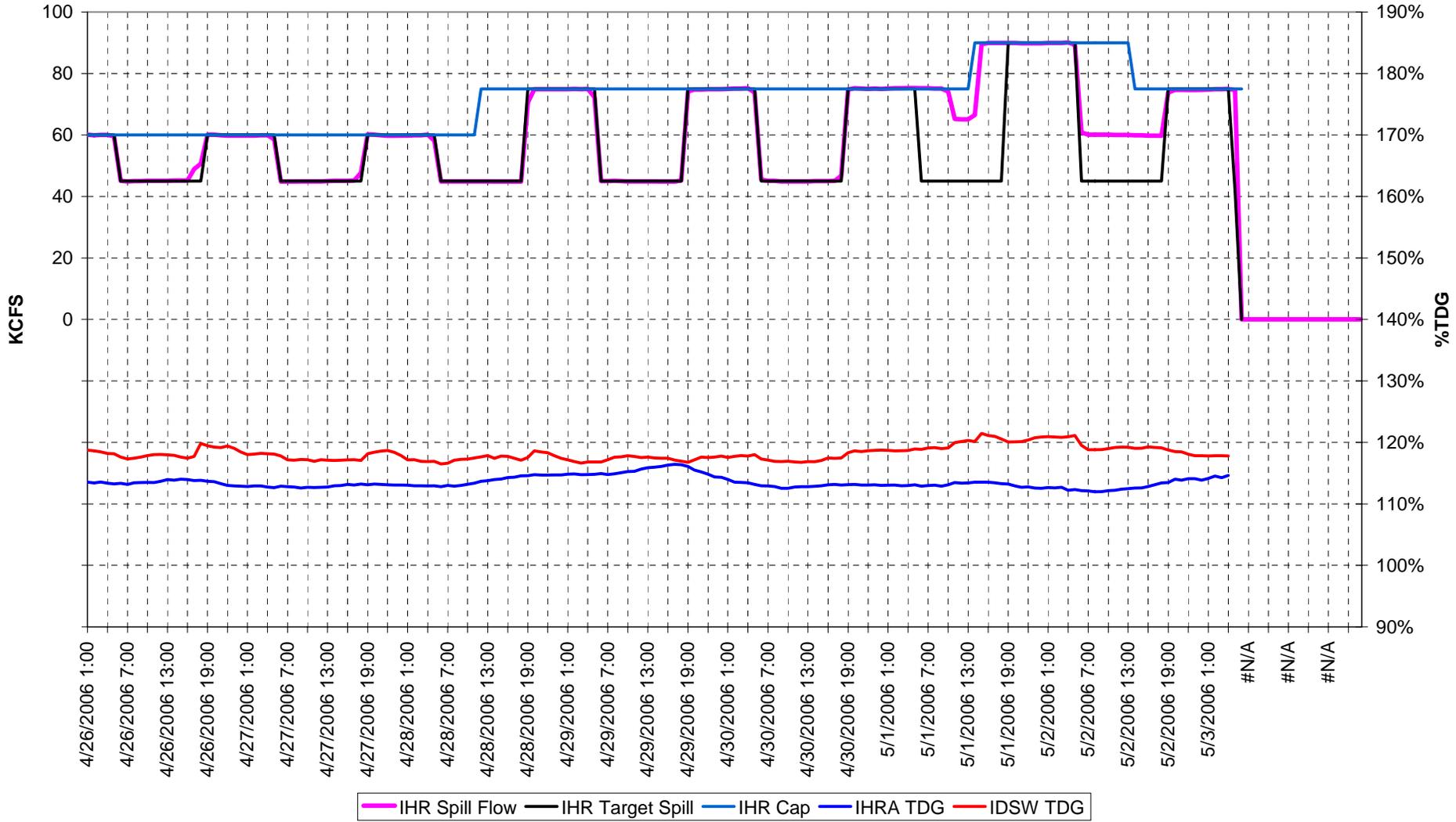
# LGS SPILL HOURLY



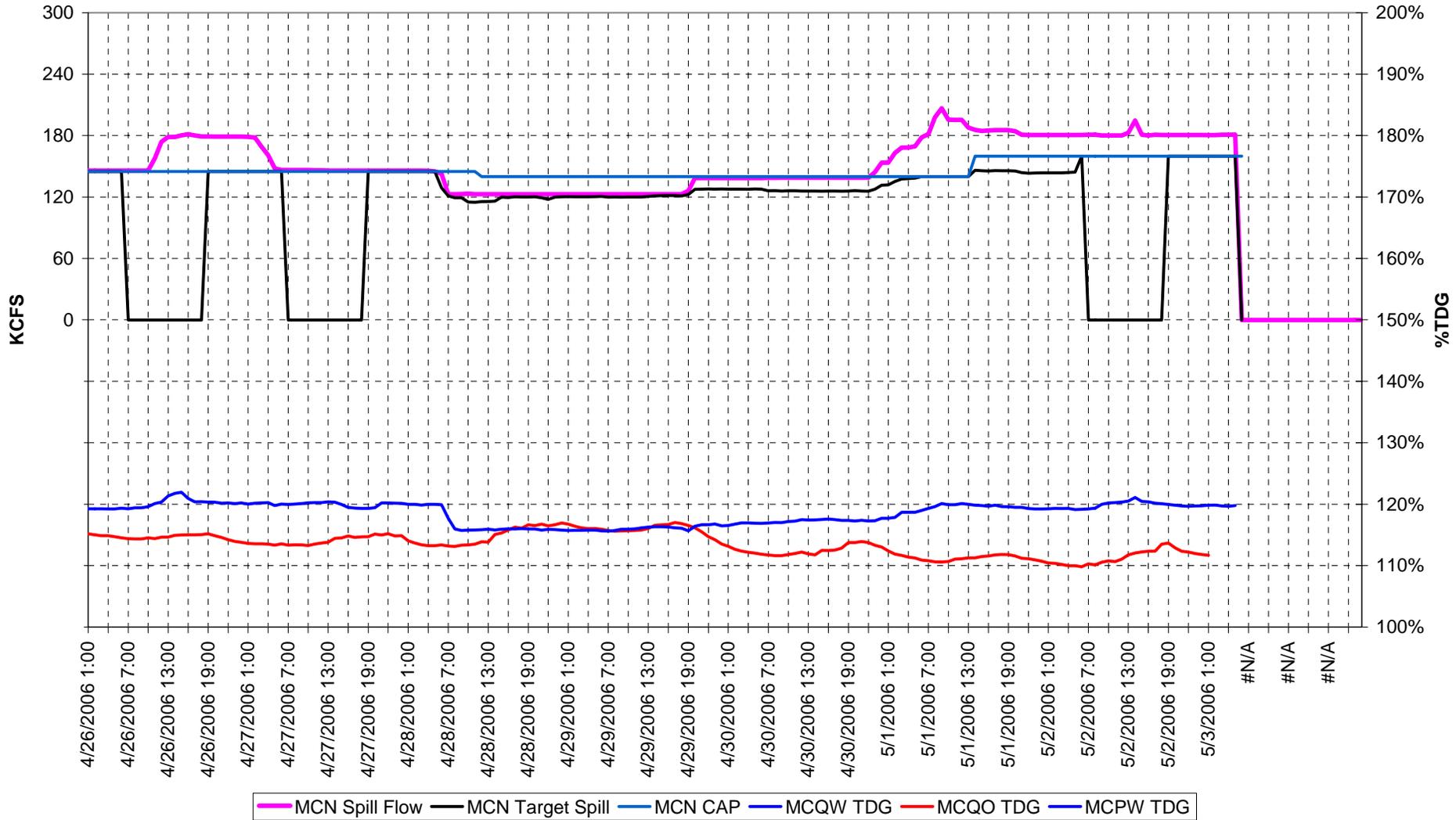
# LMN SPILL HOURLY



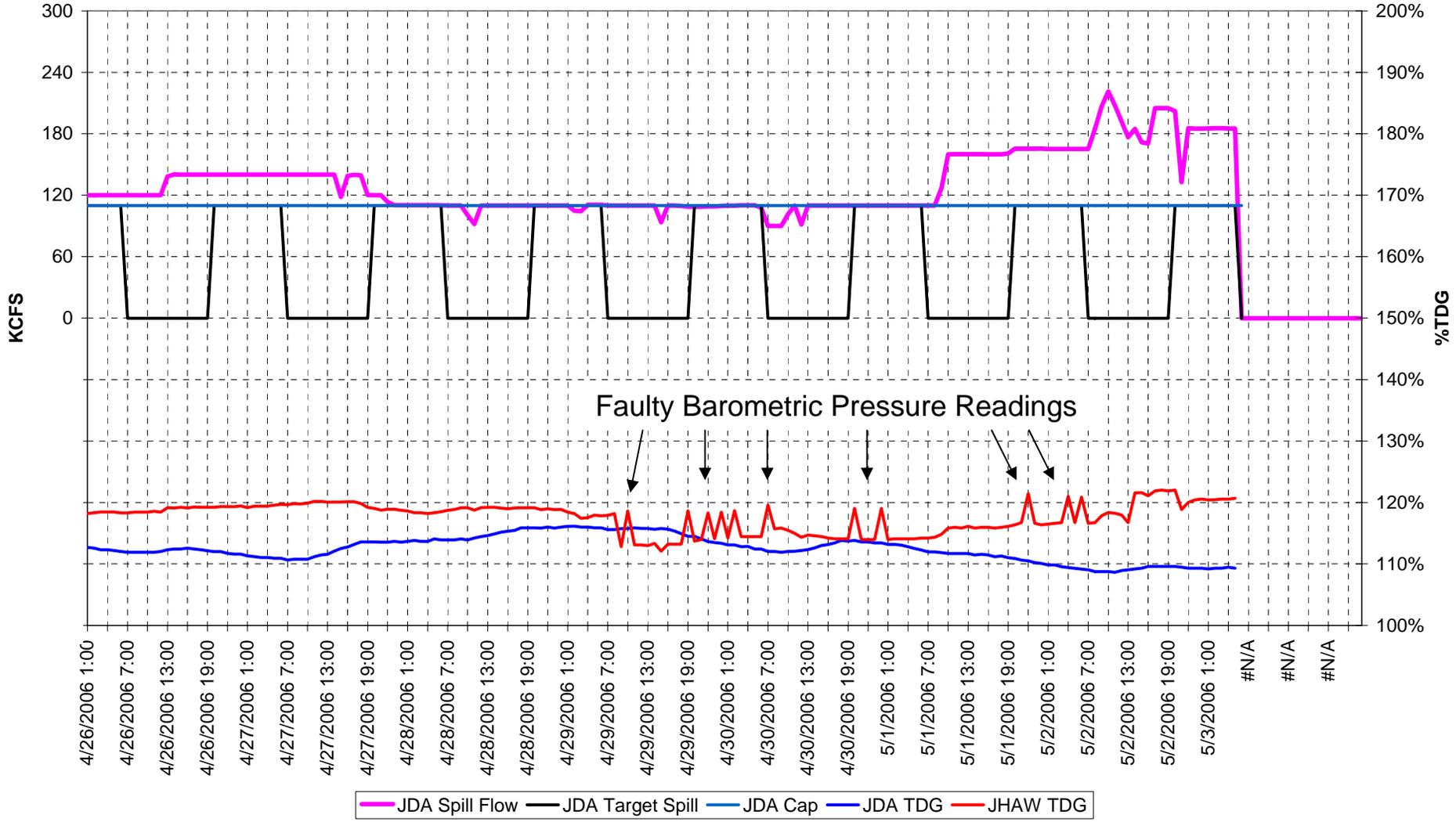
# IHR SPILL HOURLY



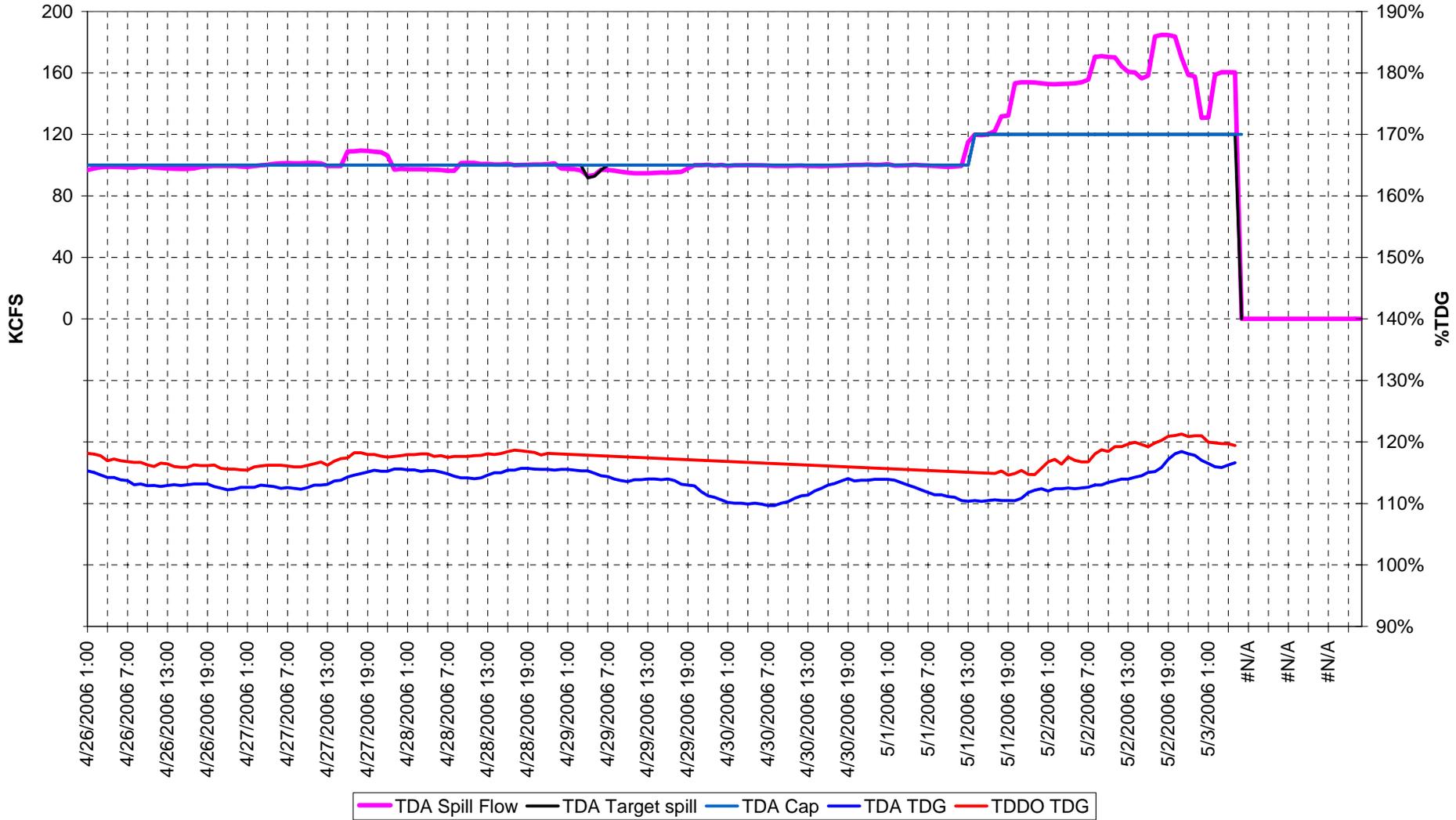
# MCN SPILL HOURLY



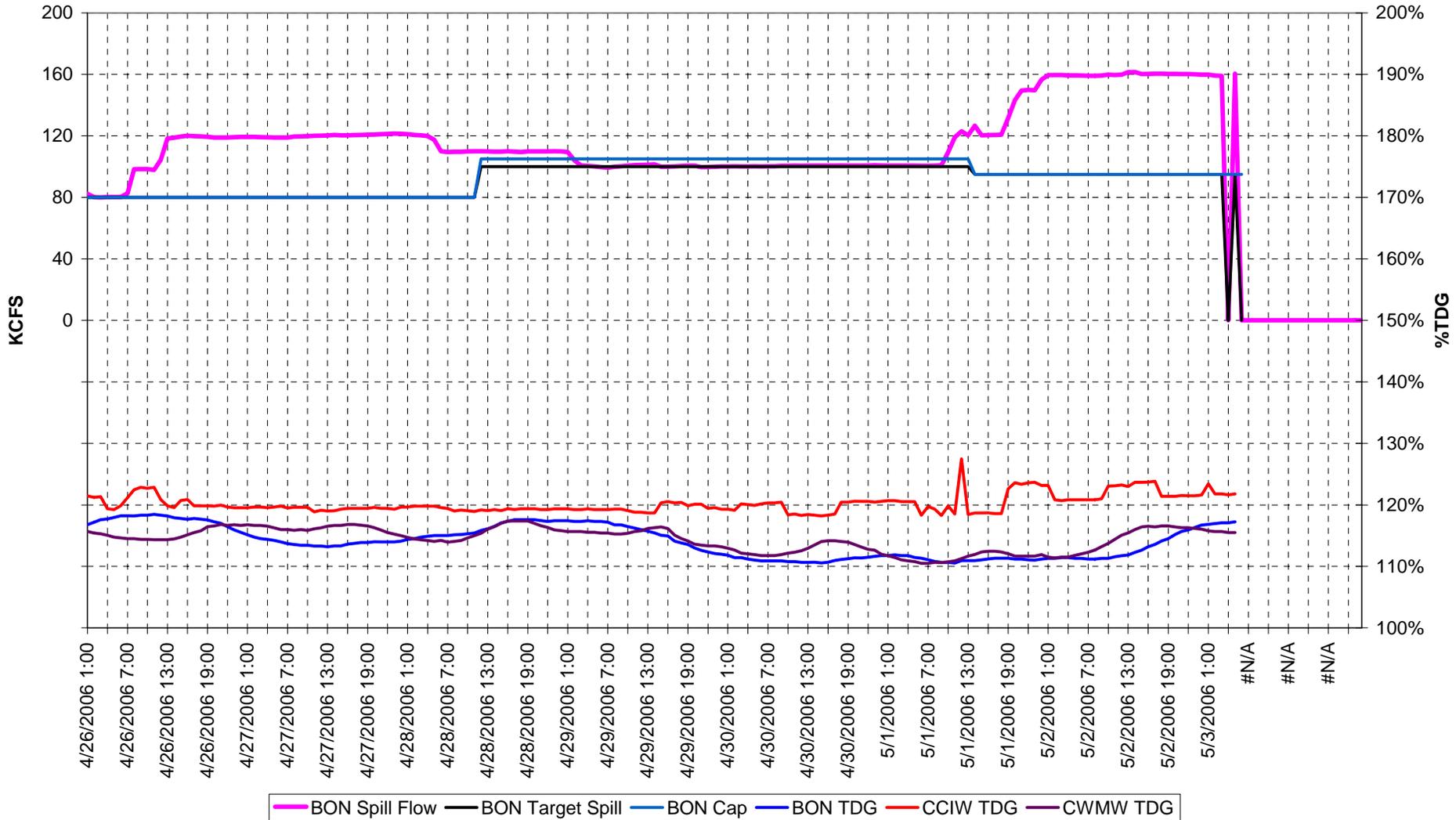
# JDA SPILL HOURLY



# TDA SPILL HOURLY



# BON SPILL HOURLY



DEPARTMENT OF FISH AND WILDLIFE RESOURCES  
 COLLEGE OF NATURAL RESOURCES  
 UNIVERSITY OF IDAHO  
 P.O. BOX 441136  
 MOSCOW, ID 83844-1136  
 (208) 885-4006  
 Fax (208 885-9080)

To: David Clugston, USACE Portland District  
 From: Michael A. Jepson, Steve Lee, Mark Morasch, Ken Tolotti, Chris Peery  
 RE: Summary #1 of Radiotelemetry data for Chinook salmon at Bonneville Dam  
 Date: 1 May 2006

This summary is based on radio data downloaded from receivers at Bonneville Dam up to 27 April 2006 and mobile tracking records from 19-23 April 2006. A total of 65 adult Chinook salmon were radiotagged and released prior to the 27 April 2006 downloads. Among these 65 salmon, 22 have been recorded in or near Bonneville Dam and five have passed the dam (one has passed John Day Dam, see below), three fish have only mobile track records downstream the dam and the remaining fish have no records at the project yet. One fish passed Bonneville Dam using the Bradford Island fishway, on 26 April, then fell back at the project and was on its second ascent of the project at the time receivers were downloaded.

Times for fish to reach the tailrace from release points 8 km downstream were 47.1 hrs before two SLEDs were removed, 24 April, 35.8 hr while the SLEDs were out, and 32.3 hr after SLEDs replaced 26 April (Table 1). Most fish that returned to the tailrace went on to approach the dam. Times to make a first approach and first entrance were measurably faster after 24 April.

Table 1. Median times for radio-tagged adult Chinook salmon from release to first tailrace record (n/numbers of fish tagged during time interval), from tailrace until first approach at a fishway entrance (n), from first approach to first entry (individual times for two fish in each group, and total to pass the dam. Condition was at time

<u>Condition</u>	<u>Dates</u>	<u>Median times</u>			
		<u>Release to tailrace (hr)</u>	<u>Tailrace to first App</u>	<u>1st App 1st Ent</u>	<u>Total to pass dam</u>
Before SLED out	15-24 April	47.1 (8/25)	14.9 (6)	70, 30 (2)	55 (4)
SLED out	24-26 April	35.8 (7/29)	9.7 (4)	0.4, 10.1 (2)	17.8 (1)
After SLED out	26-27 April	32.3 (4/11)	12.8 (3)	0.4, 1.0 (2)	none

Ratios of all approaches to entries have improved over time from 5.6 before 24 April, to about 3 after that date I (Table 2). There was one fish that entered an entrance with SLEDs removed of the six that approached during the 48 hr trial.

Table 2. Total approaches and entries to Bonneville Dam fishway entrances prior to, during, and after two SLEDs were removed from powerhouse 2, a approaches and entries made at powerhouse 2 during same time intervals.

<u>Condition</u>	<u>Dates</u>	<u>All</u>			<u>PH2</u>		
		<u>Appr</u>	<u>Entries</u>	<u>App/Entry</u>	<u>Appr</u>	<u>Entries</u>	<u>Comment</u>
Before SLED out	15-24 April	23	4	5.6	2	2	both at south entrances
SLED out	24-26 April	13	3	4.3	8	1	at downstream north
After SLED out	26-27 April	5	3	1.7	1	1	no record, FOG entry?

To date (1 May 2006) an additional 30 salmon have been tagged and released downstream from the dam. Although sample sizes are small, the data indicate that passage conditions are have improved at Bonneville Dam over the last week and these changes were likely independent of removing two SLEDs from powerhouse 2. Numbers of fish counted at the dam have continued to increase, and have now reached 7% of the 10-year average compared to 2% one week ago. These numbers are encouraging but still extremely low for this time of the year.

One radio-tagged salmon has reached John Day Dam. This fish (16-84) was tagged at Bonneville 14 April, reached John Day 23 April. This fish was first detected in the south-shore ladder with no records in the tailrace or at a fishway entrance. It exited the fishway and passed the dam using the north-shore fishway. Total time interval of record at the project was about 6 hrs. It is possible that this fish was moving deep in the water column, a

Priest Rapids Operations					Days Delta	Band constraint	Was it met?	Comments If NO, reason why.
Date	Ave.Q	Min.Q	Max.Q	Prog.Q				
17-Apr	180.1	151.3	225.2	168.3	73.9	60	Y	increasing flows on Monday
18-Apr	175.7	151.3	215.5	165.8	64.2	60	Y	within margin of error (4.2 kcfs)
19-Apr	198.0	171.4	254.3	167.6	82.9	60	N	communication issue between operators and dispatch
20-Apr	174.7	160.3	195.9	160.2	35.6	60	Y	
21-Apr	172.0	155.8	181.1	170.2	25.3	150	Y	
22-Apr	191.2	173.4	211.2	173.3				
23-Apr	186.8	161.4	207.8	160.7	49.8	150	Y	158.6 kcfs weekend minimum
Week Ave	182.6			166.6	55.3			
24-Apr	174.6	160.1	191.6	178.6	31.5	150	Y	
25-Apr	183.2	155.9	205.2	172.7	49.3	150	Y	
26-Apr	178.7	160.2	208.7	174.5	48.5	150	Y	
27-Apr	172.4	160.2	195.6	163.3	35.4	60	Y	
28-Apr	165.1	159.5	183.6	152.5	24.1	60	Y	
29-Apr	172.1	152.8	194.1	173.0				
30-Apr	182.5	162.9	199.5	168.2	46.7	60	Y	
Week Ave	175.5			169.0	39.3			

***Spring / Summer Update to the 2006 Water  
Management Plan***

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# ***Draft Spring / Summer Update to the 2006 Water Management Plan***

## **1. Introduction**

The 2006 Spring/Summer update to the Water Management Plan (WMP) updates information on how the Action Agencies plan to operate the Federal Columbia River Power System (FCRPS) reservoirs during the spring and summer seasons.

The Spring/Summer WMP Update (*S/S Update*) is needed because water supply forecasts for the spring and summer time period are not available at the time the water management plan is written. Planned operations in the *S/S Update* are based on the most current water supply forecast which is considered to be the best available forecast of the expected runoff water volume, and thus how the FCRPS will be operated in 2006. The “April Final” water supply forecast is the most current forecast available when the final version of the *S/S Update* is completed.

The *S/S Update* also reports 2006 research operations planned for the FCRPS projects. Research studies are routinely conducted to test the performance of current or new fish passage operations and the effects on a wide range of conditions, including spill survival, tailrace egress, transport benefits and the performance of new passage devices like the Bonneville second powerhouse corner collector. The Studies Review Work Group establishes the research study plan in the spring just prior to the commencement of the spring migration. The *S/S Update* summarizes the project operations that support these research activities.

The *S/S Update* does not repeat all of the information in the WMP but does provide additional detail and specifies operations based on the current water supply forecast or changes that need to be made in operations because of the availability of current water supply forecasts, flow projections, and other new information.

## 2. Role of Water Supply Forecasts (WSF)

There are four forecast points that are used to determine BiOp operation of the FCRPS reservoirs. The latest forecasts (April Final) are given below.

Forecast Point	Forecast Period	Forecast Date	Value (MAF)
Lower Granite	April – July	March Final	24.5
Lower Granite	April – July	April Final	25.5 A
The Dalles	April – August	March Final	91.2 A
The Dalles	April – August	April Final	92.7 B
Hungry Horse	April – August	March Final	2.21 B
Hungry Horse	April – August	April Final	2.16 <sup>C</sup>
Libby	April - August	March Final	6.35 C
Libby	April – August	April Final	6.08
Libby	April - August	May	<sup>CD</sup>

All forecasts are from the National Weather Service unless otherwise indicated:

A – Value that is used to set operations for spring flow objectives

B – USBR Forecast      C – COE Forecast

D – Value that is used to set operations for Libby sturgeon pulse

## 3. Seasonal Flow Objectives

### *Spring*

The spring seasonal flow objectives for Lower Granite and McNary are established by the April final water supply forecast. The Priest Rapids spring seasonal flow objective is fixed (not dependent on the water supply forecast). Based on the April final forecast the spring flow objectives are shown below.

Project	Spring Seasonal Flow Objective
Lower Granite	100 KCFS
McNary	260 KCFS
Priest Rapids	135 KCFS

### *Summer*

The summer seasonal flow objective for Lower Granite Dam is based on the June final water supply forecast. Based on the latest water supply forecast (April Final) the summer seasonal flow objectives are shown below. The McNary summer seasonal flow objective is fixed (not dependent on the water supply forecast).

Project	Summer Seasonal Flow Objective
Lower Granite	54.0 KCFS
McNary	200 KCFS

### ***Prospects for Meeting Flow Objectives***

An analysis of the likelihood of meeting the flow objectives was conducted by using the Northwest River Forecast Center Ensemble Streamflow Prediction (ESP) inflows in the Corps Hydro System Seasonal Regulation Program (HYSSR) model. This model uses the current basin conditions combined with 44 historical weather patterns (temperature and precipitation) to produce 44 ESP hydrographs for 2006. The likelihood of meeting the flow objectives and refilling the reservoirs by the targeted dates is a function of both the runoff volume and the time frame in which the snowmelt and stream flows occur. The likelihood of meeting the 2006 spring/summer flow objectives, based on March 28, 2006 ESP inflows, are shown in Section 13 of this document. This ESP/HYSRR model results indicate a high likelihood of meeting or exceeding Priest Rapids, Lower Granite and McNary flow objectives in May and June. The model also indicates a high likelihood of meeting or exceeding Lower Granite and McNary flow objectives in July (Priest Rapids flow objectives are only in effect through 30 June). Finally, the model forecasts a low probability of meeting Lower Granite and McNary August flow objectives.

## **4. Storage Project Operations**

See Section 13, 14 and 15 for latest ESP HYSSR model runs, volume charts for Libby, Dworshak and Hungry Horse and latest Dworshak ESP graphs.

### ***Libby Dam***

#### **Sturgeon Pulse**

The April final WSF of 6.08 MAF for Libby (April – August) puts Libby operations in the 3rd tier of operations for sturgeon called for in the USFWS 2006 Biological Opinion. The 3rd tier sturgeon operation calls for a sturgeon pulse volume of 1.05 MAF.

An SOR with specific flow and date recommendations is expected to be submitted to TMT prior to initiating a flow operation for sturgeon.

#### **Bull trout flows**

Based on the April final WSF and the 3<sup>rd</sup> tier of operations for sturgeon, the minimum bull trout flows are 8 kcfs in July. The project will also initiate bull trout flows of at least 6 kcfs on May 15 per the USFWS 2006 BiOp,

## ***Hungry Horse Dam***

### **Water Supply Forecast and Minimum Flows**

The April final Bureau of Reclamation WSF for April – August was 2157 kaf, 104 percent of normal. Minimum outflow from Hungry Horse and Columbia Falls are based on the March final forecast. This year they were set at 900 cfs and 3500 cfs, respectively.

### **Hungry Horse Flood Control and refill objective**

Based on the April final water supply forecast the Bureau of Reclamation expects to be at or below the end of April flood control elevation of 3521.3 feet. On 31 March, Hungry Horse was at 3526.5 feet, slightly above the end of March flood control elevation of 3526.2 feet.

## ***Grand Coulee Dam***

### **Grand Coulee April 10 and June 30 refill Objective**

The Bureau of Reclamation interpolates Grand Coulee's 10 April elevation based on straight lining the end of March and 15 April flood control elevations. Based on the April Final WSF, the 10 April refill objective was elevation xxxx feet. The project was at XXXX on 10 April. Grand Coulee is expected to refill to elevation 1290 feet by the first week of July.

### **Grand Coulee Summer Draft Limit**

Based on the April final forecast of April – August runoff volume at The Dalles, the summer draft limit for Grand Coulee is expected to be 1280 feet. The current forecast (April final) calls for a runoff volume of 60.6 MAF for the April – September period, 95 percent of normal.

## ***Dworshak Dam***

### **Summer Draft for Temperature Control and Flow Augmentation**

A key operation at Dworshak Dam is to draft cold water from the Dworshak reservoir in July, August, and September to cool water temperatures and provide flow augmentation in the Lower Snake River for the benefit of migrating salmon and steelhead. In-season modeling will be done to provide information to aid in the making the decisions of when and how to draft Dworshak. The summer reservoir draft limit is 1,520 feet. This limit determines the maximum draft available for summer flow augmentation from Dworshak. The Action Agencies will draft Dworshak to 1520 feet in September. The extension of the draft limit from August 31 into September reflects requirements for about 200 kaf to be held for release by the Nez Perce Tribe as defined per the Snake River Basin Adjudication.

## **5. Upper Snake River Flow Augmentation**

The Bureau of Reclamation currently estimates the Upper Snake River flow augmentation in 2006 is expected to fall within a range of 427 to 487 kaf.

## 6. Flood Control Operations

The 15 and 30 April flood control elevations based on the April final forecast are shown in the following table. The 31 January – 31 March flood control elevations were based on previous forecasts.

Project	31-Jan	28-Feb	15-Mar	31-Mar	15-Apr	30-Apr
ARDB	1430.5	1422.9		1414.1	1414.1	1414.1
LIB	2426.7	2412.1	2404.1	2404.1	2417.0	2417.0
DCDB	1845.1	1815.7		1812.4	1814.4	1814.4
HGH	3543.8	3531.7		3526.2	3525.0	3521.3
GCL	1290.0	1290.0		1265.9	1241.8	1229.0
GCL-shifted	--	--		1263.6	1231.6	
BRN	2077.0	2044.5		2036.5	2030.6	2026.6
BRN-shifted	--	--		2077.0	2077.0	
DWR*	1540.7	1524.2		1520.4	1536.9	1535.4
DWR-shifted*	--	--		1532.4	1542.7	

### *Dworshak/Grand Coulee flood control shift*

The Grand Coulee shift is based only on the Dworshak shift with no shift from Brownlee as Idaho Power Company (Brownlee owner) did not request shift until 3 April, at which time it was too late for Grand Coulee to accept this shift, reach their targeted 10 April flood control elevation and stay within their 1.5 ft/day draft limit based on project safety considerations.

## 7. Minimum Operating Pool

The minimum operating pool (MOP) operation for the Lower Snake projects planning date is 3 April. The Salmon Managers submitted SOR 2006-2 requesting the Snake River projects begin MOP operations coincidentally with the initiation of Court ordered spill. It was agreed at the 29 March 2006, TMT meeting that lower Snake River reservoir levels would be transitioned to a MOP operation by gradually reducing each projects' operating range over the first few days of spill. The table below describes the reservoir elevation ranges under MOP operations in 2006. Below the table is a description of how the lower Snake River elevation levels were adjusted to reach MOP operational levels.

Project	Lower Range		Upper Range	
	Operation	Elevation	Operation	Elevation
Ice Harbor	MOP	437	MOP + 1	438
Lower Monumental	MOP	537	MOP + 1	538
Little Goose	MOP	633	MOP + 1	634
Lower Granite	MOP	733	MOP + 1	734

IHR MON, APRIL 3 437-439 FEET  
IHR TUE, APRIL 4 437-438 FEET (MOP TO MOP+1)

LMN MON, APRIL 3 537-539 FEET  
LMN TUE, APRIL 4 537-538 FEET (MOP TO MOP+1)

LGS MON, APRIL 3 633-637 FEET  
LGS TUE, APRIL 4 633-636 FEET  
LGS WED, APRIL 5 633-635 FEET  
LGS THU, APRIL 6 633-634 FEET (MOP TO MOP+1)

LWG MON, APRIL 3 733-737 FEET  
LWG TUE, APRIL 4 733-736 FEET  
LWG WED, APRIL 5 733-735 FEET  
LWG THU, APRIL 6 733-734 FEET (MOP TO MOP+1)

At John Day, the forebay is being operated within a 1.5-foot range of the minimum level that provides irrigation pumping from 10 April to 30 September. The initial range is 262.5 and 264.0 feet. The minimum level will be adjusted upward if needed to facilitate irrigation pumping. Actual John Day operations 262.5' – 264' range started 10 April 2006.

## **8. Hanford Reach**

The Vernita Bar protection level flow was set at a level of 70 kcfs based on the 20 November 2005 redd count. This year's Vernita Bar protection operation is scheduled to end when the water over the eggs have accumulated 1400 (C degrees) thermal units after the initiation of spawning. This is expected to occur about 28 or 29 April. See Appendix C for the Hanford Reach Agreement.

## **9. Spill for Juvenile Fish Passage**

Implementation of the Spill for Juvenile Fish Passage is described in the 2006 Fish Passage Implementation Plan. This plan was finalized and submitted to the court along with the 2<sup>nd</sup> quarterly report on 3 April 2006. This plan is an attachment to the Water Management Plan.

## **10. Operation Considerations**

John Day: The T-1 bank of transformers failed on 2 March 2006. This prevents operation of main units 1 – 4 which are the 2<sup>nd</sup> – 5<sup>th</sup> turbine unit operating priority units. As of 5 April 2006, the project estimates the best case scenario is the transformers will be repaired in September 2006.

The Dalles: Wire rope for spill bays 7 – 9 was replaced during the fish passage season. Bays 1 – 9 are the priority bays for spill. Work was completed on April 25, twenty days ahead of schedule. The fact these bays were not available did not affect fish for spill operations as the spill to the gas cap was achievable using bays 1 – 6.

## **11. Water Quality - Spill Priority List**

River operations are conducted to meet State Clean Water Act total maximum daily load (TMDL) dissolved gas standards. Also, research operations at a particular dam can be impacted by involuntary spill. Thus spill at research projects is given lower priority in the hope that involuntary spill can be eliminated during research. The initial spill priority list for the fish spill season was issued 3 April as shown below. Involuntary spill will occur in the order shown. The priorities will be modified as needed based on status of fish migration, spill/transport strategies, and studies, and other factors.

1. Lower Granite
2. Little Goose
3. Lower Monumental
4. Bonneville
5. John Day
6. The Dalles
7. Wanapum
8. Wells
9. Rocky Reach
10. Rock Island
11. Priest Rapids
12. McNary
13. Ice Harbor
14. Grand Coulee
15. Chief Joseph

### ***Other Spill Operations***

Until construction of the spill deflectors at Chief Joseph Dam has been completed, spill swapping between Chief Joseph Dam and Grand Coulee Dam will not be implemented if the spill deflector contractor is working downstream of Chief Joseph Dam. Construction of the deflectors is expected to take three years.

## **12. 2006 Fish Passage Research**

Summaries of 2006 fish passage research studies that have the potential to change project operation are described below.

## **Lower Granite**

A spring RSW study is planned to examine its efficiency and effectiveness and fish behavior in the vicinity of the RSW and the Behavioral Guidance Structure (BGS) which has been relocated. Normal spring spill patterns as described in the FPP with Behavioral Guidance Structure (BGS) IN place and BGS OUT as two treatments. The RSW testing will take place between mid-April and late May. During the study, spill will consist of flow thru the RSW and some training spill for a total spill of approximately 20 kcfs. The evaluation involves periodic removal of the BGS, which would likely result in short-term (1-3 hours) outages of Units 6.

A summer test of the RSW and BGS may also take place sometime between mid-June and late July and will most likely run for 3 to 4 weeks. There will be two treatments for the summer test. Both treatments will use the RSW plus two different patterns of training spill. Both treatments will spill approximately 18 kcfs. The BGS will be in the OUT (stored) position during the summer test.

## **Little Goose**

A spring study between 15 April and 30 May will examine route specific survival estimates, approach paths, passage distribution, forebay residence time, and tailrace egress. Spill during this time will be 30 percent of total outflow 24 hours/day, however, two spill patterns will be alternated. A similar study will be performed during the summer between 30 June and 31 July. The spill patterns to be used are under development with SRWG and FFDRWG.

## **Lower Monumental**

A spring bulk spill study will occur between 25 April and 30 May. Two spill patterns will be used depending on total river flow. A bulk spill pattern will be evaluated at river flows less than 120kcfs simulating an RSW operation. For river flow in excess of 120 kcfs, a uniform spill pattern will be used.

## **Ice Harbor Dam**

Spring and summer RSW testing are planned. Testing will occur between 1 May and 19 July. The testing will involve alternating between 30 percent spill for 24 hours/day and spilling 45 kcfs during the day and to the spill cap at night.

## **McNary Dam**

A spring spill study will occur between 26 April and 8 June to examine passage, survival rates, and behavior under two treatments of project operations. Spill will alternate between 40 percent spill for 24 hours/day and 0 kcfs daytime spill/spill cap nighttime spill. The specific details of the study have not yet been established.

A summer spill study is tentatively scheduled to occur between 20 June and 22 July to examine passage, survival rates, and behavior under two treatments of project operations. Spill will alternate between 40 percent spill for 24 hours/day and 60 percent spill for 24 hours per day. The spill will be alternated in two day blocks which will be randomized during testing.

**John Day Dam**

None.

**The Dalles Dam**

None.

**Bonneville Dam**

None.

# 13. Latest ESP HYSSR Model Runs (Apr 25 streamflows)

## Summary of 01 May 2006 ESP HYSSR Model Runs

3-May-06

**Assumptions:**

- \* Streamflows are from the 25 Apr ESP run, which uses current basin conditions combined with 44 historical weather patterns (temperatures and precipitation) to produce 44 ESP hydrographs for 2006.
- \* Flood control is based on the April Final.
- \* Grand Coulee operates to flood control May 31. Coulee tries to meet 135,000 cfs at Priest Rapids in June, while drafting no lower than 1287 ft by June 30 to meet the target. Summer lake targets are 1285.0 ft in July and 1280 ft in August.
- \* Hungry Horse operates May and June for a controlled refill by 30 June and meets minimum flow of 3,500 cfs at Columbia Falls. The project drafts to 3540 ft by 31 Aug.
- \* Brownlee operates for flood control in May and refills in June to 2077 ft, and drafts some in July - August.
- \* Dworshak operates for flood control in May targeting full in June and drafting to 1534 ft by 31 Aug.
- \* Libby increases in May to meet a 1 MAF sturgeon pulse and targets full in June. Libby drafts to 2439 ft by 31 Aug, while meeting bull trout minimum flows of 8,000 cfs.

**Results:**

Priest Rapids Meets the Following Flow Objectives:

Month	Occurrences out of 44 Years	Average Flow for 44 Years (kcfs)	Flow Objective (kcfs)
May	44	183	135
Jun	37	163	135

Lower Granite Meets the Following Flow Objectives:

Month	Occurrences out of 44 Years	Average Flow for 44 Years (kcfs)	Flow Objective (kcfs)
May	44	132	100
Jun	44	118	84
Jul	22	55	54
Aug 15	0	35	54
Aug 31	0	36	54

McNary Meets the Following Flow Objectives:

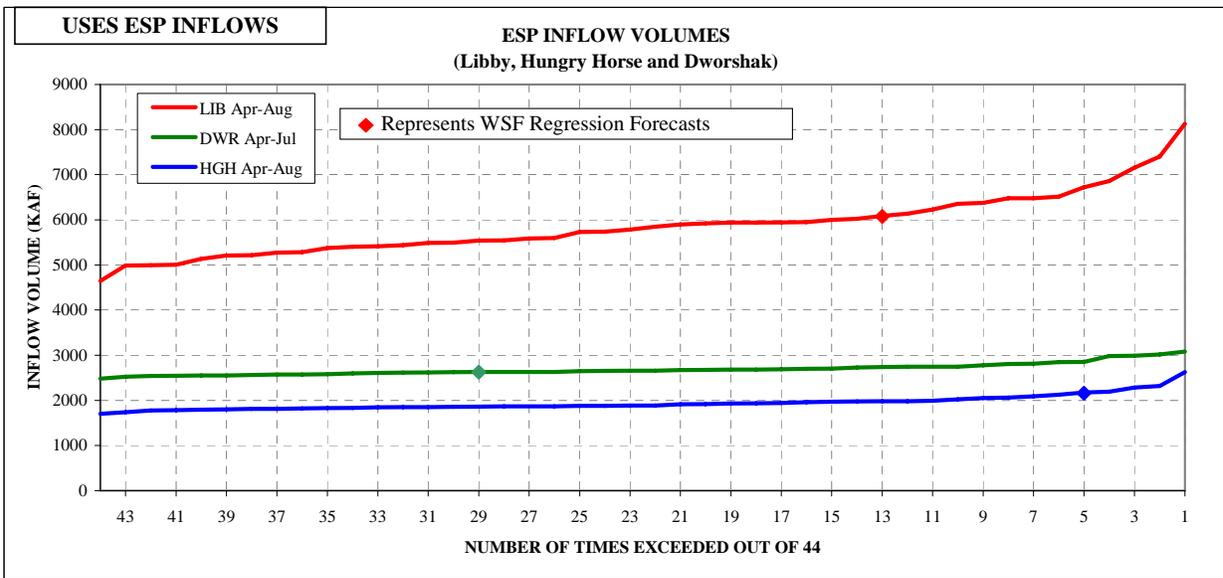
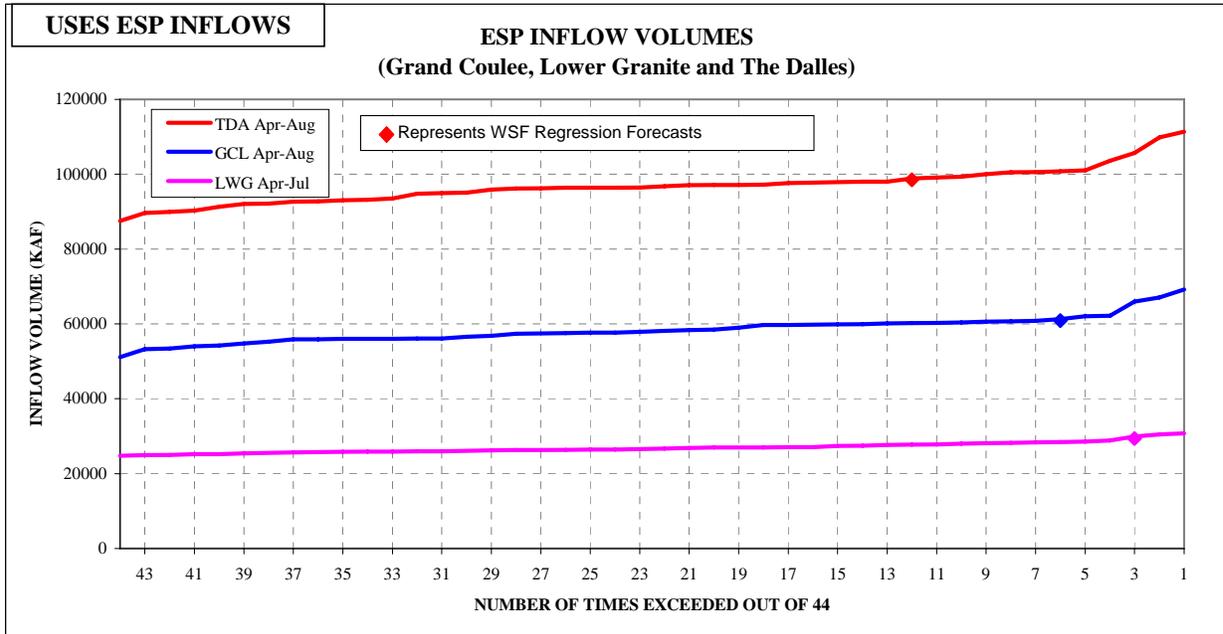
Month	Occurrences out of 44 Years	Average Flow for 44 Years (kcfs)	Flow Objective (kcfs)
May	41	321	260
Jun	36	288	260
Jul	30	215	200
Aug 15	0	137	200
Aug 31	0	132	200

Projects Refill to within 1 foot of full by 30 June:

Month	Occurrences out of 44 Years	Average Elevation on 30 Jun for 44 Years
Libby	28	2456
Hungry Horse	31	3559
Grand Coulee	37	1290
Dworshak	43	1600

Period Average Flows (kcfs):

	OBS FEB 1-28	OBS MAR 1-31	OBS APR 1-30	FCST MAY 1-31	FCST JUN 1-30	FCST JUL 1-31	FCST AUG 1-15	FCST AUG 16-31	FCST SEP 1-30
LIB	4.0	7.6	4.6	12.3	18.3	22.4	16.2	15.0	7.5
HGH	5.4	2.0	9.2	4.7	1.8	6.3	5.8	4.5	1.6
GCL	103	84	141	161	138	143	92	90	70
PRD	112	95	156	183	163	155	98	94	74
DWR	6.7	3.7	12.8	6.4	4.5	10.1	10.1	12.6	4.5
BRN	29	32	64	44	29	15	14	14	14
LWG	45	51	123	132	118	55	35	36	27
MCN	162	149	291	321	288	215	137	132	102
TDA	170	156	292	342	300	219	140	136	106
BON	177	165	308	347	305	222	142	138	108

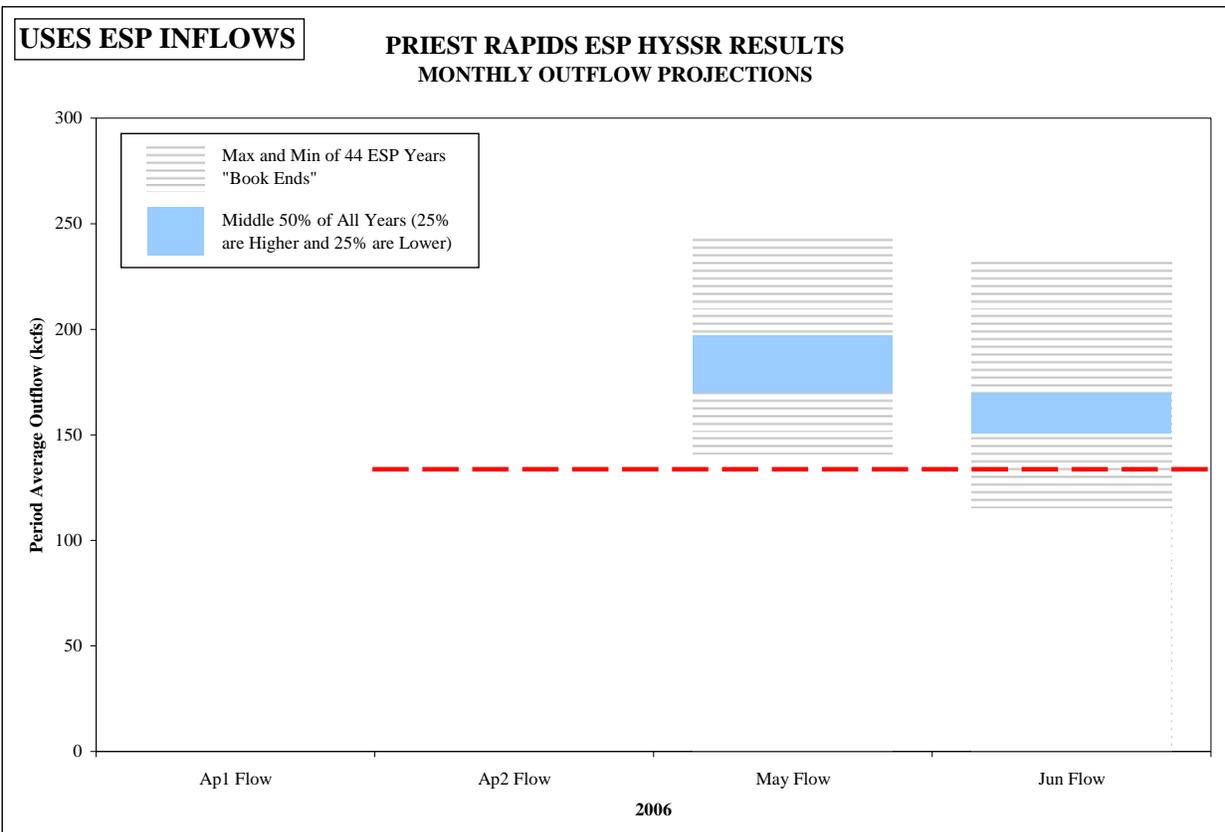
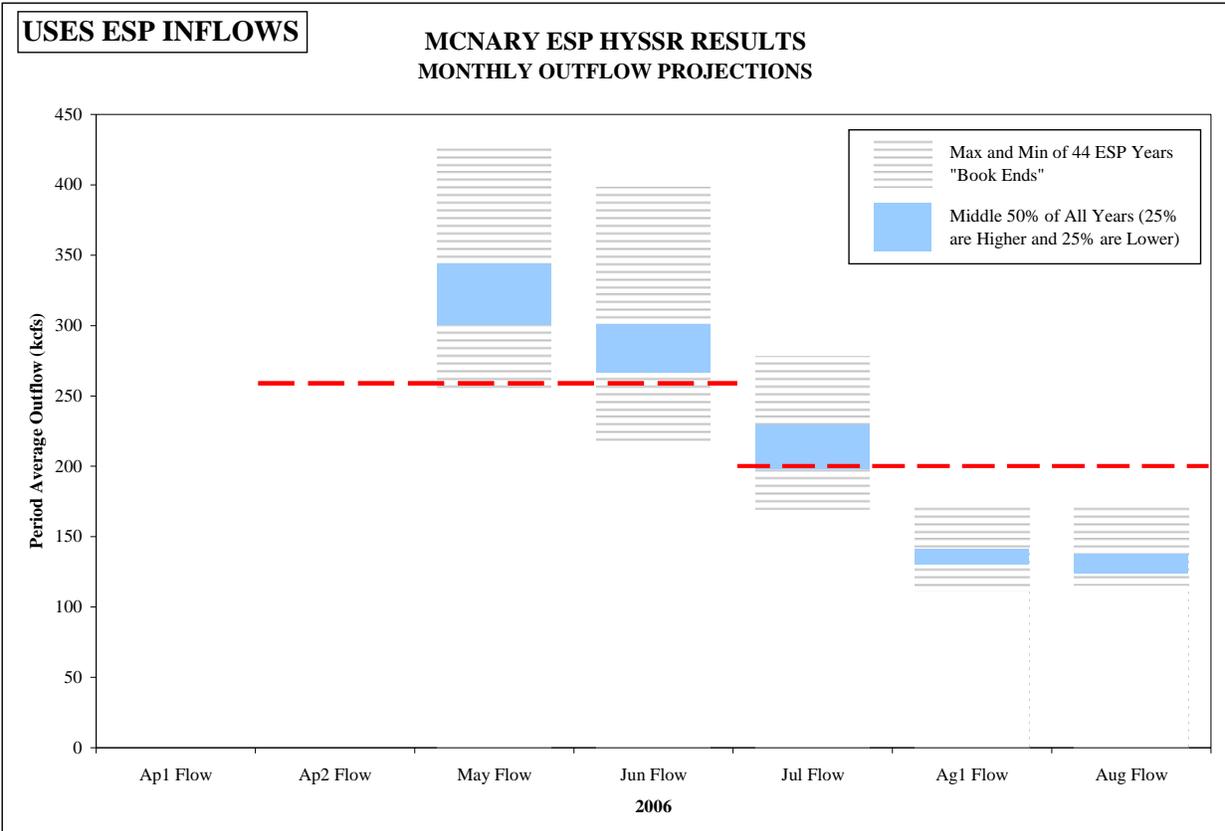


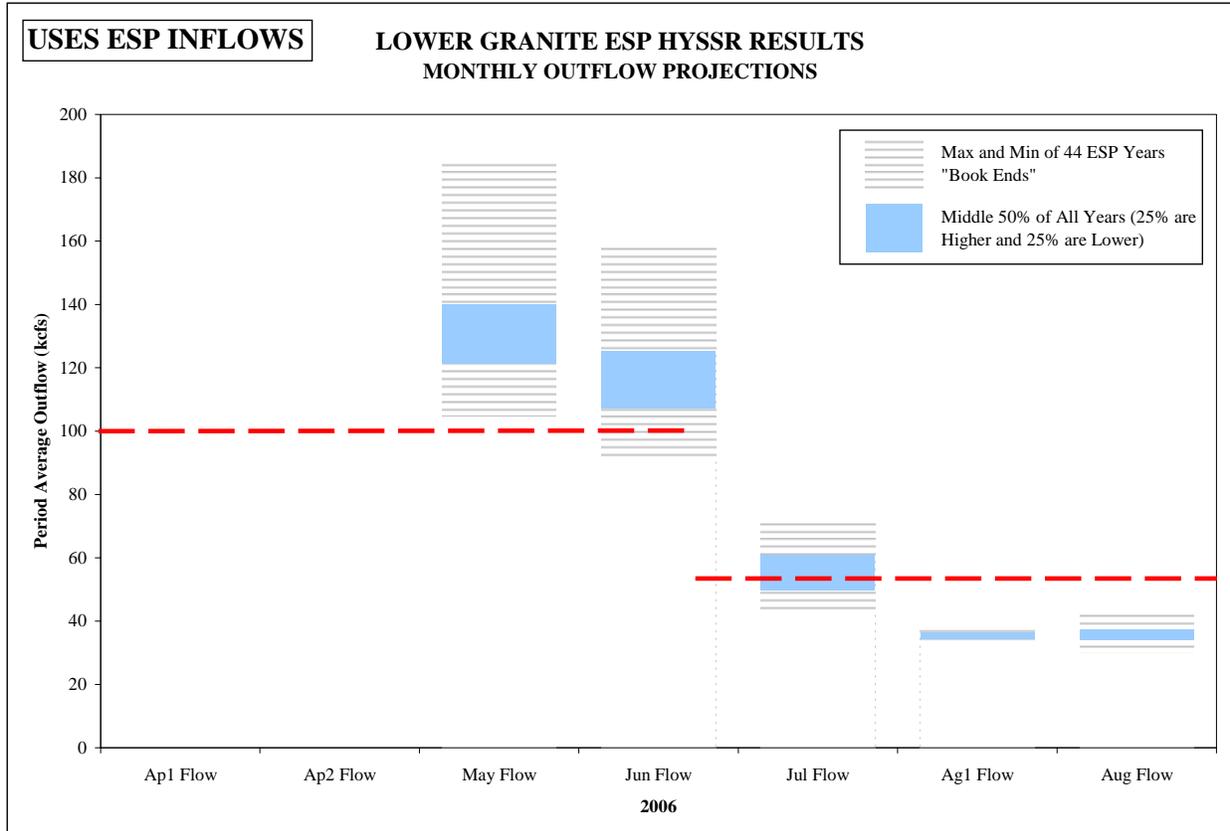
Volume Comparison Table (ESP versus Regression) - May Earlybird:

Forecast Period	Official WSF (Regression)			ESP Volumes				
	Volume (kaf)	Percent of Average	30 year Average (kaf)	10% Exceedance Probability	30% Exceedance Probability	50% Exceedance Probability	70% Exceedance Probability	90% Exceedance Probability
Grand Coulee	60900	101%	60290	61800	59900	58000	56100	54400
Lower Granite	29400	136%	21550	28500	27500	26600	26000	25300
The Dalles	98500	106%	93090	101000	98100	96600	94900	91500
Hungry Horse *	2157	104%	2070	2160	1980	1880	1850	1790
Libby **	6076	97%	6248	6500	6010	5780	5470	5150
Dworshak **	2626	99%	2645	2840	2710	2660	2620	2550

\* USBR Official Forecast (April Final)

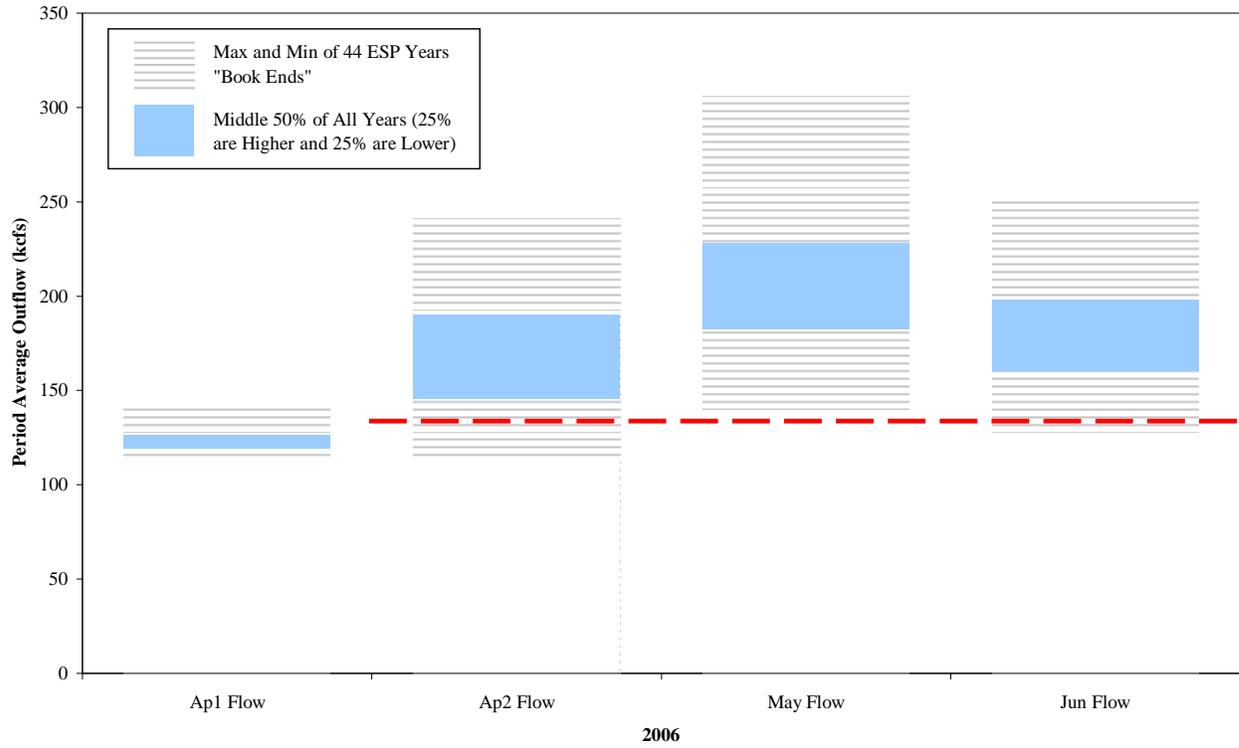
\*\* Corps Official Forecast (April Final for Libby, May Final for Dworshak)





**USES ESP INFLOWS**

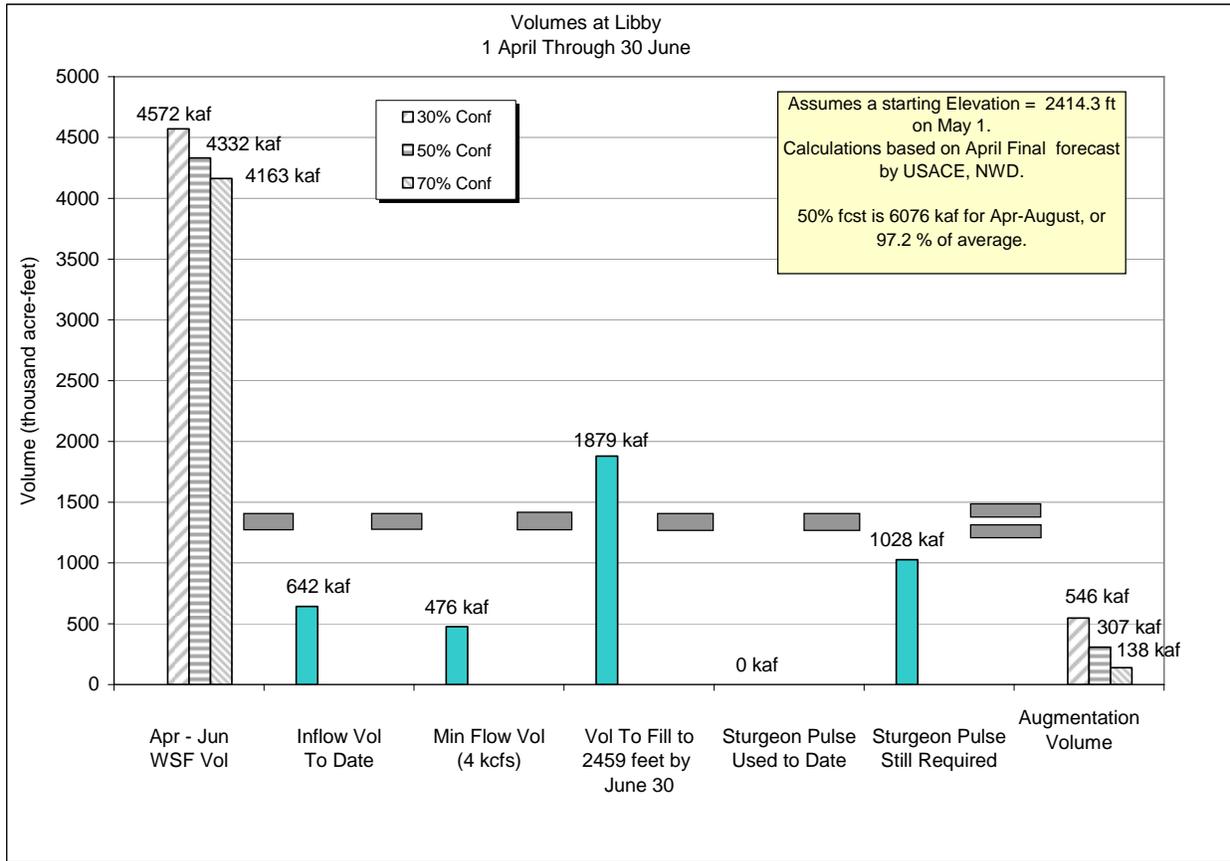
**PRIEST RAPIDS ESP HYSSR RESULTS  
MONTHLY OUTFLOW PROJECTIONS**



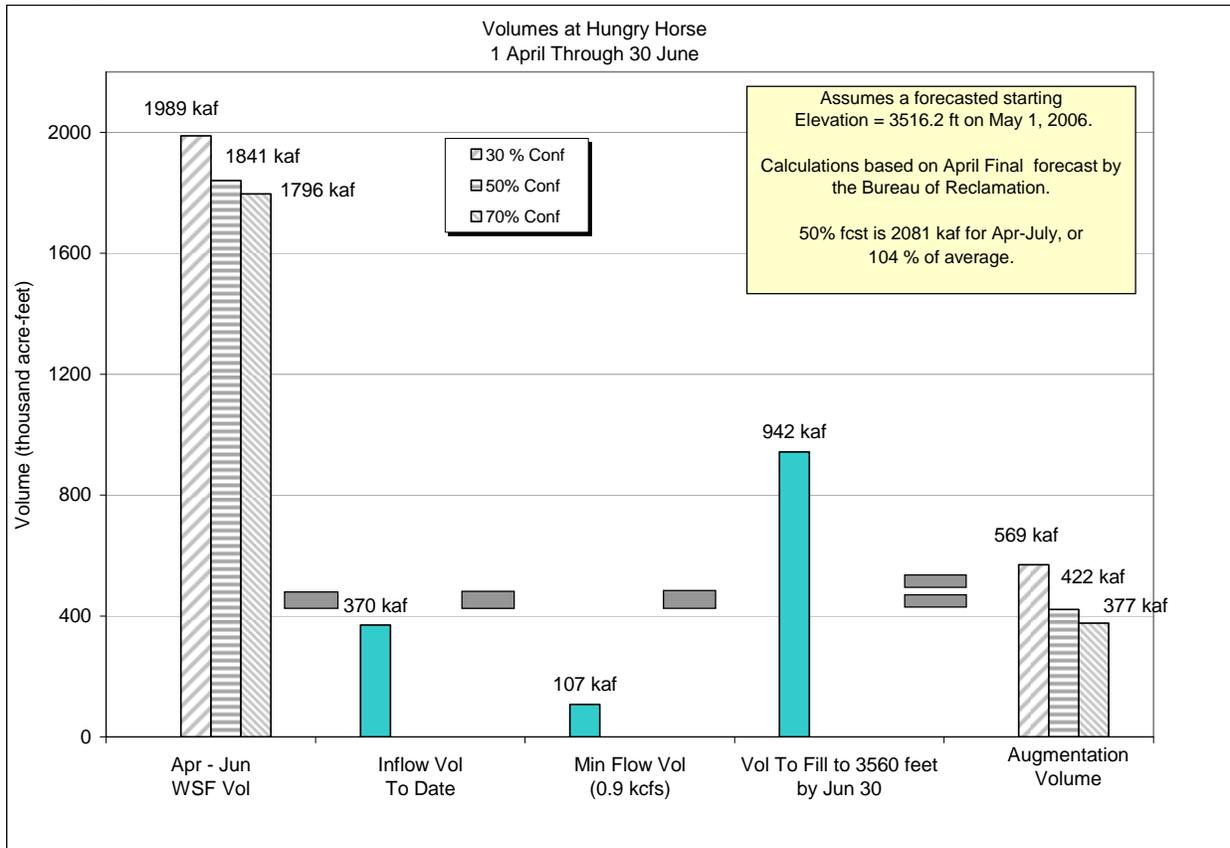
# 14. Latest Flow Augmentation Graphs for

## *Libby and Hungry Horse*

### *Libby*

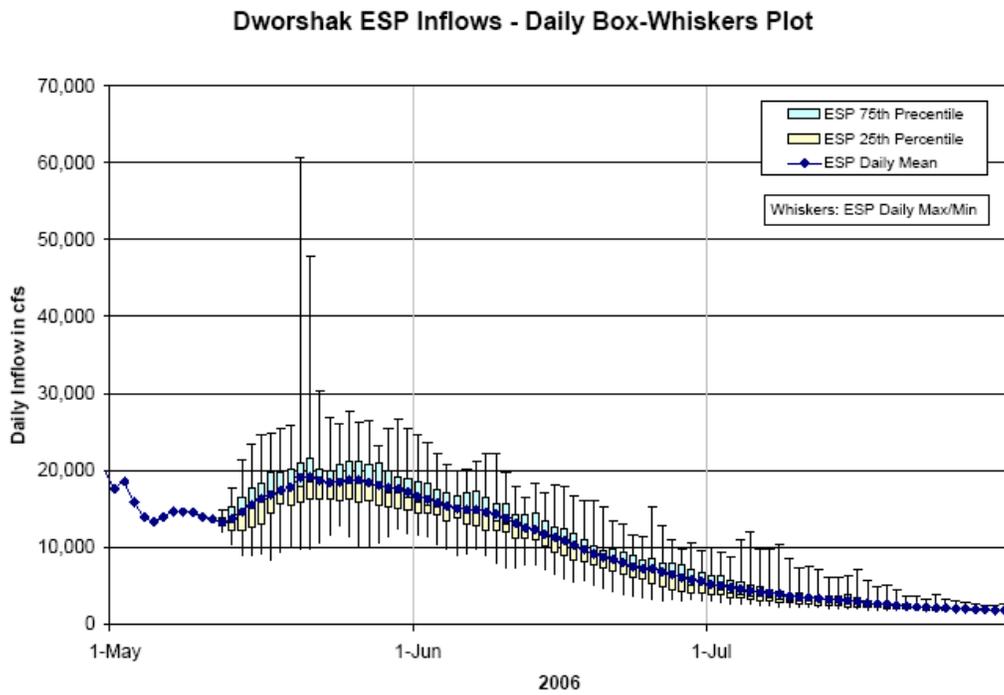


**Hungry Horse**

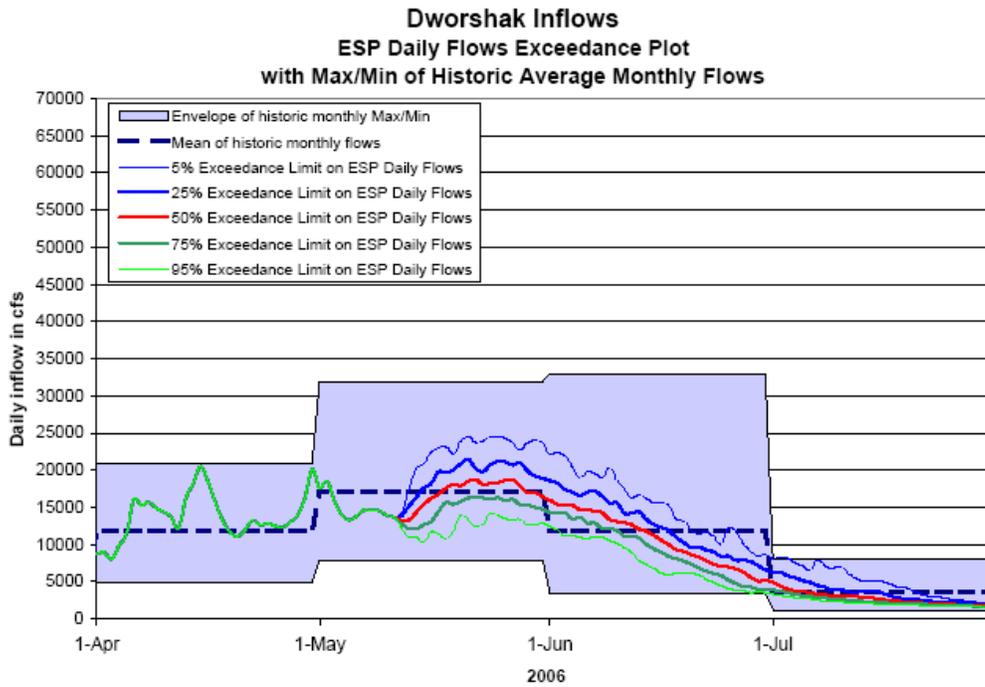


## 15. Latest DWR ESP Graphs (week of April 24)

### *ESP Inflow*



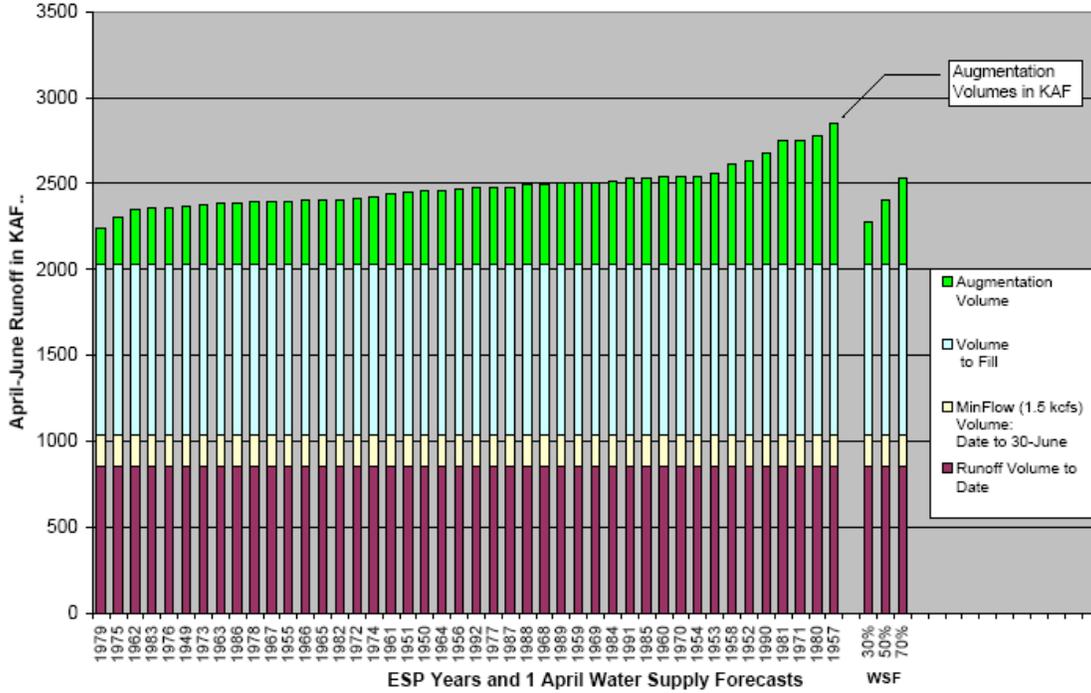
### *ESP Inflow – Exceedance*



### *ESP Augmentation Volumes*

### Dworshak Augmentation Volumes ESP inflows and 1-May Water Supply Forecast

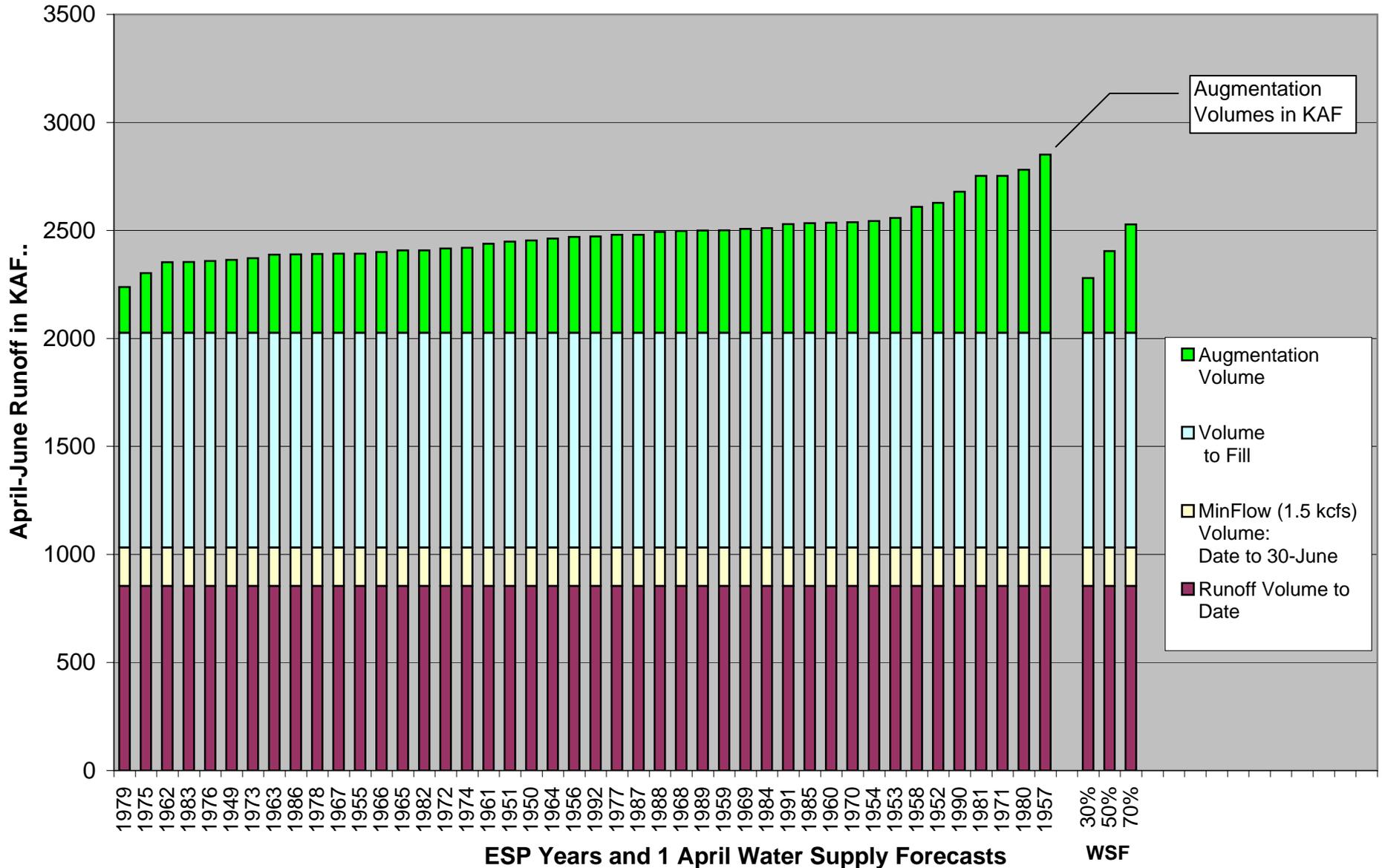
Observed data through 1-May



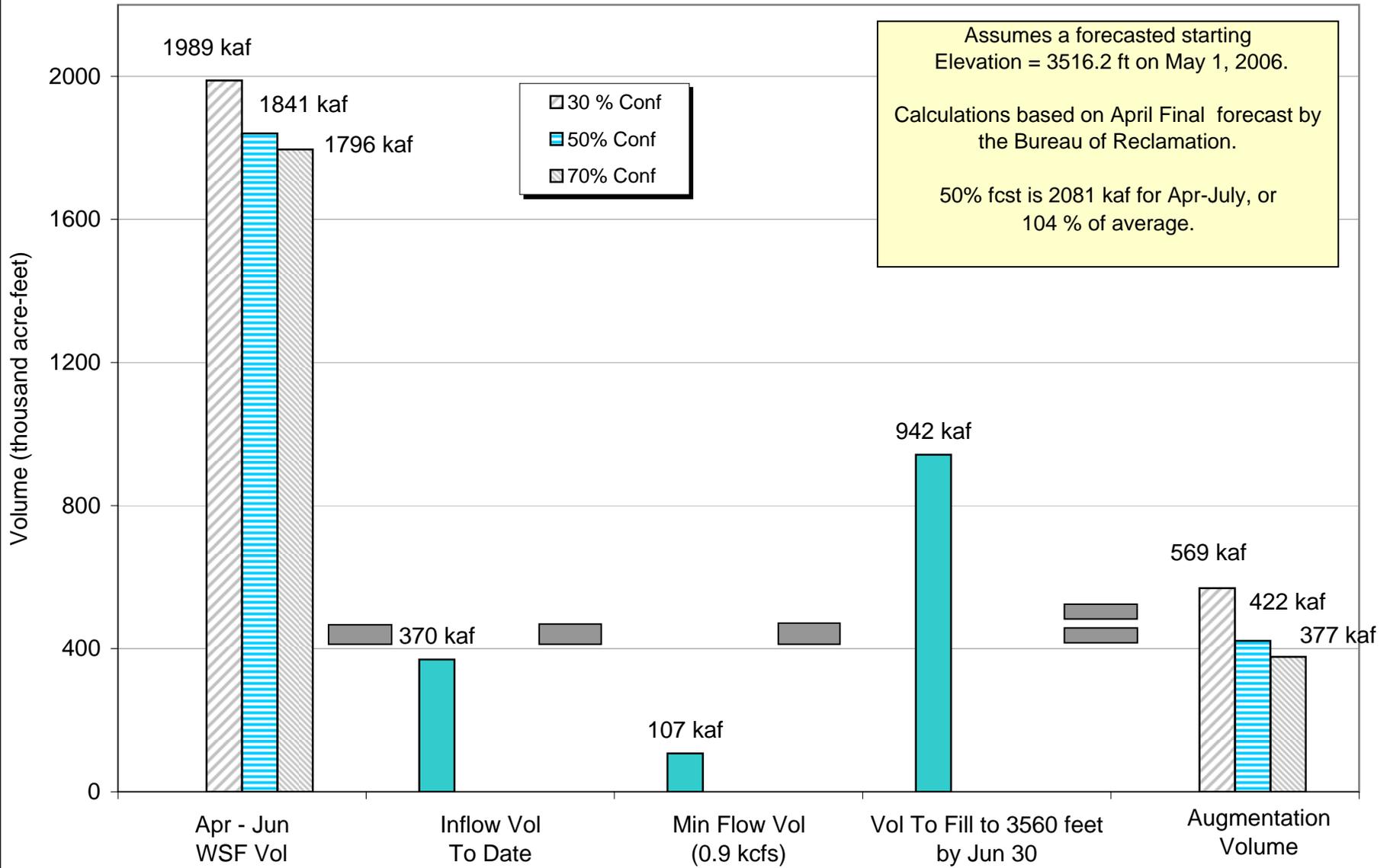
5/2/2006

# Dworshak Augmentation Volumes ESP inflows and 1-May Water Supply Forecast

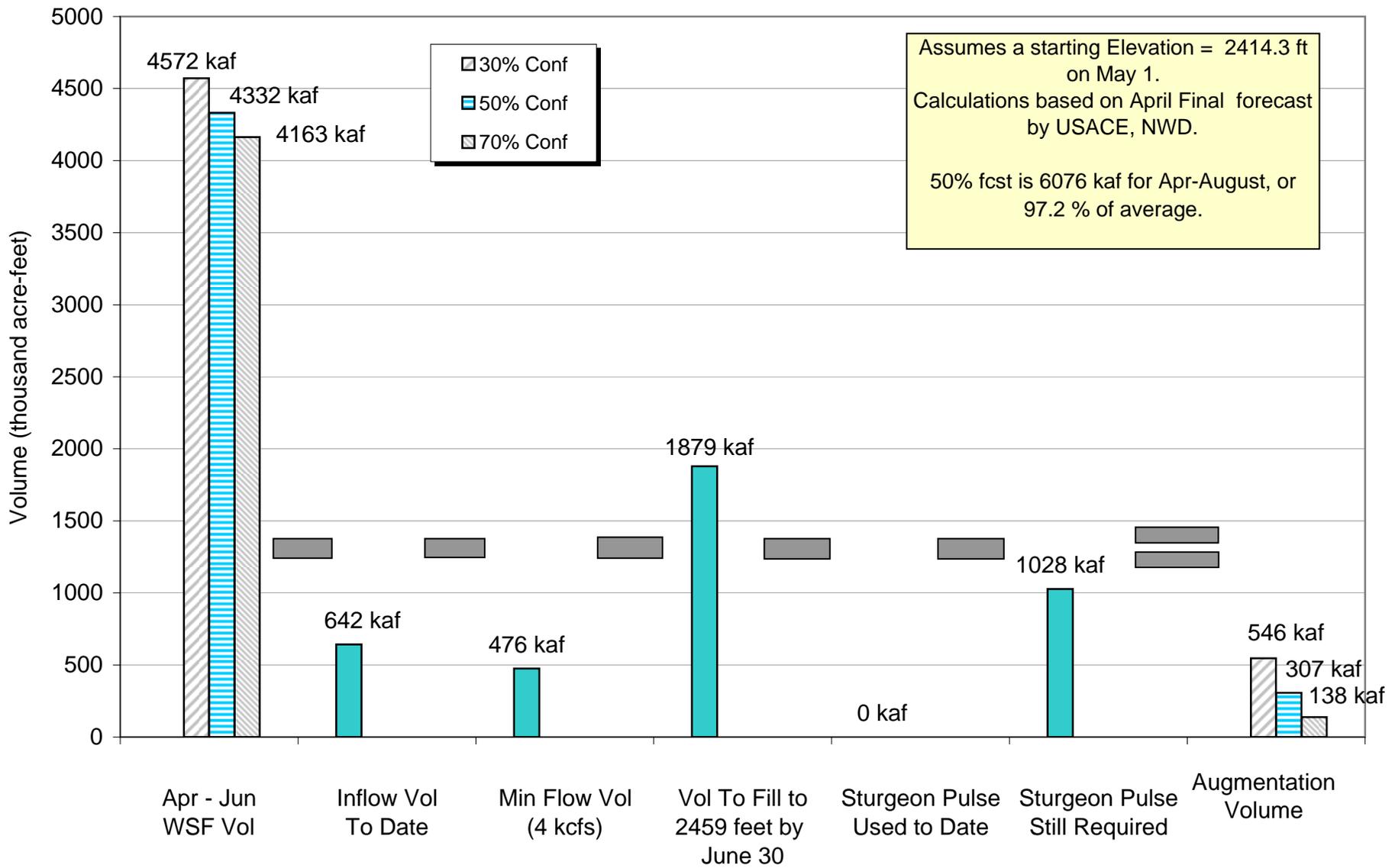
Observed data through **1-May**



### Volumes at Hungry Horse 1 April Through 30 June



### Volumes at Libby 1 April Through 30 June



# **COLUMBIA RIVER REGIONAL FORUM**

## **TECHNICAL MANAGEMENT TEAM**

May 3, 2006 Meeting

### **FACILITATOR'S SUMMARY NOTES ON FUTURE ACTIONS**

Facilitator: Donna Silverberg

Notes: Robin Harkless

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.

#### **Priest Rapids Update**

Priest Rapids operations for the weeks of April 17-23 and 24-30 were posted. A communication issue between operators and dispatch occurred that caused fluctuations outside the band width on two days during the two weeks. There will be an update on operations at the May 17 TMT meeting.

#### **WMP Spring/Summer Update**

The latest (May 2<sup>nd</sup>) draft was posted to the TMT web page, which included some revisions from NOAA. The latest flow augmentation charts and ESP runs, additional research information for the RM&E section, and elevation levels from BOR projects need to be added. Additionally, USFWS shared a number of comments including a need to check and include language from the 2006 USFWS BiOp on bull trout flows.

**ACTION:** Bernard Klatter, COE, will update the RM&E section to include both narrative and a table for all research that will occur in 2006 that could impact or be impacted by operations. The COE will incorporate the changes. All parties agreed to finalize the spring/summer update with the exception of the update to the research section and the bull trout language. TMT will receive the finalized document with the additions as requested..

#### **HYSSR-ESP Runs**

Julie Ammann presented the COE's updated HYSSR/ESP model runs, which included inflows through last week. The graphs are linked to today's agenda on the COE's TMT web page. Generally, ESP volumes remained lower than water supply volumes, as with the previous runs, but the two were closer and may shift as the season continues. The COE was given kudos and thanked for their work on the different models.

**ACTION:** At the request of Montana, the COE will run flow projections for different operation scenarios for Libby dam, and share it at the May 17 TMT meeting.

#### **Operations Review**

*Reservoirs:*

Lower Granite Navigation – Cathy Hlebechuk, COE, shared a report from the Lower Granite chief operator that spill was reduced at Lower Granite to provide safety for towboats navigating the channel on nine different occasions since April 19 for an average 20 minutes each. Spill was reduced to zero one time, and the other reductions were to RSW plus training spill, per the salmon managers' recommendation.

Upper Snake – Tony Norris, BOR, reported the Upper Snake will provide the full 487 kaf for flow augmentation, per the Nez Perce agreement.

Flow augmentation volumes – Graphs were provided by the COE, projecting Hungry Horse flow augmentation volumes between 377-569 kaf; Libby volumes between 138-546 kaf; and Dworshak similar to previous years. A daily flows exceedance plot showing monthly average flows and the Box-Whiskers plot were presented by Randy Wortman. TMT said the graphs were useful and informative.

Operations – Libby was at elevation 2416.7'. Project inflows were 29 kcfs and outflows were 4 kcfs. The COE is anticipating a sturgeon pulse operation request from the USFWS in the next couple weeks. Albeni Falls was at 2056', releasing 50 kcfs and filling. Dworshak was at elevation 1538.4', filling slightly and operating at full load. Lower Granite outflows were at 142 kcfs; McNary averaged 359 kcfs outflows; and Priest Rapids averaged 196 kcfs outflows – all were above their targeted flow objectives. Grand Coulee was at elevation 1231.6', with 165 kcfs in. Hungry Horse was at 3516.2' and outflows were being reduced to 5-7 kcfs.

*Fish:*

Adults – Adult spring chinook numbers at Bonneville were increasing, averaging about 2,500/day and totaling 12,000. The numbers remain well below the average. It was noted that temperatures are lower for this time than in previous years, and that adults tend to begin migrating at about 50° F.

Transportation – Walla Walla COE submitted a request for a transport permit, and NOAA granted an extension for one year, until March 31, 2007. Barging began at Lower Granite on 4/20, Little Goose on 4/24 and Lower Monumental on 4/28, per consensus recommendation from the TMT.

Juveniles – Yearling chinook index numbers have increased in the Snake and Lower Columbia. Steelhead showed a similar trend. Compared to historical index numbers, yearling chinook are on target with the trend and steelhead are on the higher side of the trend (with McNary and Bonneville steelhead numbers much higher than the trend).

John Day spill – FPOM met on 4/18 to discuss a salmon manager proposal to change the spill pattern at John Day to 30% day/30% night. FPOM recommended continuing with the current operation (0/60%) and monitoring for any adverse effects on fish at the fish ladders. At this point involuntary spill is occurring at the project, so it likely is a non-issue for this year.

Chum – Rick Kruger, ODFW, reported that no additional fry have been observed, and declared the end of chum emergence. Sampling will continue for chinook at Hamilton.

**ACTION:** Rick will share information on error bounds at the May 31 TMT meeting.

SLED's – Dave Clugston, COE Portland District, shared a handout with hourly adult passage information at Bonneville during a three-day test during which two sea lion exclusion devices on the Washington side were pulled (4/24-26). Passage numbers began to increase before the SLED's were lifted and again after the test ended, leading to the conclusion that SLED's were NOT an impediment to fish passage. The COE will continue to monitor this issue.

*Power System:*

*John Day T-1 Outage* – Testing continues to discover the extent of the damage done to the John Day transformer. Cathy Hlebechuk shared that units 3 and 4 might be back up as early as June, which is an improvement from earlier estimates.

*Water Quality:*

Jim Adams, COE, shared hourly spill and TDG exceedances for April 26-May 3. Many of the exceedances were the result of involuntary spill. One was due to the outage at John Day. A question was asked about The Dalles: although there is 274 kcfs turbine capacity currently only 170-200 kcfs is passing through the powerhouse, causing spill to exceed the 40% level. If more turbine capacity were used at this project spill could be reduced closer to the 40% objective. The COE will check into this and let NOAA know what was happening at the project. It was also noted that TDG levels had dropped at Bonneville. Jim explained that a wind event affected the previous spike in TDG, and involuntary spill at The Dalles was expected to cause an increase in TDG at Bonneville in the next day or two

**TMT Meeting Schedule**

*Wednesday, May 17* agenda items include:

- Priest Rapids Update
- Libby Operation Scenarios
- Finalize 2006 WMP
- State Fish Run Forecasts (WA)
- Sturgeon Pulse SOR
- John Day T-1 Outage Update
- System Operations Review

*May 31* agenda items include:

- HYSSR-ESP Runs
- Permit Process re: Marine Mammals
- Adult population analysis of chum – error bounds

## Technical Management Team Meeting Minutes

May 3, 2006

**1. Greetings and Introductions.**

Today's TMT meeting was chaired by Cathy Hlebechuk and facilitated by Donna Silverberg. The following is a summary (not a verbatim transcript) of the topics discussed and decisions made at this meeting. Anyone with questions or comments about these notes should contact Hlebechuk at 503-808-3942.

**2. Priest Rapids Update.**

The group briefly reviewed the information on recent operations at Priest Rapids; no comments were offered.

**3. Finalize Spring/Summer Update.**

Hlebechuk said the most recent version of the spring/summer update is now available via hot-link from the TMT homepage; she said she has incorporated comments from NOAA Fisheries, but is still awaiting further comments from other TMT members. Paul Wagner said most of NOAA's comments had to do with the need for more detail about planned research operations. Wagner noted that the format (a table) used to capture research operations in the 2002 or 2003 spring/summer update was excellent. Hlebechuk said she will endeavor to emulate that format in the 2006 update. David Wills also offered a few minor comments on the 2006 update at today's meeting; Hlebechuk said she will incorporate them. It was agreed that Wills will double-check the Fish and Wildlife Service website to ensure that he hasn't missed anything; once he has done so, it was agreed that the 2006 spring/summer update will be considered final.

**4. HYSSR/ESP Runs.**

The Corps reviewed its most recent HYSSR/ESP model runs, dated May 2. The full text of this presentation is available via hot-link from today's agenda on the TMT homepage. It included the following table of forecast period average flows (in Kcfs):

Project	May	June	July	Aug 1-15	Aug 16-31	Sept.
LIB	12.3	18.3	22.4	16.2	15	7.5
HGH	4.7	1.8	6.3	5.8	4.5	1.6
GCL	161	138	143	92	90	70
PRD	183	163	155	98	94	74
DWR	6.4	4.5	10.1	10.1	12.6	4.5

BRN	44	29	15	14	14	14
LWG	132	118	55	35	36	27
MCN	321	288	215	137	132	102
TDA	342	300	219	140	136	106
BON	347	305	222	142	138	108

The Corps also provided runoff forecast data for the following projects, based on the May early-bird forecast:

- Grand Coulee: 60.9 MAF, 101% of average
- Lower Granite: 29.4 MAF, 136% of average
- The Dalles: 98.5 MAF, 106% of average
- Hungry Horse: 2.16 MAF, 104% of average
- Libby: 6.07 MAF, 97% of average
- Dworshak: 2.63 MAF, 99% of average.

The group devoted a brief discussion to this information, offering a few clarifying questions and comments. At Jim Litchfield's request, the Corps agreed to do a few additional model runs showing various Libby operations.

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

Revisiting the Lower Granite navigation issue discussed at the last TMT meeting, Hlebechuk said there were nine times in the past month when spill has been reduced to allow tow-boats to pass; the average length of time spill was reduced was about 20 minutes. One time spill was reduced to zero; the other eight times it was reduced to RSW plus training spill.

Tony Norris said Reclamation is expecting to be able to provide the full 487 kaf flow augmentation volume from the Upper Snake projects in 2006, the first time this volume has been made available.

Hlebechuk then discussed flow augmentation from Hungry Horse in 2006; the group reviewed the graph displaying this information (available via hot-link from today's agenda on the TMT homepage). In general, it showed that about 400 kaf will likely be available from Hungry Horse in 2006, while about 300 kaf will be available from Libby, in addition to the 1.03 MAF sturgeon pulse. Wagner noted that the May early-bird forecast shows a significant increase in the available volume at Libby – 6.38 MAF vs. 5.92 MAF, according to the River Forecast Center – an increase of 400 kaf. However, the Corps' April final forecast for Libby was 6.131 MAF; the Corps' May early-bird forecast was 6.179 MAF. The group also discussed the most recent Dworshak ESP run, which showed an average flow augmentation volume of about 500 kaf across the 43 historic ESP years.

The group also looked at a graph titled "Dworshak Inflows – ESP Daily Flows Exceedence Plot with Max/Min of Historic Average Monthly Flows," as well as a box-whiskers plot of Dworshak daily ESP inflows for the period May 1-August 31. These graphs are available via hot-link from today's agenda on the TMT homepage; please refer to these documents for full details. There was general agreement that both graphs were useful and informative.

Moving on to current project operations, the Corps reported that Libby is at elevation 2416.7 feet, currently, with 29 Kcfs inflow and 4 Kcfs (minimum) outflow. The Corps is awaiting the sturgeon pulse SOR; it will likely be presented

at the next TMT meeting. Albeni Falls is releasing 50 Kcfs, but the lake is continuing to fill. It is currently above 2056 feet. Russ Kiefer said he will provide an update on the 2007 winter elevation request for Albeni Falls (2055 vs. 2051 feet) as soon as the steering committee makes a decision.

The Corps said the current elevation at Dworshak is 1538.4 feet, the project is releasing full load (10 Kcfs) and filling slightly. At Lower Granite, day-average outflow has decreased from 153 to 142 Kcfs over the past two days. At McNary, the daily average flow was 359 Kcfs yesterday. Priest Rapids discharge increased from 184 Kcfs on Monday to 196 Kcfs yesterday. Grand Coulee is currently at elevation 1231.6 feet, with 165 Kcfs inflow and rising. Grand Coulee will probably pass inflow over the next week. Hungry Horse is currently at elevation 3516.2; discharge is being reduced to either 7 or 5 Kcfs over the next couple of days.

Moving on to fish, Wagner said both juveniles and adults are now moving through the system. At Bonneville, the long-awaited increase in adult passage has begun; we're now seeing about 2,500 fish per day, which brings the 2006 adult count at Bonneville to about 12,000 fish, well below the 10-year average, he said. John Wellschlager said he had heard from one biologist that the increase in adult passage was likely due to an increase in water temperature.

With respect to transport, it was noted that NMFS has extended the Walla Walla District's juvenile transport permit for one year; in the interim, NMFS will be processing the Corps' application for a new five-year permit. The one-year permit expires March 31, 2007. Hlebechuk said transport started at Lower Granite on April 20; at Little Goose on April 24, and at Lower Monumental on April 28, as the SOR requested.

With respect to juveniles, Wagner said yearling chinook numbers continue to increase at Lower Granite and at Little Goose, with daily indices in excess of 100,000 at both projects. There are also many yearling chinook passing the Lower Columbia projects. Juvenile steelhead show a similar trend, Wagner said. Kokanee and sockeye counts continue to confound pre-season predictions, he said. He noted that yearling chinook at Lower Granite are closely following the historic trend, with respect to timing; the same is true of passage at McNary. The timing of juvenile steelhead passage at Lower Granite, McNary and Bonneville is at the high end of the historic scale for this date, Wagner added.

Moving on to John Day spill, it was reported that, at the April 18 FPOM meeting, there was consensus to change minimum spill to 25 percent. A formal process must be completed before this change is made; in the interim, minimum spill at John Day will continue at 30 percent. It was also agreed to continue to monitor adult passage at John Day, particularly the performance of the north ladder, before making further changes to spill at that project.

Rick Kruger said that, based on the most recent spawning ground surveys, it appears that chum emergence is now over, although no official pronouncement has been made to that effect. Wellschlager asked ODFW to make such a declaration as soon as possible; although it isn't really possible, at this point, to change Bonneville operations, it would be useful to the historic record to officially note the end-of-emergence date. I'll go out on a limb and call it official, Kruger said; the last chum fry was sampled on April 20.

Dave Clugston of the Corps then provided information on adult counts, by ladder, at Bonneville over the past two weeks. This information included hourly counts, by ladder, for the three days when the Washington shore SLEDS were removed (April 24-26). In general, the Corps saw that counts had begun to increase before the SLEDS were lifted; the test indicated no detrimental impacts, in terms of impaired adult passage, when the SLEDS are in place. He noted, however, that many of the radio-tagged fish used in the test simply disappeared.

The bottom line is that there is no indication, at this point, that the SLEDS are an impediment to adult passage, Clugston said; it appears that the 2006 adult run is simply late, well behind the timing shown in the 10-year average. In response to a question, Cindy LeFleur said the pre-season return forecast, at the river mouth, was 88,400 spring chinook.

It was noted that marine mammal predation continues to be a problem at Bonneville, with about 30 sea lions present, taking an estimated 100 adult chinook per day. In response to a question from Scott Bettin, Clugston said the task force is still evaluating the request, from the states, for a permit that will allow them to move, or even lethally take, some of the most problematic animals. It is a long, careful process, he said, noting that the permit will certainly not be forthcoming in 2006, and is unlikely to be available in 2007. Tom Lorz said the tribes are working in coordination with the states to find a possible legislative solution that will speed this process up. Bettin noted that Sea World has indicated a willingness to take the most problematic animal, C404, if he can be captured.

Moving on to the John Day T1 outage update, Hlebechuk said T1 is still out. The last time we talked, we said September was the best-case scenario for full repair, she said; it now appears possible to restore two units – units 3 and 4 -- to service by June. The question is how many phases of the transformer were damaged, Wellschlager observed, adding that there are no other power system problems to report at this time.

Jim Adams briefed the group on water quality exceedences at the FCRPS projects over the past 30 days, noting that, as might be expected at this point in the runoff season, there have been, and continue to be, numerous exceedences due to involuntary spill. Adams provided a complete overview of the current spill

caps and involuntary spill volumes at each project; this report, again, is available via hot-link from today's agenda on the TMT homepage.

**6. Next TMT Meeting Date.**

The next meeting of the Technical Management Team was set for Wednesday, May 17. Meeting summary prepared by Jeff Kuechle, BPA contractor.

**Technical Management Team Participant List  
May 3, 2006**

<b>Name</b>	<b>Affiliation</b>
Donna Silverberg	Facilitation Team
Cathy Hlebechuk	COE
Jim Adams	COE
Bill Crampton	CBB
David Wills	USFWS
Rick Kruger	ODFW
John Wellschlager	BPA
Paul Wagner	NOAAF
Tony Norris	USBR
Jim Litchfield	Montana
Robin Harkless	Facilitation Team
Ruth Burris	PGE
Dan Spear	BPA
Shane Scott	Consultant
Randy Wartman	COE
Tom Haymaker	PNGC
Dan Bedbury	EWEB
Todd Cook	PPM
Margaret Filardo	FPC
David Benner	FPC

Russ George	WMCI
Bruce MacKay	Consultant
Scott Bettin	BPA
Mike Buchko	Powerex
Tom Lorz	CRITFC
Glenn Traeger	Avista
Tom Le	PSE
Cindy LeFleur	WDFW

# TECHNICAL MANAGEMENT TEAM

<b>BOR :</b>	<i>Tony Norris / John Roache</i>	<b>BPA :</b>	<i>John Wellschlager / Dan Spear</i>
<b>NOAA-F:</b>	<i>Paul Wagner</i>	<b>USFWS :</b>	<i>David Wills / Steve Haeseker</i>
<b>OR :</b>	<i>Rick Kruger / Ron Boyce</i>	<b>ID :</b>	<i>Russ Kiefer</i>
<b>WA :</b>	<i>Cindy LeFleur</i>	<b>MT :</b>	<i>Jim Litchfield</i>
<b>COE:</b> <i>Cindy Henriksen / Cathy Hlebechuk</i>			

## TMT MEETING

Wednesday May 3, 2006, 0900 - 1200 hours  
1125 N.W. Couch Street, Suite 4A34  
Portland, Oregon 97208  
Conference call line: 503-808-5190

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Please MUTE your Phone**

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

## AGENDA

1. Welcome and introductions.
2. [\[Review Minutes 2006\]](#) 
3. Priest Rapids update
4. Finalize Spring/Summer Update
5. HYSSR/ESP Runs
6. Operations Review
  - o Reservoirs
    - Lower Granite Navigation Problem
    - Upper Snake
    - Flow Augmentation Volumes
  - o Fish
    - Transport
    - John Day Spilli
    - Chum update including error bounds on chum counts
    - Sturgeon pulse
    - Fish Migration - SLED
  - o Power System
    - John Day T-1 outage
  - o Water Quality
  - o Other
    - Set agenda for next meeting **May 17, 2006.** [\[Calendar 2006\]](#) 

*Questions about the meeting may be referred to Cathy Hlebechuk at (503) 808-3942, or Cindy Henriksen at (503) 808-3945*

# TECHNICAL MANAGEMENT TEAM

<b>BOR :</b>	<i>Tony Norris / John Roache</i>	<b>BPA :</b>	<i>John Wellschlager / Scott Bettin</i>
<b>NOAA-F:</b>	<i>Paul Wagner</i>	<b>USFWS :</b>	<i>David Wills / Steve Haeseker</i>
<b>OR :</b>	<i>Rick Kruger / Ron Boyce</i>	<b>ID :</b>	<i>Russ Kiefer</i>
<b>WA :</b>	<i>Cindy LeFleur</i>	<b>MT :</b>	<i>Jim Litchfield</i>
<b>COE:</b> <i>Cindy Henriksen / Cathy Hlebechuk</i>			

## TMT MEETING

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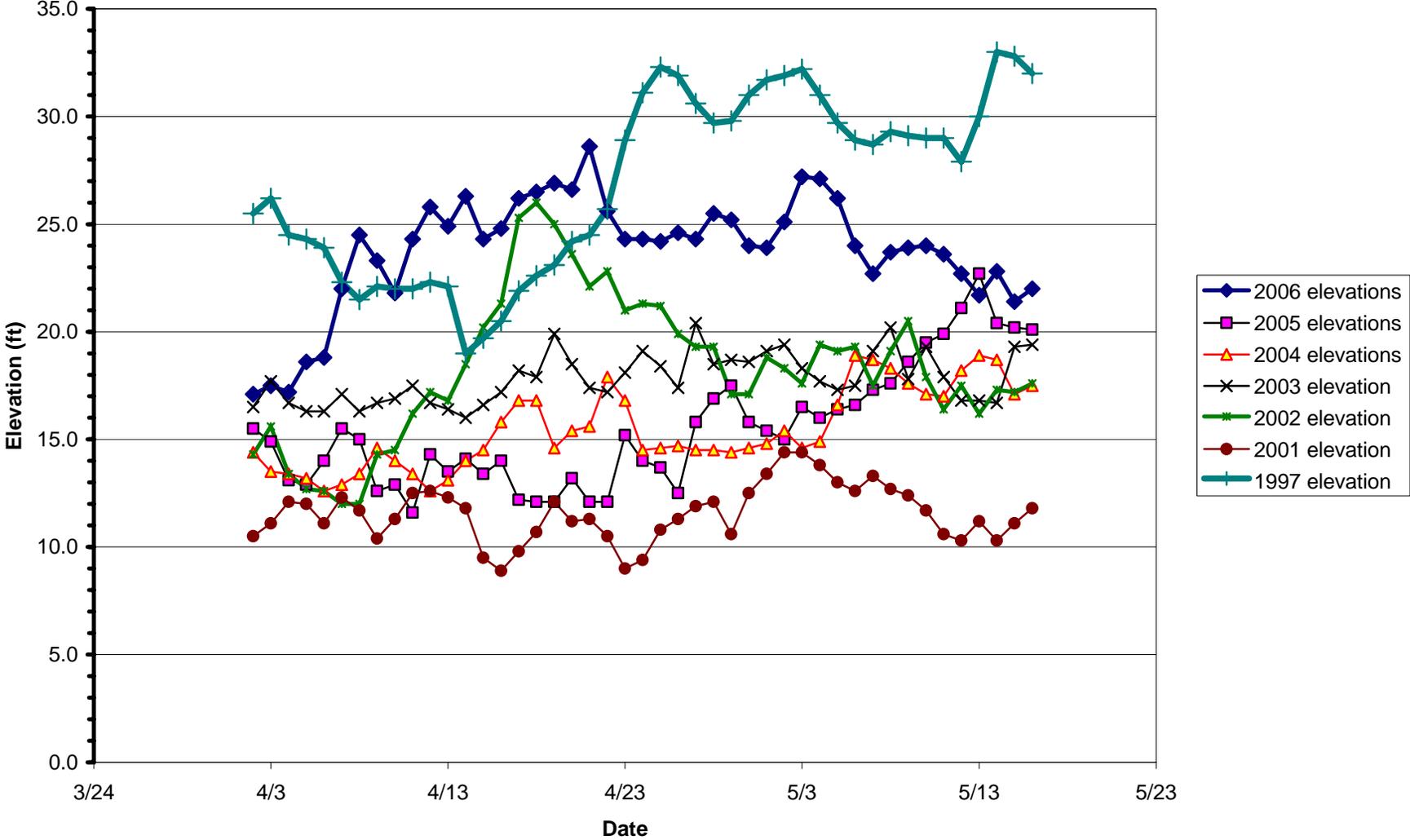
## AGENDA

1. Welcome and introductions.
2. [\[Review Minutes 2006\]](#) 
3. Priest Rapids update
  - [\[Priest Rapids Operations - Number of violations: 1\]](#) 
  - [\[Priest Rapids Operations\]](#) 
4. Libby Operation
  - [\[Libby April - August Volume\]](#) 
5. [\[Finalized Spring/Summer Update\]](#) 
6. [\[Finalize Water Management Plan\]](#) 
7. Operations Review
  - Reservoirs
    - Lower Granite spill for towboaters
    - Flow Augmentation volumes
      - libby
        - [\[Libby Augmentation Volumes ESP inflows\]](#) 
      - Dworshak
        - [\[Dworshak Inflows ESP Daily Flows Exceedance Plot\]](#) 
        - [\[Dworshak ESP Inflows - Exceedance Plot\]](#) 
        - [\[Dworshak Augmentation Volumes ESP inflows and 1-May Water Supply Forecast\]](#) 
        - [\[Dworshak ESP Inflows - Daily Box-Whiskers Plot\]](#) 
    - Hungry Horse

- [\[Volumes at Hungry Horse 1 April Through 30 June\]](#) 
  - Balance Priest Rapids flow objectives/Grand Coulee refill
  - Fish
    - TDA Spill - Corps Bernard Klatter
  - Power System
  - John Day T-1 outage
  - Water Quality
    - [\[Project Operations Update 02 May - 09 May\]](#) 
    - [\[Project Operations Update 09 May - 16 May\]](#) 
    - [\[Bonneville Tailwater Elevation from 1997 to 2006\]](#) 
8. Other
- Set agenda for next meeting **May 31, 2006.** [\[Calendar 2006\]](#) 

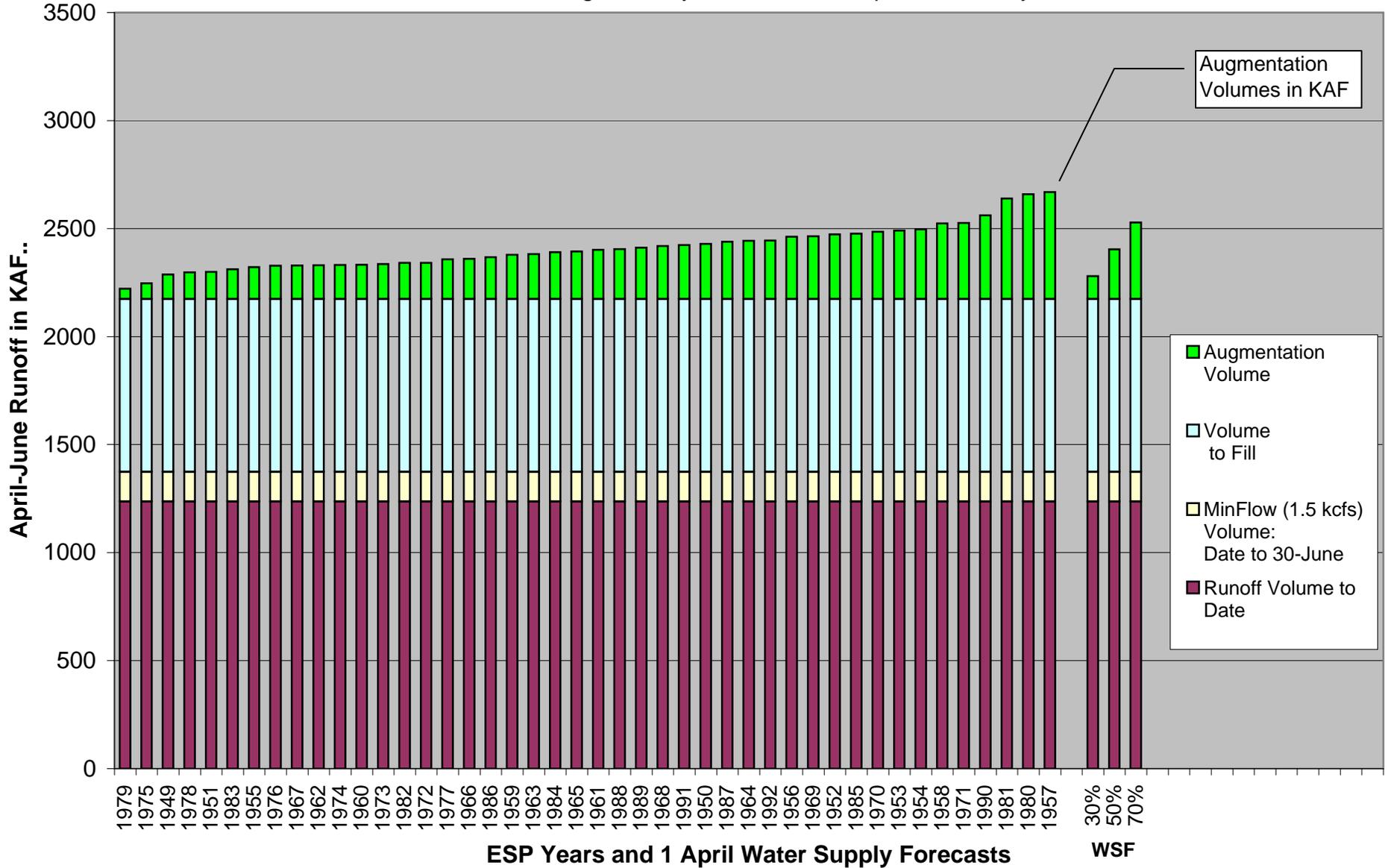
*Questions about the meeting may be referred to Cathy Hlebechuk at (503) 808-3942, or Cindy Henriksen at (503) 808-3945*

Bonneville Tailwater Elevation from 1997 to 2006



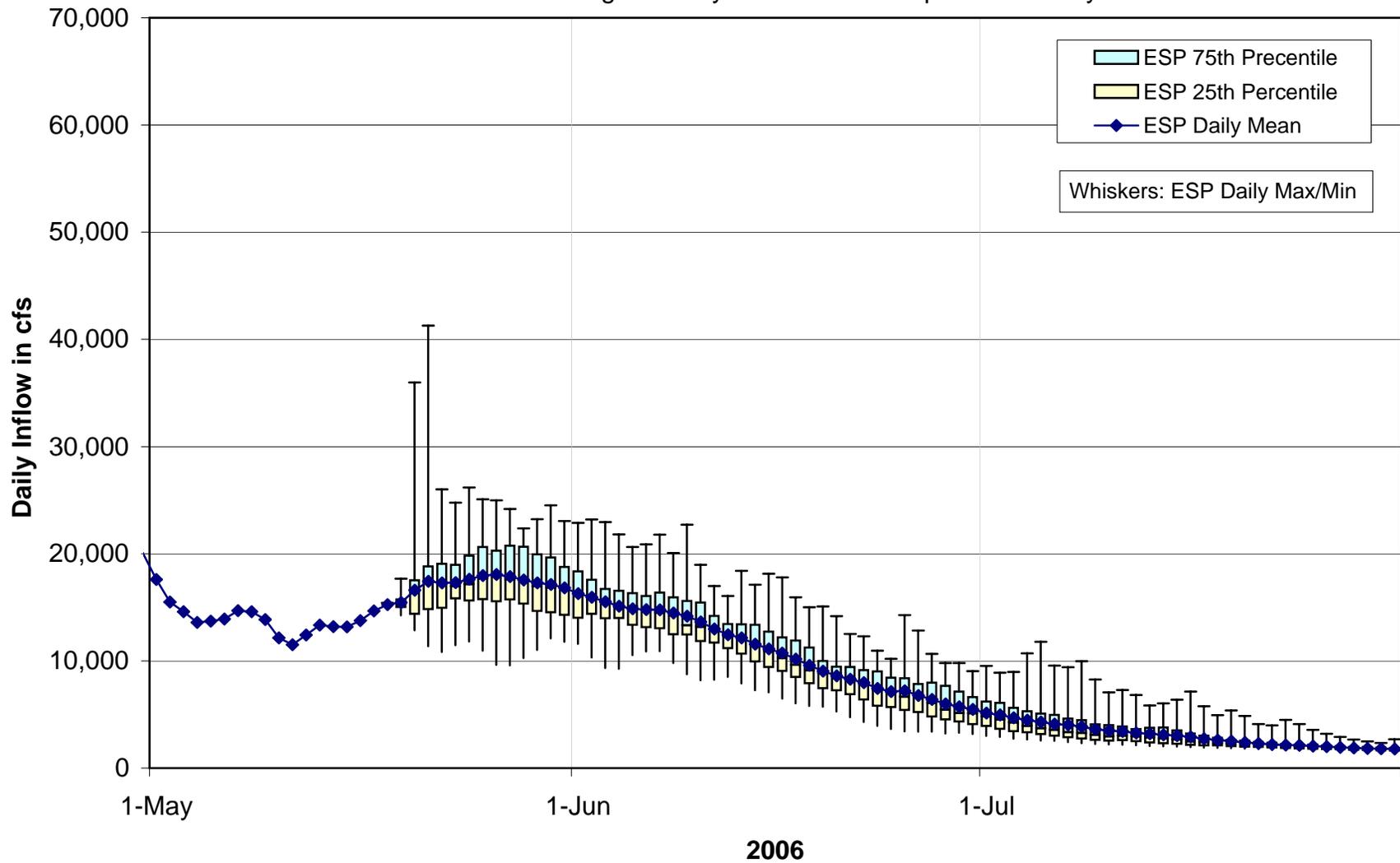
# Dworshak Augmentation Volumes ESP inflows and 1-May Water Supply Forecast

Observed data through 15-May and ESP flows updated 16-May



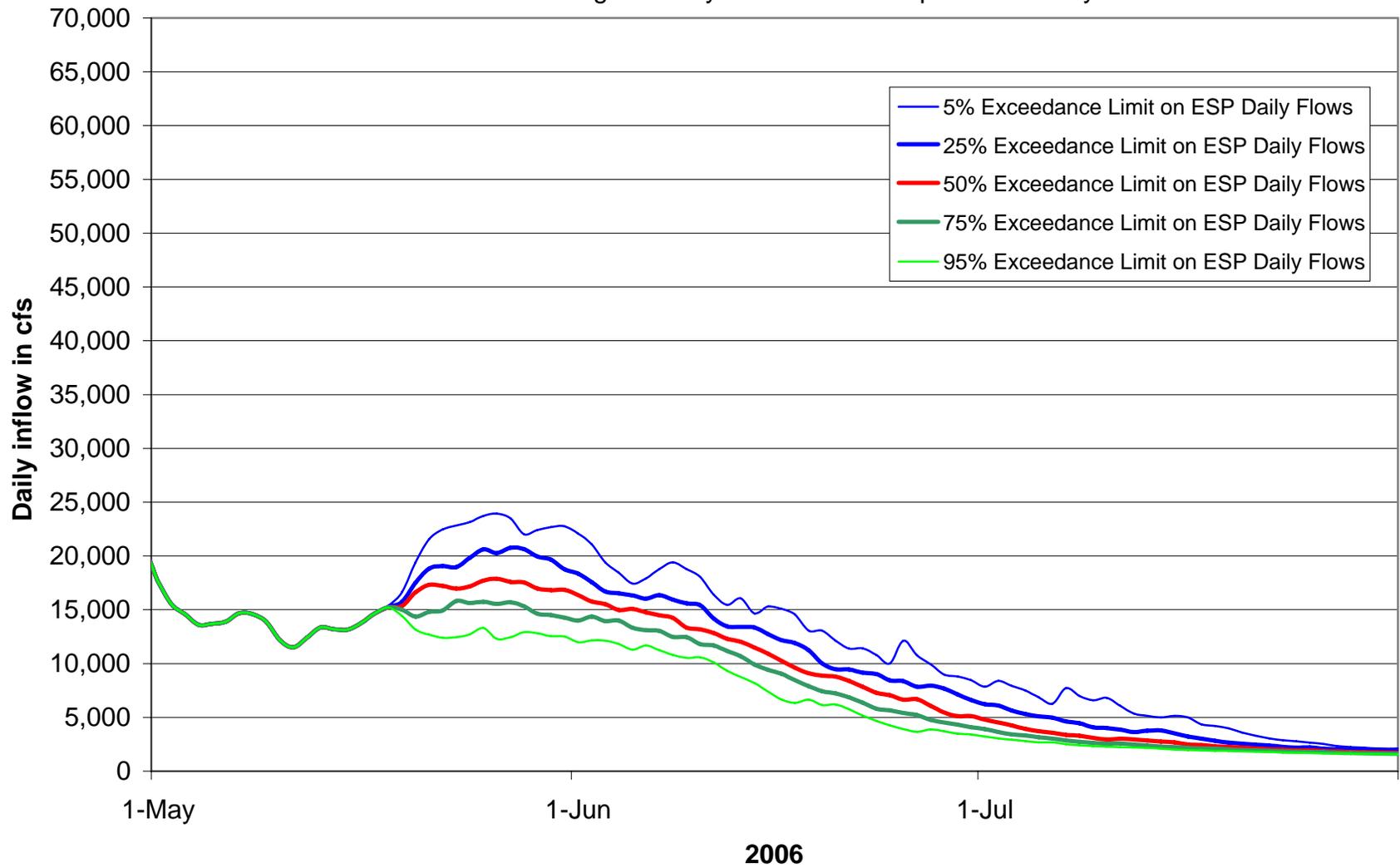
# Dworshak ESP Inflows - Daily Box-Whiskers Plot

Observed data through 15-May and ESP flows updated 16-May



# Dworshak ESP Inflows - Exceedance Plot

Observed data through 15-May and ESP flows updated 16-May



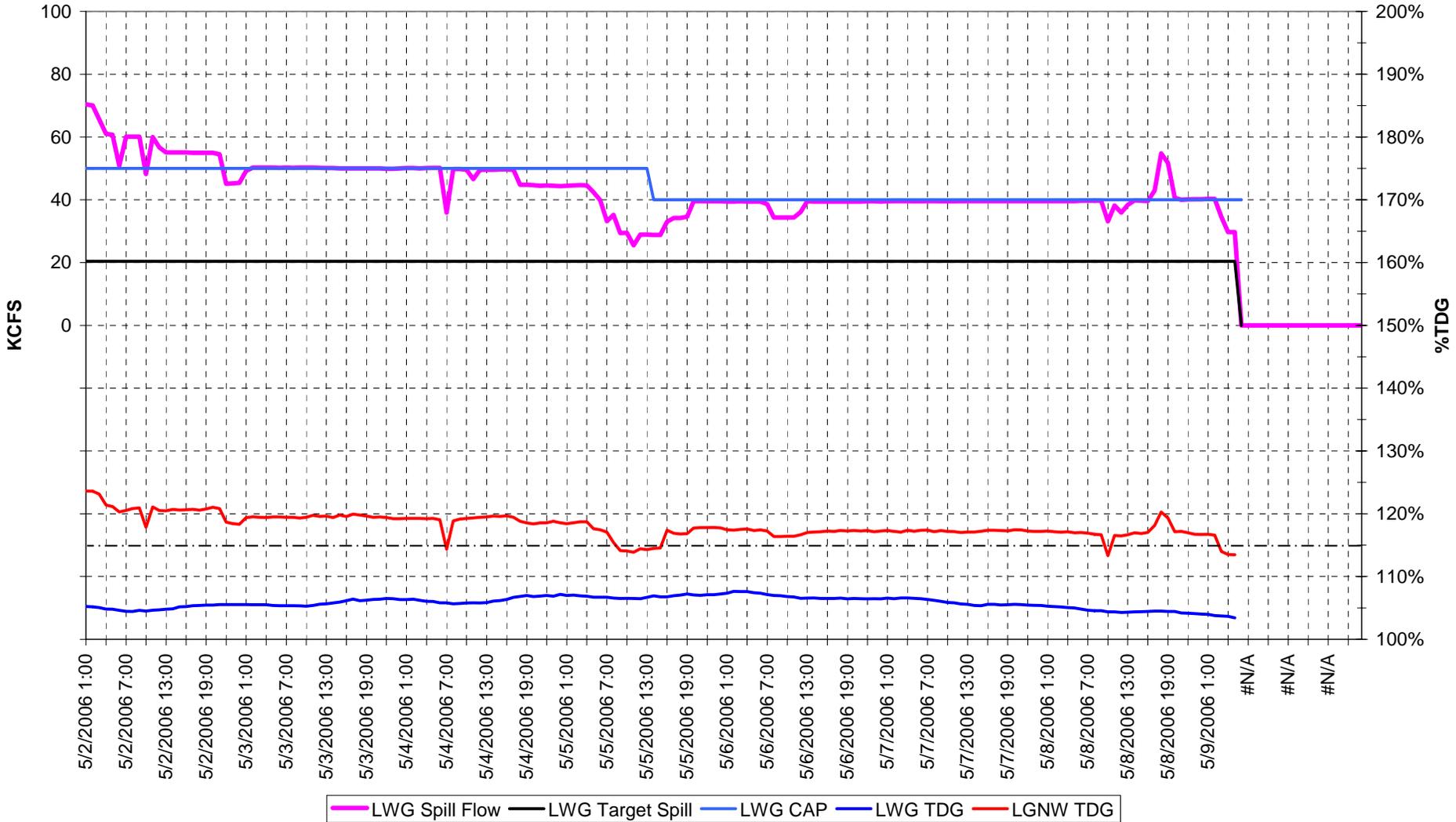


# Project Operations Update

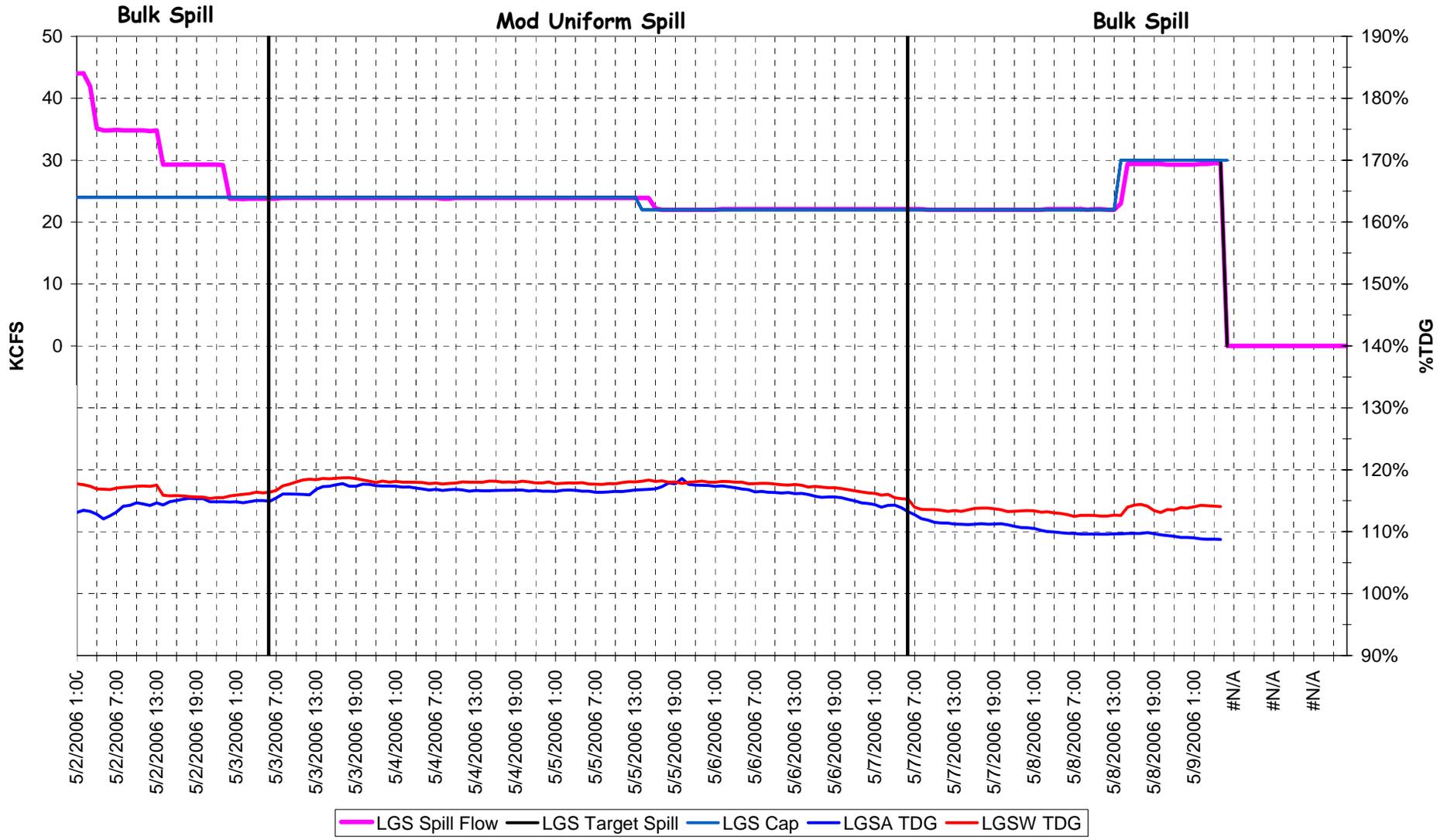
2 May - 9 May



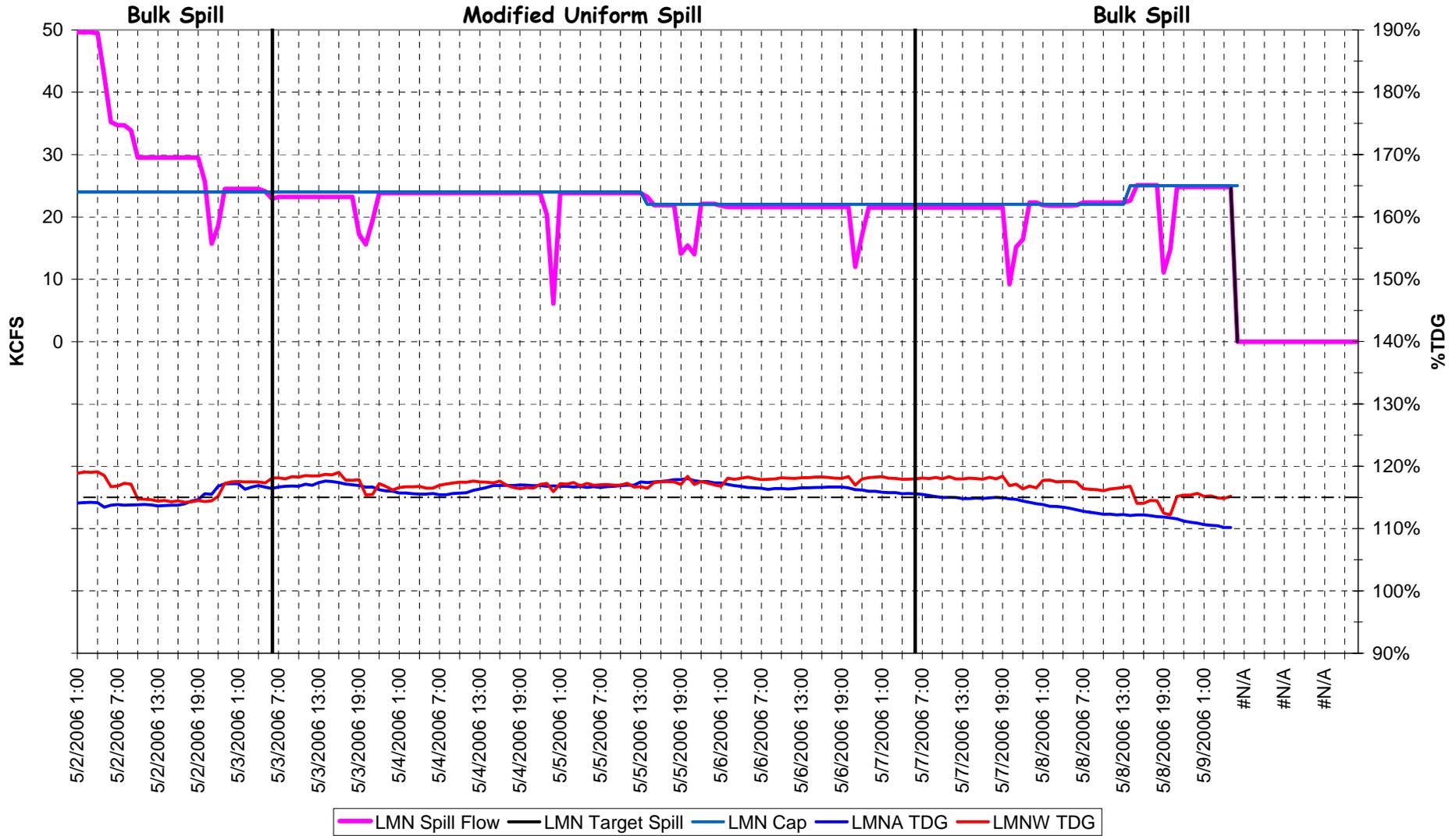
# LWG SPILL HOURLY



# LGS SPILL HOURLY

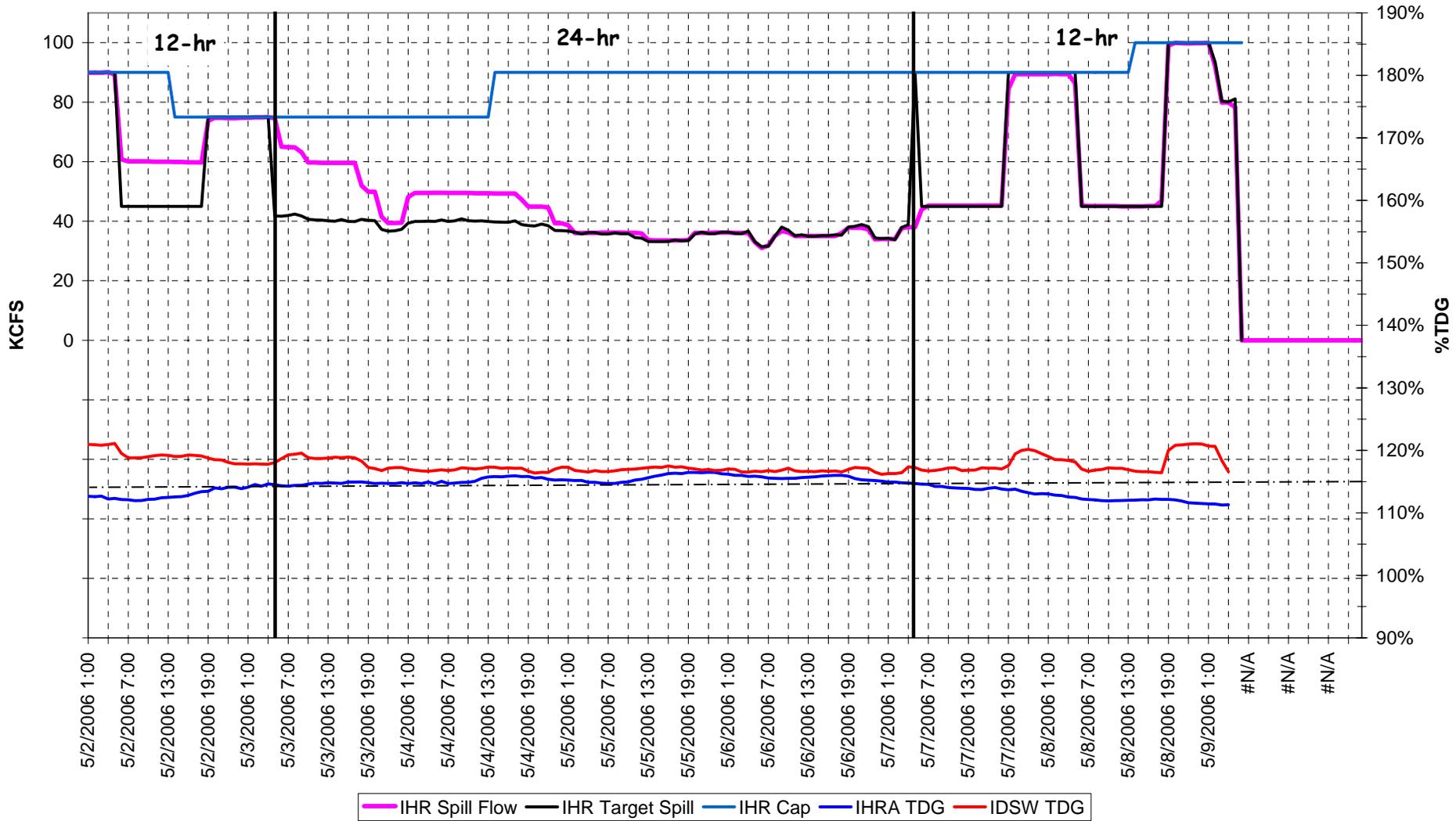


# LMN SPILL HOURLY



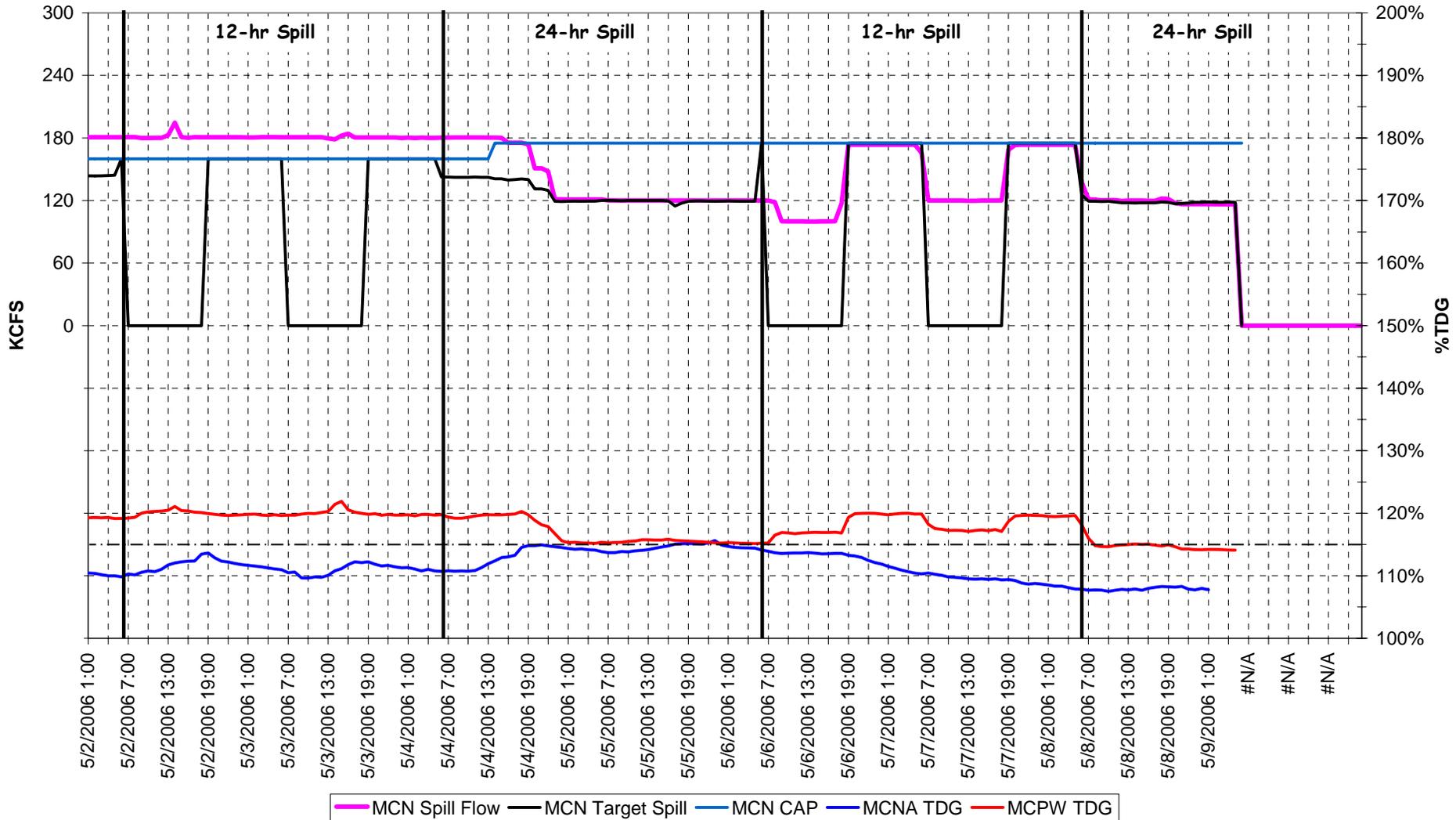
— LMN Spill Flow   
 — LMN Target Spill   
 — LMN Cap   
 — LMNA TDG   
 — LMNW TDG

# IHR SPILL HOURLY



12-hr Spill = Spill to the Spill Cap from 1800 – 0500 hrs; 45 kcfs spill from 0500 – 1800 hrs.  
 24-hr Spill = Spill 30% of project outflow up to the spill cap 24 hrs per day.

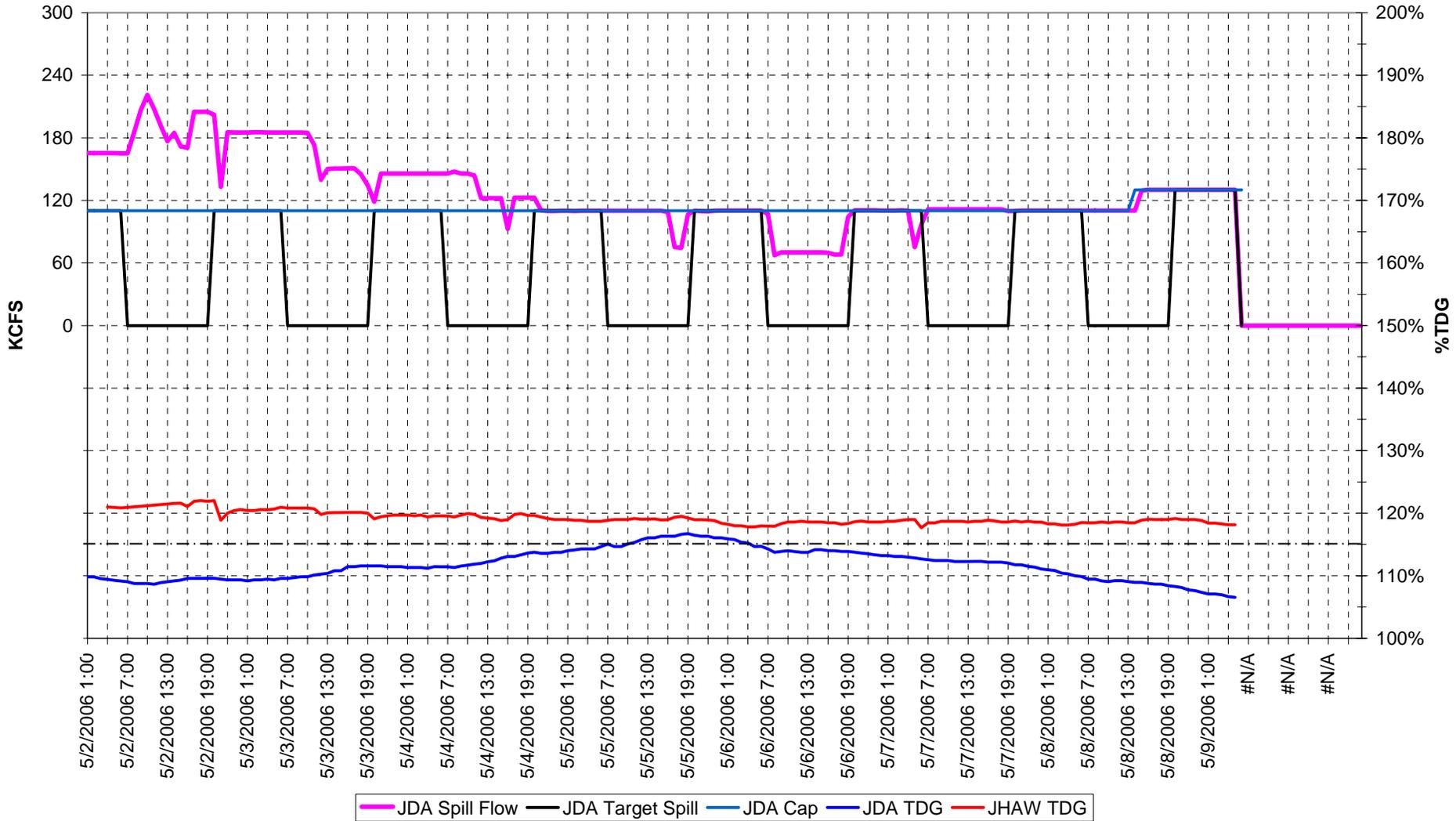
## MCN SPILL HOURLY



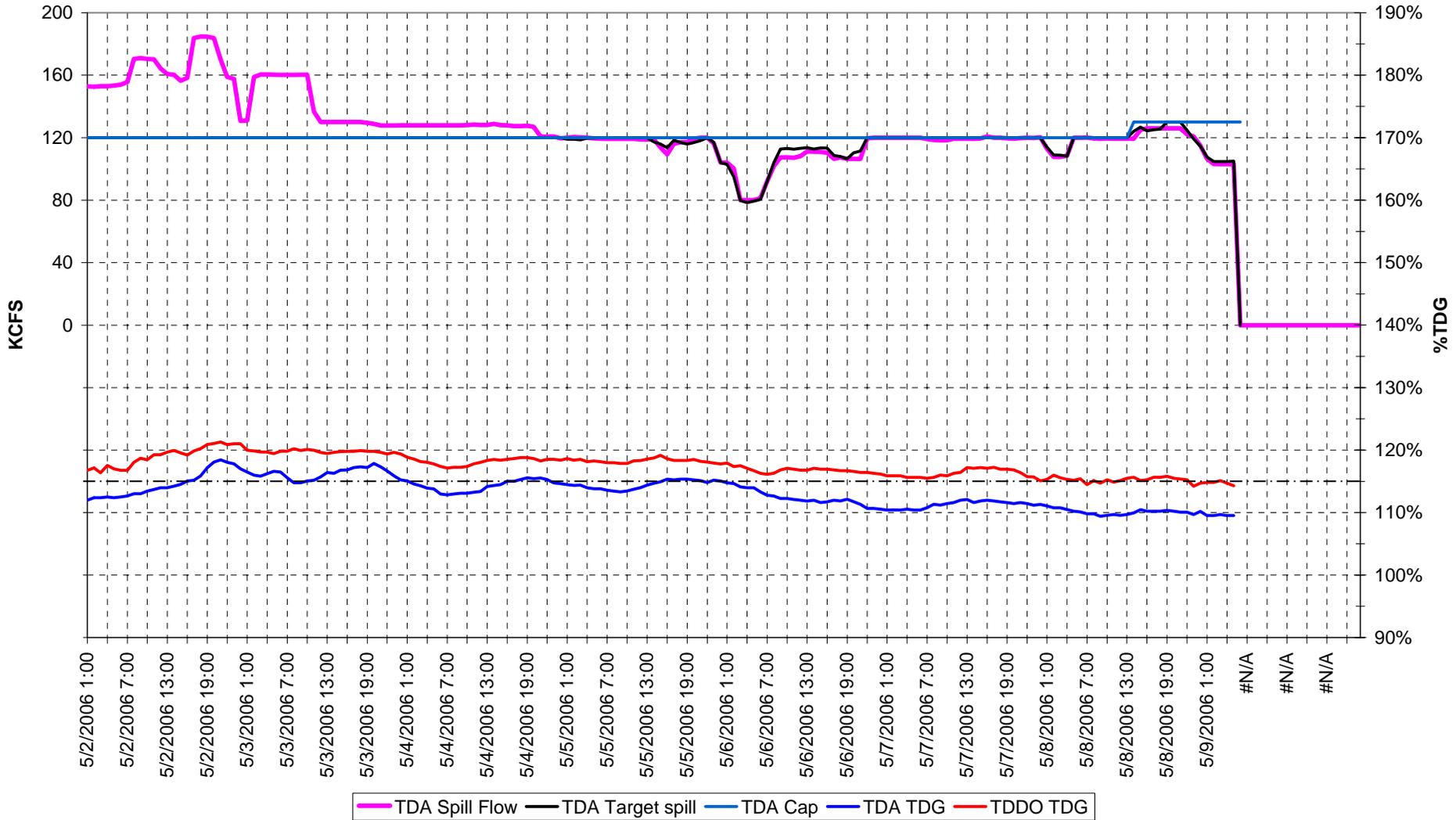
12-hr Spill = Spill to the Spill Cap from 1800 – 0600 hrs; No spill from 0600 – 1800 hrs.

24-hr Spill = Spill 40% of project outflow up to the spill cap 24 hrs per day.

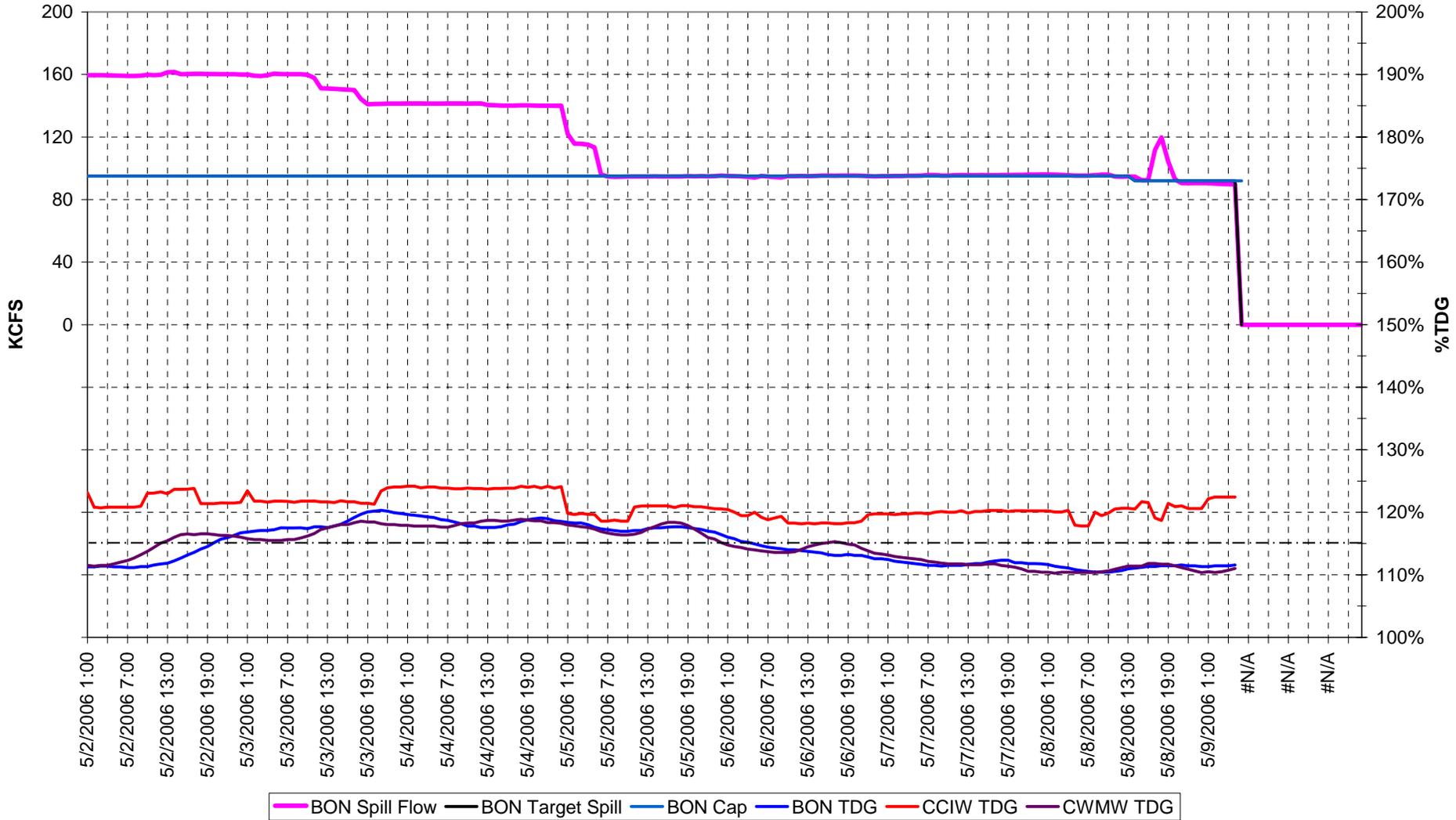
# JDA SPILL HOURLY



# TDA SPILL HOURLY



# BON SPILL HOURLY

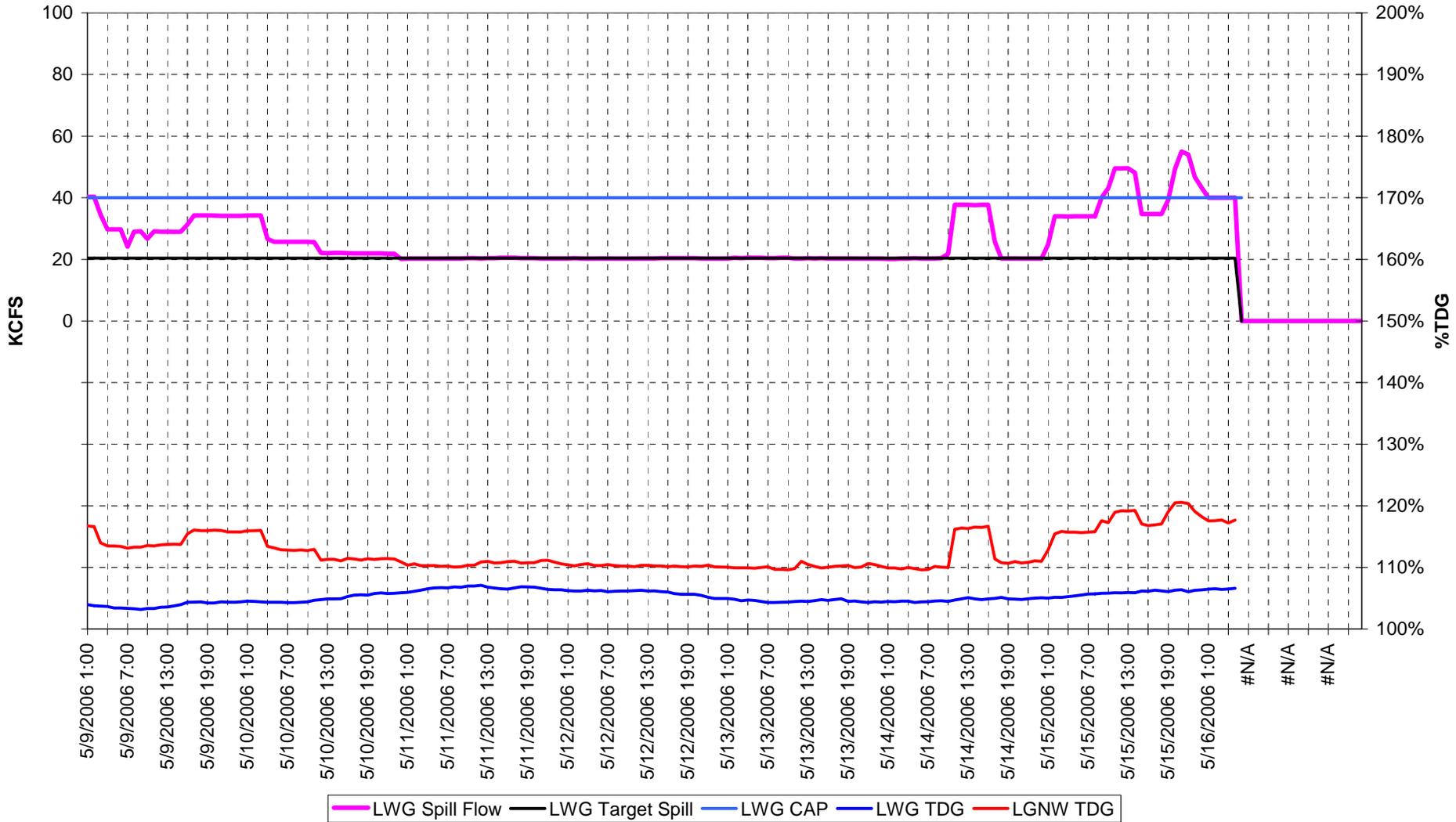


# Project Operations Update

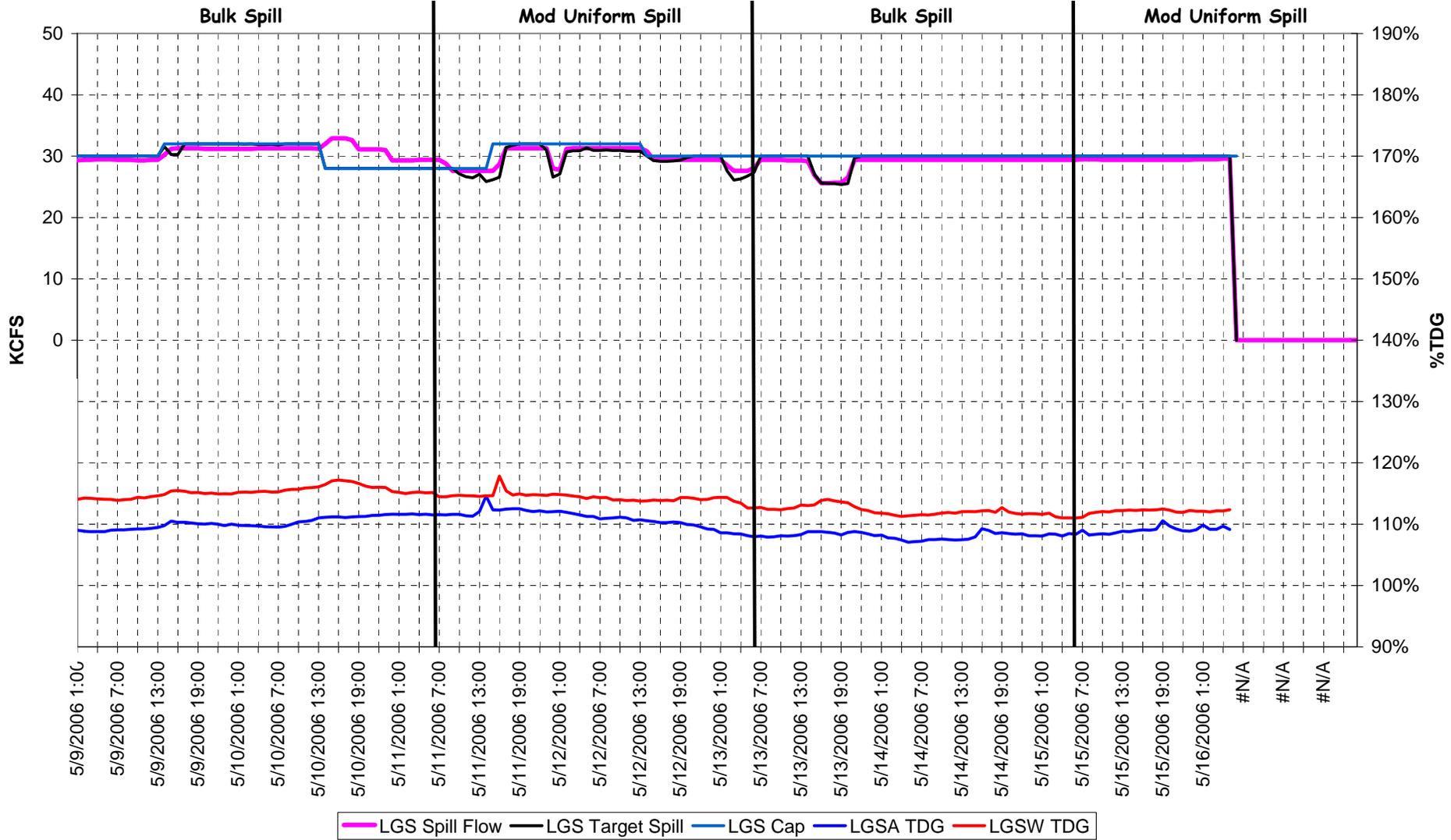
9 May - 16 May



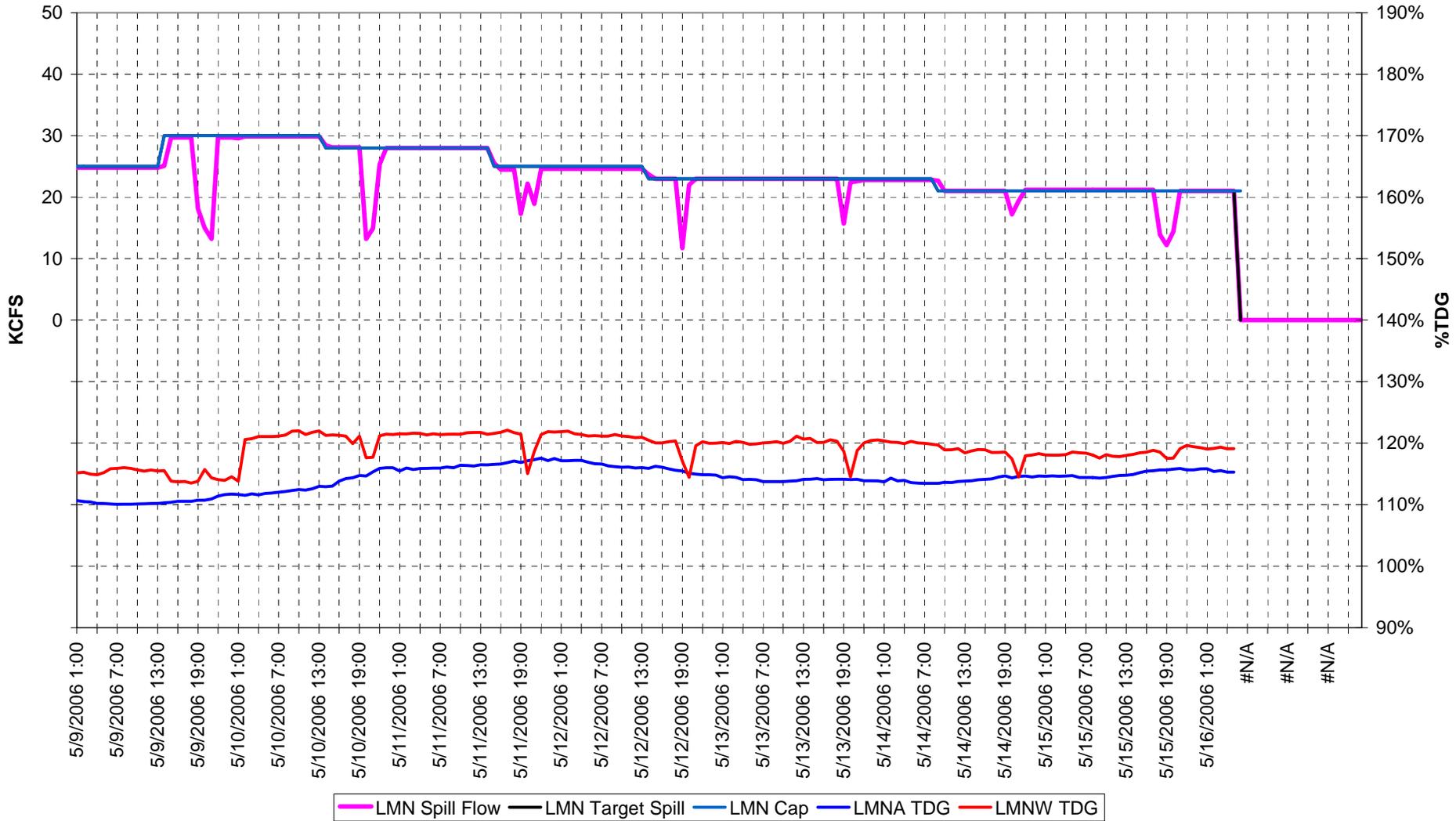
# LWG SPILL HOURLY



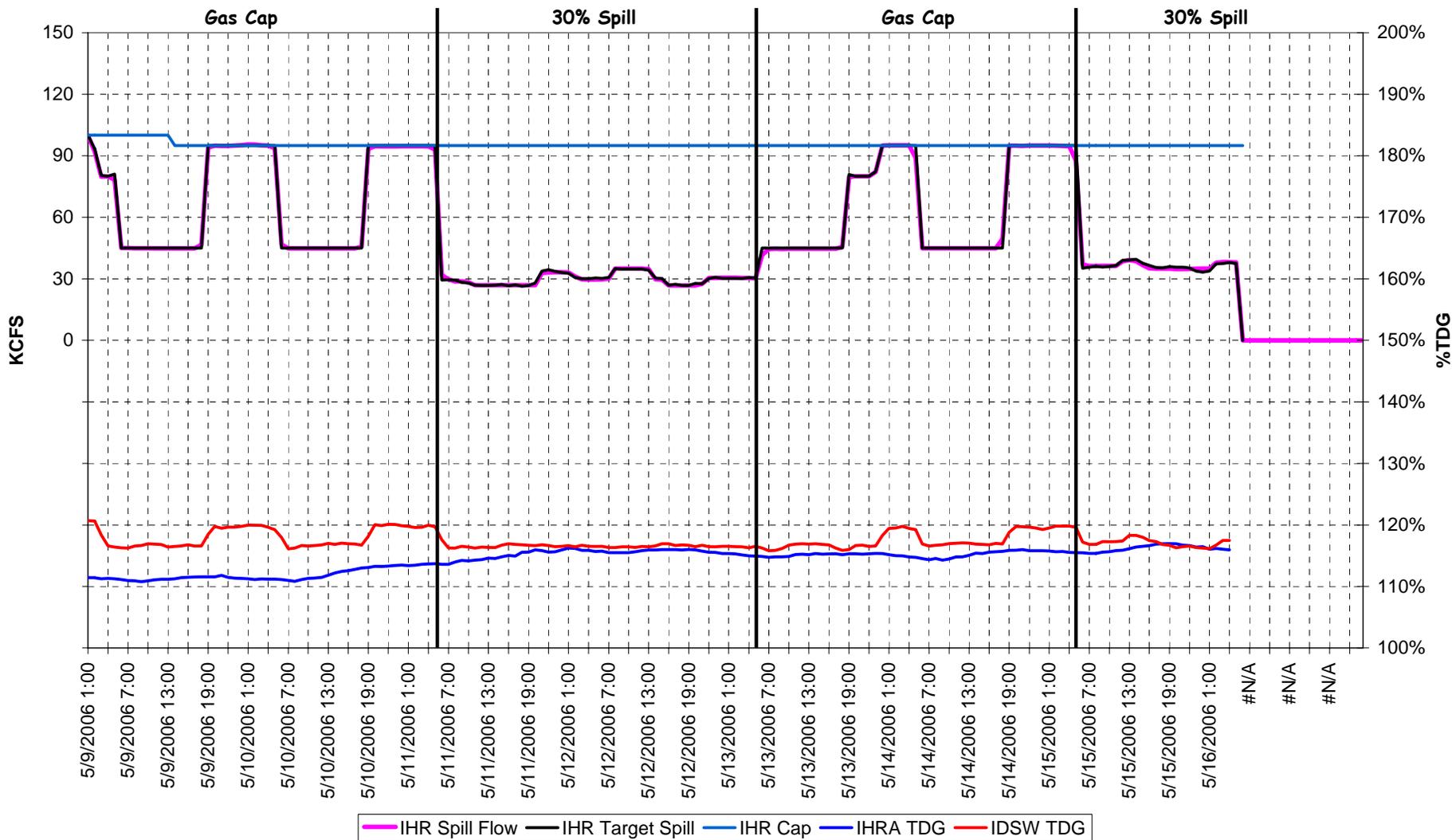
# LGS SPILL HOURLY



# LMN SPILL HOURLY

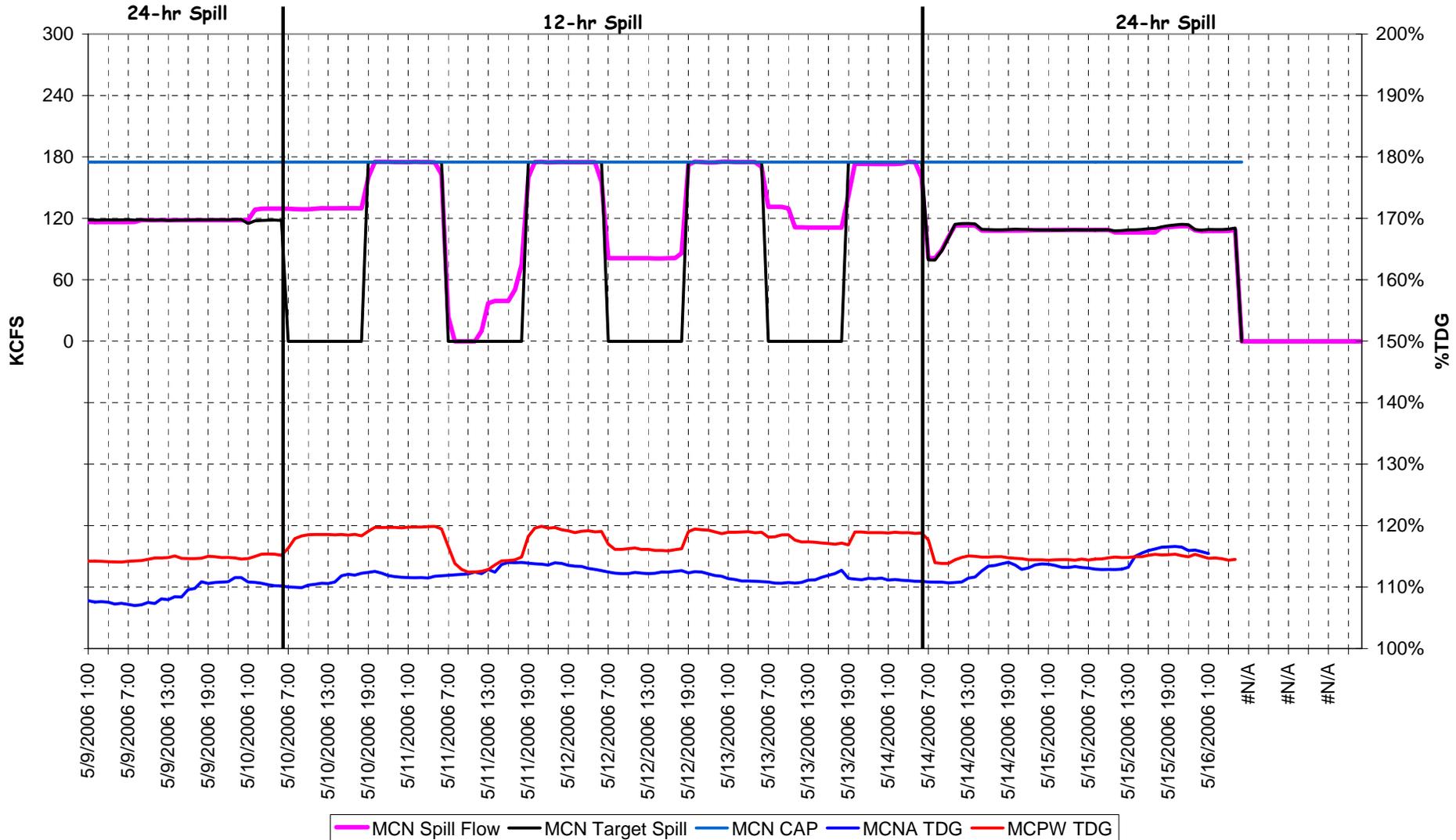


# IHR SPILL HOURLY



12-hr Spill = Spill to the Spill Cap from 1800 – 0500 hrs; 45 kcfs spill from 0500 – 1800 hrs.  
 24-hr Spill = Spill 30% of project outflow up to the spill cap 24 hrs per day.

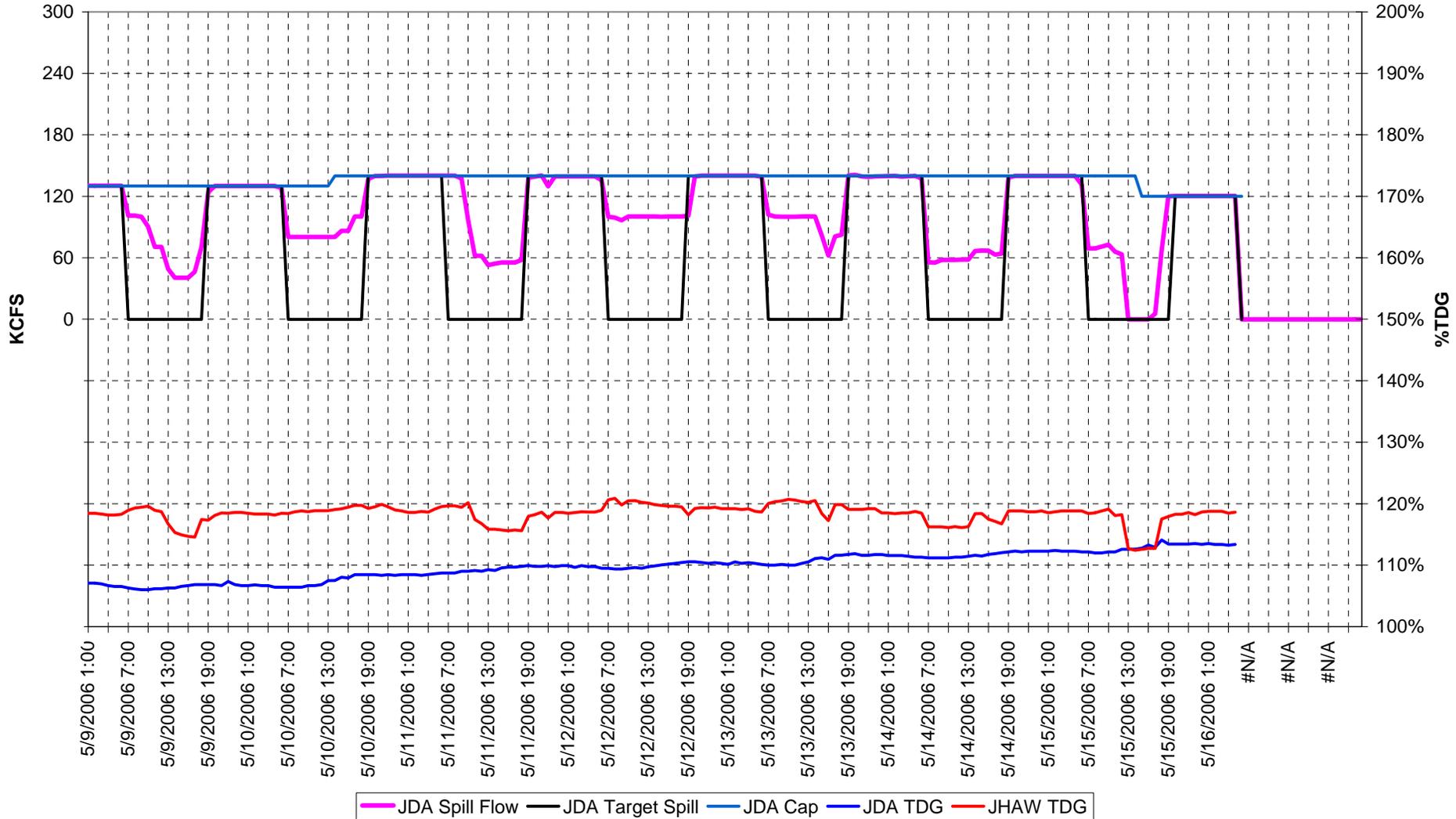
# MCN SPILL HOURLY



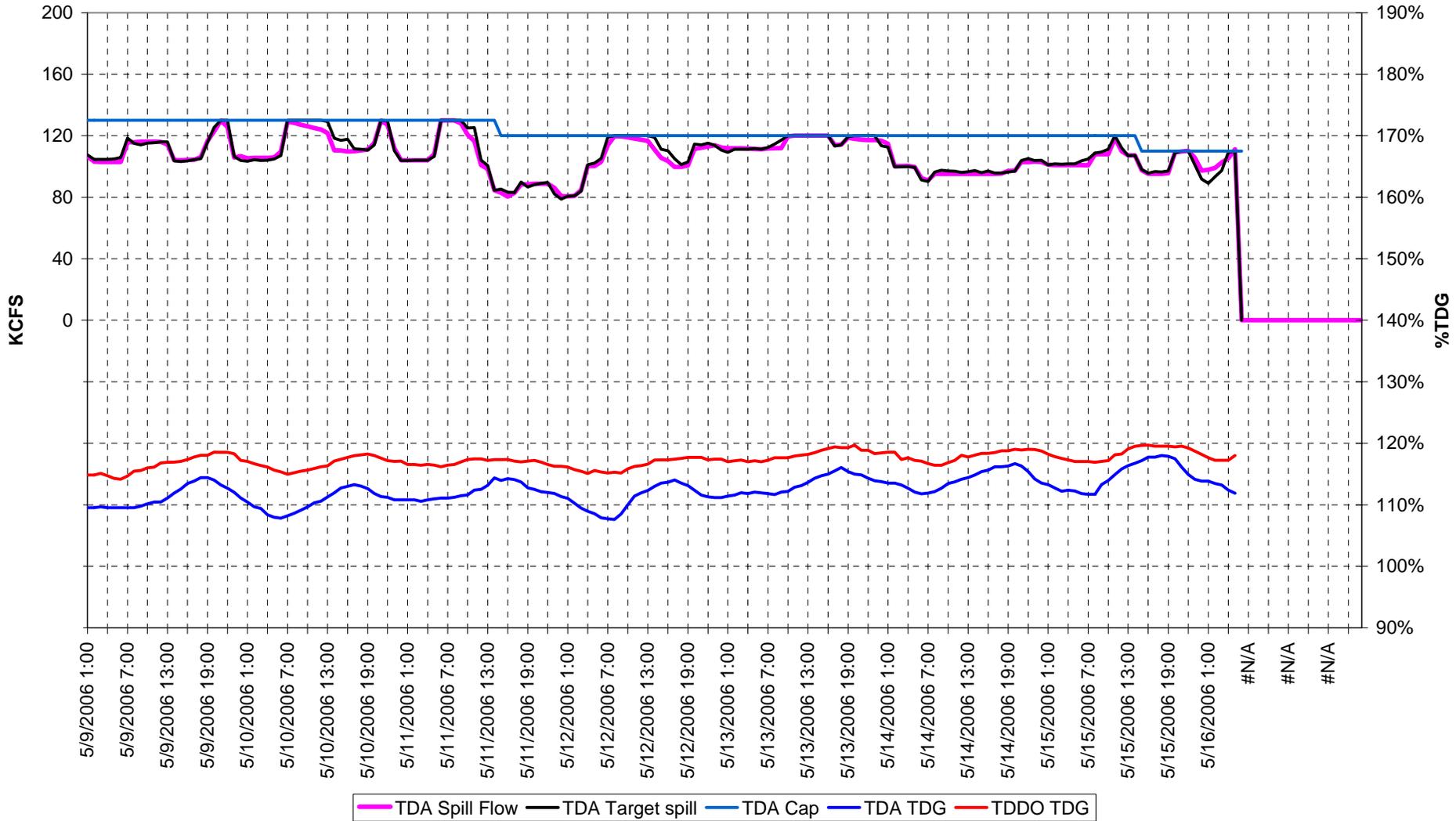
12-hr Spill = Spill to the Spill Cap from 1800 – 0600 hrs; No spill from 0600 – 1800 hrs.

24-hr Spill = Spill 40% of project outflow up to the spill cap 24 hrs per day.

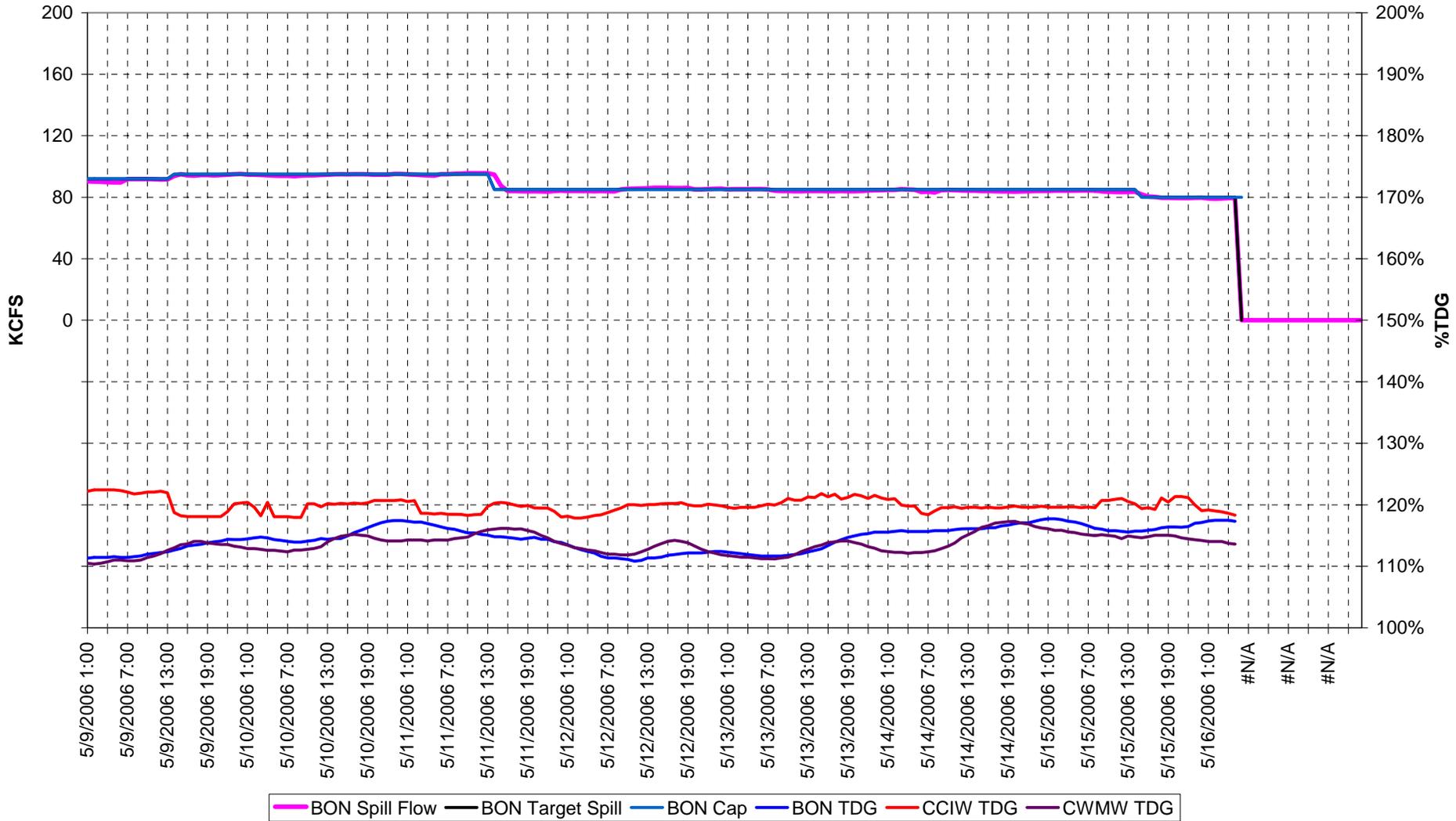
# JDA SPILL HOURLY



# TDA SPILL HOURLY

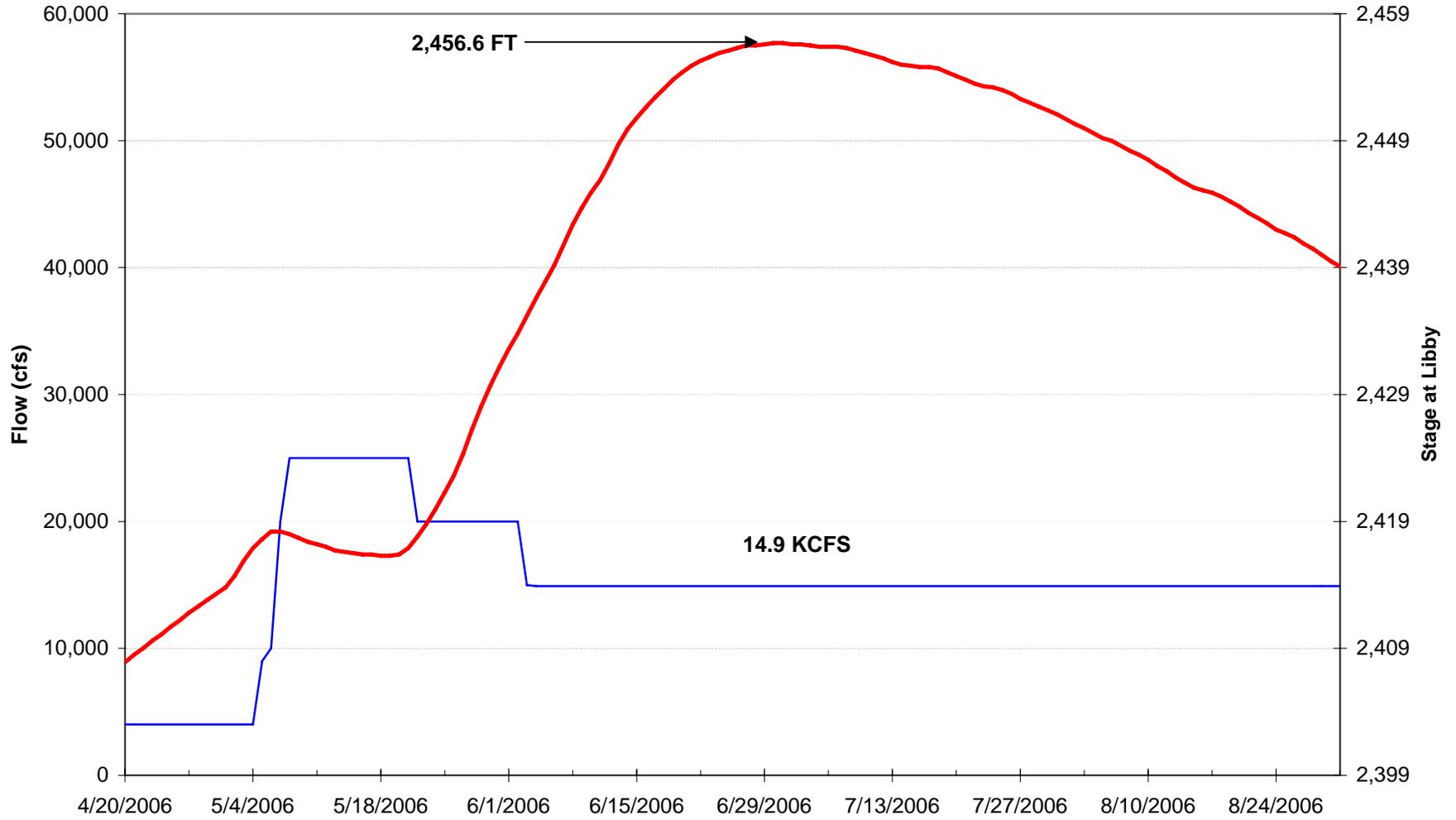
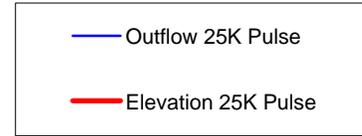


# BON SPILL HOURLY



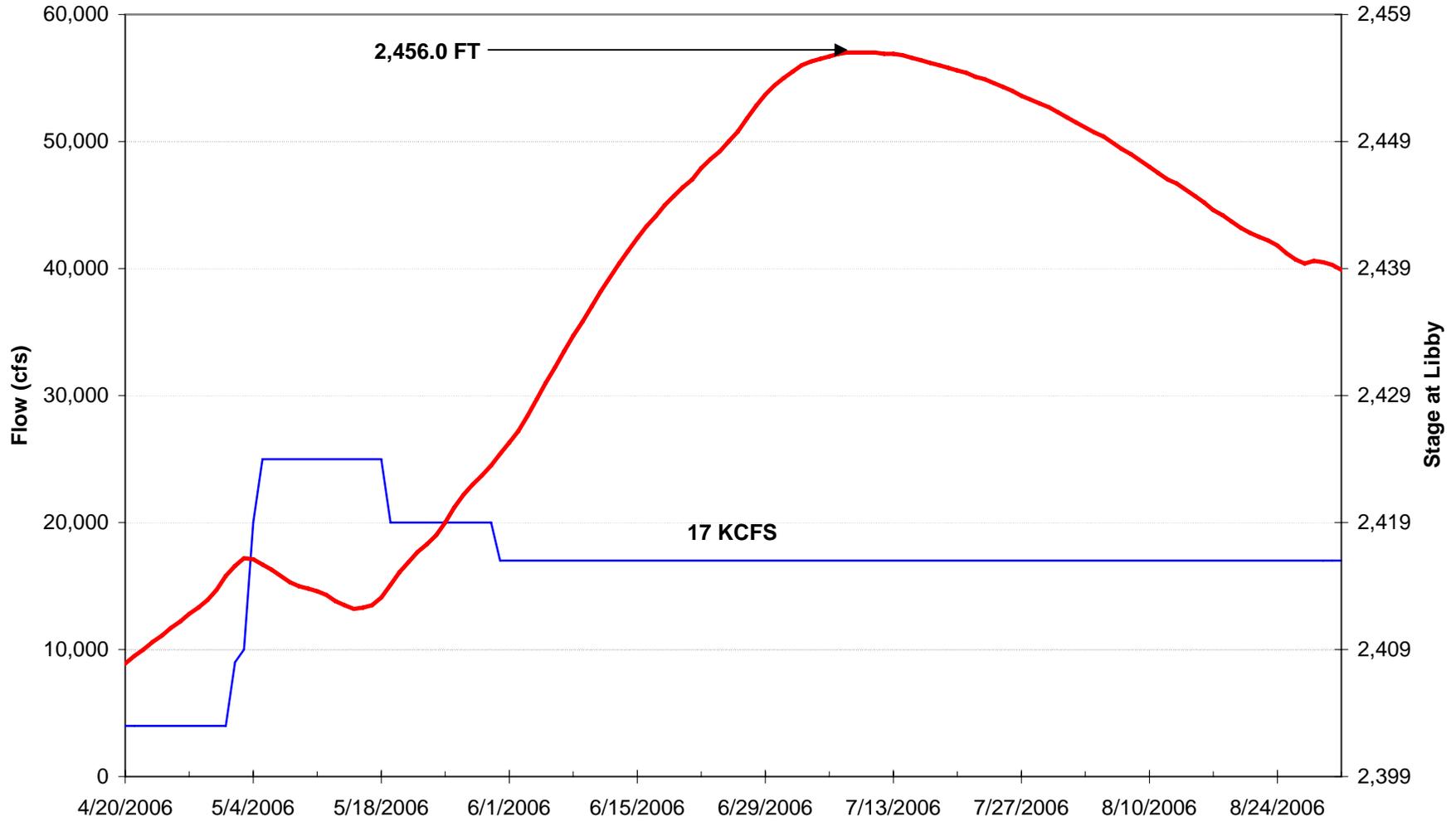
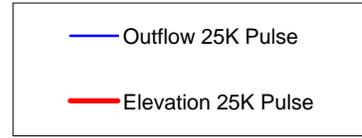
Note: Corps May Final Forecast is 6.18 MAF

**Libby**  
**5.59 MAF**  
**Apr - Aug Volume**



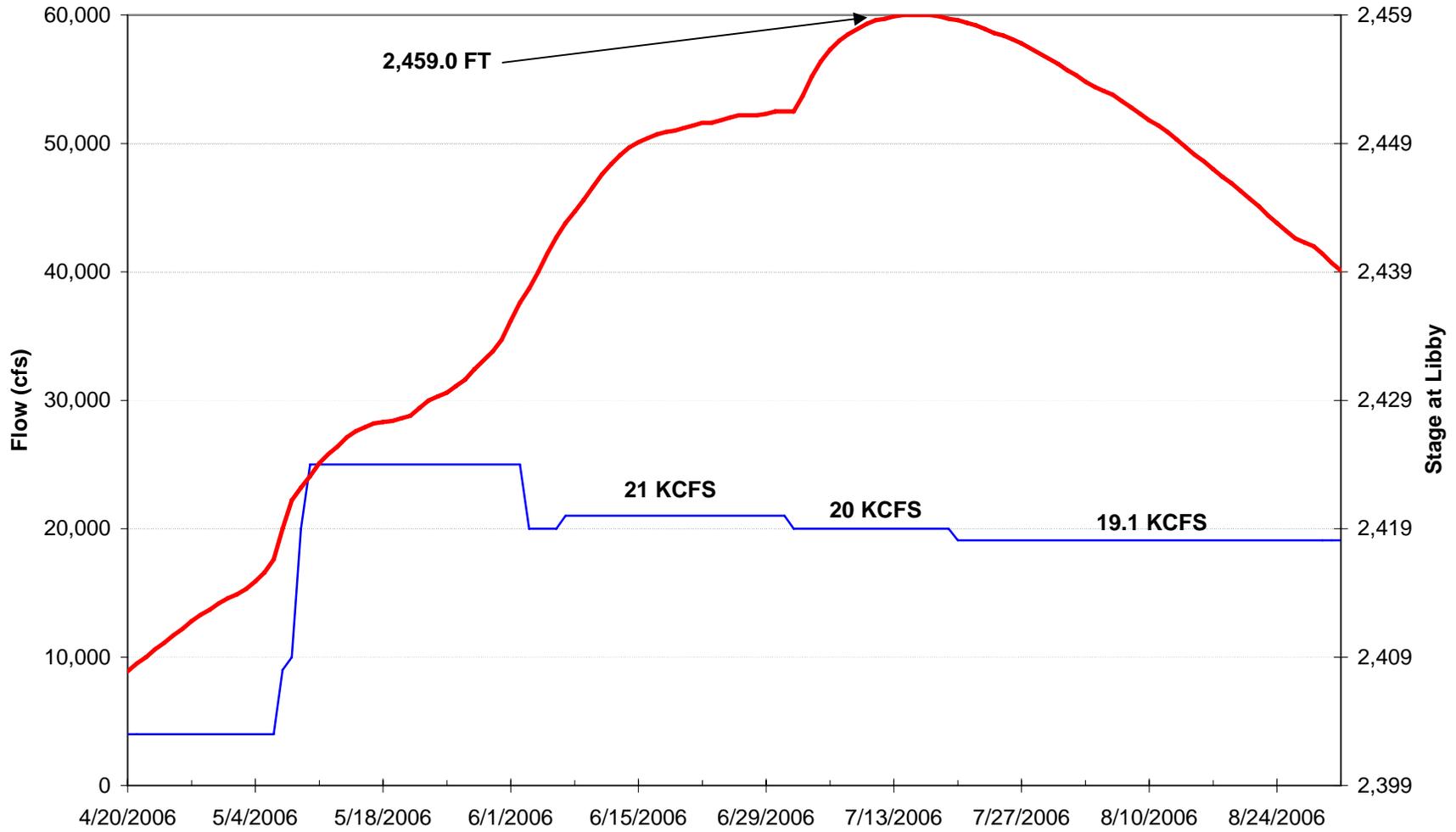
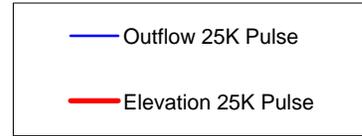
Note: Corps May Final Forecast is 6.18 MAF

**Libby  
6.03 MAF  
Apr - Aug Volume**



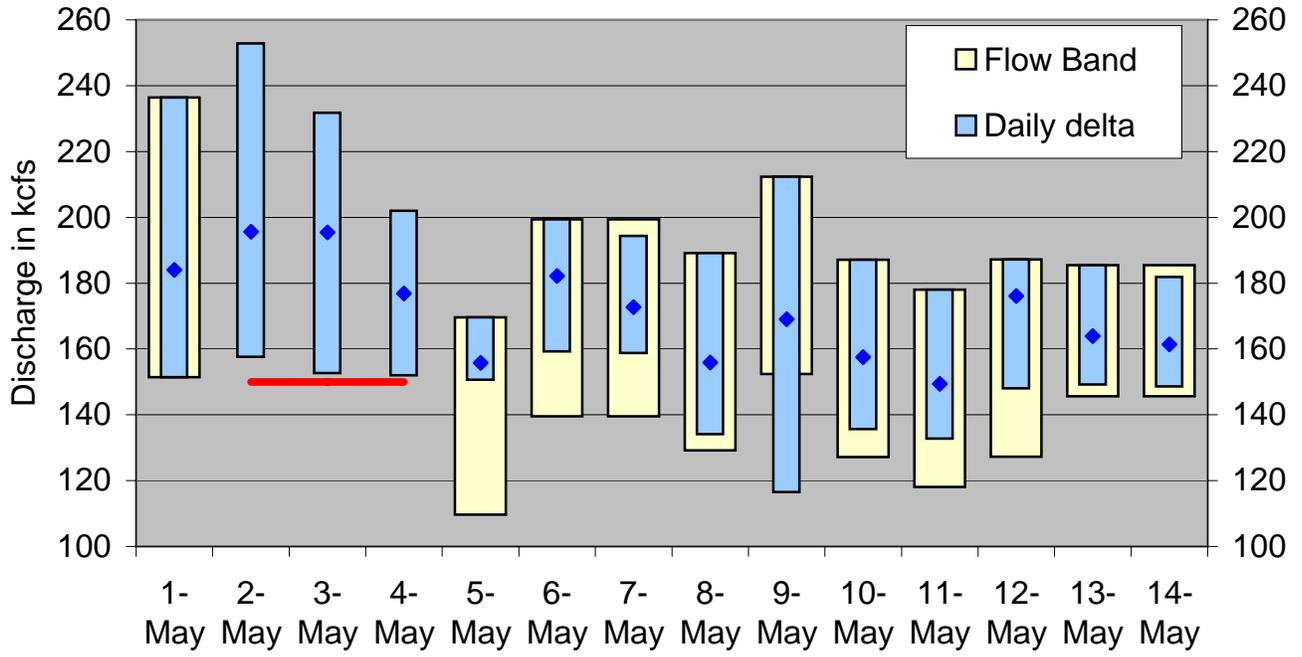
Note: Corps May Final Forecast is 6.18 MAF

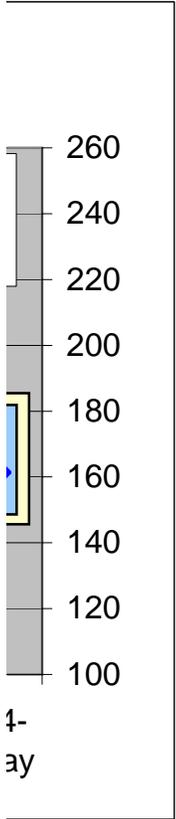
**Libby  
6.51 MAF  
Apr - Aug Volume**



### Priest Rapids Operations

Number of violations: 1





Priest Rapids Operations					Days	Band	Was it
Date	Ave.Q	Min.Q	Max.Q	Prog.Q	Delta	constraint	met?
1-May	184.0	151.3	236.4	159.9	85.1	60	Y
2-May	195.6	157.5	252.8	172.5	95.3	150	Y
3-May	195.4	152.6	231.8	185.5	79.2	150	Y
4-May	176.9	151.9	202.0	188.2	50.1	150	Y
5-May	155.8	150.6	169.6	158.0	19.0	60	Y
6-May	182.2	159.2	199.4	174.1			
7-May	172.7	158.7	194.4	150.2	40.7	60	Y
Week Ave	180.4			169.8	61.6		
8-May	155.9	134.0	189.1	165.8	55.1	60	Y
9-May	169.0	116.4	212.3	167.0	95.9	60	N
10-May	157.5	135.6	187.1	157.6	51.5	60	Y
11-May	149.4	132.7	178.0	147.3	45.3	60	Y
12-May	176.1	148.0	187.2	149.7	39.2	60	Y
13-May	163.9	149.1	185.5	156.1			
14-May	161.4	148.5	181.9	106.2	37.0	40	Y
Week Ave	161.9			150.0	54.0		

Comments  
If NO, reason why.

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Increasing flows on Monday

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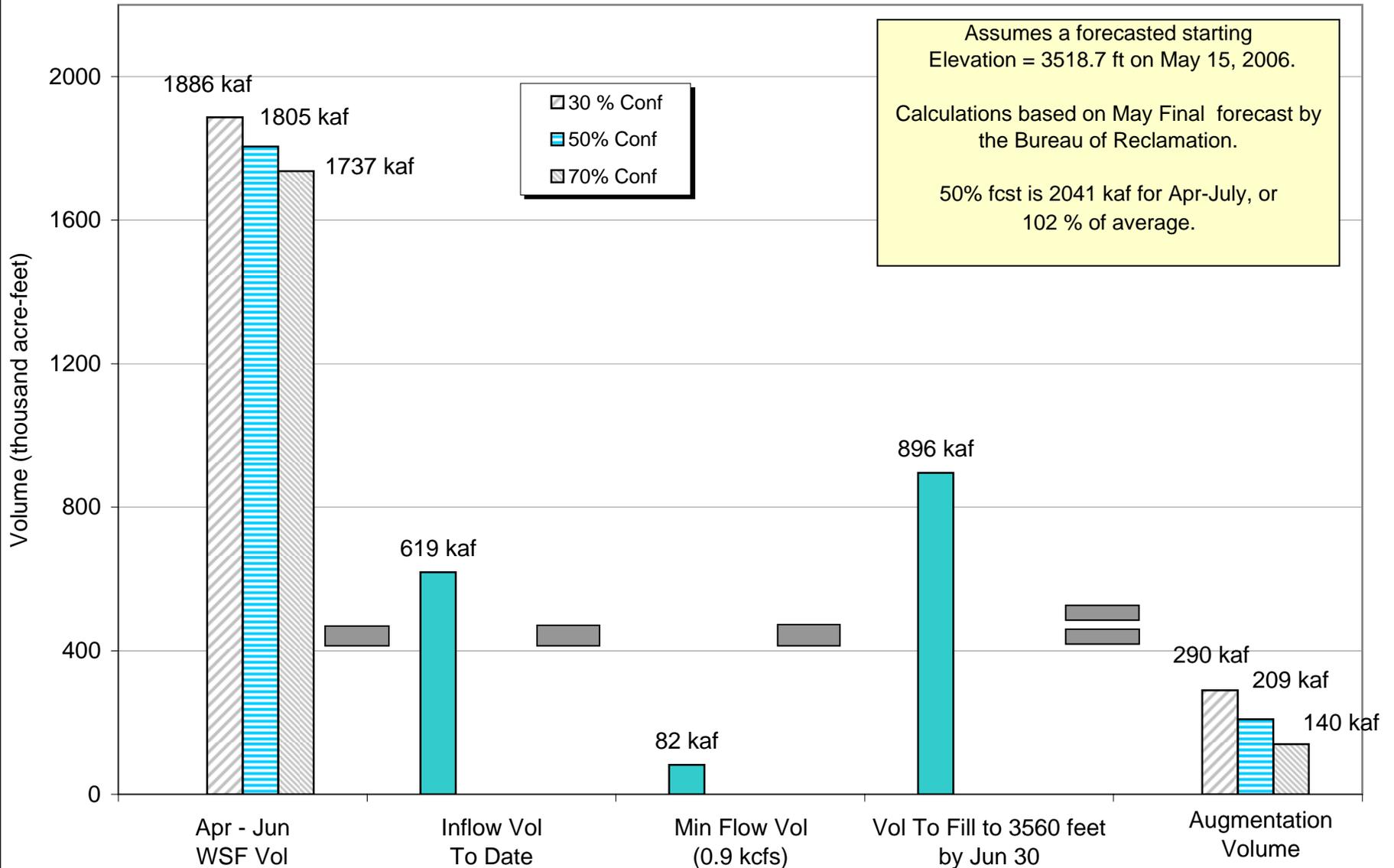
153.3 kcfs weekend minimum

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Operator error

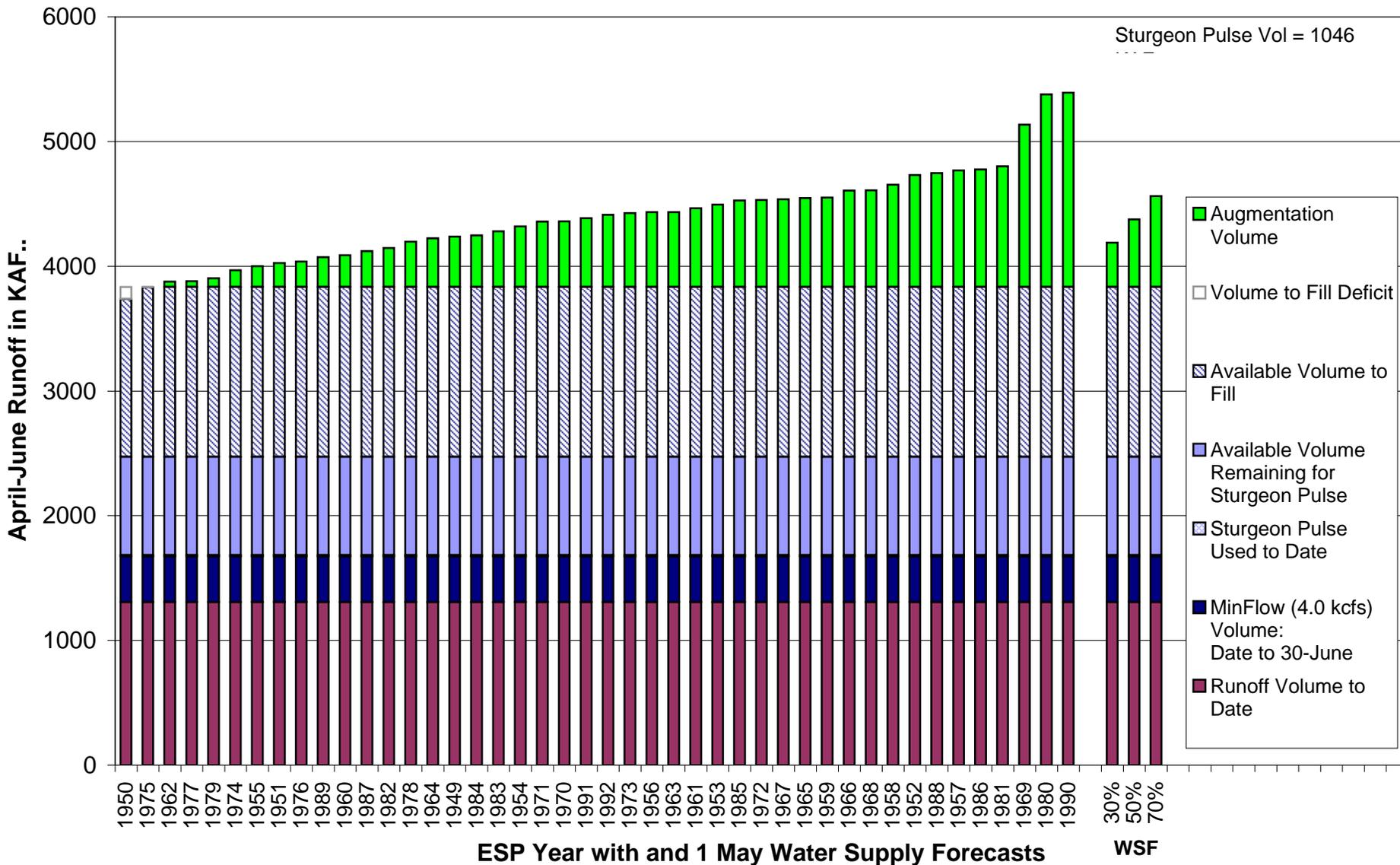
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### Volumes at Hungry Horse 1 April Through 30 June



# Libby Augmentation Volumes ESP inflows and 1 May Water Supply Forecast

Observed data through 15-May and ESP flows updated 16-May



# COLUMBIA RIVER REGIONAL FORUM

## TECHNICAL MANAGEMENT TEAM

May 17, 2006 Meeting

### FACILITATOR'S SUMMARY NOTES ON FUTURE ACTIONS

Facilitator: Donna Silverberg

Notes: Robin Harkless

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.

#### **Priest Rapids Update**

Russell Langshaw, Grant County PUD, presented Priest Rapids operations for the week of May 1-7 and 8-14. He also included a graph showing daily delta and flow bands; one violation occurred, on May 9, which Russell described as operator miscommunication. The operation outside the flow bands lasted one hour, and specifically, flows went from 155 kcfs down to 116 kcfs and back up to 175 kcfs.

Another 320 temperature units are needed to reach the end of protection flows. With about 10 per day accumulating, Russell offered that protection flows would end in the next 2 and a half weeks.

#### **Libby Operations**

The COE implemented sturgeon operations starting Monday, May 15. TMT reviewed model scenarios for possible operations at the project. The COE's desired goal is not to fill and spill at the project. The BiOp requires the project reach elevation 2439' at the end of August. The NWPCC Mainstem Amendments recommend the project reach 2439' by the end of September in the lowest 20% water supply years and 2449' by the end of September in all other years.

From Montana's perspective, today was a warm-up to see how the operation might be able to move water to benefit both salmon and Montana resident fish needs. Montana is seeking implementation of the Council's Mainstem Amendments. NOAA offered that it was unclear what the impact of starting the operation early this year will be.

**Next Steps:** TMT will continue to monitor the sturgeon operation. Montana will continue its efforts to implement the Libby operators in the NWPCC Mainstem Amendments.

#### **WMP Spring/Summer Update**

The Spring/Summer update was finalized on May 3 on the condition of addressing the research summary on page 10. The summary is a good central location for research this year that will include operations affects on research, and vice versa. The May final forecast was also added to the Update. Paul Wagner, NOAA, noted that a comparative test between acoustic and pit-tag detection might tell us a good deal about future tagging. Acoustic tags might be the tool of the future.

#### **Water Management Plan**

The 2006 WMP was approved as final by NOAA, BOR, BPA, COE, Montana, Idaho and Nez Perce. Oregon, Washington and USFWS were not available to comment. It was noted they were aware the WMP was to be finalized today.

#### **Operations Review**

*Reservoirs:*

**Lower Granite Navigation** – Cathy Hlebechuk, COE, made a correction from her report at the last TMT meeting with regards to spill reductions at Lower Granite. Her numbers from last TMT included spill reductions for both towboaters and fish barges. Since April 19, there have been spill reductions for 3 towboaters. In all instances, it was not necessary to reduce spill to zero.

Operations – Grand Coulee was at elevation 1235’ and beginning to fill. Hungry Horse was at 3520’ with high inflows filling the project quickly. The BOR expects 487 kaf from the Upper Snake for flow augmentation, around the third week in June when the migration is expected to begin. Libby was at elevation 2428.3’, with 31 kcfs in. Albeni Falls was operating at 58 kcfs outflows. Dworshak was at elevation 1552.8’, 20 kcfs inflows and 10 kcfs out (scheduled to be reduced to 5 kcfs outflows the next day). McNary flows were at 314 kcfs average for April 10-May 15. The Lower Granite average was 124 kcfs; flows were expected to reach 180-200 kcfs over the weekend, followed by sharp decreases. Priest Rapids average flows were 170 kcfs.

Flow Augmentation Volumes – Cathy shared graphs (attached to today’s TMT agenda) of ESP flow augmentation forecasts for Libby, Dworshak, Hungry Horse, Priest Rapids and Grand Coulee. A question was asked about the salmon managers’ preferred operation for refilling Grand Coulee or maintaining high Priest Rapids flows. They were also asked to state their preference for higher Priest Rapids flows – in the first part or the last part of June.

**ACTION:** The salmon managers will discuss this at FPAC and be prepared for discussion at the next TMT meeting.

*Fish:*

It was noted that the Dalles spill was not at 40% but ranged between 36-39%. There was an agreement reached in 2004 for the COE to operate the project at 40%,  $\pm 1\%$ . The COE will update the teletype to reflect this.

Adults – Paul Wagner shared the positive news that returning adults at Bonneville are up to 79,000, close to the pre-season forecast of 80,000.

Juveniles – This year’s juvenile numbers are comparing well with historic numbers. There may be another peak with the upcoming runoff increases.

*Power System:*

John Day T-1 Outage – Testing is slightly ahead of schedule. So far, testers have found that just the bushings were damaged, which is good news.

*Water Quality:*

From April 1- May 16, 220 TDG exceedances have occurred at all the projects. High flows resulting in involuntary spill; unit outages at Lower Granite, Bonneville and John Day causing additional involuntary spill; new spill patterns; and high tailwater elevations at Bonneville all added to the complexities this year. The COE has been working to assess why there have been issues. Spill caps and exceedances were posted on the TMT web page under Water Quality-Spill.

**TMT Meeting Schedule**

*Wednesday, May 31* agenda items include:

- Priest Rapids Update
- Libby Operations Update/Scenarios (COE and Montana)
- Grand Coulee Refill vs. Priest Rapids Flows Priority (Salmon Managers)
- Permit Process – Marine Mammals (Oregon and Washington)
- Adult Population Analysis of Chum – Error bounds (Oregon)
- Introduction to Dworshak Summer Operations (Nez Perce?)
  - Possible SOR
- System Operations Review – All
- June Schedule: The COE room is not available on June 14, nor is a phone line. There will not be a regular TMT meeting on that day. The June schedule will be discussed at the May 31 TMT meeting.

## Technical Management Team Meeting Notes

May 17, 2006

### ***1. Greetings and Introductions.***

Donna Silverberg welcomed everyone to the May 17 Technical Management Team meeting, which was chaired by Cathy Hlebechuk. The following is a summary, not a verbatim transcript, of the topics discussed and decisions made at this meeting. Anyone with questions or comments about these notes should contact Hlebechuk at 503-808-3936.

### ***2. Priest Rapids Update.***

Russell Langshaw said he had provided an updated report for today's meeting, available via hot-link from today's agenda on the TMT homepage. Please refer to this document for full details of his presentation. Langshaw went briefly through this information; he said the 60 Kcfs flow band was exceeded on May 9 for about an hour, due to operator miscommunication; the mistake was quickly detected and corrected.

We're at approximately 1080 temperature units today, so we need another 320 before the protection flows end, Langshaw said. They're accumulating at a rate of 10 per day, currently, so I would say we're about two and a half weeks out, he added.

### ***3. Libby Operations.***

There was a request for some additional modeling scenarios at the last TMT meeting, said Silverberg. Libby started ramping up outflow last Sunday, and is now at 25 Kcfs, Hlebechuk said. We may need to reduce Libby flows somewhat, to stay below the critical elevation at Bonners Ferry. This operation will continue for two weeks, at which point outflow will probably be ramped down to 20 Kcfs, she said.

Touching on the model results, Hlebechuk said the Corps had used various runoff volume assumptions above and below Libby's current forecast of 6.18 MAF to generate projections. The first model run, which assumes a somewhat lower runoff volume at Libby, shows that a flat outflow of 14.4 Kcfs would be needed to reach elevation 2439 by August 31. Scenario 2 shows the project reaching 3 feet from full in the first week in July, then running 17 Kcfs out through the end of August. The third ESP trace uses a higher forecast volume; under this scenario, the project would reach full in mid-July and release full load through the end of August.

Brian Marotz asked about an additional model run that took Libby to 10 feet from full by August 31, then provided some additional flow in September. One scenario shows a flat 11.8 Kcfs outflow from Libby from mid-July through the end of September,

Hlebechuk said; the project would reach elevation 2439 by September 30. The intent of the latter scenario is to avoid a sudden drop in Libby outflow at the end of August, to extend the in-river growing season and provide increased productivity, Marotz explained. At about 9 Kcfs outflow, most of the riffle habitat below the dam is wetted; however, flows above 9 Kcfs provide diminishing returns. So your desired operation would be 9 Kcfs during the biologically productive season? Hlebechuk asked. Ideally, but of course that isn't possible in this water year, Marotz replied.

The group devoted a few minutes of discussion to the preferred operational scenario at Libby this summer. The main thing, for the Corps, is that the BiOp calls for elevation 2439 by the end of August, said Hlebechuk, and this is what the Corps is planning on doing. She noted if all parties agree to do something different, we must document the reasons for that decision, involve our legal people, and Department of Justice must write a letter to Judge Redden, which is the process followed with the staggered fish transportation start dates. Jim Litchfield and Marotz discussed the optimal Libby operation, from Montana's standpoint; Marotz was very clear that Montana wants to avoid any kind of double peak once the spring freshet begins to decline. Instead, a gradual reduction in flow would be preferred by Montana.

Some concern was expressed about the possibility of having to fill and spill at Libby in this water year; Hlebechuk suggested that it may make sense to hold the current 25 Kcfs rate of outflow for a little longer than planned to create some head room in the reservoir, in case inflow suddenly increases. Bettin said that, at yesterday's Sturgeon Recovery Team meeting, the intent is to run flows up to 1764 and hold flows as high as possible – about 60 Kcfs at Bonners Ferry. The hatchery has nine females at this time; five are ready to spawn. They have been unable to catch any flowing males, however. In other words, conditions are almost perfect for spawning right now, Bettin said, as long as temperatures cooperate.

The group devoted a few minutes of discussion to the preferred 2006 Libby operation; Litchfield noted that today's discussion was something of a warm-up, and an SOR will probably be submitted at the next TMT meeting. Wagner noted that this year's sturgeon operation started about two weeks later than normal. Litchfield emphasized that Montana will be pushing for full implementation of the Libby operational recommendation in the Council's Mainstem Amendment in 2006; he said he will provide further information about how, exactly, that operation would be shaped in this water year at the next TMT meeting. It was agreed to revisit the Libby operation at that time.

#### ***4. Finalized Spring/Summer Update.***

We added the research operations table Paul Wagner requested to the final spring/summer update, Hlebechuk said; the group briefly reviewed it. The other thing that is different about this version of the update is that I have added the May final forecast information, Hlebechuk said, adding that the 2006 spring/summer update was

finalized on May 3.

One interesting thing for the future is the comparison between acoustic tags and PIT tags for juvenile research, said Wagner – the acoustic tag is showing potential as the tag of the future for juvenile research, because it provides data all the way down to the estuary and near-ocean. It gives a better picture of performance, he said, explaining that acoustic tags make noise – they ping – and do not have an antenna, unlike the older radio-tag technology. The acoustic tags are still fairly large, but shrinking, Wagner added.

### ***5. Finalized Water Management Plan.***

Hlebechuk went briefly through the changes made to this version of the 2006 WMP; she said she believes she has now incorporated all of the comments submitted. I would like to finalize this document today, she said, although it is a living document, and comments are still being accepted. No objections were raised to considering the 2006 Water Management Plan final at this point. Silverberg noted that the Fish and Wildlife Service, Oregon and Washington are not represented at today's meeting but it was brought up the reps knew the WMP was to be finalized at this meeting and the reps could have provided concerns prior to the meeting.

### ***6. Operations Review.***

Hlebechuk said she wanted to go on record to correct her statement at the last TMT meeting that there were seven spill reductions for the tow boaters since April 19 – in fact, there were only three reductions for the tow-boaters during that period. Flows are starting to come up again – they're 150 Kcfs currently at Lower Granite, and should increase to 180-200 Kcfs in the next few days – so there may be more reductions coming up. The other spill reductions were for the fish transportation barges, she said.

Norris said Grand Coulee is at elevation 1235 this morning; the project is operating to maintain 135 Kcfs at Priest. The current elevation is 3520 at Hungry Horse; project outflow will drop down to 300 cfs outflow today for flood control, from about 4 Kcfs this morning. Inflows are 21 Kcfs and increasing due to warmer weather; we expect the remaining snow pack to come off quickly, he said. The reason for the outflow reduction is to keep the stage at Columbia Falls below 13 feet; it is currently at 10.6 feet, up a foot from yesterday, Hlebechuk added.

We're still expecting the 487 kaf in flow augmentation volume from the Upper Snake his year; the salmon augmentation water will start coming out in the third week in June, once flood control operations end, Norris said.

Libby was at 2428.3 feet last night, 31 feet from full, with 31 Kcfs in. Albeni Falls is at 2057.4, releasing 58 Kcfs. Dworshak is at elevation 1552.8, with 20 Kcfs in and full load out, about 10 Kcfs. Tomorrow night, outflow will be reduced to 5 Kcfs to improve the probability of refill, because there is only 52 percent residual runoff at this point, the

Corps said. The snowpack is coming off very quickly right now, Dave Statler observed.

The McNary seasonal average flow so far is 314 Kcfs, Hlebechuk said; since April 3, it has averaged 124 Kcfs at Lower Granite. At Priest Rapids, the average flow has been 170 Kcfs since April 10. Lower Granite flow is really coming up due to local flows from un-dammed tributaries. Lower Granite outflow increased from 132 Kcfs yesterday to 150 Kcfs, currently; again, it's expected to increase to 180-200 Kcfs over the next few days. Grand Coulee flow is then expected to begin to recede fairly sharply.

The group then discussed the most recent ESP augmentation volume forecasts for Libby, Hungry Horse and Dworshak. The Corps reiterated that these graphs, available via hot-link from today's agenda on the TMT homepage, show expected augmentation volumes at these projects, based on 44 historic water years, under 30 percent, 50 percent and 70 percent probability of refill. The group offered a few clarifying questions and comments.

Moving on to Priest Rapids flow objectives and the need for balance with Grand Coulee storage operations, Hlebechuk said the goal, in this kind of water year, is to maintain more storage space in Grand Coulee for a longer period, and refill later in the season. It may not be possible to maintain the 135 Kcfs flow objective throughout the month of June, she said. Hlebechuk asked whether the salmon managers would prefer higher flows at Priest rapids earlier or later in June. You don't have to tell us right now, she said, but you may want to discuss this question at FPAC: which is more important – refilling Grand Coulee by July 1, or maintaining somewhat higher flows at Priest Rapids later into June? Also, when do you want to see those higher flows at Priest Rapids – earlier or later in June? We'll discuss that at FPAC and report back, Wagner replied. Hlebechuk noted to meet the BiOp seasonal average target of 135 kcfs April 10 – June 30, Priest rapids flows would only need to average about 106 kcfs May 17 – June 30.

The discussion turned to spill operations at The Dalles; it was noted that the goal is to stay within 1 percent of the 40 percent spill target. It was noted that BPA would like to issue a teletype to the project operators to that effect. After a brief discussion, no objections were raised to updating the teletype.

The discussion then moved on to fish. Wagner said adults are continuing to move upstream, and the news is good – we actually got a positive surprise. Year-to-date adult spring chinook passage has now reached 79,000 at Bonneville, very close to the pre-season estimate of 80,000 fish. The jack count is 1,691, on the low side, but close to what we saw last year on this date. Perhaps the jacks are also late this year, and the jack count will continue to increase, Wagner said – historically jacks tend to arrive later than the adults. On this date in 2005, only 57,000 adult spring chinook had passed, Wagner added; in other words, what looked like a horrible spring chinook year has now come around. The group discussed the role of water temperature in triggering the onset of the adult migration; it was noted that the presence of pinnipeds, odor and

turbidity may also play a role.

Moving on to juvenile passage, Wagner said the indices peaked at Lower Granite about a week ago, but have remained relatively high. The run is slightly earlier than normal this year. Juvenile steelhead passage has shown a similar trend; the upcoming increase in flow may trigger a second peak. In the Lower Columbia, juvenile passage has also peaked and is now declining somewhat. According to DART, cumulative steelhead passage is now in the 90 percent range for the season. The forecast for steelhead at Lower Granite Dam is that 92 percent of the run has now passed. The estimate for yearling chinook at Lower Granite is that 80 percent of the run has now passed, Wagner added.

Wellschalger said there are no power system issues to report at this time.

Don Faulkner said there is nothing new to report on the John Day T1 outage; the first two phases checked out OK, and they're verifying C phase now, Faulkner said. The only damage found so far is to the external bushings.

Laura Hamilton provided a brief overview of water quality issues; from April 1-May 16 there were 200 exceedences, an average of five per day, at the 8 FCRPS projects. They have been caused by four basic factors, she said – high flows causing involuntary spill, unit outages at Lower Granite, John Day and Bonneville, the new spill patterns implemented this year, especially at Bonneville, and fourth, high tailwater elevations at Bonneville. Hamilton provided a brief overview of the more detailed water quality information available from the Corps' NWD homepage.

### **7. Next TMT Meeting Date.**

The next meeting of the Technical Management Team was set for May 31. Meeting summary prepared by Jeff Kuechle, BPA contractor.

### **Technical Management Team Meeting Participant List May 17, 2006**

<b>Name</b>	<b>Affiliation</b>
Paul Wagner	NOAAF
Donna Silverberg	Facilitation Team
Robin Harkless	Facilitation Team
Cathy Hlebechuk	COE
Russell Langshaw	Grant PUD
Tom Le	PSE

Lance Elias	PPL Montana
Scott Bettin	BPA
Brian Marotz	Montana
Dave Statler	NPT
Jim Litchfield	Montana
John Wellschlager	BPA
Tony Norris	USBR
Richelle Beck	D. Rohr & Associates
Jeff Laufle	COE
Shane Scott	Consultant
Russ George	Consultant
Don Faulkner	COE
Russ Kiefer	IDFG

# TECHNICAL MANAGEMENT TEAM

<b>BOR :</b>	<i>Tony Norris / John Roache</i>	<b>BPA :</b>	<i>John Wellschlager / Scott Bettin</i>
<b>NOAA-F:</b>	<i>Paul Wagner</i>	<b>USFWS :</b>	<i>David Wills / Steve Haeseker</i>
<b>OR :</b>	<i>Rick Kruger / Ron Boyce</i>	<b>ID :</b>	<i>Russ Kiefer</i>
<b>WA :</b>	<i>Cindy LeFleur</i>	<b>MT :</b>	<i>Jim Litchfield</i>
<b>COE:</b> <i>Cindy Henriksen / Cathy Hlebechuk</i>			

## TMT MEETING

Wednesday May 31, 2006, 0900 - 1200 hours

1125 N.W. Couch Street, Suite 4A34  
Portland, Oregon 97208

Conference call line: 503-808-5190

**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 Donna Silverberg with any issues or concerns they would like to see addressed.  
Please e-mail her at [dsilverberg@cnnm.net](mailto:dsilverberg@cnnm.net) or call her at (503) 248-4703.*

## AGENDA

1. Welcome and introductions.
2. [\[Review Minutes 2006\]](#)
3. Priest Rapids update
  - [\[Priest Rapids Operations 2006 - Data\]](#) 
  - [\[Priest Rapids Operations 2006 - Number of violations\]](#) 
4. Dworshak - Taft Line Outage
  - [\[Dworshak-Taft 500 kV Line Daily Outage - Power Point Slide\]](#)
  - [\[Dworshak-Taft 500 kV Line Daily Outage - PDF\]](#) 
5. Lower Granite Summer Research - Walla Walla
6. Dworshak Summer Operations - Nez Perce
  - [\[SYSTEM OPERATIONAL REQUEST: NPT #2006-1 DRAFT\]](#)
7. Libby Operations
  - [\[SYSTEM OPERATIONAL REQUEST: #2006-MT-1 - Libby & Hungry Horse Operations for June through September\]](#)
8. Balance Priest Rapids Flow Objectives/Grand Coulee Refill - Salmon Managers
9. Marine Mammal Permit - States of Oregon/Washington
10. Error Bounds on Chum Counts - State of Oregon
11. Operations Review
  - Reservoirs
    - Lower Granite spill for towboaters
    - Flow Augmentation volumes
    - libby
      - [\[Libby Augmentation Volumes ESP inflows and 1 May Water Supply Forecast\]](#)

[- Observed data through 29-May and ESP flows updated 30-May \]](#) 

- Dworshak
  - [\[Dworshak Inflows ESP Daily Flows Exceedance Plot - with Max/Min of Historic Average Monthly Flows\]](#) 
  - [\[Dworshak Augmentation Volumes ESP inflows and 1-May Water Supply Forecast - Observed data through 29-May and ESP flows updated 30-May\]](#) 
  - [\[Dworshak ESP Inflows - Daily Box-Whiskers Plot - Observed data through 15-May and ESP flows updated 16-May\]](#) 
- Hungry Horse
  - [\[Volumes at Hungry Horse - 1 April Through 30 June\]](#) 
- Dworshak inflows
- Fish
- Power System
  - John Day T-1 outage
- Water Quality
  - [\[Project Operations Update 23 May - 30 May\]](#) 

12. Other

- Set agenda for next meeting **June 14, 2006.** [\[Calendar 2006\]](#) 

*Questions about the meeting may be referred to Cathy Hlebechuk at (503) 808-3942, or Cindy Henriksen at (503) 808-3945*

# **COLUMBIA RIVER REGIONAL FORUM**

## **TECHNICAL MANAGEMENT TEAM**

May 31, 2006 Meeting

### **FACILITATOR'S SUMMARY NOTES ON FUTURE ACTIONS**

Facilitator: Donna Silverberg

Notes: Robin Harkless

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.

#### **Priest Rapids Update**

Russell Langshaw, Grant County PUD, presented Priest Rapids operations for the weeks of May 15-28. He also included a graph showing daily delta and flow bands. An exceedance occurred on May 17 due to emergency flood control measures taken upstream, and on May 22, the operation began below the set minimum 150 kcfs due to prior weekend operations. 200 temperature units are needed to reach the end of protection flows. Russell suggested that protection flows would end in the next 7-10 days.

#### **Dworshak Taft Line Outage**

BPA is planning a line outage at Dworshak from June 12-30 to allow for necessary maintenance of the line. Mike Viles, BPA, provided information to TMT regarding the outage, explaining that the dates were chosen to coincide with thermal outages and other reasons to minimize potential problems and impacts to the system. Repairs will be done to spacer dampers, damaged conductor, damaged insulators and tower hardware. BPA has given spacer dampers a high priority for repair. BPA can put the line back in service with 5 hours advance notice if emergency conditions arise but prefer not to delay the work. Additional outages are planned for Fall 2006, June 2007 and Fall 2007. Studies have been done on the impacts to the hydro system; Mike noted that Hungry Horse will be most potentially affected, Dworshak may be affected and Libby will be least affected by the planned outage.

Don Faulkner, COE, offered that of the 2550 megawatts that will be available during the line outage, half of the power will go to PUD's. Exact numbers for transmission capacity will not be known until just prior to the operations. BPA, the COE, and the BOR have been planning for the outage and will do their best to avoid problems.

#### **Lower Granite Research**

Tim Wick, Walla Walla COE, reported that the USGS preferred schedule for the start of an RSW test at Lower Granite is June 8 instead of June 21. The date and amount of spill would be slightly different than that written into the Spill Implementation Plan. Two spill patterns would be used – flat and bulk. The date was chosen based on the best availability of fish.

**Next Steps:** While there was general support for the test, the amount of spill remained a question. TMT members agreed to discuss internally whether there is technical and policy support for the proposed alternative operation. TMT will hold a conference call on Friday, June 2, at 11:00 am to revisit the issue.

**ACTION:** If SRWG is also on board, the test will be included in the monthly report to the court. The facilitation team will contact absent members of TMT (Idaho, Washington, Montana, and BOR) to make certain they have the opportunity to respond.

### **Dworshak Summer Operations: SOR NPT-2006-1**

Dave Statler, Nez Perce, began his presentation of the Nez Perce SOR for Dworshak operations by setting the context that Dworshak summer operations are being discussed and addressed in various forums and processes including TMT, BiOp Remand policy work group, a potential MOA from BPA, Nez Perce agreement group, Idaho Operations Board, NPCC Mainstem Amendments, etc.

Generally, the SOR recommends that Dworshak be operated during the summer for temperature control and flow augmentation. Shape flows to meet 68° F at Lower Granite tailwater and limit cold water releases during the first half of July for rearing Fall Chinook juveniles in the Clearwater. After July 15, maintain 10 kcfs discharges to cool the Lower Snake and increase up to 14 kcfs as necessary to maintain temperature standards. Target elevation 1535' or higher by the end of August and 1520' by the end of September. Manage 200 kaf from the Nez Perce agreement per guidance from the Dworshak Board.

### **Questions and Comments from TMT:**

- Is temperature the overriding priority? Yes, more so than specific discharges proposed for July.
- If there is a technical dispute, which process should address it? 200 kaf per the Nez Perce agreement (elevation 1525-1530') will be addressed in the development of the Dworshak Plan by the Dworshak Board chaired by Nez Perce, and should not be debated through TMT. Other technical disputes could be addressed by TMT.
- The July 15 start date was chosen based on when most Clearwater subyearling smolts have grown to size and are moving through the system, per previous years' observations.
- Kyle Dittmer, CRITFC, reported that Ben Cope, EPA, will run weather case flow scenarios and will share them with TMT at the next TMT meeting.
- Suggestion: in the general framework change 'target' 68°F to 'avoid exceeding' as written in the summary of the SOR.
- Is there a contingency for operations prior to July 15? With the planned line outage and other pertinent factors, this may need to be considered. The COE suggested that Dworshak will likely not be impacted by the planned taft line outage described above. Generation would follow a similar pattern as it normally does, starting higher and gradually reducing to a smooth refill. The action agencies will work to avoid fluctuations during the repair work.

- The request appears very similar to usual BiOp operations; why develop the SOR? The difference is that the SOR is more prescriptive to be conservative earlier in July with cool water to save for later in the season.
- Suggestion: Provide a written summary of data on the Clearwater fish to clarify conditions supporting the recommendation for July operations.
- The SOR appears to reduce flexibility for shaping flows during the migration in July, and only focus on temperatures. Both should be considered.

**Next Steps:** Dave Statler will make revisions to the proposal based on today's discussion and any follow-up suggestions shared, and submit a final SOR at the next TMT meeting.

### **Libby/Hungry Horse Operations: SOR 2006-MT-1**

Jim Litchfield, Montana, shared a draft SOR for summer operations at Libby and Hungry Horse, which he noted is the NPCC's Mainstem recommendation, similar to past years' proposals. The key difference this year, with higher flows, is the recommended draft in September at both projects to 10' from full instead of 20' from full. Also included were preliminary results of a BPA hydropower regulation study on Montana's proposed operation showing a 3% reduction in flows at McNary during July and August, and language from Judge Redden's findings relative to the Plaintiff's proposal to increase flow augmentation, stating that there was not measurable support that increases will enhance in-river smolt survival. Jim extended appreciation to TMT for efforts in past years to implement the recommended operation – particularly 2004 which he described as successful.

Finally, he shared that the Montana proposal is also being discussed through the BiOp Remand policy work group, and that he or Brian Marotz, Montana Fish Wildlife and Parks, could join discussions in other forums, e.g. FPAC, upon request. If a technical and policy consensus were reached on the recommendation, it would need to go through formal filing with the court.

TMT comment: The ISAB interpretation that there would be no measurable differences in smolt survival with flow differences may not be true this year, given that higher flows may result in greater than 3% reductions in the lower river. There is currently very little data on in-river smolt survival. Temperature modeling in the lower river to quantify affects from changes in flows is lacking as well.

Jim added that modeling of the proposed operation and impacts to spring augmentation flows predict that Hungry Horse would meet its target elevation in 4 additional years out of 50.

**Next Steps:** Additional questions and comments will be shared with Jim about the recommendation. TMT will discuss the SOR further at the next TMT meeting.

### **Balance Priest Rapids Flow Objectives/Grand Coulee Refill**

The salmon managers were asked to consider their preference for Priest Rapids flow objectives and Grand Coulee refill operations. Given this year's high flow year, the salmon managers did not feel this would be an issue. They discussed this at FPAC, and generally, they prefer higher flows from Priest Rapids later in June (but there was not a strong opinion either way).

## **Operations Review**

### *Reservoirs:*

Lower Granite Navigation – Cathy Hlebechuk, COE, shared that two spill reductions occurred over the last two weeks for towboat operations, one to zero and one a slight decrease. There have been additional reductions for fish barges. John Wellschlager, BPA, noted that if flow had been unregulated last year, there would have been 925 kcfs in the system.

Operations – Grand Coulee was at elevation 1271.6’ and filling. Hungry Horse was at elevation 3543.7’ and filling. Priest Rapids flows averaged 230-275 kcfs. Libby was at elevation 2449.6’, operating at full powerhouse out and 32 kcfs in. Bonners Ferry elevation reached 1763.65’, very close to flood control. Dworshak was at elevation 1581.4’ and filling. Lower Granite flow objectives averaged 132.5 kcfs, Priest Rapids averaged 177.5 kcfs, and McNary averaged 319.3 kcfs. There will be an update from the sturgeon group on results of this year’s pulse at the next TMT meeting.

Flow Augmentation Volumes – Cathy shared graphs (attached to today’s TMT agenda) of ESP flow augmentation forecasts for Libby, Dworshak, Hungry Horse, Priest Rapids and Grand Coulee.

### *Fish:*

Paul Wagner, NOAA, shared that adult numbers exceeded the pre-season forecast. Yearling chinook numbers peaked at Lower Granite, evened out at Little Goose and were increasing at Columbia River projects. The steelhead and sockeye runs are reaching their tail end; overall this was a good migration year.

### *Power System:*

John Day T-1 Outage – Testing is slightly ahead of schedule. So far, testers have found that just the bushings were damaged, which is good news. The transformer is expected to be back up as early as September.

### *Water Quality:*

Jim Adams, COE, reported that there have been several TDG exceedances in the system, with a high of 132.9% at the Lower Granite tailwater at one point. TDG levels are now tapering. FPAC was briefed on this issue at their meeting earlier this week and Jim will continue to provide reports to FPAC and TMT. Adult gas bubble trauma had not been reported lately.

## **TMT Meeting Schedule: NOTE NEW DATE**

*Monday, June 12* agenda items include:

- Libby/Hungry Horse SOR (Montana)
- Dworshak Modeling (EPA/CRITFC)
- Dworshak Summer Operations SOR (Nez Perce)
- 2006 Sturgeon Operations Review (USFWS)
- Permit Process – Marine Mammals (Oregon and Washington)
- Adult Population Analysis of Chum – Error bounds (Oregon)

- System Operations Review – All

# Technical Management Team Meeting

May 31, 2006

## **1. Greetings and Introductions.**

Donna Silverberg welcomed everyone to today's Technical Management Team meeting, which was chaired by Cathy Hlebechuk. The following is a summary (not a verbatim transcript) of the topics discussed and decisions made at this meeting. Anyone with questions or comments about these notes should contact Hlebechuk at 503-808-3936.

## **2. Priest Rapids Update.**

Russell Langshaw provided an update on recent Priest Rapids fish protection operations. He noted that the flow band was exceeded on May 17 due to flood control operations; it was also exceeded on May 19 and May 26-29.

We're currently at around 1,200 temperature units, with about 200 more TUs to accumulate before this year's program ends, Langshaw said. We should reach that level in a week to 10 days.

## **2. Dworshak – Taft Line Outage.**

Mike Viles said BPA will be taking the Dworshak-Taft transmission line out of service later this month. The plan from June 12-30 is a daily outage from 6 am to 8 pm. This is to do with the West of Hatwai transmission path, which loads most heavily at night, he said. As load goes down, and you get into an excess situation, that generally flows from east to west. We wanted to do this in June because there are some planned unit outages scheduled for that month, on the thermal plants east of the Cascades. One other benefit is that this line outage has been hard to get historically, before we had the Coulee-Bell transmission line, which now provides a parallel line, Viles said. The outage will limit transmission to 2550 MW, about down from 4,000 MW if all lines were in service. Without Coulee-Bell, if you took this line out of service, capacity went down to about 1,100 MW. This is part of a 12-year project to replace all of the spacer dampers on this line, he explained; there are also many insulators that need to be replaced. Some of the connecting parts are basically corroding away, and need to be replaced on 97 towers. The goal is to reduce the risk of unplanned outages.

We're limited as to when we can conduct this work, from June to some time in October, said Viles; there is no way to completely eliminate the risk of impacting fish operations, but we're attempting to minimize that risk. There is a potential that transmission capability across the West of Hatwai path could impose generation restrictions. We would prefer to do all of this outage work in September, but there are simply too many lines that need to be done for us to do all of this work in September. A total of six crews will be working on this particular repair, he said, so we're working as fast as we can.

What's the bottom line impact to flows? Kyle Dittmer asked. That's a good question, but the transmission capability will go down from about 4,000 MW to 2,550 MW, so there will be some impact, Viles replied. We can get off the line within five hours if this limitation is having an unacceptable impact to flows, Viles added. Two more outages are planned for the June 2007 period, he added. We realize that this is a hot topic, because of the potential to limit generation and flow, but this really is critical work to improve transmission system reliability, Viles said.

The group discussed the potential impacts of this planned outage on flows, transmission and generation. We're expecting, during the outage, to have to reduce Hungry Horse outflow by about 3 Kcfs at Hungry Horse, Tony Norris said; we've had to increase discharge because we got some additional snow in that area last weekend. Don Faulkner said Libby is expected to operate at full load during the outage (600 MW), while generation will be restricted to project minimum (125 MW) at Hungry Horse. Dworshak will be releasing about 3 kcfs, but Albeni Falls may have to go to zero generation. Everyone here knows Montana's concerns, said Jim Litchfield – we want to avoid any spill at Libby or Hungry Horse. That's why we're ramping up Hungry Horse discharge now – to move some of that water out of there, Norris replied.

### ***3. Lower Granite Summer Research.***

Tim Wick said he had asked the USGS for their preferred schedule for the summer RSW test at Lower Granite; they are asking for a test that begins June 8. The summer operation at Lower Granite is scheduled to start about June 20; the June 8 start would result in a change. The summer schedule calls for 18 Kcfs spill; the test calls for 19 Kcfs spill. We would, in other words, be starting the summer operation 12 days early at Lower Granite, Wick said. We would therefore wind up with 1 Kcfs less spill for the last 12 days of the spring period, and a little more spill for the summer period. I wanted to make sure no one had a problem with what we want to do there, Wicks said.

The scheduled research is a radio-telemetry study with two spill treatments – flat spill, and bulk spill a couple of bays over from the RSW, he explained – under both treatments, the RSW would be operating. It's a different pattern than the one we used last year, which included RSW operation plus regular training spill, and RSW only. In

response to a question, Wick said the timing of the test is driven by the ability to obtain fish for tagging, and the desire to conduct the test while the bulk of the run is passing.

How will this impact the BGS test? Bernard Platt asked. The BGS test is now complete, so there will be no impact, Wick replied. In response to another question, Wick said the test plan was coordinated with the SRWG, but the timing of the test was not.

It was agreed that the TMT membership will think about this proposed change in operation and discuss any concerns they have with the Corps by this Friday, June 2, because of the need to coordinate any change in spill operations with the other plaintiffs and with Judge Redden. It was agreed that, if there are strong objections on the part of the salmon managers, a conference call may be needed this Friday.

#### ***4. Dworshak Summer Operations – Nez Perce SOR.***

Dave Statler described SOR NPT 2006-1. This SOR, submitted yesterday, requests the following specific operations:

- Operate Dworshak during the summer for temperature control and flow augmentation, shaping augmented flows to achieve the target temperature standard of 68 degrees F as measured at the Lower Granite tailrace. Limit cold water releases during the first half of July for rearing fall chinook juveniles in the Lower Clearwater River. After July 15, maintain continuous, evenly distributed discharges of 10 Kcfs (full powerhouse capacity) to cool the Lower Snake. Provide discharges in excess of 10 Kcfs, up to a maximum of 14 Kcfs, as necessary to meet the target Lower Granite temperature standard, pursuant to actual in-season conditions. Achieve a target elevation of 1535 msl or higher by August 31 to preserve 200 kaf for September temperature/flow augmentation control as per the SRBA agreement. The management of 200 kaf (elevation 1535 to 1520 msl) will be determined by the Dworshak Board. Achieve a target elevation of 1520 msl during September.

The full text of this SOR is available via hot-link from today's agenda on the TMT homepage; please refer to this document for additional details.

The group devoted a brief discussion to the Nez Perce SOR, offering a few clarifying questions and comments. Some of these concerns had to do with the somewhat cautious approach advocated by the tribe, as opposed to the more aggressive, "get ahead of the temperature curve" approach the TMT has used in some past years. Statler replied that the approach advocated in this SOR is actually quite similar to the actions that have been implemented in past years. And how would any disputes be addressed? Paul Wagner asked. By someone other than me, Statler replied. Other TMT participants expressed concern about the fact that the Nez Perce SOR focuses on temperature control, and does not place as much emphasis on the flow augmentation aspect of Dworshak summer operations.

Kyle Dittmer said he is working with Ben Cope to work up some temperature model runs, based on various flow and weather scenarios; Dittmer said he hopes to have the results of that modeling available for discussion at the next TMT meeting. Silverberg said that, given the late arrival of this SOR, and the fact that there is still some time before the operation would begin, she will not ask the TMT to make a recommendation on the Nez Perce SOR at today's meeting. It was agreed to revisit this topic at the June 14 TMT meeting.

### ***5. Libby Operations – Montana SOR.***

Jim Litchfield provided an overview of SOR 2006-MT-1, submitted prior to today's meeting. This SOR requests the following specific operations:

Hungry Horse

- Maintain minimum in-stream flows for bull trout at Columbia Falls and in

- the river below Hungry Horse Dam
- Attempt to refill by June 30 while avoiding the risk of spill through filling the project too quickly.
- In late June, reclamation will estimate a flat flow from Hungry Horse for the July-September period. This flow is to be designed to draft Hungry Horse to 10 feet from full by September 30. It may be necessary to adjust flows upward or downward in order to achieve the target elevation; if so, project ramp rates should be followed to achieve a stable aquatic environment below the dam.
- Attempt to provide stable or, if necessary, slowly declining flows at Columba Falls during the draft.

#### Libby

- Following the May-June operation for sturgeon, the Corps will estimate a flat flow designed to draft Libby to 10 feet from full by September 30.
- The Corps should attempt to refill Libby, while avoiding the risk of spill through filling the reservoir too quickly.
- The Corps, in consultation with the State of Montana, will monitor Libby outflow throughout the summer to achieve a stable weekly average flow. It may be necessary to adjust flows upward or downward in order to achieve the target elevation; if so, project ramp rates should be followed to achieve a stable aquatic environment below the dam.
- Operate to provide at least minimum bull trout flows through September (USFWS BiOp)
- Provide even or gradually declining flows through the summer period (avoid a double peak).
- Investigate the possibility of a storage exchange with Canada to further reduce the need for reservoir drafts from Libby.

Litchfield thanked the Corps and the other action agencies for their willingness to work with Montana to fine-tune the Libby and Hungry Horse operations in past years. He said the overall goal of this SOR is to provide optimal conditions for resident fish in Montana while minimizing any impacts on anadromous fish downstream. He estimated that the flat flow necessary to achieve elevation 2449 at Libby by September 30 would be about 11.8 Kcfs, based on the most recent runoff volume forecasts for that basin. He noted that this is expected to result in an approximately 6 Kcfs – about 3 percent of total river flow – reduction in flows at McNary Dam during July and August.

Litchfield said he is not seeking a decision at today's meeting; there is still some time before implementation of the operations requested in this SOR would need to begin. Given the remand and water conditions this year, 2006 is a somewhat unusual year, operationally, he said; Montana would very much like to see the Council's recommended Montana operation fully implemented this year.

Litchfield invited anyone with question, comments or concerns about the Montana SOR to contact him directly.

In response to a question, Litchfield said that, given the ongoing remand process, if this SOR is implemented, there will need to be a significant consensus among the parties to the litigation, followed by a filing with the court.

The group devoted a few minutes of discussion to this SOR, offering a series of clarifying questions, comments and concerns. Wagner noted that one issue that has frustrated the ISAB in its efforts to evaluate the effects of the Montana operation is the lack of water temperature modeling information for the lower river. That would be relatively simple to obtain, because it's a physical measurement, Wagner observed. Hlebechuk noted that, previously, Brian Merotz had said that a flat 9 Kcfs outflow from Libby produces optimal in-river conditions; this SOR requests flows 2.8 Kcfs higher. Litchfield replied that the flows requested are within the range of flows that will produce good in-river conditions in Montana. Ultimately, it was agreed to revisit the Montana SOR at the next TMT meeting.

#### ***6. Balancing Priest Rapids Operations with Grand Coulee Refill.***

Russ Kiefer said the salmon managers did discuss this issue briefly at yesterday's FPAC meeting; it was agreed that this is unlikely to be a difficult decision, given water conditions this year, because flows will likely be high enough to accommodate both Grand Coulee refill and adequate flows at Priest Rapids. The salmon managers would prefer that, if it comes to a choice, they would prefer higher Priest Rapids flows later, rather than earlier, in June.

#### ***7. Marine Mammal Permit Update.***

This topic was not addressed at today' meeting.

#### ***8. Error Bounds on Chum Counts.***

This topic was not addressed at today's meeting.

#### ***9. Operations Review.***

Hlebechuk said that, since the last TMT meeting, there have been only two spill reductions to accommodate navigation at Lower Granite. Wellschlager touched on flood control, noting that, last week, if it wasn't for the FCRPS, the unregulated flow in the Lower Columbia would have been 920 Kcfs. It's worth noting that there are benefits to the system, Wellschlager said.

The Corps noted that updated flow augmentation graphs are now available for Libby, Hungry Horse and Dworshak; this information is available via hot-link from today's agenda on the TMT homepage.

Reclamation said Grand Coulee is currently at elevation 1271.6 feet and filling. 3543.7 at Hungry Horse, releasing 4 Kcfs, going up to 5 Kcfs later today. the project is expected to refill this year. Priest Rapids flows have been 235-270 Kcfs recently. Libby is at 2449.6 feet, about 9 feet from full, with inflows of 32 Kcfs, down from 72 Kcfs a few days ago. The project is releasing full powerhouse discharge. Dworshak is at 1581.4 feet, 18.6 feet from full and filling slowly. Since April 3, the average flow at Lower Granite has been 132.5 Kcfs, at Priest Rapids, since April 10, 177.5 Kcfs; at McNary 319.3 Kcfs. We're basically in a flood control operation right now, and slowly filling the projects, Hlebechuk said.

It was noted that no sturgeon spawning has been observed to date in the Kootenai, despite the ongoing sturgeon operation at Libby; the problem appears to be the males. It was agreed that a report from the sturgeon managers at a future TMT meeting would be informative.

Wagner reported that the adult spring chinook count to date is 96,000 fish at Bonneville, in excess of the pre-season forecast, but in close congruence with the new model developed by the NMFS Science Center, which predicted 95,000 adults this year. Moving on to juveniles, Wagner said yearling chinook indices are now declining in the Lower Snake, from 83,000 fish per day on May 17 to fewer than 10,000 fish per day currently. Most of the action, currently, is in subyearling chinook, where the Lower Snake counts continue to be strong. The juvenile steelhead migration is now at the tail end of the run, as is the sockeye run, Wagner said. Overall, it's been a good outmigration year, he said; conditions were generally very good.

Wellschlager said there are no power system problems to report at this time. Faulkner said it appears that only the initial set of bushings were damaged in the T1 outage; repairs could be completed as soon as late July, if that is the case.

Jim Adams updated the group on the current water quality situation, noting that gas levels remain high throughout the system. Since May 17, the river has been pretty well gassed-up, he said; TDG levels hit 132.9% in the Lower Granite tailwater on May 21, but have since declined.

#### ***10. Next TMT Meeting Date.***

The next Technical Management Team meeting was set for Monday, June 12. Meeting summary prepared by Jeff Kuechle, BPA contractor. (3.5 hours)

#### **Technical Management Team Meeting Participants**

**May 31, 2006**

<b>Name</b>	<b>Affiliation</b>
Donna Silverberg	Facilitation Team
Jim Litchfield	Montana
Cathy Hlebechuk	COE
Tony Norris	USBR
Paul Wagner	NOAAF
David Wills	USFS
John Wellschlager	BPA
Kyle Dittmer	CRITFC
Russ Kiefer	IDFG
Robin Harkless	Facilitation Team
Dave Statler	NPT
Dan Spear	BPA
Tim Heizenrater	PPM
Rudd Turner	COE
Russ George	WMCI
Ruth Burris	PGE
Mike Viles	COE
Don Faulkner	COE
Greg Haller	Montana
Bernard Klatte	
Judi Danielson	

# Dworshak-Taft 500 kV Line Daily Outage

June 12-30 0600-2000 Hours

# Why is outage needed?

- Perform needed maintenance to prevent unplanned outage
  - Replace failed conductor spacer/dampers (7200 spacers on this line)
  - Repair damaged conductor
  - Repair damaged insulators and tower hardware on 97 towers
- Spacer damper replacement program is high priority for BPA

# Examples of conductor damage



# Examples of conductor damage



# Limited Outage Window Opportunities

- Access to portion of line needing repair is only available from June-October.
- System impacts to outage greatest in July-August period during high transfer periods
- This limits outage periods to June and September-October.
- June has potential to limit Western Montana hydro and thermal generation.
- September-October has potential to limit thermal generation.

# Maximizing Work Crews

- Six crews are being used to maximize the work completed during the outage.
  - Crews must repair damaged conductor before they can replace spacer dampers
  - As conductor is repaired crews will get on repaired conductor sections and replace spacer dampers

# Emergency Conditions

- Daily outages allow canceling next day outage if water restrictions a problem
- Daily outage also allow higher West of Hatwai flows during off-peak period when they are typically the highest due to lighter load conditions
- Line can be put back into service within 5 hours

# Addition of Coulee-Bell 500 kV line

- Impacts of a Dworshak-Taft line outage has been greatly reduced by the addition of the parallel Coulee-Bell 500 kV line in late 2004.
- West of Hatwai was limited to 1100 MW E>W when the Dworshak-Taft line was out of service prior to the Coulee-Bell 500 kV line addition.
- West of Hatwai is limited to 2550 MW E>W when the Dworshak-Taft line is out of service with the Coulee-Bell 500 kV line in service.

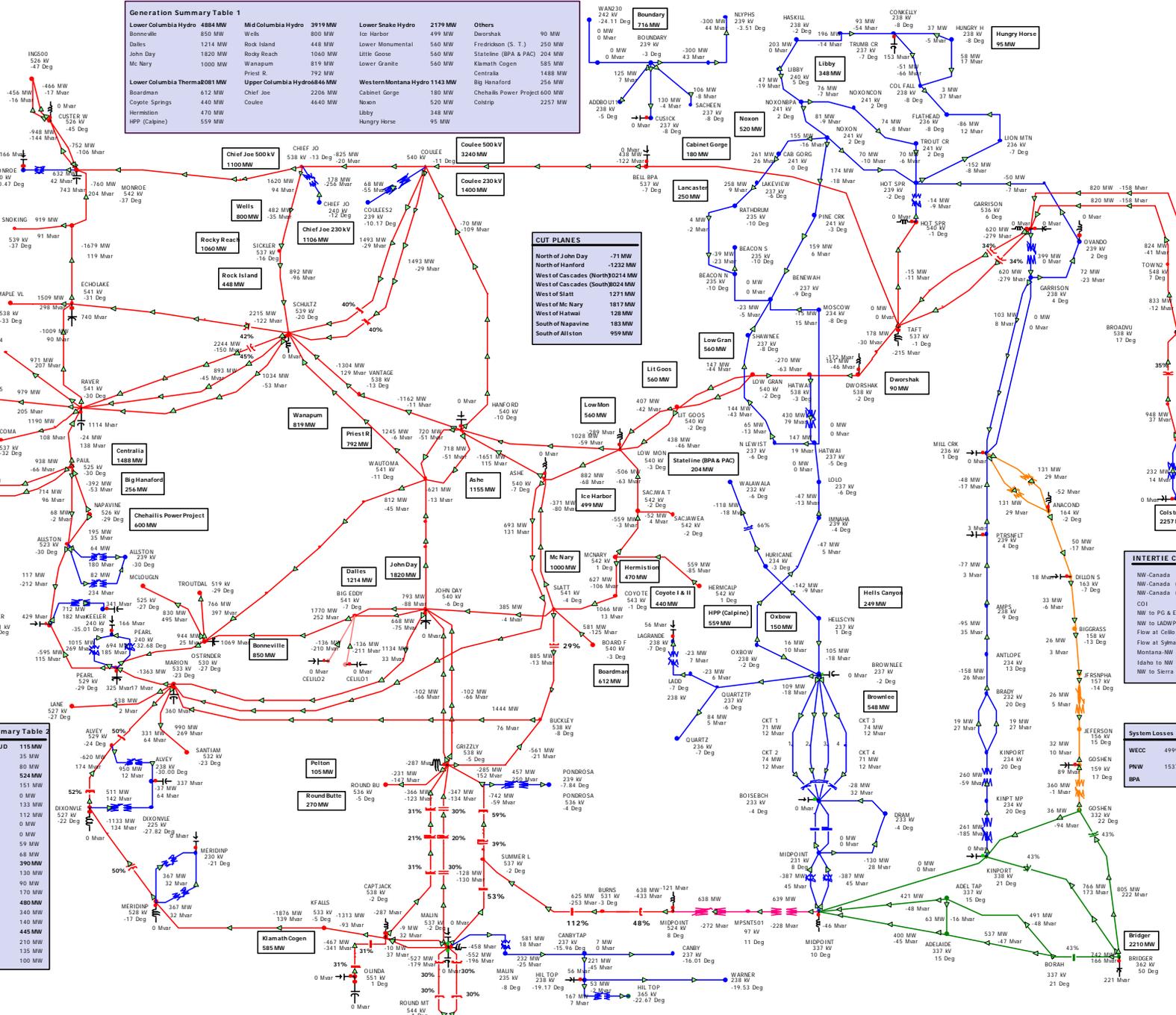
Generation Summary Table 1			
<b>Lower Columbia Hydro 4884 MW</b>	<b>Mid Columbia Hydro 3919 MW</b>	<b>Lower Snake Hydro 2179 MW</b>	<b>Others 90 MW</b>
Bonneville 850 MW	Wells 800 MW	Ico Harbor 499 MW	Dworshak
Dalles 1214 MW	Rock Island 448 MW	Lower Monumental 560 MW	Frederickson (S. T.) 250 MW
John Day 1820 MW	Rosy Reach 1060 MW	Little Goose 560 MW	Staircase (BPA & PAC) 204 MW
McNary 1000 MW	Wanapum 819 MW	Lower Granite 560 MW	Klamath Cogen 585 MW
	Priest R. 792 MW	Centralia 1488 MW	Big Hanford 256 MW
<b>Lower Columbia Thermal 081 MW</b>	<b>Upper Columbia Hydro 846 MW</b>	<b>Western Montana Hydro 1143 MW</b>	
Boardman 612 MW	Chief Joe 2206 MW	Cabinet Gorge 180 MW	
Coyote Springs 440 MW	Coulee 4640 MW	Nonan 520 MW	
Hermitson 470 MW		Libby 348 MW	
HPP (Colpino) 559 MW		Hungry Horse 95 MW	

Generation Summary Table 2	
<b>Snohomish County PUD 115 MW</b>	Kimberly C 35 MW
Jackson 80 MW	Puget Sound Energy 524 MW
Enserch 151 MW	Fredonia 0 MW
March Pt. 133 MW	Sumas CG 0 MW
Tenasca 0 MW	Whitehorn 0 MW
Lower Baker 59 MW	Upper Baker 68 MW
<b>Seattle City Light 390 MW</b>	Dabco 130 MW
Gorge 96 MW	Ros 170 MW
<b>Lewis River Gen. 480 MW</b>	Mosley Rock 340 MW
Mosleyfield 140 MW	Owiltz River Gen. 445 MW
Swift 210 MW	Merwin 135 MW
Yale 100 MW	

CUT PLANES	
North of John Day	-71 MW
North of Hanford	-1232 MW
West of Cascades (North)	0224 MW
West of Cascades (South)	024 MW
West of Stair	1271 MW
West of McNary	1817 MW
West of Hatwai	128 MW
South of Napavine	183 MW
South of Allison	959 MW

INTERIE CUT PLANESCHEDULE ACTUAL			
NW-Canada	1221 MW	1222 MW	
NW-Canada (West)		922 MW	
NW-Canada (East)		300 MW	
COI		-1546 MW	
NW to PG & E	-1700 MW	-1553 MW	
NW to LADWP Schedule	-487 MW	-681 MW	
Flow at Celilo		????	
Flow at Sylmar		884 MW	710 MW
Idaho to NW		260 MW	167 MW

System Losses	
WECC	4999 MW
PNW	1537 MW
BPA	

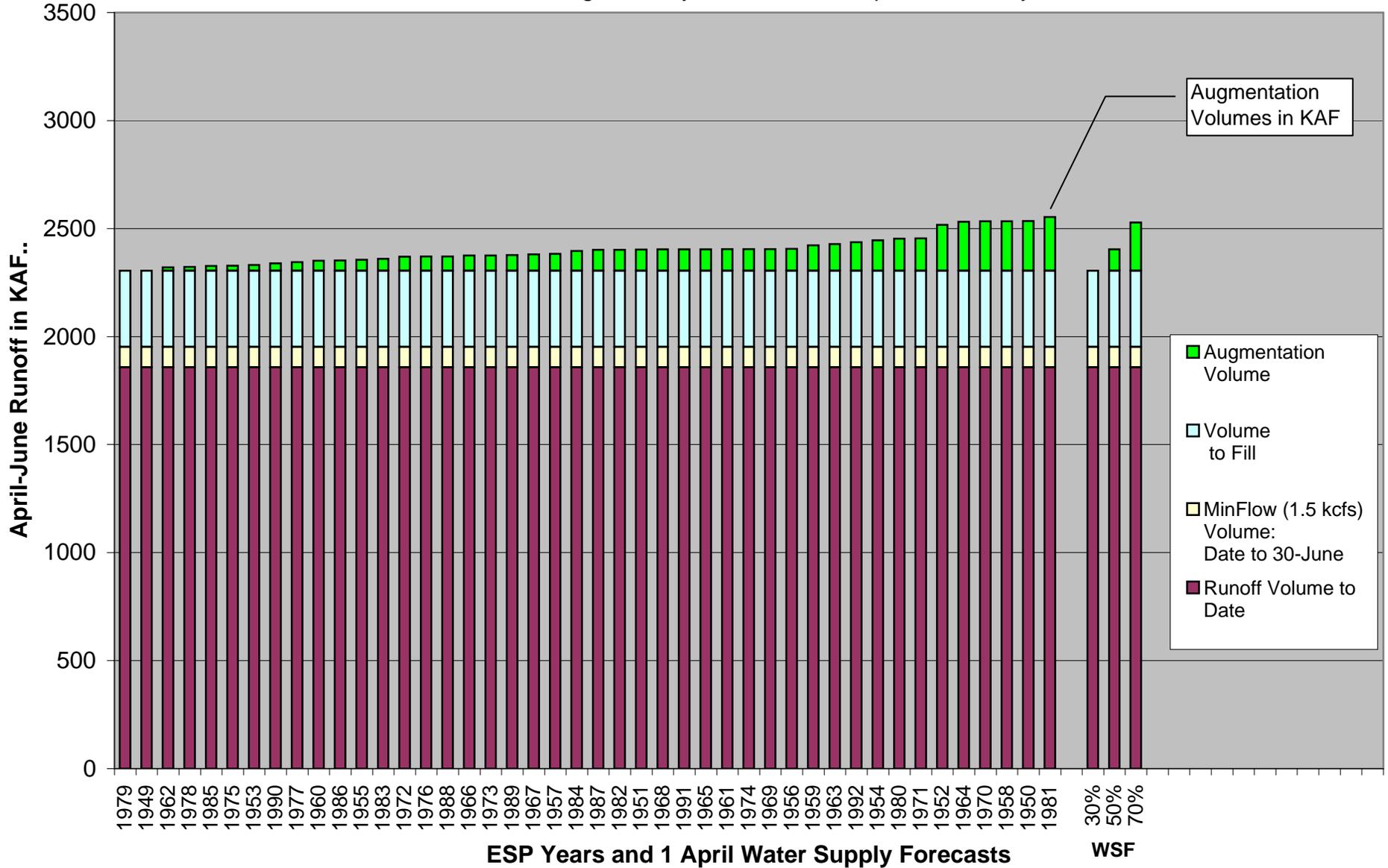


# Four outages periods planned for this work

- To complete all necessary work, additional outages are planned for Fall 2006, June 2007, and Fall 2007.

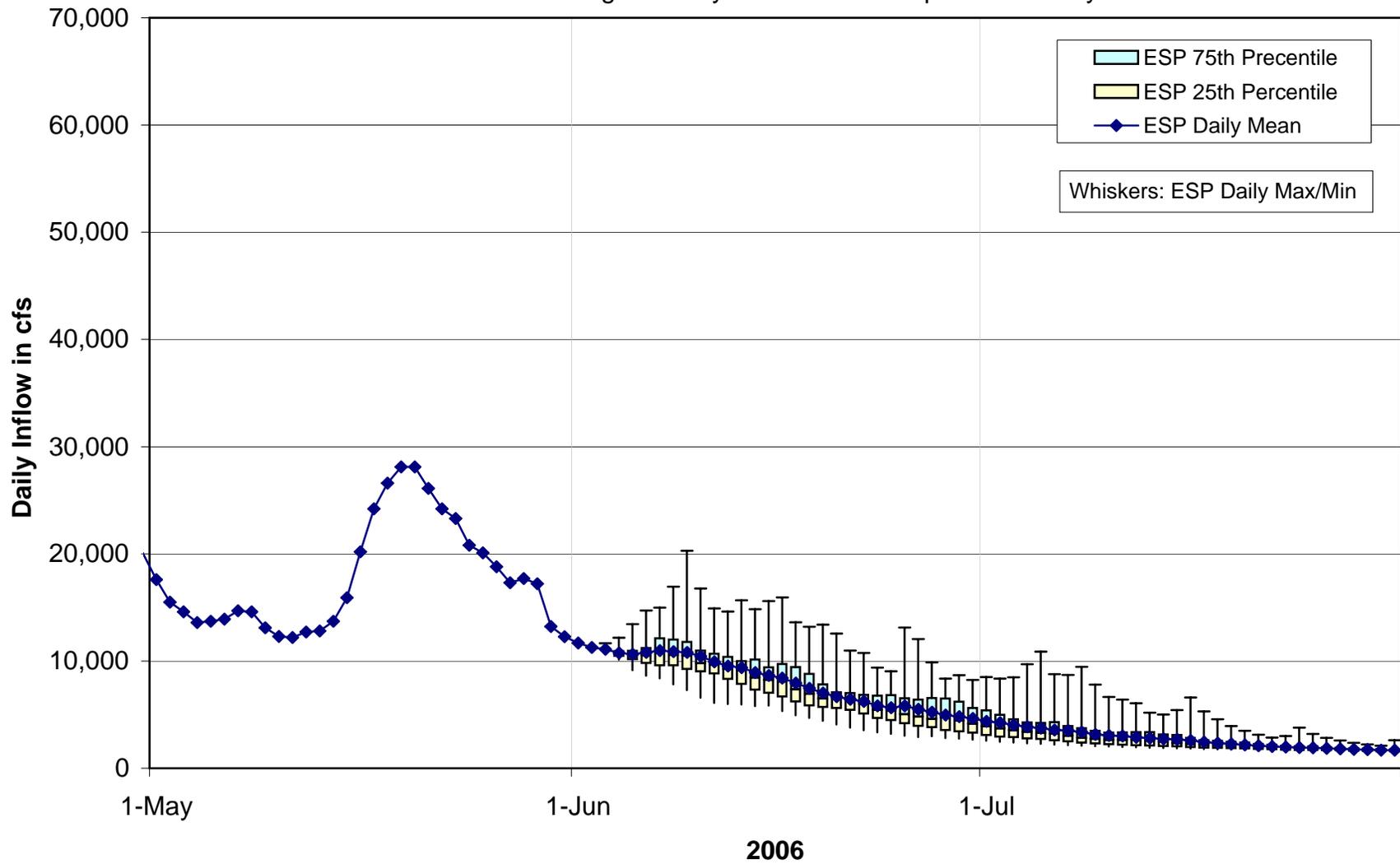
# Dworshak Augmentation Volumes ESP inflows and 1-May Water Supply Forecast

Observed data through 29-May and ESP flows updated 30-May



# Dworshak ESP Inflows - Daily Box-Whiskers Plot

Observed data through 29-May and ESP flows updated 30-May



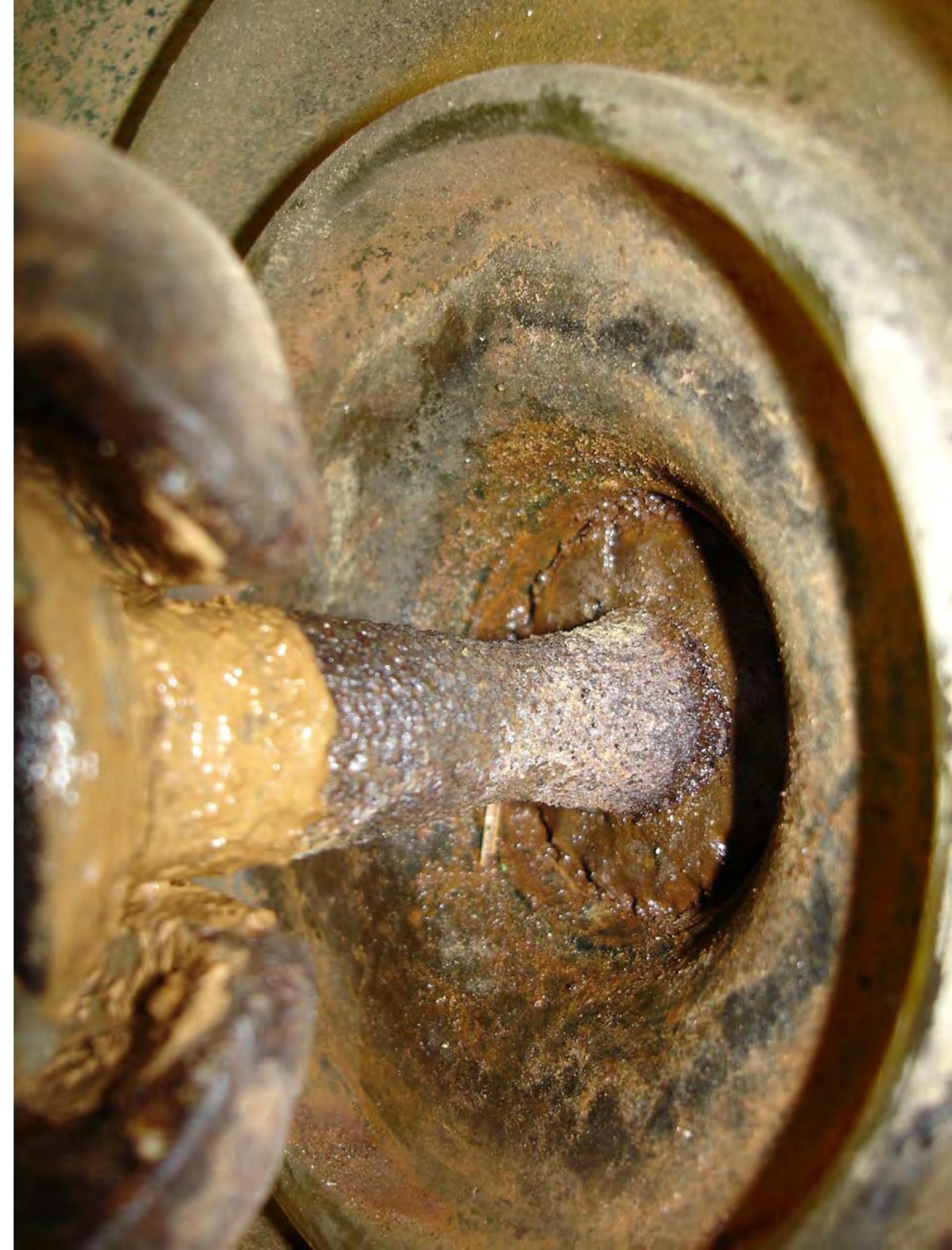












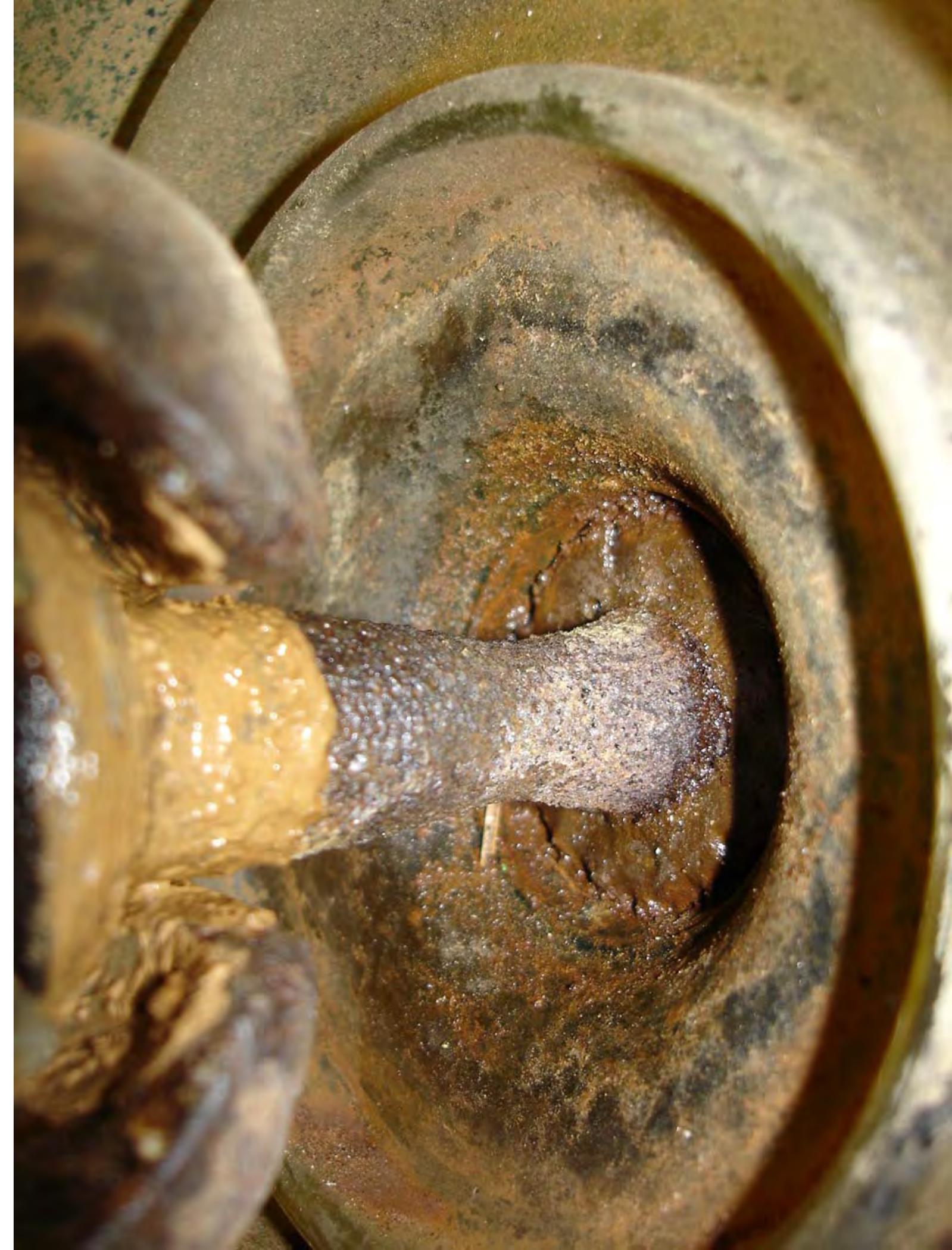


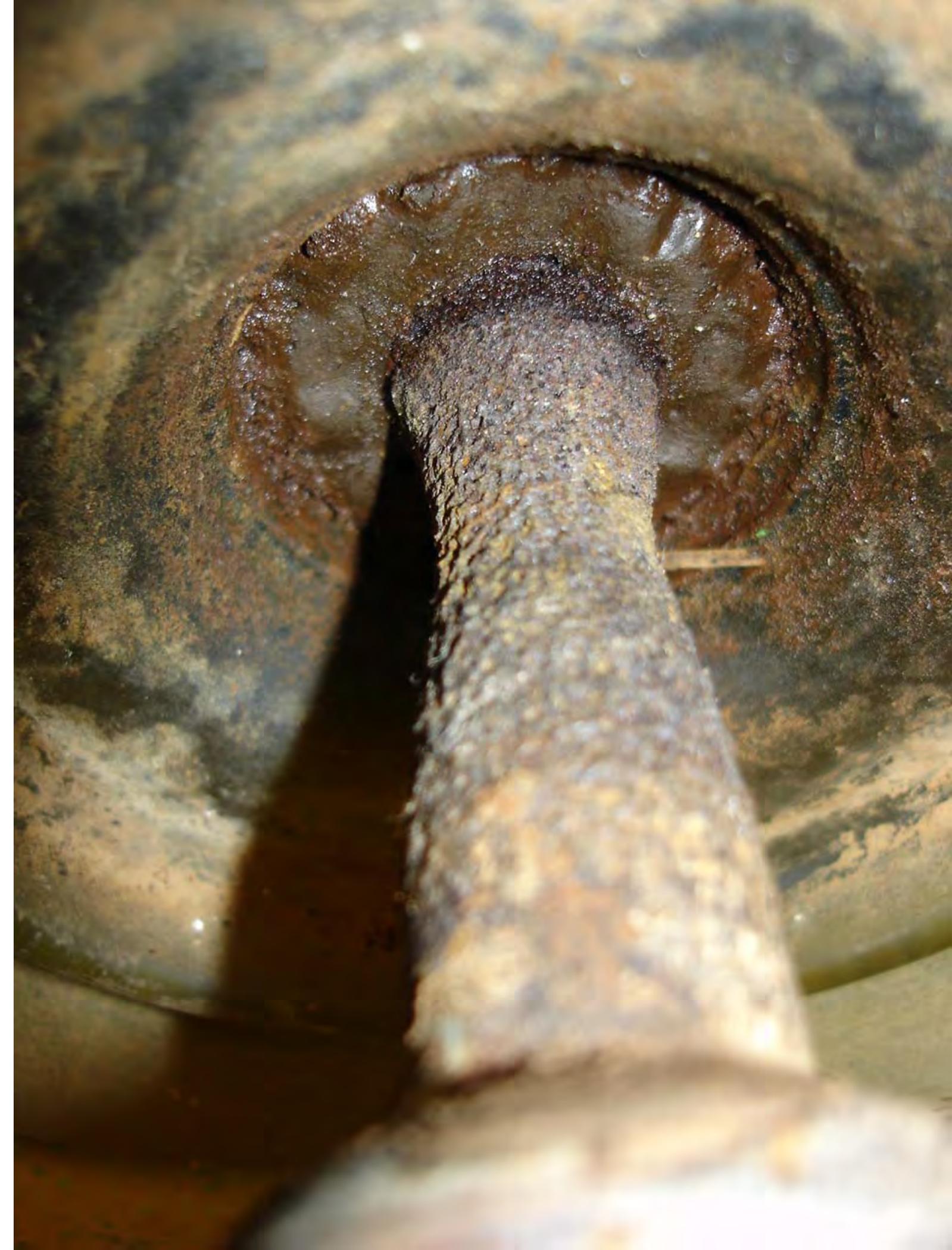






















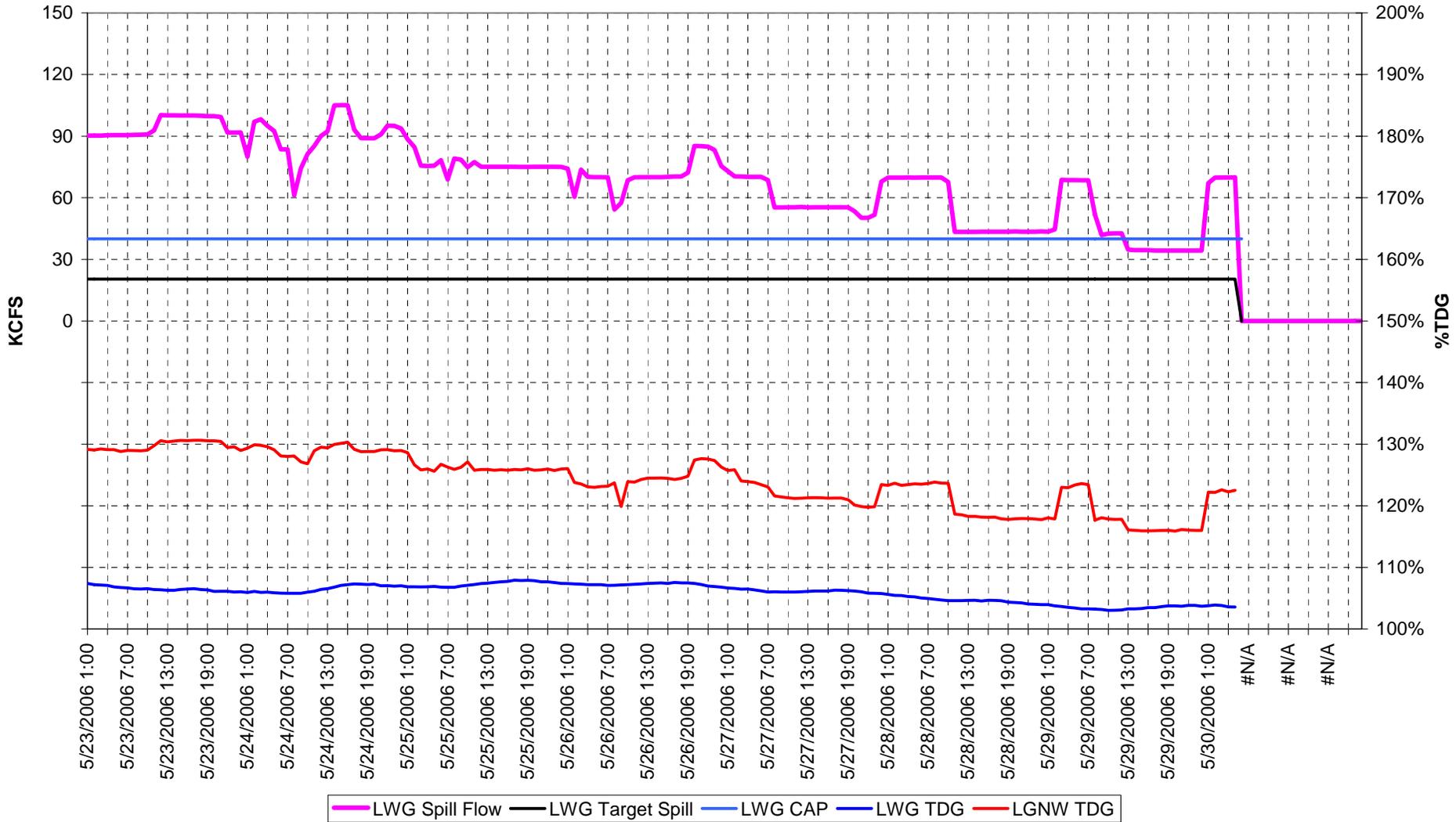


# Project Operations Update

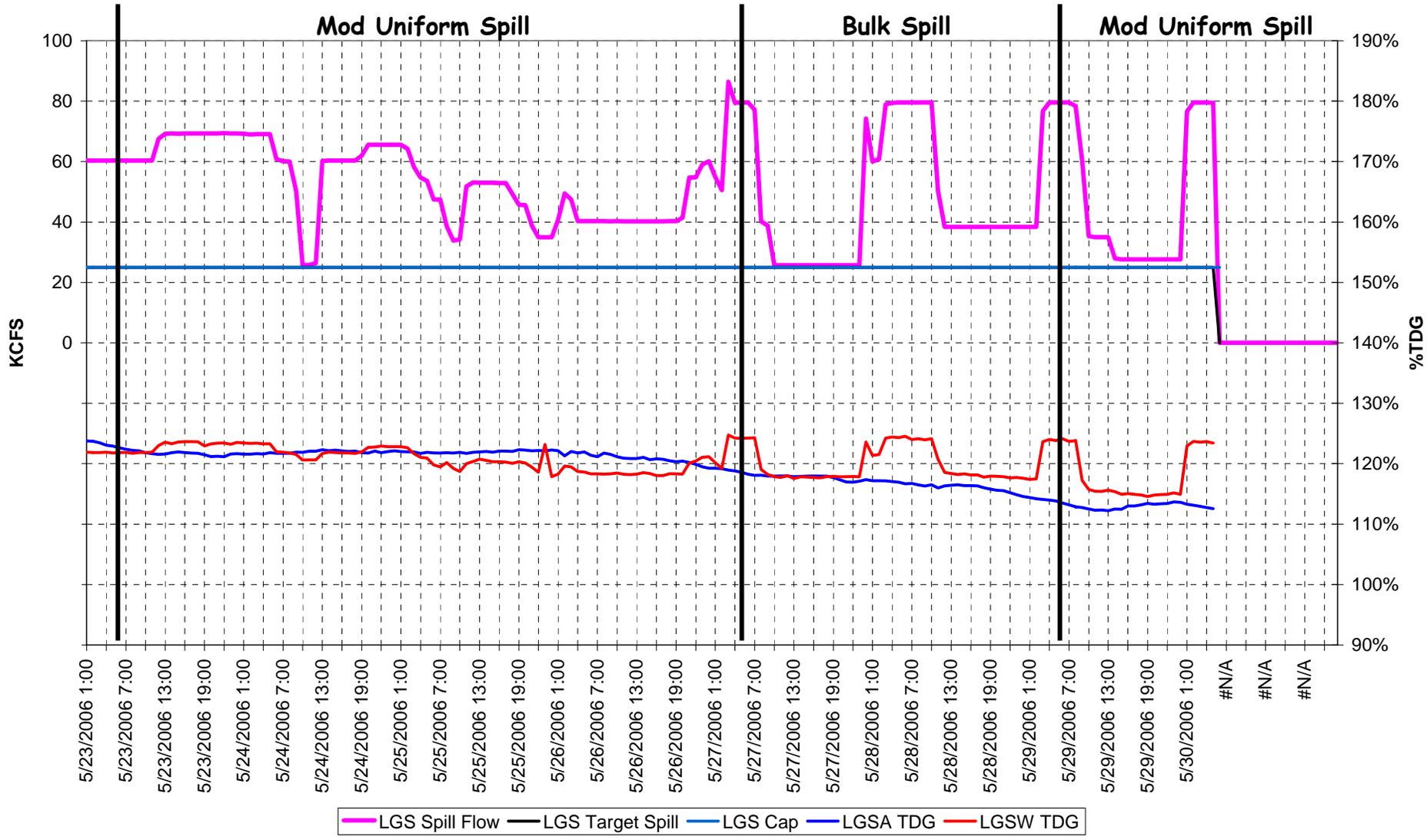
23 May - 30 May



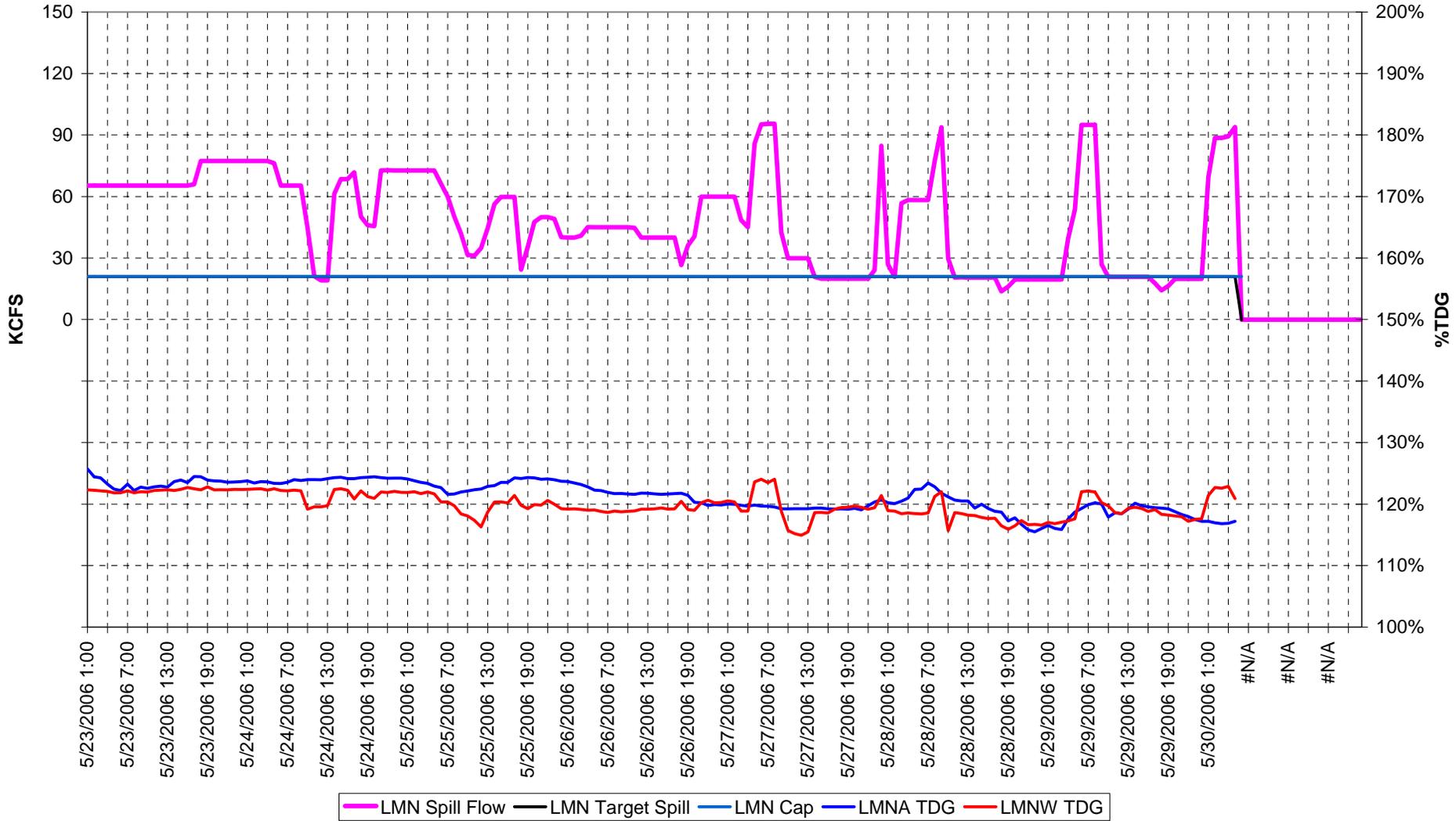
# LWG SPILL HOURLY



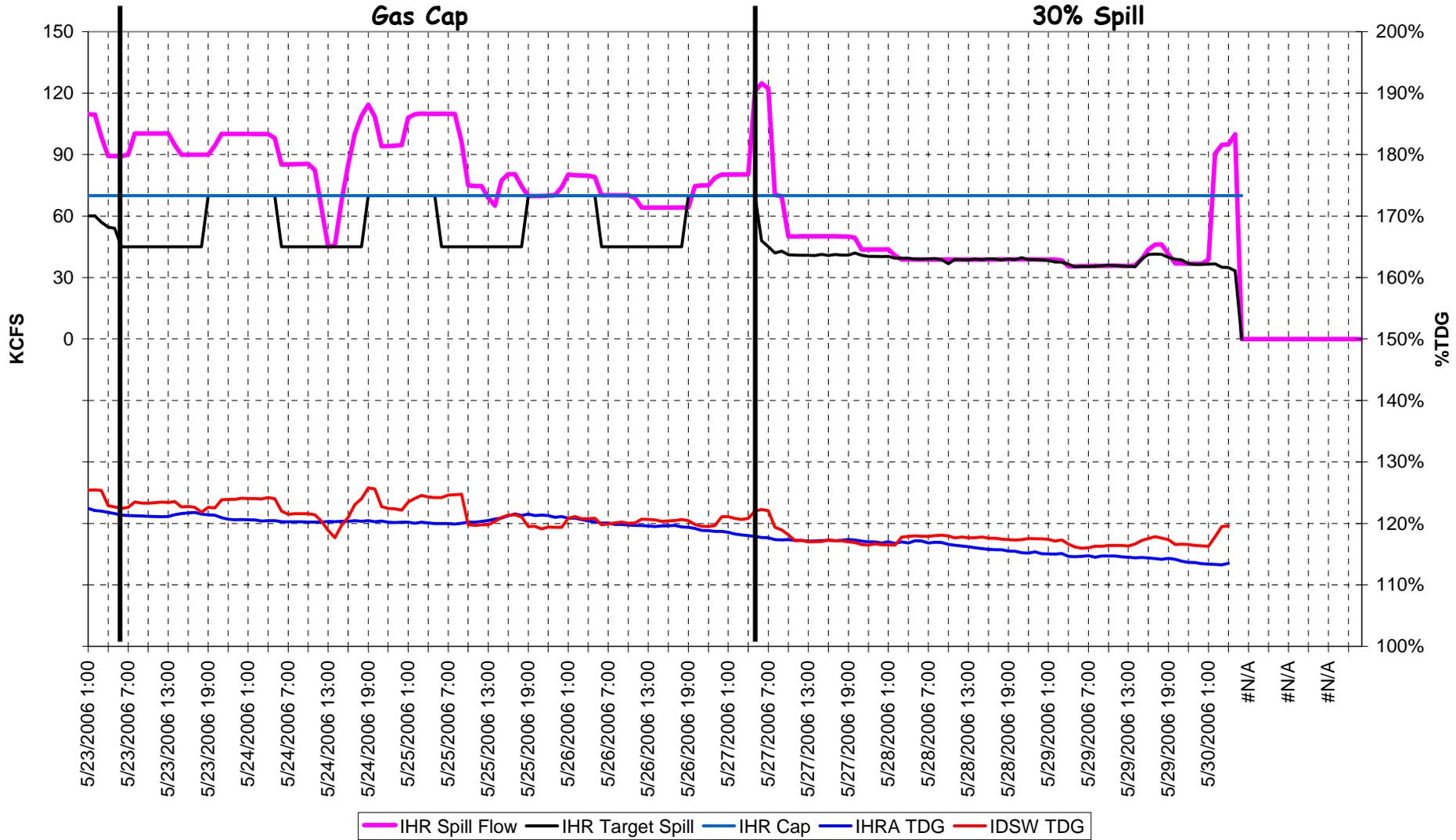
# LGS SPILL HOURLY



# LMN SPILL HOURLY

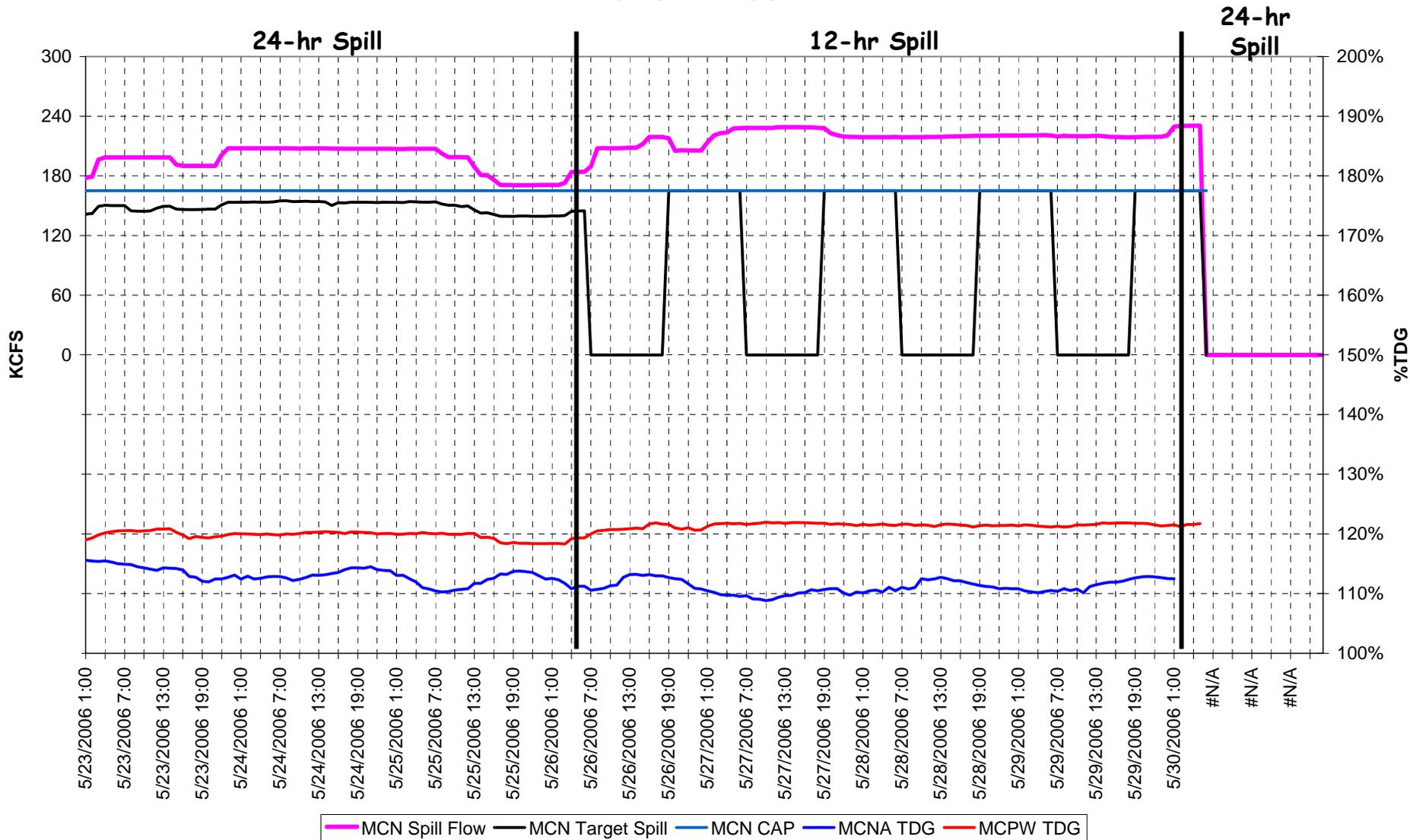


# IHR SPILL HOURLY



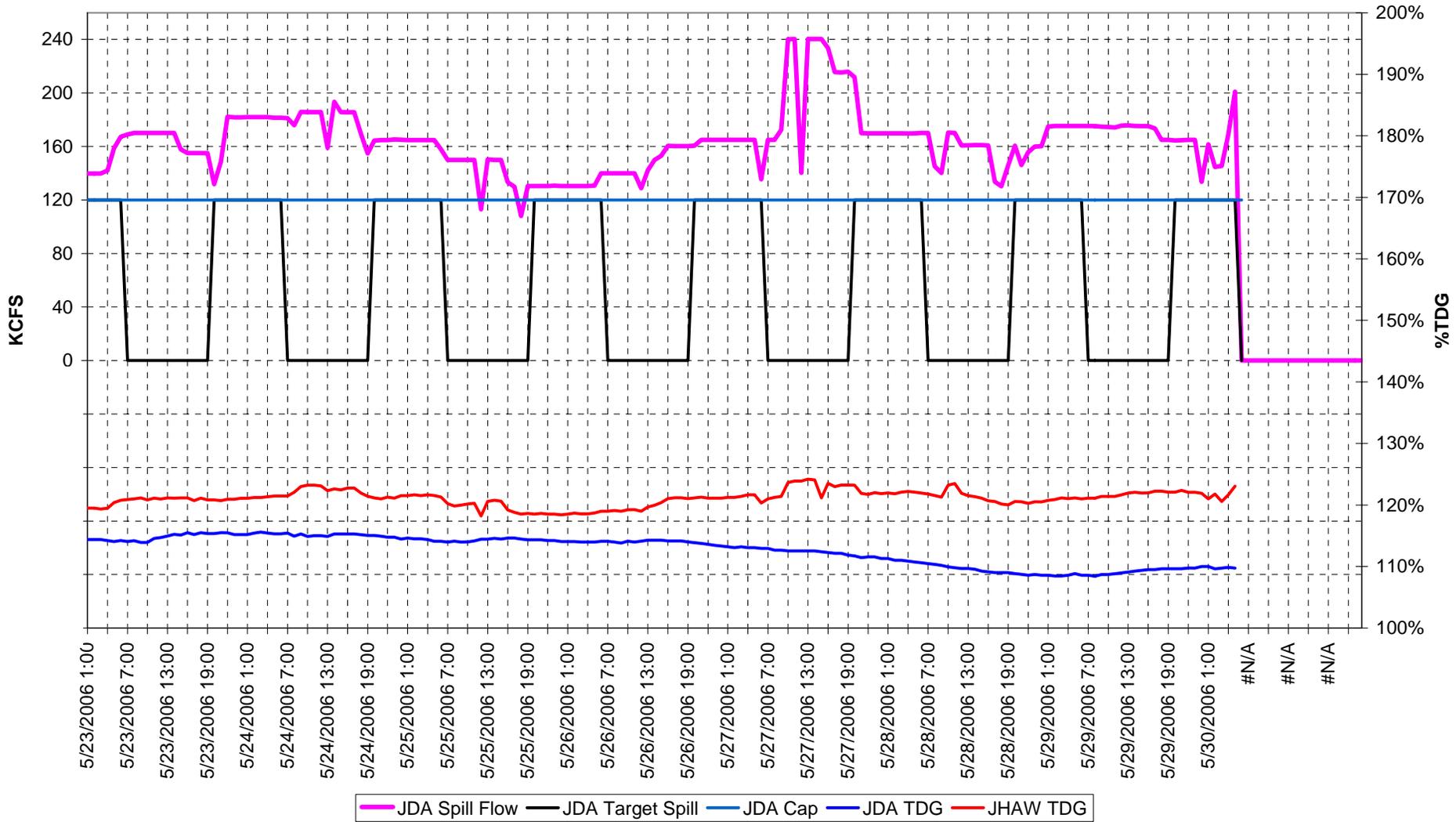
12-hr Spill = Spill to the Spill Cap from 1800 – 0500 hrs; 45 kcfs spill from 0500 – 1800 hrs.  
 24-hr Spill = Spill 30% of project outflow up to the spill cap 24 hrs per day.

### MCN SPILL HOURLY

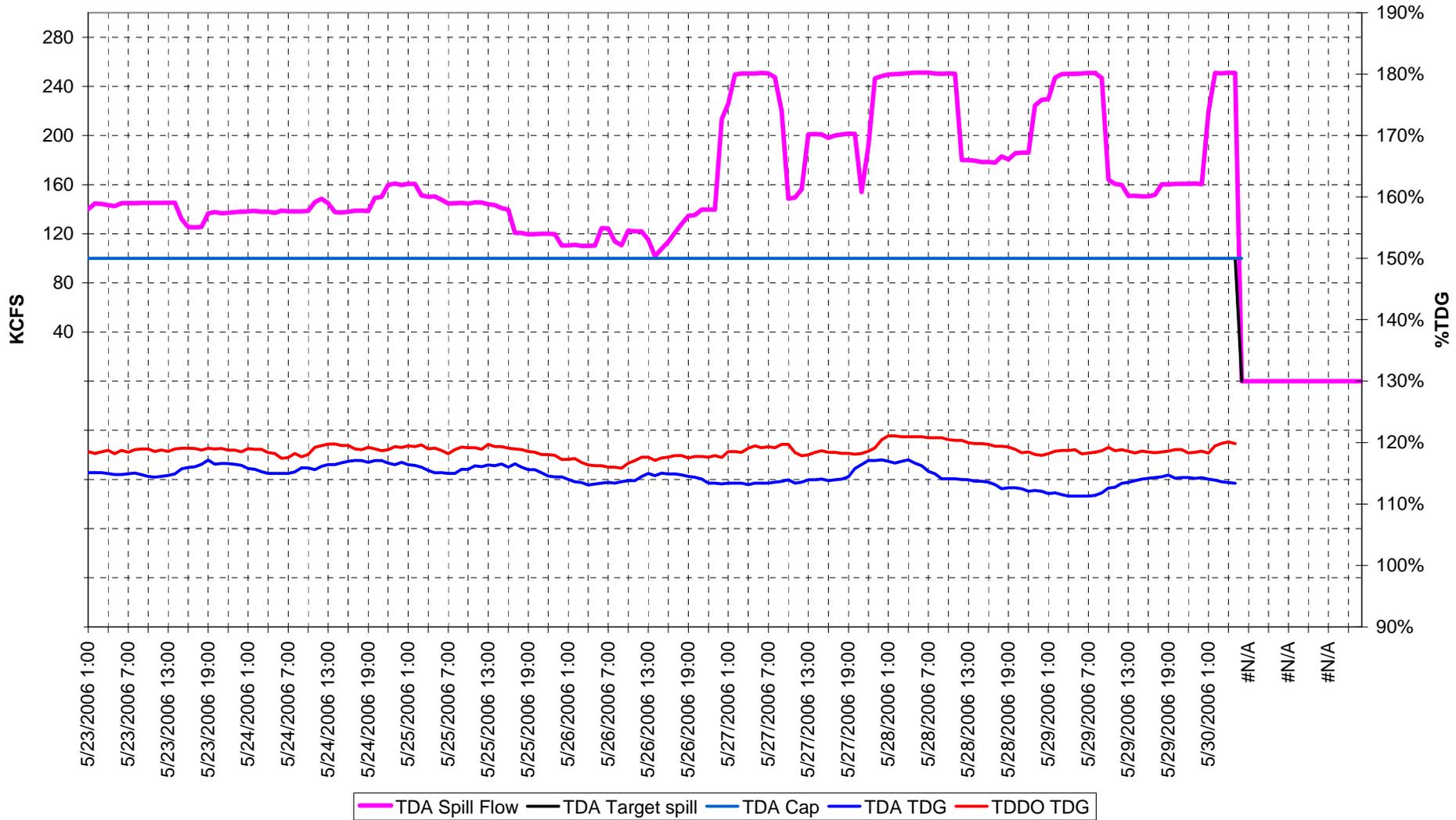


12-hr Spill = Spill to the Spill Cap from 1800 – 0600 hrs; No spill from 0600 – 1800 hrs.  
 24-hr Spill = Spill 40% of project outflow up to the spill cap 24 hrs per day.

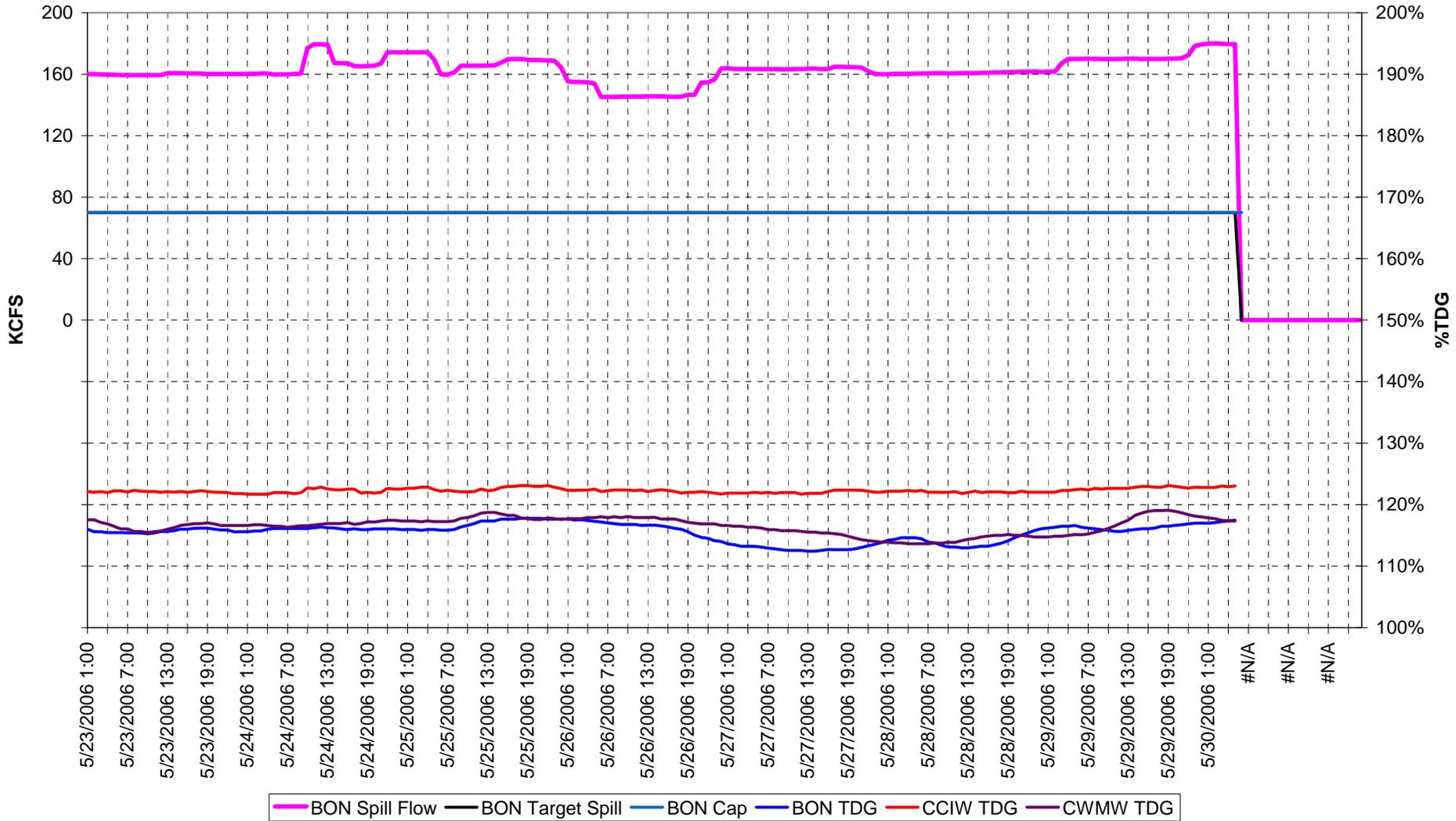
# JDA SPILL HOURLY



# TDA SPILL HOURLY



# BON SPILL HOURLY



TOTAL DISSOLVED GAS REPORT FOR DOWNSTREAM OF CHIEF JOSEPH  
starting at 0807 29 may 2006

COMPENSATION		WA TM	BARO	TD GAS	GAS	SPILL	TOT	DEPTH OF	
DATE	TIME	DEG F	PRES	PRES	%	QS	QR	GAGE(FT)	
DEPTH(FT) **									
0529	0900	53.1	742.8	957.0	128.8	034.6	222.5	17.0	9.3
0529	1000	53.2	742.1	955.0	128.7	034.7	222.1	17.0	9.3
0529	1100	53.2	741.6	955.0	128.8	034.8	221.5	17.0	9.3
0529	1200	53.2	741.3	957.0	129.1	034.9	222.0	17.0	9.4
0529	1300	53.3	741.3	955.0	128.8	035.2	220.2	17.0	9.3
0529	1400	53.3	741.1	956.0	129.0	035.2	221.4	17.0	9.3
0529	1500	53.3	741.1	956.0	129.0	035.3	222.4	17.0	9.3
0529	1600	53.3	740.8	954.0	128.8	035.5	222.7	17.0	9.3
0529	1700	53.3	740.7	952.0	128.5	035.6	220.8	17.0	9.2
0529	1800	53.3	740.5	953.0	128.7	035.9	220.5	17.0	9.2
0529	1900	53.3	740.6	950.0	128.3	035.8	220.0	16.0	9.1
0529	2000	53.3	741.2	947.0	127.8	035.9	221.1	17.0	8.9
0529	2100	53.3	742.1	949.0	127.9	036.0	220.4	17.0	9.0
0529	2200	53.3	743.2	947.0	127.4	036.1	223.5	17.0	8.9
0529	2300	53.3	744.0	954.0	128.2	040.7	229.8	17.0	9.1
0530	000	53.3	744.7	*****	134.4	054.5	257.3	18.0	***
0530	0100	53.3	745.4	976.0	130.9	048.4	237.6	17.0	***
0530	0200	53.2	745.9	948.0	127.1	035.9	227.6	17.0	8.8
0530	0300	53.2	746.6	945.0	126.6	035.3	226.5	17.0	8.6
0530	0400	53.2	746.9	947.0	126.8	035.2	225.9	17.0	8.7
0530	0500	53.2	747.9	952.0	127.3	034.9	223.8	17.0	8.9
0530	0600	53.2	748.1	953.0	127.4	034.7	223.0	17.0	8.9
0530	0700	53.2	+++++	957.0	+++++	034.4	204.5	17.0	***
++++	++++	++++	+++++	+++++	+++++	+++++	+++++	++++	0.0

\*\* Calculation of compensation depth @ 120% TDG  
[Baro. Pres. (765) - TDG Pres. (918)]/23 = 6.7 ft.

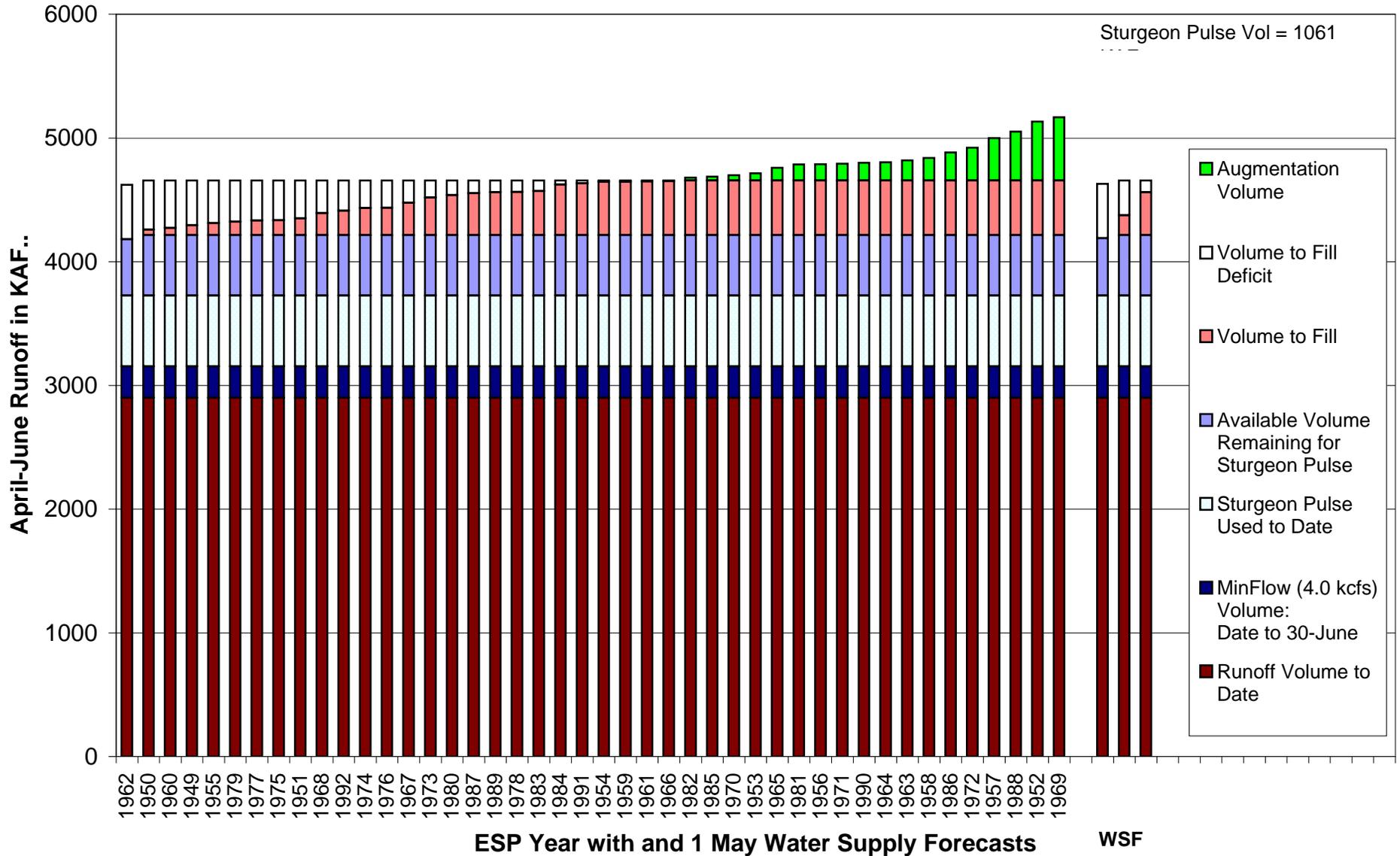
**Began Spilling at CHJ on 25 May 2006 @ 2300 hrs.**

# Additional Information

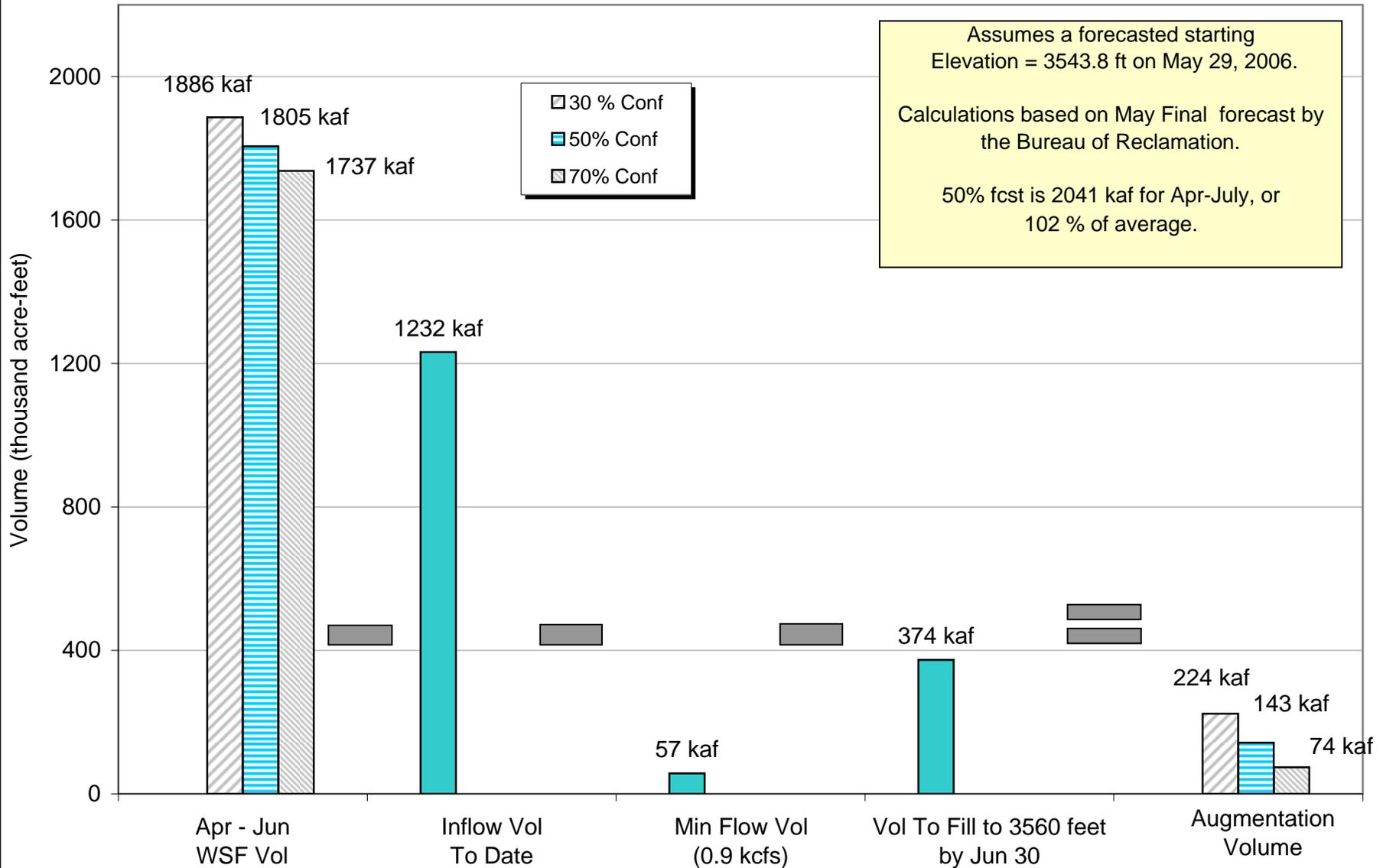
- Albeni Falls
  - Spilled 10 May – 29 May
  - Peak Spill = 26.4 kcfs
  - Peak %TDG = 114%
  - Forebay Gauge Out of Service (faulty probe housing)

# Libby Augmentation Volumes ESP inflows and 1 May Water Supply Forecast

Observed data through 29-May and ESP flows updated 30-May

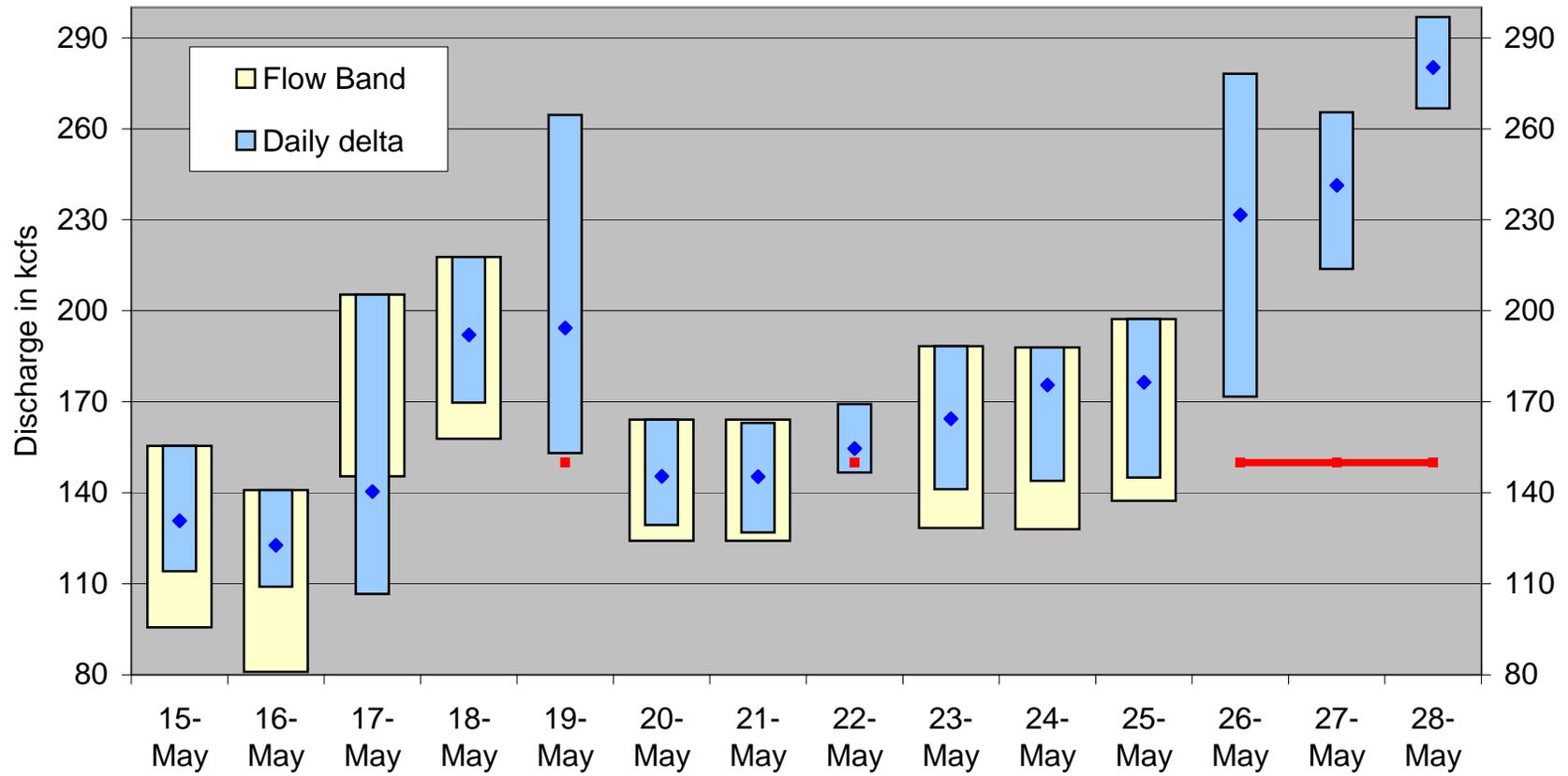


### Volumes at Hungry Horse 1 April Through 30 June



# Priest Rapids Operations 2006

Number of violations: 2



Priest Rapids Operations 2006								
Date	Mean Q	Min.Q	Max.Q	Inflows	Days Delta	Q Band width	Was it met?	Comments
15-May	130.8	114.0	155.5	167.4	41.5	60	Y	
16-May	122.7	108.9	140.9	147.3	32.0	60	Y	
17-May	140.4	106.6	205.3	142.3	98.7	60	N	Inflows increased for upstream flood control
18-May	192.1	169.6	217.7	155.2	48.1	60	Y	
19-May	194.3	153.0	264.6	184.9	111.6	150	Y	
20-May	145.5	129.3	164.1	140.9				
21-May	145.3	126.8	163.0	140.7	37.3	40	Y	
Week Avg	153.0			154.1	61.5			
22-May	154.5	146.6	169.2	173.0	22.6	150	N	Started the day below the min, daily delta only 22.6 kcfs
23-May	164.4	141.1	188.3	149.5	47.2	60	Y	
24-May	175.5	143.9	187.9	152.5	44.0	60	Y	
25-May	176.4	144.9	197.3	165.9	52.4	60	Y	
26-May	231.6	171.6	278.2	180.0	106.6	150	Y	
27-May	241.3	213.7	265.5	227.1				
28-May	280.2	266.6	296.9	248.8	83.2	150	Y	
Week Avg	203.4			185.3	50.7			

## **SYSTEM OPERATIONAL REQUEST: #2006-MT-1**

*The following State, Federal, and Tribal Salmon Managers have participated in the preparation and support this SOR: Montana Fish Wildlife & Parks & Kootenai Tribe of Idaho*

<b>TO:</b> Rock Peters	COE-P
James D. Barton	COE-Water Management
Cindy Henriksen	COE-RCC
Cathy Hlebechuk	COE-RCC
Lori Postlethwait	USBR Hydro Coordinator
Pat McGrane	USBR River Operations
Tony Norris	USBR River Operations
Suzanne Cooper	BPA-
John Wellschlager	BPA-

**FROM: Jim Litchfield, State of Montana**

**DATE: May 31, 2006**

**SUBJECT: Libby & Hungry Horse Operations for June through September**

### ***Biological Objectives***

The objective of this SOR is to implement the Northwest Power and Conservation Council's Mainstem Recommendations for operation of Libby and Hungry Horse dams from July through September. The proposed operation will provide habitat for ESA listed bull trout and provide improved environmental conditions for other resident fish that inhabit the reservoirs and the rivers above and below Libby and Horse dams. The Council's recommended operations at Libby and Hungry Horse dams will provide environmental benefits to resident fish in Montana without harming ESA listed Snake River fall chinook as they migrate through the Lower Columbia Reservoirs.

This SOR proposes to implement an evaluation of the physical and biological effects of the proposed operational changes for Libby and Hungry Horse. Fisheries scientists in the lower Columbia River determined that existing research could not isolate changes in fish survival attributable to this operation strategy. Physical changes in flows and water quality (primarily temperatures) that occur in reservoirs and rivers in Montana and the Lower Columbia River below McNary will be evaluated. Experiments have been designed and are being implemented in Montana to evaluate the biological changes that result from implementation of this SOR.

## **Specifications**

Implement the Northwest Power Planning Council's Mainstem Recommendations for operation of Libby and Hungry Horse dams during June through September. The Council's recommended operations will require the following detailed specific operations at each project.

### **Hungry Horse**

- a. Maintain minimum in stream flows for bull trout at Columbia Falls and in the river below Hungry Horse dam.
- b. Attempt to refill by June 30 while also avoiding the risk of filling too quickly resulting in uncontrolled spill. Even small amounts of spill will likely exceed Montana's water quality regulations for 110% dissolved gas. Therefore, the refill date and outflows should be managed to avoid, if possible, uncontrolled spill.
- c. In late June the Bureau of Reclamation will estimate a flat flow from Hungry Horse for July through September period. The flow estimated by the Bureau will be designed to result in a draft of the reservoir to 10 feet from full by September 30, 2006.
- d. The Bureau, in consultation with the State of Montana, will monitor this flow throughout the summer to achieve a stable weekly average flow. However, due to inflow forecast uncertainty it will be necessary to adjust the flows either up or down to insure that the reservoir draft limit is achieved. Any changes in flows should be accomplished following the ramp rates and to preserve a stable aquatic environment below the dam throughout the July through September period.
- e. Attempt to provide stable or, if necessary, gradually declining flows at Columbia Falls during the draft.

### **Libby**

- a. Following the May-June flow operation for sturgeon, the Corps will estimate a flat flow from Libby for June through September period. The flow estimated by the Corps will be designed to result in a draft of the reservoir to 10 feet from full by September 30, 2006.
- b. The Corps should attempt to refill Libby while also avoiding the risk

of filling too quickly resulting in uncontrolled spill. Even small amounts of spill will likely exceed Montana's water quality regulations for 110% dissolved gas. Therefore, the refill date and outflows should be managed to avoid, if possible, uncontrolled spill.

- c. The Corps, in consultation with the State of Montana, will monitor Libby outflow throughout the summer to achieve a stable weekly average flow. However, due to inflow forecast uncertainty it will be necessary to adjust the flows either up or down insure that the reservoir draft limit is achieved. Any changes in flows should be accomplished following the ramp rates and to preserve a stable aquatic environment below the dam throughout the July through September period.
- d. Operate to provide at least minimum bull trout flows through September (USFWS BiOp).
- e. Provide even or gradually declining flows during summer months (minimize double peak).
- f. Investigate the possibility of a storage exchange with Canada to further reduce the need for reservoir drafts from Libby.

### **Biological Evaluations**

Radio tracking and PIT tag methods will continue in the Flathead and Kootenai Rivers to detect movements and potential downstream displacement of fish. This will allow a comparison of changes in fish movement and response to flow fluctuations caused by the dam operations called for in this SOR.

IFIM river models, benthic biomass models and reservoir modeling will compare previous operations with modified operations. Field observations will be conducted to see how fish respond to new operations to determine any changes from previous measurements.

Evaluate the changed operations by using the existing biological models and validate these simulations with field sampling to determine the change in river and reservoir productivity.

In the Lower Columbia River physical measurements should be continued to determine two-dimensional changes in velocity across the range of flows at longitudinal points along the reservoirs.

Montana Fish Wildlife & Parks has a range of field experiments that will provide useful information on the changes in survival and productivity of trout below Libby and Horse reservoirs. These experiments will be continued and to the extent possible provide additional biological information on the benefits of the proposed operation for resident fish.

## ***Justification***

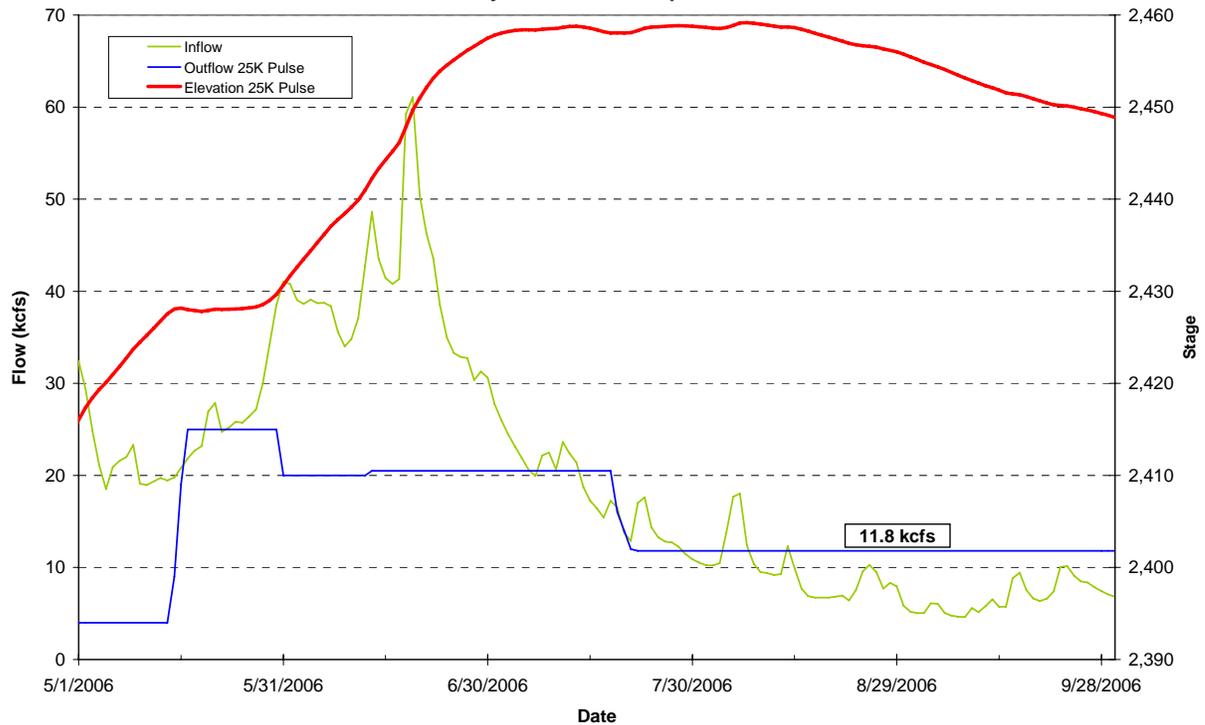
### **Biological Justification for Libby & Hungry Horse Operations**

The operation proposed in this SOR should result in a summer outflows from Libby and Hungry Horse dams that result in small flow reductions in July and August that will provide increased flows in September. The reservoirs will draft more gradually during the biologically productive, albeit short growing season in Montana. The operational changes in Montana were designed to enhance to the productivity of resident fish. The Corps recently modeled the type of operation called for in this SOR at Libby. The following graph illustrates the flows and reservoir elevation that could occur this summer.

## ESP (5/9/06) INFLOWS USED STARTING 5/10/06

APR-AUG VOLUME=6.232 MAF

Libby 2449' End of September



The key aspects of this operation are first the management of flows to insure that the project avoids filling too quickly and thereby causing uncontrolled spill. Following the period of time when refill is managed there is a flat flow of 11.8 kcfs that results in drafting the reservoir to elevation 2449.

As in previous years, it is anticipated that this change in flows at Libby will result in far smaller flow changes at McNary dam due to the attenuation of flows as the water is routed through the Canadian and US reservoirs above McNary. BPA recently conducted hydropower regulation studies of the operation proposed in this SOR. These studies estimated that during water years that have a runoff volume at The Dalles of 94.7 to 111.0 MAF there would be approximately a 3 percent<sup>1</sup> reduction in flows at McNary Dam during July and August.

### Judge Redden's Findings

Last fall the Plaintiffs requested in a proposed Preliminary Injunction that Judge Redden order increased flow augmentation for this year. On December 29, 2005

<sup>1</sup> The BPA modeling estimated the average flow at McNary for July through August at 191 kcfs. The flow reduction due to operating to this SOR was estimated by BPA to be approximately 6 kcfs. Current runoff forecast for this year at The Dalles is 109 MAF which is at the high end of the band of runoff years estimated in the BPA modeling.

Judge Redden ruled on the proposed flow augmentation by the Plaintiffs among other issues. In this order he found:

“3. Best Available Science.

NWF believes that restoration of the Columbia and Snake rivers to a more natural hydrograph will necessarily benefit salmon. In November 2002, the Independent Scientific Advisory Board (ISAB) was assigned the task of updating and clarifying its views on the benefits to salmon of flow augmentation. In its report issued on February 10, 2003, entitled Review of Flow Augmentation: Update and Clarification, ISAB noted as a preliminary matter that "many questions remain" regarding the "relationship between river flows and salmon production." In summarizing the present science on the issue, ISAB noted that "the benefit to salmon of . . . incremental adjustments [to flow] has not been well quantified." *Id.* at p. 2. ISAB then stated:

“A different perspective emerged from this latest review. We realize that the prevailing rationale for flow augmentation is inadequate. It is neither complete nor comprehensive. There is room for alternative explanations of data that have scientific justification and practical value for managing the hydrosystem for multiple uses including salmon recovery. The prevailing flow-augmentation paradigm, which asserts that in-river smolt survival will be proportionally enhanced by any amount of added water, is no longer supportable. It does not agree with information now available.”

*Id.* at pp. 2-3.

“NWF has failed to establish that the best available science supports its proposal for augmented flow during the summer 2006 migration period. This, coupled with the potential harm to other listed species, militates against granting the extraordinary relief NWF requests by injunction proceeding.”

4. Conclusion.

“I deny NWF's request for an injunction to augment flow during the summer of 2006.”

**ISAB Findings**

The biological objective of drafting Libby and Hungry Horse reservoirs during the summer for anadromous fish is based in a hypothesis that increased flows in the Lower Columbia will provide biological survival benefits for listed Snake

River fall chinook. This issue has been debated for over ten years. Last years operations at Libby and Horse failed to implement the Council's Mainstem Recommendations due to concerns over ongoing Biop litigation and objections by CRITFC and the US Fish and Wildlife Service.

The region has struggled with the tradeoffs between operations that will provide benefits to resident fish in Montana and the hypothesized benefits for Snake River fall chinook in the Lower Columbia during the summer. In response to the considerable scientific discussion and debate about the possible affects on resident and anadromous fish NOAA requested that the Council host, and the Independent Scientific Advisory Board (ISAB) conduct, a River Operations/Flow Symposium. This Symposium was held in Portland on November 9 & 10, 2004. The following is a summary of the ISAB's scientific findings with respect to implementation of the Council's Mainstem Recommendation for Libby and Horse operations that are reflected in this SOR.

“Although summer-migrating juvenile fall Chinook salmon from the Snake River have been the main concern for downstream effects of the Montana proposal, there is new information about this stock's life history. Some juveniles are holding over their first winter in fresh water and emigrating as yearlings in the spring (termed the “reservoir” life history, also referred to as the holdover life history). Importantly, a disproportionately large percentage of returning adults are originating from these holdovers... The intent of flow augmentation is to reduce mortality of smolts by speeding their migration to the ocean. With the recent findings of the large adult contribution from migrants exhibiting the reservoir life history, and also for PIT-tagged late fall migrants (NOAA Fisheries, unpublished data), the strategy of using flow augmentation to speed migration should be reassessed.”

“Because adults respond negatively to flow increases, the effects of these increases on them, not just on juveniles, need to be considered as well. No existing models seem adequate for evaluating the flow effects from the Montana proposal.”

“All indications are that the down-river effects of the shifts in flow associated with the Council's Mainstem Amendments of 2003 will be small... As a result, the Council's hypothesis that the effects on survival of salmonids in the lower Columbia River will be indiscernible is probably reasonable.”

“Without a grounding in actual measurements that involve these factors, it is difficult to see how operational changes at Hungry Horse and Libby in August and September can be translated into functionally significant changes in salmon migrations, especially fall Chinook salmon migrations in the lower river, or in any other downstream species.”

“The incremental effects of the Montana System Operations Request on the mid-Columbia and lower Columbia, however, are likely to be beneficial at certain times as well as detrimental at others because of the shifting of flows between months, rather than any consistently one-sided net change.”

“Using present estimates of both hydrology and biology, we conclude that the effects of the Mainstem Amendment and the Montana System Operations Request on salmonids downstream in the Columbia River are likely to be small.”

“Finding a practical and feasible experimental design is difficult because the effects of the Montana proposal are likely to be small, both in terms of water amounts delivered and the resulting effects, if any, on survival... The range of estimates now available, however, suggests a numerically low change in overall salmon survival, with uncertainty over direction.”

“For example, in late 2002, the Council staff compared estimates of fish survival derived from SIMPAS (version 9) and CRiSP (Council memoranda dated November 6 and December 2 from Bruce Suzumoto to Council members). For SIMPAS, 11 populations of listed and unlisted stocks were examined; six for CRiSP; High, medium, and low flow regimes were evaluated. Using SIMPAS, the estimated percentage change in survival for Montana operations compared to the BiOp flows were 0, 0.3, 0.2 (high summer flow), -0.7, 0.5, 0 (medium summer flow), and 0, 0.2, and -0.5 (low summer flow) for Snake River fall Chinook, Lower Columbia Chinook, and Hanford Reach fall Chinook, respectively; all less than 1%. The most comparable results from CRiSP showed in-river survivals of 0.035 and 0.021 (high flow), -0.068 and -0.050 (medium flow), and -0.083 and -0.049 (low flow) for Hanford Reach fall Chinook and Snake River subyearling Chinook, respectively; again, all estimates substantially less than 1%. Furthermore, “small” in this analysis ranges from an estimated loss of 7 fish in 1,000 to a gain of 5 fish in 1,000 using SIMPAS, whereas using CRiSP, there is an estimated loss of about 8 fish in 10,000 (less than 1 in 1,000) to a gain of 3.5 fish in 10,000 (less than 1 in 1,000). Although we are reluctant to place high confidence in either of these models, the estimated changes in survival are quantitatively low and of inconsistent sign.”

“Council staff estimated the 50-year-average change in flow at McNary Dam to be diminished by 8.3 kcfs in July and 5.6 kcfs in August, but increased by 0.9 kcfs in September. The largest of these estimates (-8.3 kcfs) would yield an estimated change in survival from McNary to John Day of 0.01 percent (1 fish in 10,000) using graphical analysis of the plot shown by Steve Smith of NOAA Fisheries.”

“The Council hypothesized in its Mainstem Amendments that certain modifications to current operations at Hungry Horse and Libby dams would significantly benefit resident fish without discernable adverse effects on the survival of juvenile and adult anadromous fish in the lower Columbia River. We conclude the following:

1. Resident fish and fisheries influenced locally by the Hungry Horse and Libby water-release situations may receive important biological benefits from the flow modifications, assuming they are carried out as planned. It is almost certain that the general productivity in the Montana reservoirs and in the immediate downstream reaches will benefit considerably. What are uncertain are the effects on the species of greatest concern (sturgeon and bull trout) when the increased productivity propagates through the community of predators, prey, and competitors. If the effects on these species are very large, they may be detected by future monitoring, but attribution of cause may still be confounded unless the experimental design alternates to provide enough operational variability to detect change (e.g. years when the Montana System Operations Request is implemented over a range of water supplies).
2. Effects of the Council's Mainstem Amendment and resulting Montana operations proposal on the survival of juvenile and adult anadromous fish in the Columbia River below Chief Joseph Dam will probably be very small. The available data and analytical tools do not allow us to say whether the net effect will be positive or negative for fish present in the river in the August-September period. Other time periods were not addressed in the symposium. Based on the best information now available, the Council was likely justified in its hypothesis that the flow modifications at Hungry Horse and Libby dams outlined in its Mainstem Amendments would lead to effects on survival of juvenile salmonids in the mainstem Columbia River that will be too small to measure practically against both the measurement error itself and real background variation due to other causes.
3. Recognition of the holdover or "reservoir" life history pattern of one of the foremost stocks of concern, the ESA-listed Snake River fall Chinook, complicates assessment of this stock in relation to the flow proposal. Because further research on this life history pattern is so critically needed, it is important to implement monitoring systems that will make it possible to quantify the magnitude of holdover behavior and how that affects estimates of smolt survival and SAR, as well as to reveal what factors affect holdover behavior and overwintering survival in freshwater."

Last fall's Flow Symposium was not the first time that the ISAB was asked to review proposals to modify operations at Libby and Hungry Horse. In a report to the Council by the ISAB on the scientific justification for augmenting flows using limited reservoir storage volumes, the ISAB said:

"The prevailing flow-augmentation paradigm, which asserts that in-river smolt survival will be proportionally enhanced by any

amount of added water, is no longer supportable. It does not agree with information now available.”

However, arguments are also made that travel time is also a critical attribute of overall salmon survivals. With respect to the travel time argument the ISAB said:

“The paradigm that faster movement of smolts to the estuary and ocean is always favorable for survival needs to be evaluated. Most of the reach survival studies we reviewed make this assumption. Increased migration rate and survival in the studied reaches (primarily the lower Snake River) does not ensure survival in lower reaches. The fish have to spend their time somewhere and could experience increased survival rates, the same survival rates, or decreased survival rates.”

The ISAB also reviewed the latest in scientific research into the affects of flows on survivals of anadromous fish in the Mid-Columbia and Lower Columbia reaches where it found:

“Flow appears to be the most influential factor affecting migration speed of steelhead and sockeye; for yearling chinook no effect of flow on migration speed has been found (only level of smoltification affected migration speed); for subyearling chinook no environmental variable was found to affect migration speed in the mid-Columbia. Since 1998, PIT tag and radiotelemetry studies have produced limited data on the survival of yearling chinook. Data on other species is even more limited. The studies-to-date do not indicate any statistically significant effect of flow on survival of juvenile salmonids in the mid-Columbia Reach, other than in the Hanford Reach, where stable flows are the issue. Limited data are available for lower Columbia Reach. Low flows are likely to lead to residualization of steelhead.”

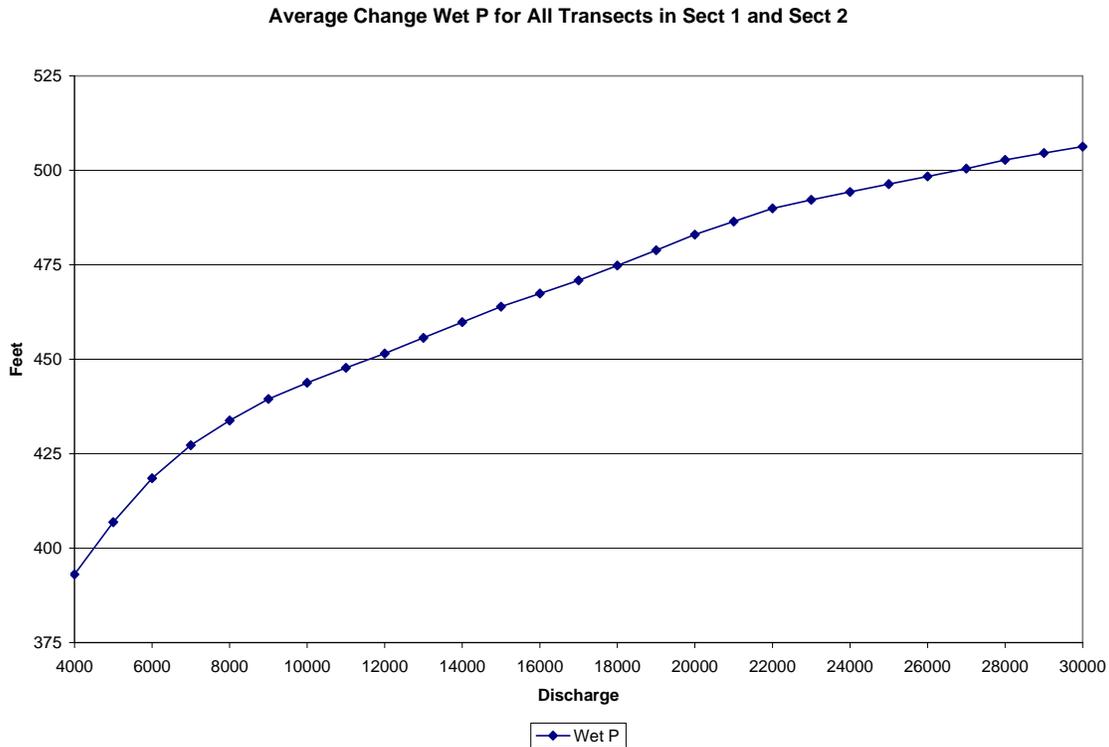
The ISAB also reviewed the status of research into the impact on resident fish of reservoir operations that have been dominated by attempting to meet summer flow objectives at McNary. With respect to the impact on resident fish in Montana the ISAB said:

“It is a well- established fact that storage reservoir drawdowns result in adverse effects on resident fish populations and their associated fisheries. In earlier reports we recommended that an effort be made to balance the needs of resident fishes upstream against those of juvenile salmon downstream. We identified the Rule Curves [IRCs] developed in Montana as being reasonable approaches to resolving difficult policy issues with biological implications. The subject of tradeoffs of benefits to

salmon versus detriments to resident fishes is one of the subjects deserving high priority action by the Council.”

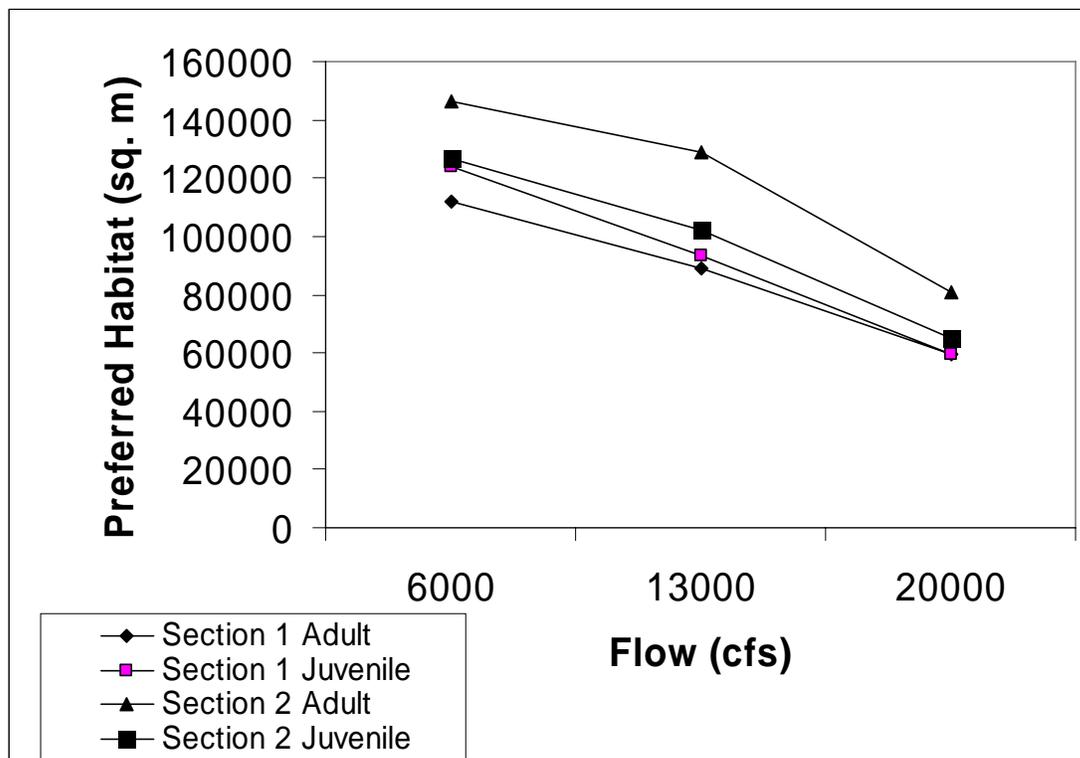
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River fisheries benefit when dams are operated to provide consistent hydrologic conditions (Muhlfeld et al. 2003; Paragamian 2000; Independent Scientific Group 1999; ISAB 1997 and 1997b; Hauer and Potter 1986). Optimal hydrologic conditions mimic natural processes and minimize impacts on fish and wildlife (Ward and Stanford 1979). For example, Muhlfeld et al. (2003) found

that subadult bull trout moved from deep, mid-channel areas during the day, to shallow low-velocity areas along the channel margins without overhead cover at night in the partially regulated reaches of the Flathead River. The authors recommended establishing as stable of a flow regime as possible to protect key ecosystem processes and maintain or restore bull trout populations in the Flathead and elsewhere in the Pacific Northwest (Independent Scientific Group 1999). Conversely, fluctuating stream flows resulting from dam operation directly affect the aquatic environment and associated riparian and wetland habitats downstream of headwater reservoirs. Flow fluctuations increase the width of the varial zone causing it to become biologically unproductive (Perry et al 1986; Hauer et al. 1997; Hauer et al. 1974). Stable or gradually changing river flows benefit all fish species of special concern in Montana. Especially during the productive warm summer months, river flows should gradually decline toward stable summer flows to protect biological production in the rivers downstream of the dams. The relationship between preferred trout habitat and flow was calculated using models of the Kootenai River. The results of this analysis are shown in the following figure. Preferred trout habitat is substantially reduced as flows increase above the optimal level of approximately 6 to 8 kcfs.



The biological justification for the recommended reservoir operations in this SOR are based on quantitative biological modeling of Hungry Horse and Libby Reservoirs (Chisholm et al. 1989; May et al. 1988; Cavigli et al. 1998; Dalbey et al 1997; Zubik and Fraley 1987; Skaar et al 1996). Computer models were constructed using empirical field measurements of physical and biological

parameters, as related to dam operations (Marotz et al. 1996). Conditions in the reservoirs resulting from various dam operation scenarios were assessed beginning with the hydrologic mass balance and thermal structure in the reservoir pool. The models calculate the biological response extending from primary producers (plants) through tertiary trophic levels (fish growth). Fish growth is correlated with survival, fecundity and reproductive success (Chapman and Bjornn 1969).

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Reducing reservoir drawdown (duration and frequency), especially during summer, protects aquatic insect production in remaining wet portions of the reservoirs, assuring an ample food supply for fish. During winter, fish (kokanee, westslope cutthroat and rainbow trout, whitefish, chubs, and suckers) eat mainly *zooplankton*, a microscopic crustacean that grazes on *phytoplankton*, suspended algae.

## **SYSTEM OPERATIONAL REQUEST: #2006-MT-1**

*The following State, Federal, and Tribal Salmon Managers have participated in the preparation and support this SOR: Montana Fish Wildlife & Parks & Kootenai Tribe of Idah*

<b>TO:</b> Rock Peters	COE-P
James D. Barton	COE-Water Management
Cindy Henriksen	COE-RCC
Cathy Hlebechuk	COE-RCC
Lori Postlethwait	USBR Hydro Coordinator
Pat McGrane	USBR River Operations
Tony Norris	USBR River Operations
Suzanne Cooper	BPA-
John Wellschlager	BPA-

**FROM: Jim Litchfield, State of Montana**

**DATE: May 30, 2006**

**SUBJECT: Libby & Hungry Horse Operations for June through September**

### ***Biological Objectives***

The objective of this SOR is to implement the Northwest Power and Conservation Council's Mainstem Recommendations for operation of Libby and Hungry Horse dams from July through September. The proposed operation will provide habitat for ESA listed bull trout and provide improved environmental conditions for other resident fish that inhabit the reservoirs and the rivers above and below Libby and Horse. The Council's recommended operations at Libby and Hungry Horse dams will provide environmental benefits to resident fish in Montana without harming ESA listed Snake River fall chinook as they migrate through the Lower Columbia Reservoirs.

This SOR proposes to implement an evaluation of the physical and biological effects of the proposed operational changes for Libby and Hungry Horse. Fisheries scientists in the lower Columbia River determined that existing research could not isolate changes in fish survival attributable to this operation strategy. Physical changes in flows and water quality (primarily temperatures) that occur in reservoirs and rivers in Montana and the Lower Columbia River below McNary will be evaluated. Experiments have been designed and are being implemented in Montana to evaluate the biological changes that result from implementation of this SOR.

## **Specifications**

Implement the Northwest Power Planning Council's Mainstem Recommendations for operation of Libby and Hungry Horse dams during June through September. The Council's recommended operations will require the following detailed specific operations at each project.

### **Hungry Horse**

- a. Maintain minimum in stream flows for bull trout at Columbia Falls and in the river below Hungry Horse dam.
- b. Attempt to refill by June 30 while also avoiding the risk of filling too quickly resulting in uncontrolled spill. Even small amounts of spill will likely exceed Montana's water quality regulations for 110% dissolved gas. Therefore, outflows should be managed to avoid, if possible, uncontrolled spill.
- c. In late June the Bureau of Reclamation will estimate a flat flow from Hungry Horse for July through September period. The flow estimated by the Bureau will be designed to result in a draft of the reservoir to 10 feet from full by September 30, 2006.
- d. The Bureau, in consultation with the State of Montana, will monitor this flow throughout the summer to achieve a stable weekly average flow. However, due to inflow forecast uncertainty it will be necessary to adjust the flows either up or down to insure that the reservoir draft limit is achieved. Any changes in flows should be accomplished following the ramp rates and to preserve a stable aquatic environment below the dam throughout the July through September period.
- e. Attempt to provide stable or, if necessary, gradually declining flows at Columbia Falls during the draft.

### **Libby**

- a. Following the May-June flow operation for sturgeon, the Corps will estimate a flat flow from Libby for June through September period. The flow estimated by the Corps will be designed to result in a draft of the reservoir to 10 feet from full by September 30, 2006.
- b. The Corps should attempt to refill Libby while also avoiding the risk

of filling too quickly resulting in uncontrolled spill. Even small amounts of spill will likely exceed Montana's water quality regulations for 110% dissolved gas. Therefore, outflows should be managed to avoid, if possible, uncontrolled spill.

- c. The Corps, in consultation with the State of Montana, will monitor Libby outflow throughout the summer to achieve a stable weekly average flow. However, due to inflow forecast uncertainty it will be necessary to adjust the flows either up or down insure that the reservoir draft limit is achieved. Any changes in flows should be accomplished following the ramp rates and to preserve a stable aquatic environment below the dam throughout the July through September period.
- d. Operate to provide at least minimum bull trout flows through September (USFWS BiOp).
- e. Provide even or gradually declining flows during summer months (minimize double peak).
- f. Investigate the possibility of a storage exchange with Canada to further reduce the need for reservoir drafts from Libby.

### **Biological Evaluations**

Radio tracking and PIT tag methods will continue in the Flathead and Kootenai Rivers to detect movements and potential downstream displacement of fish. This will allow a comparison of changes in fish movement and response to flow fluctuations caused by the dam operations called for in this SOR.

IFIM river models, benthic biomass models and reservoir modeling will compare previous operations with modified operations. Field observations will be conducted to see how fish respond to new operations to determine any changes from previous measurements.

Evaluate the changed operations by using the existing biological models and validate these simulations with field sampling to determine the change in river and reservoir productivity.

In the Lower Columbia River physical measurements should be continued to determine two-dimensional changes in velocity across the range of flows at longitudinal points along the reservoirs.

Montana Fish Wildlife & Parks has a range of field experiments that will provide useful information on the changes in survival and productivity of trout below Libby and Horse reservoirs. These experiments will be continued and to the extent possible provide additional biological information on the benefits of the proposed operation for resident fish.

## ***Justification***

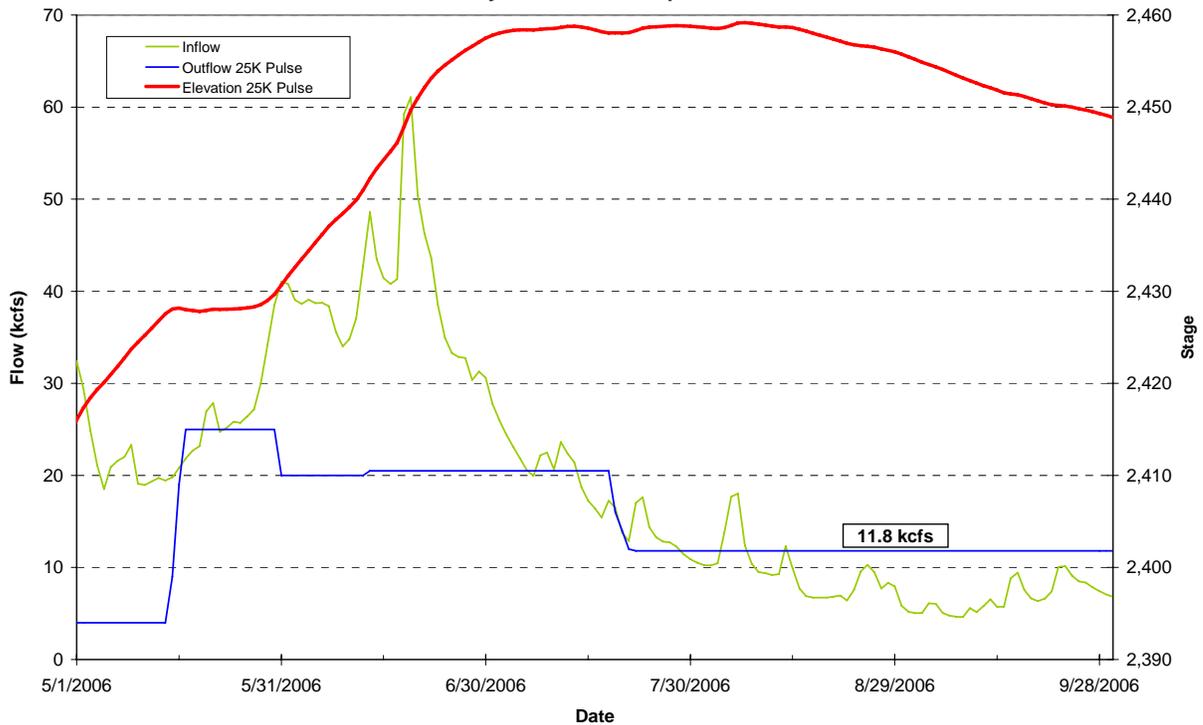
### **Biological Justification for Libby & Hungry Horse Operations**

The operation proposed in this SOR should result in a summer outflows from Libby and Hungry Horse dams that result in small flow reductions in July and August that will provide increased flows in September. The reservoirs will draft more gradually during the biologically productive, albeit short growing season in Montana. The operational changes in Montana will be significant to the productivity of resident fish. The Corps recently modeled the type of operation called for in this SOR at Libby. The following graph illustrates the flows and reservoir elevation that could occur this summer.

## ESP (5/9/06) INFLOWS USED STARTING 5/10/06

APR-AUG VOLUME=6.232 MAF

Libby 2449' End of September



The key aspects of this operation are first the management of flows to insure that the project avoids filling too quickly and thereby causing uncontrolled spill. Following the period of time when refill is managed there is a flat flow of 11.8 kcfs that results in drafting the reservoir to elevation 2449.

As in previous years, it is anticipated that this change in flows at Libby will result in far smaller flow changes at McNary dam due to the attenuation of flows as the water is routed through the Canadian and US reservoirs above McNary. BPA recently conducted hydropower regulation studies of the operation proposed in this SOR. These studies estimated that during water years that have a runoff volume at The Dalles of 94.7 to 111.0 MAF there would be approximately a 3 percent<sup>1</sup> reduction in flows at McNary Dam during July and August.

### Judge Redden's Findings

Last fall the Plaintiffs requested in a proposed Preliminary Injunction that Judge Redden order increased flow augmentation for this year. On December 29, 2005

<sup>1</sup> The BPA modeling estimated the average flow at McNary for July through August at 191 kcfs. The flow reduction due to operating to this SOR was estimated by BPA to be approximately 6 kcfs. Current runoff forecast for this year at The Dalles is 109 MAF which is at the high end of the band of runoff years estimated in the BPA modeling.

Judge Redden ruled on the proposed flow augmentation by the Plaintiffs among other issues. In this order he found:

“3. Best Available Science.

NWF believes that restoration of the Columbia and Snake rivers to a more natural hydrograph will necessarily benefit salmon. In November 2002, the Independent Scientific Advisory Board (ISAB) was assigned the task of updating and clarifying its views on the benefits to salmon of flow augmentation. In its report issued on February 10, 2003, entitled Review of Flow Augmentation: Update and Clarification, ISAB noted as a preliminary matter that "many questions remain" regarding the "relationship between river flows and salmon production." In summarizing the present science on the issue, ISAB noted that "the benefit to salmon of . . . incremental adjustments [to flow] has not been well quantified." *Id.* at p. 2. ISAB then stated:

“A different perspective emerged from this latest review. We realize that the prevailing rationale for flow augmentation is inadequate. It is neither complete nor comprehensive. There is room for alternative explanations of data that have scientific justification and practical value for managing the hydrosystem for multiple uses including salmon recovery. The prevailing flow-augmentation paradigm, which asserts that in-river smolt survival will be proportionally enhanced by any amount of added water, is no longer supportable. It does not agree with information now available.”

*Id.* at pp. 2-3.

“NWF has failed to establish that the best available science supports its proposal for augmented flow during the summer 2006 migration period. This, coupled with the potential harm to other listed species, militates against granting the extraordinary relief NWF requests by injunction proceeding.”

4. Conclusion.

“I deny NWF's request for an injunction to augment flow during the summer of 2006.”

**ISAB Findings**

The biological objective of drafting Libby and Hungry Horse reservoirs during the summer for anadromous fish is based in a hypothesis that increased flows in the Lower Columbia will provide biological survival benefits for listed Snake

River fall chinook. This issue has been debated for over ten years. Last years operations at Libby and Horse failed to implement the Council's Mainstem Recommendations due to concerns over ongoing Biop litigation and objections by CRITFC and the US Fish and Wildlife Service.

The region has struggled with the tradeoffs between operations that will provide benefits to resident fish in Montana and the hypothesized benefits for Snake River fall chinook in the Lower Columbia during the summer. In response to the considerable scientific discussion and debate about the possible affects on resident and anadromous fish NOAA requested that the Council host, and the Independent Scientific Advisory Board (ISAB) conduct, a River Operations/Flow Symposium. This Symposium was held in Portland on November 9 & 10, 2004. The following is a summary of the ISAB's scientific findings with respect to implementation of the Council's Mainstem Recommendation for Libby and Horse operations that are reflected in this SOR.

“Although summer-migrating juvenile fall Chinook salmon from the Snake River have been the main concern for downstream effects of the Montana proposal, there is new information about this stock's life history. Some juveniles are holding over their first winter in fresh water and emigrating as yearlings in the spring (termed the “reservoir” life history, also referred to as the holdover life history). Importantly, a disproportionately large percentage of returning adults are originating from these holdovers... The intent of flow augmentation is to reduce mortality of smolts by speeding their migration to the ocean. With the recent findings of the large adult contribution from migrants exhibiting the reservoir life history, and also for PIT-tagged late fall migrants (NOAA Fisheries, unpublished data), the strategy of using flow augmentation to speed migration should be reassessed.”

“Because adults respond negatively to flow increases, the effects of these increases on them, not just on juveniles, need to be considered as well. No existing models seem adequate for evaluating the flow effects from the Montana proposal.”

“All indications are that the down-river effects of the shifts in flow associated with the Council's Mainstem Amendments of 2003 will be small... As a result, the Council's hypothesis that the effects on survival of salmonids in the lower Columbia River will be indiscernible is probably reasonable.”

“Without a grounding in actual measurements that involve these factors, it is difficult to see how operational changes at Hungry Horse and Libby in August and September can be translated into functionally significant changes in salmon migrations, especially fall Chinook salmon migrations in the lower river, or in any other downstream species.”

“The incremental effects of the Montana System Operations Request on the mid-Columbia and lower Columbia, however, are likely to be beneficial at certain times as well as detrimental at others because of the shifting of flows between months, rather than any consistently one-sided net change.”

“Using present estimates of both hydrology and biology, we conclude that the effects of the Mainstem Amendment and the Montana System Operations Request on salmonids downstream in the Columbia River are likely to be small.”

“Finding a practical and feasible experimental design is difficult because the effects of the Montana proposal are likely to be small, both in terms of water amounts delivered and the resulting effects, if any, on survival... The range of estimates now available, however, suggests a numerically low change in overall salmon survival, with uncertainty over direction.”

“For example, in late 2002, the Council staff compared estimates of fish survival derived from SIMPAS (version 9) and CRiSP (Council memoranda dated November 6 and December 2 from Bruce Suzumoto to Council members). For SIMPAS, 11 populations of listed and unlisted stocks were examined; six for CRiSP; High, medium, and low flow regimes were evaluated. Using SIMPAS, the estimated percentage change in survival for Montana operations compared to the BiOp flows were 0, 0.3, 0.2 (high summer flow), -0.7, 0.5, 0 (medium summer flow), and 0, 0.2, and -0.5 (low summer flow) for Snake River fall Chinook, Lower Columbia Chinook, and Hanford Reach fall Chinook, respectively; all less than 1%. The most comparable results from CRiSP showed in-river survivals of 0.035 and 0.021 (high flow), -0.068 and -0.050 (medium flow), and -0.083 and -0.049 (low flow) for Hanford Reach fall Chinook and Snake River subyearling Chinook, respectively; again, all estimates substantially less than 1%. Furthermore, “small” in this analysis ranges from an estimated loss of 7 fish in 1,000 to a gain of 5 fish in 1,000 using SIMPAS, whereas using CRiSP, there is an estimated loss of about 8 fish in 10,000 (less than 1 in 1,000) to a gain of 3.5 fish in 10,000 (less than 1 in 1,000). Although we are reluctant to place high confidence in either of these models, the estimated changes in survival are quantitatively low and of inconsistent sign.”

“Council staff estimated the 50-year-average change in flow at McNary Dam to be diminished by 8.3 kcfs in July and 5.6 kcfs in August, but increased by 0.9 kcfs in September. The largest of these estimates (-8.3 kcfs) would yield an estimated change in survival from McNary to John Day of 0.01 percent (1 fish in 10,000) using graphical analysis of the plot shown by Steve Smith of NOAA Fisheries.”

“The Council hypothesized in its Mainstem Amendments that certain modifications to current operations at Hungry Horse and Libby dams would significantly benefit resident fish without discernable adverse effects on the survival of juvenile and adult anadromous fish in the lower Columbia River. We conclude the following:

1. Resident fish and fisheries influenced locally by the Hungry Horse and Libby water-release situations may receive important biological benefits from the flow modifications, assuming they are carried out as planned. It is almost certain that the general productivity in the Montana reservoirs and in the immediate downstream reaches will benefit considerably. What are uncertain are the effects on the species of greatest concern (sturgeon and bull trout) when the increased productivity propagates through the community of predators, prey, and competitors. If the effects on these species are very large, they may be detected by future monitoring, but attribution of cause may still be confounded unless the experimental design alternates to provide years when the Montana System Operations Request is implemented and years when it is not.
2. Effects of the Council's Mainstem Amendment and resulting Montana operations proposal on the survival of juvenile and adult anadromous fish in the Columbia River below Chief Joseph Dam will probably be very small. The available data and analytical tools do not allow us to say whether the net effect will be positive or negative for fish present in the river in the August-September period. Other time periods were not addressed in the symposium. Based on the best information now available, the Council was likely justified in its hypothesis that the flow modifications at Hungry Horse and Libby dams outlined in its Mainstem Amendments would lead to effects on survival of juvenile salmonids in the mainstem Columbia River that will be too small to measure practically against both the measurement error itself and real background variation due to other causes.
3. Recognition of the holdover or "reservoir" life history pattern of one of the foremost stocks of concern, the ESA-listed Snake River fall Chinook, complicates assessment of this stock in relation to the flow proposal. Because further research on this life history pattern is so critically needed, it is important to implement monitoring systems that will make it possible to quantify the magnitude of holdover behavior and how that affects estimates of smolt survival and SAR, as well as to reveal what factors affect holdover behavior and overwintering survival in freshwater."

Last fall's Flow Symposium was not the first time that the ISAB was asked to review proposals to modify operations at Libby and Hungry Horse. In a report to the Council by the ISAB on the scientific justification for augmenting flows using limited reservoir storage volumes, the ISAB said:

"The prevailing flow-augmentation paradigm, which asserts that in-river smolt survival will be proportionally enhanced by any amount of added water, is no longer supportable. It does not agree with information now available."

However, arguments are also made that travel time is also a critical attribute of overall salmon survivals. With respect to the travel time argument the ISAB said:

“The paradigm that faster movement of smolts to the estuary and ocean is always favorable for survival needs to be evaluated. Most of the reach survival studies we reviewed make this assumption. Increased migration rate and survival in the studied reaches (primarily the lower Snake River) does not ensure survival in lower reaches. The fish have to spend their time somewhere and could experience increased survival rates, the same survival rates, or decreased survival rates.”

The ISAB also reviewed the latest in scientific research into the affects of flows on survivals of anadromous fish in the Mid-Columbia and Lower Columbia reaches where it found:

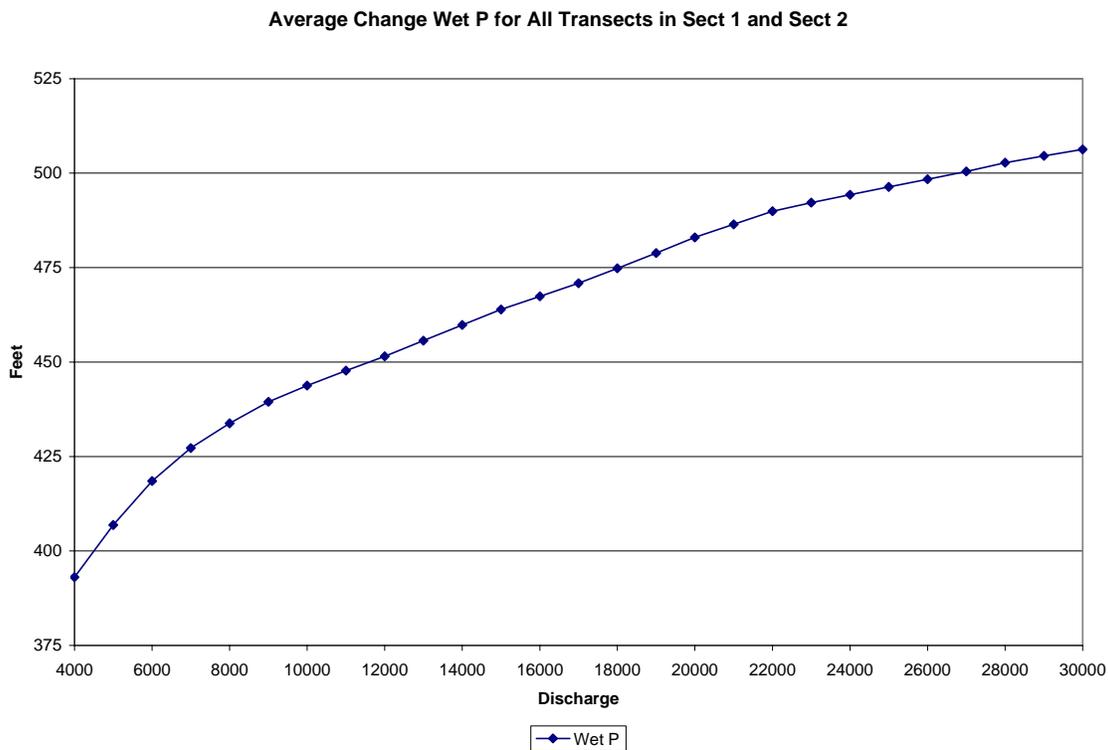
“Flow appears to be the most influential factor affecting migration speed of steelhead and sockeye; for yearling chinook no effect of flow on migration speed has been found (only level of smoltification affected migration speed); for subyearling chinook no environmental variable was found to affect migration speed in the mid-Columbia. Since 1998, PIT tag and radiotelemetry studies have produced limited data on the survival of yearling chinook. Data on other species is even more limited. The studies-to-date do not indicate any statistically significant effect of flow on survival of juvenile salmonids in the mid-Columbia Reach, other than in the Hanford Reach, where stable flows are the issue. Limited data are available for lower Columbia Reach. Low flows are likely to lead to residualization of steelhead.”

The ISAB also reviewed the status of research into the impact on resident fish of reservoir operations that have been dominated by attempting to meet summer flow objectives at McNary. With respect to the impact on resident fish in Montana the ISAB said:

“It is a well- established fact that storage reservoir drawdowns result in adverse effects on resident fish populations and their associated fisheries. In earlier reports we recommended that an effort be made to balance the needs of resident fishes upstream against those of juvenile salmon downstream. We identified the Rule Curves developed in Montana as being reasonable approaches to resolving difficult policy issues with biological implications. The subject of tradeoffs of benefits to salmon versus detriments to resident fishes is one of the subjects deserving high priority action by the Council.”

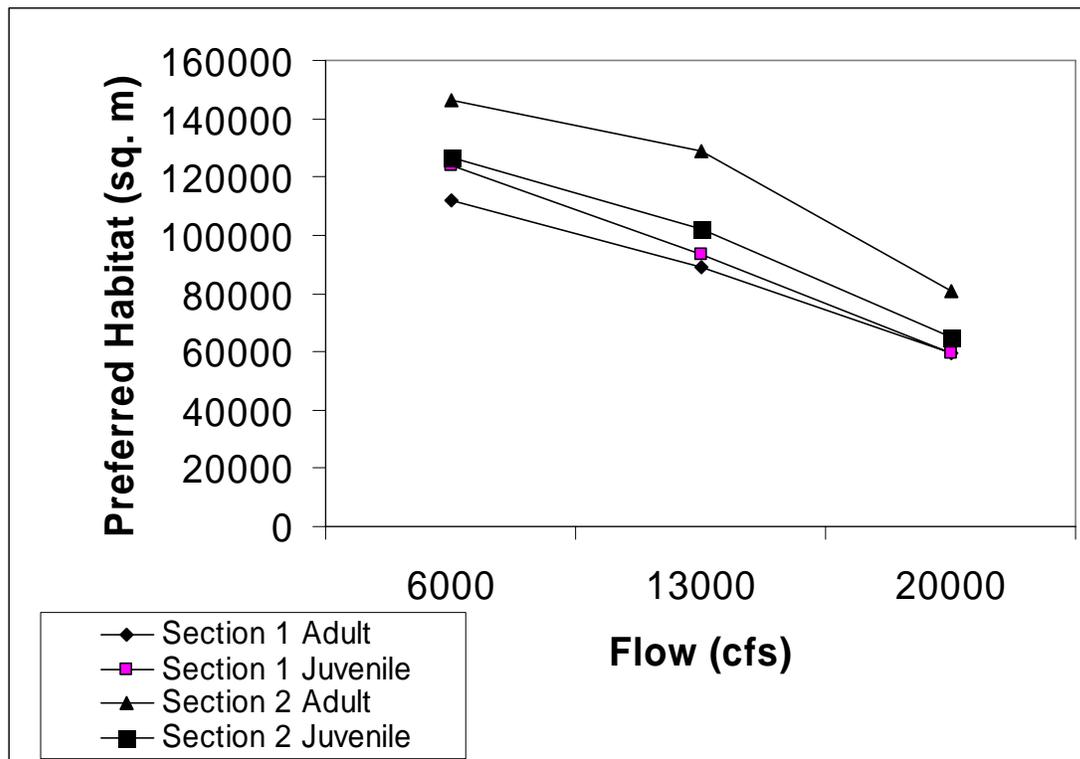
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## **SYSTEM OPERATIONAL REQUEST: NPT #2006-1 DRAFT**

**TO: Brigadier General Gregg F. Martin COE-NWD  
James D. Barton COE-Water Management  
Cathy Hlebechuk COE-RCC  
Witt Anderson COE-P  
Col. Thomas E. O'Donovan COE-Portland District  
LTC Randy L. Glaeser COE-Walla Walla District  
J. William McDonald USBR-Boise Regional Director  
Stephen J. Wright BPA-Administrator  
Steve Oliver BPA-PG-5**

**FROM: Nez Perce Tribe**

**DATE: May 30, 2006**

**SUBJECT: 2006 Dworshak Summer Operations**

### **General Framework**

Operate Dworshak during summer for temperature control and flow augmentation, shaping augmented flows to achieve the target temperature standard of 68F as measured at the Lower Granite tailrace. Limit cold water releases during the first half of July for rearing fall Chinook juveniles in the lower Clearwater River. After July 15, maintain continuous, evenly distributed discharges of 10 kcfs (full powerhouse capacity) to cool the Lower Snake. Provide discharges in excess of 10 kcfs, up to a maximum of 14 kcfs, as necessary to meet the target Lower Granite temperature standard, pursuant to actual in-season conditions. Achieve a target elevation of 1535 msl or higher by August 31 to preserve 200,000 acre-feet for September temperature/flow augmentation control as per the SRBA agreement. The management of 200,000 acre-feet (elevation 1535 to 1520 msl) will be determined by the Dworshak Board.<sup>1</sup> Achieve a target elevation of 1520 msl during September.

### **Monthly Criteria**

#### **June Operation**

- Refill Dworshak Reservoir to full pool (Elevation 1600 msl) as soon as possible (June 30 or earlier)

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<sup>1</sup> Dworshak Board created pursuant to Nez Perce SRBA Settlement Agreement (“Mediator’s Term Sheet” dated April 20, 2004) consisting of the Nez Perce Tribe (Chair), NOAA Fisheries, U.S. Army Corps of Engineers, Bonneville Power Administration and the State of Idaho.

## **July Operation**

- Maintain at full pool (pass inflows) through July 4 (45F).
- From July 5 –July 15<sup>th</sup>: increase discharge to 7 kcfs (45F). If temperatures at Lower Granite exceed 67F (19.4C), as measured in the tailrace, on a 24-hr rolling average, increase discharge to 10kcfs (powerhouse capacity) for as long as necessary to meet the Lower Granite temperature standard. (note Contingencies, below)
- July 16<sup>th</sup> –July 31: Increase flows to 10kcfs (43F) for temperature control/flow augmentation. If temperatures at Lower Granite exceed 67F (19.4C) on a 24-hr rolling average during this period, increase flows to 12kcfs for as long as necessary to meet the Lower Granite temperature standard. (note Contingencies, below)

## **August Operation**

- Continue to operate at 10kcfs (powerhouse capacity) for temperature control/flow augmentation. If temperatures at Lower Granite exceed 67F (19.4C) on a 24-hr rolling average during this period, increase flows to 12kcfs for as long as necessary to meet the Lower Granite temperature standard. (note Contingencies, below)
- Achieve target elevation of 1535 msl or higher by August 31 to preserve 200,000 acre-feet for September temperature/flow augmentation control as per the SRBA agreement.

## **September Operation**

- Shaping of the 200 kaf of September temperature control/flow augmentation water will be determined by the Dworshak Board. If the end of August elevation is higher than 1535, the amount of water between that elevation and elevation 1535 will be discharged based on in-season recommendations made by the Technical Management Team.

## **Contingencies**

- If water temperatures at Lower Granite, as measured in the tailrace, exceed 67 deg. F on a 24 hour rolling average and appear likely to exceed the standard (68 deg. F) based on weather and flow forecasts, Dworshak will provide additional flow above powerhouse capacity but not to exceed the total dissolved gas standard (approximately 14 kcfs)

## **Justification**

### *Fish Passage Timing*

Based on historic timing, migrations of yearling chinook salmon and steelhead through the Lower Snake system are essentially completed by July 1, and water management for temperature and flow focuses on subyearling fall chinook. (see figures for cumulative passage timing of yearling chinook and steelhead).

A presentation to the TMT in August 2005 reported that the Clearwater River sub-aggregate population of juvenile fall chinook population moved 1-1.5 months later than those of Snake River origin (Hesse 2005). Based on 1,918 were pit-tagged fish, the Clearwater component was about in the middle of their migration on August 10. Hesse indicated that passage of natural fall chinook salmon of Clearwater River origin would likely continue from August through next spring. In contrast the Snake stock migration appeared to be finished or nearly finished on August 10, 2005.

## Graphs (2)

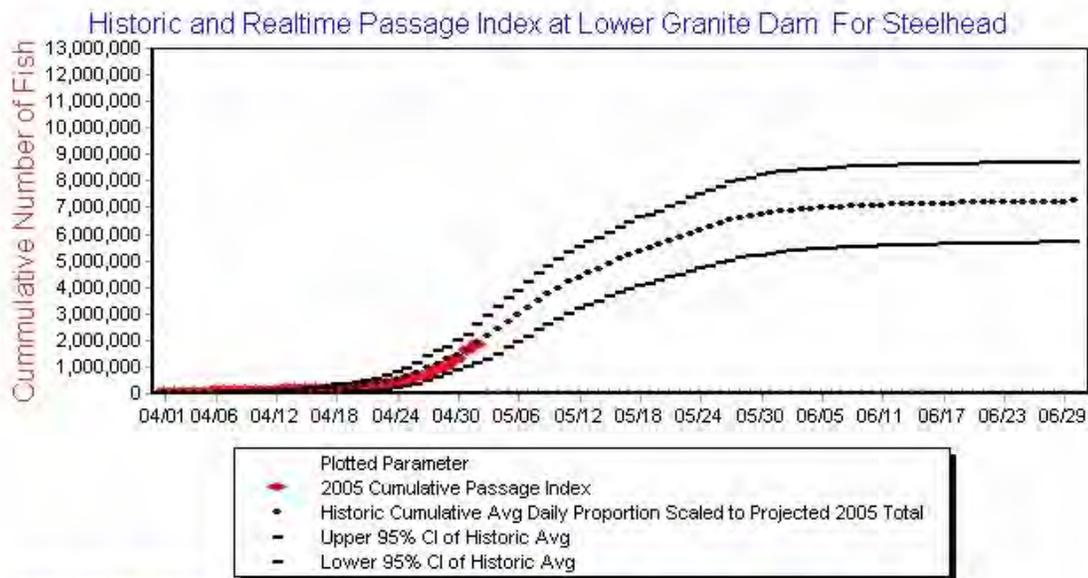
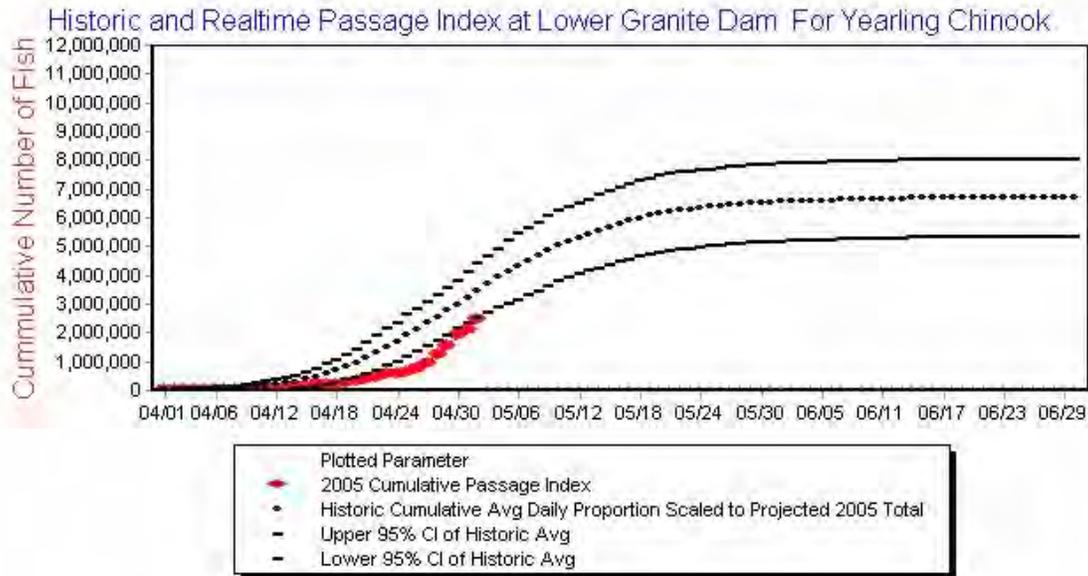
Historical passage timing and distribution data of Snake River origin fall chinook data show that 90% of the wild subyearling chinook pass Lower Granite dam by August 30 and 97% of hatchery sub-yearlings pass Lower Granite Dam by August 30. Historical data indicates that the Clearwater segment passes Lower Granite Dam later and has a more prolonged migration period, into September and later.

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## *Water Temperature*

An extensive literature review was compiled for the Environmental Protection Agency entitled, "A Review and Synthesis of Effects of Alterations to the Water Temperature Regime on Freshwater Life Stages of Salmonids with Special Reference to Chinook Salmon". This review establishes water temperature as an important factor in all life stages of salmon. The review documents the detrimental effects of elevated water temperatures on all life stages of salmon, both juvenile and adult. The literature review has identified a water temperature of 21°C as the incipient lethal temperature for adult salmon. The Washington State water quality standard for temperature in the mainstem Snake is 20°C. The maximum recommended water temperature in the NMFS BIOP at Lower Granite Dam is 20°C.

Additional temperature considerations include growth of wild fall chinook in the Lower Clearwater River and needs of the Dworshak National Fish Hatchery. Water temperature affects growth rate. Cold water releases from Dworshak Dam can slow juvenile growth and alter out migration timing. Arnsberg and Statler (1995) summarized temperature and growth/maturation relationships from various studies, including:



Historic daily proportions average of 1985-04. Curve scaled to projected 2005 index, using NOAA estimated collection no spill

- Water temperature is more than likely the single most important factor affecting fish growth (Piper et al. 1989).
- Unusual and unstable stream temperatures can lead to disease outbreaks in migrating fish, altered timing of migration, and accelerated or retarded maturation (Bjorn and Reiser, unpublished manuscript).
- Water temperature of 15.6 C appeared closest to the optimum for propagation of fall chinook fingerlings averaging between 1.38 and 8.94 grams. Weight gains were consistently greater at this temperature than at 10 or 12.7 C. Performance of fall chinook fingerlings at 18.3 OC was variable; however, some test groups had slightly better gains than fish reared in 15.6 C water. Chinook salmon may gain more even at temperatures around 20 C, if food resources are not a limiting factor. (Banks et al. 1971). Notably, Arnsberg et al. (1992) reported very low anadromous fish densities with an apparent abundance of food resources in the lower Clearwater River.

Clabough et al. (2006) concluded that management of Dworshak releases should account for the effects of the releases on adult salmonids as well as juveniles. Clabough et al. (2006) found that comparison of fish depth between Dworshak Dam release and non-release periods supported the hypothesis that individual fish used cool-water masses found at depth during release periods. Chinook salmon and steelhead modified their behavior, mainly depth of migration, to selectively swim through cooler water to ascend Lower Granite reservoir. Overall, these data support the hypothesis that upstream migrating adults use the cool water released from Dworshak Reservoir and that these releases reduce thermal stress during warm summer months. Adequately cool water conditions are key components during the upstream migration of adult salmonids. There is evidence in the literature that adult salmonids will slow or halt their migrations because of warm water conditions. Adult salmon encountering high water temperatures during migration can have reduced egg viability (CDWR 1988; Van der Kraak and Pankhurst 1996), and high temperatures have been associated with pre-spawn mortality in sockeye (Gilhousen 1990) and chinook salmon (Schreck et al. 1994; Pinson 2005). Continuous, uninterrupted passage up the Lower Snake River into the Clearwater River and near its mouth is beneficial to the early fall steelhead fishery in Idaho. Importantly, there are few potential thermal refuges in the lower Snake River (e.g. cold-water tributaries), highlighting the potential benefit of the Dworshak releases to summer- and fall-run adult salmon and steelhead.

Assuring adequate Dworshak cooling benefits distributed throughout the summer and into September is beneficial to spectrum of the downstream migrating fall chinook juveniles, adult summer chinook, adult fall chinook and adult steelhead.

### *Flows*

The BIOP summer flow objective for Lower Granite Dam in 2006 is 50 (?) kcfs. Migration conditions for wild subyearling Snake River fall chinook are improved by both

flow and temperature. Higher summer flows generally decrease temperature, depending on the proportion of cool Dworshak water to warmer Upper Snake water.

### *Other*

Additional potential benefits would be protection to adult anadromous salmonids provided by conservation enforcement. Through a Memorandum of Agreement among the Nez Perce Tribe and the Bonneville Power Administration, any power savings accrued through implementation of the plan would be shared among the Nez Perce Tribe, the Umatilla Tribe and the Columbia River Inter-Tribal Fish Commission. This proposal has been shared with policy representatives in the Policy Working Group of the FCRPS Biological Opinion Remand Process.

### *Summary*

The general framework and approach of the proposed operation is similar to that applied during 2005, with more explicit guidance for operations not to exceed full powerhouse capacity at Dworshak Dam (approximately 10 kcfs). The 2005 trigger mechanism approach to increase Dworshak discharges and/or decrease Dworshak outflow temperatures to avoid exceeding the Lower Granite tailrace temperature standard of 68F again applied in 2006.

# **COLUMBIA RIVER REGIONAL FORUM**

## **TECHNICAL MANAGEMENT TEAM**

May 31, 2006 Meeting

### **FACILITATOR'S SUMMARY NOTES ON FUTURE ACTIONS**

Facilitator: Donna Silverberg

Notes: Robin Harkless

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.

#### **Priest Rapids Update**

Russell Langshaw, Grant County PUD, presented Priest Rapids operations for the weeks of May 15-28. He also included a graph showing daily delta and flow bands. An exceedance occurred on May 17 due to emergency flood control measures taken upstream, and on May 22, the operation began below the set minimum 150 kcfs due to prior weekend operations. 200 temperature units are needed to reach the end of protection flows. Russell suggested that protection flows would end in the next 7-10 days.

#### **Dworshak Taft Line Outage**

BPA is planning a line outage at Dworshak from June 12-30 to allow for necessary maintenance of the line. Mike Viles, BPA, provided information to TMT regarding the outage, explaining that the dates were chosen to coincide with thermal outages and other reasons to minimize potential problems and impacts to the system. Repairs will be done to spacer dampers, damaged conductor, damaged insulators and tower hardware. BPA has given spacer dampers a high priority for repair. BPA can put the line back in service with 5 hours advance notice if emergency conditions arise but prefer not to delay the work. Additional outages are planned for Fall 2006, June 2007 and Fall 2007. Studies have been done on the impacts to the hydro system; Mike noted that Hungry Horse will be most potentially affected, Dworshak may be affected and Libby will be least affected by the planned outage.

Don Faulkner, COE, offered that of the 2550 megawatts that will be available during the line outage, half of the power will go to PUD's. Exact numbers for transmission capacity will not be known until just prior to the operations. BPA, the COE, and the BOR have been planning for the outage and will do their best to avoid problems.

#### **Lower Granite Research**

Tim Wick, Walla Walla COE, reported that the USGS preferred schedule for the start of an RSW test at Lower Granite is June 8 instead of June 21. The date and amount of spill would be slightly different than that written into the Spill Implementation Plan. Two spill patterns would be used – flat and bulk. The date was chosen based on the best availability of fish.

**Next Steps:** While there was general support for the test, the amount of spill remained a question. TMT members agreed to discuss internally whether there is technical and policy support for the proposed alternative operation. TMT will hold a conference call on Friday, June 2, at 11:00 am to revisit the issue.

**ACTION:** If SRWG is also on board, the test will be included in the monthly report to the court. The facilitation team will contact absent members of TMT (Idaho, Washington, Montana, and BOR) to make certain they have the opportunity to respond.

### **Dworshak Summer Operations: SOR NPT-2006-1**

Dave Statler, Nez Perce, began his presentation of the Nez Perce SOR for Dworshak operations by setting the context that Dworshak summer operations are being discussed and addressed in various forums and processes including TMT, BiOp Remand policy work group, a potential MOA from BPA, Nez Perce agreement group, Idaho Operations Board, NPCC Mainstem Amendments, etc.

Generally, the SOR recommends that Dworshak be operated during the summer for temperature control and flow augmentation. Shape flows to meet 68° F at Lower Granite tailwater and limit cold water releases during the first half of July for rearing Fall Chinook juveniles in the Clearwater. After July 15, maintain 10 kcfs discharges to cool the Lower Snake and increase up to 14 kcfs as necessary to maintain temperature standards. Target elevation 1535' or higher by the end of August and 1520' by the end of September. Manage 200 kaf from the Nez Perce agreement per guidance from the Dworshak Board.

### **Questions and Comments from TMT:**

- Is temperature the overriding priority? Yes, more so than specific discharges proposed for July.
- If there is a technical dispute, which process should address it? 200 kaf per the Nez Perce agreement (elevation 1525-1530') will be addressed in the development of the Dworshak Plan by the Dworshak Board chaired by Nez Perce, and should not be debated through TMT. Other technical disputes could be addressed by TMT.
- The July 15 start date was chosen based on when most Clearwater subyearling smolts have grown to size and are moving through the system, per previous years' observations.
- Kyle Dittmer, CRITFC, reported that Ben Cope, EPA, will run weather case flow scenarios and will share them with TMT at the next TMT meeting.
- Suggestion: in the general framework change 'target' 68°F to 'avoid exceeding' as written in the summary of the SOR.
- Is there a contingency for operations prior to July 15? With the planned line outage and other pertinent factors, this may need to be considered. The COE suggested that Dworshak will likely not be impacted by the planned taft line outage described above. Generation would follow a similar pattern as it normally does, starting higher and gradually reducing to a smooth refill. The action agencies will work to avoid fluctuations during the repair work.

- The request appears very similar to usual BiOp operations; why develop the SOR? The difference is that the SOR is more prescriptive to be conservative earlier in July with cool water to save for later in the season.
- Suggestion: Provide a written summary of data on the Clearwater fish to clarify conditions supporting the recommendation for July operations.
- The SOR appears to reduce flexibility for shaping flows during the migration in July, and only focus on temperatures. Both should be considered.

**Next Steps:** Dave Statler will make revisions to the proposal based on today's discussion and any follow-up suggestions shared, and submit a final SOR at the next TMT meeting.

### **Libby/Hungry Horse Operations: SOR 2006-MT-1**

Jim Litchfield, Montana, shared a draft SOR for summer operations at Libby and Hungry Horse, which he noted is the NPCC's Mainstem recommendation, similar to past years' proposals. The key difference this year, with higher flows, is the recommended draft in September at both projects to 10' from full instead of 20' from full. Also included were preliminary results of a BPA hydropower regulation study on Montana's proposed operation showing a 3% reduction in flows at McNary during July and August, and language from Judge Redden's findings relative to the Plaintiff's proposal to increase flow augmentation, stating that there was not measurable support that increases will enhance in-river smolt survival. Jim extended appreciation to TMT for efforts in past years to implement the recommended operation – particularly 2004 which he described as successful.

Finally, he shared that the Montana proposal is also being discussed through the BiOp Remand policy work group, and that he or Brian Marotz, Montana Fish Wildlife and Parks, could join discussions in other forums, e.g. FPAC, upon request. If a technical and policy consensus were reached on the recommendation, it would need to go through formal filing with the court.

TMT comment: The ISAB interpretation that there would be no measurable differences in smolt survival with flow differences may not be true this year, given that higher flows may result in greater than 3% reductions in the lower river. There is currently very little data on in-river smolt survival. Temperature modeling in the lower river to quantify affects from changes in flows is lacking as well.

Jim added that modeling of the proposed operation and impacts to spring augmentation flows predict that Hungry Horse would meet its target elevation in 4 additional years out of 50.

**Next Steps:** Additional questions and comments will be shared with Jim about the recommendation. TMT will discuss the SOR further at the next TMT meeting.

### **Balance Priest Rapids Flow Objectives/Grand Coulee Refill**

The salmon managers were asked to consider their preference for Priest Rapids flow objectives and Grand Coulee refill operations. Given this year's high flow year, the salmon managers did not feel this would be an issue. They discussed this at FPAC, and generally, they prefer higher flows from Priest Rapids later in June (but there was not a strong opinion either way).

## **Operations Review**

### *Reservoirs:*

Lower Granite Navigation – Cathy Hlebechuk, COE, shared that two spill reductions occurred over the last two weeks for towboat operations, one to zero and one a slight decrease. There have been additional reductions for fish barges. John Wellschlager, BPA, noted that if flow had been unregulated last year, there would have been 925 kcfs in the system.

Operations – Grand Coulee was at elevation 1271.6’ and filling. Hungry Horse was at elevation 3543.7’ and filling. Priest Rapids flows averaged 230-275 kcfs. Libby was at elevation 2449.6’, operating at full powerhouse out and 32 kcfs in. Bonners Ferry elevation reached 1763.65’, very close to flood control. Dworshak was at elevation 1581.4’ and filling. Lower Granite flow objectives averaged 132.5 kcfs, Priest Rapids averaged 177.5 kcfs, and McNary averaged 319.3 kcfs. There will be an update from the sturgeon group on results of this year’s pulse at the next TMT meeting.

Flow Augmentation Volumes – Cathy shared graphs (attached to today’s TMT agenda) of ESP flow augmentation forecasts for Libby, Dworshak, Hungry Horse, Priest Rapids and Grand Coulee.

### *Fish:*

Paul Wagner, NOAA, shared that adult numbers exceeded the pre-season forecast. Yearling chinook numbers peaked at Lower Granite, evened out at Little Goose and were increasing at Columbia River projects. The steelhead and sockeye runs are reaching their tail end; overall this was a good migration year.

### *Power System:*

John Day T-1 Outage – Testing is slightly ahead of schedule. So far, testers have found that just the bushings were damaged, which is good news. The transformer is expected to be back up as early as September.

### *Water Quality:*

Jim Adams, COE, reported that there have been several TDG exceedances in the system, with a high of 132.9% at the Lower Granite tailwater at one point. TDG levels are now tapering. FPAC was briefed on this issue at their meeting earlier this week and Jim will continue to provide reports to FPAC and TMT. Adult gas bubble trauma had not been reported lately.

## **TMT Meeting Schedule: NOTE NEW DATE**

*Monday, June 12* agenda items include:

- Libby/Hungry Horse SOR (Montana)
- Dworshak Modeling (EPA/CRITFC)
- Dworshak Summer Operations SOR (Nez Perce)
- 2006 Sturgeon Operations Review (USFWS)
- Permit Process – Marine Mammals (Oregon and Washington)
- Adult Population Analysis of Chum – Error bounds (Oregon)

- System Operations Review – All

# Technical Management Team Meeting

May 31, 2006

## **1. Greetings and Introductions.**

Donna Silverberg welcomed everyone to today's Technical Management Team meeting, which was chaired by Cathy Hlebechuk. The following is a summary (not a verbatim transcript) of the topics discussed and decisions made at this meeting. Anyone with questions or comments about these notes should contact Hlebechuk at 503-808-3936.

## **2. Priest Rapids Update.**

Russell Langshaw provided an update on recent Priest Rapids fish protection operations. He noted that the flow band was exceeded on May 17 due to flood control operations; it was also exceeded on May 19 and May 26-29.

We're currently at around 1,200 temperature units, with about 200 more TUs to accumulate before this year's program ends, Langshaw said. We should reach that level in a week to 10 days.

## **2. Dworshak – Taft Line Outage.**

Mike Viles said BPA will be taking the Dworshak-Taft transmission line out of service later this month. The plan from June 12-30 is a daily outage from 6 am to 8 pm. This is to do with the West of Hatwai transmission path, which loads most heavily at night, he said. As load goes down, and you get into an excess situation, that generally flows from east to west. We wanted to do this in June because there are some planned unit outages scheduled for that month, on the thermal plants east of the Cascades. One other benefit is that this line outage has been hard to get historically, before we had the Coulee-Bell transmission line, which now provides a parallel line, Viles said. The outage will limit transmission to 2550 MW, about down from 4,000 MW if all lines were in service. Without Coulee-Bell, if you took this line out of service, capacity went down to about 1,100 MW. This is part of a 12-year project to replace all of the spacer dampers on this line, he explained; there are also many insulators that need to be replaced. Some of the connecting parts are basically corroding away, and need to be replaced on 97 towers. The goal is to reduce the risk of unplanned outages.

We're limited as to when we can conduct this work, from June to some time in October, said Viles; there is no way to completely eliminate the risk of impacting fish operations, but we're attempting to minimize that risk. There is a potential that transmission capability across the West of Hatwai path could impose generation restrictions. We would prefer to do all of this outage work in September, but there are simply too many lines that need to be done for us to do all of this work in September. A total of six crews will be working on this particular repair, he said, so we're working as fast as we can.

What's the bottom line impact to flows? Kyle Dittmer asked. That's a good question, but the transmission capability will go down from about 4,000 MW to 2,550 MW, so there will be some impact, Viles replied. We can get off the line within five hours if this limitation is having an unacceptable impact to flows, Viles added. Two more outages are planned for the June 2007 period, he added. We realize that this is a hot topic, because of the potential to limit generation and flow, but this really is critical work to improve transmission system reliability, Viles said.

The group discussed the potential impacts of this planned outage on flows, transmission and generation. We're expecting, during the outage, to have to reduce Hungry Horse outflow by about 3 Kcfs at Hungry Horse, Tony Norris said; we've had to increase discharge because we got some additional snow in that area last weekend. Don Faulkner said Libby is expected to operate at full load during the outage (600 MW), while generation will be restricted to project minimum (125 MW) at Hungry Horse. Dworshak will be releasing about 3 kcfs, but Albeni Falls may have to go to zero generation. Everyone here knows Montana's concerns, said Jim Litchfield – we want to avoid any spill at Libby or Hungry Horse. That's why we're ramping up Hungry Horse discharge now – to move some of that water out of there, Norris replied.

### ***3. Lower Granite Summer Research.***

Tim Wick said he had asked the USGS for their preferred schedule for the summer RSW test at Lower Granite; they are asking for a test that begins June 8. The summer operation at Lower Granite is scheduled to start about June 20; the June 8 start would result in a change. The summer schedule calls for 18 Kcfs spill; the test calls for 19 Kcfs spill. We would, in other words, be starting the summer operation 12 days early at Lower Granite, Wick said. We would therefore wind up with 1 Kcfs less spill for the last 12 days of the spring period, and a little more spill for the summer period. I wanted to make sure no one had a problem with what we want to do there, Wicks said.

The scheduled research is a radio-telemetry study with two spill treatments – flat spill, and bulk spill a couple of bays over from the RSW, he explained – under both treatments, the RSW would be operating. It's a different pattern than the one we used last year, which included RSW operation plus regular training spill, and RSW only. In

response to a question, Wick said the timing of the test is driven by the ability to obtain fish for tagging, and the desire to conduct the test while the bulk of the run is passing.

How will this impact the BGS test? Bernard Platt asked. The BGS test is now complete, so there will be no impact, Wick replied. In response to another question, Wick said the test plan was coordinated with the SRWG, but the timing of the test was not.

It was agreed that the TMT membership will think about this proposed change in operation and discuss any concerns they have with the Corps by this Friday, June 2, because of the need to coordinate any change in spill operations with the other plaintiffs and with Judge Redden. It was agreed that, if there are strong objections on the part of the salmon managers, a conference call may be needed this Friday.

#### ***4. Dworshak Summer Operations – Nez Perce SOR.***

Dave Statler described SOR NPT 2006-1. This SOR, submitted yesterday, requests the following specific operations:

- Operate Dworshak during the summer for temperature control and flow augmentation, shaping augmented flows to achieve the target temperature standard of 68 degrees F as measured at the Lower Granite tailrace. Limit cold water releases during the first half of July for rearing fall chinook juveniles in the Lower Clearwater River. After July 15, maintain continuous, evenly distributed discharges of 10 Kcfs (full powerhouse capacity) to cool the Lower Snake. Provide discharges in excess of 10 Kcfs, up to a maximum of 14 Kcfs, as necessary to meet the target Lower Granite temperature standard, pursuant to actual in-season conditions. Achieve a target elevation of 1535 msl or higher by August 31 to preserve 200 kaf for September temperature/flow augmentation control as per the SRBA agreement. The management of 200 kaf (elevation 1535 to 1520 msl) will be determined by the Dworshak Board. Achieve a target elevation of 1520 msl during September.

The full text of this SOR is available via hot-link from today's agenda on the TMT homepage; please refer to this document for additional details.

The group devoted a brief discussion to the Nez Perce SOR, offering a few clarifying questions and comments. Some of these concerns had to do with the somewhat cautious approach advocated by the tribe, as opposed to the more aggressive, "get ahead of the temperature curve" approach the TMT has used in some past years. Statler replied that the approach advocated in this SOR is actually quite similar to the actions that have been implemented in past years. And how would any disputes be addressed? Paul Wagner asked. By someone other than me, Statler replied. Other TMT participants expressed concern about the fact that the Nez Perce SOR focuses on temperature control, and does not place as much emphasis on the flow augmentation aspect of Dworshak summer operations.

Kyle Dittmer said he is working with Ben Cope to work up some temperature model runs, based on various flow and weather scenarios; Dittmer said he hopes to have the results of that modeling available for discussion at the next TMT meeting. Silverberg said that, given the late arrival of this SOR, and the fact that there is still some time before the operation would begin, she will not ask the TMT to make a recommendation on the Nez Perce SOR at today's meeting. It was agreed to revisit this topic at the June 14 TMT meeting.

### ***5. Libby Operations – Montana SOR.***

Jim Litchfield provided an overview of SOR 2006-MT-1, submitted prior to today's meeting. This SOR requests the following specific operations:

Hungry Horse

- Maintain minimum in-stream flows for bull trout at Columbia Falls and in

- the river below Hungry Horse Dam
- Attempt to refill by June 30 while avoiding the risk of spill through filling the project too quickly.
- In late June, reclamation will estimate a flat flow from Hungry Horse for the July-September period. This flow is to be designed to draft Hungry Horse to 10 feet from full by September 30. It may be necessary to adjust flows upward or downward in order to achieve the target elevation; if so, project ramp rates should be followed to achieve a stable aquatic environment below the dam.
- Attempt to provide stable or, if necessary, slowly declining flows at Columba Falls during the draft.

#### Libby

- Following the May-June operation for sturgeon, the Corps will estimate a flat flow designed to draft Libby to 10 feet from full by September 30.
- The Corps should attempt to refill Libby, while avoiding the risk of spill through filling the reservoir too quickly.
- The Corps, in consultation with the State of Montana, will monitor Libby outflow throughout the summer to achieve a stable weekly average flow. It may be necessary to adjust flows upward or downward in order to achieve the target elevation; if so, project ramp rates should be followed to achieve a stable aquatic environment below the dam.
- Operate to provide at least minimum bull trout flows through September (USFWS BiOp)
- Provide even or gradually declining flows through the summer period (avoid a double peak).
- Investigate the possibility of a storage exchange with Canada to further reduce the need for reservoir drafts from Libby.

Litchfield thanked the Corps and the other action agencies for their willingness to work with Montana to fine-tune the Libby and Hungry Horse operations in past years. He said the overall goal of this SOR is to provide optimal conditions for resident fish in Montana while minimizing any impacts on anadromous fish downstream. He estimated that the flat flow necessary to achieve elevation 2449 at Libby by September 30 would be about 11.8 Kcfs, based on the most recent runoff volume forecasts for that basin. He noted that this is expected to result in an approximately 6 Kcfs – about 3 percent of total river flow – reduction in flows at McNary Dam during July and August.

Litchfield said he is not seeking a decision at today's meeting; there is still some time before implementation of the operations requested in this SOR would need to begin. Given the remand and water conditions this year, 2006 is a somewhat unusual year, operationally, he said; Montana would very much like to see the Council's recommended Montana operation fully implemented this year.

Litchfield invited anyone with question, comments or concerns about the Montana SOR to contact him directly.

In response to a question, Litchfield said that, given the ongoing remand process, if this SOR is implemented, there will need to be a significant consensus among the parties to the litigation, followed by a filing with the court.

The group devoted a few minutes of discussion to this SOR, offering a series of clarifying questions, comments and concerns. Wagner noted that one issue that has frustrated the ISAB in its efforts to evaluate the effects of the Montana operation is the lack of water temperature modeling information for the lower river. That would be relatively simple to obtain, because it's a physical measurement, Wagner observed. Hlebechuk noted that, previously, Brian Merotz had said that a flat 9 Kcfs outflow from Libby produces optimal in-river conditions; this SOR requests flows 2.8 Kcfs higher. Litchfield replied that the flows requested are within the range of flows that will produce good in-river conditions in Montana. Ultimately, it was agreed to revisit the Montana SOR at the next TMT meeting.

#### ***6. Balancing Priest Rapids Operations with Grand Coulee Refill.***

Russ Kiefer said the salmon managers did discuss this issue briefly at yesterday's FPAC meeting; it was agreed that this is unlikely to be a difficult decision, given water conditions this year, because flows will likely be high enough to accommodate both Grand Coulee refill and adequate flows at Priest Rapids. The salmon managers would prefer that, if it comes to a choice, they would prefer higher Priest Rapids flows later, rather than earlier, in June.

#### ***7. Marine Mammal Permit Update.***

This topic was not addressed at today' meeting.

#### ***8. Error Bounds on Chum Counts.***

This topic was not addressed at today's meeting.

#### ***9. Operations Review.***

Hlebechuk said that, since the last TMT meeting, there have been only two spill reductions to accommodate navigation at Lower Granite. Wellschlager touched on flood control, noting that, last week, if it wasn't for the FCRPS, the unregulated flow in the Lower Columbia would have been 920 Kcfs. It's worth noting that there are benefits to the system, Wellschlager said.

The Corps noted that updated flow augmentation graphs are now available for Libby, Hungry Horse and Dworshak; this information is available via hot-link from today's agenda on the TMT homepage.

Reclamation said Grand Coulee is currently at elevation 1271.6 feet and filling. 3543.7 at Hungry Horse, releasing 4 Kcfs, going up to 5 Kcfs later today. the project is expected to refill this year. Priest Rapids flows have been 235-270 Kcfs recently. Libby is at 2449.6 feet, about 9 feet from full, with inflows of 32 Kcfs, down from 72 Kcfs a few days ago. The project is releasing full powerhouse discharge. Dworshak is at 1581.4 feet, 18.6 feet from full and filling slowly. Since April 3, the average flow at Lower Granite has been 132.5 Kcfs, at Priest Rapids, since April 10, 177.5 Kcfs; at McNary 319.3 Kcfs. We're basically in a flood control operation right now, and slowly filling the projects, Hlebechuk said.

It was noted that no sturgeon spawning has been observed to date in the Kootenai, despite the ongoing sturgeon operation at Libby; the problem appears to be the males. It was agreed that a report from the sturgeon managers at a future TMT meeting would be informative.

Wagner reported that the adult spring chinook count to date is 96,000 fish at Bonneville, in excess of the pre-season forecast, but in close congruence with the new model developed by the NMFS Science Center, which predicted 95,000 adults this year. Moving on to juveniles, Wagner said yearling chinook indices are now declining in the Lower Snake, from 83,000 fish per day on May 17 to fewer than 10,000 fish per day currently. Most of the action, currently, is in subyearling chinook, where the Lower Snake counts continue to be strong. The juvenile steelhead migration is now at the tail end of the run, as is the sockeye run, Wagner said. Overall, it's been a good outmigration year, he said; conditions were generally very good.

Wellschlager said there are no power system problems to report at this time. Faulkner said it appears that only the initial set of bushings were damaged in the T1 outage; repairs could be completed as soon as late July, if that is the case.

Jim Adams updated the group on the current water quality situation, noting that gas levels remain high throughout the system. Since May 17, the river has been pretty well gassed-up, he said; TDG levels hit 132.9% in the Lower Granite tailwater on May 21, but have since declined.

#### ***10. Next TMT Meeting Date.***

The next Technical Management Team meeting was set for Monday, June 12. Meeting summary prepared by Jeff Kuechle, BPA contractor. (3.5 hours)

#### **Technical Management Team Meeting Participants**

**May 31, 2006**

<b>Name</b>	<b>Affiliation</b>
Donna Silverberg	Facilitation Team
Jim Litchfield	Montana
Cathy Hlebechuk	COE
Tony Norris	USBR
Paul Wagner	NOAAF
David Wills	USFS
John Wellschlager	BPA
Kyle Dittmer	CRITFC
Russ Kiefer	IDFG
Robin Harkless	Facilitation Team
Dave Statler	NPT
Dan Spear	BPA
Tim Heizenrater	PPM
Rudd Turner	COE
Russ George	WMCI
Ruth Burris	PGE
Mike Viles	COE
Don Faulkner	COE
Greg Haller	Montana
Bernard Klatte	
Judi Danielson	

# TECHNICAL MANAGEMENT TEAM

<b>BOR :</b>	<i>Tony Norris / John Roache</i>	<b>BPA :</b>	<i>John Wellschlager / Scott Bettin</i>
<b>NOAA-F:</b>	<i>Paul Wagner</i>	<b>USFWS :</b>	<i>David Wills / Steve Haeseker</i>
<b>OR :</b>	<i>Rick Kruger / Ron Boyce</i>	<b>ID :</b>	<i>Russ Kiefer</i>
<b>WA :</b>	<i>Cindy LeFleur</i>	<b>MT :</b>	<i>Jim Litchfield</i>
<b>COE:</b> <i>Cindy Henriksen / Cathy Hlebechuk</i>			

## TMT CONFERENCE CALL

**Friday June 2, 2006, 1100 - 1200 hours**

**1125 N.W. Couch Street, Suite 4A34  
Portland, Oregon 97208**

**Conference call line: 503-808-5190**

**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 Donna Silverberg with any issues or concerns they would like to see addressed.  
Please e-mail her at [dsilverberg@cnnm.net](mailto:dsilverberg@cnnm.net) or call her at (503) 248-4703.*

## AGENDA

1. Lower Granite summer operations spill study - Tim Wik, Walla Walla.

*Questions about the meeting may be referred to Cathy Hlebechuk at (503) 808-3942, or Cindy Henriksen at (503) 808-3945*

# COLUMBIA RIVER REGIONAL FORUM

## TECHNICAL MANAGEMENT TEAM

June 2, 2006 Meeting

### FACILITATOR'S SUMMARY NOTES ON FUTURE ACTIONS

Facilitator: Donna Silverberg

Notes: Robin Harkless

6/2 Conference Call UPDATE: TMT reviewed information sent via email from Cathy Hlebechuk regarding spill patterns and volumes: 'Spill discharge is the same for both treatments. The spill discharge through 21 June is 20 Kcfs. The spill discharge for the rest of the summer is 18 Kcfs. The spill discharge and timing matches the Spill Implementation Plan. The proposal is to begin the alternating treatments on 8 June not 21 June: no other change in the Spill Implementation Plan.'

The reason for the change in test date was to take advantage of fish numbers passing now and promote a better test. The test was for egress conditions of the dam, taking normal spring spill and adding '4' step on June 8. The COE has been coordinating with both SRWG and TMT on this. TMT members present responded:

- NOAA – Does not see this as a major or worrisome change. Supports the test/change.
- USFWS – Supports.
- Oregon – Supports.
- BPA – Supports.
- COE – Supports.

For Salmon Managers not on the conference call, an e-mail was sent - to Jim Litchfield ( Montana rep), Cindy Lefluer (Washington rep), Russ Kiefer (Idaho rep) and Tony Norris (BOR rep). Litchfield, Kiefer and Norris responded they support the change. Lefleur's e-mail came back saying she was gone until June 15. In addition, SWRG did not voice any objections to the change.

## Technical Management Team Conference Call

June 2, 2006

### ***1. Greetings and Introductions.***

Today's Technical Management Team conference call was chaired by Cathy Hlebechuk and facilitated by Donna Silverberg. The following is a summary (not a verbatim transcript) of the topics discussed and decisions made at this meeting. Anyone with questions or comments about these notes should contact Hlebechuk at 503-808-

3945.

## **2. Lower Granite Summer Research Operations.**

Bern Klatte prefaced this agenda item by explaining that the researchers are seeing earlier fish numbers than expected, and they want to jump on that now and get the study going earlier than proposed – originally, the study was going to start on June 21. The question is, do we continue to spill 20 Kcfs until the 21<sup>st</sup>, or go to 18 Kcfs spill now? Paul Wagner observed. We need to coordinate this with the region, because it is a slight change to the court-ordered spill, Klatte said, because there are fish available now. They would be changing the spill pattern for half of the study period ending June 21, he said, and starting the summer spill treatment earlier. According to the Fish Passage Plan, that change would need to be coordinated through TMT and SRWG. The SRWG has been notified, and will provide a response by Monday. Wagner said NOAA Fisheries is fine with this change.

So we would have slightly less spill during the test period? Rick Kruger asked – that seems like a very minor change. It's not a big deal, Wagner replied – this proposal modifies the proposed pattern to add another stop in Bay 4, which would make the spill volume 20 Kcfs rather than 18 Kcfs. It's a very minor tweak, Wagner said. The group devoted a few minutes of discussion to the details of the spill pattern that would be implemented under this proposal. Basically, we're looking at egress conditions, Klatt said; the theory is that bulk spill will provide better egress conditions. The spill volume is essentially the same, he said – it's just the pattern that's different.

David Wills said the Fish and Wildlife Service is supportive of this change in operation. Kruger said Oregon is OK with the change as well, but said that, if any problems occur, he will notify the SRWG by Monday. Scott Bettin said BPA has no objection to the proposed change in spill operations; the Corps agreed.

If the consensus is to go ahead with this, and the SRWG is also in agreement, we'll make it part of our monthly report to the court, Hlebechuk said. We will email Cindy LeFleur and Russ Kiefer, communicating the TMT's recommendation, Silverberg said.

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<b>Name</b>	<b>Affiliation</b>
-------------	--------------------

Scott Bettin	BPA
Dan Spear	BPA
Richelle Beck	D. Rohr @ Associates
Paul Wagner	NOAAF
Cathy Hlebechuk	COE
Tony Norris	USBR
Donna Silverberg	Facilitation Team
Rick Kruger	ODFW
Bern Klatte	COE

# COLUMBIA RIVER REGIONAL FORUM

## TECHNICAL MANAGEMENT TEAM

June 2, 2006 Meeting

### FACILITATOR'S SUMMARY NOTES ON FUTURE ACTIONS

Facilitator: Donna Silverberg

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# TECHNICAL MANAGEMENT TEAM

<b>BOR :</b>	<i>Tony Norris / John Roache</i>	<b>BPA :</b>	<i>John Wellschlager / Scott Bettin</i>
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<b>WA :</b>	<i>Cindy LeFleur</i>	<b>MT :</b>	<i>Jim Litchfield</i>

**COE:** *Cindy Henriksen / Cathy Hlebechuk*

## TMT MEETING

**Monday June 12, 2006, 1000 - 1200 hours**

**NOTE: DIFFERENT LOCATION, START TIME AND PHONE NUMBER FOR THIS MEETING ONLY**

**NOAA Fisheries  
Mt. St. Helens Room, 10th floor (check in on 11th floor first)  
1201 N.E. Lloyd Blvd  
Portland, Oregon  
Conference call line: 503-808-5198 Pass code: 3295**

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Please MUTE your Phone**

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

## AGENDA

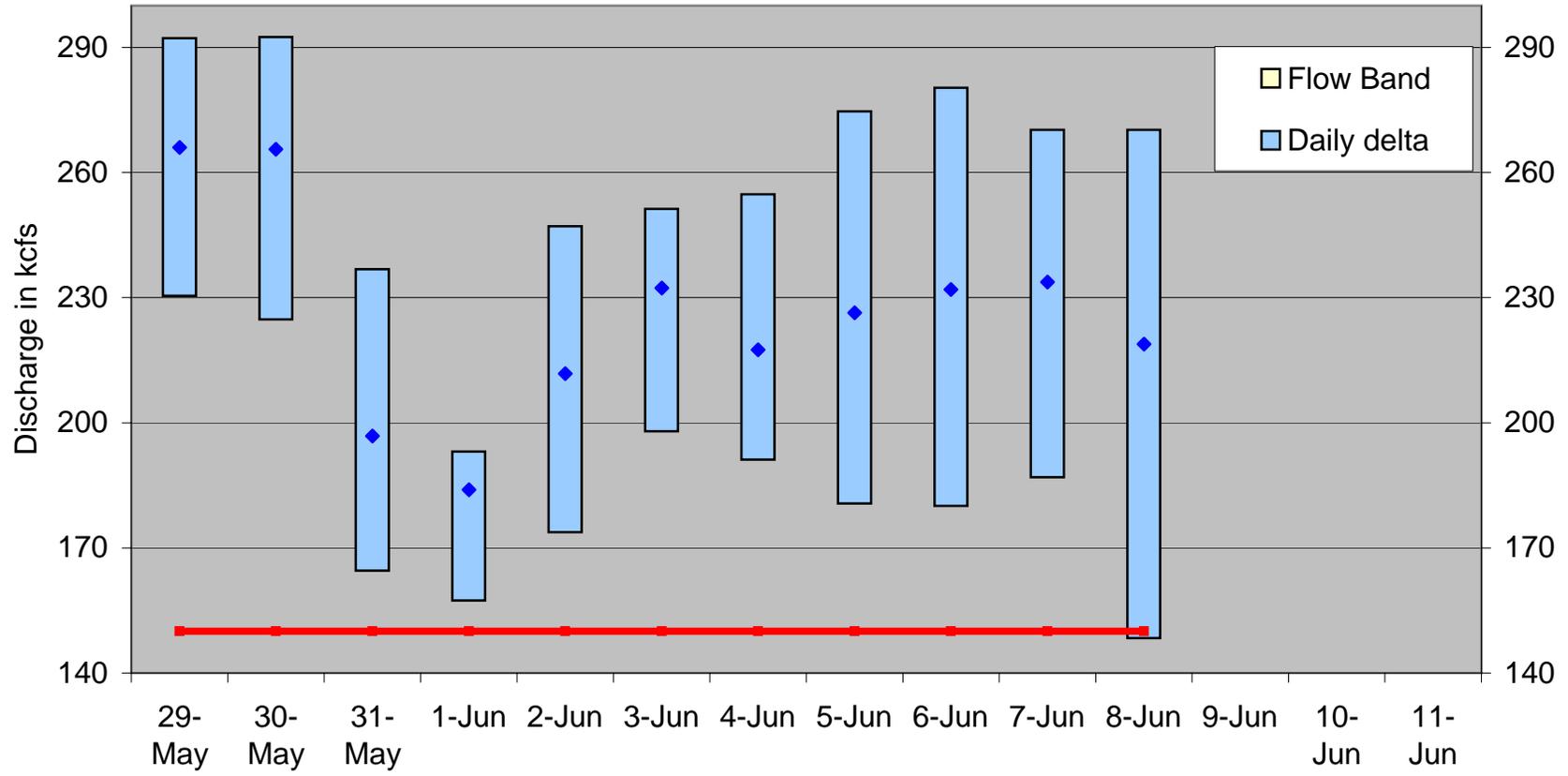
1. Welcome and introductions.
2. [{Review Minutes 2006}](#)
3. Priest Rapids update
  - o [{Priest Rapids Operations 2006 - Data}](#) 
  - o [{Priest Rapids Operations 2006 - Graph}](#) 
4. Libby and Hungry Horse SOR - Montana
  - o [{SYSTEM OPERATIONAL REQUEST: #2006-MT-1 - Libby & Hungry Horse Operations for June through September}](#)
5. Dworshak SOR - Nez Perce
  - o [{SYSTEM OPERATIONAL REQUEST: 2006-1 DRAFT}](#)
6. Adult Population Chum counts - Error bounds
7. Operations Review
  - a. Reservoirs
  - b. Flow Augmentation volumes
  - c. Hungry Horse
    - [{Volumes at Hungry Horse - 1 April through 30 June}](#) 
  - d. Dworshak inflows
    - [{Dworshak Inflows ESP Daily Flows Exceedance Plot}](#) 

- [{Dworshak Inflows ESP - Exceedance Plot}](#) 
  - [{Dworshak Augmentation Volumes ESP Inflows}](#) 
  - [{Dworshak ESP Inflows - Daily Box Whiskers Plot}](#) 
- e. Libby Operations
- [{Libby Inflows ESP Daily Flows Exceedance Plot}](#) 
  - [{Libby ESP Inflows - Daily Box Whiskers Plot}](#) 
  - [{Libby Inflows ESP - Exceedance Plot}](#) 
- f. Hungry Horse
- g. Fish
- h. Power System
- i. John Day T-1 outage
- j. Water Quality
- k. Other
8. Set agenda for next meeting June 28 [\[Calendar 2006\]](#) 

*Questions about the meeting may be referred to Cathy Hlebechuk at (503) 808-3942, or Cindy Henriksen at (503) 808-3945*

# Priest Rapids Operations 2006

Number of exceedances: 0



Priest Rapids Operations 2006					Days	Q Band	Was it	Comments
Date	Mean Q	Min.Q	Max.Q	Prog.Q	Delta	width	met?	
29-May	266.0	230.4	292.2	218.7	83.2	150	Y	Three-day weekend
30-May	265.6	224.7	292.5	243.0	67.8	150	Y	
31-May	196.9	164.5	236.8	239.4	72.3	150	Y	
1-Jun	183.9	157.3	193.1	183.5	35.8	150	Y	
2-Jun	211.8	173.7	247.1	180.9	73.4	150	Y	
3-Jun	232.3	197.9	251.3	214.0		150	Y	
4-Jun	217.5	191.1	254.8	199.4	63.7	150	Y	
<b>Week Avg</b>	224.9			211.3				
5-Jun	226.4	180.6	274.7	200.3	94.1	150	Y	
6-Jun	232.0	180.0	280.3	200.7	100.3	150	Y	
7-Jun	233.7	186.9	270.2	218.2	83.3	150	Y	
8-Jun	218.9	148.3	270.2	218.3	121.9	150	Y	Below 150k during one hour - within margin of error

# COLUMBIA RIVER REGIONAL FORUM

## TECHNICAL MANAGEMENT TEAM

June 12, 2006 Meeting

### FACILITATOR'S SUMMARY NOTES ON FUTURE ACTIONS

Facilitator: Donna Silverberg

Notes: Robin Harkless

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.

#### **Priest Rapids Update**

Russell Langshaw, Grant County PUD, reported that protection flows ended on June 9, with minimum protection flows met on all but an hour on June 8, which was down to 148.3 kcfs. Russell will provide an annual report with TMT upon completion, in the next couple months. TMT members offered that the graphs were a good addition to the information shared this year.

#### **Dworshak SOR**

Kyle Dittmer, CRITFC, shared that model runs from EPA will be available for the salmon managers during a special FPAC meeting on Thursday, June 15. Tom Lorz, CRITFC, will present the models at the June 28 TMT meeting. Dave Statler, Nez Perce, noted that revisions were made to the SOR presented at the last TMT (the updated SOR can be found linked to today's TMT agenda). They included a language change in the introduction emphasizing the Nez Perce interest in avoiding 68° instead of meeting the temperature. Also, graphs were provided with information on Clearwater fish data. TMT will discuss the SOR in more detail at the next TMT meeting.

#### **Adult Population Chum Error Bounds**

Rick Kruger, ODFW, provided information requested about adult chum counts and error bounds. In 2002, the total count was 4,232 with an error bound of  $\pm 120$ . In 2003, the count was 667 with an error bound of  $\pm 163$ . In 2004, the count was 336 with an error bound of  $\pm 182$ . Bounds are set by water conditions, with the most challenging conditions causing the greatest error bounds. Rick will share final counts for 2005 when they are available. It was noted that the purpose of the inquiry was to better understand the difficulty in counting chum and to point out that chum operations are very important and affect the entire federal power system.

#### **Operations Review**

*Reservoirs:* Grand Coulee was at elevation 1281' (9' from full) and filling, maintaining flood control. Hungry Horse was at elevation 3553' (7' from full) and releasing 7 kcfs. The BOR plans to ramp outflows down soon. Libby was at elevation 2457.4' (1.6' from full), and spilling with 35 kcfs in and 38 kcfs out. The project has experienced its third 'peak' this year. TDG levels were currently around 125%. Bonners Ferry had been

forecasted above flood stage elevations but so far has remained just below that level. Dworshak was at elevation 1590.2' (9.8' from full), with 12 kcfs in and 5.3 kcfs out due to the outage. Peak regulated flow at The Dalles is 3.91 k and unregulated is 850-900. The project has been operating at full powerhouse for over a month.

*Fish:* Paul Wagner, NOAA, reported that the final adult spring chinook count at Bonneville was 96,458 (slightly above the forecasted number). Summer chinook counts at Bonneville were 19,502. TAC has switched its count date for summer chinook to mid-June, vs. June 1. The yearling smolt run is nearing its end, with numbers less than 1,000. Subyearlings are at 40,000+ at Little Goose and 30,000+ in the lower river. Steelhead smolt numbers are on a downward trending at each of the projects. Paul showed the season wrap-up graphs from the FPC website, and DART numbers showing wild fish, which peaked in late April and have a protracted migration.

*Power:* John Wellschlager, BPA, reported that the power system is operating to meet the COE's flood control guidance. The CGS went to 65% over the weekend, and will operate to reach target flows this week. The Dworshak taft line outage started today. TBL has built in a provision for restoring the line within 6 hours if necessary to meet ESA obligations.

*Water quality:* Jim Adams, COE, reported that 12 of 17 sites have been exceeding TDG standards due to involuntary spill. The Lower Monumental forebay was at 125.3%, Little Goose tailwater was at 124.5%, Lower Granite tailwater was at 123.6% and Ice Harbor forebay was at 119.8%.

**TMT Meeting Schedule: Wednesday, June 28, 9am-noon**

Agenda Items include:

- Dworshak SOR – Nez Perce
- Libby/Hungry Horse SOR – Montana
- Marine Mammal Permitting Process Update – Oregon and Washington
- Sturgeon Operations – USFWS

## Technical Management Team Meeting Notes

June 12, 2006

### **1. Greetings and Introductions.**

Today's Technical Management Team meeting was chaired by Cathy Hlebechuk and facilitated by Donna Silverberg. The following is a summary (not a verbatim transcript) of the topics discussed and decisions made at this meeting. Anyone with questions or comments about these notes should contact Hlebechuk and 503-808-3936.

## **2. Priest Rapids Update.**

Russell Langshaw said protection flows ended June 9. Over the past week and a half, starting May 29, a 150 Kcfs minimum flow was in effect at Priest Rapids. The only issue occurred on June 8, when flows dropped to 148.5 Kcfs for an hour. On June 9, the daily average flow was 221.7 Kcfs. Langshaw said he will present an annual summary of the 2006 fish protection program once he has completed his annual report, some time in the next two months.

## **3. Libby and Hungry Horse.**

This topic was deferred until the next TMT meeting.

## **4. Dworshak SOR.**

The TMT revisited the 2006 Dworshak SOR from the Nez Perce Tribe. Kyle Dittmer said Ben Cope had provided the first round of results from the RBM-10 water temperature model last week; unfortunately, there were some errors in the initial results. Cope subsequently re-ran the model, which now appears to be functioning correctly. I'm in the process of going through the results now, Dittmer said.

He noted that FPAC will be meeting this Thursday and will discuss the model results at that time; Dittmer said he will present those results at the next TMT meeting. Two scenarios were modeled: the 2005 TMT (actual) operation, and a second scenario, under which Dworshak would release 10 Kcfs initially, outflow would drop down to 7 Kcfs for a period, then increase to 10 Kcfs until elevation 1520 is achieved some time in mid-September. Four different weather-year scenarios were modeled, he added.

David Wills noted that one difference between the operation proposed in this SOR and previous years' Dworshak operations is that, in the past, the TMT has tried to get ahead of the temperature curve by releasing cool water earlier in the summer period, while the SOR advocates a more reactive approach. I, and some of the other salmon managers, would like to see this temperature modeling information before we make a decision about what approach to recommend, he said. While I don't want to speak for Dave Statler, Wills added, at least last week, when he spoke with the salmon managers, he and Greg Haller agreed to postpone a decision until we've had a chance to review the model results.

Dave Statler, who had difficulty accessing today's conference call, joined at this point. He said June 28, the next scheduled TMT meeting, should work for the next discussion of this topic. In response to a question, Statler noted that, with respect to growth rates for subyearlings in the Lower Clearwater River, more fish are tagged in March, which indicates that the wild fish are fairly small at that

time. It also indicates that there were some surrogate hatchery releases that year. By about July 15, less fish are being captured, and those fish that are captured are at least 80 mm in length. That coincides with the target date of July 16, which we have recommended fairly consistently, Statler said. He added that he has provided some graphs showing this information in more detail.

After a few minutes of additional discussion, it was agreed to defer a decision on the 2006 Nez Perce Tribe Dworshak SOR until the next TMT meeting on June 28.

### ***5. Adult Population Chum Counts.***

Rick Kruger said he had checked around and found three confidence intervals for adult chum population estimates: +/- 120, +/- 163 and +/- 182. That is for 2002, 2003 and 2004. In 2002, the population estimate was 4,232, +/- 120; in 2003, the population estimate was 667 +/- 163; in 2004 it was 336 +/- 182. They are still working on the 2005 population estimate, Kruger added. In response to a question, Kruger said the reason the confidence intervals have continued to grow, even as the population estimates themselves have shrunk, has to do with the way the data were collected and how good the survey information is. In response to a question, Kruger said he cannot provide a preliminary 2005 chum population estimate at this time, other than the fact that he knows the population was comparatively low.

John Wellschlager noted that, during much of the late fall and winter period, operations to protect the chum redds drive the operation of the FCRPS. We go through a lot of gyrations to ensure that the Bonneville tailwater elevation is maintained at an adequate level, he said – it would be helpful to have those numbers. And are these confidence intervals 95%? Russ Kiefer asked. I believe so, Kruger replied. And does the 336 estimate for 2004 include all known spawning areas? another participant asked. I'm not sure, but I'll find out, Kruger replied.

### ***6. Operations Review.***

Reclamation said Grand Coulee is at elevation 1281 and filling. Reclamation has been working around flood control restrictions based on the residual runoff estimate for that basin. The project will be full at elevation 1290. Priest Rapids continues to release in excess of 200 Kcfs. Hungry Horse is at elevation 3553, seven feet from full. The project is releasing 7 Kcfs, but will be ramping down soon to accommodate the planned Dworshak outage.

The Corps reported that Libby is 1.6 feet from full, at 2457.4 feet, with 45 Kcfs inflow and 38 Kcfs outflow. The project was forced to start spilling last Thursday, June 8. Jim Adams said TDG levels below Libby were 123-124 percent at 8.2 Kcfs spill; spill was subsequently increased to 14 Kcfs, which only

increased the gas level to about 125 percent, where it is currently. Most of the middle and low-level snowpack is gone, but it is raining heavily in the Libby area, and there is still significant high-elevation snowpack in that basin. The Corps noted that Libby generally doesn't fill until the end of July, so there is some nervousness about the situation in that basin. Yesterday's peak flow at Bonners Ferry was about 62 Kcfs.

Moving on, the Corps said Dworshak is 9.8 feet from full, at elevation 1590.2 feet – that's also pretty high. Inflows to the project are 12 Kcfs, and we had to reduce outflow from 10 Kcfs to 5.3 Kcfs today, due to the outage. We got a revised number from our flood control people, Hlebechuk said; the peak unregulated flow at The Dalles this year was between 850 and 900 Kcfs. The peak regulated flow was 391 Kcfs.

Moving on to fish, Paul Wagner said the 2006 adult spring chinook count turned out much better than they looked in mid-April, with a total of 96,400 adults past the project. The summer chinook run is off to a good start as well, he added. He said yearling chinook indices continue to decline at the Lower Snake projects, while subyearling chinook indices continue to be strong.

Hlebechuk said there is nothing new to report on the John Day T1 outage. With respect to the Dworshak outage, Wellschlager reminded the group of the necessity of this kind of maintenance work to ensure transmission system reliability. Again, the outage will run from June 12-30, and is part of a larger two-year scheduled transmission system maintenance effort, he explained.

Adams briefly reviewed the current water quality situation in the FCRPS, noting that, since the last TMT meeting, numerous exceedences have occurred. We're currently exceeding the TDG standards at 12 of our 17 monitoring sites, he said. There is a significant amount of involuntary spill throughout the system, particularly during nighttime hours, due to lack of load. The TDG hot spots in the system are the Little Goose tailwater (124.5%) and Lower Monumental forebay (125%).

Silverberg noted that this is John Wellschlager's last meeting as a TMT member; she thanked him for his hard work, insights and willingness to work closely with the other members of the team, and wished him well in his next assignment, sentiments echoed by the other TMT members present.

## ***7. Next TMT Meeting Date.***

The next meeting of the Technical Management Team was set for Wednesday, June 28. Meeting summary prepared by Jeff Kuechle.

**TMT Participant List  
June 12, 2006**

<b>Name</b>	<b>Affiliation</b>
Donna Silverberg	Facilitation Team
Russ Kiefer	IDFG
Cathy Hlebechuk	COE
David Wills	USFWS
Rick Kruger	ODFW
Paul Wagner	NOAAF
John Wellschlager	BPA
Tony Norris	USBR
Dan Spear	BPA
Kyle Dittmer	CRITFC
Barry Espenson	CBB
Scott Boyd	COE
Russell Langshaw	GCPUD
Margaret Filardo	FPC
David Benner	FPC
Russ George	WMCI
Robin Harkless	Facilitation Team

# TECHNICAL MANAGEMENT TEAM

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<b>WA :</b>	<i>Cindy LeFleur</i>	<b>MT :</b>	<i>Jim Litchfield</i>
<b>COE:</b> <i>Cindy Henriksen / Cathy Hlebechuk</i>			

## TMT MEETING

Wednesday June 28, 2006, 0900 - 1200 hours

1125 N.W. Couch Street, Suite 4A34  
Portland, Oregon 97208

Conference call line: 503-808-5199 Pass code: 2580

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

## AGENDA

1. Welcome and introductions
2. [\[Review Minutes 2006\]](#)
3. Libby and Hungry Horse SOR - Montana
  - o [\[SYSTEM OPERATIONAL REQUEST: #2006-MT-1\]](#)
  - o [\[LIBBY SUMMER OPERATIONS - Libby 2439' End of August and Libby 2449' End of September\]](#)
4. Dworshak SOR - Nez Perce
  - o [\[SYSTEM OPERATIONAL REQUEST: 2006-1 DRAFT\]](#)
  - o [\[CRITFC Presentation\]](#)
5. Marine Mammal Permitting Process Update - Oregon and Washington
6. [\[Chum spawning population estimates\]](#)
7. Treaty Fishing
  - o [\[SYSTEM OPERATIONAL REQUEST: 2006-C1\]](#)
  - o [\[SYSTEM OPERATIONAL REQUEST: 2006-C2\]](#)
8. ESP HYSRR
  - o [\[Summary of 27 Jun 2006 ESP HYSSR Model Runs\]](#)
9. Sturgeon Operations - USFWS
10. Operations Review
  - a. Reservoirs
    1. Libby
      - [\[Libby Operations 2006 - April 1 - June 26 Volume=5.145 MAF\]](#)
      - [\[Libby ESP Inflows - Daily Box-Whiskers Plot\]](#)
      - [\[Libby ESP Hydrographs\]](#)
    2. Dworshak
      - [\[Lower Snake River Temperatures April 03 - June 27, 2006\]](#)

- [\[Dworshak Forebay Thermocline 2004-2006\]](#)
- [\[Dworshak ESP Inflows - Daily Box-Whiskers Plot\]](#)
- [\[Dworshak ESP Hydrographs\]](#)
- 3. Hungry Horse
- 4. Grand Coulee
- b. Fish
- c. Power System
- d. John Day T-1 Outage
- e. Water Quality
  - [\[Project Operations Update 20 June - 27 June, 2006\]](#)
- 11. Other
  - Set agenda for next meeting July 12 [\[Calendar 2006\]](#) 

*Questions about the meeting may be referred to Cathy Hlebechuk at (503) 808-3942, or Cindy Henriksen at (503) 808-3945*

# TECHNICAL MANAGEMENT TEAM

**BOR:** Tony Norris / John Roache

**BPA:** Robyn MacKay / Scott Bettin

**OR:** Ron Boyce/Rick Kruger

**USFWS:** David Wills / Steve Haeseker

**NOAA-F:** Paul Wagner **WA:** Cindy LeFleur

**ID:** Russ Kiefer **MT:** Jim Litchfield

**COE:** Cindy Henriksen / Cathy Hlebechuk

## TMT MEETING

Wednesday June 28, 2006 0900 - 1200 hours

1125 N.W. Couch Street, Suite 4A34

Portland, Oregon 97208

Conference call line: 503-808-5190 or 503-808-5199 (passcode 2580)

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

**Please MUTE your Phone**

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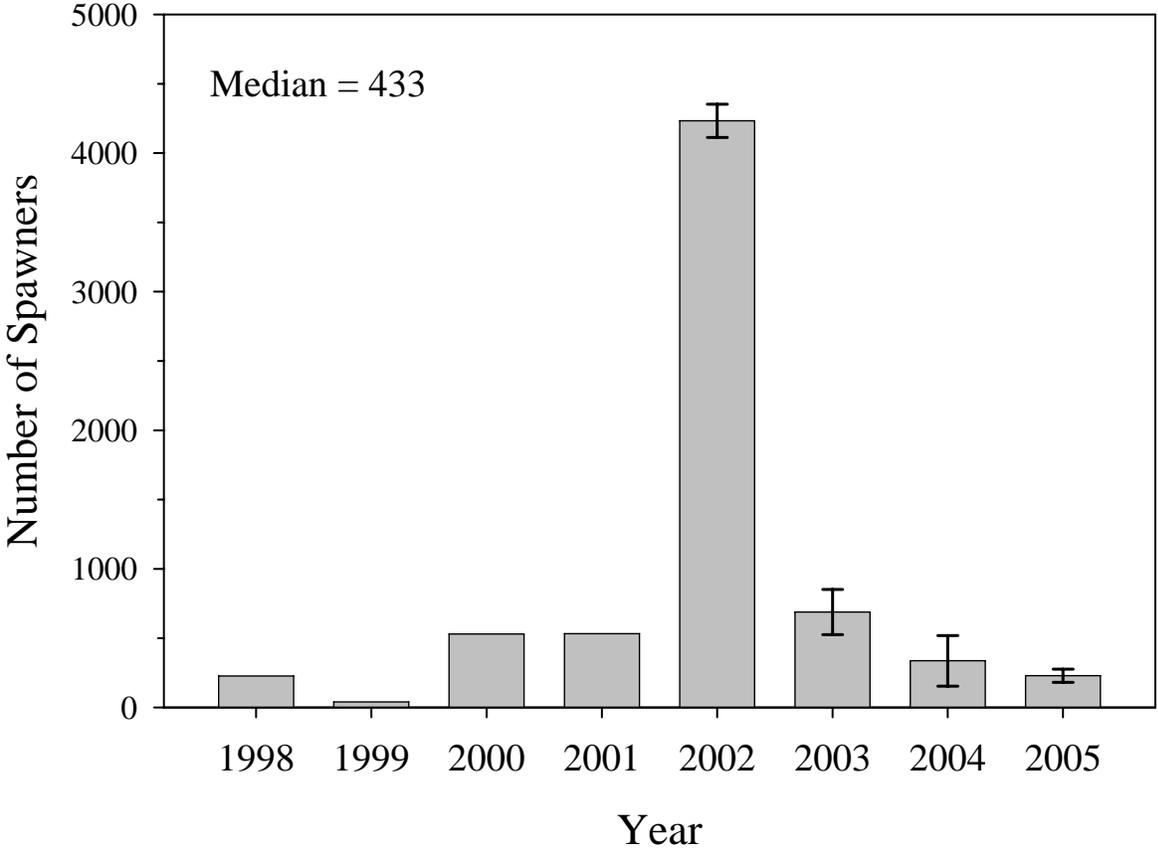
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  - a. Reservoirs
    - Flow Augmentation volumes
    - Libby
    - Dworshak
    - Hungry Horse
    - Dworshak inflows
  - b. Fish
  - c. Power System
    - John Day T-1 outage
  - d. Water Quality
  - e. Other

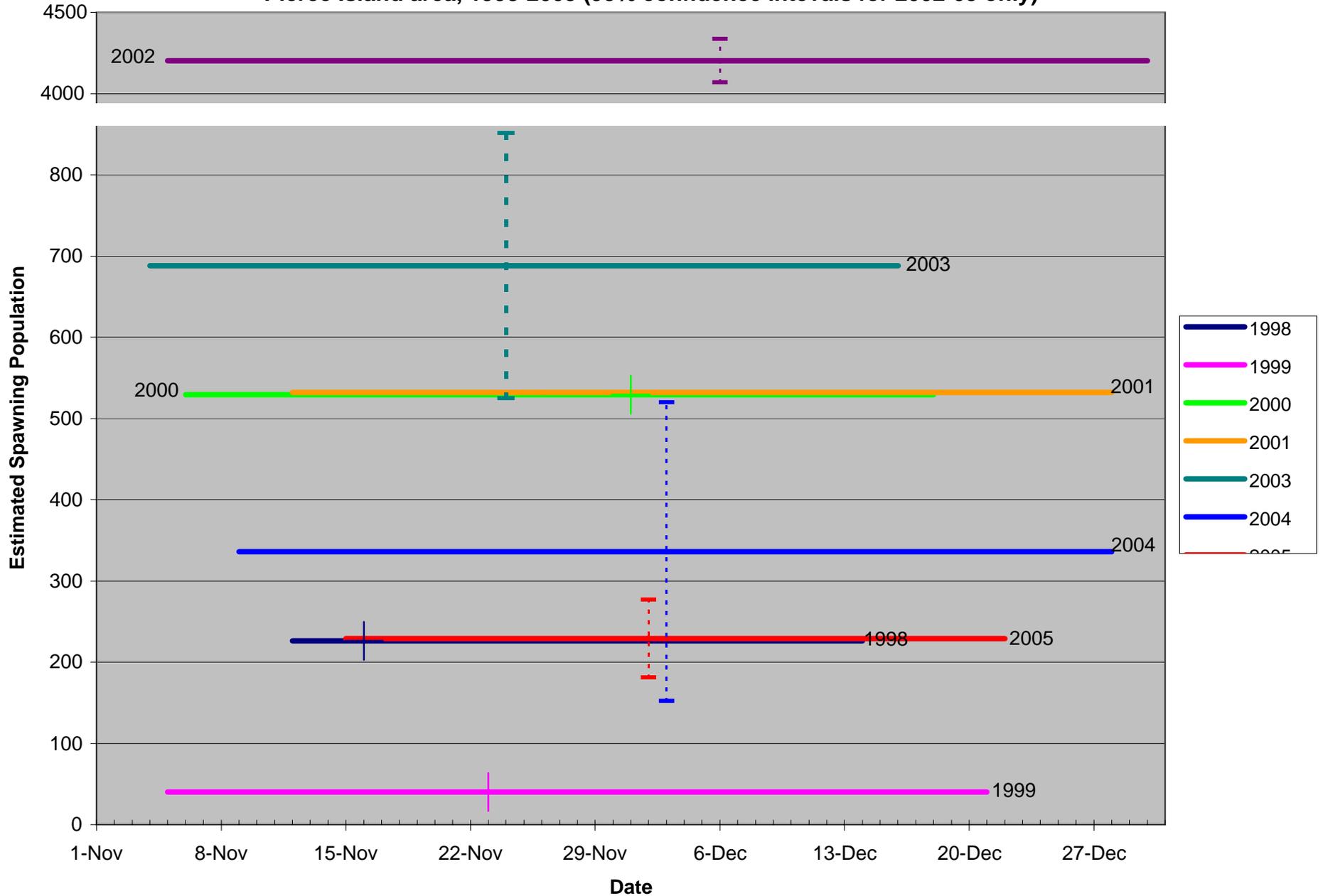
Set agenda for next meeting July 12 - [\[Reference Calendar\]](#)

*Questions about the meeting may be referred to Cathy Hlebechuk at (503) 808-3942 or Cindy Henriksen at (503) 808-3945*

Estimated number of chum salmon spawning in the Ives / Pierce island area, 1998-2005

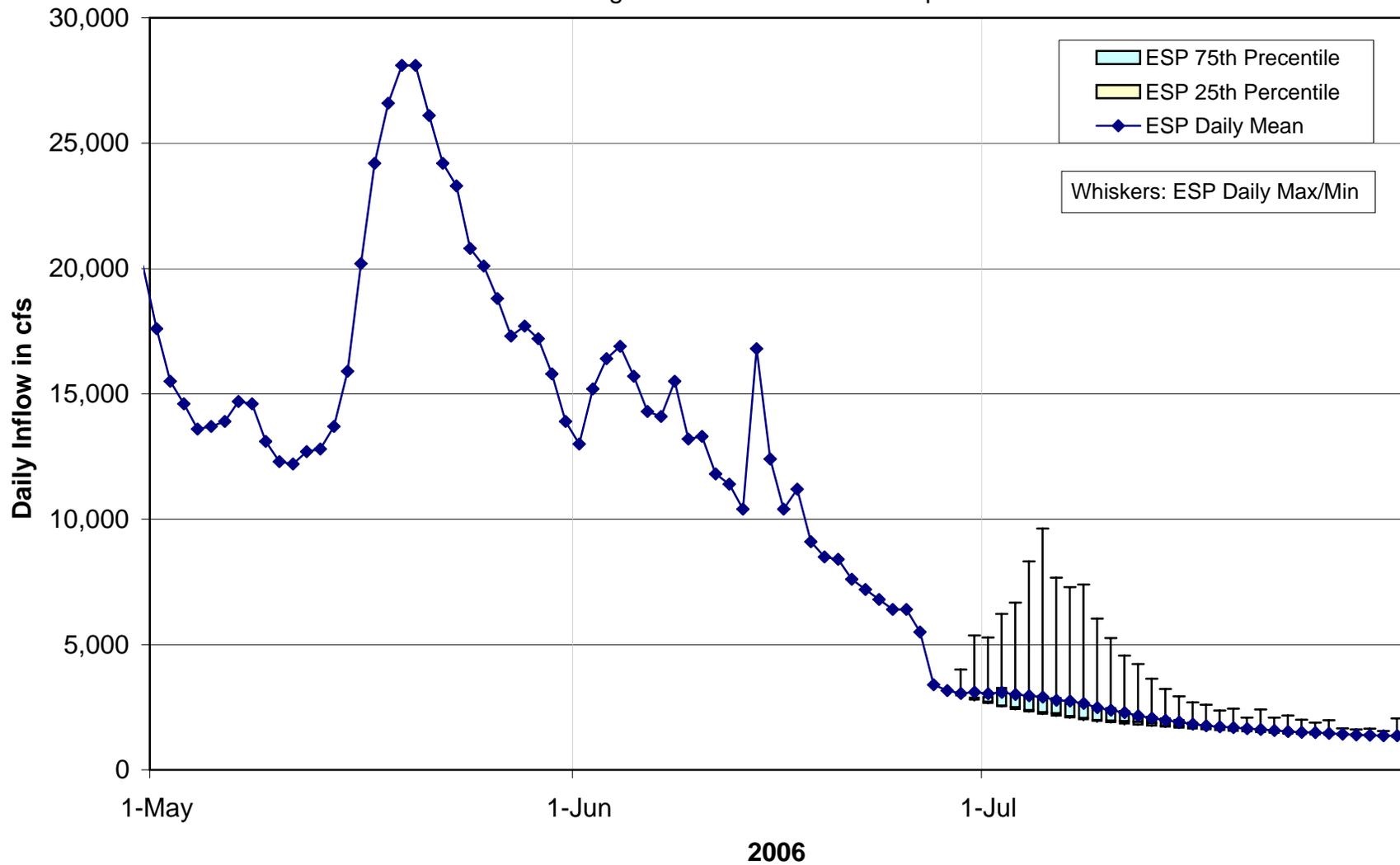


**Timing and peak of chum spawning, estimated populations of chum salmon spawning in the Ives / Pierce Island area, 1998-2005 (95% confidence intervals for 2002-05 only)**



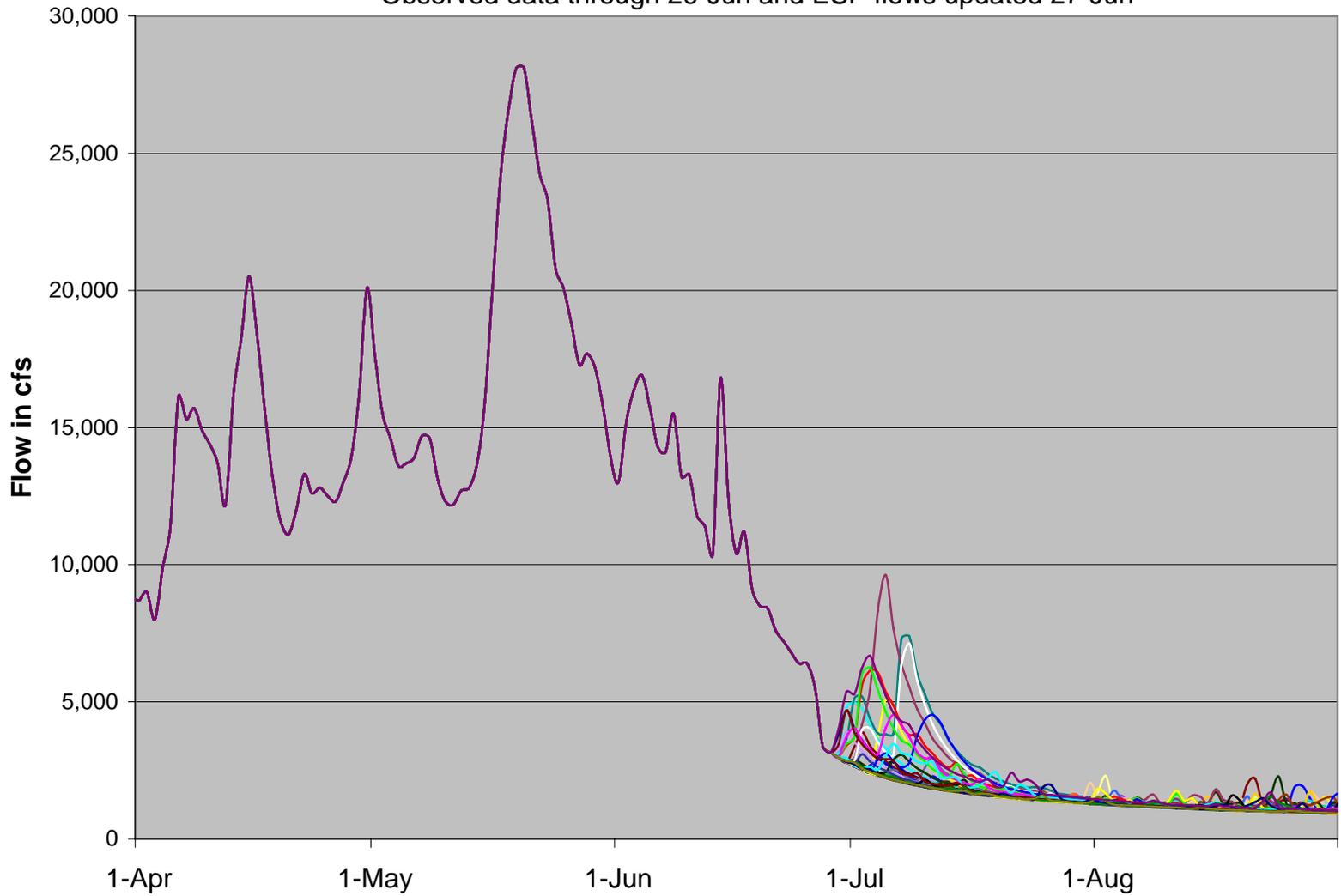
# Dworshak ESP Inflows - Daily Box-Whiskers Plot

Observed data through 26-Jun and ESP flows updated 27-Jun



# Dworshak ESP Hydrographs

Observed data through 26-Jun and ESP flows updated 27-Jun



- 1949
- 1950
- 1951
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- 1990
- 1991
- 1992

# Modeling of Dworshak Summer 2006 Operations



**Kyle Dittmer**

*Hydrologist - Meteorologist*

June 28, 2006

TMT Presentation (given by Tom Lorz)

Columbia River Inter-Tribal Fish Commission

Portland, Oregon

# Introduction



- Goals: (1) Model Dworshak flows and elevations from summer operation proposals. (2) Evaluate impacts on Dworshak pool elevation and lower Snake water temperature and flow.
- CRITFC's Hydro spreadsheet: modeled outflows and elevations. Inflows are given by NWRFC.
- EPA's RBM-10 model: water temperature. Assumes (1) 1975, 1985, 1990, and 1991 weather years, (2) 1986 tributary inflows, (3) 2000 Dworshak and Brownlee water temperatures, and (3) Dworshak release temperature is 43 to 45 degF.

# Weather Assumptions



Lewiston air temperature (degF)	MAY	JUN	JUL	AUG	SEP	Dworshak April-July Inflow (KaF)
<b>1975</b>	57.79	63.6	77.74	70.39	66.15	3342
Departure	-0.4	-2.0	4.0	-1.4	2.7	
<b>1985</b>	60.26	66.9	79.94	69.47	56.8	2913
Departure	2.0	1.0	5.9	-2.9	-6.9	
1990	58.79	67.55	77.39	75.6	72.95	2716
Departure	0.5	1.6	3.3	3.3	9.3	
1991	55.85	60.28	72.27	75.08	65.53	2565
Departure	-2.6	-6.6	-1.8	1.4	1.4	
Average Departure:	<b>-0.1</b>	<b>-1.5</b>	<b>2.8</b>	<b>0.1</b>	<b>1.6</b>	<b>2,884</b>
	MAY	JUN	JUL	AUG	SEP	June Final WSF (KaF):
2006 departure	2.8					2800
Assumption: "PDO-neutral / ENSO-cold / ENSO-neutral"						
Oct. 2005 - May 2006:		PDO = -0.00 (+/- 0.86)		MEI = -0.39 (+/- 0.18)		

# Highlights of Proposals

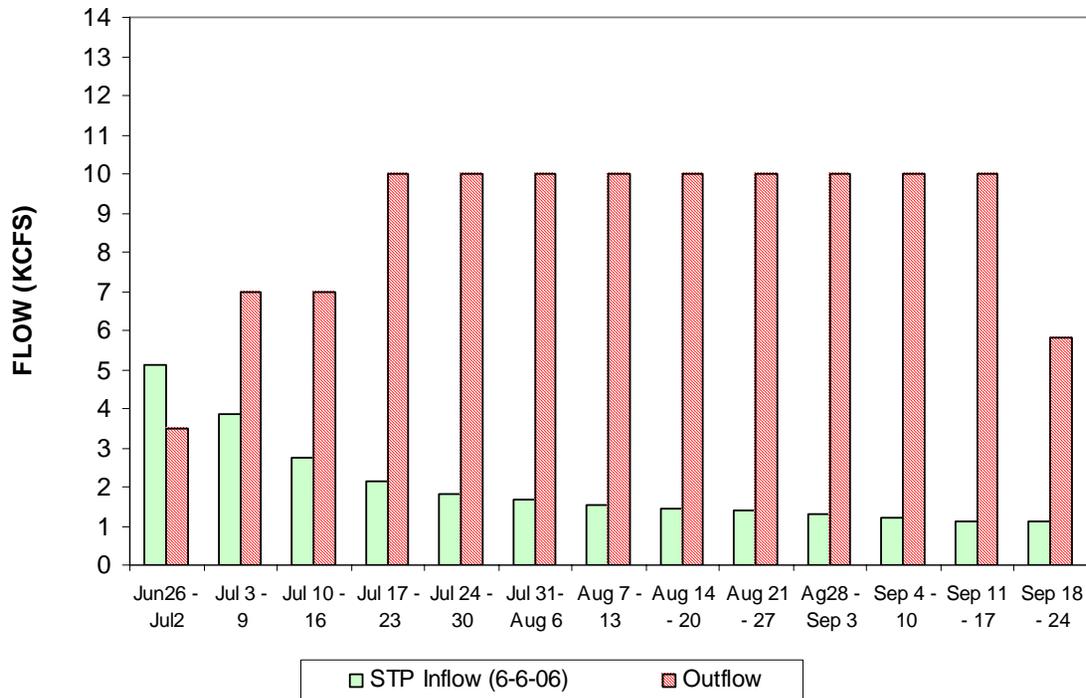


- Nez Perce Tribe SOR: draft to 1520 feet by Sept. 30. Outflows 7 - 10 kcfs. Use enough DWR spill to meet state water quality standard.
- TMT-2005: draft to 1535 ft by Aug. 31, then 1520 feet by Sept. 30. Outflows 7 - 12 kcfs.

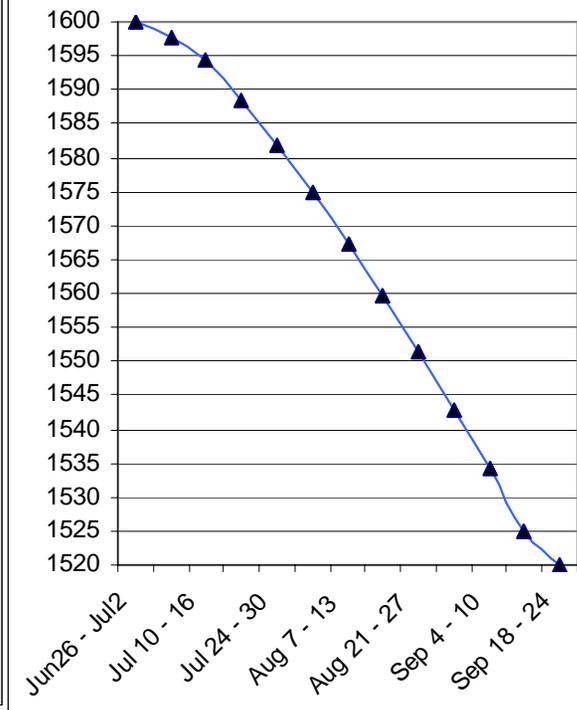
# NPT SOR



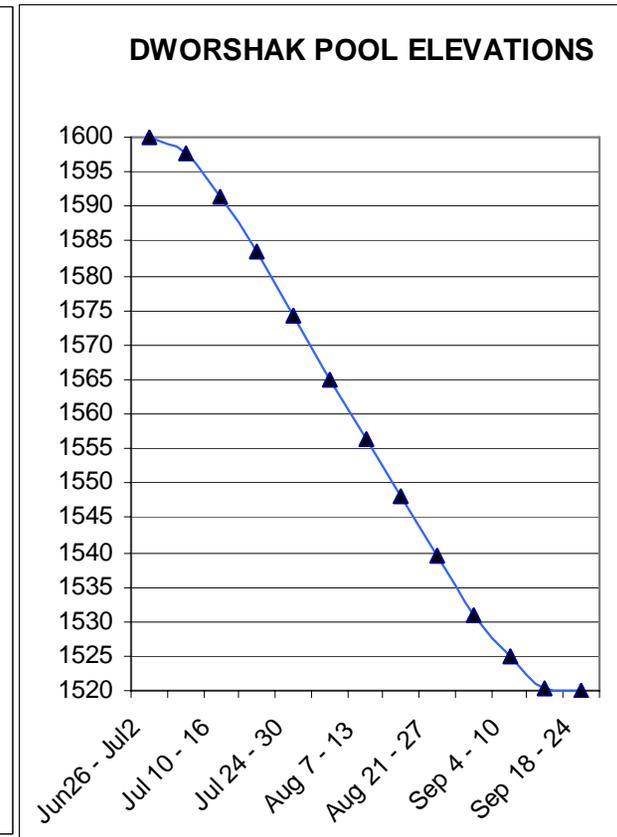
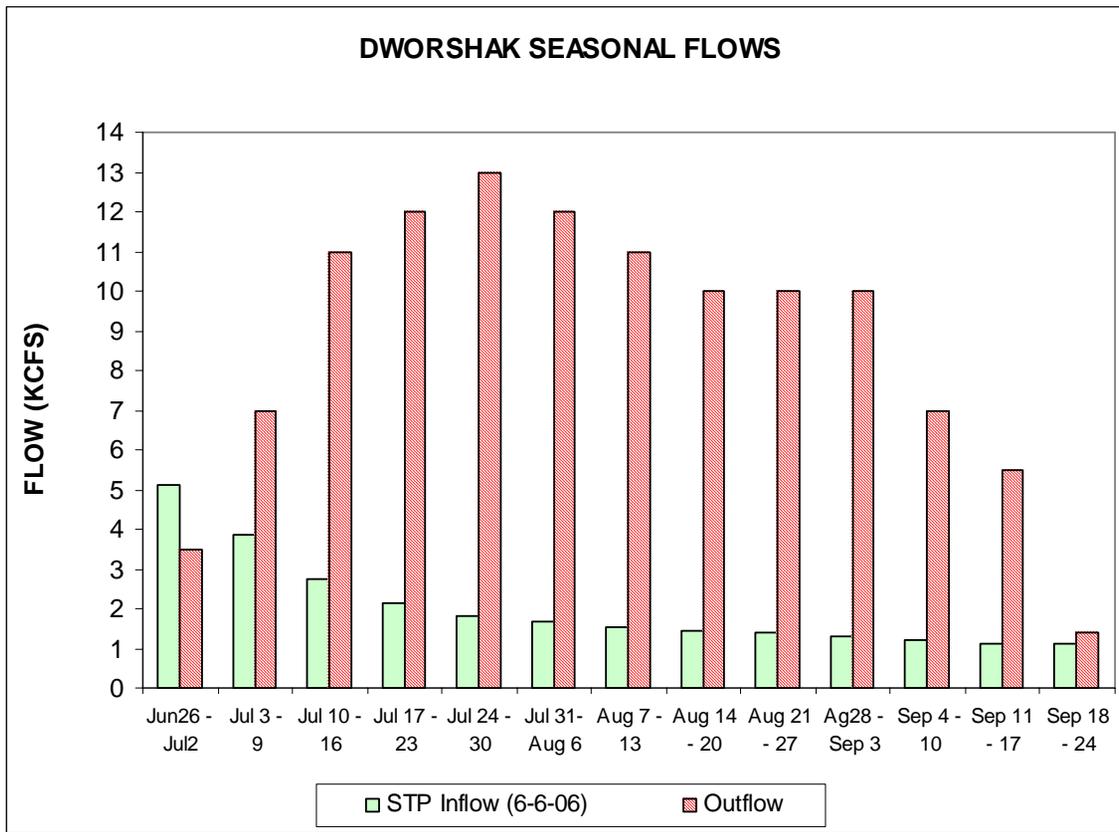
**DWORSHAK SEASONAL FLOWS**



**DWORSHAK POOL ELEVATIONS**



# TMT-2005



# Comparing Outflows

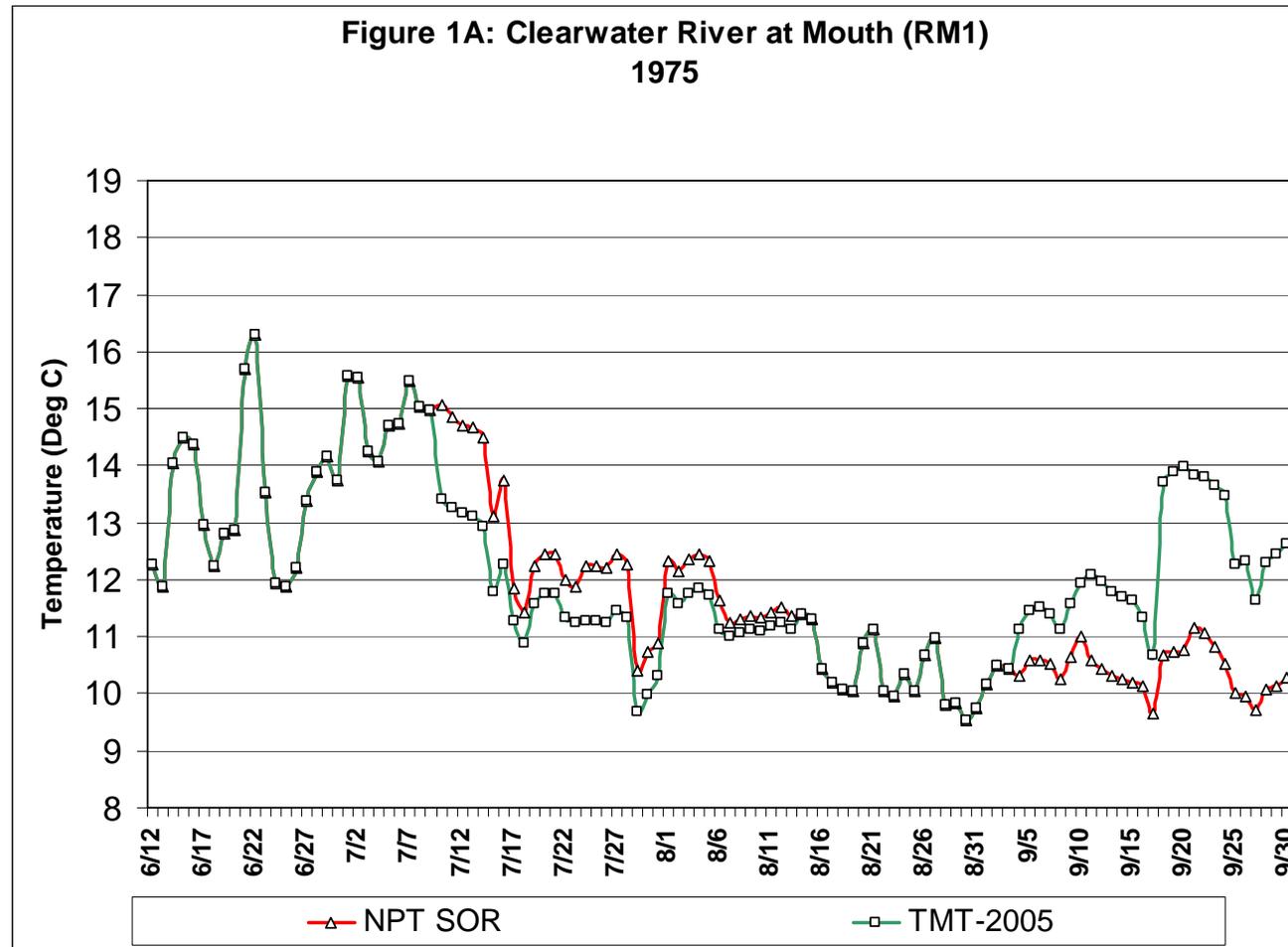


07-Jun-06	Scenario #1	Scenario #2	
WY 2006	(NPT-SOR)	(TMT-2005)	
SUMMER	Outflow	Outflow	Outflow
	(kcs)	(kcs)	(kcs)
	DWORSHAK		HELLS CANYON
Jun26 - Jul2	3.5	3.5	17.75
Jul 3 - 9	7	7	25.3
Jul 10 - 16	7	11	13.6
Jul 17 - 23	10	12	13.2
Jul 24 - 30	10	13	13.1
Jul 31-Aug 6	10	12	14.25
Aug 7 - 13	10	11	12.3
Aug 14 - 20	10	10	10.5
Aug 21 - 27	10	10	11.4
Ag28 -Sep 3	10	10	12
Sep 4 - 10	10	7	12.45
Sep 11 - 17	10	5.5	11.6
Sep 18 - 24	5.8	1.4	12.6

# Modeled Water Temperature



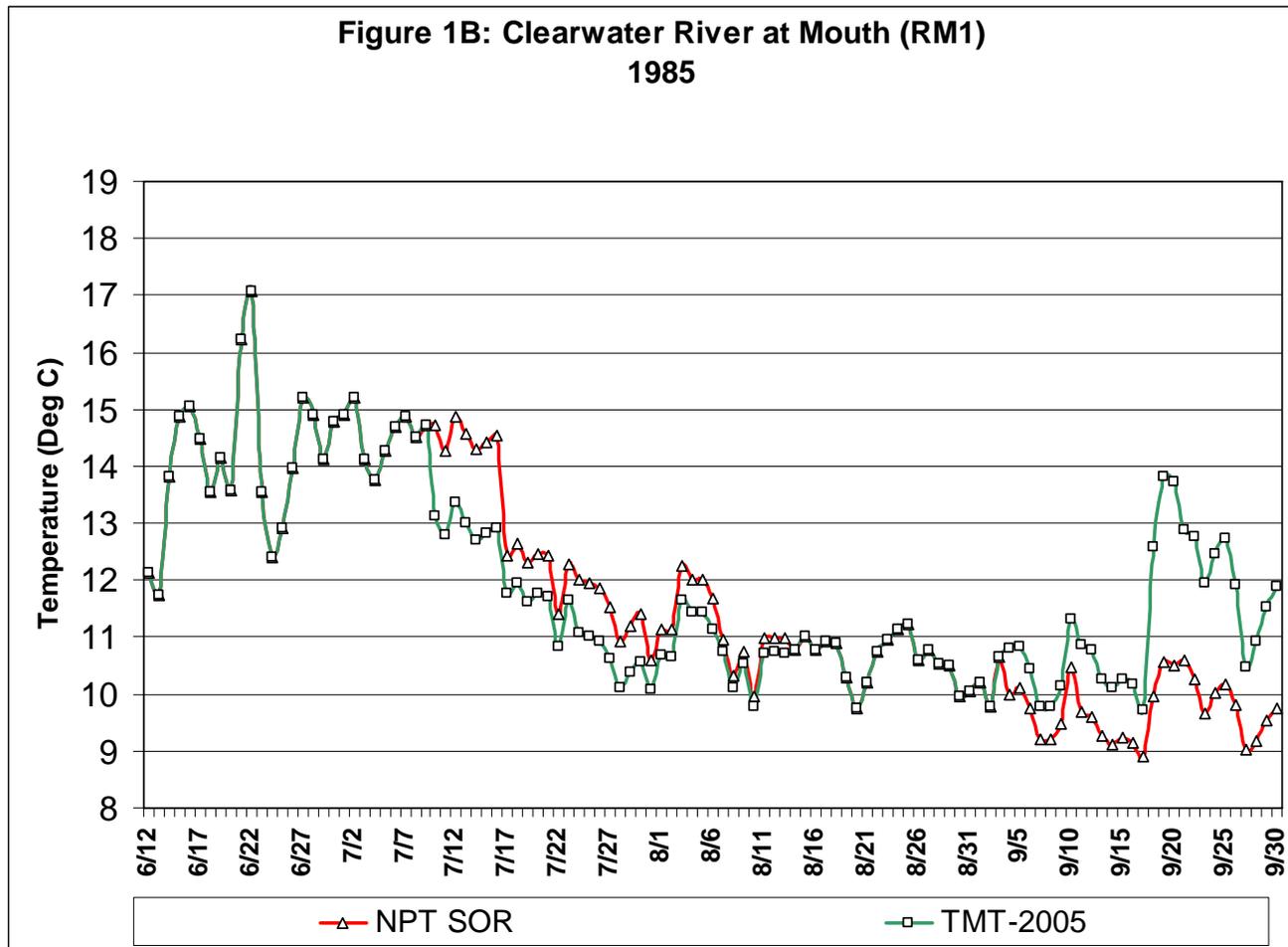
(Model data courtesy of Ben Cope, EPA-Seattle)



# Modeled Water Temperature

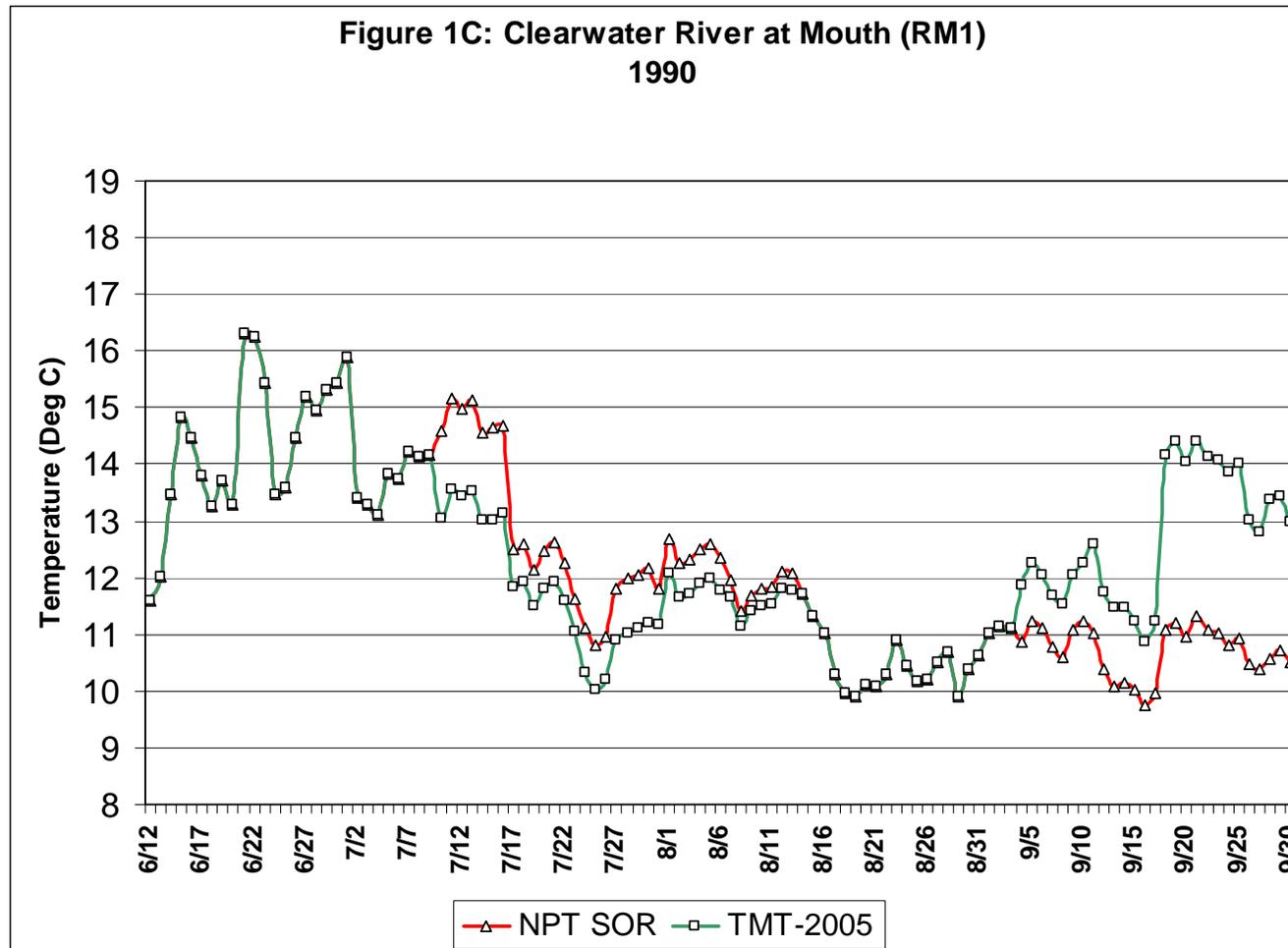


(Model data courtesy of Ben Cope, EPA-Seattle)



# Modeled Water Temperature

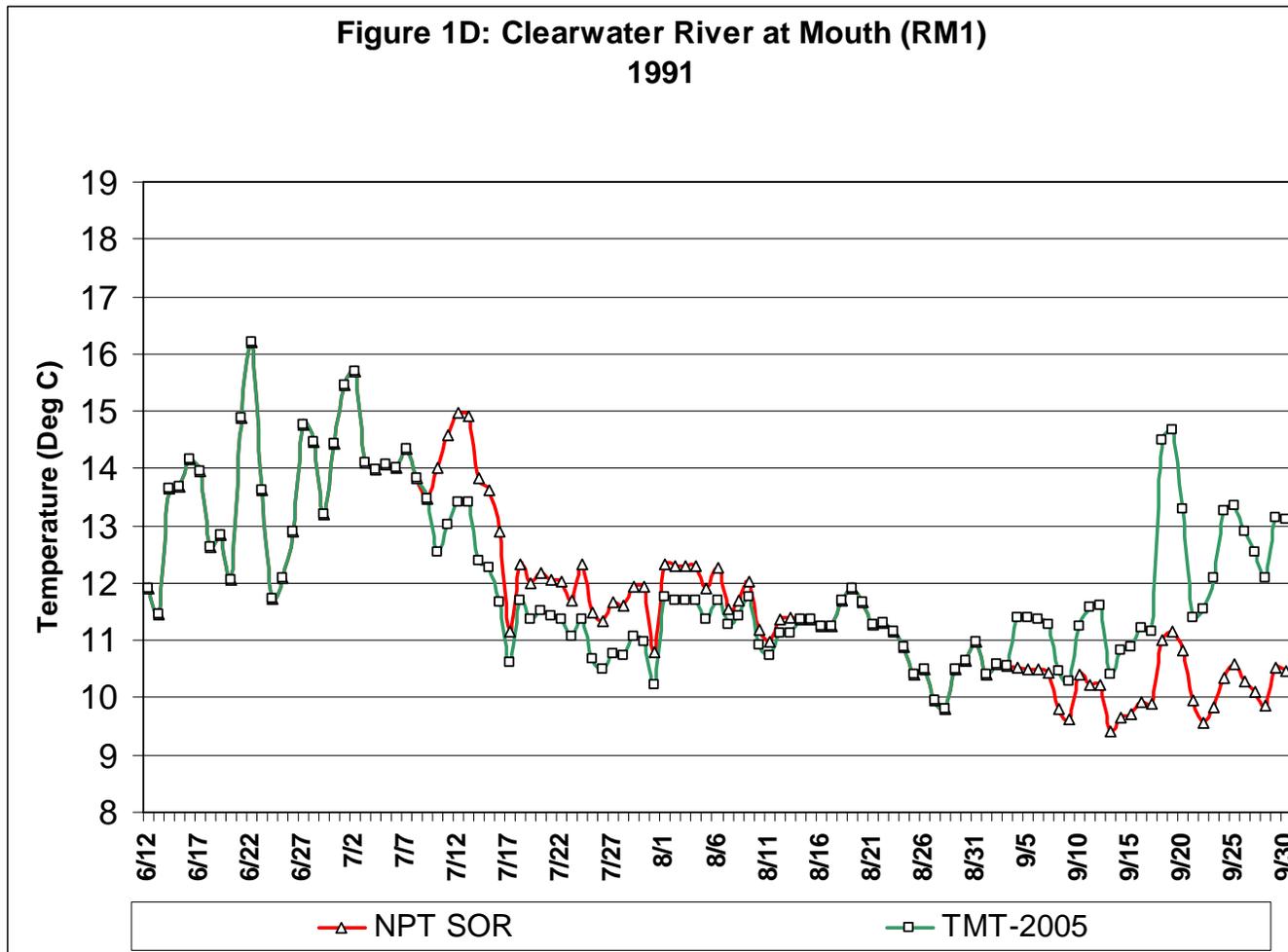
(Model data courtesy of Ben Cope, EPA-Seattle)



# Modeled Water Temperature



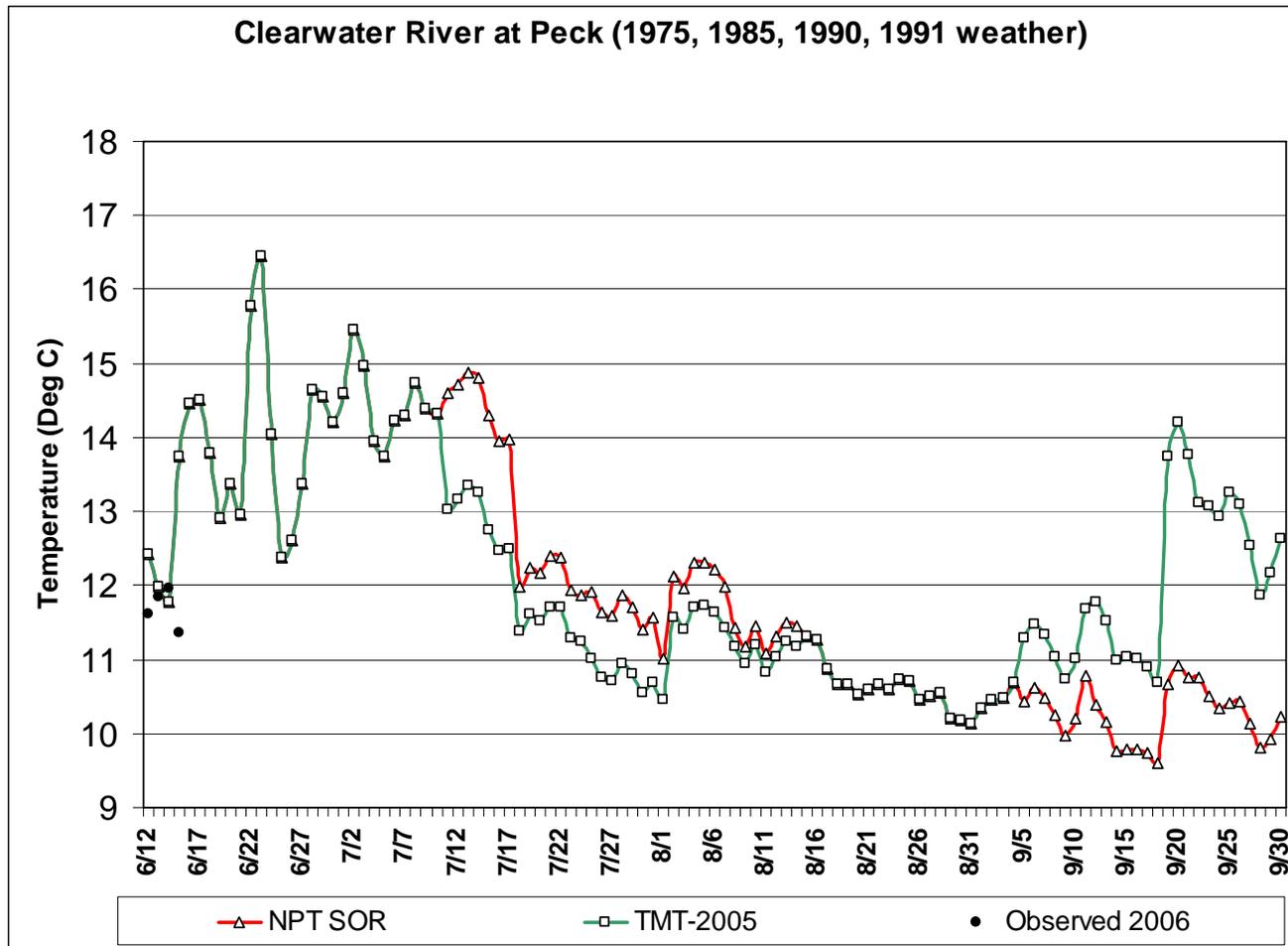
(Model data courtesy of Ben Cope, EPA-Seattle)



# Modeled Water Temperature



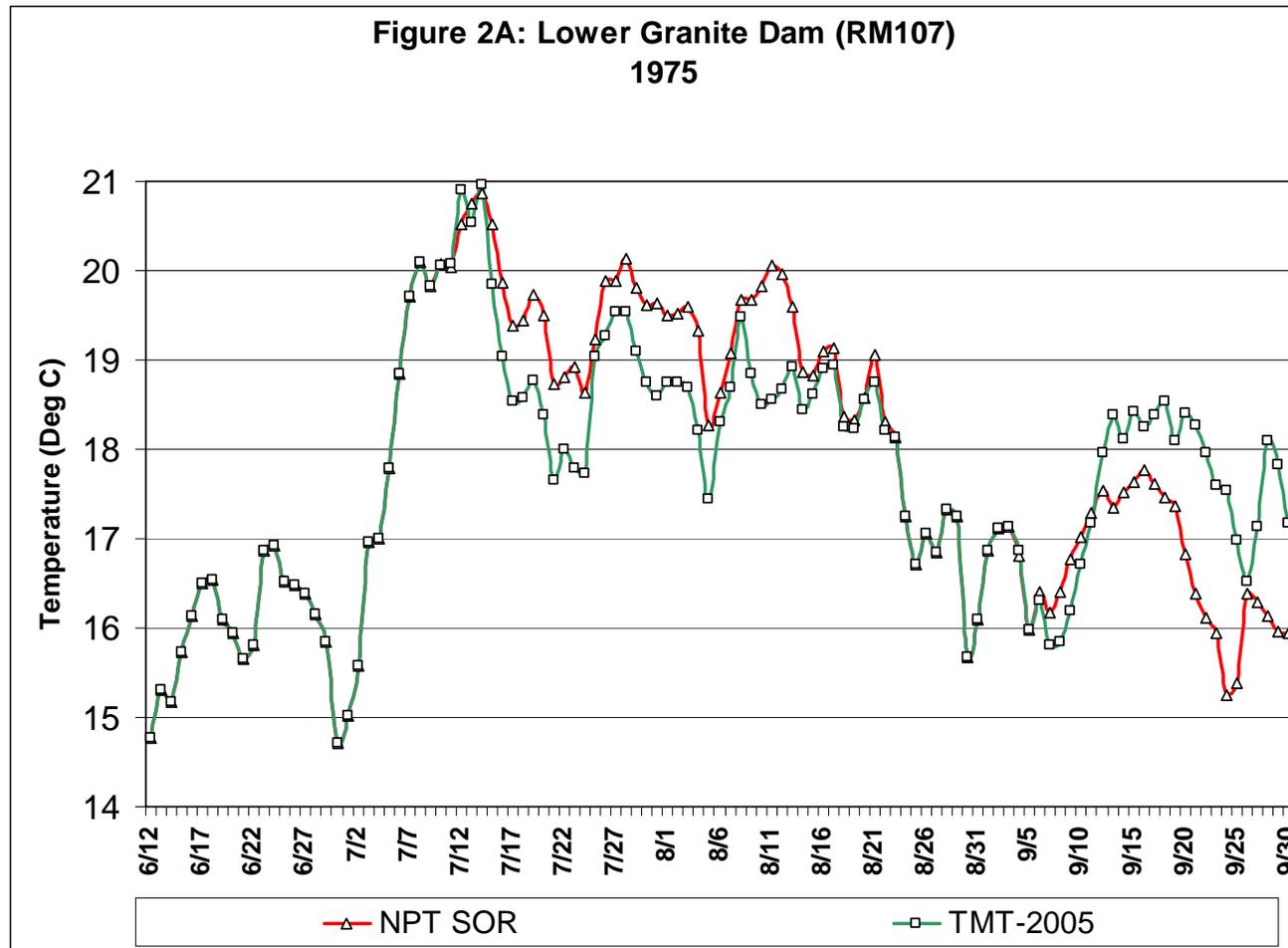
(Model data courtesy of Ben Cope, EPA-Seattle)



# Modeled Water Temperature



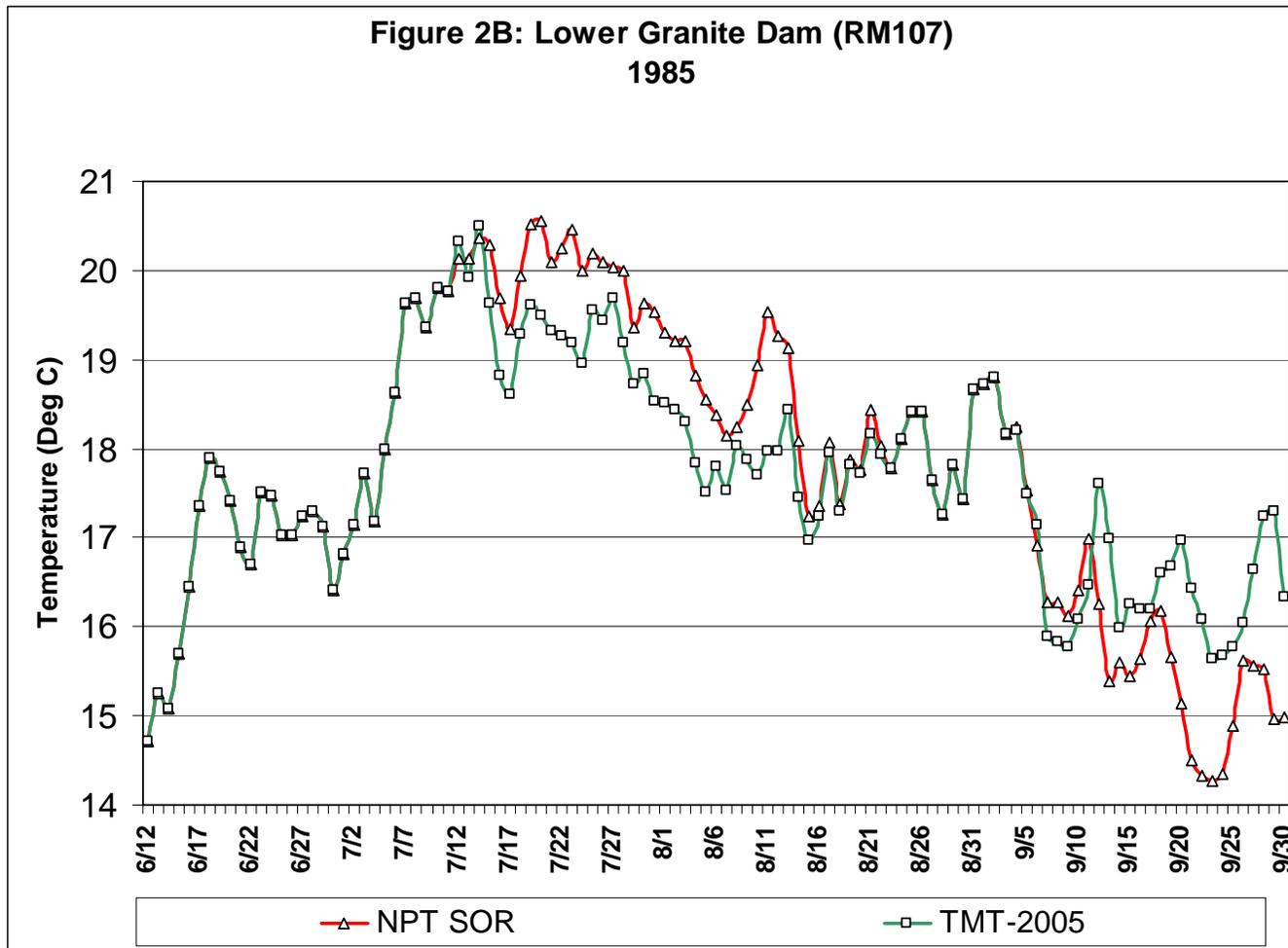
(Model data courtesy of Ben Cope, EPA-Seattle)



# Modeled Water Temperature



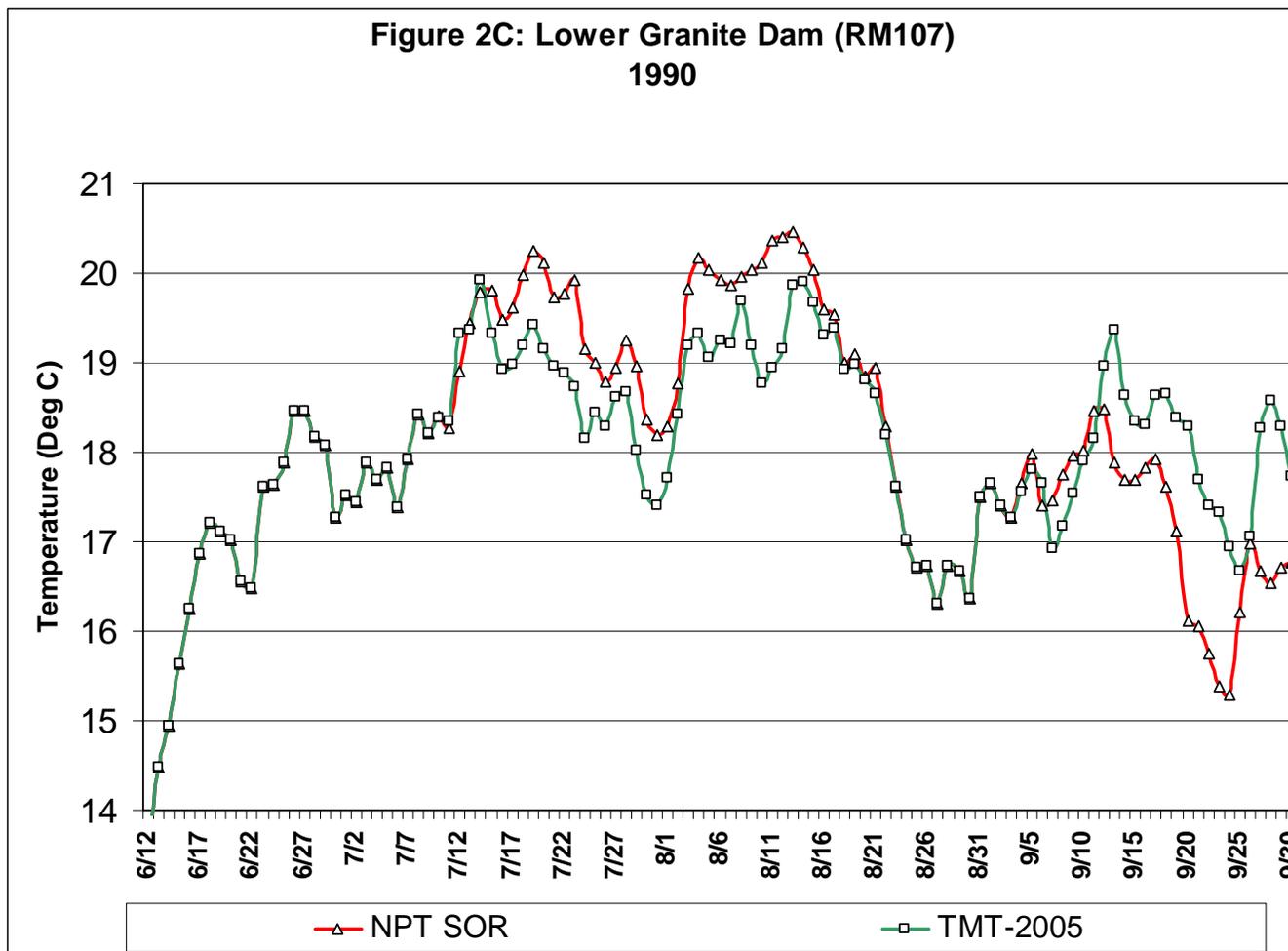
(Model data courtesy of Ben Cope, EPA-Seattle)



# Modeled Water Temperature



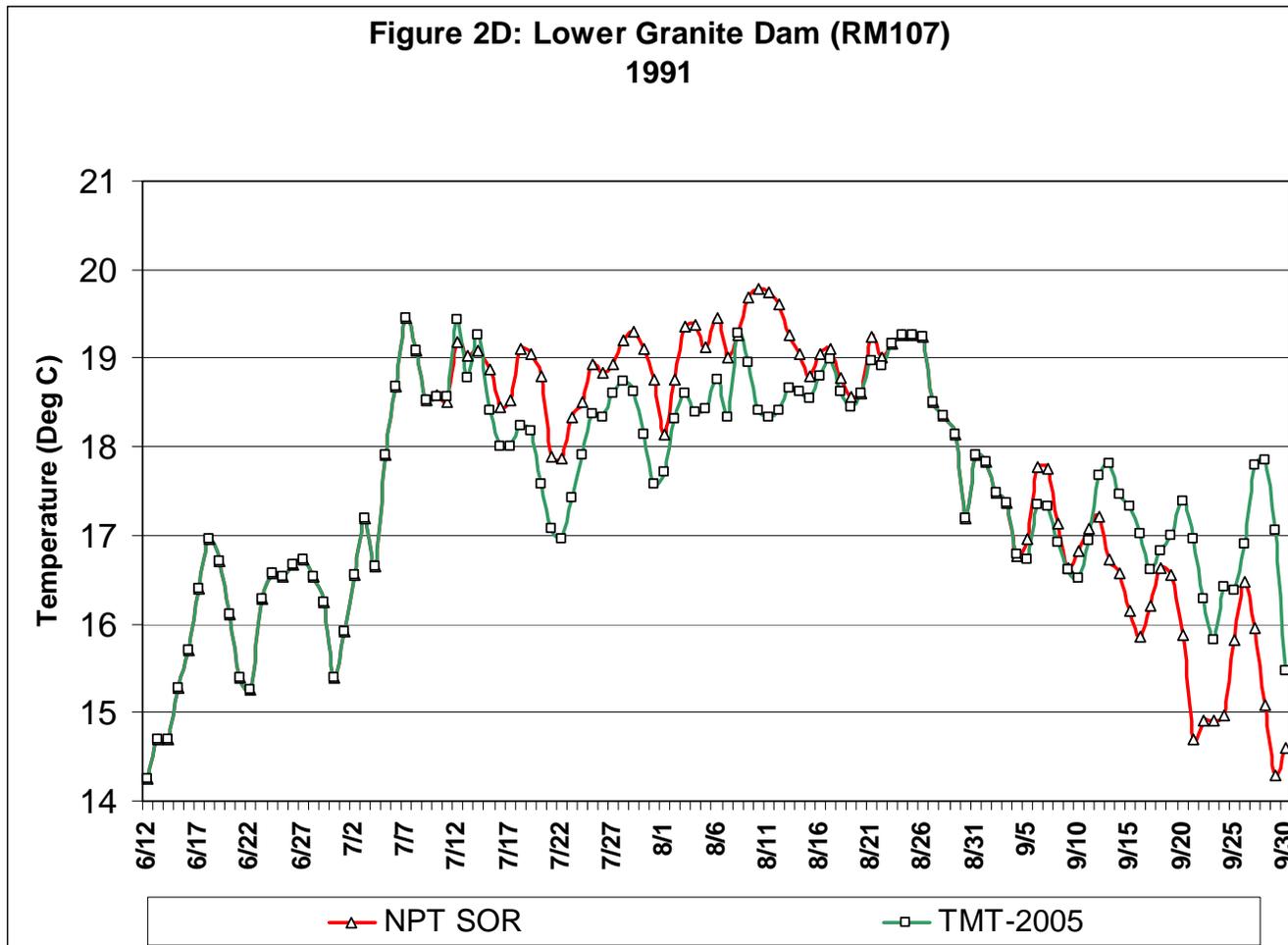
(Model data courtesy of Ben Cope, EPA-Seattle)



# Modeled Water Temperature



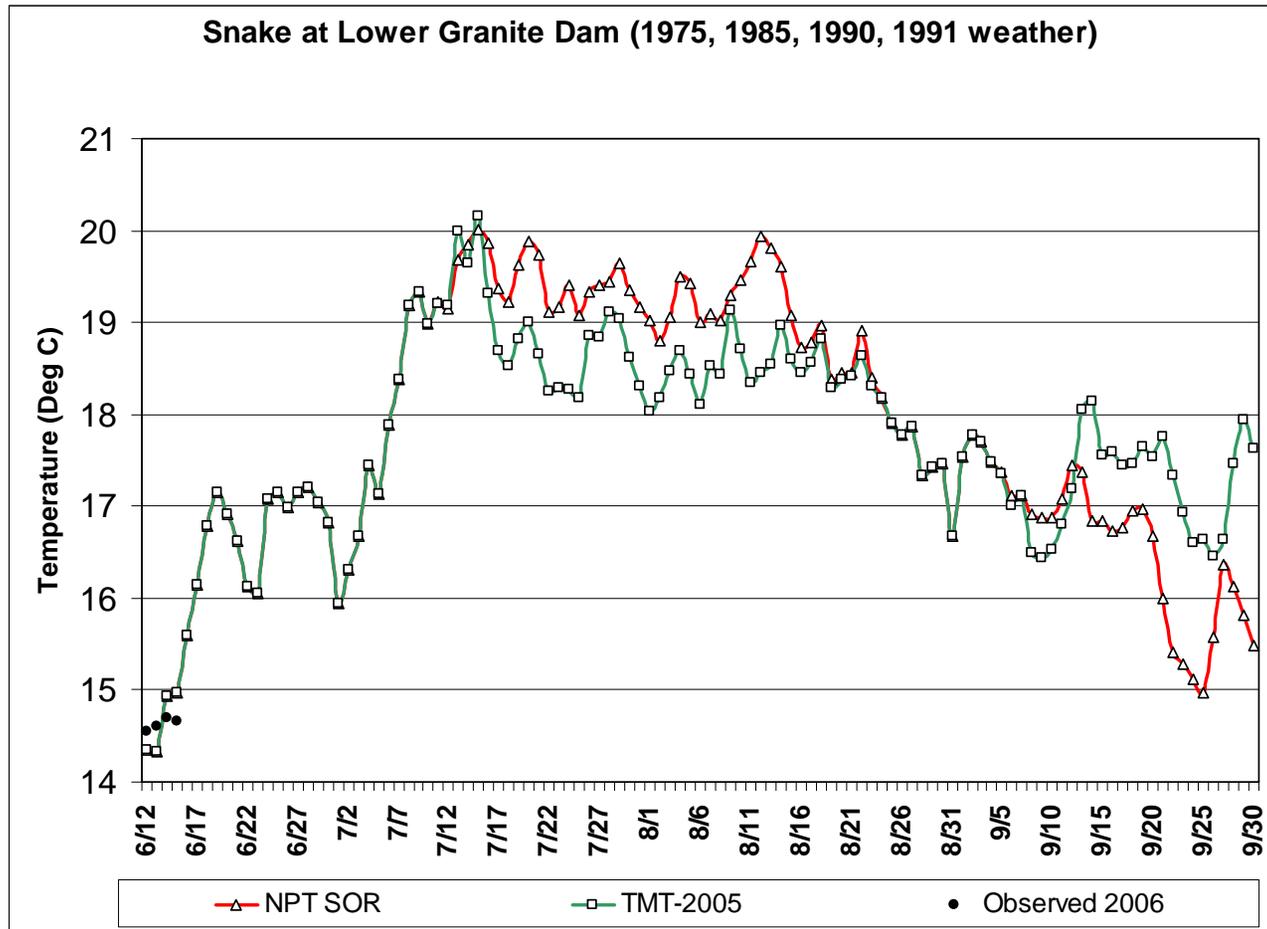
(Model data courtesy of Ben Cope, EPA-Seattle)



# Modeled Water Temperature



(Model data courtesy of Ben Cope, EPA-Seattle)



# Conclusions



- Nez Perce Tribe-SOR: 1 MaF drafted by September 30. Outflows 7 - 10 kcfs. Base assumes no DWR spill but may need to in order to meet state WQ standards. September carryover is 363 KaF.
- TMT-2005 Proposal: 1 MaF drafted by September 30 and 1535 feet elevation target on August 31. Outflows 7-12 kcfs. September carryover: 197 KaF.
- Water temperature modeling shows a +1 degC between the NPT-SOR and TMT-2005 proposals.

**Assumptions:**

- \* Streamflows are from the 20 Jun ESP run, which uses current basin conditions combined with 44 historical weather patterns (temperatures and precipitation) to produce 44 ESP hydrographs for 2006.
- \* Grand Coulee targets full by June 30 and drafts to 1285.0 ft in July and 1280 ft in August.
- \* Libby targets full in June, drafts to 2439 ft by 31 Aug, while meeting bull trout minimum flows of 8,000 cfs.
- \* Hungry Horse fills to 3560 by 30 June and drafts to 3540 ft by 31 Aug.
- \* Brownlee ends June at 2073 ft, and drafts some in July - August.
- \* Dworshak targets full in June and drafts to 1534 ft by 31 Aug.

**Results:**

Priest Rapids Meets the Following Flow Objectives:

Month	Occurrences out of 44 Years	Average Flow for 44 Years (kcfs)	Flow Objective (kcfs)
Jun	44	194	135

Lower Granite Meets the Following Flow Objectives:

Month	Occurrences out of 44 Years	Average Flow for 44 Years (kcfs)	Flow Objective (kcfs)
Jun	44	90	84
Jul	0	44	54
Aug 15	0	31	54
Aug 31	0	31	54

McNary Meets the Following Flow Objectives:

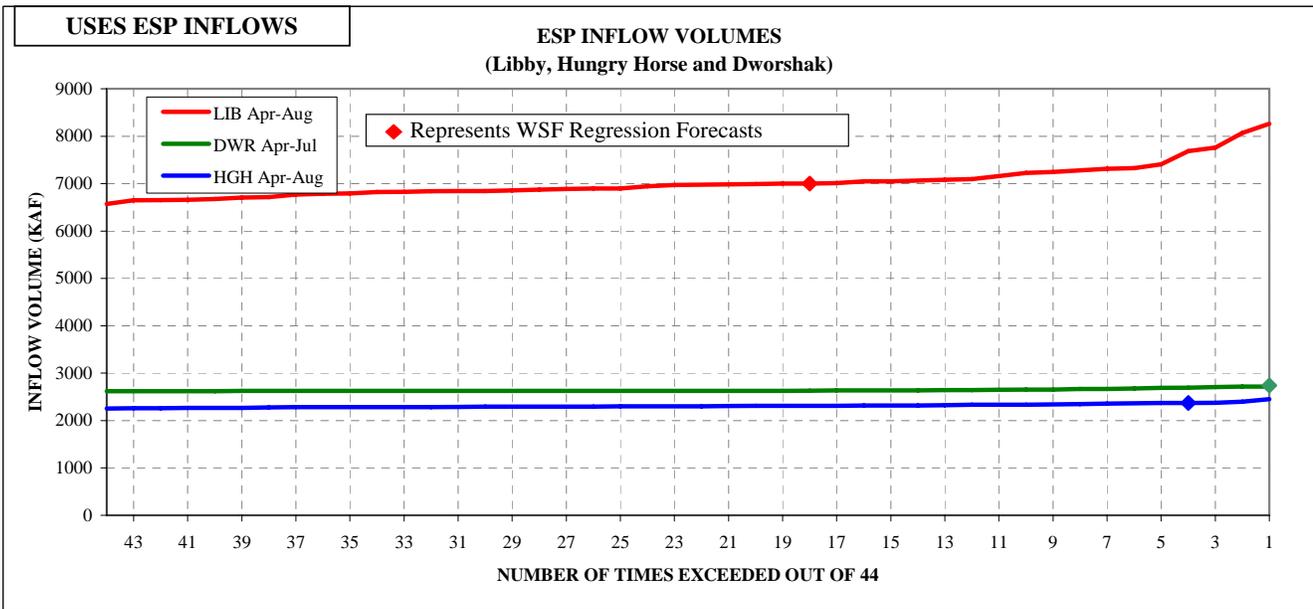
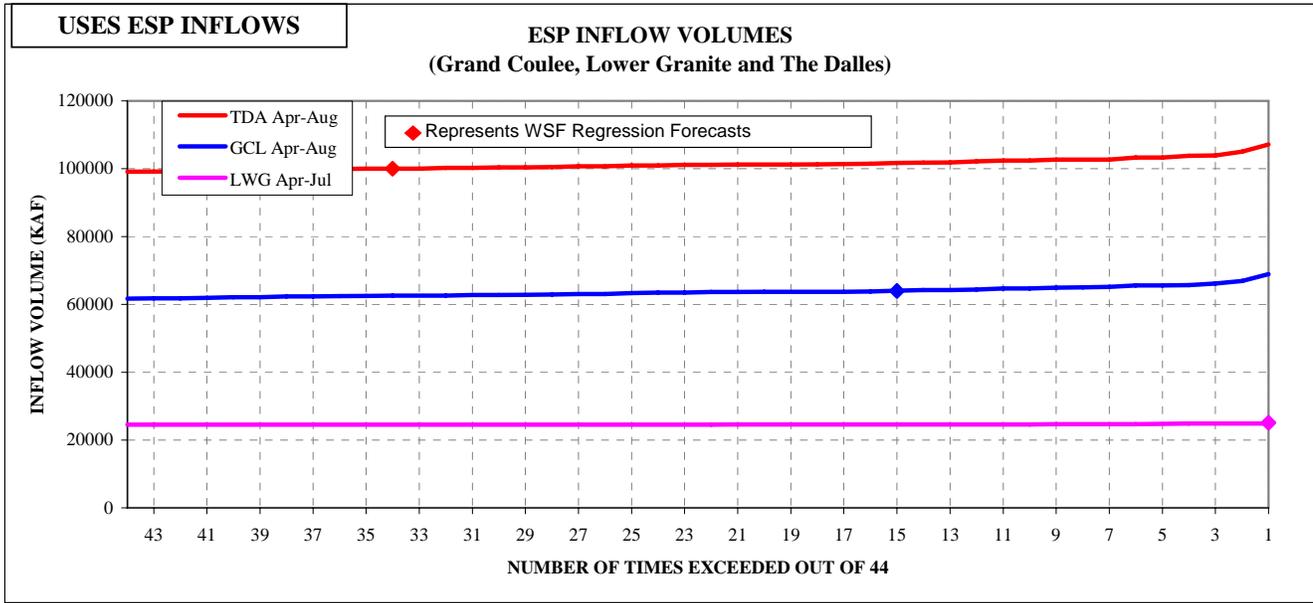
Month	Occurrences out of 44 Years	Average Flow for 44 Years (kcfs)	Flow Objective (kcfs)
Jun	44	312	260
Jul	20	203	200
Aug 15	0	159	200
Aug 31	0	151	200

Projects Refill to within 1 foot of full by 30 June:

Month	Occurrences out of 44 Years	Average Elevation on 30 Jun for 44 Years
Libby	44	2459
Hungry Horse	44	3560
Grand Coulee	44	1290
Dworshak	44	1600

Period Average Flows (kcfs):

	OBS FEB 1-28	OBS MAR 1-31	OBS APR 1-30	OBS MAY 1-31	FCST JUN 1-30	FCST JUL 1-31	FCST AUG 1-15	FCST AUG 16-31	FCST SEP 1-30
LIB	4.0	7.6	4.6	14.6	33.6	20.7	20.2	19.4	9.8
HGH	5.4	2.0	9.2	5.4	7.4	6.0	5.9	5.3	1.7
GCL	103	84	141	142	165	142	118	113	87
PRD	112	95	156	181	194	154	124	118	92
DWR	6.7	3.7	12.8	6.7	4.7	10.1	10.1	10.1	4.3
BRN	29	32	64	40	24	16	12	13	13
LWG	45	51	123	137	90	44	31	31	25
MCN	162	149	291	338	312	203	159	151	117
TDA	170	156	292	330	315	206	162	155	122
BON	177	165	308	346	317	209	165	157	124



Volume Comparison Table (ESP versus Regression) - Jun MidMonth:

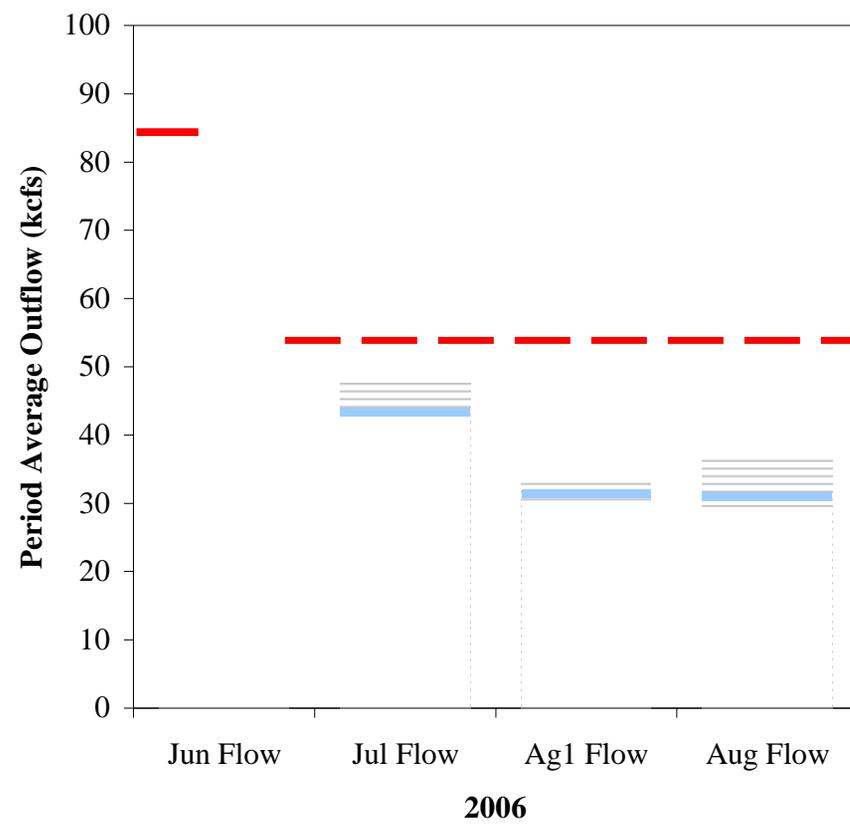
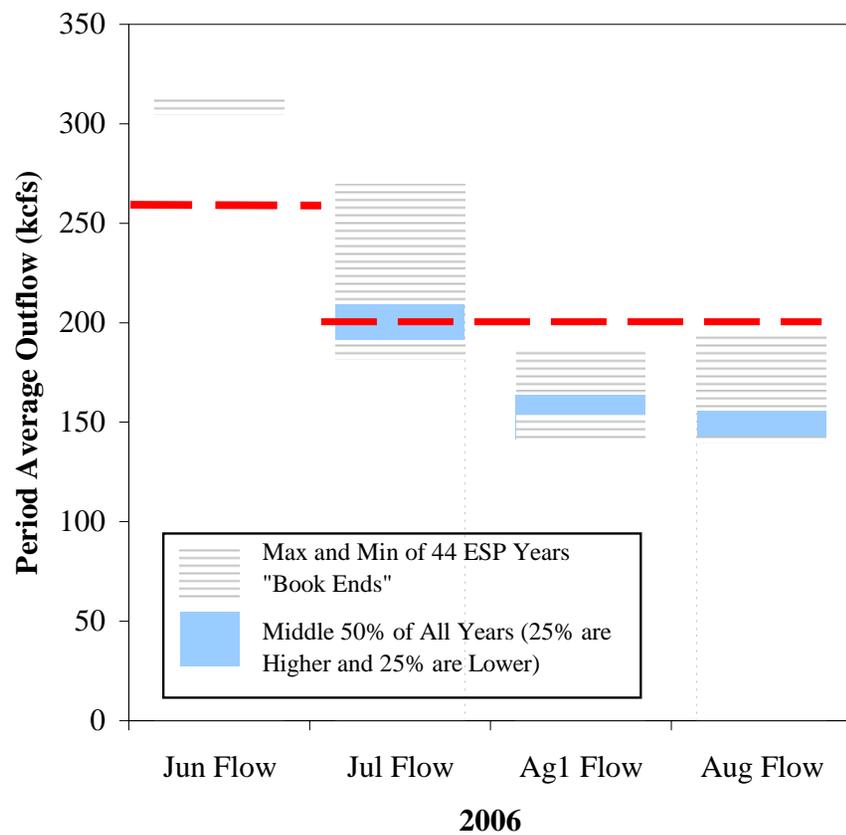
Forecast Period	Official WSF (Regression)			ESP Volumes				
	Volume (kaf)	Percent of Average	30 year Average (kaf)	10% Exceedance Probability	30% Exceedance Probability	50% Exceedance Probability	70% Exceedance Probability	90% Exceedance Probability
Grand Coulee	64000	106%	60290	65600	64200	63600	62700	62100
Lower Granite	25100	116%	21550	24800	24600	24600	24500	24500
The Dalles	100000	107%	93090	103300	101800	101100	100200	99700
Hungry Horse	2370	114%	2070	2370	2320	2300	2290	2270
Libby	7000	112%	6248	7330	7060	6970	6840	6680
Dworshak	2740	104%	2645	2680	2640	2630	2620	2620

USES ESP INFLOWS

# MONTHLY FLOW PROJECTIONS

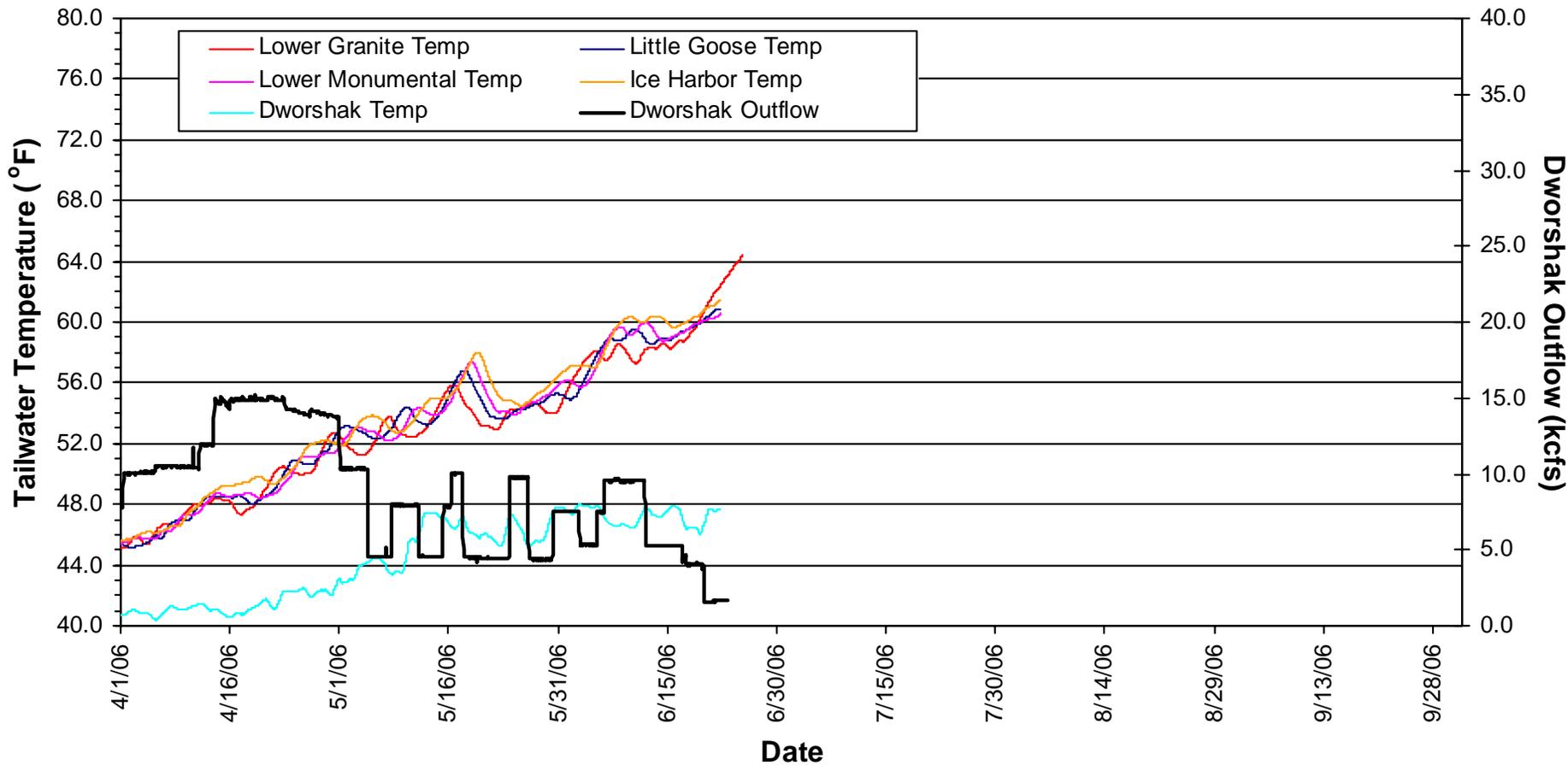
## MCNARY

## LOWER GRANITE

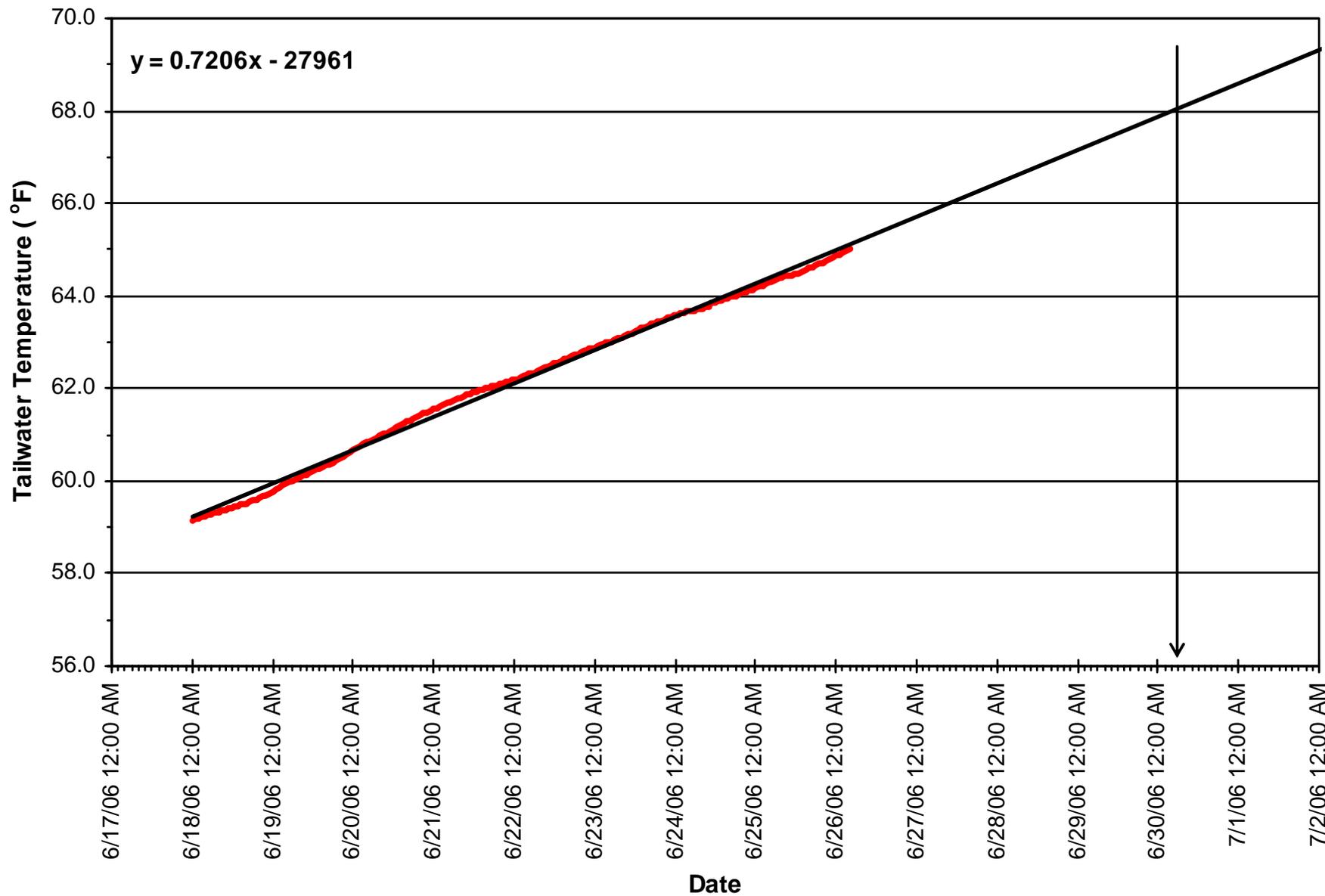


# Lower Snake River Temperatures April 3 - June 27, 2006

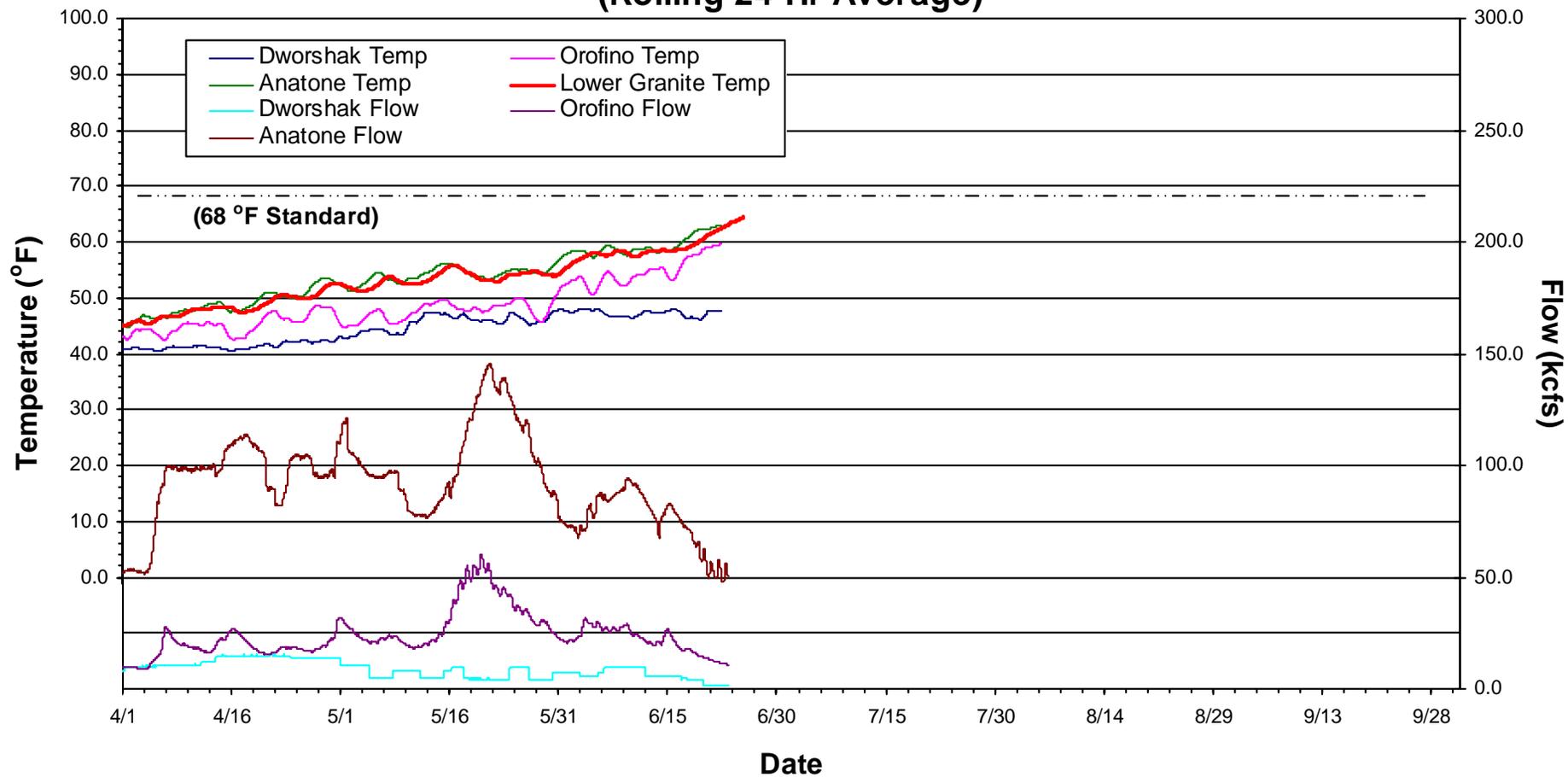
# Dworshak Outflows and Lower Snake River Tailwater Temperatures in 2006 (Rolling 24-Hr Average)



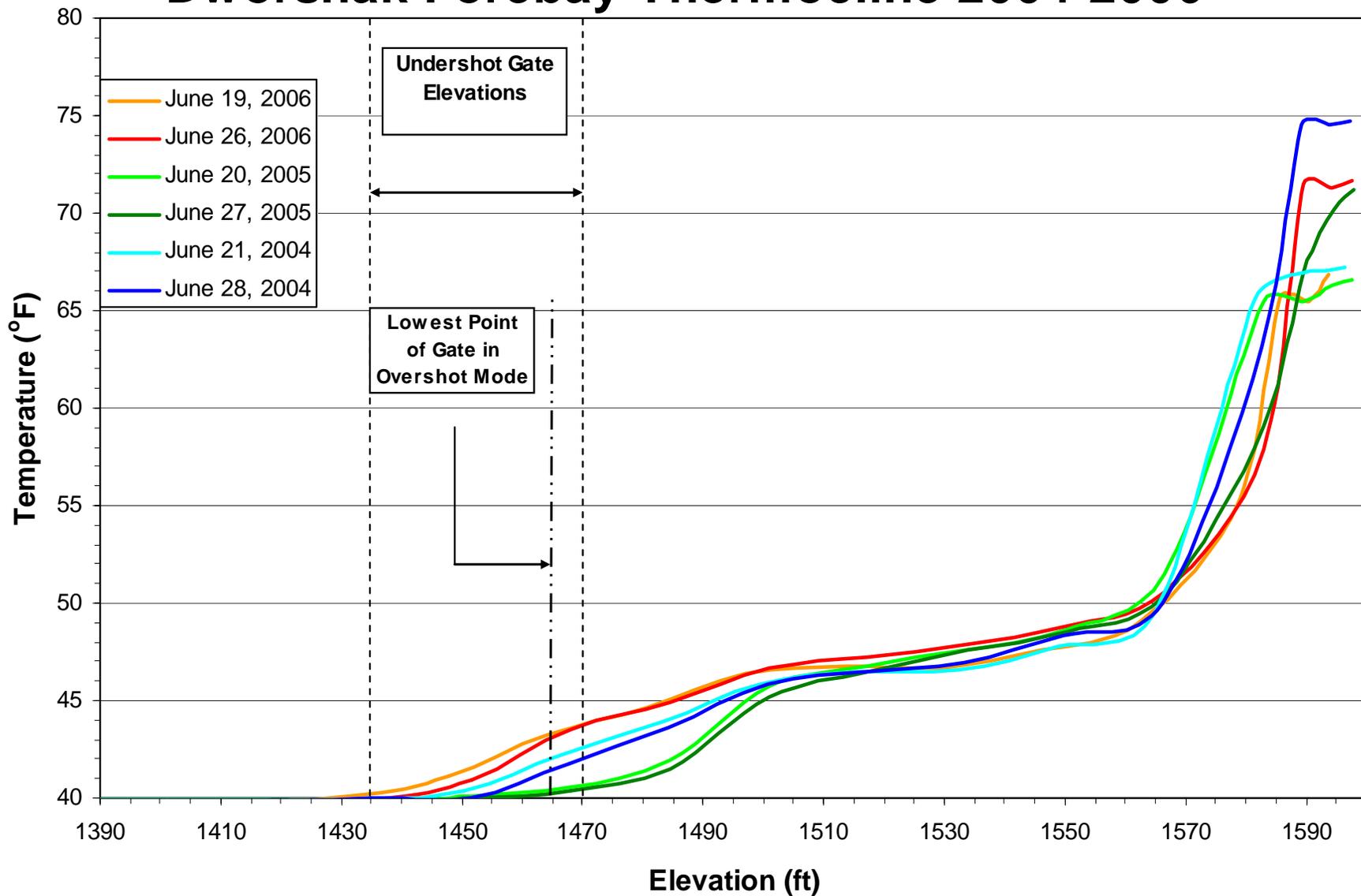
# Lower Granite Tailwater Temperature (Rolling 24-Hr Average)



# Lower Granite Inflows and Temperatures in 2006 (Rolling 24-Hr Average)



# Dworshak Forebay Thermocline 2004-2006

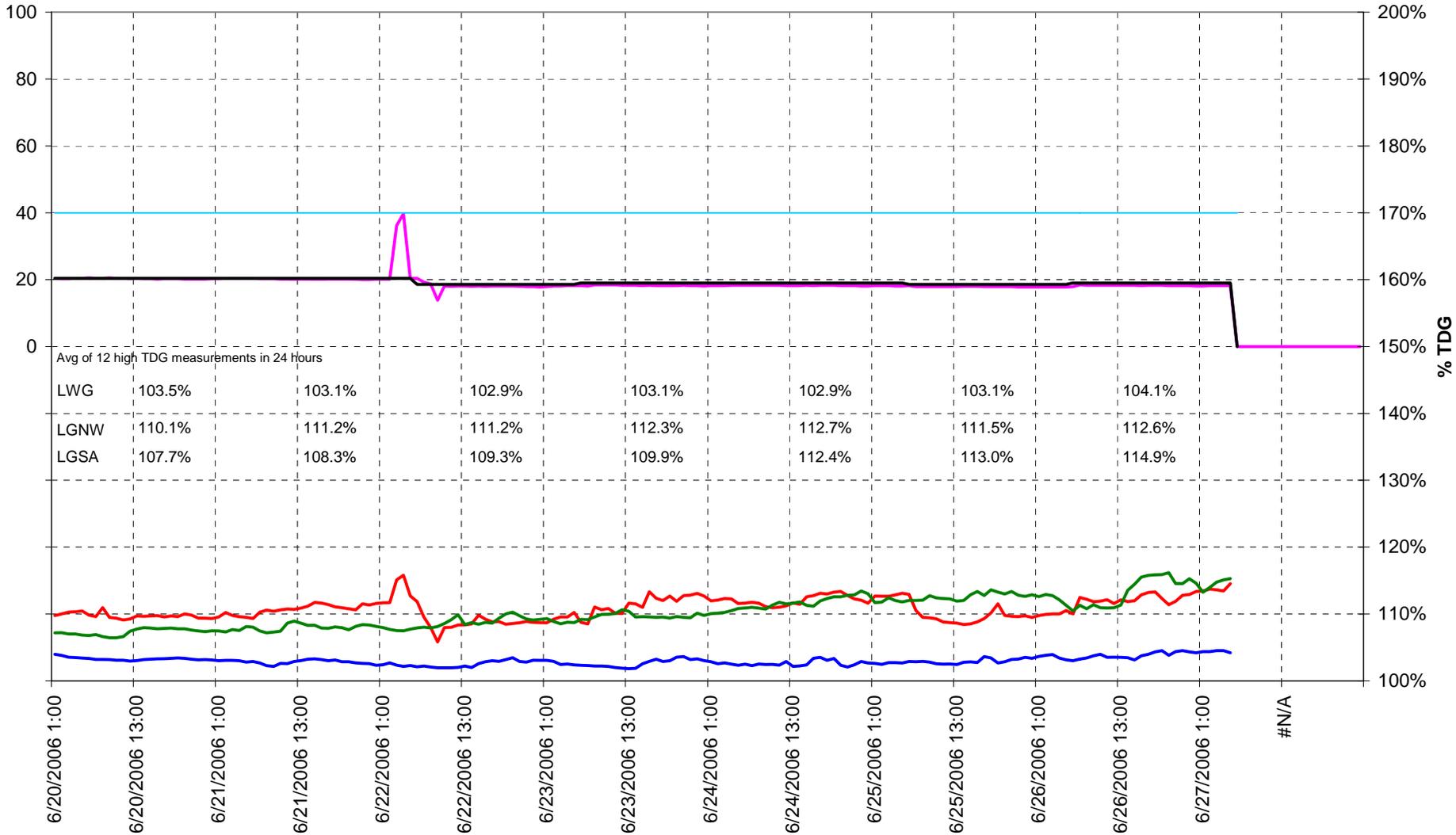


# Project Operations Update

20 June - 27 June, 2006

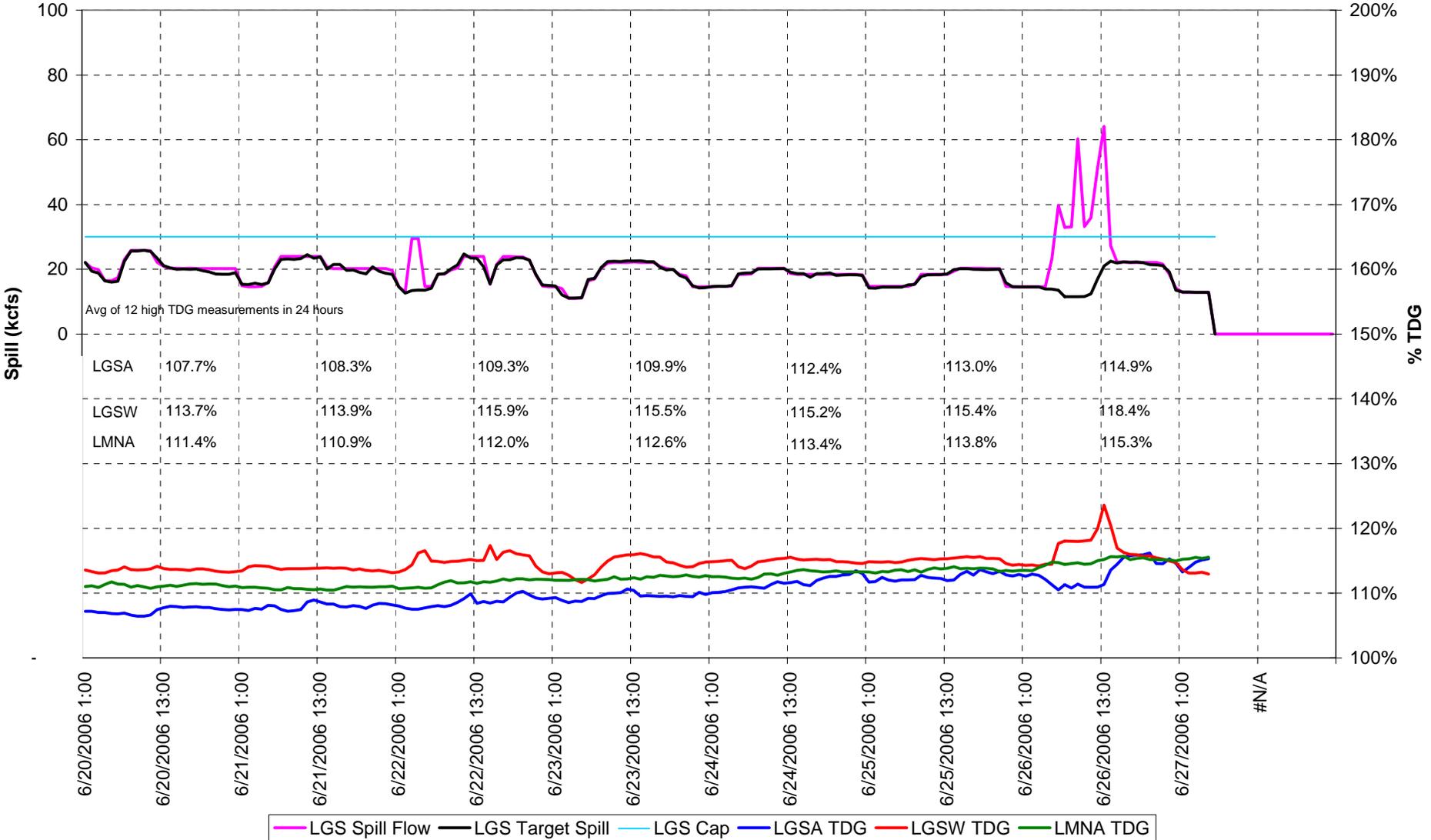


# LWG Spill Check

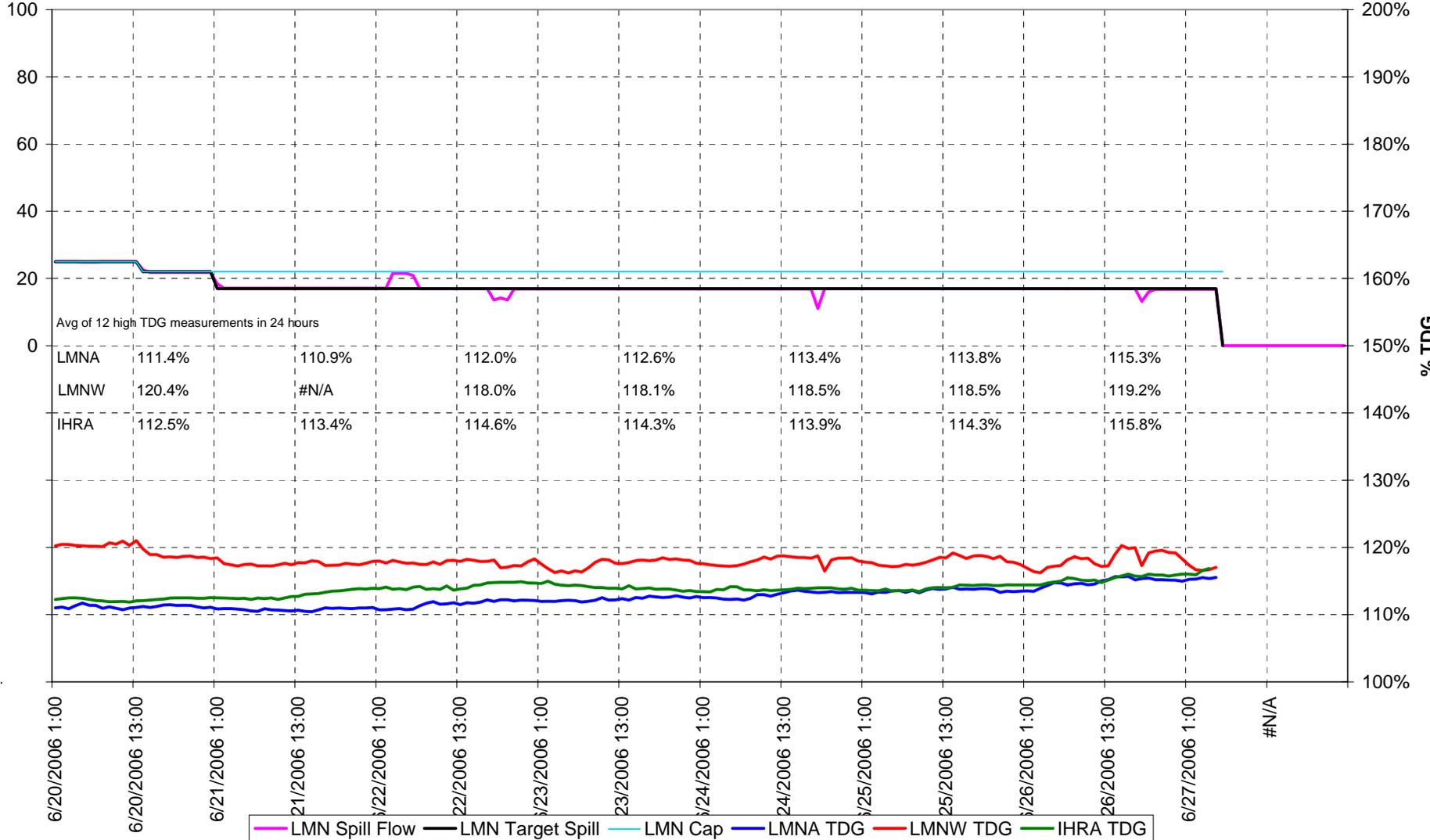


— LWG Spill Flow   
 — LWG Target Spill   
 — LWG CAP   
 — LWG TDG   
 — LGNW TDG   
 — LGSA TDG

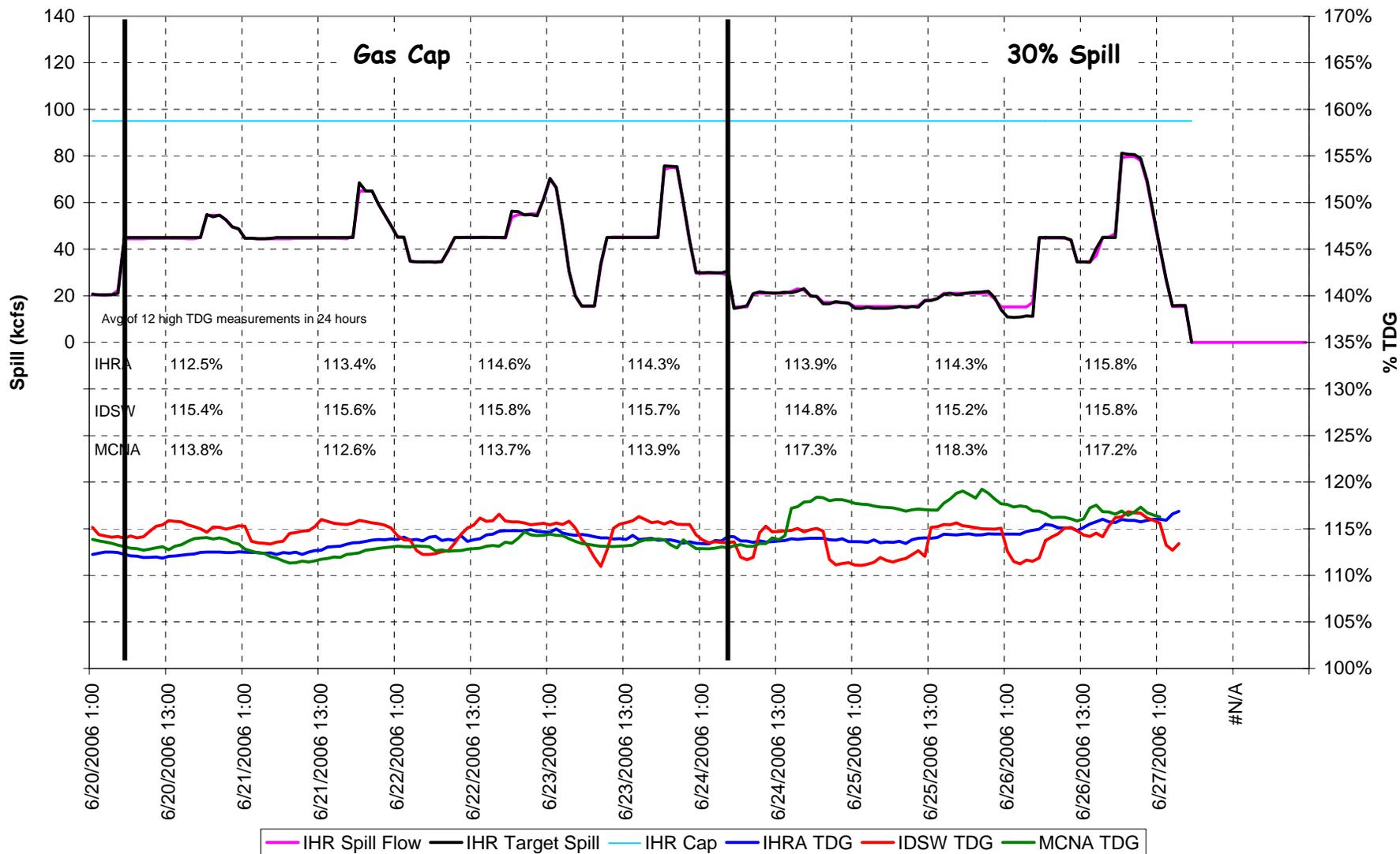
# LGS Spill Check



# LMN Spill Check

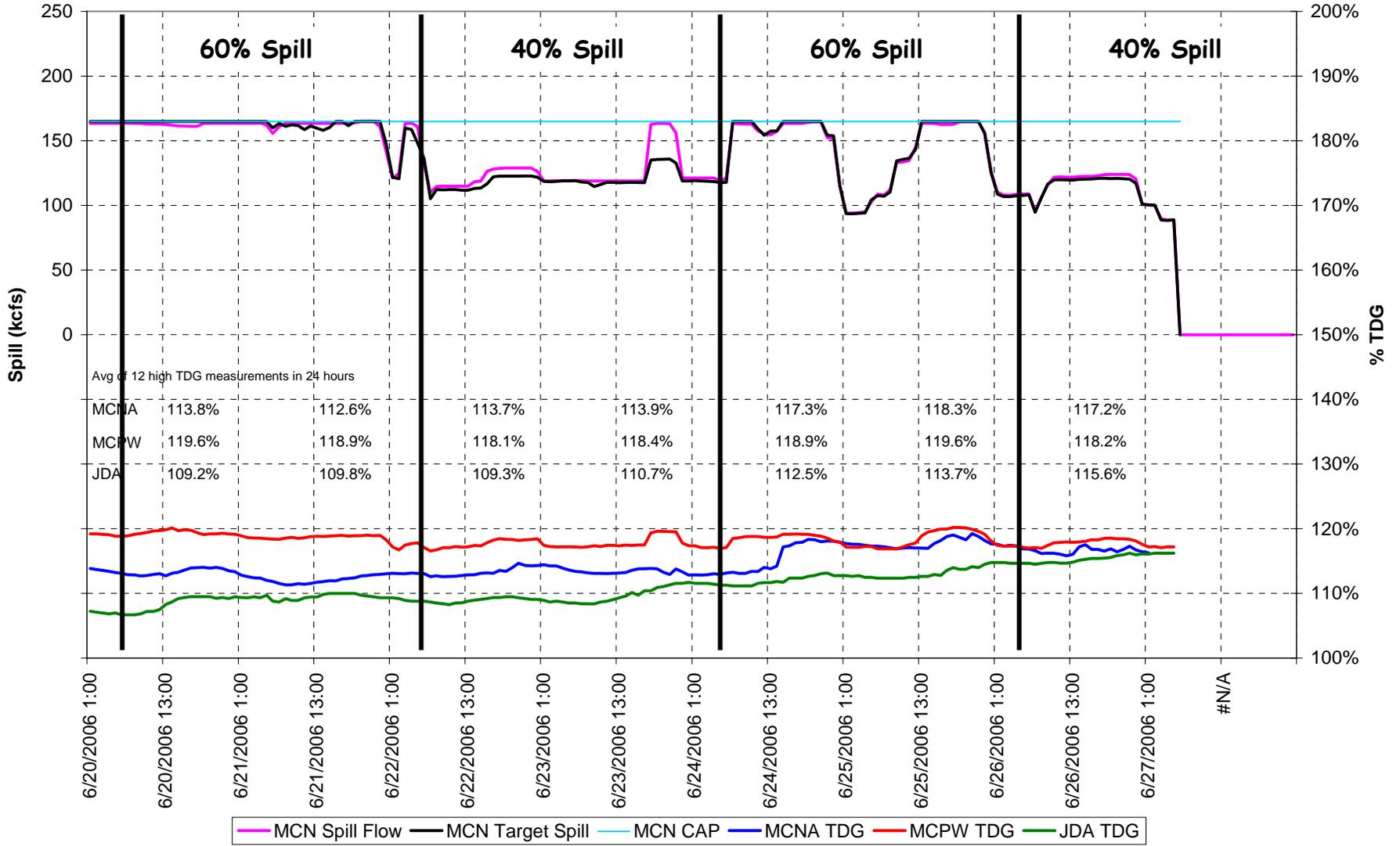


# IHR Spill Check

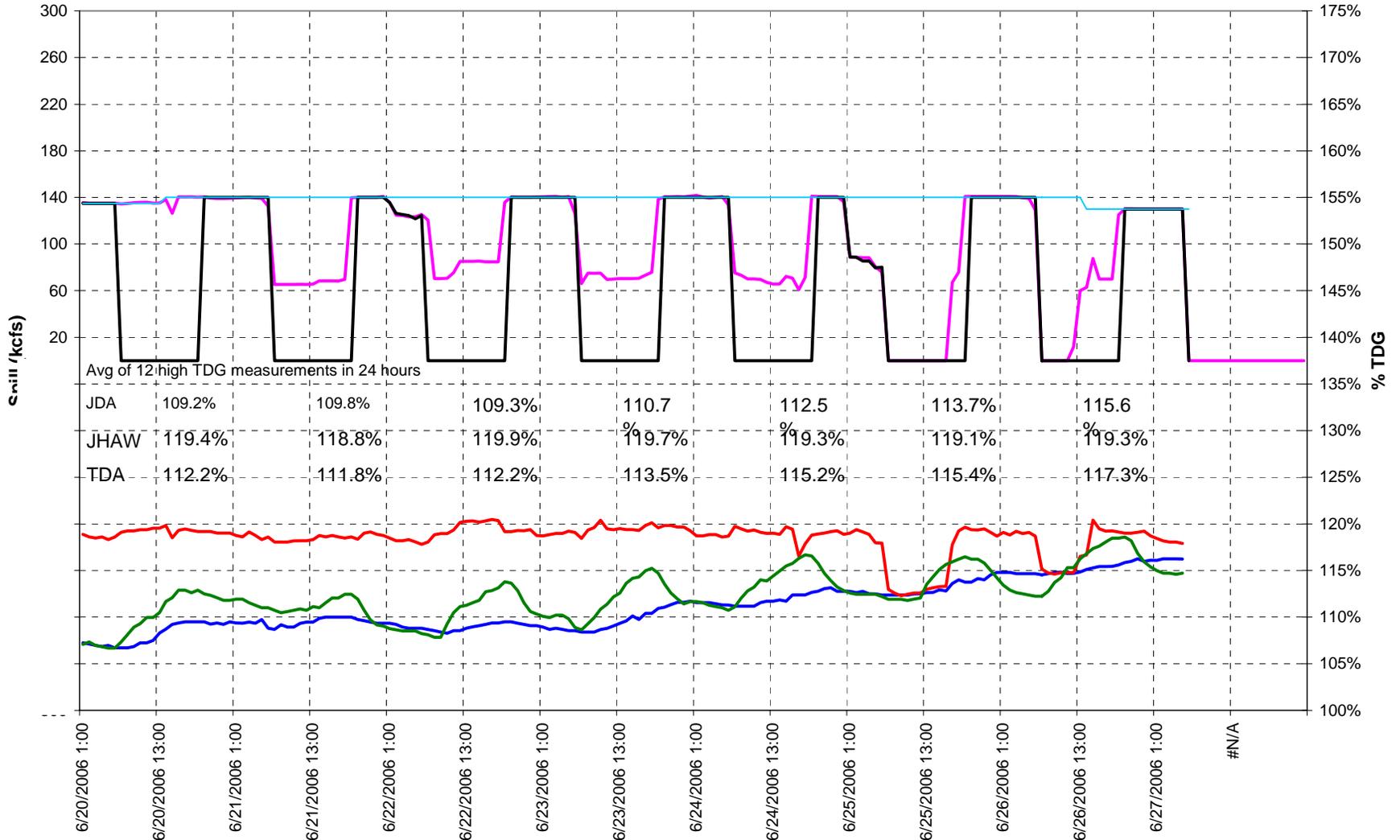


12-hr Spill = Spill to the Spill Cap from 1800 – 0500 hrs; 45 kcfs spill from 0500 – 1800 hrs.  
 24-hr Spill = Spill 30% of project outflow up to the spill cap 24 hrs per day.

# MCN Spill Check

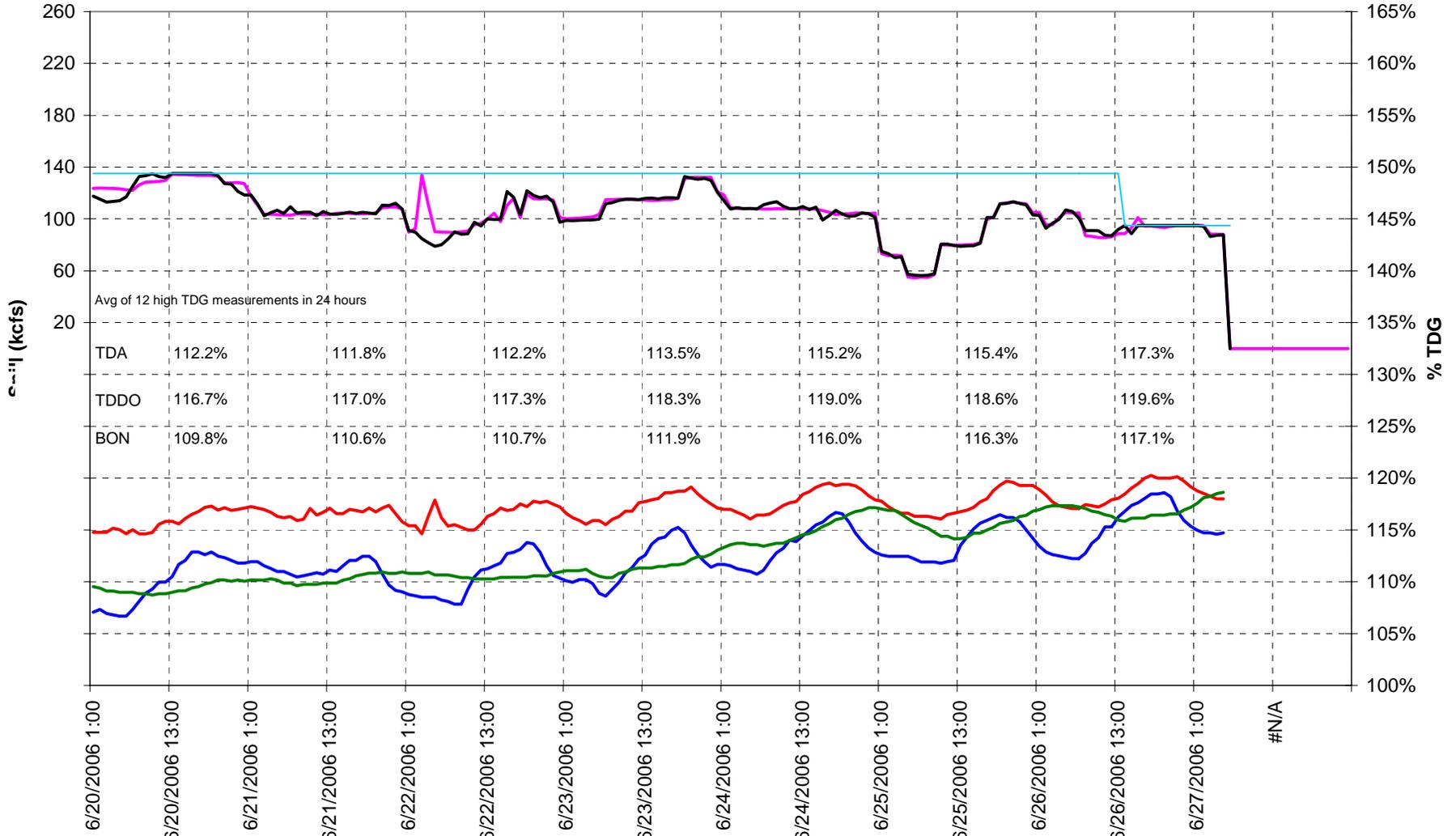


### JDA Spill Check



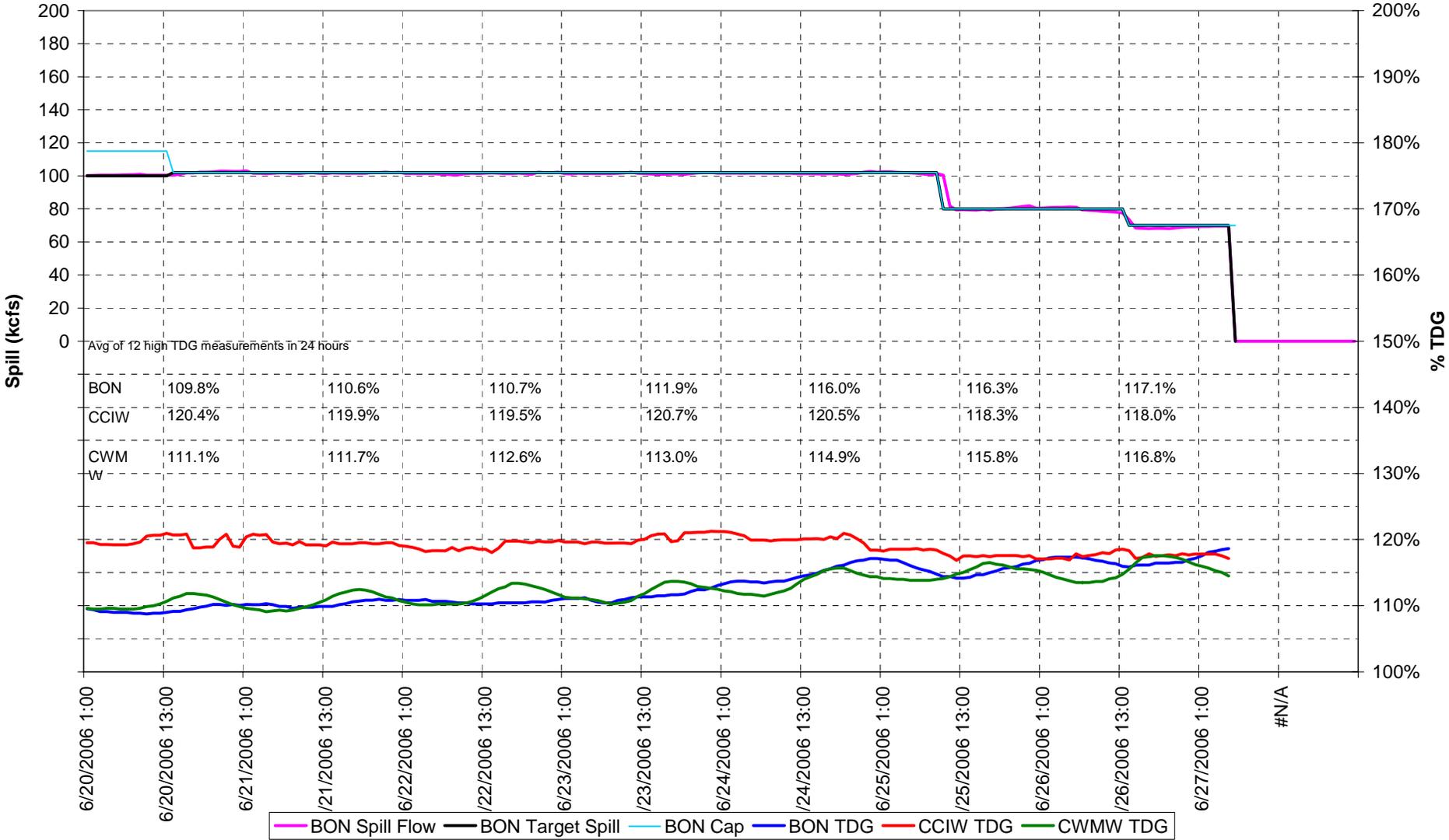
— JDA Spill Flow   
 — JDA Target Spill   
 — JDA Cap   
 — JDA TDG   
 — JHAW TDG   
 — TDA TDG

# TDA Check Spill



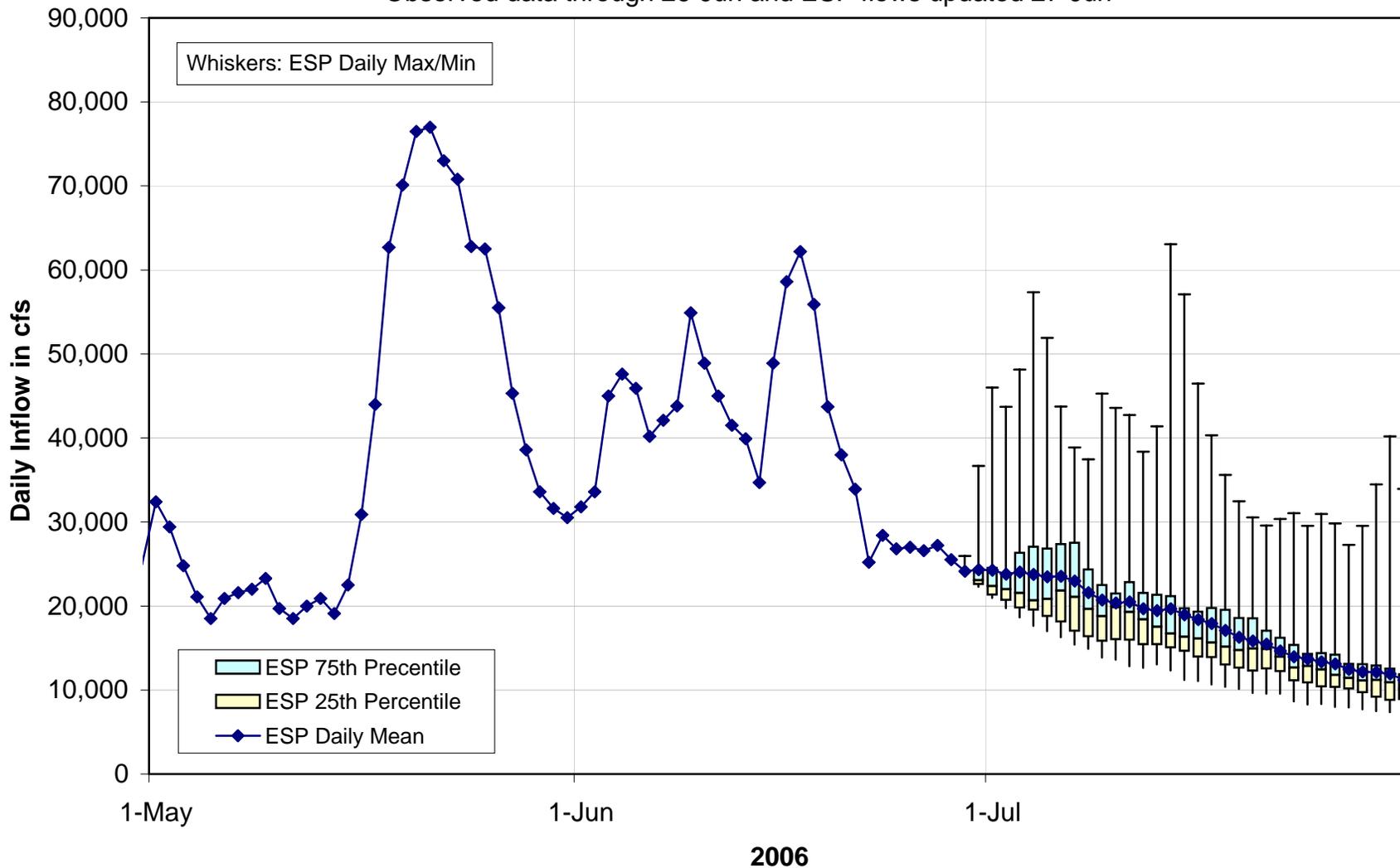
— TDA Spill Flow   
 — TDA Target spill   
 — TDA Cap   
 — TDA TDG   
 — TDDO TDG   
 — BON TDG

# BON Check Spill



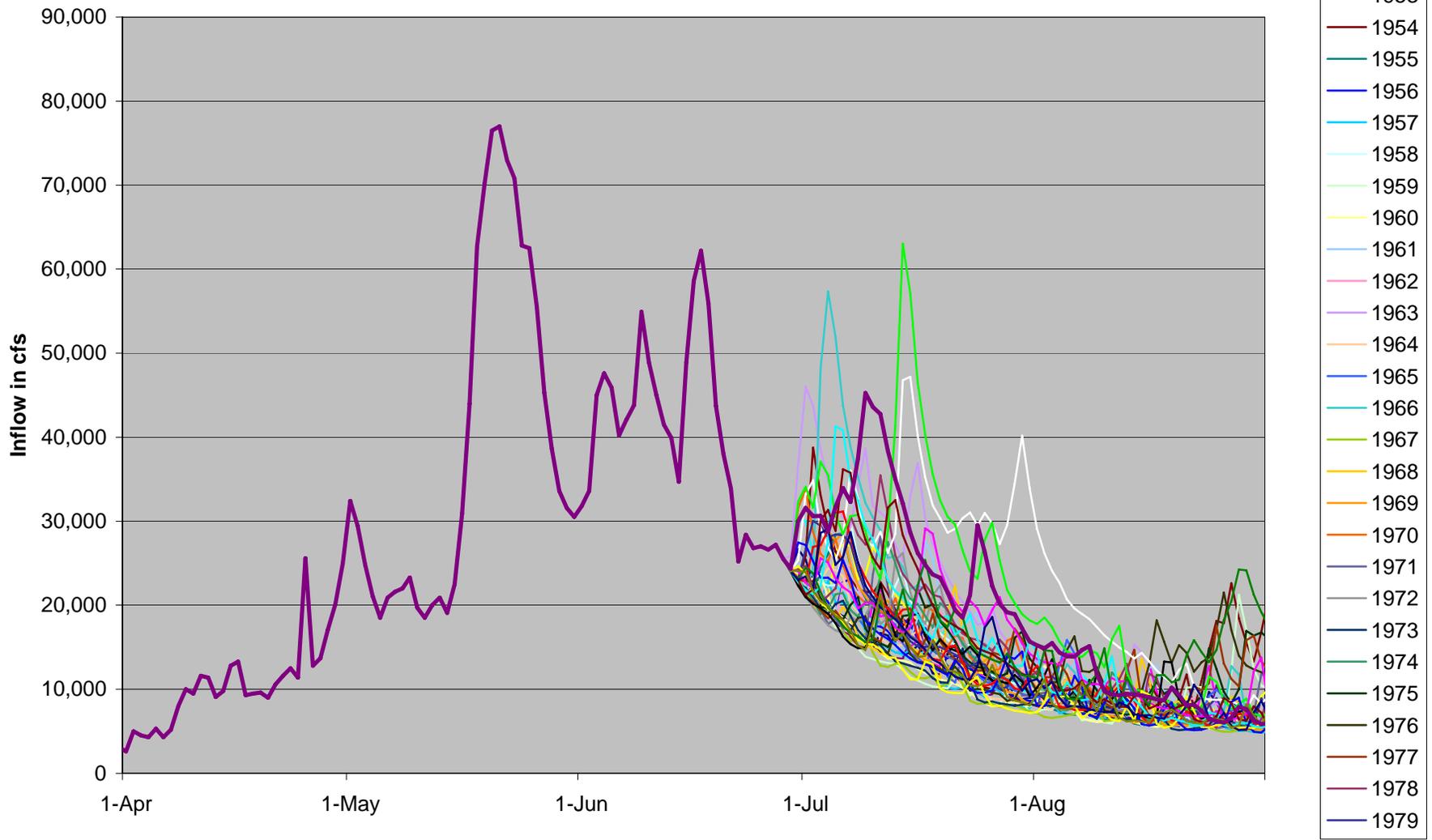
# Libby ESP Inflows - Daily Box-Whiskers Plot

Observed data through 26-Jun and ESP flows updated 27-Jun



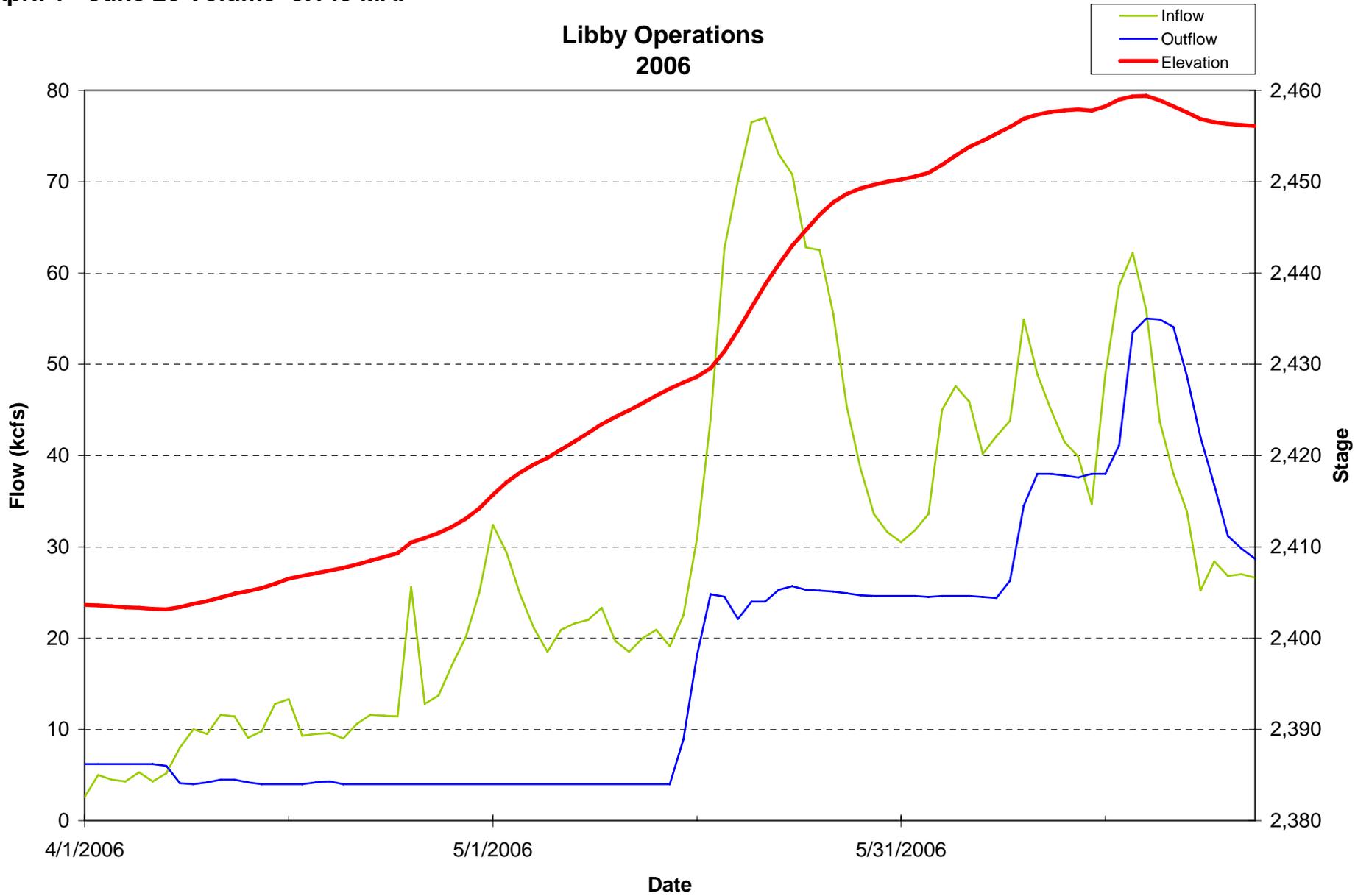
# Libby ESP Hydrographs

Observed data through 26-Jun and ESP flow updated 27-Jun



April 1 - June 26 Volume=5.145 MAF

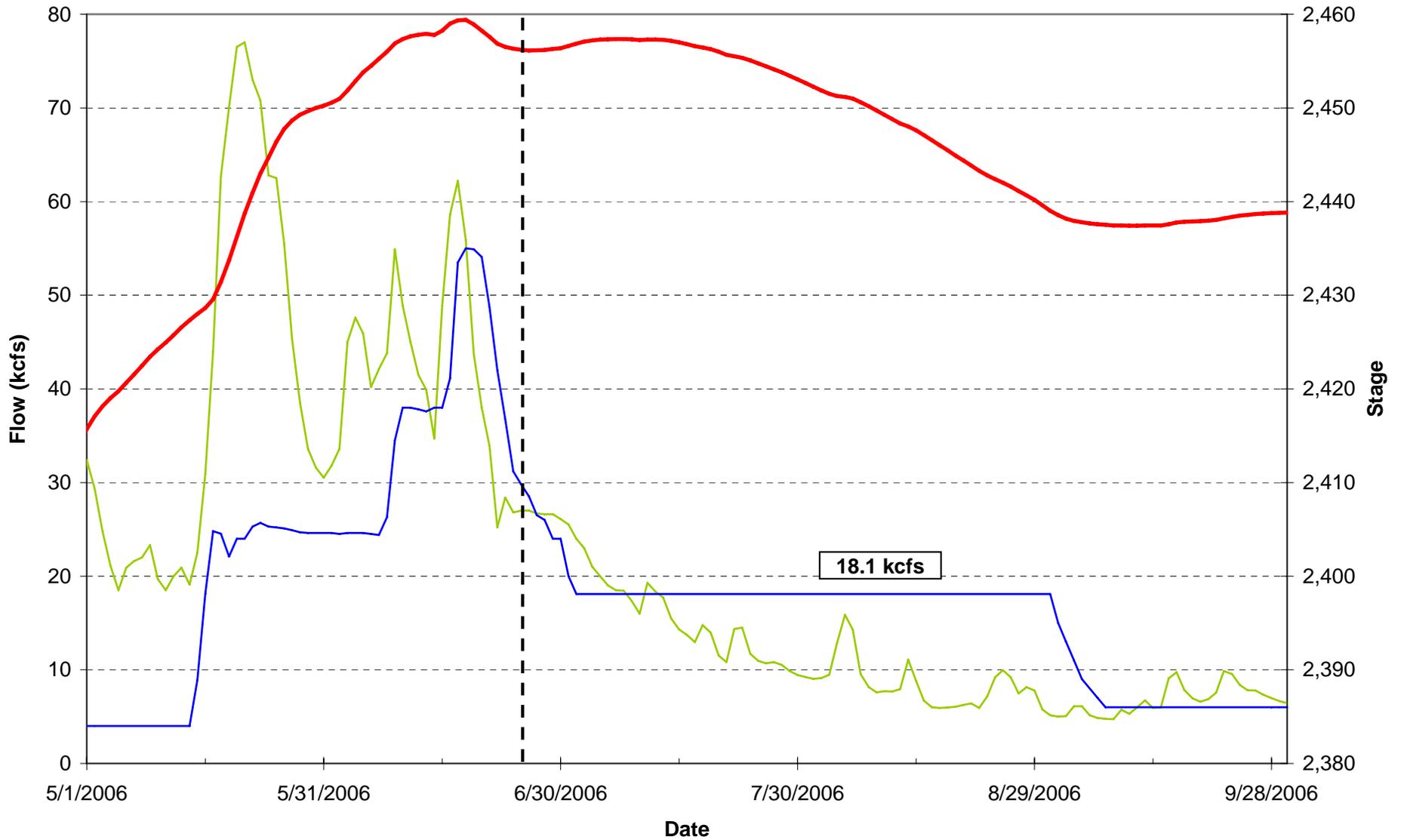
### Libby Operations 2006



# ESP (6/20/06) INFLOWS USED STARTING 6/26/06

APR-AUG VOLUME=6.815 MAF

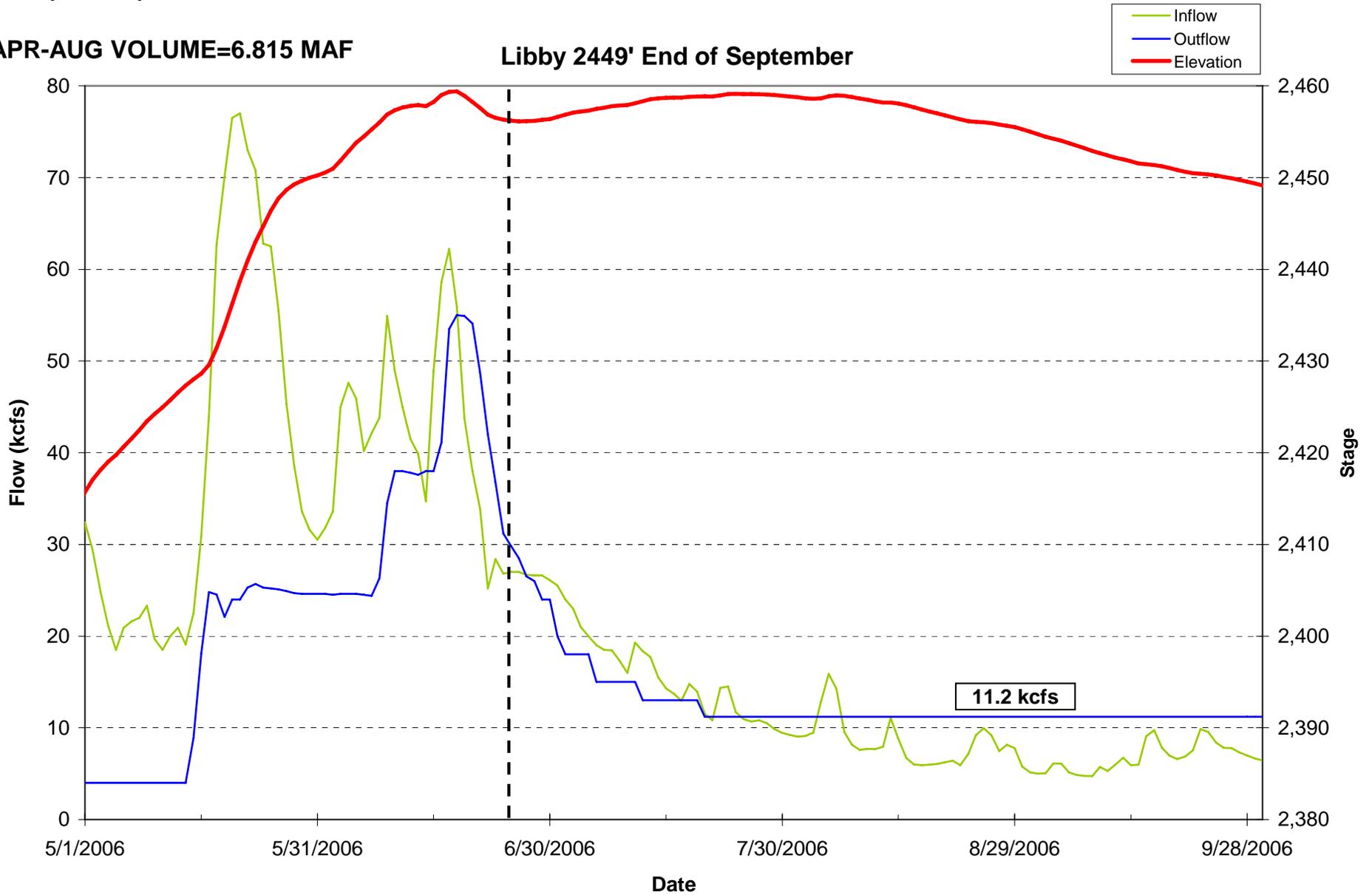
Libby 2439' End of August



# ESP (6/20/06) INFLOWS USED STARTING 6/26/06

APR-AUG VOLUME=6.815 MAF

Libby 2449' End of September



# COLUMBIA RIVER REGIONAL FORUM

## TECHNICAL MANAGEMENT TEAM

June 28, 2006 Meeting

### FACILITATOR'S SUMMARY NOTES ON FUTURE ACTIONS

Facilitator: Donna Silverberg

Notes: Robin Harkless

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.

#### **SOR 2006-MT-1**

Bruce Measure, NPCC-Montana, began the discussion offering that implementation of the Montana proposal for operations at Libby and Hungry Horse has a very high level of importance in the Montana Governor's Cabinet and NPCC. The difficulty Montana has faced over the last several years, from the state's perspective, is in getting the proposal implemented and understanding why it is not implement-able. The proposal was put forth again this year based on a continuing need to aid Montana's resident fish. He requested that the region consider this proposal in light of the fact that it is a NPCC recommendation and per results of the ISRP review.

Brian Marotz, Montana Fish Wildlife and Game, and Russ Kiefer, IDFG, provided an overview of discussions on the Montana proposal at FPAC on June 27. Areas of agreement amongst the FPAC participants included support for a gradual stabilized flow and the general 'sentiment' of the proposal. One proposed solution was a Libby/Arrow swap. Another suggested tool was a translation of the proposal's elevation targets to volumes of water. Areas of disagreement/impasse included:

- Policy vs. technical decision – many salmon managers felt that given the court ordered spill, a policy decision was needed on this issue.
- Biological outcome detection – too small to detect impacts to anadromous fish. Given the unknown, the proposal was viewed by some as misrepresenting the ISRP's analysis that the small difference in flow would have a negligible impact.
- Disagreement on the gap analysis of benefits to resident fish.
- 200 kcfs target flows at McNary are already compromised this year – this proposal would detract even further from that goal.
- There are more Snake River fish migrating in the lower river, so decreasing flows would have an even greater impact this year.
- Reconciliation with court-ordered operations – this poses a procedural challenge.

TMT members/participants offered responses to the Montana proposal:

- Idaho – Technical concerns that the impact to anadromous fish may be greater than the benefit to resident fish, but no technical vote was offered. Needs a policy decision.
- Oregon – Objects to the proposal from a technical perspective.

- Washington – This year requires a policy decision, and technical discussions should continue through FPAC for a longer term solution.
- USFWS – Technical concerns similar to Idaho – requires policy level decision.
- BOR – Makes sense to limit the draft at Hungry Horse from a hydrological standpoint. Needs regional support – elevate to policy level.
- NOAA – The proposal would reduce the likelihood to meet objectives in the BiOp. If there is regional support, however, will not object.
- COE – Defers to NOAA.
- BPA – Needs regional consensus to move forward.
- Nez Perce – Disappointed that SOR has not come to resolution. Will require operational changes; worth pursuing Libby/Arrow swap or other change in hydrosystem strategy to lower impacts to downstream fish.
- CRITFC – Conflicts with our objectives to meet anadromous fish needs. Encourage Montana to pursue with FPAC a means to meet all needs.

**Next Steps** – Without regional consensus to implement the proposed operation, Montana requested the issue be elevated to IT for policy discussion and decision. A conference call was scheduled for June 29 at 1:00 pm. (**UPDATE:** The issue was discussed during the call and no conclusion was reached. IT will continue discussing the Montana proposal on July 6 during their usual monthly face to face meeting.)

### **Dworshak Operations**

***Current conditions:*** TMT members discussed current temperature conditions, noting that temperatures at Lower Granite had increased and were projected to reach 68° earlier than normal. The COE proposed going to 43° temperature releases from Dworshak, and increasing outflows to 7.2 kcfs as soon as possible. And, when Lower Granite temperatures reach a rolling 24-hour average of 67°, this will trigger the COE to increase Dworshak outflows to full powerhouse. TMT members responded to the proposal:

- Idaho – Since temperatures appear to be moderating slightly, supported the proposal as a reasonable operation that is mindful of all interests.
- Montana – Objected to the proposal; recommended going to full powerhouse immediately.
- Oregon – Defer to the other salmon managers, but prefers a full powerhouse operation and further discussions about a more aggressive trigger for increasing outflows at Dworshak.
- USFWS – Suggested doing additional temperature volume graphs (EPA/CRITFC) to show projections through the summer.
- NOAA – Agreed with stair step approach.
- Nez Perce – Agreed with stair step recommendation, which avoids increasing outflows too soon.
- CRITFC – Agreed with stair step approach.

The COE planned to operate to full powerhouse and have a TMT call on Friday to set triggers for weekend operations. After further contemplation, the COE decided to implement its originally proposed operation (7.2 kcfs), noting the objection from Montana, which elevated the issue to the IT. (**UPDATE:** The IT call resulted in the COE

continuing the operation of 7.2 kcfs at 43° out of Dworshak. The issue was then revisited during a TMT call on Friday, June 30, and outflows were reduced to 4.2 kcfs. A summary of that conference call can be found on the TMT web page.)

***CRITFC Presentation:*** Tom Lorz presented different operating scenarios (2005, Nez Perce proposal) using 2000 temperatures to representative the current season. Tom noted that the models were intended to be read as bookends, not adjusted for adaptive management. The two operations showed a 1° C difference in temperatures, and it was not known specifically what the biological impacts of that difference might be. Tom suggested that the graphs were outdated and suggested re-running the models with current information.

***SOR NPT 2006-1:*** Dave Statler and Greg Haller, Nez Perce, provided an overview of the Nez Perce proposal for Dworshak operations through the summer. After much discussion, TMT did not support the recommendation as a proscriptive tool, but acknowledged that there was support for the general concepts in the framework of the proposal. The Nez Perce representatives clarified that their intention with the recommendation was similar to the group's interest, and will now need to decide if/how to re-write the recommendation.

### **2006 C-1, C-2 Treaty Fishery**

Tom Lorz, CRITFC, presented two SOR's for tribal treaty fishing operations, one that had already been completed before today's meeting. As a process point, TMT supported the COE and CRITFC coordinating on treaty fishing SOR's and then notifying TMT of the outcome of those discussions.

### **ESP/HYSSR Models**

Graphs were provided of ESP volumes and forecasts. All projects were projected to refill. A suggestion was made to include on the graphs which forecasts are being used in the models.

### **Operations Review**

***Reservoirs:*** Libby was at 2.7' from full; spill had ended. A graph showing Libby flows April-June was shared. A question was asked about why more water was not released in April-early May from Libby. The COE responded that the water was shaped into later May since the project was below end of April flood control, and inflows made a sharp increase to above 100% of normal in late May, remaining high in June. Increased spill caused impacts to fish, including gas bubble trauma to bull trout. No mortalities were observed. Brian Marotz, Montana, will provide a summary of this information to TMT when it is available, along with the COE's 'after action' report.

Dworshak was within a foot from full and operating 7.2 kcfs out. Hungry Horse was at elevation 3558' and expected to be full the first week of July, 20' from full end of August. Grand Coulee was at 1287' and expected to fill by July 4/5. Flows at Priest Rapids were at 200 kcfs. Upper Snake flow augmentation began this week. The season

average flows were as follows: Lower Granite April 3-June 20, 125 kcfs; McNary April 10-June 30, 325 kcfs; and Priest Rapids April 10-June 30, 192 kcfs.

Given a high number of subyearlings, a suggestion was made to increase John Day spill to a summer operation, 24 hours at 30%, rather than wait for the usual July 1 start. The action agencies agreed to check on their capacity to implement the request to go to summer operations at John Day as soon as possible.

*Fish:* The subyearling migration is underway. Adult numbers look similar to last year.

*Power:* Robyn Mackay was welcomed as the new TMT representative for BPA. She suggested that everyone review the emergency protocols and check in at the next regularly scheduled TMT meeting to update them for summer. Units 1-4 at John Day will be back up no later than September 8, possibly as early as late July.

*Water quality:* Low spill caps have been set in the Lower Snake. Many temperature exceedances have occurred. The caps are set at 65 at Bonneville, 18 at Little Goose and 15 at Lower Monumental.

**TMT Meeting Schedule: Wednesday, July 12, 9am-noon**

Agenda Items include:

- Dworshak Operations
- Libby/Hungry Horse SOR Update
- Marine Mammal Permitting Process Update – Oregon and Washington
- Sturgeon Operations – USFWS
- Emergency Protocols
- Operations Review

## Technical Management Team Meeting Notes

June 28, 2006

### ***1. Greetings and Introductions.***

Today's Technical Management Team meeting was chaired by Cathy Hlebechuk and facilitated by Donna Silverberg. The following is a summary (not a verbatim transcript) of the topics discussed and decisions made at this meeting. Anyone with questions or comments about these notes should contact Hlebechuk at 503-808-3940.

### ***2. Libby and Hungry Horse SOR.***

Bruce Measure, Montana Council Member, said this issue has been discussed in the region since 1996. He said the Governor of Montana is very concerned about the ability to manage fish in the Kootenai River in a productive manner, and the implementation of this SOR is of the highest importance to the State of Montana. We are having a very difficult time understanding why it has been so difficult to implement, he said, give the fact that this operation is mandated in the Council's Mainstem Recommendations. It was not intended in any way to be a poke in the eye to any of the other salmon managers – we in no way were editorializing against anyone else in the region, Measure said. We would like to move forward with this, he said – this year, because of the operations at Libby, we again have fish that are in bad shape.

The Council should be accorded some deference, Measure said – to ignore the Council, and the science behind this recommendation, is incongruous. At the TMT, a single member can derail such a recommendation. The ISRP has proposed a set of scientific recommendations to test the effects of our proposed operation on our listed fish. Unless this requested operation is implemented, it is not possible to do so. Again, this is a very high priority for our governor, and we are going to keep pushing for this until it is implemented, Measure said.

Brian Marotz said this operation was discussed at yesterday's FPAC meeting, which he and other Montana representatives attended. Our hope was to develop an SOR with everyone's name on it, he said, but that wasn't possible, primarily because we were unable to specify how long the summer flows would continue. The SOR we developed did have a few things in common; I think people understand why we want these operations at Libby and Hungry Horse, but a few people thought it widened the gap we were experiencing for anadromous fish.

One thing we did agree upon yesterday is the need to meet the needs of both resident and anadromous fish, said Russ Kiefer. We also recognized Montana's desire to maintain higher flows in September to keep the Kootenai productive. We explored ways to meet Montana's needs without impacting anadromous fish – for example, by supporting Montana's desire to better balance the winter flood control draft to better balance productivity in the river vs. productivity in the reservoir. We also talked about a Libby-Arrow swap as a way to provide better conditions for resident fish in Montana without negatively impacting anadromous fish. In short, we made progress yesterday, and encourage Montana to keep sending representatives to FPAC. However, given the short time-frame, we were unable to reach consensus this year, Kiefer said.

We also discussed translating the elevation targets into a volume, and creating a sliding scale, Marotz said. Does Idaho oppose this SOR? Measure asked. No – we simply discussed the technical aspects of the question at yesterday's meeting, Kiefer replied. What is Idaho's position on the Montana

SOR? Measure asked. We believe it is a policy decision, and we support it at the policy level, Kiefer replied.

This is hardly a brand-new issue, said Jim Litchfield; we have been working on it in one form or another since 1996. Every year, we try to make this SOR better, he said. I think everyone knows the specifications of the operations we're requesting; this is very important to the state. We can't understand why we can't seem to get to yes, he said – all of the issues that were discussed yesterday have been discussed for years. Marotz went through some of the rationales articulated in opposition to the Montana SOR at yesterday's FPAC meeting, including the contentions that there is no proof that Montana's requested operation will be beneficial to resident fish in Montana, or that the more traditional operation of the Montana reservoirs will harm them.

The group devoted a lengthy discussion to this topic. Tom Lorz said the tribes are very concerned about decreasing the gap for Snake River fall chinook; any reduction in lower river flow will have a significant biological impact on that species. There is also the question of how Montana's requested operation could be reconciled with the court-ordered operation of this system, and whether the TMT is the right body to consider changes to the court-ordered operation, Lorz said. What is the Corps' current estimate for summer flows at McNary? Lorz asked. According to the most recent ESP/HYSSR run, 203 Kcfs in July, 159 in the first half of August and 151 Kcfs in the last part of August, Julie Ammann replied. And if the Montana SOR is implemented, those estimates would drop by 6-7 Kcfs? Lorz asked. Correct, Hlebechuk replied.

Marotz observed that the majority of the summer migrants are moving earlier, in July, and there are fewer fish outmigrating in August. This is what would happen under a natural hydrograph, he said, so it may make sense to begin to taper off flow during August to save some water for use in September. There are still substantial numbers of fish outmigrating during August, however, Rich Domingue observed. The group discussed the ability, given the current state of the science, of researchers to accurately measure the biological impacts of this relatively small reduction in lower river flows; there was general agreement that it is not possible to accurately quantify the negative impacts of Montana's proposed operation on anadromous fish. Dave Statler observed that the Clearwater component of the Snake River fall chinook has a later migration timing than the run at large and warned against making any generalizations about the timing of the Snake River fall chinook run.

Kiefer reiterated that the salmon managers are concerned because they know that reducing flows for migrating fish through reservoirs is a bad thing. It is true that given the variability of all of the factors at work, it will not be possible to accurately quantify the biological impacts of implementing Montana's requested operation. Our purpose here is to discuss adaptive management options, he said; one example of that is our support of the elimination of the double peak in

outflow from the Montana reservoirs, because of the negative impacts of such an operation on resident fish in Montana. However, as a professional biologist, I believe that the negative impacts to anadromous fish resulting from Montana's requested operation would be greater than the biological benefits that would result for resident fish in Montana, Kiefer said. We believe this is a policy call.

So if I understand correctly, it is FPAC's position that, rather than asking the TMT to develop an operational recommendation, that it would make more sense to elevate this issue to IT, Measure said. If so, I would request that the IT meeting be held tomorrow, rather than next week. The next scheduled IT meeting will be held July 6. That will be pushing the envelope somewhat, in terms of the timing, Litchfield said; we're running out of time. Before this is elevated, however, I would like to know where everyone stands, he said.

Kiefer reiterated that, in Idaho's belief, this is a policy question that should be elevated to IT. David Wills said the Fish and Wildlife Service shares the technical concerns articulated by Kiefer, and agrees that this is a policy issue. Tony Norris said that, with respect to Hungry Horse, Reclamation agrees that, from a hydrological perspective, it would make sense to extend the draft into September, but given the remand process, they cannot support the SOR at this time. We agree that this is a policy call. It would be better for spring flows, he said. In response to a question from Wills, Norris clarified that it is not Reclamation's position that implementing the Montana SOR would not be harmful to anadromous fish. It is not up to Reclamation to determine the operational priorities for anadromous fish, he said.

Domingue said NOAA Fisheries stands behind the BiOps that are already in place; this SOR, if implemented, would compromise our ability to implement some of the operations in those BiOps. However, if Montana can obtain substantial regional support for their requested operation, NOAA Fisheries will not object, Domingue said. Hlebechuk said the Corps, too, will defer to the region. Rick Kruger said Oregon objects to the SOR on the technical grounds that have already been expressed.

Statler said the Nez Perce Tribe is disappointed that this SOR has not come to fruition, and would support additional, facilitated dialogue on this issue. Any solutions to this issue will require operational changes, he said; the swap, or some sort of reregulation, should be pursued so we can move forward on this issue. Lorz said that, in CRITFC's view, the SOR would widen the gap for anadromous fish, and encouraged the pursuit of a flow-neutral solution. Robin MacKay said BPA encourages regional consensus on this issue. Cindy LeFleur said that, in Washington's view, this is a policy decision, not a technical decision. Kiefer added that he has been directed by the policy representatives in Idaho to abstain from voting on this issue at today's meeting.

Ultimately, Litchfield said Montana would like to pursue an IT conference call on this issue for tomorrow, given the short time-frame available to start this operation, and the potential need to elevate this issue beyond IT. I will see whether that would be possible, Domingue said.

### **3. Dworshak SOR.**

Statler said the discussion at yesterday's FPAC meeting identified some immediate operational needs, as well as the seasonal SOR. Those immediate operational needs include the current water temperature situation at Lower Granite. Kiefer thanked the Corps for alerting the region to the water temperature situation in the Lower Granite tailrace – it is very helpful to recognize these situations before they become serious problems, he said.

Jim Adams drew the group's attention to a graph showing the current swift rise in water temperatures at Lower Granite; according to our modeling, if this increase continues, we will hit 68 degrees by this Saturday, he said. Under the Nez Perce SOR, we would not begin any temperature control operations from Dworshak until July 5, nearly a week later, Adams said – that's the key issue facing us today. He added that, currently, Dworshak is releasing about 5 Kcfs of 48 degree water. Domingue said that, at yesterday's FPAC meeting, there was general agreement that the Corps should reduce the Dworshak outflow temperature to 43 degrees F. In response to a question, Wills said that, for a short-term operation such as this one, personnel at Dworshak National Fish Hatchery have said that 43 degrees is the lowest temperature they want to see at this point in the season.

How would this impact the Nez Perce SOR? Silverberg asked. The SOR requests that we refill Dworshak as soon as possible, Statler replied; it is not quite full yet. It also calls for passing inflow at 45 degrees outflow temperature once the reservoir is full; Dworshak is currently at elevation 1599.1 feet, so it is not quite full. It wouldn't be a major problem if we reduce the outflow temperature to 43 degrees, he said. In response to a question, Hlebechuk said Dworshak is currently drafting slightly, with inflows of about 5 Kcfs; the Corps intends to touch elevation 1600 by the end of June.

If we increase the discharge of 43-degree water to 10 Kcfs, will that impact water temperatures at Lower Granite? Scott Bettin asked. Yes, it will lower temperatures at Lower Granite, but it takes about 5 days of travel time before those impacts are seen at Lower Granite, Adams replied.

Kiefer said the salmon managers request that Dworshak outflow immediately be increased to 7.2 Kcfs at 43 degrees. Domingue modified that somewhat, saying NMFS would advocate that there be a trigger – if temperatures in the Lower Granite tailrace reach 67 degrees F. for a 24-hour period, then Dworshak discharge should immediately be increased to full powerhouse

capacity at 43 degrees F. What would be the elevational impact to the reservoir if we move the trigger point up to this week? Greg Haller asked. I think we're fine with that concept, but it would be helpful to know what the elevation impact will be over Fourth of July weekend. If inflows hold steady, the elevation would drop by about half a foot per day, or a couple of feet over the weekend, if discharge is increased to full powerhouse capacity, Hlebechuk replied.

After a few minutes of additional discussion, it was recommended that the Corps immediately increase Dworshak discharge to 7.2 Kcfs, and reduce the outflow temperature to 43 degrees F. Adams noted that, although air temperatures are moderating somewhat in the Lower Granite area, solar radiation is expected to continue to cause water temperatures to rise. The Nez Perce would agree to such a stairstepped approach, given the unprecedented rise in water temperatures we're seeing at this point in the season, Statler said.

Litchfield said Montana disagrees with this proposed operation – I think we're being too timid, he said. I think we should go to full powerhouse capacity right away, at 43 degrees F., Litchfield said. Statler replied that such an operation would result in a much more significant draft of Dworshak reservoir over the Fourth of July weekend, and would also put more cold water into the Clearwater River, negatively impacting the growth of the fall chinook juveniles rearing in the Clearwater.

In response to a question, Hlebechuk said that, in the interest of balance, and of recreation on Dworshak Reservoir over the holiday weekend, the Corps would prefer to stick with the recommendation of increasing Dworshak discharge to 7.2 Kcfs. Litchfield said that, in his view, this is not a rational choice, if you're talking about exposing endangered species to 68-degree water. Recreation isn't the only issue – we're also talking about different life-history needs, and about saving water for use in August, Statler replied. I would add that saving cool water for the adult returns in August is also a concern, Kiefer said. I don't disagree with Montana's position, but it's question of balance, Domingue added. We share the views you've expressed, said Haller, but even the increase to 7.2 Kcfs represents a significant departure from our original position. Judy Danielson said Idaho would certainly prefer to see Dworshak remain full over the holiday weekend, but is also concerned about fish.

Karl Kanbergs said there may still be a generation restriction in force because of the scheduled line maintenance. I believe that restriction ends this Friday, said MacKay. Litchfield observed that it had been made abundantly clear that the maintenance personnel could get off the line with 6 hours notice, if fish operations become a priority.

After a few minutes of additional discussion, it was agreed to increase Dworshak discharge to 7.2 Kcfs, with a release temperature of 43 degrees F., as soon as possible; it was further agreed that the question of the most appropriate volume of Dworshak discharge will be discussed at tomorrow's IT call. In

response to a question, Ammann said it will be possible to implement the recommended operation by later today.

The group agreed to take a caucus break. When the TMT reconvened, Scott Bettin said there appears to be enough room on the transmission line to accommodate full powerhouse generation at Dworshak, although it may be necessary to back off Dworshak slightly during some hours, on an as-needed basis.

Haller said the Fish and Wildlife Service, NMFS, CRITFC and the Nez Perce Tribe had discussed the requested operation, and had also spoken with Roger Fuhrman at Idaho Power. Based on his input, which included the fact that the warmer Brownlee discharge will be decreasing over the Fourth of July weekend, Haller said the salmon managers at the caucus continue to recommend that 7.2 Kcfs at 43 degrees be released from Dworshak, beginning immediately. Kiefer said he checked with Idaho policy personnel, who expressed the preference to provide 7.2 Kcfs at 43 degrees. We should discuss the appropriate triggers that would push discharge to 10 Kcfs, he said, but at this time, we would prefer to stick with 7.2 Kcfs at 43 degrees. It might make sense to try to agree on a more aggressive trigger than a water temperature of 67 degrees for 24 hours in the Lower Granite tailwater, he said. Kruger said he would prefer to go to 10 Kcfs Dworshak discharge now, but is willing to defer to those who are advocating 7.2 Kcfs for the time being. Litchfield said he still doesn't see persuasive evidence that it makes sense to begin the Dworshak temperature control operation so cautiously; we're behind the 8-ball with the temperature situation already, and this kind of stepwise approach has never worked in the past, he said.

Statler noted that, last year on this date, the water temperature in the Lower Granite tailrace was only half a degree cooler than it is this year. We addressed it by releasing 7 Kcfs from Dworshak through July 10, at which point we increased outflow to full powerhouse discharge, and managed the water temperature at Lower Granite very well, Statler said. We did not immediately increase Dworshak discharge to 14 Kcfs, and it would be a mischaracterization to say that this is a significant departure from the temperature control operations that have been implemented in recent years. Haller added that it would also be a mischaracterization to say that this operation is primarily intended to benefit the recreational users of Dworshak reservoir over the holiday weekend – while that is one consideration, the overall intent of this operation is to balance the needs of all of the life-histories that benefit from Dworshak temperature control operations, as best we can, he said. I would only observe that last year isn't this year, and what concerns me is the rapid increase in temperature we've seen in recent days, Litchfield said.

Lorz provided a presentation on recent water temperature (RBM-10) modeling work by Kyle Dittmer and Ben Cope; this presentation is available via

hot-link from today's agenda on the TMT homepage. Lorz noted that Dittmer had run the model using weather years 1975, 1985, 1990 and 1991, all normal to cool weather years. He also chose 2000 Dworshak and Brownlee water temperatures as most representative of the conditions that will likely be encountered in 2006. Dittmer and Cope then modeled the 2005 actual operation and the proposed 2006 Nez Perce Tribe operation.

Lorz noted that the Hells Canyon discharges assumed in these model runs is significantly lower than the actual discharges so far in 2006; that's the main reason for the discrepancies between the model results and the actual temperatures seen to date, he said.

Lorz said the take-home message from this modeling exercise is that the operation requested in the Nez Perce Dworshak SOR is predicted to result in temperature excursions of about 1 degree C above the 2005 actual operation. It is possible that the CEQUAL model may produce more accurate results, said Lorz; Kyle will be back next week, and will be updating these model runs to incorporate more recent actual conditions.

Silverberg asked where the TMT now stands on the Nez Perce Dworshak SOR. Hlebechuk said that, upon further consideration, the Corps plans to implement the temperature control operation at Dworshak in a stairstep fashion, and will be increasing Dworshak discharge to 7.2 Kcfs of 43-degree water later today. She suggested that the TMT revisit this operation during a conference call this Friday, June 30. During the call on Friday, the TMT can also discuss the question of the most appropriate trigger to increase Dworshak discharge, Silverberg suggested – is an average Lower Granite tailwater temperature of 67 degrees F for 24 hours conservative enough, or would a lower temperature be more appropriate?

Litchfield said Montana does not agree with the Corps' proposed operation, noting that, in his opinion, it is simply not aggressive enough. Litchfield advocated increasing Dworshak discharge to full powerhouse capacity by later today. Does anyone besides Montana object to the Corps' proposed operation? Silverberg asked. Oregon doesn't support it, but we aren't going to elevate it to IT, Kruger replied. Will said the Fish and Wildlife Service agrees with Oregon's position. NMFS, Idaho, the Nez Perce Tribe and CRITFC said they do not object to the Corps' proposal to increase Dworshak discharge to 7.2 Kcfs later today.

Litchfield said Montana will elevate this issue to IT; it simply isn't the right operation for fish, given the steepness of the temperature curve at this point in the season. he said he will work with Silverberg to frame the question for the IT later today. In the interim, Hlebechuk reiterated that the Corps plans to increase Dworshak discharge to 7.2 Kcfs of 43-degree water later this afternoon. NOAA Fisheries' opinion at tomorrow's conference call will be very important, Litchfield

noted for the record. It was agreed that the TMT conference call will take place as scheduled on Friday, June 30.

What does the Nez Perce Tribe want to do with respect to its SOR? Silverberg asked. We recognized that the operation could change based on changes in actual conditions, Statler replied; it is now very close to July 1, when implementation was requested to begin, and the operation outlined in the SOR is still what the tribe would prefer to see guide the action agencies' operations. We're willing to accept it as a guide, with the understanding that actual operations will be dictated by actual conditions, Hlebechuk replied.

Kruger said Oregon objects to the Nez Perce SOR based on its impacts to fish and funding considerations tied to the tribal enforcement program. As a prescriptive measure, I would vote against this SOR, said Wills; however, we would be willing to support it as a general guide. Oregon would agree with that, Kruger said – there are simply too many criteria that come into play when making real-time decisions to accept a prescriptive approach. Oregon does agree with the concept of saving as much water as possible for use in August, Kruger added.

LeFleur said Washington agrees with the Oregon and USFWS position. Other TMT participants said they are uncomfortable with the fee structure referenced at the end of the SOR's justification section. It sounds, then, as though the majority of the TMT does not support implementation of the Nez Perce SOR, except as a general framework to guide operations, Statler said.

After a few minutes of additional discussion, MacKay said BPA supports the use of in-season management tools to make decisions about operational issues such as Dworshak water temperature control. We're concerned that, if this SOR was adopted, we would be committing the TMT to a season-long operation that Oregon, for one, does not support, Kruger said. It sounds, then, as though this SOR, as written, is not supported by TMT, although there is support for some of the principals it contains, Silverberg observed. No objections were made to this statement.

#### ***4. Marine Mammal Permitting Process Update.***

This topic was deferred to a future TMT agenda.

#### ***5. Chum Spawning Population Estimates.***

This topic was deferred to a future TMT agenda.

#### ***6. Treaty Fishing SORs.***

Lorz said CRITFC had submitted two summer treaty fishery SORs to date, one on June 15 (already implemented), and a second one covering fisheries on June 27-29 and July 5-7. As always, he said, the tribes are asking the action agencies to maintain full, stable pools at the Zone 6 projects. It was noted that, in all likelihood, there will be additional requests covering weekly fisheries through the end of July.

Traditionally the Corps operates Bonneville pool in a 1.5-foot operating range as a hard constraint during the treaty fisheries, and in a 1-foot range as a soft constraint, Hlebechuk said. The Dalles and John Day are operated in a 3 foot range as they are needed for generation flexibility, Hlebechuk said. The Bonneville, The Dalles and John Day operations were discussed between Colonel Mogren ( COE) and Ted Strong (CRITFC) in 1998 and transmitted in a letter from the Corps to CRITFC that same year.

Given the fact that, because of the timing of the meetings, it isn't always possible to discuss the treaty fishery SORs at TMT before they have to be implemented, is it fair to say that there are no TMT objections to their implementation? she asked. No objections were raised at today's TMT meeting.

## **7. ESP HYSSR.**

Julie Ammann briefly reviewed the most recent ESP/HYSSR model results, available via hot-link from today's agenda on the TMT homepage. She noted that it appears that 11 of the FCRPS storage projects will refill in 2006. The presentation also included the following table of period average flows, based on these model results:

Period Average Flows (in Kcfs)

Project	June 1-30	July 1-31	Aug 1-15	Aug 16-31	Sept 1-30
LIB	33.6	20.7	20.2	19.4	9.8
HH	7.4	6	5.9	5.3	1.7
GCL	165	142	118	113	87
PRD	194	154	124	118	92
DWR	4.7	10.1	10.1	10.1	4.3
BRN	24	16	12	13	13
LWG	90	44	31	31	25
MCN	312	203	159	151	117
TDA	315	206	162	155	122
BON	317	209	165	157	124

It looks as though there is still significant uncertainty about Libby this year, Litchfield noted. I would say that is correct, Ammann replied.

### **7. 2006 Sturgeon Operations.**

It was agreed to defer this topic to a future TMT agenda.

### **8. Operations Review.**

Hlebechuk said Libby filled on June 17 this year; project outflow peaked at 55 Kcfs. Currently the project is drafting slowly; it was 2.7 feet from full as of midnight last night. Spill stopped yesterday at Libby, and the project is now releasing full powerhouse capacity. The intent is to operate Libby in the top three feet for now.

The TMT briefly revisited the 2006 Libby operation to date, discussing whether or not it might have been possible to avoid spill at the project through a different suite of operations. Merotz described the biological effects of the spill in 2006 on the river environment below Libby, noting that many signs of gas bubble trauma have been seen in bull trout. He said he will provide a written summary of this information for discussion at a future TMT meeting.

The Corps said Dworshak is currently operating in the top half-foot of its operating range. Reclamation said Hungry Horse is at elevation 3558, two feet from full. The project will fill during the first week of July, and is currently releasing 4 Kcfs. Once the project fills, Hungry Horse discharge will be increased to 5.3 Kcfs, the flat flow needed to achieve elevation 3540 by August 31.

Grand Coulee is currently at elevation 1287, three feet from full; the project will fill by July 4 or early on July 5. The current flow at Priest Rapids is 210 Kcfs. Reclamation noted that Upper Snake flow augmentation began earlier this week.

It was noted that the spring seasonal average flow was 125 Kcfs (April 3-June 20) at Lower Granite, 325 Kcfs at McNary (through June 30) and 193 Kcfs at Priest Rapids (through June 30). Reclamation added that the only reason Hungry Horse did not spill in 2006 was the pre-drafting that was done in preparation for the planned line outage.

With respect to spill at John Day, Lorz said CRITFC is requesting that the summer spill operation at that project – 30 percent of total river flow 24 hours a day – begin today, rather than June 30. NMFS, Oregon, the Fish and Wildlife Service and Idaho agreed with this recommendation. MacKay replied that, while Bonneville would like to be collaborative and flexible, because of the remand, this

is a difficult year to be making last-minute changes to the court-ordered operation. She said BPA cannot agree to this change at today's meeting.

On the fish front, Domingue updated the TMT on the current passage situation, noting that there are still significant numbers of both juvenile and adult migrants moving through the system. On the water quality front, Adams provided a brief overview of recent exceedences.

**9. Next TMT Meeting Date.**

The next meeting of the Technical Management Team was set for Wednesday, July 12. Meeting summary prepared by Jeff Kuechle, BPA contractor.

Technical Management Team Meeting Participants  
June 28, 2006

Name	Affiliation
Donna Silverberg	Facilitation Team
Dave Statler	NPT
Russ Kiefer	IDFG
Robin Harkless	Facilitation Team
Rich Domingue	NMFS
Tony Norris	USBR
David Wills	USFWS
Robin MacKay	BPA
Julie Ammann	COE
Bruce Measure	Montana
Rick Kruger	Oregon
Tom Lorz	CRITFC
Cathy Hlebechuk	COE
Jim Litchfield	Montana
Brian Marotz	Montana
Bern Klatt	COE
Jim Adams	COE
Kevin Nordt	Mid-Cs

Tim Heizenrater	PPM
Scott Bettin	BPA
Russ George	WMCI
Randy Wortmann	COE
Dan Spear	BPA
Mark Bagdovitz	USFWS
Shane Scott	
Barry Espensen	CBB
Greg Haller	NPT
Greg Parker	COE
David Benner	FPC
Judy Danielson	Idaho
Craig Sprankle	Reclamation
Bruce MacKay	Consultant
Tom Le	PSE
Cindy LeFleur	WDFW

# TECHNICAL MANAGEMENT TEAM

<b>BOR :</b>	<i>Tony Norris / John Roache</i>	<b>BPA :</b>	<i>Robyn MacKay / Scott Bettin</i>
<b>NOAA-F:</b>	<i>Paul Wagner</i>	<b>USFWS :</b>	<i>David Wills / Steve Haeseker</i>
<b>OR :</b>	<i>Rick Kruger / Ron Boyce</i>	<b>ID :</b>	<i>Russ Kiefer</i>
<b>WA :</b>	<i>Cindy LeFleur</i>	<b>MT :</b>	<i>Jim Litchfield</i>

**COE:** *Cindy Henriksen / Cathy Hlebechuk*

## TMT CONFERENCE CALL

**Friday June 30, 2006, 0900 - 1100 hours**

**1125 N.W. Couch Street, Suite 4A34  
Portland, Oregon 97208**

**Conference call line: 503-808-5190**

**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 Donna Silverberg with any issues or concerns they would like to see addressed.  
Please e-mail her at [dsilverberg@cnnm.net](mailto:dsilverberg@cnnm.net) or call her at (503) 248-4703.*

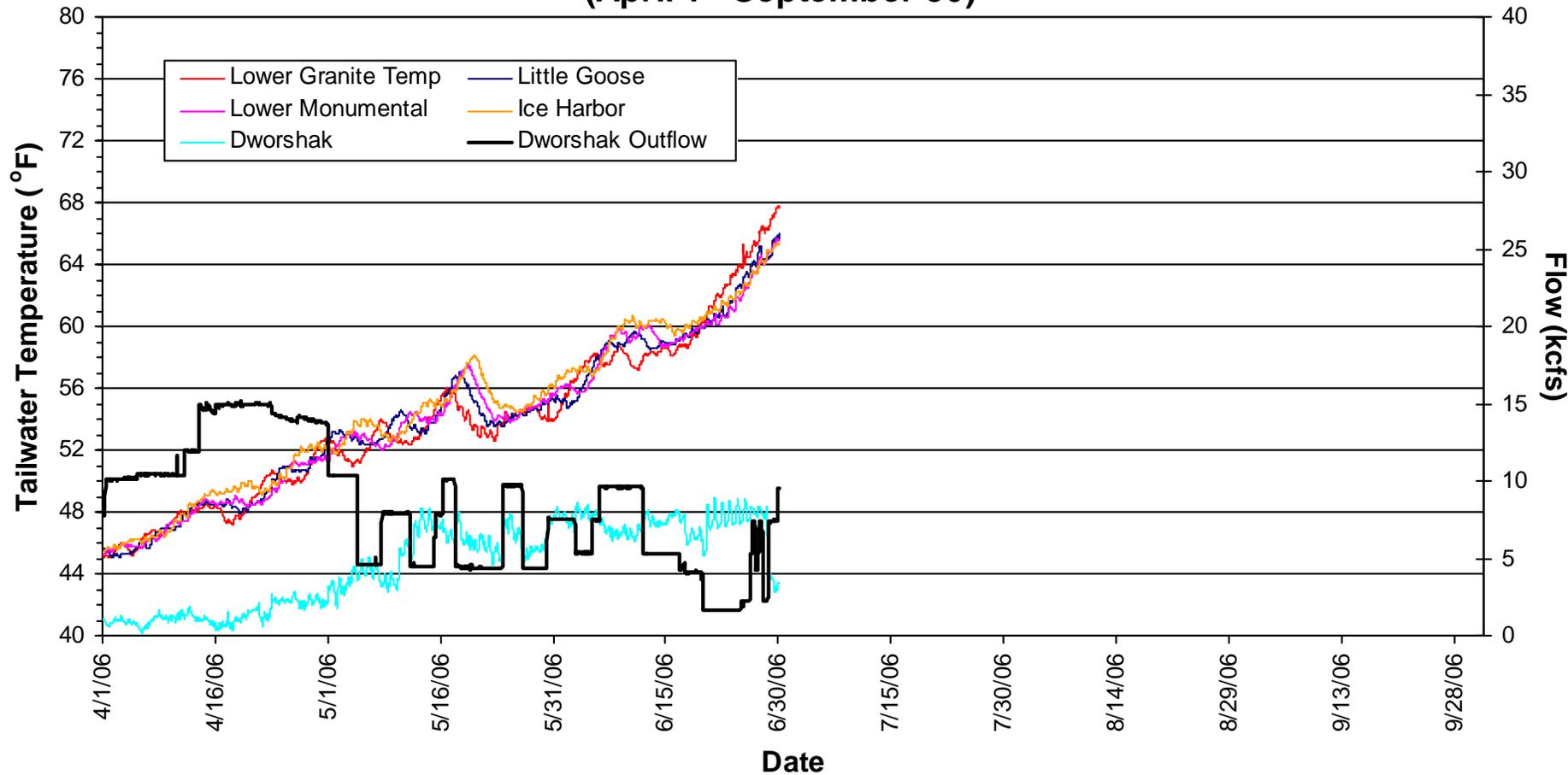
## AGENDA

1. Welcome and introductions
2. Dworshak Operation
  - [\[Lower Snake River Temperatures April 03 - June 30, 2006\]](#)
  - [\[Lower Granite Pool - Temperatures June-19 to July 06, 2006\]](#)
3. Other
  - Set agenda for next meeting July 12 [\[Calendar 2006\]](#) 

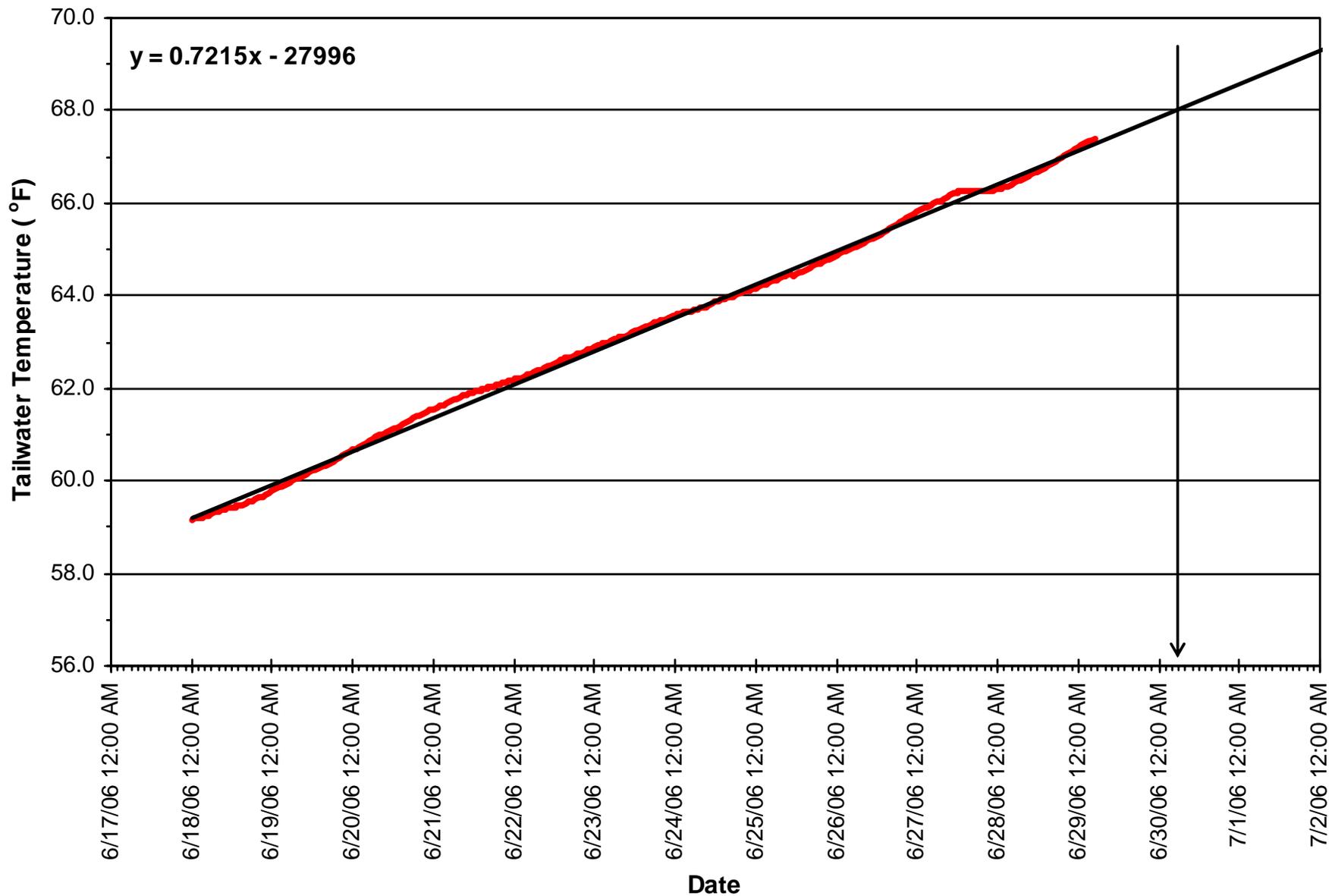
*Questions about the meeting may be referred to Cathy Hlebechuk at (503) 808-3942, or Cindy Henriksen at (503) 808-3945*

# Lower Snake River Temperatures April 3 - June 30, 2006

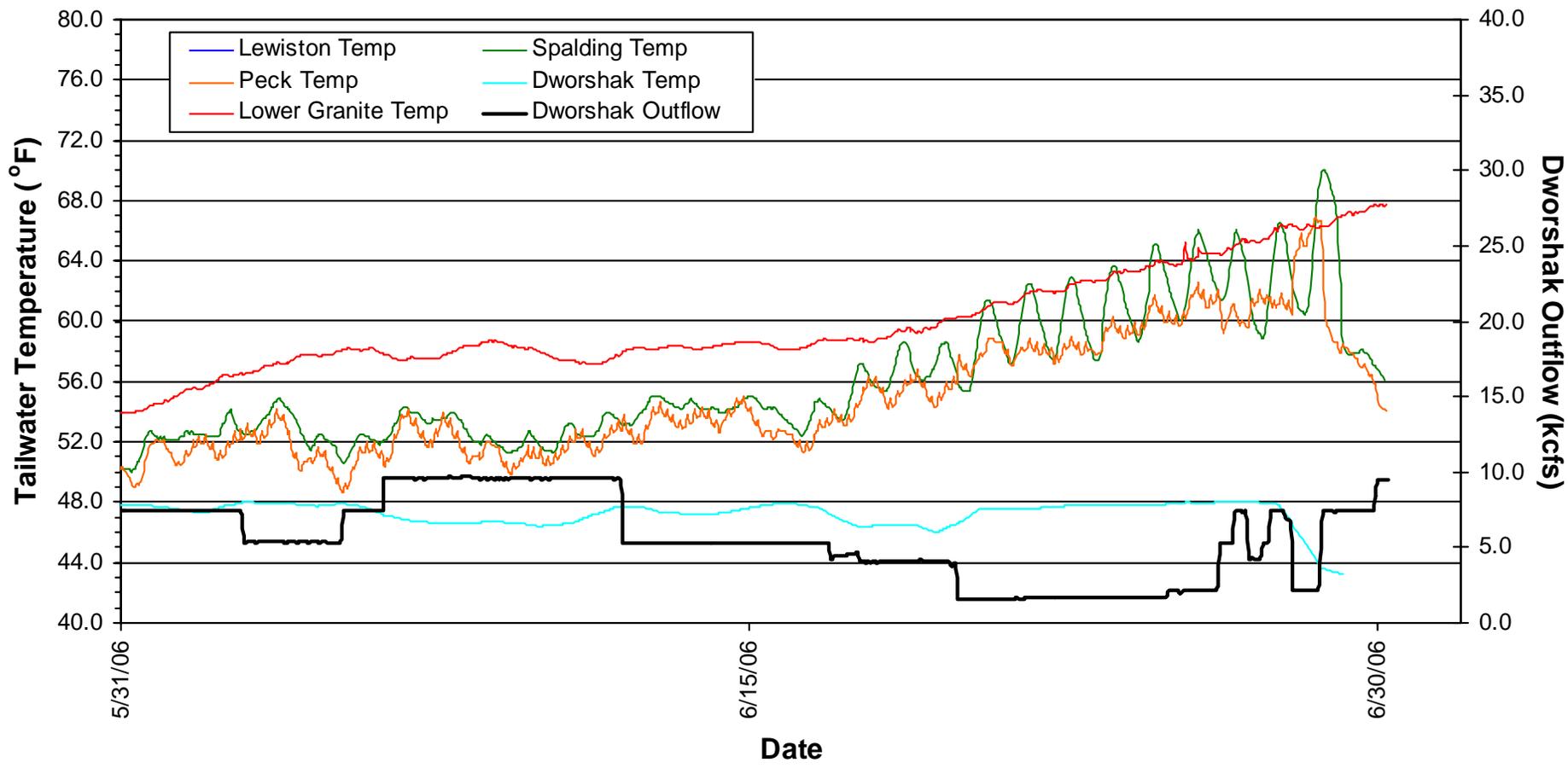
# Dworshak Outflows and Lower Snake River Tailwater Temperatures in 2006 (April 1 - September 30)



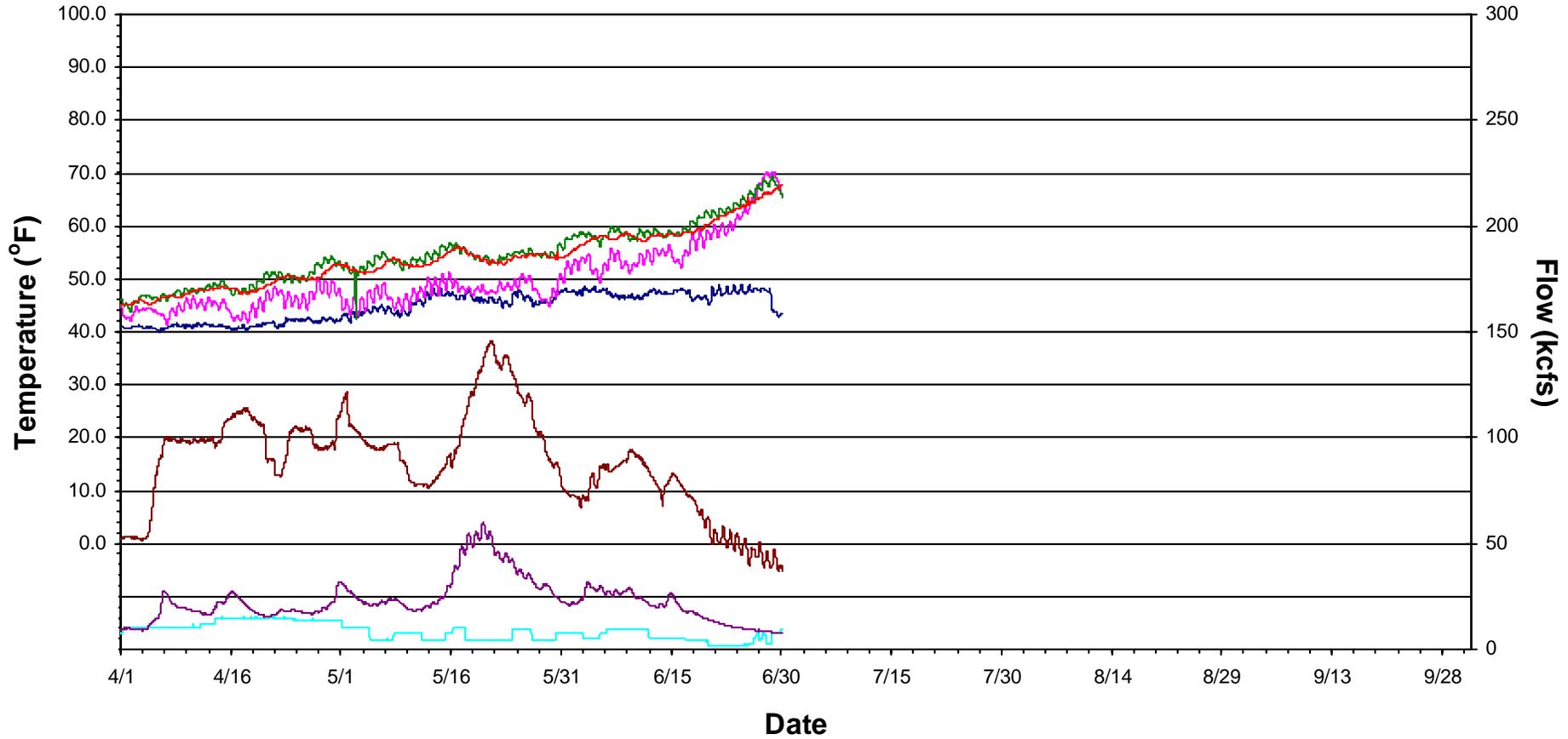
# Lower Granite Tailwater Temperature (Rolling 24-Hr Average)



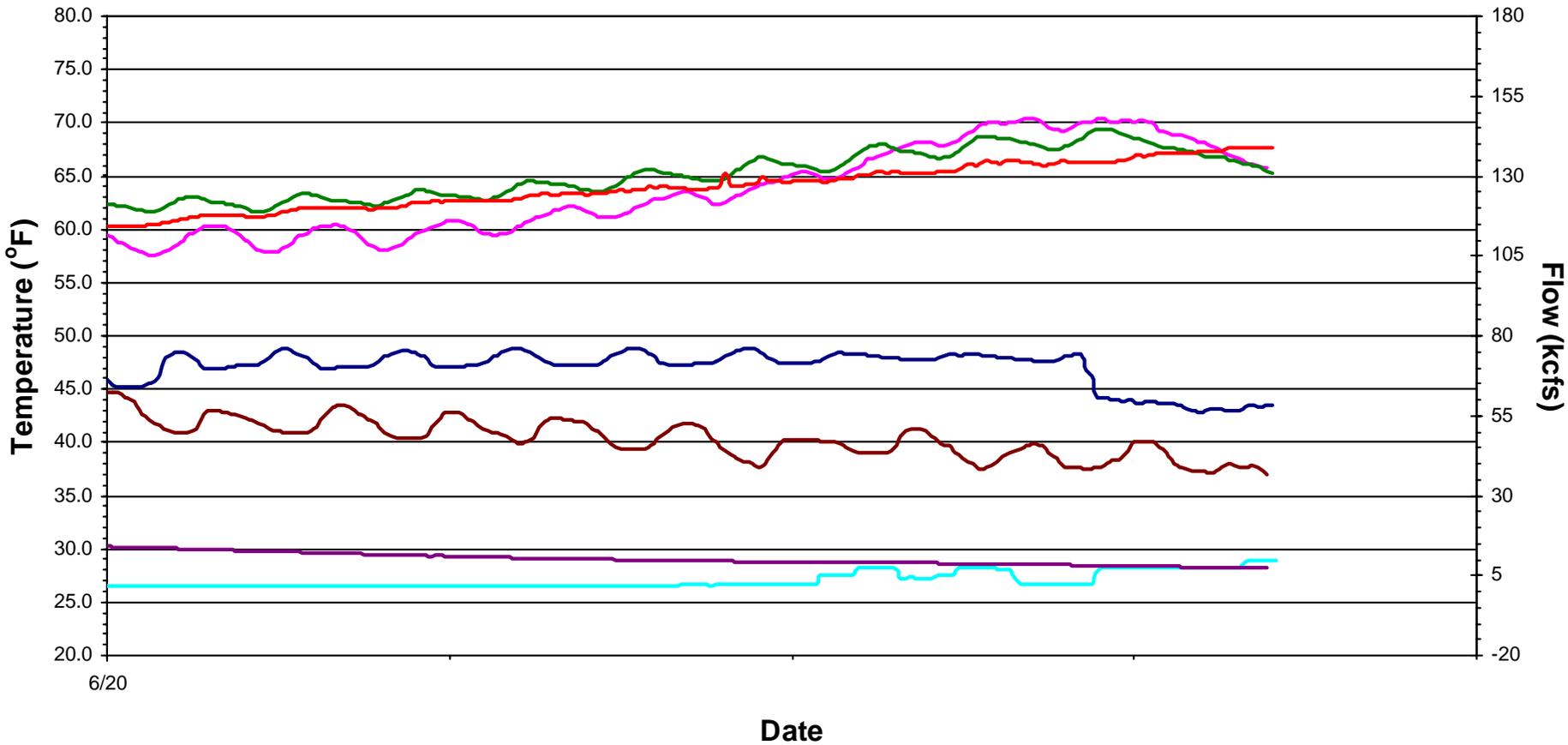
# Dworshak Outflows and Clearwater River Temperatures in 2006



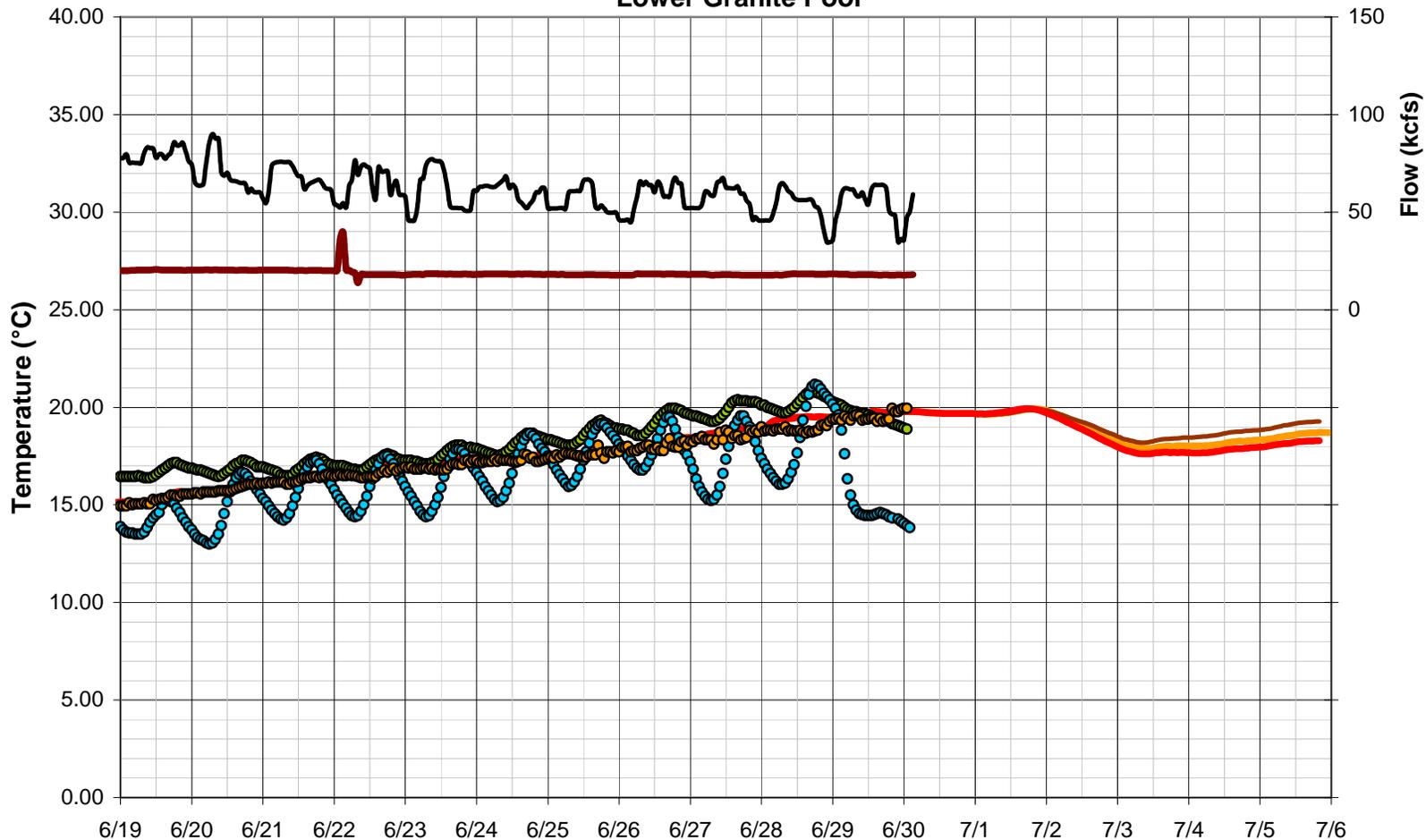
# Lower Granite Inflows and Temperatures in 2006



# Lower Granite Inflows and Temperatures in 2006



### Lower Granite Pool



# COLUMBIA RIVER REGIONAL FORUM

## TECHNICAL MANAGEMENT TEAM

### CONFERENCE CALL

June 30, 2006 Meeting

#### FACILITATOR'S SUMMARY NOTES ON FUTURE ACTIONS

Facilitator: Donna Silverberg

Notes: Robin Harkless

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**

TMT held a conference call today to continue discussions (from Wednesday's TMT call and a follow-up IT call yesterday) on Dworshak operations. Cathy Hlebechuk emailed information prior to the call indicating that temperatures at the Lower Granite tailrace had reached a 24-hour rolling average of 67° F, triggering a response to increase flows to full powerhouse at Dworshak around 10:30 pm last night. Jim Adams, COE, posted additional temperature information and results of CEQUAL modeling of three operating scenarios. Given recent natural cooling in the system, the 7-day weather forecast and the increase in flows/reduction in temperature operation from Dworshak, the models predicted that temperatures would drop and maintain below the trigger through the weekend, providing some operating flexibility.

The COE recommended dropping flows to 4.2 kcfs over the weekend and using an additional trigger at Anatone to determine if/when to increase flows. The proposed trigger was ramping up to 7.2 kcfs if temperatures reached a 24-hour rolling average of 21° C at Anatone, and increase to full powerhouse if temperatures reach a 24-hour rolling average of 22° C, based on the information from the CEQUAL models.

TMT members offered responses to the COE's proposal:

- NOAA – Lower to pass inflows over the weekend. Use the Anatone trigger until July 2 to allow time for the operation implemented on Wednesday (7.2 kcfs at 43° F from Dworshak) to reach and impact Lower Granite, then begin using both the Anatone and Dworshak temperature triggers.
- Idaho – Support the COE's proposed operation, and will check in with the COE on Monday to look at Lower Granite tailrace temperatures and determine whether model proved close to correct.
- Montana – Supports the operation, given the new information and current conditions.
- Washington – No objection to the COE's proposed operation.
- Oregon – No objection to the weekend operation, and requests a TMT check-in next Wednesday to look at temperatures and flows.
- Nez Perce – No objection to the COE's proposed operation.

- USFWS – Support the operation, and requests continuing TMT discussions next Wednesday.
- BPA – Supports the operation.
- BOR was not present.

**Next Steps** –Idaho, Nez Perce and anyone else interested in checking in on Monday should contact Jim Adams at the COE at 9:00 am on Monday, at (503) 808-3938. There will be a TMT conference call on Wednesday at 9:00 AM, (503) 808-5190.

## Technical Management Team Meeting Notes

June 30, 2006

# DRAFT

### ***1. Greetings and Introductions.***

Today's Technical Management Team conference call was chaired by Cathy Hlebechuk and facilitated by Donna Silverberg. The following is a summary (not a verbatim transcript) of the topics discussed and decisions made during this call. Anyone with questions or comments about these notes should contact Hlebechuk at 503-808-3942.

### ***2. Dworshak Operations.***

Jim Adams said Dworshak is currently releasing full powerhouse discharge at Dworshak, at about 43 degrees. Last night at about 8 pm we hit the 67 degrees F on a rolling 24-hour basis in the Lower Granite tailrace, he said; the project started releasing full powerhouse capacity at about 10:30 last night. The temperature at the Lower Granite tailwater is 67.6 degrees F, currently, so we're getting pretty close to the 68-degree standard. The cool water from Dworshak takes about 3 days to reach Lower Granite, so it will be some time before we see much relief in terms of water temperatures, Adams said. The cool water from Dworshak has made its way down the Clearwater and is now entering the Lower Granite forebay. We expect the change we made Wednesday afternoon, increasing Dworshak outflow to 7.2 Kcfs, to hit Lower Granite tailwater as early as Saturday afternoon, he said.

Water temperatures are still on an upward trend in the Lower Granite tailwater, Adams said; however, there is some good news, in terms of inflow temperatures to the forebay. The inflow temperature started dropping about 24 hours ago, from about 70 degrees to 66 degrees. In other words, we have seen some natural cooling from the tributaries, Adams said. In response to a question,

Hlebechuk said Hells Canyon discharge has dropped from 32 Kcfs to 15 Kcfs. That helps, said Ron Boyce. True, Adams said – that means that whatever we do at Dworshak will have a greater effect at Lower Granite. Dave Statler said it isn't quite as hot in the Lower Granite area today as it has been in recent days; there is a little bit of cloud cover, currently.

Adams said he had spoken to Mike Schneider, who did some model runs with CQUAL W2. There is a hot-link to those modeling results on today's agenda on the TMT homepage, Adams said. He modeled a 7.4 Kcfs outflow from Dworshak at 43 degrees; what we see is that, even at 4.2 Kcfs outflow, by July 6, we will keep tailwater temperatures below the 68-degree threshold. Basically what I think we're saying is that, given the divine intervention we're seeing, currently, even if we reduce Dworshak outflow to 4.2 Kcfs, we will keep water temperatures below 68 degrees once the cool water we started to release on Wednesday hits the Lower Granite tailrace, Adams said.

Water temperature isn't the only criteria we're managing for in the Snake, Boyce observed – don't we also want to maintain adequate flows? Yes – it's a balancing act, Statler replied. There is biological value to both flow augmentation and temperature reduction. It sounds, then, as though we have some options, operationally, Silverberg said. Correct, Adams replied – from the Corps' perspective, it looks as though 7.2 Kcfs from Dworshak may be overkill, from a water temperature perspective. We could reduce Dworshak outflow to 4.2 Kcfs, then set up some triggers which, if we hit them, would tell us to increase Dworshak discharge to 7.2 Kcfs. Adams suggested that, if water temperatures hit 21 degrees C on a 24-hour rolling average basis at the Anatone gauge, it would be appropriate to increase Dworshak outflow to 7.2 Kcfs; if it hits 22 degrees C on a rolling 24-hour basis, Dworshak outflow would be increased to full powerhouse capacity.

Boyce reiterated his statement that there is a need to maintain both temperature control and adequate flows in the Lower Snake. Silverberg replied that other TMT members are concerned that it is early in the season to be augmenting flows from Dworshak; they would prefer to save as much water as possible for use later in the summer. Statler said the Nez Perce Tribe and the State of Idaho would prefer to fill Dworshak completely and pass inflow until after the Fourth of July weekend. Hlebechuk said flows at Lower Granite are forecast to recede to 49 Kcfs tomorrow and to 45 Kcfs by July 4. In response to a question, Adams said the advantage to using Anatone as the control point for water temperatures in the Lower Granite tailrace is that it is farther upstream and provides some lead time, in terms of predicting upcoming problems.

After a few minutes of further discussion, it was agreed that the Corps will ramp Dworshak outflow down to 4.2 Kcfs, maintaining the 43-degree release temperature, beginning today. If water temperatures reach 21 degrees C at Anatone on a 24-hour rolling average, Dworshak outflow will be increased to 7.2

Kcfs; if it reaches 22 degrees C at Anatone on a 24-hour rolling average, Dworshak outflow will be increased to full powerhouse capacity. Some TMT participants wondered whether it is appropriate to rely solely on temperatures at the Anatone gauge as the trigger to increase Dworshak outflow; there was general agreement that it also makes sense to watch temperatures in the Lower Granite tailrace.

What if Lower Granite tailrace temperatures exceed 68 degrees F? Rich Domingue asked. What action will the Corps take in such a case? I think the model shows we will exceed to 68-degree standard some time in the next few days, Adams replied – that’s water that is already in the pipeline, and we can’t do anything about it. Once that water passes Lower Granite, however, and the water we started to release from Dworshak on Wednesday reaches Lower Granite, we will see some relief in tailrace temperatures. Domingue said he would prefer to wait until temperatures in the Lower Granite tailrace fall below 68 degrees F before reducing Dworshak discharge. Kiefer said Idaho would prefer to implement the Corps’ suggested operation, with the stipulation that we check in on Monday, July 3 to see where we’re at, temperature-wise. The Fish and Wildlife Service, the Nez Perce Tribe, Washington, BPA, Montana and Oregon had no objections to this operation, with the understanding that there will be a TMT conference call to discuss the Dworshak operation on Wednesday, July 5.

Ultimately, it was agreed that the Corps will reduce Dworshak outflow to 4.2 Kcfs at 43 degrees, with the triggers at Anatone. Kiefer said he will check in with Adams on Monday to be sure there are no alarming developments with respect to the temperatures at the Lower Granite tailrace.

With that, today’s conference call was adjourned.

**Technical Management Team Meeting Participants  
June 30, 2006**

<b>Name</b>	<b>Affiliation</b>
Donna Silverberg	Facilitation Team
Russ Kiefer	IDFG
Cathy Hlebechuk	COE
Jim Litchfield	Montana
David Wills	USFWS
Scott Bettin	BPA
Rudd Turner	COE
Bern Klatt	COE

Rock Peters	COE
Jim Adams	COE
Tom Lorz	CRITFC
Cindy LeFleur	WDFW
Dave Statler	NPT
Ron Boyce	ODFW
Greg Haller	NPT
Richie Graves	NMFS
Rich Domingue	NMFS