

MEMORANDUM FOR THE RECORD

Subject: Final Minutes for the 04 December 2008 FPOM meeting.

The meeting was held at TDA Administration Conference Room, The Dalles OR. In attendance:

Last	First	Agency	Office	Email
Benner	David	FPC	503-230-7564	dbenner@fpc.org
Cordie	Bob	USACE	541-298-7406	Robert.p.cordie@usace.army.mil
Clugston	David	USACE	503-808-4751	David.a.clugston@usace.army.mil
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Fredricks	Gary	NOAA	503-231-6855	Gary.fredricks@noaa.gov
Hausmann	Ben	USACE	541-374-4598	Ben.j.hausmann@usace.army.mil
Klatte	Bern	USACE	503-808-4318	Bernard.a.klatte@usace.army.mil
Lorz	Tom	CRITFC	503-238-3574	lorz@critfc.org
Mackey	Tammy	USACE	541-374-4552	Tammy.m.mackey@usace.army.mil
Meyer	Ed	NOAA	503-230-5411	Ed.meyer@noaa.gov
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Stansell	Robert	FFU	541-374-8801	Robert.j.stansell@usace.army.mil
Stephenson	Ann	WDFW	360-906-6769	stephaes@dfw.wa.gov
Tudor	Rosanna	WDFW	541-922-3630	Tudor1919@yahoo.com
Wills	Dave	USFWS	360-604-2500	David_wills@fws.gov

Ben Hausmann called in.

1. FPOM started at 1110. The November minutes were approved, with one editorial comment from Fredricks regarding Mackey's list of Action Items. The agenda was reviewed with two items included under OTHER.
2. **Action Items**
 - 2.1. [long time ago] BON PH1 Grizzlies. **ACTION:** Hausmann will investigate options for modifying the PH1 draft tube drains. **STATUS:** *Project is waiting for approval for concrete removal around the drains.*
 - 2.2. [Dec 08] BON PH1 Grizzlies. Fredricks would like a rough timeline for the proposed work. **ACTION:** Hausmann will contact the engineers and present a rough draft of a schedule to FPOM in the next couple of months.
 - 2.3. [Nov 08] Switchgate seals at BON and JDA. **ACTION:** Zyndol to check on the progress with MacIntosh. Mackey to follow-up. Hausmann will check with JDA to see if the design could be installed at BON this year. Cordie will take that to the Small Projects team and add BON to the scope of work. MacIntosh will need to contact a BON engineer. **STATUS:** *Zyndol sent some information to Hausmann via e-mail. MacIntosh still needs to contact BON Project.*
 - 2.4. [Dec 08] Switchgate seals at BON and JDA. **ACTION:** Cordie to follow up with MacIntosh and make sure BON is included in the Small Projects scope of work.
 - 2.5. [Sep 08] Pinniped task group. **ACTION:** Lorz to send Bettin information about hazing. **STATUS:** *The latest report from Smith-Root is available. This item is complete.*
 - 2.6. [Dec 08] Smith-Root report. **ACTION:** Stephenson to send a copy of the report to FPOM. **STATUS:** *No report available. September 2007 minutes and January 2009 meeting info sent to FPOM on 8 December.*
 - 2.7. [Nov 08] BON B2CC repairs. **ACTION:** Lee will provide a repair schedule. **STATUS:** *The contractor is conducting an inspection on 9 December. USACE and the contractor will then discuss what is covered under warranty and what isn't.*

- 2.8. [Nov 08] BON B2CC repairs. **ACTION:** Hausmann will talk with the maintenance crews to discuss what repairs could be made this winter. **STATUS:** *Maintenance crews could do the caulking; however, Lee suggested that be included in the contract for repairs.*
- 2.9. [Nov 08] IHR Sacajawea sub-station transformer. **ACTION:** Bettin to draft the FPP change form detailing the unit operation needed to keep the system operating correctly.
- 2.10. [Nov 08] Screen removal for lamprey passage. **ACTION:** Clugston and D. Fryer to look at the temporal passage, impacts to salmon if the screens are pulled, etc. **STATUS:** *This item is included in the Accords and was discussed at FFDRWG. This is considered one of the last years for a good out-migration so the tribes really want to try any and everything to make sure the juvenile lamprey make it safely through the dams. Fredricks said pulling screens might be an option but no decision could be made without looking at juvenile lamprey passage information, vertical distribution, diel information, some estimate of numbers of lamprey negatively impacted by fish screens, an overlay of when juvenile salmonids pass and when it is anticipated the screens would be pulled for lamprey and the effect pulling screens has on juvenile salmon survival. Clugston said he would work with Derek Fryer on getting that information.*
- 2.11. [Nov 08] PH2 VBS Task Group. **ACTION:** Klatte/Hausmann/Mackey to draft memo for next FPOM. **STATUS:** *The proposed language for inclusion in the FPP was sent to RCC and the task group on 15 December.*
- 2.12. [Nov 08] LWG jack bars. **ACTION:** NWW bio to draft FPP change form for the new bars. **STATUS:** *Completed.*
- 2.13. [Dec 08] change form 08LWG001. **ACTION:** Moody will update the change form with the edits discussed and send to Feil and Schwartz. **STATUS:** *completed.*
- 2.14. [Nov 08] BON Spill response plan. **ACTION:** Mackey to send out BON emergency spill response plan to FPOM. **STATUS:** *Sent on 1 December.*
- 2.15. [Nov 08] MCN dewatering screen monitoring. **ACTION:** Mackey to call Swenson to find out status. Need to call during the AM since he is on jury duty. **STATUS:** *called on 1 December. Left message. Will try again.*
- 2.16. [Nov 08] WDFW fish count lights. **ACTION:** Stephenson will draft a write-up detailing what the fish counters are seeing and what they are requesting. It should include what are they seeing, how improvements will be assessed, etc. Stansell offered assistance. **STATUS:** *to be discussed in February.*
- 2.17. [Dec 08] Galvanized grates. **ACTION:** Cordie will arrange to have another set of water samples taken from the ladder after the grating has been installed and the fishway is back in service.
- 2.18. [Dec 08] BON spill response plan. **ACTION:** Cordie to send TDA/JDA spill plan to Mackey. Mackey will send it to FPOM for review. Hausmann will incorporate the appropriate sections into the BON plan.
- 2.19. [Dec 08] NWW spill response plans. **ACTION:** Dykstra to review the NWW spill plans.
- 2.20. [Dec 08] Diel passage times of adult salmonids. (Clugston) **ACTION:** Mackey to send the entire UI letter report to FPOM on 5 December. **STATUS:** *Mackey completed on 5 December.*
- 2.21. [Dec 08] TDA wire ropes. Lorz wanted an update on the wire ropes. Several members expressed a desire to have that update prior to the discussion scheduled for the 7 January FFDRWG. **ACTION:** Cordie will get the updates and send them to FPOM. **STATUS:** *The gates that work are: 1-9, 12, 14-15, 17, and 20-22. Gates 10, 11, and 13 are tagged for wire rope replacement Gates 16, 18, and 19 are tagged for gate torsion stress Gate 23 tagged for apron under-cutting.*
- 2.22. [Dec 08] Fishway velocity Task Group. **ACTION:** Each Project Bio will determine the method and location for measuring velocities. They will draft a FPP change form with that information, for further discussion in January.
- 2.23. [Dec 08] VBS task group. **ACTION:** Mackey to ask about the date for the fish unit trash rake test and see if it is possible to have the ROV on 14 January inspect the trash rake while in action. **STATUS:** *The trash rake cannot be inspected by the ROV due to cost, but the Project is looking at doing a test to determine the effectiveness of the new rake compared to the old rake. Pat Hunter would like to compare drawdowns before and after.*

3. **Updates.** (Klatte/Dykstra)

3.1. Galvanized grates- water sample updates. Cordie received the last set of water samples. His report is included with the minutes. Fredricks expressed some concern about the dose. Do the samples taken accurately reflect the conditions in the fishway? Clugston commented that the powder coated grates are being included in the costs for the new JDA north ladder and that the cost of powder coating is a manageable cost for future grate replacements.

3.1.1. Cordie asked if the current stockpile of grates at TDA could be used for critical areas this year or not. There are enough grates for about 50% of the ladder. The areas targeted would include the lower east ladder, the junction pool and the east entrance. The collection channel does not need grates. FPOM asked if TDA could install the count station and ladder sections this winter. Cordie thought they might be able to get a good start of that if they knew whether or not they could use the stockpiled grates. **FPOM says ok. Fredricks is ok with installing new grating in critical areas but still wants time to review the methodology used for sampling prior to agreeing to full deployment of stockpiled grating. ACTION: Cordie will arrange to have another set of water samples taken from the ladder after the grating has been installed and the fishway is back in service.**

3.1.2. Clugston also brought up that the grating supports are sub-standard. Kristy Fortuny is working on that issue. New supports may need to be installed in future grating replacements.

3.2. LWG holding tanks.

3.2.1. The tribes and WDFW did not have enough water to operate the six tanks with six water changes per day and still maintain ladder criteria. It was determined that to operate those tanks with that criteria, the Project would have to maintain MOP + 1.3'. Once that change was made, Dykstra did not receive anymore phone calls about the inadequacy of the tanks. It wasn't until much later that Jerry Harmon commented that he hadn't noticed a difference in ability to use the tanks before the additional 1.3' and after.

3.2.2. Since that conversation, Dykstra has pushed to get funds to inspect the issue, which appears to be two problems. The first problem is a lack of indication on the two butterfly valves that feed the facility. Operators do not know if the valves are full open or not. The second problem appears to be a leak in some drain piping and valves. He will provide updates as they become available.

3.3. Kaplan study updates. Priority units will not be converted to fixed blades; therefore this appears to be no longer an O&M issue. Fredricks will continue to partake in the study progress and bring any issues to FPOM for discussion.

3.4. NWW fish pumps. Dykstra handed out a nifty table showing the status of the NWW fish pumps. It is attached to the minutes.

3.5. MCN spillway gate control check. On time and moving forward.

3.6. IHR dive operations. Dykstra coordinated the dives with FPOM since there would be flow deviations and it was outside the winter maintenance season. Dykstra asked if FPOM wanted that type of coordination to continue. **FPOM said yes.** Fredricks said the MCN spill could affect adult passage, depending on duration and location, so he would like to see these types of things coordinated. He also asked for more user friendly fish count queries on the web. He would like to look at historic fish passage for each dam for certain days or time periods, particularly during the dates when we currently don't have active counting, if it would be possible to do with the website.

4. **BON spill response plan.** (Hausmann) BON Project has a spill response plan but it does not say anything about the fishways. The standard response is to shutdown surface flow so no oil or other contaminants will continue downstream. TDA and JDA have a plan that involves deploying booms around the fishway entrances and AWS intakes. BON asked FPOM for assistance with what they would like to see in the plan and how fishways should be dealt with. FPOM requested a draft to look at. Cordie said he would find the latest version of the TDA/JDA plan and send it to Mackey who can include it with the minutes to send to FPOM. **ACTION: Cordie to send TDA/JDA spill plan to**

Mackey. Mackey will send it to FPOM for review. Hausmann will incorporate the appropriate sections into the BON plan.

4.1. Moody commented that NWW has spill plans with booms and such as well. **ACTION:** Dykstra to review the NWW spill plans.

4.2. This will be held over to the February FPOM meeting.

5. **CRITFC's review of PIT tag data for travel time from the AFF to BO3.** (Lorz) Moved to the February FPOM meeting.

6. **Diel passage times of adult salmonids.** (Clugston) **ACTION:** Mackey to send the entire UI letter report to FPOM on 5 December. FPOM will review and provide input to Clugston.

7. **JDA smolt monitoring.** FPAC recommendation for JDA smolt monitoring. (McCann/ Cordie) There is no data from previous years since this would be the first year the system has operated this far into the season. FPAC recommended running the system this year and then reviewing the data. The JDA SMF was dewatered on 1 December.

8. **Screen removal during peak juvenile lamprey, especially at MCN.** (Clugston) Moved to the February FPOM meeting.

9. **MCN dewatering screen monitoring.** (Swenson) Moved to the February FPOM meeting.

10. Other.

10.1. **TDA wire ropes.** Lorz wanted an update on the wire ropes. Several members expressed a desire to have that update prior to the discussion scheduled for the 7 January FFDRWG.

ACTION: Cordie will get the updates and send them to FPOM. **UPDATE:** The gates that work are: 1-9, 12, 14-15, 17, and 20-22. Gates 10, 11, and 13 are tagged for wire rope replacement Gates 16, 18, and 19 are tagged for gate torsion stress Gate 23 tagged for apron under-cutting.

10.2. **AFF picket lead mods.** A scope of work and budget has been sent to OPS and PM-E for review. The work will be conducted this winter work season. There will not be a walkway, nor hoists installed this year.

11. Task Groups meeting today and tomorrow.

11.1. Blanket outage language. (*Chair- Klatte, Benner, Dykstra, Fredricks, Lorz, Mackey, Wills*) Moved to January.

11.2. Fishway velocity (*Chair-Cordie, Fredricks, Lorz, Meyer, Mackey*). Each Project must insert their own details for velocity testing. Velocity needs to be checked daily. BON needs to investigate the possibility of installing a mechanical gauge at NUE and PH1 NCCH. The purpose of the velocity reading is to provide a reference point. If the one point is in criteria, you want to be able to assume that flow velocities in the areas of the channel are satisfactory for fish passage. The goal is to have only one point at each project but some may require multiple points. **ACTION:** Each Project Bio will determine the method and location for measuring velocities. They will draft a FPP change form with that information, for further discussion in January.

11.3. PH2 VBSs (*Chair- Hausmann, Benner, Fredricks, Klatte, Lorz, Mackey, Meyer, Schwartz, Wills*). **ACTION:** Klatte and Mackey will draft a memo by 10 December. It will include the monitoring criteria for pulling and re-installing STSs. There also needs to be a date for the fish unit trash rake test. Is it possible to tag it onto the 14 January 2009 ROV? Mackey to check.

ACTION: Mackey to ask about the date for the fish unit trash rake test and see if it is possible to have the ROV on 14 January inspect the trash rake while in action.

11.4. TIES (*Chair-Klatte, Bettin, Benner, Fredricks, Kruger, Mackey, Schwartz, Wills*). TIES will go in so there can be a year of study with TIES, BGS and B2CC and a year without the TIES. If

the Collection efficiency remains the same with or without TIES, then we will discuss scrapping the TIES. **It is ok to leave TIES in all season.**

11.5. SMP metrics sub-group. Meeting at FPC on 5 December at 0900. New touch screen demonstration. Next meeting is at 1300 on 7 January at PSMFC's conference room.

12. FPP proposed changes. See change forms for more details.

12.1. 09BON003 BON sturgeon language. (incorporates changes from May 2008 mtg)

12.2. 09BON007 BON 1.2.1.1, BON 2.4.1.2.f, BON 2.5.3.f, BON 2.5.3.f.1- change date of PH1 fish screen installation.

12.3. 09BON008 Table BON-11- include split flow unit priority row to the table.

12.4. 09JDA003 TDA and JDA velocity measurement language.

12.5. 09LWG001 LWG jack bars.

12.6. Fredricks would like to see **BON section 2.2.2 and 2.2.3 spill language corrected consistent with the BiOp.**

12.7. Fredricks commented that **TDA 2.4.1.2.e has gate 5-3 over the wrong unit. (09TDA003)**

13. FPP approved/rejected changes from March 2008- present.

13.1. 09overview001 OV 1.10.2.1 FPOM Coordination- reference/copy of Coordination Form.

Approved w/changes at the December FPOM

13.2. 09BON001 BON 2.1.2- include jacks in salmonids counts for splitting flows. **Approved** at the September FPOM.

13.3. 09BON002 BON 50K dates. **Approved** at the April FPOM.

13.4. 09BON004 BON 2.4.2.2.n.1 relocation. **Approved** at the December FPOM.

13.5. 09BON005 BON shad passage mode criteria. **Approved w/changes** at the December FPOM.

13.6. 09BON006 BON 2.1.2- include preference for mid to upper 1% turbine ops during split flows. **Approved** at the December FPOM.

13.7. 09TDA001 TDA ITS closure. **Approved** at the April FPOM

13.8. 09TDA002 TDA spill pattern change. **Approved** at the June FPOM.

13.9. 09JDA001 JDA SMF PIT tag shutdown date. **Approved** at the May FPOM. **Changed** at the August FPOM, back to the original language.

13.10. 09JDA002 JDA turbine unit 5. **Approved w/changes** at the May FPOM.

13.11. 09JDA004 JDA 2.5.1.2.b.1- remove language. **Approved** at the December FPOM.

13.12. 09MCN001 MCN unit priority. **Approved** at the April FPOM.

13.13. 09MCN002 MCN spill pattern. **Approved** at the April FPOM.

13.14. 09IHR001 IHR 1% tables. **Approved** at the June FPOM.

13.15. 09LGS001 LGS spill pattern. **Approved** at the April FPOM.

13.16. 09LMN001 LMN spill pattern. **Approved** at the April FPOM.

13.17. 09AppG002 App. G- BON protocols section 4.2. **Approved w/ changes** at the July FPOM.

13.18. 09AppG003 App. G-BON picket lead operations at high temps. **Rejected** at 16 July meeting.

13.19. NO CHANGE FORM. Voluntary v involuntary spill definitions. RCC recommended against including these definitions in the FPP at the June FPOM.

14. Finalized results from this meeting.

14.1. FPOM says ok. Fredricks still wants time to review the methodology used for sampling prior to full deployment of stockpiled grating.

14.2. FPOM wants to be coordinated with for dive ops and any other FPP deviation.

14.3. TIES will go in at BON this fish passage season.

15. The following documents were provided or discussed.

15.1. *Agenda, Fish Passage O&M Coordination Team.*

15.2. *MFR- Results of zinc galvanized grating field sample eval at TDA pages 6-7*

15.3. *NWW fish pump table. Page 8*

15.4. *Hourly detection dist. for adult salmon and steelhead at USACE dams pages 9-20*

15.5. *FPP change forms. Pages 21-26*

- 15.6. Fisheries Calendar Nov-Feb. pages 27-30**
- 15.7. NWW O&M report. Page 31**
- 15.8. LWG 100 ton crane Coordination Form page 32**
- 15.9. BON TIES write-up by Cordie. Page 33**

From: Bob Cordie, Project Biologist The Dalles/John Day Dams

Date: 12/3/08

Memorandum For the Record

Re; Results of zinc galvanized grating field sample evaluations at The Dalles Dam

Potential Problem

The Dalles project purchased a large portion of new zinc galvanized grating for replacement in the east fishway in 2005. With recent concern for zinc leaching into fishways, potentially resulting in negative impact fish passage, installation has been postponed until the issue can be resolved.

Methodology

Two areas have relatively recent replacement with new zinc galvanized grating prior to the zinc concern; all of the north fishway entrance area in 2003 and the east fishway uppermost two sections (upstream of the junction pool) in 2006. Sample set 1 and 2 consisted of field samples taken from these areas to determine if detectable zinc is found leaching from the grating. Forebay and tailrace samples were also taken for background zinc concentration levels. For the third sample set, a new diffuser grate from the grating stock pile was set inside the east count station picket leads by rope. The grating stock pile has been exposed to weather since it was purchased in 2005. Samples were collected 2-8 feet downstream of the grating 1 – 48hrs after installation. Flow from the sample location had to filter through the grating prior to collection.

Results

Sample Set 1

July 3, 2008 sample results; (Coffey Laboratories Inc)

Detectable limit (MRL) 0.05mg/L

East Junction Pool	non detect
East entrance tailrace	non detect
North entrance channel	non detect
North exit forebay	non detect

Sample Set 2

Aug 18, 2008 sample results; (Pyxis Laboratories LLC)

Detectable limit (MRL) 0.01mg/L

East Junction Pool	non detect
East entrance tailrace	non detect
East lower ladder	non detect
North entrance channel	non detect
North exit forebay	non detect
Pour through galv grating	1.8mg/L

Sample Set 3

November 26, 2008 sample results; (Pyxis Laboratories LLC)

Detectable limit (MRL) 0.01mg/L

Before grate installation	non detect
1hour @ 2ft	non detect
1hour @ 8ft	non detect
8hour @ 2ft	non detect
8hour @ 8ft	non detect
24hour @ 2ft	non detect
24hour @ 8ft	non detect
48hour @ 2ft	non detect
48hour @ 8ft	non detect

Discussion

Sample set 1 did not have a low enough detection limit (0.05mg/L). Sample set 2 was adjusted for a lower detection limit (0.01mg/L). Sample set 2 field results were under the established 0.026mg/L limit of concern as determined from the fish behavior lab study. Furthermore, it revealed there is leaching from grating by the 'Pour through' sample, but dilution from fishway flow may bring concentrations within acceptable limits. Sample set 3 results were also under the established 0.026mg/L limit of concern, showing that the stock pile of galvanized grating does not seem to leach zinc at a rate which would result in concentrations above the limit of concern.

The project plans to install one additional section (between overflow weirs) in the lower east ladder during the '08/'09 winter maintenance season. A fourth set of field samples can be collected to further support results from the first 3 sets. However, There seems to be supportive evidence that the grating from the stock pile can be installed without potential negative impact of fish passage.

Fish Passage Operation and Maintenance committee will need to decide whether a fourth set of samples is needed at the Dec, 2008 meeting. The project can then move forward with plans of grating replacement over the next several winter maintenance seasons.

Bob Cordie
Project Biologist, The Dalles Dam

CENWW AWS pump update / status December 3, 2008

McNary Dam	Fish Pump #3	Rebuilt, but developed oil leak the area that controls the pitch of the blades. Contract been issued for repair. Problem with stop log installation (debris in sill plates). Hard hat dive required, in early Jan. scheduled for the removal of debris and setting the stop logs.
	Fish Pump #2	No issues. Normal winter PM's
	Fish Pump #1	Currently running. Concerns on either "bearing noise" or "stavings" that may be cracked. Possibly to set another stop logs in during Jan. dive to troubleshoot and repair the pump.
Ice Harbor Dam	North shore #1	In operation. Will be shipping gearbox to Deran as soon as #3 back in operation. Ready for service by late Feb. 2009.
	NS #2	OOS. As of 3 Dec. being put back together and spin tested.
	NS #3	In operation now. Will go OOS 8 Dec. for gearbox repair at Deran. Ready for service by late Jan. 2009.
	South shore pumps # 1-8	All in operation. Normal winter PM.
Lower Monumental Dam	Fish Pump #3	OOS. Parts to be prefabricated. Planned back in service by April 2009.
	Fish Pump #1	In service. Displaying same problems as #3 - wobbling of the shaft has caused the bearing holder to get out of tolerance. Same parts to be fabricated for #3 will replace warn parts in #1 and also #2.
	Fish Pump #2	In service. Displayed same problem as # 3 and # 1. However wear was less and has had temporary repairs
Little Goose Dam	Fish Pumps # 1, 2, 3	All in service. Intermittent coolant problems with FP#3. Able to solve problems with ramping up rpm on other three. These infrequent outages are generally less than a day (3 to 4 hours).
Lower Granite Dam	Fish Pumps # 1, 2, 3	All in service.

26 November 2008

To: David Clugston (USACE)
From: Matt Keefer and Chris Caudill

Re: Hourly detection distributions for adult salmon and steelhead at USACE dams

Introduction: This letter report summarizes the diel passage behavior of adult salmonids at lower Columbia and Snake River dams. The data were assembled to help managers identify the best times for fishway maintenance and other activities that potentially disrupt upstream adult salmonid passage. Adult PIT-tag data and the extensive radio telemetry studies conducted by the UI and NMFS (e.g., Keefer et al. 2003, 2007, 2008a, 2008b; Burke et al. 2005; Stuehrenberg et al. 2005) have shown that the majority of adult activity in fishways occurs during daylight hours. The relatively limited night-time activity by salmonids has mostly been by fish that entered fishways late in the day.

Methods and Results: Here we generated time-of-day distributions of adult fish activity at fishway entrances (approaches and entries) and top-of-ladder sites (exits into forebays). These two areas bracket the fishway passage environment. We used five years of telemetry data for spring–summer Chinook salmon, fall Chinook salmon, and steelhead (2000-2004) and a single year for sockeye salmon (1997). In these years, all adult fish were collected and radio-tagged at Bonneville Dam. Sample sizes ranged from several hundred to more than 1,100 fish per run per year, and were smallest in 2004.

The level of telemetry coverage differed between dams and years. However, top-of-ladder sites were continuously monitored at all eight dams in all years and most fishway entrances were also monitored at all dams. The combination of large sample sizes and saturation antenna coverage resulted in large numbers of detections, particularly for fishway approaches (Table 1).

Time-of-day distributions are presented graphically in Figures 1-8. Results were generally similar across runs and dams, with the vast majority of tagged fish detected during daylight hours at each site. Distributions for fishway approaches typically showed a rapid increase in detections after dawn, often followed by a slight lull in mid-day and another increase in late afternoon. Distributions for fishway entrances were very similar to those for approaches, but averaged slightly later than approaches. Top-of-ladder distributions were later overall, reflecting the time fish used to pass through fishways and up ladders. At some dams, peak top-of-ladder passage occurred in the afternoon. At other sites, there was some evidence for two peak passage times, with a lull in mid-day. Differences between runs were relatively limited, and were likely related more to day length or water temperature at different seasons than to biological differences. It is possible that differences in swimming ability had an effect (e.g., the relatively late timing of sockeye salmon).

These results indicate that adult salmonid activity at dams was consistently lowest at night. The hours between approximately 22:00 and 04:00 had the lowest fishway detection numbers (Figures 1-8). At most dams, $\leq 5\%$ of the detections for each run were between midnight and 04:00 (Figure 9). This suggests that this time of night may be best time for maintenance or other actions, at least for adult salmonids. We note that adult Pacific lamprey are primarily nocturnal, and have passage timing distributions that are nearly the opposite of those for salmonids (see Figure 10).

Literature cited

Burke, B.J., K.E. Frick, M.L. Moser, T.J. Bohn, and T. C. Bjornn. 2005. Adult fall Chinook salmon passage through fishways at lower Columbia River dams in 1998, 2000, and 2001. Report of National Marine Fisheries Service to U.S. Army Corps of Engineers, Portland district.

Keefer, M.L., T.C. Bjornn, C.A. Peery, K.R. Tolotti, R.R. Ringe, P.J. Keniry, and L.C. Stuehrenberg. 2003. Adult spring and summer Chinook salmon passage through fishways and transition pools at Bonneville, McNary, Ice Harbor, and Lower Granite dams in 1996. Technical report 2003-5 of Idaho Cooperative Fish and Wildlife Research Unit to U.S. Army Corps of Engineers, Portland and Walla Walla districts.

Keefer, M. L., C. A. Peery, T. C. Bjornn, M. A. Jepson, K.R. Tolotti, R.R. Ringe, and L. C. Stuehrenberg. 2007. Adult salmon and steelhead passage through fishways and transition pools at The Dalles Dam, 1997-2001. Technical Report 2007-2 of Idaho Cooperative Fish and Wildlife Research Unit to U.S. Army Corps of Engineers, Portland and Walla Walla districts.

Keefer, M. L., C. A. Peery, T. C. Bjornn, M. A. Jepson, K.R. Tolotti, S. R. Lee, and L. C. Stuehrenberg. 2008a. Adult salmon and steelhead passage through fishways and transition pools at John Day Dam, 1997-2001. Technical Report 2008-4 of Idaho Cooperative Fish and Wildlife Research Unit to U.S. Army Corps of Engineers, Portland and Walla Walla districts.

Keefer, M. L., D. C. Joosten, C. L. Williams, C. M. Nauman, M. A. Jepson, C. A. Peery, T. C. Bjornn, R. R. Ringe, K.R. Tolotti, S. R. Lee, L. C. Stuehrenberg, M. M. Moser, and B. J. Burke. 2008b. Adult salmon and steelhead passage through fishways and transition pools at Bonneville Dam, 1997-2002. Technical Report 2008-5 of Idaho Cooperative Fish and Wildlife Research Unit to U.S. Army Corps of Engineers, Portland and Walla Walla districts.

Keefer, M.L., C.T. Boggs, C.A. Peery, and M.L. Moser. *In review*. Adult Pacific lamprey migration in the lower Columbia River: 2007 radiotelemetry and half duplex PIT-tag studies. Technical Report of Idaho Cooperative Fish and Wildlife Research Unit to U.S. Army Corps of Engineers, Portland and Walla Walla districts.

Stuehrenberg, L. C., M. L. Keefer, C. A. Peery, K. R. Tolotti, R. R. Ringe, T. C. Bjornn, and B. Burke. 2005. Adult steelhead passage through fishways and transition pool at Bonneville, McNary, and Lower Granite dams - 1996. Technical Report 2005-6 of Idaho Cooperative Fish and Wildlife Research Unit to U.S. Army Corps of Engineers, Portland and Walla Walla districts.

Table 1. Total numbers of fishway approaches, entries, and ladder exits recorded for radio-tagged adult salmonids at lower Columbia and Snake River dams. Spring–summer Chinook salmon, fall Chinook salmon, and steelhead numbers are totals for 2000-2004 migration years; sockeye numbers are for 1997.

Behavior	Dam	Sp–Su Chinook	Fall Chinook	Steelhead	Sockeye
Fishway approach	BON	64,446	51,202	47,763	6,685
	TDA	27,499	17,165	18,800	727
	JDA	182,927	88,283	63,884	2,249
	MCN	35,925	15,482	18,644	1,957
	IHA	15,619	1,778	8,204	-
	LMN	34,996	3,608	16,027	-
	LGO	42,616	2,246	16,191	-
	LGR	45,744	3,044	21,444	-
Fishway entry	BON	9,353	8,571	9,706	1,115
	TDA	8,983	9,066	9,733	526
	JDA	24,891	22,832	18,559	1,201
	MCN	8,185	5,921	5,058	676
	IHA	3,007	735	2,549	-
	LMN	4,848	1,417	4,641	-
	LGO	3,782	891	4,557	-
	LGR	4,177	563	3,128	-
Ladder exit	BON	4,629	3,122	3,547	630
	TDA	4,294	3,151	3,743	505
	JDA	3,616	2,379	3,066	446
	MCN	3,272	1,902	2,696	196
	IHA	1,733	257	1,890	-
	LMN	1,552	238	1,939	-
	LGO	1,662	217	1,812	-
	LGR	1,680	180	1,686	-

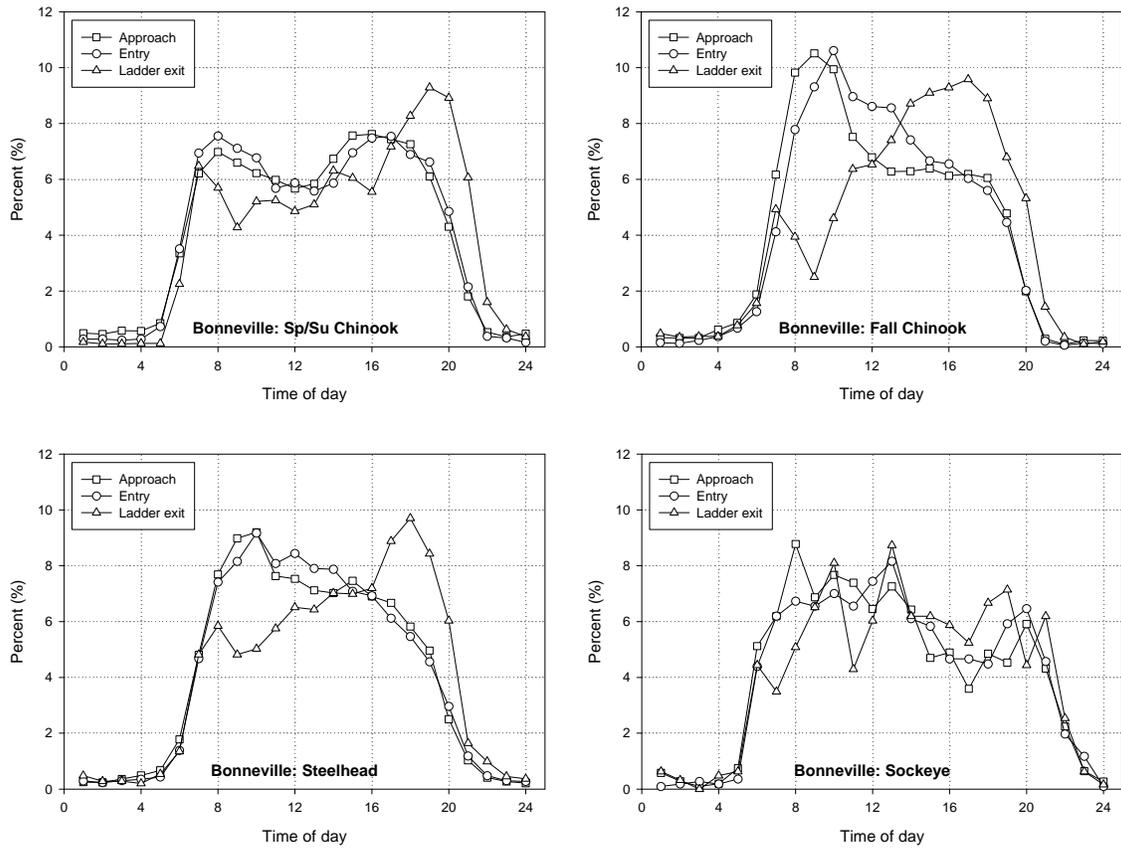


Figure 1. Time-of-day detection distributions for adult salmonids at Bonneville Dam, including 5 years of data for spring–summer Chinook salmon, fall Chinook salmon, and steelhead, and one year for sockeye salmon.

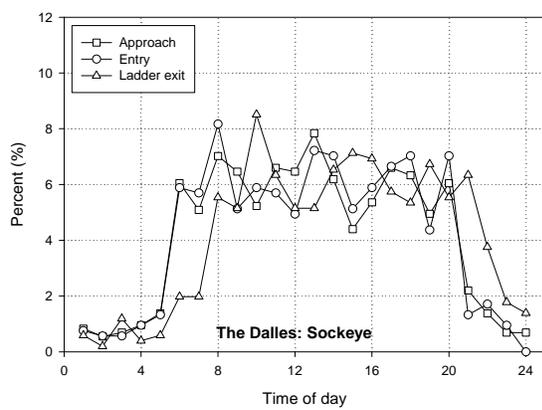
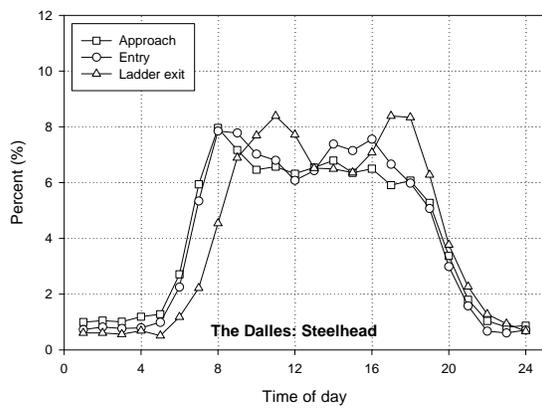
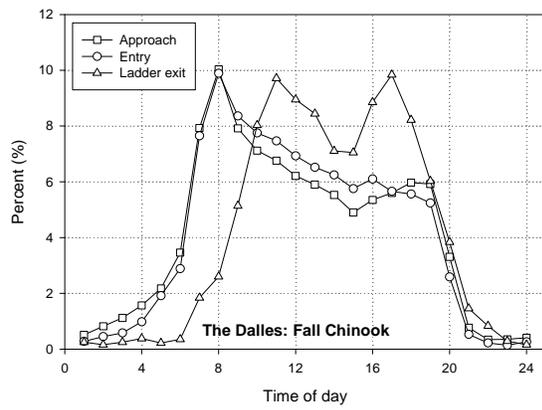
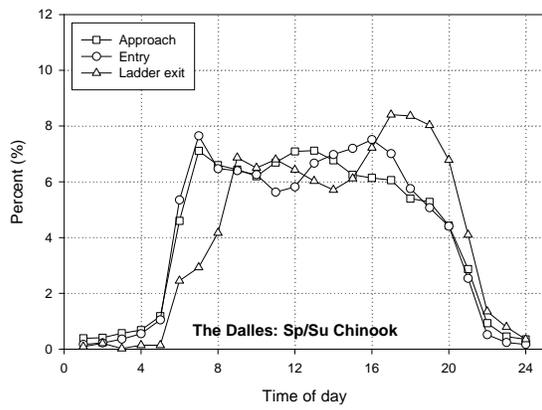


Figure 2. Time-of-day detection distributions for adult salmonids at The Dalles Dam, including 5 years of data for spring–summer Chinook salmon, fall Chinook salmon, and steelhead, and one year for sockeye salmon.

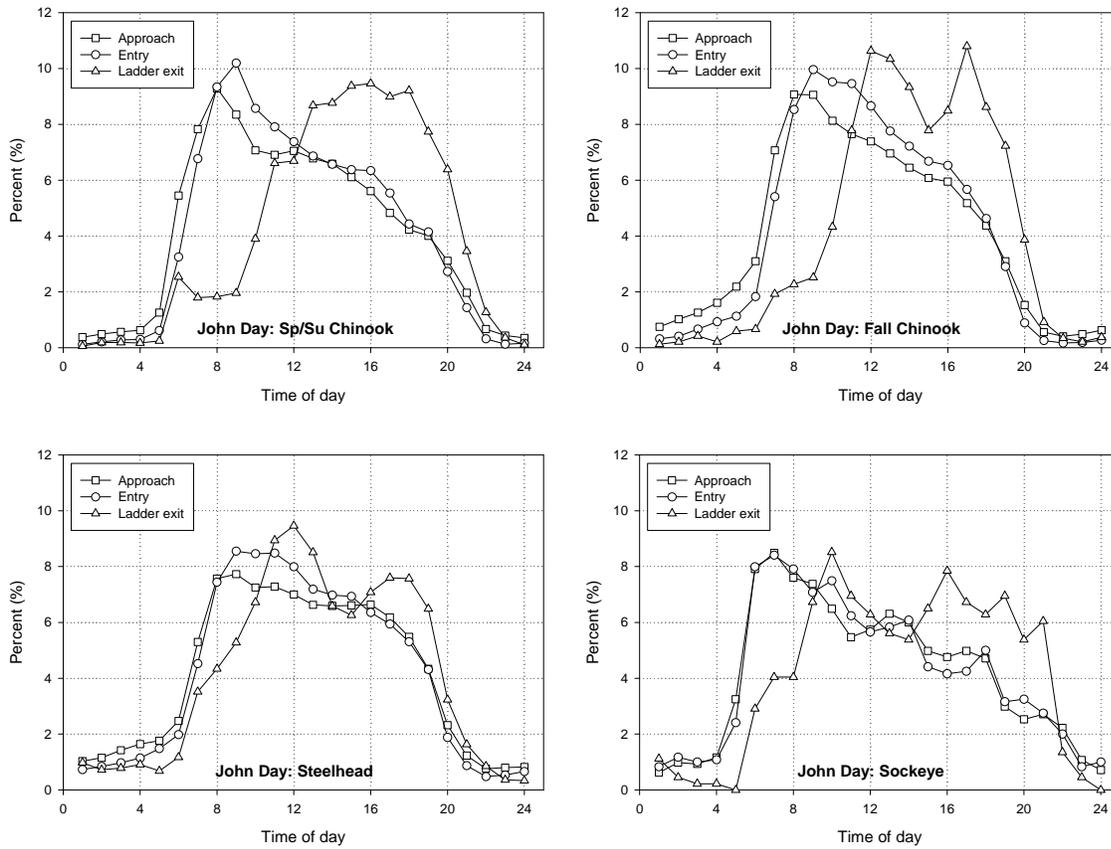


Figure 3. Time-of-day detection distributions for adult salmonids at John Day Dam, including 5 years of data for spring–summer Chinook salmon, fall Chinook salmon, and steelhead, and one year for sockeye salmon.

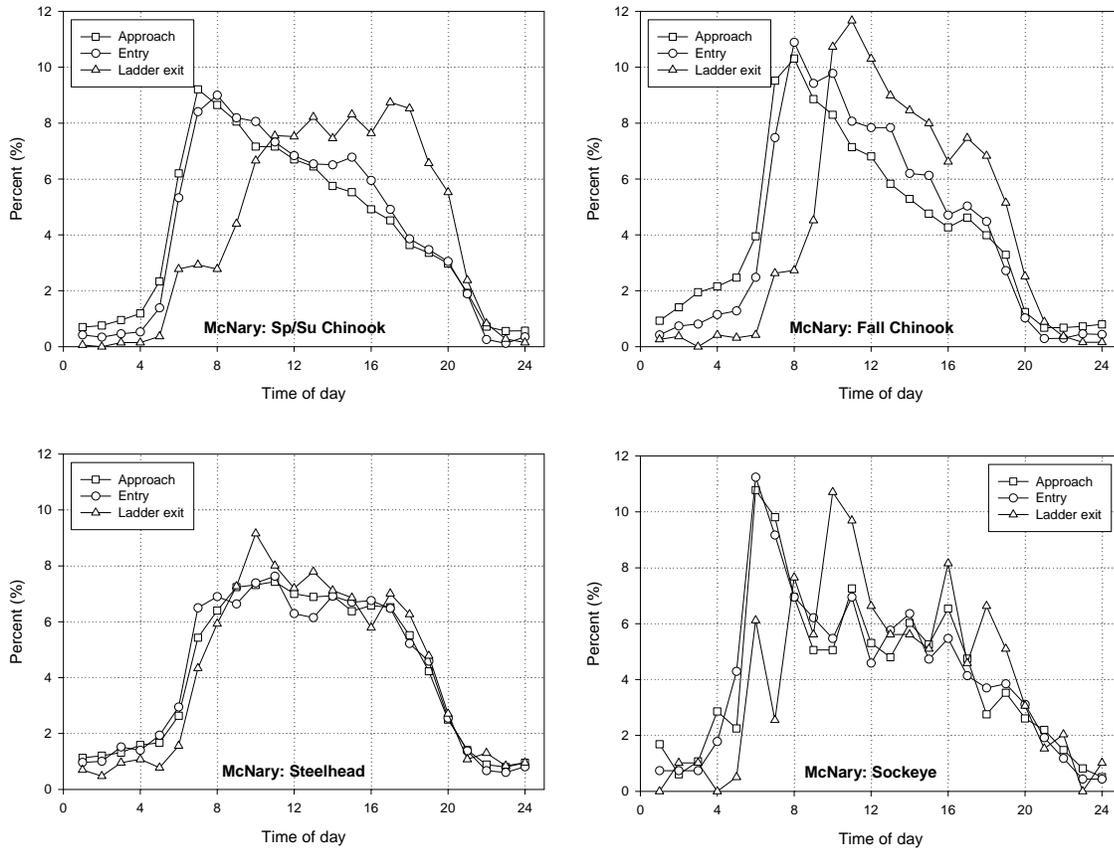


Figure 4. Time-of-day detection distributions for adult salmonids at McNary Dam, including 5 years of data for spring–summer Chinook salmon, fall Chinook salmon, and steelhead, and one year for sockeye salmon.

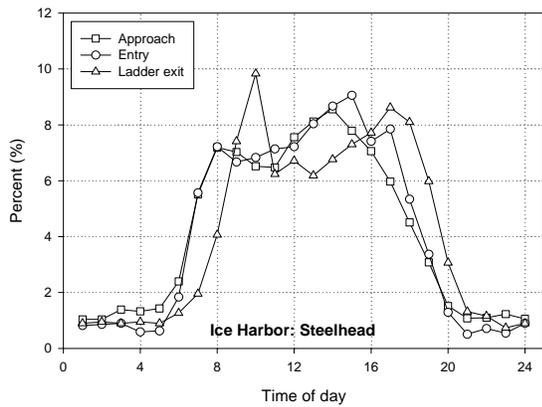
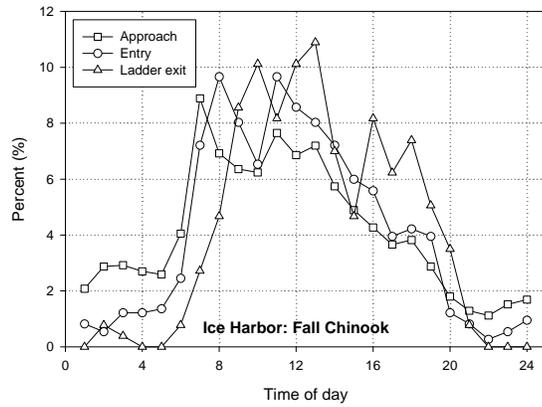
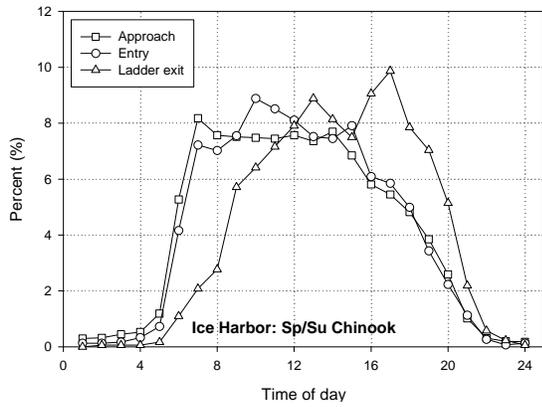


Figure 5. Time-of-day detection distributions for adult salmonids at Ice Harbor Dam, including 5 years of data for spring–summer Chinook salmon, fall Chinook salmon, and steelhead, and one year for sockeye salmon.

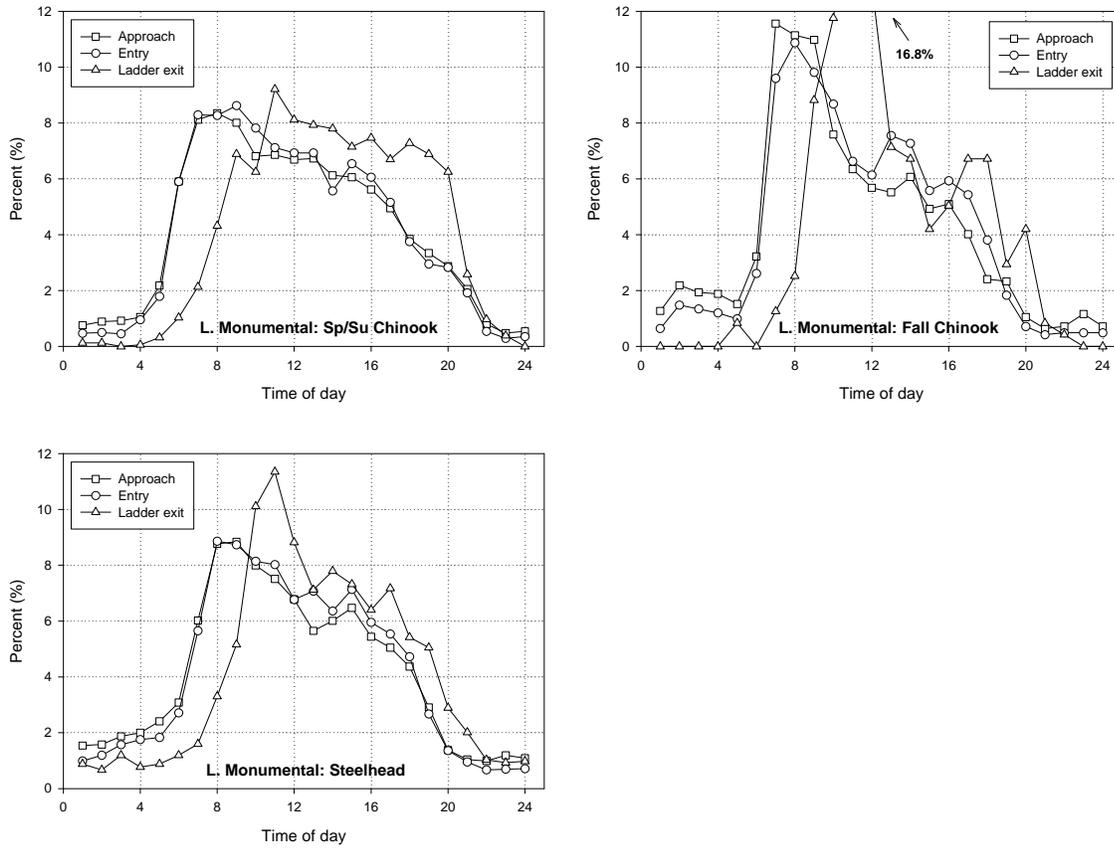


Figure 6. Time-of-day detection distributions for adult salmonids at Lower Monumental Dam, including 5 years of data for spring–summer Chinook salmon, fall Chinook salmon, and steelhead, and one year for sockeye salmon.

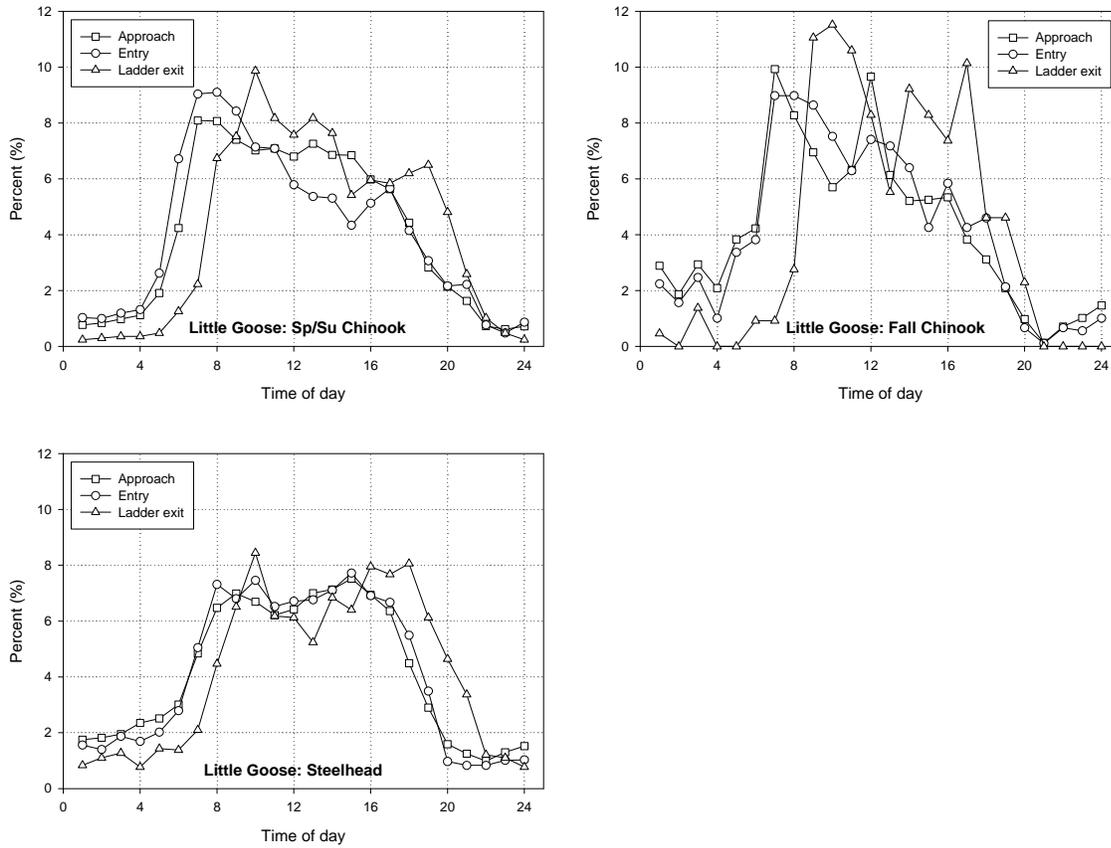


Figure 7. Time-of-day detection distributions for adult salmonids at Little Goose Dam, including 5 years of data for spring–summer Chinook salmon, fall Chinook salmon, and steelhead, and one year for sockeye salmon.

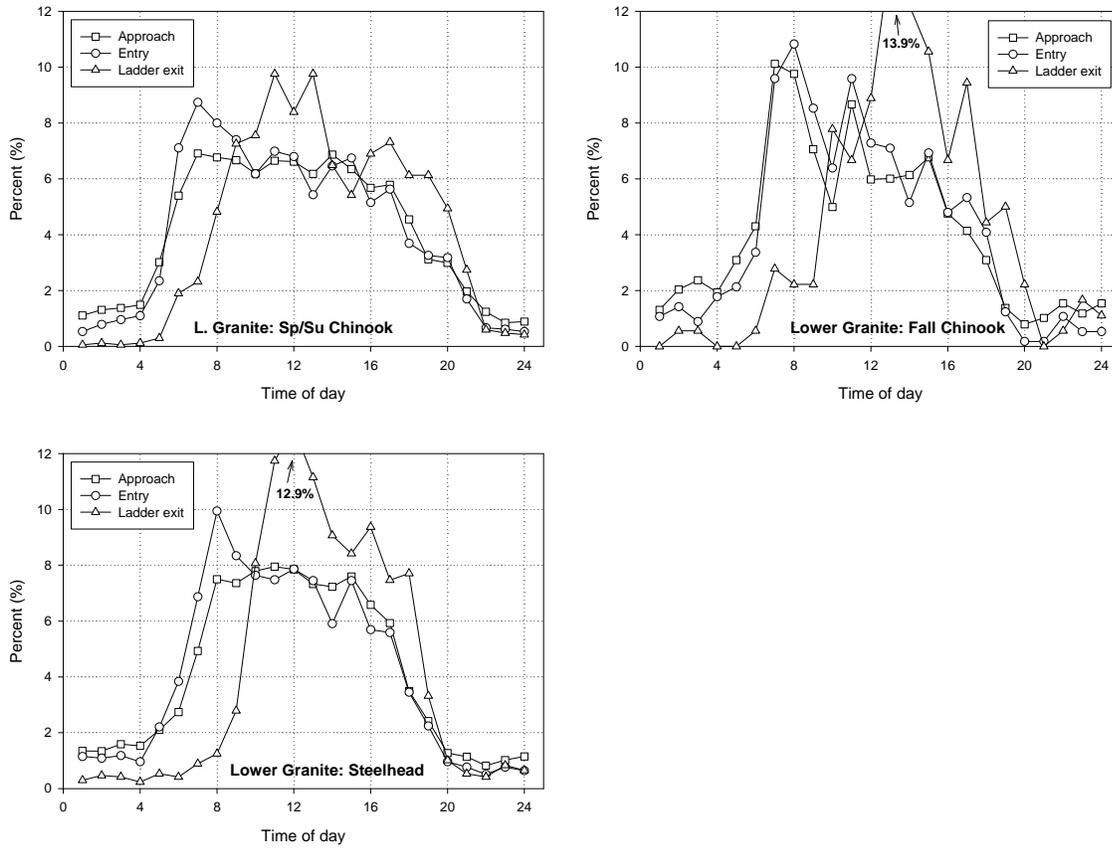


Figure 8. Time-of-day detection distributions for adult salmonids at Lower Granite Dam, including 5 years of data for spring–summer Chinook salmon, fall Chinook salmon, and steelhead, and one year for sockeye salmon.

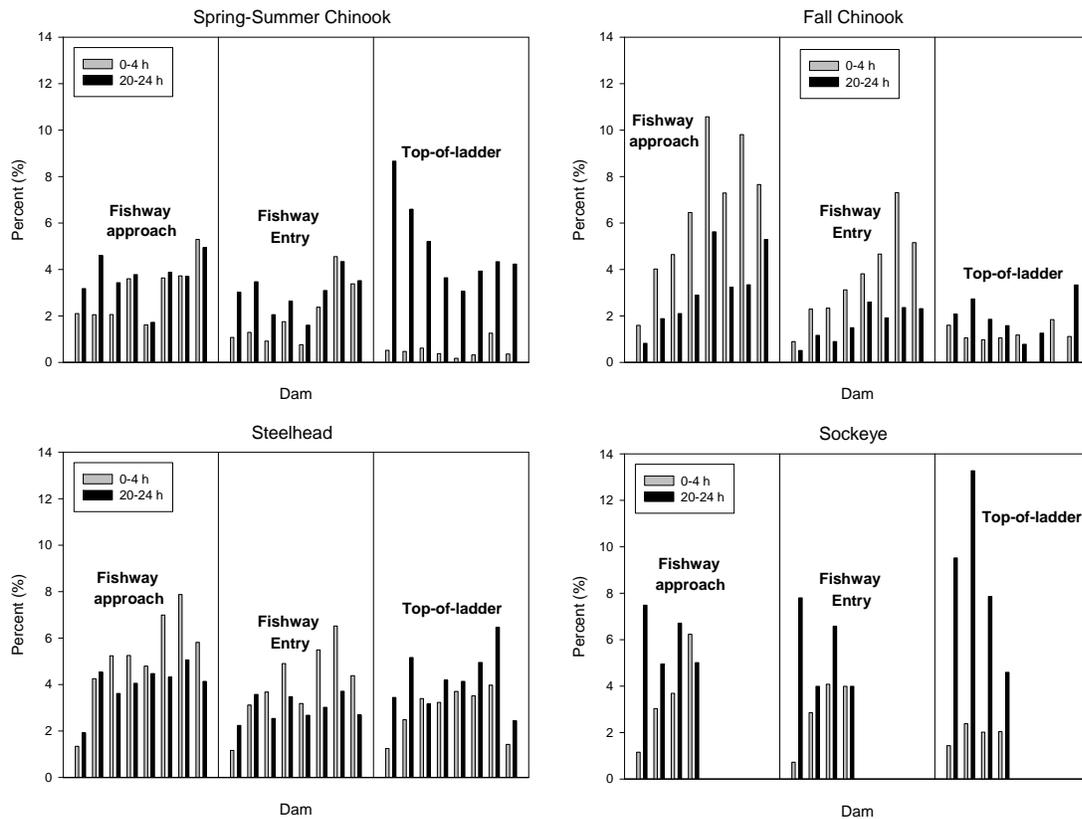


Figure 9. Percentages of each run detected between 0–4 h (gray bars) and 20–24 h (black bars), by site, run, and dam. Dams from left to right: BON, TDA, JDA, MCN, IHA, LMN, LGO, LGR.

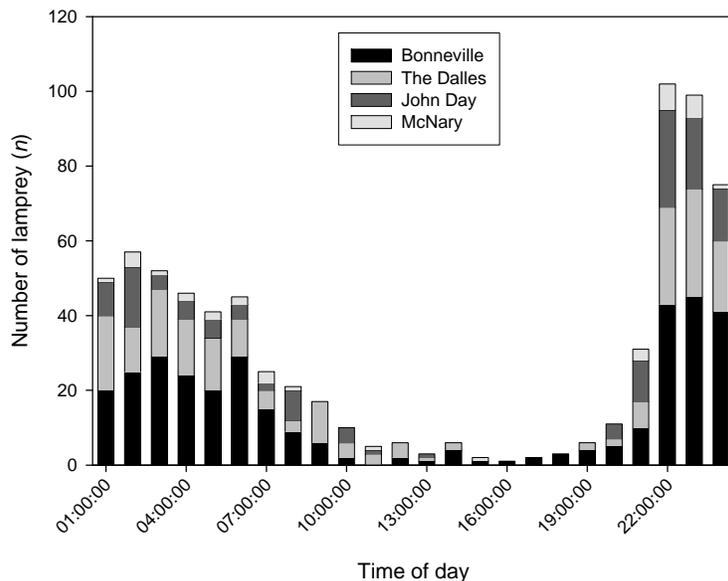


Figure 10. Distributions of the times that HD PIT-tagged adult Pacific lamprey were detected passing top-of-ladder sites at Bonneville, The Dalles, John Day, and McNary dams in 2007. (From Kefer et al. *in review*).

FPP Change Forms

Change Request Number: 09overview001

Date: 10/31/2008

Proposed by: FPOM

Location of Change: Overview 1.10.2.1 FPOM Coordination

Proposed Change: Add wording to include the use of the Coordination Form. Insert a copy of the Coordination Form.

“The District biologist will then provide essential information to the fish agencies, tribes, and other affected interests as appropriate, *through the use of the Coordination Form (below), and, if necessary,* by telephone call with an e-mail follow-up. Information for planned activities should be provided at least two weeks in advance to FPOM representatives for review. For unanticipated but non-emergency activities such as equipment failures, information should be provided at least three workdays in advance. Emergency coordination may be performed immediately prior to or subsequent to the required action (see section 1.2). Information provided to affected interests will include a summary of the problem, location, date and time, analyses of potential impacts to salmon stocks, and potential alternative actions. The affected interests should in turn respond *by email, in person, or by phone. The response will be documented on the Coordination Form, sent to FPOM and filed for future reference.* A District biologist will forward the decision to project personnel, and in some cases, RCC will issue a teletype to the project for approved activities.”

Reason for Change: To provide a Coordination Form for interested parties and to formalize the use of the form for coordination issues.

Comments from others: Use of the Coordination Form is not optional.

Record of Final Action: **Approved with the changes noted above.**

Change Request Number: 09BON003

Date: April 16, 2008

Proposed by: Bonneville Project

Location of Change- BON 5.4.6-5.4.7 and BON 6.5.1-6.5.2 (sections re-numbered as required)

Proposed Change:

- 5.4.6. *From 1 December through 30 April, non-priority turbine units will not be voluntarily scheduled for extended outages. Priority units are 1, 10, 11, and 18.*
- 5.4.7. *From 1 December through 30 April, turbines which have been idle/out of service for more than 12 hours will be started by slow rolling the unit after manually tipping turbine blades from flat to steep back to flat.*

After including the two sections above as 6.5.1 and 6.5.2-
The current 6.5.2 will be re-numbered to 6.5.4. Add “*bottom tail logs should be placed first.*”
The current 6.5.3 will be re-numbered to 6.5.5. Add “*It is recommended adjacent units be operated to flush fish prior to placing tail logs in the unit to be OOS. It is also recommended that units located adjacent to OOS units not be voluntarily taken out of service until the adjacent units return to service.*”

Reason for Change: To better protect sturgeon in the draft tube and turbine environment.

Comments from others: FPOM doesn’t want priority units OOS during fish passage season. FPOM would like 5.4.6 clarified better.

Change Request Number: 09BON004

Date: 6/4/2008

Proposed by: Project Fisheries

Location of Change: BON-18 2.4.2.2.n.1

Proposed Change:

2.4.2.2.n.1 says “coordinate gatewell cleaning with smolt monitoring personnel operating the downstream juvenile sampling facilities”. It should be moved to 2.4.2.2.m.3, which is the section on what to do when cleaning gatewells.

Reason for Change:

2.4.2.2. n.1 is in the wrong location.

Comments from others:

Record of Final Action: Approved at FPOM.

Change Request Number: 09BON005

Date:8/6/08. Update don 10/31/08

Proposed by: BON Project Fisheries

Location of Change: BON Section 2.5.1.2.a

Maintain the water depth over fish ladder weirs at 1’ +/- 0.1’ during non-shad passage season (August 16 through May 14) and 1.3’ +/- 0.1’ during the shad passage season (May 15 through August 15).

Proposed Change: Remove the dates and adjust to shad passage mode based on the numbers of shad passing.

Maintain the water depth over fish ladder weirs at 1’ +/- 0.1’ during non-shad passage season (<5,000 shad per day/per count station) and 1.3’ +/- 0.1’ during the shad passage season (> or = to 5,000 shad per day/per count station).

Reason for Change: It makes more sense to base shad passage mode on shad numbers passing. It also makes BON criteria consistent with TDA shad criteria.

Comments from others: Add *per count station* to be consistent with TDA.

Record of Final Action: Approved with changes noted above.

Change Request Number: 09BON006

Date: 9/11/08

Proposed by: FPOM

Location of Change: BON 2.1.2

Proposed Change: Include, at the end of the paragraph, “Turbine units should be operated at the mid or upper 1% range whenever possible, during the split flows operation.”

Reason for Change: Without this guidance, the Control Room will allow GDACS to run the units, which may result in some units operating at the lower end of the 1% band.

Comments from others:

Record of Final Action: Approved at FPOM.

Change Request Number: 09BON007

Date: 9/11/08

Proposed by: FPOM

Location of Change: BON 1.2.1.1 , BON 2.4.1.2.f, BON 2.5.3.f, and BON 2.5.3.f.1

Proposed Change: To include language that states the PH1 fish screens would be installed as soon as possible, after spill ends.

BON 1.2.1.1 (original) - "The downstream migration channel (DSM) is also used for adult passage from September 15 through December 15." **to**

BON 1.2.1.1 (new)- "The downstream migration channel (DSM) is also used for adult passage from *early September, as soon as fish screens are installed*, through December 15."

BON 2.4.1.2.f (original) - "All gatewell orifices should be opened and DSM1 ran south from September 15 through December 15." **to**

BON 2.4.1.2.f (new)- "All gatewell orifices should be opened and the DSM1 ran south from *early September, as soon as fish screens are installed*, through December 15."

BON 2.5.3.f (original) - "STSS and VBSs will be installed in two PH1 priority units on September 15." **to**

BON 2.5.3.f (new) - "STSS and VBSs will be installed in two PH1 priority units *as soon as possible after spill ends, but no later than 3 September 2009*."

BON 2.5.3.f.1 (original) - "The Powerhouse One DSM will be watered up on September 15, with water flow to the south." **to**

BON 2.5.3.f.1 (new) - The Powerhouse One DSM will be watered up *as soon as screens are installed*, with water flow to the south."

Reason for Change: This change provides for getting the fish screens installed and providing adult fallback protection earlier in September. This will also provide protection for when flows are split prior to September 15th.

Comments from others: Need to tighten up the date. This is too general as written.

Record of Final Action:

Change Request Number: 09BON008

Date: 9/11/2008

Proposed by: FPOM

Location of Change: Table BON-11

Proposed Change: Include a row for unit priority, by powerhouse, when splitting flows.

Table BON-11. Turbine unit operating priorities, Bonneville Powerhouses One and Two.

PERIOD	PRIORITY
Year-round; adult fish ladders are in service	11,18,15,12,17,14,13,16, 3,1,4,6,2,5,7,10,9,8
First Powerhouse Adult Fish Ladder out of service	11,18,15,12,17,14,13,16, 3,1,4,6,2,5,7,10,9,8
Second Powerhouse Adult Fish Ladder out of service	3,1,4,6,2,5,7,10,9,8 11,18,15,12,17,14,13,16
Priority for each powerhouse when flows are split due to fish numbers.	PH1- 3,1,4,6,2,5,7,10,9,8 PH2- 11,18,15,12,17,14,13,16

Reason for Change: This clearly lays out the priority for each powerhouse when flows are split.

Comments from others: Need to add verbiage to explain the split flows. The unit priority, as written, could be misinterpreted.

Record of Final Action:

Change Request Number: 09TDA003

Date: 12/4/08

Proposed by: NOAA

Location of Change TDA 2.4.1.2.e

Proposed Change: Existing language-

- e. Open ice and trash sluiceway (ITS) gates 1-1, 1-2, and 1-3 over operating Main Unit-1, and sluiceway gates 5-3, 18-2, and 18-3 over operating Main Unit 18.

Proposed language-

- e. Open ice and trash sluiceway (ITS) gates 1-1, 1-2, and 1-3 over operating Main Unit-1, *sluiceway gate 5-3 over Main Unit 5*, 18-2, and 18-3 over operating Main Unit 18.

Reason for Change:

Sluiceway gate 5-3 is not over Unit 18.

Comments from others:

Record of Final Action:

Change Request Number: 09JDA003

Date: 5/27/2008

Proposed by: The Dalles John Day Project

Location of Change: TDA 2.5.1.2.4 and JDA 2.5.1.2.a.4

Proposed Change:

Omit from TD - ‘Water velocities will be measured at one location directly and monitored during fishway inspections to verify channels are operating within velocity criteria’.

Add to TD and JD – ‘Water velocities will be monitored weekly during as part of the fishway inspection program. Project biologist will determine method. Results will be provided in weekly status report. (JD did not have the same wording as TD)

Reason for Change:

Discussion and resolution determined through FPOM velocity task group

Comments from others: need specific language for each project on how and where the velocity would be recorded.

Record of Final Action:

Change Request Number: 09JDA004

Date: 8/13/2008

Proposed by: JDA Project Fisheries

Location of Change- JDA 2.5.1.2.b.1

Proposed Change: Remove the following language “Testing will be conducted to determine if the use of one entrance at greater than 8’ depth allows better passage conditions. (Study plan will be developed through the AFEP Studies Review Work Group.)”

Reason for Change:

Remnant information from previous years FPPs. Decision was made through FPOM to operate 1 entrance weir at >8’

Comments from others:

Record of Final Action:Approved at the December FPOM.

Change Request Number: 09AppG004

Date: 7/22/2008

Proposed by: Jon Rerecich

Location of Change- Appendix G BON AFF trapping protocols 2.3.

Anytime lamprey are held overnight in the AFF, researchers will notify Project Fisheries and the Control Room.

Proposed Change:

Restrict holding times for lamprey to 48 hours.

Lamprey may be held up to 48 hours in the AFF. Researchers will notify Project Fisheries and the Control Room whenever lamprey are held.

Reason for Change:

To minimize holding lamprey too long. In 2008 there was a mortality due to holding over a weekend.

Comments from others:

Record of Final Action: Approved at the December FPOM.

Change Request Number: 09AppG005

Date: 091108

Proposed by: Bonneville Project Fisheries

Location of Change Appendix G section 1.12

Proposed Change: App. G section 1.12 currently reads: “Users will be permitted to operate valves 10 and 11” but it should read “Users will be permitted to operate valves 9 and 10”

Reason for Change: Corrects erroneous valve info.

Comments from others:

Record of Final Action: Approved at the December FPOM.

Change Request Number: 09LWG002

Date: November 17, 2008

Proposed by: Mike Halter / Kent Blevins – Lower Granite Dam Fisheries Biologists

Proposed Change:

Install new separator bars overlaying the original separator bars. These bars are constructed of 1 inch diameter ridged aluminum tubing spaced 1 1/16 to 1 1/8 inches apart covering the entire surface of the separator. Proposed operations would commence when the SMP crews notice a spike in the “minijacks” in the collected sample. The project biologist and CENWW-OD-T will be notified at that time. This operation would start in mid October and end at normal juvenile fish passage season October 31, or as noted by Corps Biologist, the absence of “minijack” in the collection. If research extends collection of fish past normal juvenile fish passage season at Lower Granite, the removal of the new separator bars will occur when the SMP crews note the lack of “minijacks” in the sample around mid November.

Reason for Change:

To reduce the number of “minijacks” in the collection and return them to the river instead of sending them to the sample holding tanks where they are separated prior to anesthetizing or anesthetized and sampled, then returned to the river and fishery. Reduce stress and injury levels among the juveniles in the collection by separating the “minijacks out of the collection. We saw a significant increase in jack numbers ranging between 30 and 34 centimeters in length this season. Their small size allowed them to slip between the separator bars we normally operate with.

Comments from others:

NOAA- Assurance of continuous monitoring at the separator for potential gilling, and other injury, etc. will not happen.

IDFG is concerned that separators can increase stress and latent mortality, and only support their use when the biological benefits will likely be greater than the potential impacts.

From our understanding [Idaho] the subyearling collected at LGR in October have relatively high SARs whether we transport or bypass them.

If this is correct, maybe it would be best to go to full flow bypass when there are large numbers of mini-jacks present.

Washington SMP edits above.

Record of Final Action:

November 2008

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
30						1
2	3	4	5	6 TDA spillwall call	7	8
9	10	11 Veteran's Day	12	13 FPOM Meeting SMP metric meeting Draft FPP input due.	14 AFEP proposal review- NWW	15 Happy Birthday
16	17 ERDC model trip- JDA & MCN	18 ERDC model trip- JDA & MCN Happy Birthday	19 ERDC model trip- JDA & MCN	20 ERDC model trip- JDA & MCN TDA spillwall call	21 ERDC model trip- JDA & MCN	22
23	24 Happy Birthday	25	26	27 Happy Thanksgiving	28 Draft FPP Due in NWD	29

December 2008

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 BON BI to orifice flow BON F1 OOS JDA SMF dewater	2 TDA-E dewater Chum workshop	3 JDA-N dewater BON BI dewater	4 FPOM at TDA JDA-N ent dewater TDA spillwall tour	5 SMP metric meeting at FPC	6
7	8 AFEP Research review- NWP	9 AFEP Research review- NWP	10 AFEP Research review- NWP	11 AFEP Research review- NWP	12	13
14	15 Adult fish counting ends LWG. STS removal begins	16	17	18 TDA spillwall call BON DSM2 dewater	19	20
21 Happy Hanukkah	22 BON AFF dewater	23 BON two-mile pipe	24	25 Merry Christmas	26 Happy Kwanzaa	27
28	29	30	31			

January 2009

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1 Happy New Year TDA spillwall call	2 NWW adult fish facility begins	3
4	5 JDA south turbine ROV	6 JDA-S dewater	7 NWP FFDRWG SMP metrics meeting	8 FPP Meeting-NOAA	9 BON CI pickets pulled. BON north blkhd installed.	10 BON WS to orifice flow BON F2 OOS
11	12 BON WS dewater	13 TDA-N dewater	14 TDA-N ent dewater BON ROV inspection	15 AFEP- brief on funded proposals TDA spillwall call	16	17 BON CI to orifice flow
18	19 HOLIDAY	20 BON CI dewater	21	22	23	24 BON DSM1 orifice lights off.
25	26 BON DSM1 dewater	27	28 Smith-Root sea lion barrier meeting.	29 TDA spillwall call	30	31

February 2009

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2 SLEDs installed	3	4	5	6	7
8	9 JDA/TDA ERDC trip	10 JDA/TDA ERDC trip	11 JDA/TDA ERDC trip TMT	12 JDA/TDA ERDC trip TDA spillwall call	13 JDA/TDA ERDC trip	14
15	16 HOLIDAY	17	18 TDA PUD ROV	19 SCT FPOM- NOAA O&M budget review	20 Revised Draft FPP Due to NWD	21
22	23	24	25 TMT JDA south turbine trashrack ROV	26 TDA spillwall call	27	28 Annual FPP Issued Adult fish facility maintenance ends

Construction

McNary:

- Turbine unit 2 out service November 20 – 21 due to VBS damage (see below).
- Turbine unit 6 remains out of service for 9 year overhaul.
- Turbine unit 8 out of service November 9 & 10 due to failed fish screen.

Lower Granite:

- Turbine unit 1 remains out of service due to excessive leakage around the head cover packing.
- Turbine unit 2 remains out of service for rewind and 6-year overhaul.
- Turbine unit 3 remains out of service for 6 year overhaul.
- Turbine unit 5 taken out of service November 12 (0741 to 2205 hours) for governor work.

Little Goose: Flow deflector installation is now in progress at spill bays 1 and 8.

Operations and Maintenance - Juvenile Fish Facilities

McNary:

- Facility switched from primary bypass mode to emergency bypass mode November 18.
- South dewatering valve conduit inspected November 20 after facility was switched to emergency bypass mode. Top mounting surfaces and sealing points found damaged. Repair plans are being formulated.
- ESBS replaced in slots 4A and 8B on November 13.
- VBS in slot 2A was damaged and subsequently jammed in slot during cleaning on November 20. Repairs were completed November 21.

Ice Harbor: Facility currently in bypass mode. Bypass system unwatering scheduled for December 18.

Lower Monumental: Intake deck crane discovered to have cracked support legs. Winter maintenance may be affected as this crane is used to raise and service the STSs.

Little Goose: Collection for transport ended November 1, currently in bypass mode.

Lower Granite:

- Collection for transport ended November 1, secondary bypass in progress to collect PIT tag data..
- Technicians continued to record tag information from adult fall Chinook fallbacks.

Operations and Maintenance - Adult Fish Facilities

Ice Harbor:

- North Shore Fish pump #2 gearbox replacement is slated to begin December 1.
- Seven south shore fish pumps (instead of 8 pumps) being operated to reduce head and maintain channel differentials at the South Shore Entrance.
- South Shore Entrance weir motor tripped a breaker on November 5 following an electrical overload. Normal operation resumed after breaker was reset.

Lower Monumental:

- North ladder picketed leads raised November 12.
- Fish Pump #3 remains out of service due to problem with the diffuser assembly and bearing housing. Fish pump 3 is “bulkheaded off” to improve efficiency of 2 pump operation.

Lower Granite:

- Daily 16 hour video counts in progress until December 30.
- All fish pumps taken out of service November 19 (0927 – 1313 hours) to reprogram pump #1 power management relay software.

Research

Little Goose: USGS currently radio-tracking adults through the tailrace.

Lower Granite: Adult fish trap in ceased operation on November 24. System unwatered November 26.

**OFFICIAL COORDINATION REQUEST
FOR
NON-ROUTINE OPERATIONS AND MAINTENANCE**

COORDINATION DATE- December 3, 2008

PROJECT- 100 Ton Intake Crane – Lower Granite Dam

RESPONSE DATE-

Description of the problem

The 100 Ton intake crane is scheduled to be OOS for rehab October 2009 thru January 2010.

The Fish Passage related issue is the installation of hydraulic cylinders on Units 4 & 6. From Dec 15 thru the end of Jan, units 4 & 6 would not be in compliance with running units with the head gates up, dogged off and cylinder removed. We would need a waiver to deviate from the FPP here. The benefit to installation of cylinders would be to allow for unit annuals on 4 & 6 during the time period Oct 1 thru Dec 15, in addition, between Dec 15 and end of Jan, two of the three units available would have the ability to lower head gates in the event of a governor problem, and then could be worked on and brought back into service, if not, they could be out the whole duration.

Type of outage required

Units 4 & 6 ESBS will be dogged off on the deck from Oct 1, 2009, and OOS. RTS after Dec.15 after fish passages season.

Units 1, 2, 3, 5 will have ESBS installed through Jan 2010.

Impact on facility operation

The FPP requires the removal of the cylinder during fish passage. With cylinder installed the headgates will be extending approximately 1 foot lower than normal.

Annual service to esbs from units 1, 2, 3, and 5 will be in Feb. to mid March, 2010, later than normal, potential conflict with Nav Lock outage.

Length of time for repairs

Expected impacts on fish passage

With intake crane out of service for this period of time - unanticipated emergency to units or ESBS may occur.

Comments from agencies

Final results:

Please email or call with questions or concerns.

Thank you,
Greg Moody
509-527-7124

Bonneville B2 Turbine Intake Extension (TIEs) 2009 Decision

Several variables are involved with the decision of implementing TIEs on Bonneville Powerhouse 2 (B2) for 2009 passage season. The following are for consideration in the decision process.

- History
 - 1987-89; TIEs were implemented to improve Fish Guidance Efficiency (FGE). Twelve TIEs were installed on alternating unit intakes of all units to reduce lateral flow in front of the powerhouse, streamline flow into turbine intakes.
 - 2004; The corner collector (B2CC) was put in service. Six TIEs on south end forebay (units 11-14) were not installed to allow lateral flow to assist in B2CC collection efficiency. TIEs were installed on units 15-18 in alternating intakes. The 6 unused TIEs were removed from project.
 - 2007-08; TIEs were not installed due to crane structural problems.
 - 2008; A Behavioral Guidance System (BGS) was installed in B2 forebay in efforts to improve passage efficiency of the B2CC. However, the TIEs were not installed due to structural problems with the TIE crane. Preliminary research results with BGS and no TIES show improved Fish Guidance Efficiency (FGE) for yearling Chinook, but no change for subyearling Chinook and Steelhead. Overall survival was very high.
 - 2008; STSs removed late May due to high debris loading, approx 1/3 of spring research period (yearling and steelhead). Returned mid June for entire summer research period (subyearling).
 - Unit 11 was not in service during summer tests and unit 15 was not in service during the spring tests. Both are projected to be in service during 2009 passage/research season.
- Future
 - TIE crane repair contract presently in place. Crane scheduled to be available for spring 2009.
 - The 6 available TIEs are in need of painting and lifting chain inspection, but not urgent.
 - BGS to remain in same configuration for 2009 passage season.
 - Unit 16 scheduled for 4yr overhaul June 15- Aug 6, which is last on the Fish Passage Plan unit priority.
 - B2 FGE and BGS research is planned for 2009 passage season, similar to 2008.
 - CFD modeling comparison with TIEs in and out.

Choices

TIEs in;

- Reduce the strong lateral flow at north powerhouse forebay.
- Provide comparison for a complimentary value to the BGS.
- Possible added improvement to subyearling and steelhead guidance.

TIEs out;

- Provide redundant data for 2008 operation comparison.
- Provide comparison with units 11 and 15 in service to determine turbine operation affect.