

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

COORDINATION TITLE- 15BON87PH1 main unit breaker replacement.

COORDINATION DATE- 3 November 2015

PROJECT- Bonneville Lock and Dam

RESPONSE DATE- preferably by FPOM on 12 November, but NLT 17 November.

Description of the problem - The installation of the Main Unit Breakers for Bonneville Powerhouse 1 Bank 9/10 will be delayed. The plan is for the Bank 9/10 outage to start on 4 January 2016, and to be complete on 15 April 2016.

Type of outage required – Bank 9/10 is fed by Units 9 and 10. These units will be out of service.

Impact on facility operation – North end priority units will not be available. The next available units will be operated. The ITS will remain operational with the automated gates open over U10.

Dates of impacts/repairs – Units 9 and 10 will be out of FPP criteria from 1 March through 15 April.

Length of time for repairs – Units 9 and 10 will be out of service from 4 January through 15 April.

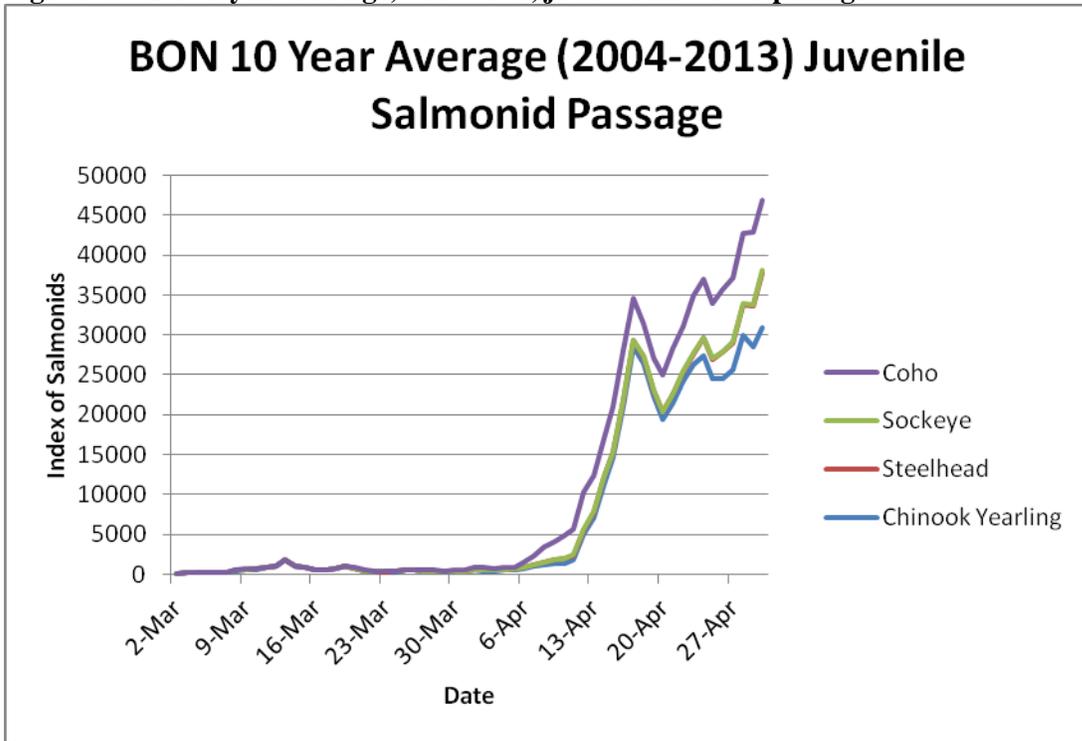
Expected impacts on fish passage – From 4 January through 29 February the fish impacts are expected to be minimal. This is during winter maintenance and PH2 will be the priority powerhouse during this time.

From 1 March through 15 April –

Downstream migrants – minimal impact. The ITS will remain in operation with the chain gates set according to FPP criteria. Units 9 and 10 will not be available to provide ideal egress conditions, however, once spill begins on 10 April, it is expected that the majority of juveniles will pass through the spillway, the B2CC, and PH2.

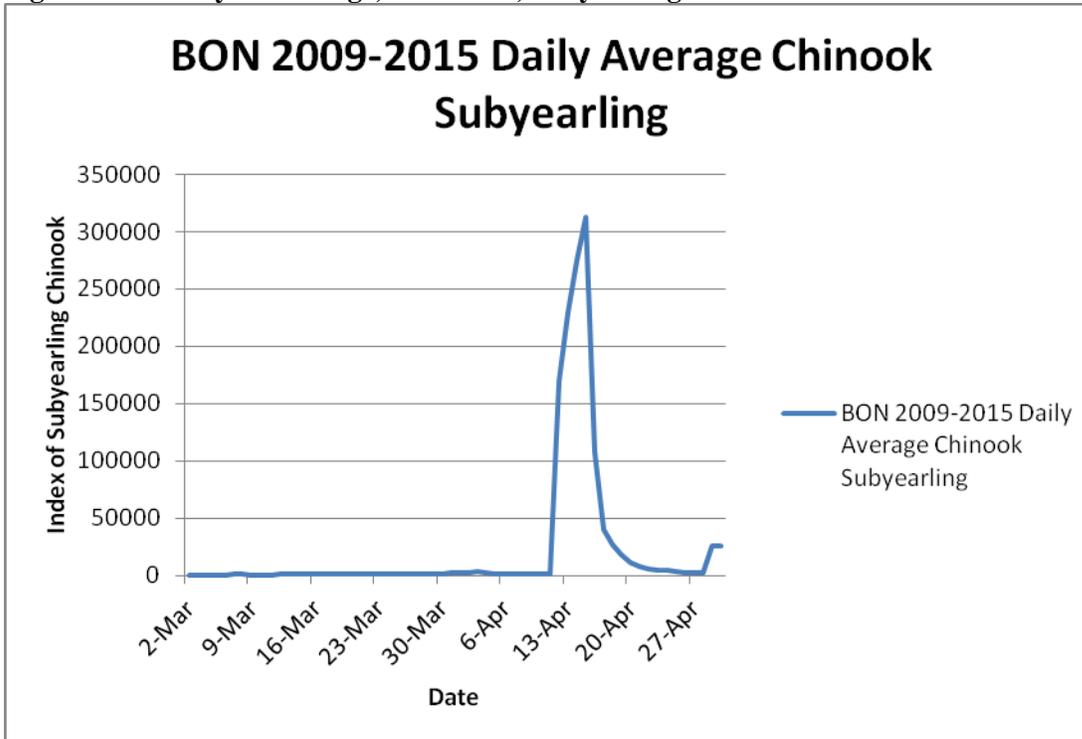
Upstream migrants (including bull trout) – PH2 will be the priority powerhouse during this time so it is expected that the majority of fish will pass through the Washington Shore fishway. Below is the eleven year average historical fish counts for Bradford Island. Fish numbers are relatively low until spill starts on 10 April.

Figure 1. BON 10 year average, 2004-2013, juvenile salmonid passage.



Data provided by FPC.

Figure 2. BON 6 year average, 2009-2015, Subyearling Chinook



*Spring Creek Hatchery discontinued their March releases of 6 million fish after 2008. A 10 year average would not be an accurate reflection of current conditions. Data provided by PSMFC.

Figure 3. BON 10 year average, 2006-2015, Adult Chinook

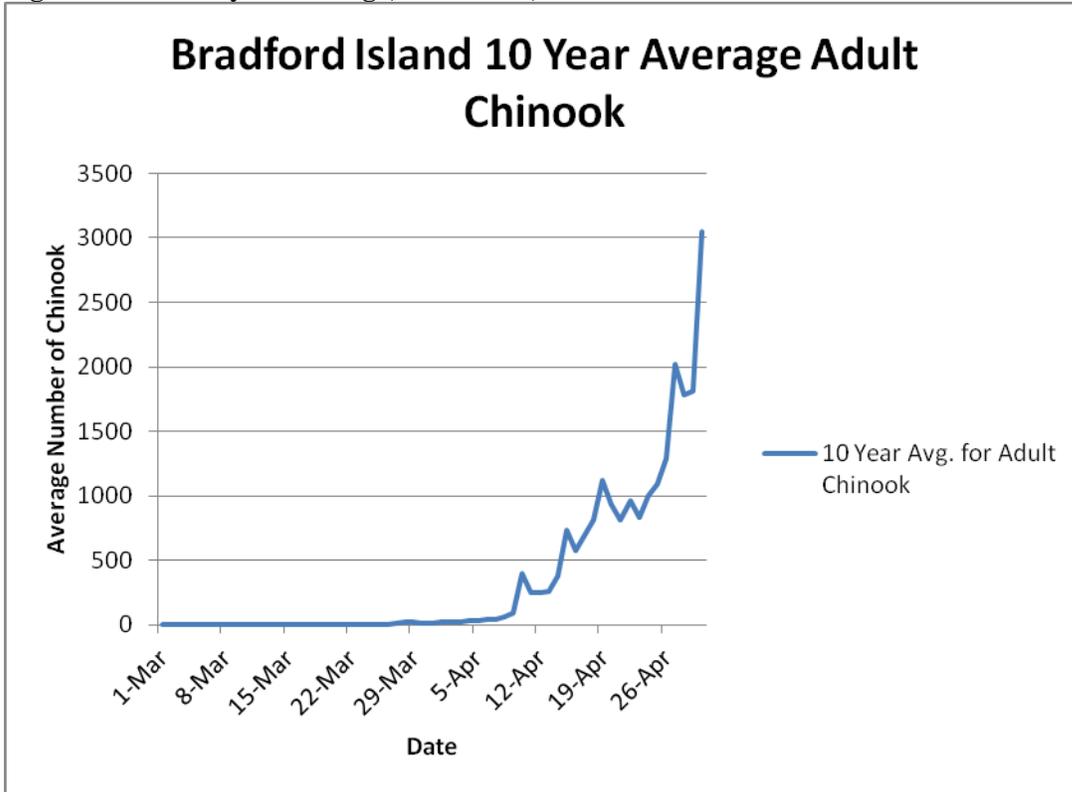


Figure 4. BON 10 year average, 2006-2015, Adult Steelhead

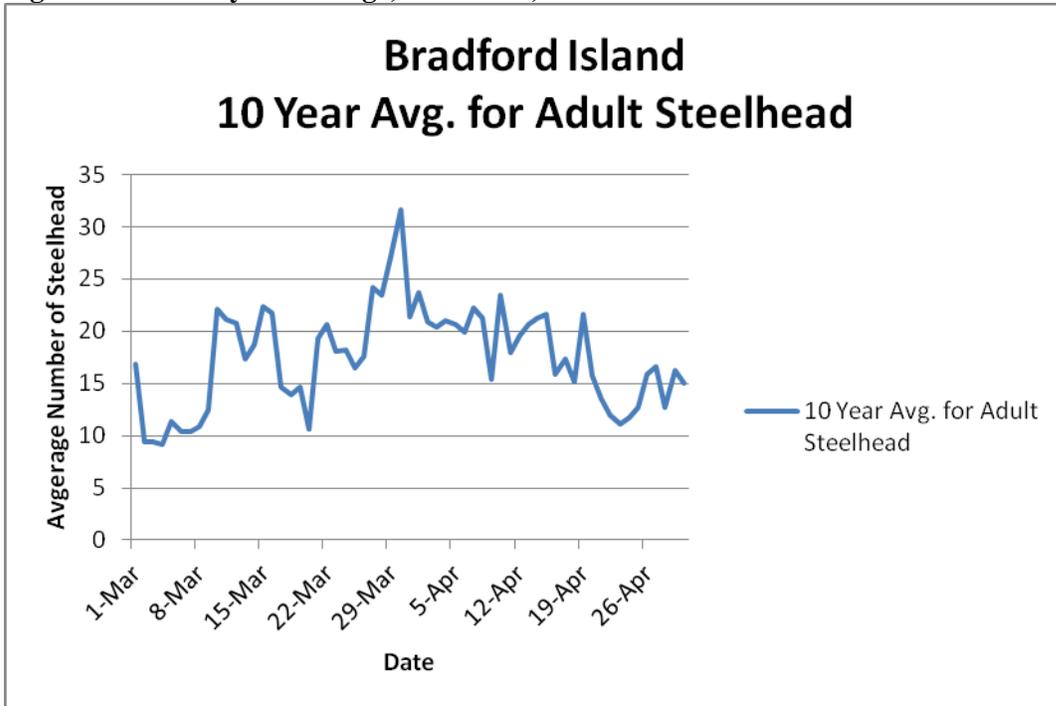
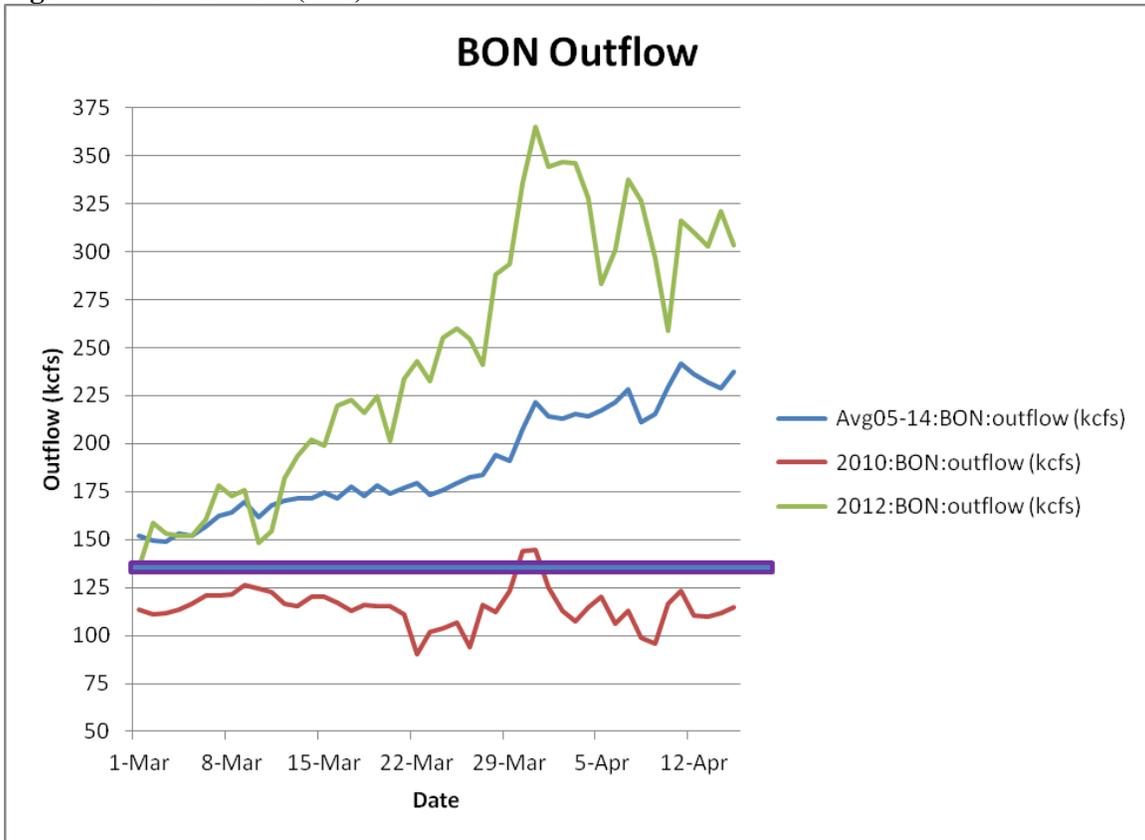


Figure 5. BON outflow (kcfs)



DART Data Citation. Columbia River DART, Columbia Basin Research, University of Washington. (2015). River Environment Graphics & Text. Available from http://www.cbr.washington.edu/dart/query/river_graph_text

Figure 5 includes the 10 year average outflow, blue line; a high flow year in 2012, green line; and a low flow year in 2010, red line. The purple bar represents the maximum outflow for PH2 and all miscellaneous flow, about 136 kcfs, (Table 1) except for the B2 Corner Collector. In 2010, flow peaked at about 145 kcfs on 29 March, so about 5.5 kcfs needed to go through PH1, resulting in the need for a PH1 unit to operate. In 2012, flow peaked at about 360 kcfs, so about 210 kcfs needed to go through PH1 and spill, due to other miscellaneous flow (Table 1).

Table 1. BON Miscellaneous Flow

BON Miscellaneous Flow

Source of Miscellaneous Flow	Amount in kcfs
Ice and Trash sluiceway -PH1	0.2
B2 corner collector	5.8
DSM (downstream migrates) - PH1	0.3
DSM (downstream migrates) - PH2	0.5
UMP (upstream Migration channel)	0.7
Fish Ladder (North shore)	0.8
Cascade Is. Fish Ladder	0.5
A Branch fish ladder	2.5
B Branch fish ladder	0.9
Nav Lock	0.4
total	12.6

PH2 anticipated outages: Unit 12 will be OOS from 14 March – 17 March.

Proposed PH1 Unit Priority: BON project fisheries proposes PH1 unit priority to be: 1, 8, 3, 6, 2, 4, 5, 7. PH1 maximum outflow capacity is approximately 100 kcfs.

Comments from agencies

NOAA-----Original Message-----

From: Gary Fredricks - NOAA Federal [mailto:gary.fredricks@noaa.gov]

Sent: Thursday, November 05, 2015 9:10 AM

To: Gibbons, Karrie M NWP

Cc: Lorz, Tom; Trevor Conder - NOAA Federal; Hausmann, Ben J NWP

Subject: [EXTERNAL] Re: FPOM: Official Coordination - 15BON87 PH1 main unit breaker replacement (UNCLASSIFIED)

I can't say I'm too crazy about this one. As the graph indicates there can be a lot of Chinook passing the project in mid-April. We aren't expecting a great run this next year but that just makes every one we get back that much more valuable. I can't predict sea lion abundance next year but if it is anything like last year, we should be concerned. Changing unit priority can cause adult delay, particularly since we closed the mid-powerhouse floating orifices years ago. It is likely that only WG-64 would be operating on that side of the river. Anything more than a couple of units running would be a concern. What is the likelihood of this happening given the operation record at the project? What is the reason for delay of the breaker work? Is there any chance this could be resolved? Can the work be compressed to be completed by mid-April? Right now I would say that this work should be completed and the priority units returned to service no later than April 15. In any case, we should also reconsider the interim unit priority in FPOM. I agree there should be minimal impact to juvenile passage. Thanks, Gary

NWP-BON-----Original Message-----

From: Hausmann, Ben J NWP

Sent: Thursday, November 05, 2015 4:18 PM

To: Gary Fredricks - NOAA Federal; Gibbons, Karrie M NWP

Cc: Lorz, Tom; Trevor Conder - NOAA Federal

Subject: RE: [EXTERNAL] Re: FPOM: Official Coordination - 15BON87 PH1 main unit breaker replacement (UNCLASSIFIED)

Gary,

Here's what I can tell you. I think the possibility of needing to have more than a few units running at PH1 that time of year is very real. Do we have evidence that not having the end unit running causes significant delay for fish finding the ladders? We could re-prioritize to minimize delay but obviously 8 would be as close as we could get at that end. The delay is due to the contractor not supplying an acceptable engineered plan to HDC to do the work. It cannot be resolved as the delay has already occurred. At this point, the breakers are set to be here January 4th. I do think compressing the work to be finished by mid-April is a very real possibility. Having the fish managers demand this will be necessary to insure it is understood.

Hope this helps.

Ben

FPOM discussion on 12 November:

Hausmann said it is due to contractor issues, the contractor did not submit a plan that met HDC requirements, it has been corrected now but it caused a delay. Breakers will be onsite in early January, but the completion estimate would be mid-April. Fredricks would like to have the work done by 15 April. Fredricks said while units are OOS, the unit priority in the FPP is not right, and would like to look at the BON model. Bettin asked Hausmann how many breakers are being replaced. Hausmann is unsure of the total number and will find out. Hausmann said they will be working on units 9 and 10 during winter maintenance, the slip is the issue. Mackey said we will get flow data and the PH1 units that will likely be running. Fredricks said to have the work completed by 15 April and look at the unit priority. Bettin said if there are a minimum number of units running at PH2, then we can pull it over to PH1. **Action:** Gibbons & Hausmann update MOC with proposed 15 April, proposed unit priority, flow data and resend. excess water from PH2 water and put it at PH1. **Action:** Gibbons & Hausmann update MOC with proposed 15 April, proposed unit priority, flow data and resend.

NOAA-----Original Message-----

From: Gary Fredricks - NOAA Federal [mailto:gary.fredricks@noaa.gov]

Sent: Wednesday, December 02, 2015 7:08 AM

To: Gibbons, Karrie M NWP

Cc: Lorz, Tom; Mackey, Tammy M NWP; Ed Meyer - NOAA Federal; Erick VanDyke; Trevor Conder - NOAA Federal; Hausmann, Ben J NWP

Subject: [EXTERNAL] Re: FPOM: Official Coordination - 15BON87 PH1 main unit breaker replacement (UNCLASSIFIED)

Karrie, It looks like more than the data were updated in this version since the end date for the work is now April 15 as we discussed in FPOM. Given this, I can agree with the schedule. However, there may still be adult passage impacts and therefore, I believe it is important to discuss PH1 unit priority further in FPOM. I suggest developing a couple of priorities based on what we know from the old modeling work and from prototype tailrace observations and then (lacking a model) go to the project and test them. I think the default FPP priority without units 9 and 10 may cause an eddy in the area of the north powerhouse entrances that might impact adult attraction. We should confirm this. If we think only a small number of PH1 units might operate, we might consider focusing unit flow on the south side where we have good ITS entrance capacity, ITS exit egress benefits and, hopefully, no unit outages. Thanks for the update. Gary

Final results-approved, further testing of PH1 unit priority will be required.

Please email or call with questions or concerns.

Thank you,

Karrie

Karrie Gibbons

NWP Operations Division Fishery Section

Acting Columbia River Coordination Biologist

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