

**Lewis River Hydroelectric Projects Settlement Agreement  
Aquatic Coordination Committee (ACC)  
Meeting Agenda**

**Date & Time:** Thursday, February 8, 2018  
9:00 a.m. – 10:00 a.m.

**Place:** CONFERENCE CALL ONLY

**Contacts:** Erik Lesko: (503) 412-8401

Time	Discussion Item
9:00 a.m.	Welcome <ul style="list-style-type: none"> <li>➤ Review Agenda and ACC 1/11/18 Meeting Notes</li> <li>➤ Comment &amp; Accept Agenda and 1/11/18 Meeting Notes</li> </ul>
9:10 a.m.	Public Comment Opportunity
9:15 a.m.	Merwin Adult Fish Trap Efficiency (ATE) Study – Approve 2018 Plan
9:30 a.m.	Study/Work Product Updates <ul style="list-style-type: none"> <li>○ H&amp;S Plan Update</li> <li>○ Woodland Release Ponds - Status</li> <li>○ Merwin Upstream Passage – Status</li> <li>○ Swift Floating Surface Collector – Status</li> <li>○ Lewis River In-Lieu Status</li> </ul>
9:45 a.m.	<ul style="list-style-type: none"> <li>➤ Next Meeting’s Agenda</li> <li>➤ Public Comment Opportunity</li> </ul> Note: all meeting notes and the meeting schedule can be located at: <a href="http://www.pacificorp.com/es/hydro/hl/lr.html#">http://www.pacificorp.com/es/hydro/hl/lr.html#</a>
<b>10:00 a.m.</b>	<b>Adjourn</b>

Join by Phone

+1 (503) 813-5252 [Portland, Ore.]

+1 (855) 499-5252 [Toll Free]

**Conference ID: 2625672**

**FINAL Meeting Notes**  
**Lewis River License Implementation**  
**Aquatic Coordination Committee (ACC) Meeting**  
**February 8, 2018**  
**Conference Call Only**

**ACC Representatives Present (14)**

Kim McCune, PacifiCorp  
 Chris Karchesky, PacifiCorp  
 Erik Lesko, PacifiCorp  
 Todd Olson, PacifiCorp  
 Jeremiah Doyle, PacifiCorp  
 Amanda Froberg, Cowlitz PUD  
 Tom Wadsworth, WDFW  
 Peggy Miller, WDFW  
 Aaron Roberts, WDFW  
 Ruth Tracy, USDA Forest Service  
 Steve Manlow, LCFRB  
 Jim Byrne, Trout Unlimited  
 Tim Romanski, USFWS  
 Jim Malinowski, Fish First

**Guest (1)**

Sam Gibbons, WDFW

**Calendar:**

March 8, 2018	ACC Meeting	HCC
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<b>Assignments from January 11, 2018</b>	<b>Status</b>
Karchesky/McCune: Email electronic copy of the final 2017 ATE Annual Report to the ACC after the February 2, 2018 conclusion of the 30-day review period.	<b>Complete – 2/28/18</b>

<b>Assignments from November 9, 2017</b>	<b>Status</b>
McCune/Lesko: Schedule a tour of the Woodland Release Ponds for the ACC, when possible.	<b>Schedule for May 10, 2018</b>

**Opening, Review of Agenda and Meeting Notes**

Erik Lesko (PacifiCorp) called the meeting to order at 9:00 a.m. and reviewed the agenda. Tom Wadsworth (WDFW) asked to add an update on the Hatchery Kokanee.

Lesko also reviewed the January 11, 2018 meeting notes. The meeting notes were approved without change at 9:05 a.m.

**Public Comment**

None

## **Merwin Adult Fish Trap Efficiency (ATE) Study for Adult Winter Steelhead – 2017 Draft Final Report**

Chris Karchesky (PacifiCorp) informed the ACC attendees that the 2017 ATE Report is pending until such time final comments are received from NMFS. Once all the comments have been received, Karchesky will provide a comment/response matrix and include it as an appendix to the 2017 Report.

## **Merwin Adult Fish Trap Efficiency (ATE) Study for Adult Winter Steelhead – Approve 2018 Plan**

PacifiCorp received comments from NMFS and WDFW on the ATE 2018 Study Plan. Kim McCune and Karchesky (PacifiCorp) created a comment/response matrix, attached it to the 2018 Plan and emailed to the ACC for its review and final approval. In addition, the final document was posted to the Lewis River website at the following link:

[http://www.pacificorp.com/content/dam/pacificorp/doc/Energy\\_Sources/Hydro/Hydro\\_Licensing/Lewis\\_River/li/acc/2018\\_Merwin\\_Dam\\_ATE\\_Study\\_Final\\_Memo.pdf](http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Hydro/Hydro_Licensing/Lewis_River/li/acc/2018_Merwin_Dam_ATE_Study_Final_Memo.pdf)

**The ACC approved the Adult Trap Efficiency Evaluation for Adult Winter Steelhead at Merwin Dam in Spring 2018 Memorandum (Attachment A) outlining the 2018 proposed study methods.**

## **Study/Work Product Updates**

### **Hatchery Kokanee Update**

Aaron Roberts (WDFW) communicated that the hatchery has a surplus of approximately 89,000 kokanee fry at Speelyai. WDFW decided to do an early rear of surplus kokanee until May 2018 and then release. This release approximately doubles the number of kokanee released annually, however, Aaron indicated that the total poundage of kokanee released (as stipulated in the Settlement Agreement) will not change from previous years.

WDFW has determined that the additional release numbers will not adversely affect the existing population. Lesko noted that because the poundage does not exceed targets and WDFW does not believe there will be negative effects (e.g., reduced size at harvest) that PacifiCorp is fine with WDFW's decision for 2018.

### **H&S Plan Update**

The subgroup is close to finalizing the 2018 Annual Operating Plan by April 2018; a 30-day review will be provided to the ACC representatives. A summary presentation of new proposed actions will be provided to the ACC prior to finalizing the plan.

### **Woodland Release Ponds/Construction Update**

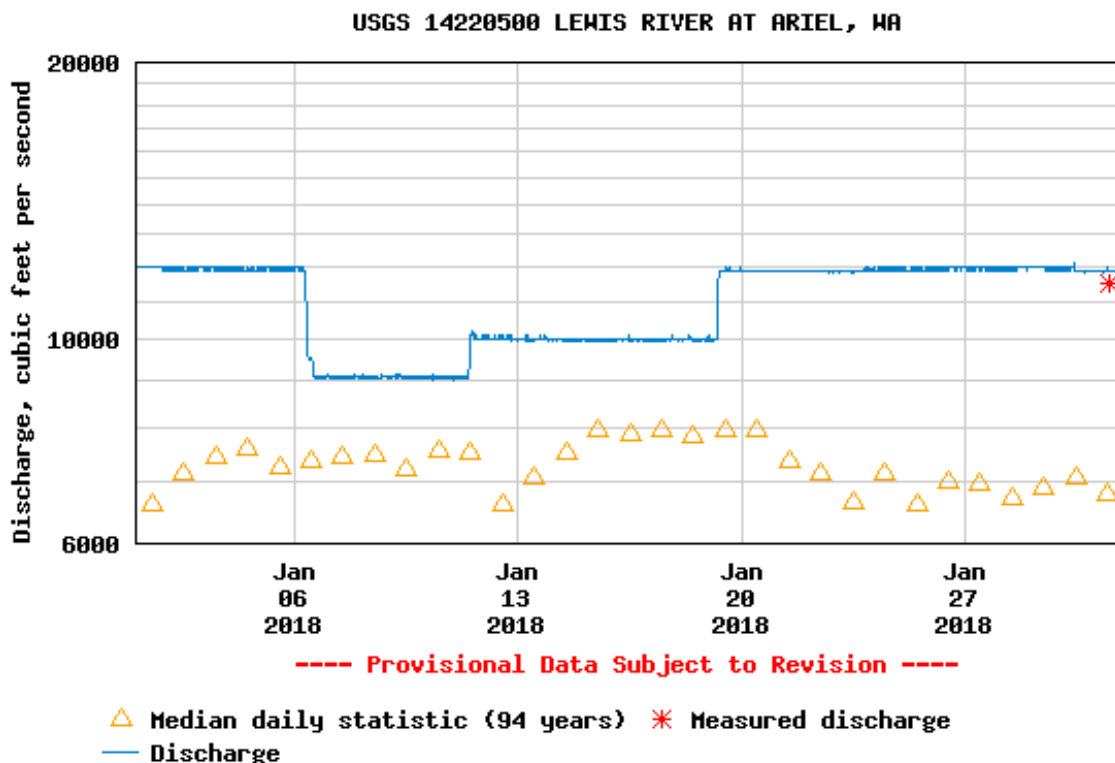
The Woodland Release Ponds have been operating full time since early January. The ponds are currently being upgraded with two (2) PIT tag antennas along the outfall pipe. The facility will soon be included in region wide PIT Tag Information System (PTAGIS) as another interrogation site.

### **Merwin Fish Collection Facility and General Operations (Attachment B)**

During the month of January, a total of 716 fish were captured at the Merwin Adult Fish Collection Facility. The vast majority of these fish were hatchery winter steelhead (665 – 93%).

The Merwin Dam adult fish trap ran intermittently through the month of January due to an unscheduled outage to repair the facilities' automatic crowder and hoist cabling system. Damage to the fish crowding mechanism was the result of a large amount of aquatic macrophytes that entered the fish ladder through the Merwin Hatchery return-water supply pipe that discharges into the upper portion of the Merwin fish ladder. The inundation of the biomaterial blocked the fish crowder and caused damage to cabling system and hoist. PacifiCorp is working with Merwin Hatchery personnel to prevent this from happening in the future. The fish ladder was dewatered on January 11, 2018 for inspection and repairs. The trap was put back in service January 24, 2018. River flow varied downstream of Merwin Dam ranging between 9,050 and 12,000 cfs throughout the month.

## Discharge, cubic feet per second



### Upstream Transport ([Attachment B](#))

Nine Blank Wire Tag (BWT) winter steelhead were transported upstream of Swift Dam in December 2017. Two additional fish were transported earlier this fall for a total of 11 BWT steelhead collected and transported in fall/winter 2017. In January 2018, an additional 35 BWT winter steelhead were transported upstream for a total of 46 fish transported as part of the 2018 run year. Typically, late run winter steelhead in the North Fork Lewis River begin arriving at the trap in January and continue through early-May. A total of 599 BWT winter steelhead were transported as part of the 2017 run year.

PacifiCorp began transporting early coho salmon to the upper basin on August 25, 2017. By the end of the December, a total of 6,499 early- and late-coho had been transported and released at the head of Swift Reservoir. An additional 448 late-run coho were transported in January 2018 for a total of 6,947 transported during the 2017 run year.

2017 Coho Salmon (thru January 2018)

Stock	Origin	Male	Female	Jacks	Total
Early (S-type)	Natural	910	1,141	18	2,069
Early (S-type)	Hatchery	765	752	16	1,533
Late (N-type)	Natural	77	92	23	
Late (N-type)	Hatchery	1615	1,532	6	3,153
<b>TOTAL</b>		<b>3367</b>	<b>3517</b>	<b>63</b>	<b>6,947</b>

**Swift Floating Surface Collector (Attachment B)**

During the month of January, 2,041 fish were collected. The largest percentage of the fish were coho parr and smolt (67%) and spring Chinook smolt (27%). The FSC ran continuously throughout the month of January.

Total numbers collected at the Swift FSC during the month of January by operation year.

Species (parr/smolt)	Jan. 2013	Jan. 2014	Jan. 2015	Jan. 2016	Jan. 2017	Jan. 2018
Coho	186	<i>Na.</i>	795	5,992	126	1,314
Chinook	49	<i>Na.</i>	501	1,537	55	548
Steelhead	17	<i>Na.</i>	6	42	5	30

Karchesky also noted that PacifiCorp is continuing to work on minimizing noise to make the facility quieter for fish. PacifiCorp also plans experiment with various illumination sources at the entrance of the collector this coming spring. Releases of PIT tagged Spring Chinook have already begun for the Collection Efficiency Evaluation.

**In Lieu Fund – Status**

Todd Olson (PacifiCorp) informed the ACC that the Services have requested PacifiCorp submit an extension of time request (6 months until August 23, 2018) to the FERC on their behalf. PacifiCorp expects to file the FERC extension request letter this week or early next week.

**Acclimation Program**

Roberts informed the ACC attendees that they have 125,000 spring Chinook eggs and it is suspected that the hatchery should meet the 100,000 acclimation stocking target. Currently fish are scheduled to be released from mid-July through early August 2018 (similar to 2017).

Karchesky (PacifiCorp) noted that PacifiCorp will be putting together an acclimation fish release and evaluation plan for 2018. This plan will review past performance (i.e., “lessons learned”) as well as propose a strategy for releasing and evaluating acclimation fish in the upper basin over the next 5 years. A draft plan will be submitted to the ACC in mid-March and will be an agenda topic during the April 2018 meeting.

**Agenda items for March 8, 2018**

- February 8, 2018 Meeting Notes
- Merwin Adult Fish Trap Efficiency Study – Decision to tag hatchery spring Chinook in 2018
- 2017/2018 Aquatic Fund Project – PROJECT FUNDING DECISION
- Up river Spring Chinook by Meridian; Update
- Study/Work Product Update

*Adjourn 9:45am*

**Next Scheduled Meeting:**

March 8, 2018
HCC
9:00 a.m. - 12:00 p.m.

**Meeting Handouts & Attachments:**

- Meeting Notes from 1/11/18
- Agenda from 2/8/18
- **Attachment A** - Quantifying Adult Trap Efficiency for Adult Winter Steelhead at Merwin Dam in Spring 2018 Memorandum, February 2, 2018
- **Attachment B** - Lewis River Fish Passage Report (January 2018)

## MEMO

### Quantifying Adult Trap Efficiency for Adult Winter Steelhead at Merwin Dam in Spring 2018

Prepared by PacifiCorp

February 2, 2018

*Final*

#### Background

At the January 11, 2018 Aquatics Coordination Committee (ACC) meeting, PacifiCorp presented the results from the third year (2017) of radio telemetry study at Merwin Dam evaluating Adult Trap Efficiency (ATE) of adult winter steelhead. The primary goal of this study was to continue to measure core passage metrics for fish that entered and transitioned through the tailrace and were eventually collected at the Merwin Fish Trap. In particular, the study was focused on assessing the general effectiveness of the new V-style fyke that was installed in the fish ladder between the 2016 and 2017 study years. Results of the 2017 study indicated that the fyke was effective in preventing fish from exiting the trap and increased the overall rate of collection from previous years (Appendix A). While these results are encouraging, the estimated ATE (76%; 70-84%) remained below the target value of 98% or greater, which was the agreed upon performance standard.

Following the presentation, a discussion occurred regarding the possibility of study biases associated with using trap non-naïve fish (i.e., fish collected and tagged at Merwin Trap and then release back downstream) and not accounting for natural straying rates. Both of these factors have not previously been accounted for in the Lewis River studies, and may have resulted in a more conservative estimate of ATE. In addition, these factors may be violating one or more of the key study assumptions outlined in the M&E Plan. It was recommended that a fourth year of study be conducted using winter steelhead, and that consideration be made for these possible influences.

#### Proposed Study Methods – 2018 Winter Steelhead

##### *Overview*

All aspects of the original study design and intent that were approved in the 2016 M&E Plan will remain. The primary goal of the 2018 evaluation will continue to measure core passage metrics for winter steelhead that entered and transitioned through the tailrace and were eventually collected at the Merwin Fish Trap. However, an emphasis will be made on collecting and radio tagging a portion of the test fish in the North Fork Lewis River downstream of Merwin Dam. These fish will then be considered trap-naïve when they transition upstream and enter the dam tailrace. Similar to previous years, a portion of fish will be also collected from the Merwin Trap and will be radio tagged and released just below the Merwin Bridge. These fish will be considered trap non-naïve when they transition back upstream and enter the tailrace. All passage metrics outlined in the M&E plan (e.g. trap entrance efficiency -  $P_{EE}$ , Adult Trap Efficiency -  $ATE_{test}$ , and trap inefficiency -  $T_i$ ) will be calculated for each group separately and compared for statistical difference.

## *Study Objectives*

Similar to previous studies, the specific study objectives include:

- 1) Determine trap effectiveness based on the ATE metric defined in the M&E plan for winter steelhead, and then compare those estimates to the specified ATE performance standard of 98 percent;
- 2) Determine if winter steelhead show directed movement to the trap entrance, and if some fish do not, what are the behavior patterns for those specific fish in the tailrace;
- 3) Determine if winter steelhead in the tailrace spend the majority of their time in the area in the entrance of the trap, and if some fish do not, are those fish holding in another location within the tailrace;
- 4) Determine the total time winter steelhead are present in the tailrace of Merwin Dam and compare that to ATE performance standards for safe, timely, and effective passage (see Attachment A for definitions);
- 5) Describe the movement and behavior of tagged winter steelhead that do not enter or choose to leave the Merwin Dam tailrace and move back downstream; and,
- 6) Determine the condition of winter steelhead that are captured by the trap, as a function of rates of descaling and injury.

## *Fish Collection, Tagging and Release*

A target of 150 blank wire tagged (BWT) winter steelhead will comprise each test group. Tangle netting will be used to collect naïve fish downstream. This will be done in concert with NOR brood stock collection efforts already in place. Additional fish will be collected and tagged at the Merwin Trap similar to previous studies. Naïve fish that were radio tagged in the lower river and then captured at the trap may be re-released downstream just below Merwin Bridge to bolster trap non-naïve fish depending on overall run size and fish availability. All tagging efforts will begin mid-February and continue through April. Tangle netting in the lower river will be scheduled for two days per week initially and all fish collected will be tagged. The number of fish tagged at the Merwin Trap each week will be in proportion to the historic run timing curve similar to previous studies.

All test fish will be gastrically implanted with a tag similar to Lotek MCFT-3A digitally coded transmitters. Each tag will have a unique identifier code and set for 5 s burst rate (off-set by ½ second intervals to avoid tag collision). These tags are 16 mm in diameter, 46 mm in length and weigh 16 g in air and 6.7 g in water. Latex tubing will be added to reduce tag regurgitation for the gastric implants. All fish will be allowed to recover following the tagging procedure before being released. Fish collected downstream (trap-naïve) will be released at the spot of capture, whereas fish collected and tagged at Merwin Trap will be transported via truck and released directly into the river at the Merwin Dam boat launch approximately 0.6 km downstream from the trap entrance.



### *Monitoring Sites and Detection Array*

Similar to earlier studies, 18 detection antennas will be deployed throughout the Merwin Dam tailrace and downstream (*for a detailed description of the detection array layout, please see the 2017 Annual Report*). Each antenna will be monitored using a radio receiver (Lotek SRX800), which will be range tested and verified. All sites will be downloaded weekly. In addition to the fixed detection arrays, manual tracking of the lower river will be conducted weekly by boat. Up to three aerial flights will also be conducted in April and May to scan for tags in the lower North Fork Lewis River and portions of the East Fork Lewis River, and Cedar Creek in combination with upper basin surveys. Detection information from fix receivers sites and manual tracking will be processed in the same manner as earlier studies.

### *Data Analysis*

The analytical approach for each study objective will remain the same as previous studies (*for a detailed description of the analytical approach for each study objective, please see the 2017 Annual Report*). Estimates of the core passage metrics, descriptions of fish movement and condition will be developed for each test group (i.e., trap-naïve vs. trap non-naïve). Estimates of the core passage metrics will be compared statistically between groups and tested for differences. The actual statistical testing methods will be determined once data is collected and checked against data normality and dependence.

### *Revised Study Assumptions*

- The tailrace, defined as the entire area of river upstream of the Merwin Dam access bridge, is the main location for fish that are migrating upstream to congregate;
- Fish initially collected at the Merwin Trap, tagged, and released downstream (i.e., trap non-naïve fish) are motivated to pass upstream;
- Tagging effects will be similar between test groups;
- Trap-naïve fish have not entered the trap prior to being tagged and released;
- All fish that are successfully captured at the Merwin Trap and are then subsequently released back downstream to pass a second time, will return upstream.

**Appendix A: Table 1.**

Core passage metrics for test fish released in 2015, 2016, and 2017. Adult Trap Efficiency ( $ATE_{TEST}$ ) defined as the percentage of adults attempting to migrate above Merwin Dam that are successfully collected in the fish trap; Trap Entrance Efficiency ( $P_{EE}$ ) defined as the proportion of fish entering the Merwin Dam Tailrace that successfully find and enter the entrance of the trap (includes fish that were trapped successfully and those that were not captured); and Trap Ineffectiveness ( $T_i$ ) defined as the relative proportion of fish that were attracted to the trap entrance, but were not ultimately captured (i.e., greater  $T_i$  values equates to lower trap effectiveness).

2015 species-specific values for  $ATE_{test}$ ,  $P_{EE}$ , and  $T_i$ .

Species	<i>N</i>	$ATE_{test}(BCA$ 95% CI)	$P_{EE}(BCA$ 95% CI)	$T_i$
Winter steelhead	146	61% (51-67%)	86% (79-90%)	29%
Spring Chinook	40	38%	90%	58%
Coho Salmon	35	9%	23%	61%

2016 species-specific values for  $ATE_{test}$ ,  $P_{EE}$ , and  $T_i$ .

Species	<i>N</i>	$ATE_{test}(BCA$ 95% CI)	$P_{EE}(BCA$ 95% CI)	$T_i$
Winter steelhead	144	73% (65-80%)	93% (87-96%)	21%
Spring Chinook	N/A	N/A	N/A	N/A
Coho Salmon	N/A	N/A	N/A	N/A

2017 species-specific values for  $ATE_{test}$ ,  $P_{EE}$ , and  $T_i$ .

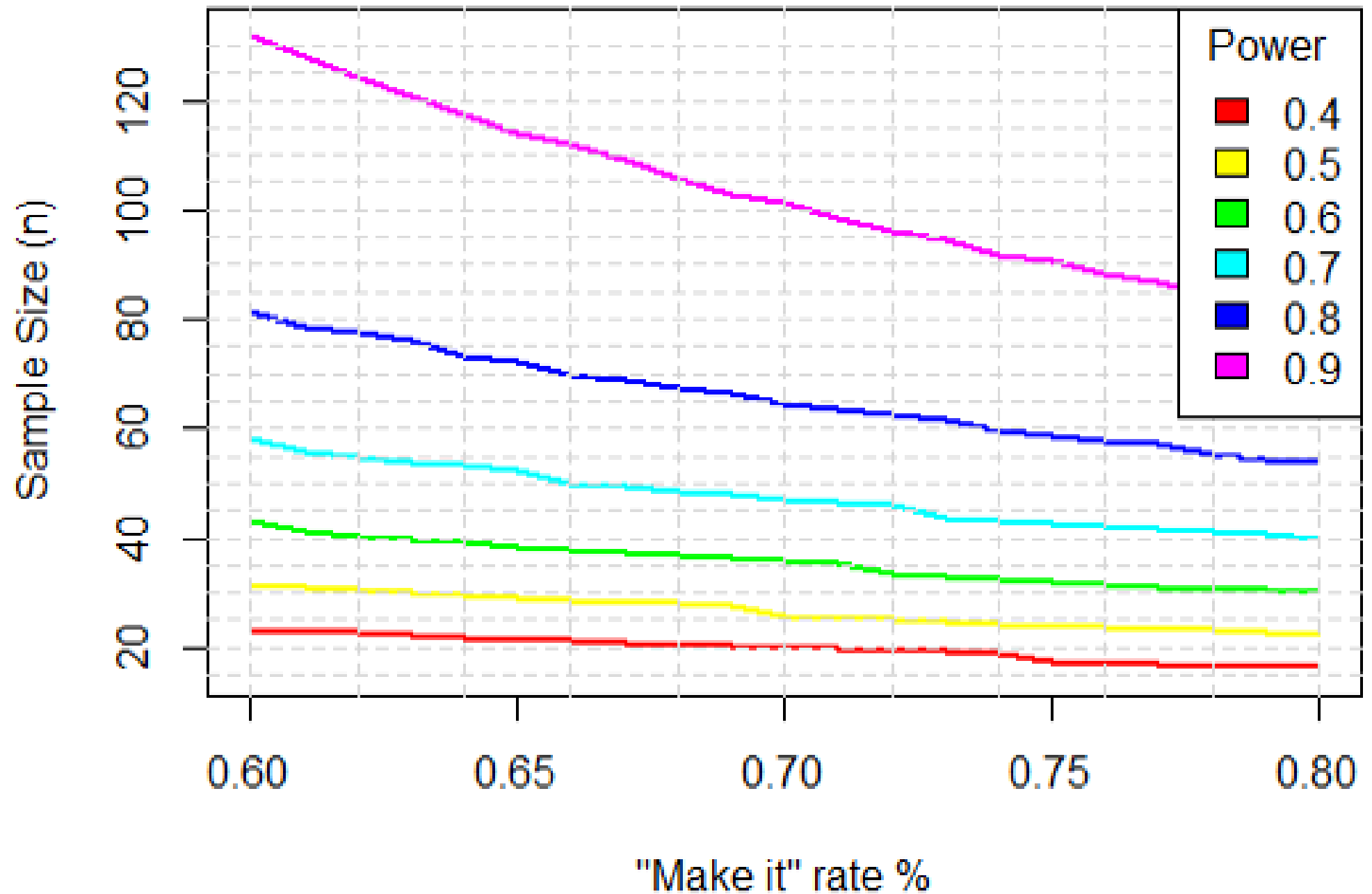
Species	<i>N</i>	$ATE_{test}(BCA$ 95% CI)	$P_{EE}(BCA$ 95% CI)	$T_i$
Winter steelhead	150	83.5% (77-90%)	76.3% (70-84%)	8.6%
Spring Chinook	N/A	N/A	N/A	N/A
Coho Salmon	N/A	N/A	N/A	N/A

Responses to Comments Received on Quantifying Adult Trap Efficiency for Adult Winter Steelhead at Merwin Dam in Spring 2018 Memorandum - February 2, 2018

	Date	Commenter	Comment Number	Comment	Response
1	2/1/2018	Tom Wadsworth, WDFW	1	Steelhead caught in the lower river may not have the same re-sight probability (i.e., there may be fish in the lower river that were never destined for the Merwin trap and thus including them will artificially bias the efficiencies low). How will this effect be accounted for? For example, will naïve fish be censored in a similar manner as non-naïve fish (i.e., fish must enter the tail race to be included in the trap efficiency calculations)?	Yes, for calculating collection efficiency ( $ATE_{TEST}$ ), trap naïve fish will be treated the same as non-naïve fish. $ATE_{TEST}$ will be calculated for both groups as the proportion of fish entering the Merwin Dam tailrace that were ultimately captured at the trap. That is, only fish that enter the tailrace will be included in the calculation; fish that do not enter the tailrace will not.
2	2/1/2018	Tom Wadsworth, WDFW	2	Will there be any fish caught in the lower river that you would choose not to include in the study (e.g., non-chrome fish etc.)?	Likely not, unless they are found to be physically injured (e.g., sea lion injuries), in poor condition (e.g., presence of fungus) or have already spawned (Kelt), they will be included in the study. Fish's outward appearance/condition, sex, length, date of capture/tagging will be recorded as well as tissue samples taken as before. We also plan to incorporate two additional metrics this year to further understand possible mechanisms influencing fish passage behavior after release. Reflex action mortality predictors (RAMP) (Raby et al. 2012) will be assessed on both trap naïve and non-naïve fish prior to release to evaluate levels of acute stress from capture and handling procedures. Additionally, to understand how energetic reserves could influence fish behavior after release, somatic tissue lipid content (i.e. energetic state) will be estimated on fish using handheld microwave radio emitters (Distell Fatmeters, <a href="https://www.distell.com/">https://www.distell.com/</a> ). Raby, G.D., Donaldson, M.R., Hinch, S.G., Patterson, D.A., Lotto, A.G., Robichaud, D., English, K.K., Willmore, W.G., Farrell, A.P., Davis, M.W. and Cooke, S.J. (2012) Validation of reflex indicators for measuring vitality and predicting the delayed mortality of wild coho salmon bycatch released from fishing gears. <i>Journal of Applied Ecology</i> , 49(1), pp.90-98.
3	2/1/2018	Tom Wadsworth, WDFW	3	It would be good to know how many samples (tagged fish) are necessary to get a dependable efficiency estimate for naïve fish. Perhaps a power analysis could be done to assess this. However, without knowing how many fish tagged in the lower river will reach the trap it could be difficult to determine the number needed to tag. Therefore, tagging as many as possible seems like the best course of action (rather the 150 target). Once the proportion that reach the trap is determined, the sample size could be adjusted for future years.	A power analysis for a proportion test was run. Power was set to 0.8, a medium effect size was used, and assumed only 70% of released fish will "make it" (i.e., enter the tailrace). Results indicate that approximately 64 fish for each treatment group will need to be released. The attached figure shows the sample sizes needed across a range of "make it" rates (i.e., how many released fish will make it to the tailrace) and give different power levels. The take-home from this plot is that, given a power of 0.8, there is not a large difference in sample sizes needed between a 65% and 70% "make it" rate (only about 5 fish difference). This indicates that the sample size is relatively robust for a slight difference in the assumed "make it" rate of 70%. Of course, the benefit of using larger sample sizes is to buffer against lower "make it" rates. Agreed, once the proportion that reach the trap is determined, the sample size could be adjusted for future years if needed. For now, the conservative sample size selected appears to be robust.
4	2/1/2018	Tom Wadsworth, WDFW	4	For the data analysis, the memo says results for naïve and non-naïve fish will be compared, but it isn't clear how the results would be used together to estimate overall Merwin trap efficiency. If the intention is just calculate separate estimates and they are found to be significantly different, would one group estimate be preferred over the other?	The intent is to calculate an estimate $ATE_{TEST}$ for each group. Both estimates will be reported and presented to the ACC for discussion.
5	2/1/2018	Michelle Day, NOAA	5	Ed (Meyer) and I have reviewed the proposed 2018 ATE study. We agree with the proposal.	No additional response.

# Sample Size Estimation Across "Make it" rates

Sig=0.05



# Lewis River Fish Passage Report

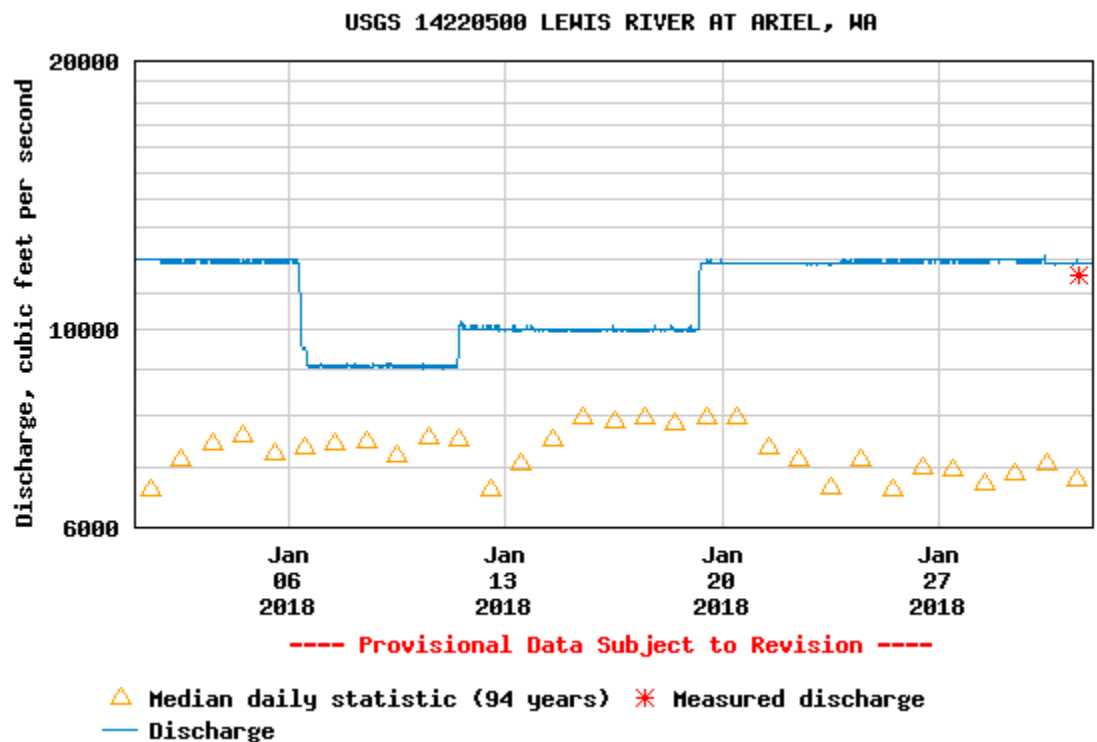
## January 2018

### Merwin Fish Collection Facility and General Operations

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### Discharge, cubic feet per second



## Upstream Transport

Nine Blank Wire Tag (BWT) winter steelhead were transported upstream above Swift Dam in December 2017. Two additional fish were transported earlier this fall for a total of 11 BWT steelhead collected and transported in fall/winter 2017. In January 2018, an additional 35 BWT winter steelhead were transported upstream for a total of 46 fish transported as part of the 2018 run year. Typically, late run winter steelhead in the North Fork Lewis River begin arriving at the trap in January and continue through early-May. A total of 599 BWT winter steelhead were transported as part of the 2017 run year earlier this spring.

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## Floating Surface Collector (FSC)

During the month of January, 2,041 fish were collected. The largest percentage of the fish were coho parr and smolt (67%) and spring Chinook smolt (27%). The FSC ran continuously throughout the month of January.

Total numbers collected at the Swift FSC during the month of January by operation year.

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**Fish Facility Report**  
**Swift Floating Surface Collector**  
**January 2018**

Day	Coho			Chinook			Steelhead				Cutthroat			Bull Trout	Planted Rainbow	Total
	fry	parr	smolt	fry	parr	smolt	fry	parr	smolt	kelt	fry	< 13 in	> 13 in			
01		19	3									1				23
02	1	30	1			1										33
03		96	14			11										121
04		63	19			21			2			1			1	107
05	1	71	4			10			3			1				90
06	4	28	1			10									1	44
07	2	23	3			21			2						1	52
08	1	26	6			16						3			3	55
09		32	5			17						1			1	56
10		17	2			8			1		1	4				33
11		28	2		1	6						1				38
12		48	11			11		1				4			6	81
13		35	12			22			8			1			2	80
14		49	11			10			3			2			2	77
15		75	20			9			2			1				107
16		75	17			9			1			5			4	111
17	1	68	6		1	16			1			5				98
18		24	5			39						1			2	71
19		27	6			63						1			2	99
20		17			1	49									6	73
21		82	2		2	11									6	103
22		32	5		1	39			2						2	81
23	1	17	4			35						3				60
24	1	33	5			33			1			4			2	79
25	29	1	2			20			1			1				54
26	2	25	7		2	18						2			1	57
27		38	7		1	9			1			2			5	63
28		16	7			8			1			3			1	36
29		10	3			5						1			4	23
30		7	4			6									3	20
31	2	7	1			6										16

<b>Monthly</b>	45	1119	195	0	9	539	0	1	29	0	1	48	0	0	55	2041
<b>Total</b>	45	1119	195	0	9	539	0	1	29	0	1	48	0	0	55	2041

