

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

Date & Time: Thursday, September 12, 2019
9:00 a.m. – 12:00 p.m.

Place: Merwin Hydro Control Center
105 Merwin Village Court
Ariel, WA 98603

Contacts: Erik Lesko: (503) 412-8401

Time	Discussion Item
9:00 a.m.	Welcome <ul style="list-style-type: none">➤ Review Agenda and ACC 8/8/19 Meeting Notes➤ Comment & Accept Agenda and 8/8/19 Meeting Notes
9:10 a.m.	Public Comment Opportunity
9:15 a.m.	Floating Surface Collector Update (45 minutes)
10:00 a.m.	Break
10:15 a.m.	SA 8.2.6 Scope of Work for Comprehensive Periodic Review; Scope of Work/Review Bids
11:00 a.m.	Project Proposal; Nutrient Enhancement Update
11:30 a.m.	Study/Work Product Updates <ul style="list-style-type: none">○ In Lieu Update○ Flow/Reservoir Conditions Update
11:45 a.m.	<ul style="list-style-type: none">➤ Next Meeting's Agenda➤ Public Comment Opportunity Note: all meeting notes and the meeting schedule can be located at: http://www.pacificorp.com/es/hydro/hl/lr.html#
12:00 p.m.	Adjourn

PLEASE BRING YOUR LUNCH

Join by Phone

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

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

Conference ID: 6325627

FINAL Meeting Notes
Lewis River License Implementation
Aquatic Coordination Committee (ACC) Meeting
September 12, 2019
Merwin Hydro Control Center, Ariel, WA

ACC Representatives Present (13)

Kim McCune, PacifiCorp
 Chris Karchesky, PacifiCorp
 Todd Olson, PacifiCorp
 Erik Lesko, PacifiCorp
 Mark Ferraiolo, PacifiCorp
 Eli Asher, Cowlitz Indian Tribe
 Bryce Glaser, WDFW
 Peggy Miller, WDFW
 Aaron Roberts, WDFW
 Tom Wadsworth, WDFW
 Steve West, LCFRB
 Tim Romanski, USFWS
 Ruth Tracy, USDA Forest Service

Calendar:

October 10, 2019	ACC Meeting	Merwin HCC
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Assignments from September 12, 2019, 2019	Status
McCune: Email the ACC Draft 8/8/19 Meeting Notes with the WDFW edits to all ACC representatives for an additional 7-day review before the edits are approved.	Complete – 9/12/19
McCune: Provide additional 7-day review period to ACC for selection of DJ Warren as Consultant for the H&S Comprehensive Periodic Review	Complete – 9/12/19
McCune/Weatherly: Provide graph of the total reservoir hole projection after Merwin outflow was increased to 1,200cfs	Complete – 9/25/18

Assignments from July 11, 2019	Status
Lesko: Add 2018 spring Chinook distribution detection data and provide to the ACC, per Tom Wadsworth request.	Complete 9/16/19

Assignments from June 13, 2019	Status
Wadsworth: Schedule bull trout subgroup meeting end of July, 2019	Pending

Parking Lot Items	Status
Tracy: Stage 0 webinar PowerPoint presentation to ACC.	Tentative – Fall 2019
All: What are things to focus on; Salmon Port	

Opening, Review of Agenda and Meeting Notes

Erik Lesko (PacifiCorp) called the meeting to order at 9:10am and reviewed the agenda. PacifiCorp wishes to add an update on the aquatic fund project called Lewis River 21 Phase II.

Lesko also reviewed the August 8, 2019 meeting notes and assignments. Edits were received by Tom Wadsworth (WDFW) on Thursday afternoon, September 11 and not all ACC representatives have had an opportunity to review. **The ACC agreed that PacifiCorp will email the ACC Draft August 8, 2019 Meeting Notes with WDFW edits to all ACC representatives for an additional 7-day review before the edits are approved.**

Public Comment

None

In Lieu Update

Todd Olson (PacifiCorp) informed the ACC attendees that prior to the end of the 30-day comment period of the Merwin In-Lieu Strategic Plan, Monitoring Plan and Bull Trout Fish Passage Plan, the following entities submitted letters/emails to the Utilities – CIT, LCFRB, WDFW, Trout Unlimited and USFS.

These submittals in general noted that given the uncertain outcome of the upcoming ADR meeting on September 19, 2019, it is premature for the ACC review/approval of the plans. Recommendation was made to postpone a review period until after all ADR processes have been concluded.

Our original schedule had distribution of the Draft Application for License Amendment which includes the Action Plans to the SA parties on September 12, 2019. The Utilities are going to delay this action pending outcome of ADR meeting on September 19, 2019. The Services did not provide response or comments on the ACC review draft documents.

Flow/Reservoir Conditions Update

Olson informed the ACC attendees that the Merwin flows went back up to 1,200 cfs (FERC minimum) in early September. To meet this outflow, it was necessary to draft Yale, so the Saddle Dam boat ramp was taken out of service. The Beaver Bay boat ramp also went out of service. Prior to ramp closure PacifiCorp informed the community. We also posted on the PacifiCorp website that the Swift boat ramp would be closing September 8, 2019.

Merwin is fairly full right now. We will be move the bulkhead used for spill gate maintenance in next couple of days to get spill gate available for operation. Given current inflows, it is likely Swift boat ramp will be closed until next spring. Our intent is for the Yale boat ramp to stay open year round.

FERC Minimums

1,200 cfs through 10/15/19

2,500 cfs through 10/31/19

4,200 cfs through 11/1/19

Floating Surface Collector (FSC) Update

Chris Karchesky (PacifiCorp) provided an update the ongoing collection efficiency evaluation at PacifiCorp's Swift Reservoir floating surface collector (FSC). Karchesky reviewed what

modifications were made prior to the spring 2019 evaluation and preliminary estimate of collection efficiency. The slides of the presentation are available as an [Attachment A](#).

Karchesky noted that more migrants were collected in in spring 2019 than any other year since the FSC has been in service (2013). He also mentioned that preliminary estimates of collection efficiency appeared to have improved dramatically. This is largely attributed to increased entrance velocities and noise reduction modifications that have occurred at the FSC over the past couple years. Karchesky informed the ACC that there is a lot of data processing that still needs to be completed, but he anticipates the draft report of the 2019 collection efficiency study will be for ACC review in early December.

<Break 10:45am>

<Reconvene 11:00am>

SA 8.2.6 Scope of Work for Comprehensive Periodic Review; Select Consultant

On August 7, 2019 PacifiCorp emailed the ACC a Statement of Qualifications for HDR and DJ Warren, two qualified consultants selected to bid on the Comprehensive Periodic Review project. Informal bids were received by both firms on September 2, 2019. PacifiCorp emailed the ACC bid proposals on September 9, 2019. Lesko informed the ACC attendees that the review of the H&S Plan was originally scheduled for October 1, 2019, but will likely be delayed, as the review draft is approximately 2-3 weeks behind schedule and will require substantial input from the ATS prior to submitting the draft plan to the winning bidder. PacifiCorp anticipates the draft plan will be ready for review by mid to late October.

Lesko provided a summary of the bid proposals along with individual qualifications for each team member via a PowerPoint presentation (see slides below). Lesko indicated that both firms appear to be highly qualified to do the work. **After considerable conversation about qualifications the ACC's preliminary decision is selection of DJ Warren. In order to accommodate those ACC representatives not in attendance the ACC further agreed that an additional 7-day review period is appropriate.**



D.J. Warren & Associates, Inc.

P.O. Box 1511
3015 Southwood Drive
Philomath, OR 97370
(541) 929-4639
djwassociates.com



TEAM	ROLE	HOURS	Portion
Dan Warren	Project Manager	42	10%
Mark LaRiviere	Senior Biologist	188	47%
Jeannie Heltzel	Biometrician	122	30%
Robyn Rice	Technical Editor	28	7%
Administrative		24	6%
TOTAL HOURS		404	

TEAM	ROLE	HOURS	Portion
Dave Ward	Project Manager, Technical Lead	104	58%
Becky Holloway	Senior Biologist	30	17%
Brian McIlraith	Fisheries	32	17%
Administrative		14	8%
TOTAL HOURS		180	

HDR

David Ward, Senior Fisheries Biologist Experience: 35

EDUCATION

Master of Science, Natural Resources - Fisheries, Humboldt State University, Arcata California, 1985

Bachelor of Arts, Zoology, Humboldt State University, Arcata California, 1978

RELEVANT EXPERIENCE

National Marine Fisheries Service, Columbia River Basin and Puget Sound Hatcheries Environmental Assessment, OR and WA

David is HDR's project manager for the development of four separate Environmental Assessments (EAs) for ongoing salmon and steelhead hatchery programs in (1) the Columbia River Basin, (2) the Nisqually River Basin, (3) East Kitsap County, and (4) Lake Washington.

Oregon Department of Fish and Wildlife, Clackamas, OR

David worked for the Oregon Department of Fish and Wildlife from 1984 to 2006

Becky Holloway, Senior Environmental Biologist Experience: 22

EDUCATION

Master of Science, Biology, University of NC Wilmington, 1996

Bachelor of Science, Marine Biology, University of NC Wilmington, 1994

RELEVANT EXPERIENCE

National Marine Fisheries Service (Contracted through Ocean Associates), NEPA Environmental Assessment for 15 Snake River Basin Hatchery Programs. Ms. Holloway co-authored a NEPA Environmental Assessment for the continued operation and maintenance of 15 Chinook Salmon, Coho Salmon and steelhead hatchery programs in the Salmon River Subbasin, Clearwater River Subbasin, and Hells Canyon reach of the Snake.

Bonneville Power Administration, Melvin R. Sampson Coho Hatchery, Ellensburg, WA. Ms. Holloway led development of project alternatives and biological resource sections for a joint SEPA/NEPA EIS that considered impacts due to construction and operation of a new coho hatchery on the Yakima

DJ Warren

Daniel Warren, MBA, PMP

Experience: 40

EDUCATION

Master in Business Administration, 1996 – Alaska Pacific University, Anchorage, Alaska

Bachelor of Science – Fisheries Science, 1980 – Oregon State University, Corvallis, Oregon

RELEVANT EXPERIENCE

Hatchery and Genetic Management Plans (HGMP): Portland, OR; 2002-2008

Bonneville Power Administration, NOAA Fisheries, Portland, OR

Provided project management, communications and information management services to BPA and NOAA Fisheries for the NOAA Fisheries HGMP process for all hatchery programs in the Columbia Basin.

California Hatchery Review (CA HSRG): Sacramento, CA; 2010-2012

Pacific States Marine Fisheries Commission

Project manager for the facilitation and technical support team which reviewed all hatchery programs within the Klamath/Trinity and Central Valley areas.

Mark LaRiviere, Senior Fisheries Scientist

Experience: 38

EDUCATION

Masters of Science in Fisheries Biology, 1981 – University of Washington, Seattle, WA

Bachelor of Science – Fisheries, 1976 – University of Washington, Seattle, WA

EXPERIENCE

Tacoma Public Utilities, Tacoma Power Senior Fisheries Biologist 1991 - 2016

Conducted technical and biological analysis of hydroelectric utility operations and impacts upon fisheries and aquatic science.

Makah Tribe, Fisheries Management Department Salmonid Enhancement Biologist 1987 – 1991

Served as freshwater fisheries manager for tribal fisheries. Supervised salmonid enhancement program - hatcheries, rearing ponds and remote release operations

EDUCATION

Masters of Science in Statistics, 2013 – Oregon State University, Corvallis, Oregon

Masters of Science in Biology, 2004 – University of Louisiana, Lafayette, Louisiana

Bachelor of Science – Fisheries and Wildlife Science, 2000 – Oregon State University, Corvallis, Oregon

EXPERIENCE

Hatchery Scientific Review Group; 2013-present.

Jeannie has provided support to the HSRG as a fisheries biologist, biometrician and HSRG member on hatchery reform issues in the Columbia Basin and Puget Sound.

Yakima Coho and Chinook Salmon Hatchery Master Plan; 2018-present.

Lead fisheries biologist and technical writer on a project to complete the Yakima River Basin Coho and Summer/Fall Chinook Salmon Master Plan and meet Northwest Power and Conservation Council (NPCC) scientific peer review requirements.

Project Proposal; Nutrient Enhancement Update

Chris Karchesky (PacifiCorp) informed the ACC attendees that the NEPA for this project is complete per Ruth Tracy (USDA FS) for the three sites identified in Attachment A. The NEPA can be adjusted in future years to add more sites or more fish.

In addition to the discussion regarding nutrient enhancement upstream of Swift Dam in 2019, Bryce Glaser (WDFW) asked about the status of putting live adult coho salmon and whether there was any resolution on putting up the full 9,000 fish up this year. Karchesky noted that it was discussed at the July 11, 2019 ATS meeting, but it had not been brought up at the ACC. Discussion occurred regarding on the possibility of putting all allotted coho (9,000) upstream this year considering that so many fish were expected to return. The general consensus was that because both early- and late-stock coho were now being transported upstream that it would be less impactful on bull trout spawning. Karchesky noted that PacifiCorp would increase the transport curve for adult coho in the current AOP to now reflect a transport goal of 9,000 fish. If the fish materialize then transporting 9,000 adults upstream would be the new goal.

If PacifiCorp has the option to increase the upstream transport number of live fish up to 9,000 from the original 7,500 so the ACC agrees to use adaptive management approach as long as we follow the Annual Operating Procedure requirements.

Lewis River Aquatic Coordination Committee Meeting

Date: Thursday, September 12, 2019

Time: 9:00 am – 12:00 pm

Location: Merwin Hydro Control Center
105 Merwin Village Court
Ariel, WA 98603

Meeting Topic: Project Proposal; Nutrient Enhancement Update

The possibility of using surplus hatchery adult coho carcasses for nutrient enhancement upstream of Swift Dam in fall 2019 was discussed at June 27, 2019 LR Aquatic Technical M&E Subgroup Meeting. The general consensus was that if enough carcasses were available and there was staffing to help support the distribution of carcasses, this effort should be considered. This topic was initially mentioned at the LR ACC Meeting on July 11, 2019 meeting. The following is an outline and tentative schedule for implementing this enhancement effort in fall 2019.

Proposed Project Outline and Schedule:

- Both early- and late-run coho carcasses available from spawning activities and any non-food grade excess fish from normal Lewis River Hatchery (LRH) operations will be seeded.
- These carcasses will be distributed through support of the Lower Columbia Fish Enhancement Group (LCFEG) volunteers at the three bridge sites identified in the 2019 approved NEPA (USFS Applicant).
 - Clear Creek Bridge Site (46° 7'39.78"N , 121°59'24.22"W)
 - Lower Lewis River Falls - Crab Creek Bridge Site (46° 8'39.87"N , 121°53'44.55"W)
 - Muddy River Bridge Site (46° 7'17.81"N , 122° 0'53.97"W)
- WDFW will provide the nutrient enhancement trailer currently located at Lewis River Hatchery for all scheduled seeding days. The trailer will be available and used to transport all carcasses from both Speelyai Hatchery and LRH upstream.
- LCFEG will provide and/or schedule transport of carcasses upstream. The group will also provide signage and flagging during these events.
- Seeding of carcass will begin early-October and continue (at least weekly) until mid- to late-November (weather dependent).
- Target is to transport approximately 800 to 1,000 carcasses to each site this fall (anticipated schedule on opposite side).
- All carcasses will have tails removed prior to seeding so not to impact spawning surveys.

NF Lewis River Nutrient Enhancement 2019 *DRAFT* Schedule (9-3-2019)

Date	Pick-up Location	Drop-off Location	Approximate Number Carcasses	Activity
10-Oct	Speelyai Hatchery	CCBS	150	WDFW Spawning
16-Oct	Lewis River Hatchery	LLRF	380	Trap Operations
17-Oct	Speelyai Hatchery	MRBS	450	WDFW Spawning
23-Oct	Lewis River Hatchery	CCBS	380	Trap Operations
24-Oct	Speelyai Hatchery	LLRF	350	WDFW Spawning
30-Oct	Lewis River Hatchery	CCBS	380	Trap Operations
31-Oct	Speelyai Hatchery	LLRF	350	WDFW Spawning
6-Nov	Lewis River Hatchery	<i>Tentative ???</i>	???	Trap Operations
13-Nov	Lewis River Hatchery	<i>Tentative ???</i>	???	Trap Operations
20-Nov	Lewis River Hatchery	MRBS	150	WDFW Spawning
27-Nov	Lewis River Hatchery	MRBS	222	WDFW Spawning

Drop-Off Location

Clear Creek Bridge Site (CCBS)	910
Lower Lewis River Falls (Crab Cr. Bridge Site)(LLRF)	1080
Muddy River Bridge Site (MRBS)	<u>822</u>
TOTAL	2812

Study/Work Product Updates

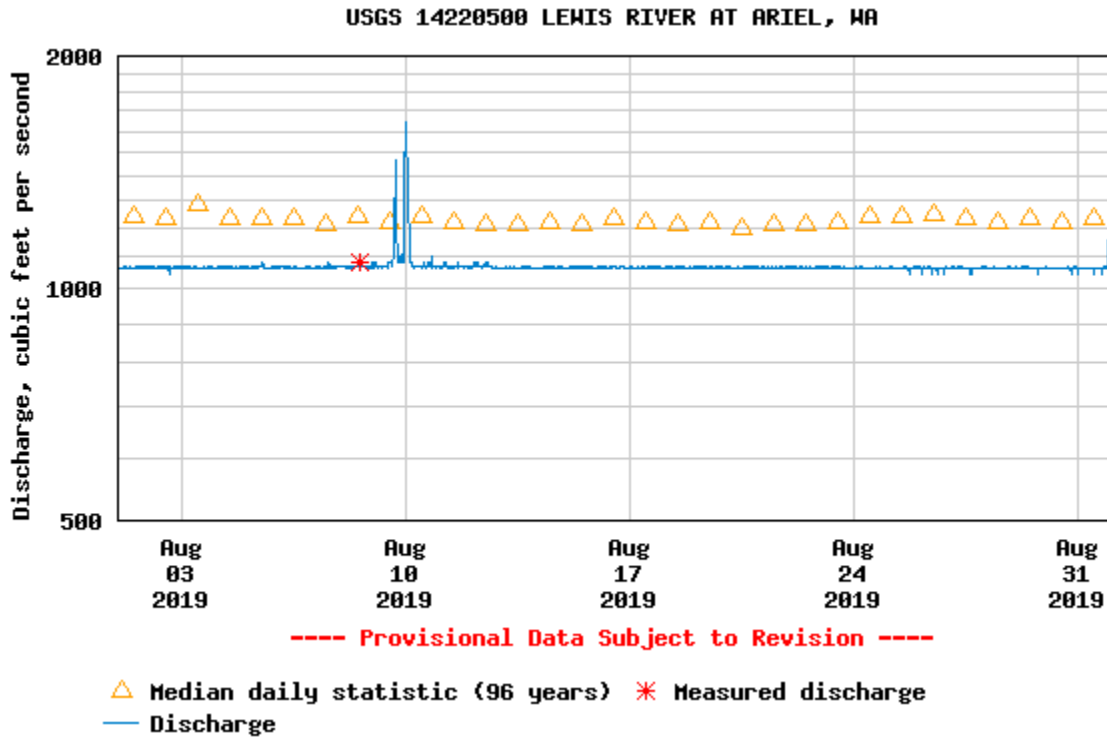
Merwin Fish Collection Facility and General Operations ([Attachment B](#))

During the month of August, a total of 682 fish were captured at the Merwin Dam Adult Fish Collection Facility. The majority of these fish were hatchery summer steelhead (90%), although early-run coho and fall Chinook began arriving.

The Merwin Dam Fish Collection Facility out of operation the first week in August for annual maintenance. Other than during this outage, the facility ran continuously during the month of August.

River flow below Merwin Dam was maintained at approximately 1,070 cfs for the month of August (Table 1).

Table 1. Discharge in cubic feet per second recorded at the USGS Ariel, WA gauge (14220500) located immediately downstream of Merwin Dam.



Upstream Transport ([Attachment B](#))

Eight (8) Blank Wire Tag (BWT) winter steelhead were captured by the end of December 2018 and were transported upstream as part of the 2019 run year. An additional 38 adults were taken upstream in January 2019 and another 30 in February, 106 in March, 705 in April, 110 in May, and 4 in June for a total of 1,001 BWT winter steelhead transported as part of the 2019 run year. Twelve (12) additional winter steelhead of natural origin (NOR) containing PIT tags from the upper basin were also transported upstream as part of the 2019 run year. A combined total of 1,013 adult winter steelhead have been transported upstream of Swift Dam as part of the 2019 run year (Table 2).

Table 2. Total number of adult winter steelhead transported upstream of Swift Dam in 2019.

Run Year	Male	Female	Total adult winter steelhead taken upstream of Swift Dam
2012	141	48	189
2013	440	301	741
2014	452	581	1,033
2015	746	477	1,223

2016	378	376	754
2017	331	261	592
2018	682	535	1,227
2019	527	486	1,013

Twenty three (33) NOR (12 female/12 male/9 jack) and an additional 76 hatchery origin jack (HOR) spring Chinook have been taken upstream through August 2019.

By the end of August, 96 adult early-run coho (50 male/46 female) had been transported upstream along with 14 wild jacks (< 20 inches). During the month of August, two NOR coho that were PIT tagged in the upper basin had been detected as returning adults at the Merwin Adult Collection Facility. Both coho were tagged at the Swift FSC in the spring of 2018 and had returned as adults.

Swift Floating Surface Collector (Attachment B)

Record numbers of fish collected at the Swift FSC in spring 2019 with a total of 105,340 out-migrants along with an additional 4,404 planted rainbow trout, and 54 adult steelhead kelts collected by the time the FSC was shut down in late-July. The total number of out-migrants collected at the Swift FSC this spring has exceeded all other previous years of operation (i.e., since 2013) over this time period (January 1 to July 31; Table 3).

The Swift FSC was shut down for summer maintenance on July 22, 2019. It is anticipated that the Swift FSC will be returned to service in early-October. Karchesky also mentioned that the Swift FSC was struck by lightning on August 9, 2019. Extensive damage occurred to several electrical systems that control the designed functionality of the facility. PacifiCorp is working through the damage, and anticipate repairs will be complete before the early October start date.

Table 3. Total number of out-migrating salmonids (by species) collected at the Swift FSC and transported downstream of Merwin Dam during the month of July since 2013.

Run Year	Collection Numbers by Run Year at Swift FSC				
	<i>(From January 1 to July 31)</i>				
	Coho	Chinook	Steelhead	Cutthroat	TOTAL
2013	14,850	976	162	551	16,539
2014	7,645	905	513	853	9,916
2015	33,242	4,417	1,221	642	39,522
2016	59,734	3,422	2,167	1,052	66,375
2017	13,217	738	1,574	372	15,901

2018	38,914	4,564	7,877	844	52,199
2019	95,351	6,229	2,911	849	105,340

Other –

Lewis River 21 Phase II, USDA Forest Service Aquatic Fund Project Withdrawal

McCune informed the ACC attendees that the on August 5, 2019 the Forest Service informed PacifiCorp that will not be implementing the Lewis River 21 Phase II project. The trail runs immediately adjacent to the Lewis river in that areas of Reach 21, if the floodable area was accessed then the trail would need to either be relocated along the valley wall at the far side of the 30 acre floodplain areas, or have trail crossing structures (at least two) that could accommodate flood flows of the Lewis River. The Forest Service does not want to relocate the trail, nor has funds to invest in the trail crossing structures that would be necessary once the Lewis River side channels accessed the area. Funds awarded to the Forest service in the amount of \$177,000 was returned to PacifiCorp on September 9, 2019, which will be returned to the aquatic fund accounting for distribution to approved projects in the future.

McCune also noted that the deadline for 2019/2020 pre-proposals is September 27, 2019.

Tom Wadsworth (WDFW) informed the ACC that he has accepted employment outside of WDFW effective September 19, 2019. Bryce Glaser (WDFW) will be the ACC representative in his place. McCune indicated she will make reference to this ACC representative change in the 2019 Lewis River annual report and it was not necessary for Wadsworth to submit this detail to PacifiCorp in writing but that I would also capture it in today’s meeting notes.

Agenda items for October 10, 2019

- September 12, 2019 Meeting Notes
- Aquatic Funds 2019/2020 Update
- In Lieu /ADR Update
- Flows/Reservoir Conditions Update
- Study/Work Product Update

Adjourn 12:10pm

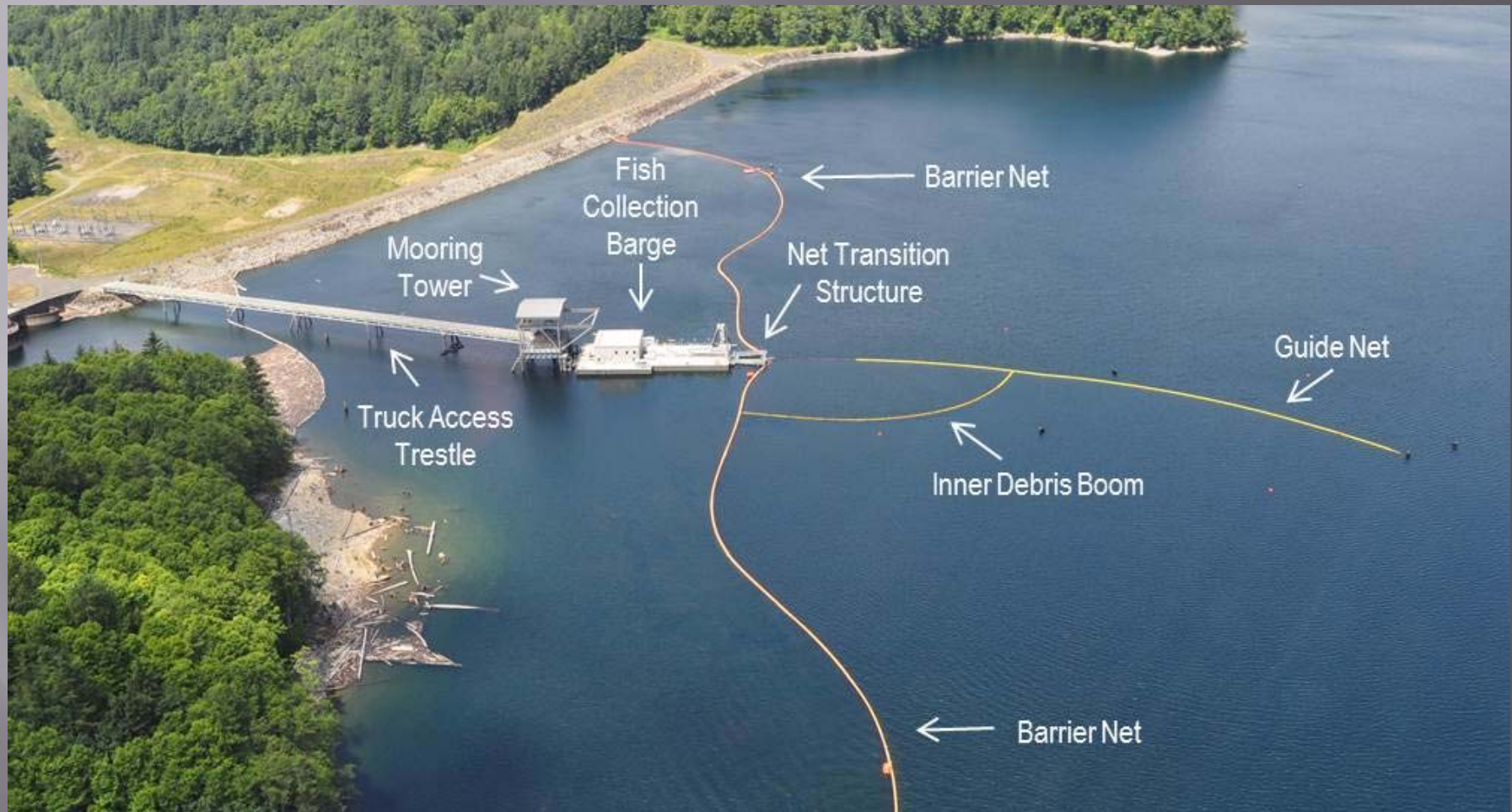
Next Scheduled Meeting:

October 12, 2019
Merwin HCC or Conf. Call
9:00 a.m. – 1:00 p.m.

Meeting Handouts & Attachments:

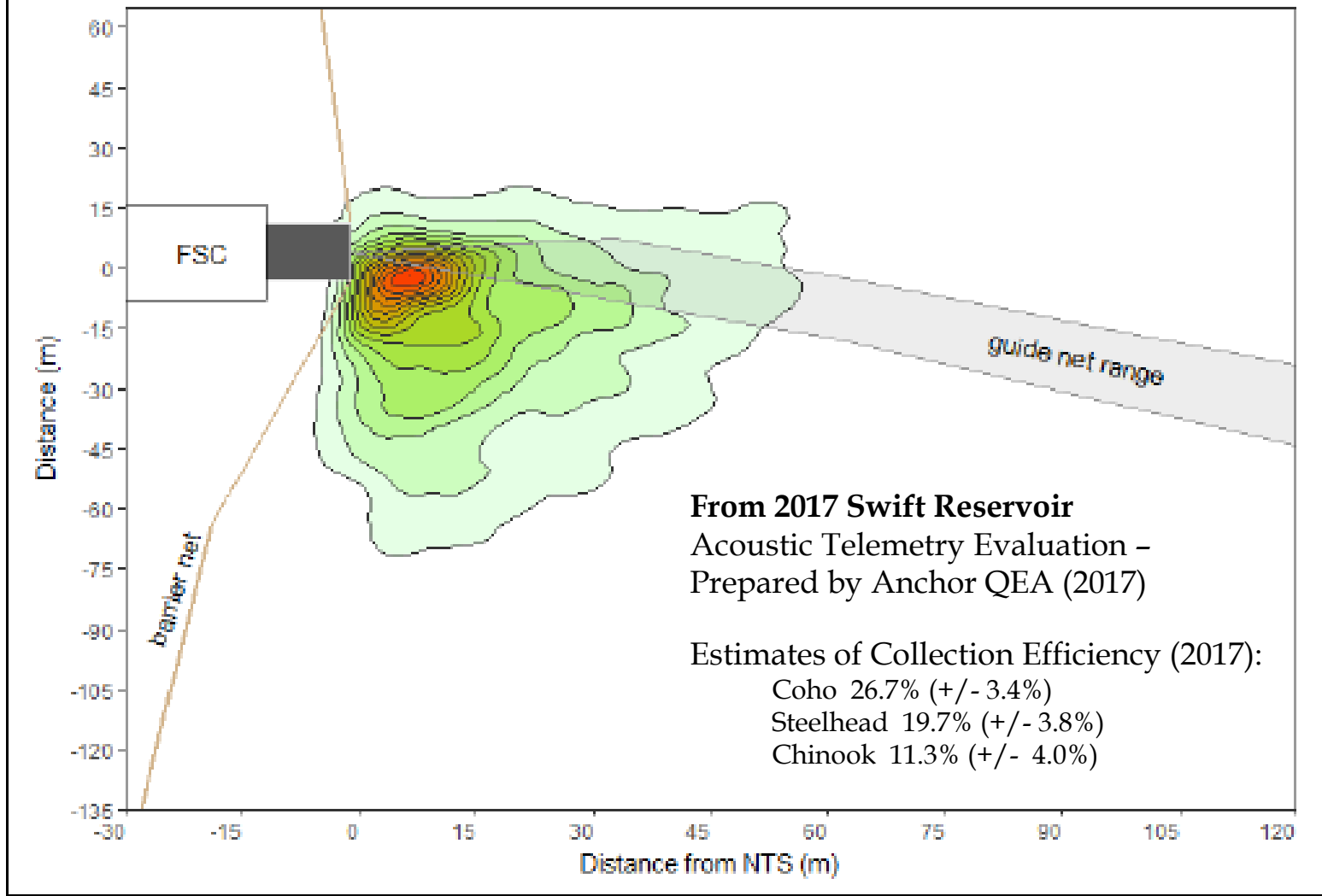
- Meeting Notes from 8/8/19
- Agenda from 9/12/19
- **Attachment A** – Floating Surface Collector Update PowerPoint, September 12, 2019
- **Attachment B** – Lewis River Fish Passage Report (August 2019)

Layout of Swift Reservoir FSC



Meeting Topic: Floating Surface Collector Update
Lewis River Aquatic Coordination Committee (ACC) Meeting
September, 12, 2019

Figure 13
Density of Detected Positions, All Species



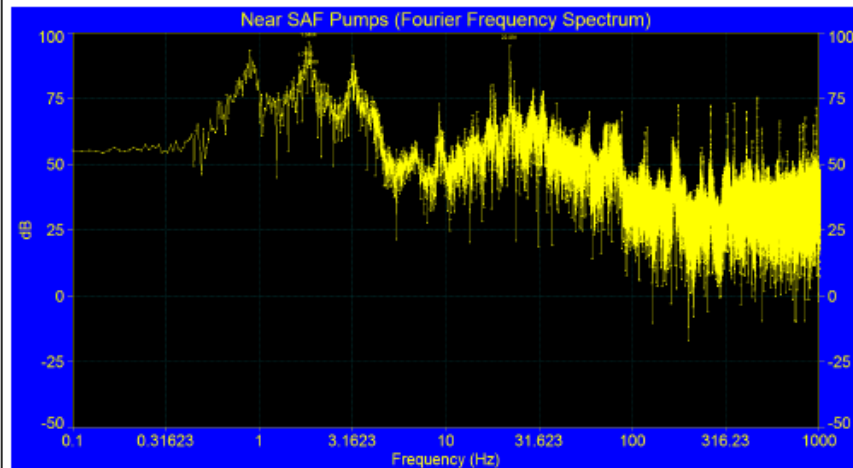
Swift Reservoir FSC - Factors Effecting Collection?

- ▣ In 2017, it appeared that fish were getting to the entrance of the FSC, but not transitioning through the NTS.

- ▣ Possible reasons why:
 - Physical Factors
 - ▣ Acoustic Noise
 - ▣ Hydraulics
 - ▣ Light
 - Biological
 - ▣ Predators

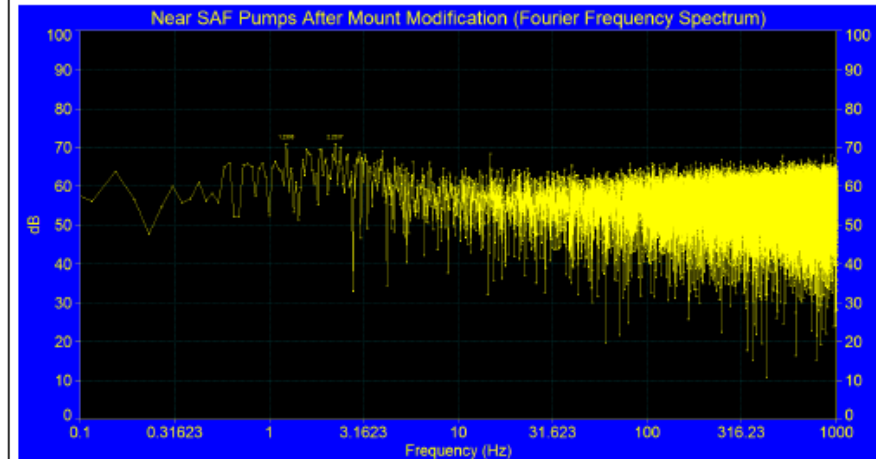
Sorting Area Flow Pumps – Noise Reduction (December 2017)

Figure 3
Frequency Versus Amplitude for One 50-Second Interval When Sorting Area Flow Pumps Were Running



Notes:
X-axis: Frequency (hertz [Hz])
Y-axis: Amplitude (decibels [dB])

Figure 6
Frequency Versus Amplitude Near the Sorting Area Flow Pumps While Running, After Mount Modification



Notes:
X-axis: Frequency (hertz [Hz])
Y-axis: Amplitude (decibels [dB])

Before
(Low frequency
vibration present)



After
(Low frequency vibration
no longer present)

From 2017 Swift Reservoir Acoustic Telemetry Evaluation – Prepared by Anchor QEA (2017)

2018 Swift FSC Collection Efficiency

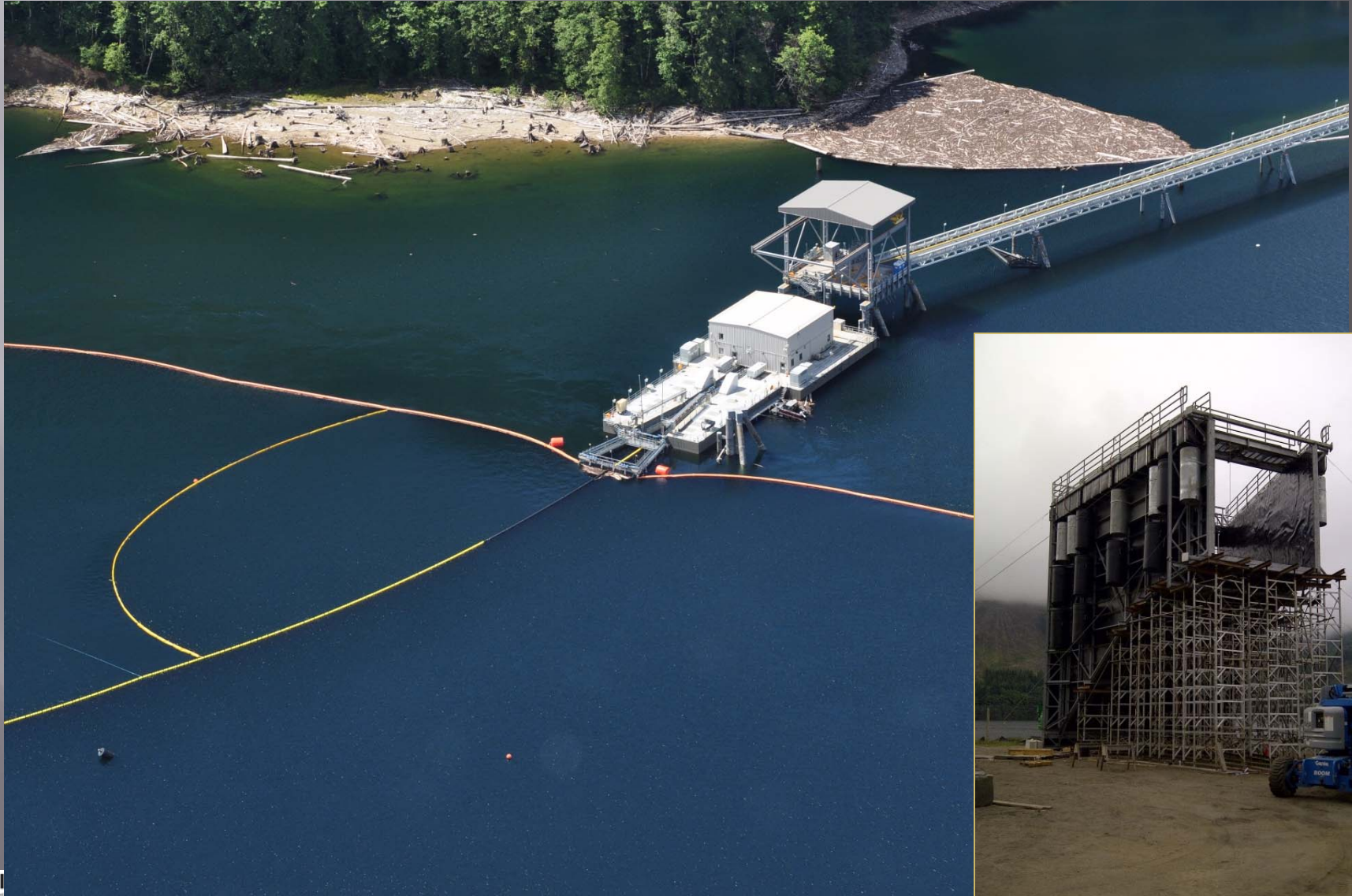
2018 Collection Efficiency Study based on PIT Tags alone:

Species	Released	Captured	(S _{RES}) - conservative surrogate for (P _{CE})	95% CI
Coho	484	191	40%	+/- 4%
Steelhead	278	136	49%	+/- 6%
Chinook	396	94	24%	+/- 4%

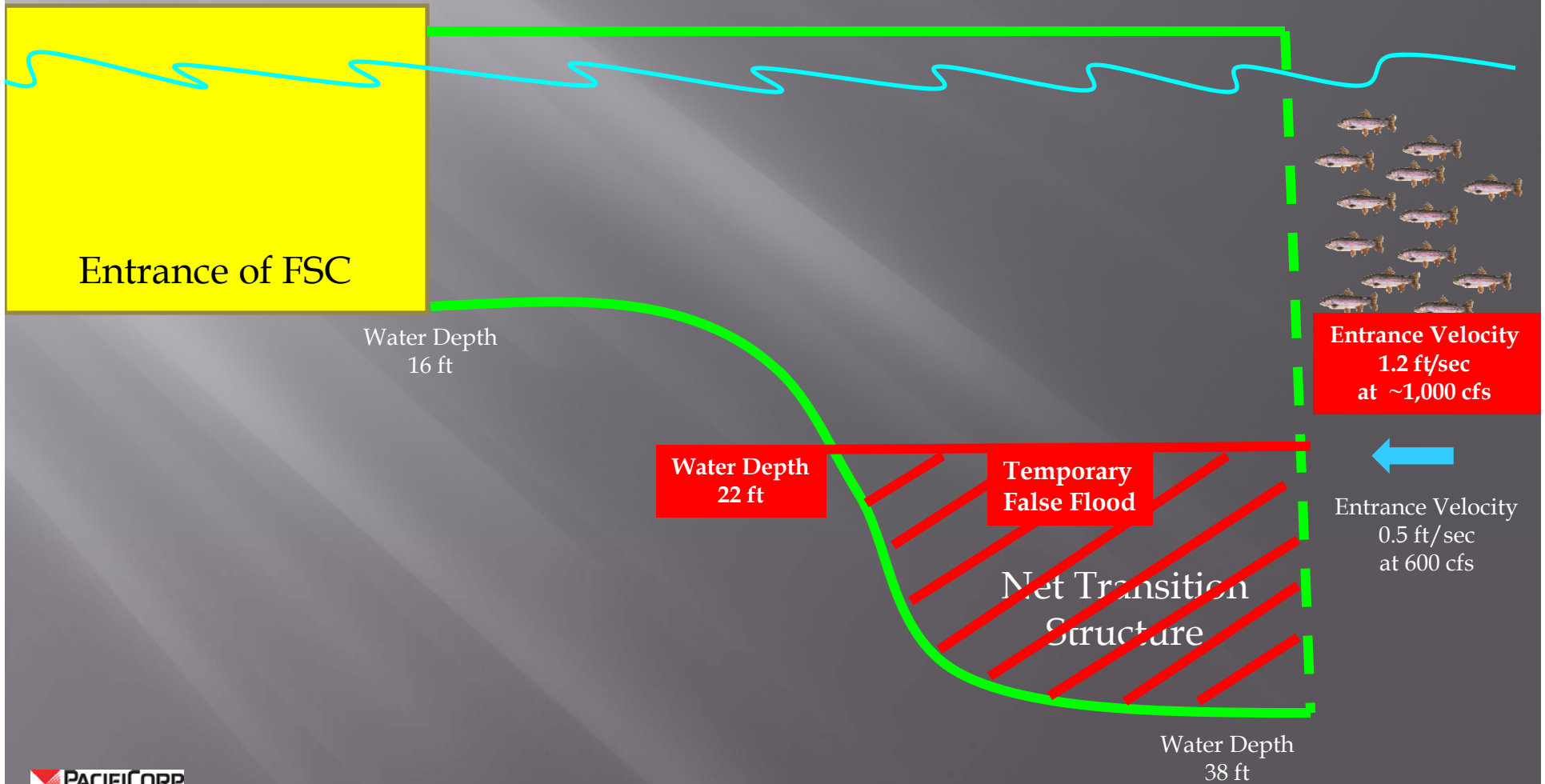
- Running estimates based on no. released (head of Swift Res.) vs. recaptured (at FSC) of PIT Tags, and have not been corrected for reservoir survival and detection at Zone of Influence.

- Final Collection Efficiency (P_{CE}) estimates from 2017:
 - Coho 26.7% (+/- 3.4%)
 - Steelhead 19.7% (+/- 3.8%)
 - Chinook 11.3% (+/- 4%)

Entrance Velocities NTS



Entrance Velocities NTS



Increased NTS Flow



NTS false floor installed February 2019

2019 Juvenile Out-Migration Summary

Table 3. Total number of out-migrating salmonids (by species) collected at the Swift FSC and transported downstream of Merwin Dam from January 1 to July 31 since 2013. *(Table from Monthly Lewis River Fish Passage Report – August 2019)*

Run Year	Collection Numbers by Run Year at Swift FSC (From January 1 to July 31)				
	Coho	Chinook	Steelhead	Cutthroat	TOTAL
2013	14,850	976	162	551	16,539
2014	7,645	905	513	853	9,916
2015	33,242	4,417	1,221	642	39,522
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2019 Swift FSC CE Evaluation

- ❑ Hydro-Acoustic Telemetry Study – using JSAT positional tags.
- ❑ Out-migrants collected at the Swift FSC are tagged and then transported back to the head of Swift Reservoir where they are released.
- ❑ All tagged fish that enter the Zone of Influence (ZOI) are considered available for collection. The ZOI defined as ~ 150 ft radius immediately outside the exclusion net and entrance of the NTS.
- ❑ 22-week deployment February 18 to July 18, 2019.

Swift FSC Collection Efficiency

▣ Final Collection Efficiency (P_{CE}) estimates:

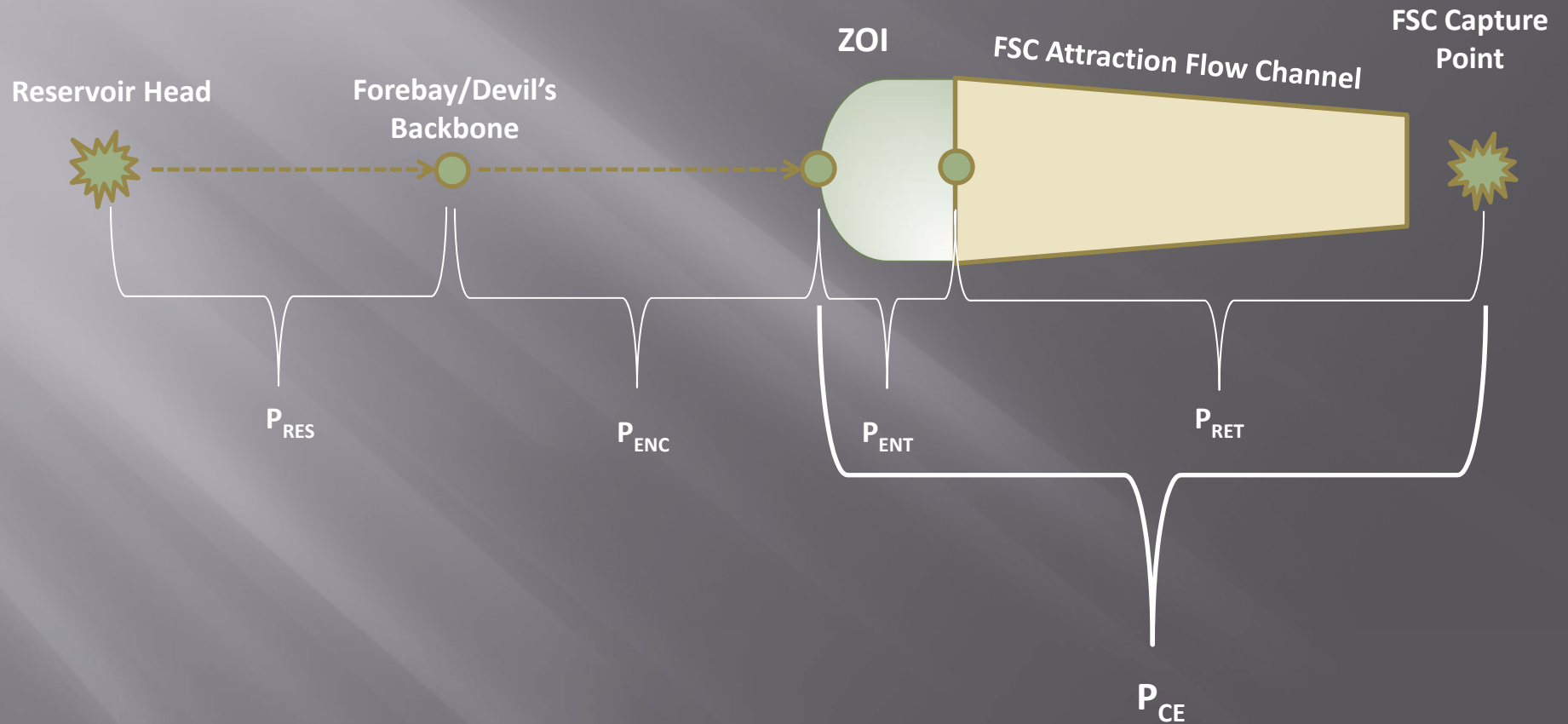
- ▣ 2017:
 - ▣ Coho 26.7% (+/- 3.4%)
 - ▣ Steelhead 19.7% (+/- 3.8%)
 - ▣ Chinook 11.3% (+/- 4%)

- ▣ 2018: $*S_{RES}$ conservative surrogate for (P_{CE})
 - ▣ Coho 39.5%* (+/- 4.4%)
 - ▣ Steelhead 48.9%* (+/- 5.9%)
 - ▣ Chinook 23.7%* (+/- 4.2%)

▣ *Preliminary* Collection Efficiency (P_{CE}) estimates:

- ▣ 2019:
 - ▣ Coho 63% (+/- 7%)
 - ▣ Steelhead 27% (+/- 14%)
 - ▣ Chinook 51% (+/- 7%)

Swift FSC Collection Efficiency (Sub-Metrics)



Lewis River Fish Passage Report

August 2019

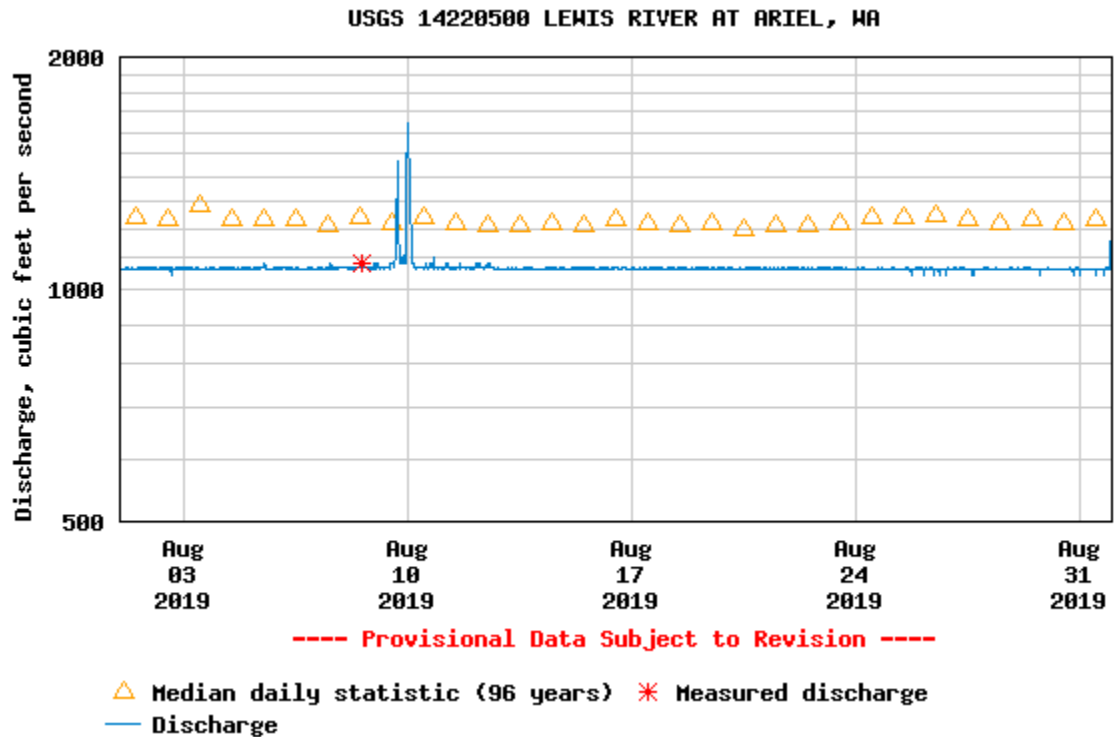
Merwin Fish Collection Facility and General Operations

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The Merwin Dam Fish Collection Facility out of operation the first week in August for annual maintenance. Other than during this outage, the facility ran continuously during the month of August.

River flow below Merwin Dam was maintained at approximately 1,070 cfs for the month of August (Table 1).

Table 1. Discharge in cubic feet per second recorded at the USGS Ariel, WA gauge (14220500) located immediately downstream of Merwin Dam.



Upstream Transport

Eight (8) Blank Wire Tag (BWT) winter steelhead were captured by the end of December 2018 and were transported upstream as part of the 2019 run year. An additional 38 adults were taken upstream in January 2019 and another 30 in February, 106 in March, 705 in April, 110 in May, and 4 in June for a total of 1,001 BWT winter steelhead transported as part of the 2019 run year. Twelve (12) additional winter steelhead of natural origin (NOR) containing PIT tags from the upper basin were also transported upstream as part of the 2019 run year. A combined total of 1,013 adult winter steelhead have been transported upstream of Swift Dam as part of the 2019 run year (Table 2).

Table 2. Total number of adult winter steelhead transported upstream of Swift Dam in 2019.

Run Year	Male	Female	Total adult winter steelhead taken upstream of Swift Dam
2012	141	48	189
2013	440	301	741
2014	452	581	1,033
2015	746	477	1,223
2016	378	376	754
2017	331	261	592
2018	682	535	1,227
2019	527	486	1,013

Twenty three (33) NOR (12 female/12 male/9 jack) and an additional 76 hatchery origin jack (HOR) spring Chinook have been taken upstream through August 2019.

By the end of August, 96 adult early-run coho (50 male/46 female) had been transported upstream along with 14 wild jacks (< 20 inches). During the month of August, two NOR coho that were PIT tagged in the upper basin had been detected as returning adults at the Merwin Adult Collection Facility. Both coho were tagged at the Swift FSC in the spring of 2018 and had returned as adults.

Floating Surface Collector (FSC)

Record numbers of fish collected at the Swift FSC in spring 2019 with a total of 105,340 out-migrants along with an additional 4,404 planted rainbow trout, and 54 adult steelhead kelts collected by the time the FSC was shut down in late-July. The total number of out-migrants collected at the Swift FSC this spring has exceeded all other previous years of operation (i.e., since 2013) over this time period (January 1 to July 31; Table 3).

The Swift FSC was shut down for summer maintenance on July 22, 2019. It is anticipated that the Swift FSC will return to service in early-October.

Table 3. Total number of out-migrating salmonids (by species) collected at the Swift FSC and transported downstream of Merwin Dam during the month of July since 2013.

Run Year	Collection Numbers by Run Year at Swift FSC				
	<i>(From January 1 to July 31)</i>				
	Coho	Chinook	Steelhead	Cutthroat	TOTAL
2013	14,850	976	162	551	16,539
2014	7,645	905	513	853	9,916
2015	33,242	4,417	1,221	642	39,522
2016	59,734	3,422	2,167	1,052	66,375
2017	13,217	738	1,574	372	15,901
2018	38,914	4,564	7,877	844	52,199
2019	95,351	6,229	2,911	849	105,340

Fish Facility Report
Swift Floating Surface Collector
August 2019

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																0
02																0
03																0
04																0
05																0
06																0
07																0
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25																0
26																0
27																0
28																0
29																0
30																0
31																0
Monthly	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	2766	2772	89813	64	2567	3598	7	56	2848	54	0	806	43	2	4404	109800

