

## Lewis River Fish Passage Subcommittee Meeting

### Agenda

Thursday June 8, 2023

12:00 to 2:00 pm

In person

Merwin Hydro Control Center

105 Merwin Village Ct. Ariel, WA 98603

or

Teams (see link below)

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<b>Introductions, Review Agenda and Approve Meeting Notes</b>	All
<ul style="list-style-type: none"><li>• May meeting notes</li></ul>	
<b>Design Team Updates</b>	Hansen/Higa/All
<b>Elements of Lewis River Future Fish Passage</b>	Olson/All
<ul style="list-style-type: none"><li>• Comments</li><li>• Capacity of Swift Upstream fish passage</li><li>• Next Steps</li></ul>	
<b>Next FPS meeting – July 13<sup>th</sup> Teams</b>	All
<ul style="list-style-type: none"><li>• Agenda</li></ul>	
<b>Adjourn</b>	

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## Microsoft Teams meeting

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**FINAL Meeting Notes  
Lewis River License Implementation  
Fish Passage Subcommittee Meeting  
June 8, 2023  
Noon to 2:00 pm  
In-Person Meeting/MS Teams Meeting**

Attendees

Christina Donehower – Cowlitz Indian Tribe	Bryce Glaser – WDFW
Amanda Farrar – Cowlitz PUD	Josua Holowatz – WDFW
Steve West - LCFRB	Peggy Miller – WDFW
Beth Bendickson – PacifiCorp	Keely Murdoch – Yakama Nation Fisheries
Eric Hansen – PacifiCorp	
Nathan Higa – PacifiCorp	
Chris Karchesky – PacifiCorp	
Erik Lesko – PacifiCorp	
Todd Olson – PacifiCorp	
Melissa Jundt – NOAA	

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**Introductions, Review Agenda and Approve Meeting Notes**

Bryce Glaser, WDFW, reviewed the meeting agenda.

**Design Team Updates**

Eric Hansen, PacifiCorp, provided an update on the Yale Downstream Fish Passage Facility. The design team is continuing beyond the 30% design, analyzing each design element and looking at ways to lower construction cost. Those elements include launching location for the floating surface collector (FSC), fabrication, mooring, and possibly combining sorting and sampling location, guide net(s) location, overall length of the FSC, and FSC ballast systems.

Nathan Higa, PacifiCorp, provided an update on the Yale and Swift upstream facilities. The design team is refining the 30% design to the 60% design. They are conducting optimizing configuration studies to establish what the final design will look like. They are working within the footprint and determining which supply scheme provides the best benefits vs cost or issues. The team is reinvestigating the penstock tap and tailrace pump systems for the water supply at both Swift 1 and Yale facilities to maximize reliability and costs.

Chris Karchesky, PacifiCorp, said that the 2023 study was still underway and he does not have much data to report at this time other than all fish have been tagged and released. He anticipates that the contractor will begin providing preliminary fish behavior data sometime mid-July when the field portion of the study ends. He indicated that the tagging sample sizes of juvenile spring

Chinook and steelhead were slightly lower than target due availability and the few extra tags left over were tagged into juvenile Coho. Depending on availability, he plans to provide the group with preliminary results of the 2023 study at the next meeting.

Todd Olson, PacifiCorp, shared a map of WHMP lands so the group could see the alternate Yale downstream FSC construction location of Saddle Dam. Eric's design team is still going through the onsite FSC fabrication and launching pros and cons. He will work with Kendel Emmerson, PacifiCorp Land Resource Manager. Peggy Miller, WDFW, looked at the maps and said it appeared there would be some impact to WHMP lands if the construction site was next to Yale Park. Todd said we will work with Kendel. The TCC needs to be consulted if projects are on WHMP lands, specifically for wildlife mitigation lands.

### **Elements of Lewis River Future Fish Passage**

Over the last couple of months we have had discussion around the components of this document. The newest version was distributed on June 2, 2023, and Todd did a walkthrough of it to see if there were any additional thoughts as well as to discuss the edits that were made.

Bryce Glaser, WDFW, brought up a point that the title should remain “Elements of” so it would not be confusing with the other Lewis River Fish Passage Plan. Todd agreed and will change it back.

**3. Studies to Inform Design Decisions** – Todd agreed with Christina's comment and edited as such.

**6. Timing of Fish Passage Measures** – Todd appreciated Christina's comment and added an edit.

Suggestions were made to add ...facility **is operational** and... also to add other **minor** construction activities...

Todd added “substantially” before the word “complete” in the date references in this section.

**Capacity of Swift Upstream Fish Passage** – Chris Karchesky indicated that he had received a few comments on the slides he provided at the last meeting regarding sizing and capacity of the upstream passage facilities. At the last meeting, Chris had provided as an example the current size of the entrance or “front door” of the Yale Upstream Passage Facility. From the comments received following that discussion, he wanted to follow-up and clarify the difference between static verse swim-through capacity. Chris provided a set of updated slides to the FPS as part of this discussion (see attached). The initial concern was to ensure that the entrance of the facilities were large enough to accommodate the peak numbers of fish anticipated daily once habitats upstream were fully seeded and a Swim-Through passage scenario had been selected. The capacity numbers he provided previously to the FPS were based on static capacity; that is, how many fish the “front door” that included individual entrance and ladder pools could hold. The more important metric for determining the functional capacity of a facility's “front door” is the swim through capacity, or number of fish that can move through the entrance over a given timeframe. By making the fish ladder too small for instance, to accommodate peak fish numbers could create a bottle neck for passage. Based on the current design of the Yale Upstream Passage Facility, the entrance of the facility has a swim through capacity of approximately 33,778 fish per day, or 1,407 fish per hour

based on a 7 pound fish, which Chris indicated was quit large. Chris also indicated that the swim through capacity currently being planned for the Swift Upstream Passage Facility was the same. Both facilities will have the same swim-through capacity at their entrances. He did note that the static capacity associated with the “front door” of the Swift Facility was currently less than that of Yale only because the elevation change needed for fish to reach the sorting building at Swift was less, which in turn requires fewer ladder legs. Chris indicated that this is actually a good thing in that fish would be required to swim a shorter distance before being trapped. He indicated that the design team was looking into how to shorten the ladder at Yale by increasing the height of the fish lock.

Melissa Jundt (NMFS) said she was comfortable with the swim-through capacity, but had some other comments regarding the entrance of the facilities in her review of the 30% design. Chris said he believed those earlier comments have been incorporated, but would need to look at the comment matrix again. Bryce Glaser (WDFW) said it still makes the assumption that they are moving all the time. If it happens in surges, you need ability to move them. He said they’ve seen bottlenecks before and are just trying to make sure they had holding capacity. Chris said it was a good point. He provided an example of how that can be mitigated by incorporating vee-traps and other structures into the design to prevent fish from backing out after the surge. He indicated that was part of the modifications currently being planned for the Merwin Trap.

Peggy Miller (WDFW) asked what goes into calculating fish per hour/fish per day? She asked if you’re subtracting every trip to get to the capacity number. Melissa Jundt answered by saying it was basically saying how much water is moving volumetrically through the system, and how many fish of a certain size can pass through that volume over a given time. Peggy then said, so you are looking at the ones you are transporting. Chris said to think of it as a pass through fish ladder system like at Bonneville Dam where you have a certain number of fish entering the fish ladder and passing through it to get to the top of the dam. It’s how many they can pass over time. Peggy then asked that in reality with fish processing in and out, eight hours a day, could it reduce the number? Chris said it can, provided as to the size of the conduit. If you get in excess of what it can handle, then you increase then number of operational cycles; that is, have additional trucks transporting fish off site similar to what we do at Merwin Trap. Bryce asked if there wasn’t a trap, the question is if they come in and fill up the hole; will the fish cooperate to fill the holding area to increase the operational capacity? Chris said when we know what’s coming, we can make adjustments to move fish faster so we don’t create a bottleneck or a condition where fish back out. Chris indicated that the limiting factor for a trap and haul facility is how many fish can be transported per truck and the distance they have to travel to be released. By adding additional trucks or releasing fish closer to the facility will reduce bottlenecks.

At Yale, it’s a matter of a single truck (10 loads) but they aren’t going that far so it can easily be done. With a no-touch facility you can process and fill transport tanks quickly. Keely asked about the number of trucks. Chris said that he anticipates that as fish numbers increases so too will the number of trucks. He also added that he would expect eventually trucks would be dedicated to certain facilities for operational efficiencies.

Bryce understands the shorter distance but what if fish don’t cooperate? Why can’t they be designed to the same sizes and what are the costs for doing that? The facility seems bigger at Yale than Swift, but PacifiCorp’s answer is we can increase operational capacity. Bryce said overall, they are much more comfortable. For Yale they are comfortable that the numbers are in line with

their recommendations. He is struggling to understand the reliance on operational capacity, rather than physical capacity. Chris said if you go all the way back, putting fish in and letting them transition, most fish are passing through. There is lots of capacity. If you look across the board, you aren't losing fish. You aren't going to have as many fish as Merwin. Bryce said if fish are at capacity, but there is a big push and now you have large numbers of fish, it would be proportionally greater at Merwin. He mentioned marine survival. Most of the habitat is above Swift and it doesn't matter how many peel off. We want to make sure we have at the least the same capacity as Swift.

Todd said we want to build it to the right size with what we expect and with the ability to add more cycles to address expected higher returns of fish. We have the ability to foreshadow the number of fish to Yale given what we collect at Merwin.

Bryce said what if fish move all night long and are in the box waiting for the shift to come on in the morning? What happens if there are other fish down below and not in the holding tank? Todd said you could position someone there 24/7 and operate the facility around the clock if needed. Todd asked Bryce if he had seen at other traps where fish back out because there is no more room. Bryce said we went from handling 10-12,000 fish to 28,000 fish at the WDFW Modrow trap. This provides a real-life example. WDFW's recommendation was for the facility to handle 3,000-5,000 fish per day. WDFW would like to see language changed to "transport a minimum of 3,000 to 5,000 per day, operationally." Chris said he went back and looked at it from a modelling standpoint. There are other facilities out there that deal with magnitudes more than Merwin, which they used to get their capacity numbers. He understands what WDFW is wanting.

Bryce added that we just want recognition that we need to be prepared to have operational increases when they're needed as our back-up plan.

Keely asked what triggers another truck? Todd and Chris said the expected daily fish return to the upstream facilities. PacifiCorp can increase the fish transport fleet and add drivers as the fish run increase. The number of trucks needed comes down to how far trucks need to go, numbers of fish, and how long it take the truck to return from delivering fish.

Todd said it sounds like we are getting close to finalizing this document. He asked that the group review this new version and let him know if there is additional text anyone wants to add. Bryce agreed that we are getting closer but there may need to be a bit more word smithing. Todd said we can talk some more. If we see/expect more fish coming out of Merwin we can increase Yale upstream operations. Bryce said we're set up for 800 fish per hour but if we're experiencing a situation where we're getting more than 1,800 fish, we'll need to expand operations. We need a clear picture to see where we are operationally as we want to keep a bottleneck from occurring.

**Section 11 Process for Selecting and Implementing Swim Through Option** *No discussion on this section's edits.*

**Section 14** Todd added language to the last paragraph and then it was word smithed more by the group.

**Section 16 Lewis River Habitat Evaluation Plans** *No discussion on this section's edits.*

Todd appreciated the group’s comments and noted the intent to have a document we are all comfortable with.

Next Steps

Todd will check with Jeff Garnett (USFWS) on Bull Trout language, and then send out a Final Draft that ACC representatives can share with their leaders for review and approval.

Bryce is a little concerned about the related Decision Document in that they might not have time to get final comments by the July meeting. He’s ok if it gets circulated but he’s not sure about being ready to make a final decision in July. For example, in their organization they need to consult with their Regional Director. Todd said that at July ACC meeting, it will be more like a “what’s the status.” Some might be able to approve it, or be ok with this tweak, or some may need more time. Keely thinks her organization may need more time as well. In the quarterly report to FERC, Todd will add that the final draft has been sent out for review so FERC will know we are getting close.

Peggy added that some ACC FPS folks are also ACC members and thus, they “wear two hats.” She also asked if this document will be used to request an Extension of Time from FERC? Todd said that FERC will likely issue an Order accepting the document elements, including the change in schedule, or indicate a need for a separate request for an Extension of Time for the various project constructions. Ultimately, the to-be-operational dates need to be approved and incorporated into the Lewis River licenses.

**Next FPS Meeting:** July 13, 2023

<b>Action Items from June 8, 2023</b>	<b>Status</b>
Beth will send out the next version the Final Draft Elements of Lewis River Future Fish Passage for review.	<b>Complete</b>
Review/provide comments on the next version of the Final Draft Elements of Lewis River Future Fish Passage.	<b>Complete</b>

<b>Action Items from May 11, 2023</b>	<b>Status</b>
Beth will send out the March and April notes for final 7-day review.	<b>Complete</b>
Todd to identify WHMP boundary near Yale Park.	<b>Complete</b>
Review/provide comments on next version of Draft Lewis River Elements of Lewis River Future Fish Passage.	<b>Complete</b>

The meeting adjourned at 2:17 p.m.

**Lewis River License Implementation  
Fish Passage Subcommittee Meeting  
June 8, 2023**

**Presentation Materials**

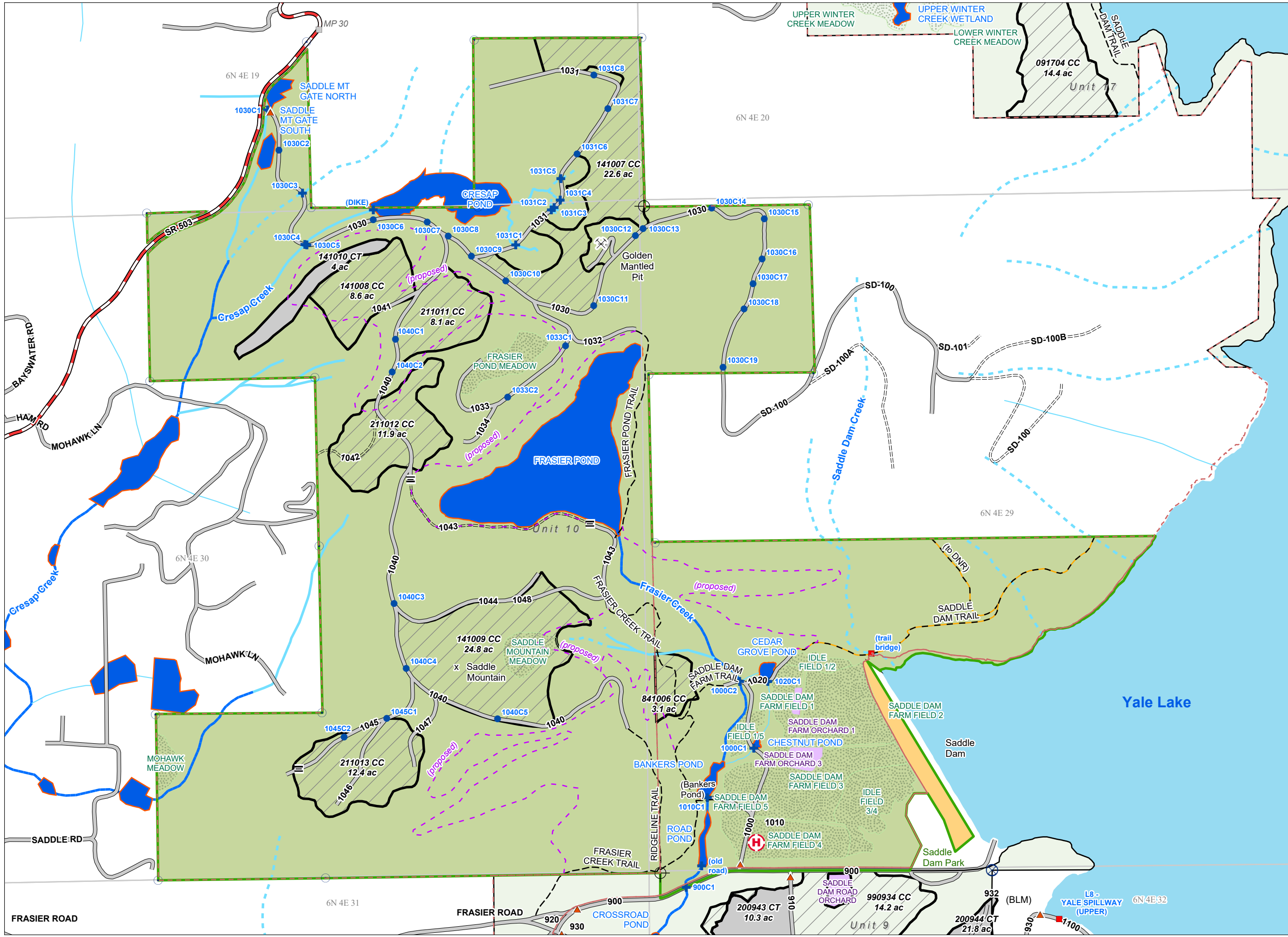
WHMP Lands around Saddle Dam (map)

WHMP Lands around Yale Park (map)

Upstream Fish Passage Facility Capacity and Sizing - 6/8/2023 Update

# Lewis River 2023 Wildlife Habitat Management Area MERWIN Unit 10

- Surveyed Section Corner
- Surveyed Property Corner
- Other Surveyed Corner
- PacifiCorp Transmission Pole
- PacifiCorp Transmission Line
- FERC Boundary
- Management Unit
- PacifiCorp Ownership
- Section
- Farmland/Meadow
- Oak
- Old Growth
- Orchard
- Shrubland
- Water Body
- Wetlands
- WHMP Land (in current Unit)**
- Primary
- Secondary
- Seasonal
- WHMP Easement
- Harvest Area**
- Clear Cut
- Commercial Thin
- Fish Stream
- Non-fish Perennial
- Non-fish Seasonal
- Other Stream
- Secondary Highway
- Abandon/Orphan Road
- Road
- Closed Trail
- Trail
- Proposed Trail
- Special Projects
- Rock Pit
- Gate
- Road Block
- Ford
- Bridge
- Ditch Culvert
- Stream Culvert
- Helicopter Landing Zone**
- Yale/Saddle Dam Field (45.9681, -122.3457)



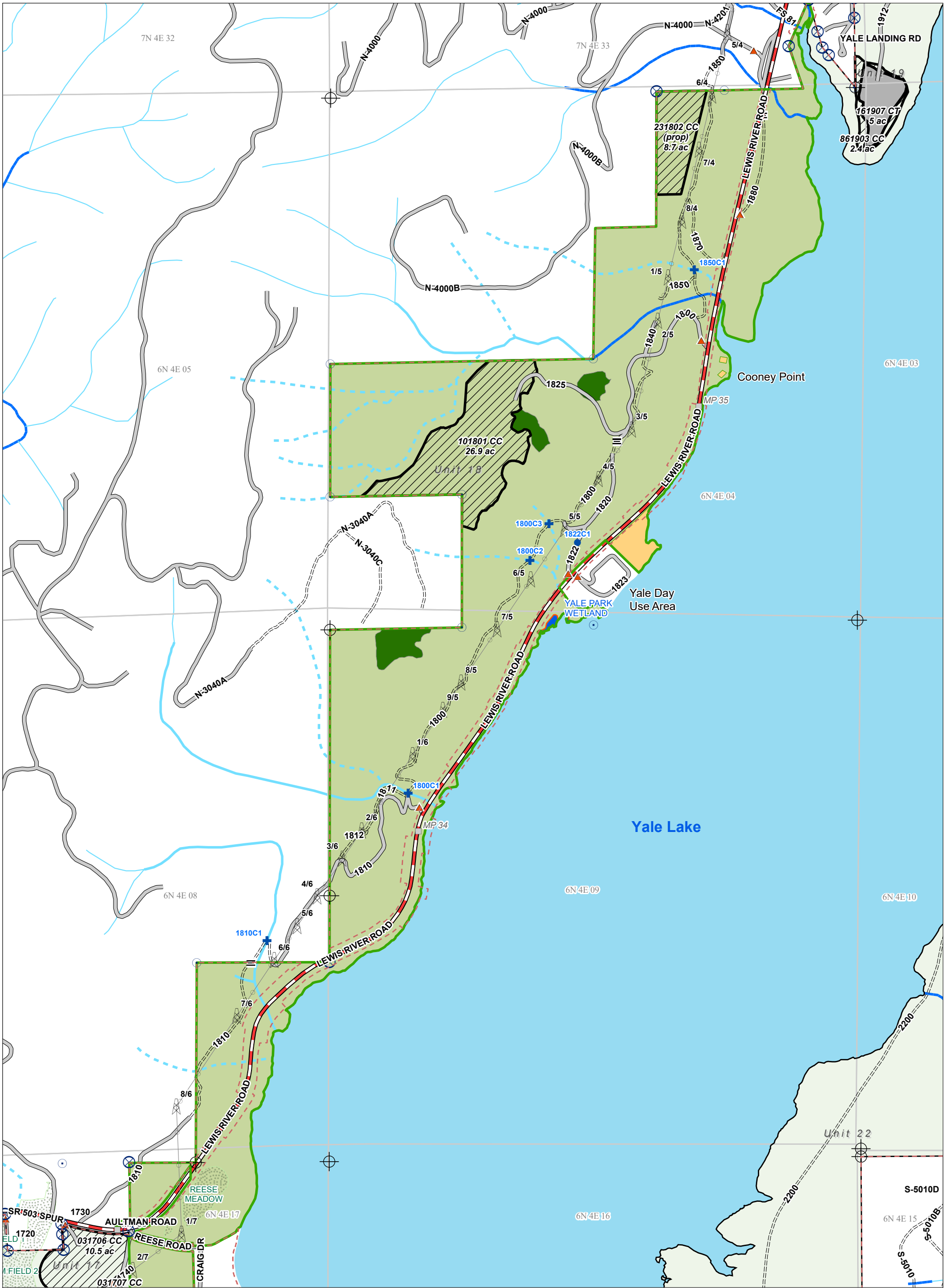
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Feet

1:8,500

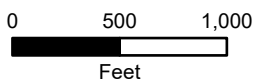
PACIFICORP

Data is projected in UTM Zone 10, NAD83, meters.  
U:\Projects\Hydro\Lewis\WHMP Map Book\ArcGIS Pro Mapbooks.mxd  
03/17/2023 p36722 gisdept@pacifiCorp.com





**Lewis River**  
 2023 Wildlife Habitat  
 Management Area  
 YALE  
 Unit 18



1:10,750

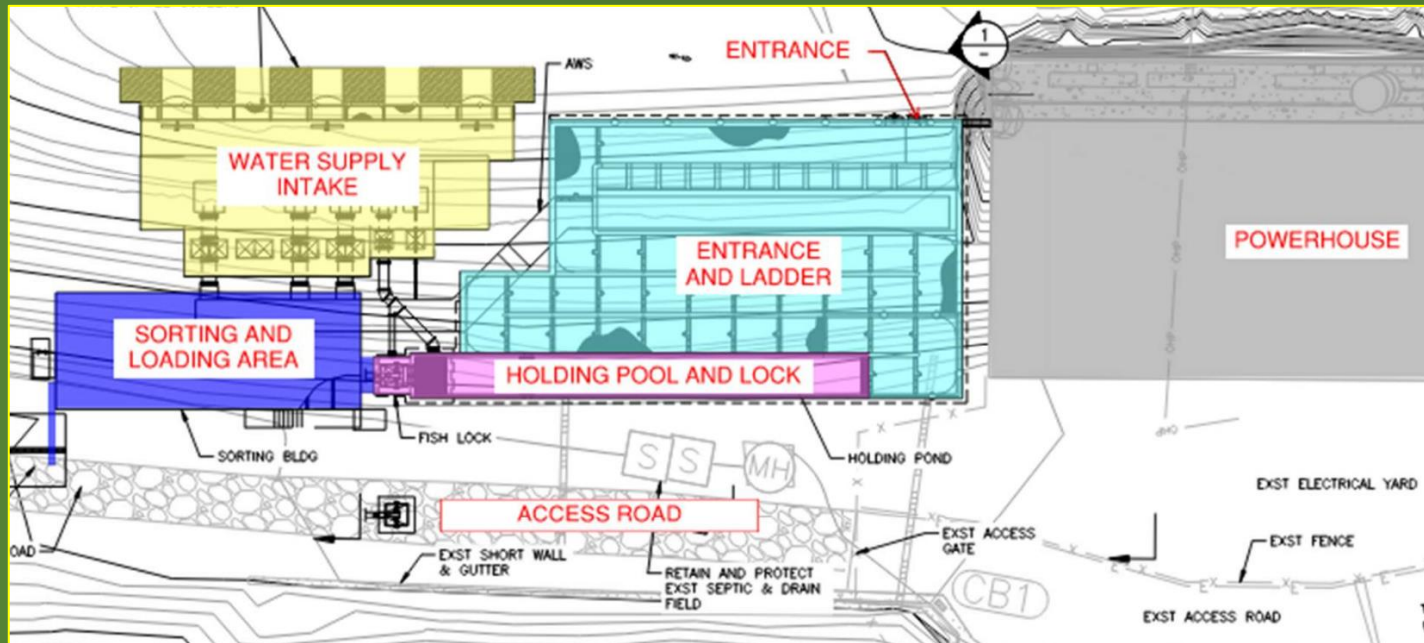


- |  |  |   |   |  |
|--|--|---|---|--|
| <ul style="list-style-type: none"> <li> Surveyed Section Corner</li> <li> Surveyed Property Corner</li> <li> Other Surveyed Corner</li> <li> PacifiCorp Transmission Pole</li> <li> PacifiCorp Transmission Line</li> <li> FERC Boundary</li> <li> Management Unit</li> <li> PacifiCorp Ownership</li> </ul> | <ul style="list-style-type: none"> <li> Section</li> <li> Farmland/Meadow</li> <li> Oak</li> <li> Old Growth</li> <li> Orchard</li> <li> Shrubland</li> <li> Water Body</li> <li> Wetlands</li> <li> Special Projects</li> </ul> | <ul style="list-style-type: none"> <li> Primary</li> <li> Secondary</li> <li> Seasonal</li> <li> WHMP Easements</li> <li><b>Harvest Area</b></li> <li> Clear Cut</li> <li> Commercial Thin</li> <li> Fish Stream</li> </ul> | <ul style="list-style-type: none"> <li> Non-fish Perennial</li> <li> Non-fish Seasonal</li> <li> Other Stream</li> <li> Secondary Highway</li> <li> Abandon/Orphan Road</li> <li> Road</li> <li> Closed Trail</li> <li> Trail</li> <li> Proposed Trail</li> </ul> | <ul style="list-style-type: none"> <li> Rock Pit</li> <li> Gate</li> <li> Road Block</li> <li> Ford</li> <li> Bridge</li> <li> Ditch Culvert</li> <li> Stream Culvert</li> </ul> |
|--|--|---|---|--|

# Upstream Fish Passage Facility Capacity and Sizing

Fish Passage Subgroup Meeting – 6/8/2023 *Update*

# Yale Upstream Facility



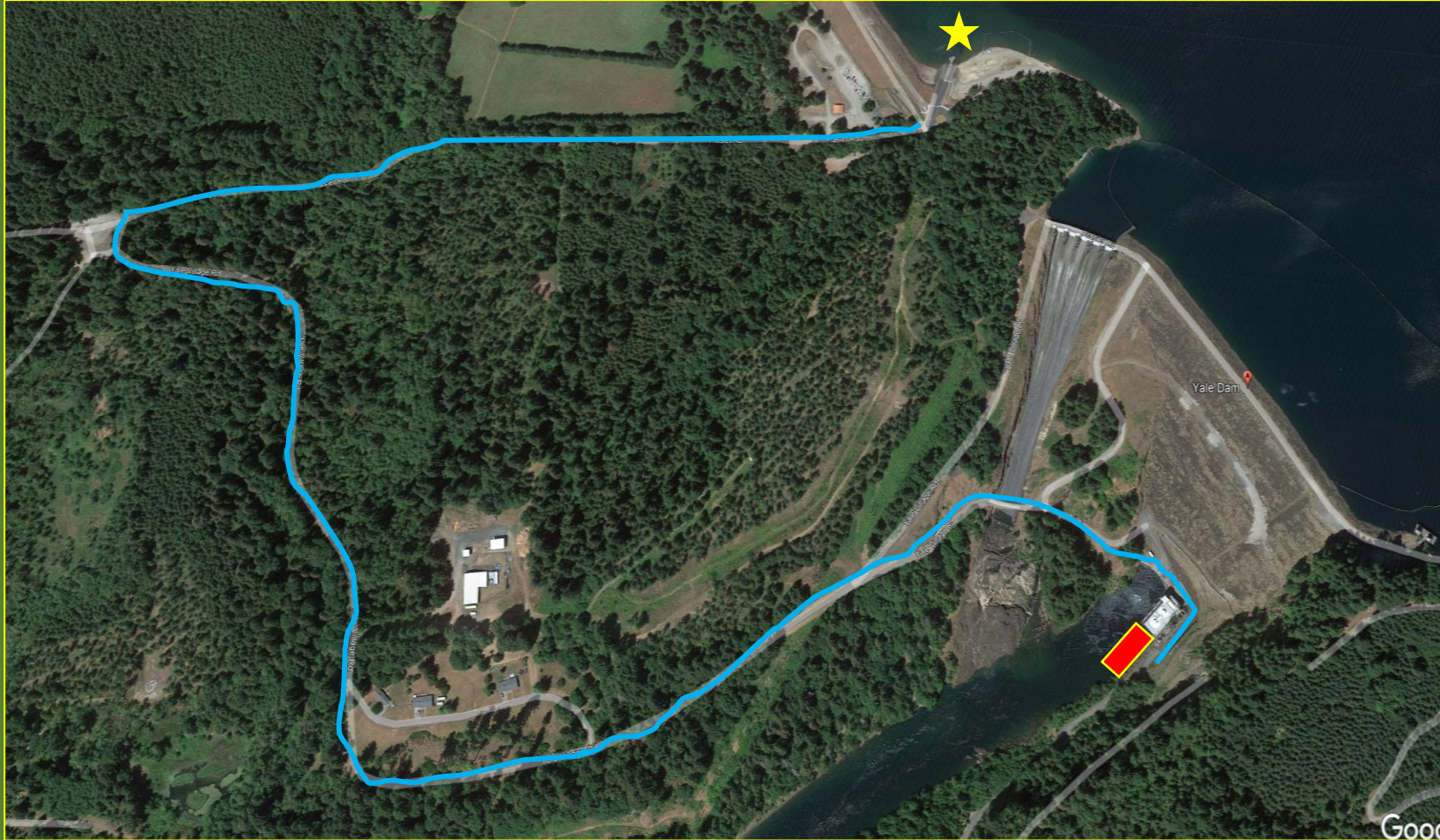
30% Design Layout

## Design capacity for the Yale Upstream Facility's Front Door:

- Average fish size: 7lbs/fish
- Total capacity in the entrance pool = 1,829 fish
- Fish ladder = 117 fish per ladder pool (~27 ladder pools):
  - Total capacity in the ladder = 3,167 fish
- Holding pool capacity = 1,100 fish
- Total capacity from entrance to upstream end holding pool ("front door") = 6,096 fish
- Swim through capacity:
  - 33,778 fish/day, or
  - 1,407 fish/hr

# Yale Upstream Facility

Upstream transport route

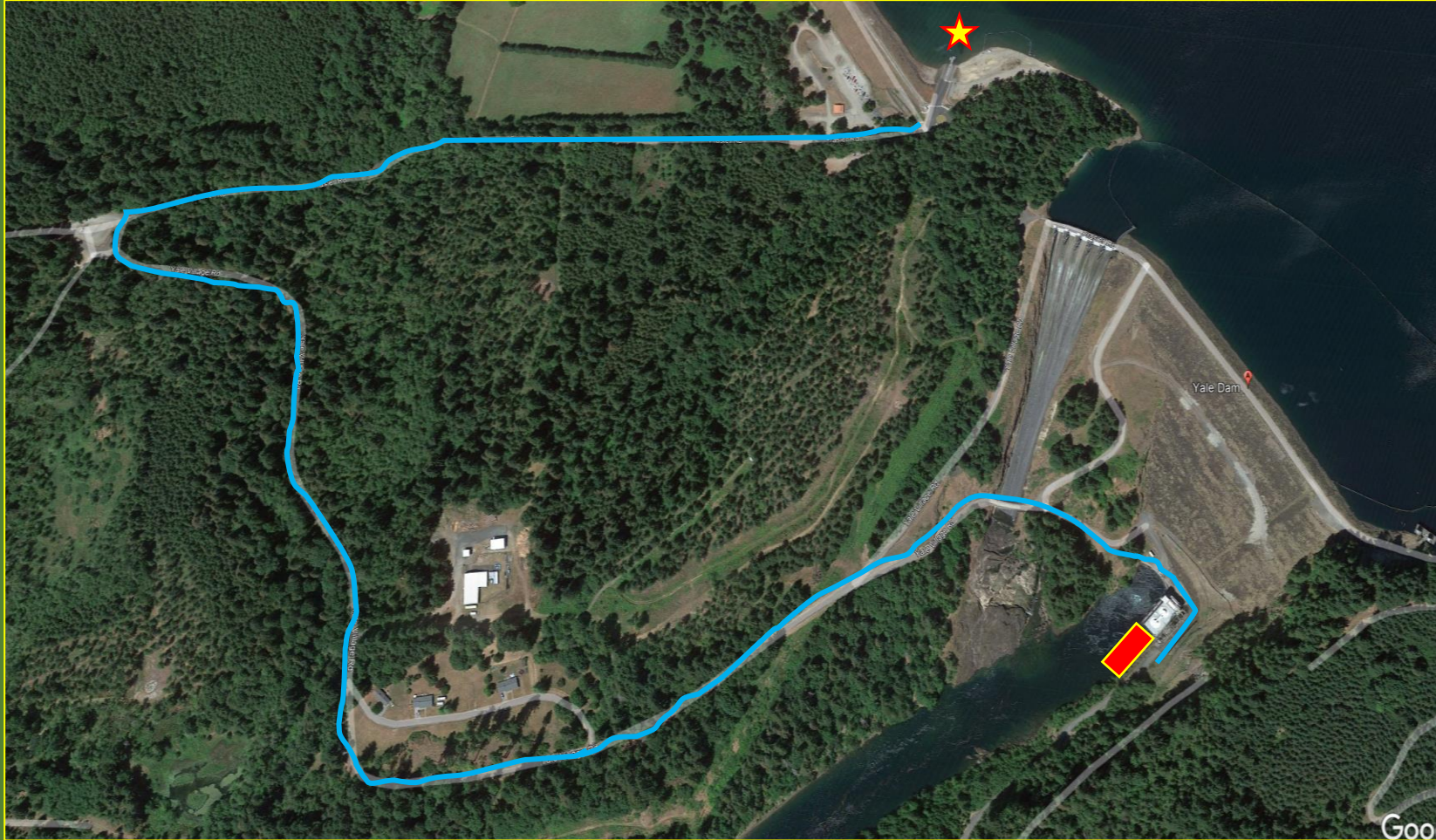


## Fish processing and transport times

Fish Processing Time	Minutes
Crowding (one-time)	10
Lock Lift	15
Process one truck load	20
<b>TOTAL</b>	<b>45</b>
<b>Transport Time</b>	<b>Minutes</b>
Truck Loading	14
Transport (to) - 1.8 miles	8
Dumping	10
Transport (from) - 1.8 miles	8
<b>TOTAL</b>	<b>40</b>
Number Truck(s)	1
Number Fish/Load	180
Number of Loads/Truck	10
<b>Total Fish Moved</b>	<b>1,800</b>
<b>Hours to Complete</b>	<b>7.7</b>

# Yale Upstream Facility

Upstream transport route



## Fish processing and transport times

Fish Processing Time	Minutes
Crowding (one-time)	10
Lock Lift	15
Process one truck load	20
<b>TOTAL</b>	<b>45</b>
<b>Transport Time</b>	<b>Minutes</b>
Truck Loading	14
Transport (to) - 1.8 miles	8
Dumping	10
Transport (from) - 1.8 miles	8
<b>TOTAL</b>	<b>40</b>
Number Truck(s)	<b>2</b>
Number Fish/Load	180
Number of Loads/Truck	10
<b>Total Fish Moved</b>	<b>3,600</b>
<b>Hours to Complete</b>	<b>7.7</b>

# Swift Upstream Facility



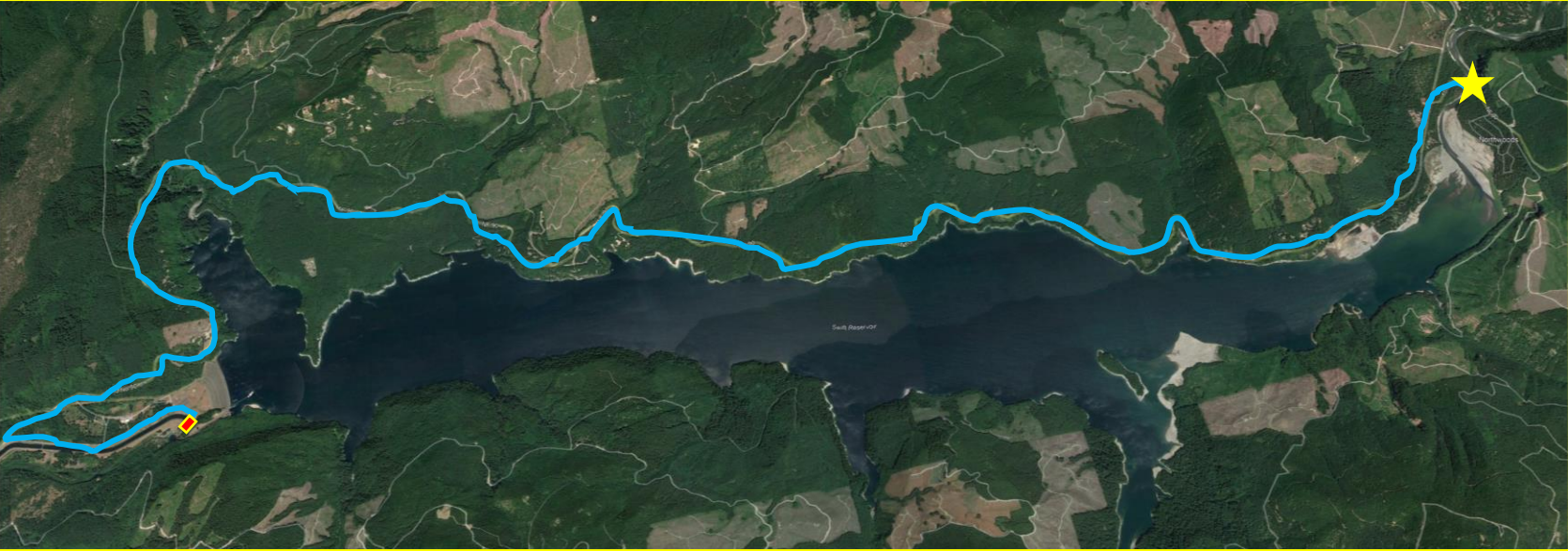
30% Design Layout

## Design capacity for the Swift Upstream Facility's Front Door:

- Average fish size: 7lbs/fish
- Total capacity in the entrance pool = 591 fish
- Fish ladder = 117 fish per ladder pool (~13+2 double switchback ladder pools):
  - Total capacity in the ladder = 1,851 fish
- Holding pool capacity = 900 fish
- Total capacity from entrance to upstream end holding pool ("front door") = 3,342 fish
- Swim through capacity:
  - 33,778 fish/day, or
  - 1,407 fish/hr

# Swift Upstream Facility

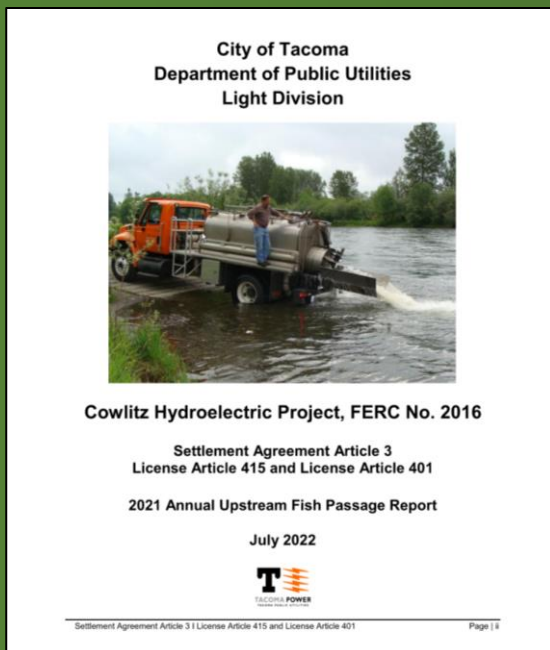
Upstream transport route



## Fish processing and transport times

Fish Processing Time	Minutes
Crowding (one-time)	10
Lock Lift	15
Process one truck load	20
<b>TOTAL</b>	<b>45</b>
Transport Time	Minutes
Truck Loading	14
Transport (to) - 15 miles	30
Dumping	10
Transport (from) - 15 miles	30
<b>TOTAL</b>	<b>84</b>
Number Truck(s)	2
Number Fish/Load	180
Number of Loads/Truck	5
<b>Total Fish Moved</b>	<b>1,800</b>
<b>Hours to Complete</b>	<b>8.0</b>

- Based on their annual report (2022), Tacoma Power collected and transported 68,668 returning Coho at the Cowlitz River Barrier Dam in 2021
- Daily passage requirements just like upstream passage facilities on the Lewis River
- The highest number of Coho collected and passed in a single day (based on daily average by weekly count) was just over 1,200/day



Week	Coho	Daily Average
...		
23	33	7
24	280	40
25	542	77
26	2486	355
27	6,076	868
28	8,676	1,239
29	7,630	1,090
30	7,793	1,113
31	8,386	1,198
32	7,445	1,064
33	8,832	1,262
34	4,899	700
35	1,862	266
36	1,390	199
37	925	132
38	447	64
39	231	33
40	348	50
41	274	39
42	97	14
43	16	2
<b>TOTAL</b>	<b>68,668</b>	

Table 2. Number of adult salmonids returning to the Cowlitz Salmon Hatchery Separator from April 2021 through March of 2022. Data source: Tacoma Power separator database.

Week #	Week Ending	Spring Chinook Adults	Spring Chinook Jacks	Spring Chinook Mini Jacks	Fall Chinook Adults	Fall Chinook Jacks	Coho Adults	Coho Jacks	Summer Steel-head Adults	Summer Steel-head Jacks	Winter Steel-head Adults	Winter Steel-head Jacks	Cutthroat Trout
1	2-Apr	1									337		
2	9	3									518		
3	16	15	1								665		
4	23	31	4						1		397		
5	30-Apr	137	25						3		229		
6	7-May	60	18						11		169		1
7	14	242	105	1					21		65		
8	21	299	123	1					17		41		
9	28	110	64						10		6		
10	4-Jun	553	122	6					40		3		1
11	11	65	16	17					30		3		
12	18	109	34	19					74				
13	25	233	60	99					73				
14	2-Jul	269	46	95					93				1
15	9	158	32	450					107				6
16	16	302	48	216					217				10
17	23	189	42	258					178				13
18	30	204	27	173					120				24
19	6-Aug	66	11	96					58				25
20	13	56	6	143	8				108				21
21	20	22	5	47	8				63				10
22	27	19	8	44	21	1			42				6
23	3-Sep	40	6	25	155	5	33		21				8
24	10	33	6	14	233	9	237	43	17				11
25	17	15	1	18	278	17	434	108	21				23
26	24	27	1		507	13	1,786	700	27				24
27	1-Oct	1			406	10	4,552	1524	27				56
28	8				608	5	6,699	1977	37				46
29	15				437	16	6,000	1630	9		1		41
30	22				294	5	6,034	1759	17				112
31	29				126	1	7,411	975	68				133
32	5-Nov				74	2	6,568	877	17				131
33	12				43	3	7,850	982	25				157
34	19				12	1	4,319	580	12				264
35	26				7		1,654	208	1				8
36	3-Dec				1		1,204	186			1		16
37	10				2	1	852	73			4		7
38	17						411	36	1		4		2
39	24				1		211	20			7		3
40	31-Dec						330	18			7		
41	9				1		268	6			5		1
42	16						92	5			12		
43	23						15	1			25		
44	30										44		
45	6-Feb										2		
46	13										4		
47	20										2		
48	27										154		
49	6-Mar	2									570		
50	13										305		
51	20										566		
52	27	1											
Season Totals		3,262	831	1,720	3,222	90	56,960	11,708	1,566	0	4,146	0	1,161

In order to reach the sea-run cutthroat broodstock collection goal, adults collected at the Cowlitz Salmon Separator, were supplemented with adults captured at the Cowlitz Trout Hatchery outfall. (See Table 3).