

LEWIS RIVER AQUATIC COORDINATION COMMITTEE

Facilitator: ERIK LESKO
503-412-8401

Location: TEAMS MEETING ONLY

Date: September 8, 2022

Time: 9:30 AM – 12:00 PM

AGENDA ITEMS

- | | |
|----------|---|
| 9:30 AM | Welcome <ul style="list-style-type: none">➤ Review and Accept 9/8/2022 Agenda➤ Review and Accept 8/11/2022 Meeting Notes |
| 9:45 AM | Public Comment Opportunity |
| 9:50 AM | USFS Update on Clearwater Creek Project Design – <i>USFS Staff</i> |
| 10:50 AM | Study/Work Product Updates <ul style="list-style-type: none">➤ Flows/Reservoir Conditions Update➤ Reservoir Shoreline Development Projects➤ ATS Update➤ FPS Update➤ Fish Passage/Operations Update➤ Swift Reservoir Stranding Survey Update➤ Compensatory Mitigation Discussions Update (tentative) |
| 11:50 AM | Next Meeting's Agenda <ul style="list-style-type: none">• USFS Clearwater Creek Design Update |
| | Public Comment Opportunity |
| 12:00 PM | Meeting Adjourn |
-

Note: all meeting notes and the meeting schedule can be located at:
<https://www.pacificorp.com/energy/hydro/lewis-river/acc-tcc.html>

Join on your computer or mobile app

[Click here to join the meeting](#)

Or call in (audio only)

[+1 563-275-5003,,644857650#](#) United States, Davenport

Phone Conference ID: 644 857 650#

**FINAL Meeting Notes
Lewis River License Implementation
Aquatic Coordination Committee (ACC) Meeting
September 8, 2022
TEAMS Meeting Only**

ACC Representatives and Affiliates Present (12)

Sarah Montgomery, Anchor QEA
Christina E. Donehower, Cowlitz Indian Tribe
Steve West, LCFRB
Chris Karchesky, PacifiCorp
Erik Lesko, PacifiCorp
Todd Olson, PacifiCorp
Jeremiah Doyle, PacifiCorp
Peggy Miller, WDFW
Josua Holowatz, WDFW
Bryce Glaser, WDFW
Nick Grant, USFS
Jeff Garnett, USFWS

Guests (3)

Dan Lautzenheiser (DJA)
Brett Kamrud (DJA)
Luke Swan (Interfluve)

Calendar:

September 8, 2022	ACC Meeting	TEAMS Meeting
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Assignments from September 8, 2022	Status
Nick Grant: Coordinate with USFS staff and Lesko regarding next steps for the Clear and Clearwater Creek projects and Aquatic Fund proposals.	Ongoing.

Assignments from August 11, 2022	Status
Erik Lesko: Schedule the surveys for the Swift Reservoir Stranding Study.	Complete.
Erik Lesko: connect with PacifiCorp staff regarding the Haapa boat launch ADA accessibility project.	Complete (August 2022).
All: Forward the Aquatic Fund announcement to potentially interested parties.	Complete 8/9/2022.

Assignments from July 14, 2022	Status
Erik Lesko: Update Teams meeting invitation to add and remove staff as needed.	Ongoing.

Assignments from June 9, 2022	Status
Todd Olson: Provide the draft letter to FERC regarding the ACC's progress, agreements, and outstanding discussion items for ACC review.	N/A See Fish Passage Element Document

Assignments from April 14, 2022	Status
Erik Lesko: Coordinate with the TCC regarding the timing for WSDOT's Cougar Creek culvert project.	Ongoing. (Currently planned for 2023.)

Opening, Review of Agenda and Meeting Notes

Erik Lesko (PacifiCorp) called the meeting to order at 9:33 a.m. and reviewed the agenda.

Lesko reviewed the August 11, 2022, meeting notes. The notes will remain available for review until the October meeting. Bryce Glaser asked for a continued emphasis on timely distribution of notes and meeting materials to which Lesko agreed.

Public Comment Opportunity

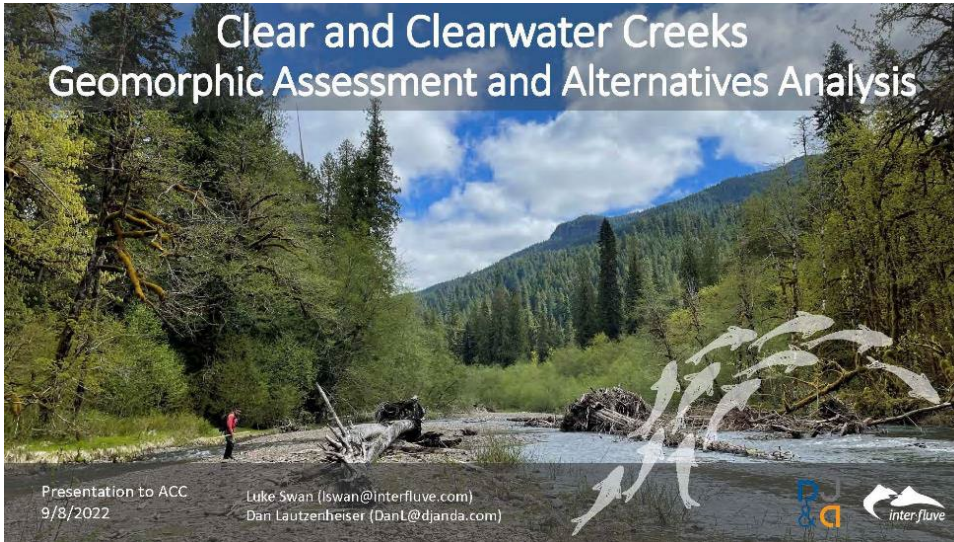
None.

USFS Update on Clear and Clearwater Creek Projects

Nick Grant said the design team for the Clear and Clearwater Creek projects will provide a presentation on design alternatives. He introduced the project team: Dan Lautzenheiser and Brett Kamrud (DJA), and Luke Swan (Interfluve). Grant said USFS contracted with DJA and Interfluve to complete feasibility assessments for the Clear and Clearwater Creek areas, which covers a combined length of approximately 15 river miles. The goal of doing assessment and restoration work in these areas is to assess the condition of the streams post-Mount St. Helens eruption and improve fish returns. Since the eruption, there has been some restoration work, and fish have not come back in the numbers that were expected.

Luke Swan is the design engineer on the project, who shared the following presentation with the ACC:

Clear and Clearwater Creeks Geomorphic Assessment and Alternatives Analysis



Presentation to ACC
9/8/2022

Luke Swan (lswan@interfluve.com)
Dan Lautzenheiser (DanL@djanda.com)



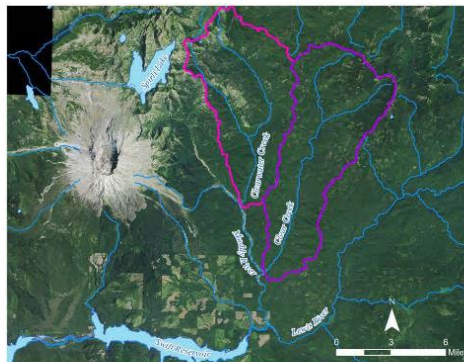
Outline

1. Project Overview
2. Geomorphic Assessment
3. Alternatives Analysis
4. Q&A



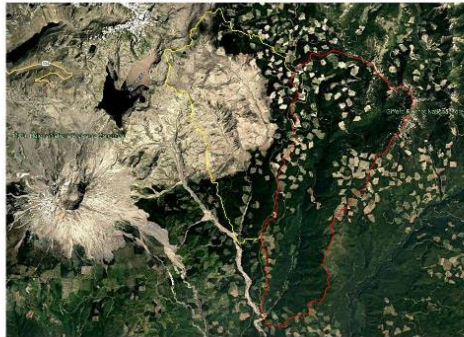
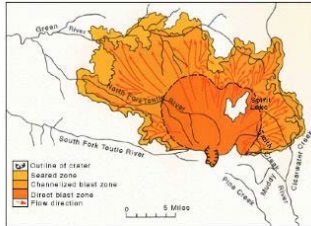
Project Overview

- Funded by ACC through the Aquatics Fund
- Assessment to support development of habitat improvement projects
- Targeting the rearing life stages of spring Chinook and Coho salmon



Geomorphic Assessment

- Key differences in process drivers between Clear and Clearwater are a result of disturbance



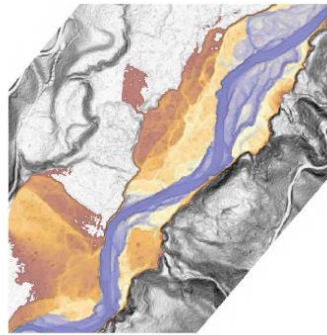
Project Overview

- Preliminary Criteria for Projects:
 1. Conducive to a self-sustaining, process-based approach;
 2. Focused on response reaches accessible by excavator;
 3. Response reaches not accessible by excavator are to be evaluated for helicopter wood placement; and,
 4. Ability to improve habitat diversity and complexity for spawning and rearing life stages.



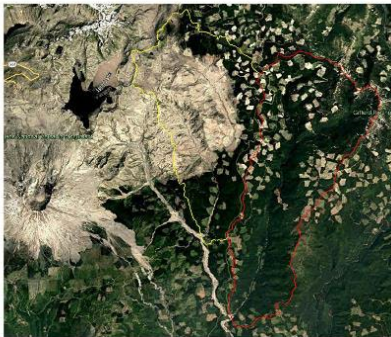
Geomorphic Assessment

- Key differences in process drivers between **Clear** and Clearwater are a result of disturbance



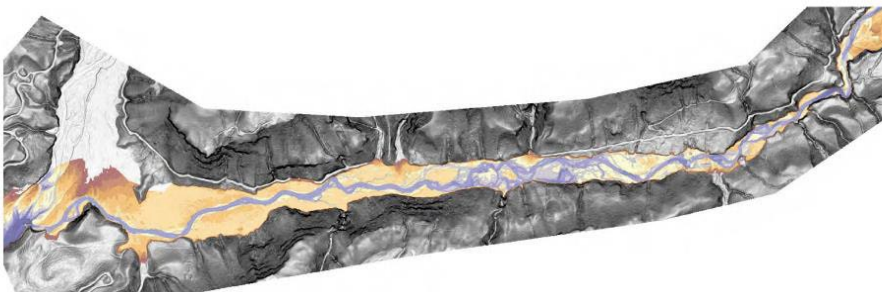
Geomorphic Assessment

- Key differences in process drivers between Clear and **Clearwater** are a result of disturbance



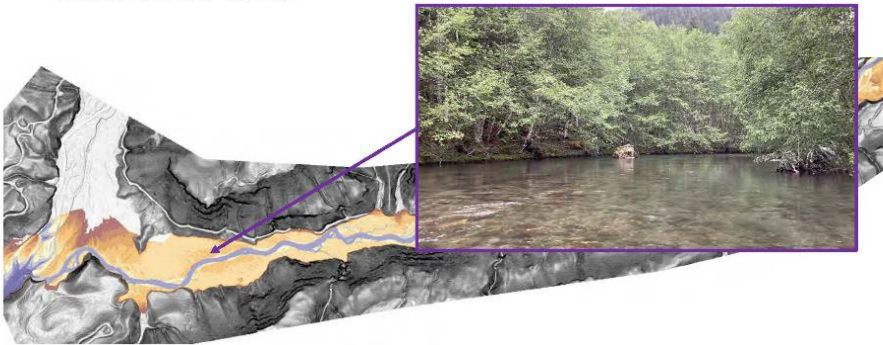
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Geomorphic Assessment

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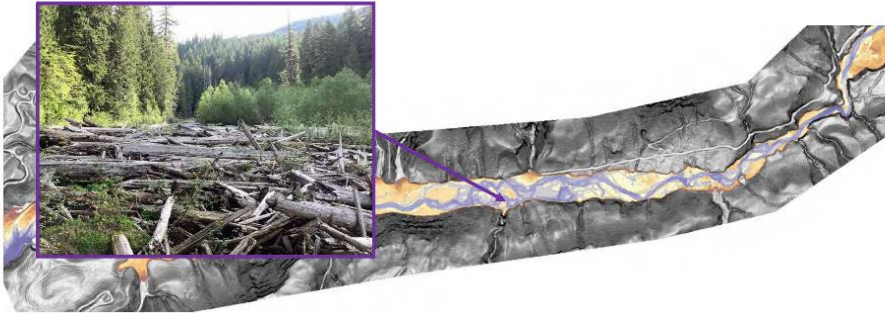
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Geomorphic Assessment

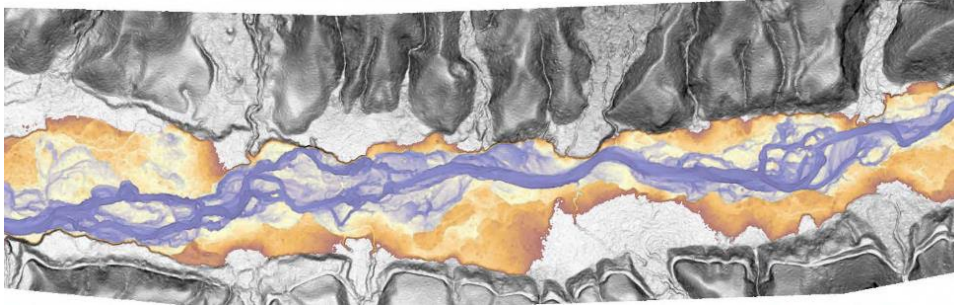
- Key Summary Points:
 1. Both streams avulse or migrate around or between hardpoints and those hardpoints are the basis for riparian forest regeneration



Geomorphic Assessment

- Key Summary Points:

3. Where the creeks have access to *tools*, channels and habitats are complex and varied



Geomorphic Assessment

- Key Summary Points:

2. As a result of disturbance history, they are different stages in evolution towards an anastomosing channel pattern

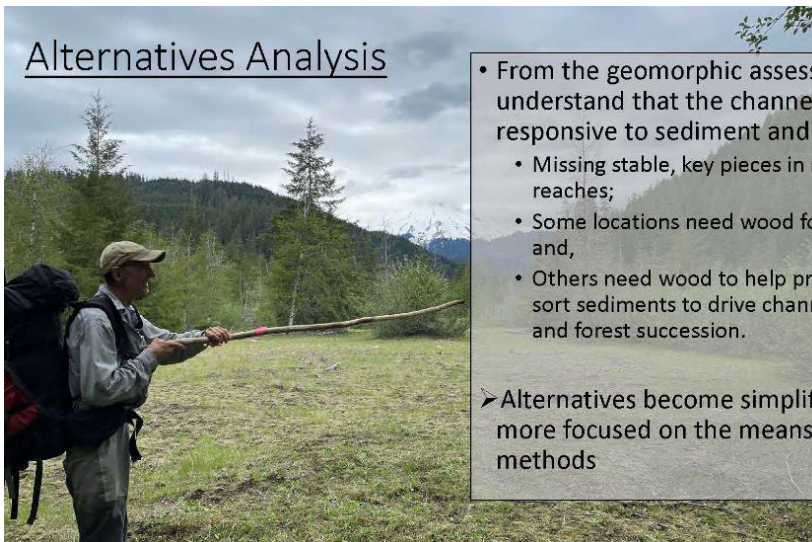


Clear



Clearwater

Alternatives Analysis



- From the geomorphic assessment, we understand that the channel is responsive to sediment and wood:
 - Missing stable, key pieces in many of the reaches;
 - Some locations need wood for habitat; and,
 - Others need wood to help process and sort sediments to drive channel evolution and forest succession.

➤ Alternatives become simplified and more focused on the means and methods

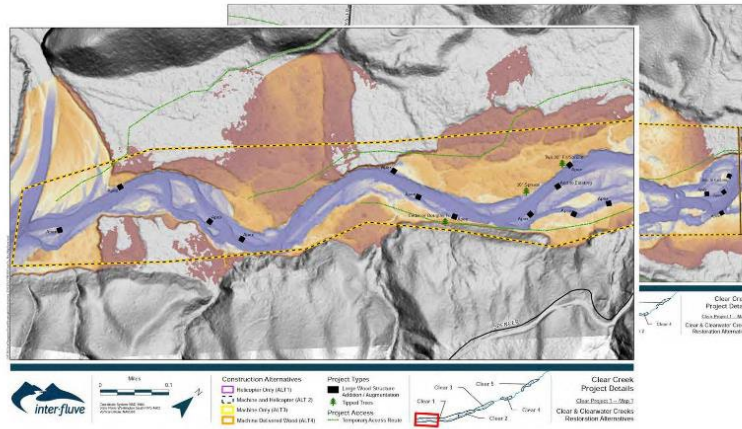
Alternatives Analysis

4 Alternatives based on Access and Methods

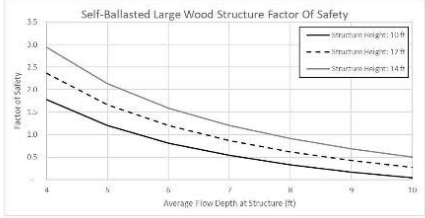
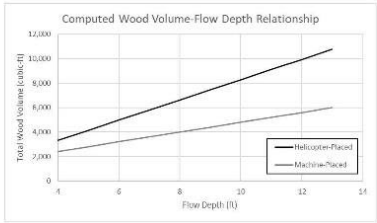
- 1: Helicopter Only Wood Placement
- 2: Helicopter Construction / Ground-based Reinforcement
- 3: Helicopter Delivery / Ground-based Construction
- 4: Ground-based Equipment Only



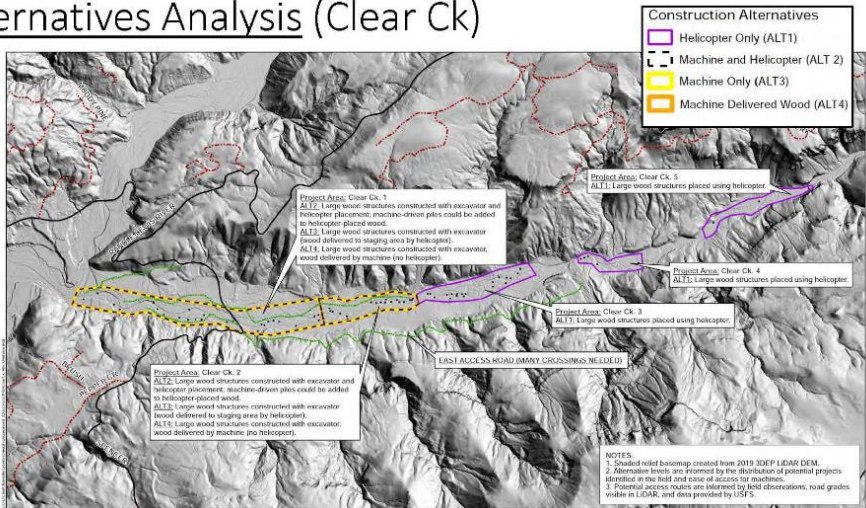
Alternatives Analysis



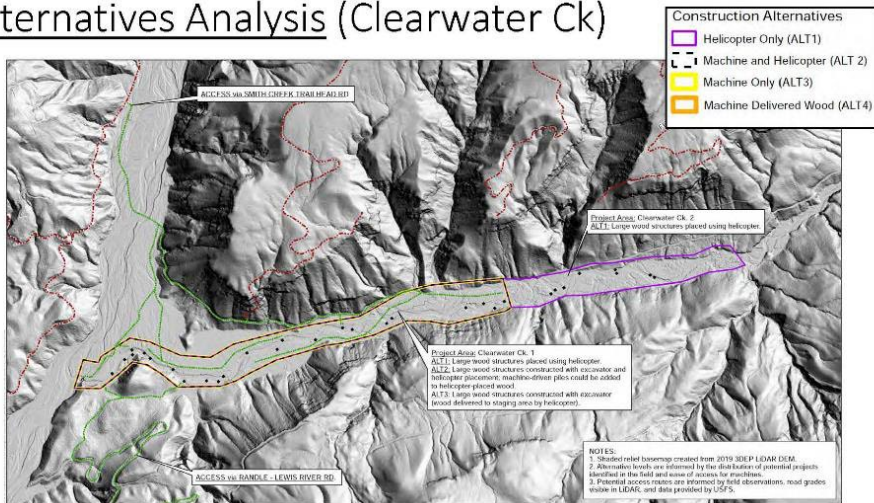
Alternatives Analysis



Alternatives Analysis (Clear Ck)



Alternatives Analysis (Clearwater Ck)



Alternatives Analysis

	Clear Creek												
	Quantity				Unit Cost				Cost				
	Alt 1	Alt 2	Alt 3	Alt 4	Unit	Alt 1	Alt 2	Alt 3	Alt 4	Alt 1	Alt 2	Alt 3	Alt 4
Miscellaneous¹													
Mobilization/Demobilization ¹	1	1	1	1	LS	\$ 100,000	\$ 100,000	\$ 75,000	\$ 75,000	\$ 100,000	\$ 100,000	\$ 75,000	\$ 75,000
Staging, Storage, Access²													
Staging Areas	3	2	1	1	AC	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ 6,000	\$ 4,000	\$ 2,000	\$ 2,000
Temporary Access	0	4	4	4	MI	\$ -	\$ 3,000	\$ 3,000	\$ 7,500	\$ -	\$ 12,000	\$ 12,000	\$ 30,000
Large Wood^{3,4}													
Large Wood Installation ³	576,040	457,495	185,200	185,200	CF	\$ 14	\$ 17	\$ 12	\$ 12	\$ 8,100,000	\$ 7,800,000	\$ 2,300,000	\$ 2,300,000
Equivalent Log Quantity ⁵	4,600	3,700	1,500	1,500	EA	<i>Per-Log Project Cost</i>				\$ 1,800	\$ 2,100	\$ 1,600	\$ 1,600
Sub-Total										\$ 8,206,000	\$ 7,916,000	\$ 2,389,000	\$ 2,407,000
<i>Contingencies (30%)</i>										\$ 2,461,800.0	\$ 2,374,800.0	\$ 716,700.0	\$ 722,100.0
Project Totals (Rounded Up)										\$ 10,700,000	\$ 10,300,000	\$ 3,200,000	\$ 3,200,000

Helicopter Only (ALT1)
Machine and Helicopter (ALT 2)
Machine Only (ALT3)
Machine Delivered Wood (ALT4)

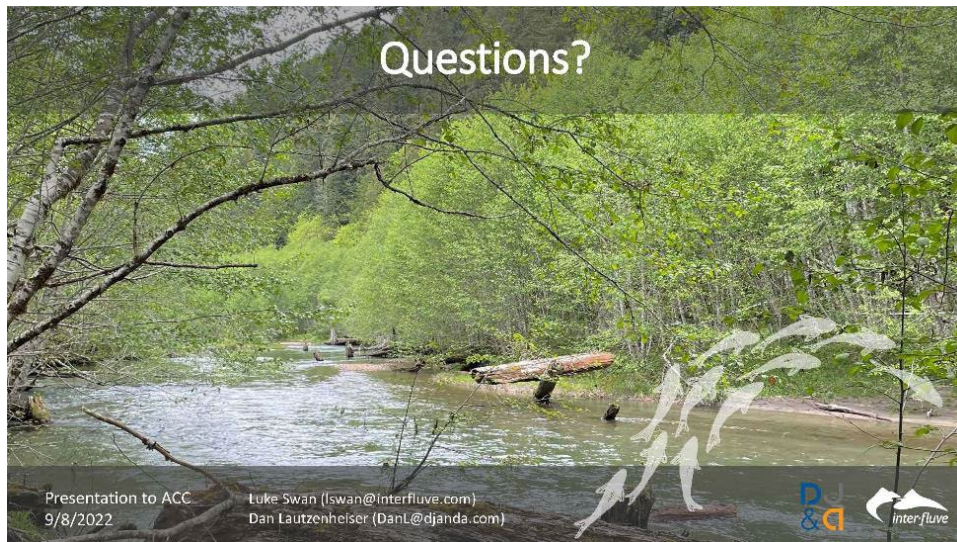
Alternatives Analysis

	Clearwater Creek										
	Quantity				Unit Cost			Cost			
	Alt 1	Alt 2	Alt 3	Unit	Alt 1	Alt 2	Alt 3	Alt 1	Alt 2	Alt 3	
Miscellaneous^{1,2}											
Mobilization/Demobilization ¹	1	1	1	LS	\$100,000.0	\$100,000.0	\$75,000.00	\$ 140,000	\$ 140,000	\$ 115,000	
Bridge Removal ²	1	1	1	LS	\$ 40,000.0	\$ 40,000.0	\$ 40,000.0	\$ 40,000	\$ 40,000	\$ 40,000	
Staging, Storage, Access³											
Staging Areas	2	1	1	AC	\$ 2,000	\$ 2,000	\$ 2,000	\$ 4,000	\$ 2,000	\$ 2,000	
Temporary Access	0	4	4	MI	\$ -	\$ 3,000	\$ 3,000	\$ -	\$ 12,000	\$ 12,000	
Large Wood^{4,5}											
Large Wood Installation ⁴	278,505	190,400	136,600	CF	\$ 14	\$ 17	\$ 12	\$ 3,900,000	\$ 3,300,000	\$ 1,700,000	
Equivalent Log Quantity ⁵	2,200	1,500	1,100	EA	<i>Per-Log Project Cost</i>				\$ 1,800	\$ 2,300	\$ 1,600
Sub-Total								\$ 4,044,000	\$ 3,454,000	\$ 1,829,000	
<i>Contingencies (30%)</i>								\$ 1,213,200.0	\$ 1,036,200.0	\$ 548,700.0	
Project Totals (Rounded Up)								\$ 5,300,000	\$ 4,500,000	\$ 2,400,000	

Helicopter Only (ALT1)
Machine and Helicopter (ALT 2)
Machine Only (ALT3)

Alternatives Analysis

Clear Creek						
Alt	Project Areas ¹	Total Stream Length ² (ft)	Proposed Volume of Wood Additions ⁴ (ft ³)	Estimated Number of Trees ^{3,4}	Expected Habitat Uplift	Construction Considerations
1	1,2,3,4,5	30,430 (5.8 mi)	576,040	4,600	Distributed wood treatment, via heavy lift helicopter, would add much needed complexity to largest possible treatment area.	Distances to source decks, turn times, size of trees, total volume of wood, and accessibility for ground crews all need to be considered for Alternative 1. Wood stability depends on volume of wood placed.
2	1,2	17,560 (3.3 mi)	457,495	3,700	Achieves wood placement in areas most deficient of in situ, stable large wood. Vertical logs increase longevity, and likely, geomorphic effectiveness of structures.	Distances to source decks, turn times, size of trees, total volume of wood, and accessibility for ground crews all need to be considered for Alternative 2. Wood stability improved with vertical logs and/or burial.
3	1,2	17,560 (3.3 mi)	185,200	1,500	Achieves wood placement in areas most deficient of in situ, stable large wood. Vertical logs increase longevity, and likely, geomorphic effectiveness of structures.	Distances to source decks, turn times, size of trees, total volume of wood, and accessibility for ground crews all need to be considered for Alternative 3. Wood stability improved with vertical logs and/or burial. Establishment of temporary access through wetlands and potentially sensitive areas will need to be evaluated.
4	1,2	17,560 (3.3 mi)	185,200	1,500	Achieves wood placement in areas most deficient of in situ, stable large wood. Vertical logs increase longevity, and likely, geomorphic effectiveness of structures.	Wood stability improved with ground-based machine placement, vertical logs, and/or burial. Establishment of temporary access through wetlands and potentially sensitive areas will need to be evaluated.



Erik Lesko asked how the cost of log is quantified in the alternatives analysis. Swan clarified that the cost is the cost of the log plus the cost of its placement, so the cost could feasibly decrease by a significant portion if logs were provided by USFS or another entity. Lesko suggested inquiring about the availability of large wood and root wads from Swift Reservoir. He also asked if there is an opportunity to move wood in the channel that is not actively engaged and make it engaged as opposed to bringing it in from another location. Swan said these opportunities are limited mainly because of the need to bring machinery into the work area – it could cause more damage than benefit so generally is not the preferred approach.

Peggy Miller said she appreciates the geomorphic approach to alternatives analysis and said this process could be useful in other areas.

Dan Lautzenheiser asked the ACC if this information has been helpful in better understanding the merits and values of Aquatic Funds projects that USFS is implementing. Lesko said yes, and though the Aquatic Funds have a limited fund pool, this type of evaluation is helpful in prioritizing actions within the entire basin. Swan noted that the alternatives analysis can be further refined based on where helicopter access would be needed or based on the assessment of reach needs and conditions. Lautzenheiser summarized that the project team is wrapping up the alternatives analysis and will be looking for feedback on how much could potentially be invested in the area to inform an Aquatic Funds proposal. Nick Grant said he will follow up with USFS staff and Lesko as needed to get input on Aquatic Funds proposals.

Glaser thanked Swan and the USFS for the presentation. He said if there are any clarifications needed about the Aquatic Funds proposal process, Lesko can answer those. If there are technical questions for the ACC, those discussions can be had during pre-proposal meeting in November.

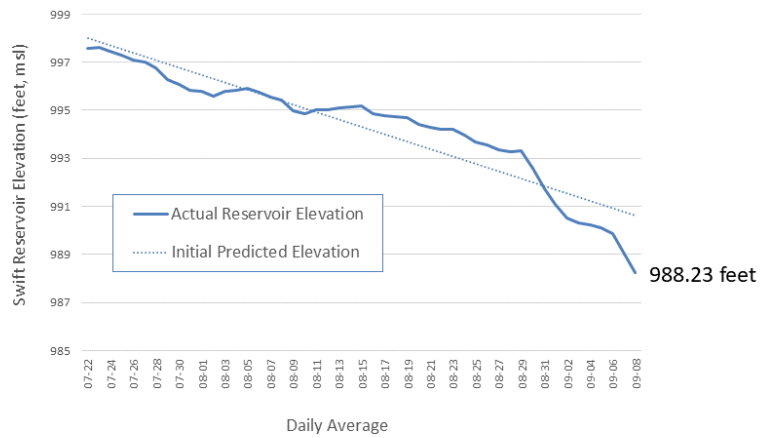
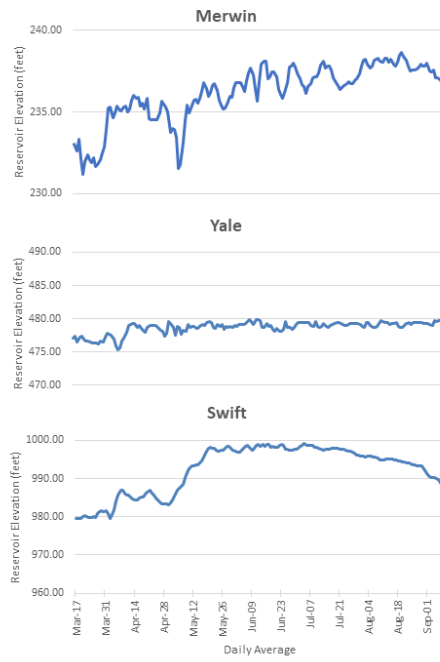
Jeremiah Doyle noted later in the meeting that he has recently observed spring Chinook spawning in Rush Creek, near where the USFS project recently finished constructing a channel and redirecting Rush Creek.

Flows/Reservoir Conditions Update

Erik Lesko shared the flows and reservoir conditions update:

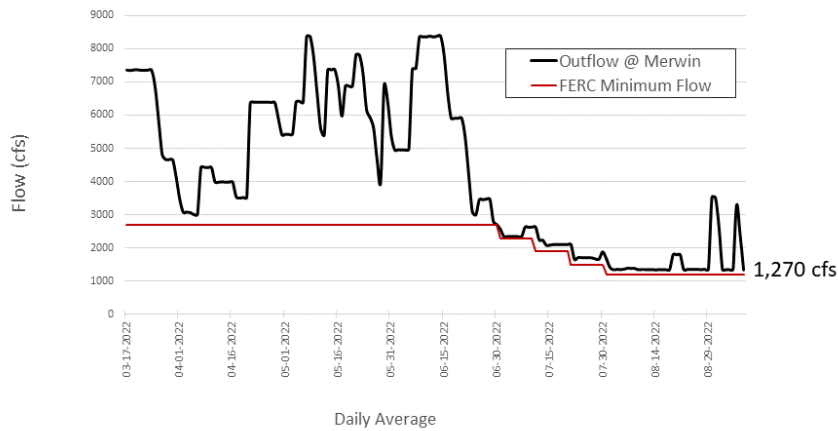
Daily Average Reservoir Elevations – March to September 2022

Total Draft: -24.92 feet
(-14.92 with Yale restriction)



Merwin Dam – Discharge Flow (cfs)

March – September 2022



Lesko noted that the discharge from Merwin reservoir has a minimum of 1,200 cfs. Some spikes in outflow have been observed, one of which was related to spillgate testing and another was electricity demand. Yesterday, it was as low as 1,270 cfs. Lesko mentioned recent news that due to the very dry and windy conditions forecasted this weekend, that Pacific Power along with other utilities are taking steps to mitigate very high wildfire potential in the coming days. Peggy Miller asked if the concern is more related to transmission lines falling or activities at the dam facilities. Lesko said utilities, as a last resort, may selectively deenergize transmission lines in high-risk areas depending on weather conditions. He noted that last year in Oregon, utilities were required to develop plans for mitigating wildfire risks, which include the use of Public Safety Power Shutoffs (PSPS), which involves selectively de-energizing lines in high-risk areas. According to local news outlets, both Pacific Power and PG&E have said there could be PSPS initiated in some areas this weekend.

Holowatz asked when the flood control obligations begin for Merwin reservoir and whether the company anticipates releasing any water in September to meet those obligations. Lesko said that flood control obligations begin in November and require the company to maintain a minimum total draft of at least 17 feet among all three reservoirs. Currently we are in the low natural flow period of the year and the reservoir are continuing to draft and he does not anticipate the need to move water at this point. However, as we move through the fall season and into winter, this could change quickly depending on precipitation. He noted WDFW's requested flow reductions for upcoming surveys for fall Chinook in the lower river.

Study/Work Product Updates

Shoreline Development Update

Lesko said he has no updates on shoreline development projects. Holowatz also noted that he has not seen any recent notifications.

ATS Update

Erik Lesko said the Aquatic Technical Subgroup (ATS) is working to finalize the Annual Operating Plan. PacifiCorp and WDFW staff met last week to discuss priorities for the ATS in 2022 and 2023. These include finalizing and implementing the genetics monitoring plan, evaluating smolt-to-adult return rates, and developing integrated population models. Glaser agreed and said WDFW is also working on developing Hatchery and Genetic Management Plans for the Lewis River programs, which will be consulted on by NOAA and USFWS.

FPS Update

Todd Olson said the Fish Passage Subcommittee have been revising the draft document, “Elements of future fish passage.” PacifiCorp received comments from the Cowlitz Indian Tribe, WDFW, and Lower Columbia Fish Recovery Board and is working to prepare a revised version and comment-response matrix for discussion at the next FPS meeting. PacifiCorp is also working to develop an analysis matrix of the fish passage facilities. The design teams are working with Chris Karchesky to develop alternatives for fish passage facilities at the Swift upstream and Yale downstream locations. The matrix will help evaluate the pros and cons of different alternatives. Bryce Glaser agreed with the update.

Swift Reservoir Stranding Survey Schedule

Erik Lesko said the first stranding survey for 2022 at Swift Reservoir will begin tomorrow, with the second occurring towards the end of September. He said Swift Reservoir has been lowering in elevation quickly. One reason is electricity demand. Tomorrow’s survey will focus in the Northwoods area. Water elevation should be at approximately 987 feet, which should be sufficient for capturing fish in the Northwoods area.

The second survey in the Northwoods area will be targeted for around 981 feet elevation. Additional surveys will occur at Drift Creek Island, around 975 to 980 feet elevation; and at the swim area at around 980 feet elevation. He anticipates at least four surveys total between tomorrow and early October. Jeff Garnett thanked Lesko for the update and said he is interested in joining the survey effort. Lesko said he will keep interested people updated as he continues to evaluate reservoir elevations and determine survey dates.

Compensatory Mitigation Discussions

No update was available. This is being discussed as a subgroup of the Fish Passage Subcommittee level, and that group will report back to the ACC with any important discussions or developments. While this group is made up of ACC members, this group discussing compensatory mitigation was not formed by the ACC.

Merwin Fish Passage Update (see also Attachment B)

Karchesky reviewed the Lewis River Fish Passage Monthly Report for August. He said PacifiCorp fish passage staff are currently working to transport mostly adult coho fish upstream in coordination with WDFW staff at the Lewis River Hatchery (LRH). Fish numbers returning to Merwin Trap have been on the uptick over the past few weeks. Over 3,000 fish were collected at the LRH trap earlier this week, and around 2,000 were collected at Merwin Dam. So far, the program is on target or above target for coho transported upstream. Karchesky noted there was a scheduled outage of the Merwin Trap lift and conveyance system earlier this week, which lasted less than 24 hours. Currently the trap is back in operation.

Swift Floating Surface Collector (see also Attachment C)

Chris Karchesky reported that the Swift Reservoir FSC is still in its summer outage period. The facility will be returned to service sometime in early October once surface water temperatures cool. So far, work scheduled during the outage is being completed on schedule with no expected delays, and the FSC will likely be operational on time. This target aligns with water temperatures dropping below 18 degrees Celsius.

Karchesky brought to attention the photo that was included in the August fish passage report and noted that a chum salmon adult was collected at the trap on August 1. He noted two additional adults were collected over the next few days. Glaser asked if tissue samples were collected. Karchesky said staff coordinated with Holowatz regarding sampling needs for the chum, and tissue samples were taken for two of the three fish. Karchesky suggested adding a sampling and handling note about chum in the AOP to provide staff direction in advance and be consistent in the future. Right now, the AOP states that chum should be returned to the lower river. Glaser said, according to the recovery plan, there is potentially an historic summer chum population in the Lewis as in the Cowlitz River. Chum do return to the Cowlitz River and are starting to be observed at other tributary weirs in the region. These fish are generally very early to return. Glaser said staff are interested in determining where these chum originate from, where they are spawning, and whether they are strays. This drives the desire to collect data from the fish when available. Karchesky said usually only one or two adult chum are collected at the Merwin Trap annually, so collecting three in the first week of August that were very colored up was a surprise. Holowatz also noted the interesting coloration of the fish.

Peggy Miller asked the status of the Chum Channel Project, which was approved for Aquatic Funds, but delayed due to a hold on funding from Bonneville Power Administration. Glaser said the BPA funding has not been lost and is still under discussion. Lesko said he requested an extension for Aquatic Funds funding for one year, which was granted. Glaser said the project also has some funding from the Lower Columbia Fish Recovery Board. It is a high priority project and is still being pursued.

Lewis River Fish Passage

See Attachment D.

Services Update on Fish Stranding Above Swift Dam

No update was available.

Administrative Updates

At the beginning of the meeting the ACC welcomed Nick Grant, who is the new USFS representative on the ACC.

Erik Lesko noted during the break that he had received an email notification stating that a helicopter that was being used to fight the wildfire near the Kalama Horse Camp apparently went down into Merrill Lake. He said the notification source was the Department of Natural Resources and just wanted to make meeting participants aware of this. WDFW staff thanked him for this update.

Josua Holowatz and Lesko clarified an update on WILDCOMM that was provided to the ACC via email. Holowatz said the purpose of WILDCOMM is to dispatch a wildlife officer who is on duty. 911 is the best way to get help in an emergency, and WDFW enforcement may also be warranted. WILDCOMM should help get the appropriate enforcement needed promptly.

Public Comment Opportunity

None present.

Agenda Items for October 13, 2022

- Review August 11, 2022, and September 8, 2022 Meeting Notes
- Study/Work Product Updates

Adjourn 11:12 am

Next Scheduled Meeting

October 13, 2022
Teams Call
9:30 a.m. – 12:00 p.m.

Meeting Handouts & Attachments

- Meeting Notes from 8/11/2022
- Agenda from 9/8/2022
- **Attachment A** –Clear and Clearwater Creeks: Geomorphic Assessment and Alternatives Analysis
- **Attachment B** – Merwin Adult Trap Collection Report (August 2022)
- **Attachment C** – Swift FSC Facility Collection Report (August 2022)
- **Attachment D** – Lewis River Fish Passage Report (August 2022)

Clear and Clearwater Creeks

Geomorphic Assessment and Alternatives Analysis

Presentation to ACC
9/8/2022

Luke Swan (lswan@interfluve.com)
Dan Lautzenheiser (DanL@djanda.com)



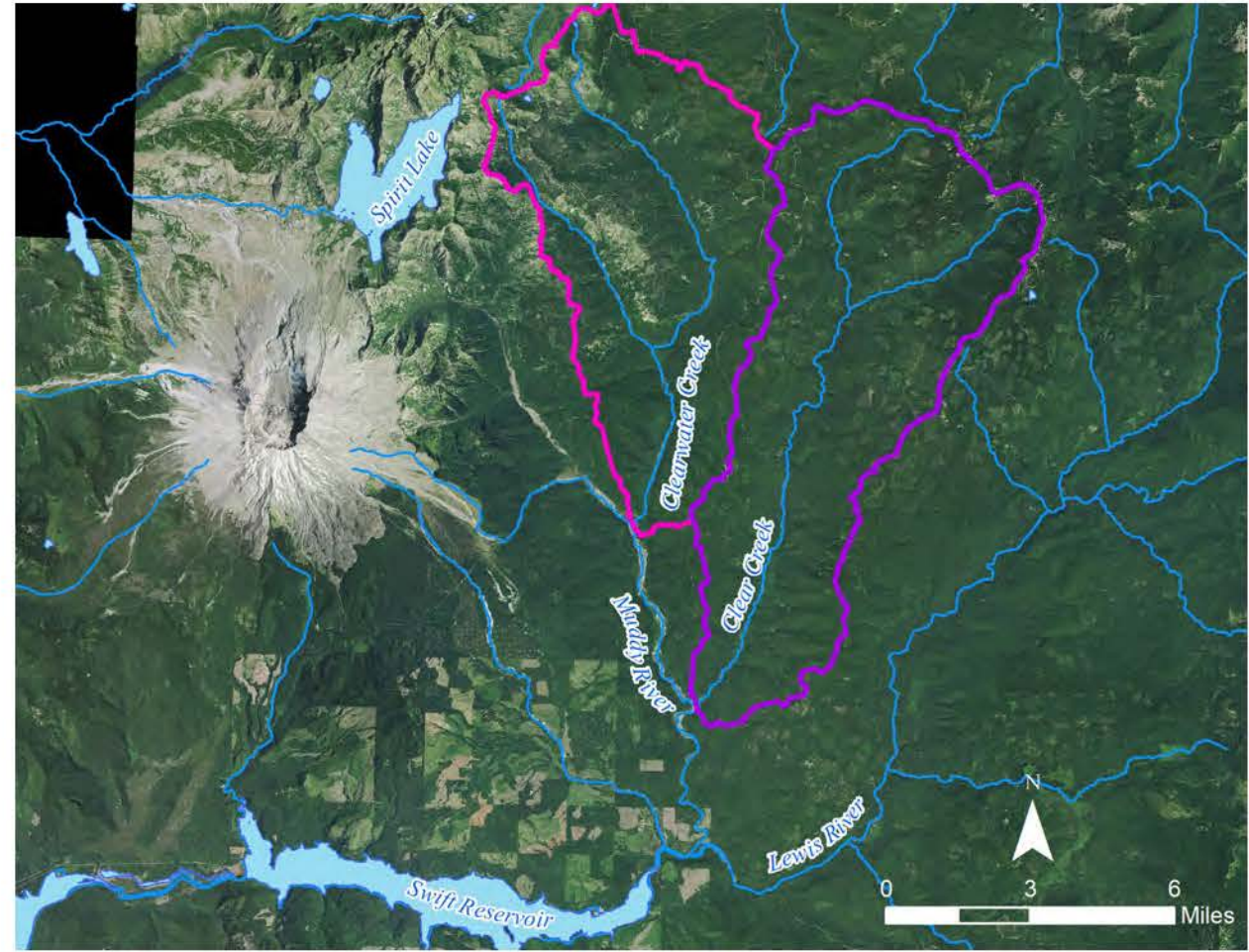
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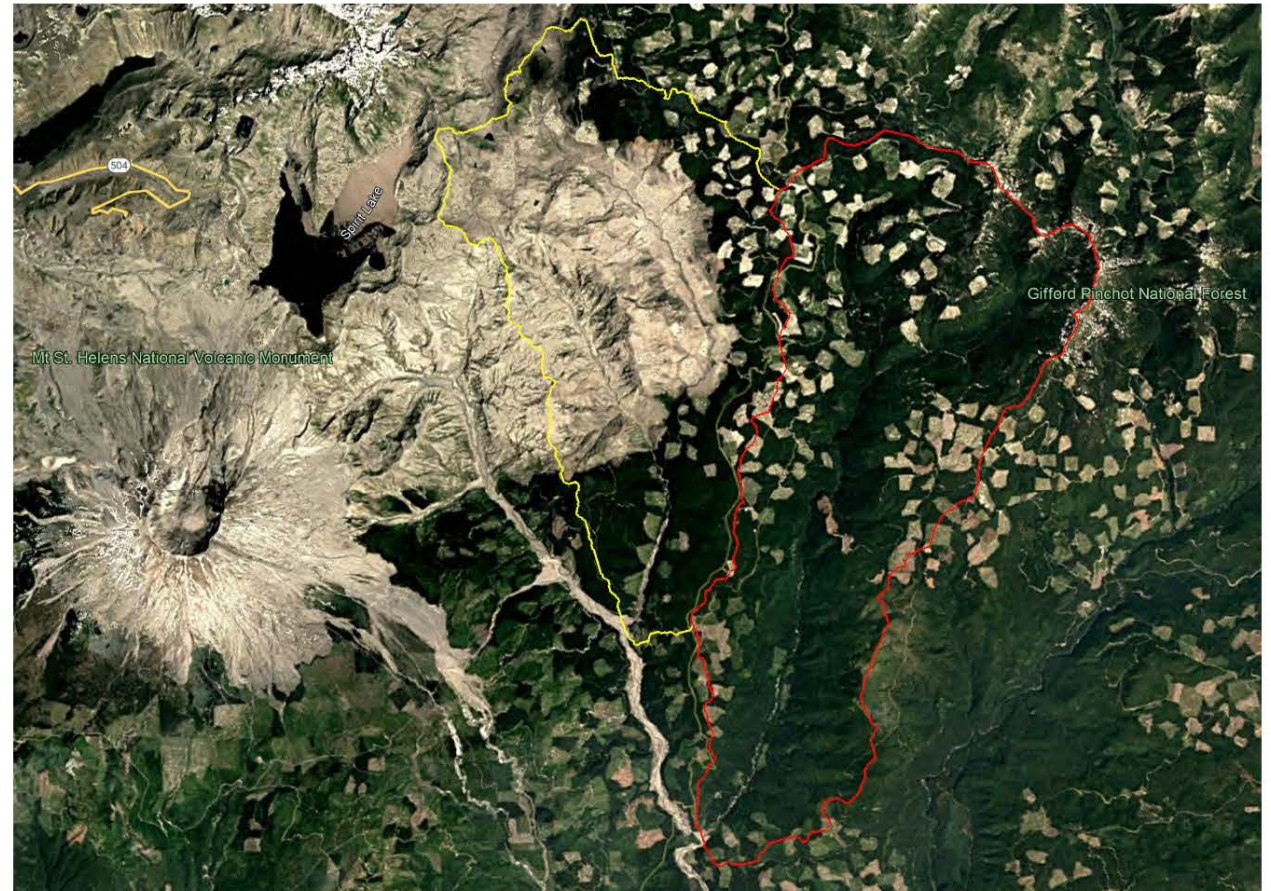
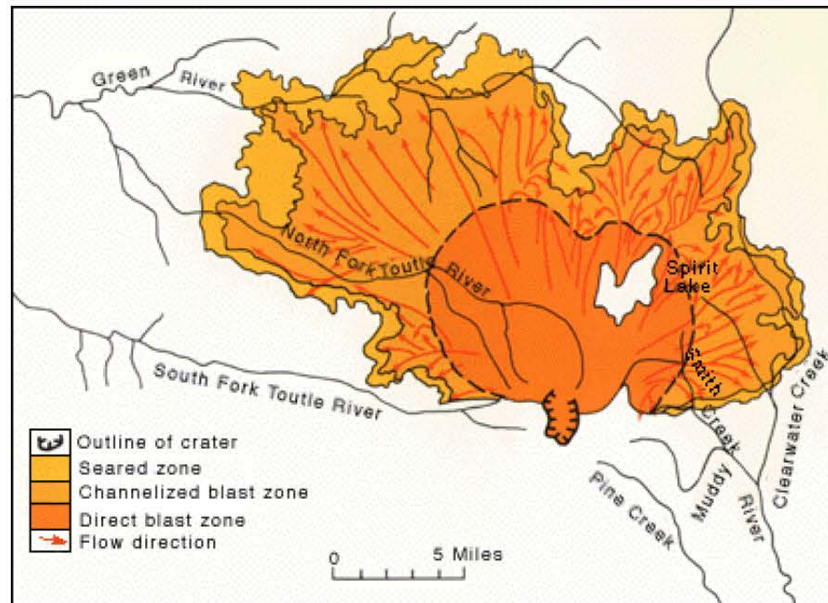
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 2. Focused on response reaches accessible by excavator;
 3. Response reaches not accessible by excavator are to be evaluated for helicopter wood placement; and,
 4. Ability to improve habitat diversity and complexity for spawning and rearing life stages.



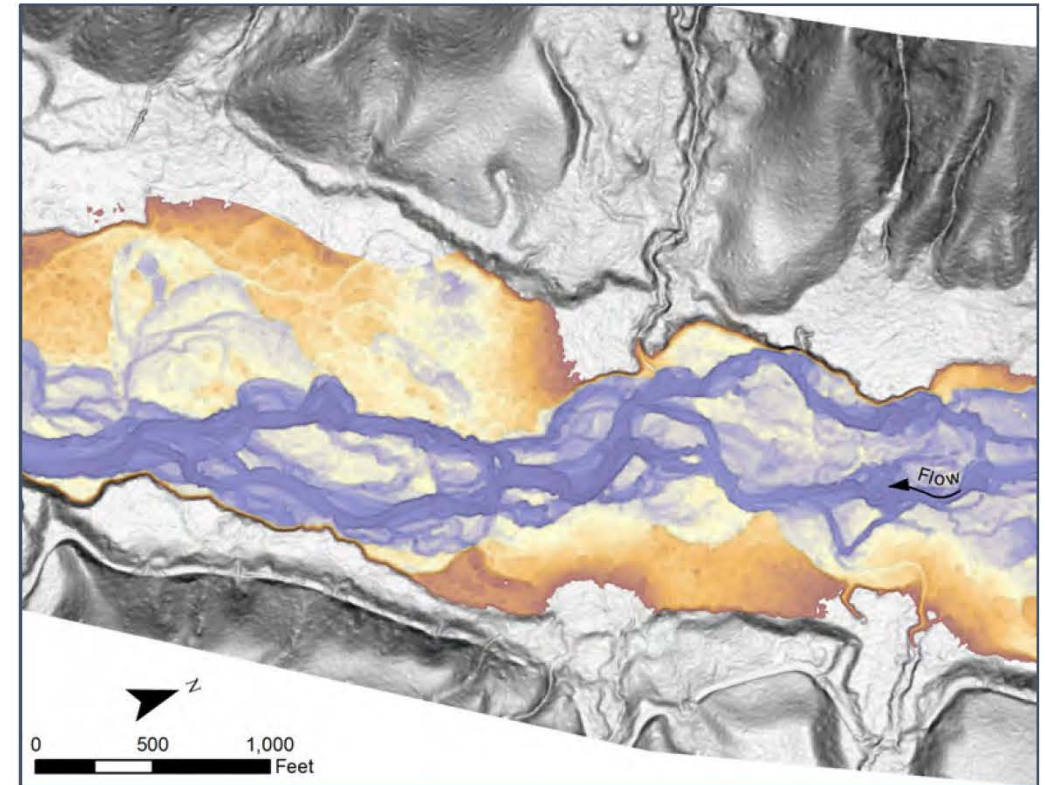
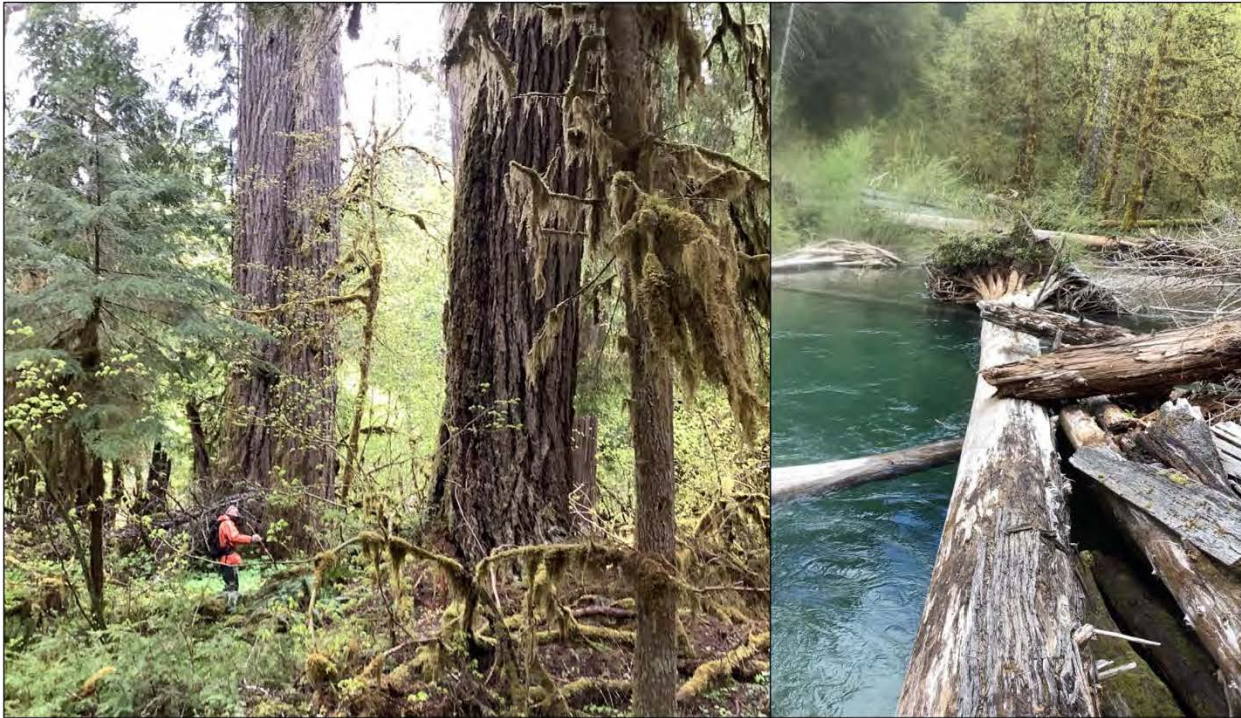
Geomorphic Assessment

- Key differences in process drivers between Clear and Clearwater are a result of disturbance



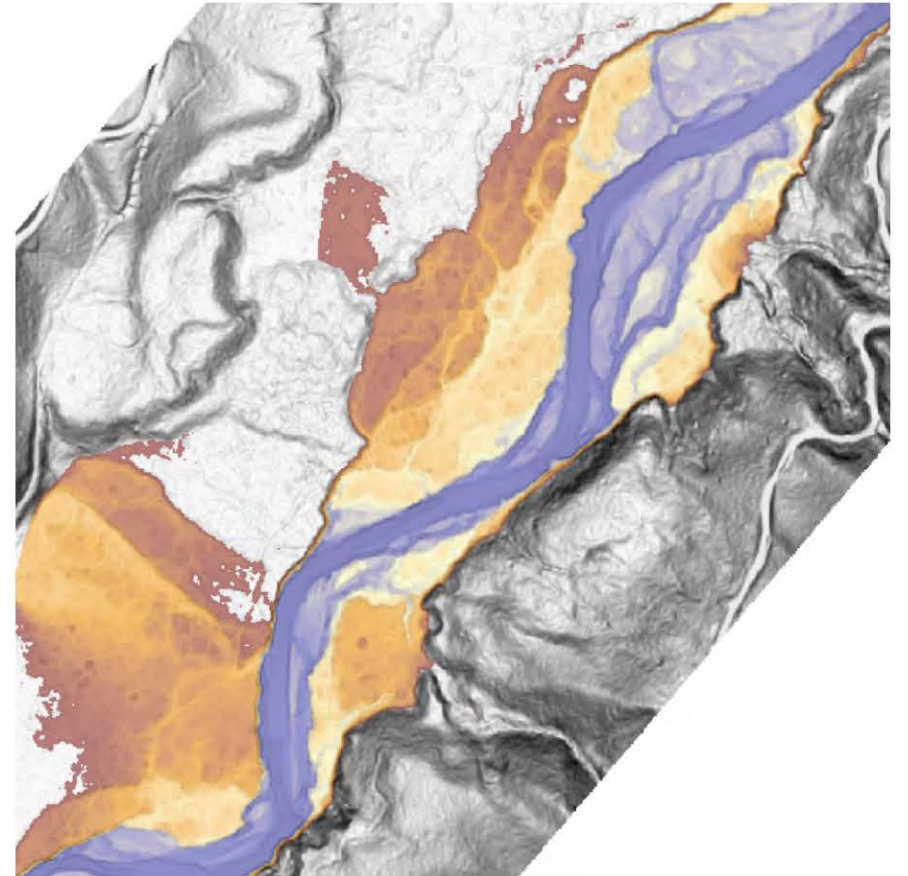
Geomorphic Assessment

- Key differences in process drivers between **Clear** and Clearwater are a result of disturbance



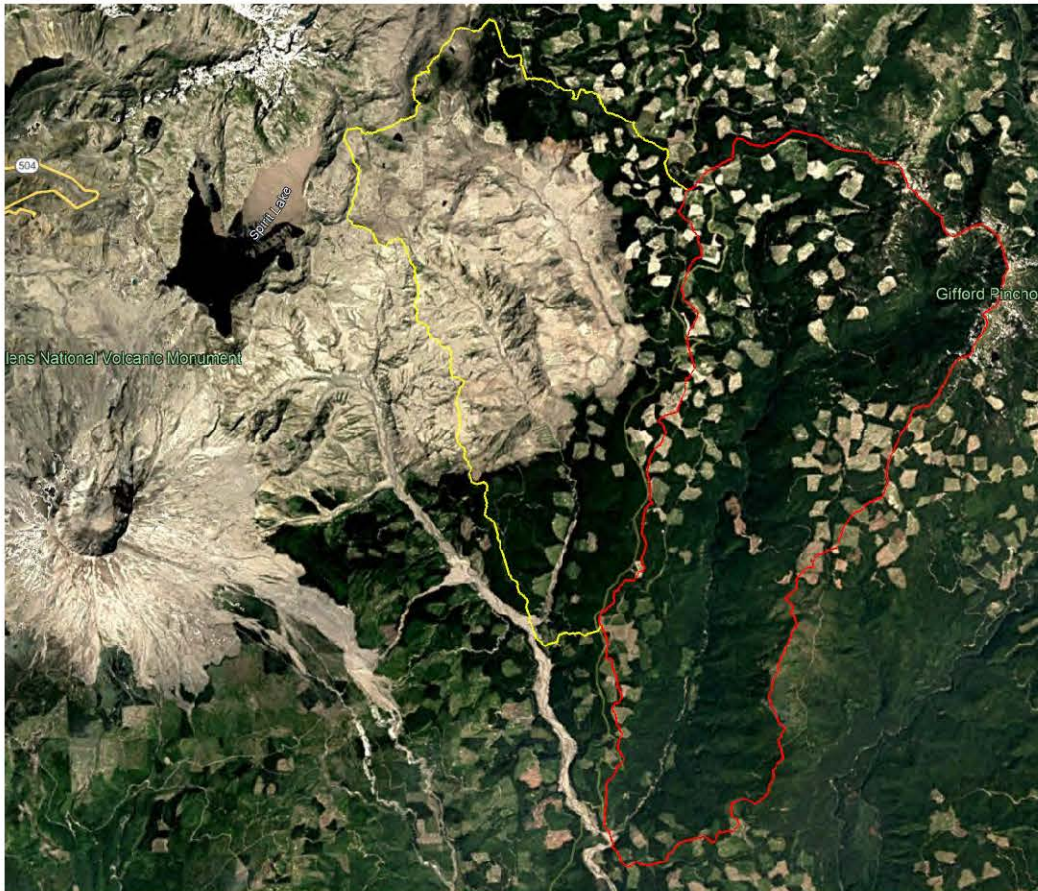
Geomorphic Assessment

- Key differences in process drivers between **Clear** and Clearwater are a result of disturbance



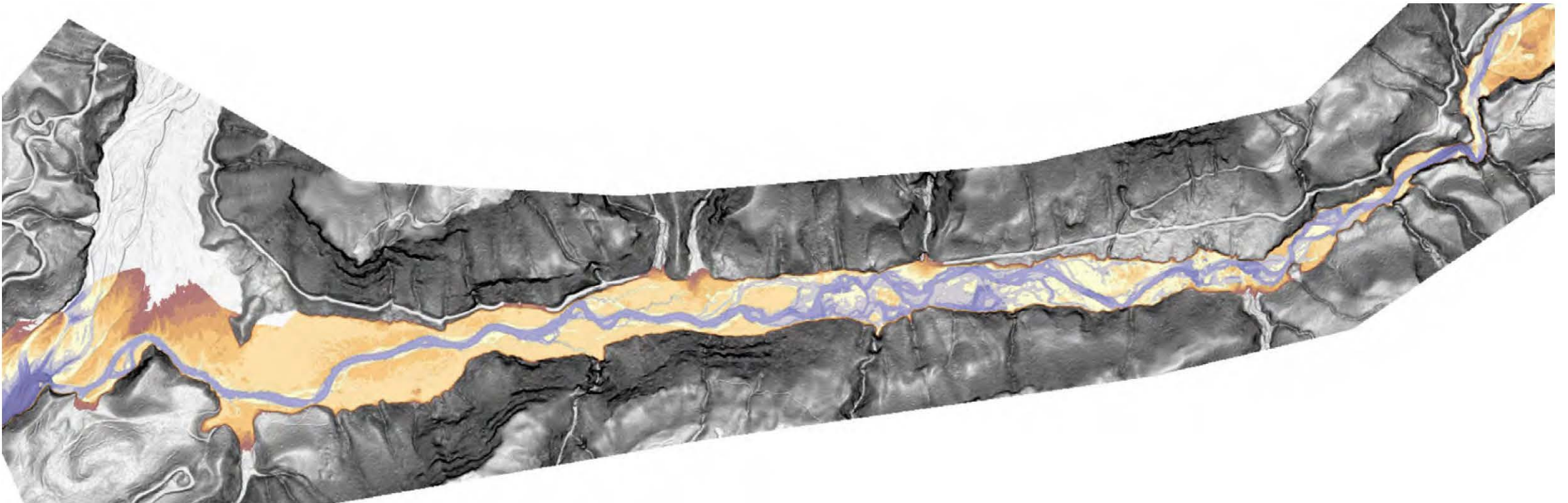
Geomorphic Assessment

- Key differences in process drivers between Clear and **Clearwater** are a result of disturbance



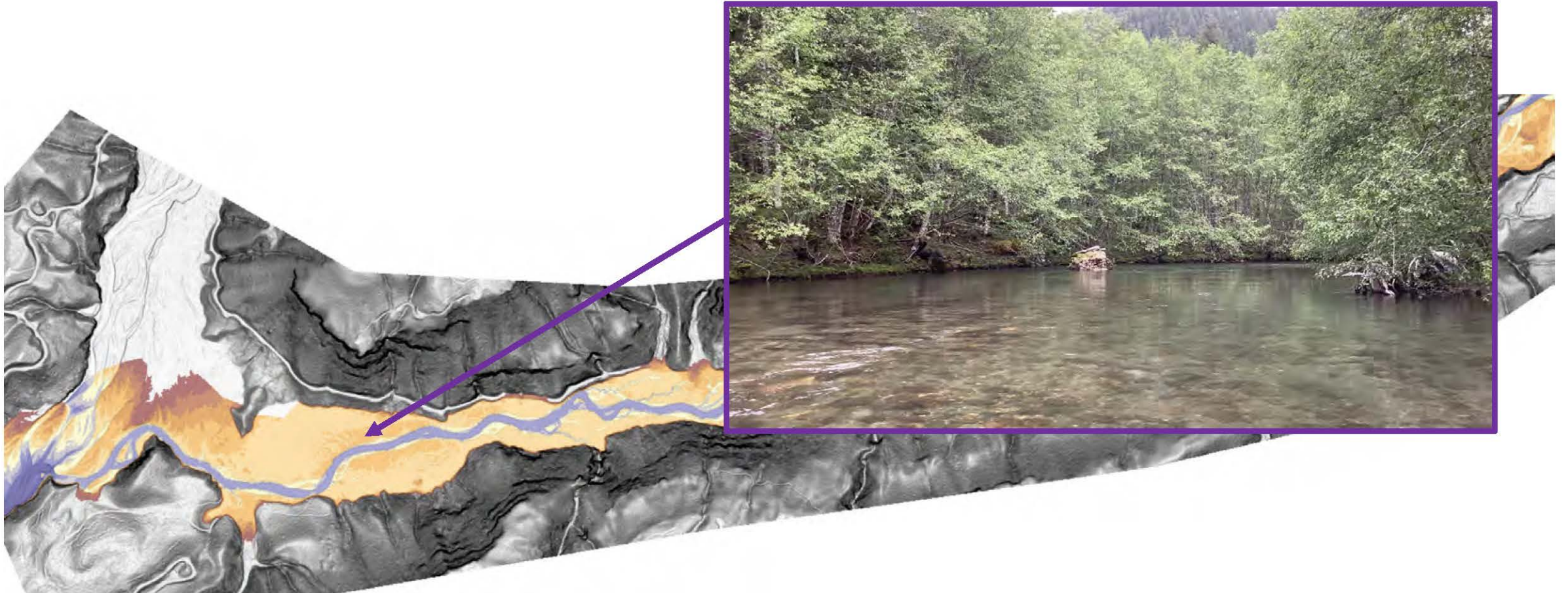
Geomorphic Assessment

- Key differences in process drivers between Clear and **Clearwater** are a result of disturbance



Geomorphic Assessment

- Key differences in process drivers between Clear and **Clearwater** are a result of disturbance



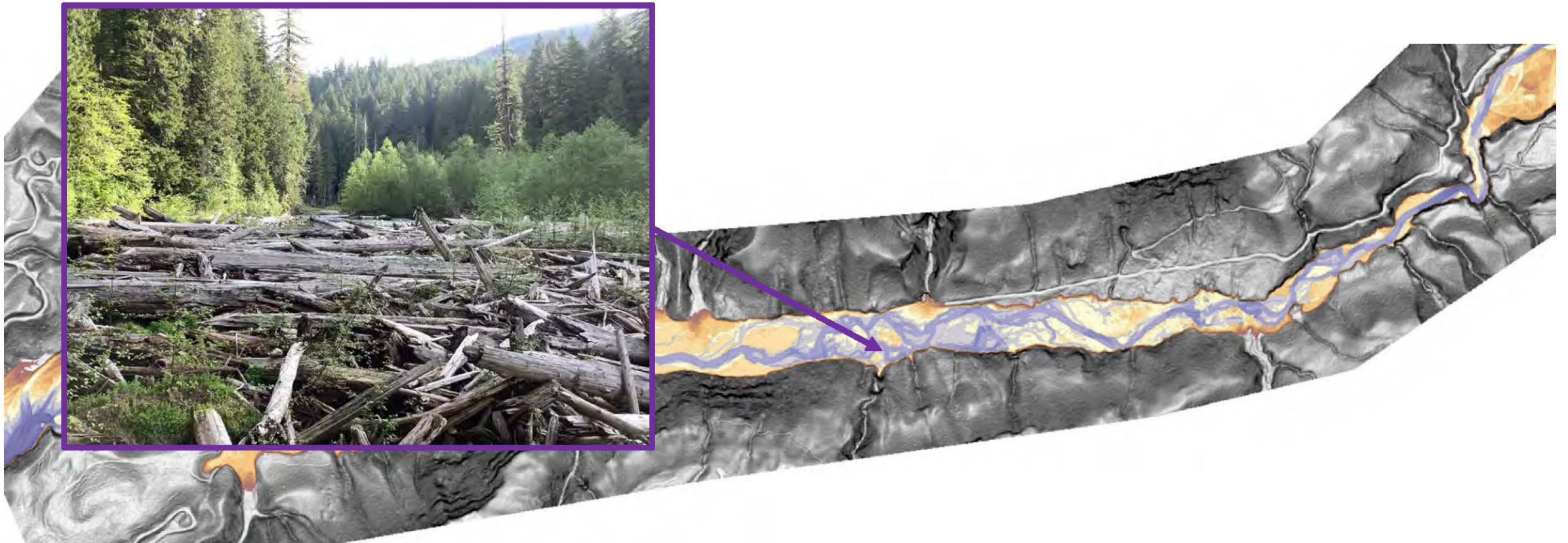
Geomorphic Assessment

- Key differences in process drivers between Clear and **Clearwater** are a result of disturbance



Geomorphic Assessment

- Key differences in process drivers between Clear and **Clearwater** are a result of disturbance



Geomorphic Assessment

- Key differences in process drivers between Clear and **Clearwater** are a result of disturbance

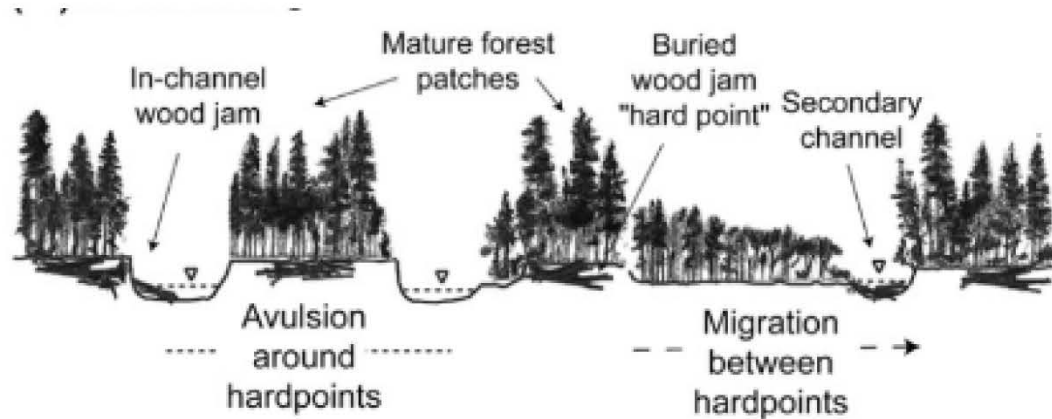


Geomorphic Assessment

- Key Summary Points:

1. Both streams avulse or migrate around or between hardpoints and those hardpoints are the basis for riparian forest regeneration

Avulsion-drive anastamosis and forest succession



(from Collins et al., 2012)



Geomorphic Assessment

- Key Summary Points:
 2. As a result of disturbance history, they are different stages in evolution towards an anastomosing channel pattern



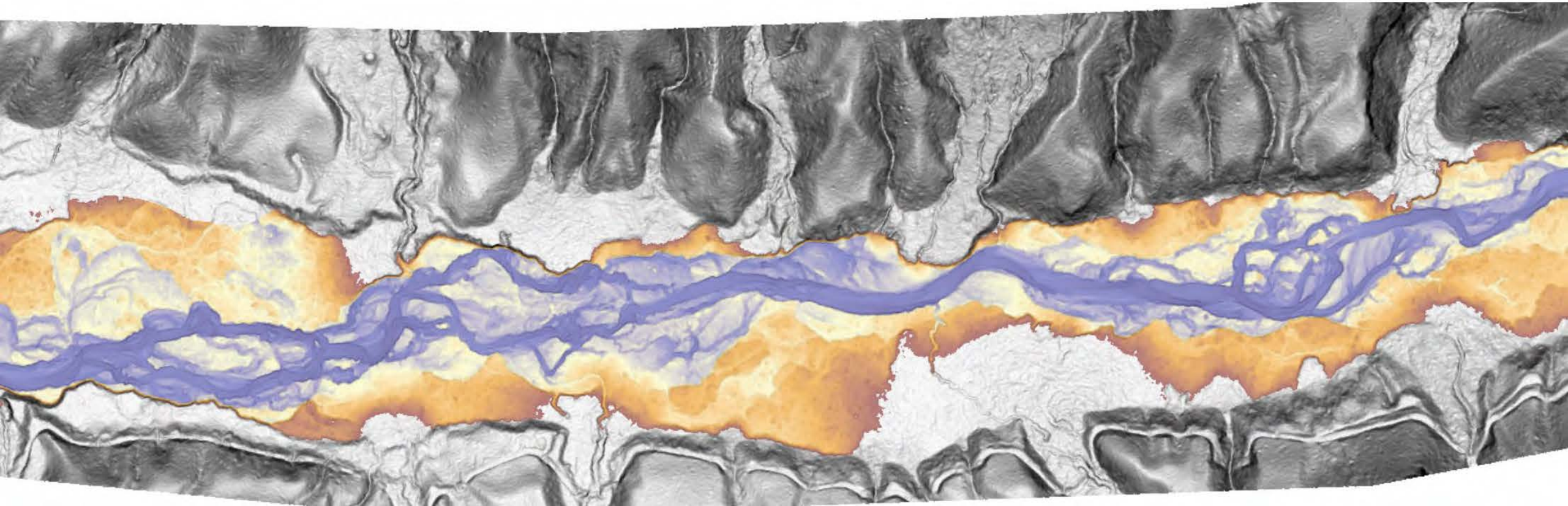
Clear



Clearwater

Geomorphic Assessment

- Key Summary Points:
 3. Where the creeks have access to *tools*, channels and habitats are complex and varied



Alternatives Analysis



- From the geomorphic assessment, we understand that the channel is responsive to sediment and wood:
 - Missing stable, key pieces in many of the reaches;
 - Some locations need wood for habitat; and,
 - Others need wood to help process and sort sediments to drive channel evolution and forest succession.
- Alternatives become simplified and more focused on the means and methods

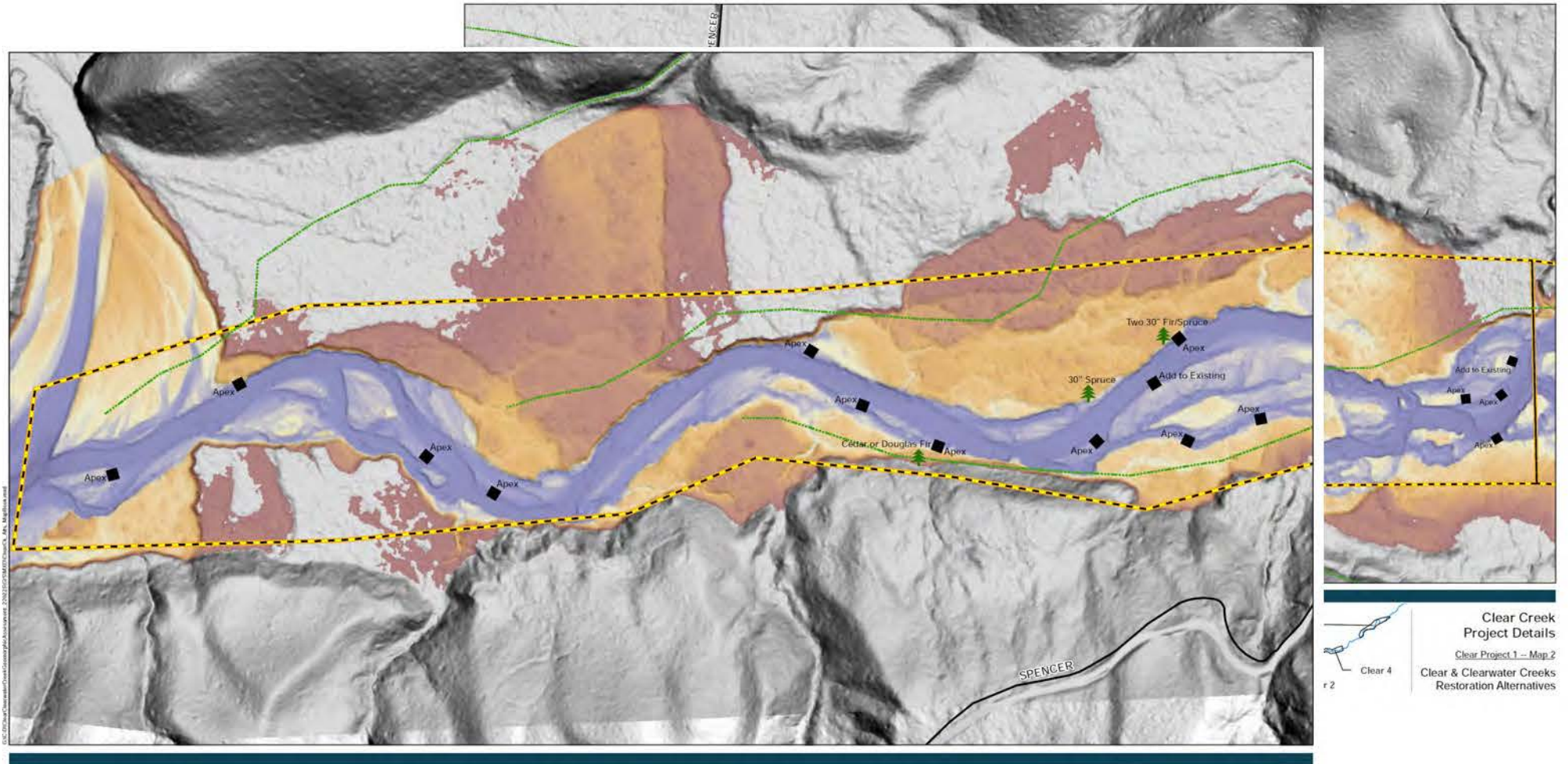
Alternatives Analysis

4 Alternatives based on Access and Methods

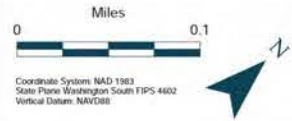
- 1: Helicopter Only Wood Placement
- 2: Helicopter Construction / Ground-based Reinforcement
- 3: Helicopter Delivery / Ground-based Construction
- 4: Ground-based Equipment Only



Alternatives Analysis

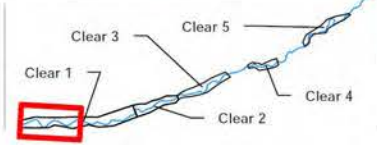


Clear Creek Project Details
 Clear Project 1 -- Map 2
 Clear & Clearwater Creeks Restoration Alternatives



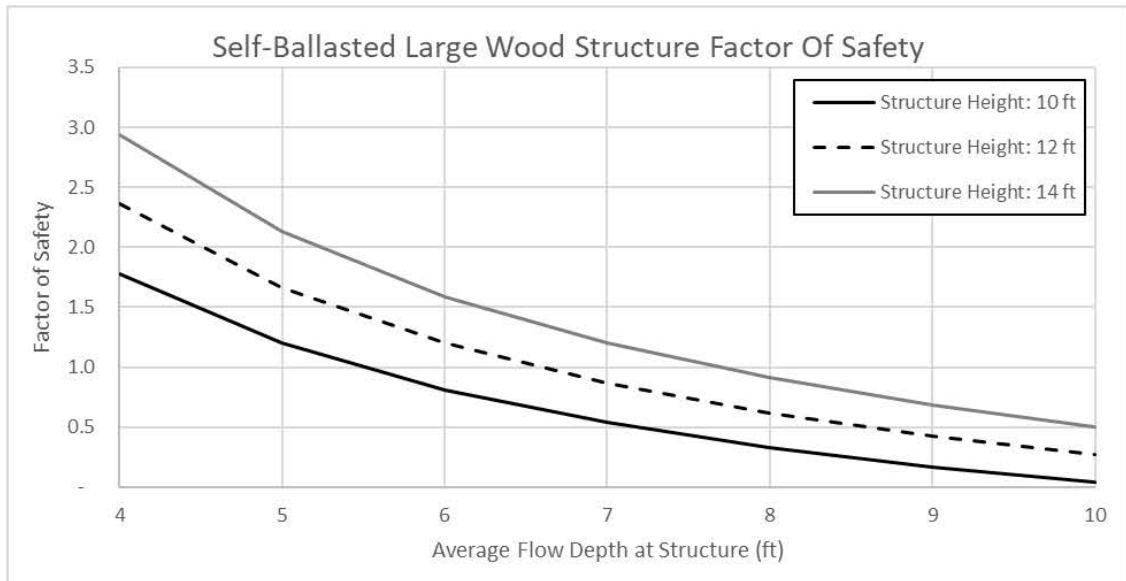
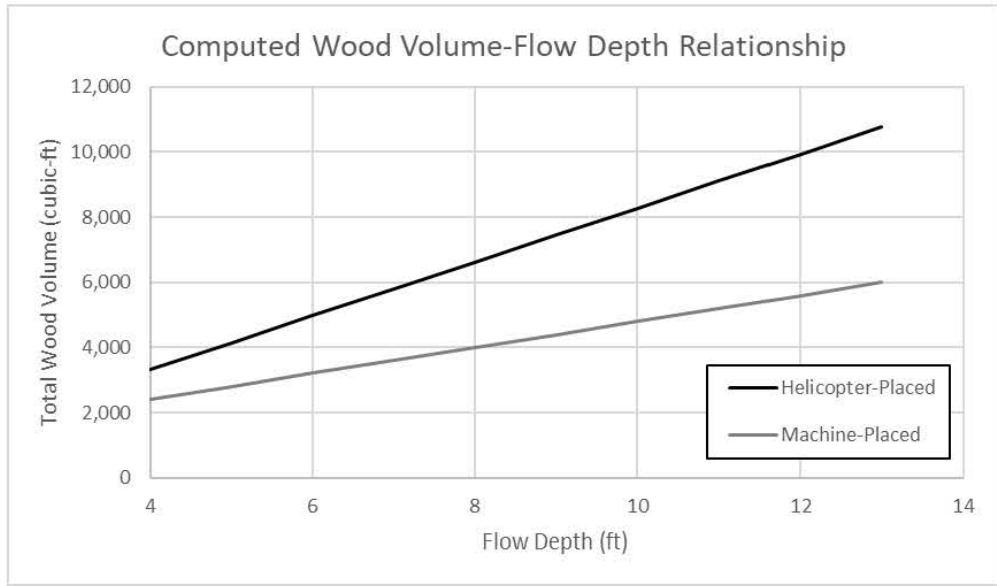
- Construction Alternatives**
- Helicopter Only (ALT1)
 - Machine and Helicopter (ALT 2)
 - Machine Only (ALT3)
 - Machine Delivered Wood (ALT4)

- Project Types**
- Large Wood Structure Addition / Augmentation
 - 🌲 Tipped Trees
- Project Access**
- Temporary Access Route







Clear Creek Project Details
 Clear Project 1 -- Map 1
 Clear & Clearwater Creeks Restoration Alternatives

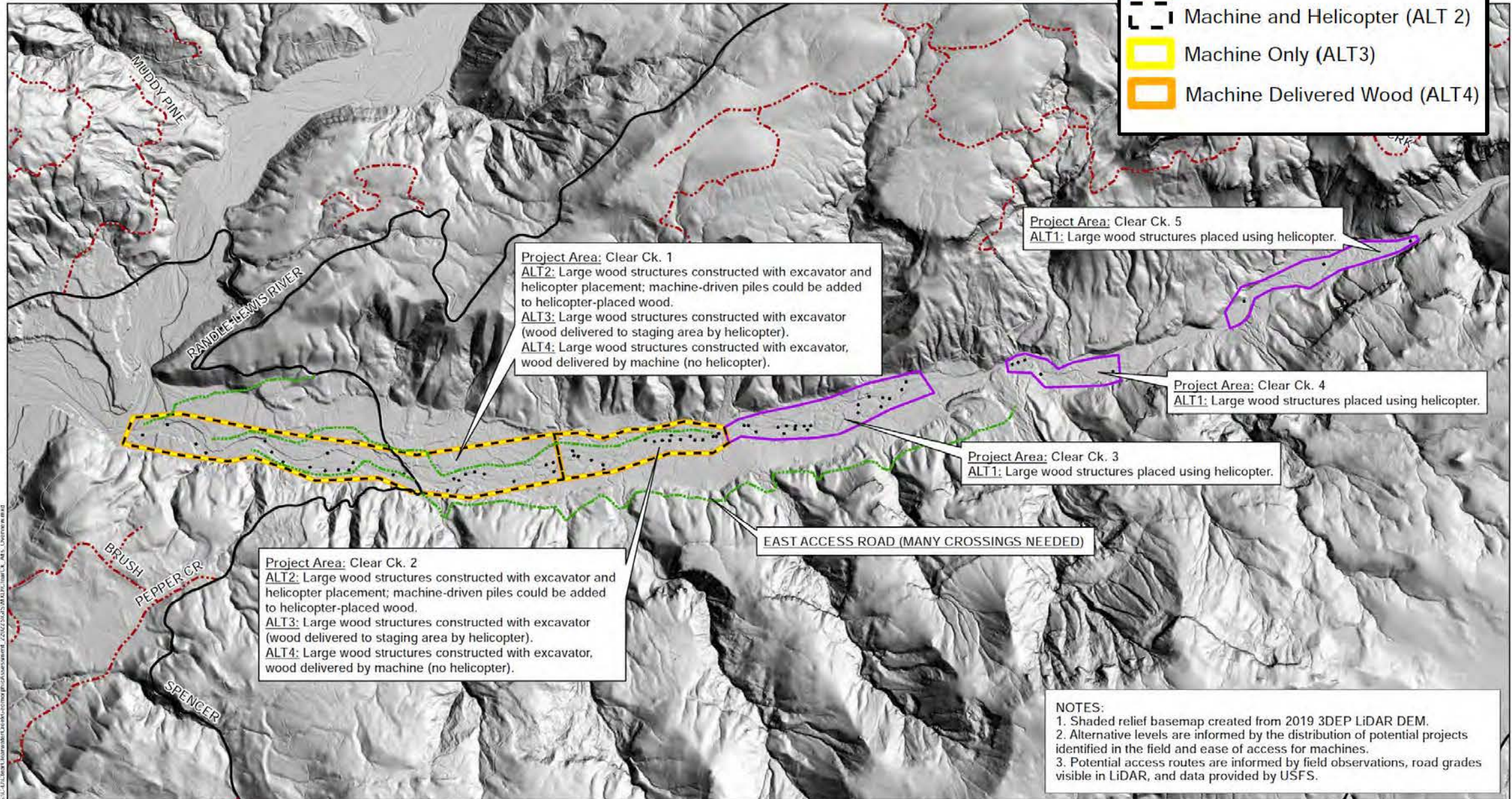
Alternatives Analysis



Alternatives Analysis (Clear Ck)





Construction Alternatives

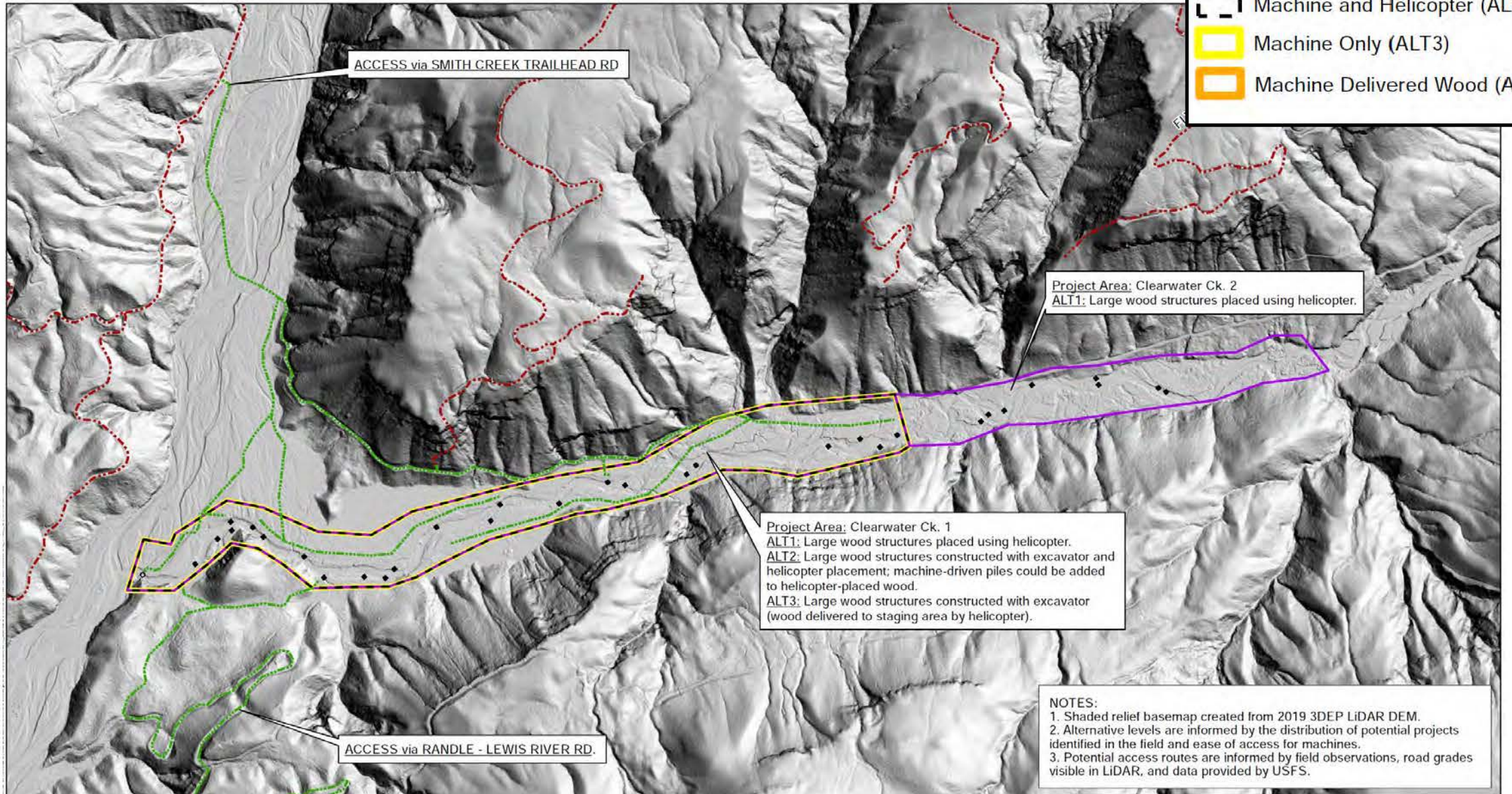
-  Helicopter Only (ALT1)
-  Machine and Helicopter (ALT 2)
-  Machine Only (ALT3)
-  Machine Delivered Wood (ALT4)



Alternatives Analysis (Clearwater Ck)

Construction Alternatives

-  Helicopter Only (ALT1)
-  Machine and Helicopter (ALT 2)
-  Machine Only (ALT3)
-  Machine Delivered Wood (ALT4)



Alternatives Analysis

Clear Creek						
Alt	Project Areas ¹	Total Stream Length ² (ft)	Proposed Volume of Wood Additions ^{3,4} (ft ³)	Estimated Number of Trees ^{3,4}	Expected Habitat Uplift	Construction Considerations
1	1,2,3,4,5	30,430 (5.8 mi)	576,040	4,600	Distributed wood treatment, via heavy lift helicopter, would add much needed complexity to largest possible treatment area.	Distances to source decks, turn times, size of trees, total volume of wood, and accessibility for ground crews all need to be considered for Alternative 1. Wood stability depends on volume of wood placed.
2	1,2	17,560 (3.3 mi)	457,495	3,700	Achieves wood placement in areas most deficient of in situ, stable large wood. Vertical logs increase longevity, and likely, geomorphic effectiveness of structures.	Distances to source decks, turn times, size of trees, total volume of wood, and accessibility for ground crews all need to be considered for Alternative 2. Wood stability improved with vertical logs and/or burial.
3	1,2	17,560 (3.3 mi)	185,200	1,500	Achieves wood placement in areas most deficient of in situ, stable large wood. Vertical logs increase longevity, and likely, geomorphic effectiveness of structures.	Distances to source decks, turn times, size of trees, total volume of wood, and accessibility for ground crews all need to be considered for Alternative 3. Wood stability improved with vertical logs and/or burial. Establishment of temporary access through wetlands and potentially sensitive areas will need to be evaluated.
4	1,2	17,560 (3.3 mi)	185,200	1,500	Achieves wood placement in areas most deficient of in situ, stable large wood. Vertical logs increase longevity, and likely, geomorphic effectiveness of structures.	Wood stability improved with ground-based machine placement, vertical logs, and/or burial. Establishment of temporary access through wetlands and potentially sensitive areas will need to be evaluated.

Alternatives Analysis

	Clear Creek												
	Quantity				Unit	Unit Cost				Cost			
	Alt 1	Alt 2	Alt 3	Alt 4		Alt 1	Alt 2	Alt 3	Alt 4	Alt 1	Alt 2	Alt 3	Alt 4
Miscellaneous¹										\$ 100,000	\$ 100,000	\$ 75,000	\$ 75,000
Mobilization/Demobilization	1	1	1	1	LS	\$ 100,000	\$ 100,000	\$ 75,000	\$ 75,000	\$ 100,000	\$ 100,000	\$ 75,000	\$ 75,000
Staging, Storage, Access²										\$ 6,000	\$ 16,000	\$ 14,000	\$ 32,000
Staging Areas	3	2	1	1	AC	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ 6,000	\$ 4,000	\$ 2,000	\$ 2,000
Temporary Access	0	4	4	4	MI	\$ -	\$ 3,000	\$ 3,000	\$ 7,500	\$ -	\$ 12,000	\$ 12,000	\$ 30,000
Large Wood^{3,4}										\$ 8,100,000	\$ 7,800,000	\$ 2,300,000	\$ 2,300,000
Large Wood Installation ³	576,040	457,495	185,200	185,200	CF	\$ 14	\$ 17	\$ 12	\$ 12	\$ 8,100,000	\$ 7,800,000	\$ 2,300,000	\$ 2,300,000
<i>Equivalent Log Quantity⁴</i>	<i>4,600</i>	<i>3,700</i>	<i>1,500</i>	<i>1,500</i>	<i>EA</i>	<i>Per-Log Project Cost</i>				<i>\$ 1,800</i>	<i>\$ 2,100</i>	<i>\$ 1,600</i>	<i>\$ 1,600</i>
Sub-Total										\$ 8,206,000	\$ 7,916,000	\$ 2,389,000	\$ 2,407,000
<i>Contingencies (30%)</i>										\$ 2,461,800.0	\$ 2,374,800.0	\$ 716,700.0	\$ 722,100.0
Project Totals (Rounded Up)										\$ 10,700,000	\$ 10,300,000	\$ 3,200,000	\$ 3,200,000

Helicopter Only (ALT1)
Machine and Helicopter (ALT 2)
Machine Only (ALT3)
Machine Delivered Wood (ALT4)

Alternatives Analysis

	Clearwater Creek											
	Quantity			Unit	Unit Cost			Cost				
	Alt 1	Alt 2	Alt 3		Alt 1	Alt 2	Alt 3	Alt 1	Alt 2	Alt 3		
Miscellaneous^{1,2}												
Mobilization/Demobilization ¹	1	1	1	LS	\$100,000.0	\$100,000.0	\$75,000.00	\$ 100,000	\$ 100,000	\$ 75,000		
Bridge Removal ²	1	1	1	LS	\$ 40,000.0	\$ 40,000.0	\$ 40,000.0	\$ 40,000	\$ 40,000	\$ 40,000		
Staging, Storage, Access³												
Staging Areas	2	1	1	AC	\$ 2,000	\$ 2,000	\$ 2,000	\$ 4,000	\$ 2,000	\$ 2,000		
Temporary Access	0	4	4	MI	\$ -	\$ 3,000	\$ 3,000	\$ -	\$ 12,000	\$ 12,000		
Large Wood^{4,5}												
Large Wood Installation ⁴	278,505	190,400	136,600	CF	\$ 14	\$ 17	\$ 12	\$ 3,900,000	\$ 3,300,000	\$ 1,700,000		
<i>Equivalent Log Quantity⁵</i>	<i>2,200</i>	<i>1,500</i>	<i>1,100</i>	<i>EA</i>	<i>Per-Log Project Cost</i>			<i>\$ 1,800</i>	<i>\$ 2,300</i>	<i>\$ 1,600</i>		
Sub-Total								\$ 4,044,000	\$ 3,454,000	\$ 1,829,000		
<i>Contingencies (30%)</i>								<i>\$ 1,213,200.0</i>	<i>\$ 1,036,200.0</i>	<i>\$ 548,700.0</i>		
Project Totals (Rounded Up)								\$ 5,300,000	\$ 4,500,000	\$ 2,400,000		

Helicopter Only (ALT1)
Machine and Helicopter (ALT 2)
Machine Only (ALT3)

Questions?

Presentation to ACC
9/8/2022

Luke Swan (lswan@interfluve.com)
Dan Lautzenheiser (DanL@djanda.com)



Lewis River Fish Passage Report

August 2022

Merwin Fish Collection Facility and General Operations

During the month of August, a total of 1,530 fish were captured at the Merwin Dam Adult Fish Collection Facility (MFCF), which is a slight decrease from the July total of 1,585. The majority of the adult fish collected in August were summer steelhead (n= 1,133), followed by early coho (n= 236), Spring Chinook (n= 117), fall Chinook (n= 36), cutthroat trout (n= 4), **Chum (n=3)**, and sockeye (n= 1). The Chum salmon collected at the trap this month were in full spawning colors (Figure 1). This is the first time since the commissioning of the MFCF in 2014 that Chum salmon have been collected in the summer; they are typically collected in November and December. All hatchery summer steelhead were given to the Washington Department of Fish and Wildlife



Figure 1. Chum salmon collected at the Merwin Fish Collection Facility on August 1, 2022.

The MFCF ran continuously for the month of August. PacifiCorp continued to implement the summer operations schedule in August. Under this operations schedule, the conveyance system and

fish lift are operated 7 days per week, with fish sorting and transport taking place Monday through Friday. Flows below Merwin Dam remained near the required minimum flow (1,250 cubic feet per second) until the end of the month, when flows increased to approximately 3,500 cubic feet per second. (Figure 2).

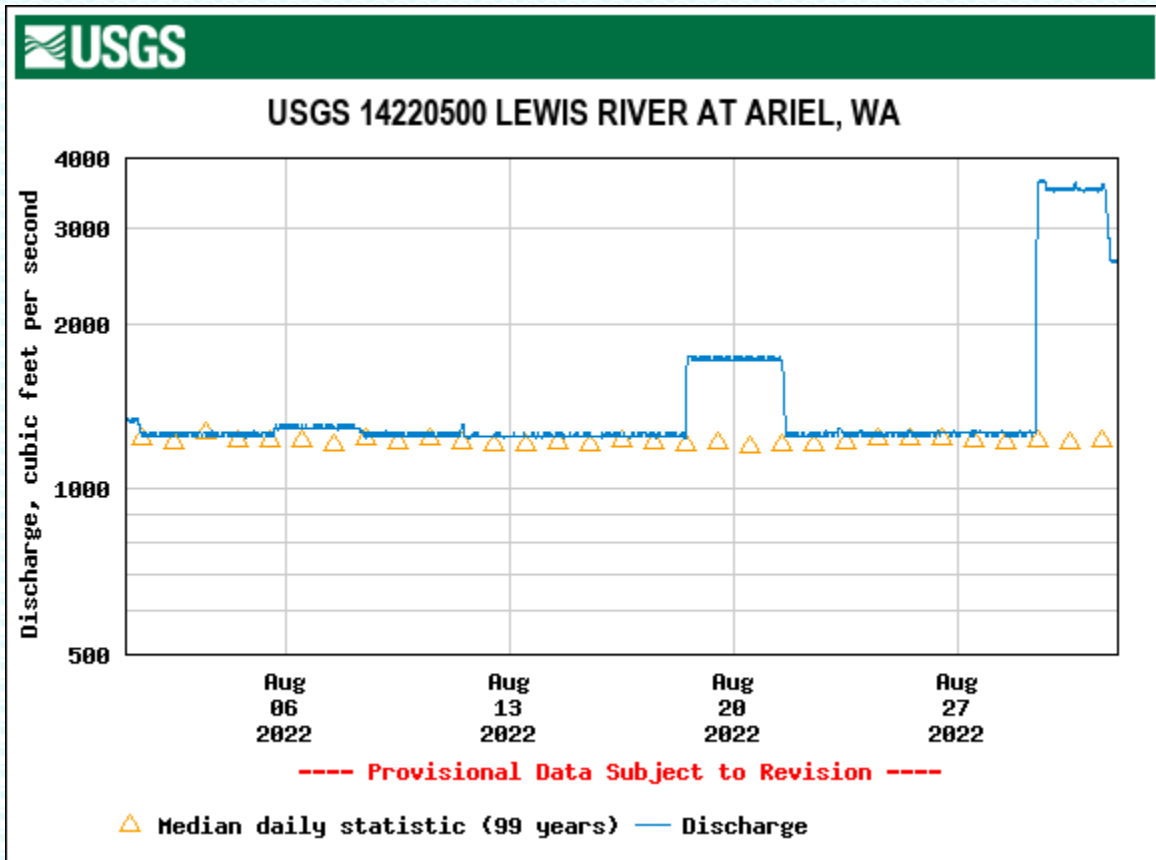


Figure 2. Discharge in cubic feet per second recorded at the USGS Ariel, WA gauge (14220500) located immediately downstream of Merwin Dam.

Two coho salmon and two cutthroat trout collected at the MFCF in August had been previously PIT tagged. Both of the cutthroat trout were tagged at the MFCF, and the coho were tagged as juveniles at the Swift FSC and Eagle Cliff screw trap. All four fish were tagged in 2021. Since January 1 2022, a total of fourteen Spring Chinook, nine wild winter steelhead, six cutthroat trout, two coho, and one summer steelhead captured at the Merwin Trap had been previously PIT tagged.

Upstream Transport

A total of 276 adult fish were transported above Swift Dam in August. Early coho composed the majority of the transported fish (n= 188) followed by Spring Chinook (n= 84), and cutthroat trout (n= 4). All fish transported upstream in August were collected at the MFCF. For calendar year 2022 to-date, 3,505 Spring Chinook (2,966 HOR/ 539 NOR), 577 winter steelhead (449 BWT/ 128 NOR), 196 coho (134 HOR/ 62 NOR), and 23 cutthroat trout have been transported upstream of Swift Dam.

Floating Surface Collector (FSC)

The Swift Reservoir Floating Surface Collector (FSC) was taken out of operation in July 18th for the scheduled summer maintenance period. It is anticipated that it will be returned to service by early-October when reservoir water temperatures fall.

