

Cle Elum Pool Raise Shoreline Protection and Upper Cle Elum River Aquatic Restoration



Bureau of Reclamation



This River Runs Forever
Yakima Basin Integrated Plan

Project overview



This River Runs Forever
Yakima Basin Integrated Plan

Cle Elum Pool Raise Project

- ❖ Raise Cle Elum Reservoir 3 ft (EL 2240' to 2243')
- ❖ Add 14,600 acre-ft for fish flow augmentation
- ❖ Protect private property and enhance shoreline habitat
- ❖ Shoreline Protection projects managed by Yakama Nation
 - *Night Sky, completed*
 - *Domerie Bay, completed*
 - *Timber Cove, In-progress*
 - *Speelyi Beach Tree Harvest*



Watershed and cultural setting

- ❖ Cle Elum Watershed: 220 sq mi, snowmelt-dominate
- ❖ Historic Kittitas and Wenatchi Band settlements
- ❖ Traditional salmon fisheries, including summer encampments
- ❖ Archaeological evidence of 11,000 years of occupation



Photo of Cle Elum Dam, circa 1910. Reservoir storage capacity of 26,000-acre feet. Photo credit: F. Kreuger collection, Central Washington University

Fish use and habitat concerns



This River Runs Forever
Yakima Basin Integrated Plan

- ❖ Sockeye reintroduction by Yakama Nation
- ❖ Juvenile outmigration limited by dam structure
- ❖ Adult collection facility will reintroduce other anadromous species into the upper Cle Elum River watershed, each of which will have specific habitat requirements for spawning and rearing.
- ❖ Interspecific competition for resources (e.g., spawning habitat) is likely to increase as additional species are reintroduced
- ❖ Shoreline habitat degradation impacts rearing/survival



IMAGE DATE:
07/24/2024

Challenges

Agreements	# of Contracts	Addenda	Total
BoR 638 Funding (Jan 25, 2023)	1	3	4
Landowner Access			
Night Sky Community	2	2	4
Domerie Bay Community	5		5
Timber Cove Community	5	3	8
Jackson Well	1		1
Homeowners Associations	2		2
Kittitas County Noxious Weed Control	1		1
Construction Services			
Night Sky Shoreline Protection Area	1	1	2
Timber Cove & Domerie Bay Areas	2	2	4
Puget Sound Energy	1		1
Speelyi Beach Area Tree Harvest	1		1
Upper Cle Elum River offsite habitat	1		1
Engineering Design	1	1	2
Wetland dealineation	1		1
Cultural survey	1		1
KCT Purchase and Sale/Assignment	1		1
Land Purchase	1		1
USFS Agreements	2		2
TOTAL	30	12	42



Land Purchase: Construction access for Timber Cove Area
Shout out to KCT Partnership i.e. Mitch Long!

In just 2.5 years, over 40 agreements!!

Shout out to Office of Legal Counsel (particularly Meredith Harris) and Fisheries administrative staff: Kiana Castilleja and Carol Sue Martin!!!

Shoreline protection design overview

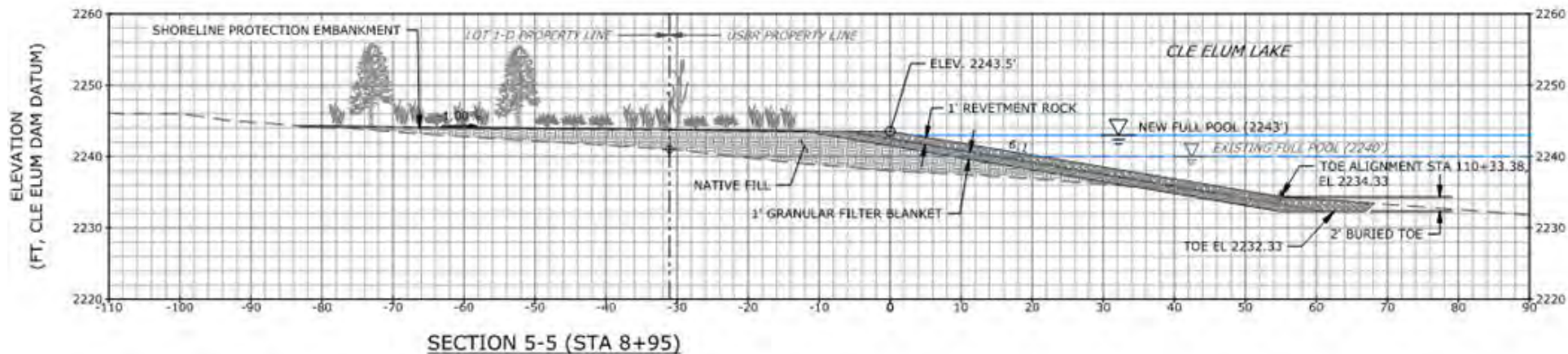
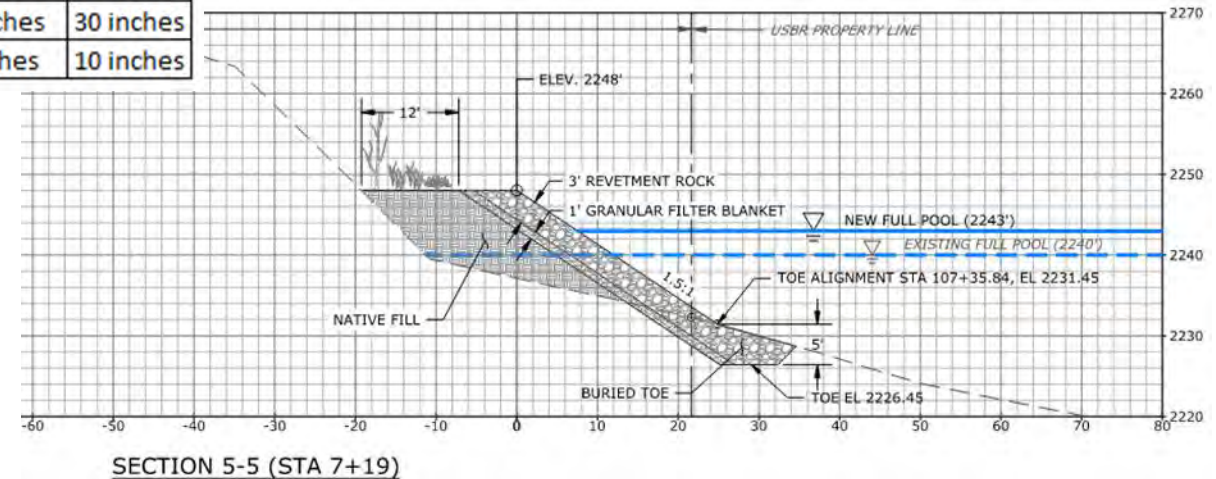
Site	Full Pool EL	Revetment Crest EL	Freeboard	Wave Run-Up Benching	Revetment Slope	Armor Material	
						D50	D100
Domerie	2243	2248	5 ft	12 ft	1V to 1.5H	16 inches	30 inches
Timber Cove	2243	2248	5 ft	12 ft	1V to 1.5H	16 inches	30 inches
Night Sky	2243	2243.5	0.5 ft	30 ft +/-	1V to 6H	6 inches	10 inches

Domerie Bay & Timber Cove:

- ❖ 5 ft freeboard
- ❖ 12 ft wave-runup bench

Night Sky:

- ❖ More protected, lower revetment, 6" freeboard





Night Sky Shoreline Protection Facility-Under Construction

IMAGE DATE:
09/25/2024



SR 903

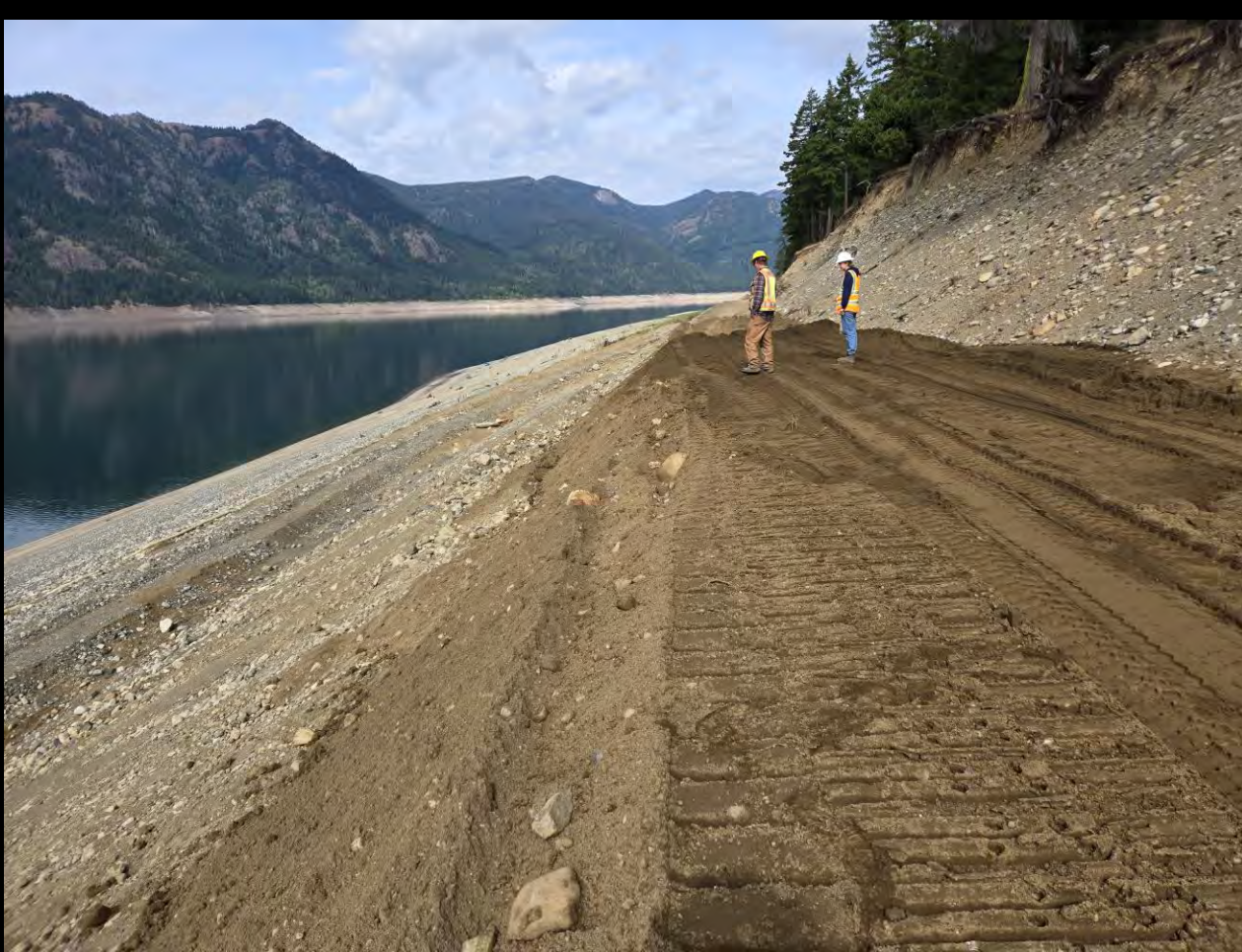
Night Sky Shoreline Protection Facility- Completed 11/15/2024

IMAGE DATE:
06/12/2025



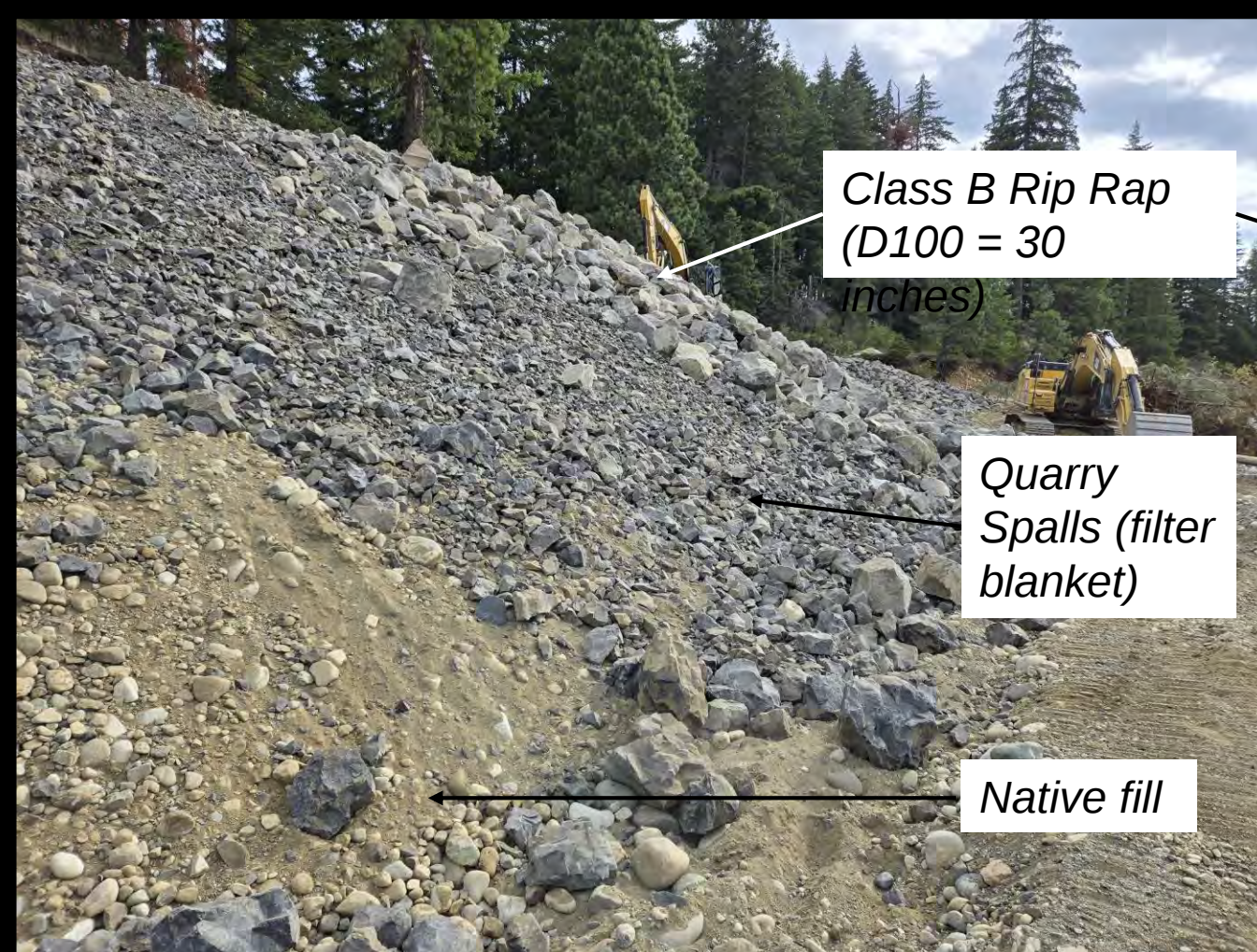
Domerie Bay Shoreline Protection Facility-Under Construction

IMAGE DATE:
08/16/2024



Domerie Bay Shoreline Protection Facility-Under Construction

IMAGE DATE:
08/22/2024





Domerie Bay Shoreline Protection Facility-completed 10/25/2024

IMAGE DATE:
11/13/2024



Timber Cove Shoreline Protection Facility – Under Construction

IMAGE DATE:
06/09/2025



Clearing

IMAGE DATE:
08/19/2024



Wood stockpile – Howsen Pit

IMAGE DATE:
06/12/2025

Main Goals:

- ❖ Support recovery of Chinook, Coho, Sockeye, Bull Trout, Steelhead
- ❖ Address historic channel incision, restore complexity

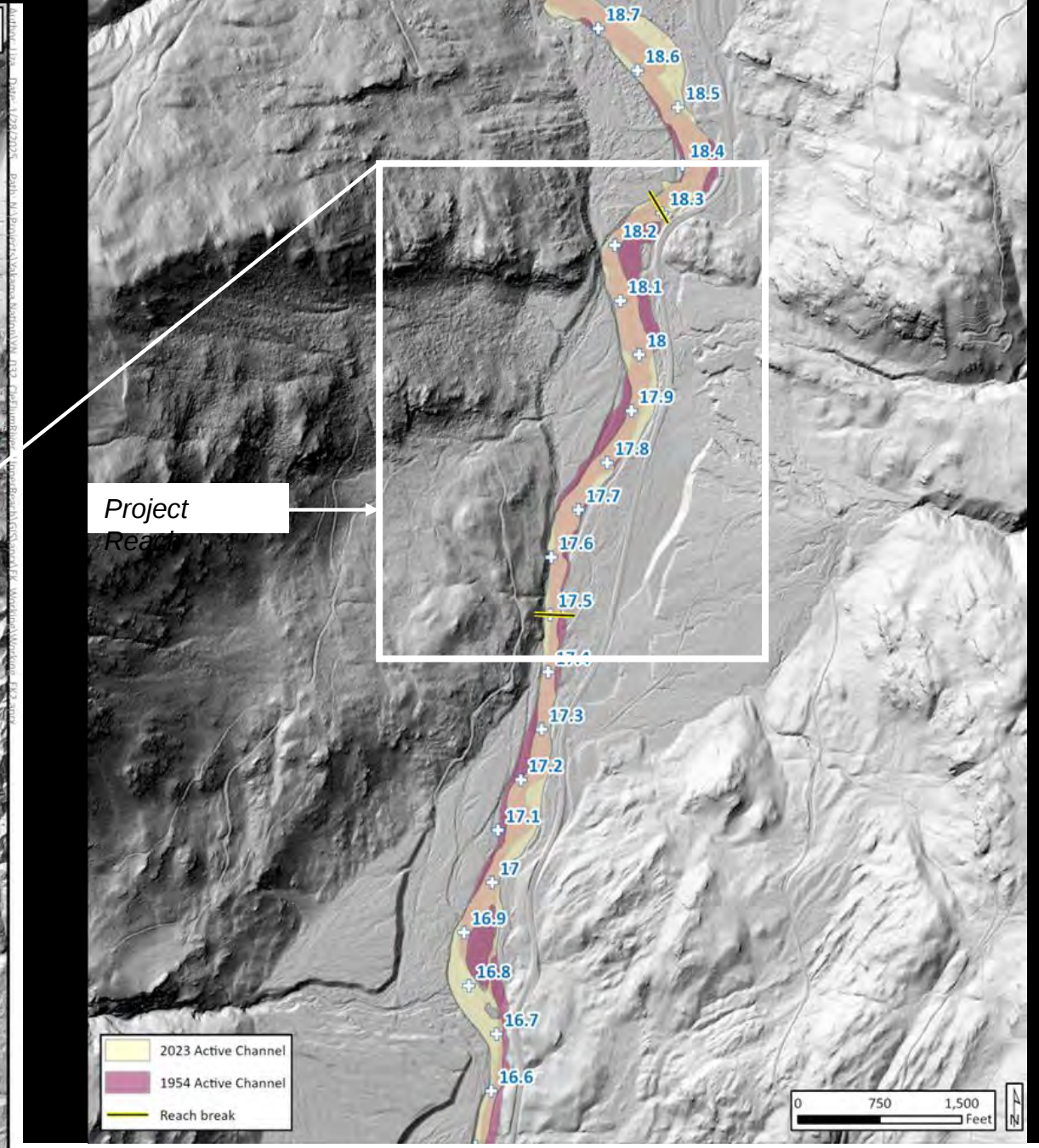
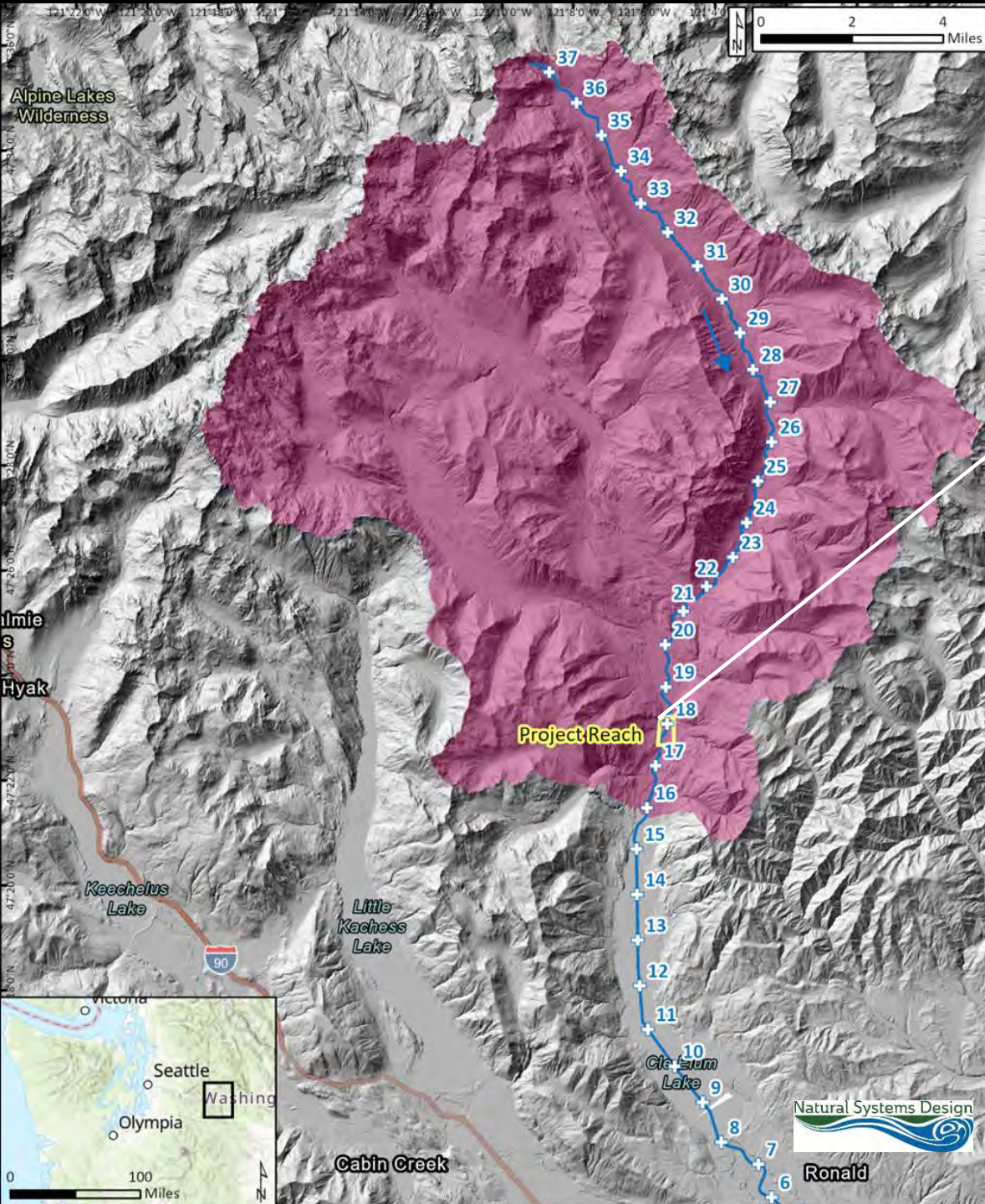
Project
Reach

Cooper
Bridge

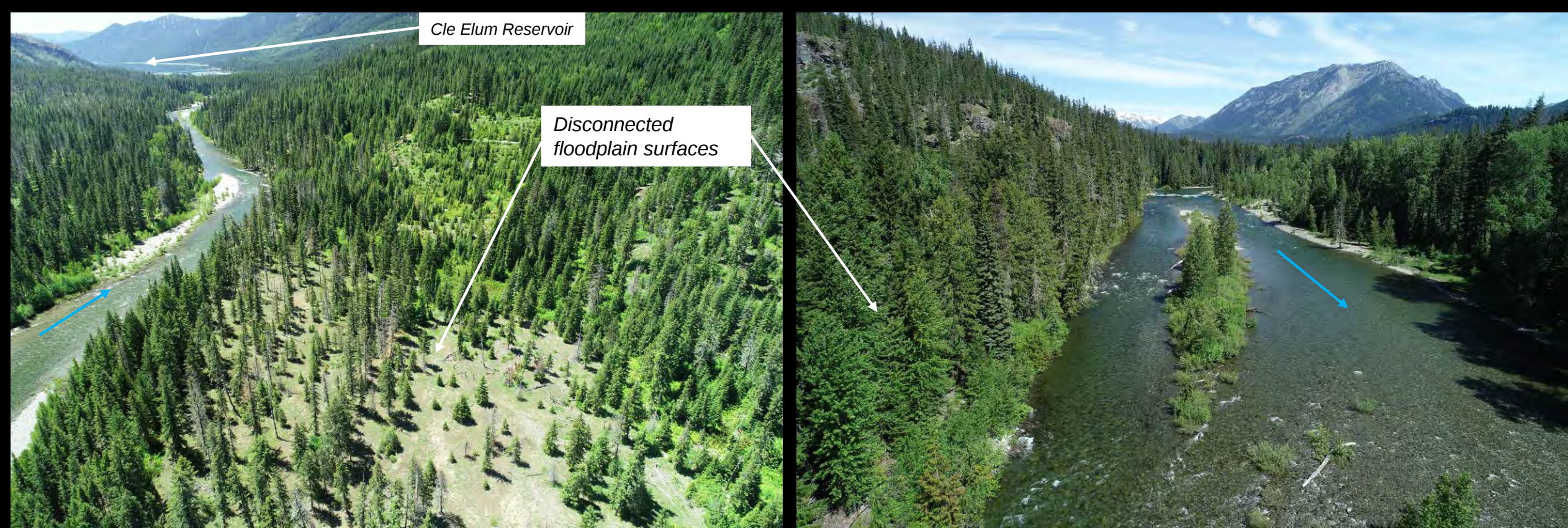
SR 903

Cle Elum River Upper Reach Aquatic Restoration Project

Image collected facing approximately
northwest above Howsen Pit: 06/12/2025

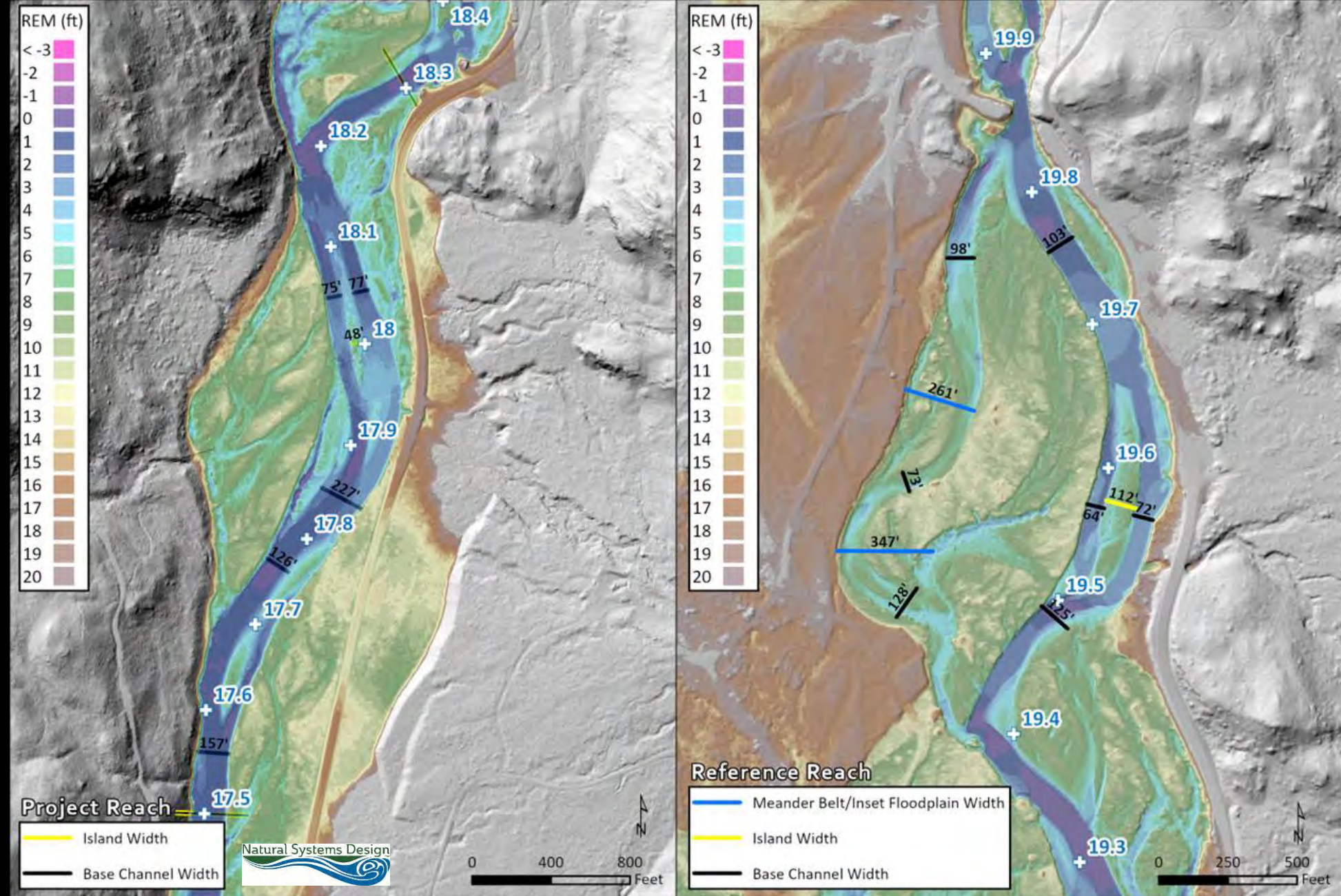


Cle Elum River Upper Reach Aquatic Restoration Project



Cle Elum River Upper Reach Aquatic Restoration Project

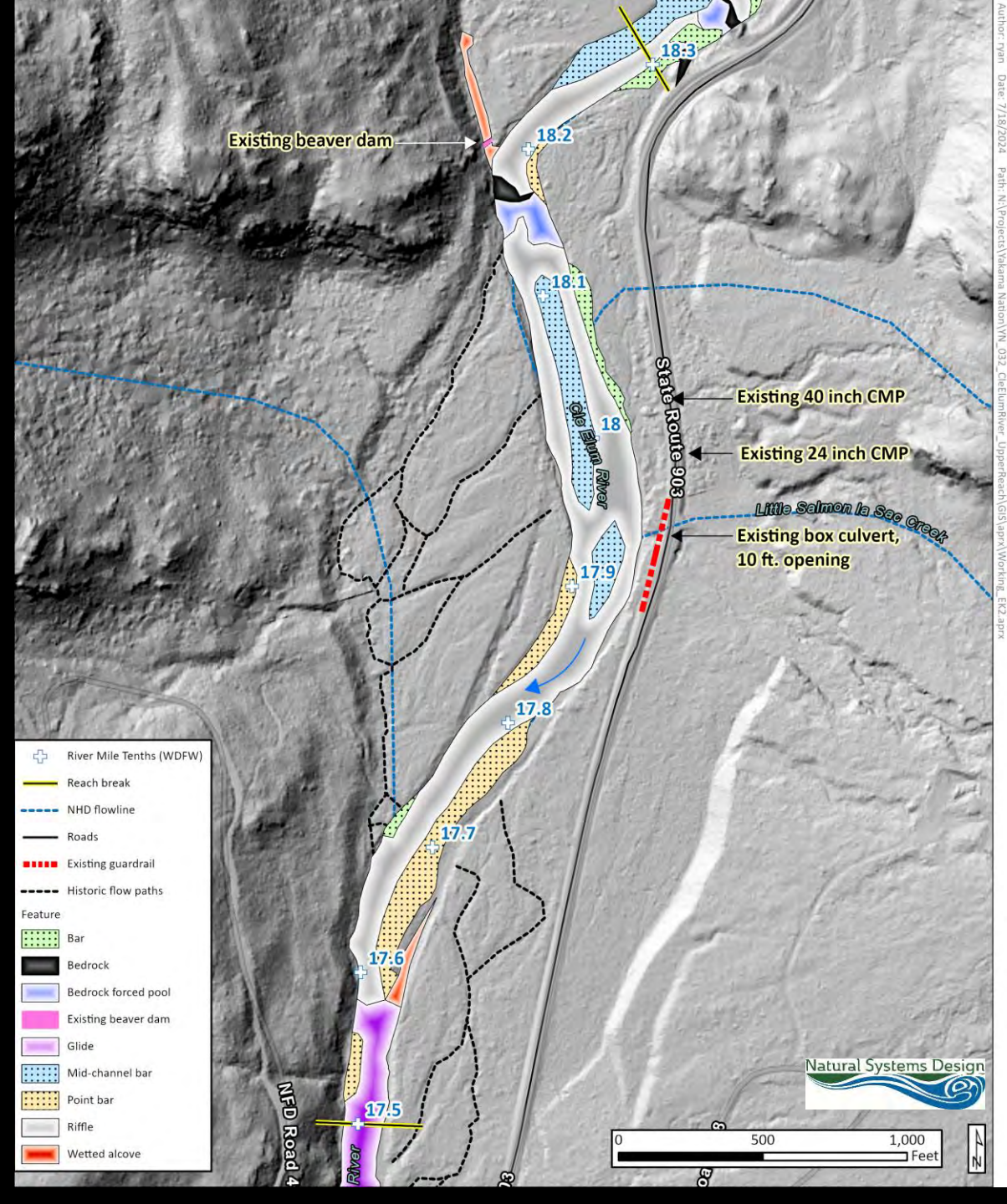
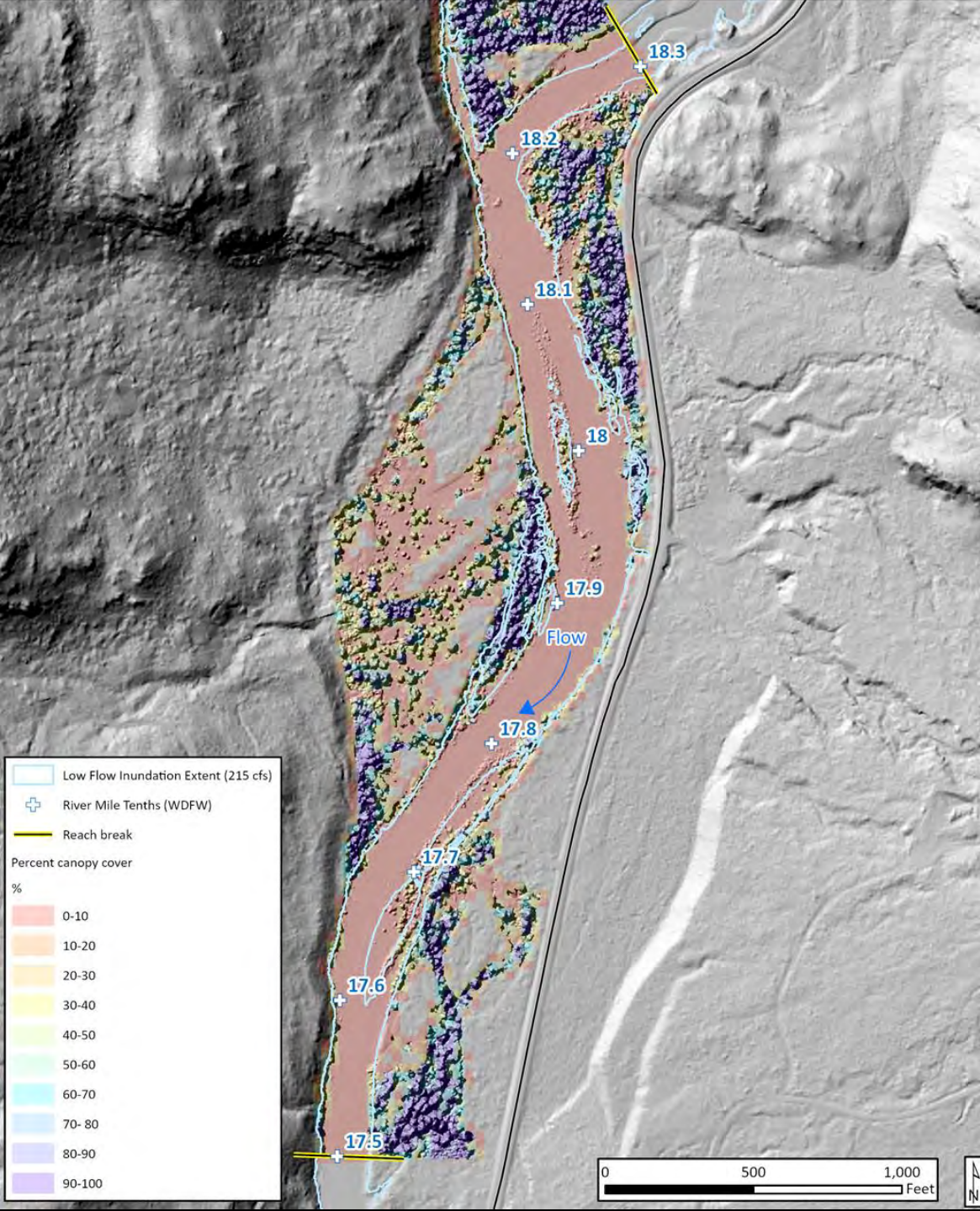
IMAGE DATE:
06/06/2024



Cle Elum River Upper Reach Aquatic Restoration Project - Existing Conditions



Cle Elum River Upper Reach Aquatic Restoration Project - Existing Conditions



FLOOD EVENT	MAINSTEM DEPTH (FT)		MAINSTEM VELOCITY (FPS)		MAINSTEM SHEAR STRESS (LBS/SQFT)		TOTAL INUNDATION AREA (ACRES)
	Mean	Max	Mean	Max	Mean	Max	
90% Exceedance Flow	1.2	2.7	2.4	3.9	0.3	1.0	27.4
Q2	5.3	7.7	7.7	8.9	1.9	2.5	52.7
Q10	6.9	9.5	9.0	10.5	2.4	3.0	75.3
Q100	9.6	12.6	10.5	11.6	3.0	3.7	117.4

Summary of existing conditions hydraulics

	SPAWNING			REARING		
	Depth	Velocity	Intersection	Depth	Velocity	Intersection
Chinook	13%	3%	0%	2%	2%	0%
Coho	25%	24%	6%	-	-	-
Steelhead	N/A	N/A	N/A	2%	5%	0%
Sockeye	9%	11%	1%	-	-	-

Percentage of preferred habitat during
typical summer low flow (180 cfs)

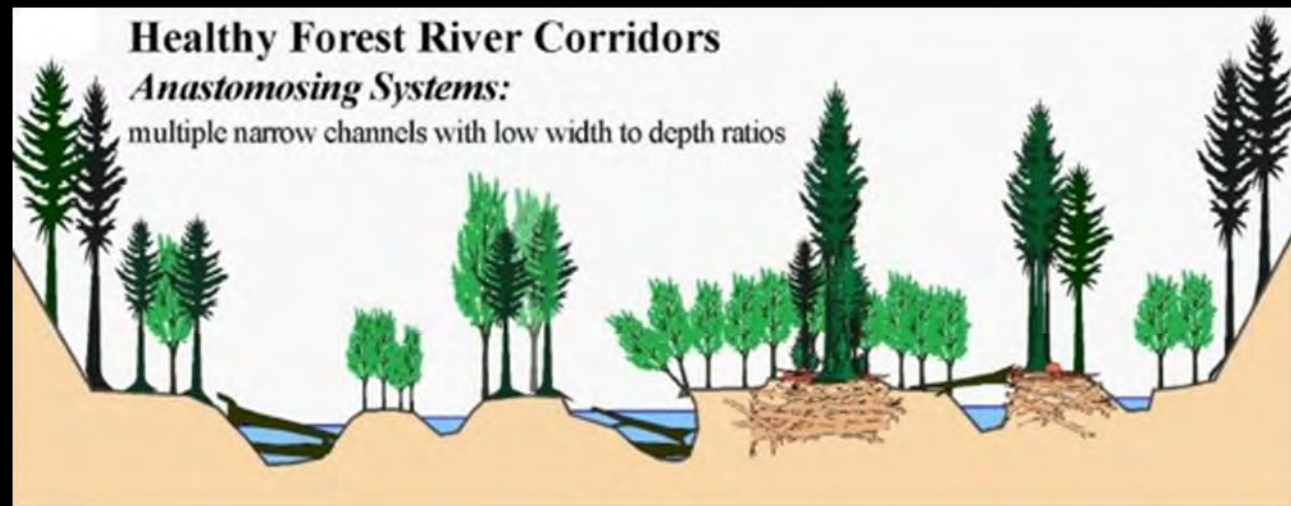
	SPAWNING			REARING		
	Depth	Velocity	Intersection	Depth	Velocity	Intersection
Chinook	N/A	N/A	N/A	13%	1%	0%
Coho	N/A	N/A	N/A	-	-	-
Steelhead	24%	7%	0%	8%	2%	0%
Sockeye	N/A	N/A	N/A	-	-	-

Percentage of preferred habitat during
typical winter flow (800 cfs)

OBJECTIVE	METRIC OF SUCCESS
Increase inundated area	Acres inundated at low flow, spring freshet, and annual peak flow
Increase side channel length	Increase length of perennial channel, increase length of channel during spring freshet
Maintain channel profile	Bank height relative to mainstem channel
Reduce length of boulder-cobble bed & increase length of gravel bed	Reduce median grain size in treated vs. untreated reaches, length of gravel bedded channels
Increase length of perennial channels	Length of perennial channel during low flow conditions
Increase magnitude and frequency of floodplain engagement	Acres inundated during spring freshet, annual peak flow
Increase area of woody vegetation	Acres of woody riparian vegetation, width of intact riparian corridor
Reduce unit stream power	Change in mainstem velocity during peak flows



Existing condition



Concept sketch of target reach conditions (Abbe, Pess et. al., 2003)



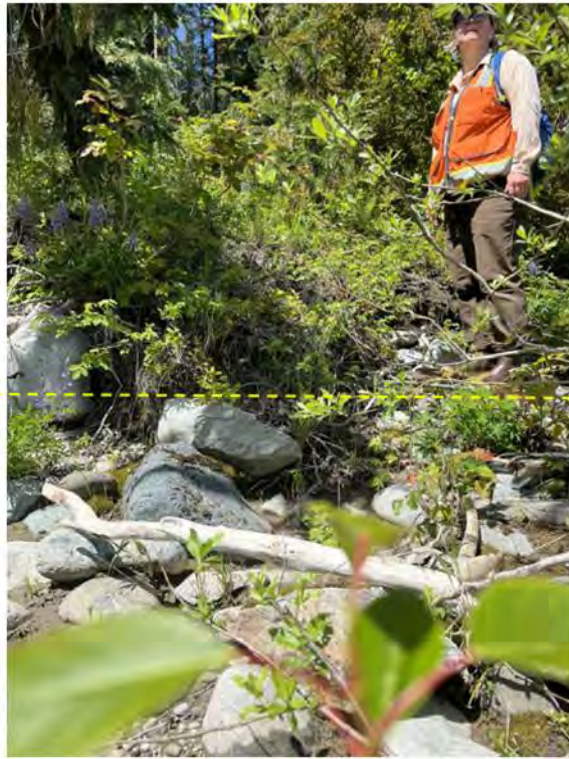
TYPE 1 ELJ

TYPE 2 ELJ

TYPE 3 ELJ

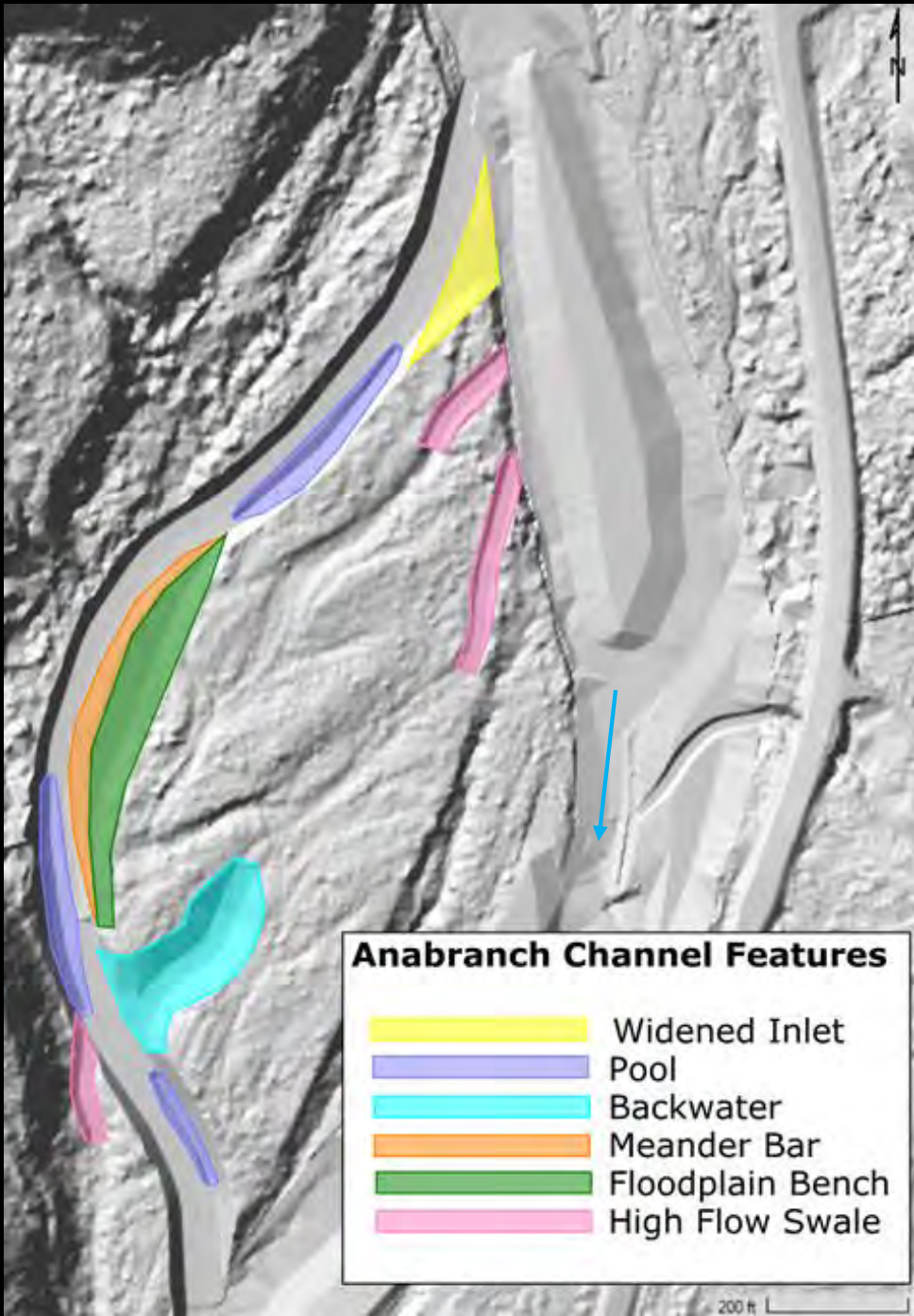
HABITAT LOG

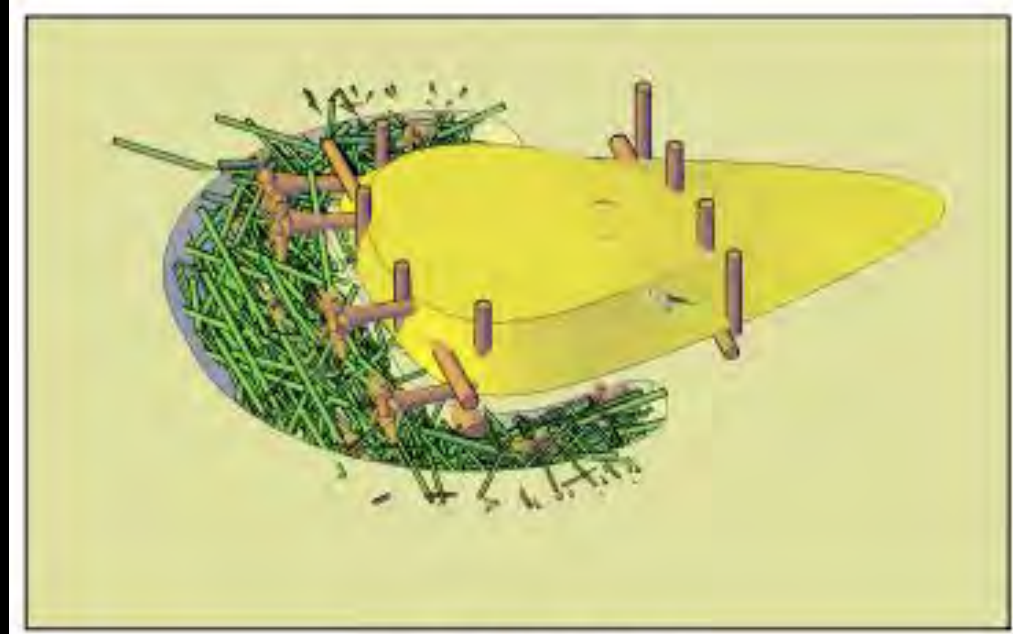
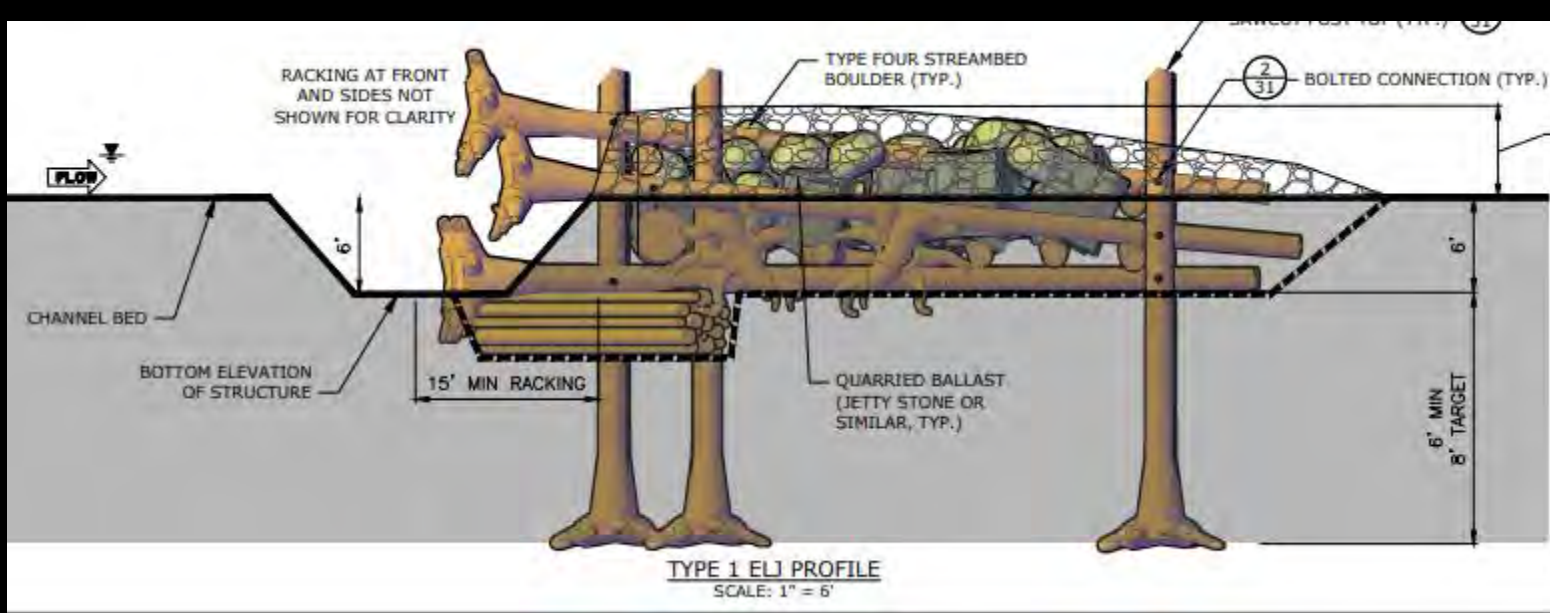
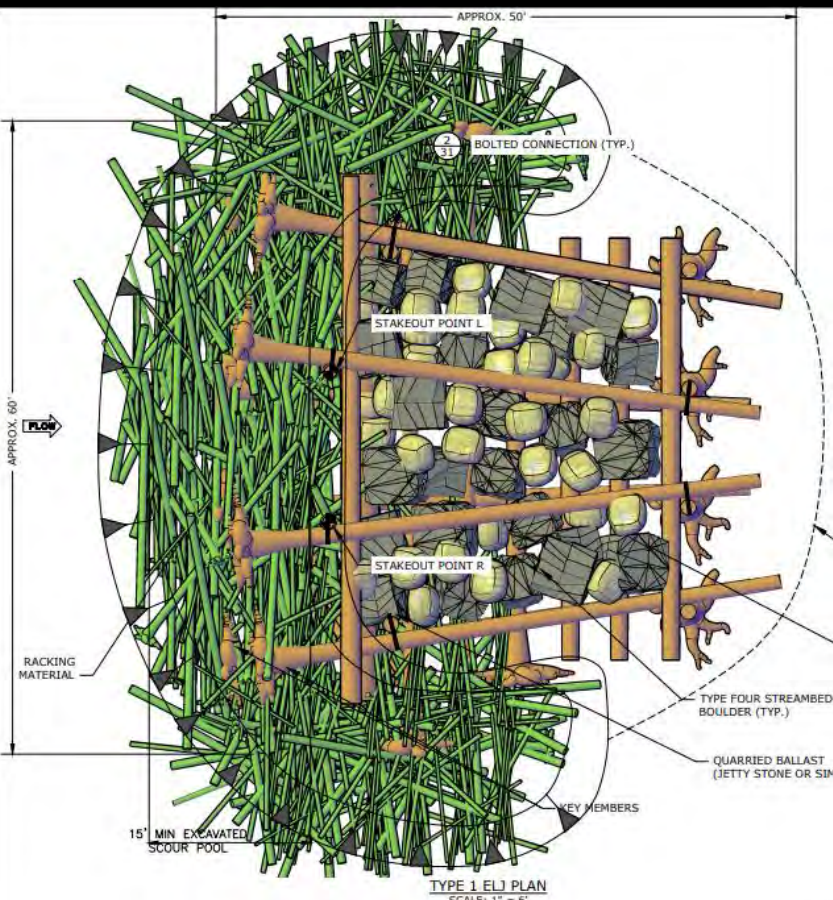
- Perennial and seasonal floodplain connections
- Mainstem and off channel large wood structures
- Gravel augmentation
- Extensive riparian planting for shade and vegetated island development



Existing floodplain disconnection at historic floodplain inlet

Cle Elum River Upper Reach Aquatic Restoration Project

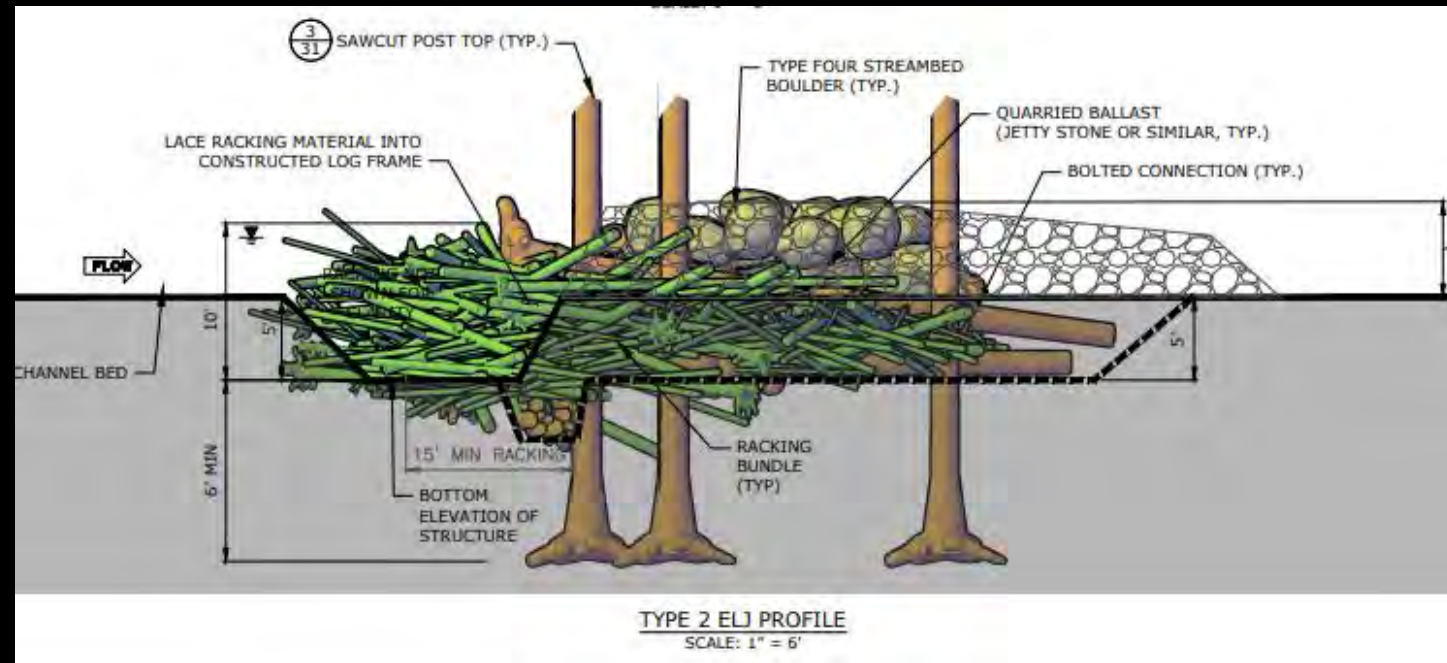
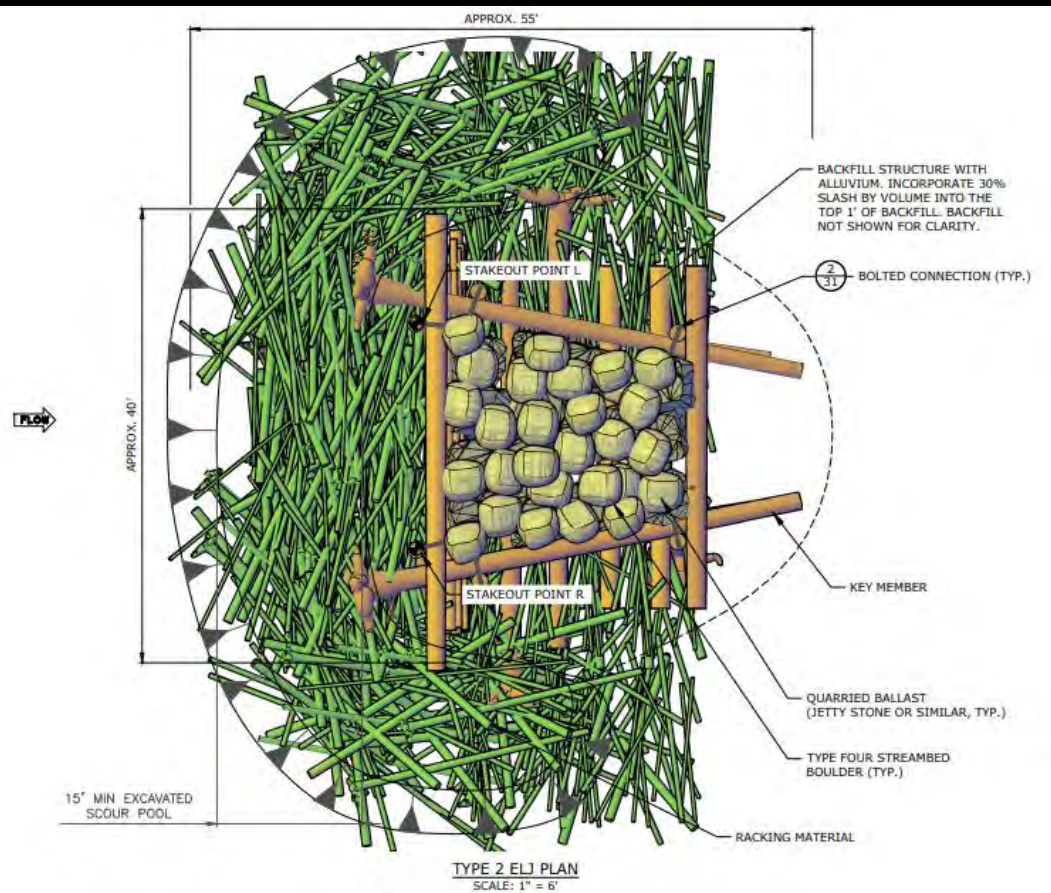




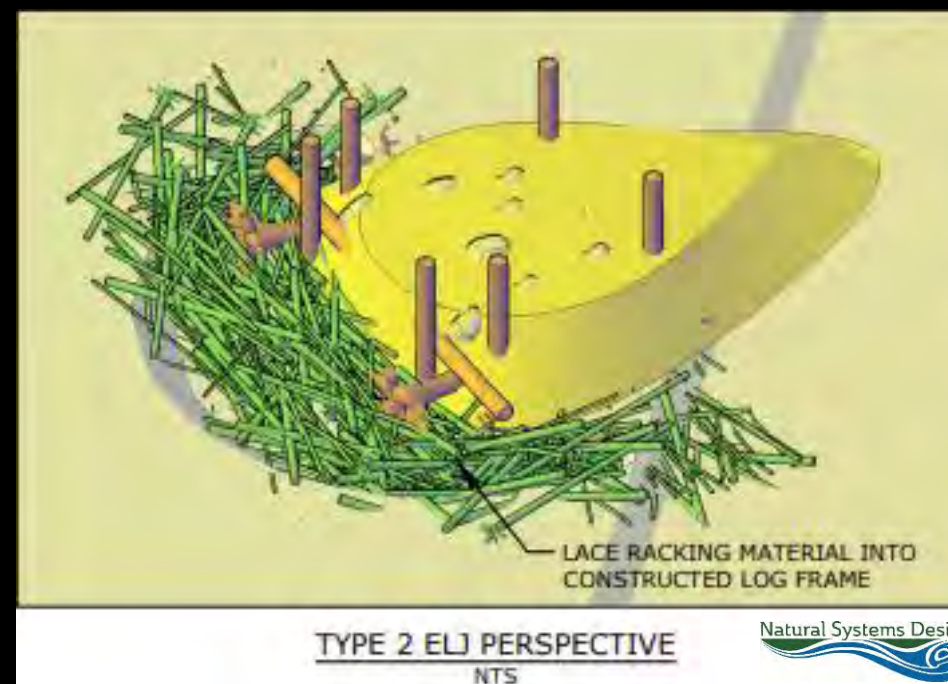
Type 1-engineered log jam

TYPE 1 ELJ PERSPECTIVE
NTS

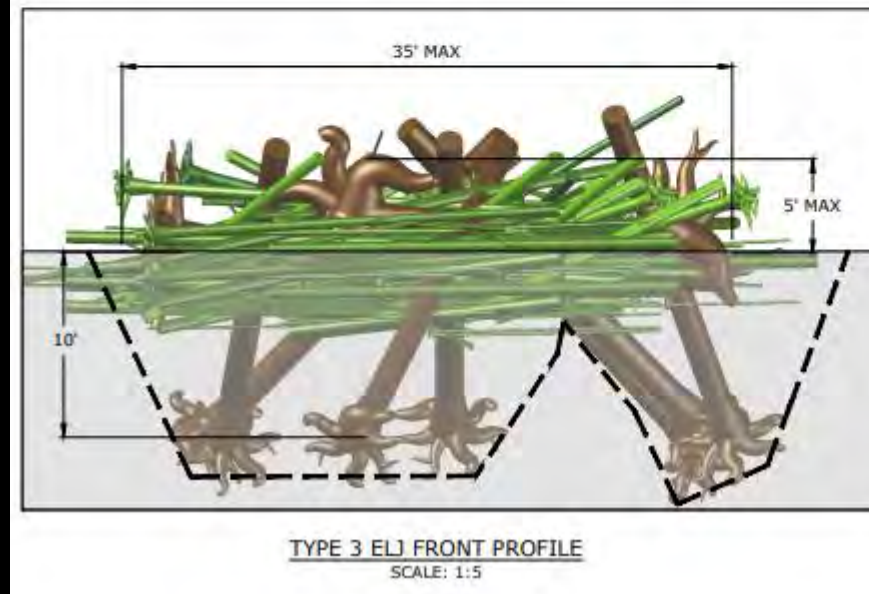
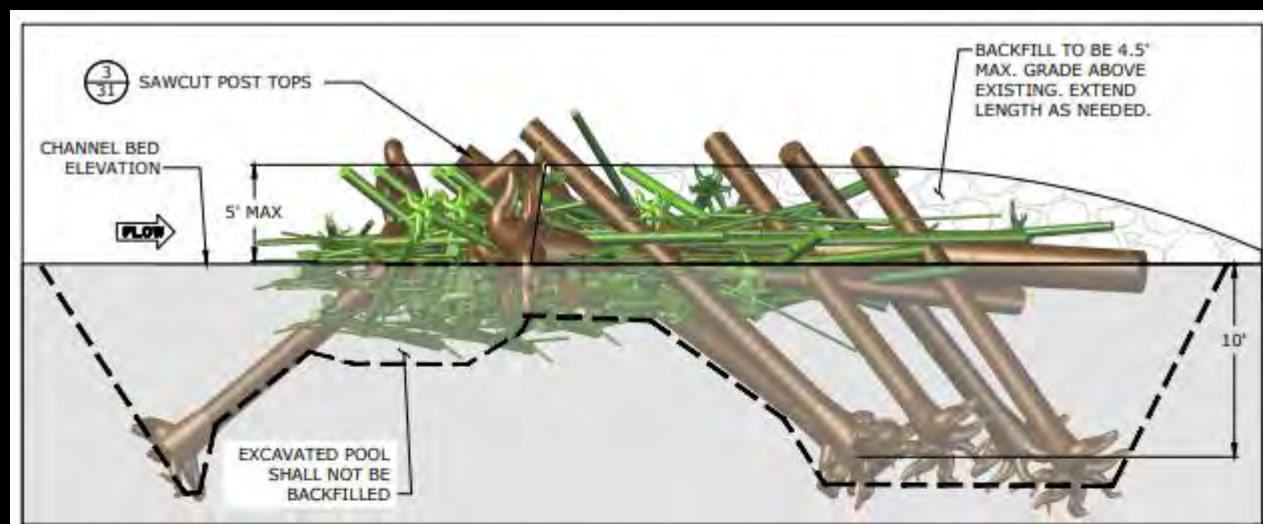
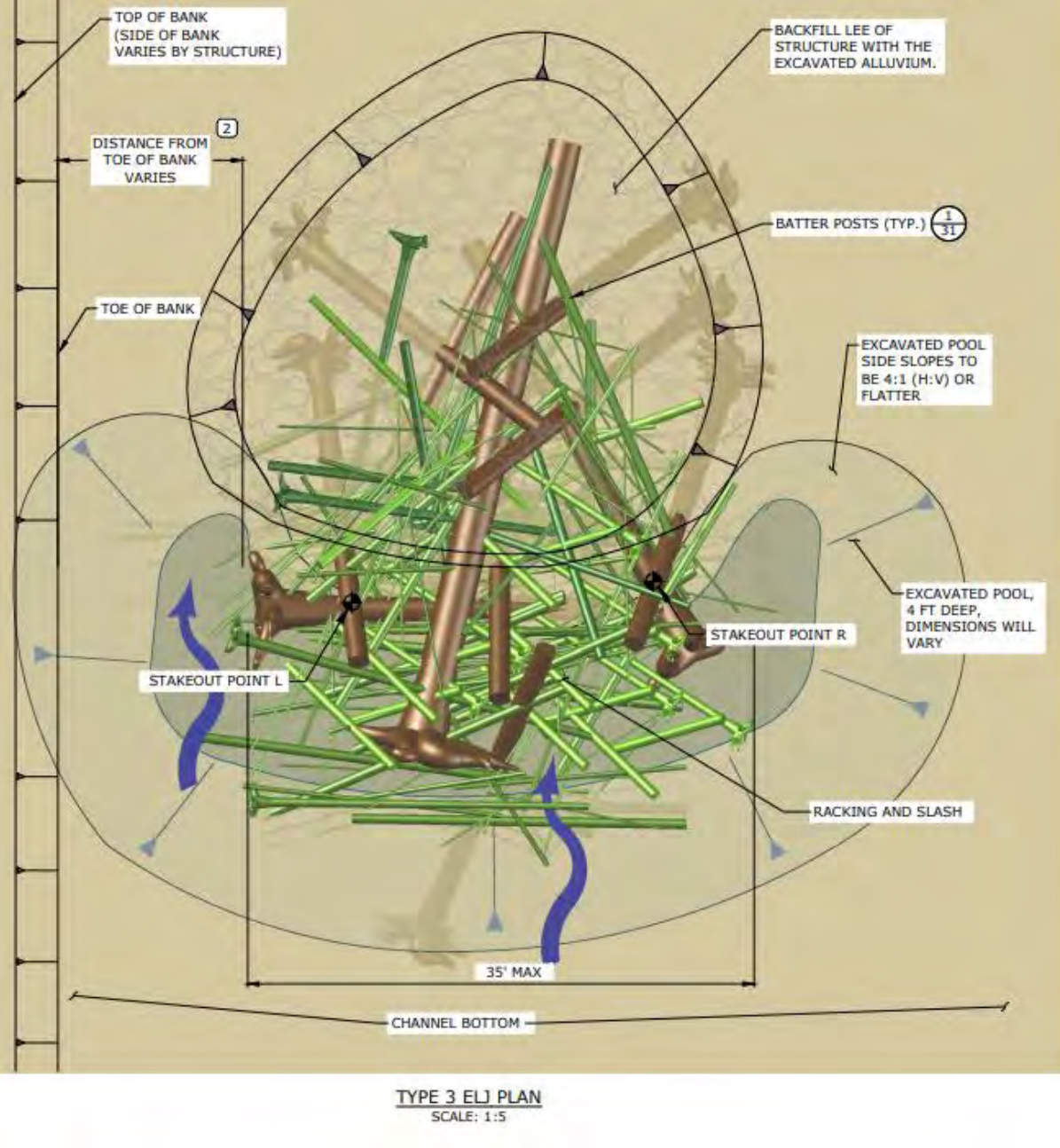


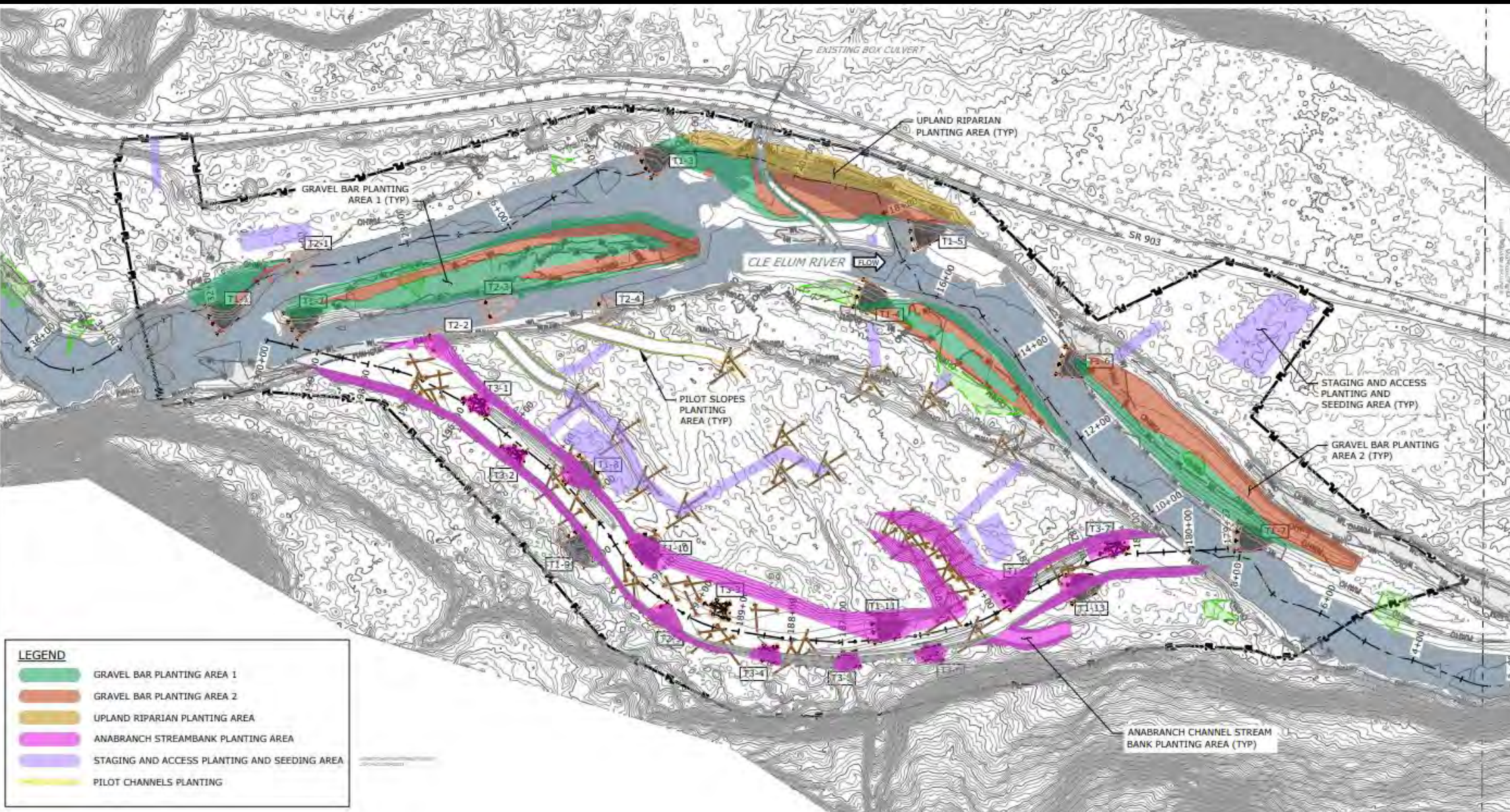


Type 2-engineered log jam



Cle Elum River Upper Reach Aquatic Restoration Project





Be a solution seeker

