Countyline Levee Setback Project: A Flood Protection Project Yields Multiple Benefits

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Water and Land Resources Division
River and Floodplain Management Section

Service provider to the King County Flood Control District

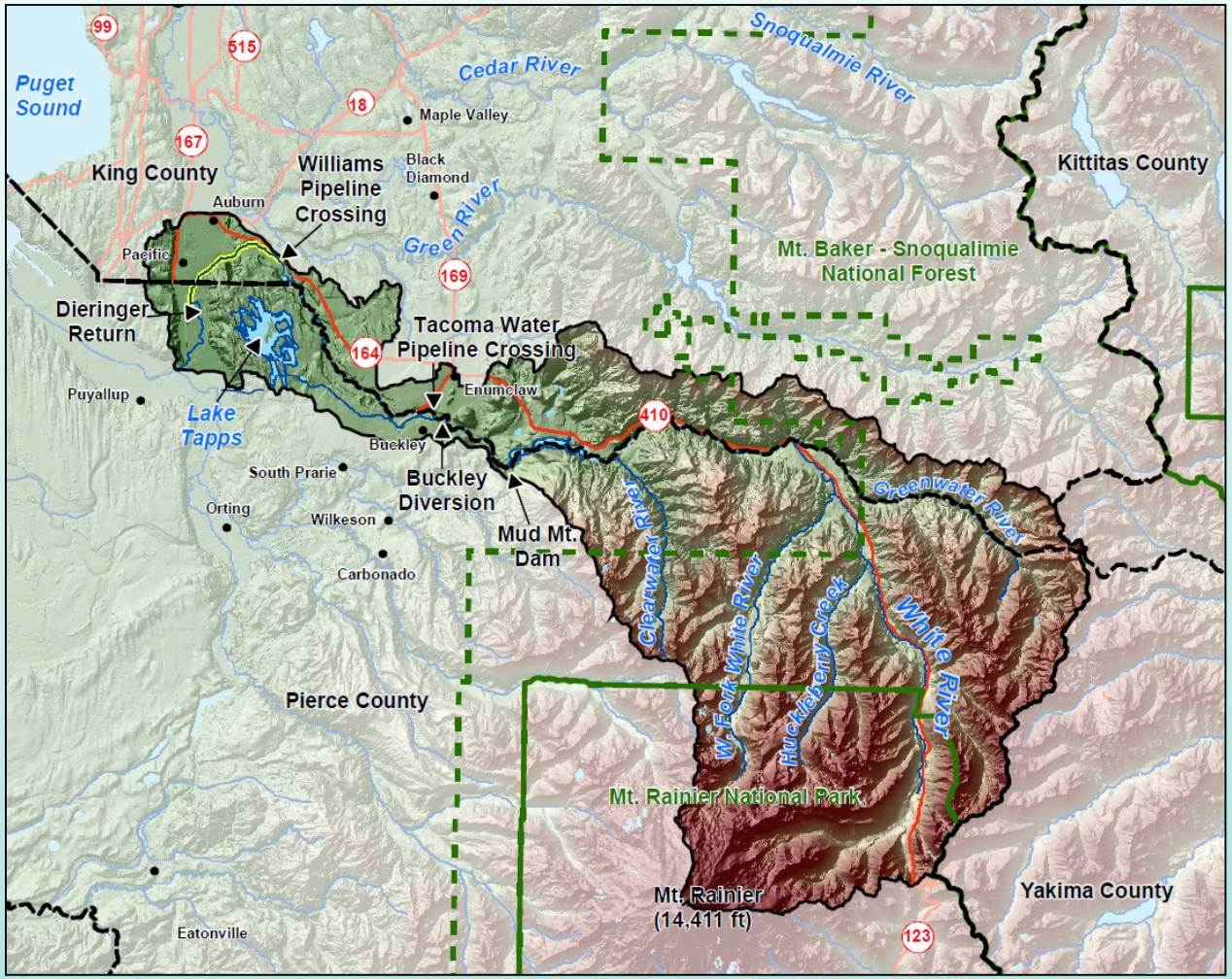
KING COUNTY FLOOD CONTROL DISTRICT

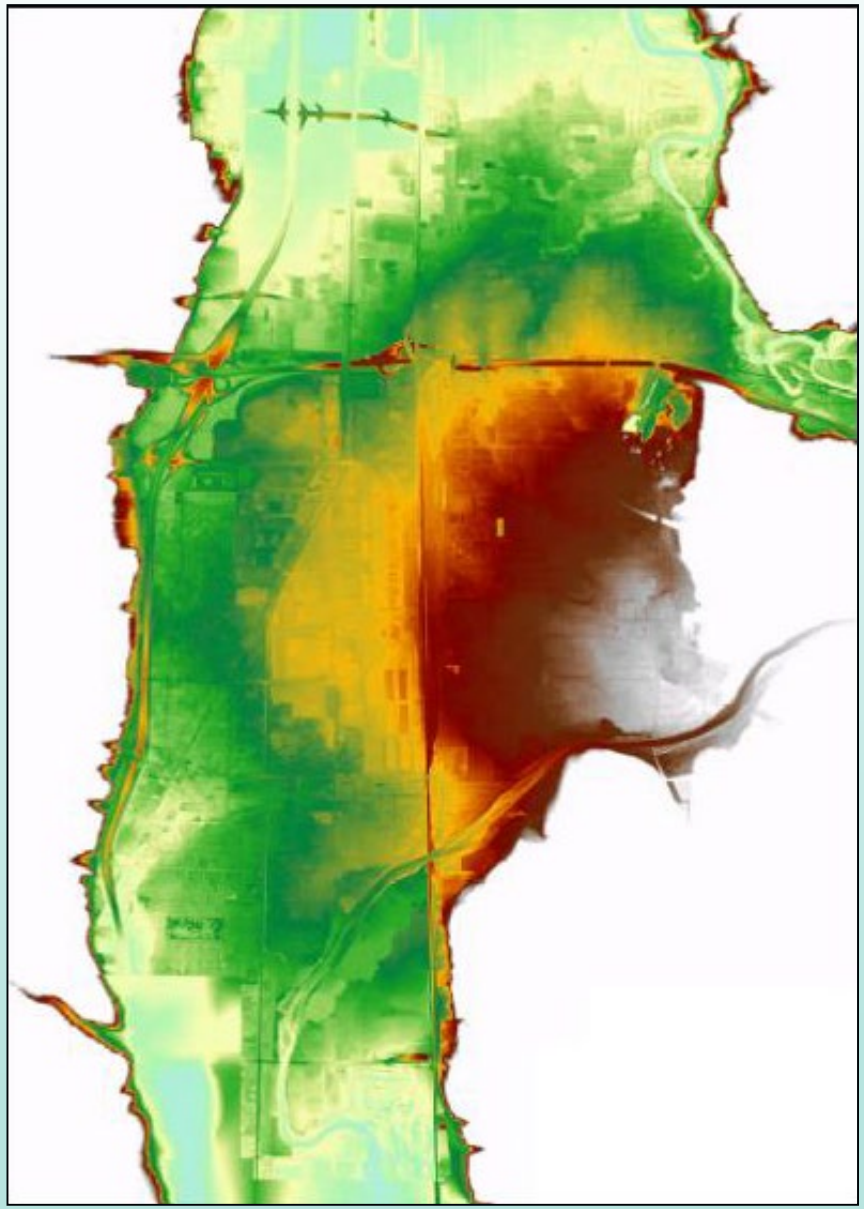
King County

Presentation Overview

- Project history and landscape context
- Design objectives and approach
- Post-project response
- Initial monitoring results

Geomorphic Setting

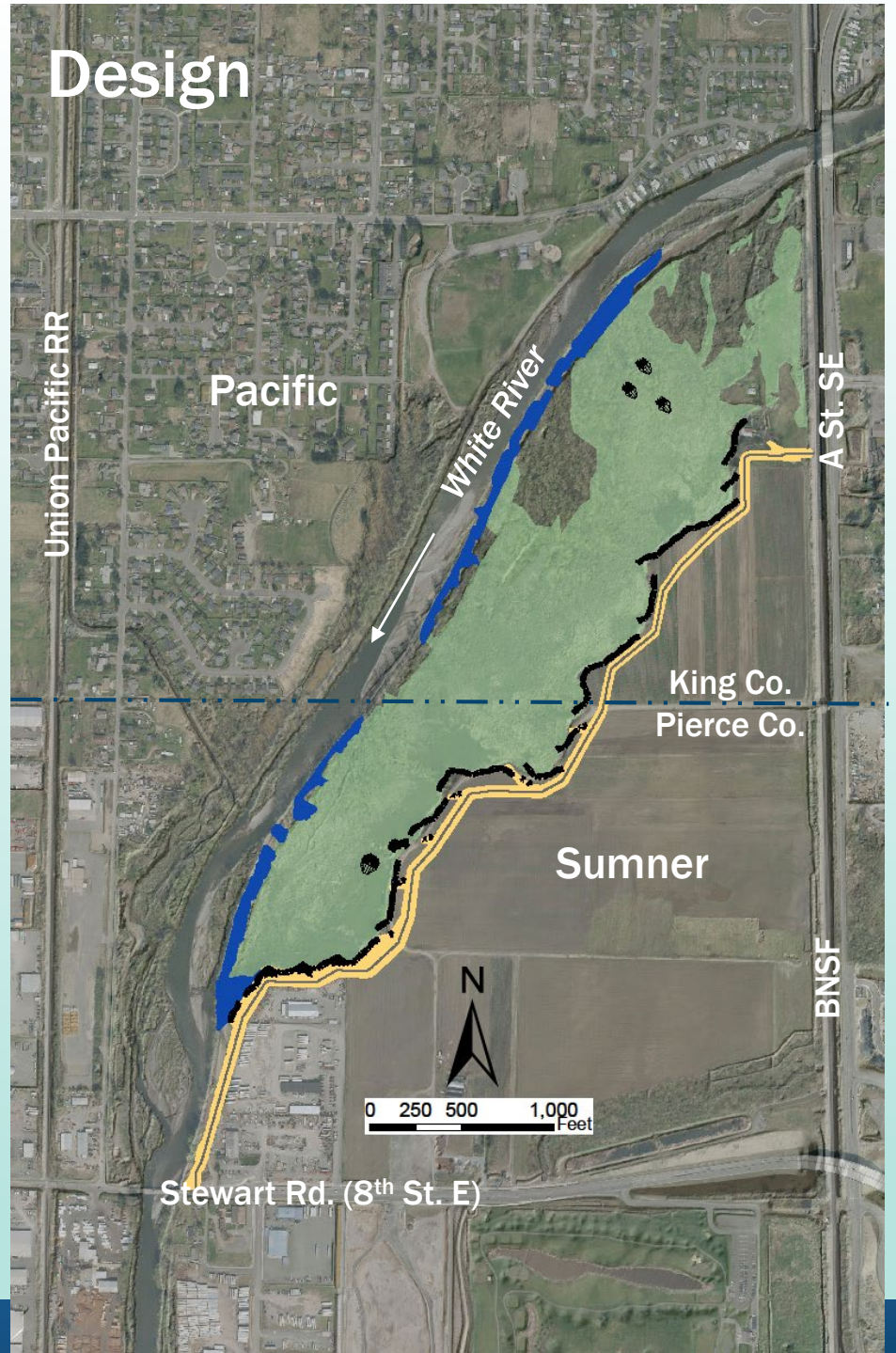


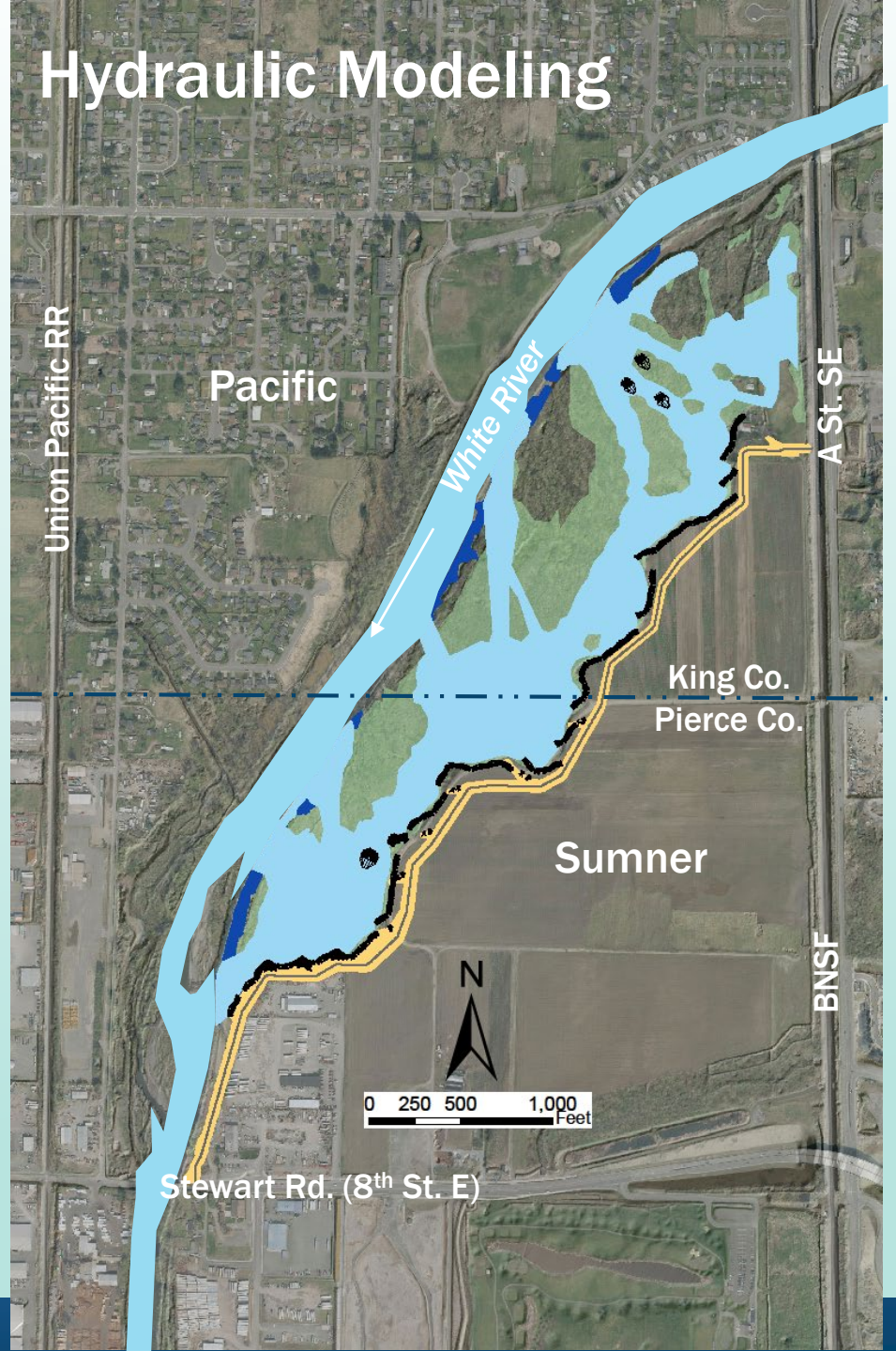


White River above Stewart Bridge, 1931 *(View Looking Upriver)*

Project Need

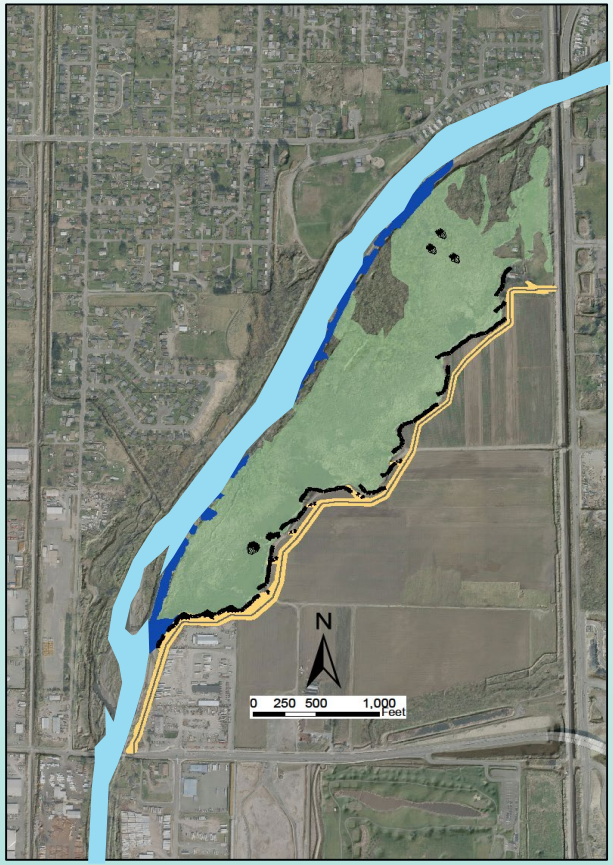
Project Need


Design
Union Pacific RR
Pacific
White River
A St. SE
King Co.
Pierce Co.
Sumner
BNSF
N
0 250 500 1,000 Feet
Stewart Rd. (8th St. E)


Hydraulic Modeling
Union Pacific RR
Pacific
White River
A St. SE
King Co.
Pierce Co.
Sumner
BNSF
N
0 250 500 1,000 Feet
Stewart Rd. (8th St. E)

Channel Dynamics – Movement and Formation

Pre-project



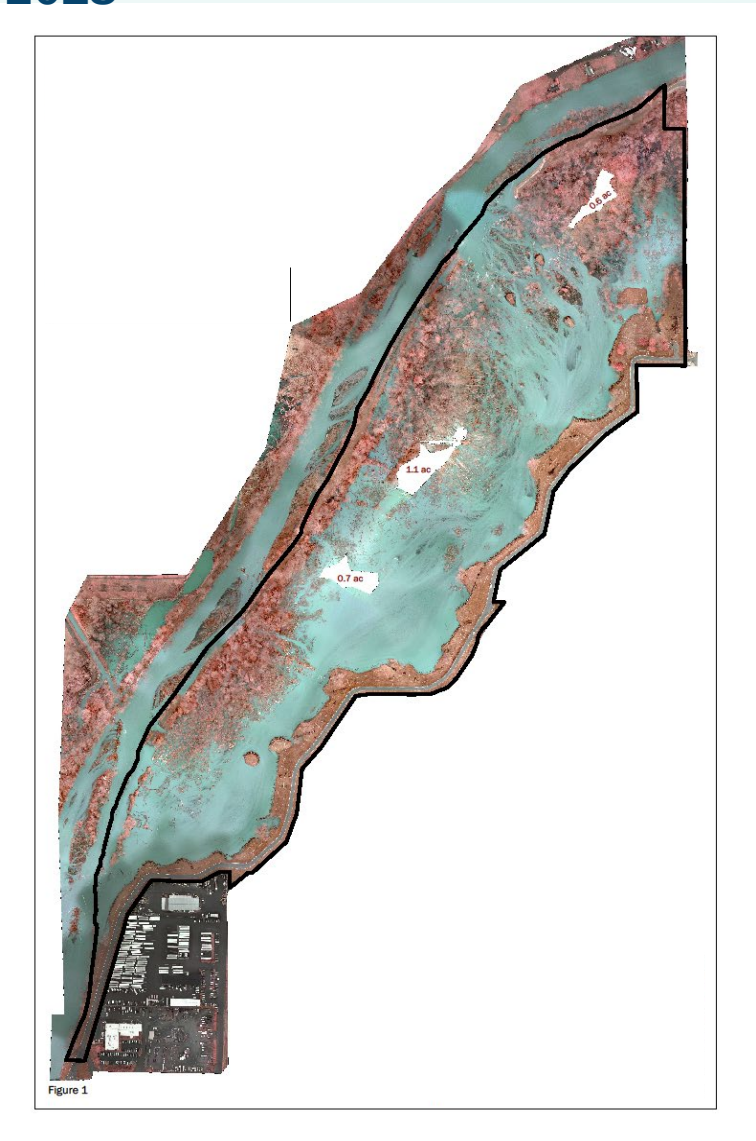
Modeling

Post-project (2018) LiDAR

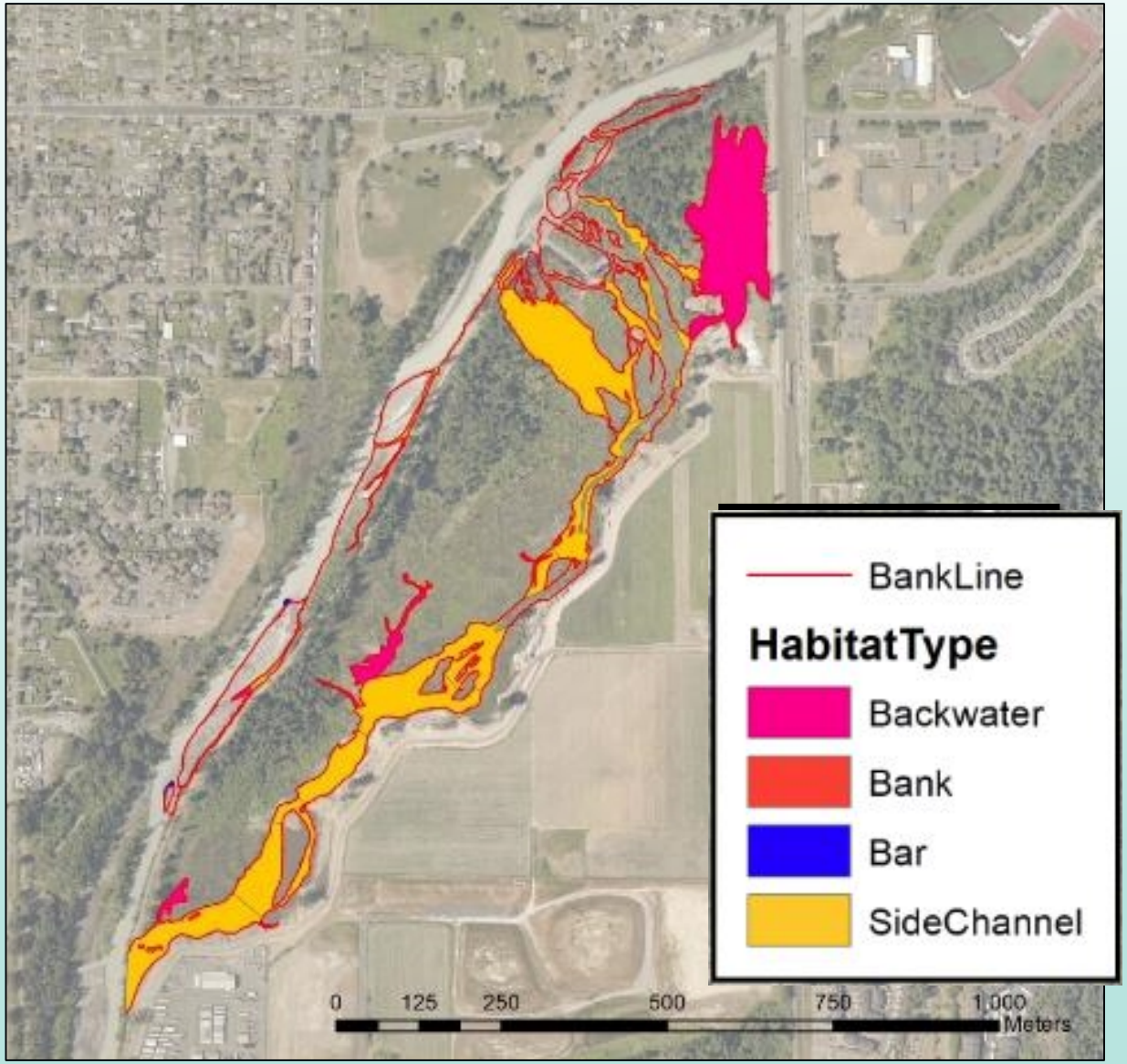
Aquatic Habitat - Inundated Area

2016

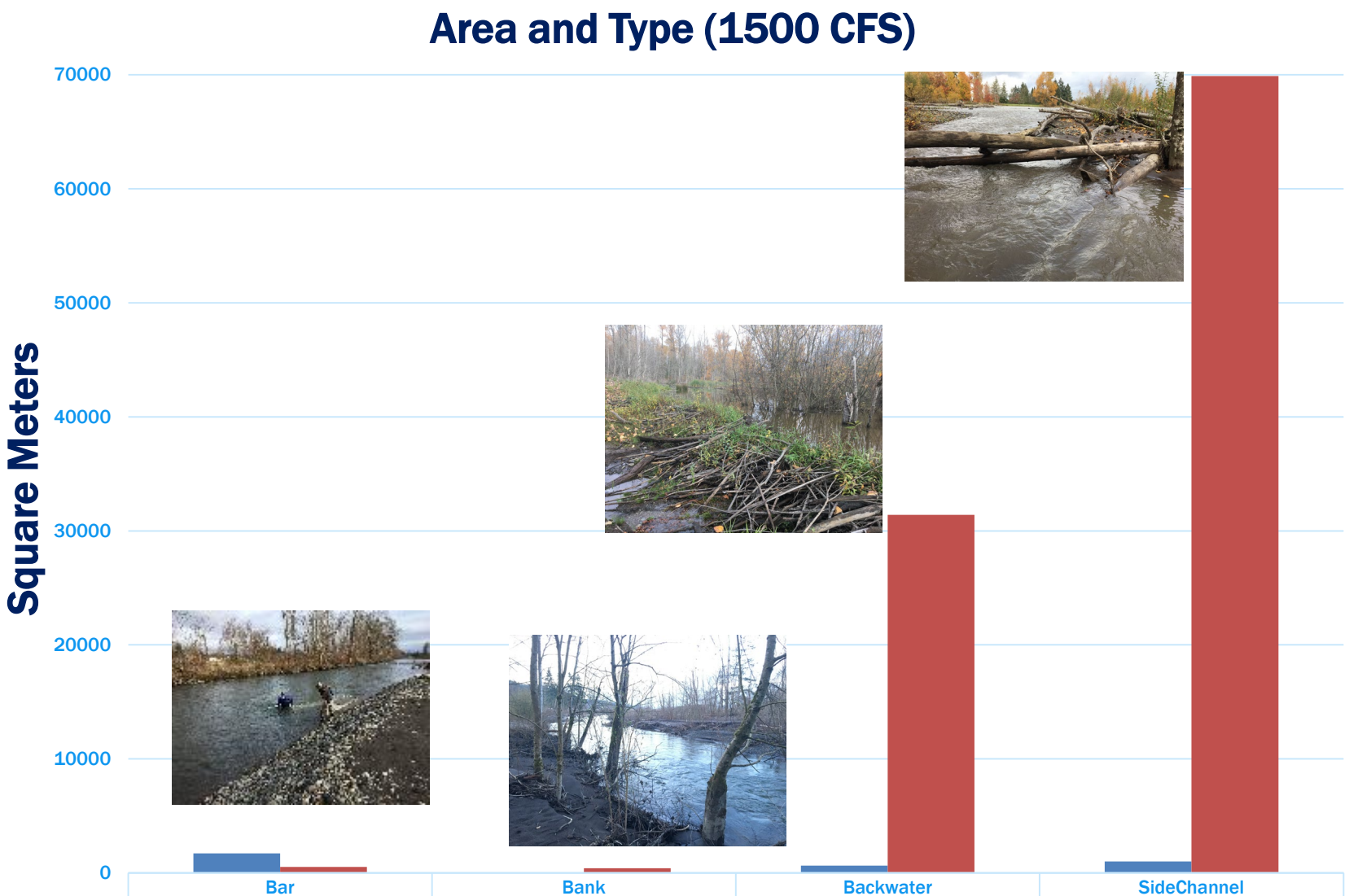
2018



Edge Habitat – Low-Flow Edge Habitat Area Change

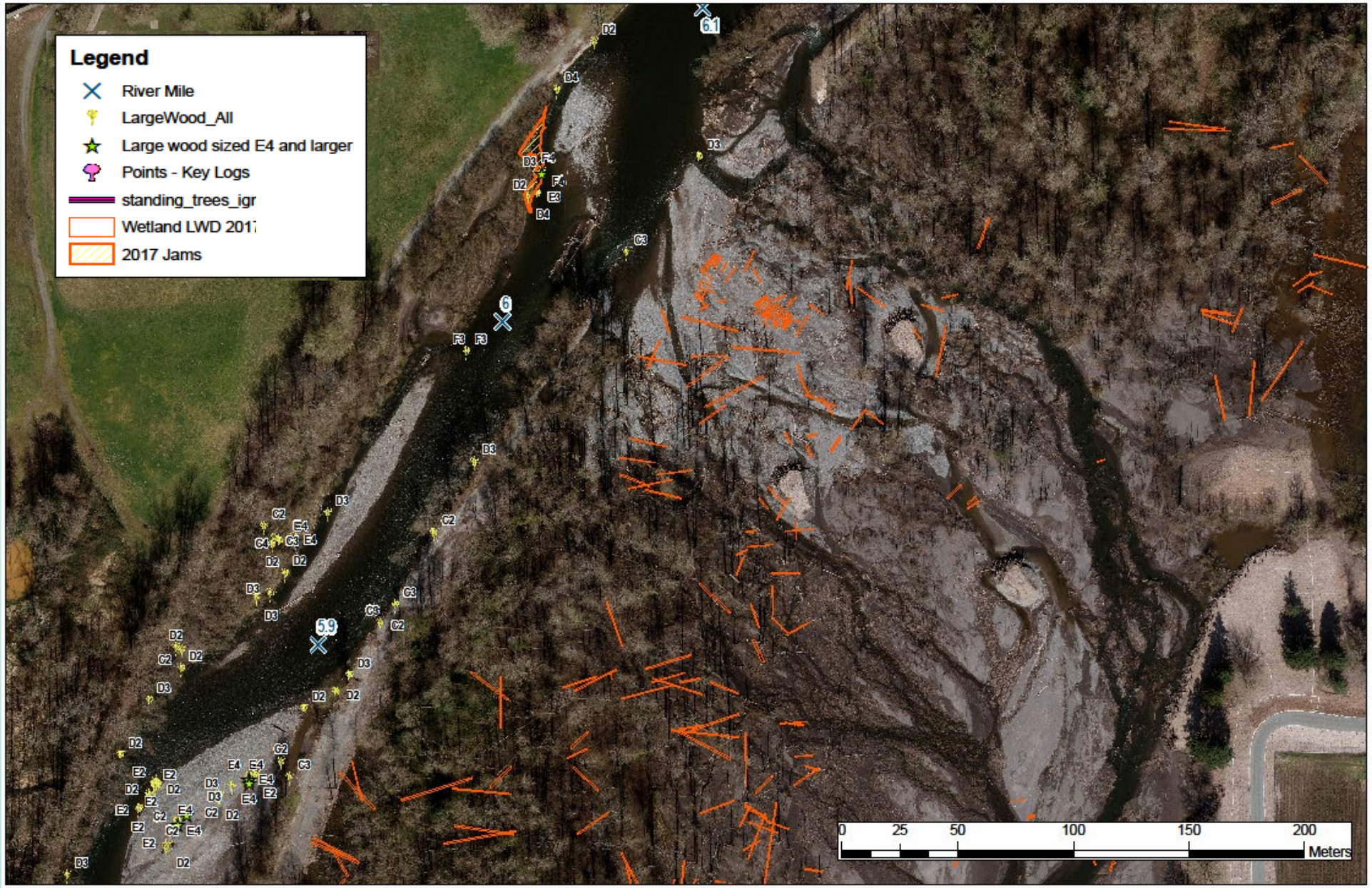


Edge Habitat – Low-Flow Edge Project Response

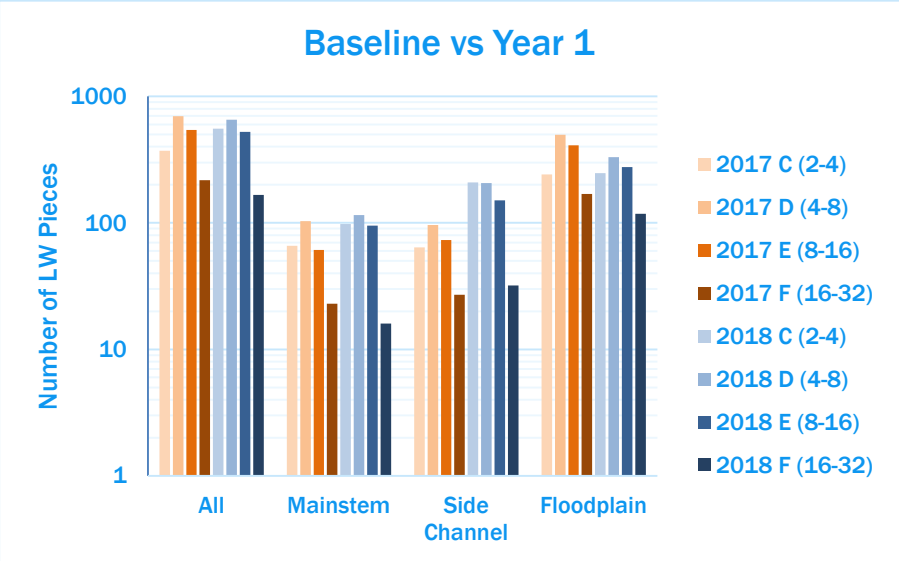


	Bar	Bank	Backwater	SideChannel
Baseline	1713.31	38.13	648.70	1021.32
Year One	540.55	410.33	31402.63	69871.22

Wood Loading – Large Wood Inventory



Wood Loading - Post-Project



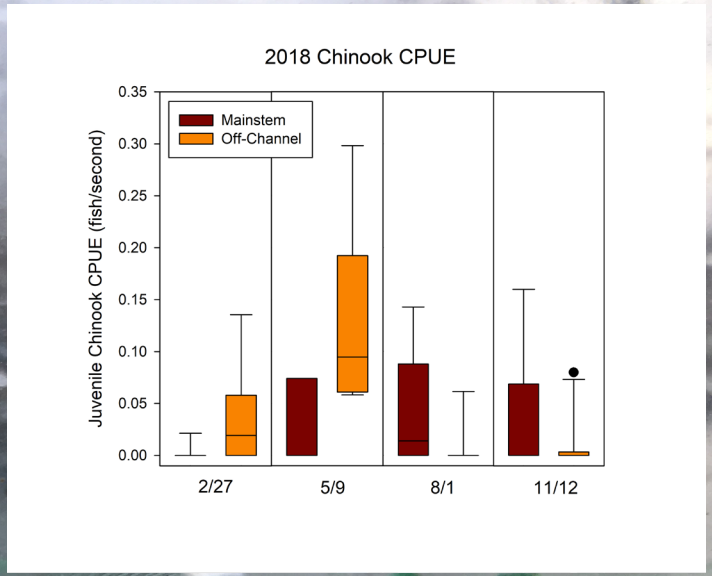
Source	LW Minimun Size Criteria	Quantified Size classes in project area	Guidelines or target	Observed Value in 2017 (Approx.)	Baseline Percent achieved	Observed Value in 2018 (Approx.)	Year 1 Percent achieved
National Marine Fisheries Service	15.2 m long and 0.6 in diameter (50ft x 24 in)	E4-6; F4-6	>80 per mile	18 in Project area (1.3 mi) 13.84 per mile	17.30%	**26** in Project area (1.3 mi) **20** per mile	**25.00%**
Fox and Bolton	2 m long and 10 cm in diameter (6.6 ft x 4 in)	All except B class	>206 per 100 m (75th percentile)	Averaged 88.19 pieces per 100 m (328 ft)	42.81%	Averaged **90.5** pieces per 100 m (328 ft)	**43.69%**
	Key Piece (50 ft x 24 in) volume is 10.75 m^3 or more	E5-G5; D6-G6	>4 (75th percentile)	Average 0.86 pieces per 100 m (328 ft)	21.50%	Average **1.29** pieces per 100 m (328 ft)	**32.25%**

Wood Loading - Channel Formation

Fish - Abundance and Habitat Use

Species	TOTAL #	Age 0	Age 1+	2018
Chinook	194	180	14	108
Coho	709	610	99	152
Pink	37	1	36	6
Rainbow/Steelhead	24	5	19	--
Chum	1	1	0	12
Cutthroat	1	0	1	
Bull trout	6	0	6	
Sculpin spp	151			
Dace	809			
Mountain whitefish	34			
Largescale sucker	355			
Red-sided shiner	9			
Lamprey	2			
UNK minnow	54			
UNK salmonid	2			
TOTAL	2388	797	175	

TABLE 8. FISH CAPTURED IN THE COUNTYLINE REACH BETWEEN 2011 AND 2015.



Vegetation – Riparian Processes

- Survival - 97% woody species
- Cover ~15%
- Invasive cover (qualitative <3%)
- Stock type assessment findings

Vegetation – Riparian Processes

- Native recruitment study
- Pollinator forbs
- Riparian buffer establishment

Conclusion

Questions?

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