

Mainstem Floodplain Restoration Element Overview

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The Reaches Project - 2002

- YRBWEP Phase II – 1994 Legislation
- Biologically Base Flows - 1999
- Reaches Report - 2002
 - Linking Fluvial Processes to Floodplain Ecology
 - Assessing Salmonid Habitat on Floodplains
 - Derivation of Normative Flows for Damaged Floodplain Ecosystem
 - Reaches
 - Cle Elum Reach
 - Kittitas Reach
 - Naches Reach
 - Union Gap Reach
 - Wapato Reach
- Key Takeaways



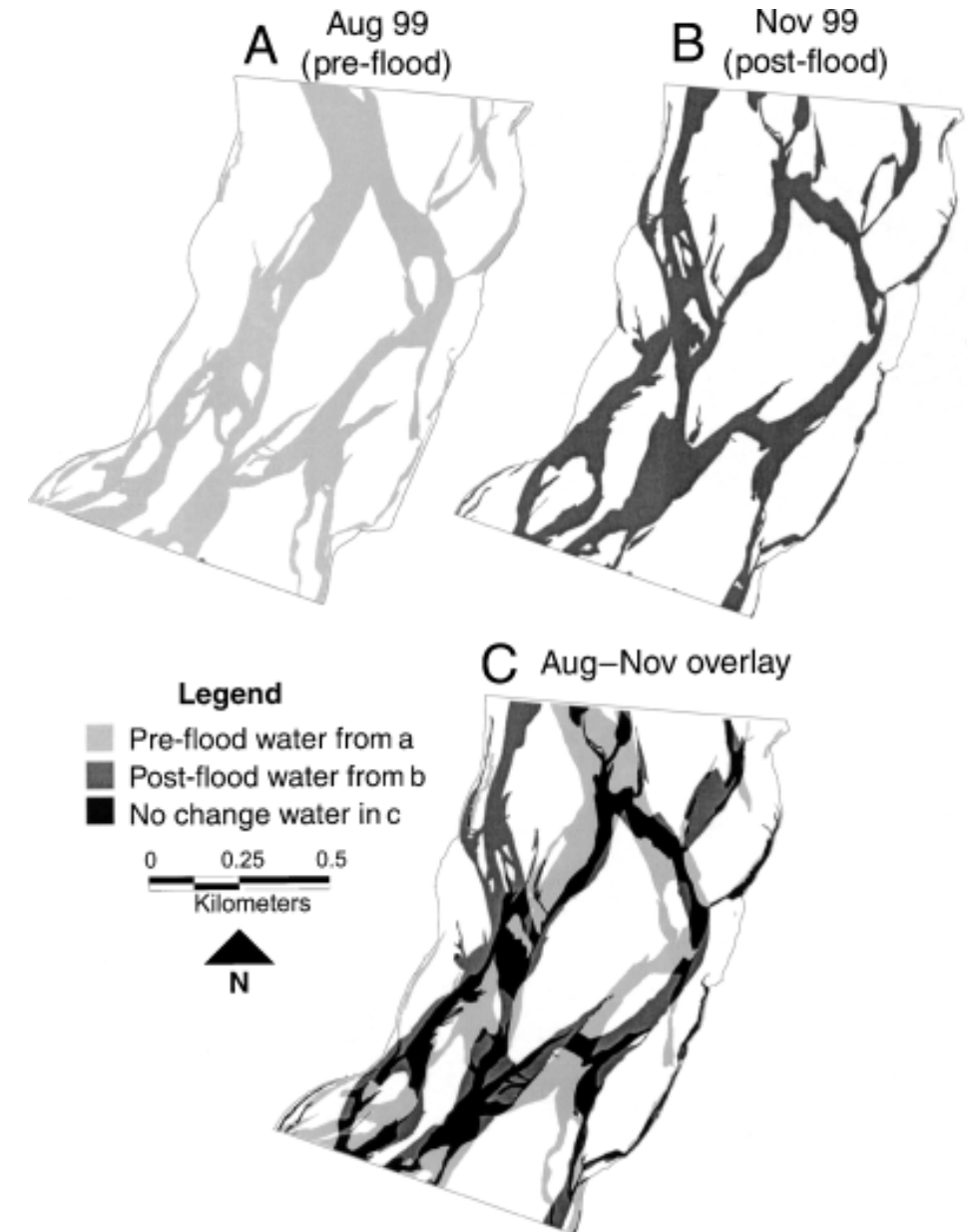
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The Reaches Project - 2002

- Linking Fluvial Processes to Floodplain Ecology

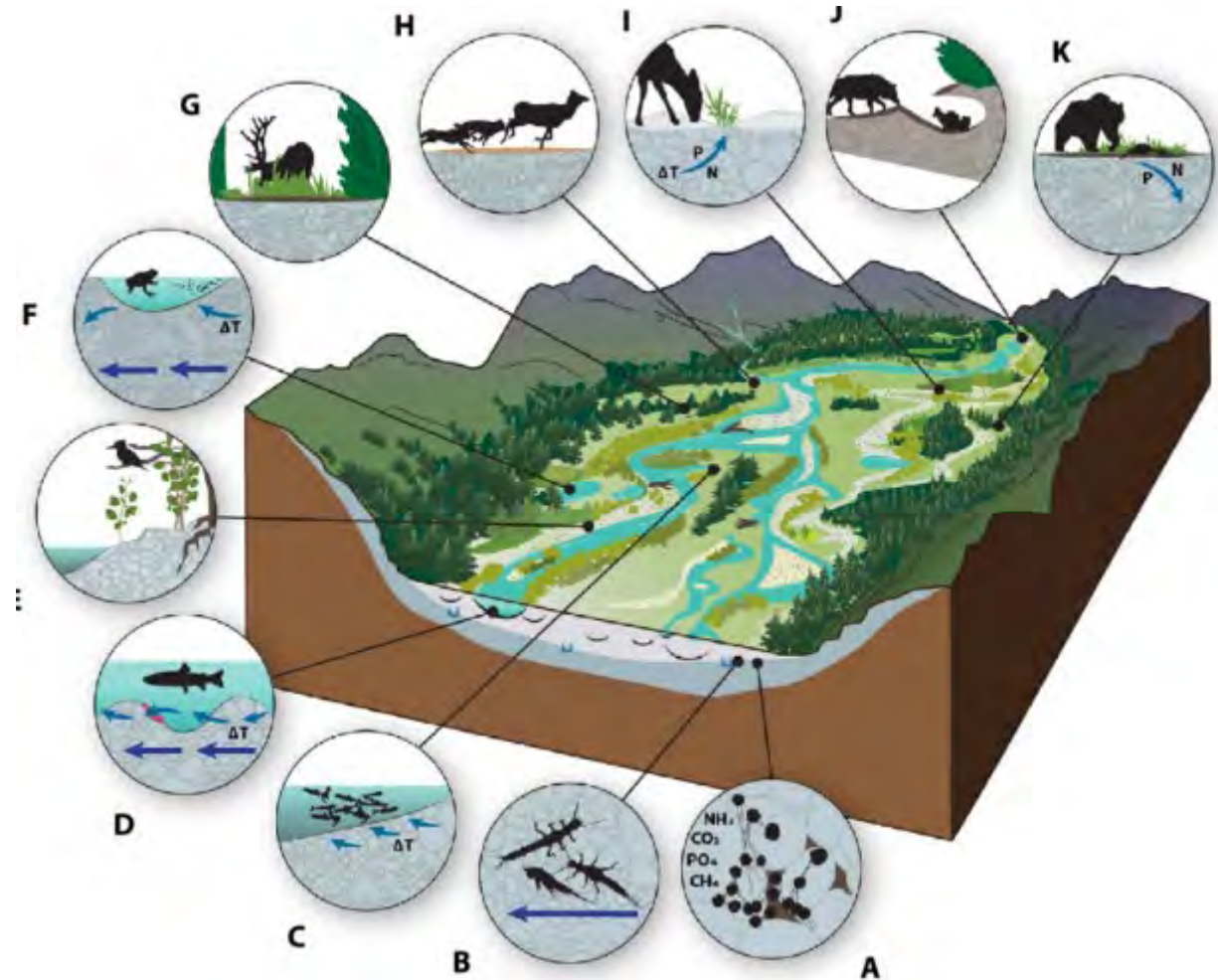
1) Riverine Process – Does the river have enough room and natural levels of energy (flood flow) so the channel can move and create new habitats?



The Reaches Project - 2002

- Linking Fluvial Processes to Floodplain Ecology

2) **Life Histories** – Do the flow patterns meet the life history needs of the plants and animals that make up the riverine Ecosystem?



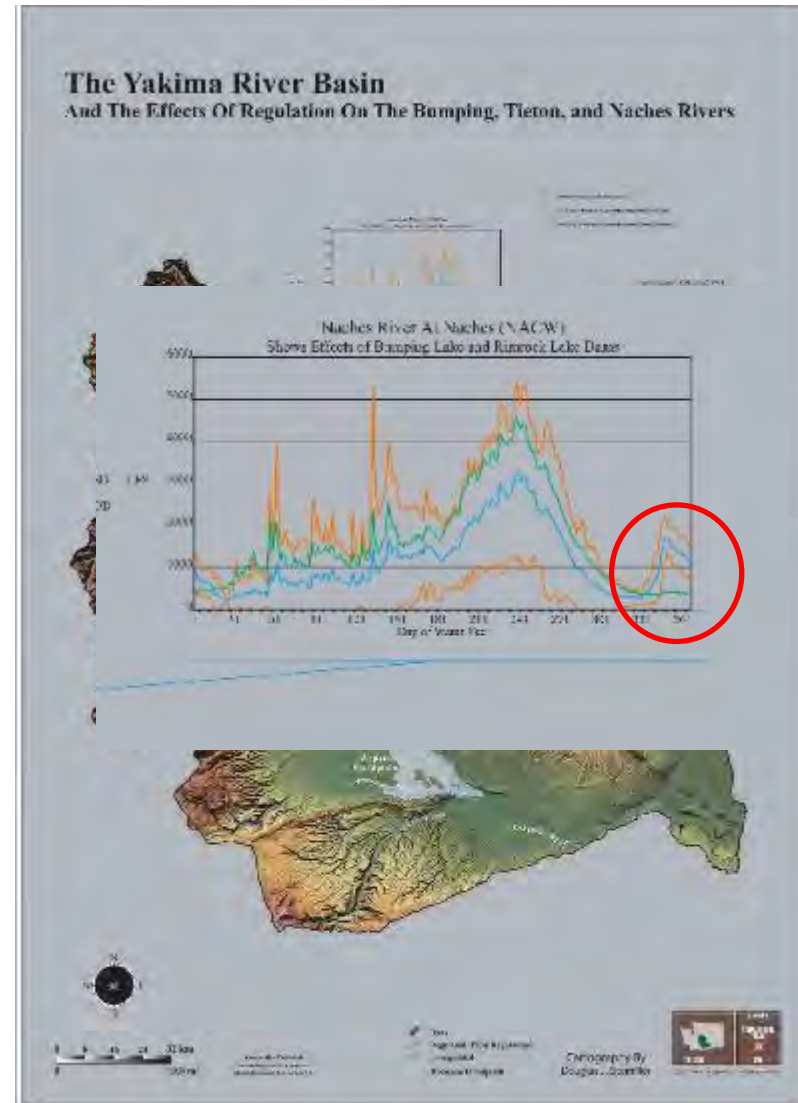
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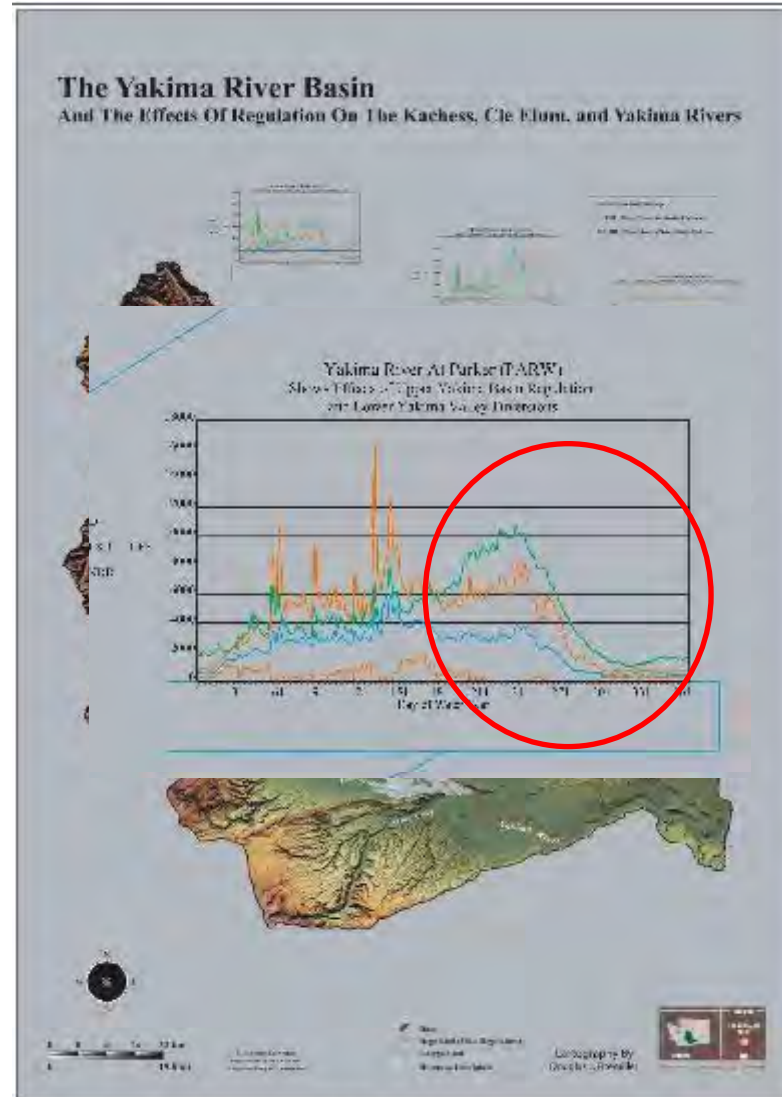


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The Reaches Project - 2002

- Linking Fluvial Processes to Floodplain Ecology



Map 13. The Yakima River Basin and the Effects of Regulation on the Kachess, Cle Elum, and Yakima Rivers



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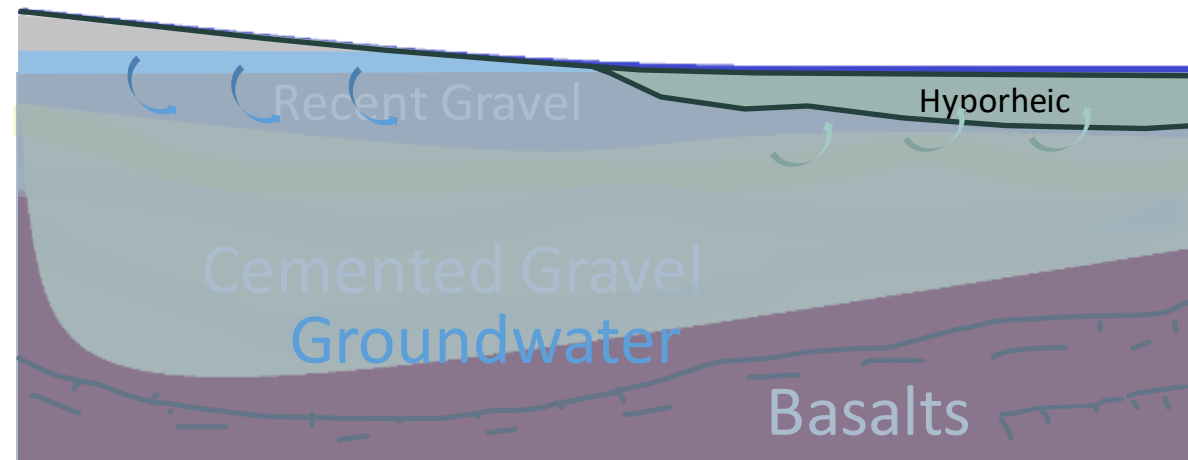
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The Reaches Project - 2002

- Linking Fluvial Processes to Floodplain Ecology

3) **Productivity and Diversity** – Extent and strength of connection between surface and groundwater ecosystems, with special emphasis on salmonids and salmonid life histories.



Profile of the Gap to Gap Reach of the Yakima River.



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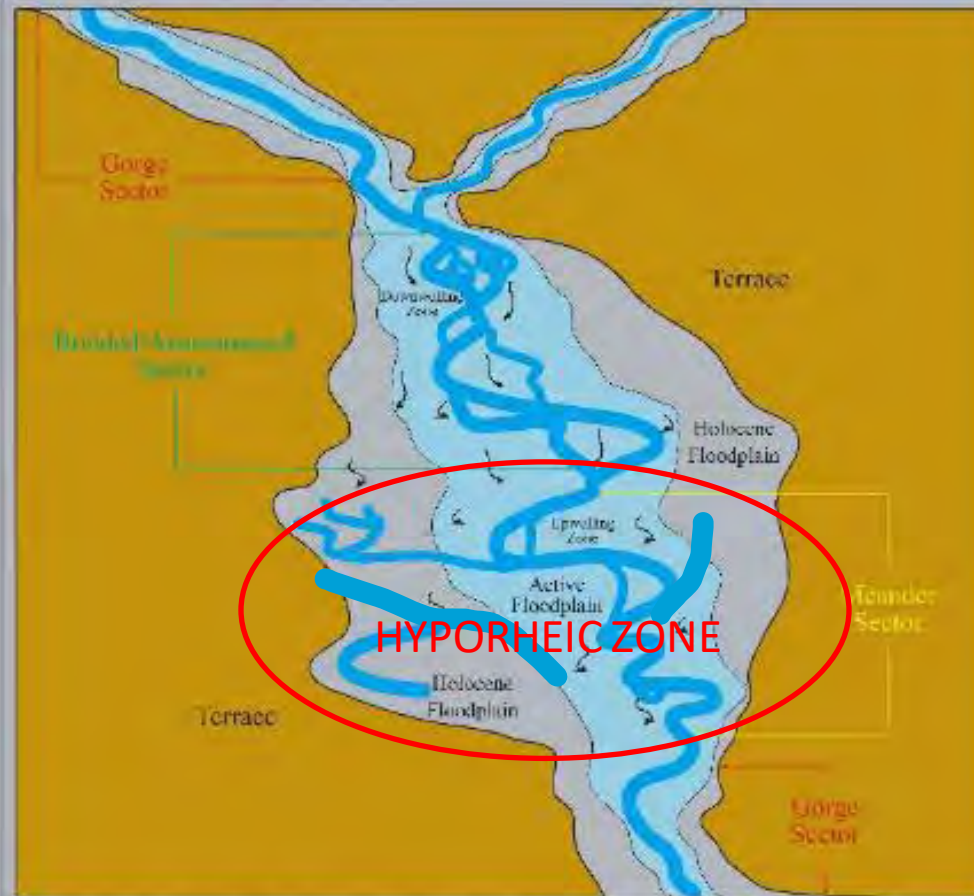
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The Reaches Project - 2002

The Structure And Function Of Alluvial Floodplains And Riverine Landscape Connectivity

- Restore connectivity of surface and sub surface ecosystems
- Restore process and life history POTENTIAL of native species
- Continuity of Sediment, Energy, Organisms, Biomass



- Groundwater Storage/Flood Attenuation
- Continuity of Sediment, Energy, Organisms, Biomass

Figure 5a. Generalized location of functional sectors and zones of downcutting and newalluvial during flood within an alluvial floodplain

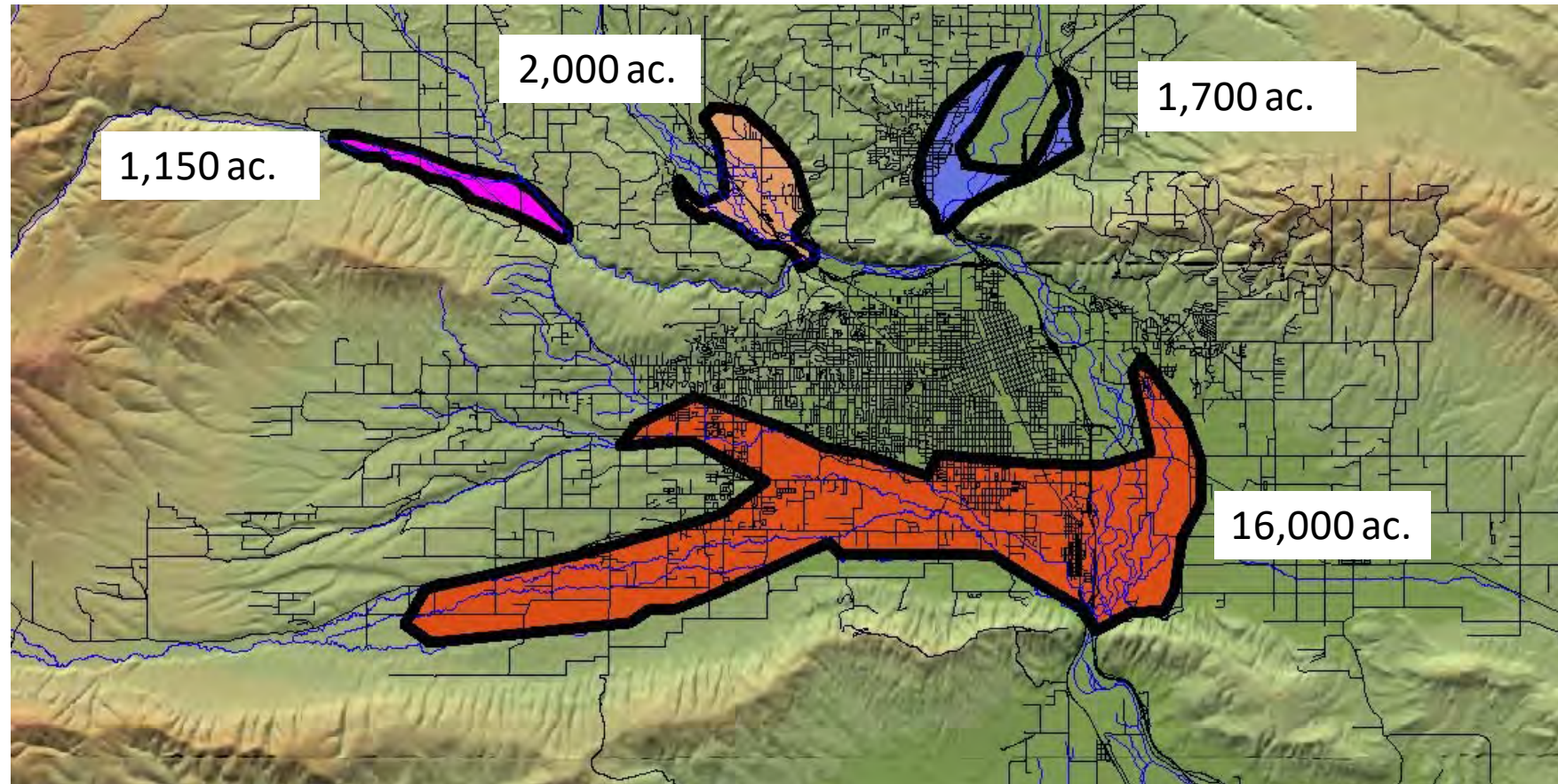


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Hyporheic Zone Extent Naches and Gap to Gap Reaches

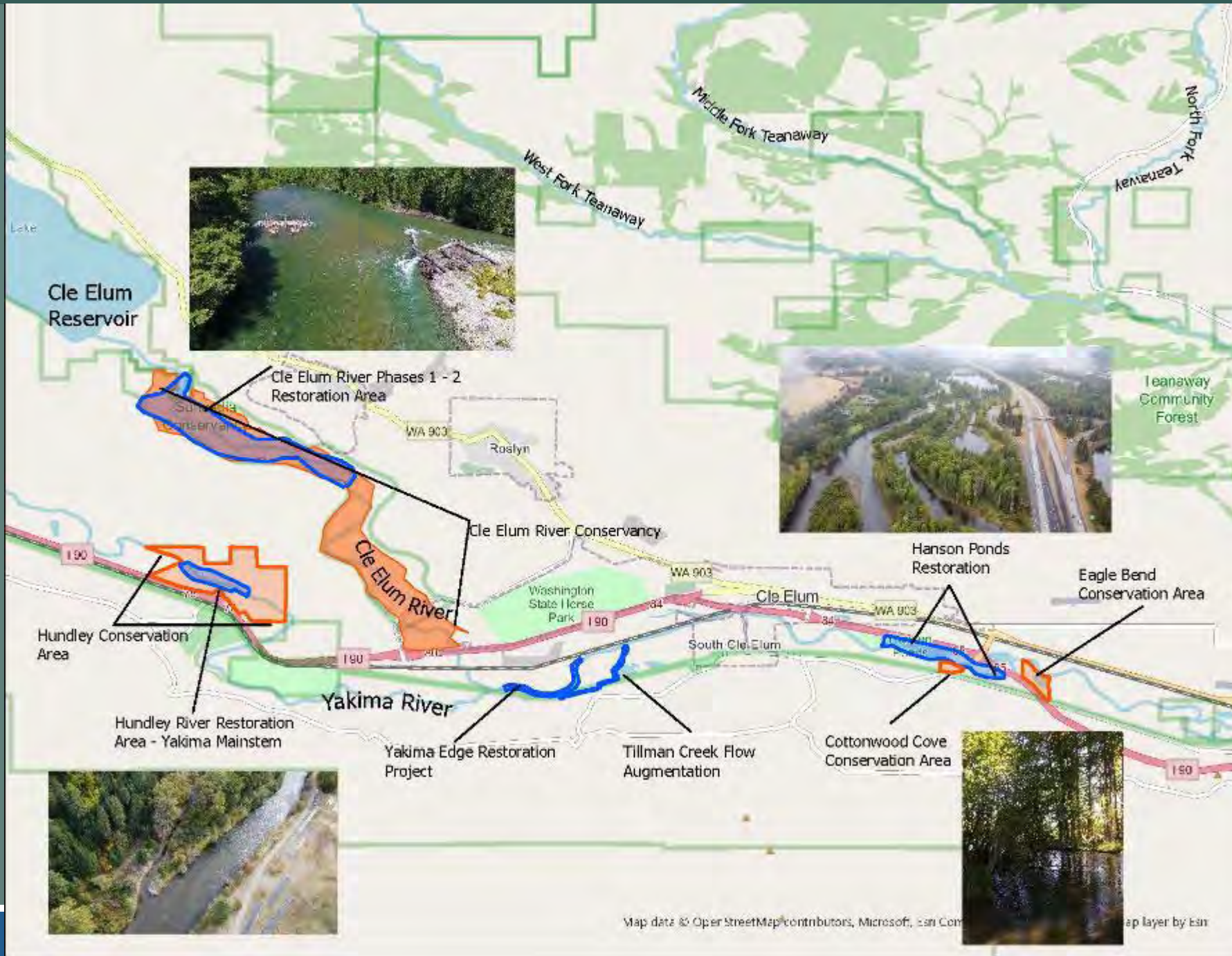


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Cle Elum Reach



Kittitas Reach



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9 properties purchased: 1999 - 2008

Water rights: 3,865.8 AF

Active restoration ongoing

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Schaake Habitat Improvement Project

Moo!

Former cattle feedlot operation
Property purchased in 2003
2-miles and 280 acres of critical Yakima River habitat



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Schaaake Habitat Improvement Project

Primary Design Elements

- Levee Removal
- Floodplains
- Side Channels
- Flood Protection Berm
- Wetlands
- Alcoves
- Substantial Revegetation and Weed Control



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Schaake Construction



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Schaake Habitat Improvement Project - Stats

- Removed 0.9 miles of levee
- New flood protection berm 0.25 miles away from the river
- Created and enhanced 40 acres of wetlands
- Constructed two perennial side channels over a mile long
- Constructed four enhancement floodplain areas -11 acres
- 130 acres of reconnected floodplain
- Construction completed **October 2021**

Moved powerlines

Cleaned garbage and debris

Enhanced alcoves

Decommissioned wells

Removed roads

Connected diverse habitats



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Schaake Results



Sidechannel just after higher flow event

Wildlife

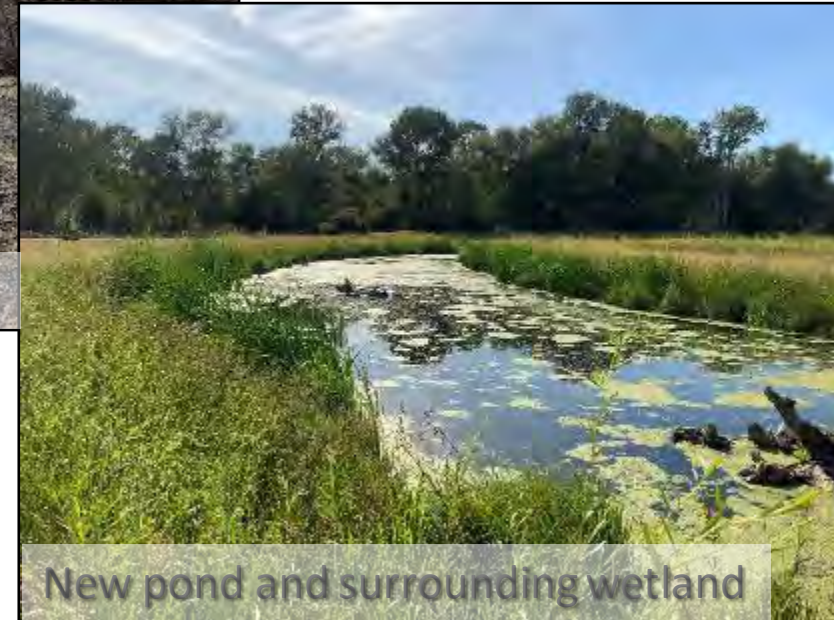
Natural

Sustainable

Diverse

Low Maintenance

Habitat



New pond and surrounding wetland



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On-going Schaaake Work



- Revegetation and weed control
- Monitoring – watch the river do its work
- Tjossem ditch water right transfers and headgate decommissioning (Trout Unlimited)
- Land Exchange (City of Ellensburg) – additional 70 acres



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Schaake Habitat Improvement Project



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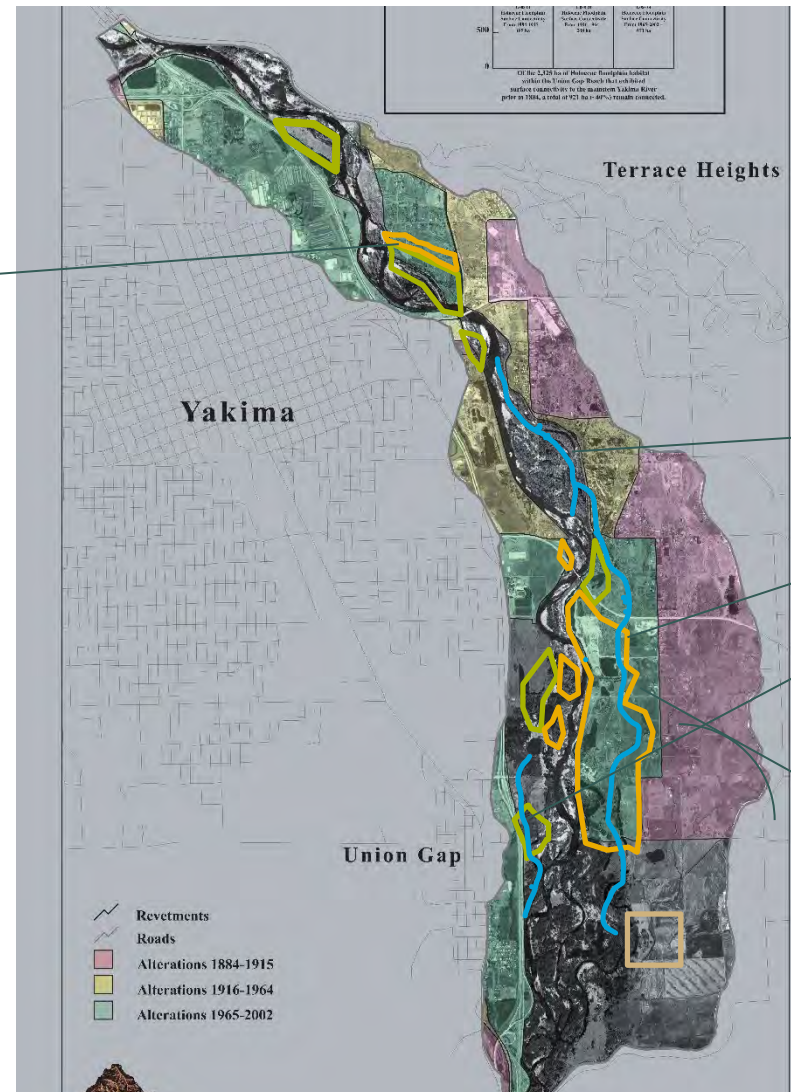
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Union Gap Reach

Cascade Mill
Parkway

-  Completed
-  In Process



Reconnection of Side
Channel,
Blue Slough,
Spring Creeks

Gap to Gap Floodplain
Restoration
700 ac. Reconnected
1200 ac. Restored
hydrology

Most Actions Near SR 24 and below in Cooperation with Reclamation



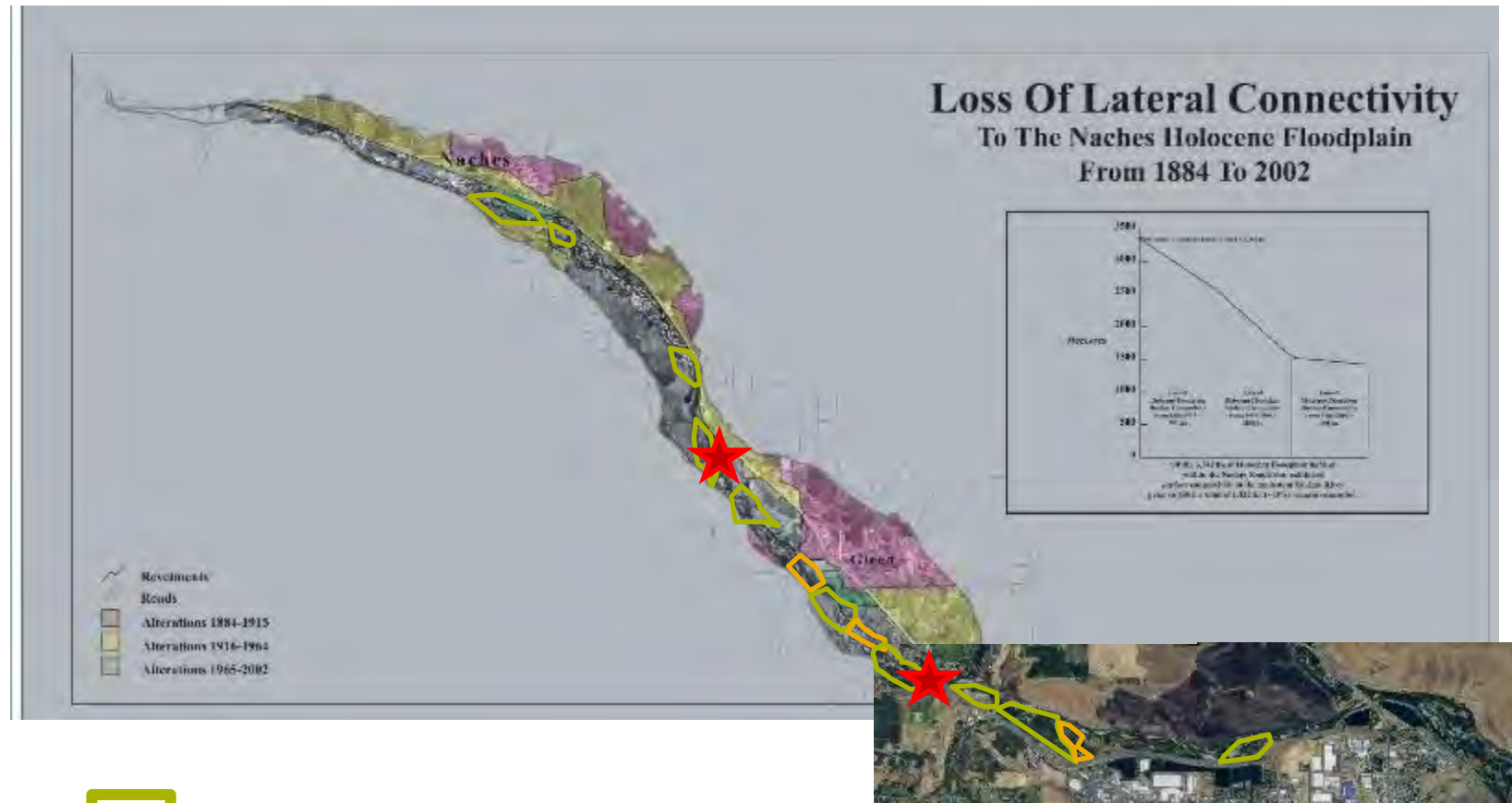
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Naches Reach

- Nelson Dam Removal and River Restoration
- Wapatox Power Water purchase by Reclamation and State.



-  Completed
-  In Process



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Nelson Dam Removal & River Restoration - Overview



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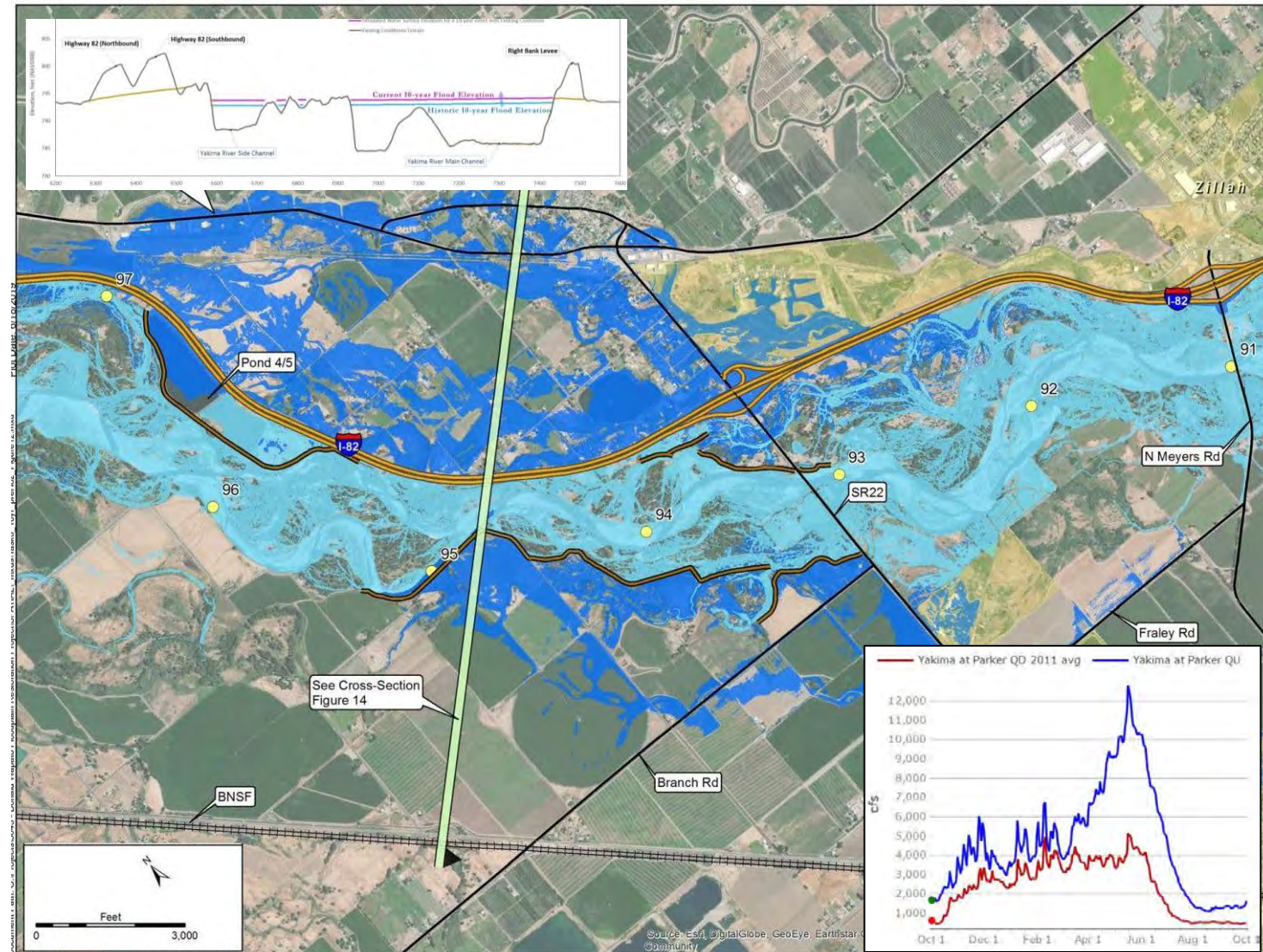


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Wapato Reach- flow and connectivity challenges

- Reaches report lingo:
- “Normative flow”,
“Geomorphic templet”
- Complementary and co-dependent concepts
- Flow is the master variable of river ecology
- Connected floodplains unleash the full potential of flow restoration
- Progress in the Wapato Reach:
- Donald Wapato junk yard
- Thermal refugia
- Wapato Reach Action Plan
- Targeted flow increases



Map by Dale Meck, Yakima County, 2019



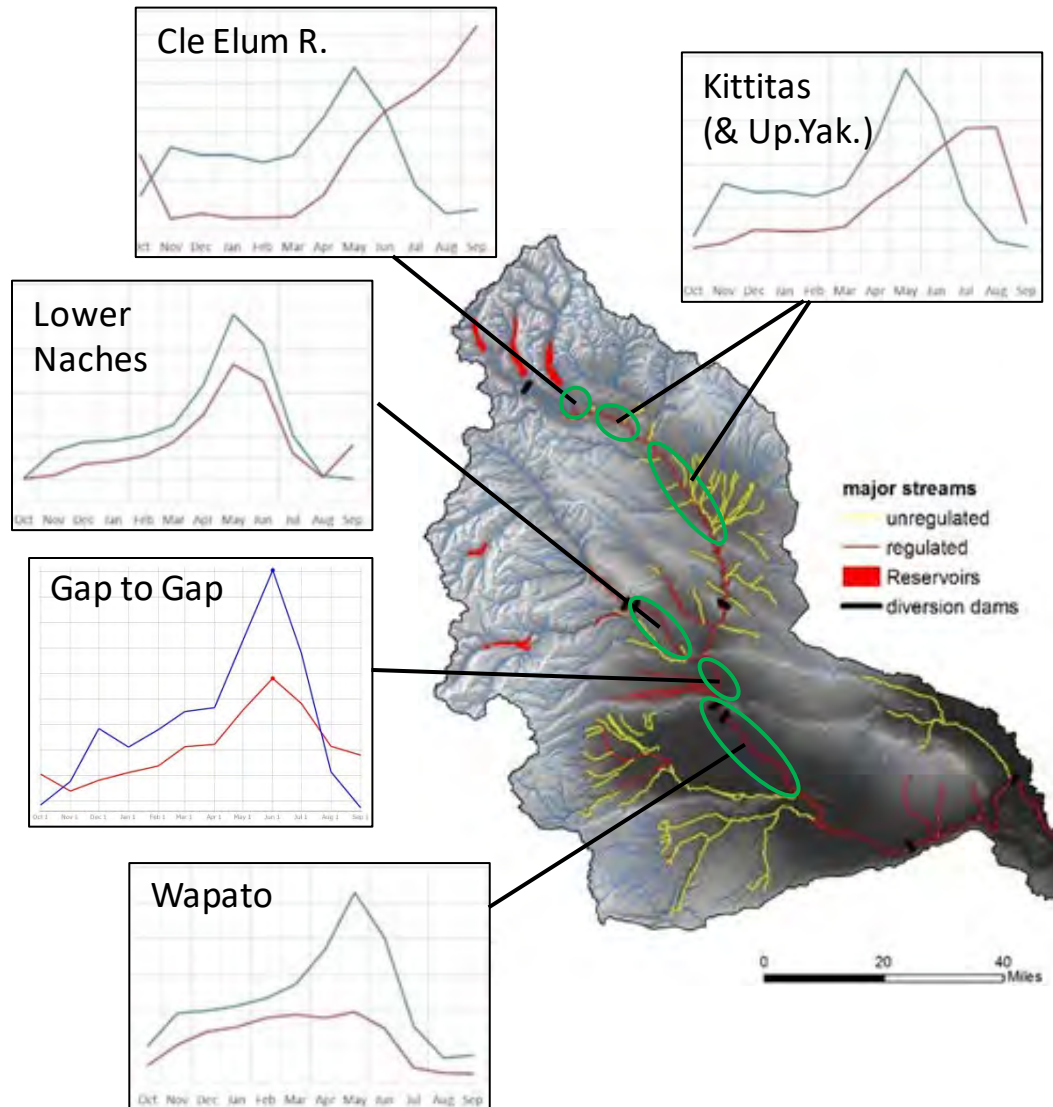
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Diversity of floodplains = diverse strategies



- Major floodplains have similar natural functions, but...
- Vary widely in flow alteration and degree of confinement
- Adjacent landscapes shape restoration possibilities
- Groundwater dynamics vary
- Different emphases and potential for restoring flow, connectivity, and riparian function



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Summary/Next Steps

- Vision from 2002 coming into focus
- Progress!
 - All five reaches have been worked on
 - 4 out of 5 reaches have had major restoration efforts started/completed
- Benefits to fisheries recovery
- Continue to implement and monitor efforts
- Tracking process and benefits



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