Preliminary Results from the Lower Yakima River Survival Study, 2021

Tobias Kock[1], Scott Evans[1], Michael Porter[2], Pat Monk[3], Adam Pope[1], and Russell Perry[1]

[1]U.S. Geological Survey
[2]Yakama Nation Fisheries
[3]Bureau of Reclamation

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U.S. Department of the Interior
U.S. Geological Survey

Presentation Overview

- Lower river survival study evaluates factors affecting juvenile salmon during migration: river flows, dams and facilities, predation, other factors.
- 2019-2020 findings concluded lower survival and high numbers of fish in some canals; variability.
- Surprise findings: fish mortality not related to fish screen performance; predation appeared minimal.
- 2021 study focused on Sunnyside Dam guidance boom.
- Future actions and options.

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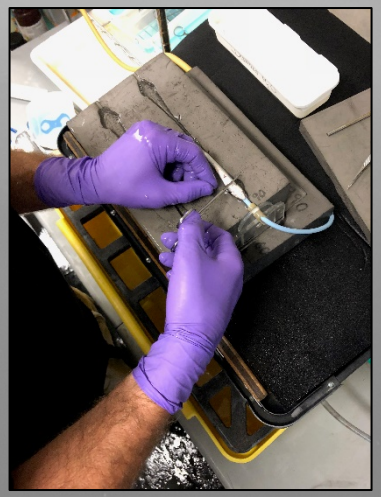
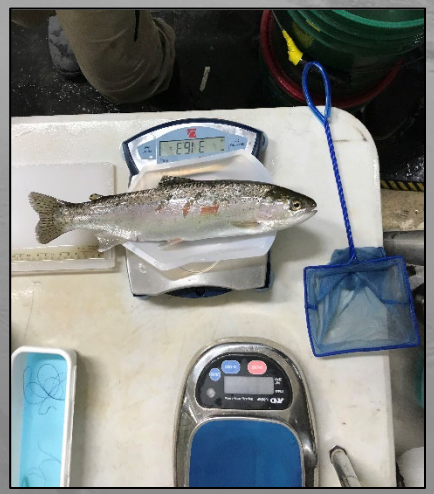
Tagging Summary

Species	2018	2019	2020	2021
Yearling Chinook salmon	429	590	347	200
Juvenile Steelhead	313	350	376	200
Subyearling Chinook salmon	344	393	495	390
Total =	1,086	1,333	1,218	790





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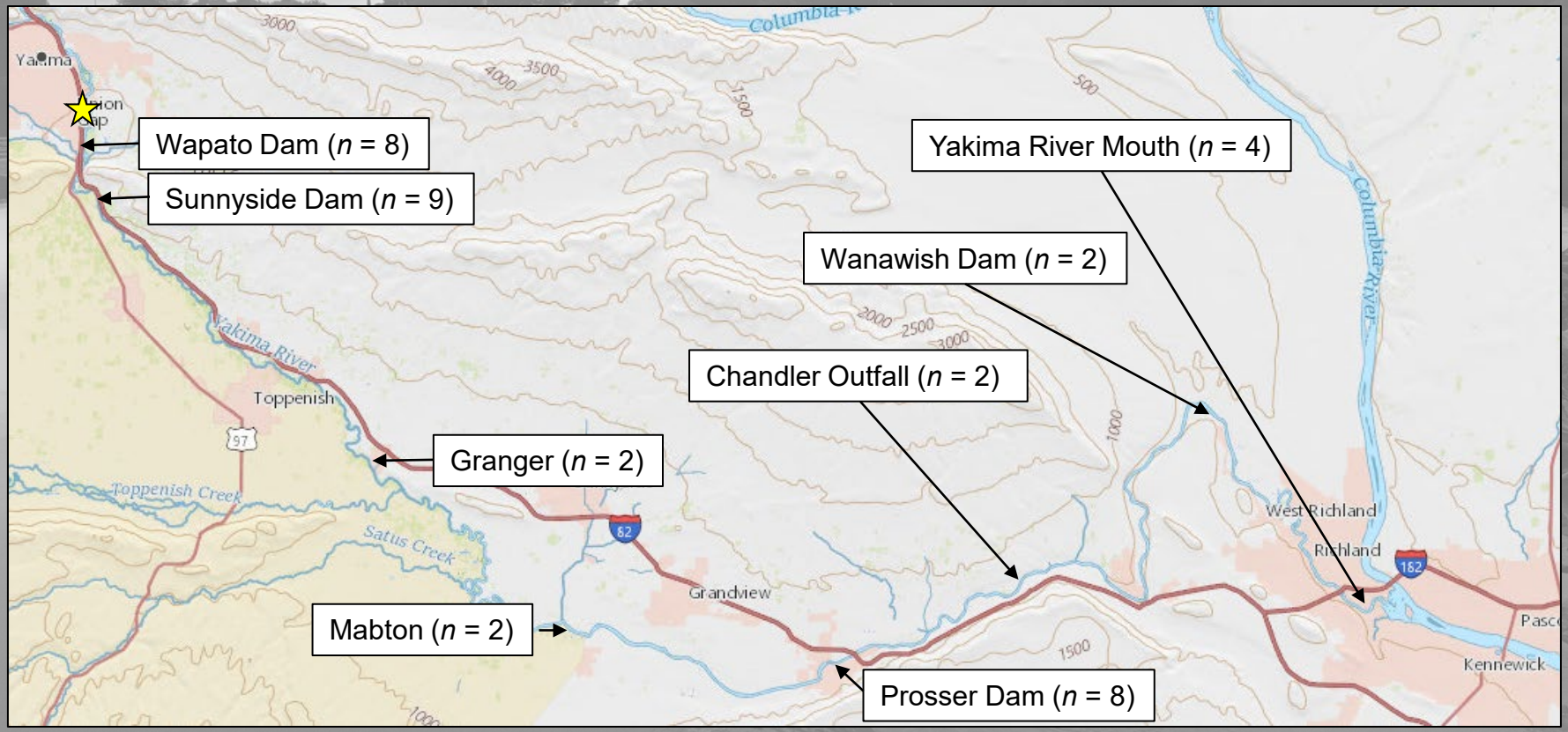
2021 Study Area and Release Site



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Sunnyside Dam

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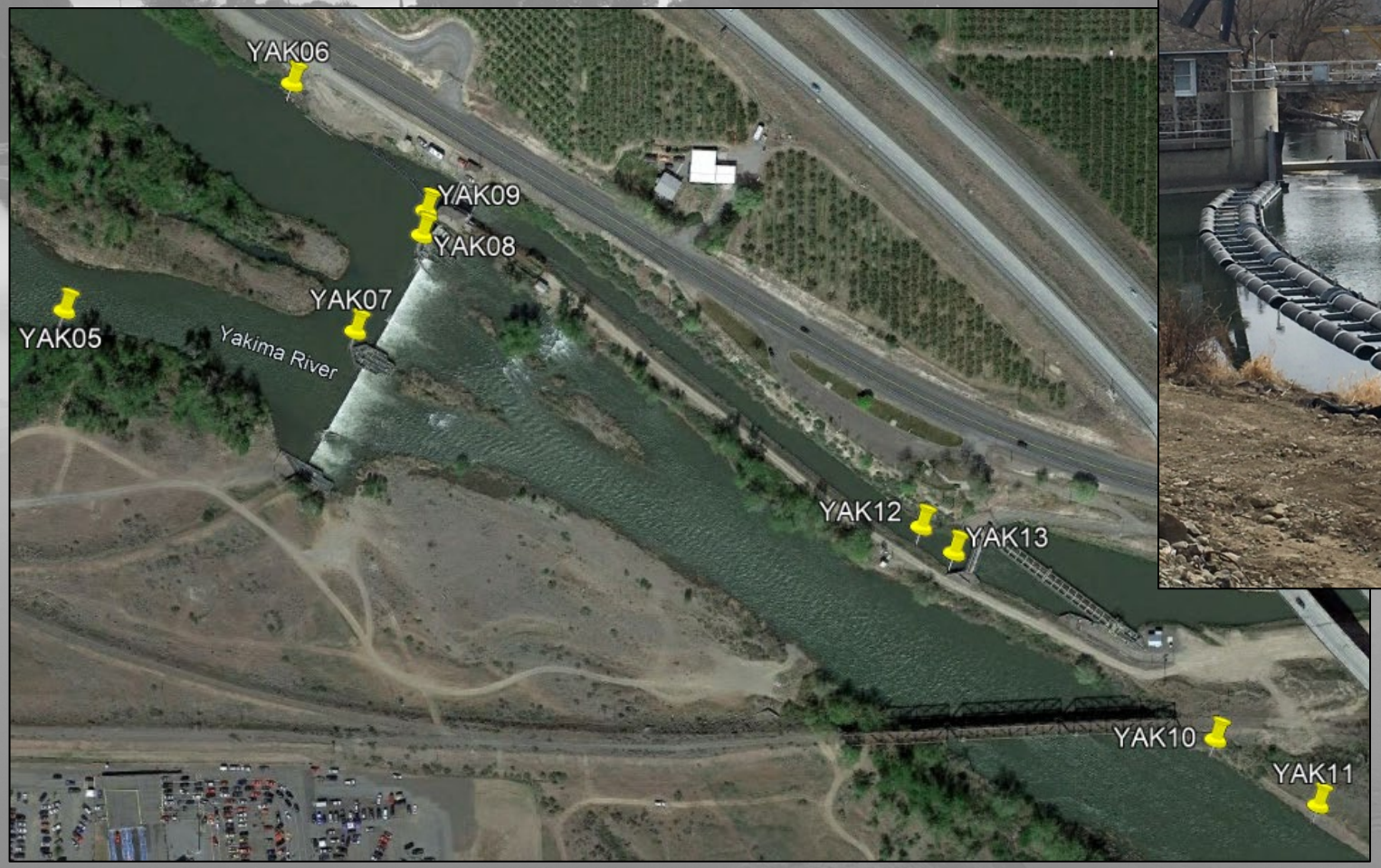
Route-Specific Passage at Sunnyside Dam



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Sunnyside Fish Screens

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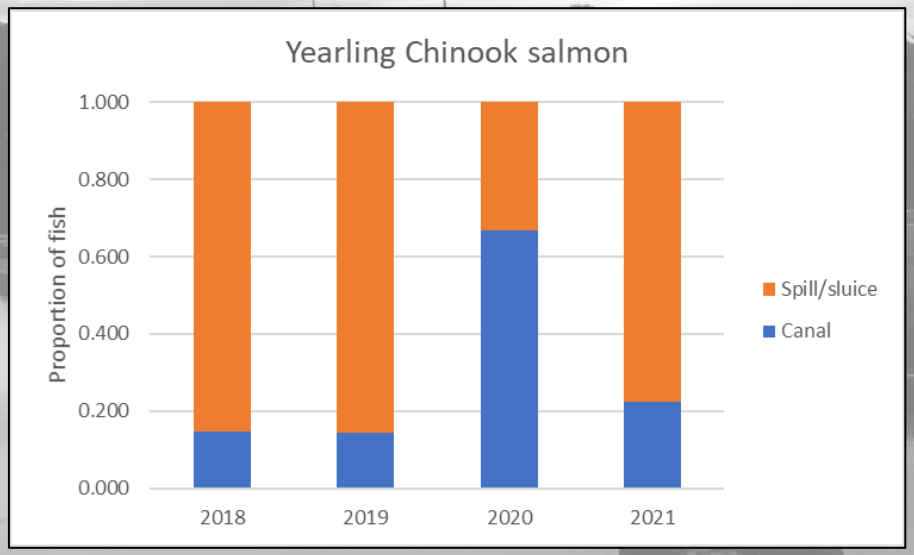
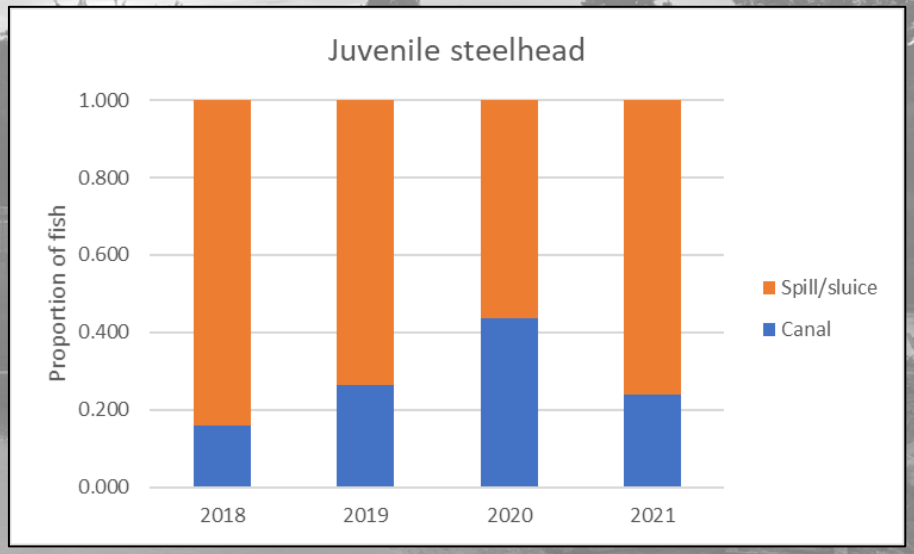
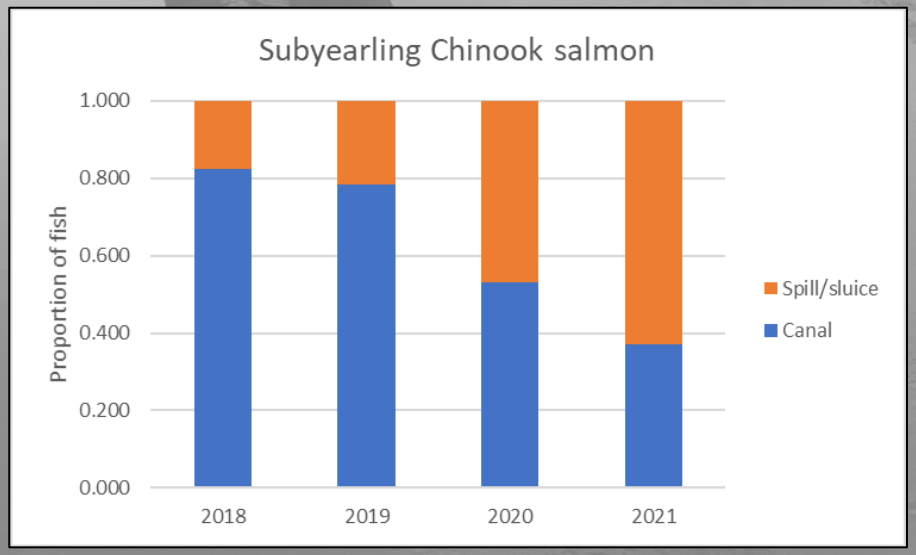
Guidance Boom Effectiveness







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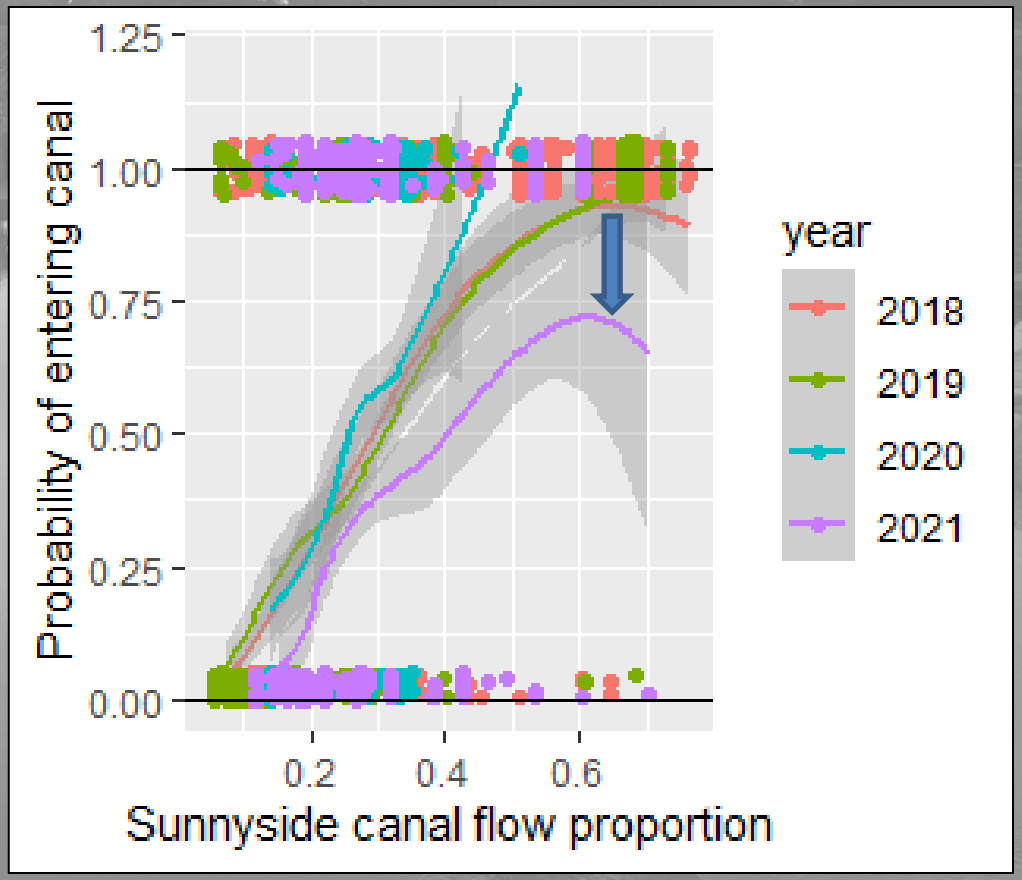
Guidance Boom Effectiveness



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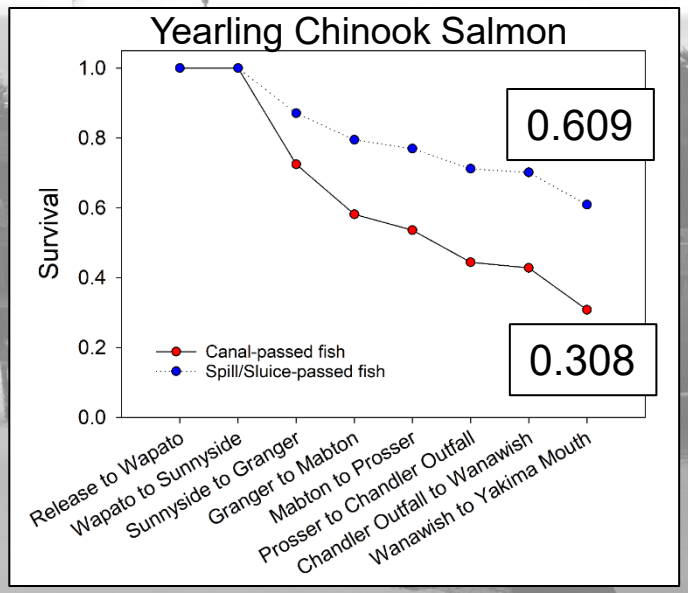
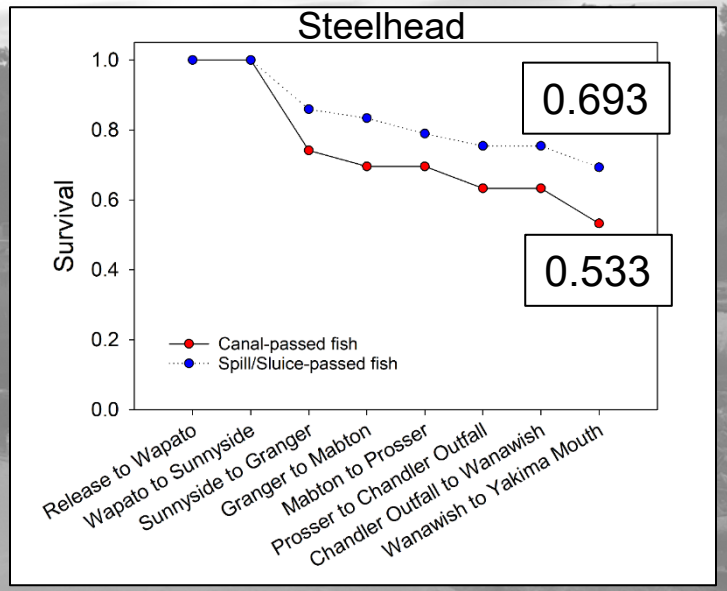
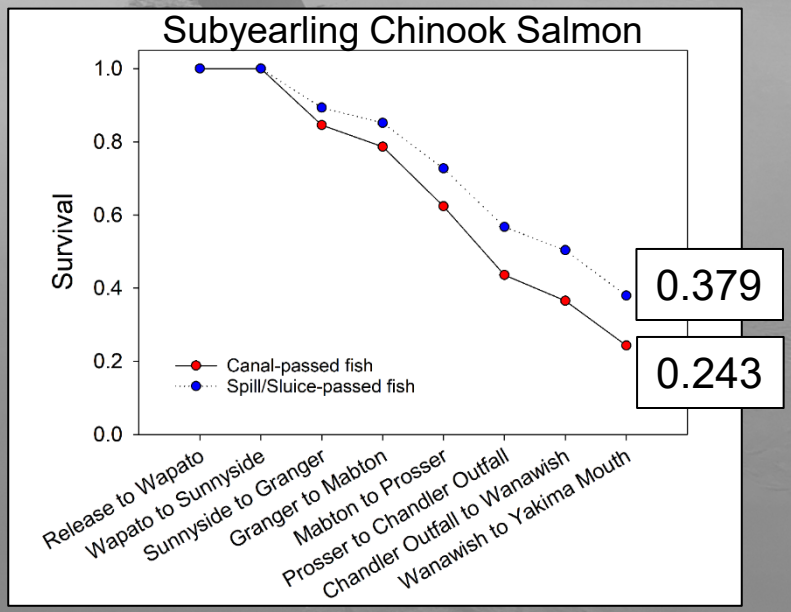
Survival Effects







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Prosser Dam and Chandler Canal Fish Screens

Percent of fish using the canal
Yearling Chinook salmon = 21.6%

Survival through Canal = 0.76
Survival over the Dam = 0.98

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Future Activities

- In 2022, Evaluate guidance boom + overflow gate. Boom needs decking and guard rails for access.
- USGS developing model incorporating flow, facilities, predators, water temperatures, interim results spring 2022, final report due 2023.
- 2022-23 Chandler canal evaluation of conditions using sensor fish.
- Continue to work on facility adjustments: Evaluate netting? Chandler guidance boom and gate? Head gate changes, bypass system fixes?
- Project Management

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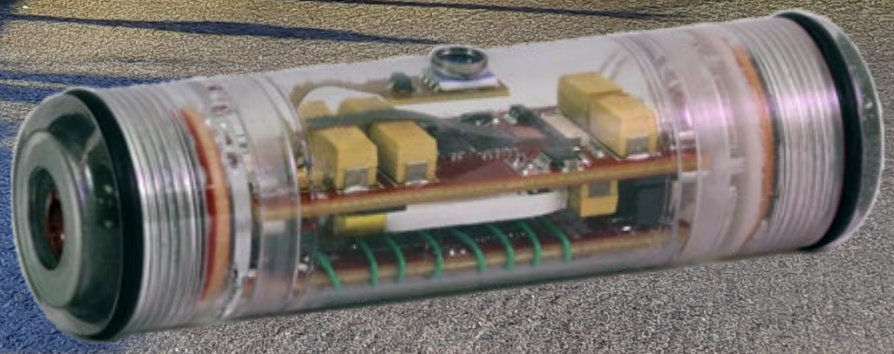
YN/USBR/USGS to evaluate Chandler Canal headgates and bypass conditions



Advanced Telemetry Systems
Sensor Fish

Chandler Canal fish bypass pump back hydraulics; debris in Wapato Dam fish screen bypass

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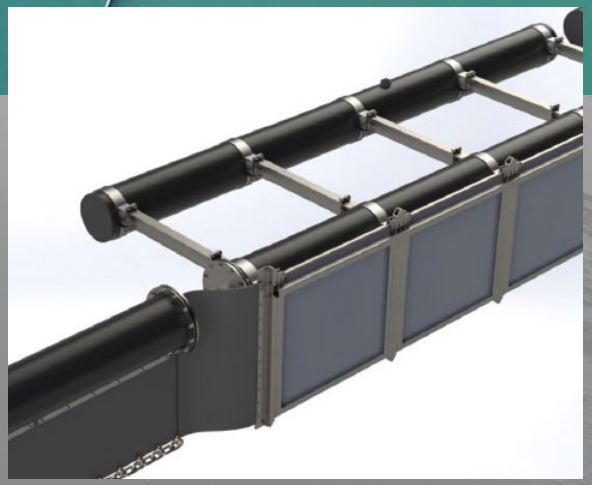
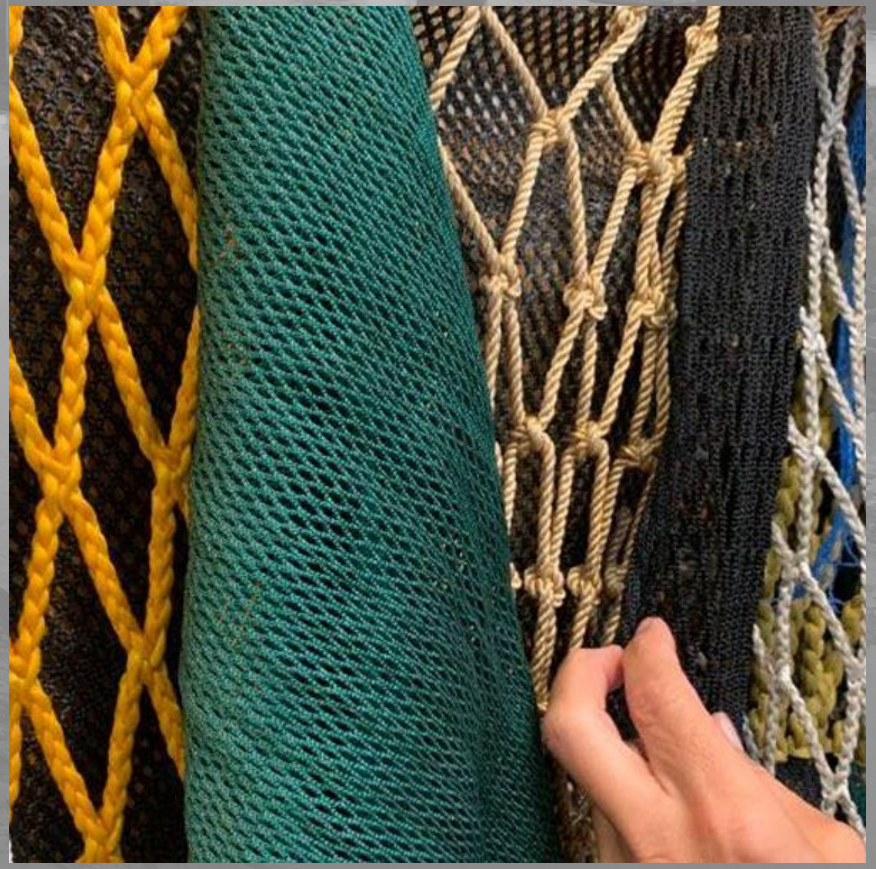
Use of booms and netting for
Fish guidance, Baker Lake WA





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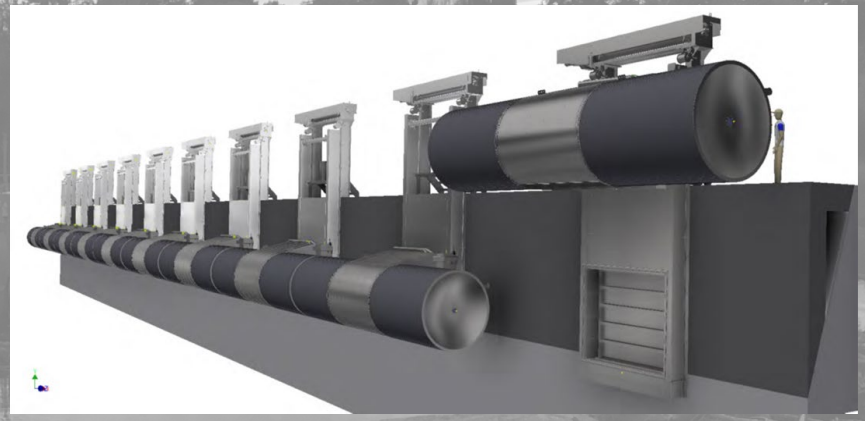
Long Term Infrastructure Needs

- Phase 1 fish screen sites built in 1980's, replacements are due.
- Roza site will use in-river screens; eliminates fish diversion into canal and bypass systems. Site conditions were ideal for this solution.
- Chandler is likely biggest challenge: Both Roza and Chandler power plants divert nearly year-round for hydroelectric production. BPA involvement through F&W program?



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Acknowledgments

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