Contact: Wendy Christensen, 509-573-8050 **Tom Tebb, 509-575-3989**

Agenda
Yakima River Basin Water Enhancement Project Workgroup
Hybrid Meeting Information

December 14, 2022; 9:30 to 12:30 PM

Join meeting

To join from a mobile device +1-408-418-9388,,24923345981##

9:30 – 9:40	Welcome/Introductions and Agenda Overview/Public Comment[1] *Ben Floyd, White Bluffs Consulting*
9:40 – 10:00	YBIP Executive and Implementation Committee Updates *Wendy Christensen, Reclamation and Melissa Downes, Ecology*
10:00 – 11:00	Lower Yakima River – Part 1
11:00 – 11:15	***Break***
11:15 – 11:25	Public Comment
11:25 – 11:40	Working Draft Ten Year Plan Updates/Refinements *Wendy Christensen, Reclamation and Melissa Downes, Ecology*
11:40 – 11:55	2022 Highlights Report *Wendy Christensen, Reclamation and Melissa Downes, Ecology*
11:55 – 12:30	Recognition and Roundtable Discussion – Workgroup Members *Ben Floyd, White Bluffs Consulting*

12:30 – Adjourn

2023 YRBWEP Workgroup Meetings – March 8, June 14, September 11, December 13

For additional information, see the reports and documents available at this link:
http://www.usbr.gov/pn/programs/yrbwep/2011integratedplan/index.html

[1] [1] Public comment opportunities will be provided for each agenda item except for Welcome/Introductions, Workgroup Roundtable Discussion and the Public Comment agenda items. Those wanting to provide public comment during the designated agenda item need to message Jenna Scholz, HDR using the meeting chat function. Each commenter will be limited to 2 – 3 minutes for comments (depending upon number of commenters) to maintain meeting schedule. Additional written material can be submitted with comments for inclusion in the meeting notes. Previously provided comments are noted and not necessary to repeat.

YAKIMA BASIN INTEGRATED PLAN

YAKIMA BASIN
BUILDING A FUTURE FOR WATER, WILDLIFE & WORKING LANDS

YRBWEP WORKGROUP – LOWER RIVER PRESENTATION
DECEMBER 14, 2022

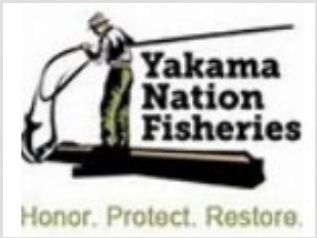
OVERVIEW

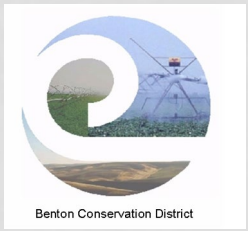
- Part 1 of 2 on the Lower River
- Chronology of Studies and Actions on Lower River
- Existing Conditions
- Action Plan for Steelhead and Salmon
  - Facilities
  - Flow
  - Habitat
- Conclusions
- Part 2 Preview

HISTORY BEFORE YBIP

- **YRBWEP Phase 1** (1980s)
- Smolt mortality studies (Yakama Nation - 1990s)
- **Title XII/YRBWEP Phase II** (Program provides for additional flows - 1994)
- **Lower Yakima TMDL** (for sediment/turbidity -1998)
- **Lower Yakima Assessment** (Benton CD)

BUREAU OF RECLAMATION





LOWER RIVER AND YBIP

- 2011 – 2014
  - **Yakima Delta restoration studies** (MCFEG)
  - **Wapato Reach Habitat Study**
  - **Roza Dam Smolt survival study**

LOWER RIVER AND YBIP

- 2015 - 2016
  - **Drought** had significant *fisheries, flow and supply effects* in the basin
  - **Begin to develop comprehensive lower Yakima strategy**
- 2017 - 2020
  - **USACE Initiates Yakima Delta restoration process with WDFW as Non-Federal Sponsor** (2019)

LOWER RIVER AND YBIP

- 2017-2020 continued
  - **Smolt Survival study**
  - **Temperature as a fish migration barrier** (Benton CD and USGS)
  - **Predation Studies** (Yakama Nation)
  - **Sockeye Study** (Reclamation)
  - **10-year Habitat Strategy**

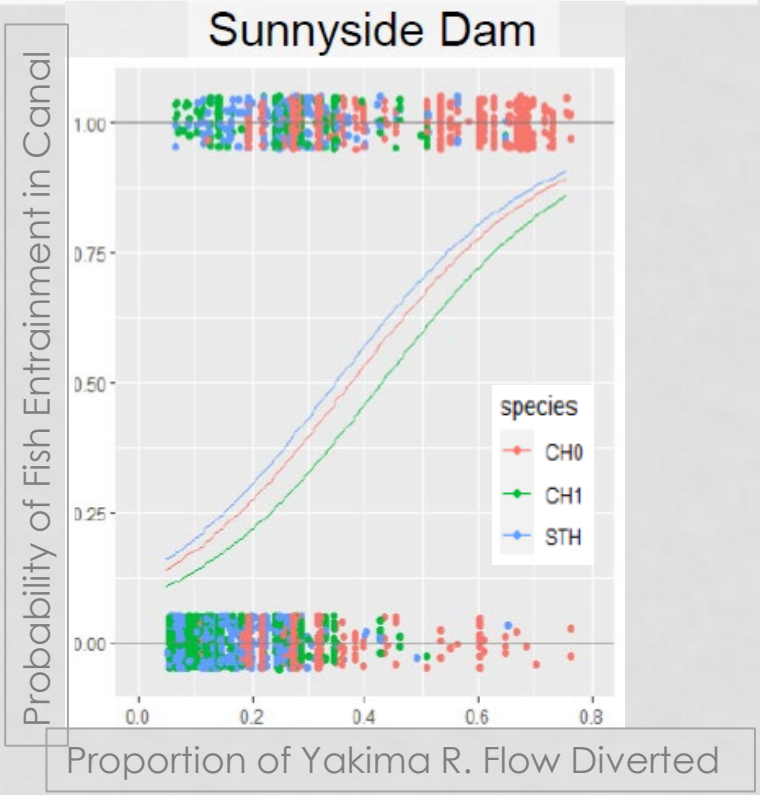
LOWER RIVER AND YBIP

- 2021
  - **Sunnyside Diversion fish guidance boom**
  - **Wapato Diversion Improvement** (BIA)
  - **Lower River Coordinator** (Yakima Nation)
- 2022
  - **Prosser/Chandler fish passage**
  - **Water Stargrass Harvester testing begins** (Benton CD)

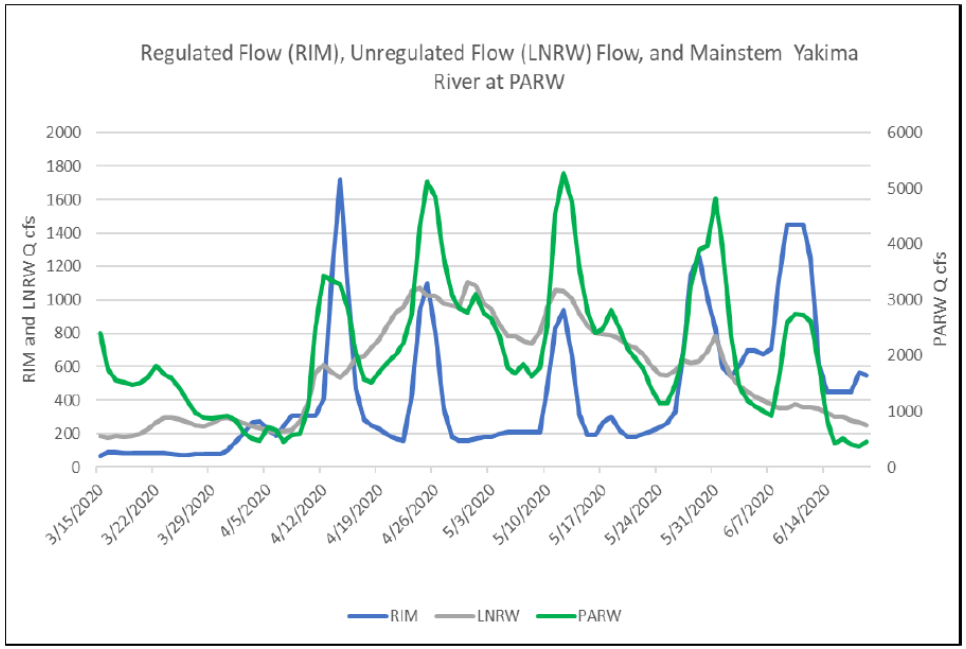
LOWER RIVER SMOLT SURVIVAL

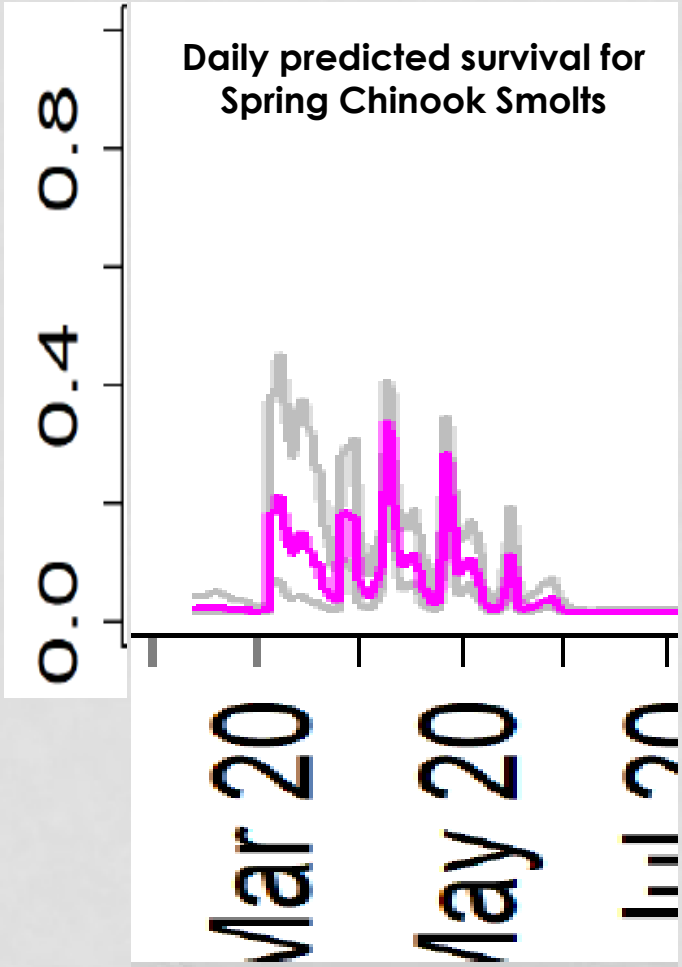
LOWER YAKIMA RIVER SMOLT SURVIVAL STUDY

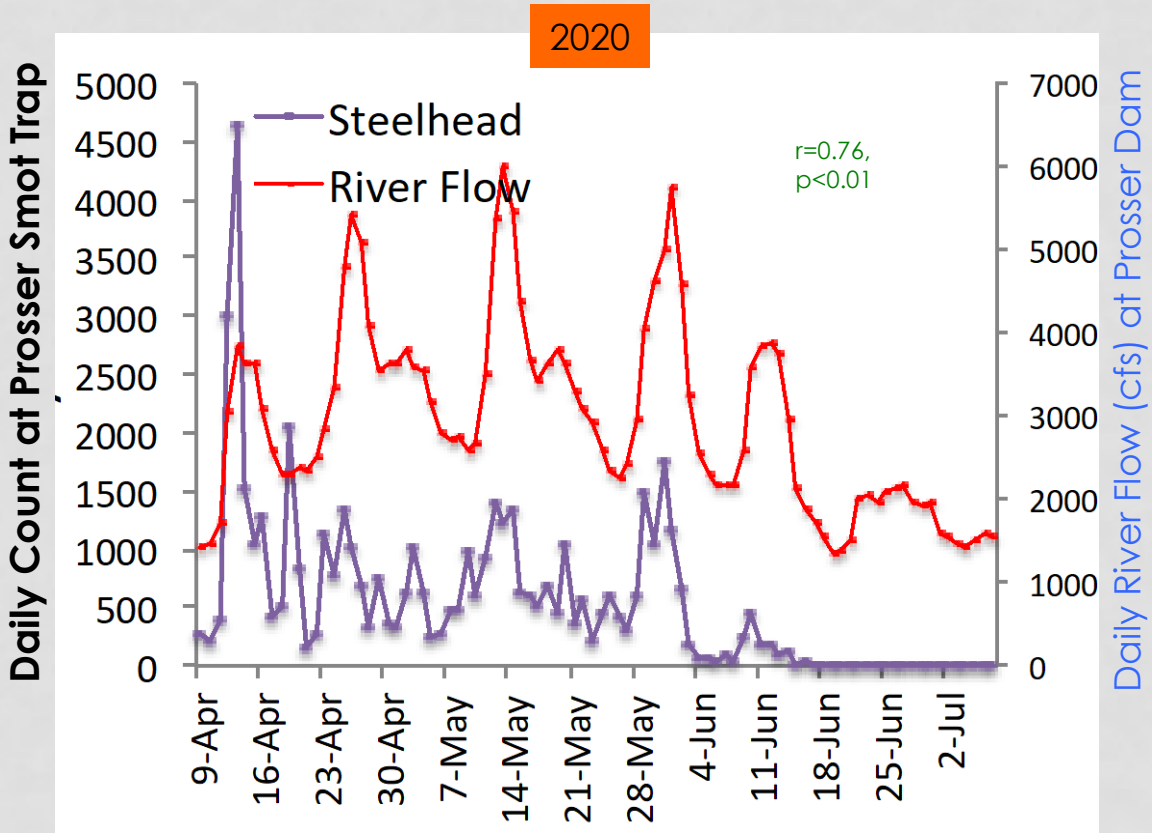
- Preliminary data showed high numbers of fish entered canals and had lower survival
- Pulse flows released from storage were added to natural flow increases to improve survival
- More smolts moved during pulse flow events than declining or stable flows



Flow Management 2020






2020
Daily Count at Prosser Smot Trap
Daily River Flow (cfs) at Prosser Dam
Steelhead
River Flow
r=0.76,
p<0.01
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
7000
6000
5000
4000
3000
2000
1000
0
9-Apr
16-Apr
23-Apr
30-Apr
7-May
14-May
21-May
28-May
4-Jun
11-Jun
18-Jun
25-Jun
2-Jul

LOWER YAKIMA RIVER SMOLT SURVIVAL STUDY

- Decision support tools being developed
  - Predict smolt survival using real time data and conditions (**S**ystem **O**ps **A**dvisory **C**ommittee)
  - Assist predator studies and multi-species survival models
  - Incorporate additional habitat-related flows
- Estimate biological benefits of environmental flows from Cle Elum Pool Raise, YRBWEP Conservation, and future storage or conservation projects
- Evaluating Sunnyside Guidance Boom, Roza Ops and Screens
- Preliminary data will be peer-reviewed and published

ACTION PLAN FOR STEELHEAD AND SALMON

STEELHEAD AND SALMON ACTION PLAN

YAKIMA BASIN
BUILDING A FUTURE FOR WATER, WILDLIFE & WORKING LANDS

- **Facilities**
- **Flows**
- **Habitat**

- **Lower River Focus**
- **Finish What We Started**
- **Takes Advantage of YBIP**

HABITAT RESTORATION – FOCAL REACHES

- Lower Yakima River
- Wapato Reach, Toppenish and Satus Creeks
- Yakima River Gap to Gap and Naches River
- Kittitas Reach-Yakima River
- Teanaway Watershed

60 Habitat Projects Identified in these Reaches

LOWER RIVER PASSAGE

- Wapato Diversion Dam
- Sunnyside Dam Diversion Dam
- Toppenish Creek Restoration
- Prosser Diversion Dam/Chandler Canal
- Wanawish Diversion Dam
- Yakima Delta

SUNNYSIDE DAM FISH PASSAGE IMPROVEMENT PROJECT

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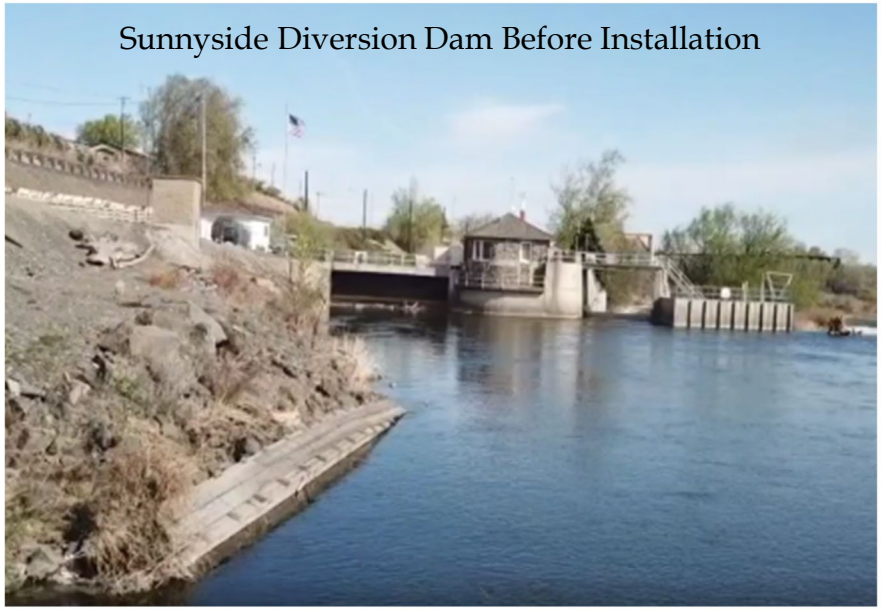
BUILDING A FUTURE FOR WATER, WILDLIFE & WORKING LANDS


Sunnyside Diversion Dam Before Installation


Temporary boom in place to deflect out-migrating smolts away from intake

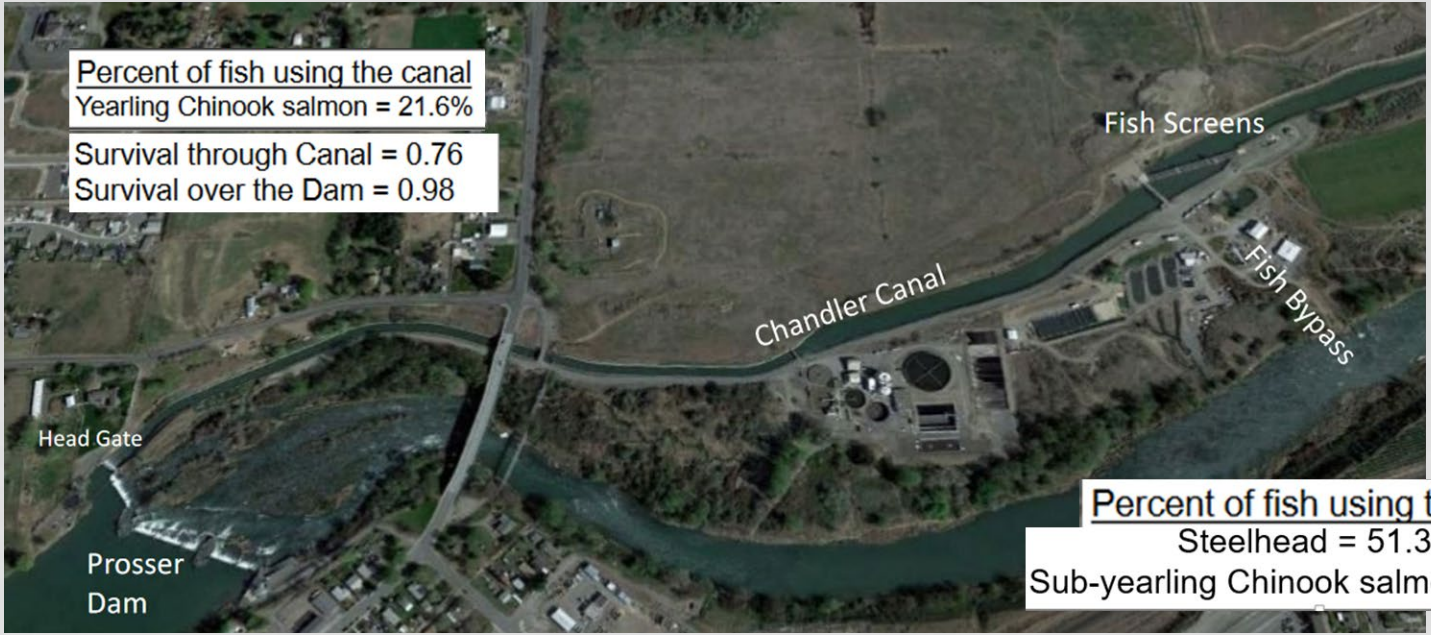
- Adaptive management identified lower river smolt survival problem.
- Concept to construction in one year.

- Fall 2021
- Monitoring is on-going

Sunnyside Dam
Sluice Gate Installation

PROSSER DAM – CHANDLER DIVERSION

SCOPING FOR IMPROVEMENTS TO FISH PASSAGE



PROSSER DAM – DATA GAPS AND EVALUATIONS

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Head-gate design, USGS survival monitoring design, measured head-gate impacts. Compare with Roza intakes, Wapato, Sunnyside.

2022 Acoustic Telemetry Sensor Fish through the Chandler Diversion

- Opening configurations for head gate
- Three bypass pipe openings (return to river)

PROSSER DAM – DATA GAPS AND EVALUATIONS

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D.O. – Assess impacts to survival and delayed travel initially then expand effort downstream/upstream daily fluctuations (fore-bay

Applying for Pacific Salmon Recovery Dollars

- D.O., Temperature, Star grass study
- Improve understanding - fore bay/down river area
- Evaluate river conditions and salmon entrainment, delay mortality impacts
- Guide river management actions

PROSSER DAM - UPSTREAM WATER STARGRASS

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LOWER RIVER SALMON PREDATORS








- Native
- Non-Native

LOWER RIVER SAMPLING LOCATIONS

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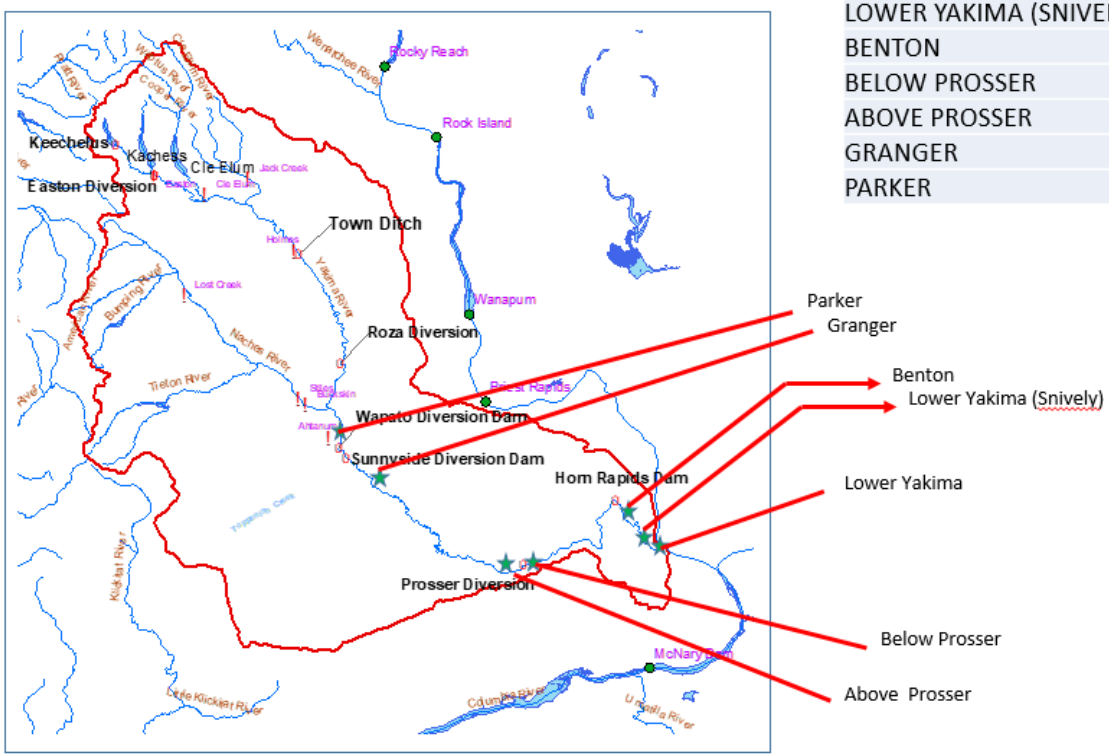
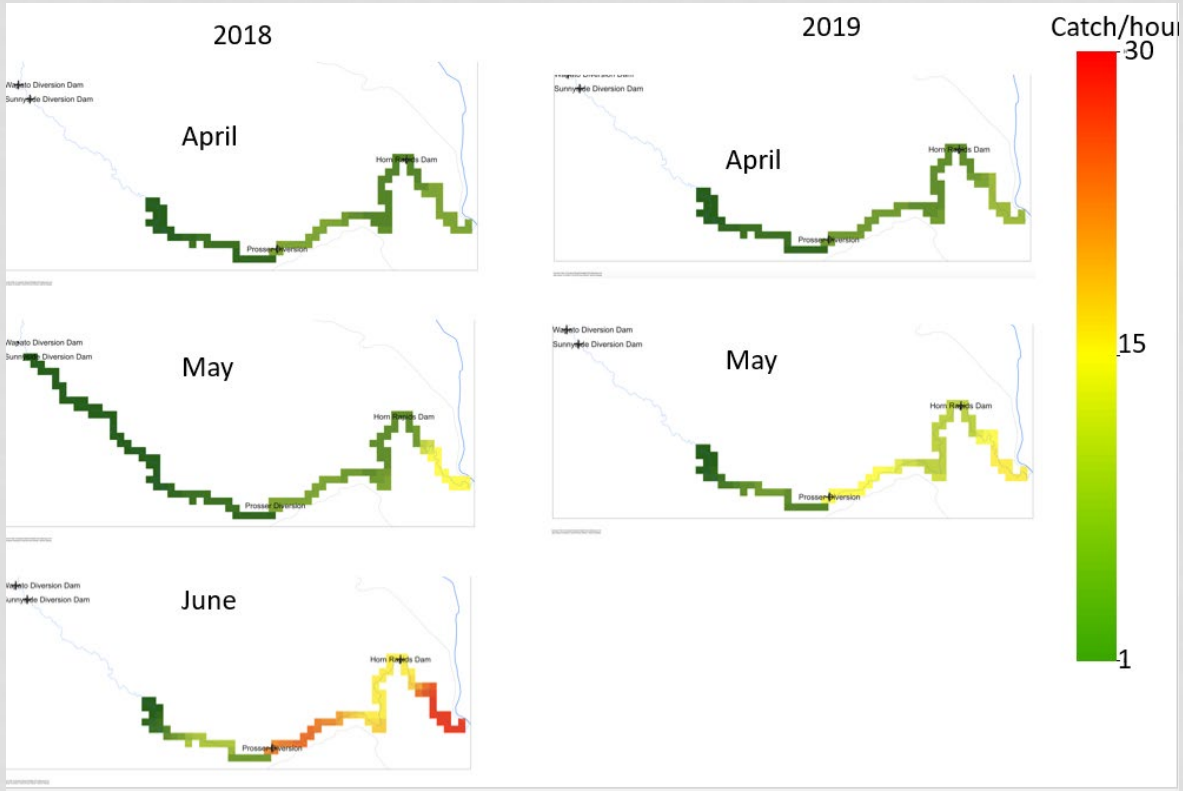
LOWER YAKIMA	6
LOWER YAKIMA (SNIVELY)	13
BENTON	27.5
BELOW PROSSER	41.5
ABOVE PROSSER	51
GRANGER	79.5
PARKER	101.5



SPATIAL AND TEMPORAL LOCATION OF SMALLMOUTH BASS



YAKIMA DELTA PREDATOR ABUNDANCES

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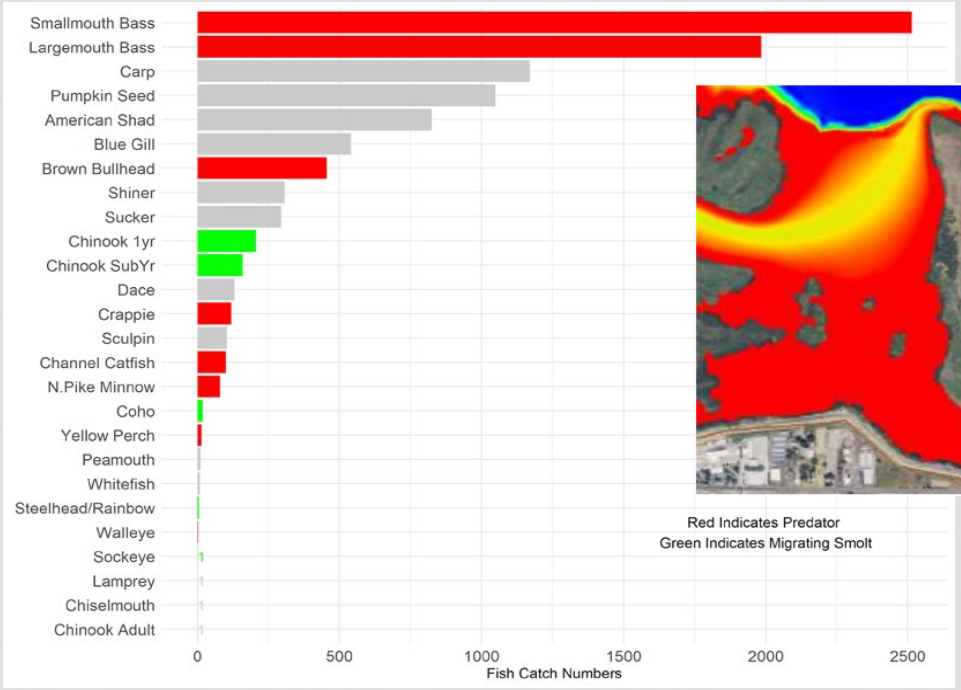
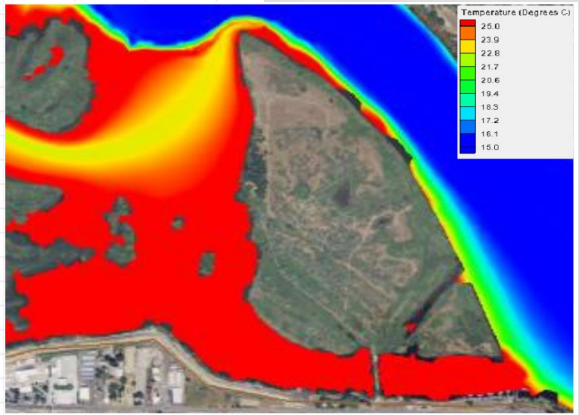
Invasive predators
Salmon species





Red Indicates Predator
Green Indicates Migrating Smolt

YAKIMA RIVER DELTA
ECOSYSTEM RESTORATION FEASIBILITY STUDY

Continuing Authority Program, Section 1135

YBIP Update
December 14, 2022

US Army Corps of Engineers®

YAKIMA RIVER DELTA FEASIBILITY STUDY

Sponsor - Washington Department of Fish and Wildlife

- **Aug. 2019 FCSA Executed**
- **Nov. 2019 Public Scoping Meeting**
- **Yakima Delta Work Group**
  - Multiagency Stakeholder Group
  - Linked to Yakima Basin Integrated Plan
  - Purpose Statement
- **Cooperating Agencies**
  - Yakama Nation
  - Umatilla
  - USFWS
  - NMFS
  - WA Department of Ecology

Authority – Continuing Authorities Program

- **Section 1135 of WRDA 1986, Public Law 99-662**

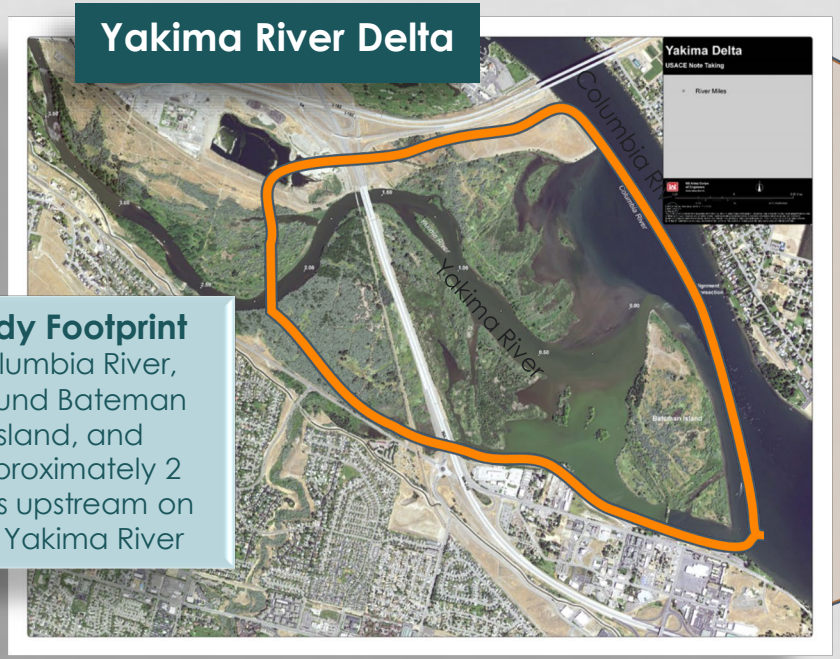
  "…With the purpose to contribute to the restoration

  of habitat degradation by the construction and

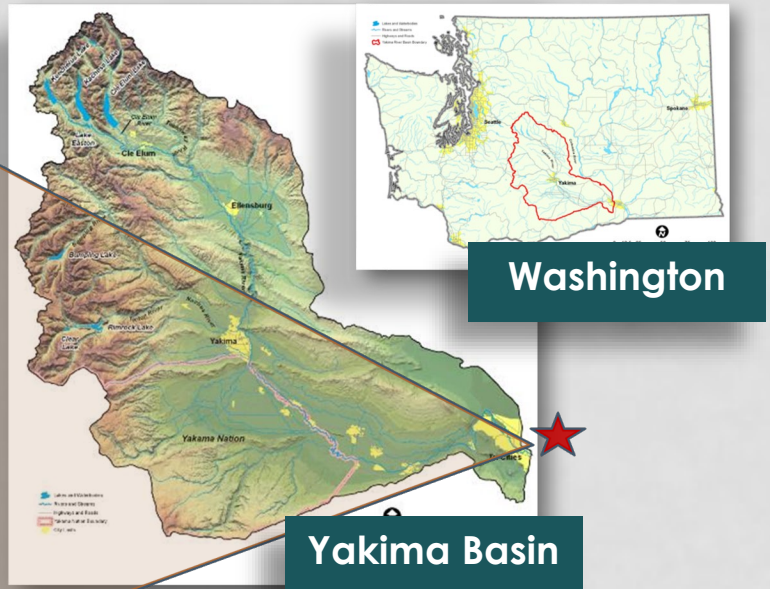
  operation of the Federal Project."

YAKIMA RIVER DELTA FEASIBILITY STUDY

- **Study Location**

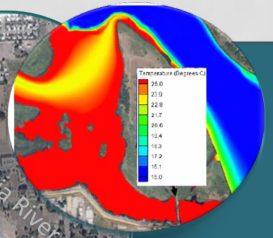


Study Footprint
Columbia River, around Bateman Island, and approximately 2 miles upstream on the Yakima River



YAKIMA RIVER DELTA FEASIBILITY STUDY

EXISTING CONDITION



CAUSES

Salmon Migration Barriers

- High Temperatures
- Flow Blockage - Causeway

Juvenile Salmon Survival

- Predator Species
- Predator Rearing Habitat
- Poor Water Quality

Altered Flow Regime

- Inundation and Sedimentation
- Poor Mixing of Columbia and Yakima Rivers

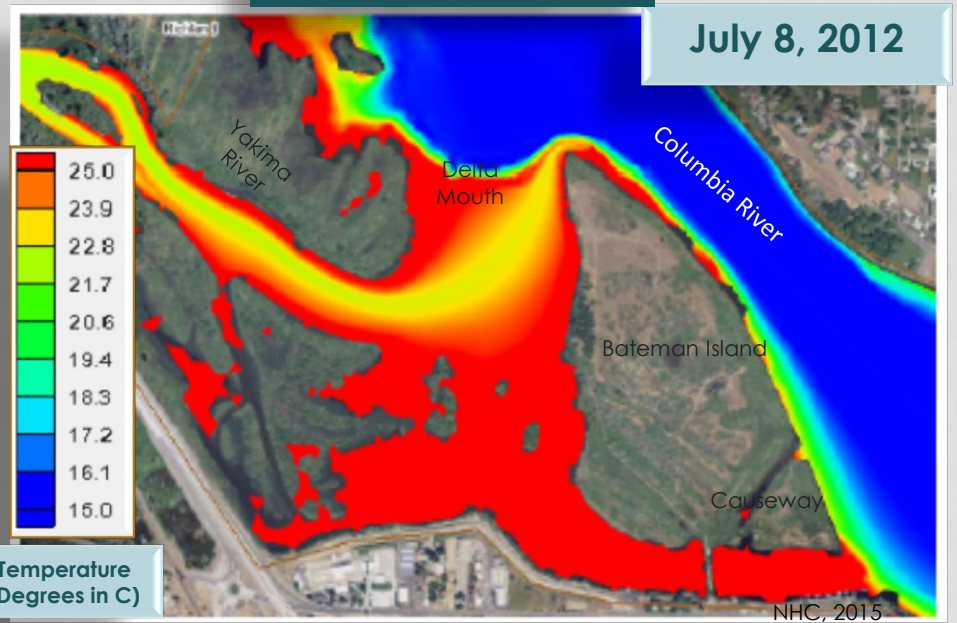
Health Concerns

- Stagnant Water Conditions
- Mosquito Breeding

YAKIMA RIVER DELTA FEASIBILITY STUDY

- **Existing Condition – High Temperatures**
  - *High Temperatures*
    - **Mouth of Yakima River**
      - Thermal Barrier - Adult Salmon
      - High Yakima River Temperatures
      - Delays Upstream Migration
      - Increased Straying
      - Impacts to Fish Health

Yakima River Delta Temperature



YAKIMA RIVER DELTA FEASIBILITY STUDY

Summary of Measures Considered

Measure 1: Infuse cool water from the quarry.
Removed

Measure 2: Cool Yakima with Spring water.
Removed

Measure 3: Route cool water from the Columbia to the Yakima.
Removed

Measure 4: Dredge Yakima at confluence with Columbia.
Removed

Measure 5: Concentrate Flows with Training Structures in the Yakima River.
Removed

Measure 6: Reconnect Floodplain under Highway 240.
Removed

Measure 8: New Side-Channel through South End of Bateman Island.
Removed

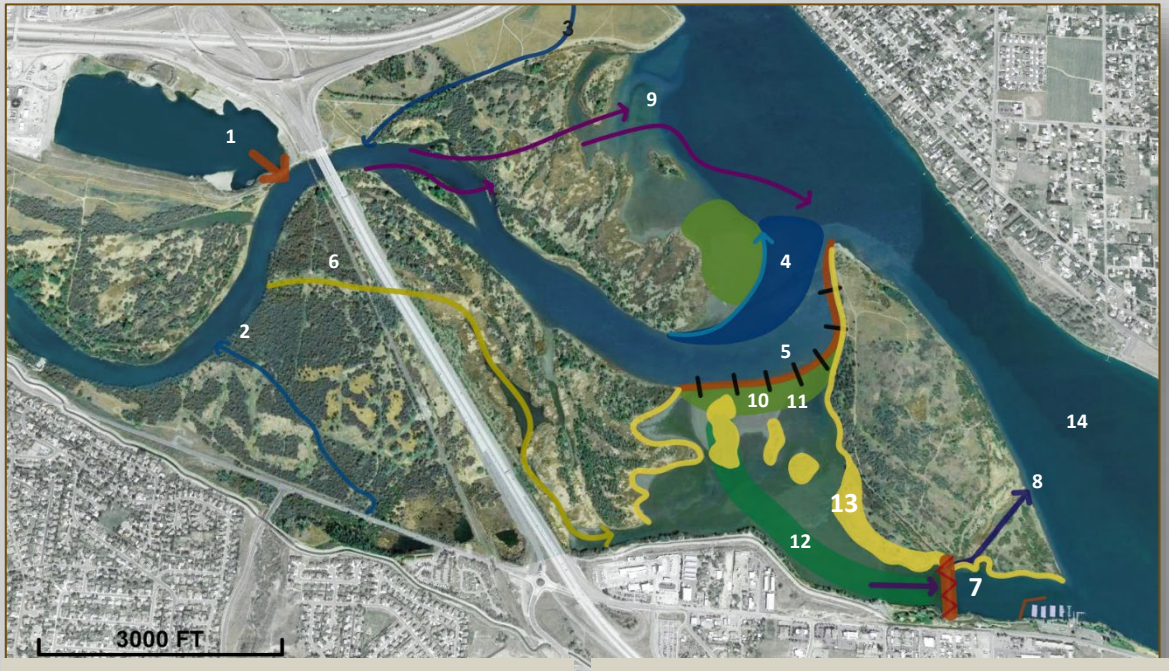
Measure 9: Realign Yakima River Along the North Shore to Columbia River.
Removed

Measure 10: Isolate Backwater from Main Yakima River Channel.
Combined with #5. Removed

Measure 11: Control Flows to Improve Riparian and Aquatic Habitat in Backwater.
Removed

Measure 12: Create Deep Water / Deep Pool Habitat within Backwater.
Removed

Measure 14: Change to McNary Dam Operations to Improve Flows through Yakima River Delta.
Removed

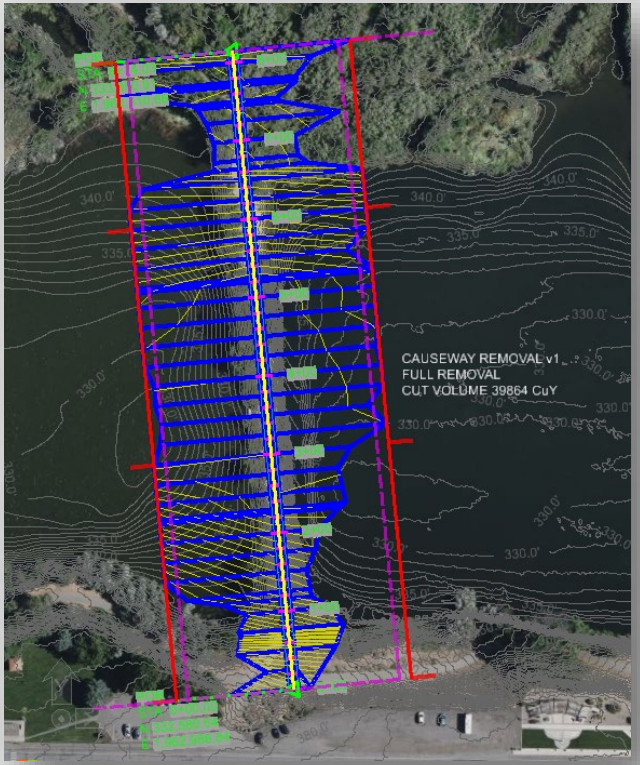


Measure 7: Complete or Partial Removal of Causeway to improve flow through the backwater.
Retained

Measure 13: Increase Fringe Riparian Habitat along Bateman Island and on shorelines in the backwater.
Retained

TENTATIVELY RECOMMENDED PLAN

- Full Removal Without Riparian Restoration
- Use of adjacent parking lots anticipated for staging areas
- More detail will be added during design to further reduce disturbance to island
- Risks/Concerns: Marina protection and Loss of access



CONCLUSIONS

- **Difficult problems**
  - Juvenile and Adult Passage
  - Temperature
  - Predation
- **Integrated Plan Goals**
  - Cannot be achieved without solving these problems
- **Yakima Basin Integrated Plan makes large-scale restoration possible**
  - History of solving difficult problems

NEXT STEPS

- Implement Yakima Delta restoration
- Develop strategy for reducing predation
- Improve passage at diversion dams
- Reduce impacts of water stargrass
- Improve sockeye migration conditions

PART 2 LOOK AHEAD

March 8 YRBWEP Workgroup Meeting

- Water Management – Flow and Supply Objectives
- Hydrologic Conditions
- Conservation
- Managed Aquifer Recharge
- Storage Opportunities and Flow/Supply Benefits
  - Upper Yakima
  - Naches Arm
  - Lower River
  - New Zealand Case Study

THANK YOU!

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Questions?

Website: www.yakimabasinintegratedplan.org