

# Returning Salmon to the Region: *Fish Passage & Reintroduction*

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SPOKANE SALMON RESTORATION COLLABORATIVE

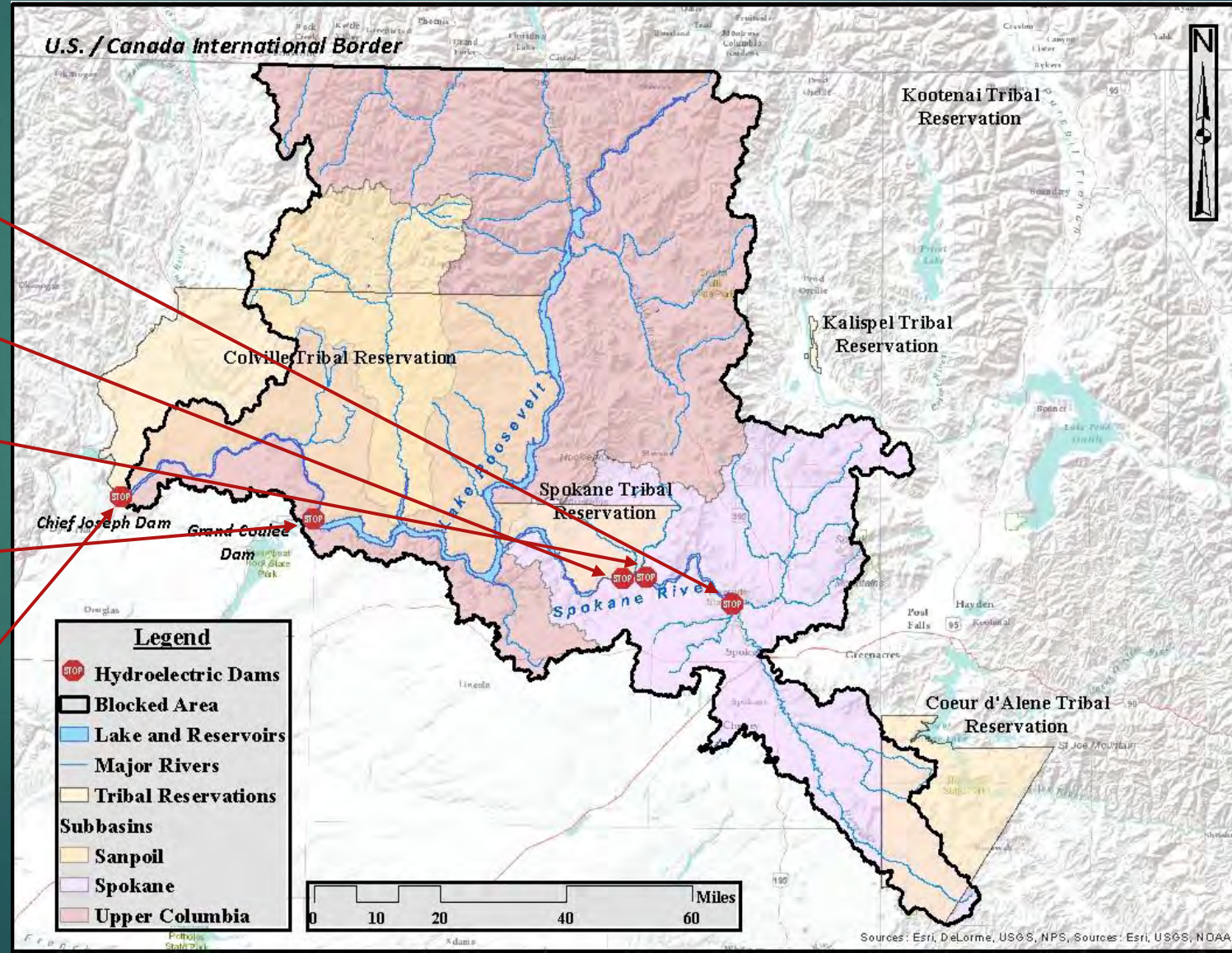
SEPTEMBER 25, 2024





# Blocked Area Hydro Development in UCUT Territories

1. Nine Mile Dam (1908)
2. Little Falls Dam (1911)
3. Long Lake Dam (1915)
4. Grand Coulee Dam (1941)
5. Chief Joseph Dam (1955)



## Dams in the Columbia River Basin

Dam construction resulted in a loss of more than half of the fish habitat in the Columbia River Basin.



# Historic Salmon Runs

- 10 million – 16 million adults returned to Columbia Basin (pre-1850)
- Upper Columbia natural-origin fish (Columbia Basin Partnership Taskforce):

Adult Returns	Historical	Currently
Spring Chinook	~ 260,000	0
Summer Chinook	~ 695,000	A few!
Fall Chinook	~ 680,000	0
Sockeye	> 800,000	0

Map Source: Seattle Times

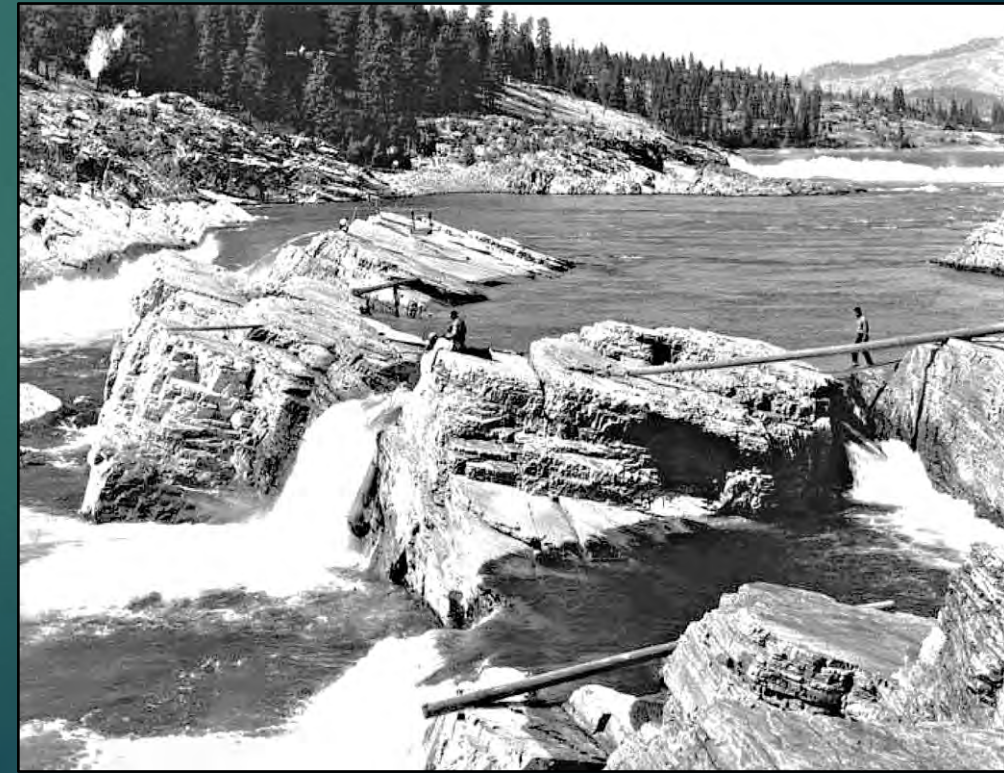
Sources: Columbia River Inter-Tribal Fish Commission, Northwest Power and Conservation Council  
EMILY M. ENG / THE SEATTLE TIMES

# What are we, UCUT, up to?

- Evaluating the feasibility of reintroducing anadromous species
  - Establish naturally reproducing populations, supported by responsible and conservative artificial production

## Why are we doing this?

- Recognize the culture and rights of native people
- Restore ecosystem processes – locally, basin-wide, and marine
- Bolster industry (fisheries, restoration, recreation)
- Provide climate change resiliency



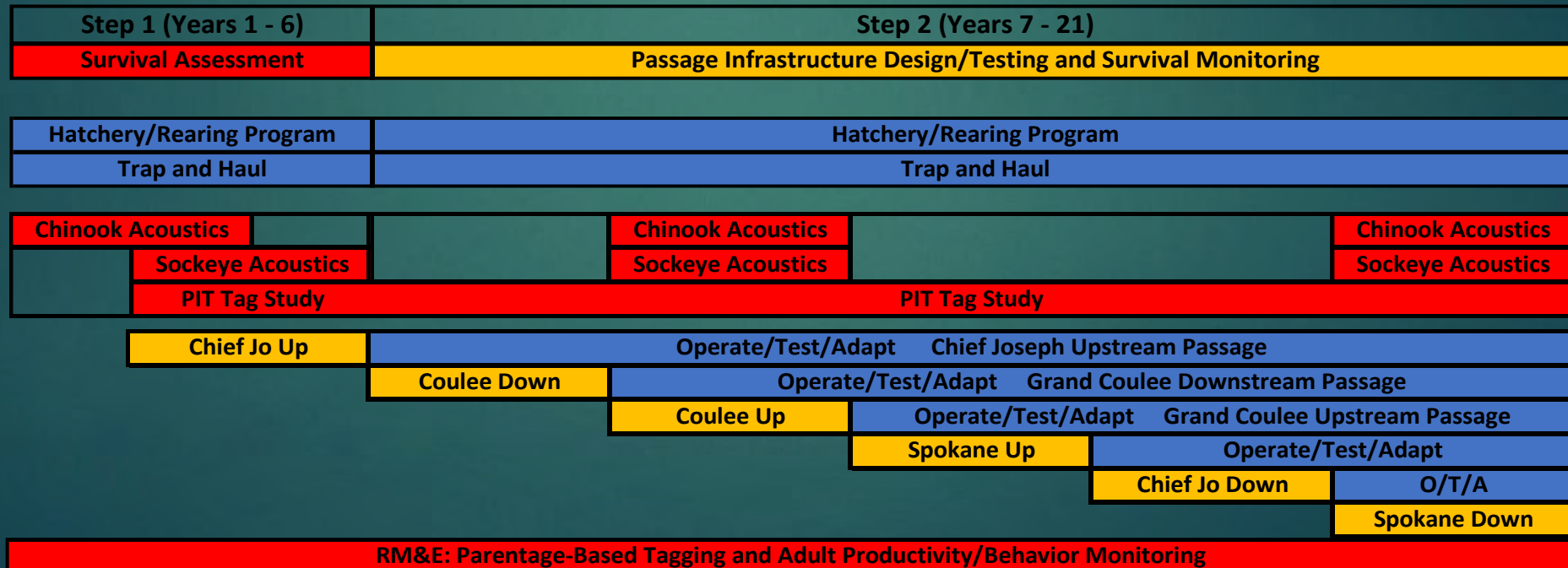


# **Fish Passage and Reintroduction: The Phase 2 Implementation Plan “P2IP”**

**A stepwise and scientifically adaptive approach to test the feasibility of restoring salmon to the Upper Columbia River basin that is focused on collaboration, cost effectiveness and benefits for the entire region.**

# P2IP: Objectives and Timeline

- Test the key assumptions used in the Phase 1 Life Cycle Model
- Establish sources of non-ESA Chinook and sockeye salmon donor stocks
- Develop interim hatchery facilities to produce fish for feasibility studies
- Develop and test up and downstream interim passage facilities under current operations
- Provide the data necessary for full-scale reintroduction and permanent passage



# Step 1 – Baseline Data, Infrastructure

## **Interim Fish Production Facilities**

- Review current facilities & programs
- New or expanded early rearing facilities, net pens, acclimation sites

## **Downstream Behavior & Survival Studies**

- Acoustic behavior and survival, yearling Chinook and Sockeye
- PIT tag releases, yearling Chinook and Sockeye

## **Upstream Survival & Behavior Studies**

- Upstream survival using Adults from PIT releases
- Tailrace Behavior

## **Interim Upstream Passage at Chief Joseph Dam**

- Trap-and-haul from Chief Joseph Hatchery ladder
- CJH ladder expansion and additional interim facilities



# Step 2 – Interim Passage & Testing

## **Step 1 Continued Activities:**

- Operation of interim rearing facilities
- Moderate-sized PIT tag releases of Chinook and Sockeye
- Trap-and-Haul from CJD to upstream reservoirs

## **Incremental Installation of Interim Passage Facilities**

*Sequence will be informed by Step 1 survival studies*

- Design & Installation
- Effectiveness Testing
- Operation

## **Research, Monitoring, & Evaluation**

- Parentage-based Tagging (PBT), Adult Recruits per Spawner (AR/S), limiting factors & adaptive management

# Interim Fish Production Facilities

- Adult Brood Collection strategies
  - Preferred donor stocks identified in Phase 1
  - Strategic collection location
- Necessary to support Phase 2 Studies
  - 250k+ Chinook and 250k+ sockeye annually
- Egg to Sub-yearling rearing
  - Existing vs new facilities
- Sub-Yearling to Yearling rearing
  - Acclimation Facilities
    - Net Pen Rearing
    - Land-based acclimation



# PIT Tag Releases

## Juvenile Chinook and Sockeye Survival

- >160k total of each species
  - Sample sizes refined with data from previous studies
  - Ensure sufficient adults return to meet research needs
- Release site to RRD/McNary Dam
- Smolt-to-Adult Return Rates



## Adult Chinook and Sockeye Survival

- Bonneville Dam to Wells Dam Survival
- Evaluate Collection Efficiency of Returning Adults

## Adult Chinook and Sockeye Behavior – Acoustic

- Evaluate Blocked Area Adult Migration and Homing
- Tailrace Behavior for Upstream Passage Planning



# Juvenile Behavior & Survival Studies

## JSATS Telemetry

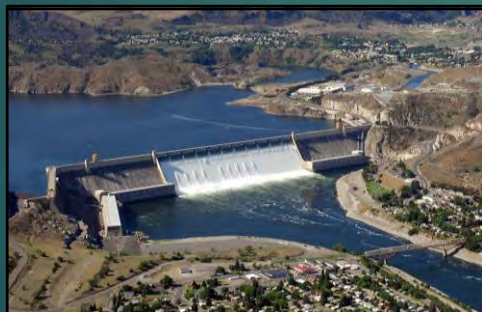
- Passage survival across NMD, LLD, LFD, GCD and CJD
- Passage routing at GCD and CJD
- Reach survival throughout the blocked area
- Travel time from multiple release locations



Photo courtesy of USGS



Chief Joseph Dam, ACOE



Grand Coulee Dam, BOR



Little Falls Dam, Avista Corp



Long Lake Dam, Avista Corp



Nine Mile Dam, Avista Corp

# Fish Passage Design Project



# Upstream Behavior & Survival Studies

## Telemetry

- Reservoir behavior
- Forebay behavior
- Habitat use



# Trap and Haul from Chief Joseph Dam

## Initial Upstream Passage Option

- Trap-and-Haul from Chief Joseph Hatchery Ladder
- Release in Reservoirs Upstream



# Step 2: Interim Downstream Passage Facilities

## Juvenile Passage Options

- Spill and Turbines to Provide Initial Passage
- Minimize Impacts to Dam Operations
- Ability to Collect Juvenile Salmon Efficiently



Potential Collection Location @ GCD





# Step 2: Interim Upstream Passage Facilities

## Adult Passage Options

- *Minimize Impacts to Dam Operations, Leverage Existing Infrastructure*
- Trap-and-Haul Program from Chief Joseph Hatchery Ladder
- Adult Collection Considerations
  - Volitional vs Assisted Passage
  - Adult Sampling and Sorting



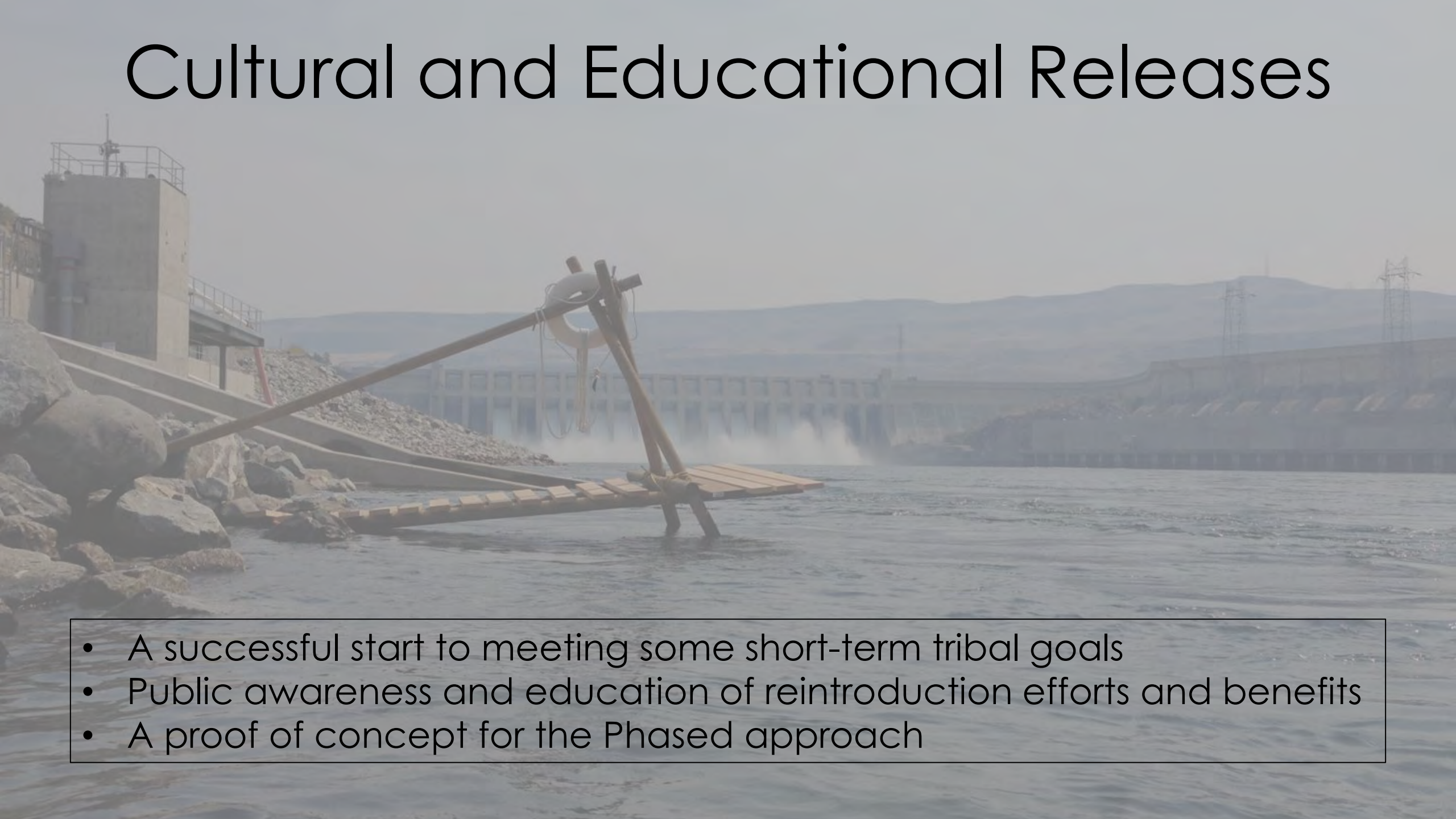
Photo Courtesy of Whooshh Innovations





More info available at:  
[UCUT.org](http://UCUT.org)

# Cultural and Educational Releases

- 
- A successful start to meeting some short-term tribal goals
  - Public awareness and education of reintroduction efforts and benefits
  - A proof of concept for the Phased approach

# Trap and haul adult salmon for ceremonial releases



Kettle Falls



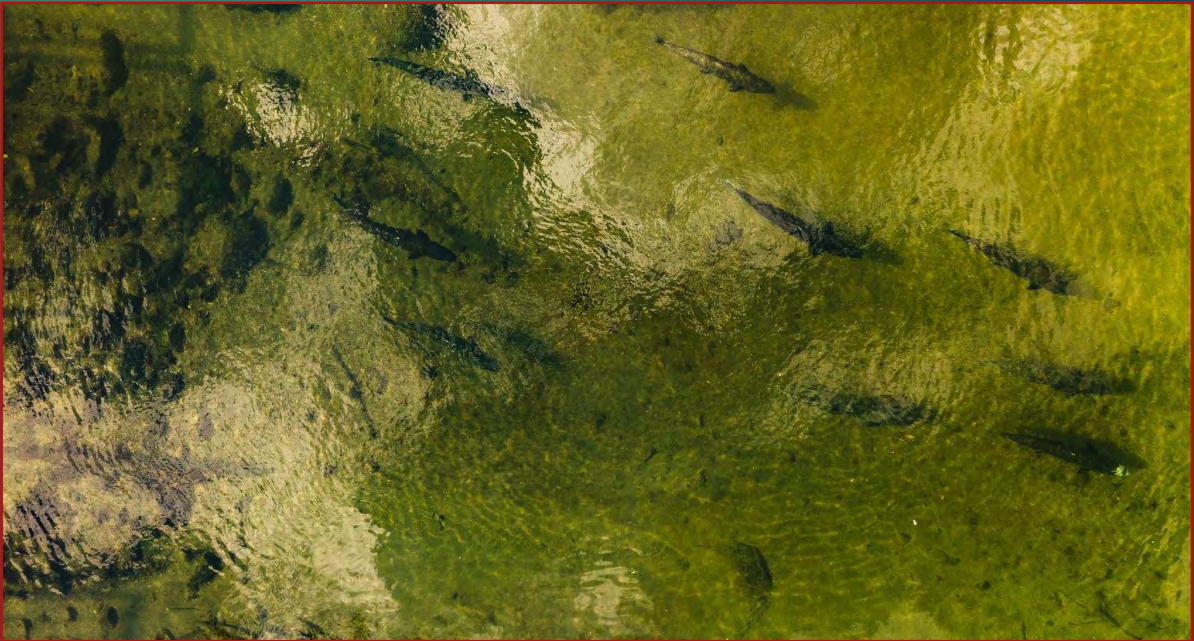
Tshimikain Ck



Spokane River

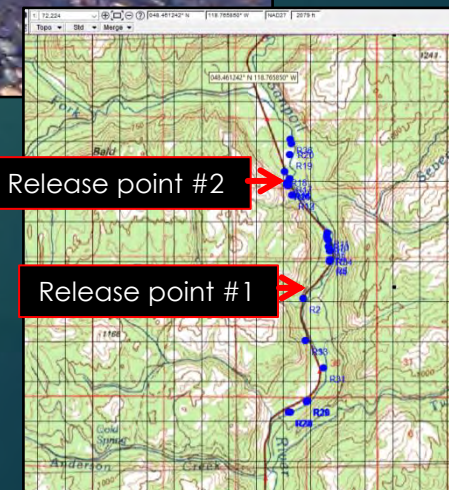
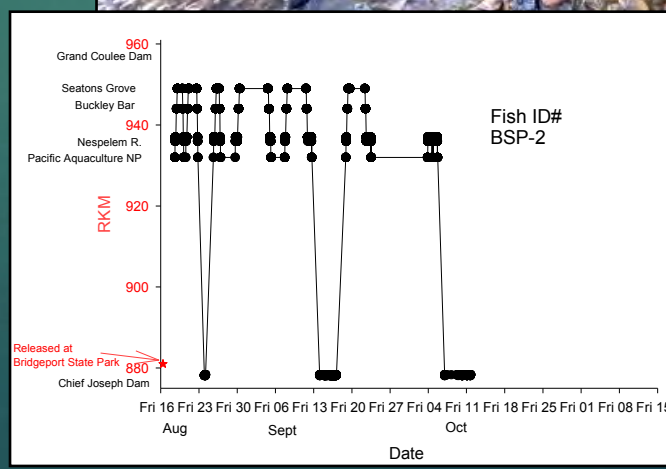


Sanpoil



Little  
Spokane  
River

# Post-release behavior, documented spawning: Sanpoil R., Tshimikain Ck., Little Spokane R., Spokane R. and Rufus Woods



# Documented production of wild juveniles



Tshimikain Creek



# 2017 Juvenile Release



750 yearling summer  
Chinook released to  
Tshimikain Creek

3 dams w/o fish passage,  
120km of storage reservoir,  
current operations and  
conditions

Then 9 more dams

90 detected below CJD

24 at or below BON, even  
more survived

In 2019 we  
received a  
detection...

*"She Who Retraces Her  
Steps"*

Migrated upstream, passing  
9 mainstem dams

Entered hatchery ladder at  
base of Chief Joseph Dam

Policy constraints prohibited  
live transfer



**nucucšnetk**





# In 2020, 3 siblings returned to the Columbia

All 3 likely contributed to Columbia  
River fisheries

1 received from a Nez Perce fish  
processor in Oregon

## Proofs of Concept:

Fish can survive under current  
conditions and operations

Hatchery ladder can collect adults

Basin-wide benefits

Healing



# sye'us'uslsh

"she who repeatedly (swims) dives"



Hangman Creek  
July 12, 2022



















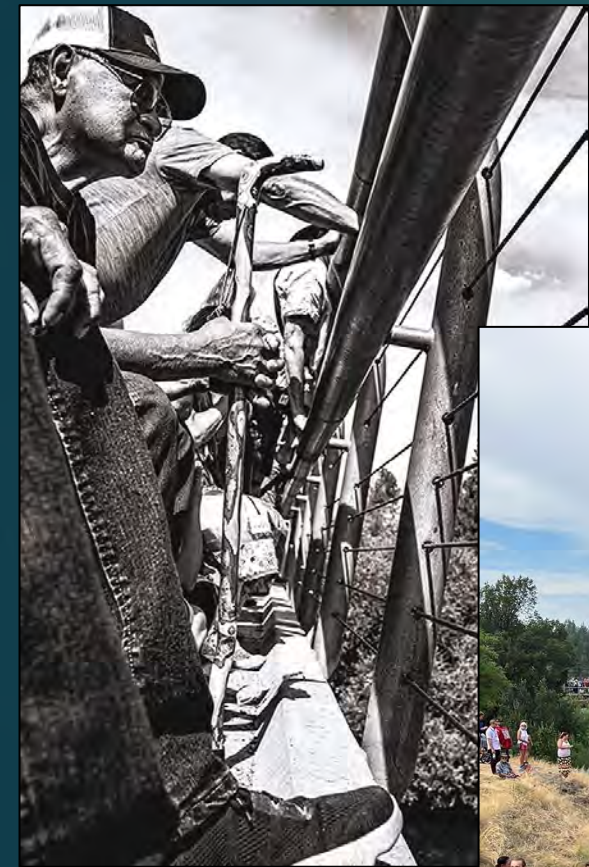


# Salmon Returning to Spokane

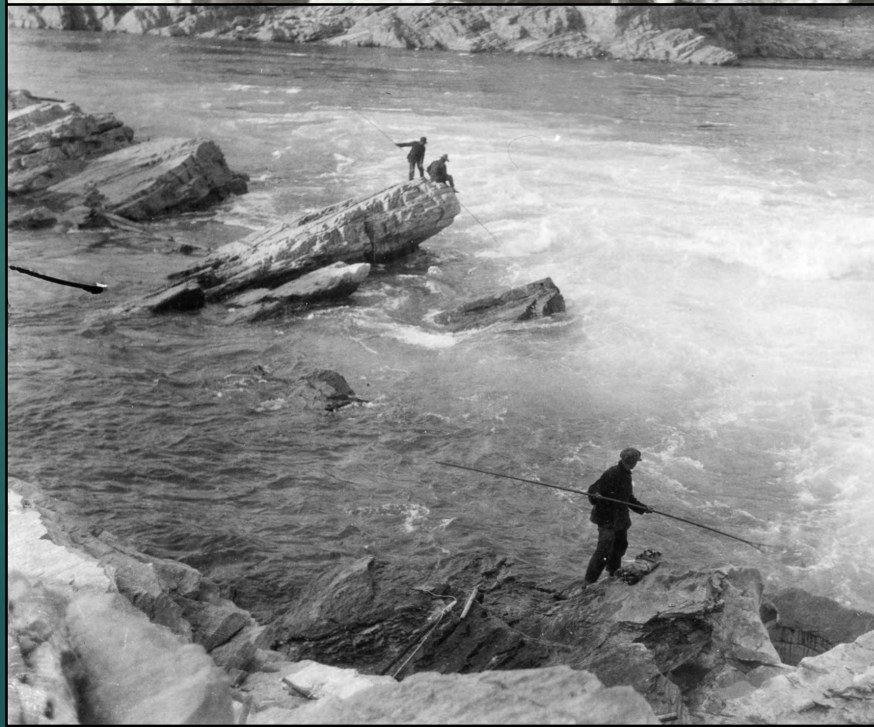
“The Coeur d’Alene’s and the Spokane’s were really close peoples. One of the things they had was the salmon celebration in the fall. It was a time of our villages and tribes coming together where everyone was happy. Even the eagles would come....” - Marlene Sproul, CDA Tribe Elder



# Salmon Returning to Spokane



# Salmon and Culture





# Spokane River Spawning

