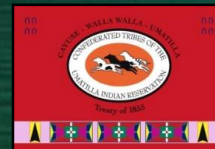


# UPPER GRANDE RONDE RIVER

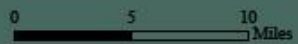
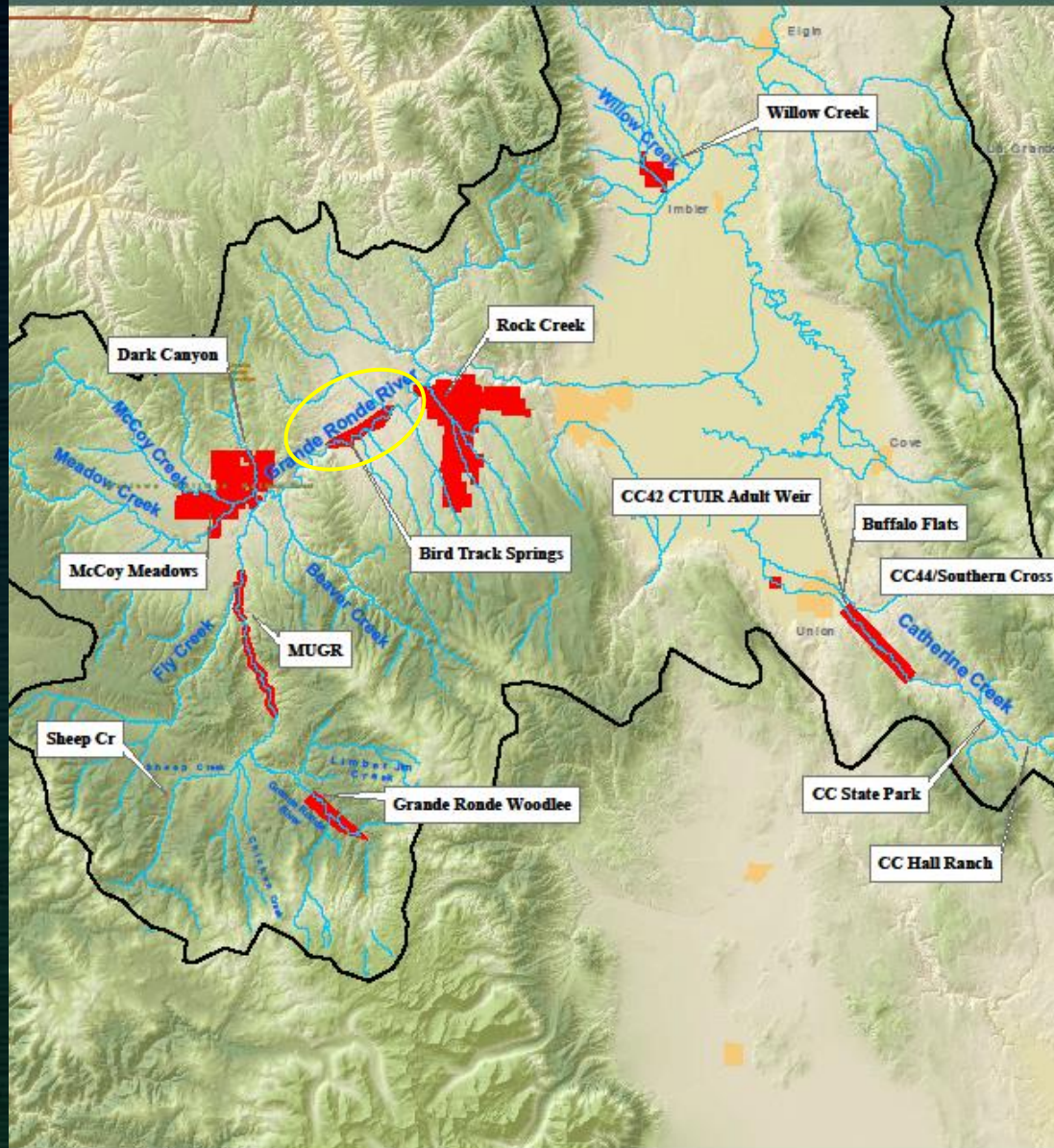
## BIRDTRACK SPRINGS FISH HABITAT FLOODPLAIN RESTORATION PROJECT

Presented by Allen Childs  
Grande Ronde Fish Habitat Project Leader/Senior Biologist

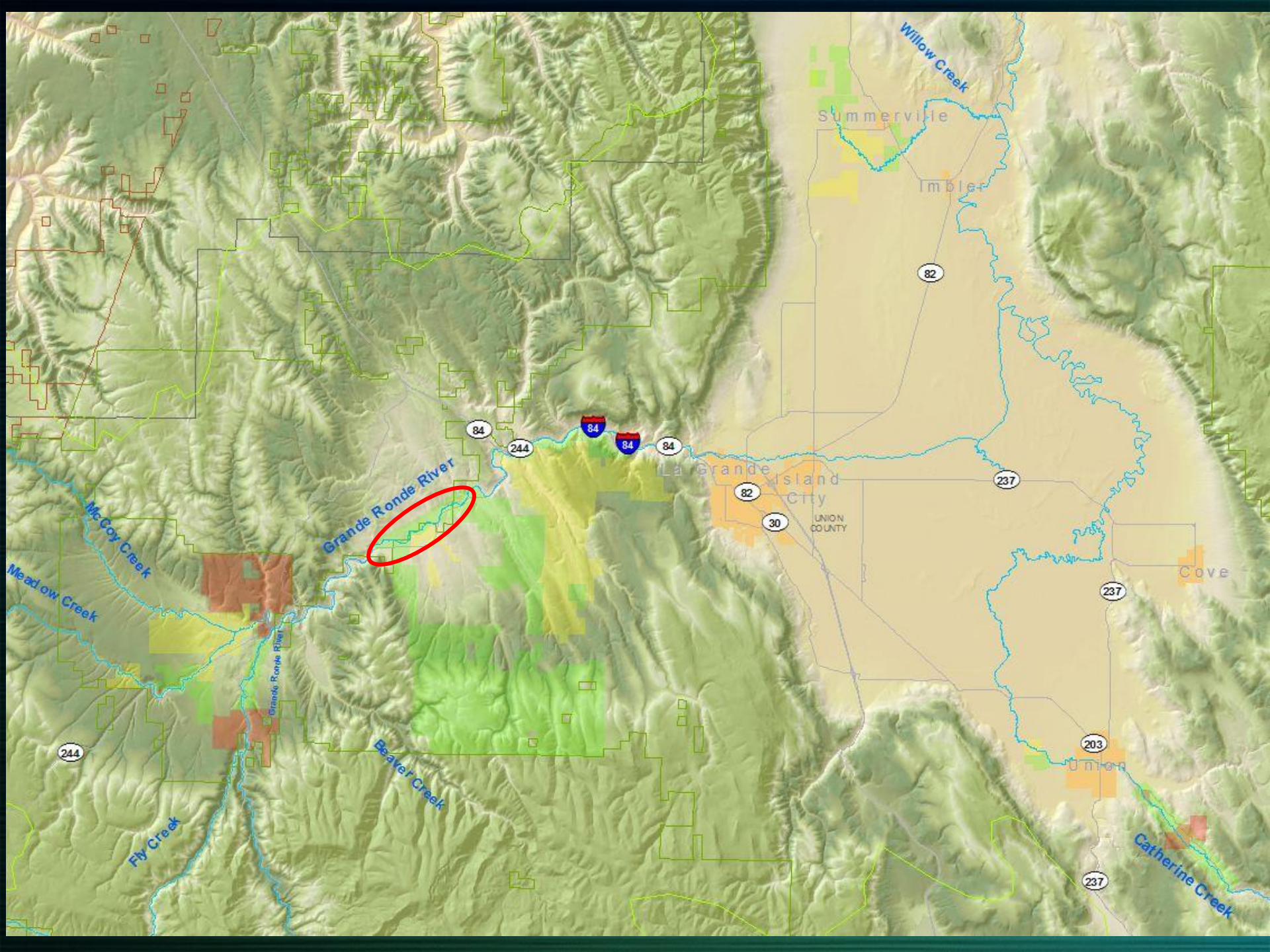
Confederated Tribes Umatilla Indian Reservation  
Department of Natural Resources Fisheries Program  
Grande Ronde Basin Fish Habitat

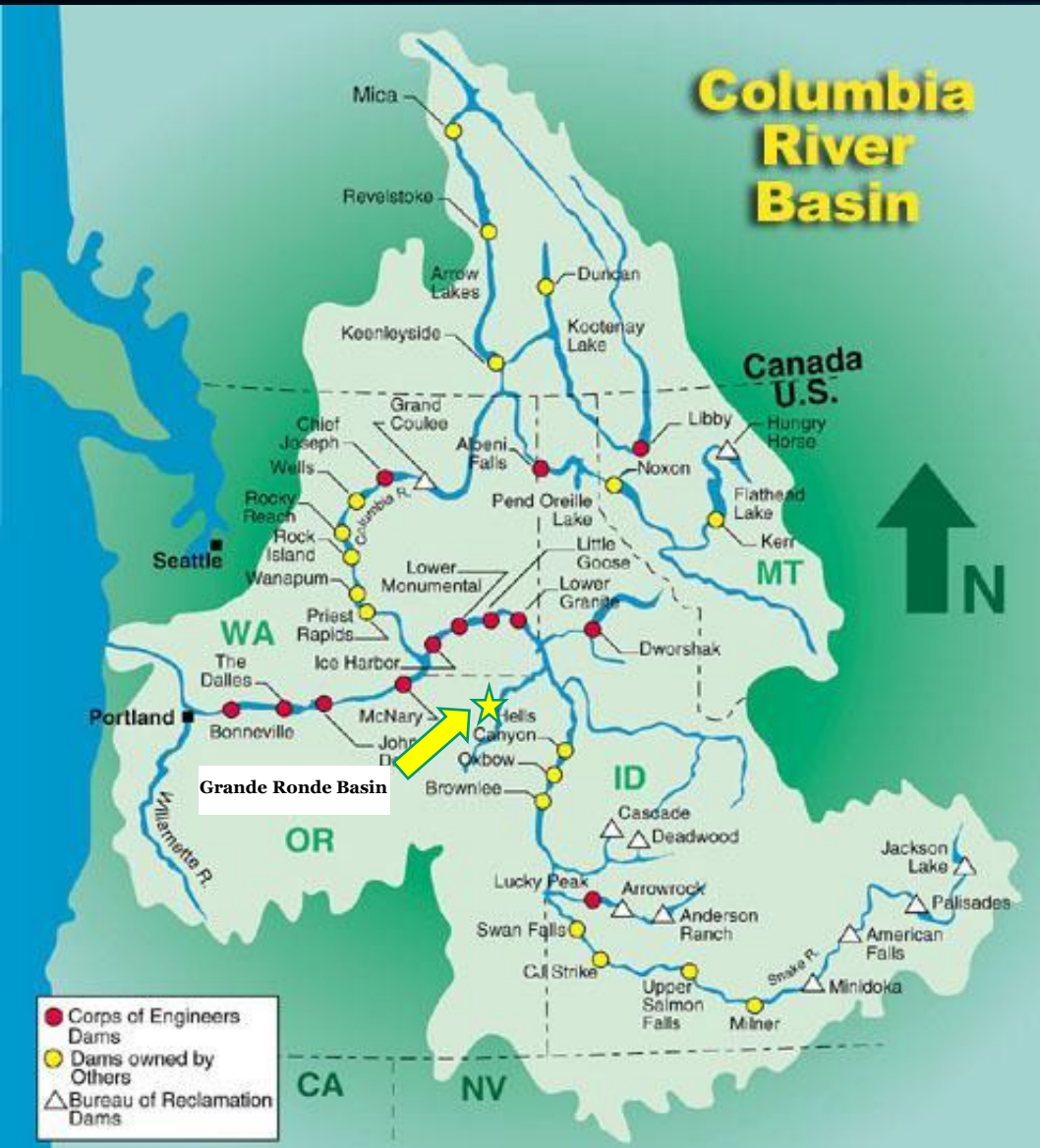


# Upper Grande Ronde River Basin Projects

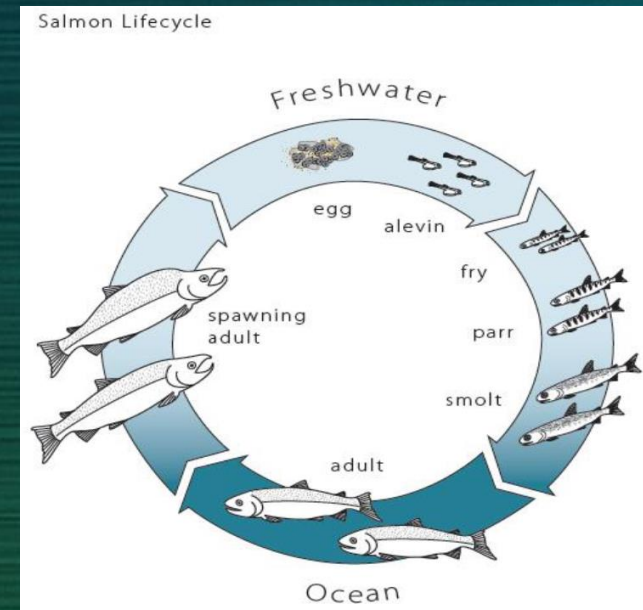


Grande Ronde Basin





- Grande Ronde Basin salmon and steelhead travel over 1,200 miles on 2 way trip from spawning reaches to ocean and back
- Historically estimated 16-20+ million salmon and steelhead in Columbia Basin
- Estimated 30K in Grande Ronde Basin
- Survival & Mortality
  - Ocean Conditions
  - Commercial/Recreational Fishing
  - Predators
  - Passage
  - Freshwater habitat
    - Spawning, summer rearing, & winter rearing



# Historic Habitat Changes

1820s-1830s – Fur Trade & Beaver Trapping

1840s-1850s – Emigration & Subsistence

1860s-1870s – Gold Fever & Homesteading

1880s-1890s – Livestock and & Range Wars

1900s-1910s – Railroad Logging

1920s-1930s – Splash Dams, Road Logging & Dredging

1940s-1950s – Channelization, Access Roads & Land Exchanges

1960s-1970s – Multiple Use Policy Changes & Wetland Draining

1920s-1930s – Splash Dams, Road Logging & Dredging

1940s-1950s – Access Roads & Land Exchanges

1960s-1970s – Multiple Use Policy Changes & Wetland Draining

1980s-1990s – Road Decommissioning





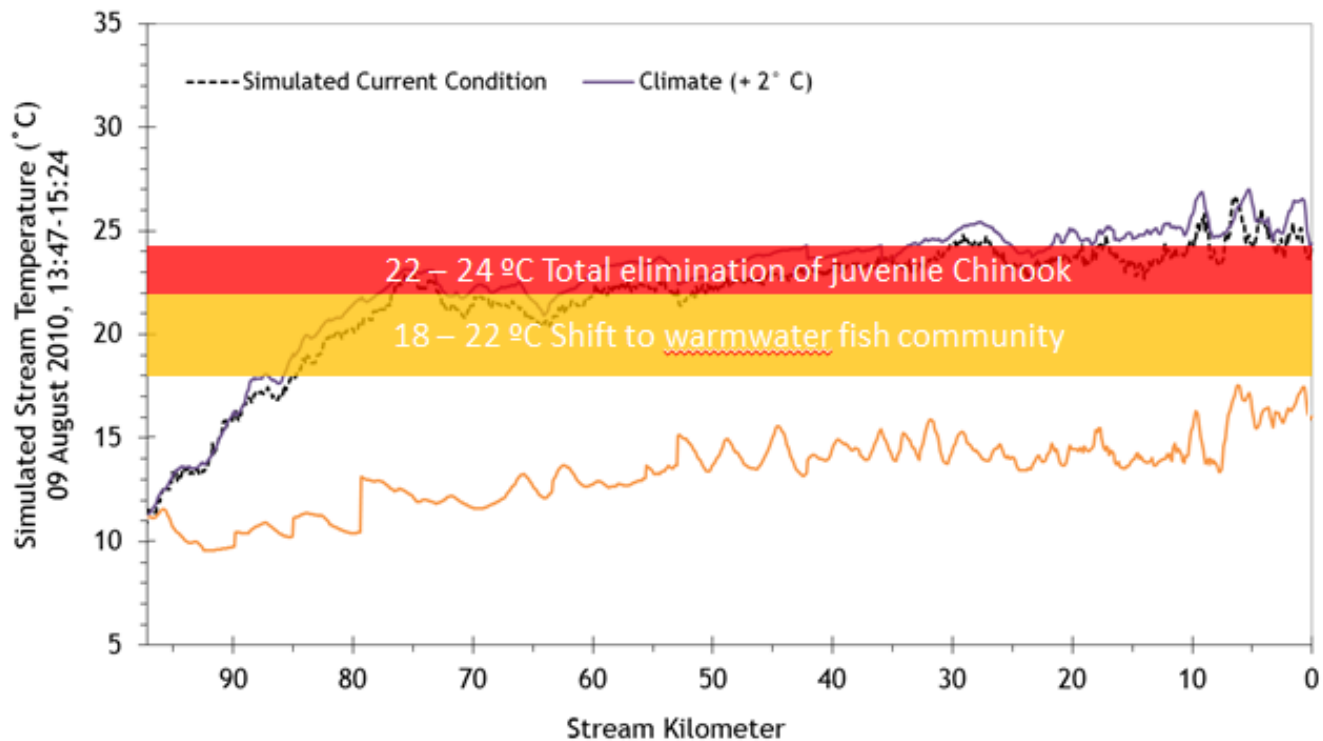
# How do we improve our fishery resources and what do they need?

- Poor habitat cannot support all life stages or high density of fish (competition)
- High in basin juvenile mortality
- Juvenile Fry need velocity refuge and cover to hold, hide & forage
- Larger summer parr have competitive and bio-energetic advantage = fitness/survival
- Quality habitat provides refuge, space, and food supply to support more and larger fish
- Adults require habitat to survive long, hot summers and suitable spawning habitat
- Fish need to be able to find thermal refuge in both summer and winter



# Water Temperature

## Heat Source model results Mainstem upper Grande Ronde River



(Temperature thresholds from McCullough 1999. USEPA Report # EPA 910-R-99-010)



# Large, Deep Pools

- Adult holding
- Juvenile rearing
- Velocity refuge
- -70% Pool Loss since 1940's



# Side Channels High Water Refuge

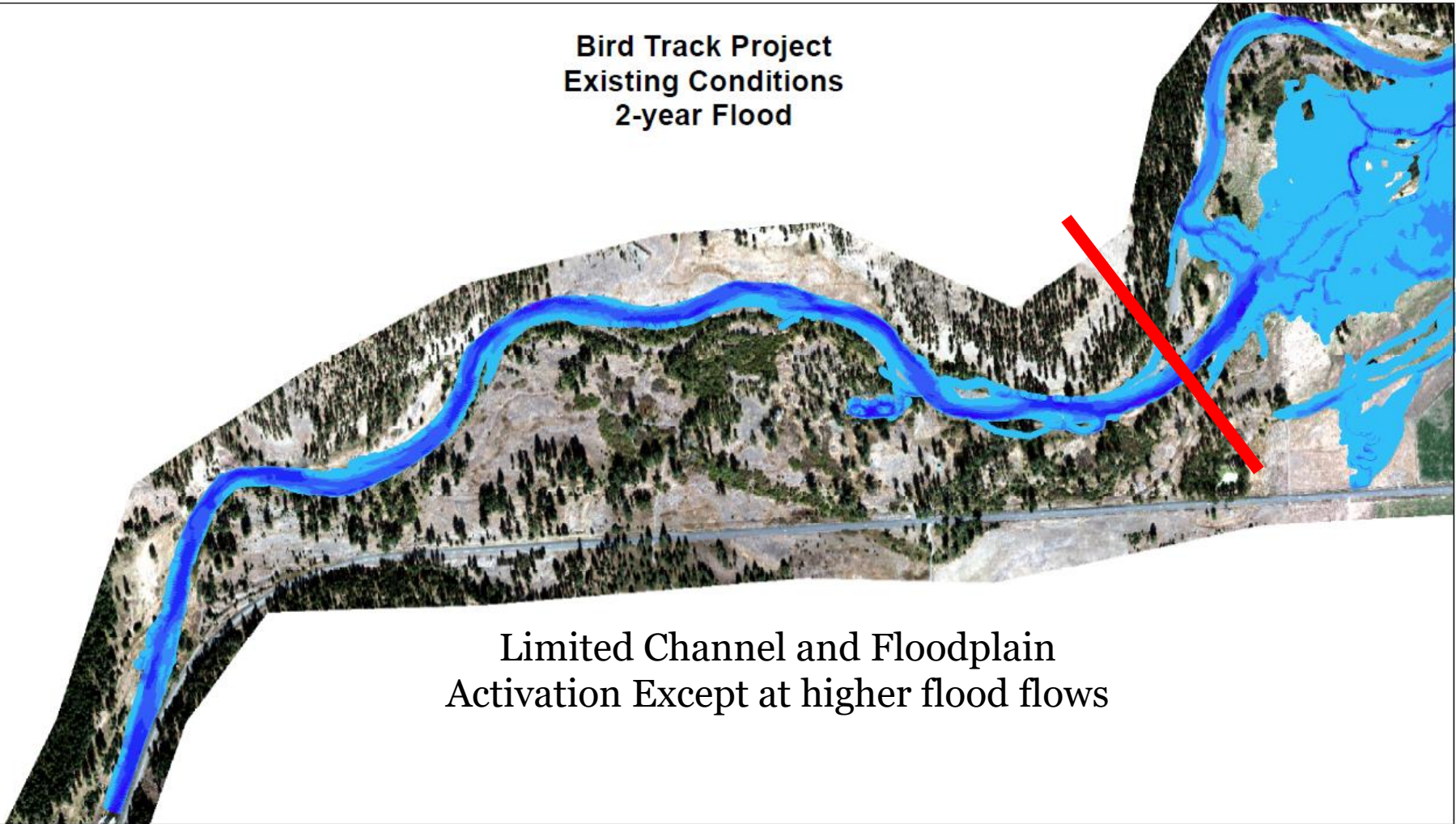
# Habitat Diversity & Complexity

# Bird Track Springs Existing Conditions



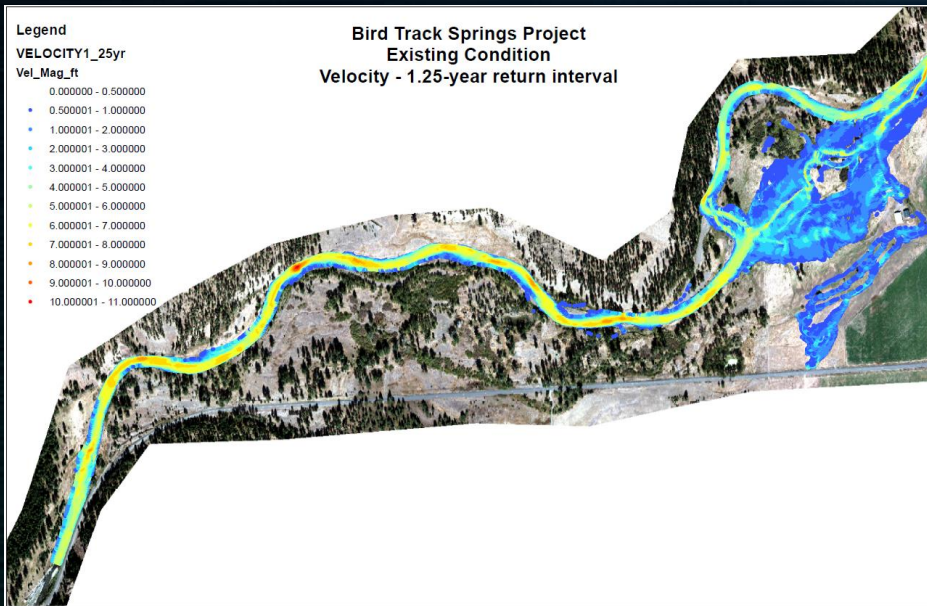
# Confined Channel

Bird Track Project  
Existing Conditions  
2-year Flood



Limited Channel and Floodplain  
Activation Except at higher flood flows

# Water Velocity and Energy



# Project Concepts

## Key Driving Forces for Concepts:

### 1. Geomorphic Planform

Plane Bed to “Forced Island-Braided”

### 2. Wet the Sponge

Greater frequency & duration of floodplain inundation

### 3. Side Channels & Alcoves

Connectivity and Availability

### 4. Cold Water Refuge

### 5. Complexity and Diversity

1. Manage Ice

CTUIR's Restoration Goals & River Vision

Restore Floodplain and Increase First Foods for Tribal Use



Hydrology	Geomorphology	Connectivity	Riparian Vegetation	Aquatic Biota
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Straight



Meandering



Island-braided

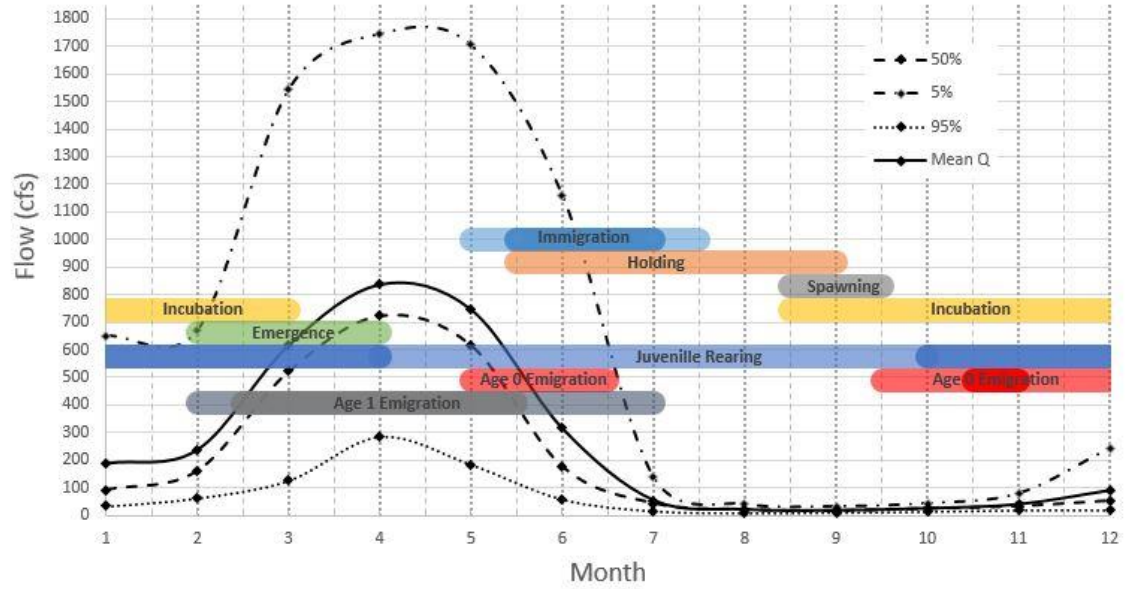


Braided

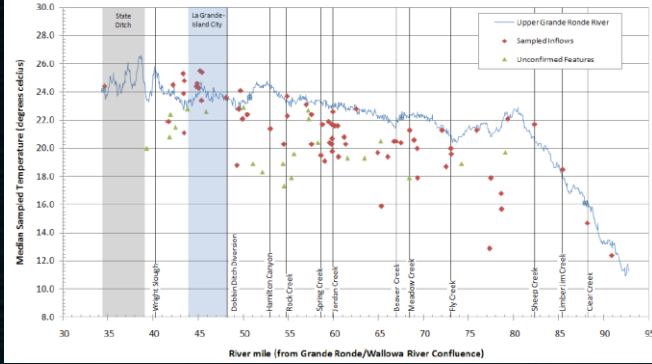
Increasing lateral migration rate



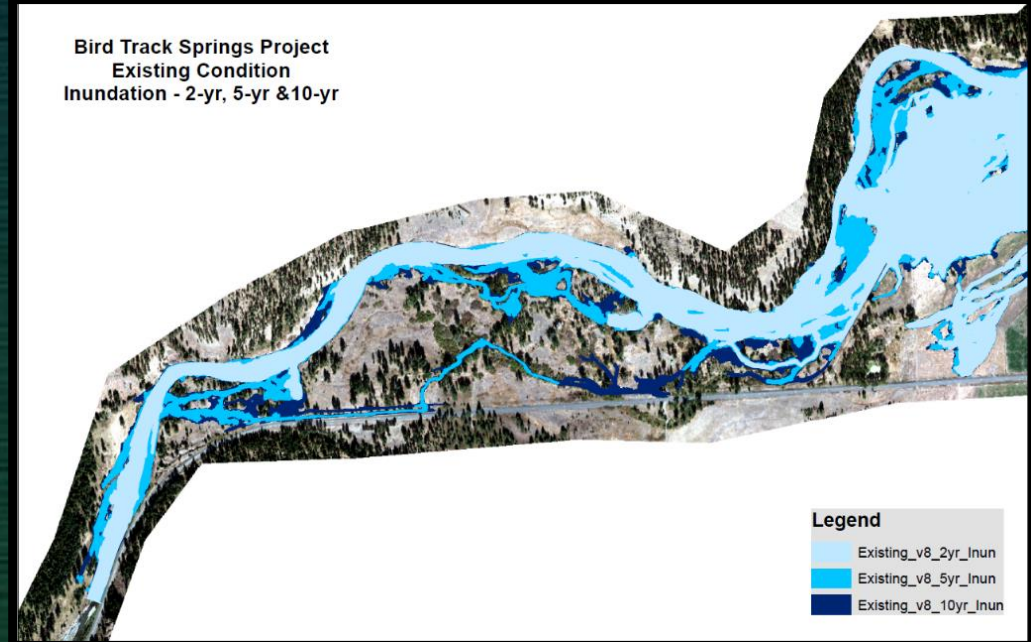
Hydrology - Chinook Periodictiy Chart for the Birdtrack Springs Project Reach  
 Monthly discharge values taken from the OWRD gage 13318960 GRANDE RONDE R NR PERRY, OR and adjusted to RM 143.3. Periodicity Chart data taken form the UGR 11 BSR prepared by the Grande Ronde Atlas Tech Team



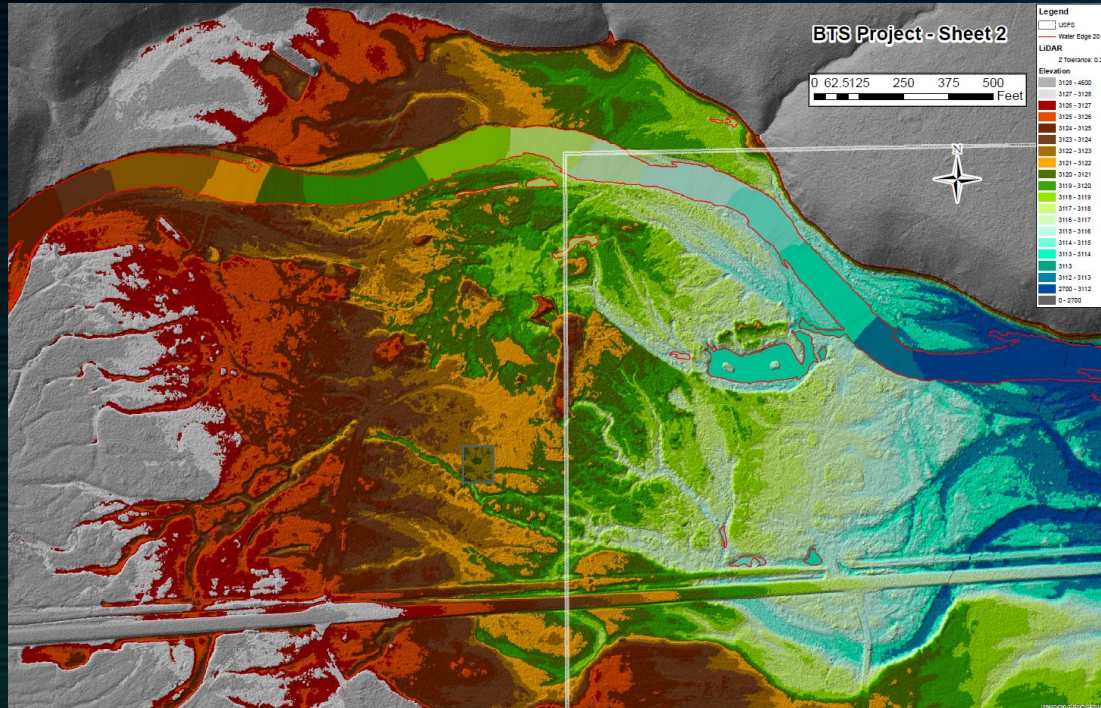
6.1.1 Longitudinal Temperature Profile



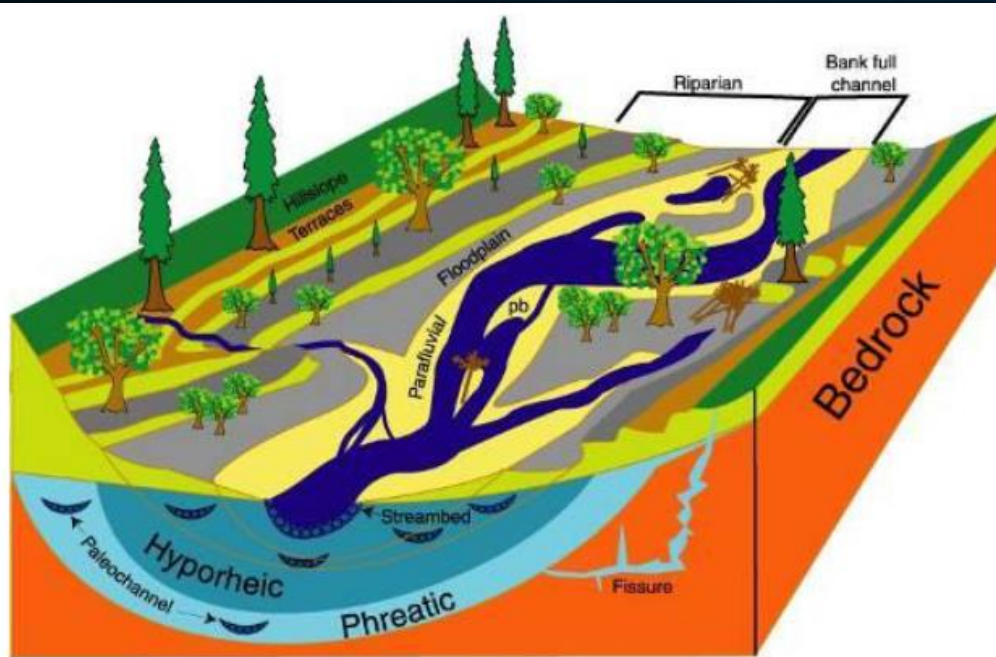
Bird Track Springs Project  
 Existing Condition  
 Inundation - 2-yr, 5-yr & 10-yr



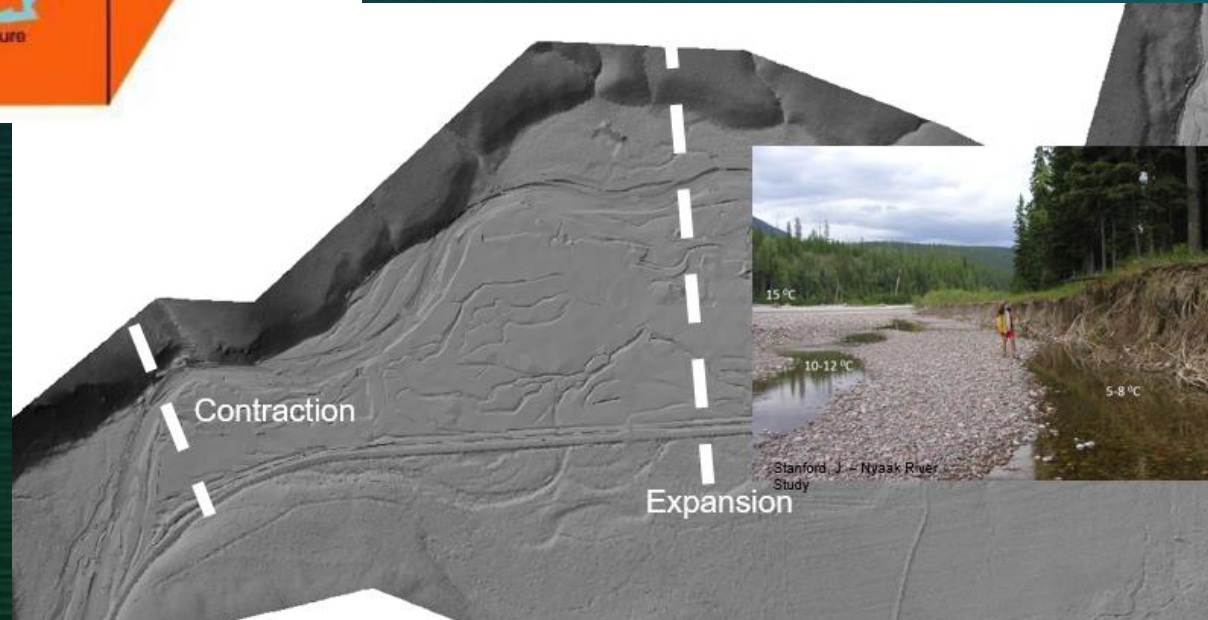
# Increase Side Channel and Connectivity



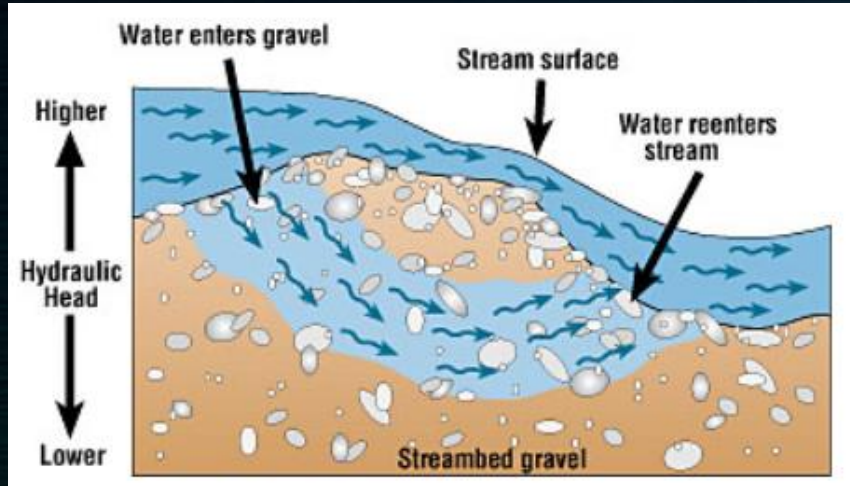
# PROMOTE DEVELOPMENT OF COLD WATER REFUGES



High potential for hyporheic cooling - 3-dimensional flowpaths, remnant channels and valley contraction/expansions



# Dynamic Channel = Cool Water Seeps



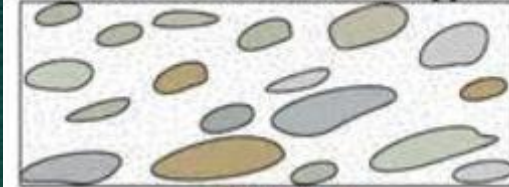
Imbricated (compacted) gravels to mobile gravels – Increase Hyporheic flow



Imbricated Pebbles - Clast Supported



Imbricated Pebbles - Matrix Supported



Non - Imbricated Pebbles



# Managing Ice



ERDC/CRREL TR-08-2

Cold Regions Research and Engineering Laboratory

Approved for public release; distribution is unlimited.

US Army Corps of Engineers  
Engineer Research and Development Center

**Ice Considerations in the Design of River Restoration Structures**

Andrew M. Tutbill February 2008

This block contains the cover of a report. It features a red vertical bar on the left with the text 'ERDC/CRREL TR-08-2' and 'Cold Regions Research and Engineering Laboratory'. The main title is 'Ice Considerations in the Design of River Restoration Structures' by Andrew M. Tutbill, dated February 2008. There is a small photograph of a river with ice chunks at the bottom.

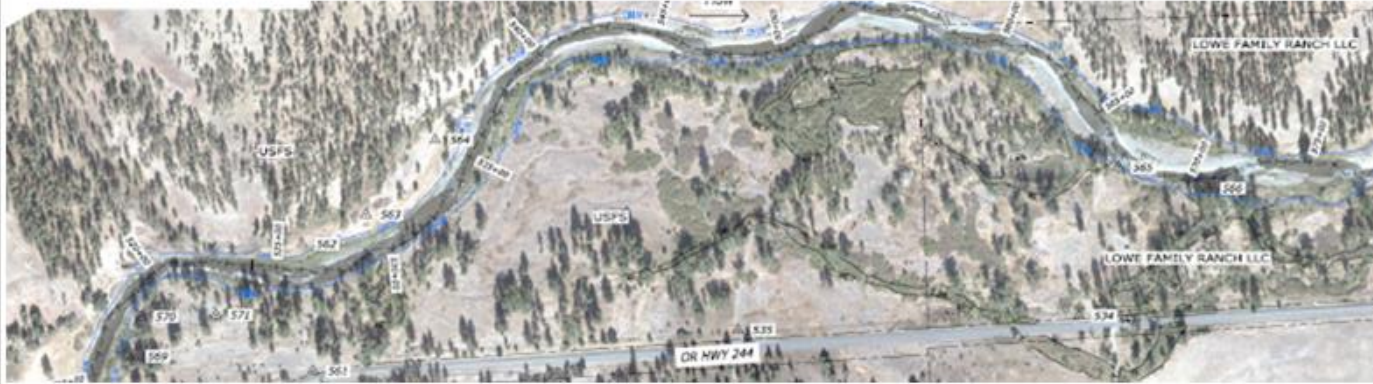




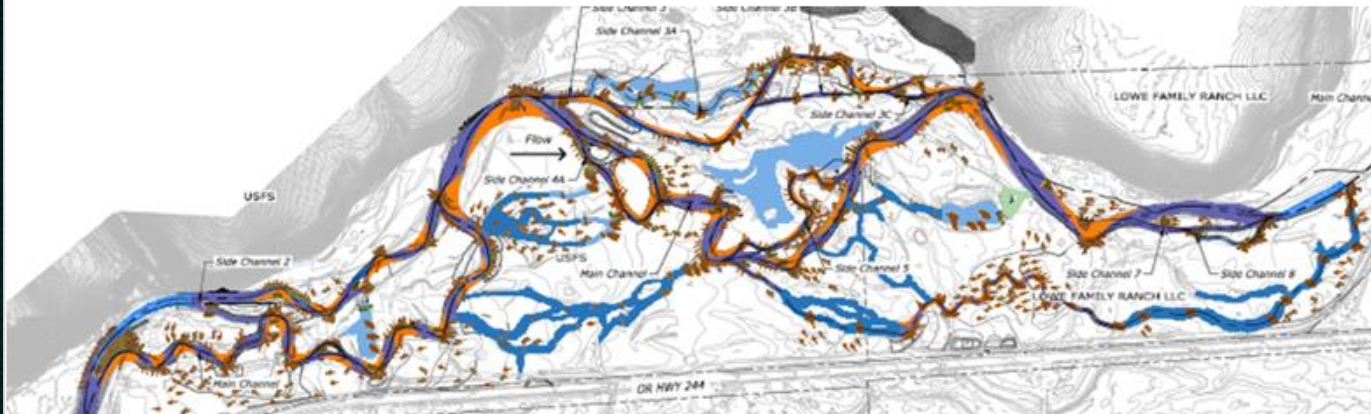




# BIRD TRACK SPRING FISH HABITAT & FLOODPLAIN RESTORATION PROJECT (Existing Condition)



## PROJECT DESIGN



## NOVEMBER 2019 ORTHO IMAGE (95% CONSTRUCTION COMPLETED)



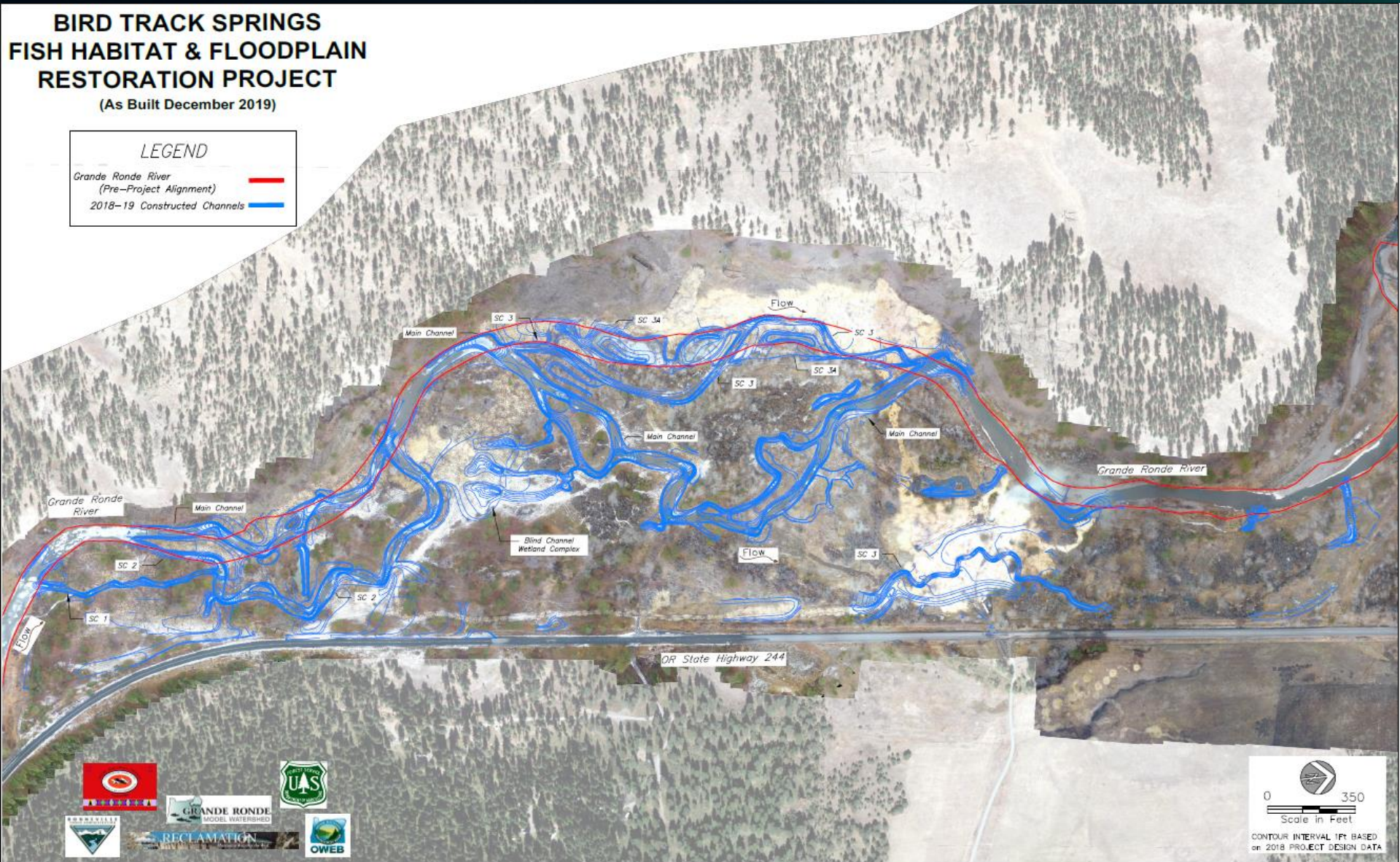
# BIRD TRACK SPRINGS FISH HABITAT & FLOODPLAIN RESTORATION PROJECT


(As Built December 2019)

**LEGEND**

Grande Ronde River  
(Pre-Project Alignment) 

2018-19 Constructed Channels 



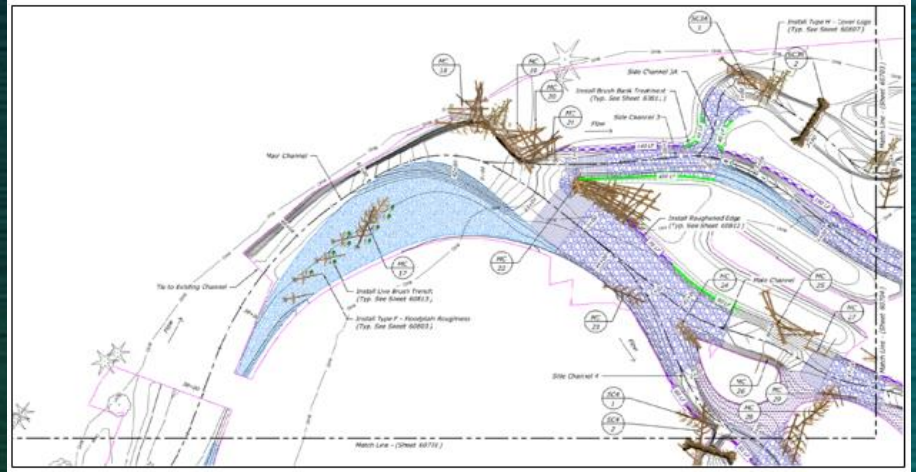
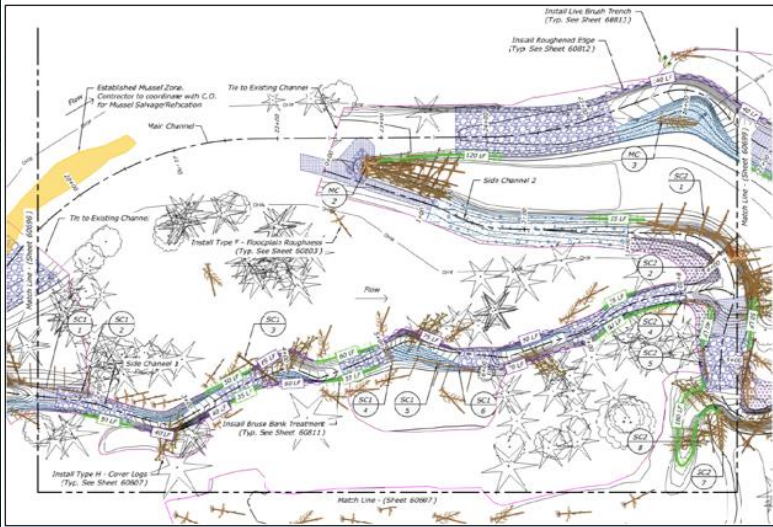
  
0 350  
Scale in Feet  
CONTOUR INTERVAL 1ft BASED  
on 2018 PROJECT DESIGN DATA

# Project Features

## Stream Channels & Floodplain

- 9,000 ft. main channel
- 9,500 ft. side channel
- 1,200 ft. alcove
- 2,000 ft. Floodplain Swale
- 120 Acres Floodplain
- 17 Large main channel pools (10 pools/mile) -900% increase
- 47 Medium side channel pools (26 pools/mile)
- 300+ large wood structures
- 250+ floodplain wood
- 3,700 ft. streambank bioengineering







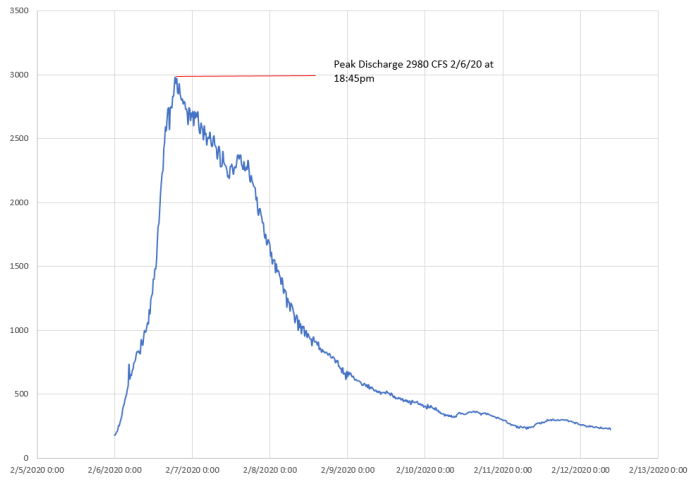




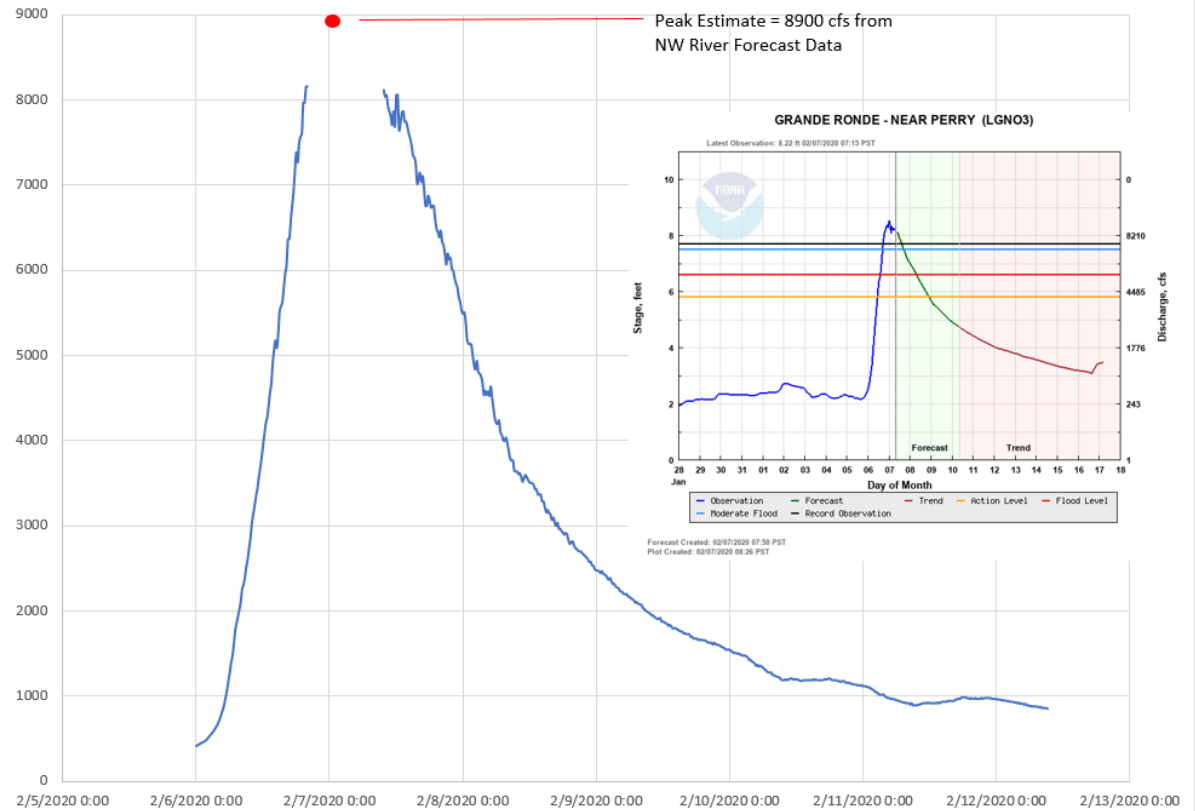




Meadow Creek Below Dark Canyon Creek

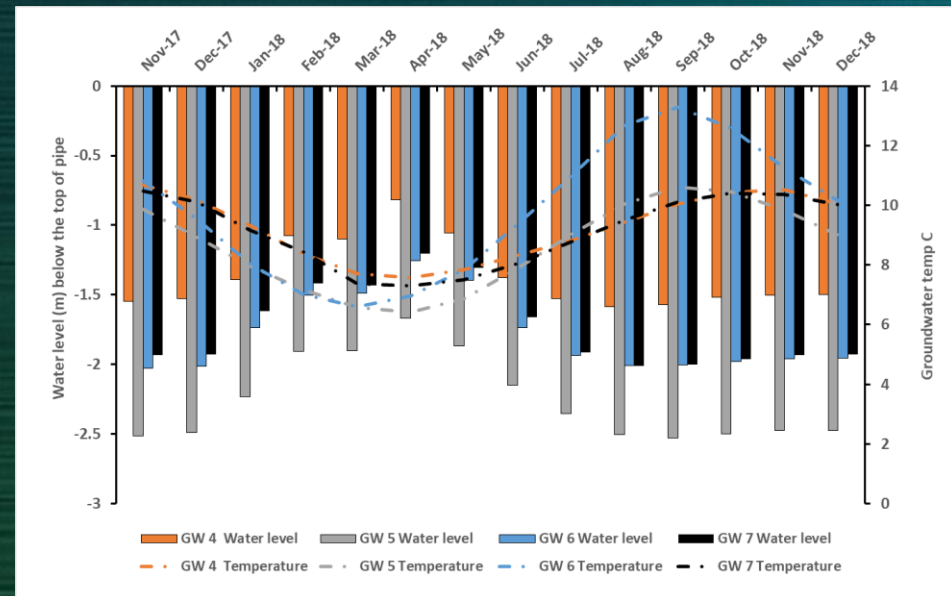
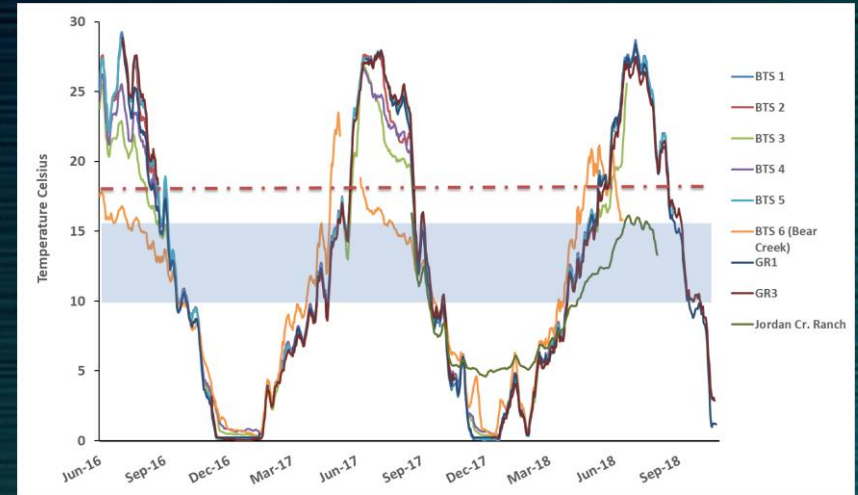


Grande Ronde near Perry



# Monitoring & Evaluation

- Adult spawning surveys
- Resident & juvenile fish snorkel surveys
- Juvenile chinook radio tracking (PIT Tags)
- Habitat surveys
- Water and air temperature
- Groundwater (elevations & temperature)
- Vegetation
- Aerial and ground photo points
- Cold water refuge research



QUESTIONS?