



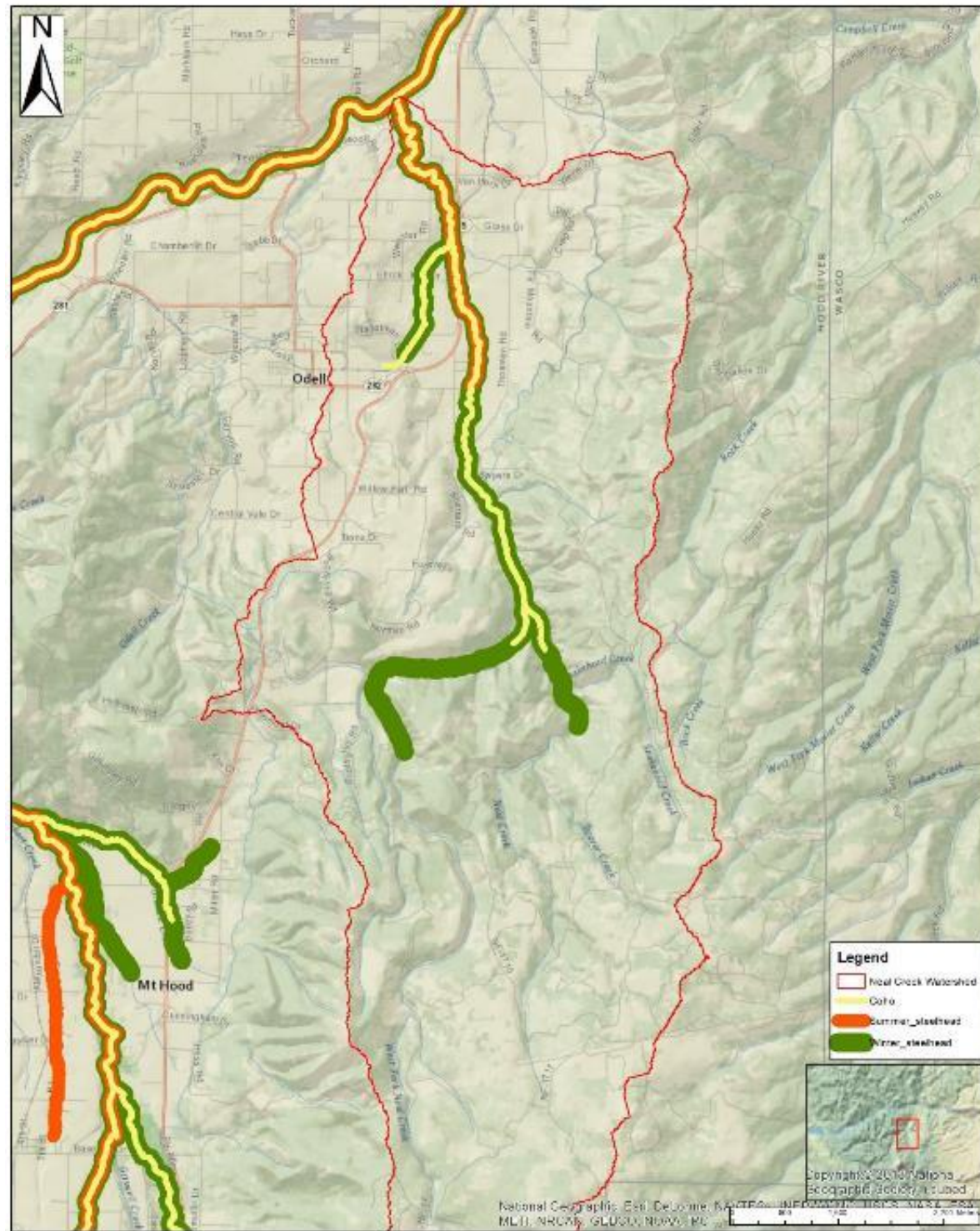
Tribal, Watershed Council, & Private Landowner  
Collaboration for Successful Habitat Restoration  
in the Hood River Watershed

Alix Danielsen, Hood River Watershed Group &  
Richard McConville, Confederated Tribes of the Warm Springs



# Neal Creek

- Neal Creek is a clear water (non-glacial) tributary of the lower Hood River (RM 4.2)
- Contains a viable population of threatened winter steelhead, threatened coho salmon, cutthroat trout, & resident rainbow trout
- Neal Creek is estimated to provide 5-10% of steelhead production in basin







## NEAL CREEK LIMITING FACTORS

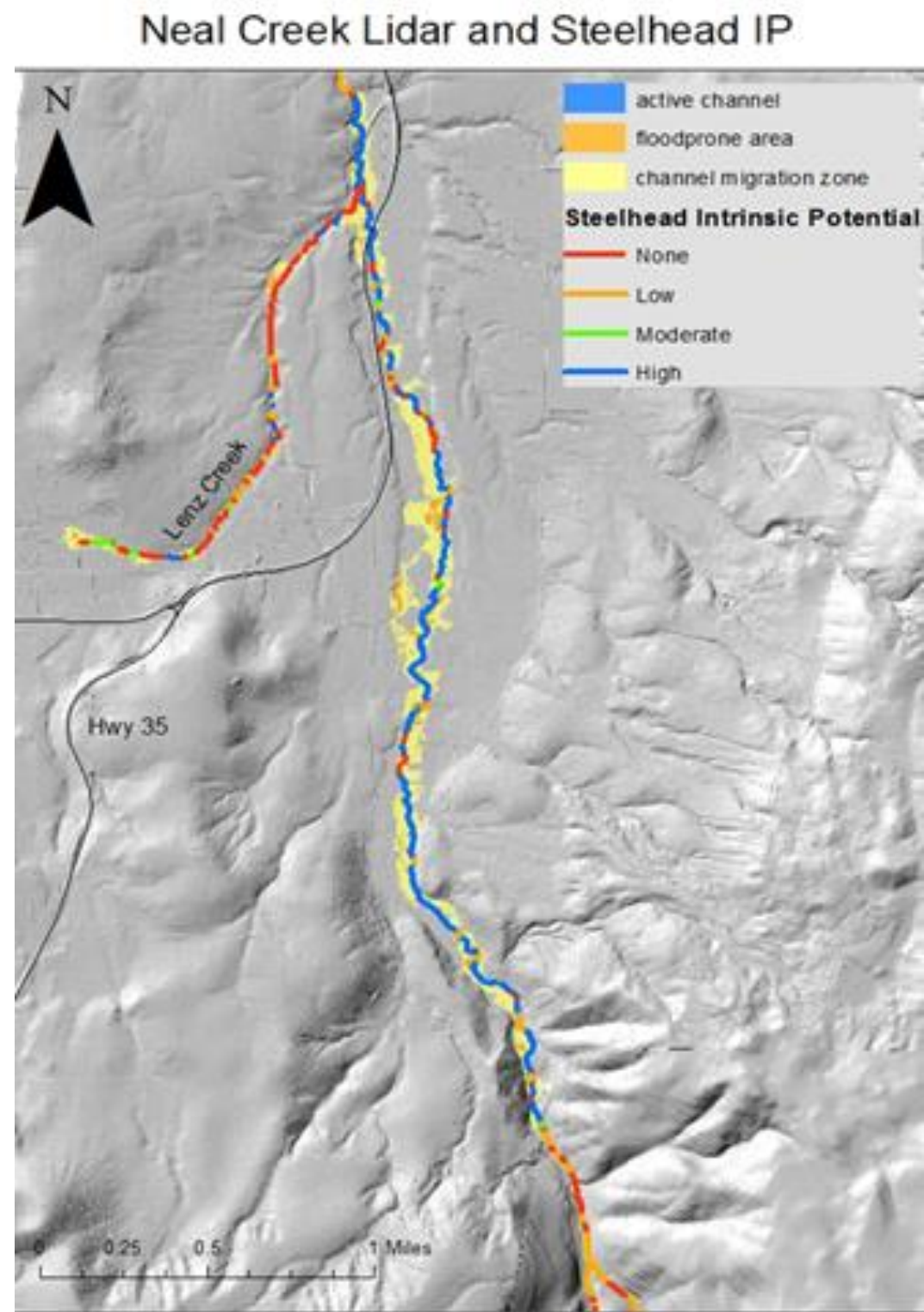
- 1) Habitat diversity
- 2) Key habitat quantity  
(spawning and juvenile rearing habitat)

Channel alterations, fill from private and county roads, irrigation conveyance, 1996 flood, logging, and large wood removal = entrenched channel segments with limited amounts of large wood and spawning gravels



## Project Background

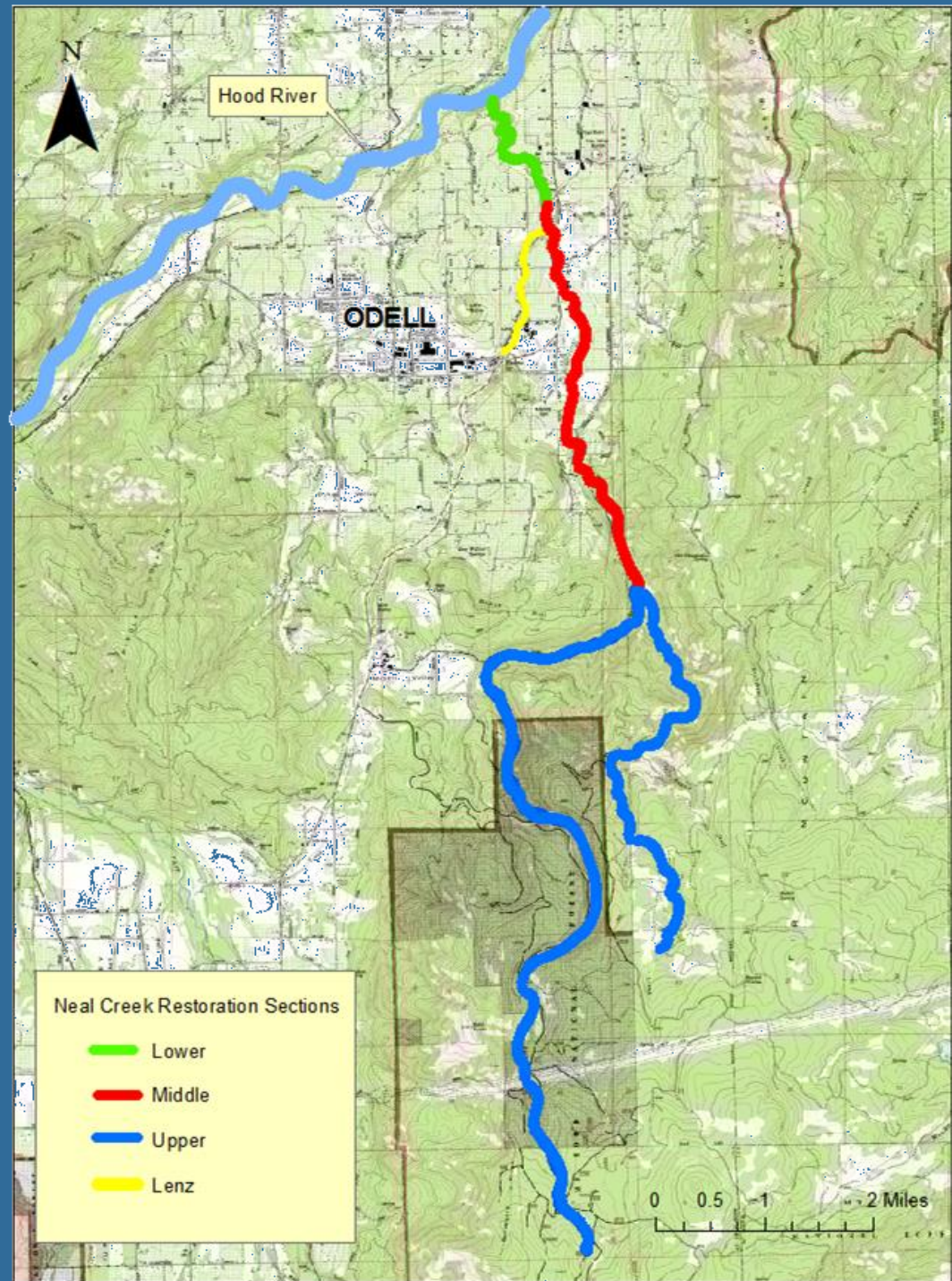
- The Oregon Lower Columbia Recovery Plan, US Forest Service Aquatic Restoration Strategy, and Hood River Action Plans identify Neal Creek as a priority stream for restoration
- 2014 CTWS Habitat Study - low amounts of large wood and limited physical stream habitat (zero spawning gravel patches)
- 2014 CTWS-funded LiDAR analysis of Neal Creek Intrinsic Potential (IP) for steelhead spawning and rearing
- 2018 analysis of restoration opportunities





## “Middle” Reach:

- Low gradient (2% or less)
- Broad and wide floodplain
- Highest Intrinsic Potential
- Highest residential and orchard density
- Roads, bridges, water withdrawals
- Minimal mature riparian vegetation; narrow buffer widths





## Restoration Initiative

### Partners:

Hood River Watershed Group - project development, project management, funding development

Confederated Tribes of the Warm Springs – project analysis, project support, funding, materials

Parr Excellence & Inter-Fluve - design and engineering

12+ Landowners, 3 Phases

Funding: Oregon Watershed Enhancement Board, CTWS, Pacific Power Blue Sky Habitat Fund/ The Freshwater Trust, Title II RAC



**Hood River**  
WATERSHED GROUP



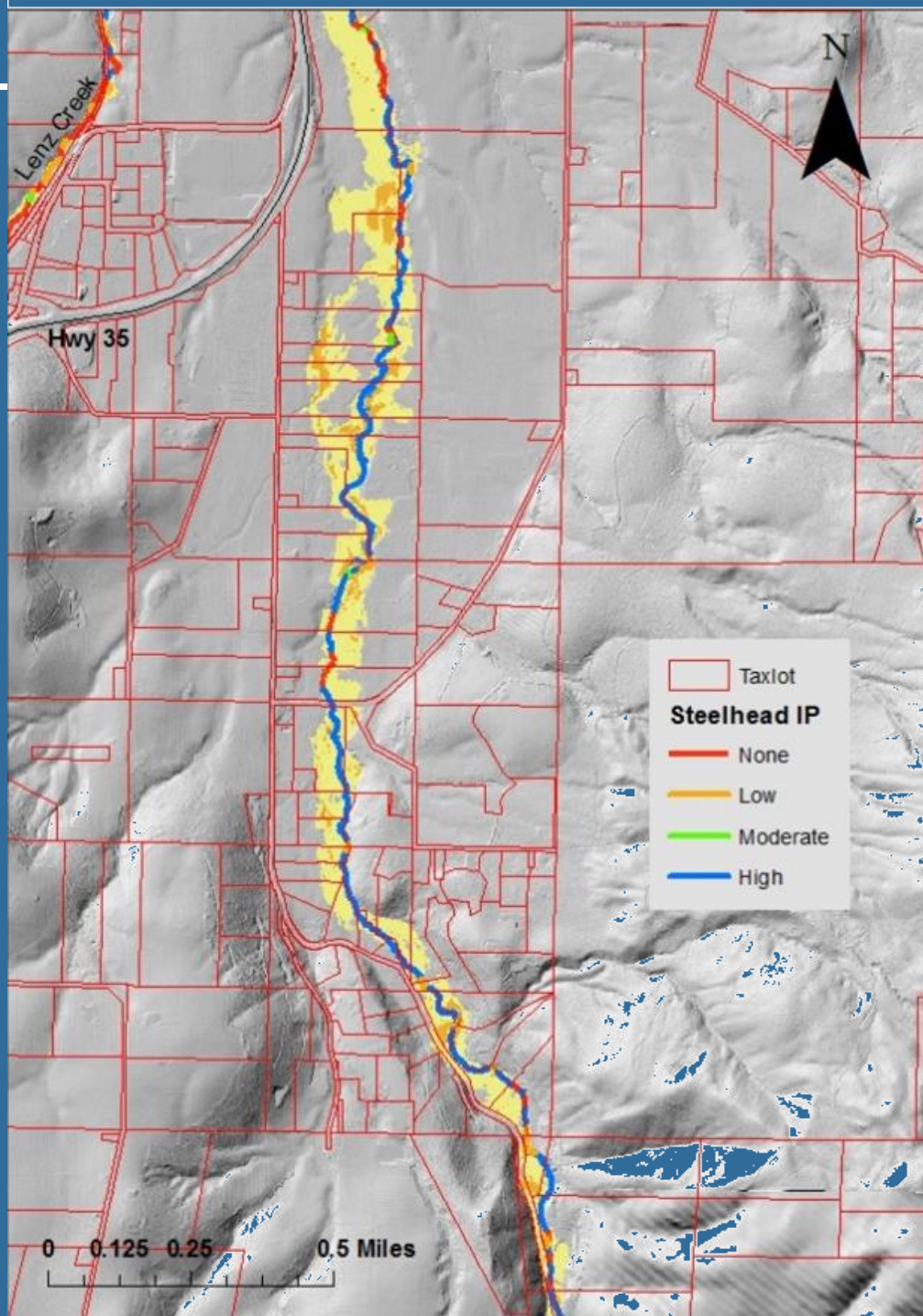


## GOALS

- 1) Restore ecological processes in Neal Creek (stream-floodplain interaction, nutrient cycling, maintenance of instream habitat complexity)
- 2) Increase spawning, rearing, and overwintering habitat for winter steelhead and coho
- 3) Increase Neal Creek's resilience to flooding
- 4) Foster ecological stewardship in Neal Creek Basin



# CHALLENGES



Land Ownership – mostly private, many small parcels

Land Use Practices – 65% forested, 30% mixed agriculture (pears, cherries, apples, cattle) 5% residential; irrigation district spill

Risk – FEMA-mapped floodplain, infrastructure, bridges



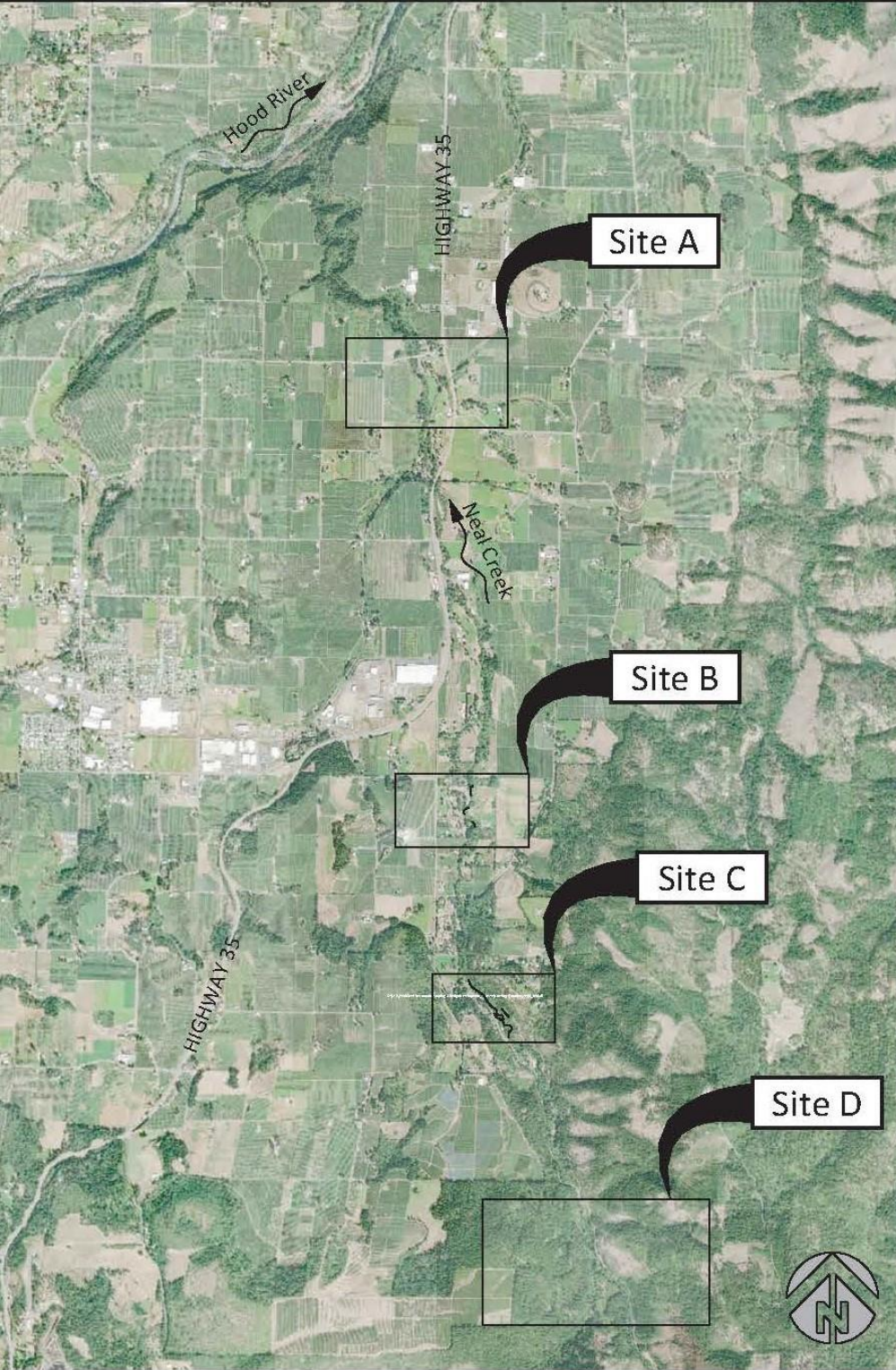
# Restoration Plan

Neal Creek Scoping and Design Development – Conceptual Design Report, 2018

Potential restoration actions within study area to improve steelhead and coho habitat

Data, assessments, hydraulic model, site survey, LiDAR, FEMA flood regulations...

Prioritization matrix (landowner interest, flood risk, total habitat area, IP, construction access/feasibility)







# Restoration Plan

Landowner Outreach – letters, calls, visits, agreements, on-going coordination, design reviews

Project Development – reach prioritization, fundraising, contracting

Design Development & Permitting

Implementation – fundraising, contracting, oversight, revegetation

Monitoring



# Design Process

- Topographic surveying
- Hydrologic and hydraulic modeling
- Wetland delineation
- Cultural resource survey
- Landowner communication
- Analysis, draft designs, permit level drawings
- Permitting





## Key Elements

- Main channel realignment
- Large wood structures (log jams)
- High flow channel enhancement
- Alcove habitat creation
- Floodplain grading
- Native riparian revegetation







## Phase 1 - 2021

Phase 1 restored approximately 1/2 mile and two acres of habitat by constructing 6 log jams, creating 14 pools, and adding over 100 logs back into Neal Creek

4 Private Landowners



















## PHASE 2 - 2023

Phase 2 restored approximately 3/4 mile of Neal Creek by constructing 11 log jams, 2 alcoves, 640 feet of new side channel habitat, and adding 45 boulders and over 100 logs

5 Private Landowners

















## PHASE 3 - 2024

Phase 3 will enhance 2 miles of Neal Creek by returning a section of the creek to its historic channel length and adding approximately 690 pieces of large wood to the channel, reconnecting 20 acres of floodplain

Hood River County Forestland



















# THANK YOU!

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