

2024 Ramp Down Research Plan

A two-year project to evaluate the ecological consequences of flow ramp down on cutthroat trout in the Upper Snake River, Wyoming

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Idaho State University

With partners at:



Teton
Conservation
District
Est. 1946



Project Description



- Lead Question:
 - Can ramp-down practices be altered to minimize the impact on the cutthroat trout and the stream ecosystem while accomplishing water management needs?
- Project Team:
 - ISU and many partners: TU, WGFD, JH OneFly, TCD, GTNP + Foundation, TU-JH
- Project Timeline:
 - Spring, 2024 – Summer, 2026
 - Summer/Fall 2024, 2025 main field efforts
- Methods
 - Hydraulic analysis of floodplain inundation at various flows
 - Field measurement of ecological responses to flow ramp-down

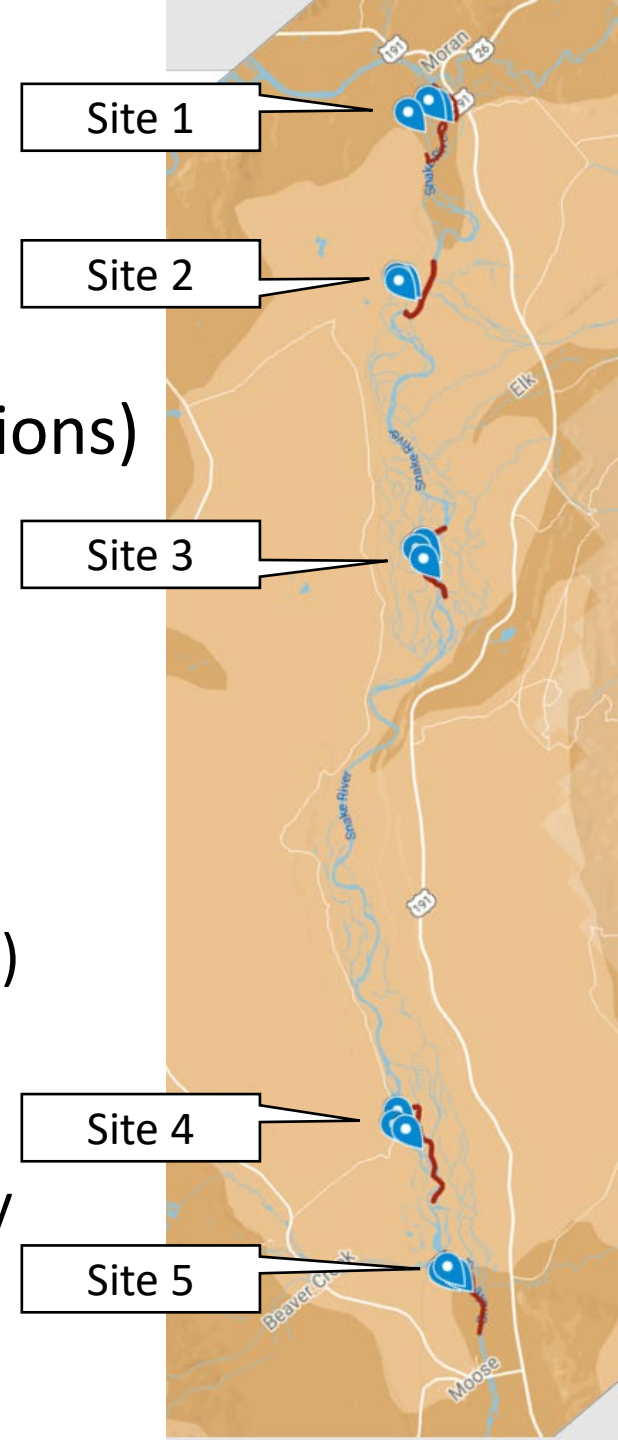
Initial Activities

- Field Reconnaissance, Sept/Oct 2023
- Recruit a MS Biology graduate student, Alex Stacy
- Exploring previous work and datasets
- Summer Fieldwork, July 2024
 - Site selection, initial msmts. and instrumentation
- Active efforts
 - Fall Fieldwork, making measurements now!
 - Pre-Ramp Down
 - During-Ramp Down (soon)
 - Post-Ramp Down (soon)
 - And...



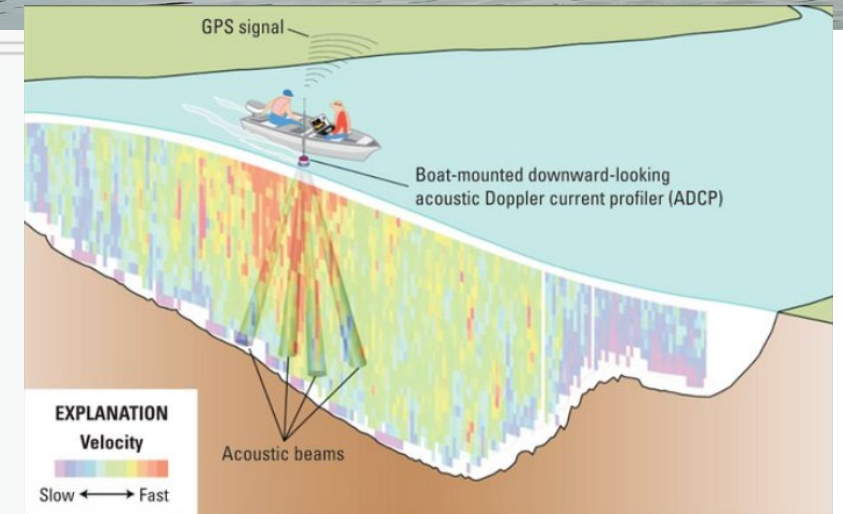
Sampling Strategy

- Five field sites, each with three channel types (=15 locations)
 - Mainstem
 - Side channel
 - Groundwater
- At each of the 15 locations:
 - Measure approximate species diversity and abundance
 - Measure bed texture (bar topography and stream bathymetry)
 - Measure water level and temperature every 15 minutes
 - Assess changes in the above in response to flow ramp down
 - Model flow inundation using lidar, visible imagery, bathymetry



Bathymetry and River Temperature

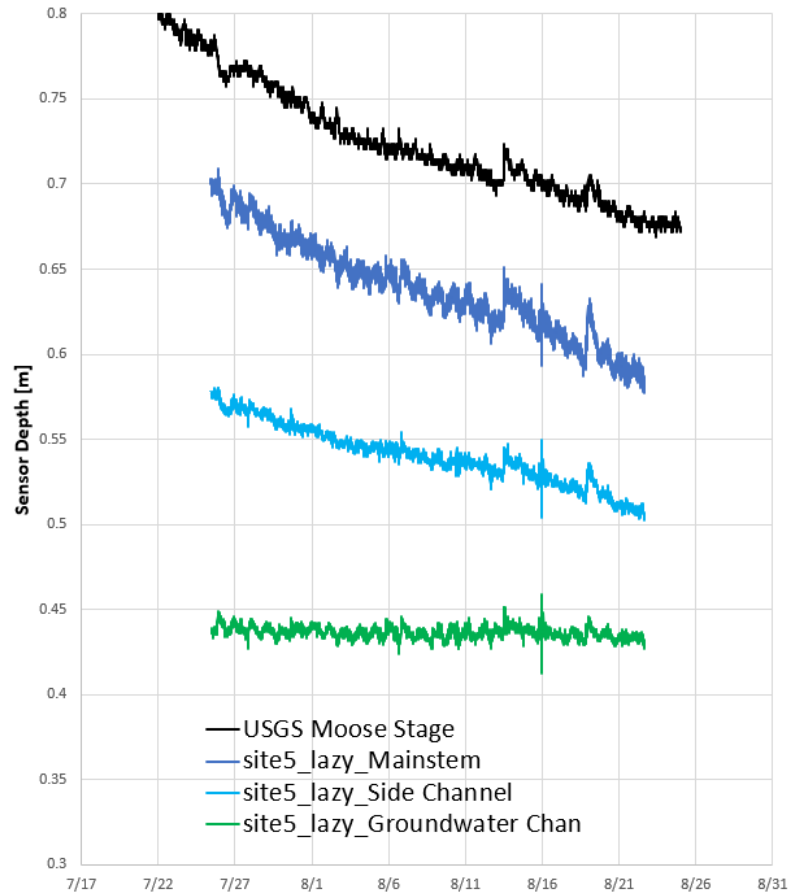
Zig-zag river in kayak, bank-to-bank, mainstem and side channels: **Depth decreases at banks**



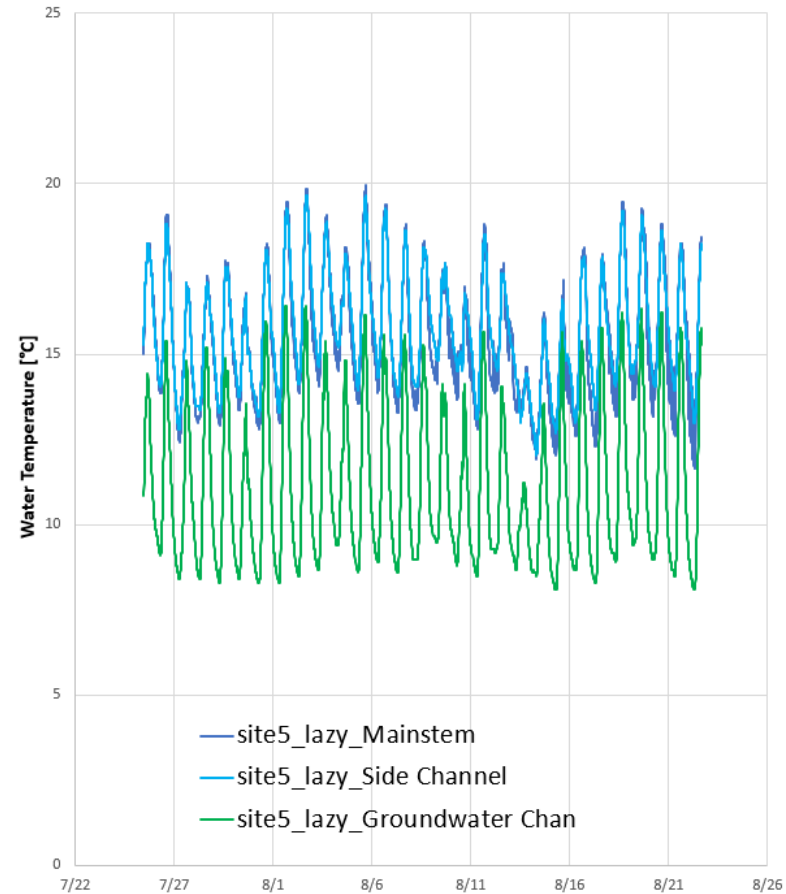
Water Level and Temperature Logging

Water levels decline similar to the USGS Gages, except in groundwater-sourced channels

2024 Water Sensor Depth: Lazy F Example

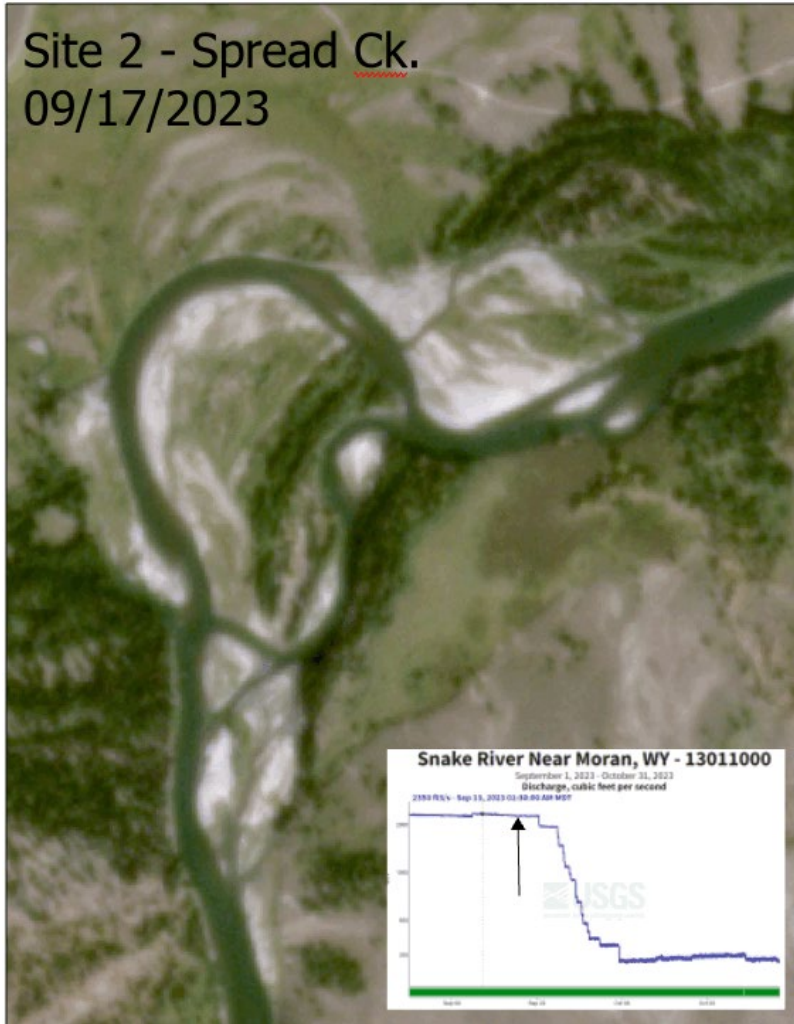


2024 Water Temperature: Lazy F Example

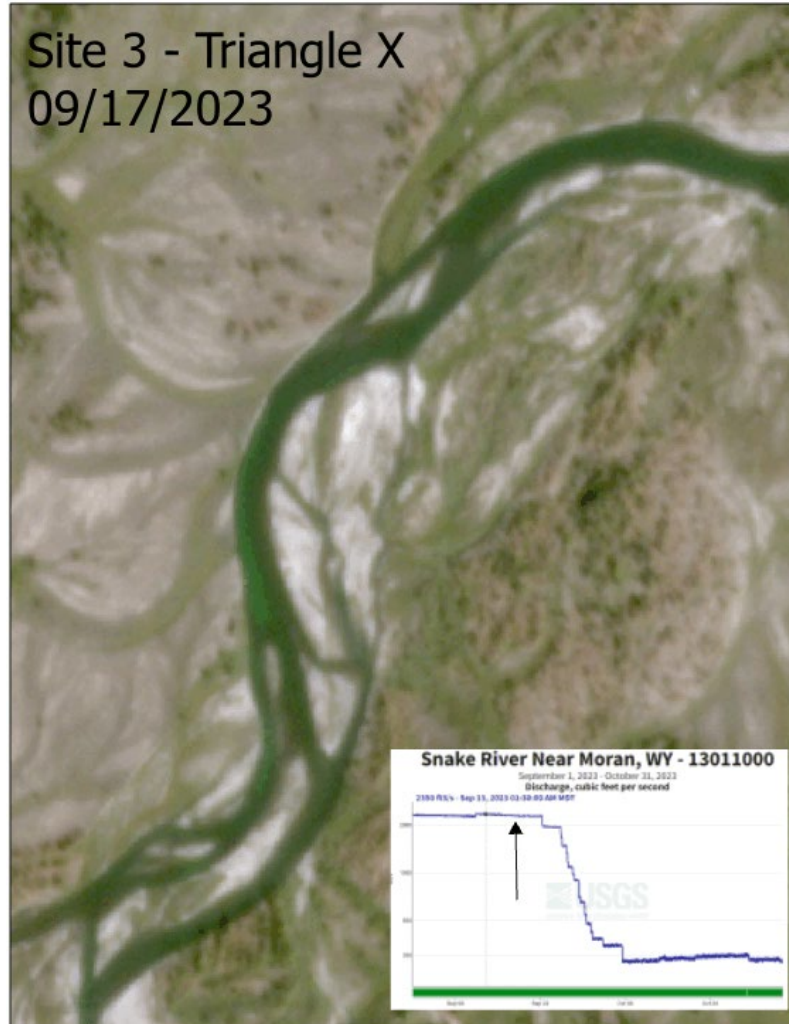


Assess Ramp Down Effects: imagery and msmts.

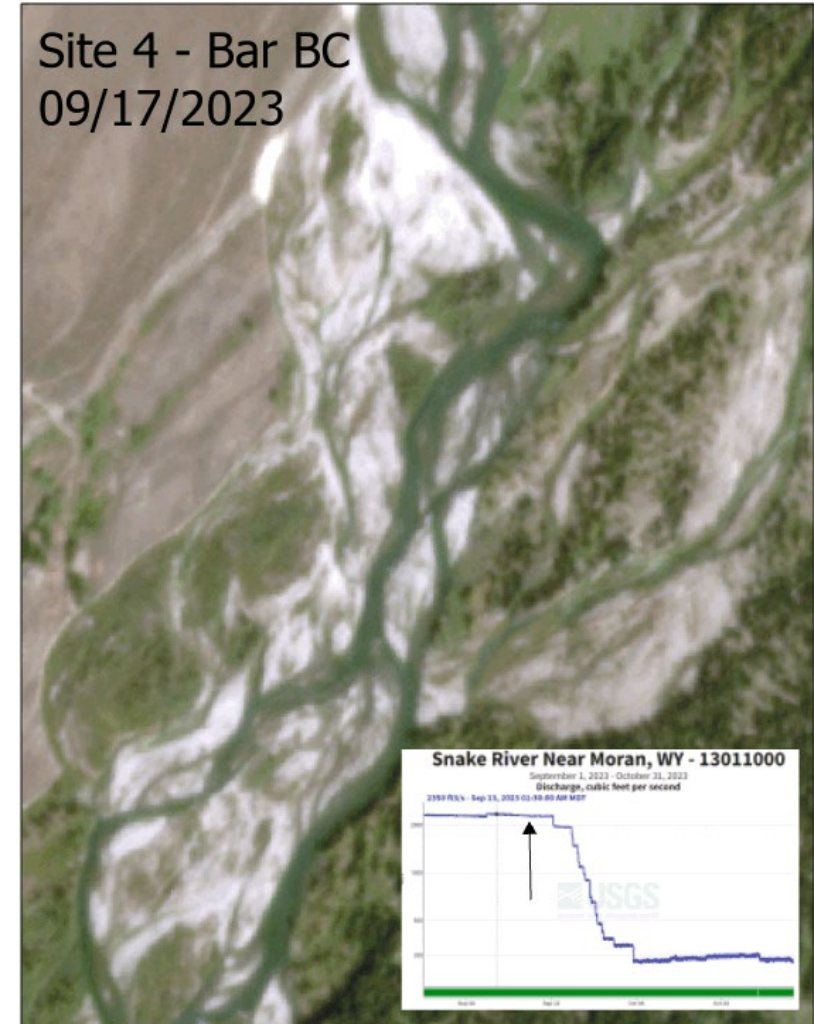
Site 2 - Spread Ck.
09/17/2023



Site 3 - Triangle X
09/17/2023

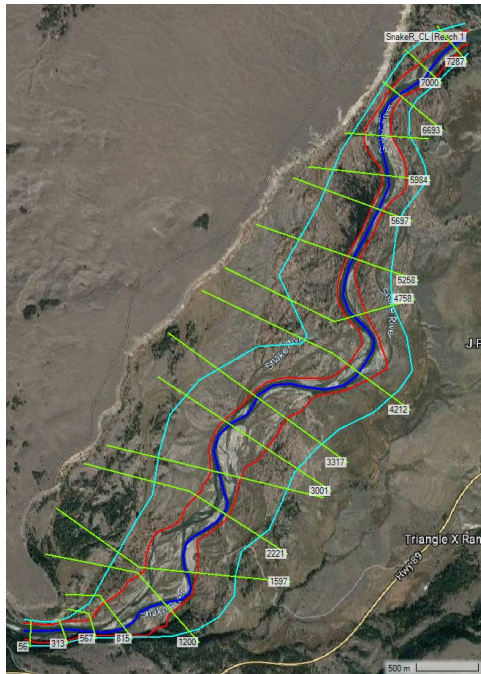


Site 4 - Bar BC
09/17/2023

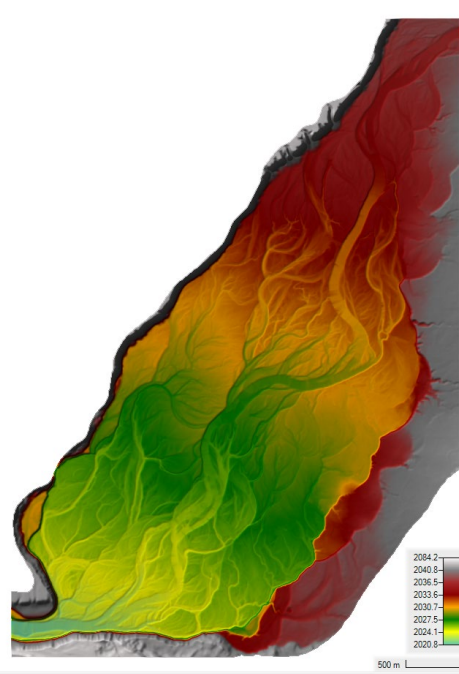


Initial Inundation Modeling

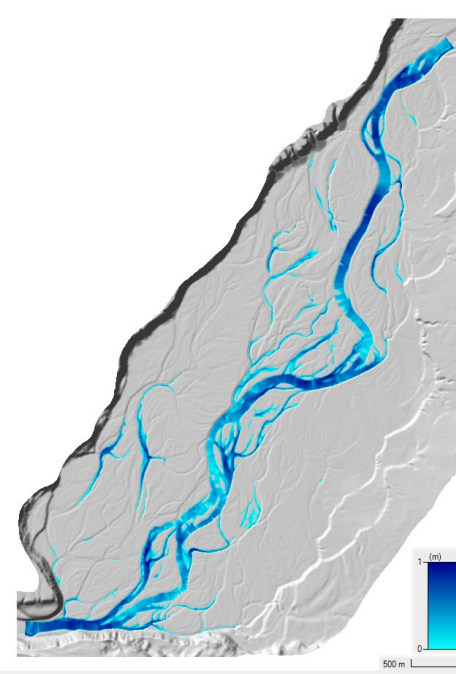
- Using preliminary 2022 LiDAR and USACE HEC-RAS software
- Evaluating multiple options:
 - Connection/Disconnection of side channels?
 - Similar response to ramp down as observed in imagery?



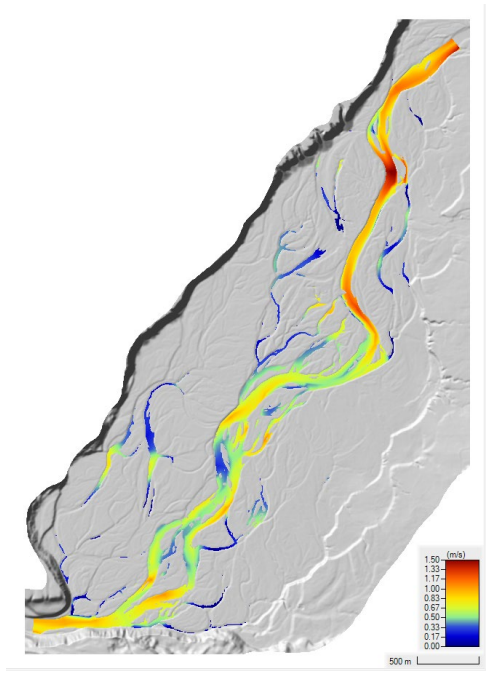
Define banks and sections



Add topo and bathymetry



Model flow depth



Model flow velocity

Our Big Ask of the Public

- Citizen Science! Your observations matter
- Help us document changes during flow ramp down
- Focus between Pacific and Moose
 - **INBETWEEN OUR SITES**
- Use Trout Unlimited RIVERS app to document
 - Do you see stranding?
 - Do you see disconnection?
 - Do you see shorelines?
 - Do you see species of concern?
- Coordination by:
 - Leslie.Steen@tu.org

Sites Map

SCAN ME



Site 1

Site 2

Site 3



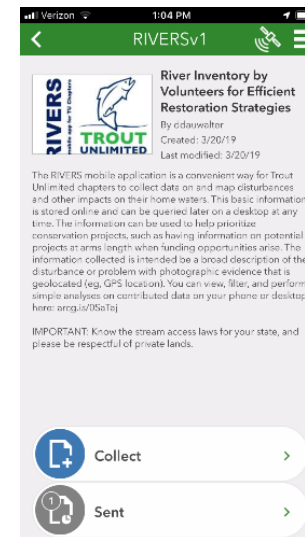
Site 4

Site 5

RIVERS app info



SCAN ME



Questions?

- Reach me at crosby@isu.edu

