

Field Trip Guide

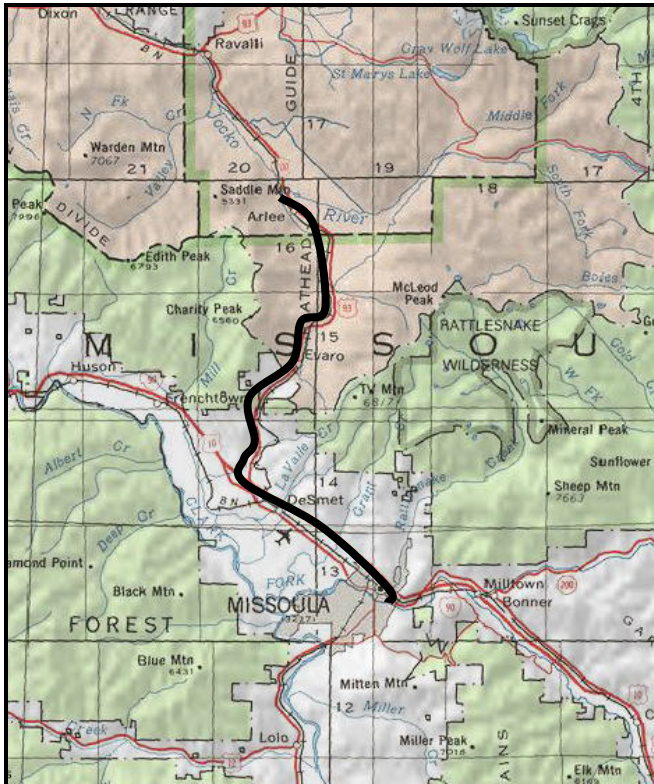


Floodplains and Rivers: Connections and Reconnections

Missoula, MT
September 22, 2005

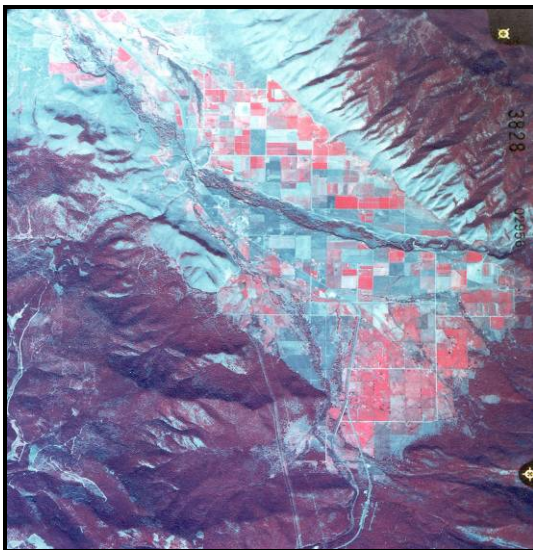
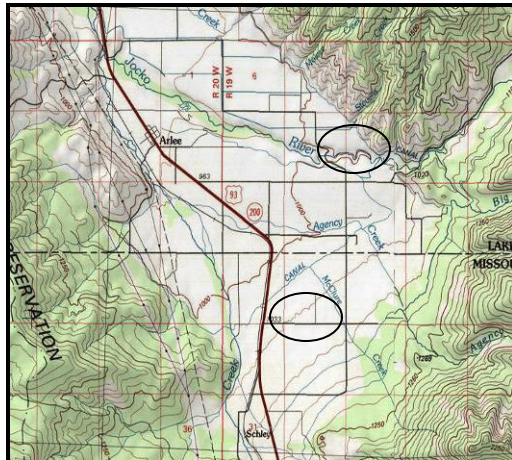
Field Trip Leaders

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Les Evarts, Fisheries Program Manager
Craig Barfoot, Fisheries Biologist
Rusty Sydnor, Restoration Botanist
Confederated Salish and Kootenai Tribes, Natural Resources Department
Tom Parker, Riparian Ecologist;
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Shandin Pete, Graduate Student, Department of Geology, The University of Montana



The Flathead Indian Reservation, home to the Salish, Kootenai and Pend' Oreille peoples, was established by the Treaty of Hellgate in 1855. The Reservation, at approximately 1.25 million acres, includes the south one half of Flathead Lake, approximately 60 miles of the Flathead River, and numerous large perennial stream systems. The earliest irrigation diversions in the Jocko Valley date to the 1860's and the largest contiguous irrigation project in the State (130,000 acres) is located on the Reservation, with construction starting in 1908.

| Miles | Directions |
|-------|---|
| 0 | The University of Montana UC Center-load buses Exit parking area, turn left on Campus Drive follow the road past the stadium through the first stop sign to the second stop sign. |
| 0.5 | Turn right and cross Madison Street Bridge, turn right onto E. Broadway at the stop light. |
| 0.8 | Get in the left lane and turn left on Van Buren St., get on I-90 heading west. |
| 10.8 | Exit at the US93 exit and head north towards Flathead Lake. |
| 23.4 | Take US93 north to mile post 13 and turn right on McClure Drive Follow McClure Drive east about 1 mile and park vehicles. |
| 24.4 | Stop 1: Overview-Jocko Valley |



Topographic map and CIR photo suggest valley-bounding faults to northeast and southeast. Late Pleistocene Jocko River glacial outwash fan onlaps onto the older, composite Agency Fan and smaller alluvial fan and distributary channel network of Finley Creek. Through the latest Pleistocene and Holocene the Jocko River has incised down to the bedrock constriction at Arlee leaving a set of prominent terrace surfaces.

24.4 Return to cars and continue East on McClure Drive. Sharp left turn in road Road becomes Gray Wolf Rd. continue north to Jocko River Crossing

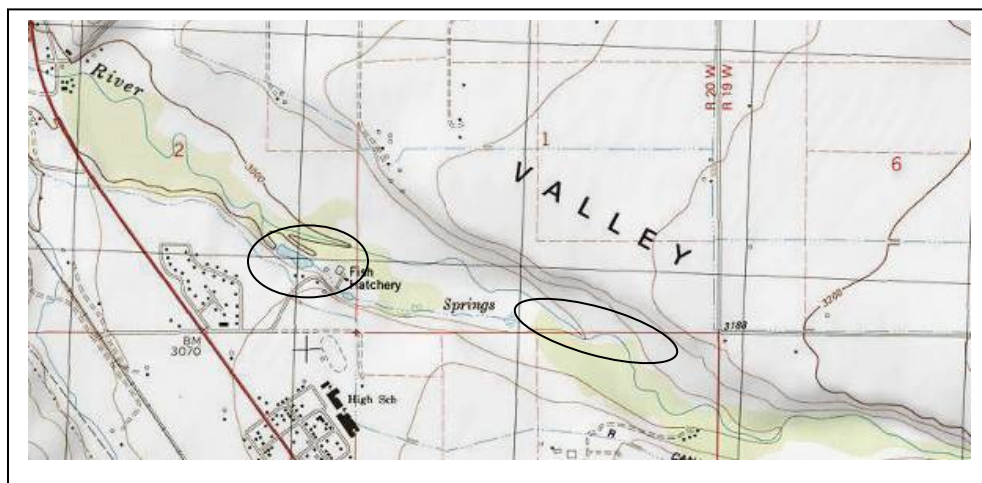
27.7 **Stop 2: Jocko River at Teresa Adams Bridge. Park off the road**

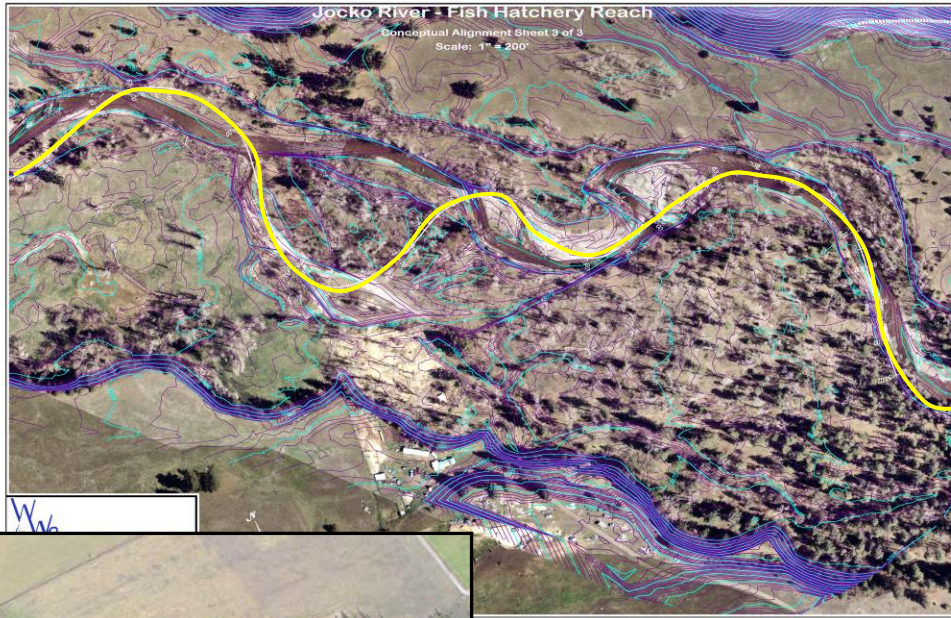


Headwater segments of the Jocko River contain step pool and cascade channel units with narrow inset floodplains. At a watershed scale, restoration effort in the Jocko is defined in four components. Assessment – Understand historical, existing and desired future condition and ecological interactions
Protection – Identify and protect the best available habitats
Passive Restoration – Modify land uses that are disrupting ecosystem processes
Active Restoration – Reset the channel and riparian area to reverse a degrading trend and move the environment toward a dynamic equilibrium

Continue North following the paved highway. The road turns west. Approximately 2.5 miles from the bridge the road makes a right angle turn to the north. As you begin the curve take the road paralleling a fence line that heads west. This dirt road will take you to the restoration site on the Jocko River, approximately 0.3 mile.

30.5 **Stop 3: Restoration Site- Background and tour of the site**





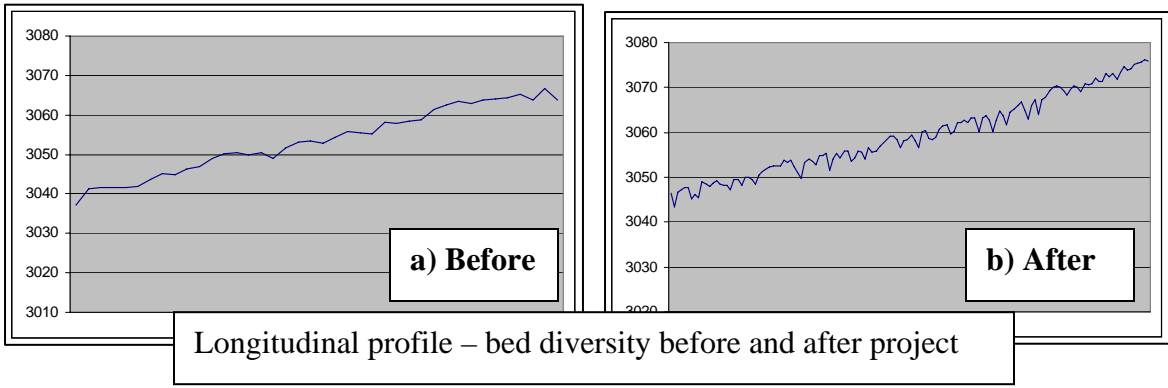
Demonstration reach broken into Phase 1 and 2, total length ~ 9,000 ft, phase 1 ~ 3,700 ft.

Goals for restoration

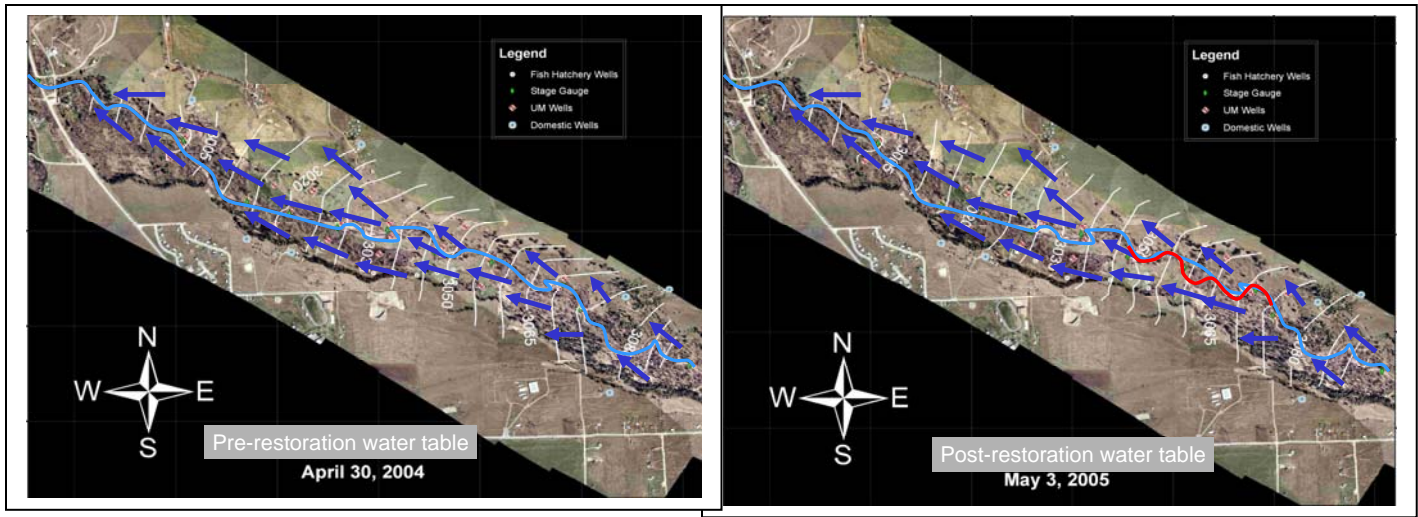
1. reconnect channel and floodplain by raising bed elevation
2. recreate ~ 1938 sinuosity
3. stabilize bank margins with vegetation
4. revegetate floodplain to convert agricultural cover type to woody riparian and emergent cover
5. raise floodplain water table elevation
6. improve fish habitat by increasing channel complexity and diversity

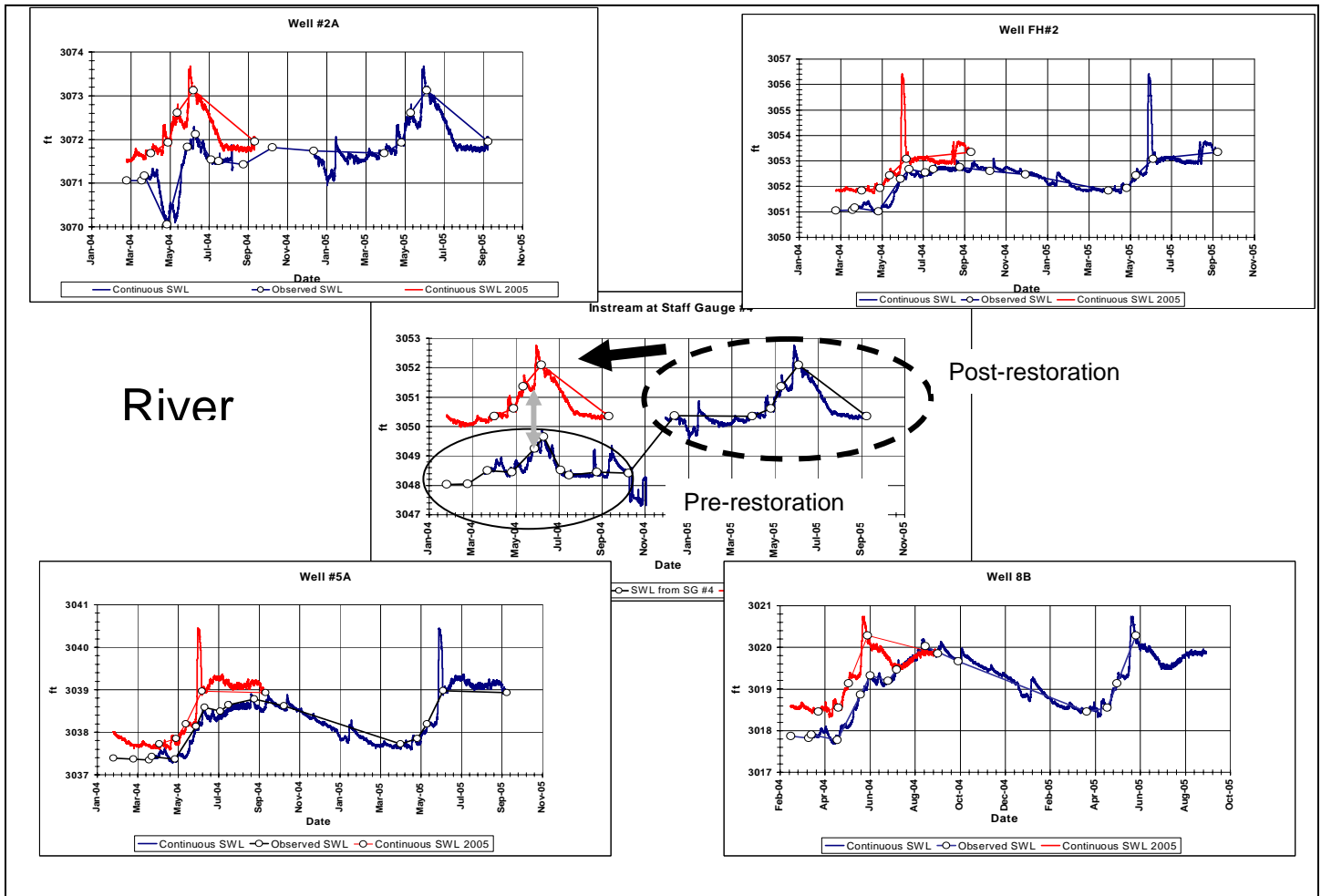
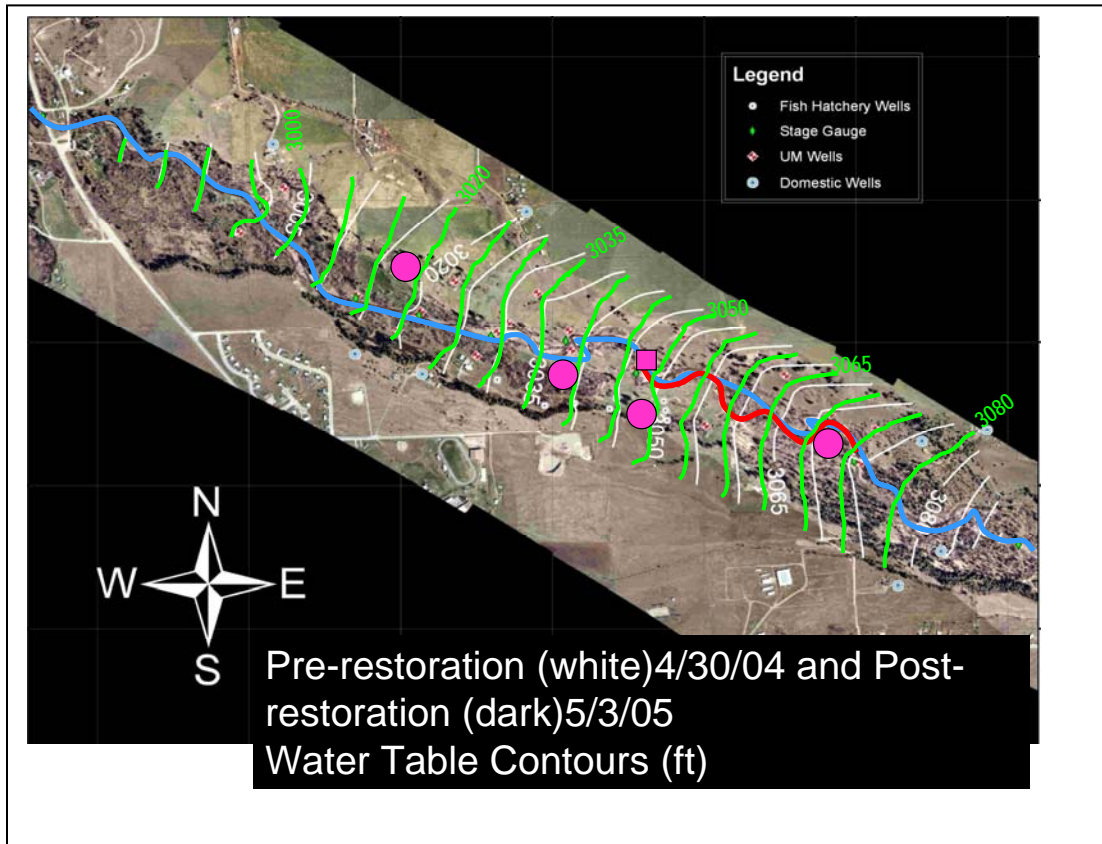


Peak flow 2005 ~ 1,900 cfs (20 year RI flood).
 Contrast channel – floodplain interactions in reconstructed reach with levee section



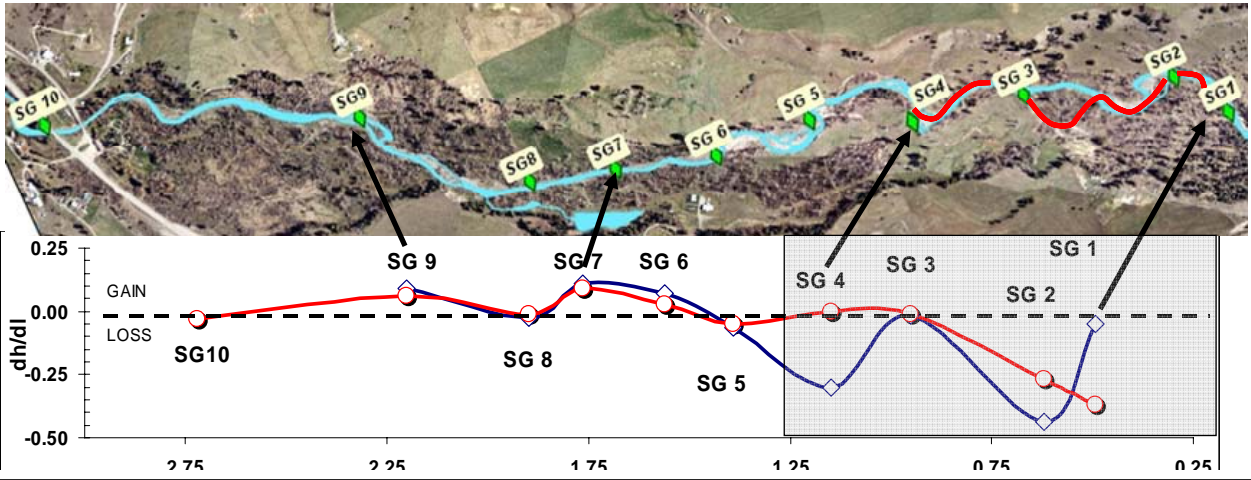
Restoration Impact on Floodplain Groundwater and Stream- Groundwater Exchange





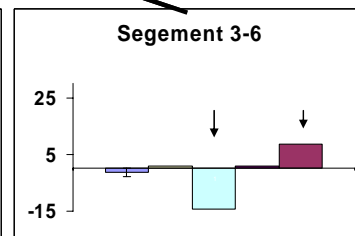
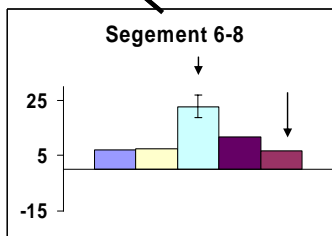
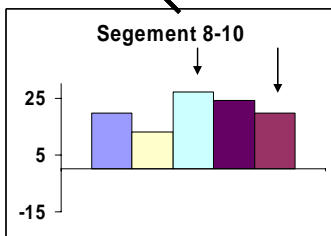
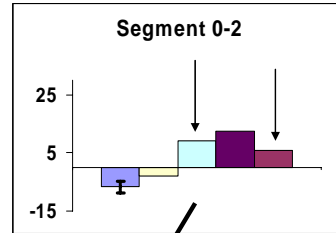
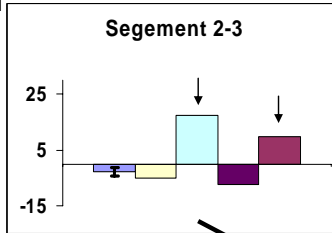
STREAMBED VERTICAL GRADIENTS

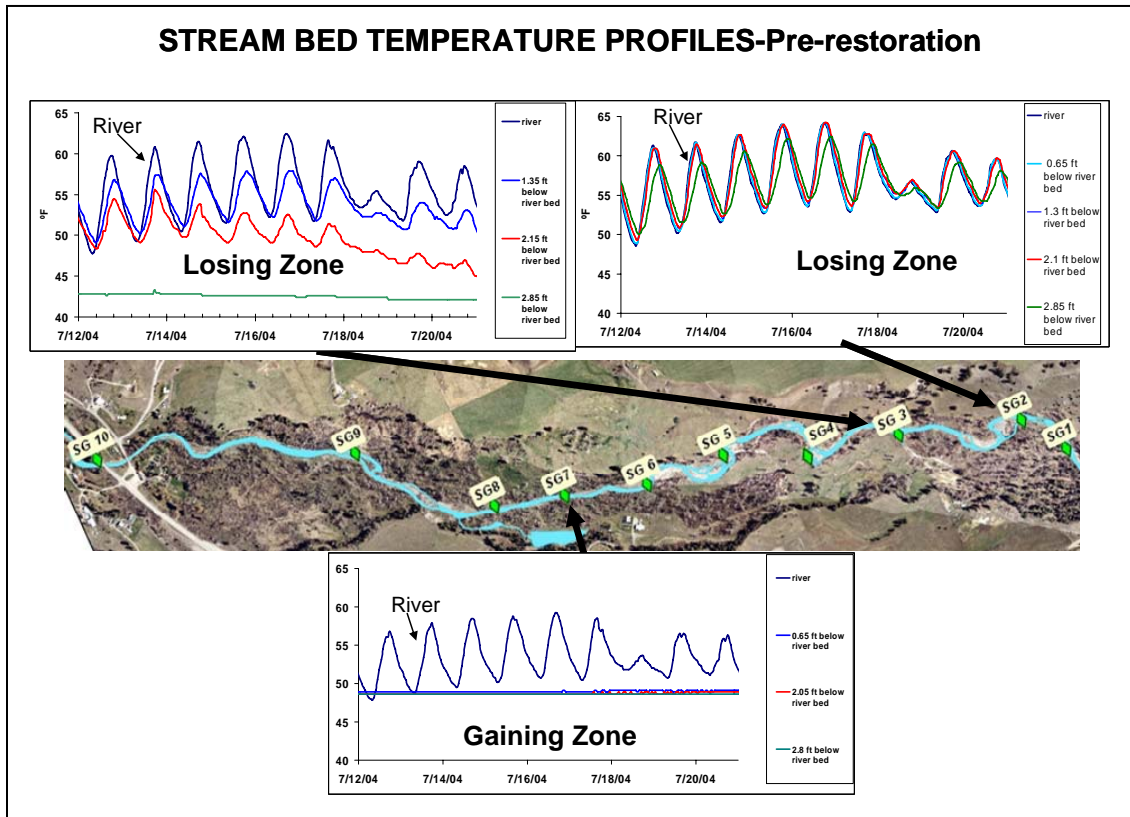
Before (4/30/05) and After (5/3/05) Restoration



Seepage Data Q2-Q1

- March 01 '04
 - April 26 '04
 - August 09 '04
 - December 16 '04
 - August 25 '05
- Scale in cfs

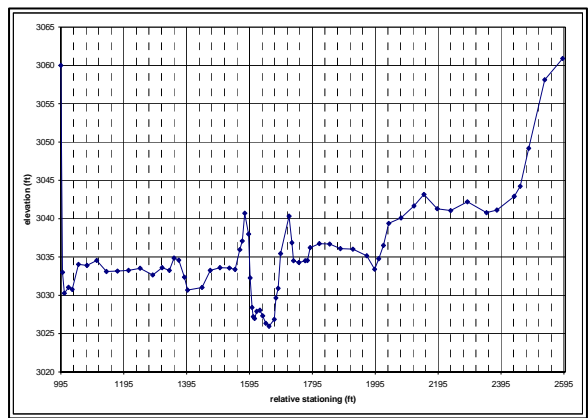




Return to the paved road and turn left. Follow this road 3.3 miles to US93.

- 33.7 Turn left towards Arlee on US93. Go 2 miles.
- 35.7 Turn left on Oxford Lane. Signs to the FWP Fish Hatchery. Continue about 0.5 miles and turn left at the Fish Hatchery Sign. Slow Down! Be Careful. Slowly proceed about 0.5 miles to the Fish Hatchery that is on the lower floodplain.

36.7 Stop 3 Lower Jocko Site-Fish Hatchery

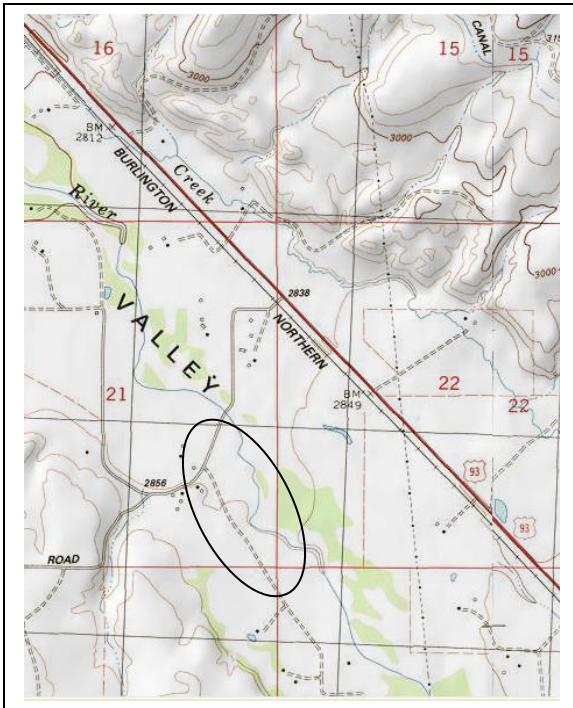


Leave the Fish Hatchery and return to the intersection of Oxford Lane and US93.

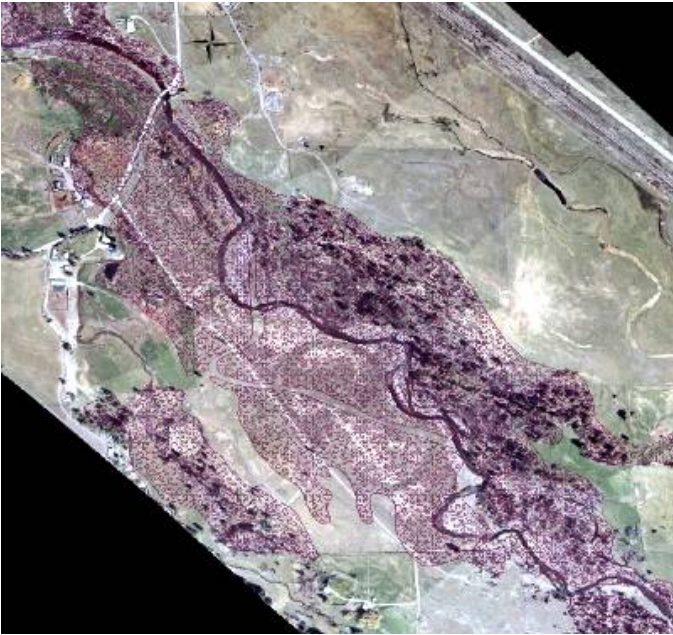
37.7 Turn right towards Ravalli and travel 5.1 miles

42.8 Turn off of US93 left towards the Jocko River on South Valley Creek Road. Go 0.5 miles across the bridge and park on the left

43.3 **Stop 4. Schall Flats**



Stippled pattern shows extent of riparian/emergent canopy cover in 1938 air photo



Leave the site and return to US93. Turn right towards Arlee and Missoula. Return to the University approximately 36 miles.