

Henry's Fork Watershed Council Summer Tour
Tuesday, July 20, 2010

Conservation of surface and ground water in a Western watershed experiencing rapid loss of irrigated agricultural land to development

09:30 Meet at Tetonia Elementary School in Tetonia

10:00 Mike Harris Pullout on Trail Creek: Trail Creek Headwaters

- Overview of Field Tour Goals/Agenda. Dr. Rob Van Kirk, Humboldt State University.
- Ecological implications of surface-groundwater interactions, and hydrologic requirements of native vs. non-native fish. Lee Mabey, USFS Fisheries Biologist.

10:45 Trail Creek Main Headgate

- Experiences of a canal company that converted from open canals and flood irrigation to pipeline/sprinkler in the 1970's. John Winger, President, Trail Creek Sprinkler Irrigation Company.

11:30 Brookside Hollow Park in Victor on Lower Trail Creek

- Water use and management on developed land after conversion from previously irrigated land. Meagan Hill, Development Manager, Teton Land & Development Group, LLC.

12:00 Lunch Discussion: Linking water management & land use planning. Lora Liegel, graduate student, Humboldt State University.

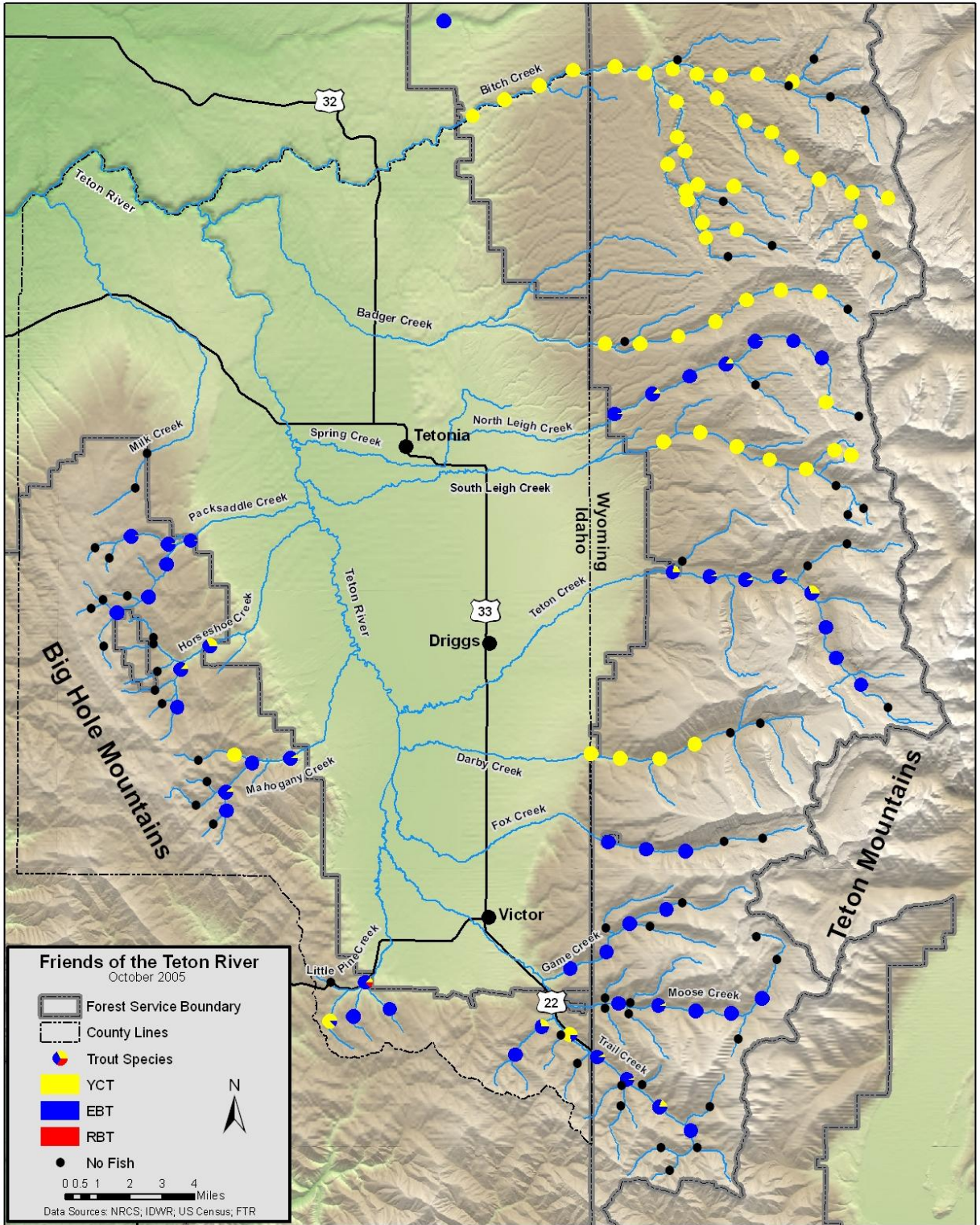
1:00 Fox Creek, Upper and Lower

- Management of a canal system that serves both irrigated agricultural land and land that has converted to residential/subdivision use. Randall Foster, Water Master, Fox Creek Canal Company

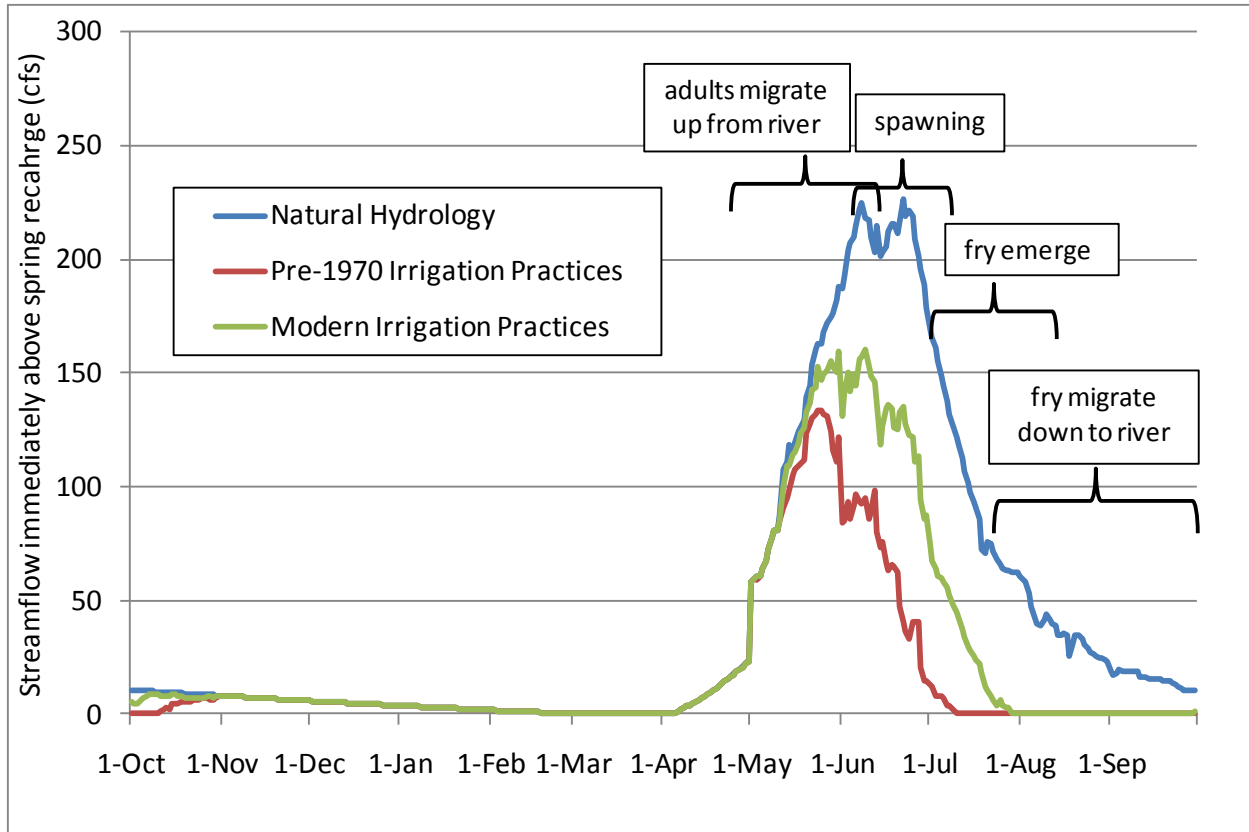
3:00 Cache Canal

- Irrigation seepage as a primary source of water for a down-gradient agricultural irrigator. Ken Dunn, Cache Canal Company water user.
- Wrap-up Discussion. Dr. Rob Van Kirk, Humboldt State University.

4:00 Return to Tetonia

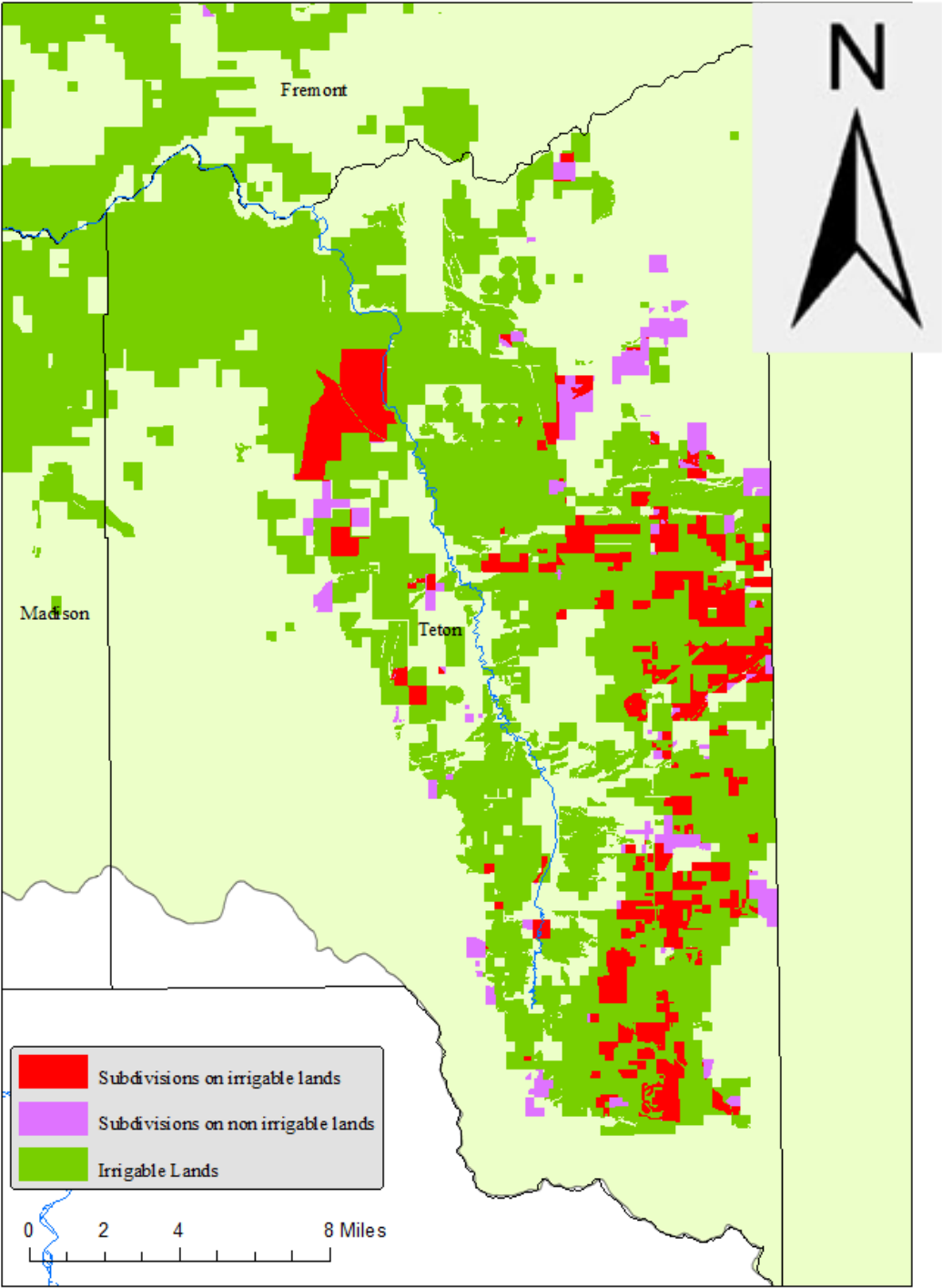


Trout species composition in Teton River tributaries, as observed in 2005.



Modeled flow in Trail Creek immediately upstream of spring recharge (“live water”) under three different irrigation use scenarios. Hydrographs are medians over 32 water years, using 1972-2003 hydrologic conditions as model input. Braces indicate timing of Yellowstone cutthroat trout life history stages.

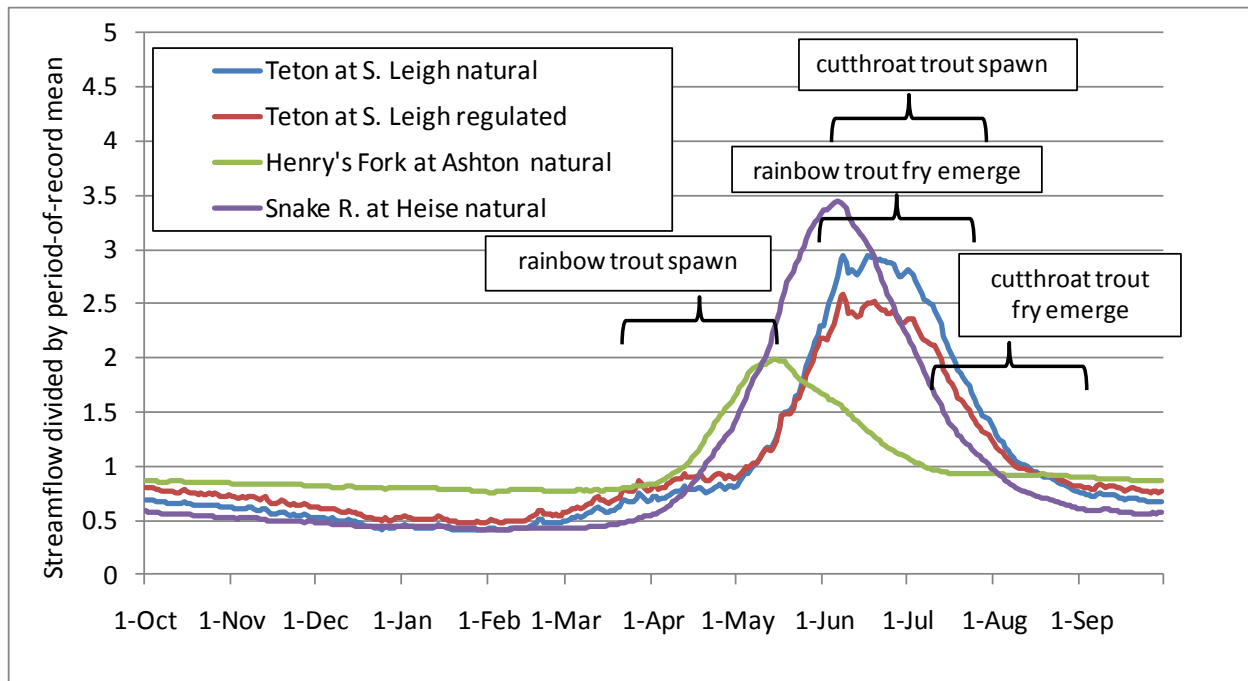
Subdivisions on Irrigable Lands in Teton County (1970-2008)



Data Sources: Idaho State University, Idaho, Madison, and Fremont Counties, IDPRM, FIDM, Teton Box Coordinates.

Coordinate System: NAD83 StatePlane Idaho East FIPS 1000 Feet
 Map Created by Lisa Kiepp, Grandville State University, 2/16/10

County	Acres of Irrigable Lands	Acres of Subdivisions on Irrigable Lands	Percent of Total Irrigable Acres
Teton	118,720	16,781	14.13
Madison	142,496	2,939	2.06
Fremont	195,733	4,214	2.15



Mean hydrographs over water years 1972-2003 for the Teton River at South Leigh Creek (natural and regulated), compared with natural hydrographs for the Henry's Fork at Ashton and the Snake River (South Fork) at Heise. Spawning and fry emergence timing for rainbow trout (nonnative) and cutthroat trout (native) are shown.

- Rainbow trout cannot successfully reproduce in streams that have a high peak flow immediately before and during fry emergence because the peak flow displaces eggs and fry. The native cutthroat trout spawn after peak flow so that their fry are not displaced by high flows.
- Henry's Fork hydrograph is representative of ground-water dominated streams throughout the Henry's Fork watershed upstream of St. Anthony. Peak flows are low during rainbow trout egg incubation and fry emergence. Introduced rainbow trout have displaced native cutthroat trout throughout this watershed.
- South Fork hydrograph is representative of snowmelt-dominated streams throughout the Snake River watershed upstream of Palisades Reservoir. Peak flows are high during rainbow trout egg incubation and fry emergence. Rainbow trout have not successfully invaded this watershed.
- Under natural hydrologic conditions, the Teton River at South Leigh exhibits a snowmelt-dominated hydrograph, with peak flow sufficient to prevent successful rainbow trout reproduction during most water years.
- Irrigation in Teton Valley reduces peak flow in the Teton River and increases ground-water influence, resulting in a regulated hydrograph that is more favorable to successful rainbow trout reproduction during most water years.

Composition of trout species in the Nickerson monitoring reach of the Teton River, 1987-2009

