

## **Exhibit Number: 1**

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Roxann Lincoln

The Jefferson River Watershed Council (JRWC) continued to work on several goals during 2004. The Drought Management Plan had to be implemented again this past summer as water was in short supply once again. Projects that were pursued include an ongoing irrigation efficiency project, two riparian improvement projects and ongoing weed control along the river corridor. JRWC continued to collect water quality data for 303(d) listed streams and conduct an aerial photo source assessment for the watershed.

Our partner, Trout Unlimited (TU) started two projects this year that will provide useful data to improve flows in the river and better understand surface water and groundwater interaction in the Waterloo area. The Bureau of Land Management (BLM) and Montana State University (MSU) started a conifer encroachment research project in the Whitetail Creek drainage.

## Water Quantity Projects

JRWC refined and made changes during the winter and spring on the Drought Management Plan. The three trigger values of 700, 400 and 250 cubic feet per second (cfs) was changed to 600 and 280 cfs. A temperature component was also added to determine when a fishing closure was needed.

The Drought Management Plan went into effect starting in mid-July and continued until the end of August when mother nature blessed the

*The mission of the Jefferson River Watershed Council is to coordinate efforts, through a spirit of community cooperation and sharing, that will enhance, conserve, and protect the natural resources, quality of life, and economic vitality of the Jefferson River watershed.*

## ANNUAL REPORT 2004

area with rain. Flows in the river dropped below the goal of 50 cfs at the Waterloo Bridge for about five days starting August 14th and dropped down to a low of 18 cfs on the 16th. Temperatures weren't near as hot as the same time frame in 2003 but water was in short supply.

A Canal Seepage Study was completed by the Department of Natural Resources and Conservation (DNRC). Seepage losses and groundwater gains to various sections of the Parrot Canal, Creeklyn Ditch, Fish Creek and Jefferson Canals were measured. Losses ranged from 1.4 % to 27% and gains from 0.7 % to 5.6% in various stretches.

JRWC assumed program responsibility for the National Center of Appropriate Technology (NCAT) Irrigation Efficiency project in the Boulder and Jefferson valleys. Twenty-two landowners are using state of the art soil moisture monitoring to determine the frequency and amount of irrigation water needed for healthy crops.

The Irrigation Efficiency Subcommittee of JRWC coordinated with partner, TU to start two important projects - 1) an engineering study of the valley's irrigation delivery systems and 2) to study groundwater and surface water interaction in the Waterloo area. These projects were contracted at \$65,000 and \$70,000 respectively.



integrated controls for a six year period.

## Finances

JRWC operated in 2004 using five grant sources. Total expenditures included \$50,781 for contracted services, \$18,913 for operating expenses and \$14,500 for administrative services.

Contracted services were as follows: \$17,026 for water quality monitoring, \$5,295 for collecting flow data to implement the Drought Management Plan, and \$7,290 the final payment for the Riparian Survey on the Jefferson River. These activities were funded through a Phase I 319 Grant to address water quality concerns.

The aerial photo assessment resulted in contracted services of \$20,500 in 2004. This activity is funded by Phase II 319 Grant at total cost of \$35,000.

JRWC developed and distributed the first basin-wide newsletter in the spring. This was funded by a DNRC HB223 Grant and \$670 was paid from this grant for printing services in 2004. The newsletter discussed activities of the four major watershed groups in the upper Missouri River Basin - The Beaverhead Watershed Committee, the Big Hole Watershed Committee, the Jefferson River Watershed Council and the Ruby Valley Watershed Council.

Operating expenses includes \$14,783 for the coordinator's salary, \$1,798 for travel and \$2,332 for office supplies and expenses. Operating expenses



*Willow Spring Creek spawning habitat*

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were provided by three grant sources, two DNRC Watershed Assistance Grants and a Local Empowerment Program Grant by the Montana Association of Conservation Districts (MACD).

## Funds Pursued

During 2004 JRWC applied for four new grants to support the goals and objectives of the Council (see last page for goals). A Renewable Resource Grant through the DNRC was applied for. The Council requested \$95,000 to conduct the bank stabilization project, to fund the Irrigation Efficiency Project, and to conduct a detailed Field Source Assessment of water quality impairments to the Jefferson and some of its tributaries. This grant will come before the Legislature in 2005.

The second grant applied for was a small \$5,000 grant to obtain aerial photo coverage for the aerial photo assessment funded with 319 funds. This project would have provided aerial

photo coverage for blank spots along certain creeks. JRWC applied to DNRC Watershed Assistance and HB223 for these funds. Both were turned down and this data wasn't collected.

The last grant applied for was a Phase III 319 Grant through DEQ. The grant request was for \$110,000 to collect detailed sediment source data, additional water quality data and support implementing the Drought Management Plan and daily operations.

## Coordination

JRWC continued to coordinate activities with the other watershed groups in the basin and the Montana Watershed Coordination Council (MWCC).

The annual meeting of all four watershed groups in the basin was sponsored by MWCC and held in Butte October 19-20th. MWCC holds their fall meeting in a different location in the state each year in order to see first hand what different groups are doing.

The Forestry/Riparian Subcommittee of JRWC partnered with the BLM and MSU to start a conifer encroachment research project in the Whitetail Creek. Dr. Clayton Marlow and staff are measuring the differences in groundwater and stream flows on paired stream channels where conifers have been removed. One stream channel is left in its current condition and the other has conifers such as Juniper and firs removed from grasslands. The study will measure the differences in flow and water levels for three years.



*Whitetail Research Project*

A project to improve the delivery efficiency of the "Duffy" irrigation structure has been developed. TU and their contract engineer have proposed a design to improve the delivery of water through the structure. The project is awaiting EPA approval to use \$25,000 in 319 Grant funds.

## Water Quality Activities

Several water quality projects took place during the year. A macroinvertebrate study was completed in May and confirmed that the lack of water in the river is impacting the health of the river and fishery. The study duplicates one completed by

Montana Fish, Wildlife & Parks conducted in 1978.

The information provides a trend over time and establishes baseline conditions for measuring changes. The report states, "biological impacts evident in 2003 appear to be almost entirely attributable to environmental stresses associated with inadequate stream flow." The Drought Management Plan continues to try and solve this problem.

JRWC and its contractor continued to collect water quality data for 303(d) listed streams in the upper watershed. Nutrient and Chlorophyll *a* data were collected in Big Pipestone and Whitetail creeks. Sampling was conducted monthly from May through September.

Metals data was collected in the Jefferson River and Fish Creek to determine if copper, cadmium and lead concentrations were present or above state standards. A report summarising the findings is expected soon.

JRWC also contracted to conduct an aerial photo assessment of the upper watershed. This project started in July and focuses on identifying sources of water quality impairments such as sediment, nutrients, metals, temperature, riparian and aquatic habitat degradation on 303(d) listed streams. A draft report is due in January 2005. This information and the WQ data will be used to develop a TMDL for the watershed.

Two riparian projects were started during 2004. Both are with private landowners. One is a bank stabilization project and the other is a riparian grazing plan. Both of these projects are in the planning stages and scheduled for implementation in 2005. One is dependent upon obtaining grant funds applied for earlier (\$15,000). The other is funded by a 319 Grant (\$9,500).

## Weed Control



*Whitehall Project staff*

A new partnership with the Whitehall Project began in the spring. The Whitehall project consists of a Science Teacher and students that propagate and release biological weed controls in the Whitehall area. The project released biological controls (bugs) in over 30 locations along the Jefferson River. Controls were aimed at Leafy Spurge and Spotted Knapweed. JRWC continued to coordinate weed control efforts with Madison County staff.

Planning is underway with Madison County and NRCS to apply for grant funding to expand weed control efforts for three miles on either side of the Jefferson River down to Waterloo Bridge. If the funding is obtained, it will provide money for

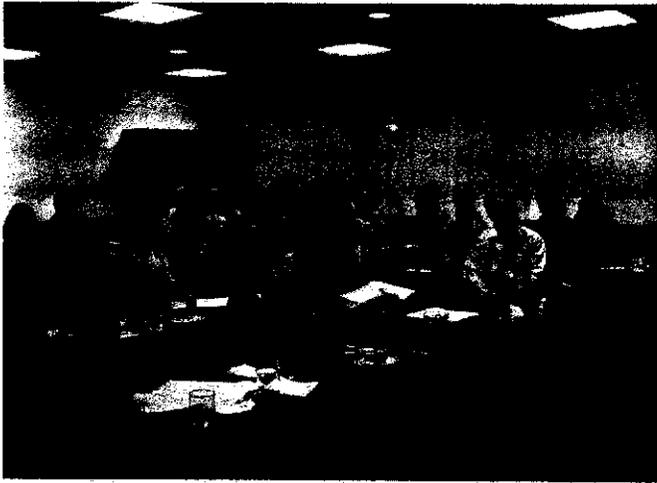
# JEFFERSON RIVER FISHERIES PROJECTS

## HABITAT IMPROVEMENT EFFORTS IN 2004/05

1. Hell's Canyon Fish Screen and Water Lease – Improve Trout Reproduction
2. Creekllyn Ditch Canal Seal – Improve Canal Efficiency to Save Water
- 3a. Parrot Ditch Water Distribution Study – Save Water for Jefferson River
- 3b. Groundwater Study near Waterloo – Protect Groundwater and Spring Creeks
4. Parson's Slough Habitat Enhancement – Improve Trout Reproduction
5. Willow Springs Habitat Enhancement – Improve Trout Reproduction
6. Keruo Diversion Fish Barrier – Reduce Loss of Trout to Parrot Ditch
7. Waterloo Flow Target – Maintain Minimum Flow at Critical Location
8. Fish Creek/Jefferson Ditch Canal Seal – Improve Canal Efficiency to Save Water
9. Renova Drop Structure – Engineering Study to Allocate Water in Two Channels
10. Boulder River Pilot Study – Improve Flow, Spawning Habitat, and Reduce Fish Loss
11. Antelope Creek Habitat Enhancement – Improve Flow and Reduce Sedimentation
12. Sappington Spring Creek – Connect Spring Creek to River for Spawning/Rearing
13. Willow Creek Reservoir – Water Management to Enhance Tributary Flow into Jefferson

TE, FVVP, & JWC

## JRWC GOALS



Annual Meeting Butte Plaza Inn

Roxann Lincoln

Field trips took place on October 19th in the Jefferson and Big Hole watersheds. A meeting was held at the Butte Plaza Inn on the 20th and all four watershed groups provided presentations concerning their activities. NRCS, BLM and the Montana Bureau of Mines and Geology also gave presentations.

JRWC also met with Federal land managers and representatives from the Montana Delegation to discuss common goals and funding for the watershed. The meeting took place in Twin Bridges on September 22nd. David Cobb of Senator Baucus' office, Jeff Garrard of Denny Rehberg's office, Chris Riley of the Forest Service, and Rick Hotaling of the BLM were present. Dr. Clayton Marlow gave a presentation on his research project in the Whitetail Creek area.

The Council stressed to federal land managers and Congressional staff that they would like to see more projects on the ground on public lands. JRWC stated they would like to work with the federal agencies to get more projects done and provide input into planning future projects. The need for adequate funding for the Forest Service and the BLM to conduct such projects was also discussed.

*The JRWC is a group of local citizens, businesses, agricultural producers, outfitters, and sportsmen interested in improving the health of the Jefferson River and its tributaries. The Council was formed in 1999. JRWC operates solely on grant funds from State and Federal sources. For more information visit website [www.JeffersonRiverWC.homestead.com](http://www.JeffersonRiverWC.homestead.com).*

\* Develop a drought management plan that relies on voluntary action from all water users to maintain critical flows in the Jefferson River while respecting water rights.

\* Improve communication between water users and natural resource managers in the Jefferson, Big Hole, Beaverhead, and Ruby Valley watersheds.

\* Conserve and enhance natural resources while sustaining the rural quality of life and economic vitality within the watershed.

\* Facilitate a coordinated approach to problem solving between public and private interests.

\* Provide educational opportunities for basin residents to become more aware of natural resource issues and concerns.

\* Support cooperative research projects designed to promote scientifically sound decision-making.

\* Support floodplain planning and the responsible development of the Jefferson River Valley.

\* Promote opportunities to enhance the health of wild fisheries in the Jefferson River and associated tributaries.



# Canal Seepage Monitoring in the Upper Jefferson River Basin



Jefferson Valley Canal below its head gate. Water level recorder is in the foreground.

January 2005  
Dave Amman, Hydrologist  
Montana DNRC

## **Introduction**

There are three major canal systems in the upper Jefferson River Basin between Twin Bridges and Parson's Bridge. Combined, these canals typically divert a total of 340 cubic feet-per-second (cfs) of water during the irrigation season. Moving from south to north (upstream to downstream) these canals are the Creeklyn Ditch (headgate located just above the Iron Rod Bridge); the Parrot Canal (headgate located just below the Iron Rod Bridge); and the Fish Creek/Jefferson Canal (joint headgate located just below the Parson's Bridge). Please see Figure 1.

The DNRC Water Measurement Program and Trout Unlimited have assisted the canal operators in measuring their diversions for the past seven years, and efforts have been made over the past three years to monitor and quantify seepage loss from the canals. An understanding of canal seepage rates and locations could potentially lead to mitigation projects that reduce or eliminate seepage and leave more water in the river, reducing the negative effects of low water especially during dry years.

Rated water level recorders were installed in the middle portion of the Parrot Canal and at the beginning and end of the Jefferson Canal. Synoptic flow measurements were taken at strategic locations on the canals so that sections of seepage loss could be somewhat isolated and point towards areas where more detailed investigations may follow.

## **Creeklyn Ditch**

The Creeklyn Ditch is approximately 11 miles long and typically diverts 60 to 70 cfs during the irrigation season. During the summer of 2003, two synoptic flow measurement runs were made. One occurred on June 30 and the other on October 22. Diversions from the ditch were shut down at least two days prior to the synoptic runs so that ditch flows would be stabilized. All flow measurements were made using Marsh McBirney flow meters and standard techniques.

The following listings summarize the measurements taken, beginning with a measurement just below the headgate, at ditch-mile 0.0 (see Figure 2):

<u>JUNE 30</u>			Loss (or Gain) <u>in cfs</u>	Loss (or Gain) <u>in percent</u>
	<u>Ditch-Mile</u>	<u>Flow</u>		
Headgate	0.00	69.4 cfs		
	1.35	65.8 cfs	-3.6 cfs	-5.2 %
	3.00	64.9 cfs	-0.9 cfs	-1.4 %
	3.85	60.0 cfs	-4.9 cfs	-7.6 %
	5.18	55.5 cfs	-4.5 cfs	-8.1 %
	6.38	58.5 cfs	+3.0 cfs	+5.4%
	7.42	51.4 cfs	-7.1 cfs	-12.1 %
	8.45	49.0 cfs	-2.4 cfs	-4.7 %

Figure 1. Jefferson River Valley canal head gate locations.

