

1.Lost Creek Watershed Summary

Description and Land Use

Table xxx: Lost Creek Watershed Overview

Watershed Size	38,451 acres/60.1 sq miles/ 155.6 sq km
Elevation Range	4, 203 feet (4,780-8,983)
Stream Miles	112.5
Land Ownership	Private: 65% /State: 7%/Federal: 29%
Road Miles	Local Road/City Street = 25.9 Four Wheel Drive Trail = 5.0 Service Road/Driveway = 6.8 Highway = 0.7 Total = 38.4

Source: Montana GIS Portal Data Layers

Lost Creek flows from the Flint Range for approximately 23 miles before joining the Clark Fork River. The drainage is shared between U.S. Forest Service, state, and private lands, with most of the private land located within the lower 16 miles of the creek’s basin (MFWP, 2009). Land use in the upper part of the basin consists mostly of National Forest recreation, while activities in the lower portion include agriculture (irrigated hay and cattle operations) and rural homesite development (MFWP, 2009).

In the past, Lost Creek was part of the Mt. Haggin Ranch, and for more than 100 years, experienced heavy use from both cattle and sheep. Additionally, soils in the basin have been contaminated by waste from the Anaconda copper smelter (Harris and Watson, 2000).

2.Impairments

Table xxx: Listed and Suspected Impairments for Lost Creek

Impairment	Reach (River Mile)	Pollutant	Impaired Beneficial Use
Arsenic	0.0-15.9	Metals	Aquatic Life, Cold Water Fishery, Drinking Water
Iron	0.0-15.9	Metals	Aquatic Life, Cold Water Fishery
Manganese	0.0-15.9	Metals	Aquatic Life, Cold Water Fishery
Sulfates	0.0-15.9	Metals	Aquatic Life, Cold Water Fishery

Nitrate/Nitrite (Nitrite + Nitrate as N)	0.0-15.9	Nutrients	Aquatic Life, Cold Water Fishery
Low Flow Alterations	0.0-15.9	<i>Not a Pollutant</i>	Aquatic Life, Cold Water Fishery, Primary Contact Recreation
Alteration in stream-side or littoral vegetative cover	0.0-15.9	<i>Not a Pollutant</i>	Aquatic Life, Cold Water Fishery
Physical substrate habitat alterations	0.0-15.9	<i>Not a Pollutant</i>	Aquatic Life, Cold Water Fishery

Temperature Measurements (Suspected Impairment)

Year	RM*	Period	Days >12°C	Days >18°C	Max Temp (°C)
PIBO 2003	19.0	7/15-8/31	0	0	11.4

Year	RM*	Period	Days >15°C	Days >20°C	Max Temp (°C)
FWP 2008	0.3	7/11-10/13	62	26	22.2
	7.0	7/16-10/23	19	0	16.6

*River Mile

Source: MDEQ, 2010; PIBO/USFS, 2010; MFWP, 2009

Metals

Multiple mines exist within the boundary of the Lost Creek watershed. However, none of these mines are listed for having adit discharge or tailings located within the floodplain of the creek (MDEQ, 2010). Much of the metals contamination in the basin is from the Anaconda copper smelter and was deposited atmospherically, through contaminated water, and through mine wastes near water sources. Iron, manganese, arsenic and sulfate are now present in soils throughout the lower 16 miles of the basin (MDEQ, 2010).

The four listed metals contaminants were last measured in the 1990s and only arsenic and iron levels exceeded human health allowances. Manganese exceeded the secondary maximum contaminant level (which addresses aesthetic values) and sulfate was listed because of the increase in concentration between the upper and lower reaches of the creek (MDEQ, 2010). Lost Creek is not listed for copper or lead, but both metals exceeded target concentrations, especially during storm events (MDEQ, 2010).

Nutrients

Lost Creek exceeds Montana DEQ TMDL standards for total nitrates/nitrites throughout the drainage (Table xxx). The Lost Creek watershed traditionally has been heavily used for livestock operations and is a large contributor to nitrogen levels in the Clark Fork River (Harris and Watson, 2000). Excess nitrogen comes mainly from agricultural runoff, in-stream livestock access and from residences without proper sewage management (Harris and Watson, 2000). Nitrogen encourages algae blooms which can decrease dissolved oxygen in the creek and harm fish populations (MFWP, 2009).

Irrigation and Dewatering

Chronic dewatering results from agricultural irrigation within the basin and has many implications for both water quantity and quality. Three-hundred and twenty water diversions exist in the Lost Creek basin (MDNRC, 2011) and lower sections of Lost Creek suffer from extremely low flows (MFWP, 2009). Low water levels result in unsuitable habitat for fish and macroinvertebrates due to increased temperatures and algal growth (Table xxx). In addition, irrigation structures can create barriers which impede fish passage and migration (MFWP, 2010).

Riparian Habitat/Stream Channel

When Montana FWP performed a stream assessment on Lost Creek in 2008, the creek received “good” to “excellent” scores in all assessed reaches. However, Lost Creek is still listed for 303 (d) impairments relating to stream channel condition (Table xxx). The effects of grazing are present throughout the watershed and therefore, beneficial riparian vegetation is often sparse. Decreased amounts of woody vegetation can lead to bank erosion and increased sedimentation (MFWP, 2009). Additionally, noxious weeds are present in the riparian assessment sites.

Temperature

Thermal impairments are attributed to agricultural dewatering, and have been documented on lower reaches of Lost Creek. Temperatures on some reaches of the creek have often climbed above 15 °C, and sometimes exceed 20 °C (MFWP, 2009). Concerning fishery health and fish survival, temperatures below 16°C are optimum for westslope

cutthroat trout growth, while temperatures below 20 °C are critical for their survival (Kirk, 2010). High temperatures also encourage algae growth and reduce dissolved oxygen content, which can be detrimental to fish health.

3. Native/Sport Fishery

Table xxx: Fish Distribution in Lost Creek

Water Body	Begin *	End*	Species	Updated
Lost Creek	10.3	20.2	Brook Trout	2/20/2009
Lost Creek	0.0	23.2	Brown Trout	1/5/2005
Lost Creek	0.0	9.4	Largescale Sucker	2/23/2009
Lost Creek	0.0	9.4	Longnose Sucker	2/23/2009
Lost Creek	0.0	10.2	Mountain Whitefish	2/20/2009
Lost Creek	0.0	9.8	Redside Shiner	2/23/2009
Lost Creek	7.4	10.3	Slimy Sculpin	9/14/2009
Lost Creek	0.0	7.4	Slimy Sculpin	2/23/2009
Lost Creek	18.5	19.5	Westslope Cutthroat Trout	7/14/2009
Lost Creek	15.0	17.0	Westslope Cutthroat Trout	1/5/2005
Lost Creek	5.6	15.0	Westslope Cutthroat Trout	1/5/2005

Source: MFWP, 2010

Current Conditions

While Lost Creek supports populations of brown trout, the fishery suffers from severe dewatering caused by over-irrigation. The lower section, which was assessed by Montana FWP in 2010, also contains many irrigation diversions (the largest of these being the Gardiner Ditch) and structures that create obstacles for fish migration and recruitment (MFWP, 2009). Brook trout and native westslope cutthroat trout are only present in the upper reaches of the creek and have not been detected in lower samples (MFWP, 2010).

Fishery Potential

Table xxx: Tributary Rating Summary for Lost Creek (Priority 2)

Stream	Reach(RM)	Trout Species	Impairments
Lost Creek	Lower: 0.0-10.3	Brown	Low summer flows due to irrigation, diversions, culverts; livestock grazing in riparian areas; high temperatures; no native trout species
Current Recruitment/Restoration Fishery Value			Protection/Enhancement Value
Medium			High
Current Tributary/Replacement Fishery Value			Protection/Enhancement Value
Medium			High
Current Native Fishery Value (westslope cutthroat)			Protection/Enhancement Value
Very Low			Low

Source: MFWP, 2010

While Lost Creek experiences several impairments, protection and enhancement possibilities for a viable trout fishery exist on several levels (Table xxx). Montana FWP has shown an interest in managing (in collaboration with state agencies and other organizations) Gold Creek as a recreational fishery, declaring lower Lost Creek a “Priority 2” stream reach in the agency’s Final Tributary Rating Summary (2010). Improved management practices can increase the fishery viability by addressing documented impairments (Table xxx) with appropriate restoration projects.

4. Assessments

Lost Creek’s habitat and water quality status have been assessed several times in the last 10 years (Table xxx). Assessments have included fish habitat and fishery potential, temperature, noxious weeds, stream flow, and stream channel and riparian habitat status.

Table xxx: Lost Creek Assessments

Type	Agency	Year	Area
Upper Clark Fork Tributaries TMDL	MDEQ	2010	River Mile 0.0-17.0
PIBO Stream and Riparian Areas (temperature)	USFS	2010	River Mile 19.1
Tributary Prioritization/Rating Summary	MFWP	2010	Lower: 0.0-10.3
Fish Population/Riparian Habitat	MFWP	2009	RM 1.4, 10.2, 16.2, 18.5
Watershed Restoration Assessment	Harris & Watson	2000	Sites throughout the drainage
Riparian/Geomorphology/Flow	WRC	2011	Lower
Irrigation Structure Inventory	WRC/TU/MFWP	2010	Throughout Lost Creek

WRC and FWP Riparian Assessment

The WRC (2011) conducted NRCS riparian assessments on 7.1 miles of Lost Creek in 2011. Of the twelve assessed reaches, the WRC classified 11 as “at-risk” and one as “sustainable”. Montana FWP (2009) also completed riparian assessments on the creek. MFWP scores ranged from “good” to “excellent and found that the main detriments to riparian and stream health were attributed to overgrazing, lack of woody vegetation, bank erosion, and some invasive weeds.

5. Restoration

Needs

- Address low flows by finding methods to decrease irrigation dewatering.
- Address in-stream fish passage obstacles
- Discourage or prevent cattle from accessing the stream in order to decrease bank erosion and riparian grazing, as well as nutrient and sediment loading.

- Riparian plantings for improved woody vegetation and stream cover
- Monitor nutrient levels in the creek and work with landowners to ensure proper sewage disposal.
- Continue to monitor 303 (d) listed and unlisted metals contaminants
- Monitor and treat invasive weeds

Activities: Projects being undertaken by the WRC

6.Map

7.Bibliography

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