

1. Warm Springs Creek (Garrison) Summary

Description and Land Use

Table xxx: Warm Springs Creek (Garrison) Watershed Overview

Watershed Size	23,957 acres/37.4 sq miles/97.0 sq km
Elevation Range	2,742 feet [4,259-7,001]
Stream Miles	54.2
Land Ownership	Private: 75% /State: 9%/ Federal: 16%
Road Miles	Highway = 0.2 Local Road/City Street = 0.6 Four Wheel Drive Trail = 27.0 Total = 27.8

Source: Montana GIS Portal Data Layers

Warm Springs Creek has its headwaters in the Garnet Range and flows for about 14 miles before joining the Clark Fork River. The creek drains an area of approximately 37 miles, most of which is privately owned land (Table xxx). The basin has a history of mining in the middle and upper reaches, but now mainly supports livestock grazing, irrigated agriculture and timber harvest (FWP, 2009).

2. Impairments

Table xxx: Listed Impairments for Warm Springs Creek

2010			
Reach	Impairment	Pollutant	Impaired
River Mile 5.3-0.0	Sedimentation/ Siltation	Sediment	Aquatic Life, Cold Water Fishery, Primary
2008			
Reach	Impairment	Pollutant	Impaired Beneficial Use
River Mile 14.0- 5.3	Sedimentation/ Siltation	Sediment	Aquatic Life, Cold Water
	Alteration in stream- side or littoral vegetative	<i>Not a Pollutant</i>	Aquatic Life, Cold Water Fishery
River Mile 5.3 to 0.0	Sedimentation/ Siltation	Sediment	Aquatic Life, Cold Water Fishery, Primary

	Low Flow Alterations	<i>Not a Pollutant</i>	Aquatic Life, Cold Water Fishery, Primary
	Alteration in stream-side or littoral vegetative cover	<i>Not a Pollutant</i>	Aquatic Life, Cold Water Fishery
	Physical substrate habitat alterations	<i>Not a Pollutant</i>	Aquatic Life, Cold Water

Source: MDEQ, 2010

Sediment/Siltation

Impairments from sediment and siltation most likely occur from over-grazing in riparian areas and from timber harvest near Warm Springs Creek. Sedimentation beyond that which is naturally occurring, damages fish and macroinvertebrate habitat by filling in redds, reducing available habitat (such as riffles and pools), and by altering stream channels (Kusnierz and Welch, 2011). Sediment levels in Warm Springs Creek exceed those defined by Montana DEQ TMDL standards.

Irrigation and Dewatering

Chronic dewatering often results from agricultural irrigation and has many implications for both water quantity and quality. Over 80 diversions exist in the Warm Springs Creek basin (MDNRC, 2011) and low flows have been noted by MDEQ (2010). A portion of the creek near River Mile 6.1 regularly dries up during summer months (MFWP, 2009). Low flows 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).

3. Native/Sport Fishery

Table xxx: Fish Distribution in Warm Springs Creek

Waterbody	Begin RM*	End RM*	Species	Updated
Warm Springs Creek	0.1	1.0	Westslope Cutthroat Trout	8/28/2009
Warm Springs Creek	5.9	14.0	Westslope Cutthroat Trout	7/26/2009
Warm Springs	0.0	3.3	Slimy Sculpin	2/23/2009

Creek				
Warm Springs Creek	0.1	1.0	Mountain Whitefish	8/28/2009
Warm Springs Creek	0.0	4.5	Longnose Sucker	2/23/2009
Warm Springs Creek	0.0	5.9	Brown Trout	11/18/2009

Source: MFWP, 2010

Current Condition

Montana FWP electrofished two sites on Warm Springs Creek (RM 0.6 and 11.5) in August and September of 2008 (MFWP, 2009). The fish sample from the lower site was comprised mainly of brown trout while the upper site, (RM 11.5) which is above the natural waterfall barrier, contained only native westslope cutthroat trout (MFWP, 2009). Fish habitat was considered “good” because of deep pools in the reach. Montana FWP rated the fish habitat at RM 11.5 as “good” but thought it could be improved with more instream large, woody debris (MFWP, 2009).

Fishery Potential

Table xxx: Tributary Rating Summary for Lower Warm Springs Creek (Priority 4)

Stream	Reach(RM)	Trout Species	Impairments
Warm Springs Creek	Lower: 0.0-5.3	Westslope Cutthroat and Bull	Lack of established riparian vegetative communities; sedimentation; roads; competition to native trout species from brown trout
Current Recruitment/Restoration Fishery Value			Protection/Enhancement Value
Low			Low
Current Tributary/Replacement Fishery Value			Protection/Enhancement Value
Low			Low
Current Native Fishery Value (westslope cutthroat/bull)			Protection/Enhancement Value
Low			Low

Source: MFWP, 2010

Table xxx: Tributary Rating Summary for Upper Warm Springs Creek (Unranked)

Stream	Reach(RM)	Trout Species	Impairments
--------	-----------	---------------	-------------

Warm Springs Creek	Upper: 5.3-14.0	Westslope Cutthroat	
Current Recruitment/Restoration Fishery Value		Protection/Enhancement Value	
Low		Low	
Current Tributary/Replacement Fishery Value		Protection/Enhancement Value	
Medium		Medium	
Current Native Fishery Value (westslope cutthroat)		Protection/Enhancement Value	
High		High	

Source: MFWP, 2010

While Warm Springs Creek experiences some 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) Warm Springs Creek as a recreational fishery, declaring lower Warm Springs Creek a “Priority 4” 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

Warm Springs Creek and its riparian areas have been assessed by various agencies in recent years (Table xxx). Assessments have included fish habitat and fishery potential, stream flow, noxious weeds, and stream channel and riparian habitat status.

Table xxx: Warm Springs Creek Assessments

Type	Agency	Year	Area
Tributary Prioritization /Rating Summary	MFWP	2010	River Mile 0.0-14.0
Fish Population/Riparian Habitat	MFWP	2009	River Mile 0.6 and 11.5
Upper Clark Fork Tributaries TMDL	MDEQ	2010	River Mile 0.0-14.0

FWP Riparian Assessment

Montana FWP conducted riparian assessments at two sites on Warm Springs Creek in 2008 (Table xxx). The assessment at RM 0.6 showed bank erosion from overgrazing and lacked sufficient established woody vegetation to prevent soil loss. River Mile 11.5 exhibited low quality riparian habitat as well due to a road that occupied most of the

riparian area. However the bank appeared stable even without sufficient woody vegetation (MFWP, 2009).

5. Restoration

Needs

- Address erosion and sediment issues by focusing on re-establishing riparian plant communities and encouraging woody species for bank stability
- Limit livestock access to riparian areas and the creek
- Monitor temperature
- Address instream barriers to fish passage

Activities: Projects undertaken by the WRC

6. Watershed Map

7. Bibliography

Bureau of Land Management, Montana State Office. Montana Surface Management Ownership (poly)[vector digital data]. 2007.

Fischer, Jessie. Warm Springs (Garrison) Watershed Map. 1:120,000. [Printed/Computer Maps]. Fischer Geospatial Enterprises, LLC. Missoula, Montana. 2011.

KirK Environmental and Natural Resources, Inc. *Cottonwood Creek Flow Monitoring and Fish Barrier Study, Flow Monitoring and Water Rights Report*. Watershed Restoration Coalition. Deer Lodge, Montana. March 5, 2010.

Kusnierz, Paul and Welch, Andy. *The Montana Department of Environmental Quality Sediment Assessment Method: Considerations, Physical and Biological Parameters, and Decision Making*. Montana Department of Environmental Quality. June, 2011

Montana Bureau of Mines and Geology (MBMG). Montana Abandoned and Inactive Mines Database [vector digital data]. Montana State Library. Helena, Montana. January 9, 2006

Montana Department of Environmental Quality. *Upper Clark Fork River Tributaries Sediment, Metals, and Temperature TMDLs and Framework for Water Quality Restoration*. March 4, 2010

Montana Department of Natural Resources and Conservation Water Resources Division. Montana Water Rights [vector digital data]. Montana State Library. Helena, Montana. July 11, 2011

Montana Fish, Wildlife & Parks. Montana Fish Distribution – Streams[vector digital data]. Montana Fish, Wildlife & Parks. Helena, Montana. May 17, 2010.

Montana Fish Wildlife and Parks. *Rating Summaries for the Prioritization of Tributaries of the Upper Clark Fork River Basin for Fishery Enhancement Draft Final*. May, 2010.

Montana Fish Wildlife and Parks. *An Assessment of Fish Populations and Riparian Habitat in Tributaries of the Upper Clark Fork River Basin (Phase II)*. March, 2009

Montana Fish, Wildlife & Parks. River Mile Locations (Tenth Mile Intervals) [vector digital data]. January 30, 2008.

Montana Natural Resources Conservation Service State Office. (6th-code) Hydrologic Units Montana Subwatershed [vector digital data]. Montana Natural Resources Conservation Service. Bozeman, Montana. 2007

U.S. Census Bureau Geography Division. Montana Roads from TIGER/Line Files (Redistricting Census 2000)[vector digital data. Montana State Library. Helena, Montana. 2001.

U.S. Department of Commerce U.S. Census Bureau, Geography Division. Montana TIGER/Line Files, UA Census 2000 [vector digital data]. Montana State Library. Helena, Montana. 2002.

U.S. Geological Survey. National Elevation Dataset for Montana [raster digital data]. Montana State Library. Helena, MT. April 1, 2002.