1.Perkins Gulch Watershed Summary

Description and Land Use

Table xxx: Perkins Gulch Watershed Overview

Watershed Size	5,903 acres/9.2 sq miles/23.9 sq km
Elevation Range	2,385 feet [4,797-7,182]
Stream Miles	49.0
Land Ownership	Private: 49% /State: 9%/ Federal: 42%
Road Miles	Local Road/City Street = 5.1 Total = 5.1

Source: Montana GIS Portal Data Layers

Perkins Gulch originates in the Boulder Mountains and flows for almost six miles before its confluence with the Clark Fork River. The creek drains an area of approximately nine square miles and land ownership in the area is split mostly between private and federal entities (Table xxx). Perkins Gulch supports livestock grazing, irrigated agriculture and timber harvest (KirK, 2008).

2. Potential Impairments

Metals

Perkins Gulch contains no abandoned mines but several prospects exist within the basin. However, these operations have contributed little if any to the contamination throughout the watershed. Atmospheric deposition is the main source of severe metals contamination (including copper, lead, zinc and arsenic) and stems from the Anaconda Smelter Superfund Site (KirK, 2008). The pollution spreads via water transportation and is also dispersed through human-caused and natural soil erosion. High levels of metals, along with acidic conditions created by leaching, pose health issues for humans, wildlife, fish and vegetative communities in the area. (MDEQ, 2010).

Irrigation and Dewatering

Chronic dewatering often results from agricultural irrigation and has many implications for both water quantity and quality. Over 26 water rights exist on Perkins Gulch (MDNRC, 2011) and low flows with complete dewatering in the lower section of the creek occur during the summer months (KirK, 2008). 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).

Nutrients

While no exact measurements for nitrogen levels exist for Perkins Gulch, KirK (2008) suggests, given the high number of livestock grazing near the creek, that nutrient loading may be a problem for the creek. Nitrites and nitrates mainly come from agricultural and urban runoff, and from in-stream livestock access. According to KirK (2008), excessive nutrient levels can lead to undesirable algae growth which in turn can cause:

- Unpleasant tastes and odors in drinking water
- Corrosion and blockages of irrigation equipment
- Reduced dissolved oxygen
- Altered ecological communities, especially macroinvertebrates
- Degradation of aesthetic value

Sediment/Siltation

Impairments from sediment and siltation most likely occur from timber harvest and over-grazing in the riparian areas. According to Montana FWP (2009), cattle have access to nearly all areas of the creek. The effects of atmospheric pollutant deposition from the Anaconda smelter on riparian vegetative communities also contribute significantly to sediment impairment (KirK, 2008). Sedimentation beyond that which is naturally occurring, damages fish and macroinvertebrate habitat by filling in redds, reducing available habitat (such as riffles and pools), blocking sunlight and by altering stream channels (Kusnierz and Welch, 2011). Sediment levels have not been officially studied in Perkins Gulch, but KirK (2008) notes that levels appear elevated throughout the drainage.

3.Native/Sport Fishery

Table xxx: Fish Distribution in Perkins Gulch

Waterbody	Begin RM*	End RM*	Species	Updated
Perkins Gulch	0.0	6.0	Westslope Cutthroat Trout	11/18/2009

Source: MFWP, 2010

Current Condition

Montana FWP conducted fish sampling and riparian assessments at two sites (RM 1.5 and 5.1) on Perkins Gulch in July of 2008. Westslope cutthroat trout were the only fish species appearing in the samples, but even those existed in small numbers (MFWP, 2009). The fish habitat for RM 1.5 was rated only "fair" and not at its potential due to lack of pools and large amounts of fine sediment, while RM 5.1 received a rating of "good" (MFWP, 2009).

Fishery Potential

Table xxx: Tributary Rating Summary for Perkins Gulch (Unranked)

Stream	Reach(RM)	Trout Species	Impairments
Perkins Gulch	All: 0.0-6.0	Westslope Cutthroat	Lack of riparian vegetative communities; bank erosion; timber harvest; over-grazing; smelter contamination
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)			Protection/Enhancement Value
Medium			**High**

Source: MFWP, 2010

While Perkins Gulch 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 the creek (in collaboration with state agencies and other organizations) as a recreational fishery 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

Perkins Gulch and its riparian areas have been monitored by several different agencies in recent years (Table xxx). Assessments have included fish habitat and fishery potential, noxious weeds, and stream channel and riparian habitat status.

Table xxx: Perkins Gulch Assessments

Type	Agency	Year	Area
Geomorphology	WRC	2011	Throughout Perkins Gulch
Tributary Prioritization /Rating Summary	MFWP	2010	River Mile 0.0-6.0
Fish Population/Riparian Habitat	MFWP	2009	River Mile 1.5 and 5.1
Overall Watershed Health	KirK	2008	River Mile 0.0-6.0

FWP Riparian Assessment

Montana FWP conducted riparian assessments at two sites on Perkins Gulch in 2009. The results for RM 1.5 showed signs of heavy grazing pressure and livestock traffic. Overhead cover was patchy and disturbance-induced vegetation appeared throughout the section. The reach received a low score. River Mile 5.1 however, received a much higher riparian assessment score. The bank appeared stable but still showed signs of livestock grazing pressure on the site's grasses and some hummocking was apparent in wet areas (MFWP, 2009).

5.Restoration

Needs

- Work with landowners to clarify reasons for dewatering (natural or human-induced?)
- Monitor temperature throughout the creek
- Address sediment, metals, nutrient and riparian vegetation issues by limiting livestock access to riparian areas and the creek
- Improve riparian vegetative communities with plantings
- Monitor and treat noxious weed populations

Activities: Projects undertaken by the WRC

6.Watershed Map

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