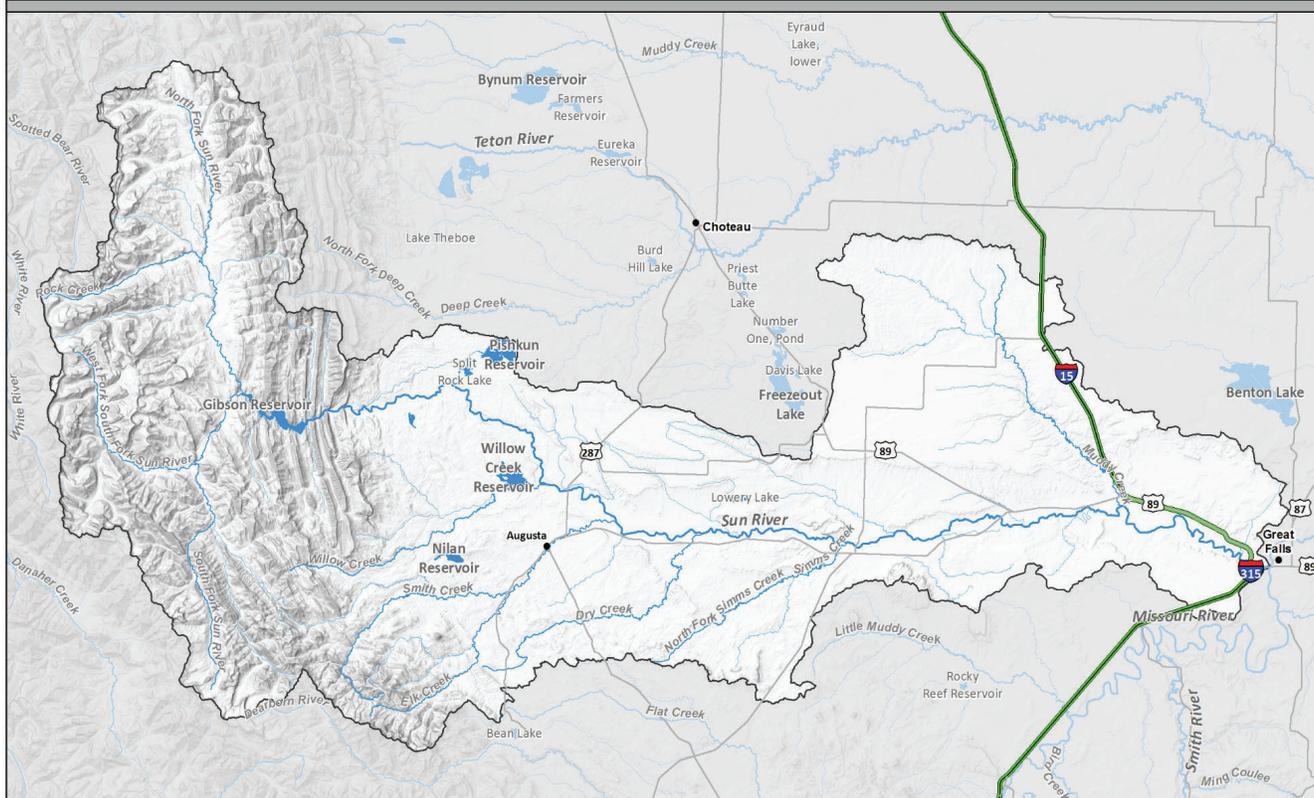
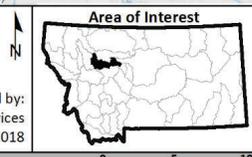


# Sun River Drainage

MONTANA FWP



 Drainage Boundary



Map Produced by:  
ASP - Geographic Data Services  
ISR 43965 - Nov 23, 2018



Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI

## SUN RIVER DRAINAGE

### PHYSICAL DESCRIPTION

The Sun River is the second largest tributary of the Missouri River between Canyon Ferry and Fort Peck dams. This west-central mountain stream drains 1,979 square miles of the east slope of the Rocky Mountains. Its headwaters are within the Bob Marshall Wilderness. The upper Sun River basin is situated in steep limestone and shale mountains within the Lewis and Clark National Forest. Its upper tributaries originate at an elevation of about 8,400 feet and converge at Gibson Reservoir located in the Sun River Gorge. Downstream from Gibson Dam, the river flows for only a few miles to the Diversion Dam impoundment, which is located 17 miles northwest of Augusta. Below this dam, the Sun River exits the mountains onto the prairie zone, first through a series of glacial outwash terraces, then till-covered foothills, and, finally, through sedimentary bench lands. The mainstem of the Sun River downstream of Gibson and Diversion dams flows east 97 miles to its confluence with the Missouri River at Great Falls. The Sun River drainage lies within the bounds of Lewis and Clark, Teton, and Cascade counties. The drainage contains about 1,176 miles of perennial streams, of which about 321 are named. Major tributaries include the North and South forks, Willow, Elk, Mill Coulee and Muddy creeks. There are 17 lakes or reservoirs within the drainage, totaling 5,097 surface acres.

The reach of the Sun River between Diversion Dam and Elk Creek is 32 miles in length, and is entrenched in a very narrow valley about 100 yards wide for the first 12 miles, broadening to about 400 yards wide near the lower end of the reach. Riparian vegetation is sparse in the upper third of this reach because of the narrow floodplain. There are only scattered stands of cottonwoods and willows bordering the river with an undergrowth of rose and Russian olive. As the floodplain widens in the lower portion of this reach, deciduous woodland dominated by cottonwoods comprises the riparian zone. The stream gradient in the reach is fairly steep, averaging about 20 feet/mile. A considerable amount of the channel substrate in the upper 12 miles is composed of reefs of bedrock and large boulders. Areas of cobbles and gravel are limited and are usually associated with side drainages or near islands. Since the construction of Gibson and Diversion dams in 1929, very little bedload has entered this reach, thereby preventing development of a more diverse substrate composition. Channel substrates diversify somewhat further downstream, and are composed of boulders and cobbles.

The reach from the mouth of Elk Creek downstream to the Missouri River at Great Falls is 65 miles in length and occupies a wide valley. The riparian zone is cottonwood dominated woodland with rose and willows being the common shrub species found in the understory. The average stream gradient in this lower reach is 9 feet/mile and varies from 17 feet/mile at the upper end to less than 3 feet/mile near the city of Great Falls. The composition of the channel substrate reflects the gradual decrease in stream gradient as well as the geology. Substrate in the upper third of this reach consists mostly of cobbles and gravel with moderate amounts of silt. Further downstream, channel substrate decreases in size and the deposition of silt increases. Below the confluence of Muddy Creek, and for the remaining 17 miles, there is excessive silt deposition. Approximately 80-90% of the sediment load of the Sun River at its mouth originates from Muddy Creek caused by return flows of the Greenfield Irrigation District of BOR's Sun

River Project. The lower two-thirds of this reach is a major recharge area of return flows and surplus diverted irrigation water. Some tributary streams in the lower portion of the drainage transport these return flows and can function as valuable refuges providing cooler water habitat during critical times of the year. Prairie streams entering the drainage from the south harbor a number of native minnow species including the rare northern redbelly x finescale dace hybrid in Adobe Creek.

Land use in the forested upper basin is dominated by wilderness activities, since nearly two-thirds of the upper Sun River basin drains portions of the vast Bob Marshall and Scapegoat wilderness areas. The Forest Service lands outside the wilderness areas are managed for semi-primitive recreation and other uses including livestock grazing, and minor amounts of timber harvest.

### **FISHERIES MANAGEMENT**

Since 1987, 15 species of fish have been sampled in the Sun River. Rainbow trout, brown trout, and mountain whitefish are generally the most commonly sampled species. Other species regularly sampled include: Rocky Mountain sculpin, longnose dace, longnose suckers, white suckers, and mountain suckers. Infrequently sampled species include: brook trout, common carp, northern pike, burbot, lake chubs, brassy minnow, brook stickleback, spottail shiner, yellow perch, walleye, black bullhead, and stonecats.

Currently, the North and South forks of the Sun River upstream of Gibson Reservoir support popular hybrid westslope cutthroat trout fisheries. Below Diversion Dam, anglers fish for rainbow and brown trout. This fishery tends to be seasonal in nature.

Early sampling events on the Sun River downstream from Diversion Dam did not allow for estimates of population size, only relative abundance through Catch per Unit Effort (CPUE). Comparisons with more recent data show changes in CPUE that are evident for mountain whitefish, rainbow trout, and brown trout in the Augusta and Simms areas. For example, a dramatic drop in CPUE has been observed for brown trout in the Simms area with numbers declining from 29.2 per electrofishing pass in 1987 to 3.4 per pass in 2005. Although the reasons for the differences are unknown, they likely are due to factors associated with irrigation water management, drought, and differences in season when the sampling occurred.

Three long-term fish population monitoring sections were established on the Sun River in 1997 in the Augusta/ U.S. Highway 287 area, the Simms area, and the reach below the town of Sun River. Due to the overall low numbers of trout, rainbow trout and brown trout data were pooled to calculate population estimates. On average, the Augusta/287 section has the highest trout densities. However, the overall trout densities are extremely low in the Sun River when compared to other trout rivers in north central Montana and compared to the north and south forks of the Sun River upstream of Gibson Reservoir. The long-term average trout densities are 182, 86, and 104 rainbow trout and brown trout 8 inches and longer per mile in the Augusta/287, Simms, and Sun River sections, respectively. Trout density estimates in recent years have been slightly higher than in the late 90s and early 2000s; however, the combined trout densities at these sites are still well below the long-term average trout densities of 561 and 630 in the north and south forks of the Sun River, respectively. Similarly, the long-term average density of

rainbow trout and brown trout combined, 8 inches and longer, in the Eagle Creek section of the Smith River is 754, over 4 times larger than the highest section of the Sun River.

Low trout densities are caused by year-round chronic de-watering of the Sun River Basin, resulting from large-scale irrigation withdrawals. This dewatering is especially true in the Simms section area, where the river has ceased flowing during the summer in past years, resulting in a series of disconnected pools. Recent focus on water management has resulted in some improvements to summer flows in this reach; however, minimum flows remain well below the recommended levels during many years. FWP recommends absolute minimum flows of 100 cfs from the Diversion Dam to Elk Creek and 130 cfs from Elk Creek to the Missouri River, and recommended minimum flows of 220 cfs throughout both reaches. These flow recommendations are based on a wetted perimeter study that determined the upper and lower inflection points based on the channel geometry.

Nilan, Willow Creek, and Pishkun reservoirs all receive hatchery plants of rainbow trout annually to provide additional fishing opportunities. Pishkun Reservoir is also regularly stocked with kokanee salmon fingerlings. Wild recruitment provides a northern pike/yellow perch fishery in Pishkun Reservoir and a rainbow/rainbow x cutthroat trout hybrid fishery in Gibson Reservoir.

The statewide angling pressure survey for the period 1982-2009 reported that the six major waters in the Sun River drainage averaged 29,619 angler days of use annually. In 2015, the total number of angler days for the major water bodies in the Sun River drainage was 30,482. The most angler days was on the mainstem Sun River with 13,178, followed by Nilan Reservoir with 7,709 angler days, Willow Creek Reservoir with 6,070 angler days, Pishkun Reservoir with 2,162 angler days, and the North Fork Sun River with 1,363 angler days.

The long-term goal of cutthroat conservation in the Sun River Drainage is to have approximately 20% of the historically occupied habitat restored to secure conservation populations of cutthroat trout. See Part 1: Trout: Westslope and Yellowstone Cutthroat Trout for details.

## **HABITAT**

There are approximately 365 miles of habitat capable of supporting salmonids in the Sun River drainage. Approximately 362 miles of stream support brook trout, and 461 miles support rainbow trout. Diversion Dam was constructed on top of a large barrier waterfall; upstream of this waterfall, the Sun River was historically fishless until fish stocking efforts were initiated in the early 20<sup>th</sup> century.

Several USGS gauges monitor stream flow on the Sun River, including from upstream to downstream, on the North Fork Sun River, South Fork Sun River, below Diversion Dam, below Willow Creek, at Simms, and near Vaughn. Long-term USGS flow records are available for the lower Sun River near Vaughn, which is 14 miles upstream from the mouth. The average annual flow for the 80-year period of record is 669 cfs. From 1934 through 2017, the peak annual flow ranged from a low of 681 in 1977 to a high of 53,500 in 1964. Upstream at a USGS gage at Simms, where dewatering is most severe, the mean monthly flows for August and September is 145 and 139 cfs, respectively, for the period of record compared to 558 and 440 cfs, respectively,

at the near Vaughn gage, and 303 and 222 cfs in August and September for the combined flow of the north and south forks of the Sun River.

Present day flow regimens of the Sun River are largely regulated by Gibson Dam and the associated off-stream storage and irrigation delivery system of the Sun River Project, which includes Pishkun and Willow Creek Reservoirs. This system can accommodate a diversion of nearly 1,700 cfs from the river. Severe dewatering of the river below diversions has commonly occurred in the past. Irrigated agriculture is the largest consumptive use of water in the Sun River basin. Irrigated croplands include hay, alfalfa, and small grains including wheat and malting barley. Irrigation is widespread and intensive throughout the basin. Approximately 120,000 acres of land are irrigated by Sun River waters; 93,220 acres of that are by the BOR Sun River Project. The three major reservoirs in the drainage store about 159,000 acre-feet and supply water to the system throughout the growing season. It has been estimated that it would take about 450,000 acre-feet of controllable flow to meet all of the irrigation needs in the Sun River basin, assuming an overall irrigation efficiency of 40 percent and crops consuming 1.5 acre-feet per acre or a total of about 180,000 acre-feet. This volume of water is not available during many years. For example, although the long-term average for Sun River basin inflows is approximately 592,000 acre-feet, inflows only averaged about 440,000 acre-feet for the period from 2003-2007. During this time, all but 13 percent of the water in the Sun River was diverted at least once for the purpose of irrigation. Most of the 57,000 acre-feet that wasn't diverted was flow during the fall, winter, and spring runoff that could not be captured and stored or diverted. Of the water diverted for irrigation, approximately 27 percent or about 117,000 acre-feet was consumed, or almost one acre-foot of water consumed per acre of irrigated ground.

#### **FISHING ACCESS**

The Sun River is paralleled by a road for its entire course. However, public access to the 97 miles of river is basically limited to seven bridge crossings above Great Falls, three FWP fishing access sites, one BLM developed access site, a carry-in boat ramp near Wadsworth Park in Great Falls, another BLM parcel adjacent to US Highway 287, and state or federally owned parcels in the Alkali Flats area. Above Diversion Dam, the river is surrounded by US Forest Service lands and is an important recreation area with campgrounds.

**FISHERIES MANAGEMENT DIRECTION FOR THE SUN RIVER DRAINAGE**

<b>Water</b>	<b>Miles/acres</b>	<b>Species</b>	<b>Recruitment Source</b>	<b>Management Type</b>	<b>Management Direction</b>
North Fork Sun River	27.1 miles	Rainbow Trout, Rainbow x cutthroat trout hybrids	Wild	General	Monitor populations to maintain historic population levels.
South Fork Sun River	26.4 miles	Rainbow Trout, Rainbow x cutthroat trout hybrids	Wild	General	Monitor populations to maintain historic population levels.
Mill Coulee Creek	7.4 miles	Rainbow trout, Brown trout	Wild	General	Maintain populations within historic levels providing for a recreational fishery and consumptive use.
Habitat needs and activities: Improve connection to the Sun River and provide passage for migratory spawning fish.					
Gibson Reservoir	1,289 acres	Arctic grayling	Wild	Conservation	Maintain population in upper reaches of the reservoir.
		Rainbow trout, Rainbow x cutthroat trout hybrids	Wild	General	Maintain populations providing for a recreational fishery and consumptive use taking into account the significant water elevation changes in the reservoir.
Sun River – Diversion Dam to mouth of Elk Creek	32 miles	Rainbow trout, Brown trout, Mountain whitefish (N)	Wild	General	Maintain a recreational fishery and enhance population levels of all species compared to historic numbers.
		Burbot (N)	Wild	General	Enhance population numbers.
Habitat needs and activities: Improve instream flows and irrigation water and conveyance management to improve chronic dewatering. Maintain habitat and instream flows of 100 cfs as an absolute minimum and 220 cfs as a recommended minimum. Excellent potential to improve the fishery.					
Sun River Slope Canal	34.4 miles	Arctic grayling	Wild	Conservation	Maintain viable population in the canal.
Habitat needs and activities: Maintain overwinter habitat in upper reaches of the canal at drops to preserve population. Salvage fish at lower drops that are lost to the population and would perish if not transferred to other upstream waters.					

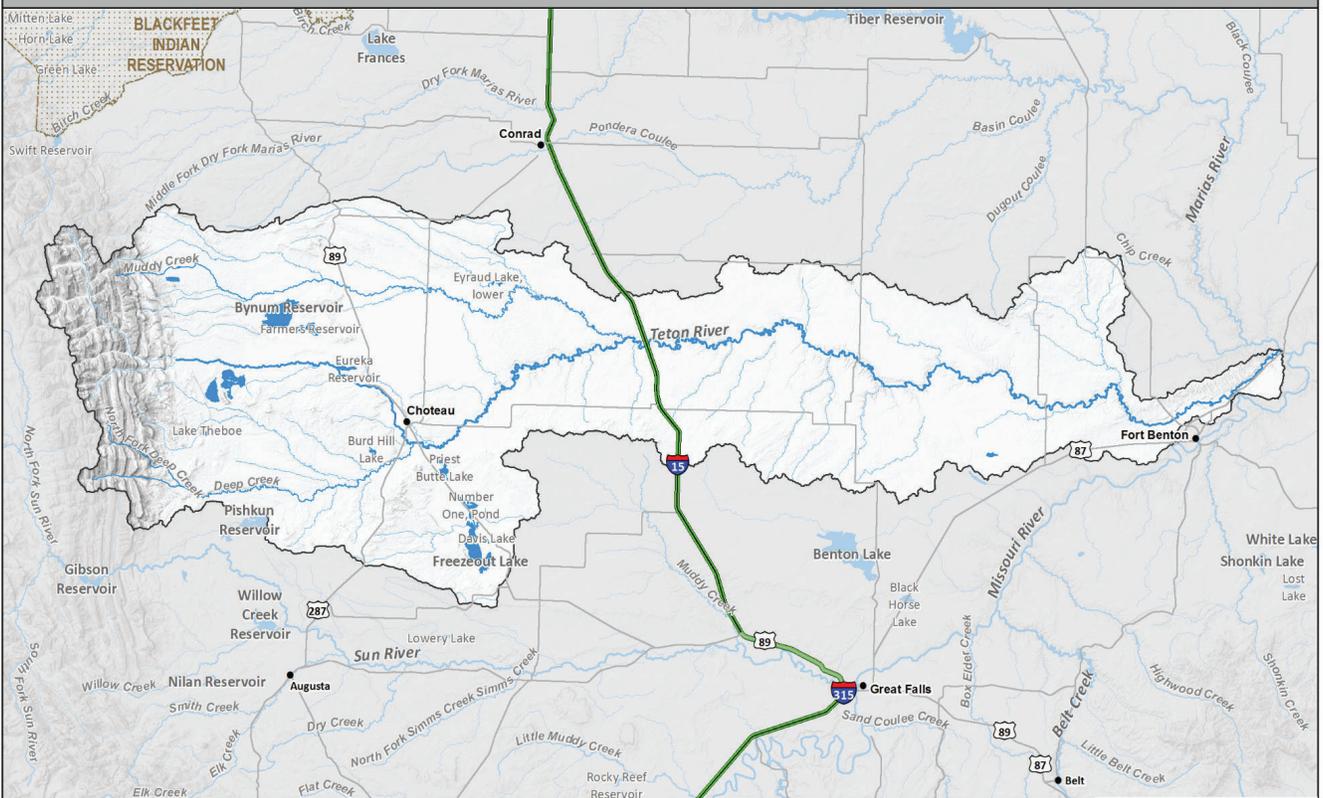
Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Sun River – Mouth of Elk Creek to confluence with Missouri River	65 miles	Rainbow trout, Brown trout, Mountain whitefish (N)	Wild	General	Maintain a recreational fishery and enhance population levels of all species compared to historic numbers.
		Burbot (N)	Wild	General	Enhance population numbers.
		Stonecat (N)	Wild	General	Maintain and enhance existing population levels.
		Northern pike	Wild	General	Maintain minimum population levels.
		Walleye	Wild	General	Manage short reach inhabited in conjunction with Missouri River.
		Native minnow species (N)	Wild	Conservation	Safeguard species of special concern to maintain population levels.
Habitat needs and activities: Improve instream flows and irrigation water conveyance management to improve chronic dewatering and irrigation based erosion. Maintain habitat and instream flows of 130 cfs as an absolute minimum and 220 cfs as a recommended minimum. Excellent potential to improve the fishery.					
Willow Creek	28 miles	Brook trout	Wild	General	Maintain populations within historic levels providing for a recreational fishery and consumptive use.
Habitat needs and activities: Maintain habitat and instream flows of 3 cfs.					
Ford Creek	19.3 miles	Brook trout	Wild	General	Maintain populations within historic levels providing for a recreational fishery and consumptive use.
Habitat needs and activities: Maintain habitat and instream flows of 12 cfs.					
Elk Creek	32.5 miles	Rainbow trout, Brown trout, Brook trout	Wild	General	Maintain populations within historic levels providing for a recreational fishery and consumptive use.
Habitat needs and activities: Maintain habitat and instream flows of 16 cfs. Improve water management to reduce chronic dewatering. Work to maintain passage from Sun River for adfluvial spawning migrations.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Pishkun Reservoir	1,518 acres	Rainbow Trout, Kokanee salmon	Hatchery	Put, Grow and Take	Maintain recreational fishery for consumptive harvest by continued stocking.
		Yellow perch	Wild	General	Maintain recreational fishery for consumptive harvest.
		Northern pike	Wild	General	Manage size and population by recommending manipulation of water levels during spawning.
Habitat needs and activities: Request cooperation of Irrigation District to manage water elevations to control northern pike spawning success.					
Willow Creek Reservoir	1,314 acres	Rainbow trout	Hatchery	Put, Grow and Take	Maintain recreational fishery for consumptive harvest by continued stocking.
Nilan Reservoir	521 acres	Rainbow trout	Hatchery	Put, Grow and Take	Maintain recreational fishery for consumptive harvest by continued stocking.
		Brown trout	Wild	General	Maintain recreational fishery with limited consumptive harvest.
Tunnel Lake	14 acres	Westslope cutthroat trout	Hatchery	Put, Grow and Take	Maintain recreational fishery for consumptive harvest by continued stocking.
		Arctic grayling	Transfer/ Wild	General	Maintain recreational fishery with limited consumptive harvest.
Wood Lake	20 acres	Westslope cutthroat trout	Hatchery	Put, Grow and Take	Maintain recreational fishery for consumptive harvest by continued stocking.
Wadsworth Reservoir	43 Acres	Walleye, Largemouth Bass, Rainbow trout, Brook trout	Hatchery	Family Fishing Water	Maintain as an urban fishery.
		Yellow perch	Transfer	Family Fishing Water	Maintain as an urban fishery.

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Westslope Cutthroat Trout Genetically Unaltered Conservation Population Streams (Isolated Single Species Populations) (2 Streams)	5.0 miles	Westslope cutthroat trout (N)	Transfer/Wild	Conservation	Maintain and protect populations to reduce extinction risk.
Habitat needs and activities: Maintain or improve habitat. Explore opportunities to expand existing reaches for populations. Investigate potential to establish additional pure populations above barriers and potential barrier sites.					
Westslope Cutthroat Trout Genetically Altered Streams (7 streams)	24 miles	Westslope cutthroat trout (N), Rainbow x cutthroat trout hybrids	Wild	Conservation	Maintain and protect populations of genetically tested 90-99% westslope cutthroat trout.
Habitat needs and activities: Maintain or improve habitat.					

# Teton River Drainage

MONTANA FWP



-  Tribal Lands
-  Drainage Boundary



Map Produced by:  
ASP - Geographic Data Services  
ISR 43965 - Nov 23, 2018



Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI

## **TETON RIVER DRAINAGE**

### **PHYSICAL DESCRIPTION**

The Teton River Basin is located in Teton and Chouteau counties of Northcentral Montana. The headwaters originate along the east front of the Rocky Mountains, flow approximately 175 miles in an easterly direction, and enter the Marias River at Loma. The drainage contains about 734 miles of perennial streams and approximately 68 named perennial streams. There are 14 lakes or reservoirs in the drainage for a total of 7,356 surface acres. Yearly precipitation averages 12-14 inches, with higher amounts occurring near and in the mountains. The mainstem Teton River originates with the junction of its North and South forks approximately 22 air miles northwest of Choteau. It flows generally eastward to Choteau along gently rolling hills and flat terrain. Principal tributaries include Deep Creek, McDonald Creek, Spring Creek and Muddy Creek. Stream substrate is characterized by glacial materials with abundant gravel, cobble and boulders. Due to the gravelly conditions, channel movement is quite active with channel braiding occurring in some areas. Stream gradient is about 35 feet/mile. Water clarity is good but becomes turbid with sudden increases in flow. The coldwater reach is approximately 33 miles in length, extending down to the discharge from Priest Butte Lake.

The riparian area consists of willows and cottonwoods throughout most of the reach, with limber pine and aspen near the headwaters. Floods in 1964 and 1975 destroyed most of the stream bank vegetation. Much of this vegetation has recovered in some areas.

Choteau is the largest town within the basin, having a population of about 1,600. Smaller communities include Dutton, Bynum, Pendroy, Agawam, Farmington and Collins. The major land uses are for crops and livestock. Approximately 80,000 acres are irrigated in the basin by many private individuals and four local ditch companies. Off-stream storage is held in Bynum, Eureka and Farmers reservoirs, and Eyraud Lakes.

Approximately 15% of the basin is national forest. Considerable exploration for oil and gas has occurred, with several shallow wells presently producing oil in the northern part of the basin. Although coal deposits are present, no commercial mining has taken place. Oil and gas exploration and potential future development continues to be a possibility. In the 33-mile reach from the headwaters to the discharge from Priest Butte Lake near Choteau, land uses include grazing and hay land with some grain crops along the lower portions. Landownership within this stream reach is approximately 80% private and 20% state. Stream access is controlled by private landowners but is usually granted upon request. The Teton River is crossed by two highway bridges near Choteau, seven county road bridges and several private bridges and fords.

### **FISHERIES MANAGEMENT**

The Teton River Basin provides a trout fishery for people in the local area. There are approximately 329 miles of stream in the Teton River drainage that support brook trout and 194 miles that support rainbow trout. Small populations of pure westslope cutthroat trout are found in headwater streams, which occupy less than 2% of the historic range in the drainage. While rainbow, brook and brown trout and mountain whitefish occur in the middle to upper reaches of the river and tributaries, sauger, burbot, channel catfish, shovelnose sturgeon, and northern pike

are found in the lower Teton River when water is present. Reservoir fisheries, which include Bynum, Eureka, and Eyraud, are composed of rainbow trout and northern pike/yellow perch or trout/yellow perch.

There are several diversions on the upper Teton River above Choteau that divert small amounts of water, three diversions that can divert about 200 cfs, and one large diversion capable of withdrawing 1,000 cfs during flood conditions. Portions of this stretch are subject to low flows or complete dewatering by irrigation diversions. The portion of the reach above Choteau has mostly small brook trout and fewer numbers of brown trout, rainbow trout and mountain whitefish. The lower portions of the reach below Choteau experience very low, but more stable flows due to groundwater recharge entering the stream. The fishery is composed of brown trout, mountain whitefish and rainbow trout. Fish present other than trout include blue, longnose, white, mountain, and shorthead redhorse suckers, longnose dace, Rocky Mountain sculpin, lake chub, carp, brook stickleback and goldeye.

## **HABITAT**

USGS flow records at the Teton River below the South Fork gage show mean monthly flows of 214 and 82 cfs for the critical months of August and September for the period of record, respectively. USGS discharge records for the lower end of the near Priest Butte Lake are available from June 1913 to June 1919. Maximum discharge was 4,500 cfs on June 22, 1916, and a minimum of 1 cfs occurred between August 9 and August 16, 1916. The low readings are influenced by the many diversions above the recording station. Further downstream at the USGS gage near Dutton, the mean monthly flows drop to of 66 and 59 cfs for the months of August and September, respectively. Near the mouth of the Teton River, the mean monthly flows for the period (1998-2011) of record drop precipitously to 12 and 7.4 cfs for August and September, respectively. In fact, at this lowest gage the mean monthly flows have been 0 cfs (dry riverbed) for 50% and 43% of the months of August and September, respectively, during the period of record.

The dewatering of tributary streams and large reaches of the Teton River for irrigation is the greatest problem facing the maintenance of aquatic and fisheries resources in the Teton River basin. Adjudication of water rights in the basin implementing a final decree that recognizes downstream water rights and the work of a water commissioner to administer those rights, has the greatest potential to provide aquatic habitat now absent in the Teton drainage.

## **FISHING ACCESS**

Public access is available throughout the public land in the headwaters area. Downstream, there are no public access sites on the Teton River; fisheries resources and habitat (i.e., flows) need to be addressed before it would be warranted to seek improved fishing access. Public access to private lands has usually been allowed with permission. The only FWP Fishing Access Sites are those associated with reservoirs at Bynum Reservoir, Eureka Reservoir, and Upper Eyraud Lake.

## **SPECIAL MANAGEMENT ISSUES**

Water rights adjudication in the basin and enforcement of a decree will play a critical role in the future of large reaches of the mainstem and tributaries and whether they remain chronically dewatered or once again become perennial streams.

The Teton River Drainage is also home to several conservation populations of westslope cutthroat trout, providing opportunities to conserve this native species in the drainage. The long-term goal of cutthroat conservation in the Teton River Drainage is to have approximately 20% of the historically occupied habitat restored to secure conservation populations of cutthroat trout (see Part 1: Trout: Westslope and Yellowstone Cutthroat Trout for details).

**FISHERIES MANAGEMENT DIRECTION FOR THE TETON RIVER DRAINAGE**

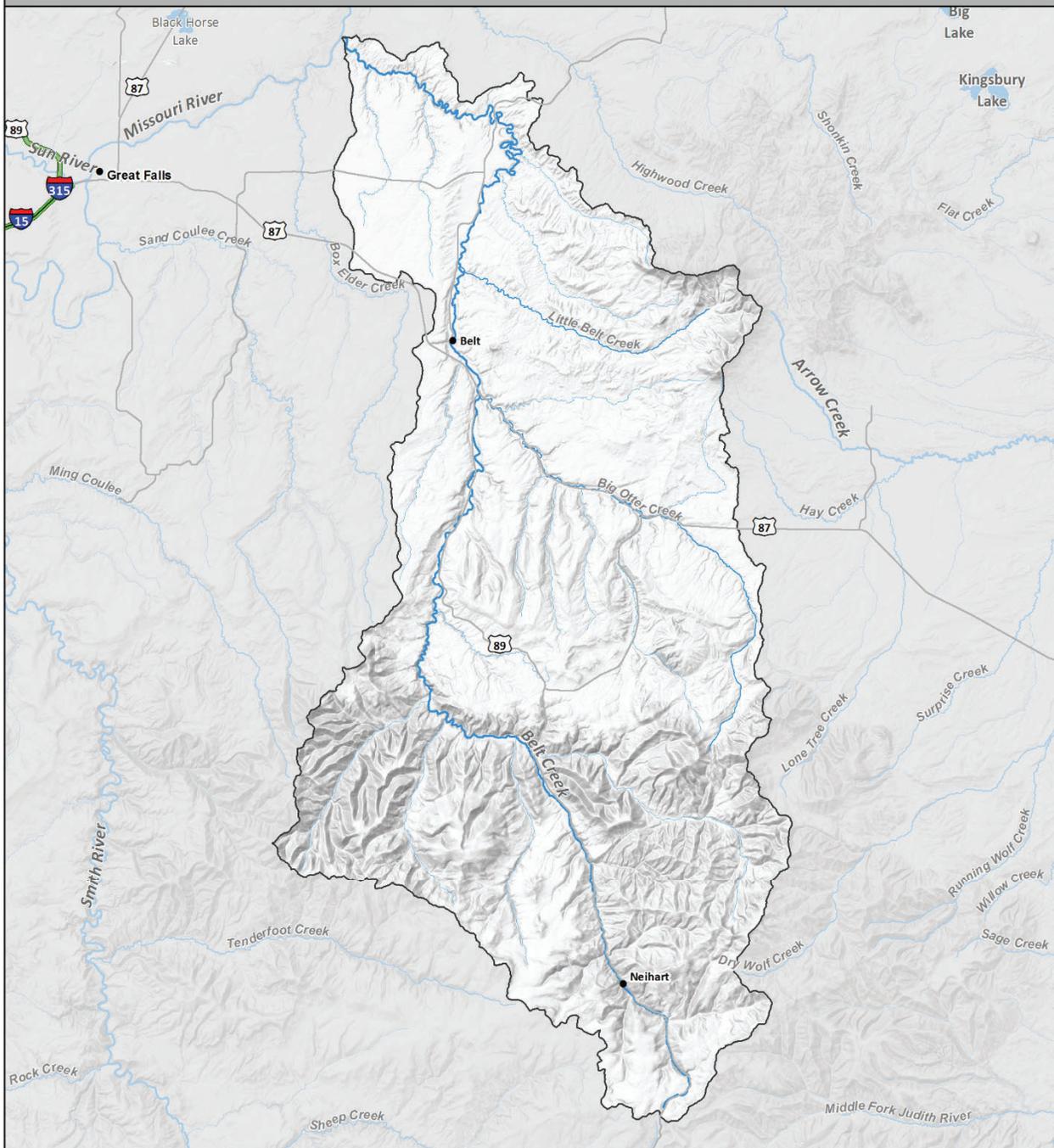
<b>Water</b>	<b>Miles/Acres</b>	<b>Species</b>	<b>Recruitment Source</b>	<b>Management Type</b>	<b>Management Direction</b>
Teton River - Headwaters to the Discharge from Priest Butte Lake	33 miles	Brook trout, Brown trout, Rainbow trout	Wild	General	Maintain populations within historic levels providing for consumptive use.
		Mountain whitefish (N)	Wild	General	Maintain populations within historic levels.
Habitat needs and activities: Maintain habitat and develop instream flows of 35 cfs. Explore strategies to prevent chronic dewatering of the mainstem of the Teton River upstream of Choteau.					
McDonald Creek	8 miles	Brook trout, Brown trout, Rainbow trout	Wild	General	Maintain populations within historic levels providing for consumptive use.
Habitat needs and activities: Maintain habitat and instream flows of 10 cfs. Explore strategies to prevent chronic dewatering.					
South Fork Deep Creek	8.8 miles	Brook trout	Wild	General	Maintain populations within historic levels providing for consumptive use.
		Westslope cutthroat trout, Rainbow trout	Wild	General	Maintain populations within historic levels providing for consumptive use.
		Westslope cutthroat trout	Wild	Conservation	Maintain and protect populations to reduce extinction risk.
Habitat needs and activities: Maintain habitat and instream flows of 6.9 cfs. Evaluate potential for greater access.					
North Fork Deep Creek	4 miles	Brook trout	Wild	General	Maintain populations within historic levels providing for consumptive use.
Habitat needs and activities: Maintain habitat and instream flows of 7.2 cfs. Explore strategies to prevent chronic dewatering.					
Deep Creek	38 miles	Rainbow trout, Brown trout, Brook trout	Wild	General	Maintain populations within historic levels providing for consumptive use.
Habitat needs and activities: Maintain habitat and instream flows of 18 cfs. Explore strategies to prevent chronic dewatering.					

Water	Miles/Acres	Species	Recruitment Source	Management Type	Management Direction
Spring Creek	13.1 miles	Brook trout	Wild	General	Maintain populations within historic levels providing for consumptive use.
		Rainbow trout	Hatchery/Wild	General	Maintain populations within historic levels providing for consumptive use.
Habitat needs and activities: Maintain habitat and instream flows of 4.5 cfs. Evaluate strategies to prevent chronic dewatering.					
Bynum Reservoir	3,205 acres	Rainbow trout	Hatchery	Put, Grow and Take	Maintain opportunity for catching larger sized fish.
		Kokanee salmon	Hatchery	Put, Grow and Take	Manage as a consumptive fishery.
		Yellow perch	Wild	Family Fishing Water	Provide an opportunity for a fishery not available in other waters in Region 4. Restrict fishing contests incompatible with Family Fishing Water management goals.
		Walleye	Hatchery/Wild	Put, Grow and Take/ General	Evaluate reestablishing a walleye fishery if productivity of existing fisheries decline.
Habitat needs and activities: Maintain a fishery with whatever water levels irrigators maintain in the reservoir.					
Eureka Reservoir	366 acres	Rainbow trout	Hatchery	Put-Grow-Take	Manage as a recreational fishery with consumptive harvest.
Habitat needs and activities: Evaluate benefits to anglers of both fish plants and FAS lease under current water level management in the reservoir.					
Teton River - Discharge from Priest Butte Lake to Mouth	151 miles	Blue sucker (N)	Wild	Conservation	Maintain populations within historic levels.
		Channel catfish (N)	Wild	General	Manage as a consumptive fishery.
		Shovelnose sturgeon (N)	Wild	General	Reestablish a recreational fishery with consumptive harvest.
		Stonecat (N)	Wild	Conservation	Reestablish a native species fishery.
Continue next page					

Water	Miles/Acres	Species	Recruitment Source	Management Type	Management Direction
		Sauger (N)	Wild	Conservation	Reestablish a native species fishery with some consumptive harvest.
		Northern pike	Wild	General	Manage as a consumptive fishery.
Habitat needs and activities: Develop methods to prevent total dewatering of the Lower Teton River.					
Eyraud Lakes	223 acres	Northern pike, Yellow perch, Largemouth bass	Wild	General	Maintain populations within historic levels for a recreational fishery with consumptive harvest.
Westslope Cutthroat Trout Genetically Unaltered Conservation Population Streams (3 streams)	5.5 miles	Westslope cutthroat trout	Wild	Conservation	Maintain or enhance populations to reduce extinction risk.
Habitat needs and activities: Replicate populations to protect them from extinction.					
Westslope Cutthroat Trout Genetically Altered Streams (7 streams)	22.5 miles	Westslope cutthroat trout & hybrids	Wild	Conservation	Maintain or enhance populations. Allow harvest in robust populations.
Habitat needs and activities: Evaluate potential sites for a major barrier on North Fork Teton River.					

# Belt Creek Drainage

# MONTANA FWP



-  Tribal Lands
-  Drainage Boundary



Map Produced by:  
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Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI



## **BELT CREEK DRAINAGE**

### **PHYSICAL DESCRIPTION**

Belt Creek is a major tributary of the Missouri River. It originates on the northwest side of the Little Belt Mountains and flows in a northerly direction for about 88 miles to its confluence with the Missouri, 14 miles downstream of Great Falls in Cascade County. Belt Creek drains approximately 800 square miles of the Little Belt and Highwood mountains. The basin contains approximately 186 named perennial streams, comprising a total length of about 442 miles of perennial stream habitat. Major tributaries to Belt Creek include Jefferson, Dry Fork, Tillinghast, Pilgrim, Logging, Big Otter, Little Belt and Big Willow creeks.

The upper basin of Belt Creek is situated in the mountainous area of the Lewis and Clark National Forest with its headwaters at an elevation of about 8,000 feet. The landscape of the headwaters is comprised of plateau-like mountains with V-shaped valleys carved through the sedimentary Belt formation of the parent rock. The basin supports subalpine and montane forests consisting mostly of lodgepole pine, Douglas fir, ponderosa pine, and subalpine fir. Within these forest zones, the upper 33 miles of Belt Creek flows through a steep, narrow valley before entering the Sluice Boxes, a limestone gorge about 14 miles in length. The riparian vegetation of the floodplain is variable with respect to elevation, consisting of an overstory of spruce and lodgepole pine in the cool, higher areas and lodgepole pine, Douglas fir, ponderosa pine and cottonwood in the lower temperate zone. Willows, water birch, rose, and red osier dogwood are shrub species which dominate the undergrowth of the riparian. There are very few meadow areas along Belt Creek.

The gradient for this size of stream is unusually steep, averaging about 90 feet/mile near its headwaters at Neihart, to 40 feet/mile at the lower end near Monarch. Channel substrates reflect the cascading nature of Belt Creek with boulders, large cobbles, and several outcroppings of bedrock typifying the stream bottom.

Belt Creek at the lower elevations flows through prairie foothills and benchlands joining the Missouri River at an elevation of 2,800 feet. This lower section begins at the confluence with Big Otter Creek and flows for 39 miles through gently dipping sandstone and shale formations while remaining entrenched within a narrow valley. The upper 13 miles of this reach typically are intermittent during dry periods, probably losing water to cavernous limestone. Downstream of this point, the stream typically becomes effluent again and remains perennial throughout its remaining course. The riparian vegetation consists of a diverse woodland environment dominated by a cottonwood overstory with an undergrowth of willows, chokecherry, rose and snowberry. Although the stream gradient lessens from that of upper Belt Creek, the average gradient of 28 feet/mile is unusually steep for a large prairie stream. Channel substrate is comprised primarily of cobbles, although scattered boulders are still present throughout its length. Cobbles and gravel in the lower end show increased silt deposits due to heavy sediment loads entering from lowland tributaries.

Land use in the Belt Creek drainage includes most types found east of the Divide. Timber harvest has been extensive in the past; however, harvest has been substantially reduced. Mountain pine beetle infestations and spruce budworm has had significant impacts on the forest health in recent years. Nearly all of the land within the lower basin is managed for cattle ranching or farming. A substantial amount of livestock grazing occurs in this area. Only minor grazing occurs in the forested upper basin. Hay and some crop land exist along the stream, but little of it is irrigated. There has been extensive silver, lead, zinc and gold mining in the Little Belt Mountains in both the Carpenter-Snow Creek and Barker-Hughesville Mining districts. Along with the mining of various ore deposits, serious heavy metals pollution has occurred from several abandoned mining tailings. The water quality of streams in the Belt Creek drainage has been impaired as a result of runoff and groundwater. Both mining district sites are Federal Superfund sites and are in the early stages of remediation work. Numerous coal mines also operated near the town of Belt in the late 1800s and early 1900s. These mines, now abandoned, contribute acid mine drainage to Belt Creek. The abandoned coal mines discharge approximately 250 acre-feet of water each year to Belt Creek and approximately 700 pounds of iron and 500 pounds of aluminum on average to Belt Creek daily. Montana DEQ is currently evaluating the possibility of constructing a water treatment plant in the town of Belt to treat the contaminated water.

A USGS stream flow gage on Belt Creek near Monarch (river mile 52.0) recorded an average annual flow of 192 cfs for the 31-year period of record from 1951-82. A relationship was also developed to predict flows on Belt Creek at the Riceville Bridge at the lower end of Sluice Boxes State Park based on flows at the USGS Smith River below Eagle Creek Gage.

#### **FISHERIES MANAGEMENT**

From the headwaters to the mouth of Big Otter Creek, a reach of approximately 51 miles, rainbow trout are the predominant sport fish found throughout the lower elevation, higher order stream reaches followed by mountain whitefish and brown trout. Westslope cutthroat trout and brook trout are uncommon in the lower mainstem, but good populations are present in some tributary streams and the headwaters area. Brook trout tend to dominate the smaller, higher elevation streams. There are approximately 211 miles of stream that support rainbow trout and 197 miles of stream that support brook trout in the Belt Creek Drainage. Approximately 37 miles of stream in the Belt Creek Drainage support pure westslope cutthroat trout. Due to this relatively large number of headwater streams that hold conservation populations of westslope cutthroat trout, the upper portion of the mainstem Belt Creek has good numbers westslope cutthroat trout of varying purity. This abundance of westslope cutthroat trout populations is primarily an artifact of the presence of naturally formed waterfalls and fragmented habitat in the Belt Drainage. Non-game species in the upper reaches of the drainage include mountain, white and longnose suckers, longnose dace, and Rocky Mountain sculpin.

The statewide fishing pressure and harvest survey for the period 1982-2009 reported an average of about 7,500 angler-days of use annually and ranged from 3,437 in 2001 to 13,424 angler-days in 1997. The most recent data estimated that 6,592 angler-days occurred on Belt Creek in 2015.

Because of substantial fishing pressure and problems with dewatering in the lower portion of this reach, the lower 13 miles does not maintain an adequate self-sustaining trout population.

Approximately 3,000 catchable rainbow trout were historically stocked in this section annually from the early 1960's to 1996. Tributaries to Belt Creek were also stocked with large numbers of non-native trout for many years prior to 1996.

This lower reach of Belt Creek between the mouth of Big Otter Creek and the confluence with the Missouri River (39 miles), supports both coldwater and warmwater fisheries. A marginal resident trout fishery exists in this reach and is limited because of low stream flows, high water temperatures, excessive siltation, and acid mine drainage effluent from abandoned coal mines. Rainbow trout and brown trout are the most common trout species found. To some extent both rainbow and brown trout from the Missouri River migrate up Belt Creek during their spawning season. Mountain whitefish have also been observed to migrate in large numbers into the lower mile of Belt Creek from the Missouri River to spawn. Historically, sauger migrated up Belt Creek (as high as Armington) during the late spring and resided in the stream until fall as long as flow conditions were adequate. No sauger have been observed in recent years in Belt Creek. However, credible reports of shovelnose sturgeon at Salem Bridge have been reported in recent years. In 1997 high flows in the Missouri River resulted in confirmed reports of northern pike in the sluice boxes section. Non-game fish found in lower Belt Creek include goldeye, longnose, mountain and white suckers, shorthead redhorse, carp and Rocky Mountain sculpin.

#### **FISHING ACCESS**

The Belt Creek drainage has a high scenic value. It is a popular recreation area for fishing, hunting, picnicking, camping, hiking, mountain biking, motorized trail riding, and for the adventurous, floating. U.S. Highway 89 parallels Belt Creek throughout the upper section and provides access to most portions of the stream. Much of upper Belt Creek and its tributaries receive a substantial amount of fishing pressure due to its proximity to Great Falls, the convenient access provided by Highway 89 and the availability of numerous developed and dispersed camping sites. A winter sports area is located in the upper basin, providing additional easy access to the stream. The only FWP land on Belt Creek that provides angler access is Sluice Boxes State Park. Routes 331 and 228 parallel the stream for about 25 miles of the lower section. Public access to private lands bordering lower Belt Creek has usually been allowed with permission. The remaining 14 miles of this lower portion flows through remote and rugged lands and access is difficult except at the Salem Bridge, about a mile upstream from the mouth.

#### **SPECIAL MANAGEMENT ISSUES**

Nineteen populations of genetically pure westslope cutthroat trout currently occupy less than 15% (33 miles) of the total historic range in the drainage. Four of the populations are at a moderate risk of extinction over the short term. These represent priorities where short and long term actions are required to reduce extinction risk and provide increased protection or expansion of the populations.

The Belt Creek Drainage is also home to several conservation populations of westslope cutthroat trout, providing opportunities to conserve this native species in the drainage. The long-term goal of cutthroat conservation in the Belt Creek Drainage is to have approximately 20% of the historically occupied habitat restored to secure conservation populations of cutthroat trout (see Part 1: Trout: Westslope and Yellowstone Cutthroat Trout for details).

**FISHERIES MANAGEMENT DIRECTION FOR BELT CREEK DRAINAGE**

<b>Water</b>	<b>Miles/acres</b>	<b>Species</b>	<b>Recruitment Source</b>	<b>Management Type</b>	<b>Management Direction</b>
Belt Creek (Headwaters to the Mouth of Big Otter Creek)	51 miles	Rainbow trout, Brown trout, Brook trout	Wild	General	Maintain populations within historic levels.
		Mountain whitefish (N)	Wild	General	Maintain numbers within historic range.
		Westslope cutthroat trout (N)	Wild	Conservation	Maintain or enhance populations in tributaries, when possible. Survey tributaries and upper reaches of mainstem to determine upstream limit of westslope cutthroat. When biologically feasible, provide for limited consumptive use.
Habitat needs and activities: Maintain habitat and instream flows of 90 cfs.					
Big Otter Creek	26.5 miles	Brown trout	Wild	General	Manage as a recreational fishery with the opportunity to catch large brown trout.
		Brook trout, Rainbow trout	Wild	General	Manage as a recreational fishery with some consumptive harvest.
Habitat needs and activities: Maintain spring creek type habitat and instream flows of 5 cfs.					
Logging Creek	11 miles	Brook trout, Rainbow trout, Brown trout	Wild	General	Manage as recreational fishery with consumptive harvest.
		Westslope cutthroat trout (N)	Wild	Conservation	Monitor the conservation population in the headwaters.
Pilgrim Creek	7.5 miles	Westslope cutthroat trout (N)	Wild	Conservation	Collect additional genetic samples and determine if headwater populations remain non-hybridized. Enhance existing barrier near the mouth and remove non-native fish from barrier to pure population in headwaters.
Habitat needs and activities: Modify/enhance existing barrier near the mouth.					

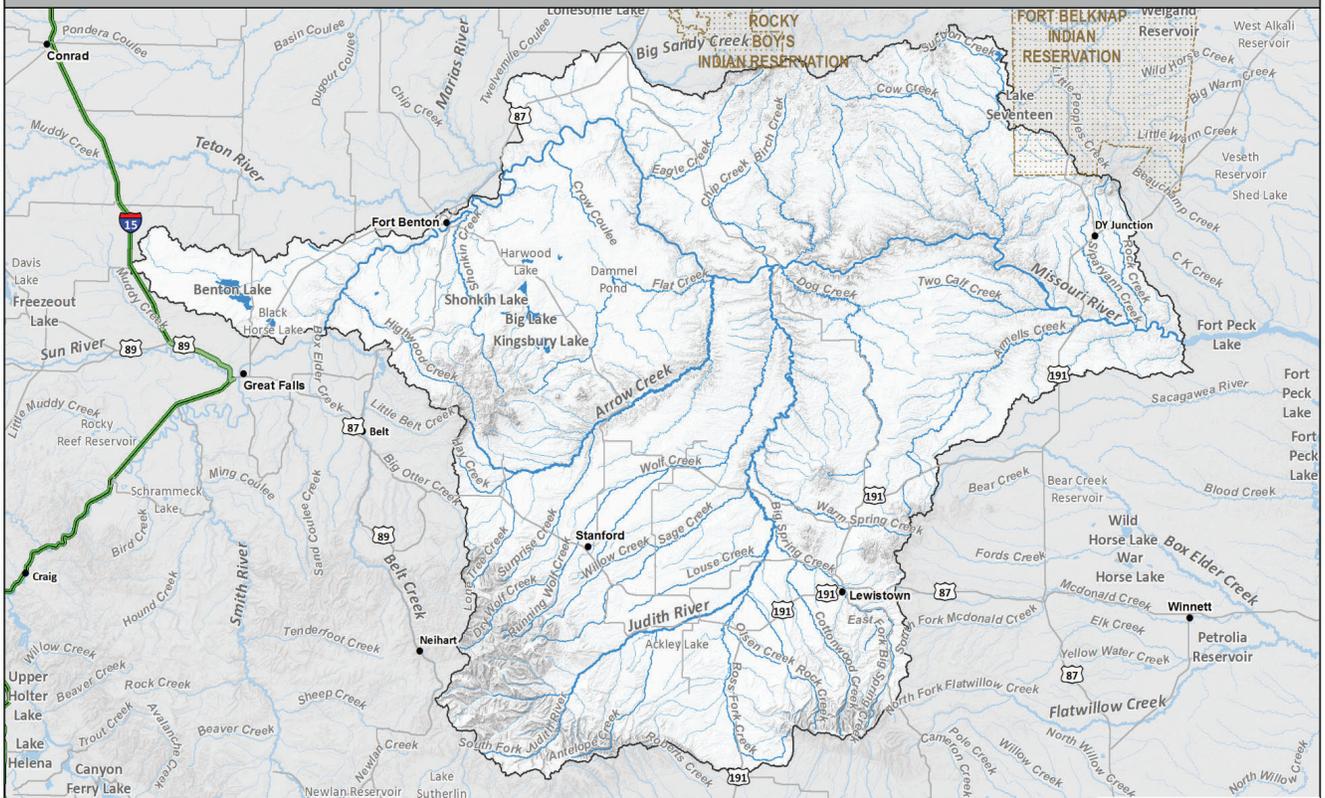
Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Dry Fork Belt Creek	11 miles	Rainbow trout, Brook trout	Wild	Suppression	Future management to minimize presence in stream.
		Westslope cutthroat trout (N)	Wild	Conservation	Future management as westslope cutthroat trout fishery.
Habitat needs and activities: Maintain habitat and instream flows of 7 cfs. Management toward a conservation population of westslope cutthroat trout.					
Oti Park Creek	4.2 miles	Brook trout	Wild	Suppression	Manage to minimize expansion of brook trout population.
		Westslope cutthroat trout (N)	Wild	Conservation	Maintain or enhance population.
Habitat needs and activities: Management toward a conservation population of westslope cutthroat trout.					
Carpenter Creek	3 miles	Westslope cutthroat trout (N)	Wild	Conservation	Evaluate opportunities to expand population and provide secure habitat throughout the Carpenter Creek drainage in anticipation of mine remediation and metals pollution in the Carpenter-Snow Creek drainage.
Habitat needs and activities: Identify potential barrier sites near mouth to develop a conservation population of Westslope cutthroat trout.					
Jefferson Creek	5.4 miles	Brook trout	Wild	General	Manage to minimize increases in population densities.
		Rainbowtrout	Wild	Suppression	Manage to minimize presence in the stream.
		Westslope cutthroat trout (N)	Wild	Conservation	Maintain or enhance population to eventually allow limited harvest.
Habitat needs and activities: Explore potential barrier sites on Belt Creek to prevent non-native fish migration into Jefferson Creek.					
Chamberlain Creek	5.4 miles	Westslope cutthroat trout (N)	Wild	Conservation	Monitor Chamberlain Creek above barrier for presence of brook trout.
Habitat needs and activities: The existing barrier is suspect at high flows because of screen clogging and erosion under the splash pad. Future work should be conducted to modify the screen to pass debris and the splash pad should be extended downstream to prevent passage of non-native fish during significant flow events.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Belt Creek (Big Otter Creek to Confluence with Missouri River)	37 miles	Rainbow trout, Brown trout	Wild	General	Maintain populations with historic levels.
		Mountain whitefish (N)	Wild	General	Maintain numbers within historic range.
		Sauger (N)	Wild	Conservation	Evaluate potential to restore populations.
Habitat needs and activities: Maintain habitat and instream flows of 35 cfs. Monitor fishery before and after water treatment plant construction and the treatment of contaminated water.					
Little Belt Creek	15.8 miles	Rainbow trout, Brown trout	Wild	General	Maintain a recreational fishery with consumption in majority of stream below barriers.
		Brook trout	Wild	Suppression	Pursue removal of brook trout above a barrier on private land to benefit westslope cutthroat trout in Little Belt Creek population and provide an additional layer of security for the North Fork and Middle Fork Little Belt Creek westslope cutthroat populations.
		Westslope cutthroat trout (N)	Wild	Conservation	Pursue opportunities to expand existing Little Belt Creek population downstream to barrier on private land.
Middle Fork Little Belt Creek	2.6 miles	Brook Trout	Wild	Suppression	Suppress brook trout population above barrier to protect westslope cutthroat trout population.
		Westslope cutthroat trout (N)	Wild	Conservation	Monitor the westslope cutthroat trout population annually. Expand population downstream if private landowners are amenable.
Habitat needs and activities: Eradication of brook trout above a waterfall barrier on private land would create a westslope cutthroat trout population resistant to long-term extinction threats and would include the North Fork and Middle Fork Little Belt drainages.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
North Fork Little Belt Creek	2.4 miles	Brook Trout	Wild	Suppression	Suppress brook trout population above barrier to protect westslope cutthroat trout population.
		Westslope cutthroat trout (N)	Wild	Conservation	Monitor the westslope cutthroat trout population annually. Expand population downstream if private landowners are amenable.
Habitat needs and activities: Eradication of brook trout above a waterfall barrier on private land would create a westslope cutthroat trout population resistant to long-term extinction threats and would include the North Fork and Middle Fork Little Belt drainages.					
Westslope Cutthroat Trout Genetically Unaltered Conservation Population Streams (Isolated Single Species Populations)	33 miles	Westslope cutthroat trout (N)	Wild	Conservation	Maintain or enhance populations to reduce extinction risk. Allow harvest in robust populations.
Habitat needs and activities: Maintain or improve habitat and explore suitable sites for barriers or reducing fragmentation of westslope cutthroat occupied habitat.					
Westslope Cutthroat Trout Genetically Altered Conservation Population Streams	59 Miles	Westslope cutthroat trout (N), Hybrids (mixed populations)	Wild	Conservation	Maintain or enhance populations. Allow harvest in robust populations.
Brook Trout Streams	197 Miles	Brook trout	Wild	General	Manage for consumptive harvest.

# Missouri River - Judith Drainage

# MONTANA FWP



- Tribal Lands
- Drainage Boundary



Map Produced by:  
ASP - Geographic Data Services  
ISR 43965 - Nov 23, 2018

Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI



## **MISSOURI RIVER – JUDITH DRAINAGE**

### **PHYSICAL DESCRIPTION**

The reach of the Missouri River from Great Falls to the mouth of the Marias River is 54 miles in length. Stream gradient averages 4.8 feet/mile and varies from 18.7 feet/mile at the mouth of Belt Creek to 2.2 feet/mile near the mouth of the Marias River. The principal tributaries entering this reach are Belt, Highwood and Shonkin creeks. Belt Creek contributes a noticeable flow to the Missouri only during the spring runoff period. Belt Creek is presented in a separate section.

The Missouri River from the confluence of the Marias River to the confluence of the Judith River is 67 miles in length. The stream gradient averages 2.1 feet/mile and varies from 3.0 feet/mile near the mouth of Arrow Creek to 1.5 feet/mile at Coal Banks Landing. The Marias River is the only tributary stream in this reach which contributes a noticeable flow to the Missouri.

The reach of the Missouri River from the confluence of the Judith River to Fort Peck Reservoir is variable due to water elevations in the reservoir, but approximately 85 miles in length. Stream gradient averages 1.9 feet/mile and varies from 3.2 feet/mile near Stafford Ferry to less than 1 foot/mile as the river enters the reservoir. The Judith River is the only tributary stream in this reach that contributes a noticeable flow to the Missouri.

The Judith River is the third largest tributary to the Missouri River in the reach between Canyon Ferry and Fort Peck dams. This stream drains an estimated 2,000 square miles of the Little Belt, Big Snowy, Judith and the North and South Moccasin mountains and surrounding lands of central Montana. The Judith flows northward for 129 miles to its confluence with the Missouri River about 50 air miles north of Lewistown. Major tributaries include the Middle, South and Ross Forks, Big Spring and Warm Spring creeks, and Wolf Creek. Many of the tributary streams go subsurface near the foothills into the limestone geology and emerge downstream. Big Spring Creek and Warm Spring Creek are primarily spring-fed creeks, while Cottonwood Creek, the South Fork Judith River, and the headwaters of Wolf Creek have long reaches that are dry in at least late summer.

The upper Judith River is situated in the mountainous area of the Helena-Lewis and Clark National Forest with its tributaries originating at an elevation of about 8,000 feet. The river begins at the confluence of the Middle and South forks and flows within a broad valley through prairie foothills and bench lands. The riparian vegetation, for about half its length consists of dense willow and other shrubs adjacent to hay meadows. Below this, cottonwoods begin to dominate the overstory along with an undergrowth of willows and rose. The average stream gradient is 30 feet/mile. Channel substrate is composed mostly of cobbles and gravel with moderate amounts of siltation.

The lower Judith River, from Big Spring Creek to the confluence with the Missouri River (elevation of 2,430 feet) is a prairie stream receiving run-off from adjacent lowlands and surrounding isolated mountain ranges. It follows a narrow river valley through prairie bench

lands and rugged breaks. The river valley averages about one-half mile wide and becomes progressively more deeply entrenched in a downstream direction. Riparian vegetation consists of deciduous woodland dominated by an overstory of cottonwoods with a dense shrubby undergrowth of willows, rose and snowberry. The average stream gradient was 12 feet/mile in 2010, but historic flooding in 2011 has shortened stream length with numerous channel avulsions and increased gradient below Ross Fork Creek. Channel substrate is mostly composed of cobbles and gravel with increasing amounts of siltation downstream.

Land uses in the Judith River drainage are fairly diverse. Basin wide, timber harvest on forest lands has been moderate; however, the South Fork of the Judith has been intensively logged. Agricultural uses occur throughout the drainage. Livestock grazing is moderate on the public forest lands of the upper basin and is a major agricultural practice in the lower basin. Nearly all of the land is privately owned and managed for cattle ranching and farming. Hay and some crop lands exist along the river and are more extensive in the upstream areas. Irrigation is also more intensive here, resulting in severe dewatering of the Judith River for several miles. An off-stream storage reservoir, Ackley Lake, located along the upper section of the Judith, stores 6,140 acre-feet and provides irrigation to 1,621 acres. Mining activities in the basin date back to the late 1800s. Gold was the primary mineral sought in the Yogo area of the Little Belt Mountains, however, sapphire mining also proved to be commercially successful. Gold mining was also pursued in the North Moccasin and Judith mountains. Presently, only a minimal amount of mining is ongoing in the Judith River Basin. Water quality issues have developed at a former open-pit gold mine that operated in the North Moccasin Mountains at Kendall. The area where sapphire mining produced commercial quantities near Yogo Creek is an area also popular with recreational placer miners.

Arrow Creek originates in the Little Belt and Highwood mountain ranges and drains portions of Judith Basin, Fergus, and Chouteau counties. The Arrow Creek watershed, occupying approximately 1,224 square miles, lies west of the Judith River drainage and Arrow Creek flows northward into the Missouri River. Major tributaries include Flat Creek, Lone Tree Creek, and Cottonwood Creek. Agricultural uses occur throughout the drainage and most lands are managed for cattle ranching and farming. In the northern part of the drainage, the creek flows through badlands on its way to the Missouri River. Arrow Creek has a fairly natural hydrograph and may be dewatered in late summer and early fall during dry years. The Arrow Creek drainage is more arid than the Judith basin, with the headwaters holding less snow for a shorter period of time. Double peaked hydrographs can result from prairie snow melting in March and summer thunderstorms causing short-duration, high-intensity discharges. Arrow Creek's channel is very sinuous. Much of the bottomland is privately owned, although DNRC trust lands and BLM-managed lands compose a greater percentage than in the Judith River Basin.

Arrow Creek flows through a wide valley bottom of Quaternary alluvium and these deposits of modern day channels are set within a canyon of sedimentary layers. The wide alluvial valley and floodplain surround a C-channel type, which characterizes most of lower Arrow Creek, being low in gradient, meandering, and with point-bars and riffle/pool morphology. The cottonwood forest on Arrow Creek is dominated by plains cottonwood. Other riparian tree and shrub species

include peach-leaf willow, yellow willow, and sandbar willow. Although present, Russian olives are not found in high densities.

## **FISHERIES MANAGEMENT**

The middle Missouri River supports a diverse warmwater fishery. All of the native fish species that historically occurred here are still found in this reach because of the relatively unaltered state of the river. There are substantial angling opportunities for sauger, walleye, channel catfish, shovelnose sturgeon, smallmouth bass, freshwater drum, burbot and a wide variety of nongame species. The FWP fisheries objective for the middle Missouri River is to emphasize native species management.

The reach of the Missouri River below Morony Dam includes a transition zone between coldwater and warmwater fisheries. The Highwood and Shonkin creek drainages support trout fisheries. Shonkin Creek also has a robust prairie fish assemblage. Thirteen species, including smallmouth bass, were sampled near the mouth in 2004. Sauger have been historically the most abundant game fish found throughout this reach of the Missouri that extends down to the Marias; numbers appear to have declined in recent years. The coldwater game fish include brown and rainbow trout and mountain whitefish. These species are common only in the upper 15 miles. Other cool/warmwater fish found in this reach include burbot, smallmouth bass, channel catfish, shovelnose sturgeon, northern pike, freshwater drum, blue sucker, and goldeye. Forage fish studies on the Missouri River indicate side channels are important habitat areas displaying higher fish diversity and abundance compared to open river areas. Side channel areas are also important rearing areas for goldeye, smallmouth buffalo and bigmouth buffalo. Young-of-the-year and forage fish are thought to use the side channel areas from early June through the end of August; flows of 4,500 cfs are required to keep side channels functional in this reach. Prior research also determined that paddlefish residing in Fort Peck Reservoir and the lower middle Missouri River require a flow of 14,000 cfs at Virgelle to initiate spring migrations to upstream spawning sites. Based on calculations made from USGS data gathered at the Virgelle and Fort Benton gaging stations, it was determined the Missouri River at Fort Benton contributes 80.6% of the median flow of the Missouri River at Virgelle. Therefore, to maintain the annual spring paddlefish migration in downstream reaches, it is recommended that the Missouri River discharge at Fort Benton be maintained at 80.6% of 14,000 cfs, or 11,284 cfs, during the spawning period, which was estimated to be from May 19 to July 5 annually.

Below the mouth of the Marias, the shovelnose sturgeon are amongst the largest found anywhere within the geographical range of the species. Paddlefish, a Species of Concern, inhabit the reach between the Marias and the mouth of the Judith River only during its spawning season. For most of their lives, paddlefish are found in Fort Peck Reservoir. When the Missouri rises to a flow greater than 12,000 cfs during the spring, paddlefish are triggered to leave the reservoir and migrate upstream to spawn. Females make this migration every 2-3 years and males every 1-2 years. Paddlefish have been observed as far upstream as the mouth of the Marias River when flows are extremely high. Previous research identified four spawning areas between the Marias and the Judith. Paddlefish receive light fishing pressure in the reach because of limited access and lack of paddlefish concentrations. Twenty-two non-game species have been found in this reach of the Missouri. Blue sucker, smallmouth buffalo, bigmouth buffalo and freshwater drum

are four nongame migratory species that are dependent on high spring flows for successful reproduction that inhabit this reach. In addition to the paddlefish, the endangered pallid sturgeon, the threatened shovelnose sturgeon, as well as sturgeon chub and blue sucker (Species of Concern), use this reach. Pallid sturgeon numbers have increased in this reach as a result of on-going recovery work.

The third reach of the middle Missouri, from the Judith River to Fort Peck Reservoir, supports a warm water fishery. Sauger, shovelnose sturgeon, channel catfish and walleye are the common game fish found in the reach. A major paddlefish snagging fishery exists in the lower 40-mile reach of the middle Missouri River during the spring. There is currently a harvest cap of 500 fish on this paddlefish population, but in 2011 it was estimated about 600 paddlefish were harvested during 14,000 angler days. Future management efforts will be designed to reduce chances of overharvest and maintain a self-sustaining population. FWP's management of paddlefish is discussed in more detail in the special management issues section of this drainage. Several tributaries with prairie fish assemblages, such as Armells Creek (81 miles long), Cow Creek and Eagle Creek, enter in this reach.

In the Judith River drainage, brown trout are the predominant game fish found throughout the reach from the confluence of the South and Middle Forks to Big Spring Creek, followed by mountain whitefish and rainbow trout. A population of brook trout exists in the upper portion of the reach where several springs originate and flow into the river. Non-game species include mountain, white and longnose suckers, longnose dace and Rocky Mountain sculpin. The Judith River receives a moderate amount of fishing pressure in this reach.

The reach of the Judith River from the mouth of Big Spring Creek to the Missouri is primarily a warm water fishery, where sauger and channel catfish are the most abundant game fish. Cold water game fish, including rainbow and brown trout and mountain whitefish, also inhabit this reach seasonally but occur in low numbers during the summer. Twenty-three non-game species have been found in the Judith River, including shorthead redhorse, longnose sucker, goldeye, flathead chub, stonecat, longnose dace, white sucker, common carp, cisco, fathead minnow, sand shiner, emerald shiner, lake chub, brook stickleback, freshwater drum, river carpsucker, Rocky Mountain sculpin, plains minnow, smallmouth buffalo, and western silvery minnow. In addition, blue suckers migrate into this reach to spawn. The lower Judith River has a diverse fishery, which reflects the variety of habitat conditions present and the transition from a coldwater to a warmwater environment. Additionally, the Judith River is an important tributary to the Missouri River, with shared fishery dynamics as various species utilize both rivers for aspects of their life histories. Pre- and post-spawn migrations of burbot, channel catfish, northern pike, and sauger have been documented moving between the Judith and Missouri Rivers. The lower Judith River receives only a light amount of fishing pressure, most likely due to its remote and fairly inaccessible location.

Rainbow trout are the most abundant game fish in the lower reaches of the South Fork Judith River. Westslope cutthroat trout are more abundant in the headwaters and upper tributaries. Low numbers of brook trout are found throughout the South Fork. Sculpin and mountain whitefish are common in the lower end above a dry reach. This stream receives substantial fishing pressure for its size. In the Lost Fork Judith River, brook trout are the predominant game

fish, followed by rainbow and westslope cutthroat trout hybrids. Rocky Mountain sculpin are found throughout the stream's length. The Lost Fork receives light fishing pressure because of its remote location. Rainbow trout are the most abundant game fish found throughout the Middle Fork Judith River. They are the dominant species found in the canyon area but are less numerous near the mouth. Brook trout are abundant in the headwater streams and become fairly abundant again near the mouth. Other species present include cutthroat x rainbow trout hybrids, brown trout and sculpins. The Middle Fork receives a moderate amount of fishing pressure considering its remote location. Yogo Creek, a tributary to the Middle Fork is a popular brook trout and hybrid rainbow trout fishery. It has many dispersed camping sites and a dense rainbow trout and brook trout population.

Big Spring Creek is exceptionally productive, and for its size, is rated as one of Montana's finest fishing waters. The creek is considered the most important trout stream in central Montana. Rainbow and brown trout are the major game species in this reach. Prior to the mid-2000s, rainbow trout made up most of the population, more recently brown trout have been about 75% of the population downstream of Lewistown. Mountain whitefish are also present, along with a few brook trout. Northern pike and yellow perch are occasionally found. Non-game fish species found in this reach include Rocky Mountain sculpin, longnose dace, longnose sucker, white sucker, mountain sucker, shorthead redhorse, carp and lake chub. Big Spring Creek receives a substantial amount of angler use, with an estimated 7,000 angler days in 2015. The majority of use is by bank fishermen; however, Big Spring Creek does receive a considerable amount of floating use. Most floating activity is related to swimming, canoeing, duck hunting, and bird watching. Cottonwood Creek is the main tributary to Big Spring Creek. The fisheries in Cottonwood Creek transition from westslope cutthroat trout in the headwaters to brook trout in the foothills and rainbow and brown trout toward the confluence with Big Spring Creek.

The fishery of Warm Spring Creek is dominated by non-game fish, including white sucker, longnose sucker, longnose dace, common carp, stonecat, and shorthead redhorse. Smallmouth bass are present in good numbers and were stocked in the creek from 1973 until 2013. The population now persists on natural reproduction. Rainbow trout are also present in good numbers and were stocked extensively from 1929 until 2013. Recent surveys indicate natural reproduction and recruitment are occurring and a wild population persists. Interestingly, an adfluvial population of rainbow trout utilizes Warm Spring Creek for its spawning location, before out-migrating to Fort Peck Reservoir. Spawning occurs in December through January when water temperatures in Warm Spring Creek are suitable. Brown trout, brook trout, channel catfish, and sauger are also present in low numbers. Land management practices in some reaches have induced excessive bank erosion and associated negative impacts. Generally speaking, the riparian and aquatic habitat of Warm Spring Creek are in good condition.

The Arrow Creek drainage contains a warmwater fishery in its lower reaches that includes goldeye, channel catfish, stonecat, and northern redbelly x finescale dace hybrid. In its headwaters, brook, and westslope cutthroat trout are present. There are approximately 47 miles of suitable habitat for salmonids. Probably 43 of these miles are inhabited by brook trout, and 4 miles by westslope cutthroat trout.

The long-term goal of cutthroat conservation in the Judith River Drainage is to have approximately 20% of the historically occupied habitat restored to secure conservation populations of cutthroat trout. See Part 1: Trout: Westslope and Yellowstone Cutthroat Trout for details.

## **HABITAT**

Present-day flow regimens of the Missouri River in the reach from Morony Dam to the mouth of the Marias are not natural because of regulation and storage at several upstream dams. Flow is largely controlled by Canyon Ferry Reservoir. There are five hydroelectric dams within the Great Falls area that are operated by Northwestern Energy. These dams do not typically affect streamflows because the FERC order that licenses the operation of the dams, stipulates that Morony Dam is to be operated to maintain uniform flows downstream. Long-term flow records are available for two USGS gage sites within this reach. For the gage site at the head of the reach below Morony Dam, the average annual flow for a 54-year period of record (1957-2011) was 7,395 cfs. Mean monthly flows ranged from 5,520 cfs in September to 13,800 cfs in June. The average annual flow for a 121-year period of record (1891-2011) at the Fort Benton gage site was 7,608 cfs. Mean monthly flows range from 4,890 cfs in September to 18,200 cfs in June.

In the second reach from the confluence of the Marias River to the confluence of the Judith River, the Marias River discharge augments the Missouri River flows by about 10% during most of the year. Present day flow regimens in this reach are similar to the reach upstream of the Marias. The Marias does not greatly increase spring flows in the Missouri because of flood control and regulation by Tiber Reservoir. However, it may be useful in the future to restore a more natural flow regime to the Missouri River. Long-term flow records are available for the USGS Virgelle gage station located 18 miles below the confluence of the Marias River. The average annual flow for a 76-year period of record (1936-2011) was 8,320 cfs. Mean monthly flows ranged from 5,830 cfs in September to 17,800 cfs in June.

In the lowest reach from the confluence of the Judith River to the headwaters of Fort Peck Reservoir, the Judith River augments the Missouri River by about 5% throughout most of the year. Present-day flow regimens of the Missouri River are similar to the upstream reach and are regulated by upstream reservoirs. Long-term flow records are available for the Fred Robinson Bridge USGS gaging station located 23 miles above Fort Peck Reservoir. The average annual flow for a 77-year period of record (1935-2011) was 8,988 cfs. Mean monthly flows range from 6,180 cfs in September to 19,400 cfs in June.

## **FISHING ACCESS**

Adequate access has been developed at most accessible locations on the Middle Missouri Wild and Scenic River reach. About 80% of the Missouri River in this reach lies within the Upper Missouri River Breaks National Monument and the Charles M. Russell National Wildlife Refuge. The river is also classified as a Wild and Scenic, and there are motorboat use restrictions on some segments from June 15 – September 15. Recreational access is limited in the area, with only 8 boat ramps throughout the reach located at Widow Coulee (river mile

2,102), Carter Ferry (river mile 2,089), Fort Benton (river mile 2,073), Loma (river mile 2,053), Coal Banks (river mile 2,032), Judith Landing (river mile 1,982), Robinson Bridge (river mile 1,921) and Rock Creek (river mile 1,907). The reach of the Missouri River from Great Falls to the mouth of the Marias River includes the upper 21 miles of the Upper Missouri National Wild and Scenic River, which begins midway in the reach at Fort Benton. From this point, the Missouri receives heavy recreational use even though there are few access points. Access to the river is limited because of the rugged terrain and lack of development within the narrow river corridor. Public access points include a ferry crossing with adjacent FAS primitive boat ramp, a campground with a boat ramp, and a bridge crossing plus the Morony Dam area, and the Fort Benton town site.

From the confluence of the Marias to the confluence of the Judith River, the entire reach is within the Upper Missouri National Wild and Scenic River corridor, and most is within the Upper Missouri River Breaks National Monument. Nearly half of the use in this reach is recreational boating. Other activities include fishing, hunting, picnicking, camping and trapping. About 40% of the river is bordered by BLM land. The greater portion of public land is located in the lower 30 miles of the reach. Most of the public land is difficult to reach, other than by floating because of the rugged terrain and lack of development within the narrow river corridor. There is one ferry crossing, a bridge and two campgrounds where the public can access the river.

From the confluence of the Judith River to Fort Peck Reservoir, 62 miles of this reach are within the Upper Missouri National Wild and Scenic River. This portion of the Missouri includes the rugged breaks country. There is considerable recreational use in this portion of the Missouri because of its nationally renowned beauty and wilderness qualities, fishing and hunting opportunities. The upper portion of this reach is within the Upper Missouri River Breaks National Monument, and the lower 23 miles of the reach is surrounded by the Charles M. Russell National Wildlife Refuge. Nearly the entire river in this reach is bordered by land administered by the BLM or USFWS. Most of the reach is difficult to access, other than by floating, because of the rugged terrain and large areas of roadless country. Access is limited to three bridge or ferry crossings. Only a few vehicle trails lead down to the river, with most of these being located in the lower 23 miles of river.

The Judith River is a popular recreation area for fishing, hunting, picnicking, camping, hiking and floating. The headwaters of the Judith and its tributary drainages are generally on USFS lands and have sufficient public access. A considerable portion of the forested land in the upper basin is managed for semi-primitive recreation. Access to the Judith River varies along its course. The first 25 miles is paralleled by a county road with several bridge crossings. For the next 45 miles there are only a few roads near the floodplain, but several county roads and highways cross the river at bridges. The remaining 60 miles flow through remote badlands where there are only three access points, including at the confluence with the Missouri. Most of the land adjacent to the stream is privately owned, but access is generally allowed with permission. Additional access is needed on the Judith River downstream of the South and Middle forks, on Warm Spring Creek, and Big Spring Creek downstream of Cottonwood Creek. FWP already has eight FASs on Big Spring Creek, but the additional access needs are due to it being a stream that is most easily accessed from the bank, rather than boat.

## **SPECIAL MANAGEMENT ISSUES**

FWP has worked closely with numerous partners in the Arrow, Judith and Mid Missouri drainages to help preserve and restore the unique native and wild fisheries available in these systems. Recent partners have included NorthWestern Energy, Montana State University, University of Idaho, BOR, and Western Area Power Administration, and the USFS. Projects have included assisting with pallid sturgeon restoration, paddlefish population research, and research on other native riverine species. An ongoing effort in cooperation with USFS has successfully increased and restored pure westslope cutthroat trout into the headwaters of several streams in the Judith, Arrow and Highwood drainages.

A particularly important issue in this drainage involves paddlefish management. Paddlefish anglers have seen several changes to the regulations and season structure since 2006. The current paddlefish season runs from May 1<sup>st</sup> to June 15<sup>th</sup>, and the harvest of paddlefish closes once the estimated harvest reaches the cap of 500 paddlefish. Anglers are allowed to snag and release paddlefish throughout the season, regardless of whether or not they already harvested a paddlefish. The 500-fish harvest cap has been met or exceeded in all but one year (2008) since its implementation in 2008. Furthermore, the date in which the harvest of paddlefish closed has occurred earlier each consecutive year thereafter. In 2009 the harvest cap was reached on May 22<sup>nd</sup>, in 2010 it was reached on May 16<sup>th</sup>, in 2011 and 2012 the harvest cap was reached on May 14<sup>th</sup> and May 10<sup>th</sup>, respectively. The current paddlefish season structure has put more pressure on paddlefish anglers to get to the river early enough to have a chance at harvesting a fish before the season closes. Anglers have voiced their concerns over the crowding issues created and difficulty in planning a fishing trip under the current season structure. FWP will continue to evaluate and modify the paddlefish season structure with regard to paddlefish management and concerns expressed by paddlefish anglers.

FWP will also continue to tag adults in the spring to track movement, growth, and estimate population size. Young-of-year transects will be conducted in late summer to estimate reproductive success as it pertains to spring flows on the Missouri River and Fort Peck Reservoir water elevations (rearing habitat). Creel surveys will continue to be conducted during the paddlefish season on the Missouri River from river mile 1,921 to 1,899 (James Kipp Recreation Area and Campground to Lower Peggy's Bottom), and a phone creel survey will be conducted after the season. These measures are critical to maintain the paddlefish population at a sustainable level.

**FISHERIES MANAGEMENT DIRECTION FOR THE MISSOURI RIVER - JUDITH DRAINAGE**

<b>Water</b>	<b>Miles/acres</b>	<b>Species</b>	<b>Recruitment Source</b>	<b>Management Type</b>	<b>Management Direction</b>
Missouri River – Great Falls to Confluence with the Marias River	54 miles	Sauger (N)	Wild	Conservation	Maintain populations within historic levels and manage as a recreational fishery with limited harvest.
		Walleye, Northern pike, Freshwater drum (N), Smallmouth bass	Wild	General	Manage as a recreational fishery with consumptive harvest.
		Rainbow trout, Brown trout, Shovelnose sturgeon (N), Channel catfish (N)	Wild	General	Maintain populations within historic levels and manage as a recreational fishery.
		Mountain whitefish (N)	Wild	General	Maintain populations within historic levels.
		Goldeye (N)	Wild	General	Manage as a recreational fishery with some consumptive harvest.
		Blue sucker (N), Stonecat (N)	Wild	Conservation	Maintain populations within historic levels.
Habitat needs and activities: Maintain stream flows of 3,700 cfs from 9/1-3/14 for maintenance of riffles, 4,887 cfs from 3/14-5/18, 11,284 cfs from 5/19-7/5 for paddlefish spawning migration, and 4,500 cfs from 7/6-8/31 for maintaining side channel habitat for forage species.					
Highwood Creek	37.6 miles	Rainbow trout, Brown trout, Brook trout	Wild	General	Maintain populations within historic levels and manage as a recreational fishery.
Habitat needs and activities: Maintain 10 cfs for instream flows to maintain aquatic habitat.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Highwood Creek Drainage - Westslope Cutthroat Trout Genetically Unaltered Conservation Population Streams (Isolated Single Species Populations) (1 Stream)	2 miles	Westslope cutthroat trout (N)	Wild	Conservation	Maintain or enhance populations to reduce extinction risk.
Highwood Creek Drainage - Westslope Cutthroat Trout Genetically Unaltered Conservation Population Streams (Isolated Single Species Populations) (2 Streams)	5-7 miles	Westslope cutthroat trout (N)	Wild	Conservation	Continue work to establish two new populations of 100% genetically unaltered westslope cutthroat trout populations to reduce extinction risk.
Shonkin Creek	52 miles	Brook trout	Wild	General	Manage as a recreational fishery with consumptive harvest
Habitat needs and activities: Maintain instream flow of 7 cfs for aquatic habitat.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Missouri River - Confluence of the Marias River to the Judith River	67 miles	Sauger (N)	Wild	Conservation	Maintain populations within historic levels, manage as a recreational fishery with limited harvest.
		Walleye, Northern pike, Freshwater drum (N), Smallmouth bass	Wild	General	Manage as a recreational fishery with consumptive harvest.
		Shovelnose sturgeon (N), Channel catfish (N)	Wild	General	Maintain populations within historic levels and manage as a recreational fishery.
		Pallid sturgeon (N)	Hatchery/ Wild	Conservation	Maintain and enhance existing population levels to reduce extinction risk.
		Paddlefish (N)	Wild	Restrictive regulations	Maintain populations within biologically healthy levels and manage as a recreational fishery with limited harvest through a cap system.
		Burbot (N)	Wild	General	Maintain populations within historic levels.
		Goldeye (N)	Wild	General	Manage as a recreational fishery with some consumptive harvest.
		Blue sucker (N)	Wild	Conservation	Maintain populations within historic levels.
Habitat needs and activities: Maintain 4,300-14,000 cfs for instream flows as indicated by the following to maintain fisheries. Maintain stream flows of 4,300 cfs from 9/1-3/14 for maintenance of riffles, 5,571 cfs from 3/14-5/18, 14,000 cfs from 5/19-7/5 for paddlefish spawning migration, and 5,400 cfs from 7/6-8/31 for maintaining side channel habitat for forage species.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Missouri River - Confluence of the Judith River to the headwaters of Fort Peck Reservoir	85 miles	Sauger	Wild	Conservation	Manage to maintain populations within historic levels in upper reaches and provide a recreational fishery with limited harvest.
		Walleye, Freshwater drum (N), Smallmouth bass	Wild	General	Manage as a recreational fishery with consumptive harvest.
		Shovelnose sturgeon (N), Channel catfish (N)	Wild	General	Maintain populations within historic levels and manage as a recreational fishery.
		Pallid sturgeon (N)	Hatchery/ Wild	Conservation	Maintain and enhance existing population levels to reduce extinction risk.
		Paddlefish (N)	Wild	Restrictive Regulations	Maintain populations within biologically healthy levels and manage as a recreational fishery with limited harvest through a cap system.
		Burbot (N)	Wild	General	Maintain populations within historic levels.
		Goldeye (N)	Wild	General	Manage as a recreational fishery with some consumptive harvest.
		Stonecat (N)	Wild	Conservation	Maintain populations within historic levels.
Habitat needs and activities: Maintain 4,700-15,302 cfs for instream flows as indicated by the following to maintain fisheries. Maintain stream flows of 4,700 cfs from 9/1-3/14 for maintenance of riffles, 7,100 cfs from 3/14-5/18, 15,302 cfs from 5/19-7/5 for paddlefish spawning migration, and 5,800 cfs from 7/6-8/31 for maintaining side channel habitat for forage species.					
Arrow Creek – Lower Reaches	64 miles	Channel catfish (N)	Wild	General	Maintain populations within historic levels and manage as a recreational fishery.
		Goldeye (N)	Wild	General	Manage as a recreational fishery with some consumptive harvest.
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Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Stonecat (N), Northern redbelly x finescale dace hybrid (N)	Wild	Conservation	Maintain populations within historic levels.
Arrow Creek Headwaters	4 miles	Westslope cutthroat trout (N)	Wild	Conservation	Maintain or enhance populations to reduce extirpation risk.
	43 miles	Brook trout	Wild	General	Maintain recreational fishery for consumptive harvest where they pose no threat to westslope cutthroat trout populations.
Habitat needs and activities: Examine methods to protect one population from competition or hybridization.					
Judith River - South /Middle Fork Confluence to Big Spring Creek	58 Miles	Rainbow trout, Brown trout, Brook trout	Wild	General	Manage as a recreational fishery with harvest.
		Mountain whitefish (N)	Wild	General	Maintain populations within historic levels.
Habitat needs and activities: Maintain 25 cfs for instream flows to maintain aquatic habitat.					
Judith River – Big Spring Creek to Mouth	71 Miles	Sauger (N)	Wild	Conservation	Manage to maintain populations within historic levels and provide a recreational fishery with limited harvest.
		Walleye, Northern pike, Rainbow trout, Brown trout Smallmouth bass	Wild	General	Manage as a recreational fishery with consumptive harvest.
		Channel catfish (N)	Wild	General	Maintain populations within historic levels and manage as a recreational fishery.
		Goldeye (N)	Wild	General	Manage as a recreational fishery with some consumptive harvest.
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Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Stonecat (N)	Wild	Conservation	Maintain populations within historic levels.
		Mountain whitefish (N)	Wild	General	Maintain populations within historic levels.
		Blue sucker (N)	Wild	Conservation	Maintain spawning and rearing populations within historic levels.
		Burbot (N)	Wild	Conservation	Maintain population within historic levels and manage as a recreational fishery.
Habitat needs and activities: Maintain 160 cfs for instream flows to maintain aquatic habitat. Work with partners to maintain flow monitoring gages.					
South Fork Judith River	20.6 miles	Rainbow trout, Brown trout, Brook trout	Wild	General	Manage as a recreational fishery with consumptive harvest.
		Westslope Cutthroat trout (N)	Wild	Conservation	Maintain and secure genetically altered population from competition and continued hybridization.
		Mountain whitefish (N)	Wild	General	Maintain populations within historic levels.
Habitat needs and activities: Maintenance of existing trout habitat by providing 3.5 cfs of instream flow.					
Lost Fork Judith River	9 miles	Rainbow trout, Brook trout	Wild	General	Manage as a recreational fishery with consumptive harvest.
Habitat needs and activities: Maintain habitat and instream flows of 14 cfs.					
Middle Fork Judith River	13.1 miles	Rainbow trout, Brook trout, Brown trout	Wild	General	Manage as a recreational fishery with consumptive harvest.
Habitat needs and activities: Maintain habitat and instream flows of 22 cfs. Work with US Forest Service to address sedimentation issues stemming from road/trail crossings.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Big Spring Creek –hatchery to Cottonwood Creek	23.7 miles	Rainbow trout, Brown trout	Wild	General	Maintain a recreational fishery with consumptive harvest.
		Mountain whitefish (N)	Wild	General	Maintain populations within historic levels.
Habitat needs and activities: Maintain habitat and instream flows of 110 cfs. Restore habitat and channel form on channelized sections. Pursue additional access for bank anglers.					
Big Spring Creek – Cottonwood Creek to Mouth	8.2 miles	Rainbow trout, Brown trout	Wild	General	Maintain a recreational fishery with consumptive harvest.
		Mountain whitefish (N)	Wild	General	Maintain populations within historic levels.
		Sauger (N)	Wild	Conservation	Manage to maintain populations within historic levels and provide a recreational fishery with limited harvest.
Habitat needs and activities: Maintain habitat and instream flows of 100 cfs. Pursue additional access for bank anglers.					
East Fork Big Spring Creek	24.8 miles	Rainbow trout, Brook trout, Brown trout	Wild	General	Maintain a recreational fishery with consumptive harvest.
		Westslope cutthroat trout (N)	Wild	Conservation	Maintain or enhance populations to reduce extirpation risk.
Habitat needs and activities: Maintain habitat and instream flows of 7.5 cfs.					
Cottonwood Creek	32 miles	Brook trout Rainbow trout, Brown trout	Wild	General	Maintain a recreational fishery with consumptive harvest
		Westslope cutthroat trout (N)	Wild	Conservation	Maintain or enhance populations to reduce extirpation risk.
Habitat needs and activities: Maintain habitat and instream flow of 4.5 cfs in Cottonwood Creek.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Beaver Creek (Tributary to Cottonwood)	13 miles	Brook trout	Wild	General	Maintain a recreational fishery with consumptive harvest.
Warm Spring Creek	28 miles	Rainbow trout	Wild	General	Monitor and maintain adfluvial population. Manage as a recreational fishery with limited harvest.
		Brown trout	Wild	General	Manage as a recreational fishery with consumptive harvest.
		Smallmouth bass	Wild	General	Manage as a recreational fishery with consumptive harvest.
		Sauger (N)	Wild	Conservation	Maintain populations within historic levels and manage as a recreational fishery with limited harvest.
		Stonecat (N)	Wild	Conservation	Maintain populations within historic levels.
		Westslope cutthroat trout (N)		Conservation	Minimize threats to population from competition and hybridization. Evaluate headwaters to determine distribution. Evaluate potential for replication.
Habitat needs and activities: Maintain habitat and instream flows of 110 cfs.					
Yogo Creek	13.7 miles	Brook trout, Rainbow trout	Wild	General	Manage as a recreational fishery with consumptive harvest to minimize potential for competition and hybridization of mixed westslope cutthroat trout population.
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Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Westslope cutthroat trout (N)	Wild	Conservation	Minimize threats to genetically altered population from competition and additional hybridization.
Habitat needs and activities: Maintain habitat and instream flows of 3 cfs.					
Judith River Drainage - Westslope Cutthroat Trout Genetically Unaltered Population Streams (Isolated Single Species Populations) (5 Streams)	10 Miles	Westslope cutthroat trout (N)	Wild	Conservation	Maintain or enhance populations to reduce extirpation risk.
Judith River Drainage - Westslope Cutthroat Trout Genetically Altered (10 Streams) & Mixed Population (10 Streams)	54.5 Miles	Westslope cutthroat trout (N)	Wild	Conservation	Maintain or enhance populations to reduce extirpation risk. Explore options to limit non-natives in mixed populations.
Judith River Drainage - Brook Trout Streams	304 Miles	Brook trout	Wild	General	Maintain recreational fishery for consumptive harvest where they pose no threat to westslope cutthroat trout populations.
Ackley Lake	226 Acres	Rainbow trout	Hatchery	Put, Grow and Take	Maintain recreational fishery for consumptive harvest by continued stocking.
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Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Tiger muskie	Hatchery	Put, Grow and Take / Quality	Manage population via stocking and limited harvest to suppress white sucker population and provide a unique trophy opportunity.
Habitat needs and activities: Work with water users to maintain minimum pool elevation.					
East Fork Reservoir	90 acres	Yellow perch	Wild	General	Maintain recreational fishery for consumptive harvest.
		Northern pike	Wild	Suppression	Maintain recreational fishery for consumptive harvest.
		Largemouth bass	Hatchery	General	Develop recreational fishery for consumptive harvest by stocking.
		Rainbow trout	Hatchery	General	Develop recreation fishery for consumptive harvest if low levels of wild fish present.
Habitat needs and activities: Work with City of Lewistown and NRCS to explore opportunities to use stored water to meet instream flows of Big Spring Creek during time of drought.					
Lower & Upper Carter Ponds	57 acres	Rainbow trout	Hatchery	Put, Grow and Take	Maintain recreational fishery for larger sized fish and consumptive harvest by continued stocking.
Big Casino Creek Reservoir	16 acres	Yellow Perch	Wild	Suppression	Encourage harvest to control numbers. Evaluate using a predator to manage numbers.
		Largemouth bass	Hatchery	Put, Grow and Take	Develop recreational fishery for consumptive harvest by stocking.
		Black crappie	Wild	General	Develop recreational fishery for consumptive harvest via wild fish transfers.
Rhoda Lake	3 acres	Westslope cutthroat trout	Hatchery	Put, Grow and Take	Maintain native species (westslope cutthroat or Arctic grayling) recreational fishery for consumptive harvest by continued stocking.

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Cow Creek-Headwaters to Cow Creek Reservoir	8 miles	Brook trout	Wild	General	Protect habitat and provide fish passage when applicable.
Cow Creek Reservoir	82 acres	Brook trout, Yellow perch, Black crappie	Wild/ Hatchery	General/ Put, Grow and Take	Continue to monitor populations and stock when necessary.
		Tiger muskie	Hatchery	Quality	Manage tiger muskie for trophy fishery (fish > 40 inches).
		Channel catfish	Wild/ Hatchery	Put, Grow and Take	Evaluate channel catfish population and supplement with stocking as needed.
		Walleye	Hatchery	Put, Grow and Take	Stock 5,000 walleye fingerling on alternate years.
Habitat needs and activities: Work with Sand Creek Ranch to repair dam and implement reservoir operations plan that benefits fish production. Maintain instream flow of 4.5 cfs in Cow Creek above reservoir to protect fish habitat.					
Cow Creek- Cow Creek Reservoir Tailwaters to Confluence with Missouri River	46 miles	Native non-game fishes (N)	Wild	Conservation	Protect habitat and provide fish passage when applicable.
Habitat needs and activities: Identify habitat issues and work closely with local conservation districts, county road crews, and landowners to implement safe water crossings which emphasis fish passage and water connectivity.					
Elks Country Club Pond	1 Acre	Rainbow trout	Hatchery	Family Fishing Water	Maintain as a Children's Fishing Water.
Lower Frog Pond	1.2 Acre	Rainbow trout	Hatchery	Family Fishing Water	Maintain as an urban fishery.
Upper Frog Pond	1.2 Acre	Rainbow trout	Hatchery	Family Fishing Water	Maintain as an urban fishery.

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Private & Public Ponds	-	Trout, Warm water species	Hatchery/Wild	Put and Take/General	Maintain existing pond fisheries available to the public for harvest.
Habitat needs and activities: Enhance structure in ponds when possible.					