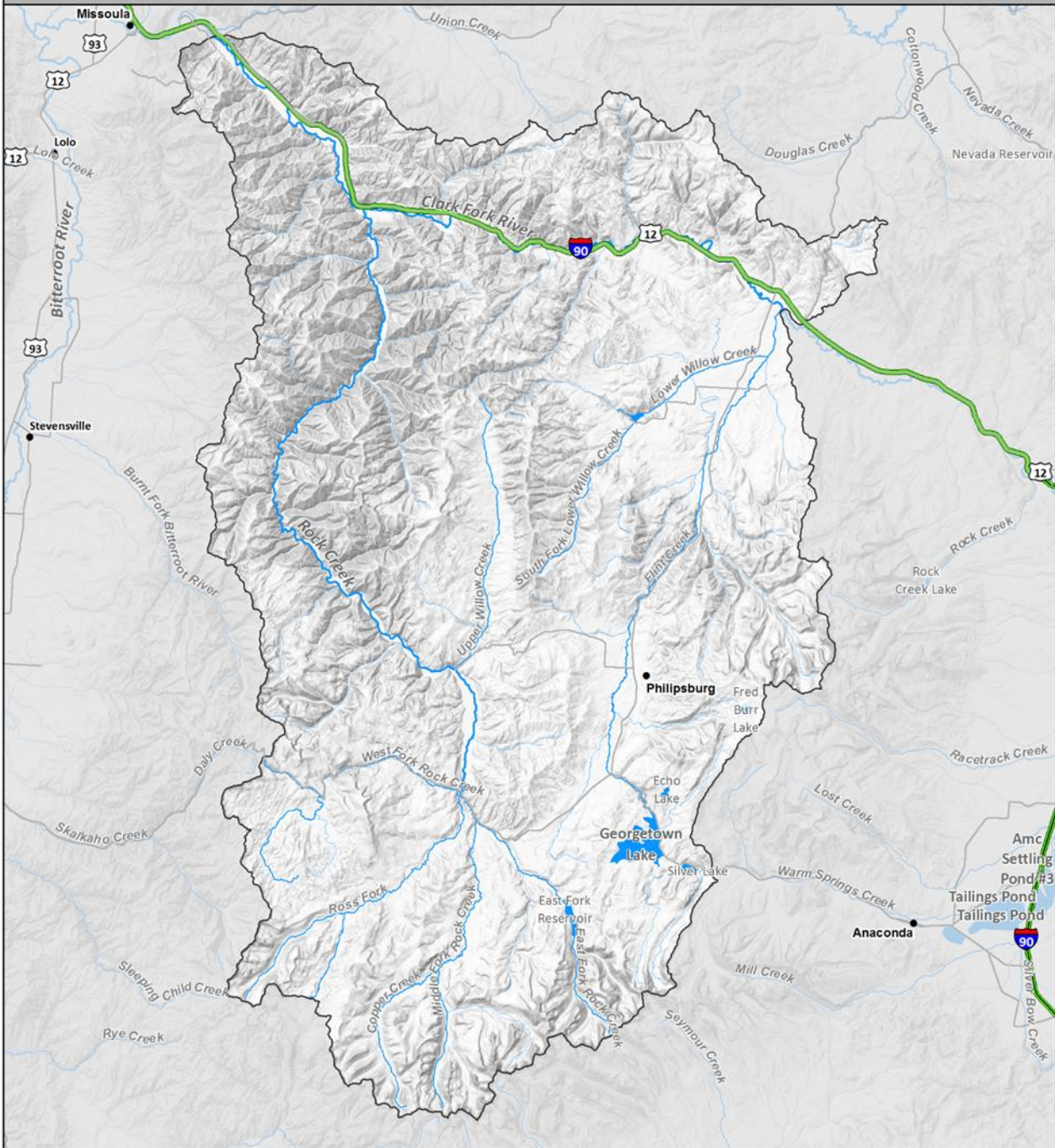




Clark Fork River - Flint / Rock Drainage

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

Clark Fork River - Flint/Rock Creek Drainage

Physical Description

The Clark Fork River-Flint/Rock Creek drainage includes three distinct subdrainages: Flint Creek, Rock Creek, and the section of the Clark Fork River from its confluence with Flint Creek to its confluence with the Blackfoot River. At the mouth of Flint Creek near the town of Drummond, the Clark Fork flows through a wide valley with the surrounding lands used primarily for agriculture. A few miles downstream, the Clark Fork Valley narrows, and the river is confined by Interstate 90 and the railroad. Below the mouth of Rock Creek near the town of Clinton, the Clark Fork Valley widens again, allowing the river to flow more freely with less impact from transportation corridors, until it reaches the mouth of the Blackfoot River.

Flint Creek and Rock Creek are major tributaries to the Clark Fork River in this reach. Flint Creek enters the Clark Fork River near the town of Drummond. Flint Creek Dam impounds North Fork Flint Creek and forms Georgetown Lake about 9 miles south of Philipsburg. Below Flint Creek Dam, Flint Creek flows through agricultural lands used primarily for cattle and hay production. Much of the water diverted from Flint Creek is used for irrigation. Rock Creek enters the Clark Fork River approximately 5 river miles upstream of Clinton and 34 river miles downstream of Drummond. The headwaters of Rock Creek begin at the Continental Divide with mainstem Rock Creek beginning at the confluence of two major tributaries: Middle Fork Rock Creek and West Fork Rock Creek. From its headwaters, Rock Creek flows approximately 52 river miles to its confluence with the Clark Fork River. The U.S. Forest Service (USFS) is the primary landowner in the drainage, although significant portions of the valley bottom are owned by private landowners in the upper and lower reaches of the drainage.

There are 46 natural lakes and reservoirs, totaling 4,468 surface acres, in the Flint-Rock Creek drainage including many mountain lakes. The largest is Georgetown Lake, which is approximately 2,080 surface acres, and is a reservoir formed by a hydroelectric dam. East Fork Reservoir is the next largest flat-water body and impounds East Fork Rock Creek. The reservoir serves as storage for irrigators in the Flint Creek valley. Most of the water stored in the reservoir is diverted into the Flint Creek Canal just below the reservoir and delivered to irrigators in the Flint Creek valley via a trans-basin diversion into Trout Creek, a tributary of Flint Creek. This water is used by irrigators throughout the Flint Creek valley, but most of the water users are in the lower Flint Creek drainage. The water is diverted via the Allendale diversion and ditch after flowing through Flint Creek. Mountain lakes can be found throughout the Rock Creek drainage, but the majority are found in the headwaters of the drainage, including several in the Anaconda-Pintler Wilderness. The Flint Creek drainage also has many mountain lakes with the highest density being in the Flint Mountain Range.

Fisheries Management

Clark Fork River

The portion of the Clark Fork River in the Flint-Rock Creek drainage has a long history of mining-related impacts associated with mining and smelting operations in the Butte and Anaconda area. While the impact of these operations is most prevalent in the upper portion of the upper Clark Fork River drainage,

these operations have negatively impacted this reaches' fishery resources and is one of the factors that has led to this reach of the Clark Fork being one of the more underused fisheries in western Montana.

The Clark Fork in this area is home to eleven native fish species including bull trout, westslope cutthroat trout, mountain whitefish, longnose sucker, largescale sucker, Northern pikeminnow, peamouth, longnose dace, redbreast shiner, Columbia slimy sculpin, and Rocky Mountain sculpin. Non-native fish species inhabiting the Clark Fork include brown trout, rainbow trout, and brook trout. Brown trout are the primary recreational fish species in the Clark Fork River downstream of Flint Creek, although westslope cutthroat trout and rainbow trout are also common. Because of increased instream flow levels and higher water quality provided by Rock Creek, the Clark Fork River section downstream of Rock Creek is considered more resilient and generally supports higher fish densities. Information is lacking on the abundance and life histories of mountain whitefish and nongame native fishes. Efforts are needed to describe these species and monitor their trends.

Bull trout and westslope cutthroat trout are at low densities in the mainstem of the Clark Fork River downstream of Flint Creek. Spawning and rearing streams for bull trout include Harvey Creek, Boulder Creek, and tributaries to Rock Creek. Westslope cutthroat trout are found in several tributaries to this section of the Clark Fork River. Densities of westslope cutthroat trout are lower in the mainstem Clark Fork River reach from Flint Creek to Bearmouth Fishing Access Site (FAS) relative to the reach downstream of Bearmouth FAS.

Several westslope cutthroat trout populations are found in tributaries to the Clark Fork River below Flint Creek. Some of these tributaries are physically and biologically connected to the mainstem and help with maintaining the fluvial population in the river. Other tributaries have barriers and block the return of adults to their natal streams. However, these barriers do protect the tributary populations from introgression with rainbow trout and rainbow/westslope cutthroat trout hybrids and prevent colonization by non-native species.

The Clark Fork River is managed as a wild trout fishery, emphasizing natural reproduction. Angling occurs year-round on the Clark Fork River but is most popular in the early spring, summer, and fall. Opportunities exist for both wade and float angling and, while fly fishing is the most popular form of use, artificial lures and bait fishing are also common. Beavertail Pond provides a flat-water fishing opportunity and attracts a significant amount of angling pressure. Beavertail Pond is managed as a put-and-take trout fishery for kids and family fishing.

Flint Creek

Flint Creek is a major tributary to the Clark Fork River that serves as an important recreational fishery. The fishing pressure is not as high in Flint Creek as other near-by recreational fisheries in the area including Rock Creek, Georgetown Lake and the Clark Fork River. Poor public access along much of Flint Creek is one reason for low fishing pressure.

Flint Creek is managed as a wild trout fishery, emphasizing natural reproduction. Brown trout are the most abundant salmonid and are the primary recreational fish. Native westslope cutthroat and bull trout are present in the drainage, however bull trout are only found in the Boulder Creek drainage and mainstem Flint Creek primarily below Boulder Creek. Westslope cutthroat trout are found in the mainstem and in many tributaries of Flint Creek. Several westslope cutthroat trout populations in the

drainage are protected from hybridization with rainbow trout by fish passage barriers. The largest genetically unaltered population is in the lower Willow Creek drainage, above Lower Willow Creek Dam. Other native fish species found in the Flint Creek drainage include mountain whitefish, largescale sucker, longnose sucker, northern pikeminnow, longnose dace, redbreast shiner, and sculpin. Non-native fish species present in the drainage include brown trout, rainbow trout, and brook trout. Information is lacking on the abundance and life histories of mountain whitefish and nongame native fish. Efforts are needed to describe these species and monitor their trends.

Bull trout conservation efforts in Flint Creek are currently focused on improving fish passage in the drainage. This includes improving fish passage in Boulder Creek (tributary to Flint Creek) which is the primary bull trout population in the Flint Creek drainage. Fish passage improvements include installing fish screens to reduce entrainment into diversion ditches and reconstructing diversion dams to improve upstream passage. FWP is also assessing possible locations for expanding bull trout populations above barriers (similar to the North Fork Blackfoot River project). FWP is working closely with the USFWS and other agencies to conduct research and assess other threats to bull trout in the Flint Creek drainage and will consider implementing other conservation measures if they appear to be biologically sound and acceptable to the Montana angling public.

The smaller lakes stocked in the Flint Creek drainage (Georgetown Lake addressed below) include Lower Boulder Lake, Stewart Lake and Echo Lake. Both Stewart and Echo lakes can be accessed by road while Lower Boulder is a backcountry lake. Many other mountain lakes in the Flint Creek drainage provide fisheries and most are sustained by natural reproduction. Several other lakes in the drainage are fishless and are managed to benefit natural integrity for other native aquatic species (e.g., amphibians).

Georgetown Lake

Georgetown Lake is the largest lake or reservoir in the drainage and is one of the most popular trout and kokanee fisheries in the state. It is managed as a put-grow-and-take fishery for rainbow trout and brook trout and as a wild kokanee salmon fishery. Georgetown Lake routinely ranks in the top 10 in Montana for angling pressure and is equally as important as both a summer and winter ice fishing destination. Hydropower, irrigation, and flood control are other uses of Georgetown Lake that influence water management in this system.

Gillnetting is completed on Georgetown Lake biennially during mid-September, although the frequency can increase to annually if specific management issues are identified. Winter creel survey is also completed on Georgetown Lake biennially specifically to assess angler catch rates and supplement gillnet data for a more complete picture of the fish populations. Winter creel surveys also assist in long-term trend monitoring in Georgetown Lake as this is the longest-term fisheries data set available for this body of water.

Georgetown Lake is managed as a high-quality trout and salmon harvest fishery. Rainbow trout and brook trout are stocked annually to maintain their abundance, with three strains of rainbow trout being stocked. Brook trout are managed as a trophy fishery with strict regulations allowing brook trout to reach greater sizes more frequently. Harvest changes abundance and size structure of the brook trout population, so a regulation change was instated in 2016 to improve the trophy brook trout fishery ([Liermann, 2022](#)).

Kokanee in Georgetown Lake reproduce naturally in the reservoir and tributaries. The large kokanee population of smaller individuals supports the current regulation of unlimited harvest. Kokanee size (length) is related to the number of fish in the population, so more kokanee result in smaller size. A recent, unprecedented spike in kokanee size in 2020 coincided with an increase in lake productivity as well as a low numbers of kokanee. However, the size of kokanee has recently declined to near baseline conditions. Kokanee numbers may be affected by predation as well. Stocking of Gerrard strain of rainbow trout since 2016 may also affect the size structure of kokanee. Gerrards tend to eat fish more than other rainbow strains and were stocked to potentially reduce kokanee numbers and increase their size. A graduate research study through Montana State University is assessing Gerrard predation on kokanee in Georgetown Lake along with other trout and salmon diets.

Fishing pressure has increased significantly on Georgetown Lake. Angler days used to average around 40-50,000 angler days in the late 1980s and early 1990s but have increased to 60-80,000 in the late 2010s. In 2020, angler days were over 90,000 ([Liermann, 2022](#)). With harvest being a significant factor affecting trout in Georgetown Lake, increasing pressure could reduce the number of rainbow and brook trout and kokanee salmon, and change size structure. Further monitoring will be important to assess the impacts of the expected continual increase of angling pressure.

Rock Creek

Rock Creek is one of twelve renowned premiere fishing rivers in Montana and is one of the state's most popular rivers in terms of outdoor recreation opportunity. The river's exceptional fishery and abundant public land (allowing for excellent public access), combined with its proximity to Missoula, contribute to its popularity.

Rock Creek is managed as a wild trout fishery, emphasizing natural reproduction and is also a stronghold for native bull trout and westslope cutthroat trout. Other native fish species found in the drainage include mountain whitefish, largescale sucker, longnose sucker, northern pikeminnow, longnose dace, and sculpin. Non-native fish species present in the drainage include brown trout, rainbow trout, brook trout, and Arctic grayling. Brown trout are currently the most abundant sport fish in the Rock Creek drainage, although westslope cutthroat trout are abundant in the upper mainstem and provide an excellent fishery. Rainbow trout were traditionally the most abundant trout species throughout the drainage until whirling disease became prevalent and their numbers decreased in the late 1990s. Rainbow trout are still abundant in the lower portion of the drainage and provide a significant recreational fishery, although densities are much lower now than were observed before whirling disease. The decline in rainbow trout densities is more pronounced in the upper drainage where they now make up only a small portion of the fishery. Brown trout have increased in abundance throughout the mainstem and have replaced rainbow trout as the most abundant salmonid. Information is lacking on the abundance and life histories of mountain whitefish and nongame native fish. Efforts are needed to describe these species and monitor their trends.

Bull trout are found throughout mainstem Rock Creek and act as a large metapopulation with fish moving throughout the drainage to complete their life history. This population also contributes bull trout to the Clark Fork River. Spawning and rearing tributaries are found throughout the drainage with most of the stronger populations located closer to the headwaters. The largest individual bull trout population in the drainage is found in East Fork Reservoir. Adults use East Fork Rock Creek for spawning and rearing, and juveniles eventually out-migrate to the reservoir where they reside as subadults and

adults. Spawning also occurs in a portion of East Fork Rock Creek routinely inundated by East Fork Reservoir.

Bull trout conservation efforts in Rock Creek are currently focused on improving fish passage in the drainage. Fish passage improvement is primarily being completed by installing fish screens to reduce entrainment into diversion ditches. Diversion dam reconstruction for improving upstream passage and reducing entrainment of downstream migrants is also being implemented. FWP is also assessing possible locations for expanding bull trout populations above barriers (similar to the North Fork Blackfoot River project), but these opportunities will likely be limited in size in Rock Creek. FWP has spent considerable time working with the USFWS, USFS and DNRC on East Fork Dam mitigation efforts to improve bull trout populations in this drainage and will continue this cooperation. FWP is working closely with the USFWS and other agencies to conduct research and assess other threats to bull trout in the Rock Creek drainage and will consider implementing other conservation measures if they appear to be biologically sound and acceptable to the Montana angling public.

Westslope cutthroat trout are found throughout the Rock Creek drainage, and like bull trout, are a metapopulation with fish moving throughout the drainage and Clark Fork River to complete their life history. Spawning and rearing tributaries are found throughout the drainage. Most tributaries in the Rock Creek drainage that maintain enough stream flow for fish to spawn and rear also sustain a westslope cutthroat trout population. Fluvial westslope cutthroat trout are found throughout the mainstem but are most abundant in the upper portion of the drainage. Rock Creek above the mouth of Stony Creek is an excellent recreational fishery. Westslope cutthroat trout populations in the Rock Creek drainage are well connected with very few tributaries having fish passage barriers. While this connectivity allows for gene flow between populations, very few westslope cutthroat trout populations in the drainage are protected from colonization by non-native trout and hybridization.

Angling occurs year-round and is most popular in the spring, summer, and fall. Opportunities exist for both wade and float fishing, although float fishing is only allowed on Rock Creek from December 1 through June 30. This regulation was put into place to allow for floating during high flows when multiple stonefly hatches are occurring but protects wade anglers from disturbance by float anglers during low flows when most locations on Rock Creek are accessible via wading. Fly fishing is the most popular form of fishing on Rock Creek, although other artificial lures are also common. Bait fishing on Rock Creek is only allowed for anglers 14 years of age and younger.

Of the lakes and reservoirs in the Rock Creek drainage, East Fork Reservoir receives the most angling pressure. East Fork Reservoir provides a quality put-grow-and-take fishery for large westslope cutthroat trout as well as a few large, wild rainbow trout. A westslope cutthroat trout stocking program was initiated for this reservoir in 2004 and has been successful in establishing a popular recreational fishery. Other mountain lakes in this drainage provide westslope cutthroat trout fisheries, and Fuse Lake also provides a self-sustaining Arctic grayling population.

Several other lakes are stocked with fish in the Rock Creek drainage including Green Canyon Lake, Whetstone Lake, and Moose Lake. Moose Lake can be accessed by road while both Green Canyon and Whetstone lakes are backcountry lakes. Many other high mountain lakes in the Rock Creek drainage provide fisheries and are sustained by natural reproduction. Several other lakes in the drainage are fishless and are managed to benefit natural integrity for other native aquatic species.

A variety of sampling methods are used in the Flint-Rock management area to monitor the status of fish populations and determine if management actions are having the desired effects. These efforts are used to monitor native fish populations, assess genetic structure, and track invasion of non-native fish, as well as to determine the effectiveness of fishing regulation changes or habitat restoration projects. Several long-term sites have been established throughout this management area and are sampled with varying frequency to assess long-term population status and trends. Population estimates are completed routinely in several tributaries that maintain bull trout to provide a long-term data set. Redd counts are also conducted annually in key bull trout spawning tributaries to assess the status of these populations.

Fishing pressure on Rock Creek has steadily increased over the previous 30+ years ([Liermann, 2022](#)). Angler days were about 20-30,000 on Rock Creek from the early 1990s through the mid-2000s. A substantial increase was observed from the mid-2000s to the mid-2010s with pressure increasing to typically 50-60,000 angler days per year. In essence, angler days on Rock Creek appear to have nearly doubled in the previous 15+ years ([Liermann, 2022](#)).

While angler use has doubled on Rock Creek, the abundance of catchable trout has not declined. Brown trout densities in the lower and middle sections of Rock Creek increased in the late 2000s and early 2010s. A decline in brown trout in both sections in the late 2010s and early 2020s also occurred, but densities are similar to or higher than those observed in the early 2000s when pressure was considerably lower. Rainbow trout densities have also increased from the late 2000s through 2021. Unfortunately, the introduction of whirling disease led to a population crash in rainbow trout in the mid to late 1990s. Brown trout coincidentally increased in abundance, replacing the rainbow trout fishery. Densities of trout remain high in Rock Creek despite a near doubling of angling pressure, which demonstrates that angling pressure likely is not affecting trout densities in Rock Creek.

A creel survey was completed on Rock Creek in 2013. An objective was to assess harvest of brown trout following a liberalization of the limit from 3 brown trout less than 12-inches to 3 brown trout of any size. The increase in harvest limits was in response to increasing brown trout numbers and distribution and reduction in average size due to high trout density. During this creel survey, FWP estimated brown trout harvest rate to be 1.2% of caught fish. The new regulation did not result in a level of harvest high enough to impact the density or size structure of brown trout in Rock Creek, but provides an opportunity to harvest trout. It is likely that increasing harvest of brown trout could increase the average size of brown trout and potentially develop more large fish (17 to 20-inch fish), but the high proportion of catch-and-release fly fishermen will likely not provide enough harvest to achieve these potential changes ([Liermann 2022](#)).

The high density of brown trout, relatively low vulnerability of the species to angling, and current low angler induced mortality suggests the fishery could support higher rates of harvest without diminishing trout numbers. Hook scar rates for brown trout in Rock Creek are lower than other species (3% vs 14% and 31% for rainbow trout and westslope cutthroat trout) indicating their relatively low susceptibility to angling. Considering that most anglers are fly fishing and releasing fish, mortality of caught fish is also likely low (mortality of about 5% or less; Muoneke & Childress, 1994).

Habitat

Clark Fork River

The upper Clark Fork basin has a long history of human disturbance beginning in earnest in the mid-1800s when placer mining for gold began on many basin streams. By 1896, copper had become the target metal and mining and smelting operations near Butte were processing thousands of tons of copper ore per day. Mining and smelting activities in the Butte and Anaconda areas continued into the early 1980s, and while some mining activity persists near Butte to this day, most of the operations have now been shut down and abandoned. Nevertheless, the environmental consequences of over 100 years of large-scale mining activity in the upper Clark Fork basin have left their mark. Enormous amounts of fine material, mostly mine tailings, were released into the drainage, and were transported and deposited downstream throughout the river system. These tailings proved toxic to aquatic life and negatively altered the aquatic biological community of the upper river.

For years, the upper Clark Fork River was void of fish. It was not until efforts were made (beginning in 1911 and later in the 1990s) to retain and stop downstream movement of a portion of the toxic tailings in the Warm Springs Treatment Pond System, that water quality improved to a level where trout could begin to recolonize the river upstream of Missoula. By then, most of the trout in the river were rainbow trout and brown trout. Brown trout have been shown to have a higher tolerance to metals and degraded habitat conditions than other trout species and is likely the reason the species dominates the current trout community in much of the upper Clark Fork River. While trout are common in the upper river today, past research has shown that trout populations are only one-fifth of what would be expected without contamination from mining wastes.

The Clark Fork River from its headwaters to the former Milltown Dam site was designated a Superfund priority site in 1986. While cleanup activities are complete on Silver Bow Creek near Butte, as well as at Milltown Dam near Missoula, active remediation is still underway on the mainstem Clark Fork River between Warm Springs Pond and the mouth of the Little Blackfoot River. Cleanup of metal contaminated soil along the upper Clark Fork River is expected to improve water quality and allow for more tolerable conditions for fish and other aquatic life. The reach of the Clark Fork downstream of Rock Creek has better water quality because of the addition of water from Rock Creek.

Several other factors affect habitat quality in the upper Clark Fork. Irrigation withdrawal can have severe impacts on summer stream flows in the river upstream of Deer Lodge, especially during drought years. These factors likely affect habitat conditions in the Clark Fork River below Flint Creek through the cumulative impacts of high water temperatures and poor water quality. Extensive channelization from the development of I-90 and two railroads has significantly reduced sinuosity and extensively altered natural alluvial processes in this reach. These activities have significantly changed the fish habitat in this reach and may potentially impact fish populations. Surprisingly, trout densities are lower in the reach from Flint Creek to the mouth of Rock Creek than are observed in the reaches above and below. These limiting factors likely cumulatively impact fish populations in this reach, but other factors may also be at play. For example, recent research suggests that algae mats in this reach may be limiting biological productivity and thus reducing trout densities. Water quality and trout densities do improve substantially again below the mouth of Rock Creek.

Flint Creek

Agriculture and mining have played a significant role in the history of the Flint Creek valley. Currently, most land use in the Flint Creek drainage is agriculture with a focus on cattle and hay production. Flint Creek below the Allendale diversion is significantly dewatered during irrigation season, which is limiting fish populations in the reach, particularly during drought years. Above the Allendale diversion, water is abundant due to water being delivered from East Fork Rock Creek into the Flint Creek drainage. Fish entrainment into diversion ditches also occurs throughout the drainage which also impacts fish populations in most reaches of Flint Creek. A study completed by FWP on the Allendale diversion, found that over 50% of the trout that attempt to migrate downstream of the diversion are entrained into the ditch. A large vertical flat plate fish screen was installed on Allendale ditch and three corrugated water screens were installed in private irrigation ditches downstream of Allendale to eliminate entrainment at these diversions. Further assessment work is being completed to assess the impacts of other diversions in lower Flint Creek. Hayfields and grazing pastures have reduced woody vegetation in the riparian area and led to bank instability in many areas. Mining has also significantly impacted fish habitat conditions in the Flint Creek valley with several tributaries displaying mining-related habitat degradation including South Fork Lower Willow Creek, Douglas Creek (near Hall), Henderson Creek, Douglas Creek (near Philipsburg), Fred Burr Creek, and North Fork Flint Creek.

Habitat conditions in Georgetown Lake are also a significant concern in the Flint Creek drainage. Georgetown Lake is a shallow, productive reservoir which allows it to produce excellent rainbow trout, brook trout, and kokanee salmon fisheries. However, these factors also create conditions that can be detrimental to these fisheries. Georgetown Lake is a high elevation (6,400 ft) reservoir that maintains ice cover for an extended period; typically, from early November through mid-May. During the winter, there is minimal diffusion of oxygen into the lake due to ice and snow cover, along with significant consumption of oxygen due to the decomposition of macrophytes and detritus along the substrate. Over the course of the winter, this combination leads to significant depletions of oxygen throughout the water column, creating poor habitat conditions for the trout and salmon in the lake. These conditions can be exacerbated if water levels are drawn down too low during the previous year's operation. Thus, water management at Georgetown Lake via Flint Creek Dam operations is critical to providing adequate water to avoid poor water quality and maintaining healthy trout and salmon fisheries.

Rock Creek

The Rock Creek drainage maintains excellent fish habitat and water quality, largely due to the extensive public land ownership in the drainage which is generally managed to provide quality fish and wildlife habitat. The upper portion of the Rock Creek drainage is largely managed for livestock ranching. Impacts to fish populations in this portion of the drainage include irrigation withdrawal and the associated entrainment of fish and reduced riparian vegetation. The middle portion of the drainage (Stony Creek to the mouth of Welcome Creek) is largely owned by the USFS. The habitat in this reach is in excellent condition with the main impact being a riparian road that is adjacent to the creek through much of this reach. The lower portion of Rock Creek below Welcome Creek is again primarily privately owned in the valley bottom with most of the land use being residential subdivisions. Temperature monitoring in the drainage indicates that water temperatures are as high near the mouth of Stony Creek (river mile 37.5) as are observed near the mouth of the drainage (river mile 0). This indicates that impacts to the fishery that cause increased temperature are greatest in the upper portion of the drainage and improve lower

in the drainage. It is suspected that the reduction in irrigation, improvement in riparian habitat conditions and supply of cold water from tributaries in the middle reach of the drainage, improves water temperatures and overall fish habitat.

The conservation value of Rock Creek has long been recognized by FWP and the citizens of western Montana. Thus, several land conservation projects have been completed in the upper portion of the drainage, mostly in the form of conservation easements. These projects include several large ranches that provide contiguous habitat with some of the easements requiring protective management of the riparian habitat. Future projects that protect additional parcels in both upper and lower Rock Creek should be high priority, particularly if they are adjacent to existing conservation easements. FWP also has a Murphy water right on Rock Creek which protects a minimum flow in the river.

Special Management Issues

Georgetown Lake Fishing Contests

Fishing contests have occasionally been proposed on Georgetown Lake and consistently opposed by sportsmen groups and lake homeowners for several decades. Typically, the only proponent of these contests has been the applicant. Fishing contests are not allowed on Georgetown Lake to avoid conflicts with other anglers, recreational use, landowner interests and the significant increase in fishing pressure they can cause.

Georgetown Lake Fisheries Dynamics

The Georgetown Lake fishery has experienced some significant changes in the size structure of popular salmonid fisheries. Kokanee average length increased dramatically between 2018 to 2020 while rainbow trout average lengths also increased from 2017 to 2021. It is important to understanding whether these changes are sustainable and whether management actions could help maintain these positive changes. Research is being conducted by FWP to assess changes in the limnology and productivity of Georgetown Lake and its effect on salmonid growth rates. An angler creel is planned to help assess effects of angler pressure and harvest on the fishery. A joint research project with Montana State University and FWP is also being conducted to assess food habits and age and growth of salmonids in Georgetown Lake. Understanding productivity, diet and predator-prey relationships will aid in maintaining or improving Georgetown Lake's excellent fishery.

Georgetown Lake Water Management

Flint Creek Dam impounds Georgetown Lake and is currently owned and operated by Granite County. Water management at Georgetown Lake involves many stakeholders. Georgetown Lake is currently operated under a Federal Energy Regulatory Commission (FERC) license that prescribes management of lake levels and water releases. Operation outside of this license requires Granite County reach agreement with FWP, U.S. Fish & Wildlife Service (USFWS), and USFS on these modifications. The

primary issue is operating the reservoir at lower water levels which can lead to reduced winter dissolved oxygen.

Clark Fork River Limiting Factors Assessment

Fish populations in the reach of the Clark Fork River from the mouth of Flint Creek to the mouth of Rock Creek are the lowest trout densities that are observed down to the confluence with the Flathead River. Poor survival has been demonstrated in this reach during telemetry studies completed in the late 2000s and a subsequent westslope cutthroat trout telemetry study focusing on Rock Creek (with some fish using the Clark Fork River for a portion of the study) completed in 2021. Reasons for these low densities are unclear as water quality generally improves from Deer Lodge downstream with dilution of metal contamination. Habitat conditions are degraded in this reach due to channelization and warm water, but do not appear to be severe enough to cause the low population densities that are observed. Excessive algae blooms typically associated with nutrient enrichment may be affecting trout numbers by changing the physical habitat and food (insect) composition and availability. Additional research is needed to guide future management actions.

In the Clark Fork River reach from Rock Creek to the Blackfoot River, water quality improves, and fish densities increase. However, algae blooms are still an issue in late summer and early fall for anglers and likely contribute to stress on fish populations.

Flint Creek Fish Entrainment and Instream Flow Augmentation

Flint Creek is an important recreational fishery and protection, and enhancement of this fishery is a priority. Current focus in Flint Creek for enhancement is on the reach from the mouth of Boulder Creek to the confluence with the Clark Fork River. This reach has higher densities of native bull trout and westslope cutthroat trout, likely due to outmigration from Boulder Creek, in addition to high densities of brown trout. The most dewatered section of Flint Creek is located from Allendale diversion to the mouth and should focus on instream flow enhancement. Fish entrainment into multiple irrigation ditches leads to the loss of large numbers of native salmonids and brown trout and is also a current focus of enhancement/restoration efforts.

Rock Creek Fish Entrainment Reduction

Fish entrainment via irrigation withdrawal is an issue in mainstem Rock Creek and multiple tributaries to Rock Creek. FWP is partnering with others to reduce fish entrainment through installation of fish screens and other methods. These efforts are currently prioritized in portions of the mainstem and tributaries that will have the most benefit to native bull trout and westslope cutthroat trout, but these projects will also benefit brown trout and rainbow trout. Instream flow enhancement is occasionally an ancillary opportunity of these projects and is also a priority effort.

Green Canyon Lake Red-sided Shiners

Green Canyon Lake is a backcountry lake located in the Copper Creek drainage of upper Rock Creek. Redside shiners were illegally introduced into Green Canyon Lake in the 1980s and have proliferated in

the system since. Currently, reidside shiners are abundant and appear to be negatively affecting both the abundance and growth of stocked westslope cutthroat trout. According to angler reports, Green Canyon Lake before the shiner introduction, used to produce very large rainbow trout (up to 5-pounds) and large westslope cutthroat trout. Measures to reduce or eliminate the shiner population are being considered by FWP. These could include the use of predatory fish as a biological control or potentially a piscicide application.

Priority Drought Waters

The upper Clark Fork River, Flint Creek, and Rock Creek and tributary stream reaches that have traditionally been affected by drought restrictions are identified below (Table 2.06-1). Native and non-native trout populations have been affected by high water temperatures and low flow levels during summer drought periods historically and will likely continue to be impacted. Classification, criteria and measurement apply to the entire reach; however, implementation of restrictions may occur in all or parts of individual reaches depending on temperature, flow and angling pressure at that time. Furthermore, there are times and locations that westslope cutthroat trout and bull trout congregate in areas within designated non-native reaches, such as when they are seeking cold water refuge in springs or at tributary mouths during warmer months. In these instances, a westslope cutthroat or bull trout criteria may be applied to these areas.

Table 2.06-1: Designated hoot owl reaches where drought related fishing restrictions and closures due to fishing pressure, high water temperatures, and/or low flows are expected to be implemented. Drought related restrictions and closures may also be placed on waters not listed here.

Waterbody	Reach	Classification	Criteria
Upper Rock Creek	Mouth of Stony Creek to confluence of the West Fork and Middle Fork (RM 39 to 52)	Cutthroat trout fishery	<ul style="list-style-type: none"> • Daily maximum water temperatures reach or exceed 66°F for 3 consecutive days or stream flow falls below 5th percentile of the daily mean value for the date. • Measurements for relevant criteria will be measured at USGS gage 12334510 at Rock Creek near Clinton and site-specific temperature monitoring with portable recorders.
Lower Rock Creek	Mouth of Rock Creek to mouth of Stony Creek (RM 0 to 39)	Non-native salmonid sport fishery	<ul style="list-style-type: none"> • Daily maximum water temperatures reach or exceed 73°F for 3 consecutive days or stream flow falls below 5th percentile of the daily mean value for the date. • Measurements for relevant criteria will be measured at USGS gage 12334510 at Rock Creek near Clinton and site-specific temperature monitoring with portable recorders.
Clark Fork River	Mouth of Blackfoot River to mouth of Flint Creek (RM 212 to 265)	Non-native salmonid sport fishery	<ul style="list-style-type: none"> • Daily maximum water temperatures reach or exceed 73°F for 3 consecutive days or stream flow falls below 5th percentile of the daily mean value for the date. • Measurements for relevant criteria will be measured at USGS gage 12324400 at Clark Fork near Garrison and site-specific temperature monitoring with portable recorders.
Flint Creek	Confluence with the Clark Fork River to mouth of Trout Creek (near Philipsburg) (RM 0 to 36)	Non-native salmonid sport fishery	<ul style="list-style-type: none"> • Daily maximum water temperatures reach or exceed 73°F for 3 consecutive days or stream flow falls below 5th percentile of the daily mean value for the date. • Measurements for relevant criteria will be measured at USGS gage 12324400 at Clark Fork near Garrison and site-specific temperature monitoring with portable recorders.

FISHERIES MANAGEMENT DIRECTION FOR CLARK FORK RIVER - FLINT/ROCK DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Clark Fork River (Flint Creek mouth-Blackfoot River mouth) and tributaries	52 miles	Bull trout (N), Westslope cutthroat trout (N)	Wild	Conservation	Continue year-long closure on angling for bull trout. Enhance migratory populations for conservation. Enhance catch-and-release westslope cutthroat trout fishery.
		Brown trout, Rainbow trout	Wild	General	Consider liberal regulations to allow for harvest opportunity and reduce numbers to lessen competition with and predation on native trout if habitat conditions improve for native trout.
		Brook trout	Wild	General	Maintain liberal harvest limits to support native species goals by reducing competition and hybridization.
Habitat needs and activities: Continue efforts to clean up mining contamination in upper portion of the drainage. Gain a better understanding of factors limiting trout populations in reach between the mouth of Flint Creek and the mouth of Blackfoot River. Improve trout recruitment (both native and non-native) to the mainstem river through connectivity improvements in tributaries (e.g., passage improvements, flow enhancement, fish screens) and increase trout production through restoration of spawning and rearing habitat. Conduct effectiveness monitoring of restoration projects in tributaries using electrofishing surveys.					
Flint Creek	41 miles	Bull trout (N), Westslope cutthroat trout (N)	Wild	Conservation	Continue year-long closure on angling for bull trout. Enhance fluvial populations of westslope cutthroat trout for conservation and angling.
		Rainbow trout, Brown trout	Wild	General	Manage for harvest opportunity.
		Brook trout	Wild	General	Maintain liberal harvest limits to support native species goals by reducing numbers and competition and hybridization.
Habitat needs and activities: Enhance instream flows below Allendale diversion. Reduce fish entrainment in mainstem Flint Creek particularly below the mouth of Boulder Creek. Improve trout recruitment (both native and non-native) to the mainstem river through connectivity improvements in tributaries (e.g.,					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
<p>passage improvements, flow enhancement, fish screens) and increase trout production through restoration of spawning and rearing habitat. Improve riparian habitat and grazing management throughout the drainage. Habitat restoration projects that are anticipated to be implemented in the Flint Creek drainage in the near future, are being completed in Boulder Creek and mainstem Flint Creek.</p>					
Georgetown Lake	2,080 acres	Rainbow trout	Hatchery	Put-Grow-and-Take	Manage stocking to support quality angling and liberal harvest opportunity.
		Brook trout	Hatchery	Trophy	Supplement with hatchery fish to provide adequate fish densities for anglers. Implement harvest limits and stocking rates that provide for trophy sized fish (>18-inches).
		Kokanee salmon	Wild	Liberal Regulations	Maintain liberal harvest limits to attain quality sized fish and high angler catch rates.
<p>Habitat needs and activities: Continue to work with dam operators to maintain sufficient overwinter pool elevations and improve other dam operations to minimize the impact chronic low winter dissolved oxygen levels have on fish populations. Prohibit fishing contests to reduce social conflicts with other anglers and recreators and fish populations.</p>					
Boulder Creek	14 miles	Bull trout (N), Westslope cutthroat trout (N)	Wild	Conservation	Continue year-long closure on angling for bull trout. Enhance migratory and resident populations of westslope cutthroat trout for conservation and angling. Consider isolation of westslope cutthroat trout populations only if hybridization or competitive displacement clearly threatens the persistence of local populations.
		Brown trout, Rainbow trout, Brook trout	Wild	General	Allow liberal harvest to reduce numbers and lessen hybridization and competition with native trout. Consider other options to reduce numbers if options would increase native trout density and angling opportunity.
<p>Habitat needs and activities: Minimize entrainment of fish into diversion ditches in the lower portion of the drainage and improve riparian habitat conditions where appropriate.</p>					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Flint Creek tributaries- other than Boulder Creek	36 miles	Westslope cutthroat trout (N)	Wild	Conservation	Enhance populations for conservation. Maintain isolation of westslope cutthroat trout populations protected by barriers to upstream fish passage if habitat and numbers are sufficient to allow persistence. Maintain connectivity to streams currently connected to allow for maintenance of migratory life histories and mainstem angling opportunities. Consider isolation of westslope cutthroat trout populations only if hybridization or competitive displacement clearly threatens the persistence of local populations.
		Brown trout, Rainbow trout, Brook trout	Wild	General	Maintain liberal harvest and consider measures that reduce their abundance in reaches protected by a barrier or in reaches considered native species strongholds. Enhance rainbow and brown trout populations that provide recruitment to Flint Creek or the Clark Fork River and are not located in reaches with abundant native trout.
Habitat needs and activities: Improve trout recruitment (both native and non-native) to the mainstem river through connectivity improvements in tributaries (e.g., passage improvements, flow enhancement, fish screens) and increase trout production through restoration of spawning and rearing habitat. Improve instream flows in reaches that are currently dewatered and support cleanup efforts in drainages with mining impacts.					
Harvey Creek	15 miles	Bull trout (N), Westslope cutthroat trout (N)	Wild	Conservation	Continue year-long closure on angling for bull trout. Enhance migratory and resident life histories for conservation and westslope cutthroat trout angling. Maintain barrier to protect populations from invasion by brown trout and rainbow trout.
		Rainbow trout,	Wild	General	

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Brown trout			Allow liberal harvest. Consider other options to reduce numbers if options would increase native species numbers and angling opportunity.
Habitat needs and activities: Continue to improve riparian habitat via grazing management. Reduce entrainment of out-migrating fish and potentially implement selective upstream fish passage for bull trout at the barrier near the mouth.					
East Fork Reservoir and East Fork Rock Creek above reservoir	370 acres and 5 miles	Bull trout (N)	Wild	Conservation	Continue year-long closure on angling for bull trout and enhance adfluvial populations for conservation.
		Westslope cutthroat trout (N)	Wild/Hatchery	Quality	Manage for harvest opportunity of quality sized fish (>15-inches). Evaluate stocking to determine return to creel and assess expansion of population in upstream tributaries.
		Rainbow trout, Brook trout	Wild	General	Allow liberal harvest. Consider other options to reduce numbers if options would increase native trout density and angling opportunity.
Habitat needs and activities: Work to maintain minimum reservoir levels to improve overwinter habitat conditions and reduce entrainment of bull trout through the dam.					
East Fork Rock Creek- below East Fork Dam	8 miles	Bull trout (N), Westslope cutthroat trout (N)	Wild	Conservation	Continue year-long closure on angling for bull trout. Enhance fluvial and resident populations for conservation.
		Brown trout, Rainbow trout, Brook trout	Wild	General	Allow liberal harvest. Consider other options to reduce numbers if options would increase native trout density and westslope cutthroat trout angling opportunity.
Habitat needs and activities: Improve habitat conditions below the reservoir by improving instream flows and maintaining periodic flushing flows. Improve riparian habitat and reduce entrainment of native fish where appropriate.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Rock Creek	62 miles	Bull trout (N), Westslope cutthroat trout (N) Rainbow trout Brown trout	Wild Wild Wild	Conservation Restrictive Regulations Liberal Regulations	Continue year-long closure on angling for bull trout. Enhance migratory bull trout populations where possible. Enhance fluvial populations of westslope cutthroat trout for conservation and angling. Maintain catch-and-release regulations in attempt to improve numbers while recognizing that whirling disease is likely the primary limiting factor. Maintain liberal harvest regulations to allow for harvest opportunity and reduce numbers to lessen competition with and predation on native trout. Consider other options to reduce numbers if options would increase native trout density and westslope cutthroat trout angling opportunity.
<p>Habitat needs and activities: Continue efforts to protect private lands via conservation easements and land acquisition. Improve riparian habitat and grazing management in drainage where appropriate. Reduce entrainment of native and wild fish into irrigation ditches. Improve native trout recruitment to the mainstem river through connectivity improvements in tributaries and the mainstem (e.g., passage improvements, flow enhancement, fish screens). Conduct effectiveness monitoring of restoration projects in tributaries using electrofishing surveys. Habitat restoration projects that are anticipated to be implemented in the Rock Creek drainage are in mainstem Rock Creek, Ranch Creek, Ross Fork Rock Creek, Middle Fork Rock Creek, West Fork Rock Creek, Upper Willow Creek, and Stony Creek.</p>					
Rock Creek tributaries		Bull trout (N), Westslope cutthroat trout (N)	Wild	Conservation	Continue year-long closure on angling for bull trout. Enhance fluvial and resident populations of westslope cutthroat trout for conservation and angling. Consider isolation of westslope cutthroat trout populations only if hybridization or competitive displacement clearly threatens the persistence of local populations.

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Brown trout, Rainbow trout, Brook trout	Wild	General	Allow liberal harvest. Consider other options to reduce numbers if options would increase native trout density and westslope cutthroat trout angling opportunity.
Habitat needs and activities: Improve native trout recruitment to the mainstem river through connectivity improvements in tributaries (e.g., passage improvements, flow enhancement, fish screens). Improve riparian habitat where appropriate and reduce entrainment of native fish where necessary.					
Tributaries to the Clark Fork River (other than Harvey Creek, Flint Creek and Rock Creek)		Westslope cutthroat trout (N)	Wild	Conservation	Enhance migratory and resident populations for conservation and angling. Maintain isolation of populations protected by barriers if habitat and fish abundance are sufficient to allow persistence. Maintain connectivity to streams currently connected to allow for migratory life histories and mainstem angling. Consider isolation of westslope cutthroat trout populations only if hybridization or competitive displacement clearly threatens the persistence of local populations.
		Rainbow trout, Brown trout, Brook trout	Wild	General	Maintain liberal harvest and consider measures that reduce their abundance in reaches protected by a barrier or in reaches considered native species strongholds. Enhance rainbow and brown trout populations that provide recruitment to the Clark Fork River and are not located in reaches with abundant native trout.
Habitat needs and activities: Improve degraded riparian habitat particularly in stream reaches where native salmonids are present. Improve trout recruitment (both native and non-native) to the mainstem river through connectivity improvements in tributaries such as Schwartz Creek and Deer Creek (e.g., passage improvements, flow enhancement, fish screens) and increase trout production through restoration of spawning and rearing habitat.					