

NATURAL RESOURCES AND CONSERVATION



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FINAL DECISION NOTICE ENVIRONMENTAL ASSESSMENT

Project Name: Cascade County Sun River Avulsion Prevention and Repair Project**Proposed****Implementation Date:** 01/01/2022. Projected date of completion 11/30/2022**Proponent:** Sun River Ditch Company**Location:** 47.51540, -111.80469**County:** Cascade

I. TYPE AND PURPOSE OF ACTION

Cascade County, in partnership with the Sun River Ditch Company, is proposing to address avulsion of the Sun River at the confluence with lower Adobe Creek. The Sun River is a dynamic lotic system and annual runoff causes the river to migrate and change over time. Low stream banks coupled with high water are a source of continual cut bank, point bar development and avulsion in the project location. Mature vegetation downstream of the project helps maintain the existing stream channel, but livestock grazing and natural stream migration results in annual changes that cumulate into periodic large changes to channel movement and erosion.

Main channel avulsion is underway as high water from the Sun River spills over the existing streambank and flows into lower Adobe Creek. An avulsion is the creation of a new river channel away from the main thread. On the Sun River, this may occur where the river captures a tributary, due to a meander cutoff, or where an old swale is captured. It may relocate the whole river or create a secondary channel. Avulsions commonly occur when floodwaters flow across a floodplain surface at a steeper grade than the main channel, carving a new channel along that steeper, higher energy path. Although avulsions typically occur during floods, they can also be driven by meander migration into an old swale, which is common on the Sun River. In 2014, the river partially migrated into a connector channel that allowed the Sun River to flow into lower Adobe Creek. If allowed to continue, the Sun River will increasingly reuse and migrate into a 2-½ mile long cutoff, eventually abandoning the current main channel. Abandonment of the current channel is a significant concern to area residents, water quality, and water users. Allowing the river to continue cutting into lower Adobe Creek will increase sedimentation, lead to new direct nonpoint sources of nutrients/residual fertilizer and pesticide runoff. In addition to water quality impacts, the cutoff channel will bypass the Sun River Ditch Company (SRDC) irrigation ditch and Sun River diversion structure. This would significantly impact 67 water users and 3,800 acres of irrigated lands with water rights on the Sun River as it would cost them millions of dollars to pump Sun River water to their system or relocate their diversion system. The environmental impacts are significant if

avulsion continues. The Sun River Valley Ditch Company water user impacts are equally significant if the main channel is abandoned.

The river avulsion at this site forces the main flow of water from the Sun River into the lower Adobe Creek floodplain, accelerating erosion within Adobe Creek and contributing a significant amount of sediment into the Sun River. As water flows from the Sun River into lower Adobe Creek, the river flows exceed the capacity of lower Adobe Creek, resulting in widespread flooding throughout the floodplain. Flooded areas include a cattle feedlot, spring calving areas and other agricultural areas that contain large amounts of nutrients such as nitrates/nitrites and phosphorous, which are introduced into the Sun River and dispersed by the flooding. Additionally, the widespread flooding is currently flooding or will flood approximately 15 residential homes during spring runoff.

Stabilization of the streambank is needed. The goal is to place 300 linear feet of class III riprap with voids filled by soil in the avulsion area. The technical memo attached at the end of this report details the design criteria, materials to be utilized, and long-term annual observational performance criteria. The goals of the project are to preserve water quality, improve management of the water resource, improve fishery habitat, and protect the SRDC diversion from Sun River channel migration. Implementation of the proposed mitigation project will safeguard SRDC's ability to manage diverted water from the Sun River, optimizing its beneficial use, and will improve and preserve the water quality and habitat for wildlife and downstream users.

II. PROJECT DEVELOPMENT

1. PUBLIC INVOLVEMENT, AGENCIES, GROUPS OR INDIVIDUALS CONTACTED:

Provide a brief chronology of the scoping and ongoing involvement for this project. List number of individuals contacted, number of responses received, and newspapers in which notices were placed and for how long. Briefly summarize issues received from the public.

This project has been on numerous Cascade County Commission agendas. Most recently on December 27, 2022 Commission agenda, Contract 22-202 – Acceptance of the DNRC Grant for the Cascade County Sun River Avulsion Prevention and Repair Project, Total Award: 135,906. No comments were received on the project during the commission meeting.

2. OTHER GOVERNMENTAL AGENCIES WITH JURISDICTION, LIST OF PERMITS NEEDED:

Examples: cost-share agreement with U.S. Forest Service, 124 Permit, 3A Authorization, Air Quality Major Open Burning Permit.

SPA 124 – The Montana Stream Protection Act requires a permit for any project that may affect the bed or banks of any stream in Montana. The intake renovation and replacement will take place within the banks of the Yellowstone River. The SPA 124 permit applies to governmental entities and Districts such as Ward Irrigation and would be issued by Montana Department of Fish, Wildlife and Parks.

USACE 404 – Section 404 of the Clean Water Act (CWA) establishes a program to regulate the discharge of dredged or fill material into waters of the United States. The Section 404 permit would be issued by the US Army Corps of Engineers.

Cascade County Floodplain Permit – Due to the proximity of work within the Federal Emergency Management Agency (FEMA) mapped floodplain, a floodplain permit must be obtained from Cascade County.

Permits required to plan and construct this project include:

- 1) 310 Permit/SPA 124 permit from the local Conservation District and/or Montana Fish, Wildlife & Parks – issued by Cascade Conservation District July 19, 2022;
- 2) Army Corps of Engineers 404 permit – Nationwide Permit Verification, NWO-2022-00742-MT issued June 3, 2022; and
- 3) Cascade County Flood Permit – Permit number 2022-04 – approved September 16, 2022.

3. ALTERNATIVE DEVELOPMENT:

Describe alternatives considered and, if applicable, provide brief description of how the alternatives were developed. List alternatives that were considered but eliminated from further analysis and why. Include the No Action alternative.

Four alternatives were evaluated in the July 23, 2021 Technical Memorandum submitted in the application to address the avulsion, including: 1) no action where natural processes are allowed to proceed, 2) focused revegetation and soft engineering techniques, and 3) riprap/soil placement along the cutbank tied into nearby cottonwood trees downstream.

- 1) **Alternative 1 – No Action** – This alternative was quickly eliminated because it results in significant water quality impacts if the river migrates through agricultural lands that have historically not flooded. Additionally, the SRDC would lose their ability to divert water without major changes and improvements to the ditch system. Major renovation to the SRDC system would be costly and create a local economic hardship for the water user and local landowners.
- 2) **Alternative 2 – Revegetation and Soft Engineering Techniques** – this alternative was considered, and rough costs estimated, but this alternative was eliminated from full consideration because of technical practicability. While revegetation could potentially protect the streambank in the long-term, there is insufficient time for generating a mature vegetated bank with seedlings even if reinforced with soft engineering techniques. Based on past efforts to stabilize the bank, this alternative was deemed to have a high likelihood of failure from typical highwater events given the severity of the avulsion on the cutbank, energy dynamics of the Sun River and the physiographic setting.
- 3) **Alternative 3 – Riprap and Soil Placements (dirty riprap) Keyed into the Streambed, Cutbank, and Downstream Vegetation** – This alternative was assessed and deemed practical because it mitigates channel avulsion, addresses threats to water quality, and ensures beneficial use is maintained for the SRDC. The total upstream distance that would be protected is 300 feet, starting upstream of the avulsion point. This alternative can efficiently be constructed to address the threats of water being routed into Adobe Creek and the use of engineered controls will maintain the channel in the existing streambed. The current Channel configuration, streambed slope, and presence of large woody debris and mature vegetation downstream.
- 4) **Alternative 4 – Riprap and Soil Placement with the Addition of Multiple Deflection Weirs Placed Below the Avulsion to Protect the Adjacent Cutbank** – This alternative expands the riprap alternative adding an additional 400 feet downstream, targeting a longer stream restoration project. The project would add deflection weirs to the main channel. Deflection weir placement would move channel energy further downstream, protecting the immediate cutbank below the riprap from significant erosion, but also would potentially impact lower channel migration. This alternative adds cost to the riprap alternative and would obstruct main channel navigation. The engineering analysis determined this alternative can be implemented, or similar actions in the future, depending on river channel movement after alternative 3 is implemented. This alternative is administratively less desirable for an emergency action because the magnitude

of the work requires additional permitting and mitigation. For these reasons, this alternative was dropped from further consideration.

Proposed Alternative – After comparing and analyzing the cost/benefit relationships, Alternative 3 is the preferred alternative. It will stabilize approximately 300 feet of the Sun River streambank both above and below the avulsion point. The proposed alternative will place approximately 300 feet of class III riprap with voids filled by soil in the avulsion area. An erosion control mat and soil seeded with native vegetation will extend up the slope to the top of the streambank, and willows (*Salix sp.*) will be planted in the riprap to aid in soil stability and aesthetic. The downstream edge of the riprap will be tied into a cottonwood (*Populus sp.*) stand for added protection from future erosion.

III. IMPACTS ON THE PHYSICAL ENVIRONMENT

- *RESOURCES potentially impacted are listed on the form, followed by common issues that would be considered.*
- *Explain POTENTIAL IMPACTS AND MITIGATIONS following each resource heading.*
- *Enter "NONE" If no impacts are identified or the resource is not present.*

4. GEOLOGY AND SOIL QUALITY, STABILITY AND MOISTURE:

Consider the presence of fragile, compactable or unstable soils. Identify unusual geologic features. Specify any special reclamation considerations. Identify direct, indirect, and cumulative effects to soils.

Limestone cliffs are the defining feature of the Rocky Mountain Front. Erosion through the thrust sheets has created unique stream systems that flow north-south through repeating sequences of limestones. These tributaries feed the Sun River, which flows eastward across the prairie where it joins the Missouri River at Great Falls. The thrust sheets have been pushed eastward, which is what forms the cliffs of Castle Reef and Sawtooth Mountain at the mouth of Sun Canyon. As the Rocky Mountain Front was uplifted, the drainage network became controlled by that geology. Tributary streams in Sun Canyon enter the river from right angles, controlled by a series of gulches formed along the more erodible layers of the thrust sheets. The bedrock geology is one major aspect of the watershed conditions that affect the dynamics of the Sun River as it flows out of the Bob Marshall Wilderness towards Great Falls. A second major control is the younger sediments, many of which are glacial deposits. The geologic and glacial histories of this area are important to understanding the behavior of the Sun River and its upper tributaries. The Rocky Mountain Front provides a major source of both flow and sediment to the river, as do glacial outwash sediments that extend into the project area. As the river continues eastward towards Great Falls, it enters a glacial lake environment characterized by much lower slopes. This setting, where a large coarse-grained sediment load progressively encounters flatter slopes (reduced transport energy), makes the Sun River especially prone to major changes, especially during flood events when high volumes of sediment are mobilized (2021 Sun River and Elk Creek Channel Migration Mapping Study).

Per the NRCS Web Soil Survey, soils in the project area are mapped as Ryell loam which on the surface is a true loam, becomes stratified with more fine sand, and deep layers are eventually extremely gravelly loamy sand. The river bend targeted for rehabilitation is eroded and the Sun River is cutting into Adobe Creek through Ryell Loam soil. Local soil loss is significant both locally and downgradient where the river floods the project area.

Proposed Alternative – The proposed alternative is expected to have a long-term beneficial effect, as

it will protect the avulsion area and streambank from further erosion, which will stabilize the soils in the project area.

No Action – Soils will be severely adversely impacted by the No Action alternative. The Sun River will continue to expand its migration into Adobe Creek, cutting off the main channel and impacting about 2 ½ miles of current Sun River pathway, it will also eventually cut off flow to the Sun River Valley Ditch Company irrigation diversion, flooding areas that historically have not been impacted by high water, and eroding downgradient soils.

5. WATER QUALITY, QUANTITY AND DISTRIBUTION:

Identify important surface or groundwater resources. Consider the potential for violation of ambient water quality standards, drinking water maximum contaminant levels, or degradation of water quality. Identify direct, indirect, and cumulative effects to water resources.

The Sun River Watershed is 1875 square miles in size (1.2 million acres), originating as two forks (North and South Forks of the Sun River) within the core of the Bob Marshall Wilderness and flowing eastward off of the Rocky Mountain Front to its confluence with the Missouri River in Great Falls. Major tributaries include Willow Creek, Elk Creek, Dry Creek, Simms Creek, and Muddy Creek. Major communities in the river corridor include Simms, Fort Shaw, Sun River, Vaughn, Sun Prairie, Augusta, and Manchester. For much of its length in the upper watershed, the river forms the boundary between Lewis and Clark and Teton counties. Below Simms the river is entirely within the boundaries of Cascade County (2021 Sun River and Elk Creek Channel Migration Mapping Study).

The Sun River, located within the Upper Missouri River Basin, is listed on the Montana DEQ 303d as fully supporting agricultural, recreational, and drinking water uses, but not fully supporting aquatic life due to fish passage barriers associated with dam construction. Specifically, the Sun River is considered a warm water fishery, but an intake dam partially restricts fish passage. The Sun River is listed as Water Quality Code 4A, which has been identified as having threats or impairments resulting from pollution categories such as dewatering or habitat modification and all TMDLs needed to rectify all identified threats or impairments have been completed and approved (Source: Montana DEQ Search Tools – 2020 Water Quality Information).

Currently, water is flowing from the Sun River into Adobe Creek, eroding and expanding a new channel for the river. Soil loss is entraining sediment and nutrients/pesticides from the land into the surface water, impacting water quality.

Proposed Alternative – The proposed alternative would have an immediate and long-term beneficial impact by stabilizing and stopping the avulsion, which would reduce turbidity and keep contaminant sources out of the surface water. While normal high water will also entrain sediment, ensuring the river course remains in the current main channel will result in protecting water quality from additional sedimentation, nutrients and pesticides. The proposed alternative protects and improves water in the Sun River. It is noted that during construction, water quality will experience a short-term adverse impact during riprap placement and excavation along the streambank.

No Action – The No Action alternative will continue to have adverse effects on water quality, and continue to impact water quality with increased sediment, nutrients, and potentially pesticide loads in surface water.

6. AIR QUALITY:

What pollutants or particulate would be produced (i.e. particulate matter from road use or harvesting, slash pile burning, prescribed burning, etc)? Identify the Airshed and Impact Zone (if any) according to the Montana/Idaho Airshed Group. Identify direct, indirect, and cumulative effects to air quality.

The project is in a rural setting, with no nearby residential areas. The current air quality conditions are consistent with a rural western-Montana setting.

Proposed Alternative – Short-term impacts to air quality may occur during construction. Fugitive dust pollution may be present during the installation of the riprap. The proposed project will not have long-term impacts on air quality.

Severity: The severity of the air quality impacts will be very minimal. Precautions will be used to minimize any dust and air quality impact.

Duration: The proposed project is expected to last approximately two weeks. The air quality will only be impacted during construction.

Extent: The extent of the air quality impacts will affect the immediate construction area.

Frequency: Air quality will be affected approximately two weeks during construction.

Mitigation: Water will be used as a dust suppressant during construction. Revegetation and seeding will be utilized to minimize dust after completion of construction.

No Action – Existing air quality will remain the same.

7. VEGETATION COVER, QUANTITY AND QUALITY:

What changes would the action cause to vegetative communities? Consider rare plants or cover types that would be affected. Identify direct, indirect, and cumulative effects to vegetation.

The project area is surrounded by approximately 33% human land use (31% agriculture, 2% developed), 28% Great Plains floodplain and riparian systems, 26% lowland/prairie grassland, 1% deciduous dominated forest and woodland, and 1% sparse and barren cliff, canyon and talus (Source: Montana Natural Heritage Program report). There are seven plant species of concern listed as either observed or likely to occur within the project area: northern wildrye (*Elymus innovatus*), Crawe's sedge (*Carex crawei*), small yellow lady's-slipper (*Cypripedium parviflorum*), beaked spikerush (*Eleocharis rostellata*), pale-yellow jewel-weed (*Impatiens aurella*), hare's-foot locoweed (*Oxytropis lagopus* var. *conjugans*), and simple kobresia (*Kobresia simpliciuscula*; Source: Montana Natural Heritage Program report).

Proposed Alternative – The proposed project will have potentially beneficial short and long-term impacts on vegetation by reducing erosion and flooding of areas adjacent to the river channel, and ensuring the water flow remains within the already unvegetated river channel. Revegetation with native species will occur during construction to help stabilize soil and prevent erosion within the riprap, as well as upslope into the riparian zone. There is a potentially long-term adverse impact

from stabilizing the river migration, in that annual emergent vegetation that relies on seasonal flooding will no longer have the conditions necessary to grow in the seasonally flooded areas.

No Action – The No Action alternative will continue to have adverse impacts to vegetation, as vegetation will be lost in the short-term as the new channel erodes the land.

8. TERRESTRIAL, AVIAN AND AQUATIC LIFE AND HABITATS:

Consider substantial habitat values and use of the area by wildlife, birds or fish. Identify direct, indirect, and cumulative effects to fish and wildlife.

The Sun River The project area is located in an area identified as priority areas for terrestrial conservation efforts within the Montana State Wildlife Action Plan, the Sun River: Augusta to Great Falls focal area (SWAP; Montana Fish, Wildlife, and Parks web map GIS data). The Sun River, from Gibson Dam to the mouth of the Missouri River, is listed as an Impaired Water Body by Montana Department of Environmental Quality (DEQ) due to agriculture, channelization, grazing in the riparian zone, impacts from hydrostructure, irrigated crop production, and rangeland grazing. The project area does not fall within an Executive Order – General/Priority habitat area for sage grouse (Montana Sage Grouse Habitat Conservation Mapping Tool, accessed 01/30/2023). Though the project area does not appear to be impacting crucial and/or critical habitat areas, there are 39 Species of Concern listed for Cascade County that may occur in the project area in a broad range of taxa, including bats, birds, reptiles, amphibians, fish, insects, and plants.

Proposed Alternative – The proposed project will have no long-term impacts on wildlife species or habitats. A short-term impact on the habitat and fisheries is possible during construction. For purposes of this analysis, the construction impacts are considered insignificant and temporary.

No Action – Short-term impacts are possible if no action is taken. Fish moving from the Sun River to Adobe Creek could lack the necessary habitat if cut off from the Sun River when water levels drop. The long-term impacts of new channel creation would likely result in no impact to terrestrial, avian and aquatic life and habitats. For purposes of this analysis, the long-term impact is considered and no impact is likely.

9. UNIQUE, ENDANGERED, FRAGILE OR LIMITED ENVIRONMENTAL RESOURCES:

Consider any federally listed threatened or endangered species or habitat identified in the project area. Determine effects to wetlands. Consider Sensitive Species or Species of special concern. Identify direct, indirect, and cumulative effects to these species and their habitat.

The National Wetlands Inventory (NWI) website was used to determine whether any wetlands were present within the lands adjacent to the project location (map included at the end of this EA). This search indicated that 11 wetland types are present within the project area and the adjacent habitat. There are three freshwater emergent wetland habitats, five riverine habitats, two freshwater pond habitats, and one freshwater forested/shrub wetland habitat. The Freshwater Emergent wetlands are seasonally flooded, contain vegetation for most of the year, and contain hydrophytic plants. The Riverine habitats are generally deepwater habitats contained within a channel, permanently flooded, with intermittent and seasonally flooded channels. In addition, the canal itself is labeled as an excavated Freshwater Emergent wetlands area.

As mentioned in the previous section, there are 39 species of concern listed as potentially using the Sun River area as viable habitat. The Sun River likely provides critical spawning and rearing habitat

for multiple native migratory and resident (Montana Fish, Wildlife, and Parks. 2018. FishMT Survey and Inventory Date, Sun River. Accessed 01/30/2023). DNRC also used the U.S. Fish and Wildlife Service IPaC tool to generate a resource list summarizing any endangered or threatened species that are known or expected to be near the project area. The IPaC list generated three (3) Federally listed species as potentially occurring in the greater project area and nine (9) migratory birds of concern: grizzly bear (*Ursus arctos horribilis*), north American wolverine (*Gulo gulo luscus*), monarch butterfly (*Danaus plexippus*), Bald Eagle (*Haliaeetus leucocephalus*), Bobolink (*Dolichonyx oryzivorus*), California Gull (*Larus californicus*), Chestnut-collared Longspur (*Calcarius ornatus*), Franklin's Gull (*Leucophaeus pipixcan*), Golden Eagle (*Aquila chrysaetos*), Long-billed Curlew (*Numenius americanus*), Marbled Godwit (*Limosa fedoa*), and Willet (*Tringa semipalmata*; USFWS IPaC report. Date accessed: 01/30/2023). The nine bird species are protected under the Migratory Bird Treaty Act, and the Golden and Bald Eagles are also protected under the Montana Bald Eagle Management Plan, Bald and Golden Eagle Protection Act, and the Lacey Act.

Terrestrial state species of concern and special status species are also present within the proposed project area, including great blue heron (*Ardea Herodias*), greater short-horned lizard (*Phrynosoma hernandesi*), American white pelican (*Pelecanus erythrorhynchos*), white-faced ibis (*Plegadis chihi*), Brewer's sparrow (*Spizella breweri*), northern hawk owl (*Surnia ulula*), veery (*Catharus fuscescens*), fringed myotis (*Myotis thysanodes*), little brown myotis (*Myotis lucifugus*), long-eared myotis (*Myotis evotis*), and hoary bat (*Lasiurus cinereus*).

Aquatic state species of concern and special status species in the project area include brassy minnow (*Hybognathus hankinsoni*), burbot (*Lota lota*), brook stickleback (*Culaea inconstans*), northern redbelly dace (*Chrosomus eos*), northern redbelly x finescale dace (*Chrosomus esox* x *Chrosomus neogaeus*), northern leopard frog (*Lithobates pipiens*), and great plains toad (*Anaxyrus cognatus*).

Proposed Alternative – The proposed project will have no impact on unique, endangered, fragile or limited resources, including endangered species. No pallid sturgeon have been observed in the Sun River. Some of the listed species may travel near the area such as Grizzly Bears, but it is transitory use of the area and there will be no impacts.

No Action – No endangered species will be affected.

10. HISTORICAL AND ARCHAEOLOGICAL SITES:

Identify and determine direct, indirect, and cumulative effects to historical, archaeological or paleontological resources.

The project area is primarily within the river channel and surrounding riparian habitat. There are no historic properties or archaeological resources that have been identified in the project area.

Proposed Alternative - There are no historic properties or archaeological resources that have been identified in the streambank/project area.

No Action - No action will probably not affect historic properties or archaeological resources, although the 2 ½ long cutoff route has not been assessed for archaeological resources. It may be possible that allowing the river to carve a new pathway could impact cultural resources. The goal of the project is to avoid a new channel and stop the avulsion.

11. AESTHETICS:

Determine if the project is located on a prominent topographic feature, or may be visible from populated or scenic areas. What level of noise, light or visual change would be produced? Identify direct, indirect, and cumulative effects to aesthetics.

The Sun River provides recreation opportunities for the public and the proposed project would include stabilization effort on the riverbank. The river channel is predominantly on rural private property which is comprised primarily of cultivated cropland and wetland and riparian systems. In addition, the project is located northeast of the immediate town limits of Fort Shaw, Montana and therefore outside of populated, residential areas. Minimal noise is created by the Sun River. The existing avulsion area routes water from the Sun River into Adobe Creek and the existing streambank is failing. The visual quality is currently not impacted but could be in the future.

Proposed Alternative – During construction and installation of the stabilization riprap there will be some short-term construction noise. Whenever possible, the contractor will minimize noise and steps will be taken to reduce noise impacts to the surrounding area. The proposed project will have no impact on visual quality and protects the current condition of the Sun River.

Severity: Noise will be consistent with a small construction project and will only take place during business hours.

Duration: Construction noise will last between 2 and 4 weeks.

Extent: Increased noise will be present in the construction area and immediate surrounding. There are no homes within the construction area that could be impacted.

Frequency: Noise related to the proposed project will be present during construction only.

No Action – No increase in noise will occur. If the avulsion continues, the existing Sun River channel will be replaced. The old channel will dry up and have a short-term visual impact before vegetation is restored. The new channel will route water through an agricultural area and visual aesthetics may be impacted for several decades until the channel and vegetation mature.

12. DEMANDS ON ENVIRONMENTAL RESOURCES OF LAND, WATER, AIR OR ENERGY:

Determine the amount of limited resources the project would require. Identify other activities nearby that the project would affect. Identify direct, indirect, and cumulative effects to environmental resources.

Cascade County relies on farming and ranching to sustain the local rural economy. Water from the Sun River is currently diverted into channelized ditches by the SRDC for sustaining agricultural operations in the area. The Sun River does not provide local water for energy production. Impacts on downstream hydropower generation on the Missouri River will be negligible.

Proposed Alternative - The proposed alternative will stabilize and stop the avulsion, which will reduce turbidity and keep other sources of contaminants out of the surface water as the new channel is formed. While normal high water will also entrain sediment, keeping the water in the current main channel will result in protecting water quality from additional sedimentation, nutrients and pesticides. The proposed alternative protects and improves water in the Sun River. It is noted that during construction water quality will be temporarily impacted during riprap

placement and excavation along the streambank.

No Action – No impacts to the demands on limited environmental resources.

13. OTHER ENVIRONMENTAL DOCUMENTS PERTINENT TO THE AREA:

List other studies, plans or projects on this tract. Determine cumulative impacts likely to occur as a result of current private, state or federal actions in the analysis area, and from future proposed state actions in the analysis area that are under MEPA review (scoped) or permitting review by any state agency.

Technical Memorandum, *Sun River Emergency Stream Restoration and Water Quality Protection Project*, prepared for Sun River Valley Ditch Company by WWC Engineering, Helena, MT, dated July 23, 2021.

SPA 124 – The Montana Stream Protection Act requires a permit for any project that may affect the bed or banks of any stream in Montana. The intake renovation and replacement will take place within the banks of the Yellowstone River. The SPA 124 permit applies to governmental entities and Districts such as Ward Irrigation and would be issued by Montana Department of Fish, Wildlife and Parks.

USACE 404 – Section 404 of the Clean Water Act (CWA) establishes a program to regulate the discharge of dredged or fill material into waters of the United States. The Section 404 permit would be issued by the US Army Corps of Engineers.

Cascade County Floodplain Permit – Due to the proximity of work within the Federal Emergency Management Agency (FEMA) mapped floodplain, a floodplain permit must be obtained from Cascade County.

Permits required to plan and construct this project include:

- 1) 310 Permit/SPA 124 permit from the local Conservation District and/or Montana Fish, Wildlife & Parks – issued by Cascade Conservation District July 19, 2022;
- 2) Army Corps of Engineers 404 permit – Nationwide Permit Verification, NWO-2022-00742-MT issued June 3, 2022; and
- 3) Cascade County Flood Permit – Permit number 2022-04 – approved September 16, 2022.

IV. IMPACTS ON THE HUMAN POPULATION
<ul style="list-style-type: none"> • <i>RESOURCES potentially impacted are listed on the form, followed by common issues that would be considered.</i> • <i>Explain POTENTIAL IMPACTS AND MITIGATIONS following each resource heading.</i> • <i>Enter "NONE" If no impacts are identified or the resource is not present.</i>

14. HUMAN HEALTH AND SAFETY:

Identify any health and safety risks posed by the project.

The current condition allows water from the Sun River to flow into Adobe Creek, flooding agricultural use areas and carrying contaminants from the flooded fields into the water.

Proposed Alternative – The proposed alternative would have an immediate and long-term beneficial impact by stabilizing and stopping the avulsion, which would reduce turbidity and keep

contaminant sources out of the surface water. While normal high water will also entrain sediment, ensuring the river course remains in the current main channel will result in protecting water quality from additional sedimentation, nutrients and pesticides. The proposed alternative protects and improves water quality in the Sun River, especially for human drinking water uses.

No Action – The No Action alternative will continue to have adverse effects on water quality, and continue to impact human health and safety with increased sediment, nutrients, and pesticide loads in surface water.

15. INDUSTRIAL, COMMERCIAL AND AGRICULTURE ACTIVITIES AND PRODUCTION:

Identify how the project would add to or alter these activities.

Cascade County relies on farming and agriculture to sustain the majority of the residents in rural settings. With the current river channel flowing through the avulsion into Adobe Creek, the irrigation canal downstream of the avulsion is at risk of being unable to draw water into the canal system to supply the 3,800 acres and 67 users that rely on the irrigation system for agricultural application.

Proposed Alternative – The proposed project is anticipated to protect crop yields with reliable and consistent availability of water rights from the Sun River. Protecting crop yields will lead to reliable revenue in the rural community.

No Action – No action has the potential to decrease crop yields and local revenue due to inconsistently available irrigation water from the Sun River and the Sun River Ditch Company.

16. QUANTITY AND DISTRIBUTION OF EMPLOYMENT:

Estimate the number of jobs the project would create, move or eliminate. Identify direct, indirect, and cumulative effects to the employment market.

Rural Cascade County relies on farming and ranching to sustain local jobs. Specifically, water rights from the Sun River are key to preserving the local jobs. Loss of water to SRDC from the Sun River will be a significant impact to jobs in the community.

Proposed Alternative – The proposed project will preserve local employment opportunities by ensuring water continues to be delivered to the SRDC irrigation system from the Sun River.

No Action – No action could potentially reduce the crop yields and water to livestock. Significant resources would be required to change the point of diversion and reconnect the water to the SRDC irrigation infrastructure.

17. LOCAL AND STATE TAX BASE AND TAX REVENUES:

Estimate tax revenue the project would create or eliminate. Identify direct, indirect, and cumulative effects to taxes and revenue.

Rural Cascade County relies on farming and ranching to sustain the local economy. Specifically, water rights from the Sun River are key to preserving the local economy and tax base. Loss of water to SRDC from the Sun River will be a significant impact to the local economy and tax base of the county.

Proposed Alternative – The proposed project will preserve crop yields and provide consistent income for farmers and ranchers. Current dryland practices in the Cascade Irrigation District create hardship on farmers and reduce crop yields. The streambank stabilization project will preserve consistent irrigation of SRDC users, ensuring a productive agricultural environment.

No Action – No action on a temporary basis will decrease agricultural yields in the community with the SRDC irrigation water. It is estimated that costs to reconnect the SRDC irrigation system would be between \$500,000 and \$1,000,000.

18. DEMAND FOR GOVERNMENT SERVICES:

Estimate increases in traffic and changes to traffic patterns. What changes would be needed to fire protection, police, schools, etc.? Identify direct, indirect, and cumulative effects of this and other projects on government services

The project area is in rural Cascade County and is just outside of the town limits of Fort Shaw, Montana.

Proposed Alternative – The proposed alternative has no impact on local community and government services, or transportation networks/traffic flow.

No Action – Will not impact local community or government services.

19. LOCALLY ADOPTED ENVIRONMENTAL PLANS AND GOALS:

List State, County, City, USFS, BLM, Tribal, and other zoning or management plans, and identify how they would affect this project.

The project will be coordinated with all applicable local, state and federal agencies. Local cooperation and regulatory permits will come from the Cascade County Floodplain Administration and other regulatory permitting agencies associated with these in river improvements. Adjustments to water rights are not anticipated with this project as there are no proposed changes to the amount of water withdrawn from Sun River Ditch Company's Sun River water right.

Proposed Alternative – There are no locally adopted environmental plans and goals that would impact the proposed alternative.

No Action – Will not impact locally adopted plans and goals.

20. ACCESS TO AND QUALITY OF RECREATIONAL AND WILDERNESS ACTIVITIES:

Identify any wilderness or recreational areas nearby or access routes through this tract.

Determine the effects of the project on recreational potential within the tract. Identify direct, indirect, and cumulative effects to recreational and wilderness activities.

The existing flow in the Sun River main channel is increasingly being routed into Adobe Creek. Loss of the main channel will have a short-term impact on recreational use of the river. Access to or quality of recreational wilderness activities, public lands, open space, or waterways is not impacted in the long term.

Proposed Alternative – The proposed project will protect the status quo use of the Sun River and no impacts will result from implementation of the project.

No Action – No action will result in a short-term impact on Sun River recreational use and potentially the fishery. When water is routed into Adobe Creek, less water is available in the existing main channel for recreation. Access to Adobe Creek and the cutoff channel is unknown and questionable. Once the cutoff is completed and the existing channel is completely abandoned, there is likely no impact assuming access is similar to the existing channel.

21. DENSITY AND DISTRIBUTION OF POPULATION AND HOUSING:

Estimate population changes and additional housing the project would require. Identify direct, indirect, and cumulative effects to population and housing.

The population of Cascade County in 2021 was estimated at 84,511 individuals and the census-designated place of Fort Shaw, Montana was estimated having 138 individuals (MT Dept. of Commerce: <http://ceicc.mt.gov>). The project site is not immediately within any residential or housing areas.

Proposed Alternative – Potentially no impact to the density and distribution of population or housing given the nature of the project. The project is four to six weeks of stream restoration and is not expected to create additional need or changes to housing.

No Action – No impact to density or distribution of population and housing.

22. SOCIAL STRUCTURES AND MORES:

Identify potential disruption of native or traditional lifestyles or communities.

Cascade County is largely made up of rural, cultivated cropland and/or Great Plains mixedgrass prairie (Source: Montana Natural Heritage Program). The agricultural way of life provides the most common type of lifestyle/community for the county.

Proposed Alternative – No action of the bank stabilization is expected to impact the county population. Given the project is expected to be short-term, no additional housing is expected to be required.

No Action – No impact to density and distribution of population and housing.

23. CULTURAL UNIQUENESS AND DIVERSITY:

How would the action affect any unique quality of the area?

The Sun River and agricultural lands sustain the way of life for Cascade County and the greater Fort Shaw area, providing fishing and boating recreational activities and local and regional food supply for the overall area.

Proposed Alternative – No impact is expected to the cultural uniqueness and/or diversity to the project area; however, there may be beneficial impacts to the Sun River as the proposed alternative will reduce erosion and sediment deposition.

No Action – No action will not affect cultural facilities, cultural uniqueness and diversity.

24. OTHER APPROPRIATE SOCIAL AND ECONOMIC CIRCUMSTANCES:

Include appropriate economic analysis. Identify potential future uses for the analysis area other than existing management. Identify direct, indirect, and cumulative economic and social effects likely to occur as a result of the proposed action.

The Sun River Valley Ditch Company (SRDC) is one of four major ditch companies on the main stem of the Sun River. The SRDC Sun River diversion structure and canal system are a decades old irrigation system that serves 67 water users and 3,800 acres of irrigated lands. The river avulsion located upstream of their only irrigation ditch and diversion structure is routing a good portion of the Sun River below their irrigation system through prime agricultural lands.

Proposed Alternative - Protecting the irrigation system preserves the agricultural lifestyle historically present in the proposed project area.

No Action - No action on a temporary basis will decrease agricultural yields in the community with the SRDC irrigation water. It is estimated that costs to reconnect the SRDC irrigation system would be between \$500,000 and \$1,000,000.

25. DRINKING WATER AND/OR CLEAN WATER

Identify potential impacts to water and/or sewer infrastructure (e.g., community water supply, stormwater, sewage system, solid waste management) and identify direct, indirect, and cumulative effects likely to occur as a result of the proposed action.

The SRDC and area residents do not rely on wastewater treatment beyond their home domestic needs. The SRDC and area residents do not rely on a community water supply. No solid waste will be generated during the project.

Sewer/Sanitation/Storm Water

The town of Fort Shaw is not in the vicinity of the proposed project area. No solid waste management or wastewater treatment facilities exist in the project area. The project area consists of bank stabilization activities on the Sun River for the Cascade Irrigation District.

Drinking Water/Fire Protection

The project area consists of bank stabilization activities on the Sun River for the Cascade Irrigation District. Water that is diverted into the Sun River Ditch Company's irrigation canal network supplies irrigation for 3,800 acres of farmland in the area. There is little to no fire protection in place or any immediate fire hazards.

Proposed Alternative – The proposed project has the potential to have indirect beneficial impacts on surface waters by preventing erosion of the riverbank. The project will have no anticipated impact on solid waste management or wastewater treatment. The project will have no anticipated direct impact to any community water supply, however some indirect beneficial impacts on irrigation water supply and groundwater recharge may occur, which can impact drinking water.

The proposed project has the potential to have direct, short-term adverse impacts to water quality through constriction activities within the river corridor. If ground disturbance for the proposed

project is equal to or greater than 1 acre, the contractor is required to obtain and comply with Montana DEQ's General Permit for Storm Water Discharges Associated with Construction Activities. This permit requires BMPs to be implemented to minimize sediment-laden runoff from reaching a water of the state (in this case, the Sun River), inspections of the BMPs, and rehabilitation of the area post construction.

No Action – The riverbank erosion would continue at an accelerated rate, which would jeopardize the integrity of the irrigation canal intake. These deleterious conditions would persist and eventually decline further, becoming ineffective for the local residents' agricultural water supply and demand.

26. ENVIRONMENTAL JUSTICE

Will the proposed project result in disproportionately high or adverse human health or environmental effects on minority or low-income populations per the Environmental Justice Executive Order 12898? Identify potential impacts to and identify direct, indirect, and cumulative effects likely to occur as a result of the proposed action.

The project location is in a rural area and will not have impacts to a specific population.

Proposed Alternative - Potentially no impact as the proposed project will not result in disproportionately high or adverse human health or environmental effects on minority or low-income populations. The economic impact will not have a disproportionate effect among any portion of the community.

No Action – No impact to environmental justice.

EA Prepared By:	Name: Samantha Treu Title: MEPA Coordinator	Date: March 2, 2023 Email: samantha.treu@mt.gov
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V. FINDING

27. ALTERNATIVE SELECTED:

Alternative 3 is the selected alternative as it provides immediate and effective protection to the Sun River, Adobe Creek and the SRDC irrigation infrastructure at a reasonable cost. It is a relatively short section of riverbank so there are no significant adverse effects with the engineered riprap construction.

28. SIGNIFICANCE OF POTENTIAL IMPACTS:

The adverse impacts will likely include soil compaction, vegetation removal, and excessive noise due to construction; however, the project proponent will begin the project by implementing various stream restoration BMPs (best management practices), such as installing silt fences, slash rolls, and fiber rolls. In addition, these impacts will be short-term and the cumulative impacts will include increased water quality for surface water of the Sun River drainage, ultimately benefitting aquatic

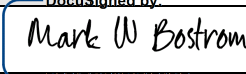
species residing in the stream and allowing efficient use of the SRDC irrigation infrastructure.

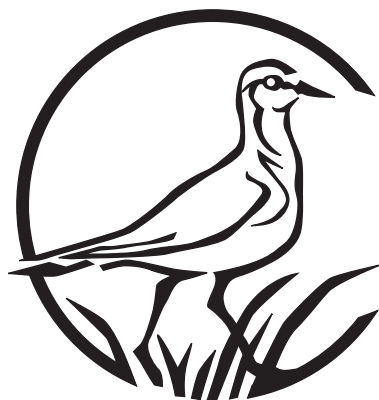
29. NEED FOR FURTHER ENVIRONMENTAL ANALYSIS:

☐ EIS

☐ More Detailed EA

☒ No Further Analysis

EA Approved By:	Name: Mark W Bostrom
	Title: Division Administrator
Signature: 	Date: 3/2/2023 1:58:24 PM MST



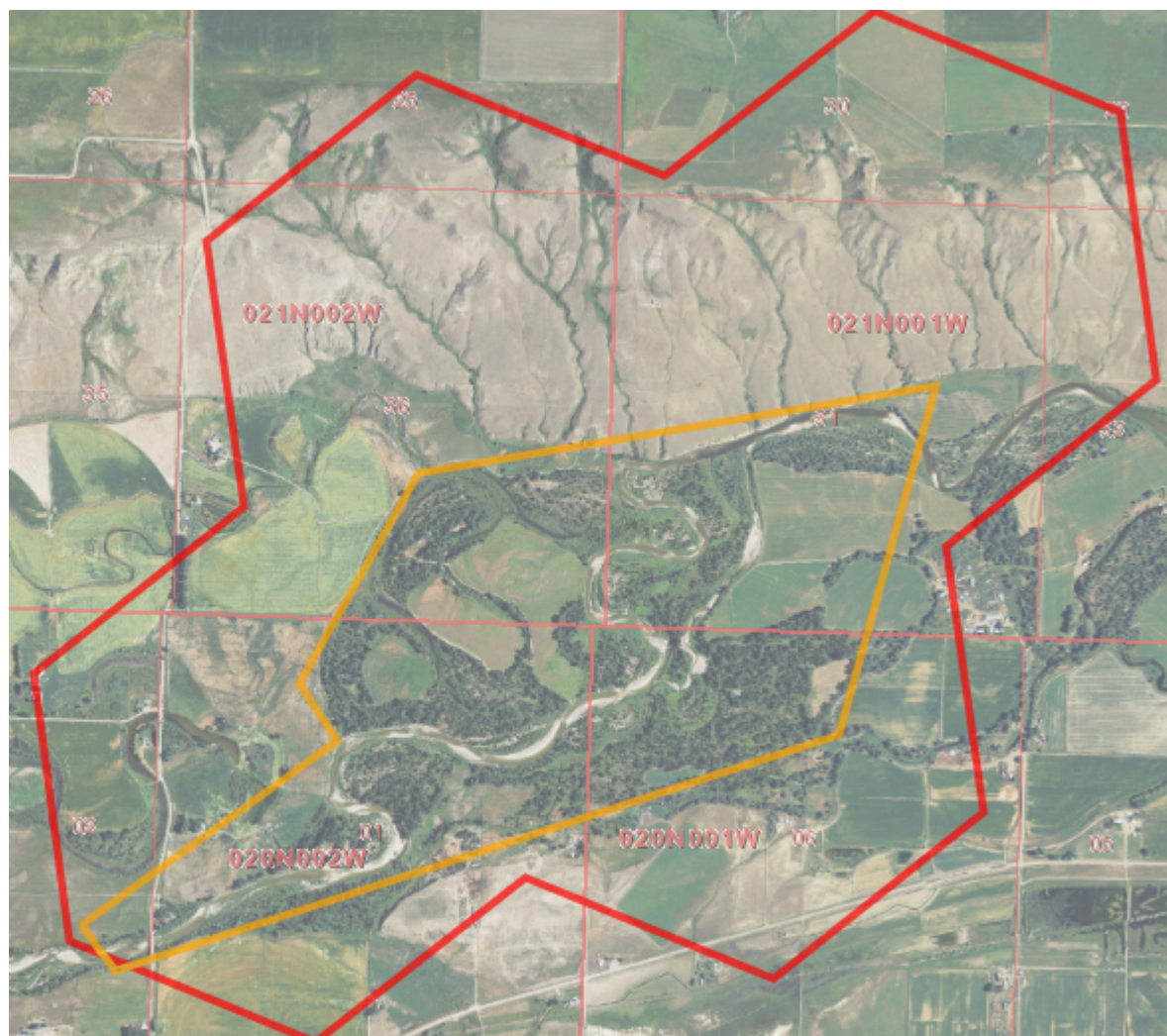
MONTANA Natural Heritage Program

1515 East 6th Avenue
Helena, MT 59620
(406) 444-5363
mtnhp.org



Latitude	Longitude
47.50951	-111.76758
47.54515	-111.82168

Summarized by:
Sun River Avulsion
(Custom Area of Interest)



Suggested Citation

Montana Natural Heritage Program. Environmental Summary Report.
for Latitude 47.50951 to 47.54515 and Longitude -111.76758 to -111.82168. Retrieved on 1/27/2023.

The Montana Natural Heritage Program is part of the Montana State Library's Natural Resource Information System. Since 1985, it has served as a neutral and non-regulatory provider of easily accessible information on Montana's species and biological communities to inform all stakeholders in environmental review, permitting, and planning processes. The program is part of NatureServe, a network of over 80 similar programs in states, provinces, and nations throughout the Western Hemisphere, working to provide current and comprehensive distribution and status information on species and biological communities.



Environmental Summary

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Introduction to Environmental Summary Report

Environmental Summary Reports from the Montana Natural Heritage Program (MTNHP) provide information on species and biological communities to inform all stakeholders in environmental review, permitting, and planning processes. For information on environmental permits in Montana, please see permitting overviews by the [Montana Department of Environmental Quality](#), the [Montana Department of Natural Resources and Conservation](#), the [Index of Environmental Permits for Montana](#) and our [Suggested Contacts for Natural Resource Management Agencies](#). The report for your area of interest consists of introductory and related materials in this PDF and an Excel workbook with worksheets summarizing information managed in the MTNHP databases for: (1) species occurrences; (2) other observed species without species occurrences; (3) other species potentially present based on their range, presence of associated habitats, or predictive distribution model output if available; (4) structured surveys that follow a protocol capable of detecting one or more species; (5) land cover mapped as ecological systems; (6) wetland and riparian mapping; (7) land management categories; and (8) biological reports associated with plant and animal observations. If your area of interest corresponds to a statewide polygon layer (e.g., watersheds, counties, or public land survey sections) information summaries in your report will exactly match those boundaries. However, if your report is for a custom area, users should be aware that summaries do not correspond to the exact boundaries of the polygon they have specified, but instead are a summary across a layer of hexagons intersected by the polygon they specified as shown on the report cover. Summarizing by these hexagons which are one square mile in area and approximately one kilometer in length on each side allows for consistent and rapid delivery of summaries based on a uniform grid that has been used for planning efforts across the western United States (e.g., Western Association of Fish and Wildlife Agencies - [Crucial Habitat Assessment Tool](#)).

In presenting this information, MTNHP is working towards assisting the user with rapidly assessing the known or potential species and biological communities, land management categories, and biological reports associated with the report area. Users are reminded that this information is likely incomplete and may be inaccurate as surveys to document species are lacking in many areas of the state, species' range polygons often include regions of unsuitable habitat, methods of predicting the presence of species or communities are constantly improving, and information is constantly being added and updated in our databases. **Field verification by professional biologists of the absence or presence of species and biological communities in a report area will always be an important obligation of users of our data. Users are encouraged to only use this environmental summary report as a starting point for more in depth analyses and are encouraged to contact state, federal, and tribal resource management agencies for additional data or management guidelines relevant to your efforts. Please see the Appendix for introductory materials to each section of the report, additional information resources, and a list of relevant agency contacts.**

Model Icons
Suitable (native range)
Optimal Suitability
Moderate Suitability
Low Suitability
Suitable (introduced range)

Habitat Icons
Common
Occasional

Range Icons
Native / Year-round
Summer
Winter
Migratory
Non-native
Historical

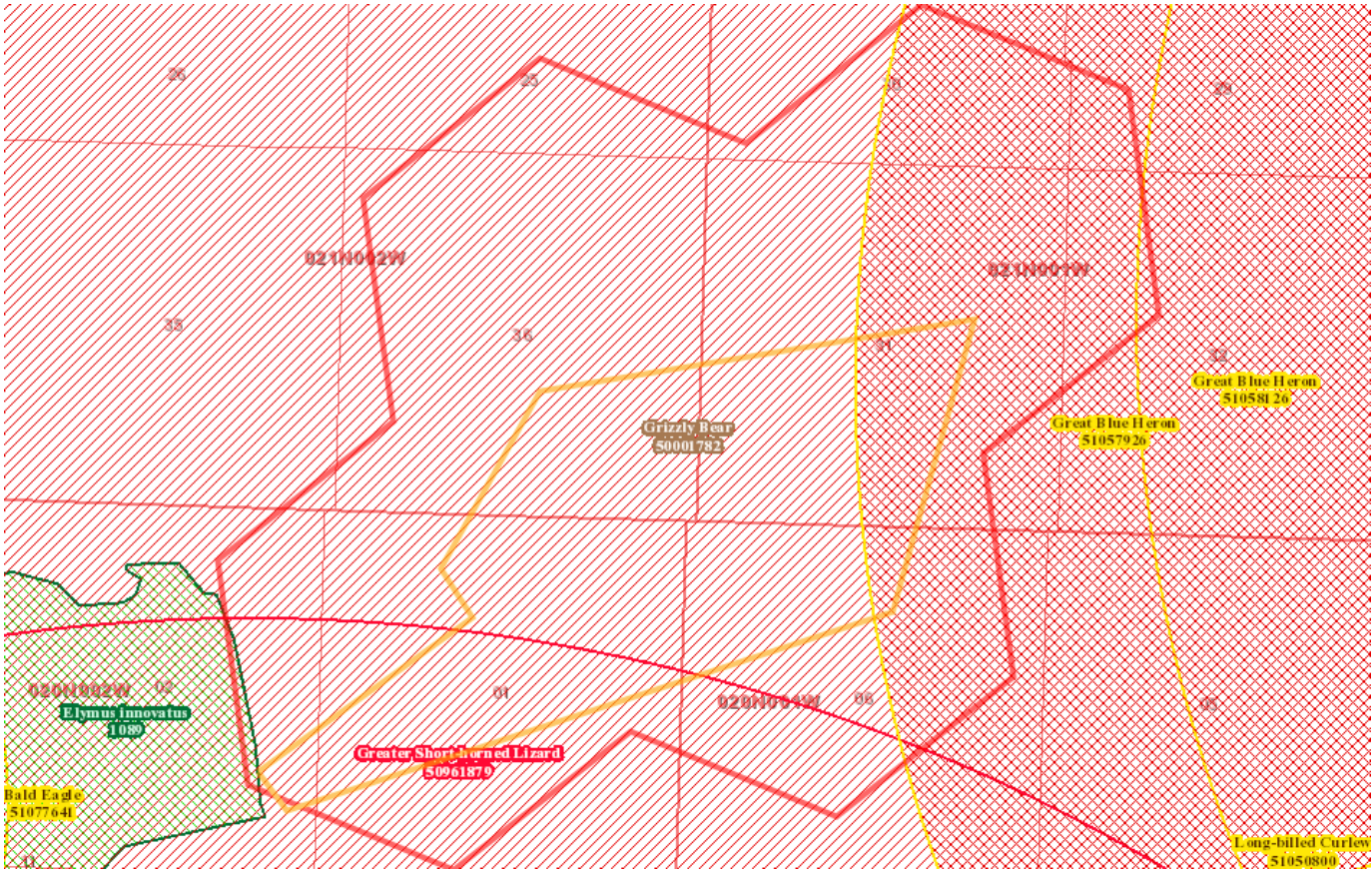
Num Obs
Count of obs with 'good precision' (<=1000m)
+ indicates additional 'poor precision' obs (1001m-10,000m)

Latitude
47.50951
47.54515

Longitude
-111.76758
-111.82168

Native Species

Summarized by: **Sun River Avulsion** (*Custom Area of Interest*)
All Species (not filtered by Status)



Species Occurrences

	USFWS Sec7	# SO	# Obs	Predicted Model	Range
V - Elymus innovatus (<i>Northern Wildrye</i>) SOC		1			Y
View in Field Guide View Predicted Models View Range Maps Species of Concern - Native Species Global: G5 State: S2 USFS: Species of Conservation Concern in Forests (HLC) Plant Threat Score: No Known Threats Delineation Criteria Individual occurrences are generally based upon a discretely mapped area provided by an observer and are not separated by any pre-defined distance. Individual clusters of plants mapped at fine spatial scales (separated by less than approximately 25-50 meters) may be grouped together into one occurrence if they are not separated by distinct areas of habitat or terrain features. Point observations are buffered to encompass any locational uncertainty associated with the observation. (Last Updated: Jan 20, 2023) Predicted Models: 25% Suitable (native range) (deductive)					
B - Great Blue Heron (<i>Ardea herodias</i>) SOC		2			Y S M
View in Field Guide View Predicted Models View Range Maps Species of Concern - Native Species Global: G5 State: S3 USFWS: MBTA FWP SWAP: SGCN3 Delineation Criteria Confirmed nesting area buffered by a minimum distance of 6,500 meters in order to be conservative about encompassing the areas commonly used for foraging near the breeding colony and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Jan 10, 2023) Predicted Models: 50% Optimal (inductive), 50% Moderate (inductive)					
M - Grizzly Bear (<i>Ursus arctos</i>) SOC	7	1			Y
View in Field Guide View Predicted Models View Range Maps Species of Concern - Native Species Global: G4 State: S2S3 USFWS: LT BLM: THREATENED FWP SWAP: SGCN2-3 Delineation Criteria Species Occurrence polygons represent areas delineated by the U.S. Fish and Wildlife Service (USFWS) that encompass both home ranges and potential transitory movements based on verified sightings. Within these areas, the USFWS wants project proponents to consider whether the species may be present when evaluating the potential impacts of a project and to work with the USFWS to develop and implement best management practices to minimize or eliminate project effects on the species. (Last Updated: Dec 21, 2022) Predicted Models: 100% Low (inductive)					
R - Greater Short-horned Lizard (<i>Phrynosoma hernandesi</i>) SOC		1	+		Y
View in Field Guide View Predicted Models View Range Maps Species of Concern - Native Species Global: G5 State: S3 BLM: SENSITIVE FWP SWAP: SGCN3, SGIN Delineation Criteria Confirmed breeding area based on the presence of a resident animal of any age. Point observation location is buffered by a minimum distance of 300 meters in order to encompass habitats supporting other individuals and documented distances moved between summer and winter habitats. Otherwise the point observation is buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Dec 22, 2022) Predicted Models: 25% Low (inductive)					



Model Icons	Habitat Icons	Range Icons	Num Obs
Suitable (native range)	Common	Native / Year-round	Count of obs with 'good precision' (<=1000m)
Optimal Suitability	Occasional	Summer	+ indicates additional 'poor precision' obs (1001m-10,000m)
Moderate Suitability		Winter	
Low Suitability		Migratory	
Suitable (introduced range)		Non-native	
		Historical	



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47.50951	-111.76758
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Native Species

Summarized by: **Sun River Avulsion** (*Custom Area of Interest*)
All Species (not filtered by Status)

Other Observed Species

	USFWS Sec7	# Obs	Predicted Model	Range
<div><div><div>F - Brassy Minnow (<i>Hybognathus hankinsoni</i>)</div><div>PSOC</div></div></div>		+		
<div><div>View in Field Guide</div><div>View Predicted Models</div><div>View Range Maps</div></div> <div>Potential Species of Concern - Native Species</div> <div>Global: G5 State: S4</div> <div>Predicted Models: 100% Suitable (native range) (deductive)</div>				
<div><div><div>F - Burbot (<i>Lota lota</i>)</div><div>PSOC</div></div></div>		+		
<div><div>View in Field Guide</div><div>View Predicted Models</div><div>View Range Maps</div></div> <div>Potential Species of Concern - Native Species</div> <div>Global: G5 State: S4</div> <div>Predicted Models: 100% Suitable (native range) (deductive)</div>				
<div><div><div>B - Bald Eagle (<i>Haliaeetus leucocephalus</i>)</div><div>SSS</div></div></div>		2		
<div><div>View in Field Guide</div><div>View Predicted Models</div><div>View Range Maps</div></div> <div>Special Status Species - Native Species</div> <div>Global: G5 State: S4 USFWS: BGEPA; MBTA USFS: Sensitive - Known in Forests (BD, BRT, KOOT, LOLO) BLM: SENSITIVE PIF: 2</div> <div>Predicted Models: 50% Optimal (inductive), 50% Moderate (inductive)</div>				
<div><div><div>B - American White Pelican (<i>Pelecanus erythrorhynchos</i>)</div><div>SOC</div></div></div>		1		
<div><div>View in Field Guide</div><div>View Predicted Models</div><div>View Range Maps</div></div> <div>Species of Concern - Native Species</div> <div>Global: G4 State: S3B USFWS: MBTA FWP SWAP: SGCN3 PIF: 3</div> <div>Predicted Models: 100% Moderate (inductive)</div>				
<div><div><div>B - White-faced Ibis (<i>Plegadis chihi</i>)</div><div>SOC</div></div></div>		1		
<div><div>View in Field Guide</div><div>View Predicted Models</div><div>View Range Maps</div></div> <div>Species of Concern - Native Species</div> <div>Global: G5 State: S3B USFWS: MBTA BLM: SENSITIVE FWP SWAP: SGCN3 PIF: 2</div> <div>Predicted Models: 50% Moderate (inductive), 50% Low (inductive)</div>				
<div><div><div>F - Brook Stickleback (<i>Culaea inconstans</i>)</div><div>PSOC</div></div></div>		+	Not Assessed	
<div><div>View in Field Guide</div><div>View Range Maps</div></div> <div>Potential Species of Concern - Native/Non-native Species - (depends on location or taxa)</div> <div>Global: G5 State: S4</div>				
<div><div><div>F - Northern Redbelly Dace (<i>Chrosomus eos</i>)</div><div>SOC</div></div></div>		+	Not Assessed	
<div><div>View in Field Guide</div><div>View Range Maps</div></div> <div>Species of Concern - Native Species</div> <div>Global: G5 State: S3 FWP SWAP: SGCN3</div>				
<div><div><div>F - Northern Redbelly X Finescale Dace (<i>Chrosomus eos x Chrosomus neogaeus</i>)</div><div>SOC</div></div></div>		+	Not Assessed	
<div><div>View in Field Guide</div><div>View Range Maps</div></div> <div>Species of Concern - Native Species</div> <div>Global: GNA State: S3 BLM: SENSITIVE FWP SWAP: SGCN3</div>				
<div><div><div>B - Brewer's Sparrow (<i>Spizella breweri</i>)</div><div>SOC</div></div></div>		+	Not Assessed	
<div><div>View in Field Guide</div><div>View Range Maps</div></div> <div>Species of Concern - Native Species</div> <div>Global: G5 State: S3B USFWS: MBTA BLM: SENSITIVE FWP SWAP: SGCN3 PIF: 2</div>				
<div><div><div>B - Northern Hawk Owl (<i>Surnia ulula</i>)</div><div>SOC</div></div></div>		+	Not Assessed	
<div><div>View in Field Guide</div><div>View Range Maps</div></div> <div>Species of Concern - Native Species</div> <div>Global: G5 State: S3 USFWS: MBTA FWP SWAP: SGCN3, SGIN</div>				

Summarized by: **Sun River Avulsion** (*Custom Area of Interest*)
All Species (not filtered by Status)

	USFWS Sec7	Predicted Model	Range
<div> <div></div> <div> <div>M - Fringed Myotis</div> <div><i>(Myotis thysanodes)</i></div> <div>SOC</div> </div> </div>			Y
<div> <div>View in Field Guide</div> <div>View Predicted Models</div> <div>View Range Maps</div> </div> <div> <div>Species of Concern - Native Species</div> <div>Global: G4</div> <div>State: S3</div> <div>BLM: SENSITIVE</div> <div>FWP SWAP: SGCN3</div> </div> <div> <div>Predicted Models:</div> <div>M 100% Moderate (inductive)</div> </div>			
<div> <div></div> <div> <div>M - Little Brown Myotis</div> <div><i>(Myotis lucifugus)</i></div> <div>SOC</div> </div> </div>			Y
<div> <div>View in Field Guide</div> <div>View Predicted Models</div> <div>View Range Maps</div> </div> <div> <div>Species of Concern - Native Species</div> <div>Global: G3G4</div> <div>State: S3</div> <div>FWP SWAP: SGCN3</div> </div> <div> <div>Predicted Models:</div> <div>M 100% Moderate (inductive)</div> </div>			
<div> <div></div> <div> <div>M - Merriam's Shrew</div> <div><i>(Sorex merriami)</i></div> <div>SOC</div> </div> </div>			Y
<div> <div>View in Field Guide</div> <div>View Predicted Models</div> <div>View Range Maps</div> </div> <div> <div>Species of Concern - Native Species</div> <div>Global: G4</div> <div>State: S3</div> <div>FWP SWAP: SGCN3</div> </div> <div> <div>Predicted Models:</div> <div>M 100% Moderate (inductive)</div> </div>			
<div> <div></div> <div> <div>M - North American Porcupine</div> <div><i>(Erethizon dorsatum)</i></div> <div>PSOC</div> </div> </div>			Y
<div> <div>View in Field Guide</div> <div>View Predicted Models</div> <div>View Range Maps</div> </div> <div> <div>Potential Species of Concern - Native Species</div> <div>Global: G5</div> <div>State: S3S4</div> <div>FWP SWAP: SGIN</div> </div> <div> <div>Predicted Models:</div> <div>M 100% Moderate (inductive)</div> </div>			
<div> <div></div> <div> <div>V - Carex crawei</div> <div><i>(Crawe's Sedge)</i></div> <div>SOC</div> </div> </div>			Y
<div> <div>View in Field Guide</div> <div>View Predicted Models</div> <div>View Range Maps</div> </div> <div> <div>Species of Concern - Native Species</div> <div>Global: G5</div> <div>State: S2S3</div> <div>Plant Threat Score: Low</div> </div> <div> <div>Predicted Models:</div> <div>M 100% Moderate (inductive)</div> </div>			
<div> <div></div> <div> <div>V - Cypripedium parviflorum</div> <div><i>(Small Yellow Lady's-slipper)</i></div> <div>PSOC</div> </div> </div>			Y
<div> <div>View in Field Guide</div> <div>View Predicted Models</div> <div>View Range Maps</div> </div> <div> <div>Potential Species of Concern - Native Species</div> <div>Global: G5</div> <div>State: S3S4</div> <div>USFS: Sensitive - Known in Forests (KOOT, LOLO) Sensitive - Suspected in Forests (BRT) Species of Conservation Concern in Forests (CG, HLC)</div> </div> <div> <div>Predicted Models:</div> <div>M 100% Moderate (inductive)</div> </div>			
<div> <div></div> <div> <div>V - Eleocharis rostellata</div> <div><i>(Beaked Spikerush)</i></div> <div>SOC</div> </div> </div>			Y
<div> <div>View in Field Guide</div> <div>View Predicted Models</div> <div>View Range Maps</div> </div> <div> <div>Species of Concern - Native Species</div> <div>Global: G5</div> <div>State: S3</div> <div>USFS: Species of Conservation Concern in Forests (CG, FLAT, HLC)</div> <div>Plant Threat Score: Unknown</div> <div>CCVI: Less Vulnerable</div> </div> <div> <div>Predicted Models:</div> <div>M 100% Moderate (inductive)</div> </div>			
<div> <div></div> <div> <div>V - Impatiens aurella</div> <div><i>(Pale-yellow Jewel-weed)</i></div> <div>SOC</div> </div> </div>			Y
<div> <div>View in Field Guide</div> <div>View Predicted Models</div> <div>View Range Maps</div> </div> <div> <div>Species of Concern - Native Species</div> <div>Global: G4</div> <div>State: S3</div> <div>Plant Threat Score: No Known Threats</div> </div> <div> <div>Predicted Models:</div> <div>M 100% Moderate (inductive)</div> </div>			
<div> <div></div> <div> <div>V - Oxytropis lagopus var. conjugans</div> <div><i>(Hare's-foot Locoweed)</i></div> <div>PSOC</div> </div> </div>			Y
<div> <div>View in Field Guide</div> <div>View Predicted Models</div> <div>View Range Maps</div> </div> <div> <div>Potential Species of Concern - Native Species</div> <div>Global: G4G5T3T4</div> <div>State: S3S4</div> </div> <div> <div>Predicted Models:</div> <div>M 100% Moderate (inductive)</div> </div>			
<div> <div></div> <div> <div>M - Long-eared Myotis</div> <div><i>(Myotis evotis)</i></div> <div>SOC</div> </div> </div>			Y
<div> <div>View in Field Guide</div> <div>View Predicted Models</div> <div>View Range Maps</div> </div> <div> <div>Species of Concern - Native Species</div> <div>Global: G5</div> <div>State: S3</div> </div> <div> <div>Predicted Models:</div> <div>M 75% Moderate (inductive), L 25% Low (inductive)</div> </div>			
<div> <div></div> <div> <div>V - Kobresia simpliciuscula</div> <div><i>(Simple Kobresia)</i></div> <div>SOC</div> </div> </div>			Y
<div> <div>View in Field Guide</div> <div>View Predicted Models</div> <div>View Range Maps</div> </div> <div> <div>Species of Concern - Native Species</div> <div>Global: G5</div> <div>State: S3</div> <div>Plant Threat Score: Unknown</div> </div> <div> <div>Predicted Models:</div> <div>M 75% Moderate (inductive), L 25% Low (inductive)</div> </div>			
<div> <div></div> <div> <div>M - Hoary Bat</div> <div><i>(Lasiurus cinereus)</i></div> <div>SOC</div> </div> </div>			S M
<div> <div>View in Field Guide</div> <div>View Predicted Models</div> <div>View Range Maps</div> </div> <div> <div>Species of Concern - Native Species</div> <div>Global: G3G4</div> <div>State: S3B</div> <div>BLM: SENSITIVE</div> <div>FWP SWAP: SGCN3</div> </div> <div> <div>Predicted Models:</div> <div>M 75% Moderate (inductive), L 25% Low (inductive)</div> </div>			
<div> <div></div> <div> <div>B - Veery</div> <div><i>(Catharus fuscescens)</i></div> <div>SOC</div> </div> </div>			S M
<div> <div>View in Field Guide</div> <div>View Predicted Models</div> <div>View Range Maps</div> </div> <div> <div>Species of Concern - Native Species</div> <div>Global: G5</div> <div>State: S3B</div> <div>USFWS: MBTA</div> <div>BLM: SENSITIVE</div> <div>FWP SWAP: SGCN3</div> <div>PIF: 2</div> </div> <div> <div>Predicted Models:</div> <div>M 75% Moderate (inductive), L 25% Low (inductive)</div> </div>			
<div> <div></div> <div> <div>M - Hayden's Shrew</div> <div><i>(Sorex haydeni)</i></div> <div>PSOC</div> </div> </div>			Y

Predicted Models: 50% Moderate (inductive), 50% Low (inductive)							
M - Silver-haired Bat (<i>Lasionycteris noctivagans</i>) PSOC							
View in Field Guide View Predicted Models View Range Maps							
Potential Species of Concern - Native Species		Global: G3G4		State: S4			
Predicted Models: 50% Moderate (inductive), 50% Low (inductive)							
M - Townsend's Big-eared Bat (<i>Corynorhinus townsendii</i>) SOC							
View in Field Guide View Predicted Models View Range Maps							
Species of Concern - Native Species		Global: G4		State: S3		USFS: Sensitive - Known in Forests (BD, BRT, KOOT, LOLO) BLM: SENSITIVE FWP SWAP: SGCN3	
Predicted Models: 50% Moderate (inductive), 50% Low (inductive)							
I - Bombus suckleyi (<i>Suckley Cuckoo Bumble Bee</i>) SOC							
View in Field Guide View Predicted Models View Range Maps							
Species of Concern - Native Species		Global: G2G3		State: S1			
Predicted Models: 50% Moderate (inductive), 50% Low (inductive)							
V - Chenopodium subglabrum (<i>Smooth Goosefoot</i>) SOC							
View in Field Guide View Predicted Models View Range Maps							
Species of Concern - Native Species		Global: G3G4		State: S2		Plant Threat Score: Unknown CCVI: Highly Vulnerable	
Predicted Models: 50% Moderate (inductive), 50% Low (inductive)							
V - Elodea bifoliata (<i>Long-sheath Waterweed</i>) SOC							
View in Field Guide View Predicted Models View Range Maps							
Species of Concern - Native Species		Global: G4G5		State: S2?		Plant Threat Score: No Known Threats	
Predicted Models: 50% Moderate (inductive), 50% Low (inductive)							
V - Stellaria crassifolia (<i>Fleshy Stitchwort</i>) SOC							
View in Field Guide View Predicted Models View Range Maps							
Species of Concern - Native Species		Global: G5		State: S2		Plant Threat Score: No Known Threats	
Predicted Models: 50% Moderate (inductive), 50% Low (inductive)							
M - Eastern Red Bat (<i>Lasiurus borealis</i>) SOC							
View in Field Guide View Predicted Models View Range Maps							
Species of Concern - Native Species		Global: G3G4		State: S3B		BLM: SENSITIVE	
Predicted Models: 50% Moderate (inductive), 50% Low (inductive)							
B - American Bittern (<i>Botaurus lentiginosus</i>) SOC							
View in Field Guide View Predicted Models View Range Maps							
Species of Concern - Native Species		Global: G5		State: S3B		USFWS: MBTA BLM: SENSITIVE FWP SWAP: SGCN3 PIF: 3	
Predicted Models: 50% Moderate (inductive), 50% Low (inductive)							
B - Black-billed Cuckoo (<i>Coccyzus erythrophthalmus</i>) SOC							
View in Field Guide View Predicted Models View Range Maps							
Species of Concern - Native Species		Global: G5		State: S3B		USFWS: MBTA; BCC11; BCC17 BLM: SENSITIVE FWP SWAP: SGCN3, SGIN PIF: 2	
Predicted Models: 50% Moderate (inductive), 50% Low (inductive)							
B - Bobolink (<i>Dolichonyx oryzivorus</i>) SOC							
View in Field Guide View Predicted Models View Range Maps							
Species of Concern - Native Species		Global: G5		State: S3B		USFWS: MBTA; BCC10; BCC11; BCC17 FWP SWAP: SGCN3 PIF: 3	
Predicted Models: 50% Moderate (inductive), 50% Low (inductive)							
B - Caspian Tern (<i>Hydroprogne caspia</i>) SOC							
View in Field Guide View Predicted Models View Range Maps							
Species of Concern - Native Species		Global: G5		State: S2B		USFWS: MBTA BLM: SENSITIVE FWP SWAP: SGCN2 PIF: 2	
Predicted Models: 50% Moderate (inductive), 50% Low (inductive)							
V - Centunculus minimus (<i>Chaffweed</i>) SOC							
View in Field Guide View Predicted Models View Range Maps							
Species of Concern - Native Species		Global: G5		State: S2		Plant Threat Score: No Known Threats	
Predicted Models: 50% Moderate (inductive), 25% Low (inductive)							
M - Long-legged Myotis (<i>Myotis volans</i>) SOC							
View in Field Guide View Predicted Models View Range Maps							
Species of Concern - Native Species		Global: G4G5		State: S3			
Predicted Models: 25% Moderate (inductive), 75% Low (inductive)							
B - Horned Grebe (<i>Podiceps auritus</i>) SOC							
View in Field Guide View Predicted Models View Range Maps							
Species of Concern - Native Species		Global: G5		State: S3B		USFWS: MBTA BLM: SENSITIVE FWP SWAP: SGCN3 PIF: 2	
Predicted Models: 25% Moderate (inductive), 75% Low (inductive)							
B - Ovenbird (<i>Seiurus aurocapilla</i>) PSOC							
View in Field Guide View Predicted Models View Range Maps							
Potential Species of Concern - Native Species		Global: G5		State: S4B		USFWS: MBTA PIF: 3	
Predicted Models: 25% Moderate (inductive), 75% Low (inductive)							
M - Dwarf Shrew (<i>Sorex nanus</i>) SOC							
View in Field Guide View Predicted Models View Range Maps							
Species of Concern - Native Species		Global: G4		State: S2S3		FWP SWAP: SGCN2-3	
Predicted Models: 100% Low (inductive)							
M - Preble's Shrew (<i>Sorex preblei</i>) SOC							

[illegible]

View in Field Guide View Predicted Models View Range Maps		Predicted Models:  75% Low (inductive)	
B - Eastern Bluebird (<i>Sialia sialis</i>) PSOC		  	
View in Field Guide View Predicted Models View Range Maps		Potential Species of Concern - Native Species Global: G5 State: S4B USFWS: MBTA	
Predicted Models:  75% Low (inductive)			
M - Black-tailed Prairie Dog (<i>Cynomys ludovicianus</i>) SOC		 	
View in Field Guide View Predicted Models View Range Maps		Species of Concern - Native Species Global: G4 State: S3 BLM: SENSITIVE FWP SWAP: SGCN3	
Predicted Models:  50% Low (inductive)			
R - Western Milksnake (<i>Lampropeltis gentilis</i>) SOC		 	
View in Field Guide View Predicted Models View Range Maps		Species of Concern - Native Species Global: G5 State: S2 BLM: SENSITIVE FWP SWAP: SGCN2	
Predicted Models:  50% Low (inductive)			
B - Black-crowned Night-Heron (<i>Nycticorax nycticorax</i>) SOC		  	
View in Field Guide View Predicted Models View Range Maps		Species of Concern - Native Species Global: G5 State: S3B USFWS: MBTA FWP SWAP: SGCN3 PIF: 3	
Predicted Models:  50% Low (inductive)			
B - Burrowing Owl (<i>Athene cunicularia</i>) SOC		  	
View in Field Guide View Predicted Models View Range Maps		Species of Concern - Native Species Global: G4 State: S3B USFWS: MBTA; BCC17 BLM: SENSITIVE FWP SWAP: SGCN3 PIF: 1	
Predicted Models:  50% Low (inductive)			
B - Common Tern (<i>Sterna hirundo</i>) SOC		  	
View in Field Guide View Predicted Models View Range Maps		Species of Concern - Native Species Global: G5 State: S3B USFWS: MBTA BLM: SENSITIVE FWP SWAP: SGCN3 PIF: 2	
Predicted Models:  50% Low (inductive)			
B - Ferruginous Hawk (<i>Buteo regalis</i>) SOC		  	
View in Field Guide View Predicted Models View Range Maps		Species of Concern - Native Species Global: G4 State: S3B USFWS: MBTA; BCC17 BLM: SENSITIVE FWP SWAP: SGCN3 PIF: 2	
Predicted Models:  50% Low (inductive)			
B - Forster's Tern (<i>Sterna forsteri</i>) SOC		  	
View in Field Guide View Predicted Models View Range Maps		Species of Concern - Native Species Global: G5 State: S3B USFWS: MBTA BLM: SENSITIVE FWP SWAP: SGCN3 PIF: 2	
Predicted Models:  50% Low (inductive)			
B - Franklin's Gull (<i>Leucophaeus pipixcan</i>) SOC		  	
View in Field Guide View Predicted Models View Range Maps		Species of Concern - Native Species Global: G5 State: S3B USFWS: MBTA; BCC10; BCC11; BCC17 BLM: SENSITIVE FWP SWAP: SGCN3 PIF: 2	
Predicted Models:  50% Low (inductive)			
B - Short-eared Owl (<i>Asio flammeus</i>) PSOC		 	
View in Field Guide View Predicted Models View Range Maps		Potential Species of Concern - Native Species Global: G5 State: S4 USFWS: MBTA; BCC11; BCC17 PIF: 3	
Predicted Models:  25% Low (inductive)			
V - Cyperus schweinitzii (<i>Schweinitz's Flatsedge</i>) SOC		 	
View in Field Guide View Predicted Models View Range Maps		Species of Concern - Native Species Global: G5 State: S2 Plant Threat Score: Low	
Predicted Models:  25% Low (inductive)			
V - Gratiola ebracteata (<i>Bractless Hedge-hyssop</i>) SOC		 	
View in Field Guide View Predicted Models View Range Maps		Species of Concern - Native Species Global: G4 State: S2 Plant Threat Score: No Known Threats CCVI: Moderately Vulnerable	
Predicted Models:  25% Low (inductive)			
V - Ranunculus cardiophyllus (<i>Heart-leaved Buttercup</i>) SOC		 	
View in Field Guide View Predicted Models View Range Maps		Species of Concern - Native Species Global: G5 State: S3 Plant Threat Score: Low	
Predicted Models:  25% Low (inductive)			
B - Thick-billed Longspur (<i>Rhynchophanes mccownii</i>) SOC		  	
View in Field Guide View Predicted Models View Range Maps		Species of Concern - Native Species Global: G4 State: S3B USFWS: MBTA; BCC10; BCC11; BCC17 BLM: SENSITIVE FWP SWAP: SGCN3 PIF: 2	
Predicted Models:  25% Low (inductive)			

Structured Surveys

Summarized by: **Sun River Avulsion** (*Custom Area of Interest*)

The Montana Natural Heritage Program (MTNHP) records information on the locations where more than 80 different types of well-defined repeatable survey protocols capable of detecting an animal species or suite of animal species have been conducted by state, federal, tribal, university, or private consulting biologists. Examples of structured survey protocols tracked by MTNHP include: visual encounter and dip net surveys for pond breeding amphibians, point counts for birds, call playback surveys for selected bird species, visual surveys of migrating raptors, kick net stream reach surveys for macroinvertebrates, visual encounter cover object surveys for terrestrial mollusks, bat acoustic or mist net surveys, pitfall and/or snap trap surveys for small terrestrial mammals, track or camera trap surveys for large mammals, and trap surveys for turtles. Whenever possible, photographs of survey locations are stored in MTNHP databases.

MTNHP does not typically manage information on structured surveys for plants; surveys for invasive species may be a future exception.

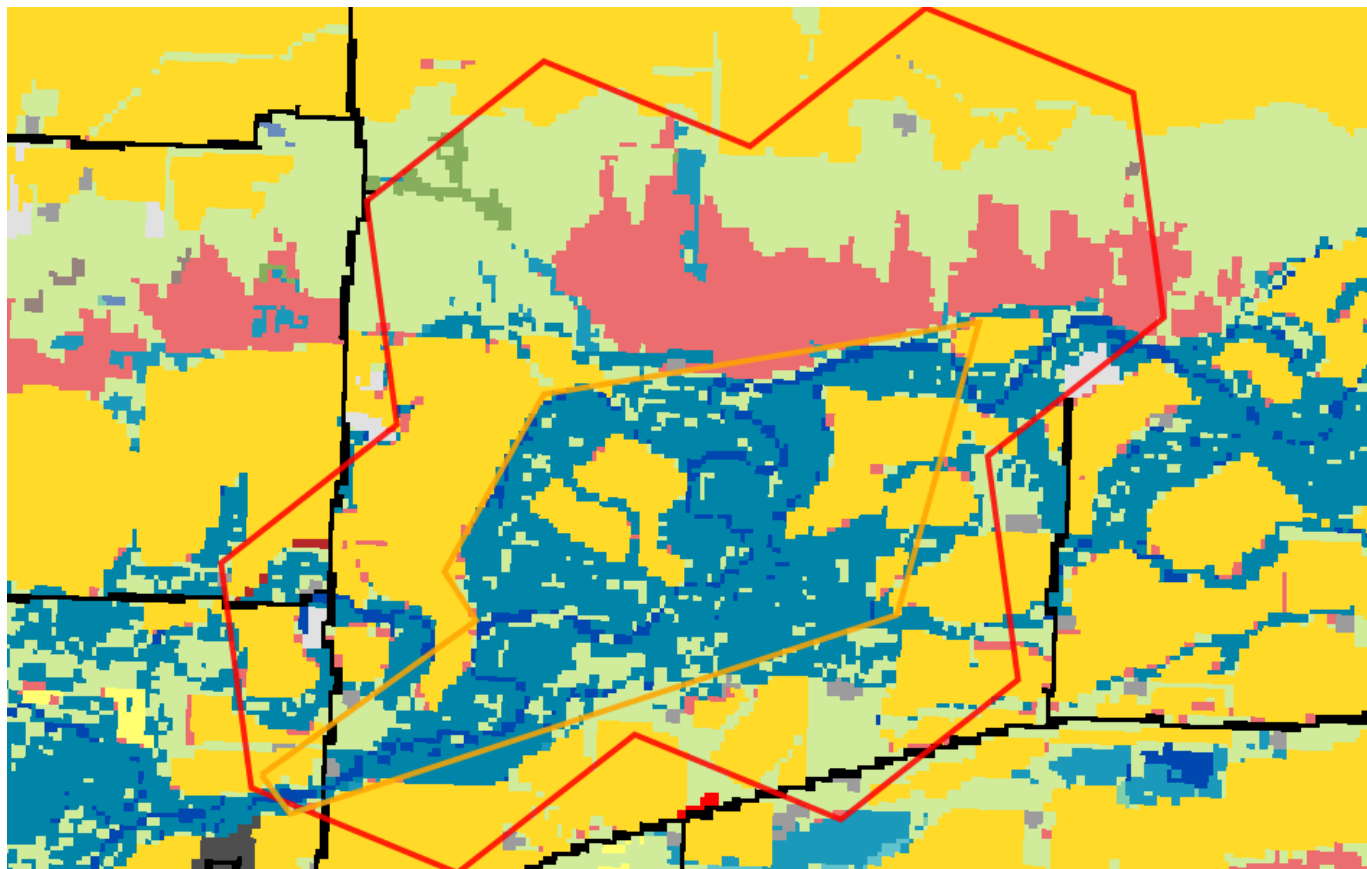
Within the report area you have requested, structured surveys are summarized by the number of each type of structured survey protocol that has been conducted, the number of species detections/observations resulting from these surveys, and the most recent year a survey has been conducted.

E-Eastern Heath Snail (<i>Eastern Heath Snail Survey</i>)	Survey Count: 1	Obs Count:	Recent Survey: 2012
E-Eurasian Water-milfoil Rake (<i>Rake tows/pulls for Eurasian Water-milfoil</i>)	Survey Count: 6	Obs Count: 1	Recent Survey: 2021
E-Invasive Mussel Plankton Tow (<i>Plankton tows for veligers of Invasive Mussels</i>)	Survey Count: 2	Obs Count:	Recent Survey: 2020
E-Kicknet (<i>Kicknet Collection Survey for Invasive Mussels and Snails</i>)	Survey Count: 6	Obs Count: 4	Recent Survey: 2021
E-Noxious Weed, Road-based (<i>Noxious Weed Road-based Visual Surveys</i>)	Survey Count: 3	Obs Count: 11	Recent Survey: 2003
E-Noxious Weed, Visual (<i>Noxious Weed Visual Surveys</i>)	Survey Count: 2	Obs Count: 54	Recent Survey: 2009
E-Visual Aquatic Invasives (<i>Visual Encounter Surveys for Aquatic Invasives on Shorelines or Underwater</i>)	Survey Count: 3	Obs Count: 1	Recent Survey: 2019
F-Fish Electrofishing (<i>Fish Electrofishing Surveys</i>)	Survey Count: 1	Obs Count: 7	Recent Survey: 1988



Land Cover

Summarized by: **Sun River Avulsion** (*Custom Area of Interest*)



Human Land Use Agriculture

Cultivated Crops

**31% (802
Acres)**

These areas used for the production of crops, such as corn, soybeans, small grains, sunflowers, vegetables, and cotton, typically on an annual cycle. Agricultural plant cover is variable depending on season and type of farming. Other areas include more stable land cover of orchards and vineyards.



Grassland Systems Lowland/Prairie Grassland

Great Plains Mixedgrass Prairie

**26% (669
Acres)**

The system covers much of the eastern two-thirds of Montana, occurring continuously for hundreds of square kilometers, interrupted only by wetland/riparian areas or sand prairies. Soils are primarily fine and medium-textured. The growing season averages 115 days, ranging from 100 days on the Canadian border to 130 days on the Wyoming border. Climate is typical of mid-continental regions with long severe winters and hot summers. Grasses typically comprise the greatest canopy cover, and western wheatgrass (*Pascopyrum smithii*) is usually dominant. Other species include thickspike wheatgrass (*Elymus lanceolatus*), green needlegrass (*Nassella viridula*), blue grama (*Bouteloua gracilis*), and needle and thread (*Hesperostipa comata*). Near the Canadian border in north-central Montana, this system grades into rough fescue (*Festuca campestris*) and Idaho fescue (*Festuca idahoensis*) grasslands. Remnants of shortbristle needle and thread (*Hesperostipa curisetata*) dominated vegetation are found in northernmost Montana and North Dakota, and are associated with productive sites, now mostly converted to farmland. Forb diversity is typically high. In areas of southeastern and central Montana where sagebrush steppe borders the mixed grass prairie, common plant associations include Wyoming big sagebrush-western wheatgrass (*Artemisia tridentata* ssp. *wyomingensis*/ *Pascopyrum smithii*). Fire and grazing are the primary drivers of this system. Drought can also impact it, in general favoring the shortgrass component at the expense of the mid-height grasses. With intensive grazing, cool season exotics such as Kentucky bluegrass (*Poa pratensis*), smooth brome (*Bromus inermis*), and Japanese brome (*Bromus japonicus*) increase in dominance; both of these rhizomatous species have been shown to markedly decrease species diversity. Previously cultivated acres that have been re-vegetated with non-native plants have been transformed into associations such as Kentucky bluegrass (*Poa pratensis*)/western wheatgrass (*Pascopyrum smithii*) or into pure crested wheatgrass (*Agropyron cristatum*) stands.



24% (609 Acres)

Wetland and Riparian Systems

Great Plains Floodplain

This system occurs along the Missouri and Yellowstone Rivers and their larger tributaries, including parts of the Little Missouri, Clark’s Fork Yellowstone, Powder, Tongue, Bighorn, Milk, and Musselshell rivers. These are the big perennial rivers of the region, with hydrologic dynamics largely driven by snowmelt and rainfall originating in their headwater watersheds, rather than local precipitation events. In the absence of disturbance, periodic flooding of fluvial and alluvial soils and channel migration will create depressions and backwaters that support a mosaic of wetland and riparian vegetation, whose composition and structure is sustained, altered and redistributed by hydrology. Dominant communities within this system range from floodplain forests to wet meadows to gravel/sand flats, linked by underlying soils and flooding regimes. In the western part of the system’s range in Montana, the overstory dominant species is black cottonwood (*Populus balsamifera ssp. trichocarpa*) with narrowleaf cottonwood (*Populus angustifolia*) and eastern cottonwood (*Populus deltoides*) occurring as co-dominants in the riparian/floodplain interface near the mountains. Further east, narrowleaf cottonwood and Plains cottonwood become dominant. In relatively undisturbed stands, willow (*Salix* species), redosier dogwood (*Cornus sericea*) and common chokecherry (*Prunus virginiana*) form a thick, multi-layered shrub understory, with a mixture of cool and warm season graminoid species below.

In Montana, many occurrences are now degraded to the point where the cottonwood overstory is the only remaining natural component. The hydrology of these floodplain systems has been affected by dams, highways, railroads and agricultural ditches, and as a result, they have lost their characteristic wetland /riparian mosaic structure. This has resulted in a highly altered community consisting of relict cottonwood stands with little regeneration. The understory vegetation is dominated by non-native pasture grasses, legumes and other introduced forbs, or by the disclimax western snowberry (*Symphoricarpos occidentalis*) and rose (*Rosa* species) shrub community.



12% (319 Acres)

Recently Disturbed or Modified Introduced Vegetation

Introduced Upland Vegetation - Annual and Biennial Forbland

Land cover is significantly altered/disturbed by introduced annual and biennial forbs. Natural vegetation types are no longer recognizable. Typical species that dominate these areas are knapweed, oxeye daisy, Canada thistle, leafy spurge, pepperweed, and yellow sweetclover.



3% (71 Acres)

Wetland and Riparian Systems Open Water

Open Water

All areas of open water, generally with less than 25% cover of vegetation or soil

Additional Limited Land Cover

- 1% (25 Acres) Great Plains Riparian
- 1% (16 Acres) Other Roads
- 1% (15 Acres) Low Intensity Residential
- 1% (15 Acres) Great Plains Wooded Draw and Ravine
- <1% (9 Acres) Developed, Open Space
- <1% (6 Acres) Major Roads
- <1% (2 Acres) Introduced Riparian and Wetland Vegetation
- <1% (1 Acres) Great Plains Cliff and Outcrop



Montana Natural Heritage Program

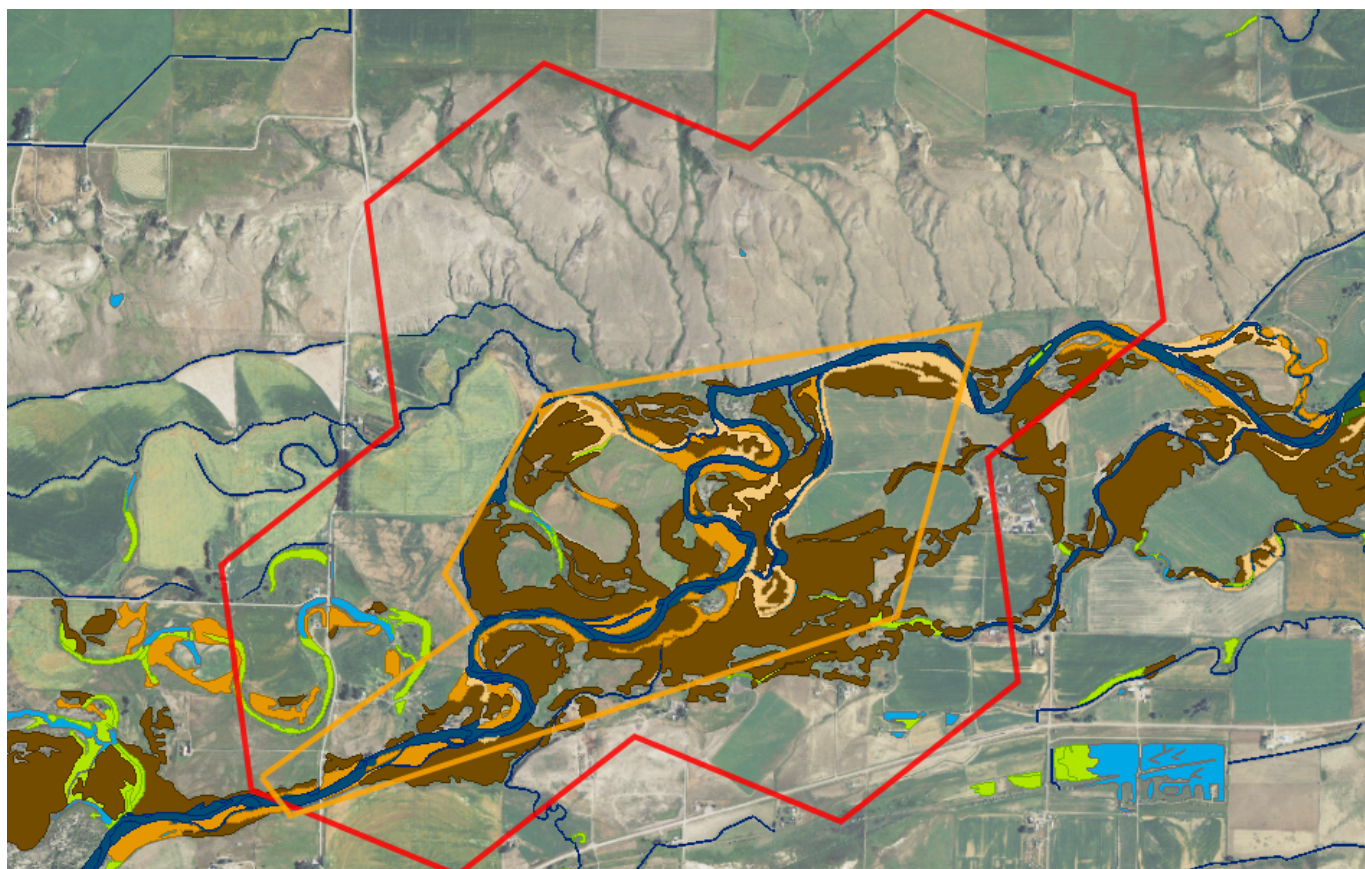
A program of the Montana State Library's
Natural Resource Information System



Latitude Longitude
47.50951 -111.76758
47.54515 -111.82168

Wetland and Riparian

Summarized by: **Sun River Avulsion** (*Custom Area of Interest*)



Wetland and Riparian Mapping

[Explain](#)

P - Palustrine

AB - Aquatic Bed

F - Semipermanently Flooded	10 Acres
(no modifier)	2 Acres PABF
h - Diked/Impounded	5 Acres PABFh
x - Excavated	3 Acres PABFx

P - Palustrine, AB - Aquatic Bed

Wetlands with vegetation growing on or below the water surface for most of the growing season.

EM - Emergent

A - Temporarily Flooded	13 Acres
(no modifier)	13 Acres PEMA
C - Seasonally Flooded	7 Acres
(no modifier)	7 Acres PEMC
F - Semipermanently Flooded	2 Acres
(no modifier)	2 Acres PEMF

P - Palustrine, EM - Emergent

Wetlands with erect, rooted herbaceous vegetation present during most of the growing season.

R - Riverine (Rivers)

3 - Upper Perennial

UB - Unconsolidated Bottom

F - Semipermanently Flooded	16 Acres
(no modifier)	16 Acres R3UBF
G - Intermittently Exposed	50 Acres
(no modifier)	50 Acres R3UBG

R - Riverine (Rivers), 3 - Upper Perennial, UB - Unconsolidated Bottom

Stream channels where the substrate is at least 25% mud, silt or other fine particles.

US - Unconsolidated Shore

A - Temporarily Flooded	23 Acres
(no modifier)	23 Acres R3USA

R - Riverine (Rivers), 3 - Upper Perennial, US - Unconsolidated Shore

Shorelines with less than 75% areal cover of stones, boulders, or bedrock and less than 30% vegetation cover. The area is also irregularly exposed due to seasonal or irregular flooding and subsequent drying.

4 - Intermittent

SB - Stream Bed

A - Temporarily Flooded	2 Acres
(no modifier)	1 Acres R4SBA

R - Riverine (Rivers), 4 - Intermittent, SB - Stream Bed

Active channel that contains periodic water flow.

x - Excavated

1 Acres R4SBAx

(no modifier)
x - Excavated

1 Acres R4SBC
<1 Acres R4SBCx

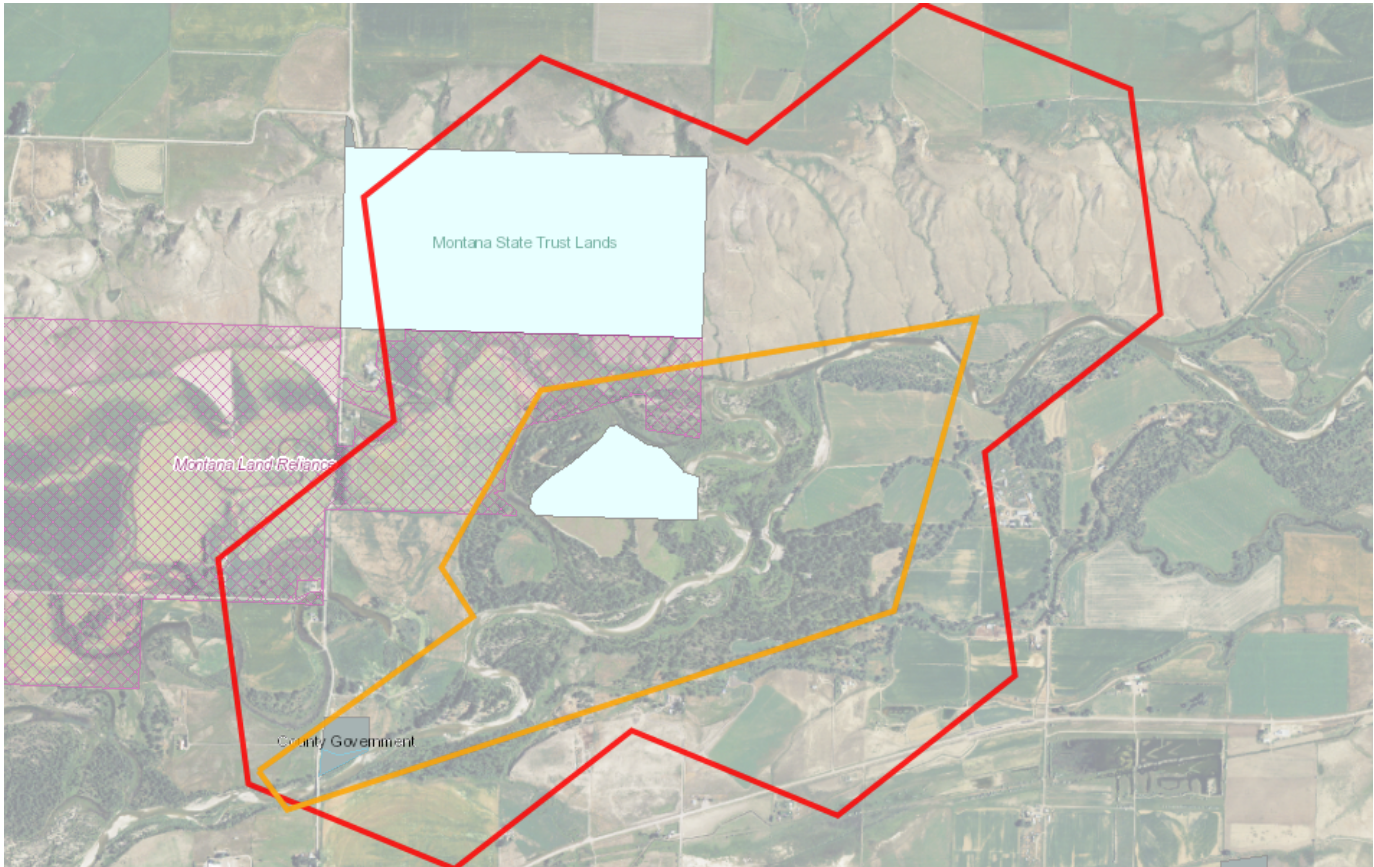
Rp - Riparian

1 - Lotic

<div><div></div>SS - Scrub-Shrub (no modifier)</div>	65 Acres Rp1SS	Rp - Riparian, 1 - Lotic, SS - Scrub-Shrub <i>This type of riparian area is dominated by woody vegetation that is less than 6 meters (20 feet) tall. Woody vegetation includes tree saplings and trees that are stunted due to environmental conditions.</i>
<div><div></div>FO - Forested (no modifier)</div>	347 Acres Rp1FO	Rp - Riparian, 1 - Lotic, FO - Forested <i>This riparian class has woody vegetation that is greater than 6 meters (20 feet) tall.</i>
<div><div></div>EM - Emergent (no modifier)</div>	39 Acres Rp1EM	Rp - Riparian, 1 - Lotic, EM - Emergent <i>Riparian areas that have erect, rooted herbaceous vegetation during most of the growing season.</i>

Land Management

Summarized by: **Sun River Avulsion** (*Custom Area of Interest*)



Land Management Summary				Explain
	Ownership	Tribal	Easements	Other Boundaries (possible overlap)
<div><div><div></div><div></div></div><div>Public Lands</div></div>	350 Acres (14%)			
<div><div><div></div><div></div></div><div>State</div></div>	340 Acres (13%)			
<div><div><div></div><div></div></div><div>Montana State Trust Lands</div></div>	340 Acres (13%)			
<div><div><div></div><div></div></div><div>MT State Trust Owned</div></div>	340 Acres (13%)			
<div><div><div></div><div></div></div><div>Montana Fish, Wildlife and Parks</div></div>				
<div><div><div></div><div></div></div><div>MTFWP Fishing Access Sites</div></div>				3 Acres
<div><div><div></div><div></div></div><div>Fort Shaw Fishing Access Site</div></div>				3 Acres
<div><div><div></div><div></div></div><div>Local</div></div>	10 Acres (<1%)			
<div><div><div></div><div></div></div><div>Local Government</div></div>	10 Acres (<1%)			
<div><div><div></div><div></div></div><div>Local Government Owned</div></div>	10 Acres (<1%)			
<div><div><div></div><div></div></div><div>Conservation Easements</div></div>			245 Acres (10%)	
<div><div><div></div><div></div></div><div>Private</div></div>			245 Acres (10%)	
<div><div><div></div><div></div></div><div>Montana Land Reliance</div></div>			245 Acres (10%)	
<div><div><div></div><div></div></div><div>Private Lands or Unknown Ownership</div></div>	1,962 Acres (77%)			



**Montana
Natural Heritage
Program**

A program of the **Montana State Library's
Natural Resource Information System**



Latitude	Longitude
47.50951	-111.76758
47.54515	-111.82168

Biological Reports

Summarized by: **Sun River Avulsion** (*Custom Area of Interest*)

Within the report area you have requested, citations for all reports and publications associated with plant or animal observations in Montana Natural Heritage Program (MTNHP) databases are listed and, where possible, links to the documents are included.

The MTNHP plans to include reports associated with terrestrial and aquatic communities in the future as allowed for by staff resources. If you know of reports or publications associated with species or biological communities within the report area that are not shown in this report, please let us know: mtnhp@mt.gov

No Biological Reports were found in the selected area



Montana Natural Heritage Program
A program of the **Montana State Library's Natural Resource Information System**

Model Icons
 Suitable (native range)
 Optimal Suitability
 Moderate Suitability
 Low Suitability
 Suitable (introduced range)

Habitat Icons
 Common
 Occasional

Range Icons
 Non-native

Num Obs
Count of obs with 'good precision' (<=1000m)
+ indicates additional 'poor precision' obs (1001m-10,000m)



Latitude	Longitude
47.50951	-111.76758
47.54515	-111.82168

Invasive and Pest Species

Summarized by: **Sun River Avulsion** (*Custom Area of Interest*)

		# Obs	Predicted Model	Range
Aquatic Invasive Species				
<input type="checkbox"/> V - Myriophyllum spicatum (<i>Eurasian Water-milfoil</i>)	N2A/AIS			
<div><div>View in Field Guide</div><div>View Predicted Models</div><div>View Range Maps</div></div> <div>Noxious Weed: Priority 2A - Aquatic Invasive Species - Non-native Species</div> <div>Global: GNR State: SNA</div> <div>Predicted Models: 75% Low (inductive)</div>				
<input type="checkbox"/> V - Nymphaea odorata (<i>American Water-lily</i>)	AIS			
<div><div>View in Field Guide</div><div>View Predicted Models</div><div>View Range Maps</div></div> <div>Aquatic Invasive Species - Non-native Species</div> <div>Global: G5 State: SNA</div> <div>Predicted Models: 100% Suitable (introduced range) (deductive)</div>				
<input type="checkbox"/> F - Common Carp (<i>Cyprinus carpio</i>)	AIS	+	Not Assessed	
<div><div>View in Field Guide</div><div>View Range Maps</div></div> <div>Aquatic Invasive Species - Non-native Species</div> <div>Global: G5 State: SNA</div>				
<input type="checkbox"/> I - Faxonius virilis (<i>Virile Crayfish</i>)	AIS	4	Not Assessed	
<div><div>View in Field Guide</div></div> <div>Aquatic Invasive Species - Native/Non-native Species - (depends on location or taxa)</div> <div>Global: G5 State: S5</div>				
Noxious Weeds: Priority 1A				
<input type="checkbox"/> V - Centaurea solstitialis (<i>Yellow Starthistle</i>)	N1A			
<div><div>View in Field Guide</div><div>View Predicted Models</div><div>View Range Maps</div></div> <div>Noxious Weed: Priority 1A - Non-native Species</div> <div>Global: GNR State: SNA</div> <div>Predicted Models: 50% Optimal (inductive), 50% Moderate (inductive)</div>				
<input type="checkbox"/> V - Isatis tinctoria (<i>Dyer's Woad</i>)	N1A			
<div><div>View in Field Guide</div><div>View Predicted Models</div><div>View Range Maps</div></div> <div>Noxious Weed: Priority 1A - Non-native Species</div> <div>Global: GNR State: SNA</div> <div>Predicted Models: 100% Low (inductive)</div>				
<input type="checkbox"/> V - Phragmites australis ssp. australis (<i>European Common Reed</i>)	N1A			
<div><div>View in Field Guide</div><div>View Predicted Models</div><div>View Range Maps</div></div> <div>Noxious Weed: Priority 1A - Non-native Species</div> <div>Global: G5T5 State: SNA</div> <div>Predicted Models: 100% Low (inductive)</div>				
<input type="checkbox"/> V - Taeniatherum caput-medusae (<i>Medusahead</i>)	N1A			
<div><div>View in Field Guide</div><div>View Predicted Models</div><div>View Range Maps</div></div> <div>Noxious Weed: Priority 1A - Non-native Species</div> <div>Global: G4G5 State: SNA</div> <div>Predicted Models: 50% Low (inductive)</div>				
Noxious Weeds: Priority 1B				
<input type="checkbox"/> V - Lythrum salicaria (<i>Purple Loosestrife</i>)	N1B			
<div><div>View in Field Guide</div><div>View Predicted Models</div><div>View Range Maps</div></div> <div>Noxious Weed: Priority 1B - Non-native Species</div> <div>Global: G5 State: SNA</div> <div>Predicted Models: 25% Optimal (inductive), 75% Moderate (inductive)</div>				
<input type="checkbox"/> V - Polygonum cuspidatum (<i>Japanese Knotweed</i>)	N1B			
<div><div>View in Field Guide</div><div>View Predicted Models</div><div>View Range Maps</div></div> <div>Noxious Weed: Priority 1B - Non-native Species</div> <div>Global: GNRTNR State: SNA</div> <div>Predicted Models: 75% Low (inductive)</div>				
<input type="checkbox"/> V - Cytisus scoparius (<i>Scotch Broom</i>)	N1B			
<div><div>View in Field Guide</div><div>View Predicted Models</div><div>View Range Maps</div></div> <div>Noxious Weed: Priority 1B - Non-native Species</div> <div>Global: GNR State: SNA</div> <div>Predicted Models: 50% Low (inductive)</div>				
<input type="checkbox"/> V - Echium vulgare (<i>Blueweed</i>)	N1B			
<div><div>View in Field Guide</div><div>View Predicted Models</div><div>View Range Maps</div></div> <div>Noxious Weed: Priority 1B - Non-native Species</div> <div>Global: GNR State: SNA</div> <div>Predicted Models: 50% Low (inductive)</div>				
Noxious Weeds: Priority 2A				
<input type="checkbox"/> V - Rhamnus cathartica (<i>Common Buckthorn</i>)	N2A			
<div><div>View in Field Guide</div><div>View Predicted Models</div><div>View Range Maps</div></div> <div>Noxious Weed: Priority 2A - Non-native Species</div> <div>Global: GNR State: SNA</div> <div>Predicted Models: 25% Optimal (inductive), 25% Moderate (inductive), 50% Low (inductive)</div>				
<input type="checkbox"/> V - Hieracium praealtum (<i>Kingdevil Hawkweed</i>)	N2A			
<div><div>View in Field Guide</div><div>View Predicted Models</div><div>View Range Maps</div></div> <div>Noxious Weed: Priority 2A - Non-native Species</div> <div>Global: GNR State: SNA</div> <div>Predicted Models: 25% Moderate (inductive), 75% Low (inductive)</div>				
<input type="checkbox"/> V - Lepidium latifolium (<i>Perennial Pepperweed</i>)	N2A			

Predicted Models:  100% Low (inductive)					
V - Ventenata dubia (Ventenata) N2A					
View in Field Guide View Predicted Models View Range Maps					
Noxious Weed: Priority 2A - Non-native Species		Global: GNR State: SNA			
Predicted Models:  100% Low (inductive)					
V - Myriophyllum spicatum (Eurasian Water-milfoil) N2A/AIS					
View in Field Guide View Predicted Models View Range Maps					
Noxious Weed: Priority 2A - Aquatic Invasive Species - Non-native Species		Global: GNR State: SNA			
Predicted Models:  75% Low (inductive)					
Noxious Weeds: Priority 2B					
V - Linaria dalmatica (Dalmatian Toadflax) N2B					
View in Field Guide View Predicted Models View Range Maps					
Noxious Weed: Priority 2B - Non-native Species		Global: G5 State: SNA			
Predicted Models:  100% Moderate (inductive)					
V - Acroptilon repens (Russian Knapweed) N2B		6			
View in Field Guide View Predicted Models View Range Maps					
Noxious Weed: Priority 2B - Non-native Species		Global: GNR State: SNA			
Predicted Models:  50% Moderate (inductive),  50% Low (inductive)					
V - Centaurea stoebe (Spotted Knapweed) N2B		12			
View in Field Guide View Predicted Models View Range Maps					
Noxious Weed: Priority 2B - Non-native Species		Global: GNR State: SNA			
Predicted Models:  50% Moderate (inductive),  50% Low (inductive)					
V - Cirsium arvense (Canada Thistle) N2B		8			
View in Field Guide View Predicted Models View Range Maps					
Noxious Weed: Priority 2B - Non-native Species		Global: G5 State: SNA			
Predicted Models:  50% Moderate (inductive),  50% Low (inductive)					
V - Cynoglossum officinale (Common Hound's-tongue) N2B		2			
View in Field Guide View Predicted Models View Range Maps					
Noxious Weed: Priority 2B - Non-native Species		Global: GNR State: SNA			
Predicted Models:  50% Moderate (inductive),  50% Low (inductive)					
V - Euphorbia virgata (Leafy Spurge) N2B		33			
View in Field Guide View Predicted Models View Range Maps					
Noxious Weed: Priority 2B - Non-native Species		Global: GNRTNR State: SNA			
Predicted Models:  50% Moderate (inductive),  50% Low (inductive)					
V - Lepidium draba (Whitetop) N2B		1			
View in Field Guide View Predicted Models View Range Maps					
Noxious Weed: Priority 2B - Non-native Species		Global: GNR State: SNA			
Predicted Models:  50% Moderate (inductive),  50% Low (inductive)					
V - Centaurea diffusa (Diffuse Knapweed) N2B					
View in Field Guide View Predicted Models View Range Maps					
Noxious Weed: Priority 2B - Non-native Species		Global: GNR State: SNA			
Predicted Models:  100% Low (inductive)					
V - Convolvulus arvensis (Field Bindweed) N2B		3			
View in Field Guide View Predicted Models View Range Maps					
Noxious Weed: Priority 2B - Non-native Species		Global: GNR State: SNA			
Predicted Models:  100% Low (inductive)					
V - Tamarix ramosissima (Salt Cedar) N2B					
View in Field Guide View Predicted Models View Range Maps					
Noxious Weed: Priority 2B - Non-native Species		Global: GNR State: SNA			
Predicted Models:  100% Low (inductive)					
V - Tanacetum vulgare (Common Tansy) N2B					
View in Field Guide View Predicted Models View Range Maps					
Noxious Weed: Priority 2B - Non-native Species		Global: GNR State: SNA			
Predicted Models:  100% Low (inductive)					
V - Berteroa incana (Hoary False-allyssum) N2B					
View in Field Guide View Predicted Models View Range Maps					
Noxious Weed: Priority 2B - Non-native Species		Global: GNR State: SNA			
Predicted Models:  50% Low (inductive)					
V - Leucanthemum vulgare (Oxeye Daisy) N2B					
View in Field Guide View Predicted Models View Range Maps					
Noxious Weed: Priority 2B - Non-native Species		Global: GNR State: SNA			
Predicted Models:  50% Low (inductive)					
V - Linaria vulgaris (Yellow Toadflax) N2B					
View in Field Guide View Predicted Models View Range Maps					
Noxious Weed: Priority 2B - Non-native Species		Global: GNR State: SNA			
Predicted Models:  50% Low (inductive)					
V - Potentilla recta (Sulphur Cinquefoil) N2B					

Regulated Weeds: Priority 3

V - Bromus tectorum (Cheatgrass) R3

Biocontrol Species

1 - **Aphthona nigriscutis** (Black Dot Leafy Spurge Flea Beetle) **BIOCNTL**

1 - Oberea erythrocephala (Red-headed Leafy Spurge Stem Borer) BIOCNTL

1 - **Cyphocleonus achates** (*Knapweed Root Weevil*) **BIOCNTL**

1 - **Mecinus janthiniformis** (*Dalmatian Toadflax Stem-boring Weevil*) **BIOCNTRL**

Introduction to Montana Natural Heritage Program



P.O. Box 201800 • 1515 East Sixth Avenue • Helena, MT 59620-1800 • fax 406.444.0266 • phone 406.444.5363 • mtnhp.org

INTRODUCTION

The Montana Natural Heritage Program (MTNHP) is Montana's source for reliable and objective information on Montana's native species and habitats, emphasizing those of conservation concern. MTNHP was created by the Montana legislature in 1983 as part of the Natural Resource Information System (NRIS) at the Montana State Library (MSL). MTNHP is "a program of information acquisition, storage, and retrieval for data relating to the flora, fauna, and biological community types of Montana" (MCA 90-15-102). MTNHP's activities are guided by statute as well as through ongoing interaction with, and feedback from, principal data source agencies such as Montana Fish, Wildlife, and Parks, the Montana Department of Environmental Quality, the Montana Department of Natural Resources and Conservation, the Montana University System, the US Forest Service, and the US Bureau of Land Management. Since the first staff was hired in 1985, the Program has logged a long record of success, and developed into a highly respected, service-oriented program. MTNHP is widely recognized as one of the most advanced and effective of over 80 natural heritage programs throughout the Western Hemisphere.

VISION

Our vision is that public agencies, the private sector, the education sector, and the general public will trust and rely upon MTNHP as the source for information and expertise on Montana's species and habitats, especially those of conservation concern. We strive to provide easy access to our information in order for users to save time and money, speed environmental reviews, and inform decision making.

CORE VALUES

- We endeavor to be a single statewide source of accurate and up-to-date information on Montana's plants, animals, and aquatic and terrestrial biological communities.
- We actively listen to our data users and work responsively to meet their information and training needs.
- We strive to provide neutral, trusted, timely, and equitable service to all of our information users.
- We make every effort to be transparent to our data users in setting work priorities and providing data products.

CONFIDENTIALITY

All information requests made to the Montana Natural Heritage Program are considered library records and are protected from disclosure by the Montana Library Records Confidentiality Act (MCA 22-1-11).

INFORMATION MANAGED

Information managed at the Montana Natural Heritage Program is botanical, zoological, and ecological information that describes the distribution (e.g., observations, structured surveys, range polygons, predicted habitat suitability models), conservation status (e.g., global and state conservation status ranks, including threats), and other supporting information (e.g., accounts and references) on the biology and ecology of species and biological communities.

Data Use Terms and Conditions


- Montana Natural Heritage Program (MTNHP) products and services are based on biological data and the objective interpretation of those data by professional scientists. MTNHP does not advocate any particular philosophy of natural resource protection, management, development, or public policy.
- MTNHP has no natural resource management or regulatory authority. Products, statements, and services from MTNHP are intended to inform parties as to the state of scientific knowledge about certain natural resources, and to further develop that knowledge. The information is not intended as natural resource management guidelines or prescriptions or a determination of environmental impacts. MTNHP recommends consultation with appropriate state, federal, and tribal resource management agencies and authorities in the area where your project is located.
- Information on the status and spatial distribution of biological resources produced by MTNHP are intended to inform parties of the state-wide status, known occurrence, or the likelihood of the presence of those resources. **These products are not intended to substitute for field-collected data, nor are they intended to be the sole basis for natural resource management decisions.**
- MTNHP does not portray its data as exhaustive or comprehensive inventories of rare species or biological communities. **Field verification of the absence or presence of sensitive species and biological communities will always be an important obligation of users of our data.**
- MTNHP responds equally to all requests for products and services, regardless of the purpose or identity of the requester.
- Because MTNHP constantly updates and revises its databases with new data and information, products will become outdated over time. Interested parties are encouraged to obtain the most current information possible from MTNHP, rather than using older products. We add, review, update, and delete records on a daily basis. Consequently, we strongly advise that you update your MTNHP data sets at a minimum of every four months for most applications of our information.
- MTNHP data require a certain degree of biological expertise for proper analysis, interpretation, and application. Our staff is available to advise you on questions regarding the interpretation or appropriate use of the data that we provide. See [Contact Information for MTNHP Staff](#)
- The information provided to you by MTNHP may include sensitive data that if publicly released might jeopardize the welfare of threatened, endangered, or sensitive species or biological communities. This information is intended for distribution or use only within your department, agency, or business. Subcontractors may have access to the data during the course of any given project, but should not be given a copy for their use on subsequent, unrelated work.
- MTNHP data are made freely available. Duplication of hard-copy or digital MTNHP products with the intent to sell is prohibited without written consent by MTNHP. Should you be asked by individuals outside your organization for the type of data that we provide, please refer them to MTNHP.
- MTNHP and appropriate staff members should be appropriately acknowledged as an information source in any third-party product involving MTNHP data, reports, papers, publications, or in maps that incorporate MTNHP graphic elements.
- Sources of our data include museum specimens, published and unpublished scientific literature, field surveys by state and federal agencies and private contractors, and reports from knowledgeable individuals. MTNHP actively solicits and encourages additions, corrections and updates, new observations or collections, and comments on any of the data we provide.
- MTNHP staff and contractors do not enter or cross privately-owned lands without express permission from the landowner. However, the program cannot guarantee that information provided to us by others was obtained under adherence to this policy.

Suggested Contacts for Natural Resource Management Agencies

As required by Montana statute (MCA 90-15), the Montana Natural Heritage Program works with state, federal, tribal, nongovernmental organizations, and private partners to ensure that the latest animal and plant distribution and status information is incorporated into our databases so that it can be used to inform a variety of permitting and planning processes and management decisions. We encourage you to contact state, federal, and tribal resource management agencies in the area where your project is located and review the permitting overviews by the [Montana Department of Environmental Quality](#), the [Montana Department of Natural Resources and Conservation](#) and the [Index of Environmental Permits for Montana](#) for guidelines relevant to your efforts. In particular, we encourage you to contact the Montana Department of Fish, Wildlife, and Parks for the latest data and management information regarding hunted and high-profile management species and to use the U.S. Fish and Wildlife Service's [Information Planning and Consultation \(IPAC\) website](#) regarding U.S. Endangered Species Act listed Threatened, Endangered, or Candidate species.

For your convenience, we have compiled a list of relevant agency contacts and links below:

Montana Fish, Wildlife, and Parks

Fish Species	Zachary Shattuck zshattuck@mt.gov (406) 444-1231 or Eric Roberts eroberts@mt.gov (406) 444-5334																												
American Bison Black-footed Ferret Black-tailed Prairie Dog Bald Eagle Golden Eagle Common Loon Least Tern Piping Plover Whooping Crane	Kristian Smucker KSmucker@mt.gov (406) 444-5209																												
Grizzly Bear Greater Sage Grouse Trumpeter Swan Big Game Upland Game Birds Furbearers	Brian Wakeling Brian.Wakeling@mt.gov (406) 444-3940																												
Managed Terrestrial Game and Nongame Animal Data	Smith Wells – MFWP Data Analyst smith.wells@mt.gov (406) 444-3759																												
Fisheries Data	Ryan Alger – MFWP Data Analyst ryan.alger@mt.gov (406) 444-5365																												
Wildlife and Fisheries Scientific Collector's Permits	https://fwp.mt.gov/buyandapply/commercialwildlifeandscientificpermits/scientific Kammi McClain for Wildlife Kammi.McClain@mt.gov (406) 444-2612 Kim Wedde for Fisheries kim.wedde@mt.gov (406) 444-5594																												
Fish and Wildlife Recommendations for Subdivision Development	Charlie Sperry CSperry@mt.gov (406) 444-3888 See https://fwp.mt.gov/conservation/living-with-wildlife/subdivision-recommendations																												
Regional Contacts 	<table><tr><td>Region 1</td><td>(Kalispell)</td><td>(406) 752-5501</td><td>fwprg12@mt.gov</td></tr><tr><td>Region 2</td><td>(Missoula)</td><td>(406) 542-5500</td><td>fwprg22@mt.gov</td></tr><tr><td>Region 3</td><td>(Bozeman)</td><td>(406) 577-7900</td><td>fwprg3@mt.gov</td></tr><tr><td>Region 4</td><td>(Great Falls)</td><td>(406) 454-5840</td><td>fwprg42@mt.gov</td></tr><tr><td>Region 5</td><td>(Billings)</td><td>(406) 247-2940</td><td>fwprg52@mt.gov</td></tr><tr><td>Region 6</td><td>(Glasgow)</td><td>(406) 228-3700</td><td>fwprg62@mt.gov</td></tr><tr><td>Region 7</td><td>(Miles City)</td><td>(406) 234-0900</td><td>fwprg72@mt.gov</td></tr></table>	Region 1	(Kalispell)	(406) 752-5501	fwprg12@mt.gov	Region 2	(Missoula)	(406) 542-5500	fwprg22@mt.gov	Region 3	(Bozeman)	(406) 577-7900	fwprg3@mt.gov	Region 4	(Great Falls)	(406) 454-5840	fwprg42@mt.gov	Region 5	(Billings)	(406) 247-2940	fwprg52@mt.gov	Region 6	(Glasgow)	(406) 228-3700	fwprg62@mt.gov	Region 7	(Miles City)	(406) 234-0900	fwprg72@mt.gov
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Region 3	(Bozeman)	(406) 577-7900	fwprg3@mt.gov																										
Region 4	(Great Falls)	(406) 454-5840	fwprg42@mt.gov																										
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Region 6	(Glasgow)	(406) 228-3700	fwprg62@mt.gov																										
Region 7	(Miles City)	(406) 234-0900	fwprg72@mt.gov																										

Montana Department of Agriculture

General Contact Information: <https://agr.mt.gov/About/Office-Locations/Office-Locations-and-Field-Offices>

Noxious Weeds: <https://agr.mt.gov/Noxious-Weeds>

Montana Department of Environmental Quality

Permitting and Operator Assistance for all Environmental Permits: <https://deq.mt.gov/Permitting>

Montana Department of Natural Resources and Conservation

Overview of, and contacts for, licenses and permits for state lands, water, and forested lands:

<http://dnrc.mt.gov/licenses-and-permits>

Stream Permitting (310 permits) and an overview of various water and stream related permits (e.g., Stream Protection Act 124, Federal Clean Water Act 404, Federal Rivers and Harbors Act Section 10, Short-term Water Quality Standard for Turbidity 318 Authorization, etc.).

<http://dnrc.mt.gov/divisions/cadd/conervation-districts/the-310-law>

Flood and Fire Resources: <http://dnrc.mt.gov/flood-and-fire>

Bureau of Land Management

Montana Field Office Contacts:



Billings	(406) 896-5013
Butte	(406) 533-7600
Dillon	(406) 683-8000
Glasgow	(406) 228-3750
Havre	(406) 262-2820
Lewistown	(406) 538-1900
Malta	(406) 654-5100
Miles City	(406) 233-2800
Missoula	(406) 329-3914

United States Army Corps of Engineers

Montana Regulatory Office for federal permits related to construction in water and wetlands

<https://www.nwo.usace.army.mil/Missions/Regulatory-Program/Montana/> (406) 441-1375

United States Environmental Protection Agency

Environmental information, notices, permitting, and contacts <https://www.epa.gov/mt>

Gateway to state resource locators <https://www.envcap.org/srl/index.php>

United States Fish and Wildlife Service

Information Planning and Conservation (IPAC) website: <https://ecos.fws.gov/ipac/>

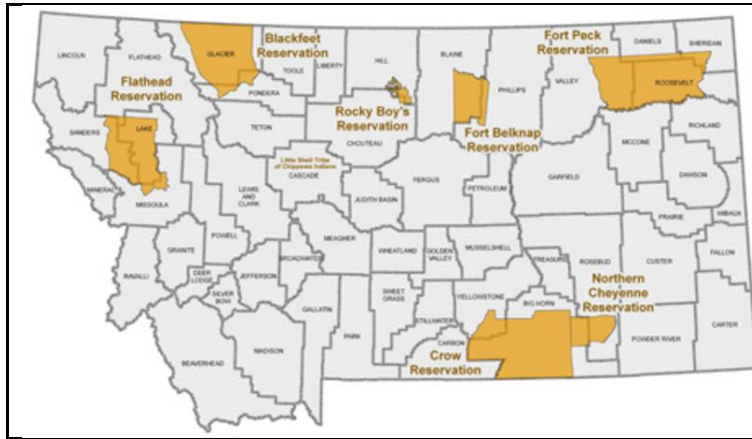
Montana Ecological Services Field Office: <https://www.fws.gov/montanafieldoffice/> (406) 449-5225

United States Forest Service

Regional Office – Missoula, Montana Contacts

Wildlife Program Leader	Tammy Fletcher	tammy.fletcher2@usda.gov	(406) 329-3086
Wildlife Ecologist	Cara Staab	cara.staab@usda.gov	(406) 329-3677
Fish Program Leader	Scott Spaulding	scott.spaulding@usda.gov	(406) 329-3287
Fish Ecologist	Cameron Thomas	cameron.thomas@usda.gov	(406) 329-3087
TES Program	Lydia Allen	lydia.allen@usda.gov	(406) 329-3558
Interagency Grizzly Bear Coordinator	Scott Jackson	scott.jackson@usda.gov	(406) 329-3664
Acting Regional Botanist	Amanda Hendrix	amanda.hendrix@usda.gov	(651) 447-3016
Regional Vegetation Ecologist	Mary Manning	marry.manning@usda.gov	(406) 329-3304
Invasive Species Program Manager	Michelle Cox	michelle.cox2@usda.gov	(406) 329-3669

Tribal Nations



[Assiniboine & Gros Ventre Tribes – Fort Belknap Reservation](#)

[Assiniboine & Sioux Tribes – Fort Peck Reservation](#)

[Blackfeet Tribe - Blackfeet Reservation](#)

[Chippewa Creek Tribe - Rocky Boy's Reservation](#)

[Crow Tribe – Crow Reservation](#)

[Little Shell Chippewa Tribe](#)

[Northern Cheyenne Tribe – Northern Cheyenne Reservation](#)

[Salish & Kootenai Tribes - Flathead Reservation](#)

Natural Heritage Programs and Conservation Data Centers in Surrounding States and Provinces

[Alberta Conservation Information Management System](#)

[British Columbia Conservation Data Centre](#)

[Idaho Natural Heritage Program](#)

[North Dakota Natural Heritage Program](#)

[Saskatchewan Conservation Data Centre](#)

[South Dakota Natural Heritage Program](#)

[Wyoming Natural Diversity Database](#)

Invasive Species Management Contacts and Information

Aquatic Invasive Species

[Montana Fish, Wildlife, and Parks Aquatic Invasive Species staff](#)

[Montana Department of Natural Resources and Conservation's Aquatic Invasive Species Grant Program](#)

[Montana Invasive Species Council \(MISC\)](#)

[Upper Columbia Conservation Commission \(UC3\)](#)

Noxious Weeds

[Montana Weed Control Association Contacts Webpage](#)

[Montana Biological Weed Control Coordination Project](#)

[Montana Department of Agriculture - Noxious Weeds](#)

[Montana Weed Control Association](#)

[Montana Fish, Wildlife, and Parks - Noxious Weeds](#)

[Montana State University Integrated Pest Management Extension](#)

[Integrated Noxious Weed Management after Wildfires](#)

[Fire Management and Invasive Plants](#)

Introduction to Native Species

Within the report area you have requested, separate summaries are provided for: (1) Species Occurrences (SO) for plant and animal Species of Concern, Special Status Species (SSS), Important Animal Habitat (IAH) and some Potential Plant Species of Concern; (2) other observed non Species of Concern or Species of Concern without suitable documentation to create Species Occurrence polygons; and (3) other non-documented species that are potentially present based on their range, predicted suitable habitat model output, or presence of associated habitats. Each of these summaries provides the following information when present for a species: (1) the number of [Species Occurrences](#) and associated delineation criteria for construction of these polygons that have long been used for considerations of documented Species of Concern in environmental reviews; (2) the number of observations of each species; (3) the geographic range polygons for each species that the report area overlaps; (4) predicted relative habitat suitability classes that are present if a predicted suitable habitat model has been created; (5) the percent of the report area that is mapped as commonly associated or occasionally associated habitat as listed for each species in the [Montana Field Guide](#); and (6) a variety of conservation status ranks and links to species accounts in the [Montana Field Guide](#). Details on each of these information categories are included under relevant section headers below or are defined on our [Species Status Codes](#) page. In presenting this information, the Montana Natural Heritage Program (MTNHP) is working towards assisting the user with rapidly determining what species have been documented and what species are potentially present in the report area. We remind users that this information is likely incomplete as surveys to document native and introduced species are lacking in many areas of the state, information on introduced species has only been tracked relatively recently, the MTNHP's staff and resources are restricted by budgets, and information is constantly being added and updated in our databases. **Thus, field verification by professional biologists of the absence or presence of species and biological communities will always be an important obligation of users of our data.**

If you are aware of observation datasets that the MTNHP is missing, please report them to the Program Botanist apipp@mt.gov or Senior Zoologist dbachen@mt.gov. If you have animal observations that you would like to contribute, you can submit them to our [Animal Observation Entry Tool](#). You can also submit plant and animal observations via Excel spreadsheets posted at <https://mtnhp.org/observations.asp> or via the [Montana Natural Heritage Observations project in iNaturalist](#)

Observations

The MTNHP manages information on several million animal and plant observations that have been reported by professional biologists and private citizens from across Montana. The majority of these observations are submitted in digital format from standardized databases associated with research or monitoring efforts and spreadsheets of incidental observations submitted by professional biologists and amateur naturalists. At a minimum, accepted observation records must contain a credible species identification (i.e. appropriate geographic range, date, and habitat and, if species are difficult to identify, a photograph and/or notes on key identifying features), a date or date range, observer name, locational information (ideally with latitude and longitude in decimal degrees), notes on numbers observed, and species behavior or habitat use (e.g., is the observation likely associated with reproduction). Bird records are also required to have information associated with date-appropriate breeding or overwintering status of the species observed. MTNHP reviews observation records to ensure that they are mapped correctly, occur within date ranges when the species is known to be present or detectable, occur within the known seasonal geographic range of the species, and occur in appropriate habitats. MTNHP also assigns each record a locational uncertainty value in meters to indicate the spatial precision associated with the record's mapped coordinates. Only records with locational uncertainty values of 10,000 meters or less are included in environmental summary reports and number summaries are only provided for records with locational uncertainty values of 1,000 meters or less.

Species Occurrences

The MTNHP evaluates plant and animal observation records for species of higher conservation concern to determine whether they are worthy of inclusion in the [Species Occurrence](#) (SO) layer for use in environmental reviews; observations not worthy of inclusion in this layer include long distance dispersal events, migrants observed away from key migratory stopover habitats, and winter observations. An SO is a polygon depicting what is known about a species occupancy from direct observation with a defined level of locational uncertainty and any inference that can be made about adjacent habitat use from the latest peer-reviewed science. If an observation can be associated with a map feature that can be tracked (e.g., a wetland boundary for a wetland associated plant) then this polygon feature is used to represent the SO. Areas that can be inferred as probable occupied habitat based on direct observation of a species location and what is known about the foraging area or home range size of the species may be incorporated into the SO. Species Occurrences generally belong to one of the following categories:

Plant Species Occurrences

A documented location of a specimen collection or observed plant population. In some instances, adjacent, spatially separated clusters are considered subpopulations and are grouped as one occurrence (e.g., the subpopulations occur in ecologically similar habitats, and their spatial proximity likely allows them to interbreed). Tabular information for multiple observations at the same SO location is generally linked to a single polygon. Plant SO's are only created for Species of Concern and Potential Species of Concern.

Animal Species Occurrences

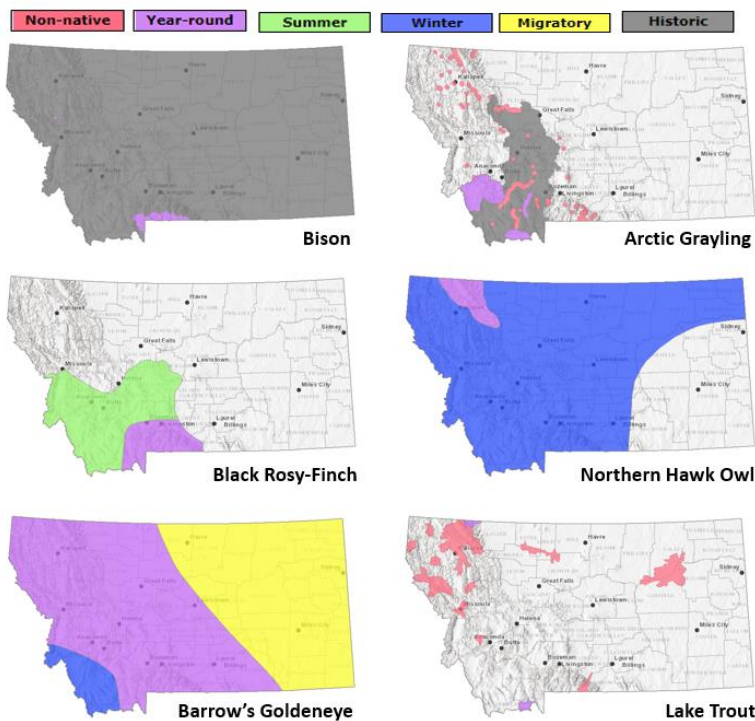
The location of a verified observation or specimen record typically known or assumed to represent a breeding population or a portion of a breeding population. Animal SO's are generally: (1) buffers of terrestrial point observations based on documented species' home range sizes; (2) buffers of stream segments to encompass occupied streams and immediate adjacent riparian habitats; (3) polygonal features encompassing known or likely breeding populations (e.g., a wetland for some amphibians or a forested portion of a mountain range for some wide ranging carnivores); or (4) combinations of the above. Tabular information for multiple observations at the same SO location is generally linked to a single polygon. Species Occurrence polygons may encompass some unsuitable habitat in some instances in order to avoid heavy data processing associated with clipping out habitats that are readily assessed as unsuitable by the data user (e.g., a point buffer of a terrestrial species may overlap into a portion of a lake that is obviously inappropriate habitat for the species). Animal SO's are only created for Species of Concern and Special Status Species (e.g., Bald Eagle).

Other Occurrence Polygons

These include significant biological features not included in the above categories, such as Important Animal Habitats like bird rookeries and bat roosts, and peatlands or other wetland and riparian communities that support diverse plant and animal communities.

Geographic Range Polygons

Geographic range polygons are still under development for most plant and invertebrate species. Native year-round, summer, winter, migratory and historic geographic range polygons as well as polygons for introduced



populations have been defined for most vertebrate animal species for which there are enough observations, surveys, and knowledge of appropriate seasonal habitat use to define them (see examples to left). These native or introduced range polygons bound the extent of known or likely occupied habitats for non-migratory and relative sedentary species and the regular extent of known or likely occupied habitats for migratory and long-distance dispersing species; polygons may include unsuitable intervening habitats. For most species, a single polygon can represent the year-round or seasonal range, but breeding ranges of some colonial nesting water birds and some introduced species are represented more patchily when supported by data. Some ranges are mapped more broadly than actual distributions in order to be visible on statewide maps (e.g., fish).

Predicted Suitable Habitat Models

Predicted habitat suitability models have been created for plant and animal Species of Concern and are undergoing development for non-Species of Concern. For species for which models have been completed, the environmental summary report includes simple rule-based associations with streams for aquatic species and seasonal habitats for game species as well as mathematically complex Maximum Entropy models (Phillips et al. 2006, *Ecological Modeling* 190:231-259) constructed from a variety of statewide biotic and abiotic layers and presence only data for individual species for most terrestrial species. For the Maximum Entropy models, we reclassified 90 x 90-meter continuous model output into suitability classes (unsuitable, low, moderate, and optimal) then aggregated that into the one square mile hexagons used in the environmental summary report; this is the finest spatial scale we suggest using this information in management decisions and survey planning. Full model write ups for individual species that discuss model goals, inputs, outputs, and evaluation in much greater detail are posted on the MTNHP's [Predicted Suitable Habitat Models](#) webpage. Evaluations of predictive accuracy and specific limitations are included with the metadata for models of individual species. **Model outputs should not be used in place of on-the-ground surveys for species. Instead model outputs should be used in conjunction with habitat evaluations to determine the need for on-the-ground surveys for species.** We suggest that the percentage of predicted optimal and moderate suitable habitat within the report area be used in conjunction with geographic range polygons and the percentage of commonly associated habitats to generate lists of potential species that may occupy broader landscapes for the purposes of landscape-level planning.

Associated Habitats

Within the boundary of the intersected hexagons, we provide the approximate percentage of commonly or occasionally associated habitat for vertebrate animal species that regularly breed, overwinter, or migrate through the state; a detailed list of commonly and occasionally associated habitats is provided in individual species accounts in the [Montana Field Guide](#). We assigned common or occasional use of each of the ecological

systems mapped in Montana by: (1) using personal knowledge and reviewing literature that summarizes the breeding, overwintering, or migratory habitat requirements of each species; (2) evaluating structural characteristics and distribution of each ecological system relative to the species' range and habitat requirements; (3) examining the observation records for each species in the state-wide point observation database associated with each ecological system; and (4) calculating the percentage of observations associated with each ecological system relative to the percent of Montana covered by each ecological system to get a measure of numbers of observations versus availability of habitat. Species that breed in Montana were only evaluated for breeding habitat use, species that only overwinter in Montana were only evaluated for overwintering habitat use, and species that only migrate through Montana were only evaluated for migratory habitat use. In general, species were listed as associated with an ecological system if structural characteristics of used habitat documented in the literature were present in the ecological system or large numbers of point observations were associated with the ecological system. However, species were not listed as associated with an ecological system if there was no support in the literature for use of structural characteristics in an ecological system, even if point observations were associated with that system. Common versus occasional association with an ecological system was assigned based on the degree to which the structural characteristics of an ecological system matched the preferred structural habitat characteristics for each species as represented in the scientific literature. The percentage of observations associated with each ecological system relative to the percent of Montana covered by each ecological system was also used to guide assignment of common versus occasional association.

We suggest that the percentage of commonly associated habitat within the report area be used in conjunction with geographic range polygons and the percentage of predicted optimal and moderate suitable habitat from predictive models to generate lists of potential species that may occupy broader landscapes for the purposes of landscape-level planning. Users of this information should be aware that land cover mapping accuracy is particularly problematic when the systems occur as small patches or where the land cover types have been altered over the past decade. Thus, particular caution should be used when using the associations in assessments of smaller areas (e.g., evaluations of public land survey sections).

Introduction to Land Cover

Land Use/Land Cover is one of 15 [Montana Spatial Data Infrastructure](#) framework layers considered vital for making statewide maps of Montana and understanding its geography. The layer records all Montana natural vegetation, land cover and land use, classified from satellite and aerial imagery, mapped at a scale of 1:100,000, and interpreted with supporting ground-level data. The baseline map is adapted from the Northwest ReGAP (NWGAP) project land cover classification, which used 30m resolution multi-spectral Landsat imagery acquired between 1999 and 2001. Vegetation classes were drawn from the Ecological System Classification developed by NatureServe (Comer et al. 2003). The land cover classes were developed by Anderson et al. (1976). The NWGAP effort encompasses 12 map zones. Montana overlaps seven of these zones. The two NWGAP teams responsible for the initial land cover mapping effort in Montana were Sanborn and NWGAP at the University of Idaho. Both Sanborn and NWGAP employed a similar modeling approach in which Classification and Regression Tree (CART) models were applied to Landsat ETM+ scenes. The Spatial Analysis Lab within the Montana Natural Heritage Program was responsible for developing a seamless Montana land cover map with a consistent statewide legend from these two separate products. Additionally, the Montana land cover layer incorporates several other land cover and land use products (e.g., MSDI Structures and Transportation themes and the Montana Department of Revenue Final Land Unit classification) and reclassifications based on plot-level data and the latest NAIP imagery to improve accuracy and enhance the usability of the theme. Updates are done as partner support and funding allow, or when other MSDI datasets can be incorporated. Recent updates include fire perimeters and agricultural land use (annually), energy developments such as wind, oil and gas installations (2014), roads, structures and other impervious surfaces (various years): and local updates/improvements to specific ecological systems (e.g., central Montana grassland and sagebrush ecosystems). Current and previous versions of the Land Use/Land Cover layer with full metadata are available for download at the Montana State Library's [Geographic Information Clearinghouse](#)

Within the report area you have requested, land cover is summarized by acres of Level 1, Level 2, and Level 3 Ecological Systems.

Literature Cited

- Anderson, J.R. E.E. Hardy, J.T. Roach, and R.E. Witmer. 1976. A land use and land cover classification system for use with remote sensor data. U.S. Geological Survey Professional Paper 964.
- Comer, P., D. Faber-Langendoen, R. Evans, S. Gawler, C. Josse, G. Kittel, S. Menard, M. Pyne, M. Reid, K. Schulz, K. Snow, and J. Teague. 2003. Ecological systems of the United States: A working classification of U.S. terrestrial systems. NatureServe, Arlington, VA.

Introduction to Wetland and Riparian

Within the report area you have requested, wetland and riparian mapping is summarized by acres of each classification present. Summaries are only provided for modern MTNHP wetland and riparian mapping and not for outdated (NWI Legacy) or incomplete (NWI Scalable) mapping efforts; [described here](#). MTNHP has made all three of these datasets and associated metadata available for separate download on the Montana [Wetland and Riparian Framework](#) web page.

Wetland and Riparian mapping is one of 15 [Montana Spatial Data Infrastructure](#) framework layers considered vital for making statewide maps of Montana and understanding its geography. The wetland and riparian framework layer consists of spatial data representing the extent, type, and approximate location of wetlands, riparian areas, and deep water habitats in Montana.

Wetland and riparian mapping is completed through photointerpretation of 1-m resolution color infrared aerial imagery acquired from 2005 or later. A coding convention using letters and numbers is assigned to each mapped wetland. These letters and numbers describe the broad landscape context of the wetland, its vegetation type, its water regime, and the kind of alterations that may have occurred. Ancillary data layers such as topographic maps, digital elevation models, soils data, and other aerial imagery sources are also used to improve mapping accuracy. Wetland mapping follows the federal Wetland Mapping Standard and classifies wetlands according to the Cowardin classification system of the National Wetlands Inventory (NWI) (Cowardin et al. 1979, FGDC Wetlands Subcommittee 2013). Federal, State, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands differently than the NWI. Similar coding, based on U.S. Fish and Wildlife Service conventions, is applied to riparian areas (U.S. Fish and Wildlife Service 2009). These are mapped areas where vegetation composition and growth is influenced by nearby water bodies, but where soils, plant communities, and hydrology do not display true wetland characteristics. **These data are intended for use at a scale of 1:12,000 or smaller. Mapped wetland and riparian areas do not represent precise boundaries and digital wetland data cannot substitute for an on-site determination of jurisdictional wetlands.**

See a detailed overview, with examples, of both [wetland and riparian classification systems and associated codes](#)

Literature Cited

- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Fish and Wildlife Service, FWS/OBS-79/31. Washington, D.C. 103pp.
- Federal Geographic Data Committee. 2013. Classification of wetlands and deepwater habitats of the United States. FGDC-STD-004-2013. Second Edition. Wetlands Subcommittee, Federal Geographic Data Committee and U.S. Fish and Wildlife Service, Washington, D.C.
- U.S. Fish and Wildlife Services. 2009. A system for mapping riparian areas in the western United States. Division of Habitat and Resource Conservation, Branch of Resource and Mapping Support, Arlington, Virginia.

Introduction to Land Management

Within the report area you have requested, land management information is summarized by acres of federal, state, and local government lands, tribal reservation boundaries, private conservation lands, and federal, state, local, and private conservation easements. Acreage for “Owned”, “Tribal”, or “Easement” categories represents non-overlapping areas that may be totaled. However, “Other Boundaries” represents managed areas such as National Forest boundaries containing private inholdings and other mixed ownership which may cause boundaries to overlap (e.g. a wilderness area within a forest). Therefore, acreages may not total in a straight-forward manner.

Because information on land stewardship is critical to effective land management, the Montana Natural Heritage Program (MTNHP) began compiling ownership and management data in 1997. The goal of the Montana Land Management Database is to manage a single, statewide digital data set that incorporates information from both public and private entities. The database assembles information on public lands, private conservation lands, and conservation easements held by state and federal agencies and land trusts and is updated on a regular basis. Since 2011, the Information Management group in the Montana State Library’s Digital Library Division has led the Montana Land Management Database in partnership with the MTNHP.

Public and private conservation land polygons are attributed with the name of the entity that owns it. The data are derived from the statewide [Montana Cadastral Parcel layer](#). Conservation easement data shows land parcels on which a public agency or qualified land trust has placed a conservation easement in cooperation with the land owner. The dataset contains no information about ownership or status of the mineral estate. For questions about the dataset or to report errors, please contact the Montana Natural Heritage Program at (406) 444-5363 or mtnhp@mt.gov. You can download various components of the Land Management Database and view associated metadata at the Montana State Library’s [GIS Data List](#) at the following links:

[Public Lands](#)

[Conservation Easements](#)

[Private Conservation Lands](#)

[Managed Areas](#)

Map features in the Montana Land Management Database or summaries provided in this report are not intended as a legal depiction of public or private surface land ownership boundaries and should not be used in place of a survey conducted by a licensed land surveyor. Similarly, map features do not imply public access to any lands. The Montana Natural Heritage Program makes no representations or warranties whatsoever with respect to the accuracy or completeness of this data and assumes no responsibility for the suitability of the data for a particular purpose. The Montana Natural Heritage Program will not be liable for any damages incurred as a result of errors displayed here. Consumers of this information should review or consult the primary data and information sources to ascertain the viability of the information for their purposes.

Introduction to Invasive and Pest Species

Within the report area you have requested, separate summaries are provided for: Aquatic Invasive Species, Noxious Weeds, Agricultural Pests, Forest Pests, and Biocontrol species that have been documented or potentially occur there based on the predicted suitability of habitat. Definitions for each of these invasive and pest species categories can be found on our [Species Status Codes](#) page.

Each of these summaries provides the following information when present for a species: (1) the number of observations of each species; (2) the geographic range polygons for each species, if developed, that the report area overlaps; (3) predicted relative habitat suitability classes that are present if a predicted suitable habitat model has been created; (4) the percent of the report area that is mapped as commonly associated or occasionally associated habitat as listed for each species in the [Montana Field Guide](#); and (5) links to species accounts in the [Montana Field Guide](#). Details on each of these information categories are included under relevant section headers under the Introduction to Native Species above or are defined on our [Species Status Codes](#) page. In presenting this information, the Montana Natural Heritage Program (MTNHP) is working towards assisting the user with rapidly determining what invasive and pest species have been documented and what species are potentially present in the report area. We remind users that this information is likely incomplete as surveys to document introduced species are lacking in many areas of the state, information on introduced species has only been tracked relatively recently, the MTNHP's staff and resources are limited, and information is constantly being added and updated in our databases. **Thus, field verification by professional biologists of the absence or presence of species will always be an important obligation of users of our data.**

If you are aware of observation or survey datasets for invasive or pest species that the MTNHP is missing, please report them to the Program Coordinator bmaxell@mt.gov Program Botanist apipp@mt.gov or Senior Zoologist dbachen@mt.gov. If you have observations that you would like to contribute, you can submit animal observations using our online data entry system at mtnhp.org/AddObs or via Excel spreadsheets posted at mtnhp.org/observations.asp

Additional Information Resources

[MTNHP Staff Contact Information](#)

[Montana Field Guide](#)

[MTNHP Species of Concern Report - Animals and Plants](#)

[MTNHP Species Status Codes - Explanation](#)

[MTNHP Predicted Suitable Habitat Models](#) (for select Animals and Plants)

[MTNHP Request Information page](#)

[Montana Cadastral](#)

[Montana Code Annotated](#)

[Montana Fisheries Information System](#)

[Montana Fish, Wildlife, and Parks Subdivision Recommendations](#)

[Montana GIS Data Layers](#)

[Montana GIS Data Bundler](#)

[Montana Greater Sage-Grouse Project Submittal Site](#)

[Montana Ground Water Information Center](#)

[Montana Index of Environmental Permits, 21st Edition \(2018\)](#)

[Montana Environmental Policy Act \(MEPA\)](#)

[Montana Environmental Policy Act Analysis Resource List](#)

[Laws, Treaties, Regulations, and Agreements on Animals and Plants](#)

[Montana Spatial Data Infrastructure Layers](#)

[Montana State Historic Preservation Office Review and Compliance](#)

[Montana Stream Permitting: a guide for conservation district supervisors and others](#)

[Montana Water Information System](#)

[Montana Web Map Services](#)

[National Environmental Policy Act](#)

[Penalties for Misuse of Fish and Wildlife Location Data](#) (MCA 87-6-222)

[U.S. Fish and Wildlife Service Information for Planning and Consultation](#) (Section 7 Consultation)

[Web Soil Survey Tool](#)

Explore location

LOCAL OFFICE MT ESFO



LOCATION
Cascade County,
Montana

CHANGE LOCATION

Wetlands in the National Wetlands Inventory (NWI)

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our

IPaC Information for Planning and Consultation

U.S. Fish & Wildlife Service

MY PROJECTS

SAMANTHA TREU

Resources

ENDANGERED SPECIES	3
MIGRATORY BIRDS	9
FACILITIES	1
WETLANDS	✓

PRINT RESOURCE LIST

What's next?

Define a project at this location to evaluate potential impacts, get an official species list, and make species determinations.

DEFINE PROJECT

This location overlaps the following wetlands:

FRESHWATER EMERGENT

WETLAND

[PEM1C](#)

[PEM1E](#)

[PEM1A](#)

FRESHWATER

FORESTED/SHRUB

WETLAND

[PEOA](#)

FRESHWATER POND

[PABF](#)

[PABFh](#)

RIVERINE

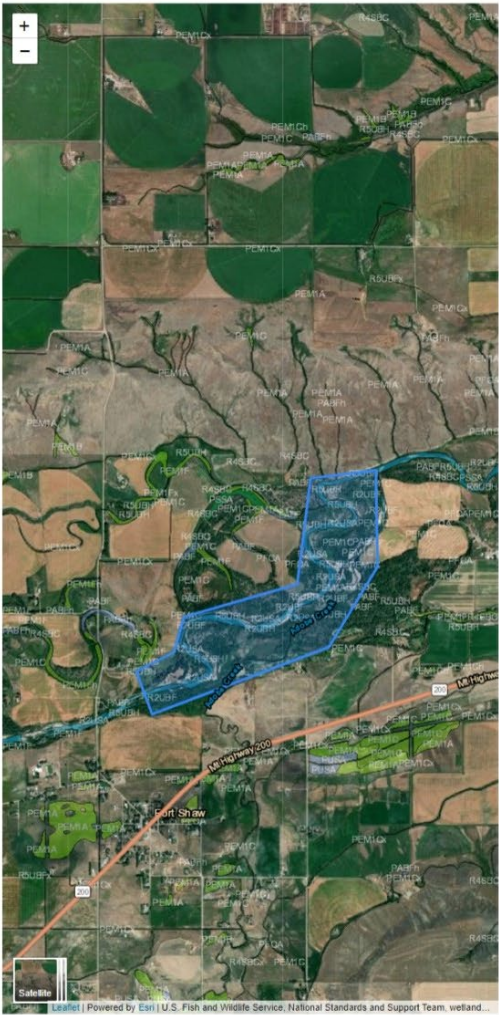
[R2UBH](#)

[R2USA](#)

[R2UBE](#)

[R5UBH](#)

[R4SBC](#)




NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

- > Data limitations
- > Data exclusions
- > Data precautions



Montana State Wildlife Action Plan (SWAP) - Terrestrial Focal Areas



Montana Fish, Wildlife and Parks
Private Organization ⓘ


Summary


To assist in the delineation of priority terrestrial habitats and communities for the Montana SWAP.


View Full Details


Download

Details


 **Dataset**
Feature Layer

 **As Needed**
Info Updated: September 23, 2022

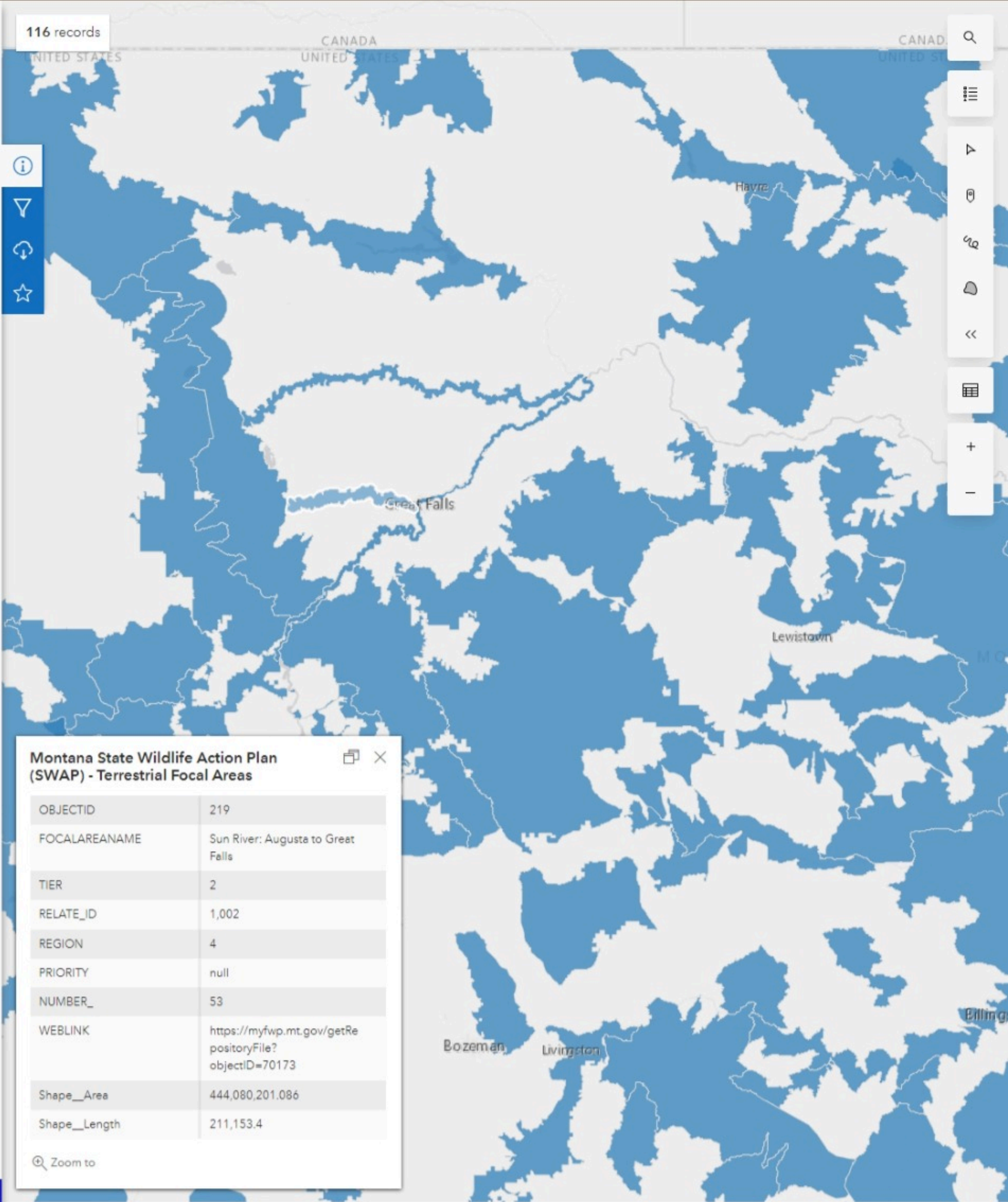
 **Not Planned**
Data Updated: September 23, 2022

 **January 16, 2018**
Published Date

 **116 Records**
[View data table](#)

 **Public**
Anyone can see this content

 **Custom License**
[View license details](#)



FISHMT :: Sur

Waterbody	Section	Field Form Type	Date
Sun River	HWY 287	Nets	8-17-2022
Sun River	Simms	Nets	8-17-2022
Sun River	Sun River 2004-Present	Nets	8-17-2022
Sun River	HWY 287	Electro	4-19-2022
Sun River	Simms	Electro	4-18-2022
Sun River	HWY 287	Electro	4-7-2022
Sun River	HWY 287	Electro	4-6-2022
Sun River	Simms	Electro	4-4-2022
Sun River	Simms	Electro	3-31-2022
Sun River	Simms	Electro	3-30-2022
Sun River	Sun River 2004-Present	Electro	4-29-2021
Sun River	Sun River 2004-Present	Electro	4-22-2021
Sun River	HWY 287	Electro	4-13-2021
Sun River	Simms	Electro	4-12-2021
Sun River	HWY 287	Electro	4-7-2021
Sun River	HWY 287	Electro	4-6-2021
Sun River	Simms	Electro	3-31-2021
Sun River	Simms	Electro	4-1-2021
Sun River	Sun River 2004-Present	Electro	4-16-2020
Sun River	Sun River 2004-Present	Electro	4-9-2020
Sun River	Sun River 2004-Present	Electro	4-8-2020
Sun River	HWY 287	Electro	4-7-2020
Sun River	Simms	Electro	4-6-2020
Sun River	HWY 287	Electro	3-31-2020
Sun River	HWY 287	Electro	3-30-2020
Sun River	Simms	Electro	3-28-2020
Sun River	Simms	Electro	3-27-2020
Sun River	HWY 287	Electro	9-4-2019
Sun River	Simms	Electro	4-19-2019
Sun River	Simms	Electro	4-18-2019
Sun River	HWY 287	Electro	4-15-2019
Sun River	HWY 287	Electro	4-5-2019
Sun River	HWY 287	Electro	4-4-2019
Sun River	Simms	Electro	4-9-2018
Sun River	Simms	Electro	4-4-2018
Sun River	HWY 287	Electro	5-5-2016
Sun River	HWY 287	Electro	4-29-2016
Sun River	Sun River 2004-Present	Electro	3-31-2015
Sun River	HWY 287	Electro	3-30-2015
Sun River	Sun River 2004-Present	Electro	3-26-2015
Sun River	Simms	Electro	3-25-2015
Sun River	HWY 287	Electro	3-24-2015
Sun River	HWY 287	Electro	3-23-2015
Sun River	Simms	Electro	3-19-2015
Sun River	HWY 287	Electro	4-22-2013

Sun River	HWY 287	Electro	4-3-2013
Sun River	HWY 287	Electro	4-2-2013
Sun River	HWY 287	Electro	4-27-2009
Sun River	HWY 287	Electro	4-14-2009
Sun River	HWY 287	Electro	4-13-2009
Sun River	Sun River 2004-Present	Electro	4-13-2006
Sun River	Simms	Electro	4-12-2006
Sun River	HWY 287	Electro	4-11-2006
Sun River	HWY 287	Electro	4-10-2006
Sun River	Sun River 2004-Present	Electro	3-30-2006
Sun River	Simms	Electro	3-29-2006
Sun River	HWY 287	Electro	3-28-2006
Sun River	HWY 287	Electro	3-27-2006
Sun River	Simms	Electro	4-18-2005
Sun River	Sun River 2004-Present	Electro	4-15-2005
Sun River	HWY 287	Electro	4-13-2005
Sun River	HWY 287	Electro	4-12-2005
Sun River	Simms	Electro	3-31-2005
Sun River	HWY 287	Electro	3-30-2005
Sun River	HWY 287	Electro	3-29-2005
Sun River	Sun River 2004-Present	Electro	4-1-2005
Sun River	HWY 287	Electro	4-19-2004
Sun River	HWY 287	Electro	4-16-2004
Sun River	Sun River 2004-Present	Electro	4-15-2004
Sun River	Simms	Electro	4-14-2004
Sun River	HWY 287	Electro	4-2-2004
Sun River	Sun River 2004-Present	Electro	3-31-2004
Sun River	HWY 287	Electro	4-1-2004
Sun River	Simms	Electro	3-30-2004
Sun River	Sun River 2000-2003	Electro	4-24-2003
Sun River	Simms	Electro	4-23-2003
Sun River	HWY 287	Electro	4-22-2003
Sun River	HWY 287	Electro	4-21-2003
Sun River	Sun River 2000-2003	Electro	4-17-2003
Sun River	Simms	Electro	4-16-2003
Sun River	HWY 287	Electro	4-14-2003
Sun River	HWY 287	Electro	4-23-2002
Sun River	HWY 287	Electro	4-22-2002
Sun River	HWY 287	Electro	4-9-2002
Sun River	HWY 287	Electro	4-8-2002
Sun River	HWY 287	Electro	4-13-2000
Sun River	HWY 287	Electro	4-12-2000
Sun River	Sun River 2000-2003	Electro	4-11-2000
Sun River	Simms	Electro	4-10-2000
Sun River	Sun River 2000-2003	Electro	4-6-2000
Sun River	HWY 287	Electro	4-5-2000
Sun River	Simms	Electro	4-4-2000

Sun River	HWY 287	Electro	4-3-2000
Sun River	Simms	Electro	4-23-1997
Sun River	HWY 287	Electro	4-22-1997
Sun River	Simms	Electro	4-9-1997
Sun River	HWY 287	Electro	4-8-1997

Brown Trout, Mountain Whitefish, Rainbow Trout, White Sucker

Long-Term Monitoring	Brown Trout, Mountain Whitefish, Rainbow Trout
Long-Term Monitoring	Brown Trout, Rainbow Trout
Long-Term Monitoring	Brown Trout, Rainbow Trout
Long-Term Monitoring	Brown Trout, Rainbow Trout
Long-Term Monitoring	Brown Trout, Rainbow Trout

3, Mountain Sucker, Mountain Whitefish, Rocky Mountain Sculpin, Stonecat, White Sucker

Montana DEQ - Water Quality Standards Attainment Record**Reporting Cycle:** 2020 **Assessment Record:** MT41K001_010.pdf **Status:** Unassigned**ASSESSMENT UNIT INFORMATION**

Reporting Cycle: 2020
Assessment Unit: MT41K001_010
Waterbody Name: Sun River
Location Description: SUN RIVER, Gibson Dam to Muddy Creek

Water Type:	Size (Miles/Acres)	Use Class:
RIVER	83.01 MILES	B-1

Hydrologic Unit Code: 10030104
HUC Name: Sun
Watershed: Upper Missouri
Basin: Upper Missouri
TMDL Planning Area: Sun
Ecoregion: Canadian Rockies, Northwestern Glaciated Plains
County: Cascade County, Lewis and Clark County, Teton County
Lat/Long AU Start (U/S): 47.602183 / -112.761601
Lat/Long AU End (D/S): 47.548837 / -111.538253

MONITORING INFORMATION

Date Assessment Started: 01/18/2000
Assessed By: Endicott, Carol

Montana DEQ - Water Quality Standards Attainment Record**Reporting Cycle:** 2020**Assessment Record:** MT41K001_010.pdf**Status:** Unassigned**CITATIONS**

Citation	Location	Biological Data	Habitat Data	Chemistry Data
Montana State Board of Health (1960), Water Pollution in the Missouri River Drainage in Montana, Progress Report No. 60-1	WQPB Ebrary	fecal coliforms; fish; macroinvertebrates; other bacteriological data	riparian &/or instream surveys & physical features	common ions, pH, conductivity, miscellaneous; major nutrients; quantitative physical data
Thoreson, Nels A. (1961), Sun River Fisheries Study: Inventory of Waters of the Sun River Drainage Upstream from Diversion Dam: May 1, 1960 to April 30, 1961, F-28-R-1 Job # I	WQPB Ebrary	fish		
Swedberg, Steve (1968), Central Montana Fisheries Study: Temperatures of Sun River Above Gibson Reservoir and Lowry Dam Site with Creek Census and Fishing Pressure Below Gibson Dam to Lowry Dam Site: July 1, 1966 to June 30, 1967, F-5-R-16 Job # IV	WQPB Ebrary	fish; other bacteriological data		quantitative physical data
Braico, Robert D. ; Botz, Maxwell K. (1974), Water Quality Inventory and Management Plan: Missouri-Sun-Smith River Basin, Montana	WQPB Ebrary	fish	riparian &/or instream surveys & physical features	common ions, pH, conductivity, miscellaneous; major nutrients; metals; quantitative physical data
Welch, Eugene B. ; Swedberg, Steve ; Johnson, Richard L. ; Baldes, Richard ; Hill, William J. ; Phinney, Duane ; Poole, Geoffrey C. (1974), Central Montana Fishery Study: Inventory of Waters of the Project Area, F-5-R-6 through F-5-R-23 Job # I	WQPB Ebrary	chlorophyll; fish	riparian &/or instream surveys & physical features	common ions, pH, conductivity, miscellaneous; quantitative physical data
Hill, William J. (1976), Water Quantity and Quality of the Sun River From Gibson Dam to Vaughn, 1973-1974, F-5-R-23 & F-5-R-24	WQPB Ebrary		photo points	General; General; common ions, pH, conductivity, miscellaneous; quantitative physical

Montana DEQ - Water Quality Standards Attainment Record

Reporting Cycle: 2020

Assessment Record: MT41K001_010.pdf

Status: Unassigned

Citation	Location	Biological Data	Habitat Data	Chemistry Data
				data
Ingman, Gary L. ; Bahls, Loren L. ; Horpestad, Abe A. (1979), Biological Water Quality Monitoring: Northcentral Montana 1977-1978	WQPB Ebrary	algae; chlorophyll; macroinvertebrates	riparian &/or instream surveys & physical features	common ions, pH, conductivity, miscellaneous; major nutrients; quantitative physical data
Water Quality Bureau, Department of Health & Environmental Sciences (1982), The Effects of Muddy Creek on the Biology of the Lower Sun River- A Summary	WQPB Ebrary	algae; chlorophyll; macroinvertebrates		major nutrients
Ingman, Gary L. ; Weber, Erich E. ; Bahls, Loren L. (1984), The Effects of Muddy Creek on the Biology of the Lower Sun River	WQPB Ebrary	algae; chlorophyll; fish; macroinvertebrates	riparian &/or instream surveys & physical features	General; benthic sediment data; common ions, pH, conductivity, miscellaneous; major nutrients; quantitative physical data
Hill, William J. ; Wipperman, Al (1986), Central (Northcentral) Montana Fisheries Study: Inventory and Survey of Waters in the Western Half of Region Four, F-5-R-24 through F-5-R-35 Job # I-a	WQPB Ebrary	fish; macroinvertebrates	riparian &/or instream surveys & physical features	quantitative physical data
Chrest, Ken ; Thomas, Jack ; Wheeler, Terry F. (1987), Sun River Corridor Inventory Report	WQPB Ebrary		riparian &/or instream surveys & physical features	
Knapton, J. Roger ; Jones, William E. ; Sutphin, Jack W. (1988), Reconnaissance Investigation of Water Quality, Bottom Sediment, and Biota Associated with Irrigation Drainage in the Sun River Area, West-Central Montana, 1986-87, USGS Water-Resources Investigations Report # 87-4244	WQPB Ebrary	fish		benthic sediment data; bioaccumulation; common ions, pH, conductivity, miscellaneous; metals; toxicity tests
Leathe, Stephen A. ; Hill, William J. ; Wipperman, Al	WQPB Ebrary	fish	riparian &/or instream	quantitative physical

Montana DEQ - Water Quality Standards Attainment Record

Reporting Cycle: 2020

Assessment Record: MT41K001_010.pdf

Status: Unassigned

Citation	Location	Biological Data	Habitat Data	Chemistry Data
(1988), Statewide Fisheries Investigations: Survey and Inventory of Coldwater Streams: Northcentral Montana Trout Stream Investigations: July 1, 1987 through June 30, 1988, F-46-R-1 Job # I-g			surveys & physical features	data
Horpestad, Abe A. ; Reid, Tom ; Davis, Dolly (1989), Application for Reservations of Water in the Missouri River Basin Above Fort Peck Dam: Summary, Purpose, Need, Amount, Public Interest, Management Plan, Appendices and Attachments	WQPB Ebrary	fish; wildlife	Land use; riparian &/or instream surveys & physical features	quantitative physical data
Kaya, Calvin M. (1992), Restoration of Fluvial Arctic Grayling to Montana Streams: Assessment of Reintroduction Potential of Streams in the Native Range, the Upper Missouri River Drainage above Great Falls (Masters Thesis)	WQPB Ebrary	fish	riparian &/or instream surveys & physical features	quantitative physical data
Lambing, John H. ; Nimick, David A. ; Knapton, J. Roger ; Palawski, Donald U. (1994), Physical, Chemical, and Biological Data for Detailed Study of the Sun River Irrigation Project, Freezeout Lake Management Area, and Benton Lake National Wildlife Refuge, West-Central Montana, 1990-92, With Selected Data for 1987-89, Open-File Report 94-120	WQPB Ebrary	algae; fish; macroinvertebrates; other bacteriological data; wildlife	riparian &/or instream surveys & physical features	General; benthic sediment data; bioaccumulation; common ions, pH, conductivity, miscellaneous; major nutrients; metals; quantitative physical data; toxicity tests
Nimick, David A. ; Lambing, John H. ; Palawski, Donald U. ; Malloy, John C. (1996), Detailed Study of Selenium in Soil, Water, Bottom Sediment, and Biota in the Sun River Irrigation Project, Freezeout Lake Wildlife Management Area, and Benton Lake National Wildlife Refuge, West-Central Montana, 1990-92, Water-Resources Investigations Report 95-4170	WQPB Ebrary	algae; fish; macroinvertebrates; wildlife	Land use	benthic sediment data; bioaccumulation; common ions, pH, conductivity, miscellaneous; metals; toxicity tests

Montana DEQ - Water Quality Standards Attainment Record**Reporting Cycle:** 2020**Assessment Record:** MT41K001_010.pdf**Status:** Unassigned

Citation	Location	Biological Data	Habitat Data	Chemistry Data
U.S. Department of Agriculture, Forest Service, Lewis & Clark National Forest ; U.S. Department of the Interior, Bureau of Land Management (1996), Lewis and Clark National Forest Oil and Gas Leasing: Draft Environmental Impact Statement	WQPB Ebrary		Land use; riparian &/or instream surveys & physical features	quantitative physical data
U.S. Department of Agriculture, Forest Service, Lewis & Clark National Forest (1997), Environmental Assessment: Sun Canyon Range Analysis	WQPB Ebrary	General; fish	Land use; riparian &/or instream surveys & physical features	General; quantitative physical data
Warmwater Fish Management Plan Team (1997), Montana Warmwater Fisheries Management Plan 1997-2006	WQPB Ebrary	fish		quantitative physical data
Shields, Ronald R. ; White, Melvin K. ; Ladd, Patricia B. ; Chambers, Clarence L. ; Dodge, Kent A. (1998), Water Resources Data: Montana Water Year 1997, USGS Water-Data Report MT-97-1	WQPB Ebrary	fish		benthic sediment data; common ions, pH, conductivity, miscellaneous; major nutrients; metals; quantitative physical data
U.S. Geological Survey (199n), USGS Water Data for the Nation - NWIS	Assessment Record	algae; chlorophyll; fecal coliforms; fish; other bacteriological data	Land use; riparian &/or instream surveys & physical features	benthic sediment data; bioaccumulation; common ions, pH, conductivity, miscellaneous; major nutrients; metals; organics; quantitative physical data
McDonald, Catherine (2000), Assessment of Water Quality for the Sun River and Muddy Creek, Sun River Watershed, West-Central Montana, MBMG Open-File Report 412	WQPB Ebrary			common ions, pH, conductivity, miscellaneous; major nutrients; metals; quantitative physical

Montana DEQ - Water Quality Standards Attainment Record

Reporting Cycle: 2020

Assessment Record: MT41K001_010.pdf

Status: Unassigned

Citation	Location	Biological Data	Habitat Data	Chemistry Data
				data
Rollo, Alan ; Endicott, Carol Leigh (2000), Personal Communication with Carol Endicott on 1/18/2000, and Data on Duck Creek	Assessment Record		riparian &/or instream surveys & physical features	
Bahls, Loren L. (2002), Diatom Report for the Sun River at Sun River, July 19, 2002	Assessment Record	algae		
Bollman, Wease (2002), Aquatic Invertebrates and Habitat at a Fixed Station on the Sun River, Cascade County, Montana	WQPB Ebrary	macroinvertebrates		
Berkas, Wayne R. ; White, Melvin K. ; Ladd, Patricia B. ; Bailey, Fred A. ; Dodge, Kent A. (2003), Water Resources Data: Montana Water Year 2002, Water Data Report MT-02-1	WQPB Ebrary	General	riparian &/or instream surveys & physical features	General; major nutrients; quantitative physical data
Bollman, Wease (2003), Aquatic Invertebrates and Habitat at a Fixed Station on the Sun River, Cascade County, Montana	WQPB Ebrary	macroinvertebrates		
(2003), DEQ Field Assessment Form	Assessment Record	algae; chlorophyll; fish; macroinvertebrates; wildlife	Land use; photo points; riparian &/or instream surveys & physical features	Rosgen type; benthic sediment data; common ions, pH, conductivity, miscellaneous; major nutrients; metals; quantitative physical data
Montana Department of Environmental Quality (2004), Statewide Monitoring 2001-2004 Data [Electronic Resource]	DEQ Metcalf Multimedia Case	chlorophyll; macroinvertebrates; other bacteriological data	photo points; riparian &/or instream surveys & physical features	General; common ions, pH, conductivity, miscellaneous
Montana Department of Environmental Quality (2004), Water Quality Restoration Plan and Total Maximum Daily Loads for the Sun River Planning	WEB		riparian &/or instream surveys & physical features	common ions, pH, conductivity, miscellaneous; major

Montana DEQ - Water Quality Standards Attainment Record**Reporting Cycle:** 2020**Assessment Record:** MT41K001_010.pdf**Status:** Unassigned

Citation	Location	Biological Data	Habitat Data	Chemistry Data
Area				nutrients; metals; quantitative physical data
Montana Department of Fish, Wildlife, and Parks, Fisheries Division (2004), FWP Dewatering Concern Areas: Revised May 2003 [Dewatered Streams List 2003]	WQPB Ebrary		Land use; riparian &/or instream surveys & physical features	common ions, pH, conductivity, miscellaneous; quantitative physical data

Comments: * Previously assessed by Carol Endicott and Perri Phillips on 9/21/2000

Montana DEQ - Water Quality Standards Attainment Record**Reporting Cycle:** 2020**Assessment Record:** MT41K001_010.pdf**Status:** Unassigned**DATA MATRIX**
Biological Data**Comments:**

entire stream			
Data Type	Comments	Ref Num	Citation
algae	This study was an early effort in biomonitoring and is difficult to interpret in light of developments that have occurred in the intervening decades.	2522	Water Quality Bureau, Department of Health & Environmental Sciences (1982), The Effects of Muddy Creek on the Biology of the Lower Sun River- A Summary
algae	This study was an early effort in biomonitoring and is difficult to interpret in light of developments that have occurred in the intervening decades.	2521	Ingman, Gary L. ; Weber, Erich E. ; Bahls, Loren L. (1984), The Effects of Muddy Creek on the Biology of the Lower Sun River
algae	Diatom association metrics used by the State of MT to evaluate biological integrity in mountain streams all indicate Full-Support of aquatic life uses. Metrics for Total Number of Species (46), Shannon Diversity (3.29), and Siltation Index (4.54) all indicated Excellent condition and water quality; Full-Support. Percent Dominant Species (30.35) and Disturbance Index (30.35) indicate Good condition and Full-Support.	10775	Bahls, Loren L. (2002), Diatom Report for the Sun River at Sun River, July 19, 2002
chlorophyll	6/19/2001 sampling results: 74 mg/sq m	10237	Montana Department of Environmental Quality (2004), Statewide Monitoring 2001-2004 Data [Electronic Resource]
chlorophyll	6/19/2002 sampling results: 71 mg/sq m	10237	Montana Department of Environmental Quality (2004), Statewide Monitoring 2001-2004 Data [Electronic Resource]
fish	This study addresses the tributaries to the Sun River, not the mainstem.	773	Thoreson, Nels A. (1961), Sun River Fisheries Study: Inventory of Waters of the Sun River Drainage Upstream from Diversion Dam: May 1, 1960 to April 30, 1961, F-28-R-1 Job # I
fish	"Attempts were made to estimate trout populations in the river, however, inadequate samples of fish were captured for an	1600	Welch, Eugene B. ; Swedberg, Steve ; Johnson, Richard L. ; Baldes, Richard ; Hill, William J. ;

Montana DEQ - Water Quality Standards Attainment Record**Reporting Cycle:** 2020**Assessment Record:** MT41K001_010.pdf**Status:** Unassigned

Data Type	Comments	Ref Num	Citation
	evaluation of flows needed to preserve the fishery."		Phinney, Duane ; Poole, Geoffrey C. (1974), Central Montana Fishery Study: Inventory of Waters of the Project Area, F-5-R-6 through F-5-R-23 Job # I
fish	RBT, LL, and NP were present above Muddy Creek. The length of stream sampled was not reported. Assuming a standard 1000 foot section was sampled, fish density was very low. Reported fish numbers would be low for even a 500 foot section.	1511	Hill, William J. ; Wipperman, Al (1986), Central (Northcentral) Montana Fisheries Study: Inventory and Survey of Waters in the Western Half of Region Four, F-5-R-24 through F-5-R-35 Job # I-a
fish	Fish were surveyed at several locations. RBT, LL, EB, and WF were present. Fish density was greater below the irrigation diversion than at the 287 bridge.	1959	Leathe, Stephen A. ; Hill, William J. ; Wipperman, Al (1988), Statewide Fisheries Investigations: Survey and Inventory of Coldwater Streams: Northcentral Montana Trout Stream Investigations: July 1, 1987 through June 30, 1988, F-46-R-1 Job # I-g
fish	Game fish population estimates indicate there are between 14 to 35 fish per mile at various locations. Inadequate stream flows and elevated temperatures were reported as resulting in the depressed trout fishery.	225	Horpestad, Abe A. ; Reid, Tom ; Davis, Dolly (1989), Application for Reservations of Water in the Missouri River Basin Above Fort Peck Dam: Summary, Purpose, Need, Amount, Public Interest, Management Plan, Appendices and Attachments
fish	The Sun River was considered to be unsuitable for reintroduction of arctic grayling due to establishment of rainbow and brown trout.	3444	Kaya, Calvin M. (1992), Restoration of Fluvial Arctic Grayling to Montana Streams: Assessment of Reintroduction Potential of Streams in the Native Range, the Upper Missouri River Drainage above Great Falls (Masters Thesis)
fish	Dewatering was considered as a constraint on fish populations. Water leasing was recommended as a possible solution.	1894	Warmwater Fish Management Plan Team (1997), Montana Warmwater Fisheries Management Plan 1997-2006

Montana DEQ - Water Quality Standards Attainment Record

Reporting Cycle: 2020

Assessment Record: MT41K001_010.pdf

Status: Unassigned

Data Type	Comments	Ref Num	Citation
macroinvertebrates	This study was an early effort in biomonitoring and is difficult to interpret in light of developments that have occurred in the intervening decades.	567	Ingman, Gary L. ; Bahls, Loren L. ; Horpestad, Abe A. (1979), Biological Water Quality Monitoring: Northcentral Montana 1977-1978
macroinvertebrates	Bioassessment score: 24/30 = 80%, Impairment Classification: Slight-Impairment, Use Support: Full-Support. "The biotic index (4.83) was within the expected limits, and the mayfly taxa richness (7) was high, suggesting that water quality at this site was unimpaired by significant nutrient pollution, and water temperatures were not excessively high. Some sandy sediment deposits were available for the burrowing mayfly <i>E. simulans</i> , and although only 8 "clinger" taxa were captured, they were abundant, comprising 76% of the animals in the sample. This suggests that fine sediments did not completely obliterate hard substrate surfaces. Three long-lived taxa made up 18% of the sampled assemblage, implying that catastrophic dewatering has not occurred recently"	3452	Bollman, Wease (2002), Aquatic Invertebrates and Habitat at a Fixed Station on the Sun River, Cascade County, Montana
macroinvertebrates	(This is the same site as 2001) Bioassessment score: 21/30 = 70%, Impairment Classification: Slight-Impairment, Use Support: Partial-Support. " The biotic index value (4.89) was within expected limits, and mayfly taxa richness (6) was high, suggesting that water quality at this site was unimpaired by significant nutrient pollution, and water temperatures were not excessively high. Thirteen "clinger" taxa were collected, suggesting that fine sediments did not completely obliterate hard substrate surfaces. Predators were not abundant, and overall taxa richness was not particularly high (24). Instream habitats may have been monotonous, lacking diversity. Long-lived taxa were represented by 4 genera, suggesting that dewatering did not recently abort life cycles at the site. The taxonomic and functional composition of the benthic assemblage at this site appears to be typical of a healthy riverine environment in the MT Plains regions. "	3451	Bollman, Wease (2003), Aquatic Invertebrates and Habitat at a Fixed Station on the Sun River, Cascade County, Montana

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Status: Unassigned

Montana DEQ - Water Quality Standards Attainment Record**Reporting Cycle:** 2020**Assessment Record:** MT41K001_010.pdf**Status:** Unassigned**DATA MATRIX****Habitat Data****Comments:**

entire stream

Data Type	Comments	Ref Num	Citation
riparian &/or instream surveys & physical features	Approximately 27% of banks inventoried in this section were eroding. Bank mass wasting occurred on 0.3% of banks. Stream bank failure occurred on 2.3% of banks. Livestock grazing impacts increase proceeding downstream. Channel straightening and resultant erosion has occurred in the lowest portion of this waterbody.	2416	Chrest, Ken ; Thomas, Jack ; Wheeler, Terry F. (1987), Sun River Corridor Inventory Report
riparian &/or instream surveys & physical features	"Severe dewatering of the river below the diversion dam commonly occurs in the summer". Substrate in the upper 1/3 of this reach consists mostly of cobbles and gravels with moderate amounts of silt. Further downstream, channel substrate decreases in size and the deposition of silt increases."	225	Horpestad, Abe A. ; Reid, Tom ; Davis, Dolly (1989), Application for Reservations of Water in the Missouri River Basin Above Fort Peck Dam: Summary, Purpose, Need, Amount, Public Interest, Management Plan, Appendices and Attachments
riparian &/or instream surveys & physical features	1964 & 1975 floods caused massive bedload movement, channel widening & channel braiding (in N Frk); 1988 fires in the North Fork increased water & sediment yield but effects on fish habitat less drastic than the flood events	10731	U.S. Department of Agriculture, Forest Service, Lewis & Clark National Forest ; U.S. Department of the Interior, Bureau of Land Management (1996), Lewis and Clark National Forest Oil and Gas Leasing: Draft Environmental Impact Statement
riparian &/or instream surveys & physical features	flow regimes and sediment transport processes have been altered due to Gibson Reservoir which affects aquatic systems below the dam; major source of impairment on National Forest lands is due to flow regulation/modification of Gibson Dam; grazing on USFS lands does not significantly impact the Sun River	3453	U.S. Department of Agriculture, Forest Service, Lewis & Clark National Forest (1997), Environmental Assessment: Sun Canyon Range Analysis
riparian &/or instream surveys & physical features	Riparian and stream assessment of Big Coulee indicates that this tributary is a significant contributor of sediment to the Sun River.	11544	Rollo, Alan ; Endicott, Carol Leigh (2000), Personal Communication with Carol Endicott on 1/18/2000, and Data on Duck Creek

Montana DEQ - Water Quality Standards Attainment Record**Reporting Cycle:** 2020**Assessment Record:** MT41K001_010.pdf**Status:** Unassigned

Data Type	Comments	Ref Num	Citation
riparian &/or instream surveys & physical features	Sun River at Simms. Water Year October 2001 to September 2002: Lowest Daily Mean Flows: 2001: 27cfs (05/19/01), 2002: 26cfs (05/19/02) , Annual 7-Day Minimum Flows: 2001:42 cfs (05/13/01), 2002: 41cfs (05/14/02). Instantaneous Low Flow: 23cfs (05/19/02) Note: MT FWP minimum flow recommendations are : above Elk Cr. : > 100cfs, below Elk Cr. : > 130cfs.	10535	Berkas, Wayne R. ; White, Melvin K. ; Ladd, Patricia B. ; Bailey, Fred A. ; Dodge, Kent A. (2003), Water Resources Data: Montana Water Year 2002, Water Data Report MT-02-1
riparian &/or instream surveys & physical features	MT FWP had determined that 60 miles of the Sun River, from the Diversion Dam to Fort Shaw is chronically dewatered.	10801	Montana Department of Fish, Wildlife, and Parks, Fisheries Division (2004), FWP Dewatering Concern Areas: Revised May 2003 [Dewatered Streams List 2003]

Montana DEQ - Water Quality Standards Attainment Record**Reporting Cycle:** 2020**Assessment Record:** MT41K001_010.pdf**Status:** Unassigned**DATA MATRIX****Chemistry Data****Comments:**

entire stream

Data Type	Comments	Ref Num	Citation
bioaccumulation	no problems	3442	Knapton, J. Roger ; Jones, William E. ; Sutphin, Jack W. (1988), Reconnaissance Investigation of Water Quality, Bottom Sediment, and Biota Associated with Irrigation Drainage in the Sun River Area, West-Central Montana, 1986-87, USGS Water-Resources Investigations Report # 87-4244
bioaccumulation	no problems	943	Nimick, David A. ; Lambing, John H. ; Palawski, Donald U. ; Malloy, John C. (1996), Detailed Study of Selenium in Soil, Water, Bottom Sediment, and Biota in the Sun River Irrigation Project, Freezeout Lake Wildlife Management Area, and Benton Lake National Wildlife Refuge, West-Central Montana, 1990-92, Water-Resources Investigations Report 95-4170
common ions, pH, conductivity, miscellaneous	no problems	1600	Welch, Eugene B. ; Swedberg, Steve ; Johnson, Richard L. ; Baldes, Richard ; Hill, William J. ; Phinney, Duane ; Poole, Geoffrey C. (1974), Central Montana Fishery Study: Inventory of Waters of the Project Area, F-5-R-6 through F-5-R-23 Job # I
common ions, pH, conductivity, miscellaneous	Conductivity was 728 µmhos/cm.	567	Ingman, Gary L. ; Bahls, Loren L. ; Horpestad, Abe A. (1979), Biological Water Quality Monitoring: Northcentral Montana 1977-1978
common ions, pH, conductivity, miscellaneous	no problems	2521	Ingman, Gary L. ; Weber, Erich E. ; Bahls, Loren L. (1984), The Effects of Muddy Creek on the Biology of the Lower Sun River

Montana DEQ - Water Quality Standards Attainment Record**Reporting Cycle:** 2020**Assessment Record:** MT41K001_010.pdf**Status:** Unassigned

Data Type	Comments	Ref Num	Citation
common ions, pH, conductivity, miscellaneous	no problems	2761	Shields, Ronald R. ; White, Melvin K. ; Ladd, Patricia B. ; Chambers, Clarence L. ; Dodge, Kent A. (1998), Water Resources Data: Montana Water Year 1997, USGS Water-Data Report MT-97-1
common ions, pH, conductivity, miscellaneous	no problems	406	McDonald, Catherine (2000), Assessment of Water Quality for the Sun River and Muddy Creek, Sun River Watershed, West-Central Montana, MBMG Open-File Report 412
common ions, pH, conductivity, miscellaneous	6/19/2001 Horiba meter readings: pH: 8.5, Specific Conductivity: 797mS/cm, Water Temperature: 20.7 C, Dissolved Oxygen: 10.7 mg/L	10237	Montana Department of Environmental Quality (2004), Statewide Monitoring 2001-2004 Data [Electronic Resource]
common ions, pH, conductivity, miscellaneous	7/19/2002 Horiba meter readings: pH: 7.3, Specific Conductivity: 650 mS/cm, Dissolved Oxygen: 8 mg/L, Water Temperature: 20.5 C	10237	Montana Department of Environmental Quality (2004), Statewide Monitoring 2001-2004 Data [Electronic Resource]
major nutrients	Nutrient concentrations were at levels below those that result in nuisance algal blooms during this study.	567	Ingman, Gary L. ; Bahls, Loren L. ; Horpestad, Abe A. (1979), Biological Water Quality Monitoring: Northcentral Montana 1977-1978
major nutrients	Nutrients were within acceptable levels in this portion of the Sun River in this study.	2521	Ingman, Gary L. ; Weber, Erich E. ; Bahls, Loren L. (1984), The Effects of Muddy Creek on the Biology of the Lower Sun River
major nutrients	Total phosphorus concentrations exceeded Upper Clark Fork River recommended concentration (20ug/L) at the Simms sampling station. The mean Total P was 0.024 mg/L. Five of eight Total Nitrogen samples were above regional criteria (UCFR criteria : 300 ug/L) .	406	McDonald, Catherine (2000), Assessment of Water Quality for the Sun River and Muddy Creek, Sun River Watershed, West-Central Montana, MBMG Open-File Report 412
major nutrients	MT DEQ 2001-2003 Nutrient Data: Numerous cases of elevated Nitrogen occur in the nutrient data for 2001 through	4650	(2003), DEQ Field Assessment Form

Montana DEQ - Water Quality Standards Attainment Record**Reporting Cycle:** 2020**Assessment Record:** MT41K001_010.pdf**Status:** Unassigned

Data Type	Comments	Ref Num	Citation
	2003. Total N values as high as 680 ug/L (7/21/01) were recorded. Also, notable exceedences of the Upper Clark Fork River phosphorus guidelines were recorded on 06/28/03 at the Sun R at Sun River site, at Sun River at Ft Shaw, and at Sun River at Simms. These P values ranged from 63 ug/L to 110 ug/L.		
major nutrients	These data are in Storease and are included in the analyses in 24N.	4609	Montana Department of Environmental Quality (2004), Water Quality Restoration Plan and Total Maximum Daily Loads for the Sun River Planning Area
metals	no problems	3442	Knapton, J. Roger ; Jones, William E. ; Sutphin, Jack W. (1988), Reconnaissance Investigation of Water Quality, Bottom Sediment, and Biota Associated with Irrigation Drainage in the Sun River Area, West-Central Montana, 1986-87, USGS Water-Resources Investigations Report # 87-4244
metals	no problems	943	Nimick, David A. ; Lambing, John H. ; Palawski, Donald U. ; Malloy, John C. (1996), Detailed Study of Selenium in Soil, Water, Bottom Sediment, and Biota in the Sun River Irrigation Project, Freezeout Lake Wildlife Management Area, and Benton Lake National Wildlife Refuge, West-Central Montana, 1990-92, Water-Resources Investigations Report 95-4170
metals	no problems	406	McDonald, Catherine (2000), Assessment of Water Quality for the Sun River and Muddy Creek, Sun River Watershed, West-Central Montana, MBMG Open-File Report 412

Montana DEQ - Water Quality Standards Attainment Record**Reporting Cycle:** 2020**Assessment Record:** MT41K001_010.pdf**Status:** Unassigned

Data Type	Comments	Ref Num	Citation
quantitative physical data	Dewatering and high temperatures were documented.	1600	Welch, Eugene B. ; Swedberg, Steve ; Johnson, Richard L. ; Baldes, Richard ; Hill, William J. ; Phinney, Duane ; Poole, Geoffrey C. (1974), Central Montana Fishery Study: Inventory of Waters of the Project Area, F-5-R-6 through F-5-R-23 Job # I
quantitative physical data	Flows were maintained at a minimum of 50 cfs below Diversion Dam.	1959	Leathe, Stephen A. ; Hill, William J. ; Wipperman, Al (1988), Statewide Fisheries Investigations: Survey and Inventory of Coldwater Streams: Northcentral Montana Trout Stream Investigations: July 1, 1987 through June 30, 1988, F-46-R-1 Job # I-g
quantitative physical data	Recommended flow from diversion dam to confluence with Elk Creek is 100 cfs. Recommended flow from Elk Creek to mouth is 130 cfs.	225	Horpestad, Abe A. ; Reid, Tom ; Davis, Dolly (1989), Application for Reservations of Water in the Missouri River Basin Above Fort Peck Dam: Summary, Purpose, Need, Amount, Public Interest, Management Plan, Appendices and Attachments
quantitative physical data	flood of June 1964 produced highest flows ever record - inst. Peak Q near Augusta = 59,700 cfs; another flood in 1975 produced peak Q at Augusta of 32,000 cfs	10731	U.S. Department of Agriculture, Forest Service, Lewis & Clark National Forest ; U.S. Department of the Interior, Bureau of Land Management (1996), Lewis and Clark National Forest Oil and Gas Leasing: Draft Environmental Impact Statement
quantitative physical data	Flows during July and August were well below 100 cfs.	2761	Shields, Ronald R. ; White, Melvin K. ; Ladd, Patricia B. ; Chambers, Clarence L. ; Dodge, Kent A. (1998), Water Resources Data: Montana Water Year 1997, USGS Water-Data Report MT-97-1

Montana DEQ - Water Quality Standards Attainment Record**Reporting Cycle:** 2020**Assessment Record:** MT41K001_010.pdf**Status:** Unassigned

Data Type	Comments	Ref Num	Citation
quantitative physical data	Gauging station data: Flows from 1905-1911 were compared with 1968-1979 from near Augusta. Flows never dropped below 100 cfs during the earlier period and the hydrograph showed typical seasonal peaks with minor spate related peaks. Flows in the later period regularly were below recommended flows. The hydrograph deviates substantially from normal.	2772	U.S. Geological Survey (199n), USGS Water Data for the Nation - NWIS
quantitative physical data	Maximum water temperatures: Sun River below Willow Cr: 1998: 78 F, 1999: 73.9 F, 2000: 75.8 F. Sun River at Augusta: 1997: 75.2 F, 1998: 77.4 F, 1999: 73.7 F, 2000: 76.5 F, 2001: 76.6 F, Sun R above the Ft. Shaw Headworks: 1998: 79.2 F, 1999: 76.6 F, 2001: 78.7 F, Sun R at Sun River: 2001: 73.2 F, Sun R below the Sun R Ditch Co: 2001: 76.3 F. Flow Volume: Notable low flow data points (daily mean stream flow) taken from USGS gage station 06085800 on the Sun R at Simms in 2001: 5/13/01: 38 cfs, 5/14: 29 cfs, 5/18: 28 cfs, 5/19: 27 cfs, 6/01/01: 39 cfs, 07/05& 06/01: 39 cfs, 7/11: 41 cfs, 7/20: 43 cfs, 7/29: 43 cfs, 8/08/01: 36 cfs, 8/09: 41 cfs, 08/10: 49 cfs, 8/24: 35 cfs, 8/25: 40 cfs, 8/26: 41 cfs. 8/27: 43 cfs. Low flows in May might expose rainbow trout spawning sites to air and/or limit available spawning sites and secure habitat. Low flows in June through Aug affect water temperature and habitat.	4609	Montana Department of Environmental Quality (2004), Water Quality Restoration Plan and Total Maximum Daily Loads for the Sun River Planning Area

ASSESSMENT HISTORY**Cycle** 2006

This use attainment record has not been updated. Please refer to the TMDL document (<http://www.deq.mt.gov/wqinfo/TMDL/finalReports.asp>) for more recent information and status of this waterbody segment.

Montana DEQ - Water Quality Standards Attainment Record

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Cycle 2008

Not assessed this cycle

Cycle 2010

Not assessed this cycle

Cycle 2012

Not assessed this cycle

Cycle 2014

Not assessed this cycle

Cycle 2016

Not assessed this cycle

Cycle 2018

Not assessed this cycle

Cycle 2020

Not assessed this cycle

Montana DEQ - Water Quality Standards Attainment Record

Reporting Cycle: 2020 **Assessment Record:** MT41K001_010.pdf **Status:** Unassigned

Overall Condition of Segment

Aquatic Life & Cold Water Fishery: BIOLOGY - Fish populations are severely impaired; MT DEQ 2001 & 2002 macroinvertebrate sampling, 2002 periphyton sampling. HABITAT - moderate impairment due to bank erosion, siltation and dewatering. Chronic low flow conditions severely impair amount of available habitat; CHEMISTRY - moderate impairment due to temperature. Agriculture: No high salinity or toxicant levels noted in water chemistry data. Industrial: No high salinity or turbidity levels noted in water chemistry data. Water body is chronically partially de-watered. Drinking Water: No human health standard exceedences. Primary Contact\ Recreation: River is chronically dewatered, discouraging or preventing floating (rafts, drift boats) and angling.

Montana DEQ - Water Quality Standards Attainment Record

Reporting Cycle: 2020

Assessment Record: MT41K001_010.pdf

Status: Unassigned

USE SUPPORT DECISION

Use Class

B-1

Trophic Status:

Trophic Trend:

Uses	DQA	Method, Data, and Information Used	Assessment Type and Confidence	Use Support	Partial Flag	Use SupportThreatened Certainty
Aquatic Life				Not Fully Supporting	No	No
Agricultural				Fully Supporting	No	No
Drinking Water				Fully Supporting	No	No
Primary Contact Recreation				Fully Supporting	No	No

Method Number and Description

Montana DEQ - Water Quality Standards Attainment Record**Reporting Cycle:** 2020**Assessment Record:** MT41K001_010.pdf**Status:** Unassigned**IMPAIRMENT INFORMATION**

Uses	Cause (Confidence): Source(Confirmed)	Observed Effects
Aquatic Life	84 (Medium): 20 (N), 58 (N) 371 (High): 46 (N), 156 (N) 388 (High): 20 (N), 58 (N) 526 (Medium): 20 (N), 58 (N)	
Agricultural		
Drinking Water		
Primary Contact Recreation		
Cause Number and Description	Source Number and Description	Observed Effect Number and Description
84-Alteration in stream-side or littoral vegetative covers	20-Channelization	
371-Sedimentation/Siltation	46-Grazing in Riparian or Shoreline Zones	
388-Temperature	58-Impacts from Hydrostructure Flow Regulation/modification	
526-Flow Regime Modification	156-Agriculture	

DELISTING / STATUS CHANGES

Cause	Reason for Change	Date of Change
Sedimentation/Siltation	TMDL Approved or established by EPA (4A)	02/23/2005
Temperature	TMDL Approved or established by EPA (4A)	02/23/2005

Montana DEQ - Water Quality Standards Attainment Record**Reporting Cycle:** 2020**Assessment Record:** MT41K001_010.pdf**Status:** Unassigned**CATEGORY INFORMATION****Previous Cycle****Cycle** 2018**Category** 4A - All TMDLs needed to rectify all identified threats or impairments have been completed and approved.**User Defined
Category** N/A**Current Cycle****Cycle** 2020**Category** 4A - All TMDLs needed to rectify all identified threats or impairments have been completed and approved.**User Defined
Category** N/A