

Long Range Plan – Madison County, Montana



Section 1: Introduction

Vision: Locally developed strategies and planning to achieve quality and quantifiable results for land stewardship of Madison County.

Mission: NRCS staff representing the Sheridan Field Office will work diligently to develop partnerships with agencies and landowners to wisely invest in natural resource concerns in Madison County to achieve quality and quantifiable results.

The purpose of this Long-Range Plan is to act as an overarching document to assist present and future NRCS staff in developing solutions for landscape level natural resource concerns within the county. The document will contain an inventory of the natural resources and agricultural assets to the county, previous conservation activity and their effects, as well as, existing resource concerns that may need to be addressed in the next 5 to 10 years. The plan will be reviewed annually and updated as necessary as more is learned about conservation areas of interest from partner collaboration and resource concerns change.

Partners: Natural Resources Conservation Service, Bureau of Land Management, US Forest Service, Montana Fish, Wildlife & Parks (FWP), South-West Montana Sagebrush Partnership, The Nature Conservancy, Ruby Valley Conservation District, Madison Conservation District, Gravelly Landscape Collaborative, Ranch Resources, Madison County Commissioner's office, Montana State University Extension.

Section 2: Natural Resource Inventory

Land Cover/ Use

Agronomy:

About 18,000 acres in this survey area is used in the production of non-irrigated crops. Most of this acreage is in the Harrison-Norris area, which is in the northeastern part of the county. Winter wheat and barley are the most commonly grown non-irrigated crops. Some spring wheat, oats, and tame pasture crops are also grown. About 130,000 acres are used for irrigated crops and pasture. The major areas of irrigated cropland are along the bottom lands of the Ruby, Beaverhead, Big Hole, and Jefferson Rivers. Hay and pasture are the most commonly grown irrigated crops, which include grass and alfalfa-grass mixtures.

Agronomic Production in Madison County, 2019:

Winter Wheat- 1,600 AC.

Spring Wheat -4,300 AC.

Barley-4,700 AC.

Alfalfa – 37,000 AC.

Grass Hay – 22,500 AC.

Rangeland:

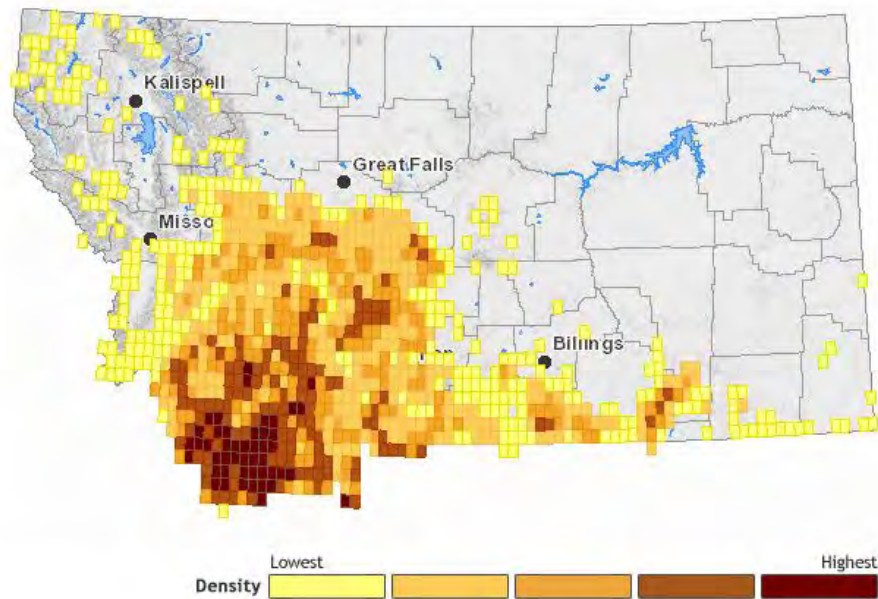
About 80% of the land in Madison County is rangeland or grazeable woodland. More than 85% of the farm income is derived from livestock, mainly cattle. Cow-calf is the major type of livestock operation. The average size of ranches is roughly 3,100 acres.

Cattle- 75,000 total, 47,000 that calved.

Montane Sagebrush steppe ecosystems are of great importance for grazing and dominates the montane and subalpine landscape of southwestern Montana from valley bottoms to subalpine ridges and is found as far north as Glacier National Park. In general, this system occurs in areas of gentle topography, fine soils, subsurface moisture or mesic conditions, within zones of higher precipitation and areas of snow accumulation. The shrub component of this system is generally dominated by mountain big sagebrush (*Artemisia tridentata ssp. vaseyana*).

The shrub component of this system is generally dominated by mountain big sagebrush (*Artemisia tridentata ssp. vaseyana*). Other co-dominant shrubs include silver sagebrush (*Artemisia cana ssp. viscidula*), subalpine big sagebrush (*Artemisia tridentata ssp. spiciformis*), three tip sagebrush (*Artemisia tripartita ssp. tripartita*) and antelope bitterbrush.

The herbaceous layer is usually well-represented. Graminoids that can be abundant include rough fescue (*Festuca campestris*), Idaho fescue (*Festuca idahoensis*), bottlebrush squirreltail (*Elymus elymoides*), pinegrass (*Calamagrostis rubescens*), needlegrass (*Achnatherum* species), spike fescue (*Leucopoa kingii*), poverty otagrass (*Danthonia intermedia*), western wheatgrass (*Pascopyrum smithii*), mountain brome (*Bromus carinatus*), slender wheatgrass (*Elymus trachycaulus*), prairie junegrass (*Koeleria macrantha*), bluebunch wheatgrass (*Pseudoroegneria spicata*), Sandberg's bluegrass (*Poa secunda*), and are variety of dry, upland sedges such as threadleaf sedge (*Carex filifolia*) and Geyer's sedge (*Carex geyeri*).



Map displaying Montane Sagebrush steppe ecosystem density throughout Montana.

Prime Farmland and other Important Farmland:

Farmland of Local Importance - These make up many important farmlands and are widely-scattered in areas where hay and forage are grown and mainly along major river valleys. With proper management, these soils can produce good yields of hay and forage.

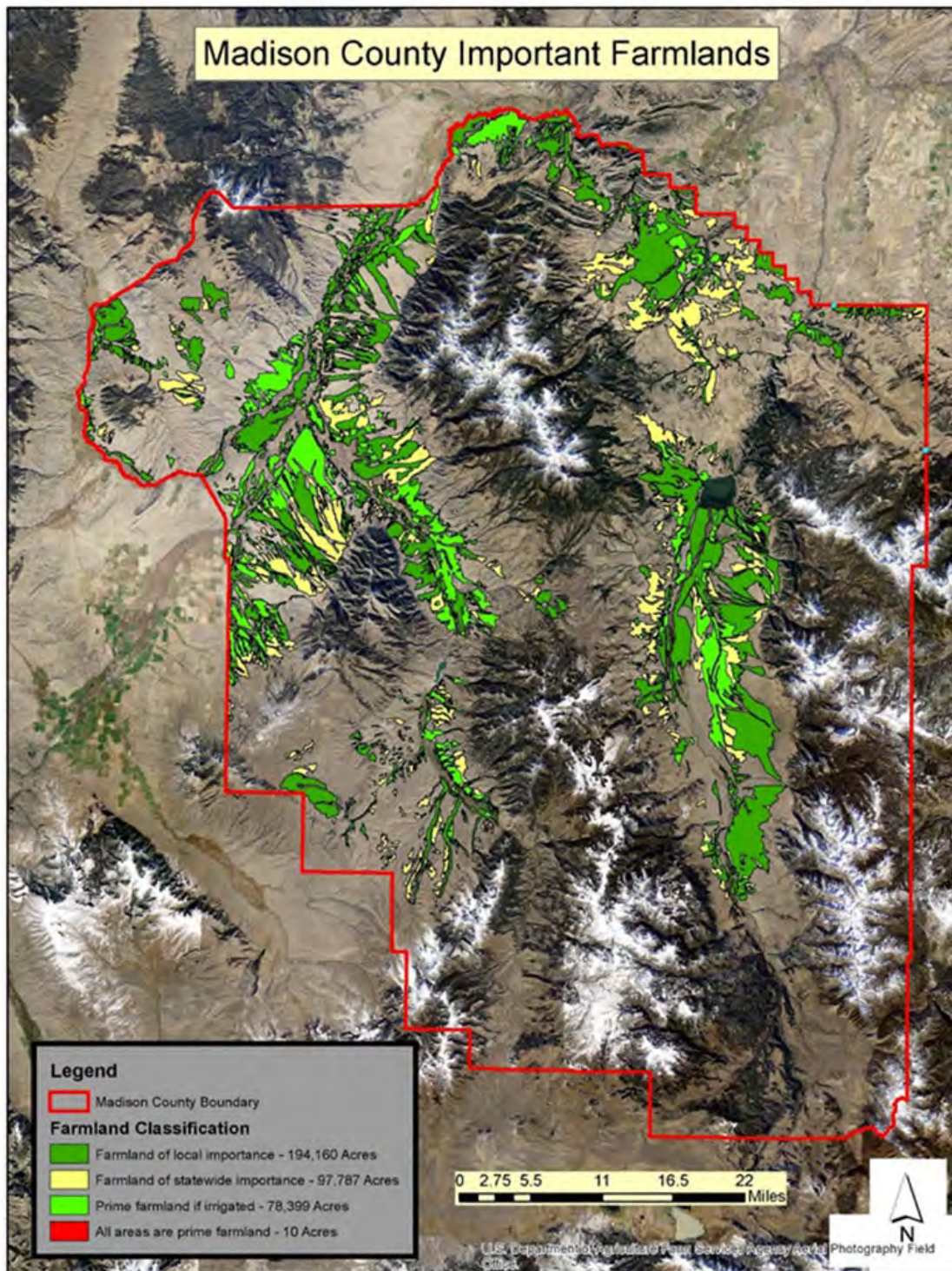
Farmland of Statewide Importance - These are mainly found on terraces and alluvial fans above the major river valleys.

The criteria for defining and delineating farmland of statewide importance are determined by the appropriate State agencies. Generally, this land includes areas of soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some areas may produce as high a yield as prime farmland if conditions are favorable. Farmland of statewide importance may include tracts of land that have been designated for agriculture by State law.

Prime if Irrigated - These areas are mainly along the Madison and Jefferson River valleys.

Prime Farmland - There is almost no Prime Farmland in Madison County (10 acres).

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil quality, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. The water supply is dependable and of adequate quality. Prime farmland is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service

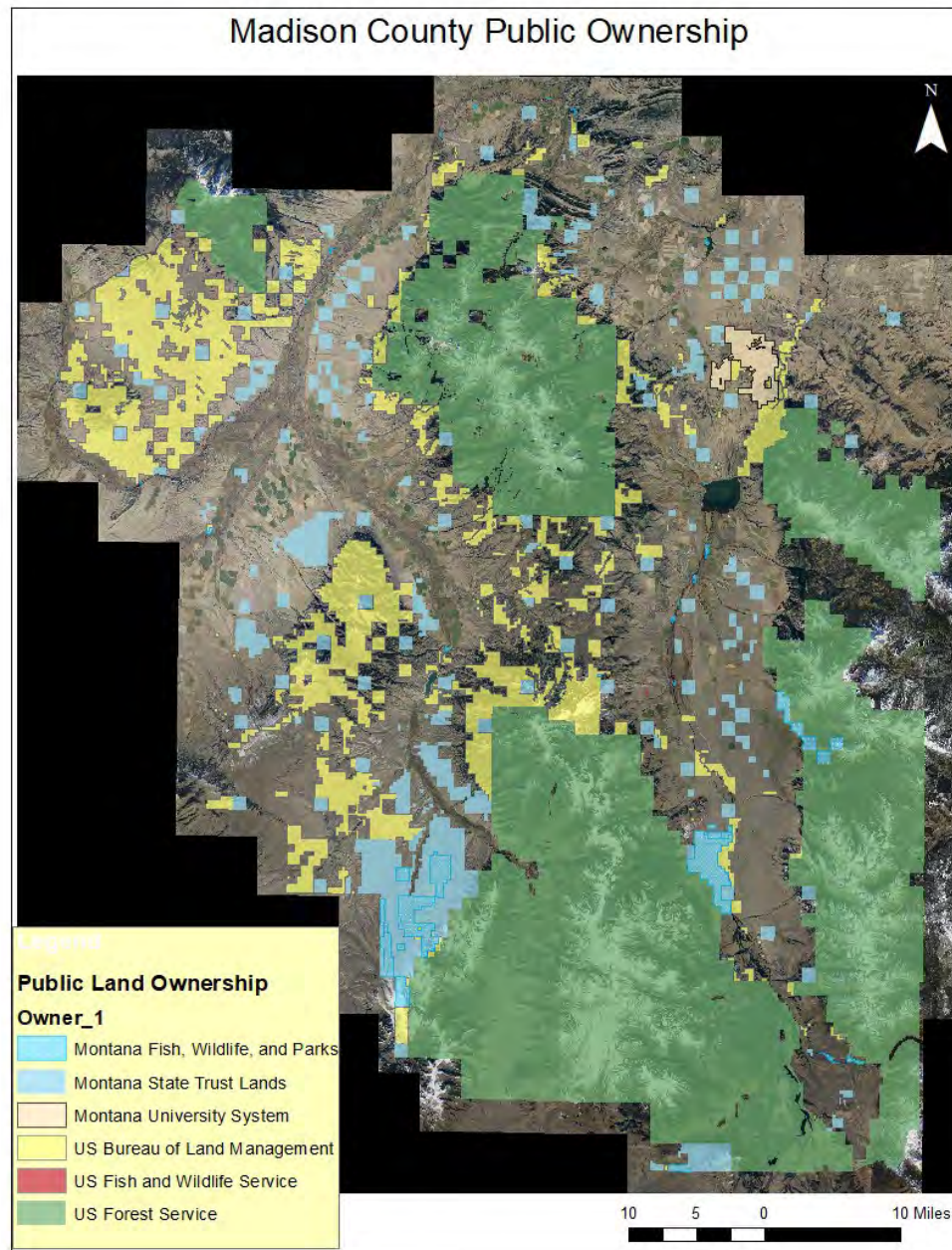


Ownership

There are 571 farms registered in the county, with an average farm size of 1,901 acres. According to Montana Agriculture Statistics, 72% of farms are family-owned, and 47% of the landscape is used for agricultural production.

Private Ownership Conservation Lands

Conservation easements are a valuable conservation tool. Depending on the parameters contained in the deed language, land can be protected for decades, or even perpetuity, for the purposes of protecting plant or animal habitat, landscape features (e.g. wetlands), or land management activities like farming and ranching. Madison County contains a total of 264,264 acres (11% of the county land base) under some form of conservation easement. Of these, 240,165 Acres (10%) are associated with private easement holders (land trusts, animal conservation organizations, etc.). The remaining easements are federally owned (14,354 acres) and state or locally owned (9,745 acres). Of the federal acres, the United States Department of Agriculture currently holds 866 acres under easement within the county.



Census

The population of Madison County was estimated 7,810 in 2016, with a population density of 2 people per square mile. 96% of the population consists of Caucasian individuals, followed by the largest minority of American Indian (<1%). The average per capita income is \$30,030. Thirty-four percent of the population only hold a high school diploma while, twenty-seven percent hold a bachelor's degree or higher. Ninety-seven percent of the population on speak English. Sixty percent of individuals over 16 years of age are employed in the labor force. (US Census Bureau, American Community Survey 2012-2016)

Soil

The field work for the Madison County Soil survey (Soil Survey Area MT636) was completed in 1980 and published in 1983. Much of the information in this paper is taken from the Soil Survey Manuscript.

General Nature of the Area:

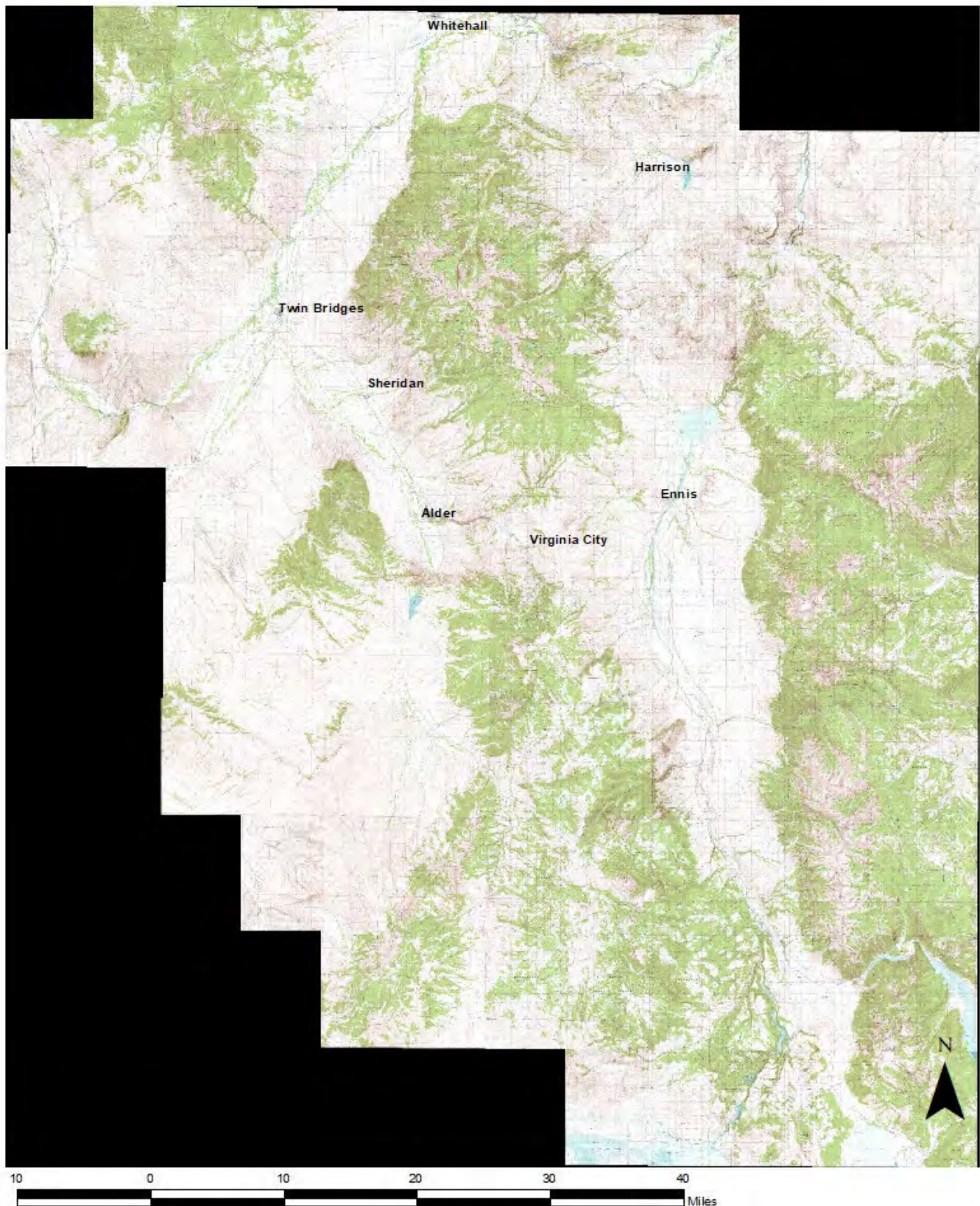
The eastern part of the survey area is characterized by the Madison Range, and the southwestern part by the Ruby Range and the Snowcrest Range. The central part of the area contains the Tobacco Root mountains to the north and the Gravelly Range to the south. The Madison River drains the eastern part of the county and the Jefferson River and its tributaries drain the western part. The Madison River flows to Ennis Lake in a broad basinal valley with numerous terrace levels and an extensive apron of coalesced fans bordering the mountain ranges. The Big Hole, Beaverhead, and Ruby Rivers join near Twin Bridges to form the Jefferson River. In most respects, the valleys of these streams resemble the Madison valley, but terrace levels are not so numerous.

The soil survey lies within two Major Land Resource Areas (MLRA) including 44B – Central Rocky Mountain Valleys and 43B – Central Rocky Mountains.

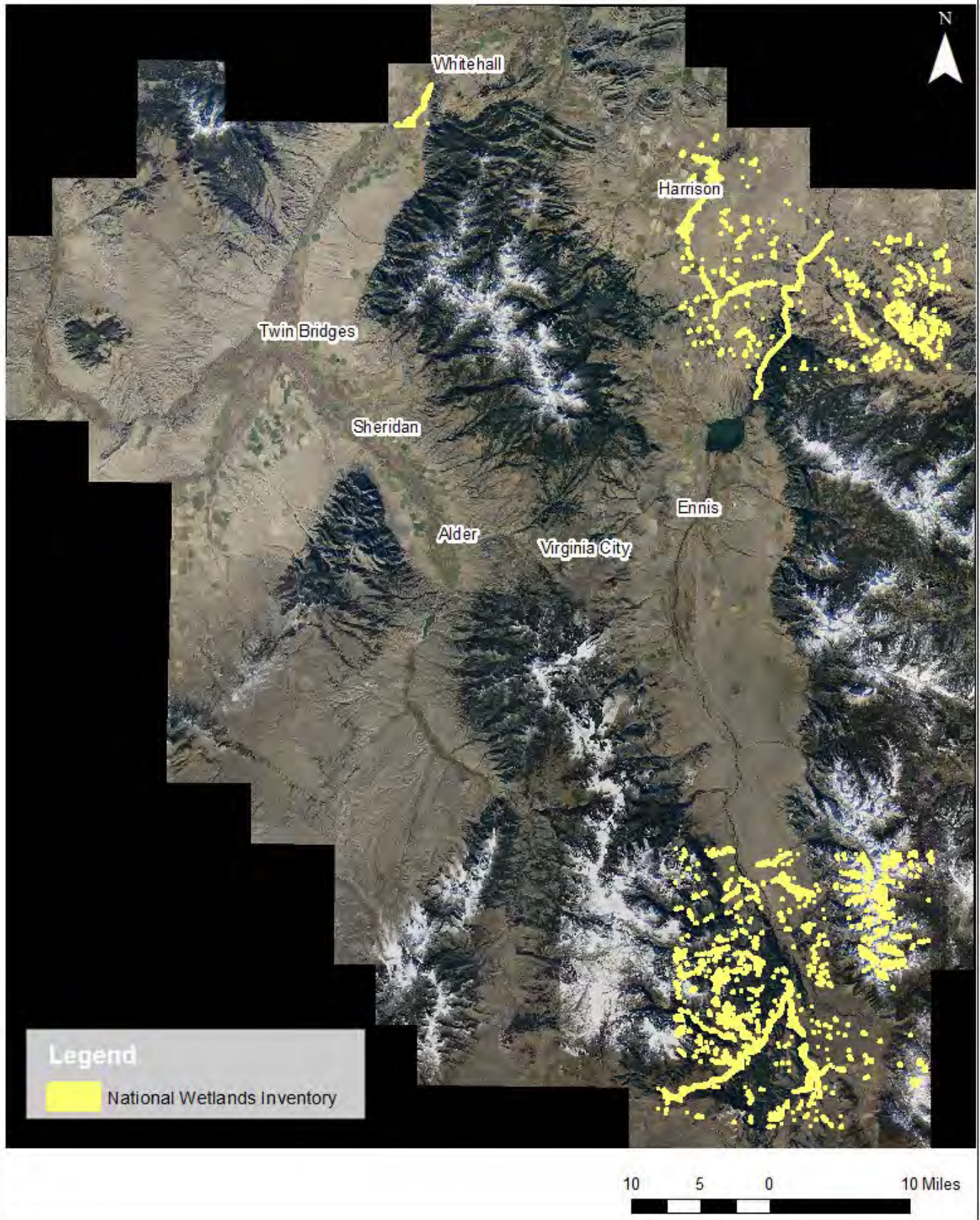
Parent Material:

These materials include Precambrian crystalline rocks and sedimentary beds. Unconsolidated materials include alluvium from streams, fans, and terraces as well as glacial outwash and morainal material. Many of the higher terraces associated with the major streams of the area are probably of late Pleistocene age and are blanketed by coarse sediment such as sand and cobbly gravel. Alluvium that blankets the flood plains and lowest terraces of the streams varies from fine-textured clay and silt to sand-sized material and cobbly gravel.

Madison County - TOPO Map



Madison County Wetlands Inventory

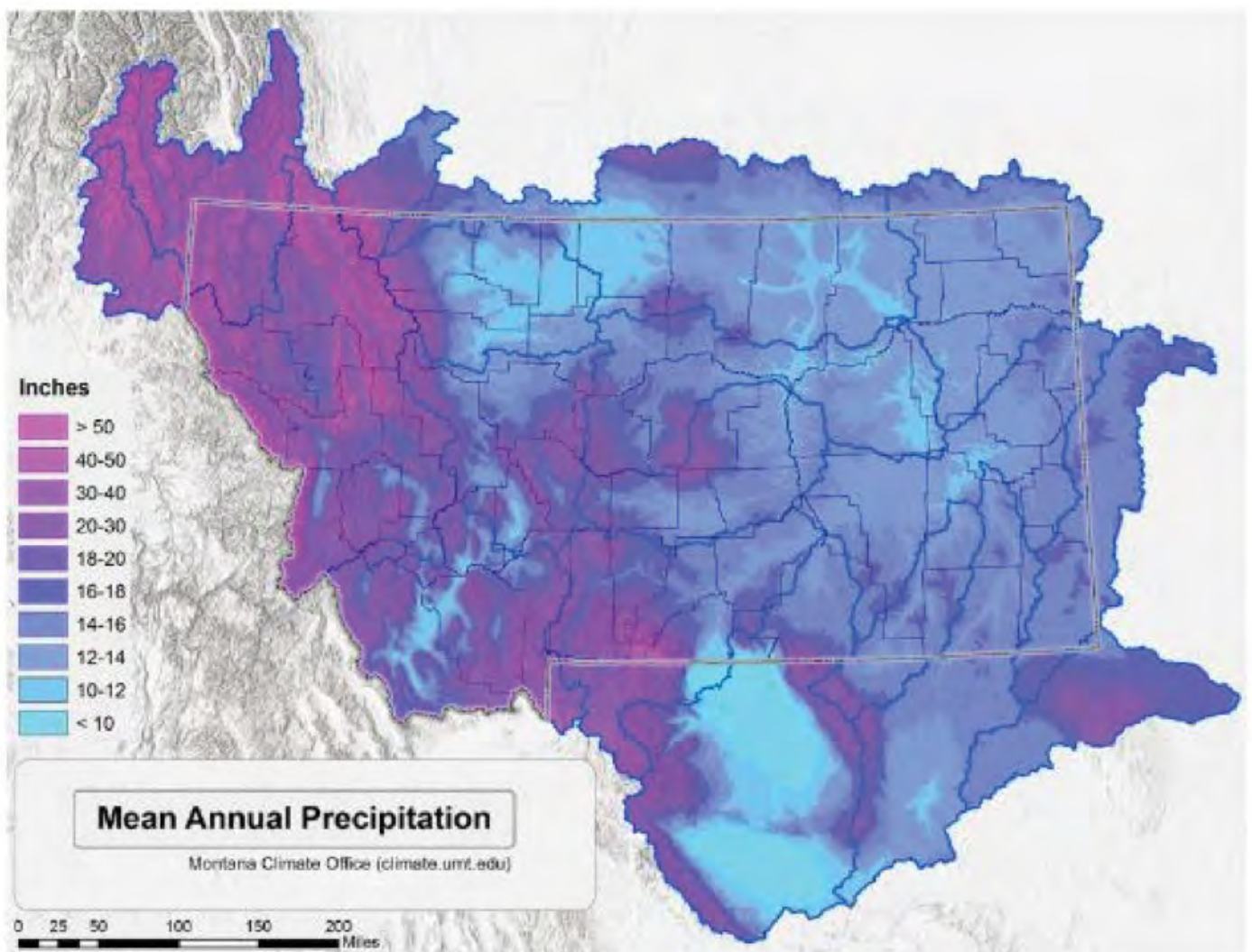


Wetlands

Wetlands are among the most important and beneficial ecosystems on the landscape. Wetlands provide critical biological, ecological, and economic benefits including flood attenuation, water filtration, carbon sequestration, and drought resiliency. Further, wetlands are home to 31% of all U.S. plant species. Half of all North American bird species use wetlands as some point in their lifecycle, and nearly half of all threatened or endangered species in the U.S. are also associated with wetlands. Madison County contains a diverse array of wetland types. According to the Montana Natural Heritage Program, a total of 74,513 acres of wetlands can be found within the county borders. Of these, 37,351 acres are palustrine (lacking flowing water), 7,203 are lacustrine (lake associated) in nature, 6,859 acres are riverine (river associated), and 23,100 acres are located within riparian zone

Water

Madison County varies in precipitation amounts, increasing from west to east. On the western end of the county, the town of Twin Bridges averages 9" of rain and 19" of snowfall. While the town of Virginia City, which is the county seat, receives an average of 16" of rainfall and 65" of snowfall. High elevations in the Madison, Gravelly, Snowcrest, and Tobacco Root mountains can exceed over 50" of snowfall, providing volumes of water to the valleys below through the spring and summer months.



Madison County is split into two main valleys by the Tobacco Root and Gravelly Mountains, the Madison River valley, and the Ruby River valley. Each valley has a respective conservation district serving these watersheds. Department of Environmental Quality (DEQ) has released a report in the Madison drainage with multiple tributaries that are considered impaired with nutrients, sediment loading, etc. The Madison Conservation District is drafting a restoration plan.

Waterbody & Location Description ¹	Waterbody ID	Impairment Cause ²	Pollutant Category
Elk Creek Headwaters to mouth (Madison River)	MT41f00_020	Alteration in stream-side or littoral vegetative covers	Not Applicable; Non-Pollutant
		Arsenic	Metals
		Turbidity	Not Applicable; Non-Pollutant
		Sedimentation/Siltation	Sediment
		Temperature, water	Temperature
Ennis Lake	MT41F005_0303	Arsenic	Metals
		Low flow alterations	Not Applicable; Non-Pollutant
		Other anthropogenic substrate alterations	Not Applicable; Non-Pollutant
		Physical substrate alterations	Not Applicable; Non-Pollutant
Hot Springs Creek Headwaters to mouth (Madison River)	MT41F002_0303	Sedimentation/Siltation	Sediment
		Low flow alterations	Not Applicable; Non-Pollutant
Indian Creek Lee Metcalf Wilderness boundary to mouth (Madison River)	MT41F004_040	Alteration in stream-side or littoral vegetative covers	Not Applicable; Non-Pollutant
		Low flow alterations	Not Applicable; Non-Pollutant
Jack Creek Headwaters to mouth (Madison River), T5S R1W S23	MT41F004_050	Alteration in stream-side or littoral vegetative covers	Not Applicable; Non-Pollutant
		Low flow alterations	Not Applicable; Non-Pollutant
Madison River Hebgen Dam to Quake Lake	MT41F001_030	Arsenic	Metals
Madison River Quake Lake to Ennis Lake	MT41F001_020	Arsenic	Metals
Madison River Ennis Dam to mouth (Missouri River) ³	MT41F001_010	Arsenic	Metals
		Alteration in stream-side or littoral vegetative covers	Not Applicable; Non-Pollutant
		Sedimentation/Siltation	Sediment
		Temperature, water	Temperature
Moore Creek Springs to mouth (Fletcher Channel), T5S R1W S15	MT41F004_130	Arsenic	Metals
		Alteration in stream-side or littoral vegetative covers	Not Applicable; Non-Pollutant
		Sedimentation/Siltation	Sediment
		Temperature, water	Temperature
North Meadow Creek Headwaters to mouth (Ennis Lake)	MT41F004_060	Low flow alterations	Not Applicable; Non-Pollutant
		Sedimentation/Siltation	Sediment
Antelope Creek Headwaters to mouth (Cliff Lake)	MT41F004_140	Sedimentation/Siltation	Sediment

		Alteration in stream-side or littoral vegetative covers	Not Applicable; Non-Pollutant
		Low flow alterations	Not Applicable; Non-Pollutant
Bear Creek Headwaters to mouth (O'Dell Spring Creek)	MT41F004_021	Sedimentation/Siltation	Sediment
Blaine Spring Creek Headwaters to mouth (Madison River) T7S R1W S6	MT41F004_010	Sedimentation/Siltation	Sediment
		Excess Algal Growth	Not Applicable; Non-Pollutant
		Low flow alterations	Not Applicable; Non-Pollutant
		Arsenic	Metals
		Total Nitrogen	Nutrients
Buford Creek Headwaters to confluence with West Fork Madison River	MT41F004_150	Arsenic	Metals
Cherry Creek Headwaters to mouth (Madison River)	MT41F002_010	Sedimentation/Siltation	Sediment
		Temperature, water	Temperature
O'Dell Spring Creek Headwaters to mouth (Madison River)	MT41F004_020	Arsenic	Metals
		Alteration in stream-side or littoral vegetative covers	Not Applicable; Non-Pollutant
		Other anthropogenic substrate alterations	Not Applicable; Non-Pollutant
		Physical substrate alterations	Not Applicable; Non-Pollutant
Red Canyon Creek Headwaters to mouth (Hebgen Lake)	MT41F006_020	Alteration in stream-side or littoral vegetative covers	Not Applicable; Non-Pollutant
		Low flow alterations	Not Applicable; Non-Pollutant
		Sedimentation/Siltation	Sediment
Ruby Creek Headwaters to mouth (Madison River)	MT41F004_080	Low flow alterations	Not Applicable; Non-Pollutant
		Sedimentation/Siltation	Sediment
South Meadow Creek Headwaters to mouth (Ennis Lake)	MT41F004_070	Sedimentation/Siltation	Sediment
Watkins Creek Headwaters to mouth (Hebgen Lake)	MT41F006_030	Alteration in stream-side or littoral vegetative covers	Not Applicable; Non-Pollutant
		Low flow alterations	Not Applicable; Non-Pollutant
		Sedimentation/Siltation	Sediment
Wigwam Creek Headwaters to mouth (Madison River)	MT41F004_160	Sedimentation/Siltation	Sediment
West Fork Madison River Headwaters to mouth (Madison River)	MT41F004_100	Low flow alterations	Not Applicable; Non-Pollutant
		Temperature, water	Temperature

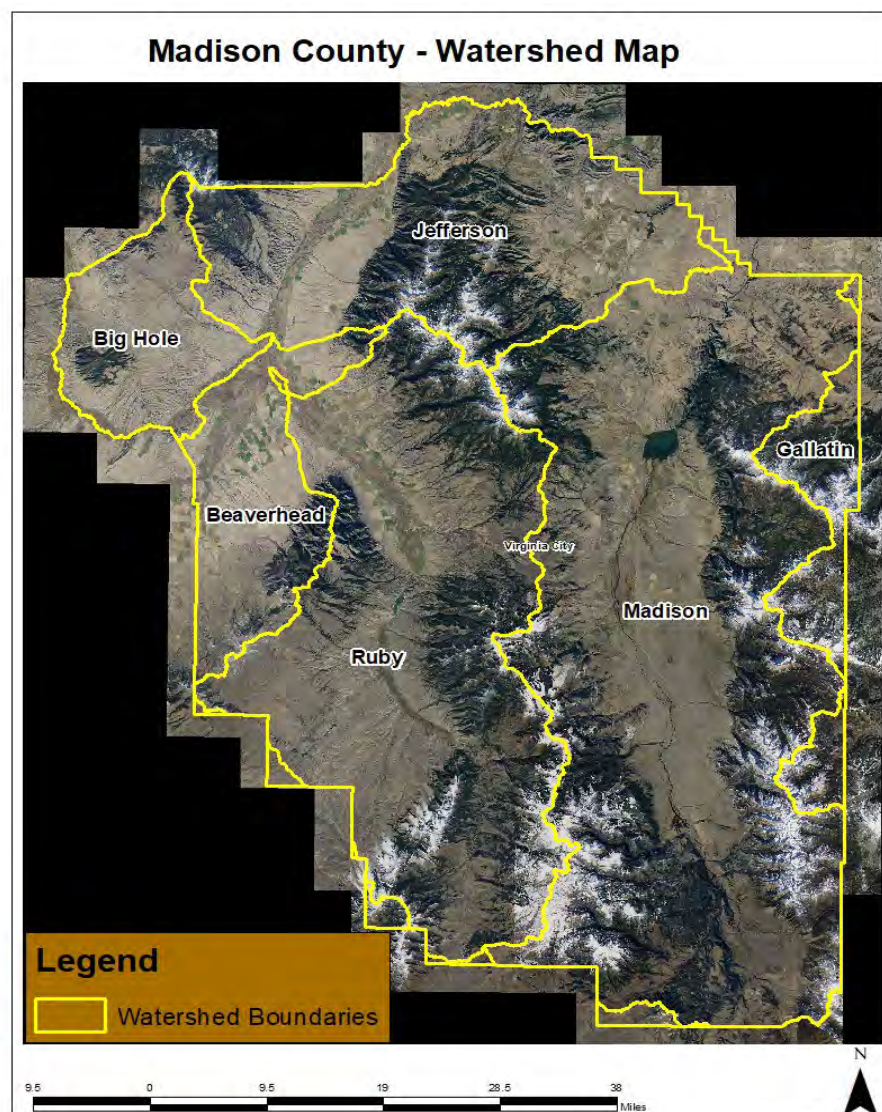
¹ All waterbody segments within Montana's Water Quality Integrated Report are indexed to the National Hydrography Dataset (NHD)

² Impairment causes contained in the 2016 Water Quality Integrated Report

³ The waterbody location description for MT41F001_010 provides an incorrect name for the dam; the correct name is the Madison Dam. The waterbody location description will be corrected in the 2018 Water Quality Integrated Report.

The Ruby River has a Total Maximum Daily Load (TMDL) for nutrients, and the Ruby Valley Conservation District (RVCD) is also drafting a watershed restoration plan. There are several de-watered or partially de-watered streams in the watershed such as Wisconsin Creek and Ramshorn. These tributaries are de-watered for irrigation purposes in the valley, mainly for hay production.

Impaired Water Body Summary	• Of the 27 water bodies originally listed on the 1996 303(d) List, 22 water bodies are considered impaired and have TMDLs prepared in this document. Pollutants addressed by TMDLs include sediment, metals, nutrients, and thermal modification. The following TMDLs are included in this Water Quality Restoration Plan: ○ Sediment – Alder, Basin, Burnt, California, Coal, Cottonwood, Currant, Garden, Indian, Mill, Mormon, Poison, Ramshorn, Shovel, Sweetwater, Warm Springs, and Wisconsin Creeks as well as Ruby River above and below the Ruby Reservoir, East Fork Ruby River, West Fork Ruby River and Middle Fork of the Ruby River. ○ Temperature – Lower Ruby River, Mill Creek. ○ Metals – Ramshorn Creek. ○ Nutrients – Sweetwater Creek.
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Confined Animal Feeding Operations

DEQ has developed a report for impaired streams in the Madison Valley. South Meadow Creek is one of the streams of concern due to nutrient loading. This stream has a Confined Animal Feeding Operation (CAFO) that it flows through. Several other streams in the Ruby also have CAFO's that could be addressed in the future.

Air and Energy

Madison County is not within any non-attainment areas for any pollutants.

Wildlife

Madison County contains four important elk and mule deer winter ranges found along the southwest Tobacco Root Mountains, the west Greenhorn Mountains, the west Snowcrest Mountains, and the east Gravelly Mountains. The west Greenhorn Mountains, and lower Sweetwater Watershed are also critical pronghorn antelope wintering areas.

Two populations of bighorn sheep occupy portions of Madison County in the Greenhorn and Madison mountain ranges. Moose are well distributed throughout the county.

The Madison Focal Area, designated by MT-FWP provides connectivity to designated wilderness areas, includes important areas for grizzly bears and wolverines. Both of which are federally listed endangered species. This area also contains important winter and summer range for elk, antelope, mule deer, and bighorn sheep. It is also an important area for grassland birds, contains many wetlands and riparian areas, and is therefore important wetland bird and waterfowl habitat.

Within the Madison Valley, impacts to the area include subdivision development and possible recreation impacts. There are several easements in the area, but there is opportunity for more. Other impacts could include livestock overstocking and overuse.

A portion of southwestern Madison County has been identified as greater sage-grouse core habitat. Habitat has been fragmented by conifer encroachment. Invasive weeds and grasses continue to be an increasing threat to habitat.

Watch video on local habitat work: https://www.youtube.com/watch?v=0kEW_-3gcno&t=69s

Madison County is in the North American Bird Conservation Initiative's Bird Conservation Region 10 and contains three designated Important Bird Areas: the Madison Valley (17,398 acres; 43% under private ownership), Sun Ranch (4,273 acres; 1% under private ownership), and Harrison Reservoir (1,551 acres; 94% under private ownership). In addition, privately owned designated conservation lands in the county encompass 629 acres (<1%), all owned by the Rocky Mountain Elk Foundation.

Fisheries

The Ruby River arises from tributaries located in the Gravelly and Snowcrest ranges and flows northwesterly for 41 miles through a narrow valley to the Ruby Reservoir. Downstream of the Ruby dam, the river meanders for approximately 48 through an agricultural valley to its confluence with the Beaverhead River, a drainage of approximately 936 square miles. The basin contains fish species common to SW Montana, these species include: rainbow trout, brown trout, brook trout, hybrid westslope cutthroat, westslope cutthroat, mountain whitefish, arctic grayling, common carp, longnose dace, rocky mountain sculpin, and white sucker.

The Madison River, a Blue-Ribbon designated fishery, originates in Yellowstone National Park at the junction of the Firehole and Gibbon Rivers. It flows northerly for 149 miles where it forms the Missouri River in Three Forks, MT. The Madison has a variety of native and nonnative fish species, including: Arctic Grayling, longnose dace, longnose sucker,

rocky mountain sculpin, mountain sucker, mountain whitefish, stonecat, white sucker, westslope cutthroat, brook trout, brown trout, common carp, fathead minnow, rainbow trout, Utah chub, and Yellowstone cutthroat. The entire river is managed to provide a diverse recreational fishery for native and nonnative fish.

State Species of Concern

According to the Montana Natural Heritage Program, Madison County contains 51 State Listed Species of Concern. These species consist of 10 mammal species, 30 bird species, 1 amphibian species, 2 fish species, 5 insect species, and 3 mollusk species. Habitats generally associated with these species are diverse including both terrestrial and aquatic types and include mountain streams, rivers, lakes, grasslands, riparian forests, conifer forests, wetlands, and sagebrush. More specialized species on the list can be found only in association with Madison County's rock cliffs, sand dunes, and forested habitat caves.

Montana Natural Heritage Program: <http://mtnhp.org/SpeciesOfConcern/?AorP=a>

A total of 63 state-listed plant Species of Concern also can be found within Madison County. They are generally comprised of 4 fern species, 1 conifer, 44 dicot species, 12 monocot species, and 2 bryophytes. Most of these species subsist in Madison's general habitat types (grasslands, wetlands, riparian, forests) but a few specialized species can only be found in more limited habitats including talus slopes, alpine, and fens.

US Fish and Wildlife Service has designated the following species as threatened and endangered: Canada Lynx, Grizzly Bears, and Wolverine.

Sensitive and Declining Plant Communities

Extensive work has been done by NRCS and other agencies to address conifer encroachment into sage-steppe ecosystems, aspen-dominated forest, deciduous-dominated riparian areas, and areas dominated by mountain mahogany. NRCS and partners have developed the Southwest Montana Sagebrush Alliance to coordinate treatments across Madison and Beaverhead Counties. NRCS Sheridan Field Office has developed a Targeted Implementation Plan (TIP) to seek funding to address conifer encroachment in the South Tobacco Roots. The project area was outlined by several partners to achieve the maximum benefit in critical sage-steppe plant communities, which are crucial for wildlife and watershed health.

Montana Natural Heritage Program: <http://mtnhp.org/SpeciesOfConcern/?AorP=p>

US Fish and Wildlife Service has designated the following species as threatened and endangered: Ute Ladies Tresses, Red Knot, and Whitebark Pine.

Forestry

The valleys of Madison County are grasslands with forests of black cottonwood, quaking aspen, rocky mountain juniper, and Douglas-fir in the draws and bordering streams and rivers. Above the valley floor, grasslands give way to forest. Forest types differ mostly because of soil and climate variations. Temperature and moisture are important climatic factors affecting forest growth and composition. Elevation and aspect are topographic features that further influence temperature and moisture, and therefore plant community composition. Douglas-fir occupies the warm-dry end of the climatic gradient; lodgepole pine is on the cool moist end at the highest elevations. Other trees are Engelmann spruce, subalpine fir, whitebark pine, and limber pine. Forest understory plant communities exhibit the same diversity. Sagebrush, bunch grasses, fescues, currant, buffaloberry, and snowberry dominate on drier sites. Pinegrass, common beargrass, grouse whortleberry, and kinnikinnick typify the cool-moist forest types.

Madison County is 39% forested, 87% of which is Federal and State-owned; about 112,000 acres non-industrial private forest.

In the Douglas-Fir forests, the natural, uninhibited fire regime would be fire-free intervals of about 45 years, with low to moderate intensity fires that maintained forests in a state where the tree species present, spacing between trees, and understory vegetation are well adapted to fire in healthy state. Lodgepole pine forests experience a longer duration fire interval from 100 to 500 years and of course are stand replacing.

A century of fire suppression and manipulation of the natural disturbance mechanisms leave many forests, both public and private, in a state that allows fires to quickly surpass the historic norm and become high severity, stand replacement fires. The wildfire threat and trend toward more catastrophic fire to the urban interface is common knowledge. The county has a Community Wildfire Protection Plan that discusses this topic in detail, so it is not repeated here.

CWPP: <http://madisoncountymt.gov/DocumentCenter/View/781/Madison-County-Montana-Community-Wildfire-Protection-Plan-PDF?bidId=>

Forest insect and disease issues are ever-present and in a constant state of flux. The current culprits in Madison County include: Bark beetles and spruce budworm. The afore-mentioned manipulation of disturbance mechanisms has increased the number of trees per-acre far beyond the natural system sustainability and skewed the forest tree species composition toward those more susceptible to insects, disease, and wildfire. This situation complicates and limits forest management options.

Manipulation of the natural water flow has had a deleterious effect on cottonwoods and conifers often out-compete and suppress aspen groves.

(Acreage figures derived from USFS Forest Inventory and Analysis Program; Inventory EVALIDator web application and from the University of Montana Extension)

Section 3: Analysis of Conservation Activity

In the past, NRCS has invested heavily in a variety of project types throughout Madison County. Projects have ranged from livestock grazing infrastructure, irrigation efficiency, stream restoration, conifer eradication, wetland restoration, and seasonal high tunnels.

Partners and other groups have also been working diligently in Madison County to achieve conservation goals. Threats to sage-grouse have sparked significant amounts of conifer eradication in core habitat in the Sweetwater Basin, Virginia City Hill, the Robb-Ledford Wildlife Management Area, the Blacktail Wildlife Management Area, and many other areas in the southern edge of the county. Agencies involved in these activities include FWP, Bureau of Land Management, Ruby Valley Conservation District, Mule Deer Foundation, and many individual landowners. These treatments are expected to increase sage-grouse distribution and abundance through time.

Additionally, the Madison Conservation District (CD) and Ruby Valley CD have been heavily involved in stream restoration and riparian improvement projects. RVCD has been working on their Ramshorn Creek Project and has installed a fish barrier which blocks passage to non-natives and allowed 10 or more miles of stream to be re-inhabited by native species. Active restoration was completed on several thousand feet of stream. Madison CD has been working on Jack Creek and Moore's Creek, and has conducted extensive monitoring throughout the watershed.

The Nature Conservancy has recently chosen to host a new position to coordinate inter-agency conifer eradication in Madison and Beaverhead Counties. The position also leads the SW Montana Sagebrush Partnership (SMSP*). This group is mainly comprised of agencies, NGO's, and landowners. The conifer encroachment issue has been recognized, and plans are being developed to make a coordinated effort.

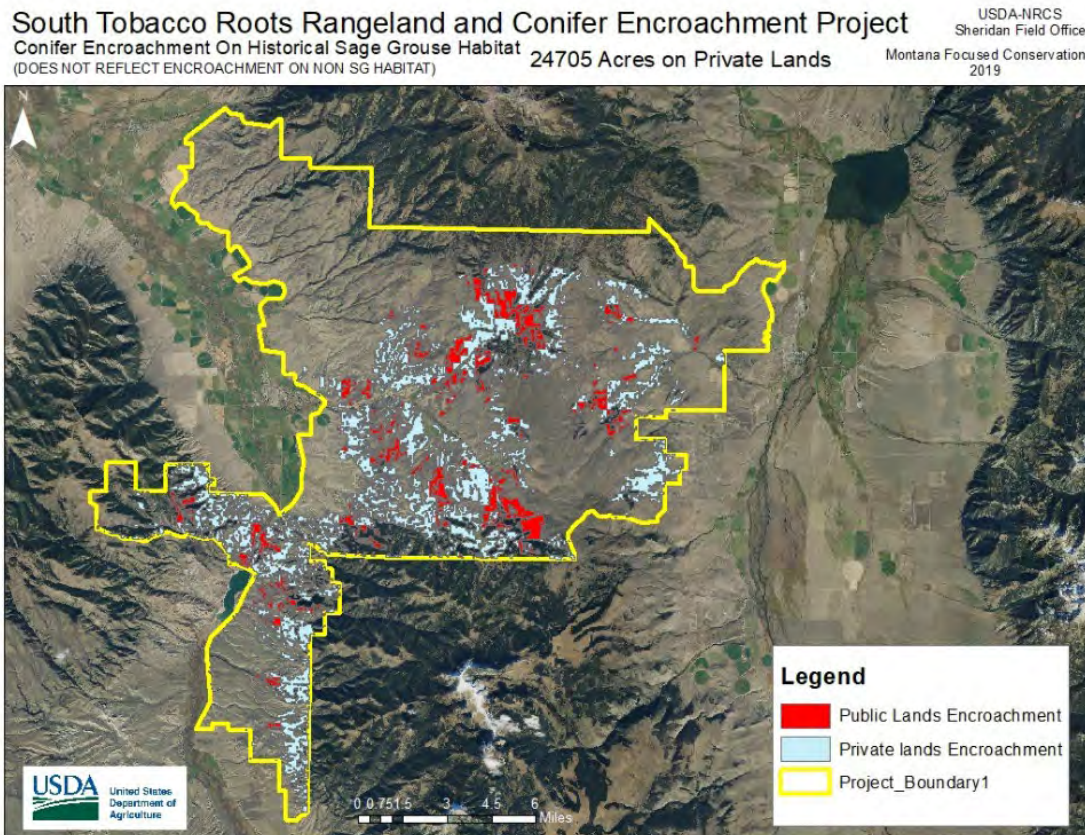
A Memorandum of Understanding between all participating members of the SMSP has been drafted and is under review by each applicable partner. The number one commitment listed in this MOU is: *Restore sagebrush habitat through removal of invading conifers across public and private ownership boundaries.*

*SMSP members include the U.S. Bureau of Land Management (BLM), Beaverhead Watershed Committee, Ruby Watershed Council, U.S. Fish and Wildlife Service-Partners for Fish and Wildlife Program (USFWS), The Nature Conservancy, Montana Fish, Wildlife and Parks (FWP), Montana Department of Natural Resources and Conservation (DNRC), U.S. Forest Service - Beaverhead-Deer lodge National Forest, Red Rocks Lakes National Wildlife Refuge, and the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS).

Section 4: Natural Resource Problems and Desired Outcomes

Conifer Encroachment





Conifer encroachment (rocky mtn. juniper, douglas fir, limber pine) has been increasing in Madison County since pioneers settled the area and fire suppression occurred across the landscape and much of the western U.S. Conifer encroaching into sage-steppe grasslands can be a detriment to many natural resource categories such as rangeland production for livestock, wildlife habitat and wildlife forage, hydrologic function, wildfire danger, etc.

The main people affected by conifer encroachment are livestock producers and recreationalists of Madison County. Montana State University research shows conifer encroachment has been linked to up to 93% forage loss in high densities (Phase 3), which is making profitable livestock production more and more challenging. Encroachment also effects recreationalists and the outfitter/ guide community which depends on fish and wildlife populations being healthy and abundant. Wildlife habitat degradation has affected sage-grouse, migratory song birds, as well as large ungulates, especially on their winter ranges.

A significant amount of revenue and jobs are created within Madison County from outdoor recreation, specifically guided hunting and fishing. If left un-treated, these acres will continue to lose rangeland forage production, wildlife habitat, hydrologic function and increase fuel loads for wildfire danger. In time, conifer could completely take over sage-steppe grasslands and form a monoculture, which would be a detriment to the resources listed above.

In order to attain the desired future condition, the goal is to treat 25% of conifer encroachment (based on what reference point/date?) on private land over a 5-year period. This will require NRCS funding to treat about 1,200 to 1,300 acres per year.

Stream Health and Restoration

Stream health and function is very important to the agricultural and recreational residents and visitors to Madison County. Water is the currency of the west and Madison County is no different. It is very important for agricultural

producers to improve stream health. Stream health and quality will hold water on the landscape longer and provide moisture during the hot, dry periods of late summer. Employment through guided hunting/ fishing, and other recreation is the second largest employer and industry in Madison County. Bountiful populations of trout, and other game species are critical to the economy of Madison and the small communities such as Ennis and Twin Bridges.

MT-DEQ has released (9/2018) a watershed assessment for the Madison Valley. This report has documented 16 streams that are impaired due to sediment loading. The streams that the Conservation District are most concerned with on the list include: Moore's Creek, North and South Meadow Creeks, Bear Creek, Indian Creek, and Hot Springs Creek. The streams listed are high in nutrients and experience sediment loading. This can be attributed to uncontrolled livestock access to the streams. For most of the hot and dry summers, the cattle concentrate within the riparian corridors, and can overgraze this narrow ribbon of vegetation.

The Madison Conservation District has approached the NRCS Sheridan Field Office about collaborating on addressing this issue. Some of the ideas for conservation practices included: prescribed grazing, riparian fencing, riparian planting, conifer removal, and herbaceous weed treatment. A combination of these practices will reduce sediment transport to the streams. (Montana DEQ. 2018. Madison Nutrient, E. coli, and Metal TMDLs and Water Quality Improvement Plan - DRAFT. Helena, MT: Montana Dept. of Environmental Quality. Pg. 5-17)

In conversation with Madison CD and RVCD, we have brainstormed ideas and talked about what we may think are viable/ and productive solutions. The districts do not think NRCS' niche would be traditional stream restoration. Both districts believe where NRCS could really make the biggest effect would be helping producers develop a grazing plan with "riparian pastures". A "riparian pasture" is a portion of land where the stream is fenced off on both sides, but the area is fenced far enough from the stream to create a usable grazing space within the fences. The land adjacent to the stream, which is now fenced, is not left un-utilized, but instead, is used for a short and intense grazing regime with specific timing.

The CDs also believe that vegetation management, which is further offset from the streams, will also reduce sediment transport to the streams, and hopefully, a large majority of sediment will be captured by a healthy riparian filter.

Invasive Weeds and Grasses

Invasive species are a growing concern in Madison County and much of southwest Montana. It is difficult to quantify the acres infested across the landscape, and much of that data is unavailable. However, there are several agencies (USFS, Madison County Weed Board, BLM) and land managers that dedicate a significant amount of time and resources to controlling invasive species, particularly in rangeland settings.

Some of the main culprits include: spotted knapweed, cheatgrass, leafy spurge, and ventenata. The University of Montana and USFWS are creating a model to map likely areas of cheatgrass infestations for southwest Montana. A similar model has been successfully used to support cheatgrass control efforts on Red Rocks NWR and some of the surrounding private land in the Centennial Valley.

The RVCD recently secured a substantial grant for weed control in the upper Ruby River watershed, which is comprised mainly of USFS and BLM land. The Madison CD has asked the NRCS field office to have some outreach and education, and possibly invest Farm Bill dollars in weed control in some of the areas in/ adjacent to the new subdivisions on the west side of the valley. Some of these smaller parcels have serious spotted knapweed infestations, and the CD believes a lot of the lack of control is due to ignorance on the subject.

Wildlife Passage/ Reconnecting Landscapes

NRCS, landowners, and partners including: Southwest Montana Sagebrush Partnership Heart of the Rockies, Montana FWP, and National Wildlife Foundation are concerned about wildlife passage and habitat connectivity across multiple landscapes in SW-MT. Several areas such as the Sweetwater Basin and West Greenhorns are very important winter range for large ungulates such as Mule Deer, Pronghorn, and Elk. Agency staff and landowners have recognized passage issues due to hazardous fencing, which also lead to laborious repairs on behalf of livestock managers. The Sheridan FO will need to work with managers in the future to help resolve some of these issues.

Section 5: Prioritization of Natural Resource Problems and Desired Outcomes

1. Conifer Encroachment

Addressing conifer encroachment does support the NRCS vision and mission. By investing Farm Bill dollars and staff time, several NRCS identified resource concerns in “Soil, Water, Animals, Plants, Air + Humans + Energy” (SWAPA + H +E) can be addressed. Conifer encroachment, into rangeland settings, can be linked to degradation of soil erosion and chemical properties, water quantity, native plant/sagebrush ecosystems, and wildlife habitat.

These goals align with the Sage-Grouse Initiative, a national priority, as well as, local priorities for landowners and partner agencies. The current staffing at the field office will be able to implement treatments for the acres and funding asked for in the South Tobacco Roots Conifer Encroachment TIP. It is estimated that it will take around 2,000 hours of staff time to inventory, contract, and layout approximately 1,300 acres of conifer encroachment treatment per year.

The cost to the agency to implement these projects will be \$250K to \$300K per year for a 5-year implementation phase. With this investment, the agency will be reducing conifer encroachment by 25% on private lands within the designated project area. The local workgroup helped identify this resource concern, early in the development of the Long-Range Plan. Initially, MT-FWP’s local biologist, and representatives from both conservation districts met and discussed landscape level resource concerns, and priority areas for their interests.

A landowner outreach meeting was held in Alder in April 2019. Nine landowners, that were program eligible, were in attendance, and we all discussed potential implementation methods. Within two weeks of the meeting, there were four applications for EQIP that represented a combined total of nearly 4,000 acres of conifer encroachment. Additional interested landowners are currently in the process of submitting applications.

Action:

With the inception of MT- Focused conservation in 2020, the Sheridan Office’s South Tobacco Roots Conifer Encroachment has proven successful. Partnering with Southwest MT Sagebrush Partnership was effective in streamlining implementation of 314 brush management and 384 woody residue treatment practices. Contracted acres are outlined below. NRCS implementation resulted in a 39% (13840 acres treated/ 35736 mapped) reduction in conifer encroachment on private lands in Madison County. Many which acres were in the South Tobacco Roots Conifer Encroachment TIP.

Year/ EQIP Investment	Sage Grouse Initiative (acres)	TIP (acres)
2019 (\$50087)	0	469
2020 (\$195550)	0	2168
2021 (\$679575)	3567	1569
2022 (\$677472)	0	6067

2. Stream Restoration

Addressing riparian health and stream restoration in partnership with the conservation districts does support the NRCS vision and mission. By investing Farm Bill dollars and staff time, several resource concerns in “SWAPA + H +E” can be addressed. The field office and conservation districts can achieve the goals within this scope.

The CD’s have already been working with landowners to implement the practices discussed above. The Madison CD also thinks this would be a good opportunity to leverage priority for a 319 grant through MT-DEQ to perform herbaceous weed control in the upland adjacent to streams. MT-DEQ is brainstorming ways to implement “focus areas”, which are similar to Montana Focused Conservation. With momentum from NRCS and the CD’s, it may be possible to draw enough attention to make this a priority for MT-DEQ.

Some of the expected difficulties with this idea, may be landowner willingness. There are “early adopters” already setting up riparian pastures and offsite water. However, many landowners within the county are not yet doing so, and many landowners have expressed their frustration with NRCS’ prescribed grazing requirements that they have experienced in the past. These concerns may be alleviated by more public outreach and showing landowners the goals and objectives in a transparent manner.

Riparian exclusion will not have landowner support. Developing a grazing plan that includes the riparian area, with management changes, may be more palatable to landowners.

Action:

Sheridan FO drafted East Tobacco Roots Riparian Health TIP for FY 2022 to implement practices on Moore’s Cr., Meadow Cr. and Hot Springs Cr. Practices were tailored to reducing livestock pressure adjacent to streams and improving herbaceous and woody vegetation in riparian areas with the concept of generating “Riparian pasture.”

Year / EQIP Investment	Moore’s Creek	Meadow Creek	Hot Springs Creek
2022/ \$17433	5800’ improved vegetation		

3. Invasive Weed Control

Developing a TIP to address weed infestations would be very complimentary to other TIP’s for conifer or riparian pasture fencing. Invasive weeds such as cheatgrass, ventenata, spotted knapweed, and leafy spurge are becoming a vast and costly resource concern for landowners and agencies to treat in Madison County.

Cheatgrass is prevalent in the Madison Valley on the Cameron Bench where over-grazing has been an issue for decades. Additionally, there are similar weed issues on the benches in the Ruby. These areas are low in organic

matter, and the long-term excessive grazing pressure has made for optimal conditions for invasive species to establish. Addressing these issues would support the NRCS mission and vision.

Currently, there is a lot of interest in this issue with landowners. Montana State Extension Services held a meeting in neighboring Beaverhead County earlier this year and approximately 80 landowners were in attendance. This is evidence to support that landowners are truly interested and are willing to participate with NRCS programs to help solve resource concerns.

Addressing this resource concern is feasible for the field office to implement. Much of the rangelands with infestations are easily traversable with ATV, and mapping for inventory and/or checkout wouldn't be extremely time consuming. The cost-share for herbaceous weed treatment (315) is relatively low per acre, and a large acreage base could be treated on a yearly basis through a TIP. NRCS could treat enough acres over a 3-4-year period to make a quantifiable footprint.

Partners are currently investing in this issue with a Wildlife Habitat Improvement Program grant in the upper Ruby Valley. USFWS has had success and continues to work on cheatgrass infestations in the Centennial Valley on private lands and Red Rock Lakes NWR. The county weed board is actively involved in mapping and treating weeds in Madison County.

Madison CD would like to see education and outreach to some of the smaller subdivided landowners. Conservation District staff have noticed large spotted knapweed infestations on many of these properties. Their staff believes many of these landowners may be willing to invest in control measures on their own, but they may be unaware of the species and concerns associated with them.

Many of these landowners are non-residents, and not typical agricultural producers. They may not realize that knapweed, annual grasses, and other species are not "normal" conditions. It is unlikely, though, that there are enough acres and Farm Bill-eligible landowners in these subdivisions to justify investment of NRCS dollars currently. However, it could be a great opportunity for staff to do an outreach event, such as a landowner meeting.

Action:

NRCS Sheridan FO drafted a TIP to utilize practices which were popular in the now discontinued Honey-Bee/Pollinator Initiative to address invasive species infestations across Madison-county. These projects were intended to use perennial vegetation practices to out-compete invasives in the sub-divided housing developments which have been converted from native rangelands and have either been disturbed through construction/ landscaping or other poor land management practices.