

Written November 2019

Section I **Introduction**

Purpose

The purpose of this plan is to create a working document that describes the natural resources of Wheatland County, inventories resource problems as they exist currently, and prioritizes projects for NRCS financial and technical assistance programs.

The Harlowton NRCS Field Office services Wheatland County. The Upper Musselshell Conservation District (UMCD) encompasses this work area. This long-range plan will be written to that scale and scope.

There are many conservation partners in Wheatland County:

- Upper Musselshell Conservation District (UMCD)
- Farm Service Agency (FSA)
- Montana Fish, Wildlife & Parks (FWP)
- Montana Department of Natural Resources and Conservation (DNRC)
- Montana State University Extension Service (MSU Extension)
- Bureau of Land Management (BLM)
- Deadman's Basin Water Users Association
- Wheatland County Weed District
- U.S. Fish and Wildlife Service (USFWS)
- Musselshell Watershed Coalition (MWC)
- Upper Musselshell Water Users Association

This plan will look at priorities for conservation work in Wheatland County over the next 5 to 10 years. However, this plan should be reviewed annually and adjusted as necessary, based on current events and changed resource concerns.

Section II **Natural Resource Inventory**

Humans

Wheatland County is located in central Montana (see map), and covers an area of 1,428 square miles (992,640 ac). The county shares boundaries with the following five counties: Judith Basin and Fergus to the north; Meagher to the west, Sweetgrass to the south; and Golden Valley to the east. Wheatland county has a population of 2,168. Harlowton is the county seat and is also the largest town in the county.

Based on the Upper Musselshell Conservation District's (UMCD) long range plan, over 84 percent of Wheatland county is privately owned. Approximately 8 percent of the county is state owned. Approximately 8 percent of Wheatland county is federally owned, comprised of BLM and US Forest Service (Helena-Lewis and Clark National Forest).

The resource land use for the county is about 82% grazing land, 9% is forest land (which is also grazed), 1% irrigated hay/cropland, and 8% dryland hay/cropland (See Ownership and Land Use Table for more details). Forest land is generally treated as grazing land due to the largely public ownership and limited logging opportunities.

There are 154 farms within the county. The average farm size is approximately 5,675 acres. The predominant agriculture products in the area are beef cattle, wheat, and hay.

Northwestern Energy provides power in the planning area. Some homes utilize alternative energy sources, with some being completely "off grid". Wheatland county serves as a large wind power producer with several production sites, the largest being between Harlowton and Judith Gap.

Soils

Wheatland County soil survey has not been published, however the mapping is complete, map units are correlated and survey data is available from Web Soil Survey (WSS). WSS provides soil data and information produced by the National Cooperative Soil Survey and is the single authoritative source of soil survey information. fully completed and published. Hard copies do not exist due to its partial completion. Information published from existing soil surveys is available on Web Soil Survey.

There is some prime farmland (if irrigated) in the planning area. The vast majority of the prime farmland occurs along the Musselshell River in the historic flood plains and valley bottoms in close proximity to the river.

Wetlands exist within the planning area. The majority of the wetlands occur in old river oxbows, abandoned river channels, or odd areas within close proximity to the Musselshell



River. Additionally, occasional large terminal basins can be found throughout the planning area.

All of the dryland soils, with very few exceptions, are HEL for wind erosion. Many of the other soils, including valley bottoms and irrigated ground, are HEL for wind erosion as well. After the 1985 Farm Bill, producers largely accepted developing and implementing HEL conservation compliance plans. The sodbuster provisions of the 1985 Farm Bill were developed as a result from action occurring just north into Petroleum County. Largescale sodbusting is something that most current producers can vividly remember and causes them to be more aware of wind erosion.

Wheatland County is bounded on the north by the Big and Little Snowy Mountains, as well as the Belt Mountains and on the south by the Crazy Mountains. The highest elevation in Wheatland county is 6,886 feet and is found in the extreme northwest corner, on the slopes of the Belt Mountains. From this point, elevations decrease both south and east until the Musselshell River is reached.

The land is made up of soils of which the plant cover is a combination of native grasses, forbs and shrubs. These lands provide forage for livestock, wildlife habitat, protection from soil erosion, and watershed protection. Rangeland also provides recreational opportunities, scenic beauty, and areas for future development.

Rangeland vegetation of the lower bench lands and foothills is typically short grass species, and tall grasses and shrubs predominate on the higher benches and foothills. Greasewood, salt sage, and salt tolerant grasses commonly occur on saline lands. Dense stands of cottonwood, willows, buckbrush, and other woody species are frequently found along the major streams and drainages within the county. These areas provide good protection for livestock during periods of bad weather.

Water

The long-term planning area precipitation average is about 11 inches, trending upward in recent years. Precipitation can be drastically different in portions of the planning unit. The southern portion of the planning area (Crazy Mountain area) and the areas into the Snowy and Belt Mountains, tend to get higher precipitation amounts. This leaves the areas to the east and west as the drier ecosystems. There are definite rainfall patterns within the planning area. Some areas just break over into the 10 to 14 inch rainfall belt, while others push into the 15 to 19 inch zone, and even higher.

The planning area averages between 10 and 20 inches of snowfall annually, which is included in the average precipitation records. This amount is trending upward in recent years as well. The winter of 2017/18 saw record snowfall for the area. The winter of 2018/19 is was significantly above average for precipitation as well.



The Musselshell River Watershed contains approximately 9,500 square miles. The entire area is home to approximately 9,325 people. The main stem of the Musselshell River begins at the confluence of the North and South Forks of the Musselshell River near Martinsdale. Then it flows for nearly 340 miles to Fort Peck Reservoir and provides irrigation water for nearly 85,000 acres and 250 farms and ranches.

The Musselshell River flows through the entire width of the county and serves as a convenient reference point. Originally the river meandered throughout the valley floor. However, in 1907 the Milwaukee Railroad drove railroad tracks through the valley and disrupted this natural pattern, making over 100 channel changes along their right of way. This not only increased the flow, but also blocked many of the natural drains. The valley floor varies from about ½ mile to 3 miles in width. It is comparatively level with average slopes of 0 to 2% draining towards the river downstream.

As a result of the historic management and disruption of the natural flow, the river channel and its flood plain have become increasingly unstable and unpredictable. In 2011, a combination of snowmelt and rain resulted in historic flooding along all reaches of the Musselshell River. At its height, floodwaters reached two feet higher than the previous record flood in 1967. Roads and highways disappeared under water, fences were swept away, livestock drowned, the old abandoned Milwaukee Railroad grade that had served as a dike in past floods was breached in many places, and more than 50 homes were destroyed. Floodwaters remained standing on fields and in borrow ditches for 45 days, killing the vegetation it covered. The river environment was dramatically altered by the 2011 flood, as more than 35 miles of the river's length was lost due to cut-offs (avulsions) across oxbows.

Ice jams and unusually warm temperatures in March 2014 resulted in the second 100+ year flood event in 3 years on the upper and middle Musselshell. Later in 2014, rain in August at the lower end saw the flow rate of the river near Mosby increase from 150 cubic feet per second (cfs) to 20,090 cfs in two days.

In 2018, record snowfall and near record spring and summer rain resulted in another major flooding event. Consistent, timely rains throughout the spring and summer, paired with the record snowfall melt caused sustained high waters for over 3 months. Although the overall river height did not reach the record heights of 2011, the high flow for a longer sustained time had very similar damaging impacts to riverbanks, roads, fencing, irrigation infrastructure, and vegetation.

Several streams exist within the watershed in addition to the Musselshell River. The predominant named streams within the watershed are as follows from west to east: Little Elk Creek, Big Elk Creek, Hoppler Creek, American Fork Creek, Roberts Creek, Carless Creek, and



Fish Creek. Roberts Creek, Fish Creek, and Carless Creek flow through the county but reach the Musselshell River outside of the planning area.

The following streams are listed on the 303d list for impairments for multiple criteria: Musselshell River, Fish Creek, Careless Creek, and the American Fork. Most prominent impairments include E. Coli, nitrate/nitrites, and iron. Streams listed with E. Coli as an impairment include the Musselshell River, Fish Creek, and American Fork. Fish Creek is also listed with nitrogen as an impairment.

The Musselshell River has historically been a dewatered stream. For obvious reasons, this created multiple resource concerns, largely habitat and irrigation concerns. The river's deeded water rights have been over-allocated for most of post-settlement history. Low stream flows prompted off-stream storage projects to supplement peak use stream flows. In 1939, the upper end of the Musselshell River water users completed two reservoir projects: Bair Reservoir, 7,300 acre feet storage capacity, and Martinsdale Reservoir, 23,348 acre feet storage capacity. In 1941, the water users in the middle section of the Musselshell River completed Deadman's Basin, which holds 76,900 acre feet of water. This reservoir lies on, or near, the Wheatland/Golden Valley county line. A significant step toward resolving water rights disputes and stream dewatering occurred in the early 2000s with the establishment of the Musselshell River Distribution Project. The project allowed the District Court to appoint four water commissioners, funded by the water users, to monitor and enforce water rights. Currently, all water taken from the Musselshell River is measured and monitored. This ensures water users take their legally entitled amount and secures everyone's right. This distribution project, accompanied with timely seasonal releases from the watershed reservoirs, has allowed for stream flows to remain higher for longer periods of time than ever in recorded history.

Although irrigated lands are a very small landmass component of the planning area, a significant amount of resources are used and produced on them. Alfalfa or alfalfa/grass hay is the top irrigated cropland product. Typically small grains of wheat, barley, and corn are used during renovation periods of perennial hay stands.

Several irrigation groups exist within the planning area. The primary groups consist of on farm, or area wide water distribution projects. The largest water users project is the Musselshell River Distribution Project. The Water Court was assigned to monitor and regulate the decreed and used water in the lower watershed of the Musselshell River, from the convergence of the North and South fork to the USGS stream flow gauge at Mosby.

Deadman's Basin Water Users Association is also another large project that covers the vast majority of the planning area. This group covers over 200 miles of meandering river from



Shawmut to Mosby, and encompasses over 110 water users.

The Musselshell River is largely considered the lifeblood of the planning unit. It is a significant component of operating units, even though the footprint of the river, and corresponding riparian area, are a very small component of the planning area. Approximately 1% of the area is irrigated, with the overwhelming majority coming from areas in close proximity to the Musselshell River. The production from these irrigated lands typically is a vital component of each ag producer's operation.

Along with the valued production and water that the Musselshell River provides come several major resource issues. Due to many factors, the Musselshell River is a very unpredictable, unstable river. Historic channelization, bank armoring, downcutting, "cut off" ditches, avulsions, and historic high flows have forced the river to make significant changes to itself, especially in recent years. Normal flows of far less than 1,000 cfs are prominent, with normal high flows rarely exceeding 7,000 cfs. The spring of 2011 brought flows of 15,100 cfs for periods of time. This caused significant river migration, numerous avulsions, severe river bank damage, and associated ag infrastructure damage. Since this 2011 event, flood events, and river migrating (destabilizing) events have become the norm and extremely common. The river is attempting to adapt to its current environment and trying to find its preferred sinuosity. Bank armoring, riparian vegetation removal, and other restrictions have complicated the matter and have made the river more unpredictable than ever in history. Due to current management, paired with the historic management of the Milwaukee Railroad in the early 1900s, the river makes significant annual changes. When the railroad was installed in the early 1900s, historic documents show that they redirected the river in over 100 individual locations, cutting off countless miles of river channel and floodplain. After the railroad pulled out, and stopped performing annual maintenance on their railbed, or right of way, the river began to make major unchecked changes to return to its previous natural state.

The Musselshell River is a valued, important water source in the planning unit. Along with the water and production that it gives, major river migration and stabilization concerns exist.

Plants and Animals

Rangeland and other grazing lands (including forestland that is typically grazed) account for 91% of the land use in the planning area. These lands are mostly comprised of shortgrass to tall grass/shrubland communities, with some higher moisture forestlands. The majority of the rangeland historically had bluebunch wheatgrass, needlegrass species, and other native



wheatgrasses. The rangelands are becoming more invaded by annual grasses each year, including cheatgrass and other non-native invaders. Rocky Mountain juniper and ponderosa pine are native to the rocky outcrops, but have expanded outside their original area, and have invader tendencies in areas such as rangeland and grasslands.

The majority of the forested areas are ponderosa pine, Rocky Mountain juniper, Douglas fir, spruce species, and limber pine, along with some aspen. Most areas that are forested are not managed for forest production but are managed for grazing lands due to their public ownership and regulation for harvest.

Overall, populations of upland wildlife species within the planning unit have been stable. Pronghorn populations have been stable, to slightly down. Elk populations have shown drastic increases, while mule deer have shown stable numbers. White-tailed deer are showing large increases in population as well. Turkeys have a consistent upward trajectory in their population numbers, albeit slowly. Occasionally a single moose, black bear, or small group of wolves are spotted in the planning unit but are largely considered to be moving through the area and not considered residents. Greater sage-grouse numbers have shown marked improvement since the early 2000s, primarily due to private lands conservation efforts. Upland game birds have also shown a stable trend in population.

Elk populations in the area are growing. Recent population counts have the herd slightly above the management objective size. Herd size management has been a difficult goal to obtain with the majority of the range being private land where herd reduction opportunities are limited. Landowner/elk conflicts have become more prevalent every year with no end in sight. Landowners are concerned about wildlife crop damage, haystack damage during low forage times, and elk/livestock disease interaction. Large herds of 100-200+ are becoming more common.

Mule deer populations tend to be fairly stable. Whitetail numbers area wide are on a significant upward trend. Whitetail populations took a severe hit in 2011 during a large “blue tongue” or EHD (epizootic hemorrhagic disease) breakout. As whitetail tend to do, their populations have rebounded to near historic highs, with high recruitment and survivability numbers.

Threatened and Endangered Species

The U.S. Fish and Wildlife Service (USFWS) has listed two animal species as threatened and one as proposed to be listed under the Endangered Species Act (ESA).

USFWS Endangered, Threatened, Proposed and Candidate Species	
Canada lynx	Threatened
Grizzly bear	Threatened
Wolverine	Proposed
Whitebark pine	Candidate



A Canada Lynx Habitat Determination Screen (MT-CPA-186) is used for NRCS conservation projects to determine and document the effects of proposed actions on the lynx.

Plant and Animal Species of Concern

Species of Concern are defined as native taxa that are at-risk due to declining population trends, threats to their habitats, restricted distribution, and/or other factors. The Montana Natural Heritage Program (MTNHP) Plant Species of Concern Report last updated on October 31, 2019 lists 7 plant species of concern for Wheatland County. The MTNHP Animal Species of Concern Report last updated on October 31, 2019 lists 36 animal species of concern for the county.

Greater sage-grouse have been a species of focus for many agencies, wildlife groups, and landowners near this area for a number of years. Although sage-grouse specific work has not been initiated within Wheatland county, habitat considerations have been part of the typical planning process. This focus was originally largely due to the bird's potential listing under the ESA. In 2009, the Roundup Field Office, a neighboring office and part of the Musselshell Work Unit, began to address landowner resource concerns specifically related to sage-grouse, their habitat, and management that might impact them. These efforts have continued to present day and will continue for the foreseeable future through the Sage Grouse Initiative (SGI) and other planning endeavors. Previously implemented conservation plans and easements have protected and improved around 200,000 acres of sage-grouse habitat. In September 2015, the USFWS determined that the sage-grouse did not warrant listing under the ESA. This shows what is possible if federal, state, and local groups are willing to partner in private land conservation efforts by landowners for the benefit of all. Landowners benefited their operations by improving their infrastructure and management and the sage-grouse benefited by having improved habitat. This is a model for successful private lands conservation efforts.

While the upper portions of the Musselshell River have several species of trout, the lower portions of the river are much warmer and do not support trout. Wheatland County is a transitional area between cold water and warm water fisheries. The warm portion of the river within the county holds channel catfish, sauger, smallmouth bass, walleye, and three species of mussels, the river's namesake. The cold-water portion of the river holds mountain whitefish, brown trout, cutthroat trout, rainbow trout, and brook trout. Few agricultural producers manage specifically for these fish. The primary limiting factors for fish in the river are river flow and obstructions. The Musselshell River is a historically dewatered stream, which can cause habitat loss (dewatering) for fish. This is largely monitored and reduced in current times. The Musselshell does have several irrigation diversions that are migratory barriers for fish. In recent years, efforts have been made to remove these structures if landowners are agreeable to change their point of diversion and use pumps. Other structures have been reconstructed to



have fish ladders. Some additional fish ladders have been proposed, but budgetary constraints and landowner participation have been the limiting factors.

Wildlife is typically an important resource concern for landowners within the county. Many absentee landowners purchased land in the area due to the high diversity and abundance of wildlife. Almost all conservation plans written within the planning unit contain at least one wildlife objective or have a proposed wildlife benefit.

Section III **Natural Resources Analysis**

In the past 20 years, NRCS has made over \$11 million in incentive payments from the Harlowton Field Office (FO) through the Environmental Quality Incentives Program (EQIP), the Conservation Stewardship Program (CSP), and the Wildlife Habitat Incentives Program (WHIP) programs. These payments have been the result of almost 349,000 acres of conservation plans through 109 separate contracts. These incentive payments have resulted in substantial conservation benefits, including: 294,000 acres of prescribed grazing, 168 miles of cross fencing, 103 miles of livestock pipeline, 246 off stream water facilities, and 3,000 acres of range or pasture planting.

Results from Conservation Activities

Rangelands are being improved through weed control, livestock water system development, and prescribed grazing. Livestock distribution and grazing management are also being aided by cross fencing. Some sections of forest have been thinned and are now more resilient to fires and drought. Irrigators are more water efficient, and streams have more water, through irrigation improvements and irrigation water management. Sage-grouse were not listed under the ESA as a result of habitat management, minimalization of land conversion, and overall implementation of conservation plans. However, there are innumerable projects still remaining to address a myriad of resource concerns.

Remaining Natural Resources Treatment Needs:

Rangeland needs: Noxious weed control, proper grazing use, livestock water improvements, invading conifer control.

The resource issues on rangeland include noxious weed invasion, conifer encroachment, and poor grazing practices, often complicated by the lack of livestock water. These issues result in degraded wildlife habitat, increased wildfire hazard, reduced livestock forage availability, and impaired hydrologic cycle.



Pasture and Crop needs: Irrigation system improvements, soil health (tillage and organic matter (OM) depletion), land use conversion

The resource issues on irrigated ground result in inefficient use of water on irrigated land. Poor crop rotations and management practices that lack diversity and adequate residue are resulting in degraded soil conditions. Rangeland conversion to cropland or pasture is also a threat to wildlife.

Forestland (grazed forest) needs: Thinning and fuels reduction, proper grazing use and additional grazing improvements, including grazing rotations and enabling infrastructure.

The resource issues on forestland (grazed forest) result in reduced forest resistance and resilience, degraded wildlife habitat, and heavy fuel loads that increase the risk of catastrophic wildfires. Fire return intervals on ponderosa pine forests should be far more frequent than what is currently occurring on the landscape.

Wildlife needs: Upland species need habitat improvements (see Rangeland). Wildlife species that use forest habitat would also benefit from improvement (see Forestland). Aquatic species need better quality habitat including riparian area improvements and access to habitat that is inaccessible due to manmade barriers. Specific wildlife habitat improvements, and sagebrush-steppe ecosystem improvements are a continuing need.

Land protection needs: Preserving and protecting the high value properties from subdivision, or general degradation is imperative. There are ecologically high value private lands in the planning area that should be protected. These lands are at risk of subdivision or habitat degradation. These lands are important to wildlife, including threatened species, species of concern, and high value wildlife species.

Section IV Natural Resource Problems and Desired Future Outcomes

Rangeland Trend

What is the severity of the problem?

Nearly every rangeland owner in the planning area has varying levels of sustainability issues. Noxious weed invasion (including annual grasses), conifer encroachment, upland and aquatic species in need of habitat improvements, and poor grazing management, typically as a result of poor livestock water distribution, are just a few of the contributing factors associated with the declining rangeland health. Improper grazing use is detrimental to the watershed because



depleting riparian vegetation as well as sediment and nutrient loading decrease stream and riparian health and vigor.

Who is willing to help with this resource concern?

Consistent partners, in cooperation with NRCS, on the rangeland health concern are the Upper Musselshell Conservation District, Musselshell Watershed Coalition, FWP, and Wheatland County Weed District. This is an issue that is a high priority because the consequences of taking no action include: wildlife habitat degradation, continued loss of native plant diversity, forage loss for livestock, increased soil erosion, continued degradation of riparian areas, interrupted hydrologic cycle, reduced in stream flows, and reduced economic viability of agricultural operations.

Resource Trends

Invasive species have continued to increase despite practices used to enhance the rangeland that include: brush management, riparian fencing, cross fencing, livestock water improvements and prescribed grazing. Although many of the invasive species have been in the area for decades, there has been an exponential increase over the past decade, including several new species. The increases may be due to fire suppression, improper grazing, climate adaptation, and increased dispersal pathways for plant seed. Pressure from increased utilization of grazing lands has also increased over the past several decades. Overgrazing is, in part, likely responsible for declining resource trends. Part of this is due to poor water distribution on grazing lands.

What are the goals?

Improve rangeland health and create sustainable range lands by limiting the spread of invasive species and increasing AUM production by 20% by improving rangeland health.

To make a significant impact on rangeland in the work area, between 10 and 30 percent of the acreage needs to be treated. This would mean between 195,000 and 585,024 acres would need to be treated for grazing management, livestock water improvements, and weeds. To accomplish this, we would need outreach, herbaceous control, prescribed grazing, along with facilitating practices such as cross fencing and water developments.

How much funding is required?

NRCS has identified 250,000 acres that need treatment and it will cost up to \$20 million dollars to implement the necessary improvements, including outreach and technical assistance.

Noxious and Invasive Weeds

What is the severity of the problem?

Poor grazing management and encroachment has contributed to deteriorating rangeland health in thousands of acres in the county. Rangeland production has decreased, several predominant noxious weeds have invaded into new areas, and these weeds need to be



controlled. Grazing lands landowners, and the communities they live in, are all greatly impacted by the decreased economic viability caused by weeds. Wildlife habitat also declines when grazing land health deteriorates. Finally, there is an increased probability of catastrophic wildfire.

Who is willing to help with this resource concern?

Consistent partners, in cooperation with NRCS, on the invasive weeds concern are Upper Musselshell Conservation District, Musselshell Watershed Coalition, Montana Department of Natural Resources, local county commissioners, along with ongoing discussions with wildlife groups. This group will help identify means to eliminate wildlife habitat degradation, increase economic viability, and improving grazing utilization on rangelands by eliminating targeted invasive weeds.

Resource Trends

In recent years, noxious and invasive weeds have dramatically increased, primarily due to grazing land overuse and optimum climatic conditions. Market prices have reduced the incentive for landowners to properly graze, which has led to overstocking and poor overall management. Fewer on-farm financial resources has lead to fewer landowner making the investment into controlling their noxious and invasive species. Thickening of weed species, and encroachment into new areas have led to decreased livestock and wildlife forage.

What are the goals?

- Reduce invading weeds
- Improve rangeland productivity by eliminating weed competition
- Improve overall wildlife habitat

The NRCS could treat approximately 1,000 acres per year in the planning area. Progress will not be easily visible for quite some time, but outreach will be in place, and pretreatment inventories will be carried out to identify current and appropriate weed treatments and other site-specific issues that need to be addressed. Focusing on specific weed species gives the best chance to return to a healthy and productive system.

How much funding is required?

NRCS can treat between 1,000 acres of weeds per year in the planning area. At \$58/acre for chemical treatment, and \$1/acre for prescribed grazing, the annual investment would be a minimum of \$60,000. Treating even 20% of the approximately 740,000 acres of rangeland would be 148,000 acres. This would take many years of additional funding assistance, including that from partners. This could increase the potential size of the resource treated. Prioritizing areas of ready/willing/able producers, along with areas of available partner investments will improve overall resource impact.



Stream/Riparian Health

What is the severity of the problem?

The Musselshell River, and its tributaries, offer valuable aquatic and terrestrial habitat, and is home to several species of concern, including spiny softshell turtle, silver minnow, and great blue herons. Therefore, the declining stream and river quality is a significant concern. Several streams, including the Musselshell River are listed for impairments, including sediment, E coli, and nutrients. Chronic de-watering is also a major concern.

Crops also rely on steady flows within the Musselshell River and its tributaries. With low rainfall in the region, irrigation is needed to support hay and crop production. Within the work area, approximately 26,000 acres are irrigated. The majority of these acres are located along the Musselshell River, with some falling along some of the larger tributaries. All of the acres are supplied with surface water diverted from perennial and seasonal streams.

Only three off-stream water storage sites exist in the Musselshell River system. These capture water during high water events and peak runoff and release this water periodically during peak water use periods throughout the summer. The most feasible opportunity for increasing stream flows is to improve and maintain upland health or create storage reservoirs. Small storage reservoirs have been discussed for decades. Some properties have small irrigation storage reservoirs. Many opportunities exist with potential small, on farm storage in old river oxbows. Larger reservoirs are costly, and almost certainly wouldn't be able to fill without outside additional water. While large reservoirs would benefit a few landowners, the larger benefit would be to focus on individual water use and manage upland health to improve the overall water cycle. This approach is more methodical, slower, and less satisfying, but can yield better long-term results. Upland health management can increase stream flows by increasing effective precipitation, increasing infiltration rates, and improving soil water holding capacity, including activities such as forest thinning, which have shown to increase effective precipitation and improved stream flows. Soil health is key to retaining water in the Musselshell River system.

Off-stream livestock water is also a need. The previous drought years have resulted in land managers with pastures they are unable to use or can only use in early months when water is available. The lack of off stream, late season reliable water is a significant concern, leaving land managers to rely on streams, or moving cattle to pastures with available water. Fields that only have water in streams are more prone to riparian area degradation from livestock. Previous efforts have fenced riparian areas in the work area, but the resource concern is still vastly untreated.

Who is willing to help with this resource concern?

The main agencies partnering with NRCS on this resource concern are Upper Musselshell Conservation District, FWP, and Musselshell Watershed Coalition. Water users groups are interested as well, and would provide individual vocal support, as well as written support.



Resource Trends

The number of systems needing improvements has decreased as more and more systems are upgraded. However the problem still persists as less water is available, and less funding opportunities exist. Upland improvements continue to be completed adding to the effective precipitation. Riparian areas continue to be a concern. Although there are several riparian fencing projects completed annually, riparian vegetation is slow to respond. Off-stream water developments continue to be a priority, but there is a substantial need in the planning area.

What is the goal?

Improve upland water retention through forest thinning and practices needed to improve soil health and retain water in the uplands.

Upgrade and improve irrigation efficiency on the irrigated acres in the planning area that are inefficient.

Improve overall soil health and on farm water use on water users farms.

Identify watersheds where off-stream water would be beneficial, along with riparian fencing.

Addressing this resource concern will take the cooperation from partners and landowners.

Outreach needs to occur to promote cost assistance programs and to determine which landowners are willing to participate.

How much funding is required?

Approximately \$6 million is needed to address the financial assistance portion of the irrigation and management systems on the irrigated acres in the planning area. This would include sprinkler systems, irrigation pipeline, structures for water control, irrigation water management and other facilitating practices. These practices could treat 5,000 identified acres.

Additional grazing land improvements will be addressed through other resource priorities within the work area. This resource concern will only focus on water quantity and quality on irrigated lands.

Soil Health

What is the severity of the problem?

The overwhelming majority of farms in Wheatland county are comprised of some component of grazing land, rangeland in most cases, and/or dry cropland. These resources have been under an immense amount of land-use pressure in recent years. Failing markets, generational transfers, land purchases, financial overextension, and lack of education have all lead to these two land uses being overutilized, and therefore the largescale degradation of the soil resources. Plant communities have become more annual species dominant, single species dominant, more susceptible to invasion of noxious weeds, and they are losing production capabilities through organic matter depletion and erosion. Cropland has faced significant wind soil erosion and loss of organic matter through mismanagement or improper use.



The Local Working Group (LWG) identifies this problem as a significant resource concern and wishes to address it. Their objective is to improve the overall soil resource and rebuild sustainability into these resource systems by incentivizing resource building management systems. This will be done in a focused approach by identifying areas that have specific soil health resource concerns that can be addressed by implementing a narrow suite of practices.

Who is willing to help with this resource concern?

Along with NRCS, the following have interest: Lower Musselshell Conservation District, FWP, Montana Land Reliance, Musselshell Watershed Coalition, and a number of different private wildlife groups.

Resource trends

Although the trend is not very apparent, there are conversions from high value lands (e.g. shortgrass prairie to dryland crop). Over 2,500 acres are being sod-busted and converted, and more than 500 acres are being subdivided annually. Additionally, overgrazing, pasture overuse, and general grazing land abuse has seen a substantial increase over the past two decades. Generational transfer, livestock and crop markets, and poor financial situations have all contributed to poor resource conservation decision-making processes. Significant financial investments are made annually for restoration, or habitat improvement through agencies and NGO's. Rangeland and cropland soils have been on a steady downhill progression.

What is the goal?

Create resiliency in rangeland and cropland systems to prevent conversion and degradation of soil resources, along with protecting investments of natural resource agencies.

How much funding is required?

Funding will vary wildly, depending on interest, availability, and landowner opportunities. Programmatic opportunities (CIG, EQIP, etc.) will dictate individual funding costs. NRCS has identified 100,000 acres of potential protection opportunities, depending on practices available, and program availability. Landowner participation and funding opportunities will be the limiting factors.

Section V *Prioritization of Natural Resource Problems and Desired Outcomes*

The Local Working Group identified and prioritized the natural resource problems within the Upper Musselshell Conservation District, or Wheatland County. The following four (4) natural resource concerns were identified as the top priorities within the work area. In order:

1. Rangeland Trend

This resource concern gets at the root of proper grazing use and wildlife habitat. This was identified as a concern by the LWG due to loss of grazing for livestock, loss of



income to the landowner/community, and loss of wildlife habitat. Improper grazing use was noted as also contributing to an increase of invasive species. It is almost as important to promote proper grazing use as it is to help treat the invasive species. Education and cost assistance for facilitating practices is needed to address the resource concern. The LWG knows, and has a strong emphasis, on keeping rangeland in rangeland. And the best way to continue to keep rangelands healthy is to promote their proper use, and incentivize their improvement.

2. Noxious and Invasive Weeds and Annual Grasses

The LWG continues to identify invasive species as a priority due to the rate at which the problem grows, the negative economic impact, degradation of ecosystem function and habitats, and risk of crossing thresholds. Invasive species will continue to spread rapidly if nothing is done to stop them. At this point, some species are present in all of the work area. Weed containment will also be a portion of addressing this resource concern. Acres may not be reduced, but the expectation is to stop areas from increasing in weed populations.

3. Stream/Riparian Health

The primary discussion in placing this concern at third was due to the overall land use footprint that irrigated lands have in the work area. Throughout previous years, irrigation efficiency improvements have been discussed thoroughly. This led to the development of the Musselshell Watershed Resiliency Initiative. This initiative began in 2018 after several years of development and continued through the 2019 funding year. The target was to improve on-farm water use and incentivize better management practices within a watershed that has been significantly impacted by major flooding and water events. The initial goal was to have this initiative as a 3-year investment. This proposal will have to be rewritten for 2020 as a 1-year Targeted Implementation Plan. This will fulfill the original 3-year investment term, as originally described to the producers and supporting partners.

4. Soil Health

Soil health is a wide-reaching resource concern due to its encompassing nature. The primary point of discussion from the LWG was to promote more sustainable management within cropland, as well as rangeland. The LWG also recognized that carbon, carbon sequestration, and carbon credits are part of the every-day conversation and want to promote positive, sustainable management to enable the producers in the area to be part of that conversation. Research into how some of these sustainable practices impact soil carbon is taking place currently within the area, so this topic is present in all of their minds.





Wheatland County Montana

Date: 10/18/2016



Field Office: Harlowton Field Office
Agency: USDA-NRCS
County and State: Wheatland County, Montana



Prepared with assistance from USDA-Natural Resources Conservation Service



Legend	
	Wheatland County
	Montana County Boundaries

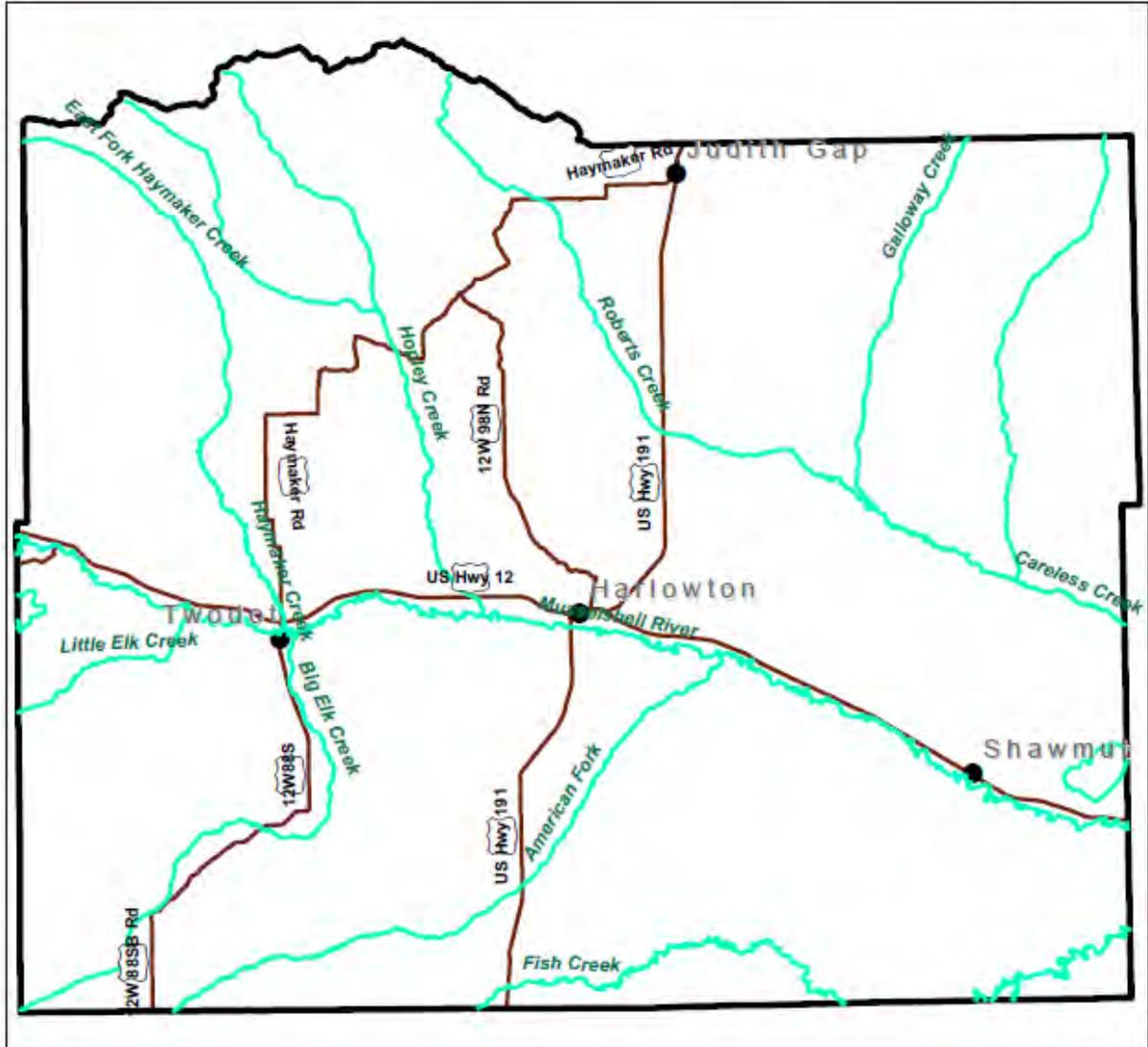


Wheatland County Montana Cities and Roads

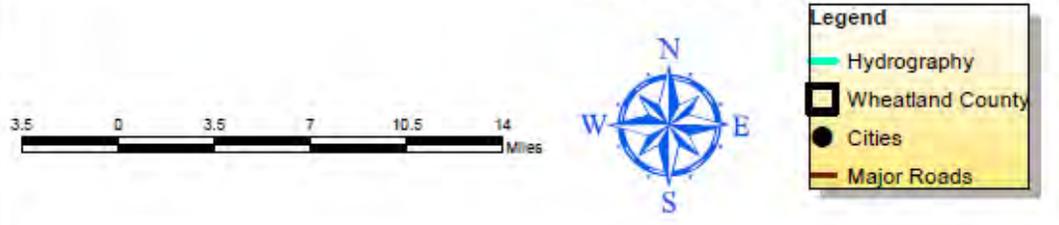
Date: 10/18/2016



Field Office: Harlowton Field Office
Agency: USDA-NRCS
County and State: Wheatland County, Montana



Prepared with assistance from USDA-Natural Resources Conservation Service

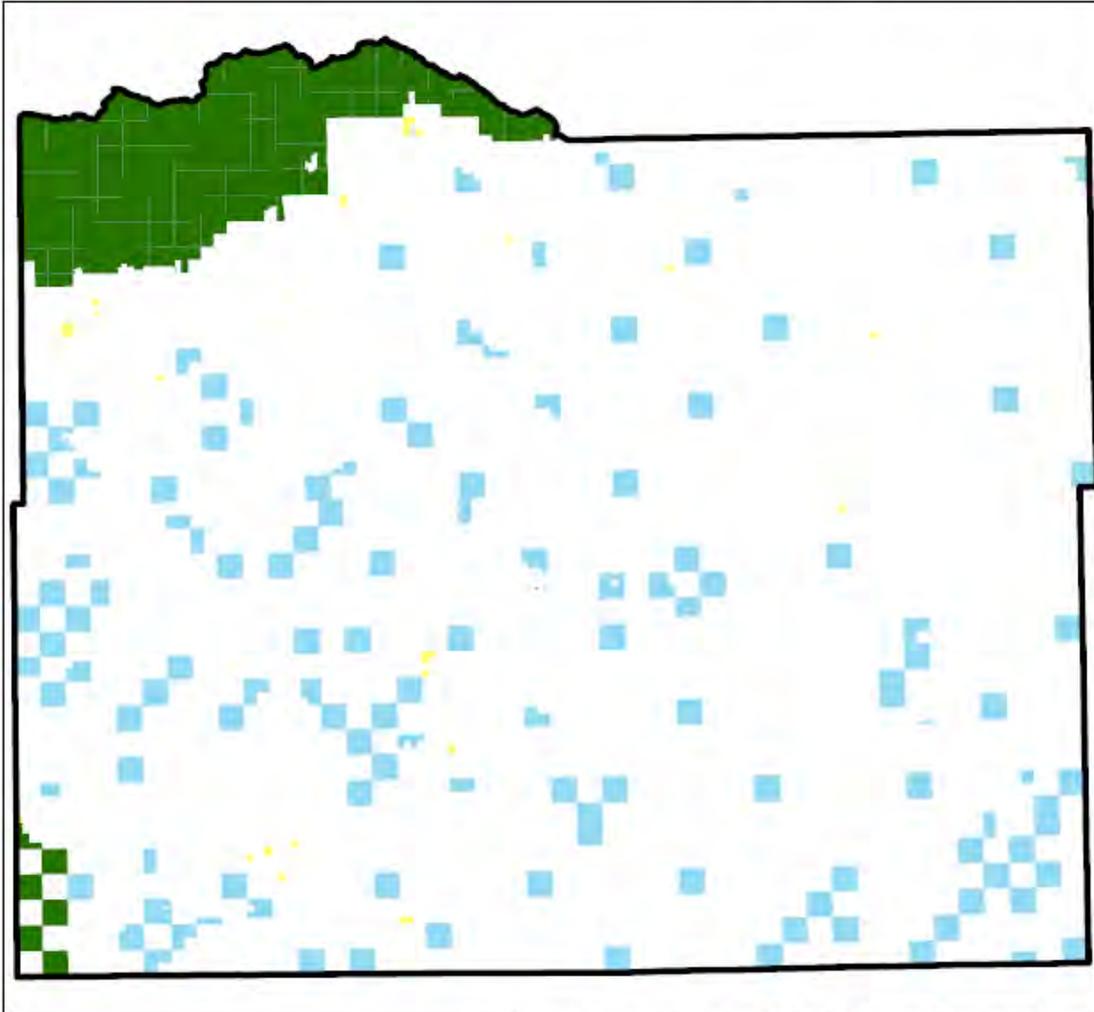


Wheatland County Montana Ownership

Date: 10/18/2016



Field Office: Harlowton Field Office
Agency: USDA-NRCS
County and State: Wheatland County, Montana



Prepared with assistance from USDA-Natural Resources Conservation Service



Wheatland Co Land Use	
Ownership	Percentage
Private	84%
USFS/BLM	8%
State of Montana	8%



Legend

- Wheatland County
- OwnerName**
- PRIVATE
- STATE OF MONTANA
- USDA FOREST SERVICE
- USDI BUREAU OF LAND MANAGEMENT

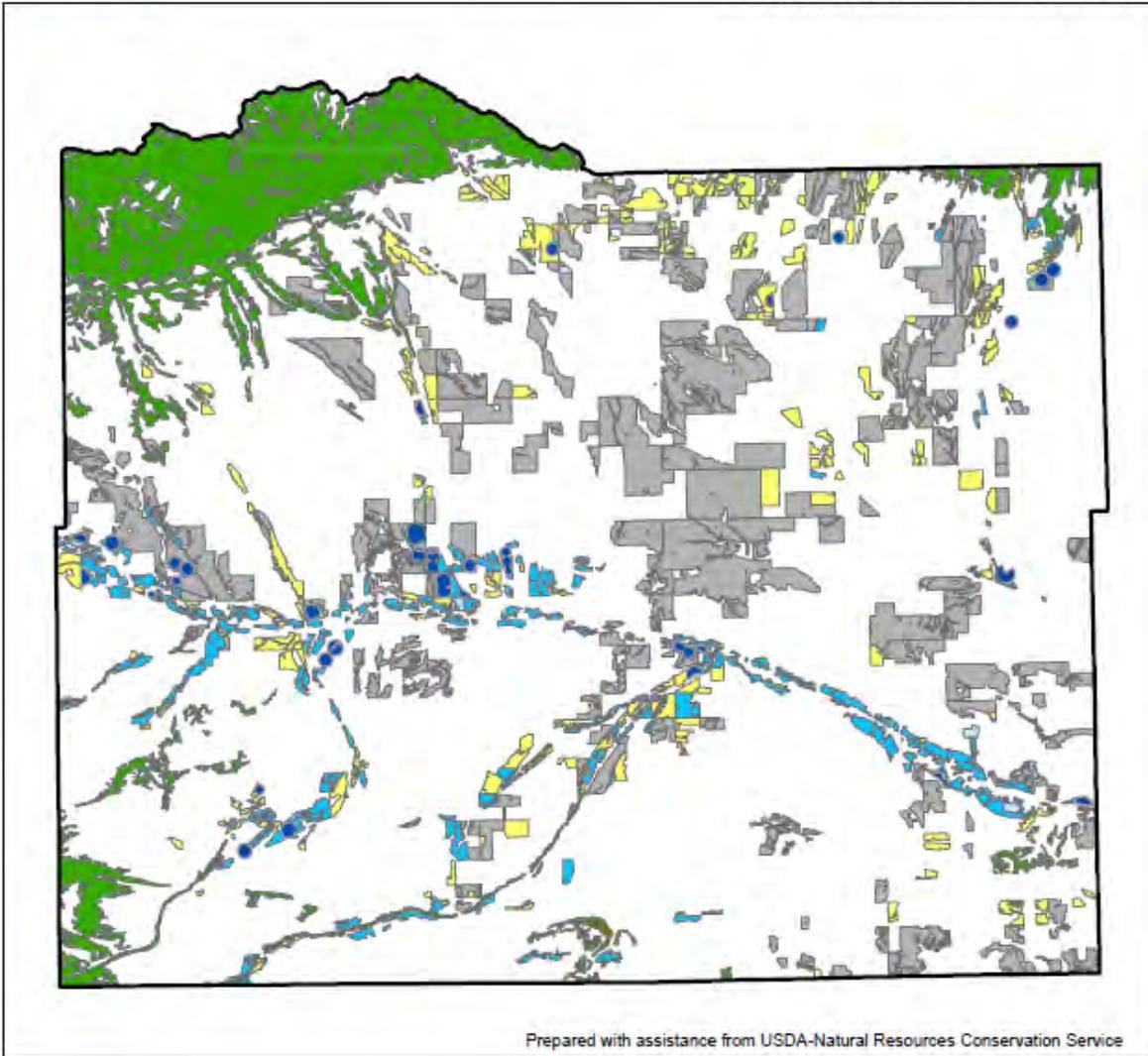


Wheatland County Montana Land Use

Date: 10/18/2018



Field Office: Harlowton Field Office
Agency: USDA-NRCS
County and State: Wheatland County, Montana



Prepared with assistance from USDA-Natural Resources Conservation Service



Wheatland Co Land Use	
Ownership	Percentage
Grazing Land	82%
Forest Land	9%
Dry Cropland	8%
Irrigated Cropland	1%



Legend	
DESCRIP	
	Wheatland County
	Forest land
	Irrigated land: flood irrigation
	Irrigated land: pivot irrigation
	Irrigated land: sprinkler irrigation
	Non-commercial forest land
	Non-irrigated hay land
	Summer fallow farmland

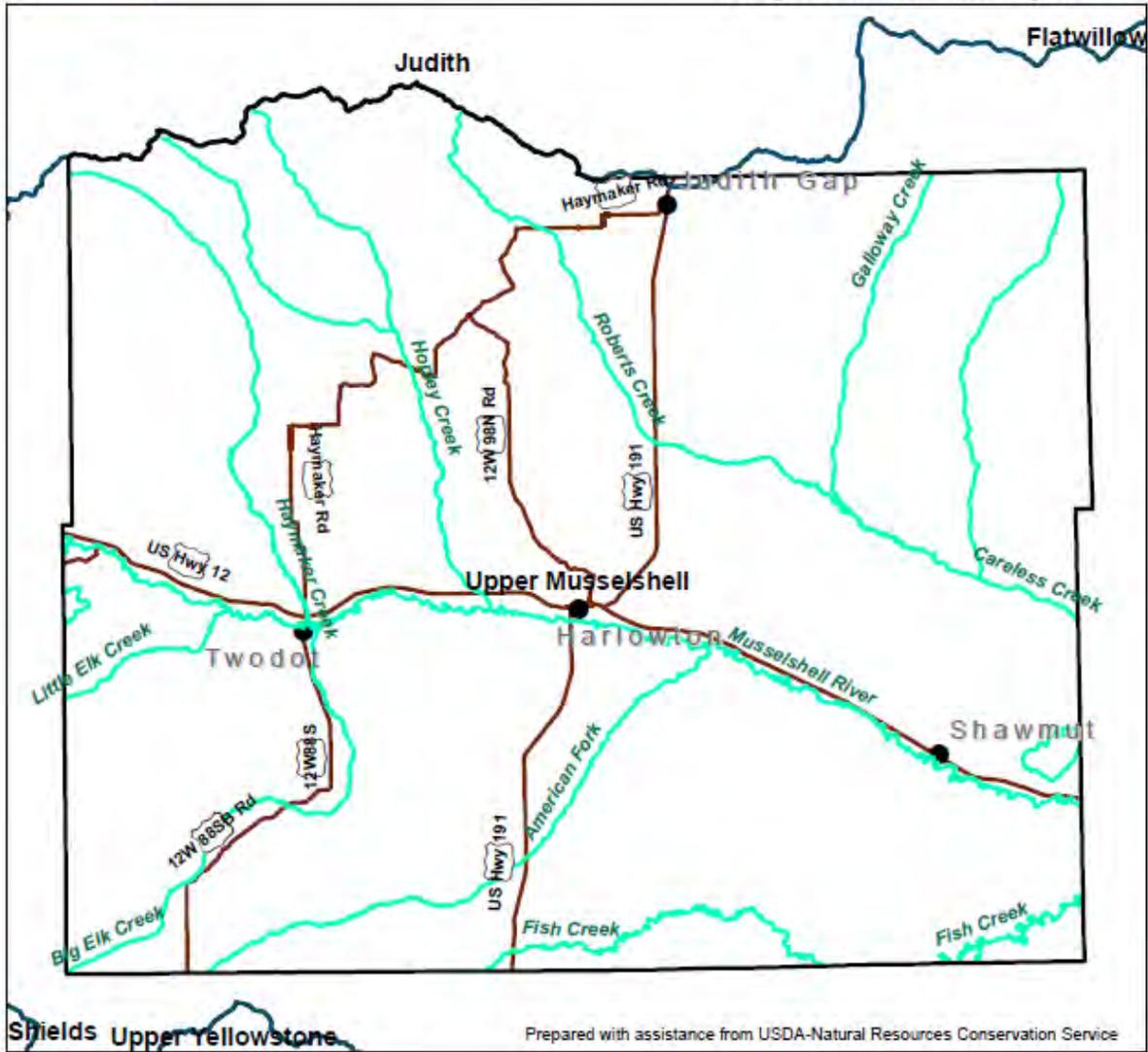


Wheatland County Montana Major Watersheds

Date: 10/18/2016



Field Office: Harlowton Field Office
Agency: USDA-NRCS
County and State: Wheatland County, Montana



Prepared with assistance from USDA-Natural Resources Conservation Service

Legend

- Wheatland County
- Hydrography
- 8 Digit Huc Watershed
- Cities
- Major Roads



Upper Musselshell Conservation District

P. O. Box 201

Harlowton, Montana 59036

Ph. (406)632-5534 x101

Notes from the Local Work Group meeting held April 10, 2019; USDA Building. Harlowton, MT

THOSE PRESENT

Bill Clements, Chairman Sam Griffith, Vice-Chairman Howard Robertson, Supervisor Johnny Cooney, Supervisors Cheryl Miller, Dist. Admin.

OTHERS PRESENT

Austin Shero, SDC-Roundup
Devin Roloff, Range Con. Harlowton
Laura Nowlin, Musselshell Watershed Coalition
Bob Lee, local producer and GLCI
Gary Olsen, Wheatland Co. weed supervisor
Ivy Bacon, Wheatland Co. weed intern
Craig Dalgarno, Upper Musselshell Water Users
Jeri Pavlovick, FSA CED

Austin Shero gave a little background on the Montana Focused Conservation as a new approach to delivering Farm Bill Programs. NRCS will focus its EQIP investments in targeted area to achieve natural resource goals as identified by conservation districts and other local partners. Discussion was held on past LWG Prioritizing grazing lands condition and noxious weed infestations with in our area. Bob Lee emphasized the importance of grazing lands and it being our most valuable renewable resource. Jeri Pavlovick, FSA, commented that in the next couple of years there will be approx. 4,200 acres of Conservation Reserve Program (CRP) coming out and we need to make, sure if doesn't go back to crops. Austin will be responsible for writing Long Range Plans. for both Wheatland and Musselshell counties to describe the baseline resource conditions, past conservation efforts and desired outcomes for resource concerns. He hopes to have the LRPs finished by the end of the year. The resource concerns identified will then be prioritized and a Targeted Implementation Plan (TIP) will be developed with a specific resource concern within a specific geographical area for funding consideration.

Musselshell River at Roundup Flood History

