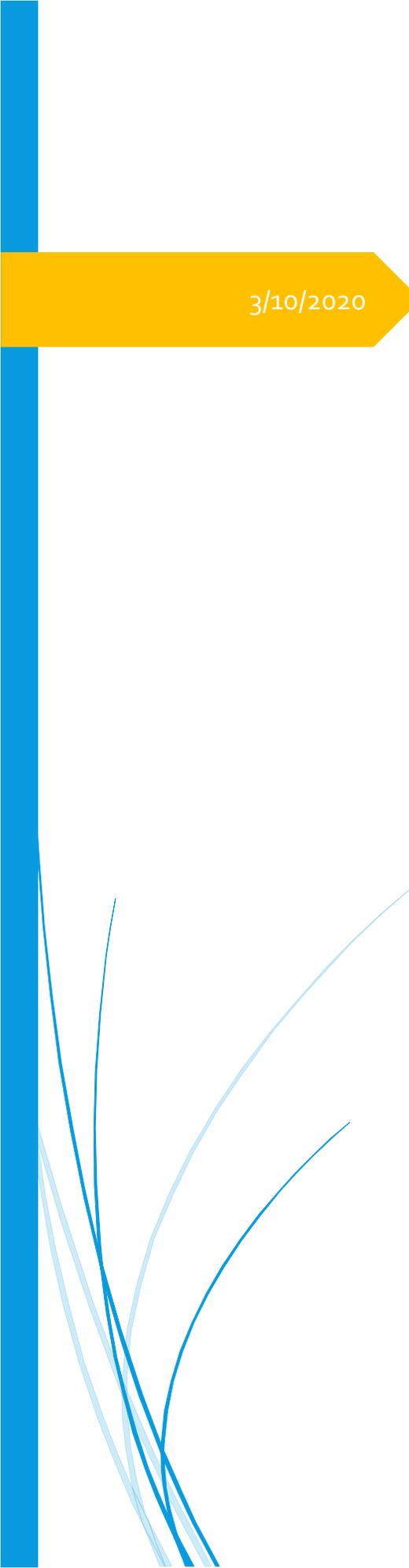




3/10/2020

# Long Range Plan

Hill County – Montana



Havre NRCS Field Office

## Section I

### Introduction:

This Long Range Plan (LRP) will serve to provide guidance to the Natural Resources Conservation Service (NRCS) Havre field office, partners and producers regarding priority natural resource conservation activities in Hill County.

**Mission:** Work with partner organizations and agricultural operators to identify and focus efforts to address the highest need and economically feasible resource concerns.

**Vision:** Improve the natural resources of Hill County and help agricultural producers remain viable as they implement increasing standards of land stewardship.

**Purpose:** To address priority natural resource concerns as identified through communication and collaboration among the Havre/Chinook NRCS Work Unit, the Hill County Local Work Group, and Hill County landowners and operators.

Partners:

- Natural Resources Conservation Service (NRCS)
- Hill County Conservation District (HCCD)
- MT Fish Wildlife and Parks (MFWP)
- U.S. Fish and Wildlife Service
- Pheasants Forever
- MT Department of Natural Resources and Conservation
- U.S. Bureau of Reclamation
- Milk River Watershed Alliance
- Sage Creek Watershed Alliance
- County Commissioners Hill County

**Time Frame:** This LRP identifies imminent resource concerns and considers activities to address them over the course of the next five years (2020-2024). In addition, resource issues that are gaining prominence have been identified and through the dynamics of the LRP, may be elevated as needed and addressed over the next 10 years (2020-2029). The LRP will be reviewed as needed and updated when appropriate to reflect changes in resource concerns and priorities.

## Section II

### Natural Resource Inventory

#### Human

Hill County is located in north central Montana. This area is known as the High Line, named for the northernmost rail line in the lower forty-eight states. It lies along the United States border with Canada, abutting Alberta and Saskatchewan. It borders Blaine County to the east, Liberty County to the west, and Chouteau County to the south. Hill County has two incorporated towns: Havre and Hingham. Other small towns include Kremlin, Gildford, Rudyard, Inverness and Box Elder. Located within Havre are both Montana State University (MSU)-Northern and the MSU Northern Agricultural Research Center (NARC). In the southeastern portion of the county lies the Rocky Boy Indian Reservation, held by the federally recognized Chippewa-Cree Tribe.

Hill County is home to Beaver Creek Park, the nation's largest county park, located 10 miles south of Havre. Fresno Dam is located 14 miles northwest of Havre on the Milk River. The dam is part of the Milk River Project, owned by the U.S. Bureau of Reclamation. Its primary functions including providing irrigation and drinking water, and a portion of the full capacity is reserved for flood control. Sixty-five miles of shoreline provide good fishing opportunities for walleye, northern pike and perch. The small ski area, Bears Paw Ski Bowl, is south of Havre in the Bears Paw Mountains. These three sites provide recreational opportunities for the residents of north central Montana.

The county contains 1,865,811 total acres (2,917 square miles) of which 65% is cropland. Range and pastureland represent 30% of land area, and forest or developed land cover the remaining 5 percent. Hill County is recognized for its agricultural production of spring wheat, winter wheat and barley. It is consistently among the top 10 counties in the state for production of these crops. Livestock production, including cattle, hogs and sheep, is also an important local agricultural sector. The county has a total land area of. The average farm size is approximately 1,992 acres. In 2017, the county received \$8.8 million in farm payments averaging just over \$38,000 per farm in government payments through various USDA programs. <sup>(1)</sup>

According to Data USA, in 2017, Hill County had a population of 16,500, a median age of 34.4 and a median household income of \$45,269. The median property value was \$128,000, and the homeownership rate was 62.4 percent. The population was 70.2% White Alone, 22.7% American Indian & Alaska Native Alone, and 3.48% Hispanic or Latino. <sup>(2)</sup>

#### **Geologic History and Climate:**

#### Soil

Most of Hill County falls within Major Land Resource Area (MLRA) 52, known as the Brown Glaciated Plains (Appendix I), forming the southernmost limit of the Laurentide Ice Sheet. It is the driest, westernmost section of the northern Great Plains. Elevation ranges from 2,000 feet

(610 meters) to 4,600 feet (1,400 meters). Much of the landscape displays evidence of glacial activity that sculpted the area approximately 20,000 years ago during the Wisconsin Age. Glaciers carved the land into flat prairies of till, pot hole wetlands and alluvial deposits. Mean precipitation varies from 10 to 13 inches and temperature extremes from -40 to 100° F. This climate drives the mineral cycles, flora, and fauna that are indigenous to the area. Ecological processes are dictated by temperature and precipitation. A highly variable climate makes agriculture in the county highly susceptible to weather extremes.



Figure 1. Example soil profile

Soils are primarily Mollisols, but Entisols, Inceptisols, Alfisols and Vertisols are also common. Till from continental glaciation is the predominant parent material and ranges in depth from zero to 50 feet. Other parent materials derive from sedimentary bedrock (shale, sandstone and mudstone). Most soils are well suited to dry land farming. However, due to their largely sedimentary nature, they are subject to erosion. Best management of these soils should incorporate limited tillage and increased seasonal cover.

The Bears Paw Mountains in the southeast corner of the county form part of MLRA 46 - Northern Rocky Mountain Foothills. This island range of the Northern Rocky Mountains formed via intrusive igneous uplifting. Numerous narrow valleys with steep gradients cut through the rugged drainages. Most of the county's forestry land use is found in association with these mountains or along narrow riparian

corridors. The dominant soil orders in this MLRA include Mollisols and Entisols and are generally shallow to very deep, well drained, and loamy or clayey. They formed in residuum or colluvium on uplands or in alluvium and colluvium on alluvial fans and terraces. This area supports grass vegetation in the valleys and foothills and forest vegetation at higher elevations. Common grass species include bluebunch wheatgrass (*Pseudoroegneria spicata*), rough fescue (*Festuca campestris*), little bluestem (*Schizachyrium scoparium*), and western wheatgrass (*Pascopyrum smithii*). Pine species, Rocky Mountain juniper (*Juniperus scopulorum*), aspen (*Populus tremuloides*), and hawthorn (*Crataegus sp.*) are common species in forested areas. The Bears Paw Mountains receive 16 – 22 inches of precipitation annually. <sup>(3,4)</sup>

Periodic upswings in commodity prices lead to tillage or break out of range and pasture. Vast amounts of expiring Conservation Reserve Program (CRP) acres are often converted to cropland in the absence of incentives offered by government entities or other groups. CRP tracts are usually very marginal farm ground with Highly Erodible Land (HEL) soils, and it is in the best interest of the producer, the public and general environmental health that it stays in perennial grasses or perennial forage. Farming these areas can create saline seeps that degrade the associated riparian areas. The seeps can also drastically reduce water quality both at their location and further downstream. The relatively low precipitation makes the cropland highly susceptible to erosion due to unsustainable management practices such as prolonged conventional tillage.

## Water

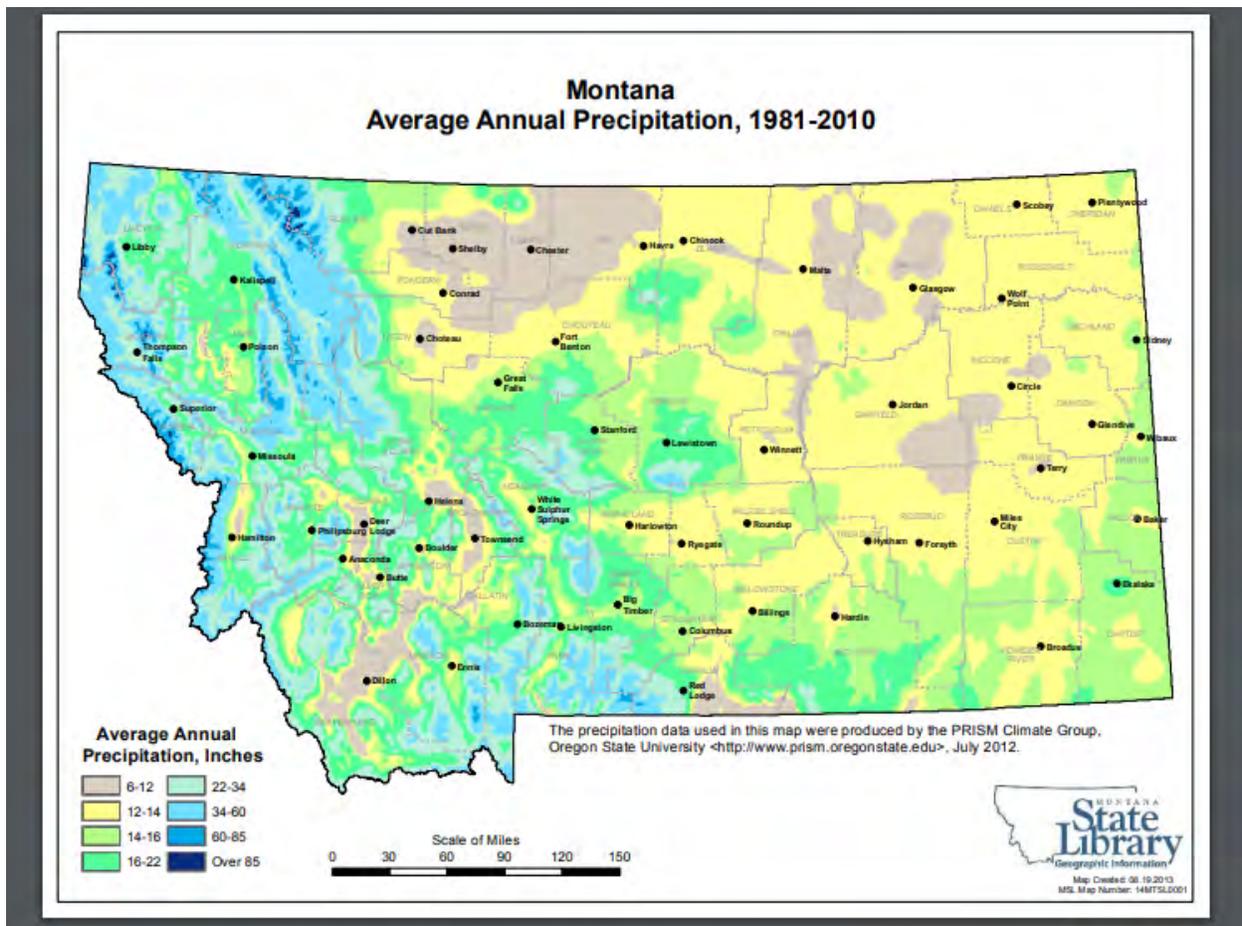


Figure 2. Montana Average Precipitation Map <sup>(5)</sup>

Average precipitation ranges from 10 to 13 inches in the plains and from 17 to 27 inches in the Bears Paw Mountains <sup>(6)</sup>. The Milk River enters the northwest part of the county from Canada and runs southeast into Fresno Reservoir. The river has a relatively small watershed and is fed primarily from the St. Mary's River Diversion. Other water sources include intermittent and ephemeral streams (Appendix II). The City of Havre sources all its water from the Milk River, while water for the North Havre County Water District, servicing residents north of town, is obtained through a surface water intake on Fresno Reservoir. The Hill County Water District supplies Kremlin, Gildford, Hingham, Rudyard, Inverness and Joplin and services 14 branch lines. The water is taken out of the Marias River south of Inverness in Choteau County. <sup>(7)</sup> Some rural residents have water wells for homesteads or livestock. These wells often produce poor flow rates or low-quality water.

## Air

Hill County contains no designated areas listed as impaired in the county. There are several confined animal facilities, and odor complaints from neighbors occur but are infrequent.

## Plants

Agriculture is the principle industry. The climate is conducive to some of the best small grain production in the nation, and wheat is a mainstay crop for the county. In the last several years, there has been a rise in pulse crops (peas, lentils and chickpeas) production. Other crops include canola, flax, mustard, safflower and corn, but in smaller quantities (Figure 3). Crop – chemical fallow is a typical rotation, although re-cropping rotations are becoming more common.

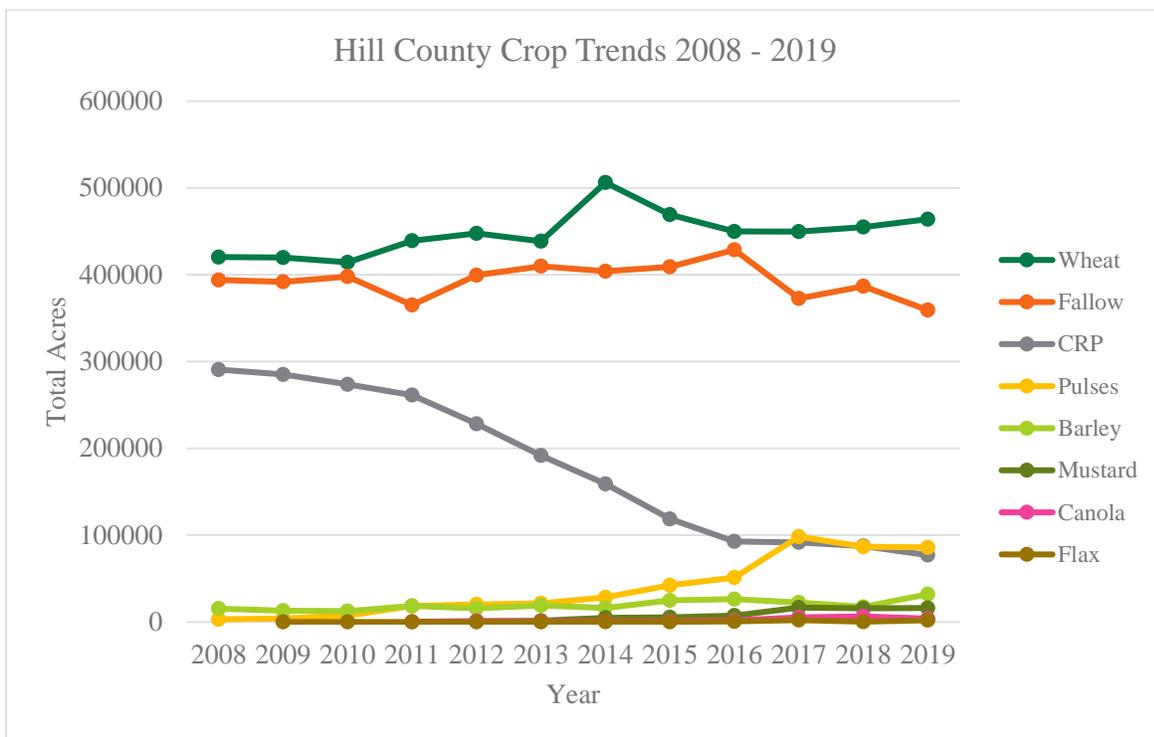


Figure 3. Hill County Crop Trends <sup>(9)</sup>

Rangeland, much of which is native mixed grass prairie, typically occurs in small tracts intermixed with cropland. Extreme climatic variability results in frequent droughts, which have the greatest influence on the relative contribution of species cover and production. Most of the rangeland in Hill County is classified as belonging to the “dry grassland” climatic zone, which supports a predominantly cool-season mixed grass plant community. Common species include western wheatgrass, thickspike wheatgrass (*Elymus lanceolatus*), green needlegrass (*Nassella viridula*), blue grama (*Bouteloua gracilis*), and needle and thread (*Hesperostipa comata*). Previously cultivated acres reseeded to perennial grasses include nonnative species such as Kentucky bluegrass (*Poa pratensis*) and crested wheatgrass (*Agropyron cristatum*).<sup>(10)</sup>

The extreme southern tip of Hill County represents to the “dry shrubland” climatic zone, which is the northernmost extent of the big sagebrush (*Artemisia tridentata*) steppe on the Great Plains. In the Bears Paw mountains, higher precipitation supports plant communities of the “moist grassland” and Northern Rocky Mountain foothills, including mid-statured cool season bunchgrasses such as rough fescue (*Festuca campestris*) and bluebunch wheatgrass. These communities are far more productive and less subject to seasonal drought.

Riparian areas along the Milk River provide high quality habitat

Plant Species of Concern (SOC) found in Hill County include desert groundsel (*Senecio eremophilus*), Scribner’s ragwort (*Senecio integerrimus var. scribneri*) and long-sheath waterweed (*Elodea bifoliata*). The Montana Natural Heritage Program (MTNHP) defines SOC as native taxa that are at-risk due to declining population trends, threats to their habitats, restricted distribution, and/or other factors. Desert groundsel and long-sheath waterweed are associated with wetland/riparian habitat, while Scribner’s ragwort is associated with mixed grass prairie and big sagebrush steppe. <sup>(11)</sup>

Weeds, including Russian knapweed (*Acroptilon repens*), spotted knapweed (*Centaurea stoebe*), leafy spurge (*Euphorbia virgata*), Canada thistle (*Cirsium arvense*), houndstongue (*Cynoglossum officinale*) and burdock (*Arctium minus*) are widespread along the Milk River and in Beaver Creek Park. Noxious weeds on rangeland are mainly along watercourses. Weeds in the rest of the county have increased in recent years, mainly along roadways (knapweed) and waterways (leafy spurge). Chemical, biological and cultural practices are the best-known methods of weed control. Biological and cultural agents are the most environmentally friendly methods, limiting the amount of collateral damage to non-targeted species. However, chemical methods can be necessary when biological and cultural methods are ineffective or not available for certain species. Chemical applications may also be needed for extremely high-density infestations or to prevent the spread of new infestations.

Weed eradication is usually not feasible or achievable. In these cases, control and tolerable levels need to be adopted to establish a maintenance-type management system. Integrated Pest Management (IPM) criteria work best and offer the greatest cost-benefit analysis. Adoption of these principals can improve the profit margins on affected tracts and prevent catastrophic infestations and costly investments due to failed countermeasures or unsustainable practices.

IPM is also very beneficial when applied to herbicide resistant weeds on cropland. Producers using weed suppressing cover crops, timely tillage and crop rotation practices can help reduce chemically resistant weed populations to acceptable levels. Kochia (*Kochia scoparia*), Russian thistle (*Salsola iberica*), cheatgrass (*Bromus tectorum*), Canadian thistle, field bindweed (*Convolvulus arvensis*), and leafy spurge are common cropland weeds. There are increasing reports of chemical resistant weeds, such as pigweed (Amaranth) species. Annual weeds are also challenging to control due to climatic conditions (hot and dry conditions limiting chemical uptake by weeds). Thus, whether the producer is organic, no-till, or traditional; weeds can be a nuisance and a costly problem. Again, the target should be weed control not eradication as eradication is very difficult and economically unsustainable.

## Animals

Hill County is home to 35 Species of Concern (SOC) (Appendix III)<sup>(12)</sup> and many of these species are associated with grassland habitat types. The vast majority of Hill County has been broken for crop production. This has resulted in habitat loss and a lack of connectivity between wildlife habitats, negatively impacting many SOCs. The eastern portion of the county has more intact wildlife habitat for priority species. In recent years, Conservation Reserve Program (CRP) acres have expired and have been put back into crop production, further limiting perennial vegetation availability. Perennial vegetation provides nesting cover, escape cover and hiding cover essential for wildlife habitat connectivity. Scarcity of uncultivated land and reduced CRP acres negatively impact wildlife populations important to Hill County. Species impacted by lack of perennial cover and loss of CRP include pronghorn (*Antilocapra americana*), sharp-tailed grouse (*Tympanuchus phasianellus*), Hungarian partridge (*Perdix perdix*), mule deer (*Odocoileus hemionus*), white-tailed deer (*Odocoileus virginianus*), greater sage-grouse (*Centrocercus urophasianus*), ring-necked pheasant (*Phasianus colchicus*), Sprague's pipit (*Anthus spragueii*), chestnut-collared longspur (*Calcarius ornatus*), McCown's longspur (*Rhynchophanes mccownii*), Baird's sparrow (*Centronyx bairdii*) and others. As of December 12, 2019, there are no threatened or endangered species listed by the U.S. Fish and Wildlife Service for Hill County.

Big game migration corridors and winter range have received increased national attention. U.S. Secretary of the Interior Secretarial Order 3362 directs bureaus within the Department of the Interior (DOI) "to enhance and improve the quality of big-game winter range and migration corridor habitat on Federal lands (p. 1)."<sup>(13)</sup> The eastern border of Hill County falls within Priority Area D: Canadian Border to Musselshell Plains (Appendix IV). This priority area extends from the Canadian Border to the Fort Peck Reservoir and provides corridor habitat for elk, mule deer, and pronghorn. Habitat fragmentation, noxious weeds, and highway/railway collisions or movement inhibition are the primary risks to habitat.<sup>(14)</sup>

Montana FWP has identified the Milk River as having some of the highest diversity of aquatic Species of Greatest Conservation Need (SGCN), as well as gamefish, in the state. Riparian areas along the river also provide high quality habitat for various SGCN amphibians, birds, mammals and reptiles (Appendix V). Despite being in good condition, the upper portion is impacted by irrigation withdrawals and grazing practices that are not compatible with fish habitat. Fresno Dam is managed primarily for walleye. This and many other fish species live in the reservoir and Milk River upstream of the Dam.<sup>(15)</sup>

Feral pigs are a concern on the horizon. Just north of Hill County in Canada, a growing population is on the verge of making it into the United States. Current distribution in Saskatchewan and known rapid reproduction of feral hogs warrants awareness and action<sup>(16)</sup>. Feral hogs are known to have huge economic impacts to agriculture as well as adverse impacts to native wildlife populations. Feral pigs can transmit diseases and parasites to livestock, people, pets, and wildlife, cause damage to crops, compete with wildlife for habitat and resources, and prey on ground nesting birds such as pheasants. Action may need to be taken to prevent the spread of this destructive invasive species in the future.

Pollinators have seen nationwide declines in both native and introduced species, especially honey bees. Lack of diverse, flowering forbs on the landscape limit food and habitat potential for pollinators. Mechanical cultivation, fallow periods, lack of species diversity, and broad use of pesticides impact pollinators in the area.

## **Energy**

There have been inquiries from businesses wanting to develop wind and solar energy in areas of the county, but they are all in the initial stages.

## **Land Uses:**

### **Cropland**

Awareness of and interest in soil health on cropland has increased in recent years in the county. The health and functionality of a given soil is indicated by soil structure, compaction levels, infiltration rate, the amount of crop residue, surface horizon color, soil biology, and other factors. Improving soil function is based on five soil health principles: 1) Keep the soil covered; 2) Keep a living root in the soil; 3) Increase diversity; 4) Minimize disturbance; and 5) Integrate livestock. Cover crops are one tool for incorporating these principals. They can improve soil condition, increase organic matter content, scavenge nutrients, improve water infiltration, reduce erosion and provide a forage source in a grazing scenario. The practice adoption is most often successful when incentivized. Promotion through partners and government programs has increased cover crop acres. However, some issues with crop insurance, the Risk Management Agency (RMA), and the Farm Service Agency (FSA) have slowed the adoption and application of those beneficial cropping practices.

Organic farming is also increasing in Hill County (Figure 4). High commodity prices for organically certified crops and government incentivizes have encouraged adoption of these systems. The emergence of herbicide resistant weeds and liabilities associated with herbicide use has also played a part in increased organic conversion. However, tillage for weed suppression has also greatly increased the amount of wind and water erosion present on organically farmed land. Research is needed on weed control in organic cropping systems to ensure continued adoption and viability in the future.

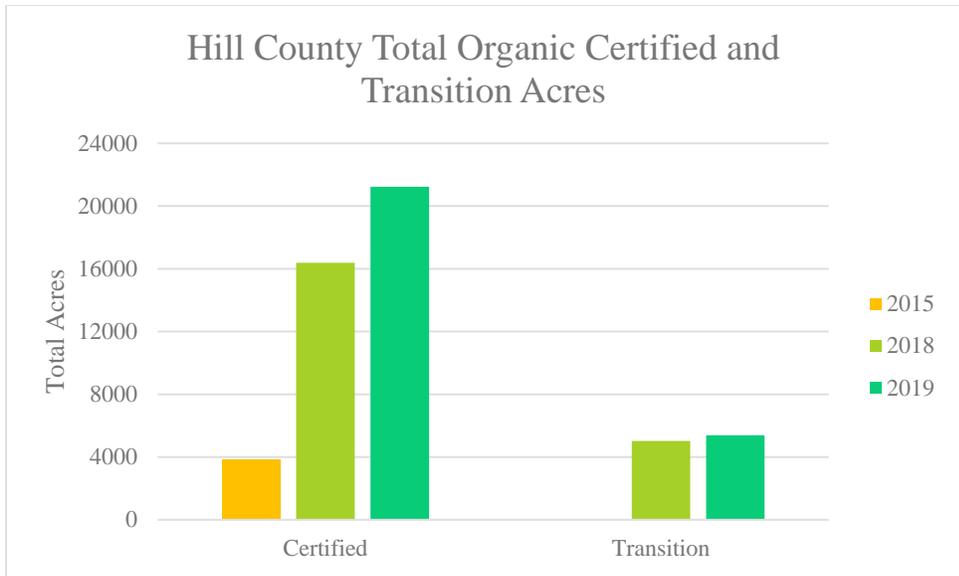


Figure 4. Organic Acres in Hill County<sup>(9)</sup>

**Grazing Land (Range & Pasture)**

According to the 2018 Agricultural Statistics, 30% of the land in Hill County is grass or water.<sup>(1)</sup> Although most of the non-federal native rangeland has been converted to crop production, pockets of native rangeland and introduced forage species are present throughout the county (Figure 4). Most of the grazing is in the Bears Paw Mountains. Overgrazing, season-long grazing and uneven grazing distribution compromise plant health and vigor of both native and introduced species. Improved condition of native rangeland could be achieved through infrastructure improvements to evenly distribute livestock and improve overall range utilization. These include increased stock water facilities, fencing, herding and changes to overall herd management.



Figure 5. Rangeland with wheat and mustard fields in the distance. NRCS photo.

### **Irrigated Land (Hay & Crop)**

There is minimal irrigation out of the Milk River in Hill County. Most of this is located east of Havre.

## **Section III Conservation Activity to Date**

### **Cropland:**

Soil erosion on cropland is an ongoing resource concern. Historic treatment alternatives have been to manage tillage operations and incorporate narrow field strips to reduce unsheltered distances. In the past, field windbreaks were utilized as an effective tool to protect soil. Managing crop stubble via a shift from summer fallow to chemical fallow has been the primary method of controlling wind erosion on cropland for the past 25 years. This, and a change to larger fields, made windbreaks become a management challenge and many were removed. Water erosion on cropland has not been a common resource issue. However, snowmelt during the 2017/18 and 2018/19 winters was abnormally high. Frozen soil impeded deep infiltration, and surface water accumulated, forming channels and causing sheet/rill erosion.

The transition to chemical fallow cropping systems began in Hill County during the 1990s and is now a common practice. In the past five years, producers have begun to diversify their cropping

systems in response to both changes in markets and promotion of soil health principals. Hill County, though still a strong producer of small grain crops, has increased crop rotation diversity with the addition of pulse crops and mustard. <sup>(9)</sup> Low precipitation combined with hot, dry summers and high evaporation rates perpetuate a reluctance to move away from the traditional crop/fallow system. Reducing fallow acres would benefit a number of soil health concerns in the county such as decreasing erosion, increasing nutrient cycling, removing excess soil moisture and increasing biological activity in both soils and saline seeps. Cash crop diversification is somewhat limited due to a short growing season and low precipitation. Cover crops can be a tool to introduce diversity beyond a regular crop rotation and can serve a dual purpose as a grazing option.

Wind erosion is a resource concern. Chemical fallow has helped, but it will always be an issue which needs addressed. Factors that may increase the potential for wind erosion include the addition of pulse crops and other low residue species in rotations as well as the large size of farm fields. Management changes like these set the stage for wind erosion to become severe, especially during inevitable drought years. The NRCS can help reduce wind erosion by continuing to inform producers of this potential threat, sharing soil health principles and promoting conservation measures – such as grass strips, field borders, strip cropping and field windbreaks – that reduce wind erosion on cropland . Conservation practices on fields that borders roadways would also enhance public safety by minimizing blowing soil. Reduced visibility caused by dust storms has been associated with highway accidents and even fatalities. Properly located and designed field borders and tall standing stubble would also reduce blowing snow and resulting icy roads during the winter.

Concentration of salts has been a prominent resource concern in Hill County, particularly saline seeps developing on cropland. Saline or sodic soils form when water moves through the soil profile, picking up salts and moving them through the ground water until they surface along lower elevations on the landscape. As the water evaporates, the salts are left on the soil surface. This results in a less productive soil. Since the 1980s, NRCS in coordination with Montana Salinity Control Association (MSCA) has implemented over 50 individual saline reclamation plans using the Environmental Quality Incentives Program (EQIP). Through these efforts and FSA's CRP salinity treatment, education and implementation has made great strides. The Sage Creek Watershed Alliance was formed in the 1990s to address salinity issues within the Sage Creek Watershed. Most operators became informed and recognized seeding perennial vegetation on recharge areas was appropriate treatment of salinity areas. In many cases, CRP or EQIP contracts were used to treat salinity recharge areas. However, as CRP acres expire from contracts, and a new generation of operators take over, the idea of harvesting a crop on land that appears 'fixed' has resulted in some areas being farmed again, only to have the seeps return. This presents a need to ensure land managers are educated about saline seeps. The former generation recognized the benefit of treating recharge areas with perennial vegetation or re-cropping while the next generation does not always have that first-hand knowledge of how to manage seeps. The resource concern of high salt concentrations also deteriorates water quality in reservoirs that were once viable livestock water sources.

The Hill County Conservation District (HCCD) has been active in the past with many conservation projects at Beaver Creek Park, including nature trail development, erosion control measures, water quality assessments and range monitoring. HCCD is addressing erosion on roads at Fresno Reservoir, conducted a Russian olive survey on the Milk River and spearheaded a program to remove old car bodies from the Milk River. Education events through the Youth Education Day and Arbor Day have been well received.

Other common conservation practices in the county include variable rate fertilizer application, split application of nitrogen, weed control measures, cross fencing and livestock water developments. Education outreach events to producers and students will need to be on-going each year.

## Section IV

### Prioritization of Natural Resource Concerns as determined by Local Working Group (LWG).

The local working group met on April 3, 2019. Partners in attendance were:

- ✚ Hill County Conservation District
- ✚ Milk River Watershed Alliance
- ✚ Sage Creek Watershed Alliance
- ✚ Natural Resources Conservation Service
- ✚ Montana Salinity Control Association
- ✚ Local Producers
- ✚ Havre Daily News
- ✚ Hill County Commissioners

Local Working Group identified the following resource concerns:

#### Weeds

- Noxious
- Herbicide resistance
- Weed spread from neighbor's property (including phragmites)

#### Soil Erosion

- Wind & Water
- Resistant Weeds & Tillage
- Cropping Systems

#### Soil Health

- Low Residue
- Depleted Organic Matter
- Poor Aggregate Stability

- Soil Compaction
- Organic Mineral Deficiency
- Soil Salinity
- Soil Acidity

#### Water Quality

- Affected by the items listed above

#### Fresno Dam

- Repairs
- St. Mary's diversion repairs

#### Conservation Reserve Program (CRP)

- Loss of program acres
- Loss of wildlife habitat
- Acres back into crop production

#### Rangeland

- Plant health
- Unreliable livestock water
- Water quality
- Fire danger

Local Working Group established priorities in Spring of 2019.

1. Soil Health
  - Low Residue
  - Depleted Organic Matter
  - Organic Mineral Deficiency
  - Soil Salinity
  - Soil Acidity
2. Weeds
  - Noxious
  - Chemical Resistant

## Section V Potential Target Implementation Plans (TIP) and Investment Portfolios

Advanced Soil Health – Producers who are already applying cover crops. Focus on residue with stripper headers and disc drills.

Soil Health – Organic producers incorporating livestock to reduce weed infestation, reduce tillage and graze cover crops.

Soil Health to Improve Organic Matter – Using cover crops and crop diversity in rotations.

Weed Control – Graze Weeds in Beaver Creek Park (BCP) – Use sheep or goats to graze weeds in BCP and surrounding landowner properties to implement IPM targeting noxious weeds prevalent in BCP that have spread to their property. Partners would be BCP and Hill County Weed District.

Brush Control-Bears Paw – Landowners in the Bears Paw with thick hawthorn patches that reduce forage accessibility, quality, and quantity for livestock and wildlife. Work with landowners on brush control and grazing management.

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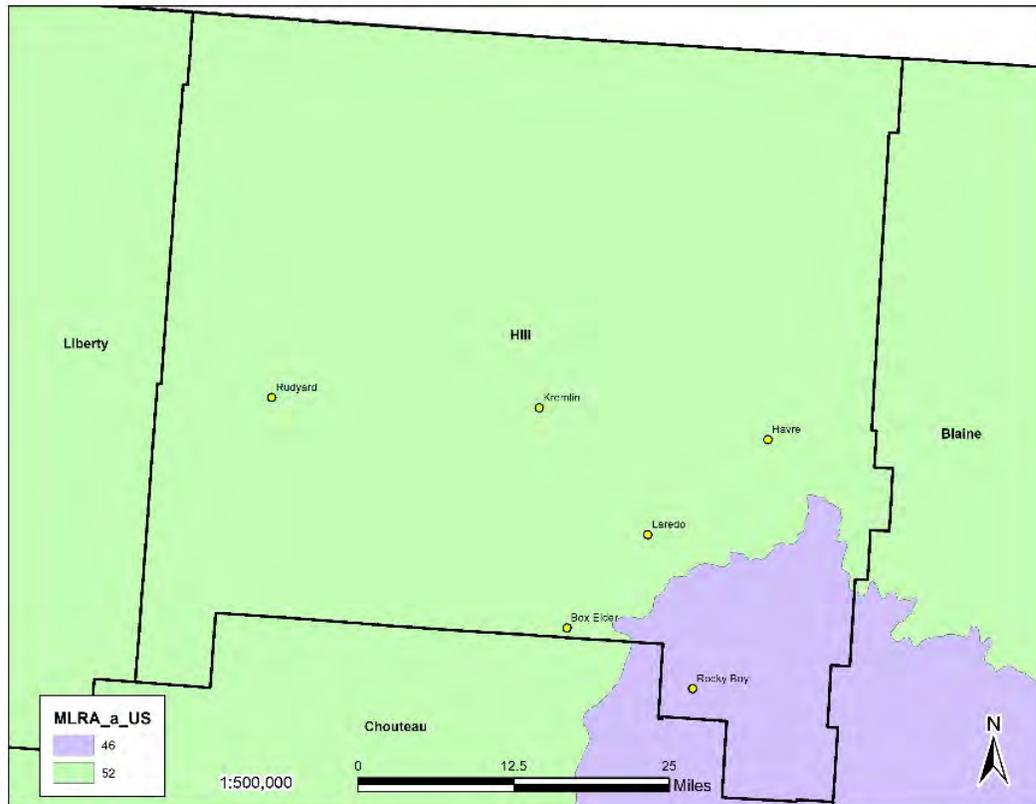
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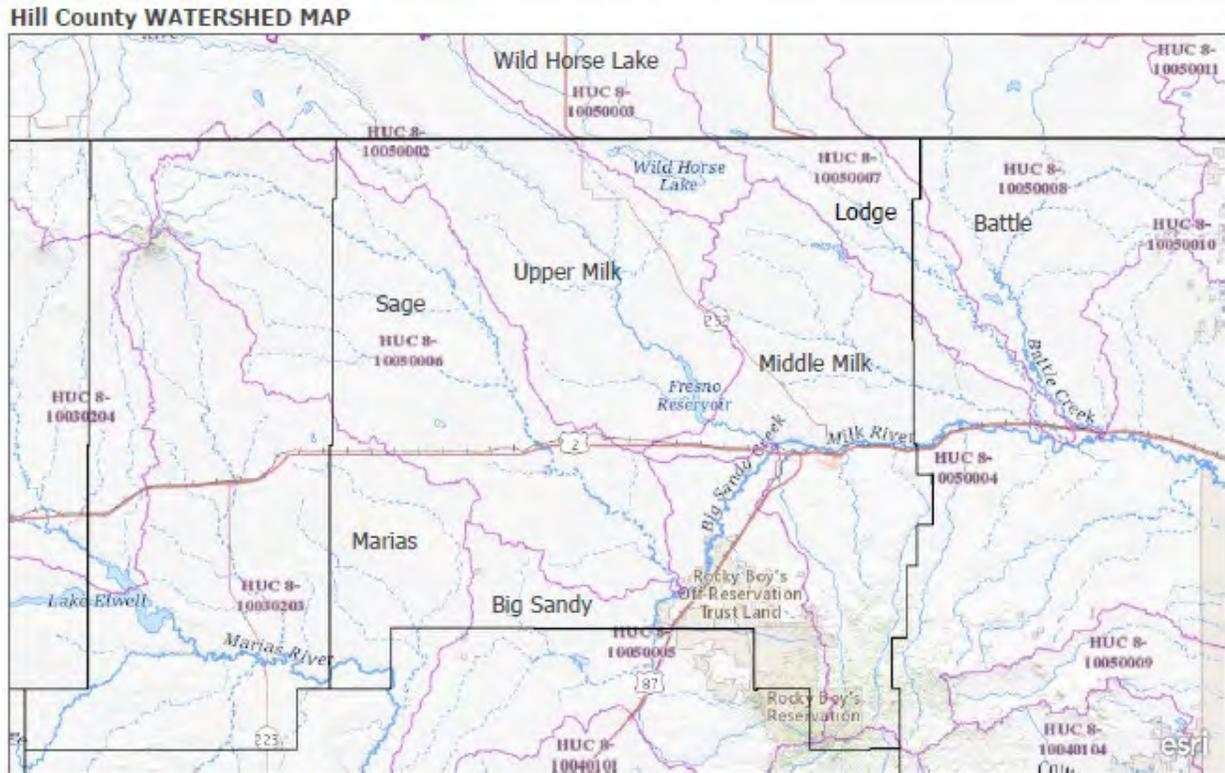
# Appendix I



Hill County Major Land Resource Areas (MLRAs) <sup>(3)</sup>

## Appendix II

### Hill County Watershed Map



ESRI Collector GPS data collection template for Hill County.

[nrcs.maps.arcgis.com/home/webmap/print.html](https://nrcs.maps.arcgis.com/home/webmap/print.html)

## Appendix III

### Hill County Animal Species of Concern (SOC) <sup>(12)</sup>

#### **Mammals (Mammalia)**

Swift Fox	<i>Vulpes velox</i>
Black-tailed Prairie Dog	<i>Cynomys ludovicianus</i>
Pygmy Shrew	<i>Sorex hoyi</i>
Merriam's Shrew	<i>Sorex merriami</i>
Dwarf Shrew	<i>Sorex nanus</i>
Eastern Red Bat	<i>Lasiurus borealis</i>
Hoary Bat	<i>Lasiurus cinereus</i>
Little Brown Myotis	<i>Myotis lucifugus</i>

#### **Birds (Aves)**

Golden Eagle	<i>Aquila chrysaetos</i>
Ferruginous Hawk	<i>Buteo regalis</i>
Great Blue Heron	<i>Ardea herodias</i>
Chestnut-collared Longspur	<i>Calcarius ornatus</i>
McCown's Longspur	<i>Rhynchophanes mccownii</i>
Bobolink	<i>Dolichonyx oryzivorus</i>
Loggerhead Shrike	<i>Lanius ludovicianus</i>
Forster's Tern	<i>Sterna forsteri</i>
Common Tern	<i>Sterna hirundo</i>
Sprague's Pipit	<i>Anthus spragueii</i>
Baird's Sparrow	<i>Centronyx bairdii</i>
Brewer's Sparrow	<i>Spizella breweri</i>
Greater Sage-Grouse	<i>Centrocercus urophasianus</i>
Long-billed Curlew	<i>Numenius americanus</i>
Burrowing Owl	<i>Athene cunicularia</i>
Veery	<i>Catharus fuscescens</i>

#### **Fish (Actinopterygii)**

Blue Sucker	<i>Cycleptus elongatus</i>
Northern Redbelly Dace	<i>Chrosomus eos</i>
Northern Pearl Dace	<i>Margariscus nachtriebi</i>
Iowa Darter	<i>Etheostoma exile</i>
Sauger	<i>Sander canadensis</i>
Paddlefish	<i>Polyodon spathula</i>

#### **Invertebrates**

A Sand-dwelling Mayfly *Lachlania saskatchewanensis*  
Striate Disc *Discus shimckii*

**Amphibians (Amphibia)**

Great Plains Toad *Anaxyrus cognatus*

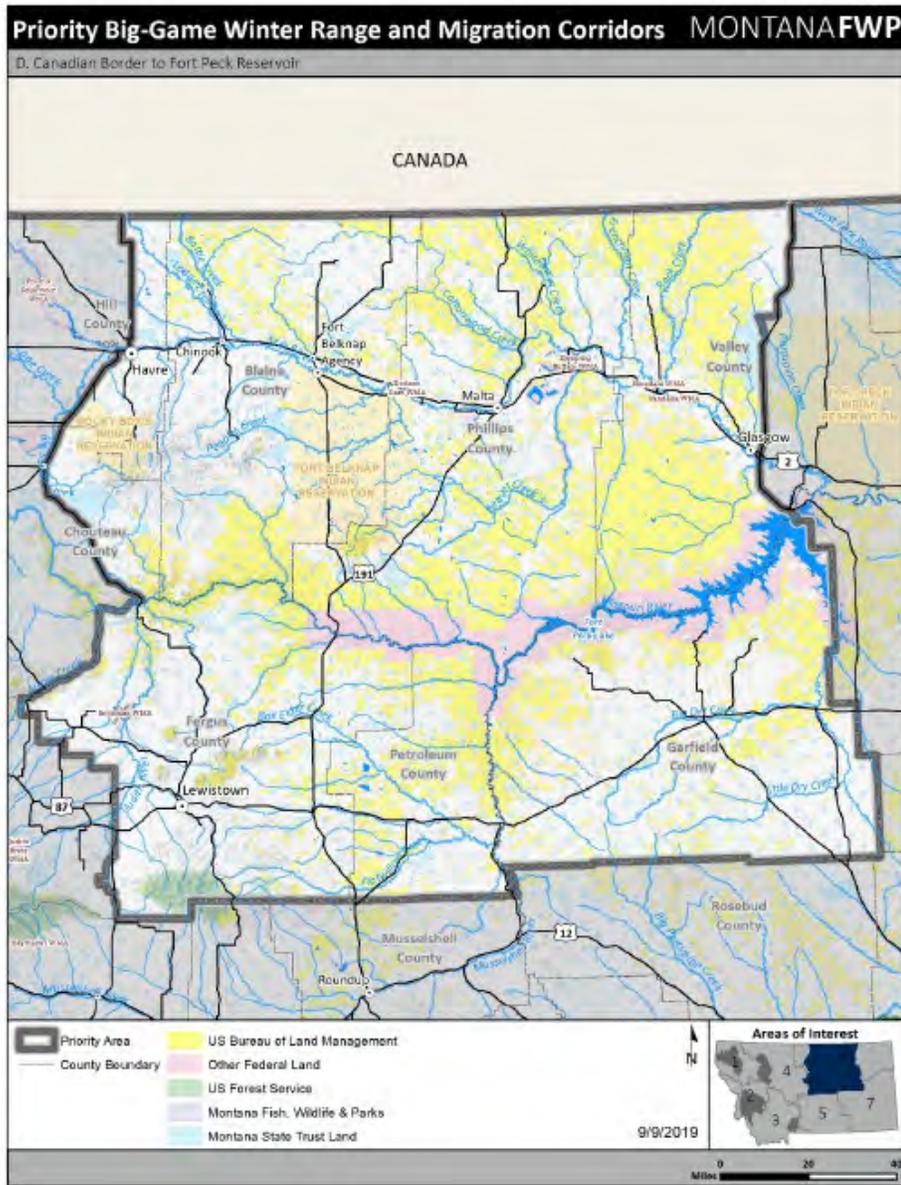
**Reptiles (Reptilia)**

Plains Hog-nosed Snake *Heterodon nasicus*

Greater Short-horned Lizard *Phrynosoma hernandesi*

# Appendix IV

## Priority Big Game Range and Migration Corridors: Canadian Border to Fort Peck Reservoir



## Appendix V

Milk River Focal Area Associated Species of Greatest Conservation Need (MFWP, 2015 pp. 82, 117)

### Amphibians

Great Plains Toad  
Northern Leopard Frog  
Plains Spadefoot

### Birds

American Bittern  
American White Pelican  
Baird's Sparrow  
Black Tern  
Black-billed Cuckoo  
Black-crowned Night-Heron  
Black-necked Stilt  
Bobolink  
Brewer's Sparrow  
Burrowing Owl  
Caspian Tern  
Chestnut-collared Longspur  
Clark's Grebe  
Clark's Nutcracker  
Common Tern  
Ferruginous Hawk  
Forster's Tern  
Franklin's Gull  
Golden Eagle  
Great Blue Heron  
Greater Sage-Grouse  
Green-tailed Towhee  
Horned Grebe  
Least Tern

Loggerhead Shrike  
Long-billed Curlew  
McCown's Longspur  
Mountain Plover  
  
Northern Goshawk  
Peregrine Falcon  
Piping Plover  
Red-headed Woodpecker  
Sage Thrasher  
Sharp-tailed Grouse  
Sprague's Pipit  
Veery  
White-faced Ibis

### Mammals

Black-tailed Prairie Dog  
Dwarf Shrew  
Fringed Myotis  
Hoary Bat  
Little Brown Myotis  
Merriam's Shrew  
Preble's Shrew  
Pygmy Shrew  
Swift Fox  
Townsend's Big-eared Bat

### Reptiles

Greater Short-horned Lizard  
Milksnake  
Western Hog-nosed Snake

### Fish

Blue Sucker  
Iowa Darter  
Northern Redbelly Dace  
Northern Redbelly x  
Finescale Dace  
Paddlefish  
Pallid Sturgeon  
Pearl Dace  
Sauger  
Shortnose Gar  
Sicklefin Chub  
Sturgeon Chub

