

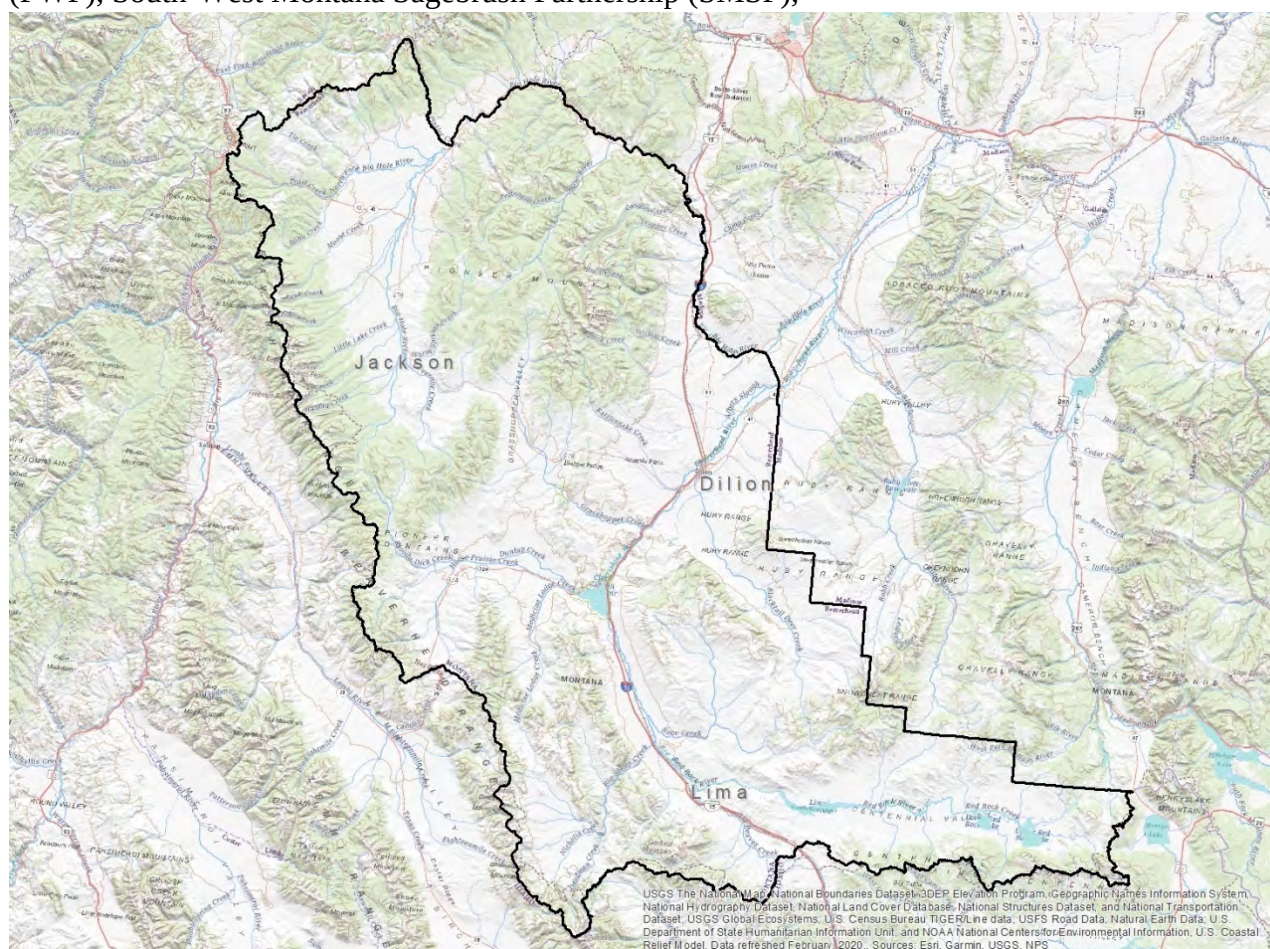
BEAVERHEAD COUNTY MONTANA LONG RANGE PLAN 2021



Section I. Introduction

The vision of the Dillon NRCS Field Office is to carry out successful conservation practices that will benefit the landscape in Beaverhead County. Our mission is to build relationships and similar conservation goals throughout agencies, communities, non-government organizations and private landowners to continue to enhance the land. The purpose of the NRCS Long Range Plan (LRP) is to address current and potential future resource concerns as well as record previous conservation activity across all of Beaverhead County for the next 5-10 years. This document prioritizes the most critical resources concerns that NRCS will provide technical assistance and funding for. This will be a living document that could potentially change with new and altering resource concerns.

Many partners participated in the development of Beaverhead County's Long Range Plan including the following: Private Landowners, Beaverhead Conservation District (BCD), Beaverhead Watershed Committee (BWC), Big Hole Watershed Committee (BHCW), The Nature Conservancy (TNC), Montana Department of Natural Resources and Conservation (DNRC), Bureau of Land Management (BLM), U.S. Forest Service (FS), Centennial Valley Association(CVA), U.S. Fish and Wildlife Service (USFWS), Montana Fish, Wildlife & Parks (FWP), South-West Montana Sagebrush Partnership (SMSP),



Section II. Resource Inventory

Humans:

These numbers are from the Headwaters Economics' Economic Profile System.

Total Land Ownership	Acres	% of Total Acres
Beaverhead County Total Acres	3,566,679	100%
Total Federal Land	2,100,619	58.9%
Forest Service	1,376,974	
BLM	667,229	
Other	55,758	
Total State Lands	355,395	10%
State Trust Lands	334,450	
Other	20,945	
Total Private Lands	1,110,666	31.1%
Conservation Easement	122,796	

Total Land Use	Acres	% of Total Acres
Forest	1,141,337	32%
Grassland	2,282,674	64%
Irrigated Lands	124,833	3.5%
Dry Hayland	71,334	0.2%
Non-Commercial Forest	71,334	0.2%
Summer Fallow	35,667	0.1%

Total Private Land Uses	Acres	% of Total Acres
Forest	39,921	4%
Irrigation	123,590	11%
Crop/Fallow	1,864	>1%
Rangeland	936,372	85%

The population of Beaverhead County is 9,360 (2017). The racial makeup of the county is approximately 91.3% White, 4.2% Hispanic or Latino, <0.1% African American, 2.0% Native American, and <0.6% Asian and 1.8% two or more races (Headwaters Economics'). There are no Native American reservations in this county. The median household income for 2017 was \$43,420 with around 6,189 full time and part time jobs in the county. In 2017 there was approximately 1,067 government jobs, which accounts for 17% of the county jobs. There are 660 individuals that work on/own farms. The unemployment rate in 2018 was 3.1%, and 7.6% of families that are below poverty line.

Beaverhead County has 125,000 head of cattle and calves, and 70,000 head of beef cows and heifers that calved in 2019. There are around 13,100 sheep and lambs, and 100 hogs and pigs. Sheep and lamb numbers were higher in the late 1800s and early 1900s, however these numbers are decreasing while cattle numbers are increasing. No milk cows were reported in the 2019 National Agricultural Statistics Service (NASS) report. There are approximately 494 farms, averaging in 2,498 acres per farm. The total number of farm acres is around 1,233,811.

Soil:

Beaverhead County includes five different soil survey areas: MT604 – Dillon Area; MT605 – Beaverhead National Forest Area; MT610 – Big Hole Area; MT612 – Horse Prairie Area; and MT614 – Red Rock Lakes Area. The field work for Beaverhead National Forest soil survey was completed in 2002 and the fieldwork for the Big Hole Area was completed in 2004. The majority of this information is taken from both Soil Survey Manuscripts along with land-use data from the Montana Department of Revenue Final Land Unit Classification.

The soil survey lies within two Major Land Resource Areas including: 44S – Central Rocky Mountain Valleys, South and 43B – Central Rocky Mountains

General Nature of the Area

The county contains portions of nine mountain ranges. The northern part of the county includes the Pioneer and Anaconda ranges, while the southernmost part of the county is the Centennial and Tendoy Mountains. The Blacktail, Ruby, Snowcrest and Gravelly Ranges reside in the southeast, and the Beaverhead Mountains are in the west and southwest.

Parent Material

The soils in the survey area formed in alluvium, lacustrine deposits, colluvium and till derived from mixed sources or from material weathered from bedrock. Types of this bedrock include limestone, sandstone, shale, quartzite, conglomerate, andesite, rhyolite, volcanic tuff, granite, and gneiss. Rock fragments, broken from bedrock by chemical weathering or frost shattering are abundant in many soils. Soils that developed in limestone tend to be alkaline and soils that developed in rhyolite, andesite and granite are typically more acidic. Soils that formed in quartzite are generally loamy. Soils that formed in lacustrine deposits or alluvium are clayey. Soils that formed in alluvium are loamy over gravelly sand.

Agronomy

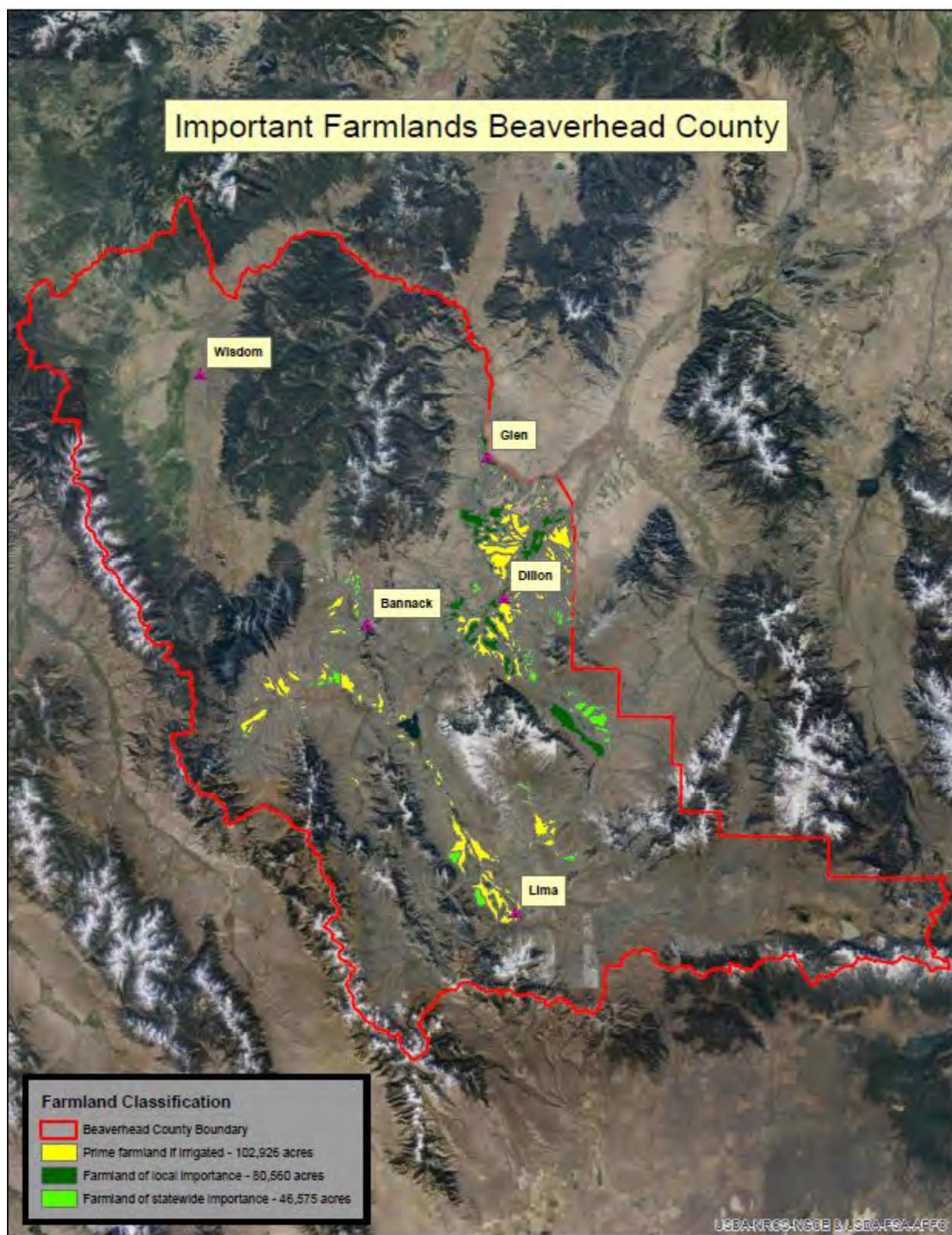
There is very limited amount of cropland in the county. The primary land use for tilled acreage is pasture or hayland, with some dryland grain and irrigated potato acreages east of Dillon (known as the “East Bench”). Acreage is usually cropped for the purpose of reestablishing pasture or hayland. The cropland and pasture are predominantly flood irrigated with some sprinkler irrigation. Wet soils are mainly used for hay production and pasture. Subirrigated meadows are used for wintering cattle and for early spring grazing.

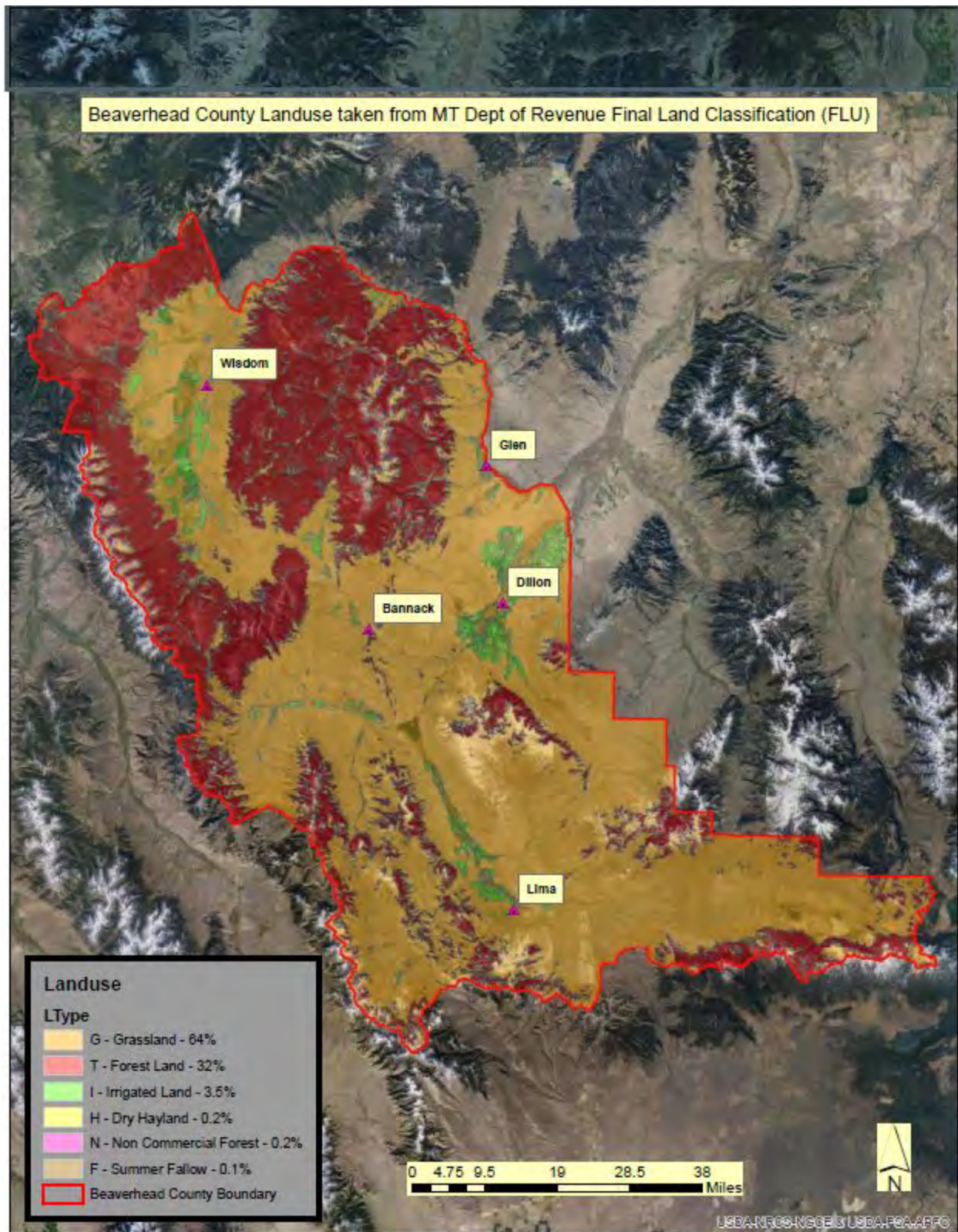
Prime Farmland and Other Important Farmland

Prime if Irrigated – There are 102,926 acres that qualify for this designation. These occur mainly on terraces and fans near Dillon and Lima.

Farmland of Local Importance – There are 80,560 acers that qualify for this designation. These are concentrated in the fans and terraces and include areas that are too limited by climate to be included with the other designations but still produce good yields of hay and pasture.

Farmland of Statewide Importance – There are 46,575 acres of this designation. These are on higher terraces and alluvial fans.





Forestry:

The valleys of Beaverhead 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 the forest. Forest stands differ mostly because of soil and climate variations. Temperature and moisture are important climatic factors affecting forest growth composition. Elevation and aspect are topographic features that further influence temperature and moisture. Rock Mountain juniper and Douglas-fir occupy the warm-dry end of the climatic gradient; lodgepole pine is on the cool moist end at the highest elevations. Other species include Englemann spruce, subalpine fir, whitebark 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.

Roughly 32% of the county is forested, 96% of which is federal and/or state owned. Only about 39,921 acres are 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 fires 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. Beaverhead County has a Community Wildfire Protection Plan that discusses this topic in detail, so it is not repeated here.

Forest insect and disease issues are ever-present and in a constant state of flux. The current culprits in Beaverhead County include bark beetles and spruce budworm. The aforementioned lack of disturbance mechanisms have increased the number of trees per acre far beyond the natural system's sustainability and skewed the forest tree species composition toward those more susceptible to insects, disease and wildfire. The 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.

Water:

The valleys of this county usually receive around 9 to 14 inches of annual precipitation, while higher elevations receive 30 inches or more predominantly in the form of snow during the winter. (See map at bottom of page)

Watersheds and Streams:

- Big Hole Watershed covers 1.78 million acres of which xx% is public or state land. The majority of the Big Hole watershed is high in elevation therefore it is predominantly a snowmelt driven system.
 - The Big Hole River – Flowing for approximately 156 miles to its confluence with Beaverhead river where they become the Jefferson is a blue ribbon trout fishery and a stronghold for one of the last remaining populations of Fluvial Arctic Grayling.
 - Wise River
 - Trail Creek
 - Canyon Creek
 - Willow Creek
 - Birch Creek
- Beaverhead Watershed has a total of approximately 2.44 million acres with over 66% being Public Lands. It is predominantly a snowmelt-driven system.
 - Beaverhead River – Consisting of 79 miles, this river is a blue ribbon trout fishery known for its size and abundance of brown trout. This river is controlled by Clark Canyon Dam which was built to retain water for irrigation use in the Dillon valley.
 - Rattlesnake Creek
 - Grasshopper Creek
 - Black Tail Creek
 - Red Rocks Watershed covering about 1.5 million acres feeds Clark Canyon reservoir south of Dillon and as with the other watersheds high mountain snow feeds this system as it melts.
 - Red Rock Creek – Flows into the Red Rock Lakes
 - Red Rock River – 57 miles long flowing from the Red Rocks Lakes that eventually flows into the Clark Canyon Reservoir. It's three main tributaries are Big Sheep Creek, Little Sheep Creek and Sage Creek.
 - Horse Prairie Creek

Irrigated Lands, Water Rights and Irrigation Districts

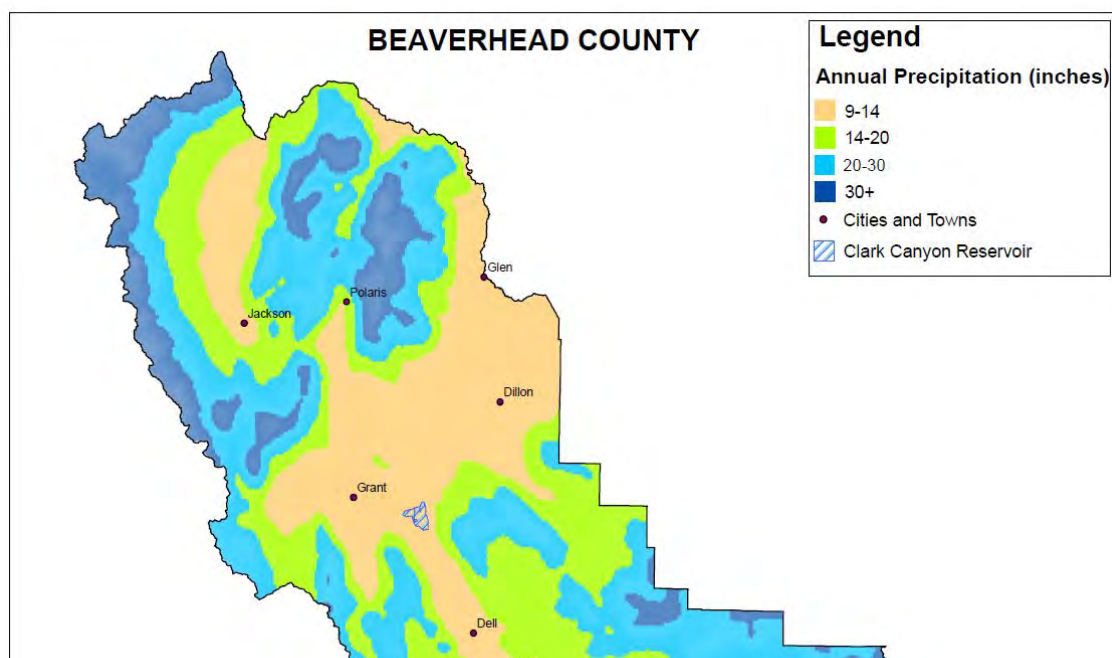
- Irrigation Data
 - There are around 124,833 acres of irrigation in the county. Flood irrigation is still the most common type of irrigation being 55% of total irrigated acres, mainly in the Big Hole area. Pivot irrigation consists of 35% followed by sprinkler irrigation which is around 9%.

➤ Irrigation Districts

- East Bench Unit –The Barretts Diversion Dam is owned by the U.S. Bureau of Reclamation and diverts water from the Beaverhead River to the East Bench Canal, Canyon Ditch and the West Side Canal. The unit provides supplemental irrigation service to 24,848 acres. The dam is located between Dillon and Clark Canyon Reservoir near the little town known as “Barretts”. Construction of this dam was done shortly after the Clark Canyon Reservoir was complete in 1964. The spillway capacity is 2,500 cubic feet per second (cfs). The East Bench Canal is 53 miles long and its headworks capacity is 440 cfs. The Canyon Canal headworks capacity is 200 cfs. The West Side Canal has a capacity of 160 cfs. The East Bench Canal provides irrigation for the East Bench Irrigation District and the West Side Canal provides irrigation for the Clark Canyon Water Supply Company.
- Lima Water Users Irrigation Company – Privately owned and operated by the producers that use the Lima Reservoir water mainly for irrigation.

➤ Significant Water Structures

- Clark Canyon Reservoir – Located around 20 miles southwest of Dillon right off of U.S. Highway 91, was built in 1964 by the U.S. Bureau of Reclamation. It was built at the head of the Beaverhead River to impound surplus flows of Horse Prairie Creek and Red Rock River. The total capacity is 257,152 acre-feet, and has a surface area of 5,903 acres. The water that is released provides for the downstream irrigation (East Bench Unit).
- Lima Reservoir – This reservoir has a holding capacity of 75,180 acre feet that was built in 1902 in the Centennial Valley and is currently owned by the “Lima Water Users”. Artic Grayling are native to the Centennial Valley and still reside in the Lima Reservoir. Rainbow trout, and Yellowstone cutthroat trout are present as well.
- Red Rock Lakes – There are two lakes that make up Red Rock Lakes; Upper Red Rock Lake and Lower Red Rock Lake. Red Rock Creek is the main water source for the lakes, and Red Rock River flows out of the lakes and impounds into the Lima Reservoir



Air and Energy:

- Utility/power company coverage areas or transmission lines
 - North Western Energy – Electric and Gas company that serves mainly in the city limits of Dillon
 - Vigilante Electric Cooperative Inc. – Electricity company that serves the entire county
 - Montana Energy Alliance, LLC – Provides bulk propane for the county, they are available 24/7.
- Railroads
 - Union Pacific – The Union Pacific railway runs through the towns on Monida, Lima, Dillon and Glen along Interstate 15
- Main Highways
 - Interstate 15 runs south through Beaverhead County going through the towns of Glen, Dillon, Dell, Lima and Monida
 - Montana State Highway 324 runs from Clark Canyon Reservoir going west into Idaho near Leadore, and runs through the area locally known as “Horse Prairie”
 - Montana State Highway 278 goes through the Big Hole area starting in Dillon and ends in Wisdom
 - Montana State Highway 43 runs from Idaho to Wisdom and goes along the northern county boundary where it eventually intersects with Interstate 15
 - Montana State Highway 91 is also known as the “old highway to Butte” runs north along Interstate 15, going through Glen.
 - Montana State Highway 41 runs through Twin Bridges, and eventually ends at Whitehall.
- Mines
 - Barretts Minerals Inc. – This talc processing facility is located in Beaverhead County, but the mining sites are in Madison County.

Plants and Animals:

- Plant Communities
 - Higher elevations consist of forest. As seen elsewhere, the forests of the county are continuously becoming overgrown. As fuel loads continue to increase, the risk

for a catastrophic wildfire goes up. Although the majority of the forestland is on public and state lands, this is still a concern for the county.

- o Confined Animal Feeding Operation (CAFO)
 - o There are three CAFO's in Beaverhead County based on the Environmental Protection Agency's facility search. One of which isn't located near a water source, while the other two are located adjacent to water sources: Blacktail Deer Creek and East Bench Canal. None of these CAFO's are a resource concern at this time.
- o Wildlife
 - o Many species of wildlife are found in Beaverhead many of which are species of special concern.
 - o Mule and Whitetail Deer, Elk, Black bears, Moose, Rocky Mountain Bighorn Sheep, Mountain Goat, Mountain Lion, turkey and wolves are designated big game species by FWP.
 - o Brown, rainbow, westslope cutthroat and brook trout are the larger fish to inhabit our river systems along with many other species of aquatic organisms.
 - o Over half of the county is identified as core and general habitat for greater sage-grouse. NRCS has been previously involved and continues to put different practices on the ground that enhance sage-grouse habitat through the NRCS Sage Grouse Initiative.
- o Threatened and Endangered Species
 - o Fluvial Arctic Graying inhabit several river systems in the county. The largest population in the Big Hole river with other smaller populations in the Red Rocks creek and several tributaries of the Big Hole river.
 - o Pygmy Rabbit habitat covers much of Beaverhead county can be found in small populations in the county.
 - o Grizzly Bears range throughout the county in low concentrations.

Section III. Conservation Activities and Analysis

The Dillon NRCS Field Office has had many different types of projects on the ground throughout Beaverhead County in the last 10 years. Projects include rangeland improvements using fencing, prescribed grazing, and watering facilities using livestock pipelines and spring developments to better distribute livestock grazing. Water savings through improved irrigation practices has enabled more water to flow through the streams and rivers.

In 1999, the NRCS signed a 20-year agreement with the U.S. Fish and Wildlife Service (USFWS) and any landowners willing to manage their land to better benefit the arctic grayling. The arctic grayling has seen a dramatic decrease in numbers for many years. The agreement is

knowns as the Candidate Conservation Agreement with Assurances (CCAA) and was developed to secure and enhance arctic grayling habitat within the upper reaches of their historic range in the Big Hole River drainage, with the end goal being to maintain or increase grayling numbers. Site-specific plans are developed for each landowner to improve stream flows, and protect the function of riparian habitats, reduce or eliminate threats for the fish and remove barriers to grayling migration. Throughout the Big Hole, NRCS designed fish ladders that were installed to help with fish passage as well as structures for water control such as new diversions and head gates that were installed to better control the water. NRCS continues to help monitor the riparian areas, provide technical assistance and seek input from landowners and partners on priority projects in the Big Hole valley.

The Beaverhead Conservation District (BCD) located in Dillon, Montana and has been very instrumental in addressing water quality, riparian area management, coordinating resource management and planning/watershed planning, education and enforcing the Natural Streambed and Land Preservation Act. The district administrator and BCD regulate 310 permits which plays a major role in managing soil erosion and water quality. One of the conservation districts major projects in recent years (2015) is the Poindexter Slough Restoration Project. This project included improving 4.73 miles of riparian area and fish habitat, removed nearly 13,200 cubic yards of fine sediment from the stream channel, installing a new headgate to allow periodic flushing flows (to remove fine sediment and maintain fish pools) as well as installing a separate headgate and pin-and-plank diversion to eliminate backwatering 1,350 feet upstream. Partners include the MT Trout Foundation, MT Trout Unlimited, Montana Fish Wildlife and Parks, USFWS, Department of Natural Resources and Conservation (DNRC), Beaverhead Watershed Committee and local businesses helped contribute to this million-dollar project.

Centennial Valley Association (CVA) is a mix of private land owners, agencies and community members that conduct projects to assess natural resource problems and concerns. They have worked diligently on trying to address the predator coexistence problem through their range rider program. Other projects include improving sage grouse and fisheries habitat, noxious weed control and fence modifications to promote wildlife habitat and movement.

In recent years, The Nature Conservancy (TNC), Bureau of Land Management (BLM), The Beaverhead Watershed Committee (BWC) and landowners have come together to address the conifer encroachment problem throughout the county. The benefit of agencies and landowners working together is conservation is put on the ground on a bigger part of the area, rather than skipping over parts of the land based on who owns it. TNC, BLM, BWC and landowners have also been working on reducing erosion and head cutting on the landscape by installing Zeedyke structures. These structures are made of a natural resource (logs, rocks, branches, etc.) to stop water from continuously cutting into the land causing erosion and land degradation.

Historically, natural wildfire has been on the landscape to keep the fuel load down, reset plant successional stages as well as keeping the forest and grasslands healthy. In the last 70 years, our society has suppressed wildfires, which is disrupting the natural fire regime. As our forests and

grasslands overgrow, they become so unhealthy that when a wildfire starts, it becomes a catastrophic and devastating fire. There will continue to be dramatic consequences resulting in a decrease in air quality and sterilized soils, landowners are beginning to realize how important it is to let a fire run through a landscape. Continuing complete fire suppression results in higher quantity but lower quality trees, conifer encroachment, overgrown sagebrush on the sagebrush steppe, lack of forage for livestock and wildlife and lack of water in watersheds due to overgrowing shrubs and trees. These resource concerns need to be addressed for our ecosystem to function correctly.

Section IV. Natural Resource Concerns and Desired Future Outcomes

Sagebrush Ecosystems

Sagebrush ecosystems in Beaverhead County as well as neighboring areas are seeing a major increase in sagebrush and conifers due to the lack of fire or natural disturbances. Ultimately, sagebrush and conifers are choking out native grasses and forbs, which are very important for the function of this ecosystem. Fire suppression has occurred on these landscapes for over 70 years. Now scientists, land managers and local producers are seeing a decline in the ecosystem function as sagebrush continues to become overgrown, and conifers encroach turning grasslands into woodlands. This is a major concern because sage grouse utilize the sagebrush ecosystem as sagebrush is their main source of food. However, sage grouse utilize the areas without sagebrush for their “leks” as well as brood rearing areas where the chicks feed on insects and forbs. Many other important wildlife species such as small mammals, large ungulates and livestock utilize the grasses and forbs as their main food source. With current fire frequency intervals, the fuel loads of non-forage species dramatically increases, which increases the risk of a catastrophic wildfire. Catastrophic wildfires often result in sterilized soils, which take many more years to recover to the beginning of its successional stage, than if a mild fire burned the area. Although there are more than five different species of sagebrush in Beaverhead County, mountain big sagebrush is the most resilient to fire with a fire return interval of 25 years, while Wyoming big sagebrush has a fire return interval of around 100 years. The two most common encroaching conifers are Douglas-fir and Rocky Mountain juniper. Areas on both private and public lands that are seeing these changes in the ecosystem are: Centennial Valley, Horse Prairie, and the core and general sage grouse habitat areas. If we continue to let sagebrush over grow in these areas without a management plan to let the successional stage reset itself, there will continue to see an increase in sagebrush and conifer cover and a decrease in all other very important plant species.

Benefits to wildlife and landowners in the Big Hole Valley

As referenced earlier in this document NRCS made a commitment to conservation in the Big Hole valley and solidified it in an agreement with the USFWS in 1999. Stakeholders have identified the sustainability of the conservation efforts put forth by many landowners and partners as a growing concern. There is opportunity to improve resource concerns identified in aquatic systems, riparian zones, irrigated pastures and wetlands as well as uplands and surrounding forests. Through improving grazing management, reducing water diversion for livestock and offsite watering systems Aquatic habitat and riparian corridors will improve.

Water Measurement Management

The Lima Reservoir is located east of the town of Lima and is owned by a group of producers known as the Lima Water Users. The Lima Reservoir was developed in 1902, and is still owned by the Lima Water Users, who use it to irrigate the land. With water becoming a more limiting resource, the Lima Water Users are in need of updated water measurement tools that will enable them to irrigate more efficiently. Many of the existing structures in the river are beyond their service life and need to be replaced with structures that allow more control of water diverted as well as allowing aquatic organism passage. There is also a need for water measurement throughout the ditch system in the valley to better control field delivering amounts.

Invasive Weeds

Invasive weeds and grasses are a growing concern in certain parts of the county, especially the valleys. With more development happening in Southwestern Montana, naturally there will be more of a concern for invasive species. Some of the main species of concern are cheatgrass, spotted knapweed and ventanata.

Irrigation Practices that Decrease the Water Table

A growing concern in Beaverhead County is the shift in the water table due to changes in irrigation practices.

Section V. Prioritization of Natural Resource Problems and Desired Outcomes

1. Sagebrush Ecosystem Management
 - a. East Pioneer Mountain Foothill TIP
2. Water Measurement Management
3. Sustainability of Conservation efforts in the Big Hole Valley
 - a. Upper Big Hole Offsite Water Development
4. Invasive Weeds and Grasses

Section VI. Targeted Implementation Plans (TIP) and Investment Portfolios

East Pioneer Foothills Rangeland Improvement Project TIP 2020

To improve rangeland and riparian health in the East Pioneer Mountains foothills through removal of conifers in ecological sites that were historically sage steppe and grassland. This project will benefit terrestrial and aquatic wildlife, livestock and humans by improving wildlife habitat, water quantity and quality, and livestock forage quantity and quality.

This targeted implementation plan proposes to address 1500 total acres of conifer encroachment on private lands within the foothills of the East Pioneer Mountains in the Big Hole River watershed. Several practices are essential for the completion of this project. Brush Management (314) is the essential practice to this project while Woody Residue Treatment (384), and Prescribed Grazing (528) will be used only when necessary to achieve treatment goals.

Upper Big Hole Offsite Water Development TIP 2022

This TIP will treat the primary resource concern of aquatic habitat for fish and other organisms through developing watering systems fed by wells and spring developments, thus reducing livestock utilization of the riparian zone and reducing stock water diversions to improve instream flows during base flow conditions in the Big Hole River and associated tributaries in the designated project area.

Implementation of this TIP will install water systems to reduce livestock impacts in many of the riparian areas (e.g., bank trampling, sediment release, etc.), and should provide an improvement in future riparian assessment scores. In addition, these stock tanks will provide greater avenues for livestock distribution and utilization of available forage, ultimately improving efficiency of livestock grazing and riparian health. Lastly, these stock tanks will provide less reliance on drinking water from the Big Hole River and associated tributaries during winter when icing becomes a limiting factor for livestock water availability. These additional benefits along with improved instream flows will ultimately improve the ability for private landowner partnerships to improve habitat for grayling and livestock management.