

A Long-Range Plan for Conservation Delivery in Rosebud County, MT

Effective 2020-2024

A strategic plan for conservation implementation in Rosebud County, MT that is updated regularly to reflect the changing priorities and resource concerns of local natural resource managers and users.

Introduction

We believe that conservation actions rooted in the shared objectives of local partners provide the longest lasting benefits to our natural resources. To that end, our team is driven to deliver high quality technical information to our clients and partners in a way that helps all local conservationists find common ground and protect, maintain, and improve local resources for permanent productive use. This plan describes the resource concerns of Rosebud County and NRCS's strategy to address these concerns with its programs.

Local Conservation Partners

Rosebud Conservation District
Rosebud County Local Working Group
Rosebud Weed District
Rosebud County Land Owners & Managers
Rosebud County Commissioners
Community Foundation of Northern Rosebud County
Northern Plains Resource Council
Northern Cheyenne Tribe
Trout Unlimited
Montana State University Extension Service
Hathaway Irrigation District
Cartersville Irrigation District
Hammond Irrigation District
Yellowstone Irrigation District

Yellowstone River Conservation District Council
Northern Great Plains Joint Venture
MT Fish, Wildlife & Parks
MT Dept. of Environmental Quality
MT Bureau of Mines & Geology
MT Dept. of Natural Resources
MT Dept. of Agriculture
US Geological Survey
USDA Farm Service Agency
USDA Agricultural Research Service
USDA Forest Service
USDI Bureau of Land Management
USDI Bureau of Reclamation
USDI Fish and Wildlife Service
USDI Bureau of Indian Affairs

Rosebud County's Natural Resources

Humans

The geography and size of Rosebud County lead to different challenges in how people use the area. Interstate 94 follows the Yellowstone River corridor through the county seat of Forsyth and then Rosebud. The interstate and river divide the county into a north and south half. North Rosebud County is remote prairie with only two paved roads and several dirt county roads. South county has two paved roads that take you to the communities of Colstrip, Lame Deer, and Ashland. Colstrip is a former 'company town' based around the coal mining and power generation industry. Lame Deer is the capital of the Northern Cheyenne Reservation which extends from the western border of Rosebud County to the Tongue River. Overall there are five high schools and four similar sized communities where most

eastern Montana counties only have one county high school and the main community is the county seat. Agriculture and energy are the most important industries in Rosebud County.

Rosebud County Demographic Data, US Census Estimates V2018

Total Population	9,063	Permanent Residents	90.9%
Native American	38.9%	Bachelor's degree or higher	18.8%
Veterans	759	Median household income	\$54,709
Homes	4,182	Poverty percent	17.3%
Farms	437	People/square mile	1.8

Soils

Soils in Rosebud county formed from sedimentary parent materials without influence of glaciers or major geological uplifts causing the county to be an upland plain with deep creek and river channels. Sixty percent of the soils are weakly developed Entisols and Inceptisols because of shallow depth to bed rock or creation by flood deposition. Prime and Important farmland soils cover 12% of the county with the majority in the Yellowstone Valley. Hydric soils cover less than 8,700ac or 0.2% of the county. Soils are grouped under the Sedimentary Plains and Pierre Shale Plains Major Land Resource Areas (MLRAs). A 1975 Soil Conservation Service (SCS) work grouped soils into four categories. Soils of the floodplains, high terraces (along the Yellowstone), sandstone and shale uplands, and red and brown shale hills. See maps for more details.

Water

There are nine prominent watersheds in Rosebud County. Annual precipitation is 12-13 inches on the prairie and higher elevations receive up to 20 inches annual precipitation. Most watershed are dominated by prairie which is primarily grazed by livestock. Crop land uses are the exception and this land use is typically tied to watersheds through irrigation systems. The Yellowstone River is the largest river in the county. There are 52,415 acres (ac) of crop land in the river corridor. Tongue River is the longest river in the county at 116 river miles with 11,691 ac of cropland in the river corridor. Rosebud Creek has 116 creek miles within the county and 18,691 ac of cropland in the creek corridor. The final outlier is North and South Sunday Creeks. These aren't particularly long, but these watersheds do have 68,361 ac of dry cropland.

Impaired waterways identified on the 2018 Montana Department of Environmental Quality *Impaired Waters Report* (i.e.303(d) list) are: Armells Creek, Little Porcupine Creek, Stellar Creek, North & South Sunday Creek, Yellowstone River, Hanging Woman Creek, Otter Creek, and Tongue River. Each waterway has impairments that could be attributed to agriculture such as sediment, nitrate, salinity, or phosphorus.

Irrigation is the largest agricultural water use. Irrigated lands along the Yellowstone are delivered water by four irrigation districts: Yellowstone Irrigation District, Hammond Irrigation District, Cartersville Irrigation District, Hathaway Irrigation District. Irrigation is also used along the Rosebud, Tongue and Musselshell rivers where irrigation water is supplied independently by each farmer/rancher. Cartersville Dam is the only in-stream diversion structure. It is located at Forsyth and diverts water for the Cartersville Irrigation System.

Groundwater developments are concentrated on alluvial benches near creeks and rivers. They are primarily used for homes, operation headquarters, or stock water systems. Wells are less frequent

further from the natural waterways because aquifers are deep (expensive to reach) and the aquifers may not produce good quality water or not enough water.

Energy

Oil production, coal mining, and coal power plants all exist in Rosebud County and wind developments are currently being explored. Oil exploration and production is concentrated northwest of Sumatra. The oilfield was first developed in the 1950s and is being investigated again for production using fracking technology. Strip mining for coal began in 1924 west of Colstrip in the upper Armells Creek watershed. Coal is locally used to fire 5 power generators around Colstrip. A wind farm development is currently being explored in the county. A major reason this is economically feasible is because energy transportation infrastructure is already installed to service the coal plants in Colstrip.

Plants & Animals

Rangeland is the dominant habitat type in the county. Cattle and greater sage-grouse receive the most management consideration. Native rangelands dominate lands north of the Yellowstone River. Native range is still prominent south of the river, but ponderosa pine is frequently found in the uplands near Colstrip, Lame Deer, and Ashland. Natural riparian communities exist along perennial streams where they aren't displaced by farm fields.

Beef cattle production is the largest sector of animal agriculture in Rosebud County. The county's largest land managers are ranchers. Ranch operations are traditional cow/calf operations but using yearling cattle to mitigate risk isn't unheard of. Production on irrigated cropland is impacted by the forage needs of cattle producers.

Selected Ag Production Figures for Rosebud County, NASS 2019

Winter Wheat	13,000 ac	Hay, Other	13,800 ac
Barley	11,300 ac	Cattle, All	95,000 head
Sugar Beets	2,000 ac	Cattle, Cows & Heifers	51,000 head
Alfalfa Hay	48,000 ac	Sheep	1,100 head

Animal and Plant Species of Concern

As of December 12, 2019, the U.S. Fish and Wildlife Service (USFWS) lists the following three endangered species for Rosebud County: interior least tern (*Sterna antillarum athalassos*), pallid sturgeon (*Scaphirhynchus albus*), and whooping crane (*Grus americana*). The least tern is dependent on river flow regimes that allow for water and fish to be temporarily impounded in oxbows and backwaters. Pallid sturgeon are in the Yellowstone River and come up-river as far as the Cartersville Irrigation Dam. Man-made impoundments have a large effect on these species. Whooping crane recovery is slow because they take four to five years to reach maturity and then may only raise one chick every two to three years.

The Species of Concern Report, last updated on October 31, 2019, from the Montana Natural Heritage Program (MTNHP) lists 45 animal species of concern and 14 plant species of concern for Rosebud County. The MTNHP Field Guide describes Species of Concern as native taxa that are at-risk due to declining population trends, threats to their habitats, restricted distribution, and/or other factors.

Wildlife conservation efforts in Rosebud County have historically focused on greater sage-grouse. Most rangelands north of the river are in core sage grouse habitat and general habitat extends south of the Yellowstone to the Colstrip area and Tongue River Valley. Migrating neo-tropical song birds do use rangelands in the county and are receiving more attention. Investigations into the effect and prevalence of Chronic Wasting Disease (CWD) in mule deer are ongoing and portions of Rosebud county are part of a priority surveillance area established by MT Fish, Wildlife & Parks. Pronghorn migration routes are being assessed in north Rosebud County.

Conservation History

NRCS has delivered the following three conservation programs in the past 10 years with the help of our partners: Soil Health, Sage Grouse Initiative, and Irrigation Efficiency. The NRCS programs have addressed resource concerns on thousands of acres and multiple land uses as illustrated below:

Range Total	981000.60	ac
Crop Total	42021.39	ac
Pasture Total	14717.20	ac
Forest Total	11521.50	ac
Other Rural Land Total	132.70	ac
Farmstead Total	94.20	ac
Associated Ag Land Total	10.20	ac

Prescribed grazing, upland wildlife habitat management, irrigation water management, residue management, and nutrient management were the primary management practices voluntarily implemented by 126 clients in conjunction with the following common facilitating practices:

Practice	# of Instances
Watering Facility Count	95
Livestock Pipeline Count	87
Access Control Count	81
Fence Count	73
Cover Crop Count	44
Pumping Plant Count	26
Irrigation Mainline Count	25
Sprinkler System Count	23
Forage and Biomass Planting Count	18
Woody Residue Treatment Count	16
Forest Stand Improvement Count	14
Water Well Count	14
Conservation Crop Rotation Count	10
Invasive Plant Species Control Count	10

The Rosebud Conservation District has been a partner in the soil health program by renting a no-till drill, offering a cover crop seed cost share program, and by hosting a regional soil health seminar and various field days.

Opportunities Remain

Nearly one third of the county's acreage has had NRCS conservation practices implemented on it. Remaining opportunities require targeted outreach and implementation in order to create meaningful outcomes. Soil degradation, water quantity, and inadequate livestock water are the priority resource concerns identified by the Local Working Group (LWG). Water quality resource concerns are well documented by the MT Dept. of Environmental Quality. All resource concerns can be meaningfully addressed using NRCS investments.

Implementing Montana Focused Conservation (MFC), an EQIP strategy, NRCS field offices will identify priority resource concerns within their administrative area so that the resource can be addressed through a Targeted Implementation Plan (TIP). Local Working Groups comprised of diverse local cooperators will be utilized to get feedback to inform NRCS field offices. NRCS field offices will also accept input from cooperators, partners, and community members outside of these LWG meetings.

Problems and Outcomes

The Forsyth NRCS office has developed the following conservation management strategies to address resource concerns identified by the Rosebud Local Working Group.

Inadequate Livestock Water – Rangelands

Livestock water is limited on rangelands. Pits, reservoirs, and other methods of storing seasonal run-off have been implemented in the past, but they aren't reliable enough to meet livestock needs consistently. Groundwater resources haven't been developed because aquifers are deep enough that producers have a hard time coming up with the capital to develop them. Alluvial aquifers in riparian areas have been developed, but they are easily compromised during a drought.

The problem is worse on rangelands north of the Yellowstone River and in the Tongue River watershed between Birney and Lame Deer. Additional information regarding range carrying capacity would help determine the scope of the conservation efforts required to positively impact the problem. As this concern is addressed, cattle grazing will be able to reliably graze range units so managers will be able to invest more time on grass management. It may be possible to serve 75% of the forage base in these areas by reliable stock water systems.

Water Quantity –Crop Lands

Insufficient water is a concern on irrigated and dry crop lands based on poor water infiltration rates on dry land and poor irrigation water use efficiency on irrigated lands. Heavy rainfalls over the past several years have made the problem more apparent. Addressing surface erosion and irrigation use efficiency is the solution and conservation efforts should be focused in the immediate Sunday Creek, Yellowstone River and Tongue River watersheds. Treating 80% of the surface erosion on dry crop lands in the Sunday Creek Watershed and increasing the water use efficiency of the irrigation water delivery and application systems in the immediate Yellowstone River and Tongue River watershed would successfully address the problem.

Soil Degradation – Rangelands

Organic matter is depleted or decreasing on rangelands across the county based on feedback from the Local Working Group. The problem is evident on most rangelands in the county. Grazing management is the solution; however, we don't know the intensity of management that is required to make an impact on organic matter levels across all rangeland ecological sites in Rosebud County. We think that 75% of rangeland managers, approximately 165 operators, in the county could learn and implement focused prescribed grazing management.

Soil Degradation – Crop Lands

Many cropland management systems in the county have less than 80% permanent ground cover or negative Soil Condition Index (SCI) ratings. There is a core group of soil health conscious producers that have adopted managements to address this resource concern and their outreach could be leveraged to get additional managers to adopt the soil health practices. The Yellowstone River Valley and North/South Sunday Creek water is where most of the problem lies.

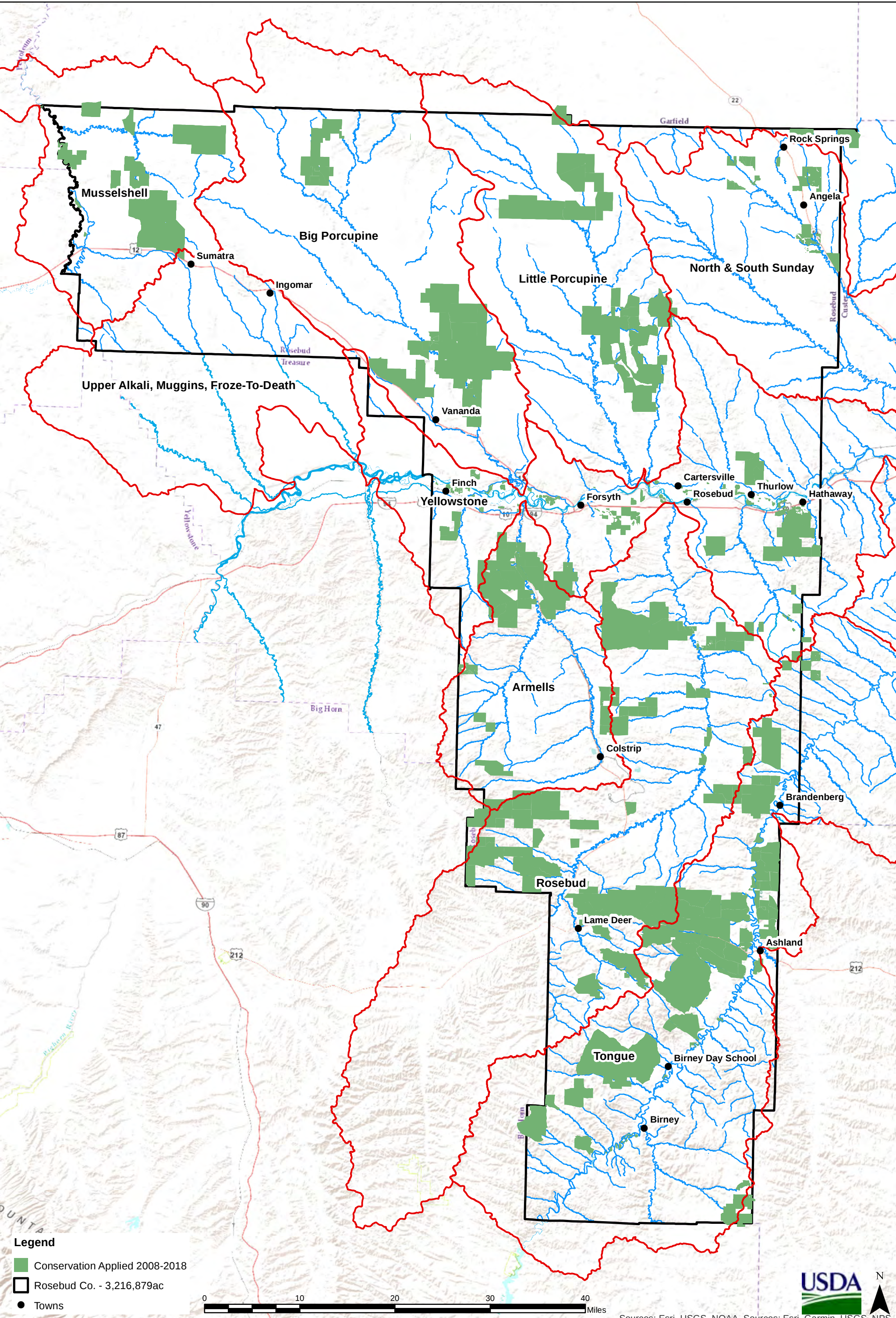
Water Quality – Riparian Areas & Natural Water Courses

Documented water quality concerns exist on eight rivers or creeks. We don't know if the problem has changed since these water ways were listed on the 303(d) list. The first course of treatment is to address animal feeding operations in the immediate riparian area. A complete count of these operations will be performed. Addressing runoff coming from 90% of operators could be achievable. Developing off stream water, introducing riparian grazing strategies, and installing crop land buffers is the next step. The acreage extent that these practices need to be implemented on before an effect is realized is unknown.

Rosebud County

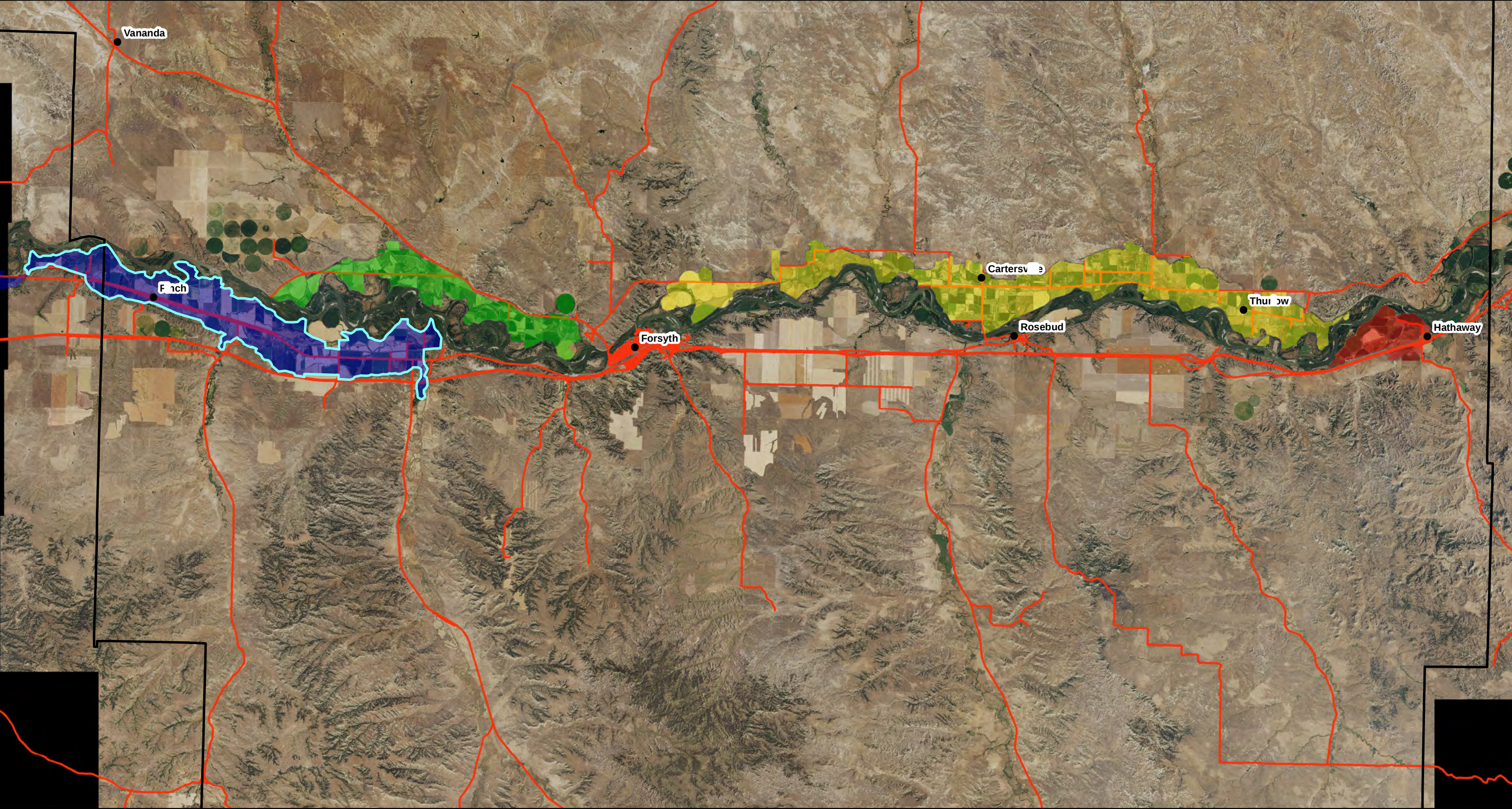
Historic Conservation Efforts

November 1, 2019
USDA-NRCS
Forsyth Field Office
Rosebud Co, MT
By: Danny Pratt



Rosebud County Irrigation Districts

October 24, 2019
USDA-NRCS
Forsyth Field Office
Rosebud Co, MT
By: Danny Pratt



Legend

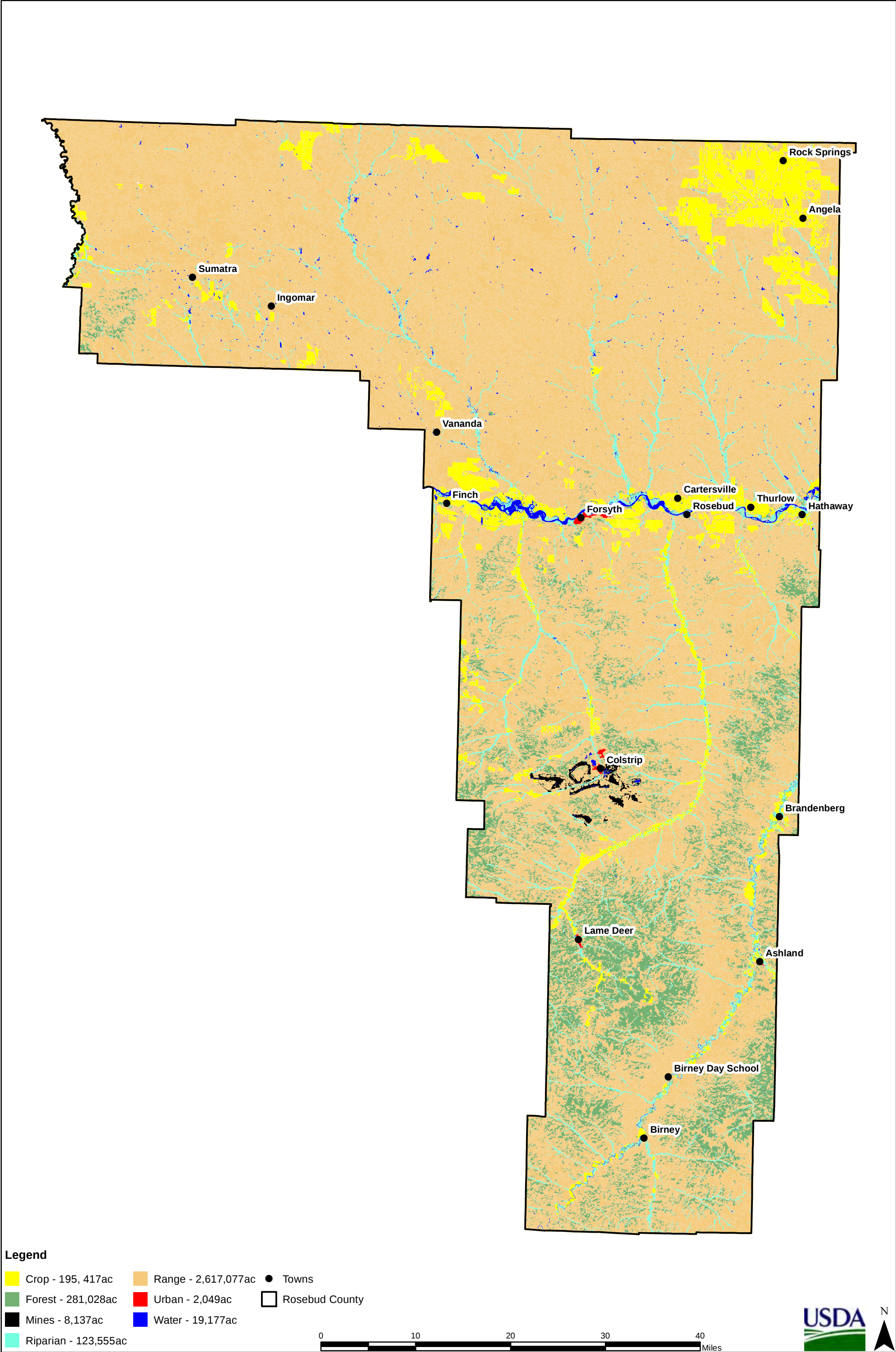
Rosebud Co. - 3,216,879ac	Cartersville ID - 12,725ac	Hathaway ID - 1,723ac	Public Roads
Towns	Hammond ID - 4,828ac	Yellowstone ID - 8,821ac (in Rosebud)	



Rosebud County

Land Use/Land Cover

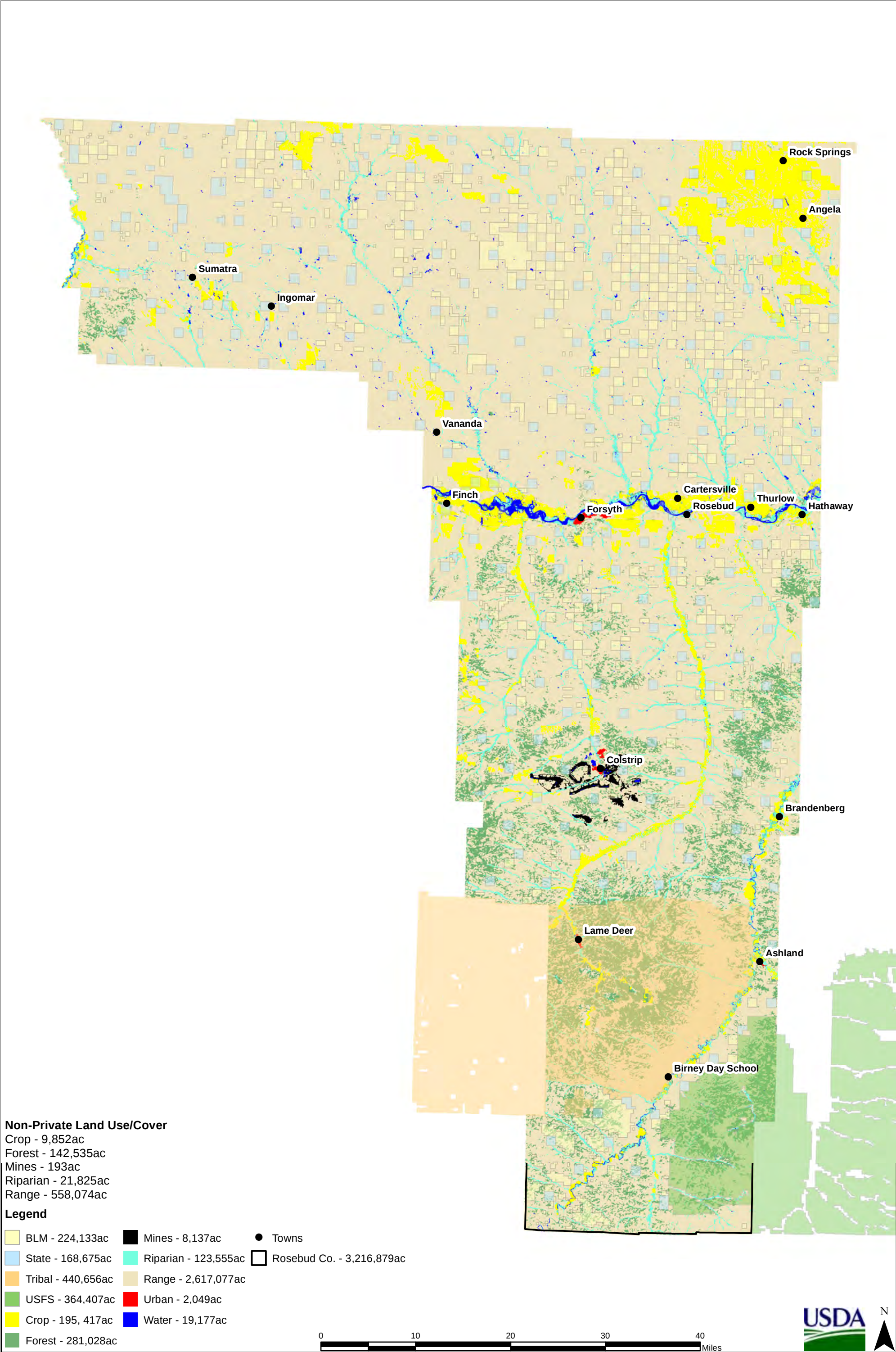
October 23, 2019
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Forsyth Field Office
Rosebud Co, MT
By: Danny Pratt



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Non-Private Ownership & Land Use/Cover

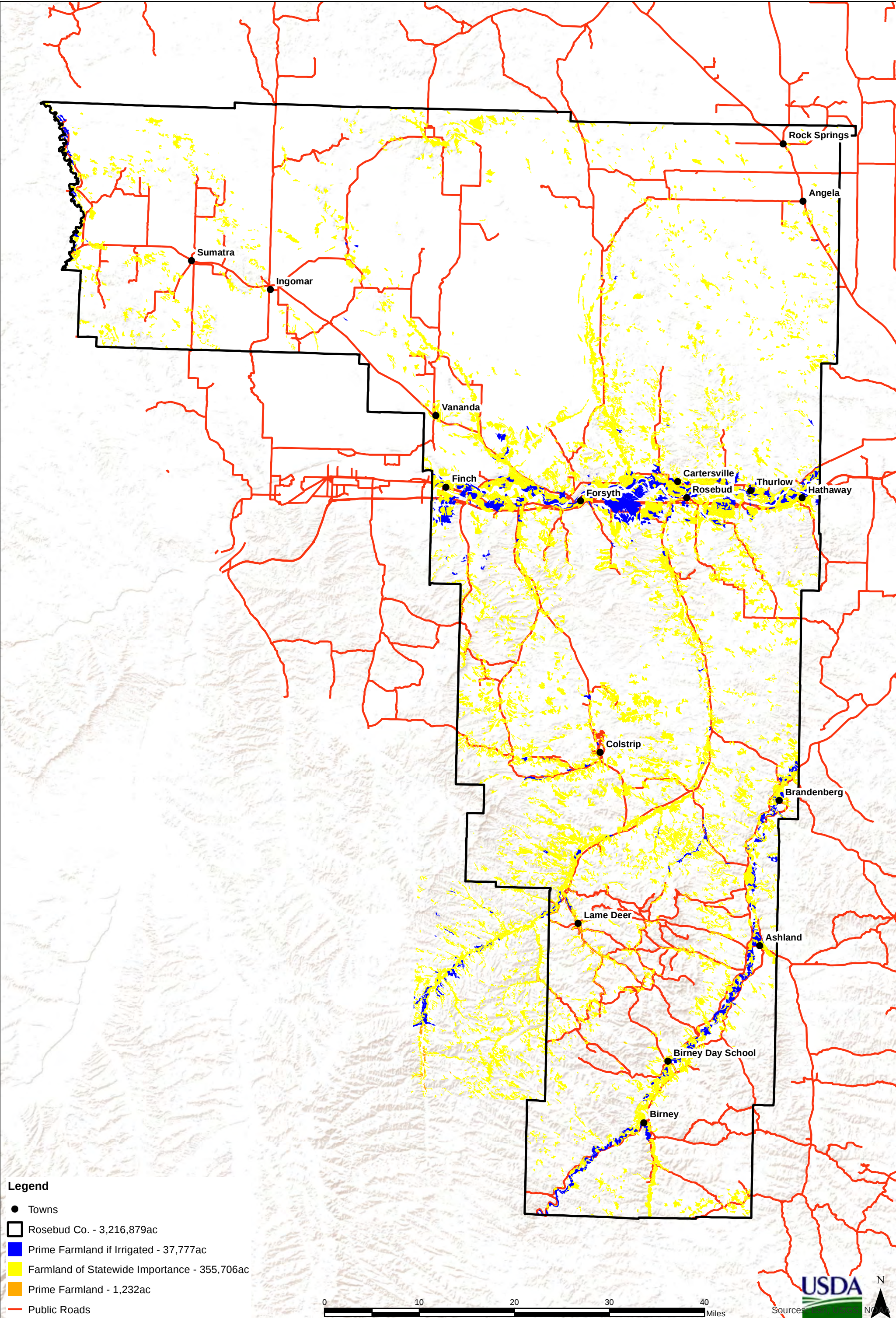
October 23, 2019
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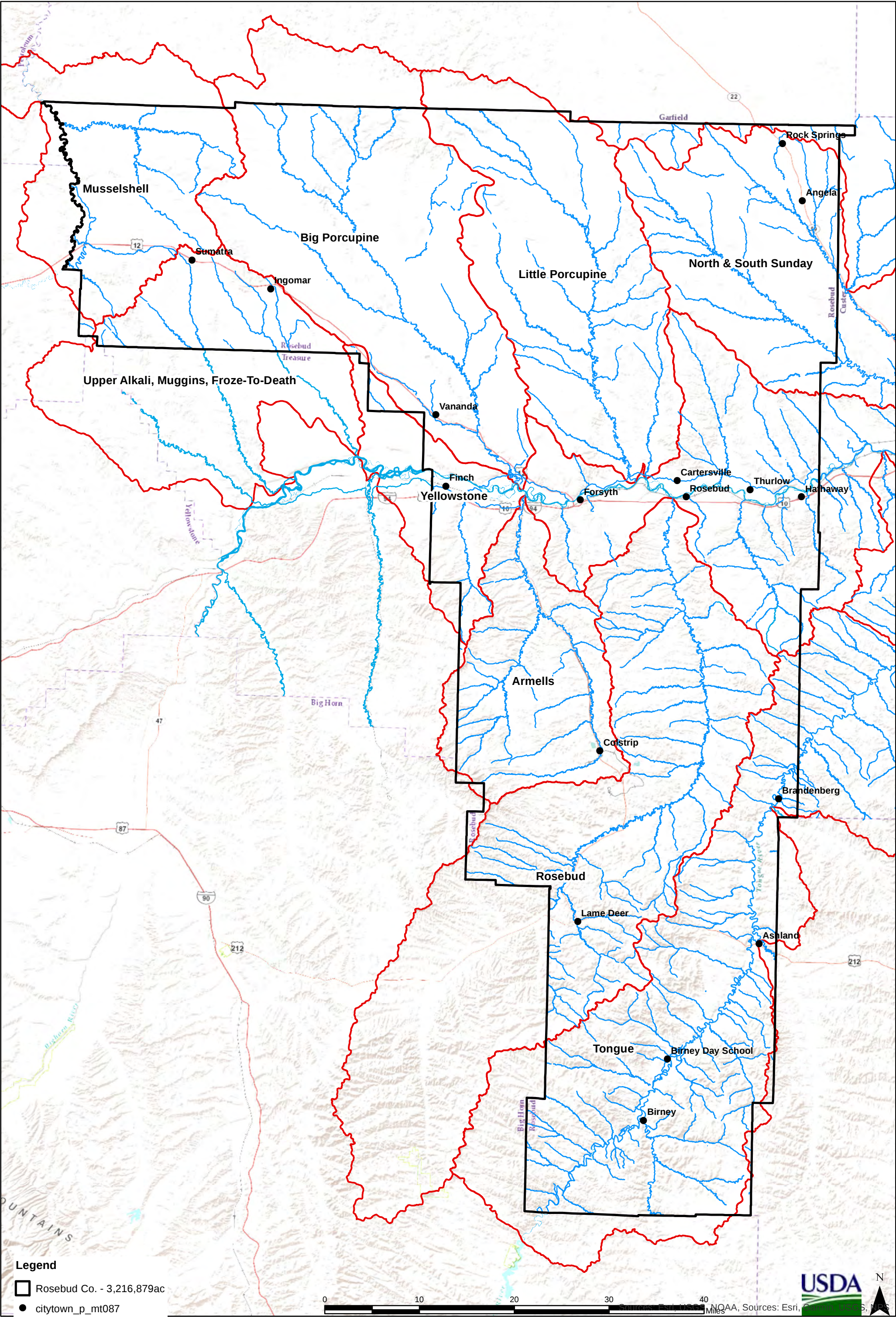
Valuable Agricultural Soils

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Rosebud County Watersheds and Streams

October 23, 2019
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Rosebud Co, MT
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Rosebud County

Greater Sage-Grouse Conservation Areas

January 31, 2020
USDA-NRCS
Forsyth Field Office
Rosebud Co, MT
By: Danny Pratt

