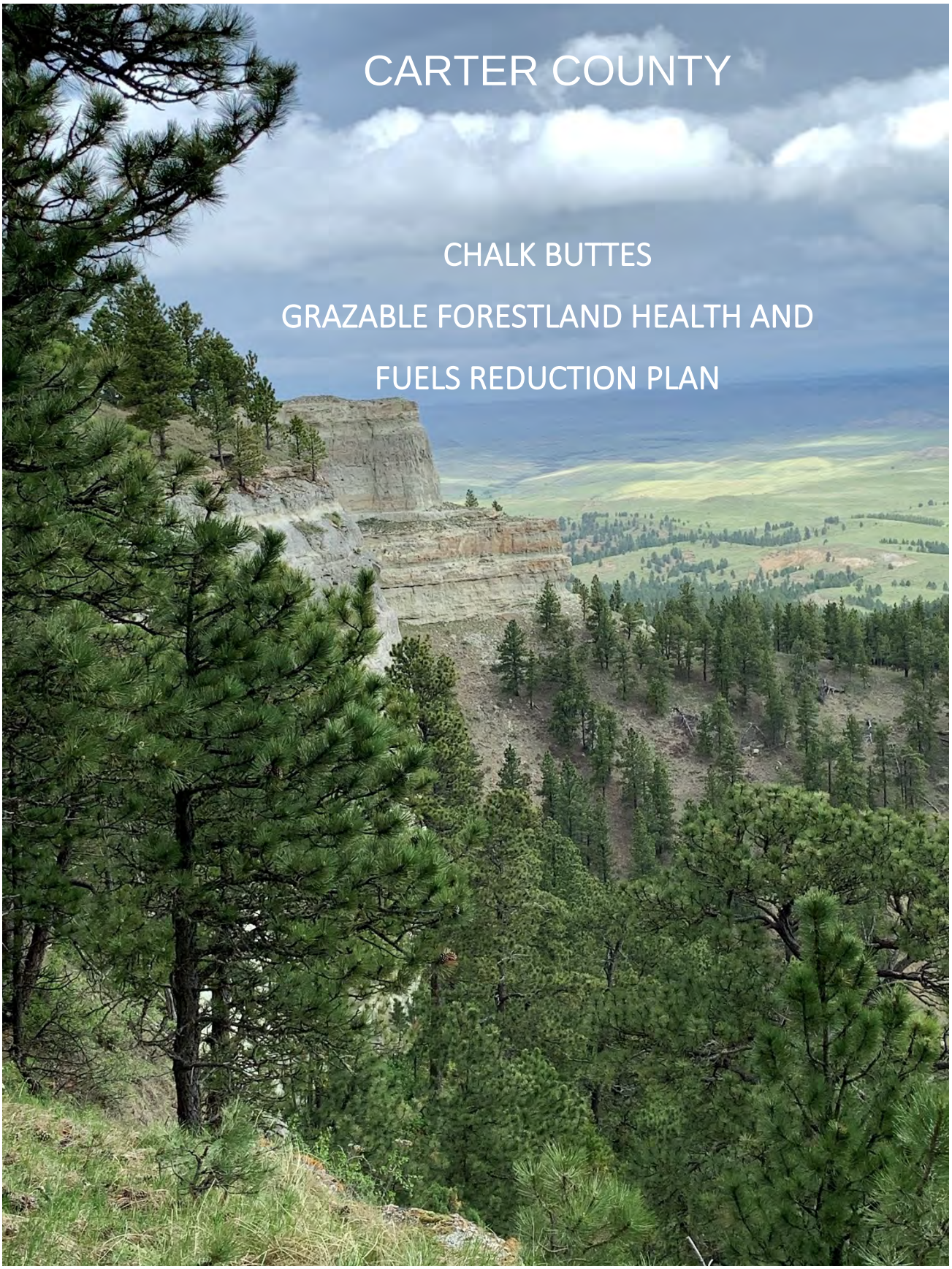
CARTER COUNTY
CHALK BUTTES
GRAZABLE FORESTLAND HEALTH AND
FUELS REDUCTION PLAN

Carter County TIP Proposal – Fiscal Year 2021

Forward

Throughout Carter County there are areas where grazable forestland is distinguished or delineated from the broader sagebrush steppe landscape. These areas include Long Pines, Ekalaka Hills, Chalk Buttes, Medicine Rocks, Mill Iron, Tie Creek, Sheep Mountains and Hammond. Management of the grazable forestland acres is a priority for the Local Work Group (LWG) in Carter County and the Carter County Conservation District (CCCD). As the described area is large in scope, it becomes necessary to break this effort into smaller pieces of work that may be accomplished within specific time frames. The LWG and the CCCD have chosen to prioritize the Chalk Buttes management area for conservation planning and potential funding associated with Montana NRCS Targeted Implementation Plans. The producers in the Chalk Buttes have recently self- initiated community-based discussions and conservation planning efforts geared towards forestland health and fuels reduction. This is an excellent base to build upon. Moving forward, the LWG and the CCCD wish to rotate grazable forestland conservation planning and funding around the county to treat similar resource concerns across the larger landscape.

Figure 1 – View looking north from the southern rim of the Chalk Buttes

Chalk Buttes Grazable Forestland Health and Fuels Reduction TIP

The Carter County Conservation District together with the Carter County Local Work Group have identified grazable forestland health as a priority resource concern. This proposal seeks to address the following resource categories: degraded plant condition and fire management. These categories include the following resource concerns: plant structure and composition and wildfire hazard from biomass accumulation. Targeted land uses include rangeland and grazable forestland. In Eastern Montana, forestland is more suited to livestock production and wildlife habitat, with timber harvest being a secondary, less frequent objective for landscape management. Therefore, the overall objective is to create heathy, productive, fire resilient Ponderosa Pine Savannas.

Overview:

The Chalk Buttes area consists of a mixture of private lands and lands managed by the United States Forest Service (USFS – Custer Gallatin National Forest – Sioux Ranger District), United States Department of Interior Bureau of Land Management (USDI-BLM – Miles City Field Office) and the Montana Department of Natural Resources and Conservation (MT-DNRC – Miles City - Eastern Land Office). The lands are predominately native range mixed with grazeable forestland. Perennial cropland (hay), pastureland and annual cropland (small grains) make up the remaining acreage.

The Chalk Buttes are intrinsically valuable to Carter County. Named for the prominent rugged, limestone formations, the area has rare beauty, diverse and unique plant communities, abundant wildlife and value for livestock grazing, timber harvest and public recreation. In recorded history, the Chalk Buttes have not experienced a catastrophic fire event. In 1985, fire consumed grazeable forestland acres on the northeast edge of the Chalk Buttes. Since then, there have been spot fires that have been quickly controlled.

Following the drought of 1988, local landowners noticed rapid expansion (encroachment) of conifer species, specifically ponderosa pine (*Pinus ponderosa*) and Rocky Mountain juniper (*Juniperus scopulorum*) in areas that were historically meadows or open rangeland (sagebrush steppe). The opinion was that drought weakened native grasses and forbs, creating open spaces in the landscape that were then filled by tree seedlings. According to one producer, many junipers were mature enough by 1988 to produce seed, which then was distributed by wildlife across the landscape. There were already many mature “seed” trees to disperse ponderosa pine seed in ideal conditions to maximize establishment.

In 2012, the Dugan Fire burned in the Ekalaka Hills east of the Chalk Buttes. The Dugan Fire was catastrophic due to extensive fuel loading, fuel ladders (firefighting term for live or dead vegetation that allows fire to climb up from the forest floor into the tree canopy) and dry conditions. This fire burned intense and hot. Vegetation has been slow to re-establish, leaving the steep slopes of the Ekalaka Hills susceptible to water and wind erosion. As of this last summer, 7 years later, vegetation has re-established and erosion has slowed, but there is an entire “crop” of standing, burned ponderosa pine trees with little or no value to the county. The dead trees are being cut and piled to remove those fuels from the area and facilitate noxious weed treatments. The Dugan Fire affirmed grazable forestland as a conservation planning priority in Carter County.

It is well accepted, and feared, that a catastrophic fire in the Chalk Buttes is imminent. Conifer encroachment, fuel loading and general lack of access to the area is creating the perfect storm. Stakeholders agree that creating an environment conducive to fire management efforts is crucial moving forward. Managed fire coupled with managed grazing will be key to maintaining healthy, productive ponderosa pine savannas long term.

Ponderosa pine dominate a landscape by developing an enclosed canopy cover that restricts the growth and production of the herbaceous understory. Historically, the elevations and lower precipitation zones associated with Carter County limited the ability or tendency of ponderosa pine to become a climax species. The historic fire regime also curbed the spread of ponderosa pine into adjacent sagebrush steppe. However, ponderosa pine is now expanding its range in Carter County.

A local historian associates conifer encroachment with fire suppression and the linear increase in average annual precipitation since 1883. When graphed, the data indicates that average annual precipitation has increased from approximately 13 inches to greater than 15 inches. As 14 inches of precipitation is a minimum for ponderosa pine, it would seem logical that the species is expanding in range. [1]

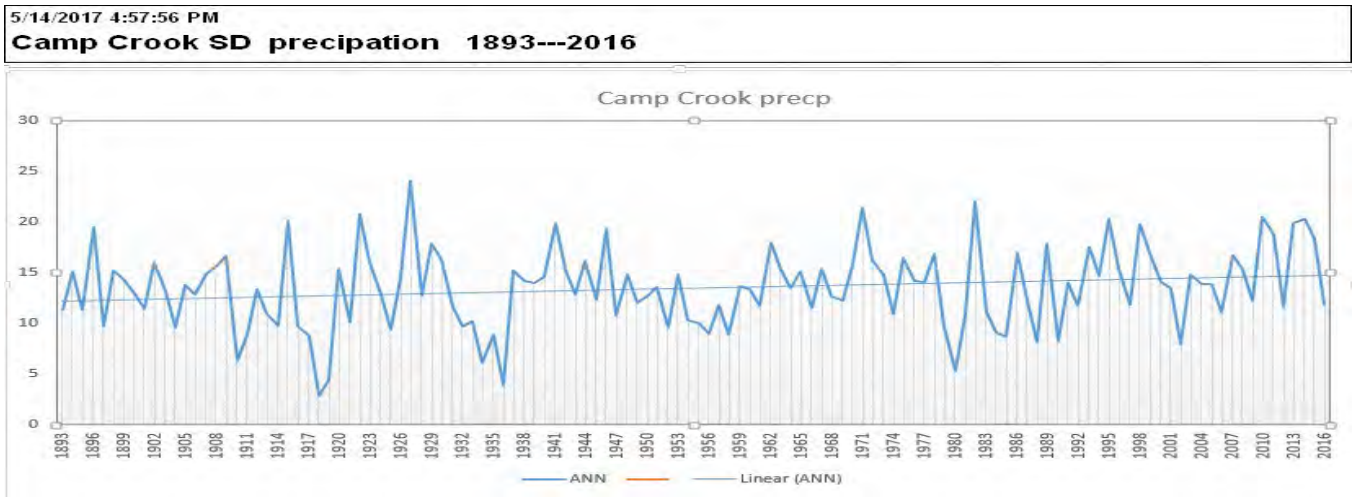

Figure 2 - Precipitation Graph - Camp Crook, SD

Problem Statement/Discussion:

As of 2020, the Chalk Buttes are overgrown with ponderosa pine. The stands are so dense that it is difficult for landowners to effectively graze the herbaceous understory with livestock, thus reducing the stocking capacity of the affected acres.

Rocky Mountain juniper is also encroaching, but principally into the peripheral areas surrounding the buttes. This landscape forms the eastern edge (rim) of the Powder River breaks and is comprised of sagebrush steppe interspersed with coulees (mesic areas). The diverse height, canopy cover and growth form of the big sagebrush coupled with a productive understory of native grasses provides ideal nesting and brood rearing habitat for Greater Sage Grouse with nearby leks.

[1] Ned Summers

Unfortunately, the encroaching juniper is creating visual obstructions across the landscape, reducing nesting and brood rearing habitat quality.

Purpose, Goals and Objectives:

In 2015, a local landowner contacted the NRCS office with a proposal. He was interested in forming a landowner's group for the purpose of developing a landscape level management plan for the Chalk Buttes and possibly securing funding to implement the plan. The landowner and the local Range Management Specialist, with permission and assistance from the Carter County Conservation District (CCCD), organized a public meeting at the Carter County Events Center.

The meeting was well received. 25 people attended and discussed forest health concerns. The group included local landowners, the Carter County Conservation District, NRCS, USFS, BLM, DNRC, Ekalaka Volunteer Fire Department, Carter County Sheriff and the Carter County Disaster and Emergency Services. The NRCS State Forester and the USFS District Ranger (Camp Crook, SD) spoke about forest health, forest management and the role of fire. The local Soil Conservationist created basic plan maps for each producer that attended. The maps were distributed to facilitate discussion and early planning efforts.

The landowners and agencies mutually agreed that a management plan should be developed for the Chalk Buttes area, with the following objectives: 1) improve grazable forestland health; 2) promote resilient and productive herbaceous understory communities; 3) prepare the land use for future timber harvest; 4) enhance and restore the deciduous component of woody draws, preserving their unique values and enhancing wildlife habitat; *5) prevent catastrophic fire events.*

Inventory:

Following the public meeting, the NRCS State Forester suggested the Ekalaka Field Office start the inventory process and spent time at the Ekalaka Field Office working on-site with the initial landowner while also providing training to local staff. The State Forester recommended the Field Office utilize GIS technology to gather inventory information prior to ground truthing. The GIS task was delegated to the Miles City Area (MCA) Rangeland Management Specialist. The mapping effort identified slope, aspect, tree canopy density and woody draws with deciduous trees. Acres with greater than 35% slope will not be considered for treatment. Individual plan maps were created for each landowner to assist with future inventory and planning efforts.

Analysis:

The ARCGIS mapping effort identified 4,633 treatable private land acres and 3,457 treatable public land acres with ponderosa pine canopy cover on slopes of less than 35% in the Chalk Buttes area. Slopes less than 35% are generally considered assessible for treatment.

Planning Alternatives:

In the spring of 2018, the same group of landowners met again with USFS and NRCS to review and analyze the results of the mapping effort. It was apparent that landowners and agencies were equally committed to a long-term management philosophy. Without post-treatment management and

subsequent planning, the problem will repeat. The following alternatives were developed to address resource concerns.

- *Resource Concerns – plant structure and composition and* wildfire hazard from biomass accumulation

  Create defendable spaces for the purpose of fire management, not just fire control. This would include the re-creation of historic, interconnected meadows, construction of strategic fuel breaks, clearing timber away from existing roads, widening and improving the existing road infrastructure and long-term management of fuel ladders. The group discussed the lack of access and adequate escape routes for people and livestock on the west side of the Chalk Buttes.

  Reduce ponderosa pine canopy cover in woody draws through directional felling, placing and strategic thinning to lessen conifer canopy cover and create space for deciduous tree and shrub species including green ash (Fraxinus pennsylvanica), box elder (Acer negundo), American elm (Ulmus americana), quaking aspen (Populus tremuloides), paper birch (Betula papyrifera), river birch (Betula nigra), chokecherry (Prunus virginiana), juneberry (Amelanchier alnifolia), current (Ribes spp.), American plum (Prunus americana), Hawthorn (Crataegus mollis) and buffaloberry (Shepherdia argentea). The USFS has observed an expansion of quaking aspen in all three of its Carter County management units (Chalk Buttes, Ekalaka Hills, Long Pines). However, the challenge is now to direct treatments that reduce pine competition and provide a more open understory, allowing all age classes of aspen to continue to expand. In time, the quaking aspen stands should act as natural fuel breaks.[2] Green ash is the tree of most local significance. Historically, ash draws have provided cover and shelter habitat for livestock and wildlife during winter storm events and calving season. Ash trees also provide firewood for the community. County-wide, the agricultural community is very concerned about the lack of tree and shrub regeneration in woody draws, in riparian areas and along creek and river systems.

  Utilize local knowledge and historic imagery to Identify and re-create meadows to improve the structure and composition of herbaceous vegetation, promote diversity across the spectrum of plant communities; enhance forage quality and quantity for livestock and wildlife and facilitate fire management.

  Clean up thickets of "doghair timber" (also referred to as "jack pine"). "Jack pine" thickets consist of small (height and diameter), poorly spaced trees that shade out the herbaceous understory. These trees have no value for timber sale and reduce the carrying capacity of grazable forestlands. The thickets create dense, complex fuel ladders that make fire management difficult. "Jack pine" have some value to wildlife and this fact should be considered in the planning process.

[2] Kurt Hanson. District Ranger. Forest Service. Custer Gallatin National Forest. Sioux Ranger District

Pre-commercial thinning and spacing of trees for the purpose of improving the quality of trees for future timber harvest and fire management. In stands of Ponderosa Pines that are well spaced, fires are more apt to stay on the ground and burn herbaceous vegetation vs. crowning. Additionally, pre-commercial thinning will enhance herbaceous understories for terrestrial habitat and livestock forage.

Outcomes:

- Ponderosa pine savannahs comprised of healthy trees spaced at appropriate distance to create canopies conducive to the plant communities that evolved in this region.
- Woody draws with adequate space and light for native, deciduous trees to successfully establish.
- Productive and resilient herbaceous understories. Plant community structure, composition and production will closely resemble that described in the ecological site descriptions for MLRA 58A and the grazable forestland guides for ponderosa pine.
- Fire resilient landscape

Figure 3 - Managed grazable forestland (USFS) in the Long Pines following mastication treatment of pine seedlings and saplings.

Measurement of Outcomes/Monitoring:

Monitoring plots will be established as needed to measure and evaluate outcomes. At a minimum, on each conservation management unit, monitoring transects will be established in key areas to measure the response of the herbaceous understory to ponderosa pine canopy reduction. The transects will measure ground cover, coniferous canopy cover, deciduous tree and shrub canopy cover, species composition of the herbaceous understory and forage production. The monitoring transects will serve to track the establishment of new ponderosa pine seedlings and aid in decisions regarding further treatments that may be necessary to maintain meadows and fuel breaks long term. Transects will be established in woody draws to track changes in herbaceous production and the regeneration of native, deciduous tree and shrub species. Through the 645 practice, upland game bird populations will be monitored (sharptail grouse, greater sage grouse, turkey) to determine how these species responding to management.

Partner Potential:

The Forest Service (USFS) is supportive of the local planning effort and interested in partnering with this project, the idea being that NRCS could assist landowners with the management of private, grazeable forestland and the Forest Service could then prioritize management on neighboring USFS acres, creating a greater, contiguous landscape level impact. The District Ranger – Custer Gallatin National Forest - Sioux Ranger District - Camp Crook, SD, is the primary contact. The USFS re-developed, widened and lengthened the road into Trenk Pass in the Chalk Buttes in the Summer 2019. The road improvements will allow equipment, necessary for logging and fire prevention/management, to access the west side of the Buttes. The Forest Service is communicating and coordinating with the Carter County Commission regarding this project. The USFS expects a NEPA decision in 2020 that would allow the agency to plan and implement treatments focused on woody draw regeneration and meadow restoration in the Chalk Buttes. This would mainly be a hazardous fuels project with thinning and prescribed burning to reduce stem density of pine while promoting aspen and other hardwood species like paper birch. The agency would not yet be able to address large landscape area treatments such as timber sales. Another project that would encompass the Ekalaka Hills and Chalk Buttes is farther out in planning, at least five years on the current Forest Project schedule. The Forest Service is also interested in partnering with DNRC and BLM. [3]

In 2019, the Carter County Conservation District and Ekalaka Field Office staff met with the Montana – Department of Natural Resources and Conservation (DNRC) Forester, stationed at the Eastern Land Office - Miles City, MT, to discuss grazable forestland management and potential state funding sources. DNRC's forestry philosophies were communicated, example forestry plans presented, and potential fund sources explained. DNRC is actively seeking grant dollars to fund similar forestry projects in the Chalk Buttes on DNRC lands.

On July 22, 2020, there was a joint meeting between the CCCD, USFS, DNRC and NRCS. We discussed the TIP proposal, studied maps of the Chalk Buttes area and discussed the future course of

[3] Kurt Hanson. District Ranger. Forest Service. Custer Gallatin National Forest. Sioux Ranger District

grazable forestland management in Carter County. DNRC has received a grant to be used in the Chalk Buttes on private lands. They will be receiving one more grant. The DNRC Forester is hoping to find a smaller project to carve out of the larger focal area which could be used to demonstrate forest management to a larger Carter County audience.[4]

Plank Stewardship Initiative would consider providing seed for critical area plantings.

National Wild Turkey Federation would consider partnering with USFS to enhance the deciduous draws in the Chalk Buttes area.

Presently there is tremendous local interest in the project. Landowners from other areas in the county are supportive as well and have inquired about beginning work on similar proposals.

[4] Andrew Miller. Forester. DNRC – Eastern Lands Office, Miles City, MT.

Proposal

Timeline:

The signup periods will be in fiscal years 2021, 2022 and 2023. As EQIP applications are submitted, producers will work with DNRC staff to develop conservation plans (forest management plans) for each conservation management unit. The plans will identify resource concerns, treatment areas, conservation practices and practice extents.

Through an EQIP contract, financial assistance will be available to help local producers implement the conservation practices and respective practice extents identified in the Forest Management Plans.

Implementation of the EQIP contracts associated with the Forest Management Plans would begin in 2022. Implementation would include the establishment of monitoring transects to track outcomes.

Practices:

666 – Forest Stand Improvement (Scenarios 10, 52)

383 – Fuel Break (Scenario 7)

314 – Brush Management (Scenario 1)

315 – Herbaceous Weed Treatment (Scenario 3)

342 – Critical Area Planting (Scenario 36)

528 – Prescribed grazing (Scenario 12) (grazing deferment up to one year to facilitate brush management)

645 – Upland Wildlife Habitat Management (Scenario 1)

Budget

Total Requested: $2,000,000

Breakdown:

Forest Management Plans (15) = **$38, 319**

3 - 21-100 acres plan ($1,338.48 ea. = $4,015.44)

1 - 101-250 acres plan ($2,398.11 ea. = $11,990.55)

8 - 251-500 acres plan ($3,457.74 ea.)

3 - < or = 20 acres plans ($1,059.64 ea. = $6,357.84)

Rangeland - 3327 acres (includes DNRC lands)

Practice Code	Practice Name	Cost per Unit	Units (Acres)	Estimated Cost
314	Brush Management – Scenario 1	$308.18	3127	$963,679
383	Fuel Break – Scenario 7	$692.09	200	$138,418
315	Herbaceous Weed Treatment – Scenario 3	$90.31	50	$4,516
342	Critical Area Planting – Scenario 36	$83.63	15	$1,255
528	Prescribed Grazing –Scenario 12	$6.50	2827	$18,376
645	Upland Wildlife Habitat Management – Scenario 1	$13.43	500	$2,686
			Total	**$1,129,893**

Forestland – 1770 acres (includes DNRC lands)

Practice Code	Practice Name	Cost per Unit	Units (Acres)	Estimated Cost
383	Fuel Break – Scenario 7	$692.09	500	$314,545
666	Forest Stand Management – Silvicultural - Scenario 52	$418.69	1120	$510,802
666	Forest Stand Management – Aspen Regeneration – Scenario 10	$256.28	100	$1,314
315	Herbaceous Weed Treatment – Scenario 3	$90.31	50	$4,516
342	Critical Area Planting – Scenario 36	$83.63	20	$1,673
528	Prescribed Grazing – Scenario 12	$6.50	1520	$9,880
645	Upland Wildlife Habitat Management – Scenario 1	$13.43	250	$858
			Total	**$843,588**

Budget Timeline (Scheduled Obligations):

	2021	2022	2023	2024	2025
Forest Management Plans	$12,500	$20,000	$5,819		
Facilitating and Management Practices	$100,000	$648,500	$550,000	$460,000	203,181
				Total	$2,000,000

Example Large Acreage Planning and Cost Scenario:

Practice Code	Practice Name	Cost per Unit	Units (Acres)	Estimated Cost
	Forest Management Plan (DNRC)	$3,457.74	1	$3457.74
314	Brush Management – Scenario 1	$308.18	280	$86,290.4
383	Fuel Break – Scenario 7	$692.09	50	$34,604.5
666	Forest Stand Management – Silvicultural - Scenario 52	$418.69	170	$71,177.3
666	Forest Stand Management – Aspen Regeneration – Scenario 10	$256.28	20	$5,125.6
315	Herbaceous Weed Treatment – Scenario 3	$90.31	2	$180.62
342	Critical Area Planting – Scenario 36	$83.63	1	$83.63
528	Prescribed Grazing – Scenario 12	$6.50	450	$2,925
645	Upland Wildlife Habitat Management – Scenario 1	$13.43	50	$671.5
			Total	**$204,516.29**

Example Small Acreage Planning and Cost Scenario:

Practice Code	Practice Name	Cost per Unit	Units (Acres)	Estimated Cost
	Forest Management Plan (DNRC)	$1,338.48	1	$1,338.48
314	Brush Management – Scenario 1	$308.18	20	$6,163.60
383	Fuel Break – Scenario 7	$692.09	7	$4,850.30
666	Forest Stand Management – Silvicultural - Scenario 52	$418.69	28	$11,728.32
666	Forest Stand Management – Aspen Regeneration – Scenario 10	$256.28	2	$512.40
315	Herbaceous Weed Treatment – Scenario 3	$90.31	.5	$45.16
342	Critical Area Planting – Scenario 36	$83.63	.2	$16.73
528	Prescribed Grazing – Scenario 12	$6.50	50	$325
645	Upland Wildlife Habitat Management – Scenario 1	$13.43	10	$134.30
			Total	**$25,114.29**

Ranking

- Does the application include privately owned grazable forestland bordering publicly owned grazable forestland?
- Does the application include grazable forestland located on the west and or south rim/s of the Chalk Buttes?
- Does the application include practices 314 and 315?