Environmental Assessment Checklist

Project Name: East Pioneers Conifer Encroachment Treatment Project
Proposed Implementation Date: Summer – Fall of 2024
Proponent: Dillon Unit, Central Land Office, Montana DNRC
County: Beaverhead

Type and Purpose of Action

Description of Proposed Action:

The Dillon Unit of the Montana Department of Natural Resources and Conservation (DNRC) has received a request from the SW Montana Sagebrush Partnership (SMSP) for conifer encroachment removal projects in the East Pioneers of Beaverhead County (T2S, R9W, Section 16 & T2S, R10W, Section 36). Approximately 665 acres of conifer encroachment removal and a potential prescribed burn are proposed across two locations, see **Exhibit A – Project Location Map,** on DNRC State Trusts Lands tracts held in trust for the Common Schools grant. The project is cross-boundary in nature, involving collaboration between the DNRC, the Bureau of Land Management (BLM), the United States Forest Service (USFS), and a private landowner, with the work facilitated by the SMSP. In total, approximately 1,046 acres of BLM land, 468 acres of USFS land, and 31 acres of private land will be treated for conifer encroachment removal, encompassing a treatment area of roughly 2,210 acres.

The primary goal of the project is to improve sage grouse, wet meadow, and mountain mahogany habitats by removing scattered Douglas-fir and Rocky Mountain Juniper from sagebrush-grassland areas. Additional benefits will include a reduction in wildfire severity and improved rangeland for wildlife and livestock. This project is expected to begin as early as the summer-fall of 2024 and may extend up to 5 years. Monitoring will be conducted by the DNRC, SMSP, BLM, USFS, and the private landowner to assess treatment effectiveness and identify necessary adjustments.

Conifer encroachment has been identified as a considerable threat to sage grouse conservation (80 FR 59858, October 2, 2015) while also threatening other wildlife, increasing the risk of more severe wildfires, and reducing forage for wildlife and livestock. Reducing the prevalence of rangeland-invading trees has been identified as an important objective for this region of southwest Montana. All the proposed work will occur in General Sage Grouse Habitat.

Objectives of the Project:

1. Eliminate low-density conifers that are encroaching into sagebrush, wet meadow, and mountain mahogany habitats on the described State Trust Lands, as well as adjacent BLM, USFS, and private land. Targeted tree species include Douglas-fir and Rocky Mountain Juniper, while all five-needle pine will be reserved.
2. Hands crews managed by SMSP would cut all visible conifers under a 12-inch Diameter Breast Height (DBH) within the treatment boundaries and with the trees being lopped and scattered so that all remaining slash is below sagebrush height or 18 inches. This is expected to improve habitat diversity within the project area and adjacent lands for several decades.

3. There is potential for prescribed fire to be utilized in the project area, the use of prescribed fire would increase the longevity of the conifer removal treatment while encouraging multi-age sagebrush stands and reduced fuel loads.

The project is informed by the observed expansion of Douglas-fir and Rocky Mountain Juniper into historical sagebrush habitats. The SMSP has mapped the project area using aerial photography, GIS modeling of conifer cover increase, and site inspections. The project area is identified as a Phase I conifer encroachment, characterized by sagebrush and grass with scattered conifers typically less than 2 meters tall.

Duration of Activities:
The project is slated to begin in the summer-fall of 2024 and could continue for up to five years.

Project Development

SCOPING AND PUBLIC INVOLVEMENT:
A specific project scoping notice was sent to individuals and organizations likely to have an interest in the proposal and project area. Notices were sent out on June 21, 2024. The comment deadline was July 22, 2024.

INDIVIDUALS & ORGANIZATIONS SCOPED:
Southwest Montana Sagebrush Partnership
Beaverhead County Commissioners
Dave & Sherrie Carriger
Diamond T Livestock LLC
Hans Lund
Aaron & Alder Orme
Will & Vicki Joyce
Trapper Creek Ranch
Kelly Motichka, Ag & Grazing Bureau Chief
Dan Rodgers, FMB Bureau Chief
Jessy Newby, MT FWP Wildlife Biologist

SUMMARY OF COMMENTS RECEIVED:

No comments were received.

In accordance with the Montana Environmental Protection Act, public concerns about the project and potential environmental impacts must be considered and analyzed prior to making the decision of whether to allow permission for this proposal to be approved.

Accommodations were made for the public to submit comments electronically using letters, phone calls, and the email account michaela.kalinowski@mt.gov.

OTHER GOVERNMENTAL AGENCIES WITH JURISDICTION, LIST OF PERMITS NEEDED: *(Conservation Easements, Army Corps of Engineers, road use permits, etc.)*

- **Montana Sage Grouse Habitat Conservation Program** – The DNRC-Dillon Unit submitted a conservation project application in accordance with Executive Order 12-2015, the project will only go forward if the DNRC receives a letter of adherence from the Montana Sage Grouse Oversight Team (MSGOT).

- **Montana Department of Environmental Quality (DEQ)** – DNRC is classified as a major open burner by DEQ, DNRC is issued a permit from DEQ to conduct burning activities on state lands managed by DNRC. As a major open-burning permit holder, DNRC agrees to comply with the limitations and conditions of the permit.

- **Montana/Idaho Airshed Group** – DNRC is a member of the Montana/Idaho Airshed Group, which regulates prescribed burning, including both slash and broadcast burning, related to forest-management activities performed by the DNRC. As a member of the Airshed Group, the DNRC agrees to only burn on days approved for good smoke dispersion as determined by the Smoke Management Unit in Missoula, Montana.

ALTERNATIVES CONSIDERED:

During the development of this project, two distinct alternatives were considered, which include the Proposed Action Alternative and the No Action Alternative.

Proposed Action Alternative – Under the Action Alternative, DNRC would allow the SMSP to implement conifer removal activities on state trust lands.

No Action Alternative – Under the No Action Alternative, the DNRC would not authorize the SMSP to implement the project on state trust lands.

Impacts on the Physical Environment

Evaluation of the impacts on the No-Action and Action Alternatives including **direct, secondary, and cumulative** impacts on the Physical Environment.

VEGETATION:

Vegetation within the Project area consists of native grazing land in a rest rotation system and is considered to have a fire regime group 5 – moderately cool and dry (*Fisher, 1987*)[1]. Field evaluations conducted by DNRC staff in 2021 found traces of Canada Thistle (*Cirsium arvense*) in Section 36, T2S, R10W within wet areas. Surrounding land consists of BLM, USFS, and private grazing land.

A data query from the Montana Natural Heritage Program (June 19, 2024) was conducted to identify Species of Concern in the proposed treatment area. Various plant species were identified as Species of Concern within/near the project area, see **Exhibit B – Environmental Summary Report**, however, a grazing field evaluation conducted by DNRC staff on October 22, 2021, did not note any plant Species of Concern.

The SMSP has mapped the project area using aerial photography, GIS modeling of conifer cover increase, and site inspections. The project area (app. 665 acres) is identified as a Phase I

[1] Fisher, W.C., and A.F. Bradley. 1987. Fire Ecology of Western Montana Forest Habitat Types. USFS General Technical Report INT-223.

conifer encroachment, characterized by sagebrush and grass with scattered conifers typically less than 2 meters tall.

Vegetation	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
No-Action														
Noxious Weeds	**x**				**x**				**x**					
Rare Plants	**x**				**x**				**x**					
Vegetative community	**x**					**x**				**x**			**No**	**1.**
Action														
Noxious Weeds		**x**				**x**				**x**			**Yes**	**2.**
Rare Plants	**x**				**x**				**x**					
Vegetative community		**x**				**x**				**x**			**Yes**	**3**

Comments:

1. If the project area is not treated, conifer encroachment will continue into sagebrush/grassland-dominated vegetation community types. As no activities would occur or be possible under this alternative, no mitigations would be possible to reduce this occurrence.

2. Disturbance of vegetation through conifer removal and prescribed burn treatments have the potential to create favorable conditions for Canada Thistle establishment, however, weed management control before and after project activities as well as monitoring are expected to mitigate the potential spread of noxious weeds.

3. Beneficial effects on native plant communities in the area would be expected from conifer removal and prescribed burn treatments by reducing the continuity of fuels and creating mosaic breakups that would reduce the potential of high-intensity wildfires.

SOIL DISTURBANCE AND PRODUCTIVITY:

A Natural Resources & Conservation Service (NRCS) data query identified 13 soil types within the project area, see **Exhibit C – Soil Report**. The Soil Report indicated that approximately 9.4% of soils within the project area have a “High” potential for damage by intense fire, approximately 5.9% have a moderate potential, and approximately 84.3% have a low potential.

Soil Disturbance and Productivity	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
No-Action														
Physical Disturbance (Compaction and Displacement)	**x**				**x**				**x**					
Erosion	**x**				**x**				**x**					
Nutrient Cycling	**x**				**x**				**x**					
Slope Stability	**x**				**x**				**x**					
Soil Productivity	**x**				**x**				**x**					

Soil Disturbance and Productivity	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
Action														
Physical Disturbance (Compaction and Displacement)		**x**				**x**				**x**			**Yes**	**1.**
Erosion		**x**				**x**				**x**			**Yes**	**1.**
Nutrient Cycling		**x**				**x**				**x**			**Yes**	**1.**
Slope Stability		**x**				**x**				**x**			**Yes**	**1.**
Soil Productivity		**x**				**x**				**x**			**Yes**	**1.**

Comments:

1. Prescribe fire, if applied to the project area, has the potential to negatively impact soil nutrients, and physical and biotic soil characteristics if the fire is intense enough to remove the duff layer and consume organic matter in the surface layer. To mitigate these negative effects the prescribed burn plan would include prepping any burn areas to prevent a high-intensity burn.

WATER QUALITY AND QUANTITY:

Section 16, T2S, R9W is located app. 0.50 miles south and west of the Big Hole River and app. 1.75 miles northeast of Trapper Creek. Section 36, T2S, R10W is located app. 1.00 miles south of Trapper Creek and app. 1.50 miles north of Cherry Creek.

Water Quality & Quantity	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
No-Action														
Water Quality	**x**				**x**				**x**					
Water Quantity	**x**				**x**				**x**					
Action														
Water Quality	**x**				**x**				**x**					
Water Quantity	**x**				**x**				**x**					

Comments:

No anticipated effects were identified.

FISHERIES:

Per Montana Fish Wildlife & Parks (FWP) Brown Trout, Rainbow Trout, and Westslope Cutthroat Trout occur in Trapper Creek, Cherry Creek, and the Big Hole. Brook Trout occurs in Cherry Creek and the Big Hole. Whitefish and Grayling occur in the Big Hole.

Fisheries	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
No-Action														

Fisheries	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
Sediment	x				x				x					
Flow Regimes	x				x				x					
Woody Debris	x				x				x					
Stream Shading	x				x				x					
Stream Temperature	x				x				x					
Connectivity	x				x				x					
Populations	x				x				x					
Action														
Sediment	x				x				x					
Flow Regimes	x				x				x					
Woody Debris	x				x				x					
Stream Shading	x				x				x					
Stream Temperature	x				x				x					
Connectivity	x				x				x					
Populations	x				x				x					

Comments:
No anticipated effects were identified.

WILDLIFE:
A data query from the Montana Natural Heritage Program (June 19, 2024) was conducted to identify Species of Concern in the proposed treatment area. Various Species of Concern were identified in the report and are outlined below, See **Exhibit B – Environmental Summary Report** for additional Potential Species of Concern.

Wildlife	Impact												Can Impact be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
Threatened and Endangered Species														
Grizzly bear *(Ursus arctos)* Habitat: Recovery areas, security from human activity		x			x				x				**Yes**	**1.**
Canada lynx (*Felix lynx)* Habitat: Subalpine fir habitat types, dense sapling, old forest, deep snow zone		x			x				x				**Yes**	**2.**
Wolverine *(Gulo gulo)*		x			x				x				**Yes**	**3.**

Wildlife	Impact												Can Impact be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
Habitat: Alpine tundra, and boreal and mountain forests (primarily coniferous)														
Sensitive Species														
Townsend's big-eared bat *(Plecotus townsendii)* Habitat: Caves, caverns, old mines	**x**				**x**				**x**					
Spotted Bat *(Euderma maculatum)* Habitat: Caves and cracks and crevices in cliffs and canyons	**x**				**x**				**x**					
Fringed Myotis *(Myotis thysanodes)* Habitat: Caves, mines, rock crevices, buildings, and other protected sites.	**x**				**x**				**x**					
Litted Brown Myotis *(Myotis lucifugus)* Habitat: Caves, mines, attics, barns, bridges, snags, loose bark, and bat houses.	**x**				**x**				**x**					
Hoary Bat *(Lasiurus cinereus)* Habitat: Caves, mines, attics, barns, and bridges	**x**				**x**				**x**					
Long-eared Myotis *(Myotis evotis)* Habitat: Caves, mines, abandoned buildings, bridges, hollow trees, stumps, under loose bark, and rock fissures	**x**				**x**				**x**					

Wildlife	Impact												Can Impact be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
Long-legged Myotis *(Myotis volans)* Habitat: Caves, mines, abandoned buildings, bridges, hollow trees, stumps, under loose bark, and rock fissures	**x**				**x**				**x**					
Preble's Shrew *(Sorex preblei)* Habitat: sagebrush grassland habitats, sometimes in openings surrounded by subalpine coniferous forest		**x**				**x**				**x**			**Yes**	**4.**
Dwarf Shrew *(Sorex nanus)* Habitat: rocky locations in alpine terrain and subalpine talus (2 to 10 centimeters diameter) bordered by spruce-fir, lodgepole pine, or Douglas-fir and aspen	**x**				**x**				**x**					
Green-tailed Towhee *(Pipilo chlorurus)* Habitat: along the ecotone, or edge, of sagebrush communities and other mixed-species shrub communities	**x**					**x**				**x**			**Yes**	**4.**
Sage Thrasher *(Oreoscoptets montanus)* Habitat: Big Sagebrush.	**x**					**x**				**x**			**Yes**	**4.**
Veery *(Catharus fuscescens)* Habitat: Willow thickets and cottonwood along streams and lakes	**x**				**x**				**x**					

Wildlife	Impact												Can Impact be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
in valleys and lower mountain canyons														
Greater Sage grouse (*Centrocercus urophasianus*) Habitat: sagebrush semi-desert	**x**					**x**				**x**			**Yes**	**5.**
Clark's Nutcracker (*Nucifraga columbiana*) Habitat: conifer forests dominated by whitebark pine at higher elevations and ponderosa pine and limber pine along with Douglas-fir at lower elevations	**x**					**x**				**x**			**Yes**	**4.**
Brewer's Sparrow (*Spizella breweri*) Habitat: shrubsteppe habitats dominated by sagebrush	**x**					**x**				**x**			**Yes**	**4.**
Long-billed Curlew (*Numenius americanus*) Habitat: mixedgrass prairie habitats and moist meadows	**x**					**x**				**x**			**Yes**	**4.**
Lewis's Woodpecker (*Melanerpes lewis*) Habitat: Open forest and woodland, often logged or burned	**x**				**x**				**x**					
Great Blue Heron (*Ardea herodias*) Habitat: cottonwoods along major rivers and lakes	**x**				**x**				**x**					
Golden Eagle (*Aquila chrysaetos*) Habitat: Cliffs and large trees	**x**					**x**				**x**			**Yes**	**4.**

Wildlife	Impact												Can Impact be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
Bald eagle *(Haliaeetus leucocephalus)* Habitat: Late-successional forest within 1 mile of open water	**x**				**x**				**x**					
Cassin's Finch (*Haemorhous cassinii*) Habitat: Every major forest type and timber-harvest regime	**x**				**x**				**x**					
Ferruginous Hawk (*Buteo regalis*) Habitat: mixed-grass prairie, shrub-grasslands, grasslands, grass-sagebrush complex, and sagebrush steppe	**x**					**x**				**x**			**Yes**	**4.**
Pinyon Jay (*Gymnorhinus cyanocephalus*) Habitat: low-elevation ponderosa and limber pine-juniper woodlands	**x**					**x**				**x**			**Yes**	**4.**
American Goshawk (*Accipiter atricapillus*) Habitat: Mature and old-growth forests, Lodgepole Pine forests	**x**				**x**				**x**					
American White Pelican (*Pelecanus erythrorhynchos*) Habitat: rivers, lakes, reservoirs, estuaries, bays, and marshes	**x**				**x**				**x**					
Bobolink (*Dolichonyx oryzivorus*)	**x**				**x**				**x**					

Wildlife	Impact												Can Impact be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
Habitat: tall grass and mixed-grass prairies														
Sharp-tailed Grouse (*Tympanuchus phasianellus*) Habitat: inter-mixed tree and shrub grasslands	**x**					**x**				**x**			**Yes**	**4.**
Brown Creeper (*Certhia americana*) Habitat: old-growth coniferous and mixed coniferous-deciduous forests	**x**				**x**				**x**					
Evening Grosbeak (*Coccothraustes vespertinus*) Habitat: mixed coniferous and spruce-fir forests	**x**					**x**				**x**			**Yes**	**4.**
Pacific Wren (*Troglodytes pacificus*) Habitat: large uncut stands of old-growth and mature coniferous forests, riparian areas	**x**				**x**				**x**					
Pileated Woodpecker (*Dryocopus pileatus*) Habitat: coniferous or deciduous forest	**x**				**x**				**x**					
Gray Wolf *(Canis lupus)* Habitat: Ample big game populations, security from human activities	**x**				**x**				**x**					
Big Game Species														
Elk		**x**				**x**				**x**			**Yes**	**4.**
Whitetail		**x**				**x**				**x**			**Yes**	**4.**
Mule Deer		**x**				**x**				**x**			**Yes**	**4.**
Other		**x**				**x**				**x**			**Yes**	**4.**

Comments:

1. Grizzly Bear – The project area lies within the distribution of grizzly bears in Montana, and it is possible that a grizzly bear could occasionally wander through the vicinity of the project area. No new roads would be constructed as a part of this proposed action. Short-term and temporary disturbance activities that affect grizzly bears, should one be in the area, would primarily be associated with noise disturbance from chainsaws while lopping & scattering conifers. Given the limited scope, scale, and duration of the proposed activities and the relatively low value of the habitats that would be affected for grizzly bear foraging; any potential direct, indirect, or cumulative effects on grizzly bears or their habitat would be minor.

2. Canada Lynx – The project area falls within the distribution of lynx in Montana. No new roads would be constructed as a part of this proposed action. Short-term and temporary disturbance activities that affect lynx, should one be in the area, would primarily be associated with noise disturbance from chainsaws while lopping & scattering conifers. In addition, grassland and young encroaching conifer stands that would be affected by proposed treatments provide poor habitat conditions for lynx and their primary prey – snowshoe hares. Given the limited scope, scale, and duration of the proposed activities and that suitable habitat for lynx would not be treated under the proposed action, no direct, indirect, or cumulative effects on lynx would be anticipated.

3. Wolverine – The project area falls within the distribution of wolverines in Montana. Short-term and temporary disturbance activities that affect wolverines, should one be in the area, would primarily be associated with noise disturbance from chainsaws while lopping & scattering conifers. In addition, high-elevation peaks and basins that possess late persistent snowpack in spring are not present in the project area. Given the limited scope, scale, and duration of the proposed activities and that the preferred denning habitat for wolverines would not be treated under the proposed action, no direct, indirect, or cumulative effects on wolverines would be anticipated.

4. Other Terrestrial and Avian Wildlife Species – Vegetation communities on the project area likely provide suitable habitat for numerous other terrestrial and avian wildlife species. Such species would likely include elk, deer, forest carnivores, small mammals, prairie and forest-associated neotropical migrant birds, raptors, black bears, etc. Treatments could remove vegetative cover usable by some species, and during treatments, motorized disturbance treatment associated with conifer removal could disturb and displace wildlife in the area for up to two months. Generally, species associated with native rangeland and sagebrush habitats would benefit, whereas species more associated with coniferous forests for meeting life requisites would not benefit. Given the types of proposed treatments, the acreage that would be treated, and the short duration activities that occur (approximately 2 months in summer/fall 2024), minor adverse direct, indirect, and cumulative effects to resident species would be expected.

5. Greater Sage Grouse – Conifer encroachment has been identified as a considerable threat to sage grouse conservation (80 FR 59858, October 2, 2015), and reducing the prevalence of rangeland-invading trees has been identified as an important objective for this region of Montana. Proposed treatments would be planned and implemented in a coordinated fashion with conifer removal efforts on nearby federal and private lands. The positive effect of treating the federal and private land would be greater, given the

treatments will be conducted concurrently with work conducted on other cooperating ownerships across the larger landscape. The project is based on the expansion of Douglas-fir and Rocky Mountain Juniper into historical sagebrush habitats. The primary objectives of the treatments are to (1) remove encroaching conifers from Phase 1 density class areas to maintain the acreage of healthy sagebrush-rangeland communities for sage grouse and reduce the presence of potential perch sites for avian predators near known leks; (2) force back conifer seed walls near sagebrush community types for maintenance and reduce the source of conifer seed and its abundance in sagebrush/grassland areas. In the overall proposed treatment area, the SMSP identified roughly 2,210 acres of conifer encroachment with a Phase 1 density, see **Exhibit A – Project Location Map**. Of these acreages, DNRC has approximately 665 acres of Phase 1 density. Removal of young conifers using chainsaws across approximately 665 acres of state trust lands proposed for treatment would temporarily (several decades) reduce the abundance and prevalence of Douglas-fir and juniper that is beginning to invade sagebrush rangelands in the area providing a longer-term cumulative benefit to the abundance and availability of sage grouse habitat. In addition, the use of prescribed fire, if warranted would increase the longevity of the conifer removal treatment while encouraging multi-age sagebrush stands and reduced fuel loads.

Linkage, Corridors, and Habitat Connectivity – The project area is focused on edge habitat situated along a forest-grassland ecotone. As such, forest cover is patchy and likely occurred in a patchy fashion under historical conditions. The project area does not occur within any known linkage zones or corridors important for maintaining connectivity of populations or migration routes. However, the potential for both short and long-term fragmentation and loss of rangeland and sagebrush habitat would be reduced, providing benefits for associated species such as sage grouse.

AIR QUALITY:

There are no identified non-attainment areas within the project area[2]. The application of prescribed fire, if used on this project, has the potential to elevate atmospheric smoke concentrations.

Air Quality	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
No-Action														
Smoke	**x**				**x**				**x**					
Dust	**x**				**x**				**x**					
Action														
Smoke		**x**				**x**				**x**			**Yes**	**1.**
Dust	**x**				**x**				**x**					

Comments:

1. DNRC is classified as a major open burner by DEQ, as a major open-burning permit holder, DNRC agrees to comply with the limitations and conditions of the permit. In

[2] *NEPAssist*. (n.d.). https://nepassisttool.epa.gov/nepassist/nepamap.aspx

addition, DNRC is a member of the Montana/Idaho Airshed Group, which regulates prescribed burning, including both slash and broadcast burning, related to forest-management activities performed by the DNRC. As a member of the Airshed Group, the DNRC agrees to only burn on days approved for good smoke dispersion as determined by the Smoke Management Unit in Missoula, Montana. With these practices, effects on air quality are expected to be mitigated.

ARCHAEOLOGICAL SITES / AESTHETICS / DEMANDS ON ENVIRONMENTAL RESOURCES:

Archaeological Sites:
A Class I (literature review) level review was conducted by the DNRC staff archaeologist for the area of potential effect (APE). This entailed inspection of project maps, DNRC's sites/site leads database, land use records, General Land Office Survey Plats, and control cards. The Class I search results revealed that no cultural or paleontological resources have been identified in section 16, T2S R9W, but one lithic scatter and historic sheep camp (24BE264) is documented in section 36, T2S R10W.

Considering the low-impact nature of the proposed project, conifer removal activities are expected to have No Effect to Antiquities. No additional archaeological investigative work will be conducted in response to this proposed development. However, if previously unknown cultural or paleontological materials are identified during project-related activities, all work will cease until a professional assessment of such resources can be made.

Aesthetics:
The project area currently consists of Phase 1 conifer encroachment, which can be described as, sagebrush and grass with scattered conifers typically less than 2 meters tall.

Demands on Environmental Resources:
The project area consists of native grazing land under State Lease No. 1653. Surrounding land use also consists of grazing land.

Will Alternative result in potential impacts to:	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
No-Action														
Historical or Archaeological Sites	**x**				**x**				**x**					
Aesthetics	**x**				**x**				**x**					
Demands on Environmental Resources of Land, Water, or Energy	**x**				**x**				**x**					
Action														
Historical or Archaeological Sites	**x**				**x**				**x**					**1.**
Aesthetics		**x**				**x**				**x**			**Yes**	**2.**
Demands on Environmental		**x**				**x**				**x**			**Yes**	**3.**

Will Alternative result in potential impacts to:	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
Resources of Land, Water, or Energy														

Comments:

1. The proposed action consists of cutting down and lopping and scattering of young (12-inch DBH and under) Douglas-fir and Rocky Mountain Juniper in localities where immature trees are typically spaced several feet or many yards apart. This would entail individuals using chainsaws and walking from tree to tree. Trees would be cut near ground level and scattered to deteriorate. Conifer removal activities and prescribed burning, if applicable, is not expected to physically or visually impact any kind of cultural or paleontological resource. Considering the low-impact nature of the proposed project, conifer removal activities are expected to have No Effect to Antiquities.

2. Conifer removal along forest fringe areas would alter existing vegetation and have a minor, temporary effect for up to several decades on the visual appearance of the affected lands and associated landscape. Treatments along the forest-grassland ecotone would appear natural and would likely be almost non-discernable to most casual observers. Minor expected changes would be cumulative to other natural and man-caused disturbances across the landscape over time.

3. The proposed conifer removal treatments are expected to have a beneficial effect on forage production in the project area by preventing further loss of forage to conifer trees. The use of prescribed burning, if applied, has the potential to alter grazing use, typically by resting the tract for up to 3 years, however, long-term beneficial effects are expected from low-intensity fires as they can potentially increase plant production.

OTHER ENVIRONMENTAL DOCUMENTS PERTINENT TO THE AREA: *List other studies, plans or projects on this tract. Determine cumulative impacts likely to occur as a result of current private, state or federal actions in the analysis area, and from future proposed state actions in the analysis area that are under MEPA review (scoped) or permitting review by any state agency.*

No other known environmental documents or federal actions are being examined within the project area.

Impacts on the Human Population

Evaluation of the impacts on the proposed action including <u>direct, secondary, and cumulative</u> impacts on the Human Population.

Will Alternative result in potential impacts to:	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
No-Action														

Will Alternative result in potential impacts to:	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
Health and Human Safety	**x**				**x**				**x**					
Industrial, Commercial and Agricultural Activities and Production	**x**				**x**				**x**					
Quantity and Distribution of Employment	**x**				**x**				**x**					
Local Tax Base and Tax Revenues	**x**				**x**				**x**					
Demand for Government Services	**x**				**x**				**x**					
Access To and Quality of Recreational and Wilderness Activities	**x**				**x**				**x**					
Density and Distribution of population and housing	**x**				**x**				**x**					
Social Structures and Mores	**x**				**x**				**x**					
Cultural Uniqueness and Diversity	**x**				**x**				**x**					
Action														
Health and Human Safety		**x**				**x**				**x**			**Yes**	**1.**
Industrial, Commercial and Agricultural Activities and Production	**x**					**x**				**x**			**Yes**	**2.**
Quantity and Distribution of Employment	**x**				**x**				**x**					
Local Tax Base and Tax Revenues	**x**				**x**				**x**					
Demand for Government Services	**x**				**x**				**x**					
Access To and Quality of Recreational and Wilderness Activities	**x**				**x**				**x**					**3.**
Density and Distribution of population and housing	**x**				**x**				**x**					
Social Structures and Mores	**x**				**x**				**x**					**4.**
Cultural Uniqueness and Diversity	**x**				**x**				**x**					

Comments:

1. Proposed tree-slashing activities would require adequate safety measures to be in place to ensure the safety of workers. Safety requirements complying with OSHA standards and federal and state safety regulations would be required for all sawing operations.

2. The proposed conifer removal treatments are expected to have a beneficial effect on forage production in the project area by preventing further loss of forage to conifer trees. The use of prescribed burning, if applied, has the potential to alter grazing use, typically by resting the tract for up to 3 years, however, long-term beneficial effects are expected from low-intensity fires as they can potentially increase plant production. These potential results could help sustain the production value of State Lease No.1653 for future generations.

3. Conifer removal along forest fringe areas would alter existing vegetation and have a minor, temporary effect for up to several decades on the visual appearance of the affected lands and associated landscape. Treatments along the forest-grassland ecotone would appear natural and would likely be almost non-discernable to most casual observers. Minor expected changes would be cumulative to other natural and man-caused disturbances across the landscape over time.

4. The proposed treatments that would be conducted using BLM funding would not be expected to disturb or alter any native or traditional lifestyles or communities.

Does the proposed action involve potential risks or adverse effects that are uncertain but extremely harmful if they were to occur?

The proposed actions associated with this project will not involve potential risks or any adverse effects that are uncertain or extremely harmful if they were to occur.

Does the proposed action have impacts that are individually minor, but cumulatively significant or potentially significant?

The proposed actions associated with this project will not have any cumulative effects or potentially significant effects on the environment.

Environmental Assessment Checklist Prepared By:

Name: Michaela Kalinowski
Title: MT Forest Action Plan Forester
Date: July 23, 2024

Finding

Alternative Selected

Proposed Action Alternative – Under the Action Alternative, DNRC would allow the SMSP to implement conifer removal activities on state trust lands.

Significance of Potential Impacts

Restoring sagebrush steppe is a high priority for maintaining greater sage grouse habitat and other sagebrush dependent species in Southwest Montana and is prescribed in the Montana Governors 2015 executive order No. 10-2014. The order states that the state agencies shall give priority to the maintenance and enhancement of sage grouse habitats in core and state, federal and private entities working collaboratively to maintain and enhance sage grouse habitats and populations. This work will be paid for through funding from the BLM.

Need for Further Environmental Analysis

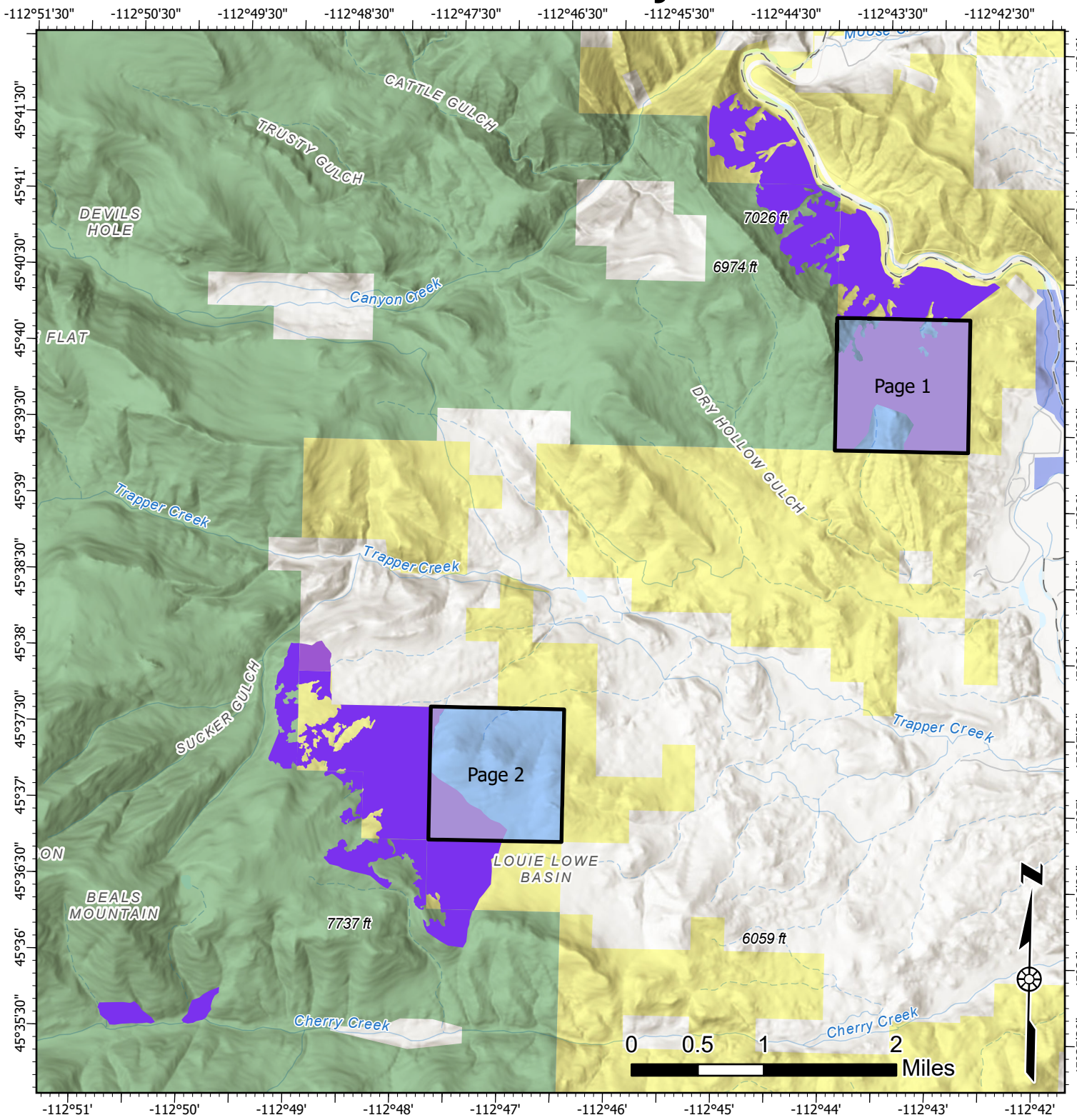
[ ]	EIS	[ ]	More Detailed EA	[X]	No Further Analysis

Environmental Assessment Checklist Approved By:

Name: Timothy Egan
Title: Dillon Unit Manager
Date: July 24, 2024
Signature: /s/ Timothy Egan

Exhibit A
Project Location Map

East Pioneers Conifer Encroachment Treatment Project



Treatment Area

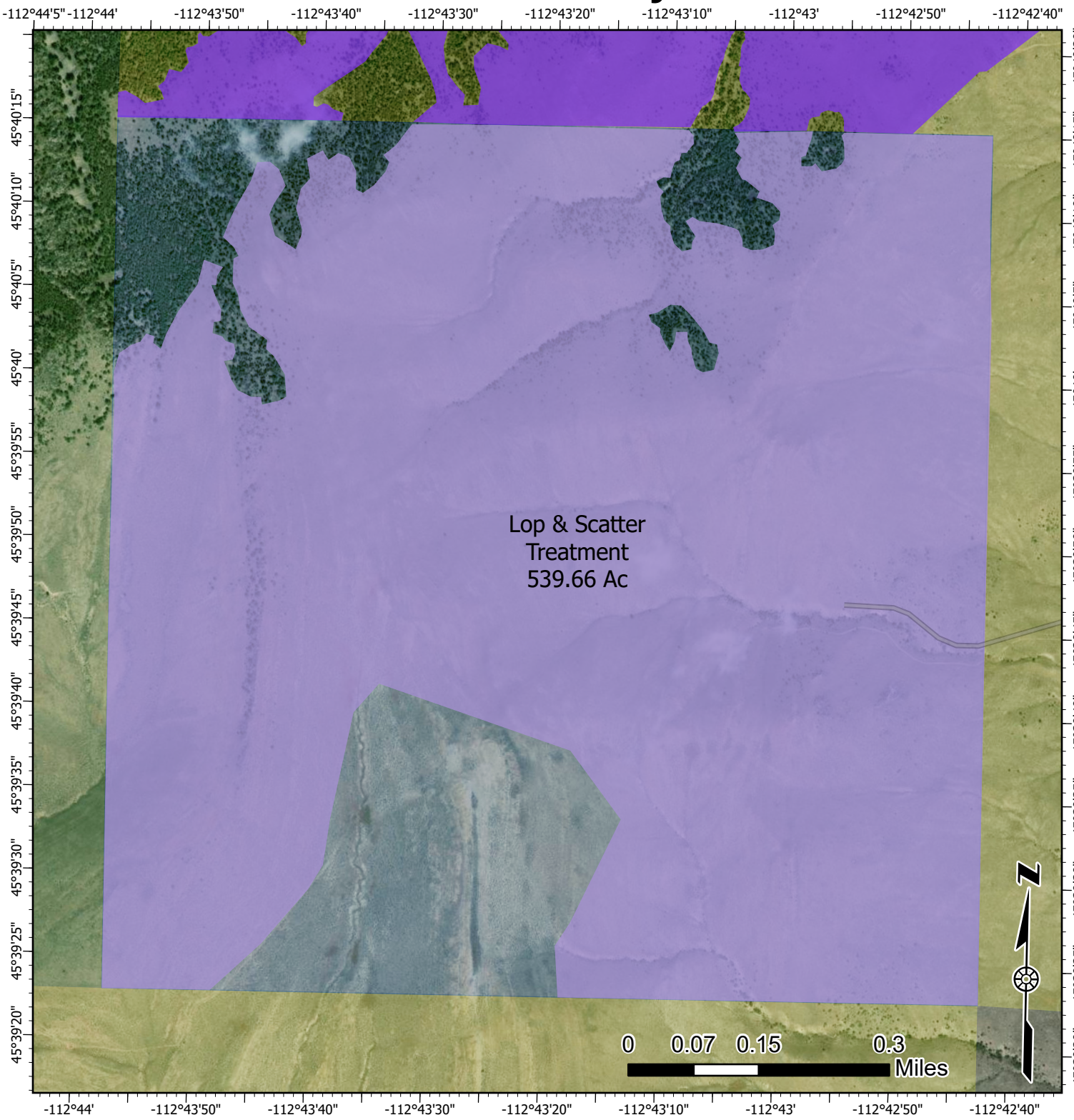
Level of Review

- MEPA
- NEPA
- NA (Private)

Public Lands

- Montana Fish, Wildlife, and Parks
- US Bureau of Land Management
- US Forest Service
- US Government
- DNRC Trust Lands

East Pioneers Conifer Encroachment Treatment Project



Treatment Area

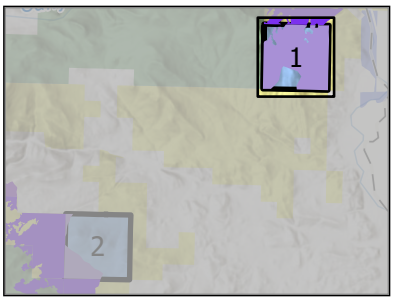
Level of Review

- MEPA
- NEPA

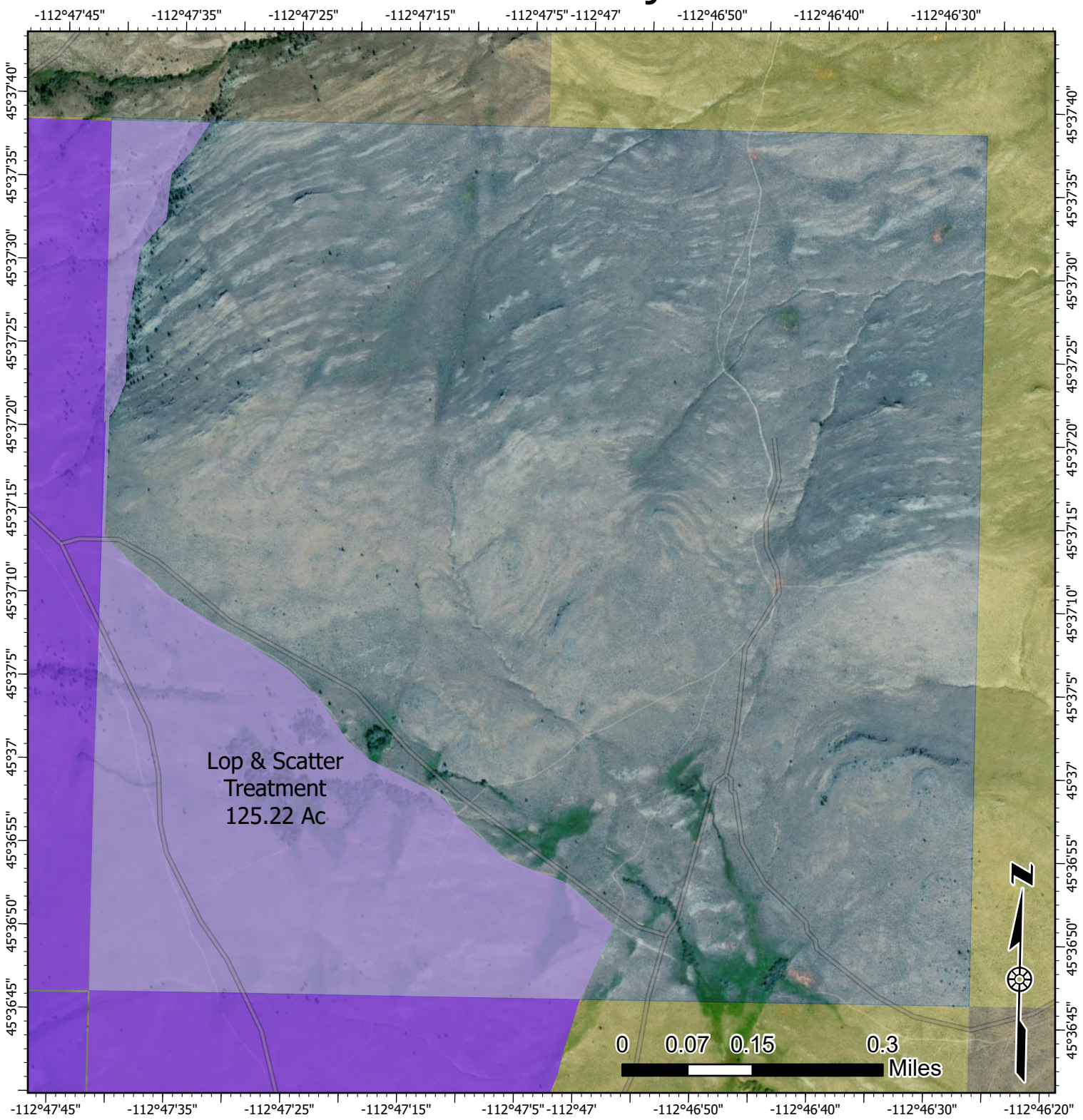
Section 16, T2S, R9W

Public Lands

- US Bureau of Land Management
- US Forest Service
- DNRC Trust Lands



East Pioneers Conifer Encroachment Treatment Project



Treatment Area

Level of Review

- MEPA
- NEPA

Section 36, T2S, R10W

Public Lands

- US Bureau of Land Management
- US Forest Service
- DNRC Trust Lands

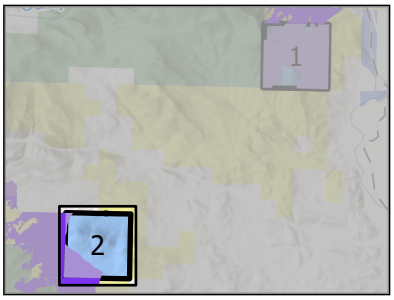


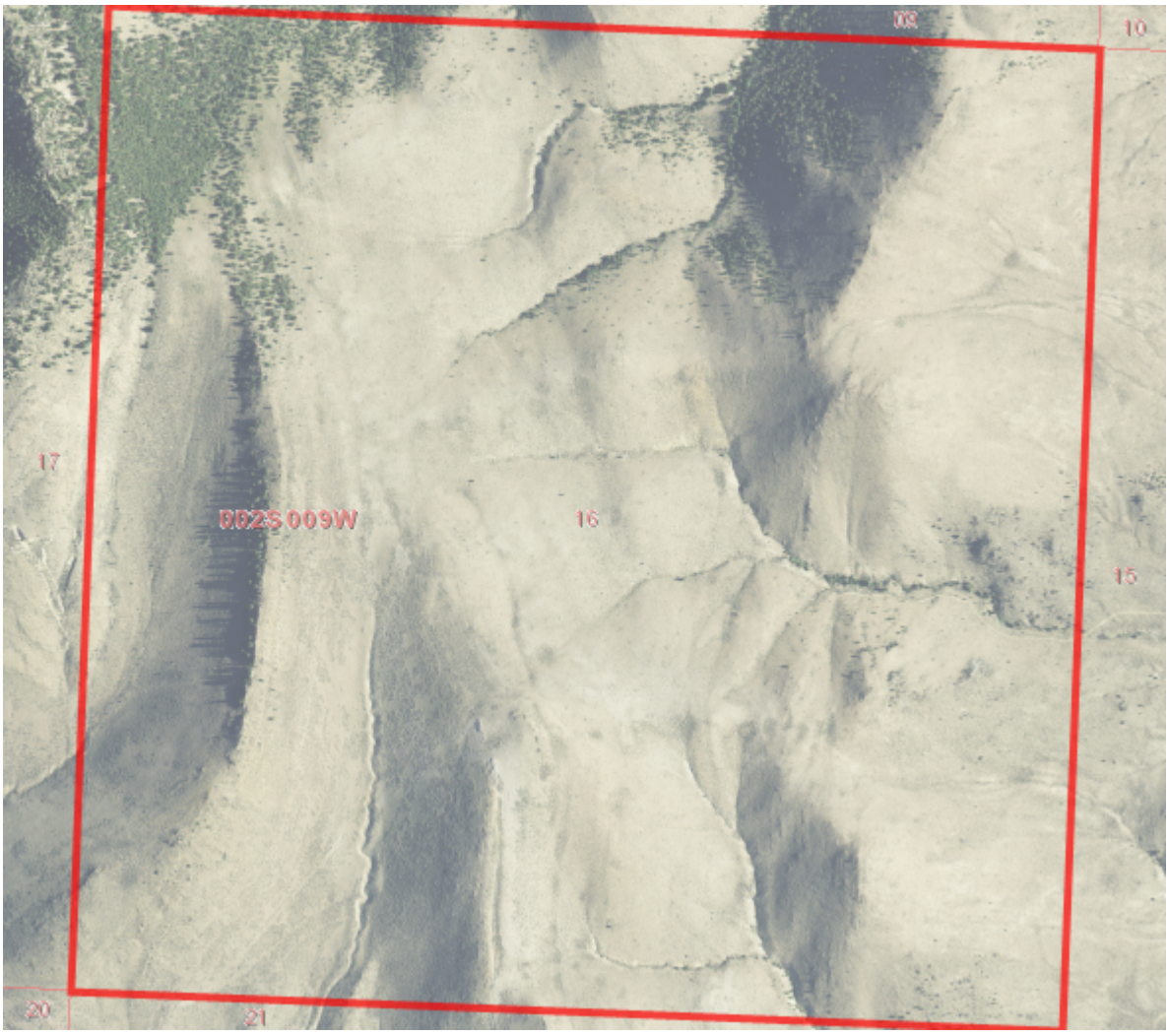
Exhibit B
Environmental Summary Report

Environmental Summary

MONTANA STATE LIBRARY
NATURAL HERITAGE PROGRAM mtnhp.org
1201 11th Ave ▫ P.O. Box 201800 ▫ Helena, MT 59620-1800 ▫ fax 406-444-0266 ▫ phone 406-444-3989

Latitude	Longitude
45.65571	-112.71197
45.67142	-112.73267

Summarized by:
002S009W016
(Township / Section)



Suggested Citation
Montana Natural Heritage Program. Environmental Summary Report.
for Latitude 45.65571 to 45.67142 and Longitude -112.71197 to -112.73267. Retrieved on 6/19/2024.

The Montana Natural Heritage Program is part of the Montana State Library's Natural Resource Information System. Since 1985, it has served as a neutral and non-regulatory provider of easily accessible information on Montana's species and biological communities to inform all stakeholders in environmental review, permitting, and planning processes. The program is part of the NatureServe network that is composed of over 60 member programs across North America that work to provide current and comprehensive distribution and status information on species and biological communities.

MONTANA STATE LIBRARY NATURAL HERITAGE PROGRAM
NATURESERVE

Table of Contents

Introduction to Environmental Summary Report

Environmental Summary Reports from the Montana Natural Heritage Program (MTNHP) provide information on species and biological communities to inform all stakeholders in environmental review, permitting, and planning processes. For information on environmental permits in Montana, please see permitting overviews by the Montana Department of Environmental Quality, the Montana Department of Natural Resources and Conservation, the Index of Environmental Permits for Montana and our Suggested Contacts for Natural Resource Management Agencies. The report for your area of interest consists of introductory and related materials in this PDF and an Excel workbook with worksheets summarizing information managed in the MTNHP databases for: (1) species occurrences; (2) other observed species without species occurrences; (3) other species potentially present based on their range, presence of associated habitats, or predictive distribution model output if available; (4) structured surveys that follow a protocol capable of detecting one or more species; (5) land cover mapped as ecological systems; (6) wetland and riparian mapping; (7) land management categories; and (8) biological reports associated with plant and animal observations. If your area of interest corresponds to a statewide polygon layer (e.g., watersheds, counties, or public land survey sections) information summaries in your report will exactly match those boundaries. However, if your report is for a custom area, users should be aware that summaries do not correspond to the exact boundaries of the polygon they have specified, but instead are a summary across a layer of hexagons intersected by the polygon they specified as shown on the report cover. Summarizing by these hexagons which are one square mile in area and approximately one kilometer in length on each side allows for consistent and rapid delivery of summaries based on a uniform grid that has been used for planning efforts across North America.

In presenting this information, MTNHP is working towards assisting the user with rapidly assessing the known or potential species and biological communities, land management categories, and biological reports associated with the report area. Users are reminded that this information is likely incomplete and may be inaccurate as surveys to document species are lacking in many areas of the state, species' range polygons often include regions of unsuitable habitat, methods of predicting the presence of species or communities are constantly improving, and information is constantly being added and updated in our databases. **Field verification by professional biologists of the absence or presence of species and biological communities in a report area will always be an important obligation of users of our data. Users are encouraged to only use this environmental summary report as a starting point for more in depth analyses and are encouraged to contact state, federal, and tribal resource management agencies for additional data or management guidelines relevant to your efforts. Please see the Appendix for introductory materials to each section of the report, additional information resources, and a list of relevant agency contacts.**

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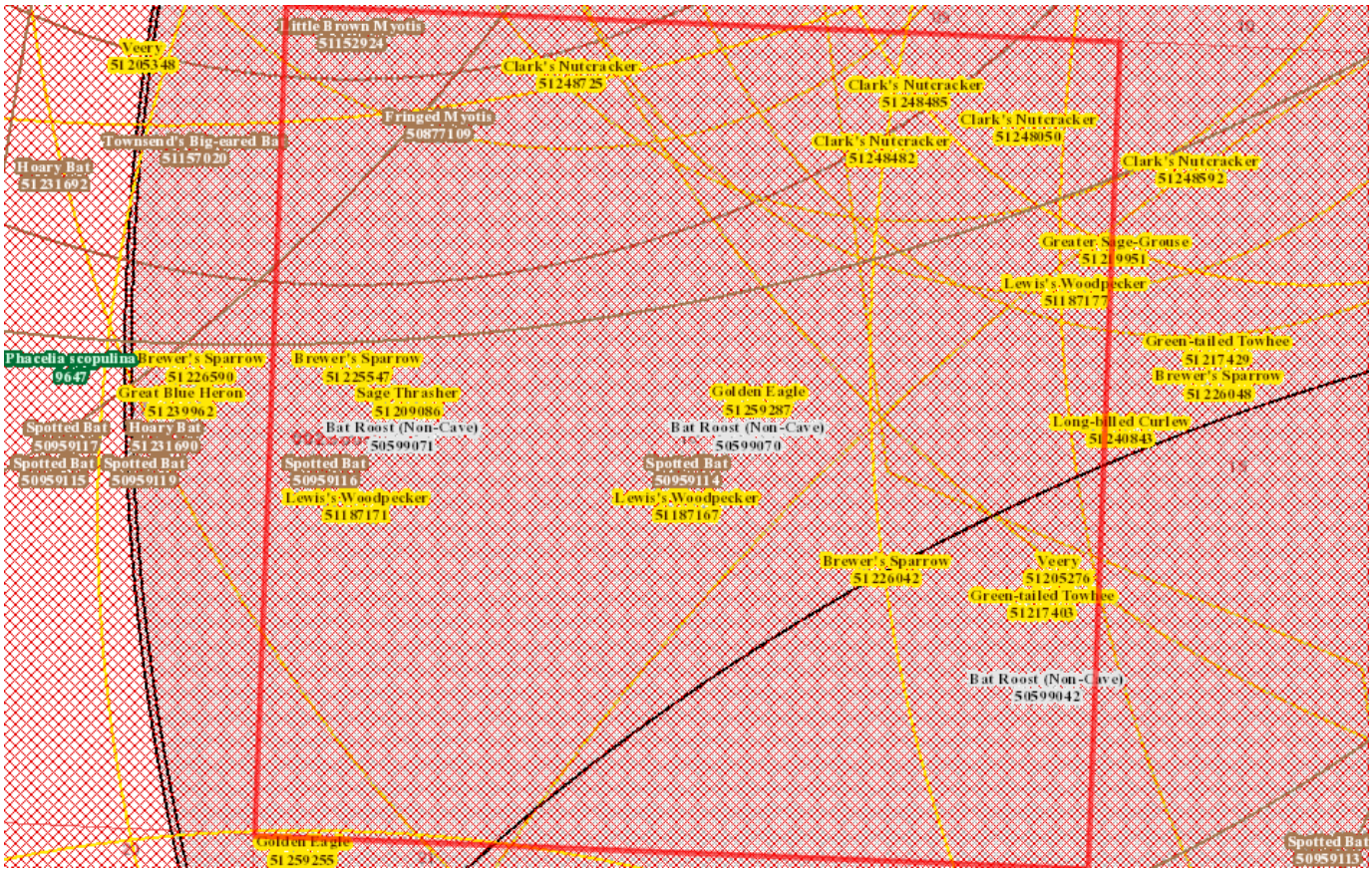
Legend

Model Icons	Habitat Icons	Range Icons	Num Obs
N Suitable (native range)	C Common	Y Native / Year-round	Count of obs with 'good precision' (<=1000m)
O Optimal Suitability	O Occasional	S Summer	+ indicates additional 'poor precision' obs (1001m-10,000m)
M Moderate Suitability		W Winter	
L Low Suitability		M Migratory	
I Suitable (introduced range)		N Non-native	
		H Historical	

Latitude	Longitude
45.65571	-112.71197
45.67142	-112.73267

Native Species

Summarized by: **002S009W016** *(Township / Section)*
Filtered by:
Native Species reports are filtered for Species with MT Status = Species of Concern, Special Status, Important Animal Habitat, Potential SOC



Species Occurrences

	USFWS Sec7	# SO	# Obs	Predicted Model	Range
M - Townsend's Big-eared Bat *(Corynorhinus townsendii)* **SOC**		1			Y

View in Field Guide **View Predicted Models** **View Range Maps**
Species of Concern - Native Species Global: **G4** State: **S3** USFS: **Sensitive - Known in Forests (LOLO)** BLM: **SENSITIVE** FWP SWAP: **SGCN3**

Delineation Criteria Confirmed area of occupancy based on the documented presence (mistnet captures, definitively identified acoustic recordings, and definitively identified roosting individuals) of adults or juveniles. Point observation location is buffered by a distance of 4,500 meters in order to encompass the 95% confidence interval for nightly foraging distance reported for the species in California and otherwise by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. When cave locations are involved, point observations are mapped in the center of a one-square mile hexagon to protect the exact location of the cave entrance as per the Federal Cave Resource Protection Act and associated regulations (U.S. Code Title 16 Chapter 63, Code of Federal Regulations Title 43 Subtitle A Part 37). The outer edges of the hexagon are then buffered by a distance of 4,500 meters and otherwise by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. All of the one-square mile hexagons intersecting this buffered area are presented as the Species Occurrence record. (Last Updated: Jul 06, 2023)

Predicted Models: M 100% Moderate (inductive)

B - Green-tailed Towhee *(Pipilo chlorurus)* **SOC**		2			S M

View in Field Guide **View Predicted Models** **View Range Maps**
Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** FWP SWAP: **SGCN3** PIF: **3**

Delineation Criteria Confirmed breeding area based on the presence of a nest, chicks, or territorial adults during the breeding season. Point observation location is buffered by a minimum distance of 125 meters in order to encompass the breeding home range size reported for the species and otherwise is buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Dec 28, 2023)

Predicted Models: M 100% Moderate (inductive)

B - Sage Thrasher *(Oreoscoptes montanus)* **SOC**		1			S M

View in Field Guide **View Predicted Models** **View Range Maps**
Species of Concern - Native Species Global: **G4** State: **S3B** USFWS: **MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **3**

Delineation Criteria Confirmed breeding area based on the presence of a nest, chicks, or territorial adults during the breeding season. Point observation location is buffered by a minimum distance of 75 meters in order to encompass the maximum breeding territory size reported for the species and otherwise is buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Dec 28, 2023)

Predicted Models: M 27% Moderate (inductive), L 73% Low (inductive)

M - Spotted Bat *(Euderma maculatum)* SOC

5 S M

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3** BLM: **SENSITIVE** FWP SWAP: **SGCN3, SGIN**

Delineation Criteria Confirmed area of occupancy based on the documented presence (mistnet captures, definitively identified acoustic recordings, and definitively identified roosting individuals) of adults or juveniles. Point observation location is buffered by a distance of 10,000 meters in order to encompass the reported maximum foraging distance for the species in British Columbia. If the locational uncertainty associated with the observation is greater than 10,000 meters, the observation is not valid for creation of a species occurrence. (Last Updated: Dec 22, 2022)

Predicted Models: M 17% Moderate (inductive), L 83% Low (inductive)

B - Veery *(Catharus fuscescens)* SOC

2 S M

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**

Delineation Criteria Observations with evidence of breeding activity buffered by a minimum distance of 300 meters in order to be conservative about encompassing home ranges and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Dec 28, 2023)

Predicted Models: M 17% Moderate (inductive), L 79% Low (inductive)

M - Fringed Myotis *(Myotis thysanodes)* SOC

1 Y

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3** BLM: **SENSITIVE** FWP SWAP: **SGCN3**

Delineation Criteria Confirmed area of occupancy based on the documented presence (mistnet captures, definitively identified acoustic recordings, and definitively identified roosting individuals) of adults or juveniles. Point observation location is buffered by a minimum distance of 2,000 meters in order to encompass the range of distances traveled from capture locations to roosts in the Black Hills of South Dakota and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. When cave locations are involved, point observations are mapped in the center of a one-square mile hexagon to protect the exact location of the cave entrance as per the Federal Cave Resource Protection Act and associated regulations (U.S. Code Title 16 Chapter 63, Code of Federal Regulations Title 43 Subtitle A Part 37). The outer edges of the hexagon are then buffered by a distance of 2,000 meters and otherwise by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. All of the one-square mile hexagons intersecting this buffered area are presented as the Species Occurrence record. (Last Updated: Jul 21, 2022)

Predicted Models: M 17% Moderate (inductive), L 24% Low (inductive)

B - Greater Sage-Grouse *(Centrocercus urophasianus)* SOC

1 Y

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G3G4** State: **S2** USFS: **Sensitive - Known in Forests (BD)** **Species of Conservation Concern in Forests (CG)** BLM: **SENSITIVE** FWP SWAP: **SGCN2** PIF: **1**

Delineation Criteria Confirmed breeding area based on the presence of a nest, chicks, juveniles, or adults on a lek. Point observations are mapped in the center of a one-square mile hexagon to protect the exact locations of leks. The outer edges of this hexagon are then buffered by a distance of 6,400 meters in order to encompass a body of research indicating that females typically nest within this distance of a lek and that lek numbers are negatively impacted by fossil fuel drilling activities within this distance of a lek. If the locational uncertainty associated with the observation is greater than this distance, it is buffered by the locational up to a maximum distance of 10,000 meters. All of the one-square mile hexagons intersecting this buffered area are presented as the Species Occurrence record. (Last Updated: Jan 05, 2024)

Predicted Models: M 3% Moderate (inductive), L 41% Low (inductive)

M - Little Brown Myotis *(Myotis lucifugus)* SOC

1 Y

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G3G4** State: **S3** USFS: **Sensitive - Known in Forests (BD, BRT, KOOT)** FWP SWAP: **SGCN3**

Delineation Criteria Confirmed area of occupancy based on the documented presence (mistnet captures, definitively identified acoustic recordings, or definitively identified roosting individuals) of adults or juveniles. Point observation location is buffered by a distance of 1,600 meters in order to encompass the greater than 1,500 meters foraging distance reported for the species in New Brunswick, Canada and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. When cave locations are involved, point observations are mapped in the center of a one-square mile hexagon to protect the exact location of the cave entrance as per the Federal Cave Resource Protection Act and associated regulations (U.S. Code Title 16 Chapter 63, Code of Federal Regulations Title 43 Subtitle A Part 37). The outer edges of the hexagon are then buffered by a distance of 1,600 meters and otherwise by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. All of the one-square mile hexagons intersecting this buffered area are presented as the Species Occurrence record. (Last Updated: Jul 06, 2023)

Predicted Models: L 100% Low (inductive)

B - Clark's Nutcracker *(Nucifraga columbiana)* SOC

5 Y

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **MBTA** USFS: **Species of Conservation Concern in Forests (FLAT)** FWP SWAP: **SGCN3** PIF: **3**

Delineation Criteria Observations with direct evidence of breeding activity or indirect evidence of breeding activity between early March and mid-July within forested habitats containing Whitebark Pine (Pinus albicaulis), Limber Pine (Pinus flexilis), or Ponderosa Pine (Pinus ponderosa). Observations are buffered by a minimum distance of 1,000 meters in order to encompass the spring/summer breeding territory size reported for the species or the locational uncertainty of the observation to a maximum distance of 10,000 meters. (Last Updated: Apr 03, 2024)

Predicted Models: L 100% Low (inductive)

M - Hoary Bat *(Lasiurus cinereus)* SOC

2 S M

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G3G4** State: **S3B** BLM: **SENSITIVE** FWP SWAP: **SGCN3**

Delineation Criteria Confirmed area of occupancy based on the documented presence (mistnet captures, definitively identified acoustic recordings, and definitively identified roosting individuals) of adults or juveniles during the active season. Point observation location is buffered by a minimum distance of 3,500 meters in order to be conservative about encompassing the maximum reported foraging distance for the congeneric Lasiurus borealis and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Mar 22, 2024)

Predicted Models: L 100% Low (inductive)

B - Brewer's Sparrow *(Spizella breweri)* SOC

4 S M

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**

Delineation Criteria Confirmed breeding area based on the presence of a nest, chicks, or territorial adults during the breeding season. Point observation location is buffered by a minimum distance of 100 meters in order to encompass the maximum territory size reported for the species and otherwise is buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Mar 21, 2024)

Predicted Models: L 100% Low (inductive)

B - Long-billed Curlew *(Numenius americanus)* SOC

1 S M

View in Field Guide View Predicted Models View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3B** USFWS: **MBTA; BCC11** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**

Delineation Criteria Confirmed breeding area based on the presence of a nest, chicks, or territorial adults during the breeding season. Point observation location is buffered by a minimum distance of 200 meters in order to approximate the breeding territory size reported for the species in Idaho and otherwise is buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Apr 03, 2024)

Predicted Models: L 44% Low (inductive)

B - Lewis's Woodpecker *(Melanerpes lewis)* **SOC** 3 S M

View in Field Guide **View Predicted Models** **View Range Maps**

Species of Concern - Native Species Global: **G4** State: **S2B** USFWS: **MBTA; BCC10; BCC17** USFS: **Species of Conservation Concern in Forests (HLC)**
BLM: **SENSITIVE** FWP SWAP: **SGCN2** PIF: **2**

Delineation Criteria Confirmed breeding area based on the presence of a nest, chicks, or territorial adults during the breeding season. Point observation location is buffered by a minimum distance of 300 meters in order to encompass the likely foraging area used by breeding adults around the nest tree and otherwise is buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Dec 28, 2023)

Predicted Models: L 41% Low (inductive)

B - Great Blue Heron *(Ardea herodias)* **SOC** 1 Y S M

View in Field Guide **View Predicted Models** **View Range Maps**

Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **MBTA** FWP SWAP: **SGCN3**

Delineation Criteria Confirmed nesting area buffered by a minimum distance of 6,500 meters in order to be conservative about encompassing the areas commonly used for foraging near the breeding colony and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Apr 03, 2024)

Predicted Models: L 17% Low (inductive)

V - Phacelia scopulina *(Dwarf Phacelia)* **PSOC** 1 Not Assessed

View in Field Guide

Potential Species of Concern - Native Species Global: **G4** State: **SH**

Delineation Criteria Individual occurrences are generally based upon a discretely mapped area provided by an observer and are not separated by any pre-defined distance. Individual clusters of plants mapped at fine spatial scales (separated by less than approximately 25-50 meters) may be grouped together into one occurrence if they are not separated by distinct areas of habitat or terrain features. Point observations are buffered to encompass any locational uncertainty associated with the observation. (Last Updated: Aug 23, 2017)

O - Bat Roost (Non-Cave) *(Bat Roost (Non-Cave))* **IAH** 3 Not Assessed

View in Field Guide

Important Animal Habitat - Native Species Global: **GNR** State: **SNR**

Delineation Criteria Confirmed area of occupancy based on the documented presence of adults or juveniles of any bat species at non-cave natural roost sites (e.g. rock outcrops, trees), below ground human created roost sites (e.g. mines), and above ground human created roost sites (e.g., bridges, buildings). Point observation locations are buffered by a distance of 4,500 meters in order to encompass the 95% confidence interval for nightly foraging distance reported for Townsendâ€™s Big-eared Bat (a resident Montana bat Species of Concern) and otherwise by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Oct 22, 2019)

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Legend

Model Icons	Habitat Icons	Range Icons	Num Obs
N Suitable (native range)	C Common	Y Native / Year-round	Count of obs with 'good precision' (<=1000m)
O Optimal Suitability	O Occasional	S Summer	+ indicates additional 'poor precision' obs (1001m-10,000m)
M Moderate Suitability		W Winter	
L Low Suitability		M Migratory	
I Suitable (introduced range)		N Non-native	
		H Historical	

Latitude	Longitude
45.65571	-112.71197
45.67142	-112.73267

Native Species

Summarized by: **002S009W016** *(Township / Section)*
Filtered by:
Native Species reports are filtered for Species with MT Status = Species of Concern, Special Status, Important Animal Habitat, Potential SOC

Other Observed Species

	USFWS Sec7	# Obs	Predicted Model	Range	
B - Golden Eagle *(Aquila chrysaetos)* **SOC**		1		Y	

View in Field Guide **View Predicted Models** **View Range Maps**
Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **BGEPA; MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN3**
Predicted Models: M 41% Moderate (inductive), L 59% Low (inductive)

B - Cassin's Finch *(Haemorhous cassinii)* **SOC**		1		Y	

View in Field Guide **View Predicted Models** **View Range Maps**
Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **MBTA; BCC10** FWP SWAP: **SGCN3** PIF: **3**
Predicted Models: L 97% Low (inductive)

B - Hooded Merganser *(Lophodytes cucullatus)* **PSOC**		1		Y	M

View in Field Guide **View Predicted Models** **View Range Maps**
Potential Species of Concern - Native Species Global: **G5** State: **S4** USFWS: **MBTA** FWP SWAP: **SGIN** PIF: **2**
Predicted Models: L 17% Low (inductive)

B - Black-and-white Warbler *(Mniotilta varia)* **PSOC**		1	Not Assessed		M

View in Field Guide **View Range Maps**
Potential Species of Concern - Native Species Global: **G5** State: **S4B** USFWS: **MBTA**

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Legend

Model Icons
- N Suitable (native range)
- O Optimal Suitability
- M Moderate Suitability
- L Low Suitability
- I Suitable (introduced range)

Habitat Icons
- C Common
- O Occasional

Range Icons
- Y Native / Year-round
- S Summer
- W Winter
- M Migratory
- N Non-native
- H Historical

Num Obs
Count of obs with 'good precision' (<=1000m)
+ indicates additional 'poor precision' obs (1001m-10,000m)

Latitude	Longitude
45.65571	-112.71197
45.67142	-112.73267

Native Species

Summarized by: **002S009W016** *(Township / Section)*
Filtered by:
Native Species reports are filtered for Species with MT Status = Species of Concern, Special Status, Important Animal Habitat, Potential SOC

Other Potential Species

	USFWS Sec7	Predicted Model	Range

F - Arctic Grayling *(Thymallus arcticus)* SOC — Range: Y H

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native/Non-native Species - (depends on location or taxa) Global: **G5** State: **S1** USFS: **Sensitive - Known in Forests (BD)**
BLM: **SENSITIVE** FWP SWAP: **SGCN1**
Predicted Models: N 17% Suitable (native range) (deductive)

F - Burbot *(Lota lota)* PSOC — Range: Y

View in Field Guide | View Predicted Models | View Range Maps
Potential Species of Concern - Native Species Global: **G5** State: **S4**
Predicted Models: N 17% Suitable (native range) (deductive)

V - Erigeron parryi *(Parry's Fleabane)* SOC — Range: Y

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G2G3** State: **S2S3** USFS: **Sensitive - Known in Forests (BRT)** Plant Threat Score: **No Known Threats**
CCVI: **Moderately Vulnerable**
Predicted Models: O 27% Optimal (inductive), M 73% Moderate (inductive)

M - Preble's Shrew *(Sorex preblei)* SOC — Range: Y

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G4** State: **S3** FWP SWAP: **SGCN3**
Predicted Models: M 100% Moderate (inductive)

M - Western Spotted Skunk *(Spilogale gracilis)* PSOC — Range: Y

View in Field Guide | View Predicted Models | View Range Maps
Potential Species of Concern - Native Species Global: **G5** State: **SU** FWP SWAP: **SGIN**
Predicted Models: M 100% Moderate (inductive)

V - Erigeron linearis *(Linear-leaf Fleabane)* SOC — Range: Y

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S2** Plant Threat Score: **Low** CCVI: **Less Vulnerable**
Predicted Models: M 100% Moderate (inductive)

V - Oxytropis lagopus var. conjugans *(Hare's-foot Locoweed)* PSOC — Range: Y

View in Field Guide | View Predicted Models | View Range Maps
Potential Species of Concern - Native Species Global: **G4G5T3T4** State: **S3S4**
Predicted Models: M 100% Moderate (inductive)

V - Townsendia spathulata *(Sword Townsend-daisy)* PSOC — Range: Y

View in Field Guide | View Predicted Models | View Range Maps
Potential Species of Concern - Native Species Global: **G3** State: **S3S4** Plant Threat Score: **No Known Threats**
Predicted Models: M 100% Moderate (inductive)

V - Eriogonum caespitosum *(Mat Buckwheat)* SOC — Range: Y

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S2S3** Plant Threat Score: **No Known Threats**
Predicted Models: M 83% Moderate (inductive), L 17% Low (inductive)

L - Rhizoplaca haydenii *(Hayden's Rimmed Navel Lichen)* SOC — Range: Y

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G2G3** State: **S1S2** USFS: **Sensitive - Known in Forests (BRT)**
Predicted Models: M 83% Moderate (inductive), L 17% Low (inductive)

V - Carex stenoptila *(Small-winged Sedge)* SOC — Range: Y

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G3** State: **S2S3** Plant Threat Score: **No Known Threats** CCVI: **Less Vulnerable**
Predicted Models: M 59% Moderate (inductive)

V - Mimulus floribundus *(Floriferous Monkeyflower)* SOC — Range: Y

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G5** State: **SH** Plant Threat Score: **No Known Threats** CCVI: **Highly Vulnerable**
Predicted Models: M 56% Moderate (inductive), L 44% Low (inductive)

V - Mimulus suksdorfii *(Suksdorf Monkeyflower)* PSOC

View in Field Guide | View Predicted Models | View Range Maps

Potential Species of Concern - Native Species Global: **G4** State: **S3S4** Plant Threat Score: **No Known Threats**

Predicted Models: M 56% Moderate (inductive), L 44% Low (inductive)

V - Boechera fecunda *(Sapphire Rockcress)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G2** State: **S2** USFS: **Sensitive - Known in Forests (BD, BRT)** **Sensitive - Suspected in Forests (LOLO)** BLM: **SENSITIVE** Plant Threat Score: **Medium** CCVI: **Moderately Vulnerable**

Predicted Models: M 56% Moderate (inductive), L 41% Low (inductive)

V - Ranunculus pedatifidus *(Northern Buttercup)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** USFS: **Species of Conservation Concern in Forests (HLC)** Plant Threat Score: **Unknown**

Predicted Models: M 56% Moderate (inductive), L 3% Low (inductive)

B - Ferruginous Hawk *(Buteo regalis)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3B** USFWS: **MBTA; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**

Predicted Models: M 27% Moderate (inductive), L 73% Low (inductive)

V - Potentilla plattensis *(Platte Cinquefoil)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3** Plant Threat Score: **No Known Threats** CCVI: **Highly Vulnerable**

Predicted Models: M 21% Moderate (inductive), L 79% Low (inductive)

M - Long-eared Myotis *(Myotis evotis)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3**

Predicted Models: M 17% Moderate (inductive), L 83% Low (inductive)

V - Dichanthelium acuminatum *(Panic Grass)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S2S3** Plant Threat Score: **Unknown**

Predicted Models: M 17% Moderate (inductive), L 83% Low (inductive)

V - Orobanche corymbosa *(Flat-topped Broomrape)* PSOC

View in Field Guide | View Predicted Models | View Range Maps

Potential Species of Concern - Native Species Global: **G4** State: **S3S4** Plant Threat Score: **No Known Threats**

Predicted Models: M 17% Moderate (inductive), L 83% Low (inductive)

I - Margaritifera falcata *(Western Pearlshell)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G3G4** State: **S2** USFS: **Sensitive - Known in Forests (BD, BRT, KOOT, LOLO)** **Species of Conservation Concern in Forests (CG, HLC)** BLM: **SENSITIVE** FWP SWAP: **SGCN2**

Predicted Models: M 17% Moderate (inductive), L 79% Low (inductive)

V - Primula incana *(Mealy Primrose)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** Plant Threat Score: **High** CCVI: **Highly Vulnerable**

Predicted Models: M 17% Moderate (inductive), L 27% Low (inductive)

V - Sphaeralcea munroana *(White-stemmed globemallow)* PSOC

View in Field Guide | View Predicted Models | View Range Maps

Potential Species of Concern - Native Species Global: **G4** State: **S3S4**

Predicted Models: M 3% Moderate (inductive), L 73% Low (inductive)

M - Dwarf Shrew *(Sorex nanus)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S2S3** FWP SWAP: **SGCN2-3**

Predicted Models: L 100% Low (inductive)

M - Long-legged Myotis *(Myotis volans)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G4G5** State: **S3**

Predicted Models: L 100% Low (inductive)

B - Pinyon Jay *(Gymnorhinus cyanocephalus)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G3** State: **S3** USFWS: **MBTA; BCC10; BCC17** FWP SWAP: **SGCN3**

Predicted Models: L 100% Low (inductive)

I - Rhyacophila betteni *(A Caddisfly)* SSS

View in Field Guide | View Predicted Models | View Range Maps

Special Status Species - Native Species Global: **G2G4** State: **S3S4**

Predicted Models: L 100% Low (inductive)

V - Eriogonum soliceps *(Railroad Canyon Wild Buckwheat)* SOC

View in Field Guide View Predicted Models View Range Maps
Species of Concern - Native Species Global: **G3** State: **S3** BLM: **SENSITIVE** Plant Threat Score: **No Known Threats** CCVI: **Less Vulnerable**
Predicted Models: L 100% Low (inductive)

V - Kobresia simpliciuscula *(Simple Kobresia)* SOC

View in Field Guide View Predicted Models View Range Maps
Species of Concern - Native Species Global: **G5** State: **S3** Plant Threat Score: **Unknown**
Predicted Models: L 100% Low (inductive)

V - Stellaria crassifolia *(Fleshy Stitchwort)* SOC

View in Field Guide View Predicted Models View Range Maps
Species of Concern - Native Species Global: **G5** State: **S2** Plant Threat Score: **No Known Threats**
Predicted Models: L 100% Low (inductive)

B - Bald Eagle *(Haliaeetus leucocephalus)* SSS

View in Field Guide View Predicted Models View Range Maps
Special Status Species - Native Species Global: **G5** State: **S4** USFWS: **BGEPA; MBTA** USFS: **Sensitive - Known in Forests (LOLO)** BLM: **SENSITIVE** PIF: **2**
Predicted Models: L 97% Low (inductive)

V - Physaria pulchella *(Beautiful Bladderpod)* SOC

View in Field Guide View Predicted Models View Range Maps
Species of Concern - Native Species Global: **G3G4T3** State: **S3** USFS: **Sensitive - Known in Forests (BD)** BLM: **SENSITIVE** Plant Threat Score: **Unknown** CCVI: **Moderately Vulnerable**
Predicted Models: L 83% Low (inductive)

B - Western Screech-Owl *(Megascops kennicottii)* PSOC

View in Field Guide View Predicted Models View Range Maps
Potential Species of Concern - Native Species Global: **G4G5** State: **S3S4** USFWS: **MBTA** FWP SWAP: **SGIN** PIF: **3**
Predicted Models: L 73% Low (inductive)

I - Bombus suckleyi *(Suckley Cuckoo Bumble Bee)* SOC

View in Field Guide View Predicted Models View Range Maps
Species of Concern - Native Species Global: **G2G3** State: **S1**
Predicted Models: L 73% Low (inductive)

V - Adoxa moschatellina *(Musk-root)* SOC

View in Field Guide View Predicted Models View Range Maps
USFS: **Sensitive - Known in Forests (BD, LOLO)**
Species of Concern - Native Species Global: **G5** State: **S3** **Species of Conservation Concern in Forests (CG, HLC)** Plant Threat Score: **Low** CCVI: **Highly Vulnerable**
Predicted Models: L 73% Low (inductive)

V - Agastache cusickii *(Cusick's Horsemint)* SOC

View in Field Guide View Predicted Models View Range Maps
Species of Concern - Native Species Global: **G3G4** State: **S2S3** USFS: **Sensitive - Known in Forests (BD)** BLM: **SENSITIVE** Plant Threat Score: **High - Medium** CCVI: **Moderately Vulnerable**
Predicted Models: L 73% Low (inductive)

V - Draba densifolia *(Dense-leaf Draba)* SOC

View in Field Guide View Predicted Models View Range Maps
USFS: **Sensitive - Known in Forests (BD, BRT)**
Species of Concern - Native Species Global: **G5** State: **S2** **Species of Conservation Concern in Forests (CG, HLC)** Plant Threat Score: **Low** CCVI: **Moderately Vulnerable**
Predicted Models: L 73% Low (inductive)

V - Polygonum austiniae *(Austin's Knotweed)* PSOC

View in Field Guide View Predicted Models View Range Maps
Potential Species of Concern - Native Species Global: **G5T4** State: **S3S4** USFS: **Species of Conservation Concern in Forests (HLC)**
Predicted Models: L 59% Low (inductive)

B - American Goshawk *(Accipiter atricapillus)* SOC

View in Field Guide View Predicted Models View Range Maps
Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **MBTA** FWP SWAP: **SGCN3** PIF: **2**
Predicted Models: L 56% Low (inductive)

V - Ageratina occidentalis *(Western Joepye-weed)* SOC

View in Field Guide View Predicted Models View Range Maps
USFS: **Sensitive - Known in Forests (BRT)**
Species of Concern - Native Species Global: **G4** State: **S2** **Sensitive - Suspected in Forests (BD, LOLO)** Plant Threat Score: **Unknown** CCVI: **Less Vulnerable**
Predicted Models: L 56% Low (inductive)

V - Physaria saximontana var. dentata *(Rocky Mountain Twinpod)* SOC

View in Field Guide View Predicted Models View Range Maps
Species of Concern - Native Species Global: **G3T3** State: **S3** Plant Threat Score: **No Known Threats** CCVI: **Moderately Vulnerable**
Predicted Models: L 56% Low (inductive)

V - Stipa lettermanii *(Letterman's Needlegrass)* SOC

View in Field Guide View Predicted Models View Range Maps
Species of Concern - Native Species Global: **G5** State: **S1S3** USFS: **Species of Conservation Concern in Forests (HLC)** Plant Threat Score: **No Known Threats**
Predicted Models: L 56% Low (inductive)

M - Silver-haired Bat *(Lasionycteris noctivagans)* PSOC

View in Field Guide | View Predicted Models | View Range Maps

Potential Species of Concern - Native Species Global: **G3G4** State: **S4**

Predicted Models: L 44% Low (inductive)

M - Wyoming Ground Squirrel *(Urocitellus elegans)* PSOC

View in Field Guide | View Predicted Models | View Range Maps

Potential Species of Concern - Native Species Global: **G5** State: **S3S4**

Predicted Models: L 44% Low (inductive)

V - Ranunculus hyperboreus *(High Northern Buttercup)* PSOC

View in Field Guide | View Predicted Models | View Range Maps

Potential Species of Concern - Native Species Global: **G5** State: **S3S4** Plant Threat Score: **No Known Threats**

Predicted Models: L 44% Low (inductive)

V - Thalictrum alpinum *(Alpine Meadowrue)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S2** USFS: **Sensitive - Known in Forests (BD, KOOT)** Plant Threat Score: **High - Medium** CCVI: **Highly Vulnerable**

Predicted Models: L 44% Low (inductive)

M - North American Porcupine *(Erethizon dorsatum)* PSOC

View in Field Guide | View Predicted Models | View Range Maps

Potential Species of Concern - Native Species Global: **G5** State: **S3S4** FWP SWAP: **SGIN**

Predicted Models: L 41% Low (inductive)

V - Castilleja gracillima *(Slender Indian Paintbrush)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G3G4** State: **S2** Plant Threat Score: **Low** CCVI: **Highly Vulnerable**

Predicted Models: L 41% Low (inductive)

B - American White Pelican *(Pelecanus erythrorhynchos)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3B** USFWS: **MBTA** FWP SWAP: **SGCN3** PIF: **3**

Predicted Models: L 41% Low (inductive)

B - Bobolink *(Dolichonyx oryzivorus)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA; BCC10; BCC11; BCC17** FWP SWAP: **SGCN3** PIF: **3**

Predicted Models: L 41% Low (inductive)

B - Broad-tailed Hummingbird *(Selasphorus platycercus)* PSOC

View in Field Guide | View Predicted Models | View Range Maps

Potential Species of Concern - Native Species Global: **G5** State: **S4B** USFWS: **MBTA; BCC10** FWP SWAP: **SGIN**

Predicted Models: L 41% Low (inductive)

B - Common Poorwill *(Phalaenoptilus nuttallii)* PSOC

View in Field Guide | View Predicted Models | View Range Maps

Potential Species of Concern - Native Species Global: **G5** State: **S4B** USFWS: **MBTA** FWP SWAP: **SGIN** PIF: **3**

Predicted Models: L 41% Low (inductive)

B - Sharp-tailed Grouse *(Tympanuchus phasianellus)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **SX,S4** FWP SWAP: **SGCN1** PIF: **2**

Predicted Models: L 24% Low (inductive)

V - Eleocharis rostellata *(Beaked Spikerush)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** USFS: **Species of Conservation Concern in Forests (CG, FLAT, HLC)** Plant Threat Score: **Unknown** CCVI: **Less Vulnerable**

Predicted Models: L 21% Low (inductive)

M - Grizzly Bear *(Ursus arctos)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S2S3** USFWS: **LT** BLM: **THREATENED** FWP SWAP: **SGCN2-3**

Predicted Models: L 17% Low (inductive)

M - Canada Lynx *(Lynx canadensis)* SOC

View in Field Guide | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **LT; CH** BLM: **THREATENED** FWP SWAP: **SGCN3**

M - Wolverine *(Gulo gulo)* SOC

View in Field Guide | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3** USFWS: **LT** USFS: **Sensitive - Known in Forests (LOLO)** BLM: **THREATENED** FWP SWAP: **SGCN3**

Environmental Summary

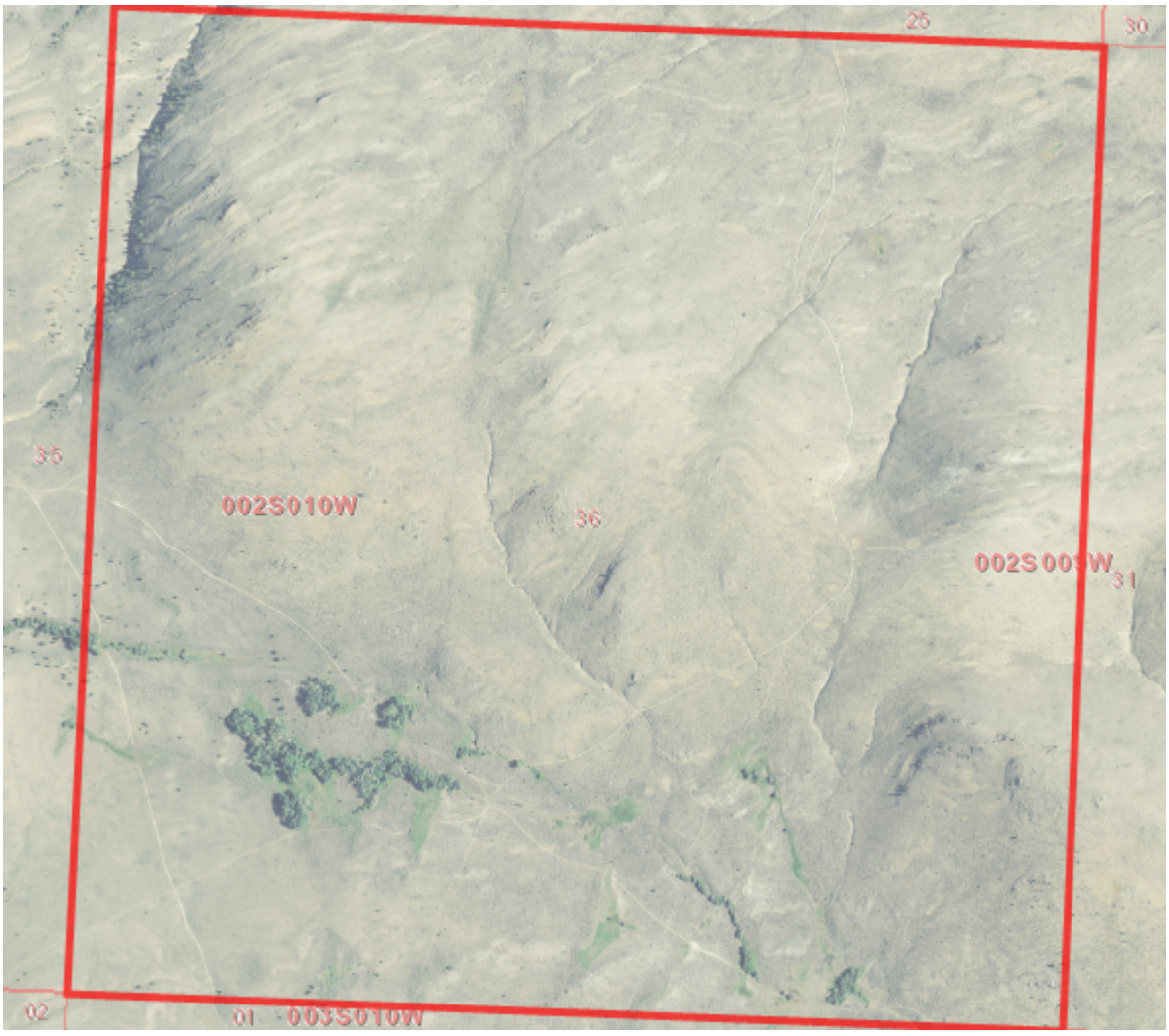
MONTANA STATE LIBRARY

NATURAL HERITAGE PROGRAM mtnhp.org

1201 11th Ave ▫ P.O. Box 201800 ▫ Helena, MT 59620-1800 ▫ fax 406-444-0266 ▫ phone 406-444-3989

Latitude	Longitude
45.61219	-112.77404
45.62794	-112.79488

Summarized by:
002S010W036
(Township / Section)



Suggested Citation
Montana Natural Heritage Program. Environmental Summary Report.
for Latitude 45.61219 to 45.62794 and Longitude -112.77404 to -112.79488. Retrieved on 6/19/2024.

The Montana Natural Heritage Program is part of the Montana State Library's Natural Resource Information System. Since 1985, it has served as a neutral and non-regulatory provider of easily accessible information on Montana's species and biological communities to inform all stakeholders in environmental review, permitting, and planning processes. The program is part of the NatureServe network that is composed of over 60 member programs across North America that work to provide current and comprehensive distribution and status information on species and biological communities.

MONTANA STATE LIBRARY NATURAL HERITAGE PROGRAM

NATURESERVE

MONTANA STATE LIBRARY
NATURAL HERITAGE PROGRAM
A program of the **Montana State Library's Natural Resource Information System**

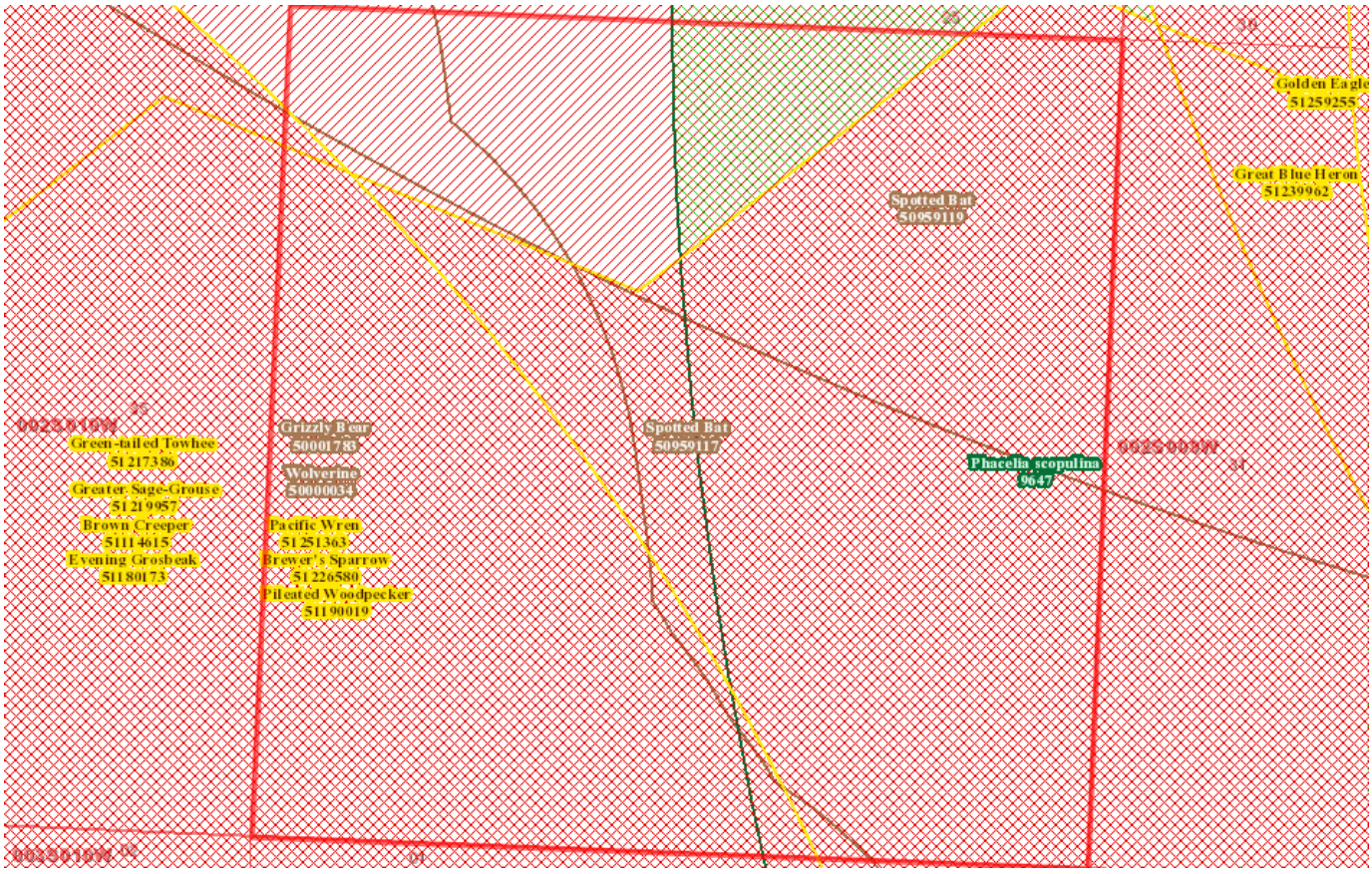
Legend

Model Icons	Habitat Icons	Range Icons	Num Obs
N Suitable (native range)	C Common	Y Native / Year-round	Count of obs with 'good precision' (<=1000m)
O Optimal Suitability	O Occasional	S Summer	+ indicates additional 'poor precision' obs (1001m-10,000m)
M Moderate Suitability		W Winter	
L Low Suitability		M Migratory	
I Suitable (introduced range)		N Non-native	
		H Historical	

Latitude	Longitude
45.61219	-112.77404
45.62794	-112.79488

Native Species

Summarized by: **002S010W036** *(Township / Section)*
Filtered by:
Native Species reports are filtered for Species with MT Status = Species of Concern, Special Status, Important Animal Habitat, Potential SOC



Species Occurrences

	USFWS Sec7	# SO	# Obs	Predicted Model	Range
B - Brewer's Sparrow *(Spizella breweri)* **SOC**		1			S M

View in Field Guide **View Predicted Models** **View Range Maps**
Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**

Delineation Criteria Confirmed breeding area based on the presence of a nest, chicks, or territorial adults during the breeding season. Point observation location is buffered by a minimum distance of 100 meters in order to encompass the maximum territory size reported for the species and otherwise is buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Mar 21, 2024)

Predicted Models: M 63% Moderate (inductive), L 37% Low (inductive)

B - Green-tailed Towhee *(Pipilo chlorurus)* **SOC**		1			S M

View in Field Guide **View Predicted Models** **View Range Maps**
Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** FWP SWAP: **SGCN3** PIF: **3**

Delineation Criteria Confirmed breeding area based on the presence of a nest, chicks, or territorial adults during the breeding season. Point observation location is buffered by a minimum distance of 125 meters in order to encompass the breeding home range size reported for the species and otherwise is buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Dec 28, 2023)

Predicted Models: M 54% Moderate (inductive), L 46% Low (inductive)

B - Greater Sage-Grouse *(Centrocercus urophasianus)* **SOC**		1			Y

View in Field Guide **View Predicted Models** **View Range Maps**
USFS: **Sensitive - Known in Forests (BD)**
Species of Conservation Concern - Native Species Global: **G3G4** State: **S2** **Species of Conservation Concern in Forests (CG)** BLM: **SENSITIVE** FWP SWAP: **SGCN2** PIF: **1**

Delineation Criteria Confirmed breeding area based on the presence of a nest, chicks, juveniles, or adults on a lek. Point observations are mapped in the center of a one-square mile hexagon to protect the exact locations of leks. The outer edges of this hexagon are then buffered by a distance of 6,400 meters in order to encompass a body of research indicating that females typically nest within this distance of a lek and that lek numbers are negatively impacted by fossil fuel drilling activities within this distance of a lek. If the locational uncertainty associated with the observation is greater than this distance, it is buffered by the locational up to a maximum distance of 10,000 meters. All of the one-square mile hexagons intersecting this buffered area are presented as the Species Occurrence record. (Last Updated: Jan 05, 2024)

Predicted Models: L 100% Low (inductive)

M - Spotted Bat *(Euderma maculatum)* **SOC** | 2 | S M

View in Field Guide **View Predicted Models** **View Range Maps**

Species of Concern - Native Species Global: **G4** State: **S3** BLM: **SENSITIVE** FWP SWAP: **SGCN3, SGIN**

Delineation Criteria Confirmed area of occupancy based on the documented presence (mistnet captures, definitively identified acoustic recordings, and definitively identified roosting individuals) of adults or juveniles. Point observation location is buffered by a distance of 10,000 meters in order to encompass the reported maximum foraging distance for the species in British Columbia. If the locational uncertainty associated with the observation is greater than 10,000 meters, the observation is not valid for creation of a species occurrence. (Last Updated: Dec 22, 2022)

Predicted Models: L 100% Low (inductive)

M - Grizzly Bear *(Ursus arctos)* **SOC** | 7 | 1 | Y | H

View in Field Guide **View Predicted Models** **View Range Maps**

Species of Concern - Native Species Global: **G4** State: **S2S3** USFWS: **LT** BLM: **THREATENED** FWP SWAP: **SGCN2-3**

Delineation Criteria Species Occurrence polygons represent areas delineated by the U.S. Fish and Wildlife Service (USFWS) that encompass both home ranges and potential transitory movements based on verified sightings. Within these areas, the USFWS wants project proponents to consider whether the species â€œmay be presentâ€ when evaluating the potential impacts of a project and to work with the USFWS to develop and implement best management practices to minimize or eliminate project effects on the species. (Last Updated: Dec 22, 2023)

Predicted Models: L 54% Low (inductive)

M - Wolverine *(Gulo gulo)* **SOC** | 7 | 1 | Not Assessed | Y

View in Field Guide **View Range Maps**

Species of Concern - Native Species Global: **G4** State: **S3** USFWS: **LT** USFS: **Sensitive - Known in Forests (LOLO)** BLM: **THREATENED** FWP SWAP: **SGCN3**

Delineation Criteria Confirmed area of occupancy supported by recent (post-1980), nearby (within 10 kilometers) observations of adults or juveniles. Tracking regions were defined by areas of primary habitat and adjacent female dispersal habitat as modeled by Inman et al. (2013). These regions were buffered by 1 kilometer in order to link smaller areas and account for potential inaccuracies in independent variables used in the model. (Last Updated: Dec 20, 2023)

B - Brown Creeper *(Certhia americana)* **SOC** | 1 | Not Assessed | Y

View in Field Guide **View Range Maps**

Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **MBTA** FWP SWAP: **SGCN3** PIF: **1**

Delineation Criteria Observations with evidence of breeding activity buffered by a minimum distance of 300 meters in order to be conservative about encompassing home ranges and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Jun 29, 2023)

B - Evening Grosbeak *(Coccothraustes vespertinus)* **SOC** | 1 | Not Assessed | Y | W M

View in Field Guide **View Range Maps**

Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **MBTA; BCC10** FWP SWAP: **SGCN3**

Delineation Criteria Confirmed breeding area based on the presence of a nest, chicks, or territorial adults during the breeding season. Point observation location is buffered by a minimum distance of 1,000 meters in order to encompass the maximum foraging distance from nests reported for the species and otherwise is buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Dec 28, 2023)

B - Pacific Wren *(Troglodytes pacificus)* **SOC** | 1 | Not Assessed | Y

View in Field Guide **View Range Maps**

Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **MBTA** FWP SWAP: **SGCN3** PIF: **2**

Delineation Criteria Observations with evidence of breeding activity buffered by a minimum distance of 300 meters in order to be conservative about encompassing home ranges and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Apr 03, 2024)

B - Pileated Woodpecker *(Dryocopus pileatus)* **SOC** | 1 | Not Assessed | Y

View in Field Guide **View Range Maps**

Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **MBTA** FWP SWAP: **SGCN3** PIF: **2**

Delineation Criteria Observations with evidence of breeding activity buffered by a minimum distance of 1,500 meters in order to be conservative about encompassing home ranges and otherwise buffered by the locational uncertainty associated with the observation up to a maximum distance of 10,000 meters. (Last Updated: Dec 28, 2023)

V - Phacelia scopulina *(Dwarf Phacelia)* **PSOC** | 1 | Not Assessed

View in Field Guide

Potential Species of Concern - Native Species Global: **G4** State: **SH**

Delineation Criteria Individual occurrences are generally based upon a discretely mapped area provided by an observer and are not separated by any pre-defined distance. Individual clusters of plants mapped at fine spatial scales (separated by less than approximately 25-50 meters) may be grouped together into one occurrence if they are not separated by distinct areas of habitat or terrain features. Point observations are buffered to encompass any locational uncertainty associated with the observation. (Last Updated: Aug 23, 2017)

MONTANA STATE LIBRARY
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Legend

Model Icons	Habitat Icons	Range Icons	Num Obs
N Suitable (native range)	C Common	Y Native / Year-round	Count of obs with 'good precision' (<=1000m)
O Optimal Suitability	O Occasional	S Summer	+ indicates additional 'poor precision' obs (1001m-10,000m)
M Moderate Suitability		W Winter	
L Low Suitability		M Migratory	
I Suitable (introduced range)		N Non-native	
		H Historical	

Latitude	Longitude
45.61219	-112.77404
45.62794	-112.79488

Native Species

Summarized by: **002S010W036** *(Township / Section)*

Filtered by:

Native Species reports are filtered for Species with MT Status = Species of Concern, Special Status, Important Animal Habitat, Potential SOC

Other Observed Species

No Species were found for the filters selected

MONTANA STATE LIBRARY
NATURAL HERITAGE PROGRAM
A program of the **Montana State Library's Natural Resource Information System**

Legend

Model Icons
- N Suitable (native range)
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Habitat Icons
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- O Occasional

Range Icons
- Y Native / Year-round
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Native Species

Summarized by: **002S010W036** *(Township / Section)*
Filtered by:
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Other Potential Species

	USFWS Sec7	Predicted Model	Range
M - Preble's Shrew *(Sorex preblei)* SOC			Y
V - Erigeron linearis *(Linear-leaf Fleabane)* SOC			Y
V - Eriogonum caespitosum *(Mat Buckwheat)* SOC			Y
V - Potentilla plattensis *(Platte Cinquefoil)* SOC			Y
L - Rhizoplaca haydenii *(Hayden's Rimmed Navel Lichen)* SOC			Y
V - Carex stenoptila *(Small-winged Sedge)* SOC			Y
V - Oxytropis lagopus var. conjugans *(Hare's-foot Locoweed)* PSOC			Y
M - Townsend's Big-eared Bat *(Corynorhinus townsendii)* SOC			Y
V - Erigeron parryi *(Parry's Fleabane)* SOC			Y
B - Ferruginous Hawk *(Buteo regalis)* SOC			S M
B - Sage Thrasher *(Oreoscoptes montanus)* SOC			S M
V - Ranunculus hyperboreus *(High Northern Buttercup)* PSOC			Y

M - Preble's Shrew *(Sorex preblei)* SOC

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G4** State: **S3** FWP SWAP: **SGCN3**
Predicted Models: M 100% Moderate (inductive)

V - Erigeron linearis *(Linear-leaf Fleabane)* SOC

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S2** Plant Threat Score: **Low** CCVI: **Less Vulnerable**
Predicted Models: M 100% Moderate (inductive)

V - Eriogonum caespitosum *(Mat Buckwheat)* SOC

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G5** State: **S2S3** Plant Threat Score: **No Known Threats**
Predicted Models: M 100% Moderate (inductive)

V - Potentilla plattensis *(Platte Cinquefoil)* SOC

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G4** State: **S3** Plant Threat Score: **No Known Threats** CCVI: **Highly Vulnerable**
Predicted Models: M 100% Moderate (inductive)

L - Rhizoplaca haydenii *(Hayden's Rimmed Navel Lichen)* SOC

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G2G3** State: **S1S2** USFS: **Sensitive - Known in Forests (BRT)**
Predicted Models: M 100% Moderate (inductive)

V - Carex stenoptila *(Small-winged Sedge)* SOC

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G3** State: **S2S3** Plant Threat Score: **No Known Threats** CCVI: **Less Vulnerable**
Predicted Models: M 83% Moderate (inductive), L 17% Low (inductive)

V - Oxytropis lagopus var. conjugans *(Hare's-foot Locoweed)* PSOC

View in Field Guide | View Predicted Models | View Range Maps
Potential Species of Concern - Native Species Global: **G4G5T3T4** State: **S3S4**
Predicted Models: M 83% Moderate (inductive), L 17% Low (inductive)

M - Townsend's Big-eared Bat *(Corynorhinus townsendii)* SOC

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G4** State: **S3** USFS: **Sensitive - Known in Forests (LOLO)** BLM: **SENSITIVE** FWP SWAP: **SGCN3**
Predicted Models: M 64% Moderate (inductive), L 36% Low (inductive)

V - Erigeron parryi *(Parry's Fleabane)* SOC

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G2G3** State: **S2S3** USFS: **Sensitive - Known in Forests (BRT)** Plant Threat Score: **No Known Threats** CCVI: **Moderately Vulnerable**
Predicted Models: M 64% Moderate (inductive), L 36% Low (inductive)

B - Ferruginous Hawk *(Buteo regalis)* SOC

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G4** State: **S3B** USFWS: **MBTA; BCC17** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**
Predicted Models: M 63% Moderate (inductive), L 37% Low (inductive)

B - Sage Thrasher *(Oreoscoptes montanus)* SOC

View in Field Guide | View Predicted Models | View Range Maps
Species of Concern - Native Species Global: **G4** State: **S3B** USFWS: **MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **3**
Predicted Models: M 63% Moderate (inductive), L 37% Low (inductive)

V - Ranunculus hyperboreus *(High Northern Buttercup)* PSOC

View in Field Guide | View Predicted Models | View Range Maps
Potential Species of Concern - Native Species Global: **G5** State: **S3S4** Plant Threat Score: **No Known Threats**
Predicted Models: M 17% Moderate (inductive), L 83% Low (inductive)

V - Mimulus suksdorfii *(Suksdorf Monkeyflower)* PSOC

View in Field Guide | View Predicted Models | View Range Maps

Potential Species of Concern - Native Species Global: **G4** State: **S3S4** Plant Threat Score: **No Known Threats**

Predicted Models: M 1% Moderate (inductive), L 82% Low (inductive)

M - Little Brown Myotis *(Myotis lucifugus)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G3G4** State: **S3** USFS: **Sensitive - Known in Forests (BD, BRT, KOOT)** FWP SWAP: **SGCN3**

Predicted Models: L 100% Low (inductive)

M - Long-eared Myotis *(Myotis evotis)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3**

Predicted Models: L 100% Low (inductive)

M - Long-legged Myotis *(Myotis volans)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G4G5** State: **S3**

Predicted Models: L 100% Low (inductive)

M - Wyoming Ground Squirrel *(Urocitellus elegans)* PSOC

View in Field Guide | View Predicted Models | View Range Maps

Potential Species of Concern - Native Species Global: **G5** State: **S3S4**

Predicted Models: L 100% Low (inductive)

B - Clark's Nutcracker *(Nucifraga columbiana)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **MBTA** USFS: **Species of Conservation Concern in Forests (FLAT)** FWP SWAP: **SGCN3** PIF: **3**

Predicted Models: L 100% Low (inductive)

I - Rhyacophila betteni *(A Caddisfly)* SSS

View in Field Guide | View Predicted Models | View Range Maps

Special Status Species - Native Species Global: **G2G4** State: **S3S4**

Predicted Models: L 100% Low (inductive)

V - Gentianopsis simplex *(Hiker's Gentian)* SOC

View in Field Guide | View Predicted Models | View Range Maps

USFS: **Sensitive - Suspected in Forests (LOLO)**

Species of Concern - Native Species Global: **G5** State: **S2** **Species of Conservation Concern in Forests (CG)** Plant Threat Score: **Unknown**

CCVI: **Extremely Vulnerable**

Predicted Models: L 100% Low (inductive)

V - Kobresia simpliciuscula *(Simple Kobresia)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** Plant Threat Score: **Unknown**

Predicted Models: L 100% Low (inductive)

V - Mimulus floribundus *(Floriferous Monkeyflower)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **SH** Plant Threat Score: **No Known Threats** CCVI: **Highly Vulnerable**

Predicted Models: L 100% Low (inductive)

V - Orobanche corymbosa *(Flat-topped Broomrape)* PSOC

View in Field Guide | View Predicted Models | View Range Maps

Potential Species of Concern - Native Species Global: **G4** State: **S3S4** Plant Threat Score: **No Known Threats**

Predicted Models: L 100% Low (inductive)

V - Primula incana *(Mealy Primrose)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** Plant Threat Score: **High** CCVI: **Highly Vulnerable**

Predicted Models: L 100% Low (inductive)

V - Ranunculus pedatifidus *(Northern Buttercup)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** USFS: **Species of Conservation Concern in Forests (HLC)** Plant Threat Score: **Unknown**

Predicted Models: L 100% Low (inductive)

V - Stellaria crassifolia *(Fleshy Stitchwort)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S2** Plant Threat Score: **No Known Threats**

Predicted Models: L 100% Low (inductive)

V - Thalictrum alpinum *(Alpine Meadowrue)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S2** USFS: **Sensitive - Known in Forests (BD, KOOT)** Plant Threat Score: **High - Medium**

CCVI: **Highly Vulnerable**

Predicted Models: L 100% Low (inductive)

M - Hoary Bat *(Lasiurus cinereus)* **SOC**

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G3G4** State: **S3B** BLM: **SENSITIVE** FWP SWAP: **SGCN3**

Predicted Models: L 100% Low (inductive)

B - Golden Eagle *(Aquila chrysaetos)* **SOC**

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **BGEPA; MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN3**

Predicted Models: L 64% Low (inductive)

M - Dwarf Shrew *(Sorex nanus)* **SOC**

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S2S3** FWP SWAP: **SGCN2-3**

Predicted Models: L 63% Low (inductive)

V - Eriogonum soliceps *(Railroad Canyon Wild Buckwheat)* **SOC**

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G3** State: **S3** BLM: **SENSITIVE** Plant Threat Score: **No Known Threats** CCVI: **Less Vulnerable**

Predicted Models: L 63% Low (inductive)

B - Long-billed Curlew *(Numenius americanus)* **SOC**

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S3B** USFWS: **MBTA; BCC11** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**

Predicted Models: L 63% Low (inductive)

V - Carex idahoa *(Idaho Sedge)* **SOC**

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G3** State: **S3** USFS: **Sensitive - Known in Forests (BD)** BLM: **SENSITIVE** Plant Threat Score: **High** CCVI: **Highly Vulnerable**

Predicted Models: L 54% Low (inductive)

B - Veery *(Catharus fuscescens)* **SOC**

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3B** USFWS: **MBTA** BLM: **SENSITIVE** FWP SWAP: **SGCN3** PIF: **2**

Predicted Models: L 54% Low (inductive)

V - Townsendia spathulata *(Sword Townsend-daisy)* **PSOC**

View in Field Guide | View Predicted Models | View Range Maps

Potential Species of Concern - Native Species Global: **G3** State: **S3S4** Plant Threat Score: **No Known Threats**

Predicted Models: L 47% Low (inductive)

M - Western Spotted Skunk *(Spilogale gracilis)* **PSOC**

View in Field Guide | View Predicted Models | View Range Maps

Potential Species of Concern - Native Species Global: **G5** State: **SU** FWP SWAP: **SGIN**

Predicted Models: L 46% Low (inductive)

B - Pinyon Jay *(Gymnorhinus cyanocephalus)* **SOC**

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G3** State: **S3** USFWS: **MBTA; BCC10; BCC17** FWP SWAP: **SGCN3**

Predicted Models: L 46% Low (inductive)

V - Eleocharis rostellata *(Beaked Spikerush)* **SOC**

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** USFS: **Species of Conservation Concern in Forests (CG, FLAT, HLC)** Plant Threat Score: **Unknown** CCVI: **Less Vulnerable**

Predicted Models: L 46% Low (inductive)

B - Cassin's Finch *(Haemorhous cassinii)* **SOC**

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **MBTA; BCC10** FWP SWAP: **SGCN3** PIF: **3**

Predicted Models: L 37% Low (inductive)

B - Western Screech-Owl *(Megascops kennicottii)* **PSOC**

View in Field Guide | View Predicted Models | View Range Maps

Potential Species of Concern - Native Species Global: **G4G5** State: **S3S4** USFWS: **MBTA** FWP SWAP: **SGIN** PIF: **3**

Predicted Models: L 37% Low (inductive)

I - Bombus suckleyi *(Suckley Cuckoo Bumble Bee)* **SOC**

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G2G3** State: **S1**

Predicted Models: L 37% Low (inductive)

V - Agastache cusickii *(Cusick's Horsemint)* **SOC**

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G3G4** State: **S2S3** USFS: **Sensitive - Known in Forests (BD)** BLM: **SENSITIVE** Plant Threat Score: **High - Medium** CCVI: **Moderately Vulnerable**

Predicted Models: L 37% Low (inductive)

V - Ageratina occidentalis *(Western Joepye-weed)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G4** State: **S2** USFS: **Sensitive - Known in Forests (BRT)** **Sensitive - Suspected in Forests (BD, LOLO)** Plant Threat Score: **Unknown** CCVI: **Less Vulnerable**

Predicted Models: 37% Low (inductive)

V - Boechera fecunda *(Sapphire Rockcress)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G2** State: **S2** USFS: **Sensitive - Known in Forests (BD, BRT)** **Sensitive - Suspected in Forests (LOLO)** BLM: **SENSITIVE** Plant Threat Score: **Medium** CCVI: **Moderately Vulnerable**

Predicted Models: 37% Low (inductive)

V - Draba densifolia *(Dense-leaf Draba)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S2** USFS: **Sensitive - Known in Forests (BD, BRT)** **Species of Conservation Concern in Forests (CG, HLC)** Plant Threat Score: **Low** CCVI: **Moderately Vulnerable**

Predicted Models: 37% Low (inductive)

V - Polygonum austiniae *(Austin's Knotweed)* PSOC

View in Field Guide | View Predicted Models | View Range Maps

Potential Species of Concern - Native Species Global: **G5T4** State: **S3S4** USFS: **Species of Conservation Concern in Forests (HLC)**

Predicted Models: 37% Low (inductive)

V - Stipa lettermanii *(Letterman's Needlegrass)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S1S3** USFS: **Species of Conservation Concern in Forests (HLC)** Plant Threat Score: **No Known Threats**

Predicted Models: 37% Low (inductive)

B - American Goshawk *(Accipiter atricapillus)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **MBTA** FWP SWAP: **SGCN3** PIF: **2**

Predicted Models: 36% Low (inductive)

V - Noccaea parviflora *(Small-flowered Pennycress)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G3** State: **S3** USFS: **Sensitive - Known in Forests (BRT)** Plant Threat Score: **Unknown** CCVI: **Highly Vulnerable**

Predicted Models: 36% Low (inductive)

V - Pinus albicaulis *(Whitebark Pine)* SOC

View in Field Guide | View Predicted Models | View Range Maps

Species of Concern - Native Species Global: **G3G4** State: **S3** USFWS: **LT** USFS: **Sensitive - Known in Forests (LOLO)** BLM: **THREATENED** Plant Threat Score: **Unknown** CCVI: **Highly Vulnerable**

Predicted Models: 36% Low (inductive)

M - Canada Lynx *(Lynx canadensis)* SOC

View in Field Guide | View Range Maps

Species of Concern - Native Species Global: **G5** State: **S3** USFWS: **LT; CH** BLM: **THREATENED** FWP SWAP: **SGCN3**

Exhibit C
Soil Report

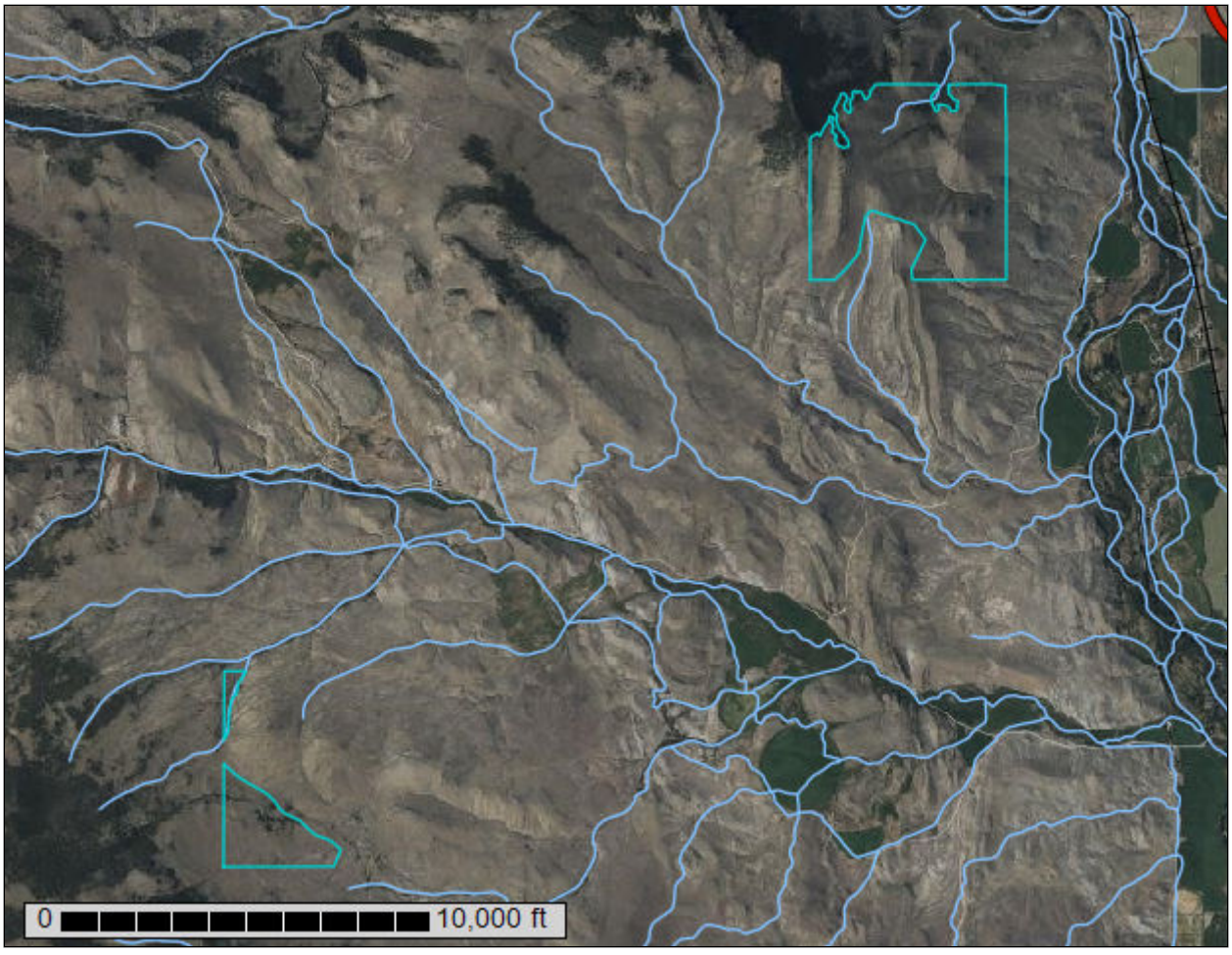
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Beaverhead National Forest Area, Montana, Dillon Area - Part of Beaverhead County, Montana, and Silver Bow County Area and Parts of Beaverhead and Jefferson Counties, Montana



June 19, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

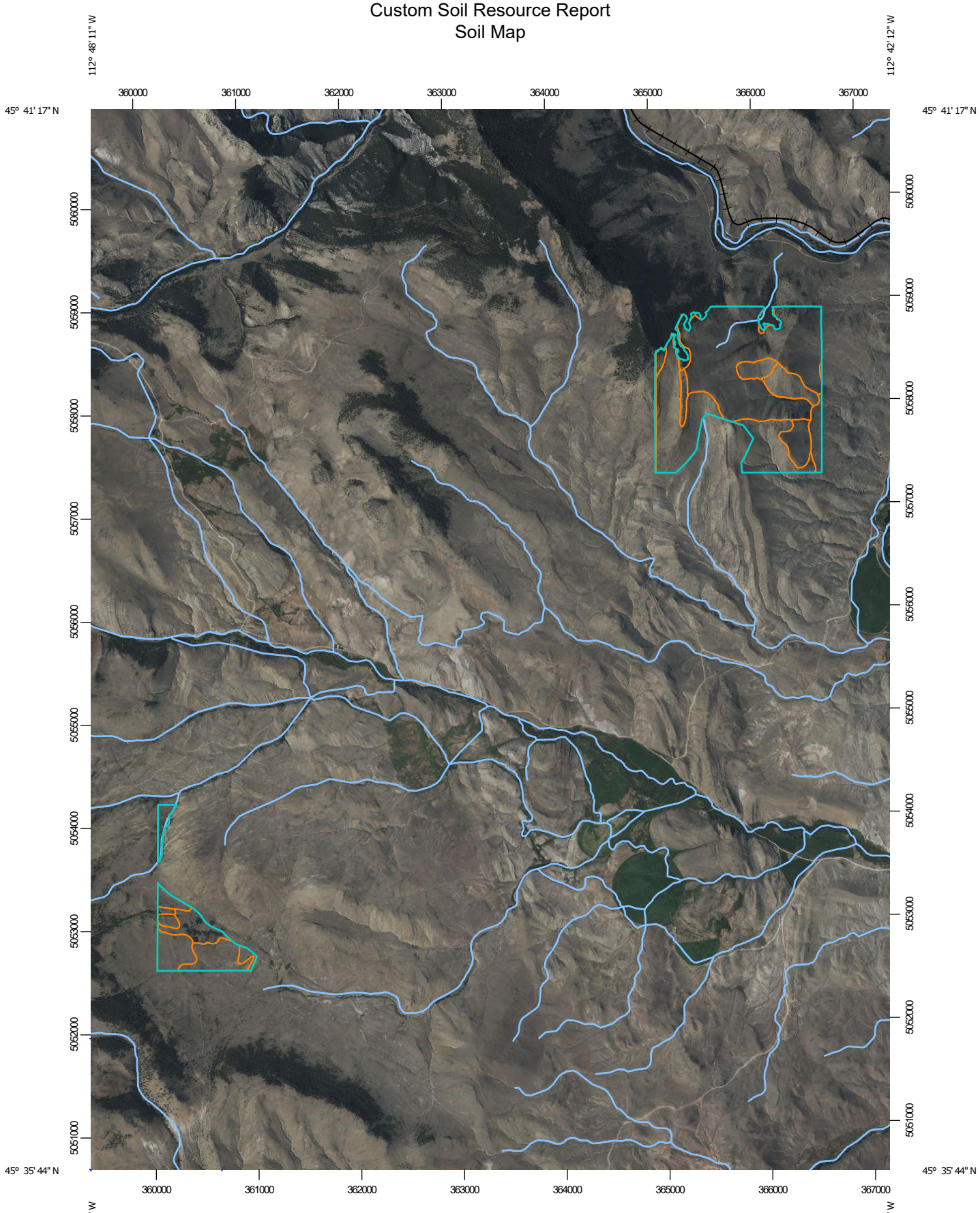
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:50,100 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 500 1000 2000 3000

Feet
0 2000 4000 8000 12000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 12N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Beaverhead National Forest Area, Montana
Survey Area Data: Version 25, Aug 25, 2023

Soil Survey Area: Dillon Area - Part of Beaverhead County, Montana
Survey Area Data: Version 21, Aug 25, 2023

Soil Survey Area: Silver Bow County Area and Parts of Beaverhead and Jefferson Counties, Montana
Survey Area Data: Version 24, Aug 30, 2023

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

MAP LEGEND

MAP INFORMATION

Date(s) aerial images were photographed: Aug 17, 2022—Aug 23, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
272F	Rencot, stony-Spudbar-Rock outcrop complex, 25 to 50 percent slopes	1.7	0.3%
923F	Whitore, rubbly-Poin, rubbly-Rock outcrop complex, 25 to 60 percent slopes	0.0	0.0%
924F	Whitlash, extremely stony-Gnojek, extremely stony-Rock outcrop complex, 20 to 60 percent slopes	0.3	0.1%
Subtotals for Soil Survey Area		**2.0**	**0.3%**
Totals for Area of Interest		**667.5**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
998E	Libeg-Nieman, stony complex, 8 to 25 percent slopes	50.4	7.6%
2125F	Rubble land-Elve, very stony-Rock outcrop complex, 25 to 60 percent slopes	2.6	0.4%
2213E	Sebud, stony-Surdal, stony-Poin, very stony complex, 8 to 35 percent slopes	28.9	4.3%
2712D	Libeg-Mooseflat, frequently flooded complex, 4 to 25 percent slopes	32.9	4.9%
9102F	Nathale, very bouldery-Poin, very stony-Rock outcrop complex, 20 to 60 percent slopes	10.2	1.5%
Subtotals for Soil Survey Area		**125.0**	**18.7%**
Totals for Area of Interest		**667.5**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
272F	Rencot, stony-Spudbar-Rock outcrop complex, 25 to 50 percent slopes	158.0	23.7%
394E	Minestope, very stony-Beeftrail, very stony-Rock outcrop complex, 8 to 30 percent slopes	17.6	2.6%
742F	Trimad, very stony-Frenchcreek, very stony-Rubble land complex, 25 to 60 percent slopes	26.3	3.9%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
761E	Quincreek, very stony-Whitlash, very stony-Rock outcrop complex, 12 to 35 percent slopes	14.4	2.2%
921F	Whitlash-Frenchcreek complex, 20 to 50 percent slopes, rubbly	23.8	3.6%
923F	Whitore, rubbly-Poin, rubbly-Rock outcrop complex, 25 to 60 percent slopes	7.3	1.1%
924F	Whitlash, extremely stony-Gnojek, extremely stony-Rock outcrop complex, 20 to 60 percent slopes	12.4	1.9%
930F	Ratiopeak-Tiban complex, 25 to 60 percent slopes, very stony	280.7	42.1%
Subtotals for Soil Survey Area		**540.4**	**81.0%**
Totals for Area of Interest		**667.5**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Beaverhead National Forest Area, Montana

272F—Rencot, stony-Spudbar-Rock outcrop complex, 25 to 50 percent slopes

Map Unit Setting

National map unit symbol: 20dyr
Elevation: 5,000 to 6,580 feet
Mean annual precipitation: 10 to 14 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 90 to 105 days
Farmland classification: Not prime farmland

Map Unit Composition

Rencot, stony, and similar soils: 30 percent
Spudbar and similar soils: 20 percent
Rock outcrop: 15 percent
Minor components: 35 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rencot, Stony

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from rhyolite; colluvium derived from rhyolite

Typical profile

A - 0 to 3 inches: very cobbly loam
Bk1 - 3 to 9 inches: very gravelly loam
Bk2 - 9 to 15 inches: extremely gravelly sandy loam
R - 15 to 60 inches: bedrock

Properties and qualities

Slope: 25 to 50 percent
Surface area covered with cobbles, stones or boulders: 0.1 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 1.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R043BP805MT - Limy Sagebrush Shrubland Group
Hydric soil rating: No

Description of Spudbar

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sandstone and shale and/or residuum weathered from sandstone and siltstone

Typical profile

A - 0 to 6 inches: very cobbly loam
Bk1 - 6 to 18 inches: very gravelly loam
Bk2 - 18 to 22 inches: extremely gravelly sandy loam
R - 22 to 60 inches: bedrock

Properties and qualities

Slope: 25 to 50 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Available water supply, 0 to 60 inches: Very low (about 1.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: R043BP805MT - Limy Sagebrush Shrubland Group
Hydric soil rating: No

Description of Rock Outcrop

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: Unranked

Minor Components

Rubble land

Percent of map unit: 10 percent
Hydric soil rating: Unranked

Spudbar, lesser slopes

Percent of map unit: 10 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R043BP805MT - Limy Sagebrush Shrubland Group
Hydric soil rating: No

Rencot, very stony

Percent of map unit: 9 percent

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R043BP805MT - Limy Sagebrush Shrubland Group
Hydric soil rating: No

Zbart

Percent of map unit: 6 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R043BP811MT - Shallow Sagebrush Shrubland Group
Hydric soil rating: No

923F—Whitore, rubbly-Poin, rubbly-Rock outcrop complex, 25 to 60 percent slopes

Map Unit Setting

National map unit symbol: 20f67
Elevation: 5,380 to 7,820 feet
Mean annual precipitation: 11 to 14 inches
Mean annual air temperature: 35 to 40 degrees F
Frost-free period: 50 to 70 days
Farmland classification: Not prime farmland

Map Unit Composition

Whitore, rubbly, and similar soils: 40 percent
Poin, rubbly, and similar soils: 20 percent
Rock outcrop: 15 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Whitore, Rubbly

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Down-slope shape: Linear
Across-slope shape: Convex, linear
Parent material: Calcareous colluvium derived from quartzite

Typical profile

A - 0 to 5 inches: very cobbly loam
E - 5 to 8 inches: gravelly loam
Bw - 8 to 14 inches: very gravelly loam
Bk1 - 14 to 21 inches: very gravelly loam
Bk2 - 21 to 60 inches: very gravelly loam

Properties and qualities

Slope: 25 to 60 percent
Surface area covered with cobbles, stones or boulders: 20.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 50 percent
Maximum salinity: Nonsaline (0.2 to 1.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: F043BP910MT - Upland Cool Woodland Group
Other vegetative classification: Douglas-fir/pinegrass (PK320)
Hydric soil rating: No

Description of Poin, Rubbly

Setting

Landform: Mountains
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Residuum weathered from quartzite

Typical profile

A - 0 to 5 inches: very cobbly sandy loam
Bw - 5 to 12 inches: very cobbly loam
C - 12 to 15 inches: extremely cobbly sandy loam
R - 15 to 60 inches: bedrock

Properties and qualities

Slope: 30 to 60 percent
Surface area covered with cobbles, stones or boulders: 16.0 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 0.4 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 1.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: F043BP903MT - Shallow Cool Woodland Group

Other vegetative classification: Douglas-fir/Idaho fescue (PK220)
Hydric soil rating: No

Description of Rock Outcrop

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8

Minor Components

Tiban, extremely stony
Percent of map unit: 10 percent
Landform: Mountains
Landform position (two-dimensional): Footslope
Down-slope shape: Linear
Across-slope shape: Concave, linear
Other vegetative classification: Douglas-fir/pinegrass (PK320)
Hydric soil rating: No

Skaggs, rubbly
Percent of map unit: 10 percent
Landform: Mountains
Landform position (two-dimensional): Shoulder, backslope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Other vegetative classification: Douglas-fir/pinegrass (PK320)
Hydric soil rating: No

Rubble land
Percent of map unit: 5 percent

924F—Whitlash, extremely stony-Gnojek, extremely stony-Rock outcrop complex, 20 to 60 percent slopes

Map Unit Setting
National map unit symbol: 20f68
Elevation: 5,300 to 6,970 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 40 to 43 degrees F
Frost-free period: 70 to 90 days
Farmland classification: Not prime farmland

Map Unit Composition
Whitlash, extremely stony, and similar soils: 35 percent
Gnojek, extremely stony, and similar soils: 30 percent
Rock outcrop: 20 percent
Reedpoint, extremely stony, and similar soils: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Whitlash, Extremely Stony

Setting

Landform: Mountains
Landform position (two-dimensional): Shoulder, backslope
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Parent material: Colluvium over residuum weathered from quartzite

Typical profile

A - 0 to 4 inches: very gravelly sandy loam
Bw - 4 to 12 inches: very gravelly sandy loam
BC - 12 to 15 inches: very gravelly sandy loam
R - 15 to 60 inches: bedrock

Properties and qualities

Slope: 30 to 60 percent
Surface area covered with cobbles, stones or boulders: 10.0 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (1.28 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.1 to 0.4 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very low (about 1.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R043BP811MT - Shallow Sagebrush Shrubland Group
Hydric soil rating: No

Description of Gnojek, Extremely Stony

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Down-slope shape: Linear
Across-slope shape: Concave, linear
Parent material: Residuum weathered from quartzite

Typical profile

A - 0 to 3 inches: very gravelly sandy loam
Bt - 3 to 10 inches: very channery sandy clay loam
Bk - 10 to 15 inches: very channery sandy loam
R - 15 to 60 inches: bedrock

Properties and qualities

Slope: 20 to 50 percent
Surface area covered with cobbles, stones or boulders: 4.0 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 1.28 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.5 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very low (about 1.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R043BP811MT - Shallow Sagebrush Shrubland Group
Hydric soil rating: No

Description of Rock Outcrop

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8

Description of Reedpoint, Extremely Stony

Setting

Landform: Mountains
Landform position (two-dimensional): Summit, shoulder
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Colluvium over residuum weathered from quartzite

Typical profile

A - 0 to 4 inches: very gravelly sandy loam
BC - 4 to 5 inches: very gravelly sandy loam
R - 5 to 60 inches: bedrock

Properties and qualities

Slope: 30 to 60 percent
Surface area covered with cobbles, stones or boulders: 7.0 percent
Depth to restrictive feature: 3 to 10 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.1 to 0.4 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Very low (about 0.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R043BP812MT - Shallow Shrubland Group
Hydric soil rating: No

Dillon Area - Part of Beaverhead County, Montana

998E—Libeg-Nieman, stony complex, 8 to 25 percent slopes

Map Unit Setting

National map unit symbol: 4zc0
Elevation: 5,500 to 7,500 feet
Mean annual precipitation: 15 to 19 inches
Mean annual air temperature: 36 to 39 degrees F
Frost-free period: 30 to 70 days
Farmland classification: Not prime farmland

Map Unit Composition

Libeg and similar soils: 55 percent
Nieman and similar soils: 30 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Libeg

Setting

Landform: Mountain slopes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Gravelly till, unspecified

Typical profile

A - 0 to 15 inches: gravelly loam
Bt1 - 15 to 24 inches: very cobbly loam
Bt2 - 24 to 34 inches: very cobbly sandy clay loam
BC - 34 to 60 inches: extremely gravelly sandy loam

Properties and qualities

Slope: 8 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: R043BP819MT - Upland Sagebrush Shrubland Group
Hydric soil rating: No

Description of Nieman

Setting

Landform: Ridges, mountain slopes
Landform position (three-dimensional): Mountaintop
Down-slope shape: Linear

Across-slope shape: Linear
Parent material: Gravelly residuum weathered from basalt

Typical profile

A - 0 to 5 inches: cobbly loam
Bt - 5 to 11 inches: very gravelly sandy clay loam
C - 11 to 15 inches: extremely gravelly loamy sand
R - 15 to 60 inches: unweathered bedrock

Properties and qualities

Slope: 8 to 25 percent
Surface area covered with cobbles, stones or boulders: 0.1 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 1.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R043BP811MT - Shallow Sagebrush Shrubland Group
Hydric soil rating: No

Minor Components

Rock outcrop

Percent of map unit: 5 percent
Hydric soil rating: No

Sebud

Percent of map unit: 4 percent
Landform: Alluvial fans, mountain slopes
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R043BP819MT - Upland Sagebrush Shrubland Group
Hydric soil rating: No

Poin

Percent of map unit: 3 percent
Landform: Ridges, mountain slopes
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R043BP811MT - Shallow Sagebrush Shrubland Group
Hydric soil rating: No

Surdal

Percent of map unit: 3 percent
Landform: Mountain slopes, ridges
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R043BP819MT - Upland Sagebrush Shrubland Group

Hydric soil rating: No

2125F—Rubble land-Elve, very stony-Rock outcrop complex, 25 to 60 percent slopes

Map Unit Setting

National map unit symbol: 4zcg
Elevation: 5,500 to 7,620 feet
Mean annual precipitation: 15 to 24 inches
Mean annual air temperature: 36 to 39 degrees F
Frost-free period: 50 to 70 days
Farmland classification: Not prime farmland

Map Unit Composition

Rubble land, volcanic: 60 percent
Elve and similar soils: 25 percent
Rock outcrop, volcanic: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rubble Land, Volcanic

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: Unranked

Description of Elve

Setting

Landform: Mountain slopes
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Gravelly colluvium derived from basalt

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 6 inches: very cobbly loam
E - 6 to 12 inches: very gravelly loam
Bw - 12 to 19 inches: very gravelly loam
BC - 19 to 33 inches: very gravelly coarse sandy loam
C - 33 to 60 inches: extremely gravelly coarse sandy loam

Properties and qualities

Slope: 25 to 60 percent
Surface area covered with cobbles, stones or boulders: 1.5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained

Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: F043BP910MT - Upland Cool Woodland Group
Other vegetative classification: Douglas-fir/common juniper (PK360)
Hydric soil rating: No

Description of Rock Outcrop, Volcanic

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: Unranked

2213E—Sebud, stony-Surdal, stony-Poin, very stony complex, 8 to 35 percent slopes

Map Unit Setting

National map unit symbol: 4zcm
Elevation: 5,500 to 7,560 feet
Mean annual precipitation: 15 to 24 inches
Mean annual air temperature: 36 to 39 degrees F
Frost-free period: 30 to 70 days
Farmland classification: Not prime farmland

Map Unit Composition

Sebud and similar soils: 55 percent
Surdal and similar soils: 20 percent
Poin and similar soils: 15 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sebud

Setting

Landform: Alluvial fans, mountain slopes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Gravelly slope alluvium derived from basalt

Typical profile

A - 0 to 10 inches: very gravelly loam
Bw1 - 10 to 23 inches: very gravelly loam
Bw2 - 23 to 32 inches: very gravelly loam
BC - 32 to 44 inches: very gravelly loam
C - 44 to 60 inches: extremely gravelly loam

Properties and qualities

Slope: 8 to 35 percent
Surface area covered with cobbles, stones or boulders: 0.1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: R044BP819MT - Upland Sagebrush Shrubland
Hydric soil rating: No

Description of Surdal

Setting

Landform: Mountain slopes, ridges
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Gravelly slope alluvium derived from basalt over residuum weathered from basalt

Typical profile

A - 0 to 13 inches: very gravelly loam
Bw1 - 13 to 23 inches: very cobbly loam
Bw2 - 23 to 31 inches: very cobbly loam
R - 31 to 60 inches: unweathered bedrock

Properties and qualities

Slope: 8 to 35 percent
Surface area covered with cobbles, stones or boulders: 0.1 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C

Ecological site: R044BP819MT - Upland Sagebrush Shrubland
Hydric soil rating: No

Description of Poin

Setting
Landform: Ridges, mountain slopes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Gravelly residuum weathered from basalt

Typical profile
A - 0 to 7 inches: very cobbly loam
Bw - 7 to 14 inches: very channery sandy loam
C - 14 to 18 inches: extremely channery loamy sand
R - 18 to 60 inches: unweathered bedrock

Properties and qualities
Slope: 8 to 35 percent
Surface area covered with cobbles, stones or boulders: 1.5 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.4 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R043BP811MT - Shallow Sagebrush Shrubland Group
Hydric soil rating: No

Minor Components

Libeg
Percent of map unit: 3 percent
Landform: Mountain slopes
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R043BP819MT - Upland Sagebrush Shrubland Group
Hydric soil rating: No

Tibkey
Percent of map unit: 3 percent
Landform: Drainageways
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R043BP817MT - Subirrigated Shrubland Group
Hydric soil rating: No

Elve
Percent of map unit: 2 percent
Landform: Mountain slopes
Landform position (three-dimensional): Mountainflank

Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Douglas-fir/common juniper (PK360)
Hydric soil rating: No

Rock outcrop, volcanic
Percent of map unit: 2 percent
Hydric soil rating: No

2712D—Libeg-Mooseflat, frequently flooded complex, 4 to 25 percent slopes

Map Unit Setting
National map unit symbol: 4zd0
Elevation: 5,500 to 7,500 feet
Mean annual precipitation: 15 to 19 inches
Mean annual air temperature: 36 to 39 degrees F
Frost-free period: 30 to 70 days
Farmland classification: Not prime farmland

Map Unit Composition
Libeg and similar soils: 60 percent
Mooseflat, frequently flooded, and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Libeg

Setting
Landform: Hillsides
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Gravelly till, unspecified

Typical profile
A - 0 to 15 inches: loam
Bt1 - 15 to 24 inches: very cobbly loam
Bt2 - 24 to 34 inches: very cobbly sandy clay loam
BC - 34 to 60 inches: extremely gravelly sandy loam

Properties and qualities
Slope: 4 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: R043BP821MT - Upland Alpine Group
Hydric soil rating: No

Description of Mooseflat, Frequently Flooded

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Organic material over fine-loamy alluvium over sandy and gravelly alluvium

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 10 inches: loam
Bg - 10 to 18 inches: silt loam
BCg - 18 to 22 inches: loamy fine sand
2Cg - 22 to 60 inches: very cobbly loamy sand

Properties and qualities

Slope: 4 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: R043BP801MT - Bottomland Group
Hydric soil rating: Yes

Minor Components

Libeg, very gravelly

Percent of map unit: 10 percent
Landform: Hillsides, mountain slopes
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R043BP819MT - Upland Sagebrush Shrubland Group
Other vegetative classification: Douglas-fir/rough fescue (PK230)
Hydric soil rating: No

Tibkey

Percent of map unit: 4 percent
Landform: Drainageways

Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R043BP817MT - Subirrigated Shrubland Group
Hydric soil rating: No

Water

Percent of map unit: 1 percent

9102F—Nathale, very bouldery-Poin, very stony-Rock outcrop complex, 20 to 60 percent slopes

Map Unit Setting

National map unit symbol: 4z8v
Elevation: 6,000 to 7,000 feet
Mean annual precipitation: 15 to 19 inches
Mean annual air temperature: 36 to 43 degrees F
Frost-free period: 30 to 70 days
Farmland classification: Not prime farmland

Map Unit Composition

Nathale and similar soils: 40 percent
Poin and similar soils: 30 percent
Rock outcrop: 20 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nathale

Setting

Landform: Ridges
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sandstone and shale

Typical profile

A - 0 to 10 inches: very channery sandy clay loam
Bt - 10 to 31 inches: extremely channery clay loam
Bk - 31 to 39 inches: extremely channery sandy clay loam
R - 39 to 60 inches: unweathered bedrock

Properties and qualities

Slope: 20 to 60 percent
Surface area covered with cobbles, stones or boulders: 1.5 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: R043BP819MT - Upland Sagebrush Shrubland Group
Hydric soil rating: No

Description of Poin

Setting

Landform: Ridges
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sandstone and shale

Typical profile

A - 0 to 7 inches: very channery loam
Bw - 7 to 14 inches: very channery sandy loam
C - 14 to 18 inches: extremely channery loamy sand
R - 18 to 60 inches: unweathered bedrock

Properties and qualities

Slope: 20 to 60 percent
Surface area covered with cobbles, stones or boulders: 1.5 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R043BP811MT - Shallow Sagebrush Shrubland Group
Hydric soil rating: No

Description of Rock Outcrop

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: Unranked

Minor Components

Ratiopeak

Percent of map unit: 3 percent
Landform: Alluvial fans
Down-slope shape: Linear

Across-slope shape: Linear
Ecological site: R043BP819MT - Upland Sagebrush Shrubland Group
Hydric soil rating: No

Cheadle

Percent of map unit: 3 percent
Landform: Ridges
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R043BP811MT - Shallow Sagebrush Shrubland Group
Hydric soil rating: No

Surdal

Percent of map unit: 2 percent
Landform: Ridges
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R043BP819MT - Upland Sagebrush Shrubland Group
Hydric soil rating: No

Hanson

Percent of map unit: 2 percent
Landform: Hillsides
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R043BP819MT - Upland Sagebrush Shrubland Group
Hydric soil rating: No

Silver Bow County Area and Parts of Beaverhead and Jefferson Counties, Montana

272F—Rencot, stony-Spudbar-Rock outcrop complex, 25 to 50 percent slopes

Map Unit Setting

National map unit symbol: 1tzcs
Elevation: 5,000 to 6,580 feet
Mean annual precipitation: 10 to 14 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 90 to 105 days
Farmland classification: Not prime farmland

Map Unit Composition

Rencot, stony, and similar soils: 30 percent
Spudbar and similar soils: 20 percent
Rock outcrop: 15 percent
Minor components: 35 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rencot, Stony

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from rhyolite; colluvium derived from rhyolite

Typical profile

A - 0 to 3 inches: very cobbly loam
Bk1 - 3 to 9 inches: very gravelly loam
Bk2 - 9 to 15 inches: extremely gravelly sandy loam
R - 15 to 60 inches: bedrock

Properties and qualities

Slope: 25 to 50 percent
Surface area covered with cobbles, stones or boulders: 0.1 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 1.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R043BP805MT - Limy Sagebrush Shrubland Group

Hydric soil rating: No

Description of Spudbar

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sandstone and shale and/or residuum weathered from sandstone and siltstone

Typical profile

A - 0 to 6 inches: very cobbly loam
Bk1 - 6 to 18 inches: very gravelly loam
Bk2 - 18 to 22 inches: extremely gravelly sandy loam
R - 22 to 60 inches: bedrock

Properties and qualities

Slope: 25 to 50 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Available water supply, 0 to 60 inches: Very low (about 1.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: R043BP805MT - Limy Sagebrush Shrubland Group
Hydric soil rating: No

Description of Rock Outcrop

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: Unranked

Minor Components

Spudbar, lesser slopes

Percent of map unit: 10 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R043BP805MT - Limy Sagebrush Shrubland Group
Hydric soil rating: No

Rubble land

Percent of map unit: 10 percent
Hydric soil rating: Unranked

Rencot, very stony

Percent of map unit: 9 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R043BP805MT - Limy Sagebrush Shrubland Group
Hydric soil rating: No

Zbart

Percent of map unit: 6 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R043BP811MT - Shallow Sagebrush Shrubland Group
Hydric soil rating: No

394E—Minestope, very stony-Beeftrail, very stony-Rock outcrop complex, 8 to 30 percent slopes

Map Unit Setting

National map unit symbol: d4sg
Elevation: 5,220 to 6,300 feet
Mean annual precipitation: 13 to 17 inches
Mean annual air temperature: 35 to 40 degrees F
Frost-free period: 50 to 70 days
Farmland classification: Not prime farmland

Map Unit Composition

Minestope, very stony, and similar soils: 40 percent
Beeftrail, very stony, and similar soils: 30 percent
Rock outcrop: 15 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Minestope, Very Stony

Setting

Landform: Hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from granite

Typical profile

A - 0 to 6 inches: gravelly coarse sandy loam
Bw - 6 to 11 inches: gravelly coarse sandy loam
BC - 11 to 17 inches: very gravelly loamy coarse sand

Cr - 17 to 26 inches: bedrock
R - 26 to 60 inches: bedrock

Properties and qualities

Slope: 8 to 30 percent
Surface area covered with cobbles, stones or boulders: 1.5 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock; 20 to 40 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.1 to 0.5 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Very low (about 1.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R043BP811MT - Shallow Sagebrush Shrubland Group

Description of Beeftrail, Very Stony

Setting

Landform: Hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from granite

Typical profile

A - 0 to 7 inches: gravelly coarse sandy loam
Bw - 7 to 14 inches: gravelly coarse sandy loam
BC - 14 to 26 inches: gravelly loamy coarse sand
Cr - 26 to 35 inches: bedrock
R - 35 to 60 inches: bedrock

Properties and qualities

Slope: 8 to 30 percent
Surface area covered with cobbles, stones or boulders: 1.5 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock; 28 to 56 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 0.4 mmhos/cm)
Sodium adsorption ratio, maximum: 8.0
Available water supply, 0 to 60 inches: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: R044BP819MT - Upland Sagebrush Shrubland

Description of Rock Outcrop

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8

Minor Components

Minestope, very stony, cool
Percent of map unit: 10 percent
Landform: Hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Other vegetative classification: Douglas-fir/bluebunch wheatgrass (PK210)

Zonite, extremely stony
Percent of map unit: 5 percent
Landform: Hills
Landform position (three-dimensional): Nose slope
Down-slope shape: Convex
Across-slope shape: Convex
Other vegetative classification: Douglas-fir/bluebunch wheatgrass (PK210)

742F—Trimad, very stony-Frenchcreek, very stony-Rubble land complex, 25 to 60 percent slopes

Map Unit Setting
National map unit symbol: 1jtm5
Elevation: 5,360 to 7,150 feet
Mean annual precipitation: 15 to 19 inches
Mean annual air temperature: 40 to 43 degrees F
Frost-free period: 70 to 90 days
Farmland classification: Not prime farmland

Map Unit Composition
Trimad, very stony, and similar soils: 40 percent
Frenchcreek, very stony, and similar soils: 20 percent
Rubble land: 17 percent
Rock outcrop: 15 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Trimad, Very Stony

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Down-slope shape: Linear
Across-slope shape: Linear, convex
Parent material: Calcareous colluvium derived from quartzite

Typical profile

A - 0 to 3 inches: very channery loam
Bw - 3 to 7 inches: gravelly loam
Bk1 - 7 to 12 inches: gravelly loam
Bk2 - 12 to 26 inches: very gravelly loam
Bk3 - 26 to 60 inches: extremely gravelly sandy loam

Properties and qualities

Slope: 35 to 60 percent
Surface area covered with cobbles, stones or boulders: 1.5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 25 percent
Available water supply, 0 to 60 inches: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: R043BP819MT - Upland Sagebrush Shrubland Group
Hydric soil rating: No

Description of Frenchcreek, Very Stony

Setting

Landform: Mountains
Landform position (two-dimensional): Shoulder, backslope
Down-slope shape: Convex
Across-slope shape: Convex, linear
Parent material: Colluvium derived from quartzite

Typical profile

A - 0 to 5 inches: very gravelly loam
Bw1 - 5 to 12 inches: very gravelly loam
Bw2 - 12 to 26 inches: extremely gravelly sandy loam
C1 - 26 to 36 inches: very gravelly loamy sand
C2 - 36 to 60 inches: extremely gravelly sandy loam

Properties and qualities

Slope: 25 to 50 percent
Surface area covered with cobbles, stones or boulders: 2.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: R043BP819MT - Upland Sagebrush Shrubland Group
Hydric soil rating: No

Description of Rubble Land

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8

Description of Rock Outcrop

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8

Minor Components

Sixbeacon, very stony

Percent of map unit: 8 percent
Landform: Mountains
Landform position (two-dimensional): Footslope
Down-slope shape: Concave, linear
Across-slope shape: Linear
Ecological site: R043BP819MT - Upland Sagebrush Shrubland Group
Hydric soil rating: No

761E—Quincreek, very stony-Whitlash, very stony-Rock outcrop complex, 12 to 35 percent slopes

Map Unit Setting

National map unit symbol: 1jtl5
Elevation: 5,280 to 6,630 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 40 to 43 degrees F
Frost-free period: 70 to 90 days
Farmland classification: Not prime farmland

Map Unit Composition

Quincreek, very stony, and similar soils: 30 percent
Whitlash, very stony, and similar soils: 25 percent
Rock outcrop: 20 percent
Bronec, very stony, and similar soils: 15 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Quincreek, Very Stony

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Gravelly residuum weathered from limestone

Typical profile

A - 0 to 3 inches: gravelly loam
Bt - 3 to 9 inches: channery clay loam
Bk1 - 9 to 19 inches: very channery loam
Bk2 - 19 to 27 inches: very channery loam
R - 27 to 60 inches: bedrock

Properties and qualities

Slope: 15 to 30 percent
Surface area covered with cobbles, stones or boulders: 0.8 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 25 percent
Gypsum, maximum content: 1 percent
Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: R043BP819MT - Upland Sagebrush Shrubland Group
Hydric soil rating: No

Description of Whitlash, Very Stony

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Down-slope shape: Linear
Across-slope shape: Linear, convex
Parent material: Residuum weathered from sandstone

Typical profile

A - 0 to 4 inches: very gravelly sandy loam

Bw - 4 to 12 inches: very gravelly sandy loam
BC - 12 to 15 inches: very gravelly sandy loam
R - 15 to 60 inches: bedrock

Properties and qualities

Slope: 15 to 35 percent
Surface area covered with cobbles, stones or boulders: 2.0 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (1.28 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.1 to 0.4 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very low (about 1.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: R043BP811MT - Shallow Sagebrush Shrubland Group
Hydric soil rating: No

Description of Rock Outcrop

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8

Description of Bronec, Very Stony

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Sandy and gravelly alluvium derived from limestone

Typical profile

A - 0 to 9 inches: very gravelly loam
Bk - 9 to 48 inches: very gravelly loam
BC - 48 to 60 inches: very gravelly loamy sand

Properties and qualities

Slope: 12 to 20 percent
Surface area covered with cobbles, stones or boulders: 0.5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0

Available water supply, 0 to 60 inches: Low (about 5.9 inches)

Interpretive groups

Land capability classification (irrigated): 6s
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: R043BP804MT - Limy Grassland Group
Hydric soil rating: No

Minor Components

Reedpoint, very stony

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Summit, shoulder
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: R043BP811MT - Shallow Sagebrush Shrubland Group
Hydric soil rating: No

921F—Whitlash-Frenchcreek complex, 20 to 50 percent slopes, rubbly

Map Unit Setting

National map unit symbol: 1jtnz
Elevation: 5,330 to 6,330 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 40 to 43 degrees F
Frost-free period: 70 to 90 days
Farmland classification: Not prime farmland

Map Unit Composition

Whitlash, rubbly, and similar soils: 75 percent
Frenchcreek, rubbly, and similar soils: 15 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Whitlash, Rubbly

Setting

Landform: Hills
Landform position (two-dimensional): Shoulder, backslope
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Colluvium over residuum weathered from quartzite

Typical profile

A - 0 to 4 inches: very gravelly sandy loam

Bw - 4 to 12 inches: very gravelly sandy loam
BC - 12 to 15 inches: very gravelly sandy loam
R - 15 to 60 inches: bedrock

Properties and qualities

Slope: 30 to 50 percent
Surface area covered with cobbles, stones or boulders: 25.0 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (1.28 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.1 to 0.4 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very low (about 1.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R043BP811MT - Shallow Sagebrush Shrubland Group
Hydric soil rating: No

Description of Frenchcreek, Rubbly

Setting

Landform: Hills
Landform position (two-dimensional): Footslope
Down-slope shape: Linear
Across-slope shape: Linear, concave
Parent material: Colluvium derived from quartzite

Typical profile

A - 0 to 5 inches: very gravelly loam
Bw1 - 5 to 12 inches: very gravelly loam
Bw2 - 12 to 26 inches: extremely gravelly sandy loam
C1 - 26 to 36 inches: very gravelly loamy sand
C2 - 36 to 60 inches: extremely gravelly sandy loam

Properties and qualities

Slope: 20 to 35 percent
Surface area covered with cobbles, stones or boulders: 25.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A

Ecological site: R043BP819MT - Upland Sagebrush Shrubland Group
Hydric soil rating: No

Minor Components

Rubble land
Percent of map unit: 5 percent

Rock outcrop
Percent of map unit: 5 percent

923F—Whitore, rubbly-Poin, rubbly-Rock outcrop complex, 25 to 60 percent slopes

Map Unit Setting
National map unit symbol: 1jtnx
Elevation: 5,380 to 7,820 feet
Mean annual precipitation: 11 to 14 inches
Mean annual air temperature: 35 to 40 degrees F
Frost-free period: 50 to 70 days
Farmland classification: Not prime farmland

Map Unit Composition
Whitore, rubbly, and similar soils: 40 percent
Poin, rubbly, and similar soils: 20 percent
Rock outcrop: 15 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Whitore, Rubbly

Setting
Landform: Mountains
Landform position (two-dimensional): Backslope
Down-slope shape: Linear
Across-slope shape: Linear, convex
Parent material: Calcareous colluvium derived from quartzite

Typical profile
A - 0 to 5 inches: very cobbly loam
E - 5 to 8 inches: gravelly loam
Bw - 8 to 14 inches: very gravelly loam
Bk1 - 14 to 21 inches: very gravelly loam
Bk2 - 21 to 60 inches: very gravelly loam

Properties and qualities
Slope: 25 to 60 percent
Surface area covered with cobbles, stones or boulders: 20.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 50 percent
Maximum salinity: Nonsaline (0.2 to 1.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: F043BP910MT - Upland Cool Woodland Group
Other vegetative classification: Douglas-fir/pinegrass (PK320)
Hydric soil rating: No

Description of Poin, Rubbly

Setting

Landform: Mountains
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Nose slope
Down-slope shape: Convex
Across-slope shape: Convex, linear
Parent material: Residuum weathered from quartzite

Typical profile

A - 0 to 5 inches: very cobbly sandy loam
Bw - 5 to 12 inches: very cobbly loam
C - 12 to 15 inches: extremely cobbly sandy loam
R - 15 to 60 inches: bedrock

Properties and qualities

Slope: 30 to 60 percent
Surface area covered with cobbles, stones or boulders: 16.0 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 0.4 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 1.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: F043BP903MT - Shallow Cool Woodland Group
Other vegetative classification: Douglas-fir/Idaho fescue (PK220)
Hydric soil rating: No

Description of Rock Outcrop

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8

Minor Components

Tiban, extremely stony

Percent of map unit: 10 percent
Landform: Mountains
Landform position (two-dimensional): Footslope
Down-slope shape: Linear
Across-slope shape: Linear, concave
Other vegetative classification: Douglas-fir/pinegrass (PK320)
Hydric soil rating: No

Skaggs, rubbly

Percent of map unit: 10 percent
Landform: Mountains
Landform position (two-dimensional): Shoulder, backslope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Other vegetative classification: Douglas-fir/pinegrass (PK320)
Hydric soil rating: No

Rubble land

Percent of map unit: 5 percent

924F—Whitlash, extremely stony-Gnojek, extremely stony-Rock outcrop complex, 20 to 60 percent slopes

Map Unit Setting

National map unit symbol: 1jtnw
Elevation: 5,300 to 6,970 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 40 to 43 degrees F
Frost-free period: 70 to 90 days
Farmland classification: Not prime farmland

Map Unit Composition

Whitlash, extremely stony, and similar soils: 35 percent
Gnojek, extremely stony, and similar soils: 30 percent
Rock outcrop: 20 percent
Reedpoint, extremely stony, and similar soils: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Whitlash, Extremely Stony

Setting

Landform: Mountains
Landform position (two-dimensional): Shoulder, backslope
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Parent material: Colluvium over residuum weathered from quartzite

Typical profile

A - 0 to 4 inches: very gravelly sandy loam
Bw - 4 to 12 inches: very gravelly sandy loam
BC - 12 to 15 inches: very gravelly sandy loam
R - 15 to 60 inches: bedrock

Properties and qualities

Slope: 30 to 60 percent
Surface area covered with cobbles, stones or boulders: 10.0 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (1.28 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.1 to 0.4 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very low (about 1.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R043BP811MT - Shallow Sagebrush Shrubland Group
Hydric soil rating: No

Description of Gnojek, Extremely Stony

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Down-slope shape: Linear
Across-slope shape: Linear, concave
Parent material: Residuum weathered from quartzite

Typical profile

A - 0 to 3 inches: very gravelly sandy loam
Bt - 3 to 10 inches: very channery sandy clay loam
Bk - 10 to 15 inches: very channery sandy loam
R - 15 to 60 inches: bedrock

Properties and qualities

Slope: 20 to 50 percent
Surface area covered with cobbles, stones or boulders: 4.0 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 1.28 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.5 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very low (about 1.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R043BP811MT - Shallow Sagebrush Shrubland Group
Hydric soil rating: No

Description of Rock Outcrop

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8

Description of Reedpoint, Extremely Stony

Setting

Landform: Mountains
Landform position (two-dimensional): Summit, shoulder
Down-slope shape: Convex
Across-slope shape: Convex, linear
Parent material: Colluvium over residuum weathered from quartzite

Typical profile

A - 0 to 4 inches: very gravelly sandy loam
BC - 4 to 5 inches: very gravelly sandy loam
R - 5 to 60 inches: bedrock

Properties and qualities

Slope: 30 to 60 percent
Surface area covered with cobbles, stones or boulders: 7.0 percent
Depth to restrictive feature: 3 to 10 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.1 to 0.4 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Very low (about 0.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R043BP812MT - Shallow Shrubland Group
Hydric soil rating: No

930F—Ratiopeak-Tiban complex, 25 to 60 percent slopes, very stony

Map Unit Setting

National map unit symbol: 1jtnp
Elevation: 5,250 to 7,450 feet
Mean annual precipitation: 12 to 18 inches
Mean annual air temperature: 35 to 40 degrees F
Frost-free period: 50 to 70 days
Farmland classification: Not prime farmland

Map Unit Composition

Ratiopeak, very stony, and similar soils: 55 percent
Tiban, very stony, and similar soils: 15 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ratiopeak, Very Stony

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Down-slope shape: Linear
Across-slope shape: Linear, convex
Parent material: Alluvium and/or colluvium derived from quartzite

Typical profile

A1 - 0 to 4 inches: very cobbly loam
A2 - 4 to 10 inches: very cobbly loam
Bt1 - 10 to 14 inches: very cobbly loam
Bt2 - 14 to 26 inches: very cobbly sandy clay loam
Bk - 26 to 60 inches: very cobbly sandy loam

Properties and qualities

Slope: 25 to 60 percent
Surface area covered with cobbles, stones or boulders: 0.5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline (0.2 to 1.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: R043BP819MT - Upland Sagebrush Shrubland Group
Hydric soil rating: No

Description of Tiban, Very Stony

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Calcareous colluvium derived from quartzite

Typical profile

A - 0 to 8 inches: very cobbly loam
Bw - 8 to 16 inches: very cobbly loam
Bk - 16 to 60 inches: very gravelly loam

Properties and qualities

Slope: 30 to 60 percent
Surface area covered with cobbles, stones or boulders: 1.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline (0.2 to 1.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: F043BP910MT - Upland Cool Woodland Group
Other vegetative classification: Douglas-fir/Idaho fescue (PK220)
Hydric soil rating: No

Minor Components

Sebud, very stony

Percent of map unit: 12 percent
Landform: Mountains
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Head slope
Down-slope shape: Concave
Across-slope shape: Concave, linear
Ecological site: R043BP819MT - Upland Sagebrush Shrubland Group
Hydric soil rating: No

Poin, extremely stony

Percent of map unit: 10 percent

Landform: Mountains
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Nose slope
Down-slope shape: Convex
Across-slope shape: Convex, linear
Ecological site: R043BP811MT - Shallow Sagebrush Shrubland Group
Hydric soil rating: No

Rock outcrop
Percent of map unit: 8 percent

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End of Documentation