

Ecological site R010XA046ID Cinder Garden 12-16 PZ EROVD-LERE7

Last updated: 12/13/2023
Accessed: 05/14/2024

General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

MLRA notes

Major Land Resource Area (MLRA): 010X–Central Rocky and Blue Mountain Foothills

This MLRA is characterized by gently rolling to steep hills, plateaus, and low mountains at the foothills of the Blue Mountains in Oregon and the Central Rocky Mountains in Idaho. The geology of this area is highly varied and ranges from Holocene volcanics to Cretaceous sedimentary rocks. Mollisols are the dominant soil order and the soil climate is typified by mesic or frigid soil temperature regimes, and xeric or aridic soil moisture regimes. Elevation ranges from 1,300 to 6,600 feet (395 to 2,010 meters), increasing from west to east. The climate is characterized by dry summers and snow dominated winters with precipitation averaging 8 to 16 inches (205 to 405 millimeters) and increasing from west to east. These factors support plant communities with shrub-grass associations with considerable acreage of sagebrush grassland. Big sagebrush, bluebunch wheatgrass, and Idaho fescue are the dominant species. Stiff sagebrush, low sagebrush, and Sandberg bluegrass are often dominant on sites with shallow restrictive layers. Western juniper is one of the few common tree species and since European settlement has greatly expanded its extent in Oregon. Nearly half of the MLRA is federally owned and managed by the Bureau of Land Management. Most of the area is used for livestock grazing with areas accessible by irrigation often used for irrigated agriculture.

For further information, see "Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin (U.S. Department of Agriculture Handbook 296, 2006)" available online at: https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/?cid=nrcs142p2_053624

Classification relationships

No data.

Ecological site concept

- Site occurs on uplands
- Slopes generally less than 30%, occurring on all aspects
- Site associated with recent lava flows
- Site nearly devoid of vegetation, soil with little development

Associated sites

R010XA048ID	Cindery South 12-16 PZ PUTR2-ARTRV/PSSPS Adjacent south aspects
R010XA020ID	Mixed Shrub 12-16 PZ Adjacent low slope areas with shallow soils
R010XA043ID	Cinder North 12-16 PZ PIFL2/PUTR2 Adjacent north aspects

R010XA044ID	Cinder 12-16 PZ PIFL2/ARTRV Adjacent low slope areas
R010XA045ID	Cinder South 12-16 PZ PUTR2/HECO26 Adjacent south aspects
R010XA047ID	Cindery North 12-16 PZ ARTRV-PUTR2/FEID-PSSPS Adjacent north aspects

Similar sites

R010XA044ID	Cinder 12-16 PZ PIFL2/ARTRV Soils with greater development
R010XA049ID	Gravelly Loam 12-16 PZ ARTRV-PUTR2/PSSPS Soils with even greater development. Increased fine soil particles within the profile.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) <i>Eriogonum ovalifolium</i> var. <i>depressum</i> (2) <i>Lewisia rediviva</i>

Physiographic features

This site occurs on moderate mountain side slopes and ridge tops on all aspects. Slopes range from 0 to 30 percent and elevation ranges from 5,000 to 7,000 feet (1500 to 2100 meters).

Table 2. Representative physiographic features

Landforms	(1) Mountains > Mountain slope (2) Mountains > Ridge
Flooding frequency	None
Ponding frequency	None
Elevation	1,524–2,134 m
Slope	0–30%
Water table depth	203 cm
Aspect	Aspect is not a significant factor

Climatic features

The Big and Little Wood River Foot slopes and Plains, proposed as MLRA 10X, has a mean elevation of 5310 feet above sea level, and varies from 3600 to 9235 feet. In general, average annual precipitation is greatest on the western side, with the southeast area being the driest. The average annual precipitation, based on 7 long term climate stations located throughout the MLRA, is 15.39 inches, with a range of 12.5 to 18 inches. Monthly precipitation is generally greatest at the end of the year, diminishes steadily until a low in July and August, then increases rapidly in the autumn.

Monthly temperatures can vary considerably. Highs of up to 102° and lows down to -52° Fahrenheit have been recorded. The average annual temperature is 42.9°. The frost-free period ranges from 75 to 98 days. The freeze-free period is a bit longer: 106 to 133 days.

Both morning and afternoon average relative humidity values peak in the winter, and reach their low in July and August. The average number of sunny, cloud-free days is above average for the summer months, but below average for the period from November through February.

Table 3. Representative climatic features

Frost-free period (characteristic range)	75-98 days
Freeze-free period (characteristic range)	106-133 days
Precipitation total (characteristic range)	305-406 mm
Frost-free period (actual range)	
Freeze-free period (actual range)	
Precipitation total (actual range)	305-457 mm
Frost-free period (average)	86 days
Freeze-free period (average)	120 days
Precipitation total (average)	406 mm

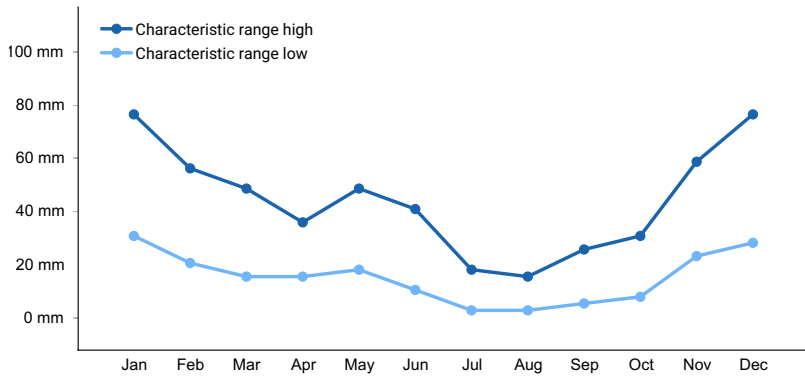


Figure 1. Monthly precipitation range

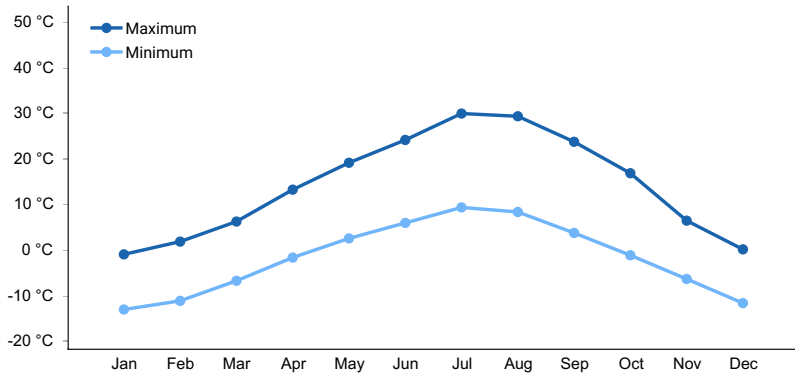


Figure 2. Monthly average minimum and maximum temperature

Influencing water features

This site is not influenced by adjacent streams or run on.

Wetland description

This site is not influenced by adjacent wetlands.

Soil features

The soils are formed in volcanic cinders. They are gravelly or very gravelly loams and gravelly coarse sandy loams. The soils have over 35 percent coarse fragments throughout the profile. The subsoils are generally very gravelly sandy loams. The gravels throughout the profile are cinders. The water intake is rapid with well to excessive drainage. Available water capacity is low to medium. Erosion hazard is low.

Table 4. Representative soil features

Parent material	(1) Cinders–volcanic rock
Surface texture	(1) Gravelly loam (2) Very gravelly sandy loam
Family particle size	(1) Ashy-skeletal
Drainage class	Well drained to excessively drained
Permeability class	Rapid
Depth to restrictive layer	152–203 cm
Soil depth	152–203 cm
Surface fragment cover <=3"	10–35%
Surface fragment cover >3"	0–10%
Available water capacity (0-101.6cm)	0–10.16 cm
Soil reaction (1:1 water) (0-101.6cm)	6.6–7.8
Subsurface fragment volume <=3" (10.2-152.4cm)	35–60%
Subsurface fragment volume >3" (10.2-152.4cm)	0–10%

Ecological dynamics

The dominant visual aspect of this site is cinders with a sparse plant community dominated by oval leaf buckwheat and bitterroot. Other perennial forbs and a few grasses are a minor component of this plant community. Composition by weight is 90 to 95 percent forbs and 1 to 5 percent grasses. Limber pine occurs around the periphery of the site but not on it.

This site is evolving in a semi-arid climate characterized by dry summers and cold winters. Herbivory has historically occurred on this site at low levels of utilization. Herbivores include mule deer and lagomorphs.

Ecological sites in this portion of this MLRA are occurring on geologically new or very young soils. These soils have little to no development in the soil profile. Therefore, the plant communities also reflect this lack of soil development. Six sites have been identified based on relative soil development and are found in association with each other on the landscape. Age of the soils and the associated sites can be shown in the following diagram:

Non-aspect sites

Volcanic ? Cinder ? Cinder? Cindery
Activity Garden (not described)

Aspect sites

Volcanic ? Cinder ? Cinder? Cindery
Activity Garden North or North or
South South

-----Soil development -----?

Fire is not an influence on this site since fuels produced on the site are not capable of carrying a fire.

The Reference State (State 1), moves through many phases depending on the natural and man-made forces that impact the community over time. State 1, described later, indicates some of these phases.

FUNCTION:

This site is suited for big game animals as late spring, summer, and fall range. It is not well suited to livestock grazing due to low production and unstable soils that can severely move down slope as a result of hoof action. It is also suited for wildflower observation in the spring and early summer.

Infiltration is good where the community is in mid to late seral status. Snow accumulates on the site due to high elevation.

Impacts on the Plant Community.

Influence of fire:

Due to the very low production on this site it does not burn

Influence of improper grazing management:

This site is not suited to livestock grazing due to low production and unstable soils that can easily move down slope as a result of hoof action.

Weather influences:

Above normal precipitation in April, May, and June can increase total annual production of the plant community. These weather patterns can also increase viable seed production of desirable species to provide for recruitment. Likewise, below normal precipitation during these spring months can significantly reduce total annual production and be detrimental to viable seed production. Below normal temperatures in the spring can have an adverse impact on total production regardless of the precipitation. An early, hard freeze can occasionally kill some plants.

Prolonged drought adversely affects this plant community in several ways. Vigor, recruitment, and production are usually reduced. Mortality can occur.

Influence of Insects and disease:

Outbreaks can affect vegetation health. Mormon cricket and grasshopper outbreaks occur periodically. Outbreaks seldom cause plant mortality since defoliation of the plant occurs only once during the year of the outbreak.

Influence of noxious and invasive plants:

Many of these species add to the fine-fuel component and may lead to increased fire frequency if noxious and invasive plants become dense enough to carry a fire.

Annual and perennial invasive species compete with desirable plants for moisture and nutrients. The result is reduced production and change in composition of the understory.

Influence of wildlife:

Big game animals use this site in the spring, summer, and fall and in moderate winters. Their numbers are seldom high enough to adversely affect the plant community.

Watershed:

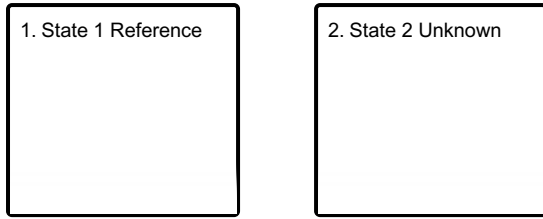
Species diversity and production are reduced with an increase in hoof/foot traffic. Infiltration and runoff are usually not affected. Undesirable species may invade. The long-term effect is a transition to a different state dominated by invasive species.

Practice Limitations:

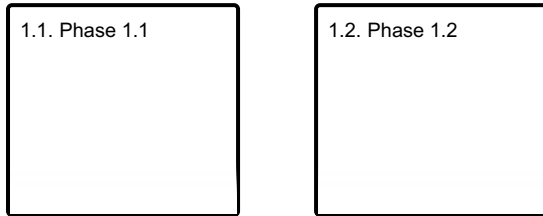
Mechanical seeding is generally not feasible on this site due to gravelly surface and low site potential.

State and transition model

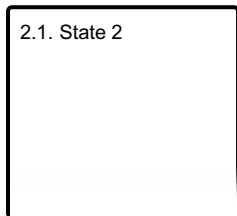
Ecosystem states



State 1 submodel, plant communities



State 2 submodel, plant communities



State 1

State 1 Reference

Dominant plant species

- cushion buckwheat (*Eriogonum ovalifolium* var. *depressum*), shrub
- bitter root (*Lewisia rediviva*), other herbaceous

Community 1.1

Phase 1.1

Reference Plant Community Phase. This plant community is dominated by cushion buckwheat and bitterroot. Scattered limber pine occurs around the periphery of the site but not on the site. Other plants that occur on the site include tapertip onion, phacelia, sulphur-flower buckwheat, buttecandle, Canby bluegrass, Indian ricegrass, and bottlebrush squirreltail. Due to the inherent low production, fire does not occur on the site. All plants growing on the site are diminutive in size.

Resilience management. The Reference Plant Community Phase is Phase 1.1. This plant community is dominated by cushion buckwheat and bitterroot. Scattered limber pine occurs on the periphery of the site but not on the site. Other plants that occur on the site include tapertip onion, phacelia, sulphur-flower buckwheat, buttecandle, Canby bluegrass, Indian ricegrass, and bottlebrush squirreltail. The plant species composition of Phase 1.1 is listed later under “Reference Plant Community Phase Plant Species Composition”. All plants growing on the site are diminutive in size. Total annual production is 50 pounds per acre (55 kilograms per hectare) in a normal year. Production in a favorable year is 60 pounds per acre (66 kilograms per hectare). Production in an unfavorable year is 40 pounds per acre (44 kilograms per hectare). Structurally, perennial forbs are dominant while cool season perennial grasses are subdominant.

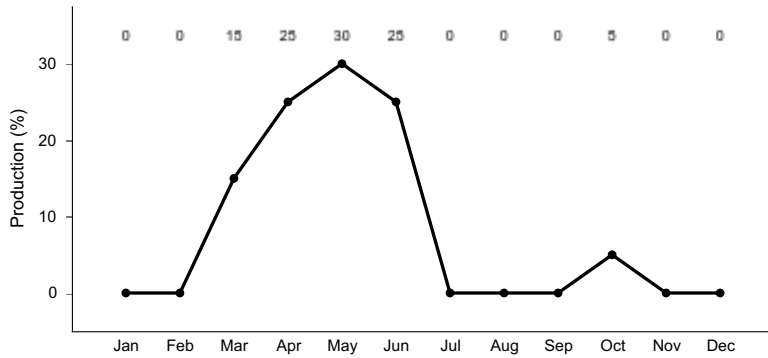


Figure 3. Plant community growth curve (percent production by month). ID0305, ARTRV SOUTH .

Community 1.2 Phase 1.2

This plant community is dominated by reduced amounts of cushion buckwheat and bitterroot. Sub-dominant species are also reduced. Some cheatgrass and other annual and perennial noxious and invasive plants have invaded. This phase has developed due to uncontrolled hoof/foot traffic or other soil disturbing activities (1.1A).

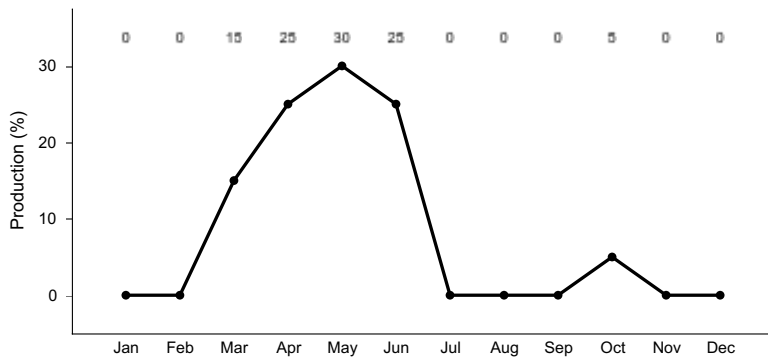


Figure 4. Plant community growth curve (percent production by month). ID0305, ARTRV SOUTH .

State 2 State 2 Unknown

Community 2.1 State 2

Unknown new site. This plant community has gone over the threshold to a new site. Site potential has been reduced. Significant soil movement has occurred. Infiltration and run-off has not changed significantly but the plant community is dominated by invasive and noxious species. This state has developed due to severe hoof/foot traffic or uncontrolled soil surface disturbing activities (T1A). It is economically impractical to return this site to State 1 with accelerating practices.

Additional community tables

Animal community

Wildlife Interpretations.

Animal Community – Wildlife Interpretations

Compared to other ecological sites within this MLRA, the low level of soil development limits plant diversity and available food and cover for wildlife. The plant community, dominated by forbs, offers suitable habitat for native invertebrates. Invertebrates would be the major animal form utilizing the ecological site. Reptiles would use the site in search of available prey (invertebrates). Mule deer and elk use the site to move between suitable seasonal habitats. Water features are sparse provided by seasonal streams, artificial water catchments and springs.

State 1 Phase 1.1 – Cushion Buckwheat/ Bitterroot Reference Plant Community (RPC): This plant community provides a limited diversity of forbs used by native insect communities that assist in pollination. Buckwheat is an important host plant for native butterflies and moths that frequent this ecological site. The lack of available cover restricts the use of this plant community for most animal populations. The reptile community is represented by leopard lizard and short horned lizard, visiting the site to locate prey. Birds utilizing these sites would be rare due to lack of cover. The coarse subsoil material would limit burrowing mammals. The site provides little forage value and no thermal or young of year cover for deer and elk.

State 1 Phase 1.2- Cushion Buckwheat/ Bitterroot/ Invasive Annuals Plant Community: This phase has developed due to uncontrolled hoof/foot traffic or other soil disturbing activities. The plant community is similar to Phase 1.1 but in poor vigor with an increase in invasive annuals. Insect diversity would be reduced but the remaining native forb plant community would still support select pollinators. Animal species utilizing this site would be similar to Phase 1.1 with a declining trend due to increase in invasive annuals.

State 2 – Invasive Annuals/ Noxious Weeds Plant Community: This state has developed due to severe hoof/foot traffic or uncontrolled soil surface disturbing activities. You would expect a severely reduced population of native invertebrate and vertebrate animals using this plant community. Invertebrate use would be determined by the diversity and amounts of invasive plant species present.

Grazing Interpretations:

It is not well suited to livestock grazing due to low production and unstable soils that can easily move down slope from hoof action.

Estimated initial stocking rate will be determined with the landowner or decision-maker. They will be based on the inventory which includes species, composition, similarity index, production, past use history, season of use, and seasonal preference. Calculations used to determine estimated initial stocking rate will be based on forage preference ratings.

Hydrological functions

No data.

Recreational uses

The site has limited opportunities for hunting, hiking, photography, and nature study. Cross country skiing is possible during the winter.

Wood products

None.

Other products

None.

Other information

Field Offices

Mountain Home, ID

Gooding, ID

Fairfield, ID

Shoshone, ID

Rupert, ID

Arco, ID

Inventory data references

Information presented here has been derived from NRCS clipping and other inventory data. Also, field knowledge of range-trained personnel was used. Those involved in developing this site description include:

Dave Franzen, co-owner, Intermountain Rangeland Consultants, LLC

Jacy Gibbs, co-owner, Intermountain Rangeland Consultants, LLC

Brendan Brazee, State Rangeland Management Specialist, NRCS, Idaho

Jim Cornwell, Range Management Specialist, IASCD

Kristen May, Resource Soil Scientist, NRCS, Idaho

Lee Brooks, Range Management Specialist, IASCD

Type locality

Location 1: Butte County, ID	
General legal description	Within the Craters of the Moon National Monument.

References

. Fire Effects Information System. <http://www.fs.fed.us/database/feis/>.

Other references

Hironaka, M., M.A. Fosberg, A. H. Winward. 1983. Sagebrush-Grass Habitat Types of Southern Idaho. University of Idaho, Moscow, Idaho. Bulletin Number "35".

USDA Forest Service, Rocky Mountain Research Station. 2004. Restoring Western Ranges and Wildlands. General Technical Report RMRS-GTR-136-vols. 1-3.

USDA, NRCS.2001. The PLANTS Database, Version 3.1 (<http://plants.usda.gov>). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

USDI Bureau of Land Management, US Geological Survey; USDA Natural Resources Conservation Service, Agricultural Research Service; Interpreting Indicators of Rangeland Health. Technical Reference 1734-6; Version 4-2005.

Contributors

Dave Franzen and Jacy Gibbs

Approval

Kirt Walstad, 12/13/2023

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

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Date	06/22/2009
Approved by	Kirt Walstad
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** rills do not occur on this site.

2. **Presence of water flow patterns:** water-flow patterns do not occur on this site.

3. **Number and height of erosional pedestals or terracettes:** pedestals do not occur on this site. Terracettes do not occur in the traditional sense (caused by water movement), but can develop due to dry raveling or foot/hoof action. They are not extensive.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** data is not available. Most of the area absent of plants or litter is cinders.

5. **Number of gullies and erosion associated with gullies:** gullies do not occur on this site.

6. **Extent of wind scoured, blowouts and/or depositional areas:** none due to the gravelly surface.

7. **Amount of litter movement (describe size and distance expected to travel):** fine and coarse litter generally does not move. Gravels on the surface help reduce fine litter movement.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** values should range from 3 to 5 but needs to be tested.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** no data.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** infiltration is good regardless of plant cover due to cinder surface.

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** is not present.

12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

Dominant: perennial forbs

Sub-dominant: cool season deep-rooted perennial bunchgrasses

Other:

Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** little decadence is expected on the site.

14. **Average percent litter cover (%) and depth (in):** additional litter cover data is needed. Accumulations of litter are usually the result of wind deposition.

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** is 50 pounds per acre (55 kilograms per hectare) in a year with normal temperatures and precipitation. Perennial grasses produce 1-5 percent of the total production, forbs 90-95 percent.

16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:** includes bulbous bluegrass, rush skeletonweed, musk and scotch thistle, and diffuse and spotted knapweed. Cheatgrass can invade the site at the lower elevations.

17. **Perennial plant reproductive capability:** all functional groups have the potential to reproduce in normal and favorable years.
