

Ecological site F003XY707OR

HC High Pumice Basin

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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.



Figure 1. Mapped extent

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

Similar sites

|             |  |
|-------------|--|
| F006XY704OR | <b>East Crater Lake Pumice Basins</b><br>Site F006XY704OR has the same tree species and similar canopy cover, but is in MLRA 6, and has a xeric moisture regime. |
|-------------|--|

Table 1. Dominant plant species

|            |                           |
|------------|---------------------------|
| Tree       | (1) <i>Pinus contorta</i> |
| Shrub      | Not specified             |
| Herbaceous | (1) <i>Carex</i>          |

Physiographic features

This site is on gently sloping, excessively drained pumiceous soils in enclosed basins or areas surrounding enclosed basins.

Table 2. Representative physiographic features

|                    |              |
|--------------------|--------------|
| Landforms          | (1) Ash flow |
| Flooding frequency | None         |

|                   |                                    |
|-------------------|------------------------------------|
| Ponding frequency | None                               |
| Elevation         | 1,676–1,981 m                      |
| Slope             | 0–7%                               |
| Water table depth | 152 cm                             |
| Aspect            | Aspect is not a significant factor |

## Climatic features

Winters are long, cold, windy and snowy, due to the very high elevations. Summers are short and cool. Effective precipitation comes mostly as snow. Average annual ppt is 67 inches.

**Table 3. Representative climatic features**

|                               |          |
|-------------------------------|----------|
| Frost-free period (average)   | 45 days  |
| Freeze-free period (average)  | 60 days  |
| Precipitation total (average) | 1,778 mm |

## Influencing water features

No water influencing water features exist.

## Soil features

The site is found on soils formed in volcanic pumice and ash mainly in enclosed basins and/or areas surrounding enclosed basins.

**Table 4. Representative soil features**

|   |   |
|---|---|
| Surface texture   | (1) Paragravelly loamy sand<br>(2) Paragravelly fine sandy loam |
| Family particle size                                    | (1) Sandy   |
| Drainage class  | Somewhat excessively drained to excessively drained             |
| Permeability class                                      | Rapid to very rapid   |
| Soil depth  | 152 cm  |
| Surface fragment cover ≤3"                              | 10–25%  |
| Surface fragment cover >3"                              | 0–20%   |
| Available water capacity<br>(0–101.6cm)                 | 7.37–17.53 cm   |
| Calcium carbonate equivalent<br>(0–101.6cm)             | 0%  |
| Electrical conductivity<br>(0–101.6cm)                  | 0 mmhos/cm  |
| Sodium adsorption ratio<br>(0–101.6cm)                  | 0   |
| Soil reaction (1:1 water)<br>(0–101.6cm)                | 5.6–6.5   |
| Subsurface fragment volume ≤3"<br>(Depth not specified) | 15–35%  |
| Subsurface fragment volume >3"<br>(Depth not specified) | 0–35%   |

**Ecological dynamics**

Lodgepole pine is the only tree specie in the historic climax plant community. The position of this site, enclosed basins and surrounding low slopes, is influenced by cold air drainage. Cold air gets trapped in these basins. Lodgepole is the only tree adapted to this environment. Other tree species, Shasta red fir and/or mountain hemlock, may occur, mostly arround the basin edges.

Stands that are heavy to very heavily stocked are susceptible to mountain pine beetle infestations. When conditions are right a massive outbreak will kill all trees. Re-establishment depends upon an existing seed source. If seed trees are available then re-establishment will occur. If not, re-establishment can take many years. Re-planting seedlings will speed up the revegetation process.

Ground vegetation under the mature canopy is sparse, generally less than 5 percent. Where openings occur cover can increase up to 25 percent.

The pumice soils are very porous, and consequently, conduct heat very poorly. The soil surface can be exceptionally hot during the summer midday, but readily looses surface heat at night. Cold air accumulation in these areas (frost pockets) also influence seedling mortality and species distribution. Lodgepole pine seedlings are able to withstand the low night time temperatures.

**State and transition model**



**State 1**  
**Lodgepole Pine plant community**

## Community 1.1

### Lodgepole Pine plant community

Lodgepole pine plant community is the historic climax plant community. The position of this ecological site, enclosed basins and surrounding lower slopes, and its high elevation contributes to the harsh growing conditions. Tree canopy cover is low and understory vegetation is sparse.

**Forest overstory.** The typical forest overstory composition of the Lodgepole pine plant community.

**Forest understory.** The typical annual production of the understory species to a height of 4.5 feet (excluding boles of trees) under low, high, and representative canopy covers.

The percentages expressed are percent canopy cover. Those species with "0" percent have a canopy cover of less than 1 percent.

**Table 5. Ground cover**

|                                  |        |
|----------------------------------|--------|
| Tree foliar cover                | 25-35% |
| Shrub/vine/liana foliar cover    | 0-1%   |
| Grass/grasslike foliar cover     | 0-1%   |
| Forb foliar cover                | 0%     |
| Non-vascular plants              | 0%     |
| Biological crusts                | 0%     |
| Litter                           | 10-15% |
| Surface fragments >0.25" and ≤3" | 10-15% |
| Surface fragments >3"            | 5-10%  |
| Bedrock                          | 0%     |
| Water                            | 0%     |
| Bare ground                      | 20-30% |

**Table 6. Soil surface cover**

|                                  |        |
|----------------------------------|--------|
| Tree basal cover                 | 0%     |
| Shrub/vine/liana basal cover     | 0%     |
| Grass/grasslike basal cover      | 0-1%   |
| Forb basal cover                 | 0%     |
| Non-vascular plants              | 0%     |
| Biological crusts                | 0%     |
| Litter                           | 30-40% |
| Surface fragments >0.25" and ≤3" | 10-15% |
| Surface fragments >3"            | 5-10%  |
| Bedrock                          | 0%     |
| Water                            | 0%     |
| Bare ground                      | 25-35% |

**Table 7. Canopy structure (% cover)**

| Height Above Ground (M) | Tree   | Shrub/Vine | Grass/<br>Grasslike | Forb |
|-------------------------|--------|------------|---------------------|------|
| <0.15                   | 0-1%   | 0-1%       | 0-2%                | —    |
| >0.15 <= 0.3            | 0-1%   | —          | —                   | —    |
| >0.3 <= 0.6             | 1-2%   | —          | —                   | —    |
| >0.6 <= 1.4             | 0-1%   | —          | —                   | —    |
| >1.4 <= 4               | 3-5%   | —          | —                   | —    |
| >4 <= 12                | 5-10%  | —          | —                   | —    |
| >12 <= 24               | 15-20% | —          | —                   | —    |
| >24 <= 37               | —      | —          | —                   | —    |
| >37                     | —      | —          | —                   | —    |

## Additional community tables

### Recreational uses

Hiking, backpacking, camping

### Wood products

Firewood, posts, sawtimber

### Type locality

|                                |   |
|--------------------------------|---|
| Location 1: Klamath County, OR |   |
| General legal description      | Plot data taken over many locations within Crater Lake National Park. |

### Contributors

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### 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.

|   |                   |
|---|-------------------|
| Author(s)/participant(s)                    |                   |
| Contact for lead author                     |                   |
| Date  |                   |
| Approved by                                 |                   |
| Approval date                               |                   |
| Composition (Indicators 10 and 12) based on | Annual Production |

### Indicators

#### 1. Number and extent of rills:

- 
2. **Presence of water flow patterns:**
- 
3. **Number and height of erosional pedestals or terracettes:**
- 
4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**
- 
5. **Number of gullies and erosion associated with gullies:**
- 
6. **Extent of wind scoured, blowouts and/or depositional areas:**
- 
7. **Amount of litter movement (describe size and distance expected to travel):**
- 
8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**
- 
9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**
- 
10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**
- 
11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**
- 
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:
- Sub-dominant:
- Other:
- Additional:
- 
13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or**

decadence):

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14. **Average percent litter cover (%) and depth ( in):**
- 

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**
- 

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:**
- 

17. **Perennial plant reproductive capability:**
-