

# Ecological site R002XN603WA

## Bog or Fen

Last updated: 12/09/2024  
Accessed: 09/26/2026

### 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): 002X–Willamette and Puget Sound Valleys

Major Land Resource Area-[MLRA][LRU]: 002X N Willamette and Puget Sound Valleys, North Puget. The Land Resource Unit (LRU) is described in detail in the reference Washington NRCS Pasture TN-101 Forage Zones available on the eFOTG. For more information on MLRA's, refer to the following web site: [http://www.essc.psu.edu/soil\\_info/soil\\_1rr/](http://www.essc.psu.edu/soil_info/soil_1rr/). Additional information on Common Resource Areas is available on the eFOTG for NRCS Washington: [http://efotg.nrcs.usda.gov/efotg\\_locator.aspx?map=WA](http://efotg.nrcs.usda.gov/efotg_locator.aspx?map=WA) and the following website: <http://soils.usda.gov/survey/geography/cra.html>. This ecological site occurs in the following Common Resource Areas: 2.10 - Fraser Lowland; 2.11 - Eastern Puget Riverine Lowlands; 2.11 - Eastern Puget Mountain River Valleys; 2.12 - San Juan Islands; 2.13 - Olympic Rainshadow; 2.5 - Eastern Puget Uplands; and 2.6 - Central Puget Lowland

Table 1. Dominant plant species

|            |                                |
|------------|--------------------------------|
| Tree       | (1) <i>Pinus contorta</i>      |
| Shrub      | (1) <i>Ledum groenlandicum</i> |
| Herbaceous | (1) <i>Carex</i>               |

### Physiographic features

These plant communities typically occur in depressional areas with accumulations of undecomposed or partially decomposed organic matter and high water tables.

Table 2. Representative physiographic features

|                    |                               |
|--------------------|-------------------------------|
| Landforms          | (1) Depression                |
| Flooding frequency | None                          |
| Ponding duration   | Very long (more than 30 days) |
| Ponding frequency  | None to frequent              |
| Elevation          | 10 – 150 m                    |

|                   |                                    |
|-------------------|------------------------------------|
| Slope             | 0 %                                |
| Ponding depth     | 10 – 40 cm                         |
| Water table depth | 30 – 70 cm                         |
| Aspect            | Aspect is not a significant factor |

### Climatic features

The average annual precipitation ranges from 18 to 60 inches, although most areas range from 30 to 50 inches. Annual precipitation less than 30 inches occurs in the rainshadow of the Olympic Mountains along the western border of this area and in the San Juan Islands. Higher average annual precipitation, 50 to 60 inches, occurs next to the foothills of the surrounding mountains. Most of the precipitation occurs as low intensity, Pacific frontal storms. The distribution is 75% in the fall and winter, 15% in the spring and 10% in the summer. Rain turns to snow at the higher elevations, although accumulations are usually small and of short duration. The number of days with snow on the ground varies from 0 to 9, with an average of 3 days. Summers are cool and dry. Recorded temperature extremes range from -1 degrees to 90 degrees fahrenheit. See the climate tables in this document for information on temperatures and frost-free periods.

Table 3 Representative climatic features

|                               |          |
|-------------------------------|----------|
| Frost-free period (average)   | 240 days |
| Freeze-free period (average)  | 300 days |
| Precipitation total (average) | 1,520 mm |

### Influencing water features

These general kinds of bog and fen wetlands are distinguished by pH, nutrient availability and hydrologic dynamics. Fens have groundwater within the rooting zone of vascular plants, while bogs have built up peat above the influence of groundwater. The vegetation in true bogs are limited by the water available from precipitation and are only found in areas of high precipitation.

### Soil features

The soils generally have a water table at or near the soil surface for much of the winter and spring, and the water table is often at or within a few feet of the soil surface for the remainder of the year. These soils are typically nutrient-poor and have an acidic pH. A soil series on which this site occurs is Semiahmoo.

Table 4. Representative soil features

|                      |                             |
|----------------------|-----------------------------|
| Surface texture      | (1) Muck                    |
| Family particle size | (1) Loamy                   |
| Drainage class       | Very poorly drained         |
| Permeability class   | Moderate to moderately slow |

|                                                          |                  |
|----------------------------------------------------------|------------------|
| Surface fragment cover <=3"                              | Not specified    |
| Surface fragment cover >3"                               | Not specified    |
| Available water capacity<br>(0-101.6cm)                  | 24.38 – 59.69 cm |
| Soil reaction (1:1 water)<br>(0-101.6cm)                 | 0 – 10           |
| Subsurface fragment volume <=3"<br>(Depth not specified) | Not specified    |
| Subsurface fragment volume >3"<br>(Depth not specified)  | Not specified    |

### Ecological dynamics

These areas may have historically been kept free of extensive brush and tree cover by burning. Typical native plant species include Labrador tea (*Ledum groenlandicum*), salal (*Gaultheria shaloni*), spirea (*Spiraea douglasii*), sedges (*Carex* spp.), and minor amounts of shore pine (*Pinus contorta*).

### State and transition model

### Additional community tables

Table 5. Community 1.1 plant community composition

| Group                  | Common Name              | Symbol | Scientific Name                | Annual Production () | Foliar Cover (%) |
|------------------------|--------------------------|--------|--------------------------------|----------------------|------------------|
| <b>Shrub/Vine</b>      |                          |        |                                |                      |                  |
| 1                      | <b>Ericaceous Shrubs</b> |        |                                | 112-224              |                  |
|                        | bog Labrador tea         | LEGR   | <i>Ledum groenlandicum</i>     | 0                    | 45-75            |
|                        | alpine laurel            | KAMI   | <i>Kalmia microphylla</i>      | 0                    | 18-30            |
|                        | black crowberry          | EMNI   | <i>Empetrum nigrum</i>         | 0                    | 12-20            |
|                        | small cranberry          | VAOX   | <i>Vaccinium oxycoccos</i>     | 0                    | 8-12             |
|                        | great burnet             | SAOF3  | <i>Sanguisorba officinalis</i> | 0                    | 2-4              |
|                        | American skunkcabbage    | LYAM3  | <i>Lysichiton americanus</i>   | 0                    | 2-4              |
| <b>Forb</b>            |                          |        |                                |                      |                  |
| 2                      | <b>Forbs</b>             |        |                                | 11-45                |                  |
|                        | great burnet             | SAOF3  | <i>Sanguisorba officinalis</i> | 0                    | 2-4              |
|                        | deer fern                | BLSP   | <i>Blechnum spicant</i>        | 0                    | 1-2              |
|                        | American skunkcabbage    | LYAM3  | <i>Lysichiton americanus</i>   | 0                    | 1-2              |
| <b>Grass/Grasslike</b> |                          |        |                                |                      |                  |

|   |                       |       |              |         |      |
|---|-----------------------|-------|--------------|---------|------|
| 3 | Grasses and Grasslike |       |              | 112-224 |      |
|   | sedge                 | CAREX | <i>Carex</i> | 0       | 8-16 |

Table 6. Community 1.2 plant community composition

| Group           | Common Name                    | Symbol | Scientific Name                | Annual Production () | Foliar Cover (%) |
|-----------------|--------------------------------|--------|--------------------------------|----------------------|------------------|
| Shrub/Vine      |                                |        |                                |                      |                  |
| 1               | Ericaceous and other shrubs    |        |                                | 224-448              |                  |
|                 | bog Labrador tea               | LEGR   | <i>Ledum groenlandicum</i>     | 0                    | 45-75            |
|                 | alpine laurel                  | KAMI   | <i>Kalmia microphylla</i>      | 0                    | 18-30            |
|                 | black crowberry                | EMNI   | <i>Empetrum nigrum</i>         | 0                    | 10-14            |
|                 | small cranberry                | VAOX   | <i>Vaccinium oxycoccos</i>     | 0                    | 8-12             |
|                 | salal                          | GASH   | <i>Gaultheria shallon</i>      | 0                    | 3-7              |
| Forb            |                                |        |                                |                      |                  |
| 2               | Forbs                          |        |                                | 336-560              |                  |
|                 | western brackenfern            | PTAQ   | <i>Pteridium aquilinum</i>     | 0                    | 16-26            |
|                 | great burnet                   | SAOF3  | <i>Sanguisorba officinalis</i> | 0                    | 11-17            |
|                 | deer fern                      | BLSP   | <i>Blechnum spicant</i>        | 0                    | 8-16             |
|                 | western cordilleran bunchberry | COUN   | <i>Cornus unalaschkensis</i>   | 0                    | 1-3              |
|                 | false lily of the valley       | MADI   | <i>Maianthemum dilatatum</i>   | 0                    | 1-3              |
| Grass/Grasslike |                                |        |                                |                      |                  |
| 3               | Grasses and Grasslike          |        |                                | 112-336              |                  |
|                 | slough sedge                   | CAOB3  | <i>Carex obnupta</i>           | 0                    | 13-21            |
| Tree            |                                |        |                                |                      |                  |
| 4               | Conifers                       |        |                                | 0                    |                  |
|                 | lodgepole pine                 | PICO   | <i>Pinus contorta</i>          | 0                    | 0-12             |
|                 | western redcedar               | THPL   | <i>Thuja plicata</i>           | 0                    | 0-12             |
|                 | western hemlock                | TSHE   | <i>Tsuga heterophylla</i>      | 0                    | 0-12             |

Table 7. Community 1.3 plant community composition

| Group | Common Name | Symbol | Scientific Name | Annual Production () | Foliar Cover (%) |
|-------|-------------|--------|-----------------|----------------------|------------------|
|-------|-------------|--------|-----------------|----------------------|------------------|

Table 8. Community 1.4 plant community composition

| Group | Common Name | Symbol | Scientific Name | Annual Production () | Foliar Cover (%) |
|-------|-------------|--------|-----------------|----------------------|------------------|
|-------|-------------|--------|-----------------|----------------------|------------------|

Table 9. Community 2.1 plant community composition

| Group | Common Name | Symbol | Scientific Name | Annual Production () | Foliar Cover (%) |
|-------|-------------|--------|-----------------|----------------------|------------------|
|-------|-------------|--------|-----------------|----------------------|------------------|

Table 10. Community 2.2 plant community composition

| Group | Common Name | Symbol | Scientific Name | Annual Production () | Foliar Cover (%) |
|-------|-------------|--------|-----------------|----------------------|------------------|
|-------|-------------|--------|-----------------|----------------------|------------------|

Table 11. Community 3.1 plant community composition

| Group | Common Name | Symbol | Scientific Name | Annual Production () | Foliar Cover (%) |
|-------|-------------|--------|-----------------|----------------------|------------------|
|-------|-------------|--------|-----------------|----------------------|------------------|

Contributors

Martha Chaney

Approval

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                                        | 11/27/2024        |
| 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):

---

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:

---