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Ecological site R227XY105AK
Terraces, Wet

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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.

Associated sites

F227XY103AK	**Stream Terraces Frozen**
F227XY104AK	**Stream Terraces**
F227XY106AK	**Glaciolacustrine Uplands**
F227XY107AK	**Glaciolacustrine Uplands, Frozen**
F227XY111AK	**Peat Mounds**
R227XY202AK	**Shallow Drainages**
R227XY501AK	**Wet Depressions**

Similar sites

F227XY107AK	**Glaciolacustrine Uplands, Frozen**
F227XY103AK	**Stream Terraces Frozen**

Table 1. Dominant plant species

Tree	(1) *Picea mariana*

Shrub	Not specified
Herbaceous	(1) *Eriophorum brachyantherum*

Physiographic features

This site occurs on nearly level and broadly concave stream terraces and lacustrine terraces and on toeslopes on lacustrine terrace escarpments. The surface is mantled in moderately thick to thick organic deposits. Surface microtopography is strongly hummocky. Most areas of this site appear to receive a surplus of water as surface and ground water discharge from the adjacent uplands. Ponding or wet conditions near the surface during much of the summer appear to be the most important characteristic of this site.

In the Gulkana River area, this site is of moderate extent. It occurs along the entire length of the West Fork and along the lower reaches of the Main Stem. This site probably occurs elsewhere in the Copper River basin also.

Table 2. Representative physiographic features

Landforms	(1) Terrace
Flooding frequency	None
Ponding duration	Long (7 to 30 days)
Elevation	580 – 760 m
Slope	0 – 10 %
Ponding depth	0 – 30 cm
Aspect	Aspect is not a significant factor

Climatic features

The subarctic continental climate of this site is characterized by long cold winters and short warm summers. Mean January temperature is -2 ?F.; mean July temperature is 54 ?F. Mean annual precipitation ranges from 15 to 19 inches. Annual snowfall ranges from 54 to 102 inches. The frost-free season is about 60 to 80 days (28 ?F. base temperature). The growing season varies greatly from year to year and frosts can occur during any summer month.

Table 3 Representative climatic features

Frost-free period (average)	80 days
Freeze-free period (average)	0 days
Precipitation total (average)	2,030 mm

Influencing water features

Soil features

The soils on this site are formed in moderately thick to thick organic materials over loamy alluvium and lacustrine deposits. The surface organic mat typically ranges from about 7 to 34 inches (18 to 86 cm) thick in the inter-hummock depressions and from 16 to over 40 inches (41 to 102 cm) within the hummocks. The seasonal high water table ranges from as much as 10 inches (25 cm) of ponding to a depth of 10 inches (25 cm) below the surface and the soils are very poorly drained. Depth to permafrost ranges from within the organic material to 38 inches (97 cm) below the mineral surface. Aquic conditions including reduced matrices and saturation are present within 10 inches (25 cm) of the surface.

Additional soil phases include: Pergelic Cryohemist, Mendna, very wet; Kuslinad, very wet; Haggard; and Cryaquepts, very wet.

Table 4. Representative soil features

Family particle size	(1) Loamy
Available water capacity (0-101.6cm)	0.36 – 0.89 cm

Ecological dynamics

Wild fire impacts and post-fire succession on this site are complex and difficult to predict. Because of the landscape position and moisture status of the site, the vegetation probably would be susceptible to burning only during extended dry periods. Because this site receives a surplus of water as surface run-in and ground water discharge from the adjacent uplands, it should always be considerably wetter that surrounding areas. Although an increase in the depth to permafrost could occur following a fire, soil drainage probably would poor because of topography and permafrost and the site would remain wet.

Cottongrass tussocks would be expected to most impacted by fire. The degree to which Eriophorum brachyantherum can survive severe burning is not known. Soil and site characteristics in areas with the best tussock development suggests that their development requires a degree of site stability. A best guess is that burning would favor an increase in sedges and dwarf shrubs and a decrease in cottongrass tussocks for an indeterminate period of time. Following light to moderate burning, Low shrub birch/closed sheath cottongrass scrub would develop on this site. Tree regeneration, primarily Picea mariana, would be expected to occur slowly.

State and transition model

Figure 3. Terraces, wet and Frozen

Additional community tables

Table 5. Community 1.1 plant community composition

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

Table 6. Community 2.1 plant community composition

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

Recreational uses

The hummocky microtopography and wet characteristics of this site makes for extremely difficult walking when crossing areas of this site. Soil conditions result in severe limitations for trails.

Other information

Wild fire impacts and post-fire succession on this site are complex and difficult to predict. Because of the landscape position and moisture status of the site, the vegetation probably would be susceptible to burning only during extended dry periods. Because this site receives a surplus of water as surface run-in and ground water discharge from the adjacent uplands, it should always be considerably wetter that surrounding areas. Although an increase in the depth to permafrost could occur following a fire, soil drainage probably would poor

because of topography and permafrost and the site would remain wet. Cottongrass tussocks would be expected to most impacted by fire. The degree to which Eriophorum brachyantherum can survive severe burning is not known. Soil and site characteristics in areas with the best tussock development suggests that their development requires a degree of site stability. A best guess is that burning would favor an increase in sedges and dwarf shrubs and a decrease in cottongrass tussocks for an indeterminate period of time. Following light to moderate burning, Low shrub birch/closed sheath cottongrass scrub would develop on this site. Tree regeneration, primarily Picea mariana, would be expected to occur slowly. : This site is not known to represent a progressive stage of similar or adjoining sites, in particular ecological sites 172Xy103AK - Stream Terraces, Frozen and 172Xy107AK - Glaciolacustrine Uplands, Frozen. Transitional area between these sites and ecological site 172Xy105AK - Terraces, Wet are common, however, throughout the Gulkana River Area. (2) Degradation: Given that the soil surface is mantled with a moderately thick to thick layer of organic material throughout this site, dramatic changes in the characteristics of this site might be expected following severe wild fire during extremely dry years. The surface organic material could become highly susceptible to burning if there was a significant drop in the level of the water table during prolonged dry conditions. Ground fires under such conditions could burn into the organic mat to a considerable degree and conceivably result in a lowering of the base elevation of the surface. Later, when the water table once again rose to more normal levels, conditions may be suitable for the development of sedge wet meadow vegetation and site characteristics more typical of ecological site 172Xy501AK - Wet Depressions. Whether changes of this magnitude as a result of wild fire have in fact ever occurred is not known.

Inventory data references

Soil and Vegetation Survey of the Gulkana River Area, AK, Clark M.H. and Kautz, D.R. USDOI, BLM-Alaska Technical Report 20, August 1999

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:**

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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):**

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

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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:**

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17. **Perennial plant reproductive capability:**
