

Ecological site F146XY072ME

Loamy Over Sandy

Last updated: 5/20/2025
Accessed: 08/31/2026

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): 146X–Aroostook Area

This area is entirely in Maine and it makes up about 1,275 square miles (3,305 square kilometers). Presque Isle is the largest city in the area. Interstate 95 ends in the town of Houlton, at the border with New Brunswick, Canada. Aroostook State Park, Fort Kent Historic Site, and Loring Commerce Center are in this area. The Big Rock ski area is in the middle of this MLRA and is on the highest point, which is Mars Hill Mountain.

Ecological site concept

This site occurs on deep, well-drained and moderately well-drained sandy soils that have a thick loamy surface layer. These soils formed as relatively coarse sediments from fast-moving glacial meltwater were overlain by finer deposits in lower energy water. These landforms are flat to moderately sloping outwash plains, outwash terraces, and stream terraces. Although this site is no longer flooded, it can have a seasonally-high water table within 1-3 feet of the soil surface from November to April. Much of this site is considered prime farmland for growing crops. Where native vegetation is present, hardwood species predominate, with some conifers in the overstory a diverse and productive understory. Common hardwood species are red maple, sugar maple, yellow birch, white birch, bigtooth aspen, and black cherry. Abandoned cropland may transition to pine, spruce-fir, or reference hardwood-dominated mixedwood forests. This site is subject to logging, wind, insects and disease, and other natural and human disturbances resulting in a variety of alternative states. When managed for timber production, several different ecological states are possible. The pine forest state, reference hardwood-dominated mixedwood state, and spruce-fir state are managed to maintain dominance of their respective timber species, and to facilitate profitable harvests along predictable timelines. Hemlock forests may also result from logging practices, though these are typically less-desirable and may result from selective harvest of more valuable species, leaving the hemlock behind. As hemlock increases on the site, it inhibits the establishment of other species by shading, reducing soil moisture availability to other plants, and especially by acidifying the soil. With sufficient economic inputs, any of the states that occur on this site may transition from one to another, however, due to cost limitations, forests are typically managed for whatever timber species are currently present on the site.

Associated sites

F146XY071ME	Sandy This site grades into the Sandy site as soil textures become coarser.
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Similar sites

F146XY071ME	Sandy These sites occur on similar landforms, but the Sandy site has coarser soil textures and drier soil drainage classes, resulting in greater conifer abundance than the Loamy over Sandy site.
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Table 1. Dominant plant species

Tree	(1) <i>Pinus resinosa</i> (2) <i>Pinus strobus</i>
Shrub	(1) <i>Gaylussacia baccata</i>
Herbaceous	(1) <i>Pteridium aquilinum</i> (2) <i>Maianthemum canadense</i>

Physiographic features

This site occurs on flat to gently sloping deposits from glacial meltwater, including outwash plains, outwash terraces, and stream terraces. These landforms are not flooded or ponded, but may have a seasonal water table within 1-3 feet of the soil surface from November to April. This site may occasionally occur on steeper slopes up to 25%.

Table 2. Representative physiographic features

Landforms	(1) Outwash plain (2) Outwash terrace (3) Stream terrace
Runoff class	Low to high
Flooding frequency	None
Ponding frequency	None
Elevation	0 – 610 m
Slope	0 – 20 %
Water table depth	60 – 180 cm
Aspect	Aspect is not a significant factor

Climatic features

The climate of this site is characterized by cold, snowy winters, and cool summers. Precipitation is nearly equally distributed throughout the year, with slightly more moisture falling in June-October. During winter months, and sometimes fall and spring, cold winds from the north bring severe weather events. The effects of a relatively short growing season are somewhat mitigated by long summer days associated with the high latitudes of the region. Occasionally high winds, microbursts, or freezing rain events damage vegetation over small portions of the landscape.

Table 3 Representative climatic features

Frost-free period (characteristic range)	80-100 days
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Freeze-free period (characteristic range)	130-140 days
Precipitation total (characteristic range)	940-1,070 mm
Frost-free period (actual range)	60-110 days
Freeze-free period (actual range)	100-140 days
Precipitation total (actual range)	910-1,070 mm
Frost-free period (average)	90 days
Freeze-free period (average)	130 days
Precipitation total (average)	990 mm

- (1) ALLAGASH [USC00170200], Saint Francis, ME
- (2) FT KENT [USC00172878], Fort Kent, ME
- (3) CARIBOU MUNI AP [USW00014607], Caribou, ME
- (4) BRIDGEWATER [USC00170833], Bridgewater, ME
- (5) HOULTON 5N [USC00173944], Houlton, ME
- (6) PRESQUE ISLE [USC00176937], Presque Isle, ME

Influencing water features

Though this site can occur on stream terraces, they are no longer actively flooded and do not represent true floodplains or wetlands.

Soil features

The soils of this site are deep and moderately well to well drained. The surface textures are loams or sandy loams over a sandy subsoil. These soils formed as relatively coarse sediments from fast-moving glacial meltwater were overlain by finer deposits in lower energy water. Soil pH ranges from 4.5 to 6.5. These are considered prime soils for growing crops. The soil temperature regime is frigid and the soil moisture regime is udic.

Table 4. Representative soil features

Parent material	(1) Glaciofluvial deposits – slate
Surface texture	(1) Fine sandy loam (2) Gravelly loam
Family particle size	(1) Sandy
Drainage class	Moderately well drained to well drained

Permeability class	Slow to moderate
Soil depth	150 cm
Surface fragment cover <=3"	Not specified
Surface fragment cover >3"	Not specified
Available water capacity (0-101.6cm)	5.08 – 18.8 cm
Calcium carbonate equivalent (0-101.6cm)	Not specified
Electrical conductivity (0-101.6cm)	Not specified
Sodium adsorption ratio (0-101.6cm)	Not specified
Soil reaction (1:1 water) (0-101.6cm)	4.5 – 6.5
Subsurface fragment volume <=3" (Depth not specified)	10 – 30 %
Subsurface fragment volume >3" (Depth not specified)	0 – 10 %

Ecological dynamics

[Caveat: The vegetation information contained in this section and is only provisional, based on concepts, and future projects support validation through field work. *] The vegetation groupings described in this section are based on the terrestrial ecological system classification and vegetation associations developed by NatureServe (Comer 2003) and localized associations provided by the Maine Natural Areas Program (Gawler and Cutko, 2010).

Much of this site is considered prime farmland for growing crops. Where native vegetation is present, hardwood species predominate, with some conifers in the overstory a diverse and productive understory. Common hardwood species are red maple, sugar maple, yellow birch, white birch, bigtooth aspen, and black cherry.

Abandoned cropland may transition to pine, spruce-fir, or reference hardwood-dominated mixedwood forests.

This site is subject to logging, wind, insects and disease, and other natural and human disturbances resulting in a variety of alternative states.

When managed for timber production, several different ecological states are possible. The pine forest state, reference hardwood-dominated mixedwood state, and spruce-fir state are managed to maintain dominance of their respective timber species, and to facilitate profitable harvests along predictable timelines. Hemlock forests may also result from logging practices, though these are typically less-desirable and may result from selective harvest of more valuable species, leaving the hemlock behind. As hemlock increases on the site, it inhibits the establishment of other species by shading, reducing soil moisture availability to other plants, and especially by acidifying the soil.

With sufficient economic inputs, any of the states that occur on this site may transition from one to another, however, due to cost limitations, forests are typically managed for whatever timber species are currently present on the site.

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 (%)
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Table 6. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 7. Community 3.1 plant community composition

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

Future work is needed, as described in a future project plan, to validate the information presented in this provisional ecological site description. Future work includes field sampling, data collection and analysis by qualified vegetation ecologists and soil scientists. As warranted, annual reviews of the project plan can be conducted by the Ecological Site Technical Team. A final field review, peer review, quality control, and quality assurance reviews of the ESD are necessary to approve a final document.

Other references

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Contributors

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Approval

Greg Schmidt, 5/20/2025

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Nels Barrett, Nick Butler, and Carl Bickford provided considerable review of this ecological site concept.

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	05/06/2025
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:
