

Ecological site RX141X602

Sandy Toeslope

Last updated: 10/03/2024

Accessed: 09/14/2026

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): 141X–Tug Hill Plateau

MLRA 141 is entirely in New York and makes up about 1,173 square kilometers (3,037 square kilometers). It consists of a relatively small but unique upland that lies just off the eastern end of Lake Ontario and west of the Black River Valley and Adirondack Mountain region. It is essentially a north- and east-facing glaciated cuesta scarp and is underlain by thick Wisconsin till and small areas of outwash. Most of the plateau is woodland, so forestry and recreation are the primary uses, but small isolated dairy operations and hobby farms are located around the perimeter. The area is bordered on the east by the Black River Valley, on the north by the St. Lawrence Lowland, on the west by the Ontario Lowland, and on the south by the Upper Mohawk Valley. The northern and eastern boundaries of MLRA 141 are distinct where they contact the physiographically dissimilar southwestern part of MLRA 142 (St. Lawrence-Champlain Plain). The western and southern boundaries are also distinct where they contact the physiographically dissimilar MLRA 101 (Ontario-Erie Plain and Finger Lakes Region).

Ecological site concept

This site occurs on somewhat poorly- to moderately well-drained sandy soils in low-lying areas associated with eskers, deltas, kame terraces, outwash plains, or sandy till deposits. Soils are typically very deep with a seasonally-high water table within 6-39 inches of the soil surface. Slopes are usually less than 8 percent. Conifers are abundant and diverse, including white pine, red spruce, balsam fir, and eastern hemlock. Paper birch, red maple, bigtooth aspen, black cherry and yellow birch are common hardwood associates. This site is often downslope of the Dry Sands site, which occurs on very better drained soils lacking a high water table.

Table 1. Dominant plant species

Tree	(1) <i>Pinus strobus</i> (2) <i>Tsuga canadensis</i>
Shrub	Not specified
Herbaceous	Not specified

Legacy ID

F141XY602NY

Physiographic features

Table 2. Representative physiographic features

Landforms	(1) Delta (2) Outwash plain (3) Terrace
Runoff class	Low
Elevation	60 – 550 m
Water table depth	30 – 70 cm
Aspect	Aspect is not a significant factor

Climatic features

Throughout the year precipitation is evenly distributed around most of this area with slightly less rainfall occurring around the lower margins of the plateau. Rainfall occurs as high-intensity, convective thunderstorms during the summer. Lake-effect snowfall is heavy from late autumn to early spring with the summit of the plateau having the lowest temperatures and the shortest freeze-free periods.

Climate stations Watertown and Old Forge are adjacent to the MLRA and were used to tabulate additional representative climate data.

Table 3 Representative climatic features

Frost-free period (characteristic range)	90-120 days
Freeze-free period (characteristic range)	130-160 days
Precipitation total (characteristic range)	1,190-1,350 mm
Frost-free period (actual range)	90-130 days
Freeze-free period (actual range)	120-160 days
Precipitation total (actual range)	1,120-1,450 mm
Frost-free period (average)	110 days
Freeze-free period (average)	140 days
Precipitation total (average)	1,270 mm

- (1) BOONVILLE 4 SSW [USC00300785], Boonville, NY
- (2) CAMDEN [USC00301110], Camden, NY
- (3) WATERTOWN [USC00309000], Watertown, NY
- (4) OLD FORGE [USC00306184], Eagle Bay, NY

Influencing water features

Soil features

Table 4. Representative soil features

Parent material	(1) Glaciofluvial deposits – gneiss (2) Glaciofluvial deposits – granite (3) Glaciofluvial deposits – sandstone
Surface texture	(1) Sand
Drainage class	Somewhat poorly drained to moderately well drained
Permeability class	Slow to moderately rapid
Soil depth	180 cm
Surface fragment cover <=3"	Not specified
Surface fragment cover >3"	Not specified
Available water capacity (5.1-7.6cm)	Not specified
Soil reaction (1:1 water) (9.1-16.5cm)	Not specified
Subsurface fragment volume <=3" (0-114.3cm)	Not specified
Subsurface fragment volume >3" (0-12.7cm)	Not specified

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 New York Natural Heritage Program (Edinger et al. 2014).

This site typically supports a mixedwood community with white pine, red spruce, balsam fir, eastern hemlock, paper birch, red maple, bigtooth aspen, black cherry and yellow birch common in various combinations.

This site has been cleared and cultivated for pasture/hayland or crop production. Blueberries are particularly suited to these sandy soils.

Gravel and sand mining are common on this site, and often accompanied by heavy logging to remove timber prior to soil excavation. Following cutting, early successional species such as fir, white birch, pin cherry, and aspen may enter the community, but they die out as the forest reaches maturity within about 80 years.

Further study is required to understand plant community dynamics on this site.

State and transition model

Additional community tables

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

Acknowledgments

Nels Barrett and Nick Butler 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	09/14/2026
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:
