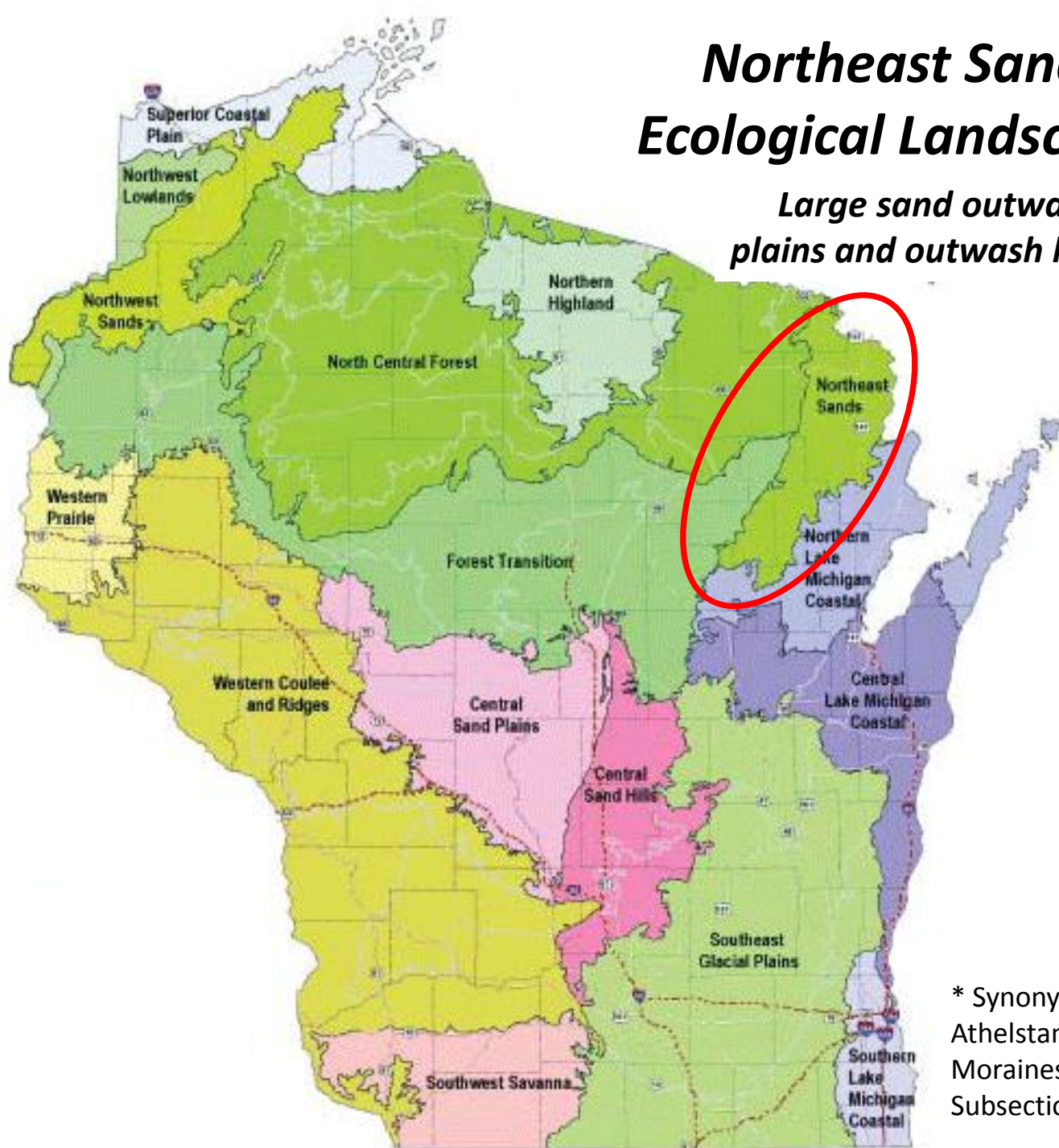


***Lakewood Southeast Project  
Lakewood/Laona Ranger District  
Chequamegon-Nicolet National Forest***



# ***Northeast Sands Ecological Landscape\****

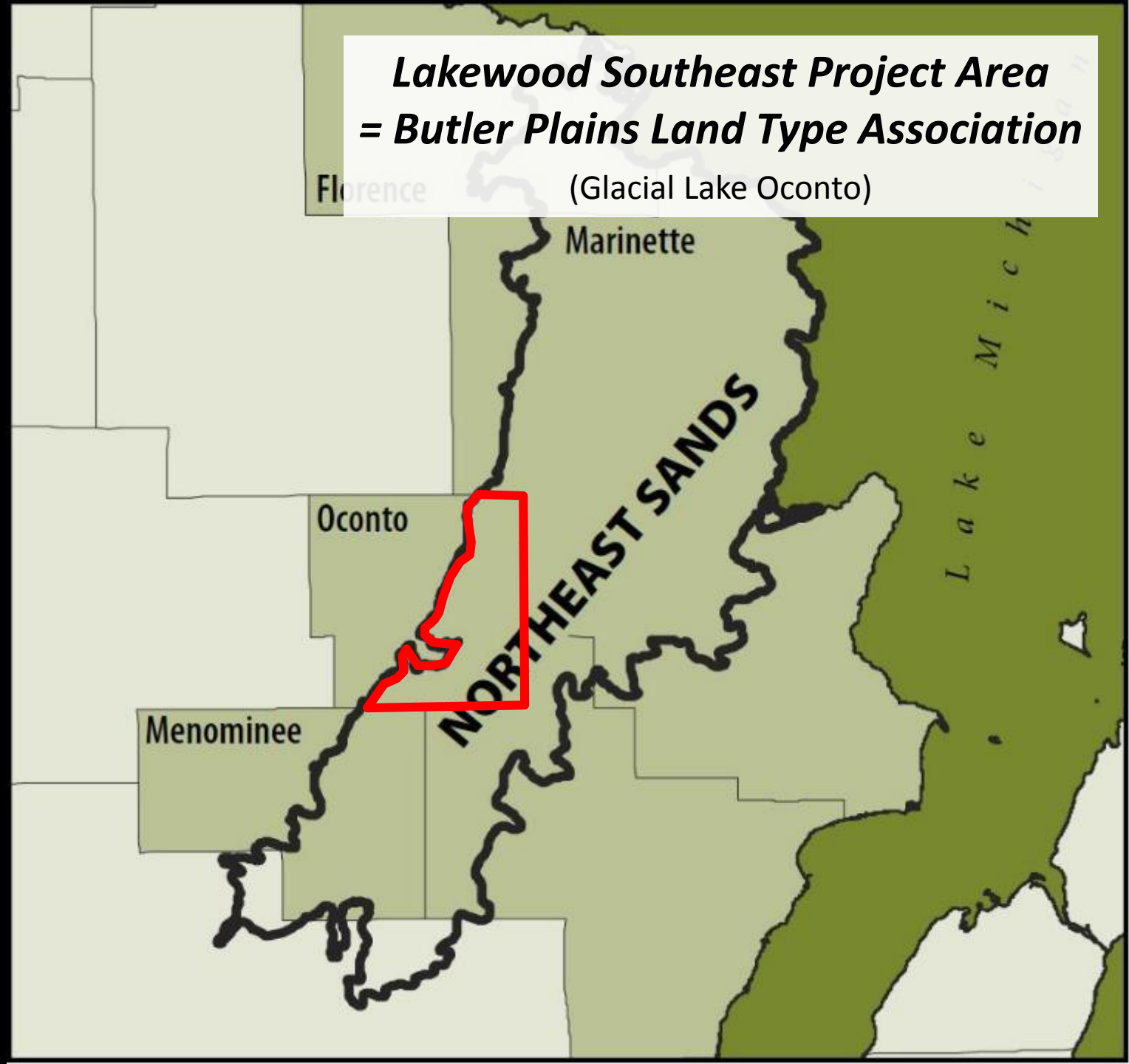
***Large sand outwash  
plains and outwash heads***

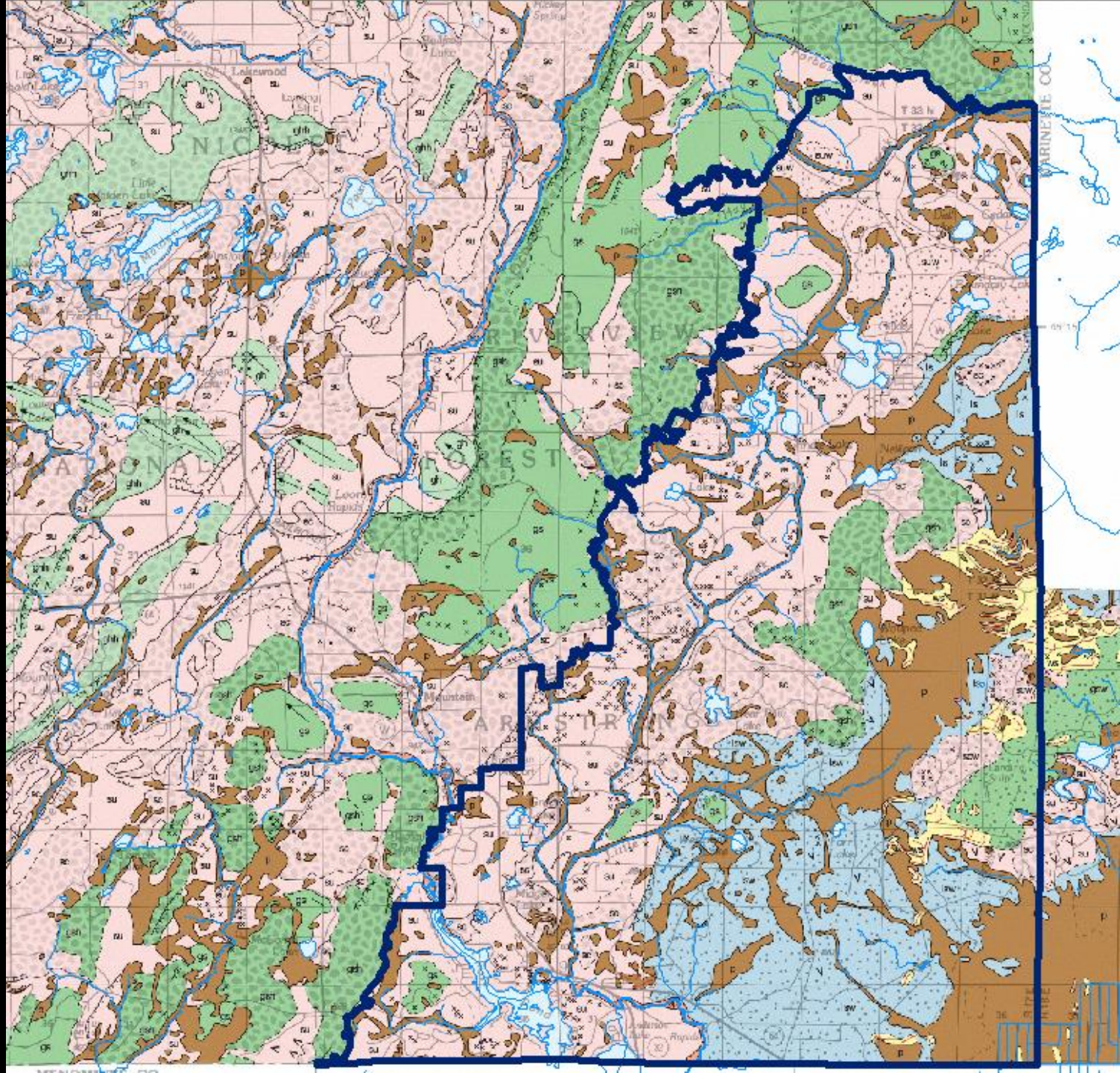


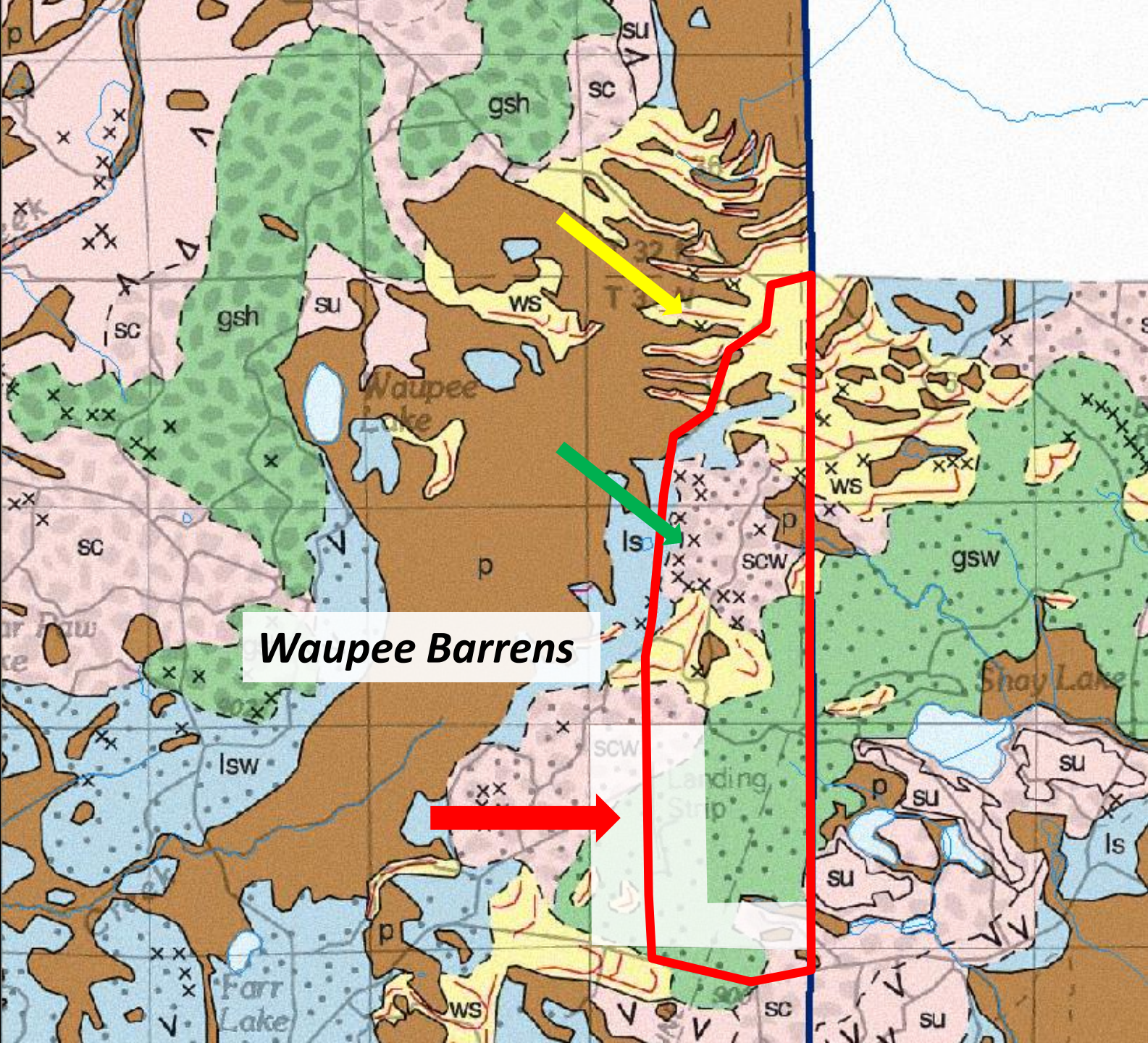
\* Synonymous with  
Athelstane Outwash and  
Moraines Ecological  
Subsection

***Lakewood Southeast Project Area  
= Butler Plains Land Type Association***

Florence (Glacial Lake Oconto)







***Waupsee Barrens***

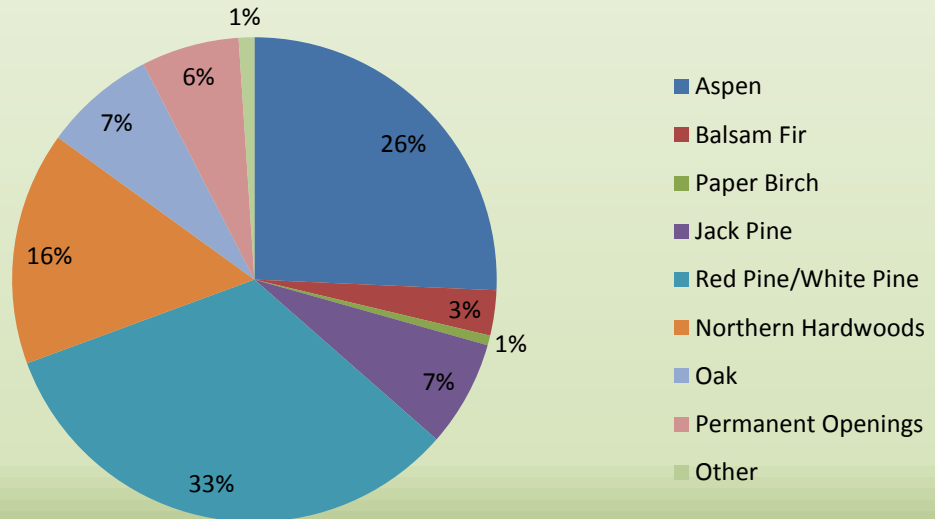
# Lakewood Southeast Project Area

- **46,000 acres gross acres**
- **37,000 acres National Forest lands**
- **27,000 acres upland NF lands suitable for timber harvest/active management**
- **Forest Plan Management Area 4 – Pine Emphasis**
- **95% upland composition in 6 types (highlighted below).**

Area-wide Composition

Uplands	Acres	% Upland
<b>Aspen</b>	6,987	<b>25.7%</b>
Balsam Fir	819	3.0%
Paper Birch	179	0.7%
<b>Jack Pine</b>	1,928	<b>7.1%</b>
<b>Red Pine/White Pine</b>	8,949	<b>32.9%</b>
<b>Northern Hardwoods</b>	4,237	<b>15.6%</b>
<b>Oak</b>	2,027	<b>7.5%</b>
<b>Permanent Openings</b>	<b>1,774</b>	<b>6.5%</b>
Other	284	1.0%
Subtotal	27,183	100.0%

Lakewood Southeast  
Area-wide Upland Composition

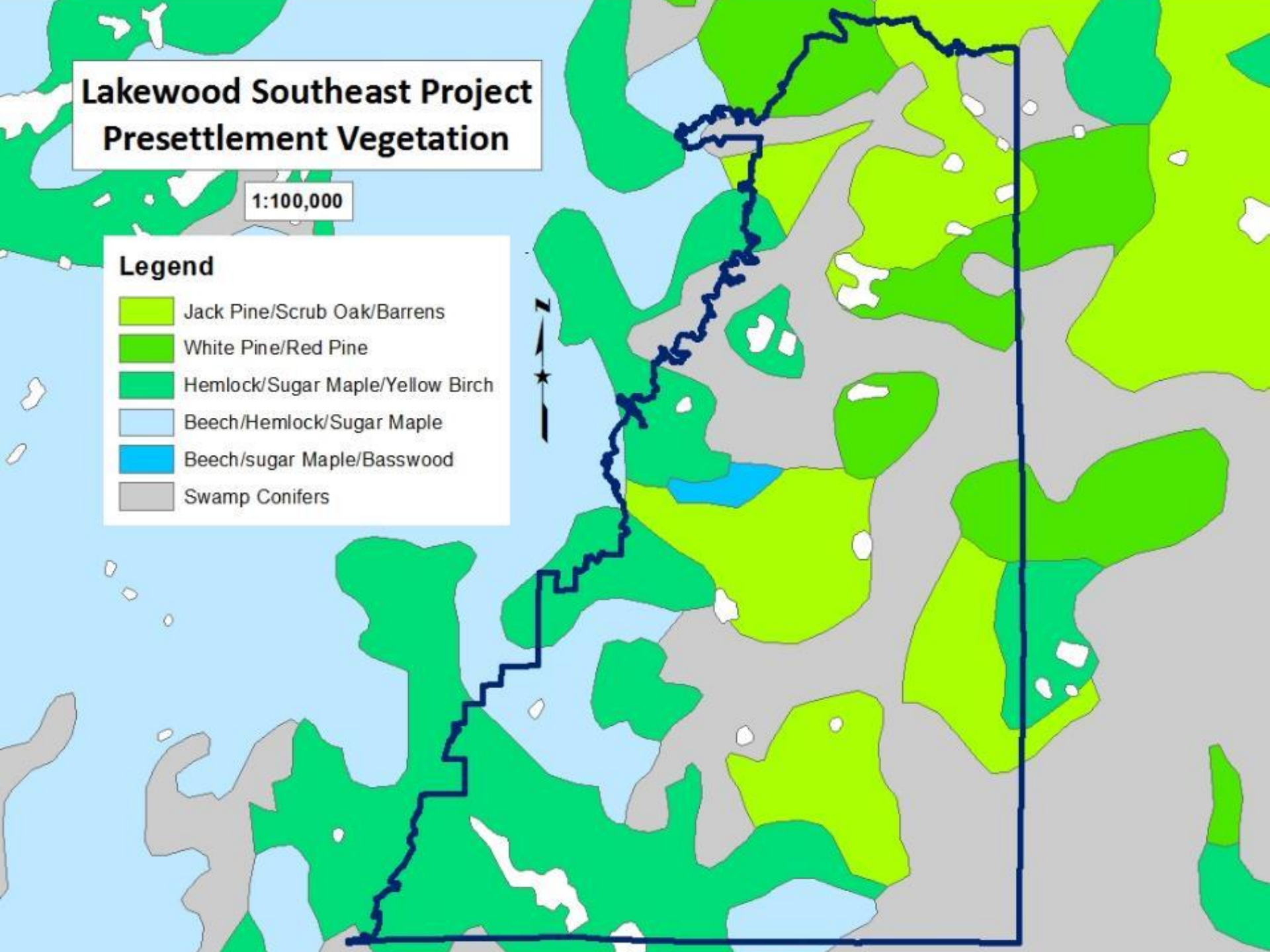


# Lakewood Southeast Project Presettlement Vegetation

1:100,000

## Legend

- Jack Pine/Scrub Oak/Barrens
- White Pine/Red Pine
- Hemlock/Sugar Maple/Yellow Birch
- Beech/Hemlock/Sugar Maple
- Beech/sugar Maple/Basswood
- Swamp Conifers



# Excerpt of 1853 Public Land Survey System Notes

Township 31 North Range 17  
chains

80.60 Section Corner

Land gently rolling. Burnt openings  
soil 3rd rate - some pine and aspen  
Timber - Undergrowth. Aspen + Pine.

August 14<sup>th</sup> - 1853

---

Measuring chain compared + found correct

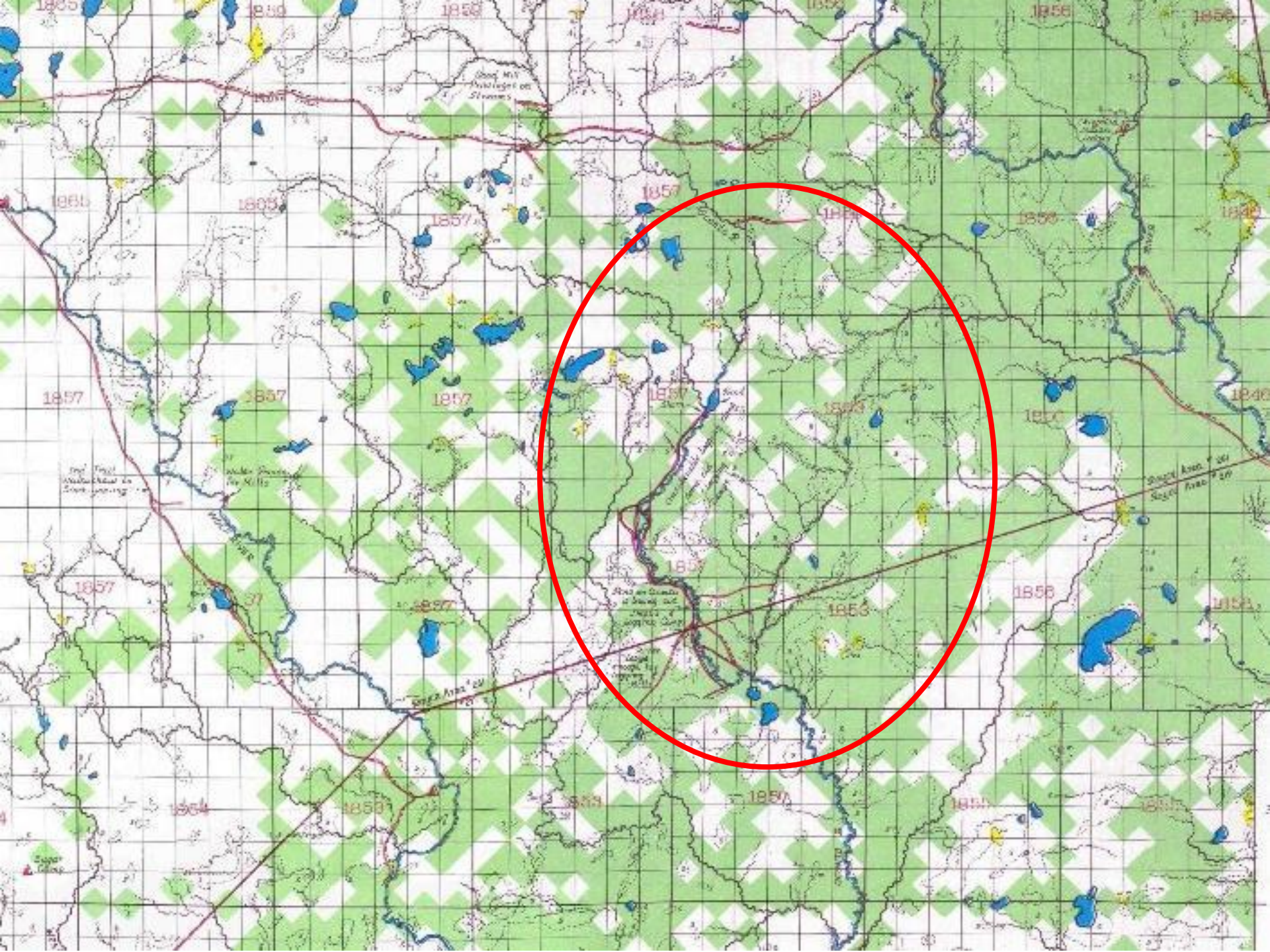
---

North between sections 11 + 12

Variation  $5^{\circ} 20'$  East

31.50 Enter wet Tamarac + Cedar  
swamps until l. . . . .























35728







## ***Fire Scar Research***

**3 study areas in/around project  
area 2009-2011**

**Principal Researchers  
Mike Stambaugh and Rich  
Guyette, University of Missouri  
Tree Ring Laboratory**

**Funded by the Joint Fire Science  
Program and the USFS Northern  
Research Station**



Red pine trees and stumps along a narrow peninsula in a large bog at the Lakewood southeast project area (Airport Road site).

1684

1756

1780

1794

1805



## *Fire Scar Research Findings*

- Fire History from 1650 - 2010
- Fires occurred 1655-1948

### Major early fire years

- 1664, 1756, 1774, 1780, 1794, 1805, 1820

### Major fire years in common with other sites

- 1664, 1756, 1780

- Mean fire interval and range
  - *Pre-Euro-American period* (1655 to 1855): 20.0 years (5 to 54 years)
  - *Depopulated period* (1655 to 1756): 34.7 years (9 to 54 years)
  - *Native American period* (1756-1855): 14.1 years (6 to 18 years)
  - *Euro Agriculture period* (1855 to 1948): 7.7 years
  - **All periods excluding fire suppression: 13.3 (2-54 years)**

- Burns about evenly split between early and late-season periods





























# Wisconsin DNR Land Legacy Report (2006)



## Northeast Sands *ecological landscape*

### Attributes and Characteristics

This ecological landscape is characterized by glaciated topography with sandy, well-drained soils as well as steep outcropping bedrock knolls. This area historically supported extensive oak and pine barrens and jack pine forests. Northern hardwood and red and white pine forests were interspersed throughout the landscape. Now, most of this landscape is forested, predominantly with aspen and paper birch. Jack pine stands remain on the outwash plains along with northern pin oak. Several important remnants of oak-pine barrens remain. The outwash plains include many pitted depressions, which frequently contain wetlands and kettle lakes.

This landscape supports an exceptional concentration of high quality rivers and streams, most of which harbor outstanding trout fisheries.

The Menominee  
lake sturgeon  
land use i  
commodit  
little a gr  
majority  
end of th  
half of th

### Conservation

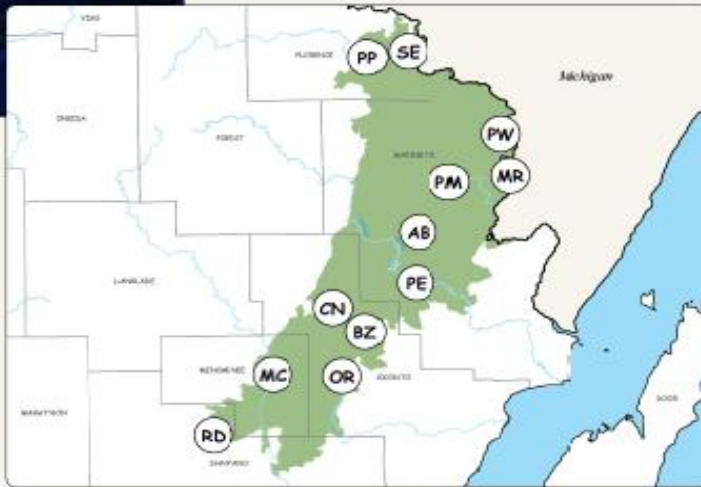
This ecolog  
best oppo  
pine barre  
high qual  
found at t  
Area, but  
large patc  
mixed wit

### Legend

- AB At
- BZ Br
- CN Ch
- MC M
- MR M
- OR O
- PW Pe
- PE Pe
- PM Pi
- PP Pi
- RD Re
- SE Sp

## Outstanding Ecological Opportunities in the Northeast Sands Ecological Landscape

- The Northeast Sands Ecological Landscape contains extensive forests, with large federal, state, county, and tribal holdings.
- Important forest communities here include mesic hemlock-beech, wet-mesic northern white-cedar swamps, and dry forests composed of various mixtures of pine, oak, and/or aspen.
- Several large remnant barrens/bracken grassland complexes occur here.
- The large rivers and streams support significant aquatic biota, including fish, mussels, and odonates.
- The forested corridors bordering rivers, streams, and some of their tributaries offer opportunities to connect scattered patches of conifers, older forests, and other important habitats.
- The complex bedrock geology of this ecological landscape is expressed at the surface as cliffs, glades, and talus slopes. These habitats support specialists, some of them rare in Wisconsin.
- Some lakes in this ecological landscape precipitate calcium carbonate, resulting in marl deposition. Rare plants associated with alkaline wetlands have been documented in or adjacent to several of these marl lakes.
- Miscellaneous opportunities include nonforested wetland communities, patches of floodplain forest, clusters of small undeveloped lakes, spring ponds, ephemeral ponds, surrogate grasslands, and scattered populations of rare species.



## ***Pine Barrens***

*Pine barrens covered 2.3 million acres – or 7%- of Wisconsin's presettlement landscape.*

*Currently, about 16,000 acres – or 0.05% of our landscape.*

*Pine barrens are described by Natural Heritage Inventory as:*

***S2 (State Imperiled)*** = *Imperiled in Wisconsin due to a restricted range, few populations or occurrences, steep declines, severe threats, or other factors.*

***G2 (Globally Imperiled)*** = *At high risk of extinction or elimination due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.*



# Northern Dry Forests

- *Typified by xeric sites.*
- *Red pine, jack pine (white pine)-dominated.*
- *Relatively open conditions maintained by fire.*
- *Large areas cut and burned during Pine Logging Era.*
- *Many former sites were converted to aspen and scrub oak.*
- *Many former sites were reforested as red pine plantations.*
- *Fire exclusion has resulted in mesification.*

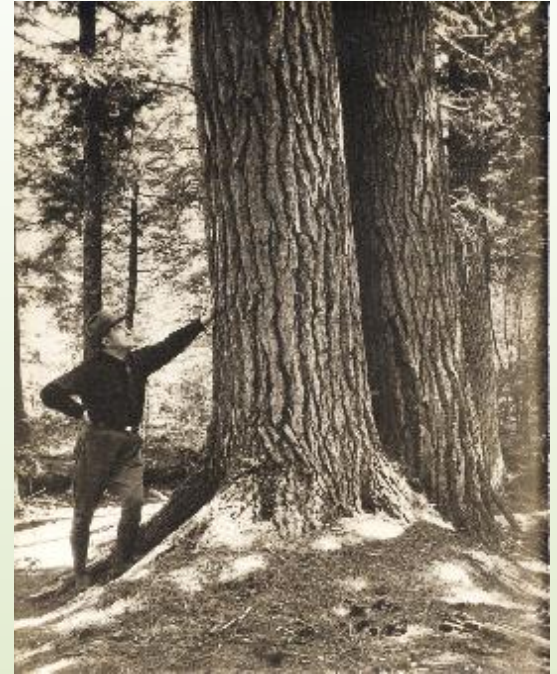


## **Natural Heritage Inventory designations:**

- **S3 (State Vulnerable)** = *Vulnerable in Wisconsin due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.*
- **G3 (Globally Vulnerable)** = *At moderate risk of extinction or elimination due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.*
- *Considered a **major restoration opportunity** by Wisconsin DNR Bureau of Endangered Resources.*

## Northern Dry – Mesic Forests

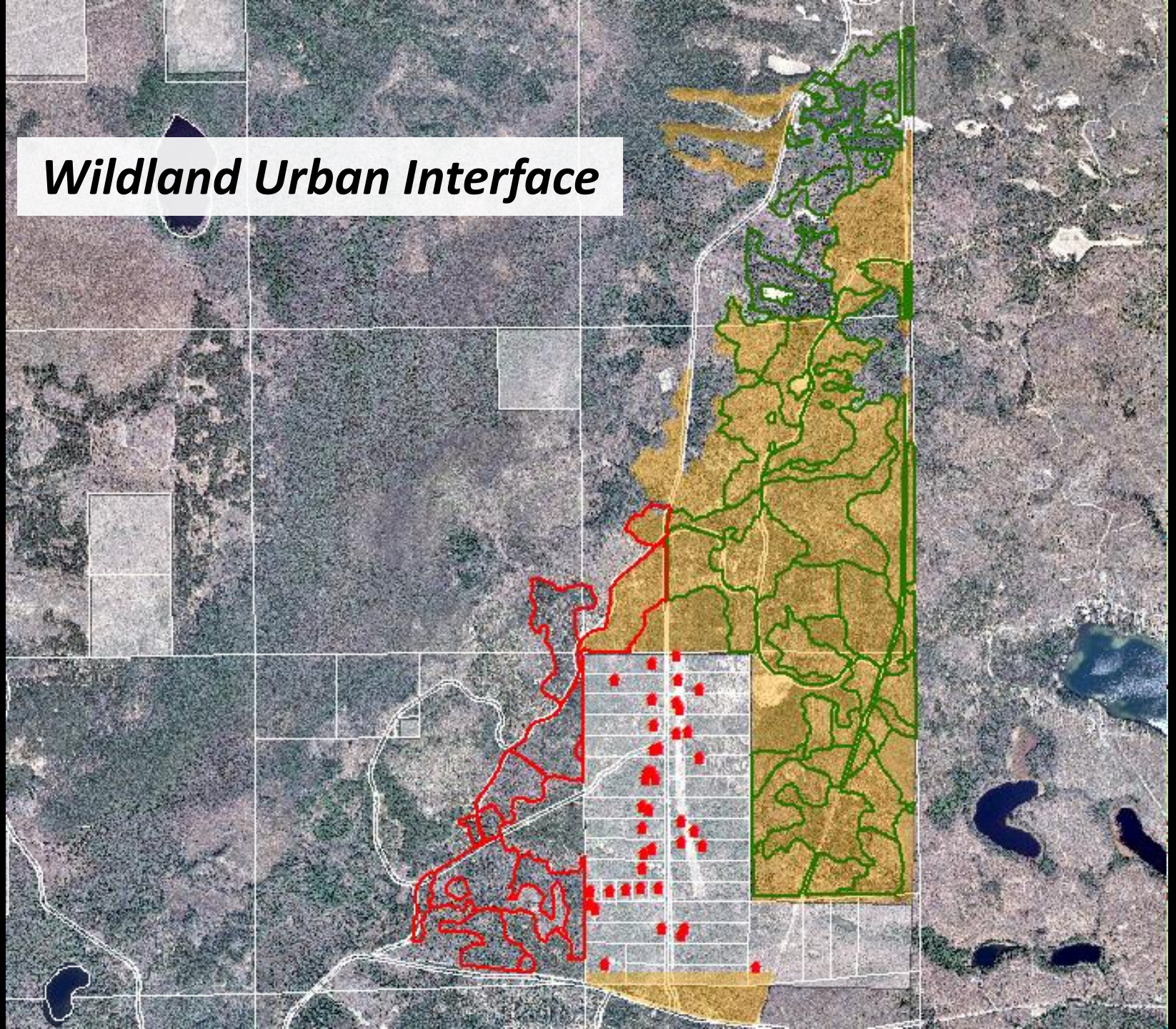
- *Typified by xeric-mesic sites, often on with outwash heads and glacial mixes.*
- *Red pine, white pine-dominated.*
- *Highly variable conditions maintained by periodic wind and fire.*
- *Large areas cut and burned during Pine Logging Era.*
- *Many former sites were converted to aspen, oak, and red maple.*
- *Many former sites were reforested as red pine plantations.*



### *Natural Heritage Inventory designations:*

- *S3 (State Vulnerable) = Vulnerable in Wisconsin due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.*
- *G4 (Globally, Apparently Secure) = At fairly low risk of extinction or elimination due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.*
- *Considered a major restoration opportunity by Wisconsin DNR Bureau of Endangered Resources.*

# ***Wildland Urban Interface***





# *Planning*





***Necedah National Wildlife Refuge - USFWS***



*Quincy Bluff SNA – The Nature Conservancy*



*Quincy Bluff SNA – Wisconsin DNR*



*Spread Eagle Barrens SNA – Wisconsin DNR*



***Moquah Barrens – USFS***



RIGHT  
TO  
KNOW  
STATION



SAFETY  
HEALTH  
&  
WELLNESS

U.S. Forest Service  
**FIRE**  
CHEQUAGO-NICOBI  
NATIONAL FOREST

# ***Purpose and Need for Action***

- 1. Move upland forest composition closer to desired conditions.***
  - Increase pines, decrease aspen.***
- 2. Move age class distributions closer to desired conditions.***
  - Increase young, decrease old in most types.***
- 3. Improve conditions in stream management zones.***
  - Encourage long-lived and shade-producing species.***
- 4. Increase within-stand species diversity.***
  - Introduce white pine component in oak, red pine stands.***
- 5. Improve stocking levels.***
- 6. Restore Northern Dry (Mesic) Forests and Barrens habitats.***
- 7. Improve habitat conditions for selected wildlife species.***
  - e.g., wood turtle, red-shouldered hawks.***
- 8. Reduce hazardous fuels in wildland-urban interface.***
- 9. Manage transportation system.***
  - New construction/reconstruction in some areas, closures/decommissioning in others.***



# ***Proposed Action***

***In response to Purpose of and Needs for Action and  
Forest Plan land management direction***

- ***10,750 acres timber harvests***
- ***2,185 acres prescribed fire***
- ***1,100 acres of pine barrens/savanna restoration***
- ***1,768 acres underplanting***
- ***850 acres timber stand improvement (TSI)***
- ***100 mechanical site preparation (natural regeneration)***
- ***Mechanical fuel treatments***
- ***Fuel break construction***
- ***Snag removal (along fire lines)***
- ***Timber sale unit slash removal***
- ***Road Construction/ decommissioning***
- ***Monitoring***

# ***Scoping/Public Involvement***

## ***Internal***

- ***FS Interdisciplinary Team of specialists***
- ***Northern Research Station***

## ***Other agencies/organizations***

- ***Wisconsin DNR***
- ***Local Townships***
- ***Menominee Tribe of Indians***
- ***Trans Canada Corporation***
- ***Great Lakes Fire Science Consortium***
- ***UWSP***

## ***Other groups***

- ***Adjacent landowners***
- ***U.S. Congress***

# ***Design/Mitigation***

- ***ATV and snowmobile trails***
- ***Urban interface issues***
- ***Slash removal***
- ***Treatment of stumps***
- ***Oak wilt timing restrictions***
- ***Reserve trees/islands***
- ***Fuel breaks***
- ***Natural gas pipeline***
- ***Visual retention areas (in response to landowner concerns)***

# ***Monitoring***

- ***USFS Northern Research Station (& UWSP)***

## ***Pre and post***

- ***Fuel loads and fire risk***
  - ***Vegetation structure and composition***
  - ***Seed bank***
  - ***Ground flora***
  - ***Invertebrates***
  - ***Birds***
  - ***Social response***
- 
- ***Intent is to document results and findings to be used by managers.***
  - ***Long-term design with 10 year time horizon.***























# ***Lakewood Southeast Project Timeline***

- *2006 Initial idea conceived.*
- *2008–2010 Inventory, survey data gathered.*
- *2010 Proposal developed.*
- *2011-2013 Public involvement and analysis.*
- *2013 Record of Decision signed.*
- *2014 Monitoring effort with researchers initiated, Sale prep commenced on first two sales.*
- *2015 Baseline monitoring data collected, sale prep on barrens sales completed.*
- *2016- 2020 Additional 25 sales (~500 ac) prepped and awarded.*
- *2015-? Prescribed burning and mechanical fuel treatments ongoing.*







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# Questions?



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