North Central Landscape
Resource Atlas

A support document to the 2nd Generation MFRC North Central Landscape Plan

December, 2015

Minnesota Forest Resources Council

Minnesota Forest Resources Council (MFRC)
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Table of Contents

User's Guide 1
Political Boundaries 3
Land Ownership (1976-2007) 5
Land Management (1976-2007) 7
Proclamation Areas 9
Native American Reservations and Treaty Boundaries 11
Quaternary Geology 13
Landforms 15
Topography 17
Shaded Relief 18
Major Watersheds 19
Soils - Farmland Class 21
Soils - Drainage Class 23
Soils - Hydric Rating 25
ECS Provinces, Sections, and Subsections 27
ECS Sections, Subsections, and Land Type Associations 29
Presettlement Land Cover (1895) 33
Land Cover (1992) 35
Land Cover (2001) 37
Land Cover (2006) 39
Land Cover (2011) 41
Presettlement Land Cover (1895) - Reclassified 43
Land Cover (1992) - Reclassified 45
Land Cover (2001) - Reclassified 47
Land Cover (2006) - Reclassified 49
Land Cover (2011) - Reclassified 51
Cropland (2013) 53
DNR Mapped Native Plant Communities 55
MBS Biodiversity Significance 57
Potential Native Plant Communities 59
Management for Acid Peatland 61
Management for Fire-Dependent Forest/Woodland 63
Management for Forested Rich Peatland 65
Management for Mesic Hardwood Forest 67
Management for Wet Forest 69
Management for Wet Meadow/Carr 71
Change in Relative Abundance of Aspen by ECS Land Type 73
Change in Relative Abundance of Red Oak by ECS Land Type 75
Change in Relative Abundance of White Pine by ECS Land Type 77
High Conservation Value Forests managed by MN DNR 79
School Trust Fund Lands 81
Forest Stewardship Plans 83
Parks and Trails 85
Trout Stream Designations 87
Deer Permit Areas 89
Important Bird Areas 91
Watershed Health Scores 93
Impaired Waters 95
Designated Infested Waters 97
DNR Terrestrial Invasive Species Observations 99
Emerald Ash Borer Introduction Risk 101
2010 US Census Population Density 103
Forestry Jobs by County (2008) 105
Sawmills (2013) 107
Annual Average Daily Traffic 109
Annual Average Daily Vehicle Miles Traveled 111
Heavy Commercial Annual Average Daily Traffic 113
Heavy Commercial Annual Average Daily Vehicle Miles Traveled 115
Road Functional Classes 117
Bibliography 119

User’s Guide

The purpose of this document is to provide spatial data as a reference for the Minnesota Forest Resources Council’s Landscape Program. Included in this document are maps and tables regarding forest management topics for the North Central Landscape Region. When printed, the document is arranged with the maps on the left page and the tables regarding the map subject on the right page. This allows for easy side-by-side viewing of the maps and tables. In PDF format, the document contains bookmarks for easy navigation to map topics. Current geographical features are included on all maps (including presettlement land cover) to provide a spatial reference for the map user. Sources are provided for each map; more details regarding sources can be found in the bibliography at the end of the document.

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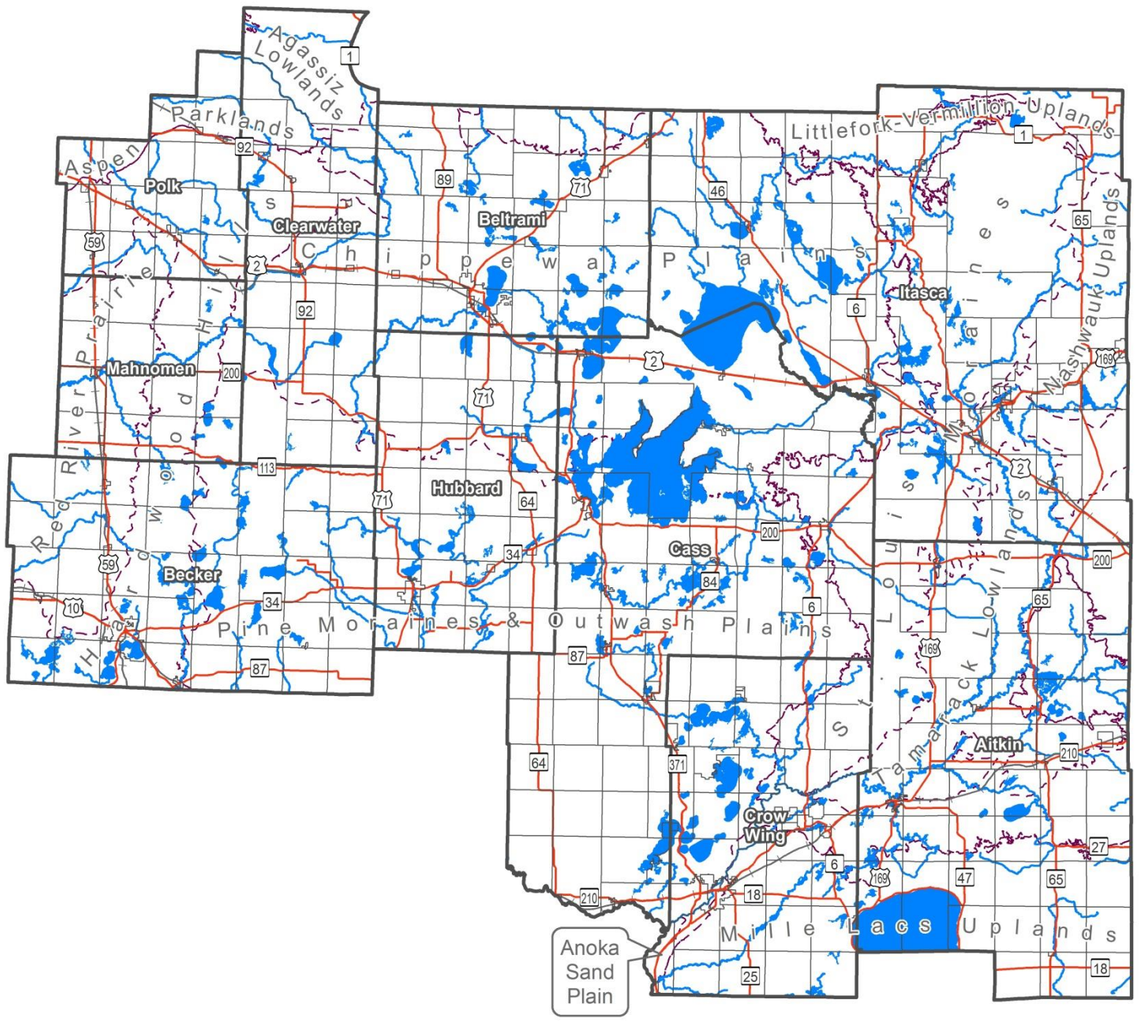
Political Boundaries

North Central Landscape Region



Political Boundaries

- County Boundaries
- Municipal Boundaries

Other Features

- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections

0 5 10 20 30 40 Miles

Sources: Political Boundaries - MN Geospatial Commons; Other Features - MN Geospatial Commons

N

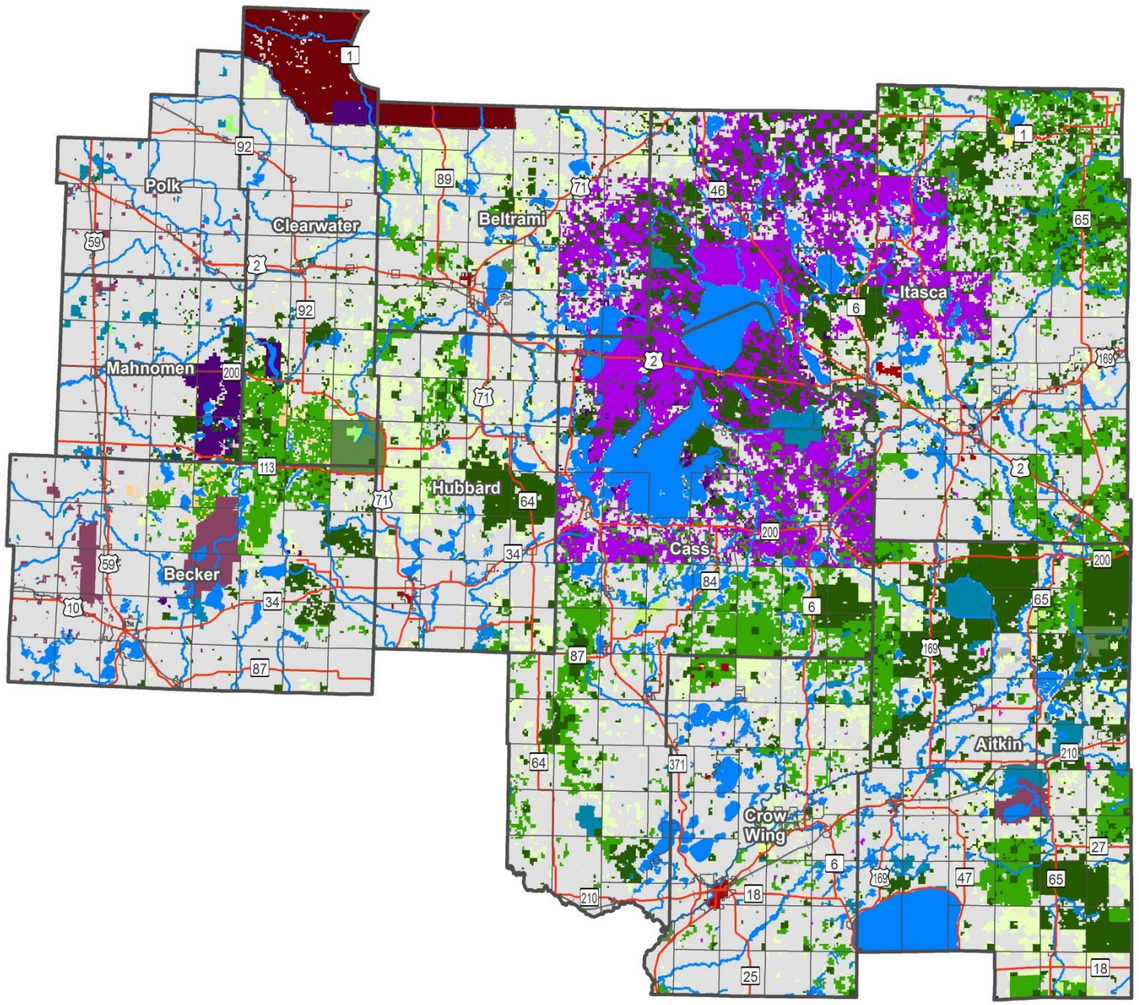
Minnesota Forest Resources Council

Political Boundaries Table

County	Area		Municipal Divisions			
	Acres	% of Region	Cities	Townships	Unorganized Territories	Total Municipal
Aitkin	1,275,804	14.1	6	40	5	**51**
Becker	925,073	10.2	7	37	0	**44**
Beltrami (south)	693,691	7.6	7	28	17	**52**
Cass	1,544,170	17.0	15	50	4	**69**
Clearwater	659,017	7.3	5	22	2	**29**
Crow Wing	739,801	8.2	18	28	3	**49**
Hubbard	639,536	7.1	4	28	0	**32**
Itasca	1,872,385	20.6	16	42	5	**63**
Mahnomen	373,535	4.1	3	16	0	**19**
Polk (east)	346,703	3.8	7	15	0	**22**
Totals	**9,069,715**	**100.0**	**88**	**306**	**36**	**430**

Land Ownership (1976-2007)

North Central Landscape Region



GAP Land Ownership

- Private Conservancy
- Private Conservancy
- The Nature Conservancy
- Tribal
- Leech Lake Band
- Mille Lacs Band
- Minnesota Chippewa Indians
- Red Lake Tribe
- White Earth Tribe
- Private
- Private

GAP Land Ownership

- Federal
- Army Corps of Engineers
- Bureau of Indian Affairs
- Bureau of Land Management
- Farmers Home Administration
- U.S. Department of Agriculture
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- Unknown
- State
- County Admin/State Forest
- County Admin/State Owned
- County Admin/State Park
- Department of Agriculture
- Department of Corrections
- Department of Military Affairs
- Department of Transportation
- Division of Ecological Services
- Division of Enforcement
- Division of Fish and Wildlife
- Division of Forestry
- Division of Lands and Minerals
- Division of Parks and Recreation
- Division of Trails and Waterways
- Division of Waters
- Minnesota DNR (Undifferentiated)
- State (Undifferentiated)
- County
- County
- Other Public
- Other Public

0 5 10 20 30 40 Miles

Sources: GAP Land Ownership - MN Geospatial Commons; Other Features - MN Geospatial Commons

N

Minnesota Forest Resources Council

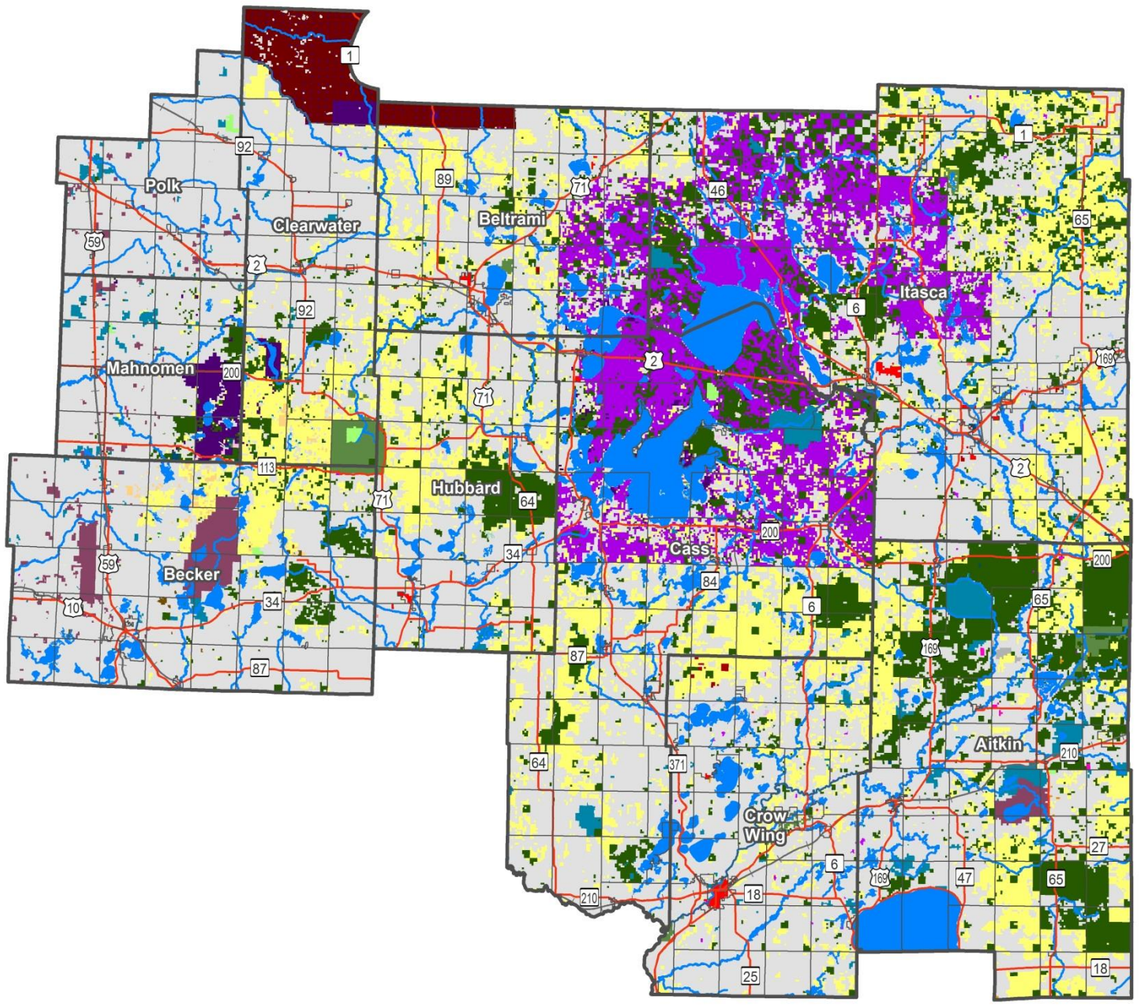
Land Ownership (1976-2007) Table

Ownership Type	Land Ownership	Acres	% of Region
Federal	Army Corps of Engineers	5,088	0.1
	Bureau of Indian Affairs	89,548	1.0
	Bureau of Land Management	5,744	0.1
	Farmers Home Administration	1,193	0.0
	U.S. Fish and Wildlife Service	99,922	1.1
	U.S. Forest Service	662,762	7.3
	Unknown	15,264	0.2
Total Federal		**879,521**	**9.7**
State	County Admin/State Forest	780,124	8.6
	County Admin/State Owned	526,698	5.8
	County Admin/State Park	16,063	0.2
	Department of Military Affairs	41	0.0
	Department of Transportation	449	0.0
	Division of Ecological Services	5,679	0.1
	Division of Fish and Wildlife	139,337	1.5
	Division of Forestry	1,053,080	11.6
	Division of Lands and Minerals	1,264	0.0
	Division of Parks and Recreation	53,640	0.6
	Division of Trails and Waterways	658	0.0
	Division of Waters	541	0.0
	Minnesota DNR (Undifferentiated)	672	0.0
	State (Undifferentiated)	3,498	0.0
Total State		**2,581,744**	**28.5**
County	County	20,135	0.2
Total County		**20,135**	**0.2**
Other Public	Other Public	15,480	0.2
Total Other Public		**15,480**	**0.2**
Private Conservancy	Private Conservancy	2,105	0.0
	The Nature Conservancy	246	0.0
Total Private Conservancy		**2,351**	**0.0**
Total Public and Private Conservancy		**3,499,230**	**38.6**

Ownership Type	Land Ownership	Acres	% of Region
Tribal	Leech Lake Band	4,954	0.1
	Mille Lacs Band	116	0.0
	Minnesota Chippewa Indians	1,988	0.0
	Red Lake Tribe	135,243	1.5
	White Earth Tribe	13,386	0.1
Total Tribal		**155,688**	**1.7**
Total Private	**Private**	**5,414,797**	**59.7**
Total North Central Region		**9,069,715**	**100.0**

Land Management (1976-2007)

North Central Landscape Region



GAP Land Management

- Tribal
- Leech Lake Band
- Mille Lacs Band
- Minnesota Chippewa Indians
- Red Lake Tribe
- White Earth Tribe
- White Earth Reservation
- Private
- Private

GAP Land Management

- Federal
- Army Corps of Engineers
- Bureau of Indian Affairs
- Bureau of Land Management
- Farmers Home Administration
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- Unknown
- State
- Department of Military Affairs
- Department of Transportation
- Division of Ecological Services
- Division of Fish and Wildlife
- Division of Forestry
- Division of Lands and Minerals
- Division of Parks and Recreation
- Division of Trails and Waterways
- Division of Waters
- Minnesota DNR
- State of Minnesota
- County
- County
- Other Public
- Municipal
- School District
- University
- Private Conservancy
- Private Conservancy
- The Nature Conservancy

0 5 10 20 30 40 Miles

Sources: GAP Land Management - MN Geospatial Commons; Other Features - MN Geospatial Commons

N

Minnesota Forest Resources Council

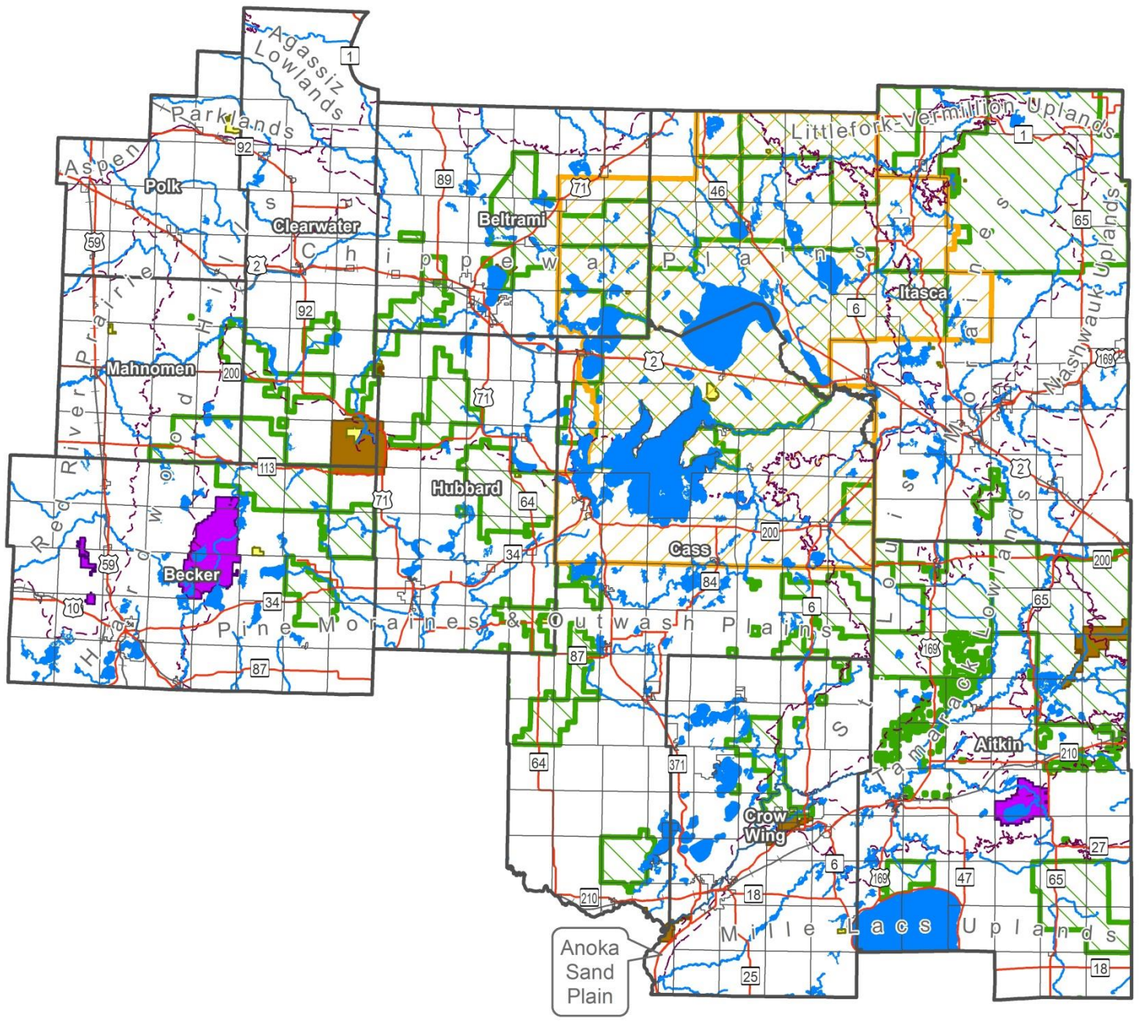
Land Management (1976-2007) Table

Management Type	Land Management	Acres	% of Region
Federal	Army Corps of Engineers	5,088	0.1
	Bureau of Indian Affairs	80,578	0.9
	Bureau of Land Management	5,744	0.1
	Farmers Home Administration	1,193	0.0
	U.S. Fish and Wildlife Service	99,922	1.1
	U.S. Forest Service	662,617	7.3
	Unknown	15,264	0.2
Total Federal		**870,405**	**9.6**
State	Department of Military Affairs	41	0.0
	Department of Transportation	449	0.0
	Division of Ecological Services	7,852	0.1
	Division of Fish and Wildlife	139,337	1.5
	Division of Forestry	1,051,584	11.6
	Division of Lands and Minerals	1,264	0.0
	Division of Parks and Recreation	53,109	0.6
	Division of Trails and Waterways	658	0.0
	Division of Waters	541	0.0
	Minnesota DNR	672	0.0
	State of Minnesota	3,498	0.0
Total State		**1,259,003**	**13.9**
County	County	1,343,021	14.8
Total County		**1,343,021**	**14.8**
Other Public	Municipal	12,235	0.1
	School District	902	0.0
	University	2,343	0.0
Total Other Public		**15,480**	**0.2**
Private Conservancy	Private Conservancy	2,105	0.0
	The Nature Conservancy	246	0.0
Total Private Conservancy		**2,351**	**0.0**
Total Public and Private Conservancy		**3,490,261**	**38.5**

Management Type	Land Management	Acres	% of Region
Tribal	Leech Lake Band	11,006	0.1
	Mille Lacs Band	979	0.0
	Minnesota Chippewa Indians	1,486	0.0
	Red Lake Tribe	135,243	1.5
	White Earth Reservation	2,557	0.0
	White Earth Tribe	13,386	0.1
Total Tribal		**164,658**	**1.8**
Total Private	**Private**	**5,414,797**	**59.7**
Total North Central Region		**9,069,715**	**100.0**

Proclamation Areas

North Central Landscape Region



Proclamation Areas

- Chippewa National Forest
- State Forest Statutory Areas
- Scientific and Natural Areas
- State Park, Recreation Area, & Wayside Statutory Areas
- National Wildlife Refuges

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections

0 5 10 20 30 40 Miles

Sources: Proclamation Areas - MN Geospatial Commons; Other Features - MN Geospatial Commons

N

Minnesota Forest Resources Council

Proclamation Areas Tables

State Forest Statutory Areas	Acres	% of Region
Badoura	15,535	0.2
Battleground	17,969	0.2
Big Fork	127,910	1.4
Blackduck	125,533	1.4
Bowstring	526,581	5.8
Buena Vista	122,336	1.3
Crow Wing	33,714	0.4
Emily	640	0.0
Foot Hills	46,897	0.5
George Washington	320,531	3.5
Golden Anniversary	7,288	0.1
Hill River	124,207	1.4
Huntersville	655	0.0
Koochiching	22	0.0
Land O'Lakes	51,500	0.6
Mississippi Headwaters	45,291	0.5
Paul Bunyan	105,116	1.2
Pillsbury	25,614	0.3
Pine Island	15	0.0
Remer	12,851	0.1
Savanna	227,434	2.5
Smoky Hills	25,397	0.3
Snake River	0	0.0
Solana	68,143	0.8
Sturgeon River	60	0.0
Two Inlets	28,052	0.3
Waukenabo	15,462	0.2
Wealthwood	15,043	0.2
Welsh Lake	19,798	0.2
White Earth	155,394	1.7
Total State Forest Statutory Areas	**2,264,983**	**25.0**
Total North Central Region	**9,069,715**	

Scientific and Natural Areas	Acres	% of Region
Badoura Jack Pine Woodland	915	0.0
Boltuck-Rice Forever Wild	77	0.0
Botany Bog	133	0.0
Chisholm Point Island	29	0.0
Greenwater Lake	810	0.0
Gully Fen	1,626	0.0
Hole-in-the-Bog Peatland	1,642	0.0
Iron Springs Bog	216	0.0
Itasca Wilderness Sanctuary	1,601	0.0
La Salle Lake	263	0.0
Ladies Tresses Swamp	40	0.0
Lester Lake	321	0.0
Little Too Much Lake	59	0.0
Lost 40	136	0.0
McGregor Marsh	420	0.0
Mille Lacs Moraine	319	0.0
Pennington Bog	108	0.0
Potato Lake	84	0.0
Santee Prairie	456	0.0
Wabu Woods	99	0.0
Total SNAs	**9,352**	**0.1**
Total North Central Region	**9,069,715**	

State Park, Recreation Area, & Wayside Statutory Areas	Acres	% of Region
Crow Wing State Park	2,846	0.0
Cuyuna Country State Recreation Area	4,628	0.1
Hill-Annex Mine State Park	625	0.0
Itasca State Park	33,249	0.4
La Salle Lake State Recreation Area	988	0.0
Lake Bemidji State Park	1,728	0.0
McCarthy Beach State Park	146	0.0
Savanna Portage State Park	15,635	0.2
Scenic State Park	3,961	0.0
Schoolcraft State Park	222	0.0
Total Park, Rec, & Wayside Statutory Areas	**64,028**	**0.7**
Total North Central Region	**9,069,715**	

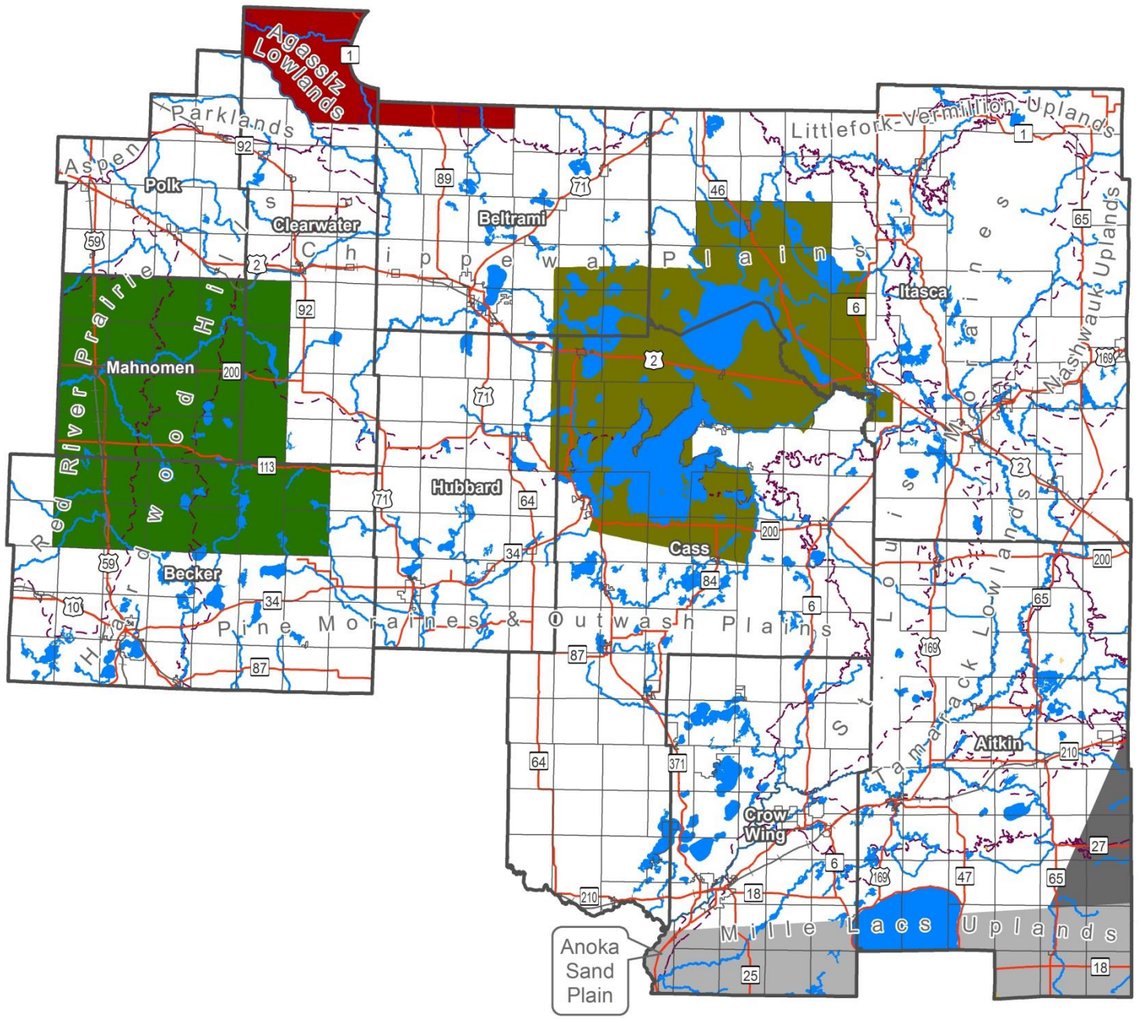
National Wildlife Refuges	Acres	% of Region
Hamden Slough National Wildlife Refuge	3,398	0.0
Rice Lake National Wildlife Refuge	18,059	0.2
Tamarac National Wildlife Refuge	43,588	0.5
Total National Wildlife Refuges	**65,045**	**0.7**
Total North Central Region	**9,069,715**	

National Forest Statutory Areas	Acres
Chippewa	1,596,672

Proclamation Areas	Acres	% of Region
Total State Forest Statutory Areas	2,264,983	25.0
Total SNAs	9,352	0.1
Total Park, Rec, & Wayside Statutory Areas	64,028	0.7
Total National Wildlife Refuges	65,045	0.7
National Forest Statutory Areas	1,596,672	17.6
Total Proclamation Areas - no overlaps	3,142,785	34.7
Total North Central Region	**9,069,715**	**N/A**

Native American Reservations and Treaty Boundaries

North Central Landscape Region



Native American Reservations

- Leech Lake
- Mille Lacs
- Red Lake
- Sandy Lake
- White Earth

Native American Treaty Boundaries

- 1837 Chippewa
- 1854 Chippewa of Lake Superior

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections

Sources: Native American Reservations and Treaty Boundaries - MN Geospatial Commons; Other Features - MN Geospatial Commons

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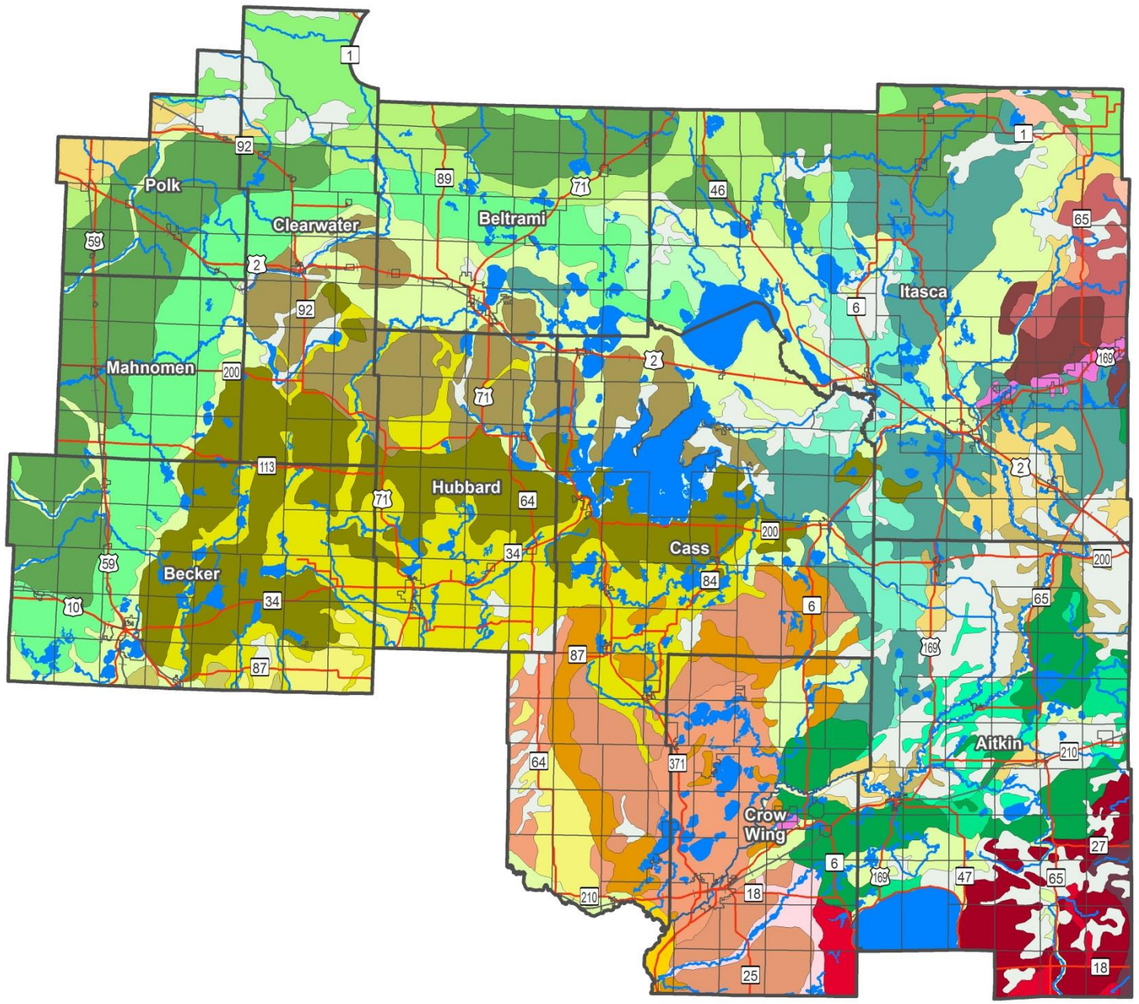
Native American Reservations and Treaty Boundaries Tables

Reservation	Acres	% of Region
Leech Lake	864,983	9.5
Mille Lacs	345	0.0
Red Lake	158,598	1.7
Sandy Lake	171	0.0
White Earth	745,082	8.2
Total Reservation Areas	**1,769,179**	**19.5**
Total North Central Region	**9,069,715**	

Treaty	Acres	% of Region
1837 Chippewa	349,878	3.9
1854 Chippewa of Lake Superior	82,431	0.9
Total Treaty Areas	**432,309**	**4.8**
Total North Central Region	**9,069,715**	

Quaternary Geology

North Central Landscape Region



Quaternary Geology

- m - Mine pits and dumps
- hp - Peat
- hal - Alluvium
- td - Terraces (Holocene to Pleistocene)
- del - Lake-modified till
- des - Stagnation moraine
- deg - Ground moraine
- dss - Stagnation moraine
- dsg - Ground moraine
- dcl - Lake-modified till
- dcg - Ground moraine
- dce - End moraine
- dhg - Ground moraine
- dhe - End moraine
- do - Outwash
- dla - Sand and gravel
- dls - Silt and fine sand
- scg - Ground moraine
- smg - Ground moraine
- sme - End moraine
- so - Outwash
- rve - End moraine
- rng - Ground moraine
- rns - Stagnation moraine
- rsg - Ground moraine
- rse - End moraine
- ro - Outwash
- wig - Ground moraine
- wie - End moraine
- wag - Ground moraine
- was - Stagnation moraine
- wo - Outwash
- wat - Water

0 5 10 20 30 40 Miles

Sources: Quaternary Geology - MN Geospatial Commons; Other Features - MN Geospatial Commons

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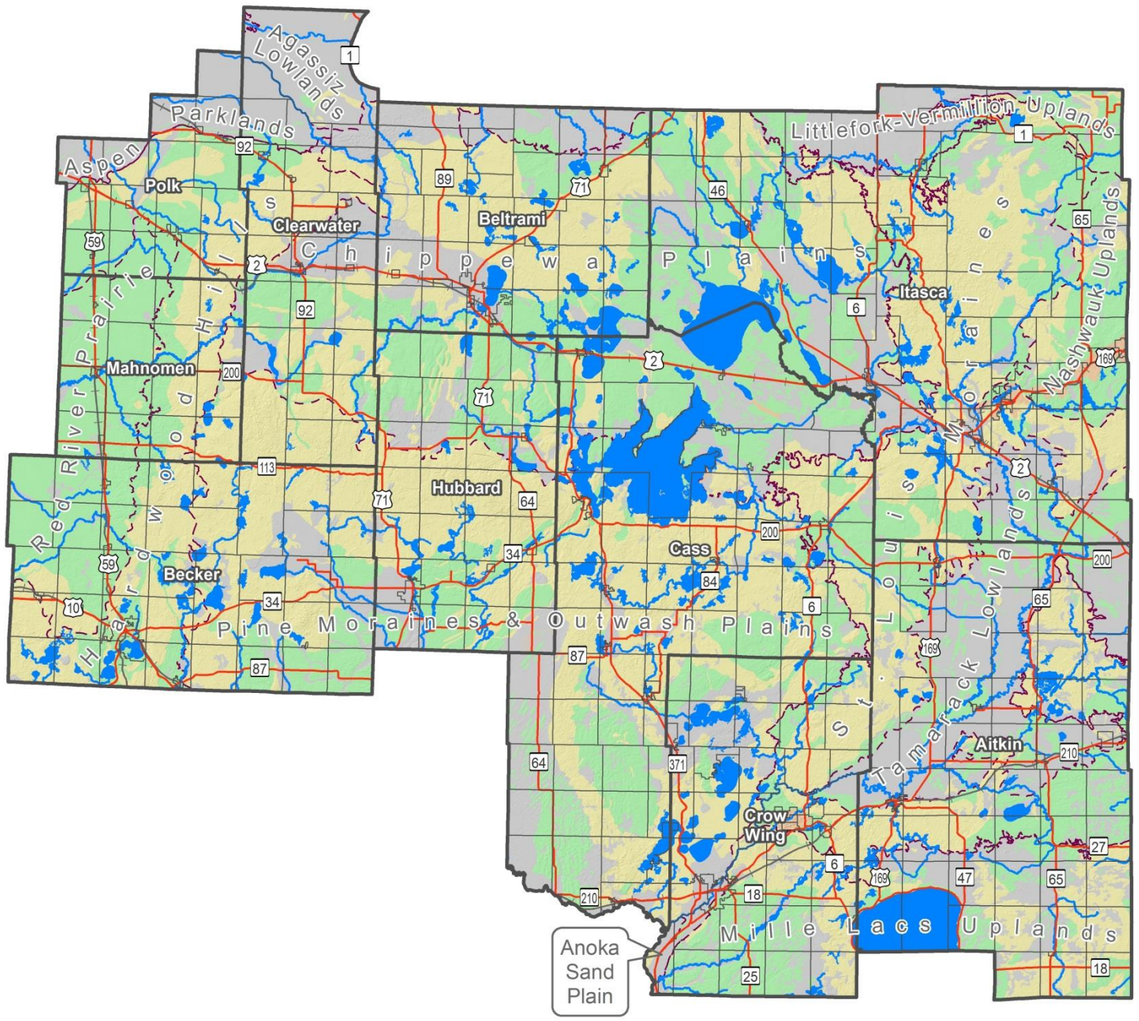
Quaternary Geology Table

Quaternary Geology	Acres	% of Region
dce - End moraine	294,998	3.3
dcg - Ground moraine	52,038	0.6
dcl - Lake-modified till	86,831	1.0
deg - Ground moraine	853,432	9.4
del - Lake-modified till	190,309	2.1
des - Stagnation moraine	266,833	2.9
dhe - End moraine	590,351	6.5
dhg - Ground moraine	215,597	2.4
dla - Sand and gravel	207,961	2.3
dls - Silt and fine sand	72,050	0.8
do - Outwash	1,139,920	12.6
dsg - Ground moraine	67,701	0.7
dss - Stagnation moraine	592,754	6.5
hal - Alluvium	45,117	0.5
hp - Peat	812,933	9.0
m - Mine pits and dumps	27,510	0.3
rng - Ground moraine	71,172	0.8
rns - Stagnation moraine	85,938	0.9
ro - Outwash	318,806	3.5
rse - End moraine	219,107	2.4
rsg - Ground moraine	297,536	3.3
rve - End moraine	27,085	0.3
scg - Ground moraine	19,744	0.2
sme - End moraine	54,369	0.6
smg - Ground moraine	162,327	1.8
so - Outwash	51,682	0.6
td - Terraces (Holocene to Pleistocene)	17,862	0.2
wag - Ground moraine	135,551	1.5
was - Stagnation moraine	13,794	0.2
wat - Water	220,782	2.4
wie - End moraine	741,270	8.2
wig - Ground moraine	421,739	4.6
wo - Outwash	694,617	7.7
Total North Central Region	**9,069,715**	**100.0**

Landforms

North Central Landscape Region



Landforms

- Level
- Rolling to Undulating
- Hummocky
- Inclined Slopes (Rolling-Steep)
- Steep
- Undifferentiated

Other Features

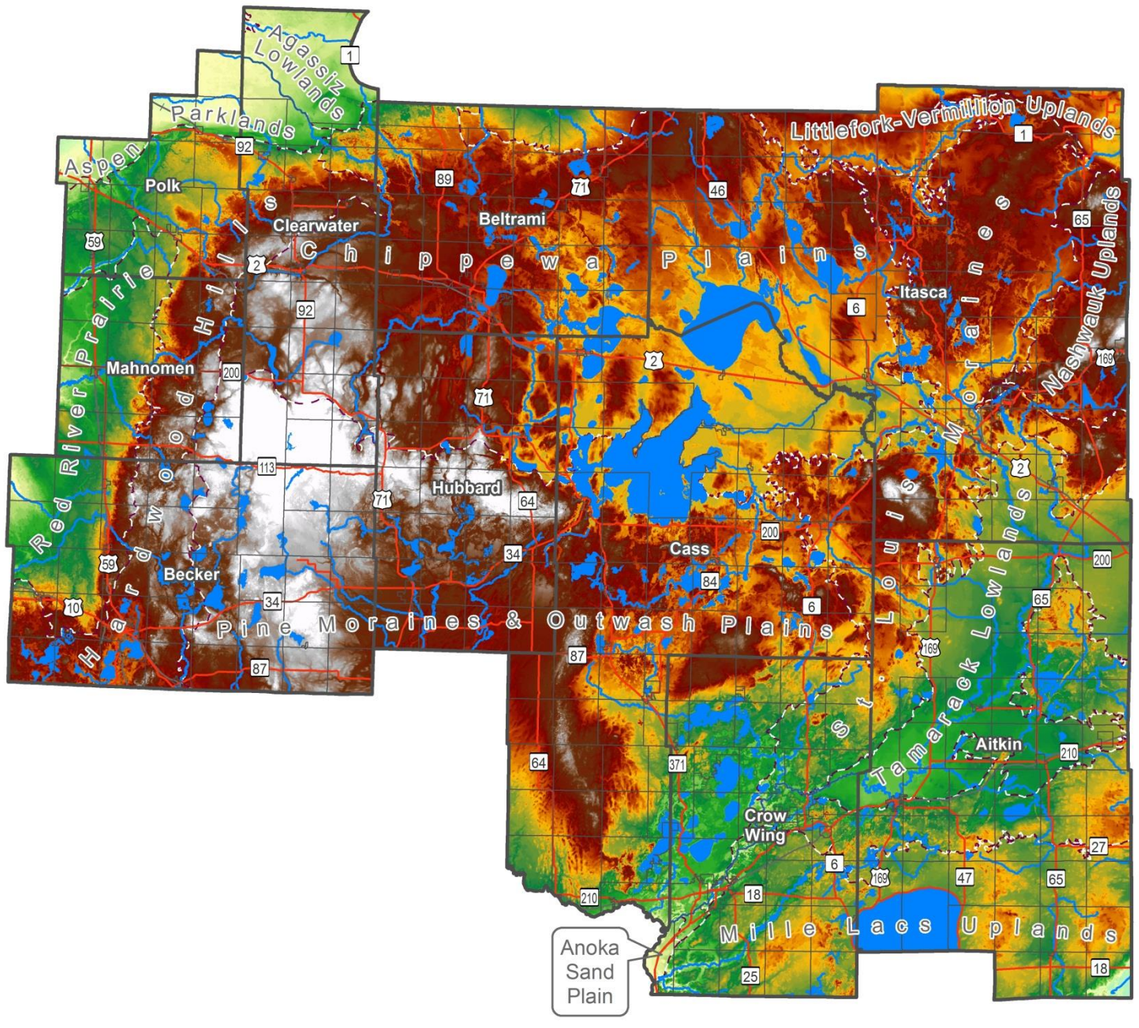
- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections

Landforms Table

Landforms	Acres	% of Region
Level	2,401,642	26.5
Rolling to Undulating	2,799,448	30.9
Hummocky	3,603,321	39.7
Inclined Slopes (Rolling-Steep)	0	0.0
Steep	0	0.0
Undifferentiated	265,304	2.9
Total North Central Region	**9,069,715**	**100.0**

Topography

North Central Landscape Region



Elevation (feet)

High : 2008

Low : 900

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections

0 5 10 20 30 40 Miles

Sources: Elevation - MN Geospatial Commons; Other Features - MN Geospatial Commons

N

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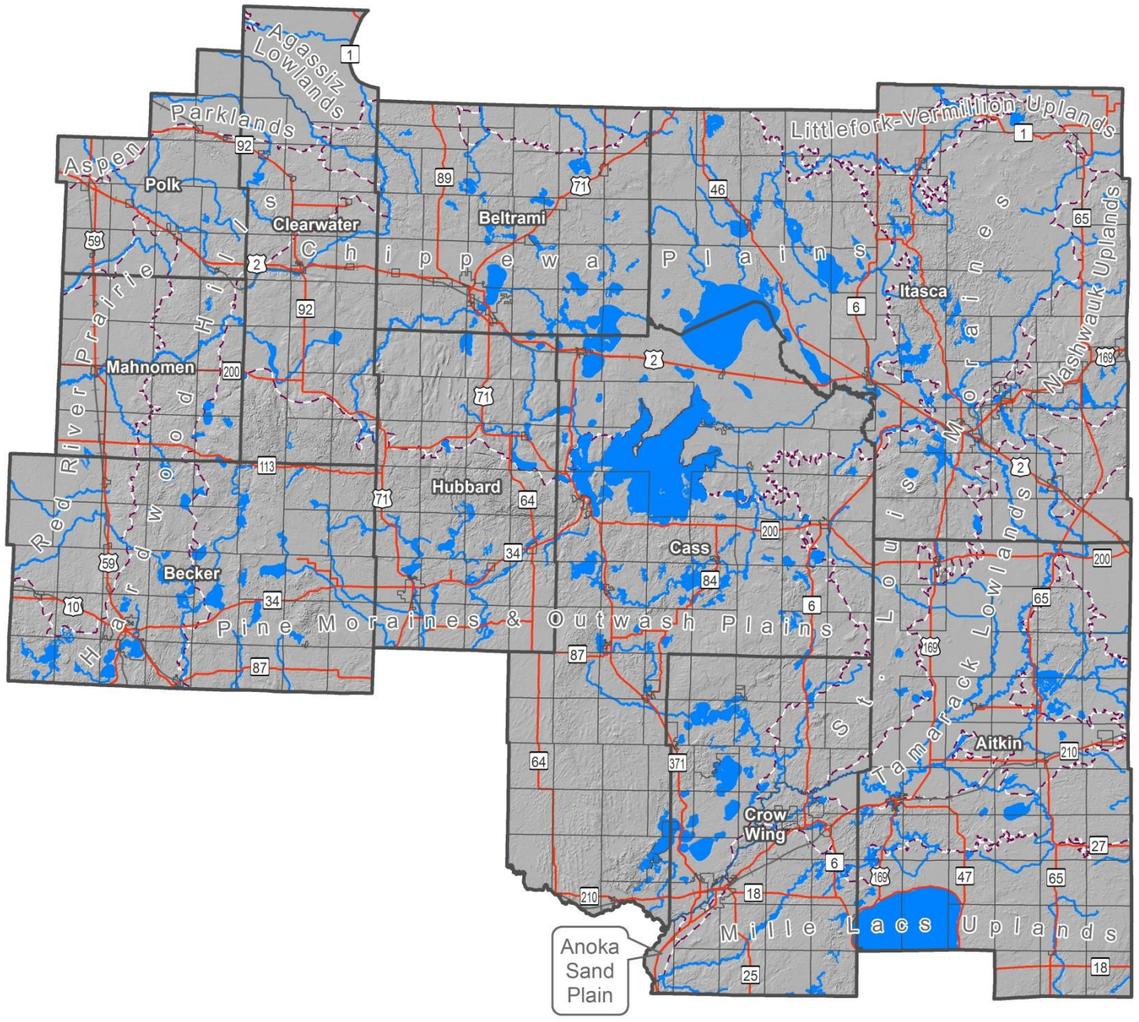
Shaded Relief

North Central Landscape Region



Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections

0 5 10 20 30 40 Miles

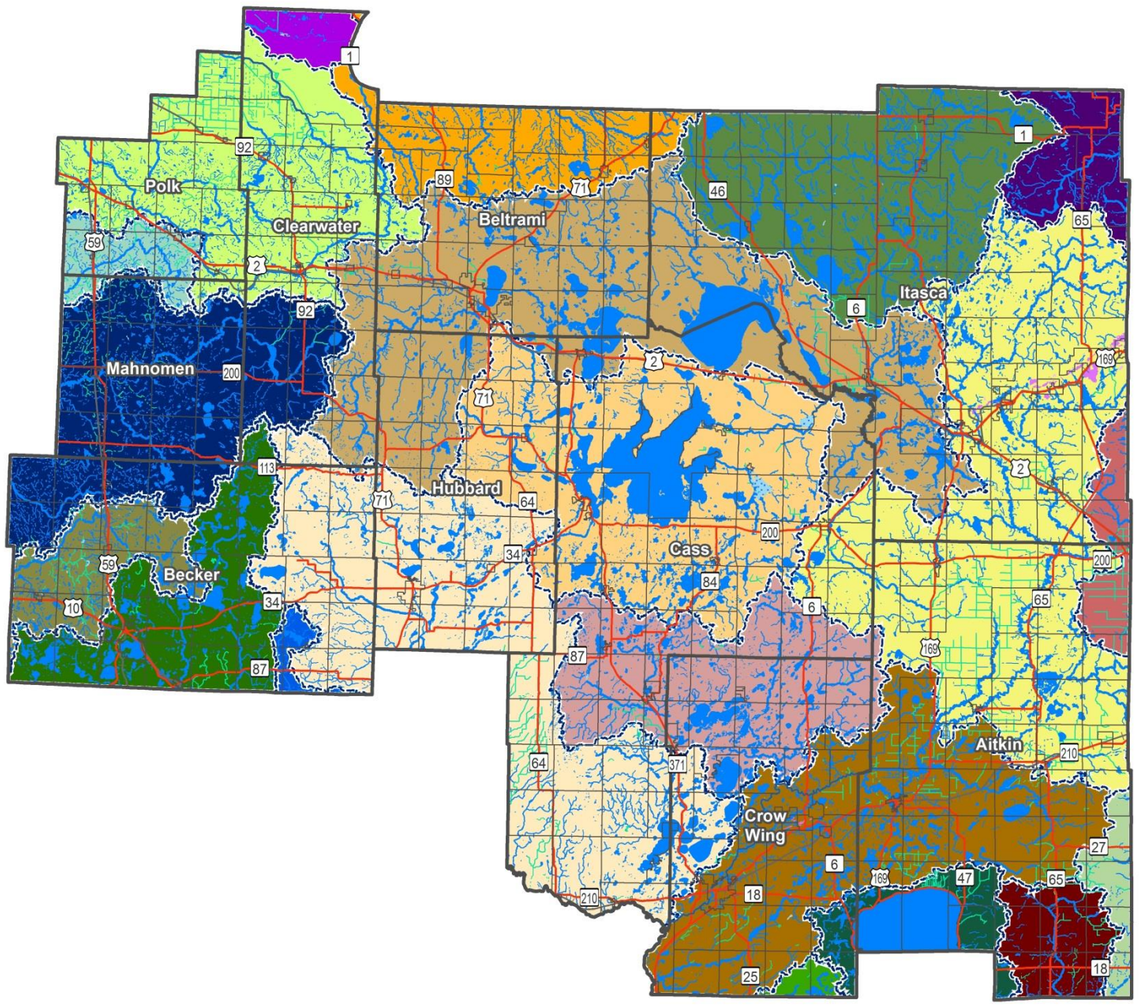
Sources: Shaded Relief - MN Geospatial Commons; Other Features - MN Geospatial Commons

N

Minnesota Forest Resources Council

Major Watersheds

North Central Landscape Region



Water Features

- Lake, Pond or Reservoir; River or Stream
- Gravel, Mine Pit or Quarry
- Tailings Pond
- Innundation Area or Intermittent Water
- River
- Stream (Perennial)
- Stream (Intermittent)
- Drainage Ditch (Perennial)
- Drainage Ditch (Intermittent)

DNR Level 04 - HUC 08 - Majors

- Big Fork River
- Buffalo River
- Clearwater River
- Crow Wing River
- Kettle River
- Leech Lake River
- Little Fork River
- Mississippi River - Brainerd
- Mississippi River - Grand Rapids
- Mississippi River - Headwaters
- Mississippi River - Sartell
- Otter Tail River
- Pine River
- Red Lake River
- Red River of the North - Sandhill River
- Redeye River
- Rum River
- Snake River
- St. Louis River
- Upper/Lower Red Lake
- Wild Rice River

Miles
0 5 10 20 30 40

Sources: DNR Level 04 - HUC 08 - Majors - MN Geospatial Commons; Other Features - MN Geospatial Commons

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Minnesota Forest Resources Council

Major Watersheds Tables

Major Watershed	Acres	% of Region
Big Fork River	642,164	7.1
Buffalo River	183,445	2.0
Clearwater River	618,573	6.8
Crow Wing River	989,280	10.9
Kettle River	68,160	0.8
Leech Lake River	857,971	9.5
Little Fork River	148,211	1.6
Mississippi River - Brainerd	750,329	8.3
Mississippi River - Grand Rapids	1,225,074	13.5
Mississippi River - Headwaters	1,228,889	13.5
Mississippi River - Sartell	23,785	0.3
Otter Tail River	356,141	3.9
Pine River	500,887	5.5
Red Lake River	57,348	0.6
Red River of the North - Sandhill River	97,857	1.1
Redeye River	28,454	0.3
Rum River	165,166	1.8
Snake River	130,118	1.4
St. Louis River	93,025	1.0
Upper/Lower Red Lake	292,268	3.2
Wild Rice River	612,570	6.8
Total North Central Region	**9,069,715**	**100.0**

DNR Hydrography Water Features	Acres
Lake, Pond or Reservoir; River or Stream	1,064,310
Gravel, Mine Pit or Quarry	7,433
Tailings Pond	348
Innundation Area or Intermittent Water	8,680

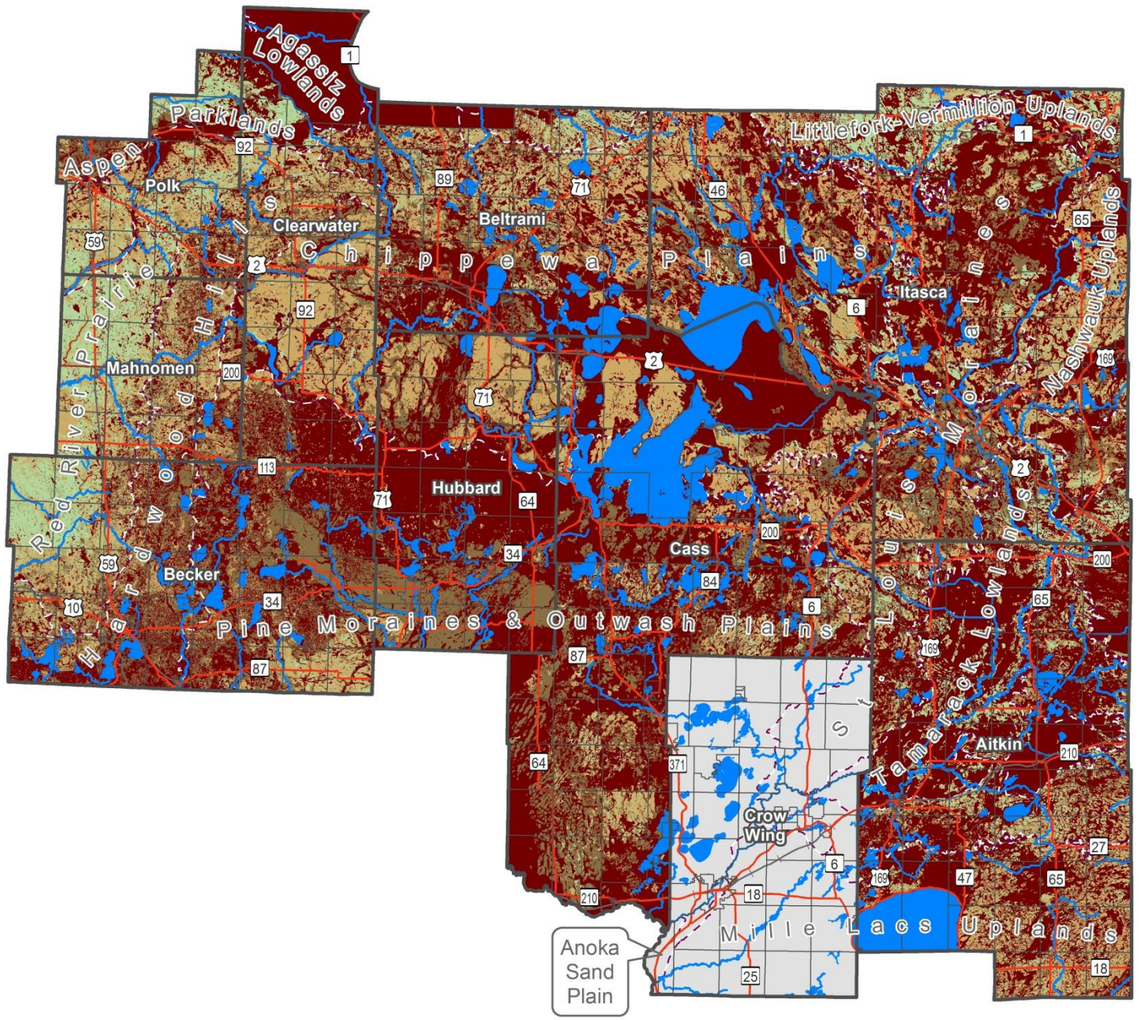
Streams (displayed in map)	Miles
Centerline (River)	2,046.1
Connector (River)	1.3
Stream (Perennial)	3,177.4
Stream (Intermittent)	3,335.7
Drainage Ditch (Perennial)	1,177.8
Drainage Ditch (Intermittent)	682.3
Total North Central Region	**10,420.5**

Streams (not displayed in map)	Miles
Arbitrary Connector	13.6
Arbitrary Flow Connector	11.5
Connector (Lake)	2,070.4
Connector (Wetland)	401.5
Drainage Ditch (Undifferentiated)	26.1
Interpreted Arc Connector	8.5
Road Culvert	0.0
Stream (Unknown)	46.9
Total North Central Region	**2,578.6**

Stream Density (total miles/square mile)	0.92

Soils - Farmland Class

North Central Landscape Region



SSURGO Soils - Farmland Class

- All areas are prime farmland
- Farmland of statewide importance
- Not prime farmland
- Prime farmland if drained
- Not rated or not available

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections

0 5 10 20 30 40 Miles

Sources: Soils - NRCS Web Soil Survey; Other Features - MN Geospatial Commons

N

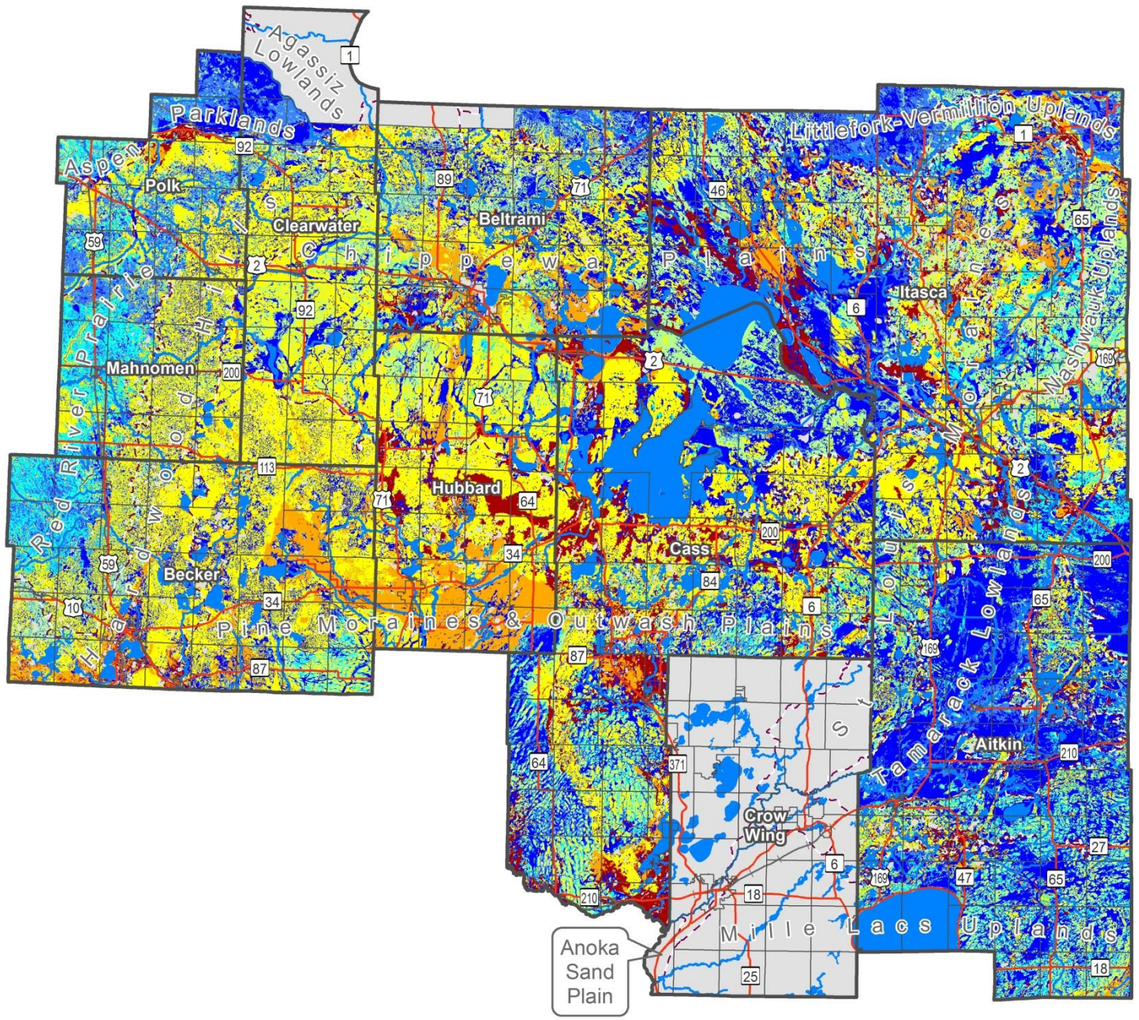
Minnesota Forest Resources Council

Soils - Farmland Class Table

SSURGO Farmland Class	Acres	% of Region
All areas are prime farmland	1,561,991	17.2
Farmland of statewide importance	1,324,322	14.6
Not prime farmland	4,608,767	50.8
Prime farmland if drained	834,825	9.2
Not rated or not available	739,810	8.2
Total North Central Region	**9,069,715**	**100.0**

Soils - Drainage Class

North Central Landscape Region



SSURGO Soils - Drainage Class

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained
- Not rated or not available

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections

0 5 10 20 30 40 Miles

Sources: Soils - NRCS Web Soil Survey; Other Features - MN Geospatial Commons

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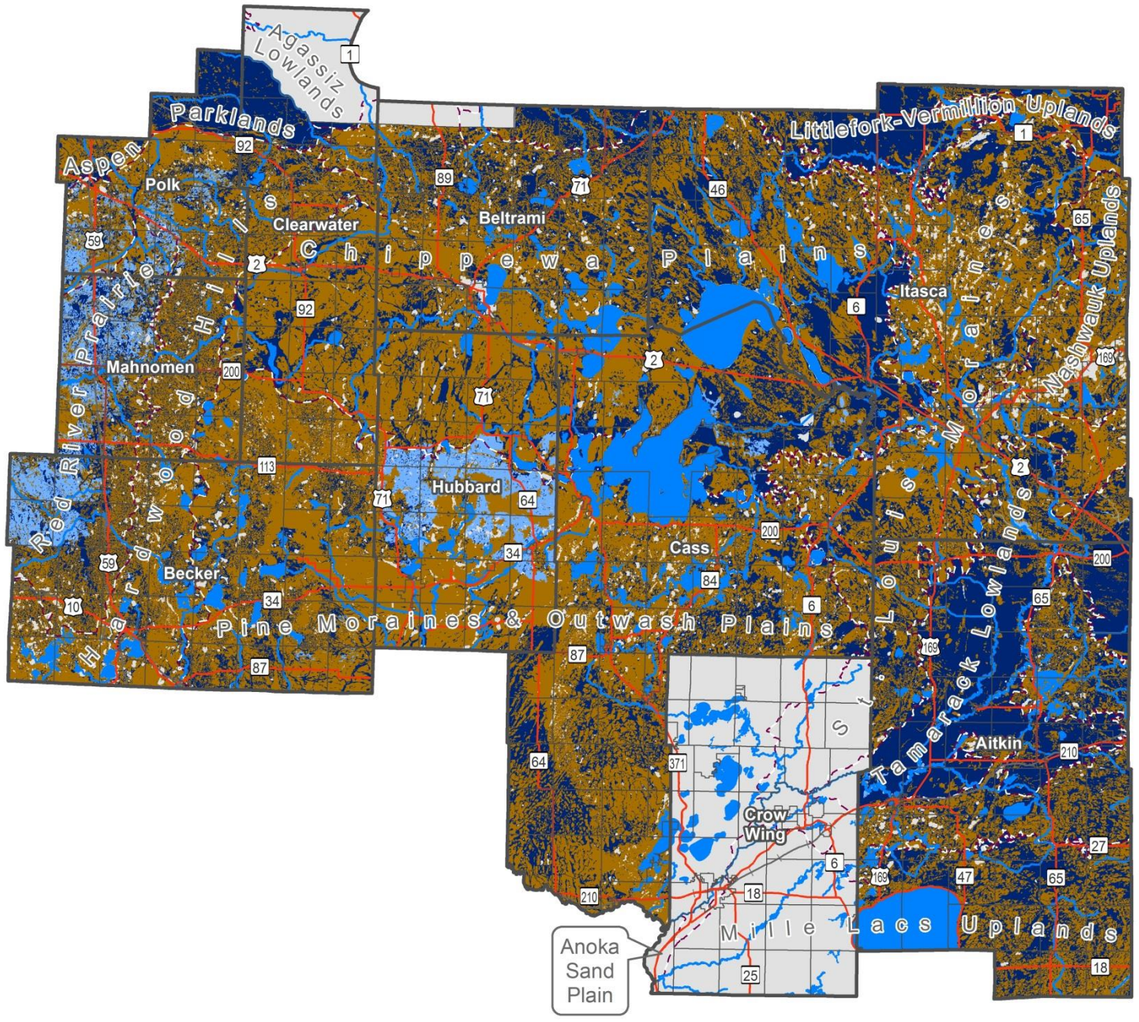
Minnesota Forest Resources Council

Soils - Drainage Class Table

SSURGO Drainage Class	Acres	% of Region
Excessively drained	378,617	4.2
Somewhat excessively drained	511,035	5.6
Well drained	2,167,428	23.9
Moderately well drained	1,067,097	11.8
Somewhat poorly drained	499,878	5.5
Poorly drained	738,280	8.1
Very poorly drained	2,000,444	22.1
Not rated or not available	1,706,936	18.8
Total North Central Region	**9,069,715**	**100.0**

Soils - Hydric Rating

North Central Landscape Region



SSURGO Soils - Hydric Rating

- All Hydric
- Partially Hydric
- Not Hydric
- Unknown Hydric

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections

0 5 10 20 30 40 Miles

Sources: Soils - NRCS Web Soil Survey; Other Features - MN Geospatial Commons

N

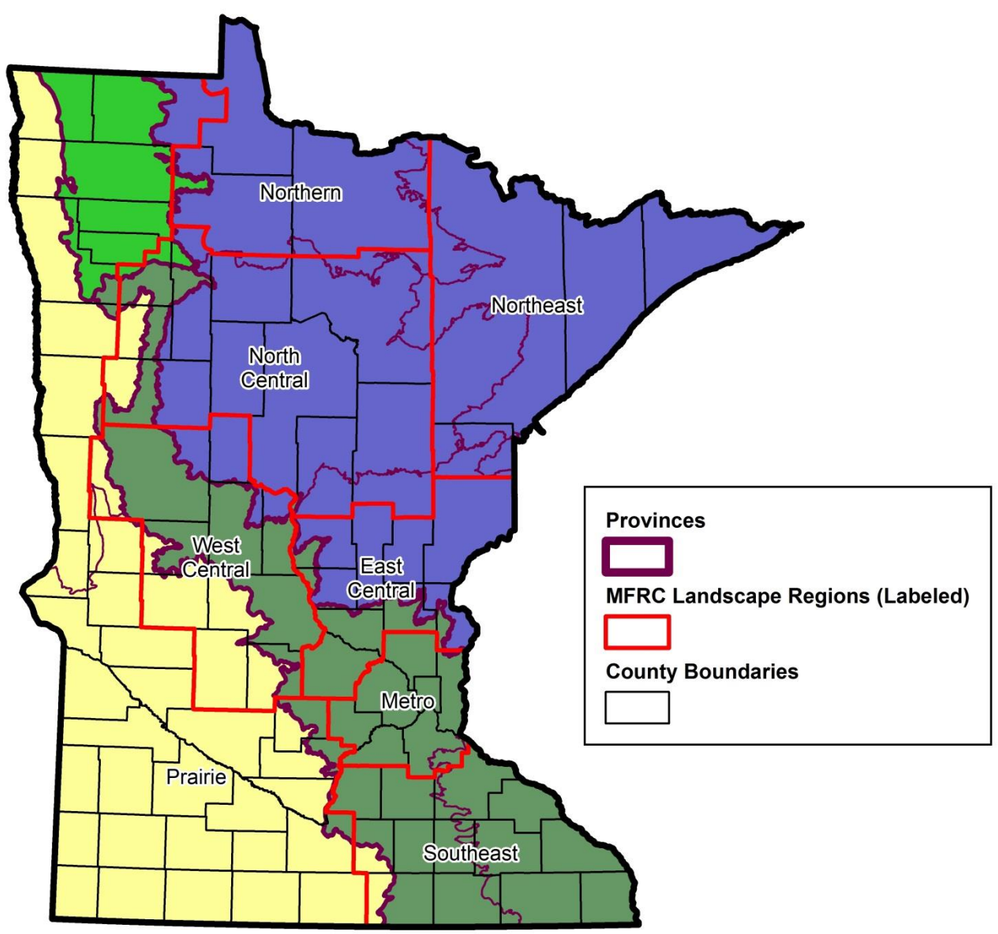
Minnesota Forest Resources Council

Soils - Hydric Rating Table

SSURGO Hydric Rating	Acres	% of Region
All Hydric	2,642,063	29.1
Partially Hydric	295,960	3.3
Not Hydric	4,421,595	48.8
Unknown Hydric	1,710,097	18.9
Total North Central Region	**9,069,715**	**100.0**

ECS Provinces, Sections, and Subsections

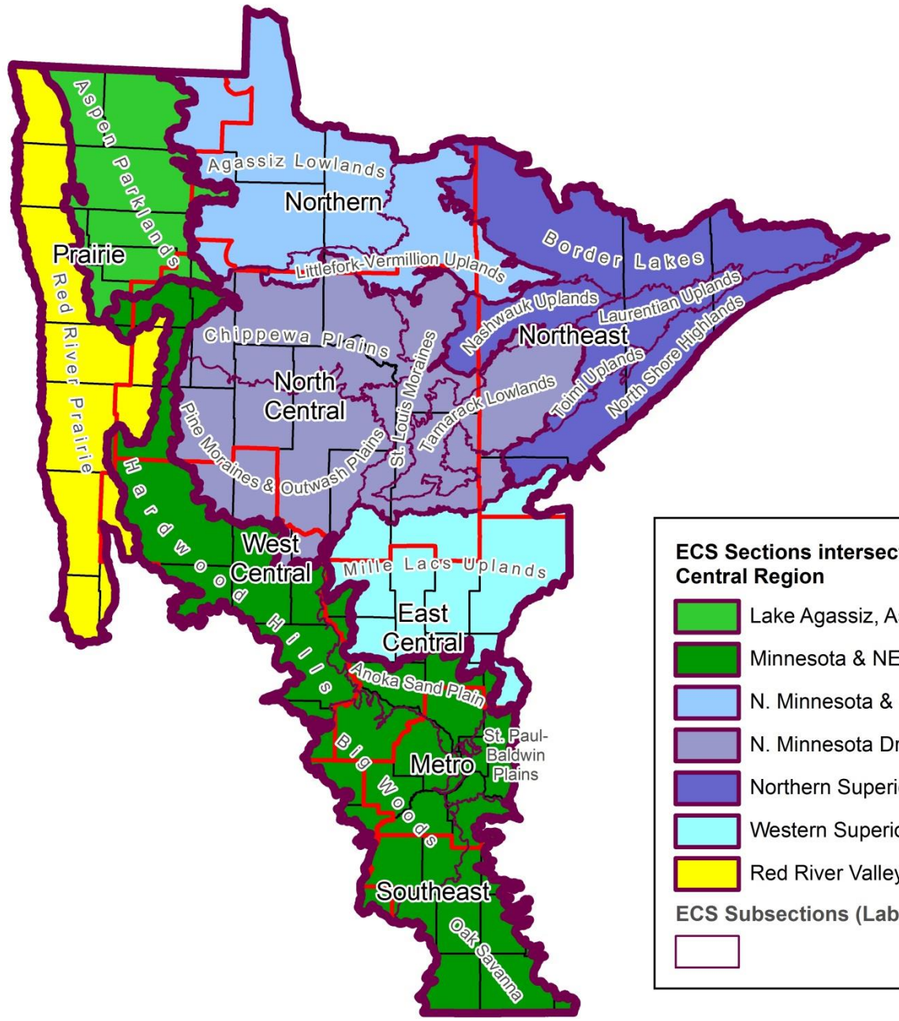
North Central Landscape Region



Provinces

MFRC Landscape Regions (Labeled)

County Boundaries



ECS Sections intersecting North Central Region

- Lake Agassiz, Aspen
- Minnesota & NE Iowa Morainal
- N. Minnesota & Ontario Peatlands
- N. Minnesota Drift & Lake Plains
- Northern Superior Uplands
- Western Superior Uplands
- Red River Valley

ECS Subsections (Labeled)

ECS Provinces

- Laurentian Mixed Forest
- Tallgrass Aspen Parklands
- Eastern Broadleaf Forest
- Prairie Parkland

ECS Sections

Sources: ECS, County Boundaries - MN Geospatial Commons; MFRC Landscape Regions - MFRC

N

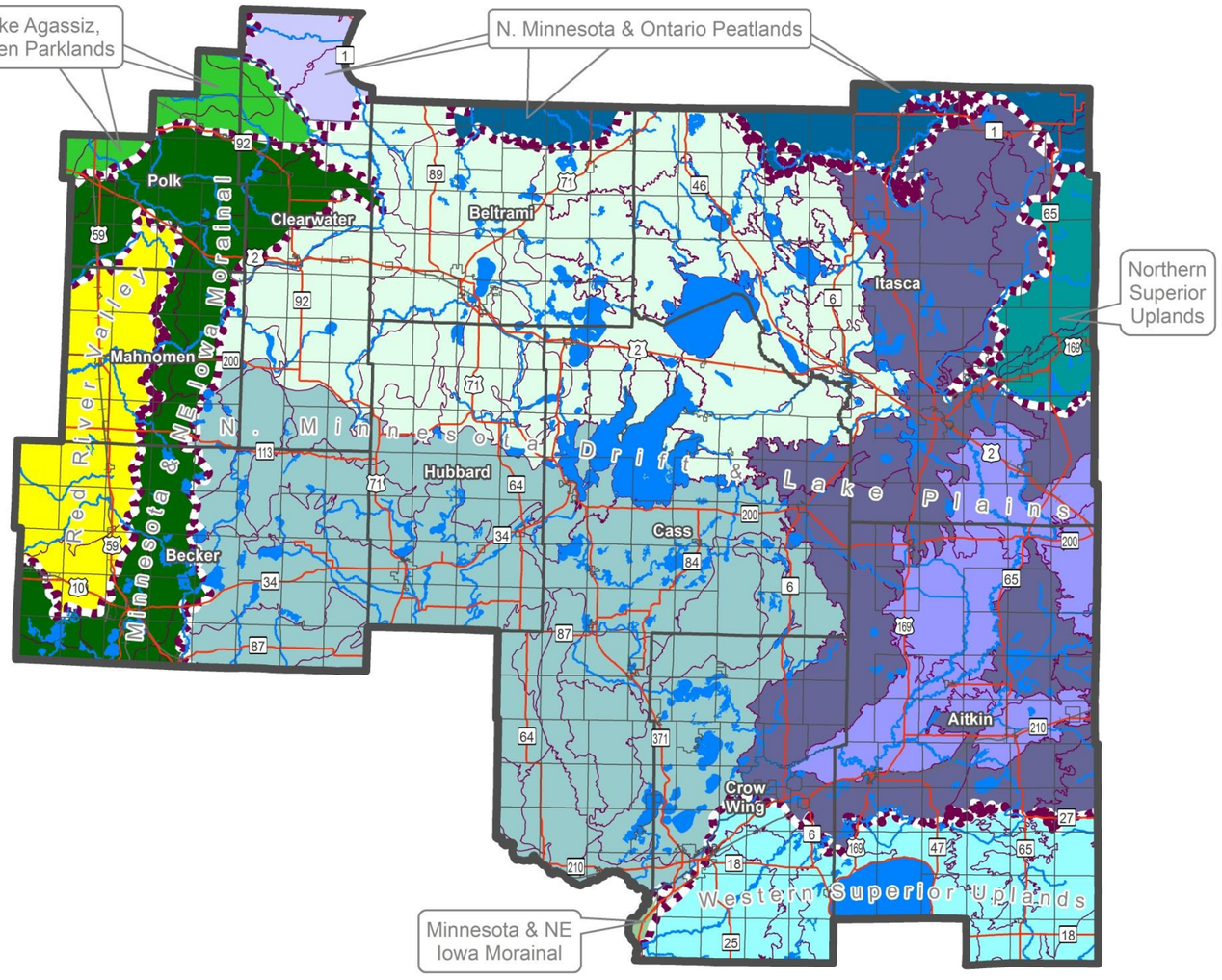
Minnesota Forest Resources Council

ECS Provinces, Sections, and Subsections Table

ECS Provinces	ECS Sections	ECS Subsections	Acres in Region	% of Region	# of LTAs
Eastern Broadleaf Forest Province	Minnesota & NE Iowa Morainal	Anoka Sand Plain	12,718	0.1	1
		Hardwood Hills	733,004	8.1	9
	Subtotal (Section)		**745,722**	**8.2**	**10**
Subtotal (Province)			**745,722**	**8.2**	**10**
Laurentian Mixed Forest Province	N. Minnesota & Ontario Peatlands	Agassiz Lowlands	119,858	1.3	4
		Littlefork-Vermillion Uplands	288,748	3.2	4
	Subtotal (Section)		**408,607**	**4.5**	**8**
	N. Minnesota Drift & Lake Plains	Chippewa Plains	2,142,176	23.6	13
		Pine Moraines & Outwash Plains	2,311,101	25.5	20
		St. Louis Moraines	1,456,897	16.1	12
		Tamarack Lowlands	573,079	6.3	5
	Subtotal (Section)		**6,483,253**	**71.5**	**50**
	Northern Superior Uplands	Nashwauk Uplands	211,922	2.3	3
	Subtotal (Section)		**211,922**	**2.3**	**3**
	Western Superior Uplands	Mille Lacs Uplands	657,410	7.2	12
	Subtotal (Section)		**657,410**	**7.2**	**12**
Subtotal (Province)			**7,761,191**	**85.6**	**73**
Prairie Parkland Province	Red River Valley	Red River Prairie	415,270	4.6	3
	Subtotal (Section)		**415,270**	**4.6**	**3**
Subtotal (Province)			**415,270**	**4.6**	**3**
Tallgrass Aspen Parklands	Lake Agassiz, Aspen Parklands	Aspen Parklands	147,531	1.6	4
	Subtotal (Section)		**147,531**	**1.6**	**4**
Subtotal (Province)			**147,531**	**1.6**	**4**
Total North Central Region			**9,069,715**	**100.0**	**90**

ECS Sections, Subsections, and Land Type Associations

North Central Landscape Region



ECS

- ECS Sections (Labeled)
- ECS Land Type Associations

ECS Subsections by ECS Sections

- Lake Agassiz, Aspen Parklands
- Aspen Parklands
- Minnesota & NE Iowa Morainal
- Anoka Sand Plain
- Hardwood Hills
- N. Minnesota & Ontario Peatlands
- Agassiz Lowlands
- Littlefork-Vermillion Uplands
- N. Minnesota Drift & Lake Plains
- Chippewa Plains
- Pine Moraines & Outwash Plains
- St. Louis Moraines
- Tamarack Lowlands
- Northern Superior Uplands
- Nashwauk Uplands
- Red River Valley
- Red River Prairie
- Western Superior Uplands
- Mille Lacs Uplands

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers

Miles
0 5 10 20 30 40

Sources: ECS - MN Geospatial Commons; Other Features - MN Geospatial Commons

N

Minnesota Forest Resources Council

ECS Sections, Subsections, and Land Type Associations Table

Section	Subsection	Land Type Association	Acres in Region	% of Region
Lake Agassiz, Aspen Parklands	Aspen Parklands	Beach Ridges	77	0.0
		Berner Lake Plain	58,897	0.6
		Brooks Lake Plain	9,866	0.1
		Goodridge Lake Plain	78,692	0.9
	Subtotal (Subsection)		**147,531**	**1.6**
Subtotal (Section)			**147,531**	**1.6**
Minnesota & NE Iowa Morainal	Anoka Sand Plain	Mississippi Sand Plain	12,718	0.1
	Subtotal (Subsection)		**12,718**	**0.1**
	Hardwood Hills	Clearbrook Till Plain	90,855	1.0
		Cormorant Sand Plain	16,578	0.2
		Detroit Lakes Sand Plain	63,721	0.7
		Erskine Till Plain	14,235	0.2
		Lengby Till Plain	100,306	1.1
		McIntosh Moraine	239,160	2.6
		Perham Sand Plain	13,309	0.1
		Underwood Moraine	41,798	0.5
		White Earth Moraine	153,042	1.7
	Subtotal (Subsection)		**733,004**	**8.1**
Subtotal (Section)			**745,722**	**8.2**
N. Minnesota & Ontario Peatlands	Agassiz Lowlands	Beltrami-Pine Island Beach Ridges	239	0.0
		Jelle Peatlands	72,638	0.8
		Red Lakes	147	0.0
		Redby Lake Plain	46,833	0.5
	Subtotal (Subsection)		**119,858**	**1.3**
	Littlefork-Vermillion Uplands	Effie Till Plain	266,597	2.9
		Koochiching Peatlands	153	0.0
		Lofgren Moraine	976	0.0
		Rauch Till Plain	21,022	0.2
	Subtotal (Subsection)		**288,748**	**3.2**
Subtotal (Section)			**408,607**	**4.5**
Northern Superior Uplands	Nashwauk Uplands	Mesabi Range	19,512	0.2
		Nashwauk Moraine	134,225	1.5
		Pengilly Till Plain	58,185	0.6
	Subtotal (Subsection)		**211,922**	**2.3**
Subtotal (Section)			**211,922**	**2.3**
Red River Valley	Red River Prairie	Audubon Moraine	60,825	0.7
		Fergus Falls Till Plain	887	0.0
		Flom Till Plain	353,558	3.9
	Subtotal (Subsection)		**415,270**	**4.6**
Subtotal (Section)			**415,270**	**4.6**
Western Superior Uplands	Mille Lacs Uplands	Ann Lake Drumlin Plain	1,171	0.0
		Brainerd Drumlin Plain	133,406	1.5
		Eastside Till Plain	27,082	0.3
		Kettle River Drumlin Plain	403	0.0
		Malmo Peatlands	46,718	0.5
		Mille Lacs Lake	62,620	0.7
		Mille Lacs Moraine	51,450	0.6
		Nokay Sand Plain	67,504	0.7
		Pine Lake Till Plain	21,913	0.2
		Riverton Moraine	30,563	0.3
		Solana Till Plain	167,859	1.9
		Three Rivers Peatlands	46,721	0.5
	Subtotal (Subsection)		**657,410**	**7.2**
Subtotal (Section)			**657,410**	**7.2**

Table continued on next page.

ECS Sections, Subsections, and Land Type Associations Table (cont.)

Section	Subsection	Land Type Association	Acres in Region	% of Region
N. Minnesota Drift & Lake Plains	Chippewa Plains	Alida Till Plain	196,599	2.2
		Becida Till Plain	64,655	0.7
		Bemidji Sand Plain	535,576	5.9
		Bena Dunes and Peatlands	93,009	1.0
		Blackduck Moraine	304,461	3.4
		Blackduck Till Plain	240,102	2.6
		Bowstring Till Plain	1,856	0.0
		Debs Till Plain	90,101	1.0
		Deer River Peatlands	62,262	0.7
		Guthrie Till Plain	120,558	1.3
		Lake Winnibigoshish	61,068	0.7
		Nary Till Plain	88,090	1.0
		Rosey Lake Plain	283,839	3.1
	Subtotal (Subsection)		**2,142,176**	**23.6**
	Pine Moraines & Outwash Plains	Bass Lake Moraine	50,007	0.6
		Crow Wing Sand Plain	219,917	2.4
		Itasca Moraine	274,817	3.0
		Itasca Moraine, Steep	239,072	2.6
		Leech Lake	104,280	1.1
		Mildred Sand Plain	152,829	1.7
		Mosquito Creek Drumlin Plain	68,849	0.8
		Naytahwaush Moraine	51,150	0.6
		Nimrod Drumlin Plain	65,756	0.7
		Outing Moraine	84,836	0.9
		Park Rapids Sand Plain	298,614	3.3
		Pillager Sand Plain	49,902	0.6
		Pine River Drumlin Plain	91,556	1.0
		Round Lake Sand Plain	37,408	0.4
		Shell Lake Moraine	122,754	1.4
		Spring Brook Till Plain	120,689	1.3
		St. Croix Moraine	105,758	1.2
		Swan Creek Sand Plain	24,141	0.3
		Two Inlets Moraine	131,744	1.5
		Wadena Drumlin Plain	17,021	0.2
	Subtotal (Subsection)		**2,311,101**	**25.5**
N. Minnesota Drift & Lake Plains	St. Louis Moraines	Aitkin Moraine	348,286	3.8
		Automba Drumlin Plain	35,733	0.4
		Coon Lake Till Plain	118,931	1.3
		Goodland Delta	57,098	0.6
		Hill City Till Plain	112,547	1.2
		Marcell Moraine	272,654	3.0
		Pokegama Moraine	137,825	1.5
		Prairie River Lake Plain	86,244	1.0
		Rice Lake Moraine	75,045	0.8
		Sandy Lake Moraine	105,682	1.2
		Sugar Hills Moraine	88,651	1.0
		Wright Till Plain	18,201	0.2
	Subtotal (Subsection)		**1,456,897**	**16.1**
	Tamarack Lowlands	Floodwood Peatlands	54,486	0.6
		Moose-Willow Peatlands	230,481	2.5
		Palisade Lake Plain	146,005	1.6
		South Rapids Lake Plain	105,426	1.2
		Warba Lake Plain	36,682	0.4
	Subtotal (Subsection)		**573,079**	**6.3**
Subtotal (Section)			**6,483,253**	**71.5**
Total North Central Region			**9,069,715**	**100.0**

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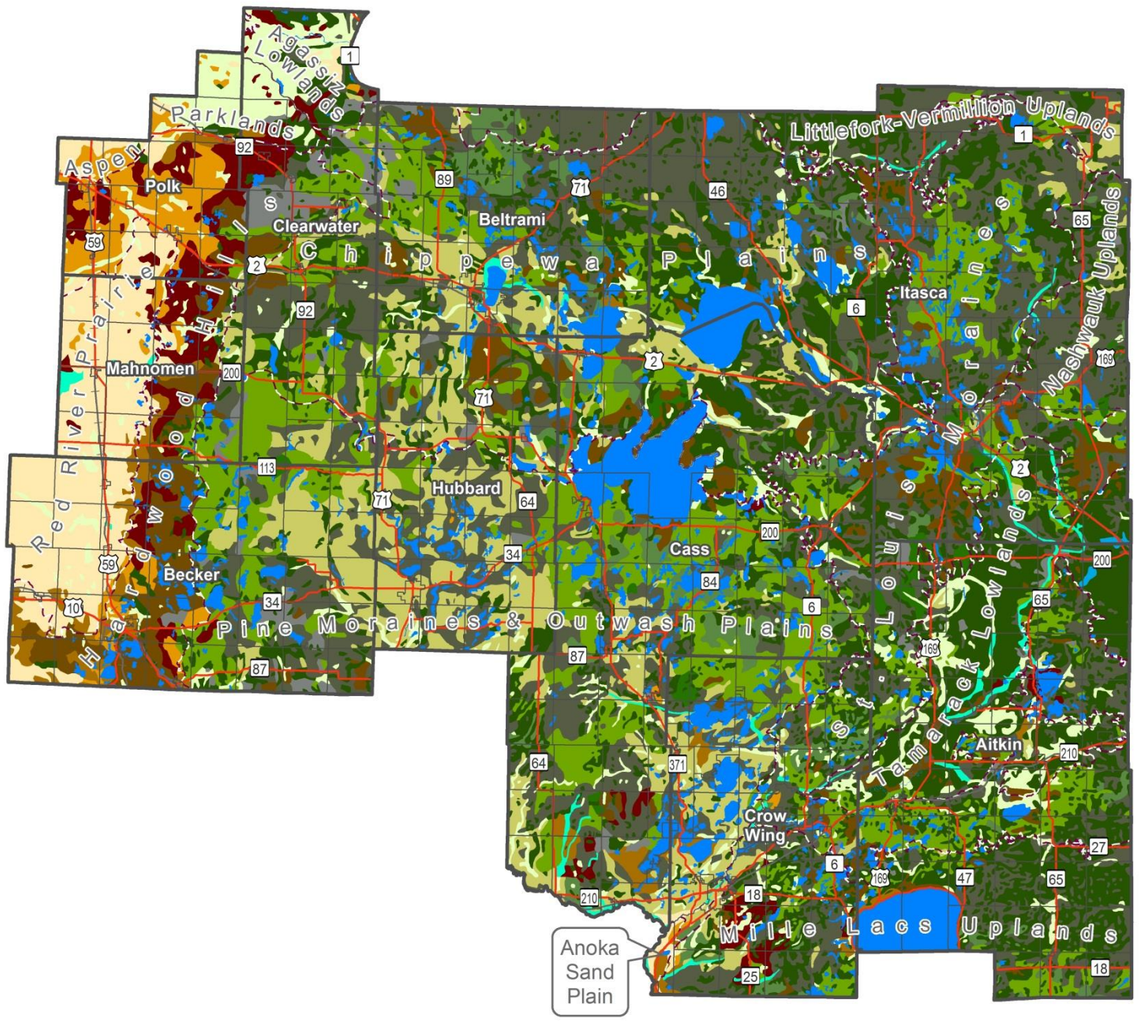
Presettlement Land Cover (1895)

North Central Landscape Region



Presettlement Land Cover (Marschner's)

- Aspen-Birch (trending to Conifers)
- Aspen-Birch (trending to hardwoods)
- Aspen-Oak Land
- Big Woods - Hardwoods (oak, maple, basswood, hickory)
- Brush Prairie
- Conifer Bogs and Swamps
- Jack Pine Barrens and Openings
- Lakes (open water)
- Mixed Hardwood and Pine (Maple, White Pine, Basswood, etc)
- Mixed White Pine and Red Pine
- Oak openings and barrens
- Open Muskeg
- Prairie
- River Bottom Forest
- Undefined
- Wet Prairie
- White Pine

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- ECS Subsections

Note: Current political boundaries and roads are displayed to provide a spatial reference for Presettlement Land Cover data.

Miles
0 5 10 20 30 40

Sources: Presettlement Land Cover - MN Geospatial Commons; Other Features - MN Geospatial Commons

N

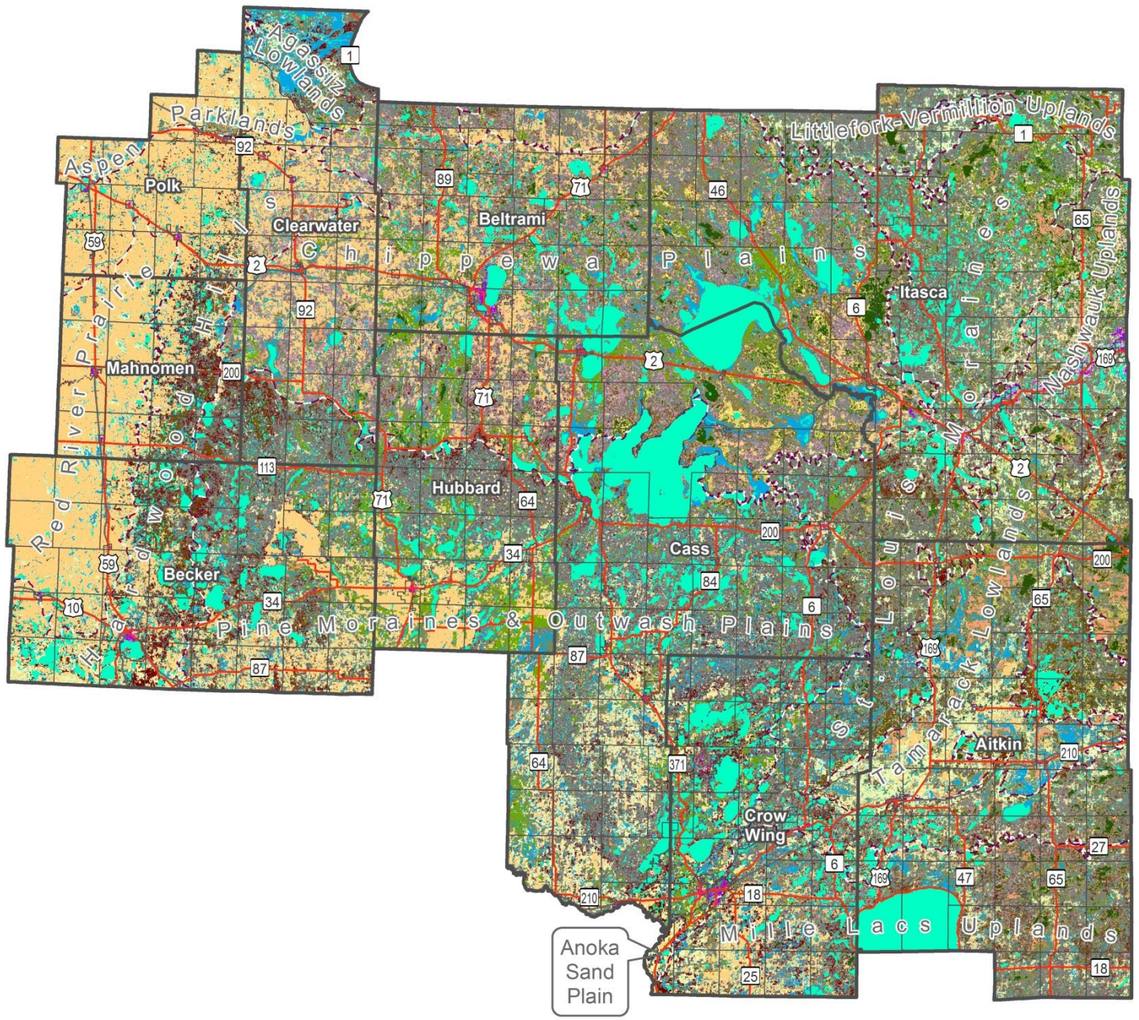
Minnesota Forest Resources Council

Presettlement Land Cover (1895) Table

Comparative Class	Presettlement Land Cover (Marschner's)	Acres	% of Region
Upland Forest	Aspen-Birch (trending to Conifers)	2,134,945	23.5
	Aspen-Birch (trending to hardwoods)	140,731	1.6
	Aspen-Oak Land	237,745	2.6
	Big Woods - Hardwoods (oak, maple, basswood, hickory)	427,558	4.7
	Mixed Hardwood and Pine (Maple, White Pine, Basswood, etc)	238,047	2.6
	Mixed White Pine and Red Pine	1,226,647	13.5
	White Pine	57,732	0.6
Subtotal (Upland Forest)		**4,463,406**	**49.2**
Upland Shrub	Brush Prairie	168,778	1.9
Subtotal (Upland Shrub)		**168,778**	**1.9**
Upland Grass	Jack Pine Barrens and Openings	816,030	9.0
	Oak openings and barrens	119,435	1.3
	Prairie	436,131	4.8
Subtotal (Upland Grass)		**1,371,596**	**15.1**
Lowland Vegetation	Conifer Bogs and Swamps	1,850,153	20.4
	Open Muskeg	4,352	0.0
	River Bottom Forest	64,244	0.7
	Wet Prairie	447,225	4.9
Subtotal (Lowland Vegetation)		**2,365,973**	**26.1**
Open Water	Lakes (open water)	699,619	7.7
Subtotal (Open Water)		**699,619**	**7.7**
Unclassified	Undefined	342	0.0
Subtotal (Unclassified)		**342**	**0.0**
Total North Central Region		**9,069,715**	**100.0**

Land Cover (1992)

North Central Landscape Region



GAP Level 3 - Reclassified

- Lowland Black Spruce
- Lowland Conifer-Deciduous mix
- Stagnant Conifer
- Lowland Northern White-Cedar
- Tamarack
- Pine
- Spruce/Fir
- Upland Cedar
- Upland Conifer
- Pine-Deciduous mix
- Spruce/Fir-Deciduous mix
- Upland Conifer-Deciduous mix
- Black Ash
- Lowland Deciduous
- Silver Maple
- Aspen/White Birch
- Maple/Basswood
- Oak
- Upland Deciduous
- Aquatic
- Marsh
- Cropland
- Grassland
- Barren
- Developed
- Lowland Shrub
- Upland Shrub

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- ECS Subsections

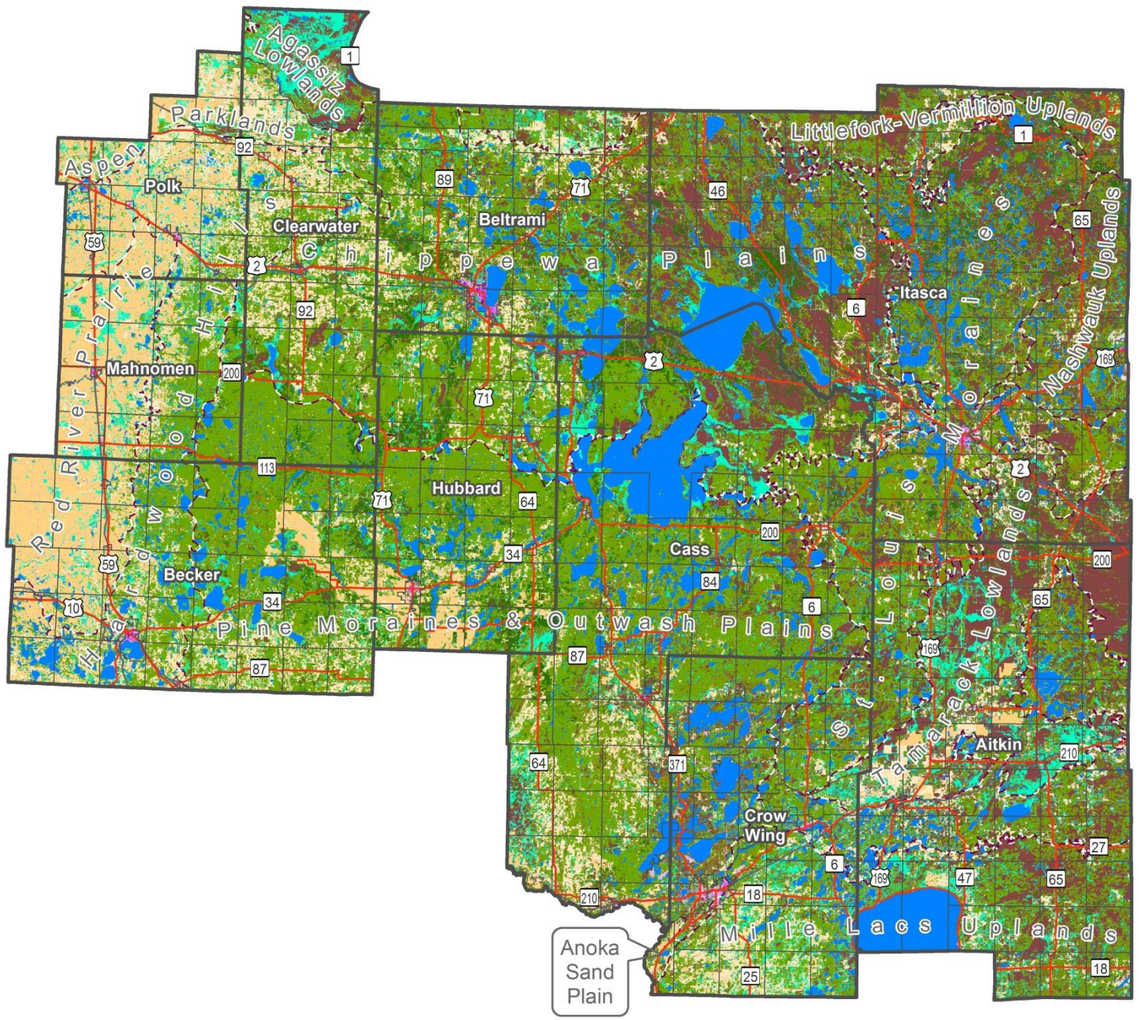
Land Cover (1992) Table

Comparative Class	GAP Level 3	Acres	% of Region
Upland Forest	Aspen/White Birch	2,421,382	26.7
	Maple/Basswood	256,868	2.8
	Oak	361,428	4.0
	Pine	354,618	3.9
	Pine-Deciduous mix	14,196	0.2
	Spruce/Fir	73,363	0.8
	Spruce/Fir-Deciduous mix	1,625	0.0
	Upland Cedar	13,884	0.2
	Upland Conifer	12,858	0.1
	Upland Conifer-Deciduous mix	1,775	0.0
	Upland Deciduous	269,917	3.0
Subtotal (Upland Forest)		**3,781,916**	**41.7**
Upland Shrub	Upland Shrub	295,996	3.3
Subtotal (Upland Shrub)		**295,996**	**3.3**
Upland Grass	Grassland	560,550	6.2
Subtotal (Upland Grass)		**560,550**	**6.2**
Lowland Vegetation	Aquatic	39,898	0.4
	Black Ash	172,557	1.9
	Lowland Black Spruce	205,990	2.3
	Lowland Conifer-Deciduous mix	40,827	0.5
	Lowland Deciduous	68,920	0.8
	Lowland Northern White-Cedar	95,632	1.1
	Lowland Shrub	664,098	7.3
	Marsh	529,112	5.8
	Silver Maple	815	0.0
	Stagnant Conifer	2,169	0.0
	Tamarack	195,040	2.2
Subtotal (Lowland Vegetation)		**2,015,059**	**22.2**

Comparative Class	GAP Level 3	Acres	% of Region
Agriculture	Cropland	1,480,323	16.3
Subtotal (Agriculture)		**1,480,323**	**16.3**
Open Water	Aquatic	877,344	9.7
Subtotal (Open Water)		**877,344**	**9.7**
Barren	Barren	17,608	0.2
Subtotal (Barren)		**17,608**	**0.2**
Developed	Developed	40,918	0.5
Subtotal (Developed)		**40,918**	**0.5**
Total North Central Region		**9,069,715**	**100.0**

Land Cover (2001)

North Central Landscape Region



Sources: National Land Cover Dataset - MRLC; Other Features - MN Geospatial Commons

Minnesota Forest Resources Council

National Land Cover Dataset 2001

- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrub/Scrub
- Grassland/Herbaceous
- Pasture/Hay
- Woody Wetlands
- Emergent Herbaceous Wetlands
- Cultivated Crops
- Open Water
- Barren Land (Rock/Sand/Clay)
- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, High Intensity
- Unclassified

Other Features

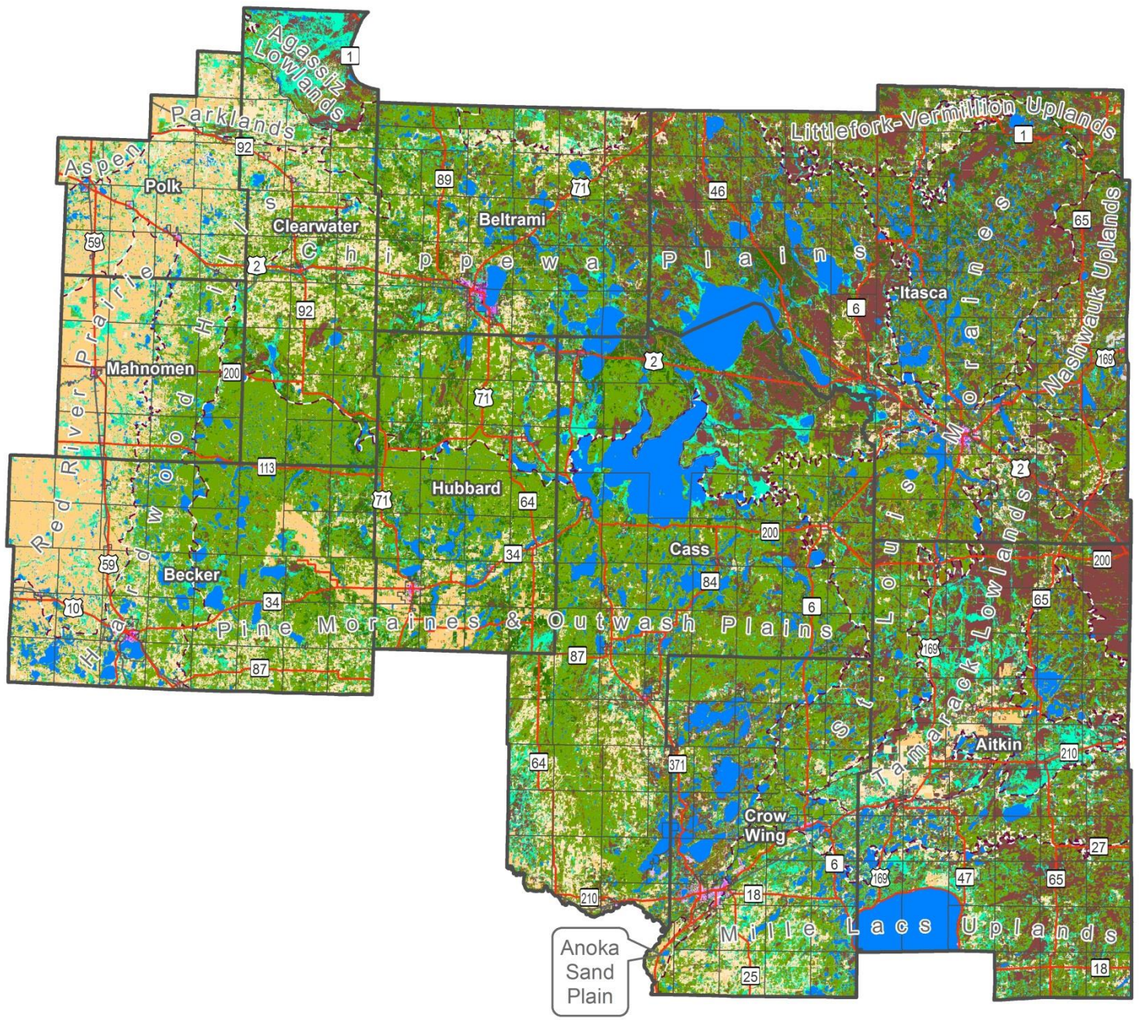
- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- ECS Subsections

Land Cover (2001) Table

Comparative Class	National Land Cover Dataset 2001	Acres	% of Region
Upland Forest	Deciduous Forest	3,094,575	34.1
	Evergreen Forest	475,506	5.2
	Mixed Forest	280,831	3.1
Subtotal (Upland Forest)		**3,850,912**	**42.5**
Upland Shrub	Shrub/Scrub	286,327	3.2
Subtotal (Upland Shrub)		**286,327**	**3.2**
Upland Grass	Grassland/Herbaceous	128,478	1.4
	Pasture/Hay	712,907	7.9
Subtotal (Upland Grass)		**841,384**	**9.3**
Lowland Vegetation	Woody Wetlands	1,511,751	16.7
	Emergent Herbaceous Wetlands	725,391	8.0
Subtotal (Lowland Vegetation)		**2,237,143**	**24.7**
Agriculture	Cultivated Crops	667,392	7.4
Subtotal (Agriculture)		**667,392**	**7.4**
Open Water	Open Water	904,191	10.0
Subtotal (Open Water)		**904,191**	**10.0**
Barren	Barren Land (Rock/Sand/Clay)	4,618	0.1
Subtotal (Barren)		**4,618**	**0.1**
Developed	Developed, Open Space	234,900	2.6
	Developed, Low Intensity	33,275	0.4
	Developed, Medium Intensity	7,009	0.1
	Developed, High Intensity	2,564	0.0
Subtotal (Developed)		**277,748**	**3.1**
Total North Central Region		**9,069,715**	**100.0**

Land Cover (2006)

North Central Landscape Region



National Land Cover Dataset 2006

- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrub/Scrub
- Grassland/Herbaceous
- Pasture/Hay
- Woody Wetlands
- Emergent Herbaceous Wetlands
- Cultivated Crops
- Open Water
- Barren Land (Rock/Sand/Clay)
- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, High Intensity
- Unclassified

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- ECS Subsections

0 5 10 20 30 40 Miles

Sources: National Land Cover Dataset - MRLC; Other Features - MN Geospatial Commons

N

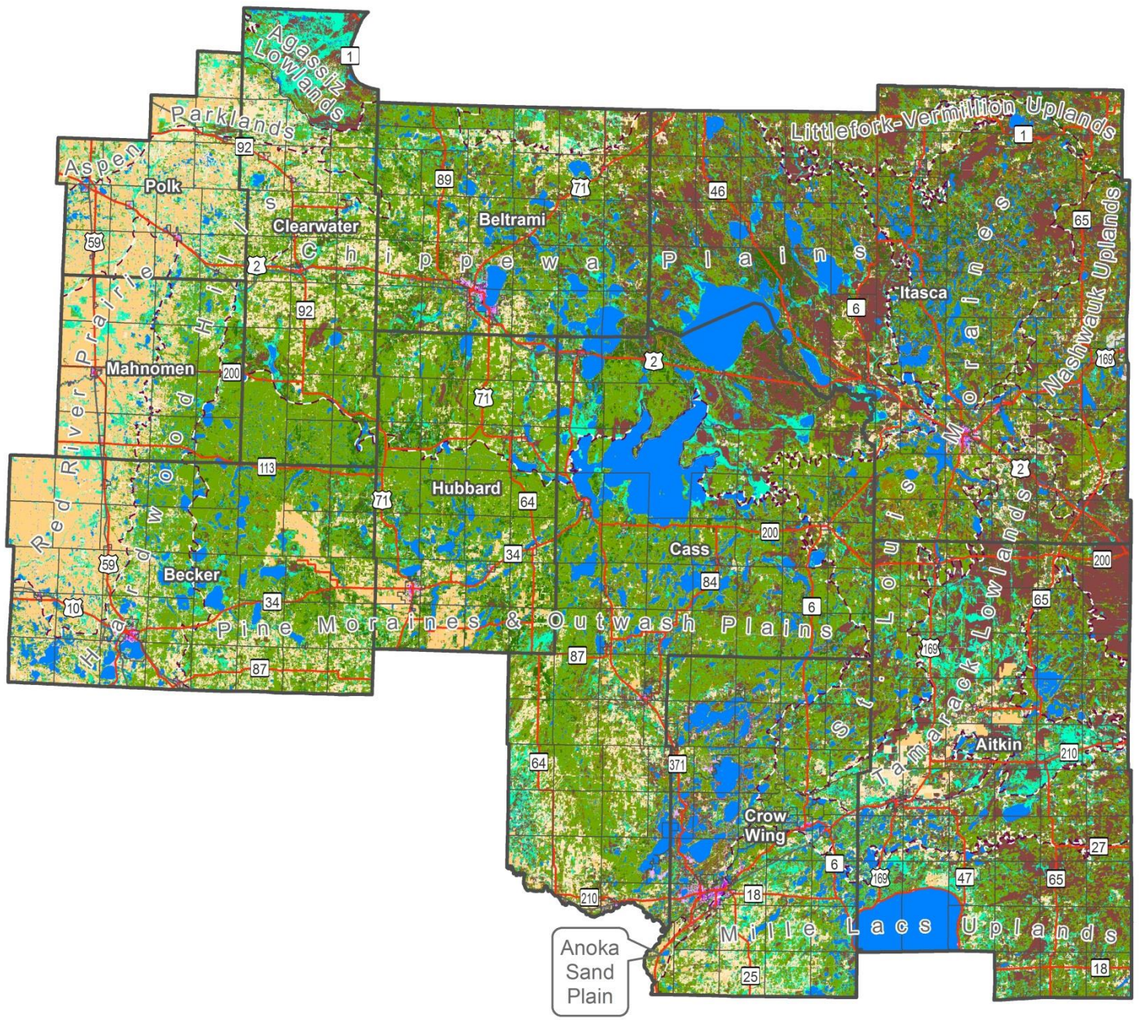
Minnesota Forest Resources Council

Land Cover (2006) Table

Comparative Class	National Land Cover Dataset 2006	Area (Acres)	% of Region
Upland Forest	Deciduous Forest	3,075,446	33.9
	Evergreen Forest	460,404	5.1
	Mixed Forest	274,046	3.0
Subtotal (Upland Forest)		**3,809,896**	**42.0**
Upland Shrub	Shrub/Scrub	295,566	3.3
Subtotal (Upland Shrub)		**295,566**	**3.3**
Upland Grass	Grassland/Herbaceous	138,155	1.5
	Pasture/Hay	712,792	7.9
Subtotal (Upland Grass)		**850,947**	**9.4**
Lowland Vegetation	Woody Wetlands	1,513,790	16.7
	Emergent Herbaceous Wetlands	739,870	8.2
Subtotal (Lowland Vegetation)		**2,253,660**	**24.8**
Agriculture	Cultivated Crops	667,437	7.4
Subtotal (Agriculture)		**667,437**	**7.4**
Open Water	Open Water	902,924	10.0
Subtotal (Open Water)		**902,924**	**10.0**
Barren	Barren Land (Rock/Sand/Clay)	9,151	0.1
Subtotal (Barren)		**9,151**	**0.1**
Developed	Developed, Open Space	235,973	2.6
	Developed, Low Intensity	33,862	0.4
	Developed, Medium Intensity	7,425	0.1
	Developed, High Intensity	2,873	0.0
Subtotal (Developed)		**280,133**	**3.1**
Total North Central Region		**9,069,715**	**100.0**

Land Cover (2011)

North Central Landscape Region



Sources: National Land Cover Dataset - MRLC; Other Features - MN Geospatial Commons

Minnesota Forest Resources Council

National Land Cover Dataset 2011

- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrub/Scrub
- Grassland/Herbaceous
- Pasture/Hay
- Woody Wetlands
- Emergent Herbaceous Wetlands
- Cultivated Crops
- Open Water
- Barren Land (Rock/Sand/Clay)
- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, High Intensity
- Unclassified

Other Features

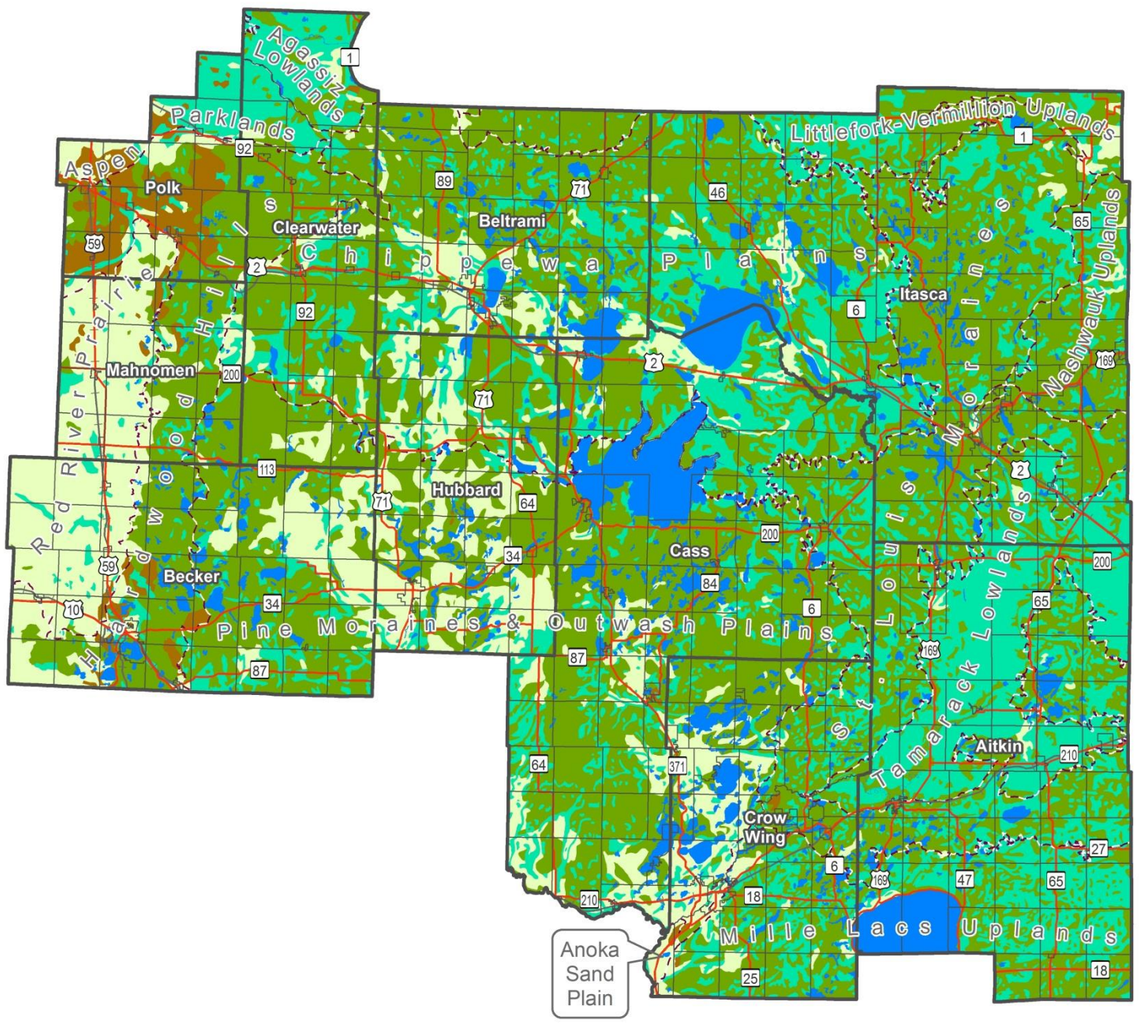
- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- ECS Subsections

Land Cover (2011) Table

Comparative Class	National Land Cover Dataset 2011	Area (Acres)	% of Region
Upland Forest	Deciduous Forest	3,035,963	33.5
	Evergreen Forest	446,098	4.9
	Mixed Forest	253,069	2.8
Subtotal (Upland Forest)		**3,735,130**	**41.2**
Upland Shrub	Shrub/Scrub	324,015	3.6
Subtotal (Upland Shrub)		**324,015**	**3.6**
Upland Grass	Grassland/Herbaceous	161,621	1.8
	Pasture/Hay	707,958	7.8
Subtotal (Upland Grass)		**869,579**	**9.6**
Lowland Vegetation	Woody Wetlands	1,482,824	16.3
	Emergent Herbaceous Wetlands	745,954	8.2
Subtotal (Lowland Vegetation)		**2,228,779**	**24.6**
Agriculture	Cultivated Crops	666,773	7.4
Subtotal (Agriculture)		**666,773**	**7.4**
Open Water	Open Water	901,124	9.9
Subtotal (Open Water)		**901,124**	**9.9**
Barren	Barren Land (Rock/Sand/Clay)	10,250	0.1
Subtotal (Barren)		**10,250**	**0.1**
Developed	Developed, Open Space	280,920	3.1
	Developed, Low Intensity	36,711	0.4
	Developed, Medium Intensity	12,763	0.1
	Developed, High Intensity	3,670	0.0
Subtotal (Developed)		**334,065**	**3.7**
Total North Central Region		**9,069,715**	**100.0**

Presettlement Land Cover (1895) - Reclassified

North Central Landscape Region



Presettlement Land Cover (Marschner's) - Reclassified

- Upland Forest
- Upland Shrub
- Upland Grass
- Lowland Vegetation
- Open Water
- Unclassified

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- ECS Subsections

Note: Current political boundaries and roads are displayed to provide a spatial reference for Presettlement Land Cover data.

Miles
0 5 10 20 30 40

Sources: Presettlement Land Cover - MN Geospatial Commons; Other Features - MN Geospatial Commons

N

Minnesota Forest Resources Council

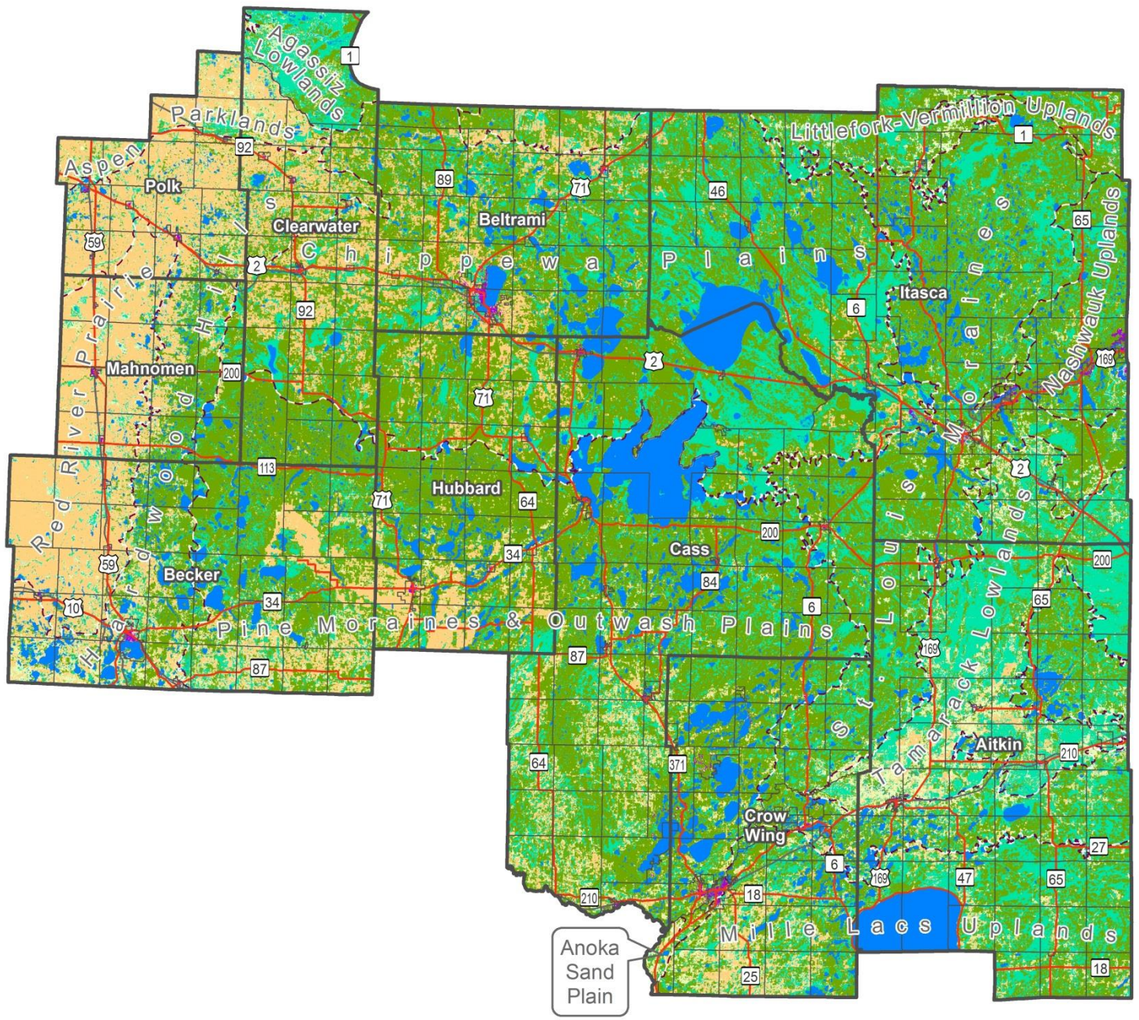
Presettlement Land Cover (1895) - Reclassified Table

	Marschner's Presettlement (1895)					GAP Land Cover (1992)			
Comparative Class	**Area (Acres)**	**% of Total**	**NA**	**NA**		**Area (Acres)**	**% of Total**	**Change 1895 to 1992 (Acres)**	**Change 1895 to 1992 (% Cover)**
Upland Forest	4,463,406	49.2	-	-		3,781,916	41.7	-681,490	-7.5
Upland Shrub	168,778	1.9	-	-		295,996	3.3	127,217	1.4
Upland Grass	1,371,596	15.1	-	-		560,550	6.2	-811,047	-8.9
Lowland Vegetation	2,365,973	26.1	-	-		2,015,059	22.2	-350,914	-3.9
Agriculture	0	0.0	-	-		1,480,323	16.3	1,480,323	16.3
Open Water	699,619	7.7	-	-		877,344	9.7	177,725	2.0
Barren	0	0.0	-	-		17,608	0.2	17,608	0.2
Developed	0	0.0	-	-		40,918	0.5	40,918	0.5
Unclassified	342	0.0	-	-		0	0.0	-342	0.0
Total North Central Region	**9,069,715**	**100.0**				**9,069,715**	**100.0**		

	NLCD (2001)				NLCD (2006)				NLCD (2011)			
Comparative Class	**Area (Acres)**	**% of Total**	**Change 1992 to 2001 (Acres)**	**Change 1992 to 2001 (% Cover)**	**Area (Acres)**	**% of Total**	**Change 2001 to 2006 (Acres)**	**Change 2001 to 2006 (% Cover)**	**Area (Acres)**	**% of Total**	**Change 2006 to 2011 (Acres)**	**Change 2006 to 2011 (% Cover)**
Upland Forest	3,850,912	42.5	68,996	0.8	3,809,896	42.0	-41,016	-0.5	3,735,130	41.2	-74,766	-0.8
Upland Shrub	286,327	3.2	-9,669	-0.1	295,566	3.3	9,239	0.1	324,015	3.6	28,449	0.3
Upland Grass	841,384	9.3	280,834	3.1	850,947	9.4	9,563	0.1	869,579	9.6	18,632	0.2
Lowland Vegetation	2,237,143	24.7	222,083	2.4	2,253,660	24.8	16,518	0.2	2,228,779	24.6	-24,881	-0.3
Agriculture	667,392	7.4	-812,932	-9.0	667,437	7.4	46	0.0	666,773	7.4	-664	0.0
Open Water	904,191	10.0	26,847	0.3	902,924	10.0	-1,267	0.0	901,124	9.9	-1,801	0.0
Barren	4,618	0.1	-12,990	-0.1	9,151	0.1	4,533	0.0	10,250	0.1	1,099	0.0
Developed	277,748	3.1	236,830	2.6	280,133	3.1	2,384	0.0	334,065	3.7	53,932	0.6
Unclassified	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total North Central Region	**9,069,715**	**100.0**			**9,069,715**	**100.0**			**9,069,715**	**100.0**		

Land Cover (1992) - Reclassified

North Central Landscape Region



GAP Level 4 - Reclassified

- Upland Forest
- Upland Shrub
- Upland Grass
- Lowland Vegetation
- Agriculture
- Open Water
- Barren
- Developed
- Unclassified

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- ECS Subsections

0 5 10 20 30 40 Miles

Sources: GAP Land Cover - MN Geospatial Commons; Other Features - MN Geospatial Commons

N

Minnesota Forest Resources Council

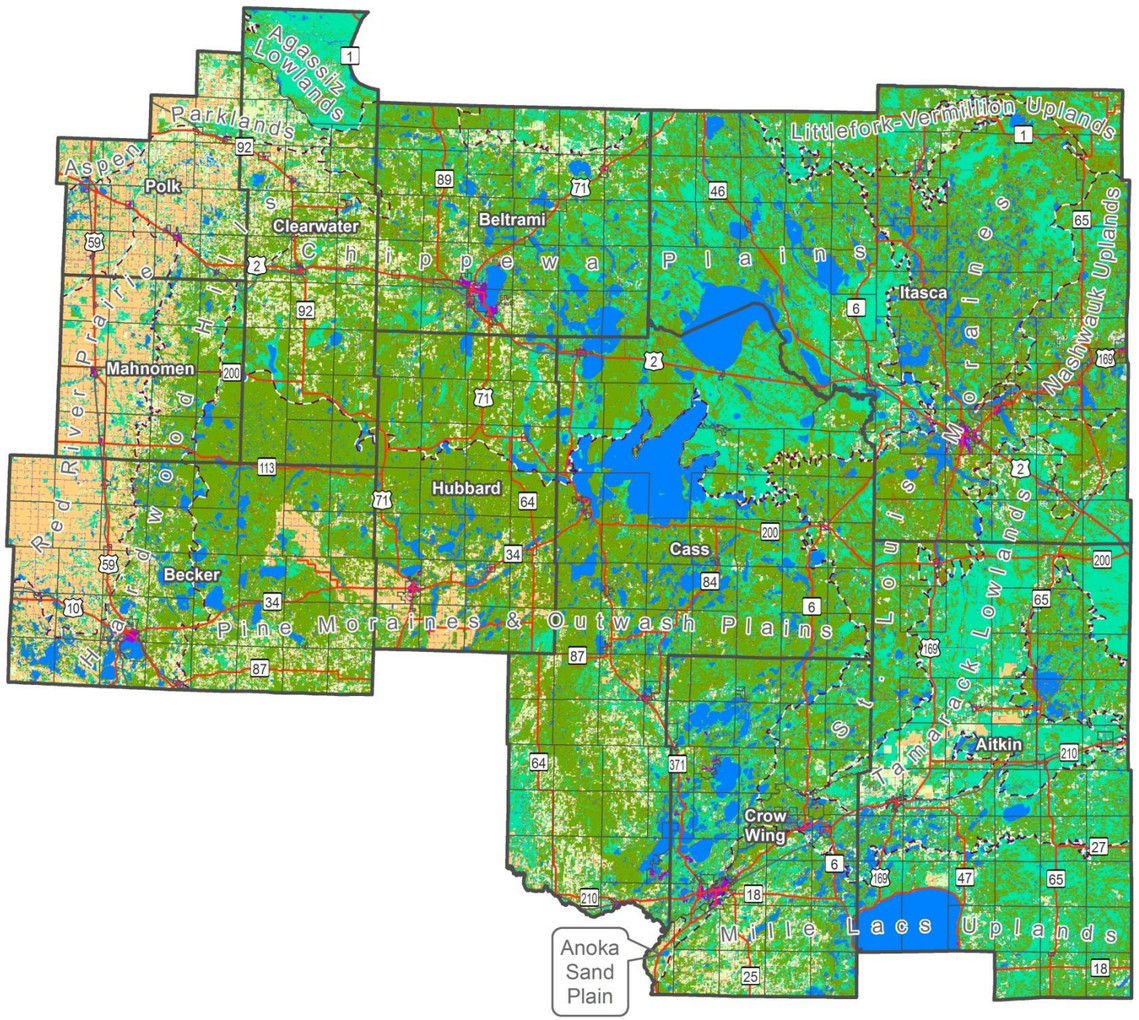
Land Cover (1992) - Reclassified Table

	Marschner's Presettlement (1895)					GAP Land Cover (1992)			
Comparative Class	**Area (Acres)**	**% of Total**	**NA**	**NA**		**Area (Acres)**	**% of Total**	**Change 1895 to 1992 (Acres)**	**Change 1895 to 1992 (% Cover)**
Upland Forest	4,463,406	49.2	-	-		3,781,916	41.7	-681,490	-7.5
Upland Shrub	168,778	1.9	-	-		295,996	3.3	127,217	1.4
Upland Grass	1,371,596	15.1	-	-		560,550	6.2	-811,047	-8.9
Lowland Vegetation	2,365,973	26.1	-	-		2,015,059	22.2	-350,914	-3.9
Agriculture	0	0.0	-	-		1,480,323	16.3	1,480,323	16.3
Open Water	699,619	7.7	-	-		877,344	9.7	177,725	2.0
Barren	0	0.0	-	-		17,608	0.2	17,608	0.2
Developed	0	0.0	-	-		40,918	0.5	40,918	0.5
Unclassified	342	0.0	-	-		0	0.0	-342	0.0
Total North Central Region	**9,069,715**	**100.0**				**9,069,715**	**100.0**		

	NLCD (2001)				NLCD (2006)				NLCD (2011)			
Comparative Class	**Area (Acres)**	**% of Total**	**Change 1992 to 2001 (Acres)**	**Change 1992 to 2001 (% Cover)**	**Area (Acres)**	**% of Total**	**Change 2001 to 2006 (Acres)**	**Change 2001 to 2006 (% Cover)**	**Area (Acres)**	**% of Total**	**Change 2006 to 2011 (Acres)**	**Change 2006 to 2011 (% Cover)**
Upland Forest	3,850,912	42.5	68,996	0.8	3,809,896	42.0	-41,016	-0.5	3,735,130	41.2	-74,766	-0.8
Upland Shrub	286,327	3.2	-9,669	-0.1	295,566	3.3	9,239	0.1	324,015	3.6	28,449	0.3
Upland Grass	841,384	9.3	280,834	3.1	850,947	9.4	9,563	0.1	869,579	9.6	18,632	0.2
Lowland Vegetation	2,237,143	24.7	222,083	2.4	2,253,660	24.8	16,518	0.2	2,228,779	24.6	-24,881	-0.3
Agriculture	667,392	7.4	-812,932	-9.0	667,437	7.4	46	0.0	666,773	7.4	-664	0.0
Open Water	904,191	10.0	26,847	0.3	902,924	10.0	-1,267	0.0	901,124	9.9	-1,801	0.0
Barren	4,618	0.1	-12,990	-0.1	9,151	0.1	4,533	0.0	10,250	0.1	1,099	0.0
Developed	277,748	3.1	236,830	2.6	280,133	3.1	2,384	0.0	334,065	3.7	53,932	0.6
Unclassified	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total North Central Region	**9,069,715**	**100.0**			**9,069,715**	**100.0**			**9,069,715**	**100.0**		

Land Cover (2001) - Reclassified

North Central Landscape Region



NLCD 2001 - Reclassified

- Upland Forest
- Upland Shrub
- Upland Grass
- Lowland Vegetation
- Agriculture
- Open Water
- Barren
- Developed

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- ECS Subsections

Sources: National Land Cover Dataset - MRLC; Other Features - MN Geospatial Commons

Minnesota Forest Resources Council

Land Cover (2001) - Reclassified Table

	Marschner's Presettlement (1895)					GAP Land Cover (1992)			
Comparative Class	**Area (Acres)**	**% of Total**	**NA**	**NA**		**Area (Acres)**	**% of Total**	**Change 1895 to 1992 (Acres)**	**Change 1895 to 1992 (% Cover)**
Upland Forest	4,463,406	49.2	-	-		3,781,916	41.7	-681,490	-7.5
Upland Shrub	168,778	1.9	-	-		295,996	3.3	127,217	1.4
Upland Grass	1,371,596	15.1	-	-		560,550	6.2	-811,047	-8.9
Lowland Vegetation	2,365,973	26.1	-	-		2,015,059	22.2	-350,914	-3.9
Agriculture	0	0.0	-	-		1,480,323	16.3	1,480,323	16.3
Open Water	699,619	7.7	-	-		877,344	9.7	177,725	2.0
Barren	0	0.0	-	-		17,608	0.2	17,608	0.2
Developed	0	0.0	-	-		40,918	0.5	40,918	0.5
Unclassified	342	0.0	-	-		0	0.0	-342	0.0
Total North Central Region	**9,069,715**	**100.0**				**9,069,715**	**100.0**		

	NLCD (2001)				NLCD (2006)				NLCD (2011)			
Comparative Class	**Area (Acres)**	**% of Total**	**Change 1992 to 2001 (Acres)**	**Change 1992 to 2001 (% Cover)**	**Area (Acres)**	**% of Total**	**Change 2001 to 2006 (Acres)**	**Change 2001 to 2006 (% Cover)**	**Area (Acres)**	**% of Total**	**Change 2006 to 2011 (Acres)**	**Change 2006 to 2011 (% Cover)**
Upland Forest	3,850,912	42.5	68,996	0.8	3,809,896	42.0	-41,016	-0.5	3,735,130	41.2	-74,766	-0.8
Upland Shrub	286,327	3.2	-9,669	-0.1	295,566	3.3	9,239	0.1	324,015	3.6	28,449	0.3
Upland Grass	841,384	9.3	280,834	3.1	850,947	9.4	9,563	0.1	869,579	9.6	18,632	0.2
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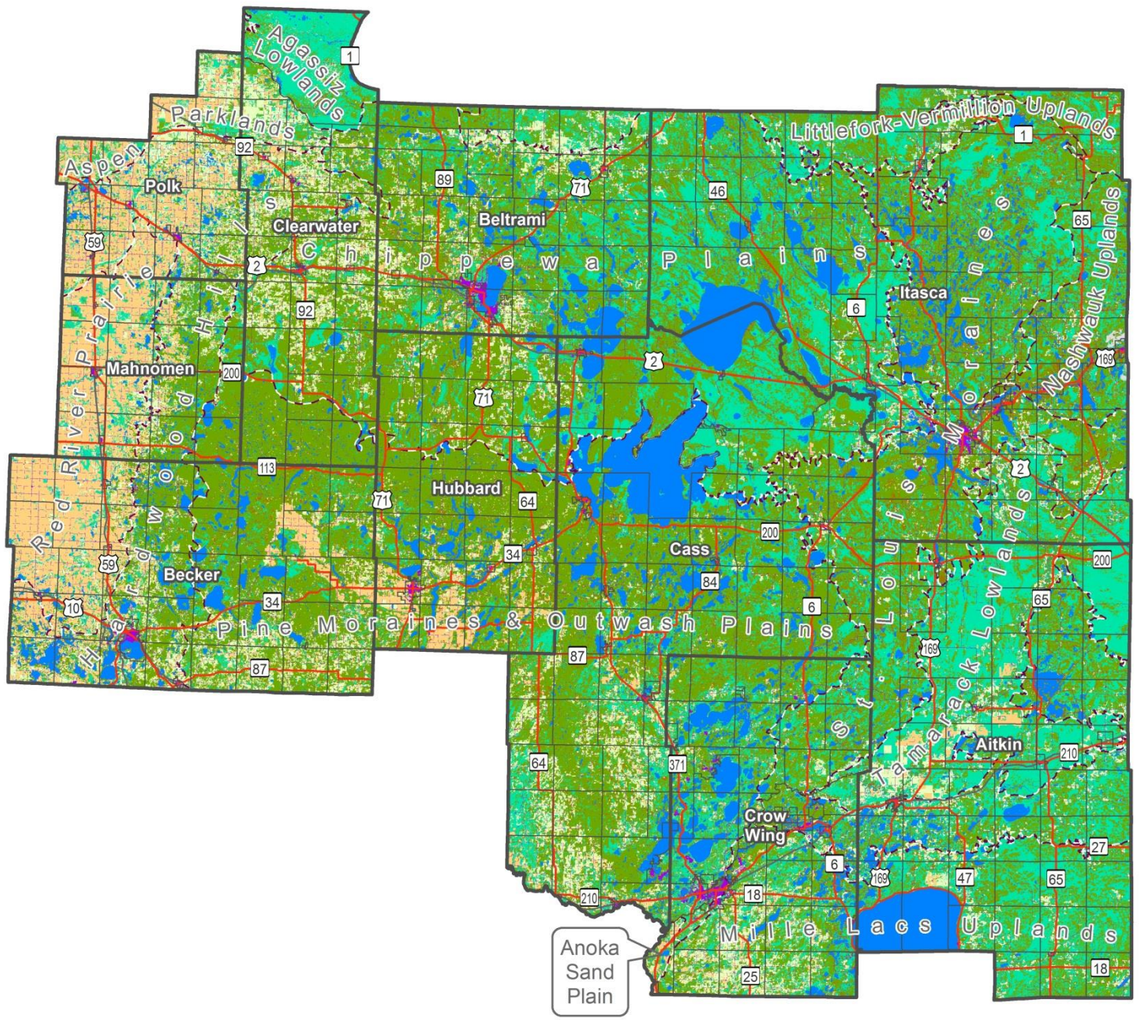
Barren	4,618	0.1	-12,990	-0.1	9,151	0.1	4,533	0.0	10,250	0.1	1,099	0.0
Developed	277,748	3.1	236,830	2.6	280,133	3.1	2,384	0.0	334,065	3.7	53,932	0.6
Unclassified	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total North Central Region	**9,069,715**	**100.0**			**9,069,715**	**100.0**			**9,069,715**	**100.0**		

Land Cover (2006) - Reclassified

North Central Landscape Region



NLCD 2006 - Reclassified

- Upland Forest
- Upland Shrub
- Upland Grass
- Lowland Vegetation
- Agriculture
- Open Water
- Barren
- Developed

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- ECS Subsections

0 5 10 20 30 40 Miles

Sources: National Land Cover Dataset - MRLC; Other Features - MN Geospatial Commons

N

Minnesota Forest Resources Council

Land Cover (2006) - Reclassified Table

	Marschner's Presettlement (1895)					GAP Land Cover (1992)			
Comparative Class	**Area (Acres)**	**% of Total**	**NA**	**NA**		**Area (Acres)**	**% of Total**	**Change 1895 to 1992 (Acres)**	**Change 1895 to 1992 (% Cover)**
Upland Forest	4,463,406	49.2	-	-		3,781,916	41.7	-681,490	-7.5
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Lowland Vegetation	2,365,973	26.1	-	-		2,015,059	22.2	-350,914	-3.9
Agriculture	0	0.0	-	-		1,480,323	16.3	1,480,323	16.3
Open Water	699,619	7.7	-	-		877,344	9.7	177,725	2.0
Barren	0	0.0	-	-		17,608	0.2	17,608	0.2
Developed	0	0.0	-	-		40,918	0.5	40,918	0.5
Unclassified	342	0.0	-	-		0	0.0	-342	0.0
Total North Central Region	**9,069,715**	**100.0**				**9,069,715**	**100.0**		

	NLCD (2001)				NLCD (2006)				NLCD (2011)			
Comparative Class	**Area (Acres)**	**% of Total**	**Change 1992 to 2001 (Acres)**	**Change 1992 to 2001 (% Cover)**	**Area (Acres)**	**% of Total**	**Change 2001 to 2006 (Acres)**	**Change 2001 to 2006 (% Cover)**	**Area (Acres)**	**% of Total**	**Change 2006 to 2011 (Acres)**	**Change 2006 to 2011 (% Cover)**
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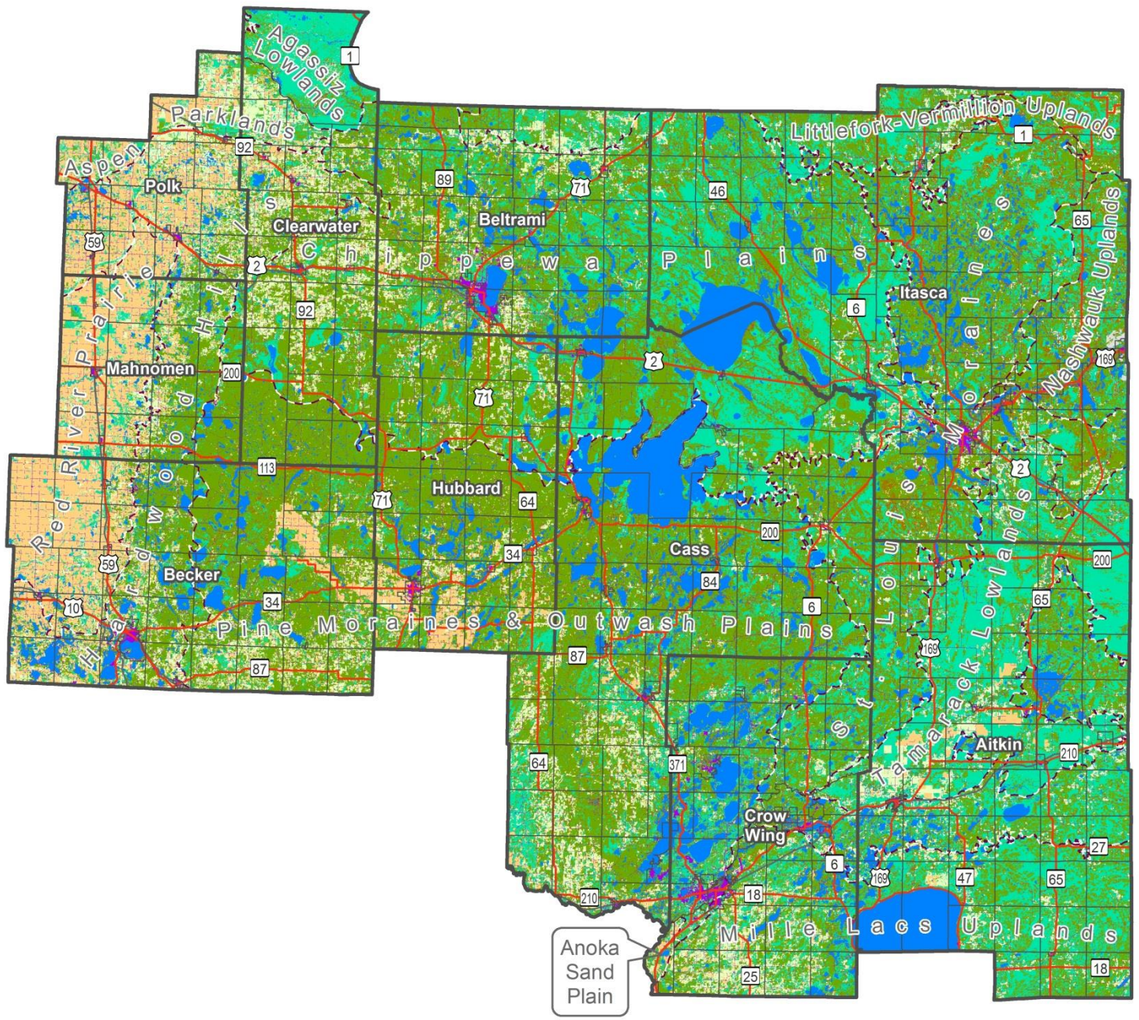
Open Water	904,191	10.0	26,847	0.3	902,924	10.0	-1,267	0.0	901,124	9.9	-1,801	0.0
Barren	4,618	0.1	-12,990	-0.1	9,151	0.1	4,533	0.0	10,250	0.1	1,099	0.0
Developed	277,748	3.1	236,830	2.6	280,133	3.1	2,384	0.0	334,065	3.7	53,932	0.6
Unclassified	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total North Central Region	**9,069,715**	**100.0**			**9,069,715**	**100.0**			**9,069,715**	**100.0**		

Land Cover (2011) - Reclassified

North Central Landscape Region



NLCD 2011 - Reclassified

- Upland Forest
- Upland Shrub
- Upland Grass
- Lowland Vegetation
- Agriculture
- Open Water
- Barren
- Developed

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- ECS Subsections

0 5 10 20 30 40 Miles

Sources: National Land Cover Dataset - MRLC; Other Features - MN Geospatial Commons

N

Minnesota Forest Resources Council

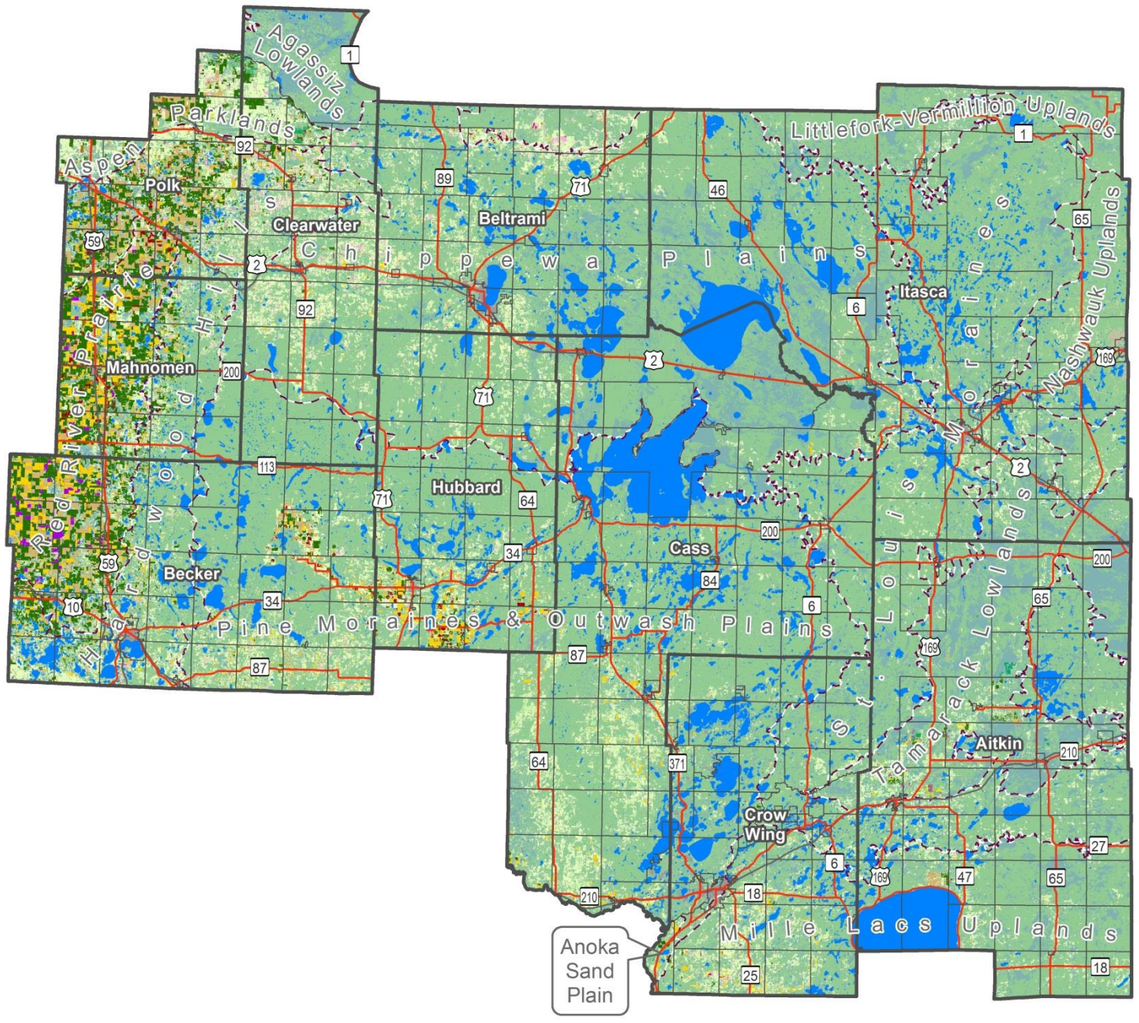
Land Cover (2011) - Reclassified Table

	Marschner's Presettlement (1895)					GAP Land Cover (1992)			
Comparative Class	**Area (Acres)**	**% of Total**	**NA**	**NA**		**Area (Acres)**	**% of Total**	**Change 1895 to 1992 (Acres)**	**Change 1895 to 1992 (% Cover)**
Upland Forest	4,463,406	49.2	-	-		3,781,916	41.7	-681,490	-7.5
Upland Shrub	168,778	1.9	-	-		295,996	3.3	127,217	1.4
Upland Grass	1,371,596	15.1	-	-		560,550	6.2	-811,047	-8.9
Lowland Vegetation	2,365,973	26.1	-	-		2,015,059	22.2	-350,914	-3.9
Agriculture	0	0.0	-	-		1,480,323	16.3	1,480,323	16.3
Open Water	699,619	7.7	-	-		877,344	9.7	177,725	2.0
Barren	0	0.0	-	-		17,608	0.2	17,608	0.2
Developed	0	0.0	-	-		40,918	0.5	40,918	0.5
Unclassified	342	0.0	-	-		0	0.0	-342	0.0
Total North Central Region	**9,069,715**	**100.0**				**9,069,715**	**100.0**		

	NLCD (2001)				NLCD (2006)				NLCD (2011)			
Comparative Class	**Area (Acres)**	**% of Total**	**Change 1992 to 2001 (Acres)**	**Change 1992 to 2001 (% Cover)**	**Area (Acres)**	**% of Total**	**Change 2001 to 2006 (Acres)**	**Change 2001 to 2006 (% Cover)**	**Area (Acres)**	**% of Total**	**Change 2006 to 2011 (Acres)**	**Change 2006 to 2011 (% Cover)**
Upland Forest	3,850,912	42.5	68,996	0.8	3,809,896	42.0	-41,016	-0.5	3,735,130	41.2	-74,766	-0.8
Upland Shrub	286,327	3.2	-9,669	-0.1	295,566	3.3	9,239	0.1	324,015	3.6	28,449	0.3
Upland Grass	841,384	9.3	280,834	3.1	850,947	9.4	9,563	0.1	869,579	9.6	18,632	0.2
Lowland Vegetation	2,237,143	24.7	222,083	2.4	2,253,660	24.8	16,518	0.2	2,228,779	24.6	-24,881	-0.3
Agriculture	667,392	7.4	-812,932	-9.0	667,437	7.4	46	0.0	666,773	7.4	-664	0.0
Open Water	904,191	10.0	26,847	0.3	902,924	10.0	-1,267	0.0	901,124	9.9	-1,801	0.0
Barren	4,618	0.1	-12,990	-0.1	9,151	0.1	4,533	0.0	10,250	0.1	1,099	0.0
Developed	277,748	3.1	236,830	2.6	280,133	3.1	2,384	0.0	334,065	3.7	53,932	0.6
Unclassified	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total North Central Region	**9,069,715**	**100.0**			**9,069,715**	**100.0**			**9,069,715**	**100.0**		

Cropland (2013)

North Central Landscape Region



Cropland Data Layer 2013

- Alfalfa
- Barley
- Barren
- Camelina
- Canola
- Carrots
- Clover/Wildflowers
- Corn
- Deciduous Forest
- Developed
- Dry Beans
- Evergreen Forest
- Fallow/Idle Cropland
- Flaxseed
- Grassland Herbaceous
- Herbaceous Wetlands
- Herbs
- Millet
- Mixed Forest
- Oats
- Open Water
- Other Crops
- Other Hay
- Pasture/Grass
- Pasture/Hay
- Peas
- Potatoes
- Rye
- Shrubland
- Sod/Grass Seed
- Sorghum
- Soybeans
- Spring Wheat
- Sugarbeets
- Sunflower
- Sweet Corn
- Triticale
- Vetch
- Wetlands
- Winter Wheat
- Woodland
- Woody Wetlands

0 5 10 20 30 40 Miles

Sources: Cropland Data Layer 2013 - USDA; Other Features - MN Geospatial Commons

N

Minnesota Forest Resources Council

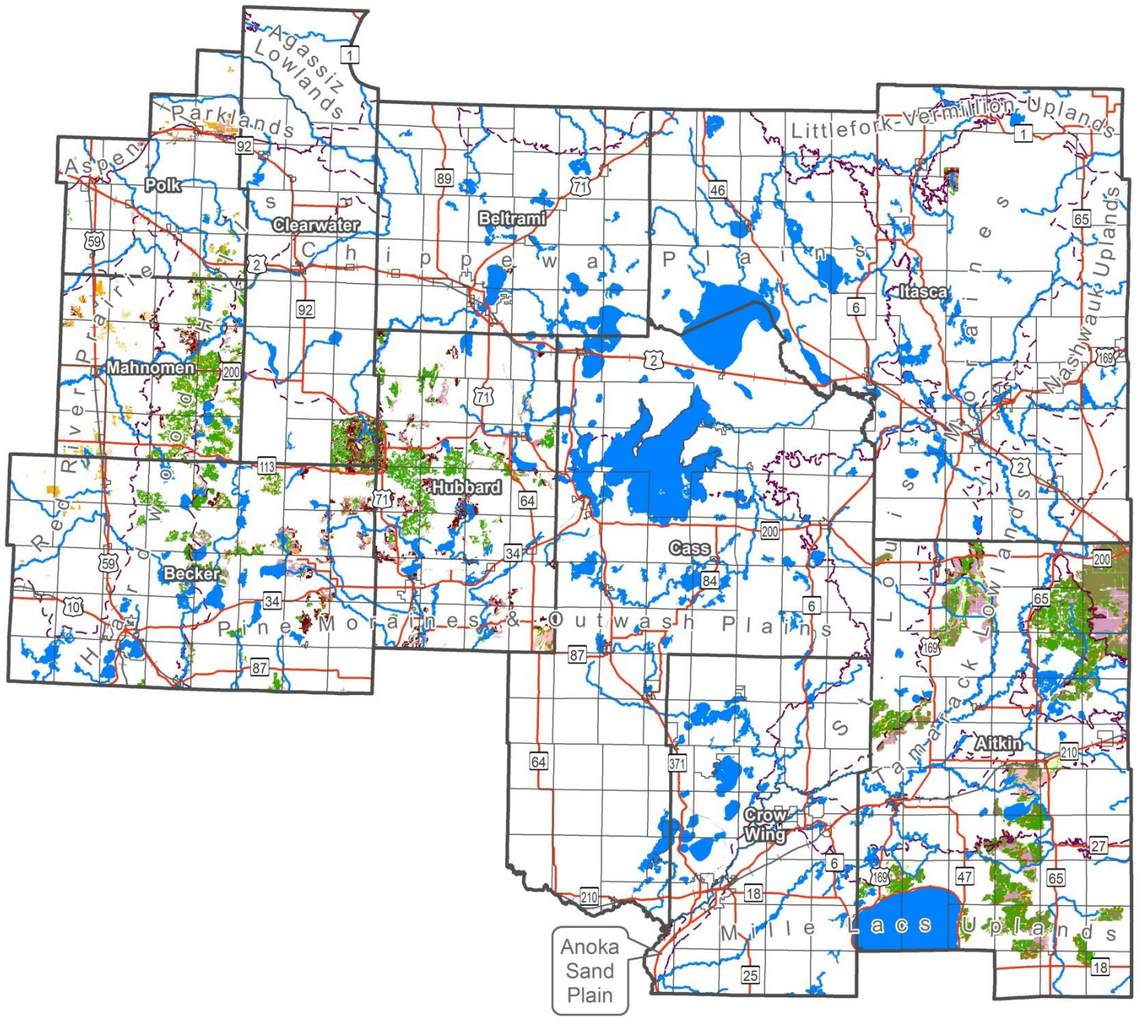
Cropland (2013) Table

Cropland Type	Acres	% of Region
Alfalfa	45,512	0.5
Barley	516	0.0
Barren	5,464	0.1
Camelina	22	0.0
Canola	566	0.0
Carrots	1	0.0
Clover/Wildflowers	272	0.0
Corn	115,770	1.3
Deciduous Forest	4,581,217	50.5
Developed	240,214	2.6
Dry Beans	11,359	0.1
Evergreen Forest	556,389	6.1
Fallow/Idle Cropland	2,279	0.0
Flaxseed	32	0.0
Grassland Herbaceous	50,648	0.6
Herbaceous Wetlands	662,992	7.3
Herbs	151	0.0
Millet	73	0.0
Mixed Forest	301	0.0
Oats	6,595	0.1
Open Water	867,654	9.6

Cropland Type	Acres	% of Region
Other Crops	2,978	0.0
Other Hay	31,807	0.4
Pasture/Grass	204,663	2.3
Pasture/Hay	661,209	7.3
Peas	222	0.0
Potatoes	2,450	0.0
Rye	515	0.0
Shrubland	52,465	0.6
Sod/Grass Seed	95	0.0
Sorghum	20	0.0
Soybeans	256,182	2.8
Spring Wheat	118,916	1.3
Sugarbeets	9,821	0.1
Sunflower	2,217	0.0
Sweet Corn	20	0.0
Triticale	21	0.0
Vetch	4	0.0
Wetlands	668	0.0
Winter Wheat	4,489	0.0
Woodland	1,835	0.0
Woody Wetlands	571,120	6.3
Total North Central Region	**9,069,743**	**100.0**

DNR Mapped Native Plant Communities

North Central Landscape Region



DNR Mapped Native Plant Communities

- Acid Peatland System
- Complex community
- Fire-Dependent Forest/Woodland System
- Floodplain Forest System
- Forested Rich Peatland System
- Lakeshore System
- Marsh System
- Mesic Hardwood Forest System
- Open Rich Peatland System
- River Shore System
- Upland Prairie System
- Wet Forest System
- Wet Meadow/Carr System
- Wetland Prairie System

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections

Note: DNR Mapped Native Plant Communities include data from Minnesota Biological Survey (MBS), Forestry native plant community data, Wildlife Management Areas land cover data, disturbed lands that intersect MBS Sites of Biodiversity Significance, non-native land cover for MNDNR Parks and Trails administered lands, land cover on all lands within statutory boundaries of MN State Parks, State Recreation Areas and State Waysides.

Miles
0 5 10 20 30 40

Sources: DNR Mapped Native Plant Communities - MN Geospatial Commons; Other Features - MN Geospatial Commons

N

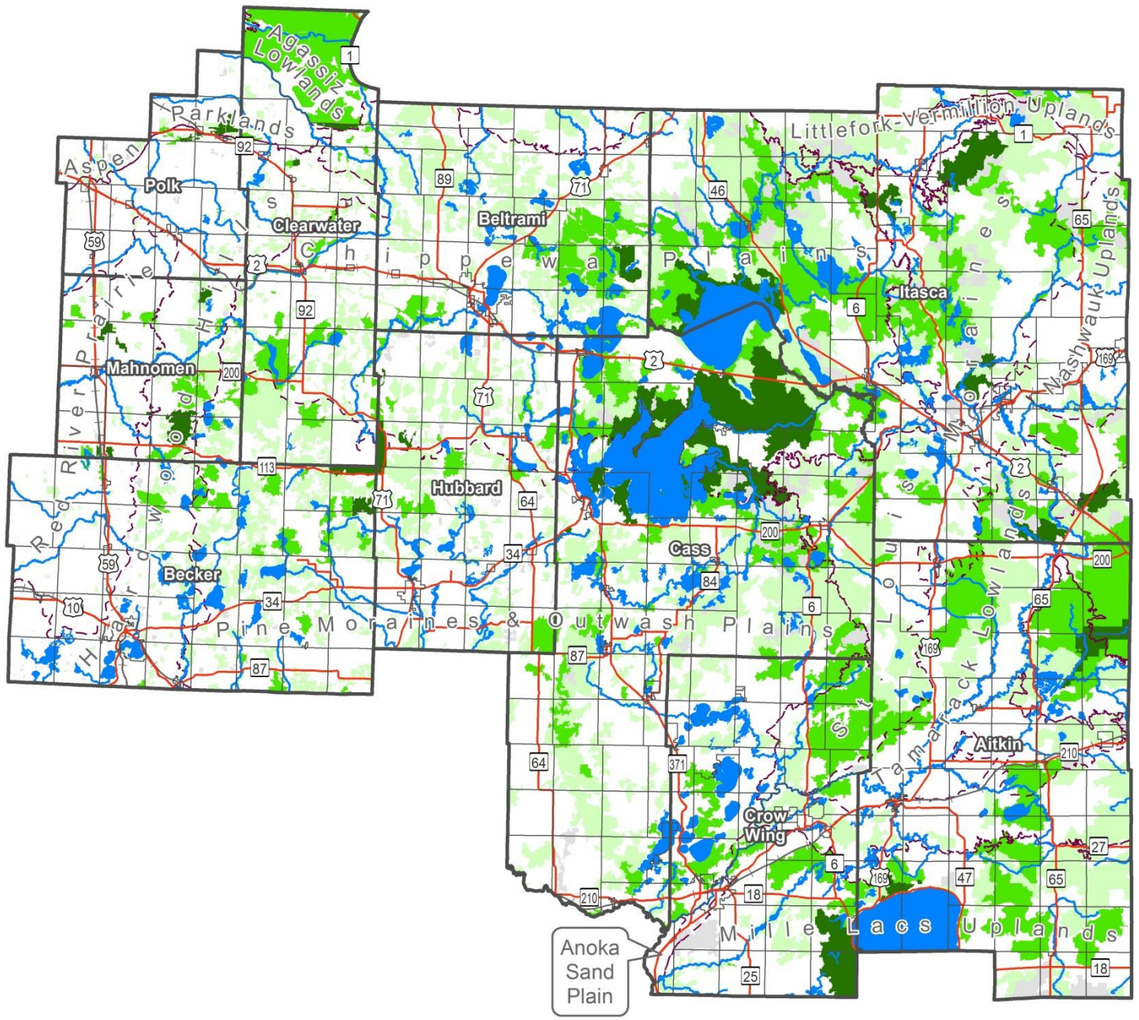
Minnesota Forest Resources Council

DNR Mapped Native Plant Communities Table

DNR Mapped Native Plant Communities	Acres	% of Region
Acid Peatland System	57,466	0.6
Complex community	26,131	0.3
Fire-Dependent Forest/Woodland System	49,811	0.5
Floodplain Forest System	2,982	0.0
Forested Rich Peatland System	62,627	0.7
Lakeshore System	17	0.0
Marsh System	3,798	0.0
Mesic Hardwood Forest System	199,453	2.2
Open Rich Peatland System	34,740	0.4
River Shore System	15	0.0
Upland Prairie System	6,754	0.1
Wet Forest System	35,246	0.4
Wet Meadow/Carr System	47,494	0.5
Wetland Prairie System	654	0.0
Total DNR Mapped Native Plant Communities	**527,188**	**5.8**
Total North Central Region	**9,069,715**	

MBS Biodiversity Significance

North Central Landscape Region



MBS Biodiversity Significance

- Outstanding
- High
- Moderate
- Below

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections

0 5 10 20 30 40 Miles

Sources: MBS Biodiversity Significance - MN Geospatial Commons; Other Features - MN Geospatial Commons

N

Minnesota Forest Resources Council

Note: MBS Biodiversity Significance Sites are preliminary for the Counties of Beltrami, Cass, Clearwater, Crow Wing, and Itasca.

Biodiversity Significance Tables

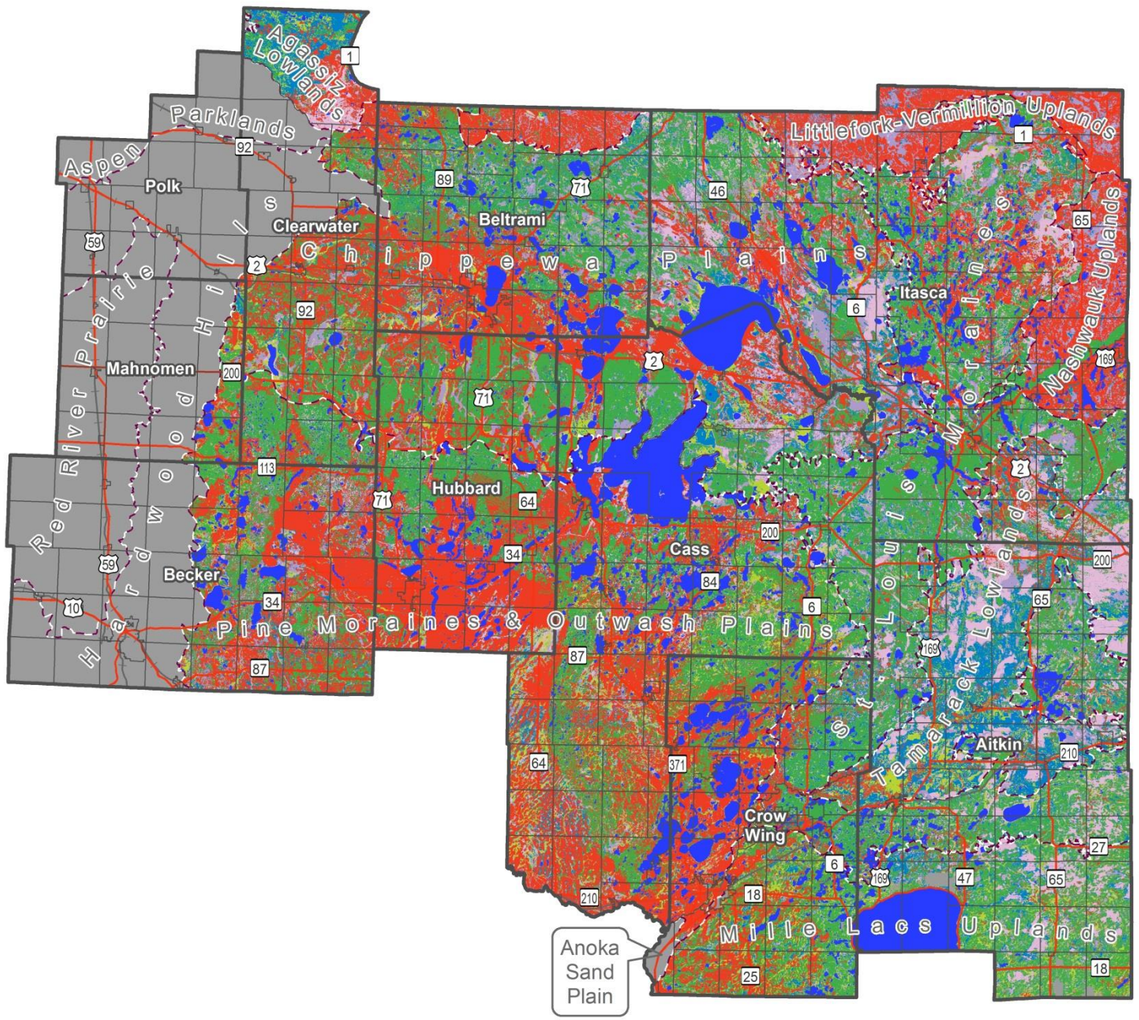
Minnesota Biological Survey (MBS) Status (December, 2015)	Acres	% of Region
Completed (Aitkin, Becker, Hubbard, Mahnomen, Polk)	3,560,651	39.3
Preliminary (Beltrami, Cass, Clearwater, Crow Wing, Itasca)	5,509,063	60.7
Total North Central Region	**9,069,715**	**100.0**

Biodiversity Significance	Acres	% of Completed Area
Outstanding	186,574	5.2
High	451,913	12.7
Moderate	652,536	18.3
Below	93,987	2.6
Total Biodiversity Significance in Completed MBS Area	**1,385,011**	**38.9**
Total Completed MBS Area	**3,560,651**	**-**

Preliminary Biodiversity Significance	Acres	% of Preliminary Area
Outstanding	255,210	4.6
High	806,677	14.6
Moderate	1,292,210	23.5
Below	187,420	3.4
Total Biodiversity Significance in Preliminary MBS Area	**2,541,516**	**46.1**
Total Preliminary MBS Area	**5,509,063**	**-**

Potential Native Plant Communities

North Central Landscape Region



Potential Native Plant Communities

- Acid Peatland
- Fire Dependent Forest
- Forested Rich Peatland
- Mesic Hardwood
- Open Rich Peatland
- Water
- Wet Forest
- Wet Meadow/Carr
- Not classified (not in LMF)

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- ECS Subsections

0 5 10 20 30 40 Miles

Sources: Potential Native Plant Communities - NRRI; Other Features - MN Geospatial Commons

N

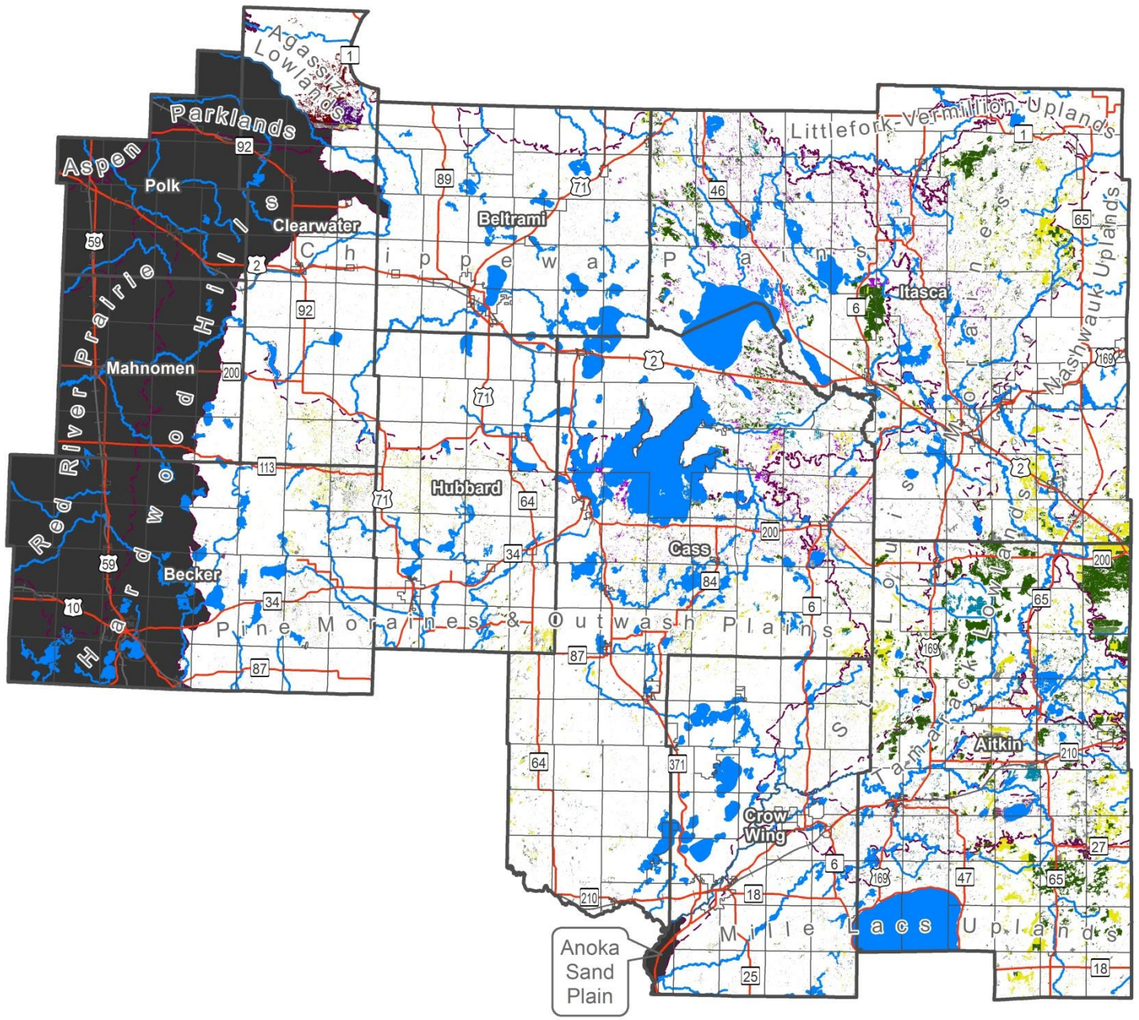
Minnesota Forest Resources Council

Potential Native Plant Communities Table

Potential NPC Systems	Acres	% of Region
Acid Peatland	497,070	5.5
Fire-Dependent Forest/Woodland	2,217,379	24.4
Forested Rich Peatland	657,527	7.2
Mesic Hardwood Forest	2,271,643	25.0
Open Rich Peatland	27,483	0.3
Water	806,568	8.9
Wet Forest	722,300	8.0
Wet Meadow/Carr	561,178	6.2
Not classified (not in LMF)	1,308,565	14.4
Total North Central Region	**9,069,715**	**100.0**

Management for Acid Peatland

North Central Landscape Region



Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections
- Area Not Modeled

0 5 10 20 30 40 Miles

Sources: Potential Native Plant Communities - NRRI; GAP Land Ownership - MN Geospatial Commons; Other Features - MN Geospatial Commons

N

Minnesota Forest Resources Council

GAP Land Management

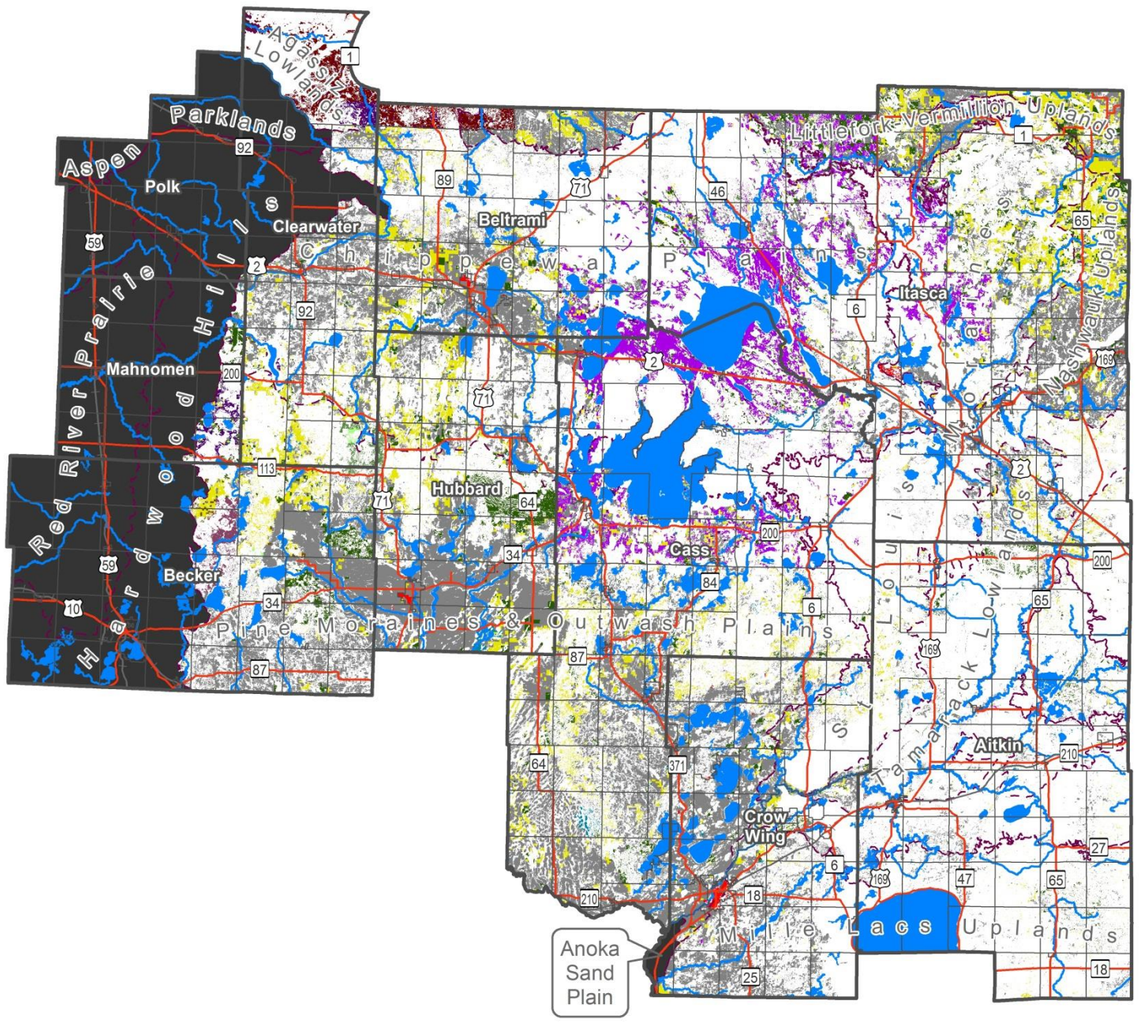
- Federal
- Army Corps of Engineers
- Bureau of Indian Affairs
- Bureau of Land Management
- Farmers Home Administration
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- Unknown
- State
- Department of Military Affairs
- Department of Transportation
- Division of Ecological Services
- Division of Fish and Wildlife
- Division of Forestry
- Division of Lands and Minerals
- Division of Parks and Recreation
- Division of Trails and Waterways
- Division of Waters
- Minnesota DNR
- State of Minnesota
- County
- County
- Other Public
- Other Public, Municipal
- Other Public, School District
- Other Public, University
- Private Conservancy
- Private Conservancy
- The Nature Conservancy
- Tribal
- Leech Lake Band
- Mille Lacs Band
- Minnesota Chippewa Indians
- Red Lake Tribe
- White Earth Tribe
- White Earth Reservation
- Private
- Private

Management for Acid Peatland Table

Management Type for Acid Peatland	Land Management for Acid Peatland	Acres	% of Total
Federal	Army Corps of Engineers	134	0.0
	Bureau of Indian Affairs	6,487	1.3
	Bureau of Land Management	163	0.0
	National Park Service	36	0.0
	U.S. Forest Service	3,157	0.6
	U.S. Park Service	40,337	8.1
	Unknown	304	0.1
Total Federal		**50,618**	**10.2**
State	Department of Military Affairs	1	0.0
	Department of Transportation	8	0.0
	Division of Ecological Services	220	0.0
	Division of Fish and Wildlife	16,480	3.3
	Division of Forestry	174,145	35.0
	Division of Lands and Minerals	1	0.0
	Division of Parks and Recreation	4,607	0.9
	Division of Trails and Waterways	34	0.0
	Division of Waters	18	0.0
	Minnesota DNR	93	0.0
	State of Minnesota	329	0.1
Total State		**195,936**	**39.4**
County	Aitkin County	46,009	9.3
	Becker County	2,609	0.5
	Beltrami County	1,460	0.3
	Cass County	14,300	2.9
	Clearwater County	2,557	0.5
	Crow Wing County	3,532	0.7
	Hubbard County	4,794	1.0
	Itasca County	38,052	7.7
	Mahnomen County	17	0.0
Total County		**113,329**	**22.8**
Other Public	Municipal	465	0.1
	School District	31	0.0
	University	33	0.0
Total Other Public		**530**	**0.1**
Private Conservancy	Private Conservancy	181	0.0
	The Nature Conservancy	4	0.0
Total Private Conservancy		**185**	**0.0**
Total Public and Private Conservancy		**360,598**	**72.5**
Tribal	Leech Lake Band	427	0.1
	Mille Lacs Band	58	0.0
	Minnesota Chippewa Indians	43	0.0
	Red Lake Tribe	9,937	2.0
	White Earth Reservation	61	0.0
	White Earth Tribe	302	0.1
Total Tribal		**10,829**	**2.2**
Total Private		**125,644**	**25.3**
Total Acid Peatland Area in Laurentian Mixed Forest in NC Landscape		**497,070**	**100.0**

Management for Fire-Dependent Forest/Woodland

North Central Landscape Region



Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections
- Area Not Modeled

0 5 10 20 30 40 Miles

Sources: Potential Native Plant Communities - NRRI; GAP Land Ownership - MN Geospatial Commons; Other Features - MN Geospatial Commons

N

Minnesota Forest Resources Council

GAP Land Management

Federal
- Army Corps of Engineers
- Bureau of Indian Affairs
- Bureau of Land Management
- Farmers Home Administration
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- Unknown

State
- Department of Military Affairs
- Department of Transportation
- Division of Ecological Services
- Division of Fish and Wildlife
- Division of Forestry
- Division of Lands and Minerals
- Division of Parks and Recreation
- Division of Trails and Waterways
- Division of Waters
- Minnesota DNR
- State of Minnesota

County
- County

Other Public
- Other Public, Municipal
- Other Public, School District
- Other Public, University

Private Conservancy
- Private Conservancy
- The Nature Conservancy

Tribal
- Leech Lake Band
- Mille Lacs Band
- Minnesota Chippewa Indians
- Red Lake Tribe
- White Earth Tribe
- White Earth Reservation

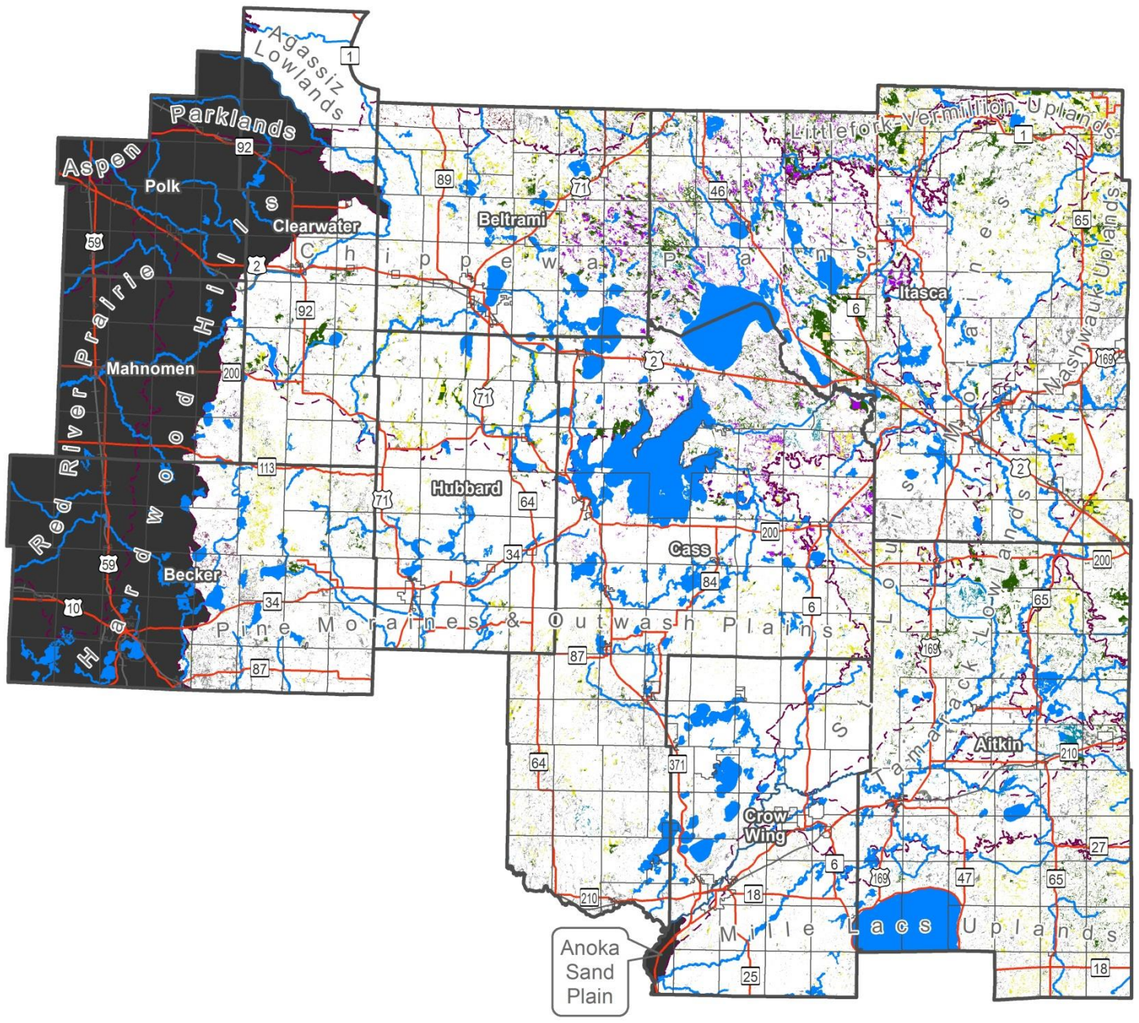
Private
- Private

Management for Fire-Dependent Forest/Woodland Table

Management Type for Fire-Dependent Forest/Woodland	Land Management for Fire-Dependent Forest/Woodland	Acres	% of Total
Federal	Army Corps of Engineers	954	0.0
	Bureau of Indian Affairs	20,531	0.9
	Bureau of Land Management	883	0.0
	National Park Service	114	0.0
	U.S. Forest Service	10,787	0.5
	U.S. Park Service	194,234	8.8
	Unknown	1,467	0.1
Total Federal		**228,970**	**10.3**
State	Department of Military Affairs	33	0.0
	Department of Transportation	46	0.0
	Division of Ecological Services	1,208	0.1
	Division of Fish and Wildlife	12,180	0.5
	Division of Forestry	173,379	7.8
	Division of Lands and Minerals	763	0.0
	Division of Parks and Recreation	12,818	0.6
	Division of Trails and Waterways	89	0.0
	Division of Waters	60	0.0
	Minnesota DNR	57	0.0
	State of Minnesota	369	0.0
Total State		**201,004**	**9.1**
County	Aitkin County	8,669	0.4
	Becker County	21,083	1.0
	Beltrami County	42,585	1.9
	Cass County	53,282	2.4
	Clearwater County	23,924	1.1
	Crow Wing County	17,409	0.8
	Hubbard County	37,927	1.7
	Itasca County	109,869	5.0
	Mahnomen County	436	0.0
Total County		**315,182**	**14.2**
Other Public	Municipal	6,691	0.3
	School District	335	0.0
	University	400	0.0
Total Other Public		**7,426**	**0.3**
Private Conservancy	Private Conservancy	1	0.0
	The Nature Conservancy	104	0.0
Total Private Conservancy		**105**	**0.0**
Total Public and Private Conservancy		**752,687**	**33.9**
Tribal	Leech Lake Band	3,359	0.2
	Mille Lacs Band	37	0.0
	Minnesota Chippewa Indians	564	0.0
	Red Lake Tribe	42,699	1.9
	White Earth Reservation	292	0.0
	White Earth Tribe	3,138	0.1
Total Tribal		**50,089**	**2.3**
Total Private		**1,414,603**	**63.8**
Total Fire-Dependent Forest/Woodland Area in Laurentian Mixed Forest in NC Landscape		**2,217,379**	**100.0**

Management for Forested Rich Peatland

North Central Landscape Region



Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections
- Area Not Modeled

0 5 10 20 30 40 Miles

Sources: Potential Native Plant Communities - NRRI; GAP Land Ownership - MN Geospatial Commons; Other Features - MN Geospatial Commons

Minnesota Forest Resources Council

GAP Land Management

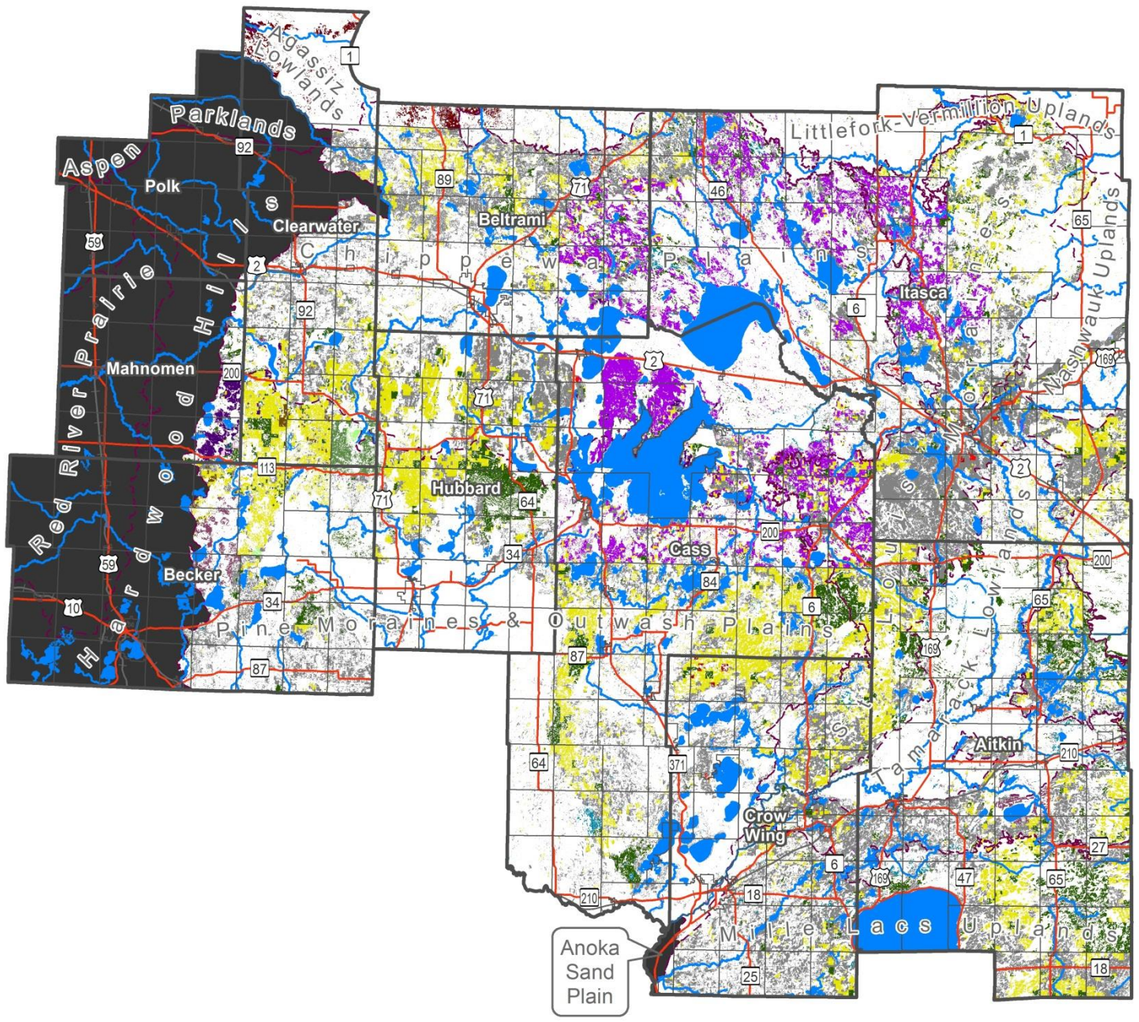
- Federal
- Army Corps of Engineers
- Bureau of Indian Affairs
- Bureau of Land Management
- Farmers Home Administration
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- Unknown
- State
- Department of Military Affairs
- Department of Transportation
- Division of Ecological Services
- Division of Fish and Wildlife
- Division of Forestry
- Division of Lands and Minerals
- Division of Parks and Recreation
- Division of Trails and Waterways
- Division of Waters
- Minnesota DNR
- State of Minnesota
- County
- County
- Other Public
- Other Public, Municipal
- Other Public, School District
- Other Public, University
- Private Conservancy
- Private Conservancy
- The Nature Conservancy
- Tribal
- Leech Lake Band
- Mille Lacs Band
- Minnesota Chippewa Indians
- Red Lake Tribe
- White Earth Tribe
- White Earth Reservation
- Private
- Private

Management for Forested Rich Peatland Table

Management Type for Forested Rich Peatland	Land Management for Forested Rich Peatland	Acres	% of Total
Federal	Army Corps of Engineers	111	0.0
	Bureau of Indian Affairs	2,767	0.4
	Bureau of Land Management	204	0.0
	National Park Service	32	0.0
	U.S. Forest Service	4,127	0.6
	U.S. Park Service	71,540	10.9
	Unknown	594	0.1
Total Federal		**79,373**	**12.1**
State	Department of Military Affairs	2	0.0
	Department of Transportation	32	0.0
	Division of Ecological Services	236	0.0
	Division of Fish and Wildlife	15,247	2.3
	Division of Forestry	186,622	28.4
	Division of Lands and Minerals	26	0.0
	Division of Parks and Recreation	3,429	0.5
	Division of Trails and Waterways	10	0.0
	Division of Waters	8	0.0
	Minnesota DNR	119	0.0
	State of Minnesota	328	0.0
Total State		**206,059**	**31.3**
County	Aitkin County	22,005	3.3
	Becker County	5,519	0.8
	Beltrami County	17,758	2.7
	Cass County	19,518	3.0
	Clearwater County	5,282	0.8
	Crow Wing County	2,851	0.4
	Hubbard County	10,889	1.7
	Itasca County	51,967	7.9
	Mahnomen County	94	0.0
Total County		**135,883**	**20.7**
Other Public	Municipal	723	0.1
	School District	60	0.0
	University	75	0.0
Total Other Public		**858**	**0.1**
Private Conservancy	Private Conservancy	243	0.0
	The Nature Conservancy	18	0.0
Total Private Conservancy		**261**	**0.0**
Total Public and Private Conservancy		**422,435**	**64.2**
Tribal	Leech Lake Band	1,555	0.2
	Mille Lacs Band	56	0.0
	Minnesota Chippewa Indians	94	0.0
	Red Lake Tribe	1,952	0.3
	White Earth Reservation	60	0.0
	White Earth Tribe	247	0.0
Total Tribal		**3,964**	**0.6**
Total Private		**231,128**	**35.2**
Total Forested Rich Peatland Area in Laurentian Mixed Forest in NC Landscape		**657,527**	**100.0**

Management for Mesic Hardwood Forest

North Central Landscape Region



Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections
- Area Not Modeled

0 5 10 20 30 40 Miles

Sources: Potential Native Plant Communities - NRRI; GAP Land Ownership - MN Geospatial Commons; Other Features - MN Geospatial Commons

N

Minnesota Forest Resources Council

GAP Land Management

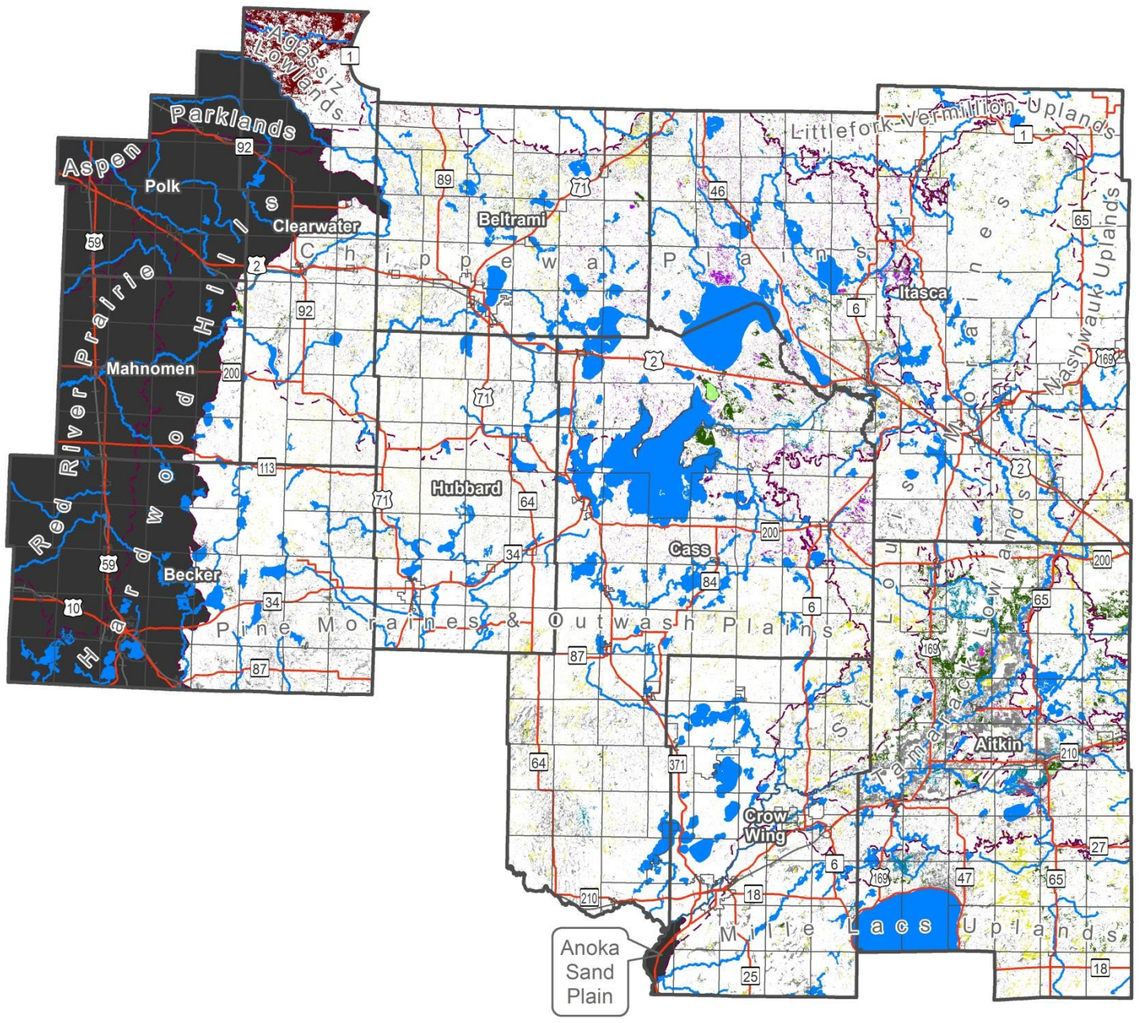
- Federal
- Army Corps of Engineers
- Bureau of Indian Affairs
- Bureau of Land Management
- Farmers Home Administration
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- Unknown
- State
- Department of Military Affairs
- Department of Transportation
- Division of Ecological Services
- Division of Fish and Wildlife
- Division of Forestry
- Division of Lands and Minerals
- Division of Parks and Recreation
- Division of Trails and Waterways
- Division of Waters
- Minnesota DNR
- State of Minnesota
- County
- County
- Other Public
- Other Public, Municipal
- Other Public, School District
- Other Public, University
- Private Conservancy
- Private Conservancy
- The Nature Conservancy
- Tribal
- Leech Lake Band
- Mille Lacs Band
- Minnesota Chippewa Indians
- Red Lake Tribe
- White Earth Tribe
- White Earth Reservation
- Private
- Private

Management for Mesic Hardwood Forest Table

Management Type for Mesic Hardwood Forest	Land Management for Mesic Hardwood Forest	Acres	% of Total
Federal	Army Corps of Engineers	1,106	0.0
	Bureau of Indian Affairs	20,245	0.9
	Bureau of Land Management	1,056	0.0
	National Park Service	296	0.0
	U.S. Forest Service	13,706	0.6
	U.S. Park Service	244,699	10.8
	Unknown	2,939	0.1
Total Federal		**284,047**	**12.5**
State	Department of Military Affairs	0	0.0
	Department of Transportation	227	0.0
	Division of Ecological Services	1,663	0.1
	Division of Fish and Wildlife	17,800	0.8
	Division of Forestry	258,591	11.4
	Division of Lands and Minerals	313	0.0
	Division of Parks and Recreation	21,098	0.9
	Division of Trails and Waterways	68	0.0
	Division of Waters	98	0.0
	Minnesota DNR	29	0.0
	State of Minnesota	818	0.0
Total State		**300,705**	**13.2**
County	Aitkin County	94,583	4.2
	Becker County	23,429	1.0
	Beltrami County	41,689	1.8
	Cass County	106,939	4.7
	Clearwater County	51,277	2.3
	Crow Wing County	51,670	2.3
	Hubbard County	69,170	3.0
	Itasca County	67,342	3.0
	Mahnomen County	739	0.0
Total County		**506,838**	**22.3**
Other Public	Municipal	2,931	0.1
	School District	308	0.0
	University	1,266	0.1
Total Other Public		**4,505**	**0.2**
Private Conservancy	Private Conservancy	81	0.0
	The Nature Conservancy	2	0.0
Total Private Conservancy		**84**	**0.0**
Total Public and Private Conservancy		**1,096,178**	**48.3**
Tribal	Leech Lake Band	2,282	0.1
	Mille Lacs Band	555	0.0
	Minnesota Chippewa Indians	492	0.0
	Red Lake Tribe	16,178	0.7
	White Earth Reservation	60	0.0
	White Earth Tribe	4,689	0.2
Total Tribal		**24,255**	**1.1**
Total Private		**1,151,210**	**50.7**
Total Mesic Hardwood Forest Area in Laurentian Mixed Forest in NC Landscape		**2,271,643**	**100.0**

Management for Wet Forest

North Central Landscape Region



Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections
- Area Not Modeled

0 5 10 20 30 40 Miles

Sources: Potential Native Plant Communities - NRRI; GAP Land Ownership - MN Geospatial Commons; Other Features - MN Geospatial Commons

Minnesota Forest Resources Council

GAP Land Management

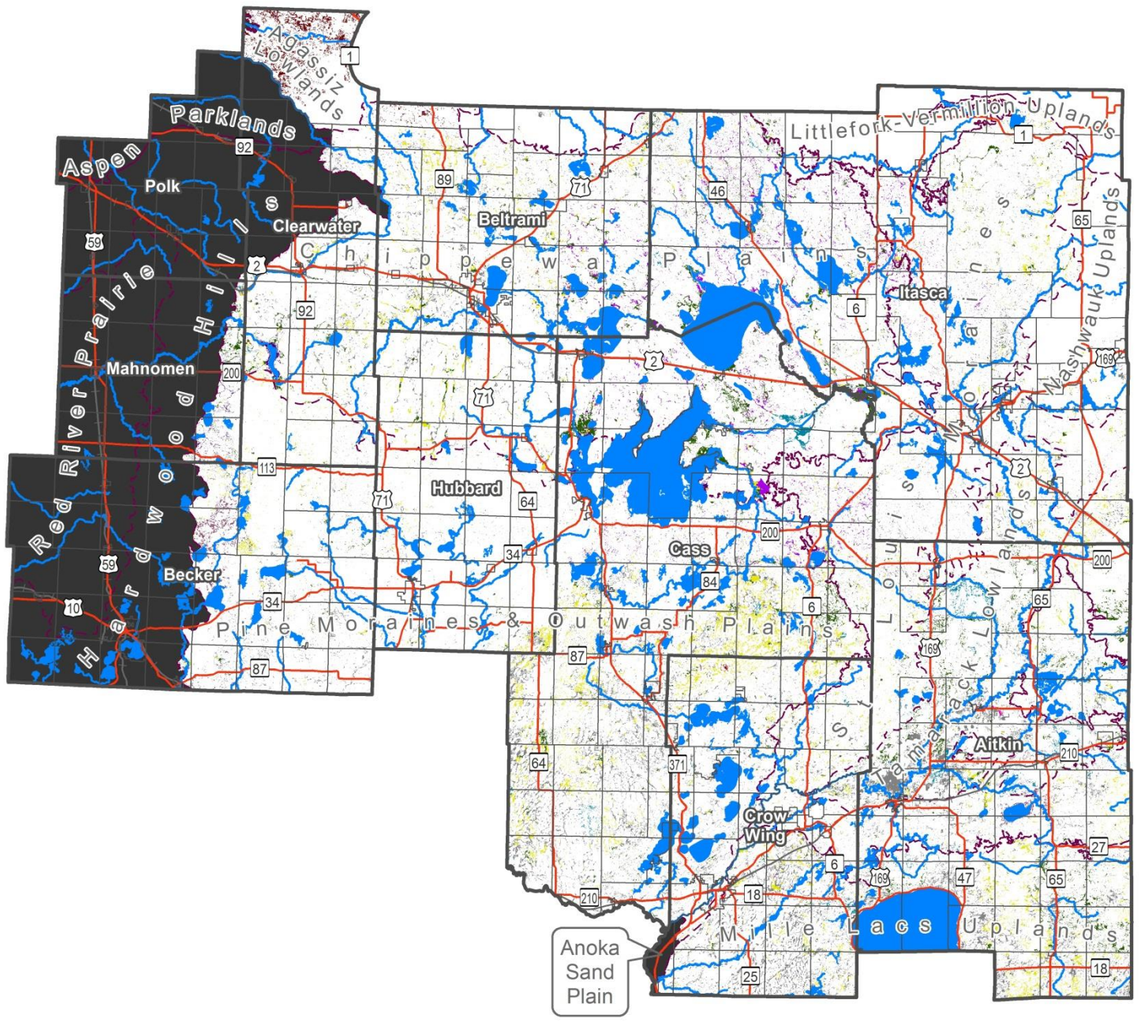
- Federal
- Army Corps of Engineers
- Bureau of Indian Affairs
- Bureau of Land Management
- Farmers Home Administration
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- Unknown
- State
- Department of Military Affairs
- Department of Transportation
- Division of Ecological Services
- Division of Fish and Wildlife
- Division of Forestry
- Division of Lands and Minerals
- Division of Parks and Recreation
- Division of Trails and Waterways
- Division of Waters
- Minnesota DNR
- State of Minnesota
- County
- County
- Other Public
- Other Public, Municipal
- Other Public, School District
- Other Public, University
- Private Conservancy
- Private Conservancy
- The Nature Conservancy
- Tribal
- Leech Lake Band
- Mille Lacs Band
- Minnesota Chippewa Indians
- Red Lake Tribe
- White Earth Tribe
- White Earth Reservation
- Private
- Private

Management for Wet Forest Table

Management Type for Wet Forest	Land Management for Wet Forest	Acres	% of Total
Federal	Army Corps of Engineers	281	0.0
	Bureau of Indian Affairs	4,518	0.6
	Bureau of Land Management	340	0.0
	National Park Service	516	0.1
	U.S. Forest Service	5,673	0.8
	U.S. Park Service	51,354	7.1
	Unknown	773	0.1
Total Federal		**63,455**	**8.8**
State	Department of Military Affairs	3	0.0
	Department of Transportation	75	0.0
	Division of Ecological Services	1,943	0.3
	Division of Fish and Wildlife	26,465	3.7
	Division of Forestry	123,955	17.2
	Division of Lands and Minerals	15	0.0
	Division of Parks and Recreation	3,489	0.5
	Division of Trails and Waterways	11	0.0
	Division of Waters	42	0.0
	Minnesota DNR	224	0.0
	State of Minnesota	324	0.0
Total State		**156,546**	**21.7**
County	Aitkin County	31,231	4.3
	Becker County	2,303	0.3
	Beltrami County	14,496	2.0
	Cass County	18,334	2.5
	Clearwater County	3,283	0.5
	Crow Wing County	10,560	1.5
	Hubbard County	6,042	0.8
	Itasca County	21,496	3.0
	Mahnomen County	194	0.0
Total County		**107,938**	**14.9**
Other Public	Municipal	541	0.1
	School District	52	0.0
	University	153	0.0
Total Other Public		**747**	**0.1**
Private Conservancy	Private Conservancy	1,454	0.2
	The Nature Conservancy	15	0.0
Total Private Conservancy		**1,469**	**0.2**
Total Public and Private Conservancy		**330,154**	**45.7**
Tribal	Leech Lake Band	1,146	0.2
	Mille Lacs Band	121	0.0
	Minnesota Chippewa Indians	127	0.0
	Red Lake Tribe	44,654	6.2
	White Earth Reservation	53	0.0
	White Earth Tribe	272	0.0
Total Tribal		**46,373**	**6.4**
Total Private		**345,773**	**47.9**
Total Wet Forest Area in Laurentian Mixed Forest in NC Landscape		**722,300**	**100.0**

Management for Wet Meadow/Carr

North Central Landscape Region



Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections
- Area Not Modeled

0 5 10 20 30 40 Miles

Sources: Potential Native Plant Communities - NRRI; GAP Land Ownership - MN Geospatial Commons; Other Features - MN Geospatial Commons

N

Minnesota Forest Resources Council

GAP Land Management

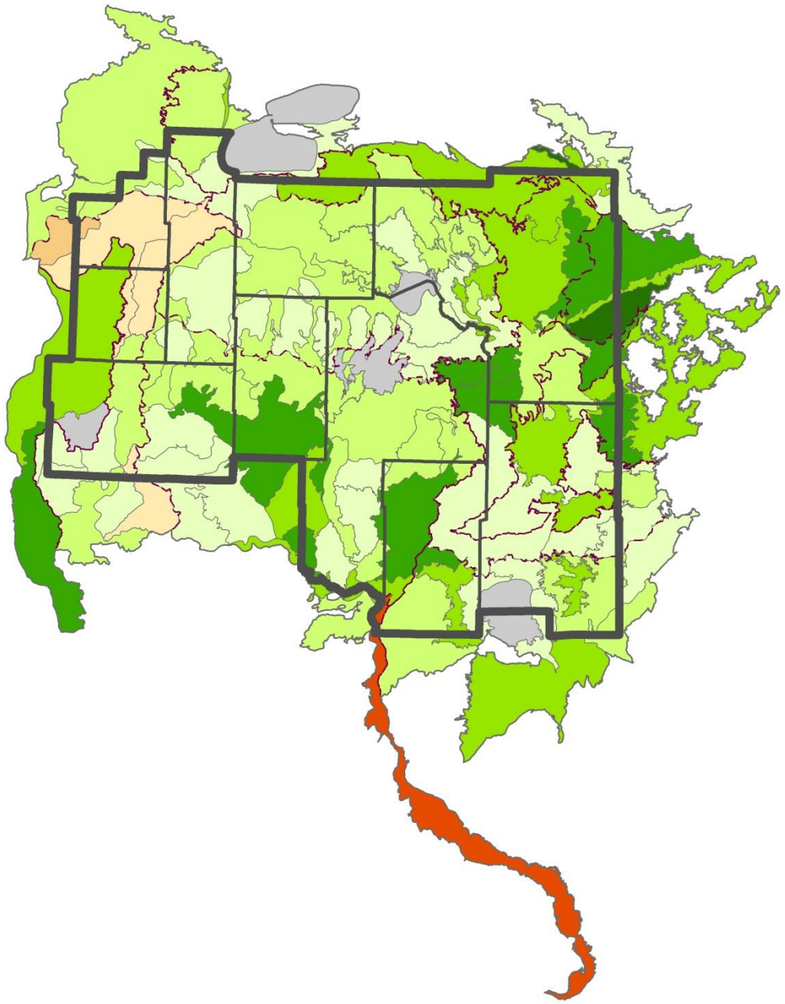
- Federal
- Army Corps of Engineers
- Bureau of Indian Affairs
- Bureau of Land Management
- Farmers Home Administration
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- Unknown
- State
- Department of Military Affairs
- Department of Transportation
- Division of Ecological Services
- Division of Fish and Wildlife
- Division of Forestry
- Division of Lands and Minerals
- Division of Parks and Recreation
- Division of Trails and Waterways
- Division of Waters
- Minnesota DNR
- State of Minnesota
- County
- County
- Other Public
- Other Public, Municipal
- Other Public, School District
- Other Public, University
- Private Conservancy
- Private Conservancy
- The Nature Conservancy
- Tribal
- Leech Lake Band
- Mille Lacs Band
- Minnesota Chippewa Indians
- Red Lake Tribe
- White Earth Tribe
- White Earth Reservation
- Private
- Private

Management for Wet Meadow/Carr Table

Management Type for Wet Meadow/Carr	Land Management for Wet Meadow/Carr	Acres	% of Total
Federal	Army Corps of Engineers	213	0.0
	Bureau of Indian Affairs	5,981	1.1
	Bureau of Land Management	337	0.1
	National Park Service	199	0.0
	U.S. Forest Service	6,967	1.2
	U.S. Park Service	37,497	6.7
	Unknown	843	0.2
Total Federal		**52,037**	**9.3**
State	Department of Military Affairs	3	0.0
	Department of Transportation	29	0.0
	Division of Ecological Services	241	0.0
	Division of Fish and Wildlife	17,362	3.1
	Division of Forestry	92,874	16.5
	Division of Lands and Minerals	24	0.0
	Division of Parks and Recreation	2,117	0.4
	Division of Trails and Waterways	41	0.0
	Division of Waters	31	0.0
	Minnesota DNR	148	0.0
	State of Minnesota	341	0.1
Total State		**113,212**	**20.2**
County	Aitkin County	18,701	3.3
	Becker County	3,569	0.6
	Beltrami County	12,233	2.2
	Cass County	34,169	6.1
	Clearwater County	4,180	0.7
	Crow Wing County	13,005	2.3
	Hubbard County	7,220	1.3
	Itasca County	12,744	2.3
	Mahnomen County	280	0.0
Total County		**106,101**	**18.9**
Other Public	Municipal	648	0.1
	School District	64	0.0
	University	310	0.1
Total Other Public		**1,022**	**0.2**
Private Conservancy	Private Conservancy	147	0.0
	The Nature Conservancy	20	0.0
Total Private Conservancy		**167**	**0.0**
Total Public and Private Conservancy		**272,541**	**48.6**
Tribal	Leech Lake Band	928	0.2
	Mille Lacs Band	151	0.0
	Minnesota Chippewa Indians	135	0.0
	Red Lake Tribe	14,912	2.7
	White Earth Reservation	21	0.0
	White Earth Tribe	589	0.1
Total Tribal		**16,736**	**3.0**
Total Private		**271,902**	**48.5**
Total Wet Meadow/Carr Area in Laurentian Mixed Forest in NC Landscape		**561,178**	**100.0**

Change in Relative Abundance of Aspen by ECS Land Type

North Central Landscape Region



Aspen Abundance
(1908-1990)

- Increase, > 10-fold
- Increase, 5 to 10-fold
- Increase, 3 to 5-fold
- Increase, 2 to 3-fold
- Some increase
- Some decline
- Decline, 2 to 3-fold
- Decline, 3 to 5-fold
- Decline, 5 to 10-fold
- Decline, > 10-fold
- Rare as bearing tree

Other Features

- North Central Landscape Region
- Counties within North Central
- ECS Subsections

0 15 30 60 90 120 Miles

Sources: Aspen Abundance - MNDNR FOR; Other Features - MN Geospatial Commons

N

Minnesota Forest Resources Council

Change in Relative Abundance of Aspen by ECS Land Type Table

Aspen Abundance (1908-1990)	Acres	% of Total
Increase, > 10-fold	122,466	0.9
Increase, 5 to 10-fold	1,658,265	11.6
Increase, 3 to 5-fold	2,986,219	20.9
Increase, 2 to 3-fold	4,470,867	31.2
Some increase	3,458,658	24.2
Some decline	568,064	4.0
Decline, 2 to 3-fold	75,059	0.5
Decline, > 10-fold	332,062	2.3
Rare as bearing tree	638,701	4.5
Totals (Land Type Areas)	**14,310,360**	**100.0**

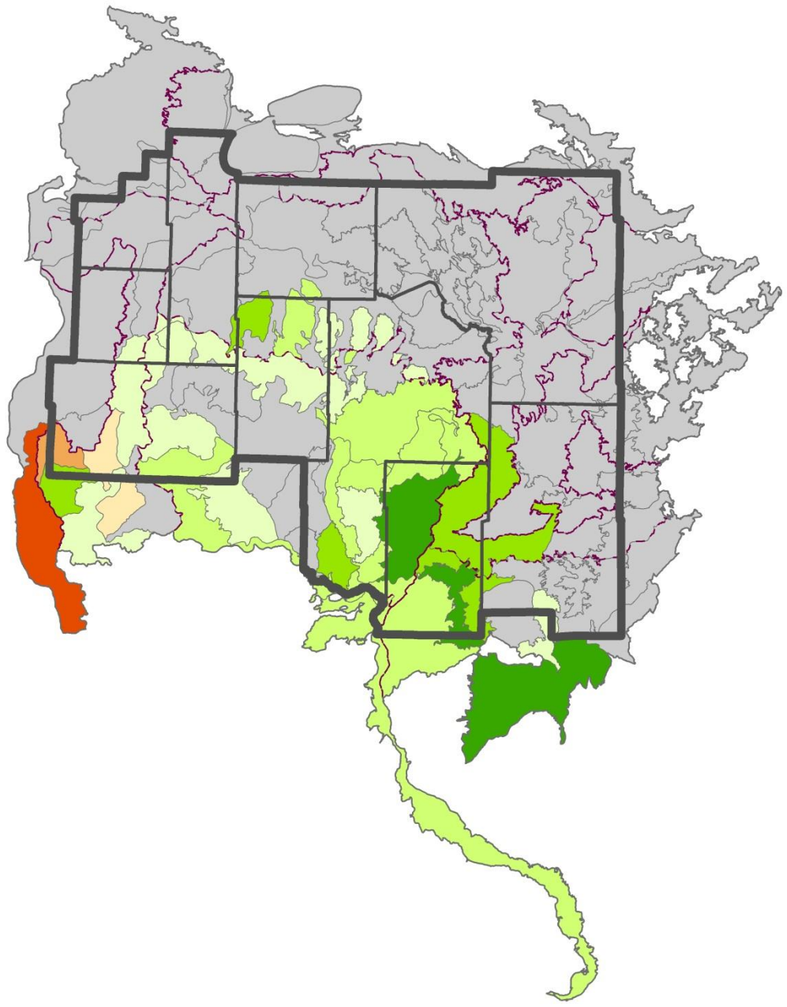
This analysis compares the relative abundance of trees using two sets of data, the Public Land Survey (PLS) and the 1990 Forest Inventory Analysis (FIA). PLS records were collected between 1846 and 1908 in Minnesota, thus PLS surveys predate significant settlement and logging in most areas and provide a comprehensive sampling of trees at that time. Tree species and their diameters, azimuths, and distances from survey corners were recorded at every section and quarter-section corner where trees were available.

FIA data were collected between 1986 and 1991 on randomly located plots in forests. Each plot consists of ten points. At each point tree species, and their diameters, azimuths, and distances from point center were recorded where trees were available. Thus FIA points differ from PLS survey corners with regard to the number of trees sampled (usually more) and no requirements to locate a tree in all four cardinal quadrants (NE, SE, SW, NW). A subset of the FIA point data was created to replicate the PLS data by selecting the nearest tree (greater than 4 inches d.b.h.) in each cardinal quadrant. PLS survey corners and FIA points were summarized by their occurrence in 291 Land Type Association (LTA) map units for the state. For each LTA, relative abundance of tree species were calculated and compared.

Study by John Almendinger, Minn. Dept. of Natural Resources, 2002

Change in Relative Abundance of Red Oak by ECS Land Type

North Central Landscape Region



Red Oak Abundance

(1908-1990)

- Increase, > 10-fold
- Increase, 5 to 10-fold
- Increase, 3 to 5-fold
- Increase, 2 to 3-fold
- Some increase
- Some decline
- Decline, 2 to 3-fold
- Decline, 3 to 5-fold
- Decline, 5 to 10-fold
- Decline, > 10-fold
- Rare as bearing tree

Other Features

- North Central Landscape Region
- Counties within North Central
- ECS Subsections

0 15 30 60 90 120 Miles

Sources: Aspen Abundance - MNDNR FOR; Other Features - MN Geospatial Commons

N

Minnesota Forest Resources Council

Change in Relative Abundance of Red Oak by ECS Land Type Table

Red Oak Abundance (1908-1990)	Acres	% of Total
Increase, 5 to 10-fold	681,994	4.8
Increase, 3 to 5-fold	653,637	4.6
Increase, 2 to 3-fold	1,741,118	12.2
Some increase	1,203,189	8.4
Some decline	134,464	0.9
Decline, 3 to 5-fold	63,683	0.4
Decline, > 10-fold	255,812	1.8
Rare as bearing tree	9,576,461	66.9
Totals (Land Type Areas)	**14,310,360**	**100.0**

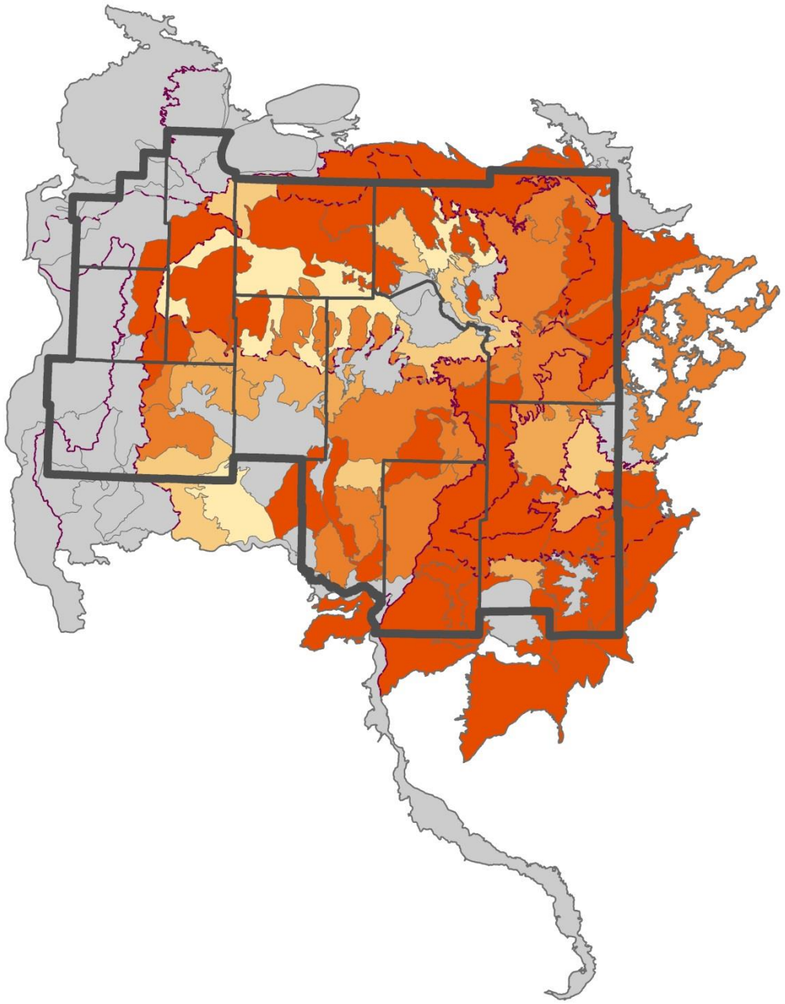
This analysis compares the relative abundance of trees using two sets of data, the Public Land Survey (PLS) and the 1990 Forest Inventory Analysis (FIA). PLS records were collected between 1846 and 1908 in Minnesota, thus PLS surveys predate significant settlement and logging in most areas and provide a comprehensive sampling of trees at that time. Tree species and their diameters, azimuths, and distances from survey corners were recorded at every section and quarter-section corner where trees were available.

FIA data were collected between 1986 and 1991 on randomly located plots in forests. Each plot consists of ten points. At each point tree species, and their diameters, azimuths, and distances from point center were recorded where trees were available. Thus FIA points differ from PLS survey corners with regard to the number of trees sampled (usually more) and no requirements to locate a tree in all four cardinal quadrants (NE, SE, SW, NW). A subset of the FIA point data was created to replicate the PLS data by selecting the nearest tree (greater than 4 inches d.b.h.) in each cardinal quadrant. PLS survey corners and FIA points were summarized by their occurrence in 291 Land Type Association (LTA) map units for the state. For each LTA, relative abundance of tree species were calculated and compared.

Study by John Almendinger, Minn. Dept. of Natural Resources, 2002

Change in Relative Abundance of White Pine by ECS Land Type

North Central Landscape Region



White Pine Abundance

(1908-1990)

- Increase, > 10-fold
- Increase, 5 to 10-fold
- Increase, 3 to 5-fold
- Increase, 2 to 3-fold
- Some increase
- Some decline
- Decline, 2 to 3-fold
- Decline, 3 to 5-fold
- Decline, 5 to 10-fold
- Decline, > 10-fold
- Rare as bearing tree

Other Features

- North Central Landscape Region
- Counties within North Central
- ECS Subsections

0 15 30 60 90 120 Miles

Sources: Aspen Abundance - MNDNR FOR; Other Features - MN Geospatial Commons

N

Minnesota Forest Resources Council

Change in Relative Abundance of White Pine by ECS Land Type Table

White Pine Abundance (1908-1990)	Acres	% of Total
Some decline	698,317	4.9
Decline, 2 to 3-fold	763,412	5.3
Decline, 3 to 5-fold	648,143	4.5
Decline, 5 to 10-fold	2,332,992	16.3
Decline, > 10-fold	4,822,147	33.7
Rare as bearing tree	5,045,349	35.3
Totals (Land Type Areas)	**14,310,360**	**100.0**

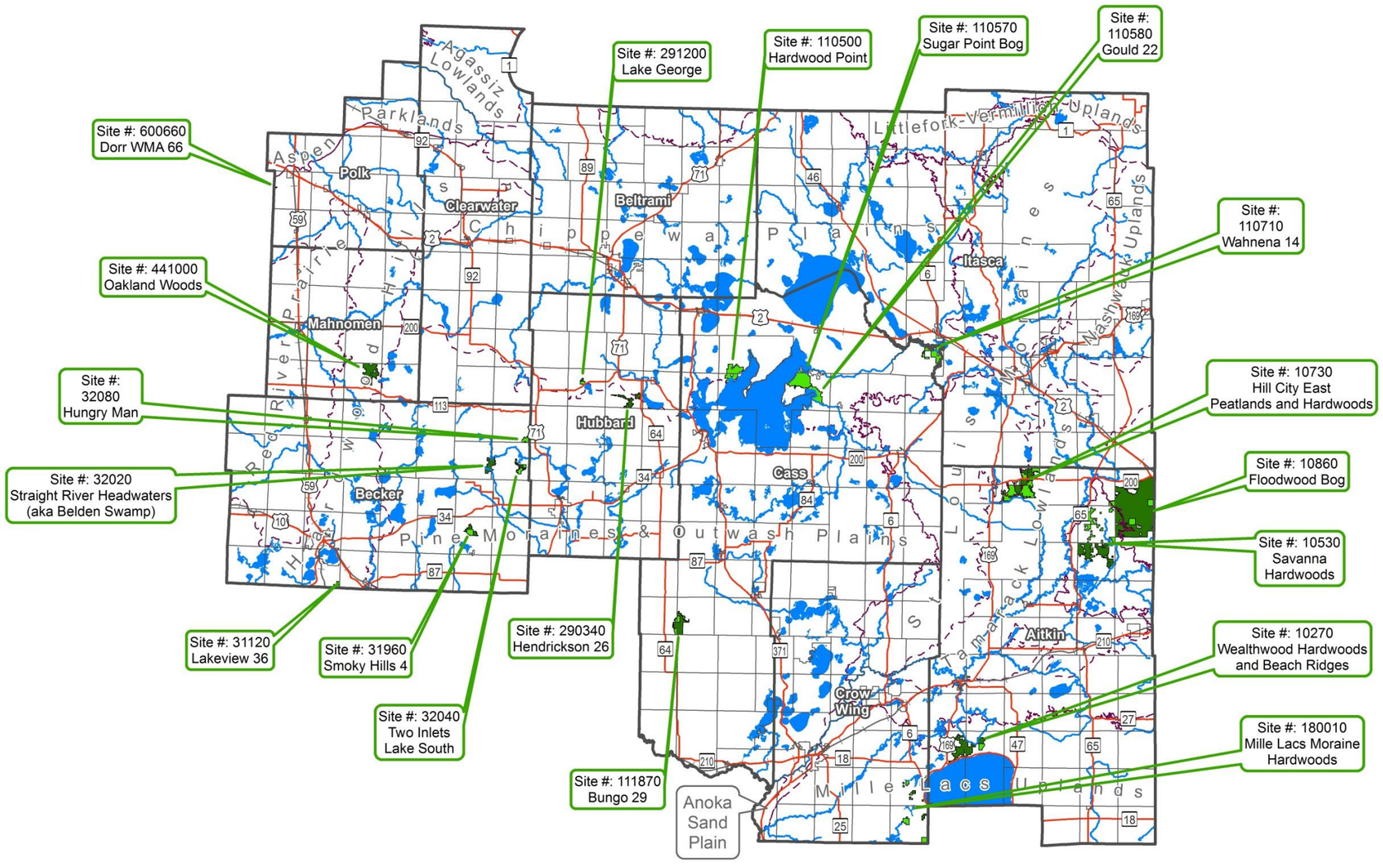
This analysis compares the relative abundance of trees using two sets of data, the Public Land Survey (PLS) and the 1990 Forest Inventory Analysis (FIA). PLS records were collected between 1846 and 1908 in Minnesota, thus PLS surveys predate significant settlement and logging in most areas and provide a comprehensive sampling of trees at that time. Tree species and their diameters, azimuths, and distances from survey corners were recorded at every section and quarter-section corner where trees were available.

FIA data were collected between 1986 and 1991 on randomly located plots in forests. Each plot consists of ten points. At each point tree species, and their diameters, azimuths, and distances from point center were recorded where trees were available. Thus FIA points differ from PLS survey corners with regard to the number of trees sampled (usually more) and no requirements to locate a tree in all four cardinal quadrants (NE, SE, SW, NW). A subset of the FIA point data was created to replicate the PLS data by selecting the nearest tree (greater than 4 inches d.b.h.) in each cardinal quadrant. PLS survey corners and FIA points were summarized by their occurrence in 291 Land Type Association (LTA) map units for the state. For each LTA, relative abundance of tree species were calculated and compared.

Study by John Almendinger, Minn. Dept. of Natural Resources, 2002

High Conservation Value Forests managed by MN DNR

North Central Landscape Region



High Conservation Value Forests (HCVF) managed by MN DNR

- Designated HCVF
- Managed HCVF on School Trust land

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections

Sources: High Conservation Value Forest - MN Geospatial Commons; Other Features - MN Geospatial Commons

Minnesota Forest Resources Council

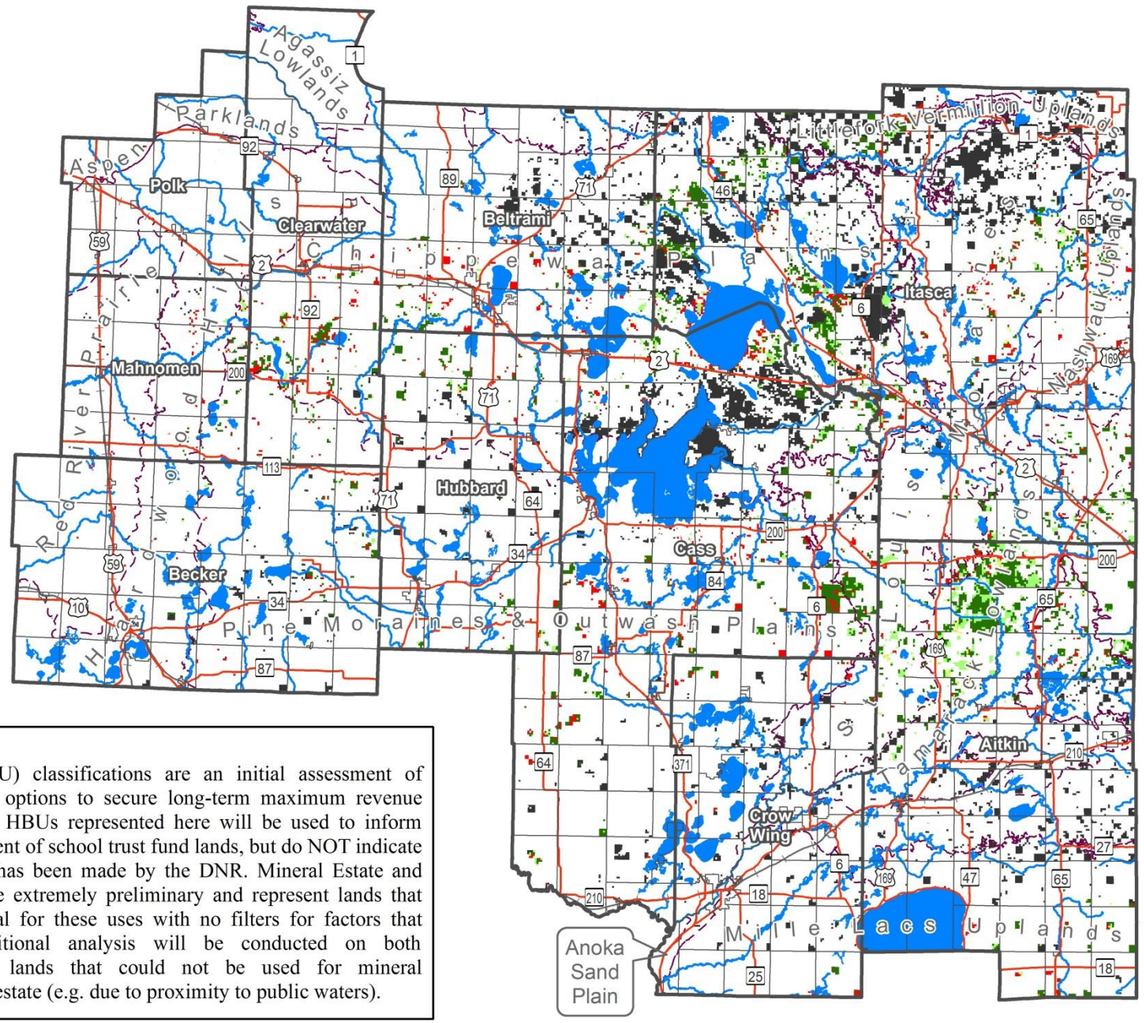
High Conservation Value Forests managed by MN DNR Table

Site #	Site Name	Status	Acres	% of Region
10270	Wealthwood Hardwoods and Beach Ridges	Designated HCVF	4,946	0.1
10270	Wealthwood Hardwoods and Beach Ridges	Managed HCVF on School Trust land	513	0.0
10530	Savanna Hardwoods	Designated HCVF	9,089	0.1
10530	Savanna Hardwoods	Managed HCVF on School Trust land	4,217	0.0
10730	Hill City East Peatlands and Hardwoods	Designated HCVF	4,068	0.0
10730	Hill City East Peatlands and Hardwoods	Managed HCVF on School Trust land	6,145	0.1
10860	Floodwood Bog	Designated HCVF	27,373	0.3
10860	Floodwood Bog	Managed HCVF on School Trust land	2,005	0.0
31120	Lakeview 36	Designated HCVF	0	0.0
31120	Lakeview 36	Managed HCVF on School Trust land	478	0.0
31960	Smoky Hills 4	Designated HCVF	620	0.0
31960	Smoky Hills 4	Managed HCVF on School Trust land	581	0.0
32020	Straight River Headwaters (aka Belden Swamp)	Designated HCVF	1,575	0.0
32020	Straight River Headwaters (aka Belden Swamp)	Managed HCVF on School Trust land	61	0.0
32040	Two Inlets Lake South	Designated HCVF	420	0.0
32040	Two Inlets Lake South	Managed HCVF on School Trust land	635	0.0
32080	Hungry Man	Designated HCVF	78	0.0
32080	Hungry Man	Managed HCVF on School Trust land	570	0.0
110500	Hardwood Point	Designated HCVF	62	0.0
110500	Hardwood Point	Managed HCVF on School Trust land	3,051	0.0
110570	Sugar Point Bog	Designated HCVF	45	0.0
110570	Sugar Point Bog	Managed HCVF on School Trust land	5,013	0.1
110580	Gould 22	Designated HCVF	83	0.0
110580	Gould 22	Managed HCVF on School Trust land	2,627	0.0
110710	Wahnena 14	Designated HCVF	82	0.0
110710	Wahnena 14	Managed HCVF on School Trust land	2,853	0.0
111870	Bungo 29	Designated HCVF	2,392	0.0
111870	Bungo 29	Managed HCVF on School Trust land	702	0.0
180010	Mille Lacs Moraine Hardwoods	Designated HCVF	624	0.0
180010	Mille Lacs Moraine Hardwoods	Managed HCVF on School Trust land	1,610	0.0
290340	Hendrickson 26	Designated HCVF	1,422	0.0
290340	Hendrickson 26	Managed HCVF on School Trust land	128	0.0
291200	Lake George	Designated HCVF	119	0.0
291200	Lake George	Managed HCVF on School Trust land	232	0.0
441000	Oakland Woods	Designated HCVF	3,155	0.0
441000	Oakland Woods	Managed HCVF on School Trust land	306	0.0
600660	Dorr WMA 66	Designated HCVF	70	0.0
Total HCVF managed by MN DNR in North Central Region			**87,951**	**1.0**
Total North Central Region			**9,069,715**	

All Sites	Status	Acres	% of HCVF
HCVF managed by MN DNR in North Central Region	Designated HCVF	56,224	63.9
	Managed HCVF on School Trust land	31,728	36.1
Total HCVF managed by MN DNR in North Central Region		**87,951**	**100.0**

School Trust Fund Lands

North Central Landscape Region



Disclaimer:
Highest and Best Use (HBU) classifications are an initial assessment of potential future management options to secure long-term maximum revenue from school trust lands. The HBUs represented here will be used to inform decisions regarding management of school trust fund lands, but do NOT indicate that a management decision has been made by the DNR. Mineral Estate and Real Estate classifications are extremely preliminary and represent lands that showed any possible potential for these uses with no filters for factors that would exclude them. Additional analysis will be conducted on both classifications to reclassify lands that could not be used for mineral exploration/extraction or real estate (e.g. due to proximity to public waters).

School Trust Fund Lands

Highest and Best Use

- Forestry
- Mineral
- Non-Productive
- Real Estate
- Recreation
- Sand and Gravel
- Stewardship

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections

0 5 10 20 30 40 Miles

Sources: School Trust Fund Lands - MNDNR LAM; Other Features - MN Geospatial Commons

N

Minnesota Forest Resources Council

School Trust Fund Lands Table

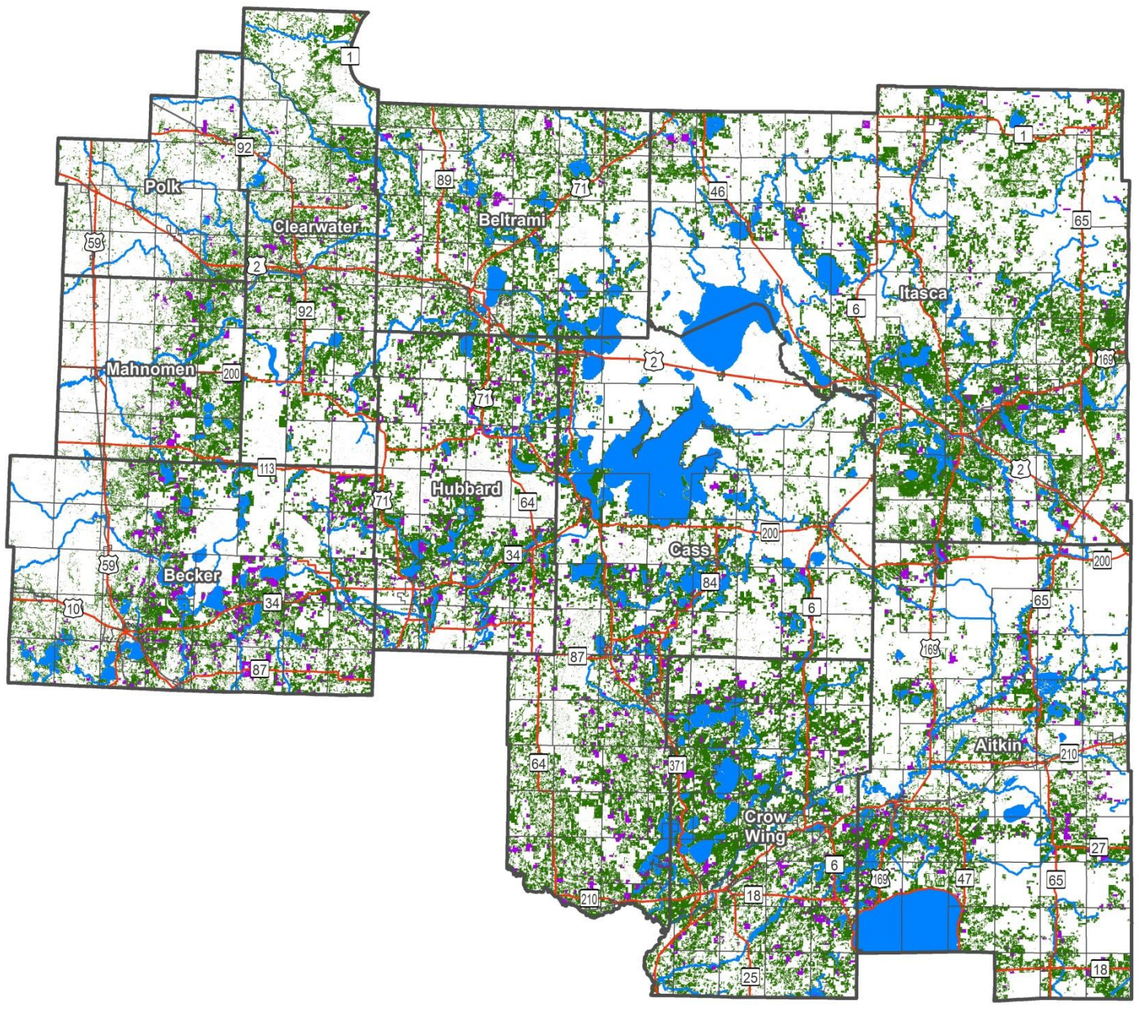
School Trust Fund Lands Highest and Best Use	Acres	% of Region
Forestry	176,467	1.9
Mineral	387,446	4.3
Non-Productive	69,146	0.8
Real Estate	91,850	1.0
Recreation	7,052	0.1
Sand and Gravel	359	0.0
Stewardship	1,522	0.0
Total School Trust Fund Lands	**733,842**	**8.1**
Total North Central Region	**9,069,715**	

Disclaimer:

Highest and Best Use (HBU) classifications are an initial assessment of potential future management options to secure long-term maximum revenue from school trust lands. The HBUs represented here will be used to inform decisions regarding management of school trust fund lands, but do NOT indicate that a management decision has been made by the DNR. Mineral Estate and Real Estate classifications are extremely preliminary and represent lands that showed any possible potential for these uses with no filters for factors that would exclude them. Additional analysis will be conducted on both classifications to reclassify lands that could not be used for mineral exploration/extraction or real estate (e.g. due to proximity to public waters).

Forest Stewardship Plans

North Central Landscape Region



Current Forest Stewardship Plans

(as of 9/30/2015)

Important Forest Resource Areas

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers

0 5 10 20 30 40 Miles

Sources: Stewardship Plans - MNDNR Forestry PFM Program; Important Forest Resource Areas - USFS SAP; Other Features - MN Geospatial Commons

N

Minnesota Forest Resources Council

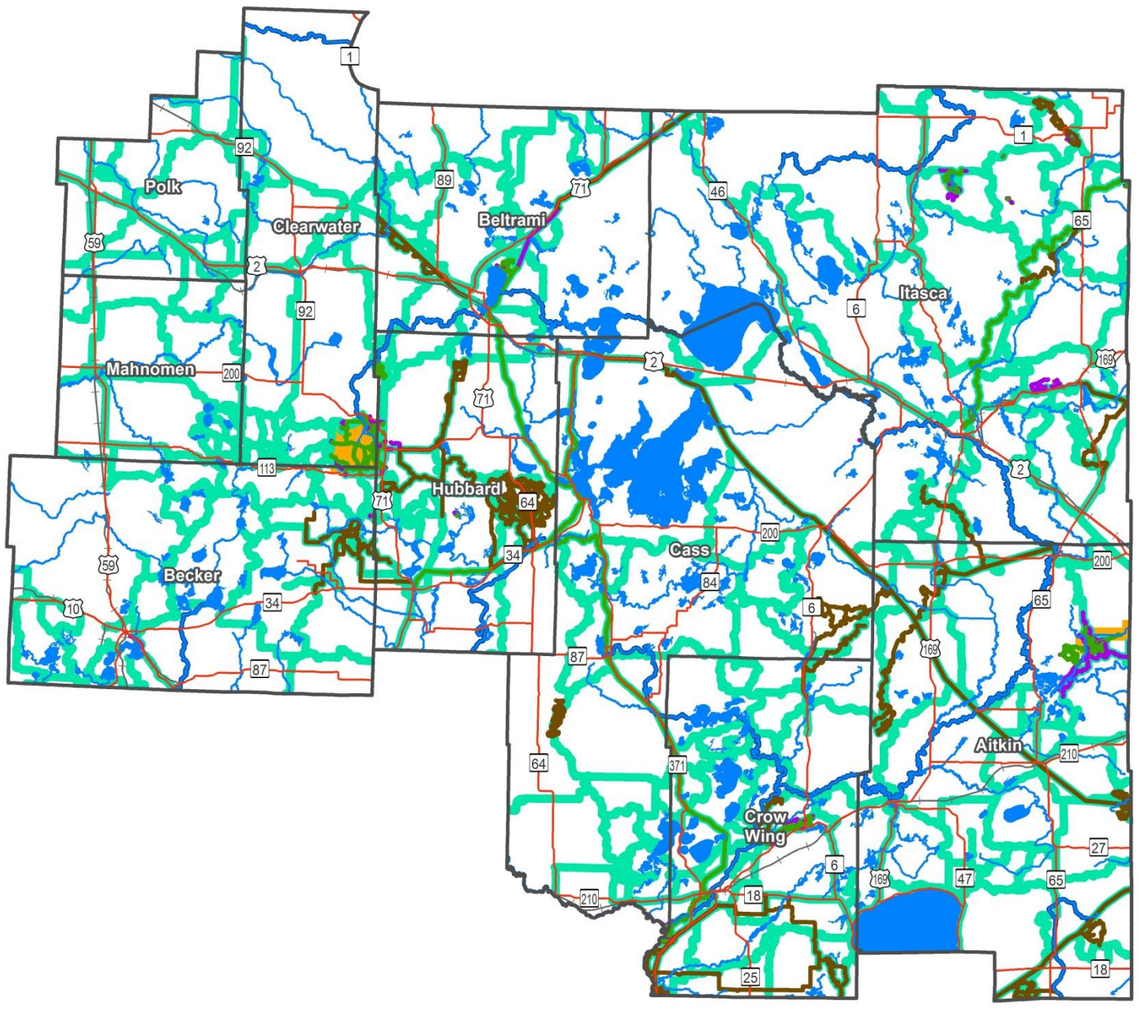
Forest Stewardship Plans Table

Current Registered Forest Stewardship Plans (as of 9/30/2015) and Important Forest Resource Areas (IFRAs)

Study Area	Acres	Acres covered by current forest stewardship plans	Acres of IFRAs	Acres of IFRAs covered by current Forest Stewardship Plans	Percent of IFRAs covered by current FSPs	Percent of FSP area that is an IFRA
Aitkin	1,275,804	27,560	318,113	19,601	6.2	71.1
Becker	925,073	41,365	268,732	30,850	11.5	74.6
Beltrami	693,691	9,388	222,719	7,538	3.4	80.3
Cass	1,544,170	32,933	396,946	25,917	6.5	78.7
Clearwater	659,017	9,621	200,179	7,035	3.5	73.1
Crow Wing	739,801	26,447	338,242	20,635	6.1	78.0
Hubbard	639,536	28,040	230,586	22,782	9.9	81.2
Itasca	1,872,385	19,810	549,420	15,543	2.8	78.5
Mahnomen	373,535	6,714	96,396	5,049	5.2	75.2
Polk	346,703	2,295	49,610	958	1.9	41.7
North Central	**9,069,715**	**204,173**	**2,670,943**	**155,908**	**5.8**	**76.4**
Minnesota	**53,997,289**	**623,038**	**9,898,192**	**434,910**	**4.4**	**69.8**

Parks and Trails

North Central Landscape Region



Trails maintained by Parks & Trails

- Abandoned Use
- Dual Use Water
- Motorized Land
- No use specified
- Non-motorized Land

Snowmobile Trails

Statutory Boundaries

- State Parks

Other Features

- County Boundaries
- Highways
- Railroads
- Lakes
- Rivers

0 5 10 20 30 40 Miles

Sources: Trails and Statutory Boundaries - MN Geospatial Commons; Other Features - MN Geospatial Commons

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Parks and Trails Table

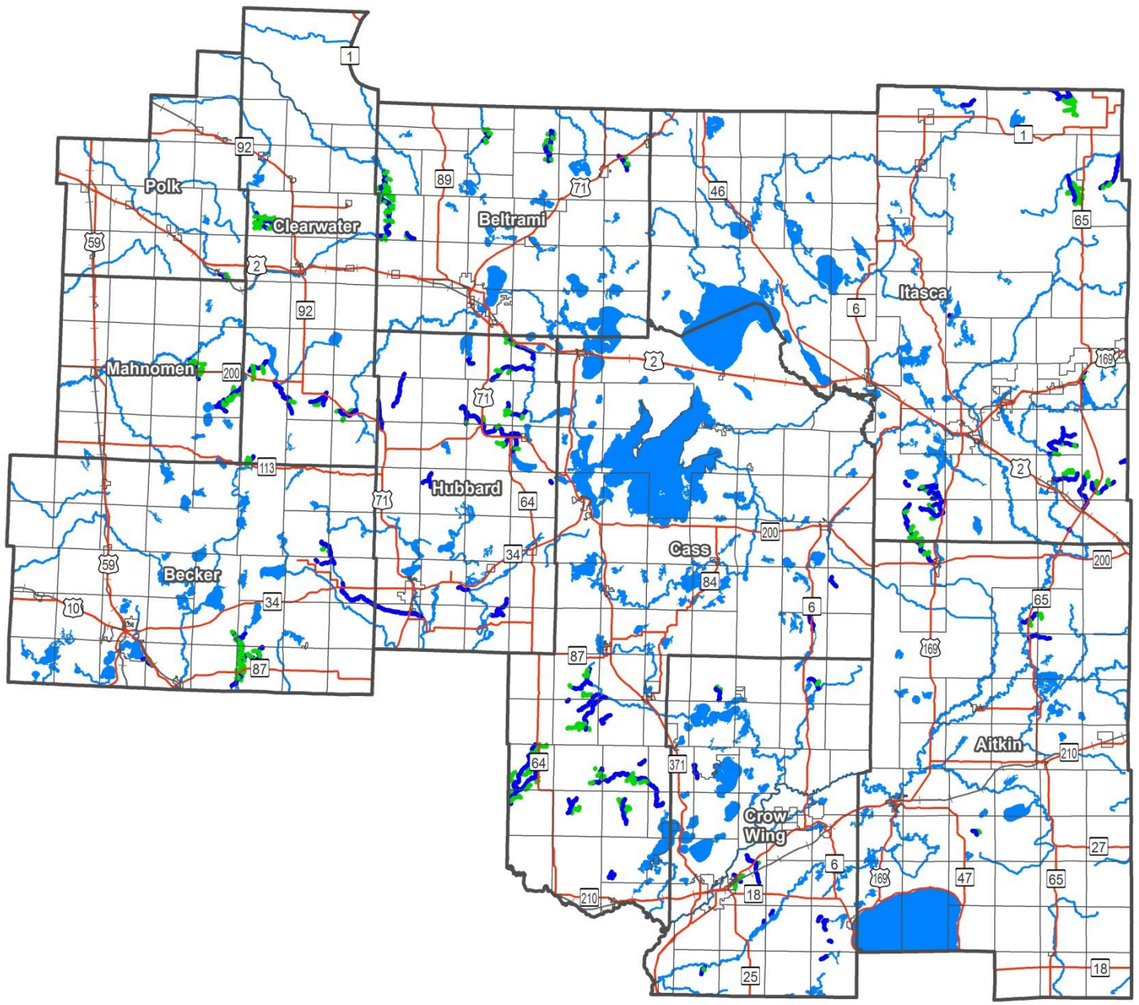
Trails maintained by Parks & Trails	Miles
Abandoned Use	0.3
Dual Use Water	594.8
Motorized Land	928.8
No use specified	159.1
Non-motorized Land	452.9
Total trails maintained by Parks & Trails	**2,135.9**

Other trails*	Miles
Snowmobile Trails	4,353.9

*may overlap trails maintained by Parks & Trails

Trout Stream Designations

North Central Landscape Region



Trout Stream Designation

- Designated Trout Stream
- Protected Tributary to Designated Trout Stream

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers

Miles
0 5 10 20 30 40

Sources: Trout Stream Designations - MN Geospatial Commons; Other Features - MN Geospatial Commons

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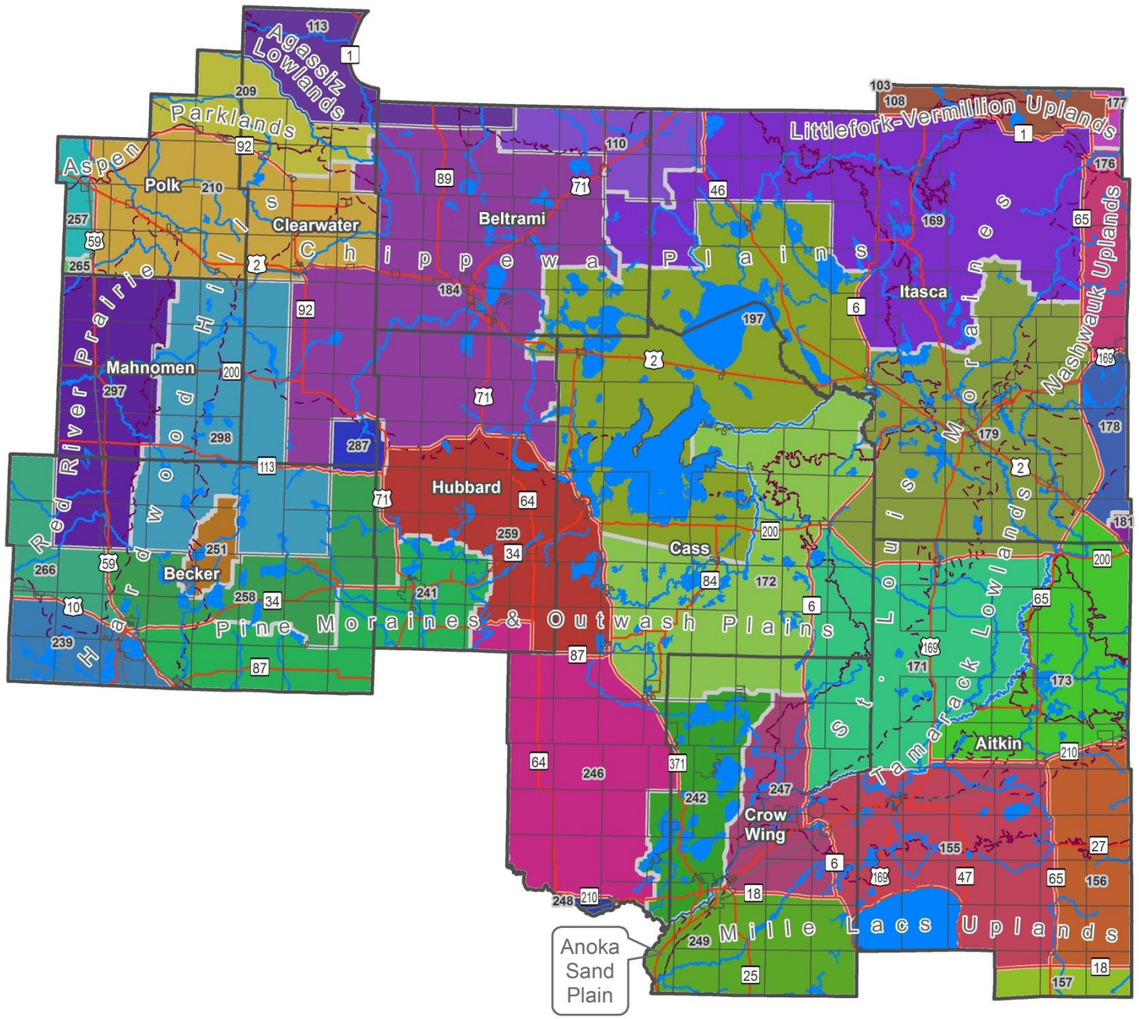
Trout Stream Designations Table

Trout Stream Designation	Miles
Designated Trout Stream	378
Protected Tributary to Designated Trout Stream	164
Total Length	**541**

Deer Permit Areas

North Central Landscape Region



Deer Permit Areas

- Deer Permit Area 103
- Deer Permit Area 108
- Deer Permit Area 110
- Deer Permit Area 113
- Deer Permit Area 155
- Deer Permit Area 156
- Deer Permit Area 157
- Deer Permit Area 169
- Deer Permit Area 171
- Deer Permit Area 172
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- Deer Permit Area 184
- Deer Permit Area 197
- Deer Permit Area 209
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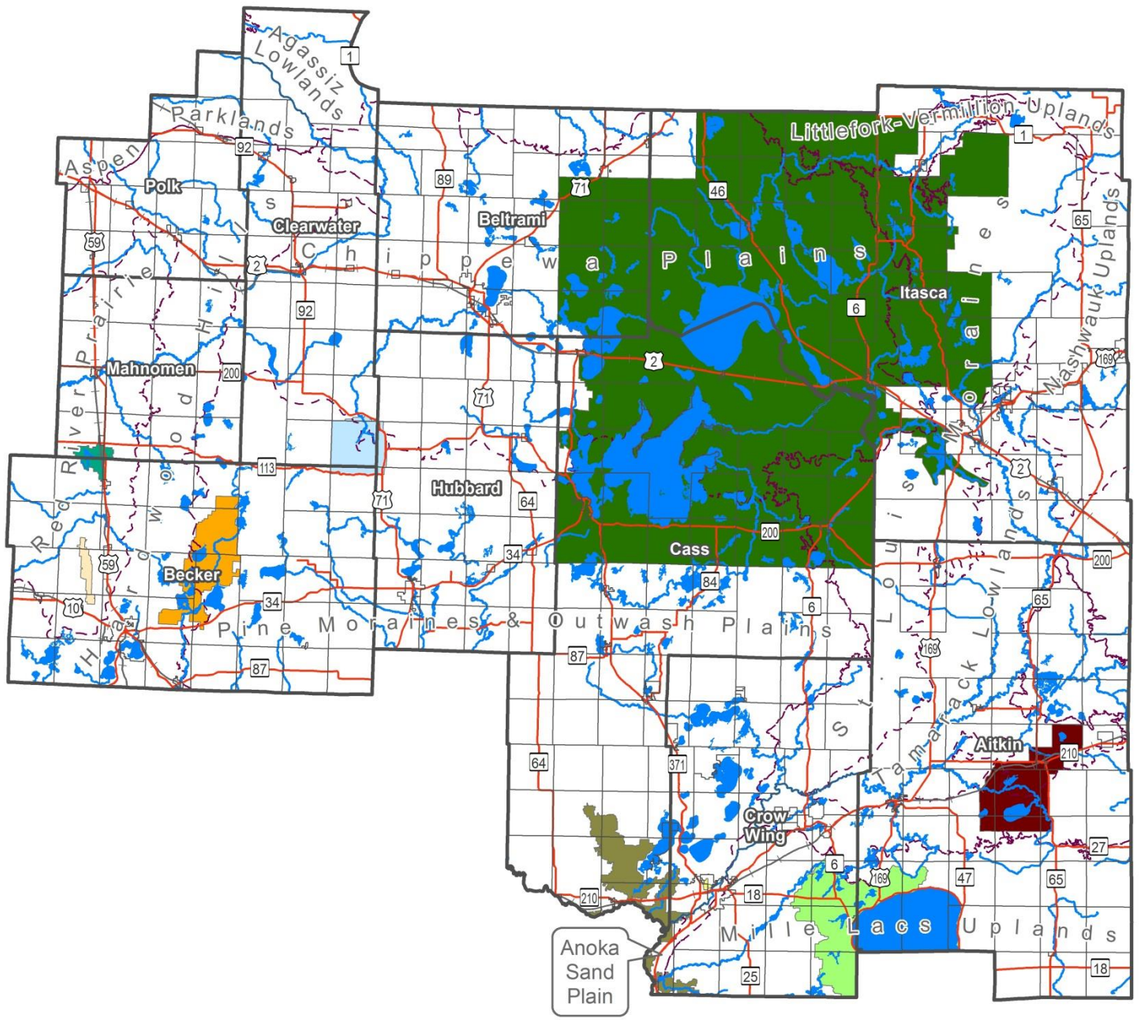
- Deer Permit Area 248
- Deer Permit Area 249
- Deer Permit Area 251
- Deer Permit Area 257
- Deer Permit Area 258
- Deer Permit Area 259
- Deer Permit Area 265
- Deer Permit Area 266
- Deer Permit Area 287
- Deer Permit Area 297
- Deer Permit Area 298

Deer Permit Areas Table

Deer Permit Area	Acres	% of Region
Deer Permit Area 103	132	0.0
Deer Permit Area 108	90,541	1.0
Deer Permit Area 110	137,821	1.5
Deer Permit Area 113	158,726	1.8
Deer Permit Area 155	401,768	4.4
Deer Permit Area 156	190,537	2.1
Deer Permit Area 157	45,911	0.5
Deer Permit Area 169	745,758	8.2
Deer Permit Area 171	466,788	5.1
Deer Permit Area 172	499,360	5.5
Deer Permit Area 173	295,931	3.3
Deer Permit Area 176	101,468	1.1
Deer Permit Area 177	14,770	0.2
Deer Permit Area 178	69,861	0.8
Deer Permit Area 179	600,963	6.6
Deer Permit Area 181	7,042	0.1
Deer Permit Area 184	843,320	9.3
Deer Permit Area 197	857,866	9.5

Deer Permit Area	Acres	% of Region
Deer Permit Area 209	152,582	1.7
Deer Permit Area 210	389,147	4.3
Deer Permit Area 239	112,923	1.2
Deer Permit Area 241	286,561	3.2
Deer Permit Area 242	196,532	2.2
Deer Permit Area 246	402,939	4.4
Deer Permit Area 247	168,489	1.9
Deer Permit Area 248	8,488	0.1
Deer Permit Area 249	274,678	3.0
Deer Permit Area 251	43,578	0.5
Deer Permit Area 257	41,799	0.5
Deer Permit Area 258	243,814	2.7
Deer Permit Area 259	349,174	3.8
Deer Permit Area 265	5,703	0.1
Deer Permit Area 266	111,530	1.2
Deer Permit Area 287	32,429	0.4
Deer Permit Area 297	287,640	3.2
Deer Permit Area 298	433,148	4.8
Total North Central Region	**9,069,715**	**100.0**

Important Bird Areas
North Central Landscape Region



Important Bird Areas

- Camp Ripley-Pillsbury-Lake Alexander IBA
- Chippewa Plains
- Hamden Slough NWR IBA
- Itasca State Park
- McGregor IBA
- Mille Lacs IBA
- Northland Arboretum IBA
- Tamarac NWR
- Waubun Marsh IBA

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections

Miles
0 5 10 20 30 40

Sources: Important Bird Areas - MN Audubon; Other Features - MN Geospatial Commons

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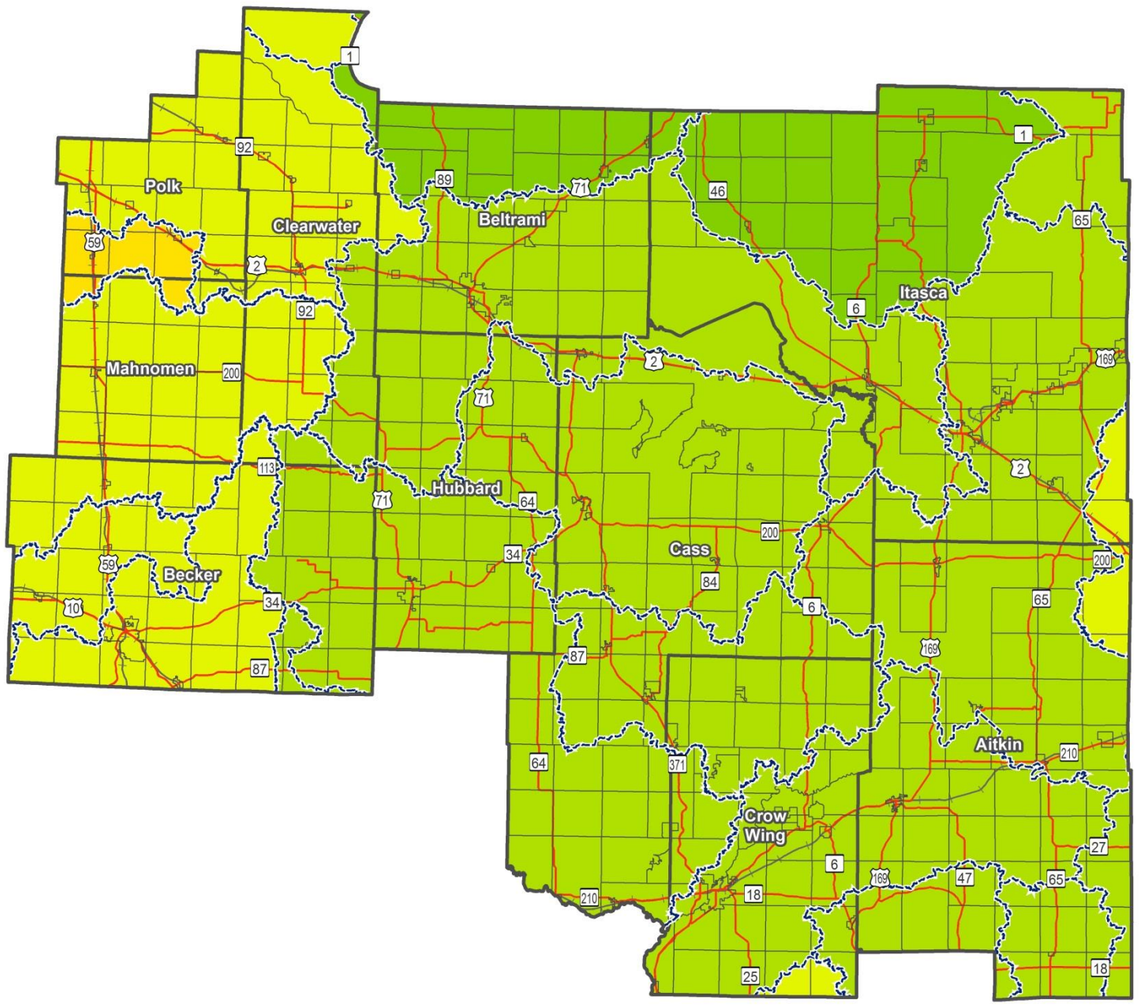
Important Bird Areas Table

Name	Acres	% of Region
Camp Ripley-Pillsbury-Lake Alexander IBA	57,765	0.6
Chippewa Plains	1,801,079	19.9
Hamden Slough NWR IBA	6,025	0.1
Itasca State Park	33,237	0.4
McGregor IBA	67,136	0.7
Mille Lacs IBA	143,406	1.6
Northland Arboretum IBA	644	0.0
Tamarac NWR	54,290	0.6
Waubun Marsh IBA	8,723	0.1
Total Important Bird Areas	**2,172,305**	**24.0**
Total North Central Region	**9,069,715**	

Watershed Health Scores

North Central Landscape Region

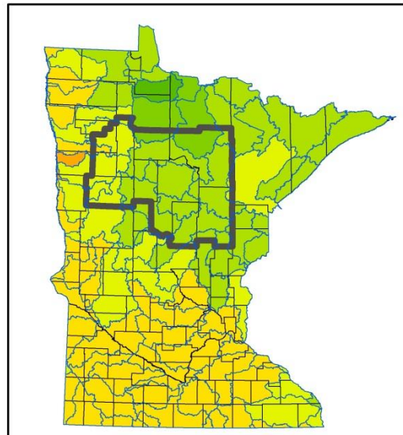


Watershed Health Score (average)

- 0 - 10
- 11 - 20
- 21 - 30
- 31 - 40
- 41 - 50
- 51 - 60
- 61 - 70
- 71 - 80
- 81 - 90
- 91 - 100

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads



0 5 10 20 30 40 Miles

Sources: Watershed Health Score - MNDNR WHAF; Other Features - MN Geospatial Commons

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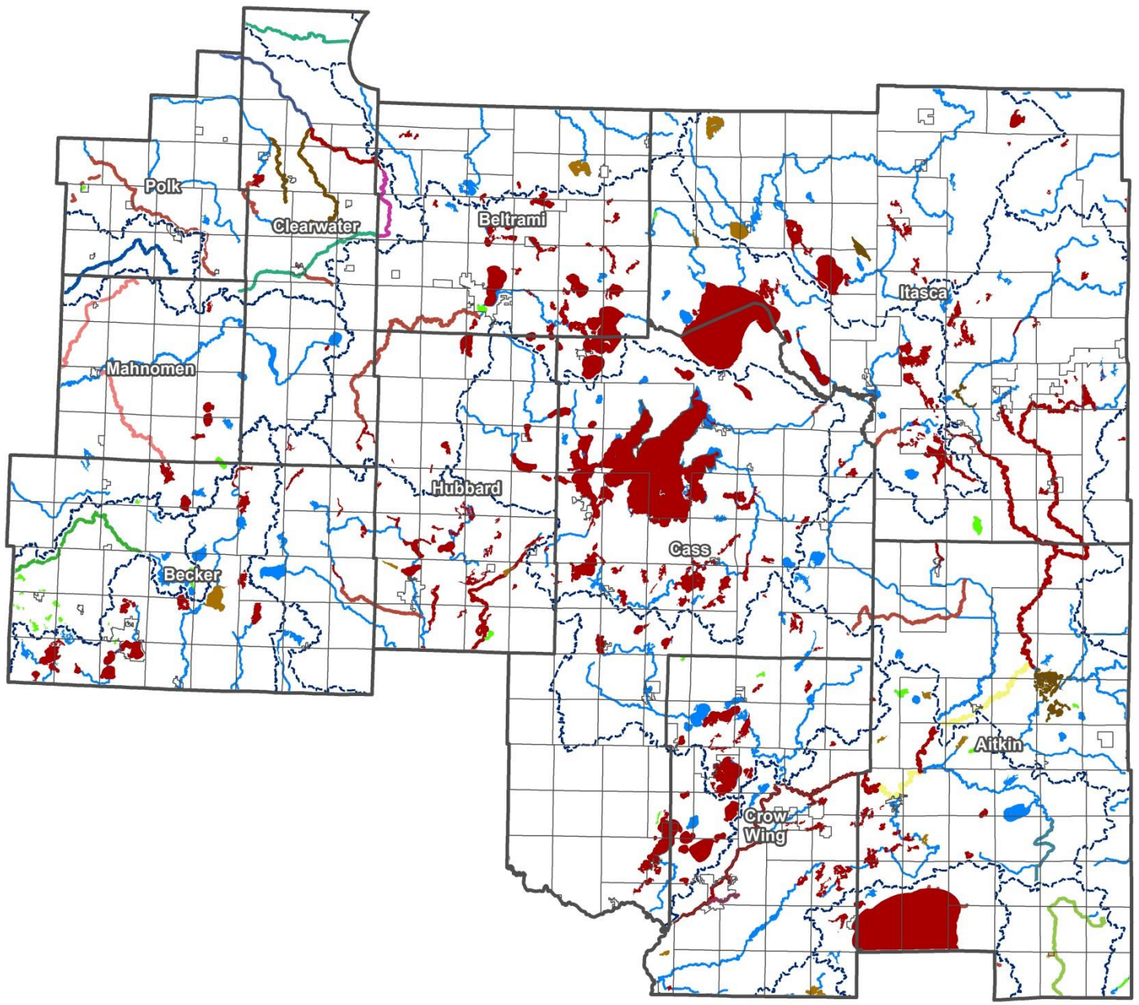
Impaired Waters

North Central Landscape Region



Impaired Streams (2012)

- Cl-, LCWA, TM
- HgF, DO
- FC
- E.coli, T
- DO
- M-IBI, F-IBI
- HgF, F-IBI
- F-IBI, pH
- HgF, A
- F-IBI
- HgF, DO, T
- DO, T
- HgF
- HgF, T
- T

Impaired Lakes (2012)

- HgF
- HgF, Nutrients
- Nutrients
- Nutrients, HgF

Other Features

- County Boundaries
- Municipal Boundaries
- Major Watersheds
- Lakes
- Rivers

0 5 10 20 30 40 Miles

Sources: Impaired Waters - MPCA; Other Features - MN Geospatial Commons

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Impaired Waters Tables

Stream Impairments	Affected Use	Miles
DO	AQL	179.5
DO, T	AQL	28.3
E.coli, T	AQL, AQR	35.2
F-IBI	AQL	13.3
F-IBI, pH	AQL	1.4
FC	AQR	42.1
HgF	AQC	299.5
HgF, A	AQC, AQL	17.6
HgF, DO	AQC, AQL	48.1
HgF, DO, T	AQC, AQL	20.0
HgF, F-IBI	AQC, AQL	29.4
HgF, T	AQC, AQL	44.2
M-IBI, F-IBI	AQL	5.6
T	AQL	47.9
Total Length		**812.2**

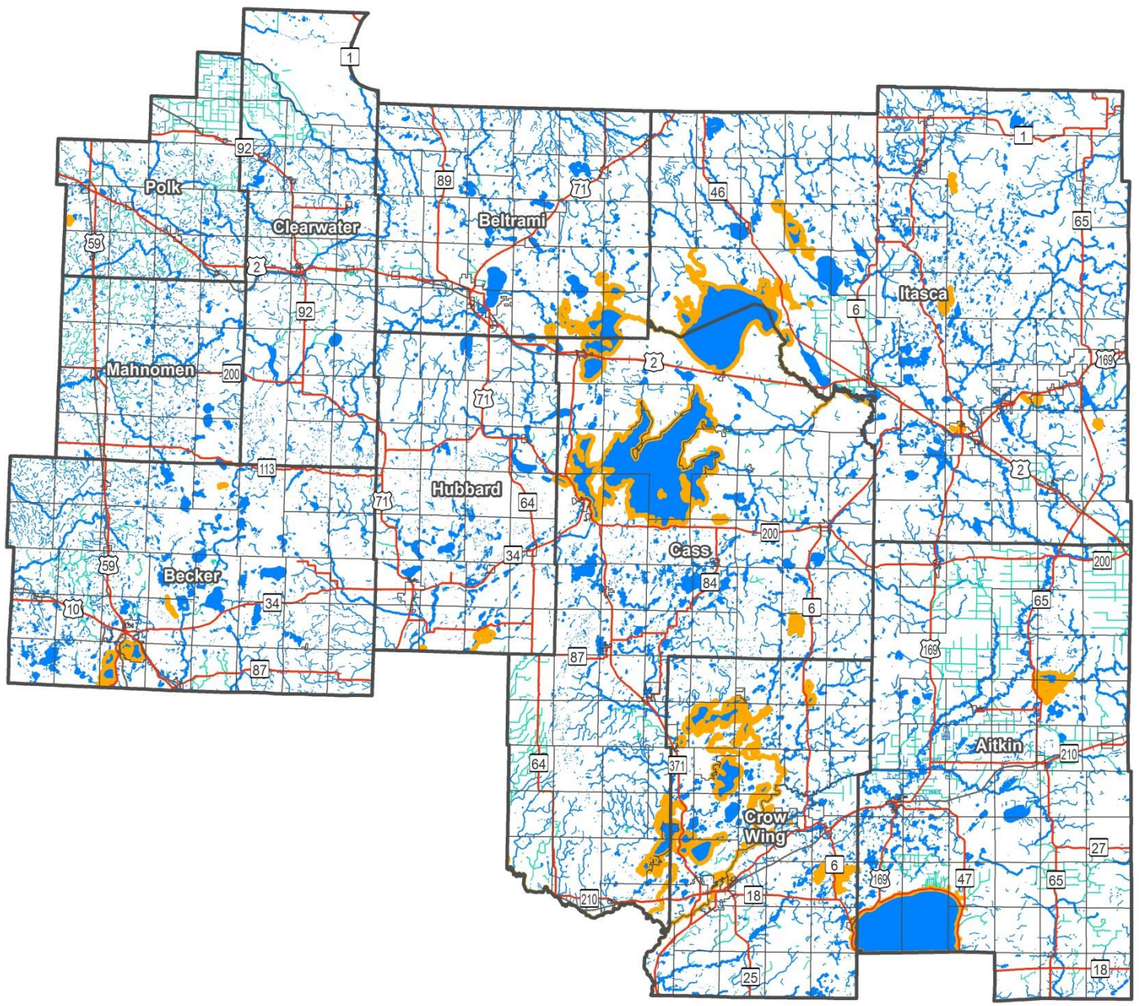
Lake Impairments	Affected Use	Area (Acres)
HgF	AQC	482,672
HgF, Nutrients	AQC, AQR	11,668
Nutrients	AQR	10,943
Nutrients, HgF	AQC, AQR	17,511
Total Area		**522,794**

Impairment Abbreviations	
A	Ammonia
Cl-	Chloride
DDT	Dichloro-diphenyl-trichloroethane
DO	Dissolved oxygen
FC	Fecal coliform
F-IBI	Fish Index of Biotic Integrity
HgF	Mercury in fish tissue
HgW	Mercury in water column
LCWA	Lack of a coldwater assemblage
PCBF	PCB in fish tissue
PCBW	PCB in water column
pH	Acidity
T	Turbidity
TM	Temperature

Affected Use Abbreviations	
AQC	Aquatic consumption
AQL	Aquatic life
AQR	Aquatic recreation

Designated Infested Waters

North Central Landscape Region



Designated Infested Waters

Designated Infested Streams

All Water Features

- Lake, Pond or Reservoir; River or Stream
- River
- Stream (Perennial)
- Stream (Intermittent)
- Drainage Ditch (Perennial)
- Drainage Ditch (Intermittent)

0 5 10 20 30 40 Miles

Sources: Designated Infested Waters - MN Geospatial Commons; Other Features - MN Geospatial Commons

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Designated Infested Waters Table

Lake Name	Acres
Andrusia	1,590
Arrowhead	296
Bay	2,320
Bertha	337
Big Rice	633
Big Sandy	6,088
Big Trout	1,363
Bird's Eye	80
Black Bear	215
Boom	8
Border Pond	8
Buck	436
Bucks Mill Pond	11
Cass	15,958
Clamshell	211
Clearwater	900
Coon-Sandwick	594
Cross Lake Reservoir	1,813
Curfman	121
Cut Foot Sioux	2,771
Daggett	258
Detroit	3,067
Egg	101
Emily	721
First Crow Wing	522
First River	200
Gilbert	357
Gull	9,947
Gull (pond)	5
Hale	130
Half Moon	42
Hart	328
Holman	148
Ice	39
Island-Loon	465

Lake Name	Acres
Kimball	190
Kitchi	1,858
Leech	110,311
Little Cut Foot Sioux	619
Little Pine	330
Little Rabbit	173
Little Rice	123
Little Sand	353
Little Winnibigoshish	1,002
Long / Tame Fish	127
Louise Mine Pit	9
Love	79
Lower Hay	693
Lower Mission	725
Margaret	248
McKinney	106
Melissa	1,850
Mill	155
Mille Lacs	63,393
Miller	105
Muskrat	67
Nisswa	219
North Long	6,144
North Twin	239
Ossawinnamakee	691
Pelican	8,367
Pickerel	388
Pig	181
Pike Bay	4,751
Pine	324
Portage	64
Pug Hole	79
Rabbits	126
Raven	94
Ray	138

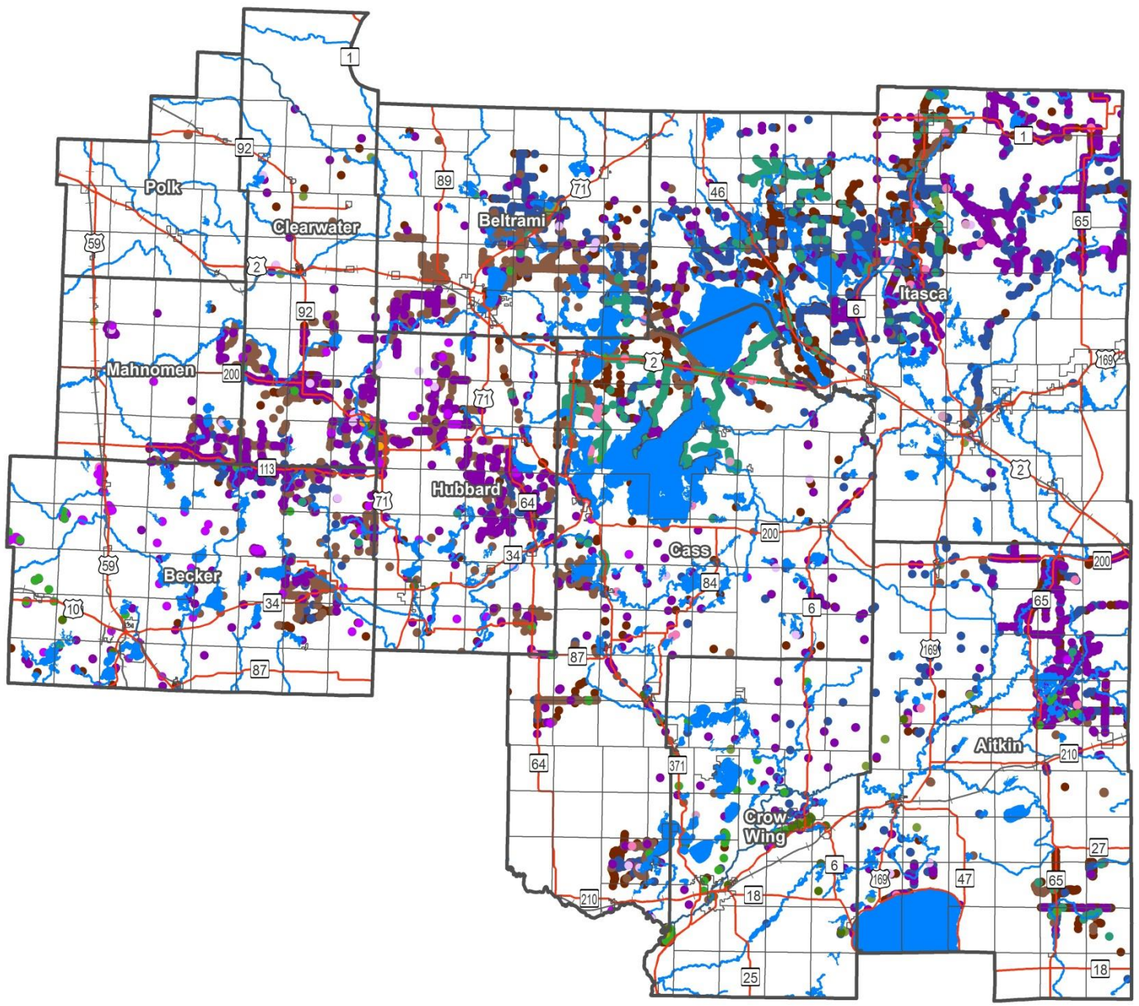
Lake Name	Acres
Rice	1,097
Round	1,650
Roy	319
Rush-Hen	858
Ruth	599
Sallie	1,273
Sand	4,226
Second Crow Wing	221
South Twin	141
Spider	1,427
Sugar	1,509
Town Line	698
Union	316
Unnamed	79
Unnamed (03-0230)	10
Unnamed (03-0231)	11
Unnamed (Raven's Flowage)	307
Unnamed pond (CW)	15
Upper Gull	422
Upper Hay	596
Upper Mission	874
Upper Twin	176
Washburn	1,590
Whitefish	7,716
Winnibigoshish	56,472
Wolf	1,073
Total Lakes	**340,080**

Stream Name	Miles
Big Fork River (H-001-029)	0.50
Bishop Creek (M-096-001-004)	0.14
Crow Wing River (Hw 87 downstream) (M-096)	16.21
Crow Wing River (Long Prairie R. to Missi R.) (M-096)	8.77
Garrison Creek (M-063-087)	0.85
Gull River (M-096-001)	14.91
Leech Lake River (M-146)	3.66
Mississippi River (Knutson Dam to Winni) (M)	10.89
Mississippi River (Little Winni to White Oak) (M)	22.33
Mississippi River (Pine R. to St. Anthony Falls) (M)	38.74
Mississippi River (Winni to Little Winni) (M)	1.61
Mississippi River (within Winnibigoshish) (M)	15.06
Pelican Brook (M-106-002)	5.34
Pelican River (H-026-081-012)	1.20
Pigeon River (M-148)	0.53
Pikes Point (M-063-083)	0.14
Pine River (Cross lake) (M-106)	7.95
Pine River (M-106)	11.37
Reddy Creek (M-063-088)	2.17
Seastade Creek (M-063-086)	0.77
Seguchie Creek (M-063-081)	0.20
Seventeen Creek (M-063-092)	0.37
Third River (M-150)	6.97
Unnamed Streams	11.93
Total Streams	**182.61**

For details see the Designated Infested Waters list available at http://files.dnr.state.mn.us/eco/invasives/infested_waters.pdf.

DNR Terrestrial Invasive Species Observations

North Central Landscape Region



DNR Terrestrial Invasive Species Observations

- Buckthorn, Common
- Buckthorn, Glossy
- Grass, Reed canary
- Knapweed, Spotted
- Loosestrife, Purple
- Mustard, Garlic
- Parsnip, Wild
- Rose, Multi-Flora
- Spurge, Leafy
- Tansy
- Teasel, Cut-Leaved
- Thistle, Canada
- Thistle, Musk/Nodding
- Thistle, Plumeless

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers

Miles
0 5 10 20 30 40

Sources: DNR Terrestrial Invasive Species Observations - MN Geospatial Commons; Other Features - MN Geospatial Commons

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DNR Terrestrial Invasive Species Observations Table

Shown On Map	
Common Name	**Count**
Buckthorn, Common	129
Buckthorn, Glossy	28
Grass, Reed canary	8,676
Knapweed, Spotted	4,680
Loosestrife, Purple	69
Mustard, Garlic	1
Parsnip, Wild	1,127
Rose, Multi-Flora	5
Spurge, Leafy	100
Tansy	5,953
Teasel, Cut-Leaved	3
Thistle, Canada	2,146
Thistle, Musk/Nodding	46
Thistle, Plumeless	123

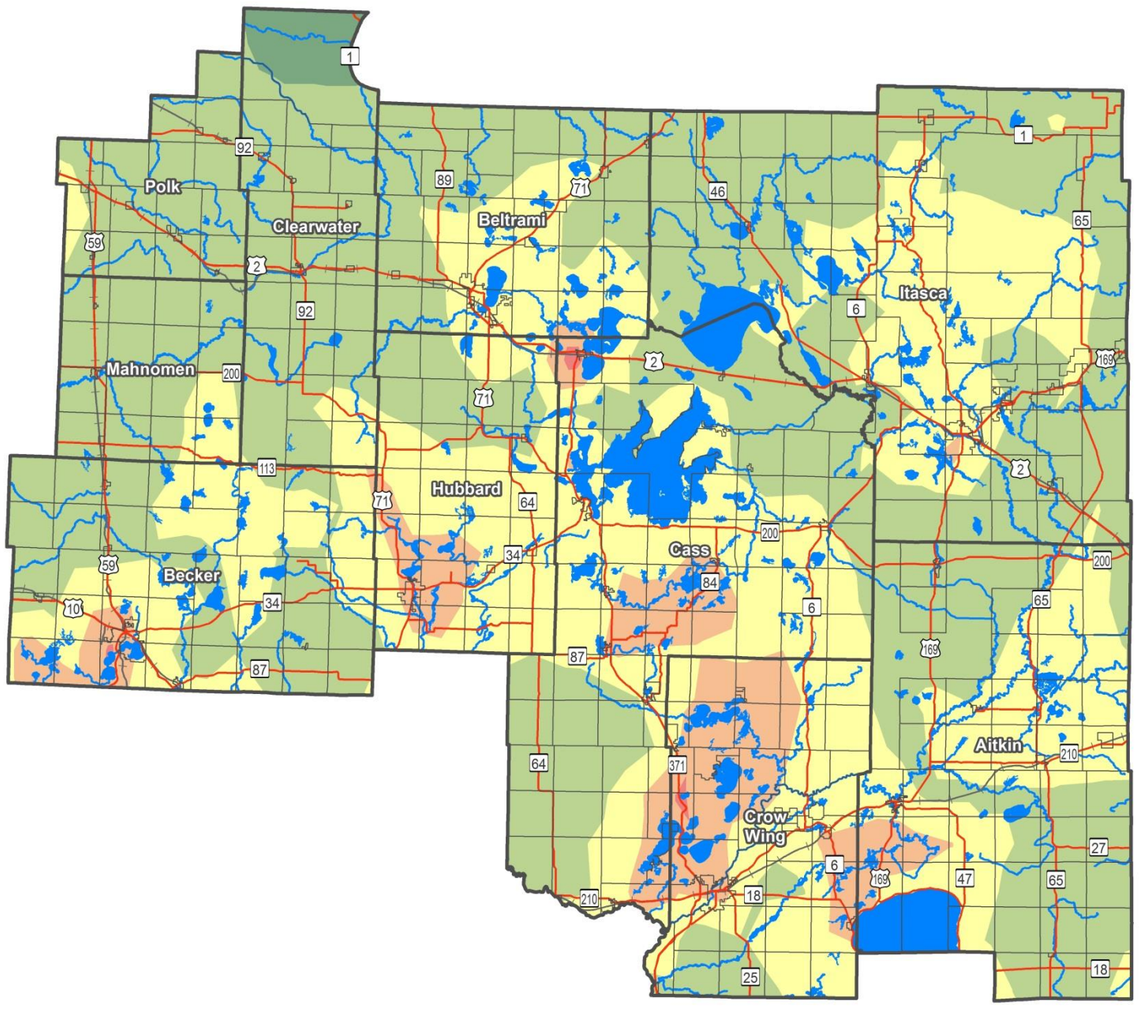
Not Shown On Map	
Common Name	**Count**
Alyssum, Hoary	588
Butter and Eggs	28
Creeping Charlie	20
Daisy, Oxeye	863
Elm, Siberian	10
Grass, Amur silver	73
Grass, Cheat	1
Grass, Kentucky bluegrass	1
Grass, Smooth brome	1,970
Hawkweed, Orange	39
Hogweed, Giant	1
Honeysuckle, Exotic	375
Iris, Yellow	2
Knapweed, Diffuse	4
Knotweed, Giant	1
Locust, Black	11

Not Shown On Map	
Common Name	**Count**
Maple, Amur	130
Mullein, Common	16
Olive, Russian	11
Peashrub, Siberian	281
Phragmites (Haplotype M)	20
Queen Ann's Lace	2
St. John's-Wort, Common	46
Sweetclover, White	1,455
Sweetclover, Yellow	553
Thistle spp.	5,252
Thistle, Bull	475
Thistle, Sow	267
Trefoil, Birdsfoot	1,177
Vetch, Cow	23
Vetch, Crown	42
Vetch, Hairy	70

Observations were made between 5/27/2004 and 6/26/2014. Each observation may vary for the number of plants observed, distribution of plants, and acres infected. Separate observations may represent the same location, therefore the count of observations may over-represent the distribution of a species.

Emerald Ash Borer Introduction Risk

North Central Landscape Region

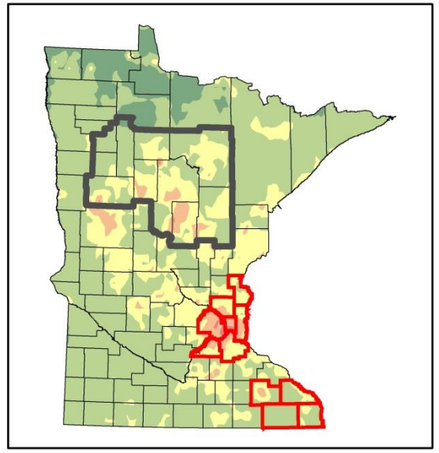


Emerald Ash Borer Introduction Risk

- Very Low
- Low
- Moderate
- High
- Very High

Other Features

- County Boundaries
- Municipal Boundaries
- Quarantine Boundaries
- Highways
- Railroads
- Lakes
- Rivers



0 5 10 20 30 40 Miles

Sources: Emerald Ash Borer Introduction Risk - MDA EAB; Other Features - MN Geospatial Commons

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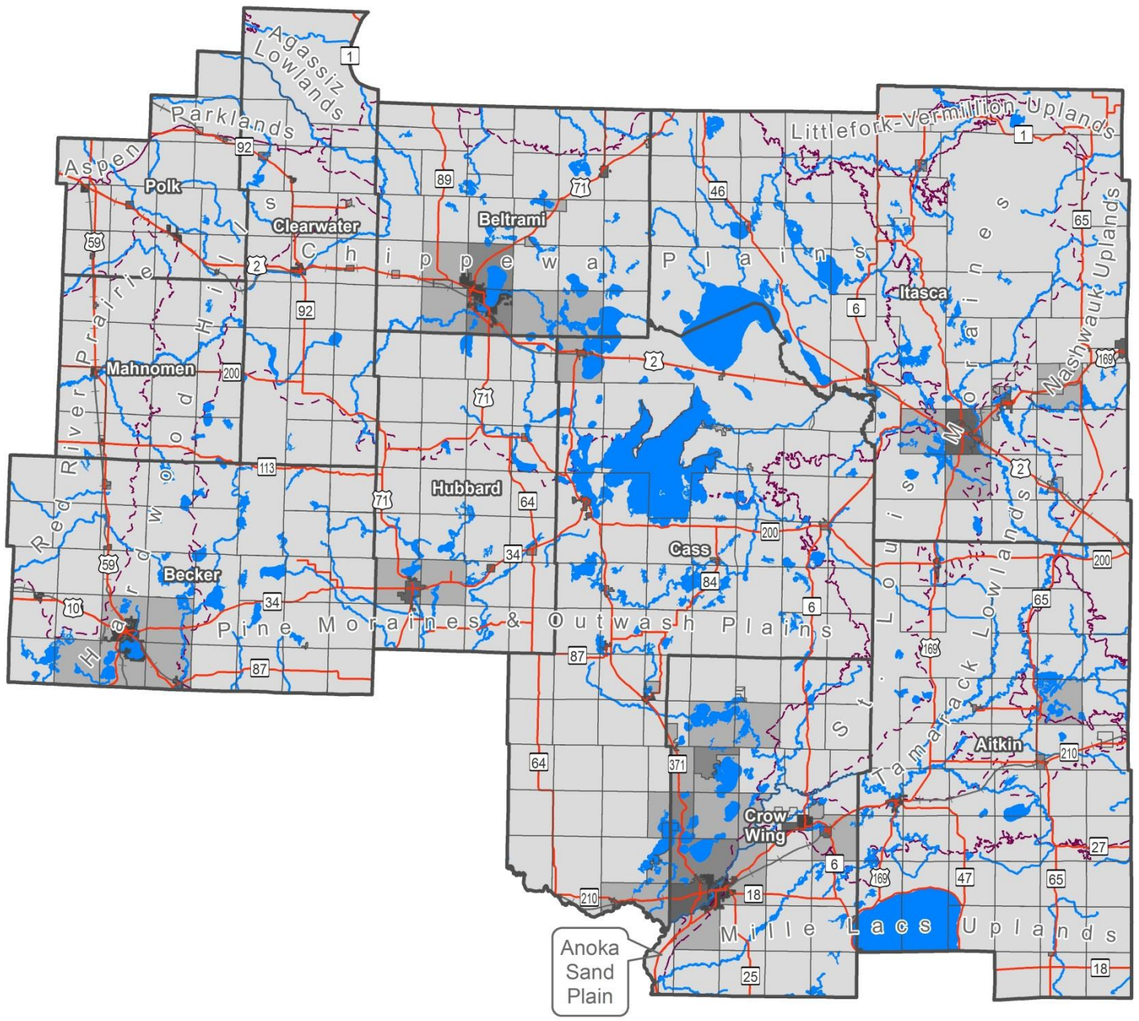
2010 US Census Population Density

North Central Landscape Region



2010 Population Density (persons/sq mi)

- 0 - 42
- 43 - 134
- 135 - 309
- 310 - 673
- 674 - 1271

Classes by natural breaks

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections

Miles
0 5 10 20 30 40

Sources: Population Density - US Census; Other Features - MN Geospatial Commons

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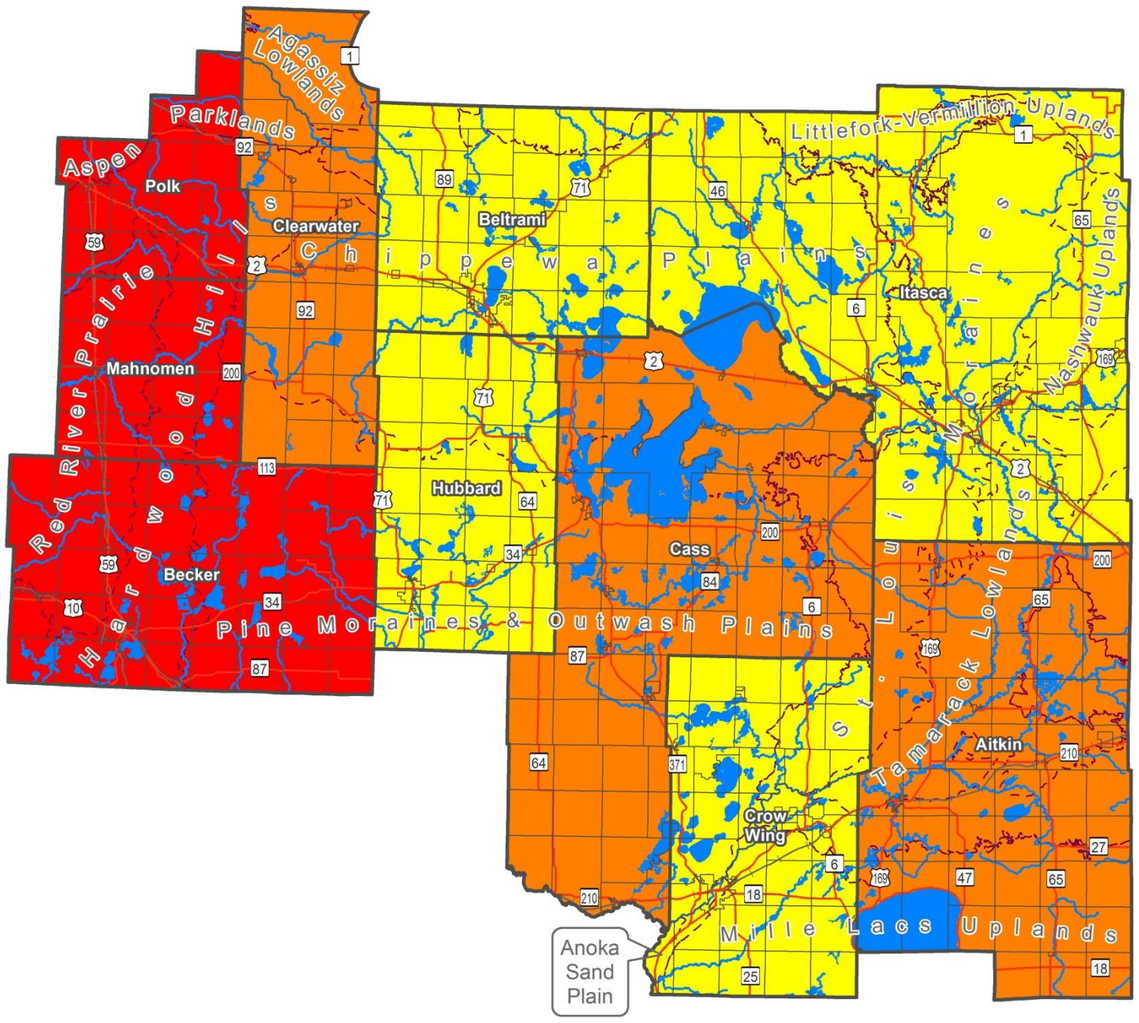
Forestry Jobs by County (2008)

North Central Landscape Region



Sources: Forestry Jobs by County - MNDNR FOR; Other Features - MN Geospatial Commons

Minnesota Forest Resources Council

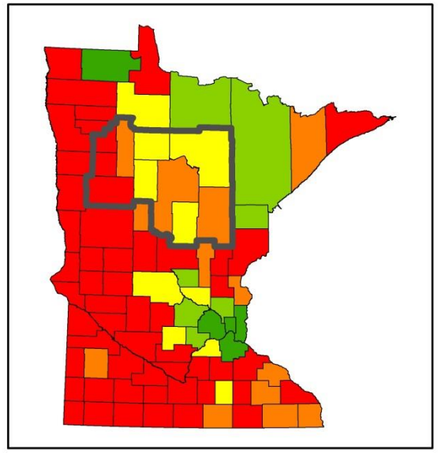
Forestry Jobs by County (2008)

- 0 - 87
- 88 - 332
- 333 - 688
- 689 - 1308
- 1309 - 3122

Classes are by Natural Breaks for statewide data.

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections



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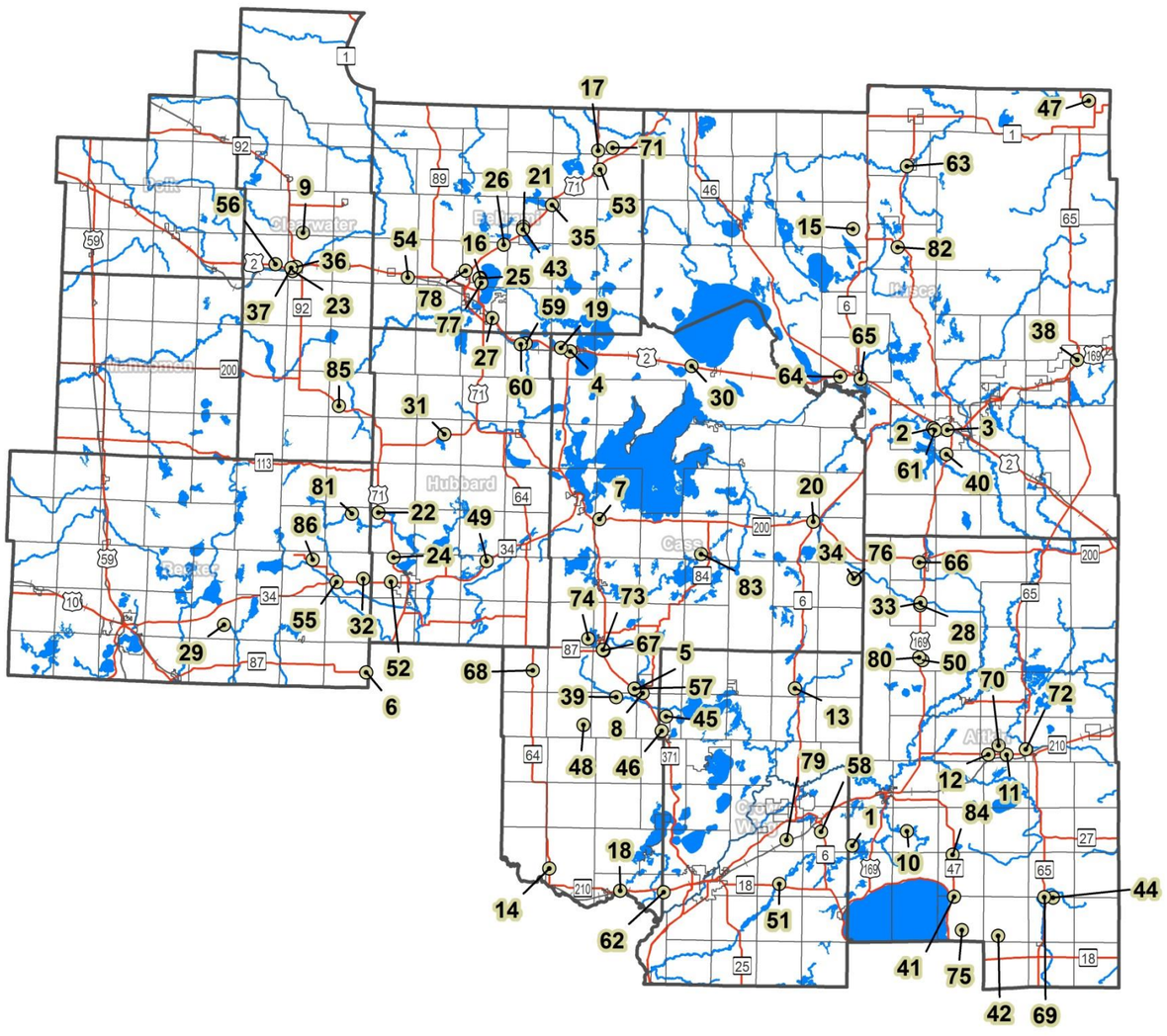
Sawmills (2013)

North Central Landscape Region



Sawmills (September, 2013)

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers

Miles
0 5 10 20 30 40

Sources: Sawmills - MDA; Other Features - MN Geospatial Commons

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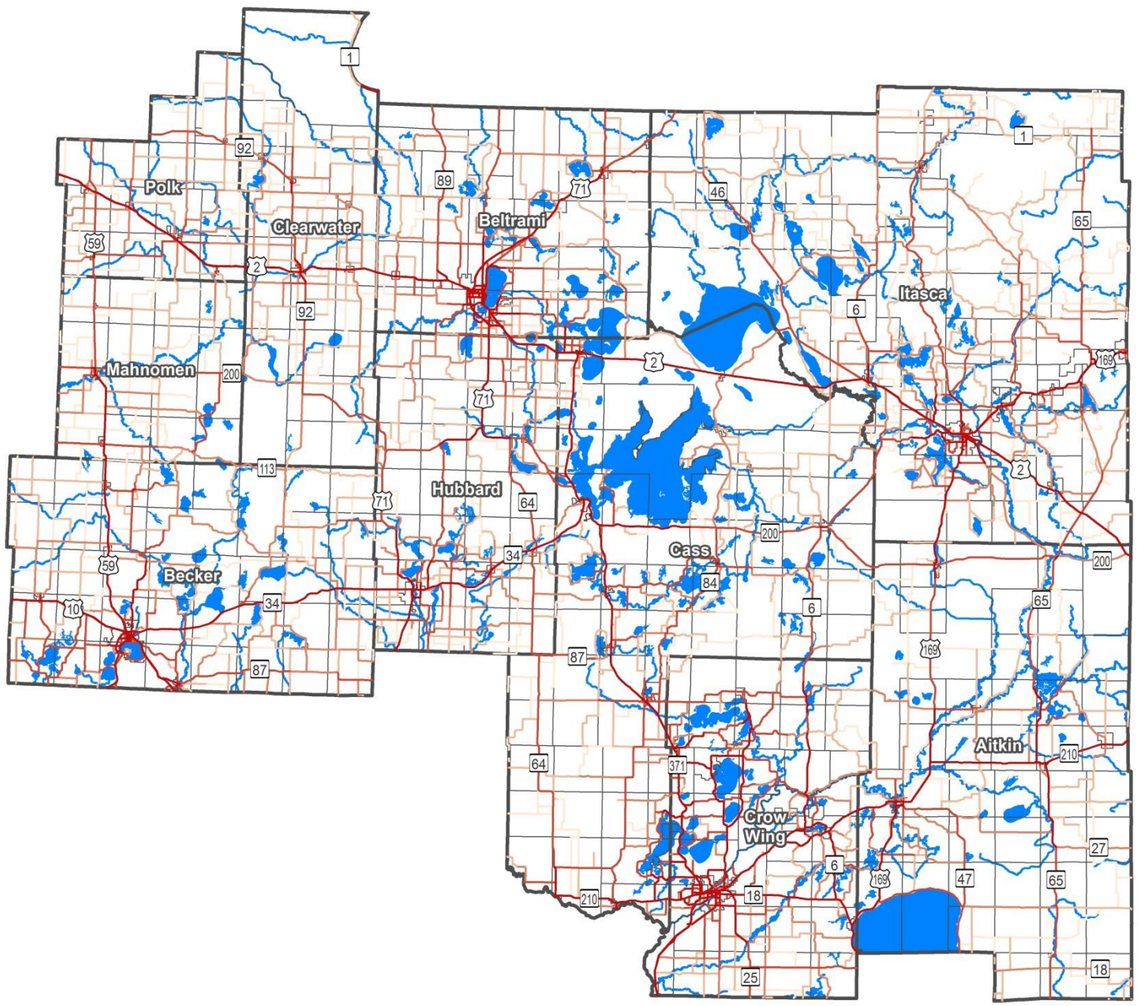
Sawmills (2013) Table

Map Number	Name	City
1	Bartel Logging And Lumber	Aitkin
2	Blandin Paper - Blandin West	Grand Rapids
3	Blandin Paper Co. - Pulp Logs	Grand Rapids
4	Cass Forest Products	Cass Lake
5	Christensen Forest Prod Inc.	Pine River
6	Clyde Schwartz Logging	Menagha
7	Country Sawmill	Walker
8	Dabil Mill	Pine River
9	Dahlke Sawmill	Clearbrook
10	Dba Lumber	Aitkin
11	Demenge Sawmill	Mcgregor
12	Demenge Sawmill - Woodyard	Mcgregor
13	Emily Forest Products	Emily
14	Enberg Logging	May Twp #
15	Etter Lumber & Timber	Talmoon
16	Fox Lake Log Creations	Bemidji
17	Frenzel Mill	Blackduck
18	Frisbee (Frank) Mill	Pillager
19	Gehrke Mill	Cass Lake
20	Hi Tech Milling Inc.	Remer
21	Highland Timber	Bemidji
22	Highway 71 Sawmill Co.	Park Rapids
23	Hillside Lumber Inc.	Bagley
24	Hooker (Melvin) Log & Lumber	Park Rapids
25	Hurd Sawmill	Bemidji
26	Hwy 71 Woodyard	Pending
27	International Paper Woodyard	Bemidji
28	Jewett Woodyard	Haypoint Area
29	John'S Mill	Frazee
30	Johnson Lumber Co.	Bena
31	Kahlstorf Lumber Co. Inc.	Lake George
32	Kimball'S Sawmill & Logging	Park Rapids
33	Kromy Ted - Woodyard	Grand Rapids
34	Lakeside Sawmill	Swatara
35	Land O' Lakes Wood Presv Co.	Tenstrike
36	Larson Lumber	Bagley
37	Larson Lumber	Littlefork
38	Latvala Sawmill	Nashwauk
39	Liane (Paul) Mill	Pine River
40	Liila Forest Products	Grand Rapids
41	Malmo Logging & Lumber Co.	Isle
42	Maple Wood Resources	Mcgrath
43	Mason Bros. Sawmill	Bemidji
44	Meb Custom Sawing	Mcgrath
45	Nagel Sawmill	Jenkins
46	Nagel Sawmill & Logging	Pine River
47	Nelson Wood Products	Togo
48	Neumann - Lynn	Pine River
49	Nevis Lumber	Nevis
50	Nistler - Leroy	Waukenabo Area
51	Nokasippi Logging & Lumber	Brainerd
52	North Star Lumber Inc.	Menahga
53	Northern Hardwood	Blackduck
54	Northwood Panelboard Co.	Solway
55	Osage Lumber & Milling	Osage
56	Pallet Minnesota Inc.	Bagley
57	Pine River Lumber Co.	Pine River
58	Portage Lake Wood Processing	Deerwood
59	Potlatch - Osb Bemidji	Bemidji
60	Potlatch - Wood Products	Bemidji
61	Potlatch Corp. - Grand Rapids	Grand Rapids
62	Potlatch Wood Concentration Yard	Baxter
63	Rajala Mill Co. - Bigfork	Bigfork
64	Rajala Timber Co. - Deer River	Deer River
65	Rajala Veneer Co.	Deer River
66	Rassier Lumber	Hill City
67	Red Pine Log Homes Inc.	Backus
68	Richards Brothers Inc.	Backus
69	Robinson Lumber & Treating	Mcgrath
70	Rock Lake Mill	Mcgregor
71	Rockensock Lumber	Blackduck
72	Savanna Pallets	Mcgregor
73	Sawyer Timber Company	Backus
74	Schmidtke - Mark	Backus
75	Simonson David	Isle
76	Smokey Hollow Enterprises	Swatara
77	Steamboat Sawmill	Bemidji
78	Summit Sawmill	Bemidji
79	Trus Joist Macmillan	Deerwood
80	Tviet Logging And Lumber	Palisade
81	Two Inlets Mill	Park Rapids
82	Valley Forest Resources	Marcell
83	Weaver Lumber Co.	Longville
84	Westerlunds Sawmill	Aitkin
85	Wildwood Lumber	Shevlin
86	Wilson Wood Products	Ponsford

Annual Average Daily Traffic

North Central Landscape Region



Annual Average Daily Traffic (2010 - 2012)

- 5 - 80
- 81 - 275
- 276 - 730
- 731 - 2200
- 2201 - 28000

Class breaks by quantile.

- No Data Available

Other Features

- County Boundaries
- Municipal Boundaries
- Lakes
- Rivers

0 5 10 20 30 40 Miles

Sources: AADT - MNDOT; Other Features - MN Geospatial Commons

N

Minnesota Forest Resources Council

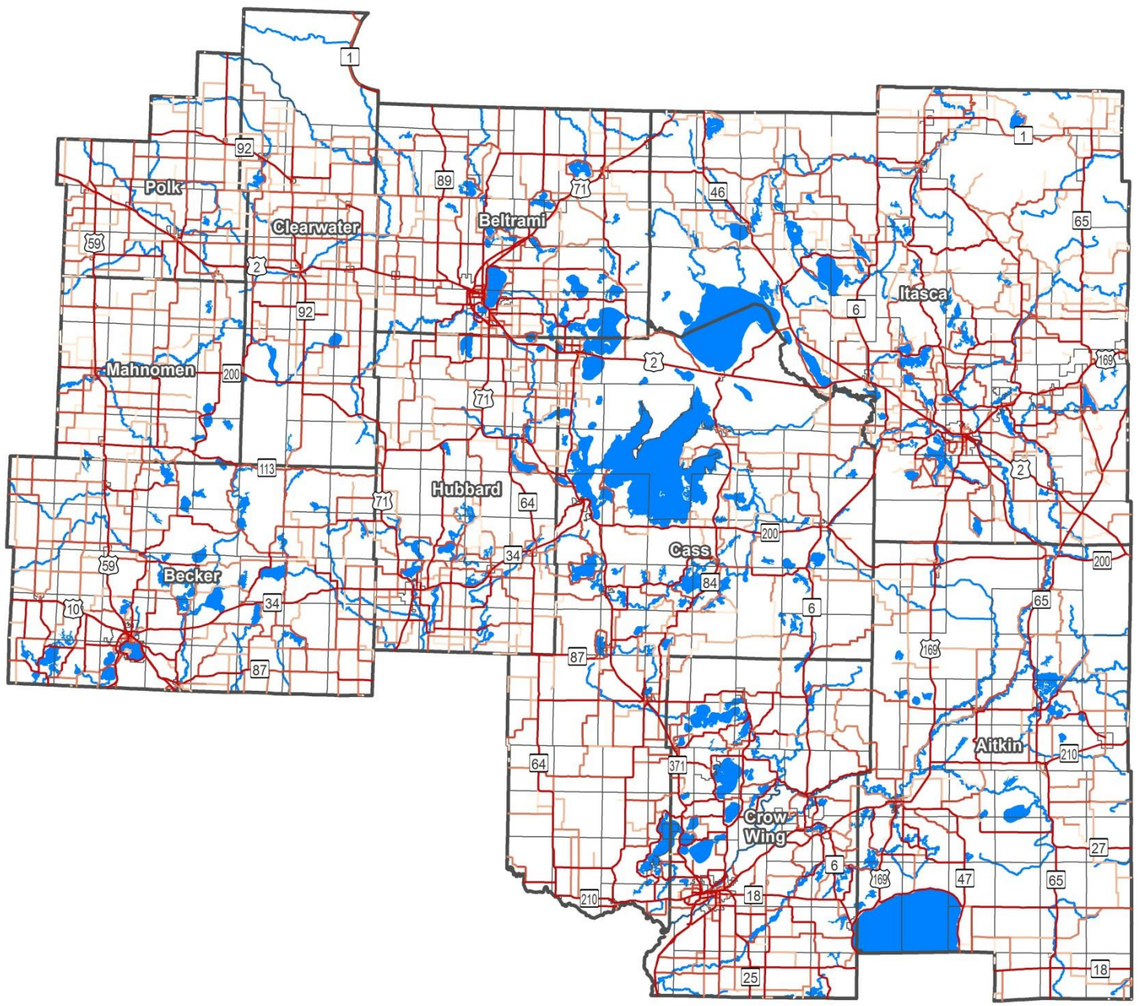
Annual Average Daily Traffic Table

Route Type	Annual Average Daily Traffic
US Highway	960,350
MN Highway	1,547,345
County State Aid Highway	1,298,350
Municipal State Aid Street	830,385
County Road	150,755
Township Road	1,685
Municipal Street	22,930
Indian Service Road	870
Total North Central Region	**4,812,670**

Annual Average Daily Traffic (AADT) is the number of vehicles that travel a section of road per day (averaged for 365 days in one year). MNDOT measures traffic for road sections every 2-4 years. Note that AADT is per section of road. If more sections of road exist for a Route Type, more AADT will be reported for that Route Type in the table above. For a normalized comparison of the amount of traffic on each route type, refer to the Annual Average Daily Vehicle Miles Traveled.

Annual Average Daily Vehicle Miles Traveled

North Central Landscape Region



Annual Average Daily Vehicle Miles Traveled (2010 - 2012)

- 0.01 - 118.69
- 118.70 - 347.10
- 347.11 - 976.05
- 976.06 - 2912.12
- 2912.13 - 341907.82

Class breaks by quantile.

- No Data Available

Other Features

- County Boundaries
- Municipal Boundaries
- Lakes
- Rivers

Miles
0 5 10 20 30 40

Sources: AAD VMT - MNDOT; Other Features - MN Geospatial Commons

N

Minnesota Forest Resources Council

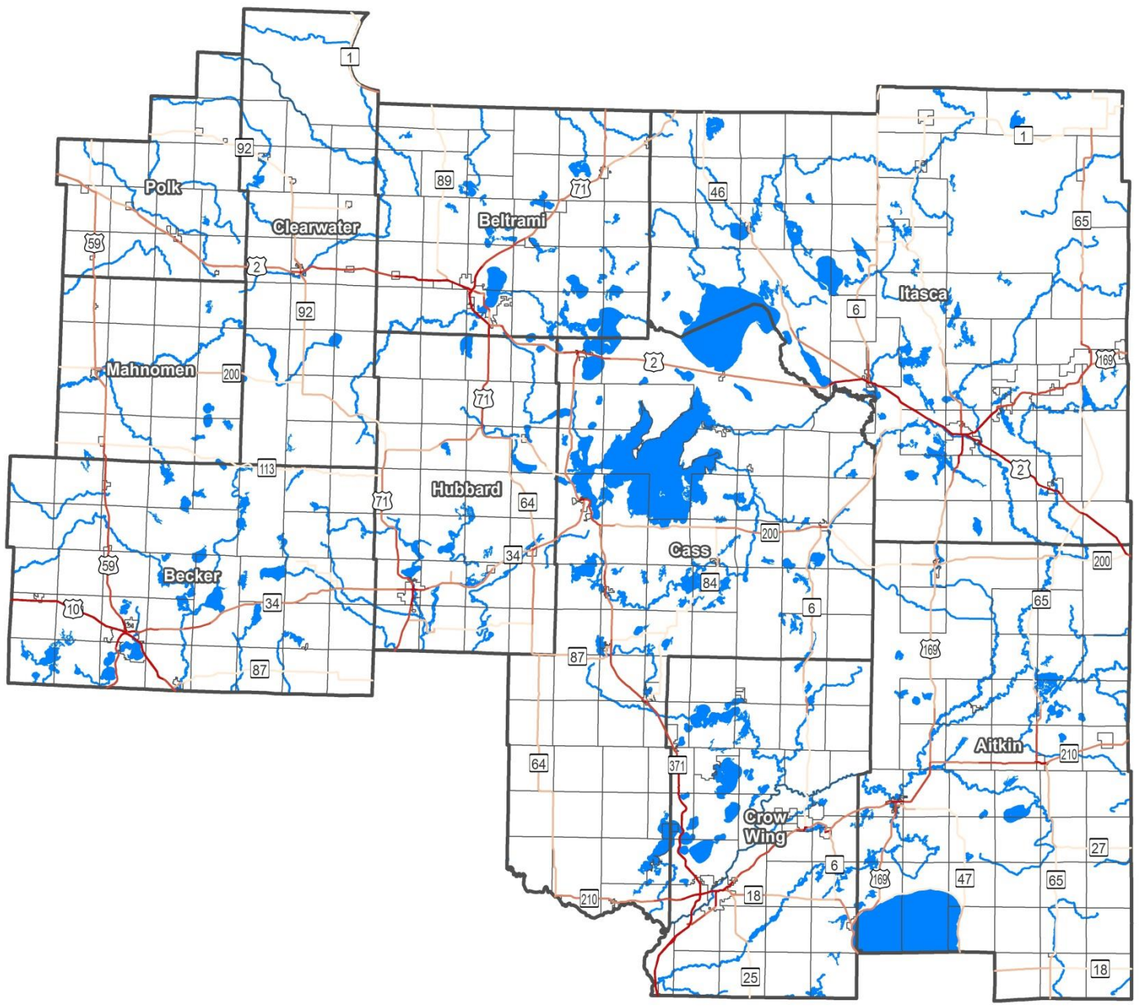
Annual Average Daily Vehicle Miles Traveled Table

Route Type	Length (miles)	Annual Average Daily Vehicle Miles Traveled
US Highway	581.5	3,208,983
MN Highway	1240.4	3,642,242
County State Aid Highway	3837.4	2,364,223
Municipal State Aid Street	93.6	249,304
County Road	1910.1	274,155
Township Road	16.2	3,554
Municipal Street	3.1	10,817
Indian Service Road	3.0	2,649
Total North Central Region	**7685.4**	**9,755,927**

Annual Average Daily Vehicle Miles Traveled (AAD VMT) is the number of vehicles that travel a section of road per day (averaged for 365 days in one year) multiplied by the length of the section of road. If 2 vehicles traveled a 2 mile section of road every day over the course of one year, the AAD VMT for that section of road would be 4. The AAD VMT should be used when comparing routes for traffic volume given that it provides a normalized comparison for traffic measurements (the Annual Average Daily Traffic count can be skewed by the presence of multiple sections of a Route Type).

Heavy Commercial Annual Average Daily Traffic

North Central Landscape Region



Heavy Commercial Annual Average Daily Traffic (2010 - 2012)

- 5 - 80
- 81 - 170
- 171 - 295
- 296 - 500
- 501 - 1800

Class breaks by quantile.

Other Features

- County Boundaries
- Municipal Boundaries
- Lakes
- Rivers

Miles
0 5 10 20 30 40

Sources: HCAADT - MNDOT; Other Features - MN Geospatial Commons

N

Minnesota Forest Resources Council

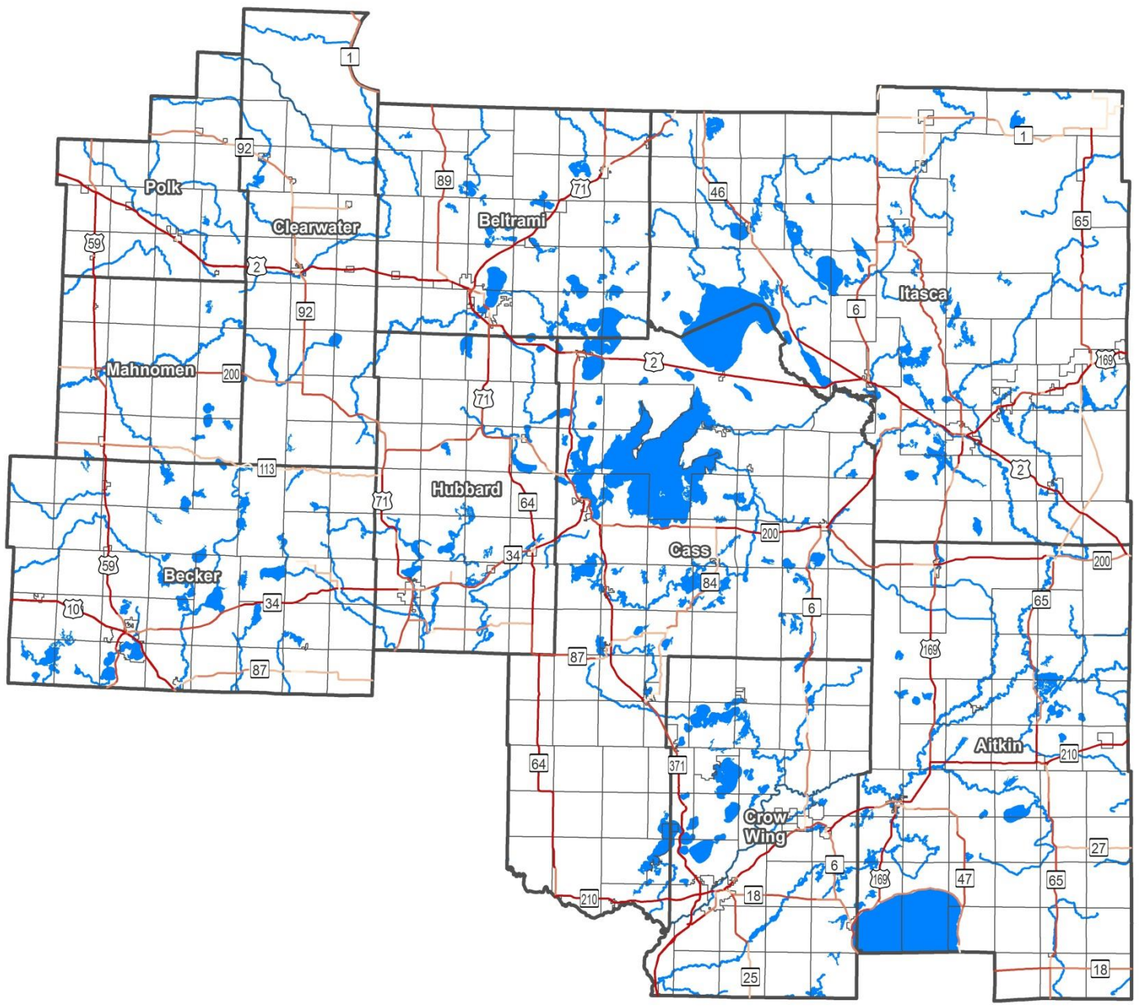
Heavy Commercial Annual Average Daily Traffic Table

Route Type	Heavy Commercial Annual Average Daily Traffic
US Highway	72,305
MN Highway	78,885
Total North Central Region	**151,190**

Heavy Commercial Annual Average Daily Traffic (HCAADT) is the number of trucks with at least 2 axles and 6 tires that travel a section of road per day (averaged for 365 days in one year). MNDOT measures traffic for road sections every 2-4 years. Note that HCAADT is per section of road. If more sections of road exist for a Route Type, more HCAADT will be reported for that Route Type in the table above. For a normalized comparison of the amount of traffic on each route type, refer to the Heavy Commercial Annual Average Daily Vehicle Miles Traveled map.

Heavy Commercial Annual Average Daily Vehicle Miles Traveled

North Central Landscape Region



Heavy Commercial Annual Average Daily Vehicle Miles Traveled (2010 - 2012)

- 0.01 - 104.60
- 104.61 - 284.42
- 284.43 - 634.44
- 634.45 - 1432.79
- 1432.80 - 24169.35

Class breaks by quantile.

Other Features

- County Boundaries
- Municipal Boundaries
- Lakes
- Rivers

Miles
0 5 10 20 30 40

Sources: HC AAD VMT - MNDOT; Other Features - MN Geospatial Commons

N

Minnesota Forest Resources Council

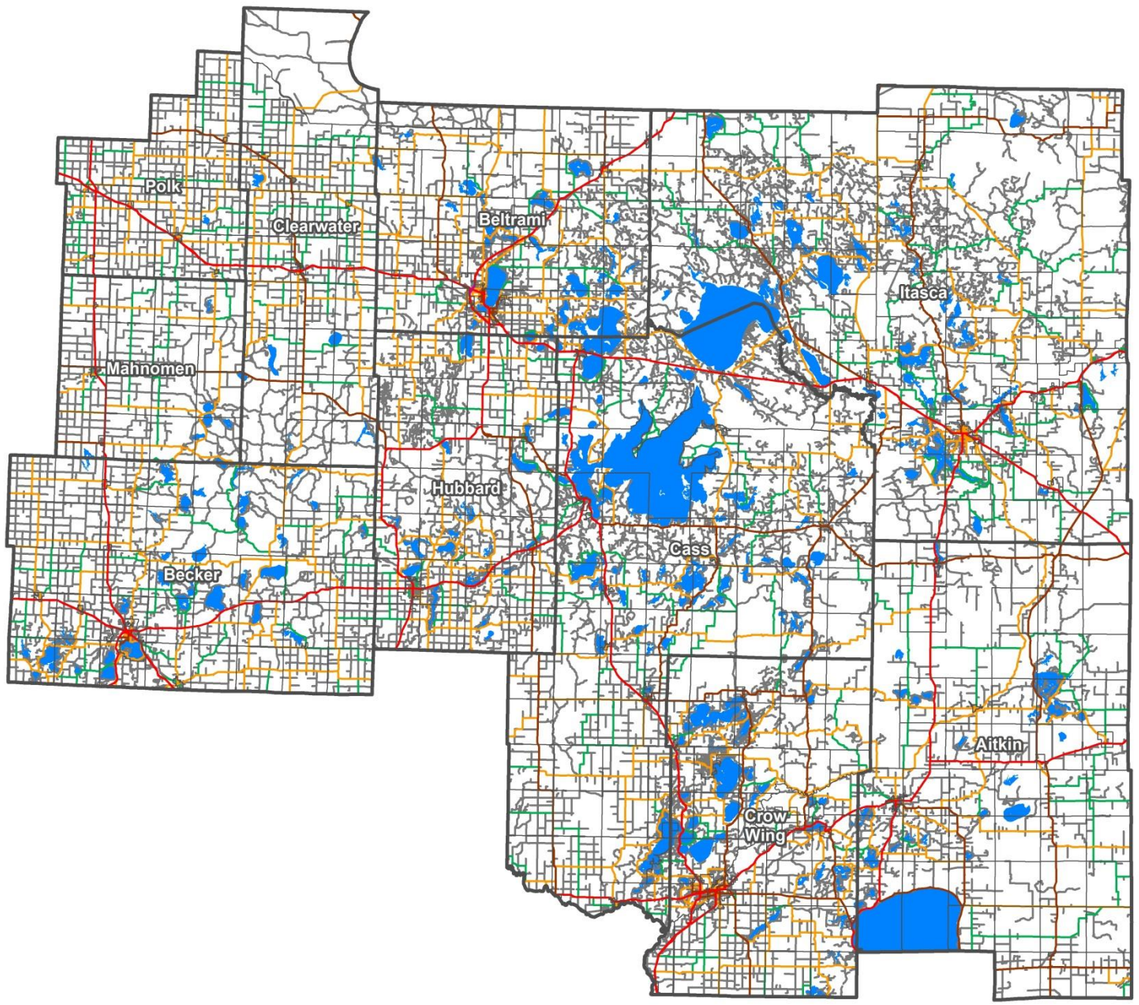
Heavy Commercial Annual Average Daily Vehicle Miles Traveled Table

Route Type	Length (miles)	Heavy Commercial Annual Average Daily Vehicle Miles Traveled
US Highway	581.3	241,973
MN Highway	1230.4	220,944
Total North Central Region	**1811.7**	**462,918**

Heavy Commercial Annual Average Daily Vehicle Miles Traveled (HCAAD VMT) is the number of trucks with at least 2 axles and 6 tires that travel a section of road per day (averaged for 365 days in one year) multiplied by the length of the section of road. If 2 trucks traveled a 2 mile section of road every day over the course of one year, the HCAAD VMT for that section of road would be 4. The HCAAD VMT should be used when comparing routes for traffic volume given that it provides a normalized comparison for traffic measurements (the Heavy Commercial Annual Average Daily Traffic count can be skewed by the presence of multiple sections of a Route Type).

Road Functional Classes

North Central Landscape Region



Road Functional Classes

- Principal Arterial - Interstate
- Principal Arterial - Other Freeways & Expressways
- Principal Arterial - Other
- Minor Arterial
- Major Collector
- Minor Collector
- Local

Other Features

- County Boundaries
- Municipal Boundaries
- Lakes

0 5 10 20 30 40 Miles

Sources: Road Functional Classes - MNDOT; Other Features - MN Geospatial Commons

N

Minnesota Forest Resources Council

Road Functional Classes Table

Road Functional Class	Miles
Principal Arterial - Interstate	0
Principal Arterial - Other Freeways & Expressways	3
Principal Arterial - Other	885
Minor Arterial	797
Total Arterial	**1,686**
Major Collector	2,520
Minor Collector	1,667
Total Collector	**4,186**
Local	13,371
Total Local	**13,371**
Total North Central Region	**19,243**

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