

MINNESOTA WETLANDS AND SURFACE WATERS

Minnesota's wetlands fit into one of three major classifications: vegetation-dominated habitats (palustrine), open-water habitats (lacustrine), or some type of stream or channel (riverine).






Types of vegetation-dominated (palustrine) wetlands are:

- **Emergent habitats** - with plants such as grasses, cattails, bulrushes, or sedges
- **Scrub-shrub habitats** - with woody shrubs less than 20 feet tall, such as alder, willow, dogwood, black spruce, or tamarack
- **Forested habitats** - with trees larger than 20 feet tall, such as ash, silver maple, black willow, black spruce, tamarack, or northern white cedar

Types of open-water (lacustrine) wetlands are:

- **Deepwater habitats or lakes** - with water depths greater than 6 feet and lack of aquatic surface vegetation
- **Shallow water habitats or lakes** - with water depths less than 6 feet and presence of aquatic surface vegetation, such as water lilies, pondweeds, duckweed, reeds, or wild rice

MINNESOTA WETLANDS

Symbol	Wetland Type	Acres (in 100,000s)	Percent of total state land area
	Emergent habitats	29.23	5.4
	Scrub-shrub habitats	28.40	5.3
	Forested habitats	43.51	8.1
	Deepwater habitats (lakes)	25.06	4.7
	Shallow water habitats (lakes)	4.93	0.9
	Totals	131.13	24.4

----- County boundary
----- Interstate highways

----- U.S. Trunk highways
• Cities >5000 population

MAP 1. MINNESOTA WETLANDS

Wetlands are distributed throughout Minnesota, with the greatest density occurring in the central, north-central, and northeastern portions of the state. This distribution has been shaped by past glacial events and human activities during the last 150 years. Heavy concentrations of forested and scrub-shrub wetlands exist in the north and northeast, while emergent wetlands are found mostly in the central and northwestern regions. The southern third of the state and the Red River Valley in the west have fewer wetlands due to artificial drainage of the landscape largely for agricultural development.

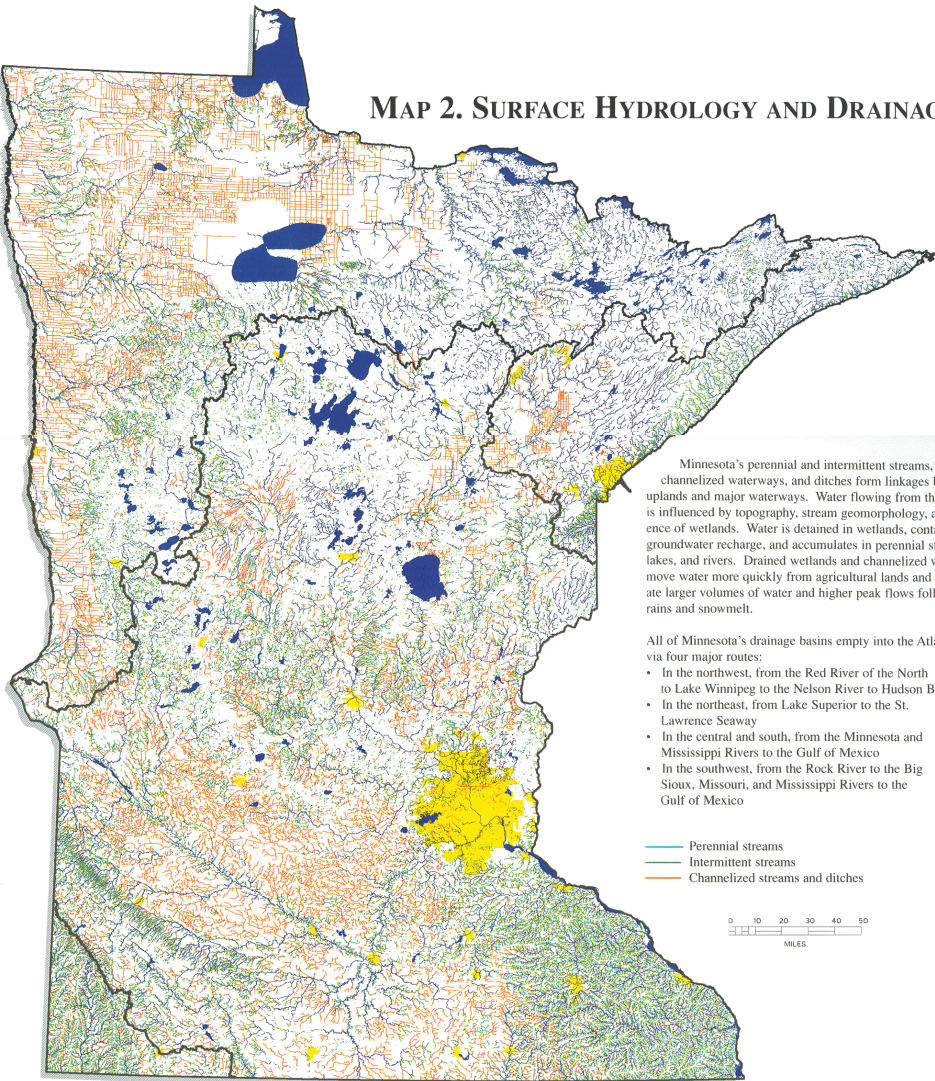
Minnesota has more than 15,000 lakes, 90,000 miles of rivers and streams, and over 10 million acres of wetlands including peatlands, marshes, sloughs, brushy swamps, forested lowlands, and wet meadows. Wetlands are lands transitional between uplands and aquatic habitats where the water table is usually at or near the soil surface, or where the land is covered by shallow water. Wetlands must have a predominance of water-oriented soils and under normal circumstances support specific vegetation adapted to such conditions. They are valuable natural resources because of their important functions, which include flood control, filtration of pollutants, fish and wildlife habitat, recreational opportunities, and scenic values.

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Minnesota is nationally recognized for establishing a no-net-loss policy for wetlands. Local governments and leading state agencies of the Minnesota Department of Natural Resources and Board of Water and Soil Resources, along with federal agencies, are implementing programs aimed at protecting existing wetlands and restoring wetlands. Restoration of wetland functions will benefit existing water and land resources of the state, as well as improve associated uses for humans and wildlife.

The present diversity and distribution of Minnesota wetlands (Map 1) are directly related to the surface hydrology of the state (Map 2) as influenced by the topography formed by past geologic and glacial events (Map 3). Human settlement activity has caused large losses of wetlands since pre-settlement times (Map 4).

MAP 2. SURFACE HYDROLOGY AND DRAINAGE



Minnesota's perennial and intermittent streams, channelized waterways, and ditches form linkages between uplands and major waterways. Water flowing from the landscape is influenced by topography, stream geomorphology, and the presence of wetlands. Water is detained in wetlands, contributes to groundwater recharge, and accumulates in perennial streams, lakes, and rivers. Drained wetlands and channelized watercourses move water more quickly from agricultural lands and may generate larger volumes of water and higher peak flows following heavy rains and snowmelt.

All of Minnesota's drainage basins empty into the Atlantic Ocean via four major routes:

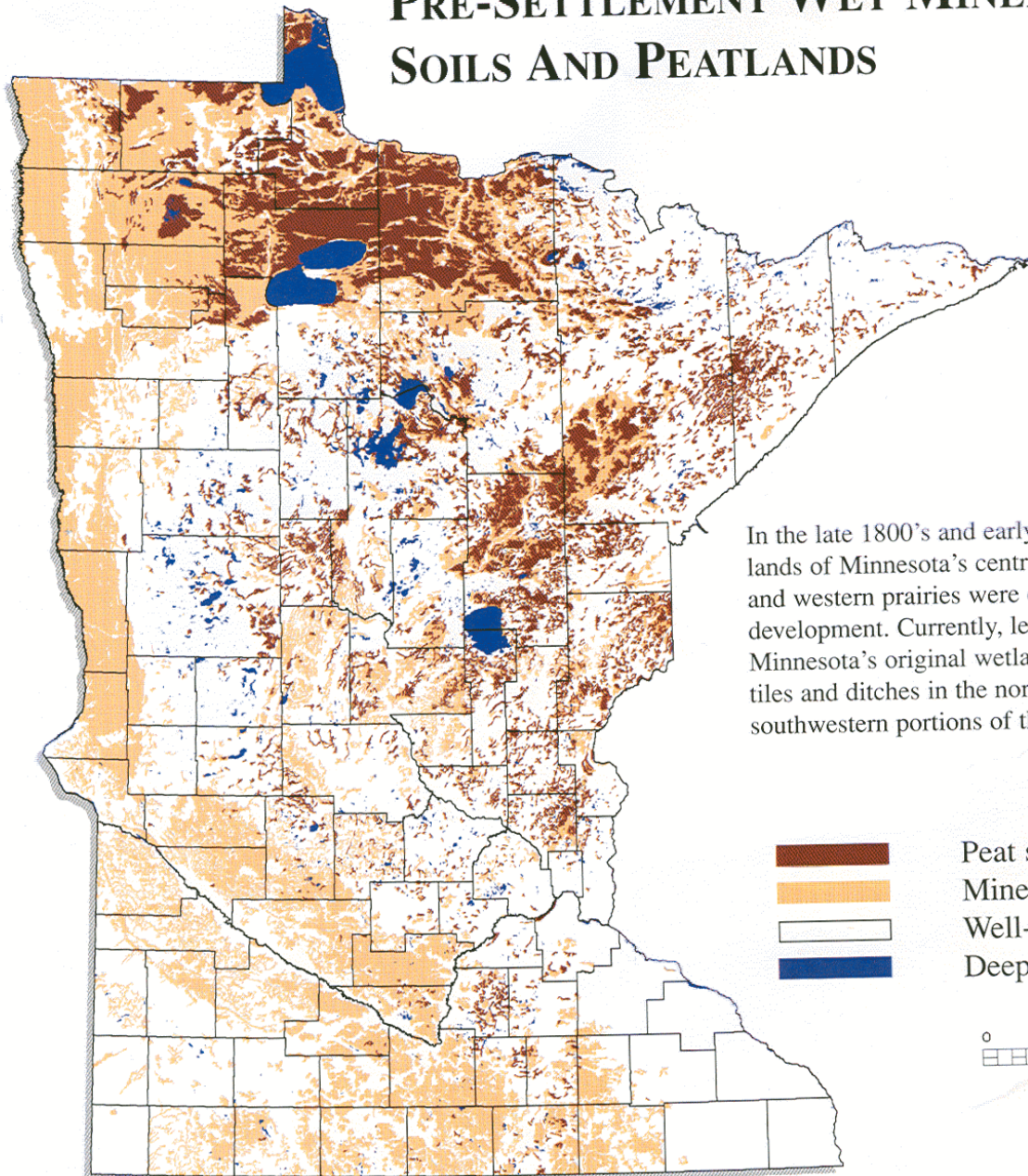
- In the northwest, from the Red River of the North to Lake Winnipeg to the Nelson River to Hudson Bay
- In the northeast, from Lake Superior to the St. Lawrence Seaway
- In the central and south, from the Minnesota and Mississippi Rivers to the Gulf of Mexico
- In the southwest, from the Rock River to the Big Sioux, Missouri, and Mississippi Rivers to the Gulf of Mexico

— Perennial streams
— Intermittent streams
— Channelized streams and ditches



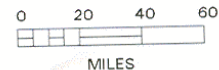
■ Lakes > 5,000 acres ■ Urban Areas >10,000 population — Regional watershed divides

MAP 4. PRE-SETTLEMENT WET MINERAL SOILS AND PEATLANDS

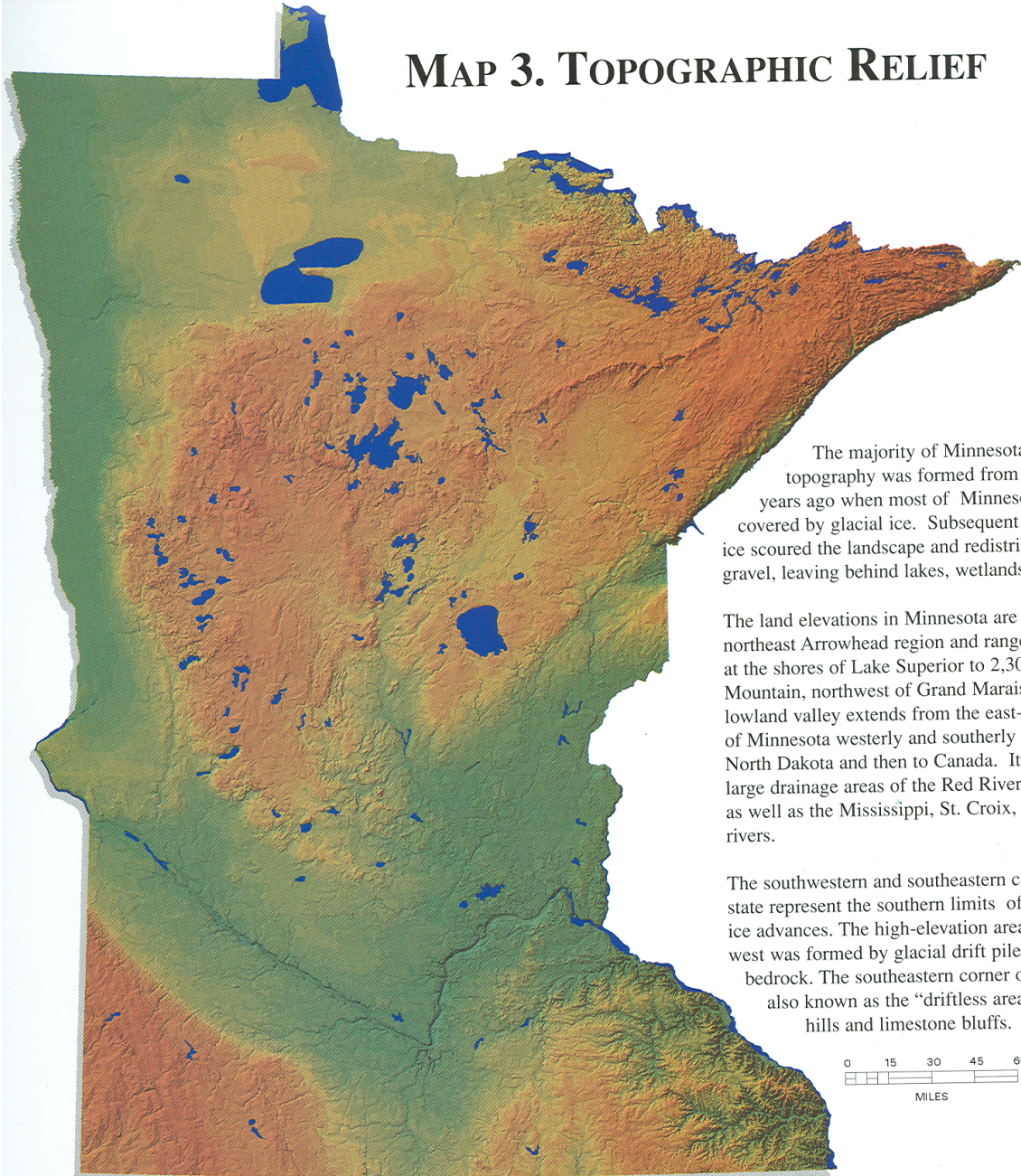


In the late 1800's and early 1900's, many wetlands of Minnesota's central forests and southern and western prairies were drained for agricultural development. Currently, less than half of Minnesota's original wetlands remain due to drain tiles and ditches in the northwestern, western, and southwestern portions of the state.

- Peat soils
- Mineral soils
- Well-drained soils
- Deepwater basins



MAP 3. TOPOGRAPHIC RELIEF



The majority of Minnesota's present-day topography was formed from 25,000-10,000 years ago when most of Minnesota was covered by glacial ice. Subsequent movements of ice scoured the landscape and redistributed soils and gravel, leaving behind lakes, wetlands, and rivers.

The land elevations in Minnesota are highest in the northeast Arrowhead region and range from 602 feet at the shores of Lake Superior to 2,301 feet at Eagle Mountain, northwest of Grand Marais. A broad, lowland valley extends from the east-central region of Minnesota westerly and southerly to South and North Dakota and then to Canada. It includes the large drainage areas of the Red River of the North, as well as the Mississippi, St. Croix, and Minnesota rivers.

The southwestern and southeastern corners of the state represent the southern limits of recent glacial ice advances. The high-elevation area of the southwest was formed by glacial drift piled upon deep bedrock. The southeastern corner of Minnesota, also known as the "driftless area," has rolling hills and limestone bluffs.








600 ft

2,300 ft



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INFORMATION FOR WETLAND TYPES

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


EASTERN AND SOUTH- EASTERN MINNESOTA

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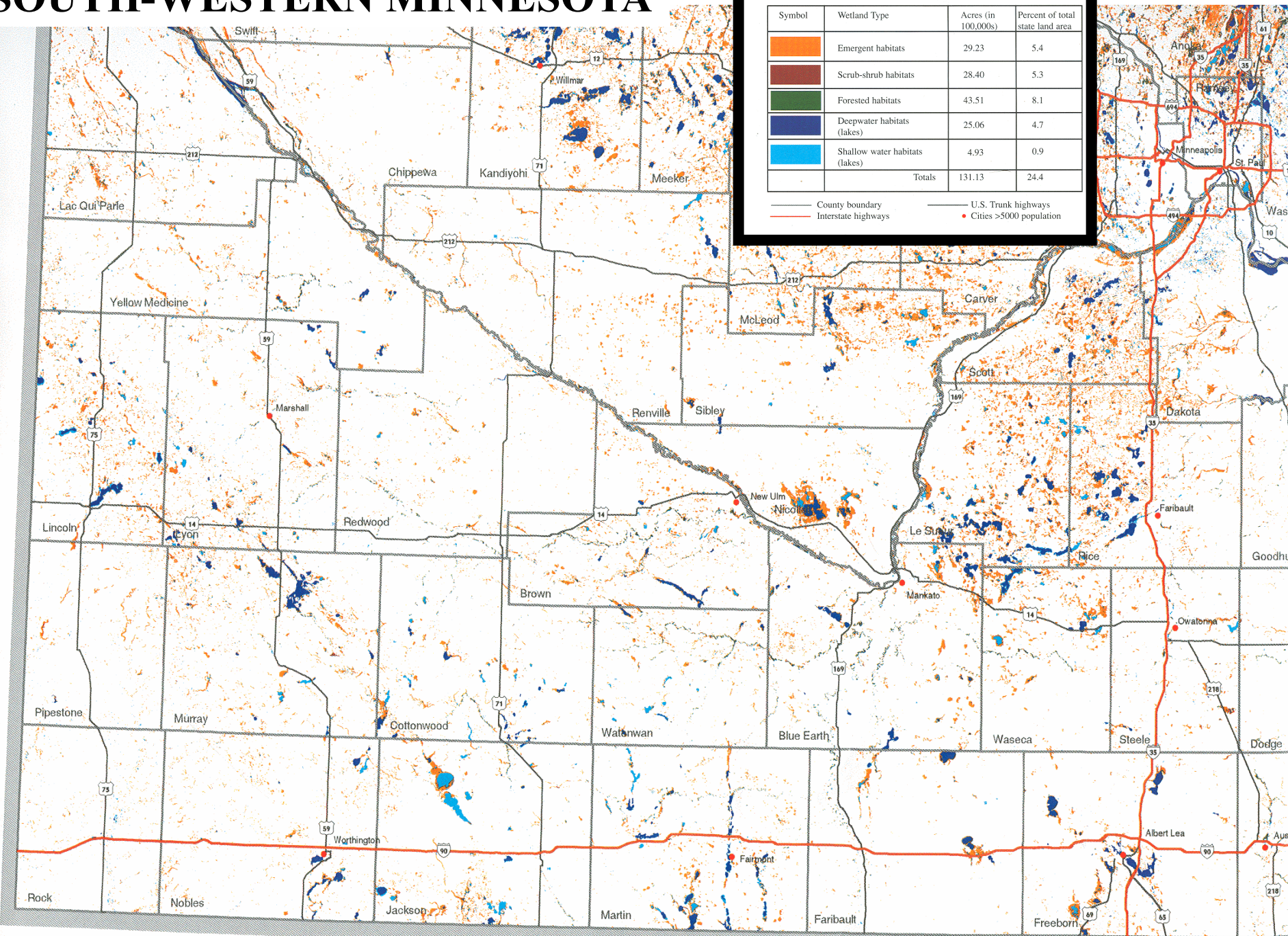
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SOUTH-WESTERN MINNESOTA

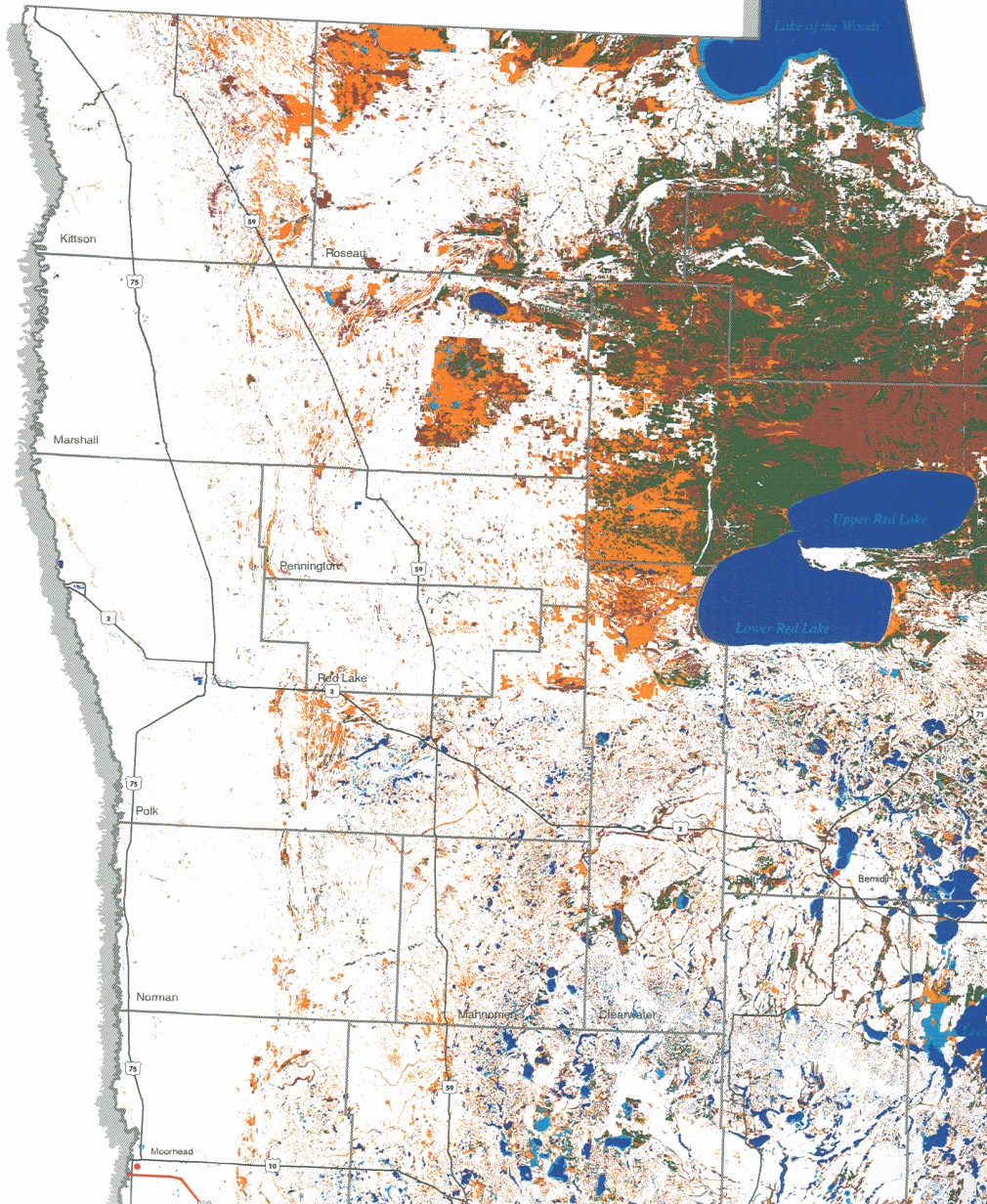
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Interstate highways Cities >5000 population





NORTH-WESTERN MINNESOTA



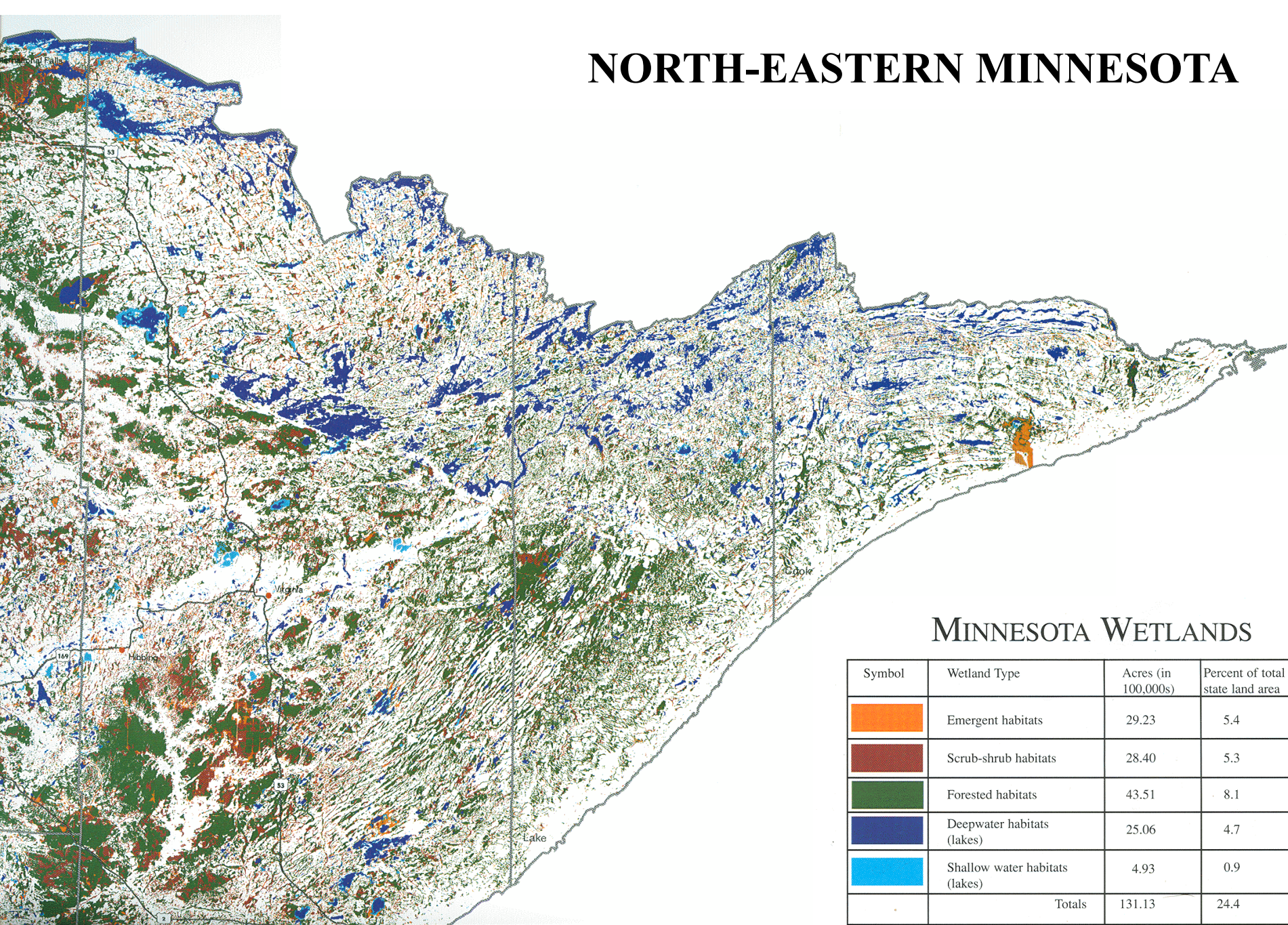
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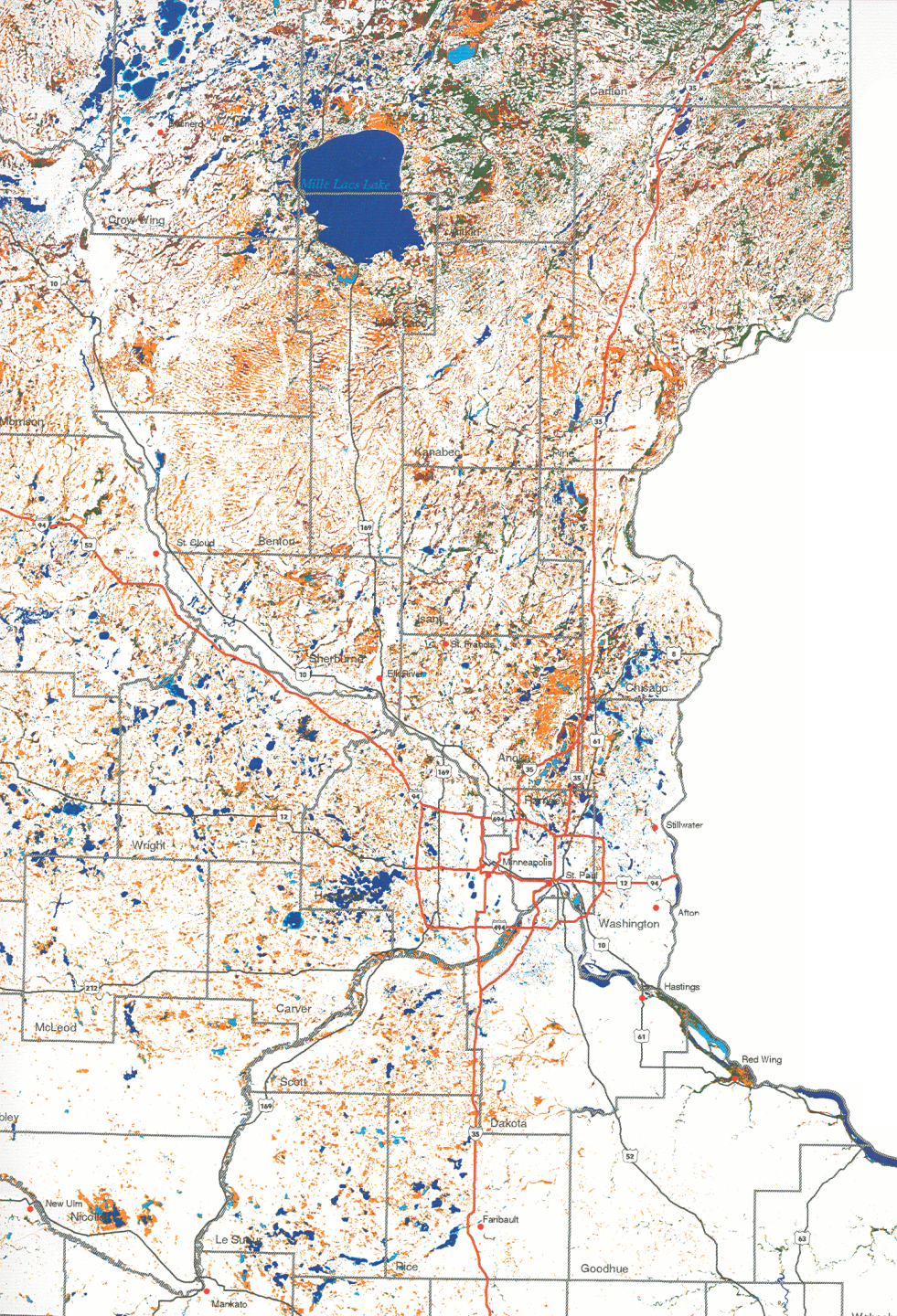
NORTH-EASTERN MINNESOTA



MINNESOTA WETLANDS


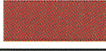



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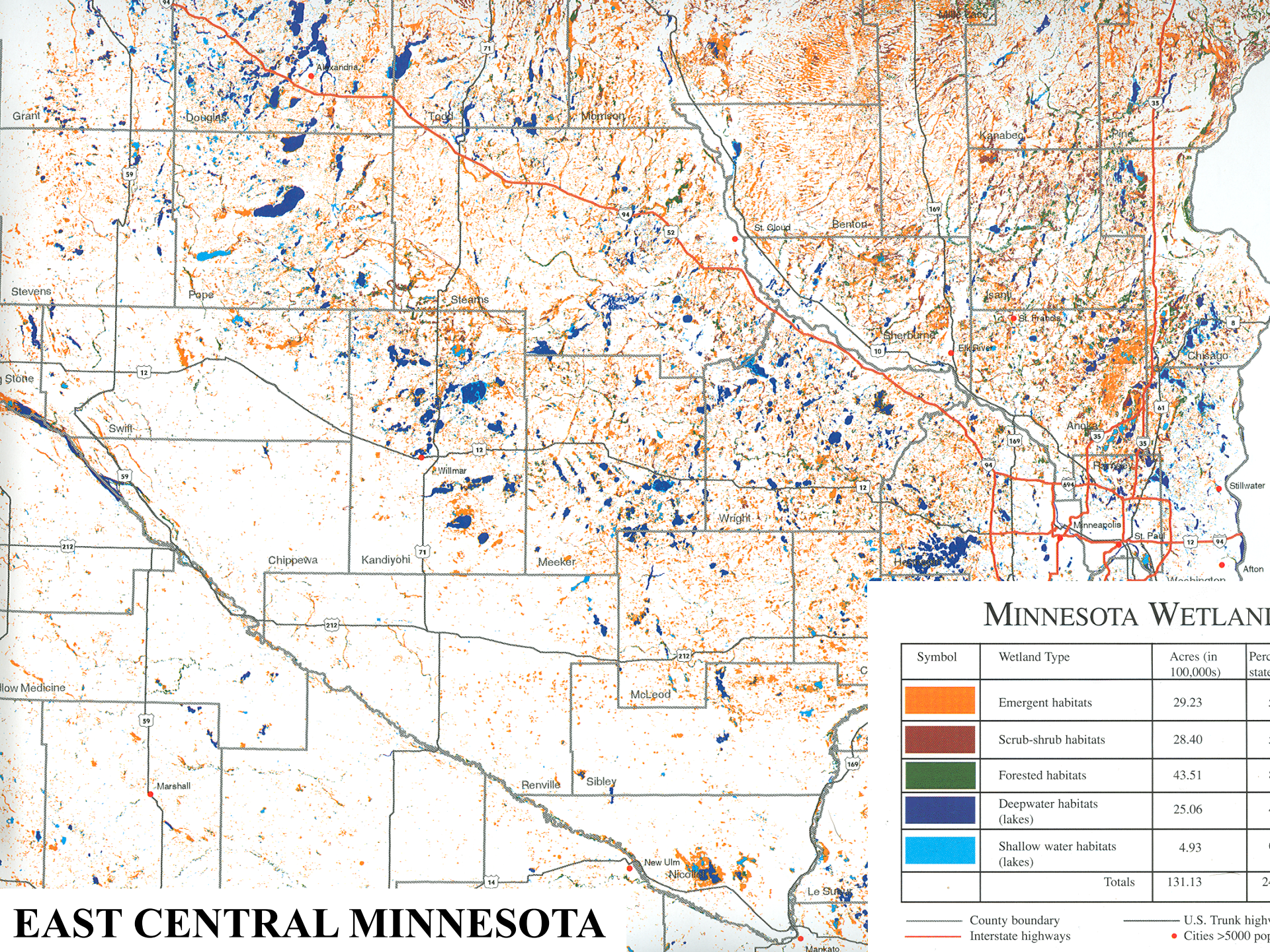


EASTERN MINNESOTA






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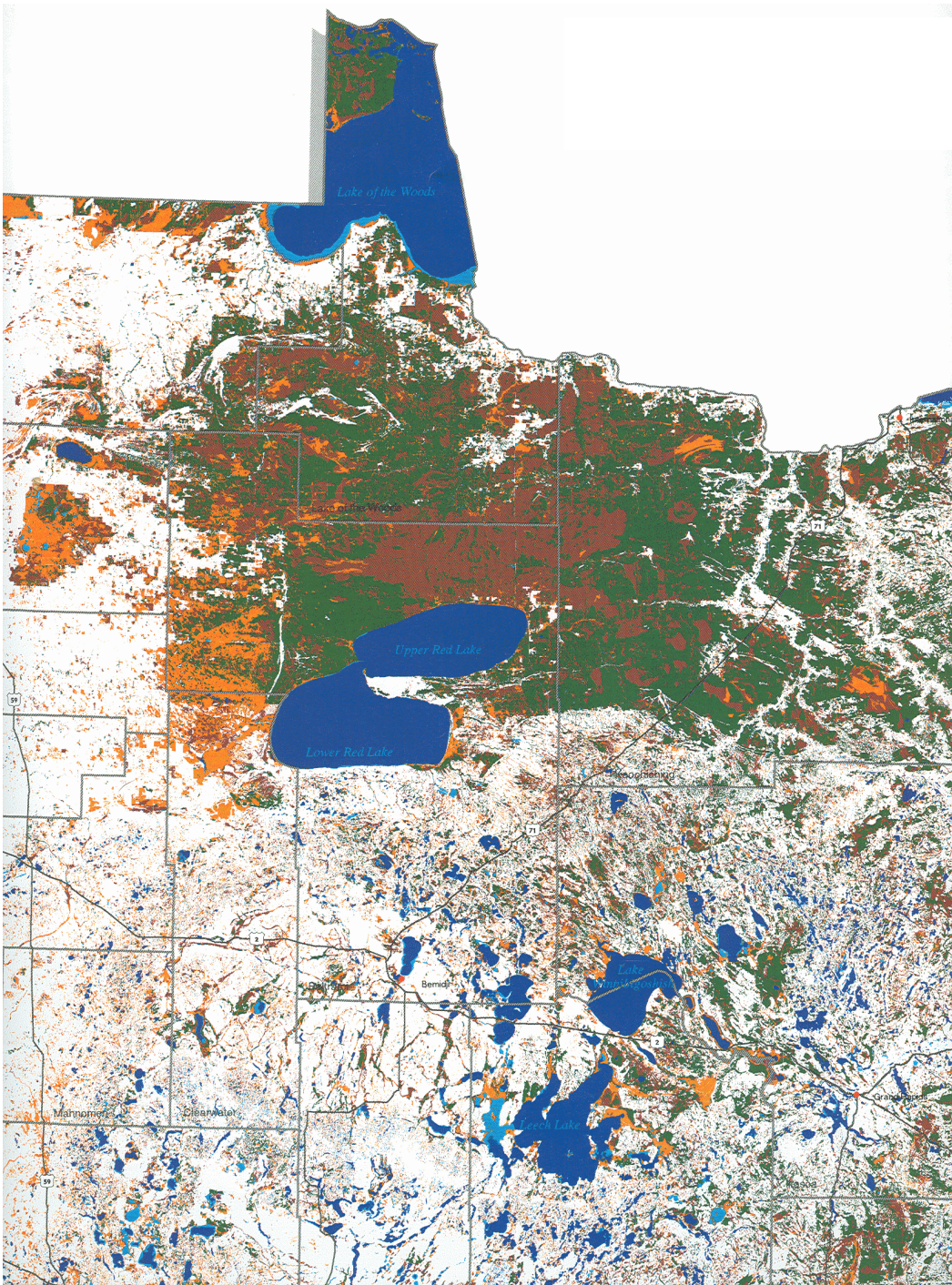
MINNESOTA WETLANDS

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	Emergent habitats	29.23	3.1%
	Scrub-shrub habitats	28.40	3.0%
	Forested habitats	43.51	4.6%
	Deepwater habitats (lakes)	25.06	2.7%
	Shallow water habitats (lakes)	4.93	0.5%
	Totals	131.13	2.9%






County boundary U.S. Trunk highway
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EAST CENTRAL MINNESOTA

NORTH CENTRAL MINNESOTA

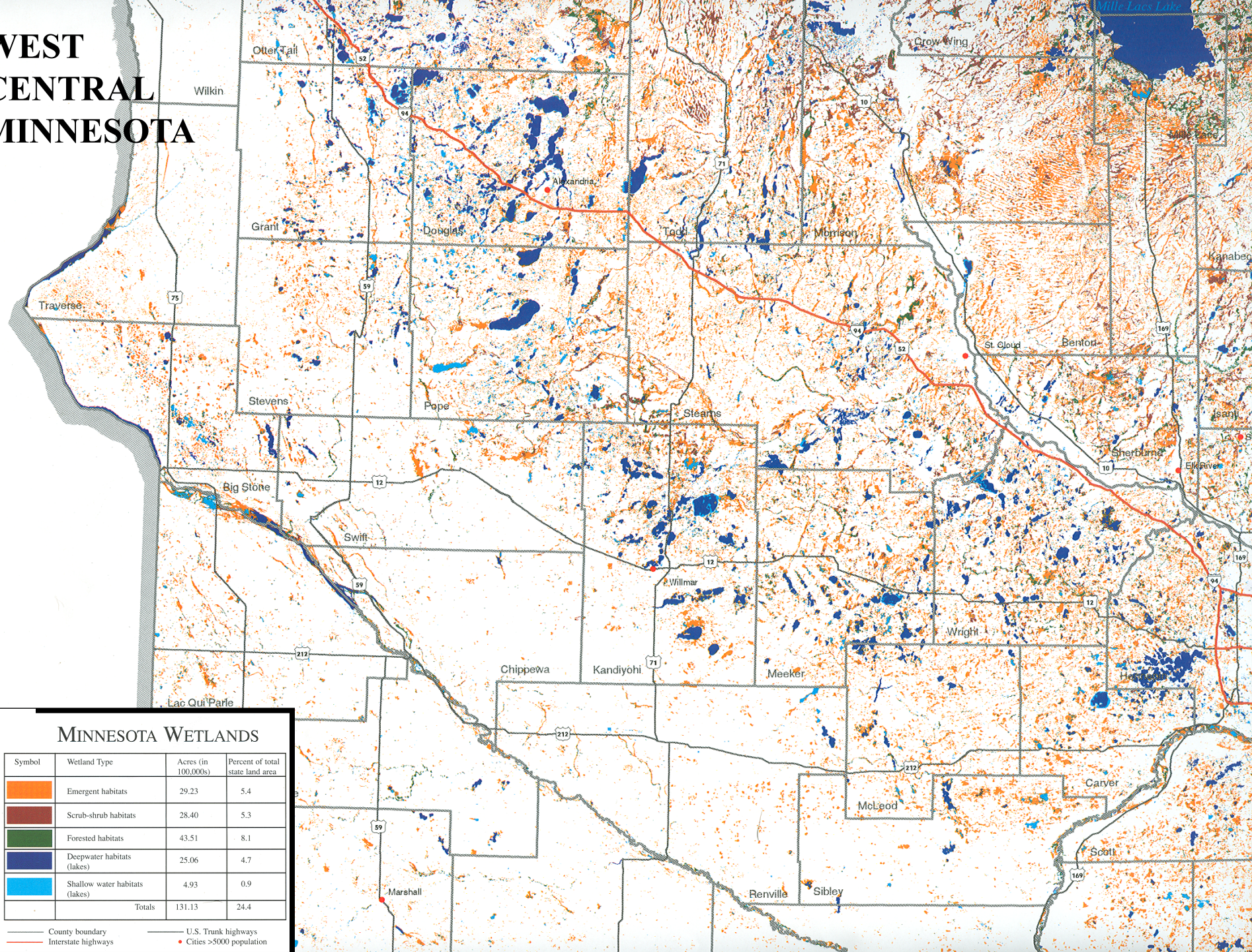


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