

Chapter 4

Land Cover and Protected Lands

Coastal Land Cover

In coastal resource management, it is sometimes difficult to see the forest for the trees, both literally and figuratively. Remote sensing by means of satellite imagery can provide a unique view of communities and show us the “big picture” of a region. Satellite-derived data are one of the best tools for:

- Documenting changes in the landscape
- Gaining a better understanding of population growth patterns and habitat distribution
- Creating a resource inventory for a large area

The 2000 Ohio Coastal Land Cover map is part of the National Oceanic and Atmospheric Administration (NOAA), Coastal Services Center’s (CSC), Coastal Change Analysis Program (CCAP). This land-cover data is designed to help coastal resource managers in their decision making processes. Land cover is the natural surface of the landscape. This includes forest, water, wetlands and urban areas, and is reflected in the maps in this chapter. In comparison, land use describes human use of the landscape: residential, commercial, agriculture, and industry for example.

Land use can be inferred from satellite imagery.

How Land Cover is Determined

Surface land cover materials reflect, absorb or transmit light from the sun. Different surface materials correspond to land cover categories and provide the basis for identifying land cover categories from satellite data. Satellite multi-spectral sensors collect multiple wavelengths of light. Reflective characteristics of the surface are compared and clumped together to form spectral signatures. Computer processing and statistical analysis of the spectral signatures determines the unique characteristics of each land cover category. These characteristics are turned into land cover classifications that can be statistically analyzed and mapped. Supplemental field work and ancillary data such as U.S. Geological Survey (USGS) maps, National Wetland Inventory data and other digital data are used to further refine the classifications.

Landsat data was used to produce the Ohio Coastal Land Cover map. Fifteen Landsat digital images from spring and summer 1999, 2000 and 2001 were computer processed and analyzed to produce the following maps. A multi-spectral scanner called a Thematic Mapper produced

the raw spectral data. This data was processed and analyzed according to Coastal Change Analysis Program protocols to determine land cover.

The Land Cover classes shown on the maps are:

High Intensity Developed – Includes highly developed areas where people reside or work in high numbers. Impervious surfaces account for 80 to 100 percent of the total cover. These areas include large commercial/industrial complexes and associated parking, commercial strip development, large barns, hangars, interstate highways and runways.

Low Intensity Developed – Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50 to 79 percent of total cover. These areas include small buildings such as single family houses, farm out-buildings, large sheds and streets and roads with associated trees and grasses.

Cultivated Crops – Areas used for the production of annual crops, where crop vegetation exceeds 20 percent of total vegetation. This class also includes all land being actively

tilled. These areas include crops (corn, soybeans and vegetables), orchards, nurseries and vineyards.

Grassland – Areas dominated by herbaceous vegetation, generally greater than 60 percent of total vegetation. These areas are not subject to intensive management such as tilling, but can be utilized for grazing. These areas include prairies, meadows, fallow fields, clear cuts with natural grasses, and undeveloped lands with naturally occurring grasses. “Herbaceous” means of, relating to or having the characteristics of an herb, having little or no woody tissue and persisting usually for a single growing season, or having the texture, color or appearance of a leaf.

Deciduous Forest – Areas dominated by trees greater than 20 feet tall and exceeding 33 percent of total vegetation cover. More than 75 percent of the tree species shed foliage in the fall. Characteristic tree species include maple, hickory, oak and aspen.

Evergreen Forest - Areas dominated by trees greater than 16 feet tall and exceeding 20 percent of total vegetation cover. More than 67 percent

of the trees maintain their leaves all year. Canopy is never without green foliage. Characteristic species include pine, firs, spruces and hemlock.

Mixed Forest – Areas dominated by both evergreen and deciduous trees, neither of which is predominant, greater than 16-feet tall and exceeding 20 percent of total vegetation cover.

Scrub / Shrub – Areas dominated by shrubs less than 20-feet tall with shrub canopy typically greater than 20 percent of total vegetation. This class includes tree shrubs, young trees or trees stunted from environmental conditions.

Palustrine Forested Wetland – Includes wetlands dominated by woody vegetation greater than or equal to 20 feet in height. Characteristic species include tupelo, cottonwoods, bald cypress, American elm, ash and tamarack. Wetland areas are dominated by saturated soils and often have standing water. Wetland vegetation is adapted to withstand long-term immersion and saturated, oxygen-depleted soils. “Palustrine” comes from the Latin word “palus” or marsh. Palustrine wetlands lack

flowing water and contain fresh water.

Palustrine Shrub/Scrub Wetland – Includes wetlands dominated by woody vegetation less than 20 feet in height. The species present could be true shrubs, young trees and shrubs, or trees that are small or stunted due to environmental conditions. Characteristic species include alder, willow and buttonbush.

Palustrine Emergent Wetland – Includes wetlands dominated by persistent emergent plants and emergent mosses or lichens. Plants generally remain standing until the next growing season. Characteristic species include cattail, sedge, bulrush, saw grass and reed.

Unconsolidated Shore – Areas of unconsolidated material such as silt, sand or gravel, that is subject to inundation and redistribution due to action of water. Usually lacking vegetation except for pioneering plants that become established during brief periods when growing conditions are favorable. Characteristic land cover features include beaches, sand bars and flats.

Bare Land – Barren areas of bedrock, sand dunes, strip mines, gravel pits and other accumulation of earth material. Generally, vegetation accounts for less than 10 percent of total cover. Characteristic land cover features include quarries, strip mines, gravel pits, dunes, beaches, and sandy areas other than beaches and exposed rock.

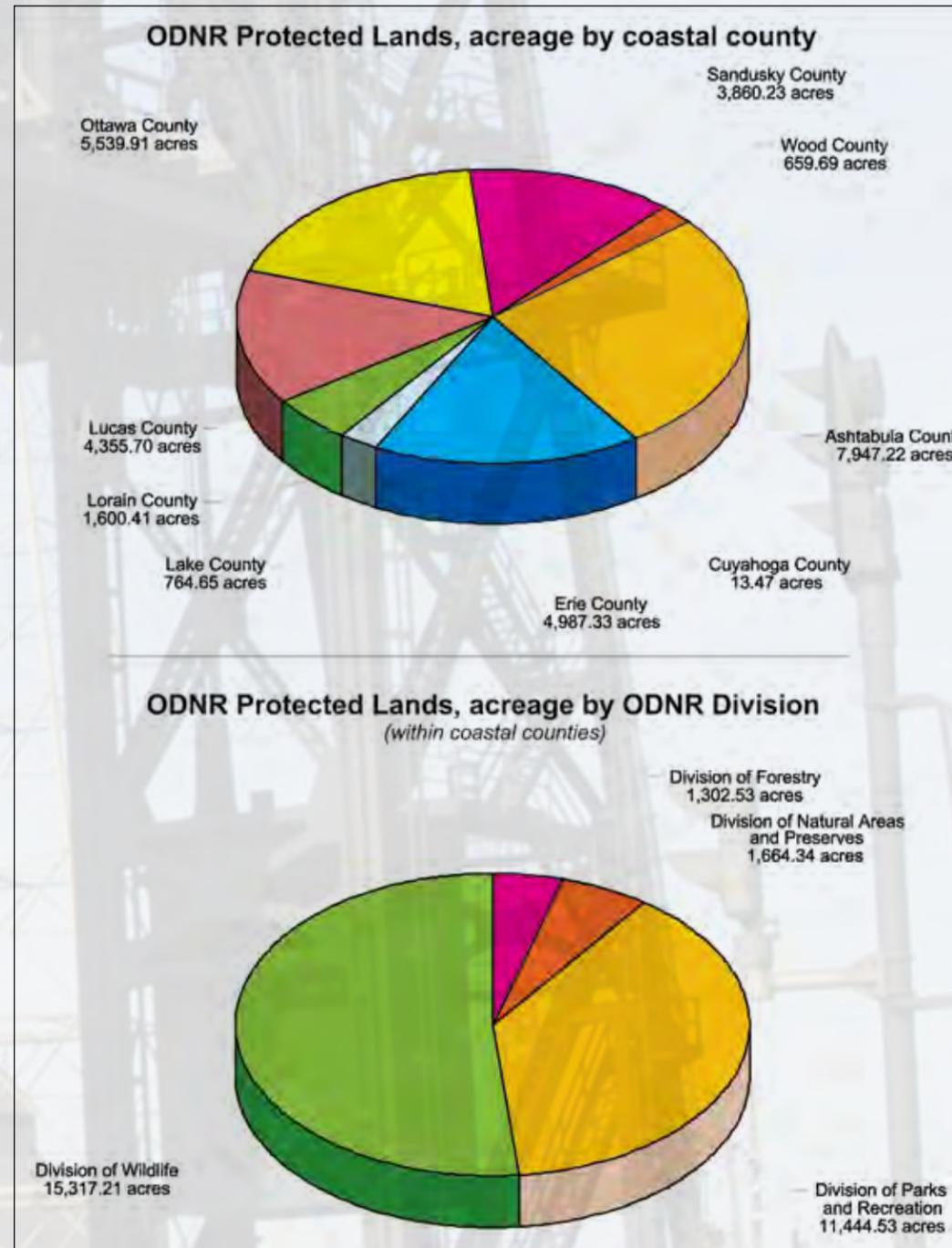
Water – All areas of open water, generally with less than 25 percent cover of vegetation or soil. Characteristic land cover features include lakes, rivers, reservoirs, streams and ponds.

This land cover data is mapped at a small scale and is not jurisdictional (cannot be used for permitting). Individual tree and vegetation species are not identifiable. The data are useful for identifying regional landscape patterns and major functional habitats; environmental impact assessment, urban planning and zoning applications. Permitting cannot be accomplished from the data. The data cannot be used in litigation. NOAA cannot assume liability for any damages or misrepresentations caused by any inaccuracies in the data.

For more information/Source:

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National Oceanic and Atmospheric Administration
 Coastal Services Center
 Coastal Change Analysis Program
www.csc.noaa.gov/crs/lca/



Source: ODNR Division of Real Estate and Land Management, "2005 Land Inventory," 2005

- Protected Lands Identification Key**
- Map Region 1: Toledo Area
 - Map Region 2: Locust Point Area
 - Map Region 3: Sandusky Bay Area
 - Map Region 4: Lake Erie Islands
 - Map Region 5: Sandusky and Huron Area
 - Map Region 6: Lorain Area
 - Map Region 7: Cleveland Area
 - Map Region 8: Painesville Area
 - Map Region 9: Arcola Creek Area
 - Map Region 10: Ashtabula and Conneaut Area

Background photo: Cleveland industry, Cuyahoga County

Protected Lands Identification



Mill Hollow Vermilion River Reservation, Lorain County



Green Island State Wildlife Area, Ottawa County



Cuyahoga Valley National Park



Huntington Reservation, Cuyahoga County

Protected Lands Description and Identification

The ‘ODNR Protected Lands’ data in this chapter identifies the properties that are owned or leased, and managed by the Ohio Department of Natural Resources. These properties include State Parks, State Nature Preserves, State Forests and State Wildlife Areas, among others.

The ‘Non-ODNR Protected Lands’ data identifies properties that are protected for conservation purposes. These lands are owned, protected and/or managed federally, locally or privately, and include county metroparks, easements, shooting clubs, wildlife refuges and nature preserves, among others.

Below is the protected lands identification guide that corresponds with the number symbols found in each map.

Map Region 1 – Toledo Area

ODNR Protected Lands

- (1) Mallard Club Marsh State Wildlife Area
- (2) Maumee Bay State Park

Non-ODNR Protected Lands

- (3) Audubon Islands Nature Preserve
- (4) Cedar Point National Wildlife Refuge
- (5) Fallen Timbers Battlefield National Historical Site
- (6) Fort Meigs State Memorial
- (7) Island 18
- (8) Ottawa Park
- (9) Pearson, Metroparks of the Toledo Area
- (10) R.A. Stranahan Arboretum
- (11) Side Cut, Metroparks of the Toledo Area
- (12) Swan Creek Preserve, Metroparks of the Toledo Area
- (13) Unnamed Regional Park
- (14) Wildwood Preserve, Metroparks of the Toledo Area

Map Region 2 – Locust Point Area

ODNR Protected Lands

- (1) Crane Creek State Park
- (2) Little Portage State Wildlife Area
- (3) Magee Marsh State Wildlife Area
- (4) Metzger Marsh State Wildlife Area
- (5) Portage River Wildlife Access
- (6) Toussaint State Wildlife Area
- (7) Wildlife Habitat Restoration Program

Non-ODNR Protected Lands

- (8) Ottawa National Wildlife Refuge – Darby Division
- (9) Ottawa National Wildlife Refuge – Navarre Division
- (10) Ottawa National Wildlife Refuge – Ottawa Division
- (11) Toussaint Shooting Club

Map Region 3 – Sandusky Bay Area

ODNR Protected Lands

- (1) Castalia State Fish Hatchery
- (2) Dempsey’s Sandusky Bay Access
- (3) Miller Blue Hole Wildlife Area
- (4) Pickerel Creek State Wildlife Area
- (5) Resthaven State Wildlife Area
- (6) West Harbor Area Refuge
- (7) Wildlife Habitat Restoration Program
- (8) Willow Point State Wildlife Area

Non-ODNR Protected Lands

- (9) Blue Heron Reserve, Sandusky County Park District
- (10) Castalia Quarry Reserve, Erie County MetroParks
- (11) Ottawa Shooting Club
- (12) Winous Point Shooting Club

Map Region 4 – Lake Erie Islands

ODNR Protected Lands

- (1) Catawba Island State Park
- (2) East Harbor State Park
- (3) Green Island State Wildlife Area
- (4) Honey Point State Wildlife Area
- (5) Kelleys Island State Park
- (6) Kuehnle State Wildlife Area
- (7) Lakeside Daisy State Nature Preserve
- (8) Marblehead Lighthouse State Park
- (9) Mazurik’s Lake Erie Access
- (10) Middle Bass Island State Park
- (11) North Bass Island
- (12) North Pond State Nature Preserve
- (13) North Shore Alvar State Nature Preserve
- (14) Put-In-Bay Aquatic Visitor Center
- (15) South Bass Island State Park

Non-ODNR Protected Lands

- (16) Kelleys Island – Coleman Preserve
- (17) Kelleys Island – Long Point Preserve
- (18) Kelleys Island – Scheele Preserve
- (19) Kelleys Island – Sweet Valley Preserve
- (20) Kelleys Island – The Glade Preserve
- (21) Kelleys Island – Woodford Woods Preserve
- (22) Perry’s Victory and International Peace National Memorial

Map Region 5 – Sandusky and Huron Area

ODNR Protected Lands

- (1) Dupont Marsh State Nature Preserve

- (2) Erie Sand Barrens State Nature Preserve
- (3) Old Woman Creek State Nature Preserve
- (4) Pipe Creek State Wildlife Area
- (5) Sandusky Wildlife Office
- (6) Sheldon Marsh State Nature Preserve

Non-ODNR Protected Lands

- (7) Edison Woods Reserve, Erie County MetroParks
- (8) NASA Plum Brook Station
- (9) Putnam Marsh Nature Preserve, Erie County MetroParks

Map Region 6 – Lorain Area

Non-ODNR Protected Lands

- (1) Amherst Beaver Creek Reservation, Lorain County Metro Parks
- (2) Black River Reservation, Lorain County Metro Parks
- (3) Bradley Woods Reservation, Cleveland Metroparks
- (4) French Creek Reservation, Lorain County Metro Parks
- (5) Lakeview Park
- (6) Sandy Ridge Reservation, Lorain County Metro Parks
- (7) Vermilion River Reservation, Lorain County Metro Parks

Map Region 7 – Cleveland Area

ODNR Protected Lands

- (1) Cleveland Lakefront State Park

Non-ODNR Protected Lands

- (2) Big Creek Reservation, Cleveland Metroparks
- (3) Brookside Reservation, Cleveland Metroparks
- (4) Confined Disposal Facility (CDF) 12
- (5) CDF 14
- (6) Garfield Park Reservation, Cleveland Metroparks
- (7) Huntington Reservation, Cleveland Metroparks
- (8) Ohio & Erie Canal Reservation, Cleveland Metroparks
- (9) Rockefeller Park
- (10) Rocky River Reservation, Cleveland Metroparks
- (11) Whiskey Island

Map Region 8 – Painesville Area

ODNR Protected Lands

- (1) Chapin State Forest
- (2) Cleveland Lakefront State Park
- (3) Headlands Beach State Park
- (4) Headlands Dunes State Nature Preserve
- (5) Mentor Marsh State Nature Preserve

Non-ODNR Protected Lands

- (6) Big Creek Park
- (7) Camp Klein

Protected Lands Identification

- (8) Chagrin River Land Conservancy
- (9) Chagrin River Property
- (10) Cloverdale Lake Conservation Club
- (11) Concord Woods Park, Lake Metroparks
- (12) Conley Paradise Road Property
- (13) Cottonwood Hollow
- (14) Densmore Easement
- (15) Fairport Harbor Lakefront Park, Lake Metroparks
- (16) Fullerton and Reed Property
- (17) Girdled Road Reservation, Lake Metroparks
- (18) Glen Area Flood Control
- (19) Grand River North #1
- (20) Grand River North #2
- (21) Grand River Partners, Inc.
- (22) Greenway Project
- (23) Hach-Otis Nature Preserve
- (24) Helen Hazen Wyman Park, Lake Metroparks
- (25) Herb Society of America
- (26) Holden Arboretum
- (27) Indian Point Park, Lake Metroparks
- (28) Lake County Farm Park
- (29) Lakefront Lodge, Lake Metroparks

- (30) Lake Metroparks Easement
- (31) Mentor Marsh Nature Preserve
- (32) Mason's Landing Park, Lake Metroparks
- (33) Mentor Lagoons Nature Preserve and Marina
- (34) Mentor Marsh Wake Robin Trailhead
- (35) North Chagrin Reservation, Cleveland Metroparks
- (36) Paine Falls Park, Lake Metroparks
- (37) Painesville Township Park, Lake Metroparks
- (38) Penitentiary Glen Reservation, Lake Metroparks
- (39) Ranney/Cascade Woods Easement
- (40) Sarvis Easement
- (41) Sherwin Preserve
- (42) Soubusta Sugarbush
- (43) Historic School House
- (44) Van Loon Easement
- (45) Veteran's Memorial Park, Lake Metroparks
- (46) Waite Hill Land Conservancy
- (47) Waite Hill Reserve
- (48) Walsh Easement
- (49) Whitlam Woods
- (50) Wildwood Cultural Center

Map Region 9 – Arcola Creek Area

ODNR Protected Lands

- (1) Geneva State Park
- (2) Wright-Davis State Nature Preserve

Non-ODNR Protected Lands

- (3) Arcola Creek, Lake Metroparks
- (4) Arcola Creek Ball Fields
- (5) Bullock Easement
- (6) Camp Stigwandish Easement
- (7) Eyring Easement #1
- (8) Eyring Easement #2
- (9) Hertick Easement
- (10) Hidden Valley Park, Lake Metroparks
- (11) Hogback Ridge Park, Lake Metroparks
- (12) J & L Kless Easement
- (13) Katopish Easement
- (14) Kimball's Woods
- (15) Lakeshore Reservation, Lake Metroparks
- (16) Red Mill Valley Property
- (17) River Oaks Subdivision Easement
- (18) River Road Park, Lake Metroparks

- (19) Riverview Park, Lake Metroparks
- (20) Unknown
- (21) Vervais Easement
- (22) YMCA Easement

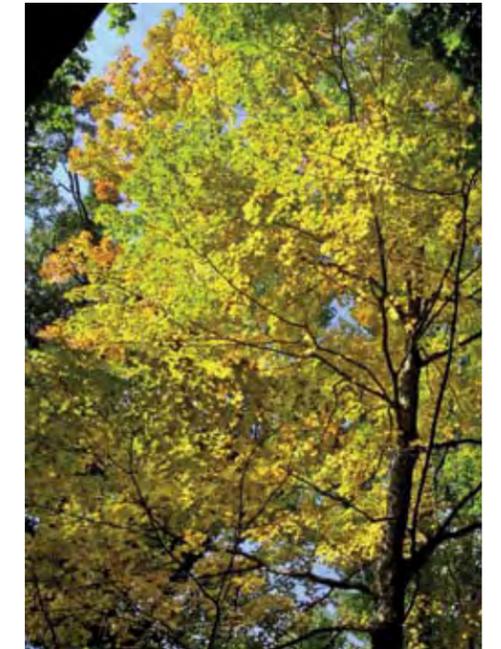
Map Region 10 – Ashtabula and Conneaut Area

ODNR Protected Lands

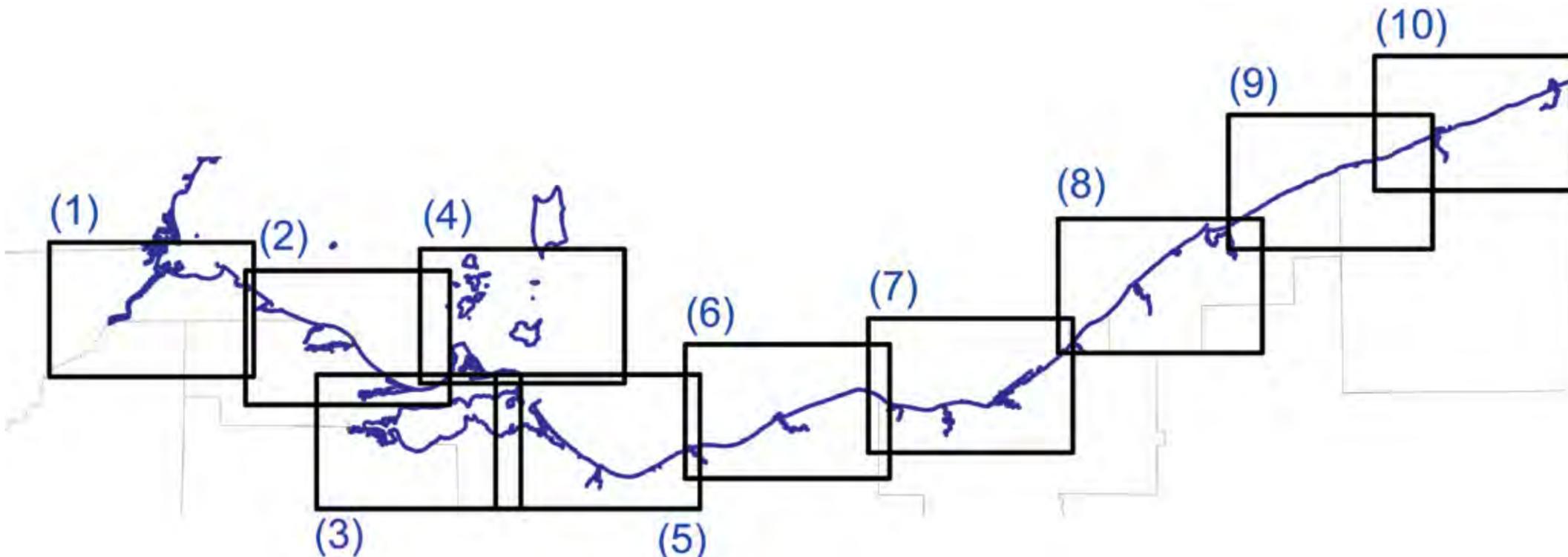
- (1) Conneaut State Wildlife Area

Non-ODNR Protected Lands

- (2) Blakeslee/Barrows Preserve
- (3) Cathedral Woods
- (4) Kent State Buttonbush Swamp
- (5) North Kingsville Sand Barrens
- (6) Wharram Nature Preserve



Hach-Otis State Nature Preserve, Lake County



Navigation Guide for Land Cover and Protected Land Maps

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Land Cover Map Region 1 – Toledo Area



Downtown Toledo, Lucas County



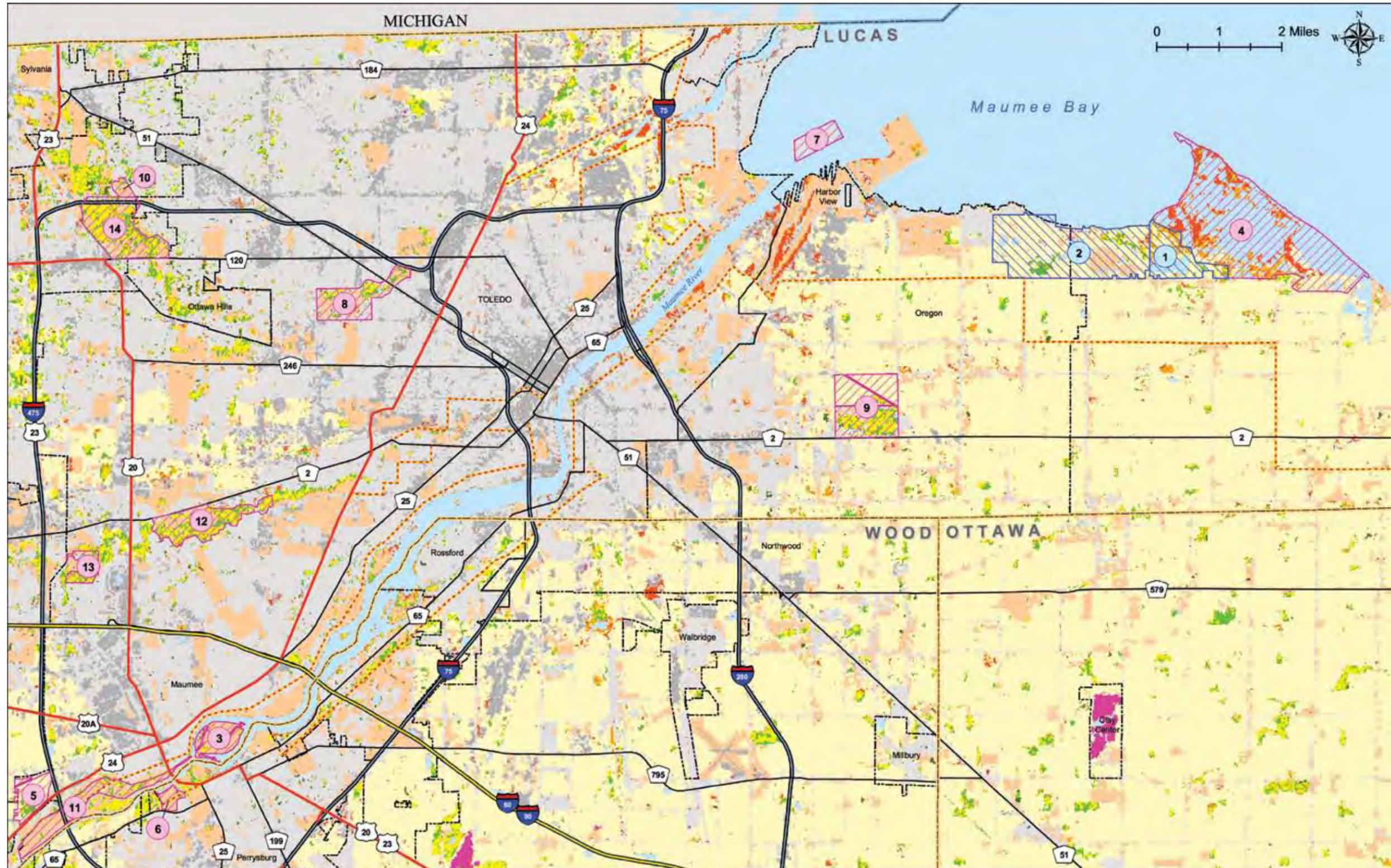
Kitty Todd State Nature Preserve, Lucas County



Farm operation

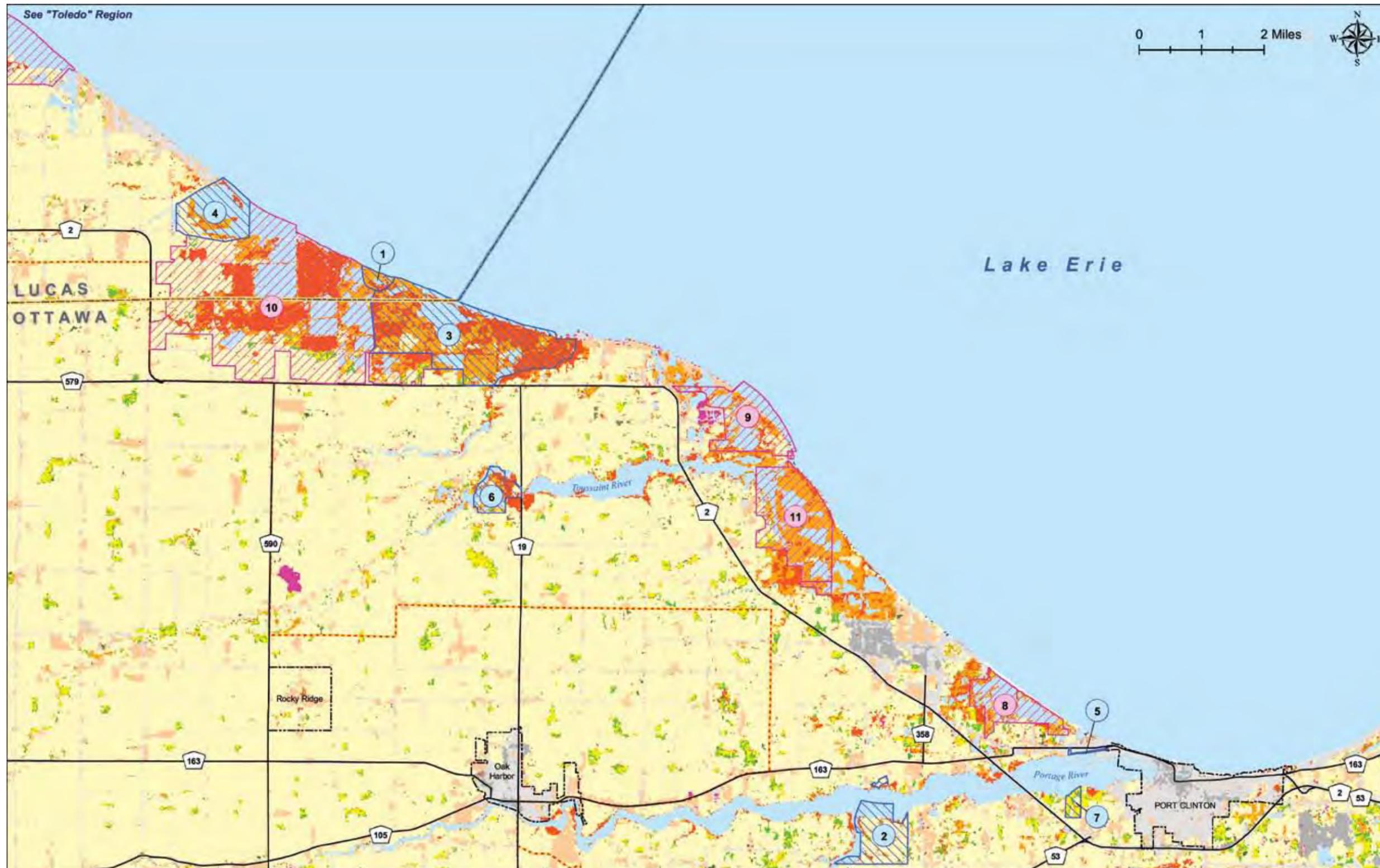


Magee Marsh State Wildlife Area, Ottawa County



Map 13 GIS data citation in Appendices

Land Cover Map Region 2 – Locust Point Area



Blue Heron at Crane Creek State Park, Lucas County



Map 13 GIS data citation in Appendices

Land Cover Map Region 3 – Sandusky Bay Area



Middle Bass Island, Ottawa County



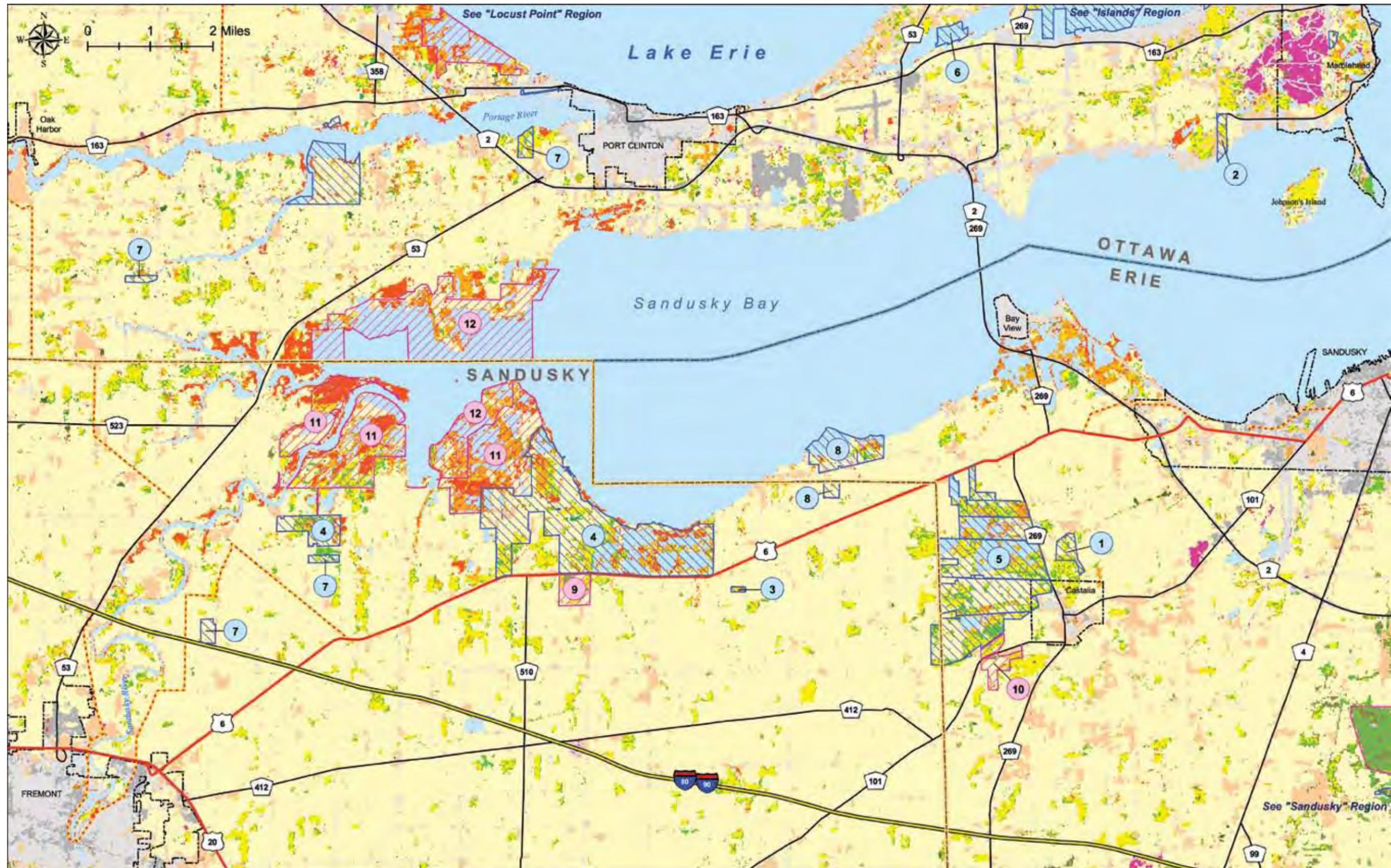
Resthaven State Wildlife Area, Erie and Sandusky Counties



Oak Point Recreational Area, Ottawa County



Quarry to residential area, Johnson's Island, Ottawa County



Map 13 GIS data citation in Appendices

Land Cover Map Region 4 – Lake Erie Islands



North Shore Alvar State Nature Preserve, Kelleys Island, Erie County



Map 13 GIS data citation in Appendices

Land Cover Map Region 5 – Sandusky and Huron Area



Power plant in Lorain, Lorain County



Tree lined street in Huron, Erie County



Condominiums on the Cedar Point Chaussee, Erie County

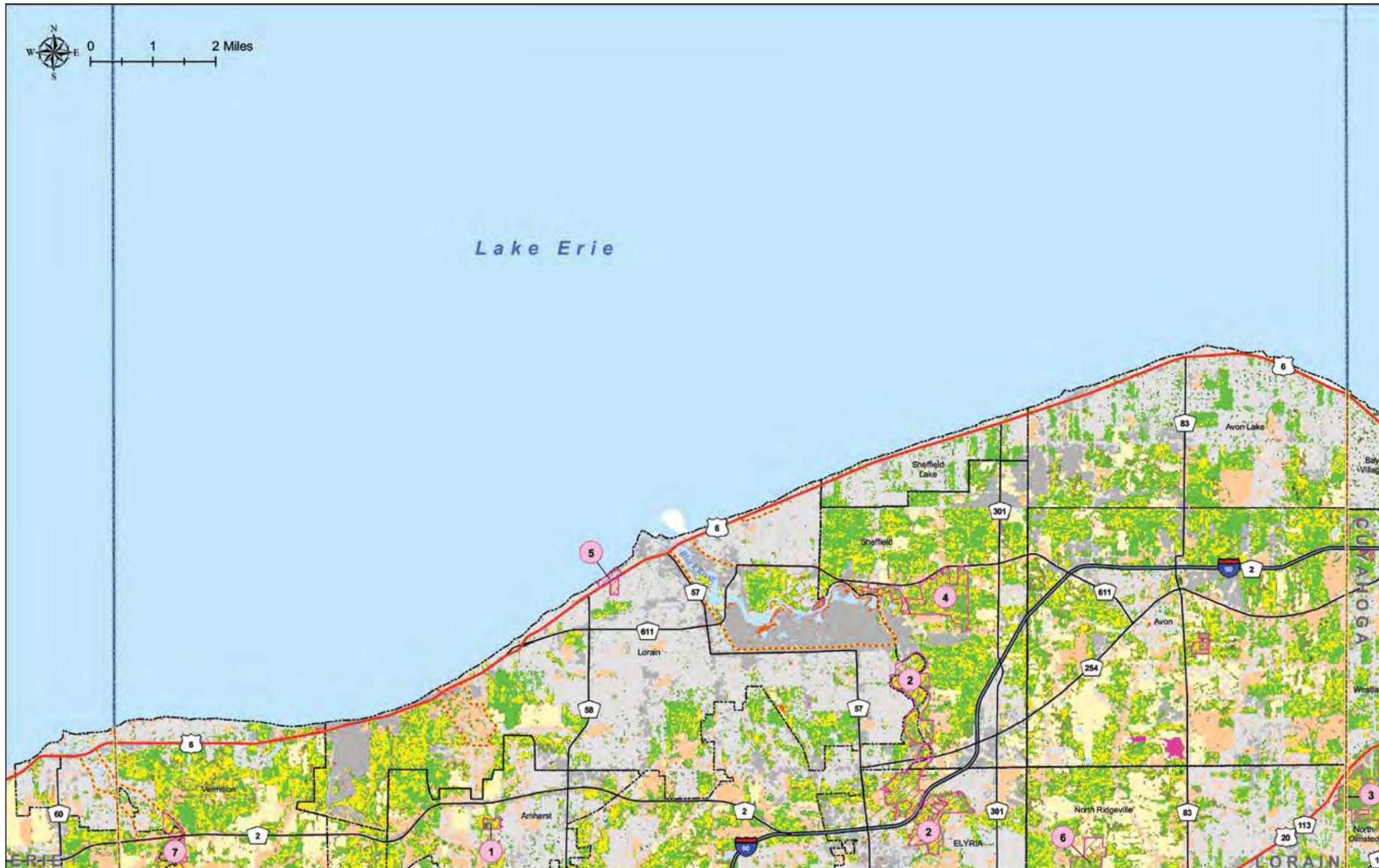


New housing at Black River Landing, Lorain, Lorain County



Map 13 GIS data citation in Appendices

Land Cover Map Region 6 – Lorain Area



Cedar Point Amusement Park, Erie County



Map 13 GIS data citation in Appendices

Land Cover Map Region 7 – Cleveland Area



Developed area along Rocky River, City of Rocky River, Cuyahoga County



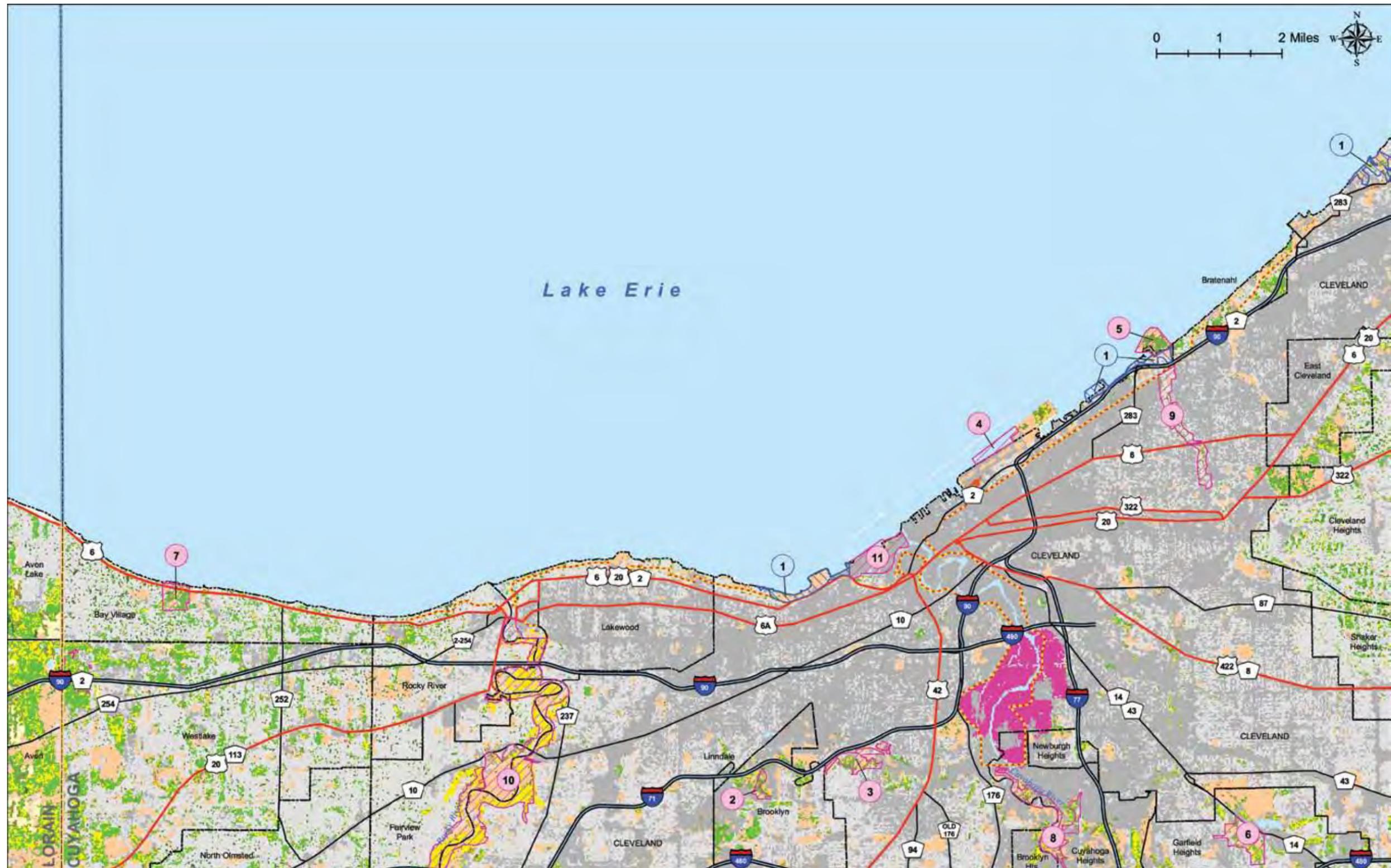
Cleveland industrial area, Cuyahoga County



Euclid Beach area of Cleveland Lakefront State Park, Cuyahoga County



Headlands Dunes State Nature Preserve, Lake County



Map 13 GIS data citation in Appendices

Land Cover Map Region 8 – Painesville Area



Downtown Cleveland, Cuyahoga County



Map 13 GIS data citation in Appendices

Land Cover Map Region 9 – Arcola Creek Area



Arcola Creek Estuary, Lake County



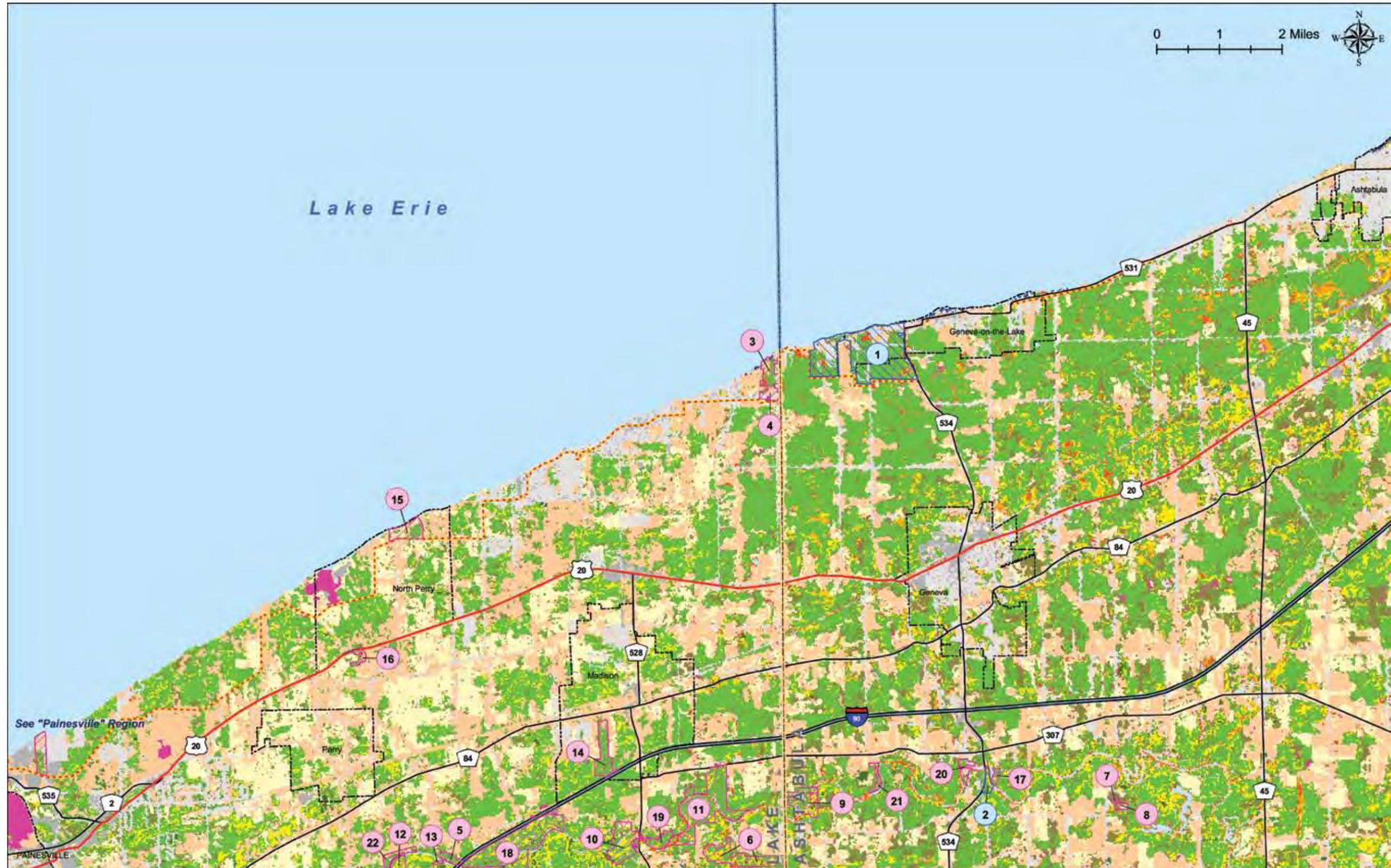
Conneaut Creek State Scenic River, Ashtabula County



Al Cummings Sunset Park, North Kingsville, Ashtabula County

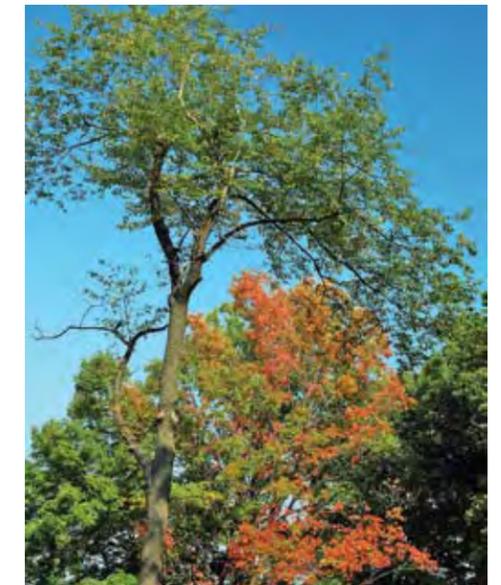


Walnut Beach Park, Ashtabula, Ashtabula County



Map 13 GIS data citation in Appendices

Land Cover Map Region 10 – Ashtabula and Conneaut Area



Conneaut Township Park, Conneaut, Ashtabula County



Map 13 GIS data citation in Appendices