



DRAFT

NOMINATION OF THE

St. Louis River Natural Area

TO THE DULUTH NATURAL AREAS PROGRAM

DATE: 3/7/19

Nominated by: City of Duluth Parks & Recreation Division



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Executive Summary

The City of Duluth, with assistance from the Minnesota Land Trust, developed this nomination for lands along the St. Louis River to be included in the Duluth Natural Area Program (DNAP) and requests submission to the Planning Commission and City Council for review under Duluth City Code, Chapter 2, Article XXIX, Sect 2-152.

The DNAP was created as a city program to protect and preserve Duluth's natural heritage by using mechanisms to identify valued environmental properties owned by the city and/or other owners interested in participating by establishing a means to protect such properties from development or exploitation. The qualifications for lands to be incorporated into the DNAP and the various avenues to protect these special places are specified in the ordinance and its complementary guidelines (City of Duluth, 2002).

The St. Louis River is a showcase feature for the City of Duluth. The river provides many recreational, health, and economic benefits to the community and its visitors. The City identified places along the river with the most intact terrestrial and aquatic habitats and the least development potential. These places align with City plans for additional community access and enjoyment initiatives. These undeveloped areas, encompassing 1,230 acres, are included in St. Louis River Natural Area (SLRNA) nomination for the (Figure 1). The nominated lands are currently owned by the City of Duluth, State of Minnesota, and private landowners (Appendix A).

The SLRNA represents a diverse and important ecosystem within the City of Duluth. As described in the DNAP Guidelines (City of Duluth, 2002), to accomplish the purpose of the DNAP, the goal is to designate the best remaining examples of viable natural areas representative of the Duluth area. The nominated lands along the St. Louis River corridor represent the best remaining examples of all five of the categories defined in the DNAP ordinance:

- Significant native plant communities area – The area supports 17 distinct native plant communities including the Lake Superior estuary marsh community that exists predominantly in the St. Louis River estuary within the state.
- Special species area – Three special plant species (pale sedge, discoid beggarticks, and soapberry) and 52 special bird species (listed in Table 5) were identified in the natural area in surveys conducted for this nomination.
- Natural water features area – the St. Louis River Estuary and four state designated trout streams, Keene, Kingsbury, Stewart, and Knowlton Creeks, are located within the proposed natural area.
- Important bird congregation area – A plethora of bird species congregate in the proposed natural area for nesting, foraging, and migratory habitat including shorebirds, waterbirds, waterfowl, and migratory landbirds.
- Geologic landform area – The geologic formation of Duluth is represented by landforms present in the nominated natural area, particularly the backwater areas of Rask Bay, North Bay, Radio Tower Bay, and Kingsbury Bay. These bays visually indicate the drowned river mouth that once flowed into Glacial Lake Duluth.



Introduction

The City of Duluth, with assistance from the Minnesota Land Trust, seeks to nominate certain lands to the Duluth Natural Areas Program (DNAP). This proposal would create a 1,230-acre Duluth Natural Area along the St. Louis River comprised of nine distinct project areas (Figure 1).

The DNAP was created as a city program to protect and preserve Duluth's natural heritage by using mechanisms to identify valued environmental properties owned by the city and/or other owners interested in participating by establishing a means to protect such properties from development or exploitation. The qualifications for lands to be incorporated into the DNAP and the various avenues to protect these special places are specified in the ordinance (Duluth City Code, Chapter 2, Article XXIX, Sect 2-152) and its complementary guidelines (City of Duluth, 2002).

The St. Louis River is an integral part of the City of Duluth's identity, providing a wealth of recreational, health, and economic benefits to the City's residents and visitors. Over the past several years, significant efforts have been and continue to be undertaken by local, state, and federal partners to clean up contamination and restore degraded habitat from legacy impacts to the river associated with its designation as a Great Lakes Area of Concern. In 2016, the City of Duluth launched the St. Louis River Corridor Initiative, a series of public park and trail improvement projects on the west side of Duluth from Fond du Lac to Lincoln Park with goals to support the natural environment and enrich neighborhood quality of life. The nomination of a natural area along the St. Louis River corridor supports these goals. The Western Waterfront Trail, one of the projects in the initiative, will eventually connect all but the easternmost portion of the SLRNA. Further, a number of existing and planned access points for the St. Louis River National Water Trail (designation pending) are located within the SLRNA.

In addition to its' importance to the City of Duluth, the lower St. Louis River is vitally important to the health of the region and Lake Superior. It serves as an important migration corridor for wildlife and is included in Minnesota Department of Natural Resources' (MNDNR's) Wildlife Action Network (Figure 2), which identifies priority areas for conservation in the state. Audubon has designed the estuary, from Chambers Grove downstream to Lake Superior and southeast to Wisconsin Point, as an "Important Bird Area" (IBA), because of its' significance as a migratory corridor for birds. The river's coastal wetland complex and adjacent plant communities are important to the biodiversity of the State of Minnesota; the majority of the lower river through Duluth falls within designated "sites of biological significance" as mapped by the Minnesota Biological Survey (Figure 3).

The following sections of this report provide necessary information on eligibility for nominating the SLRNA to the DNAP.



Eligibility

Eligibility of a tract for nomination under the DNAP requires both ownership and scientific criteria to be satisfied. This nomination provides documentation for the SLRNA that satisfies both types of criteria.

LAND OWNERSHIP

A tract is eligible for nomination as a natural area if it meets one of four ownership conditions, as specified by the DNAP Guidelines (City of Duluth, 2002). For the SLRNA the following ownership situations apply:

- City-owned property located within the boundaries of the City.
- Property located within the boundaries of the City which is owned by other persons or entities, whether public or private, where such owner desires to have their property enrolled in the Program and where the owner is willing to convey the necessary property interests to the City or other qualified party (e.g. state, nonprofit, etc.) to accomplish those ends.

The SLRNA comprises 1,230 acres of undeveloped land within the city of Duluth along the river corridor. A total of 274 parcels are encompassed within the natural area. Current ownership of the parcels is a mix of City, private, St. Louis County tax-forfeit, and State of Minnesota (Table 1; Figure 4 through 12). A list of the individual parcels and current ownership is provided in Appendix A.

Table 1: Land Ownership within the St. Louis River Natural Area

Ownership	Number of Parcels	Area (%)
City of Duluth	88	32
Private	45	36
St. Louis County Tax-Forfeit	139	27
State Public Property	2	5
Total	274	100

The initial boundaries of the SLRNA were selected based on the following considerations:

- Intact areas of known high quality aquatic and terrestrial habitat;
- Low development potential for neighborhoods, businesses, or industry;
- Proximity to current and planned City parks and amenities (e.g., Chambers Grove, Kingsbury Bay, Grassy Point, Munger Landing);
- Opportunities to provide protection of important undeveloped riverfront where willing private landowners exist.



Prior to finalizing the boundaries of the proposed natural area, a development suitability analysis was completed to determine if any of the areas within the original boundaries were better suited for economic or business development. The analysis consisted of two steps: 1) desktop evaluation using the City of Duluth's Development Suitability GIS-based tool and 2) review of the results of the evaluation with City staff. City staff from Business Development, Community Planning, and Public Administration were involved in the review.

As a result of the development suitability analysis, several City-owned parcels and a private parcel were completely removed from the proposed natural area, and the boundaries of several private parcels partially within the proposed natural area were adjusted. Adjustments were made to remove properties that could be future infill areas for residential development, commercial development near existing infrastructure, and commercial development inland from the immediate shoreline.

Fourteen private and two other government agencies own land within the natural area. The City has contacted each of these landowners and is in the process of discussing participation in the natural area based on these contacts. The natural area boundaries may be further refined based on the results of these discussions.

SCIENTIFIC CRITERIA

The DNAP Guidelines (City of Duluth, 2002) require nominations to support one or more of the following scientific criteria:

- Significant native plant communities
- Natural water feature area
- Important bird congregation area
- Special species area
- Geological landform area

The SLRNA is being nominated under all five scientific criteria.

Significant Native Plant Communities

The SLRNA contains many assemblages of native plant species that classify as native plant communities (NPC) as defined by the Minnesota Department of Natural Resources (MDNR, 2003). A mappable NPC indicates sufficient ecological integrity of the plant community present in an area that it demonstrates characteristics of a particular natural assemblage of plants.

Native plant communities were mapped for the natural area in Summer/Fall 2018 using a combination of remote sensing and field surveys (Appendix B; Figure 13 through 21). The mapped areas differ slightly from the final natural area boundaries being nominated, as the boundaries were adjusted for various land use reasons as the project proceeded.

There are 17 distinct native plant community types within the natural area comprised of various types of hardwood forest, mixed hardwood-conifer forest, floodplain forest, forested swamps, shrub swamps, wet meadows, and marshes (Table 2). These communities are present across 85% of the natural area. Widespread past and current human disturbance has occurred throughout the corridor and although these disturbances pose challenges to the ecological integrity of the corridor, NPCs and rare plant species have persisted except in limited patches.



Non-native/disturbed cover exists on 15% of the mapped area. This includes transportation corridors (e.g., railroad, streets), invasive species, restoration areas, and old fields. These areas are included in the natural area because they are limited patches surrounded by NPCs and have the potential to reduce fragmentation; in addition, some have potential to be restored with management actions (such as invasive species control).

Table 2: Native Plant Communities in the St. Louis River Natural Area in 2018

System	Class	Subtype Description	Subtype Code	Mapped Area (%)	
Sparse Vegetated Upland	Cliff/Talus	Dry Sandstone Cliff (Northern)	CTn11e	0.6	
	Cliff/Talus	Wet Sandstone Cliff (Northern)	CTn42d	0.1	
Forested Upland	Mesic Hardwood Forest	Aspen - Birch - Basswood Forest	MHn35a	2.3	
	Mesic Hardwood Forest	Red Oak - Sugar Maple - Basswood - (Bluebead Lily) Forest	MHn35b	0.5	
	Mesic Hardwood Forest	Aspen - Birch - Red Maple Forest	MHn44a	19.7	
	Mesic Hardwood Forest	White Pine - White Spruce - Paper Birch Forest	MHn44b	0.8	
	Mesic Hardwood Forest	Aspen - Birch - Fir Forest	MHn44d	1.5	
	Mesic Hardwood Forest	Aspen - Ash Forest	MHn46a	4.5	
	Mesic Hardwood Forest	Black Ash - Basswood Forest	MHn46b	0.8	
	Mesic Hardwood Forest	Sugar Maple - Basswood - (Bluebead Lily) Forest	MHn47a	0.1	
	Forested Wetland	Floodplain Forest	Black Ash - Silver Maple Terrace Forest	FFn57a	5.3
		Wet Forest	Black Ash - Aspen - Balsam Poplar Swamp (Northeastern)	WFn55a	4.7
Forested Rich Peatland		Alder Swamp	FPn73a	1.6	
Shrub and Open Wetland	Marsh	Cattail - Sedge Marsh (Northern)	MRn83a	12.8	
	Marsh	Estuary Marsh (Lake Superior)	MRu94a	16.2	
	Wet Meadow/Carr	Willow - Dogwood Shrub Swamp	WMn82a	7.7	
	Wet Meadow/Carr	Sedge Meadow	WMn82b	5.3	

Each mapped area of NPC was assigned a condition rank according to the definitions in Table 3. Condition ranks consider both the amount of human disturbance and abundance of invasive species. Within the SLRNA, 62% of mapped NPCs are in good (B) to excellent (A) condition (Table 3). Conversely, only 3% of the mapped NPCs were below fair integrity (C/D or D).



Table 3: Condition Ranks of Native Plant Communities in the St. Louis River Natural Area

Condition Rank	Description	Mapped Area (%)
A	Excellent ecological integrity. Little disturbed by recent human activity or invasive species.	7
A/B		2
B	Good ecological integrity. Lightly disturbed or recovered from past disturbance. Can return to A-rank with protection or management.	54
B/C		1
C	Fair ecological integrity. Strong evidence of human disturbance, but retain some characteristic species.	33
C/D		2
D	Poor ecological integrity. Severely altered by human disturbance or invasive species.	1

Source: MDNR, 2009.

Significant native plant communities in the natural area include Estuary Marsh (Lake Superior), NPC code MRu94a. This coastal wetland community occurs only in estuaries and river mouths influenced by the Lake Superior seiche. The fluctuating water levels of the seiche, caused by wind-driven changes in Lake Superior elevation, can reverse the flow of the river and flush sediment and nutrients back upstream. The MRu94a community is more species-diverse than similar native marsh communities in inland settings. The St. Louis River below the Fond du Lac dam contains the largest area of this community in the state; its only other documented presence is in much smaller patches at river mouths on the north shore of Lake Superior through Lake County, Minnesota.

In Rask Bay and other project areas with large areas of wetlands influenced by the seiche of Lake Superior, there were significant areas of dead or dying woody species, likely past forested or shrub swamps that are currently classified as sedge meadows or marshes. It appears that wetland shrubs and trees have been stressed by higher Lake Superior water levels over the past several years, after experiencing historic low water levels in 2007. The lake elevation at the time of the August 2018 survey was approximately 602.69 feet, compared to a long-term average of 602.13 feet, and a low of 600.43 feet in August 2007. These communities likely fluctuate between open wetland and tree/shrub dominated communities as water levels vary. The presence of NPCs across a range of water elevations helps to preserve the ability of these communities to transition between different NPCs as water levels change.

Natural Water Feature Area

There are four eligible natural water features located within or adjacent to the SLRNA. These include the St. Louis River Estuary and four trout streams, Knowlton Creek, Stewart Creek, Kingsbury Creek, and Keene Creek.

The St. Louis River Estuary is both regionally and globally significant. The St. Louis River is the largest U.S. tributary to Lake Superior and drains over 3,600 square miles of northeastern Minnesota and northwestern Wisconsin. The lower 21 miles of the river bordering the City of Duluth is considered its' estuary, because it is part of the mixing zone with Lake Superior. This 12,000-acre freshwater estuary supports globally important coastal wetland ecosystems and is also the home to the busiest harbor and international port on the Great Lakes.



The diversity of ecosystems in the estuary, including estuarine wetland and aquatic habitats, baymouth bar complex (i.e., Minnesota and Wisconsin Points), and surrounding upland forest, are very unusual in Lake Superior, the Great Lakes Region, and the world (SLRCAC, 2002). The coastal wetlands in the St. Louis River are the largest complex on Lake Superior and provide a significant proportion of biological productivity for the entire lake and serves as the primary source for the more than 40 native fish species found in western Lake Superior, including walleye, lake sturgeon, muskellunge, and northern pike.

Numerous tributary streams drain into the St. Louis River across Duluth, including eight state designated trout streams. Four of these trout streams, Knowlton, Stewart, Kingsbury, and Keene, are located within the nominated SLRNA (Figure 22). These streams are significant natural water features, as they retain temperatures cold enough to support native brook trout populations. In recent years, MNDNR has spent significant effort restoring the Knowlton Creek watershed; restoration work is also planned for Kingsbury and Keene Creeks within the next several years.

Important Bird Congregation Area

The St. Louis River is well-known as an important migratory corridor for birds. Audubon has designed the estuary, from Chambers Grove downstream to Lake Superior and southeast to Wisconsin Point, as an “Important Bird Area” (IBA). It is described by Audubon as one of the best and most popular birding sites in all of Minnesota (Audubon, 2018). The IBA contains an exceptional diversity of bird species, with 76% of the species found in Minnesota every year regularly using the estuary (Audubon, 2018).

The DNAP Guidelines (City of Duluth, 2002) focus on areas where large concentrations of birds occur, termed Important Bird Congregation Areas. These areas are designated globally as locations that provide essential habitat for avian species during some phase of their life cycle. They may be important for species that are vulnerable, threatened, endangered, particular to a certain area, representative of a distinct region, and/or significant concentrations of birds from a diversity of guilds (e.g., waterfowl, shorebirds, migratory landbirds). The specific criteria for an Important Bird Congregation Area given in the DNAP Guidelines (City of Duluth, 2002) include numerical criteria for certain guilds of birds. Guilds are groups of species in a community that exploit the same set of resources in a similar manner, but are not necessarily closely related taxonomically.

To support the nomination of the SLRNA, bird surveys were conducted by researchers from the Natural Resources Research Institute in 2018 (Appendix C). Spring and fall migration and breeding season surveys were completed in each of the nine project areas (Figure 1). Each project area was surveyed 14 times between April and October 2018. A total of 13,953 individuals representing 169 species were documented. Overall, the surveys indicate that the diverse habitats along the St. Louis River and within the proposed natural area provide critical stop-over habitat for a wide diversity of migrating and breeding birds. Based on the 2018 survey results, the SLRNA meets the DNAP criteria for four out of six guilds (Table 4).

Table 4: Comparison of 2018 Bird Survey Results to the DNAP Nomination Criteria

Guild	Description	Number of Individuals	Number of Species	Nomination Criteria Met
Waterfowl	A group of species that are highly adapted to living on the surface of the water and include ducks, geese, and swans.	5,184	22	✓
Shorebirds	Birds that live in wet or coastal environments; most species are commonly found wading along shorelines	126	12	✓



	while foraging for food in mud or sand such as sandpipers, plovers, and yellowlegs.			
Waterbirds	Birds that live on or around water and have special adaptations such as webbed feet, bills and legs adapted to feed in water, and the ability to dive from the surface or the air to catch prey in water. Examples of waterbirds include pelicans, kingfishers, grebes.	995	14	✓
Raptors	Known as “birds of prey” and consist of species that primarily hunt and feed on vertebrates this group includes hawks, falcons, and eagles.	158	12	Not well assessed by survey methods
Wading Birds	Wading birds refer to birds that wade through shallow water while foraging (e.g. bitterns, herons, cranes).	44	5	
Migratory Landbirds	Refers largely to passerines or perching birds (e.g., warblers, sparrows, woodpeckers) for the purposes of these surveys.	7,373	99	✓

Twenty-three of the 169 total species observed in the 2018 survey are sensitive bird species (defined as endangered, threatened, or of special concern). These are described in the “Special Species Area” section below.

Special Species Area

The SLRNA is being nominated as a Special Species Area due to the presence of sensitive plant and sensitive bird species.

Sensitive Plant Species

Sensitive plant surveys were conducted in the SLRNA in the summer of 2018 by scientists at SEH (SEH, 2018). One state-listed endangered species, pale sedge (*Carex pallescens*), and two state-listed special concern species, discoid beggarticks (*Bidens discoidea*) and soapberry (*Shepherdia canadensis*), were found. Plant communities in the corridor may also provide suitable habitat for other rare species, including state-listed special concern narrow reedgrass (*Calamagrostis lacustris*) and state-listed endangered two leaf waterweed (*Elodea bifoliata*).

The estuary marsh (Lake Superior), MRu94a, habitat is suitable for discoid beggarticks, which was found in four of the nine project areas. The proposed natural area contains 118 acres of this NPC. Soapberry was found in an area of upland forest, while pale sedge was found in wet meadow.

Sensitive Bird Species

Bird surveys were conducted within the SLRNA in 2018 by researchers from NRRI, as described above. A large number of species (169) were observed. Of these, 52 are species that are deemed “sensitive species” based on their designation as species of greatest conservation need (SCGN); U.S. shorebirds of conservation concern (SHCC); waterbirds of conservation concern (WACC); Partners in Flight species of continental concern (PIF), and U.S. Fish & Wildlife Service (USFWS) Region 3 and/or national birds of conservation concern (USFWS Regional or National).



Birds may be listed for many reasons, including steep population declines, elevated threats, or small populations and ranges. The sensitive bird species in the SLRNA are given in Table 5.

Table 5: Sensitive Bird Species Observed During 2018 Surveys

Species	Listing
American Black Duck	SGCN
American Bittern	USFWS Regional, SGCN, WACC
American Kestrel	SGCN
American White Pelican	SGCN, WACC
Bald Eagle	USFWS National/Regional
Baird's Sandpiper	SHCC
Black-billed Cuckoo	USFWS Regional, SGCN, PIF
Belted Kingfisher	SGCN
Bobolink	SGCN, PIF
Bonaparte's Gull	WACC
Brown Thrasher	SGCN
Caspian Tern	WACC
Canada Warbler	USFWS National/Regional, PIF
Chimney Swift	SGCN
Common Loon	SGCN, WACC
Common Merganser	SGCN
Common Tern	USFWS Regional, SGCN, WACC
Dunlin	USFWS National, SHCC
Evening Grosbeak	SGCN, PIF
Forster's Tern	SGCN, WACC
Greater Yellowlegs	SGCN, SHCC
Green Heron	WACC
Golden-winged Warbler	USFWS National/Regional, SGCN, PIF
Herring Gull	WACC
Horned Grebe	USFWS Regional, SGCN, WACC
Killdeer	SHCC
Least Bittern	USFWS Regional, SGCN, WACC
Least Sandpiper	SHCC
Lesser Scaup	SGCN
Lesser Yellowlegs	USFWS National, SHCC
Northern Harrier	SGCN
Northern Pintail	SGCN
Northern Rough-winged Swallow	SGCN
Olive Sided Flycatcher	USFWS National/Regional, SGCN, PIF
Peregrine Falcon	USFWS National/Regional, SGCN
Pectoral Sandpiper	SHCC
Philadelphia Vireo	SGCN
Pied-billed Grebe	USFWS Regional, WACC
Purple Finch	SGCN
Red-necked Grebe	SGCN, WACC
Red-shouldered Hawk	SGCN
Rusty Blackbird	USFWS National/Regional
Semipalmated Plover	SHCC



Semipalmated Sandpiper	USFWS National, SGCN, SHCC
Sedge Wren	SGCN
Sora	WACC
Solitary Sandpiper	USFWS National/Regional, SHCC
Spotted Sandpiper	SHCC
Trumpeter Swan	SGCN
Veery	SGCN
Virginia Rail	SGCN
Wilson's Snipe	SHCC

Geological Landform Area

The SLRNA has an interesting geologic history. It is located in the immediate drainage basin of a geological landform, the St. Louis River, which was significant in the formation of Lake Superior and the Great Lakes during the Post Glacial changes that followed the Great Ice Age. The geomorphology of the St. Louis River Estuary clearly depicts the natural process instrumental to the development of the present landscape of Duluth.

The St. Louis River was the largest tributary to Glacial Lake Duluth, which formed due to the retreat of the Ice Age glaciers approximately 11,500 years ago at the end of the Pleistocene era. The Great Lakes were slowly formed as the glaciers retreated and drainage outlets formed further and further east, connecting portions of the large basin that had been carved by the glaciers. The weight of the glacial mass depressed the Earth's crust, such that the elevation of the basin's outlet at Sault St. Marie was much lower than its current elevation, and the glacial deposits that had formed at the Duluth end of the lakes from the many tributaries draining into it were exposed. The St. Louis River then cut through the glacial moraine on its way to the new lower lake, whose elevation was approximately 200' lower than the current elevation of Lake Superior. Once the Earth's crust started to slowly rebound, water levels began to rise and fill in the St. Louis River valley, creating the current estuary, which is essentially a drowned river valley (Green, 1996).

Evidence of the drowned river valley is present in the form of the back waters of Rask Bay, North Bay, Radio Tower Bay, and Kingsbury Bay in the SLRNA (Figure 1). (The clay soils present throughout much of Duluth are evidence of the bed of Glacial Lake Duluth.)

Bedrock geology in the SLRNA is from the Midcontinent Rift, which is a long rift located in the center of North America that formed when the geological core of the North American continent began to split apart during the Precambrian period. From the Chambers Grove project area downstream to the North Bay project area, sedimentary sandstone and shale from the Fond du Lac formation are present. From the Radio Tower Bay project area to the Grassy Point project area, bedrock has not been mapped in the floodplain areas. However, the layered series of Troctolite and Gabbro of the Duluth Complex is present in the more elevated areas (USGS, 2006).

The surficial geology present in the natural area is predominantly floodplain alluvium and disturbed sediment from the current interglacial Hudson period within the low-lying floodplain areas (Minnesota Geological Survey, 2009). Till deposits from the Barnum period of the Wisconsin Episode, the last glaciation period, are present in the more elevated areas (Minnesota Geological Survey, 2009).



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Figures

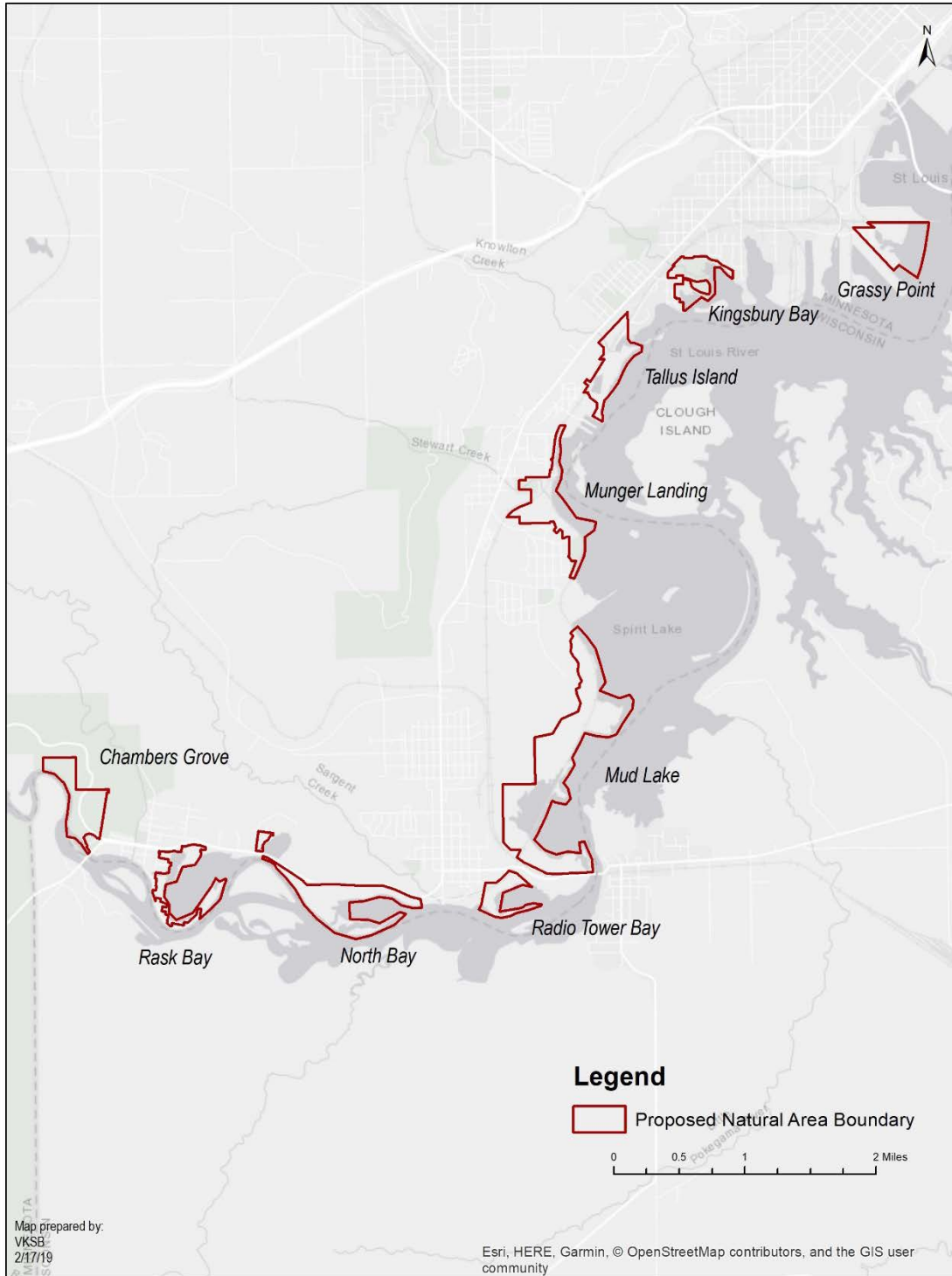


Figure 1: Proposed St. Louis River Natural Area

Inclusion in the natural area subject to landowner assent.

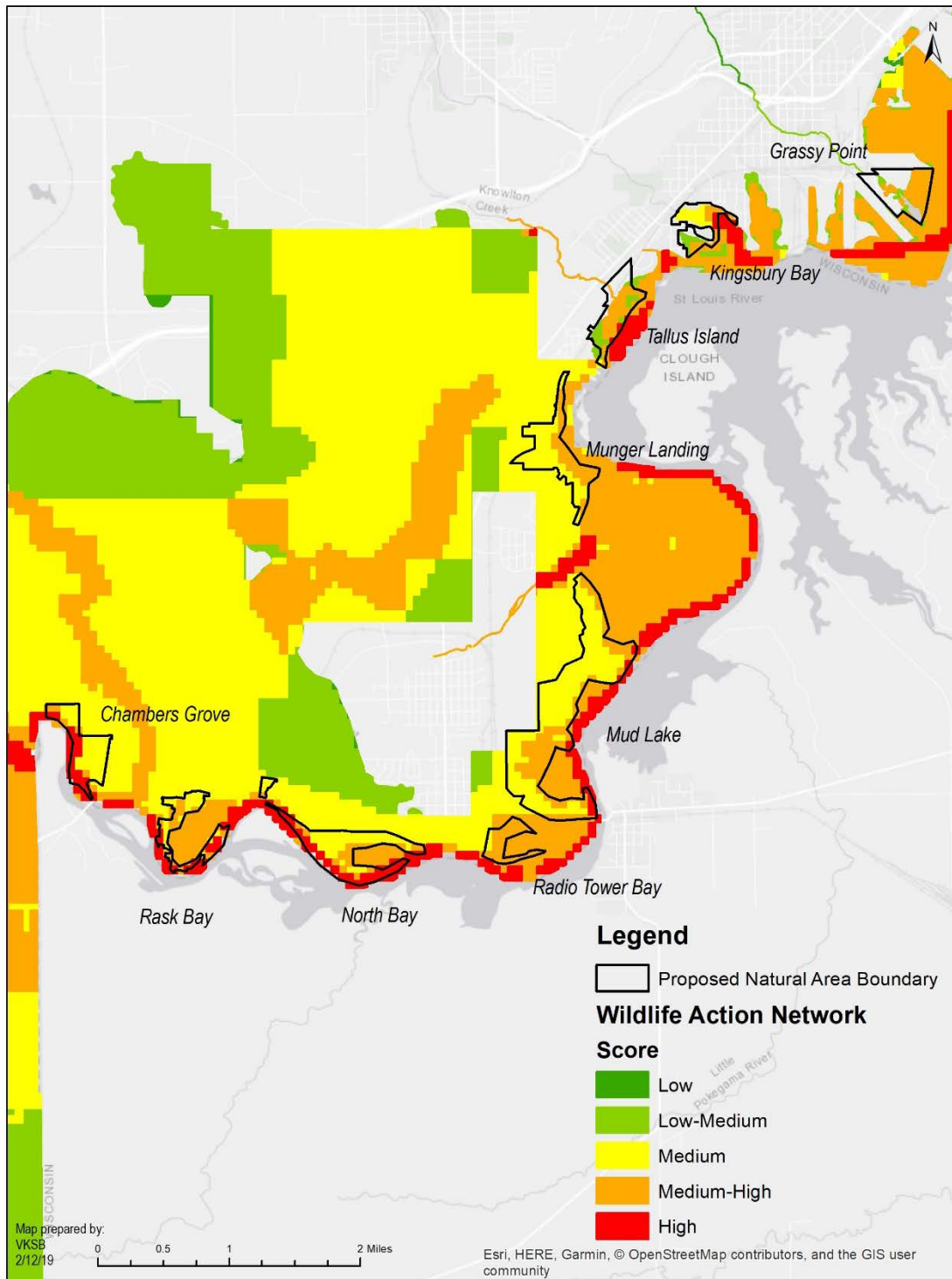


Figure 2: Wildlife Action Network Along the St. Louis River

Inclusion in the natural area subject to landowner assent.

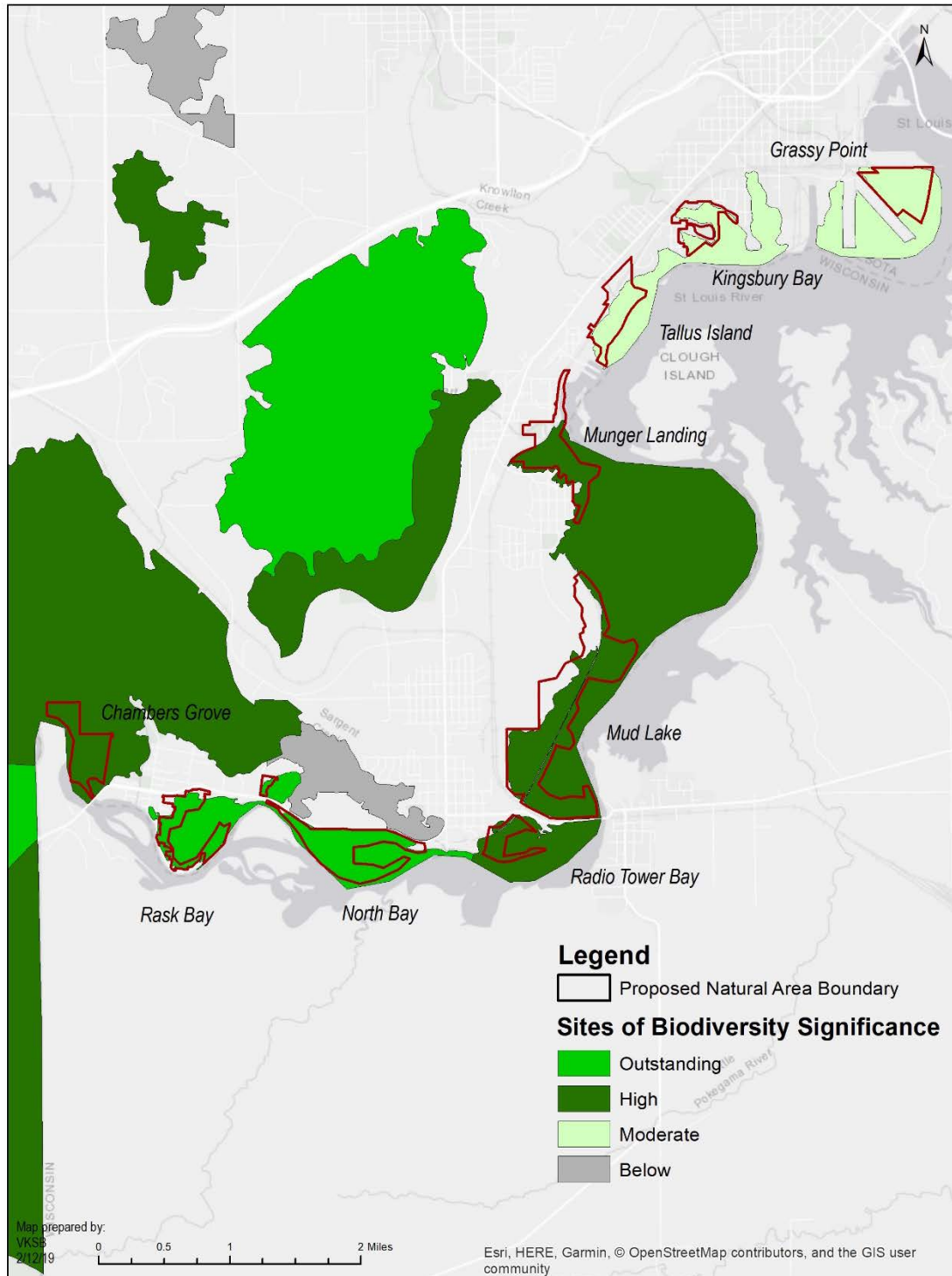


Figure 3: Sites of Biodiversity Significance Along the St. Louis River

Inclusion in the natural area subject to landowner assent.

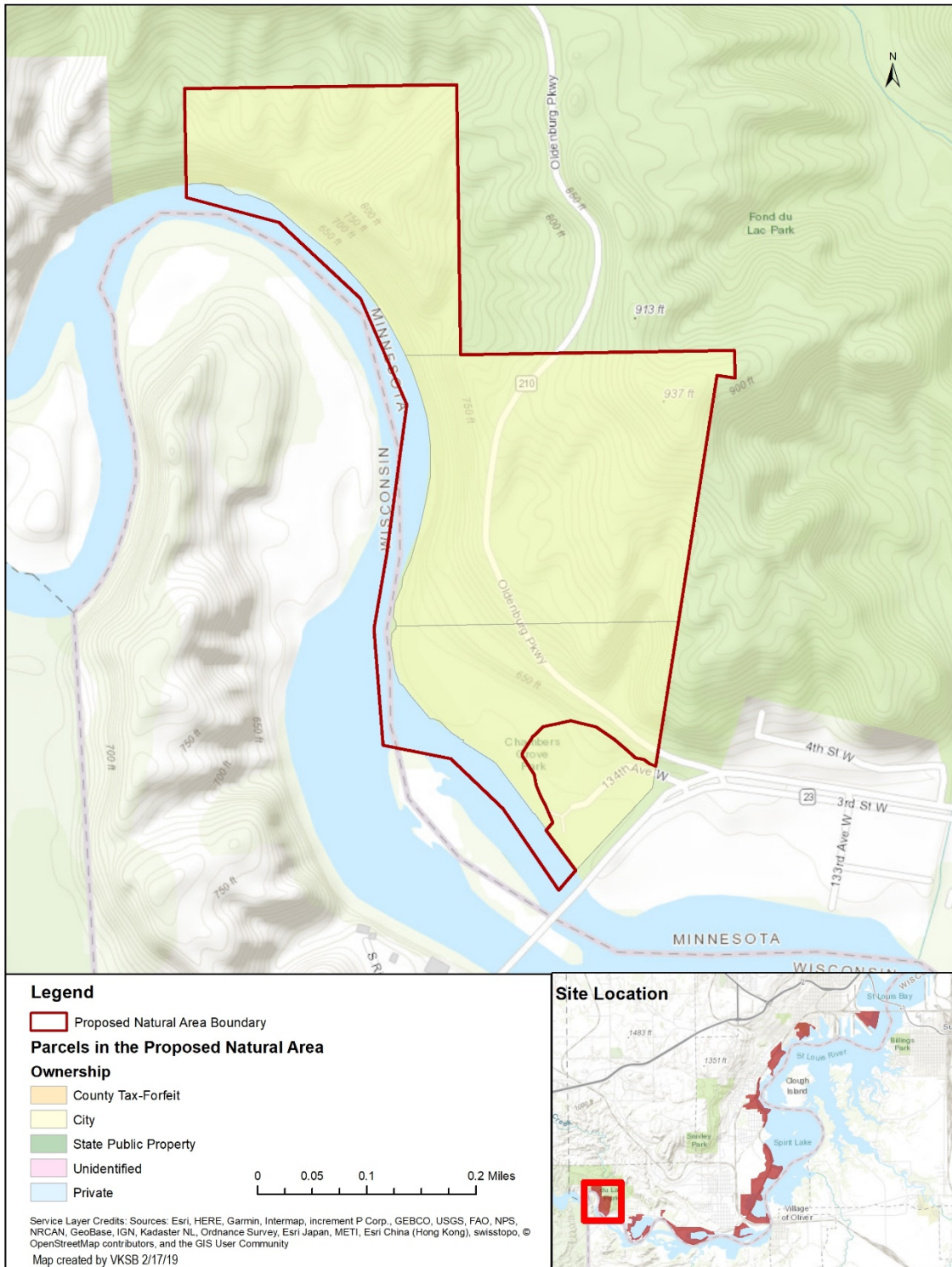


Figure 4: Property Ownership in the Chambers Grove Project Area



Figure 5: Property Ownership in the Risk Bay Project Area

Inclusion in the natural area subject to landowner assent.

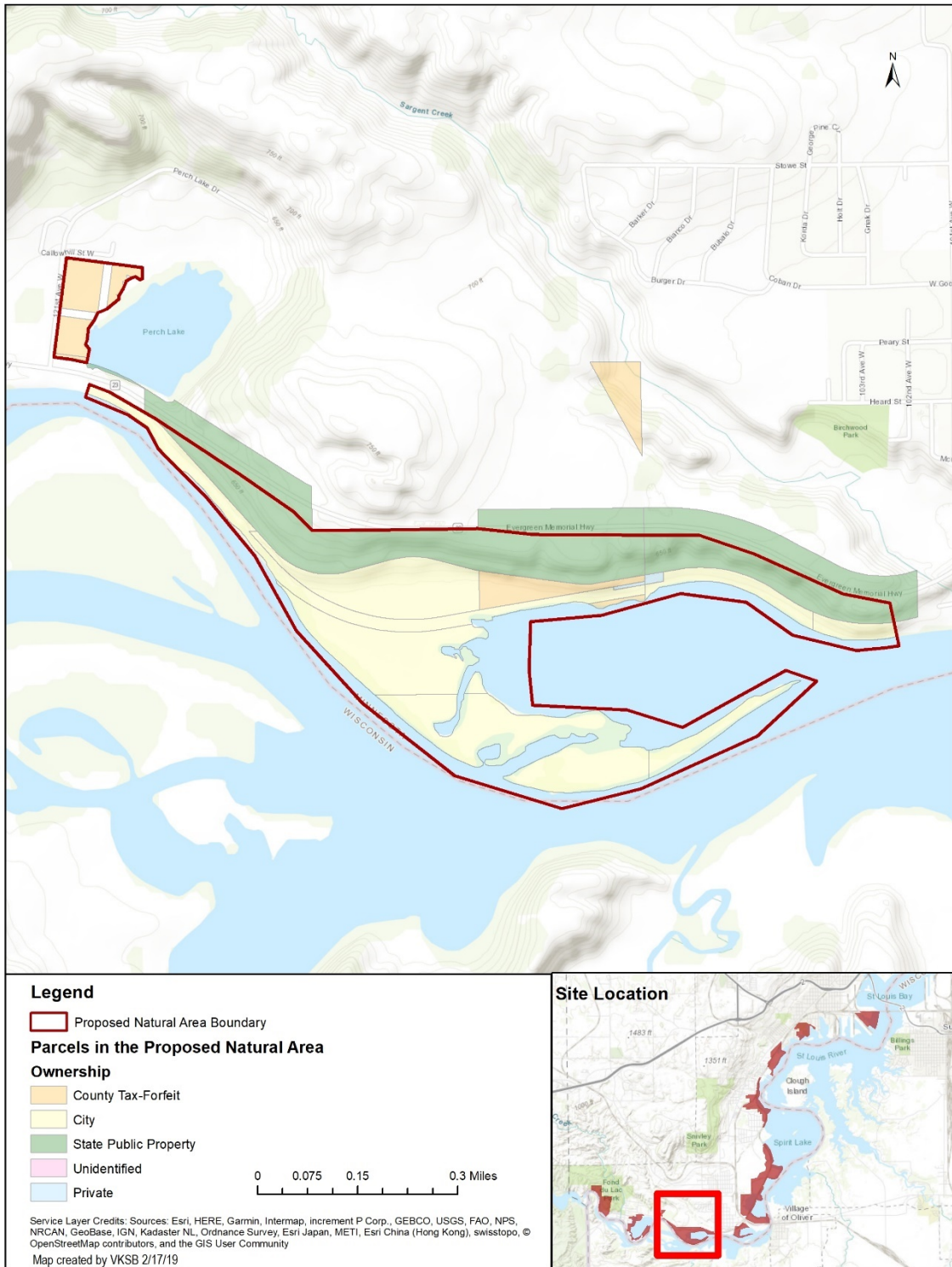


Figure 6: Property Ownership in the North Bay Project Area

Inclusion in the natural area subject to landowner assent.

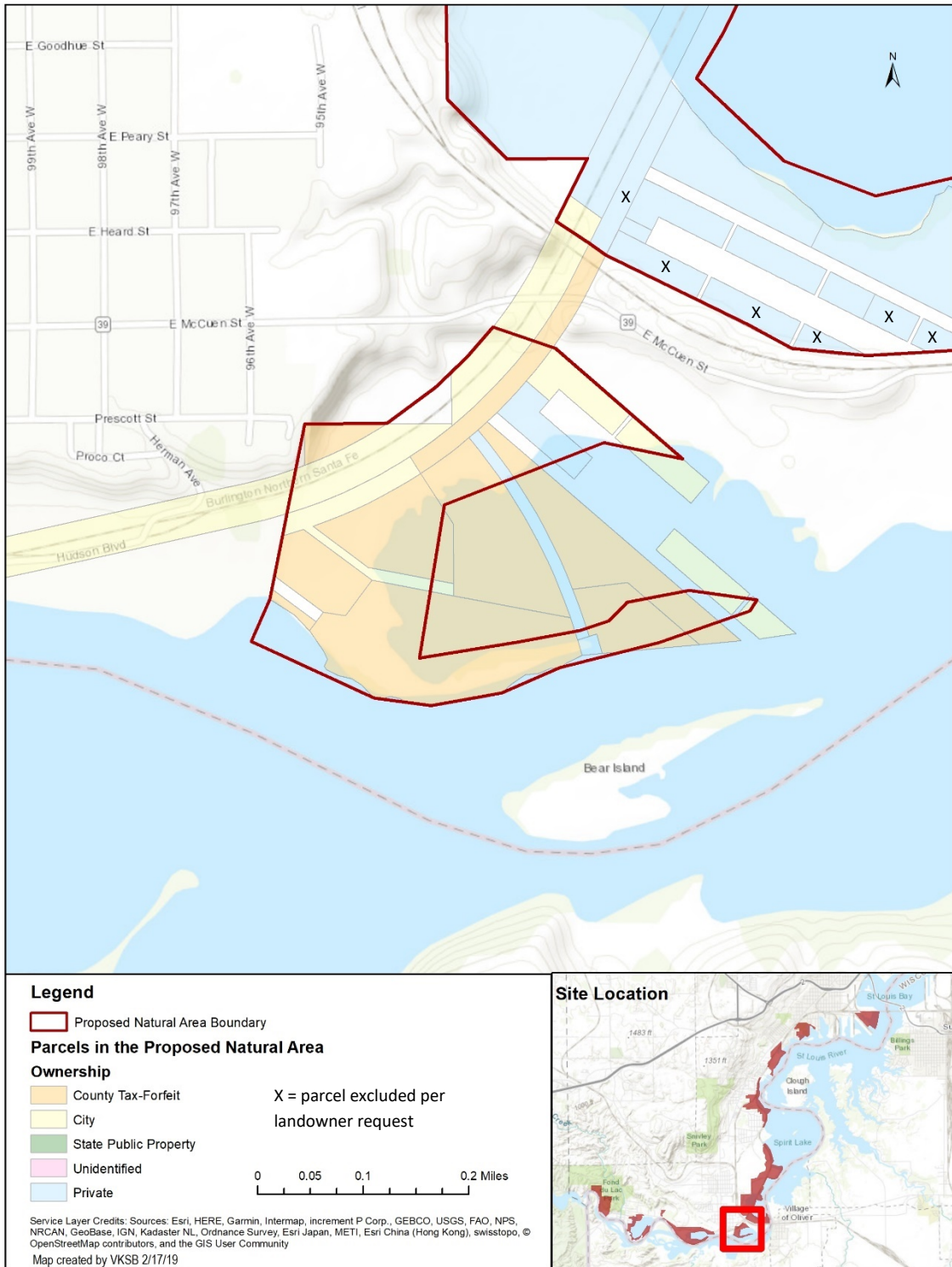


Figure 7: Property Ownership in the Radio Tower Bay Project Area

Inclusion in the natural area subject to landowner assent.

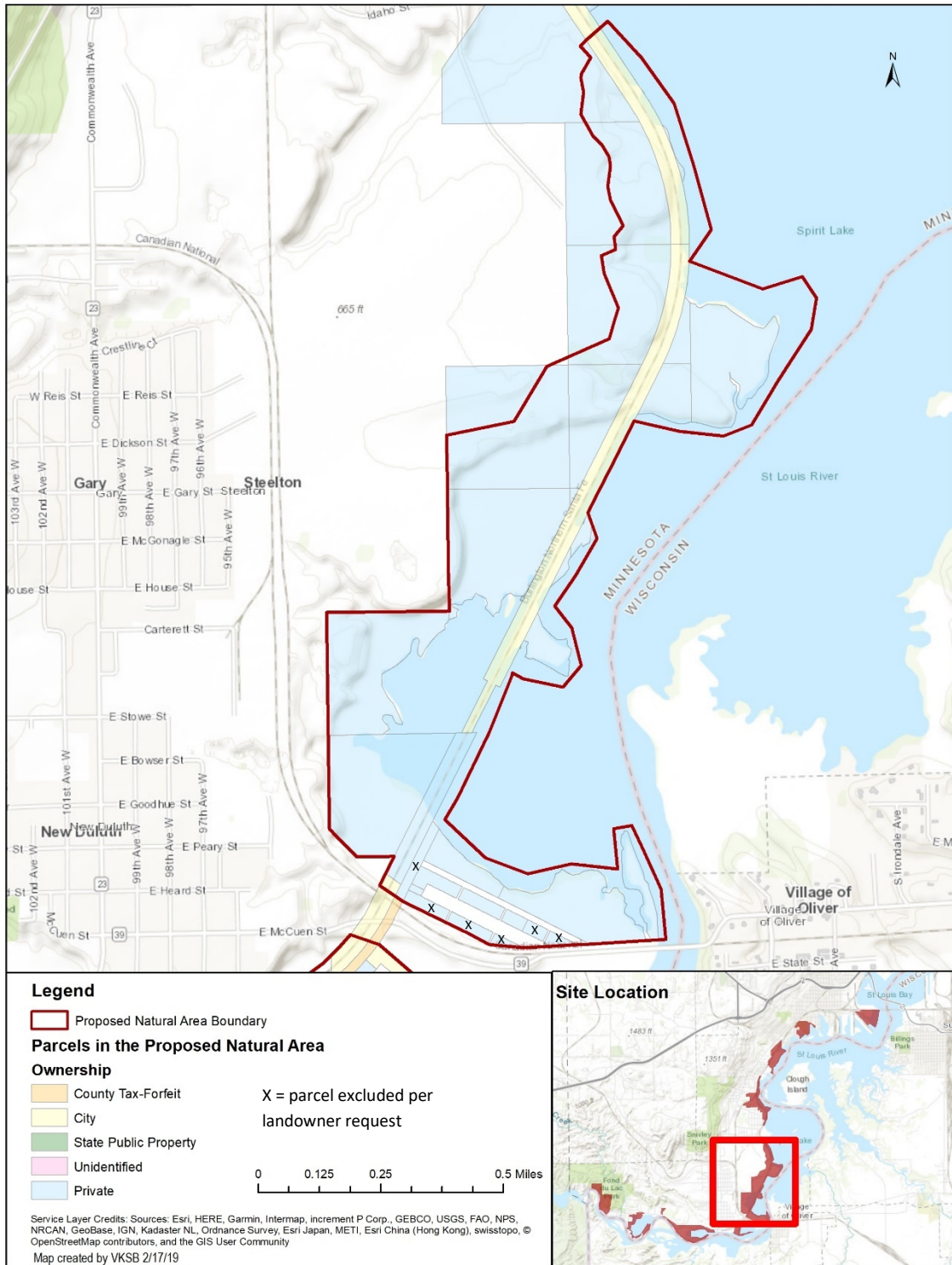


Figure 8: Property Ownership in the Mud Lake Project Area

Inclusion in the natural area subject to landowner assent.

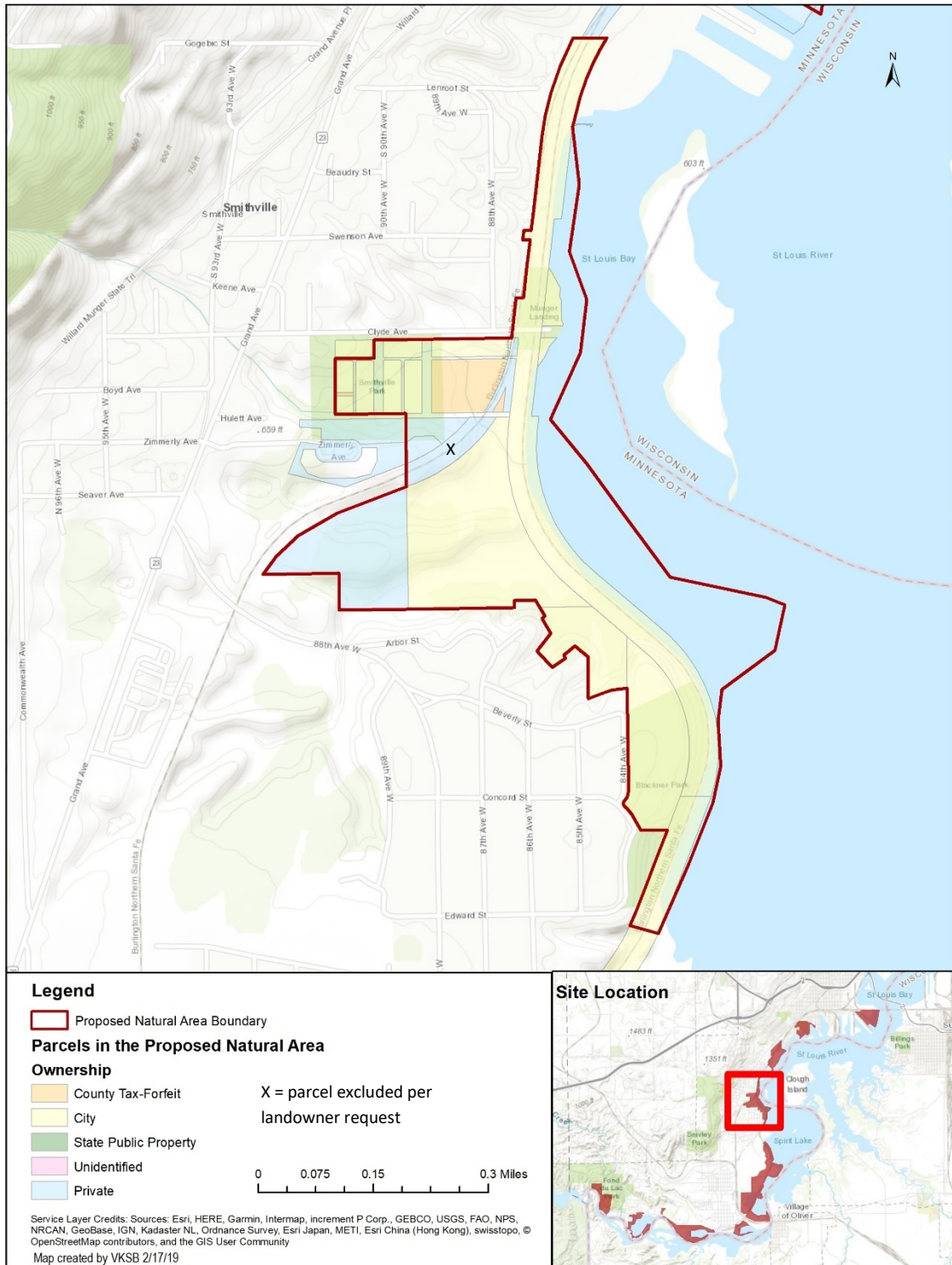


Figure 9: Property Ownership in the Munger Landing Project Area

Inclusion in the natural area subject to landowner assent.

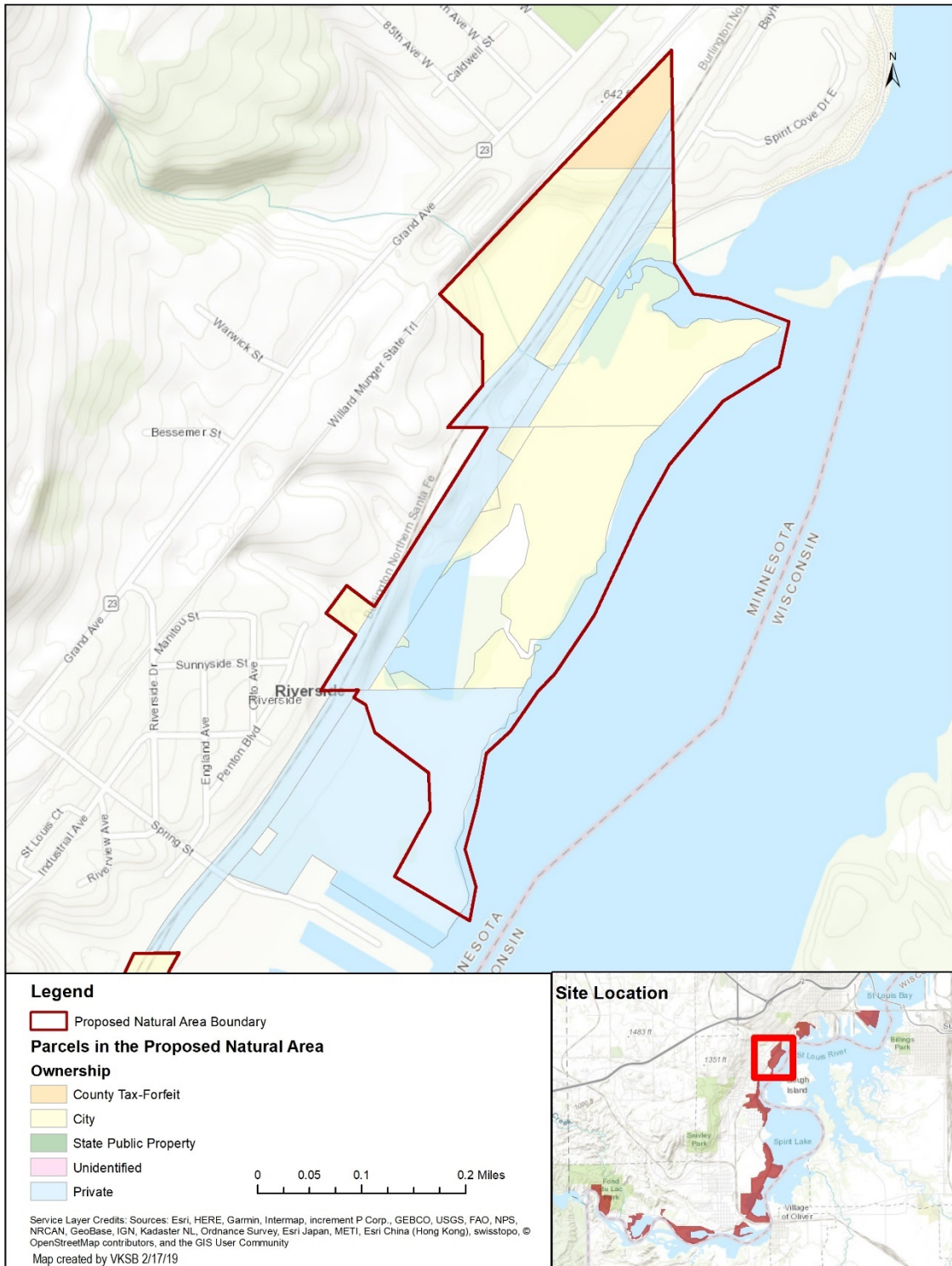


Figure 10: Property Ownership in the Tallus Island Project Area

Inclusion in the natural area subject to landowner assent.



Figure 11: Property Ownership in the Kingsbury Bay Project Area

Inclusion in the natural area subject to landowner assent.

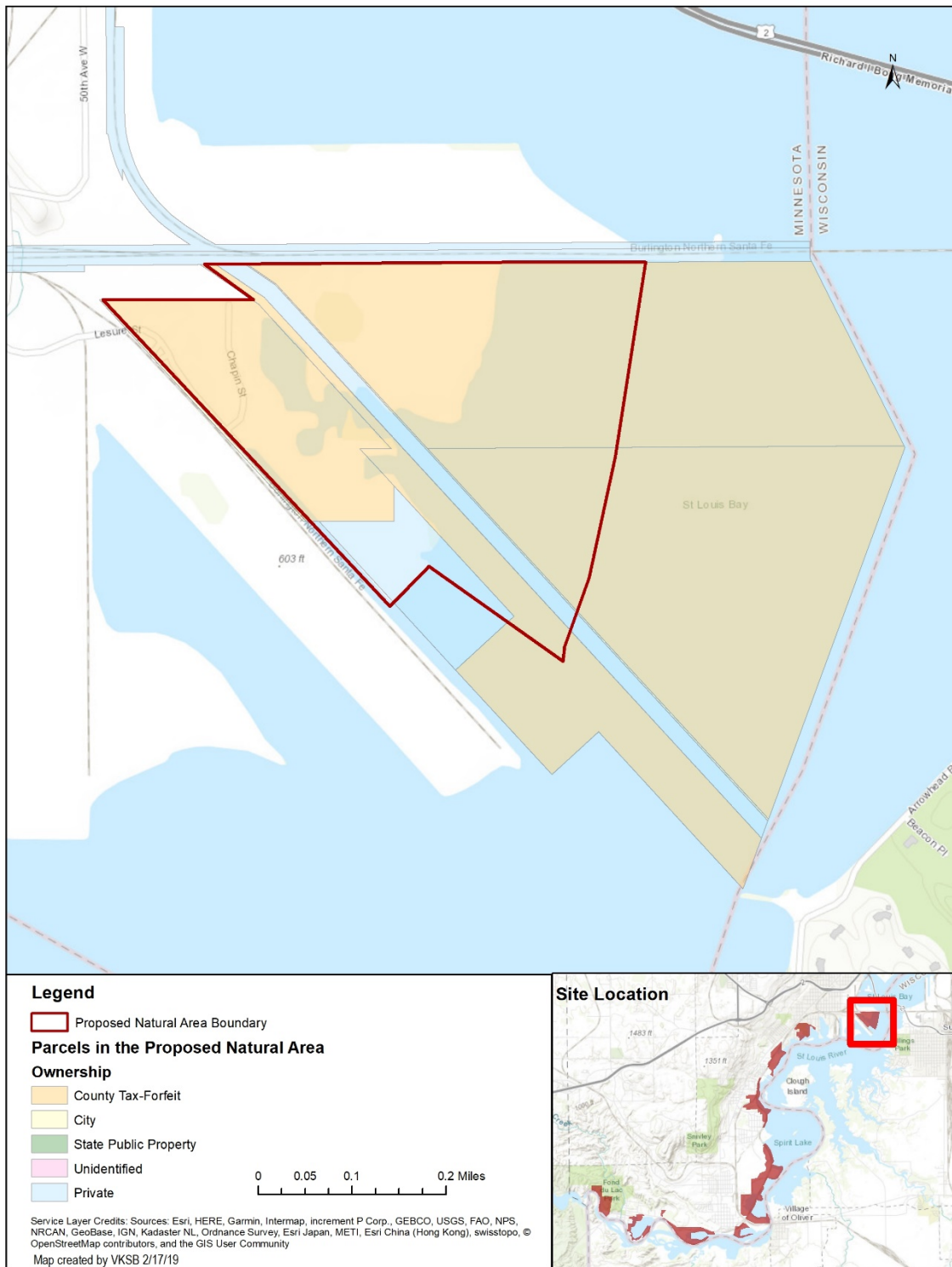


Figure 12: Property Ownership in the Grassy Point Project Area

Inclusion in the natural area subject to landowner assent.

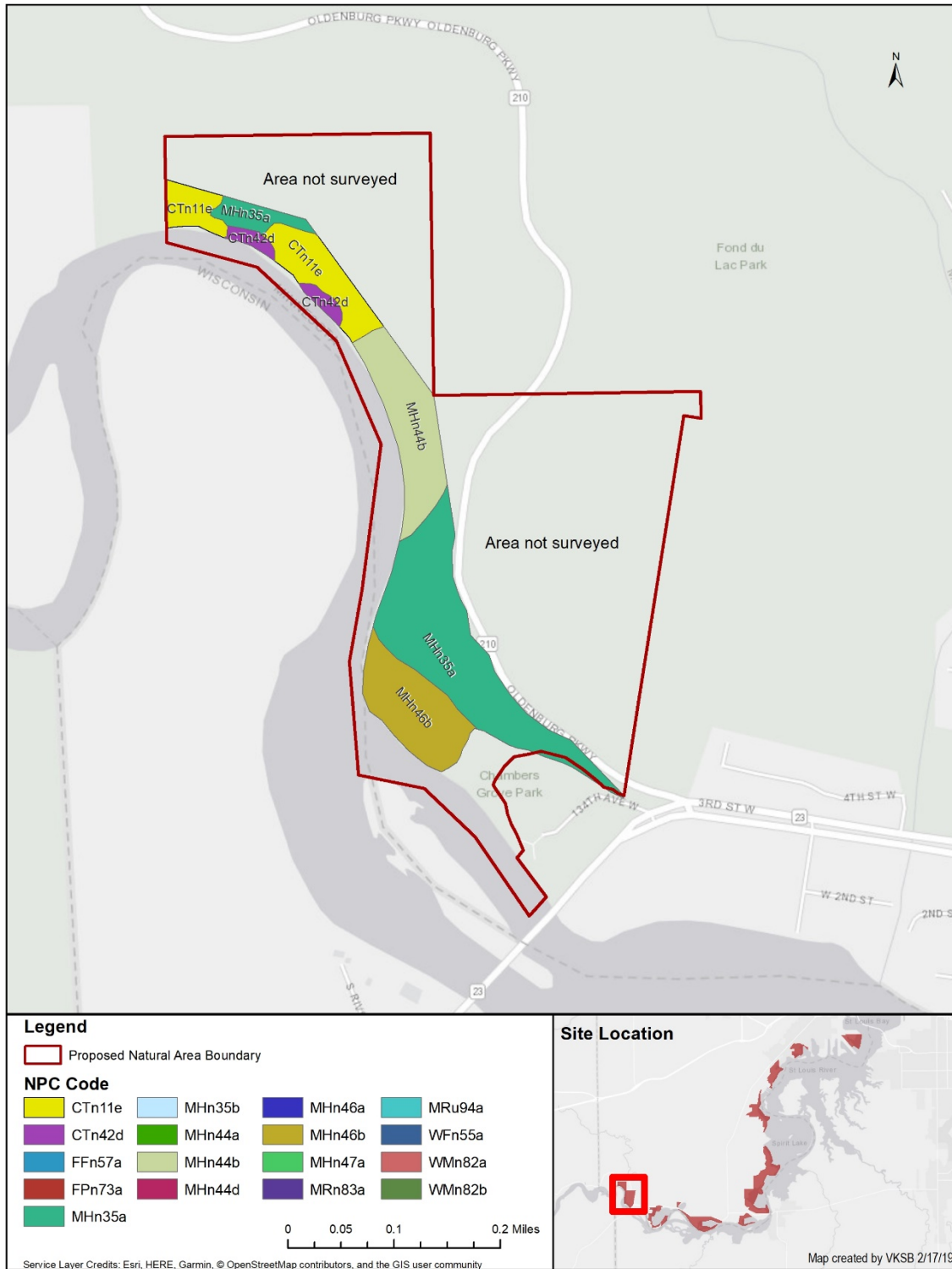


Figure 13: Native Plant Communities in the Chambers Grove Project Area

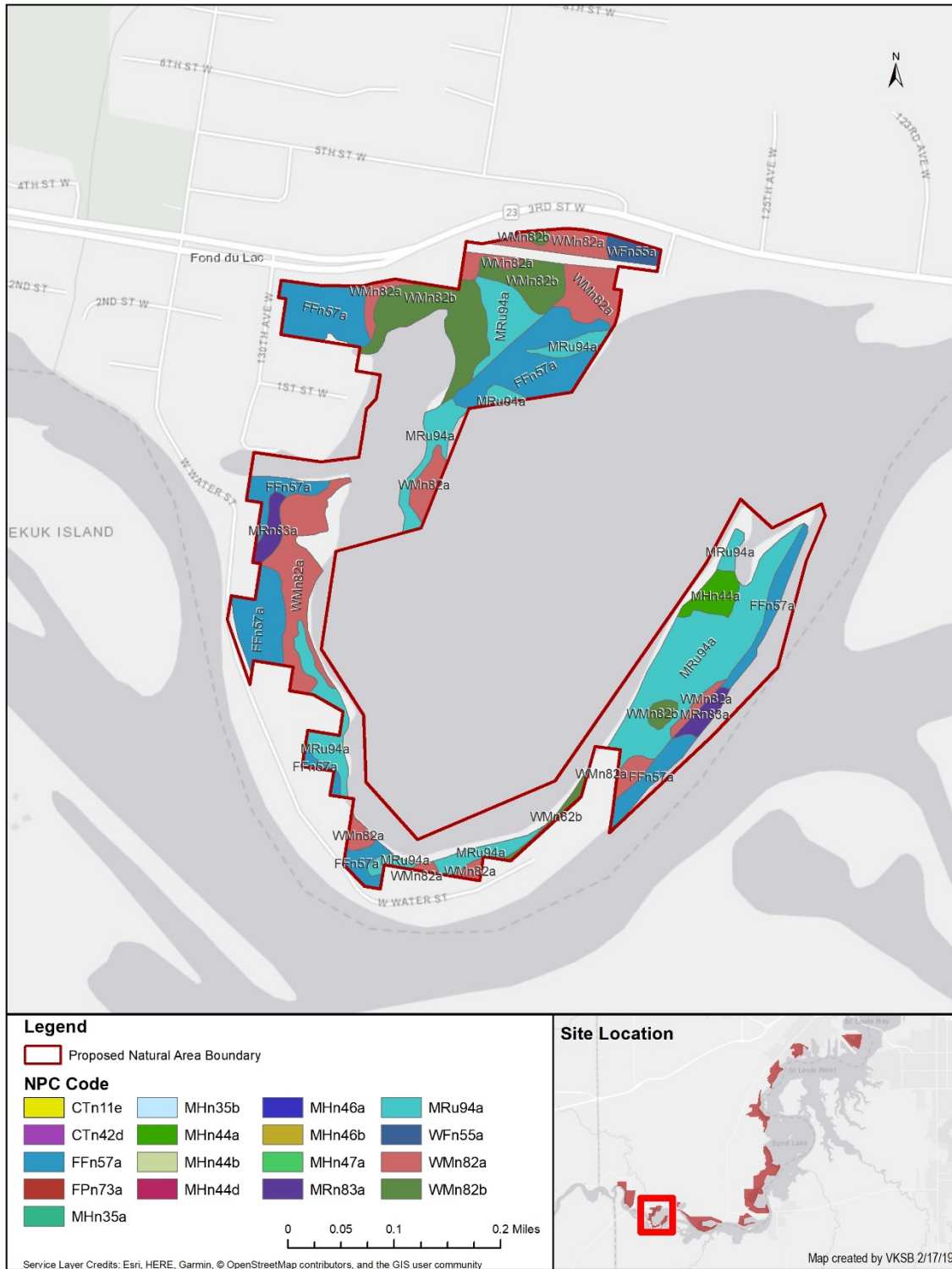


Figure 14: Native Plant Communities in the Rask Bay Project Area

Inclusion in the natural area subject to landowner assent.

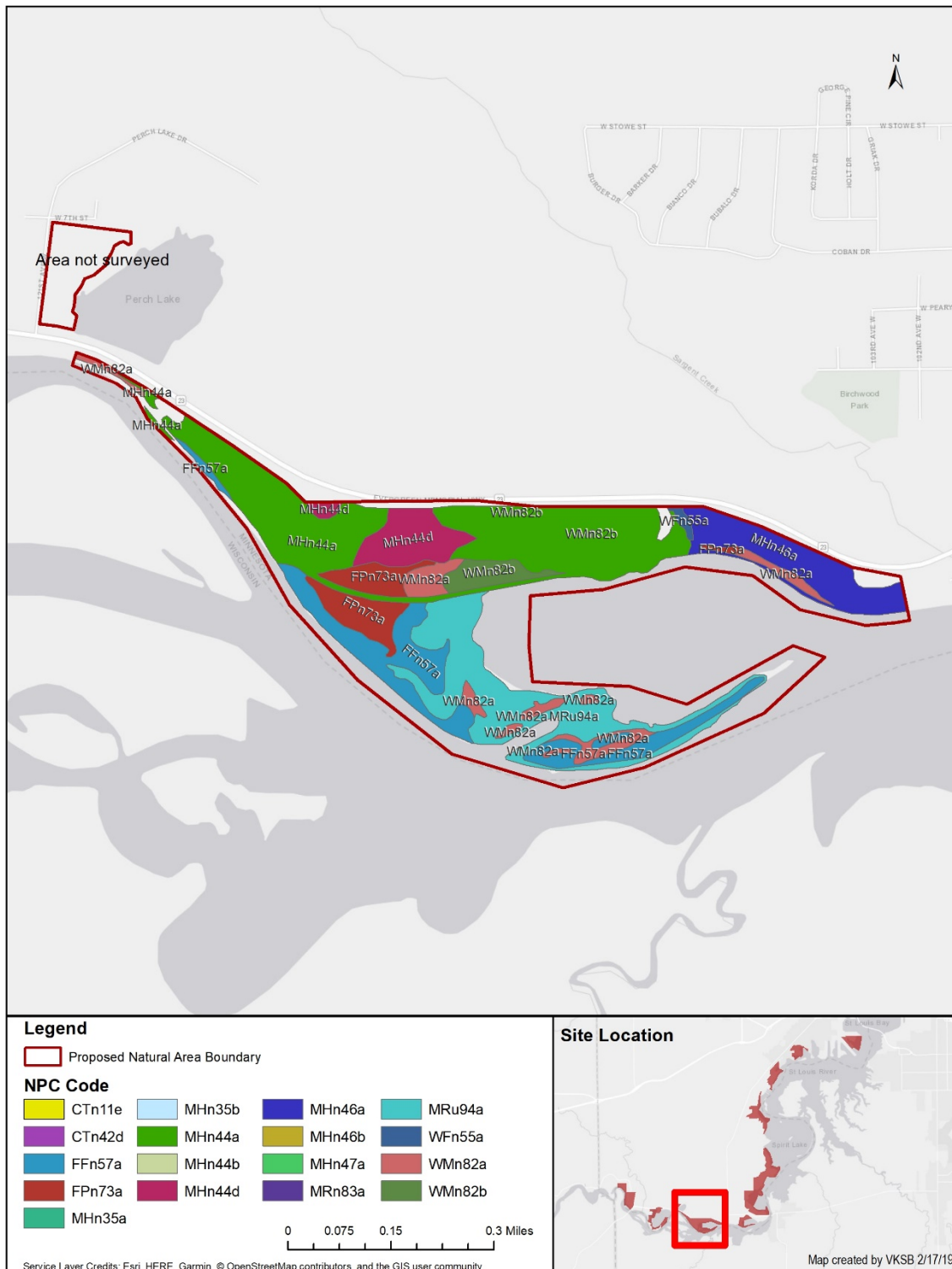


Figure 15: Native Plant Communities in the North Bay Project Area

Inclusion in the natural area subject to landowner assent.

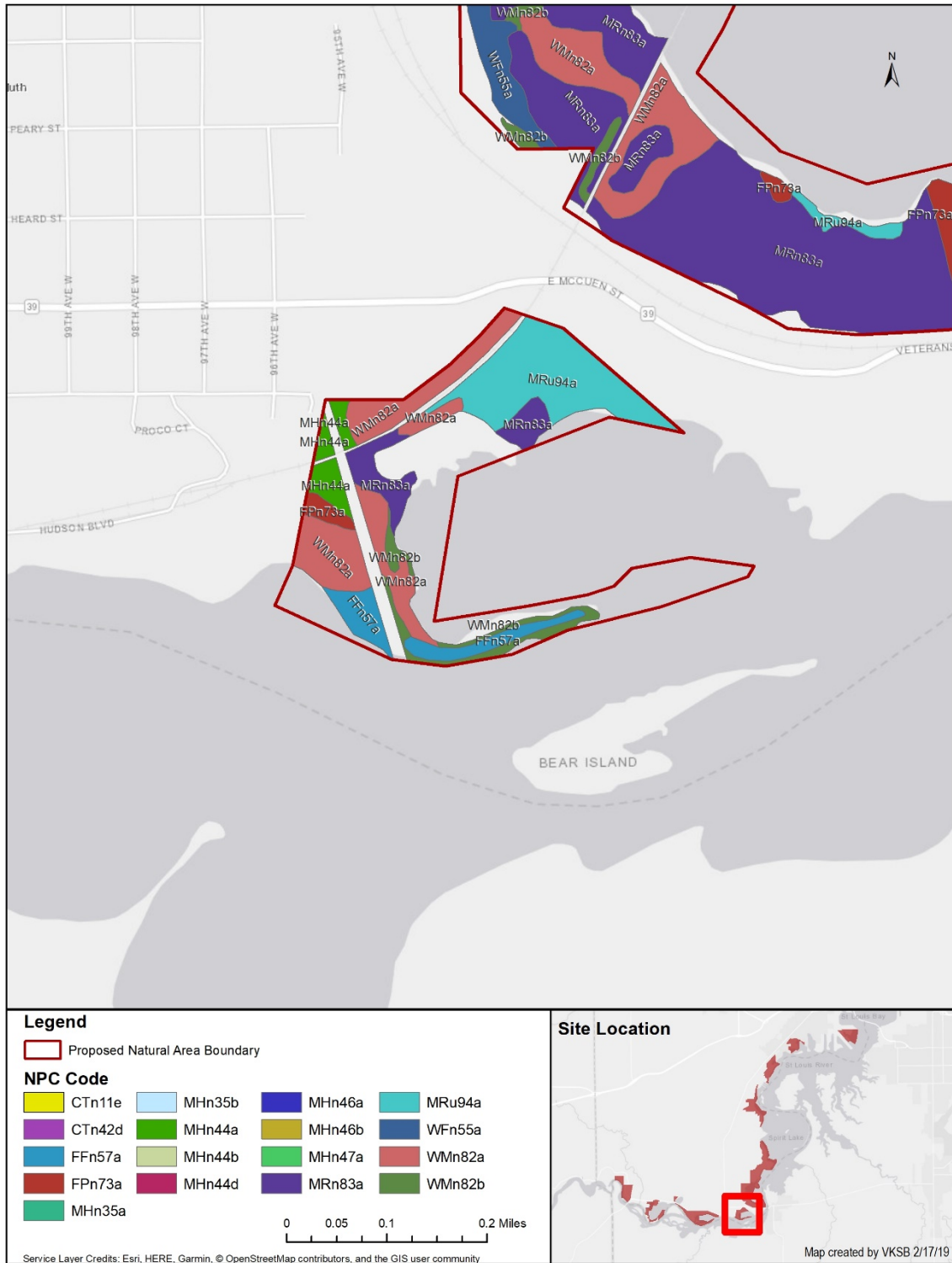


Figure 16: Native Plant Communities in the Radio Tower Bay Project Area

Inclusion in the natural area subject to landowner assent.

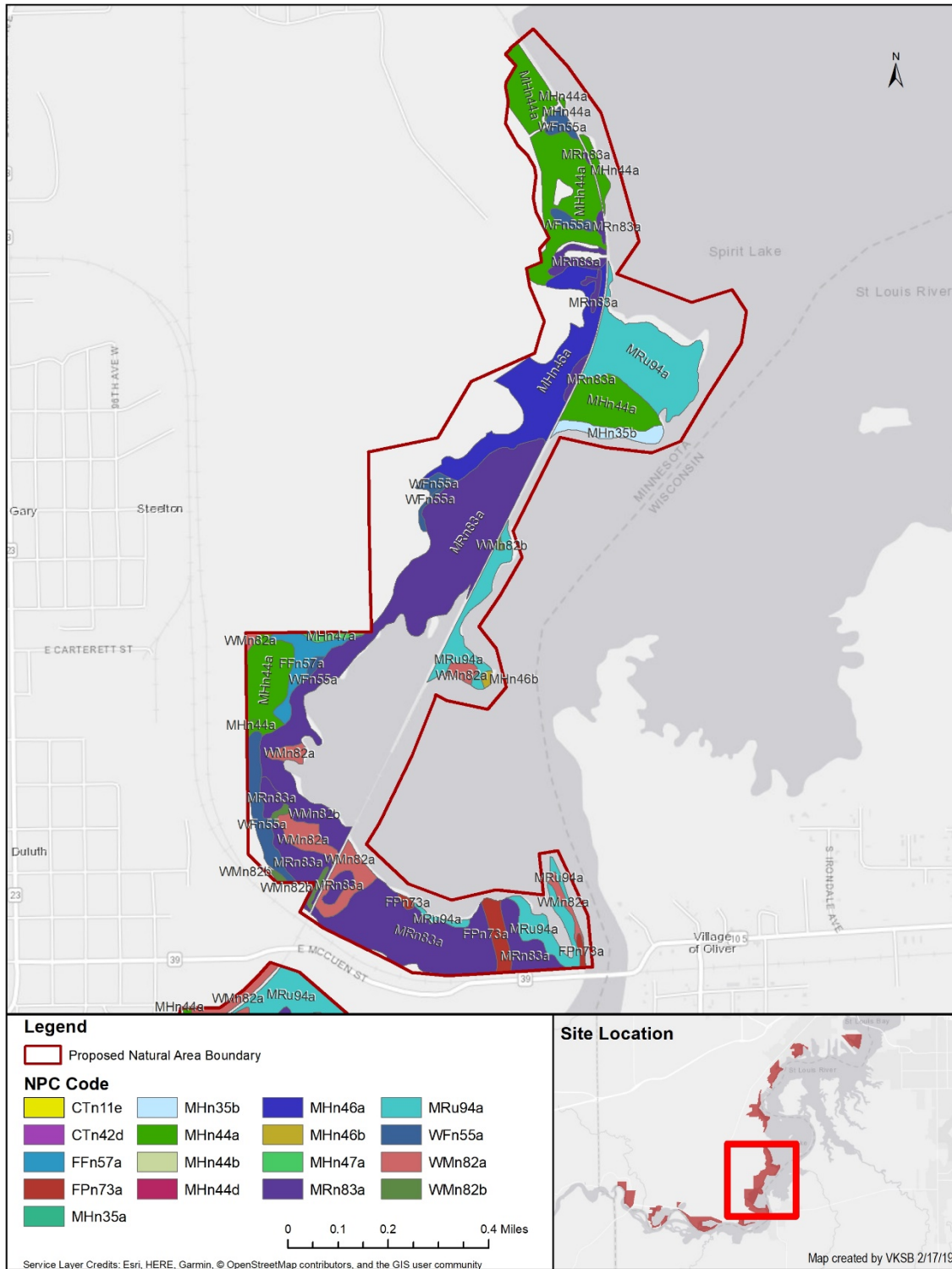


Figure 17: Native Plant Communities in the Mud Lake Project Area

Inclusion in the natural area subject to landowner assent.

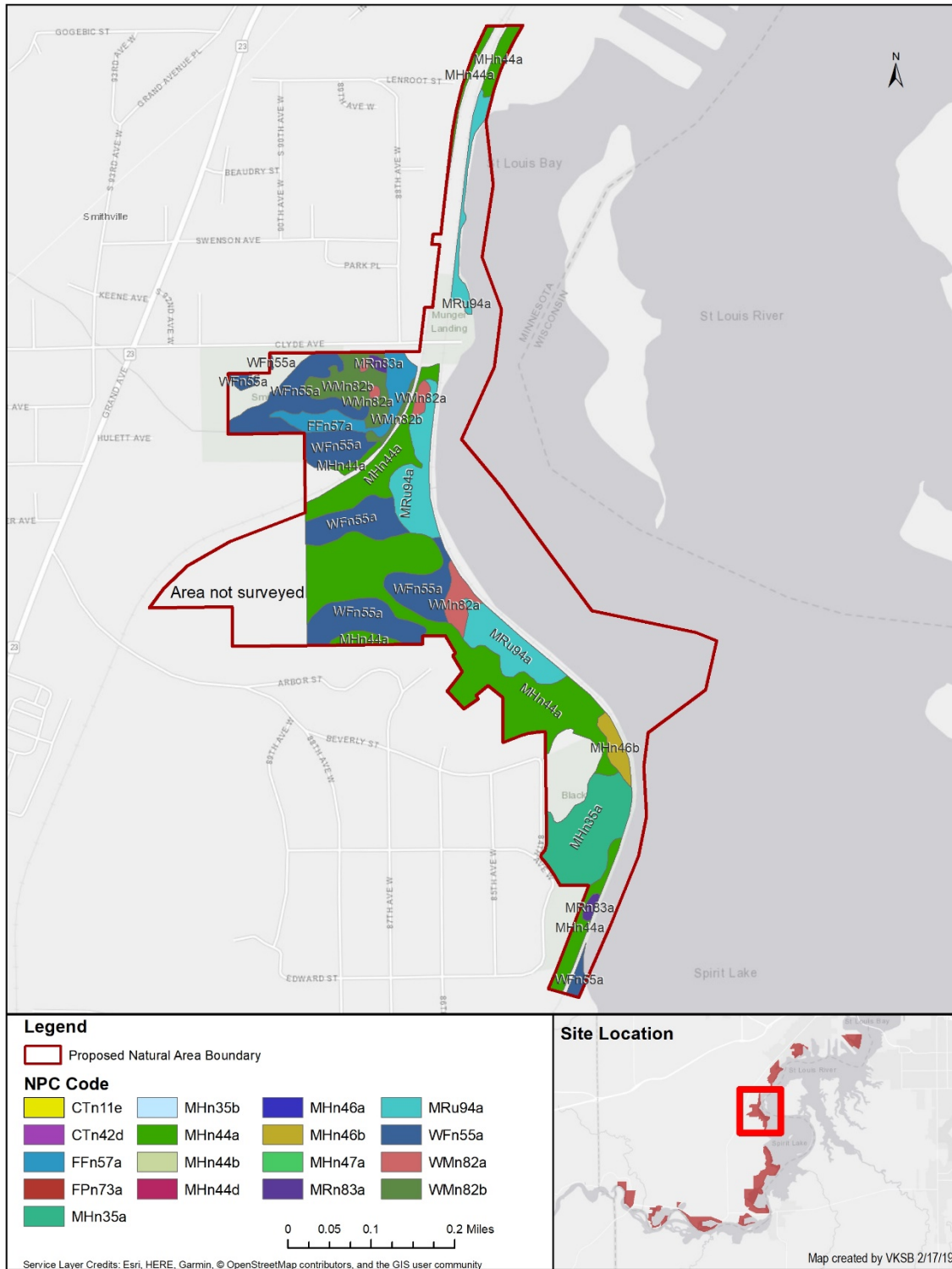


Figure 18: Native Plant Communities in the Munger Landing Project Area

Inclusion in the natural area subject to landowner assent.

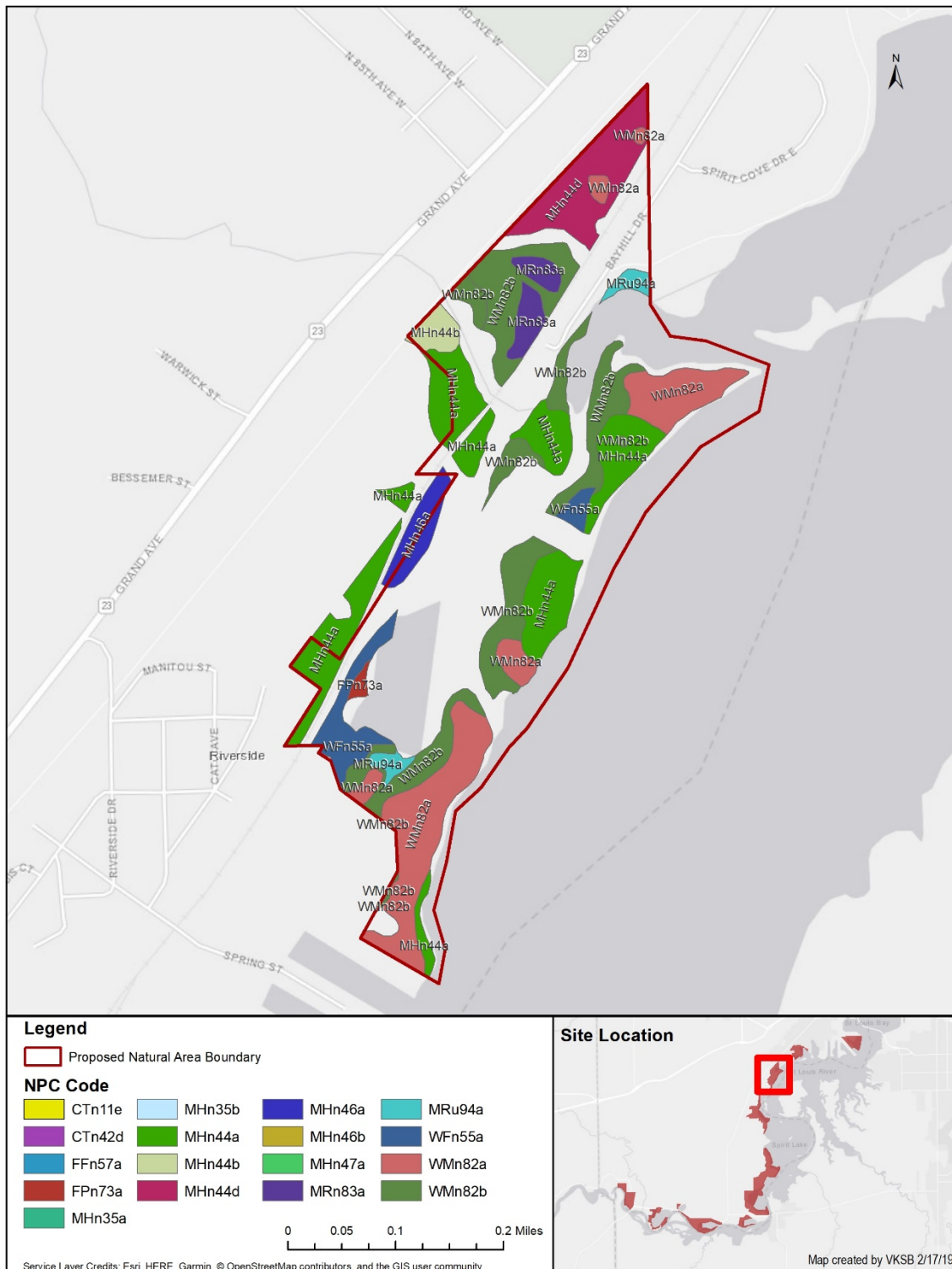


Figure 19: Native Plant Communities in the Tallus Island Area

Inclusion in the natural area subject to landowner assent.

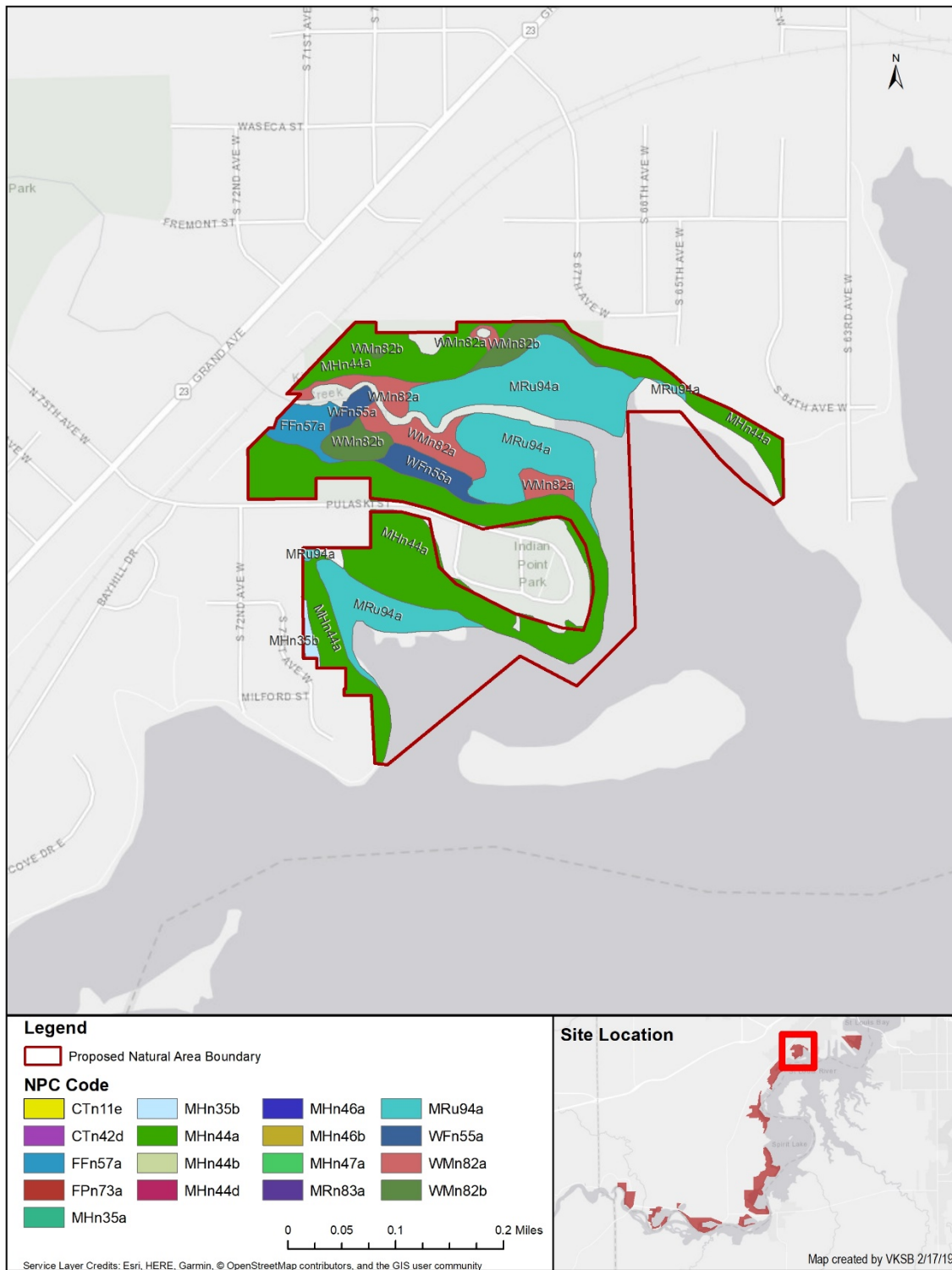


Figure 20: Native Plant Communities in the Kingsbury Bay Project Area

Inclusion in the natural area subject to landowner assent.

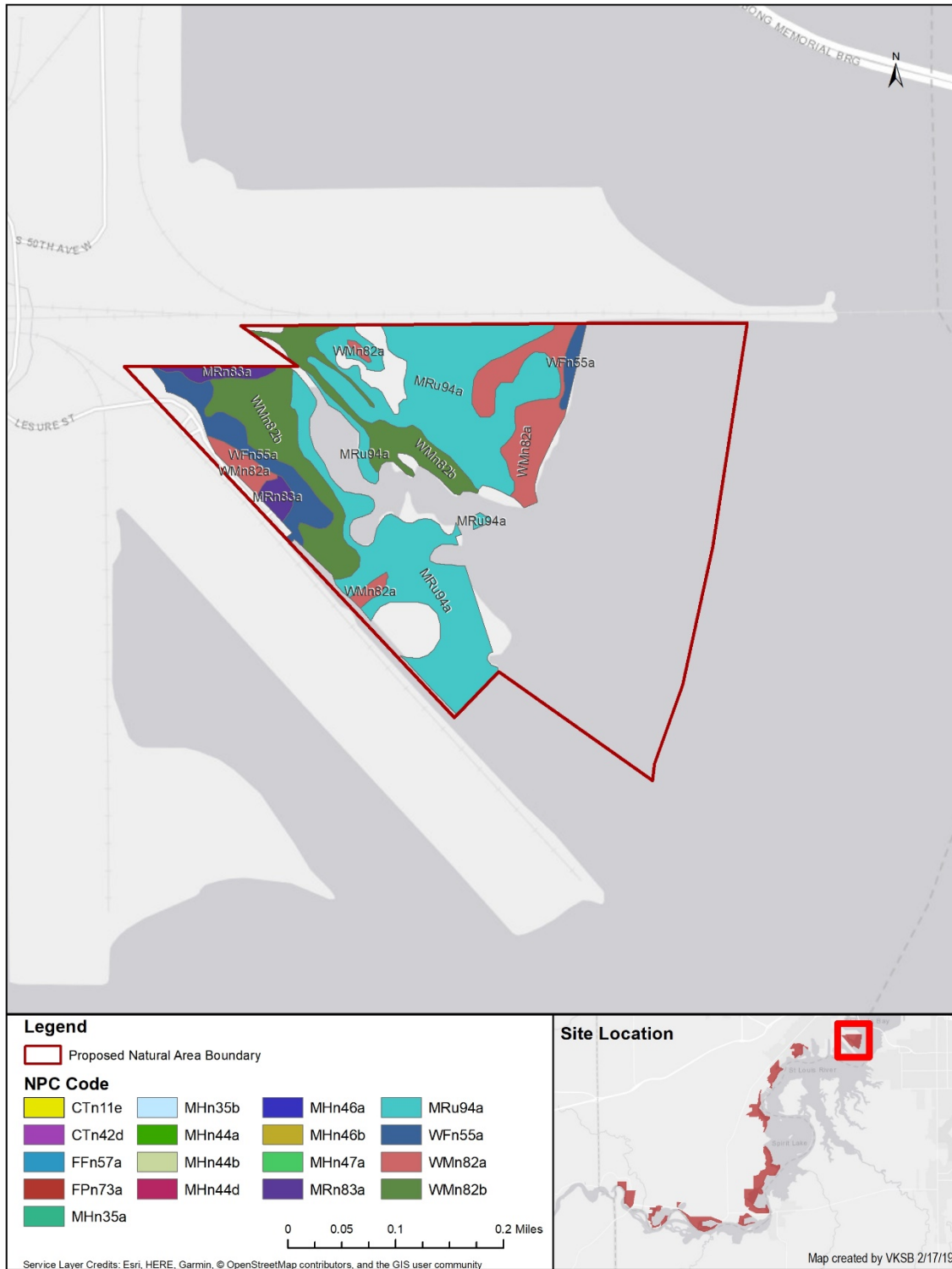


Figure 21: Native Plant Communities in the Grassy Point Project Area

Inclusion in the natural area subject to landowner assent.

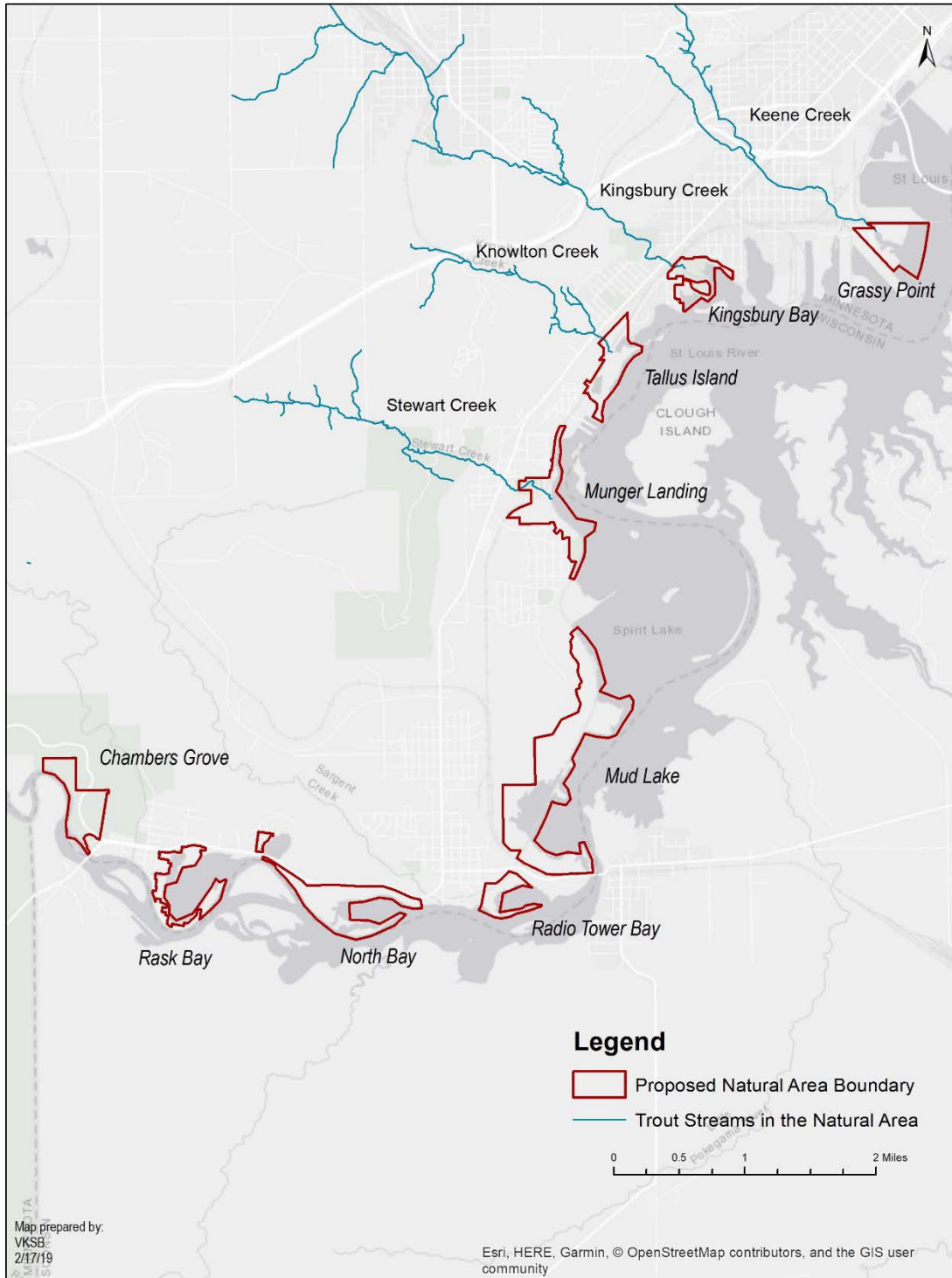


Figure 22: Natural Water Features in the St. Louis River Natural Area



Appendix A: List of Parcels in the St. Louis River Natural Area by Ownership



Parcels in City of Duluth Ownership

Parcel IDs

010-0130-00180	010-2420-05810	010-2730-00900
010-0130-00430	010-2420-05960	010-2730-01090
010-1620-01820	010-2420-05970	010-2730-01100
010-1710-00025	010-2420-06130	010-2730-01110
010-1710-00435	010-2420-06530	010-2730-01200
010-1720-00405	010-2420-06540	010-2730-01210
010-1740-00040	010-2420-06570	010-2730-01215
010-1740-00070	010-2420-06580	010-2730-01217
010-1750-00840	010-2420-06590	010-2730-01230
010-1783-00260	010-2420-06620	010-2746-00245
010-2400-02960	010-2420-06710	010-2746-00246
010-2400-03380	010-2420-08110	010-2746-00248
010-2400-03970	010-2420-08310	010-2746-00290
010-2400-04140	010-2420-08430	010-2746-00291
010-2400-04290	010-2420-08750	010-2746-00291
010-2400-04400	010-2420-08760	010-2746-00291
010-2400-04720	010-2420-08770	010-2746-00425
010-2420-03890	010-2420-08900	010-2746-00441
010-2420-04050	010-2420-09330	010-2746-00550
010-2420-04350	010-2520-12670	010-2746-00620
010-2420-04630	010-2550-02240	010-2746-01600
010-2420-04650	010-2550-02300	010-3160-00500
010-2420-04770	010-2550-03760	010-3160-00980
010-2420-04890	010-2550-04160	010-3160-01180
010-2420-04900	010-2550-04370	010-3160-01400
010-2420-04950	010-2550-05140	010-3160-01600
010-2420-04970	010-2550-05150	010-3300-04620
010-2420-05090	010-2730-00150	None (Blackmer Park)
010-2420-05370	010-2730-00860	
010-2420-05490	010-2730-00870	



Parcels in Private Ownership

Parcel IDs

010-0020-00010	010-2730-00130	010-3160-00490
010-0130-00410	010-2730-00140	010-3160-00510
010-0130-00420	010-2730-01115	010-3160-00530
010-1600-01640	010-2730-01216	010-3160-00540
010-1610-00700	010-2730-01231	010-3160-00550
010-1933-00140	010-2746-00315	010-3160-01830
010-1933-00150	010-2746-00350	010-3160-01830b
010-2550-04380	010-2746-00390	010-3160-02060
010-2550-05130	010-2746-00420	010-3160-02260
010-2730-00020	010-2746-00440	010-3160-03460
010-2730-00020b	010-2746-00560	010-3160-03770
010-2730-00040	010-2746-00590	010-3160-03770b
010-2730-00050	010-2746-01520	010-3160-03970
010-2730-00100	010-2746-01590	010-3160-04170
010-2730-00110	010-3160-00460	Unidentified (in Grassy Point)

Note: Strikethrough indicates parcel removed per landowner request



Parcels in St. Louis County Tax-Forfeit Ownership

Parcel IDs

010-1680-00130	010-1610-00710	010-1700-00530
010-1690-00110	010-1610-00870	010-1700-00540
010-1690-00620	010-1610-01540	010-1700-00600
010-1700-00110	010-1610-01550	010-1700-00610
010-1710-00100	010-1610-01560	010-1700-00650
010-1710-00530	010-1610-01590	010-1700-00660
010-1720-00100	010-1610-01600	010-1700-00780
010-1720-00470	010-1610-01640	010-1700-00790
010-1730-00400	010-1610-01740	010-1710-00010
010-1740-00080	010-1610-01750	010-1710-00020
010-2420-04820	010-1610-01760	010-1710-00030
010-0130-00230	010-1620-00780	010-1710-00040
010-0130-00330	010-1620-00880	010-1710-00050
010-0130-00340	010-1620-01760	010-1710-00430
010-1590-00410	010-1620-01810	010-1710-00440
010-1590-00420	010-1680-00110	010-1710-00450
010-1590-00470	010-1680-00120	010-1710-00460
010-1590-00520	010-1680-00270	010-1710-00470
010-1590-01350	010-1680-00790	010-1710-00600
010-1590-01400	010-1680-00850	010-1710-00610
010-1590-01530	010-1680-01030	010-1710-00660
010-1600-00620	010-1680-01040	010-1710-00670
010-1600-00690	010-1680-01060	010-1720-00350
010-1600-00820	010-1680-01070	010-1720-00390
010-1600-01460	010-1690-00030	010-1720-00400
010-1600-01550	010-1690-00200	010-1720-00460
010-1600-01600	010-1690-00210	010-1720-00510
010-1600-01650	010-1690-00520	010-1720-00520
010-1600-01800	010-1690-00530	010-1720-00560
010-1610-00510	010-1690-00540	010-1720-00570
010-1610-00640	010-1690-00700	010-1720-00600
010-1610-00650	010-1690-00720	010-1720-00610
010-1610-00660	010-1700-00040	010-1730-00060
010-1610-00670	010-1700-00460	010-1730-00220
010-1610-00690	010-1700-00520	010-1730-00360



Parcels in St. Louis County Tax-Forfeit Ownership (Continued)

Parcel IDs

010-1730-00650	010-1760-02180	010-2746-00541
010-1740-00140	010-1760-02340	010-3160-00360
010-1740-00280	010-2400-03300	010-3160-00370
010-1740-00340	010-2420-04910	010-3160-00380
010-1740-00350	010-2420-04920	010-3160-00390
010-1740-00360	010-2420-04930	010-3160-00400
010-1740-00380	010-2420-04940	010-3160-00410
010-1740-00390	010-2550-02290	010-3160-00505
010-1740-00410	010-2550-05120	010-3160-04400
010-1750-00150	010-2730-00930	010-3160-04410
010-1760-00010	010-2730-00980	
010-1760-00070	010-2746-00200	



Parcels in State Public Property Ownership

Parcel IDs

010-2730-01120

010-2730-01150