





## Aquatic and Terrestrial Invasive Species Study Report

Eagle Creek Sartell Hydro, LLC  
Sartell Hydroelectric Project  
Sartell, Minnesota

GAI Project Number: R210281.05  
| FERC No. 8315

September 2021





# Aquatic and Terrestrial Invasive Species Study Report

Eagle Creek Sartell Hydro, LLC  
Sartell Hydroelectric Project  
Sartell, Minnesota

GAI Project Number: R210281.05  
FERC #: 8315

September 2021

Prepared for:  
Eagle Creek Sartell Hydro, LLC  
116 N. State Street, PO Box 167  
Neshkoro, Wisconsin 54960-0167

Prepared by:  
GAI Consultants, Inc.  
3313 S Packerland Drive, Suite E  
DePere, Wisconsin 54115

Report Authors:



Digitally signed by Laura Sass  
DN: cn=Laura Sass, o=GAI Consultants,  
Inc., ou=Oil & Gas MW SW,  
email=l.sass@gaiconsultants.com, c=US  
Date: 2021.10.07 15:40:43 -05'00'

---

Laura Sass  
Senior Project Environmental Specialist



Digitally signed by Mary Rohde  
DN: cn=Mary Rohde, o, ou,  
email=m.rohde@gaiconsultants.com, c=US  
Date: 2021.10.12 16:10:40 -05'00'

---

Mary Rohde  
Senior Environmental Manager / Associate

# Table of Contents

1.0	Project Overview .....	2
2.0	Introduction .....	2
3.0	Methodology .....	3
3.1	Upstream and Downstream Inundated Areas.....	3
3.1.1	Aquatic Plant Survey.....	3
3.2	Terrestrial Upland Areas .....	3
3.2.1	Upland Shorelines not Owned by the Licensee .....	3
3.2.2	Upland Areas Owned by the Licensee .....	4
4.0	Results and Discussion .....	4
4.1	Aquatic Plant Survey.....	4
4.1.1	June Survey .....	4
4.1.2	August Survey.....	5
4.1.3	Overall Aquatic Plant Survey Analysis and Observations .....	6
4.2	Terrestrial Upland Areas .....	7
4.2.1	Survey of Upland Areas not Owned by the Licensee .....	7
4.2.2	Survey of Upland Areas Owned by the Licensee .....	8
5.0	References .....	8
Table 1	Daubenmire Classification Scheme Cover Ranking System	
Table 2	Aquatic Plant Species Abundance in the Mississippi River and Little Rock Lake	
Table 3	Overall Sartell Hydroelectric Project Summary	
Table 4	Terrestrial Shoreline Community Summary	
Table 5	Terrestrial Shoreline Invasive Species Summary	
Figure 1	Project Location and Overview Map	
Figure 2	June Meander Survey	
Figure 3	August Meander Survey	
Figure 4	Rake Fullness Protocol	
Figure 5	Upland Shoreline Meander	
Figure 6	June Predominant Species	
Figure 7	June Invasive Species Locations	
Figure 8	August Predominant Species	
Figure 9	August Invasive Species Locations	
Figure 10	Upland Areas Owned by Licensee	
Attachment A	Aquatic Invasive Species Survey Field Data Sheets - June	
Attachment B	Aquatic Invasive Species Survey Field Data Sheets - August	
Attachment C	Photo Log	
Attachment D	Terrestrial Survey Field Data Sheet	

## 1.0 Project Overview

The Sartell Hydroelectric Project (Project), Federal Energy Regulatory Commission (FERC) No. 8315, located on the Mississippi River in Benton and Stearns Counties, Minnesota is owned, operated, and maintained by Eagle Creek Sartell Hydro, LLC (Licensee), an indirect subsidiary of Eagle Creek Renewable Energy. The current license expires on February 28, 2025, and as part of relicensing the Licensee completed an invasive species study to identify the presence and extent of aquatic and terrestrial invasive species. GAI is pleased to submit the results of an Aquatic and Terrestrial Invasive Species (ATIS) Study conducted June 28, 29, and 30, and August 9, 10, and 11, 2021 (Study) to fulfill this request. This Study report provides baseline data on native species and aquatic and terrestrial invasive species and includes:

- Two aquatic plant surveys – sampling events conducted in June and August, and
- One terrestrial upland survey – conducted during the August survey.

## 2.0 Introduction

The Mississippi River starts as a small stream flowing from Lake Itasca on the north end of Lake Itasca State Park in Clearwater County, Minnesota. The river is protected from its headwaters for 466 miles downstream to the southern boundary of Morrison County, near Little Falls, Minnesota. Flowing through mixed hardwood and conifer forest, and fed by underground springs, lakes, marshes and bogs, the river supports a productive sports fishery, various water and paddling sports, and a variety of wildlife and recreational opportunities. It supports hundreds of animal species including nearly all of Minnesota's endangered, rare, and threatened species. The Mississippi River also provides for a variety of human uses including drinking water for a quarter of Minnesota's residents, generating electricity for many of its cities and supporting diverse recreation opportunities (Mississippi Headwaters Board 2019).

Invasive species pose one of the main threats to aquatic systems. They are defined as non-native species that, when introduced cause, or are likely to cause, harm to the environment, human health, or the economy. Invasive plant species can displace native populations, impair boating, reduce wildlife habitat, and cause nutrient imbalance. Once established within the Project boundary, invasive species can be transferred downstream through water releases or from areas outside of the Project boundary by recreationists and migrating wildlife.

This ATIS Study was conducted to assess the presence of known species and identify any new invasive species in the Project area. The Study encompassed the upstream and downstream inundated portions of the Mississippi River, Little Rock Creek, and Little Rock Lake contained in the existing and proposed Project boundary and included aquatic and terrestrial plants. The Project boundary is located within the City of Sartell and the Townships of Sauk Rapids, Watab, and Langola Benton County, and the Townships of Le Sauk, Brockway, and Holding, Stearns County, Minnesota (Figure 1). This report summarizes the results of the 2021 aquatic and terrestrial plant surveys.

## 3.0 Methodology

Prior to performing the field work, GAI reviewed known species and historic status of the Project. The Minnesota Infested Waters List identifies zebra mussels (*Dreissnia polymorpha*) and curly-leaf pondweed (*Potamogeton crispus*) within the Mississippi River and Little Rock Lake contiguous to the Project.

### 3.1 Upstream and Downstream Inundated Areas

#### 3.1.1 Aquatic Plant Survey

Aquatic plants were sampled adjacent to public water access areas, public park or beach areas, tributary inlets, and areas of higher use (i.e., areas with highly developed shorelines, concentrations of private boat docks, or privately owned water accesses). In addition to the high use areas, random points were sampled around the shoreline in a meander survey fashion along the near shore/littoral zone (usually defined as <15 ft. water depth, but only up to the maximum depth of plant colonization). Two sample events were completed: one on June 28-30 and one on August 9-11, 2021 (Figures 2 and 3). Each sampling point was located using a boat and a Trimble R1 GNSS Receiver (Attachments A and B).

Points were sampled using a double-sided rake, mounted on a pole, by lowering the rake to rest lightly on the river bottom, twisted twice, then raised straight up out of the water. At each sampled point, aquatic plant species presence and density (Figures 2 and 3) were collected. Plant density was measured by rake fullness (Figure 4). Additional plants not collected on the rake sample but visible within 6 feet of the sample point were recorded as a visual sighting on the datasheets.

Areas not captured by the sample collection were monitored for the species listed in the Minnesota DNR Guidance for Conducting Aquatic Invasives Species Early Detection and Baseline Monitoring in Lakes (MDNR 2018). No permanent vouchers were collected. Photo and location were collected of new aquatic invasive species that were found (Attachment C).

### 3.2 Terrestrial Upland Areas

The Licensee owns a portion of the terrestrial upland area of the Project, but all upland areas are susceptible to establishment of invasive species. Terrestrial areas in the Project were surveyed using two methods.

#### 3.2.1 Upland Shorelines not Owned by the Licensee

Upland shoreline areas not owned by the Licensee were surveyed by GAI on August 9th, 10th, and 11th, 2021. The shoreline was observed from the boat while moving slowly along the shoreline (Figure 5). During the study, an overall characterization of the terrestrial plant composition was made within a 10-meter riparian zone visible from open water. The shoreline survey was broken up in segments based on natural community and land-use; for example, if the shoreline was predominately residential and transitioned to undeveloped lowland forest, then a new segment would be started. When plants included in the Minnesota Noxious Weed list were observed, the species, approximate relative abundance, and length of shoreline were recorded (Attachment D). When the location of an invasive species was an individual plant on the shoreline, latitude and longitude were collected. The relative abundance of each observed species within a segment was determined by visually assessing and estimating percent foliage as would be observed standing above, perpendicular to the ground, after which, the Daubenmire Classification Scheme Cover Ranking System was used to estimate the percent foliage cover within a given segment. This ranking system was used to estimate relative abundance and can be applied to the relative size and length of a given segment of study. See Table 1 below for an overview of the Daubenmire Classification Scheme Cover Ranking System.

**Table 1**  
**Daubenmire Classification Scheme Cover Ranking System**

Percent Foliage Cover	Ranks
0-5	1
5-25	2
25-50	3
50-75	4
75-95	5
95-100	6

### 3.2.2 Upland Areas Owned by the Licensee

The Licensee owns two small upland areas within the Project boundary, located on the east and west sides of the dam. The eastern area was comprised of pavement around the hydro plant building. The western area comprised a small area of mowed grass. These were surveyed on foot in a meander fashion by GAI on August 10, 2021. An overall characterization of the terrestrial plant community was made and an estimate of relative abundance, using the Daubenmire system, was recorded for invasive species observed.

## 4.0 Results and Discussion

### 4.1 Aquatic Plant Survey

#### 4.1.1 June Survey

A total of 90 points were sampled during the June survey completed on June 28-30, 2021 (Figure 2, Attachment A). Sixty-four points were surveyed as random meander points, nine were developed/high use locations, eight were tributary inlets, six were launches/public access points, and three were protected bays. Of the sampled points, 82 were shallower than the maximum depth of plant growth of 7.0 feet, and 48 sample points had vegetation on the rake. Sixteen species were found during the survey, two of which were observed visually, but not present on the rake: watershield (*Brasenia schreberi*) and large duckweed (*Spirodela polyrhiza*). The top three predominant species were coontail (*Ceratophyllum demersum*), common waterweed (*Elodea canadensis*), and wild celery (*Vallisneria spiralis*, Figure 6). Average rake fullness in June was 1.27. Table 2 lists all species found during this survey, and Table 3 provides summary information.

One invasive species, curly-leaf pondweed, was identified on the rake during the June survey. Curly-leaf pondweed requires colder water temperatures and starts growing in the spring earlier than many native species. It has even been documented growing under the ice. Plants can grow up to 15 feet tall and may mat at the surface, shading out native species. Curly-leaf pondweed tolerates low water clarity and will readily invade disturbed areas, but as summer progresses and the waters warm, this species begins to senesce or die back. This in turn releases nutrients into the water increasing the risk of algae blooms, which can shade the native plants, further suppressing their growth. Figure 7 depicts the locations of curly-leaf pondweed found during this survey.

Yellow iris, while not collected on the rake, was observed at three locations along the shoreline during the June survey. Specimens were not collected since they were in terrestrial areas not owned by the Licensee. Figure 7 depicts the locations of yellow iris found during the Study.

Yellow iris is a perennial plant that can grow in a range of conditions from moist uplands to wetlands to lake and river shorelines. It can grow up to 4 feet in height and may form dense colonies that displace native species. Yellow iris can reproduce through seed production and by spreading vegetatively via rhizome fragments. Both seeds and fragments can float away from the original population and spread throughout a waterway or downstream to other systems.

#### 4.1.2 August Survey

The late season survey was completed on August 9-11, 2021. A total of 97 points were sampled (Figure 3, Attachment B). Sixty-four points were surveyed as random meander points, ten were protected bays, nine were boat launches/ public access points, six were developed/ high use locations, six were tributary inlets, one was an outflow, and one was sampled in the confluence of the Mississippi River and Little Rock Creek. Eighty-four of the sample points were shallower than the maximum depth of plant growth of 6.5 feet, and 48 sample points had vegetation on the rake. Ten species were found on the rake during this late season survey with another six plants documented as visual sightings (Table 2). The top three predominant species were coontail, common waterweed, and wild celery (Figure 8). The average rake fullness in August was 1.48.

No aquatic invasive species were collected on the rake during this survey. Purple loosestrife (*Lythrum salicaria*) was observed sporadically along the shoreline throughout the river reaches. Figure 9 depicts a couple locations for purple loosestrife, but once we realized it was present throughout the river reach, additional points were not collected, and was captured in the shoreland meander survey instead. No purple loosestrife was observed in Little Rock Lake. One occurrence of Japanese knotweed (*Fallopia japonica*) growing on shore was observed and documented (Figure 9).

**Table 2**  
**Aquatic Plant Species Abundance in the Mississippi River and Little Rock Lake**

Scientific Name	Common Name	Littoral Frequency of Occurrence <sup>a</sup>		Relative Frequency of Occurrence <sup>b</sup>	
		June	August	June	August
<i>Potamogeton crispus</i> <sup>c</sup>	curly-leaf pondweed	13.41	-	11.46	-
<i>Brasenia schreberi</i>	watershield	visual	-	Visual	-
<i>Ceratophyllum demersum</i>	coontail	24.39	28.57	20.83	27.59
<i>Elodea canadensis</i>	common waterweed	20.73	22.62	17.71	21.84
<i>Heteranthera dubia</i>	water star-grass	8.54	19.05	7.29	18.39
<i>Lemna minor</i>	small duckweed	-	visual	-	visual
<i>Myriophyllum sibiricum</i>	northern water milfoil	1.22	visual	1.04	visual
<i>Nuphar variegata</i>	spatterdock	1.22	-	1.04	-
<i>Nymphaea odorata</i>	white water lily	4.88	1.19	4.17	1.15

Scientific Name	Common Name	Littoral Frequency of Occurrence <sup>a</sup>		Relative Frequency of Occurrence <sup>b</sup>	
		June	August	June	August
<i>Potamogeton foliosus</i>	leafy pondweed	10.98	1.19	9.38	1.15
<i>Potamogeton natans</i>	floating-leaf pondweed	-	2.38	-	2.30
<i>Potamogeton nodosus</i>	long-leaf pondweed	2.44	1.19	2.08	1.15
<i>Potamogeton zosteriformis</i>	flat-stem pondweed	2.44	3.57	2.08	3.44
<i>Ranunculus aquatilis</i>	white water crowfoot	1.22	1.19	1.04	1.15
<i>Sagittaria graminea</i>	grass-leaved arrowhead	-	visual	-	visual
<i>Spirodela polyrhiza</i>	large duckweed	visual	visual	visual	visual
<i>Stuckenia pectinata</i>	sago pondweed	9.76	visual	8.33	visual
<i>Vallisneria americana</i>	wild celery	14.63	21.43	12.50	20.69
<i>Zannichellia palustris</i>	horned pondweed	1.22	-	1.04	-
<i>Zizania</i> sp.	wild rice	-	visual	-	visual

<sup>a</sup>The littoral frequency of occurrence refers to the number of times the species was found divided by the total number of sample locations shallower than MDC.

<sup>b</sup>The relative frequency of occurrence refers to the frequency at which one species was found in comparison to all species found (percentage).

<sup>c</sup>Invasive species.

**Table 3**  
**Overall Sartell Hydroelectric Project Summary**

Statistic	June 2021	August 2021
Frequency of Occurrence	58.54	58.33
Maximum Depth of Plants	7.0 feet	6.5 feet
Species Richness	16	16
FQI	20.25	18.09

#### 4.1.3 Overall Aquatic Plant Survey Analysis and Observations

The aquatic plant community was diverse and well established during both surveys. The same three species were found to be dominant in both surveys: coontail, common waterweed, and wild celery. The plant communities in the river were primarily found growing in areas protected from the current, for example in sheltered bays and the downstream side of islands. These



areas had finer sediments that supported robust plant growth. Additional indicators of good water health were observed in the Mississippi River portion. Freshwater sponges and bryozoan were observed during the August survey within the Mississippi River portion of the Study area. These aquatic organisms are indicators of a healthy ecosystem and good water quality.

The lake habitat had lower water clarity and fewer native species. An algal bloom was observed in Little Rock Lake during both the June and August surveys. Algal blooms occur when an abundance of the nutrients needed by a particular algae are available in a system. Nitrogen and phosphorous are two of the most common limiting nutrients and can be introduced via run-off from agricultural fields, septic systems, fertilized lawns, and other urban effluents as well as plants senescing. Algal blooms reduce the amount of light that can penetrate the water column and thus limits plant growth. (Table 3).

Curly-leaf pondweed was the only submergent aquatic invasive species found within the Sartell Project Area (Figure 7). Plants were only observed in the June survey, which is common for this species. Curly-leaf pondweed senesces as water temperatures rise and therefore, it would not be expected to be found in August. Large areas of curly-leaf pondweed observed growing in Little Rock Lake during the June survey were already beginning to senesce at that time.

## 4.2 Terrestrial Upland Areas

### 4.2.1 Survey of Upland Areas not Owned by the Licensee

A terrestrial invasive survey was conducted by GAI along the portions of shoreline included within the study area (Figure 5). Natural communities and land-uses were used to separate the study segments and included upland forest/sparse residential, lowland forest, forested (includes upland and lowland forest), and residential (Table 4). Silver maple (*Acer saccharinum*) and reed canary grass (*Phalaris arundinacea*) were dominant within the lowland forest, white pine (*Pinus strobus*), willows (*Salix* spp.), and red pine (*Pinus resinosa*) were dominant in the upland forest/sparse residential areas, silver maple, willows (*Populus* spp.), cottonwood (*Populus deltoides*), oaks (*Quercus* spp.), and basswood (*Tilia americana*) were dominant in the mixed forested segments, and silver maple and mowed lawn were dominant in the residential segments.

**Table 4**  
**Terrestrial Shoreline Community Summary**

Community Type	Mileage of Observation	Percentage of Occurrence
Upland Forest/Sparse Residential	0.89	2.31%
Lowland Forest	0.57	1.46%
Forested (Mixed Forest)	9.73	25.08%
Residential	27.61	71.15%

Invasive species identified during the terrestrial shoreline survey were limited to purple loosestrife and one occurrence of Japanese knotweed (45.652197, -94.196897). Previous occurrence of either species within the study area have not been documented. Distribution of purple loosestrife was restricted to individual plants or small populations dispersed sporadically along the shore. Purple loosestrife is relatively common and well-established in many parts of Minnesota. It was usually identified growing in open, wet shorelines of the study area.



**Table 5**  
**Terrestrial Shoreline Invasive Species Summary**

Species	Common Name	Mileage of Observation	Percentage of Occurrence
<i>Lythrum salicaria</i>	purple loosestrife	20.13	1%
<i>Fallopia japonica</i>	Japanese knotweed	45.652197°, -94.196897°	
<i>Cirsium arvense</i>	Canada thistle	45.620678°, -94.202287°	

#### 4.2.2 Survey of Upland Areas Owned by the Licensee

Two upland areas owned by the licensee were meandered on foot for the presence of invasive species, including a gravelly area on the east side of the dam, and a mowed lawn/riprap shoreline area on the west side of the dam.

The east side of the dam was primarily comprised of a gravel surface with intermittent patches of weedy plants. This area was dominated by Siberian elm (*Ulmus pumila*) saplings, trembling aspen (*Populus tremuloides*) saplings, fringed sagebrush (*Artemisia frigida*), bird's-foot trefoil (*Lotus corniculatus*), smooth brome (*Bromus inermis*), common ragweed (*Ambrosia artemisiifolia*), Timothy (*Phleum pratense*), common mullein (*Verbascum thapsus*), and Canada goldenrod (*Solidago canadensis*). This area contained small populations of Canada thistle (*Cirsium arvense*) growing in the gravel around the hydro plant building (Figure 5).

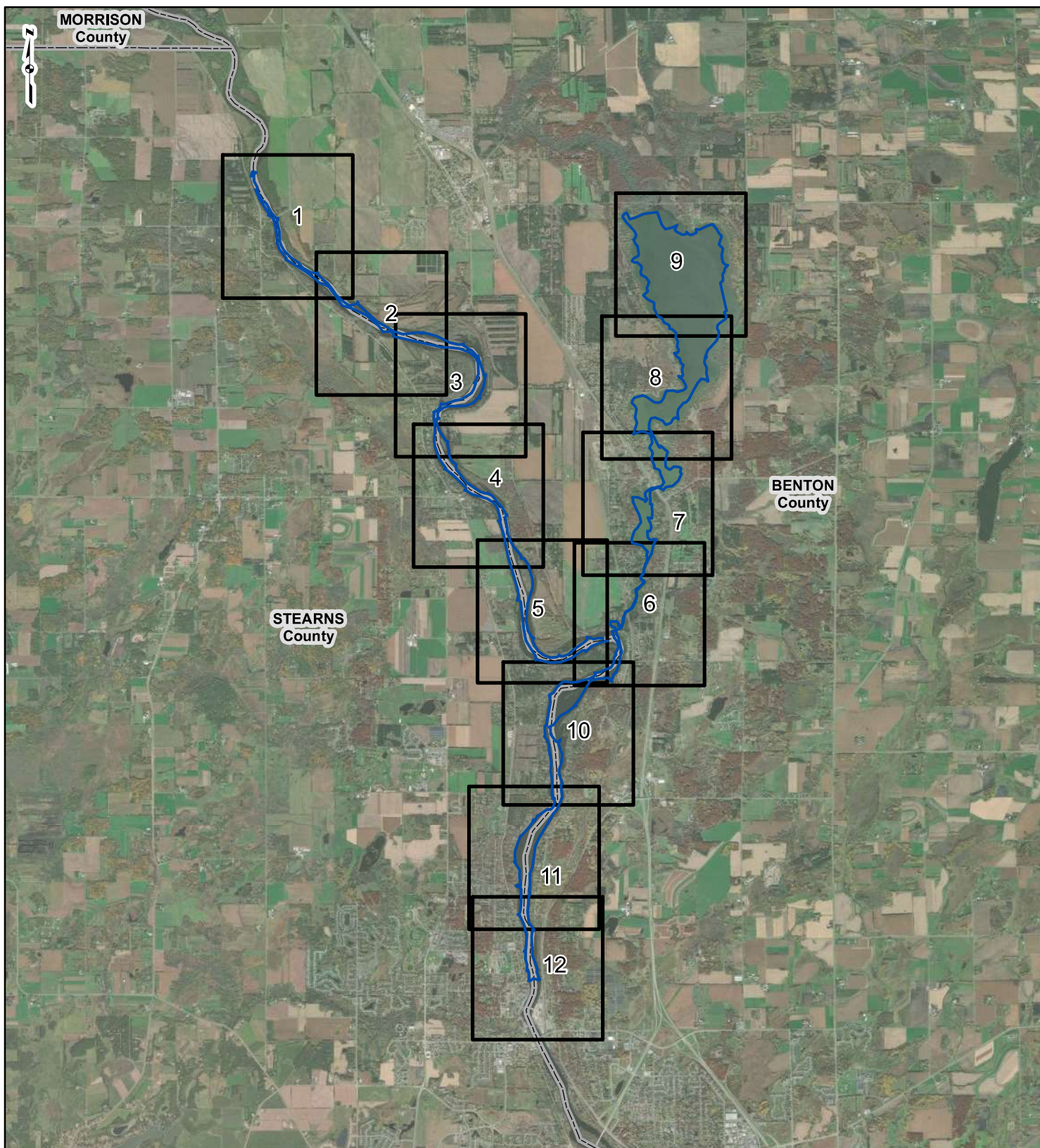
The west side of the dam was comprised of a mowed lawn area and riprap along the shoreline. This area was dominated by bird's-foot trefoil, crabgrass (*Digitaria* spp.), Siberian elm saplings, yarrow (*Achillea millefolium*), Kentucky bluegrass (*Poa pratensis*), Virginia creeper (*Parthenocissus quinquefolia*), riverbank grape (*Vitis riparia*), yellow sweetclover (*Melilotus officinalis*), sumac (*Genus* spp.), and jewelweed (*Impatiens capensis*). No listed invasive plant species were identified in this area.

## 5.0 References

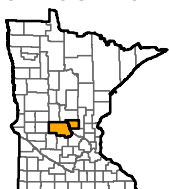
- Minnesota Department of Natural Resources. 2018. Guidance for Conducting Aquatic Invasive Species Early Detection and Baseline Monitoring in Lakes. 12 pp.
- Wisconsin Department of Natural Resources. 2019. *Recommended Baseline Monitoring of Aquatic Plants in Wisconsin: sampling design, field and laboratory procedures, data entry and analysis*, and applications. PUB-SS-1068.
- Mississippi Headwaters Board. (2019). *About MHB – History*. Mississippi Headwaters Board. <https://www.mississippiheadwaters.org/history.asp> Accessed September 24, 2021

## **FIGURE 1**

### **Project Location and Overview Map**



#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

- Meander Survey
- Sheet Index
- County Boundary

0 0.75 1.5 3  
Miles

#### FIGURE 1 OVERVIEW MAP

SARTELL AQUATIC INVASIVE  
2021 SURVEYS



DRAWN BY: EMW  
CHECKED: TDB

DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016.

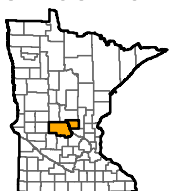
## **FIGURE 2**

### **June Meander Survey**



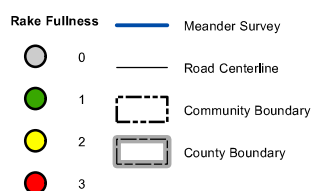


#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND



0 500 1,000 2,000  
Feet

#### FIGURE 2 AQUATIC MEANDER SURVEY MAP SHEET 1 OF 12

SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS



DRAWN BY: EMW  
CHECKED: TDB

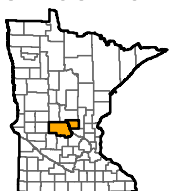
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

- |                      |                    |
|----------------------|--------------------|
| <b>Rake Fullness</b> | Meander Survey     |
| 0                    | Road Centerline    |
| 1                    | Community Boundary |
| 2                    | County Boundary    |
| 3                    |                    |

0 500 1,000 2,000  
Feet

#### FIGURE 2 AQUATIC MEANDER SURVEY MAP SHEET 2 OF 12

SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS

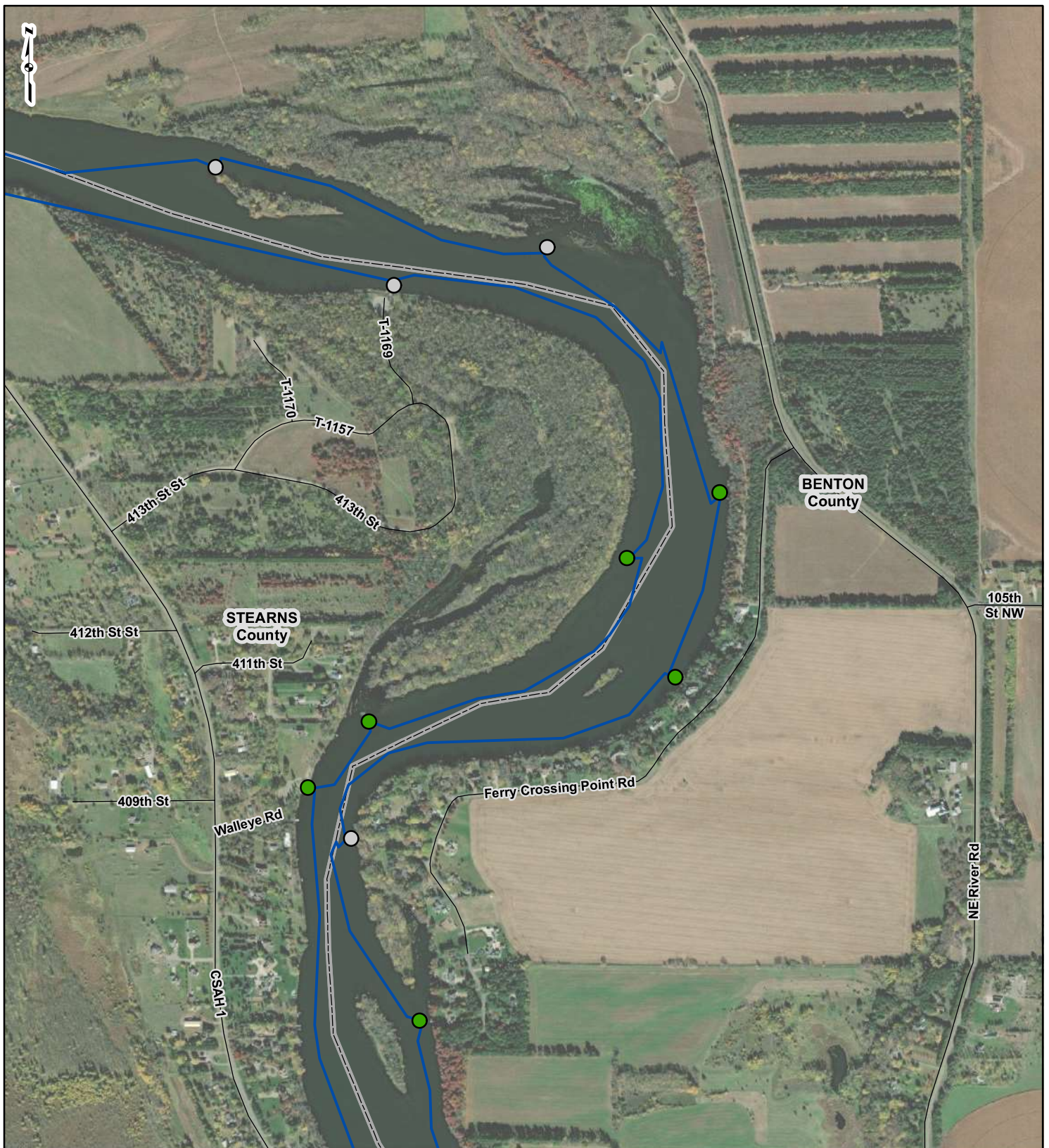


DRAWN BY: EMW  
CHECKED: TDB

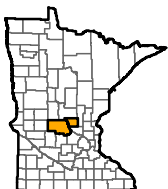
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.



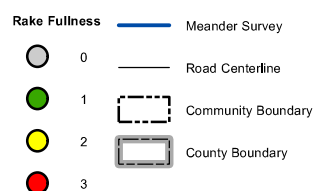


#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND



0 500 1,000 2,000  
Feet

#### FIGURE 2 AQUATIC MEANDER SURVEY MAP SHEET 3 OF 12

SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS



DRAWN BY: EMW  
CHECKED: TDB

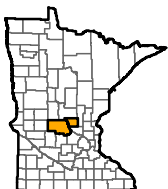
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

- Rake Fullness**
- 0
  - 1
  - 2
  - 3
- Meander Survey
  - Road Centerline
  - Community Boundary
  - County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 2 AQUATIC MEANDER SURVEY MAP SHEET 4 OF 12

SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS

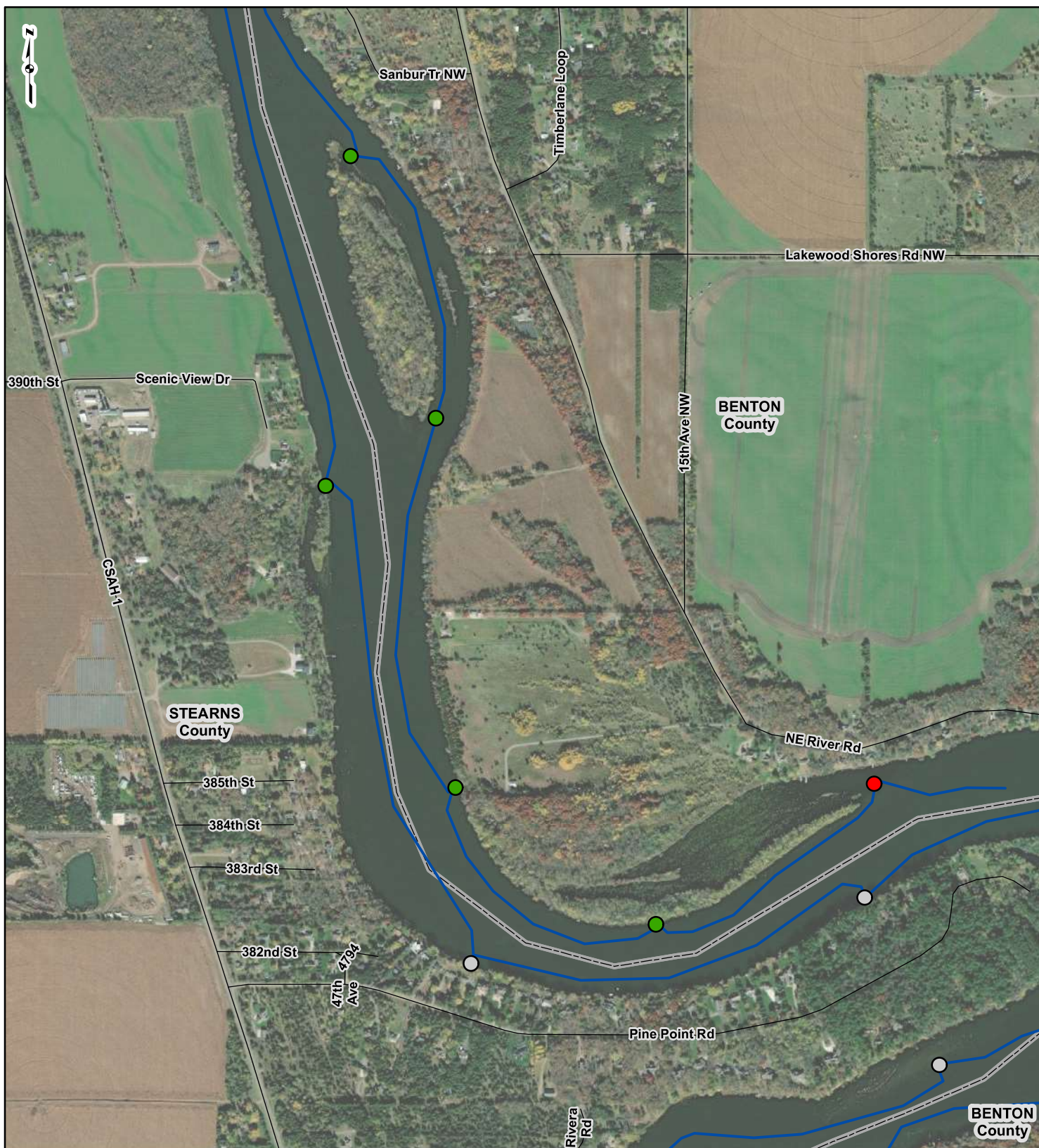


DRAWN BY: EMW  
CHECKED: TDB

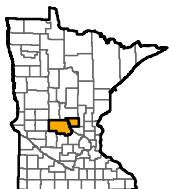
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

- |                      |                    |
|----------------------|--------------------|
| <b>Rake Fullness</b> | Meander Survey     |
| 0                    | Road Centerline    |
| 1                    | Community Boundary |
| 2                    | County Boundary    |
| 3                    |                    |

0 500 1,000 2,000  
Feet

#### FIGURE 2 AQUATIC MEANDER SURVEY MAP SHEET 5 OF 12

SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS



DRAWN BY: EMW  
CHECKED: TDB

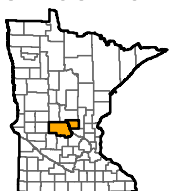
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

##### Rake Fullness



0



1



2



3

— Meander Survey

— Road Centerline

- - - Community Boundary

▭ County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 2 AQUATIC MEANDER SURVEY MAP SHEET 6 OF 12

SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS

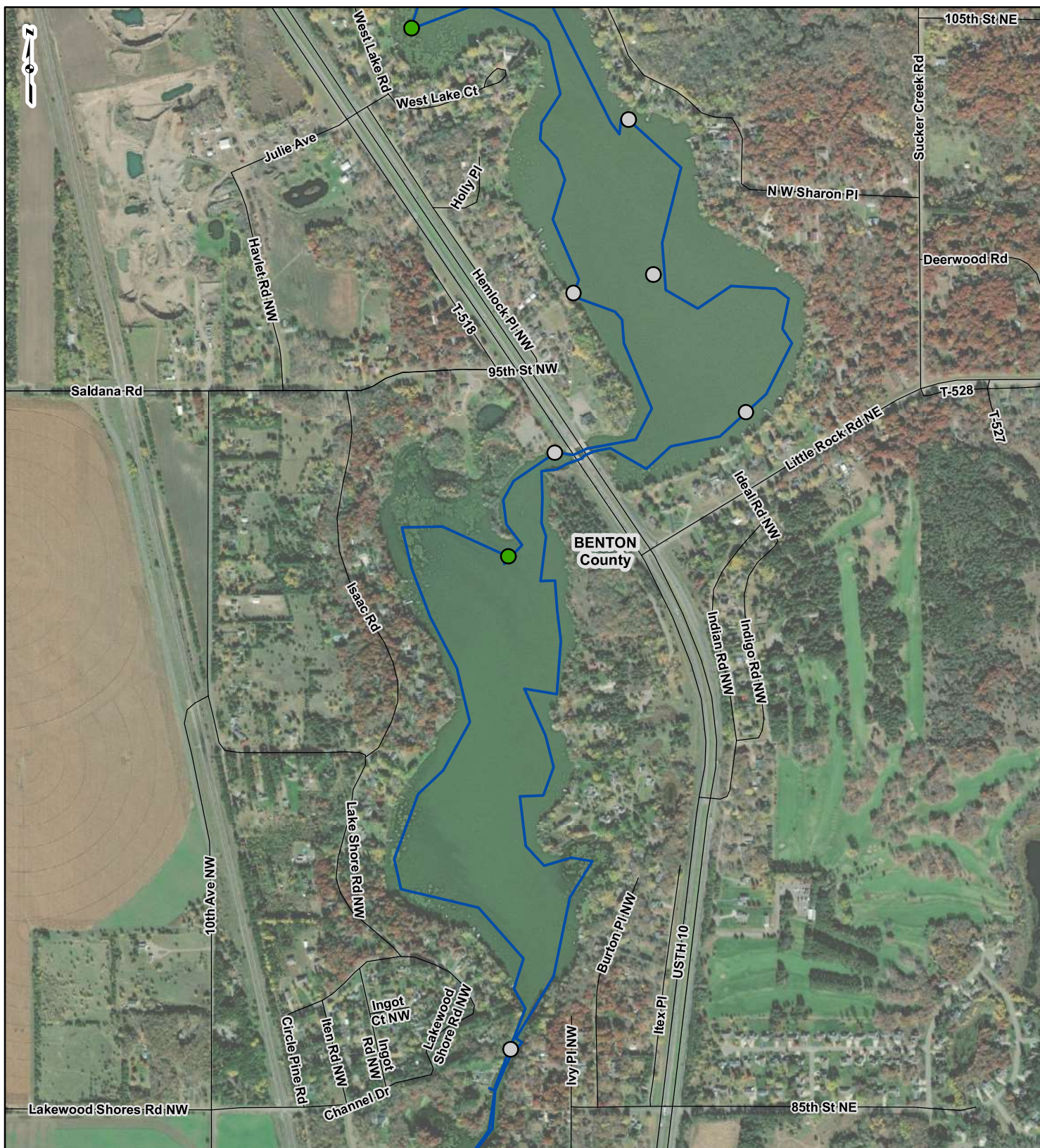


DRAWN BY: EMW  
CHECKED: TDB

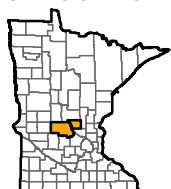
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





# PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

## LEGEND

### Rake Fullness

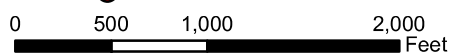


Meander Survey

Road Centerline

Community Boundary

County Boundary



## FIGURE 2 AQUATIC MEANDER SURVEY MAP SHEET 7 OF 12

### SARTELL AQUATIC INVASIVE JUNE 2021 SURVEYS



DRAWN BY: EMW

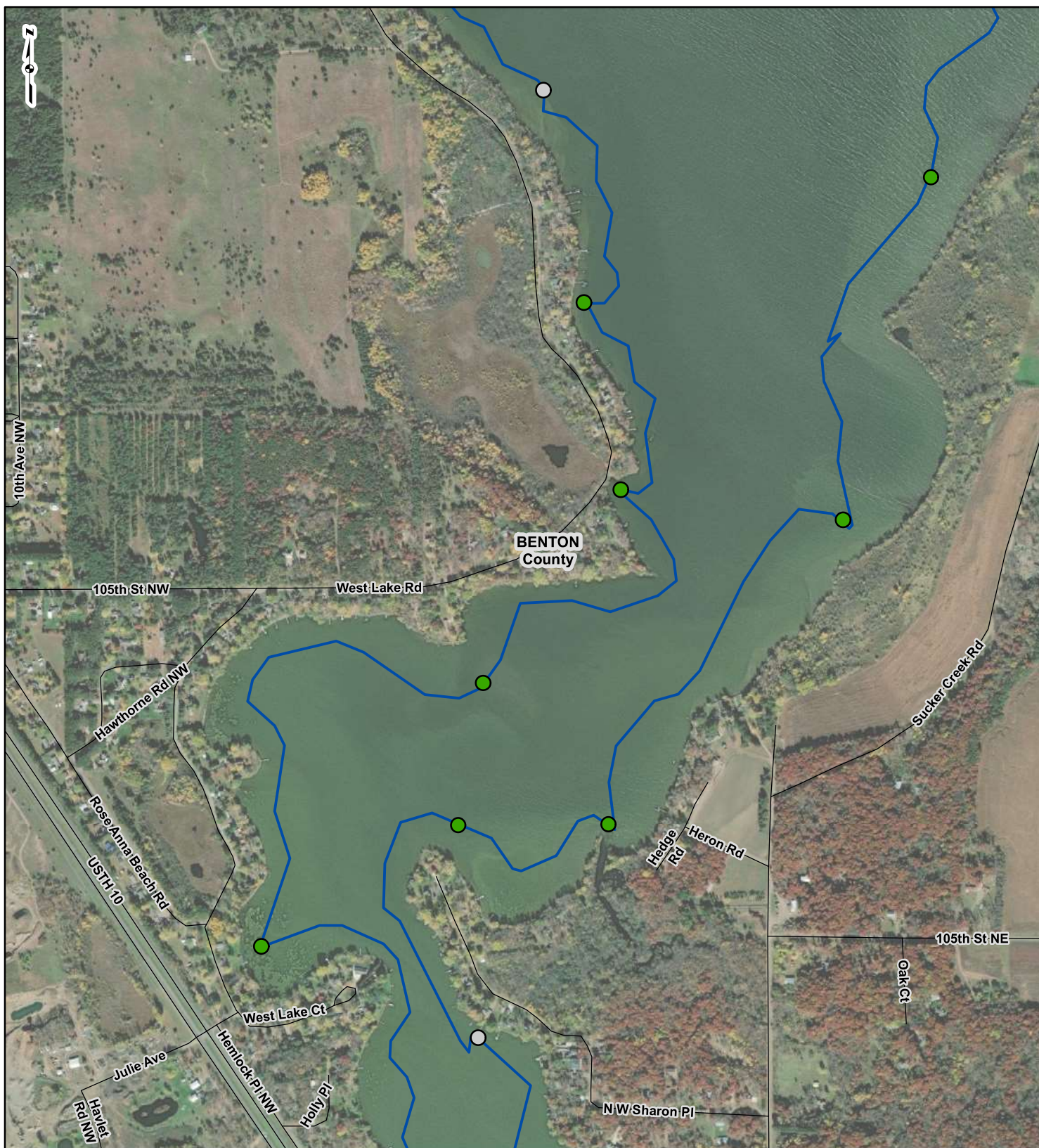
CHECKED: TDB

DATE: 9/27/2021

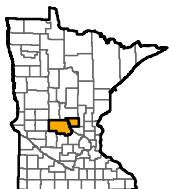
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.



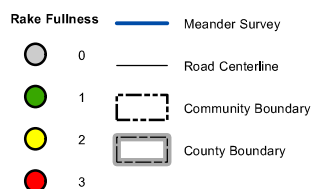


#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND



0 500 1,000 2,000  
Feet

#### FIGURE 2 AQUATIC MEANDER SURVEY MAP SHEET 8 OF 12

SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS

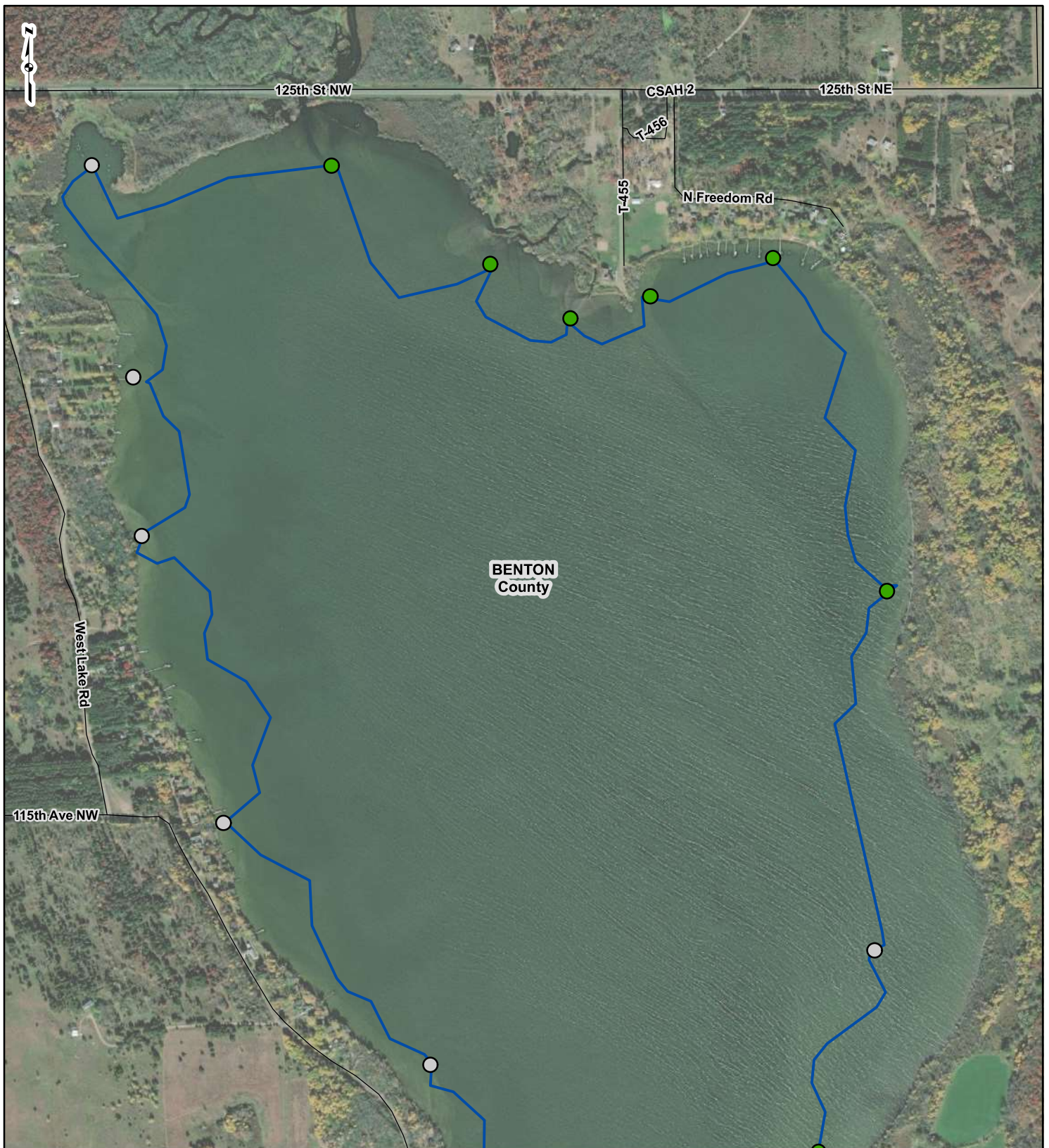


DRAWN BY: EMW  
CHECKED: TDB

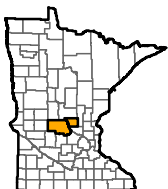
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

- |                      |                    |
|----------------------|--------------------|
| <b>Rake Fullness</b> | Meander Survey     |
| 0                    | Road Centerline    |
| 1                    | Community Boundary |
| 2                    | County Boundary    |
| 3                    |                    |

0 500 1,000 2,000  
Feet

#### FIGURE 2 AQUATIC MEANDER SURVEY MAP SHEET 9 OF 12

SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS



DRAWN BY: EMW  
CHECKED: TDB

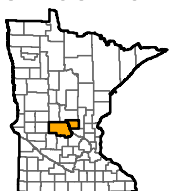
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

- |                      |                    |
|----------------------|--------------------|
| <b>Rake Fullness</b> | Meander Survey     |
| 0                    | Road Centerline    |
| 1                    | Community Boundary |
| 2                    | County Boundary    |
| 3                    |                    |

0 500 1,000 2,000  
Feet

#### FIGURE 2 AQUATIC MEANDER SURVEY MAP SHEET 10 OF 12

SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS



DRAWN BY: EMW  
CHECKED: TDB

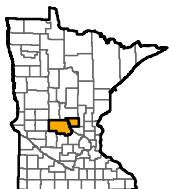
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.



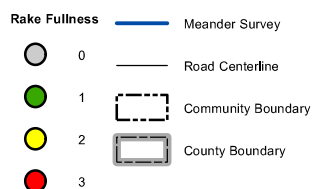


#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND



0 500 1,000 2,000  
Feet

#### FIGURE 2 AQUATIC MEANDER SURVEY MAP SHEET 11 OF 12

SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS



DRAWN BY: EMW  
CHECKED: TDB

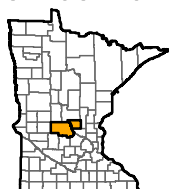
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.



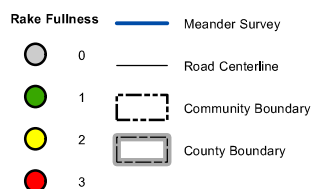


# PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

## LEGEND



0 500 1,000 2,000  
Feet

## FIGURE 2 AQUATIC MEANDER SURVEY MAP SHEET 12 OF 12

SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS



DRAWN BY: EMW  
CHECKED: TDB

DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.

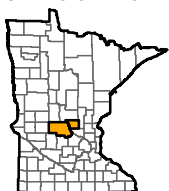


## **FIGURE 3**

### **August Meander Survey**

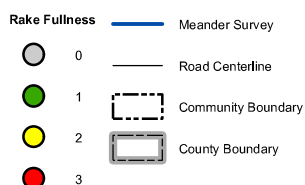


#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND



0 500 1,000 2,000  
Feet

#### FIGURE 3 AQUATIC MEANDER SURVEY MAP SHEET 1 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS



DRAWN BY: EMW  
CHECKED: TDB

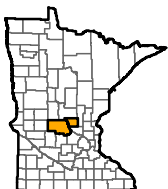
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

- Rake Fullness
- 0
  - 1
  - 2
  - 3
- Meander Survey
  - Road Centerline
  - Community Boundary
  - County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 3 AQUATIC MEANDER SURVEY MAP SHEET 2 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS

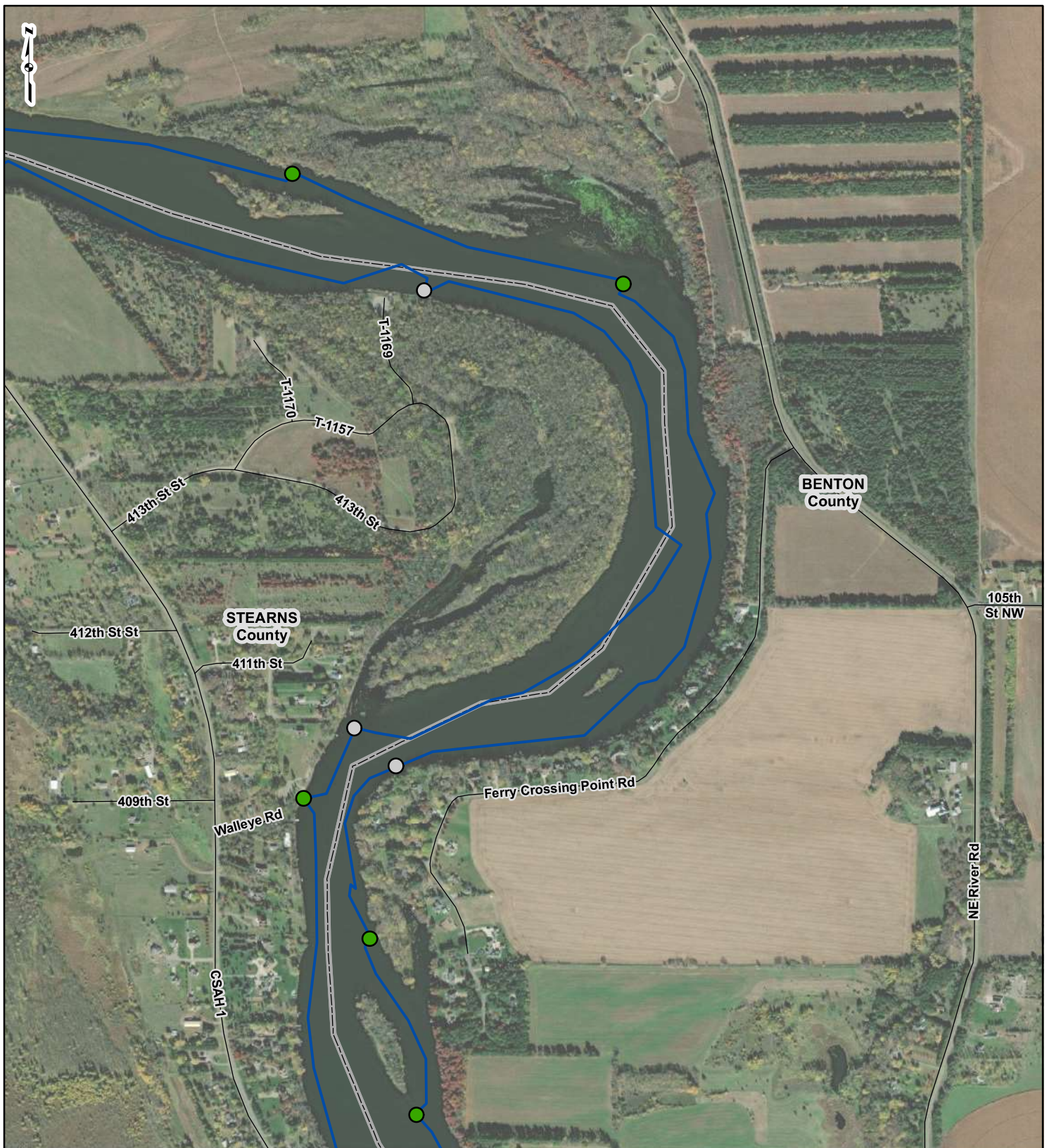


DRAWN BY: EMW  
CHECKED: TDB

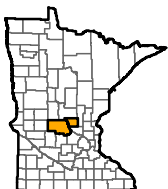
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARN'S  
COUNTIES, MINNESOTA

#### LEGEND

Rake Fullness



0



1



2



3

Meander Survey

Road Centerline

Community Boundary

County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 3 AQUATIC MEANDER SURVEY MAP SHEET 3 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS



DRAWN BY: EMW

DATE: 9/27/2021

CHECKED: TDB

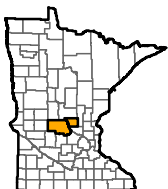
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

- Rake Fullness**
- 0
  - 1
  - 2
  - 3
- Meander Survey
  - Road Centerline
  - Community Boundary
  - County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 3 AQUATIC MEANDER SURVEY MAP SHEET 4 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS

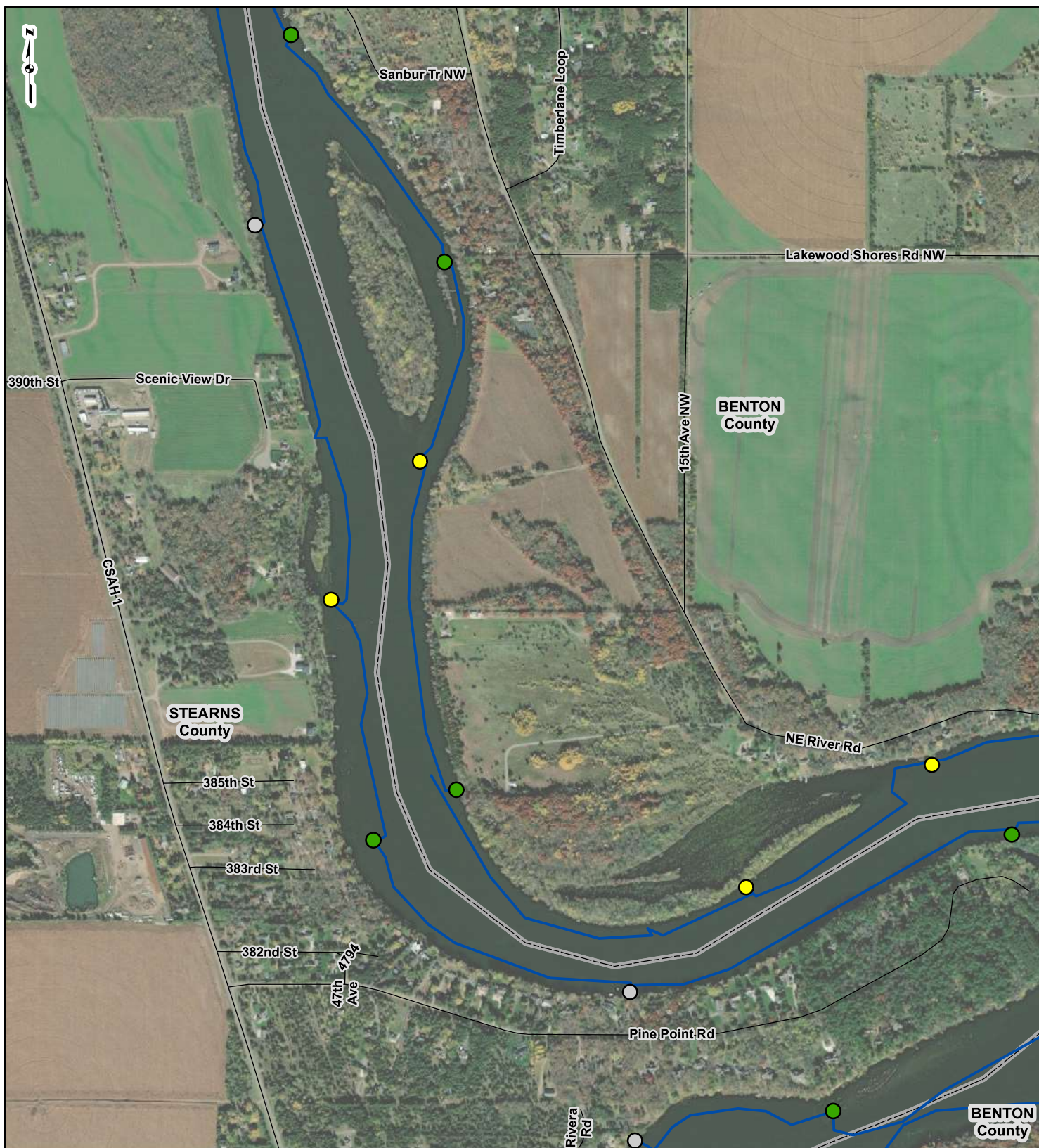


DRAWN BY: EMW  
CHECKED: TDB

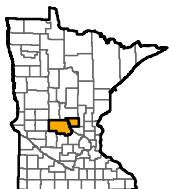
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.



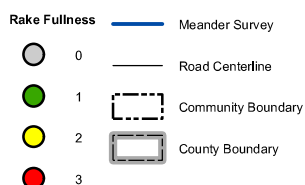


#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND



0 500 1,000 2,000  
Feet

#### FIGURE 3 AQUATIC MEANDER SURVEY MAP SHEET 5 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS

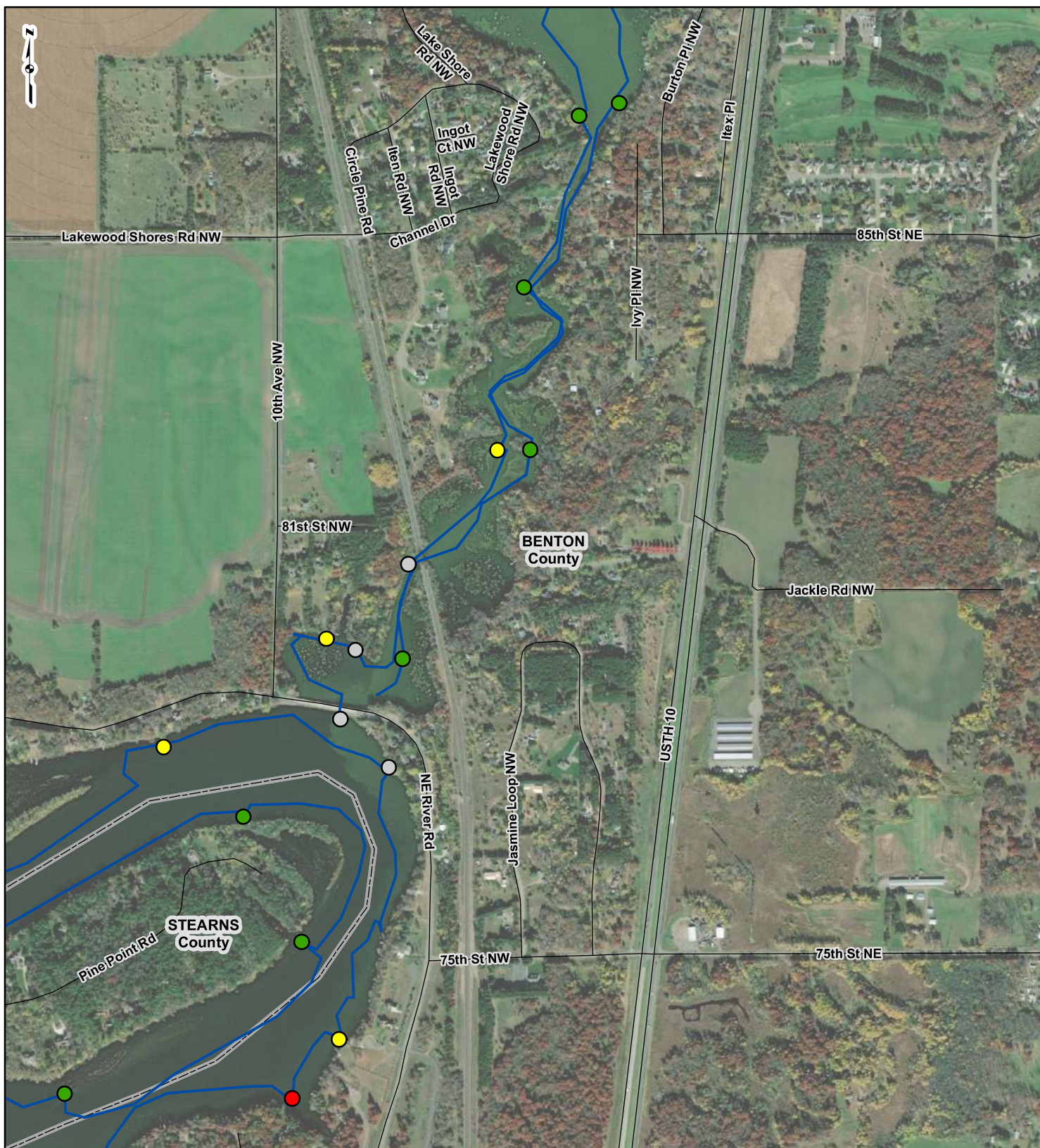


DRAWN BY: EMW  
CHECKED: TDB

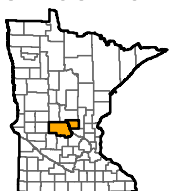
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

##### Rake Fullness



— Meander Survey

— Road Centerline

- - - Community Boundary

▭ County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 3 AQUATIC MEANDER SURVEY MAP SHEET 6 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS

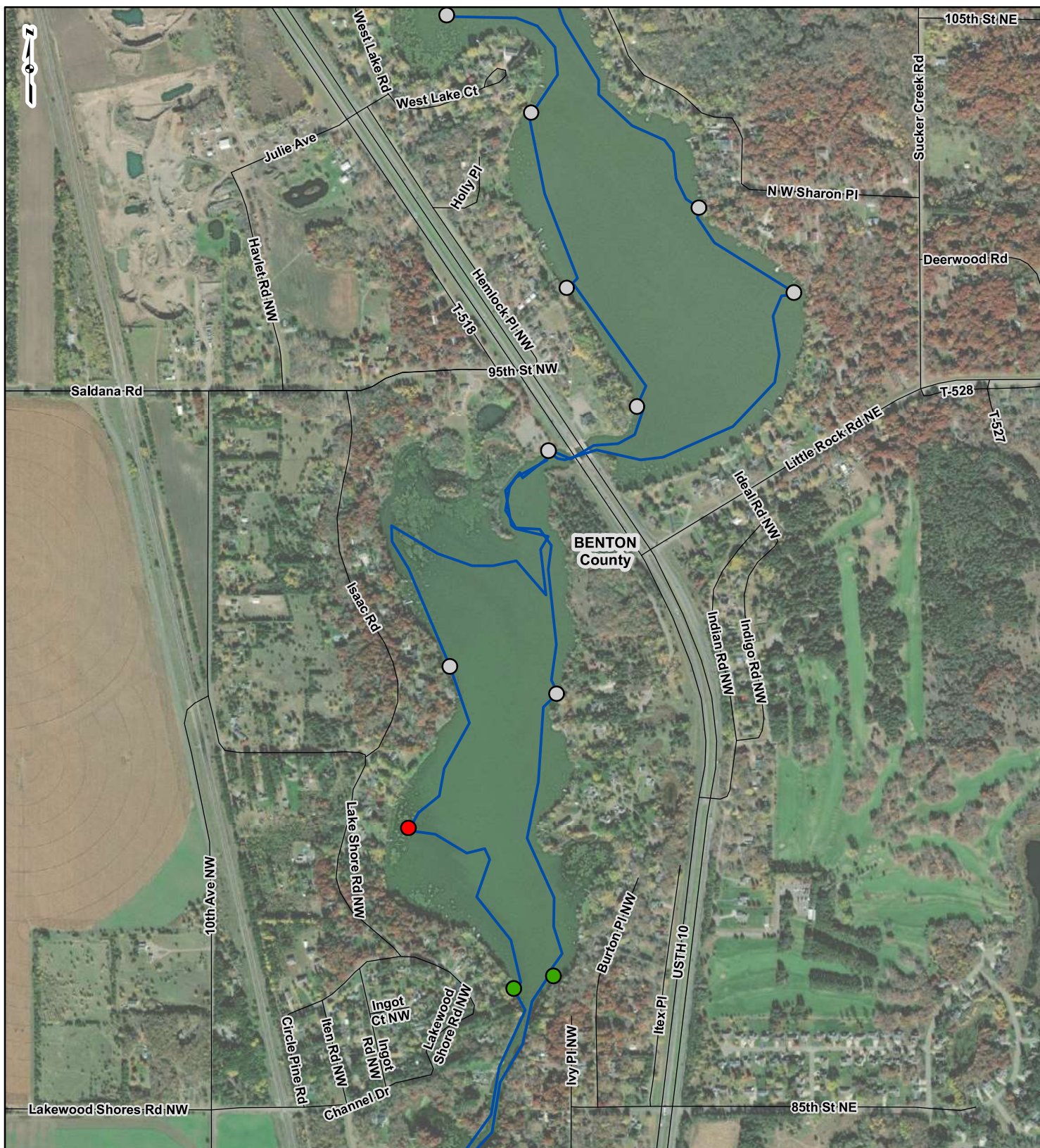


DRAWN BY: EMW  
CHECKED: TDB

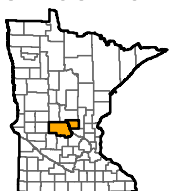
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

Rake Fullness



0

1

2

3

Meander Survey

Road Centerline

Community Boundary

County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 3 AQUATIC MEANDER SURVEY MAP SHEET 7 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS

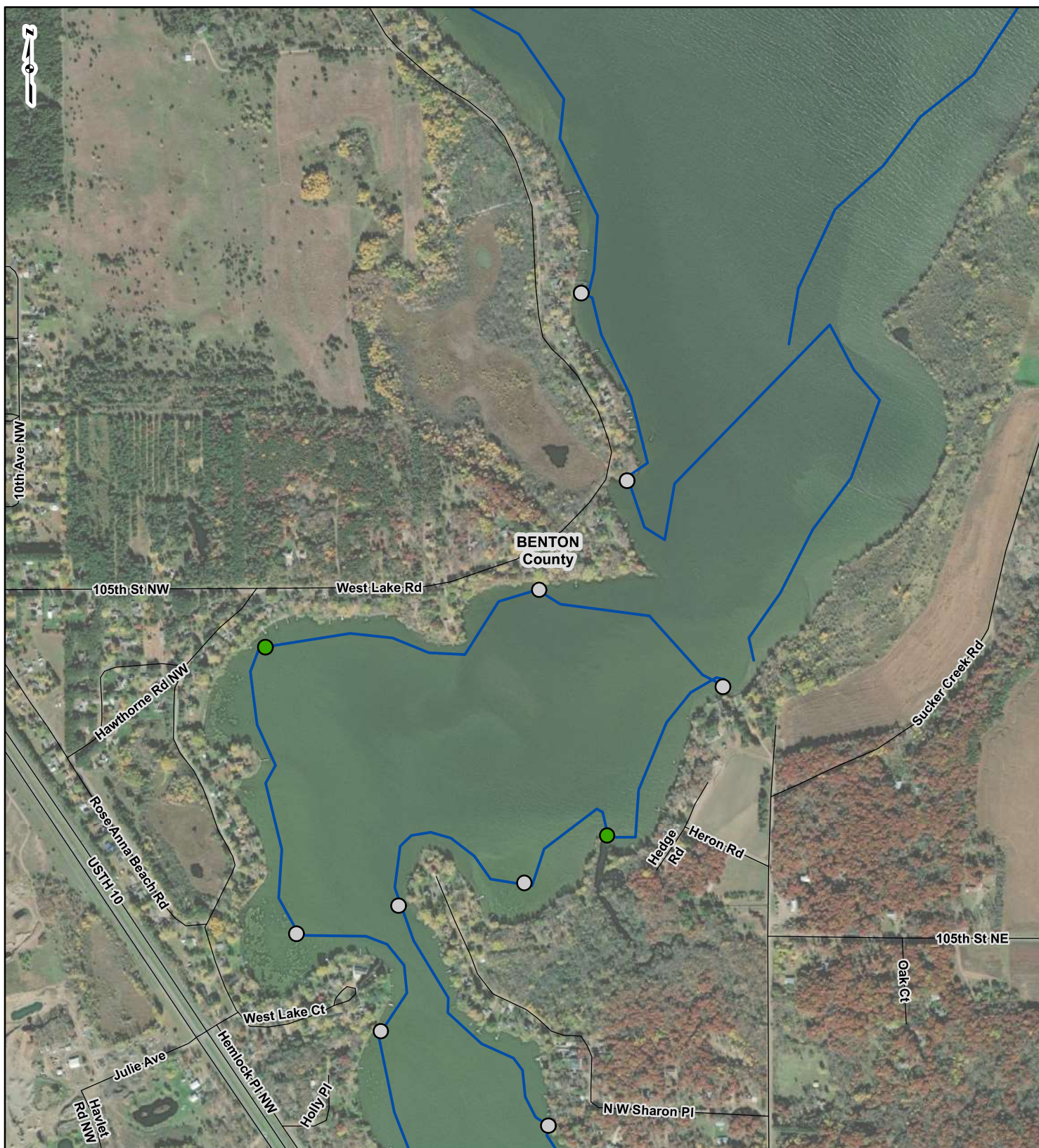


DRAWN BY: EMW  
CHECKED: TDB

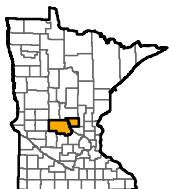
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.



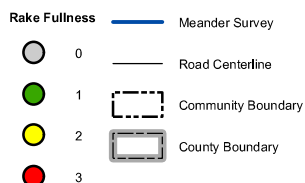


#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND



0 500 1,000 2,000  
Feet

#### FIGURE 3 AQUATIC MEANDER SURVEY MAP SHEET 8 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS

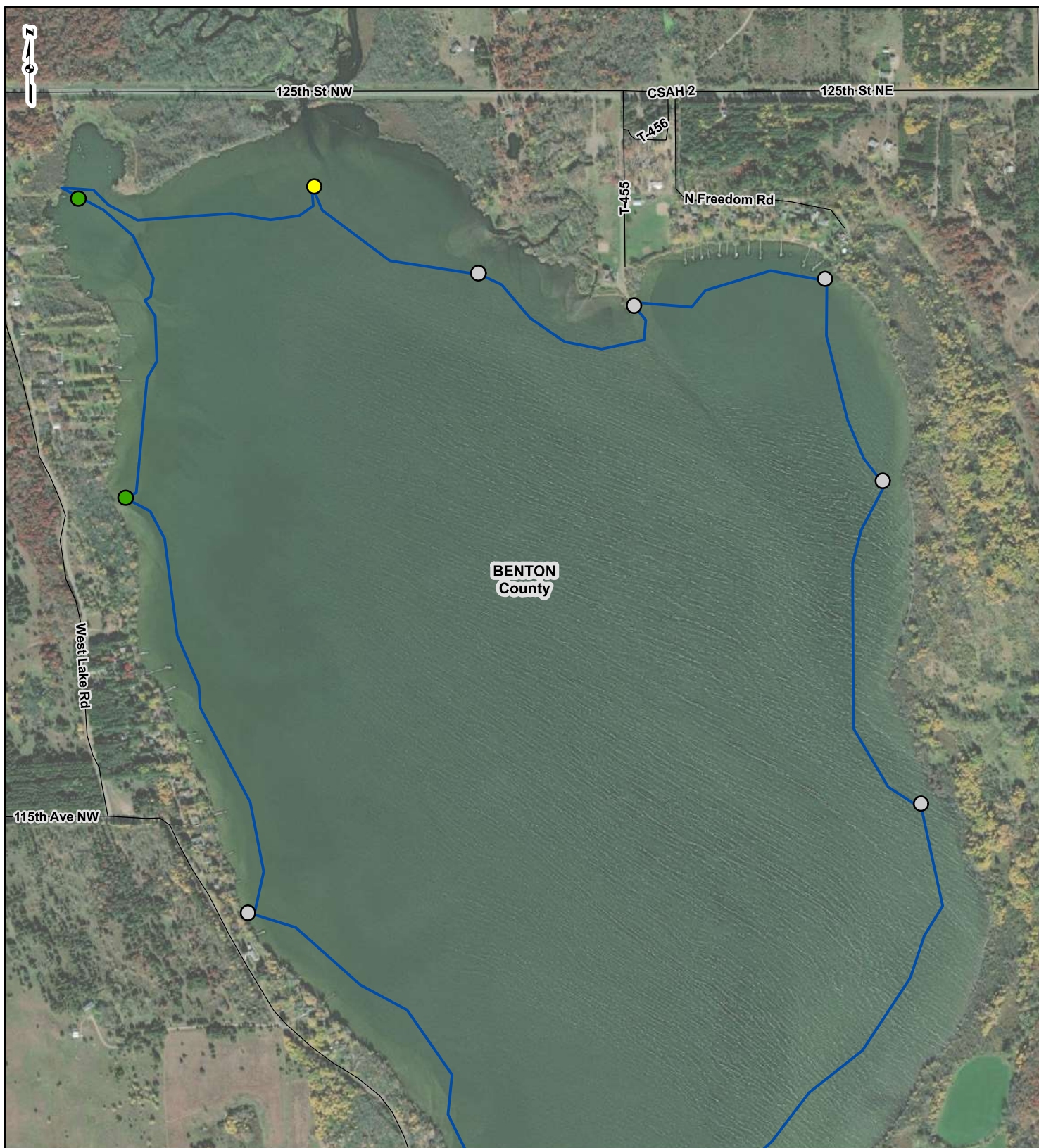


DRAWN BY: EMW  
CHECKED: TDB

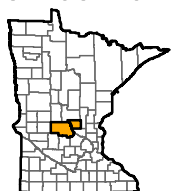
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

- |  |   |
|--|---|
| <b>Rake Fullness</b>   | <span style="color: blue;">—</span> Meander Survey                              |
| <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">0</span>  | <span style="color: purple;">—</span> Road Centerline                           |
| <span style="background-color: green; border-radius: 50%; padding: 2px;">1</span>  | <span style="border: 1px dashed black; padding: 2px;">Community Boundary</span> |
| <span style="background-color: yellow; border-radius: 50%; padding: 2px;">2</span> | <span style="border: 1px solid black; padding: 2px;">County Boundary</span>     |
| <span style="background-color: red; border-radius: 50%; padding: 2px;">3</span>    |   |

0 500 1,000 2,000  
Feet

#### FIGURE 3 AQUATIC MEANDER SURVEY MAP SHEET 9 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS

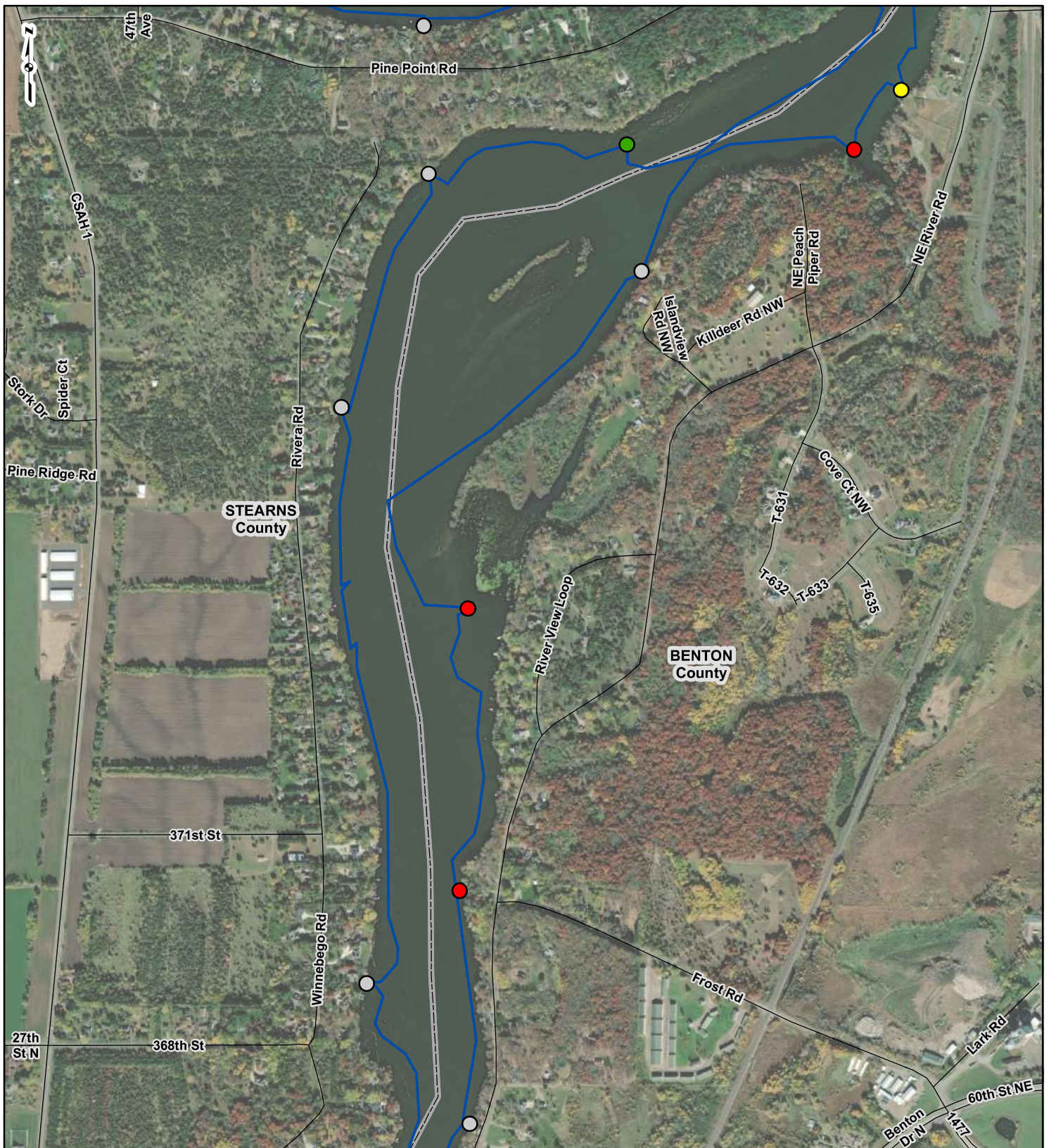


DRAWN BY: EMW  
CHECKED: TDB

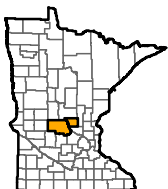
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.



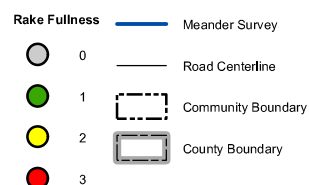


#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND



0 500 1,000 2,000  
Feet

#### FIGURE 3 AQUATIC MEANDER SURVEY MAP SHEET 10 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS



DRAWN BY: EMW

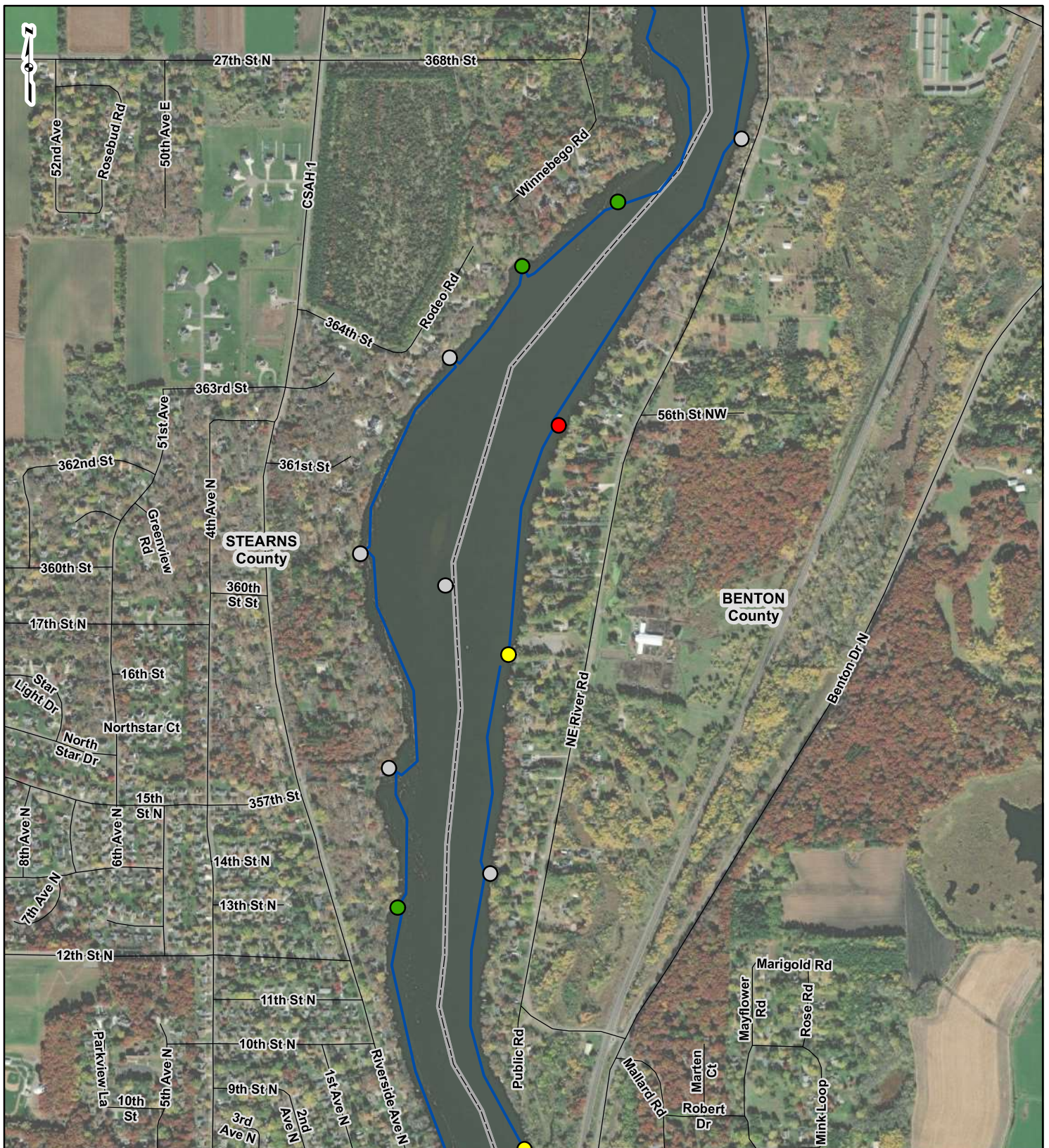
DATE: 9/27/2021

CHECKED: TDB

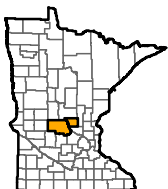
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

Rake Fullness



Meander Survey

Road Centerline

Community Boundary

County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 3 AQUATIC MEANDER SURVEY MAP SHEET 11 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS



DRAWN BY: EMW

CHECKED: TDB

DATE: 9/27/2021

APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





## **FIGURE 4**

### **Rake Fullness Protocol**






<b>Fullness Rating</b>	<b>Coverage</b>	<b>Description</b>
1		Only few plants. There are not enough plants to entirely cover the length of the rake head in a single layer.
2		There are enough plants to cover the length of the rake head in a single layer, but not enough to fully cover the tines.
3		The rake is completely covered and tines are not visible.

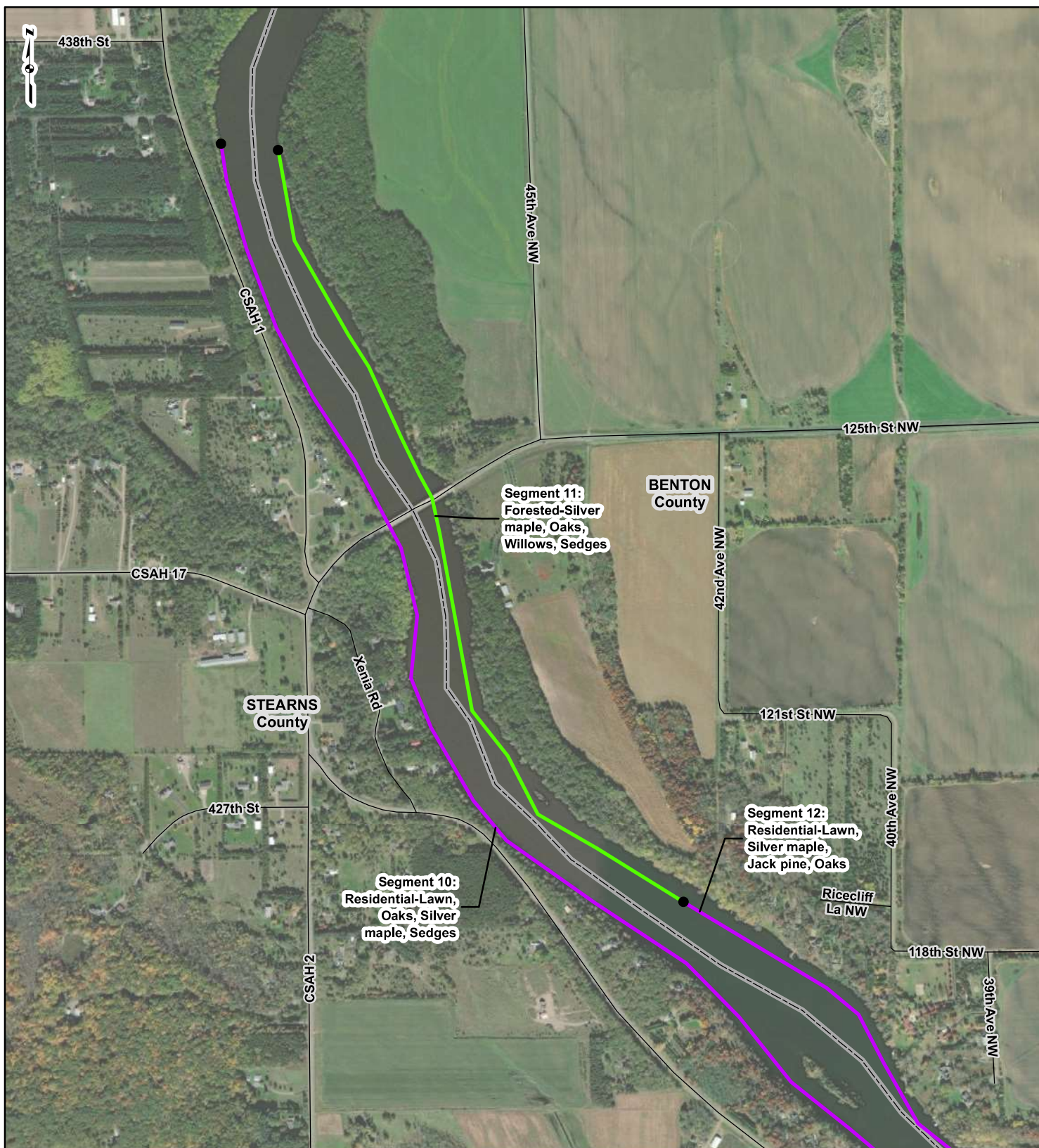
Figure 4. Rake Fullness per WDNR protocol.

Illustration of rake fullness rating used during the survey, photo used from *Recommended Baseline Monitoring of Aquatic Plants in Wisconsin: sampling design, field and laboratory procedures, data entry and analysis, and applications*. PUB-SS-1068, WDNR 2019.

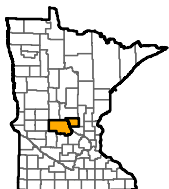


## **FIGURE 5**

### **Upland Shoreline Meander**

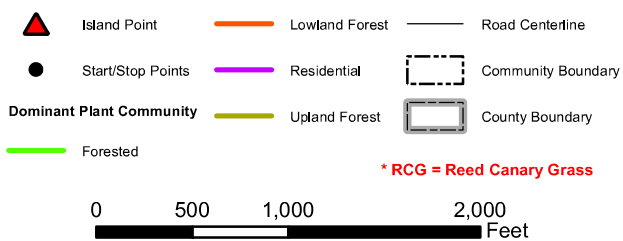


#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND



#### FIGURE 5 TERRESTRIAL MEANDER ROUTE SHEET 1 OF 12

SARTELL AQUATIC INVASIVE  
2021 SURVEYS

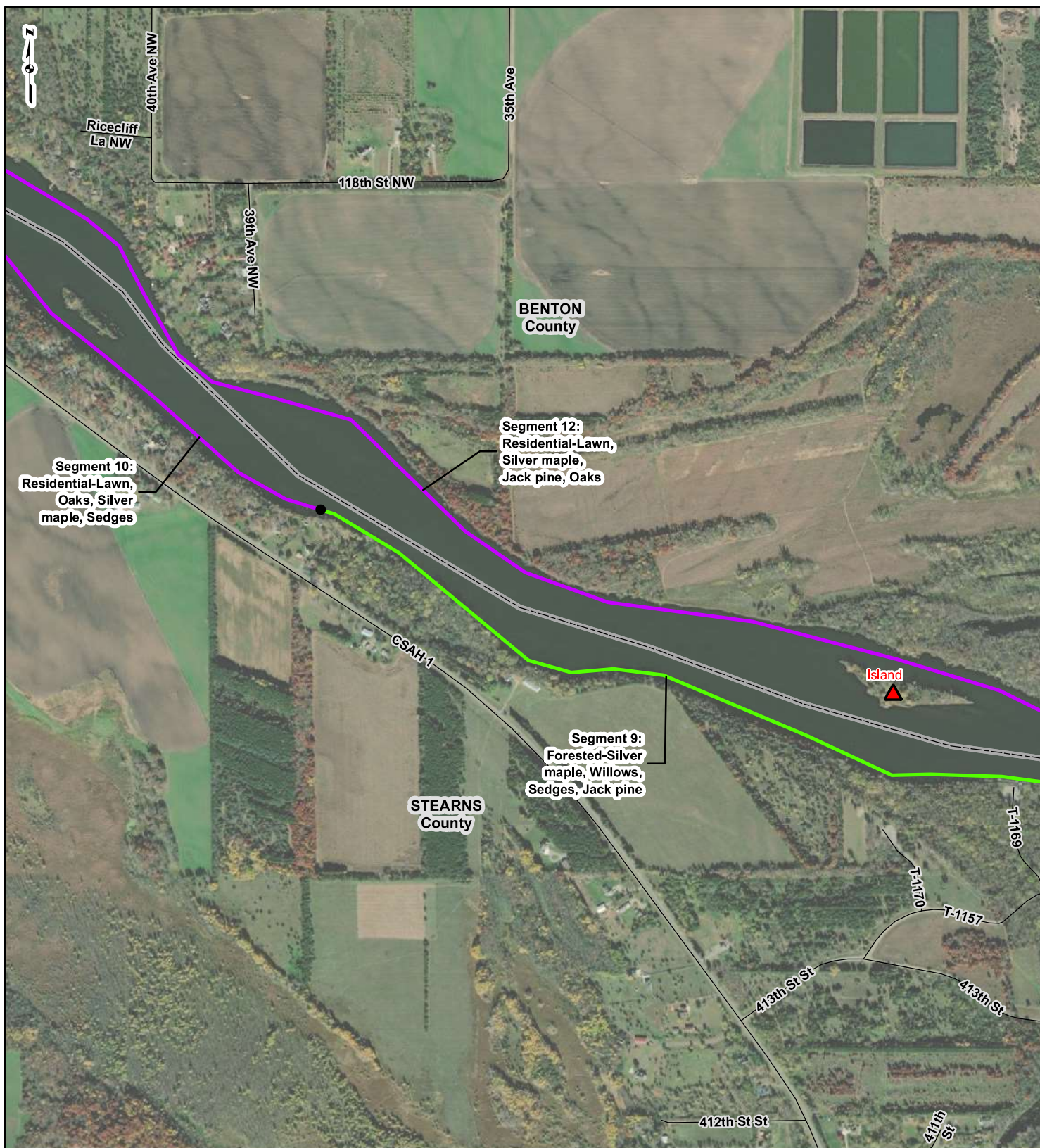


DRAWN BY: EMW  
CHECKED: TDB

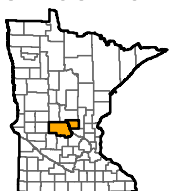
DATE: 9/30/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/30/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.



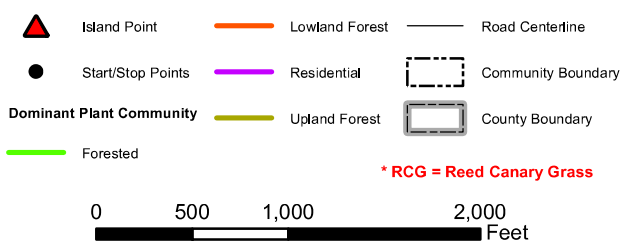


#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND



#### FIGURE 5 TERRESTRIAL MEANDER ROUTE SHEET 2 OF 12

#### SARTELL AQUATIC INVASIVE 2021 SURVEYS

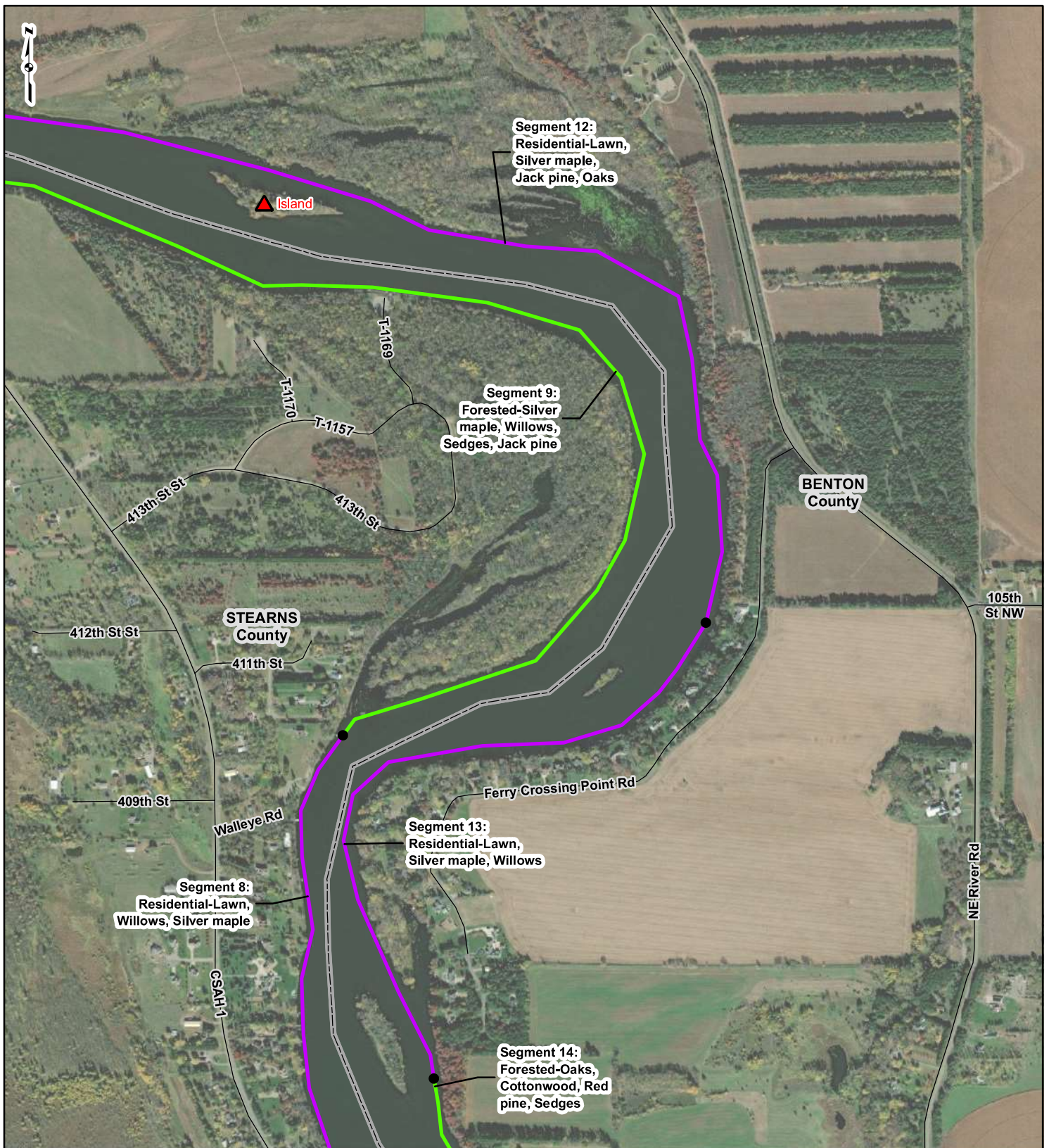


DRAWN BY: EMW  
CHECKED: TDB

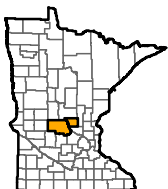
DATE: 9/30/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/30/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.



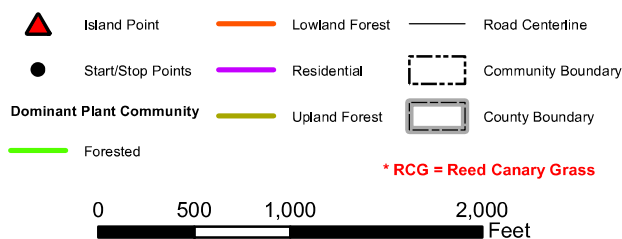


#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND



#### FIGURE 5 TERRESTRIAL MEANDER ROUTE SHEET 3 OF 12

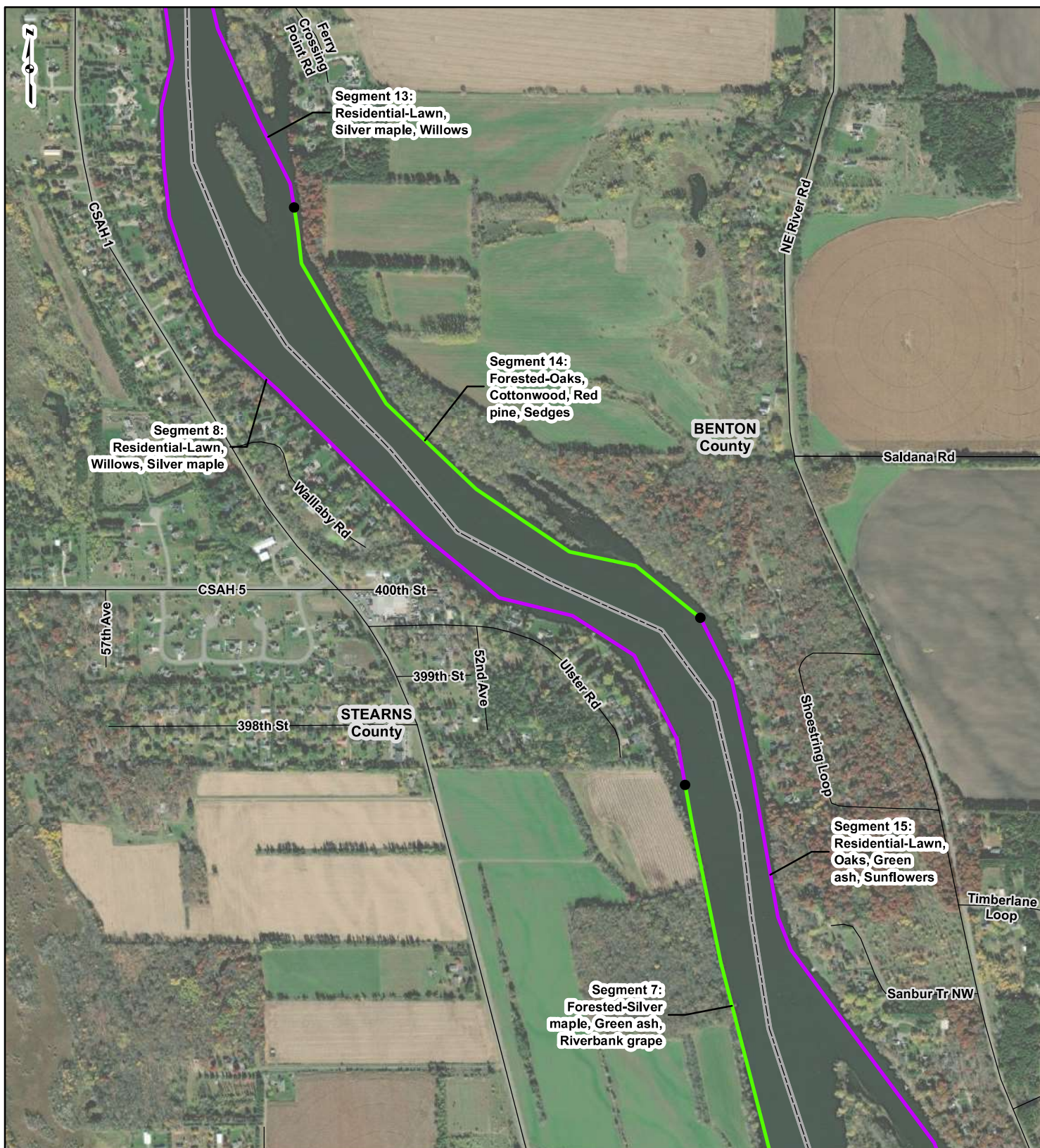
SARTELL AQUATIC INVASIVE  
2021 SURVEYS

DRAWN BY: EMW  
CHECKED: TDB

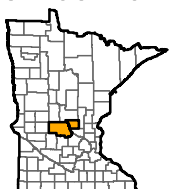
DATE: 9/30/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/30/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.



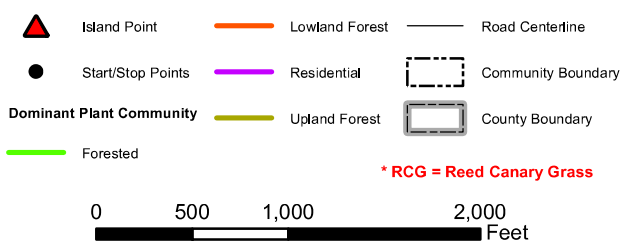


#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND



#### FIGURE 5 TERRESTRIAL MEANDER ROUTE SHEET 4 OF 12

#### SARTELL AQUATIC INVASIVE 2021 SURVEYS

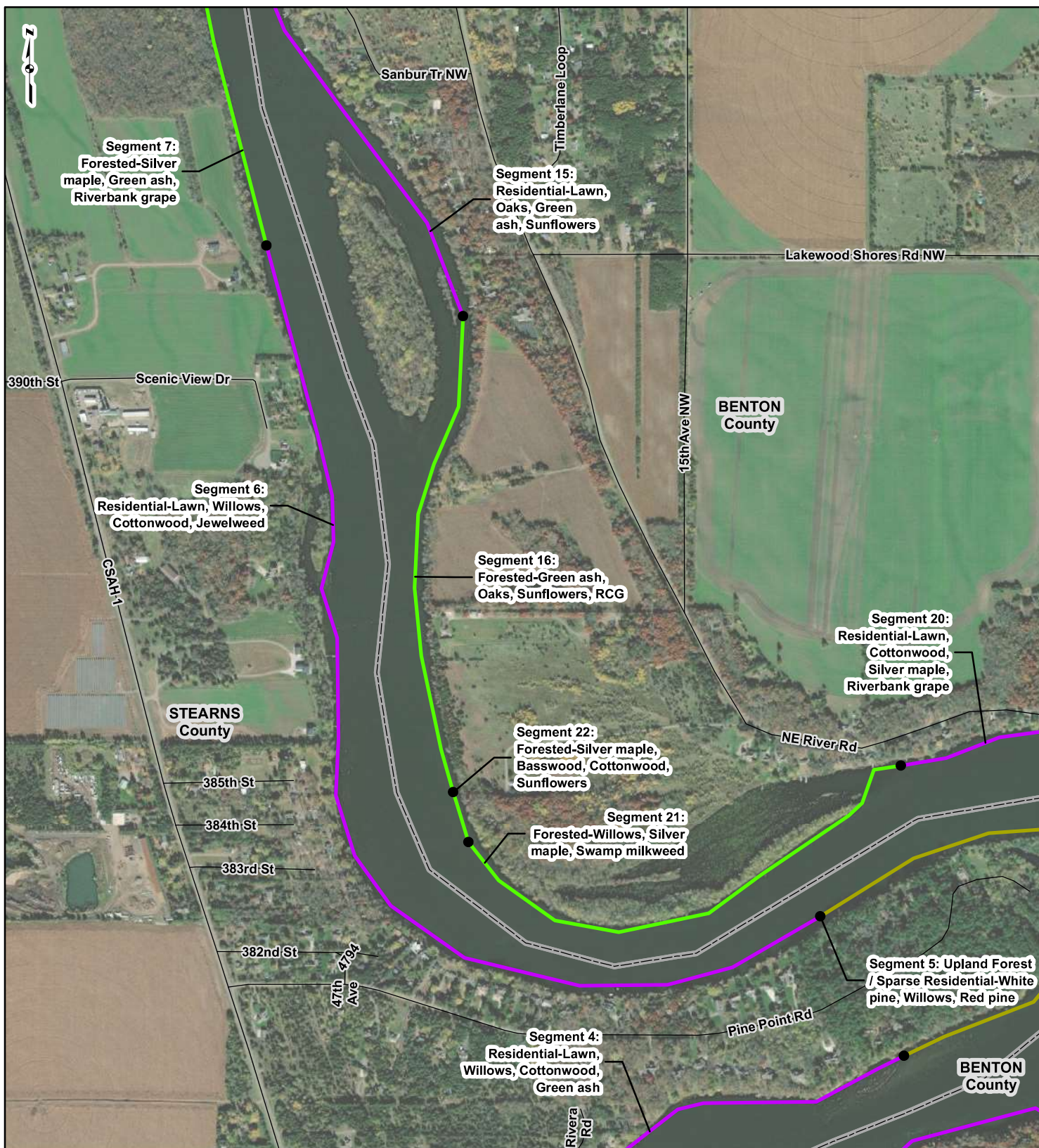


DRAWN BY: EMW  
CHECKED: TDB

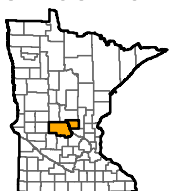
DATE: 9/30/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/30/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.



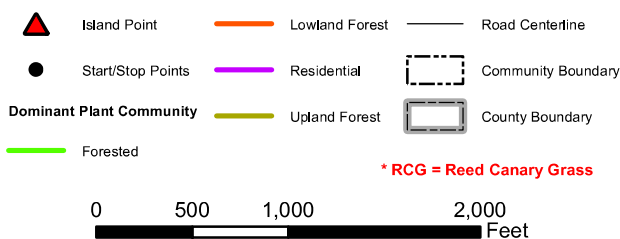


#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND



#### FIGURE 5 TERRESTRIAL MEANDER ROUTE SHEET 5 OF 12

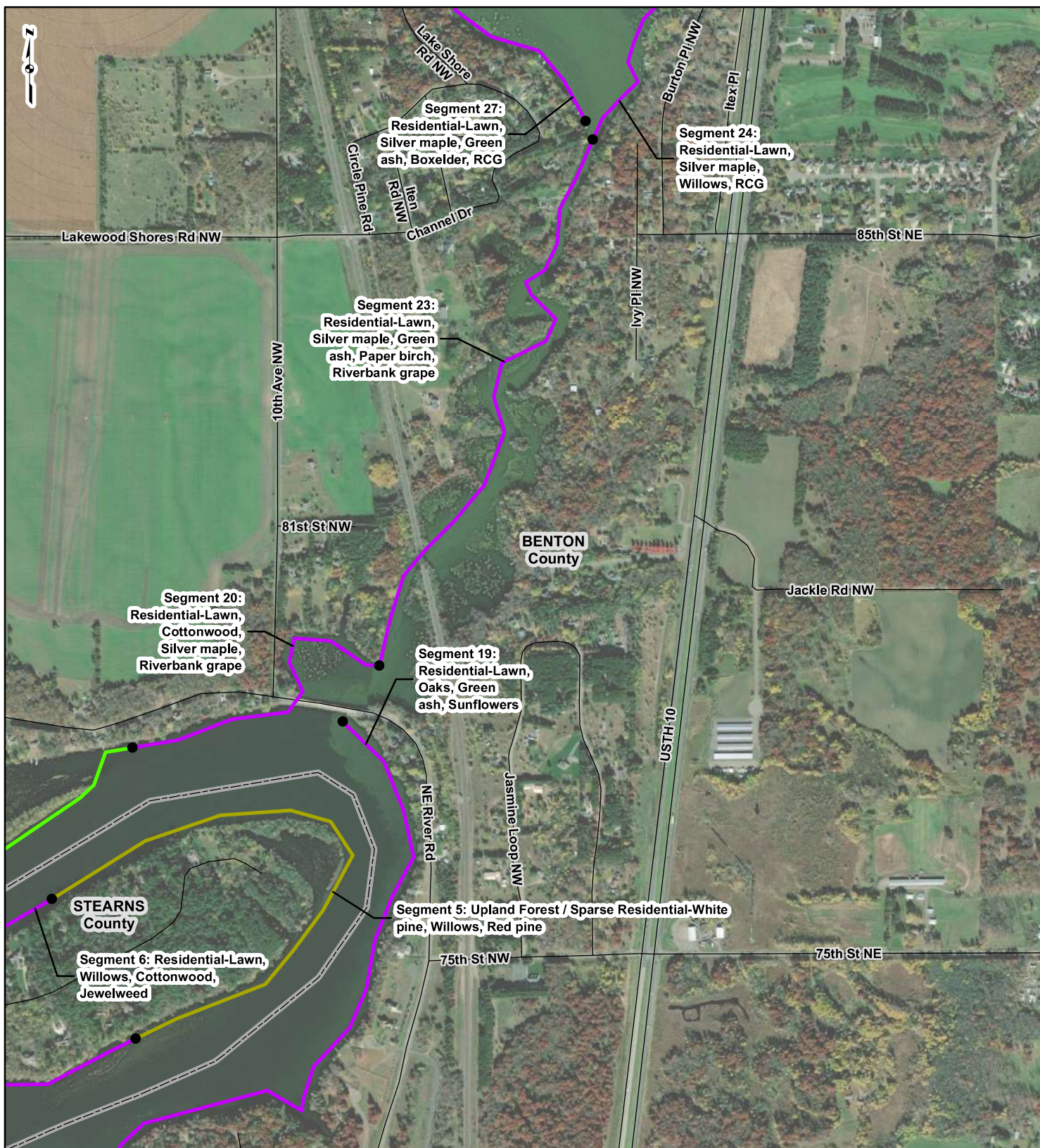
SARTELL AQUATIC INVASIVE  
2021 SURVEYS

DRAWN BY: EMW  
CHECKED: TDB

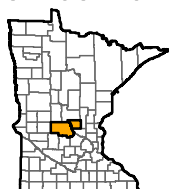
DATE: 9/30/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/30/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.



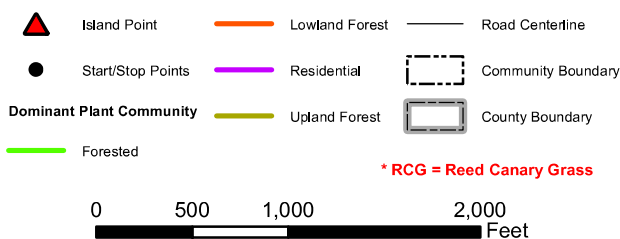


#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND



#### FIGURE 5 TERRESTRIAL MEANDER ROUTE SHEET 6 OF 12

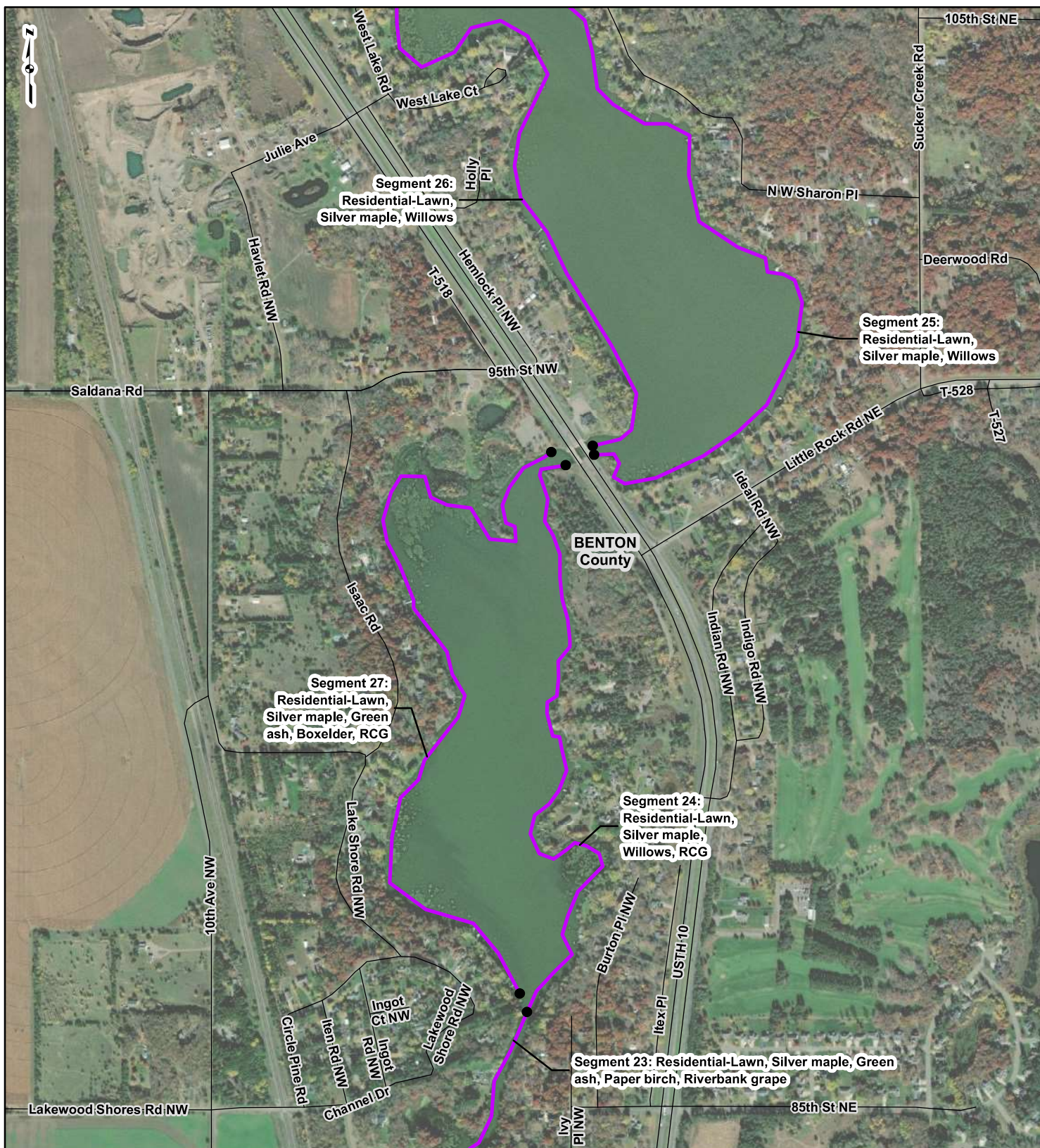
#### SARTELL AQUATIC INVASIVE 2021 SURVEYS

DRAWN BY: EMW  
CHECKED: TDB

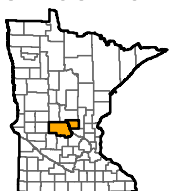
DATE: 9/30/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/30/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.



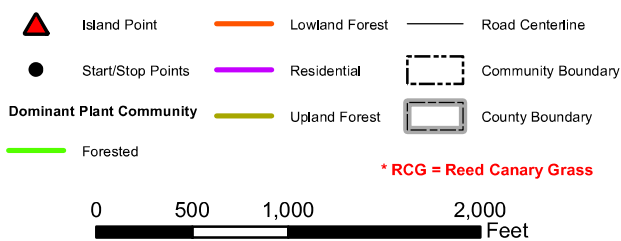


#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND



#### FIGURE 5 TERRESTRIAL MEANDER ROUTE SHEET 7 OF 12

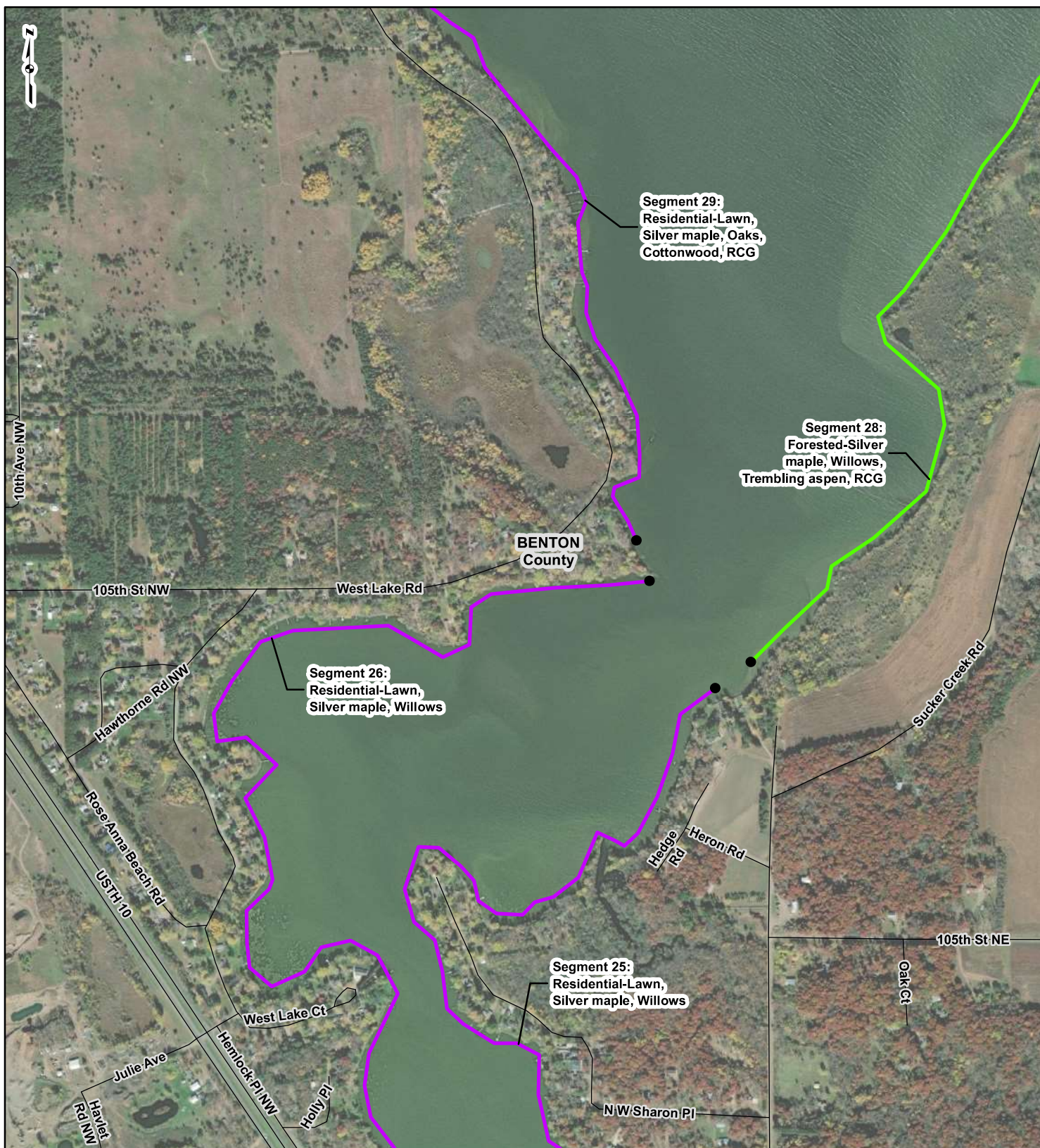
#### SARTELL AQUATIC INVASIVE 2021 SURVEYS

DRAWN BY: EMW  
CHECKED: TDB

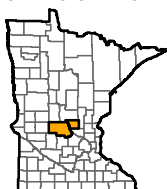
DATE: 9/30/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/30/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.



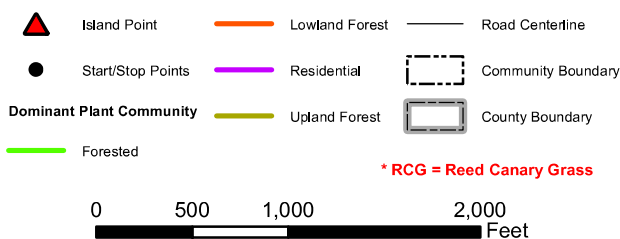


#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND



#### FIGURE 5 TERRESTRIAL MEANDER ROUTE SHEET 8 OF 12

SARTELL AQUATIC INVASIVE  
2021 SURVEYS

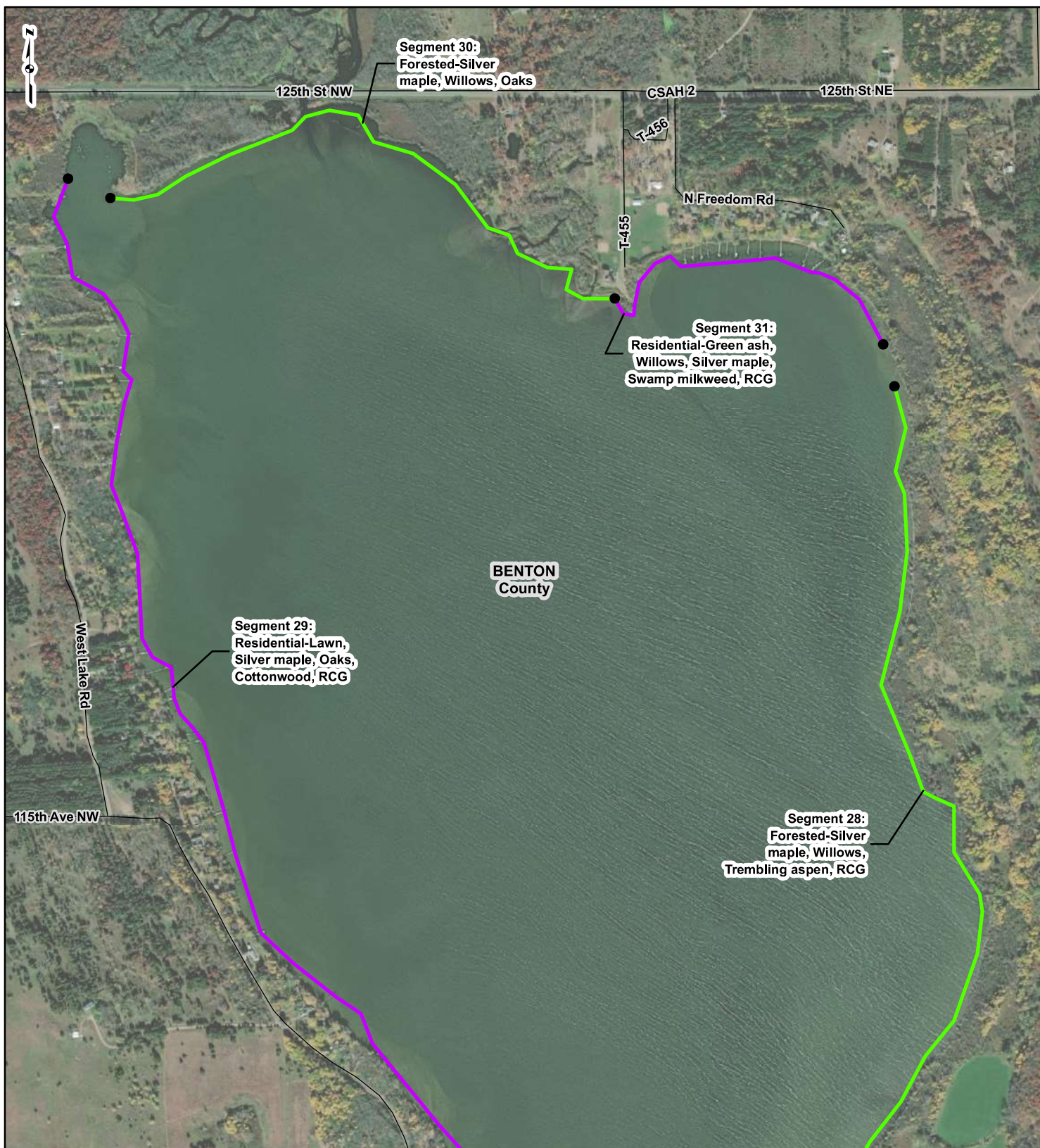


DRAWN BY: EMW  
CHECKED: TDB

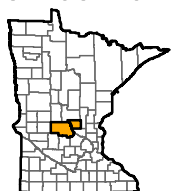
DATE: 9/30/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/30/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.



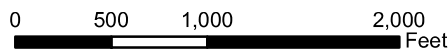
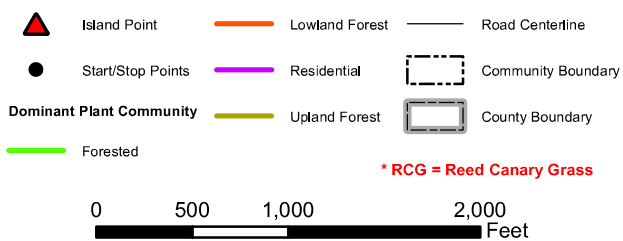


#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND



#### FIGURE 5 TERRESTRIAL MEANDER ROUTE SHEET 9 OF 12

#### SARTELL AQUATIC INVASIVE 2021 SURVEYS

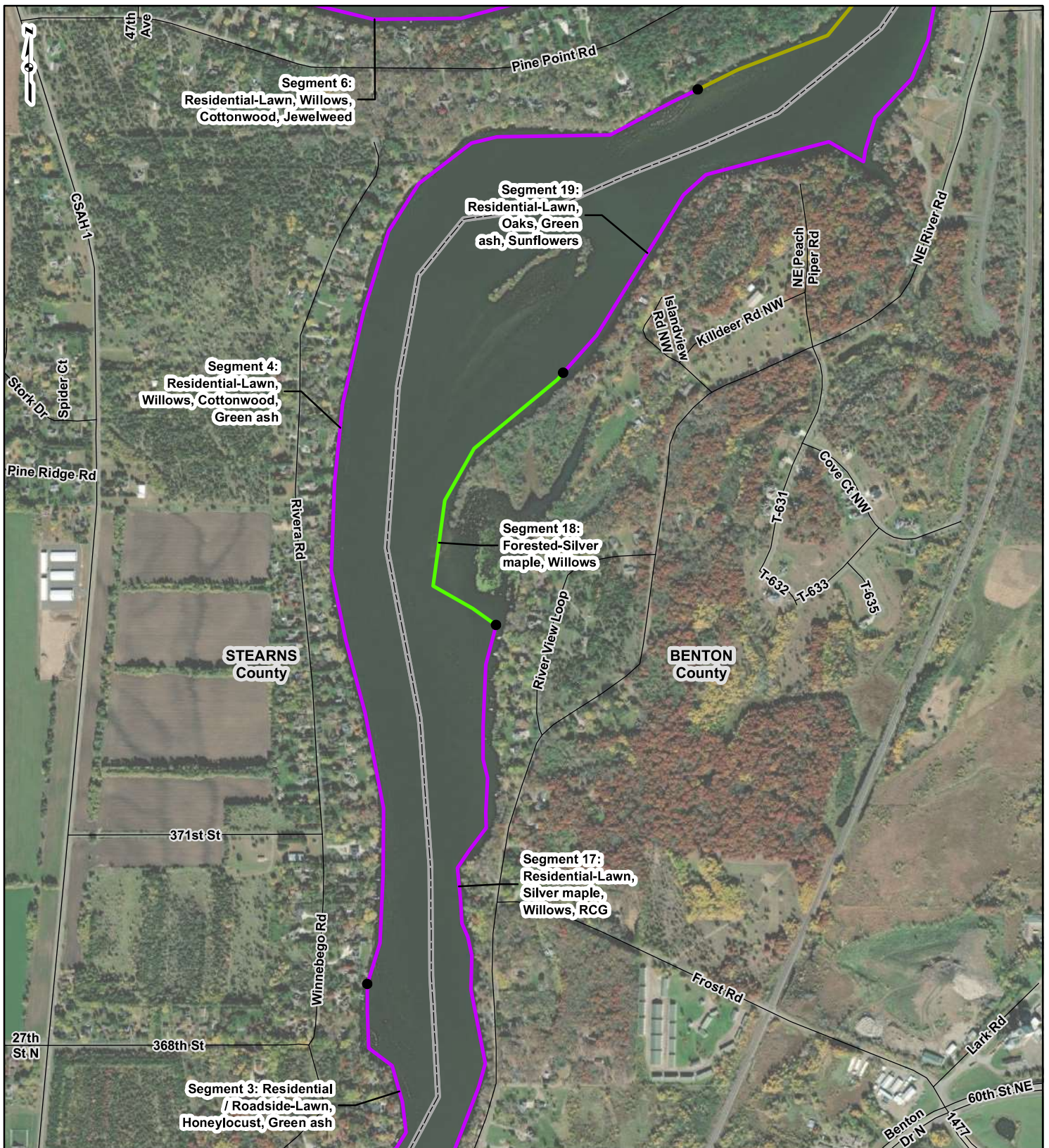


DRAWN BY: EMW  
CHECKED: TDB

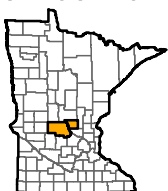
DATE: 9/30/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/30/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.



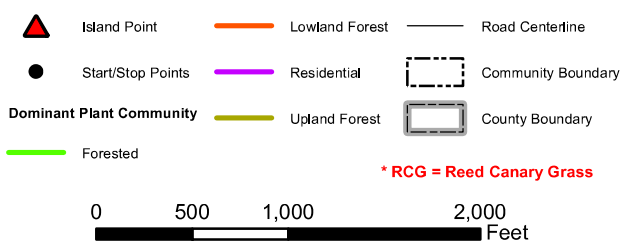


#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND



#### FIGURE 5 TERRESTRIAL MEANDER ROUTE SHEET 10 OF 12

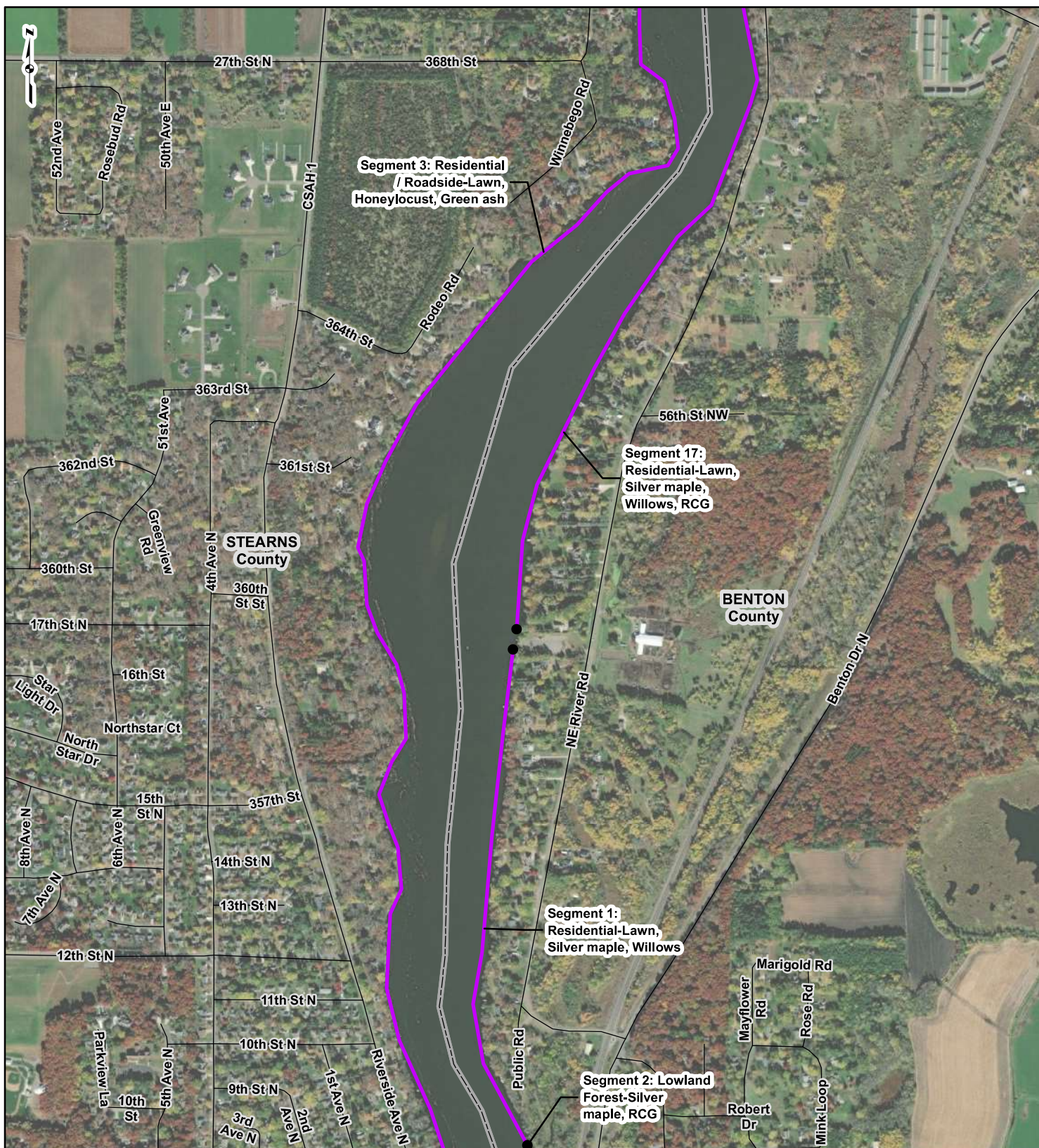
#### SARTELL AQUATIC INVASIVE 2021 SURVEYS

DRAWN BY: EMW  
CHECKED: TDB

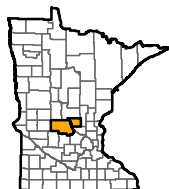
DATE: 9/30/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/30/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

- Island Point
- Start/Stop Points
- Dominant Plant Community
- Lowland Forest
- Residential
- Upland Forest
- Road Centerline
- Community Boundary
- County Boundary

\* RCG = Reed Canary Grass

0 500 1,000 2,000 Feet

#### FIGURE 5 TERRESTRIAL MEANDER ROUTE SHEET 11 OF 12

SARTELL AQUATIC INVASIVE  
2021 SURVEYS

DRAWN BY: EMW  
CHECKED: TDB

DATE: 9/30/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/30/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.



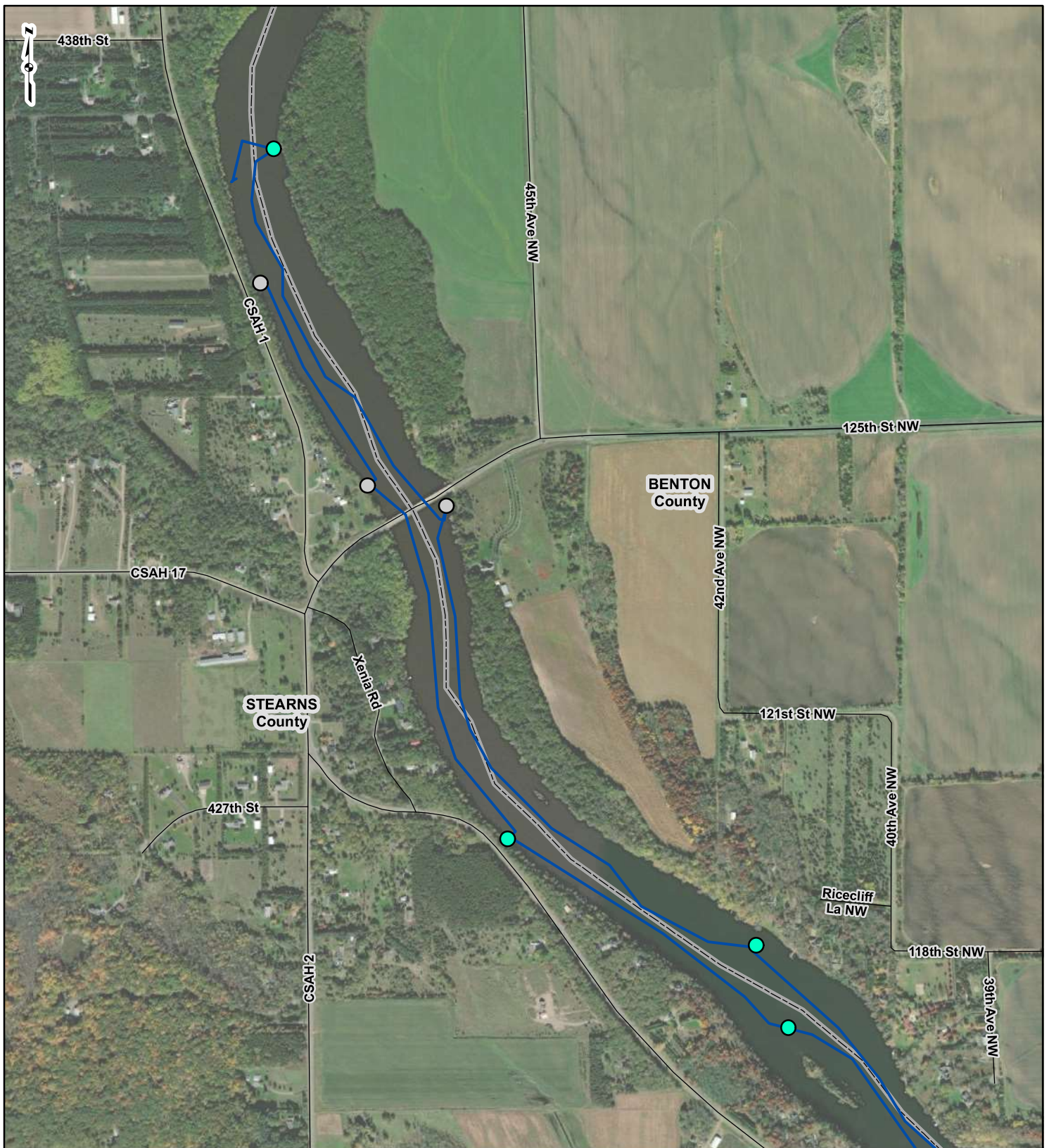




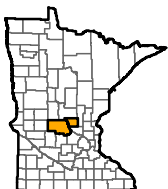
## **FIGURE 6**

### **June Predominant Species**





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

##### Predominant Species

- None
- Ceratophyllum demersum
- Elodea canadensis
- Heteranthera dubia

- Potamogeton foliosus
- Potamogeton crispus
- Stuckenia pectinata
- Vallisneria americana

- Meander Survey
- Road Centerline
- Community Boundary
- County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 6 PREDOMINANT SPECIES SHEET 1 OF 12

SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS



DRAWN BY: EMW  
CHECKED: TDB

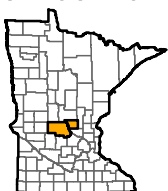
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





# PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

## LEGEND

### Predominant Species

- None
- Ceratophyllum demersum
- Elodea canadensis
- Heteranthera dubia

- Potamogeton foliosus
- Potamogeton crispus
- Stuckenia pectinata
- Vallisneria spiralis

- Meander Survey
- Road Centerline
- Community Boundary
- County Boundary

0 500 1,000 2,000  
Feet

## FIGURE 6 PREDOMINANT SPECIES SHEET 2 OF 12

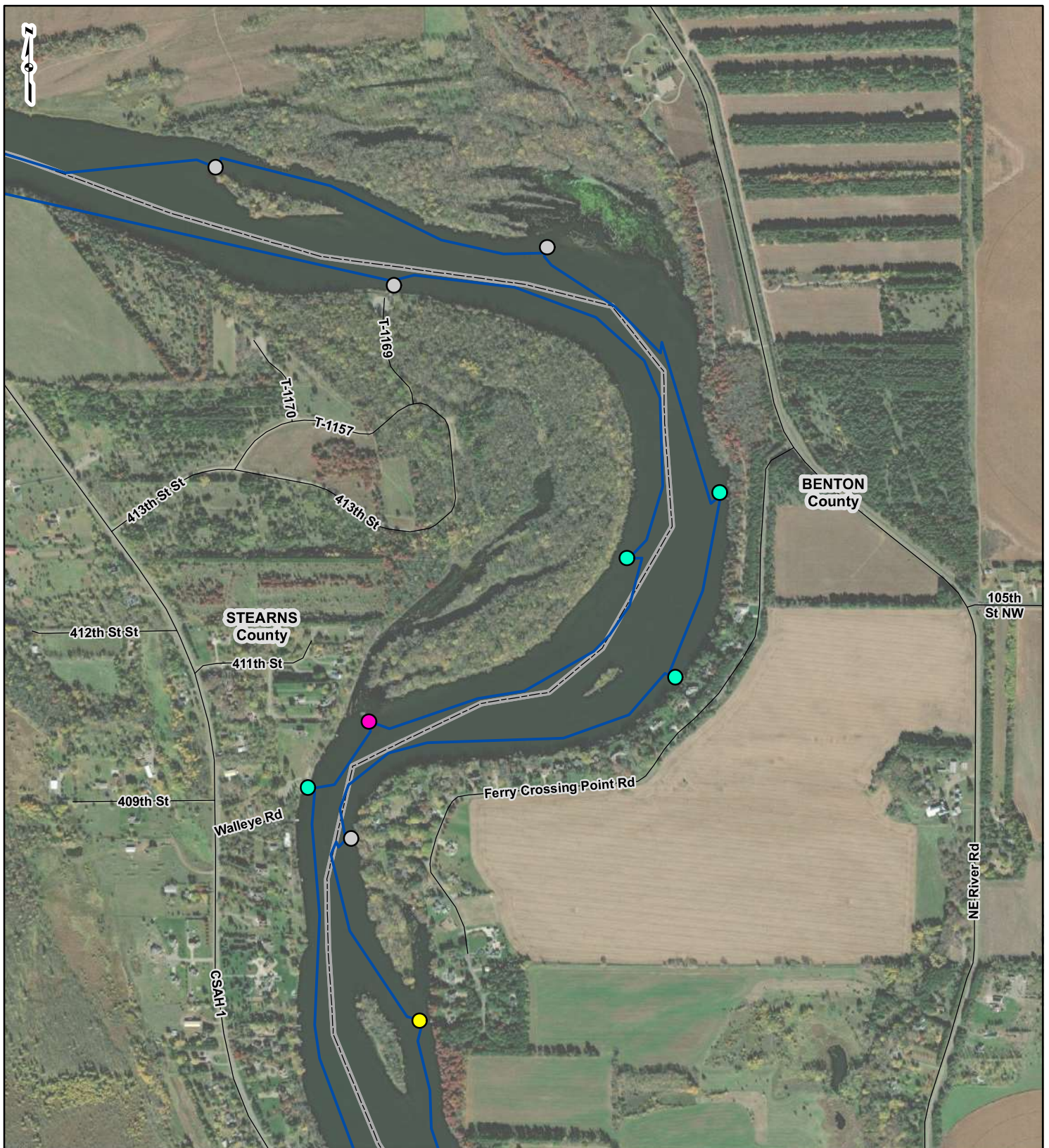
SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS

DRAWN BY: EMW  
CHECKED: TDB

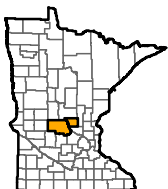
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

##### Predominant Species

- None
- Ceratophyllum demersum
- Elodea canadensis
- Heteranthera dubia

- Potamogeton foliosus
- Potamogeton crispus
- Stuckenia pectinata
- Vallisneria spiralis

- Meander Survey
- Road Centerline
- Community Boundary
- County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 6 PREDOMINANT SPECIES SHEET 3 OF 12

SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS



DRAWN BY: EMW  
CHECKED: TDB

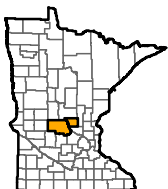
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

##### Predominant Species

- None
- Ceratophyllum demersum
- Elodea canadensis
- Heteranthera dubia

- Potamogeton foliosus
- Potamogeton crispus
- Stuckenia pectinata
- Vallisneria spiralis

- Meander Survey
- Road Centerline
- Community Boundary
- County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 6 PREDOMINANT SPECIES SHEET 4 OF 12

SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS

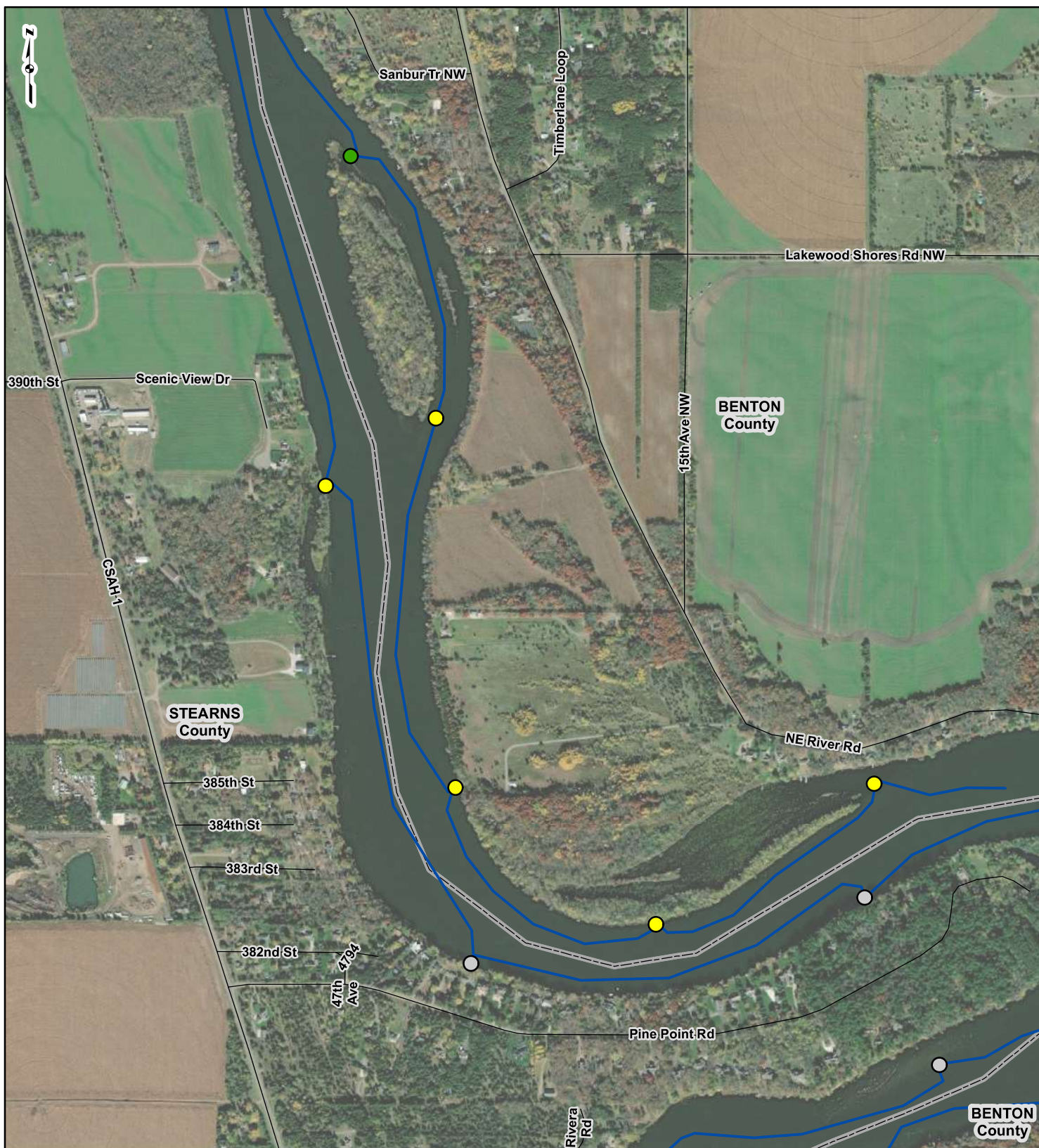


DRAWN BY: EMW  
CHECKED: TDB

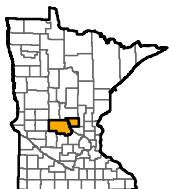
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

##### Predominant Species



0 500 1,000 2,000  
Feet

#### FIGURE 6 PREDOMINANT SPECIES SHEET 5 OF 12

SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS



DRAWN BY: EMW

CHECKED: TDB

DATE: 9/27/2021

APPROVED: LLS

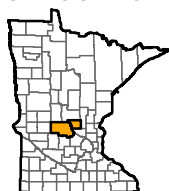
REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.

G:\R210281.05 - GIS\MXD\Aquatic\_Meander\_Survey\ECRE\_Sartell\_Fig6\_June\_Predominant\_Species\_2021\_09\_27.mxd





# PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

## LEGEND

### Predominant Species

- None
- Ceratophyllum demersum
- Elodea canadensis
- Heteranthera dubia

- Potamogeton foliosus
- Potamogeton crispus
- Stuckenia pectinata
- Vallisneria spiralis

- Meander Survey
- Road Centerline
- Community Boundary
- County Boundary

0 500 1,000 2,000  
Feet

## FIGURE 6 PREDOMINANT SPECIES SHEET 6 OF 12

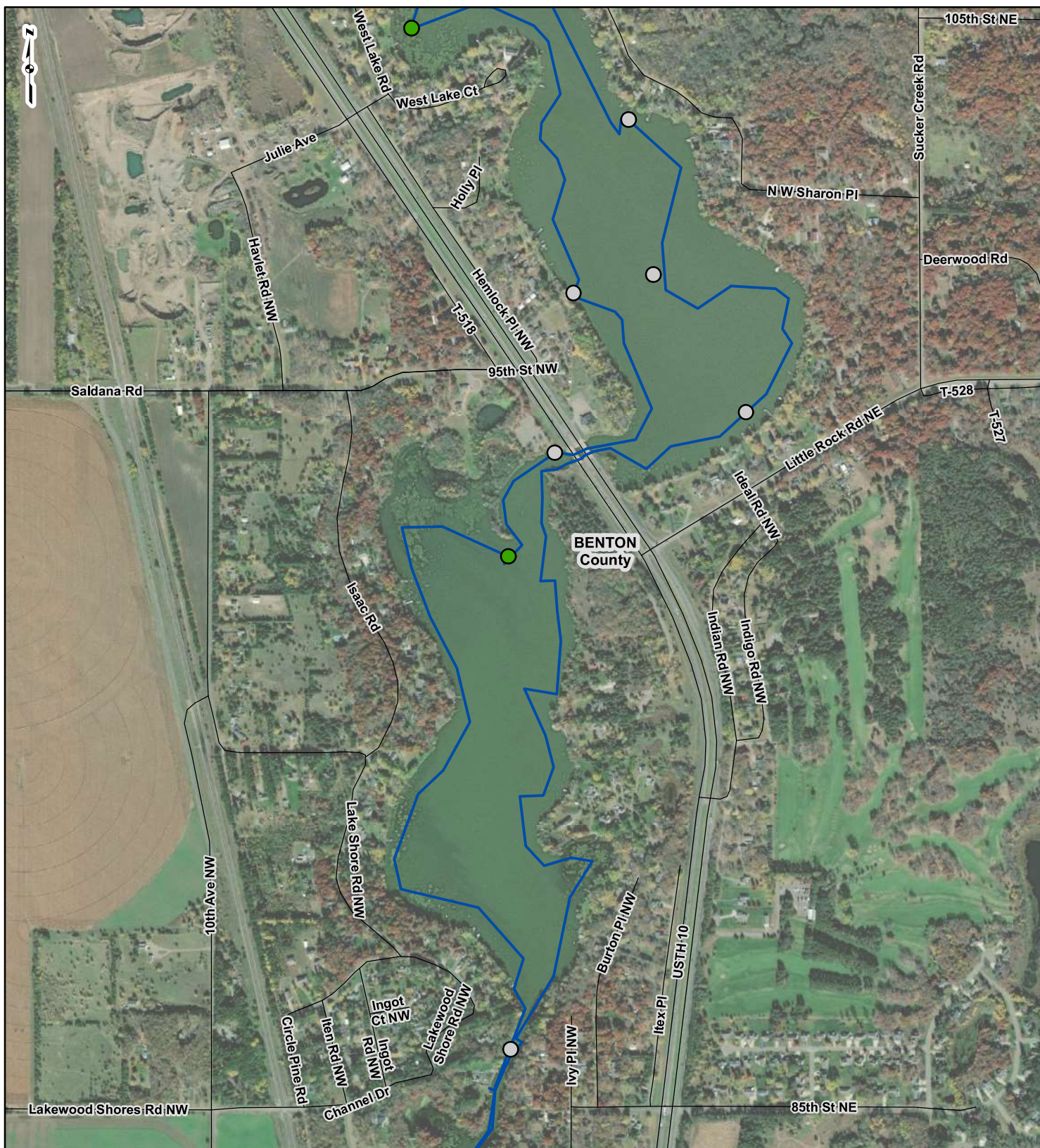
SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS

DRAWN BY: EMW  
CHECKED: TDB

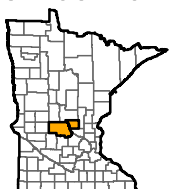
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





# PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

## LEGEND

### Predominant Species

- None
- Ceratophyllum demersum
- Elodea canadensis
- Heteranthera dubia

- Potamogeton foliosus
- Potamogeton crispus
- Stuckenia pectinata
- Vallisneria spiralis

- Meander Survey
- Road Centerline
- Community Boundary
- County Boundary

0 500 1,000 2,000  
Feet

## FIGURE 6 PREDOMINANT SPECIES SHEET 7 OF 12

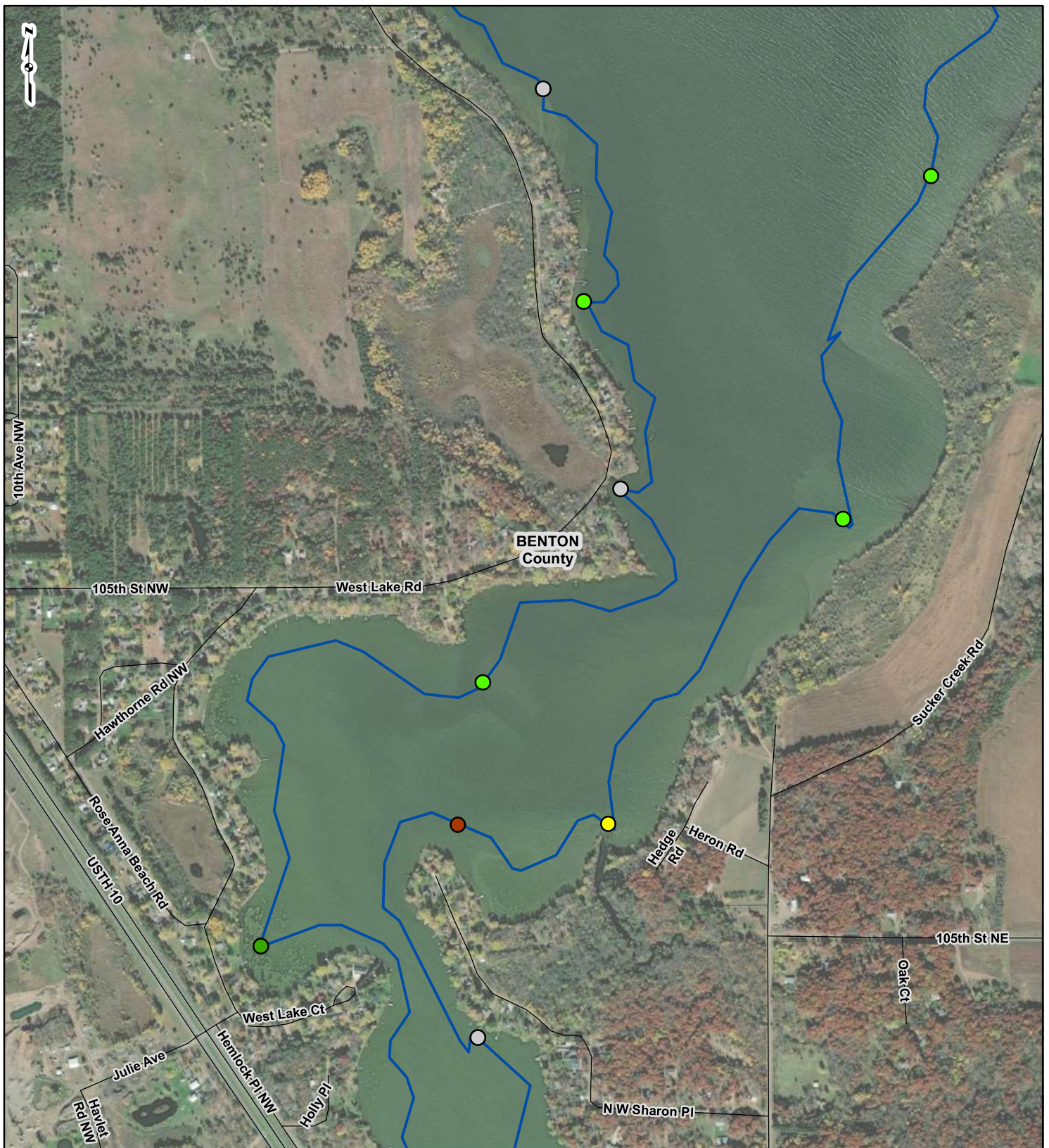
### SARTELL AQUATIC INVASIVE JUNE 2021 SURVEYS

DRAWN BY: EMW  
CHECKED: TDB

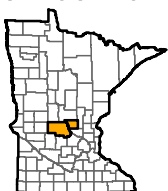
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

##### Predominant Species

- None
- Ceratophyllum demersum
- Elodea canadensis
- Heteranthera dubia

- Potamogeton foliosus
- Potamogeton crispus
- Stuckenia pectinata
- Vallisneria spiralis

- Meander Survey
- Road Centerline
- Community Boundary
- County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 6 PREDOMINANT SPECIES SHEET 8 OF 12

SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS

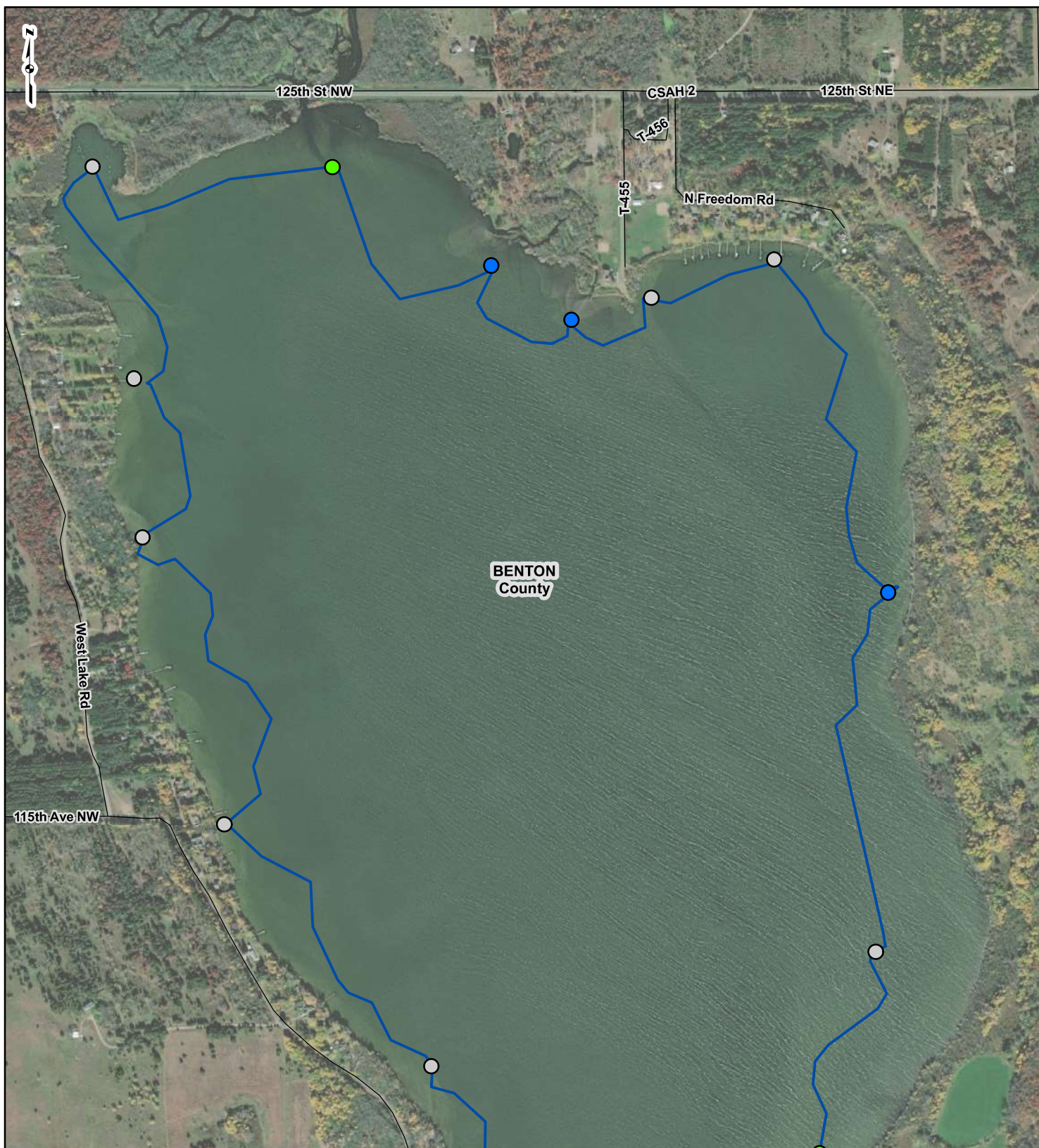


DRAWN BY: EMW  
CHECKED: TDB

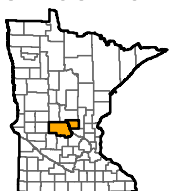
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

##### Predominant Species

- None
- Ceratophyllum demersum*
- Elodea canadensis*
- Heteranthera dubia*

- Potamogeton foliosus*
- Potamogeton crispus*
- Stuckenia pectinata*
- Vallisneria spiralis*

Meander Survey

Road Centerline

Community Boundary

County Boundary

0 500 1,000 2,000 Feet

#### FIGURE 6 PREDOMINANT SPECIES SHEET 9 OF 12

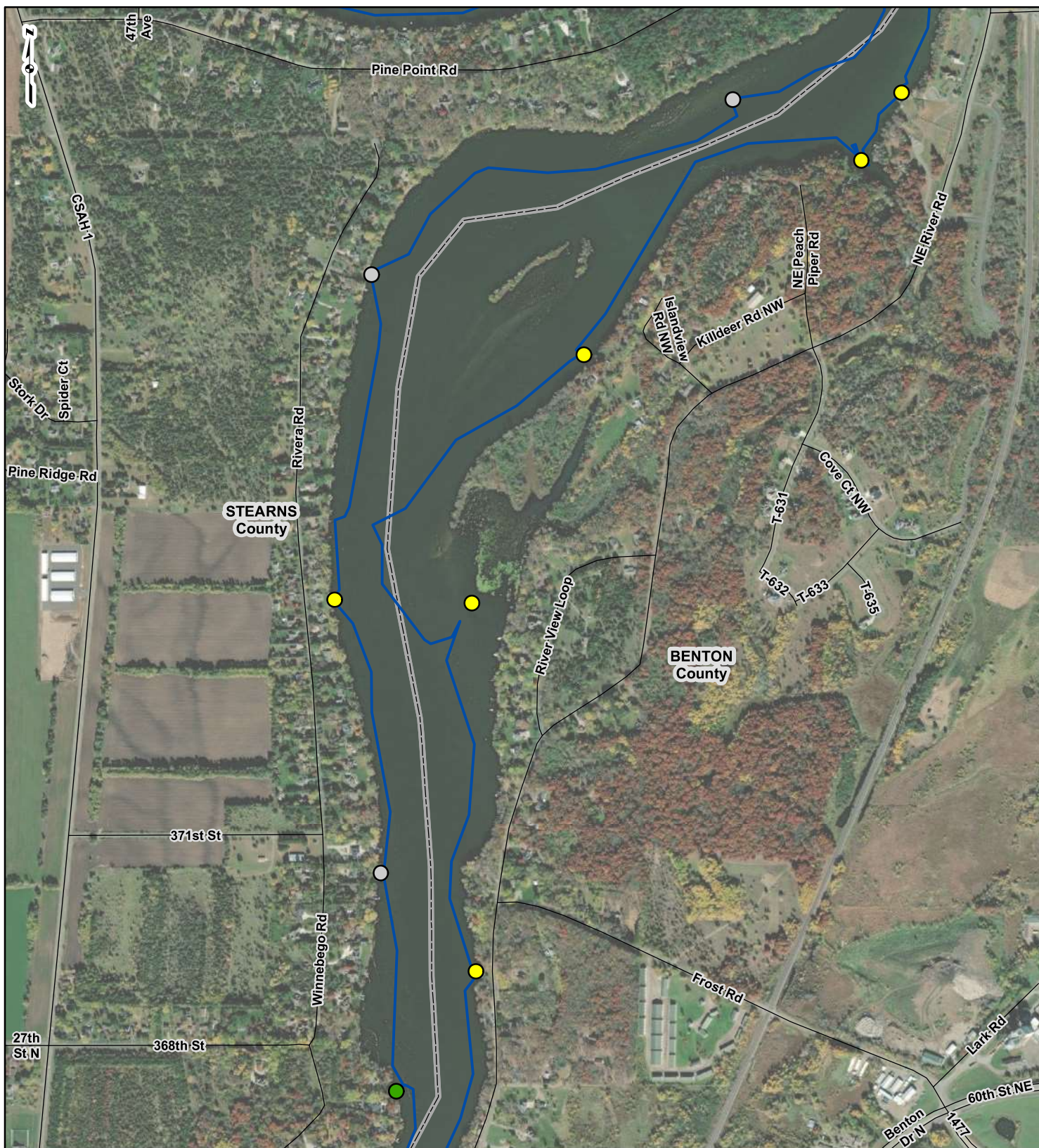
SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS

DRAWN BY: EMW  
CHECKED: TDB

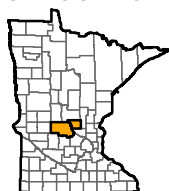
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

##### Predominant Species

- None
- Ceratophyllum demersum
- Elodea canadensis
- Heteranthera dubia

- Potamogeton foliosus
- Potamogeton crispus
- Stuckenia pectinata
- Vallisneria spiralis

- Meander Survey
- Road Centerline
- Community Boundary
- County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 6 PREDOMINANT SPECIES SHEET 10 OF 12

SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS

DRAWN BY: EMW  
CHECKED: TDB

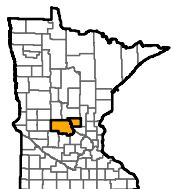
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

##### Predominant Species

- None
- Ceratophyllum demersum
- Elodea canadensis
- Heteranthera dubia

- Potamogeton foliosus
- Potamogeton crispus
- Stuckenia pectinata
- Vallisneria americana

Meander Survey

Road Centerline

Community Boundary

County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 6 PREDOMINANT SPECIES SHEET 11 OF 12

SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS

DRAWN BY: EMW  
CHECKED: TDB

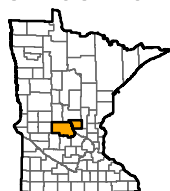
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





# PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

## LEGEND

### Predominant Species

- None
- Ceratophyllum demersum
- Elodea canadensis
- Heteranthera dubia

- Potamogeton foliosus
- Potamogeton crispus
- Stuckenia pectinata
- Vallisneria spiralis

- Meander Survey
- Road Centerline
- Community Boundary
- County Boundary

0 500 1,000 2,000  
Feet

## FIGURE 6 PREDOMINANT SPECIES SHEET 12 OF 12

SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS

DRAWN BY: EMW  
CHECKED: TDB

DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.



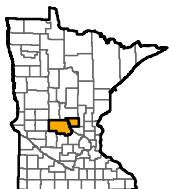
## **FIGURE 7**

### **June Invasive Species Locations**





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

- Sampled, Not Present
- Curly-leaf Pondweed
- Yellow Iris
- Meander Survey
- Road Centerline
- Community Boundary
- County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 7 AQUATIC INVASIVE SPECIES SHEET 1 OF 12

SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS



DRAWN BY: EMW  
CHECKED: TDB

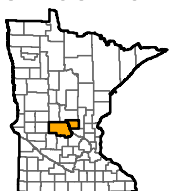
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

- Sampled, Not Present
- Curly-leaf Pondweed
- Yellow Iris
- Meander Survey
- Road Centerline
- Community Boundary
- County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 7 AQUATIC INVASIVE SPECIES SHEET 2 OF 12

SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS

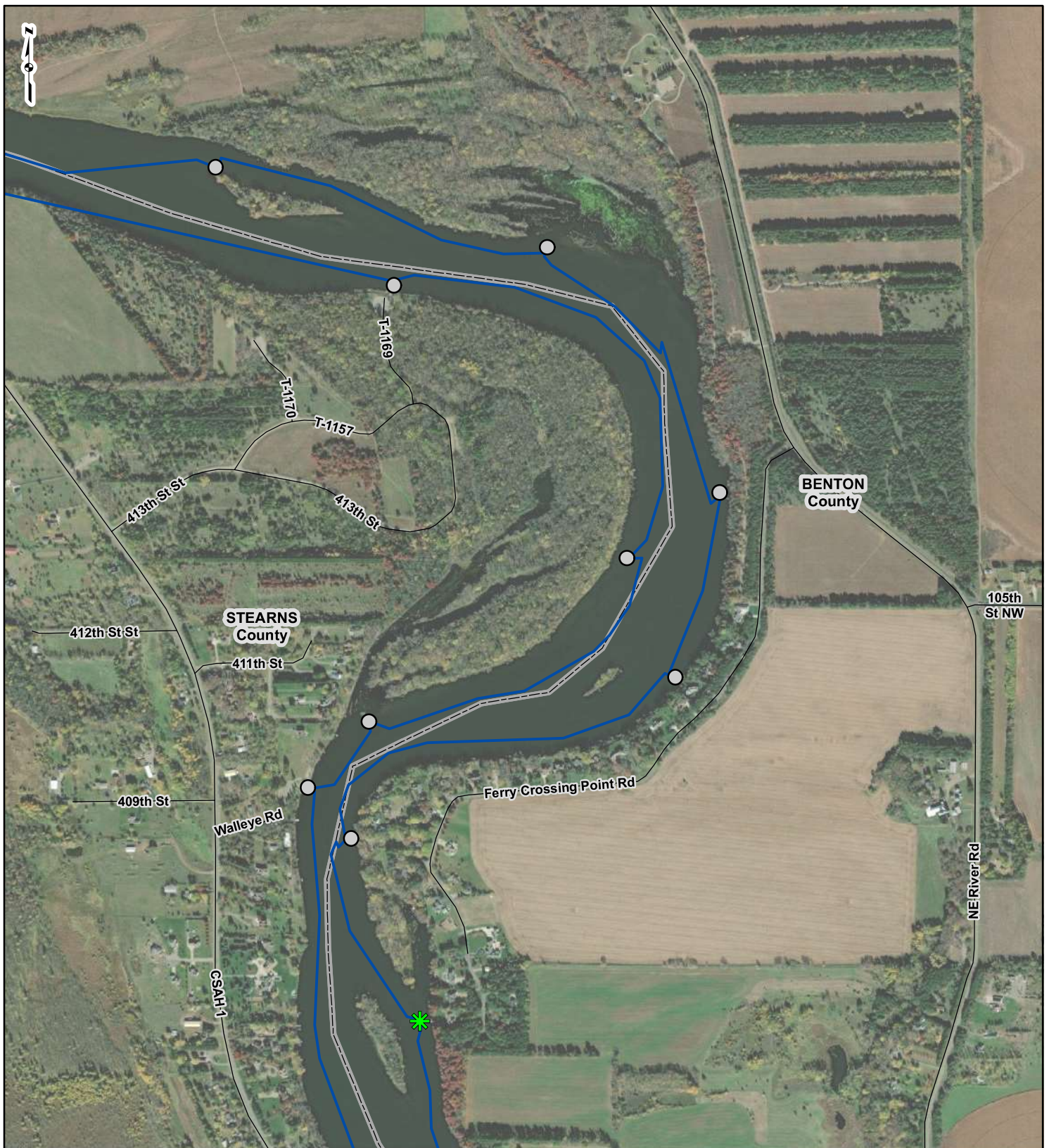


DRAWN BY: EMW  
CHECKED: TDB

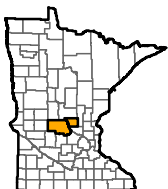
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

- Sampled, Not Present
- ★ Curly-leaf Pondweed
- ★ Yellow Iris
- Meander Survey
- Road Centerline
- - - Community Boundary
- ▭ County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 7 AQUATIC INVASIVE SPECIES SHEET 3 OF 12

SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS



DRAWN BY: EMW  
CHECKED: TDB

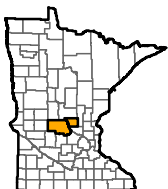
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

- Sampled, Not Present
- ★ Curly-leaf Pondweed
- ★ Yellow Iris
- Meander Survey
- Road Centerline
- - - Community Boundary
- ▭ County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 7 AQUATIC INVASIVE SPECIES SHEET 4 OF 12

SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS

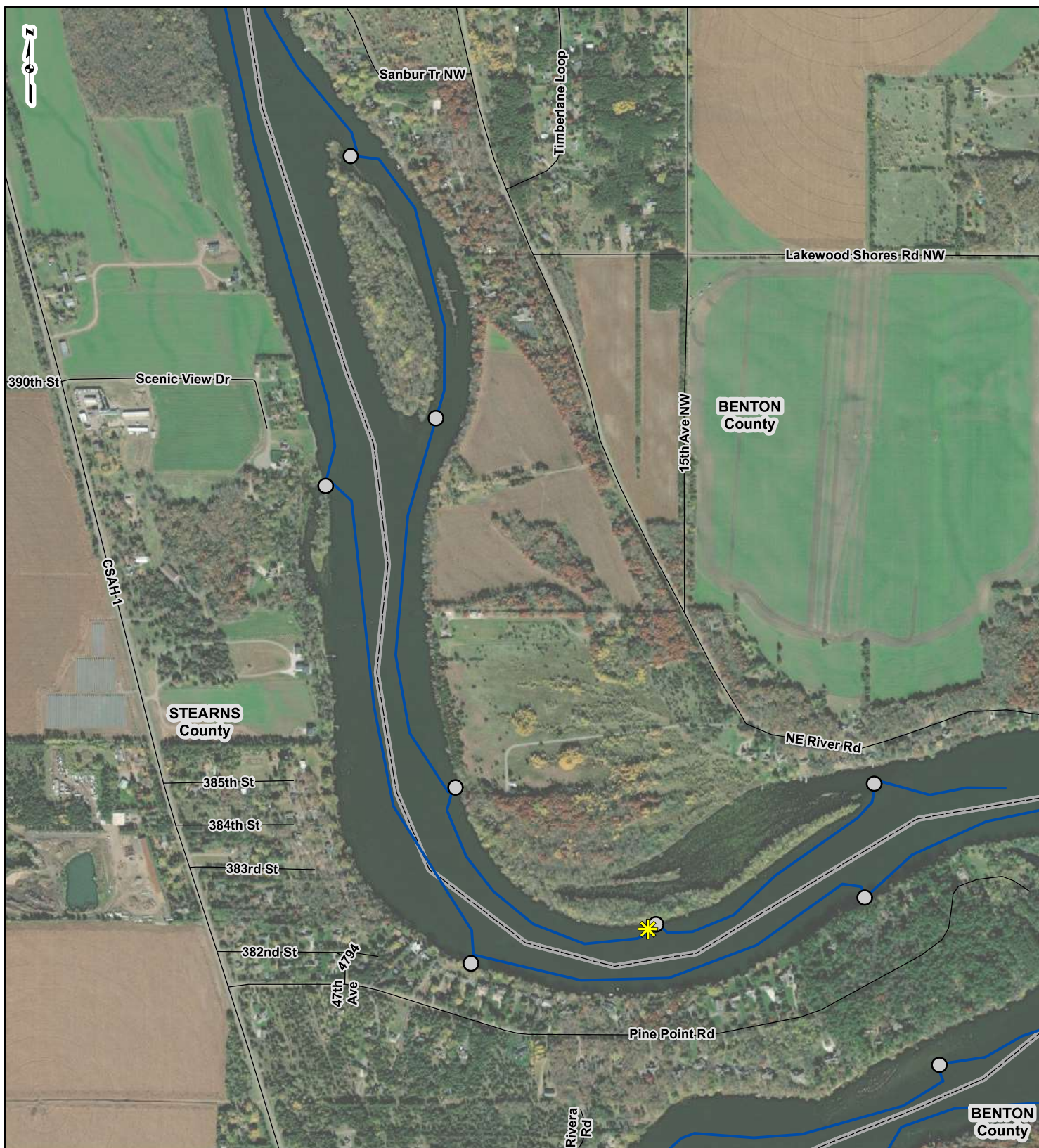


DRAWN BY: EMW  
CHECKED: TDB

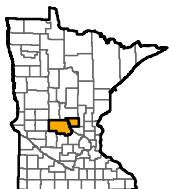
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

- Sampled, Not Present
- ★ Curly-leaf Pondweed
- ★ Yellow Iris
- Meander Survey
- Road Centerline
- - - Community Boundary
- ▭ County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 7 AQUATIC INVASIVE SPECIES SHEET 5 OF 12

SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS



DRAWN BY: EMW  
CHECKED: TDB

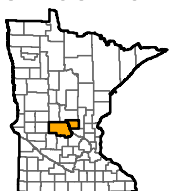
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

- Sampled, Not Present
- ✱ Curly-leaf Pondweed
- ✱ Yellow Iris
- Meander Survey
- Road Centerline
- - - Community Boundary
- ▭ County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 7 AQUATIC INVASIVE SPECIES SHEET 6 OF 12

SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS

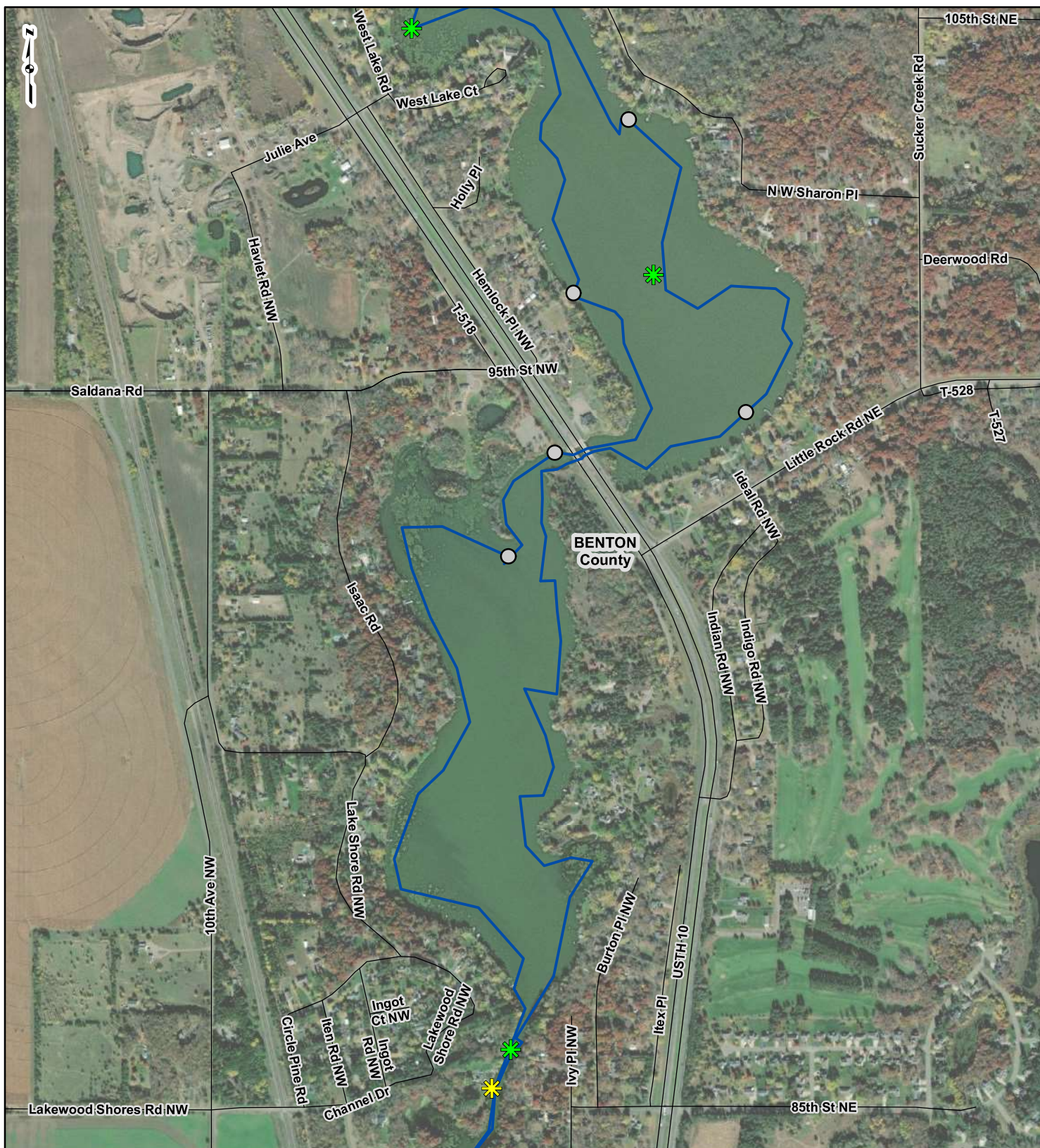


DRAWN BY: EMW  
CHECKED: TDB

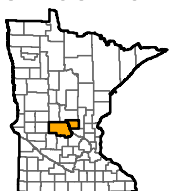
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

- Sampled, Not Present
- Curly-leaf Pondweed
- Yellow Iris
- Meander Survey
- Road Centerline
- Community Boundary
- County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 7 AQUATIC INVASIVE SPECIES SHEET 7 OF 12

SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS

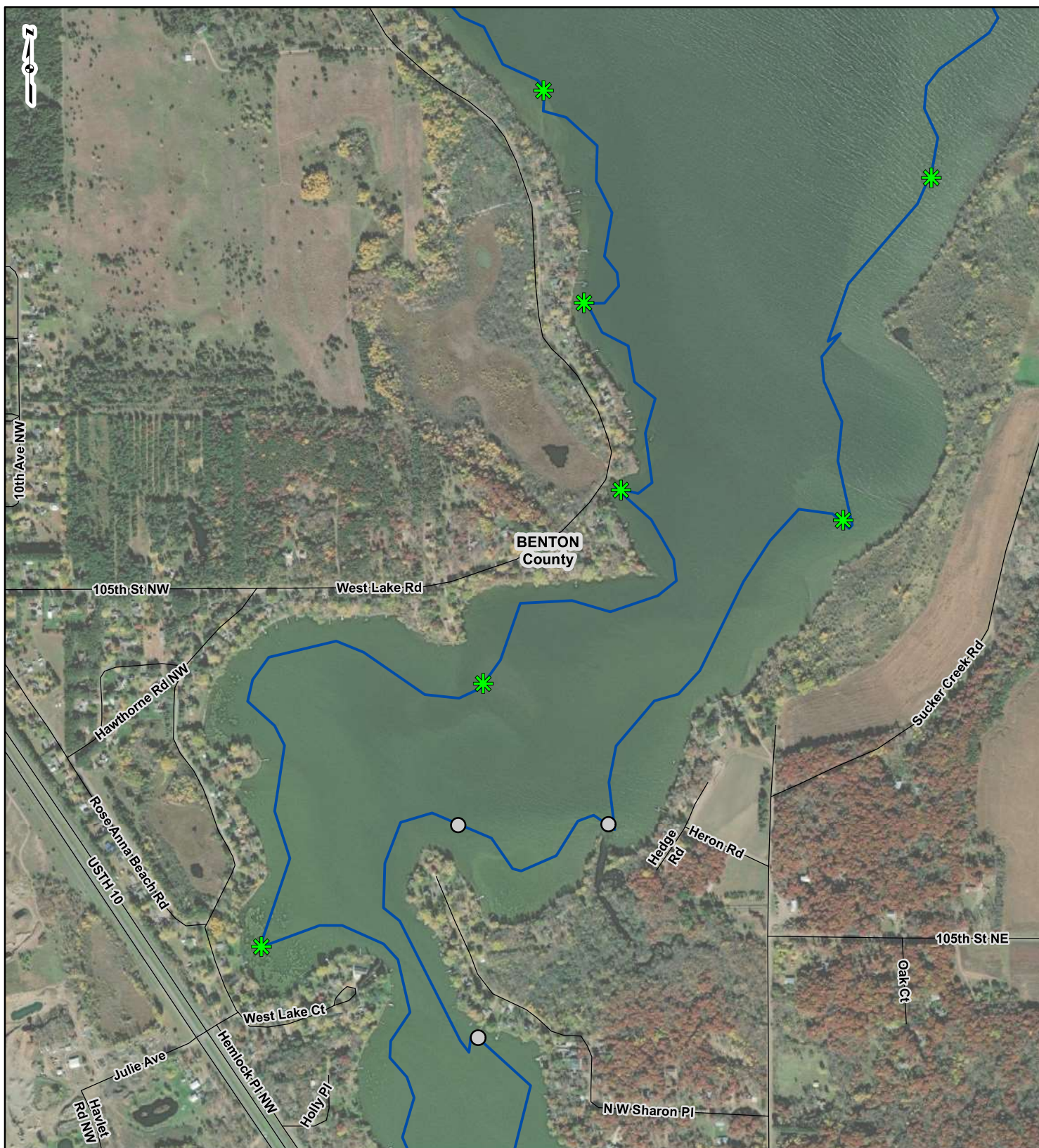


DRAWN BY: EMW  
CHECKED: TDB

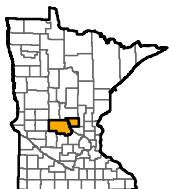
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

- Sampled, Not Present
- Curly-leaf Pondweed
- Yellow Iris
- Meander Survey
- Road Centerline
- Community Boundary
- County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 7 AQUATIC INVASIVE SPECIES SHEET 8 OF 12

SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS

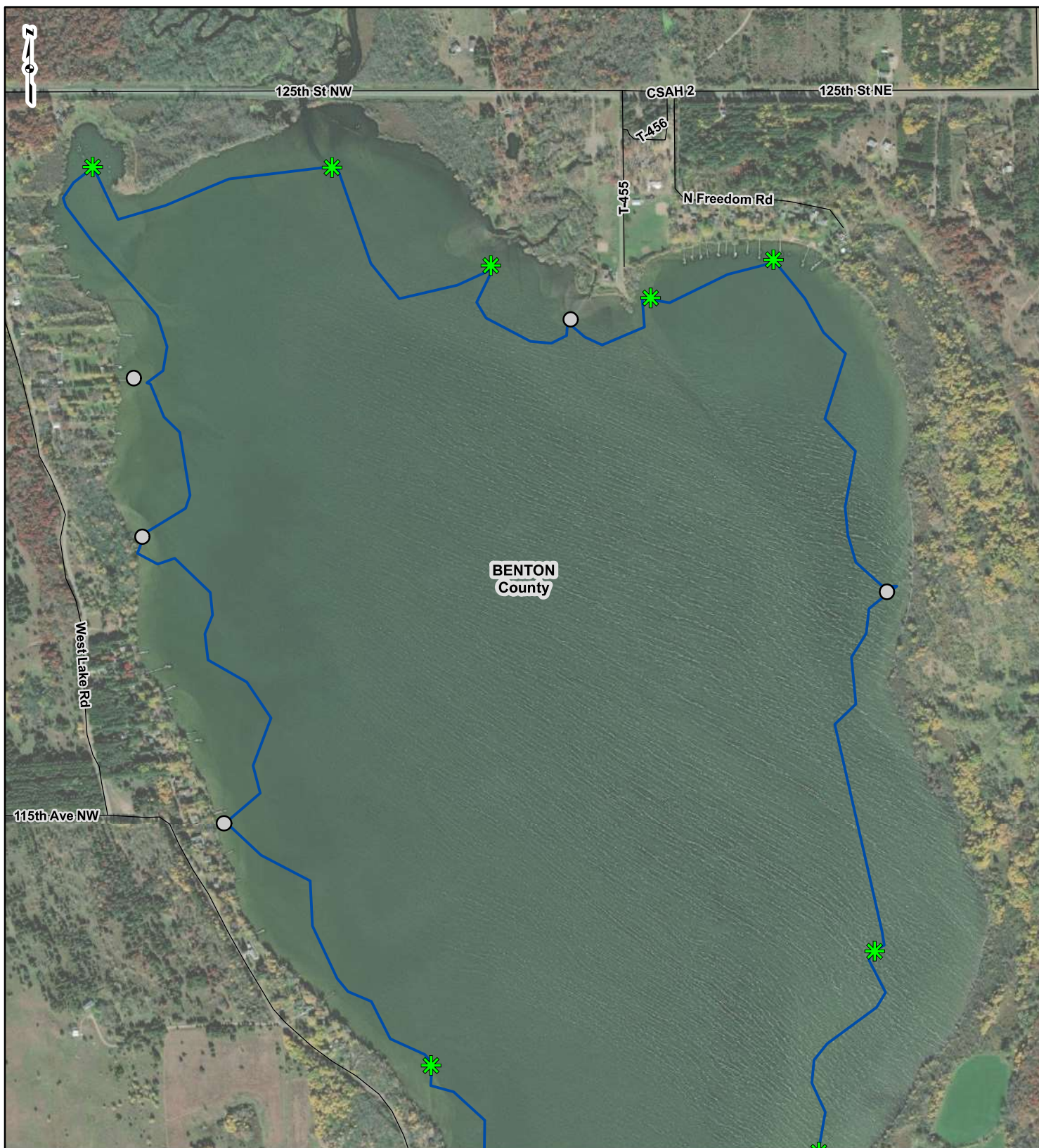


DRAWN BY: EMW  
CHECKED: TDB

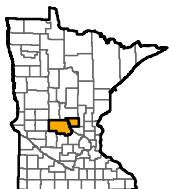
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

- Sampled, Not Present
- ✱ Curly-leaf Pondweed
- ✱ Yellow Iris
- Meander Survey
- Road Centerline
- - - Community Boundary
- ▭ County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 7 AQUATIC INVASIVE SPECIES SHEET 9 OF 12

SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS

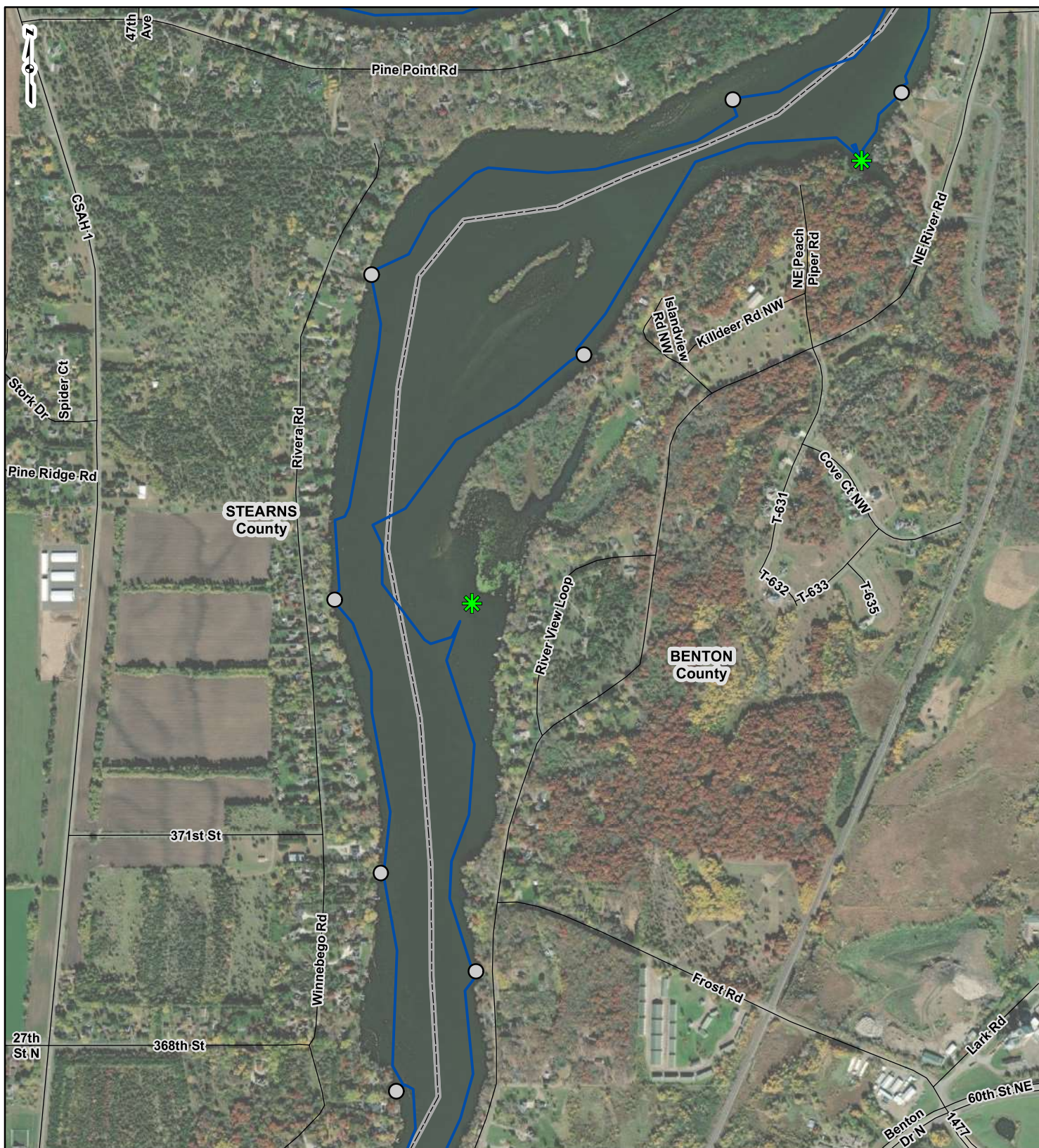


DRAWN BY: EMW  
CHECKED: TDB

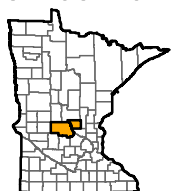
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

- Sampled, Not Present
- ★ Curly-leaf Pondweed
- ★ Yellow Iris
- Meander Survey
- Road Centerline
- - - Community Boundary
- ▭ County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 7 AQUATIC INVASIVE SPECIES SHEET 10 OF 12

SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS



DRAWN BY: EMW  
CHECKED: TDB

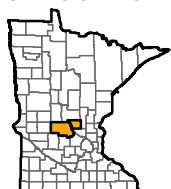
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

- Sampled, Not Present
- Curly-leaf Pondweed
- Yellow Iris
- Meander Survey
- Road Centerline
- Community Boundary
- County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 7 AQUATIC INVASIVE SPECIES SHEET 11 OF 12

SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS



DRAWN BY: EMW  
CHECKED: TDB

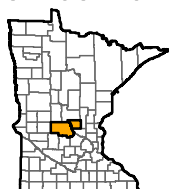
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





# PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

## LEGEND

- Sampled, Not Present
- Curly-leaf Pondweed
- Yellow Iris
- Meander Survey
- Road Centerline
- Community Boundary
- County Boundary

0 500 1,000 2,000  
Feet

## FIGURE 7 AQUATIC INVASIVE SPECIES SHEET 12 OF 12

SARTELL AQUATIC INVASIVE  
JUNE 2021 SURVEYS



DRAWN BY: EMW  
CHECKED: TDB

DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.



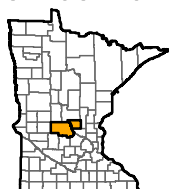
## **FIGURE 8**

### **August Predominant Species**





# PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

## LEGEND

### Predominant Species

None

Ceratophyllum demersum



Elodea canadensis



Heteranthera dubia



Vallisneria spiralis

Meander Survey

Road Centerline

Community Boundary

County Boundary

0 500 1,000 2,000  
Feet

## FIGURE 8 PREDOMINANT SPECIES SHEET 1 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS



DRAWN BY: EMW

DATE: 9/27/2021

CHECKED: TDB

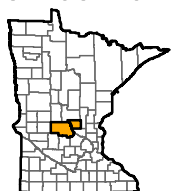
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

##### Predominant Species



None



Ceratophyllum demersum



Elodea canadensis



Heteranthera dubia



Vallisneria spiralis

Meander Survey

Road Centerline

Community Boundary

County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 8 PREDOMINANT SPECIES SHEET 2 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS



DRAWN BY: EMW

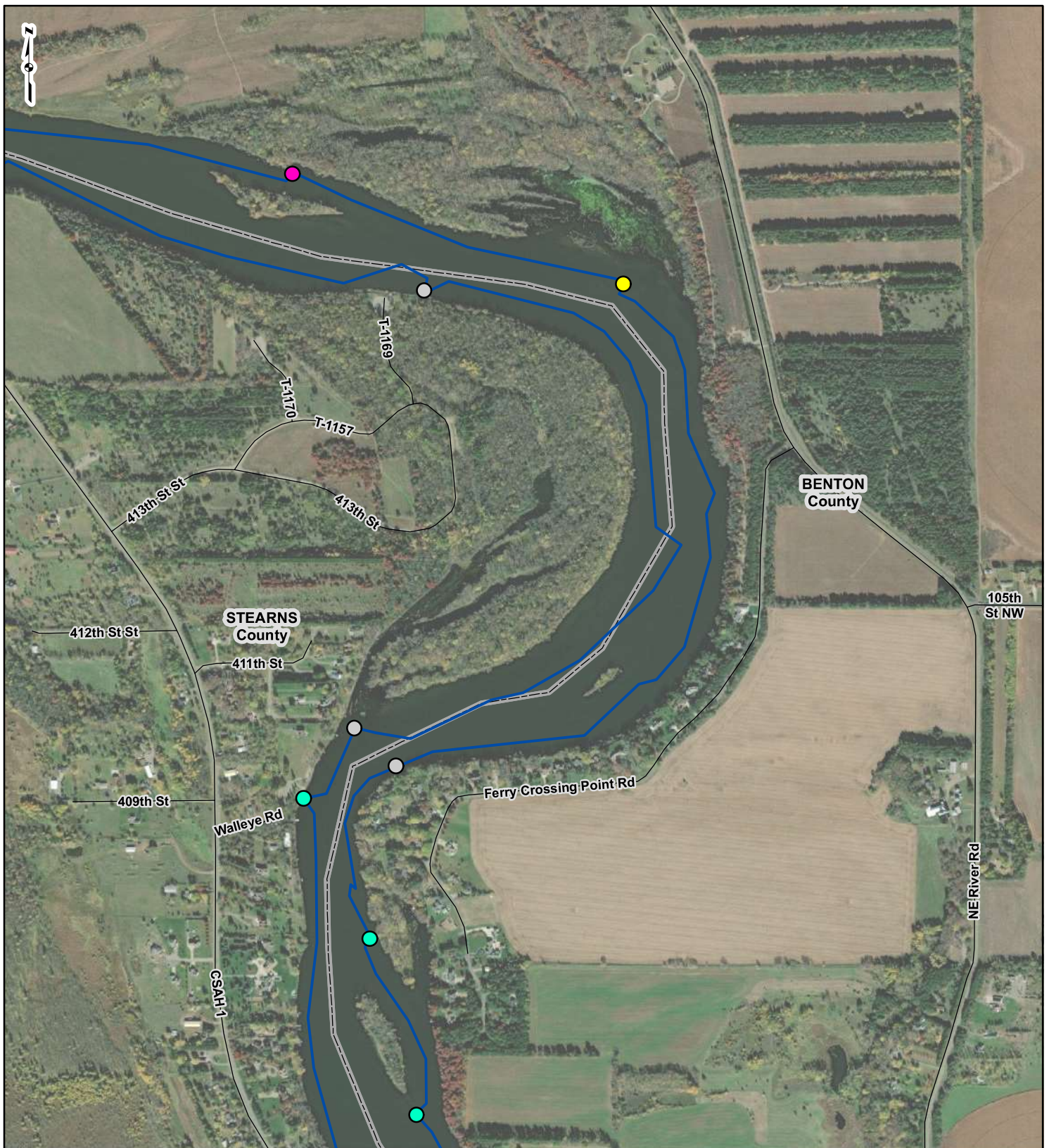
DATE: 9/27/2021

CHECKED: TDB

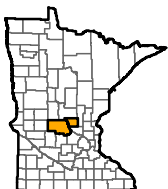
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

##### Predominant Species

- None
- Ceratophyllum demersum

- Elodea canadensis
- Heteranthera dubia
- Vallisneria spiralis

Meander Survey

Road Centerline

Community Boundary

County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 8 PREDOMINANT SPECIES SHEET 3 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS



DRAWN BY: EMW

DATE: 9/27/2021

CHECKED: TDB

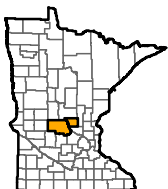
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

##### Predominant Species



None



Ceratophyllum demersum



Elodea canadensis



Heteranthera dubia



Vallisneria spiralis

Meander Survey

Road Centerline

Community Boundary

County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 8 PREDOMINANT SPECIES SHEET 4 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS



DRAWN BY: EMW

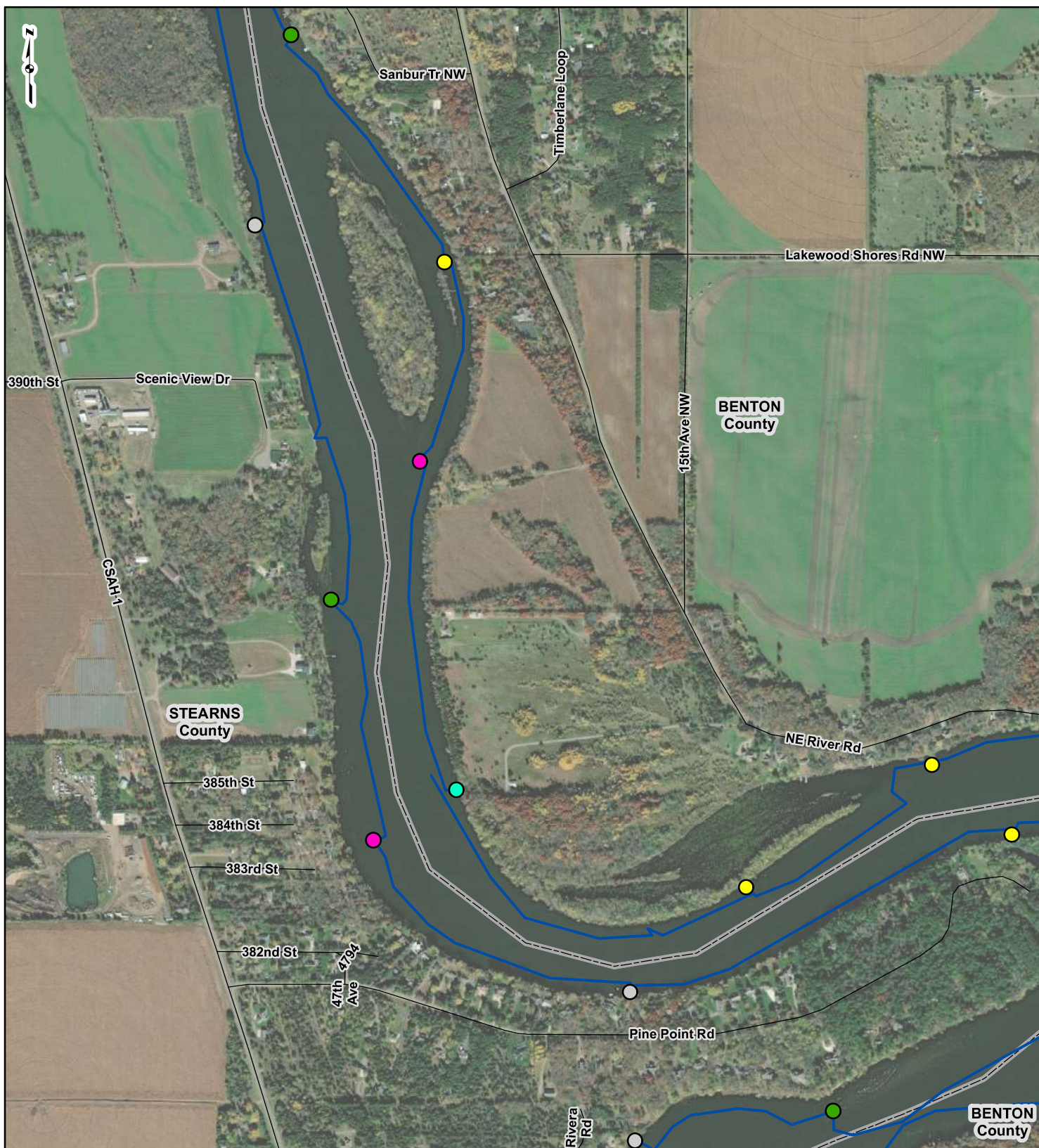
CHECKED: TDB

DATE: 9/27/2021

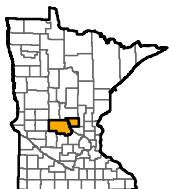
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

##### Predominant Species



None



Ceratophyllum demersum



Elodea canadensis



Heteranthera dubia



Vallisneria spiralis

Meander Survey

Road Centerline

Community Boundary

County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 8 PREDOMINANT SPECIES SHEET 5 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS

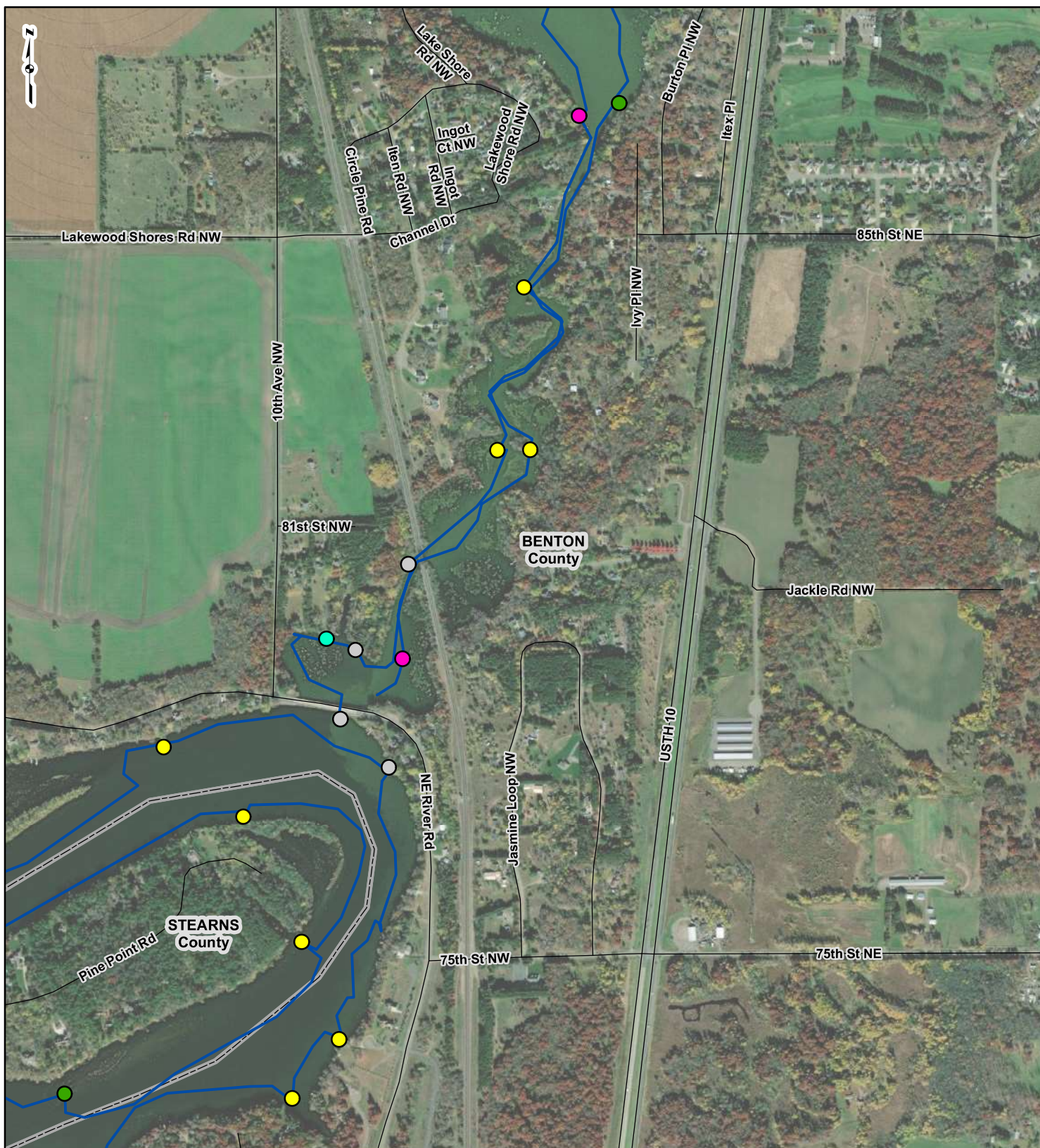


DRAWN BY: EMW  
CHECKED: TDB

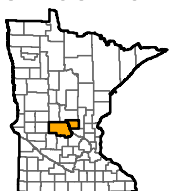
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

##### Predominant Species



None



Ceratophyllum demersum



Elodea canadensis



Heteranthera dubia



Vallisneria spiralis

Meander Survey

Road Centerline

Community Boundary

County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 8 PREDOMINANT SPECIES SHEET 6 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS

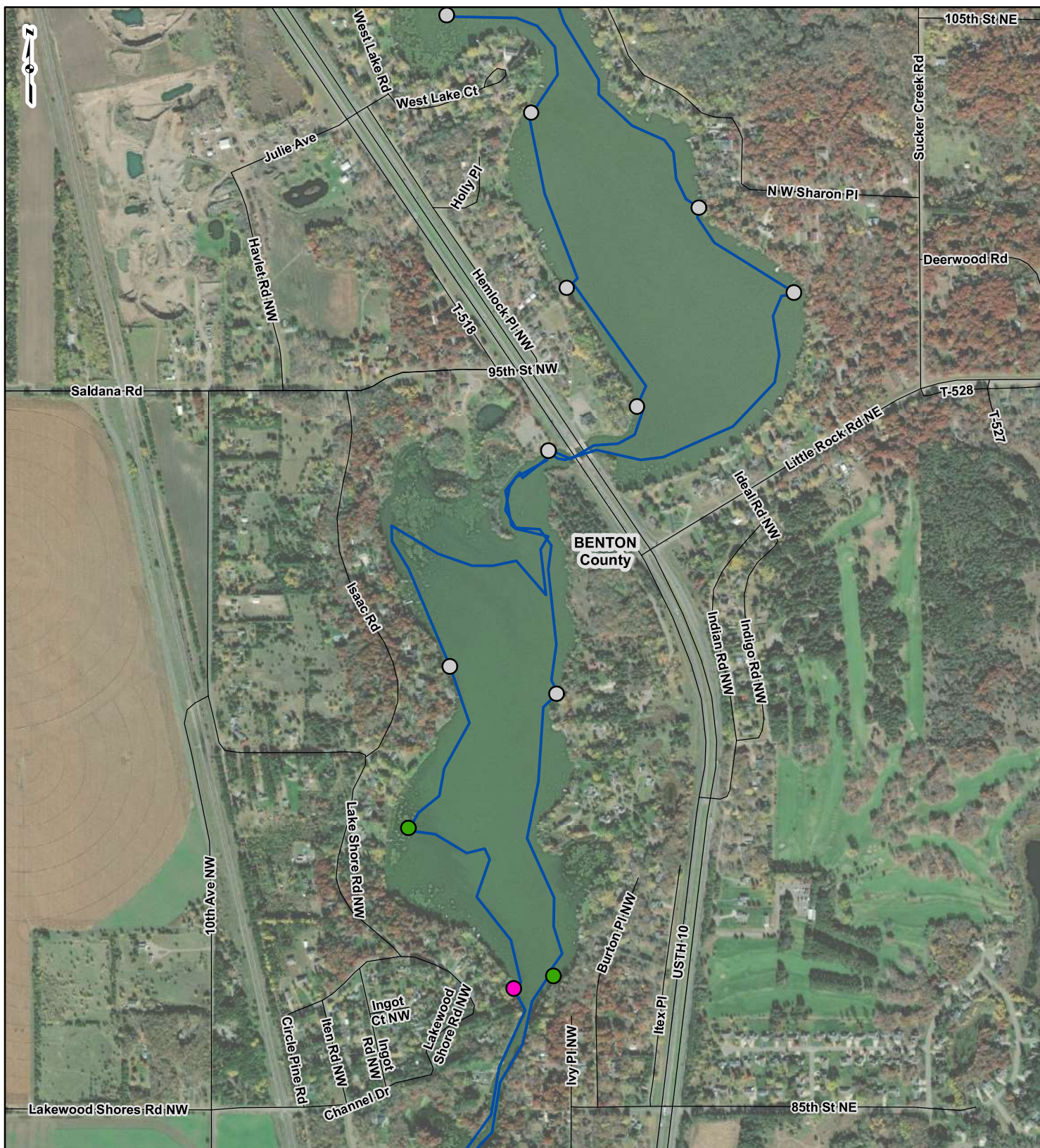


DRAWN BY: EMW  
CHECKED: TDB

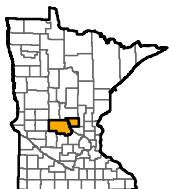
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

##### Predominant Species

None

Ceratophyllum demersum



Elodea canadensis



Heteranthera dubia



Vallisneria spiralis

Meander Survey

Road Centerline

Community Boundary

County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 8 PREDOMINANT SPECIES SHEET 7 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS

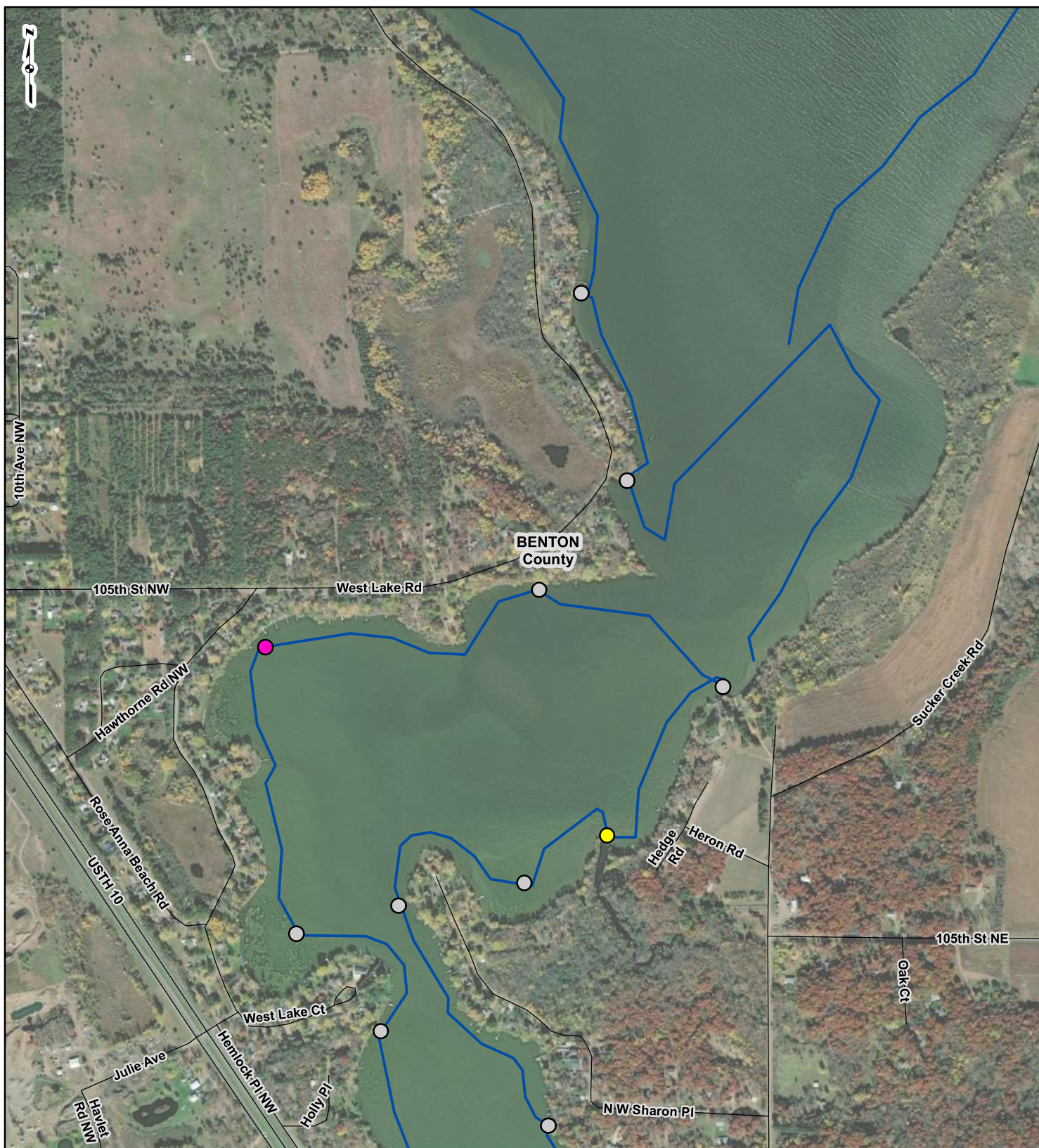


DRAWN BY: EMW  
CHECKED: TDB

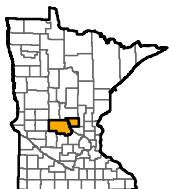
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

##### Predominant Species

- None
- Ceratophyllum demersum

- Elodea canadensis
- Heteranthera dubia
- Vallisneria spiralis

Meander Survey

Road Centerline

Community Boundary

County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 8 PREDOMINANT SPECIES SHEET 8 OF 12

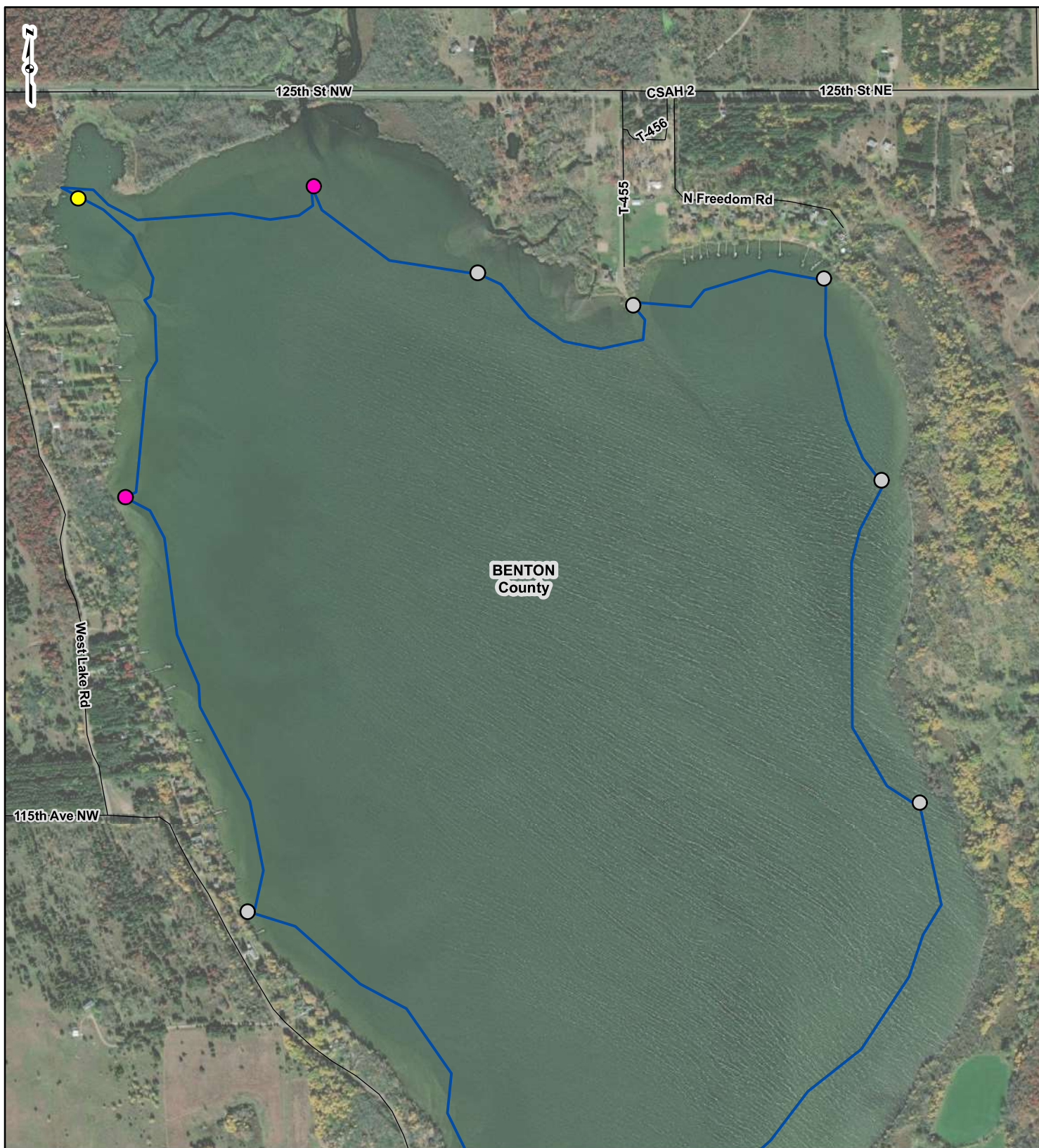
SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS

DRAWN BY: EMW  
CHECKED: TDB

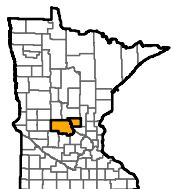
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

##### Predominant Species

None

Ceratophyllum demersum

Elodea canadensis

Heteranthera dubia

Vallisneria americana

Meander Survey

Road Centerline

Community Boundary

County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 8 PREDOMINANT SPECIES SHEET 9 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS



DRAWN BY: EMW

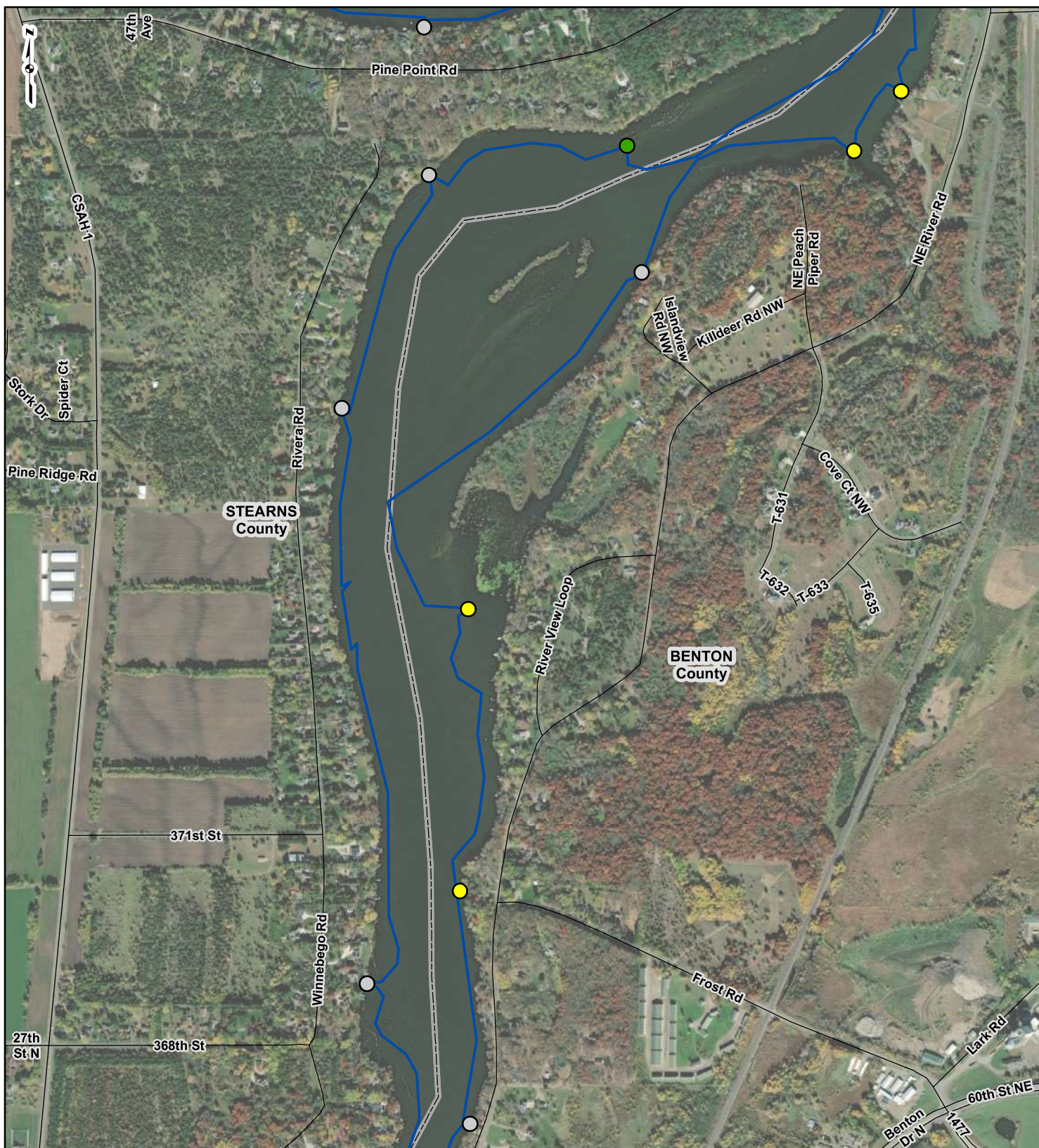
DATE: 9/27/2021

CHECKED: TDB

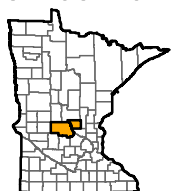
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

##### Predominant Species



None



Ceratophyllum demersum



Elodea canadensis



Heteranthera dubia



Vallisneria spiralis

Meander Survey

Road Centerline

Community Boundary

County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 8 PREDOMINANT SPECIES SHEET 10 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS



DRAWN BY: EMW  
CHECKED: TDB

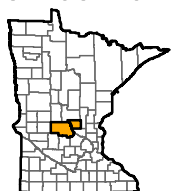
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

##### Predominant Species

None

Ceratophyllum demersum

Elodea canadensis

Heteranthera dubia

Vallisneria spiralis

Meander Survey

Road Centerline

Community Boundary

County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 8 PREDOMINANT SPECIES SHEET 11 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS



DRAWN BY: EMW

CHECKED: TDB

DATE: 9/27/2021

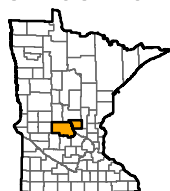
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





# PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

## LEGEND

### Predominant Species

None

Ceratophyllum demersum



Elodea canadensis



Heteranthera dubia



Vallisneria spiralis

Meander Survey

Road Centerline

Community Boundary

County Boundary

0 500 1,000 2,000  
Feet

## FIGURE 8 PREDOMINANT SPECIES SHEET 12 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS

DRAWN BY: EMW  
CHECKED: TDB

DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.



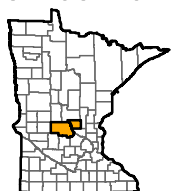
## **FIGURE 9**

### **August Invasive Species Locations**





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

- Sampled, Not Present
- ✳ Japanese Knotweed
- ✳ Purple Loosestrife
- Meander Survey
- Road Centerline
- Community Boundary
- ▭ County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 9 AQUATIC INVASIVE SPECIES SHEET 1 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS



DRAWN BY: EMW  
CHECKED: TDB

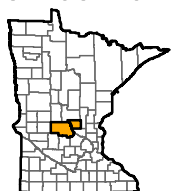
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

- Sampled, Not Present
- ✳ Japanese Knotweed
- ✳ Purple Loosestrife
- Meander Survey
- Road Centerline
- Community Boundary
- ▭ County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 9 AQUATIC INVASIVE SPECIES SHEET 2 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS

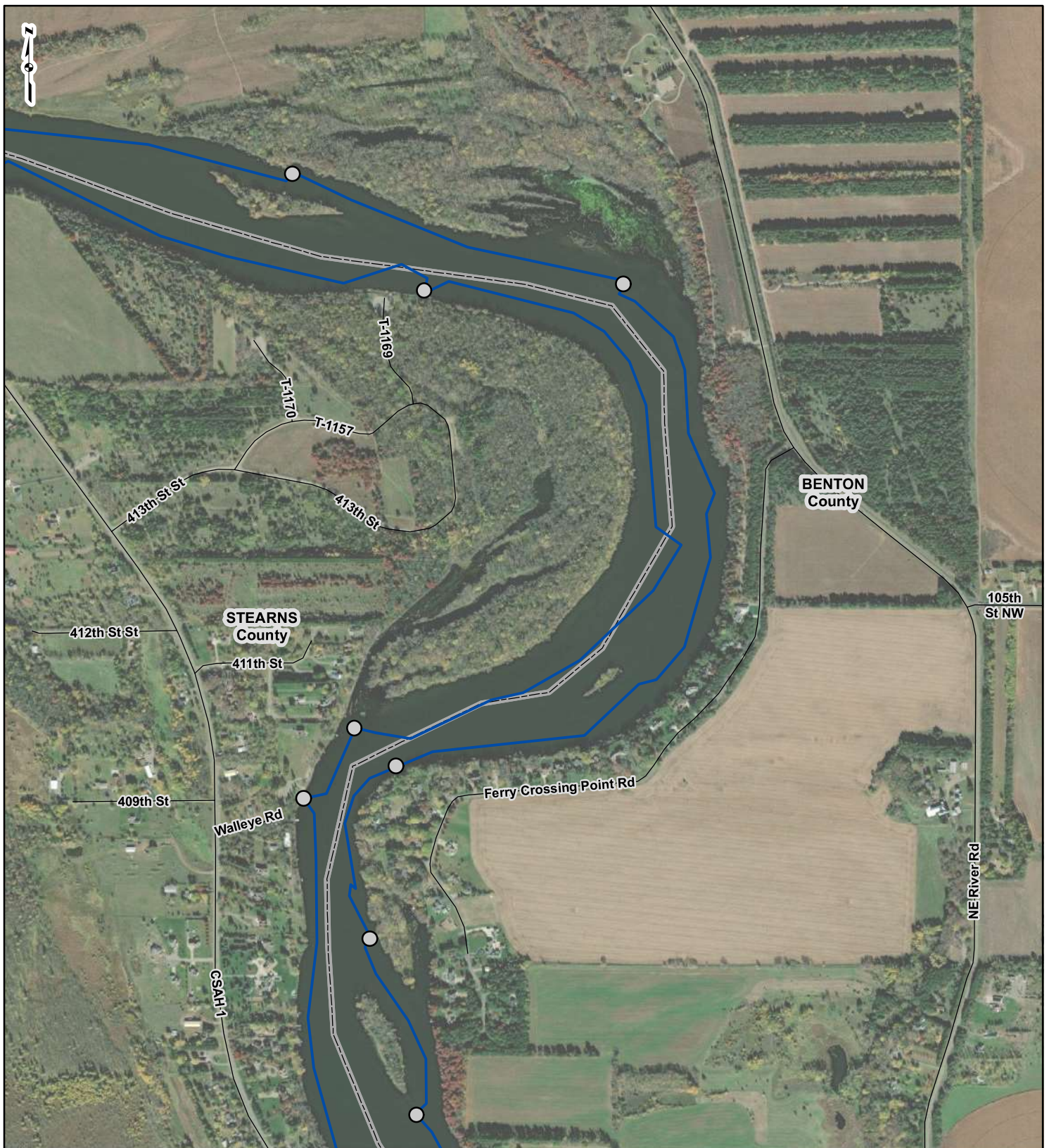


DRAWN BY: EMW  
CHECKED: TDB

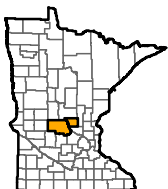
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

- Sampled, Not Present
- ✳ Japanese Knotweed
- ✳ Purple Loosestrife
- Meander Survey
- Road Centerline
- Community Boundary
- ▭ County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 9 AQUATIC INVASIVE SPECIES SHEET 3 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS



DRAWN BY: EMW  
CHECKED: TDB

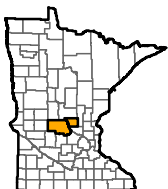
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

- Sampled, Not Present
- ✳ Japanese Knotweed
- ✳ Purple Loosestrife
- Meander Survey
- Road Centerline
- Community Boundary
- ▭ County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 9 AQUATIC INVASIVE SPECIES SHEET 4 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS



DRAWN BY: EMW  
CHECKED: TDB

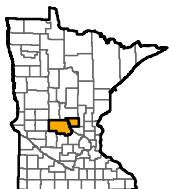
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

- Sampled, Not Present
- ✳ Japanese Knotweed
- ✳ Purple Loosestrife
- Meander Survey
- Road Centerline
- Community Boundary
- ▭ County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 9 AQUATIC INVASIVE SPECIES SHEET 5 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS



DRAWN BY: EMW  
CHECKED: TDB

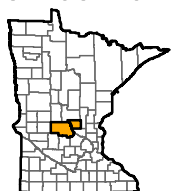
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

- Sampled, Not Present
- ✳ Japanese Knotweed
- ✳ Purple Loosestrife
- Meander Survey
- Road Centerline
- - - Community Boundary
- ▭ County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 9 AQUATIC INVASIVE SPECIES SHEET 6 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS

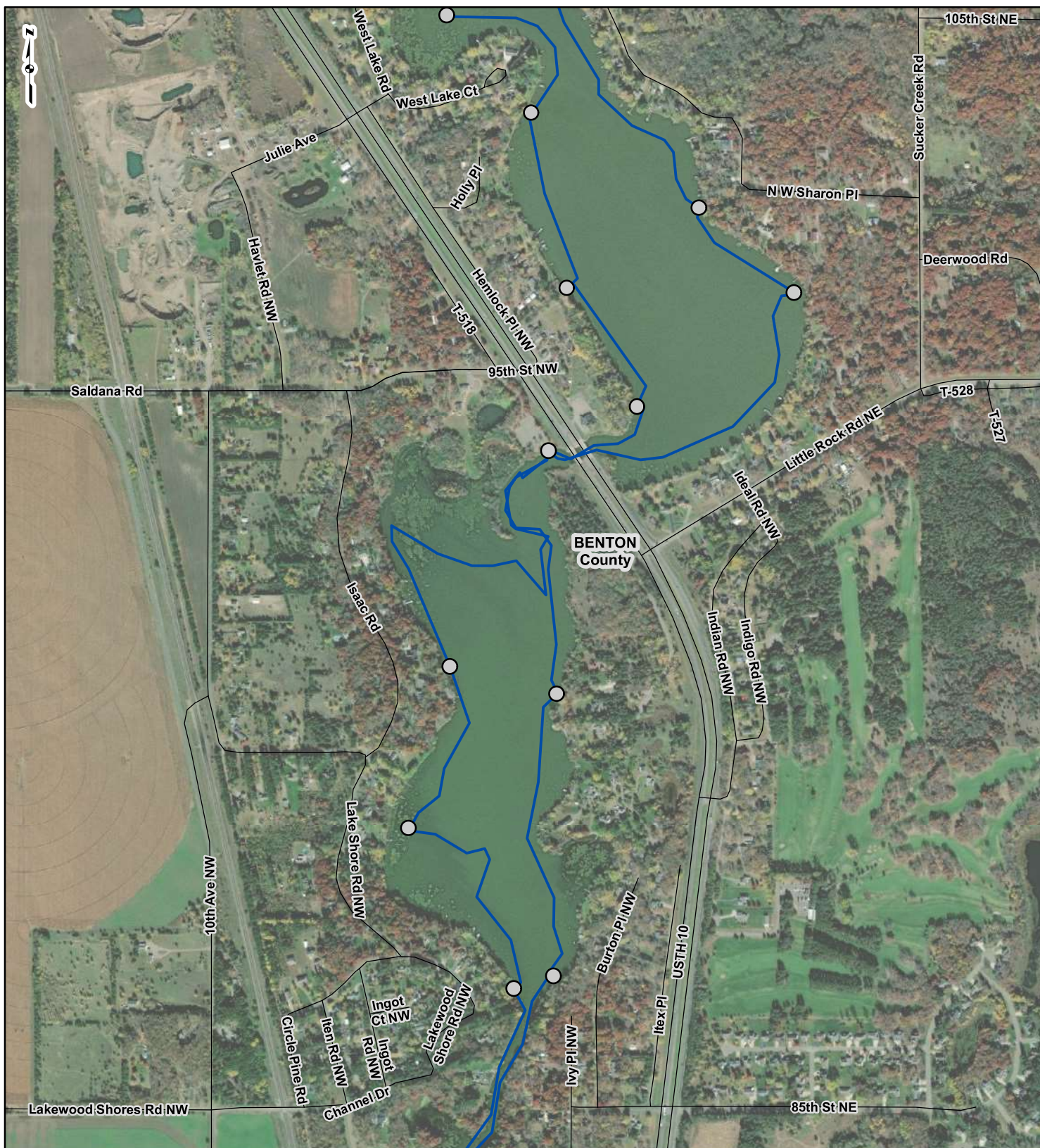


DRAWN BY: EMW  
CHECKED: TDB

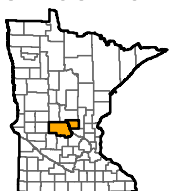
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

- Sampled, Not Present
- ✳ Japanese Knotweed
- ✳ Purple Loosestrife
- Meander Survey
- Road Centerline
- Community Boundary
- ▭ County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 9 AQUATIC INVASIVE SPECIES SHEET 7 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS

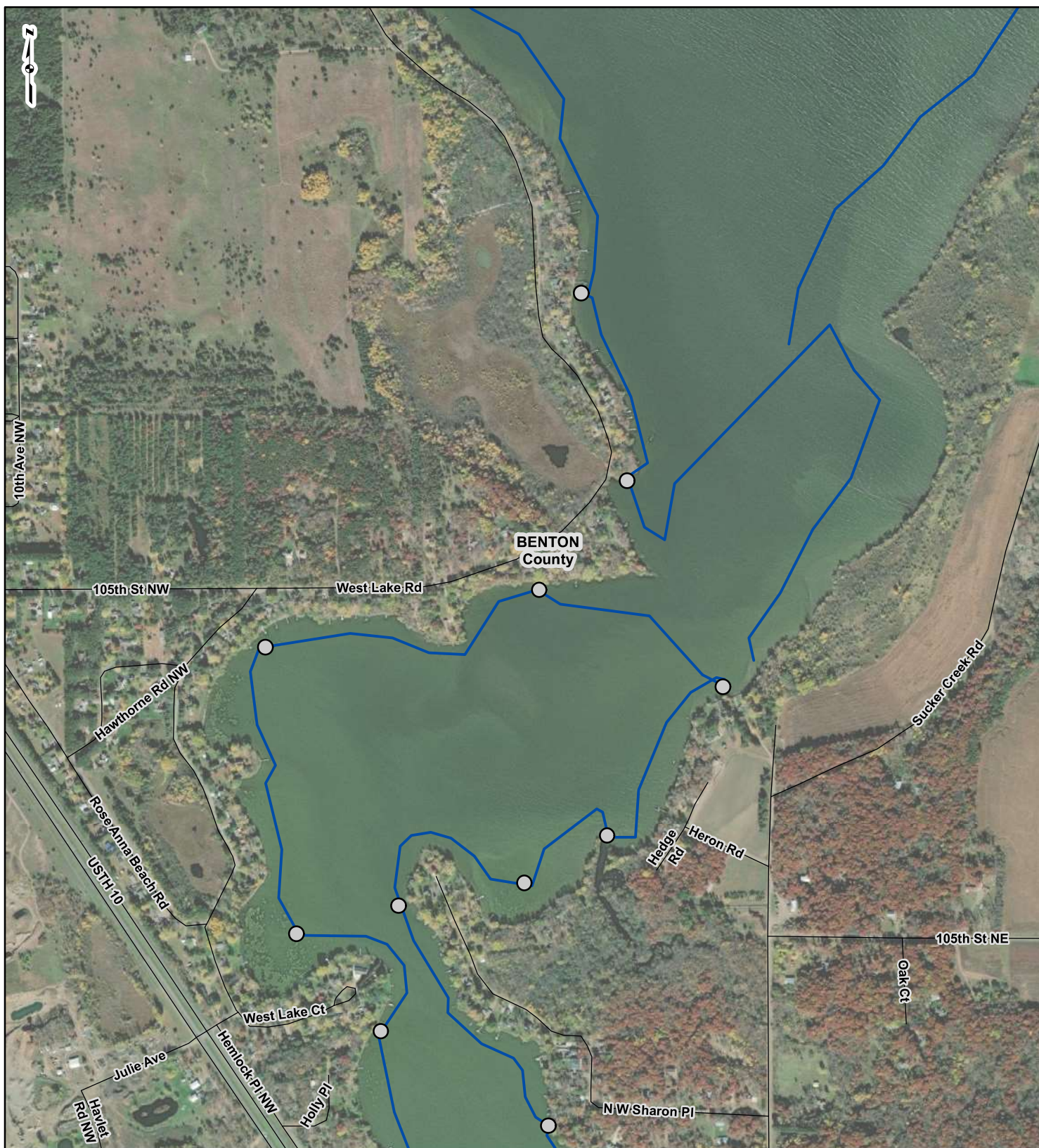


DRAWN BY: EMW  
CHECKED: TDB

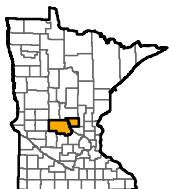
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

- Sampled, Not Present
- ✳ Japanese Knotweed
- ✳ Purple Loosestrife
- Meander Survey
- Road Centerline
- - - Community Boundary
- ▭ County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 9 AQUATIC INVASIVE SPECIES SHEET 8 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS

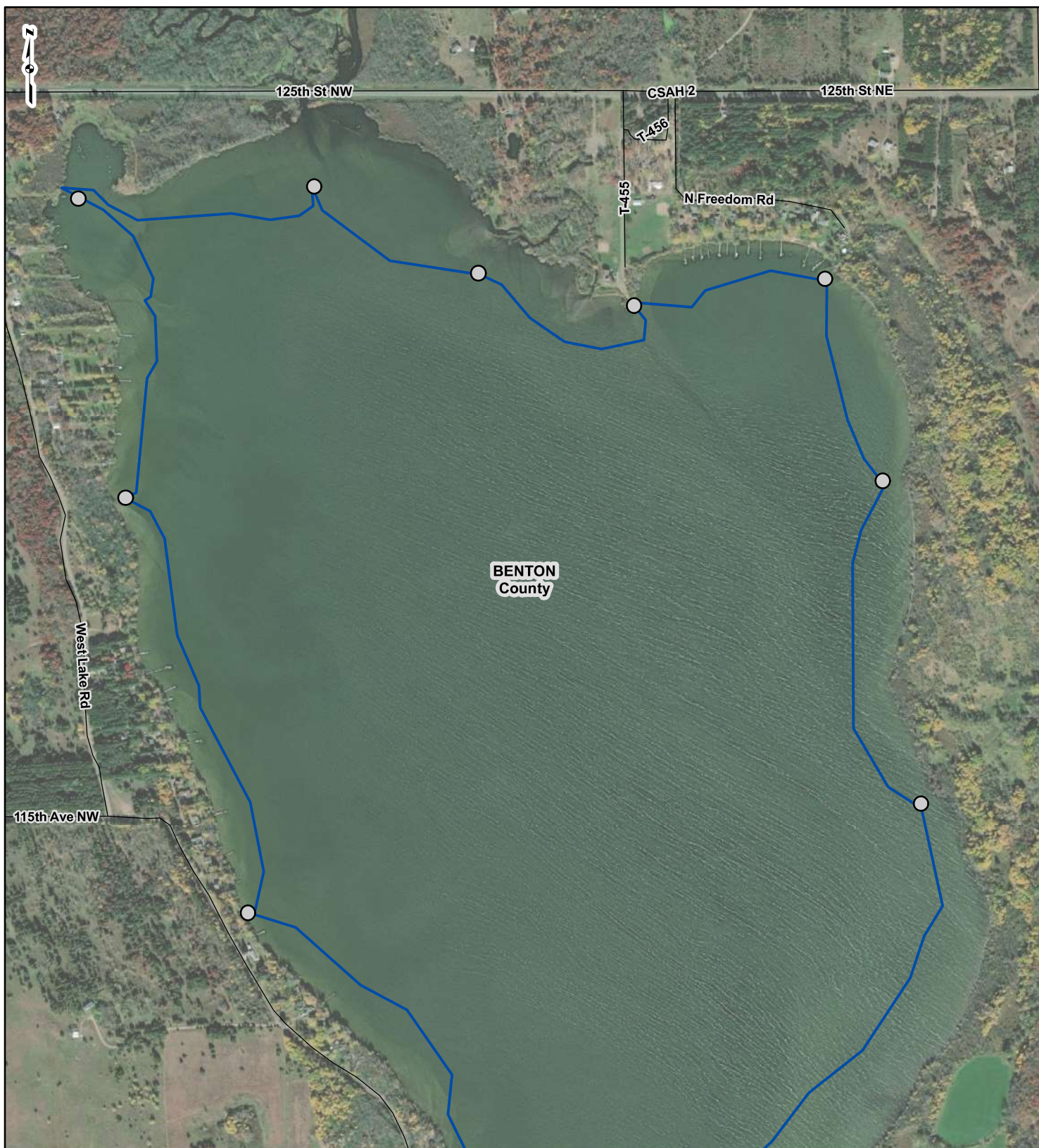


DRAWN BY: EMW  
CHECKED: TDB

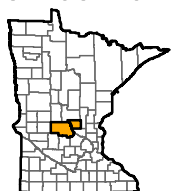
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

- Sampled, Not Present
- ✳ Japanese Knotweed
- ✳ Purple Loosestrife
- Meander Survey
- Road Centerline
- Community Boundary
- ▭ County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 9 AQUATIC INVASIVE SPECIES SHEET 9 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS

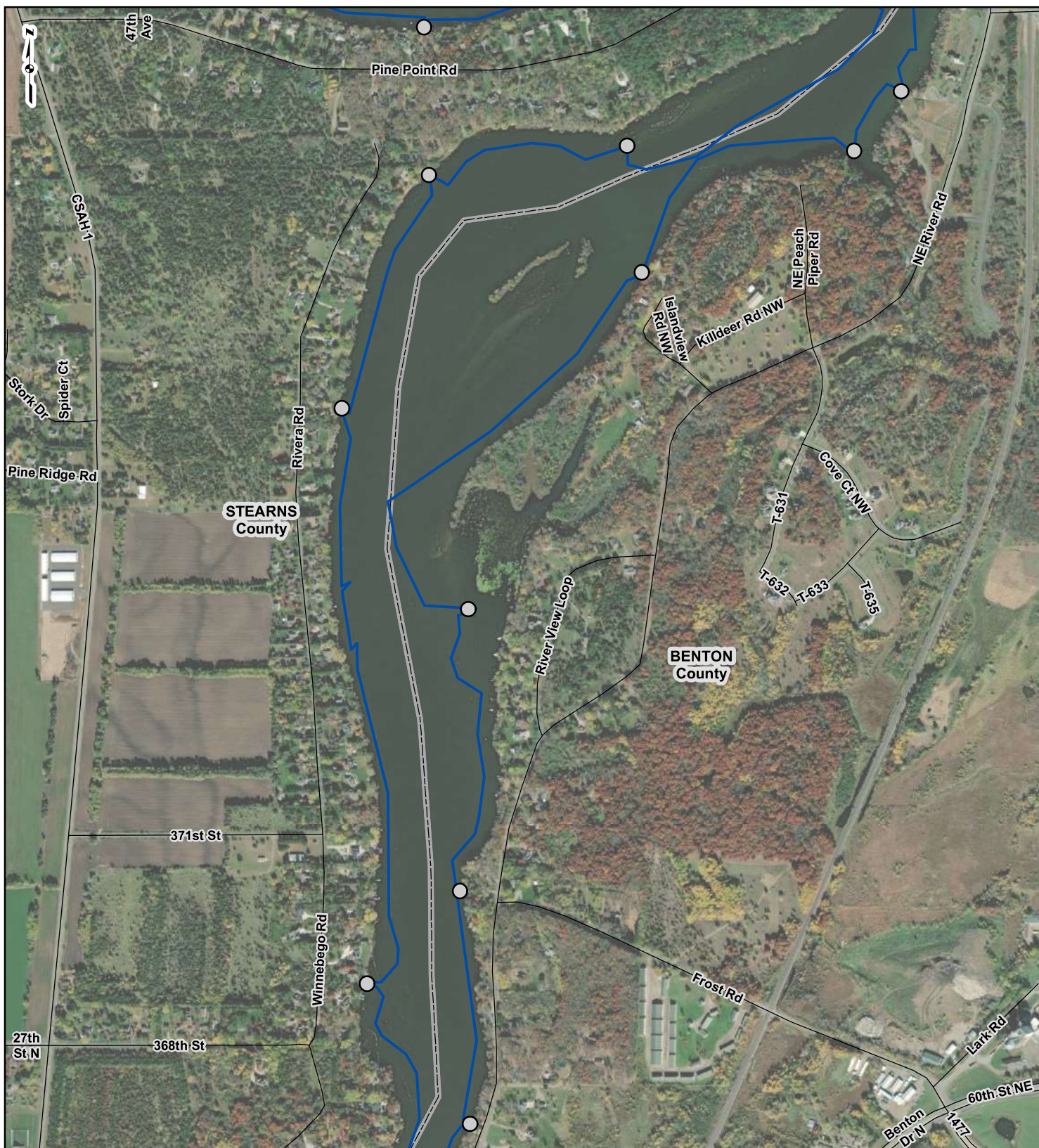


DRAWN BY: EMW  
CHECKED: TDB

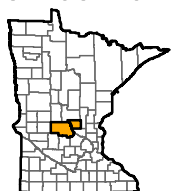
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

- Sampled, Not Present
- ★ Japanese Knotweed
- ★ Purple Loosestrife
- Meander Survey
- Road Centerline
- Community Boundary
- ▭ County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 9 AQUATIC INVASIVE SPECIES SHEET 10 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS



DRAWN BY: EMW  
CHECKED: TDB

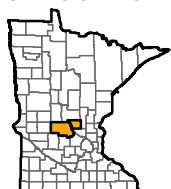
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





#### PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

#### LEGEND

- Sampled, Not Present
- ✱ Japanese Knotweed
- ✱ Purple Loosestrife
- Meander Survey
- Road Centerline
- Community Boundary
- ▭ County Boundary

0 500 1,000 2,000  
Feet

#### FIGURE 9 AQUATIC INVASIVE SPECIES SHEET 11 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS



DRAWN BY: EMW  
CHECKED: TDB

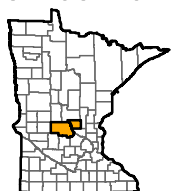
DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.





# PROJECT LOCATION



BENTON AND STEARNS  
COUNTIES, MINNESOTA

## LEGEND

- Sampled, Not Present
- ✱ Japanese Knotweed
- ✱ Purple Loosestrife
- Meander Survey
- Road Centerline
- Community Boundary
- ▭ County Boundary

0 500 1,000 2,000  
Feet

## FIGURE 9 AQUATIC INVASIVE SPECIES SHEET 12 OF 12

SARTELL AQUATIC INVASIVE  
AUGUST 2021 SURVEYS

DRAWN BY: EMW  
CHECKED: TDB

DATE: 9/27/2021  
APPROVED: LLS

REFERENCE: ESRI WORLD IMAGERY 2017, 2018, AND 2020, ACCESSED: 9/27/2021. MN PLSS Counties, 2016. MNDOT Community Boundary, 2003. MNDOT Road Centerlines, 2012.



## **FIGURE 10**

### **Upland Areas Owned by Licensee**







## **ATTACHMENT A**

### **Aquatic Invasive Species Survey Field Data Sheets - June**







Waterbody/Project Sartell Mission Date 6/29/21

Crew Laura Sosa Anna O'Leary

Sampling point	Depth (ft)	Dominant sediment type (M=muck, S=sand, R=Rock)	Sampled holding rake pole (P) or rake rope (R)?	Additional Info - Dominant Substrate type (Clay, Silt, Sand, Gravel, Cobble, Boulder, Bedrock, Wood, Organic)	Total Rake Fullness	Myriophyllum spicatum, Eurasian water-milfoil or Hybrid water-milfoil	Potamogeton crispus, Curly-leaf pondweed	Ceratophyllum demersum, Coontail	Nuphar variegata, Spatterdock	Nymphaea odorata, White water lily	<i>Vol. americana</i>	<i>P. rubrus</i>	Sage - <i>Stuckenia pectinata</i>	<i>Het. dubia</i>	<i>Elodea canadensis</i>	<i>P. zosteriformis</i>	<i>P. foliosus</i>	<i>Ranunculus aquatilis</i>	<i>N. sibiricum</i>
ME 58	4.5	GRV	1																
ME 59	4.0	GRV	1																
ME 54	4.5	GRV	1																
ME 55	4.5	GRV	1																
ME 57	1.8	GRV	1																
ME 58	2.0	GRV	1																
ME 59	4.0	GRV	1																
ME 60	3.0	GRV	1																
ME 61	3.5	GRV	1																
ME 62	2.5	GRV	1																
ME 63	5.0	GRV	1																
ME 64	7.0	GRV	1																
ME 65	3.0	GRV	1																
ME 66	3.0	GRV	1																
ME 67	5.0	GRV	1																
ME 68	8.5	GRV	1																
ME 69	4.5	GRV	1																
ME 70	4.5	GRV	1																
ME 71	3.0	GRV	1																
ME 72	3.0	GRV	1																
ME 73	4.0	GRV	1																
ME 74	6.0	GRV	1																

<<< Little Rock Lake >>>



Sortell Mississipp Date 10/28/21

Seas Anna Cism

[illegible]







## **ATTACHMENT B**

### **Aquatic Invasive Species Survey Field Data Sheets – August**







Part 14, 2014  
cloudy

Waterbody/Project Mississippi Date 8/9/21  
Crew Aura Soto, Kaitlin Buck

Sampling point	Depth (ft)	Dominant sediment type (M=muck, S=Sand, R=Rock)	Sampled holding rake pole (P) or rake rope (R)?	Additional Info - Dominant Substrate type (Clay, Silt, Sand, Gravel, Cobble, Boulder, Bedrock, Wood, Organic)	Total Rake Fullness	Myriophyllum spicatum, Eurasian water-milfoil or Hybrid water-milfoil	Potamogeton crispus, Curly-leaf pondweed	Ceratophyllum demersum, Coontail	Nuphar variegata, Spatterdock	Nymphaea odorata, White water lily	Water celery, Val. americana	Water star grass, Hot stick	Pot. nodosus, longleaf	Eleocharis canadensis	Pot. zosterifolius, flatstem	Eleocharis canadensis
30	4.0	Grav	-	-	-											
31	2.0	Grav	-	-	-											
32	3.5	Grav	-	-	-											
33	3.5	Grav	-	-	-											
34	3.0	Sand	-	-	-											
35	3.0	Grav	-	-	-											
36	3.5	Silt	-	-	-											
37	5.0	Sand	-	-	-											
38	5.0	Grav	-	-	-											
39	5.0	Silt	-	-	-											
40	4.5	Silt	-	-	-											
41	10.0	Silt	-	-	-											
42	3.5	Silt	-	-	-											
43	2.0	Sand	-	-	-											
44	6.5	Silt	-	-	-											
45	3.5	Silt	-	-	-											
46	5.0	Sand	-	-	-											
47	4.5	Sand	-	-	-											
48	4.0	Sand	-	-	-											

30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48



Waterbody/Project Little Rock Creek + Lake  
Swain Date 9/10/2011

8/11/21 Sunny, 75°F, 13 mph NW winds



85°F  
partly cloudy

Crew Laura Sass, Anna Cisar, Yelina Bbuck

Thoroughfare

[illegible]







## **ATTACHMENT C**

### **Photo Log**







## ATIS Study Photographs

	
<p>Algae bloom on the Little Rock Lake with northern watermilfoil 45.705111, -94.169656 June 30, 2021</p>	<p>A view of Little Rock Creek from the boat 45.702767, -94.176125 June 30, 2021</p>
	
<p>Japanese knotweed growing along the Mississippi River shoreline 45.652197, -94.196897 August 10, 2021</p>	<p>Bryozoan growing on coontail 45.647972, -94.201347 August 10, 2021</p>



## ATIS Study Photographs

	
<p>A view of Mississippi River from boat Location information not collected June 29, 2021</p>	<p>Algae bloom on the Little Rock Lake showing senescing curly-leaf pondweed 45.704692, -94.170264 June 30, 2021</p>
	
<p>Native phragmites observed beyond the shoreline of Little Rock Lake 45.747983, -94.181733 June 30, 2021</p>	<p>Northern water milfoil, native aquatic plant 45.705136, -94.169639 June 30, 2021</p>



## ATIS Study Photographs



Cross-section view of a whorl of northern water milfoil  
45.705128, -94.169647  
June 30, 2021



Yellow iris observed along the shoreline of Little Rock Creek  
45.677356, -94.196694  
August 10, 2021



Yellow iris observed along the shoreline of Little Rock Creek.  
45.683028, -94.184648 - Location information not attached to photo properties, but location updated from field notes  
August 10, 2021



Laura Sass showing a rake fullness of 3 including native species, predominantly coontail  
45.68029722, -94.19015553  
June 29, 2021



## **ATTACHMENT D**

### **Terrestrial Survey Field Data Sheet**



August 9, 10, 11 2021

# SANTELL - TERRESTRIAL SHORELINE SURVEY

Project		Site #	Latitude Coordinates		Longitude Coordinates		Terrestrial Invasive Species Monitoring Form																							
County	Section		Relative Abundance	Length of Shoreline	Relative Abundance	Length of Shoreline	Black swallow-wort	Brown knapweed	Canada thistle	Common nasturt	Common barberry	Common tansy	Cutleaf toad	Dalmatian toadflax	Diffuse knapweed	Giant hogweed	Grecian foxglove	Japanese hoppy	Leafy spurge	Meadow knapweed	Narrowleaf buttercup	Oriental bittersweet	Palmier amaranth	Plumeless thistle	Poison hemlock	Yellow starrthistle	Poison hemlock	Purple loosestrife	Wild Parsnip	
		1					NONE	NONE																						
		2					NONE	NONE																						
		3																												
		4																												
		5																												
		6																												
		7																												
		8																												
		9																												
		10																												
		11																												
		12																												
		13																												
		14																												
		15																												
		16																												
		17																												
		18																												
		19																												
		20																												
		21																												
		22																												
		23																												
		24																												
		25																												
		26																												
		27																												
		28																												
		29																												
		30																												

31: NONE







## Little Rock (05001300)

Area: 1,310.66 acres

Littoral Area: 1,240.12 acres

Shore Length: 10.55 miles

Mean Depth: 8 feet

Maximum Depth: 17 feet

Average Water Clarity: 2.4 feet

Choose a survey:

Standard Survey (2020-07-13)



### Water Access Information:

Administrator	Access Type	Notes	Use Type
County	Gravel	COUNTY OWNED ACCESS ON NE SIDE OF LAKE ; NE1/4	Unknown
DNR	Concrete	STATE OWNED ACCESS BY HWY. 10 BRIDGE. SEC 15	Open to Public use

## Fish Sampled

Filters:

all species



all gear



Species	Gear	CPUE	Normal Range	Avg Weight	Normal Range	Count
bigmouth buffalo	Standard gill nets	0.09	0.3-6.1	11.70	N/A	1
black bullhead	Standard gill nets	0.09	4.6-83.0	1.62	0.2-0.6	1



Species	Gear	CPUE	Normal Range	Avg Weight	Normal Range	Count
black crappie	Standard gill nets	14.64	0.8-11.1	0.40	0.2-0.4	161
black crappie	Fall electrofishing	7.00	N/A	0.36	N/A	7
bluegill	Fall electrofishing	10.00	N/A	0.06	N/A	10
brown bullhead	Standard gill nets	0.18	0.6-7.7	0.98	0.4-1.1	2
channel catfish	Standard gill nets	13.73	N/A	3.71	N/A	151
common carp	Standard gill nets	0.36	0.5-9.1	11.44	1.0-4.9	4
largemouth bass	Fall electrofishing	2.00	N/A	0.20	N/A	2
northern pike	Standard gill nets	2.00	1.2-7.8	2.86	1.5-3.0	22
silver redhorse	Standard gill nets	0.09	N/A	2.04	N/A	1
smallmouth bass	Fall electrofishing	5.00	N/A	0.40	N/A	5
walleye	Fall electrofishing	42.00	N/A	0.13	N/A	42
walleye	Standard gill nets	17.18	3.2-15.3	1.35	0.9-1.9	189
white sucker	Standard gill nets	11.18	0.8-5.9	1.91	1.4-2.2	123
yellow perch	Standard gill nets	0.18	3.0-22.5	0.33	0.1-0.4	2



## Length of Select Species Sampled - All Gear Combined

Species	Number of fish caught in each category (inches)													Total
	0-5	6-7	8-9	10-11	12-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50+	
bigmouth buffalo	0	0	0	0	0	0	0	1	0	0	0	0	0	1
black bullhead	0	0	0	0	1	0	0	0	0	0	0	0	0	1
black crappie	12	2	127	27	0	0	0	0	0	0	0	0	0	168
bluegill	10	0	0	0	0	0	0	0	0	0	0	0	0	10
brown bullhead	0	0	0	1	1	0	0	0	0	0	0	0	0	2
common carp	0	0	0	0	0	0	0	2	2	0	0	0	0	4
channel catfish	0	0	1	0	0	27	117	6	0	0	0	0	0	151
largemouth bass	1	0	1	0	0	0	0	0	0	0	0	0	0	2
northern pike	0	0	0	0	0	6	7	8	0	0	0	0	0	21
silver redhorse	0	0	0	0	0	1	0	0	0	0	0	0	0	1
smallmouth bass	0	4	0	0	1	0	0	0	0	0	0	0	0	5
walleye	16	14	29	8	57	89	15	2	0	0	0	0	0	230
white sucker	1	0	1	0	9	112	0	0	0	0	0	0	0	123



### Number of fish caught in each category (inches)

Species	0-5	6-7	8-9	10-11	12-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50+	Total
yellow perch	0	0	2	0	0	0	0	0	0	0	0	0	0	2

## Status of the Fishery

A survey using 11 gill nets was completed on July 13-17, 2020. Fisheries of significance include Walleye, Channel Catfish, Black Crappie, and to a lesser extent, Northern Pike. Little Rock Lake continues to exhibit a fish community typical of a high-nutrient reservoir lacking extensive beds of vegetation.

A total of 189 Walleyes were captured in 2020, the most ever collected since surveys began in 1974. Walleye abundance is being sustained by natural reproduction, no Walleye stocking is necessary. Little Rock's Walleye population can be looked at in an interesting timeline: years prior to 2002, five separate surveys captured Walleyes at a median rate of 3.1 fish/gill net. In survey years following 2002 to today, Walleye catch rates have essentially doubled to a median of 6.0 fish/gill net. The current Walleye catch rate for fish 10 inches and larger is 14.8 fish/gill net. The majority of fish caught were 14-15 inches and 2-3 years old. In-lake habitat conditions are improving and may be a reason for the population upswing. A similar occurrence is happening with Channel Catfish. The population appears to be expanding dramatically from what it was in the early 2000s. At this time, catfish numbers are abundant, and average about 22 inches in length with large individuals exceeding 27 inches. Channel catfish are an excellent sport fish; are hard fighters and can be good eating.

Northern Pike were also caught during the survey but their numbers are low relative to other Area lakes. Because pike reproduce well and have voracious appetites, lower presence often means that other species can do better. The largest pike sampled in 2020 was just under 30 inches, however fish in the 30-36 inch range have been observed in past assessments. Pike prefer clear-water lakes with abundant vegetation so habitat in Little Rock is not ideal at this time.

Because this survey used gill nets only, species such as Bluegill and Black Crappie were not effectively sampled. However, spring trap netting in the past indicates that both species are present, with Black Crappie the more abundant of the two. Over 70% of the crappie caught in the 2020 gill nets were 9 inches or larger. No Bluegill were captured in gill nets in 2020 however Bluegills (some >10 inches) have been measured in past spring trap net



assessments. Similar to other sunfish, Largemouth and Smallmouth Bass are not effectively sampled by gill nets but are included in compendium reports summarizing electrofishing results for various years when sampling occurred. The lack of extensive beds of vegetation is a limiting factor in terms of habitat for species such as Bluegill and Largemouth Bass.

Little Rock Lake received a drawdown from August 1 through September 19, 2019. Maximum pool-drop was 2.8 feet and a pool elevation of about nine feet (from about 11.6 feet) was maintained for a period of four weeks. Visible improvements in water clarity were reported following pool re-fill. Water clarity measurements ranged from 5.0 to 8.6 feet from late September 2019 to October 2020. Early indications are that aquatic vegetation, whether planted during the drawdown or naturally germinated as a result of the drawdown, has been noticeably more extensive and abundant.

## For More Information

Little Falls Area Fisheries Supervisor  
16543 Haven Rd  
Little Falls, MN

**Phone:** 320-232-1060

**Email:** [LittleFalls.Fisheries@state.mn.us](mailto:LittleFalls.Fisheries@state.mn.us) (mailto:LittleFalls.Fisheries@state.mn.us)

**Website** (</areas/fisheries/littlefalls/index.html>)

---

*We use [JSON](http://www.json.org/) (<http://www.json.org/>), a lightweight data-interchange format, to deliver the lake survey data. If you are an application developer, you can access this data to develop custom reports and products - [get the data](https://maps2.dnr.state.mn.us/cgi-bin/lakefinder/detail.cgi?type=lake_survey&id=05001300) ([https://maps2.dnr.state.mn.us/cgi-bin/lakefinder/detail.cgi?type=lake\\_survey&id=05001300](https://maps2.dnr.state.mn.us/cgi-bin/lakefinder/detail.cgi?type=lake_survey&id=05001300)).*

---

### Questions?

Call 651-296-6157 or 888-646-6367

Email us: [info.dnr@state.mn.us](mailto:info.dnr@state.mn.us)

### Sign up for email updates

Email address

Subscribe









**APPENDIX E-18      Sartell IPaC Resource List**





# United States Department of the Interior



## FISH AND WILDLIFE SERVICE

Minnesota-Wisconsin Ecological Services Field Office  
4101 American Blvd E

Bloomington, MN 55425-1665

Phone: (952) 252-0092 Fax: (952) 646-2873

<http://www.fws.gov/midwest/Endangered/section7/s7process/step1.html>

In Reply Refer To:

April 22, 2022

Project Code: 2022-0034970

Project Name: Sartell Hydroelectric Project

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

This response has been generated by the Information, Planning, and Conservation (IPaC) system to provide information on natural resources that could be affected by your project. The U.S. Fish and Wildlife Service (Service) provides this response under the authority of the Endangered Species Act of 1973 (16 U.S.C. 1531-1543), the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d), the Migratory Bird Treaty Act (16 U.S.C. 703-712), and the Fish and Wildlife Coordination Act (16 U.S.C. 661 *et seq.*).

### Threatened and Endangered Species

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and may be affected by your proposed project. The species list fulfills the requirement for obtaining a Technical Assistance Letter from the U.S. Fish and Wildlife Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. The Service recommends that verification be completed by visiting the ECOS IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS IPaC system by completing the same process used to receive the enclosed list.

### Consultation Technical Assistance

Please refer to our [Section 7 website](#) for guidance and technical assistance, including [step-by-step instructions](#) for making effects determinations for each species that might be present and for specific guidance on the following types of projects: projects in developed areas, HUD, CDBG, EDA, pipelines, buried utilities, telecommunications, and requests for a Conditional Letter of Map Revision (CLOMR) from FEMA.



### Using the IPaC Official Species List to Make No Effect and May Affect Determinations for Listed Species

1. If IPaC returns a result of “There are no listed species found within the vicinity of the project,” then project proponents can conclude the proposed activities will have **no effect** on any federally listed species under Service jurisdiction. Concurrence from the Service is not required for **no effect** determinations. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records.
2. If IPaC returns one or more federally listed, proposed, or candidate species as potentially present in the action area of the proposed project – other than bats (see below) – then project proponents must determine if proposed activities will have **no effect** on or **may affect** those species. For assistance in determining if suitable habitat for listed, candidate, or proposed species occurs within your project area or if species may be affected by project activities, you can obtain [Life History Information for Listed and Candidate Species](#) on our office website. If no impacts will occur to a species on the IPaC species list (e.g., there is no habitat present in the project area), the appropriate determination is **no effect**. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records.
3. Should you determine that project activities **may affect** any federally listed, please contact our office for further coordination. Letters with requests for consultation or correspondence about your project should include the Consultation Tracking Number in the header. Electronic submission is preferred.

### Northern Long-Eared Bats

Northern long-eared bats occur throughout Minnesota and Wisconsin and the information below may help in determining if your project may affect these species.

This species hibernates in caves or mines only during the winter. In Minnesota and Wisconsin, the hibernation season is considered to be November 1 to March 31. During the active season (April 1 to October 31) they roost in forest and woodland habitats. Suitable summer habitat for northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags  $\geq 3$  inches dbh for northern long-eared bat that have exfoliating bark, cracks, crevices, and/or hollows), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) of forested/wooded habitat. Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat and evaluated for use by bats. If your project will impact caves or mines or will involve clearing forest or woodland habitat containing suitable roosting habitat, northern long-eared bats could be affected.

Examples of unsuitable habitat include:

- Individual trees that are greater than 1,000 feet from forested or wooded areas,
  - Trees found in highly developed urban areas (e.g., street trees, downtown areas),
-



- A pure stand of less than 3-inch dbh trees that are not mixed with larger trees, and
- A stand of eastern red cedar shrubby vegetation with no potential roost trees.

If IPaC returns a result that northern long-eared bats are potentially present in the action area of the proposed project, project proponents can conclude the proposed activities **may affect** this species **IF** one or more of the following activities are proposed:

- Clearing or disturbing suitable roosting habitat, as defined above, at any time of year,
- Any activity in or near the entrance to a cave or mine,
- Mining, deep excavation, or underground work within 0.25 miles of a cave or mine,
- Construction of one or more wind turbines, or
- Demolition or reconstruction of human-made structures that are known to be used by bats based on observations of roosting bats, bats emerging at dusk, or guano deposits or stains.

*If none of the above activities are proposed*, project proponents can conclude the proposed activities will have **no effect** on the northern long-eared bat. Concurrence from the Service is not required for **No Effect** determinations. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records.

*If any of the above activities are proposed*, please use the northern long-eared bat determination key in IPaC. This tool streamlines consultation under the 2016 rangewide programmatic biological opinion for the 4(d) rule. The key helps to determine if prohibited take might occur and, if not, will generate an automated verification letter. No further review by us is necessary.

*Please note that on March 23, 2022, the Service published a proposal to reclassify the northern long-eared bat as endangered under the Endangered Species Act. The U.S. District Court for the District of Columbia has ordered the Service to complete a new final listing determination for the bat by November 2022 (Case 1:15-cv-00477, March 1, 2021). The bat, currently listed as threatened, faces extinction due to the range-wide impacts of white-nose syndrome (WNS), a deadly fungal disease affecting cave-dwelling bats across the continent. The proposed reclassification, if finalized, would remove the current 4(d) rule for the NLEB, as these rules may be applied only to threatened species. Depending on the type of effects a project has on NLEB, the change in the species' status may trigger the need to re-initiate consultation for any actions that are not completed and for which the Federal action agency retains discretion once the new listing determination becomes effective (anticipated to occur by December 30, 2022). If your project may result in incidental take of northern long-eared bats after the new listing goes into effect this will first need to be addressed in an updated consultation that includes an Incidental Take Statement. If your project may require re-initiation of consultation, please contact our office for additional guidance.*

### **Whooping Crane**

Whooping crane is designated as a non-essential experimental population in Wisconsin and consultation under Section 7(a)(2) of the Endangered Species Act is only required if project activities will occur within a National Wildlife Refuge or National Park. If project activities are proposed on lands outside of a National Wildlife Refuge or National Park, then you are not required to consult. For additional information on this designation and consultation requirements, please review "[Establishment of a Nonessential Experimental Population of](#)

---



[Whooping Cranes in the Eastern United States.”](#)

### **Other Trust Resources and Activities**

*Bald and Golden Eagles* - Although the bald eagle has been removed from the endangered species list, this species and the golden eagle are protected by the Bald and Golden Eagle Act and the Migratory Bird Treaty Act. Should bald or golden eagles occur within or near the project area please contact our office for further coordination. For communication and wind energy projects, please refer to additional guidelines below.

*Migratory Birds* - The Migratory Bird Treaty Act (MBTA) prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Service. The Service has the responsibility under the MBTA to proactively prevent the mortality of migratory birds whenever possible and we encourage implementation of [recommendations that minimize potential impacts to migratory birds](#). Such measures include clearing forested habitat outside the nesting season (generally March 1 to August 31) or conducting nest surveys prior to clearing to avoid injury to eggs or nestlings.

*Communication Towers* - Construction of new communications towers (including radio, television, cellular, and microwave) creates a potentially significant impact on migratory birds, especially some 350 species of night-migrating birds. However, the Service has developed [voluntary guidelines for minimizing impacts](#).

*Transmission Lines* - Migratory birds, especially large species with long wingspans, heavy bodies, and poor maneuverability can also collide with power lines. In addition, mortality can occur when birds, particularly hawks, eagles, kites, falcons, and owls, attempt to perch on uninsulated or unguarded power poles. To minimize these risks, please refer to [guidelines](#) developed by the Avian Power Line Interaction Committee and the Service. Implementation of these measures is especially important along sections of lines adjacent to wetlands or other areas that support large numbers of raptors and migratory birds.

*Wind Energy* - To minimize impacts to migratory birds and bats, wind energy projects should follow the Service's [Wind Energy Guidelines](#). In addition, please refer to the Service's [Eagle Conservation Plan Guidance](#), which provides guidance for conserving bald and golden eagles in the course of siting, constructing, and operating wind energy facilities.

### **State Department of Natural Resources Coordination**

While it is not required for your Federal section 7 consultation, please note that additional state endangered or threatened species may also have the potential to be impacted. Please contact the Minnesota or Wisconsin Department of Natural Resources for information on state listed species that may be present in your proposed project area.

#### *Minnesota*

[Minnesota Department of Natural Resources - Endangered Resources Review Homepage](#)

Email: [Review.NHIS@state.mn.us](mailto:Review.NHIS@state.mn.us)

#### *Wisconsin*

[Wisconsin Department of Natural Resources - Endangered Resources Review Homepage](#)

Email: [DNRERReview@wi.gov](mailto:DNRERReview@wi.gov)

---



We appreciate your concern for threatened and endangered species. Please feel free to contact our office with questions or for additional information.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds
- Wetlands



## Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

**Minnesota-Wisconsin Ecological Services Field Office**

4101 American Blvd E

Bloomington, MN 55425-1665

(952) 252-0092

---



## Project Summary

Project Code: 2022-0034970

Event Code: None

Project Name: Sartell Hydroelectric Project

Project Type: Dam - Maintenance/Modification

Project Description: Sartell Dam located in Sartell, Minnesota.

Project Location:

Approximate location of the project can be viewed in Google Maps: [https://](https://www.google.com/maps/@45.67314695,-94.19235583762826,14z)

[www.google.com/maps/@45.67314695,-94.19235583762826,14z](https://www.google.com/maps/@45.67314695,-94.19235583762826,14z)



Counties: Benton and Stearns counties, Minnesota

---



## Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries<sup>1</sup>, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

- 
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

## Mammals

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9045">https://ecos.fws.gov/ecp/species/9045</a>	Threatened

## Insects

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9743">https://ecos.fws.gov/ecp/species/9743</a>	Candidate

## Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

---



## **USFWS National Wildlife Refuge Lands And Fish Hatcheries**

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

---



## Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

- 
1. The [Migratory Birds Treaty Act](#) of 1918.
  2. The [Bald and Golden Eagle Protection Act](#) of 1940.
  3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
<b>Bald Eagle <i>Haliaeetus leucocephalus</i></b> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Dec 1 to Aug 31
<b>Black-billed Cuckoo <i>Coccyzus erythrophthalmus</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9399">https://ecos.fws.gov/ecp/species/9399</a>	Breeds May 15 to Oct 10

---



## Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

### Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is  $0.25/0.25 = 1$ ; at week 20 it is  $0.05/0.25 = 0.2$ .
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

### Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

### Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

### No Data (—)

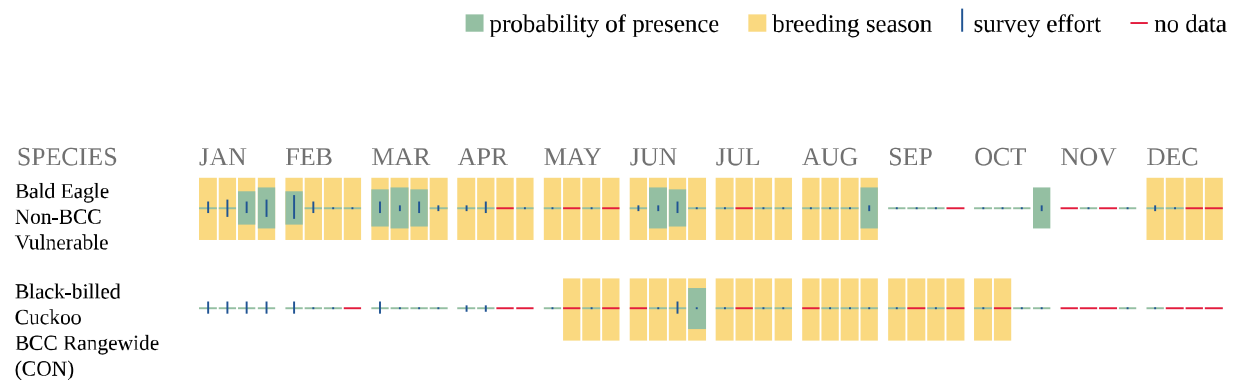
A week is marked as having no data if there were no survey events for that week.

### Survey Timeframe

---



Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Additional information can be found using the following links:

- Birds of Conservation Concern <https://www.fws.gov/program/migratory-birds/species>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>

## Migratory Birds FAQ

**Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.**

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

**What does IPaC use to generate the migratory birds potentially occurring in my specified location?**

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as



warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [AKN Phenology Tool](#).

### **What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?**

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

### **How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?**

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

### **What are the levels of concern for migratory birds?**

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

---



**Details about birds that are potentially affected by offshore projects**

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

**What if I have eagles on my list?**

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

**Proper Interpretation and Use of Your Migratory Bird Report**

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

---



## Wetlands

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

WETLAND INFORMATION WAS NOT AVAILABLE WHEN THIS SPECIES LIST WAS GENERATED.  
PLEASE VISIT [HTTPS://WWW.FWS.GOV/WETLANDS/DATA/MAPPER.HTML](https://www.fws.gov/wetlands/data/mapper.html) OR CONTACT THE FIELD OFFICE FOR FURTHER INFORMATION.

---



## **IPaC User Contact Information**

Agency: Mead and Hunt

Name: Arianna Bresnan

Address: 2440 Deming Way

City: Middleton

State: WI

Zip: 53562

Email: arianna.bres@gmail.com

Phone: 6084430316

---



**APPENDIX E-19      BITP-BITA for Wisconsin Cave Bats**



# **Broad Incidental Take Permit and Broad Incidental Take Authorization for Wisconsin Cave Bats**

## **Conservation Plan - May 2020**

---

During this COVID-19 pandemic, there is increasing concern that symptomatic or asymptomatic humans could inadvertently pass the virus that causes COVID-19 disease in humans to mammals, including bats, during handling. As a reminder, any handling of bats by a pest control operator requires an Endangered/Threatened (E/T) Species Permit (this is not required for a landowner). In addition, please be sure to continue following disinfection protocols for any equipment used during bat removals or exclusions (see Appendix 4).

The department has issued this broad incidental take authorization (used by state agencies) and broad incidental take permit (used by non-state agencies and individuals), as provided for under s. 29.604, Wis. Stats., to allow for the incidental taking of state listed cave bats in Wisconsin that may occur as a result of specific public health concerns, bat removals, building demolitions, tree cutting, bridge demolitions, miscellaneous building repairs and wind energy development projects.

This permit and authorization cover the above activities only if the associated minimization measures are followed and take is reported (where required). These measures must be followed when a bat is present or suspected to be present (e.g., evidence of bat presence, Endangered Resources Review). Please note that the northern long-eared bat is currently listed as threatened in Wisconsin and threatened with 4(d) rule at the federal level by the United States Fish and Wildlife Service (USFWS, <http://www.fws.gov/Midwest/endangered/mammals/nleb/index.html>). For the activities listed above, this Conservation Plan includes both state and federal requirements. The state cannot permit or authorize take of a federally listed species, however this Conservation Plan was written to incorporate both state and federal requirements.

For activities not listed above, contact the Wisconsin Department of Natural Resources' Endangered Resources Review Program ([DNRRERReview@wi.gov](mailto:DNRRERReview@wi.gov)) for more information on state and federal requirements. Please note that building demolition, tree cutting, bridge projects, miscellaneous building projects and wind energy development typically require a full Endangered Resources Review <http://dnr.wi.gov/topic/ERReview/Review.html> to determine impacts to other wildlife species as well.

An incidental take permit or authorization is typically issued on a project-by-project basis, however a broad incidental take permit and broad incidental take authorization were created for this situation so that neither an application nor a permit fee are required. An individual following the minimization measures listed below is automatically covered by this broad incidental take permit/authorization. Take will be minimized by following specific minimization measures and the Department has concluded that the projects covered under this permit/authorization are not likely to jeopardize the continued existence and recovery of the state population of these bats or the whole plant-animal community of which they are a part; and has benefit to the public health, safety or welfare that justifies the action.



## **Project Location**

Statewide

## **Project Information**

This permit/authorization cover specific public health concerns, bat removals, building demolitions, forestry activities, bridge demolitions, miscellaneous building repairs and wind energy development projects as described in *Minimization Measures*.

## **Species Information**

This permit/authorization cover all cave bats currently listed in Wisconsin (NR 27.07, Wis. Admin. Code):

- Big brown bat (*Eptesicus fuscus*) – State Threatened  
The big brown bat is a large insectivorous bat, weighing 15.0-26.0 grams. Fur color is russet to dark brown, and the muzzle is black and hairless. In summer, big brown bats commonly roost in artificial structures such as barns, but these bats will also use crevices in trees and rock faces. Big brown bats migrate short distances to caves and mines where they will hibernate for the winter.
- Eastern pipistrelle (*Perimyotis subflavus*) – State Threatened  
The eastern pipistrelle is Wisconsin's smallest bat weighing 4.0-8.0 grams. Fur color ranges from golden brown to reddish brown, and the wing membrane is black with red forearms. The eastern pipistrelle is an insectivorous bat. In summer, these bats commonly roost in the branches of deciduous trees disguised as a leaf. This species migrates short distances to caves and mines in the fall where they hibernate over the winter.
- Little brown bat (*Myotis lucifugus*) – State Threatened  
The little brown bat is a medium-sized member of the genus *Myotis*. This insectivorous bat weighs 5.0-12.5 grams, and has tan, reddish-brown or dark brown fur. This species commonly uses artificial structures such as attics and barns as summer roosting sites, but will also roost in crevices and cavities of trees. In fall, little brown bats make local long-distance migrations of up to 279 miles to caves and mines where they will hibernate for the winter.
- Northern long-eared bat (*Myotis septentrionalis*) – State Threatened and Federally Threatened  
The northern long-eared bat is dark brown with a gray belly, weighing 5.0-8.0 grams and is insectivorous. In summer this bat roosts in trees behind loose bark and in cracks/crevices/holes along the trunk of the tree. It rarely roosts in artificial structures. Unlike most of the state's bats, this species commonly forages in forest interior. In fall the northern long-eared bat migrates to caves and mines where they will hibernate for the winter.

## **Likely Impact to Species**

Although minimization measures to protect the big brown bat, eastern pipistrelle, little brown bat and northern long-eared bat are incorporated into this broad incidental take permit/authorization, it is not possible to fully avoid incidental take of these species in all situations. Due to the nature of activities covered under this permit/authorization, it is difficult to determine the exact number of individuals that could be taken as a result of the project; however take will be minimized by following specific minimization measures. The Department has concluded that the take allowed for under this permit/authorization is not likely to jeopardize the continued existence and recovery of the state



population of these bats or the whole plant-animal community of which they are a part.

### **Alternative Actions**

The following alternatives were considered for this permit/authorization:

*Alternative 1: Do not allow for any take of cave bats.*

This alternative was determined to not be feasible, due to the large number of affected activities, and is not an appropriate public health decision.

*Alternative 2: Do not allow for any take of cave bats during the summer roosting period but allow for some take throughout the remainder of the year.*

This alternative was determined to not be feasible, due to the large number of affected activities that occur during the summer roosting period, and is not an appropriate public health decision.

*Alternative 3: Allow for some take of cave bats, with minimization measures in place, during the summer roosting period and throughout the remainder of the year.*

This option was the preferred alternative because it addresses public health concerns; protects a large number of bats; and allows for most affected activities to continue as planned, or with minimal modifications.

### **Minimization Measures**

This permit/authorization covers the activities listed below only if the associated minimization measures are followed and take is reported (where required). These measures must be followed when a bat is present or suspected to be present (e.g., evidence of bat presence, Endangered Resources Review). Please note that the northern long-eared bat is currently listed as threatened in Wisconsin and threatened with 4(d) rule at the federal level by the United States Fish and Wildlife Service (USFWS, <http://www.fws.gov/Midwest/endangered/mammals/nleb/index.html>). For the activities listed below, this Conservation Plan includes both state and federal requirements. The state cannot permit or authorize take of a federally listed species, however this Conservation Plan was written to incorporate both state and federal requirements.

For activities not listed below, contact the Wisconsin Department of Natural Resources' Endangered Resources Review Program ([DNRRERReview@wi.gov](mailto:DNRRERReview@wi.gov)) for more information on state and federal requirements. Please note that building demolition, tree cutting, bridge projects, miscellaneous building projects and wind energy development typically require a full Endangered Resources Review <http://dnr.wi.gov/topic/ERReview/Review.html> to determine impacts to other wildlife species as well.

*Note: Take covered under this permit/authorization must be reported within 5 working days (where required below). Take not reported within 5 working days is not legally covered and is in violation of the Wisconsin Endangered Species Law (s. 29.604, Wis. Stats.). Reports can be submitted via email ([DNRBats@wi.gov](mailto:DNRBats@wi.gov)), or by submitting a sick/dead bat report using the form: <http://wiatri.net/Inventory/Bats/Report/BatForm.cfm>. When using the form, state that you are reporting take in the "Additional Comments" section.*



## A. Health Exceptions

The landowner, rather than the DNR, is allowed to determine if they believe there is a health risk under this section (Section A).

Centers for Disease Control and Prevention (CDC) protocols should be followed for all situations where rabies or histoplasmosis is a possibility or may become a possibility if action is not taken (see Appendix 1).

Additionally, exclusions completed from June 1 through August 15 must be reported to the Department by submitting a Health Exemption Form in order to be covered under this permit or authorization. The landowner is responsible for completing and submitting the form, which is available online (<http://dnr.wi.gov/topic/erreview/itbats.html>). This form must be completed and submitted to the Department within **5 working days of start of work**.

If an activity qualifies as a health exception, it is exempt from timing minimization measures, and maximum take limits, but exclusions done during the non-exclusion period for human health reasons must still minimize take by following the approved exclusion protocols listed in Appendix 5. Exclusion practices used that are not described in Appendix 5 are in violation of this permit/authorization.

## B. Bat Removals and Exclusions

Exclusion is defined as the process of allowing a colony of bats to leave the structure but not re-enter (i.e., use of one-way doors, see Appendices 2 and 5). Physically removing the colony of bats is not included in the definition of exclusion and is not covered under this section of the permit/authorization. Bats may be removed from the living space of a building at any time (see B.1. below).

Approved exclusion practices may be reviewed in Appendix 5. Exclusion practices used that are not described in Appendix 5 are in violation of this permit/authorization

If bats must be handled or transported for any reason during the exclusion process, the person conducting the exclusion must possess a valid Endangered/Threatened (E/T) Species Permit (<http://dnr.wi.gov/topic/endangeredresources/permits.html>). By obtaining the E/T Permit, the pest control operator can assure the landowner that practices used by the pest control company are in accordance with state law and no fines should incur while exclusion is completed. If bats must be handled during the exclusion, an E/T Permit holder (i.e. a rehabilitator or licensed pest control operator) may be contacted to handle the bats.

Practices that cause intentional take of the bats (i.e., sticky traps, sealing the entry/exit points to the roost with bats inside, large-hole netting that traps bats) are not considered exclusion methods, are not covered under this permit/authorization and are in violation of Wisconsin's Endangered Species Law (s. 29.604, Wis. Stats.).

### 1. Living Space or Place of Work

A living space is defined as a place of residence that is routinely and consistently inhabited. A living space does not include attics that are empty or used as storage.

If individual bats (5 or fewer) enter a living space or place of work, reasonable attempts must first be made to remove or exclude the bats alive and unharmed (see Appendix 2). If individual bats cannot realistically be removed unharmed, up to 5 bats may be killed for the purpose of removing them from a living space or place of work. No more than 5 bats may be



killed within any 24 hour period and a maximum of 10 bats may be killed from June 1 – August 15 (**take report recommended – see “Note” above**).

Removals and exclusions from June 1 – August 15 are allowed in hospitals, medical clinics, day cares centers, nursing homes, assisted living facilities and restaurants.

2. Storage Areas, Attics, Barns, etc.

Bats found in storage areas, attics, barns, etc., may be excluded from the area August 16 – May 31 (see Appendix 2). Exclusion may not occur from June 1 – August 15 unless a health exemption report form is filed (see Section A).

3. In an effort to help curb the spread of white-nose syndrome (WNS), bat exclusion professionals and pest control operators must follow these guidelines concerning cleaning equipment (NR 40, Wis. Admin. Code.):

- Equipment used outside of Wisconsin should be thoroughly cleaned and disinfected before use in Wisconsin following the protocols in Appendix 4.
- Equipment used at multiple sites within Wisconsin should be cleaned thoroughly and disinfected between uses following the protocols in Appendix 4. Materials that come in direct contact with bats such as bat cones or exclusion devices should not be used at multiple sites and should be discarded after use.

C. Building Demolition

*Please note that timing restrictions in this section vary slightly from those listed for other activities. Bats typically leave summer roosts (in buildings or other locations) in late fall and begin to return in early spring. However, one bat species in Wisconsin is known to hibernate in buildings in winter. Bats are not actively flying during winter hibernation and can appear dead. As a result, traditional exclusion methods do not work.*

1. For projects occurring where there is no evidence of bat presence (see Appendix 3), there are no restrictions.
2. For building demolition occurring from June 1 – August 15, where there is evidence of bat presence (see Appendix 3):
  - Building demolition and bat exclusions are generally not permitted during this time period in order to protect flightless pups in the roost. Exclusion and subsequent demolition may occur only if the bats are considered by the landowner to be a health risk. In these situations, a health exemption form must be completed within 5 days of starting work (see section A).
3. For building demolition occurring from August 16 – October 31 or March 16 – May 31, where there is evidence of bat presence (see Appendix 3):
  - Bats must be excluded from the building for at least 7 consecutive days immediately prior to demolition. Full exclusion is not required if the building is unsafe to enter, however reasonable attempts should still be made to exclude as many bats as possible while keeping all people safe. (Report required for unsafe buildings – see “Note” on Page 3.)
4. For building demolition occurring from November 1 – March 15, where there is evidence of bat presence (see Appendix 3):



- For any bats found prior to demolition work or encountered during the demolition phase, attempts must be made to transfer the bats to a wildlife rehabilitator for the remainder of the hibernation period OR the DNR's bat biologists must be consulted for additional options (Paul White, 608-267-0813 and [john.white@wi.gov](mailto:john.white@wi.gov), or Heather Kaarakka, 608-266-2576 and [heather.kaarakka@wi.gov](mailto:heather.kaarakka@wi.gov)).

#### D. Tree Cutting

Northern long-eared bats are federally protected in trees that are known maternity roosts (from June 1 – July 31) and in areas where known hibernacula could be impacted (including tree removal within 0.25 miles of a hibernacula entrance). If you will be cutting trees, please have an Endangered Resources Review <http://dnr.wi.gov/topic/ERReview/Review.html> conducted to determine if known northern long-eared bat maternity roosts or hibernacula exist near your project. If the Endangered Resources Review states that these areas do not exist near your project, there are no restrictions for tree cutting; however special consideration should be given to protecting snags or dying trees, particularly from June 1 – August 15.

#### E. Bridge Projects

The process for assessing transportation project impacts to listed species and the associated minimization measures will follow existing protocols.

1. Bridge repairs or demolition occurring from August 16 – May 31 do not have any restrictions. If bats are present, reasonable attempts should be made to prevent take by excluding the bats from the structure prior to demolition.
2. Emergency bridge repairs or demolition occurring from June 1 – August 15 are covered under this permit/authorization but must be reported within 5 working days (**report required – see “Note” above**).
3. Non-emergency bridge repairs or demolition may not occur from June 1 - August 15 unless bats are excluded prior to April 1 to prevent bats from using the bridge during the maternity period.

#### F. Miscellaneous Building Projects (e.g., roofing, painting, siding)

1. For projects occurring where there is no evidence of bat presence (see Appendix 3):
  - Full bat exclusions are not required.
  - If roofing, painting or siding and bats are found incidentally under shingles or roof vents, or behind shutters or siding, set the shutters or siding down and leave the area. Once the bats have left, continue with repairs. If bats do not leave, attempts should be made to transfer the bats to a wildlife rehabilitator OR the DNR's bat biologists should be consulted for additional options (Paul White, 608-267-0813 and [john.white@wi.gov](mailto:john.white@wi.gov), or Heather Kaarakka, 608-266-2576 and [heather.kaarakka@wi.gov](mailto:heather.kaarakka@wi.gov)).
2. For projects occurring from June 1 – August 15, where there is known bat presence (see Appendix 3):
  - Building projects with the potential to impact bats and bat exclusions are generally not permitted during this time period in order to protect flightless pups in the roost. Exclusion and subsequent building repairs may occur only if the bats are considered

by the landowner to be a health risk. In these situations, a health exemption form must be completed within 5 days of starting work (see section A).

- If roofing, painting or siding and bats are found incidentally under shingles or roof vents, or behind shutters or siding, set the shutters or siding down and leave the area. Once the bats have left, continue with repairs. If bats do not leave, attempts should be made to transfer the bats to a wildlife rehabilitator OR the DNR's bat biologists should be consulted for additional options (Paul White, 608-267-0813 and [john.white@wi.gov](mailto:john.white@wi.gov), or Heather Kaarakka, 608-266-2576 and [heather.kaarakka@wi.gov](mailto:heather.kaarakka@wi.gov)). Note that full bat exclusions are not required when bats are only incidentally found during miscellaneous building projects.
3. Projects occurring from August 16 – May 31 where there is known bat presence (see Appendix 3):
- Take should be minimized during the course of the project by following applicable exclusion protocols listed in Appendix 5. Exclusion practices used that are not described in Appendix 5 are in violation of this permit/authorization.
  - If roofing, painting or siding and bats are found incidentally under shingles or roof vents, or behind shutters or siding, set the shutters or siding down and leave the area. Once the bats have left, continue with repairs. If bats do not leave, attempts should be made to transfer the bats to a wildlife rehabilitator OR the DNR's bat biologists should be consulted for additional options (Paul White, 608-267-0813 and [john.white@wi.gov](mailto:john.white@wi.gov), or Heather Kaarakka, 608-266-2576 and [heather.kaarakka@wi.gov](mailto:heather.kaarakka@wi.gov)). Note that full bat exclusions are not required when bats are only incidentally found during miscellaneous building projects.

#### G. Wind Energy Development

Wind energy projects typically affect tree bat species (not currently listed) and only impact cave bat species in certain situations (e.g., projects located near cave bat hibernacula may increase the occurrence of impacts to cave bats especially during fall migration in August and September). Further, there is not enough data at this time to determine the impact of potential mortality to local bat populations. Because of this uncertainty and the scope of impacts, no additional actions, above those currently requested by the Department, will be required of this industry at this time.

#### **Mitigation**

For every take of a cave bat that occurs, reasonable attempts must be made to prevent future take in the same area (e.g., exclusion of bats from the area, sealing of siding or eaves after bats are gone).

#### **Responsible Parties**

Landowners are responsible for all actions and costs incurred as a result of following this Broad Incidental Take Permit/Authorization.

#### **Funding**

Landowners are responsible for all costs incurred as a result of following this Broad Incidental Take Permit/Authorization.



Appendix 1: Health Information

Appendix 2: Removing and Excluding Bats

Appendix 3: Determining Bat Presence

Appendix 4. Cleaning and Disinfection Protocols for Bat Exclusion Professionals

Appendix 5. WDNR Exclusion Protocol

## **Appendix 1: Health Information**

The following information was created by the Center for Disease Control and Prevention (CDC): <http://www.cdc.gov/rabies/bats/contact/index.html>. This information should be followed when handling or testing bats for rabies or histoplasmosis.

Recent data suggest that transmission of rabies virus can occur from minor, seemingly unimportant, or unrecognized bites from bats. Human and domestic animal contact with bats should be minimized, and bats should never be handled by untrained and unvaccinated persons or be kept as pets.

In all instances of potential human exposures involving bats, the bat in question should be safely collected, if possible, and submitted for rabies diagnosis. Rabies postexposure prophylaxis is recommended for all persons with bite, scratch, or mucous membrane exposure to a bat, unless the bat is available for testing and is negative for evidence of rabies.

Postexposure prophylaxis should be considered when direct contact between a human and a bat has occurred, unless the exposed person can be certain a bite, scratch, or mucous membrane exposure did not occur.

In instances in which a bat is found indoors and there is no history of bat-human contact, the likely effectiveness of postexposure prophylaxis must be balanced against the low risk such exposures appear to present. Postexposure prophylaxis can be considered for persons who were in the same room as a bat and who might be unaware that a bite or direct contact had occurred (e.g., a sleeping person awakens to find a bat in the room or an adult witnesses a bat in the room with a previously unattended child, mentally disabled person, or intoxicated person) and rabies cannot be ruled out by testing the bat. Postexposure prophylaxis would not be warranted for other household members.

If you woke up because a bat landed on you while you were sleeping or if you awakened and found a bat in your room, you should try to safely capture the bat and have it tested. The same precautions should be used if you see a bat in a room with an unattended child, or see a bat near a mentally impaired or intoxicated person.

The small teeth of the bat can make a bite difficult to find. Be safe and in these situations, try to safely capture the bat, have the bat tested, and seek medical advice.



## **Appendix 2: Removing and Excluding Bats**



# Bat Exclusion

Method used by The Wisconsin Bat Program

## A PROVEN SOLUTION

**Do you have bats that you would like to remove from your living space?** The following description is the widely accepted, non-lethal approach for excluding bats from your home. Killing the bats you will find does not solve the root problem which involves locating and sealing the actual access point that the bats are using. The remaining bats and future bats will still find their way into your attic or similar roosting space until you locate and seal all access points. Bats are NOT rodents and therefore will NOT chew their way into your house if you close off the opening. They use only existing openings.

As you may already know, bats are extremely beneficial to have in your neighborhood and many property owners spend a lot of effort trying to attract bats to their area by providing artificial roosts for them. If you have bats in your home you are half-way to experiencing the benefits of these insect-eating mammals without having to share your living space. The first step is already done; you have the bats interested in your location. The second step involves providing these bats with alternative roosting options that allows them to remain on the property without having access to your home. Finally, after a successful exclusion, the bats you saved will have a good chance of staying nearby. Why should you care if they stay? A single bat can eat 1,000 or more mosquito-sized insects in one hour

and the equivalent of the bat's own body weight per night. As that is just a single bat, you can imagine what a colony of 20 to 100 bats can eat in one night.

Bats will NOT attack you while you are enjoying an evening on your porch. Instead, they are enjoyable to view as they capture 100's and 1,000's of insect pests that would normally be interrupting your relaxing night outside. They conduct this service to you for free. You simply need to provide these bats with an alternative place to live that is not in your home. Like bird houses, a bat house is relatively easy to build yourself, inexpensive to purchase, and readily available from a variety of organizations.

## Let's get started with the process.

First of all, timing is important when excluding bats from the home. Do not attempt to exclude bats during the summer months when the colony is established and the young are unable to fly. Bat exclusions should not be conducted from May 1st through August 31. Exclusions occurring during this time period will separate mothers from their pups, leaving the pups to die of starvation. Frantic mothers, searching for an opening to reach their pups, may enter your living space and be more difficult to deal with than what you started with. By trapping the flightless young inside, you may also have created another unexpected



problem involving the smell of dead animals.

### **Step 1: OBSERVE**

#### **Where are the bats entering?**

At sunset or just before sunrise, have one or more persons located around the house observe where the bats are exiting the building. Observers should be able to see the entire structure without turning their heads; bats can exit and take flight in a matter of seconds. Make observations



**Bat Guano**

for several nights. This will ensure that all or most exit-points are identified. Pay special attention to areas in which bats commonly find access to your home: corners, eaves, louvers, loose siding, window air conditioners, and loose or damaged screens. Search the building for other various structural defects needing maintenance as the bats may search for alternative openings to their former roosting site after exclusion. It may take a second year of observation to ensure you have located all possible entry points.

Visible signs such as staining and guano (bat droppings) will also help identify openings. The body oils of bats can cause



**Bat guano in front of garage**

staining on the main access areas of the building, though you will need to look carefully because it is not always obvious. One of the best ways to find an opening is somewhat counter-intuitive: looking down instead of up. Guano found on the ground indicates bat activity from their opening above. When you find a concentration of these small droppings on the ground next to the foundation, you will often have a better chance of finding the access point.

### **Step 2: INSTALL**

#### **Can we still keep the bats here in my yard by putting up a bat house?**

YES. Want to provide bats with a home, just not your own? We recommend installing an alternative roost, commonly referred to as a "bat house", in the general vicinity of the entry-points. If you exclude in the fall, installing the bat house a year before the exclusion or during the start of summer, provides the best chance for



**Two types of bat houses**

success. As bats come and go, they will become familiar with the structure. Upon exclusion, this familiarity will provide the best possible chance for the successful inhabitation of the bat house by the recently excluded bats. If you are interested in purchasing or building bat houses, contact the Wisconsin Bat Monitoring program. The program staff can help you decide on where to purchase the best bat house design with proven success. The Wisconsin Bat Monitoring program can also give you instructions for building your own bat house. Read our information pamphlet titled: "Building a Bat House" to learn how to build and locate your bat house. Location and design are critical pieces as bats are more difficult to attract to a bat house than birds are to a bird house.

### **Step 3: EXCLUDE**

- 1. One-way doors**
- 2. One-week wait,**
- 3. Seal all of the holes.**

After all openings have been discovered, install one-way exits. These exits will allow bats to leave, but will not allow them to re-enter. Keep in mind the time of year as you do not want to trap the flightless young inside. Avoid excluding bats between May 1<sup>st</sup> and August 31<sup>st</sup>.

One-way exclusion devices can be created using plastic netting with one-sixth inch (0.4 centimeter) or smaller mesh. Shape the plastic netting so that it covers the opening entirely and extends at least two feet below it. Using staples or duct tape, attach the top and side edges of the



**Applying screen for one-way door**

plastic netting to the building, leaving the bottom edge open. Be conscious of the netting's tautness; you should be able to slide your hand into the bottom opening though not so loose that the bats may easily crawl back up the opening. At sunset the following night, some of the bats will escape through the open, bottom portion. Leave the netting up for five to seven days; this will ensure that all bats have exited the building. After all bats have been excluded, you may then seal the openings permanently with appropriate construction materials.





**Space on bottom for bats to escape**

Remember that bats will not chew their way back inside your house. So, after you've found and sealed all of the access points you will have successfully excluded the bats from your living space.

Other materials can be used to create one-way exits, such as plastic sheeting or PVC pipe. Install the plastic sheeting in the exact manner as the plastic netting. A portion of PVC pipe, which should be similar in size to a tube of caulk, can be inserted into the opening. Seal the



**PVC one-way door**

remaining portion of the opening that surrounds the outer rim of the pipe.

## **Clean-up**

After the bats have been successfully excluded, most people will want to clean the guano out of the building. When cleaning enclosed spaces, there is one simple precaution you should take in protecting yourself from being exposed to a disease known as histoplasmosis. Histoplasmosis is a respiratory disease caused by a fungus that can grow on accumulations of bird and bat guano and may become airborne if disturbed during the cleaning process. The fungus is not necessarily present at your site; however it is best to approach any clean-up with some safety measures. Symptoms of histoplasmosis usually appear within 3 to 17 days after exposure, and may resemble a cold or chronic cough. The risk of histoplasmosis can be reduced and even prevented by wearing a face mask and gloves while working. Wash all clothes and equipment after cleaning out the

previously occupied space. If you want nothing to do with a possible risk to your health there are professional cleaning services that can do this for you. Search online or in your phone directory for a local business. There are also a number of exclusion professionals that deal specifically with bat removal in the State of Wisconsin if you are not comfortable with the do-it-yourself method.

## Summary

This is how you conduct widely accepted, non-lethal approach to excluding bats from your living space.

1. Observe your building around sunset or sunrise to detect all locations bats are using for access.
2. Install a bat house prior to conducting exclusion in order to maintain the beneficial insect-eating service of the bats in your back yard.
3. Install a one-way door over the opening(s) and wait a week until all of the bats have left.
4. Permanently seal the access points with appropriate materials.
5. Enjoy a night on your deck or patio and watch your relocated colony of bats eat 100's to 1,000's of mosquito-sized insects.
6. Let us know how it worked out as we would like to hear your success story about relocating bats from your attic to their own bat house.
7. For additional information on bats of Wisconsin check out our bat website.

### **Wisconsin Bat Monitoring Program**

<http://wiatri.net/inventory/bats>



## Bat Access points to your living space

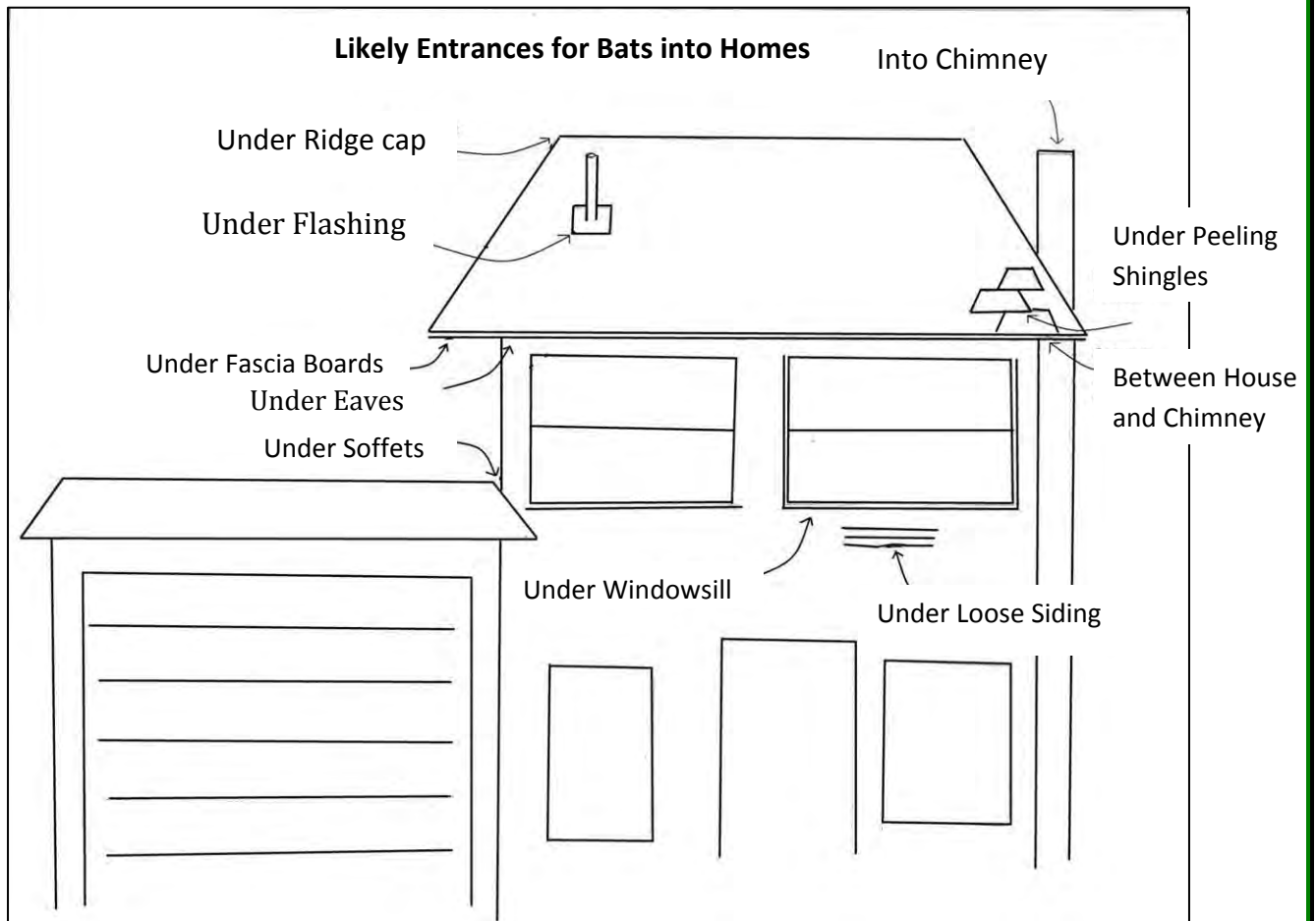


Figure 1: There are several common entry points for bats to find their way into your home. Check for guano piles and stains around these points first in locating the entry points.

## Exit Only

### One-way Doors for Bat Exclusion

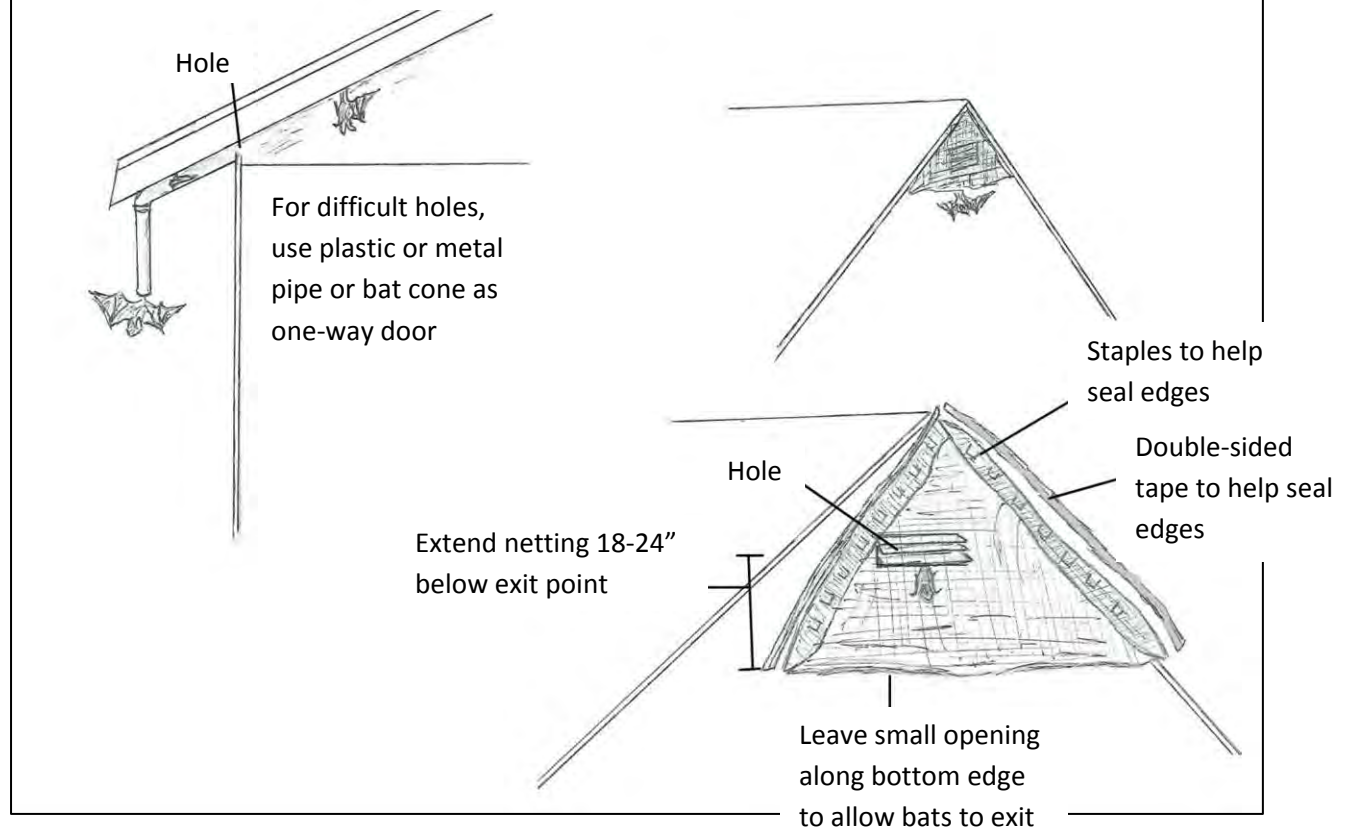


Figure 2: Two common one-way door designs: PVC tube for a small oddly-shaped hole, and netting or mesh for larger holes.



### **Appendix 3: Determining Bat Presence**

1. Take note of places where bats are likely to enter your home. Bats can enter through holes smaller than a quarter in size. Places like fascia boards, where two buildings meet, between the building and a chimney, under loose shingles, under ridge caps, under windows, through vents into attics, under flashing, under eaves and under loose siding are all common places for bats to enter.
2. Look for evidence on the ground. Bats will defecate while they roost, and piles of guano usually indicate where bats are roosting.
3. Look for evidence on the building itself. Places where bats enter and exit often have stains from urine and skin oils on the siding and holes. These can be good indications of where bats are entering.
4. Monitor in the evening. Even if no visible signs occur, bats may still be roosting in a building. Observe the building at dusk to see if any bats fly out of openings. Listening at this time can also alert the observer to the presence of bats. Bats will often become very vocal 5-10 minutes before they take flight to forage. Bats make an audible buzzing and clicking while they are roosting.

## Appendix 4.

The WDNR is requiring cleaning of all equipment and clothing that comes in contact with cave bats and their habitat at any point during the year in an effort to control human transmission of white-nose syndrome. The fungus that causes white-nose syndrome, *Pseudogymnoascus destructans* was listed as prohibited invasive species in 2011 under NR. 40, and allow for the following control measures.

All equipment and clothing that is used outside of the state of Wisconsin and at multiple sites within the state during exclusion must be cleaned according to the protocols listed in appendix 4. Protocols are in accordance with U.S. Fish and Wildlife Service white-nose syndrome decontamination procedures:

<http://whitenosesyndrome.org>.

Additionally, to minimize risk of possible transfer of the SARS-CoV-19 to North American bats, follow these guidelines for proper Personal Protective Equipment during work.

1. Per CDC guidelines for COVID-19, to block or minimize exchange of respiratory droplets wear a mask when doing work involving bats, including installation of one-way doors and cleaning of attics.
2. Use of disposable equipment and coverings (gloves, coveralls and booties) is highly recommended.
3. All equipment used during the exclusion process should be thoroughly scrubbed or brushed to remove all organic material.
4. Once scrubbed of organic material, clothing and equipment must be sealed in a plastic container or bag to be transported to a suitable site for cleaning. Anything that can be disposed of must be sealed in a plastic trash bag and discarded.
  - a. All equipment and clothing that can be **completely submersed** must be washed with Woolite in wash cycle, rinsed, then
    - i. submersed in hot water (>131 degrees F) for a minimum 20 minutes
    - ii. soaked in 1:10 bleach solution for a minimum of 10 minutes,
    - iii. soaked in 1:128 Lysol for a minimum of 10 minutes.
  - b. All equipment that **cannot be completely submerged** in a solution or hot water or must be used immediately between sites must be scrubbed to remove all organic material and wiped with Lysol disinfecting wipes so that the entire surface is disinfected.
5. All equipment and clothing must air dry.
6. Prior to entering the vehicle, clean or remove clothing and footwear to avoid contaminating vehicles.



## Appendix 5: WDNR Exclusion Protocol

Exclusion activities outside of the following protocol are not covered under the Broad Incidental Take Permit/Authorization and mortality may incur fines. The landowner and/or the pest control operator completing the work may be liable for fines.

Exclusion is the act of allowing bats to leave but not return to a building through the use of one-way doors. One-way doors may be comprised of the following materials and design:

1. **Tubing**- Tubes for exclusion may be plastic or metal and should hang down at least 10-15 inches from the opening. Netting may be installed at the end of the tube to prevent re-entry but the mesh must be plastic with holes smaller than 1/6<sup>th</sup> inch.
2. **Mesh or netting**- Netting may be installed over entry/exit points, but the netting must have holes 1/6<sup>th</sup> inch or smaller so as to not trap bats, and must extend at least two feet below the entry point. The mesh/netting must be open at the bottom to allow bats to exit under the screen.
  - a. If it is found the netting used is tangling and trapping bats, the pest control operator must remove the bats and release them, and the netting must be replaced with smaller mesh or with a different type of one-way door.
3. **Plastic sheeting**- Plastic sheeting may be installed in a similar fashion to the mesh. There should be enough space behind the plastic to allow the bats to crawl out from behind the sheeting. It must be open at the bottom to allow the bats to exit.
4. **Changes to roosting environment**- changes can be made to the roosting habitat to discourage use by bats. These may include, but are not limited to, installation of windows to increase light in the roost, or installation of sheet metal on roosting surface to limit ability of bats to hang. Any changes to the roost environment must not cause take.

Exclusion devices must remain up for at least 5 days prior to sealing the openings, and there must not be bats in the roost when building is sealed.







UNIVERSITY OF WISCONSIN-MILWAUKEE  
ARCHAEOLOGICAL RESEARCH LABORATORY  
CENTER CULTURAL RESOURCE MANAGEMENT

# Architecture/Historical Investigations Sartell Hydroelectric Project

March 25, 2022



University of Wisconsin-Milwaukee  
Archaeological Research Laboratory Center  
Sabin Hall, 3413 N. Downer Avenue  
Milwaukee, WI, 53211  
414-251-6138/wedwards@uwm.edu

---

## Sartell Hydroelectric Project (FERC No. 8315) Architectural/Historical Reconnaissance Survey

City of Sartell  
Benton and Stearns Counties  
Minnesota

Prepared by  
Kelly Blaubach, M.A., Lead Architectural Historian  
University of Wisconsin-Milwaukee Cultural Resource Management  
Sabin Hall 290  
3413 N. Downer Avenue  
Milwaukee, WI 53211

Project Investigator  
Richard W. Edwards IV, Ph.D., RPA  
University of Wisconsin-Milwaukee Cultural Resource Management  
Sabin Hall 290  
3413 N. Downer Avenue  
Milwaukee, WI 53211

Sponsoring Agency  
Eagle Creek Sartell Hydro, LLC  
Eagle Creek Renewable Energy  
7315 Wisconsin Avenue, Suite 1100W  
Bethesda, MD 20814

February 2022



## Acknowledgments

---

The Sartell facility operates under a license issued by the Federal Energy Regulatory Commission (FERC). Eagle Creek Sartell Hydro, LLC (a subsidiary of Eagle Creek Renewable Energy) is the licensee for the facility. The facility's current license was issued in 1985 and expires in 2025. The licensee is following a FERC process known as Traditional Licensing Process (TLP). Currently, the process is in the first stage: the licensee has filed a notice of intent, preliminary application document (PAD), and newspaper notice; the FERC has approved the use of the TLP.

This investigation is being undertaken to satisfy requirements of the licensing process pertaining to Section 106 of the National Historic Preservation Act. The activity that is the subject of this report has been financed by Eagle Creek Renewable Energy. All photographs contained in this report were taken by University of Wisconsin-Milwaukee Cultural Resource Management. Additional information was provided by Kevin Winkelman, manager of the Sartell Hydro facility in Sartell.

## Contents

Acknowledgments.....	3
Abstract .....	5
Introduction.....	6
Project Location .....	6
Methodology .....	6
Literature Search.....	6
Historic Contexts .....	8
Sartell .....	8
Watab Pulp and Paper Company .....	8
Transportation: Railroads.....	9
Survey Results .....	10
Bibliography .....	12

## Figures

Figure 1. Project Location (topo).....	7
Figure 2. Surveyed Properties (overview). .....	13
Figure 3. Surveyed Properties (north).....	14
Figure 4. Surveyed Properties (south).....	15

## Tables

Table 1. Surveyed Properties .....	10
Table 2. Properties not surveyed/resurveyed .....	10



## Abstract

---

The Sartell Hydroelectric Project is located in the City of Sartell, spanning the Mississippi River between Stearns and Benton Counties. Eagle Creek Renewable Energy is renewing their FERC license for the facility. The current license expires in 2025, and part of the relicensing process requires the identification and evaluation of historic properties within the project's Area of Potential Effect (APE). The APE identified for the project included the entire Sartell reservoir, up to elevation 1,014.5 feet. A review of the Minnesota Historic Site and Structure Inventory identified five resources within the project's APE. None of these sites had been previously evaluated for eligibility for inclusion in the National Register of Historic Places (NRHP.)

In February 2022, Cultural Resource Management at the University of Wisconsin-Milwaukee (Archaeological Research Laboratory Center) conducted architecture/history investigations for the Sartell Hydroelectric Project. In addition to a literature review, investigations included a reconnaissance survey of the project's APE and evaluation of the Sartell Hydroelectric Project. As the APE was limited to the Sartell Reservoir, structures included in the survey included only those bridges/roadways that span the waterway. The literature review identified five previously surveyed resources in the Historic Site and Structure Inventory. Of these five resources, three met the survey criteria found in Minnesota's Historic and Architectural Survey Manual: the St. Regis Dam and Mill (BN-STC-001), the Fort Ripley Military Road - Watab Segment (BN-WAT-006), the Brainerd Branch – Sauk Rapids to Brainerd Railroad (BN-WAT-009). No NRHP-listed properties were identified. An additional three resources were identified and surveyed during the course of investigations.

None of the resources surveyed were found to be potentially eligible for the NRHP.

"I certify that this investigation was conducted and documented according to the Secretary of the Interior's Standards and Guidelines and that the report is complete and accurate to the best of my knowledge."

*Richard W. Edwards IV*

3/28/2022

---

Signature of Principal Investigator

---

Date

## Introduction

---

### Project Location

The Sartell Hydroelectric Project is located in the City of Sartell, in Stearns and Benton Counties, Minnesota. The Sartell Reservoir, resulting from the damming of the Mississippi River at Sartell, extends approximately eleven (11) miles upstream of the dam and includes the tributary Little Rock Creek and Little Rock Lake (Figure 1).

### Methodology

The Area of Potential Effect (APE) for the Project was delineated to include the hydroelectric facility itself as well as the Sartell Reservoir impounded behind it. The APE was extended to this distance upstream in order to satisfy the requirements of the FERC licensing process but limited to the waterway itself as the relicensing process has no potential to affect adjacent properties. As the APE was limited to the Sartell Reservoir, structures included in the reconnaissance survey included only those bridges/roadways that span the waterway.

Architecture/History investigations began with research into the project area, the subject property, as well as hydroelectric and transportation history in the region and state. Online resources included those available through local historical societies (Sartell Historical Society, Benton County Historical Society, and the Stearns History Museum) and the Minnesota Historical Society. Resources from the University of Wisconsin State library system were also used to create a historic context for the project area. Research continued as surveyed properties were evaluated for eligibility for the National Register of Historic Places (NRHP).

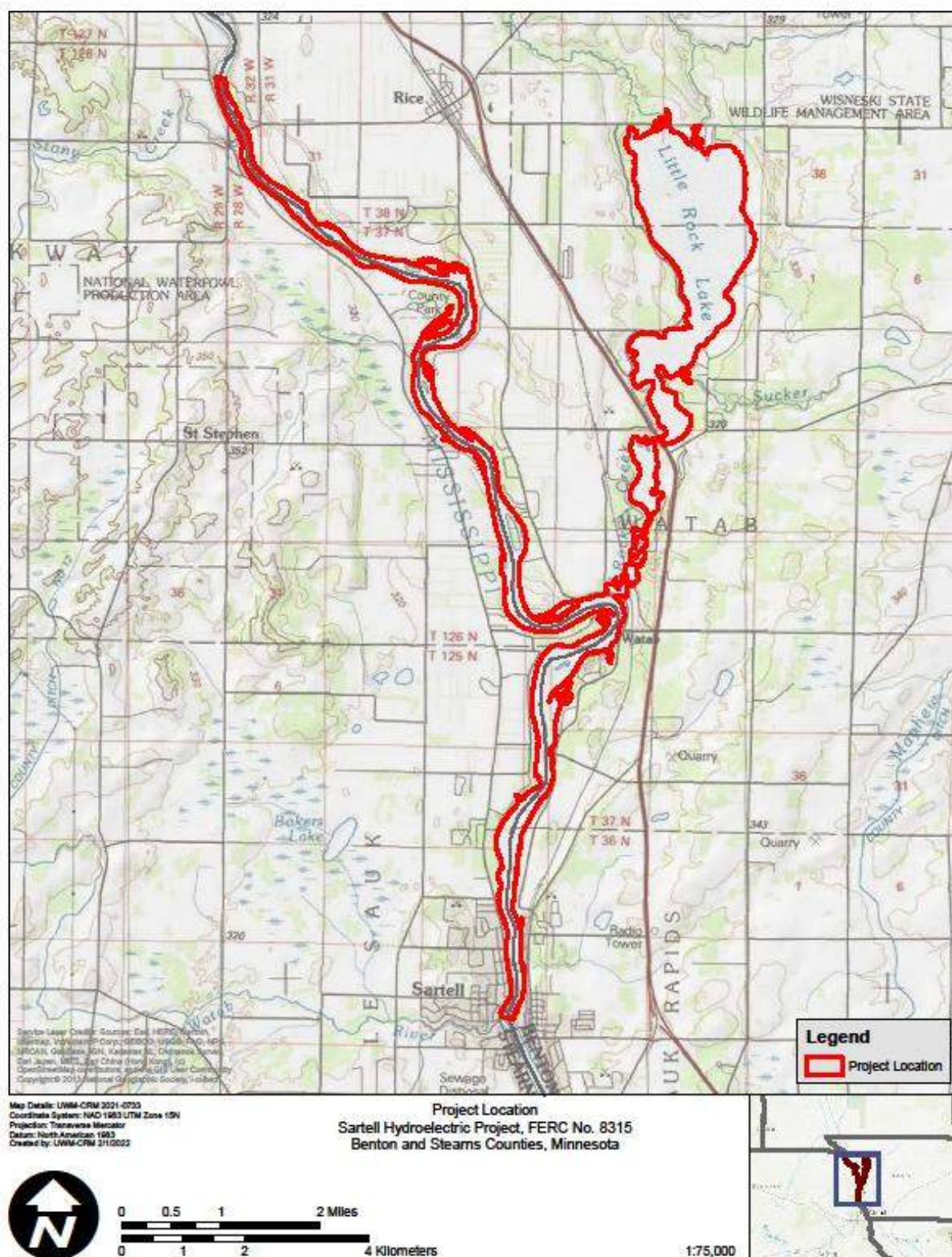
On February 3, 2022, a consultant from UWM-CRM conducted a site visit to document the Sartell Hydroelectric Project as well as those resources in the APE that were identified for survey. Please note that the Sauk Rapids to Brainerd Railroad (BN-WAT-009) bridge over the Little Rock Creek was not photographed during the survey because it was not visible from the right-of-way and ‘No Trespassing’ signs were posted. No additional resources were identified in the APE during the course of the survey. Preliminary eligibility recommendations were provided for the surveyed resources based on their historic and architectural/engineering significance within local, regional, and statewide contexts.

### Literature Search

A literature search of the APE was conducted, beginning with a search of the Minnesota Historic Site and Structure Inventory conducted by the State Historic Preservation Office. This search identified five previously inventoried resources within the project’s APE. None of these sites had been previously evaluated for eligibility for inclusion in the NRHP. Of the five resources previously inventoried, only three were resurveyed and evaluated during the course of current investigations: the St. Regis Dam and Mill (BN-STC-001), the Fort Ripley Military Road - Watab Segment (BN-WAT-006), and the Brainerd Branch – Sauk Rapids to Brainerd Railroad (BN-WAT-009). The two remaining previously inventoried resource—the 125<sup>th</sup> Street NW Bridge (BN-LAN-004) and River Road NE Bridge (BN-WAT-010)—were not of age to meet survey criteria as identified in the Minnesota SHPO’s Historic and Architectural Survey Manual and are not evaluated further.



Figure 1. Project location (topo)



## Historic Contexts

---

### Sartell

Prior to the mid-19<sup>th</sup> century, the area of what would eventually become Sartell was inhabited in turns by Dakota, Chippewa, and Ho-chunk tribes as they were forced westward by encroaching white settlement.<sup>1</sup> French fur traders knew the present site of Sartell as the “third rapids” that they would encounter as they traveled north on the Mississippi River from Minneapolis. One of the earliest permanent white settlers of the area was Joseph B. Sartell in 1854, who established a flour mill and later a lumber mill and dam near Watab Creek Park.<sup>2</sup> In 1905, the Watab Pulp and Paper Company began construction of a paper mill at the site, with the accompanying hydromechanical dam and powerhouse completed in 1907. The mill quickly became the area’s largest employer, and the complex was bought by the St. Regis in 1946 and Champion International in 1982, after which time mill operations were significantly expanded.

In 1907, the Village of Sartell was incorporated and named after the area’s earliest white settler, Joseph B. Sartell. The paper mill continued to grow, and in 1925 another major company was founded in Sartell: DeZurik Water Controls, a valve production plant. While the city was originally located along the US Highway 10, a major arterial traveling north from the Twin Cities and St. Cloud, the re-route of the roadway in the 1960s and the construction of a new bridge over the Mississippi River led to the decline of the original downtown area.<sup>3</sup> The population growth of Sartell began to accelerate due to the city’s location, services, and small-town atmosphere. However, a fire at the paper mill in 2012 would eventually lead to the sale and demolition of the complex, and loss of a major employer in the area.

### Watab Pulp and Paper Company

The founding of the Watab Pulp and Paper Company began in 1905 when the city’s namesake, Joseph B. Sartell, sold 70 acres along the Mississippi River to a group of Wisconsin investors. He sold the land for 1 dollar in a successful attempt to persuade them to locate their new mill business in the fledgling community, adjacent to ample water power and the Northern Pacific Railroad. The original dam was constructed in 1907 of wooden planks, local granite and fieldstone, and 25,000 barrels of concrete. This resulted in the creation of both the Sartell reservoir behind the dam and of Little Rock Lake, which is located approximately five miles upstream from the structure.<sup>4</sup> The mill first produced newsprint for Minneapolis and St. Paul newspapers, paying workers between \$1.25 and \$3 dollars per day depending on the job.<sup>5</sup> Following the purchase of the mill and dam by St. Regis Paper Company – a national company headquartered in upstate New York – mill equipment was modernized. A major overhaul and expansion project in the 1980s included the installation of a new paper pulping machine, on-site pollution control, and a waste water treatment plant. The new pulping machine rendered the hydromechanical pulp grinders in the dam and powerhouse structure obsolete; the hydro turbines were converted to produce hydroelectric power for the mill. The expansion project in the 1980s costs over \$300 million dollars, one of the largest construction projects in Minnesota’s history, and transformed a local, brick paper mill into a nationally significant, bright blue steel complex. It was locally nicknamed Big Blue.<sup>6</sup>

---

<sup>1</sup> “The Land, Water, and Language of the Dakota, Minnesota’s First People,” How the Dakota Have Shaped the State, MNopedia.com, last modified July 9, 2021, <https://www.mnopedia.org/land-water-and-language-dakota-minnesota-s-first-people>.

<sup>2</sup> “History of Sartell,” SartellMN.com, accessed February 25, 2022, <https://sartellmn.com/about/history/>.

<sup>3</sup> Ibid.

<sup>4</sup> Anita Rasmussen, “The Death of a Historic Community Icon,” PlannersWeb.com, accessed February 23, 2022, <https://plannersweb.com/2013/11/death-historic-community-icon/>.

<sup>5</sup> Jim Maurice, “History of the Sartell Paper Mill,” WJON.com, accessed February 22, 2022, <https://wjon.com/history-of-the-sartell-paper-mill/>.

<sup>6</sup> Rasmussen, “The Death of a Historic Community Icon.”



The mill, by then producing supercalendered paper for magazines and catalogs, was merged with Champion International Corp in 1984, then International paper in 2000, and finally Verso Paper in 2006. On Memorial Day in 2012, an explosion and fire at the mill killed one person and injured four others. The warehouse portion of the complex was destroyed, and in the face of the damage in addition to a shrinking paper milling industry, Verso Paper decided not to repair and reopen the mill in Sartell.<sup>7</sup> Between 2013 and 2015, the site was demolished and materials salvaged, with the exception of the brick powerhouse and dam structure. The hydroelectric portions of the project were sold separately and connected to the regional power grid.

## Transportation: Railroads

Rail construction across the country significantly accelerated following the Civil War, with a number of lines and rail companies connecting Minnesota to manufacturing and agricultural hubs throughout the upper midwest. The Northern Pacific Railway, one of two major transcontinental railroads that began in Minnesota, eventually extended from the Twin Cities to Seattle. It traveled along roughly the 49<sup>th</sup> parallel and carried increasing numbers of people and freight across the northern United States in the late 19<sup>th</sup> century.<sup>8</sup> The company also built branch lines all along its transcontinental route through the 1880s and 1890s.

The St. Paul and Northern Pacific Railway Company (StP&NP) was incorporated on January 29, 1874 as the Western Railroad of Minnesota. One of its goals was to build a branch line for the Northern Pacific Railroad between Mankato and Brainerd. By 1879, track had been laid between Brainerd and Sauk Rapids, but would not continue to St. Paul until 1886. In 1896, the StP&NP was acquired by the Northern Pacific.<sup>9</sup> Headquartered first in St. Paul and then in Brainerd, the Northern Pacific Railroad played a key role in Minnesota's history, and major road shops and associated industries helped establish the City of Brainerd in the second half of the 19<sup>th</sup> century. The NP merged to form the Burlington Northern Railroad in 1970, which later merged with the Santa Fe Railroad in 1996. It is now known as the BNSF Railway, one of the largest systems of freight railroad in the country.<sup>10</sup> Near the project area, the railroad roughly follows US Highway 10 as it travels northward from St. Cloud to Fort Ripley, passing through the City of Sartell and crossing over Little Rock Lake, a tributary to the Mississippi River at Watab. This segment of the NP no longer extends all the way north to Brainerd; tracks currently cease soon after Camp Ripley.

---

<sup>7</sup> Ibid.

<sup>8</sup> Adam Burns, "Northern Pacific Railway: Main Street of the Northwest," American Rails.com, last revised February 21, 2022, <https://www.american-rails.com/np.html>.

<sup>9</sup> Andrey J. Schmidt, et al., "Minnesota Statewide Historic Railroads Study – Section E. Statement of Historic Contexts," Multiple Property Documentation Form, Railroads in Minnesota, 1862-1956, 130.

<sup>10</sup> "Northern Pacific Railway," Wikipedia.org, last revised February 7, 2022, [https://en.wikipedia.org/wiki/Northern\\_Pacific\\_Railway](https://en.wikipedia.org/wiki/Northern_Pacific_Railway).

## Survey Results


On February 3, 2022, a consultant from UWM-CRM conducted a field survey of the Sartell Hydroelectric Project and its reservoir. Five previously inventoried resources had been identified in the literature search prior to the survey. Of these, three were resurveyed and, when accessible, photos were taken. Two of the resurveyed resources were linear segments of larger roadway and railroad corridors which bisected the APE. In addition, three resources were newly inventoried. All three new resources were contributing buildings or structures belonging to the previously inventoried resources. New or updated inventory forms have been created for each surveyed property. See Figures 2-4 for mapping of surveyed properties.

**Table 1. Surveyed Properties**

Inventory No.	Property Name	Address	NRHP status	Contributing/Non-Contributing Status
BN-STC-001	Watab Paper Mill and Dam	301 1 <sup>st</sup> Avenue, Sartell MN	Evaluated not eligible	n/a
BN-STC-004	Sartell Hydroelectric Powerhouse	301 1 <sup>st</sup> Avenue, over Mississippi River	Evaluated not eligible	Contributing to the not-eligible BN-STC-001
BN-STC-005	Sartell Hydroelectric Dam	301 1 <sup>st</sup> Avenue, over Mississippi River	Evaluated not eligible	Contributing to the not-eligible BN-STC-001
BN-WAT-006	Fort Ripley Military Road – Watab Segment	CR 55 in Benton County	Evaluated not eligible	n/a
BN-WAT-009	Brainerd Branch – Sauk Rapids to Brainerd Railroad	Northern Pacific tracks between Sauk Rapids to Camp Ripley	Evaluated not eligible	n/a
XX-RRD-NPR029	Bridge – Brainerd Branch – Sauk Rapids to Brainerd Railroad	Over Little Rock Creek, 0.5 miles north of CR 79	Evaluated not eligible <sup>11</sup>	Contributing to the not-eligible BN-WAT-009


The remaining two previously inventoried resources were not resurveyed. Both were modern roadway bridges bisecting the APE, and did not meet survey criteria as defined within the Minnesota SHPO's Historic and Architectural Survey Manual.

**Table 2. Resources not surveyed/ resurveyed**

Inventory No.	Property Name	Address	Type	Thumbnail
BN-LAN-004	125 <sup>th</sup> St. NW Bridge	125 <sup>th</sup> St. over Mississippi R.	Continuous Beam span steel bridge	

<sup>11</sup> This bridge is currently being reevaluated by the MN SHPO, changing from eligible to not eligible.



BN-WAT-010	Bridge No. 2972	CR 55 over Little Rock Creek	Pre-cast concrete bridge	
------------	--------------------	------------------------------------	--------------------------------	---

With regards to the Watab Pulp and Paper Mill, the powerhouse, dam, and remaining mill building fragment do not constitute an intact example of a paper mill, nor are they distinguished by their architecture, engineering, or associations with the history of hydroelectric power in Minnesota. While it is unlikely that the property is eligible for the NRHP, a Determination of Eligibility has nevertheless been completed to provide appropriate context for the evaluation of the property's historic and architectural significance.

## Bibliography

---

Amigo, Eleanor and Mark Neuffer. *Beyond the Adirondacks: The Story of the St. Regis Paper Company*. Westport, Connecticut: Greenwood Press, 1980.

Brainerd History.com. "Brainerd owes its existence to Northern Pacific Railroad." Reproduced from the Centennial Edition of the Brainerd Daily Dispatch (1871-1971). Accessed March 8, 2022, [http://sections.brainerddispatch.com/history/stories/rai\\_1002030058.shtml#:~:text=It%20was%20constructed%20in%20the%20early%201870s.&text=The%20city%20owes%20its%20existence,brought%20mechanics%2C%20laborers%20and%20merchants](http://sections.brainerddispatch.com/history/stories/rai_1002030058.shtml#:~:text=It%20was%20constructed%20in%20the%20early%201870s.&text=The%20city%20owes%20its%20existence,brought%20mechanics%2C%20laborers%20and%20merchants).

Burns, Adam. "Northern Pacific Railway: Main Street of the Northwest." American Rails.com. Last revised February 21, 2022, <https://www.american-rails.com/np.html>.

Johnson, Jack K. "History of Old Fort Ripley, 1848-1877," November 2015. Minnesota Military Museum.org. Accessed March 8, 2022, <https://www.mnmilitarymuseum.org/resources/mn-military-history/old-fort-ripley/>.

Marvig, John. "BNSF Little Rock Creek Bridge." Bridgehunter.com. Last updated November 27, 2012, <http://bridgehunter.com/mn/benton/bh54632>.

Maurice, Jim. "History of the Sartell Paper Mill." WJON.com. Accessed February 22, 2022. <https://wjon.com/history-of-the-sartell-paper-mill/>.

Minnesota State Historic Preservation Office (SHPO).

- *Historic and Architectural Survey Manual*. (St. Paul: Minnesota State Historic Preservation Office, 2017).
- *Guidelines for Inventory and Evaluation of Railroads in Minnesota*. (St. Paul: Minnesota State Historic Preservation Office and Minnesota Department of Transportation, March 2019).

MNopedia.com. "The Land, Water, and Language of the Dakota, Minnesota's First People." How the Dakota Have Shaped the State. Last modified July 9, 2021. <https://www.mnopedia.org/land-water-and-language-dakota-minnesota-s-first-people>.

Pearson, Neal. "Paper Mill History." Interview. Sartell Historical Society, undated. Audio, 14:51. <https://www.sartellhistoricalsociety.org/stories>.

Rasmussen, Anita. "The Death of a Historic Community Icon." PlannersWeb.com. Accessed February 23, 2022, <https://plannersweb.com/2013/11/death-historic-community-icon/>.

SartellMN.com. "History of Sartell." Accessed February 25, 2022. <https://sartellmn.com/about/history/>.

Schmidt, Andrey J., et al., "Minnesota Statewide Historic Railroads Study – Section E. Statement of Historic Contexts," Multiple Property Documentation Form, Railroads in Minnesota, 1862-1956. 2007.



Figure 2. Surveyed Properties (overview)

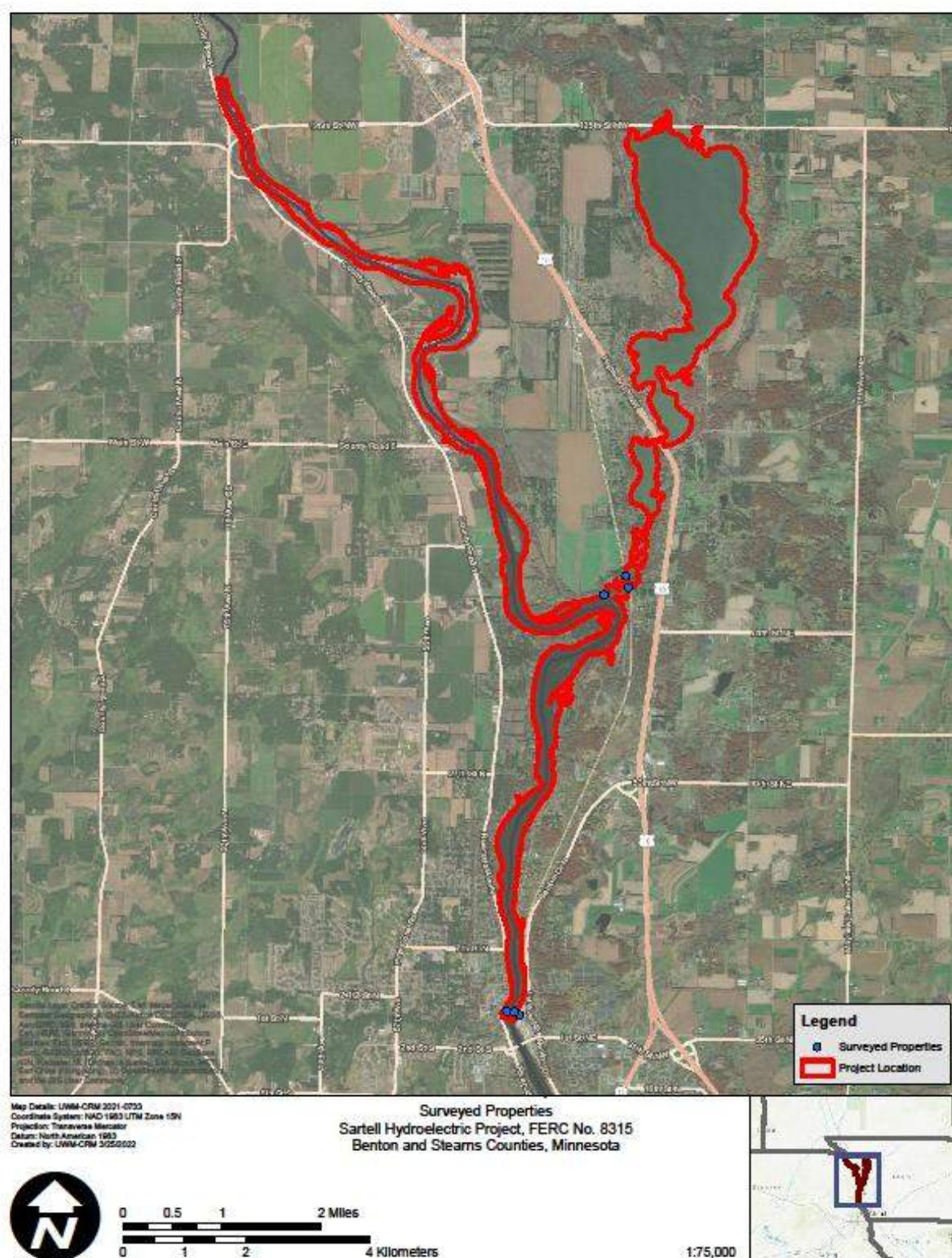
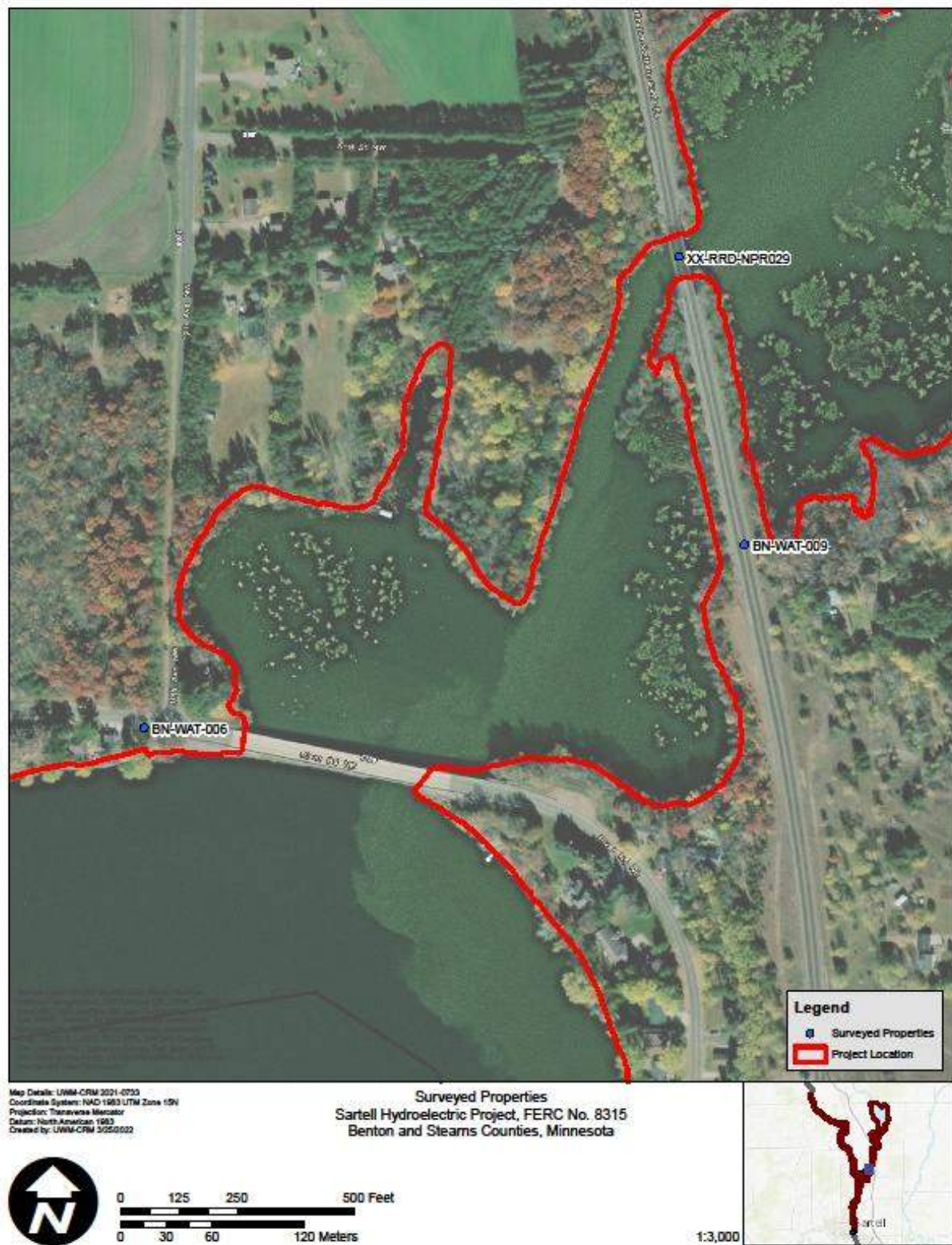




Figure 3. Surveyed Properties (north)







United States Department of the Interior  
National Park Service**National Register of Historic Places Registration Form**

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in National Register Bulletin, *How to Complete the National Register of Historic Places Registration Form*. If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions.

**1. Name of Property**Historic name: Watab Paper Mill and DamOther names/site number: St. Regis Paper Mill and Dam, Sartell Hydroelectric Project  
(MN Inventory: BN-STC-001)

Name of related multiple property listing:

N/A

(Enter "N/A" if property is not part of a multiple property listing)

**2. Location**Street & number: 301 1<sup>st</sup> Avenue NECity or town: Sartell State: MN County: Benton and StearnsNot For Publication: ☐Vicinity: ☐**3. State/Federal Agency Certification**

As the designated authority under the National Historic Preservation Act, as amended,

I hereby certify that this \_\_\_ nomination X request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60.In my opinion, the property \_\_\_ meets X does not meet the National Register Criteria.I recommend that this property be considered significant at the following level(s) of significance: N/A\_\_\_ national \_\_\_ statewide \_\_\_ local

Applicable National Register Criteria:

\_\_\_A \_\_\_B \_\_\_C \_\_\_D

---

Signature of certifying official/Title:

Date

---

State or Federal agency/bureau or Tribal Government



Watab Pulp and Paper Mill

Benton and Stearns  
Counties, MN  
County and State

Name of Property

In my opinion, the property \_\_\_ meets \_\_\_ does not meet the National Register criteria.

\_\_\_\_\_  
**Signature of commenting official:**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**Title :**

\_\_\_\_\_  
**State or Federal agency/bureau  
or Tribal Government**

#### 4. National Park Service Certification

I hereby certify that this property is:

\_\_\_ entered in the National Register

\_\_\_ determined eligible for the National Register

\_\_\_ determined not eligible for the National Register

\_\_\_ removed from the National Register

\_\_\_ other (explain:) \_\_\_\_\_

\_\_\_\_\_  
Signature of the Keeper

\_\_\_\_\_  
Date of Action

#### 5. Classification

##### Ownership of Property

(Check as many boxes as apply.)

Private:

☒

Public – Local

☐

Public – State

☐

Public – Federal

☐

##### Category of Property

(Check only **one** box.)

Building(s)

☒

District

☐☐

Watab Pulp and Paper Mill

Benton and Stearns  
Counties, MN  
County and State

Name of Property

Site

Structure

☒

Object

☐

### Number of Resources within Property

(Do not include previously listed resources in the count)

Contributing

Noncontributing

1

1

buildings

0

0

sites

1

0

structures

0

0

objects

2

1

Total

Number of contributing resources previously listed in the National Register N/A

### 6. Function or Use

#### Historic Functions

(Enter categories from instructions.)

INDUSTRY/ manufacturing facility = mill

---

---

---

#### Current Functions

(Enter categories from instructions.)

INDUSTRY/energy facility = hydroelectric dam

---

---

---



Watab Pulp and Paper Mill

Benton and Stearns  
Counties, MN  
County and State

Name of Property

## 7. Description

### Architectural Classification

(Enter categories from instructions.)

Neoclassical

---

---

---

---

---

---

---

**Materials:** (enter categories from instructions.)

Principal exterior materials of the property:

Walls: Brick

Roof: Metal

Foundation/Dam: Concrete

Watab Pulp and Paper Mill

Benton and Stearns  
Counties, MN  
County and State

Name of Property

### Narrative Description

(Describe the historic and current physical appearance and condition of the property. Describe contributing and noncontributing resources if applicable. Begin with a **summary paragraph** that briefly describes the general characteristics of the property, such as its location, type, style, method of construction, setting, size, and significant features. Indicate whether the property has historic integrity.)

---

#### Summary Paragraph

The Sartell Hydroelectric Project is a hydroelectric generating station and dam located over the Mississippi River in the City of Sartell, Minnesota. The property, located at 301 1<sup>st</sup> Avenue, consists of a powerhouse, dam, and a portion of the former paper mill structure. The remainder of the paper mill buildings, first constructed in 1905 and greatly expanded in the 1980s, were partially destroyed by fire in 2012 and fully demolished by 2015. The remaining powerhouse building is located on the eastern bank of the Mississippi River, and is a two-story rectangular building with a gabled roof and stepped parapet endwalls. The dam is a concrete structure located west of the powerhouse, with tainter gate and overflow sections. The remaining mill building is located northeast of the powerhouse and dam on the eastern river bank. The historic boundary encompasses approximately eight acres.

---

### Narrative Description

#### *Powerhouse*

The powerhouse is a cream-brick building with a rectangular footprint measuring approximately 230' x 50', and a square entrance block on the eastern bank that measures 40' x 40'. A one-story block is located at the western end. While the powerhouse sections are constructed of cream brick and feature gabled roofs with stepped parapet endwalls, the entrance block has a flat roof and its brick walls have been painted. A concrete deck over the intake bay is located north of the powerhouse. The building is largely utilitarian in style, though minor references to the Neoclassical style include round-arched brick window surrounds, shallow pilasters, and a corbelled brick cornice. Windows throughout have been partially or fully filled in with brick and glass block. The interior of the powerhouse contains a series of turbines and generators. While some of the turbines may be original to the project, the hydroelectric generators were installed in the 1980s.

#### *Dam*

The dam structure measures approximately 330' long and is attached to the western edge of the powerhouse. Originally constructed between 1905 and 1907, it is a concrete structure consisting of a concrete deck, tainter gate section, and an overflow spillway section. The tainter gate section contains three gates separated by concrete piers, with two smaller gates to the east and one larger gate to the west. The overflow spillway consists of two equal-length bays with a concrete apron downstream. A steel catwalk resting atop the concrete piers spans the top of the dam. Originally the overflow portion of the dam contained "needles," which consisted of braced wooden planks, as well as a swinging suspension bridge over the top of the dam between the west river bank and



Watab Pulp and Paper Mill

Benton and Stearns  
Counties, MN  
County and State

Name of Property

powerhouse. The needle dam portion was replaced with mechanized gates in the 1960s following heavy flooding, and the suspension bridge was replaced by a fixed metal catwalk.

### *Mill Building*

The remaining mill building is located on the eastern riverbank, north of the existing powerhouse. It is a two-story gable roofed building constructed of concrete block. Fenestration is limited to single paned metal sashes, with some openings filled in. The southern portion of the building was directly attached to the mill complex, with remnants of the connection still evident.

### *Integrity*

As a paper mill property, the demolition of the majority of associated mill building between 2012 and 2015 presents a significant loss of integrity for a paper mill property type. The replacement and/or infill of the windows on the powerhouse with glass block is also a loss of integrity, though original openings are still apparent from the arched window surrounds and sills. The dam structure was reconstructed circa 1965, from a needle dam to a mechanized overflow dam, and the suspension bridge over the river was replaced by a fixed metal catwalk. Overall, the loss of integrity to the property is significant.

Watab Pulp and Paper Mill

Benton and Stearns  
Counties, MN  
County and State

Name of Property

## 8. Statement of Significance

### Applicable National Register Criteria

(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

### Property is NOT recommended as qualifying for the NRHP

- ☐ A. Property is associated with events that have made a significant contribution to the broad patterns of our history.
- ☐ B. Property is associated with the lives of persons significant in our past.
- ☐ C. Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- ☐ D. Property has yielded, or is likely to yield, information important in prehistory or history.

### Criteria Considerations

(Mark "x" in all the boxes that apply.)

- ☐ A. Owned by a religious institution or used for religious purposes
- ☐ B. Removed from its original location
- ☐ C. A birthplace or grave
- ☐ D. A cemetery
- ☐ E. A reconstructed building, object, or structure
- ☐ F. A commemorative property
- ☐ G. Less than 50 years old or achieving significance within the past 50 years



Watab Pulp and Paper Mill

Benton and Stearns  
Counties, MN  
County and State

Name of Property

**Areas of Significance**

(Enter categories from instructions.)

Industry: Paper Milling

---

---

---

---

---

---

**Period of Significance**

1905-1972

---

---

**Significant Dates**

c. 1965

---

---

**Significant Person**

(Complete only if Criterion B is marked above.)

---

---

---

**Cultural Affiliation**

---

---

---

**Architect/Builder**

---

---

---

Watab Pulp and Paper Mill

Benton and Stearns  
Counties, MN  
County and State

Name of Property

**Statement of Significance Summary Paragraph** (Provide a summary paragraph that includes level of significance, applicable criteria, justification for the period of significance, and any applicable criteria considerations.)

The Sartell Hydroelectric Project evaluated under Criterion A: History for its association with the history of the state's paper milling industry, as well as for its association with the history of hydroelectric generation in Minnesota. The powerhouse and dam were constructed between 1905 and 1907 to provide hydromechanical power for the Watab Paper Company mill located on the eastern side of the river. Following a fire in 2012, almost all of the mill buildings were demolished, resulting in a significant loss of integrity for the paper mill complex. The remaining powerhouse and dam alone do not illustrate the former property's association with either the local or statewide paper milling industry, and the property was not found to be eligible under Criterion A for its association with Minnesota's paper milling industry.

Under Criterion A: History, the Sartell Hydroelectric Project provided hydromechanical power for the Watab Paper Company and its successors the St. Regis Paper Mill and Champion International. Technological innovation in wood pulping at the mill in the 1980s rendered the hydromechanical power provided by the powerhouse and dam obsolete. After the mid-1980s, the powerhouse and dam were converted to producing hydroelectric power for the mill, and currently provides hydroelectrical power for regional distribution. As the powerhouse and dam did not begin producing hydroelectric power until the 1980s, its association with the history of hydroelectric generation in Minnesota has not reached sufficient age to be considered historic.

Under Criterion C: Architecture, the powerhouse was constructed as a utilitarian building with minor references to the Neoclassical style, as seen in the round-arch brick window surrounds, shallow pilasters, and parapet roofline. The replacement and partial infill of almost every window opening has resulted in a loss of integrity for the building. The Sartell Hydroelectric powerhouse is not a particularly distinctive example of the Neoclassical style as applied to an industrial building, nor does it retain a sufficient degree of integrity to be considered eligible for the NRHP under Criterion C: Architecture.

Under Criterion C, the Sartell Hydroelectric Project was evaluated as an example of a dam property type, originally constructed as a needle dam between 1905 and 1907 and featured a swinging suspension bridge that extended from the west bank of the river to the powerhouse. These elements were removed in the mid-1960s following major flooding in the area and replaced with concrete overflow and tainter gate sections and a fixed-base catwalk atop the piers. The changes to the original structure have resulted in a loss of integrity, and the structure is not considered a good example of an early 20<sup>th</sup> century dam.



Watab Pulp and Paper Mill

Benton and Stearns  
Counties, MN  
County and State

Name of Property

**Narrative Statement of Significance** (Provide at least **one** paragraph for each area of significance.)

### *History of Sartell*

Prior to the mid-19<sup>th</sup> century, the area of what would eventually become Sartell was inhabited in turns by Dakota, Chippewa, and Ho-chunk tribes as they were forced westward by encroaching white settlement.<sup>1</sup> French fur traders knew the present site of Sartell as the “third rapids” that they would encounter as they traveled north on the Mississippi River from Minneapolis. One of the earliest permanent white settlers of the area was Joseph B. Sartell in 1854, who established a flour mill and later a lumber mill and dam near Watab Creek Park.<sup>2</sup> In 1905, the Watab Pulp and Paper Company began construction of a paper mill at the site, with the accompanying hydromechanical dam and powerhouse completed in 1907. The mill quickly became the area’s largest employer, and the complex was bought by the St. Regis in 1946 and Champion International in 1982, after which time mill operations were significantly expanded.

In 1907, the Village of Sartell was incorporated and named after the area’s earliest white settler, Joseph B. Sartell. The paper mill continued to grow, and in 1925 another major company was founded in Sartell: DeZurik Water Controls, a valve production plant. While the city was originally located along the US Highway 10, a major arterial traveling north from the Twin Cities and St. Cloud, the re-route of the roadway in the 1960s and the construction of a new bridge over the Mississippi River led to the decline of the original downtown area.<sup>3</sup> The population growth of Sartell began to accelerate due to the city’s location, services, and small-town atmosphere. However, a fire at the paper mill in 2012 would eventually lead to the sale and demolition of the complex, and loss of a major employer in the area.

### *Watab Pulp and Paper Company*

The founding of the Watab Pulp and Paper Company began in 1905 when the city’s namesake, Joseph B. Sartell, sold 70 acres along the Mississippi River to a group of Wisconsin investors. He sold the land for 1 dollar in a successful attempt to persuade them to locate their new mill business in the fledgling community, adjacent to ample water power and the Northern Pacific Railroad. The original dam was constructed in 1907 of wooden planks, local granite and fieldstone, and 25,000 barrels of concrete. This resulted in the creation of both the Sartell reservoir behind the dam and of Little Rock Lake, which is located approximately five miles upstream from the structure.<sup>4</sup> The mill first produced newsprint for Minneapolis and St. Paul newspapers, paying workers between \$1.25 and \$3 dollars per day depending on the job.<sup>5</sup>

<sup>1</sup> “The Land, Water, and Language of the Dakota, Minnesota’s First People,” How the Dakota Have Shaped the State, MNopedia.com, last modified July 9, 2021, <https://www.mnopedia.org/land-water-and-language-dakota-minnesota-s-first-people>.

<sup>2</sup> “History of Sartell,” SartellMN.com, accessed February 25, 2022, <https://sartellmn.com/about/history/>.

<sup>3</sup> Ibid.

<sup>4</sup> Anita Rasmussen, “The Death of a Historic Community Icon,” PlannersWeb.com, accessed February 23, 2022, <https://plannersweb.com/2013/11/death-historic-community-icon/>.

<sup>5</sup> Jim Maurice, “History of the Sartell Paper Mill,” WJON.com, accessed February 22, 2022, <https://wjon.com/history-of-the-sartell-paper-mill/>.

Watab Pulp and Paper Mill

Benton and Stearns  
Counties, MN  
County and State

Name of Property

Following the purchase of the mill and dam by St. Regis Paper Company – a national company headquartered in upstate New York – mill equipment was modernized. A major overhaul and expansion project completed in 1982 included the installation of a new paper pulping machine, on-site pollution control, and a waste water treatment plant.<sup>6</sup> The new pulping machine rendered the hydromechanical pulp grinders in the dam and powerhouse structure obsolete; the hydro turbines were converted to produce hydroelectric power for the mill. The expansion project in the 1980s costs over \$300 million dollars, one of the largest construction projects in Minnesota's history, and transformed a local, brick paper mill into a nationally significant, bright blue steel complex. It was locally nicknamed Big Blue.<sup>7</sup> See attached photo log for historic photographs of the property.

The mill, by then producing supercalendered paper for magazines and catalogs, was merged with Champion International Corp in 1984, then International paper in 2000, and finally Verso Paper in 2006. On Memorial Day in 2012, an explosion and fire at the mill killed one person and injured four others. The warehouse portion of the complex was destroyed, and in the face of the damage in addition to a shrinking paper milling industry, Verso Paper decided not to repair and reopen the mill in Sartell.<sup>8</sup> Between 2013 and 2015, the site was demolished and materials salvaged, with the exception of the brick powerhouse and dam structure. The hydroelectric portions of the project were sold separately and connected to the regional power grid. Eagle Creek Renewable Energy purchased the property.

*Conclusion*

The Sartell Hydroelectric Project represents the community's last link to the Watab Paper Mill and its successors, which were vital to the founding and growth of Sartell throughout the 20<sup>th</sup> century. However, the site does not retain integrity as it relates to paper milling in the region or its original dam construction, nor does it hold significance as a historic hydroelectric project. The powerhouse does not display the style and integrity which would be required for architectural significance. For these reasons, the Sartell Hydroelectric Project is not recommended as eligible for listing in the NRHP under any criteria.

<sup>6</sup> Neal Pearson, "Paper Mill History," interview, Sartell Historical Society, undated, audio, 14:51, <https://www.sartellhistoricalsociety.org/stories>; Eleanor Amigo and Mark Neuffer, *Beyond the Adirondacks: The Story of the St. Regis Paper Company*, (Westport, Connecticut: Greenwood Press, 1980), 92-93.

<sup>7</sup> Rasmussen, "The Death of a Historic Community Icon."

<sup>8</sup> Ibid.



Watab Pulp and Paper Mill

Benton and Stearns  
Counties, MN  
County and State

Name of Property

---

## 9. Major Bibliographical References

**Bibliography** (Cite the books, articles, and other sources used in preparing this form.)

Amigo, Eleanor and Mark Neuffer. *Beyond the Adirondacks: The Story of the St. Regis Paper Company*. Westport, Connecticut: Greenwood Press, 1980.

Maurice, Jim. "History of the Sartell Paper Mill." WJON.com. Accessed February 22, 2022.  
<https://wjon.com/history-of-the-sartell-paper-mill/>.

MNopedia.com. "The Land, Water, and Language of the Dakota, Minnesota's First People." How the Dakota Have Shaped the State. Last modified July 9, 2021.  
<https://www.mnopedia.org/land-water-and-language-dakota-minnesota-s-first-people>.

Pearson, Neal. "Paper Mill History." Interview. Sartell Historical Society, undated. Audio, 14:51. <https://www.sartellhistoricalsociety.org/stories>.

Rasmussen, Anita. "The Death of a Historic Community Icon." PlannersWeb.com. Accessed February 23, 2022, <https://plannersweb.com/2013/11/death-historic-community-icon/>.

SartellMN.com. "History of Sartell." Accessed February 25, 2022.  
<https://sartellmn.com/about/history/>.

---

### Previous documentation on file (NPS):

- ☐ preliminary determination of individual listing (36 CFR 67) has been requested
- ☐ previously listed in the National Register
- ☐ previously determined eligible by the National Register
- ☐ designated a National Historic Landmark
- ☐ recorded by Historic American Buildings Survey # \_\_\_\_\_
- ☐ recorded by Historic American Engineering Record # \_\_\_\_\_
- ☐ recorded by Historic American Landscape Survey # \_\_\_\_\_

### Primary location of additional data:

- ☐ State Historic Preservation Office
- ☐ Other State agency
- ☐ Federal agency

Watab Pulp and Paper Mill

Benton and Stearns  
Counties, MN  
County and State

Name of Property

☐ Local government

☒ University

☒ Other

Name of repository: Sartell Historical Society

**Historic Resources Survey Number (if assigned):** BN-WAT-001

## 10. Geographical Data

**Acreage of Property** 8.22 acres

Use either the UTM system or latitude/longitude coordinates

### Latitude/Longitude Coordinates

Datum if other than WGS84: \_\_\_\_\_

(enter coordinates to 6 decimal places)

1. Latitude: Longitude:

2. Latitude: Longitude:

3. Latitude: Longitude:

4. Latitude: Longitude:

**Or**

### UTM References

Datum (indicated on USGS map):

☐ NAD 1927 or ☒ NAD 1983

1. Zone: 15N Easting: 406105 Northing: 5052737

2. Zone: 15N Easting: 406314 Northing: 5052696

3. Zone: 15N Easting: 406276 Northing: 5052547

4. Zone: 15N Easting : 406054 Northing: 5052596



Watab Pulp and Paper Mill

Benton and Stearns  
Counties, MN  
County and State

Name of Property

**Verbal Boundary Description** (Describe the boundaries of the property.)

The historic boundary for the Sartell Hydroelectric District is a polygon that spans the Mississippi River and encompasses the powerhouse, dam, and a building on the east bank of the river that remains from the original paper mill site. Beginning on the western bank of the river approximately 100 feet below the dam's concrete apron, the boundary travels northeast along the bank of the river for approximately 500 feet before turning east and traveling across the Mississippi River for approximately 700 feet to the eastern edge of the concrete block mill building. From there, the boundary extends southwest for approximately 500 feet, then turns west and travels back across the river for approximately 750 feet to the point of beginning.

**Boundary Justification** (Explain why the boundaries were selected.)

The historic boundary was delineated to encompass the powerhouse and dam belonging to the Sartell Hydroelectric Project, the last remaining mill building historically associated with the property, and the intake and tailrace areas immediately up-and downstream from the structures. The western boundary line is visually defined by the western riverbank, and the eastern boundary line is defined by the eastern edge of the former mill building. The northern and southern lines were drawn to encompass the buildings and structures of the property within a simple, rectangular boundary.

---

**11. Form Prepared By**

name/title: Kelly Blaubach, Architectural Historian  
organization: University of Wisconsin-Milwaukee, Cultural Resource Management  
street & number: 3413 N. Downer Avenue  
city or town: Milwaukee state: WI zip code: 53201  
e-mail: kjblaub@uwm.edu  
telephone: 414-251-7361  
date: 2-28-2022

---

**Additional Documentation**

Submit the following items with the completed form:

Watab Pulp and Paper Mill

Benton and Stearns  
Counties, MN  
County and State

Name of Property

- **Maps:** A **USGS map** or equivalent (7.5 or 15 minute series) indicating the property's location.
- **Sketch map** for historic districts and properties having large acreage or numerous resources. Key all photographs to this map.
- **Additional items:** (Check with the SHPO, TPO, or FPO for any additional items.)

### Photographs

Submit clear and descriptive photographs. The size of each image must be 1600x1200 pixels (minimum), 3000x2000 preferred, at 300 ppi (pixels per inch) or larger. Key all photographs to the sketch map. Each photograph must be numbered and that number must correspond to the photograph number on the photo log. For simplicity, the name of the photographer, photo date, etc. may be listed once on the photograph log and doesn't need to be labeled on every photograph.

### Photo Log

Name of Property: Sartell Hydroelectric Dam

City or Vicinity: City of Sartell

County: Benton and Stearns Counties

State: Minnesota

Photographer: Ryan W. Schmidt

Date Photographed: 2/3/2022

Description of Photograph(s) and number, include description of view indicating direction of camera:



Watab Pulp and Paper Mill

Benton and Stearns  
Counties, MN  
County and State

Name of Property

Please see Attachment 1 for Photo Log.

- 1 of 12. Historic photo, Watab Pulp and Paper Mill, 1908, looking east across Mississippi River (Minnesota Historical Society)
- 2 of 12. Aerial photo, Verso Paper Mill, c. 1990, looking southwest at complex (plannersweb.com)
- 3 of 12. Dam and powerhouse overview, looking northeast
- 4 of 12. Powerhouse entrance, looking north
- 5 of 12. Powerhouse interior, turbines, looking northeast
- 6 of 12. Powerhouse, south elevation, looking east from dam deck
- 7 of 12. Dam, looking west from dam deck
- 8 of 12. Dam, overflow section from upstream, looking southwest
- 9 of 12. Powerhouse, west end of north elevation, looking southwest from intake deck
- 10 of 12. Powerhouse, east end of north elevation, looking southeast from intake deck
- 11 of 12. Powerhouse, south elevation, looking northwest from entrance
- 12 of 12. Mill building, looking northeast from dam

**Paperwork Reduction Act Statement:** This information is being collected for nominations to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C. 460 et seq.). We may not conduct or sponsor and you are not required to respond to a collection of information unless it displays a currently valid OMB control number.

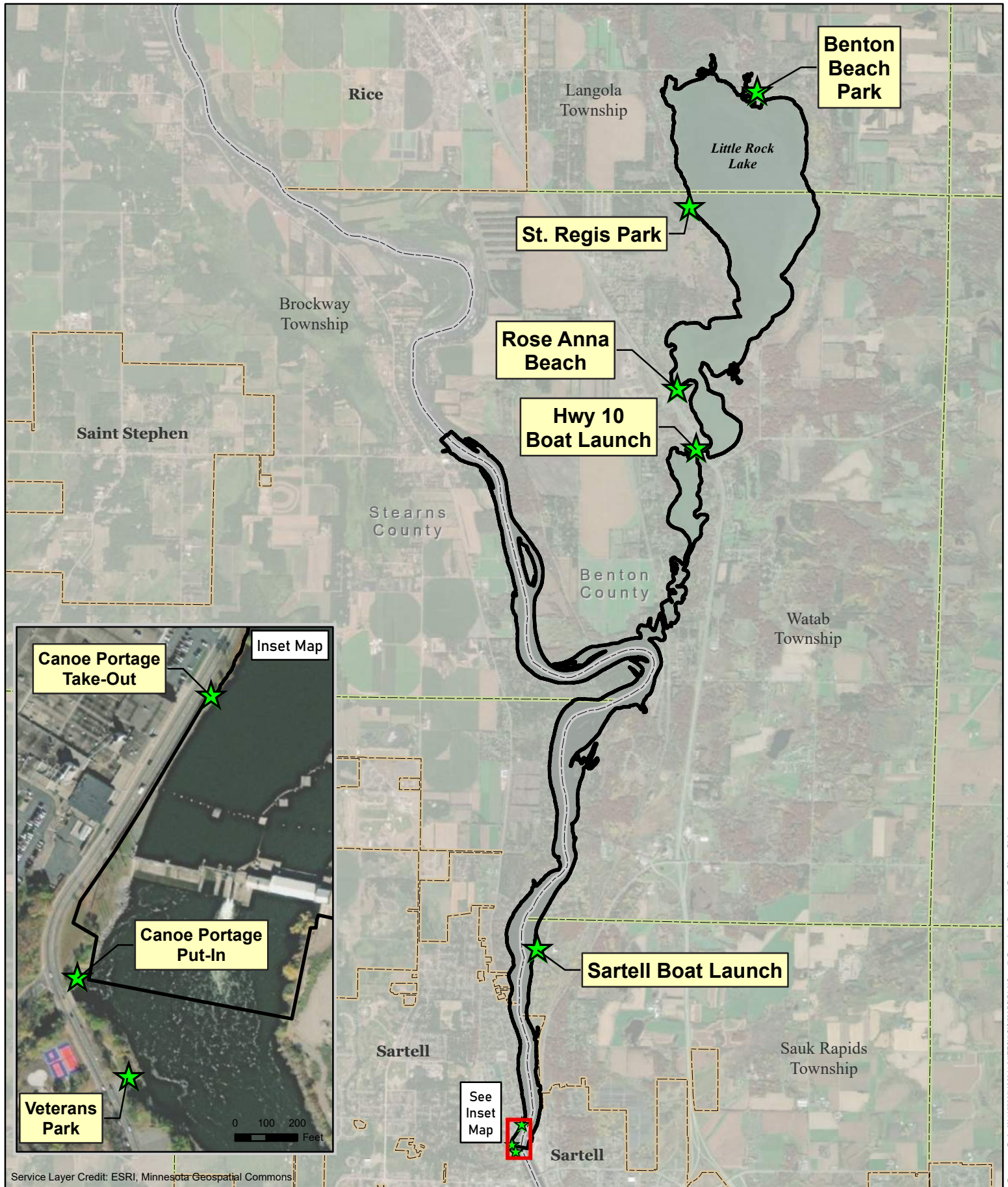
**Estimated Burden Statement:** Public reporting burden for each response using this form is estimated to be between the Tier 1 and Tier 4 levels with the estimate of the time for each tier as follows:

- Tier 1 – 60-100 hours
- Tier 2 – 120 hours
- Tier 3 – 230 hours
- Tier 4 – 280 hours

The above estimates include time for reviewing instructions, gathering and maintaining data, and preparing and transmitting nominations. Send comments regarding these estimates or any other aspect of the requirement(s) to the Service Information Collection Clearance Officer, National Park Service, 1201 Oakridge Drive Fort Collins, CO 80525.

**APPENDIX E-21      Recreation Sites in the Sartell Project Vicinity**





Service Layer Credit: ESRI, Minnesota Geospatial Commons



- Proposed Project Boundary
- County Boundary
- City Boundary
- Township Boundary



0 0.5 1 1.5 2  
Miles

## Sartell Hydroelectric Project Project Vicinity Recreation Facilities

FERC No. 8315







## **PARKS AND OPEN SPACES: HOW WE PLAY**

### **Why This Matters For Sartell: Be Fun and Active**

The Sartell area is blessed with an abundance of natural beauty and environmentally sensitive areas. The Mississippi and Watab Rivers flow through the middle of the city and serve as primary sources of natural beauty. The area also provides a home to a variety of plant and animal life and is a source of recreation and enjoyment for residents and visitors alike. As a result, Sartell is committed to preserving, enhancing and providing good stewardship of our parks. The purpose of this chapter is to provide a guiding plan for parks, open space, and natural resources management. Sartell's parks and open space play an important role in making the City a desirable place to live, work and play. Parks improve our physical and psychological health, enhance community life, provide outdoor experience and serve as an anchor for strong neighborhoods.

Sartell has over 27 parks of diverse sizes, amenities, and opportunities for recreation and a number of additional properties that add to the greenspace of Sartell. Residents relied heavily on non-City facilities for their recreation needs, such as the school district's facilities. Sartell has been focused on building additional trails and park systems. The results from this last decade of acquisition and building have been dramatic:

- Increase in open space and park acreage from 150 acres in 2003 to a current total 363 acres
- Construction of new parks: Pinecone Central
- Acquisition of land for future park sites and amenities, such as Pinecone Central Park and Sauk River Regional Park

Not only do residents love the existing parks, but they also have numerous ideas for what to do with them and how to make them better. Now that the City has succeeded in developing its extensive parks system, the City's focus is to keep the parks in excellent condition, make connections between them and the trail network, and enhance the parks with additional amenities (or rebuild aging structures).

#### **Emerging Recreational Trends:**

- Increased interest in trail-related activities (walking, biking, in-line skating) and demand for improved safety and security.
- Growing public interest in Environmental Stewardship and environmental sensitive lifestyles.
- More year-round facilities and a need for adequate fields for "non-traditional" sports such as lacrosse, rugby,

kickball, etc.

- Increasing attention to healthy lifestyles.
- Greater demand for adult recreational activities, especially as the baby boom generation continues to age.
- The growth of youth athletic associations.

## PARK AND OPEN SPACE CLASSIFICATIONS

The National Recreation and Park Association (NRPA) and the American Academy of Park and Recreation Administration (AAPRA) have developed park and trail system standards-based guidelines to serve as spatial and functional guidelines for communities to use as they develop their park systems. The following is a list of proposed park classifications including Level of Service (LOS) most relevant to Sartell's needs. It is important to note that these standards are general guidelines.



### Neighborhood Park

**Description:** Basic unit of the park system that serves as the recreational and social focus of the neighborhood. Typically developed to provide both active and passive recreation opportunities for residents of all age groups living in the surrounding neighborhoods.

**Location Criteria:** ¼ mile to ½ mile service area radius

**Size Criteria:** 2-10 acres (Sizes may be determined as needed to accommodate desired uses)

**Site Selection Guidelines:** Site should be easily accessible from surrounding neighborhood and should link to a community greenway or trail system. Site development should provide for both active and passive recreation opportunities. The landscape of the site should possess pre-development aesthetic value and not be a “left-over” outlot or located within a 100-year flood-plain or be greater than 25% wetland.

**Development Guidelines:** Park development should be a balance of 50% active space and 50% passive space for recreational uses on the site and typically not be programmed. Appropriate park elements would include: play equipment, court games, open “non-programmed” play field or open space, tennis courts, volleyball courts, shuffleboard courts, horseshoe pits, ice skating areas, wading pool, or splash pad. Other park facilities should include picnic areas, internal



trail system, and general open space for enjoying the “park scenery.” Neighborhood parks should provide at least 7 to 10 parking spaces, and limited lighting should be provided for facility illumination, security, and safety.

Example Park fitting this category: Wilds Park North

### Community Park

**Description:** Larger in size and serves a broader purpose than the neighborhood park with the purpose of providing recreational opportunities for several neighborhoods or larger sections of the community. Typically developed to provide both active and passive recreation opportunities for larger groups while preserving unique landscapes and open spaces.

**Location Criteria:** Should serve two or more neighborhoods with a ½ mile to 3.0-mile service area radius

**Size Criteria:** 5-30 acres (Size may be determined as needed to accommodate desired uses)

**Site Selection Guidelines:** Site should be easily accessible from the entire service area, should be centrally located, and should have strong connection to other park areas. Site development should provide for both active and passive recreation opportunities. The landscape of the site should possess pre-development aesthetic value and not be a “left-over” outlot or located within a 100-year flood-plain. The site, when possible, should be located adjacent to natural resource areas and greenways. These areas tend to provide landscapes with greater biodiversity thus enhancing the passive recreational experience.

**Development Guidelines:** While the community park should be designed to accommodate both active and passive recreational opportunities, programming should remain, for the most part, limited. Appropriate active park elements would include: larger play areas with creative play equipment for a range of ages, court games, informal ball fields for youth play, tennis, volleyball and shuffleboard courts, horseshoe pits, ice skating, swimming pools and beaches, archery ranges, and disc golf. Parking lots should be provided to accommodate the use, and limited lighting should be provided for facility illumination, security, and safety development programs.

Example Park fitting this category: Val Smith Park



### Regional and Special Use Park

**Description:** Covers a broad range of parks and recreational facilities oriented toward a single purpose use such as historical, cultural, or social sites. These sites may offer local historical, educational, or cultural, recreational opportunities. Examples of this type of park include historic downtowns, performing arts parks and facilities, arboretums, public gardens, indoor theaters, churches and public buildings. Other examples include community and senior centers, community theaters, hockey arenas, golf courses, aquatic parks, tennis centers, softball complexes, and sports stadiums. Community centers, however, are typically located in neighborhood or community parks.



**Location Criteria:** Location is primarily based on recreation need, community interest, facility type and availability of land. These type of parks should service the entire community rather than a defined neighborhood or area within a community.

The site should be easily accessible from major transportation routes and locations where possible.

**Size Criteria:** Facility space requirements should determine the size of the park.

**Site Selection Guidelines:** No specific site selection standard is recommended due to the diversity of use potential.

**Development Guidelines:** Due to the unique quality of this type of recreational facility, community input and focus groups should be used to determine the site development program.

Example Park fitting this category: Sauk River Regional Park



## Greenways



**Description:** Link the park system components to create a “cohesive park, recreation, and open space system,” that emphasizes the natural environment. Greenways allow for safe, continuous pedestrian movement between parks throughout a community and can enhance property values.

**Location Criteria:** Location is primarily based on the availability of land. Typically greenways are linear in nature and follow natural corridors such as waterways. Greenways can also be of the built environment including abandoned railroad

beds, areas within residential subdivisions, revitalized riverfronts, reclaimed industrial sites, safe powerline rights-of-way, pipeline easements, transportation rights-of-ways, etc. Boulevards and parkways can also be considered candidates as greenways if they provide a “park-like quality and provide off-street trail opportunities.”

**Corridor Width Criteria:** 25 feet within a subdivision, 50 feet minimum and 200 feet optimal

**Site Selection Guidelines:** Site selection is generally based on availability and the trail system plan. Natural corridors should be considered whenever possible, but appropriate “built” corridors are also acceptable with proper design.

**Development Guidelines:** Greenways provide the opportunity for some recreational travel opportunities such as hiking, walking, jogging, bicycling, and in-line skating. Parkway corridors also provide attractive travel experiences for the motorist and canoeing can occur in “green” waterway corridors.

### Park Classification

Table 1 shows park classifications assigned to each of Sartell's parks generally based on use, location, and size. While some of the parks may be smaller in size than a typical standard suggests, their location and current amenities have taken precedence in the classification process.

<b>Park</b>	<b>Classification</b>	<b>Size</b>
<b>Celebration</b>	<b>Community Park</b>	<b>1.75</b>
<b>Creekview Preserve</b>	<b>Neighborhood Park</b>	<b>1.87</b>
<b>Cypress Park</b>	<b>Mini Park</b>	<b>.72</b>
<b>Eastside Kiddie</b>	<b>Neighborhood Park</b>	<b>.55</b>
<b>Fox Run of Avalon Village</b>	<b>Mini Park</b>	<b>.71</b>
<b>Geoffrey</b>	<b>Neighborhood Park</b>	<b>.81</b>
<b>Huntington</b>	<b>Community Park</b>	<b>27.03</b>
<b>Lions</b>	<b>Community Park</b>	<b>7.33</b>
<b>Madison Crossing</b>	<b>Mini Park</b>	<b>.85</b>
<b>Meadowlake</b>	<b>Mini Park</b>	<b>.56</b>
<b>Morningstar</b>	<b>Neighborhood Park</b>	<b>.55</b>
<b>Natures Edge</b>	<b>Mini Park</b>	<b>.25</b>
<b>Northside</b>	<b>Community Park</b>	<b>37.28</b>
<b>Pine Tree Pond</b>	<b>Mini Park</b>	<b>.47</b>
<b>Pinecone Central</b>	<b>Regional Park</b>	<b>113</b>
<b>Pinecone Regional (Bernicks)</b>	<b>Regional Park</b>	<b>73</b>
<b>Rolling Meadows East</b>	<b>Neighborhood Park</b>	<b>1.32</b>
<b>Rolling Meadows West</b>	<b>Neighborhood Park</b>	<b>3.66</b>
<b>Rotary Riverside</b>	<b>Community Park</b>	<b>1.99</b>
<b>Sabre Oaks</b>	<b>Mini Park</b>	<b>.27</b>
<b>Sandstone</b>	<b>Neighborhood</b>	<b>3.33</b>
<b>Sartell Veterans</b>	<b>Community Park</b>	<b>1.84</b>
<b>Sauk River Regional</b>	<b>Regional Park</b>	<b>46</b>
<b>Val Smith</b>	<b>Community Park</b>	<b>16.04</b>
<b>Watab Creek</b>	<b>Community Park</b>	<b>11.88</b>
<b>Wilds Park North</b>	<b>Neighborhood Park</b>	<b>7.32</b>
<b>Wilds Park South</b>	<b>Neighborhood Park</b>	<b>2.40</b>

**Table 1**



### Future Park Needs

Sartell has 363 acres of dedicated park space (not counting greenspaces). Based on the National Park standard of providing 10 acres of park and open space land per 1,000 people and on having a population of 17,000 (170 acres), Sartell exceeds the guideline by 193 acres. It is important to note this is only a rule-of-thumb guideline. While Sartell's parkland acres within the system exceed national guidelines, the ratio alone does not imply that the community is being provided with an adequate range of park types or classifications and recreation facilities.

Table 2 shows park classification acreage ratio guidelines adapted from the National Standards that are most relevant to serving Sartell's needs. These ratios plan for providing an adequate distribution of park types within the system. These standards typically apply to those parks that offer active recreation opportunities. Standards do not apply for park and open space areas that are more specialized or that provide more passive recreational opportunities. These areas are typically more dependent on the location and size of the feature itself. The sizes shown in Table 2 are guidelines. The locations and amenities offered often take precedence in how parks are classified.

**Table 2**  
**Park Classification Guidelines**

Community Park	5-30 Acres
Neighborhood Park	2-10 Acres
Mini-Park	<2 Acres
Regional and Special Use Park	No Standard
Greenways	No Standard
Natural Resource and Open Space Areas	No Standard

## PARKS AND OPEN SPACE GOALS

### GOAL 1: VALUE PASSIVE RECREATION

Passive recreation generally enhances the open-space aspect of a park by providing a minimal intensity of development for "unstructured" recreation opportunities, such as walking, picnics, and exercise. Active recreation, on the other hand, involves more intensive development for ball fields or aquatic centers, and typically includes programmed activities. Active recreation is a service provided by others. The Sartell/St. Stephen Community Education provides extensive sports programming, leagues, and recreation facilities at the various parks and other public spaces. By focusing on passive open

spaces, Sartell provides a unique opportunity to connect with nature, and its trail network provides connections to major amenities like a future downtown.

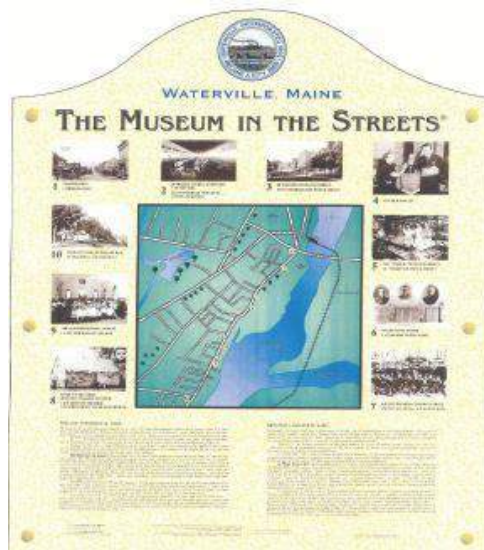
## **Potential Strategies May Include These And Other Future Cool Ideas:**

### **1.1 Target Funding For Passive Open Spaces**

When considering budget allocations for parks, prioritize improvements and development of passive recreation. Ensure all residents of Sartell are within a short walking distance of passive recreation opportunities.

### **1.2 Encourage Residents To Explore Passive Open Spaces With New Events**

Organize trail events like a scavenger hunt, geocaching, history and public art walks to encourage more residents to discover the valuable open space resources available to them.



## **GOAL 2: PRIORITIZE EXISTING PARKS**

Sartell has spent much of the last decade creating new parks to respond to the citizen-approved ½-cent sales tax. While more park spaces are planned, ensure that existing parks are maintained so that they remain attractive assets. New parks



increase the City's operating costs and responsibilities. As such, focus dollars toward enhancing existing parks before creating new ones.



## **Potential Strategies May Include These And Other Future Cool Ideas:**

### **2.1 Add Amenities And Enhancements To The Parks**

Residents noted that some of the trails and existing parks could use more amenities such as benches and other seating, trees and bike racks. Develop a priority list of cost-effective improvements to existing parks. Seek private sponsorship of amenities, such as an Adopt-a-Bench program that engages residents in the upkeep and improvement of these parks. Incorporate artistic, whimsical elements. Install Free Little Libraries in our parks, especially near playground equipment, pools and other areas which may appeal to families or individuals in an effort to bring books and magazines to the people.

### **2.2 Improve The Parks And Trails For Runners And Avid Walkers**

Runners prefer softer surfaces that protect their knees and joints. Allocate space for an unpaved trail for runners separate from a bike trail. Connect and expand existing trail markings that indicate mileage and location. Include points of interest such as sidewalk art or information kiosks.

### **2.4 Expand Community Gardening**

Community gardens are of keen interest to Sartell residents. Seek opportunities to create a range of community gardens, including fruit orchards, U-pick fields like strawberry and pumpkin patches, etc. With resident volunteers, these can be inexpensive, yet impressive, improvements to the parks.

### **2.5 Construction Of A Skate Park**

## **GOAL 3: ENSURE THE PARKS & TRAILS ARE SAFE**

To promote expanded use of the parks and at all times of the day, maintaining park safety is a critical goal for Sartell.

## **Potential Strategies May Include These And Other Future Cool Ideas:**

### **3.1 Add Video Surveillance To Local Parks**

Begin a program to cover major trails and entrances and promote these investments to residents.



### **3.2 Improve The Maintenance Of Parks And Trails**

Ensure that park and trail maintenance concerns are addressed quickly. Create a Google map on the City's website and/or a smartphone app that allows residents to tag areas of the parks that require some level of maintenance or improvement.

### **GOAL 4: EXPAND THE PARK CONNECTIONS & TRAIL NETWORK**

Improving existing parks and ensuring that they are safe is the current priority for Sartell. However, this does not mean we should not think ahead about ways to improve connectivity of the trail network. Sartell's trail system is extensive, but there are a few missing links. An effective trail network is one that is connected and fully integrated into the City's neighborhoods and regionally.

### **Potential Strategies May Include These And Other Future Cool Ideas:**

#### **4.1 Plan For New Trails**

New trails should seek specifically to address the missing links in the system. This includes the Lake Francis plans that include new trail connections and amenities that appeal to the use of outdoor spaces such as a fishing pier, water activities, and an outdoor amphitheater.

As warranted, review trails throughout the parks system and consider if connections to the regional trail system or other parks may be appropriate.

Identify high-use trails and consider appropriate trail surface materials to encourage safe, unrestricted use of the trail.



## 4.2 Organize Walking Groups

New trail connections are not always, what is needed to strengthen connections; sometimes-organized activities can offer residents comfort in using the parks. Encourage groups to offer walking groups and walking school buses to encourage greater use of the facilities.

Market programs and facilities using brochures, cable television, the internet and other available promotional avenues.



## 4.3 Develop And Redevelop Parks That Focus On Accessibility, Flexibility And Naturalization Where Appropriate.

Integrate practices that meet or exceed established standards for ecological design for landscapes and green building techniques that improve function and minimize long-term maintenance and operating costs. Engage and involve residents in identifying programs, services, and facility needs within the community.

Implement a long-term renewal plan based on a complete inventory of the system, lifecycle cost analysis, and condition assessment of all park facilities.

Build or renew facilities to meet or exceed standards for accessibility.

Build quality facilities that can be adapted to new uses as community needs change.

Accept parkland dedication only if it is consistent with the City's development plans and the City's parks plan.

Maintain zoning and subdivision regulations that provide for and encourage the continued development of parks, trails, recreational opportunities, and preservation of open space.

Apply official controls, such as Parkland Dedication Requirements, to ensure that appropriate and developable park land is provided with new development. Whenever possible, the land dedication should reflect the goals and policies of this Comprehensive Plan.

Evaluate the quality and usability of land for parks, trails, and open space being proposed for parkland dedication by the developer.



Evaluate and plan for the future demand for available youth and adult park areas. Offer new ideas and facilities that will provide the opportunity to expand entertainment programming, athletic leagues, artistic opportunities, family schedule-friendly programs, healthy lifestyle/holistic classes, and community-wide special events.

Provide flexible spaces to accommodate changing trends in demand for park and open space programming.

Systematically upgrade existing park shelters, playground structures, trails and other park amenities to meet the changing needs of the community

Where appropriate consider alternative vegetation management within the City's park areas.

Continue the process of completing energy audits for all park buildings. Utilize audit results when planning for long-term capital improvements to the park buildings.

Using Best Management Practices (BMP's), buffer lakes, ponds, wetlands, and streams with native grasses and other ecologically appropriate plant species. Where possible, use buffers on public lands as demonstration projects to encourage residents, business owners, and developers to emulate best practices.



#### 4.4 Develop Relationships and Partners to Deliver Recreational and Passive Activities

Continue to support the park/school partnership and to coordinate park use with educational providers. If in the future any private or non-profit entity no longer wants to have the shared use park, the City should consider the opportunity to acquire the property for City park purposes.



Continue partnerships with youth organizations to collaborate on park improvements on a shared-use basis.

Continue program to promote volunteer efforts to assist with park amenities and aesthetic appeal.

Involve neighborhoods and the community to help shape park facilities and the use of open spaces within the City.

Enhance park and trail opportunities for the City with partnerships with other governmental agencies including the St. Cloud APO, Regional Active Living Advisory Group and surrounding cities and counties.

**GOAL 5: RECOGNIZE THE MISSISSIPPI, WATAB, SAUK AND OTHER RIVERS AND NATURAL AREAS AS A MAJOR RECREATIONAL, ECONOMIC AND OPEN SPACE ASSET TO THE COMMUNITY.**



**Potential Strategies May Include These and Other Future Cool Ideas:**

**5.1 Maintain Existing Public Accesses** to the rivers and increase public access in new development and redevelopment projects, specifically within the Mill Property area. Continue to develop access along the Rivers that are aesthetically compatible with the riverfront and sensitive to ecological function.

**5.2 Work To Connect** rivers to neighborhoods, parks and community facilities through trails and greenway corridors. Work with MnDOT to expand the Great River Bike Trail to include amenities within Sartell.

**5.3 Work With the DNR and Other Agencies** in creating and/or enhancing portages within all the navigable rivers.

The city will preserve and improve the natural, ecological and scenic resources within the park and open space system, including water quality, vegetation, wildlife and other environmentally sensitive resources.







# 2040

## Comprehensive Plan



A Shared Vision for the Future





# Acknowledgments

Plan Adopted on June 4, 2019 (County Ordinance No. 474)

**County Staff Lead**

Roxanne Achman, Department of Development Director

**County Board**

Ed Popp  
Jake Bauerly  
Spencer Buerkle  
Steve Heinen  
Warren Peschl

**Planning Commission**

Art Buhs  
Dan Gottwalt  
Gerry Feld  
Jerry Lang  
Mary Jo Holewa  
Mitch Czech  
Scott Johnson  
Steve Heinen (Alternate)  
Warren Peschl

**Park Commission**

Cindy Voit  
David Rixe  
Greg Bruestle  
Mary Kivi  
Paul Wesenberg

**County Staff**

Chris Byrd, Public Works Director/County Engineer  
Monty Headley, County Administrator  
Nicole Ruhoff, Public Health Supervisor  
Scott Zwick, GIS Coordinator  
Sean Moe, Land Use Technician

**Organizations**

Town Board Officials  
John Uphoff, Executive Director, Benton Economic Partnership

**Prepared by**

Hoisington Koegler Group, Inc.

# Table of Contents

Acknowledgments.....	ii
1.	
INTRODUCTION.....	1
What is a Comprehensive Plan?.....	2
Why Plan?.....	2
How to Use this Plan.....	3
2040 Comprehensive Plan.....	4
The Planning Process.....	4
2.	
COMMUNITY DIRECTION.....	9
Population.....	10
Diversity.....	12
Agriculture.....	14
Labor Force.....	17
Mobility.....	19
Communication.....	22
Housing.....	26
Public Health.....	27
3.	
VISION, GOALS + POLICIES.....	33
Vision Statement.....	34
Goals + Policies.....	35
Quality of Life.....	35
Land Use.....	38
Economic Development.....	40
Environment & Natural Resources.....	42
Mobility.....	44
4.	
LAND USE.....	47
Existing Conditions.....	48
2040 Land Use Plan.....	50



5.		
TRANSPORTATION	.....	69
Existing Conditions	.....	70
Multimodal Planning	.....	79
Balancing Transportation Needs with Land Use	.....	81
Implementation	.....	86
6.		
PARKS	.....	89
Existing Conditions	.....	90
Past Planning Efforts	.....	92
Emerging Trends & Opportunities	.....	98
Future Needs	.....	100
Next Steps	.....	108
7.		
IMPLEMENTATION	.....	111
County's Role in Implementation	.....	112
Implementation by Topic	.....	112

## Chapter 1

# Introduction

Benton County is located in central Minnesota and is part of the rapidly growing St. Cloud Metropolitan Area. Since it was first settled in the late 1850's, Benton County has been primarily an agricultural and rural community, as family farmers found its rich soil suitable for horticultural production, animal pasture land, and dairy operations.

Today the County remains primarily agricultural in its land use, although its southwestern corner is under increasing pressure to accommodate urban development around the Cities of St. Cloud, Sauk Rapids, and Sartell. The economic resources of the county are diverse in terms of income sources from agriculture, industry and retail.



# What is a Comprehensive Plan?

A comprehensive plan is an expression of the county's vision for the future and a strategic map to reach that vision. Comprehensive planning is an important tool for communities to articulate desired land use patterns to ensure a safe, pleasant, and economical environment for residential, agricultural, and commercial activities. A comprehensive plan provides the overall foundation for all land use regulation in the county. In Minnesota, authority for land use planning and regulation is vested primarily in local governments. For cities and townships, the authority to plan is found in Minnesota Statutes Section 462.353. Counties are authorized to plan under Minnesota Statutes Section 394.23. Planning can help:

- Preserve important natural resources, agricultural land, and other open lands.
- Create the opportunity for residents to participate in guiding a community's future.
- Identify issues, stay ahead of trends, and accommodate change.
- Foster sustainable economic development.
- Ensure more efficient and cost-effective infrastructure and public services.
- Provide an opportunity to consider future implications of today's decisions.
- Protect property rights and values.

# Why Plan?

We plan for the following reasons:

## Understanding the Big Picture

The "comprehensive" nature of the plan requires that all facets and functions of community life be considered. The data collection, analysis, and public engagement that feeds the plan provides a holistic view of county conditions and dynamics. This holistic view allows for future planning and decision making to be based on an informed, factual understanding of the county.

## Framework for Local Decision Making

The vision, guiding principles, goals, and policies outlined in this plan provide a basis for decision making and ensure that future actions respond to the desires, priorities, and concerns expressed through the public engagement process.

## Guidance for Landowners and Developers

By articulating a vision for future land use, public investment priorities and policies, and development goals, the plan provides guidance, resources, and reassurance to property owners and developers looking to farm, build, or reinvest in the community.

## Inform and Engage the Public

The planning process is an avenue for informing community members about the Comprehensive Plan, gaining input on the county vision and priorities, and encouraging broader discussions about community improvement. Just as the public plays a critical role in creating this plan, they are also a key to its successful implementation. Community members play a role as future advocates for the plan, as well as active participants in its implementation.

## Mobilize for Action

The plan is intended to be action-oriented, recommending concrete steps and strategies that can be implemented by the County in the immediate future. Many of the strategies recommended in the plan require the cooperation of outside groups, agencies, private businesses, and individuals in the community. The plan provides a basis for future partnership and collaboration.

# How to Use this Plan

While intended to guide change, this plan must also remain flexible to respond to changing needs, conditions and emerging trends. County officials must understand that they are responsible for the future of their community, and they must consider carefully the merits of adjustments to the plan. This is a critical step in the planning process; therefore, future decisions need to be evaluated against the vision, goals and policies laid out in this plan (see Chapter 3). Some decisions will align well, while others may not. This could quite possibly lead to changes to the vision or the plan. These proposals will trigger the community planning process, which should engage community members and stakeholders on updates to the plan.

Further guidance is provided in the chapters on how to achieve the Plan's vision and goals. These are discussed through a series of guiding principles. The guiding principles serve as a yardstick to measure the appropriateness and results of future initiatives. The guiding principles are a tool for future decision-making and help to define the character, values, and priorities of Benton County.

## Comprehensive Plan vs. Zoning

### Comprehensive Plan:

- Broad in scope
- Visionary
- Principles and Policy oriented
- It's a guiding document
- Conceptual and idealistic
- Focus is on community or regional scale
- Flexible in its interpretation

### Zoning Ordinance:

- Narrow in scope
- More rigid standards
- It's the law
- Detail oriented, specific
- Focus on the district and site level

### So which one rules?

In many instances, State Statutes make direct references linking a zoning ordinance provision to a community's master plan. Case law over the years has proven that a zoning ordinance in sync with a comprehensive plan is a more defensible ordinance than one that is not in sync or is not based on an approved comprehensive plan.

A review of zoning and subdivision ordinances always follows the updated comprehensive plan, resulting in minor or major modifications, depending on the new directions forged by the comprehensive plan.



# 2040 Comprehensive Plan

The last comprehensive plan was adopted in 2006. Comprehensive plans are typically updated every ten years and reflect a twenty year time horizon. Considering a future over twenty years away forces broadly consideration of issues and opportunities facing Benton County. This Comprehensive Plan looks out to the year 2040. In many ways, this Plan builds on past planning efforts.

This plan contains a series of plan elements and is organized as follows:

- **Chapter 1 - Introduction:** Defines the comprehensive planning process.
- **Chapter 2 - Community Direction:** Sets the stage for the plan by providing an overview of the County's existing conditions and emerging trends.
- **Chapter 3 - Goals and Policies:** Defines the Plan's vision, goals and policies.
- **Chapter 4 - Land Use Plan:** Describes Benton County's desired land use and development patterns, while recognizing the area's natural resources.
- **Chapter 5 - Transportation:** Describes Benton County's transportation system and provides policy direction on how to maintain this system, while accommodating all modes of travel.
- **Chapter 6 - Parks & Trails:** Describes Benton County's park and trail system, and provides a ten year work plan.
- **Chapter 7 - Implementation:** Identifies how the plan will be implemented to achieve the identified goals and policies.

# The Planning Process

The Benton County Comprehensive Plan was developed over a year long process (May 2018 – June 2019) undertaken by the Benton County Department of Development and planning consultants from Hoisington Kogler Group, Inc. The planning process consisted of three phases:

- **Discovery Phase:** The discovery phase identified existing conditions and emerging trends that may influence Benton County's future.
- **Exploration Phase:** The exploration phase included ideas on how to update the Comprehensive Plan that reflected the community's issues and concerns, while considering emerging trends.
- **Adoption Phase:** The last phase of the planning process aimed to build consensus on the draft Comprehensive Plan.

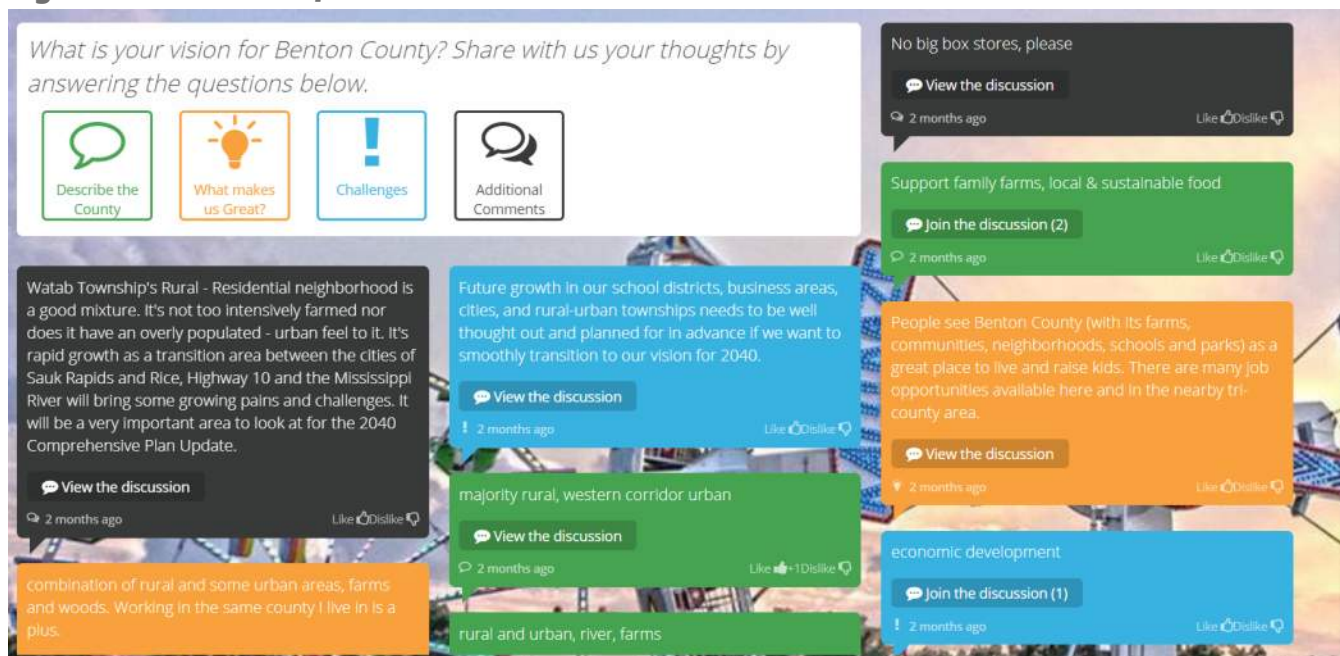
Public and stakeholder engagement played a vital part of the comprehensive planning process, ensuring that recommendations in the plan are based on a well-rounded understanding of community needs, values, issues, and opportunities. This planning process employed a number of traditional and contemporary modes of public engagement, and provided a range of opportunities for public input throughout the process. A summary of these activities are discussed in this section.

## Online Engagement

An initial step in the updating process was to conduct a community-wide survey using an online engagement tool (i.e., Social PinPoint). The online tool (see image) provided insight into what makes Benton County a great place to live, work and play. Participants were able to take part in conversations and like or dislike a comment that was shared on the “ideas wall.” The online tool was promoted through various marketing materials, including flyers that were handed out during the County fair and Amnesty events. County Commissioners and Planning Commissioners promoted the Comprehensive Plan update by distributing business cards that included project contact information and a website link. Online surveys and comment forms were also available during the planning process to garner feedback on draft materials and staff addressed township officials at two Association of Township Officers Meetings.

The “Ideas Wall” attracted over 200 unique visitors, who offered their input on the future of Benton County. Many people used the words “rural,” “farming,” “townships,” “the people,” and “parks” to describe Benton County’s characteristics.

**Figure 1.1. Social Pinpoint “Ideas Wall”**





## Focus Groups

Focus groups served as a sounding board, idea generator and a gauge of community sentiments. Each focus group member served as a “champion” of the process by promoting the public engagement activities and sharing ideas from their interest groups and circles of acquaintances. The focus groups consisted of the following members and met on July 26, 2018 or July 30, 2018, and May 8, 2019:

- Economic Development and Builders Association
- Farm Representatives
- Environmental Representatives
- Township Representatives
- Benton County Public Services
- Benton County Sheriff
- Benton Economic Partnership (April 25, 2019)

In September 2018, the focus group representatives were provided the first draft of the Vision, Goals and Policies chapter and were asked to review and provide comment back to the County.

## Township & City Engagement

Many meetings occurred with the townships and cities to better understand their aspirations and concerns (see Table 1.1 & Table 1.2). As part of this effort, Benton County hosted several town hall meetings to fully engage township officials. These meetings occurred on July 18, 2018 and January 16, 2019. Those who chose to participate in the meetings are noted in Table 1.2. In September 2018, all township officials were provided the first draft of the Vision, Goals and Policies chapter and were asked to review and provide comment back to the County. In many respects, a larger part of this process focused on full transparency and collaboration with the townships. The Comprehensive Plan has embraced their desires and aspirations for the future, while addressing their concerns.

**Table 1.1. City Meetings**

City	Meeting Date	Notes
Foley	July 18, 2018	Meeting with Staff
	December 13, 2018	Meeting with Staff
Rice	December 13, 2018	Meeting with Staff
	February 25, 2019 *	Planning Commission
Royalton	December 13, 2018	Meeting with Staff
Sartell	December 13, 2018	Meeting with Staff

*\* The City of Rice submitted response regarding their growth areas (see Appendix A); the Comprehensive Plan has addressed these comments accordingly and are reflected in the Land Use Chapter.*

**Table 1.2. Township Meetings**

Township	Meeting Date	Notes
Alberta	July 18, 2018 Listening Session	Representatives Did Not Attend
	January 16, 2019 Listening Session	Representatives Did Not Attend
	February 21, 2019 Annual Township Meeting	Representatives Attended
Gilmanton	July 18, 2018 Listening Session	Representatives Did Not Attend
	January 16, 2019 Listening Session	Representatives Attended
	February 21, 2019 Annual Township Meeting	Representatives Attended
Glendorado	July 18, 2018 Listening Session	Representatives Attended
	January 16, 2019 Listening Session	Representatives Attended
	February 21, 2019 Annual Township Meeting	Representatives Attended
Granite Ledge	July 18, 2018 Listening Session	Representatives Attended
	January 16, 2019 Listening Session	Representatives Attended
	February 21, 2019 Annual Township Meeting	Representatives Attended
Langola	July 18, 2018 Listening Session	Representatives Attended
	December 13, 2018 Town Board Special Session	Representatives Attended
	December 20, 2018 Town Board Meeting	Representatives Attended
	January 16, 2019 Listening Session	Representatives Attended
	February 21, 2019 Annual Township Meeting	Representatives Attended
Mayhew Lake	July 18, 2018 Listening Session	Representatives Attended
	January 16, 2019 Listening Session	Representatives Attended
	February 21, 2019 Annual Township Meeting	Representatives Attended
Maywood	July 18, 2018 Listening Session	Representatives Attended
	January 16, 2019 Listening Session	Representatives Attended
	February 21, 2019 Annual Township Meeting	Representatives Attended
Minden	July 18, 2018 Listening Session	Representatives Attended
	January 16, 2019 Listening Session	Representatives Attended
	February 21, 2019 Annual Township Meeting	Representatives Attended
St. George	July 18, 2018 Listening Session	Representatives Attended
	January 16, 2019 Listening Session	Representatives Attended
	February 21, 2019 Annual Township Meeting	Representatives Attended
Sauk Rapids	July 18, 2018 Listening Session	Representatives Did Not Attend
	January 16, 2019 Listening Session	Representatives Did Not Attend
	February 21, 2019 Annual Township Meeting	Representatives Did Not Attend
Watab	July 18, 2018 Listening Session	Representatives Attended
	January 16, 2019 Listening Session	Representatives Attended
	February 21, 2019 Annual Township Meeting	Representatives Attended



## Parks Commission

During the planning process, the Parks Commission was re-established after being inactive for several years. The Parks Commission served as a guiding body in creating the Parks Chapter. The planning consultant met with the Parks Commission on four occasions:

- July 26, 2018
- October 16, 2018
- February 6, 2019
- March 27, 2019
- April 24, 2019

## County Board and Planning Commission

Both the County Board and Planning Commission were engaged during project milestones. A summary of these meeting and discussion topics are listed in Table 1.3. Meeting minutes are available on the County's website.

**Table 1.3. County Board and Planning Commission Meetings**

Meeting Date	Meeting Topic	Topic
May 29, 2018	County Board – Committee of the Whole	Kick-off meeting to discuss the direction of the Land Use Plan
October 30, 2018	County Board and Planning Commission Workshop	Review and discussion pertaining to the draft goals and policies
December 19, 2018	County Board	Project update and discussion pertaining to the growth areas identified in the Land Use Plan
March 14, 2018	Planning Commission	Review and discussion pertaining to the draft plan.
April 8, 2019	County Board – Committee of the Whole	Review and discussion pertaining to the draft plan
May 23, 2019	Planning Commission	Recommendation to adopt the Comprehensive Plan
June 4, 2019	County Board	Adoption of the Comprehensive Plan

## Chapter 2

# Community Direction

Benton County is a dynamic and growing area. The County balances growth within its cities while maintaining its historic characteristics of promoting agrarian lifestyles, natural resources and rural communities. Finding that balance presents both challenges and opportunities for the future. This chapter provides a snapshot of the economic, demographic and social trends within the County today, and highlights where we are going in the future.



# Population

The central region continues to be one of the fastest growing regions in the state. Economic Development Region 7W includes a total of four counties, located in the larger 13 county Central Minnesota Planning Region. The region saw a 31 percent population increase since 2000, making it the fastest growing of the 13 economic development regions (EDRs) in the state, and now the third largest in total population after gaining over 100,000 new residents. Benton County grew by 16.8 percent between 2000 and 2016. In comparison, the State of Minnesota saw a 12.2 percent gain during this time period, meaning Region 7W accounted for 16.6 percent of total state growth (see Table 2.1).

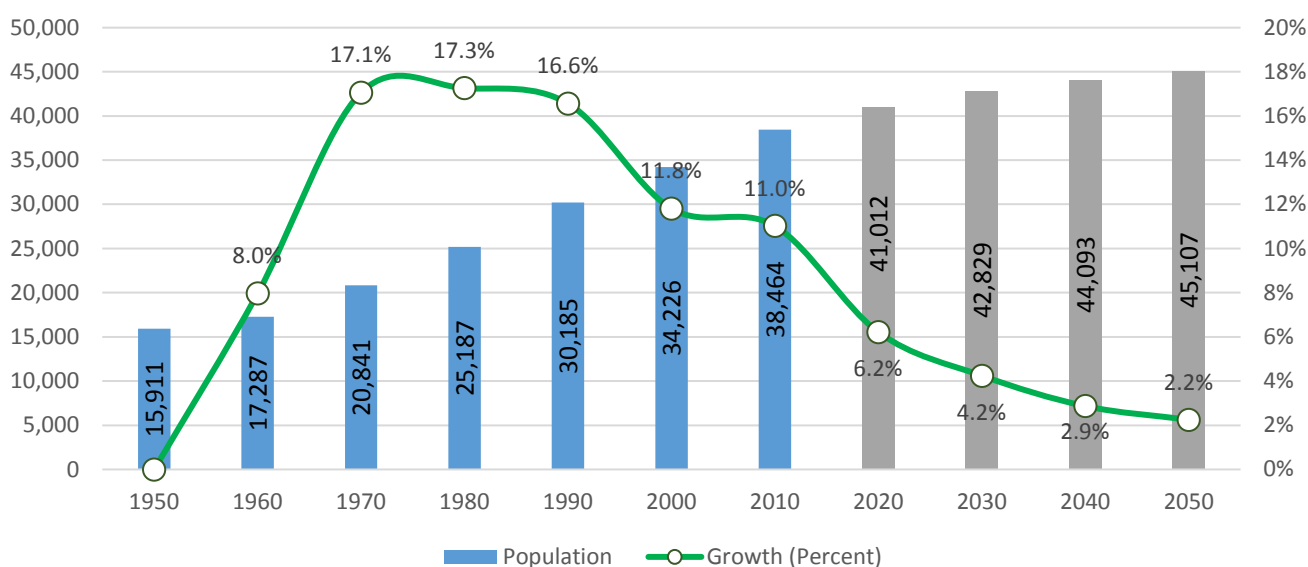
Figure 2.2 provides additional information on Benton County's historical population growth. The table also provides population forecasts generated by the State Demographers. Benton County is projected to continue to grow at modest levels, reaching 45,107 (5,776 new people) in 2050.

**Table 2.1. Population**

Area	2000	2016 (est.)	Number	Percent
Region 7W	321,795	421,722	99,927	31.1%
<b>Benton County</b>	<b>34,226</b>	<b>39,992</b>	<b>5,766</b>	<b>16.8%</b>
Sherburne County	64,417	93,528	29,111	45.2%
Stearns County	133,166	155,652	22,486	16.9%
Wright County	89,986	132,550	42,564	47.3%
Minnesota	4,919,479	5,519,952	600,473	12.2%

Source: 2000 Census - 2016 ACS

**Figure 2.2. Population Trends & Projections**



Source: State Demographer

As part of this growth, it is also important to recognize that the population is aging. Benton County's median age increased slightly from 33.7 to 35.8 between 2000 and 2016. This increase suggests residents are aging in place. The most notable change includes a decrease in the younger population between the ages of 15 and 29; however, there is a visible increase in the population of 35-44 year olds (see Table 1.3). This suggests the younger population is staying in the County as they enter adulthood.

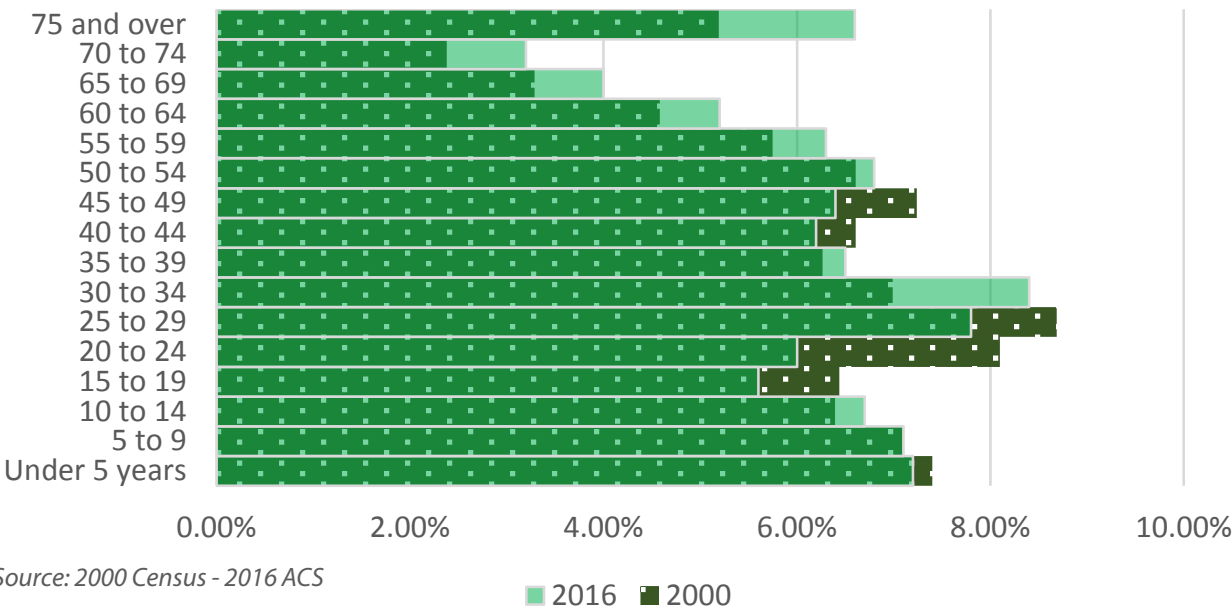
Furthermore, Benton County has a substantial senior population. Over 14% of the population is over the age of 65, and it is assumed this population will increase over the next ten years as the subsequent age groups continue to age in place (see Figure 2.3).

## Population Trends

According to the Minnesota Center for Rural and Policy Development, "more rural counties have had higher median ages and a larger percentage of their population 65 or older throughout the second half of the 20th century. With the combination of increasing out-migration of younger people to urban areas and an in-migration of older people to rural counties, the median age of our most rural areas is increasing faster than in urban ones. In 1980, the average median age in our entirely rural counties was 34 compared to 27 in our entirely urban counties (a gap of 7 years). In 2016, the average median age in our entirely rural counties increased to 47 while the entirely urban counties had an average median age of 36 (a gap of 11 years)."

It is important to examine the age distribution of current Benton County residents, because they will demand certain types of housing as their age and family composition changes. Spending patterns also change, which affects economic development. As the population continues to age, needs such as health care, loss of mobility, financial concerns, and home maintenance will change and new demands will be placed on Benton County.

**Figure 2.3. Age Cohorts**



Source: 2000 Census - 2016 ACS



# Diversity

Benton County has seen an increase in minority populations over the last decade. In 2000, 96% of Benton County identified themselves as “white alone” (non-Hispanic/Latino) (see Table 2.2). By 2016, 92% of Benton County’s population identified themselves as “white only,” which is similar to neighboring counties: Wright (95%), Sherburne (94%) and Stearns (93%).



## Diversity Trends

Minnesota’s population is changing and so is that of Benton County (see Sidebar). Like the State, Benton County is becoming more diverse. The Region 7W 2017 Regional Report recognizes these changing demographics. For example, the region saw a 23 percent gain in the number of “white-alone” residents, but saw a much faster increase in every other race group. The number of Black or African American residents rose by 350 percent.

These trends may be one of the defining elements of the region over the next decade. Benton County’s ethnic diversity is changing slightly and over time may shape the County’s housing demands and the delivery of services such as recreation opportunities, multiple language materials and communications, and school programming.

**Table 2.2. Race & Ethnicity**

Race	2000	2000 Percent	2016	2016 Percent	2000 - 2016 Change
White	32,796	95.82%	36,337	92.09%	9.74%
Black or African American	266	0.78%	1,046	2.65%	74.57%
American Indian and Alaska Native	177	0.52%	161	0.41%	-9.94%
Asian	392	1.15%	437	1.11%	10.30%
Hispanic or Latino	274	0.80%	791	2.00%	65.36%
Two or More Races	321	0.94%	685	1.74%	53.14%
<b>Total Population</b>	<b>34,226</b>	<b>100.00%</b>	<b>39,457</b>	<b>100%</b>	<b>13%</b>

Source: 2000 Census - 2016 ACS

# Minnesota's Changes in Race & Ethnicity

The following statements were listed on the Minnesota State Demographic Center's website:

- In 1920, about 1 in 5 Minnesotans was foreign-born. In 2015, about 1 in 12 were (8.3%, or about 457,200 residents). Forty-nine percent of Minnesota's foreign-born population are naturalized U.S. citizens.
- In 2015, the largest groups of foreign-born Minnesotans were born in Mexico (about 67,300); Somalia (31,400); India (30,500); Laos, including Hmong (23,300); Vietnam (20,200); China, excluding Hong Kong and Taiwan (19,900); Ethiopia (19,300); and Thailand, including Hmong (16,800). These estimates do not include U.S.-born children of these immigrants. They also likely underestimate the size of our immigrant populations because trust and language issues reduce response rates to Census surveys.
- 11.5% of Minnesotans (age 5+) spoke a language other than English at home. Behind English, the most common languages spoken are Spanish (about 193,600 speakers) and Hmong (56,200 speakers).
- In Minnesota, people of Color (those who identify as a race other than White alone, and/or those who are Hispanic) make up 19% of the total population. Non-Hispanic White Minnesotans represent the remaining 81% of the statewide population.
- All race groups have grown recently in MN, but between 2010 and 2015, the state has added four times as many people of Color as non-Hispanic White residents. Populations of Color are distributed unevenly across the state, and are more likely to live in metro areas than rural areas.
- Between 2010 and 2015, the fastest growing racial group in Minnesota was the Asian population, which grew by 22%, adding nearly 48,000 people. Second fastest was the Black population, which grew by 16%, adding 45,000 people, followed by the Hispanic population, which grew by 13%, adding 32,000 people. (Asian and Black race groups are that race "alone" and non-Hispanic).

(All data from 2015 Population Estimates, U.S. Census Bureau)



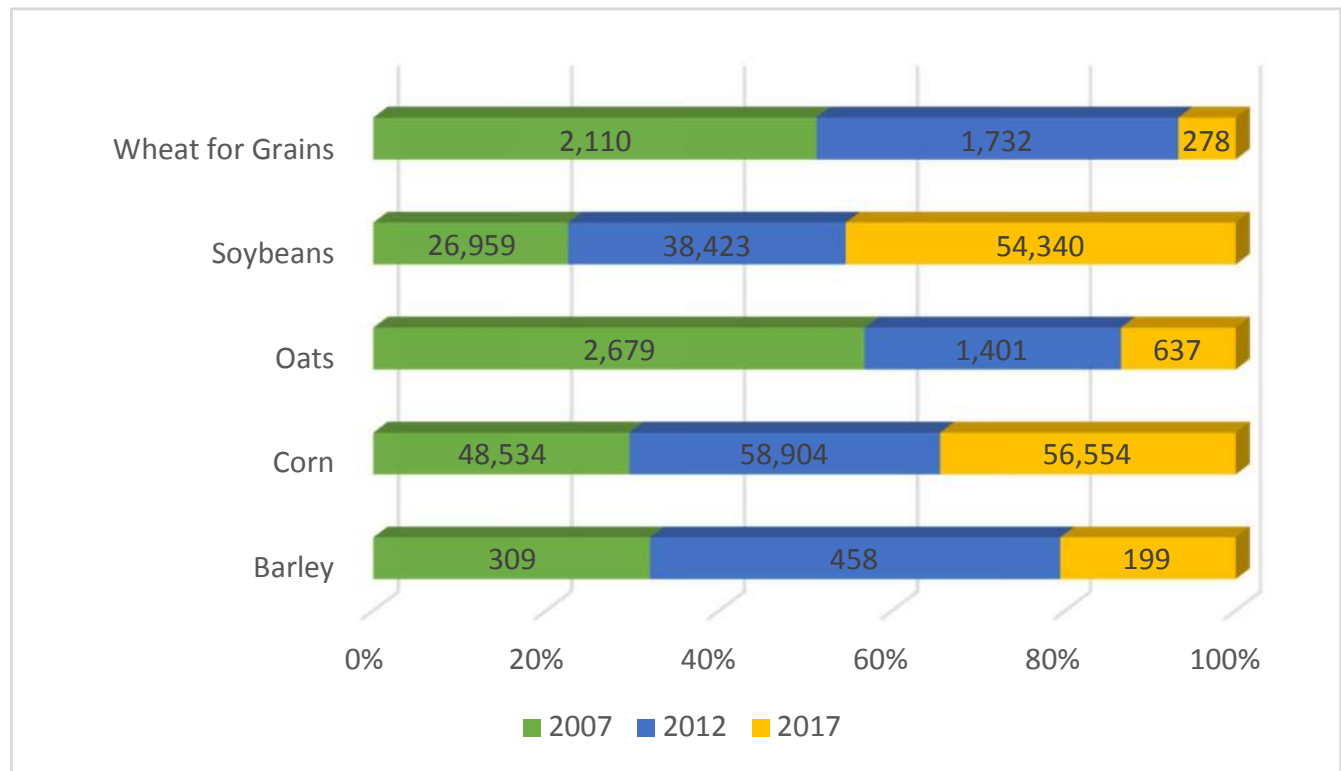
# Agriculture

Agriculture has been the center of economic activity for Benton County. In 1860, Benton County produced wood, grain, meat, and dairy products. Wheat and potatoes were the cash crops at that time. According to the 2017 US Census of Agriculture, the largest value of sales by commodity group included poultry and eggs, cattle and calves, milk from cows, and hogs and pigs. Cash crops continue to play a significant role in today's economy. However, Benton County has seen a shift in the production of certain field crops (see Figure 2.4). These shifts demonstrate the economic volatility in cash crops and how the supply and demand for a particular crop can change annually. Regardless of these shifts, Benton County still ranks above the 20th percentile for value of agriculture products sold amongst the 3,075 counties in the Untitled States.

In addition to the direct income from agriculture, many other companies are supported locally through sales to farms or by adding value to farm commodities, although that economic activity is not usually reported among the agricultural statistics. Local firms in farm implements, poultry processing, ethanol production or general retail sales are dependent on the basic farm economy.

Farming will continue to be one of Benton County's strongest economic engines. However, there has been significant changes in how farms are owned and operated at a national level. Figure 2.5 highlights these national changes, which include a decrease in the number of farms, while the average size of the farm has increased. Benton County has seen a decrease in the number of farms in operation between 1982 and 2017 (see Table 2.3), while the amount of land being farmed has increased. This finding suggests smaller farms are removing their land from production or selling to larger operations/corporations, which mirror national trends.

**Figure 2.4. Field Crops (Acres Harvested)**



Source: 2017 Census of Agriculture

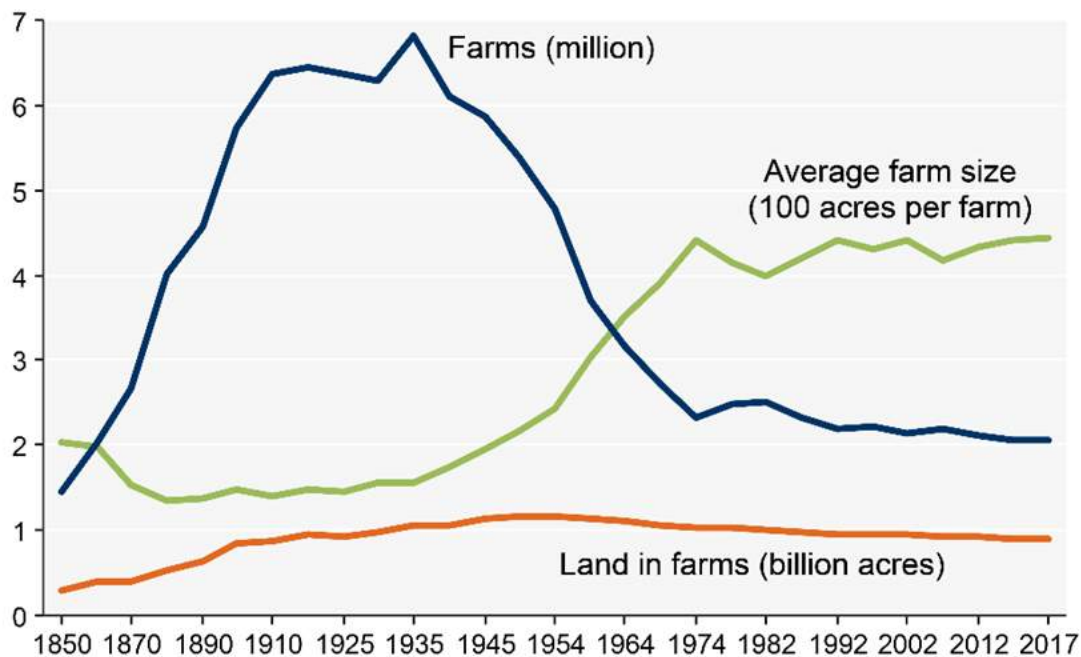
**Table 2.3. Farms in Benton County**

Year	Number of Farms	Land in Farms (acres)	Average Size (acres)	% of Total Land
1982	1,035	198,778	192	76.1%
1992	865	183,760	212	70.0%
2002	965	195,949	203	75.0%
2012	958	188,735	197	71.2%
2017	816	194,832	NA	75.3%

Source: 2017 Census of Agriculture

**Figure 2.5. US Farms, Land in Farms, and Average Acres per Farm, 1850 - 2017**

Million farms, billion acres, or 100 acres per farm



Source: USDA, Economic Research Service using data from USDA, National Agricultural Statistics Service, Census of Agriculture (through 2012) and *Farms and Land in Farms: 2017 Summary*.

## Agriculture Trends

Minnesota has the fifth largest agricultural economy in the US, contributing to the state's ranking as the eighth best in the nation for business. Benton County can position itself as one of Minnesota's leading counties for business by capitalizing on new markets tied to farming. Some of these new markets and trends are followed:

- **Farm to Table:** Farm to table is a social movement, which promotes the serving or preparing of foods directly from a farm to a restaurant. This movement has sparked a resurgence of entrepreneurs opening restaurants or "dinner on the farm."



- **Farm to School:** Nearly 6 percent of Minnesota school districts have a Farm to School program, up from 2.3 percent in 2006. These programs establish a direct link between a local producer where their goods (e.g., vegetables, fruits or meat) are acquired and used for student meals. This is a similar model as the “farm-to-table” model. Programs of this nature have helped educated students on the importance of nutrition, while connecting students to the farming community.
- **Hop Farms:** In 2011, the Minnesota Legislature passed a law legalizing tap rooms. Since that time, Minnesota has experienced a large number of breweries popping up across the state. This in turn has created a significant demand for hops and other grains. Benton County is now home to the first farm (Mighty Axe Hops) that processes hops into pellets that brewers use as a key ingredient in their beer.



Benton County should consider these emerging markets when establishing economic initiatives that support local agriculture and farming businesses. Benton County should also be aware of the following trends that could impact the local economy positively or negatively:

- Minnesota agriculture will likely stay strong for the foreseeable future. Competition between different agriculture niches such as vegetable and grain crops and dairy have increased competition for farmland.
- National policies on tariffs continue to change, which may play a role in regional and local commodity prices, as well as the exporting of goods.
- Livestock farms (dairy and hogs) have grown in size creating concerns over manure management, noise, smells, water quality, and water quantity.
- Benton County has already seen climate changes. The projections for the County’s climate by the middle of this century indicate continued increases in temperatures. Additionally, precipitation patterns are anticipated to change, providing an increase in the overall rainfall as well as an increase in the number of days without rain - exacerbating both flooding and drought potential. These trends will play a significant role in crop production.
- Many farmers also lack adequate physical and financial infrastructure on their farm and in their region for harvesting, processing, storing, and distributing food to nearby markets.

# Labor Force

As depicted in Table 2.4, Benton County saw a significant increase (18.57%) in the number of jobs between 2002 and 2015. In 2015, the manufacturing industry holds the largest number of jobs within Benton County. This is followed by health care and social assistance, retail trade, and construction. It is important to recognize that the Census measures employment through surveys of “covered” industries (i.e., industries that pay unemployment insurance), which typically leaves out farmers and self-employed

individuals. Therefore, Table 2.7 may not provide an accurate picture of the number of agriculture or farming jobs in Benton County.

Overall, Benton County has seen positive growth in the number of new jobs between 2002 and 2015. However, the region will start to see a decrease in the labor force as the population becomes older (see Figure 2.3 and Table 2.5). This is also seen in Table 2.6 as the average age of a Benton County farmer has increased from 47 in 1982 to 54 in 2012.

**Table 2.4. Jobs by Industry 2002-2015**

Industry	Jobs (2002)	Percent (2002)	Jobs (2015)	Percent (2015)	2002 - 2015 Percent Change
Agriculture, Forestry, Fishing and Hunting	217	1.50%	239	1.30%	9.21%
Construction	1,173	8.10%	1,805	10.20%	35.01%
Manufacturing	4,369	30.20%	3,791	21.30%	-15.25%
Wholesale Trade	789	5.50%	1,098	6.20%	28.14%
Retail Trade	1,436	9.90%	1,905	10.70%	24.62%
Transportation and Warehousing	448	3.10%	1,111	6.30%	59.68%
Information	123	0.90%	233	1.30%	47.21%
Finance and Insurance	150	1.00%	216	1.20%	30.56%
Real Estate and Rental and Leasing	54	0.40%	235	1.30%	77.02%
Professional, Scientific, and Technical Services	203	1.40%	344	1.90%	40.99%
Management of Companies and Enterprises	265	1.80%	328	1.80%	19.21%
Administration & Support, Waste Mgmt. & Remediation	890	6.20%	908	5.10%	1.98%
Educational Services	1,011	7.00%	1,240	7.00%	18.47%
Health Care and Social Assistance	1,381	9.50%	2,269	12.80%	39.14%
Arts, Entertainment, and Recreation	36	0.20%	75	0.40%	52.00%
Accommodation and Food Services	970	6.70%	1,043	5.90%	7.00%
Other Services (excluding Public Administration)	612	4.20%	487	2.70%	-25.67%
Public Administration	334	2.30%	431	2.40%	22.51%
<b>Total:</b>	<b>14,461</b>	<b>100%</b>	<b>17,758</b>	<b>100%</b>	<b>18.57%</b>

Source: 2015 US Census Longitudinal-Employer Household



**Table 2.5. Labor Force by Age Groups**

Age Groups	2020 Labor Force Projection	2030 Labor Force Projection	2020 - 2030 Change	
			Numeric	Percent
16 to 19 years	24,377	20,772	-3,605	-14.80%
20 to 24 years	47,880	49,370	1,490	3.10%
25 to 44 years	145,833	153,417	7,584	5.20%
45 to 54 years	77,001	71,742	-5,260	-6.80%
55 to 64 years	70,087	59,372	-10,715	-15.30%
65 to 74 years	18,092	23,798	5,706	31.50%
75 years & over	3,082	4,684	1,603	52.00%
<b>Total Labor Force</b>	<b>386,352</b>	<b>383,155</b>	<b>-3,197</b>	<b>-0.80%</b>

Source: 2017 Region 7W

**Table 2.6. Average Age of Farm Worker**

Year	Average Age of Farm Worker
1982	47.1
1992	50.0
2002	49.5
2012	53.4
2017	NA

Source: 2017 Census of Agriculture

## Labor Force Trends

Benton County will continue to experience a shift in the labor force as the population gets older. Retaining and attracting a younger labor force (born between 1981 and 1999) may be challenging given Benton County's proximity to job centers, such as St. Cloud and the Twin Cities. Therefore, it is important to recognize the jobs that are attracting a younger labor force that is interested in science, technology, engineering and math (STEM). For example, a recent study by the Minnesota Department of Employment and Economic Development (DEED) identified a list of top jobs for millennials based on wages, projected growth, millennial share of employment, and total number of jobs statewide. The jobs identified in this study align with Benton County's top industries (see Table 2.4), including construction trade workers and health care. National studies have also indicated a resurgence in farming. Farming is now seen as a profession that has evolved with science, technology, and engineering. These advancements have attracted a younger population to farming, as well as entrepreneurs focused on farm-to-table ventures.

Other notable trends described in the State of Minnesota (2018) report by Center for Rural Policy and Development include:

- Government continues to be a significant source of employment in rural counties. Through the second half of the 20th century, the private sector has declined across rural areas, driving that sector's employment lower. However, there is still a high need/demand for public-sector services in these areas. While some public-sector employment is geography-based, low population density doesn't mean less of a need for services.
- Minnesota has experienced significant increases in the percentage of 25- to 64-year-olds participating in the labor force since 1970. The largest increases have occurred in our more rural counties, where the labor force participation rate increased by 17 percentage points.
- A significant percentage of the workforce in the more rural parts of the state also operate as non-employers, meaning they have a non-farm business with no employees, have annual receipts of \$1,000 or more, and are subject to federal income taxes—what we generally think of as self-employed.

- Throughout the 1990s, unemployment was highest in our most rural counties. However, that began to change in the mid-2000s, and in fact, the most rural counties weathered the Great Recession better than other county groups, largely due to the healthy state of agriculture at the time. With the economy picking up again, all regions have recovered from their recession levels.
- The growing number of retirements and lack of growth in the labor force is contributing to vacancy rates.



# Mobility

Roadways provide for an integrated transportation system that will serve the future needs of its residents, businesses and visitors, and will support the County's agricultural and economic development initiatives. Maintaining and improving this system is important to the ongoing economic health and quality of life in the County. It is also important to maintain the ability to travel easily and safely to work and other destinations.

Benton County has many transportation needs that vary from urban to rural locations and also include recreational travel. Each need is important in its own right. These needs are served by the County roadways system and by the State and local area systems. Benton County is responsible for 225.59 miles of County Road (CR) and 224.42 miles of County State Aid Highways (CSAH).

## Mobility Trends

In today's funding environment, roadway agencies (township, city, county and state) are expected to do more with less. This imperative has resulted in a larger emphasis on preserving existing assets in a "state of good repair," while balancing the mobility needs for all modes of transportation (e.g., cars,

pedestrians, bicyclists, and trucks). In light of this situation, many Counties are faced with difficult decisions in prioritizing and budgeting transportation projects.

Benton County should consider the following rural transportation needs when planning for future transportation investments.

- **Recreational Needs:** Trails are an integral component in any transportation system. Trails offer residents safe access between towns and key destinations. Most of the trails in Benton County are destinations in themselves, offering scenic routes such as the Mississippi River Trail (MRT). In addition to trails, paved shoulders provide transportation along major corridors throughout the County.

Simple steps to make bicycling safe and comfortable pay huge dividends in civic, community and economic development. Given the opportunity to ride, residents enjoy dramatic health benefits, reduced congestion, increased property values, and more money in their pockets to spend in the local economy.



- **Commuter Needs:** The transportation network in rural Benton County has developed over the decades with a larger emphasis on the automobile. This development pattern is based on low population and employment densities in rural parts of the county that does not make transit feasible. The transportation network in these areas provide efficient connections between cities, townships and key destinations within and outside the County limits.

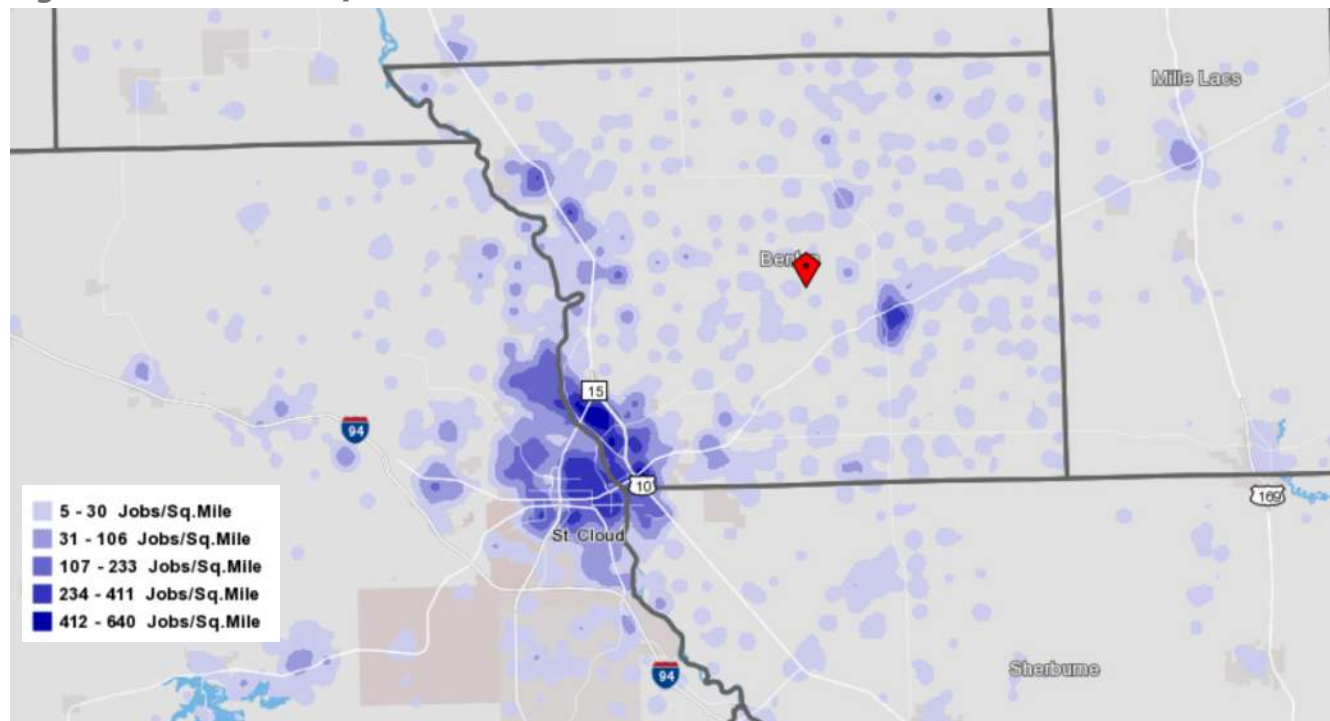
As illustrated in Figure 2.6, residents live throughout the county and commute longer distances to their jobs. According to the 2016 US Census ACS, the average travel time to work for a Benton County resident is 22 minutes. In comparison, it takes a St. Cloud resident, on average, 18 minutes to travel to work. It will be important to continue to provide safe and efficient transportation routes for rural residents.

- **Farm to Market:** As noted throughout this Chapter, farming plays a significant role in the

County's economy. The County should consider prioritizing transportation improvements that provide mobility benefits in moving goods (e.g., crops and livestock) between the farm and final destination (e.g., farmers market, school, distributor, processing facility or grocery store).

- **Senior Needs:** Transportation options for seniors will become increasingly important as the population ages in rural Benton County (see population trends on page 3). For example, seniors will need access to many services and activities on a regular basis, including health care facilities, grocery stores, community centers, faith-related gathering places, places that support social activities, and housing options.
- **Farming Needs:** Growth in agriculture has resulted in increasing demands on local resources and facilities. Farm equipment has also increased in size and weight, adding pressure to the local roadway system. Future roadway improvements should consider the design and pavement structure to handle an increase in vehicle weight.

**Figure 2.6. Jobs Per Square Mile**



Source: Census - OnTheMap

## Active Living Trends

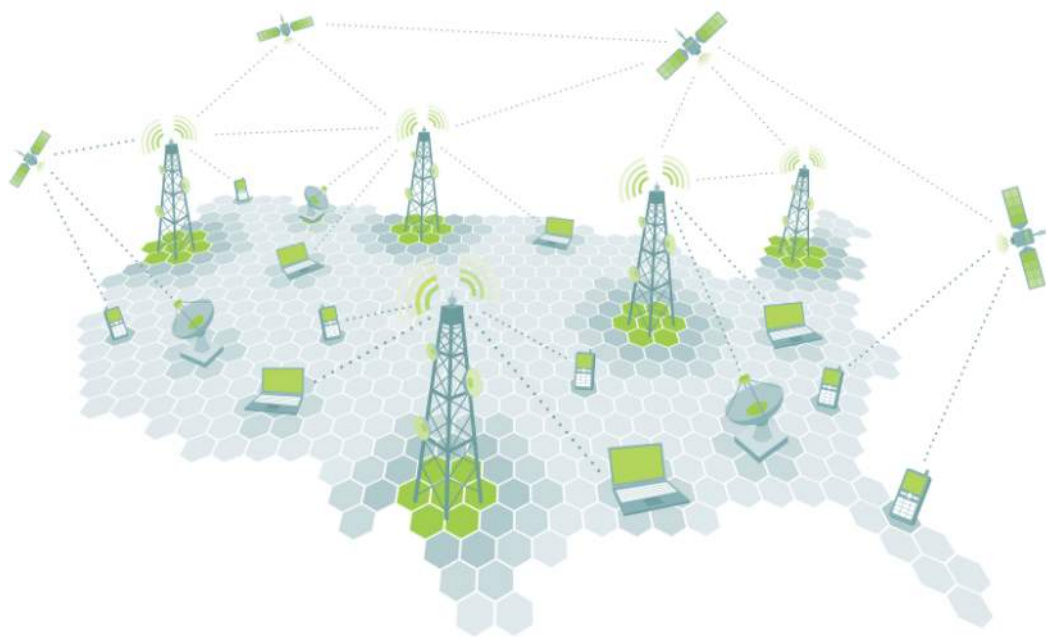
Residents who can easily and comfortably move on foot in their neighborhoods tend to get more physical activity and feel more secure while also having a large impact on the economic development and growth of a community. Opportunities to walk or bike can decrease vehicle emissions, improve air quality, increase the desirability for people to reside in the community, and draw new customers into businesses in downtown districts. Being able to reach these types of destinations by means of walking, biking, or public transit is essential for healthy communities, but to be active, one must have safe and convenient access between neighborhoods, jobs, services, and recreational activities. Adequate pedestrian, bicycle, and transit infrastructure is necessary to create safe connections for all users, including people who do not own a vehicle. Ample parks and open spaces also provide residents with opportunities to integrate physical activity into their daily habits. Land use patterns should also promote active living and encourage a reduction in driving to improve air quality and respiratory health.

## Regional Active Transportation Plan

**The Public Health Divisions of Benton, Sherburne, Stearns, and Wright Counties, working together under the Statewide Health Improvement Program (SHIP), have developed a Regional Active Transportation Plan (ATP) that identifies a set of strategies that can be implemented by SHIP staff and/or community partners in the region. For this plan, a Regional Network was identified that connects the nodes and corridors in the region. The Regional Network represents high-level, conceptual connections between important regional origins and destinations and does not identify specific street routes or facility types. Benton County should continue to use this plan to help implement projects that support active living initiatives from a transportation perspective.**







# Communication

Reliable and affordable internet (wireless or broadband), also known as e-Connectivity, plays a fundamental role in our economic activity. More importantly, access to high-speed internet is vital for a diverse set of industries, including agricultural production, manufacturing, mining, and forestry. This connectivity acts as a catalyst for rural prosperity by enabling efficient, modern communications between rural American households, schools, and health care centers. In that respect, it is important to recognize the internet coverage in Benton County. In general, approximately 25 percent of the county is

served with wireless broadband, while 25 percent is underserved. The remaining 50 percent do not have access to any form of wireless broadband.

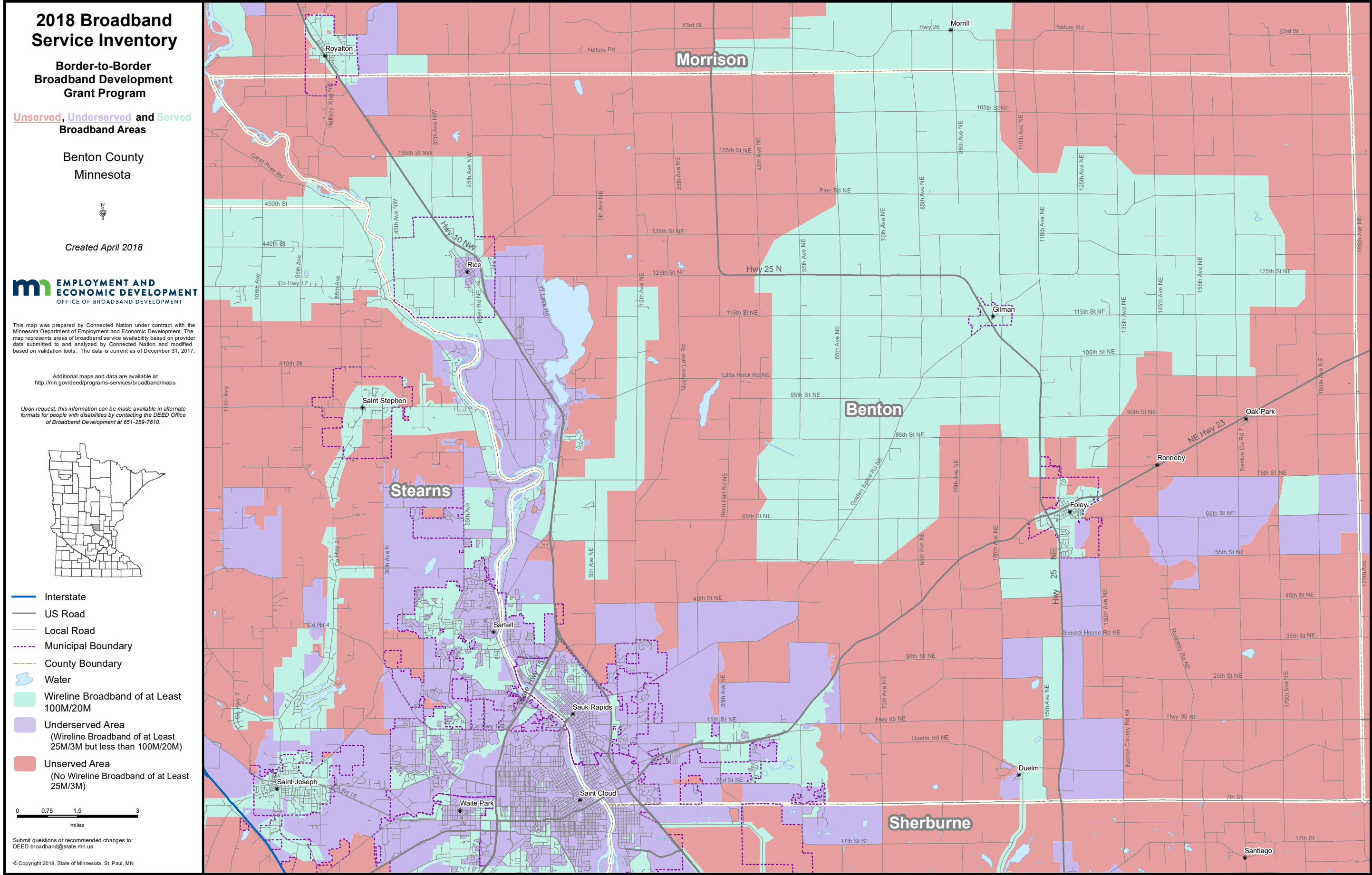
The 2012 US Census of Agriculture is another source of data to better understand Benton County's internet coverage (see Table 2.7). In 2012, 73 percent of Benton County farmers had some form of internet, which represents a 15 percent increase from 2007.

**Table 2.7. Internet Access to Benton County Farmers**

Year	Number of Farms	Farms with Internet	Percent with Internet
2007	919	537	58%
2012	958	695	73%

*Source: 2012 US Census of Agriculture (data was not collected as part of the 2017 US Census of Agriculture)*

Figure 2.7. 2018 Broadband Service Inventory





Page Intentionally left blank

## Communication Trends

According to a 2017 report by the Federal Communications Commission, 80 percent of the 24 million American households that do not have reliable, affordable high-speed internet are in rural areas. Key findings from this report include:

- From 2012 to 2014, mobile LTE broadband was newly deployed to 34.2 million people, including 21.5 million rural Americans. But in the following two years, new mobile deployments dropped 83 percent, reaching only 5.8 million more Americans, including only 2.3 million more rural Americans.
- Rural and Tribal areas continue to lag behind urban areas in mobile broadband deployment. Although evaluated urban areas saw an increase in data speeds (LTE broadband at speeds of 10 megabits per second and minimum upload speeds of at least three megabits per seconds) from 81.9% in 2014 to 90.5 % in 2016, such deployment in evaluated rural and Tribal areas remained flat at about 70% and 64%, respectively.
- Approximately 14 million rural Americans and 1.2 million Americans living on Tribal lands still lack mobile LTE broadband at speeds of 10 megabits per second and minimum upload speeds of at least three megabits per second.
- Approximately 92% of the population has access to both fixed terrestrial services at 25 Mbps/3 Mbps and mobile LTE at speeds of 5 Mbps/1 Mbps. In rural areas, 68.6% of Americans have access to both services, as opposed to 97.9% of Americans in urban areas. With respect to fixed 25 Mbps/3 Mbps and 10 Mbps/3 Mbps LTE services, 85.3% of all Americans have access to such services, including 61% in evaluated rural areas and 89.8% in evaluated urban areas.

- Approximately 98.1% of the country has access to either fixed terrestrial service at 25 Mbps/3 Mbps or mobile LTE at 10 Mbps/3 Mbps, with that number dropping to 89.7% in rural areas.

The Nation and State continue to recognize the wireless and broadband gaps that exist in rural areas. In response to this issue, the State of Minnesota has established two goals in providing better access:

- By 2022, all Minnesota businesses and homes will have access to high-speed broadband that provides minimum download speeds of at least 25 megabits per second and minimum upload speeds of at least three megabits per second.
- No later than 2026, all Minnesota businesses and homes have access to at least one provider of broadband with download speeds of at least 100 megabits per second and upload speeds of at least 20 megabits per second.

As part of this effort, Benton County should take an active role in helping advance affordable and reliable internet access from border-to-border.



# Housing

Cities within Benton County are seeing growth, and there is continuing demand for more residential options at the edges of these cities. Many townships within the County are seeing more demand for traditional “suburban” residential development, with large lot, single family detached homes.

There is a correlation between level of income, housing value and geographical location. The cities tend to have an older and smaller-sized housing stock which is declining in value. The housing just outside of the cities, however, is newer, larger, higher in value, and inhabited by higher wage earners. This was seen in the early 2000s as Sauk Rapids and Sartell felt a boom in housing. Both of these Cities

are experiencing continued residential growth within their City limits.

Table 2.8 ranks the townships and cities by median household income and median housing value. St. George Township has the highest median household income and one of the highest median housing value. Most of the cities are near the bottom of the list. In the southwestern corner of the county, Sartell, Sauk Rapids and St. Cloud are all characterized by lower median housing values and lower median household incomes than the surrounding townships. Sauk Rapids and Minden Townships have significantly higher median housing values and incomes than the cities they surround.

**Table 2.8. Median Household Income & Household Value**

Rank	City or Township	Median Household Income (2016)
1	St. George Township	\$79,375
2	Langola Township	\$76,250
3	Mayhew Lake Township	\$74,375
4	Gilmanton Township	\$74,107
5	Sartell (part)	\$71,959
6	Watab Township	\$70,938
7	Graham Township	\$70,833
8	Glendorado Township	\$70,781
9	Sauk Rapids Township	\$70,583
10	Rice	\$69,044
11	Gilman	\$68,750
12	Maywood Township	\$67,583
13	Minden Township	\$67,125
14	Alberta Township	\$62,679
15	Granite Ledge Township	\$61,071
16	Royalton (part)	\$52,778
17	Foley	\$52,394
18	Sauk Rapids	\$48,164
19	St. Cloud (part)	\$45,223

Rank	City or Township	Median Household Value (2016)
1	Mayhew Lake Township	\$239,200
2	Glendorado Township	\$230,600
3	Langola Township	\$227,200
4	St. George Township	\$222,700
5	Maywood Township	\$212,900
6	Graham Township	\$212,500
7	Gilmanton Township	\$209,900
8	Sauk Rapids Township	\$205,600
9	Granite Ledge Township	\$201,900
10	Watab Township	\$190,100
11	Alberta Township	\$187,500
12	Minden Township	\$181,700
13	Sartell (part)	\$180,300
14	Rice	\$153,600
15	Sauk Rapids	\$148,300
16	St. Cloud (part)	\$144,100
17	Gilman	\$140,300
18	Royalton (part)	\$132,100
19	Foley	\$131,100

Source: Census - 2016 ACS  
Benton County Comprehensive Plan

## Housing Trends

According to a 2017 study prepared by the Urban Institute, the nation can expect the following housing trends in rural America:

- Rural areas will see slow growth rates.
- Rural Americans are aging faster than Americans in metropolitan areas.
- Rural households will become as racially diverse by 2030 as the nation was in 1990.
- Demand for housing in rural areas will increase.
- The housing needs of rural seniors will require urgent attention.
- A growing share of working-age rural Americans may need housing assistance, even if they do not qualify for it.



## Public Health

The comprehensive plan can play a pivotal role in promoting the health of the County. The natural and built environment provides the opportunity to support or limit healthy behaviors and active lifestyles. Our health begins with decisions on where to place things such as county facilities and services, transit routes, parks, trails, and highway investments. County operations, public entities, community organizations and businesses should be encouraged to consider community health as early as possible in the decision-making process to ensure all residents can lead healthy lives. A “health-in-all-policies” approach recognizes that community leaders, planners and engineers are in a unique position to improve the county’s health by shaping the environments where people live, work and play.

The Minnesota Department of Health (MDH) and local public health agencies have recognized the impacts the built environment can have in achieving healthy communities. MDH has identified numerous practices that can be implemented to promote a healthier environment for our residents. In Benton County, this work is guided by the Statewide Health Improvement Partnership (SHIP) grant from the MDH, with a strong focus on reducing health care costs and reducing chronic disease by creating sustainable policy, systems, and environmental changes. Local public health agencies and SHIP are working to create healthier communities across Minnesota by expanding opportunities for active living, healthy eating and tobacco-free living. Comprehensive planning can draw upon these connections and put policies in place to support healthy communities. The Benton County Comprehensive Plan has started





the healthy community discussion by recognizing existing programs and initiatives, as well as highlighting health inequities and opportunities for chronic disease prevention by increasing active living opportunities and access to local foods.

## Planning for the Public's Health

Benton County Public Health tracks and monitors the health status of county residents. The county's overall health is defined based on various health metrics such as rates of chronic disease, substance and alcohol use, and nutritious food intake, to name a few. All local public health agencies in Minnesota must participate in assessment and planning to determine local public health priorities and focus local resources accordingly. These findings are primarily detailed in the following documents:

### Community Health Assessment (CHA)

The CHA is updated every five years. The CHA discusses a wide array of information about the conditions and factors affecting health, as well as indicators of population health status. It represents a snapshot in time of the health of people, adults and children, and the environments in Benton County. This assessment is one tool that helps to identify the top health priorities for community action. An area

of focus for this work is chronic disease prevention. Public Health works to improve health by reducing risk factors that contribute to chronic disease, resulting in reduced health care costs.

### Central Minnesota Community Health Survey

The Central Minnesota Community Health Survey is one part of the planning process that asks important questions about the health and wellness of the respondents and community. Surveying will occur on a three-year cycle, as both hospitals and local public health are required to complete the survey every three to five years. This survey is part of an ongoing collaboration between Benton, Sherburne and Stearns Public Health agencies along with CentraCare Health, Fairview Northland Medical Center and the United Way of Central MN. The results of this survey are invaluable to Public Health to assist in determining the direction of their work and measuring success.



## Community Health Improvement Plan (CHIP)

The CHIP is a long-term, systematic effort to address public health priorities identified in the county. The CHIP is used by Benton County Public Health and community partners to set priorities, coordinate resources, develop policies, and set actions to protect and promote health.

## Public Health Trends

The majority of Benton County residents would describe their health as good, very good or excellent. We fare well in many health indicators when compared to other counties in the state and at the national level. Yet when we really start to look at the data, we see that while we have made progress, we still have much work to do. We are particularly interested in health disparities, described as differences in key determinants of health such as education, safe housing, and access to healthy food, which may have an adverse effect on select populations.

We are also looking at health inequities which are described as differences in health that are not only unnecessary and avoidable but, in addition, are considered unfair and unjust. Health inequities are rooted in social determinants that make some population groups more vulnerable to poor health than other groups. Knowing where these disparities and inequities exist helps target our resources for those most in need.

Current health findings are documented in the County's CHA, Central MN Community Health Survey data and the CHIP, in addition to other public health resources.

## Food Access Trends

Ensuring access to a healthy, sustainable food system is key to establishing and maintaining a high quality of life. The ability to easily access basic needs and services influences a person's social, economic, physical, and mental well-being. Planning for future development requires integrated thinking about transportation (e.g., roads, sidewalks, paths, transit) and land use, including considerations about where and how people will obtain food. Long-range planning must support a balanced retail environment, including a fair distribution of food outlets, and a diversity of options to purchase healthy food. Access to healthy foods can reduce the rates of preventable diseases, improve the county's overall health, aid in community and economic development initiatives, and promote a fair share for all residents.

Access to healthy food is a challenge, particularly in rural communities. Long drives to healthy food sources, and associated transportation costs, are a deterrent to obtaining healthy foods and maintaining a nutritious diet. Distance is compounded for households that lack a personal vehicle or the ability to drive one. The growth of rural poverty means that more low-income households are located in communities where transit service is limited or nonexistent.

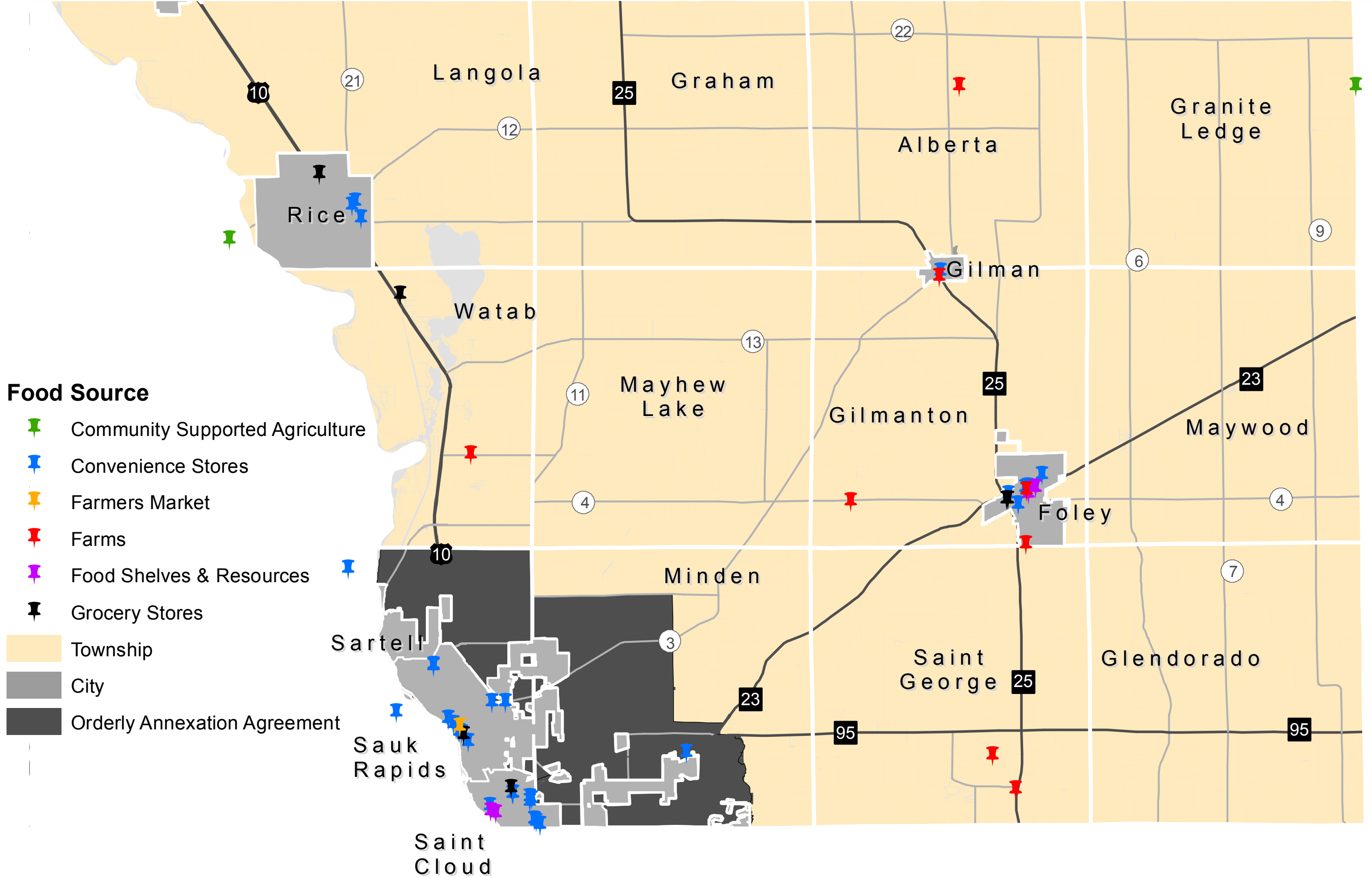


To address these needs, Benton County can move toward including food, equity, and health-related policy and systems changes in this comprehensive plan. This should include:

- Affordable, safe, and reliable transportation to food sources.
- Support for small- and medium-sized food and farm enterprises.
- Zoning code regulations that support healthy food infrastructure.
- Access to and preservation of land for food production.
- Support of community food assets (such as community gardens, pollinator-friendly habitats, food hubs, and farmers' markets).

Creating reliable access to safe, affordable, and healthy food is an important way to ensure health for all. Food access locations in Benton County and surrounding areas is shown in Figure 2.3.

Figure 2.8. Benton County Access to Food





Page Intentionally left blank

## Chapter 3

# Vision, Goals + Policies

The Comprehensive Plan is a statement of what Benton County wants to become. It is a set of goals and policies designed to achieve a community wide vision. The Comprehensive Plan is based on a composition of concepts, patterns and relationships that deal with integrating the social aspects of a community with its physical development. Unlike the Development Code, the Comprehensive Plan is futuristic in that it guides decisions that have yet to be made.



In many ways, the 2040 Comprehensive Plan builds on prior planning efforts. It includes directives (goals and policies) for maintaining our landscape, while preserving our rural and farming character, abundant open spaces and natural resources. Recognizing that the overall environment is an economic asset of the County, protection of our lands and natural resources is a high priority. The livability, public health and economic vitality of our towns are also highly valued. Our values are captured in the Plan's vision, goals and policies. These plan elements are defined below:

- **Vision:** The vision is a broad statement that encompasses the overarching aspirations of the county over the next twenty-years.
- **Goals:** Goals are broad statements that describe a desired outcome or end-state. Goals are often long-term in scope.
- **Policies:** Policies describe the general course of action or way in which programs and activities are conducted to achieve a stated goal. Policies speak to underlying values, context, or principles, and are sometimes place-specific.

## Vision Statement

As part of the plan's early public engagement efforts, a vision emerged for the future of Benton County. The vision is a broad statement that encompasses the overarching aspirations of the county. More importantly, this statement reflects the public's desire to maintain the County's unique character and sense of place.

## 2040 Comprehensive Plan Vision Statement

The following vision statements were used to help guide the development of the plan's goals and policies.

**Benton County is a vibrant community which seeks to:**

- Uphold its quality of life, a standard of living that preserves the rural and agricultural nature of the County, while enhancing its worth with quality services and programs
- Balance land uses and growth in a sustainable manner
- Promote economic development in business and agriculture through its use of technology and available resources
- Protect its environment and natural resources including farmland, water, air, habitat and aggregate resources
- Recognize mobility as a contributing factor to the economic development, health, and quality of life of rural communities

# Goals + Policies

The Comprehensive Plan is guided by a set of goals and policies that have their origins in the 2006 Comprehensive Plan. Since that time, the goals and policies have been expanded upon to reflect community and stakeholder input. The goals and policies have also been categorized into five key areas that capture the themes described in the vision statements (Quality of Life, Land Use, Economic Development, Environment and Natural Resources, and Mobility). A narrative for each area is described below to provide general context behind the listed goals and policies.



## Quality of Life

Residents continue to cite “quality of life” as one of the strongest assets that draw people to Benton County. The comprehensive plan is a reflection of these values, such as rural, farming and agrarian lifestyles, and are translated through the various plan elements (e.g., land use, transportation, natural resources, and parks and trails). The comprehensive plan also recognizes that the values tied to a high quality of life are fostered through County programs and services.

Benton County is committed to providing a high quality of life for its citizens through access to a variety of County programs and services, housing options, public health initiatives, and recreational amenities. Achieving these standards can be challenging from a funding and staffing perspective. Therefore, it is important to recognize the financial commitments and resources required to deliver

various programs and services. The comprehensive plan is not a financial document; instead, the goals and policies provide direction for future decision making. As part of these efforts, it is also important to recognize the County’s changing demographics (e.g., aging population, shortage in workers, and an increase in diversity). These shifts may influence the demand and delivery of a particular service or program over time.

The following goals and policies reflect Benton County’s quality of life and commitment to delivering services and programs.

### Goal 1: Livability

Maintain and enhance the livability of Benton County for all members of the community.

#### Policies

1. **Population Diversity:** Promote appreciation of diverse populations.
2. **Human Services:** Continue to provide human services serving a wide variety of Benton County residents including vulnerable populations such as children, seniors, minorities, and those with disabilities. Expand online resources with web links for information and services specifically targeted towards these groups.
3. **ADA Transition Plan:** Continue to work toward creating an Americans with Disabilities Act (ADA) Transition Plan and Inventory. Once the plan is created, follow its implementation strategies.
4. **Age in Place:** Pursue opportunities to assist seniors to “age in place,” including providing options for life-cycle housing and transportation choices to essential destinations and resources.
5. **Mobility Options:** Promote transit options (public and private) that serve a growing population that requires alternative modes to access key destinations (e.g., jobs, public services, schools and town centers).



6. **Plan for Health:** Consider public health as an important factor when developing County programs, services, plans and policies. Pursue health options in all long range planning with a preventative approach.
7. **Funding:** Actively pursue various funding mechanisms (e.g., grants) that help enhance Benton County's quality through active living and public health initiatives.

## Goal #2: Housing Stock

Continue to maintain a high quality living environment in all residential neighborhoods and upgrade those in need of improvement.

### Policies

1. **County HRA:** Explore the expansion of the County HRA's role in housing development and redevelopment activities.
2. **Life Cycle Housing:** Promote the improvement and maintenance of the existing housing stock to provide sanitary living conditions and ensure that an adequate amount of housing is maintained, including retrofitting existing homes to better serve families in need of affordable housing.

## Goal 3: Parks & Trails

Develop, maintain, and manage a County park, trail, and open space system to meet the needs of the community by utilizing various methods of fiscally responsible funding strategies.

### Policies

1. **County Park System:** Maintain the existing County park system in a way that is safe and meets the intergenerational needs of the community.
2. **Recreational Diversity:** Provide recreational amenities ranging in intensity and recreation type across a broad spectrum of skill levels and abilities to meet the needs of all residents.

3. **Coordination:** Coordinate with local and state agencies to avoid overlap in park and trail development, and work together to fill gaps in the system.
4. **Destinations:** Create and improve key County park destinations (e.g., Benton Beach and Bend in the River), while finding opportunities to support new parks in areas of the County that are underserved.
5. **Connectivity:** Ensure that there is a balance within the County Park System that creates connections between the rural and urbanizing areas of the County.
6. **Trails:** Promote the development and improvement of a larger interconnected network of both on-street and off-street trails.
7. **Greenspace:** Preserve and protect natural areas, open spaces and water bodies that can contribute to an interconnected greenway system.
8. **Shared Facilities:** Promote the sharing of recreational facilities among area communities.



9. **Coordinate and Collaborate:** Coordinate and collaborate between departments (e.g., administration, planning, public health and public works) and with state agencies (e.g., DNR and MnDOT) to ensure future park and trail improvements achieve regional and community benefits.
10. **Funding:** Review the current funding mechanisms for parks and trails, and consider various funding options for the acquisition and maintenance of parkland and the development of recreational and/or community education activities.
11. **Park Dedication Fees:** Maintain a sustainable park dedication fee that helps enhance the parks and trails system at the local and regional level.

## Goal 4: Community Facilities

Continue to maintain and improve all community facilities.

### Policies

1. **Community Facilities:** Continue to maintain community facilities and identify areas of improvement in a capital improvement plan.
2. **Facility Coordination:** Promote maximum cooperation and assistance to other governmental and partner agencies in planning and developing facilities that provide a high level of service and avoid duplication of services or facilities.

## Goal 5: Service Efficiency

Maximize public service efficiencies at the local level both through effective planning and management practices, innovation, and sound stewardship of human and financial resources.

### Policies

1. **Capital Improvement Program:** Continue to plan for the maintenance and upgrading of all public facilities through the use of a County capital improvement program.
2. **County Staff:** Continue to improve and update the County's staff capabilities through training, improved facilities and equipment, and better management.
3. **Volunteerism:** Look to provide opportunities for volunteerism, participation in community activities and acceptance of community leadership positions.
4. **Community Engagement:** Engage and invite community members to participate in the local decision-making processes.





## Goal 6: Public Health

Assure that opportunities to be healthy are available everywhere and for everyone.

### Policies

1. **Building Capacity:** Use a collaborative approach to improve the health of all people by incorporating health considerations into decision-making across all sectors and policy areas.
2. **Food:** Pursue opportunities to provide and grow healthy and affordable food options for County residents.
3. **Planning for Health:** Consider food access, active living, environmental quality (e.g., air, water, smoke, and toxins), health care options and human services when planning for future land uses.
4. **Inform & Educate:** Expand conversations about what creates health and educate residents on the social determinants of health.
5. **Assessments:** Continue to monitor, report and plan based on the health status of County residents.



## Land Use

Comprehensive plans play a pivotal role in shaping our landscape by influencing future land use decisions that can have a significant impact on the built environment and access to resources. In that respect, the Land Use Plan is arguably the most prominent chapter in the Benton County Comprehensive Plan. It gives people a visual representation of what the county is expected to look like in the future. The text, maps and images contained in the Land Use Plan provide a basis for making decisions on future land use regulations and development. The Land Use Plan also includes provisions that protect development from resources to minimize conflicts, and directs higher density development towards urban areas to help maintain efficient delivery of services.

The following goals and policies emphasize Benton County's land use controls, while balancing growth in a sustainable manner.

## Goal 1: Planning for Growth

Maximize the potential of Benton County as a thriving center for agriculture, business, and recreation, while planning for orderly and efficient growth.

### Policies

1. **Comprehensive Planning:** Promote the development and implementation of a comprehensive plan that effectively plans for land use, community facilities, transportation, housing, economic development, environmental protection, and technological advancement for Benton County. Plan for land uses that support and enhance Benton County's ability to attract and direct quality development.

2. **Plan Implementation:** Review the Comprehensive Plan annually and amend as necessary to ensure its usefulness as a practical guide for current and future development. Adhere to this Plan, which shall guide all zoning changes, as closely as possible to ensure consistent development policy. Formulate and enforce County ordinances to ensure development in accordance with the Comprehensive Plan.
3. **Urban Growth Areas:** Maintain the urban growth areas as an effective tool to guide planning and growth management decisions. Collaborate with the cities and townships to monitor growth and adjust the urban growth areas when necessary.
4. **Development within Urban Growth Areas:** Allow only low-density development in the municipal growth areas, so that development of infrastructure can be done efficiently and effectively as cities grow and expand.
5. **Re-subdivision Sketches:** Require urban re-subdivision sketches to be submitted along with large-lot plats in the Urban Growth Areas.
6. **Orderly Annexation:** Work with cities in Benton County and their adjacent townships to plan for orderly growth outside of their corporate limits. Pursue Orderly Annexation Agreements with townships surrounding the cities of Royalton, Rice, Gilman, and Foley.
2. **Agriculture:** Recognize and support the agricultural practices, character and lifestyle within the County, allowing for the pursuit of agriculture as a career.
3. **Age in Place:** Allow lot splits on rural land or accessory dwelling units to allow family members or other caregivers to live near seniors in an effort to allow people to age in place.
4. **Urban and Rural Distinction:** Keep the cities dense and urban and the rest of the county very low density and generally agricultural. Maintain a difference between the two.
5. **Rural Non-Farm Housing:** Allow additional rural non-farm housing so owners can extract some equity from their property, while sustaining agricultural operations on their land and their neighbors'. Seek creative solutions to the tension between preservation and development by using techniques such as clustering and transfer or sale of development rights.
6. **Special Soils:** Recognize and protect soils that are highly productive when properly managed (i.e. irrigation).
7. **Granite Ledge Township:** Allow a higher density of housing development when feasible in Granite Ledge Township on sites that are suited for on-site sewage treatment systems and do not negatively impact the environment.
8. **Urban Fringe Growth:** Encourage residential, commercial and industrial growth in an orderly and compact fashion around the established urban areas and rural service centers so new developments can be efficiently served by public improvements and reduce pressure on the character and quality of the County's rural areas.
9. **Highway 10 Corridor:** Support various developments along the Highway 10 corridor that apply innovative design solutions to minimize impacts to the environment and transportation system.

## Goal 2: Rural Land Use

Sustain an agricultural Land Use pattern in harmony with low density rural housing.

### Policies

1. **Rural Land Use:** Plan land use and provide roads and other public services to sustain most of the County as a low-density, rural and generally agricultural environment.





10. **Confined Animal Feedlots:** Continue to allow confined animal feedlots in the rural area by protecting them from new non-farm housing through County zoning. Require strict pollution controls consistent with State requirements.
11. **Right to Farm:** Support a farmer's right to farm when they are using generally accepted farming practices.

### Goal 3: Commercial and Industrial Development

Plan for the orderly and efficient growth of commercial and industrial development in the County.

#### Policies

1. **Commercial and Industrial Development:** Encourage the majority of new commercial and industrial developments to locate within Benton County cities in accordance with their comprehensive plans. Commercial and industrial development that does not need public sewer and water services should be located within

planned areas with adequate road service and upland area, and regulated through Conditional Use Permits.

2. **Home Businesses:** Allow home-based businesses in rural areas that are compatible with neighboring properties and the access road.
3. **Aggregate Resources:** Allow a very low density of rural, non-farm housing development in areas of mapped sand and gravel (aggregate) resources. Require adequate buffer, landscaping, and end use plans.

## Economic Development



Benton County has primarily stayed a farming and agricultural community. These land uses have played a pivotal role in shaping today's local and regional economy. As the County continues to promote its economic vitality through farming and agricultural uses, it is committed to finding new opportunities to diversify the economic climate. Rural economic opportunities may include a growing demand for "farm-to-table" restaurants, schools and daycares, home businesses, maker-spaces, breweries, event space, and businesses that process their crop production on-site (e.g., hops to hop-pellets).

Innovative strategies are needed to strengthen and diversify our economy, while attracting new businesses and a qualified labor force. As the County looks to the future, technology will play a pivotal role in fostering economic prosperity in rural parts of the county. For example, broadband access will open the doors for economic growth, while supporting entrepreneurs and telecommuters. It also elevates the county's ability to support workforce development by offering rural residents access to online education and resources.

Benton County is committed to business retention and expansion, workforce development, marketing the county, and quality of life initiatives. These values are reflected in the following goals and policies.

## Goal 1: Resources

Cooperatively utilize the existing resources in the County and develop new resources for economic growth, and ensure a quality labor force.

### Policies

1. **Local and Regional Cooperation:** Promote an on-going cooperative effort on a local and regional basis, utilizing the County, its Cities and Townships, Housing Redevelopment Authorities (HRAs), local Economic Development Authorities (EDAs), Benton Economic Partnership, local Chambers of Commerce, the Initiative Foundation, state agencies, local builders, business owners, the educational community and citizens to pursue a wide range of economic development opportunities.
2. **Business Retention:** Continue to support efforts to retain and expand existing businesses.
3. **Business Development:** Recruit new businesses and promote the idea of incubator space for emerging businesses.
4. **Asset Marketing:** Identify and market the County's internal (e.g., business friendly regulations), external (e.g., labor force) and natural (e.g., parks, trails and land) assets more aggressively to attract and expand diversified businesses.
5. **County-Wide Assistance:** Provide economic development assistance and resources to all parts of the County, particularly those areas on the eastern side of the County facing more challenges with and barriers to development.



6. **Entrepreneurship:** Support entrepreneurship through small business retention and expansion, and home based occupations that are not in conflict with the Benton County Development Code.
7. **Technology:** Extend broadband service throughout the entire County by 2040.

## Goal 2: Agricultural Hub

Promote Benton County as a hub for diverse types of farming and agricultural businesses.

### Policies

1. **Agricultural Businesses:** Encourage value-added agricultural industries, businesses and diverse agricultural operations to locate in the County.



2. **Crop Variety:** In addition to the regularly farmed crops in Benton County such as corn and soy beans, encourage the production of a variety of crops such as vegetables, fruits, and hops.
3. **Infrastructure Development:** Fund future infrastructure needs (i.e. farm-to-market roads and global communication) in a fiscally responsible manner that supports and promotes development.
4. **Development Process:** Implement strategies to streamline the permitting and development review process to attract new businesses to the County.
4. **Diversifying the Workforce:** Utilize technology to expand various workplace opportunities (telecommuting).
5. **Labor Shortages:** Pursue strategies to address the labor shortages experienced by farming and agricultural businesses and operations.

### Goal 3: Labor Force

Ensure a quality labor force for existing and potential businesses and operations.

#### Policies

1. **Human Resources:** Maximize our human resources through early childhood care and education, training and retention of our youth, and continued education for adults.
2. **Life Cycle Housing:** Encourage the availability of a range of quality housing types and values to ensure an ample labor force including tenant housing for farm workers.
3. **Availability of Education:** Promote local access for continuing education by actively seeking out institutions to offer programs and services through the use of available technologies.



## Environment & Natural Resources



Benton County's landscape is a complex ecosystem comprised of natural resources and water features. The landscape of the community is defined by fields, rolling topography, the stands of mature timber, large wetland flats and depressions, the scattered lakes, and the Mississippi River, which forms the western boundary of the county. Each one of these features contribute to the unique characteristics that Benton County resident's value.

Respecting the natural environment pays us great dividends over the long-term. A healthy urban forest helps shade our community. Wetlands recharge groundwater and clean our lakes and water resources. Intact open spaces serve as habitat for wildlife populations displaced through development. Preservation of natural resource areas and the integration of development patterns within the natural characteristics of the landscape contribute to a healthy natural environment.

As part of our natural resources, the mining of aggregate resources plays an important role in Benton County's economy. These resources and those discussed above are reflected throughout the goals and policies.

## Goal 1: Stewardship

Promote environmental stewardship for the County's long-term environmental benefit.

### Policies

1. **County Biological Survey:** Develop strategies for the conservation of the County's environmentally sensitive natural areas identified on the County Biological Survey.
2. **Development Review:** Protect the integrity of major natural resources through development review and regulation.
3. **Scenic Resources:** Protect scenic values by controlling billboards and regulating signs, auto junkyards, and other potentially unsightly land uses and practices.
4. **Wildlife Habitat:** Protect the integrity of wildlife habitat by acquiring prime tracts of land for public open space, by regulating rural land use for a very low intensity of development, enforcing regulations on wetlands and shorelines, and by designing new development and roads to keep major woodlands intact.
5. **Hazardous Waste:** Continue to work to promote the proper handling, disposal and recycling of hazardous waste.

## Goal 2: Aggregate Resources

Protect the County's supply of aggregate resources.

### Policies

1. **Preservation:** Identify areas throughout the County that are rich in aggregate resources and manage development in areas in order to preserve access to the aggregate resources.
2. **Resource Retention:** Encourage aggregate resources that are extracted in the County to be used locally when possible.
3. **Land Use Compatibility:** Minimize land use conflicts adjacent to mining operations.

## Goal 3: Water Resources

Protect the groundwater supply from contamination, while providing County businesses and residents with an adequate supply of clean water.

### Policies

1. **Best Management Practices:** Protect water quality by encouraging the use of "Best Management Practices" and other features of the County's Water Plan in private development and public improvements.
2. **Wetlands:** Continue to enforce wetland regulations. Support individual landowners' efforts to reestablish preexisting wetlands by using a wetland banking system.
3. **Watershed Management Organizations:** Implement through zoning and public works the policies of the watershed management organizations consistent with the County's Water Plan.
4. **Vintage Resources:** Preserve vintage water resources throughout the County.
5. **Ditch Maintenance:** Regularly maintain the official County ditch system, while complying with "Ditch Laws" in order to handle stormwater, protect private property from flood damage, and maintain high water quality.
6. **Sewage Treatment:** Explore the best sewage treatment options (best practices) for clustered residential developments and allow individual sewage treatment systems on larger rural lots that have the appropriate soil types.
7. **Individual Treatment Systems:** Continue careful consideration and review of soil suitability for the placement of individual sewer treatment systems before the issuance of a permit.





## Goal 4: Energy

Explore new opportunities for clean, affordable and sustainable energy throughout the County.

### Policies

1. **Clean Energy:** Encourage businesses and residents to utilize clean energy, including solar and wind power in permitted areas.
2. **Plans:** Incorporate renewable energy into County plans and policies.
3. **Ordinance:** Periodically review and update the County's ordinances that regulate the use of renewable energy, particularly wind and solar power.
4. **Permitting Process:** Review the County's land use controls on an annual basis to determine if there any challenges in supporting the use of clean energy.

# Mobility



Access to transportation contributes to the economic development, health, and quality of life of rural communities. Reliable transportation is needed for rural residents to access health care services, employment and educational opportunities, and social services. More importantly, reliable transportation is needed for farmers and rural businesses to move goods and products. This includes safe access to highways, linkages to shipping yards and rail, and access to freight routes.

It is clear that transportation alternatives are on the verge of changing. Over the next thirty years, ride-sharing, autonomous vehicles and increased access to public transportation are anticipated to change how future generations move about the county. The biggest unknown is the advancement of autonomous vehicles and its impact on the built environment. This plan does not address these anticipated changes given its unknowns. Instead, it continues to emphasize the importance of providing a safe and connected transportation system that meets all users, while preparing the County for the future.



## Goal 1: Transportation System

Provide and maintain a safe, convenient, and efficient County transportation system for the movement of people and goods.

### Policies

1. **Funding:** Establish a consistent and continuous funding mechanism for Benton County's transportation system.
2. **Regional Planning:** Take an active role with MnDOT, Benton County Cities, Townships, the APO, and other agencies involved in transportation planning, to provide the most effective transportation system for Benton County, particularly regarding Highways 10, 23, and 95.
3. **Maintenance:** Maintain the county's transportation assets (e.g., road and bridges) in good conditions or otherwise known in the industry as a "state of good repair."
4. **Preservation:** Explore system preservation strategies and low-cost/high benefit solutions before expansion.
5. **Plan Implementation:** Update the Transportation Plan to identify and designate future roadways within the County by their functional classification and to prioritize system improvements.
6. **Support Roads:** Extend local and service roads in an efficient manner consistent with the County's Transportation Plan that is complementary to the state highway system.
7. **Commercial and Industrial Sites:** Locate and design industrial and commercial developments to avoid truck traffic through residential and agricultural areas.
8. **Circulation Improvements:** Support a regional transportation system that circulates traffic and enhances the ability to move goods and products between cities and town centers.
9. **Ten Ton Routes:** Identify heavily traveled freight corridors and maintain their ten-ton route capacity to safely move goods and products throughout the county and region.
10. **Multi-Modal Transportation:** Investigate multi-modal transportation opportunities within the current system such as walking, biking, air cargo, rail, transit and ground transport.
11. **Connectivity:** Provide pedestrian and bicycle enhancements as part of roadway reconstruction or expansion projects in urban or urbanizing areas when feasible.
12. **Programming and Prioritization:** Consider programming transportation projects as a higher priority when they achieve other benefits or objectives (e.g., trail improvements or wetland restoration needs).

## Goal 2: Safety

Advance the safety of the County transportation system.

### Policies

1. **Safety Improvements:** Improve unsafe access points, crossing conflicts along State and County Highways and at-grade railroad crossings.
2. **Recreational Activities:** Identify and pave shoulders within high growth corridors as a part of County Road projects for recreational purposes. The shoulders should be wide enough to accommodate both pedestrian and bicycle activity.
3. **Emergency Preparedness:** Encourage the development of through streets for more efficient emergency response.
4. **Education:** Increase public awareness on pedestrian, bicycle and driver safety.
5. **Funding:** Pursue funding opportunities to address safety concerns identified as part of the County's Highway Safety Plan or through other safety studies.



## Goal 3: Aesthetic Character and Function

Enhance the aesthetic character and functional qualities of the transportation networks within the County.

### Policies

1. **Visual Aesthetic:** Encourage developing properties to create landscape buffers to maintain the aesthetic quality of the area.
2. **Signage:** Promote the appropriate use of signs (directional informational and advertising) to create community identity.
3. **Rural Character:** Maintain the rural character of the State and County highway system by identifying appropriate commercial and industrial sites that cluster development rather than sprawl development along roadways.
4. **Drainage:** Identify and maintain the County's road ditches and culverts in a manner that is consistent with state law.
5. **Government Cooperation:** Coordinate with Townships on road development issues including location and configuration.

## Goal 4: Technology Based Solutions

Advance the County's transportation system by incorporating new technologies that prepare the County for the future.

### Policies

1. **Autonomous and Electric Vehicles:** Consider transportation investments that support electric and connected autonomous vehicles.
2. **Intelligent Transportation Solutions:** Incorporate technology based solutions when feasible to improve the safety and mobility of all users.



## Chapter 4

# Land Use

The Land Use Chapter and its Future Land Use Map (together referred to as the “2040 Land Use Plan”) is arguably the most prominent chapter in the Benton County Comprehensive Plan. It helps articulate future land use patterns, while providing policy direction that protects the County’s natural features and enhances the agrarian lifestyle. The text, maps, and images in this section will also help inform updates to the Benton County Development Code. The Development Code provides specific regulations on how a property can develop. The Development Code defines the permitted and conditional uses within a zoning district, and sets the lot size and development requirements. The County’s Development Code is applied primarily in unincorporated areas of the county (i.e., townships). Cities are the responsible agency for establishing and enforcing zoning ordinances within their boundaries.



# Existing Conditions

Benton County is approximately 259,000 acres in size (see Table 4.1). Approximately 10 percent of those acres are within incorporated areas or orderly annexation areas. Benton County's land use control falls within the remaining 233,000 acres. Of those acres, 76 percent is predominantly used for agricultural purposes, including land for crop production, pasture lands, dairy farms, and other open areas associated with farming. Non-farmstead (i.e., rural residential) homes are also scattered throughout Benton County. These land use patterns (8.5 percent) are small-scale in nature and thus far have not significantly altered the County's rural areas.

Commercial and industrial land uses are also located throughout rural parts of the county. The type of uses vary greatly, but typically cater to the agrarian economic lifestyle. These uses for the most part have been confined to the areas around Highway 10 and Highway 23. It is also important to recognize the numbers in Table 4.1 do not account for the number of small businesses that are operating from their home or farm. These type of businesses (e.g., salons, woodworking, auto mechanics and accountants) are typically approved through a Conditional Use Permit (CUP). A total of ten CUPs were issued by the County in 2017 and 2018. Figure 4.1 illustrates the existing land use patterns as of 2018.

**Table 4.1. 2018 Generalized Existing Land Uses**

Generalized Existing Land Use Category	Acres	Percent
Incorporated Areas (Cities)	10,972.11	4.24%
Orderly Annexation Agreements (Existing)	14,483.86	5.60%
Sub Total	25,455.97	9.84%
Agriculture & Farming Uses	196,524.84	75.99%
Rural Residential (40 acres or less)	22,230.40	8.60%
Commercial/Industrial	691.63	0.27%
Public / Semi-Public (e.g., ROW, Church, School)	1,088.18	0.42%
Parks & Open Space	4,811.29	1.86%
Rural Vacant *	7,810.99	3.02%
Sub Total	233,157.33	90.16%
<b>Total</b>	<b>258,613.30</b>	<b>100.00%</b>

\* The parcel is not actively being farmed or contain a structure/home.

Source: Benton County Tax Assessor Data

# How are Land Use Decisions Made Today?

The authority to engage in land use planning is set forth in Minnesota law. Planning is considered to be an exercise of the police powers of the state. City, township, and county planning is based on state law, often called state planning enabling legislation. Under enabling legislation, planning begins with an analysis of community needs and goals, which are then formulated into a Comprehensive Plan. The Comprehensive Plan then becomes the guiding policy for community development. The zoning ordinance and other land use regulations must be based on this comprehensive plan.

For cities and townships, the authority to plan is found in Minnesota Statutes Section 462.353. Counties are authorized to plan under Minnesota Statutes Section 394.23.





# 2040 Land Use Plan

The 2040 Land Use Plan takes a system-wide approach that integrates natural features and soil data to better inform land management and decision making. This approach was established to provide the following benefits:

- Articulate desired land use patterns that align with the Comprehensive Plan's vision, goals and policies.
- Identify areas that should be preserved for farming based on soils, natural features and development patterns.
- Illustrate the County's vast range of natural features (e.g., open water, wetland and streams) that defines its landscape.
- Manage growth in a sustainable manner that preserves and protects natural features.
- Conserve farmland and natural areas by limiting sprawl.

The 2040 Land Use Plan (see Figure 4.2) should also be used to help articulate the County's expectations for future development. These expectations are translated through a set of community values. The community values were identified by county stakeholders during the planning process and serve as a blueprint for future land use decisions, while helping align the 2040 Land Use Plan with the County's Development Code.

## Community Values

- **Aggregate Resources:** Encourage development to occur in areas that do not contain accessible large aggregate deposits.
- **Agricultural Resources:** Protect Benton County's agricultural lands as a resource base for its agricultural industries and for related benefits they contribute towards the County's rural character, scenic quality, natural environment, and economic health.
- **Environmental Resources:** Enforce State and County regulations that protect natural resources, wetlands, shorelands, and floodplains.
- **Growth:** Protect existing farms by directing development pressure towards areas served with urban services or existing complementary development.
- **Housing:** Expand housing choices for county residents and an expanding workforce by creating development opportunities throughout Benton County.
- **Natural Resources:** Preserve and manage Benton County's natural resources in order to protect the environment and conserve resources for future use.
- **Open Space Preservation:** Encourage open space preservation through the process of clustering homes.
- **Rural Residential:** Buffer development from farming operations to minimize conflicts between the two uses.
- **Water Resources:** Protect the quality and supply of surface water and groundwater resources.

Figure 4.1. Existing Land Use

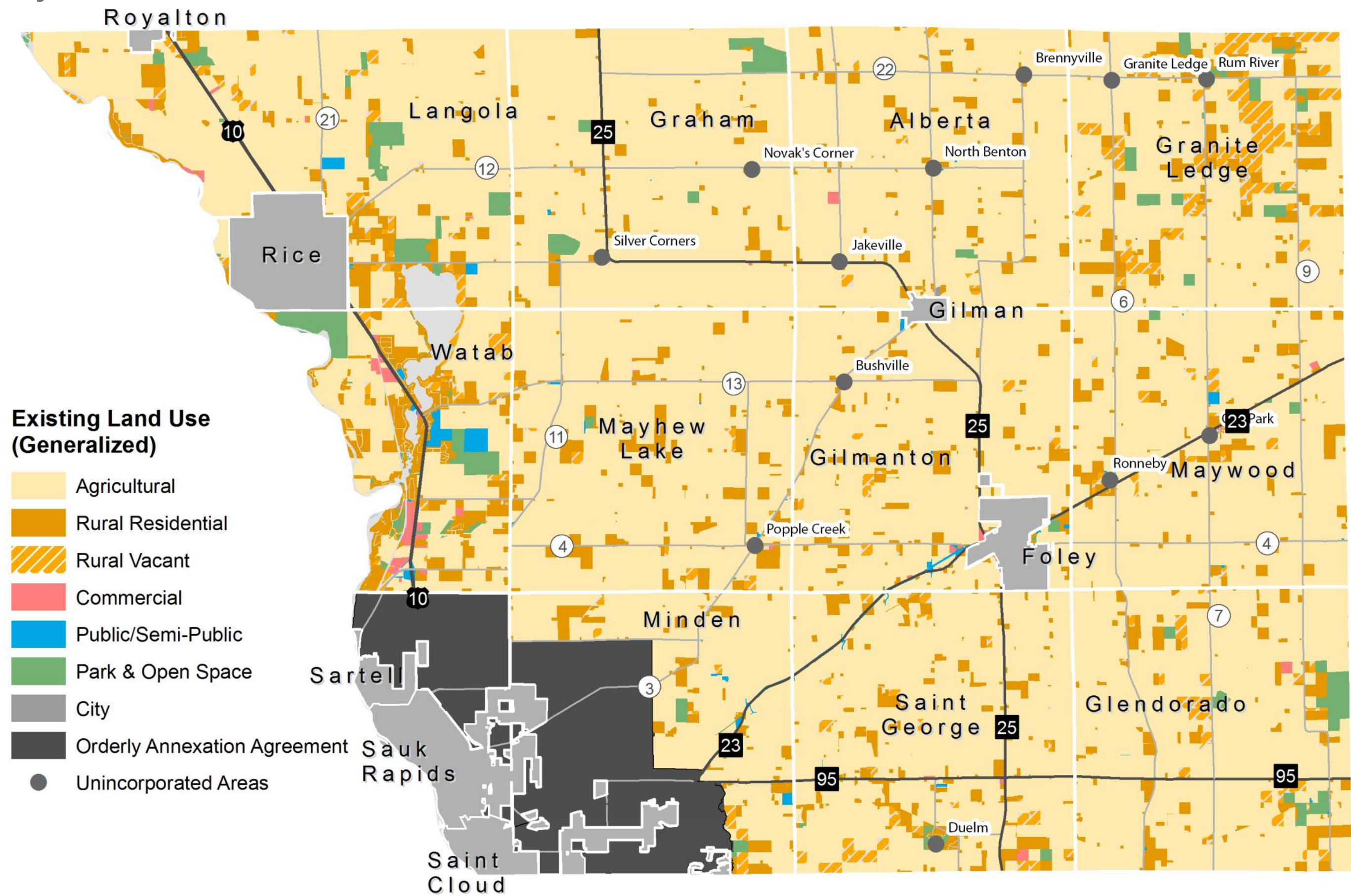
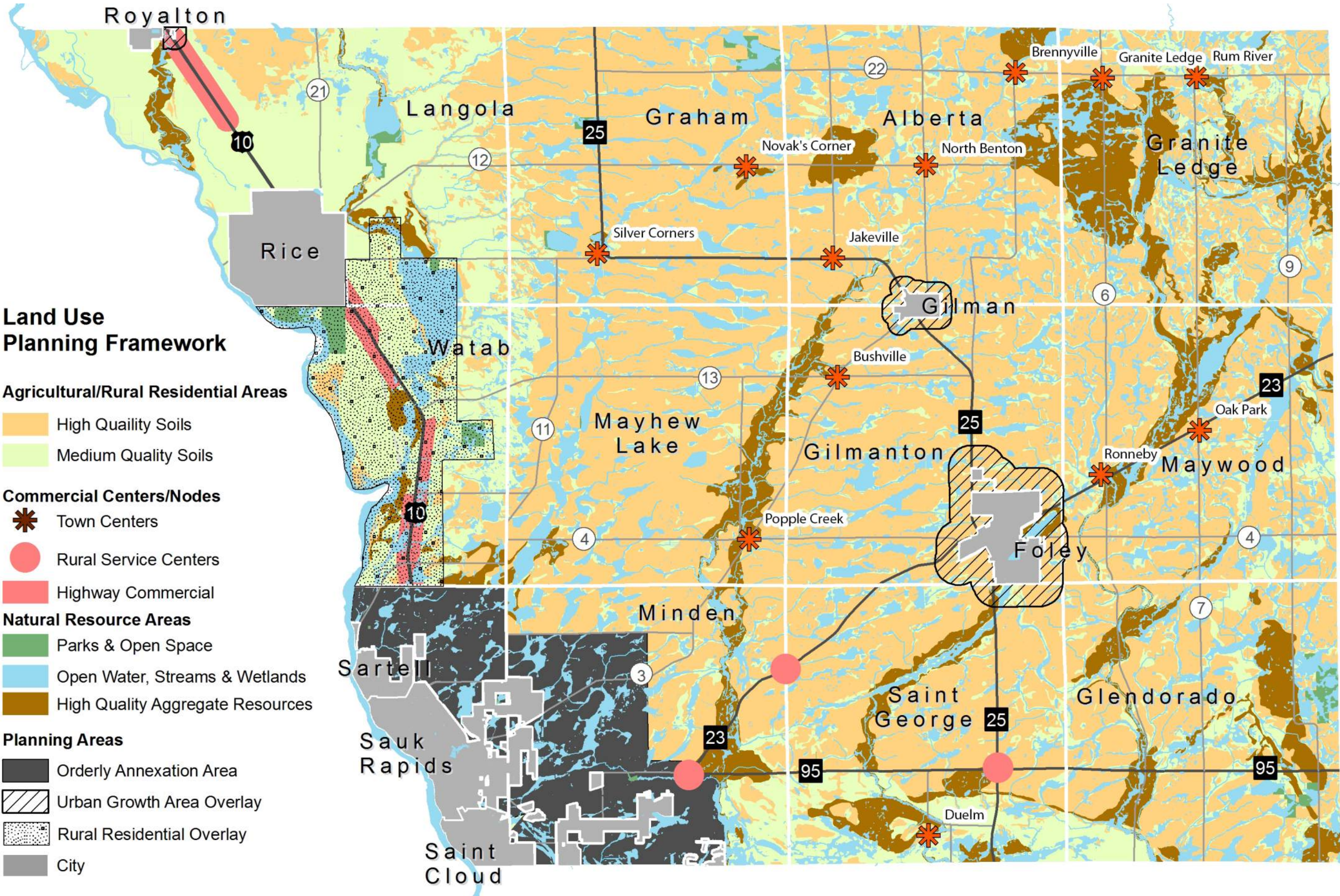




Figure 4.2. Planned Land Use (2040)





## Future Land Use Categories

The following section provides general descriptions of the future land use categories (or typologies) contained within Benton County's 2040 Land Use Plan (see Figure 4.2). The categories were established to better reflect future land use patterns and community values. The boundaries of the future land use categories are defined based on existing land use patterns, local jurisdictional growth plans, and natural resources.

### Agricultural & Rural Residential Areas

The majority of Benton County will continue to be used for agricultural purposes, while supporting low-density non-farming housing (i.e., rural residential). Figure 4.2 helps demonstrate future land use patterns suitable for agricultural purposes by depicting soil types (source: University of Minnesota and Land Management Information Center). The soil types include:

- **High Quality Soils:** These areas have been determined to be the most appropriate for long-term farming because of its soils and history of agriculture. High quality soils are generally considered "prime" or "good" for agriculture use.
- **Medium Quality Soils:** Medium quality soils are generally considered "good" or "fair" for agriculture use or can be made so through irrigation, tilling, fertilization and crop rotation. The sandy soils of southern Minden and St. George Townships are an example of soils that are not naturally prime for agriculture, but can be managed for high productivity. Farming is supported in these areas as long as it is maintained outside of the current city limits and planned growth areas.







To help preserve these areas for future agricultural uses, development should be guided at lower densities. A density of 4 dwelling units per 40 acres is desired. A slightly higher density can be achieved if homes are clustered and developed at 6 dwelling units per 40 acres (measured on a quarter-quarter section basis). Future residential development should also be situated in a way that maximizes the agriculture use of the remaining farmland.

## Natural Resource Areas

The Natural Resources Areas begin to highlight some of the unique features that define Benton County's landscape. The 2040 Land Use Plan depicts these natural resources as parks and open space, open water, streams and wetlands, and high quality aggregate resources.

### Parks and Open Space

Parks are an essential amenity that positively impact the health of the county. Benton County maintains and operates 4 county parks that encompass 338 acres in total. The two largest county parks include Benton Beach and Bend in the River. Benton County's parks provide a range of community gathering space and recreational activities. The parks system also offers a variety of options for the user, such as camping, picnic shelters, trails, and passive open spaces. The park system is further complemented by city parks and open space areas. A more in-depth look at the Benton County park system is discussed in Chapter 6.



## Open Water, Streams and Wetlands

Water features are among the highest profile natural amenities within the county. The vast amount of wetlands, creeks, and streams are particularly valuable. The Mississippi River is also a defining water feature that draws visitors throughout the region for boating, fishing, and other recreational activities.

The water features identified in Figure 4.2 represent wetlands, lakes, rivers, streams, and creeks. These water systems support wildlife habitat, natural vegetation and spawning areas. Alteration of these systems in the form of pollutants, filling or draining can have an adverse effect. For this reason, they require special attention (see sidebar).

## High Quality Aggregate Resources

Large portions of aggregate resources can be found throughout the county. High quality aggregate areas are identified in Figure 4.2 (source Minnesota Geological Survey) and may consist of sand and gravel and crushed stone. Most of the highest quality aggregate in these areas are used for construction purposes, such as the manufacturing of concrete or asphalt. Aggregates of lower quality are used for fill, base-course for roads, and for a variety of other purposes.

Figure 4.3. Protected Waters and Wetlands

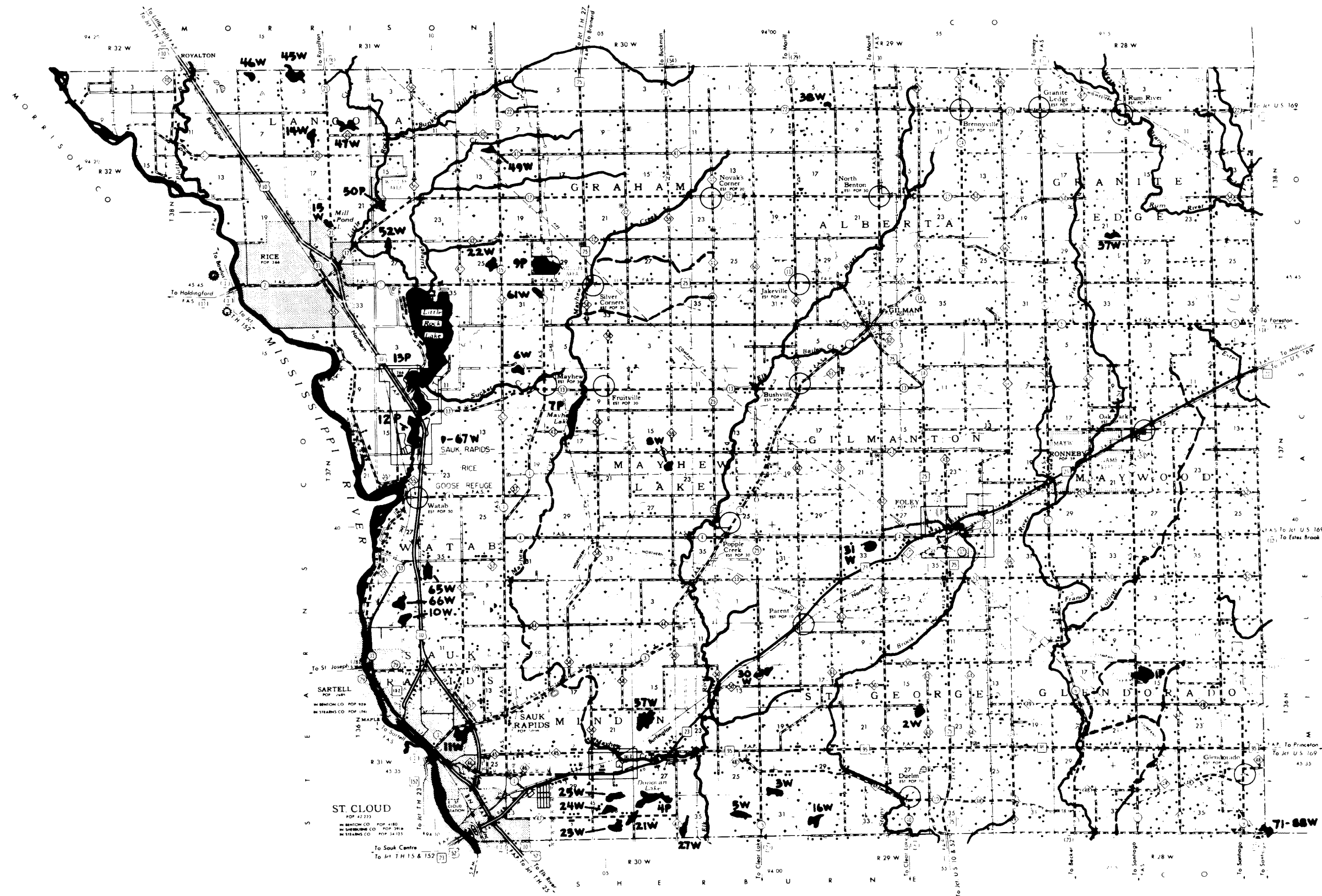




Figure 4.4. Floodplain Management Areas

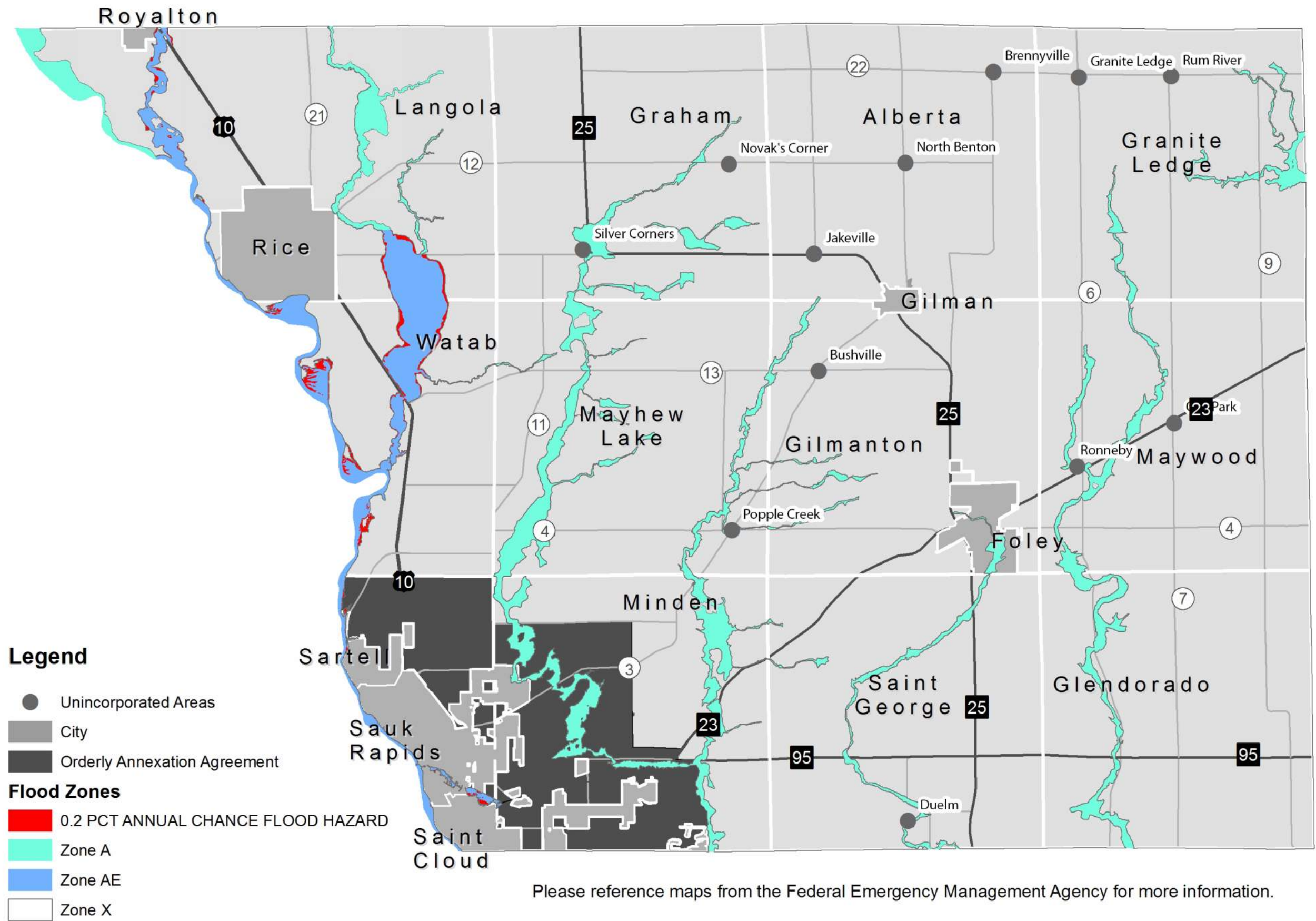
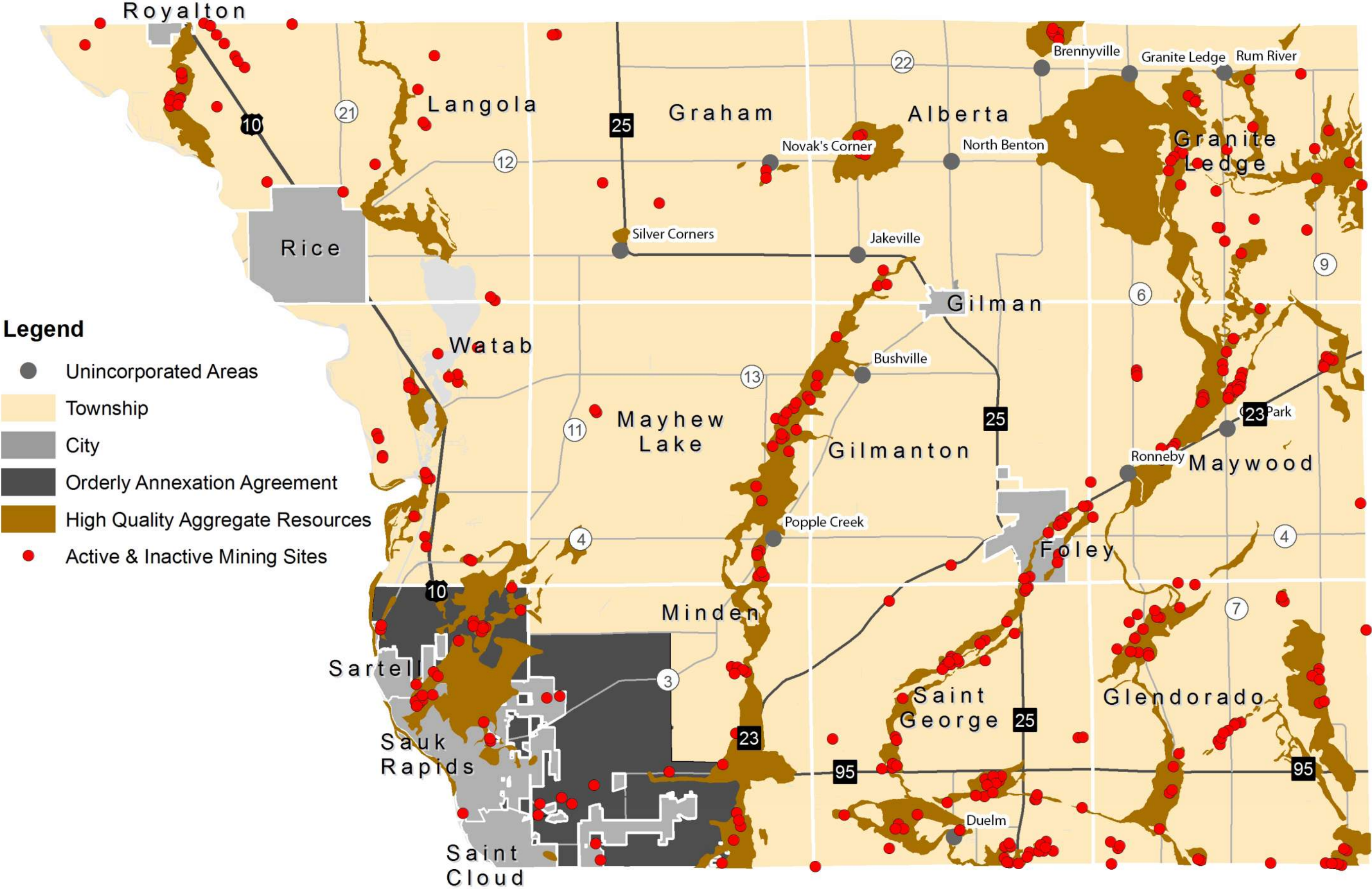




Figure 4.5. Aggregate Resources & Mining Areas





Page Intentionally left blank

Benton County has a total of eight quarry pits and 336 gravel pits (sand, gravel, and/or crushed stone) that have been or are currently being mined (see Figure 4.5). Pit and quarry locations have been gathered from several different sources through the Minnesota Geological survey records. The pits and quarries range in size from less than one acre to greater than 50 acres and may be active, inactive, depleted, or reclaimed. The aggregate quality of the pits varies.

Aggregate resources in the region, particularly in the Twins Cities is rapidly diminishing. Benton County recognizes these trends and the growing demand for mining operations in the area. There is a desire to preserve these resources for local economic development initiatives and public works projects. Accessing these resources locally can reduce the costs for local construction projects, compared to shipping resources from outside of the region. In an effort to preserve these resources, Benton County should consider the following policies:

- Locally source aggregate resources for construction projects, such as county roadway improvements or other public works initiatives.
- As part of the development review process, applicants should demonstrate to the satisfaction of the County that their project does not impact future access to aggregate resources.

## Examples of State and County Regulations

**Shoreland Protection Area:** Land within 1,000 feet of specified lakes or within 300 feet of designated streams in Benton County is protected under the County's Shoreland District Management regulations. Those lakes and streams are illustrated on the County's Official Protected Waters and Wetlands Map generated by the Minnesota Department of Natural Resources (see Figure 4.3).

Regulations vary according to the classification of each lake or stream. Lakes classified as Natural Environment are: Bible Duck Slough, Donovan, Mayhew, Pularskis and Vicki. Lakes classified as Recreational Development are: Little Rock and the Little Rock Channel and Flowage. All rivers and streams are classified as Forested, Transition, Agricultural, Urban or Tributary.

Regulations also address land use, lot size, setback from the water, building elevation, grading and filling, tree and shrub removal, docks, natural resource protection and related matters. Shoreland regulations supplement and modify the "base" zoning.

**Floodplain Management Area:** The Floodplain Management Areas are not shown on the Land Use Plan map but are illustrated by the federal Flood Insurance Rate Study map (see Figure 4.4), which has been adopted as a supplement to the County zoning map.

The regulations of the Flood Plain District are the same as those of the model flood plain district developed by the Minnesota Department of Natural Resources in conformance with the Flood Plain Act, Minnesota Statutes Chapter 104. Included are regulations on land use, parcel size, flood proofing, building elevation and floodwater obstructions.



## Commercial Centers/Nodes

The work of business retention and attraction is critical to the local economy in Benton County, driving growth of the local tax base and expanding the employment opportunities, services, and amenities that residents depend on and desire. Benton County aspires to bring new opportunities, businesses, and economic vibrancy to the community in the next 20 years. These initiatives are reflected in the Benton Economic Partnership's 2019 Strategic Plan. The 2040 Land Use Plan has identified areas in the unincorporated areas that are suitable for commercial and industrial uses. These areas are reflected in Figure 4.2 as Town Centers, Rural Service Centers and Highway Commercial.



*Images of Town Centers in Benton County*

## Town Centers

Town Centers capture small housing and business nodes (e.g., commercial establishment or two, a church, and a handful of residences). These locations are usually at the crossroads of two major roadways that are not incorporated. Historically, these locations have provided rural parts of the county access to goods and services. The number of businesses today may be relatively small, but can range from implement stores, storage facilities, restaurants/bars, and religious institutions. Smaller subdivisions and single-family residential homes are also common land uses in these areas.

Some of the larger Town Centers include Duelm, Oak Park, Mayhew, and Brennyville. Although incorporation is not anticipated, there may be opportunities to allow limited development in and around these centers. For example, Benton County allows for a variety of home occupied businesses through a Conditional Use Permit (CUP). Typical home businesses in the county include "cottage" type industries or services, ranging from woodworking, cabinetry, contractor yards, small repair shops, seamstresses and beauty salons. As these businesses prosper, they may outgrow the home business and seek to expand their services by relocating. CUP's who choose to expand should be encouraged to locate in and around Town Centers. Clustering businesses at key nodes can help generate stronger economic prosperity for rural parts of the county, while providing a centralized location for commerce.

## Rural Service Centers

The Rural Service Centers are similar to the Town Centers; however, they do not have the historical context as an unincorporated Town Center. The Rural Service Centers are primarily located at nodes where state highways intersect. The Rural Service Centers should continue to grow with housing and businesses. The pattern of land use should be similar to these centers' historic character; that is, a mixture of residential and non-residential development on compact lots. Housing should also be permitted in the Rural Service Centers on parcels large enough to meet all Benton County requirements for on-site wastewater disposal systems and individual water wells.

## Highway Commercial

Commercial and industrial land uses make up a relatively small part of the county's land area. Suitable locations for commercial or industrial development have been located outside the incorporated areas. These areas are principally located along the Highway 10 corridor. Development is typically unsewered and either provide goods and services to the surrounding agricultural community or to the traveling public. Residential development is typically prohibited in these areas.

The feasibility to develop along the highway may be challenging from a transportation and environmental perspective. These challenges include limited roadway access, wetland constraints, and the ability to address sewer and water needs.

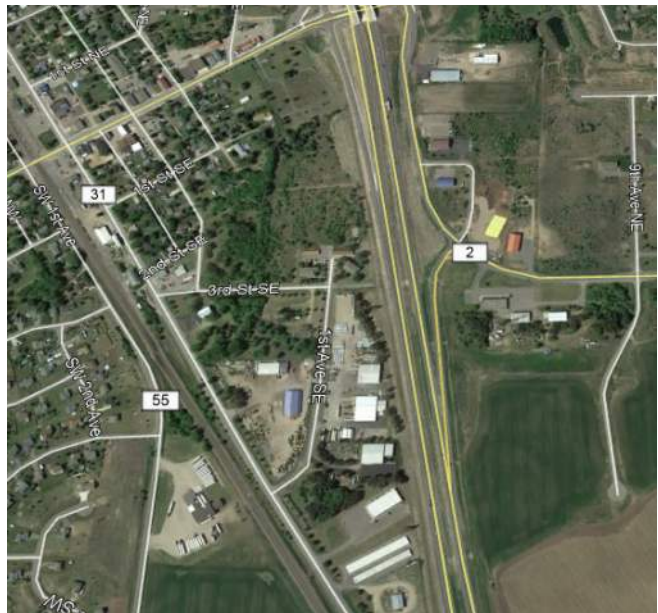
The following guiding principles should be used to promote development in a sustainable manner.

- **Clustering:** Businesses should be clustered together. Clustering development in this manner will help businesses support one another, providing successful and viable businesses.

- **Design:** Ensure a compatible design transition between commercial uses and residential or agriculture uses including retaining existing features of the landscape as defining elements of site design (fence rows, ditches, wetlands, woods) or incorporating greater setback and landscaping standards. All commercial or industrial development should be screened from the view of adjacent houses or farms.
- **Image:** Site design and building aesthetics along the corridor should promote a positive image of the community. This can be achieved through design principles (e.g., building materials and landscaping) that convey the corridor as an attractive place for visitors and prospective businesses.



Highway 10 near Royalton, MN



Highway 10 south of Rice, MN



- **Environment:** The proximity of new commercial development with the natural environment needs to be monitored. Appropriate mitigation strategies need to occur to avoid impacts to wetlands, open waters, natural species, etc.
- **Road Access:** Road access must conform to the access management requirements of Benton County and/or the Minnesota Department of Transportation.
- **Signage:** Sign restrictions (e.g., height, design and location) should be applied to mitigate negative visual impacts to the corridor.
- **Zoning:** Commercial or industrial development should be permitted in locations appropriately planned and zoned by Benton County, or in locations planned by a City, annexed to that City and rezoned appropriately.

## Planning Areas

For the purposes of this Comprehensive Plan, the County assumes a majority of the growth projected for the year 2040 and beyond (see Chapter 2) will occur within the cities or along their borders. Growth outside of the city limits have been identified in the 2040 Land Use Plan (see Figure 4.2) as Rural Residential Overlay, Orderly Annexation Areas, and Urban Growth Areas. The purpose and intent for each of these land use categories are described below.



*Precedent examples of design elements (e.g., lighting, signage, and rain gardens) that can help portray a positive image of the community along a roadway corridor.*

## Rural Residential Overlay

Although agriculture remains the predominant County land use for the foreseeable future, there are locations that may not be appropriate for long-term farming. These include parts of Watab Township (e.g., along Highway 10 and around Little Rock Lake), Sauk Rapids Township, and the western one-third of Minden Township. These locations have the highest concentration of residential development in the non-urbanized portions of the county. These areas are not anticipated to be served by City water and sewer utilities, except where failing septic systems or contaminated private wells cause health concerns.

The overlay encompasses existing residential lots and platted subdivisions where the density is greater and services are nearby. Development in these areas typically range between 1 to 2.5 units per acre. Future land use patterns in the overlay should be within these density ranges. The density may exceed 2.5 units per acre if a connection to a public wastewater treatment facility is made. Future subdivisions should be able to demonstrate best practices and the latest in innovative technology to address on-site septic.



## Urban Growth Areas

Over the years, cities have become more urbanized with more commercial development and higher density residential uses. As a result of these development pressures, some of the townships have seen changes to their borders with neighboring communities. These types of changes have made it harder for some of the townships to stand alone as rural communities as they once did, and in many respects still do. The need for land use planning is evident based on these changing environments. Good land use planning begins by recognizing areas of growth identified by a city and their planning documents (e.g., comprehensive plans or land use studies). At a minimum, the County's Comprehensive Plan must address these areas of growth as prescribed by Minnesota law (see page 16).

The Urban Growth Areas have their origins dating back to the 1999 Benton County Comprehensive Plan. These areas were recognized as "Urban Transitional Areas." The 2006 Benton County Comprehensive Plan also identified "Urban Growth Areas" around the cities of Foley, Gilman, Rice and Royalton. During this plan's public involvement process, it became clear that the 2006 Urban Growth Areas may no longer reflect a city's growth projections (too much or too little) or aspirations to develop in that manner. Based on



*Precedent examples of rural residential land uses*



# Minnesota State Statute (Urban Growth Areas)

The following are excerpts from Minnesota State Statute regarding Urban Growth Areas:

- Minn. Stat. § 462.352 (Subd. 18) Urban Growth Areas. “Urban growth area” means the identified area around an urban area within which there is a sufficient supply of developable land for at least a prospective 20-year period, based on demographic forecasts and the time reasonably required to effectively provide municipal services to the identified area.
- Minn. Stat. § 462.3535 (Subd. 1) General. Each municipality is encouraged to prepare and implement a community-based comprehensive municipal plan.
- Minn. Stat. § 462.3535 (Subd. 4.): Cities; urban growth areas. (a) The community-based comprehensive municipal plan for a statutory or home rule charter city, and official controls to implement the plan, must at a minimum, address any urban growth area identified in a county plan and may establish an urban growth area for the urbanized and urbanizing area. The city plan must establish a staged process for boundary adjustment to include the urbanized or urbanizing area within corporate limits as the urban growth area is developed and provided municipal services.
- Minn. Stat. § 462.3535 (Subd. 5.) Urban growth area boundary adjustment process. (a) After an urban growth area has been identified in a county or city plan, a city shall negotiate, as part of the comprehensive planning process and in coordination with the county, an orderly annexation agreement with the townships containing the affected unincorporated areas located within the identified urban growth area.

those conversations, the urban growth boundaries were refined to both simplify and better-reflect community direction.

The Urban Growth Areas are now represented as illustrative boundaries (approximately a quarter-mile to a half-mile from existing city boundaries). This approach will help continue to manage growth in a sustainable manner, while working towards a more formalized process for creating a boundary at the parcel level. Therefore, it is the responsibility of the city and the townships to work together to better define those boundaries. It is the County's role to recognize these areas as part of the Land Use Plan and serve as a resource in future land use planning decisions.

Overall, it is important to recognize the Urban Growth Areas as part of the 2040 Land Use Plan. The boundaries help guide potential growth and prevent the encroachment of non-farm uses into agricultural lands. The boundaries can also be used to plan for the efficient extension of roads and public services. If and when development occurs, the Urban Growth Areas should be limited to very low densities (4 units per 40 acres).

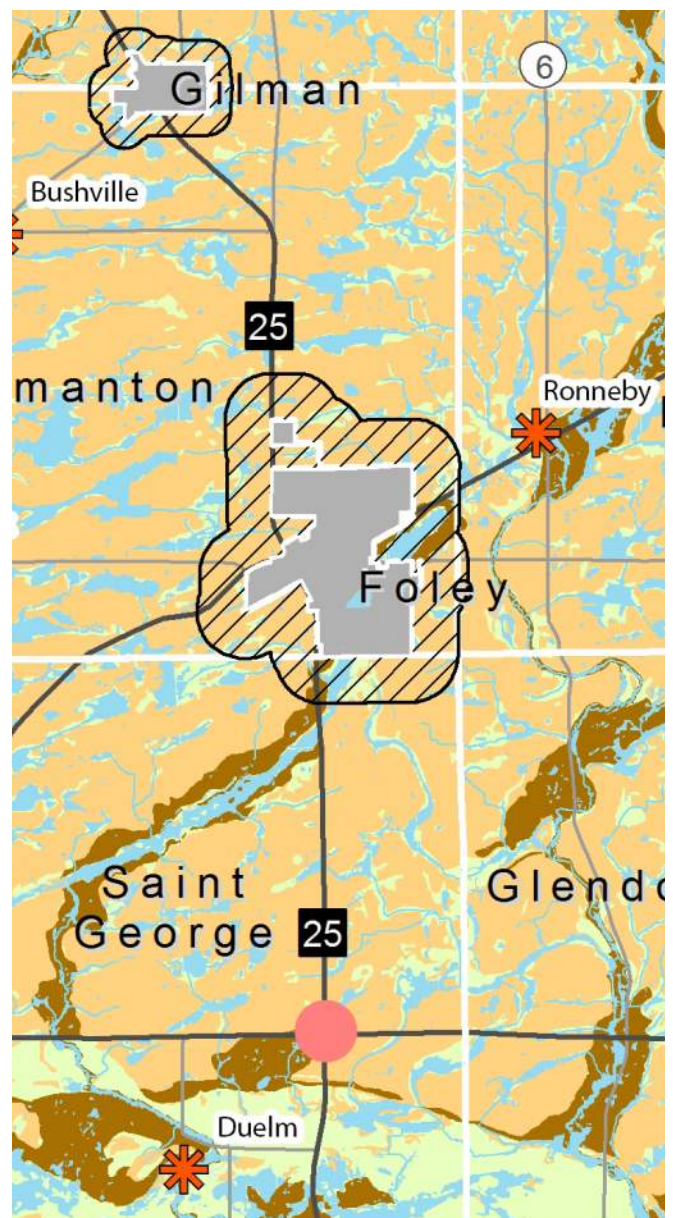
Development in the Urban Growth Areas should follow the following guiding principles:

- **Clustering:** Houses may be clustered onto smaller parcels than normally allowed if the subdivision layout and sewage systems are designed to easily accommodate a future annexation by the City and service by the City's sewer and water systems.
- **Collaboration:** Cities and Townships should work together to better define the urban growth boundaries.
- **Commercial and Industrial Uses:** Retail, service or industrial businesses may be allowed in the Urban Growth Area under these conditions:
  - If there is no City land use plan that addresses the location in question, under a Conditional

Use Permit issued by the County with the review of the nearby City.

- Consistency with the land use plan of the nearby city, or the land use plan and zoning of a joint City-County planning and zoning board (if applicable).

*The Urban Growth Areas are represented as illustrative boundaries (approximately a quarter-mile to a half-mile from existing city boundaries).*





- **Environmental Protection:** The subdivision must conform to the County regulations for the protection of wetlands, shorelands and floodplains.
- **Future Public Roads:** The subdivision must be able to easily provide public road access in the future to the portions of the tract not adjacent to the County or Township road.
- **Livestock:** No new feedlot or livestock operations should be allowed in the Urban Growth Area. This provision does not apply to the expansion of existing feedlot or livestock operations.
- **Long-Range Planning:** A new development should demonstrate how its proposal (e.g., subdivision) will eventually be incorporated into a City's long range plans, including street and utility system plans. This would occur when a development is achieving over 5 units per 40 acres.
- **Official Map:** The subdivision must be consistent with any Official Map of roads, utilities, drainage and parks (if such a map covers the area in question)
- **Parcel Size:** The County encourages development on smaller parcels in order to retain larger parcels intact for cultivation, minimize interference with farming, and reduce complaints about farm operations such as odors or machinery noise.
- **Private Sewage System:** Private, individual sewage treatment systems must meet the County's adopted requirements and state laws regulating Sanitary Sewer Treatment Systems (SSTS).
- **Public Utilities:** A subdivision should be able to economically and efficiently retrofit the site with City sewer and water lines.
- **Subdivisions:** A subdivision plat should indicate how the tract could be later resubdivided into city-size lots for utility service.

## Orderly Annexation Areas

The Orderly Annexation Area applies to the property covered by an agreement between a city and a township (as well as the County) in which land will be annexed to the city in the future under specified conditions. Orderly annexation agreements are a legal tool that can help a township control, to some degree, when and how land is annexed. This proactive measure includes an agreement between both the city and township that stipulates the terms and conditions in the transition/annexation of land. Typical terms and conditions state the time, location, tax revenue, infrastructure and land uses associated with the property. This binding agreement has been a common practice by several communities in southwestern Benton County. Existing agreement and their boundaries are reflected in Figure 4.2. Please reference Minnesota State Statute 414 to learn more about the legal process for municipal boundaries adjustments.

The 2040 Land Use Plan does not promote or encourage annexation, but merely identifies best practices and policies to help facilitate growth in a sustainable manner. These best practices are discussed throughout this chapter.

# An Urban Growth Boundary Approach

The following example is an approach a city or township may use to better define their growth boundaries at a parcel level.

**Step 1:** Prepare an estimate of population growth of the city and county over the next twenty years based on past trends. The population's estimates help identify the amount of land needed for new development of housing, commercial, industrial, and public spaces.

**Step 2:** Prepare an inventory of existing public facilities (e.g., sewer, water, roads, schools, and parks), their capacity, and projected needs. The projected needs should reflect any concurrency and adequate public facilities requirements. The estimate of future infrastructure should reflect anticipated development densities and realistic costs and financial ability to pay for new and upgraded public services.

**Step 3:** Prepare an estimate of the amount of buildable land needed for the next twenty year. This estimate should take into consideration development constraints, such as wetlands and topography. Other consideration should include physical or political barriers to the expansion of the growth boundary identified.

**Step 4:** Prepare a detailed map showing the growth boundary and the areas to include inside the boundary. A mapping exercise should be prepared to clearly demonstrate what parcel falls with-in or outside of the growth boundary.

**Step 5:** Develop a growth boundary agreement that documents the findings above. The findings should inform amendments to the city, township or county comprehensive plans and zoning maps; in addition to documenting the agreement on the location of the growth boundary. The agreement between the local governments should also describe the procedures for reviewing and updating the growth boundary, and state the urban services (e.g., public sewer and water) that will not be extended beyond the growth boundary.

**Step 6:** Agree to implement low-density agricultural or rural residential land uses outside of the growth boundary. This should be done by the local governments after the boundary agreement has been adopted (through resolutions). This will protect not only farm land, but also water supplies, wildlife habitat, and sensitive rural lands. Low-density zoning outside of the growth areas can ensure large residential and commercial developments do not leapfrog over the growth boundary, or hobby farms do not over run the agricultural areas.



Page Intentionally left blank



## Chapter 5

# Transportation

Roadways provide for an integrated transportation system that will serve the future needs of residents, businesses, and visitors. Maintaining and improving this system is important to the ongoing economic health and quality of life of the county, and to the ability of people to travel easily and safely to work and other destinations, to develop property, and to move goods. Chapter 5 provides a framework for balancing future transportation needs throughout the county.



# Existing Conditions

Benton County has many transportation needs that vary from rural to urban settings. These needs are served by the County, State, and local transportation system. This existing system is documented throughout this section.

## Jurisdictional Classification

Jurisdiction over the roadway system is shared among four levels of government: state, county, city, and township. The Minnesota Department of Transportation (MnDOT) maintains the trunk highway system on behalf of the state. Benton County maintains the County State Aid-Highway (CSAH) and County Road (CR) system. The County's CSAH system is supported by state aid funds, which can be used towards road construction and maintenance. The remaining streets are the responsibility of the cities or townships.



The jurisdiction of roadways is an important element in the Transportation Plan because it affects a number of critical organizational functions and obligations (regulatory, maintenance, construction, and financial). The primary goal of reviewing jurisdiction is to match the roadway function with the organizational level best suited to handle the route function (see next section on functional classification). The existing jurisdiction of roadways in Benton County is illustrated in Figure 5.1 and Table 5.1. Figure 5.1 also depicts the Average Daily Traffic (ADT) volumes for this system.

**Table 5.1. Roadway Mileage by Jurisdiction**

Jurisdiction	Centerline Miles	Percent
US Trunk Highway	20.75	2.13%
State Trunk Highways (TH)	63.51	6.53%
County Roads (CR)	225.59	23.20%
County State Aid Highways (CSAH)	224.42	23.08%
Municipal State-Aid Street	20.66	2.12%
Township Road	307.56	31.36%
Municipal Street	109.99	11.31%
<b>Total</b>	<b>972.48</b>	<b>100%</b>

Figure 5.1. Existing Roadway System by Jurisdiction & 2017 Traffic Volumes

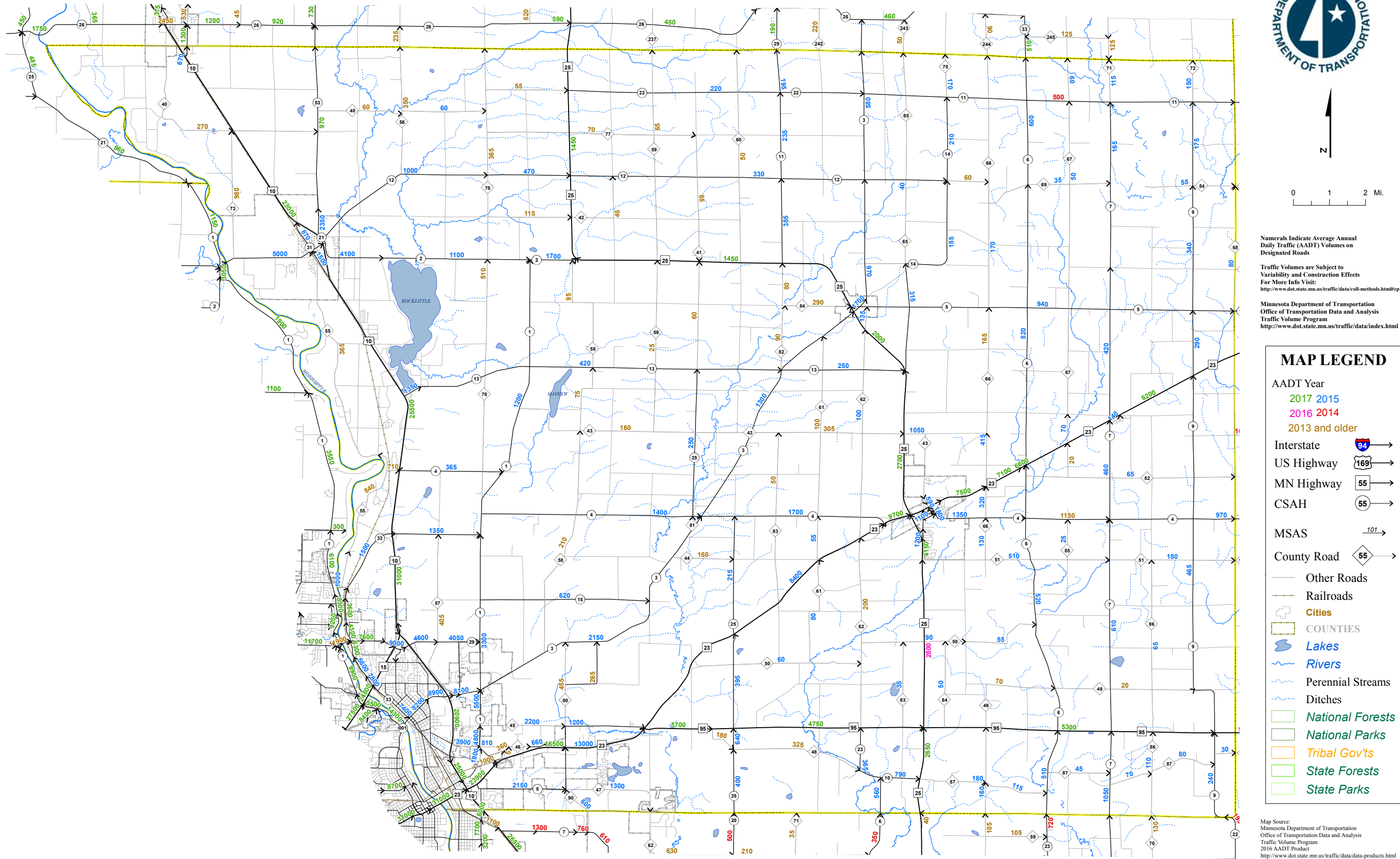
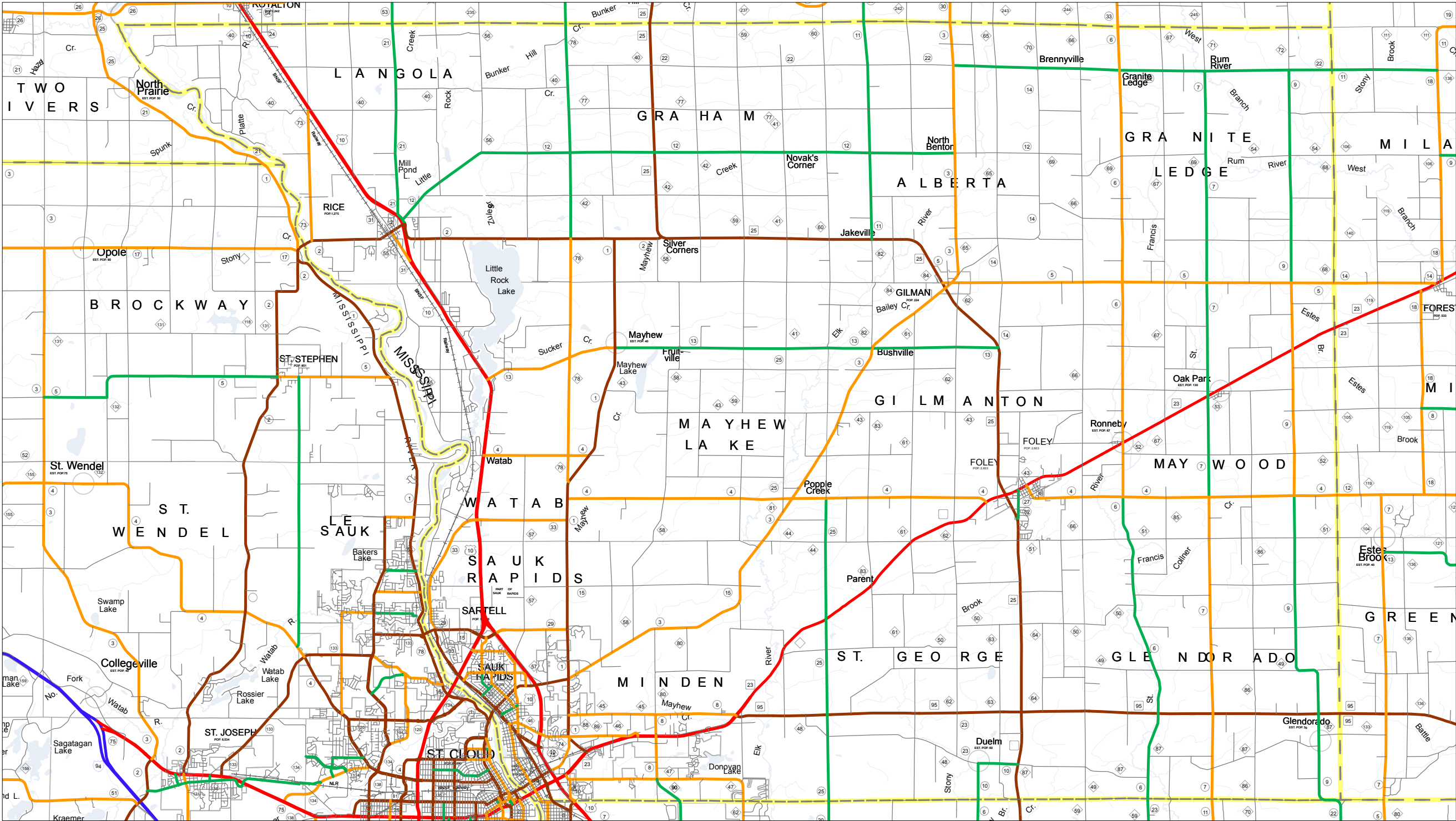




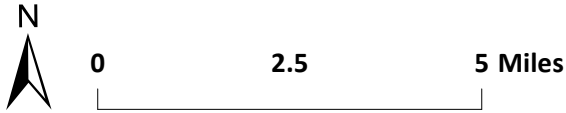
Figure 5.2. Existing Functional Classification System



**Benton Functional Classification**

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

	INTERSTATE TRUNK HWY
	U.S. TRUNK HWY
	STATE TRUNK HWY
	COUNTY STATE AID HWY
	COUNTY ROAD



FINAL: September 2015  
Produced by: Geographic Information and Mapping Section



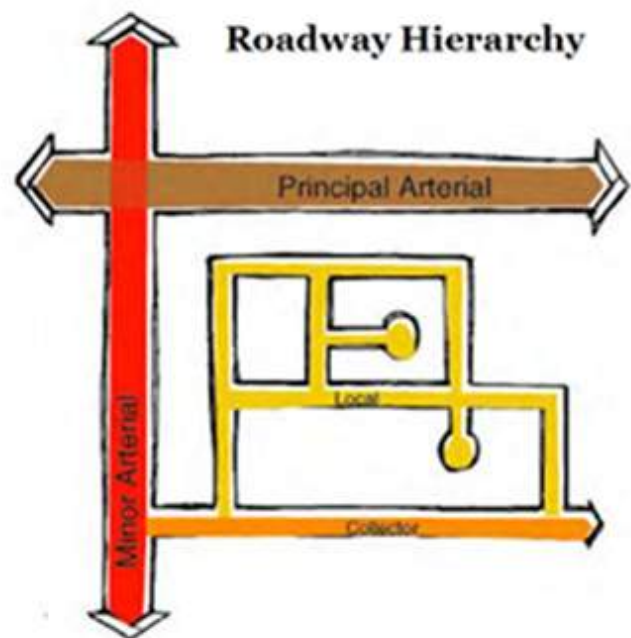
## Functional Classification

Roadway functional classification categories are defined by the role they play in serving the flow of trips through the overall roadway system. The intent of the functional classification system is to also create a hierarchy of roads that collect and distribute traffic from neighborhoods to the county or state system (see Figure 5.3). Roadways with a higher functional classification (arterials) generally provide for longer trips, have more mobility, have limited access and connect larger centers. Roadways with a lower functional classification (collectors and local streets) generally provide for shorter trips, have lower mobility, have more access and provide connection to higher functioning roadways.

The order of classification is from Principal Arterials at the highest capacity and the highest mobility function down to Local roads with the greatest access function. Characteristics considered when preparing a functional classification system include:

- Land uses adjacent to a route
- Route continuity
- Route ability to serve major activity generators
- Trip length characteristics of a route
- Spacing of routes with regard to function of the route

**Figure 5.3. Roadway Hierarchy by Functional Class**





Under Federal Law (Title 23, Statute 470.105), state transportation agencies have the primary responsibility for overseeing functional classification of roadways. MnDOT works in cooperation with Benton County and the St. Cloud Area Planning Organization (APO) to assign the functional classification to roadways and to maintain the classifications within the ranges allowed under federal guidelines. Benton County's system was documented in 2015 by MnDOT (see Figure 5.2). This system includes Principal Arterials, Minor Arterials, Major Collectors, Minor Collectors, and Local Roads.

- **Principal Arterials:** Principal Arterials provide high-speed mobility between the cities and important locations outside Benton County. In Benton County, Principal Arterials are generally constructed with limited access with signalized intersections. Private access is typically prohibited.
- **Collectors:** Collectors are designed to serve shorter trips that occur within the county and to provide access from neighborhoods to other collector roadways and the arterial system. They are expected to carry less traffic than arterial roads and to provide access to some properties. Collectors are designated as either major or minor collectors:
  - **Major Collector:** Major collectors supplement the arterial system by emphasizing mobility over land access.
  - **Minor Collector:** Minor collectors emphasize land access over mobility and provide connections to major collector and minor arterial routes.
- **Local:** Local streets provide access to adjacent properties and neighborhoods. Local streets are generally low speed and designed to discourage through traffic. These types of roads are typically owned and maintained by cities and townships.

Updates to the statewide functional classification is typically conducted every 10 years or on an as needed basis when changes to the system occur. At any given time, Benton County may request a change to a county roadway's functional class. These requests are typically made when a new roadway is added to the system or the attributes/characteristics to a route change (e.g., increase or decrease in traffic volumes).

Benton County should continue to monitor and update the county's functional classification system. This will help ensure the county system is being maintained and operated by the appropriate roadway agency. It is also an opportunity to better align roadway improvement needs with potential funding opportunities. For example, roads classified as a Minor Arterial or higher are typically eligible for federal transportation funds.

## Access Management

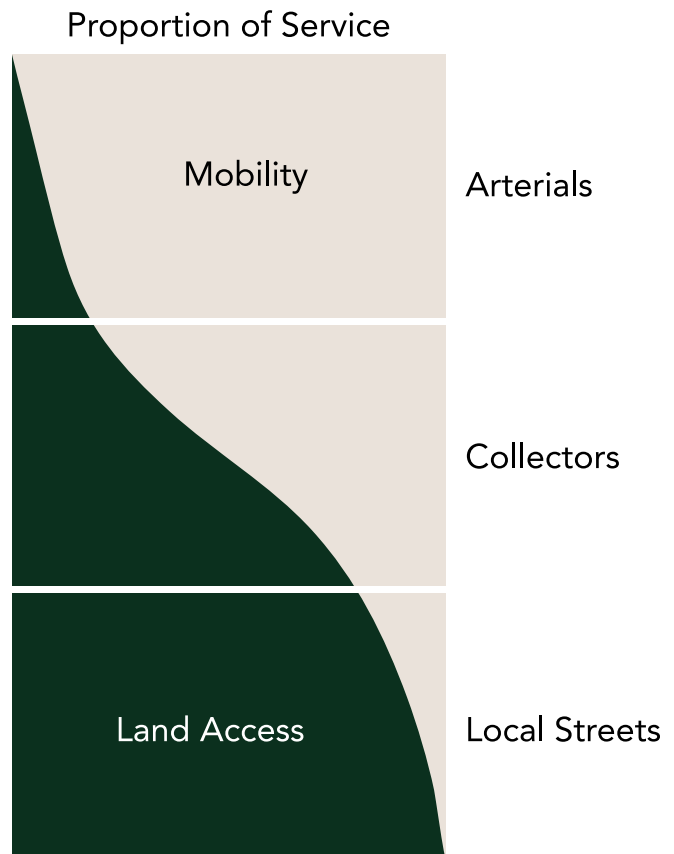
As applied to the roadway system in Benton County, the term “access” is the relationship between local land use and the transportation network or system. There is an inverse relationship between the amount of access provided and the ability to move through traffic on a roadway (see Figure 5.4). Access management guidelines are developed to maintain traffic flow on the network so each roadway can provide its functional duties, while providing adequate access for private properties to the transportation network. This balance of access and mobility is the focal point to effective access management.

Through access management, Benton County strives to maintain the integrity of the roadway system by preserving the balance between safety and mobility. With limited ability to improve the system, the County strives to adequately and efficiently provide service to through traffic movements while simultaneously providing adequate access to serve development. The County can then stipulate the specific access spacing requirements for various County roads through plat reviews and/or specify the best location and requirements for access through their access permit process.

Key points when reviewing access management include the following:

- Adequate spacing of access points
- Adequate sight distances
- Avoid off-set or dogleg intersections and entrances
- Encourage development of turn lanes
- Encourage proper driveway design including width, radii, and sight angles

**Figure 5.4. Access & Mobility Relationship**



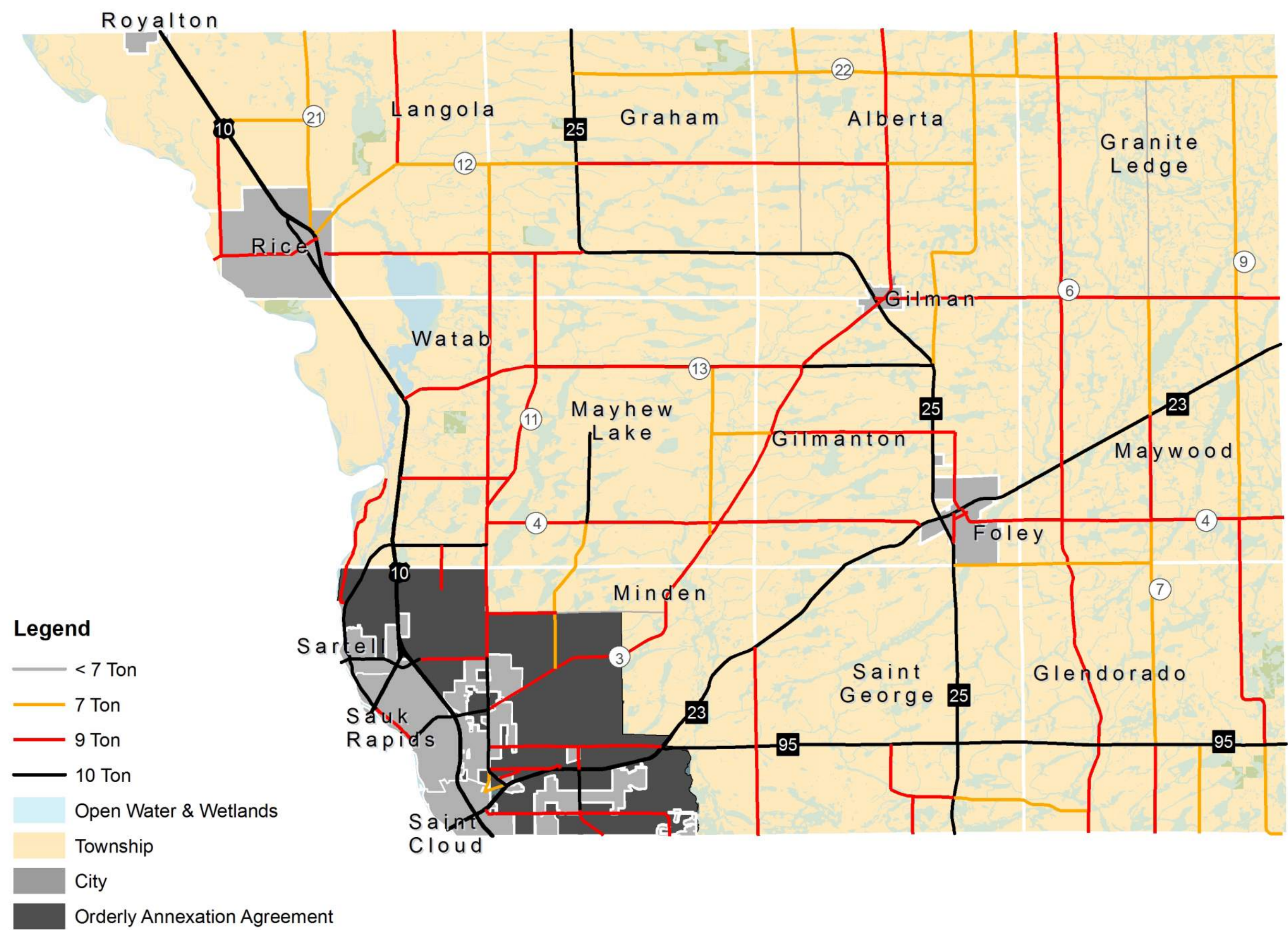


## Freight Movement

Benton County's transportation system plays a major role in helping move goods and products between agricultural hubs and urban centers. Key freight corridors include the State Highways, which provide regional connections to the Twin Cities and beyond. The County's nine- and ten-ton roads (see Figure 5.5) also provide a critical role in moving goods and products. These routes are capable of accommodating the heavier loads placed upon them by trucks and farm equipment. Maintaining and expanding this system helps support the rural economy and farm-to-market routes. Farm-to-market routes are typically county roads that provide access between agricultural hubs and town centers. The County should monitor this system and upgrade roads to ten-ton standards when feasible.



Figure 5.5. Ten-Ton Network





Page Intentionally left blank

# Multimodal Planning

As the County grows, so will its transportation needs. These needs will vary across all modes of transportation and in different parts of the county. The popularity of multimodal facilities (e.g., sidewalks, trails and bikeways) has consistently increased over the last few decades as Americans have used them to promote health, fitness, and sustainability. Trails provide opportunities to travel safely within a community, exercise, and enjoy natural areas. However, these amenities must be balanced in the right environment when feasible. Table 5.2 demonstrates this balance by aligning multimodal improvements with the land use patterns in Benton County. Examples of multimodal elements include:

## Bike Lanes

A bike lane is located on the road and designed through pavement marking and optional signage. These type of routes are typically used by “confident riders,” who are sharing the road with vehicular traffic. A striped bike lane is typically six feet in width and found in suburban and urban settings.

## Shared Lane or Shoulder Improvements

Pavement markings are placed in the vehicle travel lane to indicate where people should preferably cycle. These routes are typically used by the “strong and fearless,” who are advanced and confident riders. They take the shortest route possible and are comfortable in sharing the road with vehicles. Shoulder improvements (two to four feet in width) in all settings (rural and urban) can provide enough room for a bicyclist.



## Separated Shared Use Path

A shared use path is separated from vehicular traffic and supports multiple recreation and transportation opportunities, such as walking, bicycling, in-line skating and people in wheelchairs. These types of improvements are typically eight to twelve feet in width.

## Sidewalks

Sidewalks are paved paths (four feet in width) for pedestrians that are separated from vehicular traffic. Sidewalk connections are typically made as part of subdivisions and new developments. Sidewalks can offer a high-quality experience for users of all ages and abilities as compared to on-roadway facilities.

## Fixed Route Transit

Portions of Benton County (i.e., St. Cloud, Sartell and Sauk Rapids) are served by one urban bus operator and two rural bus systems. These operators provide transit services at fixed times at fixed locations. This type of service is located in areas that warrant transit demand, which typically includes suburban and urban settings. The St. Cloud APO has identified future transit needs as part of their Long-Range Transportation Plan and should be referenced for more information.



## On Demand Transit Service

On demand transit is a valuable transportation service for seniors, people with disabilities, and those who can't use the standard fixed route transit systems to travel to medical appointments, employment, school, or even to conduct errands such as buying groceries. This type of service is typically scheduled ahead of time and is offered throughout Benton County through public and private providers. The demand for this service will likely increase as populations age in rural parts of the county.

**Table 5.2. Common Multimodal Treatments by Land Use Type**

Land Use Type	Bike Lanes	Shared Lane or Shoulder	Separated Shared Use Path	Sidewalks	Fixed Route Transit Service	On Demand Transit Service
Rural/Agricultural Areas		●				●
Town Centers/Service Centers	●	●		●		●
Urban Growth & Orderly Annexation Areas	●	●	●	●	●	●
Urbanized Areas	●	●	●	●	●	●
Commercial Corridors			●		●	●

# Balancing Transportation Needs with Land Use

Planning for the future transportation system should account for the effective linkages between urban and rural environments. To help achieve this objective, this section identifies the type of transportation systems and strategies commonly associated with different land use patterns.

## Agricultural & Rural Residential Areas

The Land Use Plan recognizes Benton County's vast amount of rural and agricultural landscapes. These areas have very low-density residential development accessory to agricultural or farm operations of varying sizes. Farmsteads and homes are typically located on local roads with minimum right-of-way widths and generally see lower traffic volumes. Due to the low densities and large separations between land uses within these areas, pedestrian and bicycling accommodations are minimal or non-existent.

Transportation investments in these areas typically focus on low-cost/high-benefit solutions that address safety issues, drainage, and system preservation needs (e.g., crack sealing, mill and overlays, and shoulder repairs) that help maintain the roads and bridges in a "state-of-good" repair. Larger investments over time may include full reconstruction or the upgrading to meet ten-ton standards. A ten-ton road helps support heavier truck loads and farming equipment. More importantly, ten-ton routes serve as important



connectors between freight generators and receiving facilities (e.g., farms, mining operations, grain elevators, agricultural business centers, freight terminals, and distribution centers). Maintaining and managing this system is important to Benton County's quality of life and economy.

The following guidelines should be considered when balancing transportation needs in the Rural Residential/Agricultural areas.

## Transportation Guidelines for Agricultural & Rural Residential Areas

- New housing should preferably be accessed by a township road.
- A driveway should be connected to a county road if there is no other access to the property and County access management guidelines are followed.
- When more than one new housing parcel is created by subdivision and access is directly via a county road, the access management guidelines of Benton County and the Minnesota Department of Transportation (MnDOT) must be followed.
- Prioritize ten-ton route improvements to roads that are designated as major collector or higher.
- Consider adding a two-foot paved shoulder as part of roadway reconstruction projects to accommodate the potential for pedestrian and bicycle needs.



## Town Centers/Rural Service Centers

Town Centers and Rural Service Centers are unincorporated areas located at the crossroads of two major roadways. Historically, these locations have provided rural parts of the county with access to goods and services. The number of businesses today may be relatively small, but can range from implement stores, storage facilities, restaurants/bars, and religious institutions. Smaller subdivisions and single-family residential homes are also common land uses in these areas. Although incorporation is not anticipated, there may be opportunities to allow limited development in and around these centers.

Transportation improvements at these key nodes should be tailored to meet their settings, while preserving their historical nature. Context Sensitive Solutions (CSS) is one approach to evaluating transportation needs that also protects and preserves these areas. CSS is defined by MnDOT “as the art of creating public works projects that meet the needs of the users, the neighboring communities, and the environment. It integrates projects into the context or setting in a sensitive manner through careful planning, consideration of different perspectives, and tailoring designs to particular project circumstances. CSS is a collaborative, interdisciplinary approach that involves all stakeholders in providing a transportation facility that fits its setting. It is an approach that leads to preserving and enhancing scenic, aesthetic, historic, community, and environmental resources, while improving or maintaining safety, mobility, and infrastructure conditions.”

A noticeable change in these areas has been an increase in traffic volumes on the roadways, which has caused concern in regards to safety, mobility and access issues. Some of these concerns stem from the higher speeds of traffic when approaching an intersection. A more permanent way to address these concerns is through traffic calming and safety



treatments. These can be low-cost/high-benefit solutions that change the look and feel of the road and communicate to drivers that the function of the roadway is changing. Other safety measures may include flashing beacons, rumble strips, edge treatments, and turn lanes.

The following guidelines should be considered when balancing transportation needs in the Town Centers and Rural Service Centers.

### Transportation Guidelines for Town Centers/Rural Service Centers

- Exercise flexibility and creativity to shape effective transportation solutions, while preserving and enhancing the Town Centers and Rural Service Centers.
- New development should be planned accordingly to respect future right-of-way needs, mobility, access, and safety. Roadway drainage is also a big variable that affects the amount of potential right-of-way needed.
- New development will need to follow the Benton County and MnDOT Access Management Guidelines.
- Monitor safety issues at intersections, and program improvements as needed.
- Collaborate with local agencies and businesses to implement Context Sensitive Solutions as part of future county roadway projects.

## Urban Growth & Orderly Annexation Areas

Urban development within the growth areas typically requires the greatest degree of planning and entitlements. As areas develop, they generally require being rezoned, platted, and having infrastructure extended to serve them with city sewer and water. Key factors that influence the timing of development expansion into planned growth areas include: willing sellers/buyers, market conditions, proximity to and capacity of trunk sanitary sewer and water systems, and collector or arterial roadway capacities.

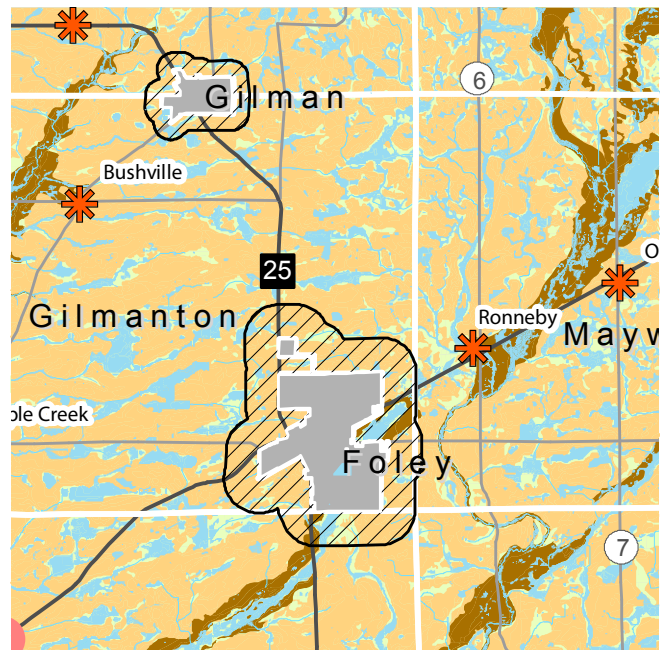
As these areas develop over time, future rights-of-way should be valued as public assets. Therefore, right-of-way needs to be protected and managed in a manner that respects the roadway's intended function, while serving the greatest public good. A common practice used in protecting future right-of-way needs is through the "official mapping" process (see Minnesota State Statutes 462.352 and 462.3). An official map would show affected properties, future right-of-way needs, centerline alignments, setbacks, controlled access locations, and other transportation facilities. This will provide some level of control in protecting the corridor from development. Official mapping provides a basis for restricting development in designated rights-of-way, or between designated setbacks, to allow the government authorities time to purchase or otherwise reserve the land.

Platting and subdivision regulations also give the County authority to consider future roadway alignments during the platting process, because most land must be platted before it is developed. The County may use their authority in the townships to regulate land development to influence plat configuration and the location of proposed roadways. In most instances, planning and engineering staff work with developers to formulate a plat that meets

development objectives and that conforms to a long-term community vision and/or plans.

Planning for future growth in urbanizing areas should also take into consideration other modes of transportation. Pedestrian and bicycle trails play a large role in the overall transportation network by offering an alternative means of transportation to places of employment, primary points of interest, and recreational areas. In that respect, a "Complete Streets" approach is typically applied in developing areas and urban environments. Complete Streets are commonly defined as roadways that accommodate all users (e.g., pedestrians, bicyclist, vehicles, and transit), regardless of age and ability. This is important to consider when recognizing the diversity of people traveling throughout the community.

The following guidelines should be considered when balancing transportation needs in growing parts of the county.



*Urban Growth Area Examples (Foley and Gilman)*



## Transportation Guidelines for Urban Growth & Orderly Annexation Areas

- Careful planning and design should be done to cluster development in a way that envisions longer term urban development form/patterns with municipal infrastructure, such as roadways.
- New development should be planned accordingly to respect future right-of-way needs, mobility, access, and safety.
- New subdivisions should be able to easily provide public road access in the future to the portions of the tract not adjacent to the County or Township road.
- New development will need to follow the Benton County and MnDOT Access Management Guidelines.
- Evaluate future development areas to establish alignments for future road corridors in order to optimize the widths of these corridors from a “complete streets” perspective.
- Given the potential for larger traffic volumes in these areas, a sidewalk with a substantial buffer between vehicle travel lanes should be developed to ensure the safe access of the roadway by pedestrians.
- Multimodal design of public rights-of-way should utilize innovative and non-traditional design standards in a way that is equitable for all modes/users, inter-modal activities, and is respectful of the surrounding community.

## Urbanized Areas

A portion of Benton County’s roadway system is located in the Cities of Foley, Rice, Sartell, Sauk Rapids, and St. Cloud. It is important to recognize this system as it supports development efforts and complements a portion of the urbanized transportation system that lies within the City’s boundaries. Enhancements to this system are primarily focused on traffic operations, access management, preservation, and the integration of multimodal improvements. The demand for multimodal improvements in the urbanized areas has grown in recent years. As a result, many roadway improvement projects have included trails or sidewalks, providing more connections to neighborhoods and key destinations, while enhancing the local and regional trail network. The urbanized areas should continue to foster a proactive approach to planning the pedestrian network; one that recognizes the needs of vehicle traffic, but does more to meet the unique demands of pedestrians. In some respect, these initiatives need to be driven at the local-level and integrated into their planning efforts.

A multimodal approach will also help mitigate congestion issues in the Sartell, Sauk Rapids, and St. Cloud area. Users consider facilities congested when speeds are reduced significantly below posted speeds and/or long queues are evident at intersections. Congestion can lead to increases in crashes, diversion from desired roadways or use of



local routes for regional movements, and increases in travel times and vehicle emissions. Maintaining and improving this system is important to the ongoing economic health and quality of life of the County by allowing people to travel and move goods easily and safely and also to facilitate property development.

The following guidelines should be considered when balancing transportation needs in the urbanized areas.

### Transportation Guidelines for Urbanized Areas

- Work with the St. Cloud APO to identify transportation priorities and investments.
- The street and public right-of-way network should be used to connect various public realm amenities, so neighborhood residents can use a range of intermodal activities (e.g., walking and biking) to travel to and from destinations such as schools, parks/open space, shops and businesses.
- New development will need to follow the Benton County and MnDOT Access Management Guidelines.
- Municipalities should play an active role when planning improvements to the County Roads in these areas from a planning, engineering, and financial perspective.



## Commercial Corridors

Benton County has excellent access to the regional transportation system, which is served by State Highway 10, 23, 25 and 95. These corridors provide critical connections to the Twin Cities and beyond, while providing relatively high levels of service. The State Highways have significant volumes of traffic and consequently, pedestrians and cyclists do not traverse these roadways.

The Land Use Plan recognizes the commercial and industrial land use patterns that have located along major highways, particularly along Highway 10. Land uses include a wide variety of both established and newer commercial uses, as well as light industrial and manufacturing, and wholesale and warehousing activities. As the primary commercial corridor passing through the heart of Benton County, the success of Highway 10 as a commercial corridor is critical to the local economy. To promote reinvestment in the area, the County will continue to collaborate with MnDOT to improve the corridor's mobility and safety.

The following guidelines should be considered when balancing transportation needs along Commercial Corridors.

### Transportation Guidelines for Commercial Corridors

- Access needs to be limited in order to preserve the ability of the roadway to accommodate high volumes and to maximize safety.
- Access management along these corridors should continue to follow the guidelines established by the Minnesota Department of Transportation (in terms of spacing of cross streets and access points).
- Local agencies should establish a series of parallel streets on either side of State Highways to provide enhanced access to individual businesses and residences along the corridor.





# Implementation

Infrastructure systems such as roadways, bridges, culverts, and sidewalks have become very expensive and difficult to maintain in today's environment with aging infrastructure, rising costs of materials, and stagnant or declining revenue. In fact, many local agencies are being forced to pause and ask questions about the costs and benefits of continuing to maintain assets throughout their entire system, or if other approaches should be explored to better balance needs with available resources. Generally, considerations to include are:

## Performance Standards and Measures

A performance-based approach improves the accountability of local infrastructure investments, assessment of risks related to different performance levels, and monitoring of progress, and also increases transparency.

## Project Prioritization

Project prioritization can help Counties rank infrastructure needs in a manner that is consistent with preservation goals and objectives. This technique can help avoid the typical "worst first" approach to programming preservation projects

that tends to invest limited resources in the most expensive "fixes" such as reconstruction, instead of directing maintenance funds to infrastructure that merely needs rehabilitation and will provide more cost-effective, timely solutions. Project prioritization includes applying the correct "fix" at the right time by performing lower cost maintenance actions sooner in the life of the roadway.

## New Revenue Sources

There are methods to capture new revenue streams to close the financial gap in maintaining assets in a "state of good repair." Exploring new revenue sources will allow the County to expand and accelerate preservation initiatives. Some Counties have used their powers to increase the wheelage tax or implement a local transportation sales tax under State Statute (Minnesota State Statute 297A.993).

## New Maintenance Techniques

There are new maintenance techniques that can extend the lifecycle of an asset. For example, new maintenance techniques for roadway surfaces can provide longer service life and higher traffic volume thresholds, resulting in more stable road maintenance costs. Cost reduction of life cycle

extension strategies which save money, or extend surface life, can directly benefit preservation needs and minimize any identified financial gap.

## **Asset Management**

Tracking assets and their condition will provide a stronger outlook on lifecycle costs and replacement schedules, which will help establish funding plans and identify future funding gaps or shortfalls.



Page Intentionally left blank

## Chapter 6

# Parks

Parks are often cited as people's favorite places. They are the places people go to have fun, relax, and play. Whether it's a place to fish, take a quiet walk through the woods, or go on a vigorous run with the dog, a high-quality park and trail system has something for all ages and abilities.

Benton County has acknowledged the importance of providing park, trail, and open space opportunities that enhance the quality of life for residents and visitors. Parks and trails are essential to promoting community health and wellness, connecting individuals and families to ecological education and stewardship, promoting cultural understanding, and fostering economic viability.

The Parks chapter will serve as a implementation guide for future investments to the County's parks and trails.



# Existing Conditions

Benton County includes a variety of county parks, trails, and natural areas that provide access to the outdoors for residents and visitors (see Figure 6.1). This system is further complemented by regional and local parks. The County's park and trail system is further defined throughout this section.

## County Parks

### County Signature Parks

Signature parks are larger in scale, provide active and passive recreation, and typically provide access to regional destinations such as lakes, rivers/creeks or forests. These parks are designed to serve a large number of park users throughout the county. Users are typically traveling longer distances (up to 30 minute travel sheds) to access these parks. Features unique to the County's signature parks might be a public beach, campgrounds, large rentable picnic shelters, multi-use open spaces, restroom facilities, and larger play areas. Today, there are two signature parks in Benton County:

#### *Bend in the River (289 acres)*

This land was acquired by the County in 2002 and is the largest county park in the system. The park includes 3,300 feet of undeveloped shoreline along the Mississippi



River. Scenic views of the river bend and islands in the Mississippi River are one of the park's main attractions.

The County completed a master plan for the development of the park in December 2005 and amenities include restoration of the natural prairie, provision of picnic shelters, provision of hike and ski trails, wildlife viewing blinds and observation areas, and a preserved historic farmstead. A notable outcome of the Bend in the River Master Plan was the construction of a canoe landing.

#### *Benton Beach (30 acres)*

Features of the park include a campground with tent and RV sites, a restroom and



shower house, and a picnic shelter. Lakeview Center is a 100-person capacity conference center with a two-story deck overlooking Little Rock Lake. Both the conference center and the picnic shelter are available for rent. For athletic and recreational facilities, the park provides a playground, horseshoe pits, sand volleyball courts, a softball field with backstop, a basketball court, and a disc-golf course.

## County Community Parks

These parks are smaller and scaled for community or family gatherings, or for access to lakes. Typical amenities include passive open spaces, access to water bodies, picnic areas, and restroom facilities. Community parks generally have a closer service area, attracting visitors up to 15 minutes away.

### *Mayhew Lake Park (4.4 acres)*

This park currently provides boat access to Mayhew Lake and has a picnic area. Amenities include an improved boat launch, fishing pier, picnic tables, and grills. Portable restrooms are provided.

### *Rose Anna Beach (0.6 acres)*

This park serves as a neighborhood-scaled park, providing a picnic table, and a grill. During the winter months, the park provides access to Little Rock Lake.

### *St. Regis Park (0.6 acres)*

This neighborhood-scaled park provides picnic tables, grills, and portable restrooms for park visitors to access Little Rock Lake for picnicking, fishing, and ice fishing. Limited vehicle access during the winter prevents erosion of the shoreline during the warmer months. Residents have indicated that future priorities for this area include: installation of hardy, native plants, educational or interpretive markers, and the installation of a canoe launch.



*Mayhew Lake Park*



*Rose Anna Beach (top image), St. Regis Park (bottom image)*

## County Natural Area Parks

These areas are intended for passive recreation uses such as walking and nature enthusiasts. These areas are unlikely to develop with recreational amenities. These areas are intended to be preserved, while providing residents access to nature. Future amenities may include non-paved trails, seating areas, informational kiosks, and picnic tables.

### *St. George Township Park (17 acres)*

St. George Township Park is undeveloped at this time. Land was acquired through a generous donation by a county resident, and deed restrictions indicate the future use is for wildlife habitat and study of the natural area.

### *Wapicada Village / Mayhew Park (12.5 acres)*

Wapicada Village / Mayhew Park is undeveloped at this time. The terrain and location in the Watab Creek floodplain make it difficult to access or develop as a viable park today. An abandoned railroad right-of-way, now privately owned, traverses the property.



## Regional and State Parks

Benton County does not have any regional or state parks. Regional and State parks in close proximity to Benton County that offer recreational options for residents include the Sherburne National Wildlife Refuge, Rum River State Forest, Crane Meadows National Wildlife Refuge, and St. Wendel Tamarack Bog Scientific and Natural Area.

## Trails

### County Trails

Benton County has developed some trails within its park system including at Bend in the River and Benton Beach. These internal trail networks provide pathways for walkers and runners within the signature parks. The County does not own or operate any trails outside of its current park system. The majority of the existing trails in Benton County fall under municipal jurisdictions and the state. However, this Comprehensive Plan recognizes the desire to build a more cohesive network of trails identified in the Regional Active Transportation Plan (2015). These routes are identified in Figure 6.2.

### State Trails

The Mississippi River defines Benton County's western border between Sherburne and Stearns County. The Mississippi River Trail (MRT) bikeway follows the river roughly 600 miles from its source at Itasca State Park to the Iowa border. Located largely on road shoulders, the route also includes segments of scenic state, regional and local trails. Minnesota's route, sometimes on both sides of the river, totals more than 800 miles. Portions of the MRT are located in the cities of Rice, Sartell, and Sauk Rapids (see Figure 6.3 and Figure 6.4). The MRT is intended to extend all the way to the Louisiana Delta Region at the Gulf of Mexico - some 3,000 miles.

# Past Planning Efforts

A variety of plan documents were reviewed during the planning process. These plans and supporting planning/policy documents have been created over the last 10 years and provide a foundation for developing this chapter. The following is an inventory of relevant findings from this plan review.

## Benton County Parks, Trails and Open Space Master Plan (2002)

This Plan identifies and prioritizes existing parks, trails and natural resource areas within the county that have a high potential for public use and enjoyment. In some respect, the plan today has been viewed as too aspirational from a programming and budgetary standpoint. The 2002 Master Plan provided a foundation for shaping the Parks Chapter of the Comprehensive Plan and its recommendations.

## Regional Active Living Transportation Plan (2015)

The Public Health Divisions of Benton, Sherburne, Stearns, and Wright Counties, worked together under the Statewide Health Improvement Program (SHIP) to develop a Regional Active Transportation Plan (ATP) that identifies a set of strategies to be implemented by SHIP staff and/or community partners in the region for pedestrians and bicyclists. For this plan, a Regional Network was identified that connects the nodes and corridors in the region. The Regional Network represents high-level, conceptual connections between important regional origins and destinations and does not identify specific street routes, or facility types. The Plan serves as a guiding document in helping prioritize trail investments throughout the region.

Figure 6.1. Existing County Parks

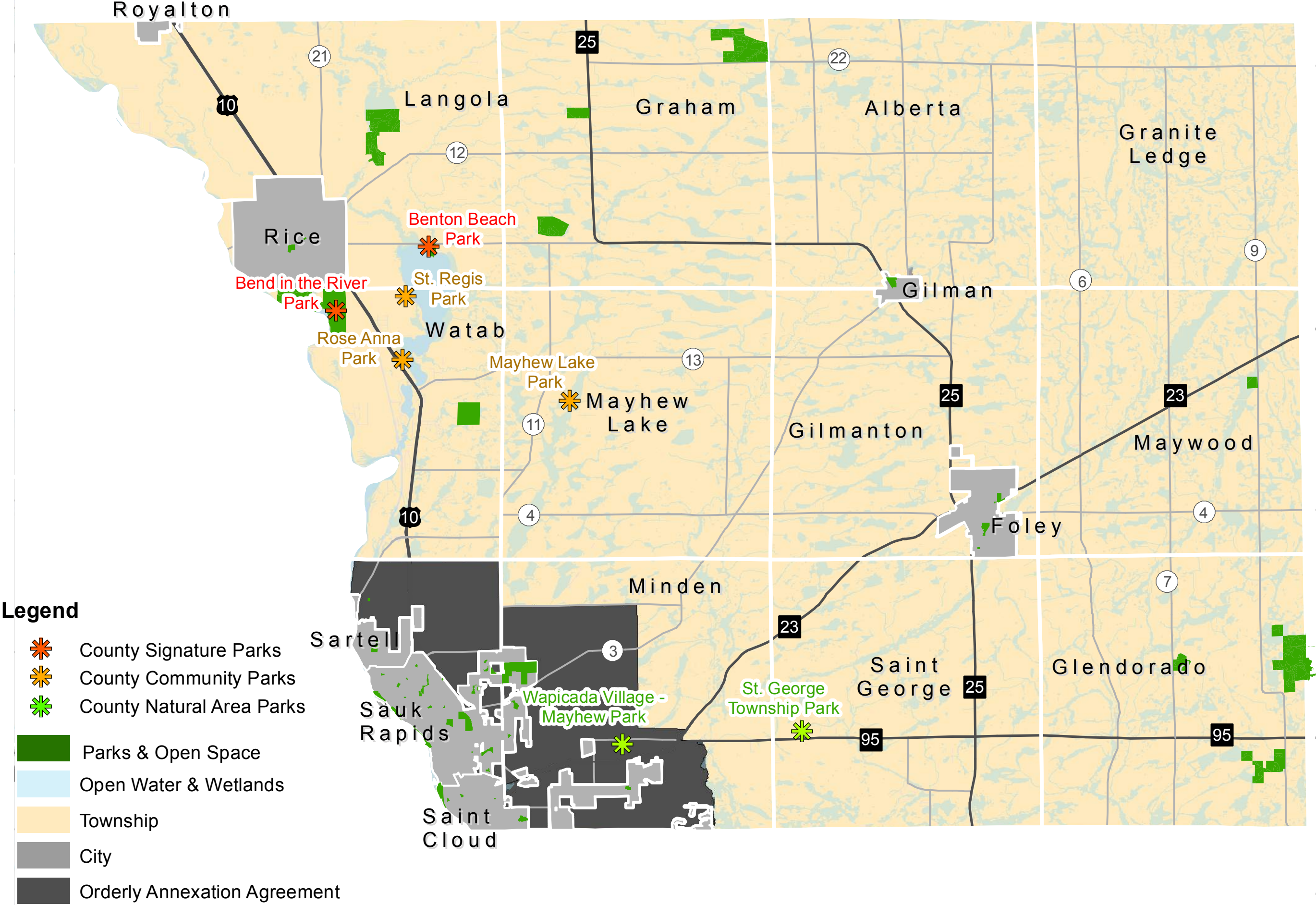




Figure 6.2. Regional Active Transportation Plan

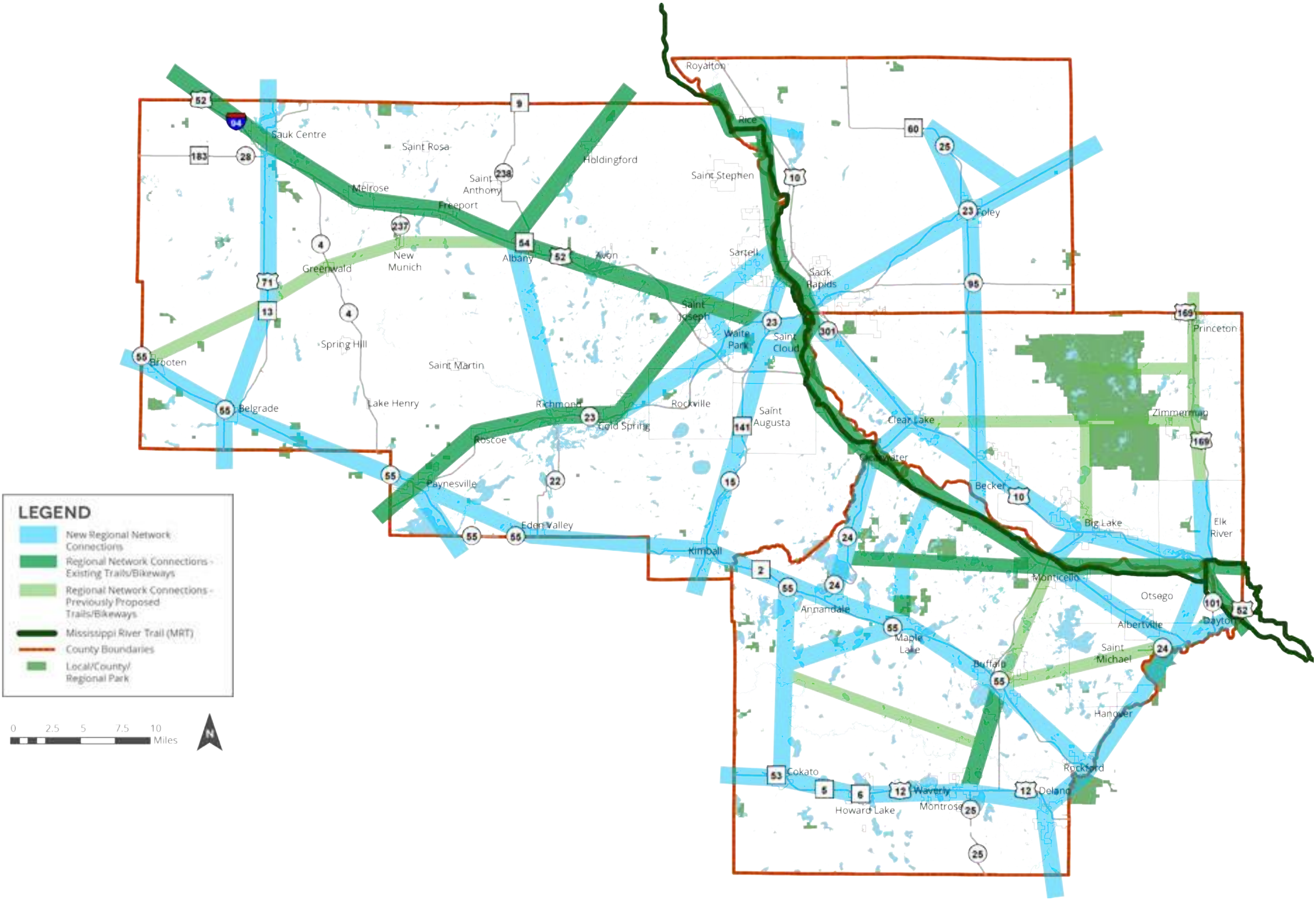


Figure 6.3. Mississippi River Trail (Map 1 of 2)

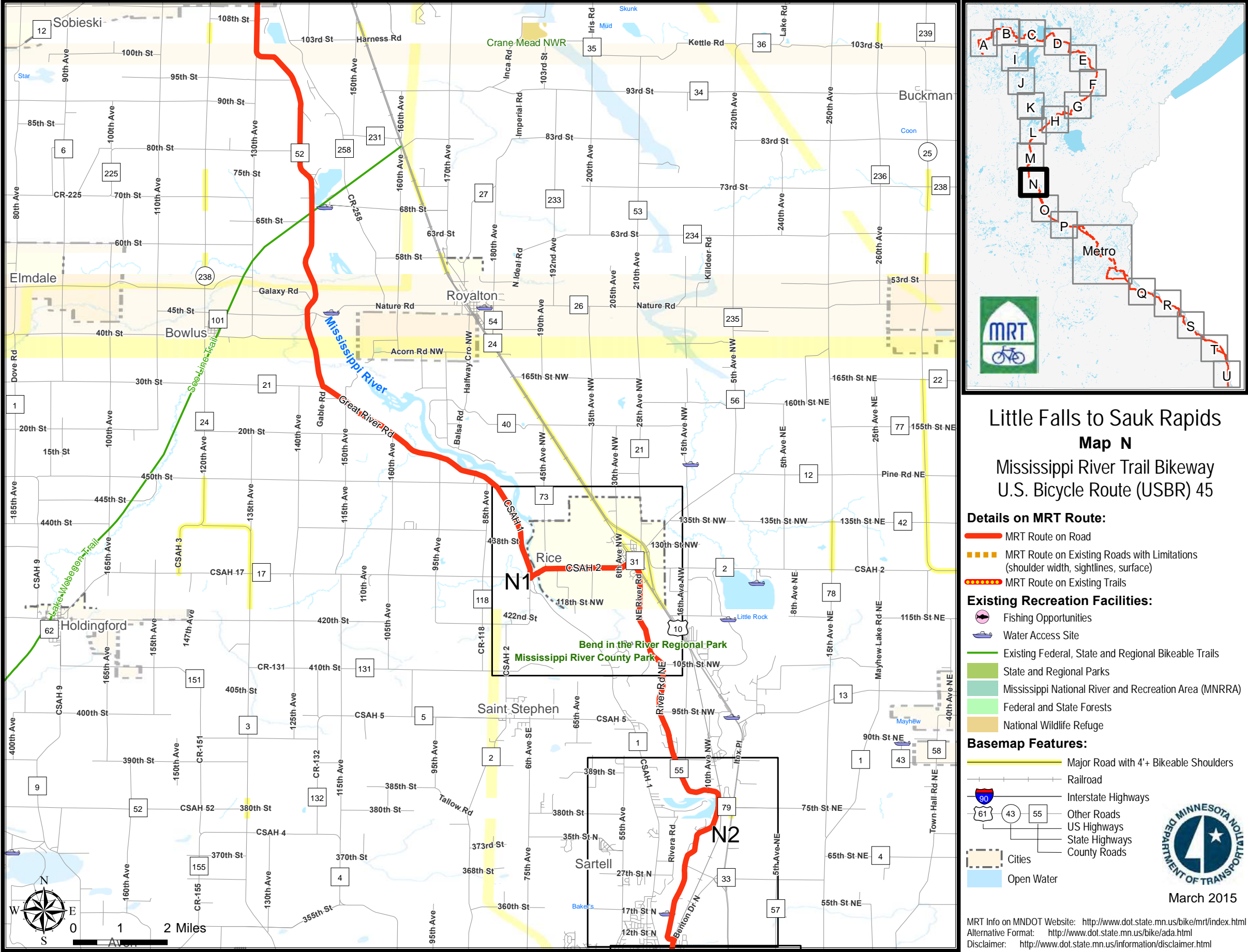
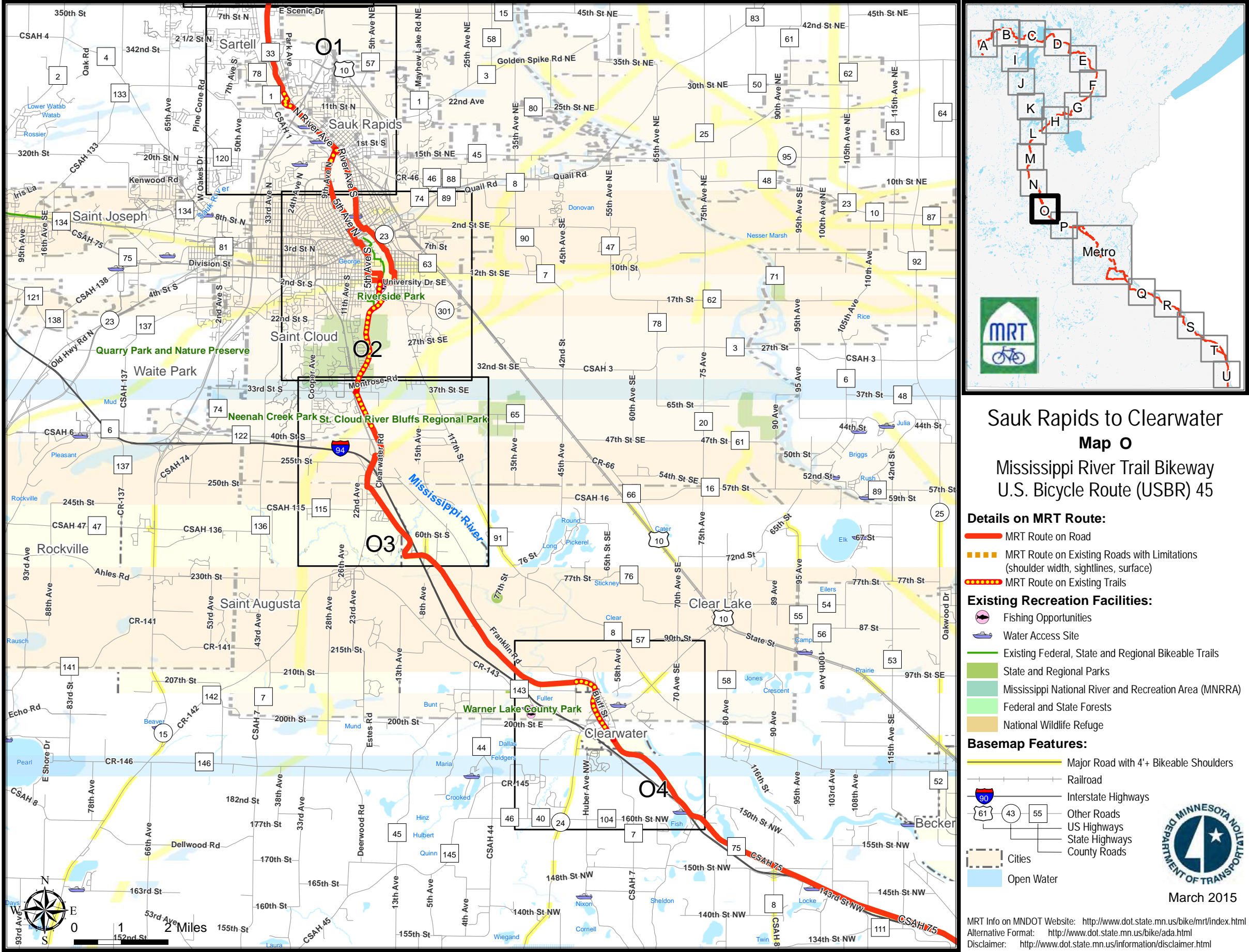




Figure 6.4. Mississippi River Trail (Map 2 of 2)



## St. Cloud Area Planning Organization's (APO) Long-Range Transportation Plan (LRTP)

The St. Cloud APO is a regional body responsible for transportation planning in the entire urbanized area and is independent of the individual cities/counties in the region. The APO is responsible for developing and maintaining a twenty-year transportation plan for the St. Cloud metropolitan area, which includes portions of Benton County. The most recent Plan (Year 2040) was adopted October 21, 2014. The LRTP discusses bicycle and pedestrian initiatives. These initiatives include a regional network of trails and sidewalks that safely move people throughout the region. As it pertains to Benton County, this Plan provides policy direction for helping achieve a multimodal network within the St. Cloud metropolitan area (i.e., Sartell and Sauk Rapids).

### Local Comprehensive Plans

The Cities of St. Cloud, Rice, Sartell and Sauk Rapids have adopted comprehensive plans or parks and trail master plans. These plans provide a framework for establishing their local park and trail system through goals, policies, and the identification of specific needs and projects. For example, the City of Rice adopted a Parks & Trails Master Plan in 2017. This plan identifies various improvements to the local system, including trail improvements along County Roads that connect downtown Rice to the Mississippi River.

## Influencing Factors

**How people play and spend leisure time has changed over the last 10 to 20 years. Benton County recognizes the ever-changing recreational needs of the county. Some of the influencing factors that have shaped how people play and spend leisure time locally and nationally include:**

- People are increasingly busy and have more demands on personal time
- Importance of place and desire to make memorable experiences
- People want to share their experiences on social media
- Concerns for safety in public places and neighborhoods
- Governments and agencies have tight budgets
- Interest in staying active while aging
- Higher frequency in new residents moving to the community
- Popularity of trails and information recreation
- Increased interest in specialized recreation facilities and aquatics
- Increase of technologies leads to disconnection from nature
- Popularity of non-traditional recreation activities
- Green alternatives to traditional landscaping and for water quality



# Emerging Trends & Opportunities

Benton County recognizes changing and emerging trends that are influencing how people play and use park facilities. The following list includes trends that have emerged locally and nationally over the last ten years that serve as potential opportunities for Benton County. Whether the trends are on the rise or in decline, they are worth noting as they may affect Benton County residents in one way or another.

## Access to Water

Benton Beach and Bend in the River have become popular tourist destinations in part due to their relationship to water (e.g., the Mississippi River). Visitors and residents are participating in more non-motorized water activities, such as canoing and paddle boarding. As the County improves its park system, consideration should be given to creating better access to the river and lakes. As part of this effort, the County will need to be aware of invasive species, and ongoing implications to erosion and sedimentation.



## Active Living

A healthy recreation and park system equals healthy residents. People who engage in regular physical activity are healthier and happier. When people have access to parks, trails, and recreation, they exercise more. In addition, increased exposure to natural areas has been linked to improved physical and psychological health. Benton County's Public Health Department can serve as a resource in helping promote active living goals, while seeking funding opportunities to enhance the park and trail system.

## Fiscal Constraints

Many communities are dealing with tight budgets due to the economic downturn in the past ten years, as well as the impacts of the retiring baby boomer generation. In an effort to address these fiscal constraints, some counties are deferring maintenance in the upkeep of their parks and recreation system. This approach can result in a backlog of operations and maintenance costs that lead to a negative perception and decreased use of the park system.

Residents and stakeholders have expressed the importance that parks and trails play in their quality of life. Numerous studies have shown that residential property values increase as investments are made to the park and trail systems. Parks and trails can also positively affect commercial property and can be catalysts for development. For example, bike trails are growing in popularity and trail heads are being promoted as tourist destinations by other counties. New businesses (e.g., restaurants, bike shops, bed and breakfasts, and gift shops) are looking to locate along these corridors to meet the needs of visitors.

## Greenway Corridors and Trail Connections

Today, trails have become part of greenway corridors that provide wildlife habitat and movement corridors, open space vistas, water treatment benefits, and the opportunity to interpret local history and culture. As part of the County's trail planning efforts, best practices should be applied that enhance and protect natural resources and water quality.

## Natural Resource Management

The need and awareness to be environmentally sensitive in the way residents and visitors impact the county's natural surroundings is ever increasing. Benton County recognizes that in order for change to occur it must start by adopting goals and standards to protect resources for future generations. These goals are reflected in Chapter 3.

## Reconnecting with Nature

A larger emphasis is being placed on regional destinations, especially at the county level. Regional destinations provide a different level of service that cannot be offered at the city level. County parks typically provide opportunities to reconnect with nature in larger, rural landscapes and serve visitors at a regional scale. Benton Beach and Bend in the River serve this role.

## Safety

Safety was listed as a key value to the Benton County Park Commission as part of this process. Residents value the safety they feel living in Benton County and desire parks and trails that promote safety. Future investments in the parks should take into consideration Crime Prevention Through Environmental Design (CPTED). CPTED are design principals that help reduce crime (e.g., lighting and open sight lines).



## Placemaking & Memorable Experiences

More communities are building parks and facilities that facilitate placemaking opportunities (e.g., festivals, concerts, events, and places to gather). The Project for Public Spaces ([www.pps.org](http://www.pps.org)) describes "Placemaking" as a process that facilitates creative patterns of use, paying particular attention to the physical, cultural, and social identities that define a place and support its ongoing evolution. The rise of social media has also played a significant role in how people capture (e.g., sharing photos) their memorable experiences. Residents have cited Benton Beach and Bend in the River as two county amenities that have shaped memorable experiences in the county park system.



# Future Needs

In order to evaluate the future needs of Benton County's parks and trails, several methods were utilized:

- **Peer County Comparison:** A peer review of similar counties was conducted to better understand emerging trends and needs at a county level.
- **Travel Shed Analysis:** The County parks were evaluated using a level of service analysis to determine if residents have adequate access to recreational opportunities.
- **Park Dedication Review:** An overview of the County's Park Dedication Fee was documented to determine available resources for future park and trail improvements.
- **Park Commission Engagement:** The Park Commission was actively engaged throughout the planning effort. Their input was utilized to help share the plan's recommendations.

## Peer County Comparison

The counties selected for the Peer County Comparison include Freeborn, Goodhue, Isanti, McLeod and Steele County (see Table 6.1). The survey focused on the size of their system, emerging needs, department organization, and operations and maintenance needs.

## Peer Review Findings

Findings from the peer review indicate the following:

- Benton County's park system is similar in size to its peer counties (see Table 6.2).
- There is a growing demand for more walking trails or pathways within the Benton County Parks and peer counties.
- The peer counties are experiencing a decrease in outdoor picnic rentals. However, the counties are seeing an increase in rental facilities that offer modern amenities (e.g., air conditioning and restrooms).
- The demand for camping sites has risen, in addition to electrical sites for recreational vehicles/campers.
- County residents and visitors are looking for a stronger connection to nature through passive open spaces.

**Table 6.1. Peer Community Context Comparison**

Context	Benton	Freeborn	Goodhue	Isanti	McLeod	Steele
Population (2017)	40,128	30,550	46,562	39,553	35,884	36,828
Households (2017)	16,012	13,121	19,205	14,710	14,675	14,489
Persons Per Household (2017)	2.44	2.28	2.38	2.66	2.41	2.50
Acres	260,986	461,426	498,888	289,970	324,334	276,487
County Seat	Foley	Albert Lea	Red Wing	Cambridge	Glencoe	Owatonna
County Seat Population (2017)	2,717	18,032	16,572	8,868	5,519	25,922

- Benton County and the peer counties are seeing a stronger demand for mountain bike trails, which has resulted in competing interests and conflicts between other users (hikers and skiers).
- The peer counties are placing a larger emphasis on creating regional destinations, while maintaining existing assets and amenities. This has resulted in the counties pursuing regional designation for their parks through the Greater Minnesota Regional Parks and Trails Commission.
- The peer counties are actively chasing grant funds to help offset costs. Park Master Plans have played an important role in helping secure funding.
- There is a growing demand by County residents to see more investments in the park system.

## Travel Shed Analysis

The following information offers one lens through which to view the state of Benton County's park system. Typically park planning is done through a level-of-service analysis, which measures the number of parks and their size, the type of amenities offered in each park, and a resident survey/assessment to determine their needs. These findings help shape specific recommendations for each park.

This analysis looks closer at the County's Signature Parks (Bend in the River and Benton Beach) and their service areas from an access/mobility perspective. Figure 6.5 and Figure 6.6 demonstrate that both of these parks are within a 10 to 30 minute driving radius. This standard is used as a typical baseline for assessing gaps in the county system. Based on these radii, Benton County's Signature Parks serve most if not all of its residents. Underserved areas include far reaching areas along Benton County's eastern border.

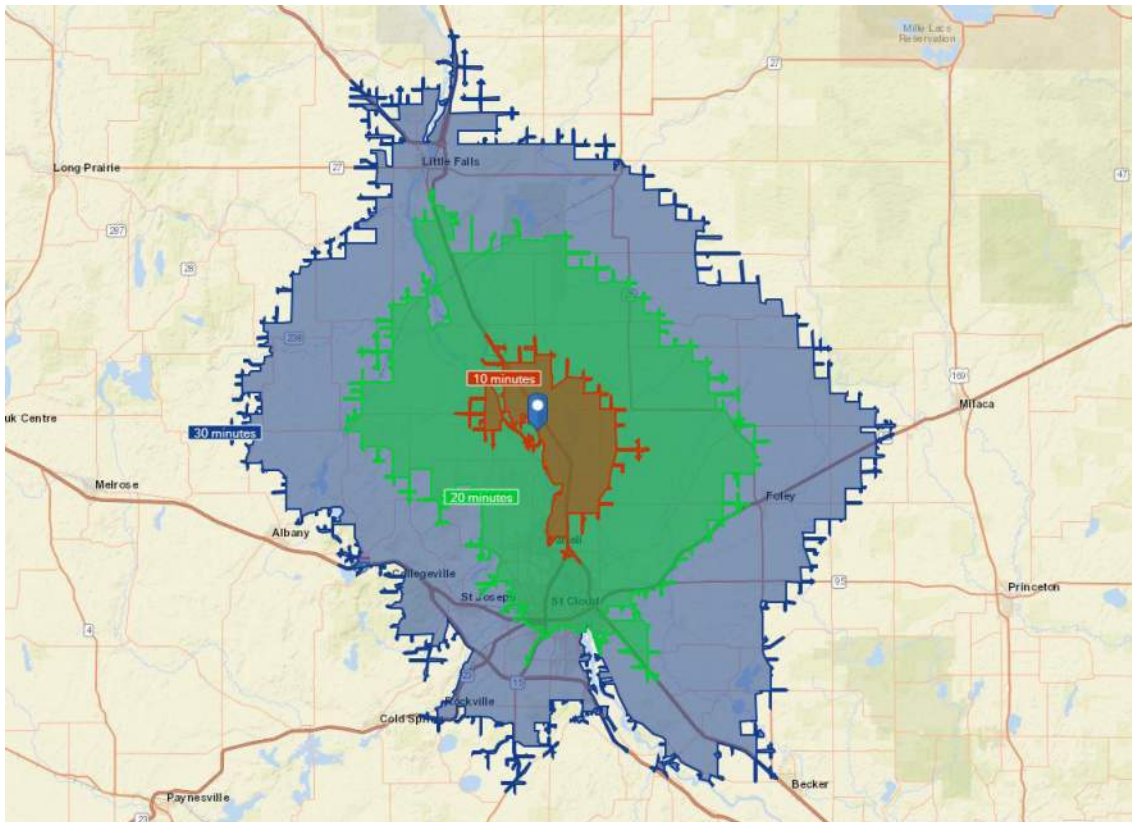
The travel shed assessment assumes that everyone has access to the County's Signature Parks by vehicle. Accessing these parks by bus, bike or foot is limited. Benton County should explore opportunities that provide better connections for these users. The Transportation Chapter in this Comprehensive Plan and the Regional Active Living Transportation Plan (2015) provides guidance on how to improve these connections.

**Table 6.2. Peer Community Park System Comparison**

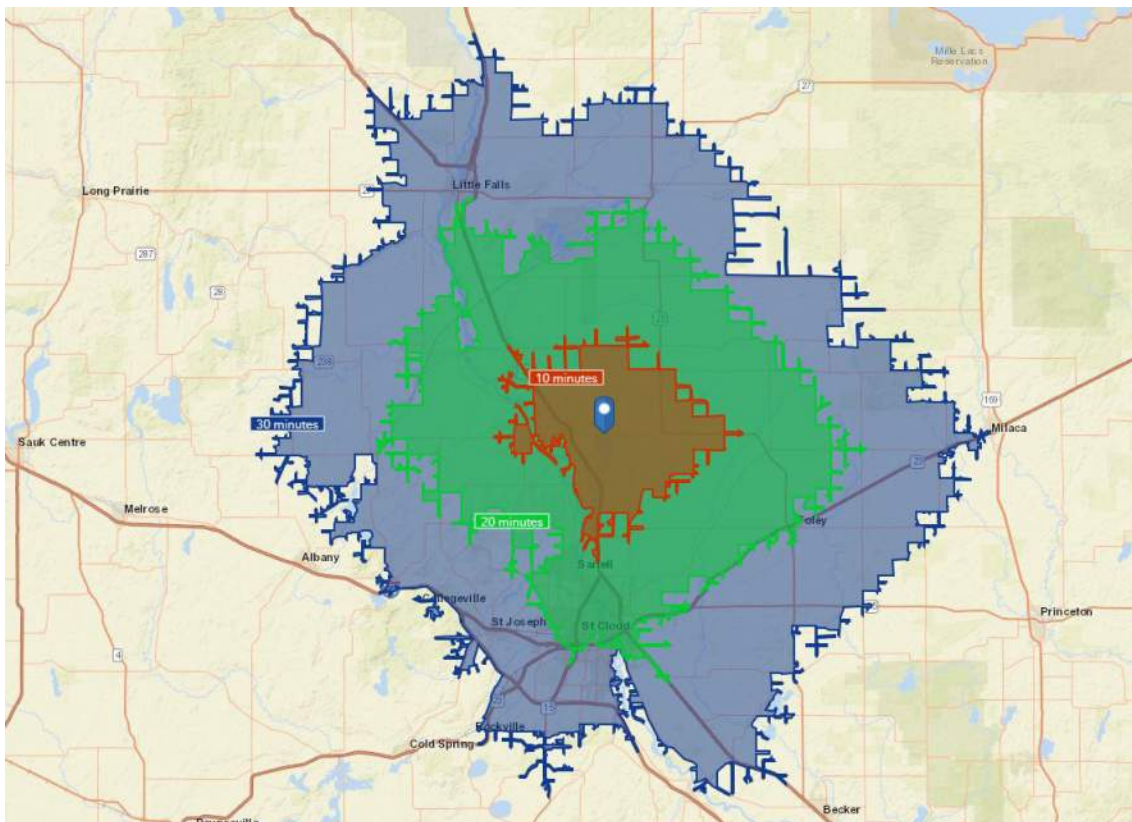
Park System	Benton	Freeborn	Goodhue	Isanti	McLeod	Steele
Number of County Parks	4	4	1	6	6	4
County Park Acreage	338	266	25	684	571	23
State/Regional Parks (Acres)	0	0	78	244	0	0
Indoor Regional Recreational Center	0	0	0	0	0	1
<b>Total Park Acres</b>	<b>338</b>	<b>266</b>	<b>103</b>	<b>928</b>	<b>571</b>	<b>23</b>
Percent of Park Acres to County Area	0.13%	0.06%	0.02%	0.32%	0.18%	0.01%



**Figure 6.5. Bend in the River Travel Shed**



**Figure 6.6. Benton Beach Travel Shed**



# Park Dedication Review

The County’s existing Park Dedication ordinance and fees collected to date were evaluated to determine available resources for future park and trail improvements. It was an also an opportunity to educate stakeholders on how these funds can be used according to state law.

## Minnesota State Law

As part of the land development process, Benton County may require a developer to dedicate land to the township for park and recreation purposes (Minnesota State Statute 394.25 Subd. 7 applies to a County and 462.358 Subd. 2b applies to a City). This requirement is typically addressed in a County’s Development Code or subdivision ordinance, and referred to as a park dedication. A park dedication ordinance recognizes that with development there is an increased need for parks and open spaces. At its discretion, a county or city may require a developer to meet those needs by choosing one or more of the following options:

- Pay a fee to the municipality (known as a fee in lieu) for future park investments;
- Donate land for park and recreational purposes;
- Construct recreational facilities; and/or,
- Privately reserve land within the subdivision for public park and recreation purposes.

## Benton County’s Park Land Dedication

Benton County approved a Park Dedication ordinance in 2004 (see sidebar), requiring dedication of park land or park dedication fees with all new development. Since the establishment of the park dedication ordinance, Benton County has collected an annual average of \$4,000 in fees (see Table 6.3).

The fees are collected if the County Board, at its discretion, accepts a per lot cash fee in lieu of land. Historically, this has been the most common approach. The fee may be up to 10 percent of the

# Benton County Park Land Dedication

(Development Code Section  
10.12.2 - Ord. #373, adopted  
2/17/04)

All new residential plats, including plats associated with planned unit developments, shall be subject to the park dedication requirements prescribed in the Benton County Development Code. In all new subdivision plats, up to 10% (ten percent) of the gross area shall be set aside and dedicated by fee title or easement to Benton County for public recreation space.

In lieu of land dedication, the County Board and Director may require a financial contribution. Historically, this has been the most common approach.

Table 6.3. Benton County Park Dedication Fees Collected

Year	Collected
2012	\$4,200
2013	\$3,000
2014	\$4,800
2015	\$4,800
2016	\$600
2017	\$1,800
2018	\$7,100
Average	\$3,757



median undeveloped lot value as of the date of final plat approval, as determined by the Benton County Assessor.

Per State Statute (394.25 Subd. 7), the County must use at least 75 percent of these funds in the township or city where the collection occurred. The township board may agree to allow the County to use these funds outside of the township in a manner that is consistent with the comprehensive plan, master plan, or capital improvement program. The Parks chapter also provides a long-term plan for future park and trail improvements that (in conjunction with other master plans) forms the nexus for establishment of park dedication.

### Using Park Dedication Funds

Table 6.5 summarizes Benton County's 2018 Year End balance for the park dedication fees based on the 75/25 percent statutory requirements. A few townships (i.e., Gilmanton, St. George, and Watab) have utilized their funds in recent years (see Table

6.4). Benton County's park dedication funds may be relatively small in nature; however, these funds still serve as a resource for implementing new parks and amenities. To help maximize these dollars, the Township(s) and County should work together to find projects that provide regional benefits.

**Table 6.4. Park Dedication Fees Spent**

Year	Townships	County
2012	\$0	\$0
2013	\$0	\$0
2014	\$0	\$0
2015	\$10,722	\$0
2016	\$0	\$0
2017	\$8,000	\$0
2018	\$0	\$0
<b>Total:</b>	<b>\$18,722</b>	<b>\$0</b>

**Table 6.5. Benton County 2018 Year End (YE) Balance of Park Dedication Fees**

Township	75% Portion			25% Portion		
	Township \$ Collected	Township \$ Spent	Township YE Balance	County \$ Collected	County \$ Spent	County YE Balance
Alberta	\$0	\$0	\$900	\$0	\$0	\$1,223
Gilmanton	\$0	\$0	\$2,800	\$0	\$0	\$3,600
Glendorado	\$1,350	\$0	\$2,700	\$450	\$0	\$900
Graham	\$0	\$0	\$2,700	\$0	\$0	\$600
Granite Ledge	\$0	\$0	\$4,050	\$0	\$0	\$1,350
Langola	\$900	\$0	\$2,250	\$300	\$0	\$1,200
Mayhew Lake	\$0	\$0	\$5,339	\$0	\$0	\$1,761
Maywood	\$900	\$0	\$6,075	\$300	\$0	\$2,025
Minden	\$450	\$0	\$8,438	\$150	\$0	\$2,813
St. George	\$375	\$0	\$375	\$125	\$0	\$6,325
Sauk Rapids	\$0	\$0	\$0	\$0	\$0	\$0
Watab	\$1,350	\$0	\$11,587	\$450	\$0	\$5,118
<b>Totals</b>	<b>\$5,325</b>	<b>\$0</b>	<b>\$47,214</b>	<b>\$1,775</b>	<b>\$0</b>	<b>\$26,914</b>

It is important to recognize these projects need to align with State Statute requirements (Minnesota State Statute 394.25 Subd. 7). Per State Statute, funds can be used for the acquisition and development or improvements of parks, recreation facilities, playgrounds, trails, wetlands, or open space. Funds cannot be used for ongoing operation, maintenance, or redevelopment of existing parks, recreational facilities, playgrounds, trails, wetlands, or open space.

Moving forward, the Townships and County should work together in maximizing their park dedication funds. To achieve this objective, both parties should consider the following:

- Determine the Township’s recreational needs and develop objective standards for the amount of recreational lands and facilities that will be needed to meet growth and development. At that time, redirect park dedication funds to those needs.

- Utilize existing park dedication funds as a local match for grant applications.
- Identify park needs that provide regional benefits to multiple Townships within a specified area. Utilize park dedication funds to meet those needs; however, this may require a Township(s) to redirect their park dedication funds to an improvement outside of their jurisdiction.

Table 6.6 is a tool the County and Townships can use to evaluate and budget for new improvements. In general, the capital costs can be viewed as eligible projects that can be funded with park dedication fees if they provide a “new” recreational amenity. Ineligible projects include operation and maintenance needs. State Statute should be reviewed to determine what constitutes as an eligible project.

**Table 6.6. Planning Level Cost Estimates**

Park Element	Capital Cost	Annual O&M Cost	Estimated Life (Years)	Notes & Assumptions
New Park Development				
County Park	\$90,000/Acre	\$550/Acre	25-50	
General Grounds & Landscaping				
Mowed Turf Grass (Irrigated)	\$60,000/Acre New Sod \$34,000/Acre New Seed	\$1,000/Acre	15-30	Includes mowing, trimming, fertilizing, weed control, aerating & overseeding.
Mowed Turf Grass (Non Irrigated)	\$30,000/Acre New Sod \$2,000/Acre New Seed	\$800/Acre	15-30	Does not assume hydroseed. Includes mowing, trimming, fertilizing, weed control, aerating & overseeding.
Irrigation	\$25,000/Acre	\$1,300/Acre	25	
Contractual Landscape Maintenance	\$6.50 Sq. Ft. (\$282,600/Acre)	\$.25 Sq. Ft. (\$9,250/Acre)	20	
Prairie Restoration	\$5,000/Acre	\$300/Acre		
Naturalized Shoreline	\$100/LF	\$400/Acre		



Park Element	Capital Cost	Annual O&M Cost	Estimated Life (Years)	Notes & Assumptions
Rain Garden	\$10/Sq. Ft.	\$300/Acre		Low end - high end could be up to \$20/Sq Ft
Woodland / Slope Restoration	\$4,000/Acre	\$400/Acre		Assumes restoration of existing wooded area. \$20,000/Acre if new tree planting required
Park Building & Shelters				
Buildings with Restrooms	\$300-\$400/Sq. Ft.	\$11,000/Bldg./Yr.	40	Includes all buildings
Picnic Shelters	\$150-\$200/Sq. Ft.	\$3,800/Bldg./Yr.	40	Includes all shelters
Trails & Surfaces				
Trails (10 Ft. Wide Asphalt)	\$50/LF	\$5,280 Per Mile	30	
Parking Lots (Asphalt)	\$2,500-\$3,000/Stall	\$20-\$25 Per Stall	40	
Sidewalks (Concrete)	\$30/Linear foot			Assumes 6 foot wide sidewalk
Natural Surface Trails	\$30/Linear foot if limestone ADA or \$5/Linear foot if rustic footpath	\$500/Mile	-	
Park Amenities				
Lighting	\$15,000		15	Includes 2-3 pedestrian scale light posts
Nature Play Areas	\$50,000-\$100,000	\$1,000/Site	20	Assumes 1 to 2 signature features and remainder natural materials
Community Gardens	\$10,000-\$20,000/Acre	\$800 Acre	-	
Off-Leash Dog Park	\$10,000-\$50,000 Acre	\$800 Acre	15-20	
Fishing Pier	\$25,000		20	Includes 100' long wood pier with railings
Dock	\$10,000		20	Includes 40' long metal dock
Swimming Beach	\$15,000		25	Includes grading and sand
Splash Pad	\$600,000	\$5,000	15-20	
Amphitheater	\$800,000		50	Assumes open stage and seating for 200+
Disc Golf Course	\$25,000		25	

**All costs are planning level costs in 2018 dollars and do not necessarily reflect additional costs, such as engineering, design, construction administration, and staff time.**

## Parks Commission Engagement

The Park Commission was actively engaged throughout the planning process and served as a guiding body in creating this chapter. The planning consultant met with the Parks Commission on five occasions to discuss various aspects of the plan.

- July 26, 2018
- October 16, 2018
- February 6, 2019
- March 27, 2019
- April 24, 2019

As part of these meeting discussions, the following objectives were identified to help guide the Parks Commission in their future decision making:

- Maintain and enhance Benton County's Signature Parks and County Community Parks before adding new County parks to the system.
- The County will only take on the responsibility of managing and maintaining the existing County Parks and natural areas. Townships may choose to build new parks with their park dedication funds (in accordance to state statute) or through other financial resources. However, the Townships will

be the sole party responsible for managing and maintaining these parks over time.

- Find opportunities to maximize and use the park dedication funds (both county and township) that enhance the County's Signature Parks and Community Parks.
- Townships who choose to use or transfer their park dedication funds should provide the County a township resolution.
- Find opportunities to start implementing the Regional Active Living Transportation Plan (2015) to provide better pedestrian and bicycle access between county parks, townships, and cities. A short-term priority should include better connections between the City of Rice, Mississippi River, and Bend in the River. The City of Rice's 2017 Parks and Trails Master Plan should serve as a guide in helping inform this connection.
- Actively pursue funding opportunities (e.g., grants) that will support improvements to the County parks and trail system.
- Formalize internal roles and responsibilities in planning, maintaining, and managing Benton County's parks and trails.





# Next Steps

Parks are not mere expenditures, but an investment in the future well-being of individuals and groups, as well as the continued attractiveness and viability of the County. Based on the future needs assessment, stakeholder input, staff direction, and guidance from the Parks Commission, the Parks chapter calls for a generalized list of projects that will focus on short-, mid-, and long-term action items (see Table 6.7). These projects were informed by the objectives established by the Parks Commission in the previous section.

The goal of this type of implementation strategy is to prioritize larger initiatives. The County and Parks Commission will need to continue to evaluate individual park needs on an annual basis and program these improvements in a fiscally responsible manner.

The priorities have been summarized into three categories:

- **Planning Initiatives:** Planning initiatives typically include master plans, environmental studies or engineering design. These type of initiatives are typically done to help set the stage for future capital investments. These types of initiatives help support a grant application by demonstrating to the grantee that the project has been fully conceptualized and planned accordingly.
- **Capital Investments:** Capital investments are physical improvements to the built or natural environment. This may include new buildings, land acquisition, environmental restoration, or park amenities (e.g., benches, signage or playground equipment). Capital investments should be programmed or considered as part of future Capital Improvement Plans (CIPs).
- **Policy & Staffing:** The implementation of planning initiatives and capital investments require time and resources. In that respect, this category has identified additional staffing needs to help formalize a parks department and carry out the priorities identified in this plan. This may also include policy revision to better align and support emerging trends and park needs.

## Ongoing Projects

Equally important to the initial capital costs for a project are ongoing operations and maintenance costs. Adequately budgeting operations and maintenance ensures that facilities fulfill life expectancy and that parks remain safe and welcoming. Investing in the park system is an important aspect of retaining and attracting residents, while improving their quality of life.

In addition to the priority projects, Benton County should consider the following on-going initiatives.

- Continue a regular patrol of parks to provide for the safety of park users.
- Periodically update and distribute the list of available public park facilities, park maps, and trail maps to the community and interested groups. This can be achieved online or through various marketing materials.
- Continue to actively engage the Parks Commission as the guiding body for recommendation to the park and trail system.
- Identify and program improvements as part of the County's Capital Improvements Program.

**Table 6.7. Priority Projects****Short-Term Priority Projects (1 - 3 Years)**

Planning Initiatives	Capital Investments	Policy and Staffing
Update the Park Master Plan for Benton Beach & Bend in the River.	Design, install and maintain standardized park signage for all County parkland and trails.	Dedicate one full-time staff member to oversee park master planning and day-to-day planning needs.
Investigate the feasibility of implementing a county trail system that compatible with the Active Transportation Plan recommendations.	Create improved trail and pedestrian connections within the existing park systems.	Update the County Park Dedication Fee ordinance.
Seek a regional designation for Bend in the River through the Greater Minnesota Regional Parks and Trails Commission (GMRPTC).	Develop and implement a program (e.g., skiing and snow showing paths) for year-round use in the County's signature parks.	Begin prioritizing and programing investments through the Capital Improvement Programs process.
	Collaborate with the City of Rice in expanding the Mississippi River Trail (as identified in their 2017 Parks Mater Plan) by implementing an off-street paved trail along CSAH 2 between the Mississippi River, Bend in the River, and downtown Rice.	

**Mid-Term Priority Projects (4 - 7 Years)**

Planning Initiatives	Capital Investments	Policy and Staffing
Explore methods to integrate parks and trails with the networks of adjacent communities (cities and counties) and State facilities.	Implement improvements and recommendations from the Benton Beach and Bend in the River Master Plans.	Expand park staff to two full-time staff members to oversee park master planning and day-to-day planning needs.
Develop a Park Master Plan for Rose Anna Beach.	Begin investing in trail improvements that adhere to the Regional Active Living Transportation Plan and feasibility report recommend as part of the short-term priority projects.	Formalize a Parks Department as it's own group or within a similar department (e.g., Public works).
Develop a Park Master Plan for Mayhew Lake Park.	Re-establish a swim area at Benton Beach.	

**Long-Term Priority Projects (8 - 10+ years)**

Planning Initiatives	Capital Investments	Policy and Staffing
Seek opportunities through public or private funds for the establishment of a new county park.	Implement improvements and recommendations from the Bend in the River and Benton Beach Master Plans.	Expand park staff to two full-time staff members to oversee park master planning and day-to-day planning needs.
Investigate the feasibility of implementing a county trail system that is in unison with Active Transportation Plan's recommendations.	Implement improvements and recommendations from the Rose Anna Beach and Mayhew Lake Park Master Plans.	



Page Intentionally left blank

## Chapter 7

# Implementation

The Benton County Comprehensive Plan sets a number of goals for the county to achieve or strive to achieve over the next ten to twenty years. Goals, policies and initiatives referenced throughout the plan can be implemented through a series of public and private actions.

The Comprehensive Plan will be implemented in a number of ways. On a daily basis, the document is used by County staff to help frame recommendations to the County Board and other advisory commissions. It is also used by residents and developers to understand the County's intentions for the use of land, the provision of housing, infrastructure needs, and planned park and open space improvements.



# County's Role in Implementation

Benton County's role in achieving its vision and addressing the trends affecting it can be thought of as a continuum of increasing involvement, expense and commitment. In some cases the County's role is clear; in others the role is variable and yet to be determined. The following guiding principles should be considered when implementing this plan.

- **Study:** Identify trends and issues, research, monitor, analyze for policy development, and conduct pilot studies.
- **Inform and Educate:** Share information to increase awareness of issues, protect public safety, provide technical assistance, and motivate sustainable behavior.
- **Advocate:** Promote policies in local, regional, state and federal government that will benefit the people of Benton County.
- **Collaborate and Facilitate:** Work in partnership with others, coordinate activities and relationships to achieve more than could be done unilaterally.
- **Operate and Lead by Example:** Manage County facilities and run programs to higher standards that will demonstrate both the County's commitment and potential best practices.
- **Regulate:** Administer ordinances and laws through permitting, inspection and enforcement.

# Implementation by Topic

Each chapter provides guidance in how to achieve the Comprehensive Plan's vision over the next twenty years. The following is a summary of the implementation measures discussed throughout these chapters.

## Agriculture & Economic Development

- Partner with USDA, Minnesota Department of Agriculture, and local community development agencies to explore programs that facilitate farm-to-table, farm-to-restaurant, and farm-to-school programs between Benton County farmers and communities.
- Study ways to support existing small-scale farmers and to help newcomers establish small-scale farms.
- Take an active role in assisting the State of Minnesota achieve its goal of providing high-speed Internet access to all County residents by 2022 and businesses by 2026.

## Mobility & Transportation

- Plan for trails and other facilities that connect destinations and create a network across the County, providing recreational opportunities as well as transportation alternatives for pedestrians, bicyclists, and other non-vehicle users.
- Continue to support and maintain the network of safe and efficient County roads that provide transportation routes for rural residents throughout the county.

- Prioritize transportation improvements that provide mobility benefits in moving goods (e.g., crops and livestock) between farm and final destination (farmers market, school, processing facility or grocery store).
- Explore ways to increase transportation access for aging rural seniors, connecting them to services and their communities.
- Schedule all County Roads to be upgraded to 10-ton load limit to accommodate the increasing weight of freight and farm equipment.
- Utilize the Regional Active Living Plan as a metric when making transportation decisions.
- Update the Transportation Plan to identify and designate future roadways within the County by their functional classification and to prioritize system improvements.
- Refer to the St. Cloud APO Long-Range Transportation Plan when identifying future transit needs within the County.
- Follow Transportation Guidelines for various land uses listed within “Balancing Transportation Needs with Land Use” on page 81

## Land Uses

- Adjust zoning and subdivision ordinances to promote land use patterns that provide alternatives to motorized transportation in order to promote active living.
- Review the Comprehensive Plan annually and amend as necessary to ensure its usefulness as a practical guide for current and future development.
- Formulate and enforce county ordinances to ensure development remains in accordance with the Comprehensive Plan.
- Facilitate cooperation between cities and their surrounding townships when making land use decisions.

## Public Health & Food Access

- Integrate a “health-in-all-policies” approach to County decision-making and implementation measures.
- Adopt zoning code regulations that support healthy food infrastructures.
- Explore programs that preserve land for food production and provide access to that land for interested newcomers.
- Update County website to include an expanse of resources to information and services to assist vulnerable populations in the County.
- Continue to work toward creating an Americans with Disabilities Act (ADA) Transition Plan and Inventory and follow its implementation strategies.

## Parks and Trails System

- Create better access to rivers and lakes, both as recreational amenities and as natural resources to be preserved
- Enhance and protect natural resources and water quality by adopting surface water management and design best practices when establishing greenway corridors within the County
- Consider Crime Prevention Through Environmental Design (CPTED) standards when designing and investing in future parks
- Explore opportunities to better connect potential park users accessing County parks by bus, bicycle, or foot.
- Maximize park dedication funds by working closely with Townships.
- Implement the Ten Year priorities.



Page Intentionally left blank