



1414 West Hamilton Avenue  
P.O. Box 8  
Eau Claire, WI 54702-0008

October 30, 2017

Ms. Kimberly D. Bose, Secretary  
Federal Energy Regulatory Commission  
888 First Street, NE  
Washington, DC 20426

**Subject: 2017 Purple Loosestrife Monitoring Report  
Holcombe Hydro (P-1982), Cornell Hydro (P-2639), Jim Falls Hydro (P-2491),  
Wissota Hydro (P-2567), Chippewa Falls Hydro (P-2440) and Dells Hydro (P-  
2670)**

Dear Secretary:

Enclosed is the 2017 Purple Loosestrife Monitoring Report for the above-referenced hydro projects. Pursuant to the 2001 Lower Chippewa River Settlement Agreement, Xcel Energy (licensee) is required to annually monitor for the presence of loosestrife at each impoundment and eradicate pioneering plants on company-owned shoreline.

This year there was a modest increase in loosestrife coverage on Holcombe Flowage while Cornell Flowage and Dells Pond both saw a small decrease. The infestation on Lake Wissota remained about the same as last year while Chippewa Falls Flowage continues to remain free of purple loosestrife.

Should you have any questions regarding this report, please contact Matthew Miller of this office at (715) 737-1353 or at [matthew.j.miller@xcelenergy.com](mailto:matthew.j.miller@xcelenergy.com).

Sincerely,

A handwritten signature in blue ink that reads 'William Zawacki'.

William Zawacki  
Director, Hydro Plants

Enclosure

c: Nick Utrup - USFWS (via e-mail)  
Cheryl Laatsch - WDNR (via e-mail)  
Brian Guthman - LHIA (via e-mail)  
Jeanette Kelly - Beaver Creek Reserve (via e-mail)

***PURPLE LOOSESTRIFE ASSESSMENT – 2017***

**Dells Pond, Chippewa Falls Flowage, Lake Wissota, Old Abe Flowage,  
Cornell Flowage, Holcombe Flowage, and Jim Falls Spillway Channel**

**Prepared for:**

**Xcel Energy  
P.O. Box 8  
Eau Claire, WI 54702**

**Prepared by:**



**Principal contact:  
Christopher J. Turner  
Ph.: 715/829-3737  
Fax: 715/874-5389  
Email: cturner@glec.com**

**October 14, 2017**

## **INTRODUCTION**

Purple loosestrife (*Lythrum salicaria* L.) is an erect, herbaceous perennial of Eurasian origin that became established in the estuaries of northeastern North America by the early 1800's. Since then, this highly invasive species has spread throughout much of the United States, including most of Wisconsin's counties. As purple loosestrife expands its local distribution and becomes more widespread, it poses a serious threat to native emergent vegetation in shallow-water marshes and shorelines by displacing native food and cover plants in the waterways.

As part of the 2001 Lower Chippewa River Settlement Agreement, Xcel Energy agreed to monitor for the presence and spread of purple loosestrife at its six Lower Chippewa River hydroelectric projects. The surveys are to take place each year in the late summer when loosestrife blooms are easily detectable. Additionally, Xcel Energy committed to treating small clusters of pioneering plants which occur on company-owned property with an approved aquatic herbicide.

In 2010, Xcel Energy partnered with Beaver Creek Reserve to introduce European beetles (*Galerucella calmariensis* and/or *Galerucella pusilla*) into the main spillway channel adjacent to the Jim Falls Hydro. Beetles were again introduced into the same area during the summer of 2011. The beetles are commonly referred to as "Cella" foliage beetles or purple loosestrife bio-control beetles and they feed specifically on purple loosestrife plants. Their use has shown to be successful at decreasing the overall population of purple loosestrife. The locations and density of loosestrife within the Jim Falls spillway channel are therefore being monitored to determine the success of the beetle introduction.

## **METHODS**

Following the same approach as previous surveys, an inspection of the entire shoreline of Dells Pond, Chippewa Falls Flowage, Lake Wissota, Old Abe Flowage, Cornell Flowage and Holcombe Flowage was performed by boat. The surveys were conducted between August 15 and September 15, 2017. The surveyor motored slowly around the shoreline looking for purple loosestrife plants. When loosestrife was discovered, the location was

marked on a map and coordinates were entered into a handheld GPS unit. Loosestrife infestations were classified as either “present” or “abundant” and marked on the map with a specific color. “Present” was defined as a few plants that sparsely inhabited an area but did not comprise a large percentage of the overall vegetation. “Abundant” indicated that denser loosestrife growth existed and that the loosestrife comprised a significant portion of the shoreline’s overall vegetative cover.

By referencing the location of purple loosestrife plants with land ownership maps provided by Xcel Energy, the surveyor determined if the plants were on company-owned property. If the plants were on Xcel Energy property, and if it was only a minor infestation, the plants were sprayed with Rodeo<sup>®</sup> (an aquatic herbicide) from a backpack sprayer. From past work, it has been determined that herbicide application can be used as an effective treatment for small loosestrife populations, however, it is much less effective at controlling larger infestations. If major infestations were noted on Xcel Energy property, they were not to be treated, but documented for the possibility of a different eradication method in the future.

Using GPS coordinates and notations made by the surveyor, the locations of purple loosestrife infestation were noted on field maps and catalogued in a spreadsheet. The locations were then digitized onto GIS base maps (Wisconsin DNR 24K Hydrography version 6 and ESRI StreetMap USA). Locations of purple loosestrife are depicted on the maps using green for present and red for abundant. Due to the scale of the maps, locations covering less than 20 feet of shoreline are denoted by a dot while areas covering 20 feet of shoreline or greater are denoted by a line drawn to scale. Through the combined use of GPS, laser rangefinder, visual estimates, and GIS, the total length of shoreline infested by purple loosestrife was calculated for each flowage (Table 1). Appendix A includes survey maps for each flowage infested with loosestrife along with a corresponding catalog of each loosestrife location.

A survey of purple loosestrife was also conducted in the Jim Falls spillway channel adjacent to the downstream powerhouse. This area has been known to contain purple loosestrife in locally high densities which prompted the introduction of purple loosestrife bio-control beetles in 2010. A comprehensive mapping effort of the area began in 2010 to monitor the spread of loosestrife and the success of the beetle introduction. This portion of

the fieldwork was completed on foot using GPS and maps to identify the locations and densities of the loosestrife within the channel.

## **RESULTS AND DISCUSSION**

The number of purple loosestrife locations and the total length of shoreline infested for each flowage over the last three years are summarized below in Table 1. A standardized approach used to calculate abundance and shoreline coverage allows for a direct comparison from year-to-year. This year's survey revealed an increase in purple loosestrife infestation on Holcombe Flowage and small increases in the amount of loosestrife on both Old Abe Flowage and Lake Wissota. Small decreases in the amounts of purple loosestrife were noted at Cornell and Dells Pond. Collectively, the coverage (1,277 feet) of loosestrife infestation at the five flowages increased approximately 11 percent since 2016. However, the coverage has decreased approximately 22 percent from 2015. Table 2 includes a summary of the total number of loosestrife infestations and the total length of shoreline infested for all six hydro projects over the past three years. Chippewa Falls Flowage again remained free of loosestrife infestation.

**Table 1. Summary of Purple Loosestrife Infestations (2015-2017).**

	Number of purple loosestrife locations						Shoreline Affected (ft)					
	Present			Abundant			Present			Abundant		
	2015	2016	2017	2015	2016	2017	2015	2016	2017	2015	2016	2017
Holcombe	167	170	189	1	1	1	1193	812	1007	137	120	40
Cornell	25	29	25	0	0	0	151	80	76	0	0	0
Old Abe	27	26	30	0	0	0	134	100	118	0	0	0
Wissota	5	9	10	0	0	0	21	27	30	0	0	0
Chippewa Falls	0	0	0	0	0	0	0	0	0	0	0	0
Dells	0	3	2	0	0	0	0	8	6	0	0	0

**Table 2. Total Purple Loosestrife Infestations (2015-2017).**

	2015	2016	2017
Total number of loosestrife points at Impoundments	225	238	257
Total feet of shoreline affected in Impoundments	1636	1147	1277

Holcombe Flowage contained the most purple loosestrife among the six impoundments surveyed. There were 189 locations categorized as present and one location categorized as abundant (see Holcombe Flowage Map 1). While the number of infestations increased only slightly, the amount of shoreline affected increased approximately 12 percent from the previous year. While a few new plants were found during the survey, the majority of the infested areas have been documented in previous years. New infestations are generally associated with areas where the native vegetation has been disturbed. This disturbance can come from urbanization (clearing for home sites, swimming areas or fishing areas), road improvements, or erosion. It is also common to have plants grow only during select years. This may be the case on Holcombe Flowage, with new plants growing this year, while previously observed plants did not.

The majority of plants on Holcombe Flowage were again found in the area on and near Pine Island and along Highway 27. A comparison to the 2015 and 2016 surveys show much similarity with the overall loosestrife populations in this area (see Holcombe Map 2). Several small infestations were again found just to the east of the Highway 27 Bridge. This area had a similar degree of infestation last year. The only area of abundant plant growth this year was also classified as abundant in several previous surveys (the length of which decreased from 120 feet in 2016 to 40 feet in 2017). No purple loosestrife was found on the Pine Lake or Cranberry Lake areas of Lake Holcombe.

Several plant clumps were found scattered along the north and south shorelines of the main flowage (see Holcombe Maps 3 and 4) with many of these plants having been documented in the past. The large islands near the south shoreline of the main flowage also contain several plants. Overall, the plant density in the main basin remained fairly consistent with last year's survey.

The upstream reach of the flowage (see Holcombe Maps 5 and 6) also contains a number of purple loosestrife plants that have been noted in past surveys. The overall plant density in these areas was slightly more than what was documented in 2016. A few plants were noted in the eastern part of the flowage (see Holcombe Map 7), each of which have been seen in some of the previous years' surveys.

In total, approximately 1,047 feet of shoreline was found to contain purple loosestrife on Lake Holcombe compared to 932 feet in 2016 and 1,330 feet in 2015. As stated above, all infestations but one were classified as present.

Cornell Flowage included 25 infestations classified as present and none as abundant (see map of Cornell Flowage). Many of the infested sites have been noted in surveys from the last several years. An area classified as abundant in previous surveys, located in a low lying area on an island just upstream from the State Highway 64 Bridge, has now been classified as present. Both the overall number of loosestrife locations and the amount of shoreline affected decreased slightly from 2016.

Thirty areas of loosestrife infestation were found on Old Abe Flowage (see map of Old Abe Flowage) all of which were classified as present. This is very similar to the plant abundance from last year. Most of the locations consisted of single plants or a few plant clumps, many of which have been documented in past surveys. The total amount of shoreline infested by purple loosestrife this year was approximately 118 feet. This compares to 100 feet in 2016.

The number of purple loosestrife sites found on Lake Wissota increased from nine in 2016 to ten in 2017, matching the previous high number of plants documented in 2013. These locations are all minor infestations with small plant clumps at each location (see map of Lake Wissota). Total shoreline infested on Lake Wissota increased from 27 feet in 2016 to 30 feet in 2017. Very little variability has been documented over the last three years.

Loosestrife was documented on Dells Pond in 2016 for the first time in several years and was again detected this year. This year, only two loosestrife plants were observed totaling six feet of shoreline.

The minimum flow channel at Jim Falls Hydro remains infested with a relatively high concentration of purple loosestrife plants. A significant decrease in the number of plants was noted in 2012 followed by a rebound in 2013 and 2014 and another decline in 2015 and increase in 2016 (Table 3). In 2017, the amount of loosestrife decreased. Loosestrife was found scattered throughout the channel, with the lower third being moderately infested (see maps of Jim Falls Spillway Channel). The area of greatest concentration occurs just upstream from the County Highway Y Bridge (see Jim Falls Spillway map 2). The coverage of loosestrife in this area decreased from approximately 6,695 square feet in 2016 to 5,431

square feet in 2017 (Table 4). The loosestrife is scattered throughout the area and therefore is not classified as abundant. It also appears to be less dense overall than in previous years. Small areas of loosestrife in both the upper and lower portions of the spillway channel increased in both number and amount of shoreline affected. Collectively, these locations accounted for 222 feet of infested shoreline versus 313 feet in 2016. Most of these locations were comprised of small plant clumps infesting between one and ten feet of shoreline, with a few more significant areas of infestation.

Seven years have passed since the introduction of the bio-control beetles into the minimum flow channel. While it is difficult to make a determination as to their success, the fact that the density of loosestrife in the lower area of the spillway channel is continuing to decrease, and the fact that loosestrife infestation in the remaining portion of the channel appears to be stabilizing, is encouraging.



**Table 3. Purple Loosestrife Infestations in the  
Jim Falls Spillway Channel (2015 – 2017).**

	2015	2016	2017
Total number of loosestrife points at Jim Falls Spillway	42	69	45
Sq feet of Jim Falls Spillway infestation near Hwy Y	9,461	6,695	5,431
Total other shoreline affected at Jim Falls Spillway	217	313	222

**Table 4. 2017 Summary of Purple Loosestrife Infestations in  
Jim Falls Spillway Channel**

Location #	Degree of Infestation	Single / Multiple	Coverage (ft)	Location #	Degree of Infestation	Single / Multiple	Coverage (ft)
JF1	Present	Multiple	5431 sq ft	JF36	Present	Single	3 ft
JF2	Present	Multiple	4 ft	JF37	Present	Multiple	4 ft
JF3	Present	Single	1 ft	JF38	Present	Single	1 ft
JF4	Present	Multiple	15 ft	JF39	Present	Multiple	6 ft
JF5	Present	Single	2 ft	JF40	Present	Multiple	4 ft
JF6	Present	Multiple	10 ft	JF41	Present	Single	1 ft
JF7	Present	Multiple	3 ft	JF42	Present	Multiple	5 ft
JF8	Present	Multiple	7 ft	JF43	Present	Single	3 ft
JF9	Present	Multiple	8 ft	JF44	Present	Multiple	18 ft
JF10	Present	Single	2 ft	JF45	Present	Multiple	4 ft
JF11	Present	Multiple	14 ft				
JF12	Present	Single	2 ft				
JF13	Present	Single	2 ft				
JF14	Present	Single	4 ft				
JF15	Present	Single	4 ft				
JF16	Present	Multiple	4 ft				
JF17	Present	Multiple	6 ft				
JF18	Present	Single	7 ft				
JF19	Present	Single	2 ft				
JF20	Present	Single	3 ft				
JF21	Present	Multiple	5 ft				
JF22	Present	Single	5 ft				
JF23	Present	Single	3 ft				
JF24	Present	Single	3 ft				
JF25	Present	Single	2 ft				
JF26	Present	Multiple	7 ft				
JF27	Present	Multiple	4 ft				
JF28	Present	Multiple	4 ft				
JF29	Present	Multiple	14 ft				
JF30	Present	Multiple	4 ft				
JF31	Present	Single	2 ft				
JF32	Present	Single	3 ft				
JF33	Present	Multiple	5 ft				
JF34	Present	Multiple	7 ft				
JF35	Present	Multiple	5 ft				

## Appendix A

# Survey Maps and Catalog of Purple Loosestrife Locations at Surveyed Flowages

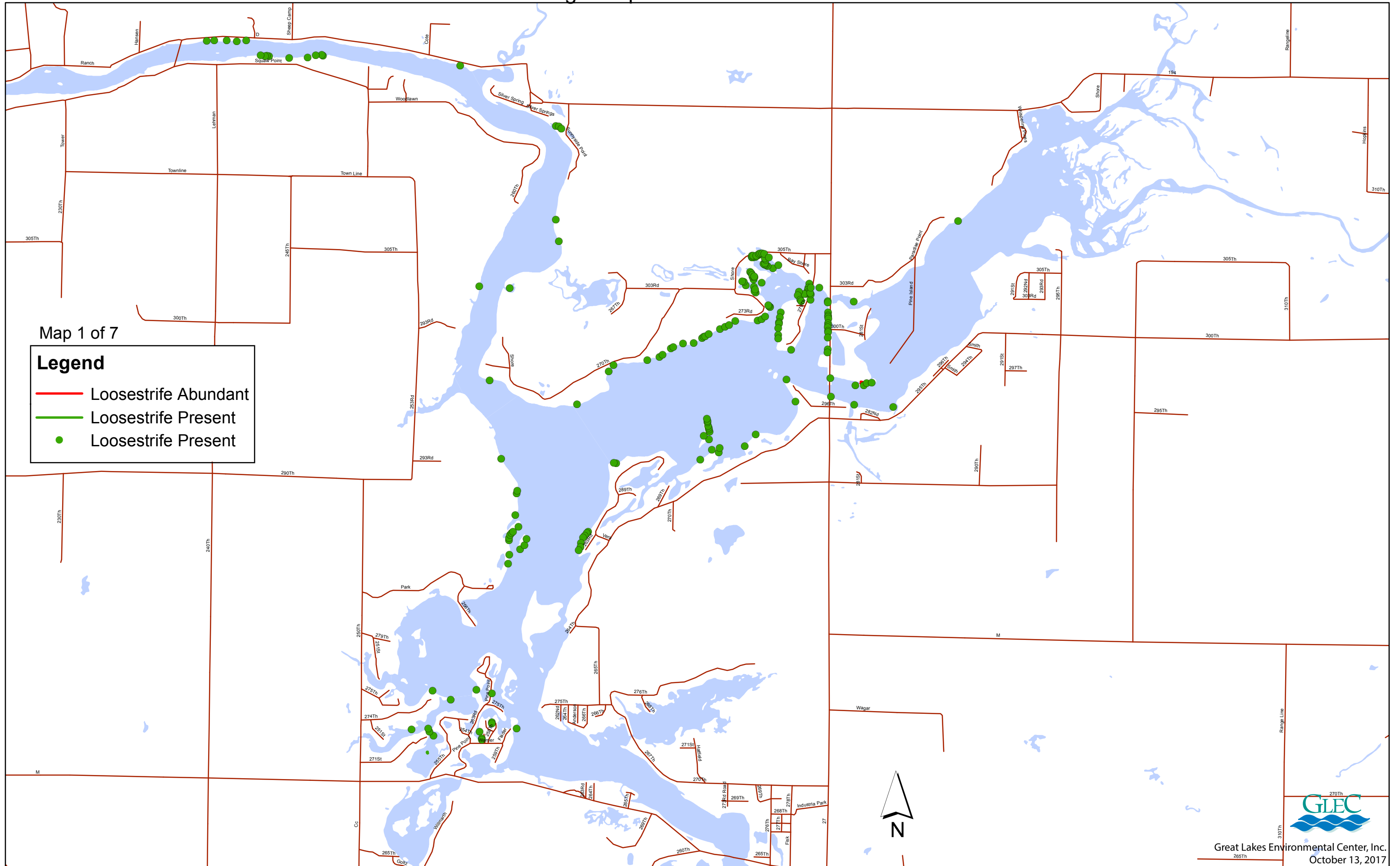
2017

## Appendix A

# Survey Maps and Catalog of Purple Loosestrife Locations at Surveyed Flowages

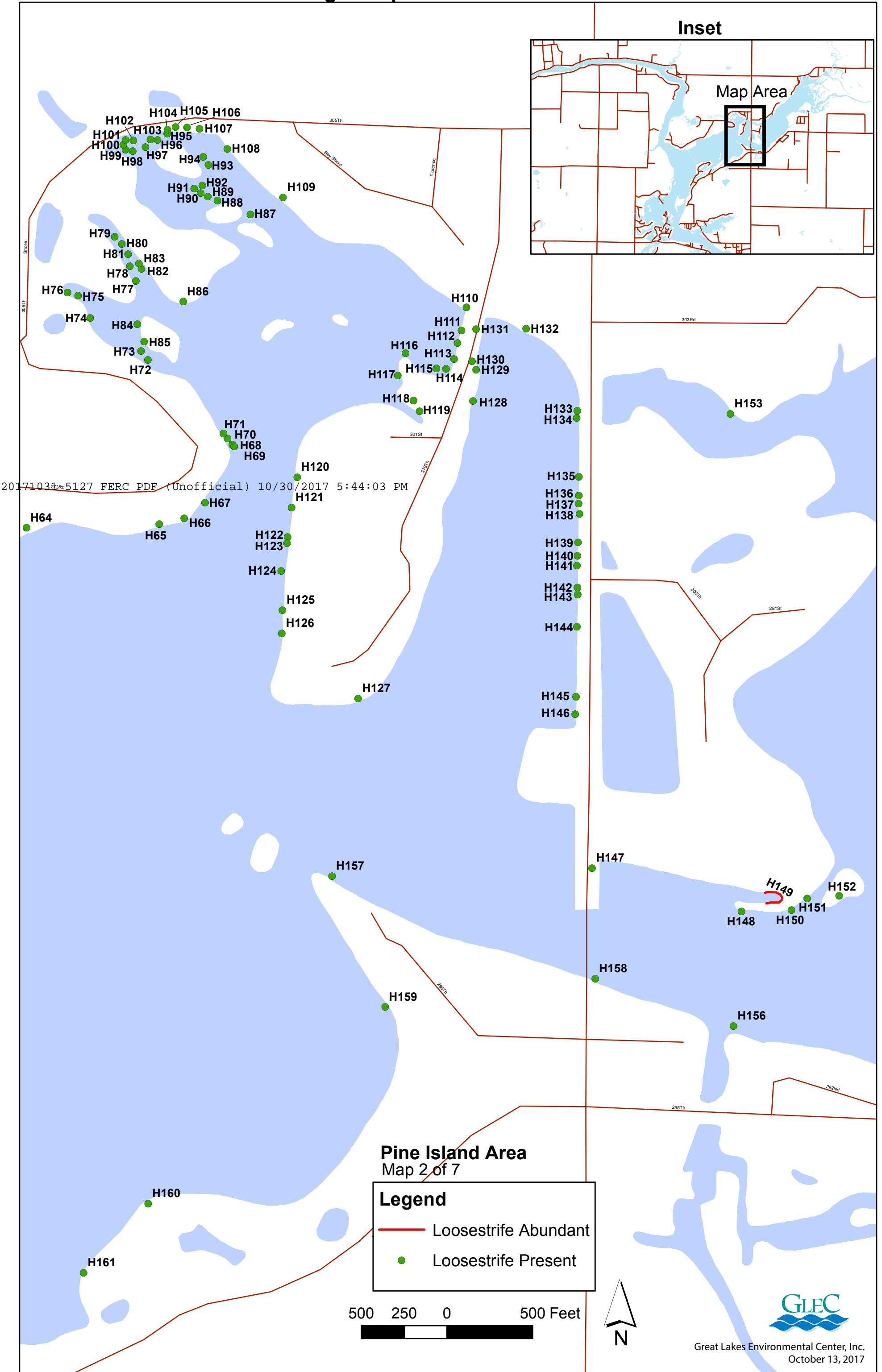
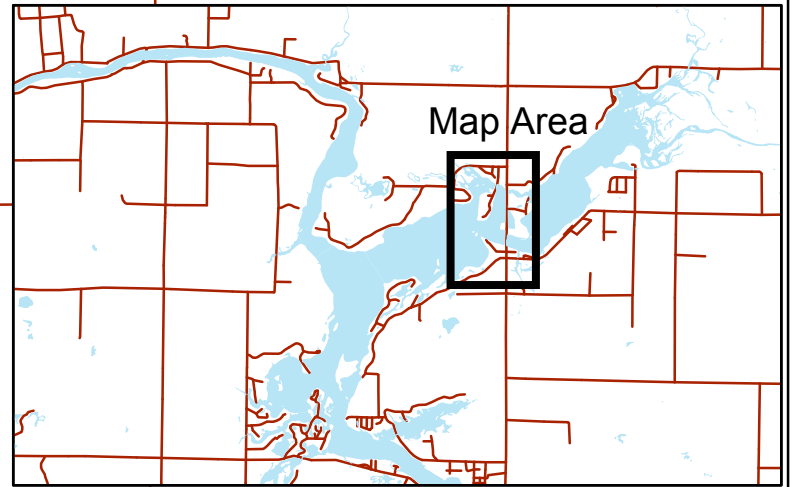
2017

# Holcombe Flowage Purple Loosestrife Assessment - 2017



# Holcombe Flowage Purple Loosestrife Assessment - 2017

Inset

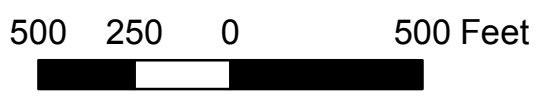


20171031 15:27 FERC PDF (Unofficial) 10/30/2017 5:44:03 PM

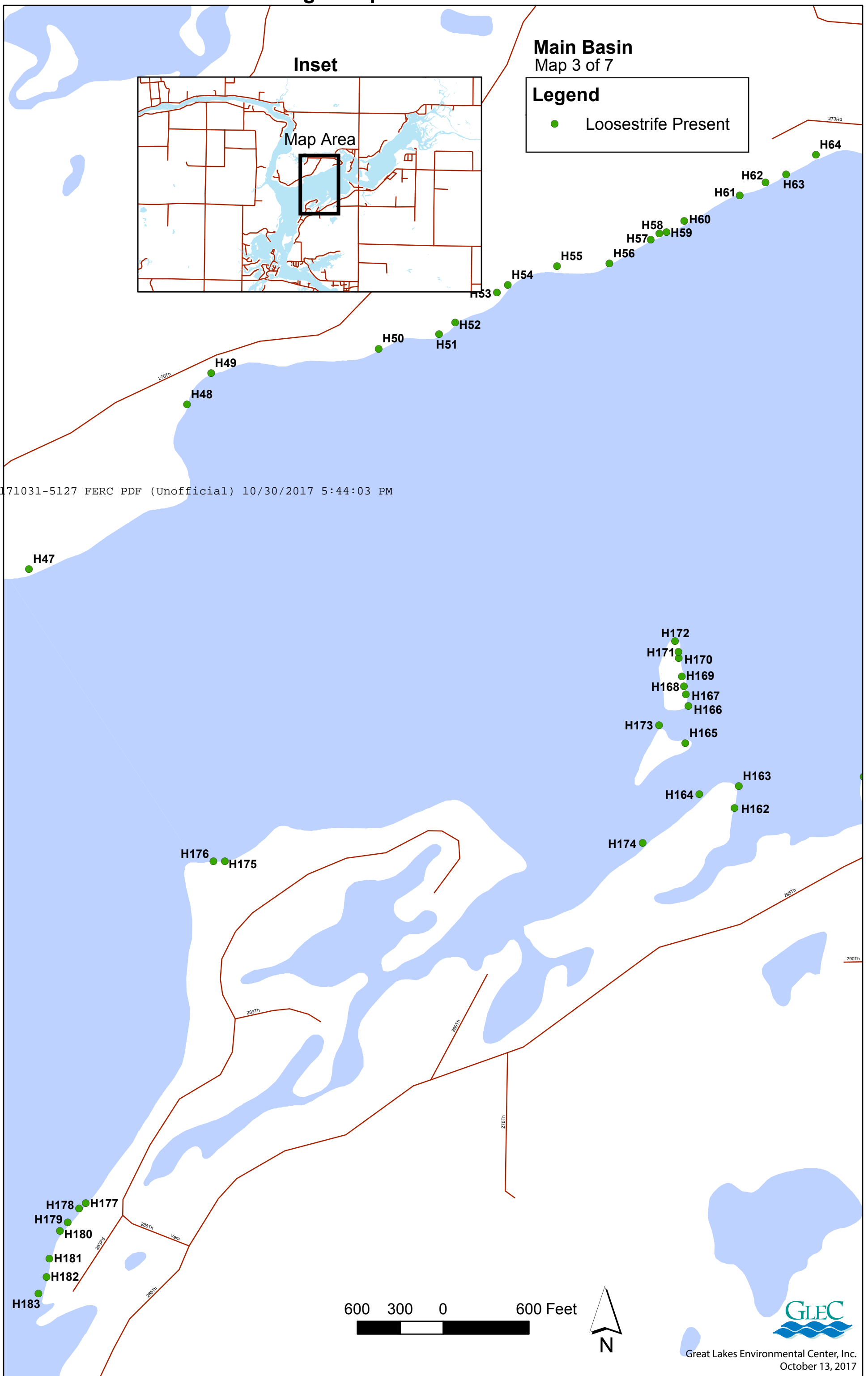
**Pine Island Area**  
Map 2 of 7

**Legend**

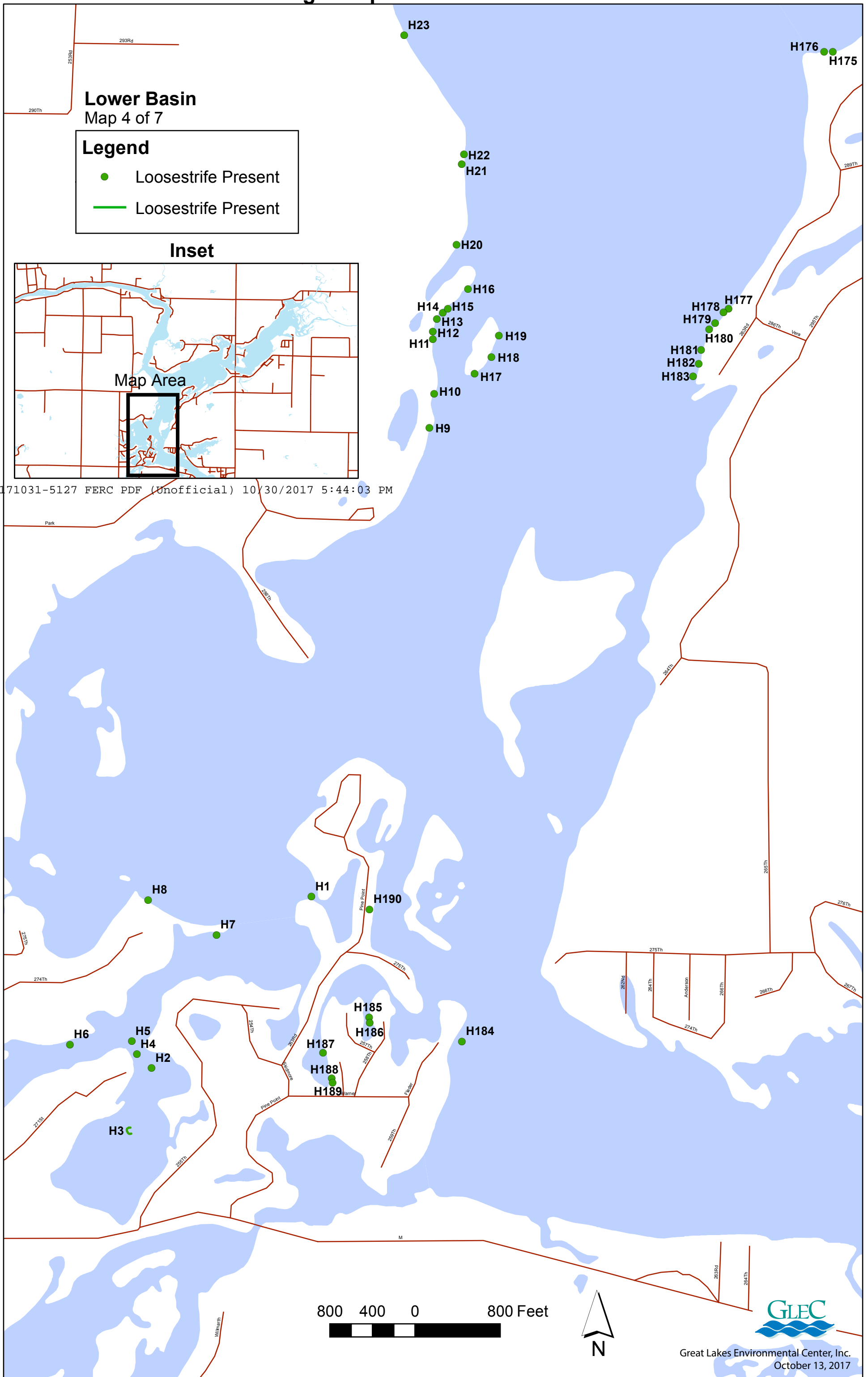
- Loosestrife Abundant
- Loosestrife Present



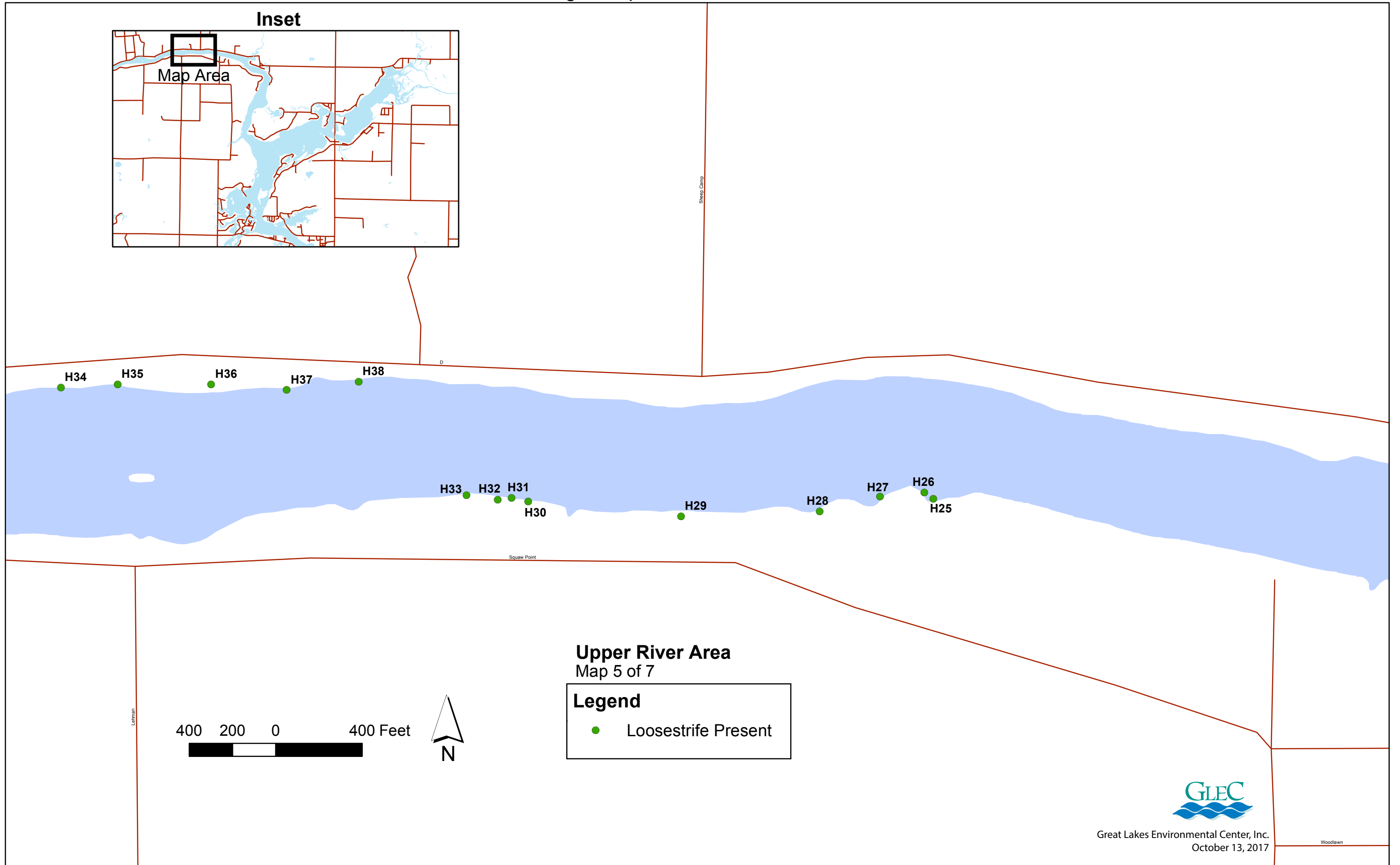
# Holcombe Flowage Purple Loosestrife Assessment - 2017



# Holcombe Flowage Purple Loosestrife Assessment - 2017

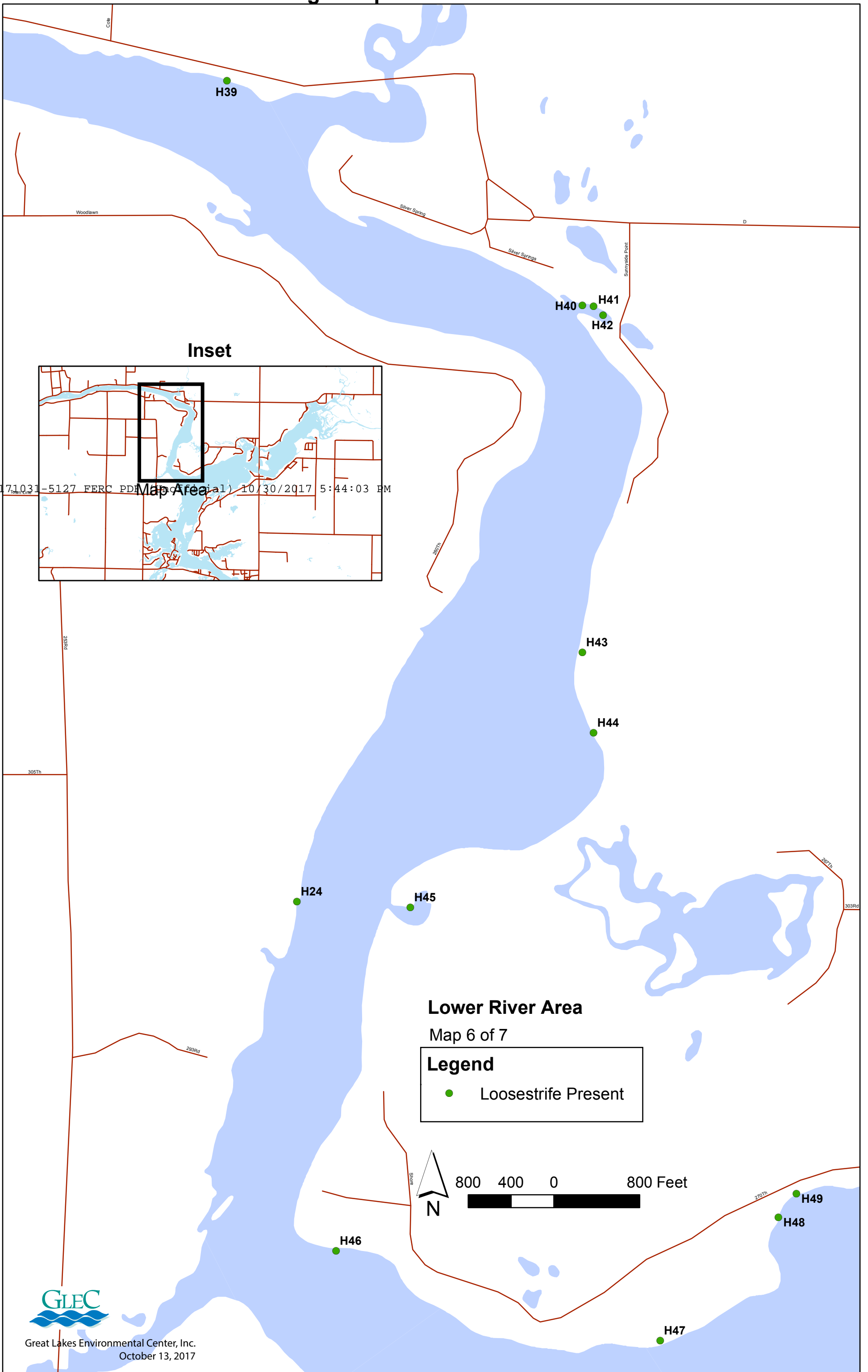


# Holcombe Flowage Purple Loosestrife Assessment - 2017

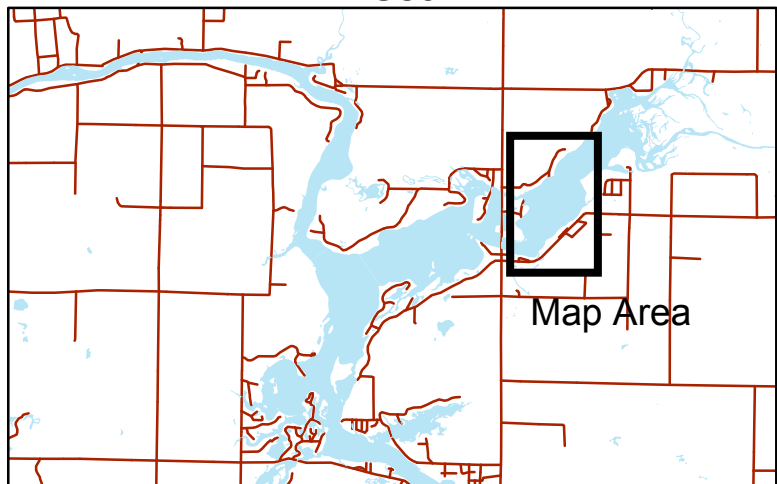




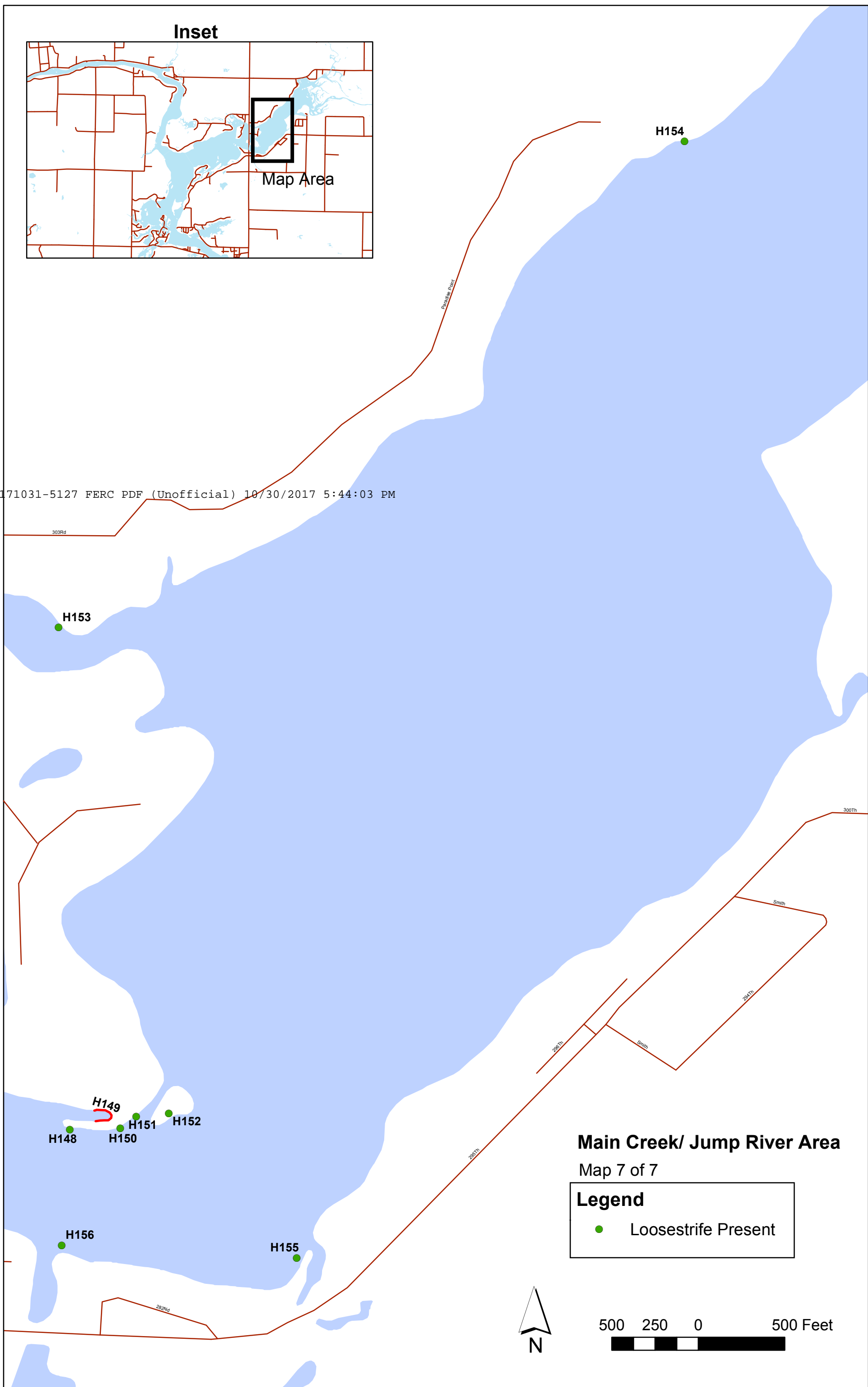
# Holcombe Flowage Purple Loosestrife Assessment - 2017



**Inset**



20171031-5127 FERC PDF (Unofficial) 10/30/2017 5:44:03 PM



H154

H153

H149

H148

H150

H151

H152

H156

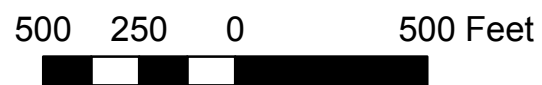
H155

**Main Creek/ Jump River Area**

Map 7 of 7

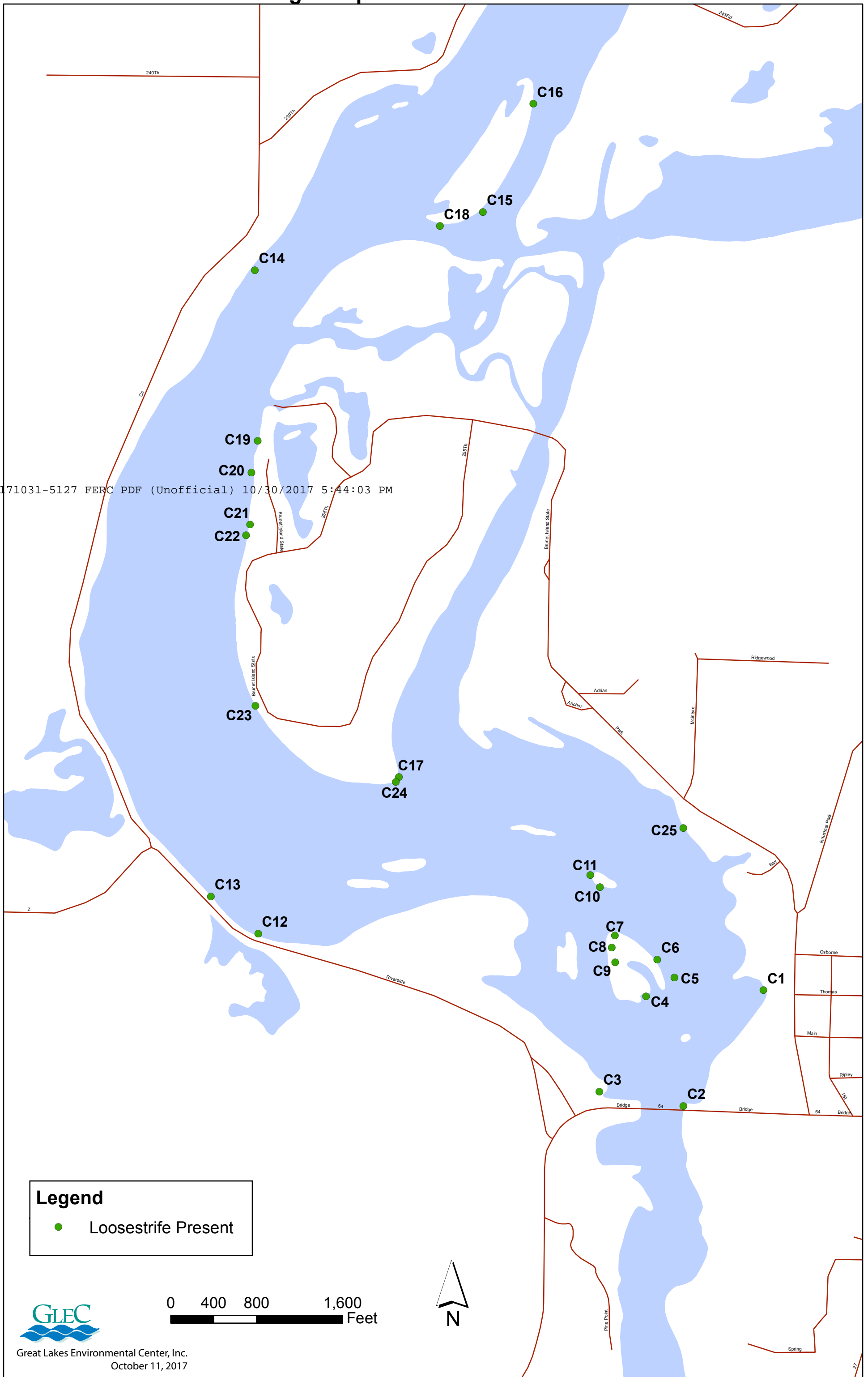
**Legend**

● Loosestrife Present



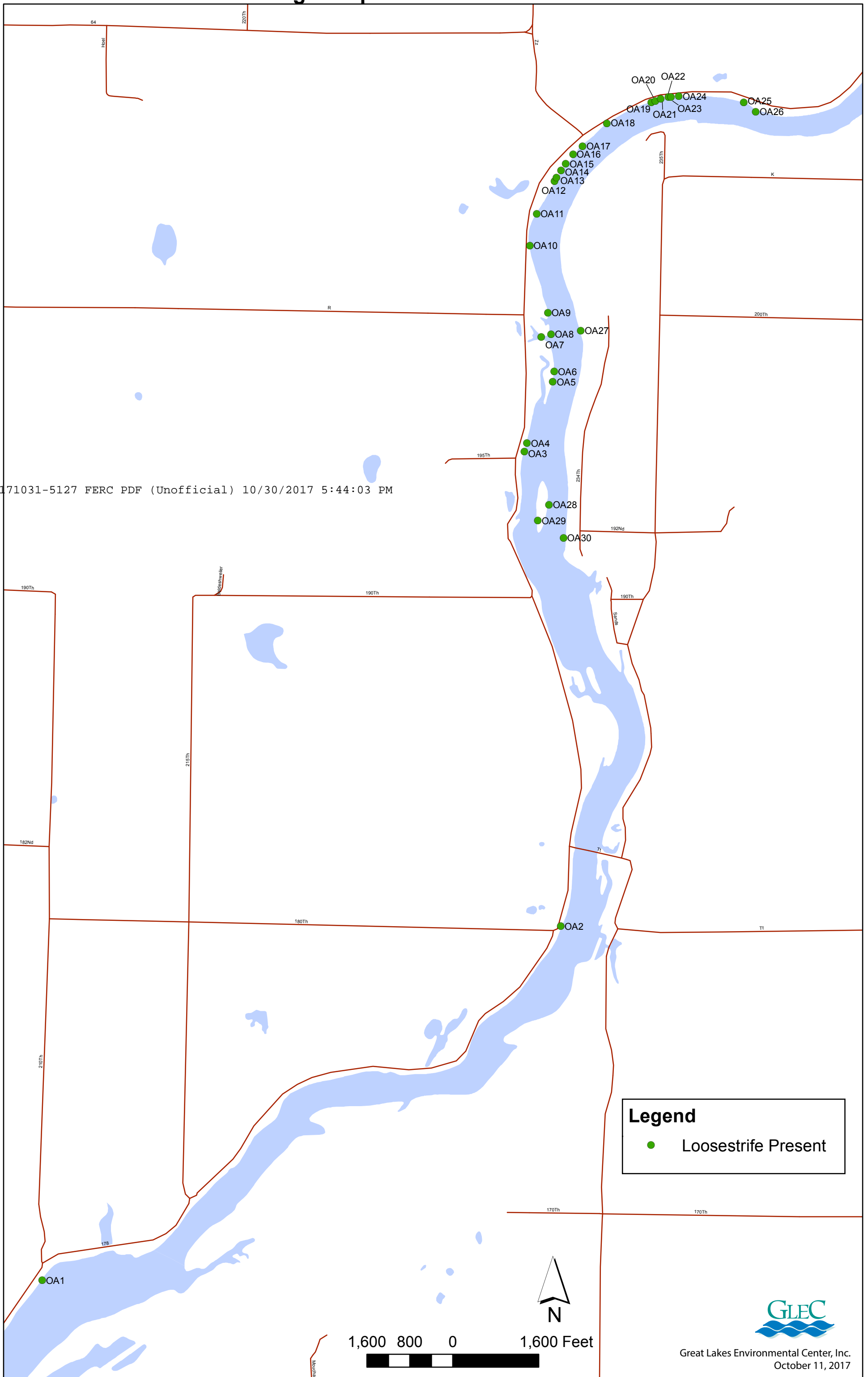
# Cornell Flowage Purple Loosestrife Assessment - 2017

20171031-5127 FERC PDF (Unofficial) 10/30/2017 5:44:03 PM

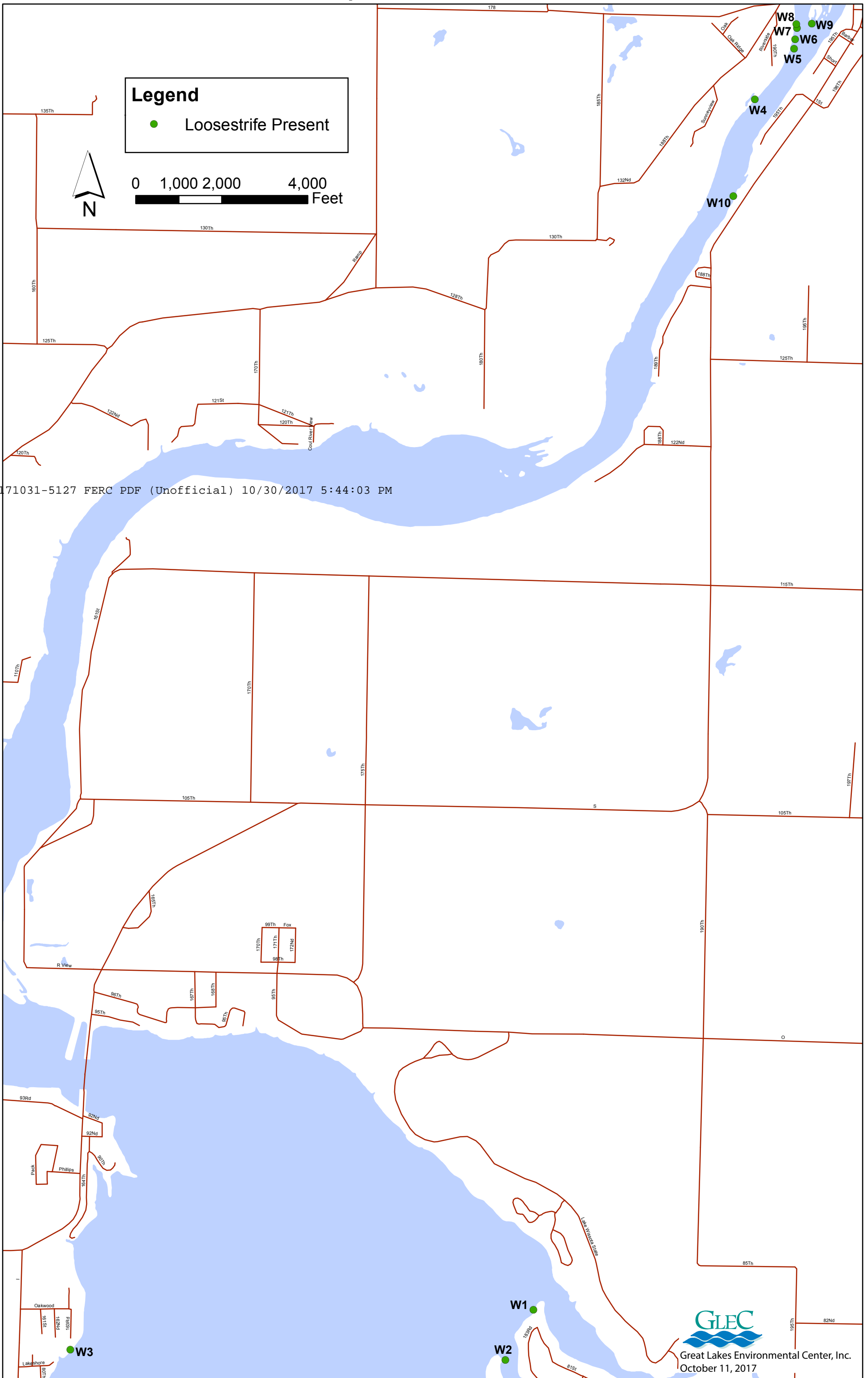


# Old Abe Flowage Purple Loosestrife Assessment - 2017

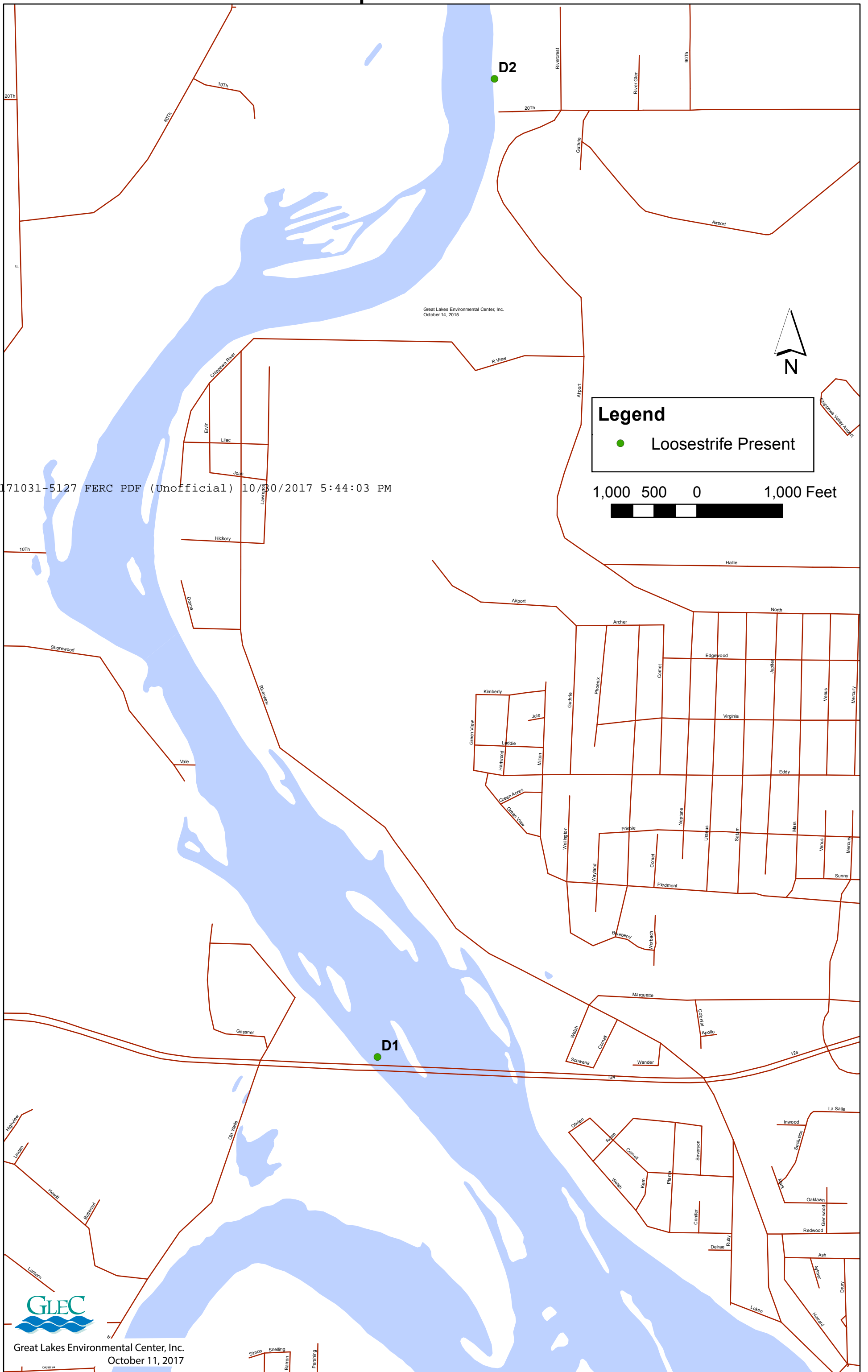
20171031-5127 FERC PDF (Unofficial) 10/30/2017 5:44:03 PM



# Lake Wissota Purple Loosestrife Assessment - 2017



# Dells Pond Purple Loosestrife Assessment - 2017





Jim Falls Spillway Channel Purple Loosestrife Assessment – 2017 (Map 1 of 4)





Jim Falls Spillway Channel Purple Loosestrife Assessment – 2017 (Map 2 of 4)





Jim Falls Spillway Channel Purple Loosestrife Assessment – 2017 (Map 3 of 4)





Jim Falls Spillway Channel Purple Loosestrife Assessment – 2017 (Map 4 of 4)



Document Content(s)

2017 Purple Loosestrife Report.PDF.....1-26