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P.O. Box 8
Eau Claire, WI 54702-0008

September 24, 2009

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

**Subject: 2009 Purple Loosestrife Monitoring Report
White River Hydro (P-2444), Superior Falls Hydro (P-2587), Hayward Hydro (P-2417), Big Falls Hydro (P-2390-01), And Thornapple Hydro (P-2475)**

Dear Secretary:

Enclosed is a copy of the 2009 purple loosestrife monitoring report for the above-referenced hydro projects. The operating license issued by the Federal Energy Regulatory Commission (FERC) for each project directs the Licensee to annually monitor project shorelines for purple loosestrife presence. The results are then documented and submitted to the agencies and the Commission.

This year's surveys were conducted in August during a period of peak loosestrife flowering. The results were then compared to previous surveys in order to determine any trends. Superior Falls, White River, and Big Falls continue to remain free of any infestations. Thornapple continues to show a downward trend in both presence and abundance, while Lake Hayward's population remains relatively stable.

Should you have any questions regarding this report, please feel free to contact Matthew Miller of this office by telephone at (715) 737-1353 or by electronic mail at matthew.j.miller@xcelenergy.com.

Sincerely,

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

William Zawacki
Director, Hydro Plants

Enclosure: 2009 Purple Loosestrife Report

c: Mr. Nick Utrup (U.S. Fish and Wildlife Service)
Mr. Jeff Scheirer (Wisconsin DNR)
Project Files

**2009 Purple Loosestrife Monitoring Report For Superior Falls
Flowage, White River Flowage, Lake Hayward, Big Falls Flowage
And Thornapple Flowage.**

September 24, 2009

Results Of The 2009 Purple Loosestrife Monitoring At Superior Falls Flowage, White River Flowage, Lake Hayward, Big Falls Flowage And Thornapple Flowage.

1.0 INTRODUCTION

The operating licenses for the above-mentioned hydro projects directed the Licensee to develop a purple loosestrife (*Lythrum salicaria*) monitoring plan for project shorelines. The plans were developed with input from the Wisconsin Department of Natural Resources (WDNR), the U.S. Fish and Wildlife Service (USFWS), and the National Park Service (NPS). The plan involves annual monitoring of project shorelines during the period of peak purple loosestrife biomass (late July through August). The following report is a summary of the surveys that were performed in August 2009, including a comparison with surveys from previous years.

2.0 METHODS

The Superior Falls and White River Flowages were surveyed on August 18, while Lake Hayward was surveyed on August 19. Project lands downstream of the Hayward Hydro Project were also surveyed. Big Falls and Thornapple Flowages were surveyed on August 24. The survey dates coincided with peak flowering whereby purple loosestrife could easily be identified and documented for relative abundance. Field observations were conducted by boat with the aid of binoculars.

Shorelines infested with purple loosestrife were divided into two classes, either present or abundant. Areas categorized as present indicated a single plant or a few plants scattered along the shoreline. Those areas categorized as abundant indicated a large concentration of plants approaching a near monotypic stand. The areas of infestation were then documented on a bathymetric map and the length of shoreline was calculated with a planimeter. This method has a tendency to overestimate the amount of shoreline that is infested, as a single dot on the map often indicates just one plant. However, it does provide a reliable indication of the relative abundance of purple loosestrife and whether it is increasing or decreasing in coverage from year to year.

3.0 RESULTS

3.1 Superior Falls Flowage. No purple loosestrife was observed on the Superior Falls Flowage. The findings were consistent with surveys conducted from 1998-2008. A survey of flowage waters was also conducted for Eurasian Milfoil (*Myriophyllum spicatum*) and no plants were found. This is also consistent with the results of past surveys.

3.2 White River Flowage. There was no documentation of purple loosestrife on

the White River flowage. The findings were consistent with surveys conducted from 1998-2008.

3.3 Lake Hayward. The presence and abundance of purple loosestrife on Lake Hayward has been relatively stable over the last several years. This year's survey indicated a slight increase in areas categorized as present, while those areas of abundant infestation showed a slight decline. Licensee is aware of control efforts by the National Park Service in the Hayward Project tailwaters. Once again, no loosestrife was observed in this region.

Purple loosestrife has historically been abundant near the Smith Lake Creek inlet. Field observations this year indicated little change from 2008. The table below summarizes the results of surveys from Lake Hayward since they began in 1997.

<u>Year</u>	<u>Shoreline Miles (Present)</u>	<u>Shoreline Miles (Abundant)</u>
1997	0.3	0.70
1998	Shoreline coverage not determined	
1999	1.08	0.25
2000	1.28	0.10
2001	1.13	0.19
2002	0.90	0.07
2003	0.10	0.07
2004	0.54	0.0
2005	0.54	0.0
2006	0.82	0.04
2007	0.80	0.04
2008	0.46	0.07
2009	0.47	0.06

Licensee donated money to the Hayward High School's Environmental Studies class a number of years ago to initiate a biological control program for purple loosestrife on Lake Hayward. The class cooperated with the WDNR to secure a population of leaf-eating beetles (*Galerucella californiensis* or *G. pusilla*) which specifically targets purple loosestrife plants. The beetles were then transplanted to those areas with the greatest concentration of plants. Their efforts appear to have been very successful over the last several years, especially in those areas classified as abundant. Continued monitoring will help evaluate the long-term benefits of the biological control program.

3.4 Big Falls Flowage. There were no purple loosestrife plants found on the shoreline of Big Falls Flowage. Again, this was similar to the results of previous surveys conducted from 1998-2008.

3.5 Thornapple Flowage. The presence of purple loosestrife showed a marked decline over 2008 levels. Purple loosestrife was found to be present along 0.45 miles of shoreline this year compared to 1.30 miles in 2008. The decline in loosestrife presence is likely an indication that the plants have reached their peak numbers due to available habitat. The majority of pioneering plants are located on less than suitable habitat where the banks are steep or shaded. Many shoreline areas where pioneering plants were observed were often the result of a recent disturbance (lawn cutting, brush removal) along privately developed shorelines.

Areas of abundant loosestrife infestations also showed a marked decline from 2008. Shoreline mileage categorized as abundant decreased from 0.15 miles in 2008 to 0.06 miles this year. As expected, wetland areas accounted for the majority of abundant infestations. The table below summarizes the findings from surveys conducted from 1998-2009 on the Thornapple Flowage.

<u>Year</u>	<u>Shoreline Miles (Present)</u>	<u>Shoreline Miles Common</u>	<u>Shoreline Miles (Abundant)</u>
1998		<i>Shoreline coverage not determined</i>	
1999	2.36	0.27	0.67
2000	1.64	-	0.70
2001	2.52	-	0.67
2002	2.52	-	0.48
2003	2.10	-	0.48
2004	2.33	-	0.45
2005	2.15	-	0.42
2006	1.76	-	0.39
2007	1.40	-	0.33
2008	1.30	-	0.15
2009	0.45	-	0.06

In July of 2004, Licensee cooperated with the Lake Holcombe Improvement Association (LHIA) to introduce a beetle population to the shorelines of the Thornapple Flowage that specifically targets purple loosestrife plants. Approximately 20,000 beetles were introduced in the wetland areas of the flowage where purple loosestrife densities have historically been highest. Earlier introductions of these beetles at Licensee's Hayward and Holcombe projects have been met with great success. The continuing decline of loosestrife presence and abundance indicates that the beetles have had a significant impact. Future surveys will hopefully document this decreasing trend. Licensee will continue to monitor purple loosestrife densities on the flowage throughout the term of the license.

4.0 CONCLUSION

Purple loosestrife was not documented on the White River Flowage, the Superior Falls Flowage or the Big Falls Flowage. Much of the Thornapple Flowage shoreline is scattered with purple loosestrife plants, with heavier concentrations confined to the wetland areas in the central portion of the impoundment. The number of pioneering

plants appears to be declining due to a lack of available habitat. More importantly, there has been a significant decline over the last four years in both the presence and abundance of loosestrife, which is likely attributable to the biological control efforts of 2004. It may have taken several years for the beetle population to become well established, with their impacts only now appearing over the last two years.

Lake Hayward has experienced a drastic decline in purple loosestrife over the past several years due to the introduction of a beetle population which specifically targets the plant. The presences and abundance of loosestrife now appears to have stabilized over the past two years. It is hoped that future surveys will confirm this stabilizing trend.

PURPLE LOOSESTRIPE MONITORING

AUGUST 19, 2009

AREAS OF PURPLE LOOSESTRIPE PRESENT OR COMMON

$$\frac{7.2 \text{ CLICKS}}{1 \text{ MILE}} = \frac{3.4 \text{ CLICKS}}{X \text{ MILES}}$$

$$X = 0.47 \text{ MILES} = 2482 \text{ FT.}$$

OR 5.4% OF SHORELINE

AREAS OF PURPLE LOOSESTRIPE ABUNDANT

$$\frac{7.2 \text{ CLICKS}}{1 \text{ MILE}} \times \frac{0.4 \text{ CLICKS}}{X \text{ MILES}}$$

$$X = 0.06 \text{ MILES} = 317 \text{ FT.}$$

OR 0.69% OF SHORELINE

LAKE Hayward Flowage
 SECTION 26, 27
 RANGE 9 W
 TOWN Hayward
 TOWNSHIP 41 N

This is the only hydrographic map of this lake available, produced from original charts of Dept. of Natural Resources — Madison

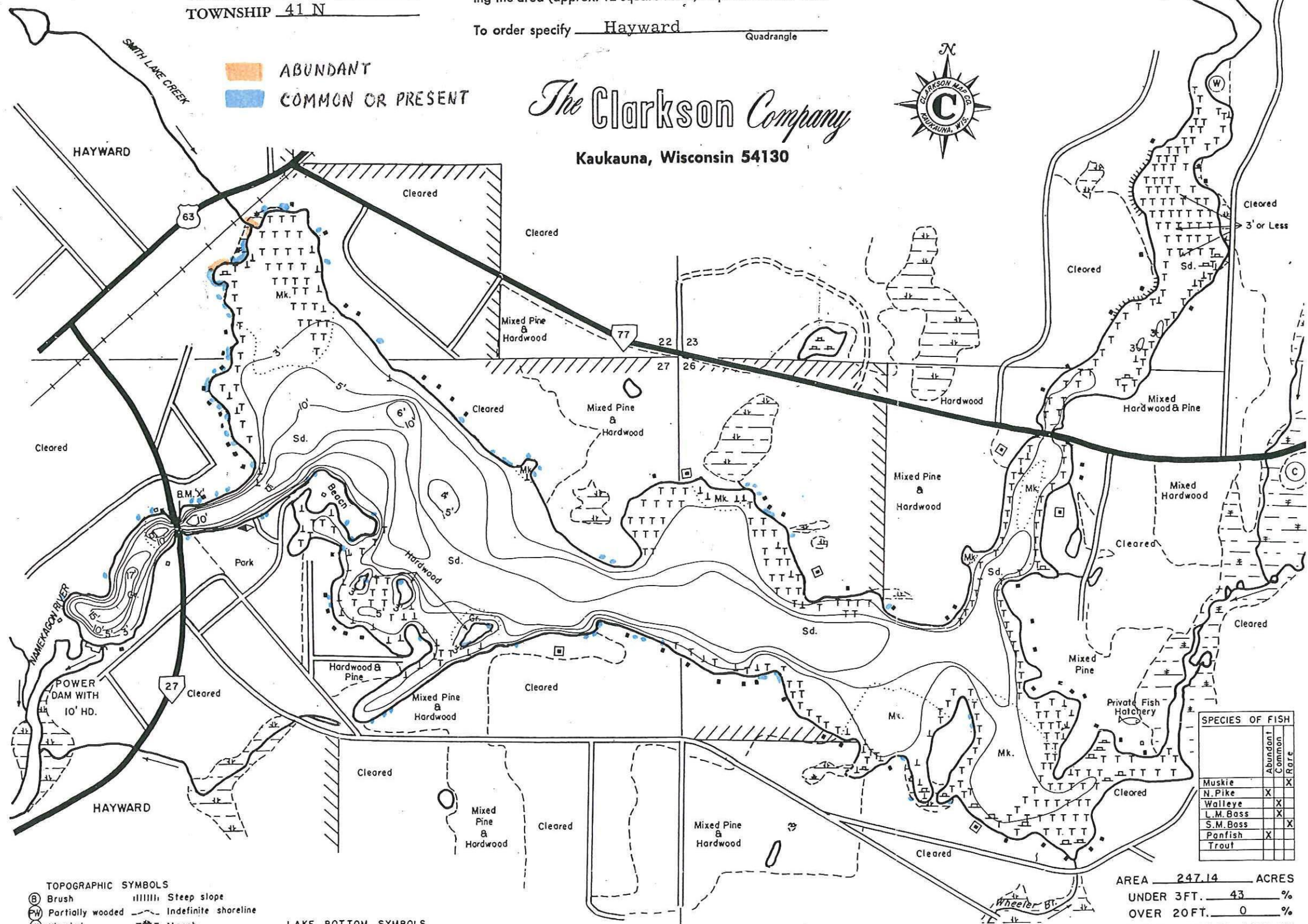
A U. S. Geological Survey Map is available from us showing the area (approx. 12 square miles) adjacent to this lake.

To order specify Hayward Quadrangle

SAWYER COUNTY

Map No. 5260

The Clarkson Company
 Kaukauna, Wisconsin 54130



- TOPOGRAPHIC SYMBOLS**
- (B) Brush
 - (W) Partially wooded
 - (W) Wooded
 - (C) Cleared
 - (P) Pastured
 - (A) Agricultural
 - B.M. Bench Mark
 - Dwelling
 - Resort
 - ||||| Steep slope
 - - - Indefinite shoreline
 - Marsh
 - Spring
 - Intermittent stream
 - Permanent inlet
 - Permanent outlet
 - Dam
- LAKE BOTTOM SYMBOLS**
- P. Peat
 - Mk. Muck
 - C. Clay
 - M. Marl
 - Sd. Sand
 - St. Silt
 - Gr. Gravel
 - R. Rubble
 - Br. Bedrock
 - T Submergent vegetation
 - Emergent vegetation
 - Floating vegetation

SPECIES OF FISH

	Abundant	Common	Rare
Muskie			X
N. Pike	X		
Walleye	X		
L.M. Bass		X	
S.M. Bass		X	
Panfish	X		
Trout			

AREA 247.14 ACRES
 UNDER 3FT. 43 %
 OVER 20FT. 0 %
 VOLUME 1235.34 ACRE FT.
 TOTAL ALK. 69 P.P.M.
 SHORELINE 8.64 MILES
 MAX. DEPTH 17 FEET

- ◇ Access
- ◀ Access with Parking
- ◆ Boat Livery

PURPLE LOOSESTRIPE MONITORING

AUGUST 24, 2009

LAKE Thornapple Flow
 SECTION 18, 19, 22, 23, 24
 RANGE 6, 7 W
 TOWN Thornapple
 TOWNSHIP 34 N

ABUNDANT
 COMMON OR PRESENT

AREAS OF PURPLE LOOSESTRIPE
 PRESENT OR COMMON

$$\frac{2.5 \text{ CLICKS}}{4000 \text{ FT}} = \frac{1.5 \text{ CLICKS}}{X}$$

$$X = 2400 \text{ FT} = .45 \text{ MILES}$$

OR 5.9% OF SHORELINE

AREAS OF PURPLE LOOSESTRIPE

ABUNDANT

$$\frac{2.5 \text{ CLICKS}}{4000 \text{ FT}} = \frac{.2 \text{ CLICKS}}{X}$$

$$X = 320 \text{ FT} = 0.06 \text{ MILES}$$

OR 0.79% OF SHORELINE



LEGEND

TOPOGRAPHIC SYMBOLS	
BRUSH REFUGE	⊕
SAPLING TANGLE	⊞
SPAWNING BOX	□
MINNOW SPAWNER	*
WEED BED	⊞
ROCKY SHOAL	⊞
DWELLING	■
ABANDONED DWELLING	□
RESORT	□
STEEP SLOPE	≡
SPRING	○
INTERMITTENT INLET	→
BRUSH	⊞
WOODED	⊞
PASTURED	⊞
CULTIVATED	⊞
ENCROACH. SHORE	→
PERMANENT INLET	→
PERMANENT OUTLET	→
MARSH	⊞
PARTIALLY WOODED	⊞
CLEARED	⊞
BENCH MARK	B.M.

LAKE BOTTOM SYMBOLS	
PULPY PEAT	P
MUCK	K
CLAY	C
SAND	S
RUBBLE	R
EMERGENT VEG.	L
FIBROUS PEAT	F
DETRITUS	D
MARL	M
GRAVEL	G
BEDROCK	Br.
SUBMERGENT VEGET.	T

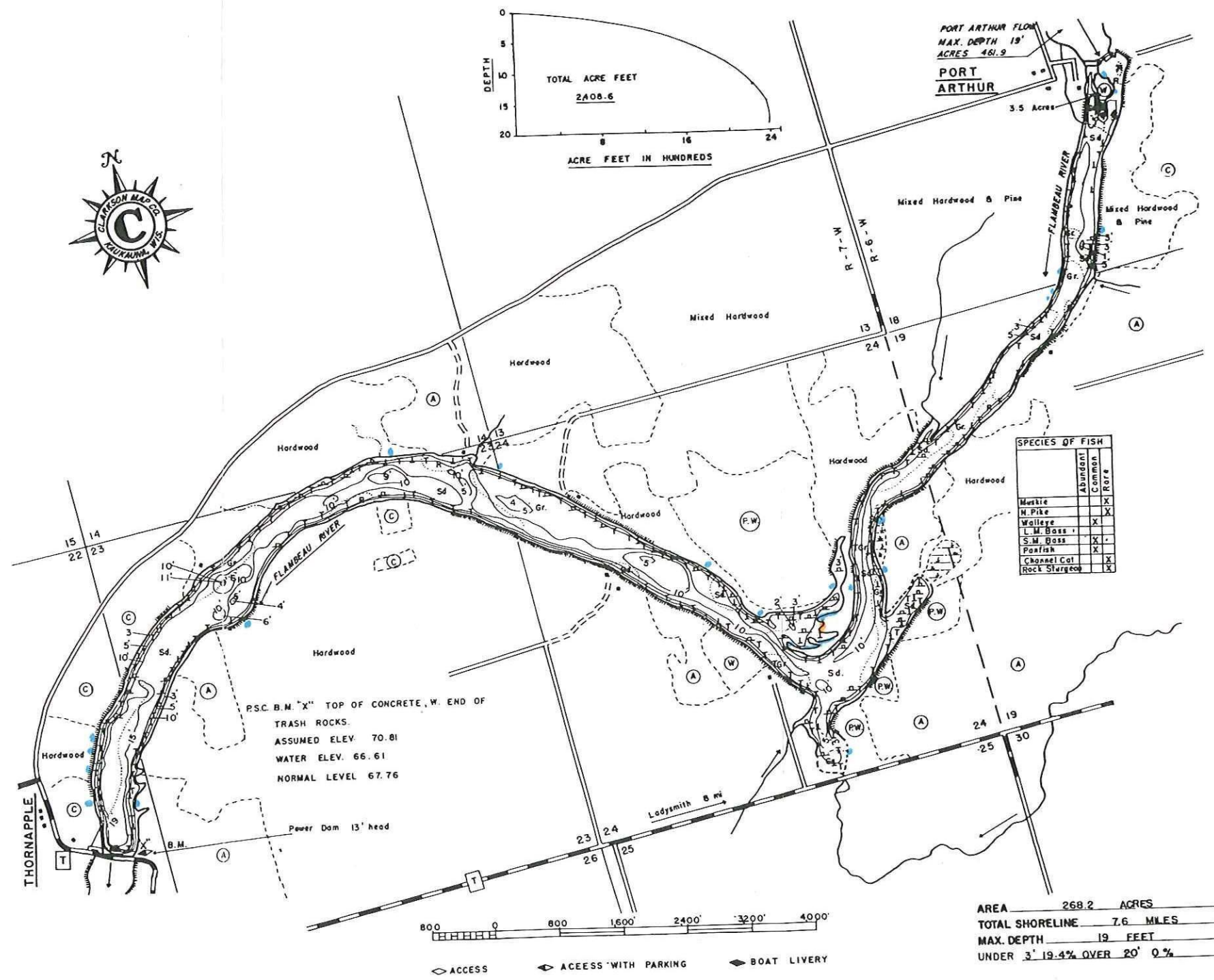
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A U. S. Geological Survey Map is available from us showing the area (approx. 12 square miles) adjacent to this lake.

To order specify Thornapple Quadrangle

MAP NO.

5129



Document Content(s)

2009 Purple Loosestrife Report.PDF.....1-8