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1414 West Hamilton Avenue
PO Box 8
Eau Claire, WI 54702-0008

September 30, 2020

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

Subject: **2020 Purple Loosestrife Monitoring Report**
White River (P-2444), Superior Falls (P-2587), Hayward (P-2417), Big Falls (P-2390-01), and Thornapple (P-2475)

Dear Secretary:

Enclosed is a copy of the 2020 purple loosestrife monitoring report for the above-referenced hydro projects. The license for each project directs Xcel Energy (licensee) to annually monitor project shorelines for purple loosestrife presence. The results are then documented and submitted to the resource 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. Loosestrife was documented at Superior Falls for the first time since monitoring began in 1998. Pursuant to license article 409, licensee notified the Wisconsin DNR and Michigan DNR accordingly. White River and Big Falls continue to remain free of purple loosestrife. Loosestrife populations on Lake Hayward were slightly less than last year and have remained relatively stable over the last 10 years. Thornapple Flowage showed a slight decrease in loosestrife compared to 2019.

Should you have any questions, please contact Matthew Miller at (715) 737-1353 or matthew.j.miller@xcelenergy.com.

Sincerely,

James M Zyduck Digitally signed by James M Zyduck
Date: 2020.09.30 06:10:05 -05'00'

James M. Zyduck
Director, Hydro Plants

Enclosure: 2020 Purple Loosestrife Report

c: Nick Utrup - USFWS (via e-mail)
Cherly Laatsch - Wisconsin DNR (via email)
Project Files

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Purple Loosestrife Monitoring Report for:

Superior Falls Flowage (Article 409)
White River Flowage (Article 408)
Lake Hayward (Article 410)
Big Falls Flowage (Article 408)
Thornapple Flowage (Article 410)

Xcel Energy
September 2020

2020 Purple Loosestrife Monitoring at Superior Falls Flowage, White River Flowage, Lake Hayward, Big Falls Flowage and Thornapple Flowage.

1.0 INTRODUCTION

The FERC licenses for the above-referenced hydro projects direct Xcel Energy (licensee) to develop a purple loosestrife (Lythrum salicaria) monitoring plan for project shorelines. The plans were developed in consultation with the Wisconsin Department of Natural Resources (WDNR), the U.S. Fish and Wildlife Service (USFWS), and the National Park Service (NPS). The plans require licensee to annually monitor 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 2020 and includes a comparison with surveys from previous years.

2.0 METHODS

Superior Falls Flowage and White River Flowage were surveyed on August 12 and Lake Hayward on August 13, 2020. Project lands immediately downstream of the Hayward Dam were also surveyed. Big Falls and Thornapple flowages were surveyed on August 20, 2020. The survey dates coincided with peak flowering whereby purple loosestrife can be identified and documented for relative abundance. Field observations were conducted via boat by two persons with the aid of binoculars.

Shorelines infested with purple loosestrife were divided into two classes, either present or common and abundant. Areas categorized as present or common 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 infested shoreline was calculated with a map wheel. 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. Two loosestrife plants were observed this year. This was the first-time loosestrife was documented at the Superior Falls Project since monitoring began in 1998. Pursuant to license article 409, licensee notified the Wisconsin DNR and Michigan DNR on August 27 via e-mail. Per their instruction, licensee directed our Superior Falls operator to physically dig or hand-pull the specimens, bag them, and dispose of them accordingly. A survey of flowage waters was also conducted for Eurasian Water Milfoil (Myriophyllum spicatum) and no plants were found. This is consistent with past surveys.

3.2 White River Flowage. There was no purple loosestrife observed in 2020. No evidence of purple loosestrife has been found since monitoring began in 1998.

3.3 Lake Hayward. The presence of purple loosestrife on Lake Hayward has been relatively stable over the last five years. Appendix A includes a map of Lake Hayward depicting this year's loosestrife coverage, which was slightly less than last year. There were no areas classified as abundant this year.

Licensee is aware of annual purple loosestrife monitoring and control efforts by the National Park Service (NPS) in the project's tailwater. This year's survey found four plants in the tailwater area, three along the west shoreline and one along the east shoreline.

The table below summarizes the results of surveys from Lake Hayward since 1997.

Year	Shoreline Miles (Present or Common)	Shoreline Miles (Abundant)
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
2010	0.57	0.06
2011	0.63	0.06
2012	0.76	0.01
2013	0.72	0.00
2014	0.63	0.00
2015	0.49	0.00
2016	0.57	0.00
2017	0.40	0.00
2018	0.61	0.00
2019	0.60	0.00
2020	**0.57**	**0.00**

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 calmariensis* or *G. pusilla)* which specifically targets purple loosestrife plants. The beetles were then transplanted to those areas with the greatest concentration of plants.

3.4 Big Falls Flowage. There were no purple loosestrife plants found along the shoreline of Big Falls Flowage. Purple loosestrife has never been documented since monitoring began in 1998.

3.5 Thornapple Flowage. The presence of purple loosestrife showed a slight decrease from last year and continues to remain well below infestation levels from when monitoring first began. Purple loosestrife was found to be present or common along 0.94 miles of shoreline compared to 1.06 miles in 2019. There were no areas classified as abundant this year. The wetland area near the middle of the flowage, which has historically exhibited the greatest concentrations of loosestrife, has seen a significant reduction over the last few years. See Appendix A for a survey map of Thornapple Flowage depicting the results of this year's monitoring.

Significant increases in purple loosestrife are unlikely due to a combination of past bio-control efforts and a lack of available habitat. Shoreline areas where pioneering plants were observed were often the result of a recent disturbance (lawn cutting, brush removal, etc.) along privately developed shorelines. In contrast, single specimens recorded in one year may be absent the next due to lawn mowing, landscape activities, or environmental factors only to reappear the following year.

The table below summarizes the results from surveys conducted from 1998-2020 on the Thornapple Flowage.

Year	Shoreline Miles (Present or Common)	Shoreline Miles (Abundant)
1998	*Shoreline coverage not determined*	
1999	2.63	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
2010	0.79	0.00
2011	1.91	0.00
2012	1.42	0.03
2013	1.94	0.03
2014	1.42	0.03
2015	1.45	0.12
2016	1.06	0.12
2017	0.69	0.03
2018	0.79	0.00
2019	1.06	0.00
2020	**0.94**	**0.00**

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 overall decline of loosestrife presence and abundance indicates that the beetles have had a significant impact. Licensee will continue to monitor purple loosestrife densities on the flowage throughout the term of the license.

4.0 CONCLUSION

Purple loosestrife was observed at Superior Falls Flowage for the first-time since monitoring began in 1998 and, pursuant to license article 409, licensee notified the Wisconsin and Michigan DNRs. White River Flowage and Big Falls Flowage continue to remain loosestrife free. Loosestrife coverage on Lake Hayward has experienced a drastic decline in purple loosestrife since 2000 due to the introduction of a beetle population, which specifically targets the plant. Loosestrife coverage this year was slightly less than last year.

Much of the northern shoreline of Thornapple Flowage is scattered with purple loosestrife plants. The central portion of the impoundment, which historically has seen the heaviest concentrations of loosestrife, has seen a drastic reduction over the last few years. Shoreline mileage classified as present or common this year was 0.94 versus 1.06 last year. There were no areas classified as abundant this year, the same as in 2019.

APPENDIX A

2020 Purple Loosestrife Survey Maps for Lake Hayward and Thornapple Flowage

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Annual Purple Loosestrife Monitoring
August 13, 2020

Present or common

Abundant

Areas of loosestrife present or common

7.2 clicks / 1 mile = 4.1 clicks / x miles

x = 0.57 miles = 3,010 ft.

or 6.6% of shoreline

Areas of loosestrife abundant

0.0 ft.

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

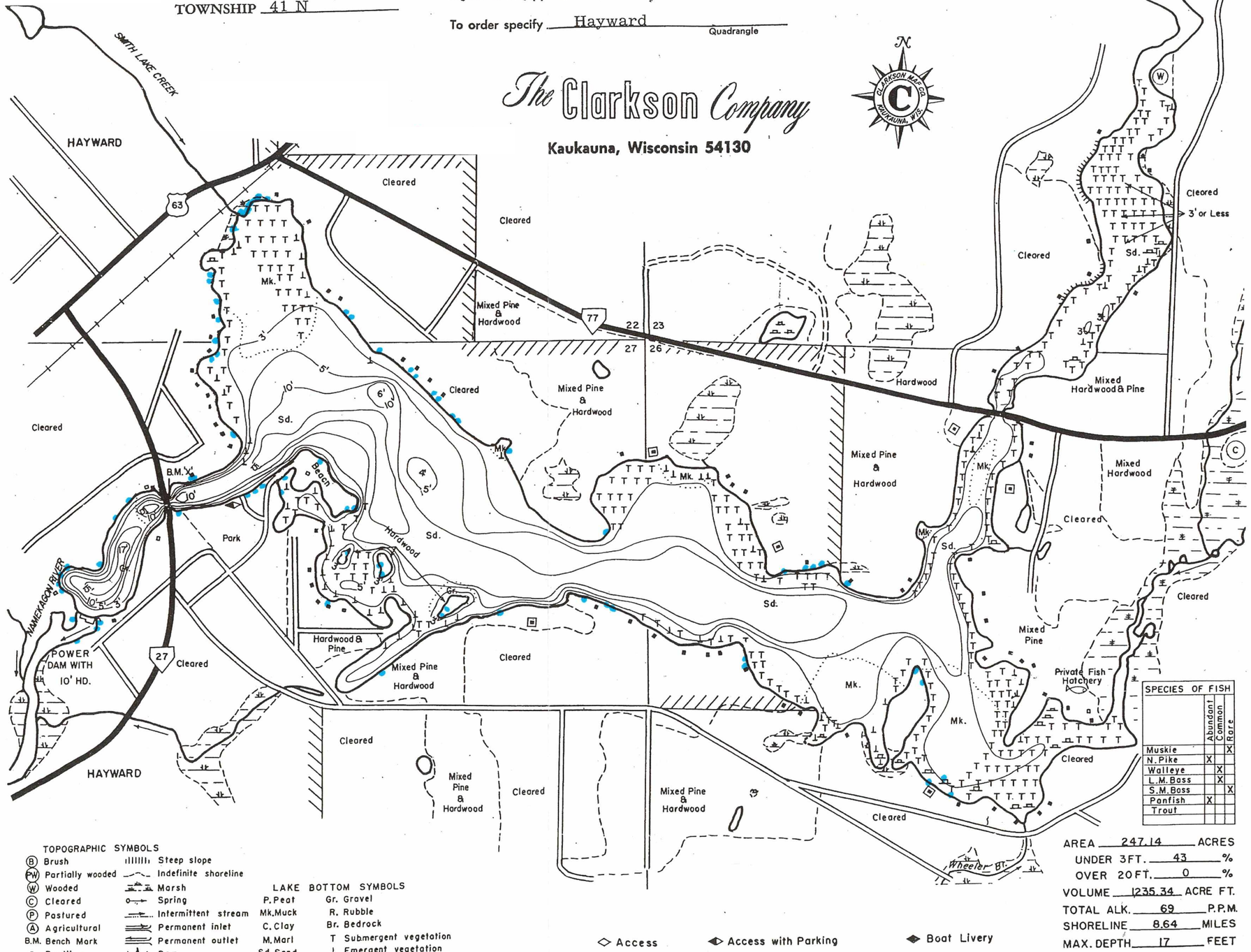
This is the only hydrographic map of this lake available, produced from original charts of Dept. of Natural Resources — Madison

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



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

TOPOGRAPHIC SYMBOLS
(B) Brush
(PW) 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

◇ Access
◆ Access with Parking
◆ Boat Livery

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Annual Purple Loosestrife Monitoring - August 20, 2020

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

RUSK COUNTY
MAP NO.
5129

Present or Common

Abundant

Areas of loosestrife present or common

2.5 clicks 3.1 clicks
4,000 ft. = x ft.

x = 4,960 ft. = 0.94 miles

or 12.4% of shoreline

Areas of loosestrife abundant

0.0 ft.

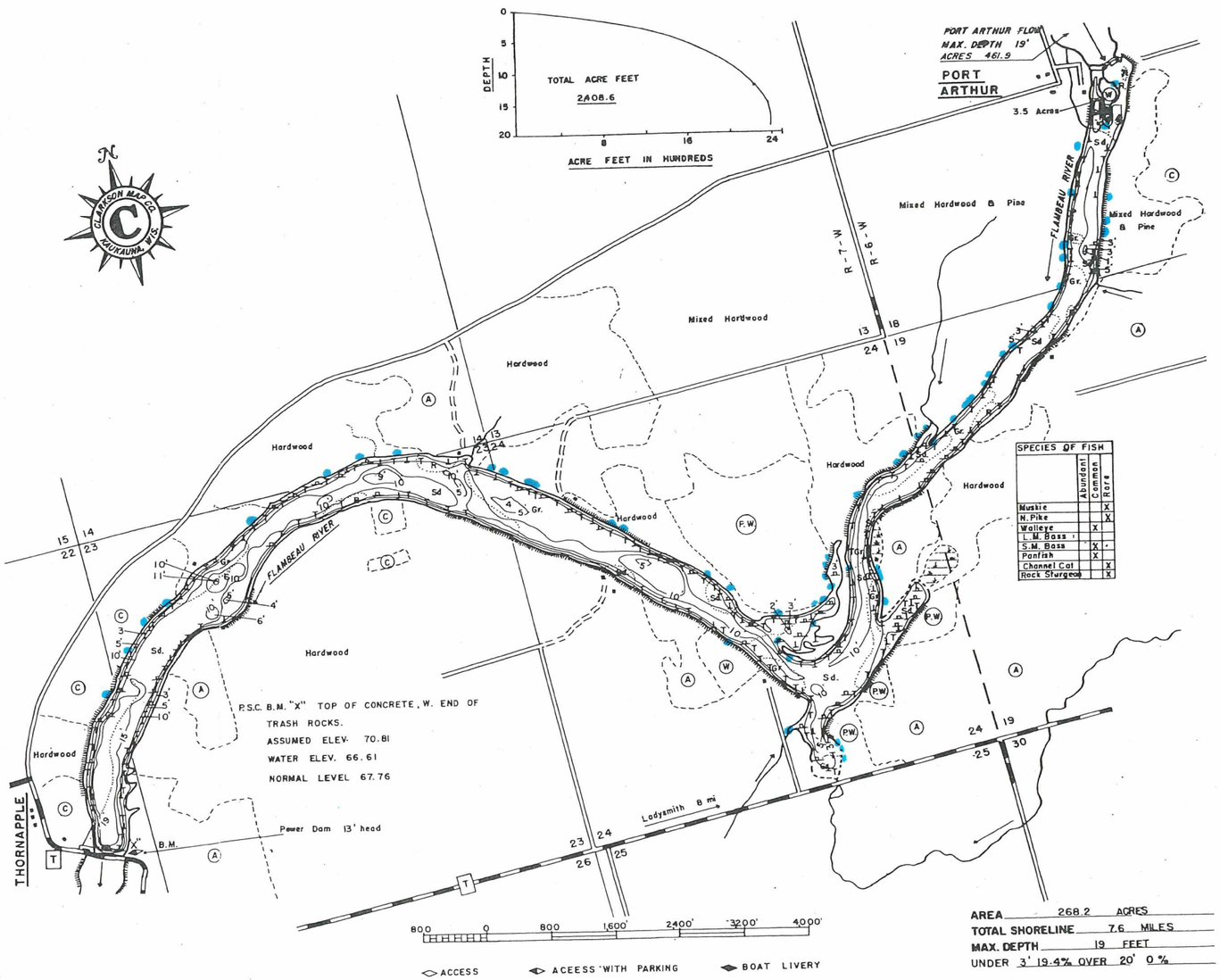
LEGEND

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 (W)
PASTURED (P)
CULTIVATED (C)
ENCROACH. SHORE
PERMANENT INLET
PERMANENT OUTLET
MARSH
PARTIALLY WOODED (PW)
CLEARED (C)
BENCH MARK B.M.

LAKE BOTTOM SYMBOLS

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



AREA 268.2 ACRES
TOTAL SHORELINE 7.6 MILES
MAX. DEPTH 19 FEET
UNDER 3' 19.4% OVER 20' 0 %

CLARKSON MAP CO.
724 DESNOYER STREET
Kaukauna, Wisconsin 54130

Document Content(s)