



Wisconsin Public Service Corporation

700 North Adams Street
P.O. Box 19001
Green Bay, WI 54307-9001

www.wisconsinpublicservice.com

December 22, 2015

FERC Project No. 1979
NATDAM No. WI00748

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

Dear Secretary Bose:

Alexander Hydroelectric Project
2015 Invasive Species Report

In accordance with the Order Approving the Invasive Species Monitoring Plan for the Alexander Hydroelectric Project (Project No. 1979), issued March 4, 2005, Wisconsin Public Service Corporation (WPS) is submitting the Purple Loosestrife, Eurasian Water Milfoil (EWM) and Zebra Mussel survey results. Additionally, in accordance with the Order Amending Purple Loosestrife Control Measures in the Approved Monitoring Plan issued on July 9, 2009, WPS revised the survey methods to include general plant vigor information in its Purple Loosestrife survey results.

Purple Loosestrife

In 2015, a survey for Purple Loosestrife was completed on July 14. The survey identified a total of thirty-one (31) Purple Loosestrife colonies. No colonies were cut or sprayed to avoid adverse impacts to existing or potential new populations of *Galerucella sp.* Beetles (beetles). Each colony was issued a number and mapped on the WPS GIS system. Plant vigor information was recorded for each colony. Beetle feeding was noted on fifteen (15) colonies. In 2015, approximately 7,000 beetles were released in five different locations to supplement existing beetle populations.

The 2015 Purple Loosestrife figures including colony locations, beetle release locations and plant vigor survey forms are included in Appendix 1. A spreadsheet summarizing the purple loosestrife survey data collected from 2009-2015 is located in Appendix 2.

WPS proposes to continue monitoring for Purple Loosestrife and release a minimum of 6,000 beetles annually. The beetles will be released in at least two separate locations. This is being proposed as a biological control measure to attempt to establish healthy beetle populations throughout the Project.

Eurasian Water Milfoil

Eurasian Water Milfoil (EWM) surveys are conducted annually. Samples were collected at three (3) sampling locations within the Project. The sampling locations were specifically chosen near boat landings. No EWM was identified during the survey. A summary of the 2015 EWM survey results is included in Appendix 3.

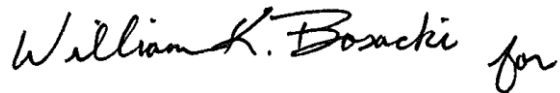
Zebra Mussels

Monthly inspection of the substrate samplers for the presence of Zebra Mussels was conducted during the months of April through September. Zebra Mussels were not found during any of the monthly inspections. A summary of the 2015 Zebra Mussel survey results is included in Appendix 4.

Copies of the 2015 Invasive Species Report were provided to the Wisconsin Department of Natural Resources (WDNR) and US Fish and Wildlife Service (FWS) on October 30, 2015. Copies of the Zebra Mussel survey results were provided to UW-Manitowoc on October 30, 2015. No comments regarding the reports were received from the resource agencies. Documentation of consultation with the resource agencies is located in Appendix 5.

If you have any questions regarding this letter, please contact James Nuthals at (920) 433-1460 or William Bosacki at (920) 433-4977.

Sincerely,



Gil Snyder
Power Generation Manager

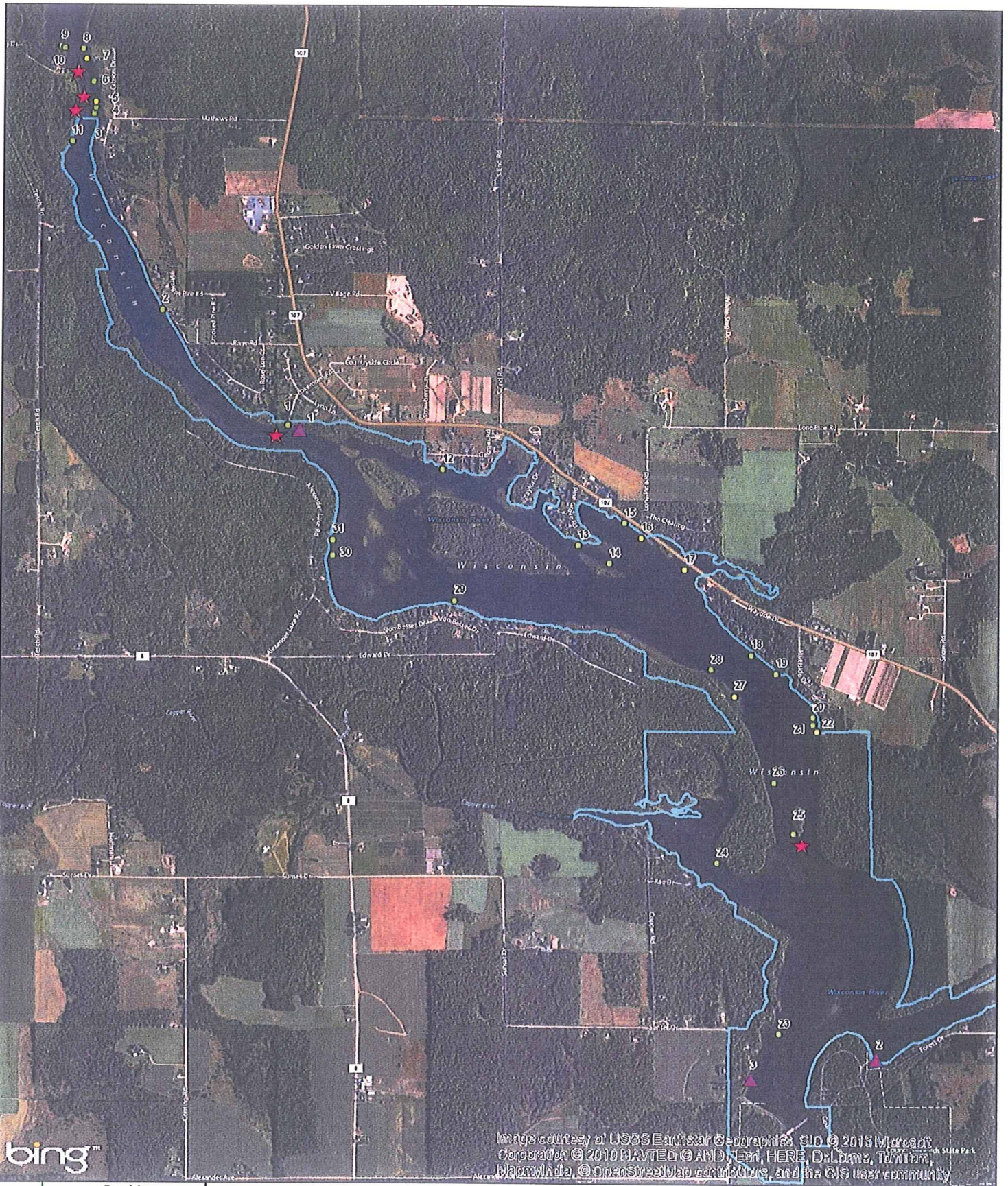
Dmj/rjv

Enc: Appendix 1, Appendix 2, Appendix 3, Appendix 4, Appendix 5

cc: Mr. William Bosacki, WPS - D2	Mr. Darrin M. Johnson, WPS - STP
Mr. Edward Brandt, WPS - CRI	Mr. Brad Menning, WPS - MERH
Mr. Todd Jastremski, We Energies	Mr. John Myers, WPS - D2
Ms. Joan Johaneck, WPS - D2	Mr. James Nuthals, WPS D-2

Appendix 1

Purple Loosestrife Figures and Survey Forms

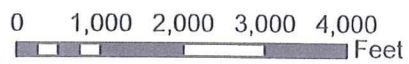


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2015 Alexander Flowage Invasive Plant Survey



Date: 10/30/2015

- ★ Beetle Release Site
 - ▲ Eurasian Water Milfoil
 - Project Boundary
 - Purple Loosestrife
 - 0-5 Plants
 - 6-50 Plants
 - >50 Plants
-

Purple Loosetrife Survey Form

Hydroelectric Project

Inspection Date

Alvord
2/14/2015

Colony Number	Colony Size S 0-5 M 6-50 L >50	General Plant Vigor			Total Plant Vigor 10-12=good 7-9=fair 4-6=poor 0-3=very poor	Notes	GPS Point
		Plant Height 4=>4ft 3=2-4ft 2=1-2 ft 1= <1 ft	Plant Flowering 4=100% of plants 3=51-99% of plants 2=26-50% of plants 1= <25% of plants	Beetle Feeding 4=0-25% feeding 3=26-50% feeding 2=51-75% feeding 1=76-100% feeding			
1	S	3	2	1	6	Poor	Release site 1000
2	S	4	4	4	12	good	
3	S	4	4	4	12	good	
4	S	3	4	1	8	fair	Release site 1000
5	M	4	4	4	12	good	Release site 2000
6	S	4	2	2	8	fair	
7	M	4	2	2	8	fair	Release site 2000
8	S	3	2	2	7	fair	Release site
9	S	2	4	4	10	good	
10	S	2	4	4	10	good	
11	S	4	4	4	12	good	

* 5 beetle release sites ~ 7000 beetles

25 Small colonies
6 Medium colonies
15 w/ Beetle feeding.

Purple Loosestrife Survey Form

Hydroelectric Project

Inspection Date

Alexander
7/14/2015

General Plant Vigor

Colony Number	Colony Size S 0-5 M 6-50 L >50	Plant Height 4=>4ft 3=2-4ft 2=1-2 ft 1= <1 ft	General Plant Vigor			Total Plant Vigor 10-12=good 7-9=fair 4-6=poor 0-3=very poor	Notes	GPS Point
			Plant Flowering 4=100% of plants 3=51-99% of plants 2=26-50% of plants 1= <25% of plants	Beetle Feeding 4=0-25% feeding 3=26-50% feeding 2=51-75% feeding 1=76-100% feeding				
12	S	2	4	4	10	good		
13	S	2	2	2	6	poor		
14	S	2	2	2	6	poor		
15	S	4	4	4	12	good		
16	M	2	4	4	10	good		
17	M	2	4	4	10	good		
18	S	4	4	4	12	good		
19	S	4	4	4	12	good		
20	S	4	4	4	12	good		
21	S	4	4	4	12	good		
22	M	4	4	2	10	poor		

Appendix 2

Purple Loosestrife Data 2009-2015

Alexander Hydroelectric Project

Year	Total Number of Colonies	Number of Small Colonies (0-5)	Number of Medium Colonies (6-50)	Number of Large Colonies (50+)	Number of Colonies with Beetle Feeding	Percentage of Total Colonies with Beetle Feeding	Beetles Released
2009	20	13	5	2	11	10%	10,000
2101	21	14	5	2	10	48%	2,000
2011	20	13	6	1	14	70%	3,000
2012	38	27	7	4	15	39%	2,000
2013	19	11	6	2	14	74%	3,000
2014	53	49	4	0	28	53%	3,000
2015	31	25	5	0	15	48%	7,000
7 year average	28.9	21.7	5.4	1.6	15.3	49%	

Appendix 3

Eurasian Water Milfoil Survey Results

2015 Alexander Milfoil Survey Results

Transect #	Water Depth			
	0-0.5 M	0.5M-1.5M	1.5M-3M	>3M
1A	0	NA	NA	NA
1B	0	0	NA	NA
1C	0	0	NA	NA
2A	0	NA	NA	NA
2B	0	0	NA	NA
2C	0	0	NA	NA
3A	0	NA	NA	NA
3B	0	0	NA	NA
3C	0	0	0	NA

NA=Not Applicable
 Abundance Scale 0=Absent, 1=Present, 2=Presence < 1/2, 3= Equal presence to other species
 4=Dominant Species Present, 5=Total infestation

Appendix 4

Zebra Mussel Survey Results

ZEBRA MUSSEL INSPECTION RESULTS
WESTERN HYDROELECTRIC PROJECTS

HYDRO NAME

- Grandfather Falls Merrill Tomahawk Otter Rapids
 Wausau Alexander Jersey Hat Rapids

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: 4-25-15
COMMENTS/RESULTS: 0

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: 5-9-15
COMMENTS/RESULTS: 0

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: 6-9-15
COMMENTS/RESULTS: 0

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: 7-4-15
COMMENTS/RESULTS: 0

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: 9-8-15
COMMENTS/RESULTS: 0

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: _____
COMMENTS/RESULTS: _____

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: _____
COMMENTS/RESULTS: _____

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: _____
COMMENTS/RESULTS: _____

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: _____
COMMENTS/RESULTS: _____

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: _____
COMMENTS/RESULTS: _____

Appendix 5

Documentation of Consultation



Wisconsin Public Service Corporation

700 North Adams Street
P.O. Box 19001
Green Bay, WI 54307-9001

www.wisconsinpublicservice.com

October 30, 2015

Phil Moy
UW Manitowoc
705 Viebann Street
Manitowoc, WI 54420

Dear Mr. Moy:

Alexander Hydroelectric Project (P-1979) Zebra Mussel Survey Results

As per the order approving the Invasive Species Monitoring Plan for the Alexander Hydroelectric Project issued March 4, 2005, Wisconsin Public Service Corporation (WPS) is submitting the survey results for zebra mussels.

Monthly inspections of substrate samplers for the presence of zebra mussels were conducted during the months of April through October. Zebra mussels were not found during any of the monthly inspections. A summary of the results has been included in Appendix A.

Please provide any comments you may have within 30 days. If you have any questions regarding this report, please contact Darrin Johnson at 715-345-7509,

Sincerely,

A handwritten signature in black ink, appearing to read 'Darrin Johnson', is written over a light blue horizontal line.

Darrin Johnson
Environmental Consultant

Appendix 1

Zebra Mussel Survey Results

ZEBRA MUSSEL INSPECTION RESULTS
WESTERN HYDROELECTRIC PROJECTS

HYDRO NAME

- Grandfather Falls Merrill Tomahawk Otter Rapids
 Wausau Alexander Jersey Hat Rapids

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: 4-25-15
COMMENTS/RESULTS: 0

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: 5-9-15
COMMENTS/RESULTS: 0

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: 6-9-15
COMMENTS/RESULTS: 0

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: 7-4-15
COMMENTS/RESULTS: 0

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: 9-8-15
COMMENTS/RESULTS: 0

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: _____
COMMENTS/RESULTS:

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: _____
COMMENTS/RESULTS:

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: _____
COMMENTS/RESULTS:

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: _____
COMMENTS/RESULTS:

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: _____
COMMENTS/RESULTS:



Wisconsin Public Service Corporation
700 North Adams Street
P.O. Box 19001
Green Bay, WI 54307-9001
www.wisconsinpublicservice.com

October 30, 2015

Ms. Cheryl Laatsch
WDNR-FERC Coordinator
101 S. Webster St.
GEF 2-7th Floor
Madison, WI 53707

Mr. Nick Utrup
USFWS Ecological Services Field Office
4101 American Blvd. East
Bloomington, MN 55425

Dear Ms. Laatsch and Mr. Utrup:

Alexander Hydroelectric Project (P-1979)
Invasive Species Report for the Alexander Hydroelectric Project

As per the Order Approving the Invasive Species Monitoring Plan for the Alexander Hydroelectric Project (Project No. 1979), issued March 4, 2005, Wisconsin Public Service Corporation (WPS) is submitting the purple loosestrife, Eurasian water milfoil (EWM) and zebra mussel survey results. Additionally, as per the Order amending Purple Loosestrife Control Measures in Approved Monitoring Plan issued on July 9, 2009, WPS revised the survey methods to include general plant vigor information in its purple loosestrife survey results.

Purple Loosestrife

In 2015, a survey for purple loosestrife was completed on July 14. The survey identified a total of thirty-one (31) purple loosestrife colonies. No colonies were cut or sprayed to avoid adverse impacts to existing or potential new populations of *Galerucella sp.* Beetles (beetles). Each colony was issued a number and mapped on the WPS GIS system. Plant vigor information was recorded for each colony. Beetle feeding was noted on fifteen (15) colonies. In 2015, approximately 7,000 beetles were released in five different locations to supplement existing beetle populations.

The 2015 purple loosestrife figures including colony locations, beetle release locations and plant vigor survey forms are included in Appendix A. A spreadsheet summarizing the purple loosestrife survey data collected from 2009-2015 is located in Appendix B.

WPS proposes to continue monitoring for purple loosestrife and releasing a minimum of 6000 beetles in at least two separate locations as a biological control measure in an attempt to establish healthy beetle populations throughout the Project.

Eurasian Water Milfoil

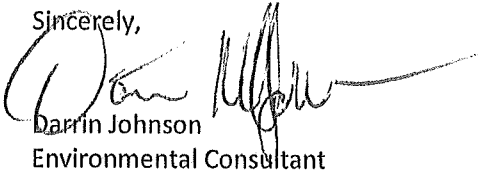
Eurasian water milfoil (EWM) surveys are conducted annually. Samples were collected at three sampling locations within the Project. The sample locations were specifically chosen near boat landings. No EWM was identified during the survey. A summary of the 2015 EWM survey results has been included in Appendix C.

Zebra Mussels

Monthly inspection of the substrate samplers for the presence of zebra mussels were conducted during the months of April through September. Zebra mussels were not found during any of the monthly inspections. A summary of 2015 zebra mussel survey results has been included in Appendix D.

Please provide any comments you may have regarding this report within 30 days. If you have any questions, feel free to contact me at 715-345-7509.

Sincerely,

A handwritten signature in black ink, appearing to read 'Darin Johnson', with a long horizontal flourish extending to the right.

Darin Johnson
Environmental Consultant

Appendix A

2015 Purple Loosestrife Figure and Survey Forms

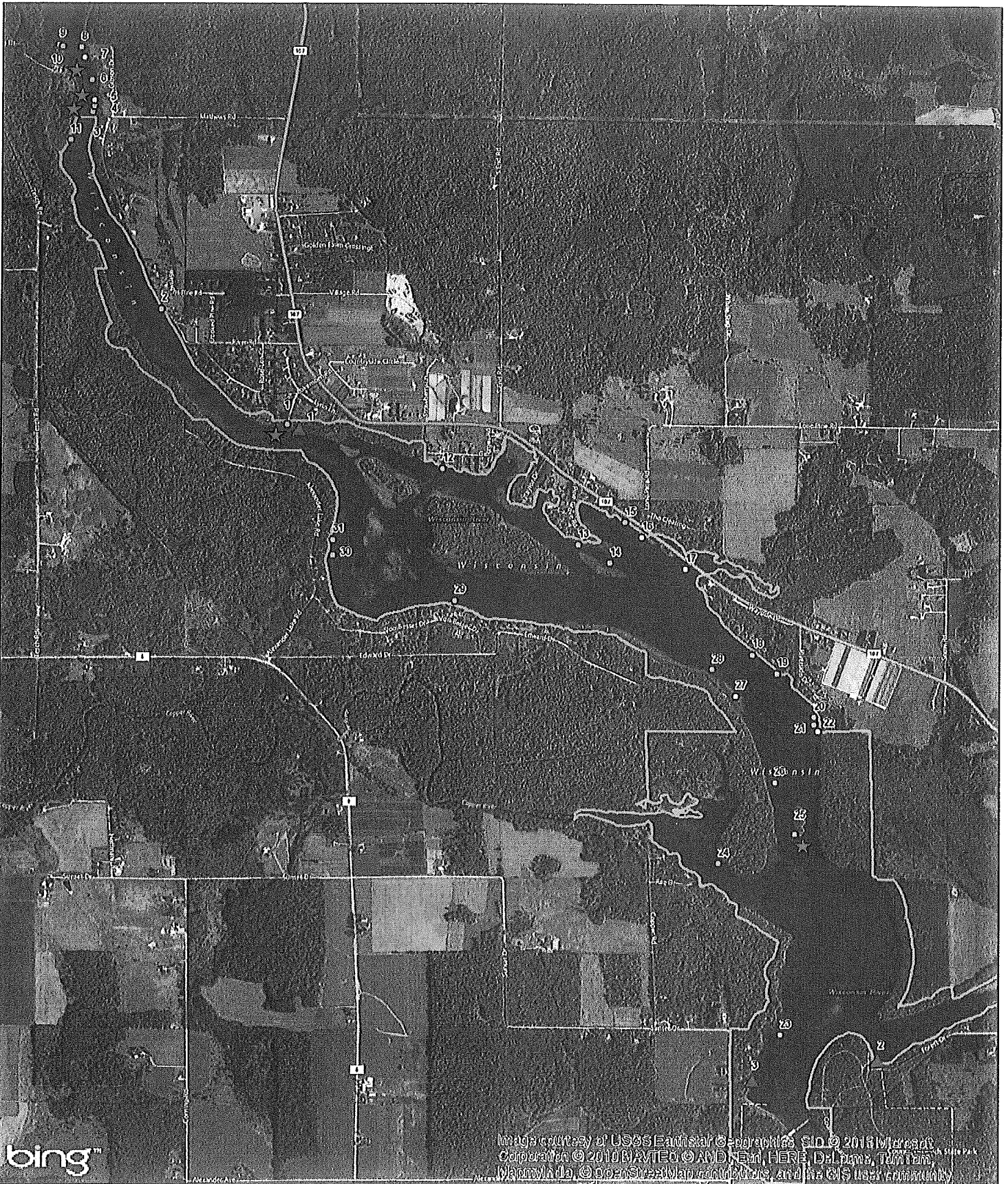


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Price	Oneida
Taylor	Lincoln
	Marathon

2015 Alexander Flowage Invasive Plant Survey



0 1,000 2,000 3,000 4,000 Feet

Date: 10/30/2015

- ★ Beetle Release Site
- ▲ Eurasian Water Milfoil
- Project Boundary
- Purple Loosestrife**
- 0-5 Plants
- 6-50 Plants
- >50 Plants



Purple Loosestrife Survey Form

Hydroelectric Project
Inspection Date

Arrowhead
2/14/2015

Colony Number	Colony Size S 0-5 M 6-50 L >50	General Plant Vigor			Total Plant Vigor 10-12=good 7-9=fair 4-6=poor 0-3=very poor	Notes	GPS Point
		Plant Height 4=>4ft 3=2-4ft 2=1-2 ft 1=<1 ft	Plant Flowering 4=100% of plants 3=51-99% of plants 2=26-50% of plants 1=<25% of plants	Beetle Feeding 4=0-25% feeding 3=26-50% feeding 2=51-75% feeding 1=76-100% feeding			
1	S	3	2	1	6	Poor	Release site 1000
2	S	4	4	4	12	good	
3	S	4	4	4	12	good	
4	S	3	4	1	8	fair	Release site 1000
5	M	4	4	4	12	good	Release site 2000
6	S	4	2	2	8	fair	
7	M	4	2	2	8	fair	Release site 2000
8	S	3	2	2	7	fair	1000
9	S	2	4	4	10	good	
10	S	2	4	4	10	good	
11	S	4	4	4	12	good	

* 5 beetle sites ~ 7000 beetles

25 Small colonies
6 Medium colonies
15 w/ beetle feeding.

Purple Loosestrife Survey Form

Hydroelectric Project
 Inspection Date

Alexander
7/14/2015

Colony Number	Colony Size S 0-5 M 6-50 L >50	General Plant Vigor			Total Plant Vigor 10-12=good 7-9=fair 4-6=poor 0-3=very poor	Notes	GPS Point
		Plant Height 4=>4ft 3=2-4ft 2=1-2 ft 1=<1 ft	Plant Flowering 4=100% of plants 3=51-99% of plants 2=26-50% of plants 1=<25% of plants	Beetle Feeding 4=0-25% feeding 3=26-50% feeding 2=51-75% feeding 1=76-100% feeding			
12	S	2	4	4	10	good	
13	S	2	2	2	6	poor	
14	S	2	2	2	6	poor	
15	S	4	4	4	12	good	
16	M	2	4	4	10	good	
17	M	2	4	4	10	good	
18	S	4	4	4	12	good	
19	S	4	4	4	12	good	
20	S	4	4	4	12	good	
21	S	4	4	4	12	good	
22	M	4	4	2	10	good	

Appendix B

Purple Loosestrife Data 2009-2015

Alexander Hydroelectric Project

Year	Total Number of Colonies	Number of Small Colonies (0-5)	Number of Medium Colonies (6-50)	Number of Large Colonies (50+)	Number of Colonies with Beetle Feeding	Percentage of Total Colonies with Beetle Feeding	Beetles Released
2009	20	13	5	2	11	10%	10,000
2101	21	14	5	2	10	48%	2,000
2011	20	13	6	1	14	70%	3,000
2012	38	27	7	4	15	39%	2,000
2013	19	11	6	2	14	74%	3,000
2014	53	49	4	0	28	53%	3,000
2015	31	25	5	0	15	48%	7,000

7 year average	28.9	21.7	5.4	1.6	15.3	49%
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Appendix C

2015 Eurasion Water Milfoil Survey Results

2015 Alexander Milfoil Survey Results

Transect #	Water Depth			
	0-0.5 M	0.5M-1.5M	1.5M-3M	>3M
1A	0	NA	NA	NA
1B	0	0	NA	NA
1C	0	0	NA	NA
2A	0	NA	NA	NA
2B	0	0	NA	NA
2C	0	0	NA	NA
3A	0	NA	NA	NA
3B	0	0	NA	NA
3C	0	0	0	NA

NA=Not Applicable
 Abundance Scale 0=Absent, 1=Present, 2=Presence < 1/2, 3= Equal presence to other species
 4=Dominant Species Present, 5=Total infestation

Appendix D

2015 Zebra Mussel Results

ZEBRA MUSSEL INSPECTION RESULTS
WESTERN HYDROELECTRIC PROJECTS

HYDRO NAME

- | | | | |
|--|---|-----------------------------------|---------------------------------------|
| <input type="checkbox"/> Grandfather Falls | <input type="checkbox"/> Merrill | <input type="checkbox"/> Tomahawk | <input type="checkbox"/> Otter Rapids |
| <input type="checkbox"/> Wausau | <input checked="" type="checkbox"/> Alexander | <input type="checkbox"/> Jersey | <input type="checkbox"/> Hat Rapids |

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: 4-25-15
COMMENTS/RESULTS: 0

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: 5-9-15
COMMENTS/RESULTS: 0

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: 6-9-15
COMMENTS/RESULTS: 0

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: 7-4-15
COMMENTS/RESULTS: 0

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: 9-8-15
COMMENTS/RESULTS: 0

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: _____
COMMENTS/RESULTS: _____

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: _____
COMMENTS/RESULTS: _____

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: _____
COMMENTS/RESULTS: _____

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: _____
COMMENTS/RESULTS: _____

INSPECTION TYPE: MONTHLY INSPECTION INSPECTION DURING DRAWDOWN
DATE: _____
COMMENTS/RESULTS: _____

No Comments Received from FWS

No Comments Received from WNDR

No Comments Received from UW Manitowoc