P-2720-060

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Designing the future

December 22, 2009

Ms. Kimberly D. Bose
Office of the Secretary
Federal Energy Regulatory Commission
Mail Code: DHAC, PJ-12.3
888 First Street, NE
Washington, DC 20426

Subject: *Exotic Species Monitoring Survey*
Sturgeon Falls Hydroelectric Project - FERC Project No. 2720
City of Norway, Michigan, Licensee

Dear Secretary Bose:

Article 406 of the Federal Energy Regulatory Commission (FERC) license for the Sturgeon Falls Hydroelectric Project requires the licensee (City of Norway) to monitor the presence of Eurasian watermilfoil and purple loosestrife in project waters, and to implement measures to control their spread. The City of Norway has contracted with EnviroScience of Stow, Ohio, to conduct a monitoring and control plan based on targeted release of milfoil weevils (*Euhrychiopsis licontei*). A report of the control program and associated reservoir surveys, titled *Progress Report for the Implementation of the Middfoil Process of Eurasian Watermilfoil Control and Aquatic Vegetation Monitoring for Sturgeon Falls, Sturgeon River, Michigan*, is enclosed. The report indicates that the presence of Eurasian Watermilfoil has been significantly reduced, and that no purple loosestrife was observed during surveys of project waters.

Copies of the draft report were sent to the Michigan Department of Natural Resources and to the U.S. Fish & Wildlife Service. Written comments approving the monitoring and control approach were provided by the Michigan Department of Natural Resources (Marquette Fisheries Station) by e-mail dated November 6, 2009. No comments have been received from the U.S. Fish & Wildlife Service. Documentation of consultation is provided as an attachment to the report. Copies of the final report have been sent to resource agencies by copy of this letter.

If you have any questions regarding this submission or require additional information, please contact me.

Sincerely,

MEAD & HUNT, Inc.

Linda D. Mitchell

Linda D. Mitchell

Enclosures

cc: Ms. Jessica Mistak – Michigan Department of Natural Resources Marquette Fisheries Station
Mr. Nick Utrup – U.S. Fish & Wildlife Green Bay Management Assistance Office
Mr. Joe Pickart – City of Norway

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#2720
1 of 8

Progress Report for the Implementation of the Middfoil® Process of Eurasian Watermilfoil Control and Aquatic Vegetation Monitoring for Sturgeon Falls, Sturgeon River, MI

Prepared for:

City of Norway, Power and Light

Prepared by:

EnviroScience, Inc.
3781 Darrow Rd.
Stow, OH 44224

September 23, 2009

1.0 Introduction

The City of Norway, Power and Light is required to manage the infestation and excessive growth of Eurasian watermilfoil *(Myriophyllum spicatum)* (EWM) and Purple Loosestrife (*Lythrum salicaria*) to comply with their FERC (Federal Energy Regulatory Commission) license. Milfoil weevils (*Euhrychiopsis lecontei*) have the potential to provide an environmentally safe alternative to traditional milfoil control techniques (MiddFoil®) such as harvesting and herbicides. These traditional control methods are expensive, do not selectively target milfoil, and must be used repeatedly. In contrast, weevils provide a sustainable and extremely species-specific control of EWM. The milfoil weevil is being investigated for its potential for controlling EWM in the Sturgeon Falls Hydroelectric Project area.

2.0 Overall Project Description

The City of Norway, Power and Light began a MiddFoil® program in the summer of 2008 stocking approximately 10,000 weevils in one site within the Sturgeon River. A second stocking event occurred on June 25, 2009, stocking 22,000 (12,000 contracted, 10,000 extra) weevils in two new locations. The follow up survey occurred seven weeks later on August 17, 2009.

3.0 2008 Results Summary

The MiddFoil® program at Sturgeon Falls had a successful first year. The initial survey revealed the presence of an indigenous population of milfoil weevils, which indicated that the river had not only the necessary requirements to sustain a weevil population within the water body, but also suitable shoreline habitat for over-wintering. Approximately 10,000 weevil eggs and larvae were stocked in one continuous dense milfoil bed along the southern shore, southeast of the boat launch of the Sturgeon River on June 18, 2008. In addition to the EWM, several other native plant species were observed. These species include: Largeleaf pondweed (*Potamogetan amplifolious*), Eel grass/ Wild Celery (*Vallisneria americana*), Elodea (*Elodea canadensis*), Northern watermilfoil (*Myriophyllum sibiricum)*, Coontail (*Ceratophyllum demersum*), Illinois pondweed

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(*Potamogetan illinoensis*), Flatstem pondweed (*Potamogetan zosteriformis*), White-stem pondweed (*Potamogeton praelongus*), Small pondweed (*Potamogeton pusillus*), Clasping-leaf pondweed (*Potamogeton richardsonii*), Sago pondweed (*Potamogeon pectinatus*), Buttercup (*Ranunculus* sp.), Mare's tail (*Hippuris* sp.) and Lilies (*Nuphar* sp.).

By the time of the follow up survey performed on August 12, 2008, laboratory examination revealed an extraordinary increase in weevil life stages on the 30 stems collected from the high value of 13 early in the season to 68 weevil life stages at the time of the follow-up survey (App. A, Table 1). It was obvious that this high weevil population had a dramatic impact on the EWM, decreasing the density by more than half per square meter by the August survey (App. A, Table 2).

4.0 2009 Results

Initial Survey

On June 25, 2009, an EnviroScience field team established two new stocking sites, S2 and S3. Site 2 is located close to the original S1 (northwest) but closer to the channel of the river. The third stocking site is located at the mouth of Hamilton Creek. Biologists conducted an initial survey of all three sites (Figure 1) prior to stocking weevils.

Qualitative measurements included visual analysis of the milfoil plants, presence of weevils and weevil-induced damage, and native plant species present in the areas. The overall density of EWM at S1 was sparse, weevil adults, eggs and larvae were observed, and damage from weevil larvae was seen on about 60% of the plants. The same species noted from the 2008 surveys were noted again in 2009 with the exception of two new species being identified; Thinleaf pondweed (Potamogeton capillaceus) and Water marigold (*Bidens Beckii*). The

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Figure 1. Sturgeon Falls Hydroelectric Project.

overall plant community compromised 90% native species with Elodea, lilies and Flat-stem pondweed being the most dense.

The overall density of EWM at the new site, S2, was ranked as dense and just below the surface of the water. Adult weevils were observed and less than 5% of the plants exhibited weevil-induced damage. The EWM was the dominant plant and comprised about 95% of the aquatic plant community.

At the mouth of Hamilton Creek, S3, the EWM was moderately dense with 15% at the surface and flowering. Weevil adults and larval damage was seen on 20% of the plants. A few of the native species from the other sites were seen which included: Common bladderwort (*Utricularia vulgaris*), Northern watermilfoil, Flat-stem pondweed, Elodea and Buttercup.

For quantitative assessment of weevils, three transects of 10 EWM stems, for a total of 30 stems, were taken from all three sites. The transect samples were brought to the lab for analysis. Multiple weevil life stages were found in all three sites (App. A,Table 1).

Plant density was determined by collecting all plants within a 0.09 m^2 PVC quadrat. The EWM plants were counted and converted to number of plants per square meter (App. A,Table 2). These data serve as an indicator of increases or decreases in EWM density in future survey years.

After the initial survey was complete, 12,000 weevils were stocked in S2 and 10,000 weevils were stocked in S3.

Follow up Survey

On August 17, 2009, follow-up surveys for sites S1, S2, S3, were conducted. The once large bed of milfoil in S1 found in 2008 had decreased to sparse, sporadic stems. The native macrophytes were dominating the area. Weevil

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damage was observed on what stems were present in the field. Despite the sparseness of the milfoil, the laboratory analyses of 30 transect stems revealed a high weevil count (App. A,Table 1). The EWM density at the start of the program was 103.33 stems/meter^2 down to 1.76 stems/meter^2 by the 2009 follow-up survey, a 98% decrease (App. A,Table 2).

The overall density of EWM in S2 was sparse to moderate and the plants were still below the surface as seen during the initial survey. The plants were denser closer to the river channel. A lot of the plants were lying on the bottom, covered in algae with new healthy meristems starting to grow. However, weevil damage was observed on the new growing tips. Water marigold, flatstem pondweed and lilies were very dense in this area. Laboratory analyses of 30 transect stems revealed weevil life stages (App. A,Table 1). EWM density was 30.33 stems/meter^2, down from 100.00 stems/meter^2 in the initial survey (App. A,Table 2).

The overall density of EWM in S3 was sparse. Although the density data did not decrease the composition of the bed changed drastically (App A, Table 2). The native aquatic plants made up 75% of the species present. Weevil damage was observed on 50% of the EWM plants and 10% on Northern watermilfoil plants. Laboratory analyses of 30 transect stems revealed three weevil life stages present, a large decrease from the initial survey (App A,Table 1).

5.0 Discussion

The native plant community was seen to compete with the EWM and dominate all three weevil locations of the Sturgeon River by the time of the follow up survey. The most dramatic decrease of EWM was seen in S1. As the weevils begin to control the beds of EWM, they migrate to adjacent beds in search of better quality plants. However, due to the aggressive nature of this plant it is expected to resurge in these areas again. It might take a season or two for the

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weevil population to grow in large quantities, as seen in S1, to bring it back under control. This oscillation between predator and prey is common. It is the recommendation for the City of Norway, Power and Light to continue forward with this positive trend of the MiddFoil® program for the Sturgeon Falls Hydroelectric Project stocking beds of EWM closer to the Menominee River.

6.0 AVAS Plant Survey

Qualitative vegetation sampling was performed on August 17, 2009, using the Michigan DEQ guidance contained in Standard Procedures for Surveying Aquatic Plants. This method involves performing visual and rake tow surveys along sections of the littoral zone. For the Sturgeon Falls Project area, the shoreline of the Menominee and Sturgeon Rivers was divided into 40 sections (Figure 1). In each of these zones, the presence and relative density of each aquatic plant species was determined, and the information was recorded on the Standard Aquatic Vegetation Assessment Site Species Density Sheet (AVAS) developed by the State of Michigan (App. B) On the AVAS density sheets the approximate percent cover was reported rather than narrative ranges. On the summary sheet, however, these percentages were translated into cover codes A, B, C, and D to describe the approximate coverage of each plant within the map area, as described in the following table.

Cover Code	Approximate Cover Range
A	1-2%
B	3-20%
C	21-60%
D	61-100%

Visual and rake surveys were performed at each site until no new species were encountered and the biologist conducting the survey was comfortable that

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adequate information had been obtained to estimate the density of each species encountered. Species of questionable identity were placed in a plastic bag, appropriately labeled and identified using taxonomic keys at the completion of the survey. The boundary of each AVAS was determined using differential GPS technology.

7.0 Survey Findings

The August survey identified seventeen different aquatic plant species. One exotic species was found, Eurasian watermilfoil. Although Eurasian watermilfoil was found in 39 of the 40 AVAS locations, making up 13.7 percent cumulative cover, it was not the dominant species (App B). The majority of the locations were given a score of A (1-2%) finding less than 10 stems of EWM. The heaviest infestation considered moderate to dense was in AVAS locations 24-28, south of the island on the Menominee River. According to the calculated cumulative cover (CC) value, the Sturgeon Falls project area is dominated by four native species - Wild Celery (31.1 CC), Flatstem pondweed (20.4 CC), Elodea (20.4 CC) and Coontail (18.6 CC) (App. B,Table 3). Several other submergent macrophytes were found less frequently such as water marigold, northern watermilfoil, lilies and various other pondweed species. Purple Loosestrife was not identified within the boundary waters of the Sturgeon Falls project area.

8.0 Discussion

A different vegetation surveying technique, an AVAS survey, was used in 2009 to measure the exotic species occurrence in the Sturgeon Falls Project area than what has been used in the past. This survey gives a cumulative cover percentage of every species identified within the survey area. Eurasian watermilfoil was found to be sparsely distributed throughout most of the project area with only being moderate to dense in a few areas. To give a rough estimate of actual acreage; the project area consists of roughly 369 surface acres of water of which 141 acres of survey area were identified with EWM. An estimate of the

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actual percentage of EWM in each area totaled 16.6 acres. Although no formal weevil population study has been performed of the whole project area, it could be speculated that the milfoil weevil could be a contributing factor to the decrease of EWM over the last few years.

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Appendix A

2008 and 2009 Progress Report Data Tables for Sturgeon River

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Table 1. Summary Data from Site Transect Analysis of EWM During 2008 and 2009 Initial and Follow-up Surveys of Sturgeon River

Site #	Parameter Measured	Initial Survey (June 18, 2008)	Follow-up Survey (August 12, 2008)	Initial Survey (June 25, 2009)	Follow-up Survey (August 17, 2009)
S1	Total weevils	13.00	68.00	89.00	25.00
	Total stems	30.00	30.00	29.00	30.00
	Average weevils/stem	**0.43**	**2.27**	**3.07**	**0.83**
	Avg. meristems/stem	2.00	1.90	2.00	2.17
S2	Total weevils	n/a	n/a	21.00	20.00
	Total stems	n/a	n/a	29.00	30.00
	Average weevils/stem	n/a	n/a	**0.72**	**0.67**
	Avg. meristems/stem	n/a	n/a	1.59	1.50
S3	Total weevils	n/a	n/a	79.00	3.00
	Total stems	n/a	n/a	30.00	30.00
	Average weevils/stem	n/a	n/a	**2.63**	**0.10**
	Avg. meristems/stem	n/a	n/a	1.59	2.27

n/a = site not established until 2009

Table 2. Density Data of Eurasian Watermilfoil Collected During 2008 and 2009 Initial and Follow-up Surveys of Sturgeon River

Site	June 18, 2008 Density (stem /m^2)	August 12, 2008 Density (stem /m^2)	June 25, 2009 Density (stem /m^2)	August 17, 2009 Density (stem/m^2)
S1	103.33	33..33	9.22	1.76
S2	n/a	n/a	100.00	33..33
S3	n/a	n/a	66.67	70.00

Appendix B

Standard Aquatic Vegetation Assessment Site Species Density Sheet, Summary Sheet and Table

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Lake Name:Sturgeon River County:Dickinson Co. Surveyor Name:Cortney Marquette Survey Date:August 17, 2009

Standard Aquatic Vegetation Assessment Site Species Density Shee

Code No.	Plant Name	Aquatic Vegetation Assessment Site Number NO. 1	NO. 2	NO. 3	NO. 4	NO. 5	NO. 6	NO. 7	NO. 8	Code No.	Plant Name	Aquatic Vegetation Assessment Site Number NO. 9	NO. 10	NO. 11	NO. 12	NO. 13	NO. 14	NO. 15	NO. 16
1	Eurasian watermilfoil	a	a	a	a	a	b	a	b	1	Eurasian watermilfoil	b	a	a	a	a	a	a	c
2	Curly leaf pondweed									2	Curly leaf pondweed								
3	Chara									3	Chara								
4	Thin leaf pondweed					a	a	a		4	Thin leaf pondweed								
5	Flat stem pondweed					b	c		b	5	Flat stem pondweed	b		a		d	c	c	a
6	Robbins pondweed									6	Robbins pondweed								
7	Variable pondweed									7	Variable pondweed								
8	White stem pondweed									8	White stem pondweed								
9	Richardsons pondweed									9	Richardsons pondweed		a				c	a	b
10	Illinois pondweed									10	Illinois pondweed								
11	Large leaf pondweed									11	Large leaf pondweed								
12	American pondweed									12	American pondweed								
13	Floating leaf pondweed							a		13	Floating leaf pondweed								
14	Water stargrass									14	Water stargrass								
15	Wild Celery		c		b	b				15	Wild Celery	c	c	a	b	a	c	b	d
16	Arrowhead (submergent)									16	Arrowhead (submergent)								
17	Native milfoil									17	Native milfoil								
18	Whorled watermilfoil									18	Whorled watermilfoil								
19	Various leaf watermilfoil									19	Various leaf watermilfoil								
20	Coontail		c		c	d	d	b	c	20	Coontail	d	a	b	c	c	c	b	c
21	Elodea	d		c	c	b	b	d	d	21	Elodea	c	d	d	c	a			
22	Bladderwort									22	Bladderwort								
23	Bladderwort (mini)									23	Bladderwort (mini)								
24	Buttercup			d						24	Buttercup								
25	Najas spp.									25	Najas spp.								
26	Brittle naiad									26	Brittle naiad								
27	Sago pondweed									27	Sago pondweed					a			
28	Water merigold									28	Water merigold								
29										29									
30	White waterlily									30	White waterlily								
31	Yellow waterlily									31	Yellow waterlily								a
32	Watershield									32	Watershield								
33	Small duckweed									33	Small duckweed								
34	Great duckweed									34	Great duckweed								
35	Watermeal									35	Watermeal								
36	Arrowhead									36	Arrowhead								
37	Pickerelweed									37	Pickerelweed								
38	Arrow arum									38	Arrow arum								
39	Cattail									39	Cattail								
40	Bulrush									40	Bulrush								
41	Iris									41	Iris								
42	Swamp Loosestrife									42	Swamp Loosestrife								
43	Purple Loosestrife									43	Purple Loosestrife								
44	Rush spp	c								44									
45										45									

Lake Name:Sturgeon River County:Dickinson Co. Surveyor Name:Corrine Marquette Survey Date:August 17, 2009

Standard Aquatic Vegetation Assessment Site Species Density Shee

Code No.	Plant Name	Aquatic Vegetation Assessment Site Number NO. 17	NO. 18	NO. 19	NO. 20	NO. 21	NO. 22	NO. 23	NO. 24
1	Eurasian watermilfoil	a	a		a	b	b	b	b
2	Curly leaf pondweed								
3	Chara								
4	Thin leaf pondweed			a		a	a		
5	Flat stem pondweed	a		c	a	a	a		c
6	Robbins pondweed								
7	Variable pondweed								
8	White stem pondweed	a							
9	Richardsons pondweed	b	b	c	b	a	a	c	a
10	Illinois pondweed								
11	Large leaf pondweed								a
12	American pondweed								
13	Floating leaf pondweed								
14	Water stargrass								
15	Wild Celery	d	d	d	d	d	d	d	c
16	Arrowhead (submergent)								
17	Native milfoil					a	a	a	
18	Whorled watermilfoil								
19	Various leaf watermilfoil								
20	Coontail			b	b				b
21	Elodea		b	b					a
22	Bladderwort								
23	Bladderwort (mini)								
24	Buttercup								
25	Najas spp.								
26	Brittle naiad								
27	Sago pondweed			a				a	
28	Water merigold								
29									
30	White waterlily								
31	Yellow waterlily								
32	Watershield								
33	Small duckweed								
34	Great duckweed								
35	Watermeal								
36	Arrowhead								
37	Pickerelweed								
38	Arrow arum								
39	Cattail								
40	Bulrush								
41	Iris								
42	Swamp Loosestrife								
43	Purple Loosestrife								
44									
45									

Code No.	Plant Name	Aquatic Vegetation Assessment Site Number NO. 25	NO. 26	NO. 27	NO. 28	NO. 29	NO. 30	NO. 31	NO. 32
1	Eurasian watermilfoil	c	c	d	b	c	b	a	b
2	Curly leaf pondweed								
3	Chara								
4	Thin leaf pondweed								
5	Flat stem pondweed	c	b		c	c	c	d	d
6	Robbins pondweed								
7	Variable pondweed								
8	White stem pondweed								
9	Richardsons pondweed		a	a		a			b
10	Illinois pondweed								
11	Large leaf pondweed	b	b	b			b		a
12	American pondweed								
13	Floating leaf pondweed			a					
14	Water stargrass								
15	Wild Celery	b	c	c	c	d		b	d
16	Arrowhead (submergent)								
17	Native milfoil								
18	Whorled watermilfoil								
19	Various leaf watermilfoil								
20	Coontail	a	a	a	b	b	c	c	c
21	Elodea								a
22	Bladderwort							a	a
23	Bladderwort (mini)								
24	Buttercup								
25	Najas spp.								
26	Brittle naiad								
27	Sago pondweed		a	a			b		
28	Water merigold								b
29									
30	White waterlily				a				
31	Yellow waterlily	b	b				b	b	a
32	Watershield				a				
33	Small duckweed								
34	Great duckweed								
35	Watermeal								
36	Arrowhead								
37	Pickerelweed								
38	Arrow arum								
39	Cattail								
40	Bulrush								
41	Iris								
42	Swamp Loosestrife								
43	Purple Loosestrife								
44									
45									

Lake Name:Sturgeon River County:Dickinson Co. Surveyor Name:Cortney Marquette Survey Date:August 17, 2009

Standard Aquatic Vegetation Assessment Site Species Density Shee

Code No.	Plant Name	Aquatic Vegetation Assessment Site Number NO. 33	NO. 34	NO. 35	NO. 36	NO. 37	NO. 38	NO. 39	NO. 40	Code No.	Plant Name	Aquatic Vegetation Assessment Site Number NO. 41	NO. 42	NO. 43	NO. 44	NO. 45	NO. 46	NO. 47	NO. 48
1	Eurasian watermilfoil	d	c	b	a	a	c	b	b	1	Eurasian watermilfoil								
2	Curly leaf pondweed									2	Curly leaf pondweed								
3	Chara						b	a		3	Chara								
4	Thin leaf pondweed			c			b	a		4	Thin leaf pondweed								
5	Flat stem pondweed	b	c		a	c		d	c	5	Flat stem pondweed								
6	Robbins pondweed									6	Robbins pondweed								
7	Variable pondweed									7	Variable pondweed								
8	White stem pondweed					b				8	White stem pondweed								
9	Richardsons pondweed	a	b		b	b	a			9	Richardsons pondweed								
10	Illinois pondweed									10	Illinois pondweed								
11	Large leaf pondweed			a	b	b		a	a	11	Large leaf pondweed								
12	American pondweed									12	American pondweed								
13	Floating leaf pondweed				a					13	Floating leaf pondweed								
14	Water stargrass									14	Water stargrass								
15	Wild Celery	b		c		b		a		15	Wild Celery								
16	Arrowhead (submergent)									16	Arrowhead (submergent)								
17	Native milfoil			b	c	b	b	a	b	17	Native milfoil								
18	Whorled watermilfoil									18	Whorled watermilfoil								
19	Various leaf watermilfoil									19	Various leaf watermilfoil								
20	Coontail	a						b	b	20	Coontail								
21	Elodea	a		b	a	c	c	c	d	21	Elodea								
22	Bladderwort			a						22	Bladderwort								
23	Bladderwort (mini)									23	Bladderwort (mini)								
24	Buttercup								a	24	Buttercup								
25	Najas spp.									25	Najas spp.								
26	Brittle naiad									26	Brittle naiad								
27	Sago pondweed			a		a	b		b	27	Sago pondweed								
28	Water merigold			b	b	d	c	d	c	28									
29										29									
30	White waterlily									30	White waterlily								
31	Yellow waterlily		b	b	c	c	b	b		31	Yellow waterlily								
32	Watershield							a		32	Watershield								
33	Small duckweed									33	Small duckweed								
34	Great duckweed									34	Great duckweed								
35	Watermeal									35	Watermeal								
36	Arrowhead									36	Arrowhead								
37	Pickerelweed									37	Pickerelweed								
38	Arrow arum									38	Arrow arum								
39	Cattail									39	Cattail								
40	Bulrush									40	Bulrush								
41	Iris									41	Iris								
42	Swamp Loosestrife									42	Swamp Loosestrife								
43	Purple Loosestrife									43	Purple Loosestrife								
44										44									
45										45									

LAKE Sturgeon River | COUNTY- Dickinson Co | SURVEY DATE: August 17, 2005

Standard Aquatic Vegetation Summary Sheet

SURVEY BY: Cortney Marquette

		Total number of AVAS's for each Density Category				Calculations				Sum of Previous Four Columns	Total Number of AVAS's	Quotient of Column 9 divided by Column 10		
		A	B	C	D	Category A x 1	Category B x 10	Category C x 40	Category D x 80					
Code No	Plant Name	1	2	3	4	5	6	7	8	9	10	11	Code No	Plant Name
1	Eurasian milfoi					18	130	240	160	548	40	13.7	1	Eurasian milfoi
2	Curly leaf pondweed					0	0	0	0	0	40	0.0	2	Curly leaf pondweed
3	Chara					1	10	0	0	11	40	0.3	3	Chara
4	Thinleaf pondweed					7	10	40	0	57	40	1.4	4	Thinleaf pondweed
5	Flatstem pondweed					7	50	440	320	817	40	20.4	5	Flatstem pondweed
6	Robbins pondweed					0	0	0	0	0	40	0.0	6	Robbins pondweed
7	Variable pondweed					0	0	0	0	0	40	0.0	7	Variable pondweed
8	Whitestem pondweed					1	10	0	0	11	40	0.3	8	Whitestem pondweed
9	Richardsons pondweed					10	80	120	0	210	40	5.3	9	Richardsons pondweed
10	Illinois pondweed					0	0	0	0	0	40	0.0	10	Illinois pondweed
11	Large leaf pondweed					5	60	0	0	65	40	1.6	11	Large leaf pondweed
12	American pondweed					0	0	0	0	0	40	0.0	12	American pondweed
13	Floating leaf pondweed					3	0	0	0	3	40	0.1	13	Floating leaf pondweed
14	Water stargrass					0	0	0	0	0	40	0.0	14	Water stargrass
15	Wild Celery					3	80	360	800	1243	40	31.1	15	Wild Celery
16	Sagitteria					0	0	0	0	0	40	0.0	16	Sagitteria
17	Northern milfoi					4	40	40	0	84	40	2.1	17	Northern milfoi
18	M. verticillatum					0	0	0	0	0	40	0.0	18	M. verticillatum
19	M. herterophyllum					0	0	0	0	0	40	0.0	19	M. herterophyllum
20	Coontail					5	100	400	240	745	40	18.6	20	Coontail
21	Elodea					5	50	280	480	815	40	20.4	21	Elodea
22	Utricularia spp.					3	0	0	0	3	40	0.1	22	Utricularia spp.
23	Bladderwort-min					0	0	0	0	0	40	0.0	23	Bladderwort-min
24	Buttercup					1	0	0	80	81	40	2.0	24	Buttercup
25	Najas spp.					0	0	0	0	0	40	0.0	25	Najas spp.
26	Brittle naiad					0	0	0	0	0	40	0.0	26	Brittle naiad
27	Sago pondweed					7	30	0	0	37	40	0.9	27	Sago pondweed
28	Water Merigold					0	30	80	160	270	40	6.8	28	Water Merigold
29						0	0	0	0	0	40	0.0	29	
30	Nymphaea					1	0	0	0	1	40	0.0	30	Nymphea
31	Nuphar					2	80	80	0	162	40	4.1	31	Nuphar
32	Brasenia					2	0	0	0	2	40	0.1	32	Brasenia
33	Lemna minor					0	0	0	0	0	40	0.0	33	Lemna minor
34	Spirodella					0	0	0	0	0	40	0.0	34	Spirodella
35	Watermeal					0	0	0	0	0	40	0.0	35	Watermeal
36	Arrowhead					0	0	0	0	0	40	0.0	36	Arrowhead
37	Pickerelweed					0	0	0	0	0	40	0.0	37	Pickerelweed
38	Arrow Arum					0	0	0	0	0	40	0.0	38	Arrow Arum
39	Cattails					0	0	0	0	0	40	0.0	39	Cattails
40	Bulrushes					0	0	0	0	0	40	0.0	40	Bulrushes
41	Iris					0	0	0	0	0	40	0.0	41	Iris
42	Swamp Loosestrife					0	0	0	0	0	40	0.0	42	Swamp Loosestrife
43	Purple Loosestrife					0	0	0	0	0	40	0.0	43	Purple Loosestrife
44	Rush spp					0	0	40	0	40	40	1.0	44	Rush spp.
45						0	0	0	0	0	40	0.0	45	

Table 3. Aquatic Plant Species Encountered in Sturgeon Falls

Common Name	Scientific Name	Cumulative Cover
1. Eurasian watermilfoil	*Myriophyllum spicatum*	13.7
3. Chara	*Chara sp.*	0.3
4. Thinleaf pondweed	*Potamogeton capillaceus*	1.4
5. White stem pondweed	*Potamogeton praelongus*	0.3
6. Claspingleaf pondweed	*Potamogeton richardsonii*	5.3
6. Flatstem pondweed	*Potamogeton zosteriformis*	20.4
7. Large leaf pondweed	*Potamogeton amplifolius*	1.6
8. Sago pondweed	*Potamogeton pectinatus*	0.9
9. Floatingleaf pondweed	*Potamogeton natans*	0.1
10. Coontail	*Ceratophyllum demersum*	18.6
11. Elodea	*Elodea Canadensis*	20.4
12. Northern watermilfoil	*Myriophyllum spicatum*	2.1
13. Wild Celery	*Vallisneria Americana*	31.1
14. Waterlily	*Nuphar sp.*	4.1
15. Watershield	*Brasenia sp.*	0.1
16. Water marigold	*Bidens Beckii*	2.6
17. Buttercup	*Ranunculus longirostris*	2.0
18. Bladderwort	*Utricularia vulgaris*	0.1

Attachment

Documentation of Consultation

MEAD HUNT

Designing the future

October 15, 2009

Ms. Jessica Mistak
Senior Fisheries Biologist
Marquette Fisheries Station
Michigan Department of Natural Resources
484 Cherry Creek Road
Marquette, MI 49855

Subject: Sturgeon Falls Hydroelectric Project – FERC Project No. 2720
City of Norway, Michigan, Licensee
Exotic Species Monitoring

Dear Ms. Mistak:

Article 406 of the Federal Energy Regulatory Commission (FERC) license for the Sturgeon Falls Hydroelectric Project requires the licensee to monitor the presence of Eurasian watermilfoil and purple loosestrife in project waters, and to implement measures to control their spread.

The City of Norway has contracted with EnviroScience, Inc. of Stow, Ohio, to conduct a monitoring and control plan based on targeted release of milfoil weevils (*Euhrychiopsis lecontei*). A report of the control program and associated reservoir surveys, titled *Progress Report for the Implementation of the Middfoil Process of Eurasian Watermilfoil Control and Aquatic Vegetation Monitoring for Sturgeon Falls, Sturgeon River, Michigan,* is enclosed for your review and comment. Please send any comments on this report to my attention within 30 days of the date of this letter. The City plans to submit this report in accordance with provisions of its Invasive Plant Monitoring Plan in November of this year.

Your attention to this matter is appreciated. Should you have questions, please do not hesitate to contact me or Utilities Superintendent Joe Pickart at (906) 563-9641.

Sincerely,

MEAD & HUNT, Inc.

Linda D. Mitchell
Compliance Specialist

Enclosure

Mead & Hunt Inc. 6501 Watts Road Madison Wisconsin 53719-2700
608 273 6380 fax: 608 273 6391 www.meadhunt.com

MEAD HUNT

Designing the future

October 15, 2009

Ms. Louise Clemency
U.S. Fish & Wildlife Service
26661 Scott Tower Drive
New Franken, WI 54229

Subject: Sturgeon Falls Hydroelectric Project – FERC Project No. 2720
City of Norway, Michigan, Licensee
Exotic Species Monitoring

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Sincerely,

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Linda D. Mitchell

Linda D. Mitchell
Compliance Specialist

Enclosure

Mead & Hunt Inc. 6501 Watts Road Madison Wisconsin 53719-2700
608 273 6380 fax: 608 273 6391 www.meadhunt.com

Linda Mitchell

From: Jessica Mistak [mistakj@michigan.gov]
Sent: Friday, November 06, 2009 9:48 AM
To: Linda Mitchell
Cc: Nick_Utrup@fws.gov; William Ziegler; dpl@norwaymi.com
Subject: Sturgeon Falls Invasive Species Monitoring

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Linda,
The Michigan DNR has reviewed the September 23, 2009 Sturgeon Falls Progress Report for Implementation of the Middfoil Process of Eurasian Watermilfoil Control and Aquatic Vegetation Monitoring prepared by EnviroScience. We are encouraged to see that weevil stocking appears to be having an effect on Eurasian watermilfoil growth.

I have consulted with Joe Pickart and he relayed that the plans for 2010 include stocking weevils in a small isolated area on the west side of the 577 Bridge, as well as two years of follow-up monitoring to verify the results of weevil stocking. We concur with these plans and look forward to reviewing the results.
Sincerely,
Jessica Mistak

Jessica Mistak, Senior Fisheries Biologist DNR Marquette Fisheries Station
484 Cherry Creek Rd
Marquette, MI 49855
906-249-1611 ext. 308
FAX 906-249-3190