



City of Norway

P.O. Box 99 - 915 Main St., Norway, MI 49870 - Ph. 906-563-9961 - Fax 906-563-7502 - norwaymi.gov

October 12, 2020

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

**Re: Article 406 – Invasive Plant Monitoring Report for 2018
Sturgeon Falls Project, FERC No. 2720**

Dear Secretary Bose:

Pursuant to the requirements of Article 406 of the Order Issuing New License dated January 6, 2005, as amended by Order Amending License dated December 8, 2006 and the Order Modifying and Approving Invasive Plant Monitoring Plan Pursuant to Article 406 dated May 18, 2006, the City of Norway, Michigan (City) as the licensee of the Sturgeon Falls Hydroelectric Project (FERC Project No. 2720) is providing a copy of the biennial monitoring report for the even-numbered year 2020.

Attachment 1 to this letter includes the report for the 2020 monitoring year. The report was provided to the Michigan Department of Natural Resources (MDNR) and the U.S. Fish and Wildlife Service (FWS) for comments. Neither consulted party responded with comments. Documentation of Consultation is included in Attachment 2 of the letter.

Should you have any questions relative to this information, please do not hesitate to contact me at (906) 563-9961.

Sincerely,

A handwritten signature in black ink that reads "Ray D. Anderson". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Ray D. Anderson
City Manager

Attachment

cc: Sturgeon Falls Project, FERC No. 2720
Mr. Scott Hegy – City of Norway

Ms. Elle Gulotty – MDNR
Mr. Nick Utrup – FWS

Attachment 1
2020 Monitoring Report

Invasive Watermilfoil and Aquatic Vegetation Monitoring Survey Report for Sturgeon Falls Hydroelectric Project Area

Prepared for:

City of Norway
Department of Power and Light
1000 Saginaw St.
Norway, MI 49870



Prepared by:

Amber Butterfield & Lindsay Peterson
Dickinson Conservation District
420 North Hooper St.
Kingsford, MI 49802



August 12, 2020

1.0 Introduction

The City of Norway, Department of Power and Light, has contracted the Dickinson Conservation District to survey and quantify the invasive Watermilfoil (*Myriophyllum spp.*) and the native aquatic vegetation in the Sturgeon Falls Hydroelectric Project area of the Menominee and Sturgeon Rivers. The survey of milfoil and native vegetation densities is done as part of the City of Norway's FERC (Federal Energy Regulatory Commission) compliance. Surveyors also monitor for the wetland invasive, Purple Loosestrife (*Lythrum salicaria*), along the shoreline areas as well.

2.0 Survey

The stretch of river involved in the survey constitutes much of the border between Dickinson County in Michigan and Marinette County in Wisconsin. The Menominee River composes most of the survey area except for about 1.5 miles of the Sturgeon River preceding where the two rivers join. The survey area spanned from Piers Gorge, upstream on the Menominee, to the hydro dam downstream on the Menominee, and to an impasse on the Sturgeon where the river narrows and many islands develop, totaling approximately 6.5 miles and 400 surface acres.

3.0 Methods

Surveying methods involved visually inspecting all aquatic vegetation beds or areas of the river where milfoil fragments or uprooted plants could become hung up or settle out and potentially develop into a new infestation. At every site, where milfoil was located, GPS coordinates were marked, density ratings were assigned, the area was calculated, and native vegetation was identified and rated for density as well.

Density ratings were based on an approximate percent cover range, as seen in Table A. Both milfoil and native vegetation were rated on the same scale.

Table A. Relative density ratings and approximate percent cover

Density Rating		Percent Cover Range
1	Found	1-10%
2	Sparse	11-30%
3	Moderate	31-60%
4	Dense	61-100%

Unlike previous years, the water level was high enough to be able to survey in areas of the river that were not previously accessible, increasing the surveyor's ability to assess the infestation of each of the plant beds. As with previous years, the rake

sampling technique was avoided. This method, which involves tossing a rake head attached to a rope over the side of the boat to catch and pull up plants, tends to break up milfoil during sampling and can cause fragmentation. This can lead to the spread and further distribution of the invasive, especially in current systems such as rivers.

4.0 Results

4.1 Milfoil Survey Results

Quantitative milfoil surveying was conducted on July 30, 2020. In total, 46 individual beds, equating to approximately 60 acres of milfoil, were mapped throughout the Sturgeon Falls Project area, accounting for about 14.12% of the total surface acres, which is an approximately 3.45% decrease from 2018 (Appendix A-Figure 1). Of the 60 acres of milfoil, about 16.508 acres were at the 'found' density level, while 0 acres were at the dense category. The largest density level in total acres came from the 'sparse' density level (Table B and Appendix A – Table 1). Many of the larger beds varied in their densities throughout the entire area. Therefore, to more accurately represent the populations found, larger beds were broken up and may be assigned multiple densities for different parts but are considered a single bed overall.

In addition, no new beds were found to have milfoil present in them this year.

Table B. Acreage of milfoil by density

Density	Number of Sites	Total Acres	Percent of Total Acreage
Found	28	16.508	4.13%
Sparse	16	27.251	6.81%
Moderate	18	12.73	3.18%
Dense	0	0	
Totals	63	56.489	14.12%
Total Project Area Acreage = approx. 400 surface acres			
*Note: 'Number of Sites' includes every individual density rating. Many larger beds were assigned multiple density ratings. There were 46 individual beds			

4.2 Native Vegetation Survey Results

Throughout the project area, 18 different native aquatic plant species were identified. The most dominant species were Wild Celery (*Vallisneria americana*), invasive Watermilfoil (*Myriophyllum spicatum* X *M. sibiricum*), and Flat Stem Pondweed (*Potamogeton compressus*) (Appendix A – Table 2), which is fitting seeing as it was the focus of the survey and not all plants beds were surveyed if milfoil was not present.

Native vegetation was dense and there was a great deal of algae coating the plants, more in some areas than others. Overall, the native plant community appears healthy, diverse, and productive despite the infestation of invasive milfoil throughout the community. It appears that native plant species, such as Wild Celery and Coontail, can inhabit a wider range of flow conditions than the invasive milfoil beds during the 2020 survey.

4.3 Terrestrial Invasive Species Monitoring

During the course of the milfoil survey, staff continuously monitored the shoreline for other potentially problematic invasive species that may invade the project area. Primary targets for this surveying effort were Purple Loosestrife (*Lythrum salicaria*) and Non-Native Phragmites (*Phragmites australis*). Purple Loosestrife was detected and mapped in one location, by the Highway 8 bridge, and was removed shortly after the survey was completed.

5.0 Discussion

Riverine systems are subject to an extensive variety of influences, both natural and anthropogenic. These factors all have impacts on the biological function of the river, including invasive species such as milfoil. Furthermore, the flow of rivers creates a corridor of transport for invasive species which leads to the spread and expansion of that species. Invasive milfoil was distributed throughout the of the Sturgeon Falls project area, with a majority of the infestations being of sparse concentrations. There were observable natural shifts in the plant communities and the distribution and density of milfoil as compared to past surveys. Many of the previously identified milfoil beds were found to have no visible plants present, as well as a majority of the beds were found to be at lower densities during the 2020 survey than in past surveys. Overall, the milfoil could be classified as a moderately dense infestation within the project area.

Many of the milfoil beds mapped in 2020, that had milfoil present, had changed in density and area since 2018. The number of sites where milfoil was present in 2020 is lower than the 2018 survey. With water levels being at a record high going into the winter of 2019-2020 and then an abnormal amount of rain in July of 2020, the water levels are still high, and the current of the river is faster. Due to these factors, the milfoil,

as well as the native vegetation, lacked the same expanse of suitable habitat as it had in past years, therefore did not fully develop in less than ideal conditions (ie increased water depth and current).

The healthy, productive state of the native plant community in the Sturgeon Falls project area is quite encouraging. The plants fill a niche that would otherwise be overtaken by milfoil due to its invasive nature. This becomes very apparent in several beds where the milfoil is patchy growing only in disturbed areas, along the edges of plant beds, or in the only gaps it can find. There are also numerous plant beds where no milfoil was found.

Yet the fact that milfoil can quickly dominate disturbed areas is a concern. Any changes in water level can create habitat or destroy it. Erosion and sedimentation can disrupt native vegetation and milfoil could overtake an affected area quicker than native vegetation could overtake an affected area quicker than native vegetation could recover. This is of particular concern with hybridized milfoil species, which is what most of the milfoil in the project area is, because it has been proven to germinate faster than native or Eurasian Milfoil and tends to utilize more of the growing season than native species that begin to come in later in the season.

In some areas, recognition of plants was made difficult by the amount of algae present, which obscured plant structures and appearances that are key identification. This was likely due to the warm temperatures experienced during this year's growing season and warm waters early in the spring. Many of the milfoil beds within the project area are not very large or are composed of very sparse, patchy populations. Ultimately, it is suggested that monitoring of both the milfoil and the natural plant community continue.

Appendix A

2020 Data

Aquatic Vegetation Analysis- Table 1, Figure 1
Attributes of Sturgeon Falls Milfoil Beds- Table 2
2020 Milfoil Density Map- Figure 2
2020 Milfoil Density Map, Upstream- Figure 3
2020 Milfoil Density Map, Downstream- Figure 4

Table 1. Aquatic Vegetation of the Sturgeon Falls Project Area

Common Name	Scientific Name	Average Density	Relative Frequency
Wild celery	<i>Vallisneria americana</i>	1.2174	43.48%
Invasive Watermilfoil	<i>Myriophyllum spicatum X sibiricum</i>	0.9348	52.17%
Flat-stem pondweed	<i>Potamogeton zosteriformis</i>	0.8696	21.74%
Yellow pond lily	<i>Nuphar spp.</i>	0.6087	30.43%
White water lily	<i>Nymphaea odorata</i>	0.5435	28.26%
Coontail	<i>Ceratophyllum demersum</i>	0.5000	34.78%
Clasping-leaf pondweed	<i>Potamogeton richardsonii</i>	0.5000	32.61%
Small pondweed	<i>Potamogeton pusillus</i>	0.2826	17.39%
Large-leaf pondweed	<i>Potamogeton amplifolius</i>	0.1957	13.04%
Waterweed	<i>Elodea spp.</i>	0.1739	17.39%
Sago pondweed	<i>Stuckenia pectinata</i>	0.1304	13.04%
Common bladderwort	<i>Utricularia vulgaris</i>	0.1087	10.87%
Stargrass	<i>Heteranthera zosterifolia</i>	0.1087	8.69%
Water marigold	<i>Bidens beckii</i>	0.0652	6.52%
Floating-leaf pondweed	<i>Potamogeton natans</i>	0.0652	4.35%
White water buttercup	<i>Ranunculus aquatilis</i>	0.0435	4.35%
Illinois pondweed	<i>Potamogeton illinois</i>	0.0217	2.17%
Duckweed	<i>Lemna spp.</i>	0.0217	2.17%
White-stem pondweed	<i>Potamogeton praelongus</i>	0.0000	0%
Cattails	<i>Typha spp.</i>	0.0000	0%
River bulrush	<i>Scirpus fluviatilis</i>	0.0000	0%
Robbins Pondweed	<i>Potamogeton robbinsii</i>	0.0000	0%
Arrowhead	<i>Syngonium podophyllum</i>	0.0000	0%

Average Density: The average density is based on the number of observations for each density rating divided by the total number of sampling sites. The average density corresponds to the same density rating scale of 1-4 for Found - Dense.

Relative Frequency: The relative frequency is the percentage of sites out of the total number of sites where the plant was observed.

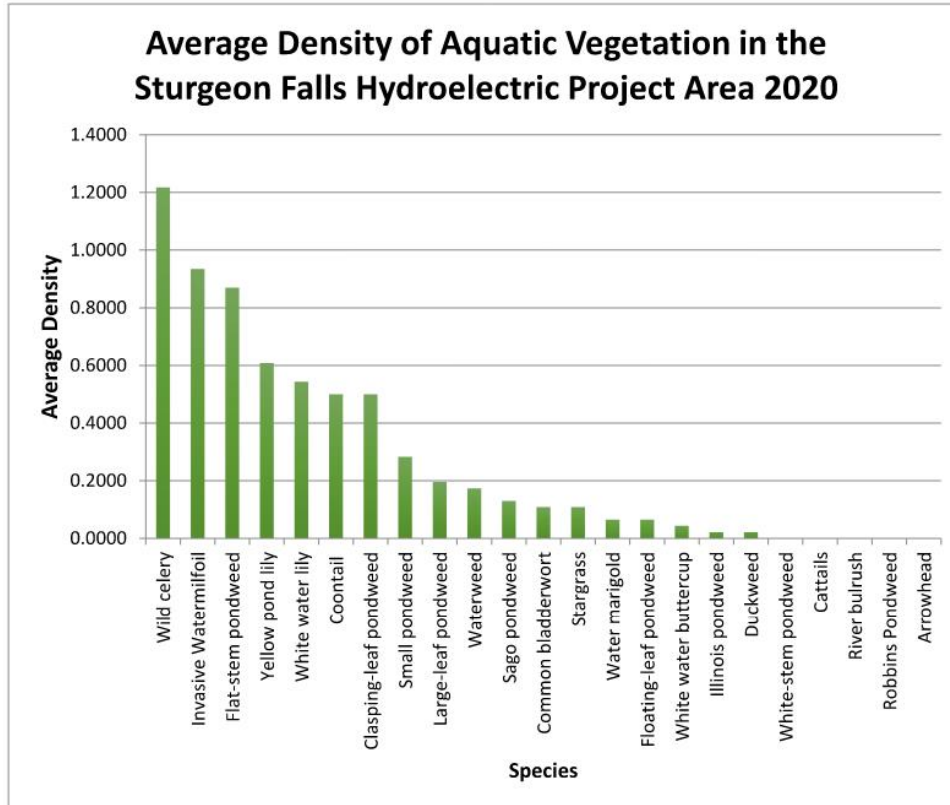


Figure 1. Average density of aquatic vegetation in the Sturgeon Falls Project area in 2020

Table 2. Attributes of the milfoil beds throughout the Sturgeon Falls Project area

Bed ID	Density 2020	Density 2018	Density % 2020	Density % 2018	Density % 2016	Density % Change from 2016 to 2018	Density % Change from 2018 to 2020	Acres
1	N/A	Found	0%	1%	10%	-9%	-1%	0
2	N/A	Found	0%	1%	15%	-14%	-1%	0
3	Found	N/A	1%	0%	1%	-1%	1%	0.003
4	N/A	Found	0%	5%	30%	-25%	-5%	0
5	Found	N/A	5%	0%	30%	-30%	5%	0.15
6	Found	N/A	1%	0%	35%	-35%	1%	0.285
6	Sparse	N/A	20%	0%	35%	-35%	20%	0.447
7	Found	Found	5%	2%	45%	-43%	3%	0.298
7	Found	N/A	1%	N/A	N/A	N/A	1%	0.387
7	Sparse	N/A	25%	N/A	N/A	N/A	25%	0.298
8	N/A	N/A	0%	0%	20%	-20%	0%	0
9	Found	Found	1%	1%	45%	-44%	0%	0.005
9	N/A	Found	0%	1%	45%	-44%	-1%	0
9	N/A	Found	0%	1%	45%	-44%	-4%	0
10	N/A	N/A	0%	0%	10%	-10%	0%	0
11	Found	N/A	1%	0%	20%	-20%	1%	0.467
12	N/A	Found	0%	1%	5%	-4%	-1%	0
13	Found	Found	1%	5%	60%	-55%	-4%	0.001
13	N/A	Found	0%	5%	60%	-55%	-5%	0
14	N/A	N/A	0%	0%	40%	-40%	0%	0
15	Found	Found	2%	1%	10%	-9%	1%	0.064
16	Found	Found	2%	1%	10%	-9%	1%	0.052
17	Found	Sparse	1%	25%	15%	10%	-24%	0.161
18	Found	N/A	1%	0%	10%	-10%	1%	0.142
19	N/A	Found	0%	1%	10%	-9%	-1%	0
20	N/A	N/A	0%	0%	5%	-5%	0%	0
21	N/A	Sparse	0%	30%	5%	25%	-30%	0
21	N/A	Found	0%	10%	10%	0%	-10%	0
21	N/A	Sparse	0%	30%	20%	10%	-30%	0
22	N/A	Moderate	0%	40%	40%	0%	-40%	0
23	N/A	N/A	0%	0%	0%	0%	0%	0
24	N/A	N/A	0%	0%	5%	-5%	0%	0
25	Moderate	Dense	60%	80%	35%	45%	-20%	3.397
25	Moderate	Dense	60%	80%	40%	40%	-20%	0.431
25	Sparse	Dense	30%	80%	30%	50%	-50%	10.104
25	Sparse	Dense	15%	80%	25%	55%	-65%	2.34
26	Sparse	Moderate	25%	40%	60%	-20%	-15%	2.38
26	Sparse	Moderate	25%	40%	35%	5%	-15%	0.25
26	Sparse	Moderate	25%	40%	35%	5%	-15%	0.254
26	Sparse	N/A	25%	0%	30%	-30%	25%	0.536
26	Sparse	N/A	25%	0%	20%	-20%	25%	0.418
26	Sparse	N/A	25%	0%	15%	-15%	25%	0.249
26	Sparse	N/A	25%	0%	30%	-30%	25%	0.956
27	Found	Sparse	5%	30%	30%	0%	-25%	2.032
28	N/A	Found	0%	1%	5%	-4%	-1%	0
29	N/A	Found	0%	1%	5%	-4%	-1%	0
30	N/A	Sparse	0%	20%	5%	15%	-20%	0
30	N/A	Sparse	0%	15%	15%	0%	-15%	0
30	N/A	Moderate	0%	50%	45%	5%	-50%	0
30	N/A	Moderate	0%	50%	45%	5%	-50%	0
31	N/A	Sparse	0%	15%	35%	-20%	-15%	0
32	N/A	Sparse	0%	15%	15%	0%	-15%	0
33	N/A	Found	0%	2%	15%	-13%	-2%	0
34	Moderate	Dense	40%	70%	15%	55%	-30%	0.078
35	Found	Moderate	5%	40%	10%	30%	-35%	0.076
35	Found	Moderate	5%	40%	50%	-10%	-35%	0.153
35	Moderate	Moderate	35%	40%	15%	25%	-5%	0.358
36	Moderate	Moderate	30%	60%	45%	15%	-30%	0.535
37	Moderate	Dense	40%	80%	15%	65%	-40%	0.334
38	Moderate	Dense	50%	80%	80%	0%	-30%	0.897
38	N/A	Moderate	0%	40%	45%	-5%	-40%	0
38	Moderate	Dense	50%	80%	15%	65%	-30%	0.646
38	Moderate	Sparse	50%	25%	15%	10%	10%	0.974

38	Moderate	Dense	50%	80%	30%	50%	-30%	0.365
38	N/A	Found	0%	5%	25%	-20%	-5%	0
38	N/A	N/A	0%	0%	30%	-30%	0%	0
38	Moderate	Dense	50%	N/A	N/A	N/A	N/A	0.25
38	Moderate	Dense	50%	N/A	N/A	N/A	N/A	0.17
39	Sparse	Sparse	30%	20%	75%	-55%	10%	1.973
39	Moderate	Moderate	60%	40%	40%	0%	20%	0.175
39	N/A	Sparse	0%	25%	35%	-10%	5%	0
39	Moderate	Moderate	60%	50%	50%	0%	10%	1.629
39	Sparse	Sparse	30%	15%	35%	-20%	15%	0.342
39	N/A	Sparse	0%	25%	25%	0%	5%	0
39	Moderate	Moderate	60%	35%	15%	20%	25%	0.816
39	Moderate	Moderate	60%	50%	25%	25%	10%	0.177
39	Moderate	Moderate	60%	35%	25%	10%	25%	0.636
39	Moderate	Dense	60%	80%	75%	5%	20%	0.862
40	Found	Found	10%	10%	10%	0%	0%	0.368
40	Found	Found	10%	10%	5%	5%	0%	0.841
40	Found	Found	10%	10%	35%	-25%	0%	0.455
40	Found	Found	10%	5%	25%	-20%	5%	0.922
40	Found	Found	10%	10%	30%	-20%	0%	0.814
41	Sparse	Dense	25%	70%	10%	60%	-45%	1.335
41	Found	Sparse	5%	25%	10%	15%	-20%	2.179
42	Found	Found	10%	10%	35%	-25%	0%	1.865
42	Sparse	Sparse	25%	25%	50%	-25%	0%	2.397
42	Found	Found	10%	10%	35%	-25%	0%	0.158
42	Found	Found	1%	10%	0%	10%	-9%	0.218
42	Found	Sparse	1%	25%	0%	25%	-24%	1.016
43	Found	Found	5%	5%	10%	-5%	0%	0.729
43	Sparse	Moderate	30%	40%	50%	-10%	-10%	2.972
43	Found	Found	5%	10%	45%	-35%	-5%	1.386
43	Found	Found	5%	5%	N/A	N/A	0%	1.281
44	N/A	Found	0%	5%	N/A	N/A	-5%	0
45	N/A	Found	0%	5%	N/A	N/A	-5%	0
46	N/A	Found	0%	1%	N/A	N/A	-1%	0
Total Acres: 56.489 = 14.12% of total surface acreage of project								

Sturgeon Falls Hydroelectric Project Area: Milfoil Beds Location and Densities



- Milfoil Density
- N/A
 - Found
 - Sparse
 - Moderate
 - Dense

The above map shows the location of all surveyed aquatic plant beds, highlighting the extent and density of milfoil where it was documented. The density is categorized by color according to the legend.



Map prepared by Amber Butterfield, Dickinson Conservation District, August 31, 2020. Information presented is based on data collected during the aquatic vegetation and invasive milfoil survey conducted in 2020.

Sturgeon Falls Hydroelectric Project Area: Milfoil Bed Locations and Densities Sites 1-10



Milfoil Density

- N/A
- Found
- Sparse
- Moderate
- Dense

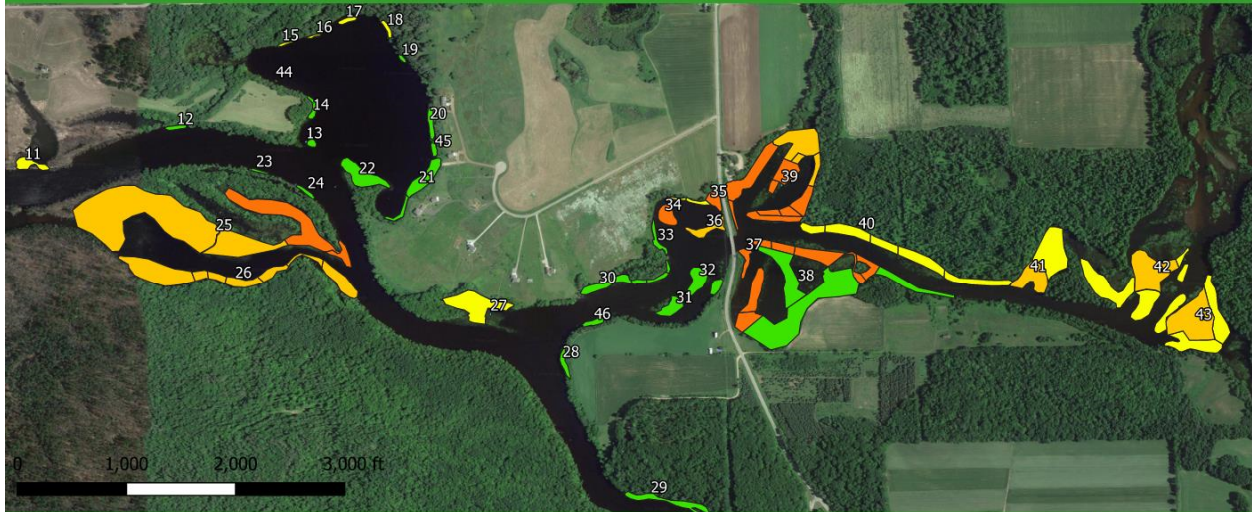
The above map shows the location of all surveyed aquatic plant beds, highlighting the extent and density of milfoil where it was documented. The density is categorized by color according to the legend.



Map prepared by Amber Butterfield,
Dickinson Conservation District, August 31,
2020.

Information presented is based on
data collected during the aquatic vegetation
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survey conducted in 2020.

Sturgeon Falls Hydroelectric Project Area: Milfoil Bed Locations and Densities- Sites 11-46



Milfoil Density

- N/A
- Found
- Sparse
- Moderate
- Dense

The above map shows the location of all surveyed aquatic plant beds, highlighting the extent and density of milfoil where it was documented. The density is categorized by color according to the legend.



Map prepared by Amber Butterfield,
Dickinson Conservation District, August
31, 2020.

Information presented is based on
data collected during the aquatic
vegetation and invasive milfoil
survey conducted in 2020.

Attachment 2
Documentation of Consultation

Shawn Puzen

From: Shawn Puzen
Sent: Thursday, September 10, 2020 3:37 PM
To: Utrup, Nick; gulotty@michigan.gov
Cc: Ray Anderson; Shawn Puzen
Subject: 2020 Invasive Species Monitoring Report for your comment-Sturgeon Falls Hydroelectric Project
Attachments: 2020 Milfoil Survey Report.Final.pdf

Hi Elle and Nick,

Enclosed for your comment is the 2020 Invasive Species Monitoring Report for the Sturgeon Falls Hydroelectric Project. Monitoring is required in the even years.

The monitoring was conducted on July 30, 2020 by the Dickinson County Conservation District.

Please provide your comments within 30 days. If we do not receive a response within 30 days, we will assume you do not have any comments.

If you have any questions, please do not hesitate to contact me.

Thanks,

SHAWN PUZEN

FERC HYDROPOWER LICENSING AND COMPLIANCE, WATER
Mead & Hunt
Direct: 920-593-6865 | Cell: 920-639-2480 | Transfer Files
meadhunt.com | LinkedIn | Twitter | Facebook | Instagram



The Michigan Department of Natural Resources and the U.S. Fish and Wildlife Service did not respond with comments.

The report provided for their comment is identical to the report currently being filed. Therefore, to reduce the file size, it has not been included a second time.

Document Content(s)

20201012 FERC Invasive Species Monitoring Report.PDF.....1