MEAD HUNT

*Designing the future*

ORIGINAL

June 30, 2005



Ms. Magalie R. Salas
Office of the Secretary
Federal Energy Regulatory Commission
Mail Code: DHAC, PJ-12
888 First Street, NE
Washington, DC 20426

Subject: *Invasive Plant Monitoring Plan*
License Article 406
Order Issuing New License – January 6, 2005
Sturgeon Falls Hydroelectric Project; FERC Project No. 2720-039
City of Norway, Michigan – Licensee

Dear Ms. Salas:

On behalf of the City of Norway, we are hereby filing one original and eight copies of the *Invasive Plant Monitoring Plan* for the Sturgeon Falls Hydroelectric Project. The plan is being submitted in accordance with License Article 406 of the project license issued on January 6, 2005.

A copy has also been submitted to the Michigan Department of Natural Resources, the U.S. Fish and Wildlife Service, and the Commission's Chicago Regional Office. A *Certificate of Service* attesting to distribution of the plan is enclosed. Resource agency review comments are included as an appendix to the plan document.

Thank you for your time and consideration in this matter. If you have any questions, please contact me.

Sincerely,

MEAD & HUNT, Inc.

Linda D. Mitchell

Linda D. Mitchell
Project Manager

Enclosures

cc: See attached list

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

# Certificate of Service

## *Invasive Plant Monitoring Plan*

I hereby certify that I, on behalf of the City of Norway, Michigan, have this day served the foregoing *document upon all entities specified in License Article 406 of the Order Issuing New License* dated January 6, 2005, to be consulted on matters related to this Commission filing.

Dated this 30 day of June, 2005.

Linda D. Mitchell

Linda D. Mitchell
MEAD & HUNT, Inc.



MEAD & HUNT

# Distribution List

## Sturgeon Falls Hydroelectric Project

### FERC Project No. 2720

*Invasive Plant Monitoring Plan*

Ms. Magalie R. Salas, Secretary
Federal Energy Regulatory Commission
Mail Code: DHAC, PJ-12
888 First Street
Washington, DC 20426

Ms. Peggy Harding
Regional Engineer
Federal Energy Regulatory Commission
Federal Building
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Ms. Jessica Mistak
Habitat Management Unit
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Ms. Janet Smith
Field Supervisor
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Fish & Wildlife Service
Green Bay Field Office
2681 Scott Tower Drive
New Franken, WI 54229-9565

ORIGINAL



# Invasive Plant Monitoring Plan
# Sturgeon Falls Hydroelectric Project
## FERC Project No. 2720

**Menominee River**
**Dickinson County, Michigan and**
**Marinette County, Wisconsin**

**CITY OF NORWAY**
**NORWAY, MICHIGAN**

*Prepared by:*

MEAD & HUNT

*June 2005*

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# List of Appendices

**Appendix**

# Invasive Plant Monitoring Plan
# Sturgeon Falls Hydroelectric Project
**FERC Project No. 2720**

## 1. Introduction

On January 6, 2005, the Federal Energy Regulatory Commission (FERC) granted an *Order Issuing New License* to the City of Norway (City) for its Sturgeon Falls Hydroelectric Project (Sturgeon Falls Project), FERC Project No. 2720, located on the Menominee River in Dickinson County, Michigan, and Marinette County, Wisconsin. The Order includes License Articles specifying actions the City must take to comply with terms and conditions of the license. This *Invasive Plants Monitoring Plan* has been prepared in accordance with requirements of License Article 406, which requires the City to develop a plan to monitor purple loosestrife and Eurasian milfoil in project waters. A copy of License Article 406 is included as Appendix A.

## 2. Sturgeon Falls Project Area Description

The Sturgeon Falls Project is located on the Menominee River about 3.5 miles southeast of the City of Norway, and about 1 mile downstream from the confluence of the Menominee and Sturgeon Rivers. The Menominee River at this location forms the boundary between the states of Michigan and Wisconsin. Portions of the project lie in Dickinson County, Michigan, and Marinette County, Wisconsin. Adjacent lands in Dickinson County are located in Norway Township, T39N, R29W, while adjacent lands in Marinette County are located in the town of Niagara, T38N, R21E. A project area map is included as Appendix B.

The Sturgeon Falls Dam impounds a reservoir comprising approximately 440 acres. The impounded areas include a reach of the Menominee River extending 2.3 miles upstream from the dam, and a reach of the Sturgeon River extending approximately 2 miles upstream from its confluence with the Menominee River. Most of the project shoreline is covered by woodlands. Project wetlands consist of forested swamps, bogs, and emergent wetlands dominated by grasses, sedges, and herbs.

The City owns approximately 603 acres within the project boundary, consisting of three parcels. The largest parcel, containing 557 acres, is located in the lowermost reach of the project area, near the project dam and powerhouse. A 40-acre parcel is located near the upstream boundary of the project on the Menominee River's Wisconsin shoreline, and a 6-acre parcel is located on the adjacent Michigan shoreline.

# 3. Identification of Invasive Plants

In 2000, the City retained qualified ecological consultants to conduct a botanical resources assessment of the project area. Appendix C contains botanical resources maps developed as a result of this effort. These investigations identified a single purple loosestrife (*Lythrum salicaria*) plant, and numerous occurrences of Eurasian watermilfoil (*Myriophyllum spicatum*). No other invasive plants were identified as proliferating within the project area.

## A. Purple Loosestrife

Purple loosestrife is a perennial wetland plant found in wet and moist habitats such as marshes, streams, and riverbanks. It tolerates changes in soil moisture and temperature, and once established, tends to predominate over other plant life. As a result, its presence can significantly reduce diversity of native vegetation and associated wetland species. During surveys conducted in 2000, a single large purple loosestrife plant was found on a small island located approximately one-half mile downstream of the project's western (upstream) boundary. The island is located approximately 100 feet from the Wisconsin shoreline in the town of Niagara, Section 18, T38N, R21E. The plant's 21 flowering stalks were cut, securely bagged, and disposed of in a landfill to prevent seed dispersal.

## B. Eurasian Watermilfoil

Eurasian watermilfoil is an invasive plant that tends to out-compete native aquatic plants, including native watermilfoils. Accidentally introduced to North America from Europe, it is now found in the majority of inland lakes in Michigan. Unlike many other plants, Eurasian watermilfoil reproduces vegetatively by producing shoot fragments and runners, rather than relying on seed for reproduction. Plant fragments and runners, which may remain viable for weeks if kept moist, can be carried downstream by water currents or inadvertently picked up and transported by boaters.

Eurasian watermilfoil can be difficult to differentiate from native watermilfoil species, as both have slender stems with feathery leaves. However, a Eurasian watermilfoil typically has 12 to 21 pairs of leaflets, while the native northern watermilfoil usually has 5 to 9 pairs. Another identifying characteristic of the Eurasian variety is its tendency to form dense mats of vegetation that crowd out other species. These dense stands threaten the integrity of diverse aquatic communities, and inhibit recreational uses like swimming, boating, and fishing.

During surveys conducted in 2000, Eurasian watermilfoil was found in limited numbers, typically in association with other water species. Areas of documented occurrence are shown in Appendix C, Map Sheets 2, 3, 4, 6, and 8.

# 4. Follow-up Monitoring

The City will conduct periodic monitoring to document the occurrence of purple loosestrife and Eurasian watermilfoil in project waters. The City's plan to monitor purple loosestrife and Eurasian watermilfoil in project waters and shoreline areas is outlined below.

Monitoring will be conducted on an annual basis through year 2010, and every two years thereafter during even-numbered years. Monitoring will be conducted between the third full week of July and the end of the first full week in August. Under typical weather conditions, purple loosestrife plants are in full flower and easily viewed during this period. The timing of monitoring will be adjusted as dictated by bloom status, and will be coordinated with resource agencies.

The entire shoreline of the Sturgeon Falls impoundment will be visually surveyed by an individual who is familiar with the ecology and anatomy of purple loosestrife and Eurasian watermilfoil. A shallow-draft motorboat or other suitable craft will be used, supplemented by pedestrian surveys if necessary. Surveys will include wetlands and shoreline areas of wet soil habitat shown in botanical resource maps included in Appendix C of this plan. Occurrences of purple loosestrife and Eurasian watermilfoil will be marked on maps in the field using indelible markers. Incidental sightings of additional species of concern that may be identified by the Michigan Department of Environmental Quality (MDEQ) Office of the Great Lakes will be noted if the resource agencies alert the licensee before the surveys are conducted that new exotic species of concern have been identified. Eurasian milfoil plants will be examined for signs of weevil damage and observations will be recorded.

The area and percent cover of each purple loosestrife stand identified will be determined, and average plant density will be estimated. Sampling and measurement methodology may differ according to specific stand characteristics, but will be sufficiently rigorous to document the character of each stand.

For Eurasian watermilfoil occurrences, the following will be determined: stand perimeter, relative mat density, and average mat thickness. Where milfoil is observed, a determination will be made as to species, using a dip net or rake to obtain samples, if required, for closer examination.

## 5. Measures to Increase Public Awareness of Invasive Species

The most effective method for avoiding the development of uncontrolled future populations of Eurasian watermilfoil is to prevent its introduction into new lakes, streams, and rivers. To increase public awareness of this danger, the City will post informational signage as provided by the Michigan Department of Environmental Quality (MDEQ) at the Sturgeon Falls Project tailwater boat launch. In addition, the City will make information on invasive or noxious plants as provided by the MDEQ available for public procurement at City Hall.

## 6. Management Practices the Licensee Will Implement to Prevent the Spread of Nuisance Species

The City will take precautions to prevent the spread of purple loosestrife and Eurasian watermilfoil through transport of plant fragments on any equipment used during the course of any activities associated with the operation and maintenance of the Sturgeon Falls Project. Equipment used for project purposes in Sturgeon Falls impoundment, including boats, motors, trailers, and diving equipment, will be inspected and rinsed or otherwise cleaned as necessary to remove fragments of purple loosestrife or Eurasian watermilfoil. When small infestations of purple loosestrife (1 to 5 plants) are observed on project lands, they will be removed by hand-pulling.

# 7. Reporting

The results of monitoring will be transmitted to the U.S. Fish and Wildlife Service (FWS) and the Michigan Department of Natural Resources (DNR) within 45 days of the survey date. The report will include an evaluation of trends in density, relative abundance, and in overall diversity. Survey results will be mapped on GIS base maps prepared at sufficient scale to provide adequate resolution. Maps included in the report will also show data layers representing the Public Land Survey system (PLS), hydrography, and the public transportation network. The report will include narrative describing incidental sightings of additional species of concern that may be identified by the Michigan Department of Environmental Quality (MDEQ) Office of the Great Lakes, and observations regarding the probable presence of weevils that feed on Eurasian watermilfoil.

# 8. Control Measures

## A. Purple Loosestrife

A variety of methods have been tried to control the spread of purple loosestrife, including hand-pulling, burning, cultivation, applying chemical agents, and biological controls. To have a reasonable chance of effectiveness, a control program would have to be an ongoing process. One-time control measures would have only a temporary effect due to new plants constantly springing up from the extensive seed bank.

Younger purple loosestrife plants (1 to 2 years old) can be hand-pulled, but should not be pulled after flowering to avoid scattering of seed. Isolated older plants, especially those in deep organic soils, can be dug out or "teased" loose with a hand cultivator. However, great care must be exercised to avoid release of fragments, which can form new roots; removed plants must be bagged and removed from the area to prevent fragment release. Plant removal is a labor-intensive control method that is cost-effective only on very small infestations of limited area.

Chemical control typically involves the spot or sprayer application of glyphosate herbicides. Glyphosate is available under the trade names Roundup and Rodeo, but only Rodeo is registered for use over open water. Glyphosate application is most effective when plants have just begun flowering in early July. Glyphosate is non-selective so care should be taken not to let it come in contact with non-target species. Significant disadvantages to chemical control include cost, possible effects on non-target species, and the need for repeated applications.

Biological control agents include leaf-feeding beetles (*Galerucella spp.*) that are highly host-specific. Beetle releases have reduced loosestrife occurrence by nearly 50 percent in just a few years in at least one Upper Midwest impoundment. Feeding by these insects at high densities can defoliate mature plants, cause seedling mortality, and destroy or prevent the formation of flower spikes. Leaf-eating beetles are believed to have the capability to establish viable populations within several years of release. If biological control is undertaken, it is recommended that a minimum of 2,000 leaf feeding beetles be released into the affected area.

## B. Eurasian Milfoil

Many methods have been tried in the United States to contain or eliminate Eurasian watermilfoil. The control methods can be classified as chemical, physical, or biological.

Chemical control typically is based on the use of fluridone, a broad spectrum aquatic herbicide, or 2, 4-Dichlorophenoxyacetic acid (2, 4-D), a chemical used to control weeds in lawns. Chemical concentration must be carefully controlled to prevent negative impacts on native species. If chemical treatment is necessary, the Michigan DNR recommends 2,4-D application in early spring before littoral zone temperatures reach 60 degrees F. Treatment with 2,4-D is recommended again in the fall after the native plants have died back. The chemical should be sprrayed 15 to 20 feet around the bed to help kill runners and smaller plants not visible from the boat. The Michigan DNR further notes that follow-up treatment or handpulling may be necessary.

Physical control may be attempted using mechanical harvesters, underwater rototillers, and cultivators; however, the plant quickly re-grows and the creation of numerous fragments can actually enhance its spread. Harvesting may be used to open up small high-use areas such as boat launches and marinas, but is not recommended for the entire impoundment because control is temporary. Other methods include water drawdown to desiccate watermilfoil plants, and the use of physical barriers. The latter are covers placed over the colony to prevent fragmentation spread, and are practical only for small infestations.

Biological control methods are still in the research and development stage. The most promising agent for long-term suppression appears to be a native weevil (*Euhrychioppsis lecontei*), which appears to be widespread across North America. This is a host-specific species, which appears to prefer Eurasian watermilfoil to the native northern watermilfoil. Adults live underwater and lay eggs on the watermilfoil. Emergent larvae then feed on the plants, suppressing its growth and reducing its root biomass.

The effectiveness of this weevil in suppressing population has been mixed, with good results at some sites and poor results at others. Further, weevils will suppress Eurasian watermilfoil, but will not eliminate it. It is most useful for long-term control of lower priority sites, over large reas where other management actions are less effective, while alternative methods are more suitable where rapid control is needed. If weevils are stocked, a sufficient number of weevils should be released to achieve a density of 10 per square meter within the treatment area. However, the University of Minnesota Fisheries, Wildlife and Conservation Biology does not advocate moving weevils, because a particular strain may not be native to the receiving water body.

## C. Procedures for Obtaining Technical Assistance

Control measures identified to date all have the potential for negative impacts on aquatic communities and non-invasive species. The use of chemical and biological agents, in particular, should not be initiated in the absence of technical assistance from appropriate resource agencies. Any plans for implementation of control measures to be conducted by the City will be determined in consultation with the Michigan DNR, the MDEQ, and the FWS as appropriate. The need for control measures will be evaluated based on a determination of whether the nuisance species are becoming more abundant or increasing in dominance, and on the availability of suitable control measures. The City will utilize control methods outlined in this plan or other suitable methods that may be available at a future date.

# Appendix A. License Article 406

# Appendix A

## Article 406
## Invasive Plant Monitoring Plan

Within 6 months of license issuance, the licensee shall file for Commission approval, a plan to monitor purple loosestrife and Eurasian milfoil in project waters. The plan shall be prepared after consultation with the Michigan Department of Natural Resources (DNR) and the U.S. Fish and Wildlife Service (FWS).

The plan shall include, at a minimum:

- Criteria used to determine and list which invasive plant species are at the project.
- Results of baseline field surveys (data should be logged, mapped, and photographed) to determine the presence/absence of invasive species.
- Follow-up methods of monitoring (e.g.; field survey, aerial photographs), the frequency (e.g.; annually), and schedule (e.g.; July 1 to 30) for monitoring invasive species.
- Description of the specific measures the licensee will implement (e.g.; informational signs posted along property or brochures issued) to increase public awareness of invasive species.
- Description of management practices the licensee will implement (i.e.; rinsing, trucking, and mowing equipment of seeds before and after use) to help prevent the spread of nuisance species.
- Description of the criteria that will be used to determine when control measures are needed and a description of the specific control measures that the licensee will implement to control/eliminate each nuisance species found at the site (i.e.; manual pulling, chemical application, biological controls).
- Recommended procedures for obtaining technical assistance from the DNR and FWS.
- Schedule for filing monitoring reports with the DNR, FWS, and the Commission for review.

The licensee shall include with the invasive plant monitoring plan documentation of agency consultations, including copies of agency comments and recommendations on the draft plan, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations, before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. The invasive plant monitoring plan shall not be implemented until the licensee is notified that the plan is approved. Upon approval, the licensee shall implement the plan according to the approved schedule, including any changes required by the Commission.

# Appendix B. Project Map

# LARGE-FORMAT IMAGES

One or more large-format images (over 8½" X 11") go here. These images are available in E-Library at:

For Large-Format(s):
Accession No.: 20050707-0312

Security/Availability:

- [X] PUBLIC
- [ ] NIP
- [ ] CEII
- [ ] NON-PUBLIC/PRIVILEGED

File Date: July 5, 05 Docket No.: P2720

Parent Accession No.: 20050707 0311

Set No.: 1 of 1

Number of page(s) in set: 1

# Appendix C. Botanical Resource Maps

# LARGE-FORMAT IMAGES

One or more large-format images (over 8½" X 11") go here. These images are available in E-Library at:

For Large-Format(s):
Accession No.: 20050707-0313

Security/Availability:

- [X] PUBLIC
- [ ] NIP
- [ ] CEII
- [ ] NON-PUBLIC/PRIVILEGED

File Date: 7/4/05 Docket No.: P-2720

Parent Accession No.: 20050707-0311

Set No.: 1 of 1

Number of page(s) in set: 18

# Appendix D. Documentation of Agency Consultation

# Summary of Resource Agency Consultation

The following text presents resource agency comments of the licensee's *Draft Invasive Plant Monitoring Plan*, and the licensee's response. Copies of licensee and resource agency correspondence are included following this summary.

**Michigan Department of Natural Resources Comment (Letter dated June 13, 2005)**

Section 4 - Follow-up Monitoring: In addition to purple loosestrife and Eurasian watermilfoil, the City of Norway should monitor for species of concern identified by the Michigan Department of Environmental Quality (MDEQ) Office of the Great Lakes (see Michigan's Aquatic Nuisance Species State Management Plan 2002). Although species other than purple loosestrife and Eurasian watermilfoil are not listed by MDEQ at this time, over the course of the license, it is anticipated that additional invasive species will be introduced (e.g., hydrilla), thus requiring additional monitoring and control.

**Licensee's Response**

License Article 406 clearly specifies that the licensee must file "a plan to monitor purple loosestrife and Eurasian milfoil in project waters." The MDNR's request to include monitoring of species of concern that may be listed at a future date would expose the licensee and its ratepayers to future costs that could be significant. The added costs are not included in the estimated cost for loosestrife and watermilfoil monitoring cited in the project Environmental Assessment, because the additional monitoring request had not been made at the time that information gathering for that document was conducted.

Based on the lack of detailed information and the reasons cited above, the licensee has not revised its monitoring plan to specify a formal program for species that may be listed at a future date. However, the licensee is willing to share incidental observations with appropriate resource agency personnel. To reflect this accommodation, Section 4 of the plan has been revised to indicate that incidental sightings of additional species of concern that may be identified by the Michigan Department of Environmental Quality (MDEQ) Office of the Great Lakes will be noted if the MDEQ alerts the licensee of the potential occurrence of new exotic species.

**Michigan Department of Natural Resources Comment (Letter dated June 13, 2005)**

Because of the importance vested in early identification and control of nuisance aquatic plant species, MDNR recommends annual monitoring as opposed to the licensee's suggestion of biennial monitoring. Annual monitoring is important, especially in the beginning of a monitoring program, to identify existing plants, aggressively control invasive plants before they spread, and evaluate effects of initial control efforts.

**Licensee's Response**

The licensee does not believe that the need for or benefit of annual surveys over the 30-year license period has been demonstrated. However, to address the MDNR's concerns, the *Invasive Plant Monitoring Plan* has been revised to specify that monitoring will be conducted on an annual basis through year 2010, and every two years (during even-numbered years) for the period 2012 through 2034.

**Michigan Department of Natural Resources Comment (Letter dated June 13, 2005)**

Section 6 – Management Practices the Licensee Will Implement to Prevent the Spread of Nuisance Species: *The last sentence should be modified to include Eurasian watermilfoil along with purple* loosestrife.

**Licensee's Response**

The referenced sentence reads: "When small infestations of purple loosestrife (1 to 5 plants) are observed on project lands, they will be removed by hand-pulling." The license does not believe that the inclusion of Eurasian watermilfoil is appropriate in this context. Issues related to handpulling Eurasian watermilfoil are further addressed below.

**Michigan Department of Natural Resources Comment (Letter dated June 13, 2005)**

Additionally, MDNR defines small infestations as less than 100 plants, as opposed to the licensee's suggestion of 2 to 5 plants... If small patches (e.g., fewer than 100 plants) are documented, these should be hand pulled by boat or scuba divers. Special care must be taken to collect all roots and plant fragments during removal. Care should also be taken to not destroy native plants. Plants should be properly disposed land [sic].

**Licensee's Response**

The licensee believes that the criterion of 5 or fewer plants of purple loosestrife is appropriate in the context of its *Invasive Plants Monitoring Plan,* but disagrees with this control method for Eurasian watermilfoil. Hand removal of either species must be done with extreme care to avoid the release of viable plant fragments that can be spread by wind, waves, and water currents. New plants can generate from shoots, rhizomes and root segments, and thus the meticulous collection of plant fragments is essential.

Even for small purple loosestrife infestations, handpulling can be extremely labor-intensive. This is especially true in the case of older purple loosestrife plants, which have extensive root systems

that can bind as much as 2 cubic feet of soil. As the hand removal effort becomes more difficult, the likelihood of fragment release tends to increase. However, the problem of fragment release is much greater in the case of a submersed species such as Eurasian watermilfoil. Removal of even a few plants increases turbidity, resulting in poor water clarity that interferes with the ability of workers to identify and collect plant fragments. It is highly probable that any hand or mechanical pulling efforts for Eurasian watermilfoil control purposes would only serve to disperse the plants further and increase their spread. The licensee thus believes that, where warranted by the severity of the infestation, chemical treatment using 2,4-D is a far more appropriate and cost-effective control method.

**Michigan Department of Natural Resources Comment (Letter dated June 13, 2005)**

In addition to hand pulling, MDNR recommends the following management practices:

- For stands less than 10,000 square feet, we recommend hand pulling and selective (systemic) chemical treatment (either Rodeo or 2,4-D).
- For stands 10,000 square feet to 5 acres, we recommend selective (systemic) chemicals and introduction of leaf feeding beetles (*Galerucella spp)* or native milfoil weevils (*Euhrychioppis lecontei*) as appropriate.
- For stands greater than 5 acres, we recommend selective (systemic chemicals, introduction of leaf feeding beetles or native milfoil weevils, and mechanical harvesting.

**Licensee Response**

These comments are addressed under Section 8, Control Measures.

**Michigan Department of Natural Resources Comment (Letter dated June 13, 2005)**

Section 8.A – Purple Loosestrife

- 2nd paragraph – Clarify last sentence to define "very small infestation of limited area" as stands of fewer than100 plants.

- 3rd paragraph – If chemical treatment is necessary, we recommend Rodeo application when plants have recently begun flowering (e.g. July).

- 4th paragraph – If biological control is necessary, the licensee should release a minimum of 2,000 leaf feeding beetles into the affected area.

**Licensee Response**

The licensee does not believe that 100 plants or less is an appropriate criterion to define a "very small infestation" in the context of its *Invasive Plant Monitoring Plan*. However, it has revised the plan to encompass the MDNR's further recommendations. Section 8.A of the plan has been revised to state that the preferred timeframe for the application of chemical treatment is when the plants have recently begun flowering. The section has also been revised to show the MDNR's recommendation for the minimum number of leaf feeding beetles to be released for biological control.

***Michigan Department of Natural Resources Comment* (Letter dated June 13, 2005)**

Section 8.B – Eurasian milfoil

- 2nd paragraph – If chemical treatment is necessary, we recommend 2,4-D application in early spring (one week after ice out until littoral zone reaches 60 degrees F – after the water reaches 60 degrees F, native plants begin growing and could be damaged). Treatment with 2,4-D is recommended again in the fall after the native plants have died back. The chemical should be sprayed 15 to 20 feet around the bed to help kill off runners and smaller plants not visible from the boat. Since chemicals are 80 – 85 percent effective, chemical treatment should be followed by hand pulling via scuba diving and/or spring and fall treatment over the same beds.

**Licensee Response**

Section 4.B has been revised to include the MDNR's comments regarding chemical treatment.

**Michigan Department of Natural Resources Comment (Letter dated June 13, 2005)**

Section 8.B – Eurasian Milfoil

- 3rd paragraph – Conventional harvesting equipment including a harvester, onshore conveyor, and trucks may be used to open up small high-use areas (e.g., boat lanes, marines, boat launches) and control free floating plant fragments in open water. Mechanical harvest of the entire impoundment is not recommended because control is temporary and will need to be repeated every 4 – 6 weeks during the growing season.

**Licensee's Response**

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Section 8.B has been revised to state that mechanical harvesting may be used to open up small high-use areas, but is not recommended as a control measure for the entire impoundment.

**Michigan Department of Natural Resources Comment (Letter dated June 13, 2005)**

Section 8.B – Eurasian Milfoil

- 4th paragraph – Weevils will suppress Eurasian watermilfoil, not eliminate it. Therefore, control by weevils is most useful for long-term control in lower priority sites and over large areas where other management actions are less effective. High priority areas where effective and rapid control is needed (e.g., boat channels, beaches, docks) should be managed with other approaches.

**Licensee's Response**

Section 8.B. of the plan has been revised to state that weevils may be useful for long-term control, but that other approaches may be required for high priority areas where rapid control is needed.

**Michigan Department of Natural Resources Comment (Letter dated June 13, 2005)**

The licensee should determine if the native milfoil weevil, *Eugrychiopsis lecontei*, is present in the impoundment. This can be done by following procedures outlined in the following University of Minnesota link: http://www.fw.umn.edu/research/milfoil/milfoilbc/Doyouhaveweevils.html. Additionally, if the weevil is found, measures should be taken to encourage overwinter survival (this may include drawdown and increased leaf litter along shoreline).

**Licensee's Response**

The licensee believes that formal studies to identify the presence or absence of the native milfoil weevil are outside of the scope of activities specified by License Article 406. However, Section 4 of the plan has been revised to indicate that Eurasian milfoil plants will be examined for signs of weevil damage and observations will be included in the report prepared in accordance with Section 7 of the plan. Conditions of the project license do not permit the licensee to alter project impoundment levels to encourage weevil overwintering. The project's riparian zone is almost entirely forested, and increasing leaf litter is not considered to be necessary or practical.

**Michigan Department of Natural Resources Comment (Letter dated June 13, 2005)**

We recommend that the weevil are stocked at a density of 10 per $m^2$ or 100,000 per ha, which is less than the $25m^2$ recommended, but should be sufficient to allow population viability. [The comment includes a footnote that cites a report entitled "Factors influencing the control of Eurasian watermilfoil with native or naturalized insects" (R. Newman, D. Ragsdale, and D. Biesboer, 1999) as the source for the recommended stocking density.]

**Licensee Response**

Section 8.B has been revised to include the recommended stocking density. The revision also cites concerns noted by the University of Minnesota at the web site cited above.

**Michigan Department of Natural Resources Comment (Letter dated June 13, 2005)**

Section 8.C – Procedures for Obtaining Technical Assistance

The last sentence should be clarified to read "The need for control measures will be based on the abundance of nuisance plants. The City shall control the invasive plants as recommended by the resource agencies." MDNR recommendations are included in this letter.

**Licensee Response**

This comment responds to a sentence in the draft plan that reads as follows: "The need for control measures will be evaluated based on a determination of whether the nuisance species are becoming more abundant or increasing in dominance, and on the availability of suitable control measures." The licensee believes that this language appropriately reflects the intent of Article 406. This intent is noted in Paragraph 24 of the new license, which states that the article "requires an invasive plant monitoring plan including control measures when deemed appropriate by the Commission." Based on this language, the licensee does not believe that a declaration of intent to implement control measures based exclusively on future recommendations of the resource agencies is appropriate. However, the licensee has revised its plan to reflect the fact that approaches and methods recommended by the MDNR have been incorporated into the plan. The last sentence has been revised to read as follows: "The City will utilize control methods outlined in this plan or other suitable methods that may be available at a future date."

**U.S. Fish and Wildlife Service**

No comments were received.

MEAD HUNT

*Designing the future*

May 18, 2005

Ms. Jessica Mistak
Habitat Management Unit
Fisheries Division
Michigan Department of Natural Resources
Marquette Fisheries Station
484 Cherry Creek Road
Marquette, MI 49855-8999

Ms. Janet Smith
Field Supervisor
U.S. Department of the Interior
Fish & Wildlife Service
Green Bay Field Office
2661 Scott Tower Drive
New Franken, WI 54229-9565

Subject: Article 406 – *Draft Invasive Plant Monitoring Plan*
Order Issuing New License – Major Project (issued January 6, 2005)
Sturgeon Falls Hydroelectric Project
FERC Project No. 2720
Norway, Michigan

Dear Ms. Mistak and Ms. Smith:

On behalf of the City of Norway, I am hereby submitting a copy of the *Draft Invasive Plant Monitoring Plan* to each of you for your review and comment. The plan has been prepared in accordance with Article 406 of the above-referenced new license for a major water power project.

Please submit any review comments you may have by June 18, 2005. Upon receipt of any review comments, the *Draft Invasive Plant Monitoring Plan* will be finalized and submitted to the Federal Energy Regulatory Commission for approval.

Thank you for your time and consideration in this matter. If you have any questions, please contact me.

Sincerely,

MEAD & HUNT, Inc.

Linda D Mitchell

Linda D. Mitchell
Project Manager

Enclosure

cc: Mr. Joe Pickart, City of Norway

Mead & Hunt Inc. 6501 Watts Road Madison Wisconsin 53719-2700
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STATE OF MICHIGAN
JENNIFER M. GRANHOLM
GOVERNOR
DEPARTMENT OF NATURAL RESOURCES
LANSING
REBECCA A. HUMPHRIES
DIRECTOR

Refer to: 4202.2.33

June 13, 2005

Ms. Linda Mitchell
Mead & Hunt
6501 Watts Rd.
Madison, WI 53719

Dear Ms. Hunt,

Subject: Article 406 Draft Invasive Plant Monitoring Plan
Sturgeon Falls Hydroelectric Project (FERC No. 2720)

The Michigan Department of Natural Resources (MDNR) has received your May 18, 2005 Sturgeon Falls Hydroelectric Project Draft Invasive Plant Monitoring Plan. We offer the following comments:

4. Follow-up Monitoring

In addition to purple loosestrife and Eurasian watermilfoil, the City of Norway should monitor for species of concern identified by the Michigan Department of Environmental Quality (MDEQ) Office of the Great Lakes (see Michigan's Aquatic Nuisance Species State Management Plan 2002). Although species other than purple loosestrife and Eurasian watermilfoil are not listed by MDEQ at this time, over the course of the license, it is anticipated that additional invasive species will be introduced (e.g., hydrilla), thus requiring additional monitoring and control.

Because of the importance vested in early identification and control of nuisance aquatic plant species, MDNR recommends annual monitoring as opposed to the licensees suggestion of biennial monitoring. Annual monitoring is important, especially in the beginning of a monitoring program, to identify existing plants, aggressively control invasive plants before they spread, and evaluate effects of initial control efforts.

6. Management Practices the Licensee Will Implement to Prevent the Spread of Nuisance Species

The last sentence should be modified to include Eurasion watermilfoil along with purple loosestrife. Additionally, MDNR defines small infestation as less than 100 plants, as opposed to the licensee's suggestion of 2 to 5 plants.

In addition to hand pulling, MDNR recommends the following management practices:



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- If small patches (e.g., fewer than 100 plants) are documented, these should be hand pulled by boat or scuba divers. Special care must be taken to collect all roots and plant fragments during removal. Care should also be taken to not destroy native plants. Plants should be properly disposed land.
- For stands less than 10,000 square feet, we recommend hand pulling and selective (systemic) chemical treatment (either Rodeo or 2, 4-D).
- For stands 10,000 square feet to 5 acres, we recommend selective (systemic) chemicals and introduction of leaf feeding beetles (*Galerucella spp*) or native milfoil weevils (*Euhrychioppsis lecontei*) as appropriate.
- For stands greater that 5 acres, we recommend selective (systemic) chemicals, introduction of leaf feeding beetles or native milfoil weevils, and mechanical harvesting.

8. Control Measures

A. Purple Loosestrife

2nd paragraph- Clarify last sentence to define "very small infestation of limited area" as stands of fewer than 100 plants.

3rd paragraph- If chemical treatment is necessary, we recommend Rodeo application when plants have recently begun flowering (e.g. July).

4th paragraph- If biological control is necessary, the licensee should release a minimum of 2,000 leaf feeding beetles into the affected area.

B. Eurasian milfoil

2nd paragraph- If chemical treatment is necessary, we recommend 2,4-D application in early spring (one week after ice out until littoral zone reaches 60°F- after the water reaches 60°F, native plants begin growing and could be damaged). Treatment with 2,4-D is recommended again in the fall after the native plants have died back. The chemical should be sprayed 15 to 20 feet around the bed to help kill off runners and smaller plants not visible from the boat. Since chemicals are 80-85% effective, chemical treatment should be followed by hand pulling via scuba diving and/or spring and fall treatment over the same beds.

3rd paragraph- Conventional harvesting equipment including a harvester, onshore conveyer, and trucks may be used to open up small high-use areas (e.g., boat lanes, marinas, boat launches) and control free floating plant fragments in open water. Mechanical harvest of the entire impoundment is not recommended because control is temporary and will need repeated every 4-6 weeks during the growing season.

4th paragraph- Weevils will suppress Eurasian watermilfoil, not eliminate it. Therefore, control by weevils is most useful for long-term control in lower priority sites and over large areas where other management actions are less

effective. High priority areas where effective and rapid control is needed (e.g., boat channels, beaches, docks) should be managed with other approaches.

The licensee should determine if the native milfoil weevil, *Euhrychiopsis lecontei*, is present in the impoundment. This can be done by following procedures outlined in the following University of Minnesota link http://www.fw.umn.edu/research/milfoil/milfoilbc/Doyouhaveweevils.html. Additionally, if the weevil is found, measures should be taken to encourage overwinter survival (this may include reduced drawdown and increased leaf litter along shoreline).

We recommend that the weevil are stocked at a density of 10 per $m^2$ or 100,000 per ha, which is less than the $25m^{-2}$ recommended[1], but should be sufficient to allow population viability.

C. Procedures for Obtaining Technical Assistance

The last sentence should be clarified to read "The need for control measures will be based on the abundance of nuisance plants. The City shall control the invasive plants as recommended by the resource agencies." MDNR recommendations are included in this letter.

If you have any questions about this matter, please contact Jessica Mistak, Senior Fisheries Biologist, 906-249-1611 ext 308 or mistakjl@michigan.gov. If you wish to contact Jessica Mistak in writing, her address is:

MARQUETTE FISHERIES STATION
MICHIGAN DEPARTMENT OF NATURAL RESOURCES
484 CHERRY CREEK RD
MARQUETTE, MI 49855

Sincerely,

Jessica Mistak

Jessica Mistak, Senior Fisheries Biologist

cc: Ms. Janet Smith, FWS
Mr. Chris Freiburger, MDNR
Mr. Mike Herman, MDNR

[1] Newman, R.M., Ragsdale, D.W., and Biesboer, D.D. 1999. Factors influcencing the control of Eurasian watermilfoil with native or naturalized insects. Fourth Status Report for 1999-2001 to the Minnesota Department of Natural Resources, Ecological Services, St. Paul, MN.