

ORIGINAL

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COMMISSION



March 21, 2011

The Secretary  
Federal Energy Regulatory Commission  
Mail Code: DHAC, PJ-12.3  
888 First Street, N.E.  
Washington, D.C. 20426

2011 MAR 28 P 1:50

FEDERAL ENERGY  
REGULATORY COMMISSION

**Re: Grandmother Falls Hydroelectric Project, FERC License No. 2180 – Exotic Species Monitoring Report for CY2008**

Dear Secretary:

Article 407 of FERC License No. 2180 required PCA Hydro (PCA) to submit an Invasive Species Management Plan for approval contingent upon review and approval by both the Wisconsin Department of Natural Resources (WDNR) and U.S. Fish and Wildlife Service (FWS). On September 26, 2005, PCA received submitted a plan, approved by both WDNR and FWS, to the FERC. The FERC approved the plan, with conditions, on January 19, 2006.

The principal conditions imposed by FERC require that PCA;

- a) Conduct the exotic plant surveys described in the plan annually for five years beginning in 2006, and
- b) Solicit comments on the draft annual report from the WDNR and FWS and,
- c) Submit the final annual report to the FERC including any changes recommended by WDNR and FWS.

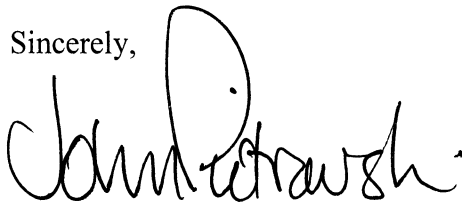
Enclosed is a copy of the 2010 monitoring report that documents the presence and locations of purple loosestrife, reed canary grass, and Eurasian water milfoil (single floating sprig) found within the project. As was the case in 2009, curly-leaf pondweed was not encountered during the meander survey nor was giant reed grass seen during the shoreline survey.

In correspondence dated 14 February 2011, PCA provided WDNR and FWS each with a copy of the 2010 annual report for review. The agencies were asked to provide written comments regarding this plan to PCA by the close of business on 15 March 2011; no comments were received.

Therefore, we are submitting to the FERC the 2010 annual report as final per Article 407 requirements. Copies of relevant correspondence are also enclosed.

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

Sincerely,

A handwritten signature in black ink, appearing to read "John Piotrowski". The signature is fluid and cursive, with a large initial "J" and "P".

John Piotrowski  
Environmental Manager

Enclosures

cc: Bruce Ridley (letter only)  
John Stelling (letter only)

Biologist  
U.S. Fish & Wildlife Service  
2661 Scott Tower Drive  
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WDNR Biologist  
107 Sutliff Avenue  
Rhineland, WI 54501

File GMD 2250  
File GMD 2260



February 14, 2011

Biologist  
U.S. Fish & Wildlife Service  
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Aquatic Biologist  
WDNR  
107 Sutliff Avenue  
Rhineland, WI 54501

**Re: Grandmother Falls Hydroelectric Project, FERC License No. 2180 – Exotic Species Monitoring Report for CY2009**

Dear Agency Representative:

Article 407 of the Federal Energy Regulatory Commission's (FERC) License No. 2180 mandates that PCA Hydro (PCA) prepare an Invasive Species Management plan that must be reviewed and approved by the Wisconsin Department of Natural Resources (WDNR) and U.S. Fish and Wildlife Service (FWS). Said plan was submitted to the agencies, reviewed and ultimately approved by FERC on January 19, 2006. The plan requires that PCA conduct invasive plant surveys annually for five years (beginning in 2006) and submit an annual report to the FERC subsequent to review and approval by both WDNR and FWS. Accordingly, PCA is providing WDNR and FWS each with a copy of the 2010 annual report for review.

The 2010 survey findings can be briefly summarized as follows:

- Curly-leaf pondweed and giant reed grass were not found within the flowage
- One floating sprig of Eurasian water milfoil was documented
- Purple loosestrife was encountered in small clusters at 47 locations. The number of colony clusters increased as 34 of the clusters were part of mapped colonies in 2009. Colonies decreased in size, but increased in density due to herbicide application.
- The extent of reed canary grass infestation precludes the use of tradition suppression actions such as prescribed burns, mowing, cultivation or herbicide application.

We request that you submit any written comments regarding this plan to PCA by the close of business on 15 March 2011. An absence of reply will be considered an acceptance of the report contents.

Sincerely,

A handwritten signature in black ink, appearing to read "John Piotrowski". The signature is fluid and cursive, with a large initial "J" and "P".

**John Piotrowski**  
**Environmental Manager**

**Enclosure**

**cc: Bruce Ridley (letter only)**  
**John Stelling (letter only)**  
**GMD 2260**  
**GMD2260**

# GRANDMOTHER FALLS HYDROELECTRIC DAM

FERC PROJECT 2180-WISCONSIN

## EXOTIC SPECIES MONITORING REPORT YEAR 5 – 2010



*Prepared for*

# PCA Hydro, Inc.

February 2011

*Prepared through the collaborative efforts of*

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## INTRODUCTION

Article 407 within the Federal Energy Regulatory Commission (FERC) license issued to Packaging Corporation of America (PCA) for the Grandmother Falls Flowage Hydroelectric Project (FERC No. 2180), located in the Town of Bradley, Lincoln County, Wisconsin (Map 1), required PCA to submit an Invasive Species Management Plan for approval. On September 26, 2005, a plan, reviewed by the Wisconsin Department of Natural Resources (WDNR) and the U.S. Fish & Wildlife Service (USFWS), was submitted to and then accepted, with conditions, by FERC on January 19, 2006. The two main conditions associated with the acceptance of the plan were 1) PCA must conduct the exotic plant surveys as described in the plan annually for five years beginning in 2006, and 2) an annual report must be submitted to the WDNR, USFWS and FERC for review and approval.

NES Ecological Services and Onterra, LLC implemented the monitoring during the 2006-2010 growing seasons to document the presence and location of invasive plant species observed within the project waters (Maps 2 and 3) so their occurrence can be tracked over time. Species taken into consideration for the 2010 investigation, as outlined in the Invasive Species Management Plan, include purple loosestrife (*Lythrum salicaria*), giant reed grass (*Phragmites australis*), curly-leaf pondweed (*Potamogeton crispus*), reed canary grass (*Phalaris arundinacea*), and Eurasian water milfoil (*Myriophyllum spicatum*). Preparation of this report documents the results of the 2010 survey and satisfies the condition regarding the submittal of an annual report.

## METHODS

### Meander Survey

Curly-leaf pondweed (CLP) begins growing immediately following ice out, reaches maturity by early to mid June, and then dies off in early to mid July, the time when most aquatic plants are just reaching peak biomass. Since it is at peak biomass in June, the extent of curly-leaf pondweed is most accurately documented if surveys are conducted during this time period. Therefore, a meander survey of the project water's littoral zone (Map 2) was completed on June 10, 2010. The survey was accomplished by navigating a boat throughout the project area and scanning the water for colonies of curly-leaf pondweed. GPS points were automatically collected to track survey paths (Map 2).

### Point-intercept Survey

Point-intercept surveys allow the systematic sampling of submerged plants within project waters and ensure all areas of the littoral zone are visited. Based upon calculation techniques supplied by the WDNR (WDNR 2005) that employ water surface area (624 acres) and shoreland development factor (7.29), a plot resolution of 55-meters was applied to the project waters displayed in Map 3. Using this information, a total of 885 points were selected to be surveyed within the Grandmother Falls Flowage.

NES performed a point-intercept survey on August 19 & 20, 2010 within the Grandmother Falls Flowage to detect the presence of Eurasian water milfoil (EWM), remaining CLP and other potential submerged, exotic plant species. At each point (plot), submerged plants were collected

with a rake for identification and the plot's water depth was determined using a depth finder. When detected, the locations of exotic plant colonies were GPS located and water depth was recorded. The extents of each colony were determined through numerous rake tows. Each mapped colony was assigned a density rating of 1, 2, or 3 and depicted as a polygon depending on the density rating for each species (Map 4). A colony was determined to be those areas containing large groups ( $\geq 10$  individuals) of plants. A rating of 1 indicates a sparse colony, likely containing a mix of exotics and natives; while a rating of 3 indicates a colony dominated by exotics. However, some exotic occurrences were too scattered to be mapped as colonies. In these cases, individual plants or small groups ( $\leq 9$  individuals) of plants were mapped using points. In addition to those groups identified within the point-intercept plots, EWM found outside the baseline survey points was also recorded as either a colony or a point, given a density rating, and mapped.

## Shoreline Survey

Following the point-intercept survey, NES ecologists scanned the entire shoreline and shallow water areas of the project waters (Map 1) for exotic emergent species. Occurrences of purple loosestrife, reed canary grass, and giant reed grass within 10 feet of the water's edge were identified, mapped using GPS, and a density rating applied as described above.

In addition to identifying and mapping purple loosestrife, the WDNR also requested that small clusters be removed during the annual surveys. Therefore, all purple loosestrife plants identified were targeted and manually/chemically removed following the 2010 survey (September 9, 2010). Treated areas for purple loosestrife are shown on Map 4.

Photographs from the 2010 survey are located in Appendix A.

## RESULTS

### Meander Survey

No colonies of curly-leaf pondweed were encountered during the meander survey conducted on June 10, 2010. To document the mid-June survey, GPS tracking logs were automatically recorded and are displayed on Map 2.

### Point-intercept Survey

A total of 885 points were selected within the project waters based on WDNR guidelines; however, only 458 of these points were surveyed due to existing field conditions. The remaining 427 points were either inaccessible by boat ("not visited") or they were at depths of  $\geq 10$  feet ("too deep"), beyond the depth of plant growth (Map 3).

One sprig of Eurasian water milfoil was found floating near one of the 458 points surveyed in August, 2010 (Map 4).

### Shoreline Survey

Giant reed grass, once again, was not discovered within the project area during the survey. Reed canary grass, on the other hand, was found to be very prevalent in preferred habitat types along the shoreline of Grandmother Falls Flowage. Grass coverage by the species continues to be  $\sim 50\%$ ,



which made it impossible to map; therefore, this species is not shown on the attached maps. Purple loosestrife was also encountered during the survey; however, this species is not as common as reed canary grass. Seven colonies were identified as polygons and 47 other small clusters were found along the shoreline and mapped (Map 4). Three colonies were deemed medium density (2), with the remainder being low density (1). All colonies and small groups were removed by clipping off the seed heads and chemically treating the stems.

## DISCUSSION

The 2010 surveys conducted within Grandmother Falls Flowage again indicated the presence of purple loosestrife and reed canary grass, while Eurasian water milfoil was isolated to one floating sprig and curly-leaf pondweed and giant reed grass were not encountered. Based on the results, NES and Onterra came to the following conclusions and management alternatives for each species.

The comprehensive aquatic vegetation surveys conducted in 2000 and 2006-2010 did not indicate the presence of curly-leaf pondweed or giant reed grass within or adjacent to the flowage. The species continued absence has led us to believe that it is very unlikely they will suddenly appear in the future.

In 2000, the aquatic vegetation surveys conducted by NES did not identify the occurrence of Eurasian water milfoil within project waters. However, the presence of this species in Lake Mohawksin, upstream of Grandmother Falls Flowage, made it highly probable that EWM would establish itself within project waters due to its ability to root from floating plant fragments. In 2006, 16 separate occurrences were found and mapped. This number decreased to 12 in 2007, 6 in 2008, 0 in 2009 and 1 in 2010 (Table 1). Although one EWM plant was found in 2010, it was floating; therefore, management actions are not suggested at this time.

In 2010, small clusters of purple loosestrife (indicated as a point) occurred at 47 locations along the river, compared to 7 locations in 2009, 14 locations in 2008 and 10 locations found in 2007 and 2006. Thirty four of these clusters were included as part of mapped colonies in 2009. In addition, one colony mapped as low density in 2009 split into two medium density colonies; one low density colony decreased in size and remained the same density; one decreased in size and became denser; and three remained the same density and size (Table 2) (Map 4).

Cutting seed heads and treating them with herbicide (Rodeo) in 2009 eliminated many of the small clusters identified in the survey. In general, colonies saw a reduction in size, but an increase in density as a result of herbicide application.

Results of the 2010 shoreline survey once again indicate that reed canary grass is prevalent (density = 2). The Wisconsin DNR recommends a variety of methods for suppression of reed canary grass including prescribed burns, mowing, frequent cultivation or herbicide application. However, the frequency and extent at which reed canary grass was found within the project site suggests that the infestation is beyond feasible control by these methods.

**Table 1. Eurasian Water-Milfoil 2009-2010 Survey Comparisons (Map 4).**

Location	Status Compared to 2008	Comments
Mile 1, upstream from Grandmother Falls Dam	1 population <b>not located</b>	Population located on west side of river near portage
Between Miles 1-2, upstream from Grandmother Falls Dam	1 population <b>not located</b>	Located on west side of river north of Mile 1 line (also located in 2006)
Between Miles 2-3, upstream from Grandmother Falls Dam	1 population <b>not located</b>	Located on east side of island at confluence of Pine River
Between Miles 5-6, upstream from Grandmother Falls Dam	2 populations <b>not located</b>	Population located on north and south sides of the river (also located in 2006)
Between Miles 5-6, upstream from Grandmother Falls Dam	1 population <b>not located</b>	Located on east side of south island

**Table 2. Purple Loosestrife 2009-2010 Survey Comparisons (Map 4).**

Location	Status Compared to 2009	Comments
Mile 1, upstream from Grandmother Falls Dam	<b>No populations</b>	
Between Miles 1-2, upstream from Grandmother Falls Dam	2 colonies (density = 1) <b>same</b>	Populations located on the south side of the river
Between Miles 2-3, upstream from Grandmother Falls Dam	1 colony (density = 1) became <b>13 clusters</b>	Population located on north side of river
Between Miles 3-4, upstream from Grandmother Falls Dam	2 clusters <b>not located</b>	Located on east side of river
Between Miles 3-4, upstream from Grandmother Falls Dam	1 colony (density = 1) became <b>2 smaller colonies (density = 2) and 7 clusters</b>	Population is located on island
Between Miles 4-5, upstream from Grandmother Falls Dam	<b>No populations</b>	
Between Miles 5-6, upstream from Grandmother Falls Dam	<b>No populations</b>	
Between Miles 6-7, upstream from Grandmother Falls Dam	1 colony (density = 1) became <b>7 clusters</b>	Populations on small island west of larger island.
Between Miles 6-7, upstream from Grandmother Falls Dam	1 colony (density = 1) became a <b>smaller colony (density = 2) and 2 clusters</b>	Populations on small island west of larger island.
Between Miles 6-7, upstream from Grandmother Falls Dam	<b>8 new clusters, 2 clusters same</b>	Population west of boat landing
Between Miles 6-7, upstream from Grandmother Falls Dam	1 <b>new colony</b> (density = 1)	Population west of boat landing
Between Miles 6-7, upstream from Grandmother Falls Dam	1 colony (density = 1) became <b>smaller and 5 clusters</b>	Located on east side of river
Between Miles 6-7, upstream from Grandmother Falls Dam	<b>3 new clusters</b>	Located on east side of river

## CONCLUSION

As 2010 was the last year of surveys, we recommend periodic (5 year intervals) site visits to re-survey the shoreline and document the spread of invasive species. Without further treatment, the existing purple loosestrife colonies will continue to expand. The release of *Galerucella* beetles in the dense populations of purple loosestrife is an option to control the spread of the species in the long term. However, to successfully rear a healthy population of beetles, there can be little or no herbicide application within the host colony. Therefore, we also recommend introducing beetles into the dense colonies of purple loosestrife and periodically chemically treating the single stems and clumps of the species that occur along the banks.

## REFERENCES

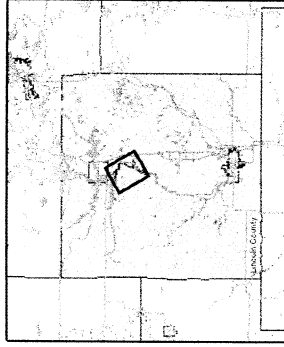
Wisconsin Department of Natural Resources. April 2005. Aquatic Plant Management in Wisconsin – Draft.

# Map 1

## Grandmother Flowage

Lincoln County, Wisconsin


### Project Waters & Base Point-Intercept Locations



Extent of large map shown in red.


### Legend

- P-I Survey Location

 Project Waters

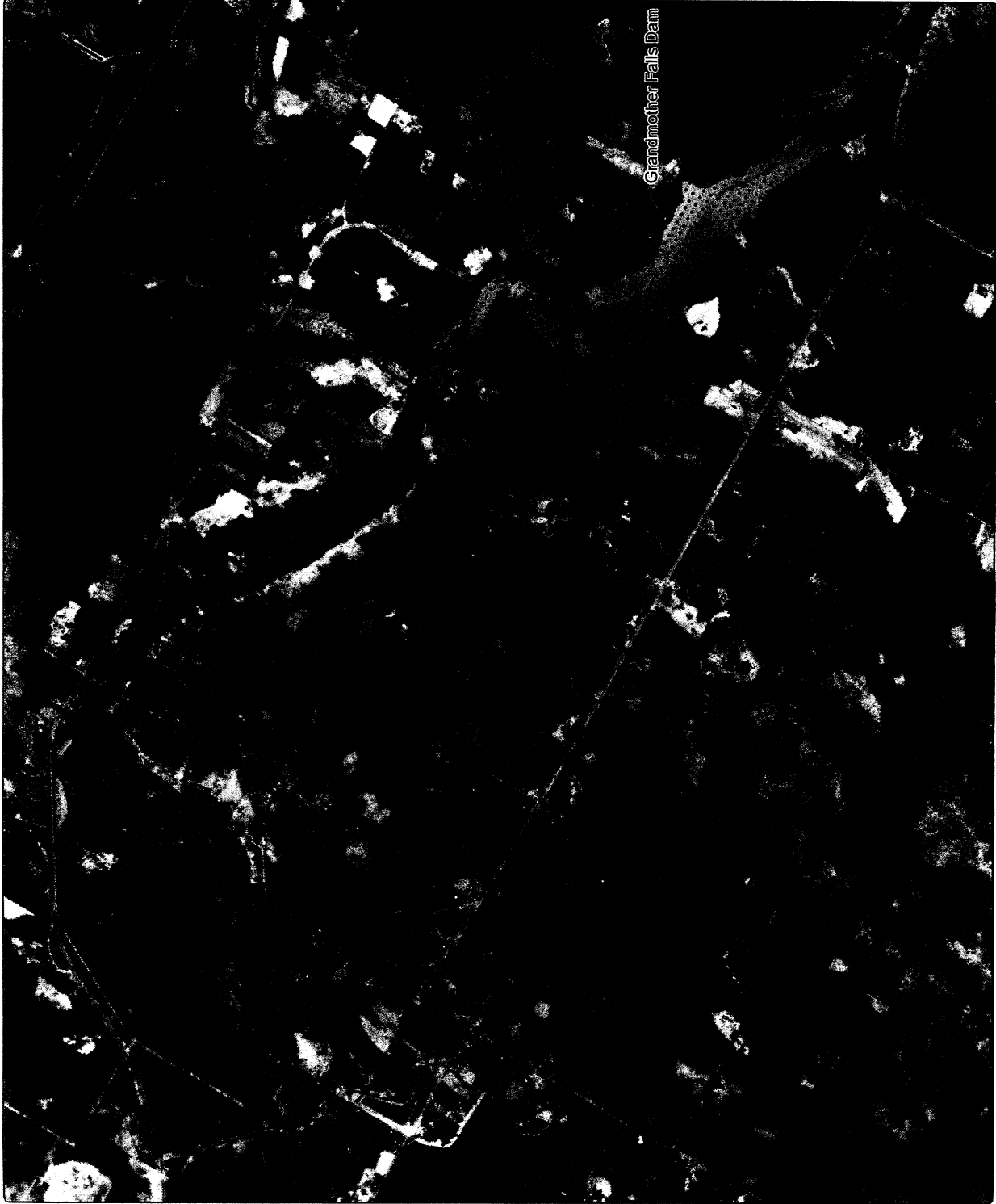


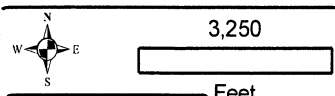
2,100  
Feet



Map Date: March 17, 2006

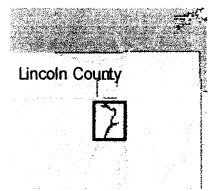
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Sources:  
Aquatic Plant Survey: Onterra, 2010  
Roads and Hydro: WDNR  
Map Date: November 23, 2010



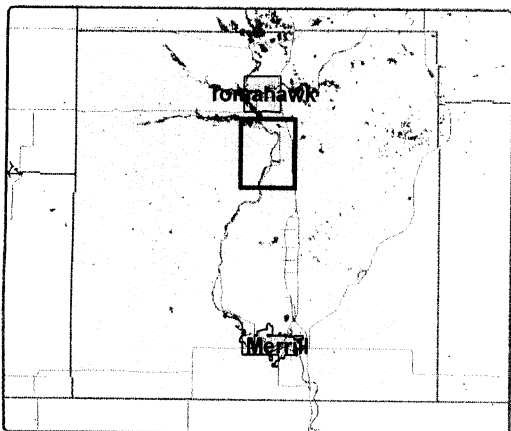
Extent of large map shown in red.

- Legend**
- Survey Path  
(Points recorded along line at 30-second intervals)
  - Public Access

## Map 2


**Grandmother Falls  
Flowage**  
Lincoln, County Wisconsin  
**Curly-leaf Pondweed  
Survey Track**

201103



Extent of Large Map Shown in Red.

### Legend

- Contains EWM
- Visited
- Not Visited
- Too Deep
-  Project Waters

## Map 3

### Base Point-Intercept Locations


### Grandmother Falls Flowage

Lincoln County, Wisconsin

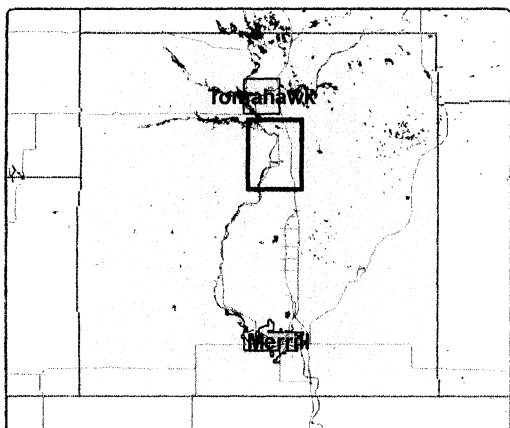
1 inch = 0.5 miles



Data Sources:  
 Roads and Hydro: WDNR  
 Orthophoto: NAIP, 2008  
 Aquatic Plant Survey: NES, 2010  
 Map Date: November 23, 2010

 **NES Ecological Services**  
 A Division of Robert E. Lee & Associates, Inc.






2011032



Extent of Large Map Shown in Red.

Data Sources:  
 Roads and Hydro: WDNR  
 Orthophoto: NAIP, 2008  
 Aquatic Plant Survey: NES, 2010  
 Map Date: November 23, 2010

### Legend

-  Project Waters
- Point- Intercept Survey**
  -  Eurasian Water Milfoil  
Density = 1
- Shoreline Meander Survey**
  -  Herbicided Purple Loosestrife  
Individual or Small Cluster
  -  Herbicided and/or Mechanically Removed  
Purple Loosestrife Colony (Density = 1)
  -  Herbicided and/or Mechanically Removed  
Purple Loosestrife Colony (Density = 2)

## Map 4


### Exotic Species Locations

# Grandmother Falls Flowage

## Lincoln County, Wisconsin

1 inch = 0.5 miles



 **NES Ecological Services**  
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# A

## APPENDIX A

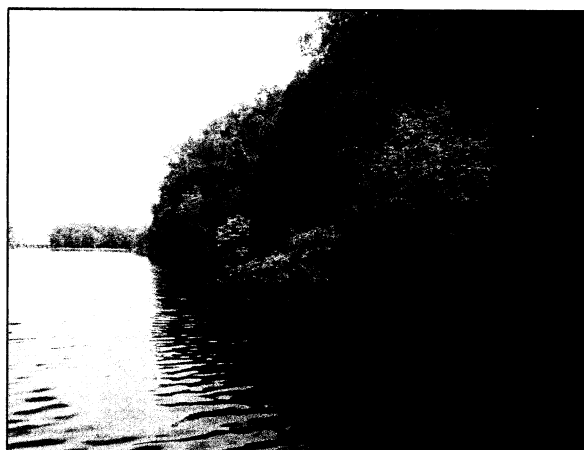
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### Site Photographs





**Photo 1.** GMF Flowage looking north between Mile 5 and 6.



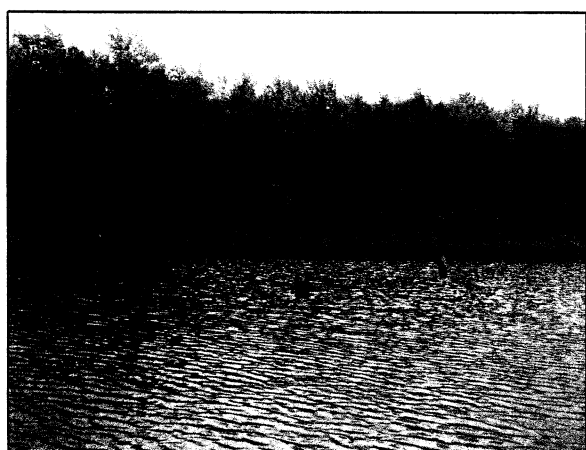
**Photo 2:** GMF Flowage looking northwest near Mile 6.



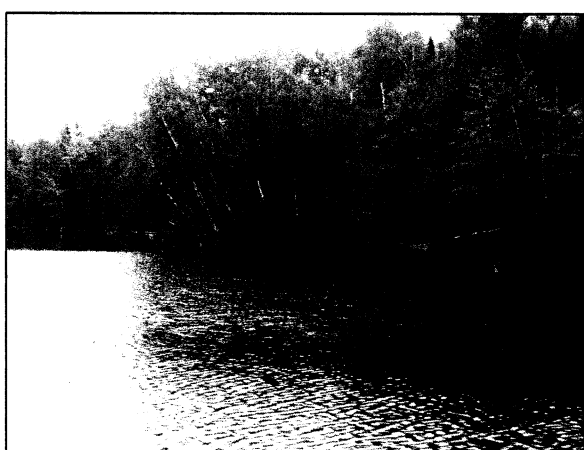
**Photo 3.** Impoundment at west end of Spirit River.



**Photo 4.** GMF Flowage looking northeast between Mile 1 and 2.



**Photo 5.** GMF Flowage looking southeast near Mile 1.



**Photo 6.** GMF Flowage looking southwest near Mile 1.

Document Content(s)

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