ORIGINAL

March 5, 2007

The Secretary
Federal Energy Regulatory Commission
Mail Code: DHAC, PJ-12.1
888 First Street, N.E.
Washington, D.C. 20426

024

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

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) Submit an annual report to the WDNR, the FWS and the FERC for review and approval.

Enclosed is a copy of the first year monitoring report that documents the presence and locations (if applicable) of purple loosestrife, reed canary grass, giant reed grass, curly-leaf pondweed and Eurasian water milfoil found within the project boundary. The report recommends that, because curl-leaf pondweed was not found, the next meander survey for curly-leaf pondweed be performed in 2010 rather than in 2007. Also, the report recommends that, due to extensive infestation, future reed canary grass monitoring be discontinued.

Other findings relative to the other cited exotics are contained in the report.

Sincerely,

John Piotrowski

John Piotrowski
Sr. Environmental Engineer

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Enclosure

cc: Biologist
U.S. Fish & Wildlife Service
2661 Scott Tower Drive
New Franken, WI 54229

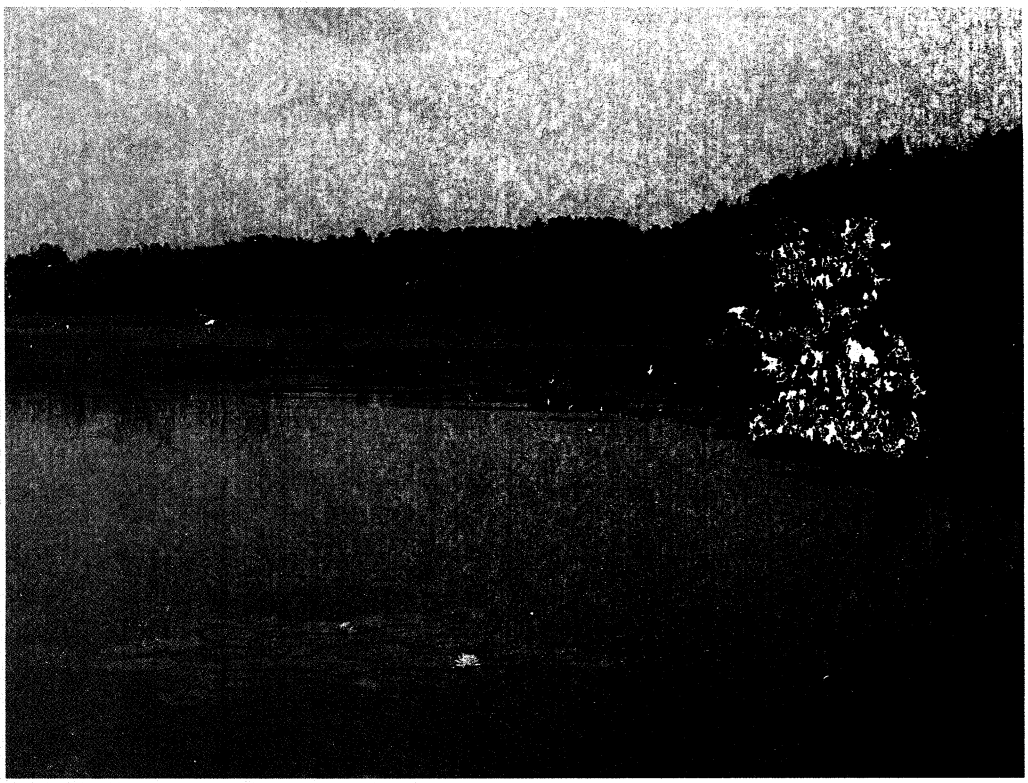
Mr. Robert Martini – WDNR Rhinelander

Gene Foster (letter only)
Bruce Ridley (letter only)
John Stelling
GMD2250

GRANDMOTHER FALLS HYDROELECTRIC DAM

FERC PROJECT 2180-WISCONSIN

EXOTIC SPECIES MONITORING REPORT YEAR 1 – 2006



Prepared for

PCA Hydro, Inc.

February 2007

Prepared through the collaborative efforts of

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Table of Contents

Maps

Attachment

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 first year of monitoring during the 2006 growing season to document the presence and location of invasive plant species observed within the project waters (Map 3) so their occurrence can be tracked over time. Species taken into consideration for this investigation, as outlined in the Invasive Species Management Plan, include purple loosestrife (*Lythrum salicaria*), reed canary grass (*Phalaris arundinacea*), giant reed grass (*Phragmites australis*), curly-leaf pondweed (*Potamogeton crispus*), and Eurasian water milfoil (*Myriophyllum spicatum*). Preparation of this report documents the results of the 2006 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 waters (Map 2) was completed during June 20 & 21, 2006 to inspect for curly-leaf pondweed (CLP) within the littoral zone. This 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 at 90 second intervals to track survey paths.

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 and Onterra performed a point-intercept survey on August 16 – 18, 2006 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 on the map. A colony was determined to be those areas containing large groups (≥ 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 (≤ 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 and Onterra 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 manually removed during the annual surveys. Therefore, clumps of 1-3 purple loosestrife plants were targeted and manually removed during the 2006 survey.

RESULTS

Meander Survey

No colonies of curly-leaf pondweed were encountered during the meander survey conducted on June 20 & 21, 2006. To document the early 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 550 of these points were surveyed due to existing field conditions. The remaining 335 points were either inaccessible by boat ("not visited") or they were at depths of ≥ 10 feet ("too deep"), beyond the depth of plant growth (Map 3). A shore check was also performed on Highway 107 along the Pine Creek area that was not assessed by boat. Invasive species were not documented in this area.

Within the 550 points surveyed August 16 – 18, 2006, Eurasian water milfoil was identified at 9 plots (Map 4). None of these nine locations contained enough plants to be mapped as a colony; therefore, they are indicated as points. The density of each was given a rating of 1 due to the small numbers present. Photo documentation of EWM is located in Attachment A.

In addition to the populations identified within the point intercept plots, two colonies and five small groups of plants were found outside the plots while traveling between survey spots (Map 4). The density of each of the seven populations is quite low; therefore, they were all given a rating of 1.

Even though these areas were found outside the plots, they were mapped so changes could be documented over time.

Shoreline Survey

Giant reed grass was not discovered within the project area during the August 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. The grass occurs so frequently within these habitats that coverage by the species is > 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. Two colonies, located on islands within the flowage, were identified and mapped (Map 4) along with ten other small groups found along the shoreline. The density of these 12 populations was estimated to be 1. Three of these groups contained less than three plants; therefore, they were removed by hand from the site (Map 4). In addition to these three clumps, another small group found on the edge of the southern most colony was also removed. Although this clump was removed, it was not included as a separate group because if its proximity to the island colony. Photo documentation of reed canary grass and purple loosestrife is located in Attachment A.

DISCUSSION/CONCLUSIONS

The 2006 surveys conducted within Grandmother Falls Flowage indicate the presence of Eurasian water milfoil, purple loosestrife and reed canary grass, while 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 & 2006 did not indicate the presence of curly-leaf pondweed within the flowage. The species continued absence has led us to believe that it is very unlikely to suddenly appear within the next couple of years; therefore, we are suggesting that the next meander survey targeting curly-leaf pondweed be conducted in June of 2010. Conducting a specific survey for this species at a frequency greater than five years appears to be unnecessary. The point intercept survey, which will continue to be conducted annually, does not target the identification of curly-leaf pondweed during the peak of its growth, but if the species were to appear in significant numbers between meander surveys, it would be noted as occurring within the project waters during this survey. If this were to happen, PCA agrees to begin monitoring the species on a more regular basis as determined by the USFWS, WDNR and FERC.

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. Six years later, 16 separate occurrences were found and mapped; however, as mentioned above, the density of each is low, with many groups containing only one or two plants. Even though 16 groups were identified, the probability of finding EWM within the littoral zone of the Grandmother Falls Flowage is low.

Although the frequency of occurrence and density of Eurasian water milfoil within the flowage is low, it has become established in 16 areas over a six year period. The species ability to grow quickly and out-compete native flora indicates that there should be continued monitoring of Eurasian water milfoil. An additional survey in 2007 will help to determine population growth patterns and locate any new populations, if they exist. Due to its low density, management actions are not suggested at this time; however, they may be required in the future if populations of this species increase dramatically. PCA will implement further action, as stated in Article 407, if requested by FERC personnel.

Giant reed grass was not found during the original survey, nor was it found during the 2006 surveys. Because PCA will continue conducting shoreline surveys for purple loosestrife, this species will be noted in the future if observed.

In 2000, reed canary grass was found at 4 out of 45 plots surveyed, but the original survey focused on the aquatic community, including islands, within the flowage. The adjacent shoreline areas were not fully surveyed; therefore a comparison to the 2000 survey cannot be made. Results of the 2006 shoreline survey indicate that reed canary grass is prevalent (density of 2) outside the water. 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. Continued monitoring of the species is not recommended.

Purple loosestrife was found at 2 of the 45 aquatic plots surveyed during the 2000 vegetation surveys. In addition to identifying this species within the established plots, approximate shoreline locations were also noted. Unfortunately, the densities and exact location of these populations was not recorded; therefore, the historic data cannot be used to determine changes, other than if the species were present or absent.

Based on the information available from the 2000 survey, no purple loosestrife was found on the northern most island within the flowage, while in 2006 a small colony was identified. The other colony identified during the 2006 survey was found on an island, north of the Wisconsin River and Pine Creek confluence (Map 4). Scattered purple loosestrife was also identified in this same area during the 2000 surveys. This island, however, is the only location that had a population similar to what was identified in 2000. The remaining eleven occurrences appear to have become established since 2000. However, at the same time, several areas associated with Bauer and Pine Creeks that contained purple loosestrife in 2000, now show no signs of the species. The exact reason for the disappearance of the plants within these areas is not know. We would expect the species to spread to new areas as it did and become denser within established areas, but that did not occur.

Because the original survey did not accurately map the shoreline, the 2006 survey should be used to accurately characterize and track the presence of purple loosestrife in the future within the project site. Although a small clump of loosestrife was removed from the southern island, the two island colonies contain the greatest density of plants while the other populations have low numbers. Three of these had so few plants that they were removed by hand while conducting the shoreline survey. The abundance of purple loosestrife within the remaining nine areas was large enough that we did not address its removal in 2006; however, we believe the infestation is small enough that cutting

along with herbicide application will effectively control the species. The release of Galerucella beetles that target purple loosestrife is another tool used to control this species, but this particular site does not appear to have enough plants to sustain a healthy beetle population. Therefore, we suggest cutting and removing the seed heads along with herbicide application in August of 2007 in order to obtain optimum suppression. Continued monitoring to document purple loosestrife populations is also suggested.

REFERENCES

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

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.: 20070319-0172

Security/Availability:

- ☑ PUBLIC
- ☐ NIP
- ☐ CEII
- ☐ NON-PUBLIC/PRIVILEGED

File Date: 3/12/07 Docket No.: P-2180

Parent Accession No.: 20070319-0171

Set No.: 1 of 1

Number of page(s) in set: 4

ATTACHMENT A

Exotic Species Photographs

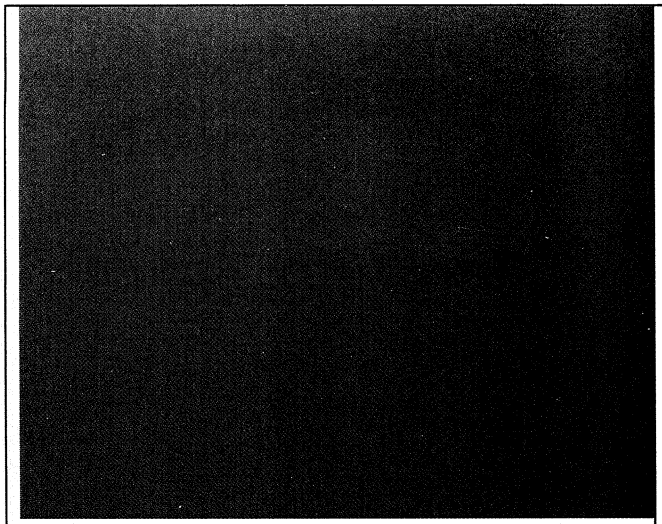

Photo 1. Eurasian water milfoil

Photo 2. Purple loosestrife in bay.

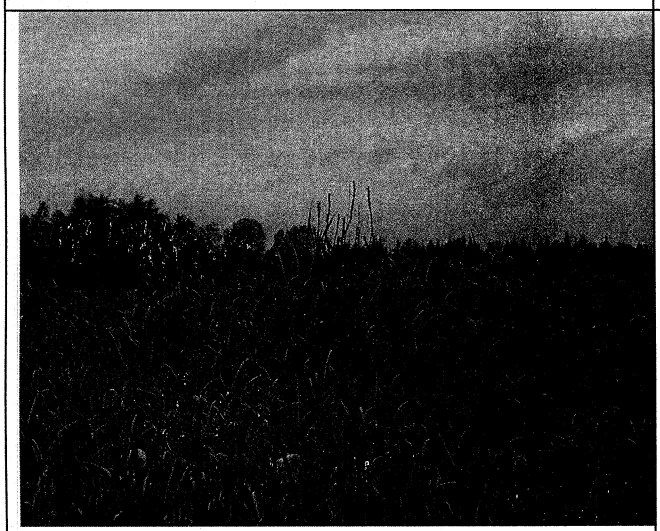

Photo 3. Purple Loosestrife island infestation.

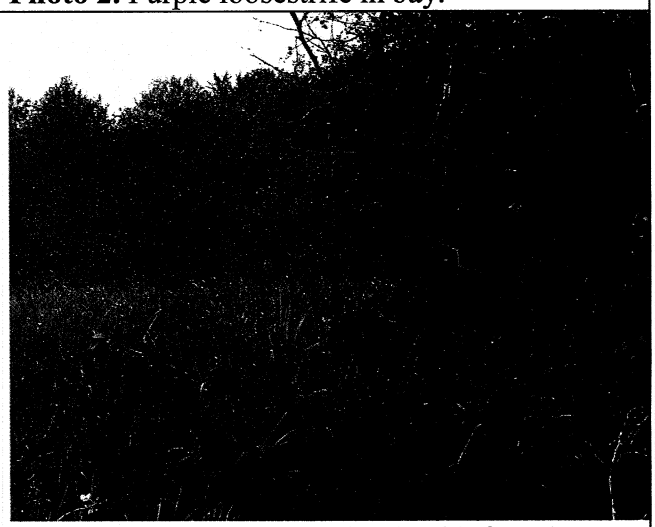

Photo 4. Purple Loosestrife island infestation.

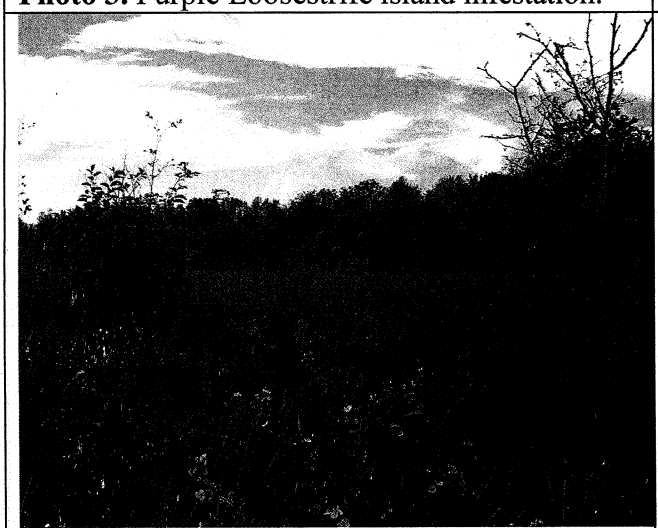

Photo 5. Purple Loosestrife island infestation.

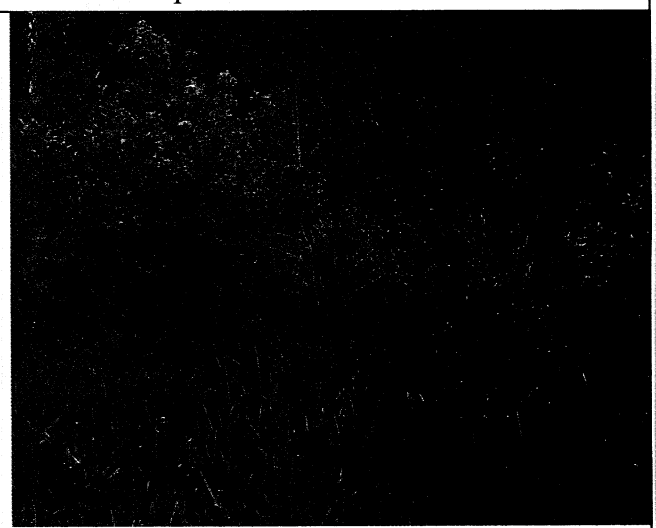

Photo 6. Purple Loosestrife and Reed Canary Grass island infestation.

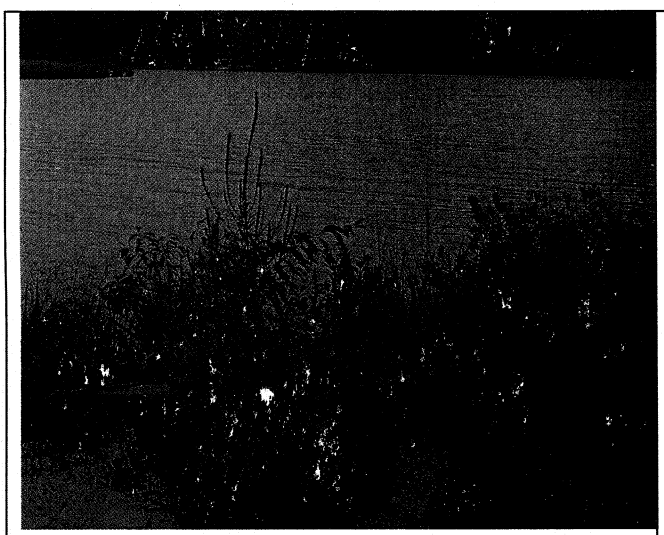

Photo 7. Hand-pulled Loosestrife.

Photo 8. Scattered EWM.

Photo 9. Scattered EWM.

Photo 10. Hand-pulled Loosestrife with Reed Canary Grass in the background.