

April 24, 2009

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FEDERAL ENERGY
REGULATORY COMMISSION



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

Re: Grandmother Falls Hydroelectric Project, FERC License No. 2180 - Exotic Species Monitoring Report for CY2008 ⁻⁰³³

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 2008 monitoring report that documents the presence and locations of purple loosestrife, reed canary grass, and Eurasian water milfoil found within the project. As was the case in 2007, curly-leaf pondweed was not encountered during the meander survey nor was giant reed grass seen during the shoreline survey.

In correspondence dated 23 March 2009, PCA provided WDNR and FWS each with a copy of the 2008 annual report for review. The agencies were asked to provide written comments regarding this plan to PCA by the close of business on 23 April 2009; no comments were received.

Therefore, we are submitting to the FERC the 2008 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 that reads "John Piotrowski". The signature is written in a cursive style with a large, prominent initial "J".

John Piotrowski
Environmental Manager

Enclosures

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

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2661 Scott Tower Drive
New Franken, WI 54229

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File GMD 2250
File GMD 2260

GRANDMOTHER FALLS HYDROELECTRIC DAM

FERC PROJECT 2180-WISCONSIN

EXOTIC SPECIES MONITORING REPORT YEAR 3 – 2008



Prepared for

PCA Hydro, Inc.

March 2009

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, 2007 and 2008 growing seasons 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 the 2008 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 2008 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 16, 2008. 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). The 2009 survey will be scheduled for mid-June.

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 4 – 6, 2008 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 (≥ 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 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 2008 survey. Treated areas for purple loosestrife are shown on Map 4.

RESULTS

Meander Survey

No colonies of curly-leaf pondweed were encountered during the meander survey conducted on June 16, 2008. 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 450 of these points were surveyed due to existing field conditions. The remaining 435 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).

Within the 450 points surveyed on August 4-6, 2008, Eurasian water milfoil was identified at 6 points (Map 4). None of these 6 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.

Shoreline Survey

Giant reed grass, once again, 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. Grass coverage by the species continues to be ~

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 14 other small groups were found along the shoreline and then mapped (Map 4). The density of these 21 populations ranged from 1-2. All colonies (density = 1 or 2) were removed by clipping off the seed heads and chemically treating the stems. Photo documentation of reed canary grass and purple loosestrife is located in Appendix A.

DISCUSSION/CONCLUSIONS

The 2008 surveys conducted within Grandmother Falls Flowage again 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, 2007, and 2008 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, but annual meander surveys will be conducted for this species during the next two years.

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 and 6 in 2008 (Table 1).

The 2007 point intercept survey resulted in the identification of eleven groups at established plots. Five of the groups identified in 2008 were the same as those found in 2007. The remaining six plots were reviewed, but no EWM was present. Those areas containing EWM in 2006, but not in 2007 were also reviewed; and no evidence of the species was found. These results indicated that only three locations have maintained a population during the three year monitoring period. Many of these locations only contained one or two plants; therefore, the fact that no evidence was found in subsequent years is not unusual. The plants likely did not over-winter successfully. In addition to the five similar locations, one new location was found at the established plots in 2008.

No additional populations were identified outside of the point-intercept survey in 2008. Those areas found outside the established plots in both 2006 and 2007 were reviewed in 2008. The survey indicates that these areas no longer exist.

Even though 6 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 been found in over 20 areas over a seven year period. The species ability to grow quickly and out-compete native flora indicates that there should be continued monitoring of Eurasian water milfoil. In 2008, we found only one new EWM occurrence. 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 2000, 2006, 2007 or the 2008 surveys. Because PCA will continue conducting shoreline surveys for purple loosestrife, this species will be noted in the future if observed.

In 2008, small clusters of purple loosestrife (indicated as a point) occurred at 14 locations along the river, compared to 10 locations found in 2007 and 2006. Only one of the fourteen locations occurred as a cluster in 2007. One of the clusters mapped in 2007 has become a new low density colony in 2008. In addition, two colonies mapped in 2007 increased in density, four colonies decreased in density and one remained the same density but increased in size between surveys (Table 2) (Map 4).

Cutting seed heads and treating them with herbicide (Rodeo) in 2007 had a positive impact on eliminating some populations as was observed during the 2008 monitoring. Populations that were hand pulled in 2007 did not have as high of mortality as the chemically treated areas. In fact, some that were hand pulled saw population increases. Populations may have increased in these areas due to overlooked seedlings.

These observations prompted us to conduct additional maintenance activities; therefore, all plants identified within clumps and colonies in 2008 had the seed heads removed and were treated with herbicide (Rodeo). If the largest populations are not reduced by the 2008 maintenance activities, the release of *Galerucella* beetles that target purple loosestrife will be recommended for the summer of 2010. Herbicide applications will continue on small infestation in 2009 as these activities should effectively control the exotic, invasive species within the project area.

Results of the 2008 shoreline survey once again 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. Monitoring of the species will continue to ensure it does not displace all the native species along the river's shoreline.

Location	Status Compared to 2007	Comments
Mile 1, upstream from Grandmother Falls Dam	1 new population	Population located on west side of river near portage
Mile 1, upstream from Grandmother Falls Dam	3 populations not located	Populations were located north of portage on west side of river
Between Miles 1-2, upstream from Grandmother Falls Dam	1 population the same	Located on west side of river north of Mile 1 line (also located in 2006)
Between Miles 1-2, upstream from Grandmother Falls Dam	1 population not located	Population was located on the south side of the river
Between Miles 2-3, upstream from Grandmother Falls Dam	1 population the same	Located on east side of island at confluence of Pine River
Between Miles 3-4, upstream from Grandmother Falls Dam	1 population outside point-intercept plots not located	Population was located on south side of the island
Between Miles 4-5, upstream from Grandmother Falls Dam	1 population not located	Population was located on south side of the island
Between Miles 5-6, upstream from Grandmother Falls Dam	2 populations the same	Population located on north and south sides of the river (also located in 2006)
Between Miles 5-6, upstream from Grandmother Falls Dam	2 populations not located	Populations were located on south side of river at bend and east side of north island
Between Miles 5-6, upstream from Grandmother Falls Dam	1 new population found in established plots	Located on east side of south island
Between Miles 6-7, upstream from Grandmother Falls Dam	1 population not located	Population was located on west side of river

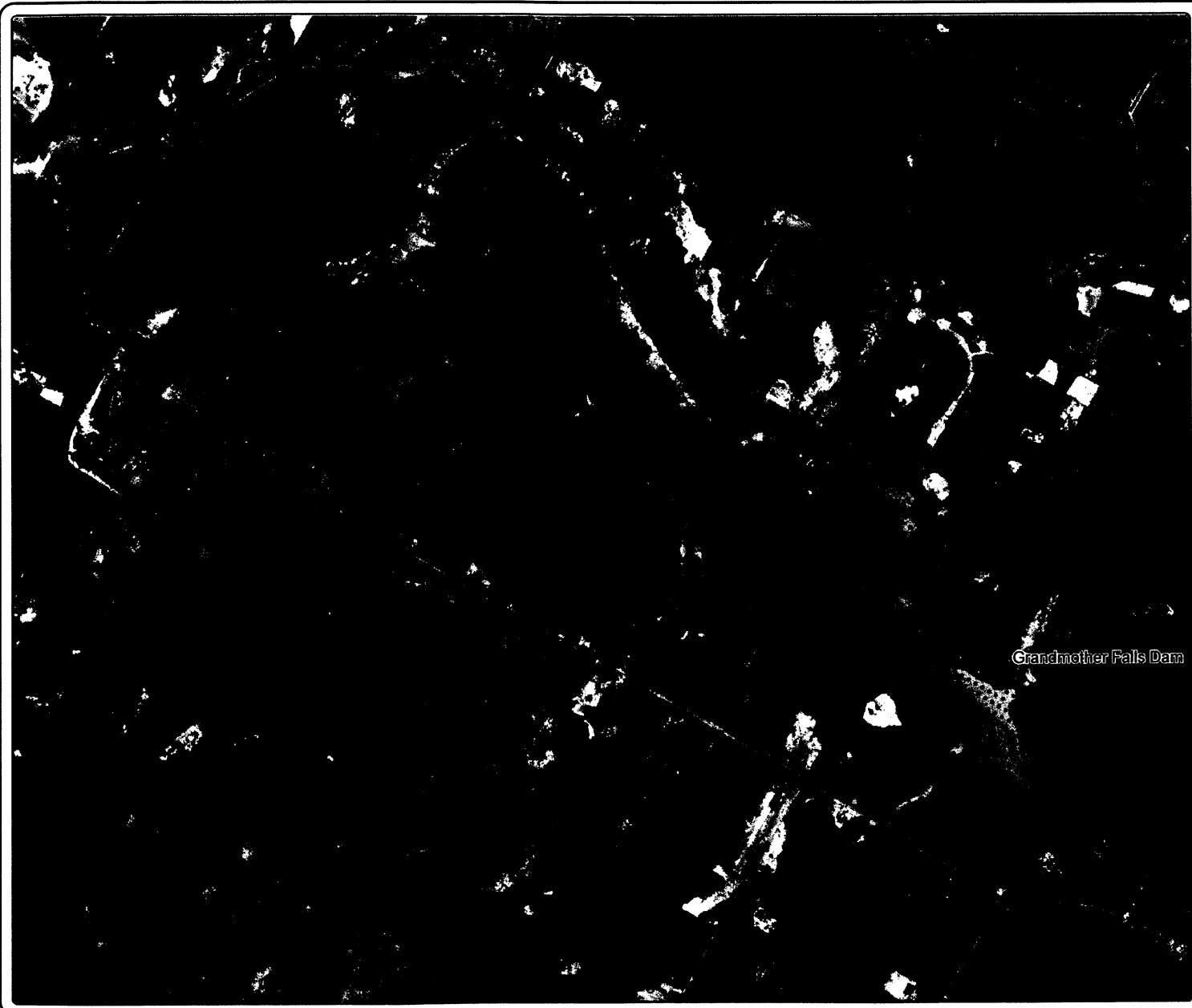
Table 1. Eurasian Water-Milfoil 2007-2008 Survey Comparisons (Map 4).

Table 2. Purple Loosestrife 2007-2008 Survey Comparisons (Map 4).

Location	Status Compared to 2007	Comments
Mile 1, upstream from Grandmother Falls Dam	No populations	
Between Miles 1-2, upstream from Grandmother Falls Dam	2 new clusters	Located on south side of river
Between Miles 1-2, upstream from Grandmother Falls Dam	2 colonies (density = 1) same	Populations located on the south side of the river
Between Miles 1-2, upstream from Grandmother Falls Dam	1 cluster not located	Located on east side of river
Between Miles 2-3, upstream from Grandmother Falls Dam	1 colony (density = 1) became larger	Population located on north side of river
Between Miles 2-3, upstream from Grandmother Falls Dam	1 new cluster	Located on the south side of the river
Between Miles 2-3, upstream from Grandmother Falls Dam	2 clusters not located	Located on the east side of river
Between Miles 3-4, upstream from Grandmother Falls Dam	5 new clusters	Located on south ½ of island
Between Miles 3-4, upstream from Grandmother Falls Dam	1 colony (density = 2) became smaller and less dense (1)	Population is located on island
Between Miles 4-5, upstream from Grandmother Falls Dam	1 new cluster	Located on east side of river
Between Miles 4-5, upstream from Grandmother Falls Dam	1 cluster became a new colony (density = 1)	Located on east side of river
Between Miles 5-6, upstream from Grandmother Falls Dam	1 cluster same	Located on north side of river
Between Miles 5-6, upstream from Grandmother Falls Dam	1 new cluster	Located on south side of island
Between Miles 5-6, upstream from Grandmother Falls Dam	2 clusters not located	Populations were located on west end of island and north side of river
Between Miles 6-7, upstream from Grandmother Falls Dam	2 colonies (density = 1) became more dense (density = 2)	Populations west of boat landing and west side of island.
Between Miles 6-7, upstream from Grandmother Falls Dam	1 colony (density = 1) became larger	Population east of boat landing
Between Miles 6-7, upstream from Grandmother Falls Dam	2 new clusters	Located on east side of river
Between Miles 6-7, upstream from Grandmother Falls Dam	1 cluster same	Located on east side of river
Between Miles 6-7, upstream from Grandmother Falls Dam	2 clusters not located	Located on island and east side of river

REFERENCES

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

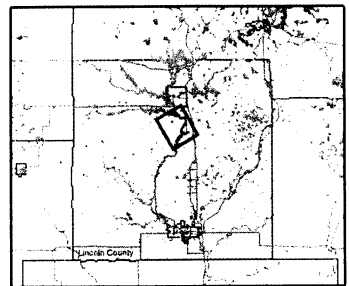


Map 1

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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Lake Management Planning

LARGE-FORMAT IMAGES

One or more large-format images (over 8 ½" x 11") go here.
These images are available in e-Library at:

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Parent Accession No.

20090512-0035

Number of page (s) in set: 3

A

APPENDIX A

Site Photographs

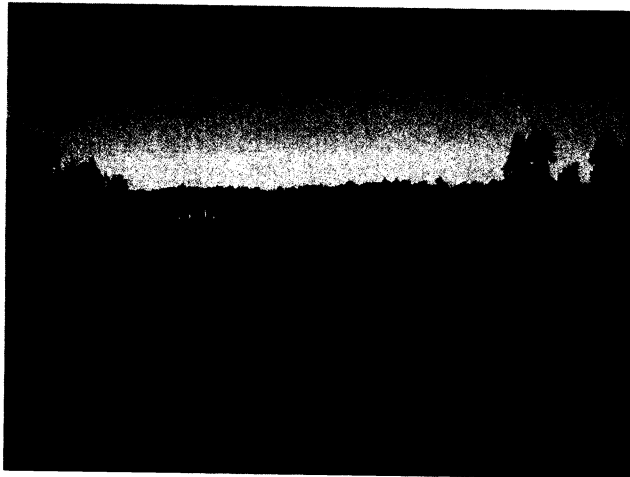


Photo 1. GMF Flowage looking north up tributary midway between Mile 2 and 3.

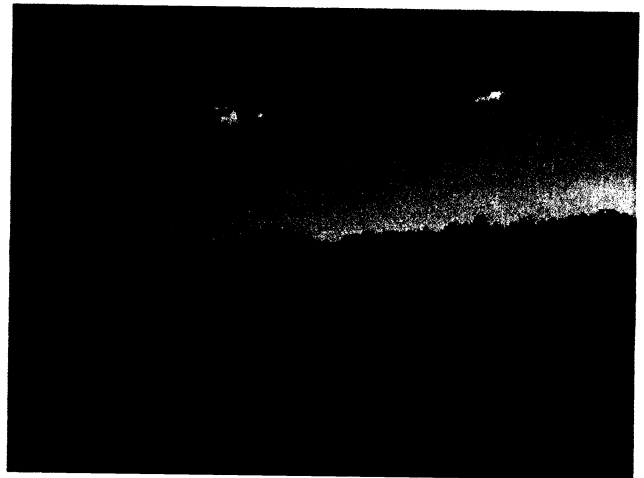


Photo 2: Reed canary grass on north shore near Mile 2 line.

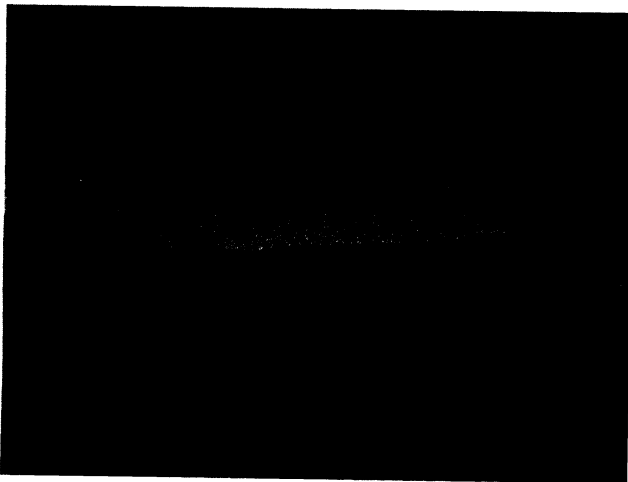


Photo 3. GMF Flowage looking north off boat landing.



Photo 4. Purple loosestrife and reed canary grass along southern shoreline west of Mile 2 line.

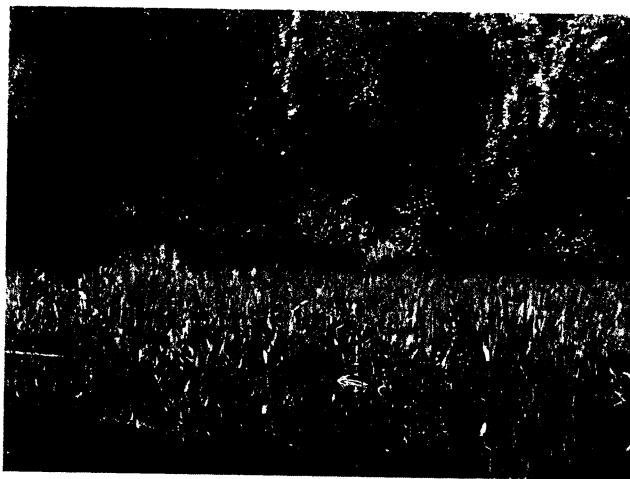


Photo 5. Purple loosestrife shoreline infestation along east shoreline north of boat landing.



Photo 6. GMF Flowage looking south along east side of island below PCA dam.