We Energies
2010 Annual Report - Nuisance Plant Control Survey
Way Dam & Michigamme Reservoir
FERC Project #1759

We Energies' Environmental department staff, Mr. Mike Grisar and Mr. Scott Horzen, conducted a survey from a boat at the Way Dam and Michigamme Reservoir project on July 27 through July 30, 2010. All waters and appropriate wetlands accessible from the boat were evaluated. Those species targeted for the survey included purple loosestrife (*Lythrum salicaria*) and Eurasian water milfoil (*Myriophyllum spicatum*). The visual meander survey included all visible shorelines and areas of shallow water adjacent to the shorelines. Shallow water was surveyed to a point where the water depth and clarity excluded visibility conducive to observing submerged vegetation. On average, this depth was at approximately 7-feet.

Additionally, We Energies' Environmental Department staff, Mr. Horzen and Mr. Tim Muehlfeld, and Ms. Ann Hruska from the Dickinson Conservation District surveyed the Michigamme River from the Highway 95 bridge north of Channing, MI downstream to Newberg Road at the Way Dam project boundary. This survey occurred on July 26 and August 1, 2010. This is an approximate 5-mile stretch of the river that We Energies committed to surveying during the annual agency meeting in Fall 2008. The effort was done to determine the extent of purple loosestrife immediately upstream of the Way Dam project, and to attempt to minimize the potential for a prolific invasion within the project limits and further down through the Menominee system.

<u>Way Dam and Michigamme Reservoir Project Area</u>

No Eurasian water milfoil was observed in the entire Way Dam and Michigamme Reservoir project area.

Purple loosestrife was observed, mapped, and removed at four locations (attached map) in 2006. All four locations (stands 1-4) occurred within the eastern portion of the project area along the shorelines of the Michigamme River, three near the mouth of the Michigamme River where it empties into the reservoir and one in the far eastern reaches of the project area.

While the license requires a survey on an alternating year basis (even years), We Energies conducted an interim survey in 2007 and again in 2009. In 2007, purple loosestrife was observed at two of the same locations identified in 2006 (i.e. stands 1 and 3). It was observed at four new locations upstream from stands 1 and 3, three of which were in the vicinity of Weber Lake, and one was along the river channel upstream from Weber Lake.

During the 2008 survey, the purple loosestrife population in the Michigamme River portion of this reservoir experienced an increase from previous survey years (Table 1). Since 2006, increases exceeding 600% and 300% have been observed in the number of plants and the number of stems recorded, respectively. In a similar trend, the number of multi-year plant observations has doubled in each of the two years since 2006, totaling nine in 2008. The number of stems recorded per plant substantially decreased from 2007 to 2008.

A trend of an increasing purple loosestrife infestation again continued in 2009. Although fewer purple loosestrife locations were observed, the number of plants observed and total number of stems increased by over 60% between 2008 and 2009 (~24x and >5x that of 2006 levels, respectively). The number of stems observed per plant remained relatively constant between

2008 and 2009. The total number of multi-year plants more than tripled between 2008 and 2009.

The 2010 survey resulted in the exponential trend of occurrences of purple loosestrife. When compared to 2009 results, the number of stand locations increased by nearly two and one-half times. Approximately 6-fold increases were observed in both the number of plants and stems observed. The number of stems per plant continues to be relatively level. However, multi-year plant observations increased ten times the levels observed in 2009.

Table 1. Summary of purple loosestrife observations 2006-2010.

	2006	2007	2008	2009	2010
# of Observed Stands	4	6	30	28	68
# of Plants Observed	4	9	57	94	558
# of Stems Observed	51	128	160	271	1732
Stems Observed per Plant	12.75	14.22	2.81	2.88	3.10
Multi-year Plants Observations	2	4	9	31	314

Purple loosestrife has been found at 96 total locations in the past 5 years. Of these, only 15 (approximately 35%) of the 43 locations documented between 2006 and 2009 were locations where the purple loosestrife returned in 2010. This indicates the manual removal of all plant materials is relatively successful. While it is very labor intensive to conduct these manual removals, it is successful at least at those locations were the loosestrife can be seen.

The challenge is being able to visually observe all of the stands during the survey period. For example, the peak flowering period for purple loosestrife occurred relatively late in 2009. At the time of the 2009 survey, most of the plants observed had only just begun to flower making it difficult to find the plants. This resulted in having over 300 plants found in 2010 to be at least two-year old plants. Another contributing factor is that in some cases, shorelines are being infested by reed canary grass, a very dense and tall growing invasive species that makes it difficult to spot the purple loosestrife. The aggressive nature of the reed canary grass tends to reduce the height and vigor of loosestrife plants making it even more difficult to observe loosestrife. An example of this is stand #78, where the shoreline is quite visible, but heavily dominated by reed canary grass. The late flowering period in 2009 and dense reed canary grass growth led to not locating this stand until 2010. 182 plants were found with the vast majority of the plants occurring as 1st and 2nd year plants. Fortunately, the stand was found, and accounts for 58% of all the plants observed in 2010.

While a majority of the stand locations are centralized around the Weber Lake area and upstream, purple loosestrife occurrences expanded further downstream into the main reservoir beyond where it had been previously documented. Up until 2010, the furthest downstream observations occurred about ½-mile upstream of where the Michigamme River enters the

reservoir basin. This year, two stands where found approximately 1.5-miles downstream, one on a small island in the west portion of the basin (stand #96) and one along the far west shoreline (stand #95).

The loosestrife continues to expand exponentially in all categories, except the number of stems per plant. This rate is typical of new infestations, but is indicative that the long-term outlook for keeping purple loosestrife in check will continue to be a challenge. The continued exponential increases is very discouraging with respect to the level of effort being put forth to remove all the plants that can be found. This is especially concerning with the reality that the multi-year plants have had the opportunity to produce seed and expand the population at stands that were not visible in previous years.

We Energies plans to continue surveying for purple loosestrife at the Way Dam & Michigamme Reservoir project site annually to minimize the potential for mature plants setting and releasing seed into the reservoir.

Michigamme River – Highway 95 to Newberg Road

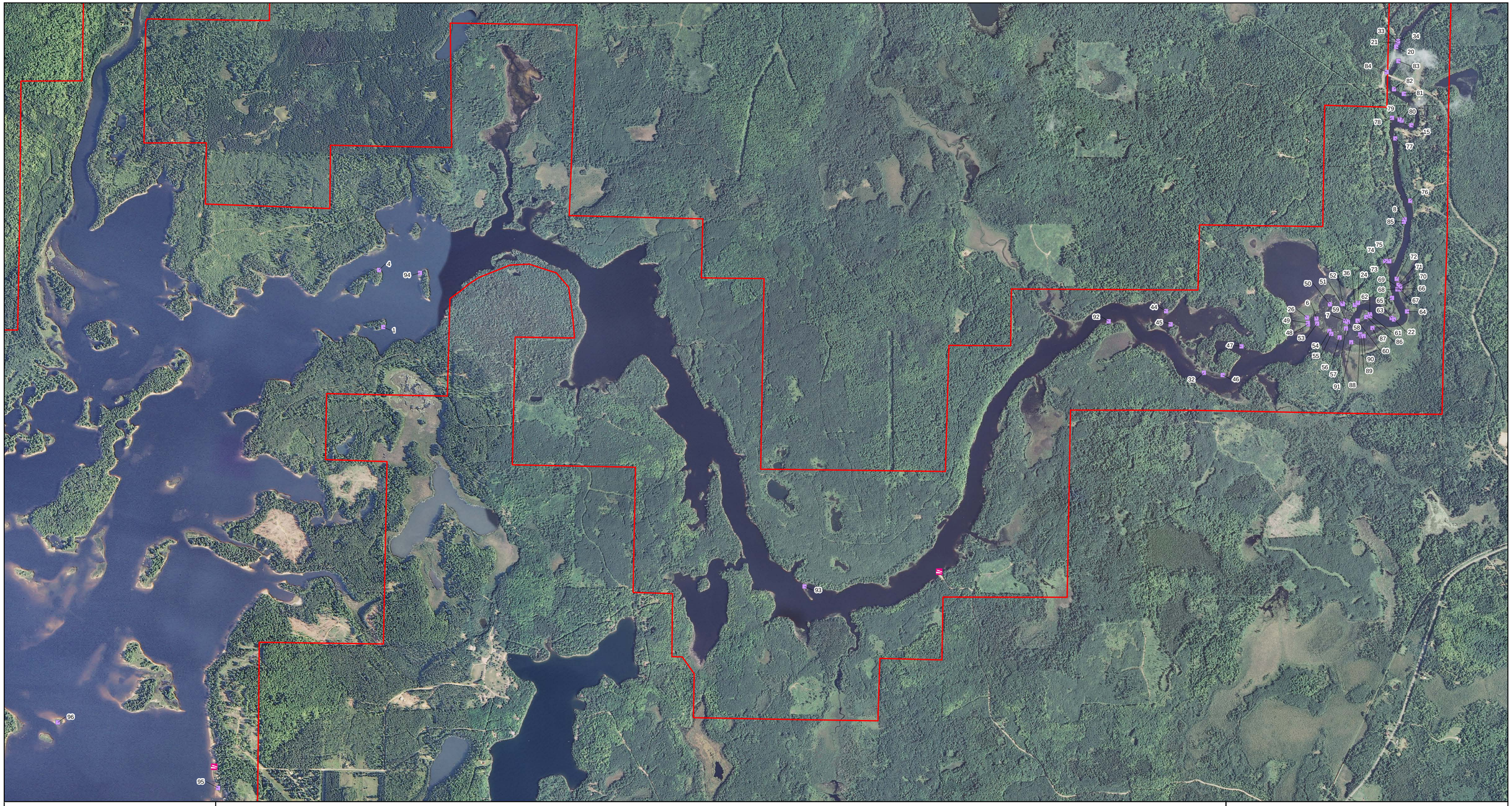
The increase in purple loosestrife within the Way Dam project lands is concerning as there is a viable purple loosestrife population occurring upstream of the Way Dam project area. In agreeing to conduct a survey on the Michigamme River further upstream from the project area, the company hopes to develop a better understanding of the extent to which purple loosestrife occurs upstream of the reservoir system.

In 2009, surveys commenced along that stretch of the Michigamme River from the north end of the Way Dam project area to the first road crossing at M-95 near the Dickinson and Marquette County line. The 2009 survey yielded fifty-six purple loosestrife stands along this stretch of the Michigamme River. All stands were mapped and manually removed. Within these stands, 79 multi-year plants were encountered and 34 first-year plants (113 plants in total). A total of 361 stems were counted.

We Energies collaborated with Ms. Ann Hruska to complete the 2010 survey along the same stretch of the Michigamme River. A total of 362 plants were located of which a majority were multi-year plants. Among these plants, 1,234 total stems were tallied. All stands were mapped and manually removed. The same phenomenon that occurred in the Way Dam project area occurred along Michigamme River with respect to not being able to visually see the purple loosestrife plants in 2009. This was primarily due to the late flowering that occurred in 2009. Reed canary grass infestations are not near as prominent along the river stretch as soil conditions and shaded stream banks are not as suitable for reed canary grass to grow.

The effort to expand our understanding of source populations upstream of the Way Dam project area expanded in 2010 by further collaboration with Ms. Hruska. Ms. Hruska has been awarded a Wilderness Shores Mitigation Enhancement Fund grant for conducting purple loosestrife management along the Michigamme River upstream of the Way Dam project area. In preparation for implementing this grant, Ms. Hruska conducted road surveys in August 2010 along access points from the M-95 crossing up to and north of Republic. Ms. Hruska found numerous dense monotypic stands of purple loosestrife along the shores of the Michigamme River in and around the Republic, MI area. Some of these stands are several acres in size. Many other small stands were observed along the Michigamme River banks at road vantage points from the M-95 crossing at the Marquette and Dickinson County line upstream to Republic. It is quite evident the source population(s) for the loosestrife occurring in the Way Dam project area is from the area in and around the Republic area.

We Energies plans to continue to survey and remove purple loosestrife from this stretch between Highway 95 and Newberg Road in 2011. We intend to continue collaborating with Ms. Hruska in further investigating source populations and management for purple loosestrife upstream of the Way Dam project area.



Public Boat Launch

FERC Hydro Project Boundary

Purple Loosestrife

Year 2010 Field Work

- sparse
- moderate sparse
- moderate
- moderate dense
- dense

N
W E
S

Feet
1,000 0 1,000 2,000

Way Dam Hydro Project - Year 2010
Eurasian Water Milfoil and Purple Loosestrife Survey

Source: USDA -NAIP Imagery, 2009
GPS field data collected 7/27/2010 & 7/28/2010 & 7/30/2010

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Public Boat Launch

FERC Hydro Project Boundary

Purple Loosestrife

Feet

1,000 0 1,000 2,000

N

W E

S

Michigamme River - Year 2010
Eurasian Water Milfoil and Purple Loosestrife Survey

Source: USDA -NAIP Imagery, 2009
GPS field data collected 7/26/2010 and 7/31/2010

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