We Energies
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November 24, 2015

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
Division of Licensing and Compliance
888 First Street, NE
Washington, DC 20426

Dear Ms. Bose:

RE: 2015 Reports on Purple Loosestrife and Nuisance Plants

	FERC No.	License Article
Way / Michigamme Reservoir	**1759**	**413**
Hemlock Falls	**2074**	**412**
Lower Paint	**2072**	**411**
Peavy Falls	**11830**	**411**
Michigamme Falls	**2073**	**412**
Brule	**2431**	**410**
Twin Falls	**11831**	**412**
Pine	**2486**	**413**
Kingsford	**2131**	**412**
Big Quinnesec Falls	**1980**	**412**
Chalk Hill	**2394**	**410**
White Rapids	**2357**	**410**

The "Terrestrial Based Natural Resources Management Plan," filed in September of 1999 as part of the Wilderness Shores Settlement Agreement, which affects Way Dam (FERC No. 1759), Hemlock Falls (FERC No. 2074), Peavy Falls (FERC No. 11830), Michigamme Falls (FERC No. 2073), Lower Paint (FERC No. 2072), Twin Falls (FERC No. 11831), Kingsford (FERC No. 2131), and Big Quinnesec Falls (FERC No. 1980), and the "Order Modifying and Approving Purple Loosestrife and Eurasian Water Milfoil Monitoring Plan" issued on April 30, 1996, for the Pine (FERC No. 2486), August 14, 1997, for the Brule (FERC No. 2431), December 11, 1997, for the Chalk Hill (FERC No. 2394) and White Rapids (FERC No. 2357) projects, require We Energies to provide the final reports on the required annual and biennial monitoring for those projects no later than 30 days after the monitoring is completed. An annual extension for submitting these reports by the end of November was granted in 2010. Monitoring is scheduled each year for a portion of these twelve projects, with the field portion of the monitoring to be completed by August 7.

Report of 2015 AIS Monitoring

Please find attached a report of Purple Loosestrife (PL) monitoring activities completed in 2015 consistent with the proposed plan submitted January 22, 2014 and Table 1. The results were presented by Mike Grisar of our environmental staff at our Annual Land Management Meeting held on October 27, 2015, with representatives from the Wisconsin and Michigan DNRs as well as some county and local agency representatives that work on tracking and controlling invasive species. The information was made available to everyone in attendance upon request.

Table 1: Comparison of 2015 PL Data Collected vs Proposed Plan Requirements

	Proposed New Plan		
	2015	2015	
	Plan	Actual	
Way Dam	x	x	
Hemlock Falls	x	x	
Peavy Falls	x	x	
Lower Paint		x	Added due to PL being found in 2014
Michigamme Falls	x	x	
Brule			
Twin Falls			
Pine	x	x	
Kingsford			
Big Quinnesec Falls			
Chalk Hill	x	x	
White Rapids	x	x	

Please call me at (906) 779-4099 if you have any questions concerning this filing.

Sincerely,

Todd P. Jastremski, Asset Manager
Hydroelectric Operations Division

cc: Kyle Kruger – MDNR
Nicholas Utrup – FWS
Cheryl Laatsch – WDNR
James Fossum – MHRC/RAW
John Zygaj – FERC CRO

Attachments:
2015 Annual Report – Nuisance Plant Control Survey (21 pages)

We Energies
2015 Annual Report - Nuisance Plant Control Survey
White Rapids Reservoir
FERC Project #2357

Background and Methods

We Energies Environmental Department staff, Mr. Mike Grisar and Mr. Bill Braunschweig, conducted a survey from a boat of the entire shoreline at the White Rapids project on July 31, 2015. All waters and appropriate wetlands accessible from the boat were evaluated for the presence of purple loosestrife (*Lythrum salicaria*).

If any occurrences of purple loosestrife were observed, they were mapped using a Trimble XH GPS unit. Each location was identified as a stand and the number of plants, stems per plant, and relative age of the plants were recorded. Any plants observed were removed by hand including flowers, stems, and roots.

Results and Discussion

In 2010, purple loosestrife was observed for the first time on the White Rapids reservoir. It was a relatively small population of six plants found on the west point along the south side of the channel bisecting the large island in the middle of the reservoir. This population returned each of the next two years in 2011 and 2012, and all plants were removed. While the entire reservoir was monitored in subsequent years for the presence of purple loosestrife, particular attention was given to the location where purple loosestrife was observed between 2010 through 2012. No purple loosestrife has been observed at White Rapids since 2012, including in 2015.

Conclusions

It was discouraging that a new location of purple loosestrife was observed in White Rapids for the first time in 2010. By removing the plants in this stand for three consecutive years, the stand was effectively managed and absent between 2013 through 2015. Manually removing individual plants that were encountered during previous years was effective in eliminating the stand.

An influx of purple loosestrife occurring along public roadways leading to several of the reservoirs was first reported in 2010. Since, purple loosestrife infestations were documented to be increasing exponentially along CTH K leading easterly toward the Menominee River between the Chalk Hill and White Rapids project areas. Portions of these populations were managed in 2011, 2012, and 2014 as the populations were reduced. While still present 2015, management efforts appear to have reduced the population along CTH K. Continued management by other parties is necessary to reduce the potential for purple loosestrife to spread in the Menominee River system.

We Energies
2015 Annual Report - Nuisance Plant Control Survey
Chalk Hill Reservoir
FERC Project #2394

Background and Methods

We Energies Environmental Department staff, Mr. Tyson Schreiner and Mr. Bill Braunschweig, conducted a survey from a boat of the entire shoreline at the Chalk Hill project on August 20, 2015. All waters and appropriate wetlands accessible from the boat were evaluated for the presence of purple loosestrife (*Lythrum salicaria*).

If any occurrences of purple loosestrife were observed, they were mapped using a Trimble XH GPS unit. Each location was identified as a stand and the number of plants, stems per plant, and relative age of the plants were recorded. Any plants observed were removed by hand including flowers, stems, and roots.

Results and Discussion

Prior to 2010, a very small population of purple loosestrife had been observed and managed for at the south end of Miscauno Island. Purple loosestrife was observed at a new location in the south end of the Chalk Hill Reservoir in 2010. A single plant was located in the back of a secluded bay along the west side immediately adjacent to a wood duck house that was installed by a third party. The entire plant was removed including the flowering heads, stems, and root mass. By removing this plant, the stand was effectively managed and has been absent since.

While the entire reservoir has been monitored for the presence of purple loosestrife, particular attention has been given to the locations where it was observed in 2010 and the south end of Miscauno Island. No purple loosestrife has been observed at Chalk Hill since 2010, including in 2015.

Conclusions

It was discouraging that a new location of purple loosestrife was observed in Chalk Hill for the first time in 2010. By removing the plant in 2010, the population was managed early in its infestation. This stand has not been observed since 2010. Continued active removal of observed purple loosestrife will help to prevent the infestation from spreading in Chalk Hill.

An influx of purple loosestrife occurring along public roadways leading to several of the reservoirs was first reported in 2010. Since, purple loosestrife infestations were documented to be increasing exponentially along CTH K leading easterly toward the Menominee River between the Chalk Hills and White Rapids project areas. Portions of these populations were managed in 2011, 2012, and 2014 as the populations were reduced. While still present 2015, management efforts appear to have reduced the population along CTH K. Continued management by other parties is necessary to reduce the potential for purple loosestrife to spread in the Menominee River system.

We Energies
2015 Annual Report - Nuisance Plant Control Survey
Pine Reservoir
FERC Project #2486

Background and Methods

We Energies Environmental Department staff, Mr. Mike Grisar and Mr. Bill Braunschweig, conducted a survey from a boat of the entire shoreline at the Pine project on July 31, 2015. All waters and appropriate wetlands accessible from the boat were evaluated for the presence of purple loosestrife (*Lythrum salicaria*).

If any occurrences of purple loosestrife were observed, they were mapped using a Trimble XH GPS unit. Each location was identified as a stand and the number of plants, stems per plant, and relative age of the plants were recorded. Any plants observed were removed by hand including flowers, stems, and roots.

Results and Discussion

No purple loosestrife plants were observed along the shores of the Pine Reservoir project area.

Conclusions

Purple loosestrife has yet to be observed at the Pine project area since the nuisance plant surveys began. Diligent monitoring will continue to prevent an invasion of this species.

We Energies
2015 Annual Report - Nuisance Plant Control Survey
Michigamme Falls Reservoir
FERC Project #2073

Background and Methods

We Energies Environmental Department staff, Mr. Mike Grisar and Mr. Bill Braunschweig, conducted a survey from a boat of the entire shoreline at the Michigamme Falls project on July 30, 2015. All waters and appropriate wetlands accessible from the boat were evaluated for the presence of purple loosestrife (*Lythrum salicaria*).

If any occurrences of purple loosestrife were observed, they were mapped using a Trimble XH GPS unit. Each location was identified as a stand and the number of plants, stems per plant, and relative age of the plants were recorded. Any plants observed were removed by hand including flowers, stems, and roots.

Results and Discussion

No purple loosestrife plants were observed along the shores of the Michigamme Falls Reservoir project area.

Conclusions

Purple loosestrife has yet to be observed at the Michigamme Falls project area since the nuisance plant surveys began. Diligent monitoring will continue to prevent an invasion of this species.

We Energies
2015 Annual Report - Nuisance Plant Control Survey
Peavy Falls Reservoir
FERC Project #11830

Background and Methods

We Energies Environmental Department staff, Mr. Mike Grisar and Mr. Bill Braunschweig, conducted a survey from a boat of the entire shoreline at the Peavy Falls project on August 17, 2015. All waters and appropriate wetlands accessible from the boat were evaluated for the presence of purple loosestrife (*Lythrum salicaria*).

If any occurrences of purple loosestrife were observed, they were mapped using a Trimble XH GPS unit. Each location was identified as a stand and the number of plants, stems per plant, and relative age of the plants were recorded. Any plants observed were removed by hand including flowers, stems, and roots.

Results and Discussion

In 2013, one purple loosestrife stand was observed along the Peavy Falls shorelines consisting of two plants estimated to be 2 and 3 years old with just 2 and 4 stems, respectively. This was the first time purple loosestrife was encountered at this project site, and it was observed within a few feet of the west side of the boat launch at Recreation Area #10. The entire plant, including roots, stems, and flowers were removed. Purple loosestrife has not been observed since, including in 2015.

Conclusions

It was discouraging that purple loosestrife was observed for the first time in 2013 at the Peavy Falls project area since the nuisance plant surveys began. As no plants were observed in 2014 or 2015, the manual removal appears to have been successful. Diligent monitoring will continue to prevent further invasion of this species and eradicate the single stand that was observed.

We Energies
2015 Annual Report - Nuisance Plant Control Survey
Lower Paint Reservoir
FERC Project #2072

Background and Methods

We Energies Environmental Department staff, Mr. Mike Grisar and Mr. Bill Braunschweig, conducted a survey from a boat of the entire shoreline at the Lower Paint project on July 30, 2015. All waters and appropriate wetlands accessible from the boat were evaluated for the presence of purple loosestrife (*Lythrum salicaria*).

If any occurrences of purple loosestrife were observed, they were mapped using a Trimble XH GPS unit. Each location was identified as a stand and the number of plants, stems per plant, and relative age of the plants were recorded. Any plants observed were removed by hand including flowers, stems, and roots.

Results and Discussion

In 2010, purple loosestrife was observed for the first time on the Lower Paint Reservoir. A single purple loosestrife plant was observed and removed including the flowering heads, stems, and root mass. No purple loosestrife had been observed since, until this year. In 2014, a single plant was observed again in the upper shores of the reservoir, but approximately ½-mile downstream of where the plant was found in 2010. The entire plant was removed, and documented as an approximate 3 year old plant with 9 stems. Purple loosestrife was not observed in 2015.

Conclusions

It is discouraging that purple loosestrife has now been observed twice in Lower Paint. Fortunately, the manual removal of the 2010 plant was successful as it has not returned at that location. However, the discovery of a new plant in 2014 is an indication that a source population likely occurs upstream. Anecdotal reports have been made of purple loosestrife occurring upstream near Crystal Falls on the Paint River. Management by other parties will be necessary to reduce the potential for purple loosestrife to spread in the Menominee River system.

We Energies
2015 Annual Report - Nuisance Plant Control Survey
Hemlock Falls
Project #2074-007

Background and Methods

We Energies Environmental Department staff, Mr. Mike Grisar and Mr. Bill Braunschweig, conducted a survey from a boat of the entire shoreline at the Hemlock Falls project on July 30, 2015. All waters and appropriate wetlands accessible from the boat were evaluated for the presence of purple loosestrife (*Lythrum salicaria*).

If any occurrences of purple loosestrife were observed, they were mapped using a Trimble XH GPS unit. Each location was identified as a stand and the number of plants, stems per plant, and relative age of the plants were recorded. Any plants observed were removed by hand including flowers, stems, and roots.

Results and Discussion

No purple loosestrife plants were observed along the shores of the Hemlock Falls Reservoir project area.

Conclusions

Purple loosestrife has yet to be observed at the Hemlock Falls project area since the nuisance plant surveys began. Diligent monitoring will continue to prevent an invasion of this species.

We Energies
2015 Annual Report - Nuisance Plant Control Survey
Way Dam & Michigamme Reservoir
FERC Project #1759

We Energies Environmental department staff, Mr. Mike Grisar, Mr. Bill Braunschweig, Mr. Jeff Barens, and Mr. Tyson Schreiner conducted two separate surveys from a boat at the Way Dam and Michigamme Reservoir project on July 28 and July 29, 2015 and August 16 and August 18, 2015. All waters and appropriate wetlands accessible from the boat were evaluated for the presence of purple loosestrife (*Lythrum salicaria*).

Additionally, the We Energies' Environmental Department staff surveyed the Michigamme River from the Highway 95 bridge north of Channing, MI downstream to Newberg Road at the Way Dam project boundary. These surveys occurred on July 27 and August 17, 2015. 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.

If any occurrences of purple loosestrife were observed, they were mapped using a Trimble XH GPS unit. Each location was identified as a stand and the number of plants, stems per plant, and relative age of the plants were recorded. Any plants observed were removed by hand including flowers, stems, and roots.

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

Purple loosestrife has been observed in the Michigamme Reservoir each year since 2006. Several years prior to 2006, it had been documented at a single location and as a single plant. Each year, every plant found has been removed. From 2006 through 2010 a rapid invasion occurred resulting in significant increases in the number of locations (i.e. stands), total plants, and total stems observed. Plants were found primarily in the east portions of the reservoir and upstream of where the Michigamme River outlets into the main reservoir basin. In 2010, it was the first time purple loosestrife had been observed beyond the mouth of the river and in the main basin, which was in two locations.

Dramatic declines in the number of locations, plants, and total stems were observed in 2011. However, the population spiked in 2012 when the highest recorded levels in the total number of plants and stems were observed. As a result of the 2012 spike, it was decided to conduct two separate surveys for purple loosestrife in an attempt to better locate plants that were developing later in the season and reduce the potential to find multi-year plants the following year. This also would reduce seed production and dispersal by plants not detected during the first survey. It has been noted that the flowering period for purple loosestrife in Way Dam has been variable. By conducting the two surveys each year in 2013 through 2015, it is evident that there is not a distinct peak flowering period, but rather the flowering of individual plants is spread out between mid-July and the end of August.

The highest number of total stands and multi-year plant observations recorded to date was observed in 2014. While the total number of plants and stems observed was higher than 2013 observations, these were less than peak levels observed in 2012. If only a single survey was completed in July as was done between 2006 through 2012, generally much less of an increase would have been observed in the number of plants, number of stems, and multi-year plant

observations. By comparing only the July survey data, this allows for a more direct comparison to previous years. Using the July 2014 results, the number of stands, total plants, and stems observed were comparable to the 2013 July survey results.

The 2015 survey resulted in the highest number of total stands recorded to date. However, approximately half the total plants, stems, and multi-year plants were observed in 2015 when compared to 2014 results. When considering only the July survey results, the population of purple loosestrife in 2015 was at the lowest levels observed since 2011. Similar to 2014, the additional August survey again proved very productive in 2015. It resulted in the removal of an additional 57% of all stands, 54% of all plants, and 51% of all stems found.

Another measure of analyzing the management effectiveness is by removing the largest stands observed from the analysis. In each year since 2012, just three to four stands have accounted for a large percentage of the total plants and stems observed, particularly when evaluating only the July surveys. Statistically, with these stands removed from the calculations, the purple loosestrife population was on a consistent downward trend between 2010 and 2014. However, there was a slight increase in 2015. Overall, there has been a very positive trend from 2010 through 2015.

One additional measure to determine management effectiveness is how many of the locations where purple loosestrife is found in a given year are locations where it was found in a previous year. Purple loosestrife has been found at 333 total locations in the past 10 years. Of these, only 43 (approximately 13%) stands documented between 2006 and 2014 were locations where the purple loosestrife returned in 2015. This has been a consistent trend since 2010.

While a majority of the stand locations are centralized around the Weber Lake area and upstream, purple loosestrife occurrences expanded further downstream in 2012 into the main reservoir. This was beyond where it had been previously documented prior to 2010. Up until 2010, the furthest downstream observations occurred about ½-mile upstream of where the Michigamme River enters the reservoir basin. By 2012, purple loosestrife had been observed throughout much of the main reservoir basin; however, it was widely distributed and in relatively few locations. In 2013, many of the stands documented to have spread through the main basin between 2010 through 2012 were no longer present. Through 2015, only nine total stands have been found in the main basin.

When considering all factors including the trends in reduced plants and stems as well as the relatively small proportion of the total stands reoccurring from one year to the next, the management technique of manual removal of all plant material has been successful. While it is very labor intensive to conduct these manual removals, it is successful at least at those locations where the loosestrife can be observed.

Two primary objectives will continue to drive the management plan for controlling purple loosestrife within Way Dam. These include early detection of new infestation locations as well as finding and thoroughly managing the larger stands. By implementing the second survey strategy since 2013, the 2015 results suggest these goals are being achieved. By not conducting the second survey and removing the reproduction potential of these additional plants, the purple loosestrife population would likely have continued to increase exponentially as was being observed between 2006 and 2012.

We Energies plans to continue surveying and managing 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 is developing a better understanding of the extent to which purple loosestrife occurs upstream of the reservoir system. We Energies has also been collaborating with Ms. Ann Hruska of the NRCS Dickinson County Conservation District office to combat the purple loosestrife infestation on the Michigamme River.

In 2009, surveys commenced along that stretch of the Michigamme River from the north end of the Way Dam project area up to the first road crossing at M-95 near the Dickinson and Marquette County line. Surveys have continued in this river stretch through 2015, and two distinct surveys were conducted each year from 2013 through 2015.

Similar to the population explosion that occurred in Way Dam, a dramatic increase in the purple loosestrife population occurred between 2009 and 2012. Similar to the trends between 2011 and 2012 on Way Dam, the river stretch experienced a substantial decline in the documented population in 2013. Then a spike in the population on the river stretch occurred again in 2014. Survey results in 2015 show declines in the number of stands, plants, and stems observed.

Using only the July 2014 results as a more direct comparison to the initial survey beginning in 2009, the number of stands, total plants, and stems observed increased over the July 2013 survey results. When comparing July 2015 to July 2014, a substantial decrease was observed in each of the population categories.

To further improve the management effectiveness, the second survey conducted in each of the past three years has resulted in a significantly more thorough removal of purple loosestrife from the river stretch surveyed below M-95. The August 2015 survey resulted in the removal of an additional 52% of all the stands, 61% of all the plants, and 67% of all the stems detected in 2015 that would not have been removed from the system with the second survey.

Additionally, purple loosestrife has been found at 970 total locations in the past 7 years. Of these, 171 (approximately 18%) stands documented between 2009 and 2014 were locations where the purple loosestrife returned in 2015.

The effort to expand our understanding of source populations upstream of the Way Dam project area expanded in 2010 by further collaboration with Ms. Ann Hruska. Ms. Hruska was 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 were 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 was quite evident the source population(s) for the loosestrife occurring in the Way Dam project area is from the area in and around Republic, MI.

In 2011 and 2012, Ms. Hruska continued the purple loosestrife management efforts upstream of Way Dam by conducting a more detailed survey in the Republic area and on portions of the Michigamme River up and downstream of Republic. She also began implementing a biological control management program for purple loosestrife targeting the most problematic stands

documented in the presence/absence surveys she conducted. Further monitoring and biological control measures continued to be implemented in 2013. Results indicated the prior releases of beetles had been effective in reducing the extent and productivity of the source populations upstream of Way Dam. Unfortunately, there was very minimal evidence the released beetles survived the winter of 2013-14. Evidence the beetle populations recovered from the cold winter was observed in 2015. Additional beetles were reared and released with the long-term goal to establish a viable population of beetles that will be able to manage the purple loosestrife population as a self-sustaining biological control agent for the Michigamme River system.

The management activities that have occurred both within the Way Dam project area and the approximate 5-mile stretch of the Michigamme River upstream have had a direct and positive impact on keeping the purple loosestrife infestation within Way Dam in check. We Energies plans to continue to survey and remove purple loosestrife from this stretch between Highway 95 and Newberg Road in 2016. 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.

We Energies Hydroelectric Operations
Way Dam Purple Loosestrife Monitoring Summary (2006-2015)

July Survey Only

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
# of Observed Stands	4	6	30	28	68	53	65	39	39	55
# of Plants Observed	4	9	57	94	558	176	1239	240	275	159
# of Stems Observed	51	128	160	271	1732	397	1863	497	521	338
Stems Observed per Plant	12.75	14.22	2.81	2.88	3.1	2.26	1.50	2.07	1.89	2.13
Multi-year Plants Observations	2	4	9	31	314	110	429	190	254	132

Total (July & August Surveys Combined)

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
# of Observed Stands	4	6	30	28	68	53	65	61	93	106
# of Plants Observed	4	9	57	94	558	176	1239	290	720	347
# of Stems Observed	51	128	160	271	1732	397	1863	680	1247	686
Stems Observed per Plant	12.75	14.22	2.81	2.88	3.1	2.26	1.50	2.34	1.73	1.98
Multi-year Plants Observations	2	4	9	31	314	110	429	233	565	269

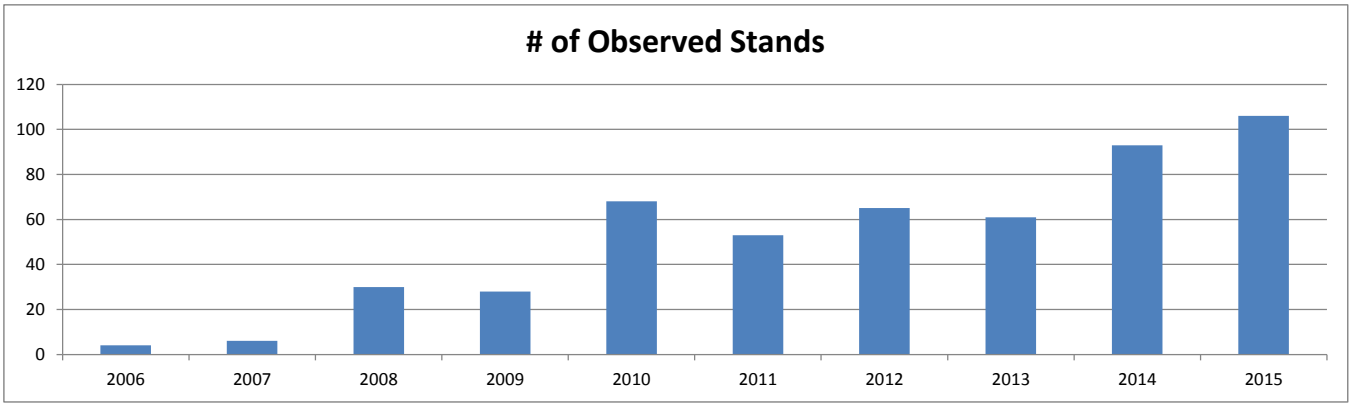
July Survey with Largest Stands Removed

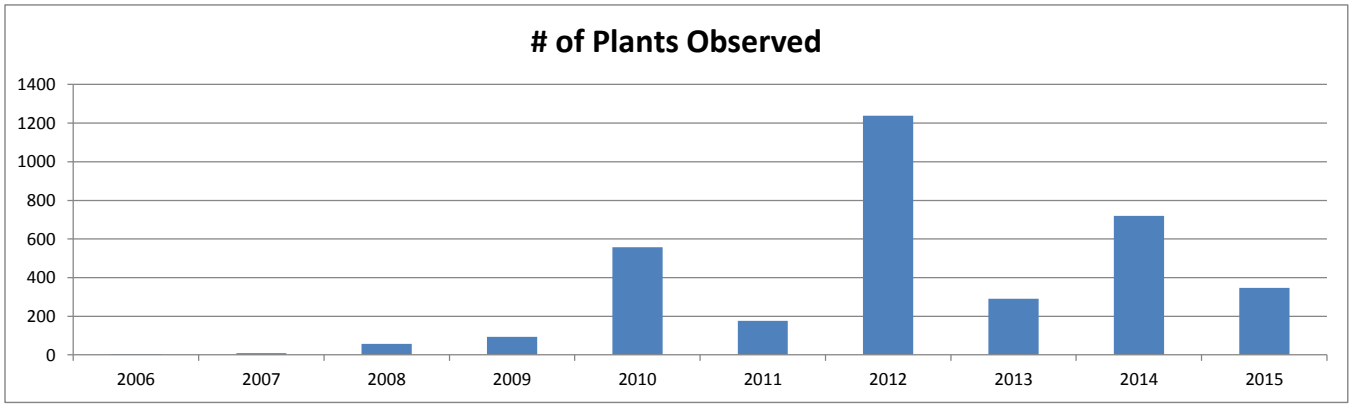
2012 minus stands 78, 96, 164, & 172
2013 minus stands 172, 180, & 181 (trip 1)
2014 minus stands 78, 164 & 172 (trip 1)
2015 minus stands 30, 164, & 242 (trip 1)

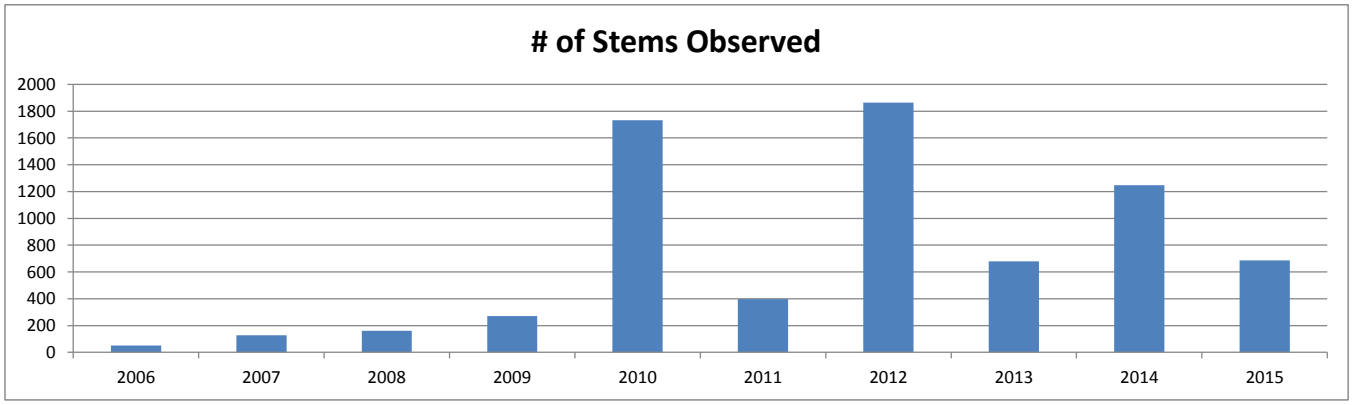
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
# of Observed Stands	4	6	30	28	68	53	61	62	36	52
# of Plants Observed	4	9	57	94	558	176	111	93	86	113
# of Stems Observed	51	128	160	271	1732	397	358	248	247	277
Stems Observed per Plant	12.75	14.22	2.81	2.88	3.10	2.26	1.50	2.67	2.87	2.45
Multi-year Plants Observations	2	4	9	31	314	110	170	88	81	97

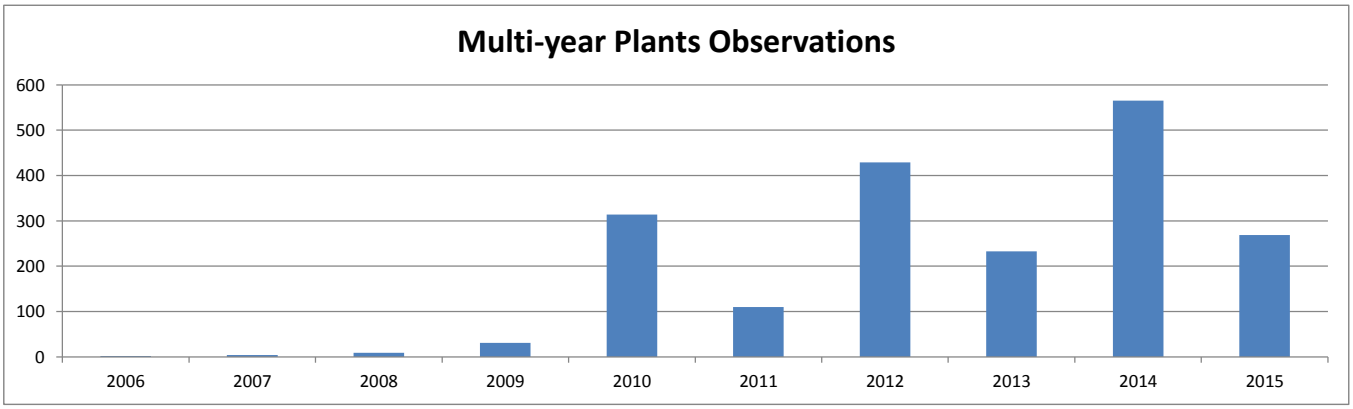
We Energies - Purple Loosestrife Monitoring 2006-2015 on Way Dam Reservoir

Total Observations



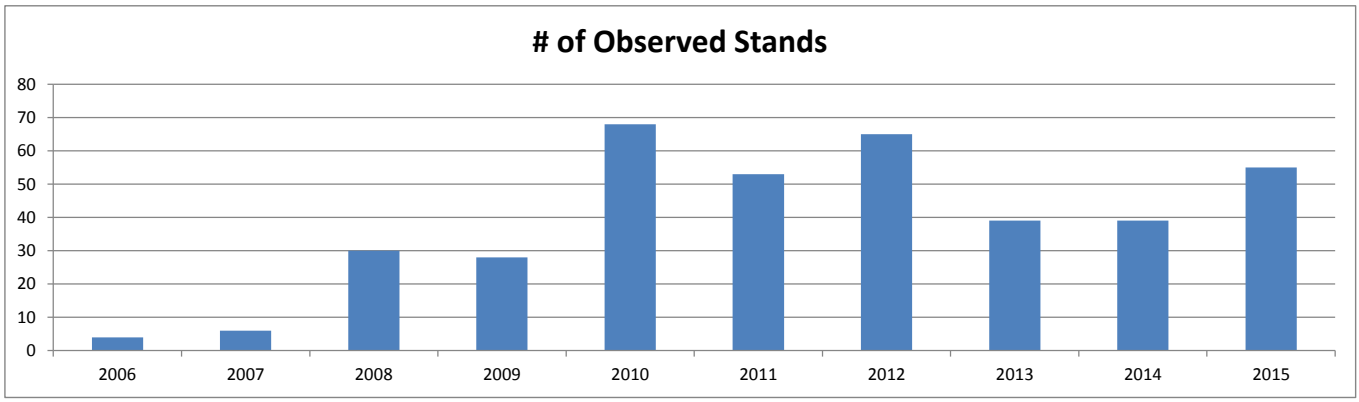


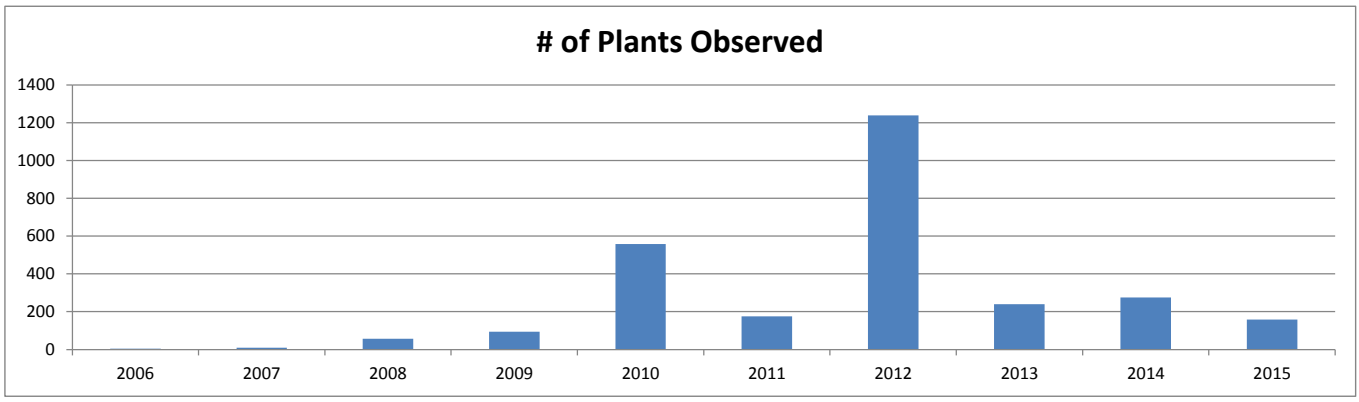


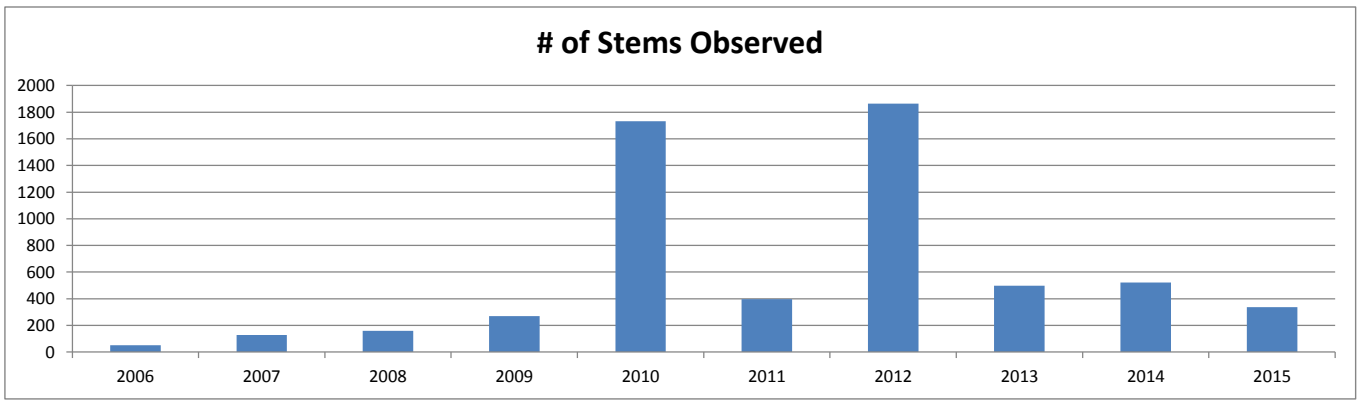


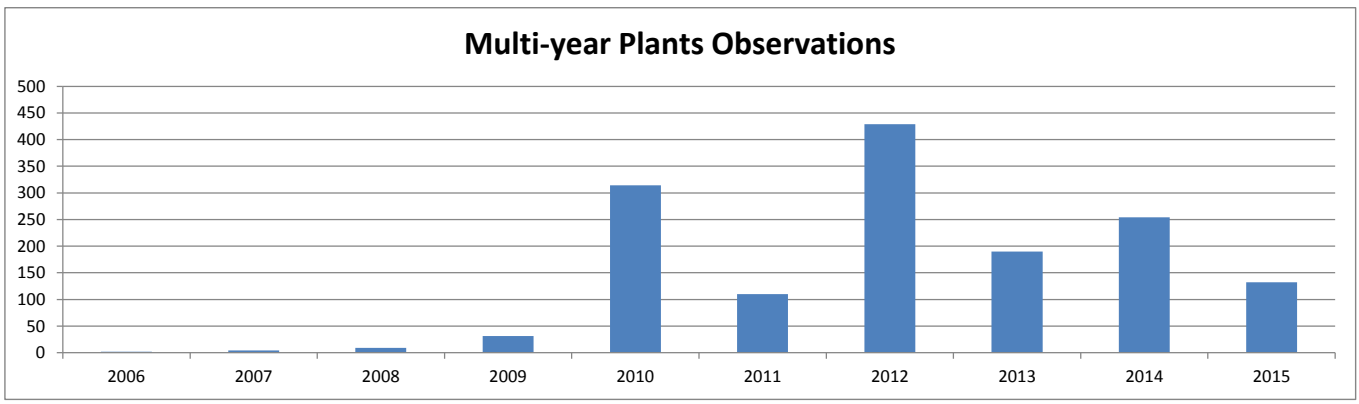
We Energies - Purple Loosestrife Monitoring 2006-2015 on Way Dam Reservoir

July Survey Only



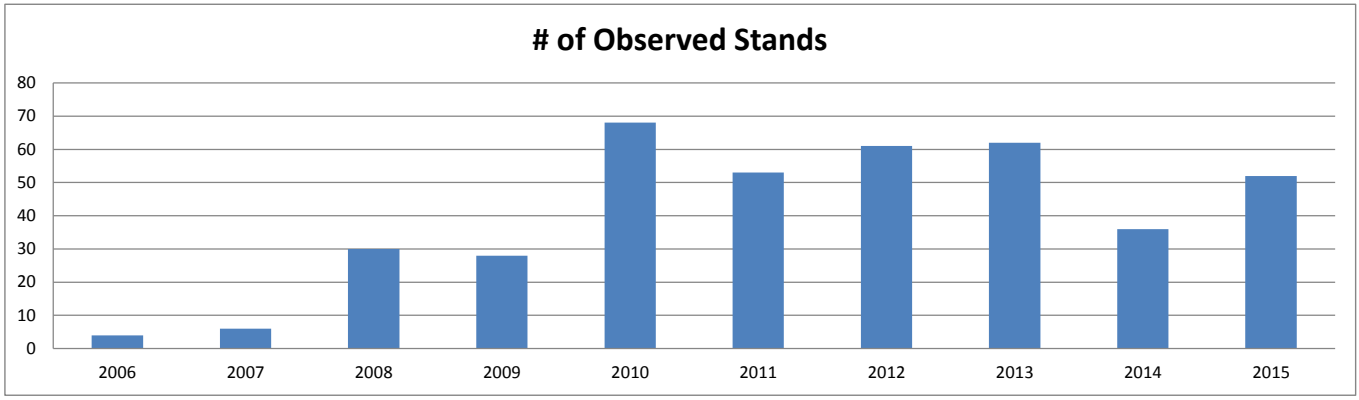


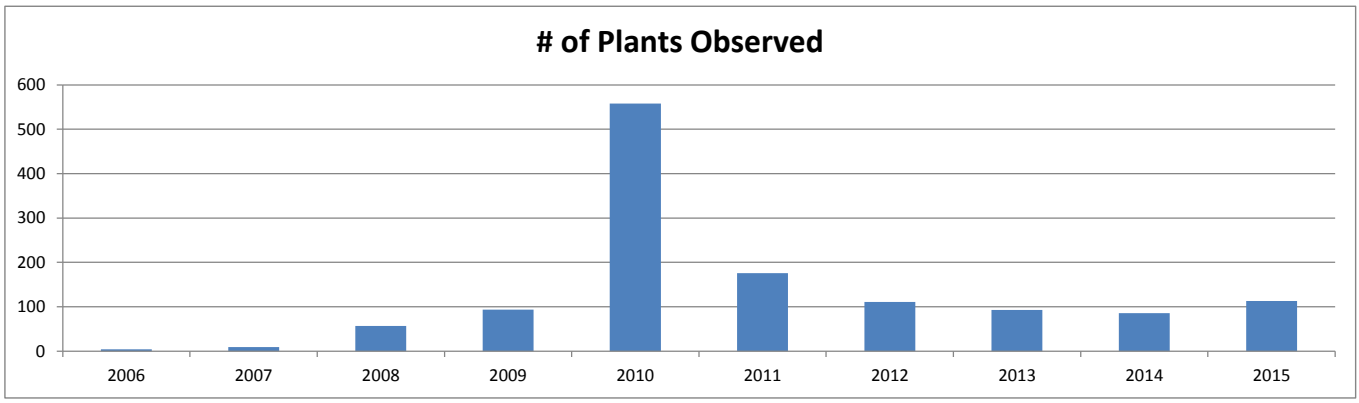


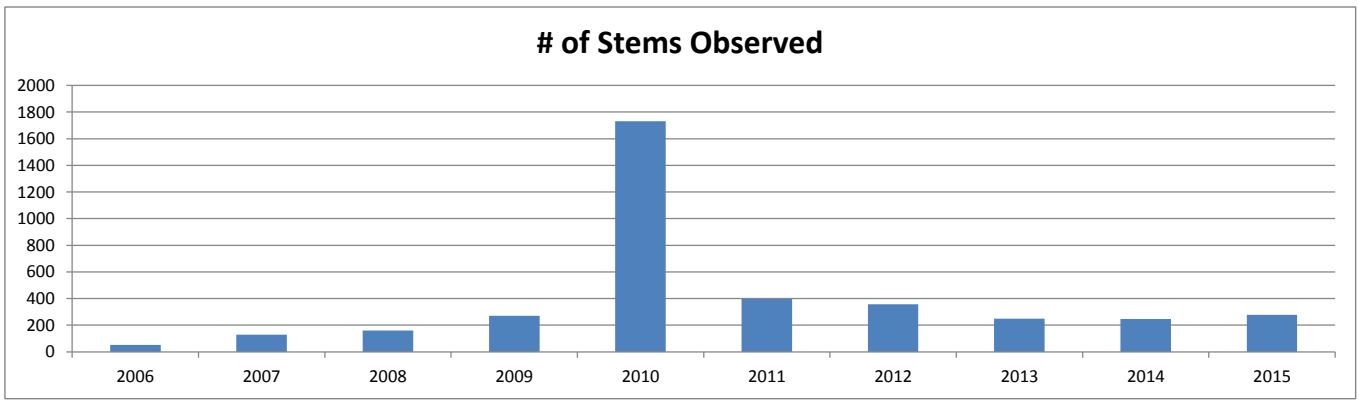


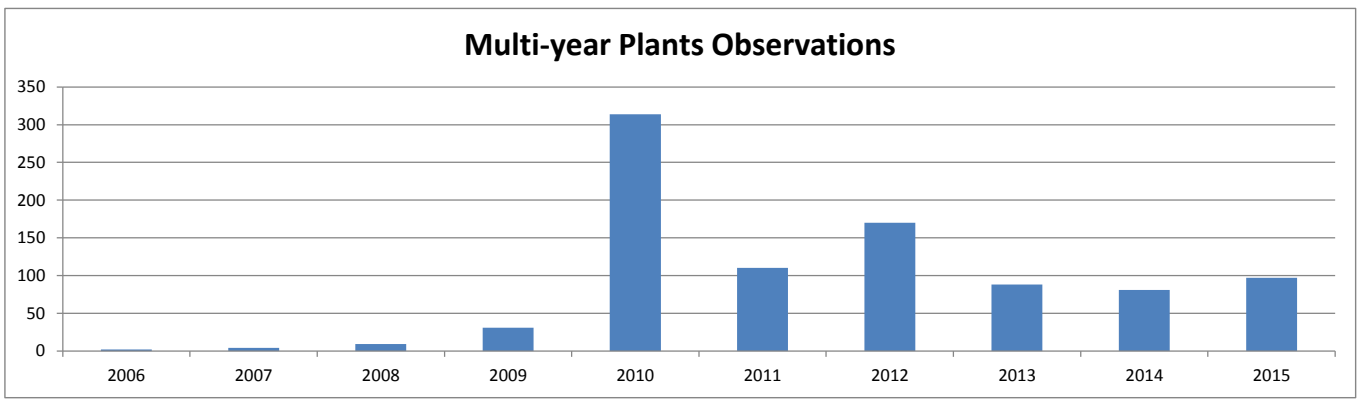
We Energies - Purple Loosestrife Monitoring 2006-2015 on Way Dam Reservoir

July survey only minus largest 2012-2015 stands









We Energies Hydroelectric Operations
Michigamme River Purple Loosestrife Monitoring (2009-2015)

July Survey Only

	2009	2010	2011	2012	2013	2014	2015
# of Observed Stands	56	140	149	217	99	221	168
# of Plants Observed	113	362	592	915	361	535	292
# of Stems Observed	361	1234	1149	1732	585	873	487
Stems Observed per Plant	3.19	3.41	1.94	1.89	1.62	1.63	1.67
Multi-year Plants Observations	79	317	282	525	280	451	230

Total (July & August Surveys Combined)

	2009	2010	2011	2012	2013	2014	2015
# of Observed Stands	56	140	149	217	192	384	328
# of Plants Observed	113	362	592	915	686	994	755
# of Stems Observed	361	1234	1149	1732	1132	1750	1473
Stems Observed per Plant	3.19	3.41	1.94	1.89	1.65	1.76	1.95
Multi-year Plants Observations	79	317	282	525	524	832	636

July Survey with Largest Stands Removed

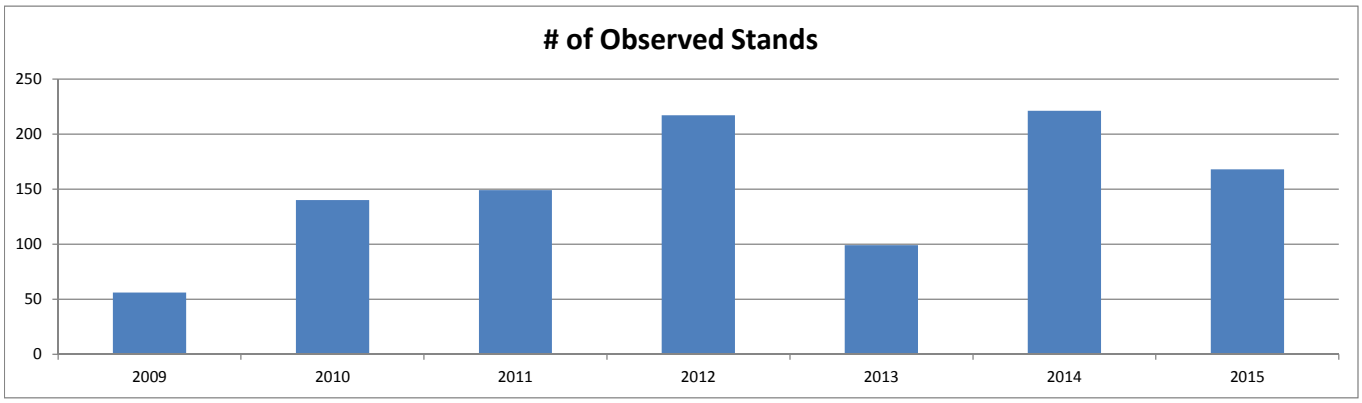
2013 minus stands 464, 564, & 567 (trip 1)
2014 minus stands 151 & 383 (trip 1)

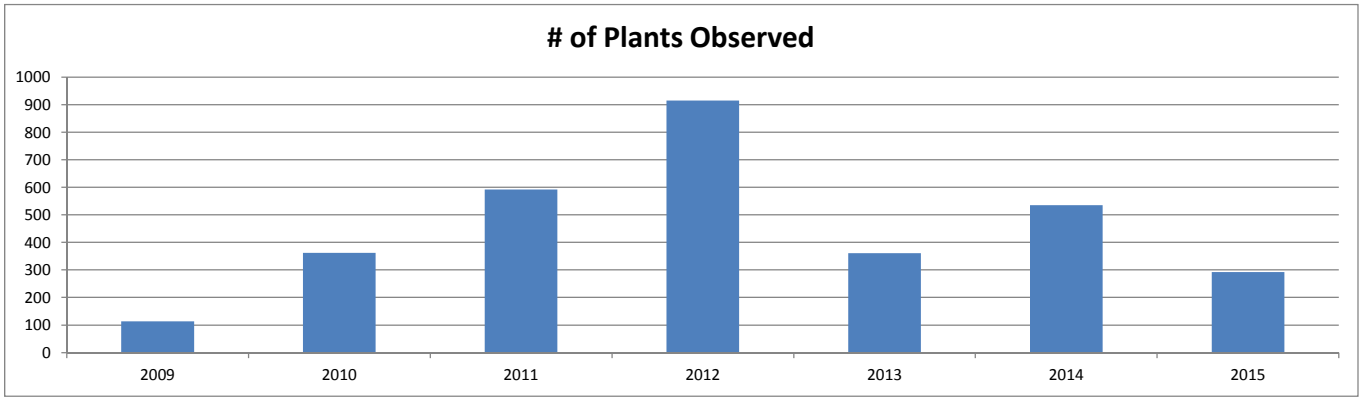
	2009	2010	2011	2012	2013	2014	2015
# of Observed Stands	56	140	149	217	96	219	168
# of Plants Observed	113	362	592	915	242	498	292
# of Stems Observed	361	1234	1149	1732	399	817	487
Stems Observed per Plant	3.19	3.41	1.94	1.89	1.65	1.64	1.67
Multi-year Plants Observations	79	317	282	525	192	417	230

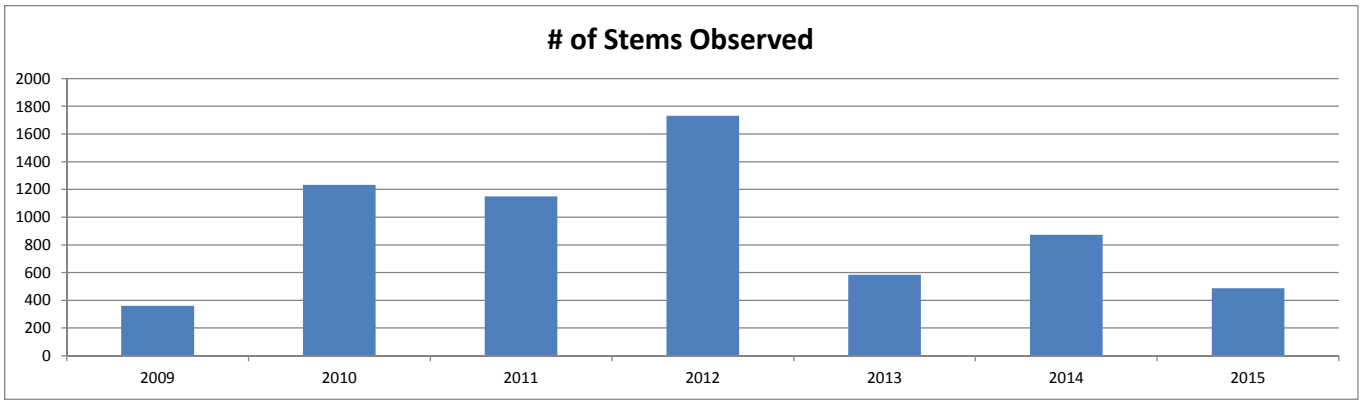
* No large stands observed during the July 2015 surveys.

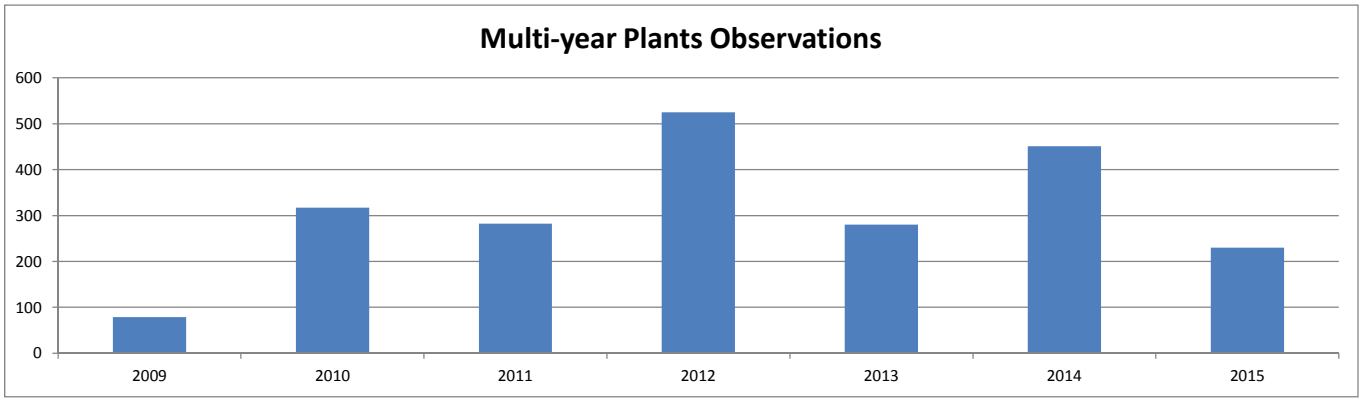
We Energies - Purple Loosestrife Monitoring 2009-2015 on Michigamme River

July Survey Only



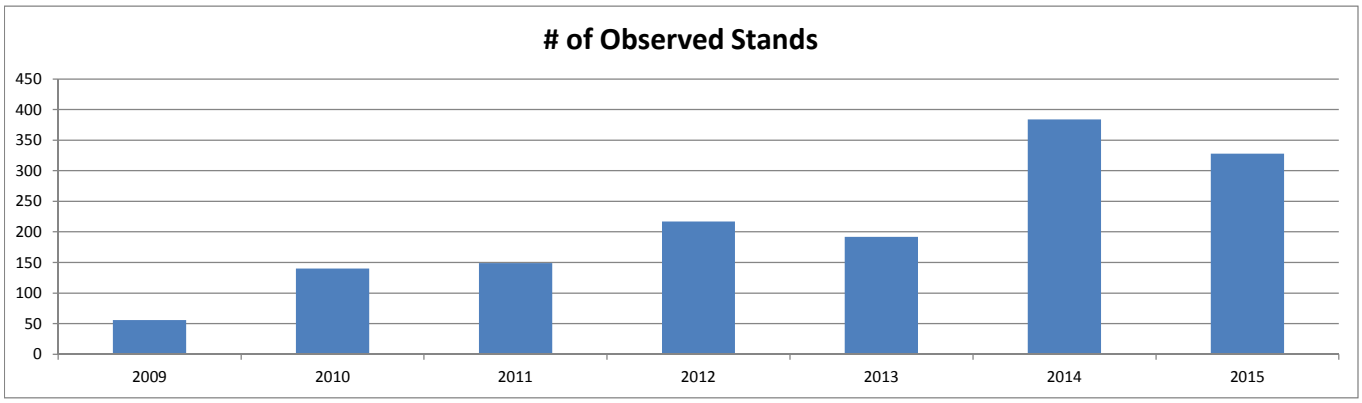


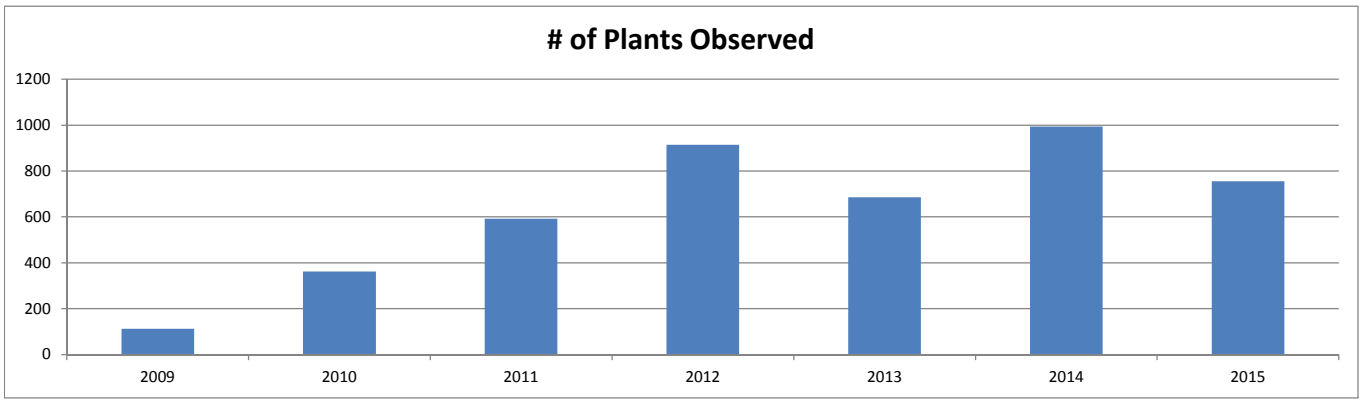


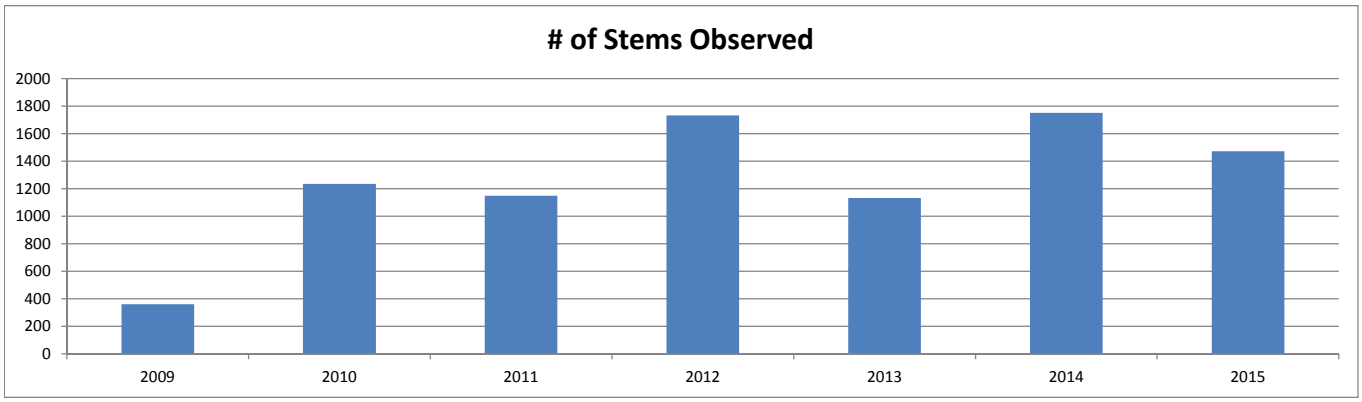


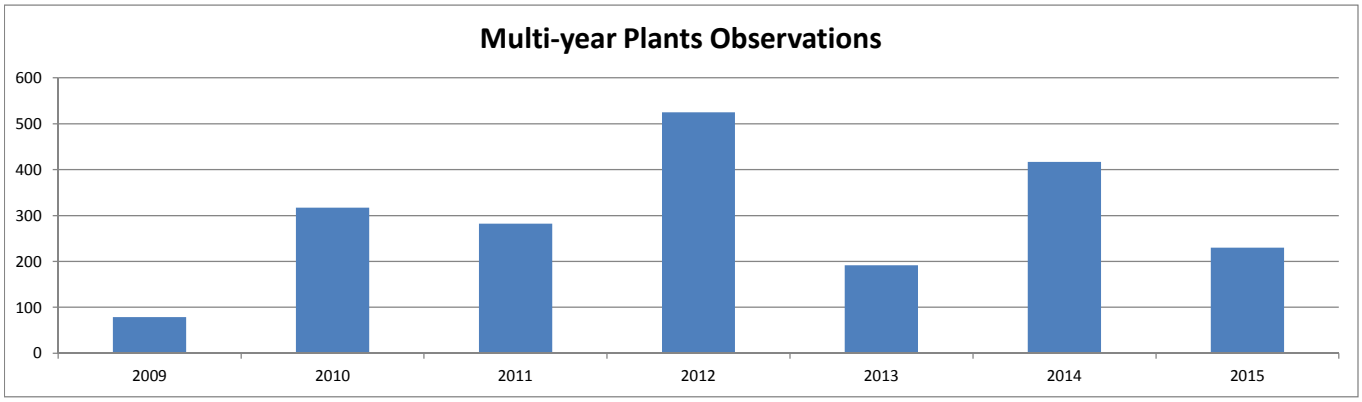
We Energies - Purple Loosestrife Monitoring 2009-2015 on Michigamme River

Total Observations



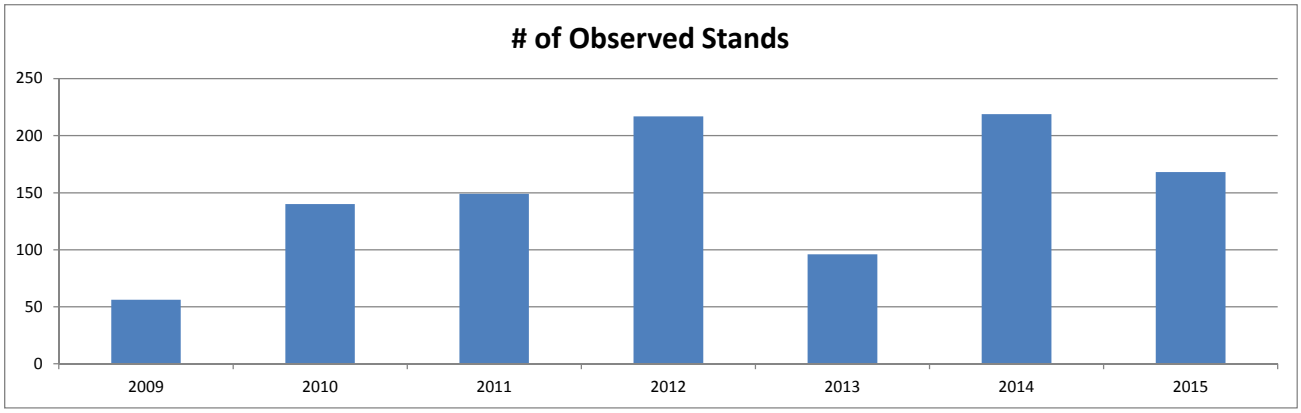


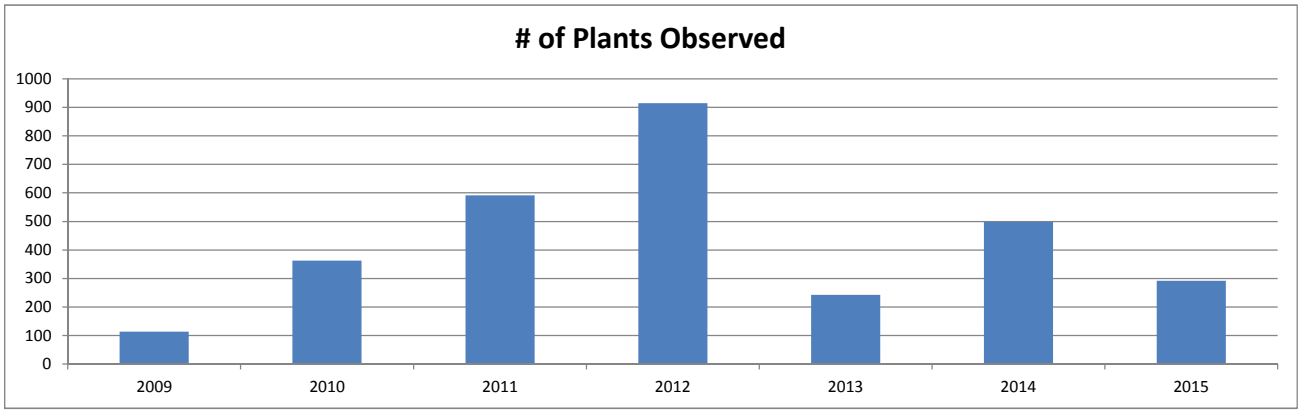


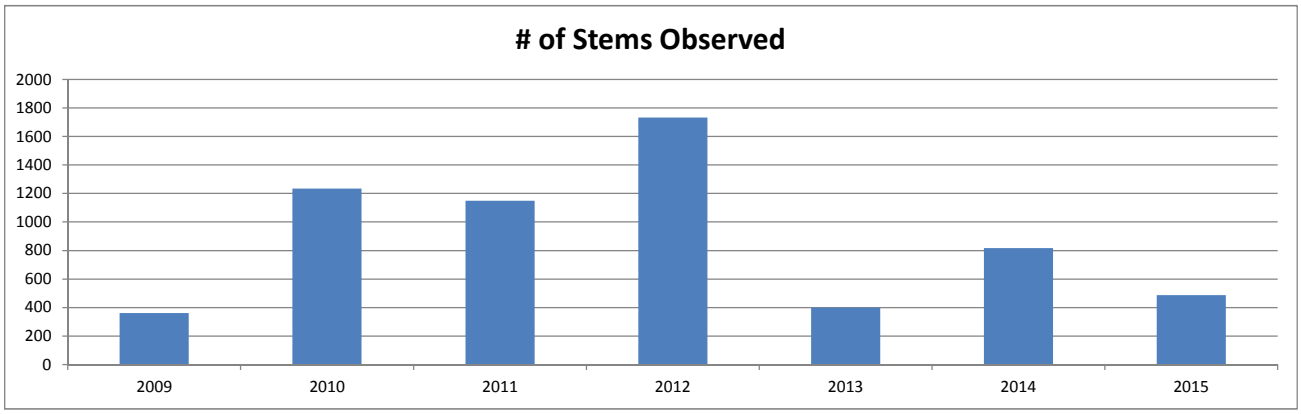


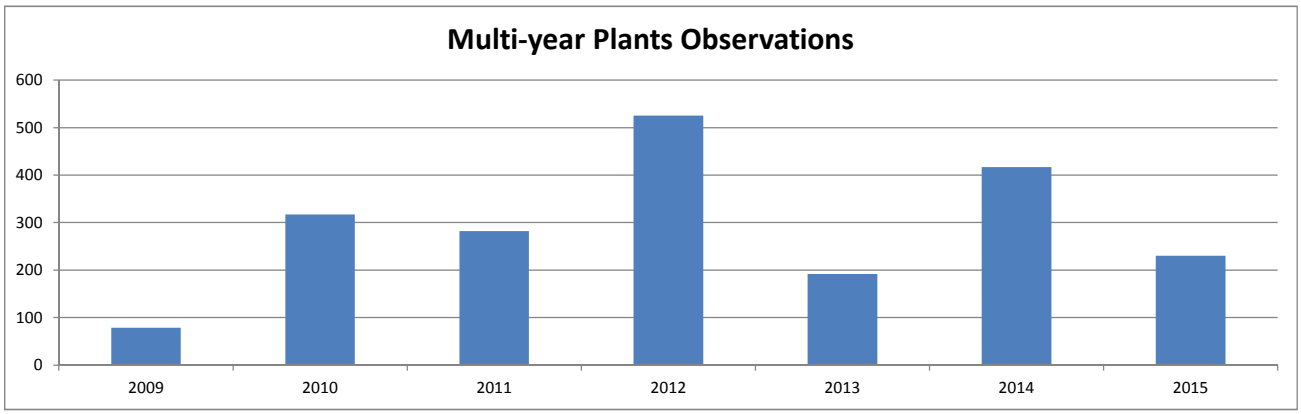
We Energies - Purple Loosestrife Monitoring 2009-2015 on Michigamme River

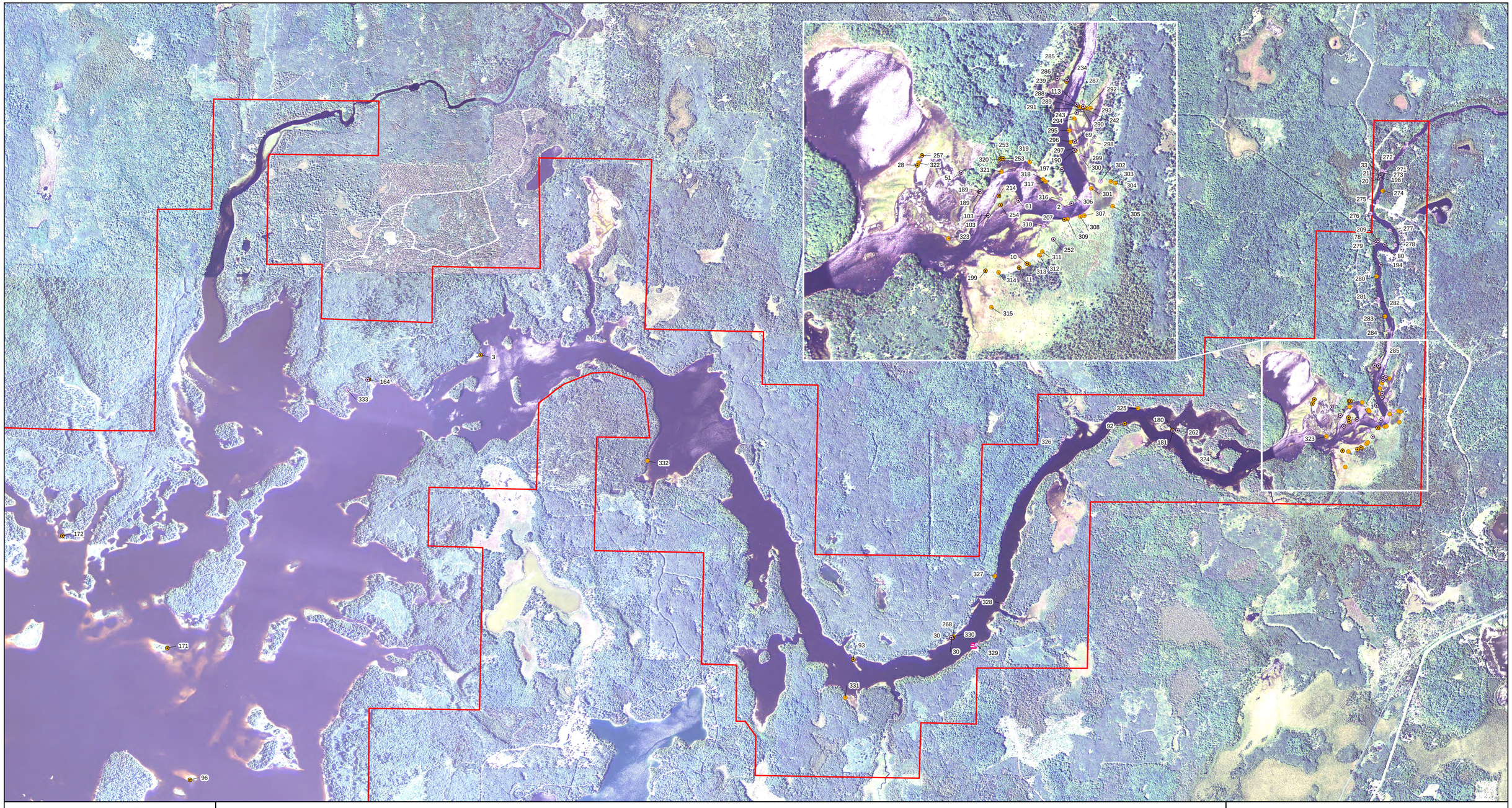
July survey only minus largest 2013-2014 stands





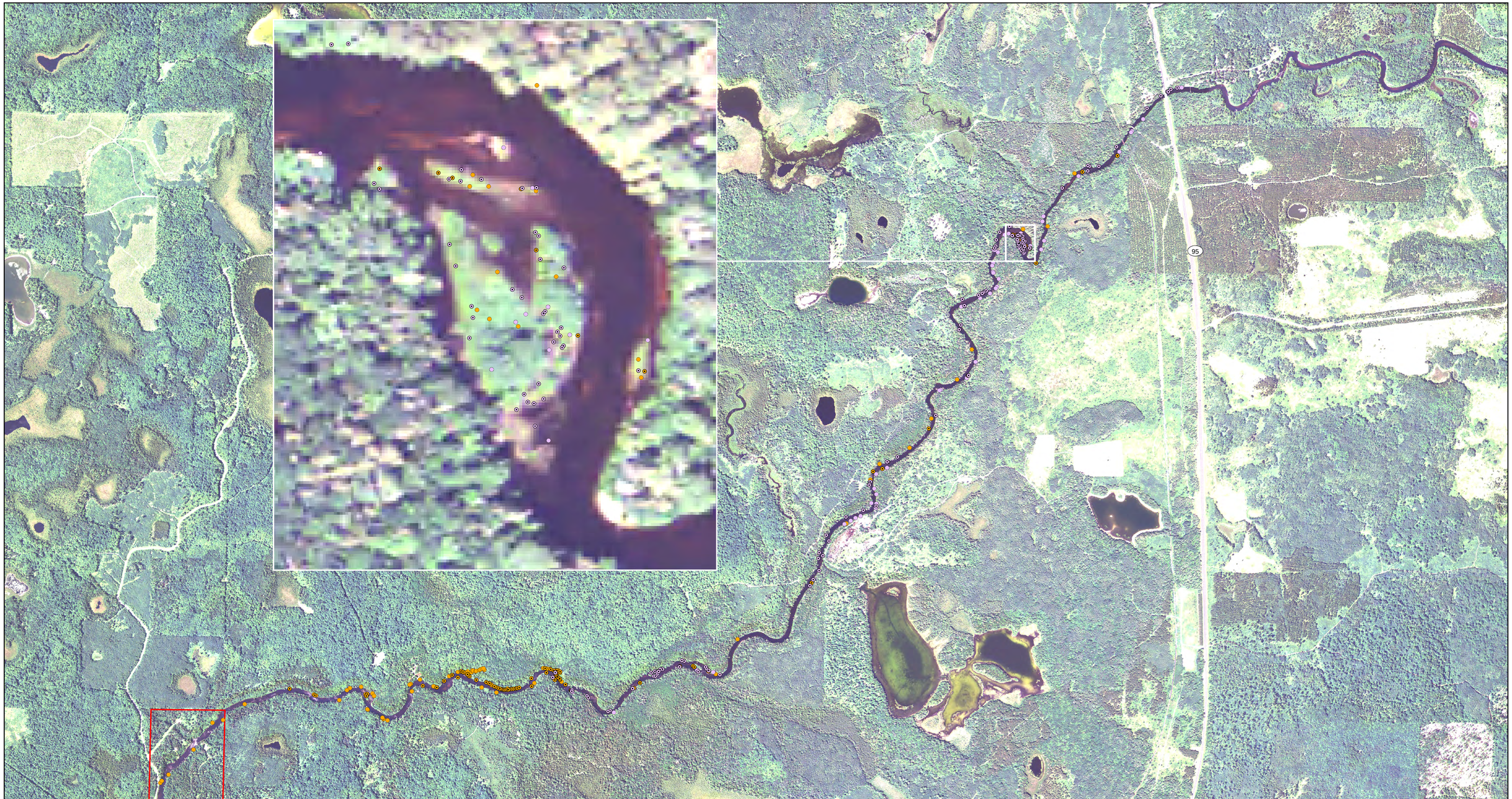






Way Dam Hydro Project - Year 2015
Purple Loosestrife Survey

Source: USDA -NAIP Imagery, 2012
GPS field data collected 7/28/2015, 7/29/2015, 8/16/2015, 8/18/2015



- Purple Loosestrife: Reoccurring Sites July 2015*
- Purple Loosestrife: New Sites July 2015
- Purple Loosestrife: Reoccurring Sites August 2015*
- Purple Loosestrife: New Sites August 2015
- Public Boat Launch
- FERC Hydro Project Boundary

* Reoccurring sites are those that have been mapped in previous years

Feet
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Michigamme River - Year 2015
Purple Loosestrife Survey

Source: USDA -NAIP Imagery, 2012
GPS field data collected 7/27/2015 & 8/19/2015

x42590 9/22/2015 \\Pbsa3naa\psbaqfloateam\DATA\FOI\Env_Strategy\GIS Projects\Hydro_lands\Maps\2015_Reports\michigamme river 2015 PL monitoring.mxd