



Exhibit A

**Section 7.3 Eurasian Watermilfoil of
the 2025 Beaver Dam Lake APMP**



**Percent of Littoral Area in Beaver Dam Lake with Curly-Leaf Pondweed
During 2006-2024**

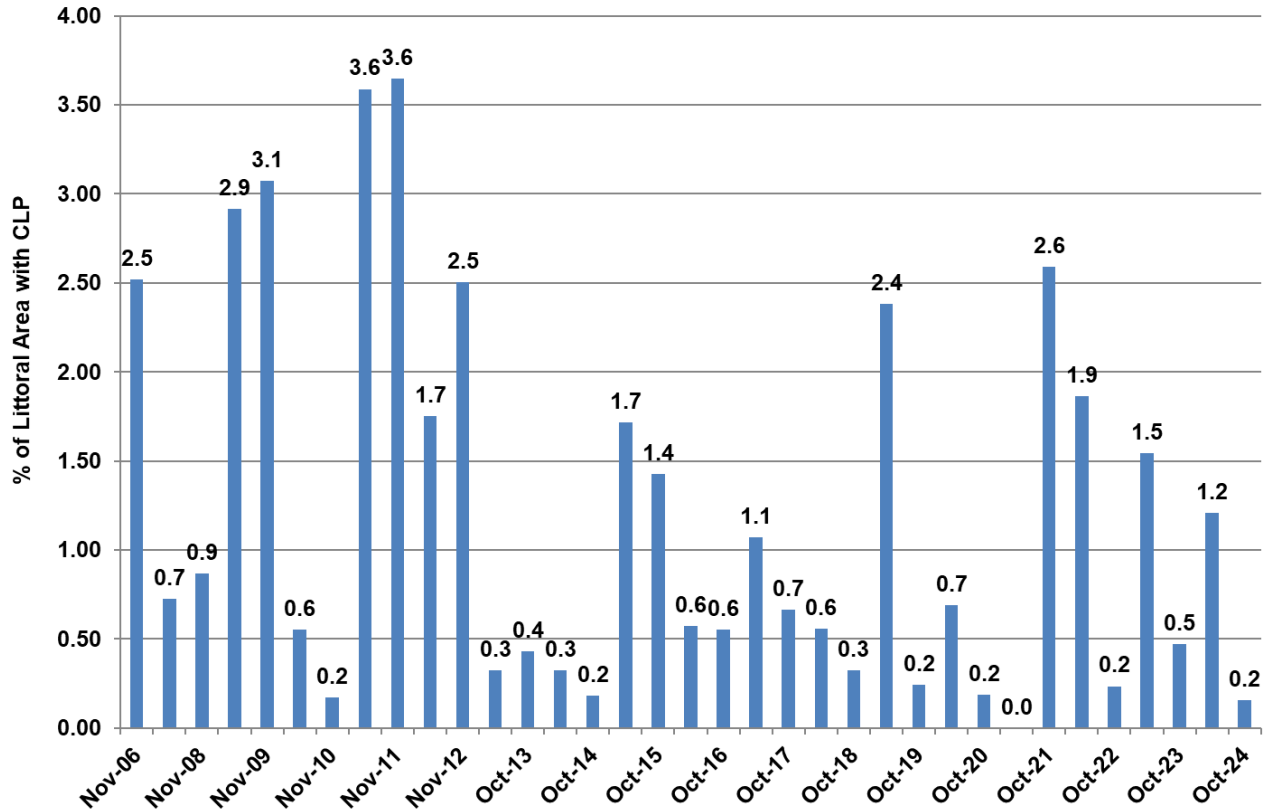


Figure 7-4 Percent of Littoral Area of Beaver Dam Lake with Curly-leaf Pondweed during 2006-2024

The May 2013 plant survey results indicated CLP management was needed in Norwegian Bay and City Bay. However, winter conditions unfavorable for CLP had caused the demise of curly-leaf pondweed in the two channels adjacent to Rabbit Island Bay and CLP was not found during May. In 2013, 9.7 acres in Norwegian Bay and 19.1 acres in City Bay were treated with Endothall. CLP was not observed in Norwegian Bay or City Bay during a June 2013 plant survey.

CLP was not problematic during 2014 through 2024 and CLP management was not needed during this period. In the fall of 2024, CLP was found in 0.2 percent of the Beaver Dam Lake littoral area (Table 7-2 and Figure 7-4). Hence, the District goal of CLP presence in 7 percent or less of the littoral zone was attained and management is not needed in 2025.

7.3 Eurasian Watermilfoil (EWM)

EWM is a submersed aquatic plant native to Europe, Asia, and northern Africa (U.S. Forest Service, 2012). EWM was first introduced to the United States in the 1880s, being first observed in the Chesapeake Bay (Nichol’s et al., 1986). EWM moved westward and was first introduced in southern Wisconsin in the 1960s (WDNR, 2012c). EWM moved northward in WI and was first observed in Beaver Dam Lake during 1991 (WDNR, 2012d).

Unlike many other plants, EWM generally does not rely on seeds for reproduction. Its seeds usually germinate poorly under natural conditions and it generally reproduces by fragmentation—each fragment can grow into a new plant. The plant produces fragments after fruiting at least once or twice during the summer. These fragments can be carried downstream by water currents or spread by waves or boaters throughout a waterbody (WDNR, 2012d).

Once established in an aquatic community, EWM generally reproduces from fragments and stolons (runners that creep along the lake bed) rather than seeds. Stolons, lower stems, and roots persist over winter and store the carbohydrates that help EWM claim the water column early in spring, photosynthesize, divide, and form a dense leaf canopy that shades out native aquatic plants. EWM's fast growth rate, up to 2 inches per day in spring and summer, its ability to spread rapidly by fragmentation, and its ability to effectively block out sunlight needed for native plant growth often result in monotypic stands. Monotypic stands of EWM provide only a single habitat and threaten the integrity of aquatic communities in a number of ways; for example, dense stands disrupt predator-prey relationships by fencing out larger fish and reducing the number of nutrient-rich native plants available for waterfowl. EWM spreads rapidly and can grow to dominance in as little as two years (WDNR, 2012c and 2012d).

Dense stands of EWM also inhibit recreational uses like swimming, boating, and fishing. Cycling of nutrients from sediments to the water column by EWM may lead to deteriorating water quality and algae blooms of infested lakes (WDNR, 2012c).

After EWM was accidentally introduced into Beaver Dam Lake in 1991, it spread quickly, displaced native plants, and inhibited recreational use of the lake. A District plant survey of the lake in 1999 estimated EWM coverage at approximately 73 percent of the littoral area of the lake (Barr, 2011c). The District completed an APM Plan in 2000 (Barr, 2000). The APM Plan recommended treatment of EWM infested areas with 2,4-D. During 2000 through 2005, the District implemented the APM Plan. 2,4-D treatments of EWM infested areas generally occurred twice during each growing season. The first treatment generally occurred in June and the second in August. In 2004, a third treatment was added to the program. Treatment areas were determined by annual inspections to identify problematic EWM infested areas in the lake. EWM infested areas treated with 2,4-D during the 2000 through 2005 period are summarized in Table 7-3 and discussed in detail in the Beaver Dam Lake (East and West) Macrophyte Surveys and Management Plan (Barr, 2006).

Table 7-3 2000-2005 Beaver Dam Lake EWM Infested Areas Treated with 2,4-D

Year	1 st Treatment (ac)	2 nd Treatment (ac)	3 rd Treatment (ac)	Total Treated Areas (ac)
2000	50	67	--	117
2001	85	75	--	160
2002	80	18	--	98
2003	84	58	--	142
2004	102	44	25	171
2005	53	66	--	119

The District completed an aquatic plant survey in 2005 and updated its APM Plan in 2006. The District plant survey of the lake in 2005 estimated EWM coverage at approximately 47 percent of the littoral area of the lake. The updated plan recommended an adaptive management strategy to reduce EWM coverage and density in Beaver Dam Lake. The strategy employed annual plant surveys that identified areas of the lake infested with EWM and used a customized treatment program to control EWM. The customized program considered locations in which EWM was found, lake volume, mixing potential, flow, and current research information. A customized treatment strategy (herbicide or combination of herbicides, dose, application strategy, and timing) was annually selected. Treatments occurred during early spring prior to the native plant growing season. In some years, selected areas were treated in fall after the native plant growing season had concluded. The treatment timing, either before or after the native plant growing season, protected native species from harm. In addition, control of EWM prior to the native plant growing season encouraged native species to claim areas vacated by EWM and, hence, encouraged restoration of the native plant community.

The District again updated its APM Plan in 2012. Since 2012, the District has annually updated its APM Plan. The District uses an adaptive management approach, striving for continuous improvement. Aquatic plant surveys are annually completed to determine EWM management results and areas requiring management in the subsequent year. The current program customizes EWM management for each basin—management method (manual removal or herbicide treatment) and for herbicide treatment, herbicide type and dose, are determined for each basin.

Table 7-4 summarizes EWM frequency of occurrence in the littoral areas (shallow areas where plants grow) during the 2006 through 2024 period. The littoral areas of the lake include water depths up to 25 feet, the area of the lake where EWM has been found. The frequency of occurrence is based upon whole lake point intercept plant surveys in which approximately 1,346 sample points in the lake were surveyed. Lake area locations are shown on Figure 1-2. Maps showing sample points are found in Appendix E.

Table 7-5 summarizes EWM extent—the number of acres of EWM in the lake—during the 2006 through 2024 period. The EWM extent is based upon whole lake point intercept plant surveys in which approximately 1,346 sample points in the lake were surveyed. Lake area locations are shown on Figure 1-2. Maps showing EWM extent are found in Appendix F.

Table 7-6 summarizes the percent of the littoral zone with EWM during the 2006 through 2024 period. The percent of the littoral zone with EWM was computed by dividing the EWM extent in acres by the area of the littoral zone in acres and multiplying by 100 to convert to percent. The littoral zone is the area of the lake to the 25-foot depth.

The data shows a rapid spread of EWM has generally occurred between summer and fall, except when a fall treatment occurred. EWM extent in eastern basins approximately doubled between summer and fall during 2009 through 2011 except in 2010 when a fall treatment in Norwegian Bay resulted in a reduction of EWM between summer and fall (Table 7-5). West Lake EWM extent approximately doubled between summer and fall during 2010 through 2012 but not in 2009 when a fall treatment in West Lake, Williams Bay, Rabbit Island Bay, and Library Lake resulted in a reduction of EWM extent between summer and fall (Table 7-5). In 2024, EWM extent for Beaver Dam Lake nearly tripled between summer and fall—from 8 acres in summer to 22 acres in fall.

Despite the spread of EWM between summer and fall, successful management of EWM has reduced EWM extent by 88 percent—from 176 acres in the fall of 2008 to 22 acres in the fall of 2024 Table 7-5—

and EWM frequency by 85 percent—from 34 percent in the fall of 2008 to 5 percent in the fall of 2024 (Table 7-4).

Table 7-6 summarizes the percent of the littoral area of Beaver Dam Lake with EWM during 2006 through 2023. The littoral area is defined as the area of the lake up to the 25-foot depth. Based upon aquatic plant surveys, the littoral area in Beaver Dam Lake is estimated to be 530 acres. The percent of littoral area on Table 7-6 was computed by dividing the EWM extent (Table 7-5) by the littoral area, and then multiplying by 100 to convert to percent. During 2008 through 2024, the percentage of littoral area with EWM ranged from a low of 0.08 percent during July of 2021 to a high of 34 percent in the fall of 2008. During the fall of 2024, 4 percent of the littoral zone contained EWM (Table 7-6).

The District has changed the EWM goal periodically. Beginning with the 2006 APM Plan and continuing through 2012, the District goal was to reduce EWM in Beaver Dam Lake to a littoral area frequency of 5 percent or less. In 2012, the goal was changed to reduce EWM to a littoral area extent of 10 percent or less. In 2014, the District changed the EWM goal to 7 percent or less of the littoral zone. On April 18, 2024, the District changed the goal to:

EWM control goals for Library Lake and all named parts of Beaver Dam Lake such as Cemetery, City, Williams, Rabbit and Norwegian Bays and East Lake and the West Lake are <3% of the littoral zone. All navigation areas and heavy use areas such as Tiger Bay and the Brigadoon location, the Narrows, the sand dam area between Williams and Rabbit Bay, the Grove Street bridge area, the Highway 63 and 48 channels to and from the bridges and boat landings will have a 0% EWM goal.

In October 2024, Cemetery Bay, Rabbit Island Bay, and West Lake failed to meet the EWM goal because the percent of the littoral zone with EWM was greater than 3% (9 percent in Cemetery Bay, 5 percent in Rabbit Island Bay, and 8 percent in West Lake. In October 2024, EWM was found in 2 percent of the littoral zone in City Bay which met the goal of <3%. However, EWM was present in navigation and heavy use areas, including channels to and from the Highway 63 and 48 boat landings and bridges which have a 0% EWM goal. Therefore, removal of EWM from Cemetery Bay, Rabbit Island Bay, West Lake, and City Bay by herbicide treatment is necessary to attain the EWM goal. EWM was not observed in Williams Bay, Library Lake, East Lake, and Norwegian Bay in October 2024 and, therefore the EWM goal was attained.

Table 7-4 2006-2024 EWM Frequency of Occurrence in the Littoral Zone of Beaver Dam Lake

Location	Percent of sample points up to 25-foot depth with Eurasian watermilfoil, including visuals																							
	Fall 2006	Fall 2007	Fall 2008	July 2009	Fall 2009	July 2010	Fall 2010	July 2011	Fall 2011	June 2012	July 2012	Fall 2012	May 2013	June 2013	July 2013	Fall 2013	July 2014	Fall 2014	July 2015	Fall 2015	July 2016	Fall 2016	July 2017	Fall 2017
Norwegian Bay	28.57	16.39	52.46	39.71	80.00	33.82	28.36	11.76	51.52	13.24	54.41	72.13	39.71	0.00	7.35	58.82	4.41	44.12	1.47	1.47	8.82	22.06	10.29	17.65
East Lake	5.13	0.00	13.38	14.00	27.86	22.70	27.54	28.78	33.79	N/A ¹	17.57	27.86	N/A ¹	N/A ¹	2.88	19.73	0.73	2.10	0.00	0.00	0.00	1.36	1.41	1.36
City Bay	59.12	7.74	72.84	32.78	62.13	21.67	55.93	54.40	70.39	8.89	48.07	58.90	46.93	0.00	21.67	46.11	1.67	9.44	0.00	7.78	0.00	1.67	2.22	5.56
Cemetery Bay	41.10	0.00	40.00	0.00	6.82	0.00	10.23	3.37	47.73	N/A ¹	0.00	18.39	N/A ¹	3.37	0.00	2.25	0.00	1.14	4.49	44.94	5.62	26.97	0.00	0.00
West Lake	18.77	11.07	21.19	14.84	13.33	10.59	13.61	7.35	10.18	N/A ¹	8.64	14.15	N/A ¹	N/A ²	6.69	17.31	5.50	11.52	0.00	1.21	4.28	8.36	5.83	11.64
Williams Bay	13.33	28.05	23.81	16.98	11.01	3.85	12.15	9.80	10.19	N/A ¹	3.85	15.96	N/A ¹	N/A ²	0.96	6.36	0.00	9.43	0.00	0.00	1.87	8.33	1.89	0.93
Rabbit Island Bay	39.39	28.72	30.10	18.49	20.54	12.82	26.79	10.17	17.86	0.00	1.67	11.43	N/A ²	N/A ²	0.85	3.33	1.68	5.00	0.00	1.67	4.20	10.00	0.00	3.33
Library Lake	73.33	61.97	47.30	5.04	2.60	0.72	7.41	0.00	0.00	N/A ¹	2.88	1.79	N/A ¹	N/A ¹	0.00	0.72	0.00	1.44	5.76	12.23	0.00	0.00	1.44	3.60
East Lake Basins	12.74	24.17	26.45	13.84	12.90	7.93	14.26	7.02	10.71	N/A³	5.53	12.54	N/A³	N/A³	3.48	10.95	2.88	8.06	1.17	3.31	2.30	9.09	2.71	4.96
West Lake Basins	16.79	5.52	44.89	21.97	43.72	19.67	34.89	31.38	54.31	N/A³	30.86	43.24	N/A³	N/A³	10.08	33.12	1.46	10.65	1.05	11.46	3.03	6.98	3.33	6.98
Beaver Dam Lake— All Basins	14.42	15.77	34.46	17.17	25.96	12.77	22.64	17.43	29.51	N/A³	16.03	26.16	N/A³	N/A³	6.17	20.29	2.30	9.11	1.12	6.64	2.73	7.84	3.08	6.16

¹N/A Frequency of occurrence not available because the area was not surveyed

² N/A Frequency of occurrence not available because limited areas were surveyed - not the whole lake/bay area. Rabbit Island Bay channels surveyed and a small area near the Eagle Point boat launch.

³N/A Frequency of occurrence not available because some areas were not surveyed and/or only limited areas were surveyed in West Lake (area near Eagle Point boat landing) and Rabbit Island Bay (only the channels)

Table 7-4 (Continued) 2006-2024 EWM Frequency of Occurrence in the Littoral Zone of Beaver Dam Lake

Percent of sample points up to 25-foot depth with Eurasian watermilfoil, including visuals														
Location	July 2018	Fall 2018	July 2019	Fall 2019	July 2020	Fall 2020	July 2021	Fall 2021	July 2022	Fall 2022	July 2023	Fall 2023	July 2024	Fall 2024
Norwegian Bay	1.47	2.94	0.00	4.41	0.00	0.00	0.00	0.00	1.47	4.41	0.00	0.00	0.00	0.00
East Lake	0.00	0.00	0.00	0.00	0.00	0.71 ⁶	0.00	0.00	0.00	5.52	0.00	0.00	0.00	0.00
City Bay	0.00	1.67	0.00	2.22	0.00	3.89	0.56	0.56	2.22	14.44	0.00	0.00	0.00	3.33
Cemetery Bay	0.00	0.00	5.62	14.61	3.37	2.25	1.12	7.87	14.61	33.71	1.12	6.74	4.49	13.48
West Lake	2.76	6.83	0.31	0.31 ⁴	1.85	13.54	0.00	1.21	2.42	3.33	0.30	0.00	2.42	8.18
Williams Bay	0.94	1.90	0.94	0.94 ⁴	12.15	27.10	0.00	1.83	0.00	1.83	0.92	0.00	0.00	0.00
Rabbit Island Bay	0.84	4.17	0.00	3.36 ⁵	5.88	16.81	0.00	0.00	10.08	23.53	0.00	1.68 ⁷	6.78	7.56
Library Lake	5.76	10.07	0.00	0.72 ⁴	2.16	5.04	0.00	0.00	0.72	5.04	0.00	0.00	0.72 ⁸	0.00
East Lake Basins	0.21	1.05	1.04	4.18	0.63	2.09	0.41	1.66	3.73	13.90	0.21	1.24	0.83	3.73
West Lake Basins	2.75	6.27	0.29	1.01	4.20	14.49	0.00	0.86	3.01	6.89	0.29	0.86	2.44	5.16
Beaver Dam Lake— All Basins	1.71	4.12	0.60	2.31	2.74	9.42	0.17	1.19	3.31	9.75	0.25	1.02	1.78	4.58

⁴All EWM was rake removed during the 2019 fall plant survey.

⁵The majority of the EWM was in the west canal and all EWM in Rabbit Island Bay were-rake removed during the 2019 fall plant survey.

⁶All EWM was rake removed during the 2020 fall plant survey.

⁷All EWM was rake removed during the 2023 fall plant survey.

⁸All EWM was rake removed during the 2024 July plant survey.

Table 7-5 2006-2024 EWM Extent in Beaver Dam Lake

Acreage of EWM (based on plant surveys)																								
Location	Fall 2006	Fall 2007	Fall 2008	July 2009	Fall 2009	July 2010	Fall 2010	July 2011	Fall 2011	June 2012	July 2012	Fall 2012	May 2013	June 2013	July 2013	Fall 2013	July 2014	Fall 2014	July 2015	Fall 2015	July 2016	Fall 2016	July 2017	Fall 2017
Norwegian Bay	3.64	4.75	18.12	8.65	28.23	12.09	9.61	1.99	19.67	3.36	21.21	26.91	15.16	0.00	2.19	23.37	1.10	17.89	0.45	0.81	2.48	6.94	4.66	6.19
East Lake	0.00	0.00	9.34	8.14	19.37	14.13	17.48	17.18	23.93	N/A ¹	11.33	19.98	N/A ¹	N/A ¹	1.18	15.72	0.33	0.90	0.00	0.00	0.00	1.97	0.63	0.48
City Bay	60.25	3.94	68.06	27.89	61.62	20.11	54.01	47.97	73.66	7.65	48.76	55.75	50.85	0.00	20.70	49.01	0.79	7.26	0.00	6.87	0.00	1.50	2.37	5.13
Cemetery Bay	10.90	0.00	17.80	0.00	1.81	0.00	3.97	0.86	21.32	N/A ¹	0.00	7.17	N/A ¹	0.75	0.00	0.51	0.00	0.26	1.54	31.56	1.70	13.76	0.00	0.00
West Lake	25.27	11.36	33.19	24.59	19.67	15.80	25.15	8.65	14.78	N/A ¹	15.31	23.11	N/A ¹	3.15 ²	10.05	29.13	7.23	29.94	0.00	1.72	6.83	20.64	9.46	21.05
Williams Bay	3.63	10.23	12.64	9.48	4.80	1.15	6.68	4.57	4.65	N/A ¹	1.68	6.92	N/A ¹	0.26 ²	0.33	2.46	0.00	7.45	0.00	0.00	0.92	5.78	1.89	0.26
Rabbit Island Bay	5.80	12.36	13.21	10.57	8.51	6.26	11.47	4.22	8.01	0.00	0.51	5.64	0.00 ²	N/A ²	0.38	1.45	0.61	3.11	0.00	1.37	1.41	9.51	0.00	0.83
Library Lake	0.66	0.59	3.62	0.40	0.09	0.04	0.72	0.00	0.00	N/A ¹	0.20	0.04	N/A ¹	N/A ¹	0.00	0.06	0.00	0.14	0.70	1.90	0.02	0.00	0.20	0.43
East Lake Basins	74.79	8.69	113.32	44.68	111.03	46.33	85.07	67.99	138.58	N/A³	81.30	109.81	N/A³	N/A³	24.07	88.60	2.22	26.31	1.99	39.24	4.18	24.16	7.66	11.80
West Lake Basins	35.36	34.54	62.66	45.04	33.07	23.25	44.02	17.44	27.44	N/A³	17.70	35.70	N/A³	N/A³	10.76	33.10	7.84	40.64	0.70	4.99	9.18	35.93	11.55	22.57
Beaver Dam Lake— All Basins	110.15	43.23	175.98	89.72	144.10	69.58	129.09	85.43	166.02	N/A³	99.00	145.51	N/A³	N/A³	35.88	121.70	10.06	66.96	2.68	44.23	13.36	60.10	19.21	34.37

¹N/A EWM extent not available because the area was not surveyed

²EWM extent is based on survey of limited areas—not the whole lake/bay area. Rabbit Island Bay channels surveyed and a small area near the Eagle Point boat launch which included portions of West Lake and Williams Bay.

Table 7-5 (Continued) 2006-2024 EWM Extent in Beaver Dam Lake

Location	Acreage of EWM (based on plant surveys)													
	July 2018	Fall 2018	July 2019	Fall 2019	July 2020	Fall 2020	July 2021	Fall 2021	July 2022	Fall 2022	July 2023	Fall 2023	July 2024	Fall 2024
Norwegian Bay	0.30	0.65	0.00	0.70	0.00	0.00	0.00	0.00	0.23	0.89	0.00	0.00	0.00	0.00
East Lake	0.00	0.00	0.00	0.00	0.00	0.24 ⁵	0.00	0.00	0.00	2.54	0.00	0.00	0.00	0.00
City Bay	0.00	1.56	0.00	0.97	0.00	3.75	0.14	0.27	1.03	11.95	0.00	0.00	0.00	1.84
Cemetery Bay	0.00	0.00	1.22	4.10	1.41	0.74	0.27	3.75	7.43	18.69	0.70	3.12	1.65	4.88
West Lake	5.46	12.35	1.55	0.36 ³	4.41	27.89	0.00	2.64	3.99	4.73	0.30	0.00	3.54	11.71
Williams Bay	0.72	0.54	0.27	0.25 ³	8.76	17.29	0.00	0.71	0.11	0.43	0.38	0.00	0.00	0.00
Rabbit Island Bay	0.27	1.32	0.00	0.62 ⁴	3.96	11.26	0.00	0.00	4.59	15.06	0.00	0.73 ⁶	3.22	3.21
Library Lake	0.76	1.85	0.00	0.04 ³	0.24	0.51	0.00	0.00	0.04	0.61	0.00	0.00	0.05 ⁷	0.00
East Lake Basins	0.30	2.21	1.22	5.77	1.41	4.73	0.41	4.02	8.69	34.07	0.70	3.12	1.65	6.72
West Lake Basins	7.21	16.06	1.82	1.27	17.37	56.95	0.00	3.35	8.73	20.83	0.68	0.73	6.81	14.92
Beaver Dam Lake— All Basins	7.52	18.27	3.04	7.05	18.78	61.68	0.41	7.37	17.42	54.90	1.38	3.85	8.46	21.64

³All EWM was rake removed during the 2019 fall plant survey.

⁴The majority of the EWM in the west canal and all EWM in Rabbit Island Bay were rake removed during the 2019 fall plant survey.

⁵All EWM was rake removed during the 2020 fall plant survey.

⁶All EWM was rake removed during the 2023 fall plant survey.

⁷All EWM was rake removed during the 2024 July plant survey.

Table 7-6 2006-2024 Percent of Littoral Zone with EWM in Beaver Dam Lake

Location	Percent of Littoral Zone with EWM (based on plant surveys)																				
	Fall 2006	Fall 2007	Fall 2008	July 2009	Fall 2009	July 2010	Fall 2010	July 2011	Fall 2011	July 2012	Fall 2012	July 2013	Fall 2013	July 2014	Fall 2014	July 2015	Fall 2015	July 2016	Fall 2016	July 2017	Fall 2017
Norwegian Bay	9.52	12.42	47.38	22.62	73.82	31.62	25.13	0.05	51.44	55.47	70.38	5.72	61.11	2.88	46.79	1.18	2.12	6.49	18.15	12.18	16.19
East Lake	0.00	0.00	14.83	12.92	30.75	22.43	27.75	27.27	37.98	17.98	31.71	1.87	24.95	0.53	1.43	0.00	0.00	0.00	3.13	0.93	0.71
City Bay	59.45	3.89	67.15	27.52	60.80	31.92	53.29	47.33	72.68	48.11	55.01	20.42	48.36	0.78	7.17	0.00	6.78	0.00	1.48	2.34	5.06
Cemetery Bay	20.21	0.00	33.00	0.00	3.36	0.00	7.36	1.59	39.53	0.00	13.29	0.00	0.94	0.00	0.48	2.86	58.51	3.15	25.51	0.00	0.00
West Lake	17.60	7.91	23.12	17.13	13.70	11.01	17.52	6.03	10.30	10.67	16.10	7.00	20.29	5.04	20.86	0.00	1.20	4.76	14.86	6.43	14.30
Williams Bay	7.95	22.41	27.70	20.77	10.52	2.52	0.15	10.01	10.19	3.68	15.15	0.72	5.39	0.00	12.29	0.00	0.00	2.02	11.74	3.93	0.54
Rabbit Island Bay	9.56	20.38	21.78	17.43	14.03	10.32	18.91	6.96	13.21	0.84	9.30	0.63	2.39	1.01	5.13	0.00	2.26	2.33	15.72	0.00	1.36
Library Lake	4.81	4.30	26.40	2.92	0.66	0.29	5.25	0.00	0.00	1.46	0.27	0.00	0.45	0.00	0.99	5.11	13.86	0.15	0.00	1.44	3.14
East Lake Basins	29.15	3.39	44.17	17.42	43.28	18.06	33.16	26.51	54.02	31.69	42.81	9.38	34.54	0.87	10.26	1.99	15.30	1.63	9.42	2.93	4.52
West Lake Basins	13.42	13.11	23.78	17.09	12.55	8.82	16.70	6.62	10.41	6.72	13.55	4.08	12.56	2.98	15.42	0.70	1.89	3.48	13.69	4.27	8.35
Beaver Dam Lake— All Basins	21.18	8.31	33.84	17.25	27.71	13.38	24.82	16.43	31.92	19.04	27.98	6.90	23.40	1.93	12.87	2.68	8.50	2.57	11.58	3.62	6.47

Table 7-6 (Continued) 2006-2024 Percent of Littoral Zone with EWM in Beaver Dam Lak

Location	Percent of Littoral Zone with EWM (based on plant surveys)													
	July 2018	Fall 2018	July 2019	Fall 2019	July 2020	Fall 2020	July 2021	Fall 2021	July 2022	Fall 2022	July 2023	Fall 2023	July 2024	Fall 2024
Norwegian Bay	0.78	1.70	0.00	1.83	0.00	0.00	0.00	0.00	0.61	2.32	0.00	0.00	0.00	0.00
East Lake	0.00	0.00	0.00	0.00	0.00	0.36 ³	0.00	0.00	0.00	3.80	0.00	0.00	0.00	0.00
City Bay	0.00	1.54	0.00	0.96	0.00	3.70	0.14	0.26	1.01	11.79	0.00	0.00	0.00	1.81
Cemetery Bay	0.00	0.00	2.26	7.60	2.62	1.37	0.49	6.96	13.78	34.65	1.30	5.78	3.07	9.04
West Lake	3.70	8.37	1.05	0.24 ¹	2.99	18.90	0.00	1.79	2.70	3.20	0.20	0.00	2.40	7.93
Williams Bay	1.51	1.13	0.57	0.52 ¹	18.40	36.30	0.00	1.49	0.22	0.90	0.80	0.00	0.00	0.00
Rabbit Island Bay	0.44	2.16	0.00	1.01 ²	6.47	18.40	0.00	0.00	7.50	24.62	0.00	1.19 ⁴	5.26	5.25
Library Lake	5.54	13.49	0.00	0.29 ¹	1.76	3.69	0.00	0.00	0.32	4.46	0.00	0.00	0.36 ⁵	0.00
East Lake Basins	0.12	0.85	0.47	2.22	0.54	1.82	0.16	1.54	3.34	13.09	0.27	1.20	0.64	2.58
West Lake Basins	2.67	5.95	0.67	0.47	6.43	21.08	0.00	1.24	3.23	7.71	0.25	0.27	2.52	5.52
Beaver Dam Lake— All Basins	1.42	3.45	0.57	1.33	3.54	11.63	0.08	1.39	3.28	10.35	0.26	0.73	1.60	4.08

¹All EWM was rake removed during the 2019 fall plant survey.

²The majority of the EWM in the west canal and all EWM in Rabbit Island Bay were rake removed during the 2019 fall plant survey.

³All EWM was rake removed during the 2020 fall plant survey.

⁴All EWM was rake removed during the 2023 fall plant survey.

⁵All EWM was rake removed during the 2024 July plant survey.

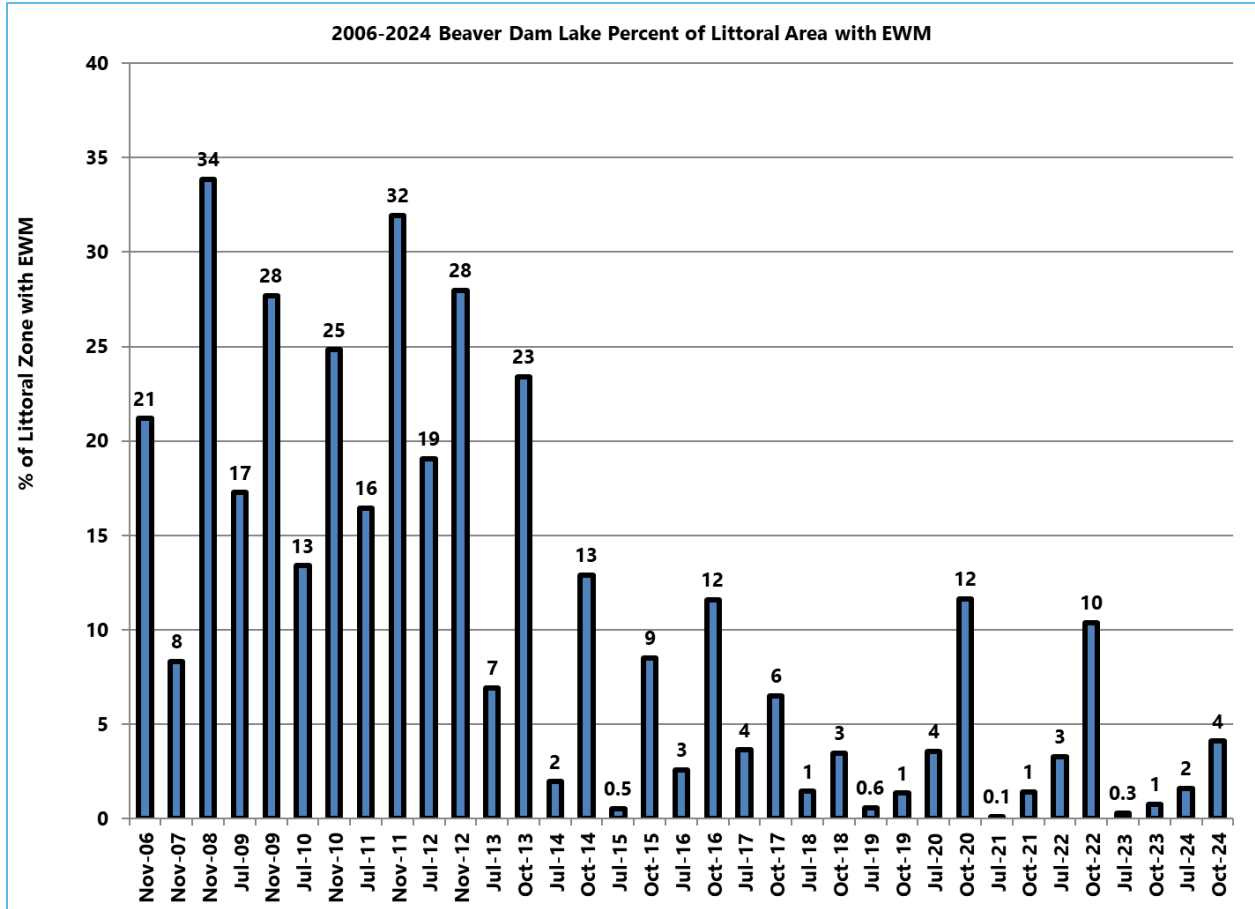


Figure 7-5 Percent of Littoral Area of Beaver Dam Lake with EWM during 2006-2024

Table 7-7 summarizes EWM herbicide treatment areas, both spring and fall, and shows the types of herbicide used for treatment during the 2006 through 2024 period. A detailed discussion of the treatments is found in treatment plans found in Appendix J. In addition, annual reports completed by the Beaver Dam Lake Management District contain detailed discussions of the treatments completed during 2006 through 2011 (Barr, 2007a; Barr 2007b; Barr, 2009a; Barr, 2010a; Barr, 2011a, and Barr, 2012c). The reports are available upon request.

Table 7-7 2006-2024 Beaver Dam Lake Herbicide Treatment Summary: Area Treated and Herbicide Used

	Spring Treatment					Fall Treatment				
	Treat with 2,4-D (ac)	Treat with 2,4-D and Endothall (ac)	Treat with Diquat (ac)	Treat with Aquastrike (ac)	Treat with ProcellaCOR (ac)	Total Spring (ac)	Treat with 2,4-D (ac)	Treat with 2,4-D and Endothall (ac)	Total Fall (ac)	Sum of Spring and Fall (ac)
2006	91	58	--	--		149	22	--	22	171
2007	63	90	4	--		157	10	--	10	167
2008	97	23	--	--		120	25	--	25	145
2009	154	24	--	--		178	23	2	25	204
2010	71	93	--	--		164	11	23	34	198
2011	181	--	--	--		181	--	--	--	181
2012	169	53	--	--		222	--	--	--	222
2013	218	29	--	--		247	--	--	--	247
2014	278	--	--	--		278	--	--	--	278
2015	336	--	--	--		336	--	--	--	336
2016	166	--	--	--		166	--	--	--	166
2017	177	--	5	--		182	--	--	--	182
2018	161	--	10	--		171	--	--	--	171
2019	10	--	16	18	3	47	--	--	--	47
2020	53	--	15	2	--	70	--	--	--	70
2021	113	--	25	47	--	185	--	--	--	185
2022	--	--	--	--	12	12	--	--	--	12
2023	125	--	--	--	41	166	--	--	--	166
2024	--	--	--	--	--	0	--	--	0	0

In 2015, the EWM management program was expanded to include manual removal of EWM in summer. In 2015, manual removal of EWM occurred in Norwegian Bay, Cemetery Bay, and Library Lake during late July and in Library Lake and Norwegian Bay in late August. In 2016, manual removal of EWM occurred in Rabbit Island Bay, the channel between Rabbit Island Bay and Library Lake, Cemetery Bay, City Bay, and Norwegian Bay during late August. In 2017, manual removal of EWM occurred in Library Lake during July. In July of 2018, EWM observed in the west canal of Rabbit Island Bay was manually removed. In 2019, all EWM observed in West Lake, Williams Bay, Library Lake, and Rabbit Island Bay and the majority of the EWM observed in the west canal of Rabbit Island Bay was manually removed during the fall plant survey. In 2020, all East Lake EWM was removed during the fall plant survey. During the July 2021 plant survey, all EWM was manually removed from Cemetery Bay and City Bay, the only areas of the lake where EWM was observed. During the July 2022 plant survey, a single EWM plant in the channel outlet to Rabbit Island Bay was the only EWM observed in Rabbit Island Bay and was manually removed. In 2023, the single EWM plant observed in Williams Bay during the July plant survey was manually removed. All EWM observed in Rabbit Island Bay during the 2023 fall plant survey was manually removed. In 2024, the two EWM plants observed in Library Lake during the July plant survey were manually removed.

7.3.1 Herbicide Residue Data

Herbicide residue data collected during 2006 through 2023 are summarized in Appendix M. In 2024, herbicide treatment of EWM did not occur and, therefore, herbicide residue data were not collected.