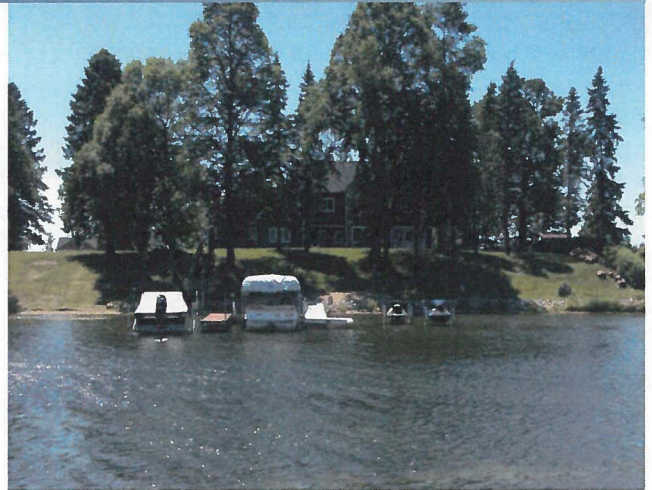


Data Collection—Shoreline Surveys

The Pelican River Watershed District conducts periodic assessments of the land use, lake use, and level of shoreline alteration on main District lakes.

In 2018, District staff completed surveys of Detroit (Big and Little) and Curfman Lakes. An assessment was conducted on each shoreline parcel which included: (1) counting the number and type of waterfront equipment including docks, lifts, personal watercraft, motorized boats (wakeboard, fishing, pontoons) and non-motorized boats/equipment (rafts, kayaks, paddleboards, sailboats, etc.) and (2) rating the shoreline condition based upon an alteration scale of greatly, moderately, or minimally altered/natural condition.



2018 Shoreline Surveys Waterfront Equipment Big and Little Detroit, Curfman Totals			
Big/Little Detroit and Curfman	2010	2018	Change
Docks	495	569	15%
Covered Boat lift	343	506	48%
Uncovered Boat lift	315	418	33%
PWC	70	230	229%
Motorized	596	920	54%
Non-motorized	109	375	244%
Mechanical Plant Control	23	32	39%

Waterfront Equipment

Over the past 8 years, since the 2010 survey, there are notable equipment changes on Big Detroit, Little Detroit, and Curfman lakes in the various types and number of watercraft (wake boats, pontoons, fishing boats, kayaks, paddleboards, etc.), docking systems, use of weed rollers, etc.

Big Detroit Lake—316 parcels

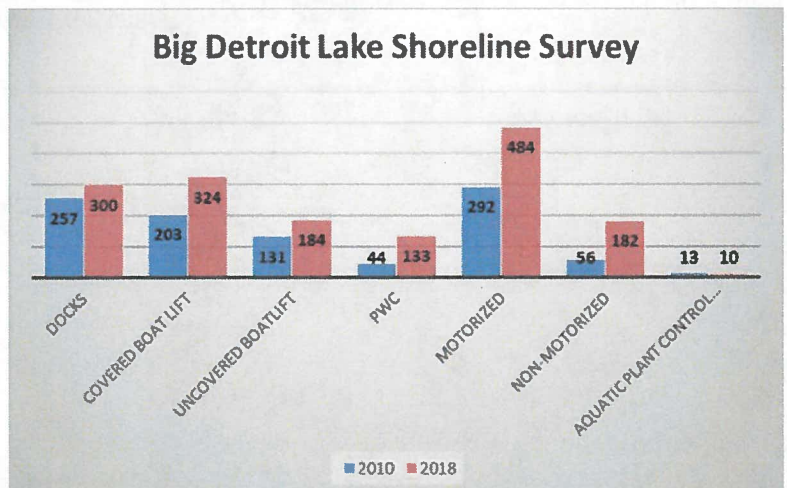
The number of all types of waterfront equipment increased significantly from the 2010 to the 2018 survey, except for automated plant control devices, which decreased from 13 to 10 devices. Pontoons, covered boat lifts, personal watercraft, kayaks, and paddleboards had the greatest amount of changes.

In 2018, 484 motorized boats were counted, a 66% increase from the 2010 survey of 292. The 2010 survey did not specify the type of watercraft, but the 2018 survey noted over one-half of the boats (290) were pontoons. With 316 parcels on Big Detroit, there is an average of 1.5 motorized boats per parcel. The number of PWC's (jet skis) **almost tripled** in eight years, from 44 to 133. The number of non-motorized watercraft (stand up paddleboards, kayaks, etc.) also tripled from the 2010 survey, up from 56 to 182 in 2018.

Along with the increases in number of watercraft, boat lifts also significantly increased by 52% from 334 in 2010 to 508 in 2018. The majority of lifts are covered (324 lifts) in comparison with uncovered (184 lifts).

There was a slight increase (17%) in the number of docks, from 257 in 2010 to 300 in 2018. However the survey noted there are more "U-shape" and "L-shape" docking systems which can handle multiple boat lifts.

There were three less automated aquatic plant control devices (i.e., weed rollers) observed in 2018 (10) than in 2010 (13).

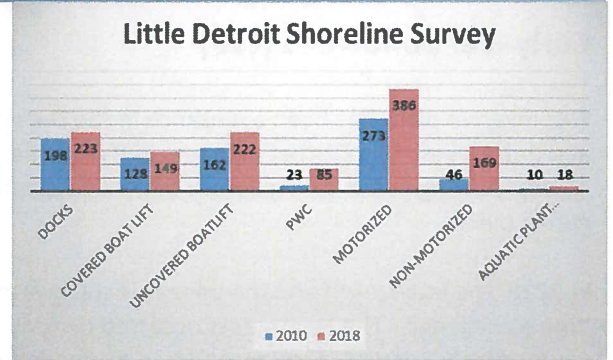


Data Collection—Shoreline Surveys

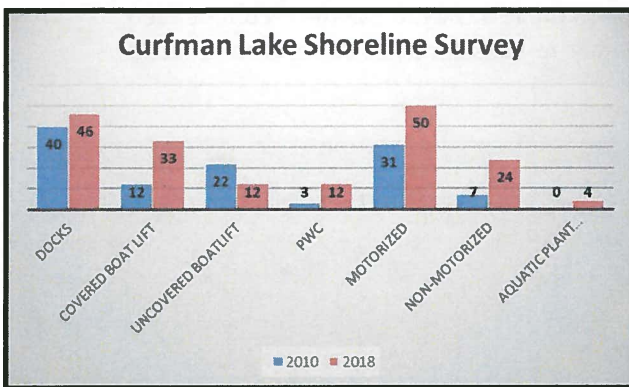
Little Detroit Lake— 198 parcels

In comparing the 2018 survey to the 2010 survey, increases in all types of waterfront equipment were noted. The total number of watercraft per parcel increased from 1.4 in 2010 to 2.0 boats per parcel in 2018.

Motorized watercraft increased from 273 in 2010 to 386, an increase of 42%. There are 251 pontoons on Little Detroit which account for 65% of all watercraft. The number of PWC's (jet skis) more than tripled, from 23 to 85. Total and non-motorized equipment (kayaks, paddle boards, etc.) increased from 46 in 2010 to 169 in 2018. Along with the increases in watercraft and PWC's, the number of docks increased from 198 in 2010 to 223, a 13% increase in 2018, as well as the number of boat lifts from 290 in 2010 to 371, a 28% increase in 2018. Uncovered boat lifts increased 37%, from 162 lifts to 222 lifts in 2018, while covered lifts only increased from 128 lifts in 2010 to 149 lifts. Most of the uncovered lifts were for personal watercraft. There were 18 automated aquatic plant management (APM) devices (i.e. weedroller) counted in 2018, up from 10 in 2010. Little Detroit has more APM devices than Big Detroit and Curfman.



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Curfman Lake—43 parcels

Curfman Lake had similar increases of waterfront equipment, with the exception of boat lifts. It was clear that covered lifts were preferred with an increase from 12 to 33 (175%) and a decrease in non-covered lifts from 22 to only 12 (-45%). Motorized watercraft increased from 31 in 2010 to 50, a 61% increase, which averages 1.1 per parcel. Pontoons were the most popular motorized watercraft—22 boats counted. Personal Watercraft increased 4-fold in eight years from 3 to 12 in 2018. Docks modestly increased from 40 to 46 in 2018.

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In 2010 there were no automated aquatic plant management devices, however 4 APM devices were surveyed in 2018.

Shoreline Alterations

Big Detroit. In 2018, 27% (84) parcels were classified as natural or minimally modified, 25% (79) parcels were moderately altered and 48% (153) parcels greatly altered. These results are similar to the 2010 survey results.

Little Detroit. 2018 survey results had only 15% (30) parcels remaining in their natural or minimally altered condition, with 18% (36) parcels moderately altered; and 67% (132) parcels greatly altered. Almost half of the 2010 classified minimally altered shorelines were greatly altered by 2018.

Curfman. In 2018, 49% (21) parcels were classified as natural or minimally modified, 16% (7) parcels were moderately altered and 35% (15) parcels greatly altered. As on Detroit, shorelines have been greatly altered since the 2010 survey.

Shoreline Alteration—Big Detroit, Little Detroit, and Curfman	2018	2010	% Change
Minimal Shoreline Alteration. (Naturally vegetated area—trees and/or shrubs /unmowed grasses present along at least 3/4 of shoreline, may contain cattail or bulrush fringe. May have natural rip-rap or sand shore.	84 parcels—Big Detroit	66 parcels—Big Detroit	+27.3%
	30 parcels—Little Detroit	59 parcels—Little Detroit	-49.2%
	21 parcels—Curfman	31 parcels—Curfman	-32.3%
Moderate Shoreline Alteration. (Trees &/or shrubs cover at least ¼ but less than ½ of shoreline Unmowed plants cover at least ¼ but less than ½ of shoreline; lawn &/or impervious covers at least ½ .)	79 parcels—Big Detroit	135 parcels—Big Detroit	-41.5%
	36 parcels—Little Detroit	89 parcels—Little Detroit	-59.6%
	7 parcels—Curfman	9 parcels—Curfman	-22.2%
Greatly altered (Trees &/or shrubs/ cover less than 1/4 of shoreline or not present. Entire shoreline is mowed, bare and/or impervious surface, and/or modified by rip-rap, sand blanket, retaining wall, boat ramp.	153 parcels—Big Detroit	121 parcels—Big Detroit	+26.4%
	132 parcels—Little Detroit	57 parcels—Little Detroit	+131.6%
	15 parcels—Curfman	5 parcels—Curfman	+200%