

### PROJECT OVERVIEW

Avalon Parc is a condo association located in SE Wisconsin which was developed in 2005. It has an unaerated 0.88-acre private stormwater basin with a maximum depth of 6.7 feet and average depth of only 2.6 feet, mainly due to a large safety shelf around the perimeter. In 2009, residents observed an increase in algal growth and hired Lake and Pond Solutions Co. to perform treatments. Although the 2010 and 2011 seasons demonstrated that algae could be conditionally controlled, density was still increasing. Additionally, 2011 spring water sampling data revealed that reactive and total phosphorus levels were above 0.03 ppm. To combat the increasing algal density and elevated phosphorus, a bacterial regime was implemented at the beginning of 2012.



### METHODS

Starting in 2012, a bacterial regime was initiated using Polar Blend (PB) bacteria and MD pellets. PB was applied at 3# per acre initially starting in late March and then 2# per acre per month until water temperature reached 64 degrees F. The MD pellets were applied at 25# per acre monthly from May – August. Baseline water quality data was also taken in the spring of 2012.

Due to limited budget, this regime was altered to Polar Blend and Nature's Blend (NB) bacteria in 2013 – 2015. Rates were 3# per acre initially starting in late March or early April and then 2# per acre per month through September. PB bacteria was replaced with NB bacteria once water temperatures exceeded 64 degrees F.

Based on new development on the north end of the pond in 2015, residents became concerned about the impact to their stormwater pond. A water sampling regime was reinstated in the spring of 2015 and MD pellets were added along with PB and NB bacteria during the 2016 – 2018 seasons. In addition to the bacterial rates previously used, MD pellets were applied at 25# per acre monthly from May – September.



### RESULTS

After four consecutive seasons of bacterial usage (2012 – 2015), reactive phosphorus levels dropped below lab detection limits while total phosphorus was reduced by 58%. During this same time frame, the average number of

treatments dropped from 3.5 to only 2 per season. Algal density was also visually reduced with treatments occurring mainly around the shoreline versus large expanses of the pond.

In 2016, a new development added nearly 2 more acres of impervious surface to the pond watershed and large rain events became the new norm. MD pellets were added to the bacterial regime to combat the increase in nutrients and organic material entering the pond. As expected, the average treatments per season went up but reactive phosphorus levels remained under detection limits while total phosphorus also dipped below detection limits twice. Algal densities generally remained low, but residents had become accustomed to less algae and required treatment at a much lower threshold than pre-2012.

YEAR	SPRING REACTIVE PHOS (ppm)	SPRING TOTAL PHOS (ppm)	USED POLAR BLEND?	USED NATURE'S BLEND?	USED MD PELLETS?	ALGAE TREATMENTS PER SEASON	AVG TREATMENTS PER SEASON	NOTES
2010	n/a	n/a	N	N	N	4	3.5	No bacteria used
2011	0.031	0.032	N	N	N	3		
2012	0.030	0.031	Y	N	Y	1	2.0	Bacteria used
2013	n/a	n/a	Y	Y	N	2		
2014	n/a	n/a	Y	Y	N	3		
2015	<0.004	0.013	Y	Y	N	2		
2016	<0.004	<0.005	Y	Y	Y	3		
2017	<0.004	0.009	Y	Y	Y	4	3.0	NEW STORMWATER INPUTS, bacteria used
2018	<0.004	<0.005	Y	Y	Y	2		

### SUMMARY

The combination of Polar Blend bacteria, Nature’s Blend bacteria, and MD pellets helped to reduce phosphorus concentrations, algal density, and treatment frequency in an unaerated stormwater pond over the course of nine seasons. Although there was an increase in algal treatments the past three years, much of this was due to larger rain events and the new development along the north shoreline. Treatment frequency can also be linked to a changing perception among residents. A 5-foot ring of algae was once tolerated but improving conditions on the pond have now led to a lower threshold before algae treatment takes place. Overall, residents have been extremely pleased with the outcome and will continue to implement a bacterial regime on their pond.



July 2018