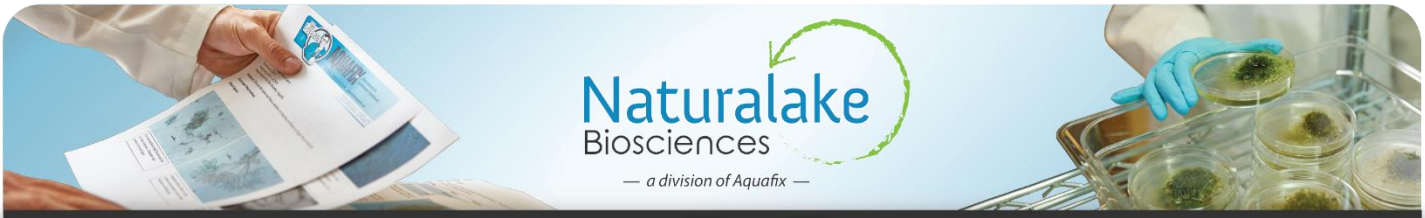

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Date: **10/26/18**

To: Lake & Pond Solutions

PROJECT: Delavan Ponds
SAMPLE(s): "sediment" from North, West, East, and Inlet ponds
Received: 10/09/18
Analyzed: 10/09/18 – 10/25/18
Sample analyzed by Test America, Chicago and interpreted by Deborah Lee, Microbiologist, AQUAFIX

Problem(s): Sediment build up

Sediment Analysis
Sample "Sediment"
Sample analyzed by Test America, Chicago

Name	Delavan inlet dredged	Delavan inlet dredged	Delavan inlet dredged	Delavan inlet undredged	Delavan inlet undredged	Delavan inlet undredged
Date	10/19/2017	5/16/2018	10/09/2018	10/19/2017	5/16/2018	10/09/2018
Total Solids (%)	20.0	24.0	22.0	18.0	23.0	19.0
Total Volatile Solids (%)	17.0	15.0	13.0	15.0	14.0	13.0
Total Organic Carbon (mg/Kg)	49,000.0	47,000.0	57,000.0	53,000.0	48,000.0	53,000.0
Total Nitrogen (mg/Kg)	3,900.0	2,800.0	3,600.0	4,000.0	5,100.0	4,800.0
Total Kjeldahl Nitrogen (mg/Kg)	3,900.0	2,800.0	3,600.0	4,000.0	5,100.0	4,800.0
Nitrate (mg/Kg)	<2.0	<1.7	<1.8	<2.2	9.4	<2.2
Total Phosphorus (mg/Kg)	900.0	960.0	720.0	740.0	850.0	800.0
Orthophosphate (mg/Kg)	38.0	22.0	28.0	27.0	17.0	22.0
Aluminum (mg/Kg)	12,000.0	13,000.0	12,000.0	12,000.0	11,000.0	12,000.0
Calcium (mg/Kg)	76,000.0	78,000.0	81,000.0	98,000.0	86,000.0	110,000.0
Copper (mg/Kg)	43.0	49.0	45.0	40.0	42.0	39.0
Iron (mg/Kg)	17,000.0	18,000.0	18,000.0	17,000.0	17,000.0	17,000.0
Magnesium (mg/Kg)	9,500.0	8,700.0	8,700.0	8,300.0	7,900.0	8,000.0

Name	North Pond	North Pond	North Pond	West Pond	West Pond	West Pond
Date	10/19/2017	5/16/2018	10/09/2018	10/19/2017	5/16/2018	10/09/2018
Total Solids (%)	39.0	35.0	43.0	29.0	27.0	34.0
Total Volatile Solids (%)	9.2	8.9	7.8	9.2	9.9	8.4
Total Organic Carbon (mg/Kg)	31,000.0	35,000.0	40,000.0	20,000.0	35,000.0	36,000.0
Total Nitrogen (mg/Kg)	1,600.0	2,400.0	1,800.0	2,800.0	2,200.0	2,000.0
Total Kjeldahl Nitrogen (mg/Kg)	1,600.0	2,400.0	1,800.0	2,800.0	2,200.0	2,000.0
Nitrate (mg/Kg)	<1.0	1.7	<0.94	<1.4	5.4	<1.2
Total Phosphorus (mg/Kg)	700.0	930.0	740.0	700.0	1,000.0	1,000.0
Orthophosphate (mg/Kg)	28.0	16.0	20.0	23.0	17.0	19.0
Aluminum (mg/Kg)	10,000.0	11,000.0	9,700.0	11,000.0	12,000.0	11,000.0
Calcium (mg/Kg)	50,000.0	50,000.0	50,000.0	80,000.0	63,000.0	69,000.0
Copper (mg/Kg)	45.0	47.0	50.0	17.0	19.0	17.0
Iron (mg/Kg)	15,000.0	17,000.0	16,000.0	14,000.0	17,000.0	14,000.0
Magnesium (mg/Kg)	17,000.0	18,000.0	18,000.0	9,400.0	11,000.0	9,200.0

Name	East Pond	East Pond	East Pond	Merge Pond
Date	10/19/2017	5/16/2018	10/09/2018	10/19/2017
Total Solids (%)	45.0	42.0	58.0	32.0
Total Volatile Solids (%)	5.9	5.7	4.2	11.0
Total Organic Carbon (mg/Kg)	25,000.0	29,000.0	32,000.0	40,000.0
Total Nitrogen (mg/Kg)	1,100.0	1,100.0	1,100.0	2,300.0
Total Kjeldahl Nitrogen (mg/Kg)	1,100.0	1,100.0	1,100.0	2,300.0
Nitrate (mg/Kg)	<0.90	1.0	<0.71	<1.3
Total Phosphorus (mg/Kg)	500.0	630.0	480.0	730.0
Orthophosphate (mg/Kg)	24.0	15.0	18.0	28.0
Aluminum (mg/Kg)	7,100.0	7,200.0	5,700.0	11,000.0
Calcium (mg/Kg)	68,000.0	76,000.0	62,000.0	50,000.0
Copper (mg/Kg)	13.0	14.0	10.0	26.0
Iron (mg/Kg)	11,000.0	12,000.0	11,000.0	15,000.0
Magnesium (mg/Kg)	18,000.0	20,000.0	21,000.0	7,500.0

The two Delavan Inlet samples were from the same pond. Delavan dredged was from the dredged side of the pond and Delavan un-dredged was from the un-dredged side. In each pond, top sediments were taken from five sites and composited into a well-mixed sample for analysis.

In 2018 we physically screened the sediment samples as they were collected in the field and before they were added to the composite bucket. This screening method removed wood, rocks, submerged plants, filamentous algae clumps and large snails from the sediments sent out for analysis. In 2018 we did not sample from the Merge Pond.

Summary

- Most of the solids seem to be organic and could probably be reduced using MD Pellets.
- There may not be much change in the inlet pond other than a slight decrease in total volatile solids.
- The upper ponds all seem to have increased in total solids and decreased in total volatile solids.

Recommend

- High dose rate of MD Pellets for the entire water body concentrated in the areas with soft organic sediments.

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