

MANAGING MULTI-PURPOSE LAKES AND PONDS IN COLUMBIA, MD.

Columbia Association





- Open space includes 3 lakes and 41 ponds and over 34 miles of stream valley.
- Purpose of lakes and ponds
 - Sediment traps during development converted to stormwater ponds.
 - Waterfront for residential property
 - Recreational amenities for residents and visitors

- Recreational Uses
 - fishing, hiking, wildlife watching, non motorized boating
 - Camps- sailing, canoeing
 - Do not allow swimming
- Users groups
 - Residents
 - Visitors
 - Non residents who work in Columbia

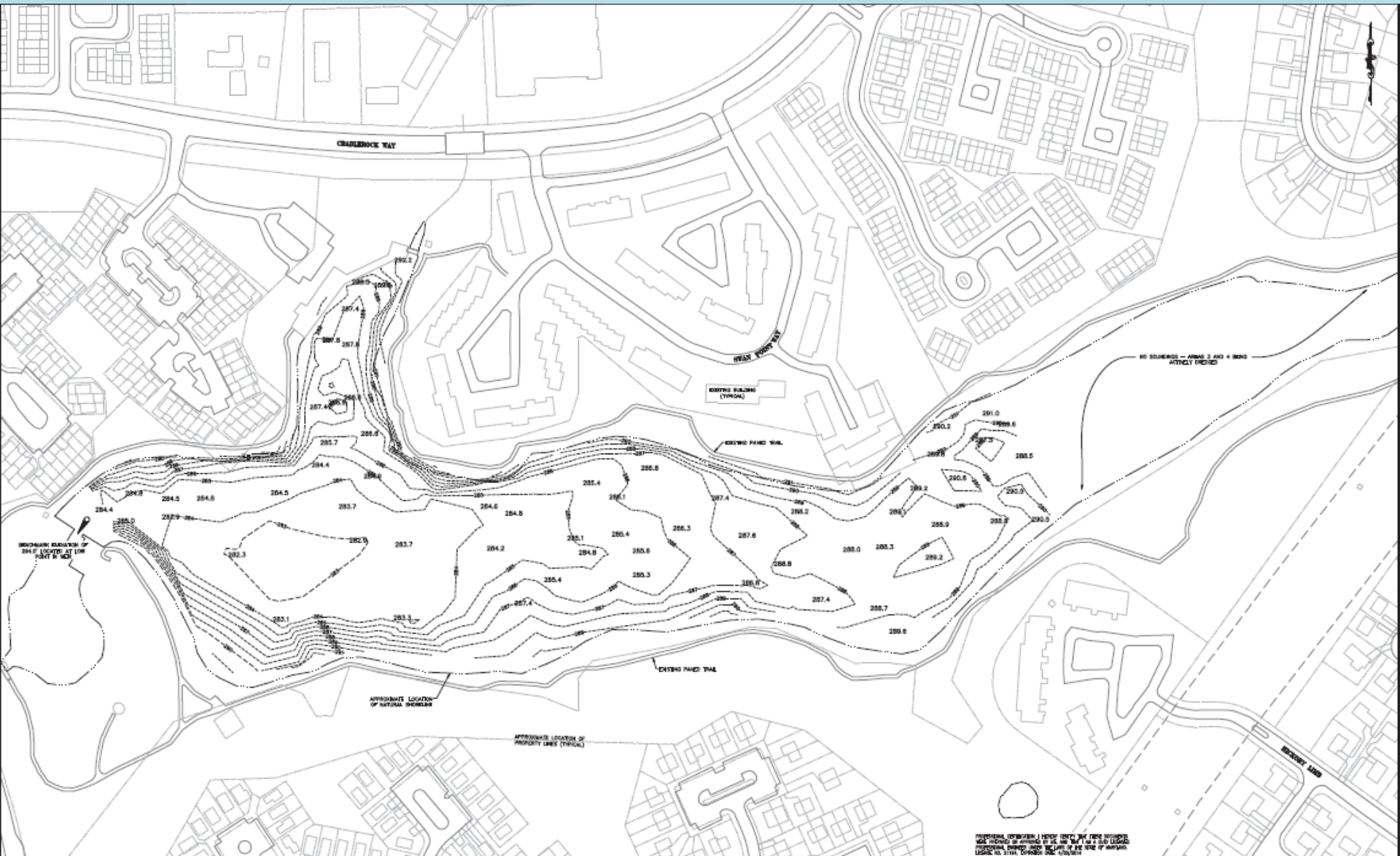
- Condition of our lakes
 - All are eutrophic, have been since 80's
 - Excessive plant growth
 - Excessive sediment loads



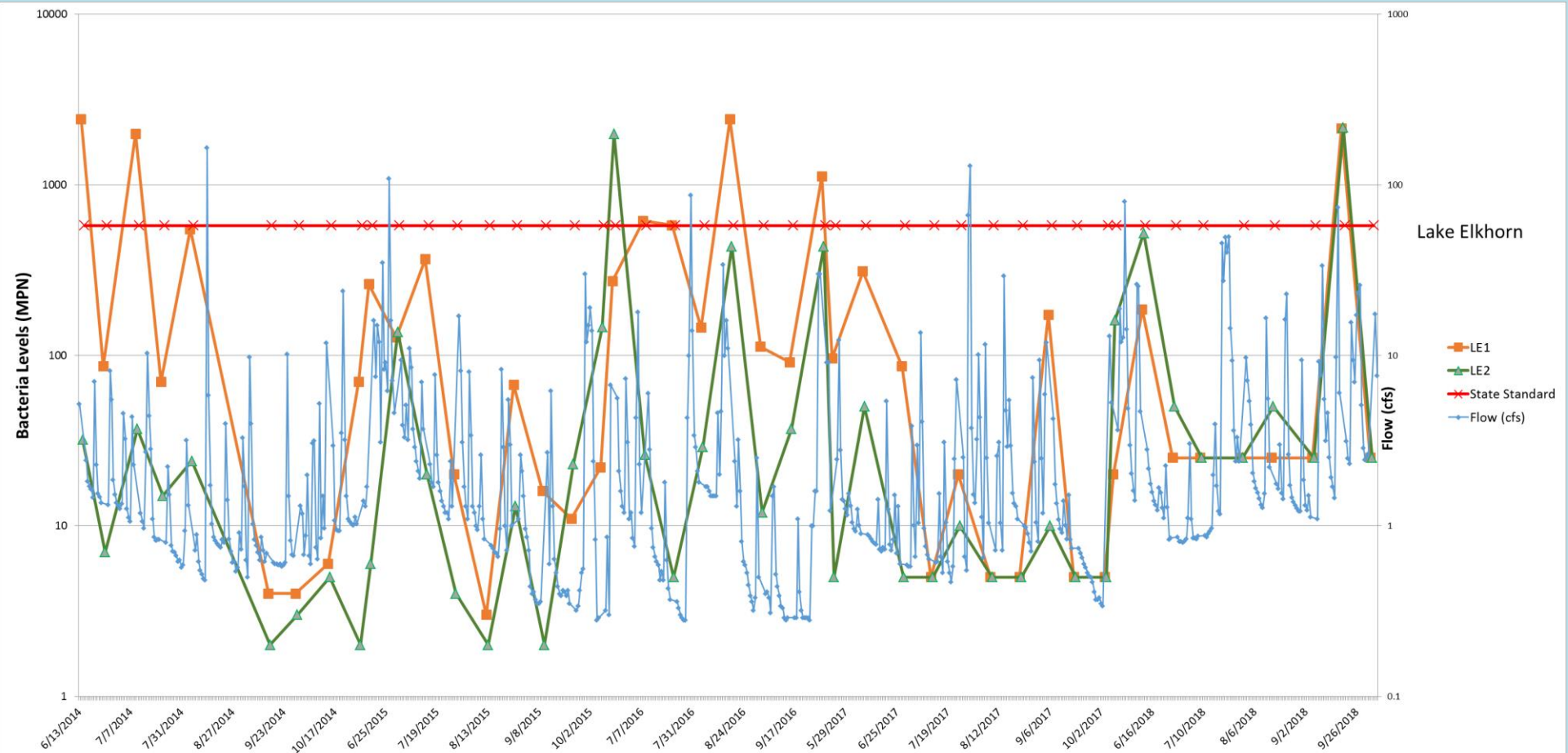




- Monitoring
 - Flow, sediment, bacteria, algal species and density, conductivity, TP



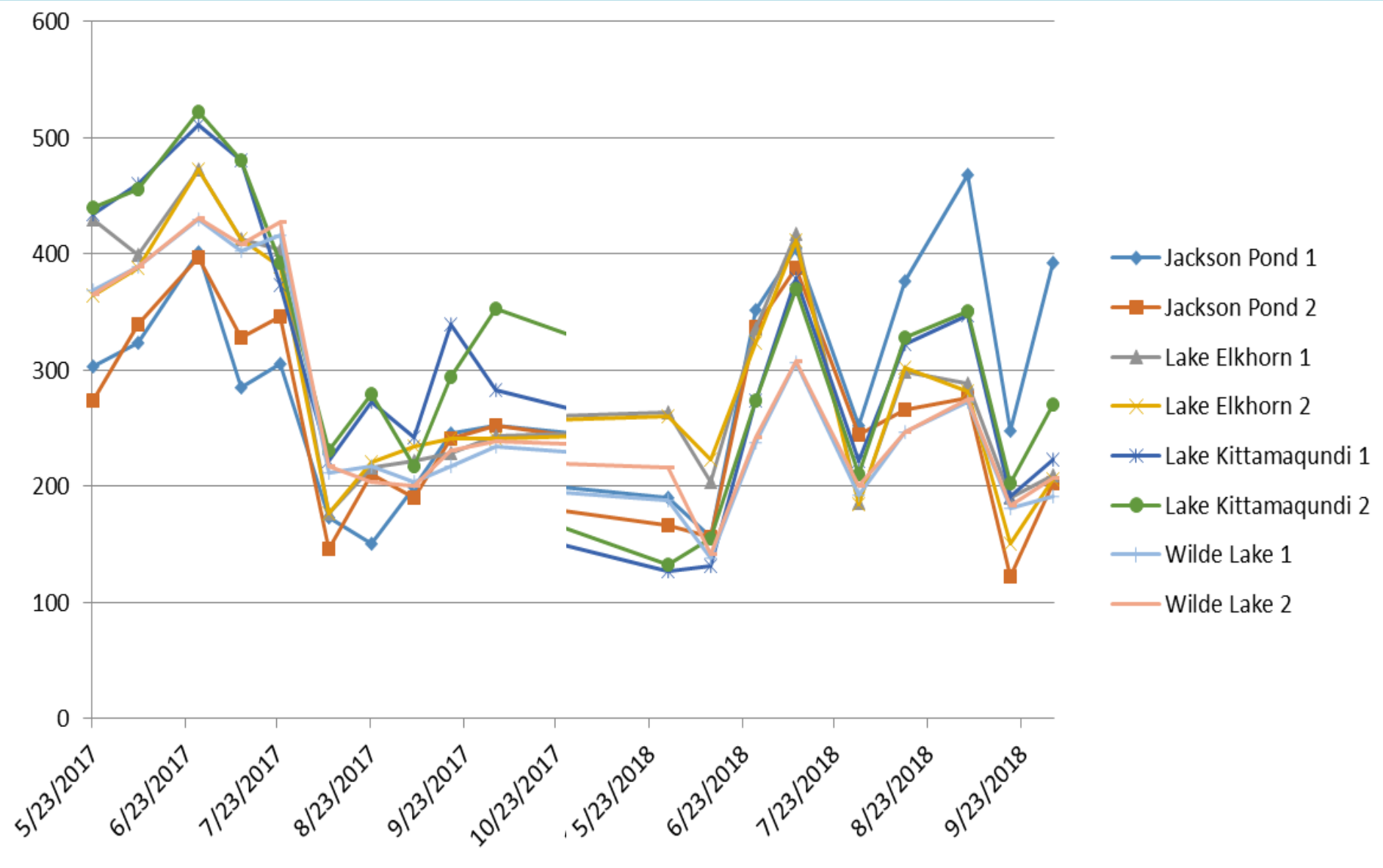
PROFESSIONAL ENGINEER'S REPORT ONLY. THIS REPORT WAS PREPARED BY THE ENGINEER OF RECORD FOR THE CLIENT AND IS NOT TO BE USED FOR ANY OTHER PURPOSES WITHOUT THE WRITTEN CONSENT OF THE ENGINEER OF RECORD.



Lake Elkhorn

- LE1
- LE2
- State Standard
- Flow (cfs)

Conductivity (microsiemens/cm)



Site	Date	Genus	Species	Algal Group	Unit	Cells/Unit	Species Units/mL	Species Cells/mL
Homespun Pond	10/18/2016	Synechococcus	sp.	Cyanobacteria	cell	1	32,986	32,986
Homespun Pond	10/18/2016	Microcystis	wesenbergii	Cyanobacteria	colony	86	79	6,754
Homespun Pond	10/18/2016	cyanophyte unicell, oval/rod	spp.	Cyanobacteria	cell	1	3,927	3,927
Homespun Pond	10/18/2016	Pseudanabaena	sp.	Cyanobacteria	filament	6	157	942
Homespun Pond	10/18/2016	Microcystis	spp. (unicell)	Cyanobacteria	cell	1	157	157

Columbia Association

MICROCYSTIN RESULTS

Tested on: 10/25/2016
Method: Enzyme-Linked ImmunoSorbent Assay (ELISA)
Analyte: Microcystins/Nodularins
Analyzed by: Kamil Cieslik

Sample ID/ Date Collected	Initial Conc. Factor	Dilution Ratio	Assay Value, ug/L	Final Dilution Factor	Avg. LFB Recovery	Avg. LFM Recovery	Final Concentration (ug/L)	Average (ug/L)
1Homespun1018 10/18/2018	1x 1x	none none	1.08 0.99	1 1	95%	107%	1.08 0.99	1.03
2Homespun1018 10/18/2018	1x 1x	none none	0.52 0.58	1 1	95%	---	0.52 0.58	0.55

ND = Not detected above LOD/LOQ
LOD/LOQ = 0.15 µg/L
LFB = 1.0 µg/L MCLR
LFM = 1.0 µg/L MCLR



Synechococcus sp. 400X (scale bar = 10µm)

Lake Management Activities Vegetation Control



17.09.2010 08:11

Sediment Management





Sediment Management Plan



MURRAY HILL SEDIMENT PLACEMENT SITE



DEESSEPS
NORFOLK

KOBELCO

- **Watershed Management Activities**
 - **Columbia Watershed Management Plan**
 - 346 rain gardens installed (\$1,096,095 paid by residents and DNR Trust Fund Grant)
 - 780 Total Soil Samples
 - 7 Stream restoration projects (linear footage 3527)
 - 19 Bioretention facilities constructed out of the watershed management plan or were requested by residents.

Total Phosphorus (mg/L)

