July 12, 2015

Mr. Tom Hall
Peppermill Lake Association
8522 Chase Drive
Bainbridge, OH 44023

Peppermill Lake Association – Depth and Sediment Survey

The following lake study was conducted for the Peppermill Lake Association on 10 July 2015. The two ponds in this study are located within the Peppermill Lake development in Bainbridge, OH. Pond size was determined using a range finder and satellite imagery. The upper pond measured 3.7 surface acres, and the lower pond measured 2.5 surface acres. The focus of this study was to determine the amount of sediment build-up in each pond. This was accomplished by measuring the current water depth and the amount of accumulated sediment at different locations along a standard grid (50 x 50 ft transects) throughout the pond. Measurements were collected with the use of an electronic depth gauge and common sediment probe.

Water and sediment depth were recorded in depth profile at each corresponding transect, as seen in Figures 1,2 and Tables 1,2. In Tables 1,2 color coding indicates trends in water and sediment depth. The light to dark blue shaded boxes represent water depth and the red, yellow, green boxes represent varying degrees of sediment accumulation. Pond water level appeared to be normal at the time of the study, although storms were present in the area the day before this study.

Upper Pond:

Maximum water depth in the upper pond was determined to be 12.0ft, occurring once near the middle of the pond at point G4 (Table 1). **The original average water depth was determined to be approximately 6.5ft and the current average water depth is 4.1ft. The average sediment accumulation is 2.4ft**, with a maximum accumulation of 6ft (point O2) occurring in the northeast section of the pond near the primary inlet. **Approximately 36% of the pond's volume has filled with sediment. There are approximately 14,331 cubic yards of sediment present within the pond.**

Lower Pond:

Maximum water depth in the lower pond was determined to be 7.0ft, occurring once near the near dam spillway pipe (point A2) (Table 1). It was also noted that within the main channel, 6.0ft depth was consistent along transect three (3). **The original average water depth was determined to be approximately 7.5ft and the current average water depth is 4.5ft. The average sediment accumulation is 2.9ft**, with a maximum accumulation of 6ft occurring along the earthen dam away from

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the primary outlet (points A4, A5). **Approximately 40% of the pond's volume has filled with sediment. There are approximately 11,817 cubic yards of sediment present within the pond.**

    The average accumulation of sediment is above 2.0ft depth in each pond, which is surpassing an alarming level. Sediment deposits are rich in nutrients and continuously add to the shallowness of the pond. This is an ideal environment for nuisance and exotic aquatic plant growth. We suggest that average water depths be at least 5.0 - 6.0ft to sustain a healthy, well-balanced ecosystem.

    The ponds appeared to be flowing at a high rate during this survey. Upon talking with John Wilson II, it is my understanding that improper flow may also be contributing to sedimentation issues within these basins. A copy of this report has been forwarded to our Lakes Renovation Department, please let us know if you would like to set up a consultation to discuss tackling some of these issues. Thank you for choosing AQUA DOC and we look forward to helping you with any and all of your aquatic needs.

Sincerely,

Carter L. Bailey
Aquatic Biologist

Table 1. Water and sediment depths at corresponding transects. Color coding indicates trends in water and sediment depth.

CLIENT: Peppermill Lake Assoc.- Upper Pond   DATE: 7/10/15   SIZE: 3.7 SA   ORIENTATION: NE

	ft	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	Depth	x	x	x	x	x	x	x	x	x	x	x	x	x	x	1.0
1	Sed.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	4.0
2	Depth	x	x	x	x	x	x	x	x	x	4.0	x	x	x	3.0	1.0
2	Sed.	x	x	x	x	x	x	x	x	x	1.0	x	x	x	2.0	6.0
3	Depth	3.0	5.0	5.3	5.5	5.0	5.0	4.0	6.0	6.0	6.0	6.0	6.0	4.0	3.0	x
3	Sed.	1.0	1.0	1.0	1.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.5	x
4	Depth	4.0	6.0	5.8	5.5	5.0	6.0	12.0	8.0	7.0	3.0	3.0	2.0	2.0	4.0	x
4	Sed.	2.0	4.0	2.5	1.0	2.0	4.0	3.0	2.0	3.0	5.0	2.0	3.0	2.0	2.0	x
5	Depth	4.0	5.0	4.5	4.0	4.5	4.5	11.0	4.0	5.0	4.0	3.0	2.0	2.0	x	x
5	Sed.	1.0	3.0	2.5	2.0	2.0	3.5	4.0	2.0	1.0	3.0	3.0	3.0	3.0	x	x
6	Depth	3.0	4.0	x	x	3.0	3.0	3.5	3.0	3.0	3.0	2.5	1.0	1.0	x	x
6	Sed.	1.0	3.0	x	x	3.0	2.0	3.5	2.0	3.0	2.5	2.0	4.0	4.0	x	x
7	Depth	x	x	x	x	x	x	1.0	1.0	1.0	1.0	2.0	x	x	x	x
7	Sed.	x	x	x	x	x	x	2.0	2.0	3.0	3.0	2.5	x	x	x	x

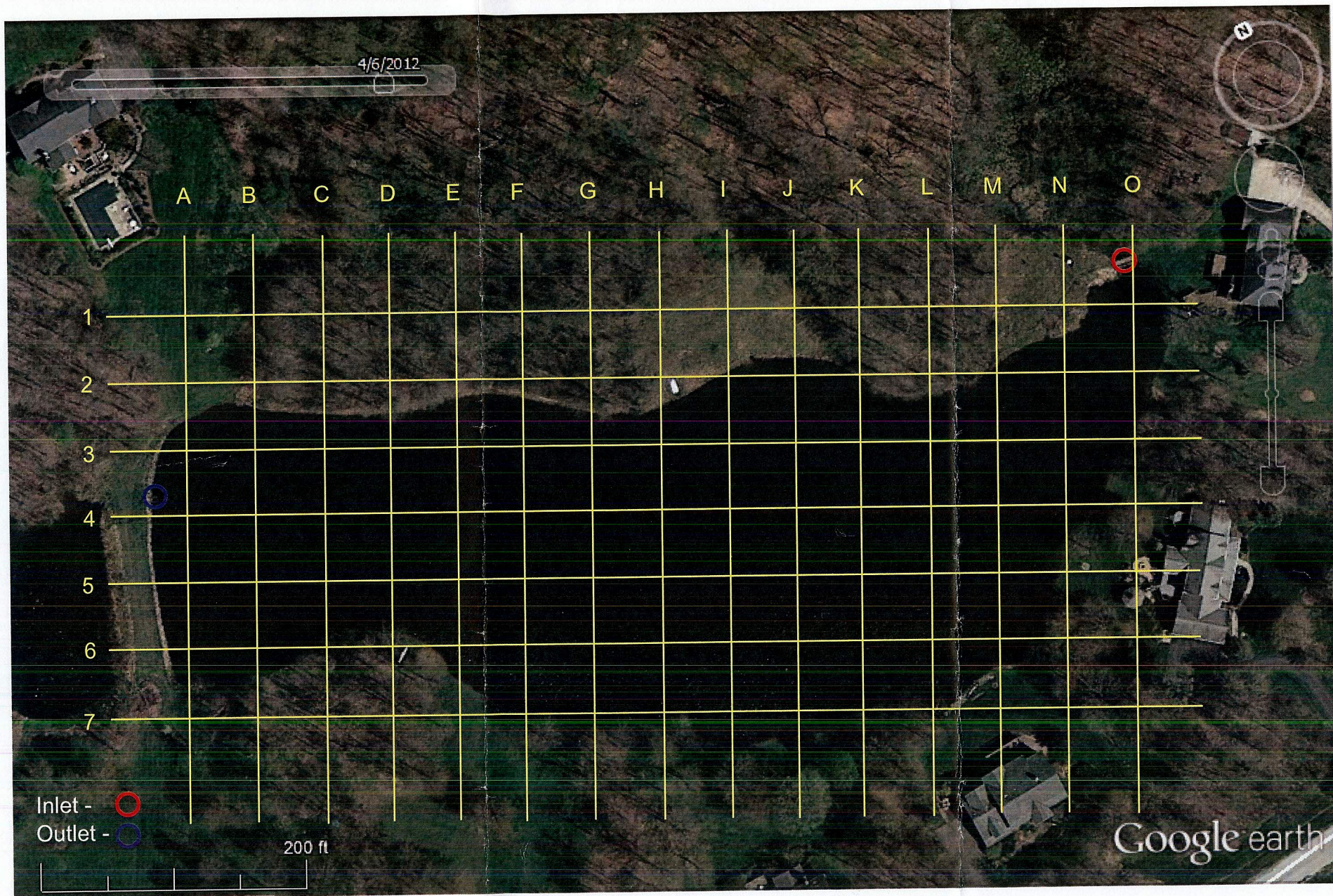|		
Avg Water Depth =	4.1	ft
Avg Sediment Depth =	2.4	ft
2.4 ft sed. x 3.7 SA =	8.9	ac-ft
8.9 ac-ft x 1615 yd^3/ac-ft =	14331	yd^3

Figure 1. Upper pond map including sampling grid, intervals are 50 x 50ft. Pond area is 3.7 ac. Note: map orientation 45°NE.

Table 2. Water and sediment depths at corresponding transects. Color coding indicates trends in water and sediment depth.

CLIENT: Peppermill Lake Assoc.- Lower Pond DATE: 7/10/15   SIZE: 2.5 SA

ORIENTATION: NE

	ft	A	B	C	D	E	F	G	H	I	J
1	Depth	3.0	4.5	4.0	4.0	X	X	X	X	X	X
	Sed.	2.0	1.0	2.0	2.0	X	X	X	X	X	X
2	Depth	7.0	5.5	5.0	5.0	5.0	X	X	X	X	X
	Sed.	2.0	5.5	3.0	2.5	2.0	X	X	X	X	X
3	Depth	5.0	6.0	6.0	6.0	6.0	5.5	4.5	X	X	X
	Sed.	6.0	4.0	3.0	4.0	4.0	4.0	2.5	X	X	X
4	Depth	5.0	5.5	5.0	5.0	5.0	5.0	5.0	X	X	2.0
	Sed.	6.0	2.0	2.0	3.0	4.0	4.0	3.0	X	X	5.0
5	Depth	5.0	X	3.0	4.0	4.0	5.0	5.0	5.0	4.0	2.0
	Sed.	3.0	X	2.0	1.0	4.0	4.0	3.0	2.5	3.0	5.0
6	Depth	X	X	X	X	4.0	4.0	4.0	5.0	4.0	3.0
	Sed.	X	X	X	X	1.0	1.0	2.0	2.0	2.0	3.0
7	Depth	X	X	X	X	X	X	2.0	X	X	2.0
	Sed.	X	X	X	X	X	X	1.0	X	X	2.0

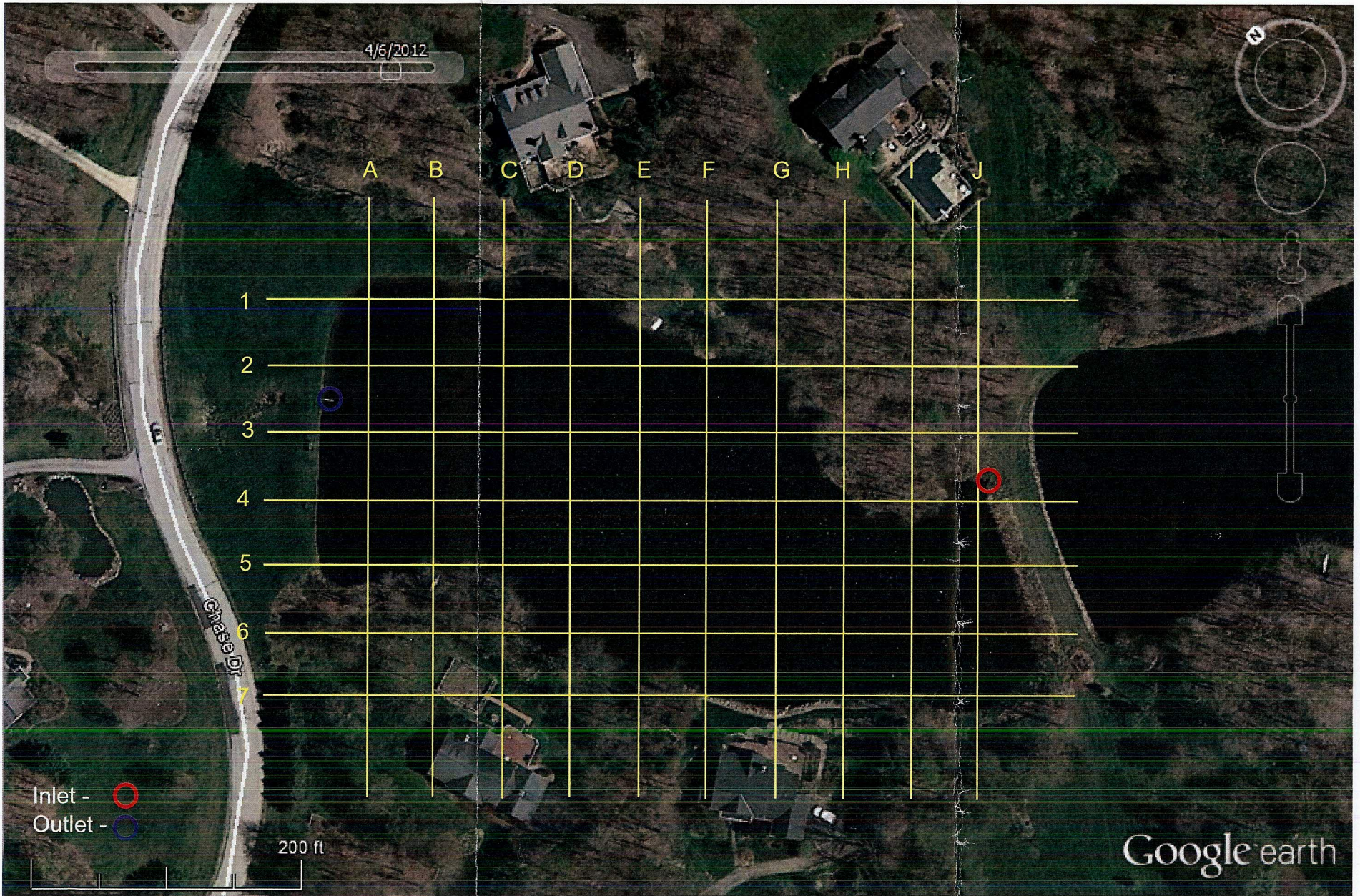|		
Avg Water Depth =	4.5	ft
Avg Sediment Depth =	2.9	ft
2.9 ft sed. x 2.5 SA =	7.3	ac-ft
7.3 ac-ft x 1615 yd³/ac-ft =	11817	yd³

Figure 2. Lower pond map including sampling grid, intervals are 50 x 50ft. Pond area is 2.5 ac. Note: map orientation 45°NE.