

## Summary of Austin Lake Muck Reduction\* 2012-2014

Events	Date	Adjusted	Controls		Diffusers	
		USGS Lake Level (feet)	Avg Depth to Muck Top (feet)	Std Dev (feet)	Avg Depth to Muck Top (feet)	Std Dev (feet)
1	7/18/2012	5.457	4.73	0.86	4.77	0.67
2	10/4/2012	5.490	5.22	0.80	5.67	0.65
3	10/8/2013	6.100	5.98	0.70	6.42	0.59
4	5/4/2014	6.090	5.99	0.69	6.48	0.61
5	10/27/2014	6.070	6.32	0.64	6.77	0.58
			<b>n=47</b>		<b>n=18</b>	

Note: Differences were converted to inches for ease of understanding

Controls	Difference btwn Events (inches)	Diffusers	Difference btwn Events (inches)	Difference between Diffusers and Controls (inches)
2-1	5.5	2-1	10.3	5.3
3-2	1.8	3-2	1.7	-0.1
4-3	0.2	4-3	0.9	0.7
5-4	4.2	5-4	3.7	-0.5
<b>Sum=</b>	<b>11.7</b>	<b>Sum=</b>	<b>16.6</b>	<b>5.0</b>

Measurement error is plus or minus 0.1 foot which is equivalent to plus or minus 1.2 inches  
e.g. the difference of 5.5 inches represents somewhere between 4.3 and 6.7 inches

So the loss in the control area was between 10.5 and 12.9 inches

And the loss in the diffuser area was between 15.4 and 17.8 inches.

$$\text{Average rdxn in Muck} = \frac{(47 \times 11.7) + (18 \times 16.6)}{47 + 18} = 13.1 \text{ in}$$

Treatment Area: 245 Acres

$$\text{Volume of material} = 245 \text{ A} \times 13.1 \text{ in} \times (43560 \text{ f}^2/\text{A}) \times (1/12 \text{ in}) \times (\pi/27 \text{ f}^3) =$$

$$431,499 \text{ y}^3$$

\*as reviewed by Pat Crowley, Kalamazoo Co Drain Commissioner