Granite Lake Sediment Release Estimate-2018

Date	1M	3M	5M	7M	9M
6/22/18	20.4	22.6	31.4	141	20.9
7/26/18	17.7	17.1	16	21.8	38
8/23/18	18.5	19.8	38.1	229	608

Total P values in mg/m^3 or ppb

These values are very strange. 31.4 to 16 indicates mixed, but no other data suggests this. Also, at 7M to go from 141 to 21.8 and have the 9M be 20.9 when 7M is at 141 doesn't make sense??

Depth range	Calculated Volume (acre-feet)
15-20 ft	381.45
20-25 ft	246.5
25-30 ft	48.26
30 ft +	21.4
Total 15-30 ft	769.55

Depth range	Change in TP (mg/m3) (August minus June)	Estimated increase TP in Kg (June 22 to August 23)
15-25 ft	6.7	5.2
25-30 ft	208*	30.7
30+ ft	587	13.7
Total TP increase 15-30+ft		**49.7**

*Used starting of 20.9 as 141 was odd value at 7M (20.9 was June value at 9M)

The estimated release rate would be **49.7 kg** over 63 days in an area of 91.27 acres (area of lake over 15 ft or about 5M)= ***0.0232 mg/m²/d*** from anoxic sediments.

Keep in mind that the depths of TP collection were in meters and the DO and volume used feet, so there is some conversion error as rounded to nearest 5 feet for the meter depths to calculate (for example 7M is 23 feet so used these concentrations up to 25 feet).

Note: To determine internal TP release from sediments during entire growing season, need an anoxic factor (AF). This is determined by a weighted mean of days (based upon area) sediment is anoxic over the course of the summer before fall turnover (or mixing that begins prior to fall turnover). Granite Lake was anoxic at 15 ft and deeper at June and August data collection dates, therefore it is fair to assume the release rate may change and the total TP release of **49.7 kg** will be higher since more P will be released in Sept. If we assume it turns by say Oct 1 (just for example) the TP release would be about 87.4 kg. Again, assuming the release rate is same for Sept, which it may not be but gives an idea of how it could be higher.