

Wisconsin Internal Load Estimator

Date: 2/14/2011 Scenario: 14

Method 1 - A Complete Total Phosphorus Mass Budget

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Phosphorus Inflow Concentration: 74.3 mg/m³

Areal External Loading: 96.6 mg/m²-year

Predicted Phosphorus Retention Coefficient: 0.78

Observed Phosphorus Retention Coefficient: 0.58

Internal Load: 94 Lb 43 kg

Method 2 - From Growing Season In Situ Phosphorus Increases

Start of Anoxia

Average Hypolimnetic Phosphorus Concentration: 34 mg/m³

Hypolimnetic Volume: 1207.4 acre-ft

Anoxia Sediment Area: 185 acres

Just Prior To The End of Stratification

Average Hypolimnetic Phosphorus Concentration: 59 mg/m³

Hypolimnetic Volume: 1207.4 acre-ft

Anoxia Sediment Area: 185 acres

Time Period of Stratification: 72 days

Sediment Phosphorus Release Rate: 0.7 mg/m²-day 1.88E-003 lb/acre-day

Internal Load: 82 Lb 37 kg

Method 3 - From In Situ Phosphorus Increases In The Fall

Start of Anoxia

Average Hypolimnetic Phosphorus Concentration: 34 mg/m³

Hypolimnetic Volume: 1207.4 acre-ft

Anoxia Sediment Area: 185 acres

Just Prior To The End of Stratification

Average Water Column Phosphorus Concentration: 5 mg/m³

Lake Volume: 15229.0 acre-ft

Anoxia Sediment Area Just Before Turnover: 185 acres

Time Period Between Observations: 72 days

Sediment Phosphorus Release Rate: 0.8 mg/m²-day 2.18E-003 lb/acre-day

Internal Load: 95 Lb 43 kg

Method 4 - From Phosphorus Release Rate and Anoxic Area

Start of Anoxia Anoxic Sediment Area: 185 acre

End of Anoxia Anoxic Sediment Area: 185 acre

Phosphorus Release Rate As Calculated In Method 2: 0.7 mg/m²-day

Phosphorus Release Rate As Calculated In Method 3: 0.7 mg/m²-day

Average of Methods 2 and 3 Release Rates: 0.7 mg/m²-day

Period of Anoxia: 72 days

Default Areal Sediment Phosphorus Release Rates:

	Low	Most Likely	High
Internal Load: (Lb)	72	109	145
Internal Load: (kg)	33	49	66

Internal Load Comparison (Percentages are of the Total Estimate Load)

Total External Load:	477 Lb	217 kg		
			Lb	kg
%				
From A Complete Mass Budget:			94	43

16.5		
From Growing Season In Situ Phosphorus Increases:	82	37
14.7		
From In Situ Phosphorus Increases In The Fall:	95	43
16.7		
From Phosphorus Release Rate and Anoxic Area:	109	49
18.5		

Predicted Water Column Total Phosphorus Concentration (ug/l)

Nurnberg+ 1984 Total Phosphorus Model:	Low	Most Likely	High
	23	30	58

Osgood, 1988 Lake Mixing Index: 5.6

Phosphorus Loading Summary:

	Low	Most Likely	High
Internal Load (Lb):	94	88.8	109
Internal Load (kg):	43	40.3	49
External Load (Lb):	232	477	1185
External Load (kg):	105	217	538
Total Load (Lb):	326	566	1294
Total Load (kg):	148	257	587