Overview for 2004

Annual Loading = 158.1 vs. 225 lbs limit

Maximum 3 Month Loading = 75.6 vs. 70 lbs limit

Hatchery Flow = 9.8 vs. 20 mgd limit

16,282 vs. 20,000 Coho limit

515 vs. 1,000 Chinook limit

Lake TP Concentration: 7.1 mg/m^3 volume - weighted

78% vs. 95% compliance with 8 mg/m^3 goal

Hatchery renovations have been completed.

Database capabilities have been expanded and historical data added.

Storm event and tributary data have been collected. Correlations developed.

Hatchery P Mass Balance has been completed.

Special Studies: Zebra mussel study completed, sediment study almost complete.

Watershed P and Flow Mass Balance have been completed.

Data and BASINS model have been used to help craft buffer zone ordinance.

Figure 1. Overview of 2004 Annual Report.

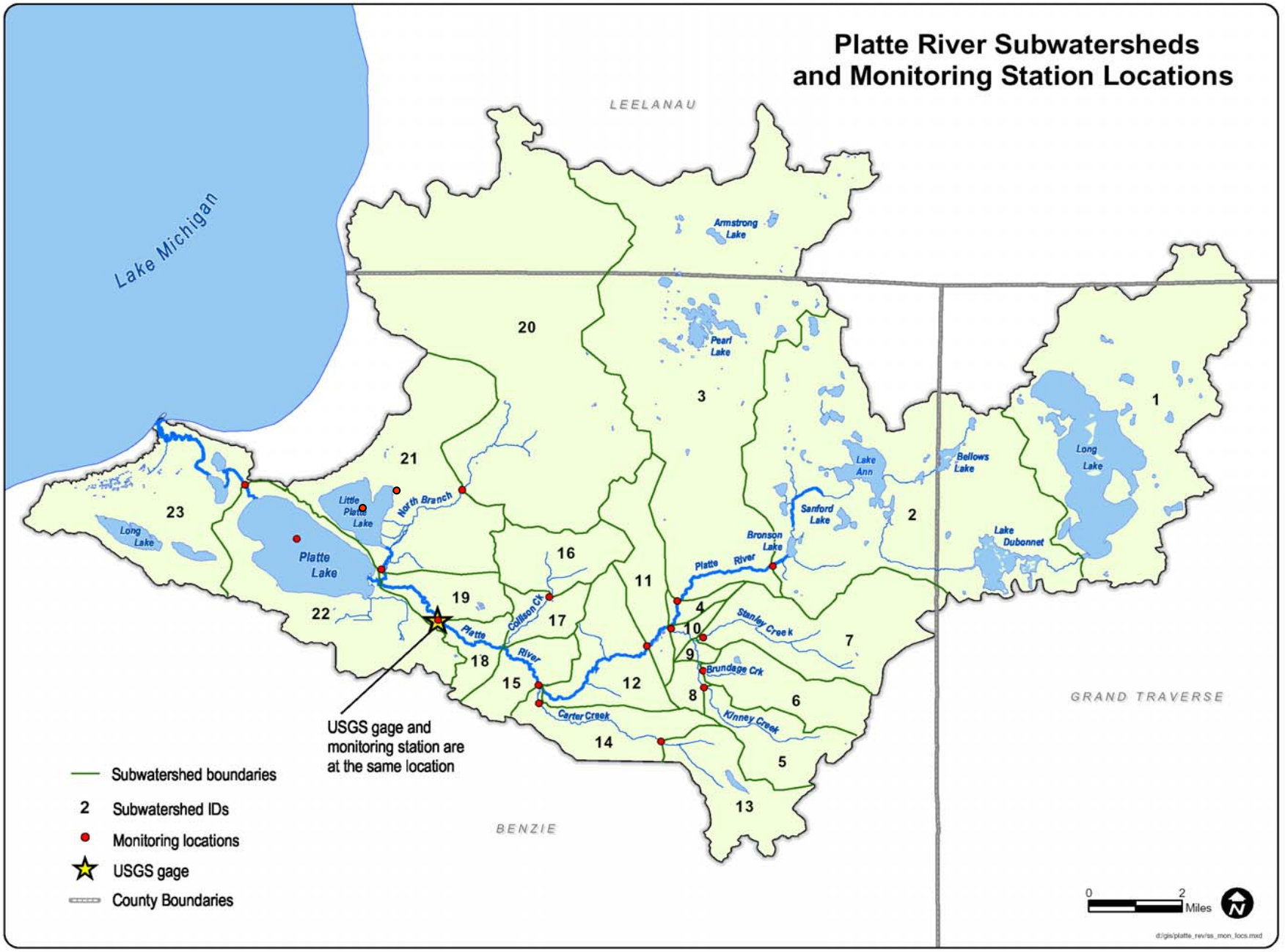


Figure 2. Platte River Sub-Watersheds and Monitoring Locations.

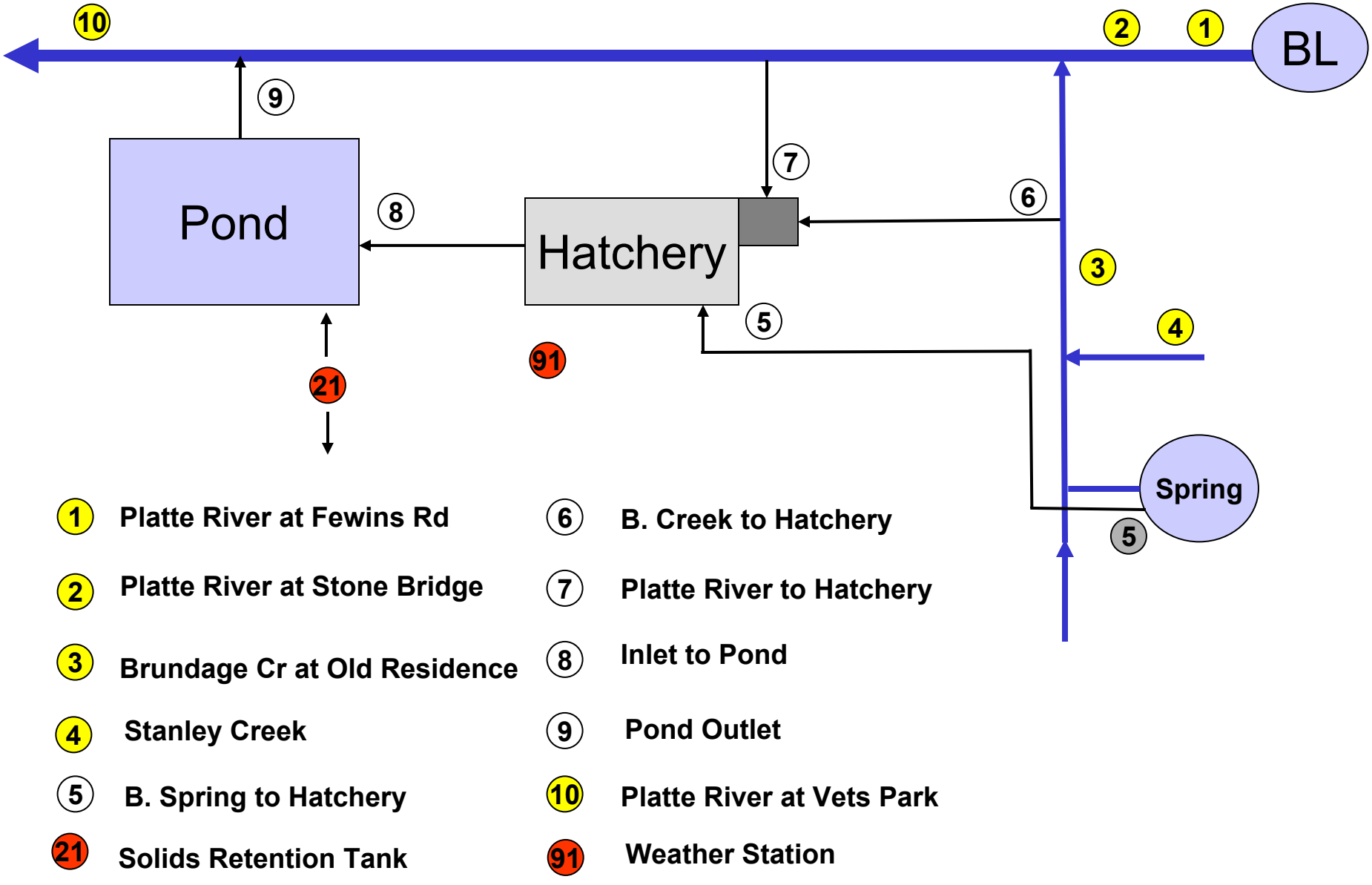
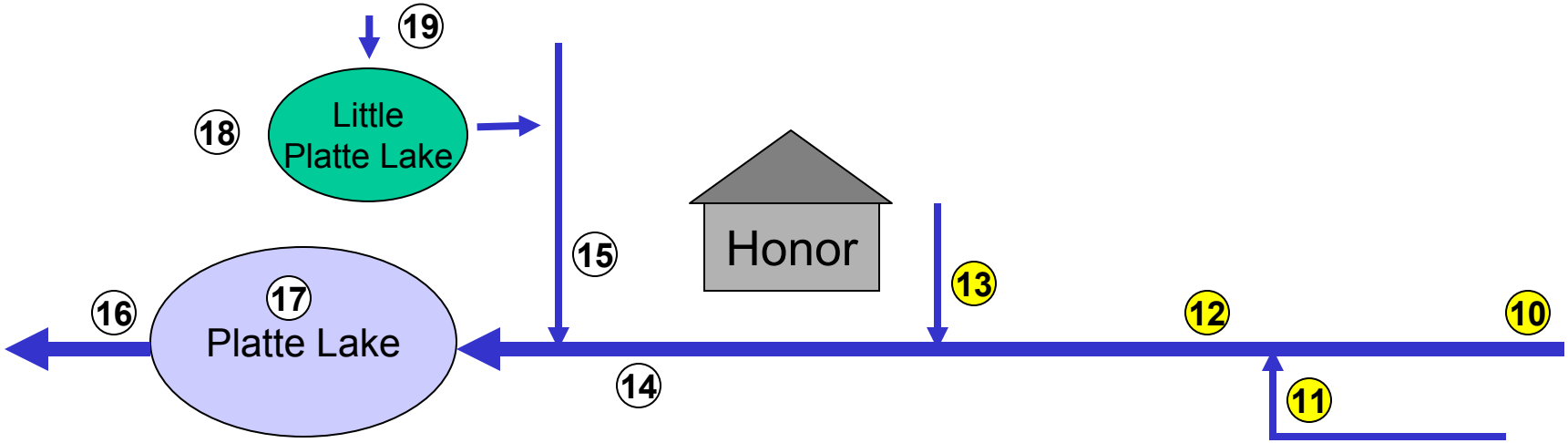


Figure 3. Hatchery and Upstream Sampling Stations



10	Platte River at Vets Park	14	Platte River at USGS
11	Carter Creek at mouth	15	North Branch at Deadstream
12	Platte River at Pioneer Rd	16	Lake Outlet at M - 22
13	Collison Creek	17	Platte Lake at Center
18	Little Platte Lake	19	Featherstone Creek

Figure 4. Lake and Lower Tributary Sampling Stations for 2004.

Hatchery	List	Frequency
Brundage Spring to Hatchery	S	2 per Week
Brundage Creek to Hatchery	S	2 per Week
Platte River to Hatchery	S	2 per Week
Inlet to Pond	S	2 per Week
Discharge from Pond	S	2 per Week
Solids Storage Tank	S	2 per Week
→ Tank & Clarifier Overflow	S	2 per Month
Weather Station	S	Event
→ Production Data, Fish and Egg TP	C	1 per Month
Weir Data	C	Seasonal
Streams		
Platte River at Fewins Road	S	1 per Month
Platte River at Stone Bridge	S	→ 1 per Week + Event
Brundage Creek at Old Residence	S	→ 1 per Week + Event
Stanley Creek at Carmean Road	S	1 per Month
Platte River at Vets Park	S	1 per Month + Event
Carter Creek near mouth	S	1 per Month
Platte River Pioneer Road	S	1 per Month
Collison Creek near mouth	S	1 per Month
Platte River at USGS	S	→ 1 per Week + Event
North Branch at Deadstream Road	S	2 per Month
→ Featherstone Creek	S	2 per month
Lake Outlet at M-22	S	2 per Month
Lake		
Big Platte Lake: center: 8 depths	L	2 per Month
→ Little Platte Lake: center: surface	L	2 per Month
Sediments	Special	Special
Macrophytes	Special	Special
Zebra Mussels	Special	Special
→ Organic Debris	Special	Special

List S	List L	List C
Flow	Dissolved Oxygen	Count
Phosphorus	Temperature	Weight
Turbidity	pH	
	ORP	
	Conductivity	
	Phosphorus	
	Chlorophyll	
	Phytoplankton	
	Zooplankton	
	Turbidity	
	Light	
	Secchi Depth	
	Alkalinity	
	TDS	
	Calcium	
→	Filtered Silica	
→	Filtered Nitrate	
→	Filtered Alk	
→	Filtered P	
	Weather	

Figure 5. Stations, Sampling Frequency, and Measured Parameters.

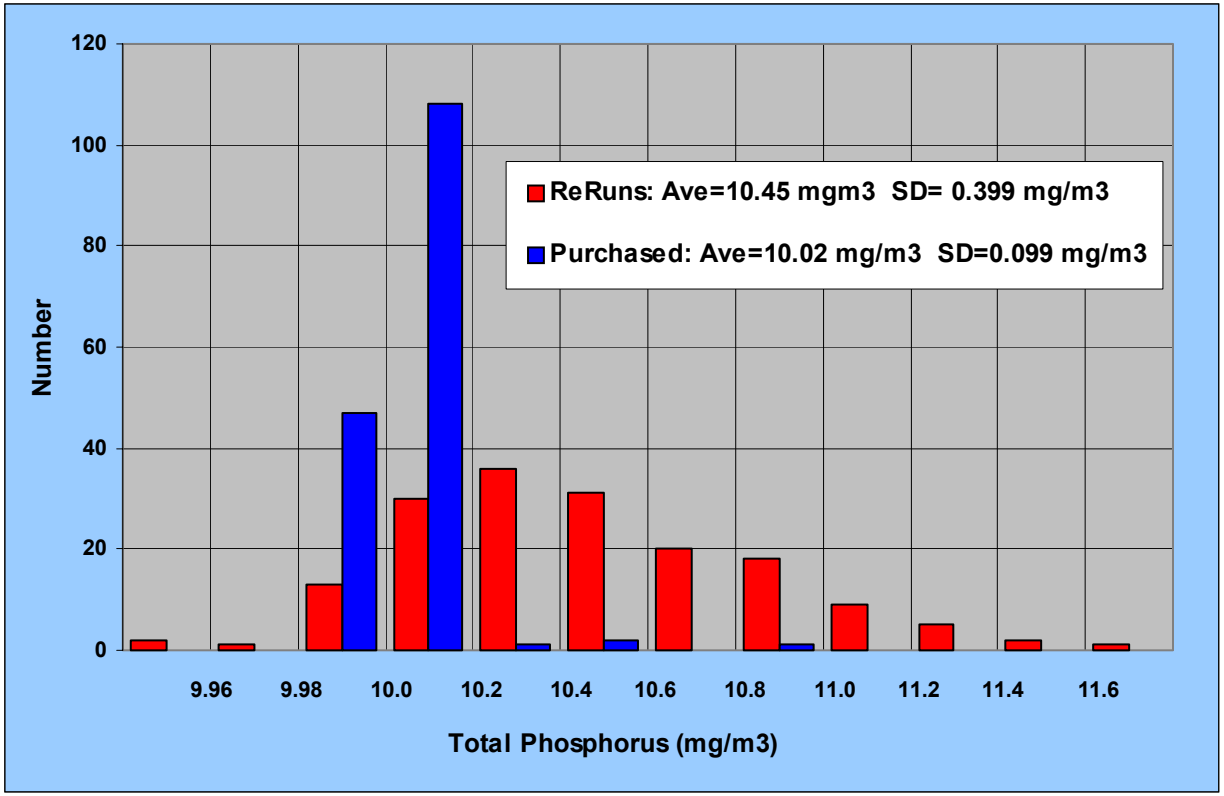


Figure 6. Histogram of CMU Testing of Phosphorus Standards.

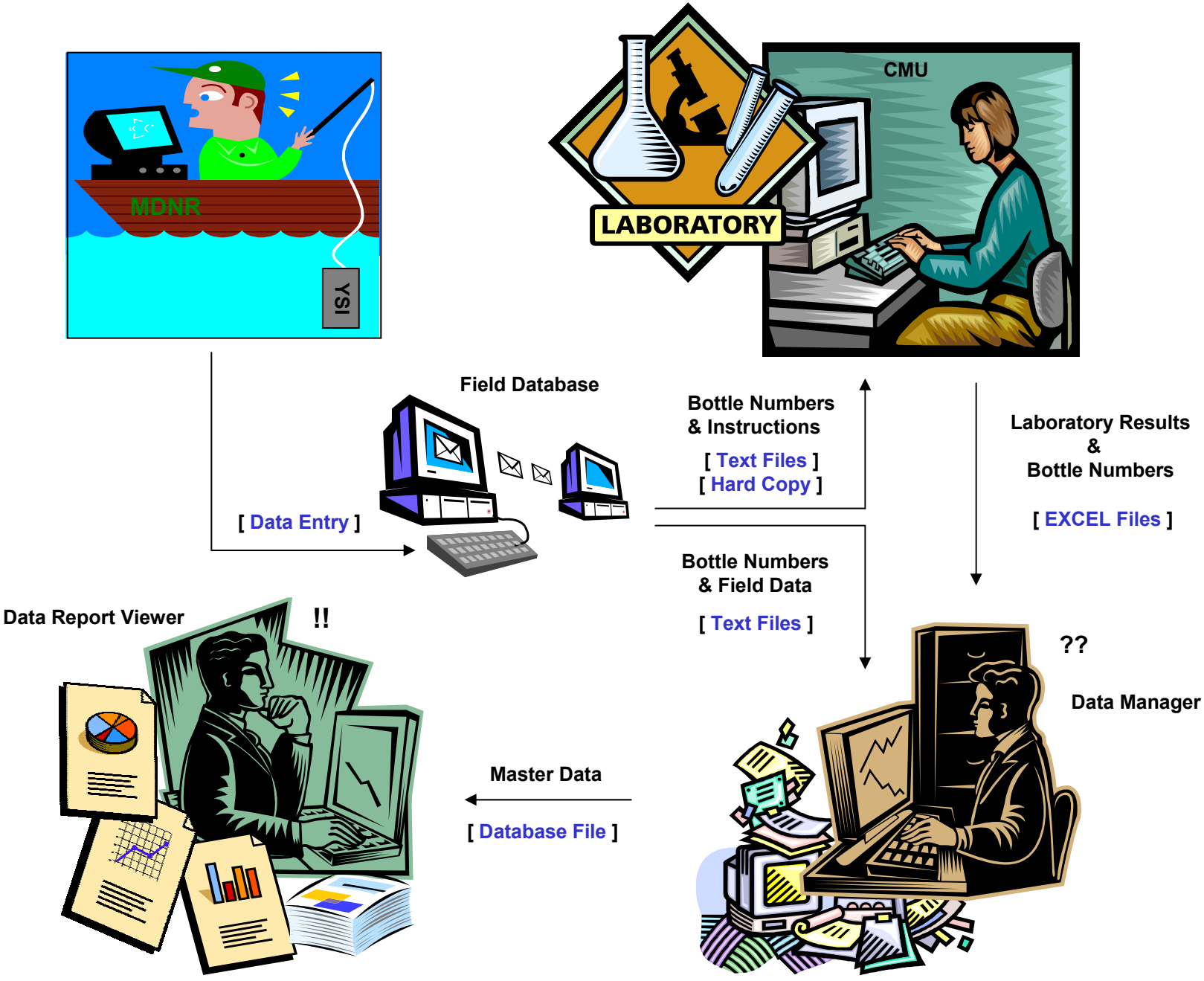


Figure 8. Database Components and Information Flow.

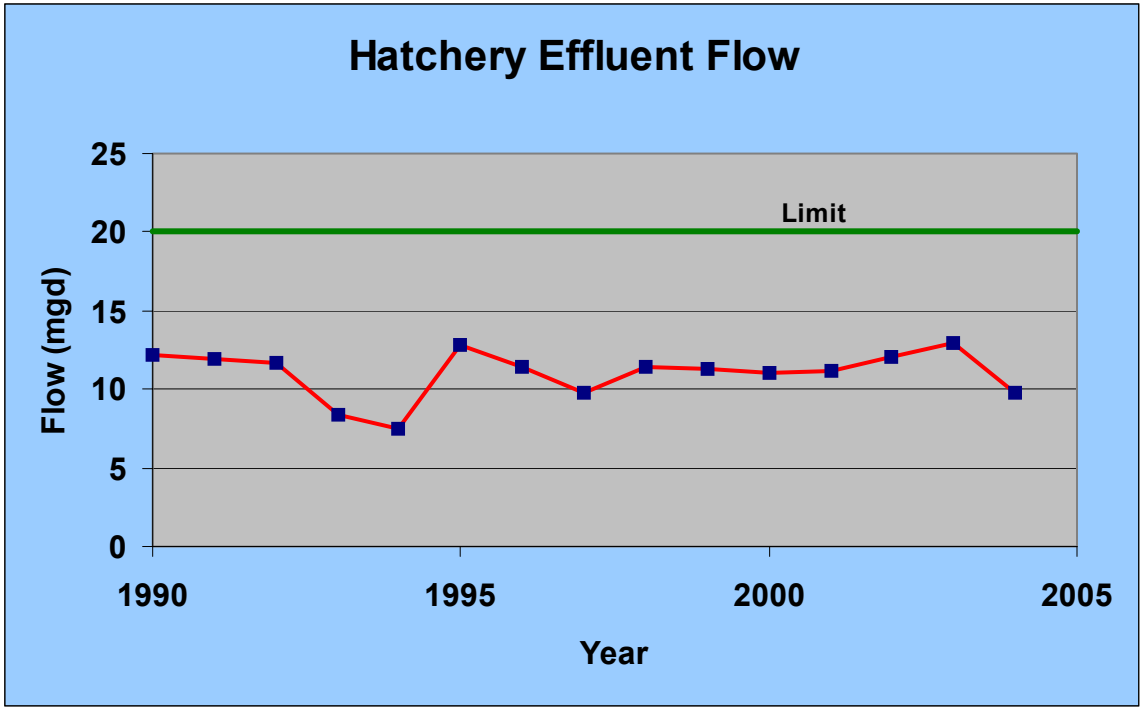


Figure 9. Annual Average Effluent Flow Rate.

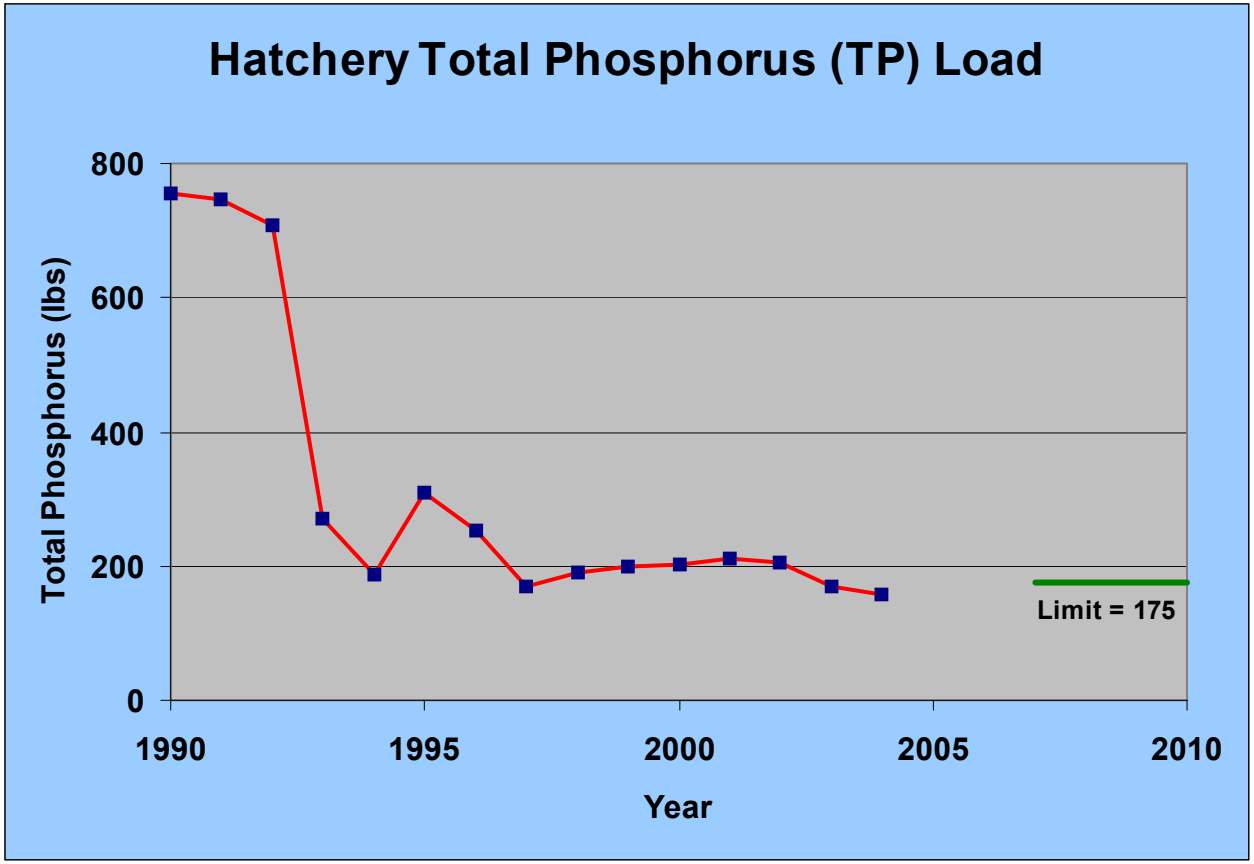


Figure 10. Hatchery Net Total Phosphorus Load (J/N).

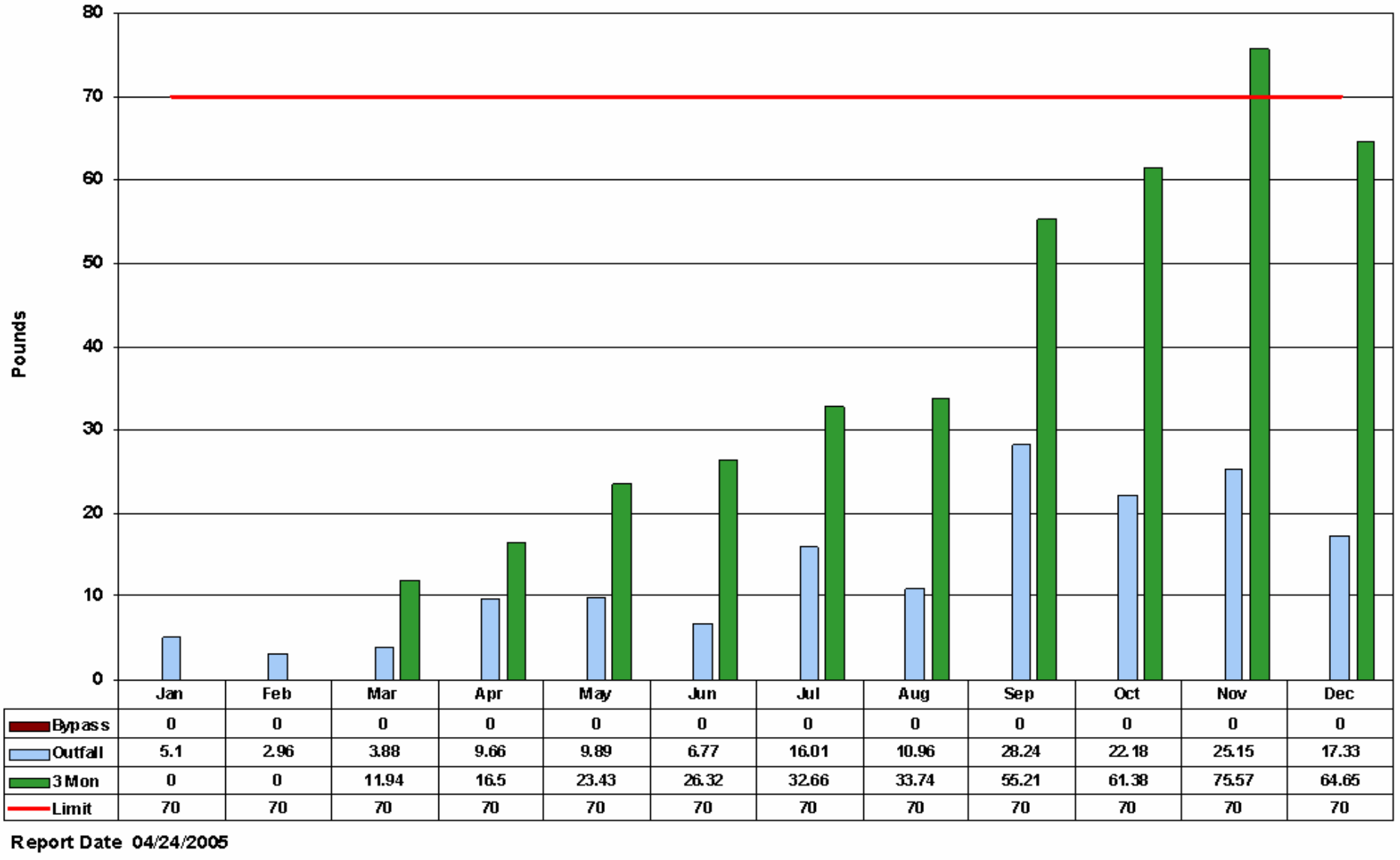


Figure 11. Monthly Variation of Net Phosphorus Load.

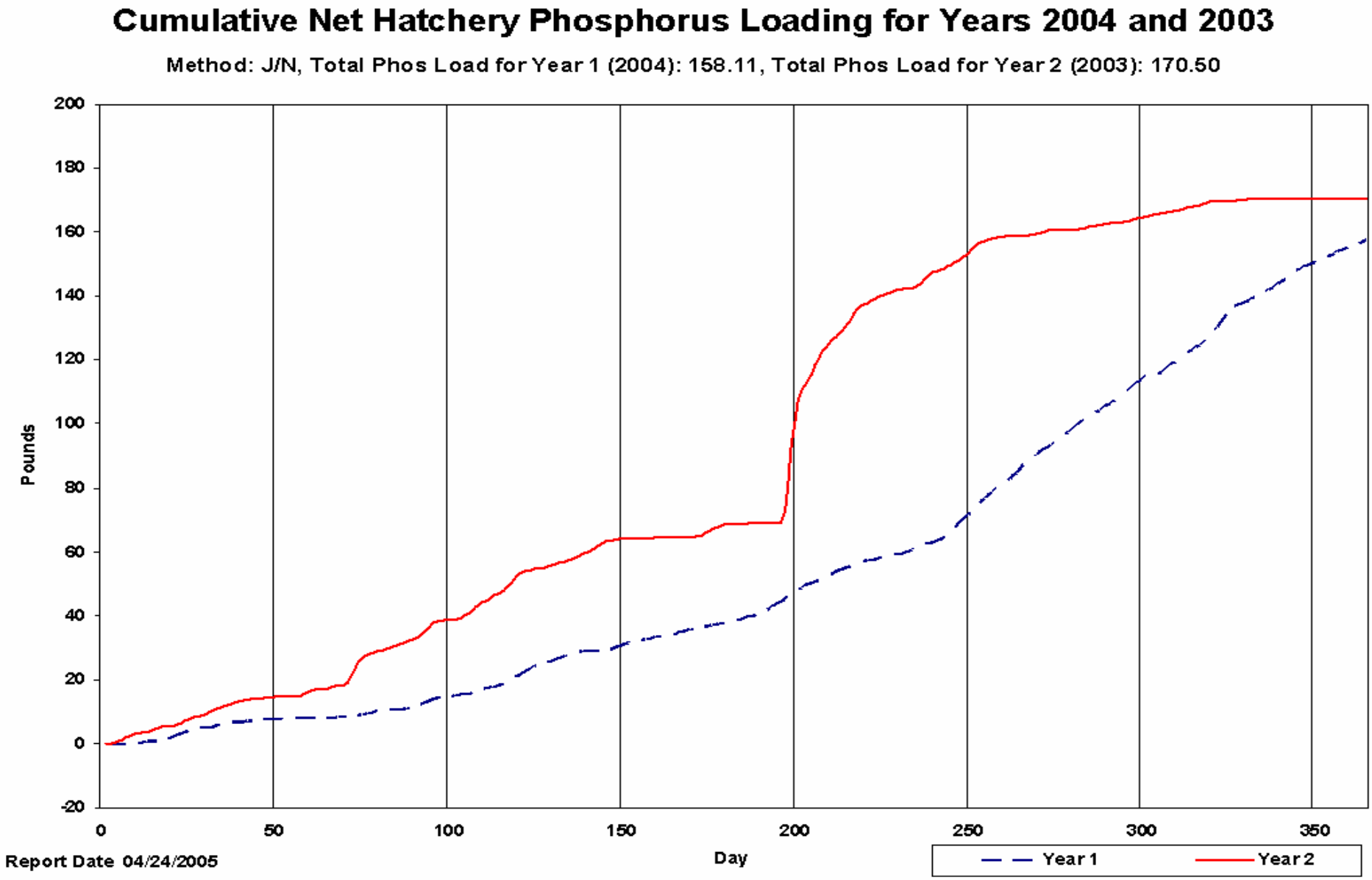
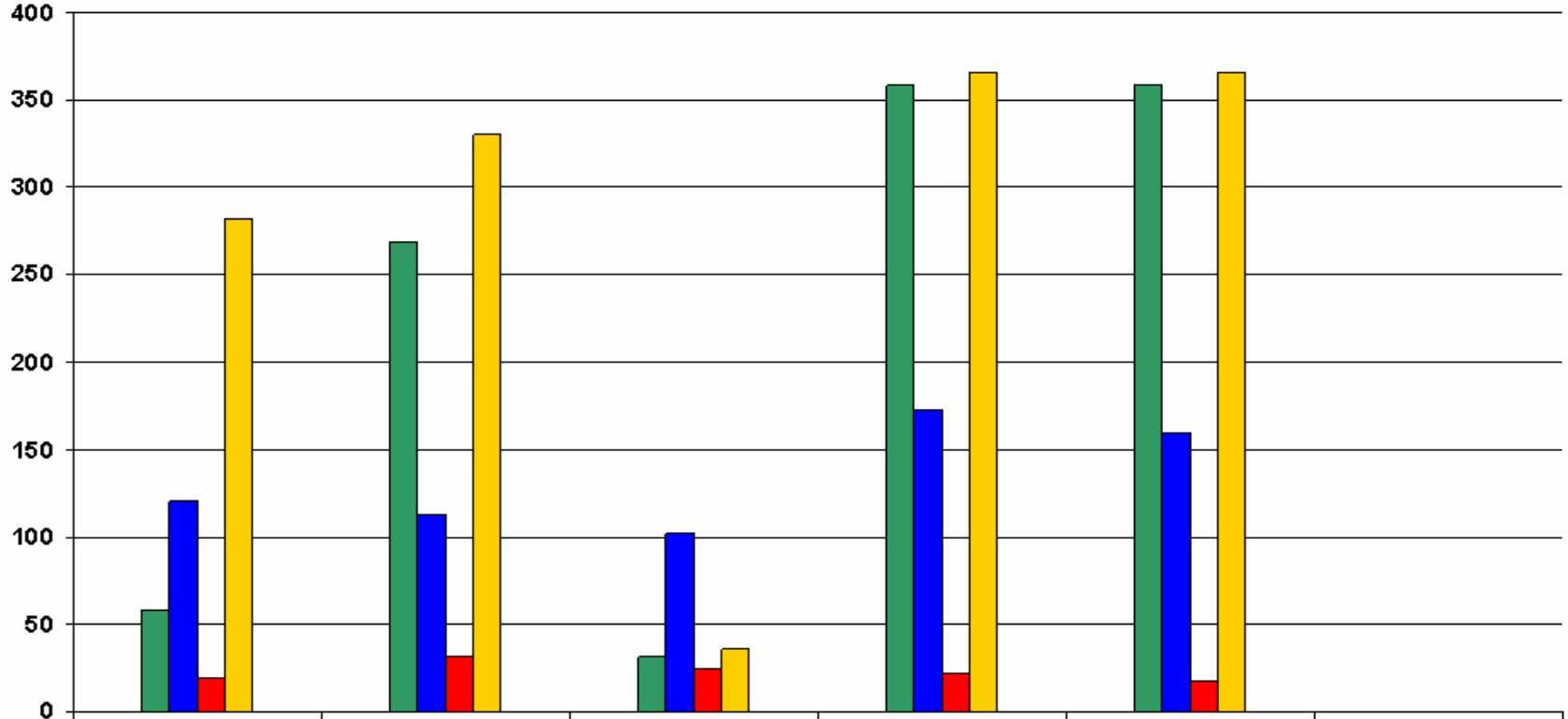


Figure 12. Net Hatchery Load for 2003 and 2004.

Hatchery Water Use, Average Phosphorus & Turbidity for 2004

Method: J/N

Input Flows: 3585.6, Output Flow: 3585.66, Phosphorus & Turbidity not counted when Flow equal to Zero



	B Spring (11)	B Creek (12)	Platte River (13)	Pond In (14)	Pond Out (15)	Bypass (19)
Water Flow / 10	58.29	268.85	31.42	358.57	358.57	0
Avg Phos X 10	120.38	112.84	101.86	171.91	159.52	0
Avg Turb X 10	18.75	30.69	24.06	21.61	16.63	0
Days At Rate	282	330	36	366	366	0

Report Date 04/24/2005

Flow in Millions of Gallons per Year / 10, Phosphorus in mg/m³ X 10, Turbidity in NTU X 10

Figure 13. Phosphorus and Turbidity of Hatchery Input and Outlet Streams.

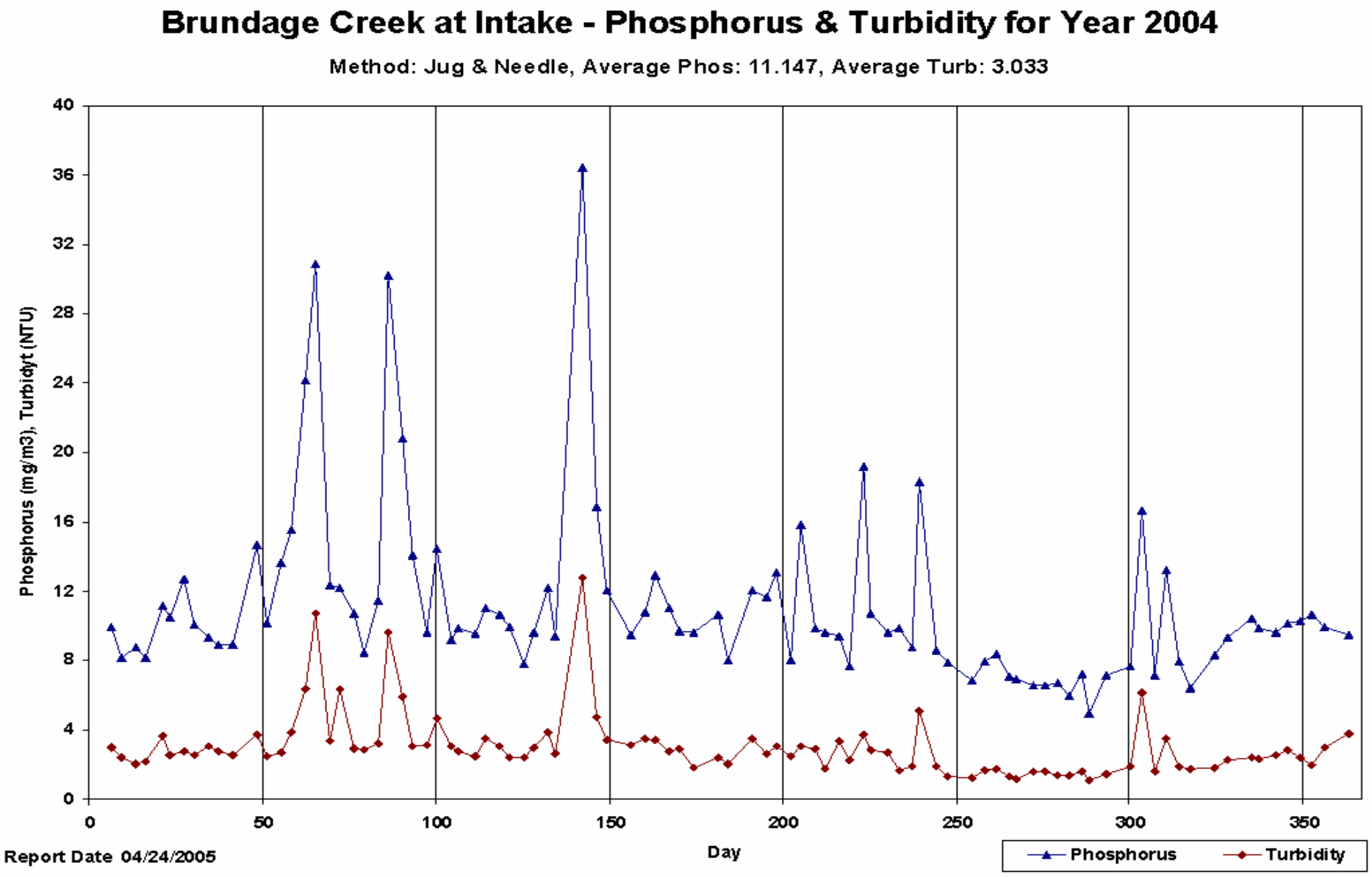


Figure 14. Phosphorus and Turbidity of Brundage Creek (J/N).

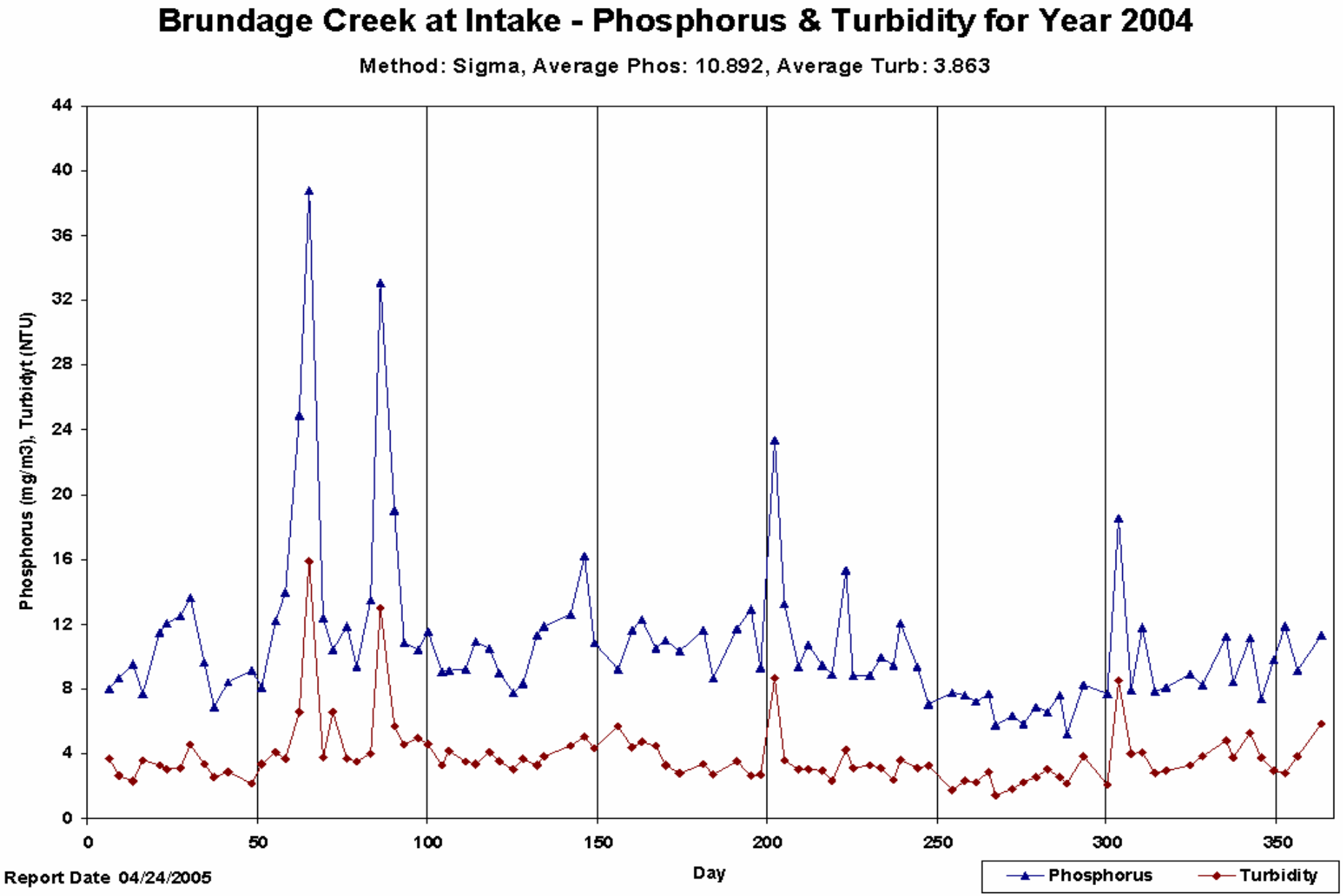


Figure 15. Phosphorus and Turbidity of Brundage Creek (Sigma).

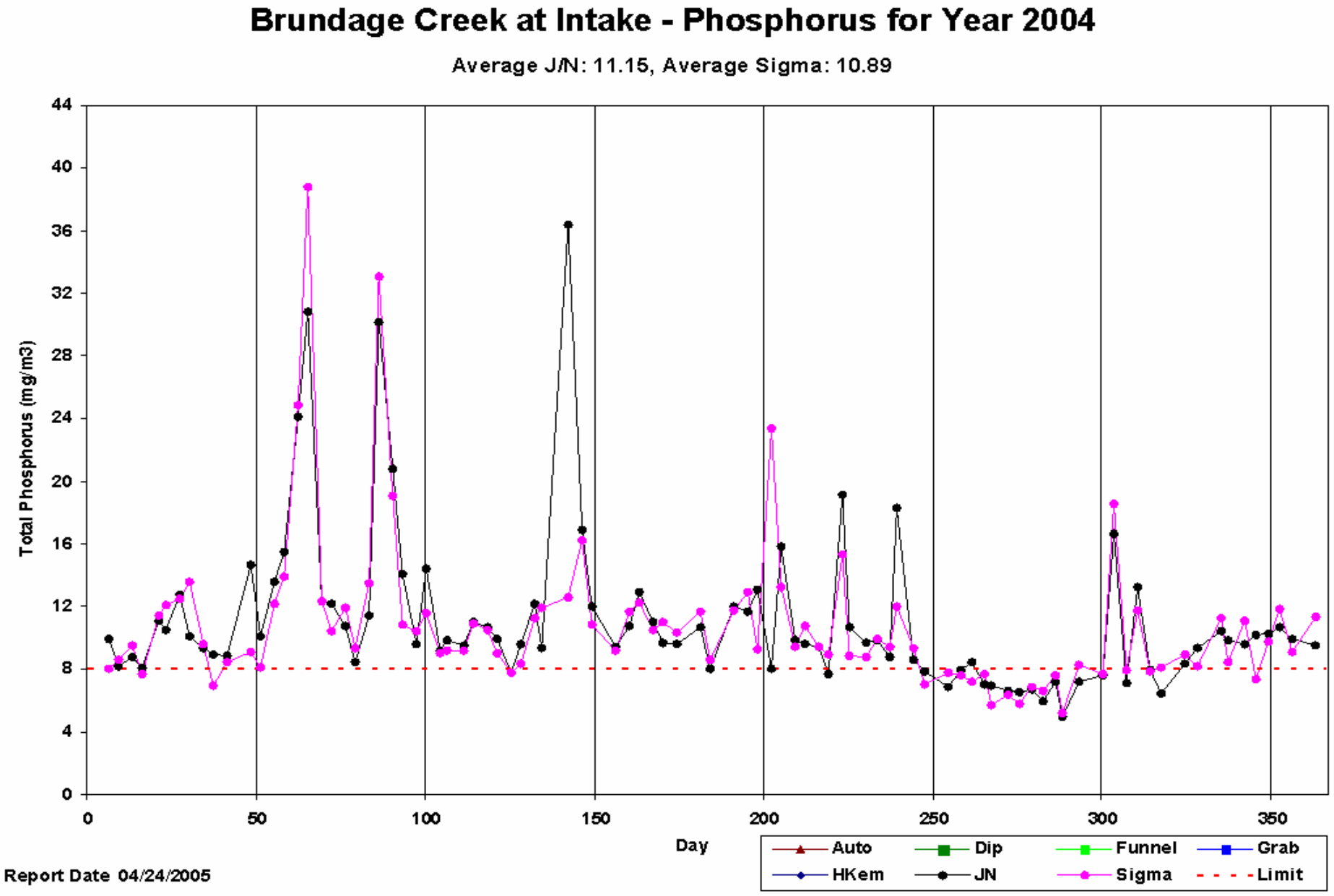


Figure 16. Phosphorus of Brundage Creek (J/N vs. Sigma)

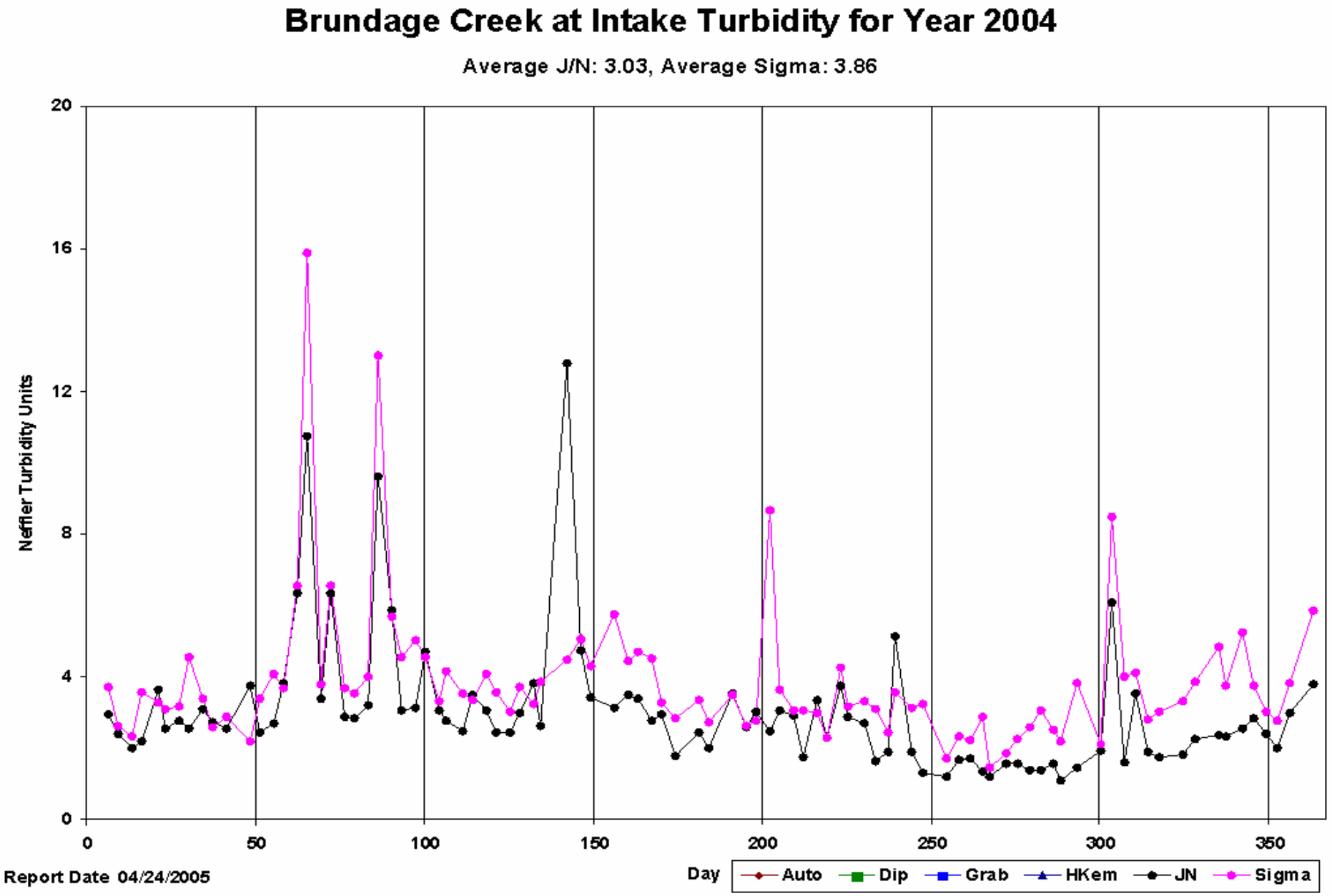
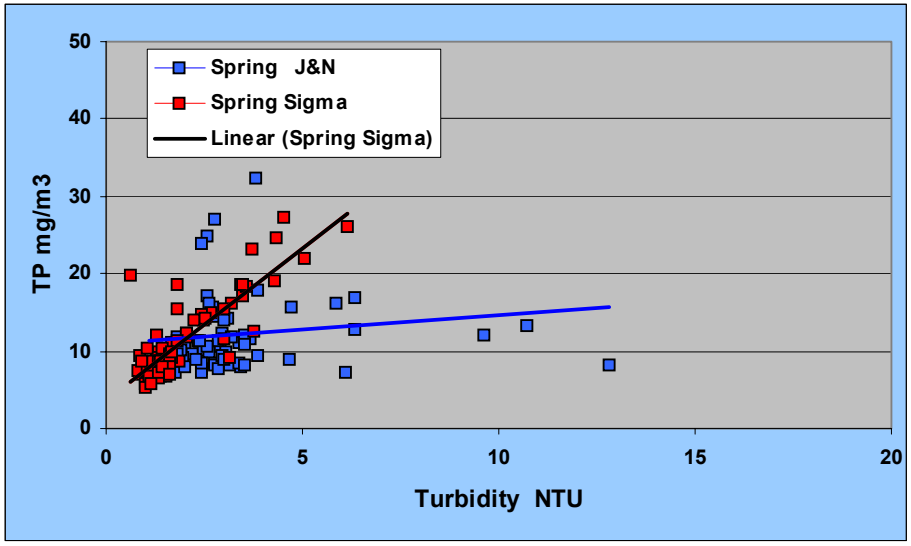
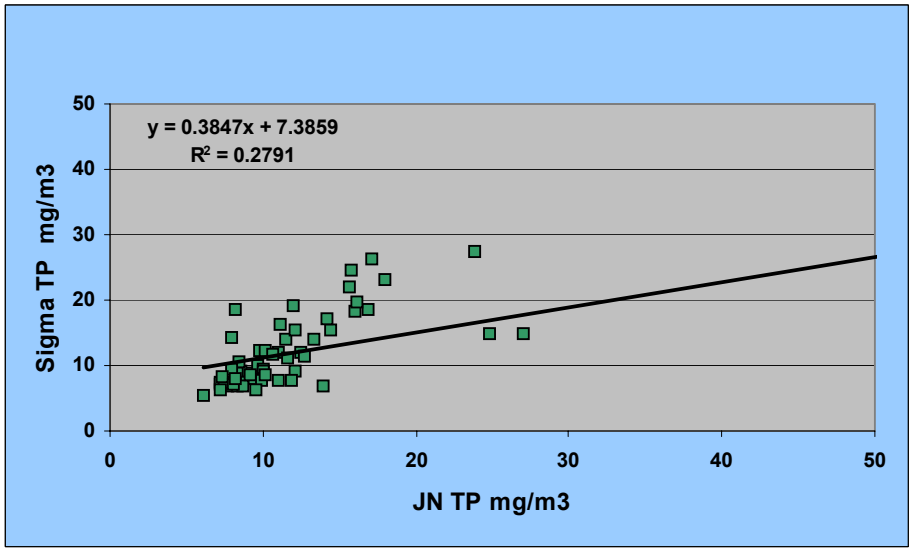


Figure 17. Turbidity of Brundage Creek (J/N vs. Sigma)





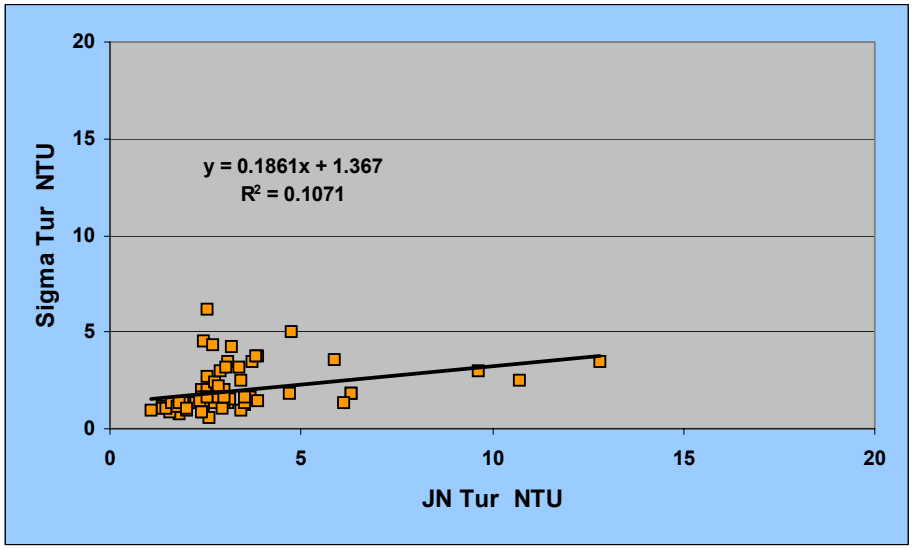
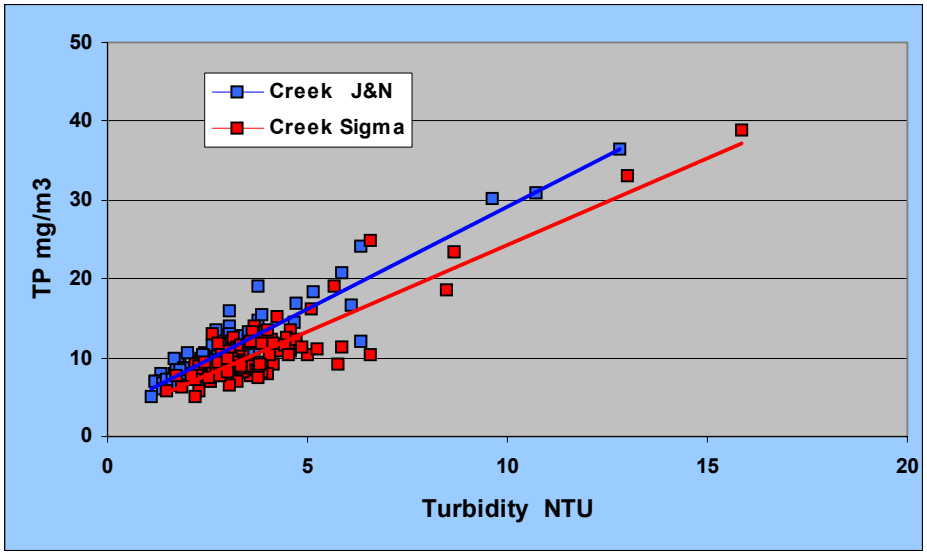
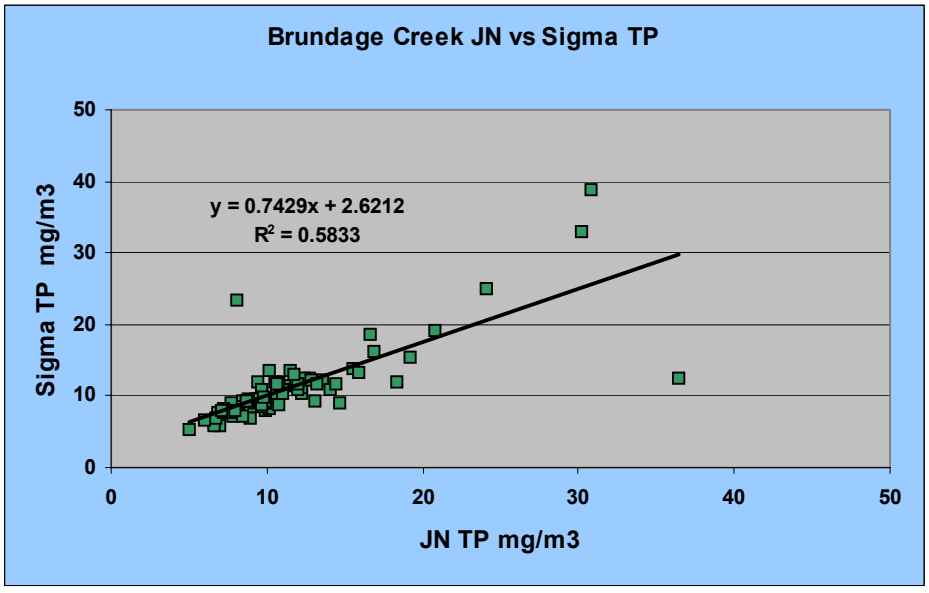


Figure 18. Brundage Spring Phosphorus and Turbidity Correlations.





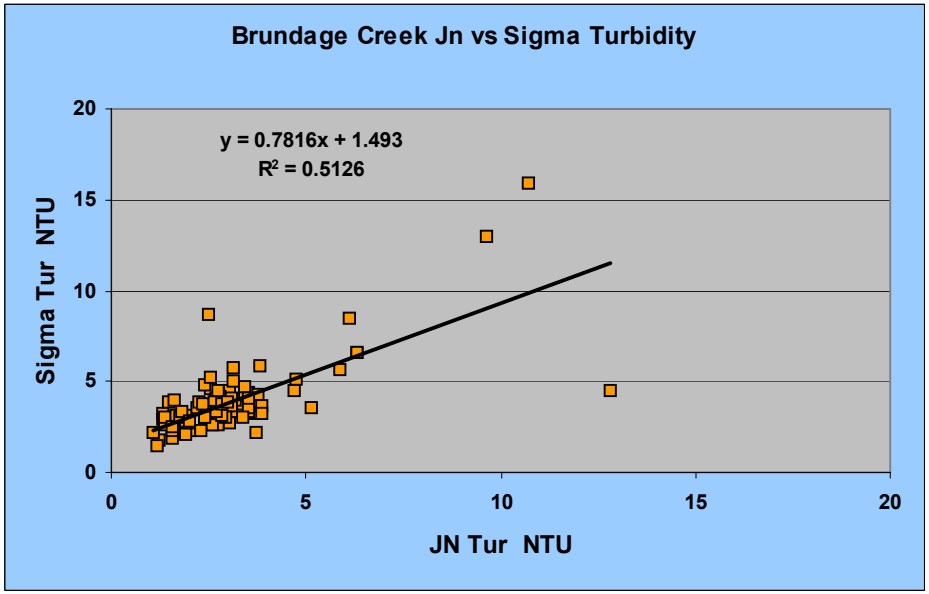
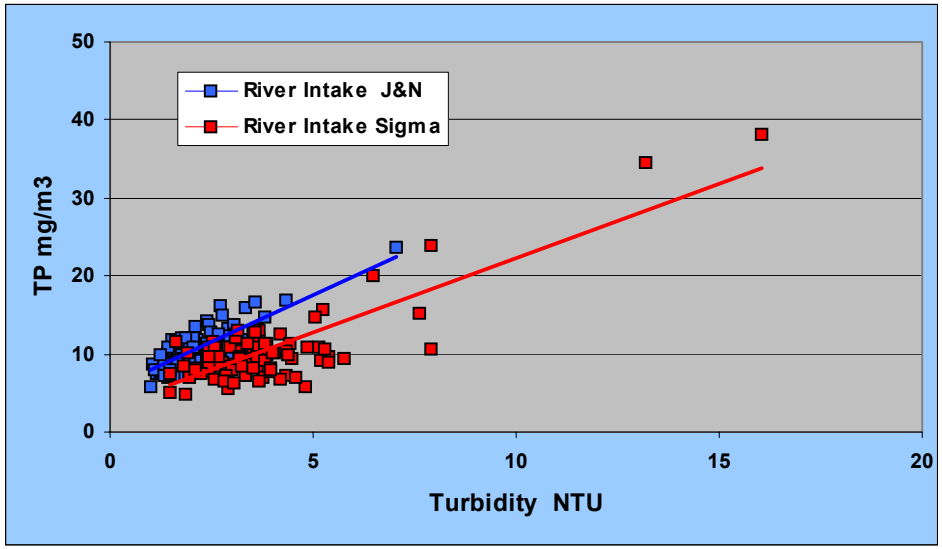
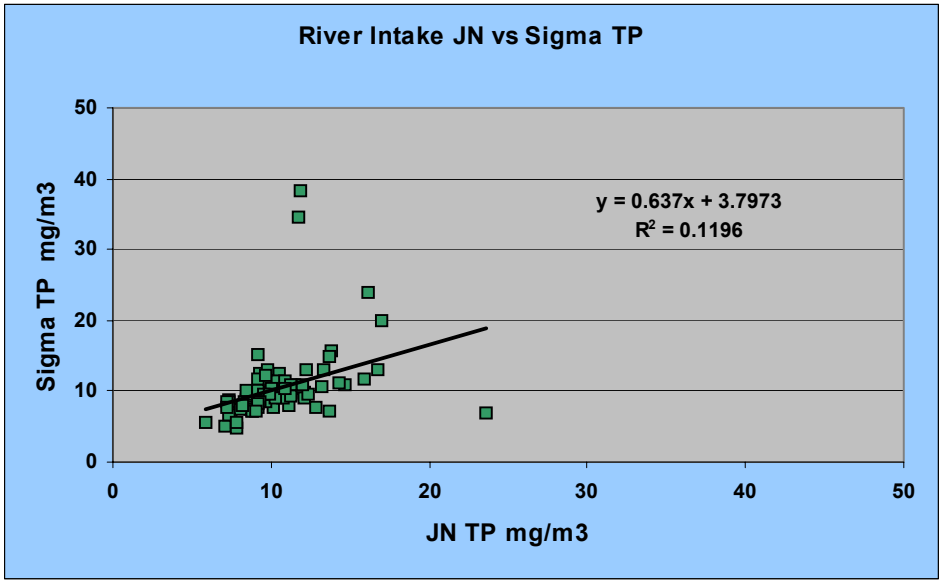


Figure 19. Brundage Creek Phosphorus and Turbidity Correlations.





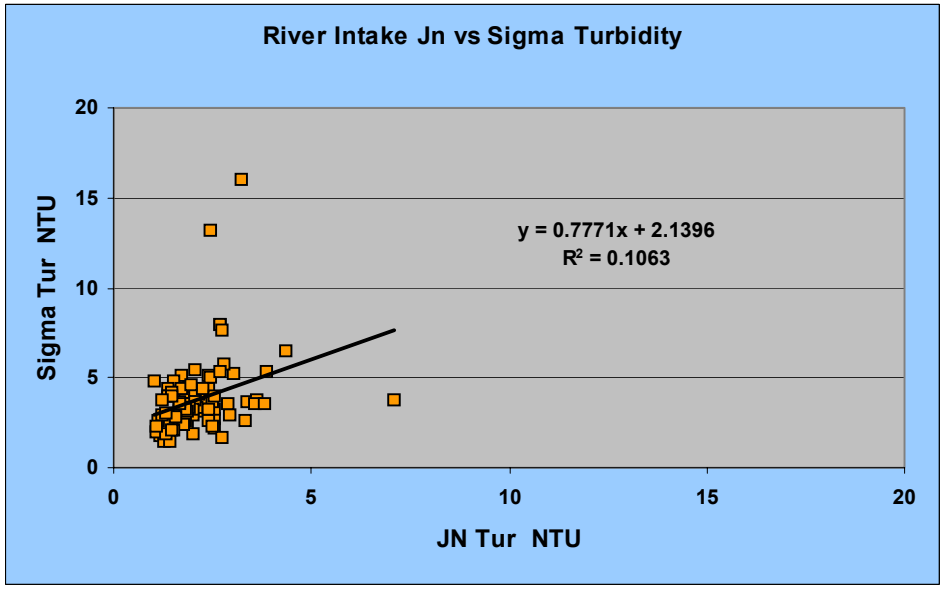
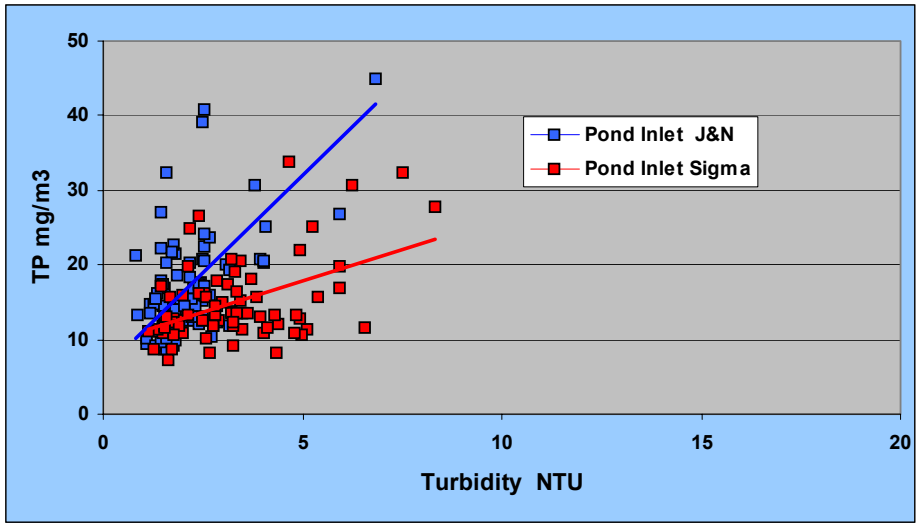
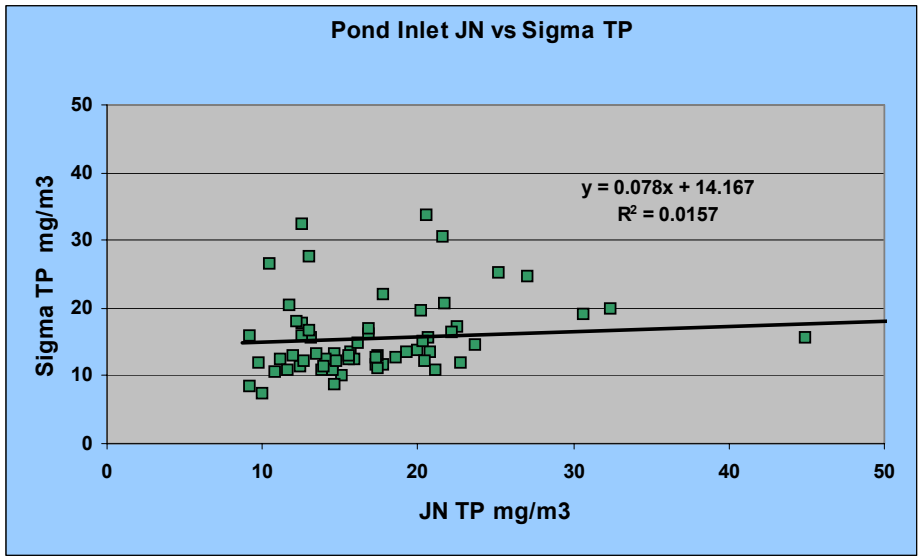


Figure 20. Platte River Intake Phosphorus and Turbidity Correlations.





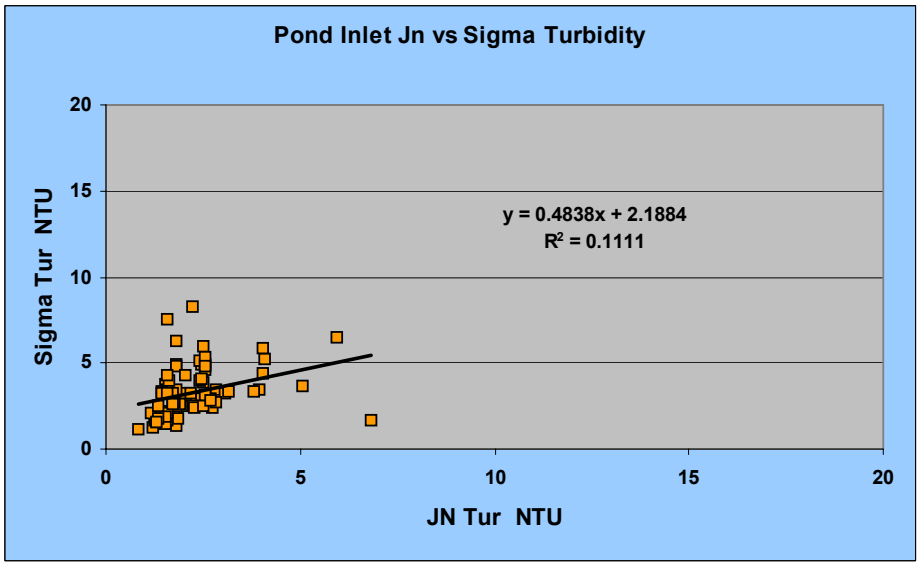
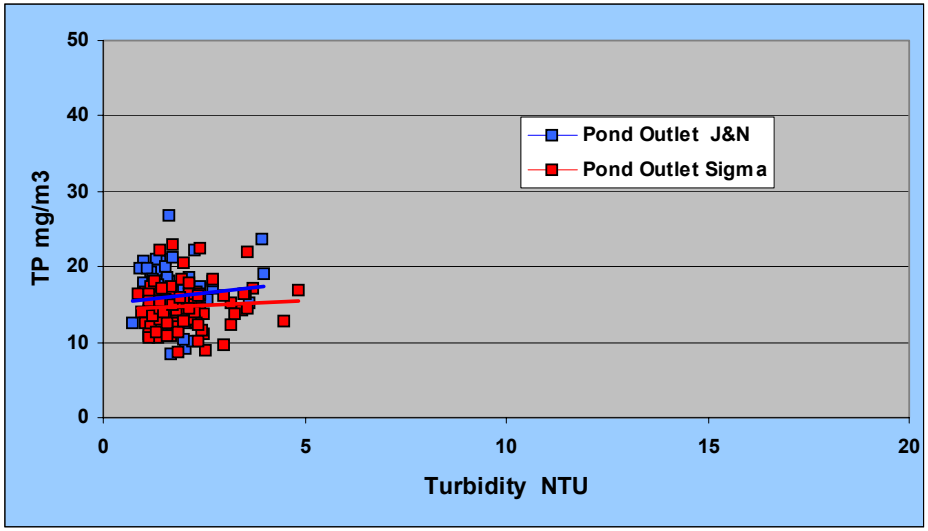
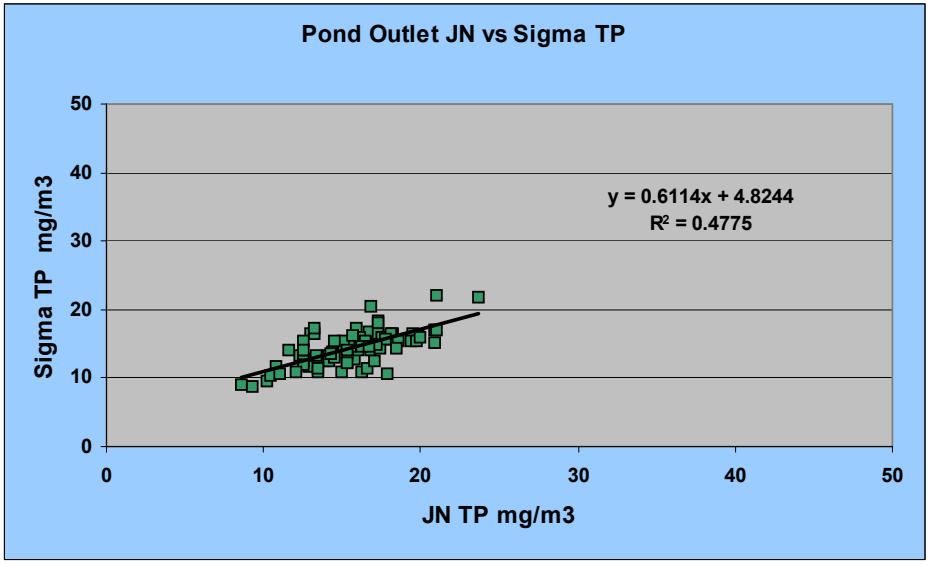


Figure 21. Pond Inlet Phosphorus and Turbidity Correlations.





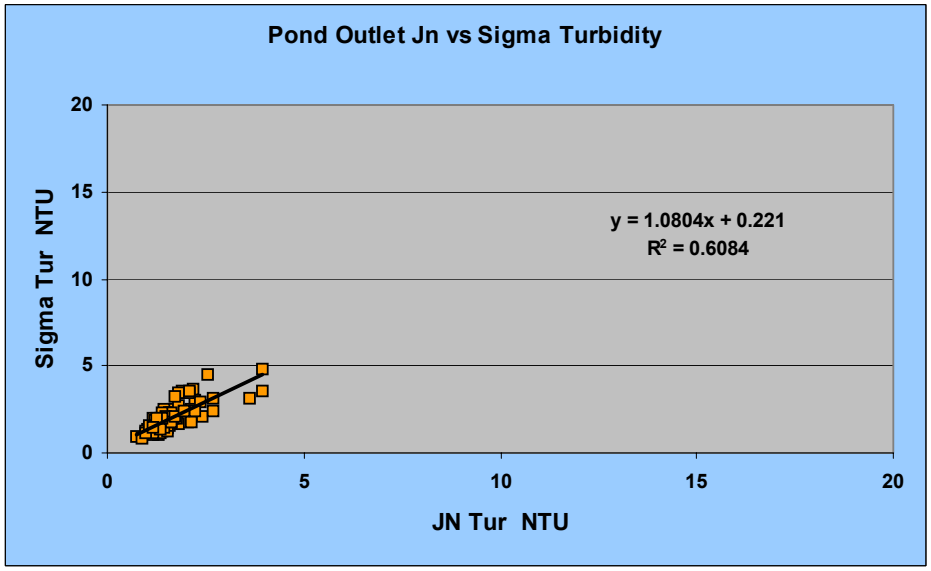


Figure 22. Pond Outlet Spring Phosphorus and Turbidity Correlations.

	Mean [SD] TP J & N	Mean [SD] TP Sigma	Probability (%) Means are Same
Spring	12.1 [7.5]	11.4 [5.2]	54
Creek	11.2 [5.1]	10.9 [5.0]	73
River	10.5 [2.7]	10.3 [4.8]	76
Pond Inlet	17.2 [8.8]	14.9 [5.5]	5
Pond Outlet	16.0 [3.2]	14.7 [2.8]	< 1

	Mean [SD] Tur J & N	Mean [SD] Tur Sigma	Probability (%) Means are Same
Spring	3.2 [2.0]	2.0 [1.3]	0
Creek	3.0 [1.8]	3.9 [2.0]	<1
River	2.1 [0.9]	3.8 [2.1]	0
Pond Inlet	2.2 [1.0]	3.3 [1.5]	0
Pond Outlet	1.7 [0.6]	2.0 [0.8]	<1

Figure 23. Summary of Student t Test Results for Phosphorus and Turbidity.

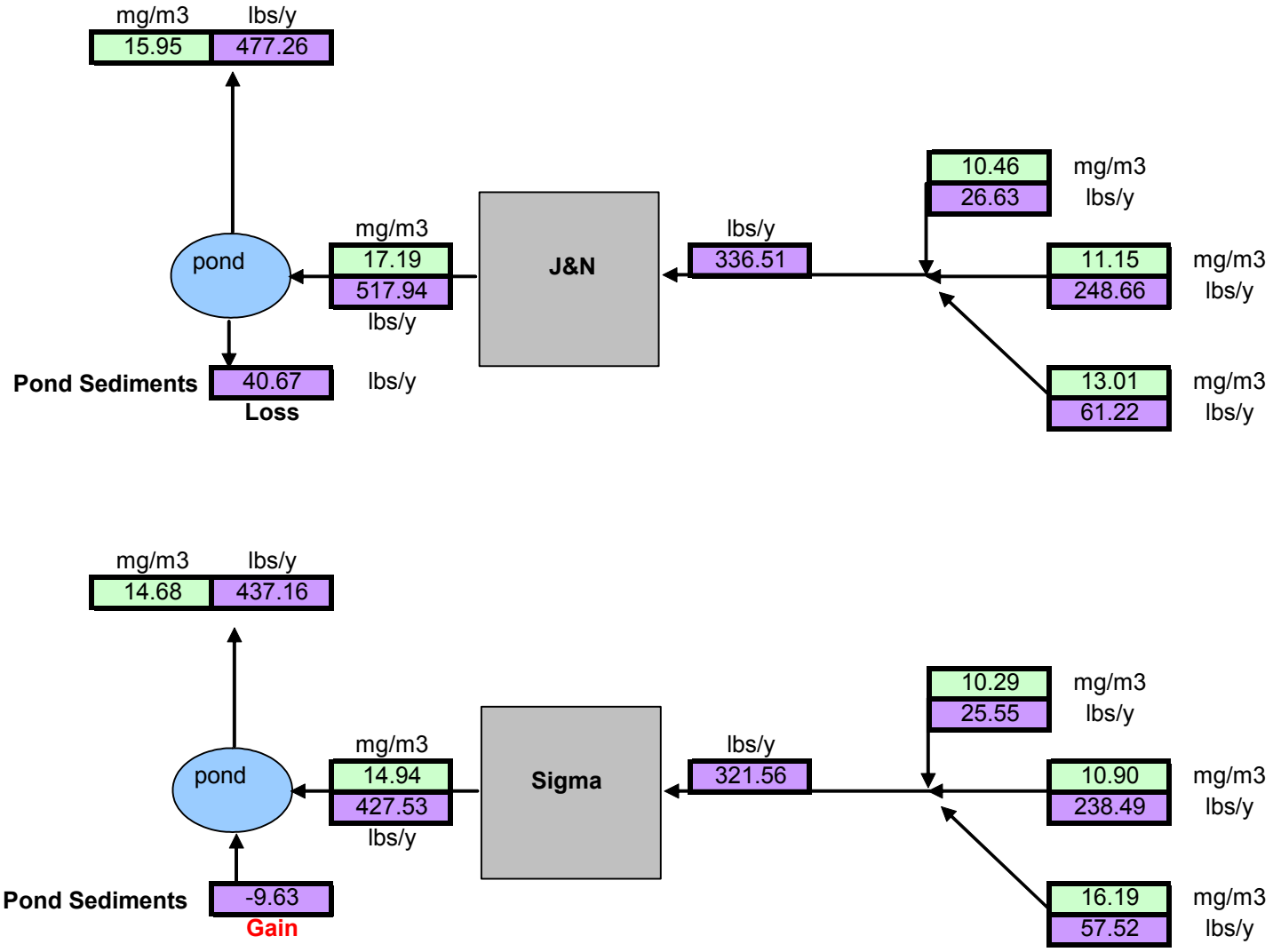


Figure 24. Annual Average Phosphorus Concentrations and Loading (J/N vs. Sigma).

Fish Production for year 2004

Month	Inspectors		Weight (kg)		Food		Mortalities	Shipped	Planted		Eggs	Net Growth	
Jan	AS	Beginning	14,487	Weight (kg)	1,965	Number	295,600	0	0	Wt Coho (kg)	0.0	3407.6	(kg)
		Ending	17,730	% Phos	0.82	Weight (kg)	164.6	0.0	0.0	Wt Chinook (kg)	0.0	21.15	%
Feb	AS	Beginning	17,742	Weight (kg)	3,464	Number	191,098	0	0	Wt Coho (kg)	0.0	4428.9	(kg)
		Ending	22,019	% Phos	0.72	Weight (kg)	151.9	0.0	0.0	Wt Chinook (kg)	0.0	22.28	%
Mar	AS	Beginning	22,493	Weight (kg)	5,123	Number	491,323	0	0	Wt Coho (kg)	0.0	16891.9	(kg)
		Ending	27,810	% Phos	0.74	Weight (kg)	11574.9	0.0	0.0	Wt Chinook (kg)	0.0	67.16	%
Apr	AS	Beginning	28,156	Weight (kg)	5,226	Number	24,092	66,474	24,946	Wt Coho (kg)	0.0	6587.7	(kg)
		Ending	14,413	% Phos	0.78	Weight (kg)	67.7	19517.0	746.0	Wt Chinook (kg)	0.0	30.95	%
May	EE	Beginning	14,683	Weight (kg)	6,198	Number	3,529	0	4,332,655	Wt Coho (kg)	0.0	9141.3	(kg)
		Ending	6,364	% Phos	0.80	Weight (kg)	12.3	0.0	17448.0	Wt Chinook (kg)	0.0	86.87	%
Jun	AS	Beginning	6,497	Weight (kg)	4,137	Number	938	0	0	Wt Coho (kg)	0.0	3866.5	(kg)
		Ending	10,359	% Phos	0.82	Weight (kg)	4.5	0.0	0.0	Wt Chinook (kg)	0.0	45.88	%
Jul	AS	Beginning	10,445	Weight (kg)	6,667	Number	1,198	0	0	Wt Coho (kg)	0.0	4503.5	(kg)
		Ending	14,939	% Phos	0.79	Weight (kg)	9.5	0.0	0.0	Wt Chinook (kg)	0.0	35.48	%
Aug	AS	Beginning	15,166	Weight (kg)	5,650	Number	3,019	0	0	Wt Coho (kg)	0.0	5403.5	(kg)
		Ending	20,535	% Phos	0.81	Weight (kg)	34.5	0.0	0.0	Wt Chinook (kg)	0.0	30.27	%
Sep	AS	Beginning	20,802	Weight (kg)	7,662	Number	1,552	0	0	Wt Coho (kg)	0.0	6697.7	(kg)
		Ending	27,477	% Phos	0.67	Weight (kg)	22.7	0.0	0.0	Wt Chinook (kg)	249.5	27.75	%
Oct	AS	Beginning	27,832	Weight (kg)	5,688	Number	183	0	0	Wt Coho (kg)	914.9	12697.3	(kg)
		Ending	40,524	% Phos	0.64	Weight (kg)	5.3	0.0	0.0	Wt Chinook (kg)	2608.7	37.15	%
Nov	AS	Beginning	40,792	Weight (kg)	6,890	Number	187	0	0	Wt Coho (kg)	47.7	5514.3	(kg)
		Ending	46,301	% Phos	0.67	Weight (kg)	5.3	0.0	0.0	Wt Chinook (kg)	0.0	12.66	%
Dec	AS	Beginning	46,572	Weight (kg)	7,468	Number	8,927	0	0	Wt Coho (kg)	0.0	-377.6	(kg)
		Ending	46,179	% Phos	0.68	Weight (kg)	15.4	0.0	0.0	Wt Chinook (kg)	0.0	-0.81	%
Total for Year				Weight (kg)	**66,138**	Number	**1,021,646**	**66,474**	**4,357,601**	Wt Coho (kg)	**962.7**	**78762.4**	(kg)
				% Phos	**0.74**	Weight (kg)	**12068.4**	**19517.0**	**18194.0**	Wt Chinook (kg)	**2858.2**	**34.73**	%
Production Weight for Year			**81,471 kg**										

Gross Annual Production = 12068 + 19517 + 18194 + 46179 – 14487 = 81471

Annual Food Use / Annual Gross Production = 66138 / 81471 = 0.81

Annual P in Feed = (1965)(0.82%) + (3464)(0.72%) + …. + (7468)(0.68%) = 1071

P associated with Start, End, Mort, Shipped, and Planted = 0.4465 % (Total Weight)

P associated with eggs = (963 + 2852) (2.205) (1.3 %) = 109

Figure 25. Fish Production Data.

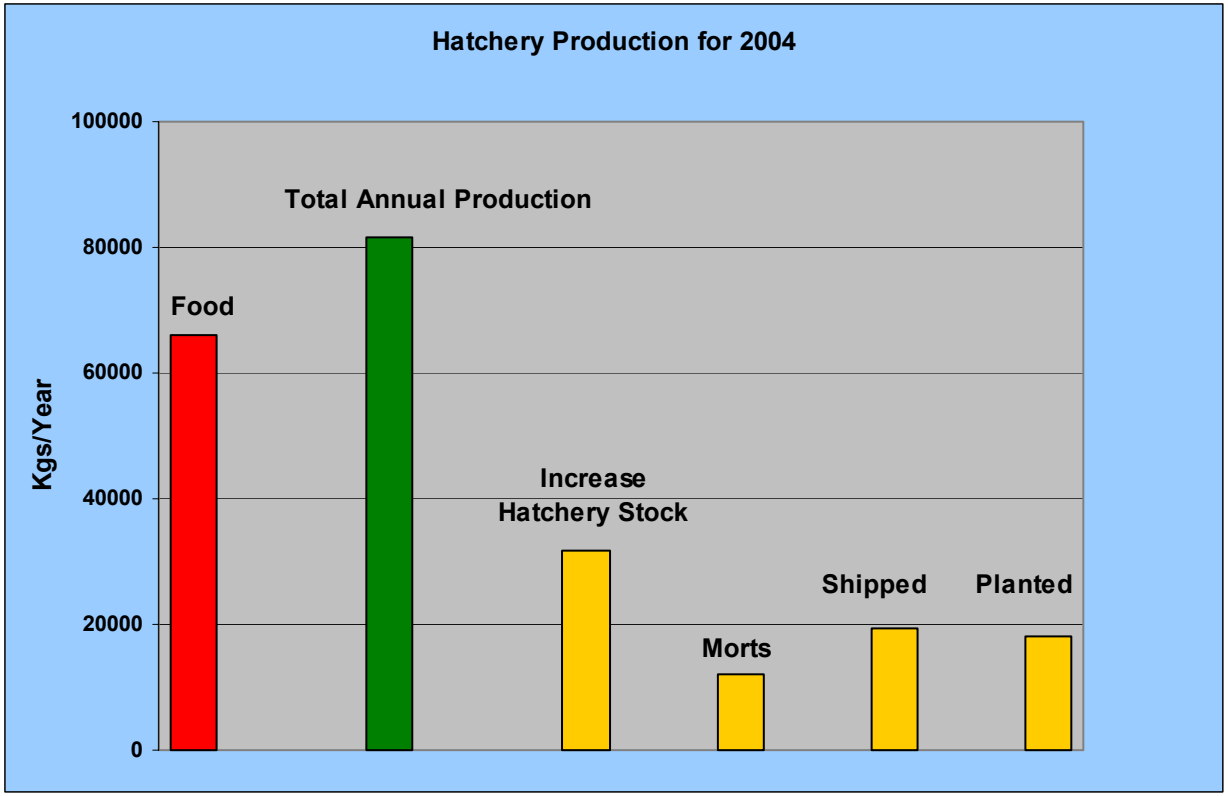


Figure 26. Summary of Fish Production Data for 2004.

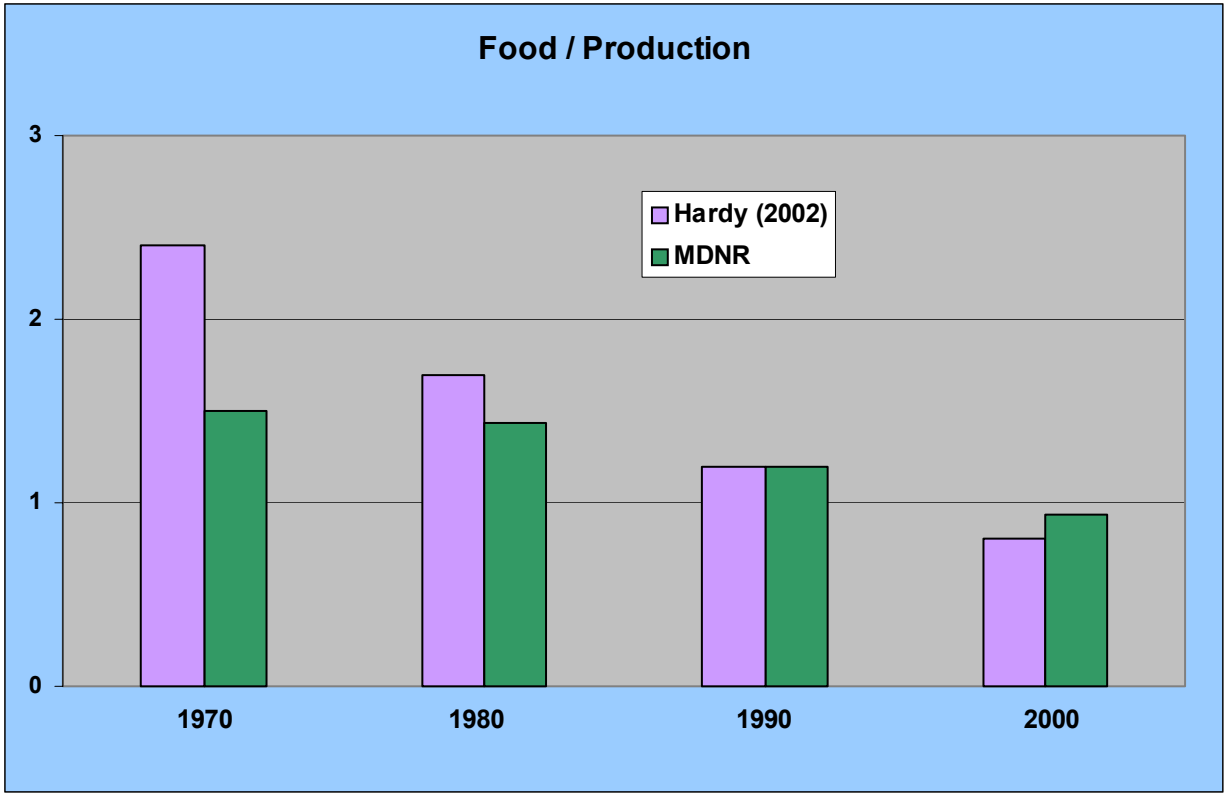


Figure 27. Ratio of Food Used to Fish Production.

Fish Production for year 2004

Month	Inspectors		Weight (kg)		Food		Mortalities	Shipped	Planted		Eggs	Net Growth	
Jan	AS	Beginning	14,487	Weight (kg)	1,965	Number	295,600	0	0	Wt Coho (kg)	0.0	3407.6	(kg)
		Ending	17,730	% Phos	0.82	Weight (kg)	164.6	0.0	0.0	Wt Chinook (kg)	0.0	21.15	%
Feb	AS	Beginning	17,742	Weight (kg)	3,464	Number	191,098	0	0	Wt Coho (kg)	0.0	4428.9	(kg)
		Ending	22,019	% Phos	0.72	Weight (kg)	151.9	0.0	0.0	Wt Chinook (kg)	0.0	22.28	%
Mar	AS	Beginning	22,493	Weight (kg)	5,123	Number	491,323	0	0	Wt Coho (kg)	0.0	16891.9	(kg)
		Ending	27,810	% Phos	0.74	Weight (kg)	11574.9	0.0	0.0	Wt Chinook (kg)	0.0	67.16	%
Apr	AS	Beginning	28,156	Weight (kg)	5,226	Number	24,092	66,474	24,946	Wt Coho (kg)	0.0	6587.7	(kg)
		Ending	14,413	% Phos	0.78	Weight (kg)	67.7	19517.0	746.0	Wt Chinook (kg)	0.0	30.95	%
May	EE	Beginning	14,683	Weight (kg)	6,198	Number	3,529	0	4,332,655	Wt Coho (kg)	0.0	9141.3	(kg)
		Ending	6,364	% Phos	0.80	Weight (kg)	12.3	0.0	17448.0	Wt Chinook (kg)	0.0	86.87	%
Jun	AS	Beginning	6,497	Weight (kg)	4,137	Number	938	0	0	Wt Coho (kg)	0.0	3866.5	(kg)
		Ending	10,359	% Phos	0.82	Weight (kg)	4.5	0.0	0.0	Wt Chinook (kg)	0.0	45.88	%
Jul	AS	Beginning	10,445	Weight (kg)	6,667	Number	1,198	0	0	Wt Coho (kg)	0.0	4503.5	(kg)
		Ending	14,939	% Phos	0.79	Weight (kg)	9.5	0.0	0.0	Wt Chinook (kg)	0.0	35.48	%
Aug	AS	Beginning	15,166	Weight (kg)	5,650	Number	3,019	0	0	Wt Coho (kg)	0.0	5403.5	(kg)
		Ending	20,535	% Phos	0.81	Weight (kg)	34.5	0.0	0.0	Wt Chinook (kg)	0.0	30.27	%
Sep	AS	Beginning	20,802	Weight (kg)	7,662	Number	1,552	0	0	Wt Coho (kg)	0.0	6697.7	(kg)
		Ending	27,477	% Phos	0.67	Weight (kg)	22.7	0.0	0.0	Wt Chinook (kg)	249.5	27.75	%
Oct	AS	Beginning	27,832	Weight (kg)	5,688	Number	183	0	0	Wt Coho (kg)	914.9	12697.3	(kg)
		Ending	40,524	% Phos	0.64	Weight (kg)	5.3	0.0	0.0	Wt Chinook (kg)	2608.7	37.15	%
Nov	AS	Beginning	40,792	Weight (kg)	6,890	Number	187	0	0	Wt Coho (kg)	47.7	5514.3	(kg)
		Ending	46,301	% Phos	0.67	Weight (kg)	5.3	0.0	0.0	Wt Chinook (kg)	0.0	12.66	%
Dec	AS	Beginning	46,572	Weight (kg)	7,468	Number	8,927	0	0	Wt Coho (kg)	0.0	-377.6	(kg)
		Ending	46,179	% Phos	0.68	Weight (kg)	15.4	0.0	0.0	Wt Chinook (kg)	0.0	-0.81	%
Total for Year				Weight (kg)	**66,138**	Number	**1,021,646**	**66,474**	**4,357,601**	Wt Coho (kg)	**962.7**	**78762.4**	(kg)
				% Phos	**0.74**	Weight (kg)	**12068.4**	**19517.0**	**18194.0**	Wt Chinook (kg)	**2858.2**	**34.73**	%
Production Weight for Year			**81,471 kg**										

% Growth per Month = (100) (5403) / (15166 + 20535) /2 = 30 %

Food / Fish in System = (100) (5650) / (15166 + 20535)/2 = 31 %

Figure 28. Fish Production Data.

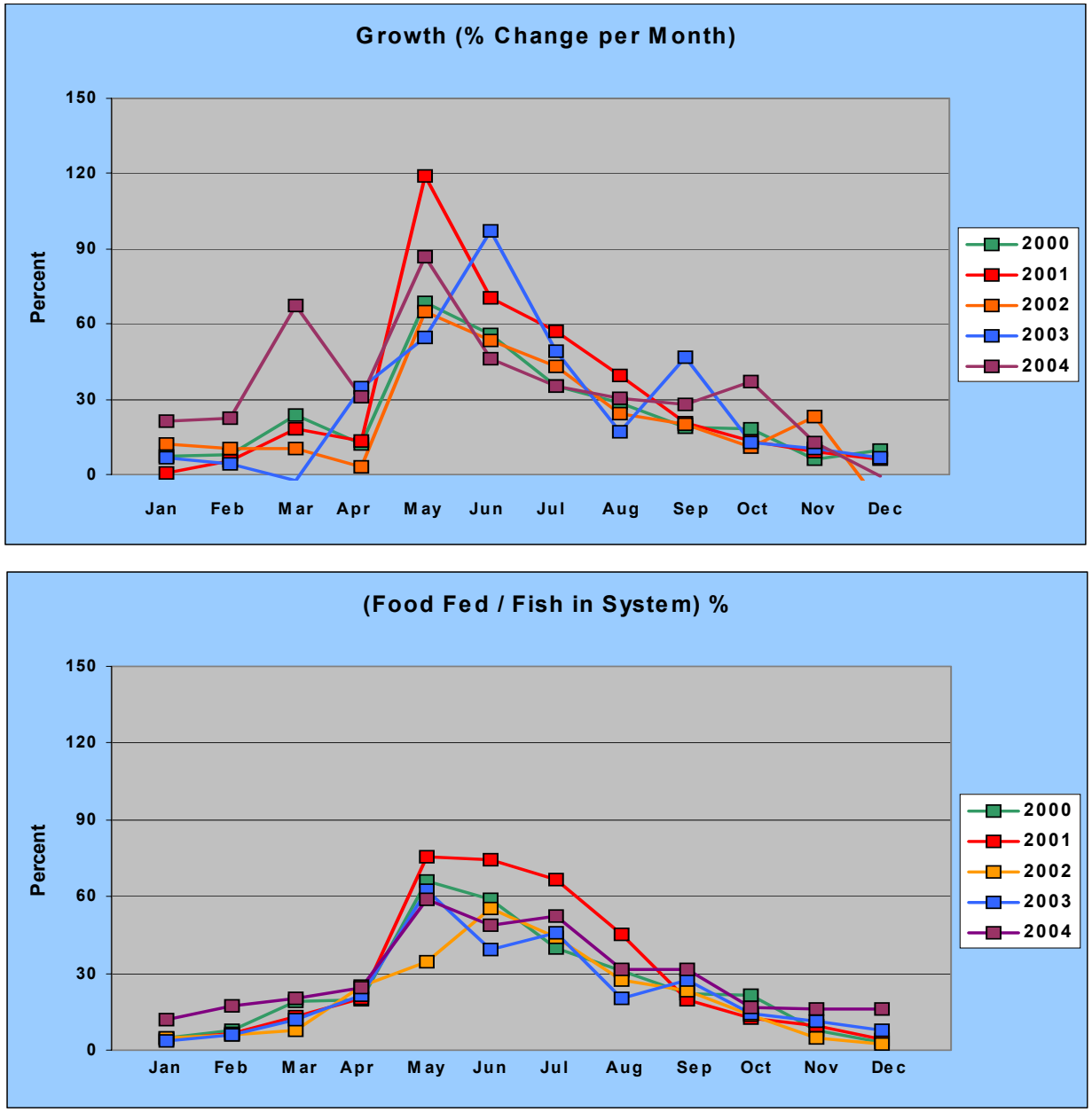
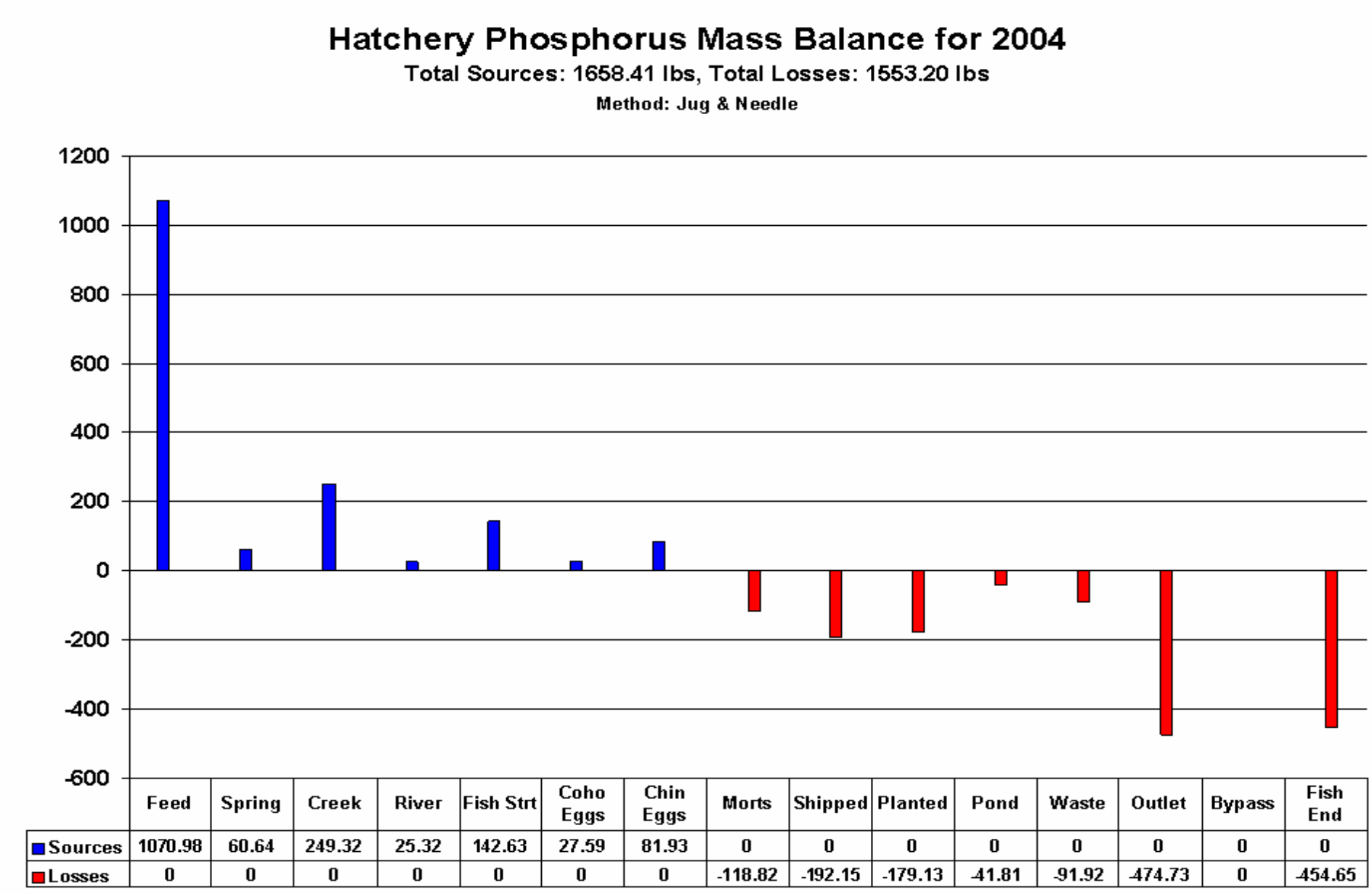


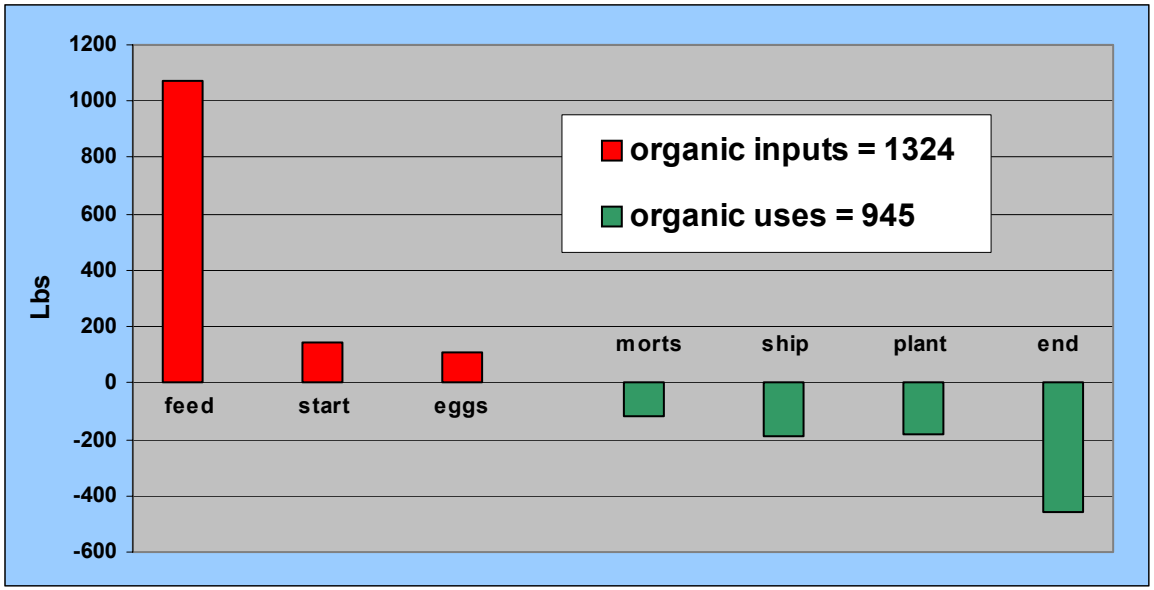
Figure 29. Monthly Verification of Growth and Food Use.



	Feed	Spring	Creek	River	Fish Strt	Coho Eggs	Chin Eggs	Morts	Shipped	Planted	Pond	Waste	Outlet	Bypass	Fish End
Sources	1070.98	60.64	249.32	25.32	142.63	27.59	81.93	0	0	0	0	0	0	0	0
Losses	0	0	0	0	0	0	0	-118.82	-192.15	-179.13	-41.81	-91.92	-474.73	0	-454.65

Report Date 04/24/2005

Figure 30. Hatchery Phosphorus Mass Balance.



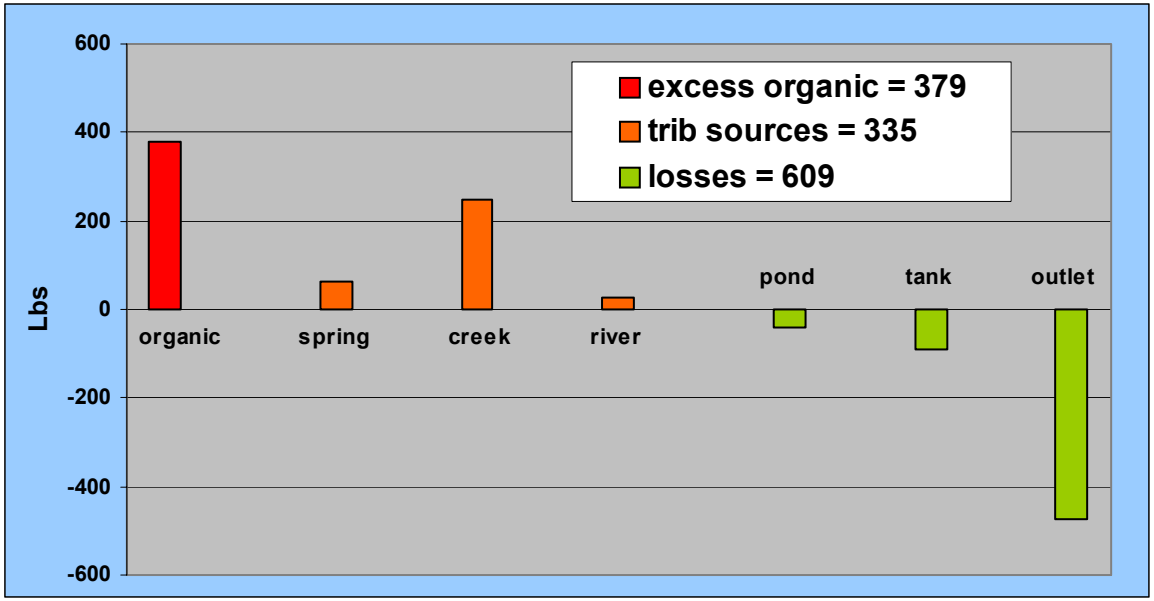


Figure 31. Components of Hatchery Phosphorus Mass Balance.

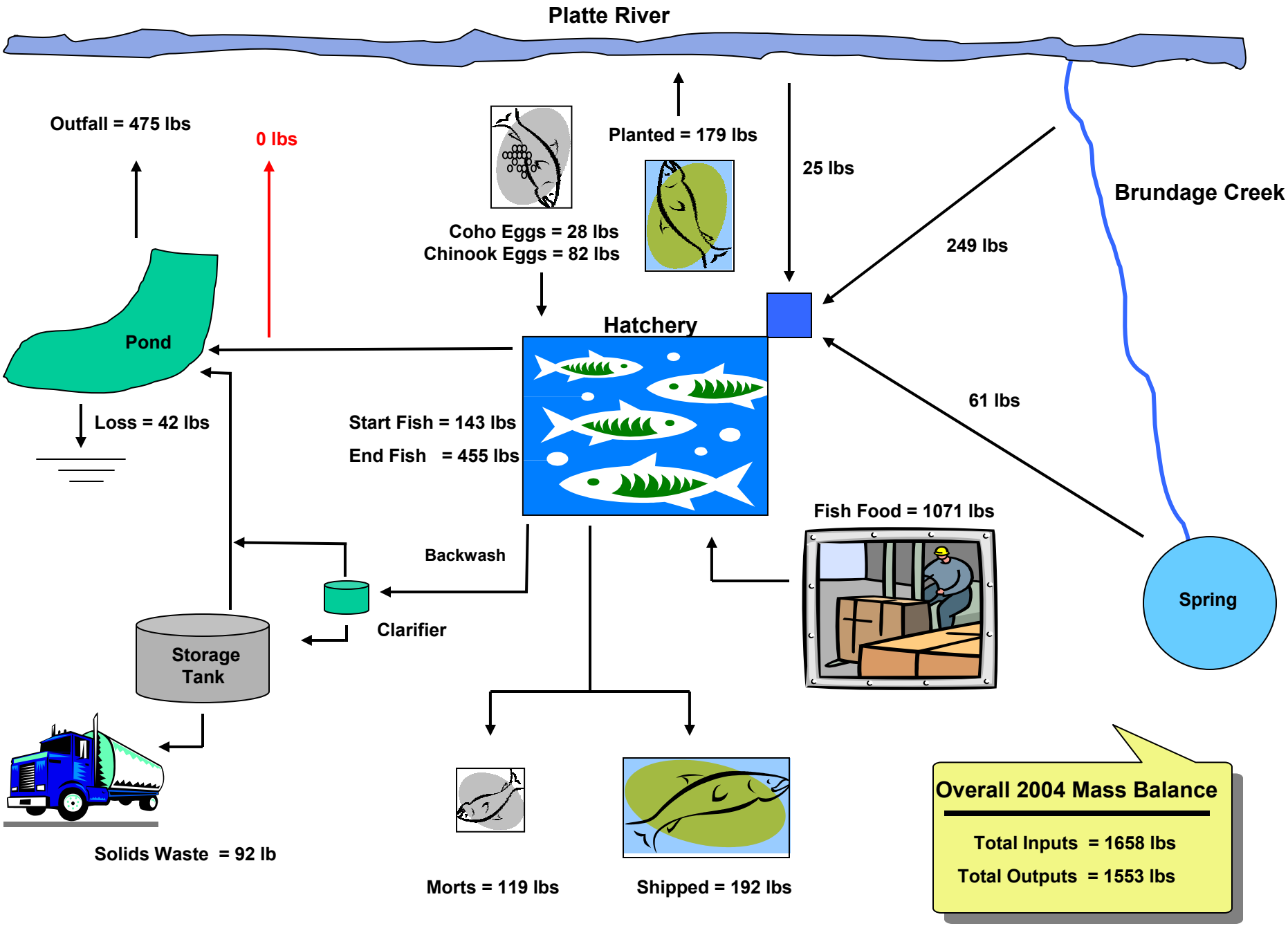


Figure 32. Hatchery Phosphorus Mass Balance.

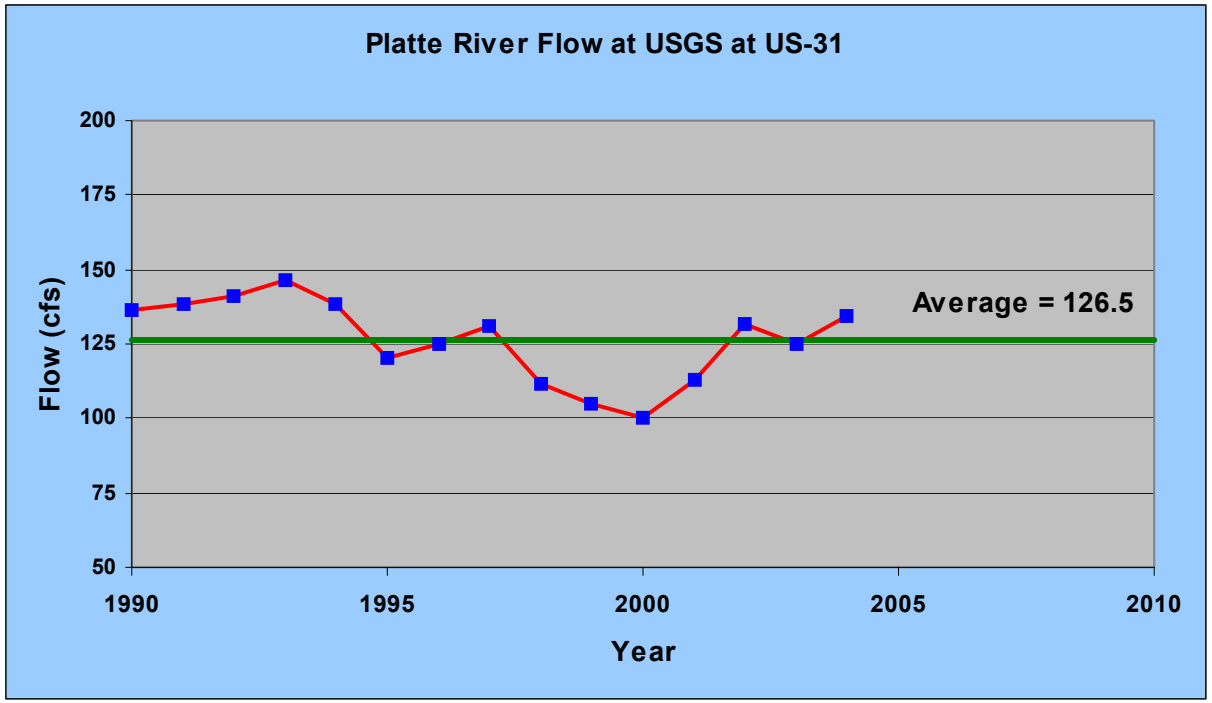


Figure 33. Annual Average USGS Flow of Platte River at US 31.

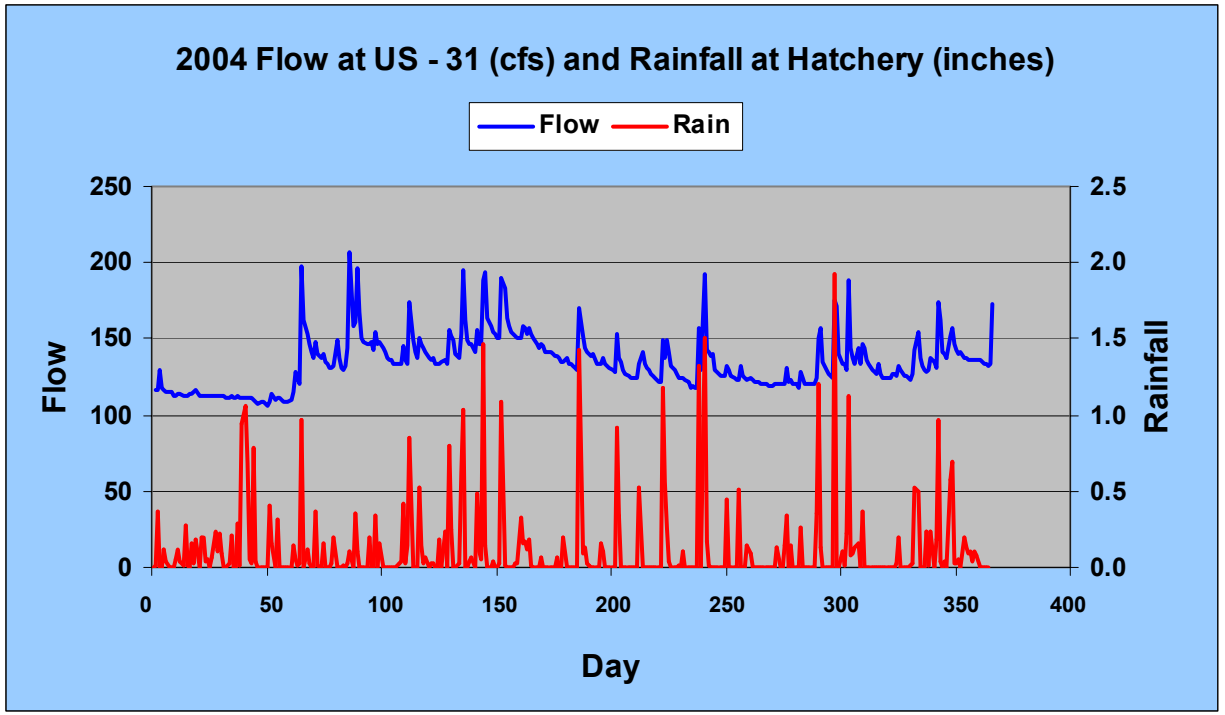


Figure 34. Daily Average Flow of Platte River at US 31 and Hatchery Rainfall.

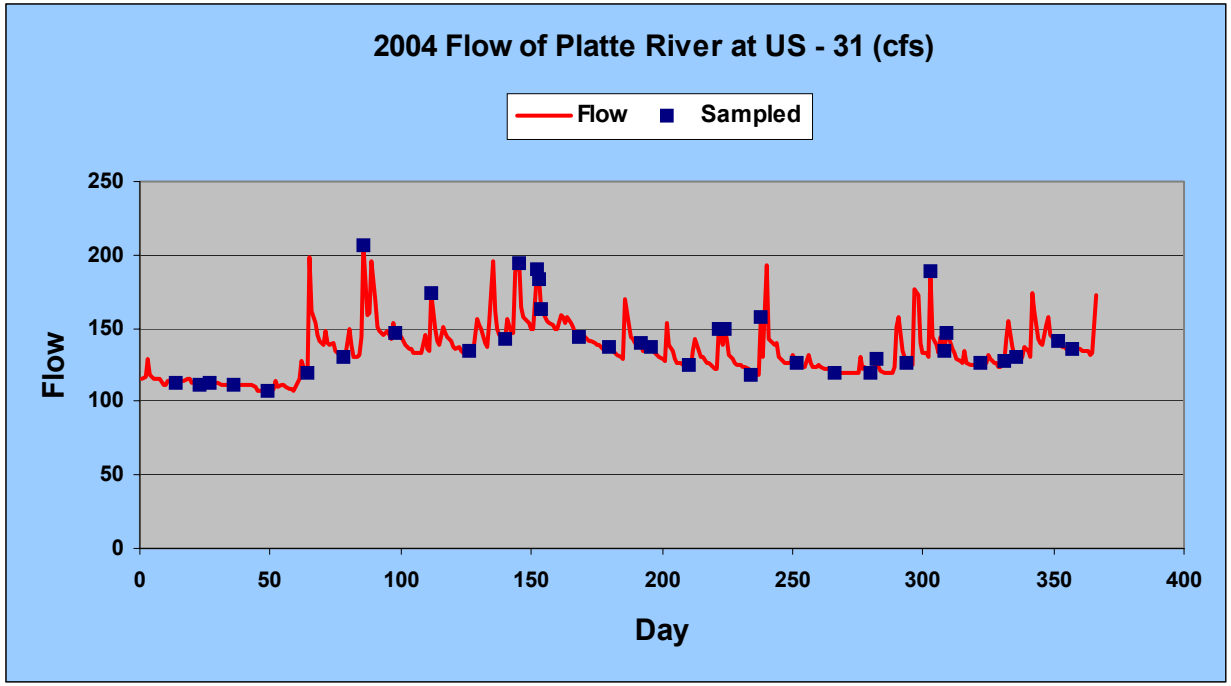
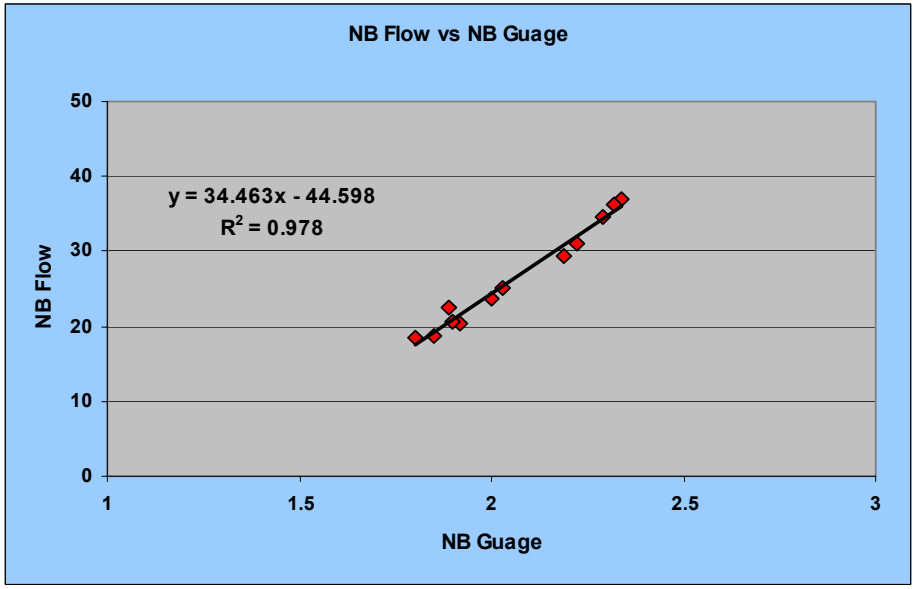
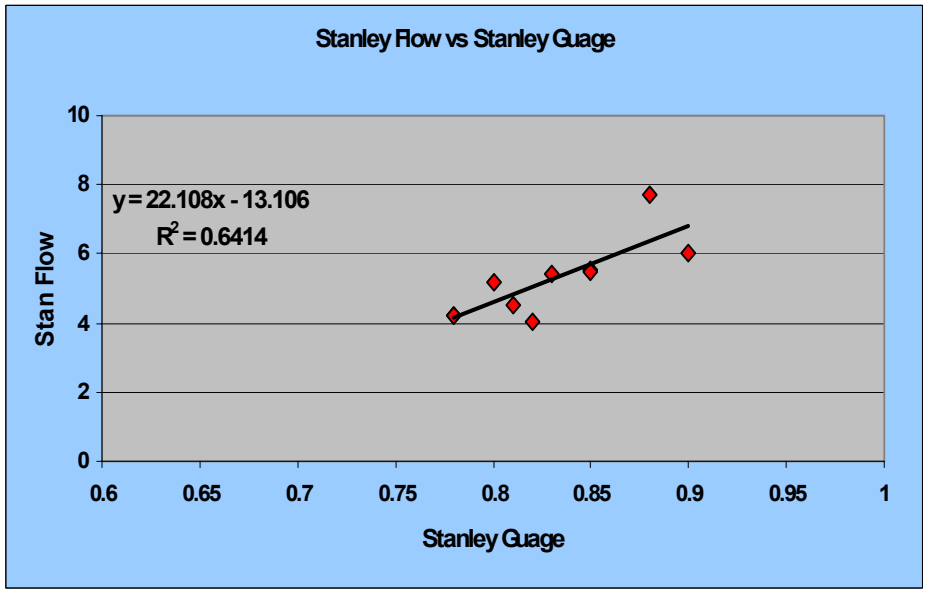
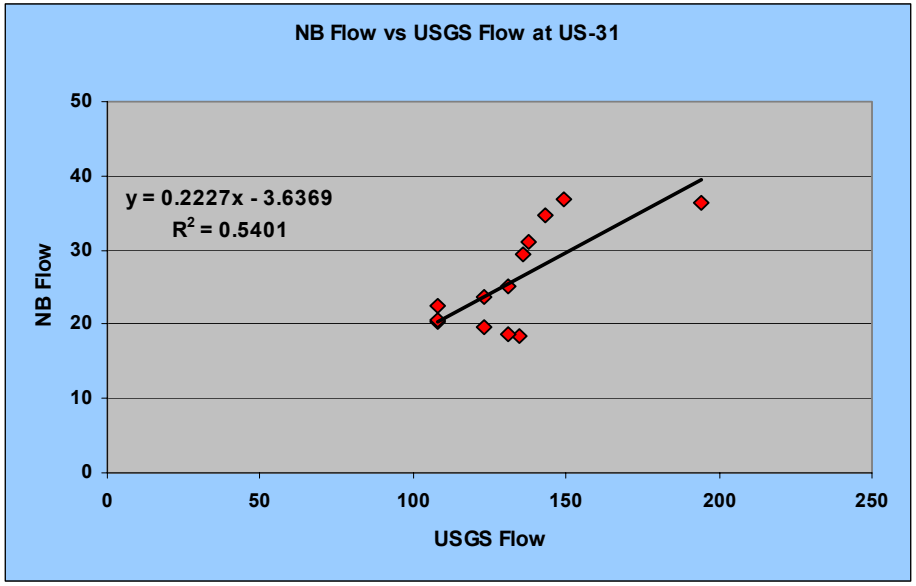


Figure 35. Daily Average Flow of Platte River and Sampling Dates.







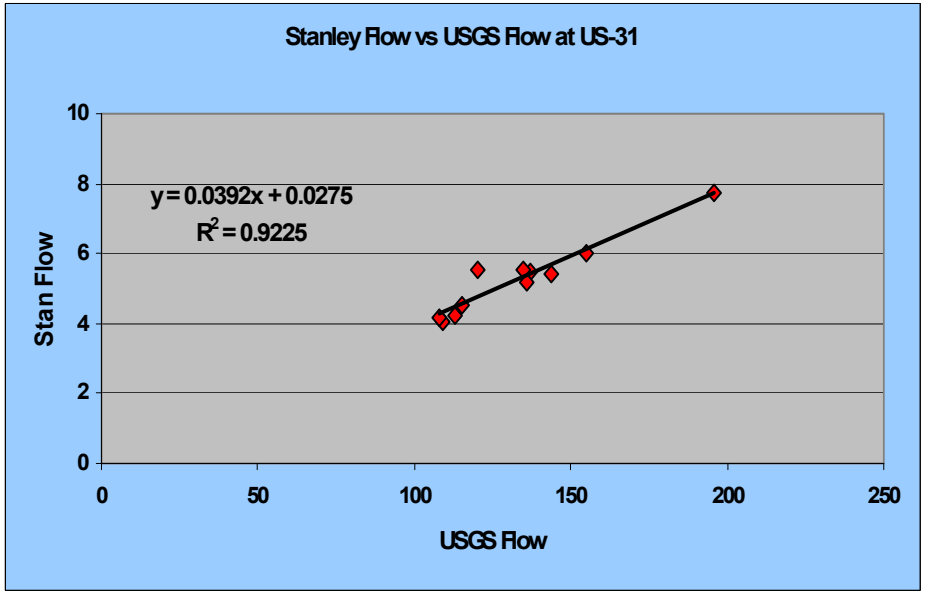


Figure 36. PLIA Flow and Gauge Data and Correlations with USGS.

	Number of Samples	Site Gauge vs. Site Flow R^2	Site Flow vs. USGS Flow R^2
PR at Fewins Rd	5	----	0.99
PR at Stone Bridge	8	0.78	0.81
Stanley Creek	11	0.64	0.92
BC at Old Residence	8	0.92	0.76
PR at Vets Park	12	0.92	0.82
Carter Creek	11	0.91	0.89
PR at Pioneer Rd	11	0.96	0.89
Collison Creek	12	----	0.85
PR at USGS	11	0.79	0.95
NB	13	0.98	0.54
PR at M-22	12	0.97	0.66

Figure 37. Summary of PLIA Flow and Guage Correlations.

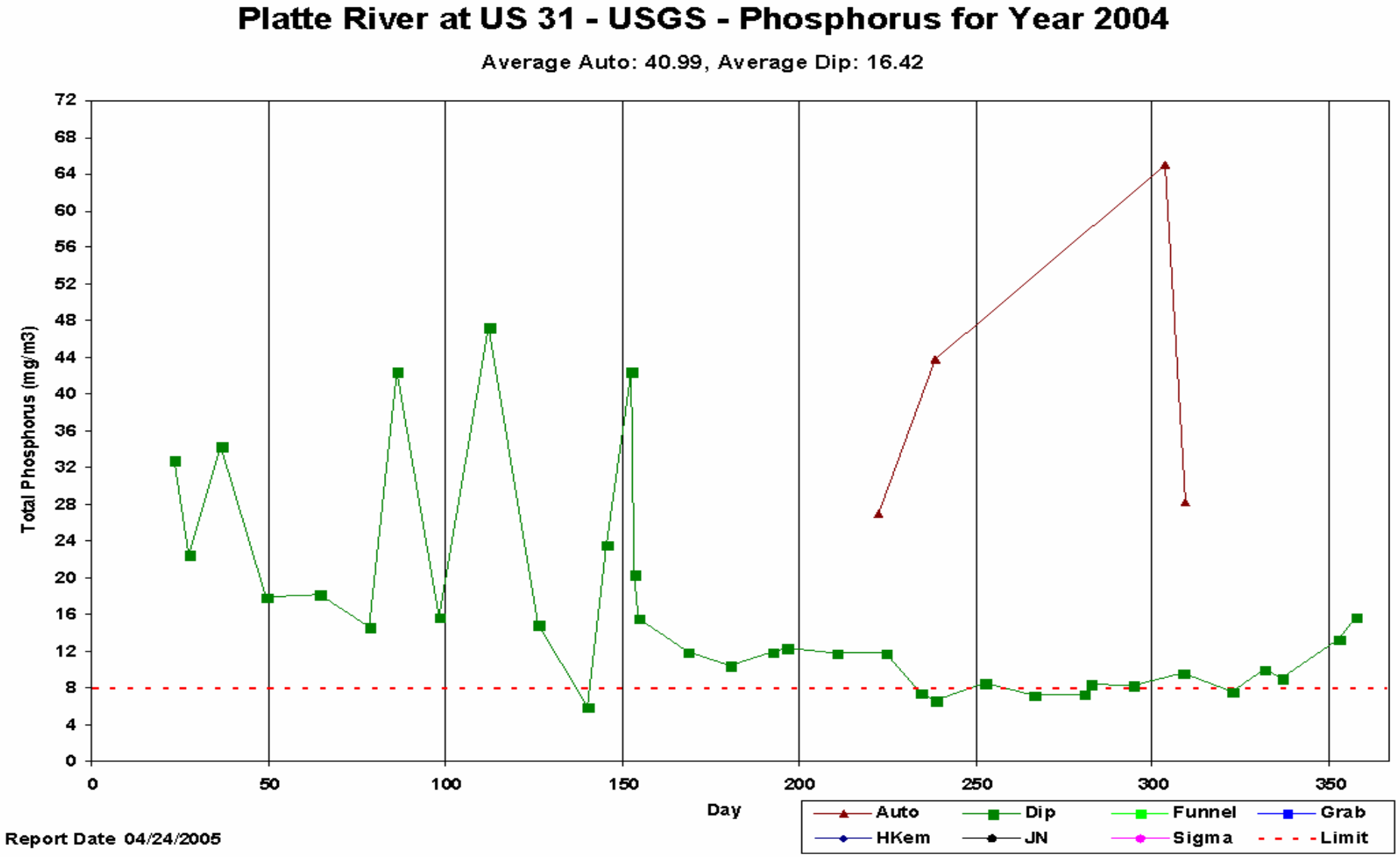


Figure 38. Measured Phosphorus Concentrations of Platte River at US 31.

Site	Ave Dip TP mg/m3	Number	Ave Auto TP mg/m3	Number
Platte River at Fewins Road	9.9	5		
Platte River at Stone Bridge	11.5	9	24.2	11
Brundage Creek at Old Residence	15.5	9	34.7	7
Stanley Creek at Carmean Road	11.7	8		
Platte River at Vets Park	13.9	10		
Carter Creek near mouth	18.4	8		
Platte River Pioneer Road	24.8	9		
Collison Creek near mouth	49.5	10		
Platte River at USGS	16.4	34	41	4
North Branch at Deadstream Road	14.5	34		
Featherstone Creek	10.5	7		
Lake Outlet at M-22	7.7	33		

Figure 39. Summary of Regular (Dip) and Storm (Auto) Phosphorus Concentrations.

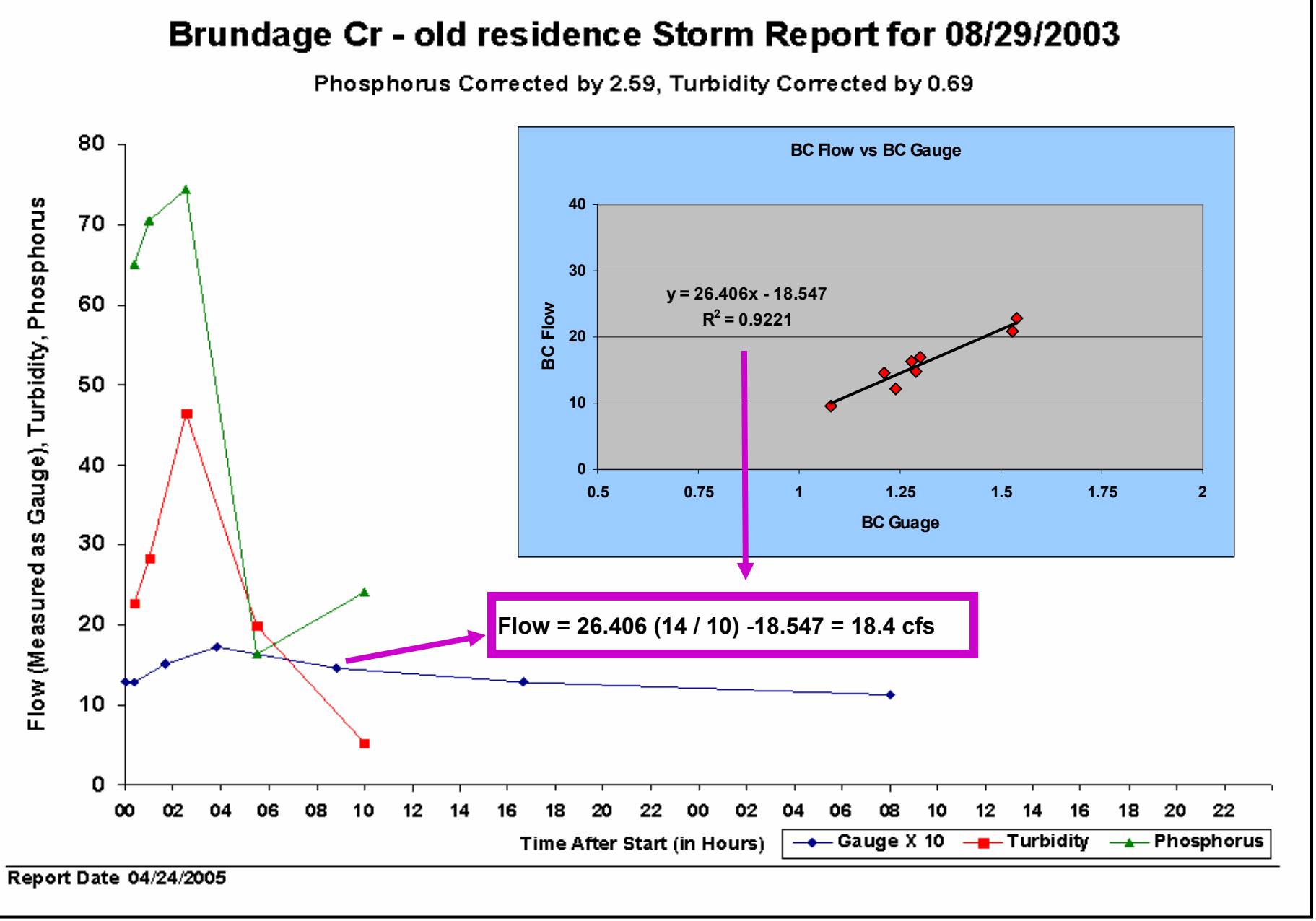


Figure 40. Storm Event Data for Brundage Creek.

Year	Lake Ave TP mg/m3	B Spring TP mg/m3	B Creek TP mg/m3	PR Intake TP mg/m3	Upper TP mg/m3	Lower TP mg/m3	US 31 TP mg/m3	Ave Secchi Feet	US 31 Flow cfs
1990	9.1		14.5		33.2	33.2	23.8	11.7	137
1991	7.8		15.7		37.6	37.5	16.9	12.3	138
1992	8.4		11.9		30.6	30.9	12.75	10	141
1993	7.7		11.9		21.8	23.5	13.3	12.3	146
1994	7.8		11.2		18	18.6	14.2	11.7	138
1995	8.2		9		15.3	15.1		10.1	120
1996	7.7		10.2		15.1	15.4	13.8	11.7	125
1997	6.4		8.4		12.8	13.3	12.1	9.6	131
1998	6.2		9.1		12.2	12.6	10.9	10	111
1999	6.3	8.4	6.9	8.1	12.3	12.4	9.9	11.7	105
2000	6.6	8.5	7.4	7.9	13.5	14.1	13	10.7	101
2001	7.6	10	7.4	7.4	13.7	14.5	11.2	11	113
2002	8.3	12.3	10	9.6	15.5		12.6	14	132
2003	8.1	13.7	12.6	12.5	15.8		14.8	13.8	125
2004	7.1	13	11.1	10.5	15.9		16.4	18.8	134

Figure 41. Summary of Long-Term Data.

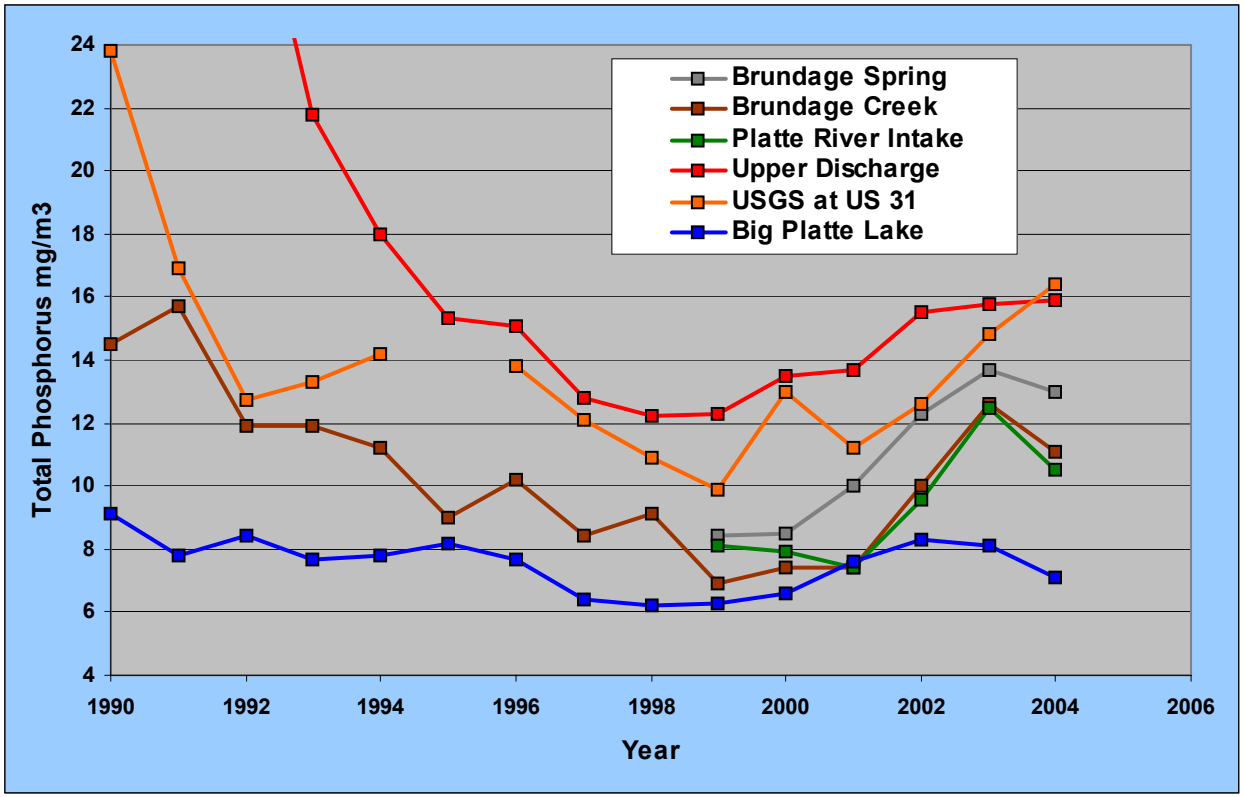


Figure 42. Long-Term Hatchery, Tributary, and Lake Phosphorus Concentrations.

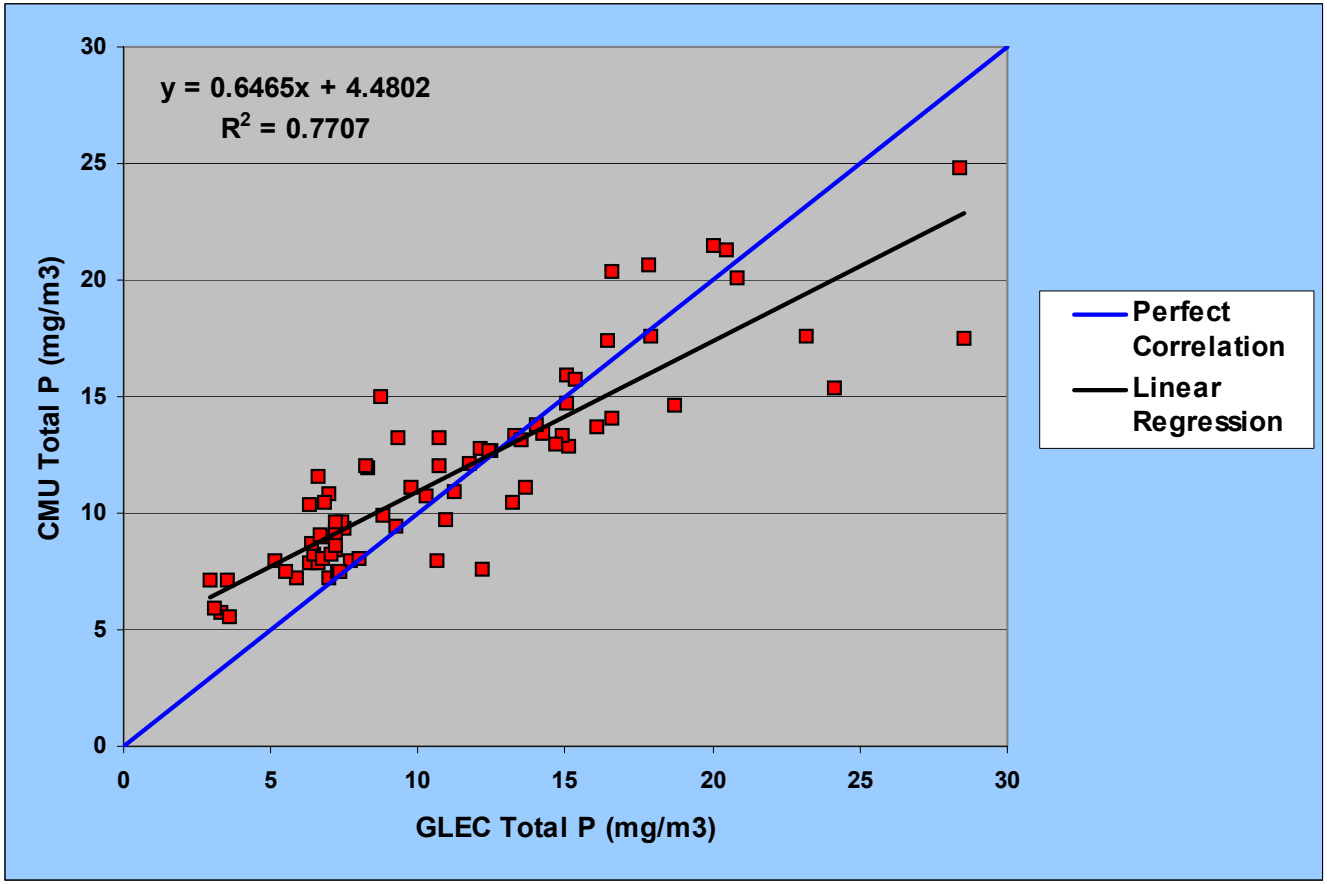


Figure 43. Relationship between CMU and GLEC Phosphorus Measurements.

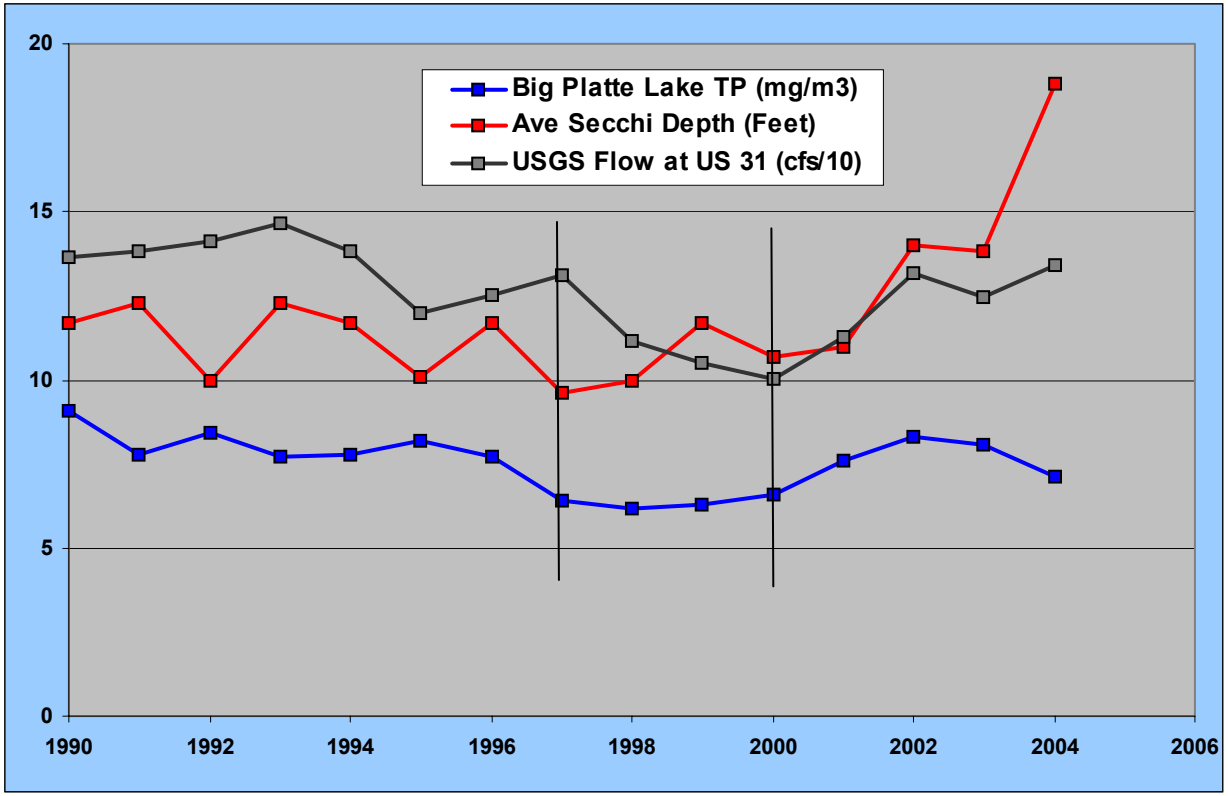


Figure 44. Long-Term Trend of Lake Data and Platte River Flow.

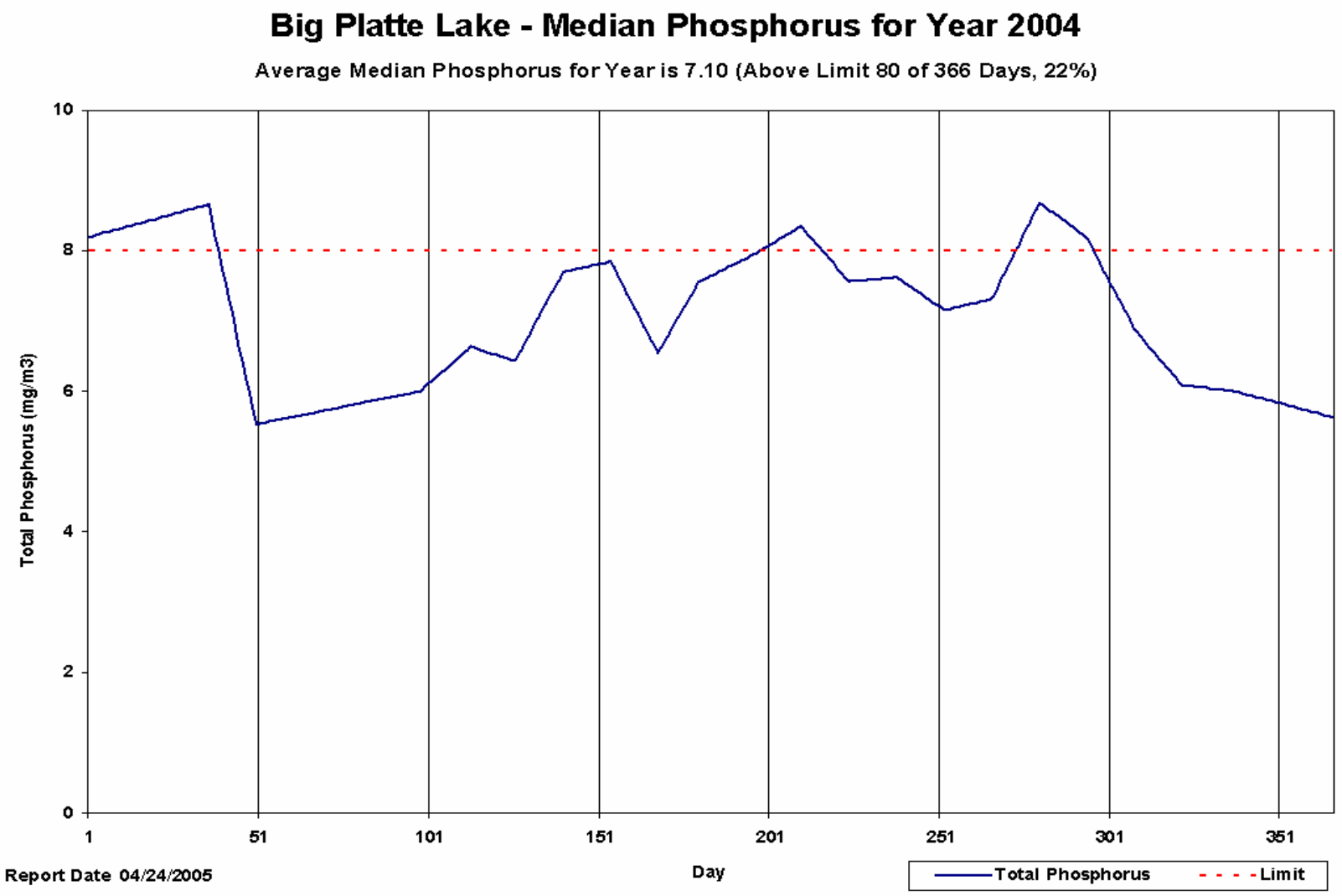


Figure 45. Median Total Phosphorus Concentration of Big Platte Lake for 2004.

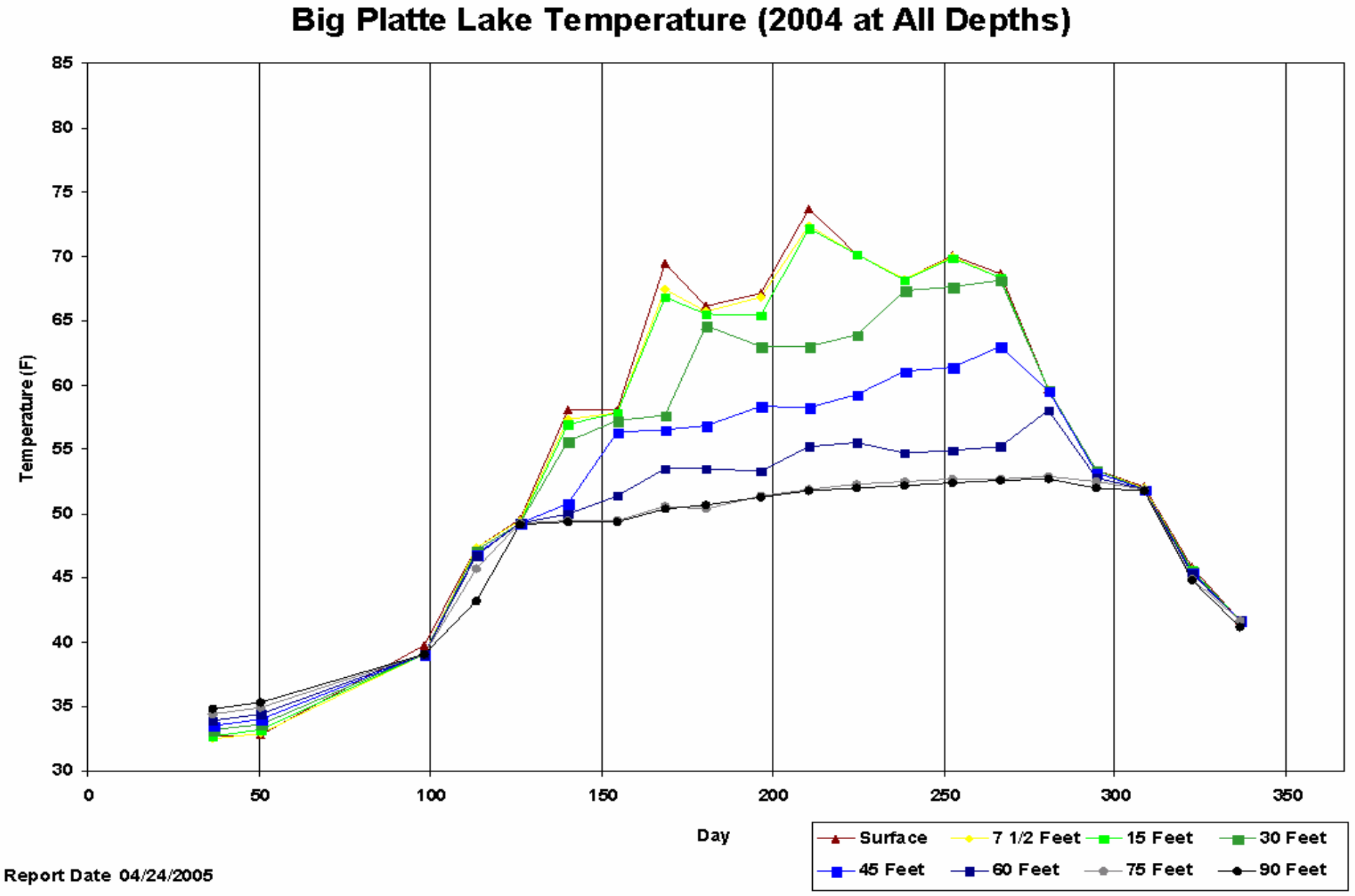


Figure 46. Temperature Data for Various Depths in Big Platte Lake.

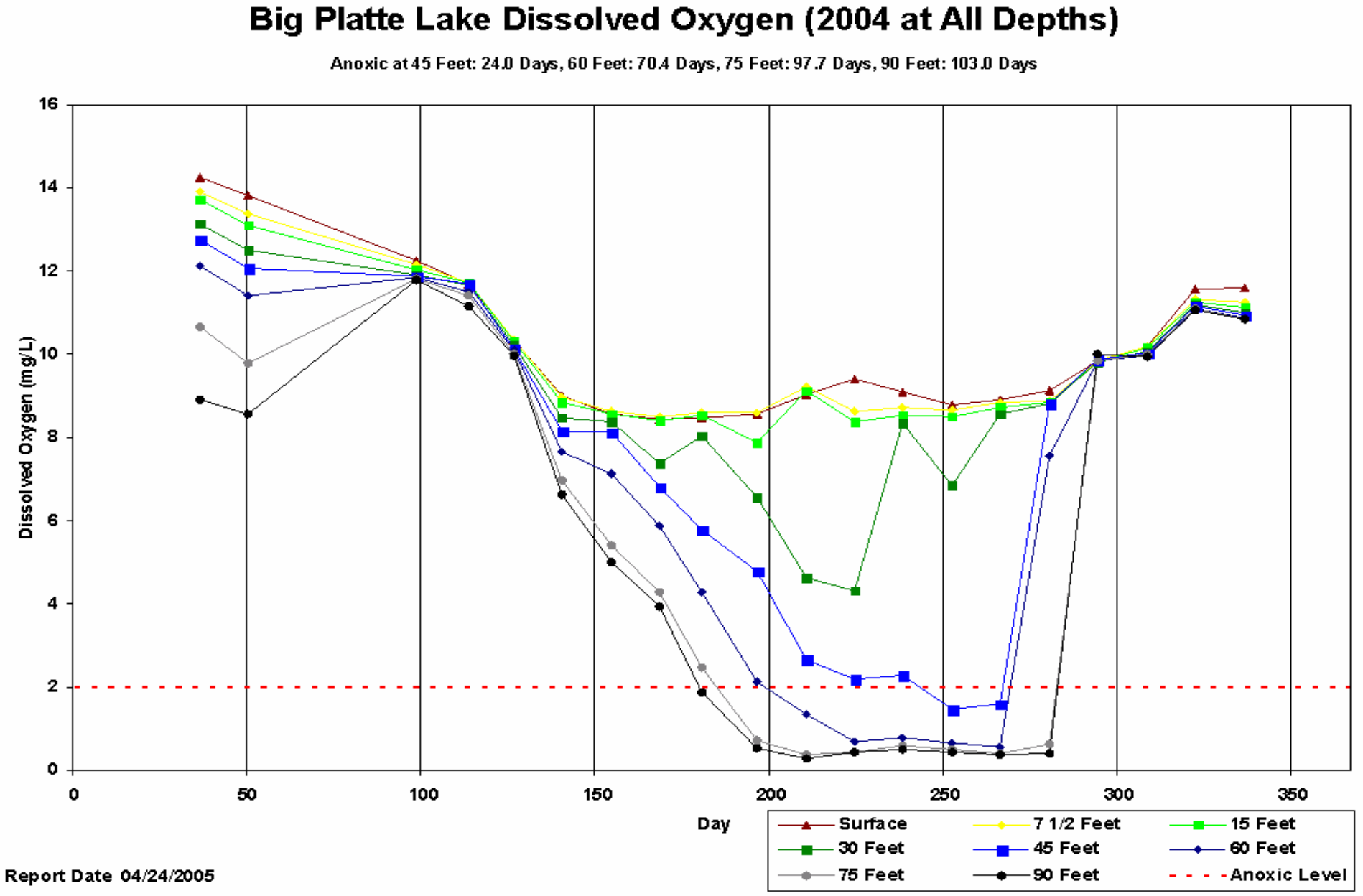


Figure 47. Dissolved Oxygen Data for Various Depths in Big Platte Lake.

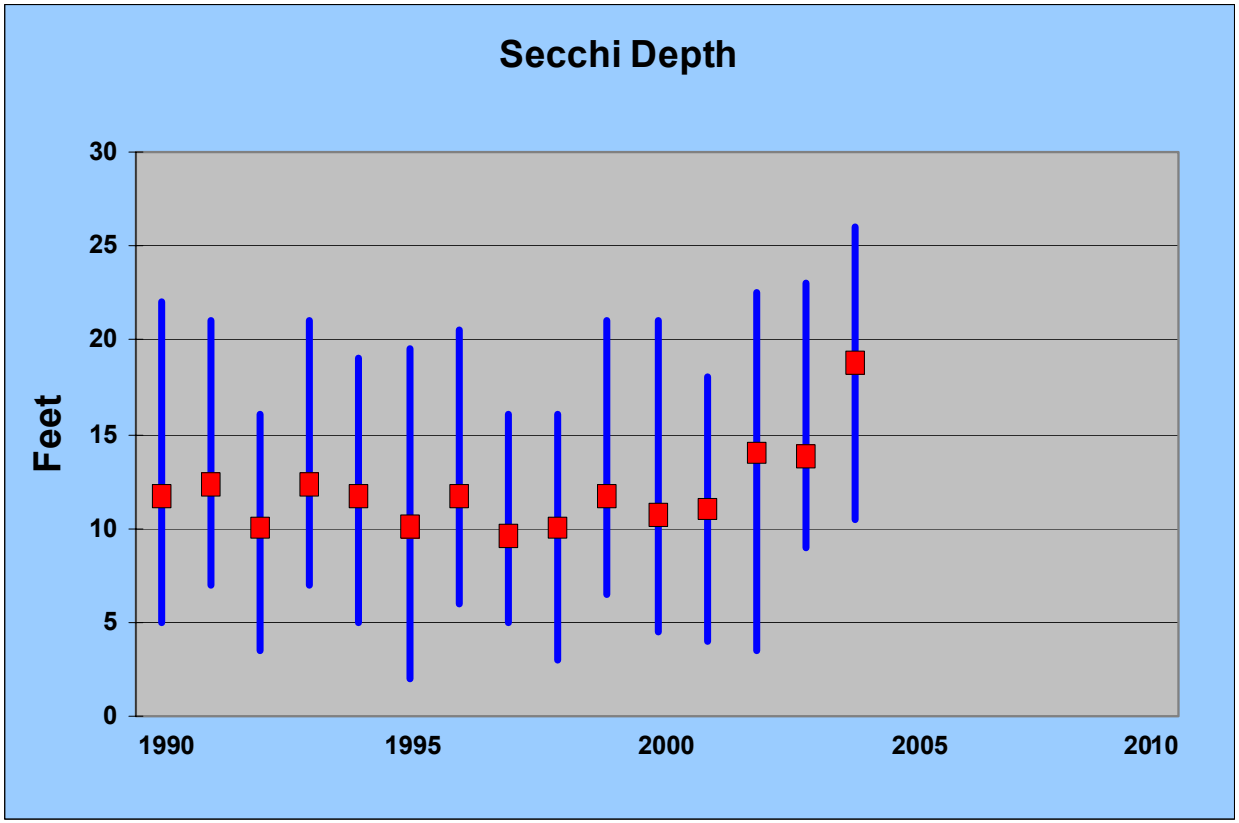


Figure 48. Average and Range of Secchi Depth Data for Big Platte Lake.

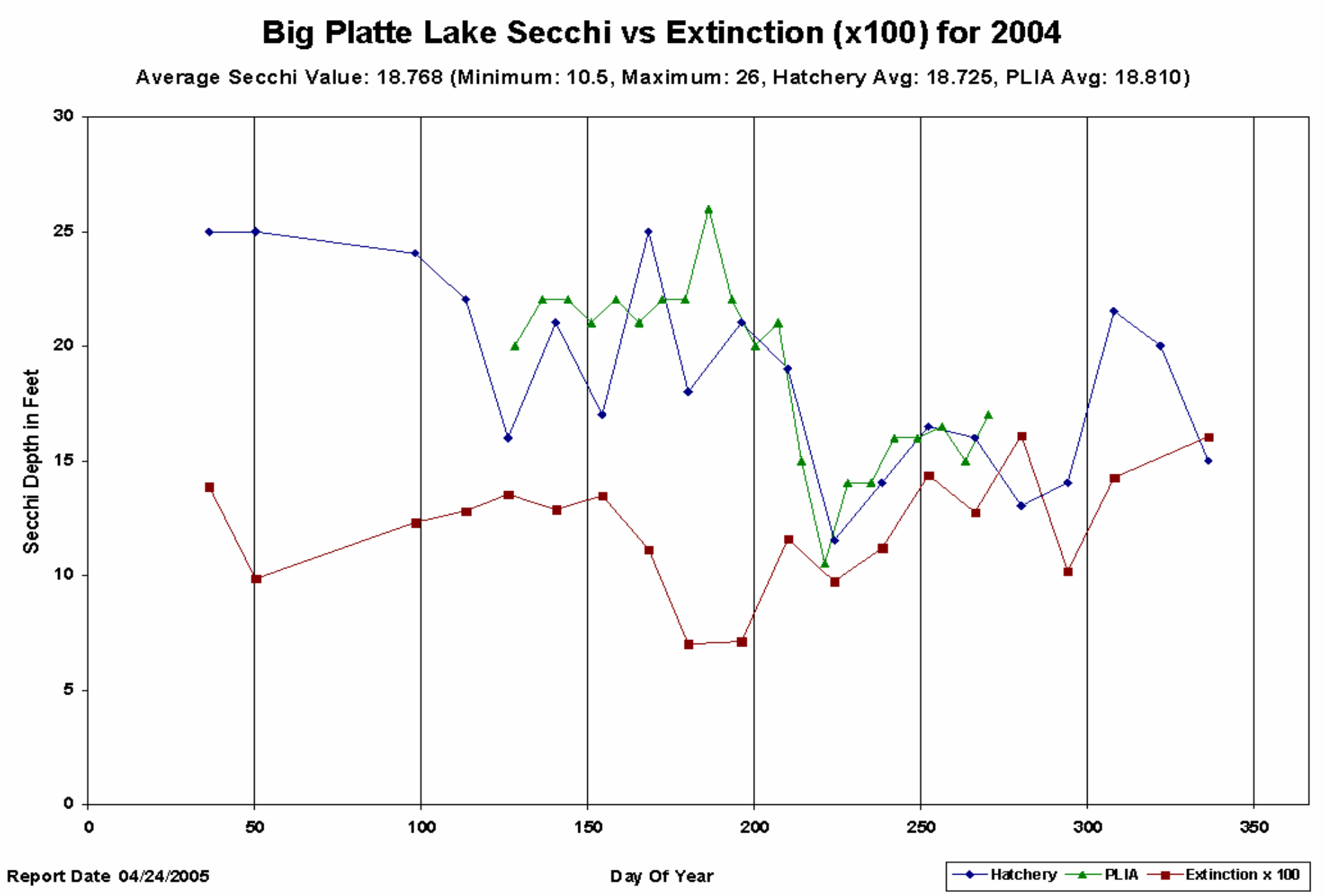


Figure 49. Secchi Depth and Extinction Coefficient Data for Big Platte Lake.

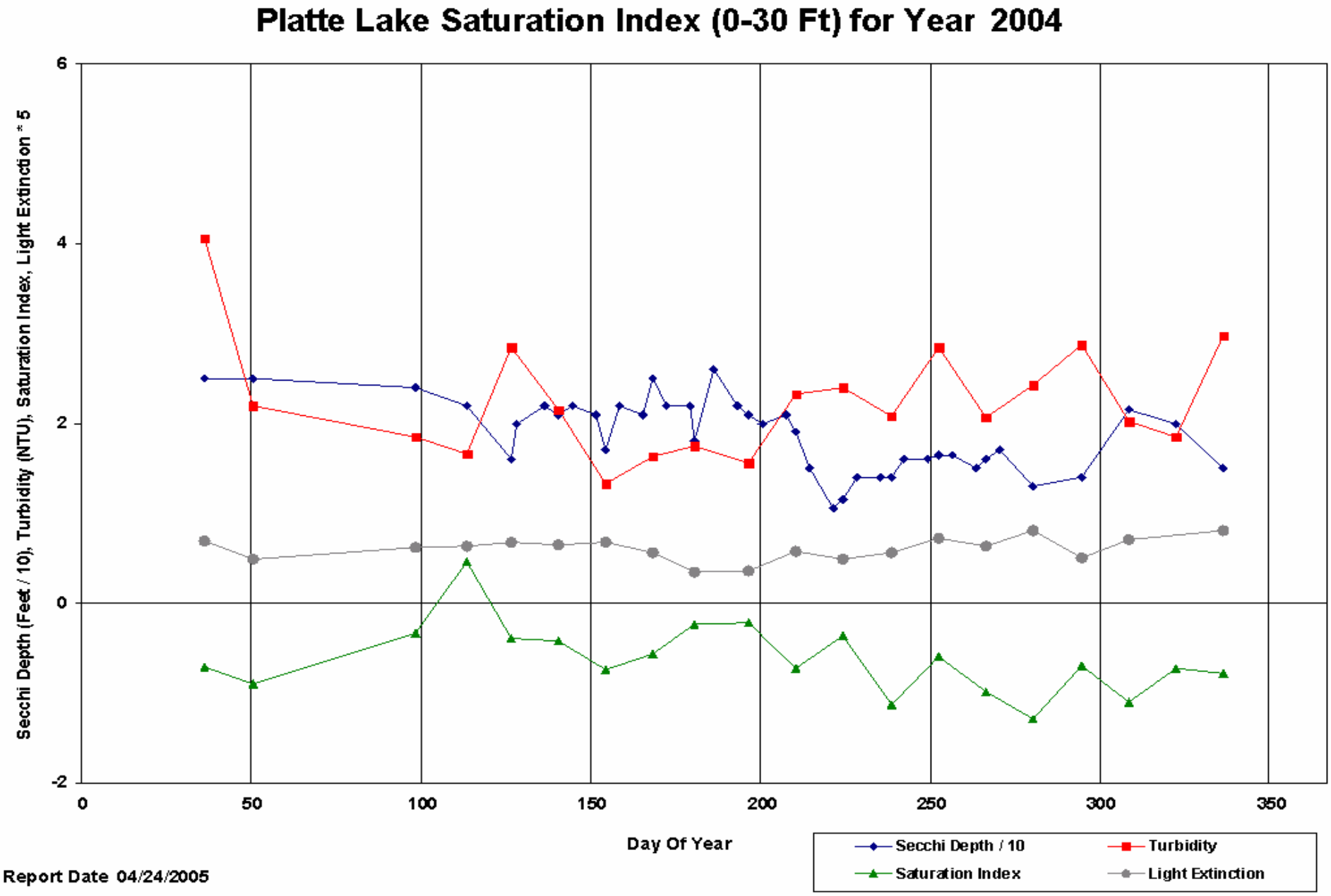


Figure 50. Secchi Depth, Turbidity, Extinction Coefficient, and Saturation Index for Big Platte Lake.

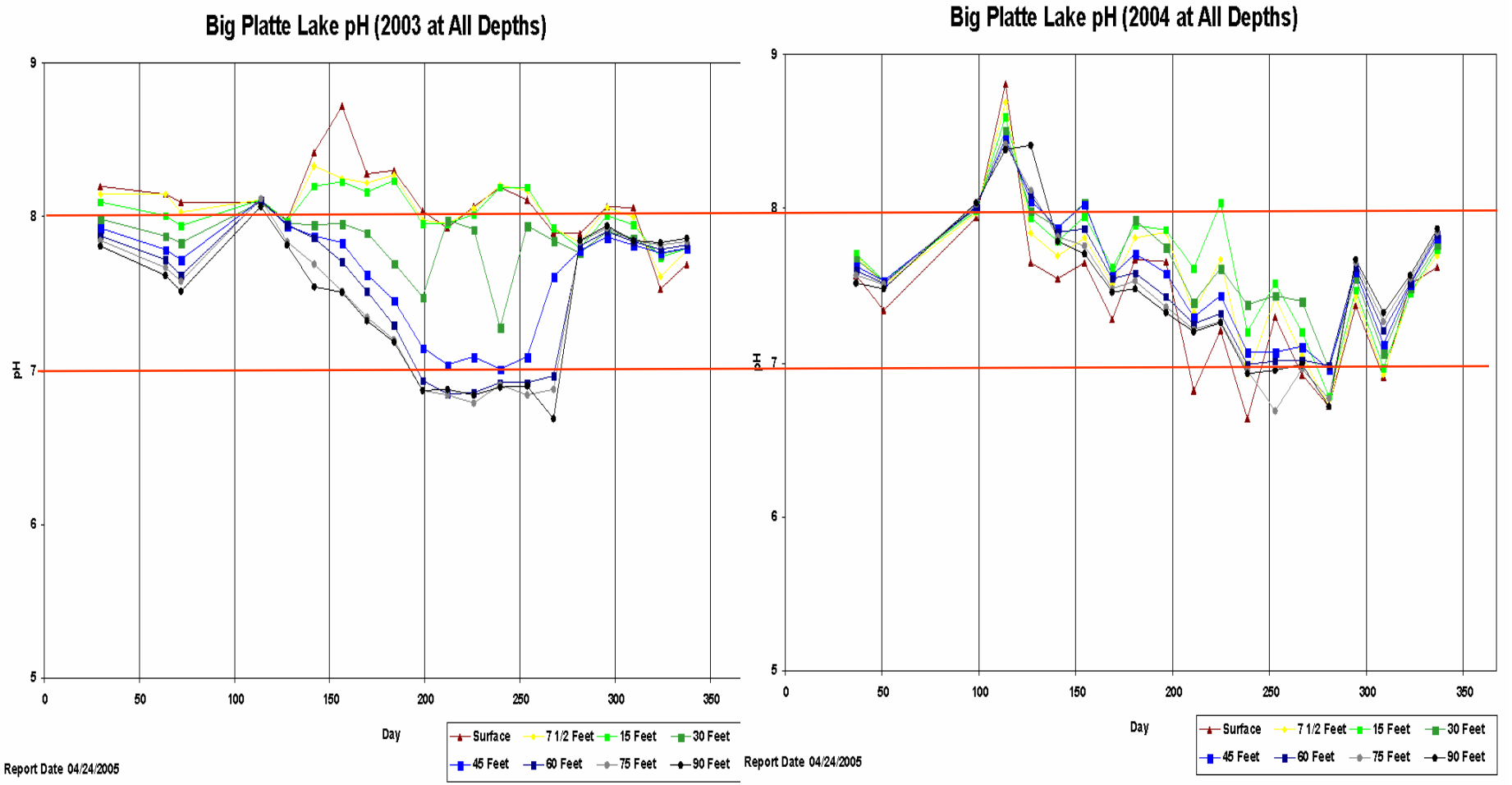


Figure 51. 2003 and 2004 pH Data at Various Depths in Big Platte Lake.

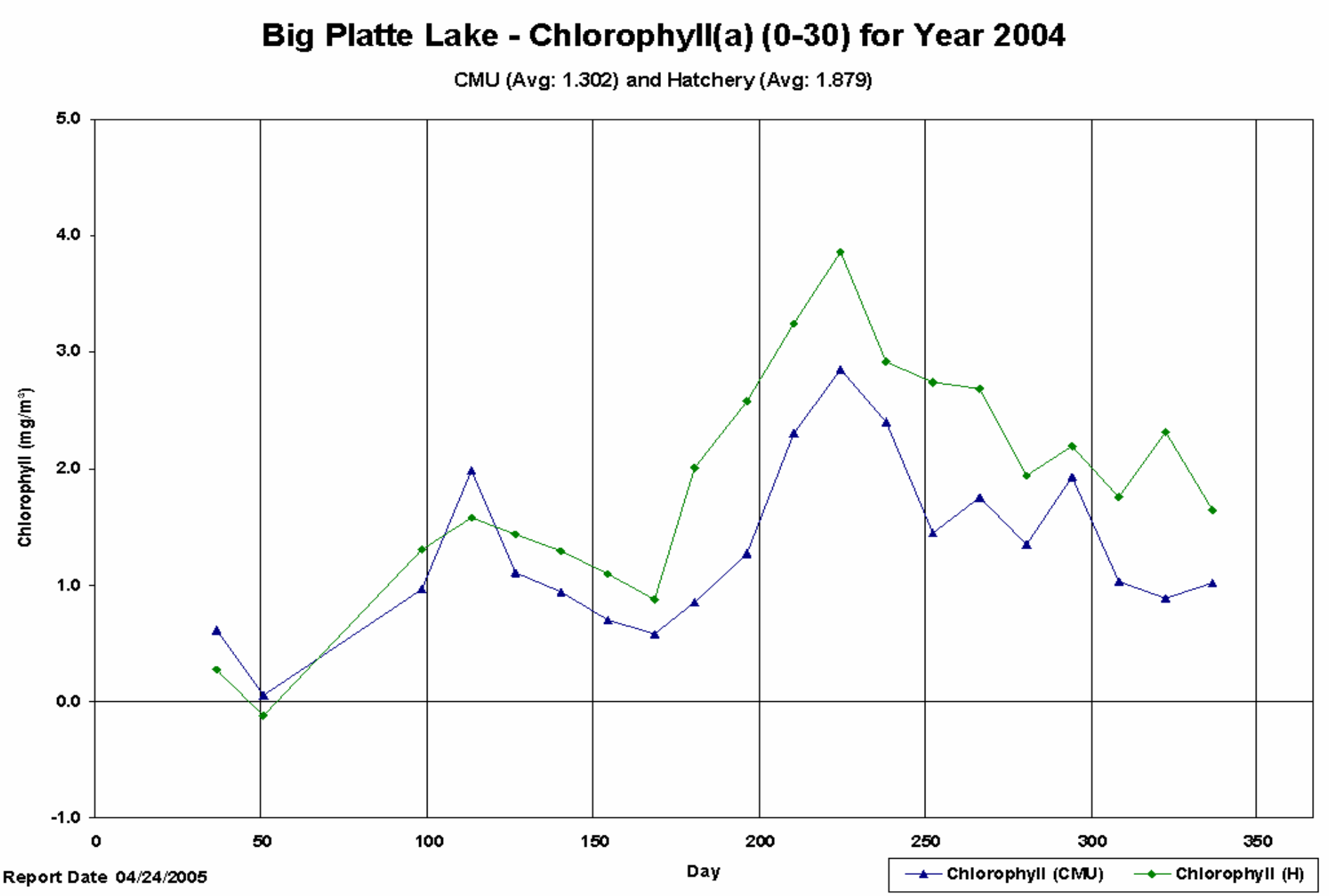


Figure 52. Surface Water Chlorophyll in Big Platte Lake.

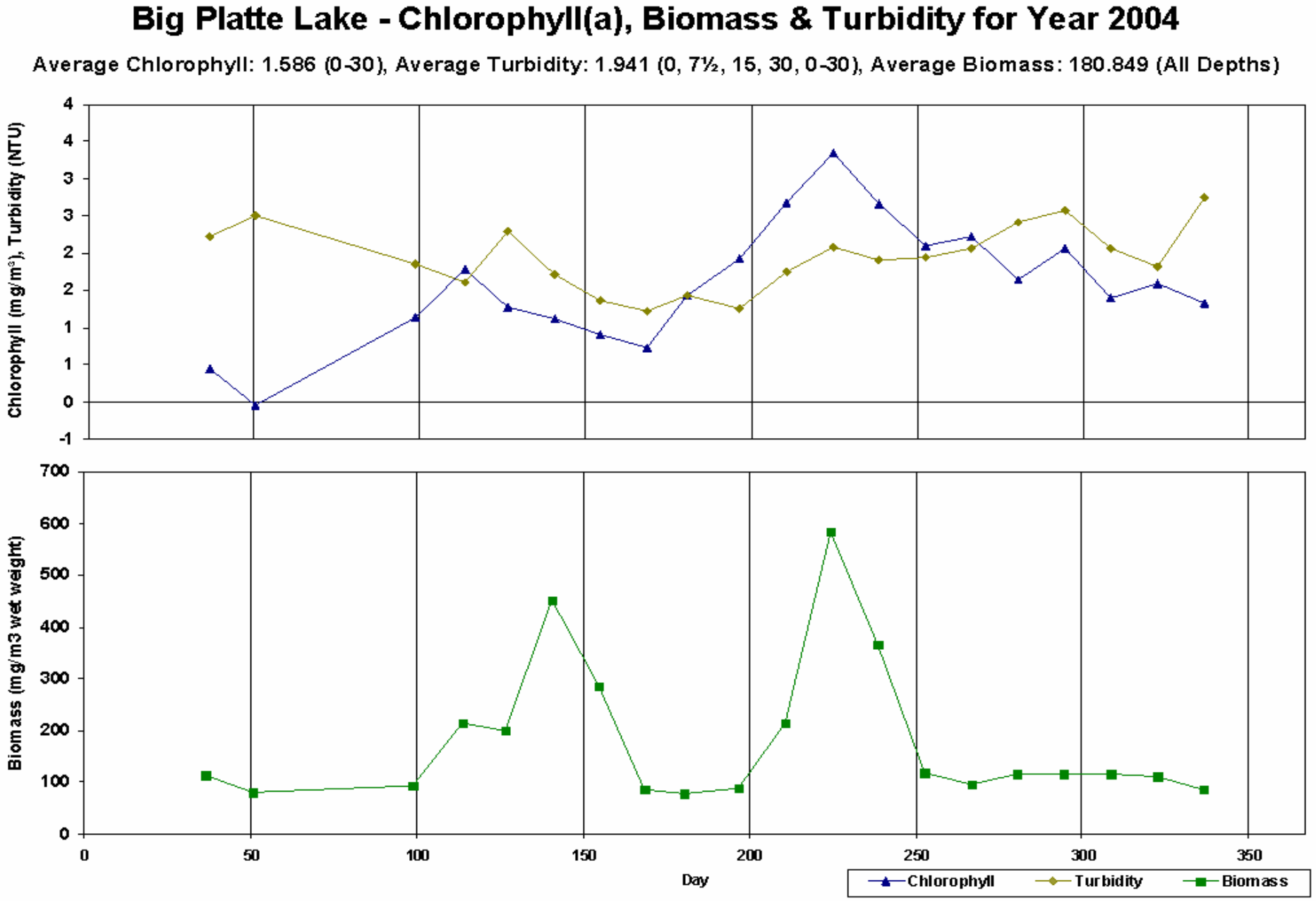
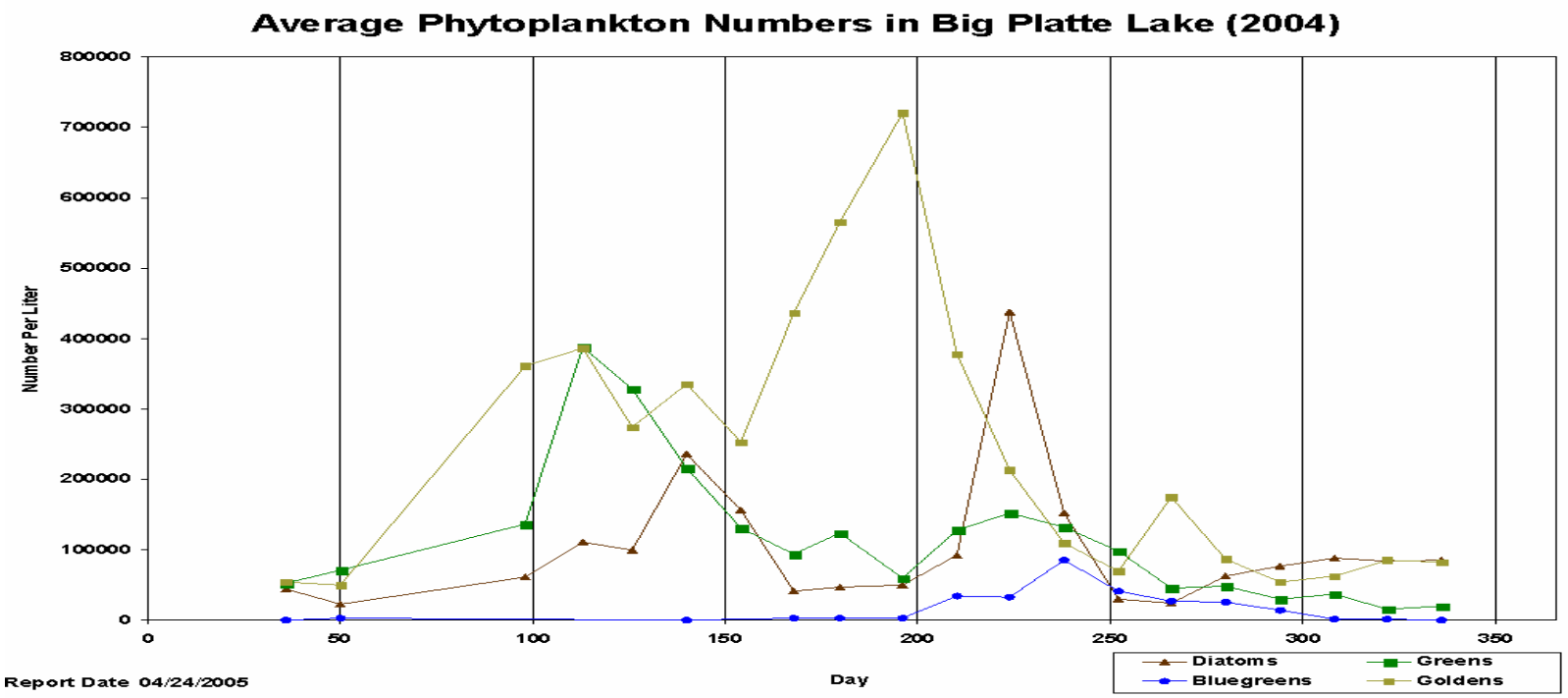


Figure 53. Chlorophyll, Turbidity, and Algal Biomass in Big Platte Lake.



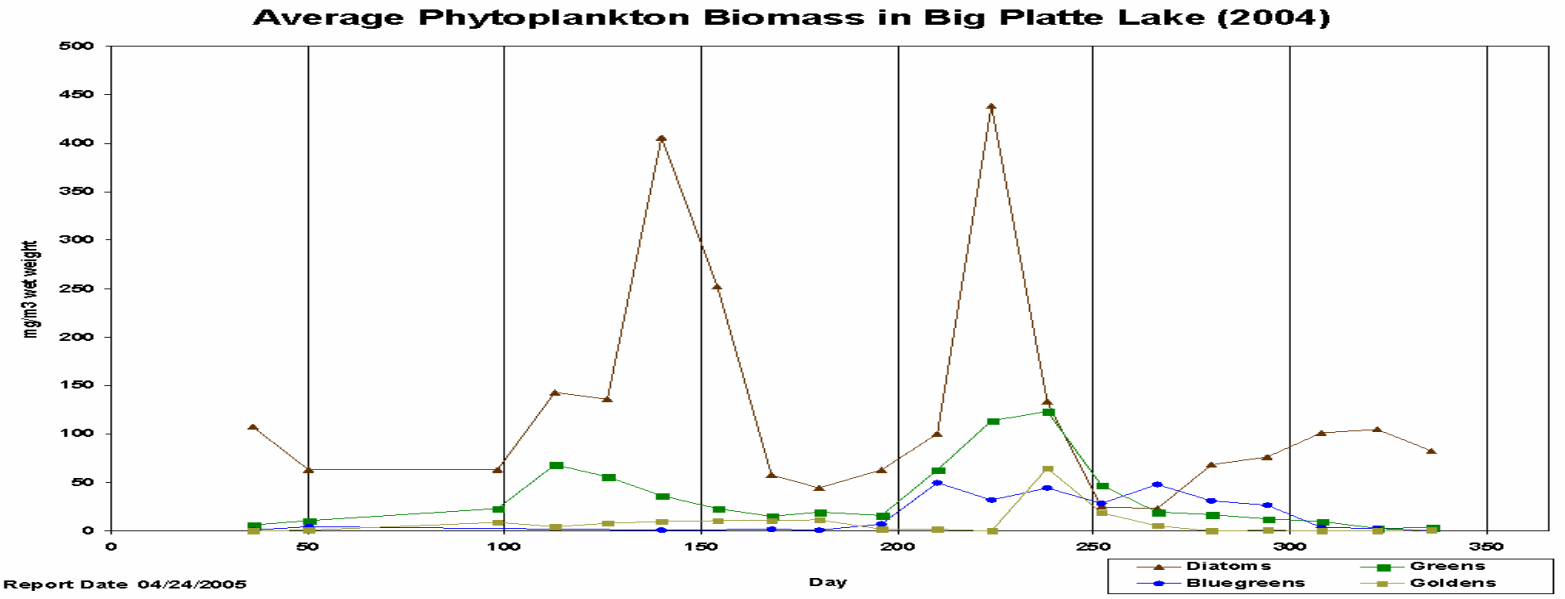
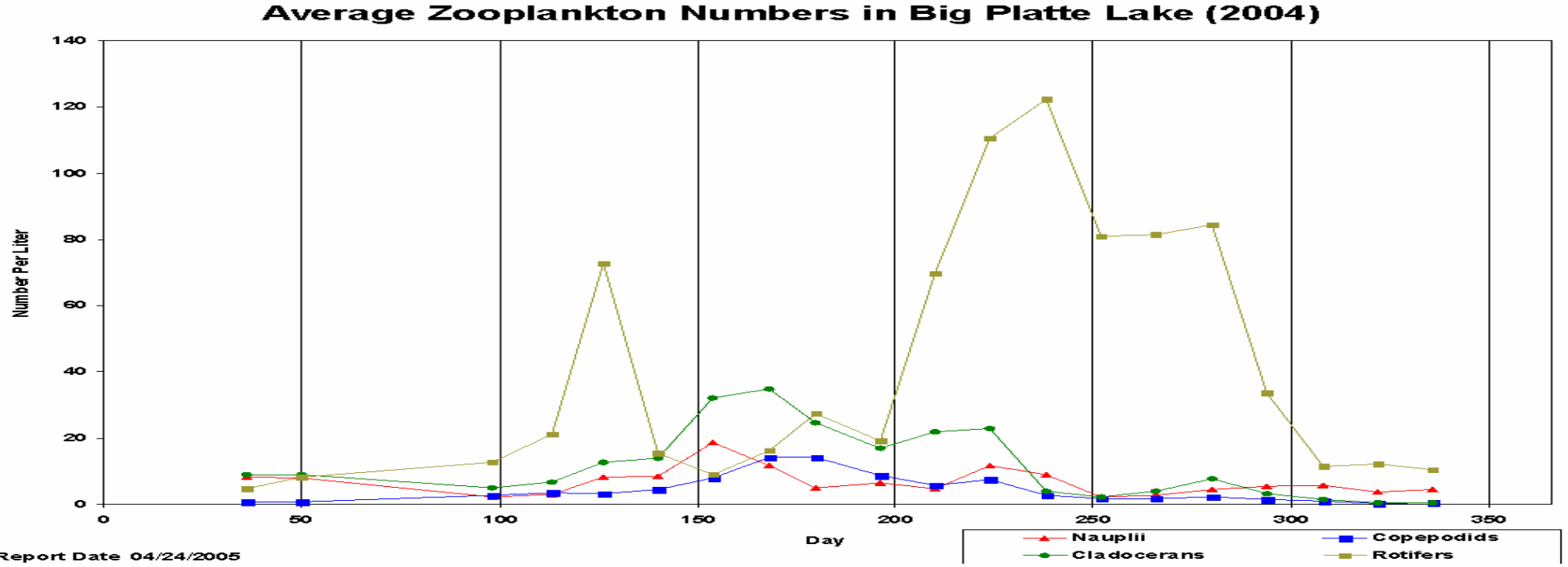


Figure 54. Phytoplankton Numbers and Biomass in Big Platte Lake.



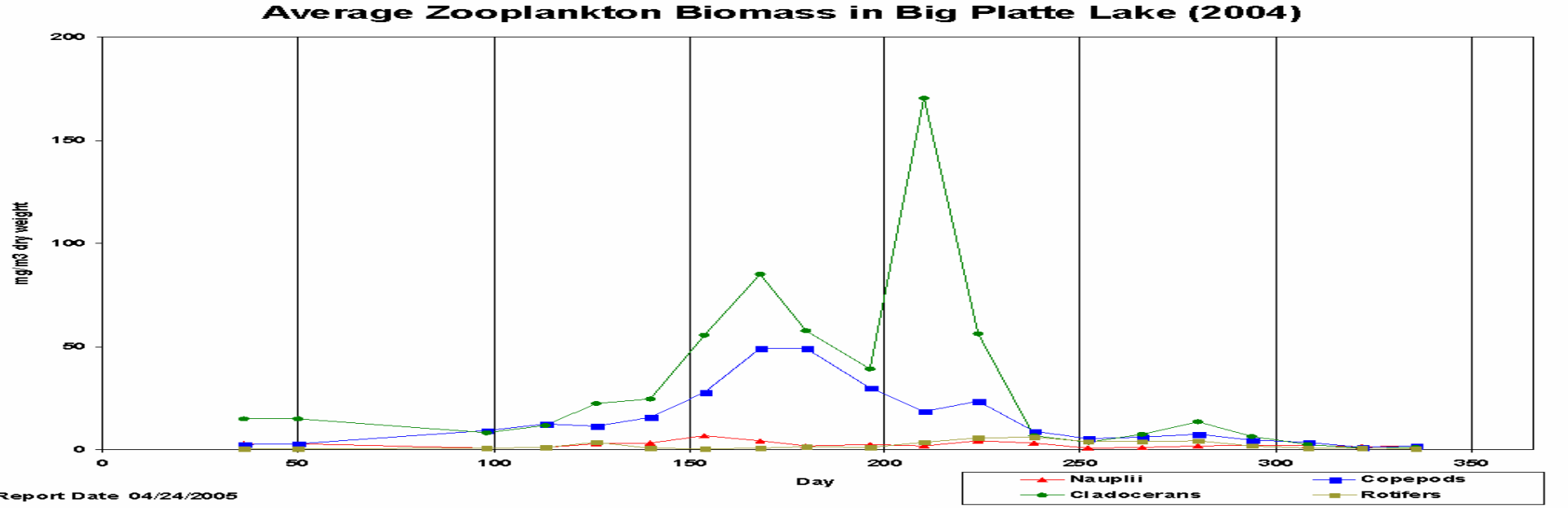


Figure 55. Zooplankton Number and Biomass in Big Platte Lake.

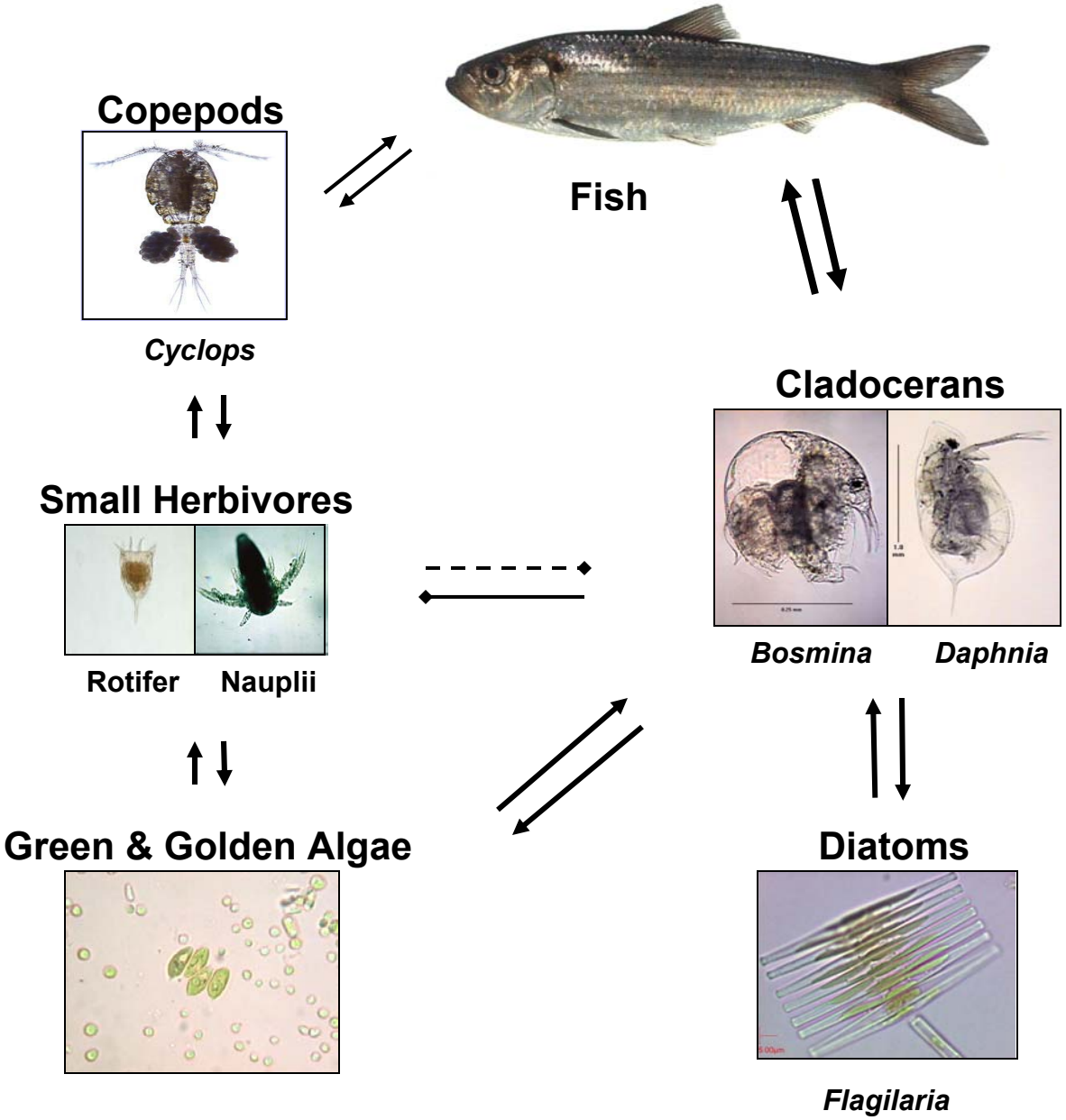


Figure 56. Food Web for Big Platte Lake.

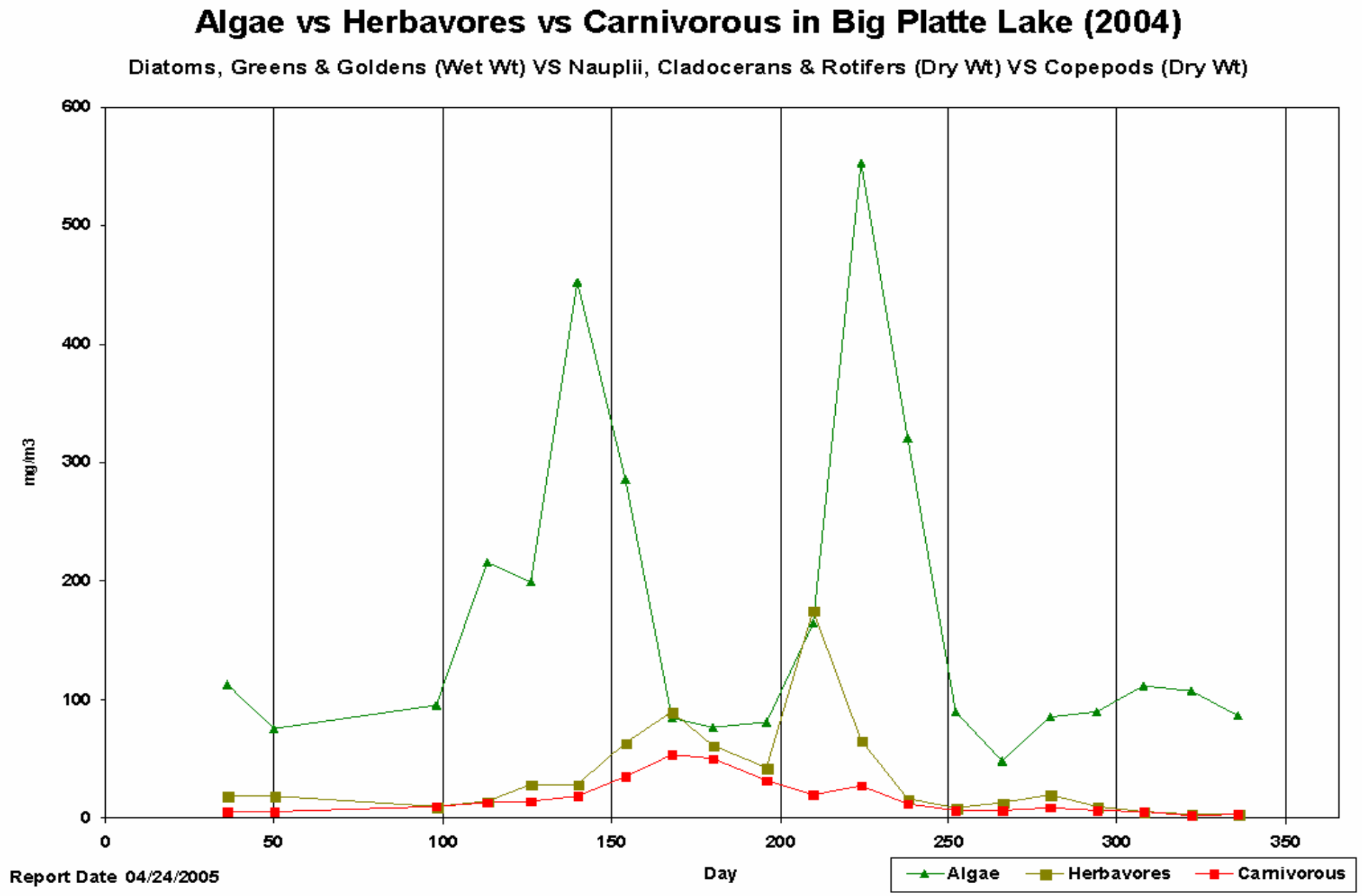


Figure 57. Phytoplankton, Herbivores, and Carnivores in Big Platte Lake.

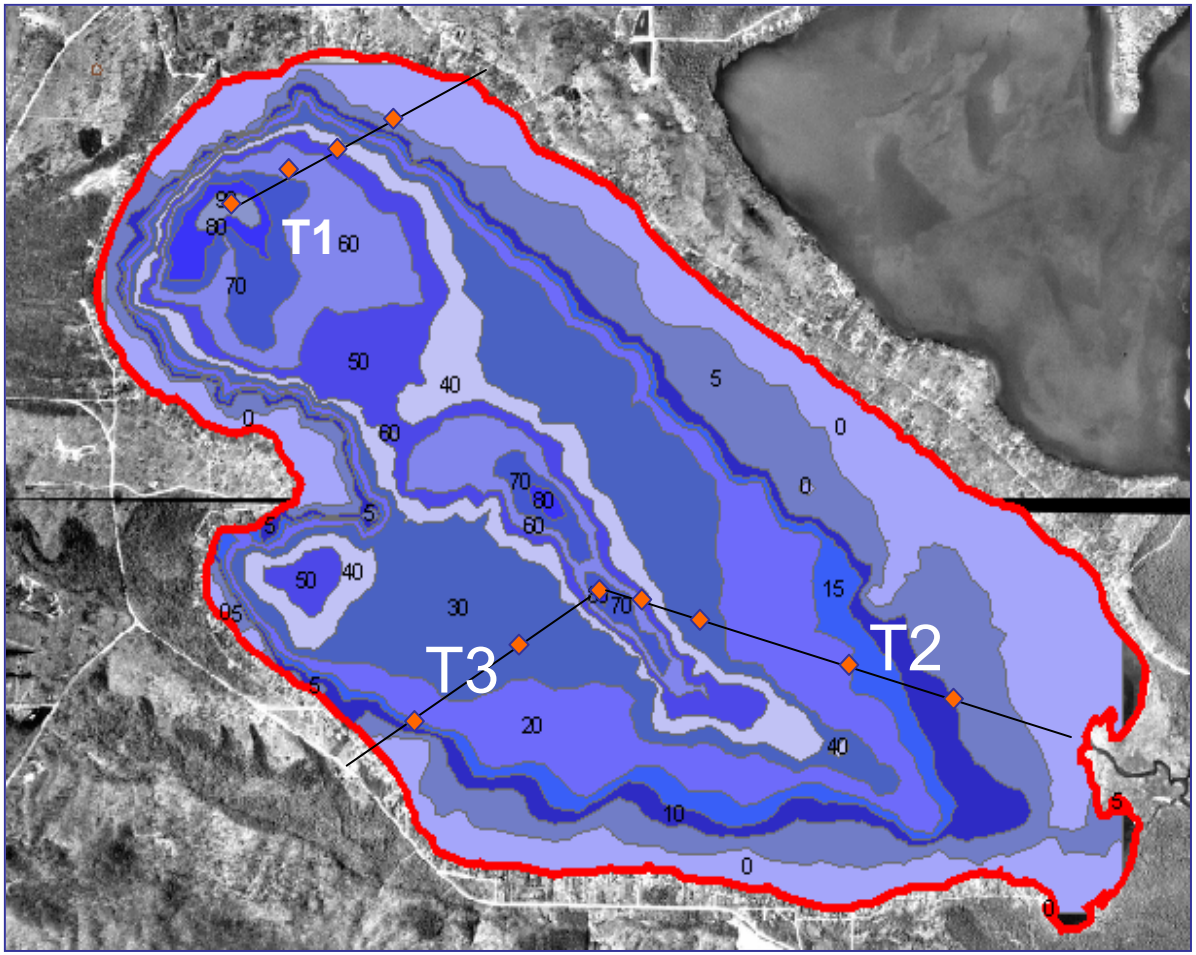


Figure 58. Sediment Sampling Sites.

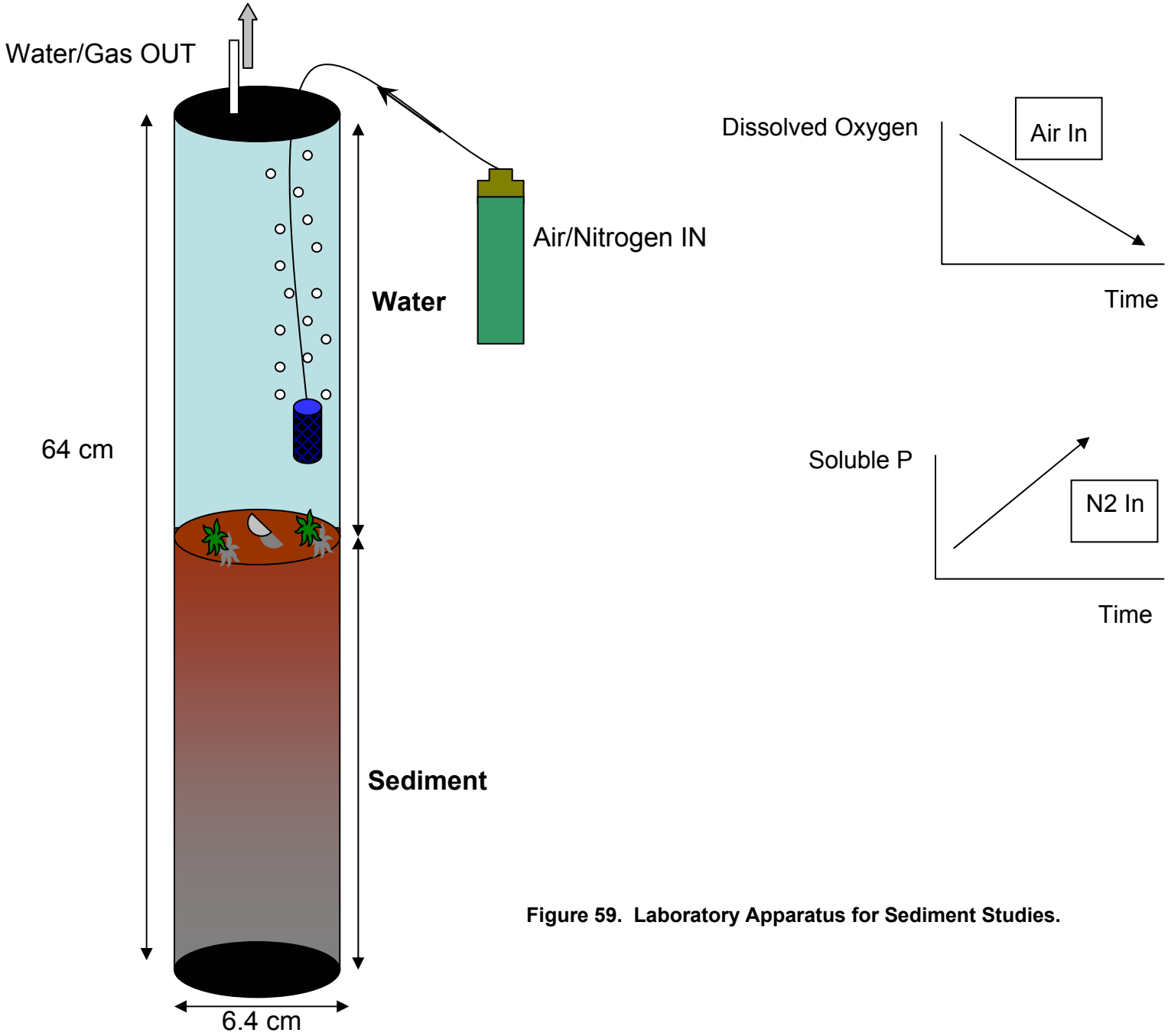


Figure 59. Laboratory Apparatus for Sediment Studies.

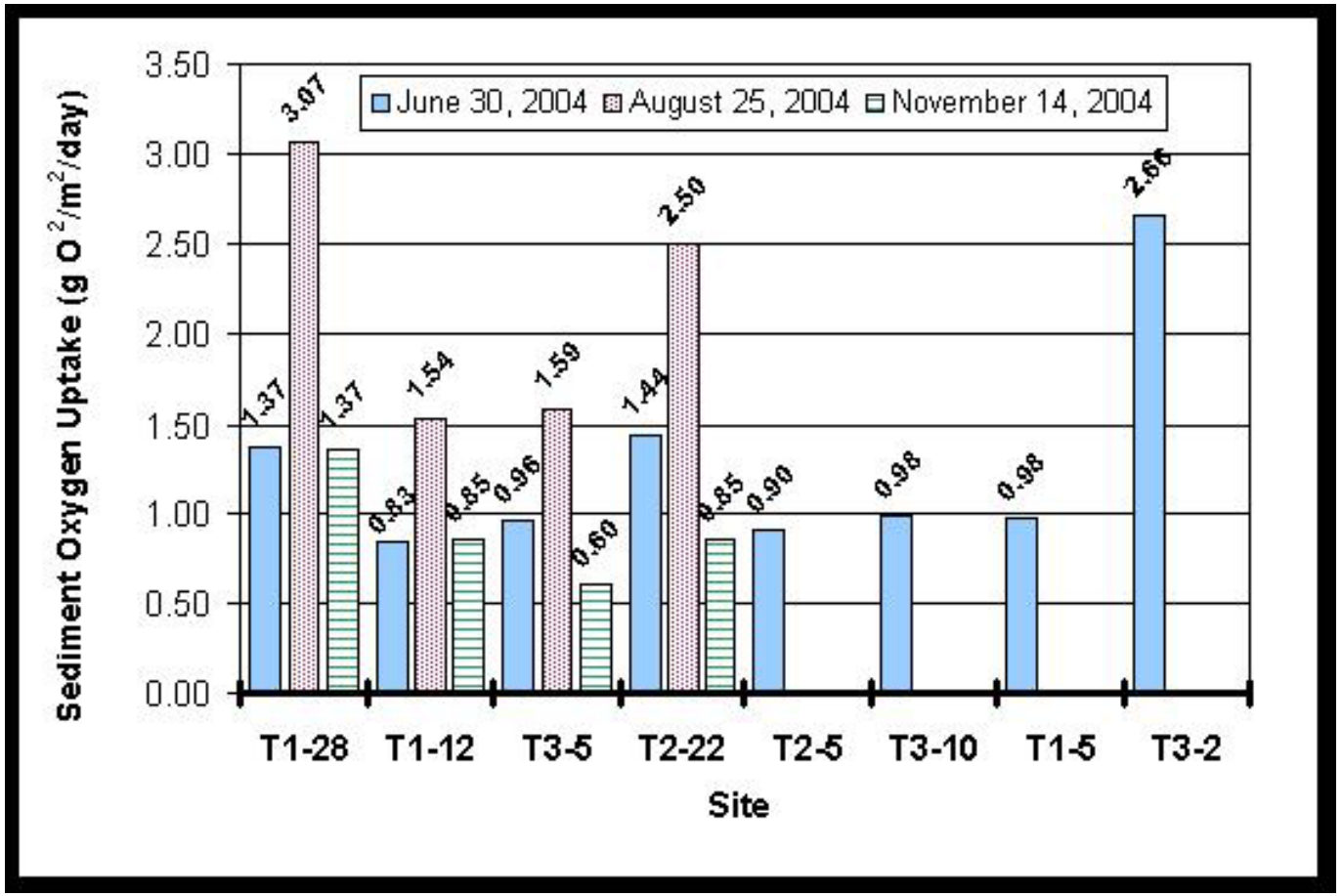
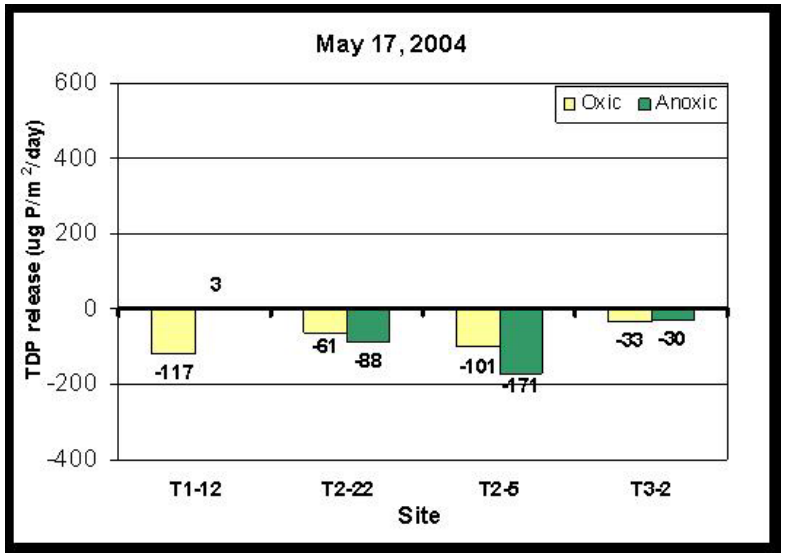
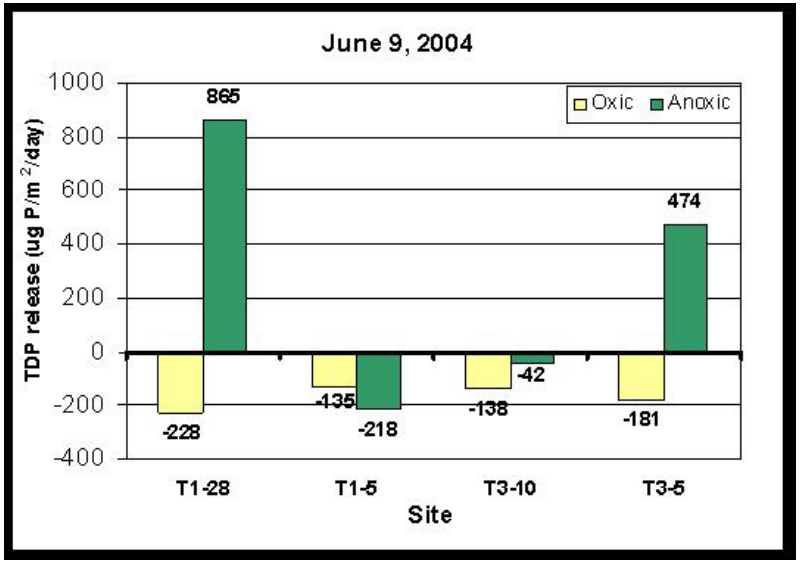
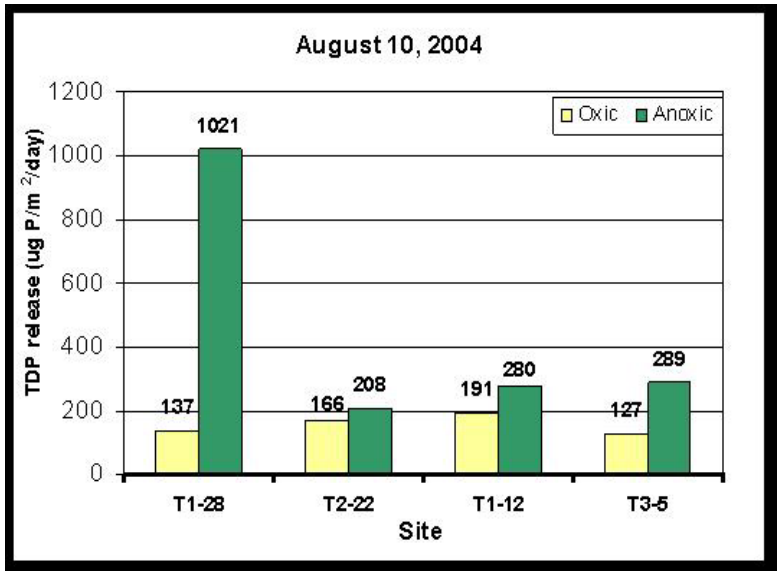


Figure 60. Sediment Oxygen Demand Data for Big Platte Lake.







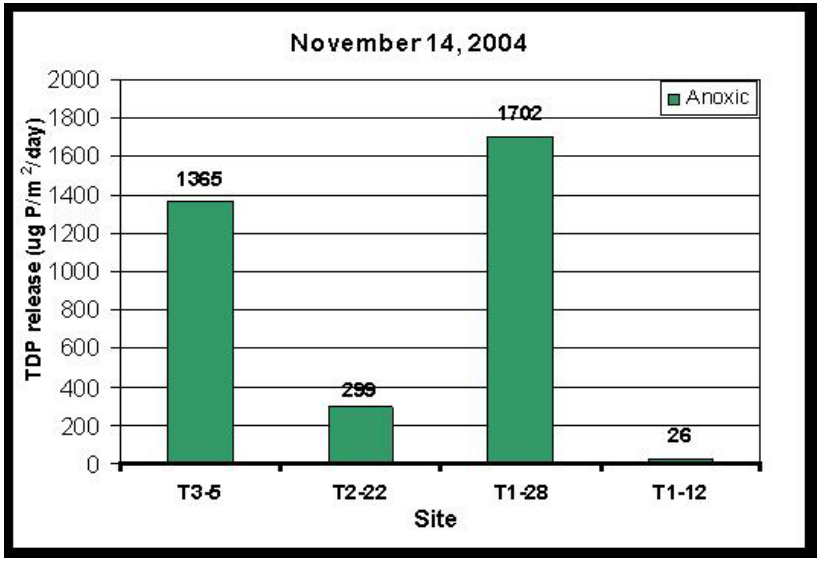


Figure 61. Phosphorus Release Rate Data for Big Platte Lake.

Figure 62. Sampling Sites for Zebra Mussel Study.

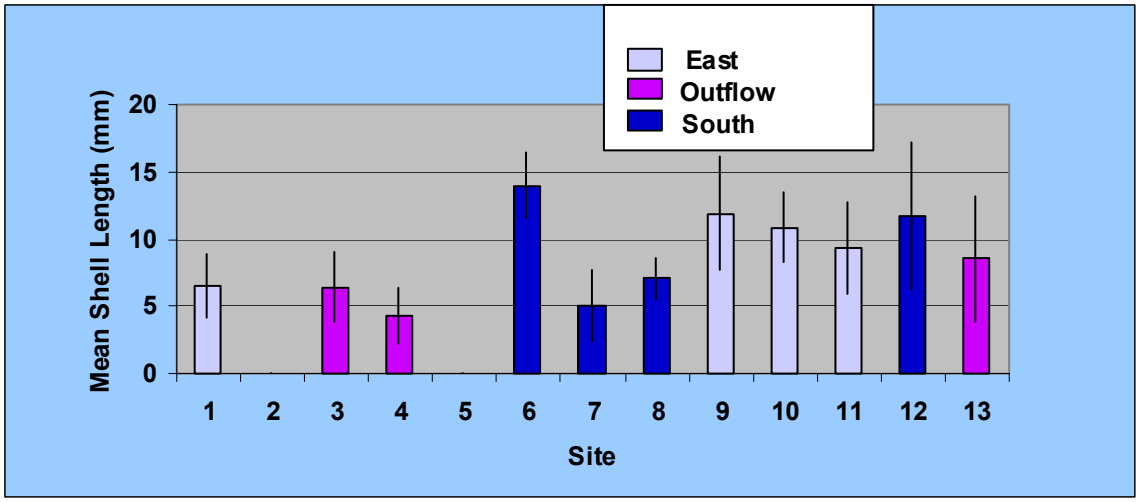


Figure 63. Zebra Mussel Shell Length at Various Sites.

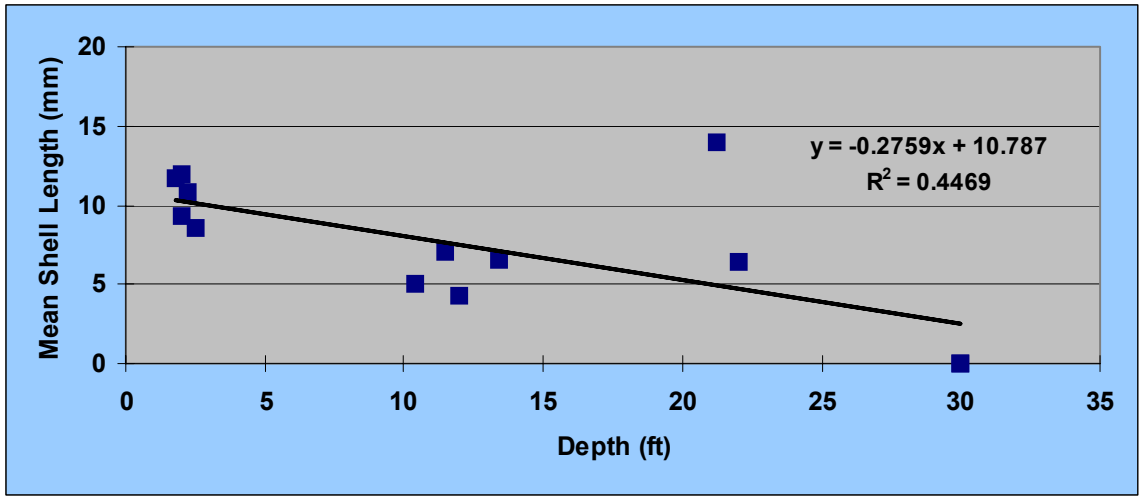


Figure 64. Relationship between Zebra Mussel Shell Length and Depth.

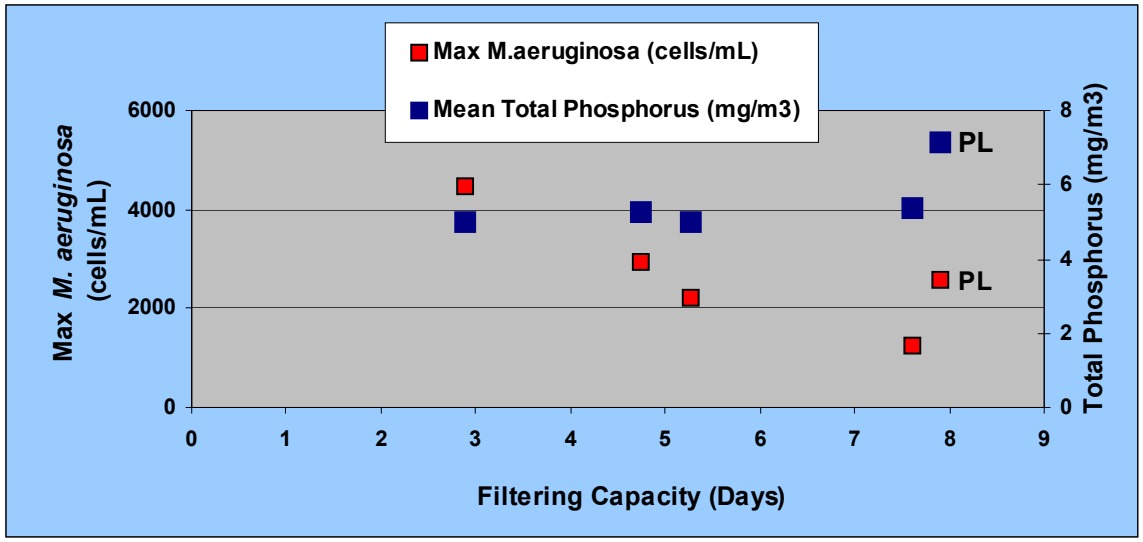


Figure 65. Filtering Capacity, Total Phosphorus, and *Microcystis* in Big Platte Lake.

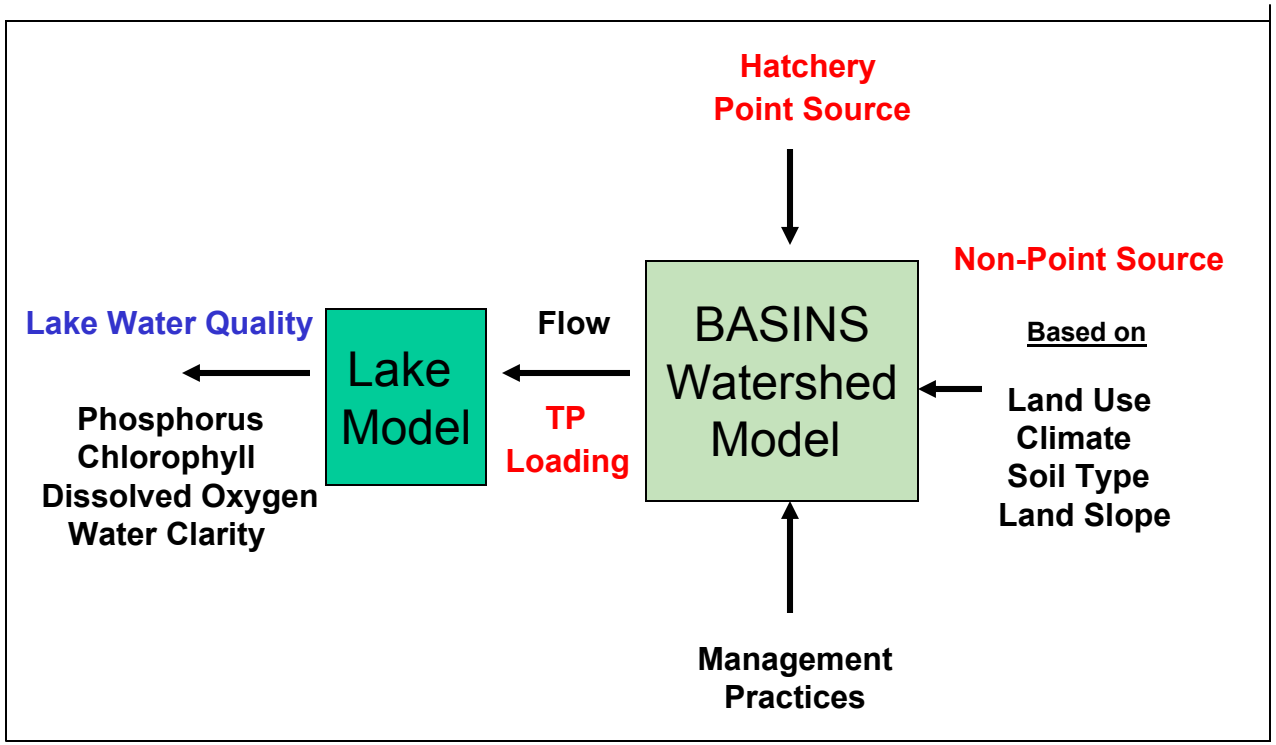


Figure 66. Components of BASINS and Lake Water Quality Model.

	Measured K&E 80 - 81 cfs	Calibration BASINS 1997 cfs	Measured 1997 cfs	Measured 2004 cfs	Best Estimate 2004 cfs
Fewins Road	**59.2**	**76.4**		**60.2**	**82.9**
NonPoint F to BC		**0.8**			**0.8**
BC to PR		**6.9**			**8.1**
PR to H		**1.7**		**1.3**	**1.3**
BS to H		**12.0**		**2.5**	**2.5**
BC to H		**1.7**		**11.4**	**11.4**
Net Hatchery				**0.0**	**0.0**
Total Hatchery		**15.2**		**15.2**	**15.2**
NonPoint BC to C		**10.6**			**11.5**
Carter	**7.3**	**10.2**		**8.2**	**8.2**
NonPoint C to C		**3.1**			**3.4**
Collison	**0.6**	**6.7**		**3.4**	**3.4**
NonPoint C to USGS		**2.3**			**2.5**
USGS	**118.3**	**130.5**	**131.0**	**134.3**	**134.7**
NonPoint USGS to Lake		**3.0**			**3.3**
NB	**25.8**	**32.6**		**25.9**	**25.9**
Direct Runoff to Lake		**9.2**			**10.0**
Rain on Lake		**11.7**	**11.7**	**12.7**	**12.7**
Evap from Lake		**18.2**			**16.5**
M22	**151.9**	**168.8**		**170.2**	**170.0**

Figure 67. Annual Average Hydrologic Balance for 2004 (cfs).

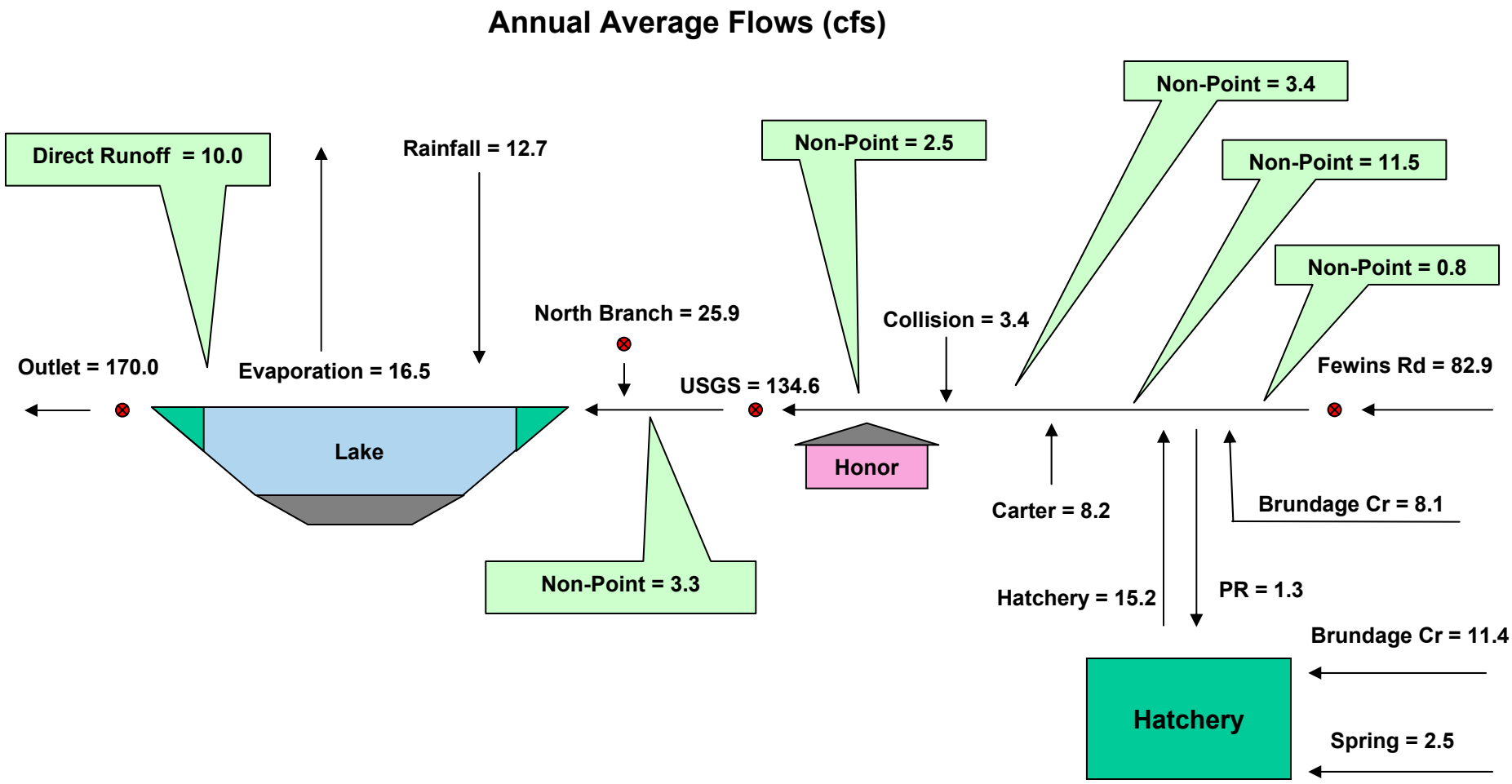


Figure 68. Watershed and Lake Flow Balance for 2004.

	Measured K&E 80 - 81 lbs/yr	Calibration BASINS 1997 lbs/yr	Measured 2004 lbs/yr	Best Estimate 2004 lbs/yr
Fewins Road	1,381	3,079	892	2,219
NonPoint F to BC		28		30
BC to PR		324		175
PR to H		66	25	25
BS to H		34	61	61
BC to H		278	249	249
Net Hatchery				140
Total Hatchery	2,222	379	475	475
NonPoint BC to C		335		364
Carter	170	253	303	303
NonPoint C to C		82		89
Collison	13.8	171	563	563
NonPoint C to USGS		132		143
USGS	5,107	4,717	4,520	4,337
NonPoint USGS to Lake		113		123
NB	1,134	459	652	652
Direct Runoff to Lake	439	362		393
Rain on Lake	485		270	270
Lost Fish			84	84
Planted Fish			18	18
Macrophytes			85	85
Sediment Release			110	110
Settling				3,681
M22	3,040		2,385	2,390

% Retention
61
Settling Velocity m/yr
23.0

Figure 69. Phosphorus Mass Balance for Watershed and Big Platte Lake.

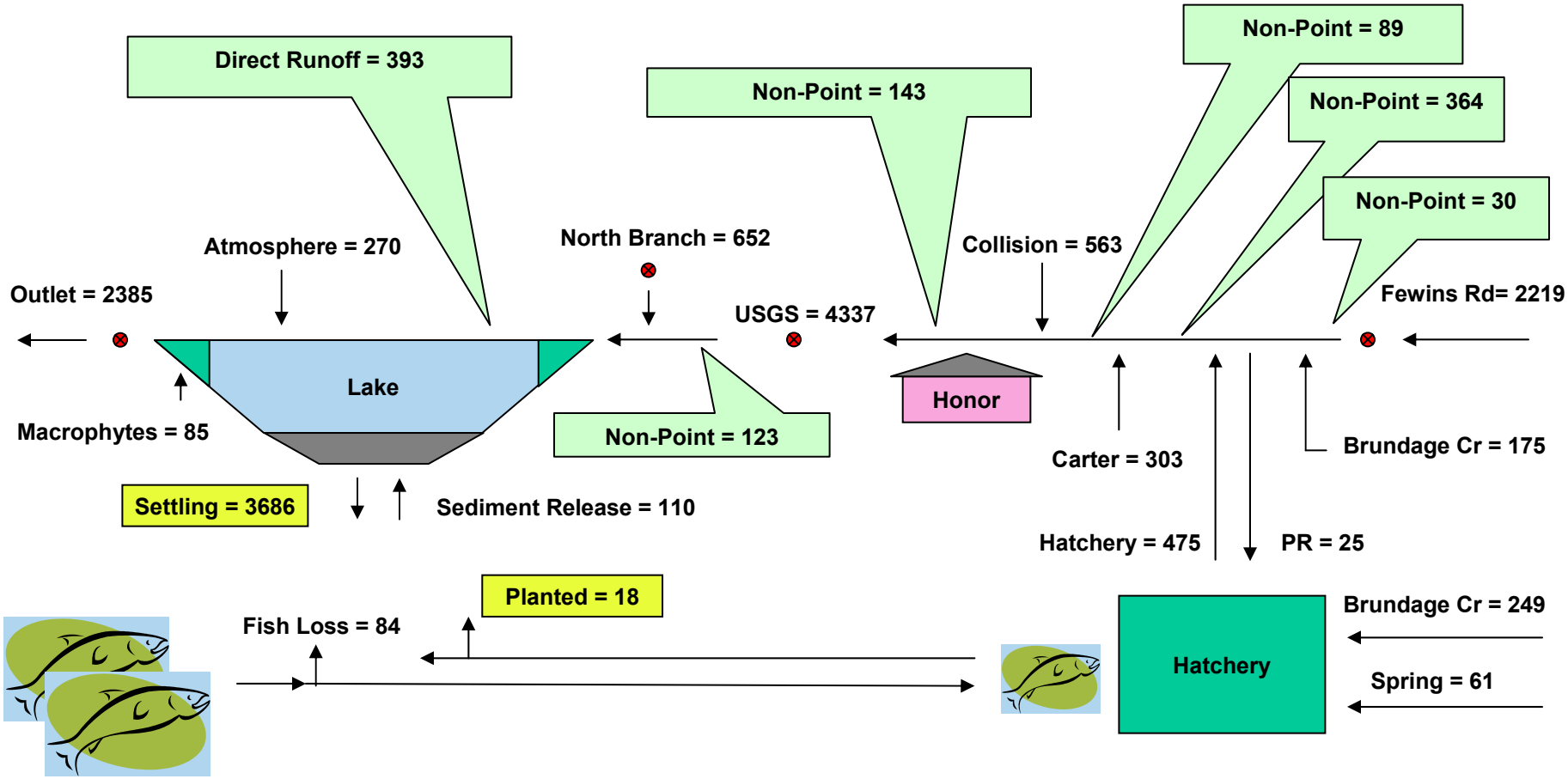


Figure 70. Watershed and Lake Phosphorus Balance (lbs/yr) for 2003.

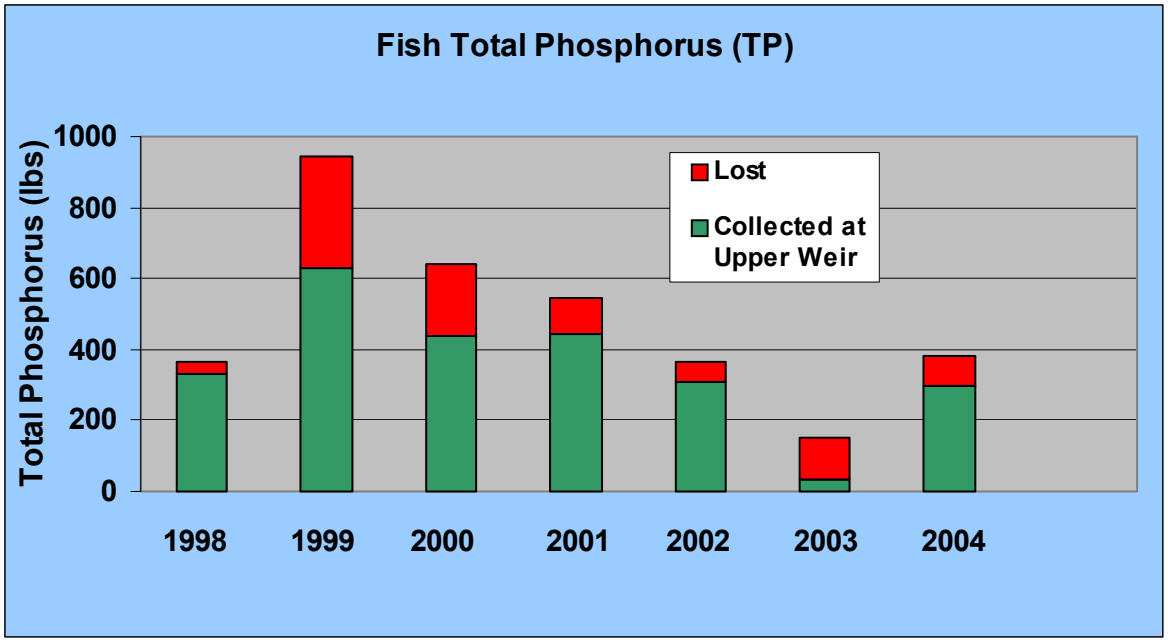


Figure 71. Fish Collected at Upper Weir and Lost in Big Platte Lake.

Lost fish - 2004

lbs	% P		
18,714	0.4465	84	lbs

Planted Fish - 2004

kg	lbs/kg	% P	assumed loss		
18,194	2.205	0.446500	10%	18	lbs

Rainfall - 2004

annual inches	sur area m2	TP mg/m3		
43.6	10,222,058	10.8	270	lbs

Macrophytes - 2003

senesce		sloughing & excretion				
			period	rate		
lbs	%P	lbs	days	1/day		
2,014	1.3	1007	90	0.05	85	lbs

Sediment Release - 2004

depth feet	area m2	anoxic days	release rate mg/m2/day	lbs		
90	36,421	103	1.00	8.3		
75	254,944	98	0.30	16.5		
60	1,116,899	70	0.30	51.7		
45	2,092,163	24	0.30	33.2	total	
30	4,224,794	0	0.30	0.0	110	lbs

Figure 72. Calculation of Phosphorus Mass Balance Terms for Big Platte Lake.

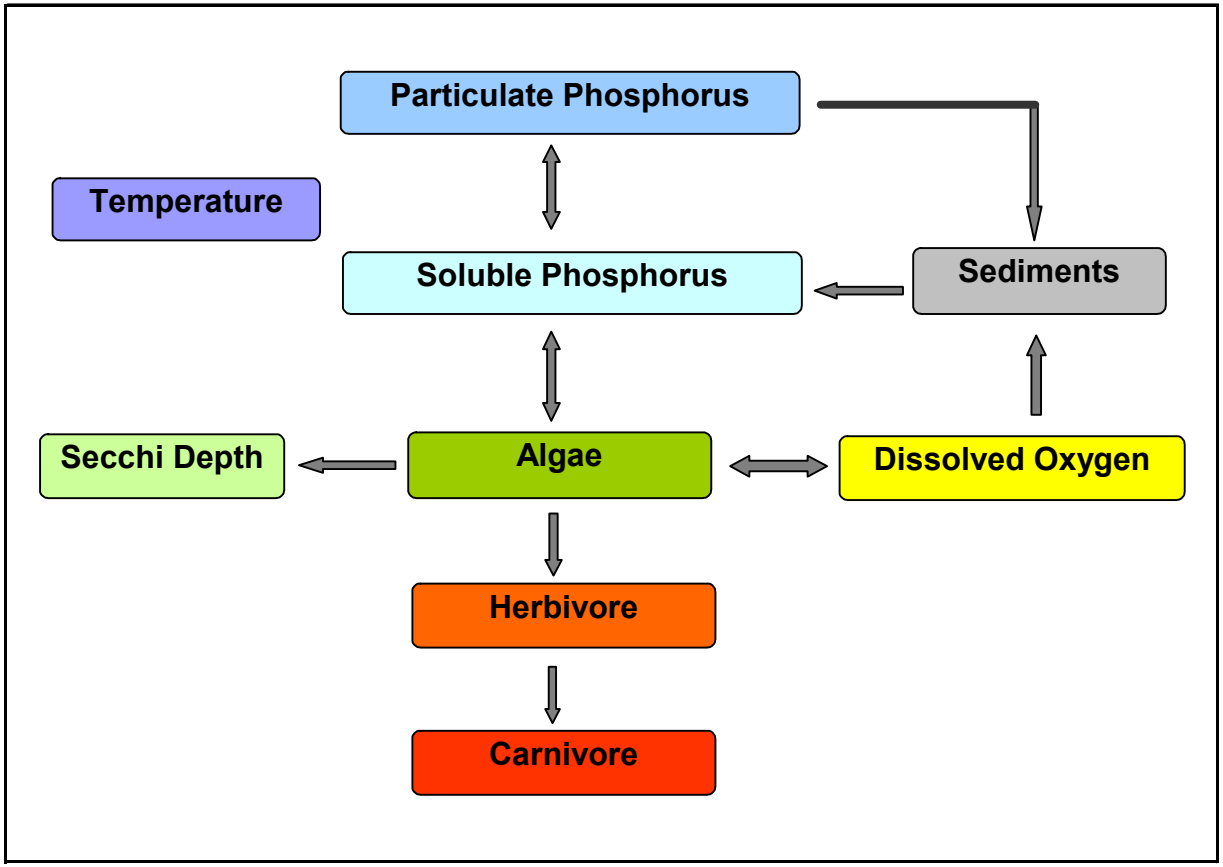


Figure 73. Kinetic Components of Lake Water Quality Model.