Analysis of Chickasaw Creek Concentrations and Loads, Water Year 2009

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Part I: Concentrations

Approach: Flow data were not yet available for Chickasaw Creek when this analysis was begun, so concentrations were analyzed initially; loads were analyzed later. Chickasaw Creek was compared with Lost Creek and Rock Creek, two other small agricultural watersheds monitored by NCWQR. Data for these two tributaries were retrieved to cover the time period of monitoring for Chickasaw Creek, September 29, 2008 through October 25, 2009. For all three tributaries, daily time-weighted mean concentrations (TWMCs) were computed to reduce multiple observations (samples) on some days to a single average concentration for each of those days.

Each day's observation for Chickasaw Creek was paired up with the observations from Lost Creek and Rock Creek that were made as nearly as possible at the same time. This usually resulted in the selection of observations from the same day, but if no observation was available for that day, the one from the day before or the day after was chosen. All other observations were discarded. If any of the three observations for a given day and parameter was missing, that day was deleted from the data set. In this way, a complete matched set of data for each watershed was selected for analysis. This resulted in 289 days with observations (and 102 days with no observations).

These sets of data were plotted in a number of ways, and various statistical comparisons were made. A few of the more revealing comparisons are presented below.

Results: It is obvious from the plots that concentrations of all parameters analyzed tend to be higher in Chickasaw Creek than in Rock Creek or Lost Creek, and in some cases they are much higher. The one exception is suspended solids, which is relatively comparable among the three creeks.

When concentrations are sorted in descending order from highest to lowest, most rivers have a few high values and then more frequent lower values, resulting in a concave plot. For most parameters other than suspended sediment, the highest values in Chickasaw Creek are higher than the highest values in the other two creeks. But what is even more characteristic is that the middle range values do not decrease in concentration nearly as rapidly in Chickasaw Creek as they do in the other two creeks. This indicates that high concentrations are sustained for longer periods of time in Chickasaw Creek than in the other two.

Ohio EPA suggests the following draft nutrient standards for protection of aquatic life (Warm Water Habitat): total phosphorus <0.10 mg/L, total dissolved nitrogen < 1.0 mg/L. In these streams, nitrate plus nitrite constitutes most of the total dissolved nitrogen. The percent of daily average concentrations that **exceed** these draft standards are:

	Total Phosphorus < 0.10	Nitrate Plus Nitrite<1.0
Chickasaw Creek	82.6	67.1
Rock Creek	29.4	51.2
Lost Creek	31.8	79.2

Tables and Graphs

Table 1. Average concentrations of various parameters

Creek	Suspended Solids	Total Phosphorus	Dissolved Phosphorus	Nitrate Nitrogen	Organic Nitrogen	Total Nitrogen	Chloride
Mean concentration							
Chickasaw	26.9	0.317	0.189	8.34	1.42	9.76	147.1
Rock	40.3	0.107	0.025	1.85	0.63	2.48	33.1
Lost	21.8	0.112	0.034	2.43	0.90	3.33	17.9
Median concentration							
Chickasaw	12.0	0.306	0.191	6.43	1.11	8.32	133.4
Rock	11.9	0.061	0.023	1.04	0.40	1.33	30.9
Lost	9.3	0.072	0.027	2.10	0.74	2.95	16.5

Table 2. 75th percentile* concentrations of various parameters

Creek	Suspended Solids	Total Phosphorus	Dissolved Phosphorus	Nitrate Nitrogen	Organic Nitrogen	Total Nitrogen	Chloride
Chickasaw	22.7	0.440	0.268	15.72	1.81	16.86	222.4
Rock	23.6	0.108	0.034	2.44	0.60	3.46	37.8
Lost	21.4	0.127	0.040	3.24	1.11	4.24	20.8

* The 75th percentile concentration is that concentration that is exceeded by only 25% of the daily TWMCs.

Table 3. 25th percentile* concentrations of various parameters

Creek	Suspended Solids	Total Phosphorus	Dissolved Phosphorus	Nitrate Nitrogen	Organic Nitrogen	Total Nitrogen	Chloride
Chickasaw	8.0	0.160	0.092	0.37	0.90	1.55	61.8
Rock	5.6	0.037	0.010	0.10	0.29	0.47	27.9
Lost	4.3	0.054	0.017	1.16	0.55	1.91	13.5

* The 25th percentile concentration is that concentration that is exceeded by 75% of the daily TWMCs.

Table 4. Percent of daily concentrations in Rock Creek and Lost Creek that exceed the overall *average* concentration in Chickasaw Creek. If the three creeks had equal concentrations, this value would be about 50%.

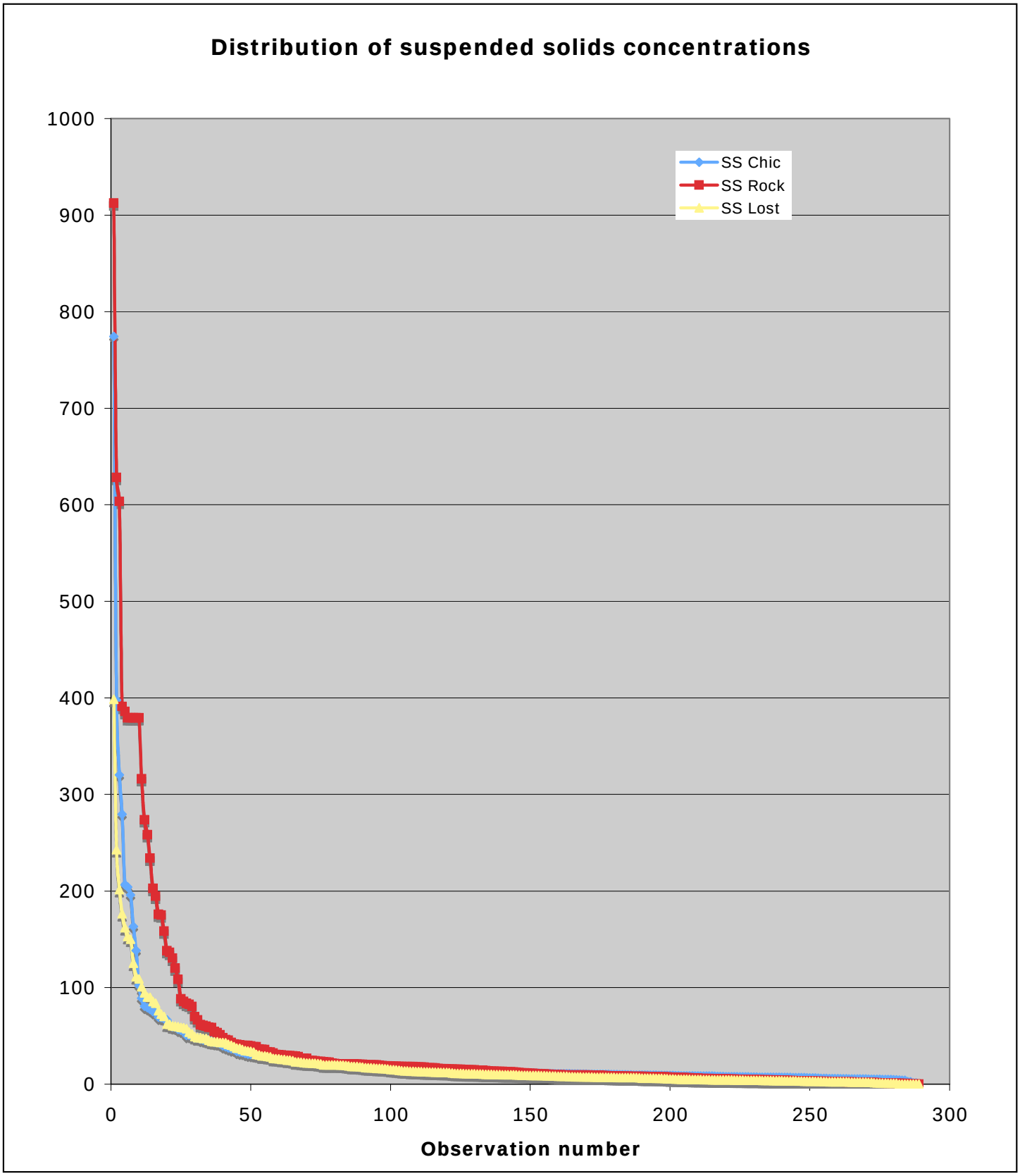
Creek	Suspended Solids	Total Phosphorus	Dissolved Phosphorus	Nitrate Nitrogen	Organic Nitrogen	Total Nitrogen	Chloride
Rock	22.84	7.27	0.00	2.08	9.00	1.73	0.69
Lost	19.38	5.54	0.69	2.42	13.50	2.77	0.00

Table 5. Percent of days on which each creek had the highest concentration of the three. If the three creeks had equal concentrations, this value would be about 33%.

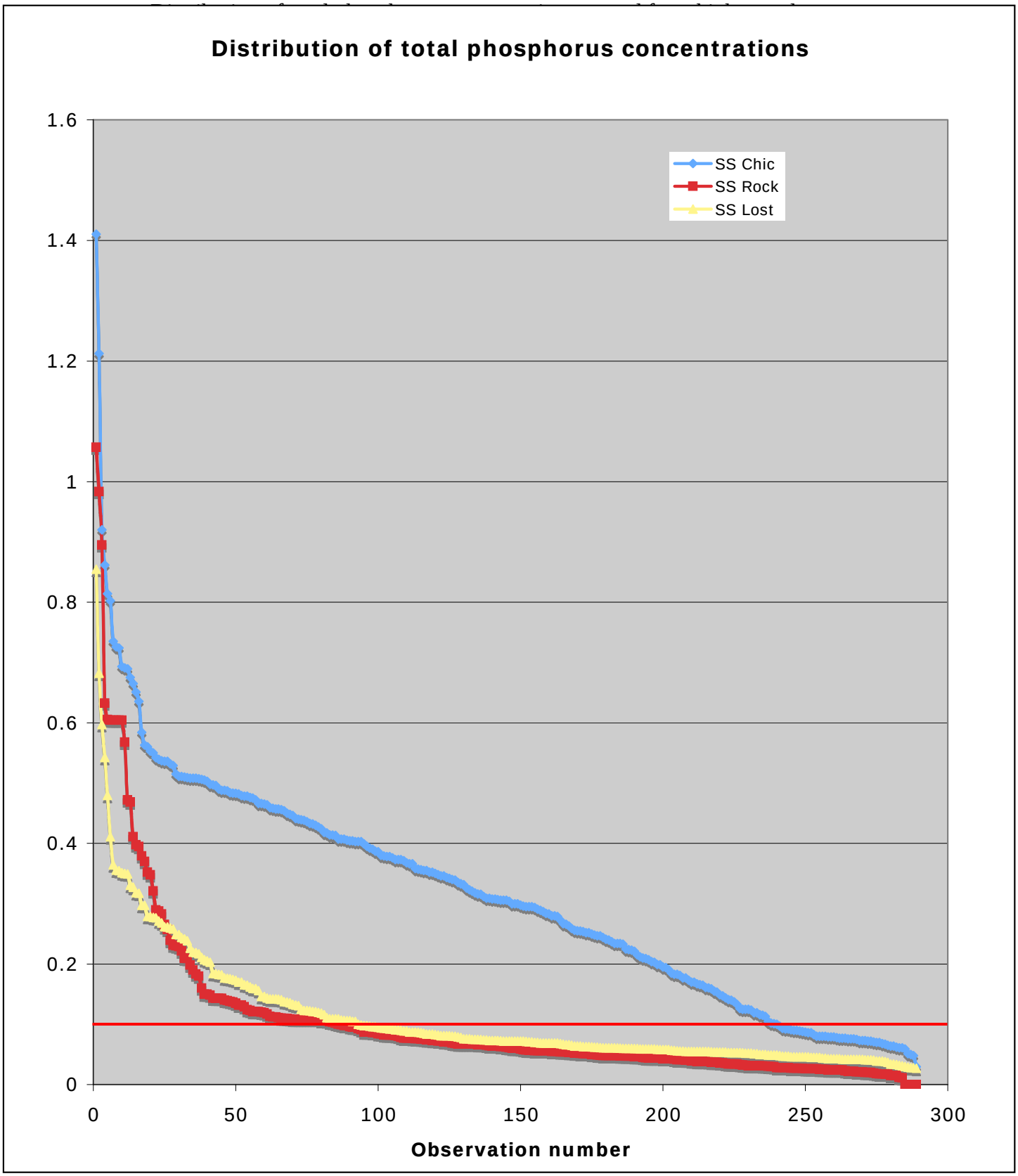
Creek	Suspended Solids	Total Phosphorus	Dissolved Phosphorus	Nitrate Nitrogen	Organic Nitrogen	Total Nitrogen	Chloride
Chickasaw	40.1	83.0	91.3	62.3	78.6	73.0	97.2
Rock	39.8	10.7	3.5	29.1	9.3	6.6	2.8
Lost	20.1	6.3	5.2	9.6	12.1	20.4	0.0

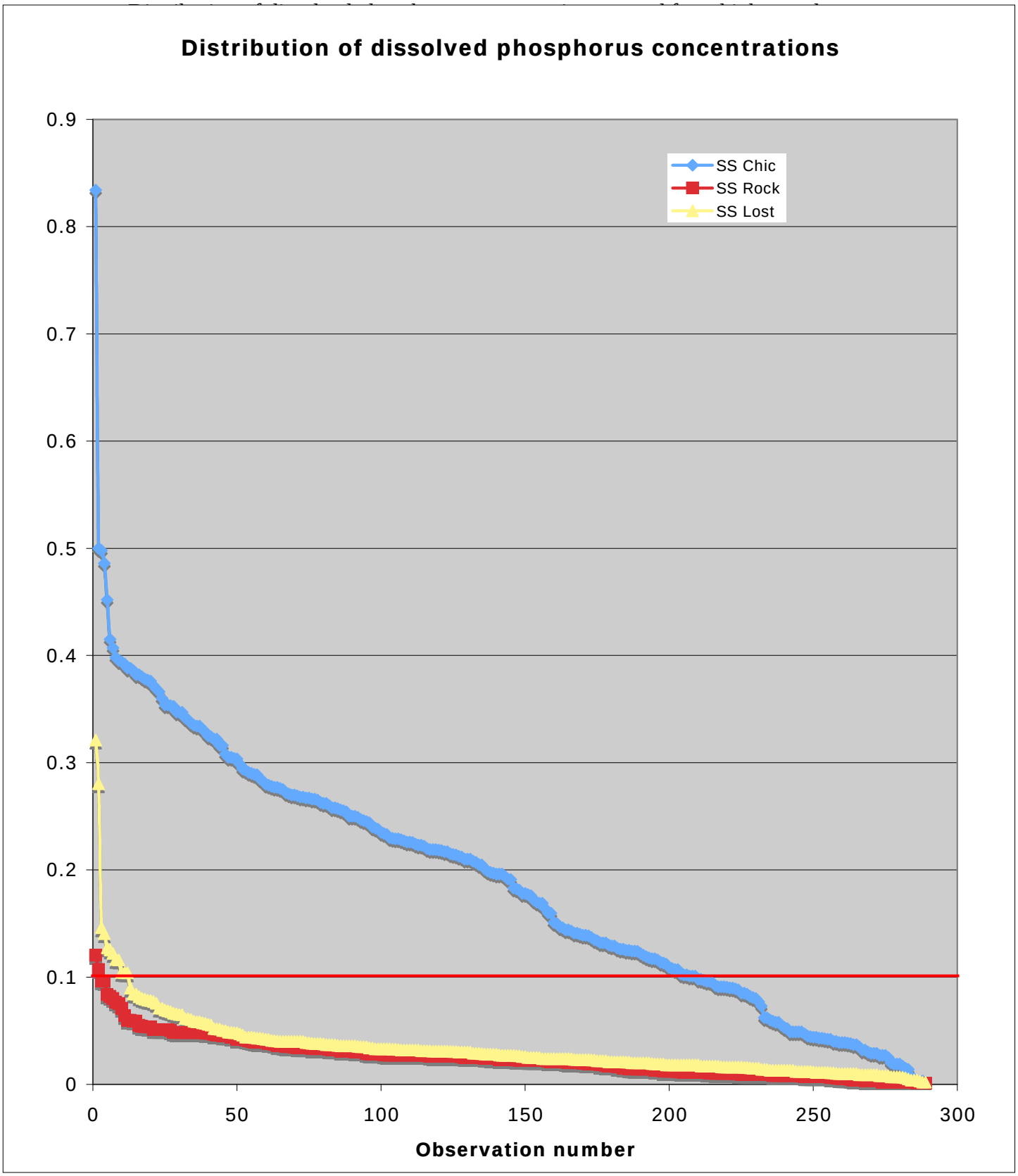
Table 6. Distribution of values of dissolved reactive phosphorus as a percent of total phosphorus. Dissolved reactive phosphorus is of particular concern because is readily available to promote algal growth, while total phosphorus is less so.

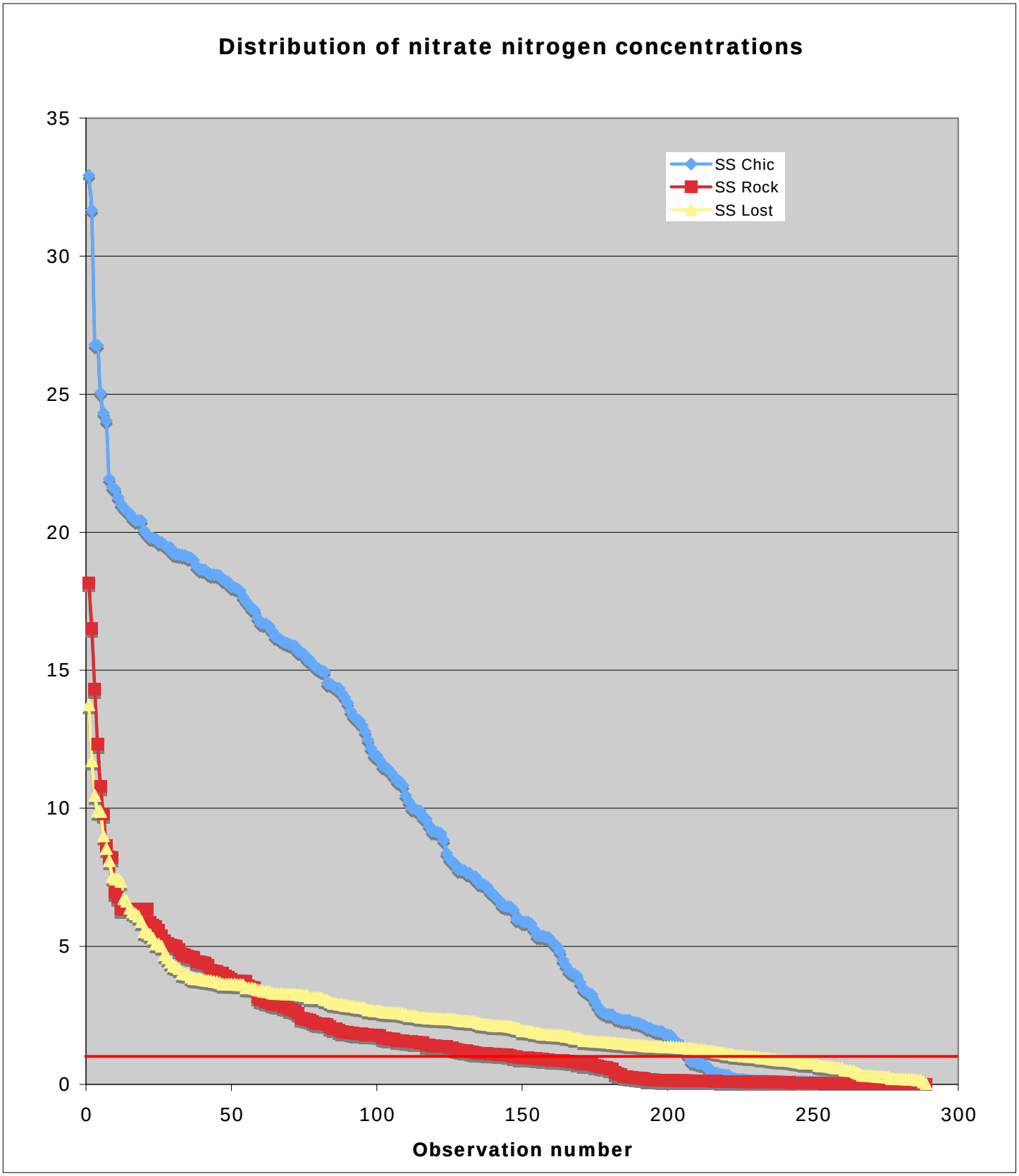
Creek	Mean	Median	75th percentile	24th percentile
Chickasaw	58.7	61.4	69.9	51.0
Rock	32.0	32.7	43.0	21.6
Lost	32.5	30.6	23.8	40.4



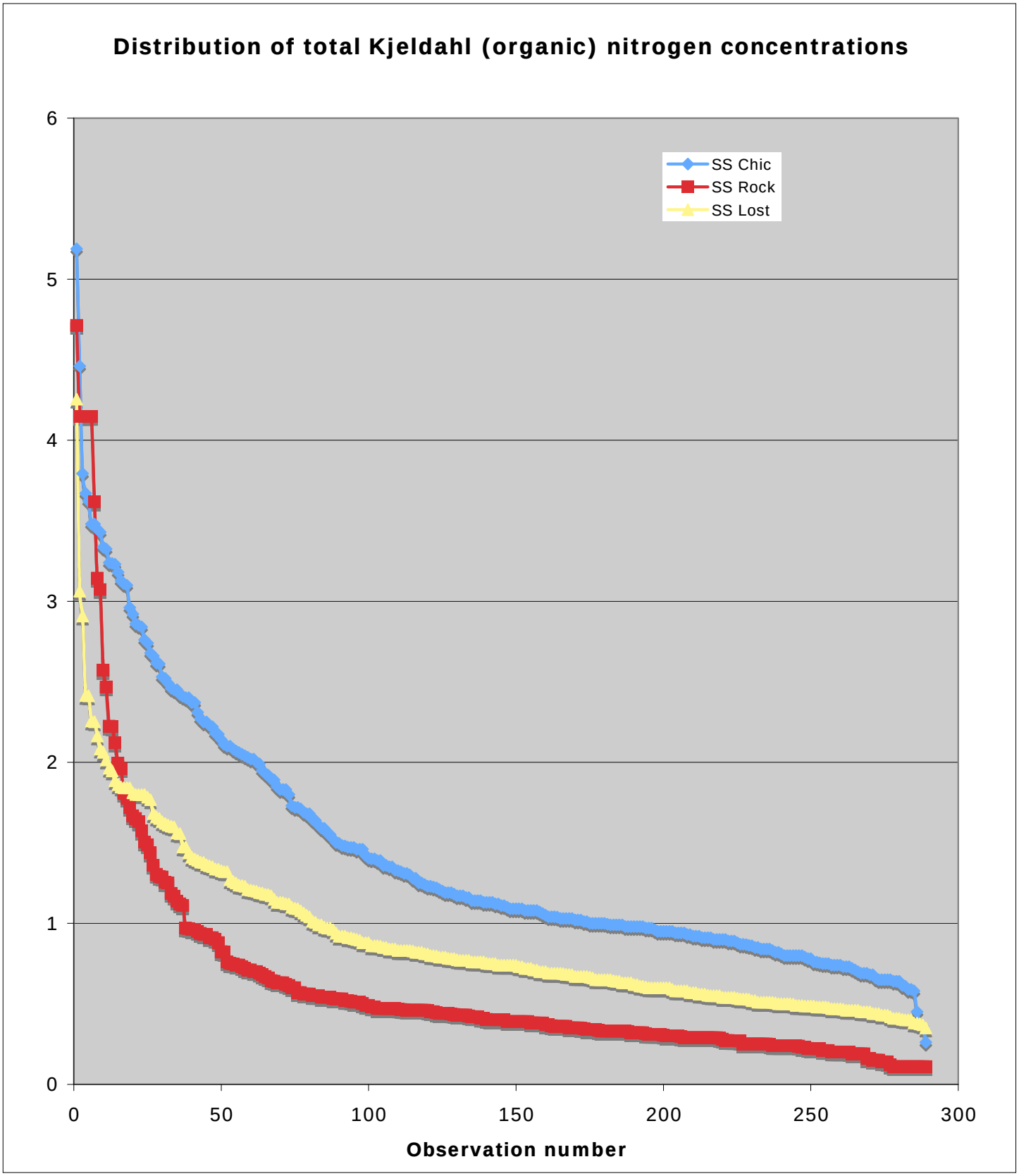
Distribution of suspended sediment concentrations, sorted from highest to lowest.


Distribution of total phosphorus concentrations
SS Chic
SS Rock
SS Lost
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
50
100
150
200
250
300
Observation number

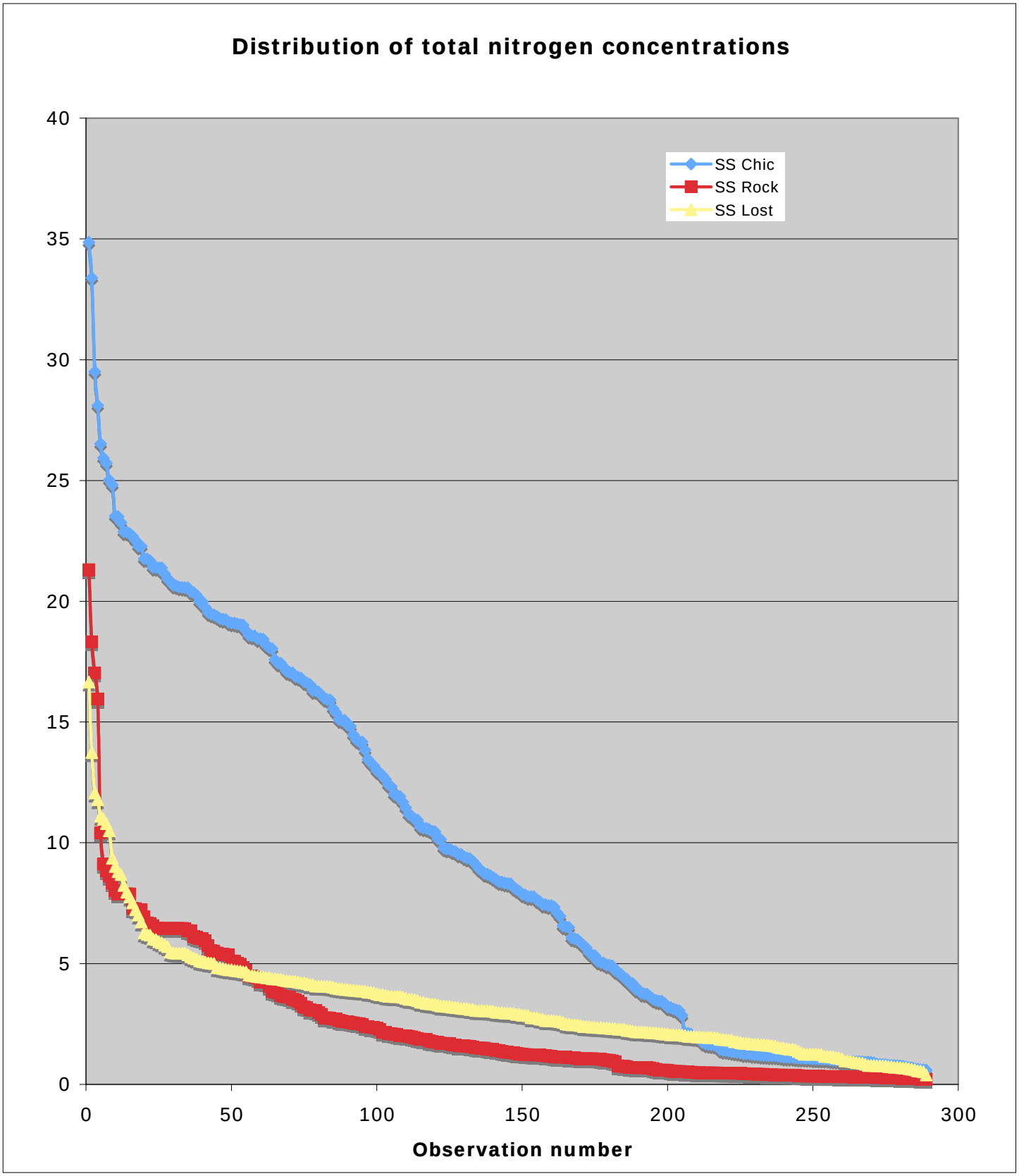

Distribution of dissolved phosphorus concentrations
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
50
100
150
200
250
300
Observation number
SS Chic
SS Rock
SS Lost



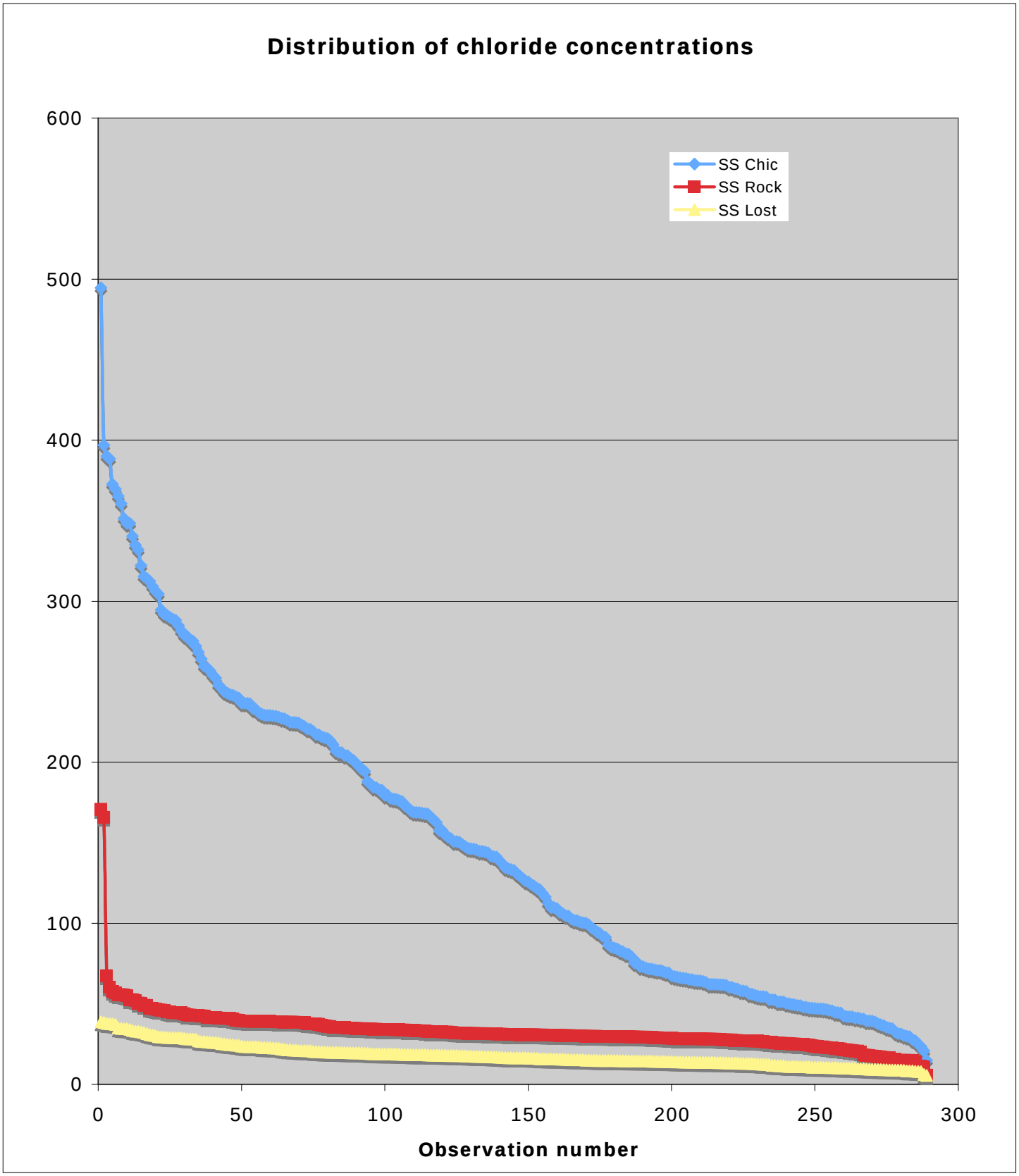
Distribution of nitrate nitrogen concentrations, sorted from highest to lowest.



Distribution of total Kjeldahl nitrogen concentrations, sorted from highest to lowest. Total Kjeldahl nitrogen is essentially the organic nitrogen portion of the total nitrogen in the sample.



Distribution of total nitrogen concentrations, sorted from highest to lowest.



Distribution of chloride concentrations, sorted from highest to lowest.

Part II. Loads

Approach: Provisional flow data were provided by USGS, both as "unit values" every 15 minutes and as daily mean flows. These flow values may change slightly as the rating curve (which relates water height, or stage, to flow) is improved with further field observations.

Daily loads were computed for the 2009 Water Year for Chickasaw Creek and Rock Creek using the following procedures.

- For days with one sample only, the daily load is the product of the sample concentration and the flow at the time of the sample and a units conversion factor.
- For days with more than one sample, unit loads were calculated as the product of sample concentration, the flow at the time of the sample, a time interval equal to half the time between the sample and the previous sample plus half the time between the sample and the following sample, and a units conversion factor. For the first sample, the first time window is the time between midnight and the sample. For the last sample, the second time window is the time between the sample and midnight. The daily load is the sum of these unit loads.
- These daily loads were then adjusted by the ratio of the USGS daily mean discharge to the observed discharge.
- Loads for days with no samples were estimated using statistical models that relate each parameter's daily loads to daily discharge and seasonal factors. These models are of the general form

$$\ln(L) = fn\left[\ln(Q), \ln(Q)^2, \sin(2\pi t), \cos(2\pi t), \sin(4\pi t), \cos(4\pi t)\right]$$

  where L is load, Q is discharge, and t is time of the year, with values between 0 and 1.
- Prior to back-transformation, the estimated loads were adjusted to avoid back-transformation bias using "tuning factors" based on the variance of the model residuals and the deviations of the residuals from the mean of the residuals.
- After back-transformation, estimated loads for days with no samples were merged with the observed daily loads to create a complete daily load record for the year. Estimated loads were used only for those days on which no samples were taken; there were 101 days without samples.

These daily loads were analyzed statistically, and were also aggregated into monthly loads and an annual load for each parameter. The daily loads were compared with the observed and estimated loads used to develop the Chickasaw Creek TMDL, and with daily loads for WY2009 for Rock Creek.

Results: As expected, the loads of all parameters are highly focused in time, and the majority of the annual load is associated with days of high flow following rainfall and/or snowmelt. The following table illustrates the focused nature of the daily loads.

Table 7: Illustrating the highly focused nature of daily discharge and loads

Characteristic	Discharge	SS	TP	DRP	NO3	TKN	Chloride
Percent of total annual amount in the 36 days (<10% of time) with highest discharge	75	96	91	85	79	88	58
Percent of total annual amount in the 36 days with highest values of the parameter	75	97	92	87	79	88	60

Percent of total annual amount in the (1) day with highest values of the parameter	10	33	20	19	9	14	8
Days (sorted high to low) to exceed 50% of total annual amount	11	4	5	6	10	7	22

Monthly discharge and loads were highest in February, April, May, and June, moderately high in December, and relatively low in the other months. This primarily reflects the timing of high-flow events, and may be affected by timing of fertilizer/manure application. One year is too short a time to reveal consistent seasonal patterns, and one should not read too much meaning into the numbers in the table below.

Table 8: Monthly discharge (thousand cubic meters) and loads (kilograms)

Month	Discharge	SS	TP	DRP	NO3	TKN	Chloride
October '08	16	487	5.1	2.4	4.9	17	4,969
November	96	2,981	40	27	253	175	18,899
December '09	1,127	102,218	1,336	542	14,050	3,295	100,270
January	119	2,549	39	27	1,086	194	23,620
February	3,090	264,849	1,856	520	54,980	11,482	166,831
March	672	18,194	159	68	10,065	1,065	45,281
April	2,657	357,952	1,498	568	48,456	5,618	94,577
May	2,453	684,092	2,112	751	38,417	6,387	63,419
June	1,104	328,916	877	341	27,766	2,953	35,746
July	89	2,427	28	15	319	132	9,470
August	61	1,114	27	18	27	75	9,933
September	20	140	9.3	6.7	2.8	19	4,621

Annual loads are presented in the next tables, along with some related information which helps to put them into context. The relative size of the loads, with suspended solids highest, followed by chloride, nitrate, total Kjeldahl nitrogen, total phosphorus and dissolved reactive phosphorus, conforms to the pattern observed in other rivers and streams in Ohio monitored by the NCWQR.

Annual loads for Rock Creek are presented for comparison, and the comparison is made explicit with a table that presents the ratios of the annual loads for the two watersheds, computed as $load_{Chickasaw}/load_{Rock}$. In WY2009, Chickasaw Creek received less rainfall than Rock Creek, but a larger percent of it left the watershed as runoff (the rest would be groundwater recharge and evapotranspiration). Based on this one year of data, unit-area loads of sediment from Chickasaw Creek were less than half of those from Rock Creek, and flow-weighted mean concentrations of suspended sediment were slightly greater than half those for Rock Creek. Loads and concentrations of TKN were about equal in both watersheds, and loads of total phosphorus were only slightly greater in Chickasaw Creek than in Rock Creek, though the FWMC was nearly half again as large. Loads and FWMCs of DRP, NO3, and chloride were much greater in Chickasaw Creek than in Rock Creek – from twice as great to more than five times as great. Reducing the watershed losses of these dissolved parameters appears to represent the largest watershed management challenge for Chickasaw Creek.

While these observations are based on only one year of data, the relationships are not likely to change greatly when more data are available. The final table in this section compares the WY2009 loads for Rock Creek with loads for the past 15 years. It shows that WY2009 was a fairly average ("typical") year for discharge and the loads of most parameters.

Table 9: Annual loads (WY2009) for Chickasaw Creek, and related information

Parameter	Annual Volume (thousand cubic meters)	Annual Volume (million cubic feet)	Unit Area Discharge (cm)	Unit Area Discharge (in)	Rainfall, GLSM State Park (in)	% runoff
Discharge	11,504	406.25	27.62	10.87	26.3	41.3%

Parameter	Annual Load (kg)	Annual Load (short tons)	Unit Area Load (kg/ha)	Unit Area Load (lb/acre)	FWMC (mg/L)
SS	1,765,919	1946.57	413.23	368.67	153.51
TP	7,987	8.80	1.87	1.67	0.69
DRP	2,887	3.18	0.68	0.60	0.25
NO3	195,426	215.42	45.73	40.80	16.99
TKN	31,413	34.63	7.35	6.56	2.73
Chloride	577,634	636.73	135.17	120.59	50.21

Table 10: Annual loads (WY2009) for Rock Creek, and related information

Parameter	Annual Volume (thousand cubic meters)	Annual Volume (million cubic feet)	Unit Area Discharge (cm)	Unit Area Discharge (in)	Rainfall, Tiffin (in)	% runoff
Discharge	28,400	1002.94	31.70	12.48	34.3	36.3%

Parameter	Annual Load (kg)	Annual Load (short tons)	Unit Area Load (kg/ha)	Unit Area Load (lb/acre)	FWMC (mg/L)
SS	8,190,000	9027.84	914.06	815.50	288.38
TP	13,700	15.10	1.53	1.36	0.48
DRP	1,710	1.88	0.19	0.17	0.06
NO3	93,000	102.51	10.38	9.26	3.27
TKN	71,000	78.26	7.92	7.07	2.50
Chloride	576,000	634.92	64.29	57.35	20.28

Table 11: Ratios comparing annual loads in Chickasaw and Rock Creeks (Chickasaw/Rock)

Watershed Area, Chickasaw/Rock:	47.70%				
Parameter	Annual Volume	Annual Volume	Unit Area Discharge	Unit Area Discharge	Rainfall
Discharge	40.51%	40.51%	87.13%	87.13%	76.59%
Parameter	Annual Load	Annual Load	Unit Area Load	Unit Area Load	FWMC
SS	21.56%	21.56%	45.21%	45.21%	53.23%
TP	58.30%	58.30%	122.23%	122.23%	143.92%
DRP	168.85%	168.85%	354.01%	354.01%	416.84%
NO3	210.14%	210.14%	440.58%	440.58%	518.78%
TKN	44.24%	44.24%	92.76%	92.76%	109.23%
Chloride	100.28%	100.28%	210.26%	210.26%	247.58%

Table 12: Rank of 2009 Rock Creek Loads (1=highest, 15=lowest) in context of last 15 years

	Discharge	TP	DRP	NO3	TKN	Chloride
Rank out of 15 years	6	7	8	12	4	11

The other context that gives meaning to the loads from Chickasaw Creek is the Grand Lake St. Marys TMDL which includes it along with other tributaries to Grand Lake St. Marys. The TMDL involves a considerable level of uncertainty, as flow data had to be "borrowed" from a nearby watershed, and minimal concentration data were available. Thus comparisons between WY2009 results and values in the TMDL should not presume that the TMDL is correct, but can be used to put both sets of numbers in context. The TMDL presents load estimates for TP and NO3 only. The estimated annual loads for these two parameters from the TMDL are substantially greater than the observed loads in 2009 – 67% greater (167% as great) for TP and 148% greater (248% as great) in the case of NO3. However, the observed loads of WY2009 are still much greater than the TMDL target loads.

The TMDL presents tables of allowable loads as a function of flow exceedence class, along with estimates of the percent of daily loads that exceed the allowable loads, mean and median loads, and percent reduction needed to reach compliance with the TMDL. We have recalculated these tables using the daily loads observed in WY2009. In addition to TP and NO3 tables, we have computed tables comparing DRP against the TP target and TKN against the NO3 target. We also present parallel tables for the other parameters, but there are no standards to compare them against and consequently no reduction targets. In these tables, a negative percent reduction means that the observed load already is less than the allowable load for that flow range.

Compared to the tables in the TMDL, the re-computed tables presented here have more flow classes that conform to the targets, especially among the lower flow ranges, and in general lower percentages of daily loads that exceed the target load. This appears to be due in part to over-

estimation of existing concentrations in the TMDL, and in part to overestimating flows based on an adjacent watershed. This over-estimation is particularly large in the lower flow classes. While this exercise suggests that Chickasaw Creek loads may not be as large as the TMDL estimated, it still indicates the need to greatly reduce loads, especially in the upper flow ranges, to bring observed loads into compliance with the target loads mandated by the TMDL.

Table 13: Annual load for Chickasaw Creek in 2009, compared with the annual load estimate from the TMDL and the TMDL target load. TMDL loads were computed from the daily loads and flow duration data given in the TMDL report.

Parameter	Annual Load (tons/yr)	2009 Load (tons/yr)	TMDL Load (tons/yr)
TP	14.7	8.8	0.97
NO3	534	215	12.1

Table 14: Loads by flow exceedence range (TMDL table) for TP

Flow Exceedence Ranges	Sample Distribution	Median Obs. Flow (cfs)	Allowable Load	% of days >TMDL	Median Observed Load	Mean Observed Load	Est.. Reduction (Median)	Est.. Reduction (Mean)
0-10	36	55.50	14.75	97.2%	70.51	202	79.1%	92.7%
10-40	110	7.15	2.3	60.9%	3.15	5.55	26.9%	58.6%
40-60	72	1.75	0.81	61.1%	0.94	1.06	14.2%	23.8%
60-90	110	0.30	0.26	46.4%	0.24	0.29	-9.6%	9.4%
90-100	37	0.04	0.08	13.5%	0.05	0.06	-57.2%	-45.1%

Table 15: Loads by flow exceedence range (TMDL table) for NO3

Flow Exceedence Ranges	Sample Distribution	Median Obs. Flow (cfs)	Allowable Load	% of days >TMDL	Median Observed Load	Mean Observed Load	Est.. Reduction (Median)	Est.. Reduction (Mean)
0-10	36	55.50	184	100.0%	2,116	4,286	91.3%	95.7%
10-40	110	7.15	29	96.4%	250.23	347.91	88.4%	91.7%
40-60	72	1.75	10	72.2%	30.72	35.83	67.4%	72.1%
60-90	110	0.30	3	28.2%	0.86	2.44	-250.6%	-22.8%
90-100	37	0.04	1	0.0%	0.003	0.005	-36040%	-21264%

Table 16: Loads by flow exceedence range (TMDL-like table) for DRP, comparing DRP loads with TP TMDLs

Flow Exceedence Ranges	Sample Distribution	Median Obs. Flow (cfs)	Allowable Load	% of days >TMDL	Median Observed Load	Mean Observed Load	Est. Reduction (Median)	Est. Reduction (Mean)
0-10	36	55.50	14.75	80.6%	28.61	68.39	48.5%	78.4%
10-40	110	7.15	2.3	46.4%	2.14	3.19	-7.6%	27.8%
40-60	72	1.75	0.81	33.3%	0.57	0.73	-41.3%	-11.1%
60-90	110	0.30	0.26	22.7%	0.16	0.19	-62.4%	-35.8%
90-100	37	0.04	0.08	0.0%	0.03	0.03	-210.4%	-190.3%

Table 17: Loads by flow exceedence range (TMDL-like table) for TKN, comparing TKN loads with NO3 TMDLs

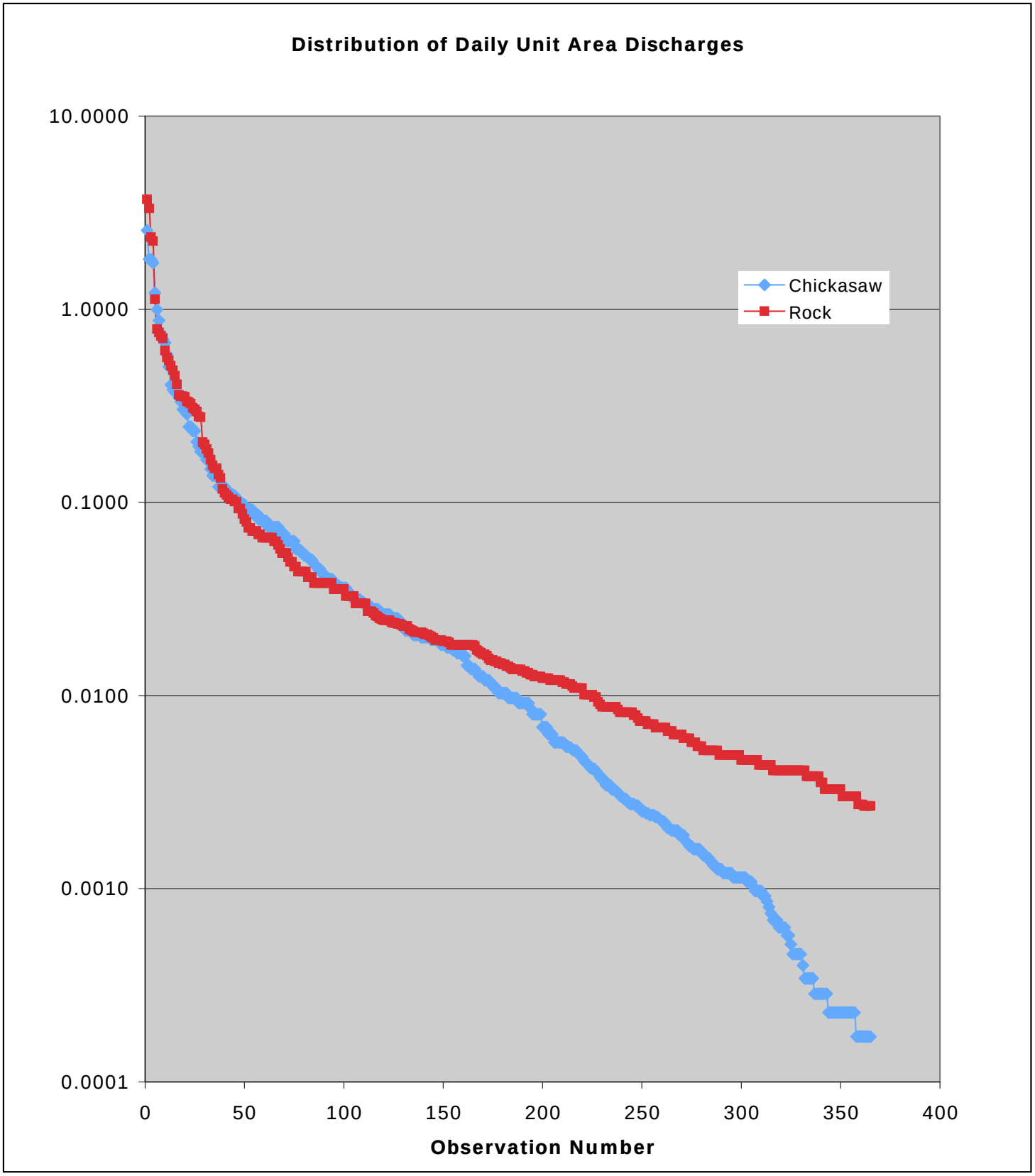
Flow Exceedence Ranges	Sample Distribution	Median Obs. Flow (cfs)	Allowable Load	% of days >TMDL	Median Observed Load	Mean Observed Load	Est. Reduction (Median)	Est. Reduction (Mean)
0-10	36	55.50	184	72.2%	286.1	765.0	35.7%	75.9%
10-40	110	7.15	29	31.8%	20.06	30.16	-44.6%	3.8%
40-60	72	1.75	10	9.7%	5.34	5.76	-87.4%	-73.6%
60-90	110	0.30	3	6.4%	1.09	1.25	-174.5%	-139.5%
90-100	37	0.04	1	0.0%	0.12	0.12	-760.2%	-754.2%

Table 18: Loads by flow exceedence range (TMDL-like table) for SS

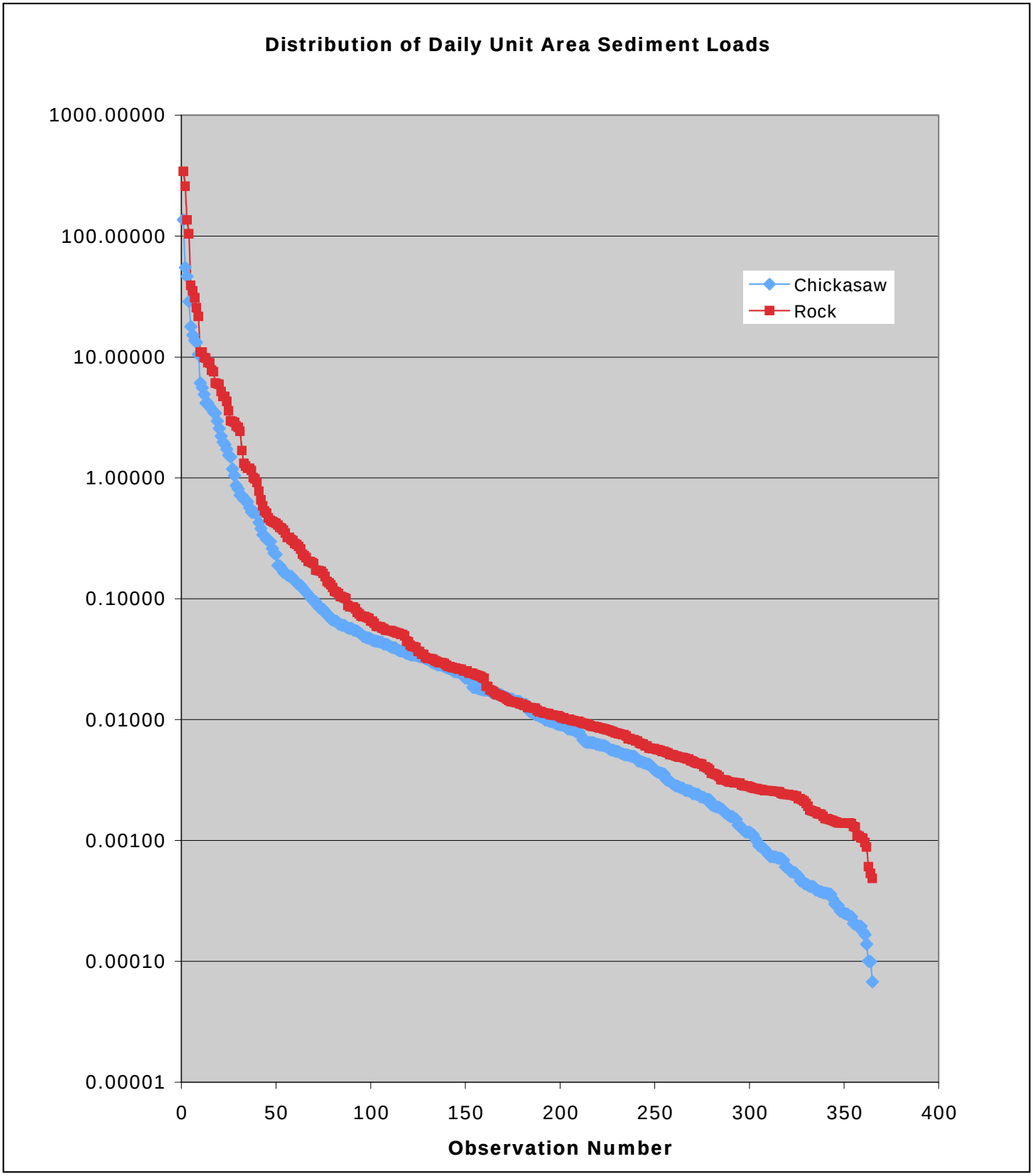
Flow Exceedence Ranges	Sample Distribution	Median Obs. Flow (cfs)	Allowable Load	% of days >TMDL	Median Observed Load	Mean Observed Load	Est. Reduction (Median)	Est. Reduction (Mean)
0-10	36	55.50	no TMDL	n.a.	11,795	46,849	n.a.	n.a.
10-40	110	7.15	no TMDL	n.a.	233.5	663.0	n.a.	n.a.
40-60	72	1.75	no TMDL	n.a.	58.9	66.8	n.a.	n.a.
60-90	110	0.30	no TMDL	n.a.	10.3	14.4	n.a.	n.a.
90-100	37	0.04	no TMDL	n.a.	1.27	1.37	n.a.	n.a.

Table 19: Loads by flow exceedence range (TMDL-like table) for chloride

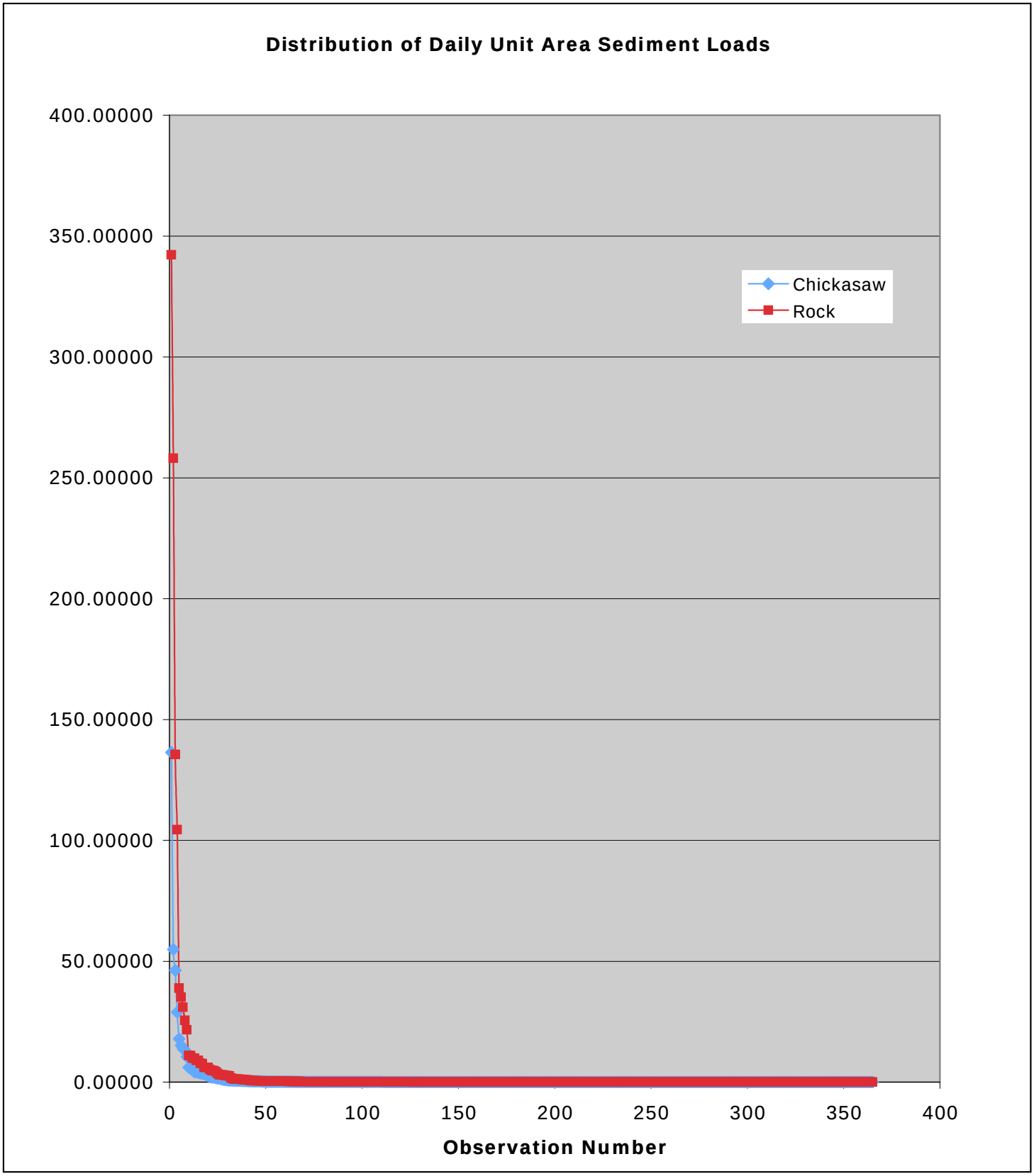
Flow Exceedence Ranges	Sample Distribution	Median Obs. Flow (cfs)	Allowable Load	% of days >TMDL	Median Observed Load	Mean Observed Load	Est. Reduction (Median)	Est. Reduction (Mean)
0-10	36	55.50	no TMDL	n.a.	28.61	68.39	n.a.	n.a.
10-40	110	7.15	no TMDL	n.a.	2.14	3.19	n.a.	n.a.
40-60	72	1.75	no TMDL	n.a.	0.57	0.73	n.a.	n.a.
60-90	110	0.30	no TMDL	n.a.	0.16	0.19	n.a.	n.a.
90-100	37	0.04	no TMDL	n.a.	0.03	0.03	n.a.	n.a.



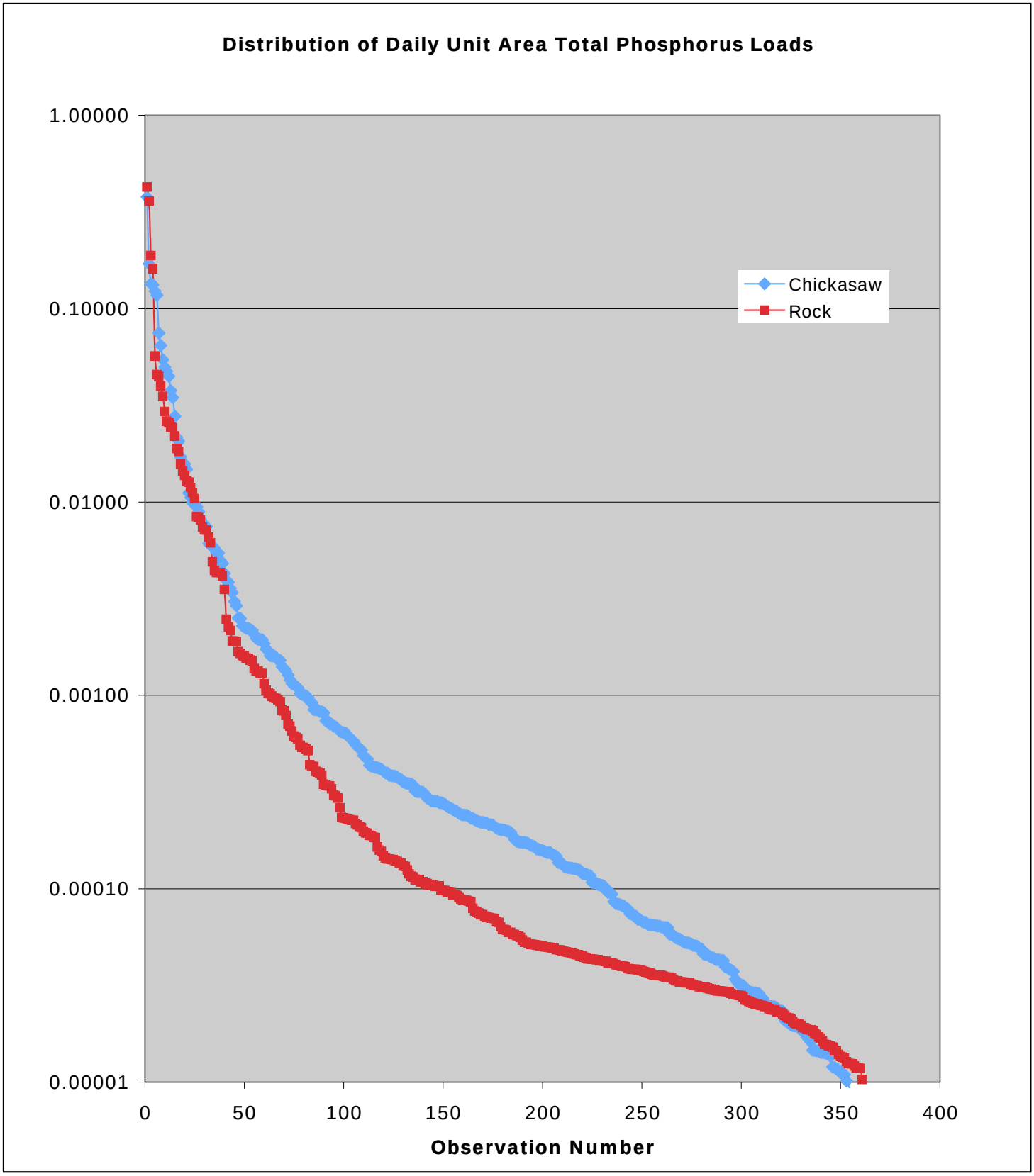
Distribution of unit area daily discharge amounts, sorted from highest to lowest. Logarithmic scale.



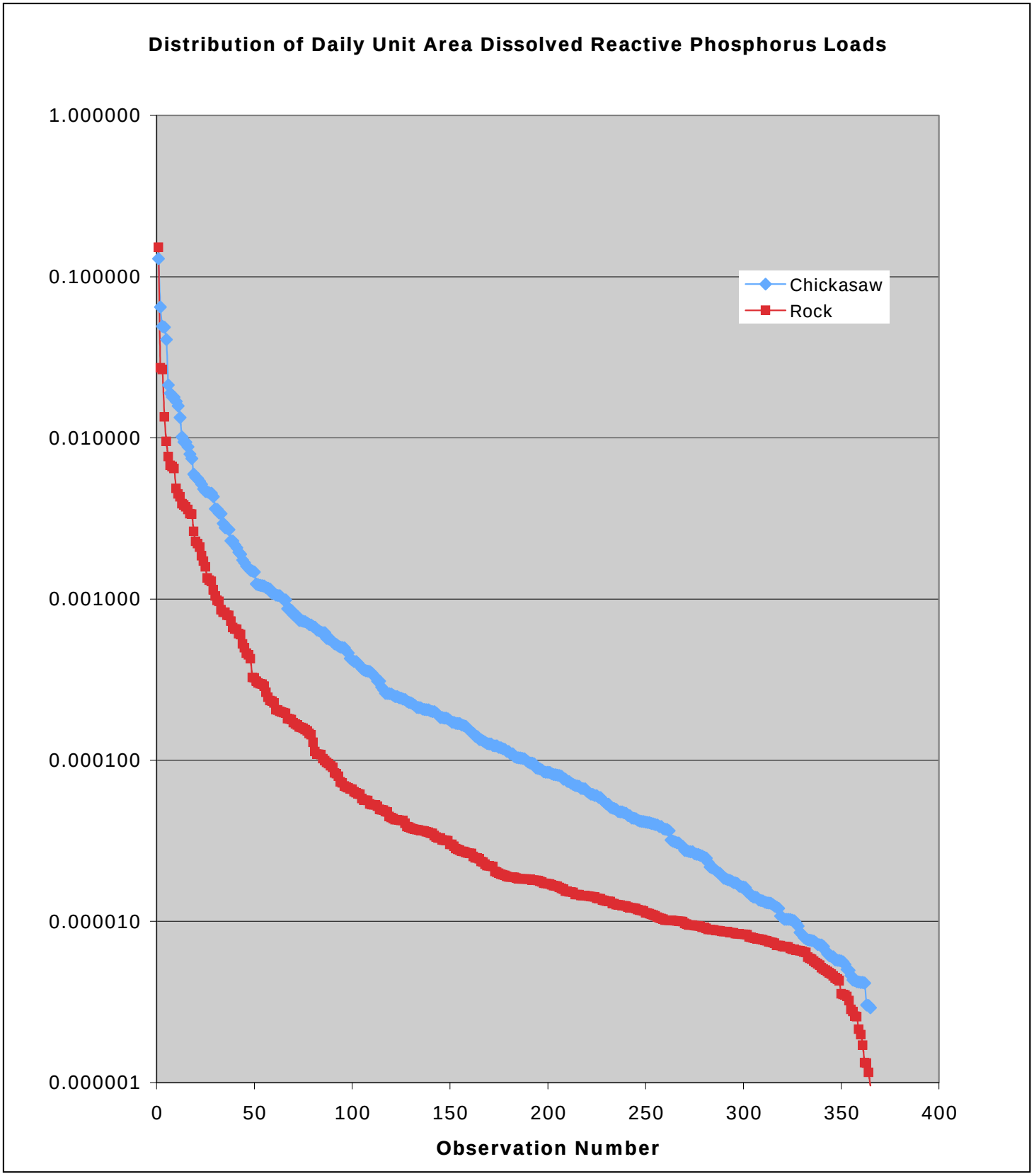
Distribution of unit area loads of suspended sediment, sorted from highest to lowest. Logarithmic scale.



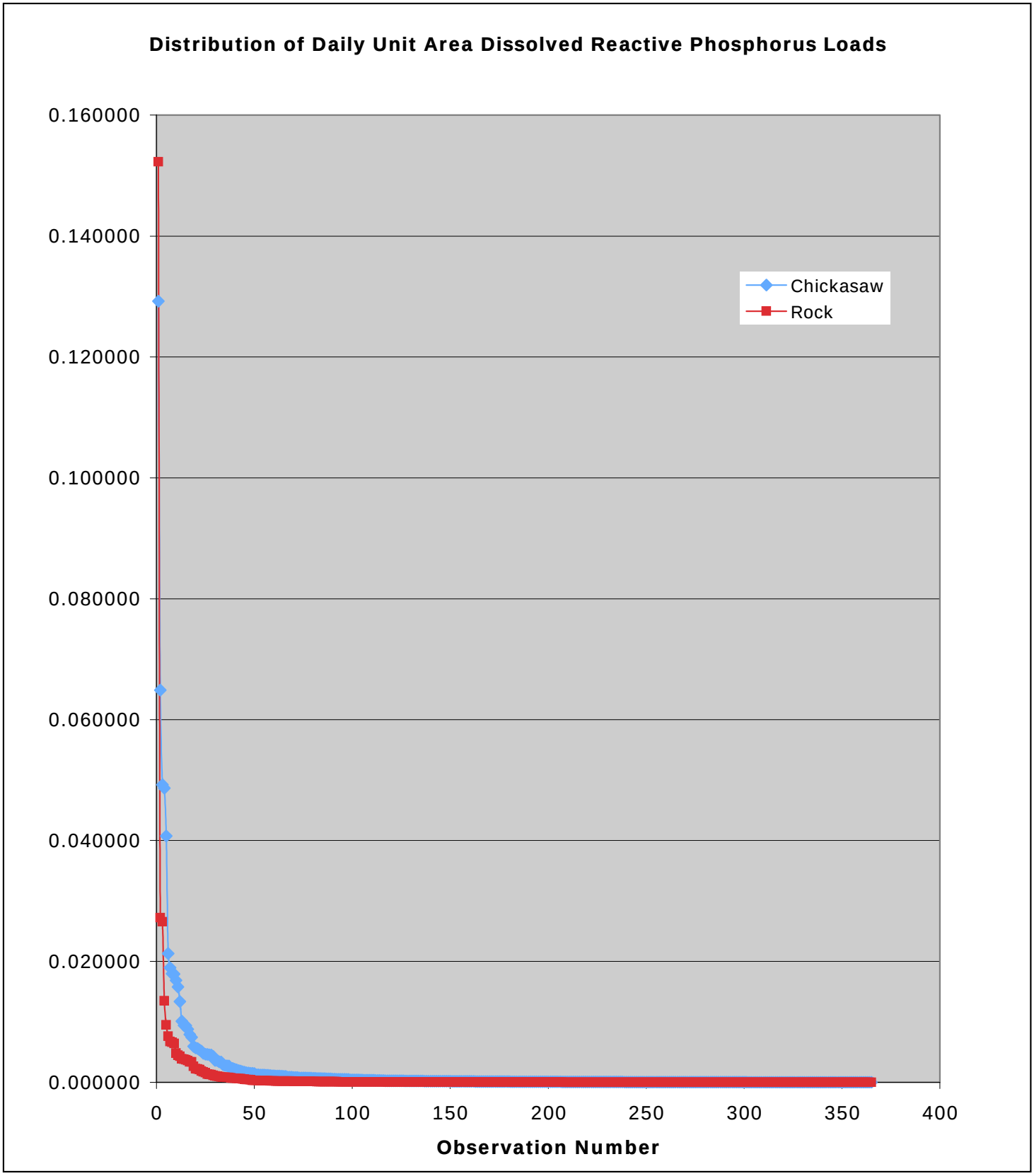
Distribution of unit area loads of suspended sediment, sorted from highest to lowest. Linear scale.



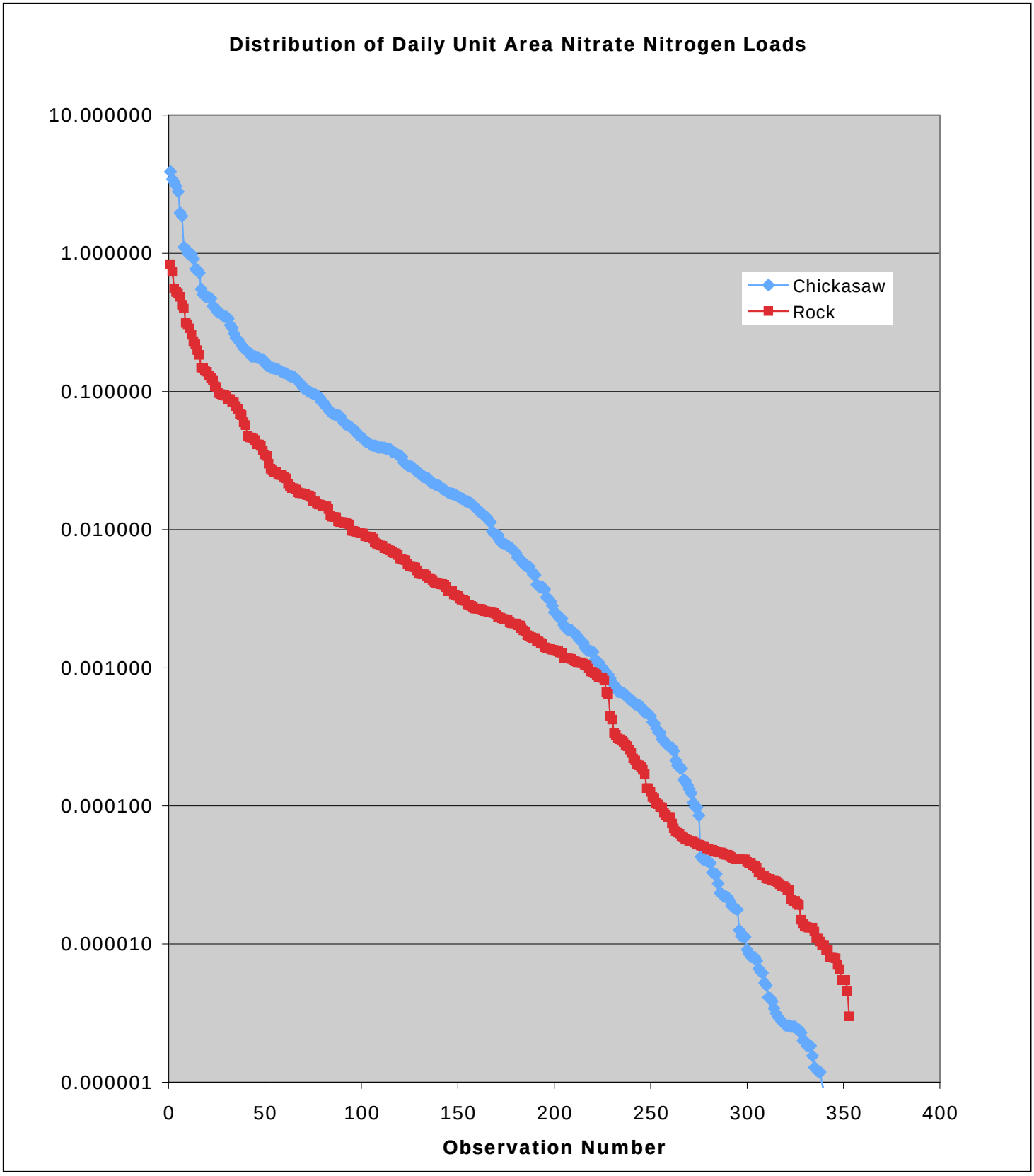
Distribution of unit area loads of total phosphorus, sorted from highest to lowest. Logarithmic scale.



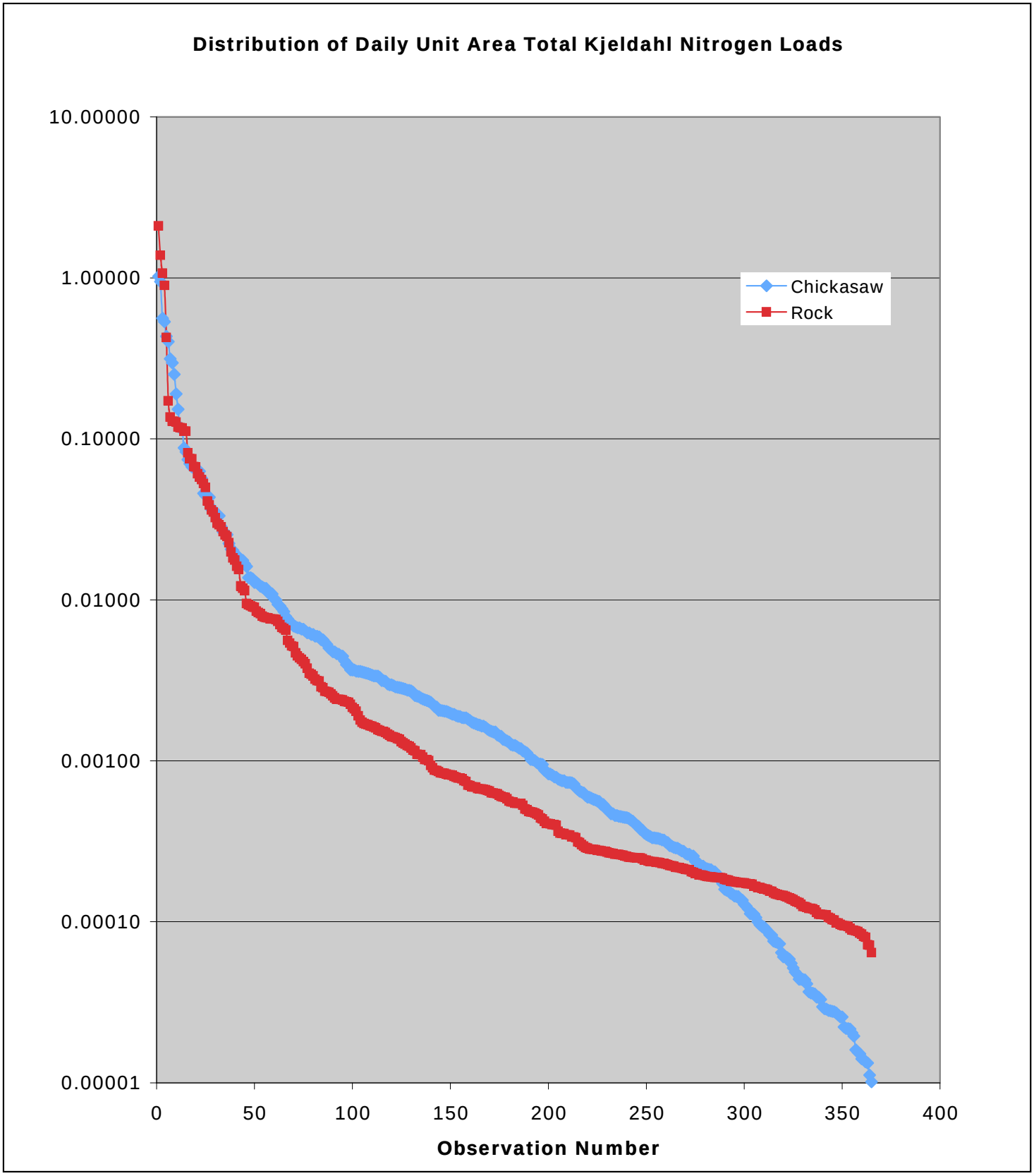
Distribution of unit area loads of dissolved reactive phosphorus, sorted from highest to lowest. Logarithmic scale.



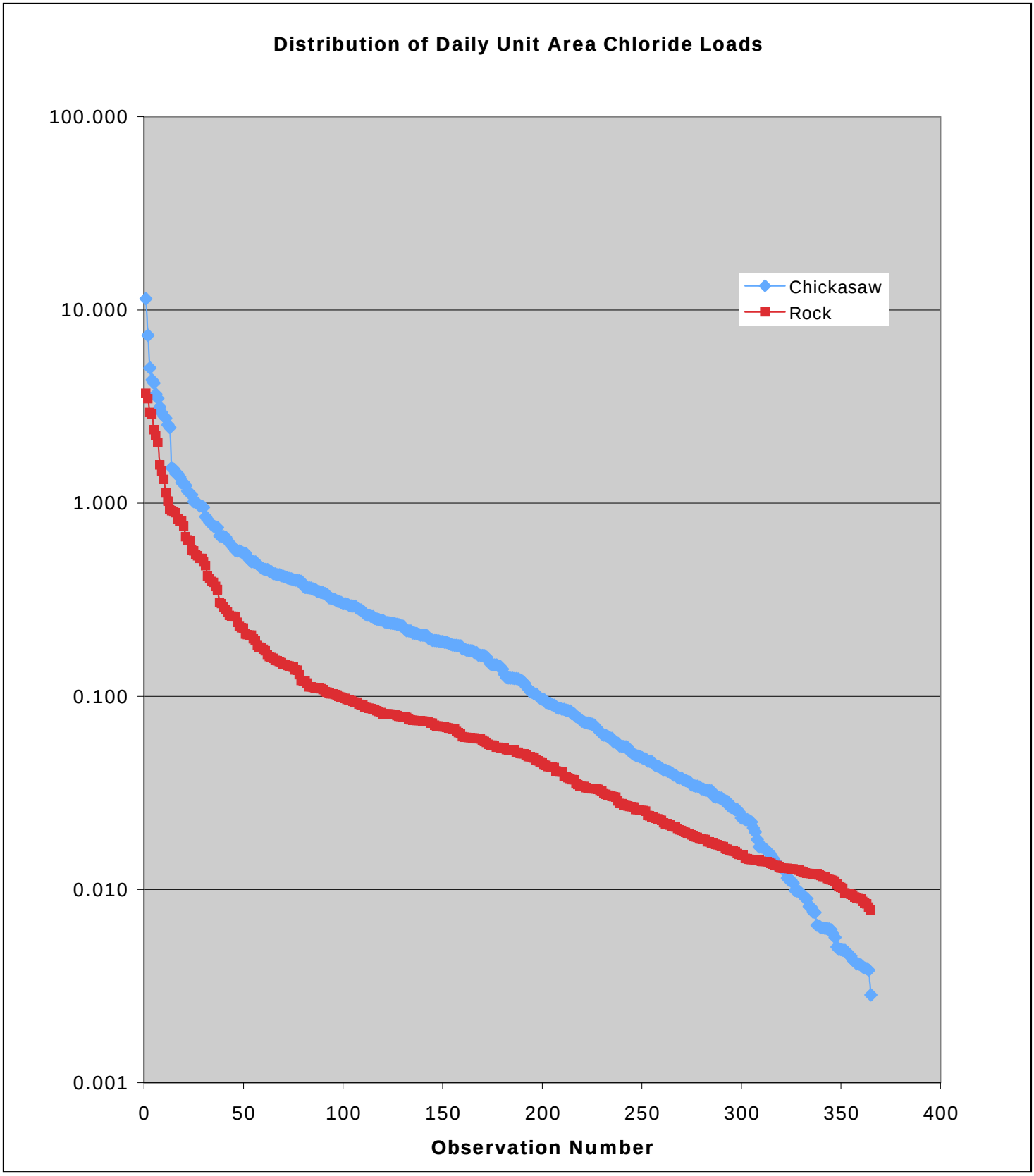
Distribution of unit area loads of dissolved reactive phosphorus, sorted from highest to lowest. Linear scale.



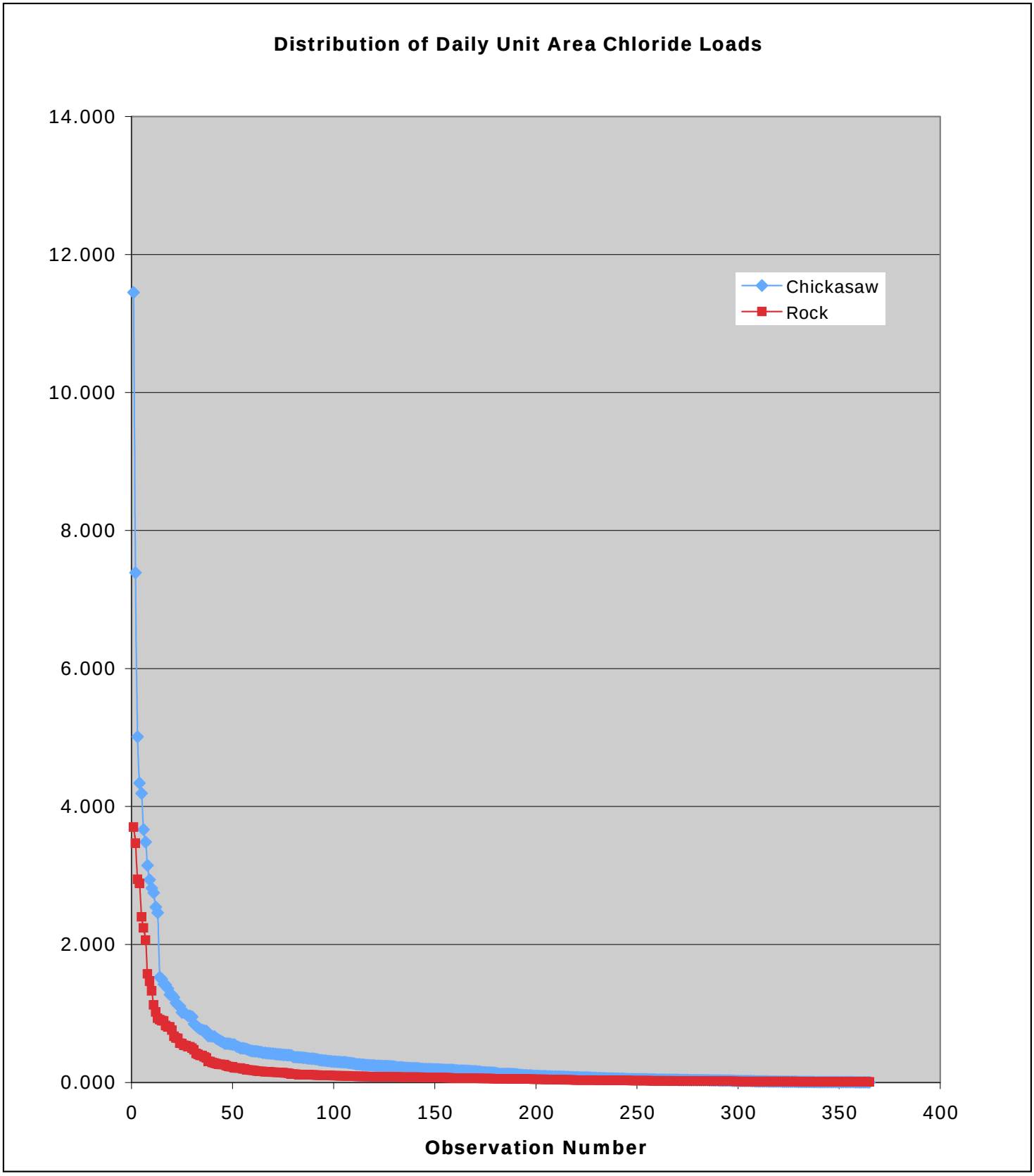
Distribution of unit area loads of nitrate nitrogen, sorted from highest to lowest. Logarithmic scale.



Distribution of unit area loads of total Kjeldahl nitrogen, sorted from highest to lowest. Logarithmic scale.



Distribution of unit area loads of chloride, sorted from highest to lowest. Logarithmic scale.



Distribution of unit area loads of chloride, sorted from highest to lowest. Linear scale.

Appendix A. Observed and estimated daily loads for Chickasaw Creek, Water Year 2009 (October 1, 2008 to September 30, 2009). Discharge is in thousands of cubic meters per day, loads are in kilograms per day.

Date	USGS Discharge	SS	TP	DRP	NO3	TKN	Chloride	Remark
10/1/08	0.12	1.8	0.07	0.023	0.00	0.15	32	Estimated
10/2/08	0.10	1.5	0.06	0.018	0.00	0.12	26	Estimated
10/3/08	0.10	1.5	0.06	0.018	0.00	0.12	27	Estimated
10/4/08	0.10	1.6	0.06	0.018	0.00	0.12	27	Estimated
10/5/08	0.10	1.6	0.06	0.018	0.00	0.12	27	Estimated
10/6/08	0.07	1.3	0.05	0.013	0.00	0.09	21	Estimated
10/7/08	0.07	1.3	0.05	0.013	0.00	0.09	21	Estimated
10/8/08	0.10	1.6	0.06	0.018	0.00	0.12	28	Estimated
10/9/08	0.10	1.6	0.06	0.018	0.00	0.12	28	Estimated
10/10/08	0.12	2.0	0.07	0.024	0.00	0.15	35	Estimated
10/11/08	0.12	2.0	0.07	0.024	0.00	0.15	35	Estimated
10/12/08	0.15	2.3	0.08	0.030	0.01	0.19	42	Estimated
10/13/08	0.15	2.3	0.08	0.031	0.01	0.19	42	Estimated
10/14/08	0.15	2.4	0.08	0.031	0.01	0.19	42	Estimated
10/15/08	0.20	3.0	0.10	0.043	0.01	0.25	56	Estimated
10/16/08	0.64	9.4	0.27	0.179	0.05	0.82	161	Estimated
10/17/08	0.49	7.3	0.22	0.131	0.03	0.63	129	Estimated
10/18/08	0.24	3.8	0.12	0.057	0.01	0.32	69	Estimated
10/19/08	0.20	3.1	0.10	0.044	0.01	0.26	57	Estimated
10/20/08	0.20	3.1	0.10	0.044	0.01	0.26	57	Estimated
10/21/08	0.20	3.1	0.11	0.044	0.01	0.26	57	Estimated
10/22/08	0.24	3.9	0.12	0.058	0.02	0.32	71	Estimated
10/23/08	0.29	6.9	0.06	0.036	0.00	0.22	100	
10/24/08	1.25	42.4	0.31	0.161	0.17	1.22	418	
10/25/08	5.87	146.4	1.57	0.881	1.29	5.76	1950	
10/26/08	1.08	54.4	0.28	0.117	2.09	1.23	307	
10/27/08	0.56	28.1	0.14	0.060	0.42	0.67	196	
10/28/08	1.03	60.6	0.25	0.111	0.42	1.20	361	
10/29/08	0.81	38.7	0.18	0.078	0.17	0.91	235	
10/30/08	0.49	29.1	0.11	0.042	0.09	0.53	158	
10/31/08	0.42	18.8	0.08	0.035	0.00	0.40	155	
11/1/08	0.49	7.8	0.22	0.131	0.08	0.68	139	Estimated
11/2/08	0.61	27.4	0.14	0.054	0.05	0.61	187	
11/3/08	0.93	33.7	0.22	0.110	0.09	0.87	259	
11/4/08	0.64	10.3	0.28	0.178	0.14	0.90	177	Estimated
11/5/08	0.42	6.7	0.19	0.107	0.08	0.59	122	Estimated
11/6/08	0.69	11.1	0.30	0.194	0.18	0.98	190	Estimated
11/7/08	2.42	44.9	1.03	0.878	1.13	3.72	557	Estimated
11/8/08	4.40	92.9	2.00	1.793	2.84	7.17	907	Estimated
11/9/08	6.12	141.1	2.93	2.647	4.85	10.35	1180	Estimated
11/10/08	5.87	140.9	1.50	0.787	0.53	4.93	1714	
11/11/08	2.69	128.0	0.86	0.406	0.03	3.07	654	
11/12/08	3.43	159.0	0.97	0.442	0.03	3.39	694	
11/13/08	9.30	349.1	3.51	2.232	21.57	12.18	1562	
11/14/08	4.40	106.5	1.36	0.722	9.69	7.44	1383	
11/15/08	23.25	653.9	9.37	6.277	74.39	47.42	4252	
11/16/08	14.19	550.1	8.29	5.024	48.25	28.67	1838	
11/17/08	3.92	179.3	1.69	2.439	38.88	6.45	453	TP, TKN Est.
11/18/08	2.32	60.7	1.61	0.858	12.97	8.09	312	
11/19/08	1.39	34.2	0.74	0.372	7.99	4.78	234	

11/20/08	1.15	35.4	0.53	0.258	5.73	3.29	214	
11/21/08	0.86	21.8	0.35	0.187	3.94	2.54	175	
11/22/08	0.54	23.1	0.24	0.118	2.33	1.32	127	
11/23/08	0.54	35.8	0.27	0.105	2.02	1.87	148	
11/24/08	1.03	23.9	0.37	0.201	3.33	2.73	296	
11/25/08	1.57	26.6	0.54	0.359	4.06	3.21	395	
11/26/08	0.95	20.7	0.28	0.200	3.10	1.60	206	
11/27/08	0.59	17.8	0.18	0.099	1.56	1.90	142	
11/28/08	0.51	11.1	0.14	0.082	1.20	1.42	127	
11/29/08	0.42	13.2	0.13	0.074	0.80	0.94	98	
11/30/08	0.66	13.6	0.19	0.092	1.18	1.41	154	
12/1/08	1.69	27.6	0.74	0.469	2.45	5.23	367	
12/2/08	1.05	21.3	0.27	0.204	2.02	1.93	237	
12/3/08	0.86	19.1	0.29	0.212	1.99	3.14	184	
12/4/08	1.00	27.5	0.31	0.236	2.25	3.12	218	
12/5/08	0.69	21.2	0.24	0.178	1.46	2.00	177	
12/6/08	0.27	18.2	0.10	0.064	0.65	0.67	66	
12/7/08	0.49	12.8	0.16	0.112	1.07	1.24	111	
12/8/08	0.71	21.7	0.27	0.156	1.72	2.29	222	
12/9/08	6.85	157.6	2.79	2.321	61.88	12.23	1310	Estimated
12/10/08	31.81	1322.4	20.52	14.468	362.36	71.35	4133	Estimated
12/11/08	8.56	209.3	3.60	2.956	80.87	15.70	1551	Estimated
12/12/08	3.43	65.0	1.21	0.971	26.88	5.67	751	Estimated
12/13/08	2.23	38.7	0.75	0.571	15.78	3.55	527	Estimated
12/14/08	2.69	48.1	0.91	0.708	20.02	4.35	614	Estimated
12/15/08	4.16	5.0	1.69	1.040	25.63	8.57	736	
12/16/08	3.92	75.0	1.35	1.079	31.88	6.53	827	Estimated
12/17/08	2.30	39.3	0.75	0.562	16.55	3.66	535	Estimated
12/18/08	1.62	26.0	0.51	0.362	10.62	2.50	397	Estimated
12/19/08	127.24	10958.1	148.44	67.456	1626.73	375.31	10513	Estimated
12/20/08	46.49	2216.7	31.83	19.849	559.67	110.51	5266	Estimated
12/21/08	15.42	440.6	6.84	5.197	163.19	30.25	2355	Estimated
12/22/08	7.59	167.8	2.76	2.185	71.48	13.48	1367	Estimated
12/23/08	9.30	218.2	3.51	2.748	91.09	16.92	1593	Estimated
12/24/08	298.53	44836.0	567.16	174.072	3894.34	1077.13	17900	Estimated
12/25/08	58.73	3070.8	42.35	24.340	728.11	144.62	6081	Estimated
12/26/08	58.73	3049.1	41.85	23.959	729.67	144.26	6055	Estimated
12/27/08	163.95	15802.0	202.99	80.864	2145.97	504.43	12036	Estimated
12/28/08	159.06	14912.3	190.96	76.734	2085.13	484.48	11746	Estimated
12/29/08	51.39	2427.2	33.14	19.451	635.90	121.89	5442	Estimated
12/30/08	34.26	1305.5	18.25	11.762	408.98	75.04	4065	Estimated
12/31/08	21.53	657.7	9.48	6.627	243.99	43.40	2889	Estimated
1/1/09	15.42	406.9	6.00	4.364	167.14	29.39	2243	Estimated
1/2/09	11.75	277.5	4.16	3.096	122.37	21.45	1818	Estimated
1/3/09	8.81	186.9	2.86	2.156	87.60	15.42	1451	Estimated
1/4/09	7.34	145.7	2.26	1.703	70.78	12.52	1253	Estimated
1/5/09	5.63	76.1	1.26	0.991	64.22	6.19	681	
1/6/09	6.12	113.1	1.77	1.322	57.23	10.13	1075	Estimated
1/7/09	7.10	135.8	2.09	1.553	68.49	11.91	1200	Estimated
1/8/09	5.87	105.4	1.64	1.216	54.77	9.61	1029	Estimated
1/9/09	3.92	62.8	1.01	0.735	33.61	6.11	741	Estimated
1/10/09	4.65	77.0	1.21	0.887	41.54	7.35	844	Estimated
1/11/09	4.40	71.3	1.13	0.817	39.00	6.90	804	Estimated
1/12/09	4.40	41.6	1.36	0.956	32.64	5.33	887	
1/13/09	4.16	125.8	1.73	1.019	31.45	6.07	1005	
1/14/09	3.92	69.6	1.19	0.787	29.09	5.13	1937	
1/15/09	3.43	73.6	1.03	0.654	26.21	4.08	1009	

1/16/09	2.94	202.4	1.10	0.576	23.34	4.35	754	
1/17/09	2.45	46.6	0.86	0.526	20.21	3.47	622	
1/18/09	2.23	38.9	0.84	0.503	17.06	3.25	512	
1/19/09	1.96	21.2	0.55	0.348	13.84	2.41	448	
1/20/09	1.79	49.7	0.73	0.439	13.58	3.38	426	
1/21/09	1.57	35.6	0.55	0.348	12.04	2.44	359	
1/22/09	1.39	25.7	0.45	0.286	10.06	1.95	311	
1/23/09	1.25	23.3	0.44	0.258	8.24	1.83	280	
1/24/09	1.15	21.9	0.51	0.294	7.30	2.17	268	
1/25/09	1.03	31.5	0.41	0.229	6.54	2.09	371	
1/26/09	0.95	19.4	0.36	0.216	6.82	2.15	371	
1/27/09	0.88	12.0	0.27	0.175	5.59	1.17	248	
1/28/09	0.81	23.9	0.29	0.170	4.68	1.18	210	
1/29/09	0.73	9.3	0.32	0.206	3.82	1.52	167	
1/30/09	0.69	9.6	0.28	0.186	3.59	1.45	157	
1/31/09	0.61	8.4	0.30	0.193	3.23	1.38	139	
2/1/09	0.56	10.3	0.27	0.173	2.81	1.14	123	
2/2/09	0.51	8.0	0.23	0.165	2.51	1.26	115	
2/3/09	0.46	6.7	0.23	0.175	2.45	1.12	147	
2/4/09	0.42	4.9	0.21	0.159	2.30	0.92	129	
2/5/09	0.39	5.2	0.22	0.159	2.31	0.90	114	
2/6/09	0.46	8.2	0.24	0.177	2.66	1.01	123	
2/7/09	29.36	2818.4	24.65	11.508	283.47	108.55	2414	
2/8/09	743.89	123308.3	525.83	210.443	11930.09	2399.39	31578	
2/9/09	320.56	23889.8	161.27	33.834	4747.43	1267.87	21412	
2/10/09	286.30	26018.5	275.83	71.899	4237.18	812.60	12548	Estimated
2/11/09	778.15	56506.5	502.36	37.602	16662.59	4055.92	48938	
2/12/09	374.39	20977.4	213.00	76.444	7960.20	1716.92	14894	
2/13/09	100.33	2227.3	38.12	19.764	2068.74	285.93	4133	
2/14/09	63.62	669.3	15.27	6.426	1235.54	141.88	3187	
2/15/09	41.60	229.3	8.28	5.168	766.33	80.89	2412	
2/16/09	31.81	40.4	5.89	3.722	551.28	54.71	1972	
2/17/09	26.92	805.6	4.76	3.365	431.48	53.56	1704	
2/18/09	29.36	557.6	4.87	3.700	424.90	46.69	1771	
2/19/09	20.07	576.1	3.47	2.649	288.54	36.12	1326	
2/20/09	17.62	289.0	3.60	2.142	223.12	26.03	1691	Estimated
2/21/09	15.66	242.2	3.04	1.830	195.54	22.57	1535	Estimated
2/22/09	13.70	198.9	2.52	1.535	168.15	19.22	1376	Estimated
2/23/09	11.99	119.4	2.33	2.038	164.75	25.18	1209	
2/24/09	10.77	139.8	1.80	1.114	127.79	14.39	1125	Estimated
2/25/09	9.79	121.5	1.58	0.978	114.62	12.82	1037	Estimated
2/26/09	9.30	112.1	1.46	0.906	108.21	12.01	988	Estimated
2/27/09	100.33	3686.7	40.32	15.505	1525.12	196.02	5429	Estimated
2/28/09	51.39	1272.0	14.51	6.843	749.70	86.62	3400	Estimated
3/1/09	36.71	755.4	8.82	4.502	520.49	57.61	2656	Estimated
3/2/09	22.02	353.3	4.28	2.403	295.24	31.39	1819	Estimated
3/3/09	17.13	244.4	3.02	1.752	222.52	23.29	1497	Estimated
3/4/09	13.70	177.1	2.23	1.322	172.67	17.88	1255	Estimated
3/5/09	11.99	145.8	1.86	1.110	148.31	15.24	1124	Estimated
3/6/09	10.28	117.0	1.51	0.910	124.24	12.70	991	Estimated
3/7/09	8.56	90.7	1.19	0.721	100.54	10.25	853	Estimated
3/8/09	149.27	6371.9	67.93	21.997	2356.25	299.41	6510	Estimated
3/9/09	75.86	4468.5	23.26	9.805	1486.85	273.31	3515	
3/10/09	46.49	1019.6	8.42	4.231	835.01	50.21	2385	
3/11/09	36.71	1626.3	9.63	5.244	616.99	54.75	2020	
3/12/09	29.36	402.3	4.90	3.142	488.32	26.72	1738	
3/13/09	22.76	161.8	2.57	1.752	362.75	15.70	1468	

3/14/09	19.33	232.7	2.03	1.063	291.13	8.70	1258	
3/15/09	16.15	190.7	1.49	0.694	233.53	5.81	1143	
3/16/09	12.97	143.9	1.82	1.061	166.77	15.39	1081	Estimated
3/17/09	11.26	180.3	0.87	0.326	168.17	10.02	910	
3/18/09	11.26	114.8	0.57	0.056	152.18	10.69	933	
3/19/09	11.26	157.6	1.05	0.360	147.12	11.71	1056	
3/20/09	8.56	121.1	0.71	0.274	103.12	8.65	788	
3/21/09	8.32	78.3	0.58	0.241	102.75	8.15	883	
3/22/09	7.83	68.7	0.92	0.543	93.59	8.32	697	Estimated
3/23/09	7.59	105.2	0.53	0.326	88.98	6.60	832	
3/24/09	7.83	70.6	0.50	0.133	83.47	6.73	785	
3/25/09	10.52	97.3	0.67	0.263	113.74	9.89	1023	
3/26/09	8.56	78.8	0.69	0.377	99.86	8.31	895	
3/27/09	7.10	63.6	0.54	0.298	72.67	7.03	721	
3/28/09	7.59	75.3	0.55	0.296	75.93	7.13	795	
3/29/09	17.37	320.7	2.95	1.651	155.67	24.15	1895	
3/30/09	9.30	93.7	1.65	0.939	107.40	11.62	933	
3/31/09	8.08	66.6	0.94	0.468	78.65	7.91	823	
4/1/09	8.32	60.7	0.96	0.308	77.12	9.24	935	
4/2/09	7.34	57.0	0.74	0.360	68.49	7.27	785	
4/3/09	425.78	76302.9	319.53	91.042	8401.19	1345.56	18551	
4/4/09	122.35	6574.6	47.55	22.949	3089.38	185.31	4719	
4/5/09	129.69	17797.3	63.13	20.569	2013.34	268.76	4941	
4/6/09	773.25	197593.4	726.52	277.270	13110.53	2286.24	15658	
4/7/09	159.06	9487.8	67.18	31.779	3289.64	242.67	4791	
4/8/09	70.96	2143.8	16.82	9.225	1444.10	68.83	2512	
4/9/09	44.05	799.9	6.47	4.493	875.19	32.59	1731	
4/10/09	46.49	697.4	9.48	6.370	855.94	46.49	2060	
4/11/09	41.60	460.9	6.70	4.243	744.62	26.62	1934	
4/12/09	31.81	372.8	9.77	2.672	578.32	25.45	1556	
4/13/09	105.22	8451.5	45.13	19.349	1487.59	185.31	4338	
4/14/09	215.34	14675.4	92.22	40.310	4204.87	354.57	6390	
4/15/09	78.30	2201.1	16.44	9.788	1595.84	76.74	2733	
4/16/09	51.39	705.5	7.40	4.933	1015.41	42.65	2117	
4/17/09	39.15	500.0	3.92	2.858	766.60	28.58	1750	
4/18/09	31.81	279.5	2.74	1.978	602.03	8.44	1526	
4/19/09	24.47	167.9	1.79	1.101	449.27	15.66	1331	
4/20/09	36.71	308.3	4.37	2.973	580.31	33.77	1883	
4/21/09	34.26	421.4	5.45	3.118	546.42	28.09	1795	
4/22/09	26.92	223.1	2.37	0.781	448.44	19.65	1354	
4/23/09	19.33	206.5	1.18	0.058	319.16	13.34	1019	
4/24/09	17.86	169.5	0.89	0.250	287.42	15.01	1031	
4/25/09	14.93	109.1	0.72	0.030	238.38	12.69	814	
4/26/09	12.97	186.4	1.02	0.091	198.95	12.32	834	
4/27/09	11.99	59.8	0.80	0.228	180.45	10.79	782	
4/28/09	13.46	194.1	0.83	0.269	185.86	12.11	830	
4/29/09	13.46	94.1	1.21	0.700	174.29	13.46	1016	
4/30/09	48.94	16650.2	34.76	8.084	627.24	189.70	2862	
5/1/09	1096.26	582960.0	1612.22	552.354	13937.63	4367.39	13444	
5/2/09	173.74	17750.7	88.08	43.261	3245.41	317.94	4343	
5/3/09	70.96	2817.9	21.29	12.560	1294.37	87.99	2122	
5/4/09	44.05	596.9	7.27	4.983	819.27	27.40	1702	
5/5/09	31.81	264.0	3.98	2.895	590.41	25.45	1486	
5/6/09	88.09	5058.6	32.48	18.405	1777.14	156.07	2843	
5/7/09	105.22	2705.2	26.09	15.362	2038.13	154.67	3630	
5/8/09	58.73	991.3	10.75	7.165	1121.12	81.63	2179	
5/9/09	51.39	357.7	4.68	2.724	920.86	58.58	2425	

5/10/09	34.26	256.9	4.32	3.152	632.06	29.12	1566	
5/11/09	26.92	260.6	5.14	3.634	478.85	24.23	1061	
5/12/09	20.55	188.7	2.73	1.520	300.83	19.12	1068	Estimated
5/13/09	24.47	249.6	1.49	0.073	418.19	19.82	1287	
5/14/09	249.59	58735.0	232.80	57.108	4267.35	652.55	5830	
5/15/09	83.20	7364.7	25.03	8.889	1723.01	112.74	2573	
5/16/09	48.94	1110.9	8.32	3.034	965.59	50.41	1786	
5/17/09	34.26	324.7	4.25	1.527	656.19	26.08	1436	
5/18/09	39.15	482.3	6.83	3.415	615.80	40.10	1680	Estimated
5/19/09	26.92	285.1	2.48	1.588	511.69	21.00	1475	
5/20/09	21.78	234.3	1.63	1.024	393.10	8.06	1267	
5/21/09	18.60	173.0	1.21	0.781	325.64	14.88	1107	
5/22/09	15.42	133.2	1.11	0.755	254.37	11.41	953	
5/23/09	13.46	135.1	0.92	0.525	208.07	8.75	886	
5/24/09	12.24	153.5	0.94	0.600	184.26	14.56	815	
5/25/09	11.01	103.7	0.85	0.540	155.70	7.93	780	
5/26/09	8.81	70.6	0.68	0.340	122.21	7.03	610	
5/27/09	12.48	149.8	0.99	0.499	164.11	10.48	822	
5/28/09	10.77	63.2	1.35	0.883	93.89	10.87	887	
5/29/09	7.83	45.7	0.93	0.626	84.33	7.75	500	
5/30/09	6.85	42.5	0.66	0.411	66.94	7.61	480	SS estimated
5/31/09	5.14	26.7	0.45	0.252	50.00	5.34	376	
6/1/09	8.81	41.1	0.70	0.352	79.28	8.81	699	
6/2/09	39.15	3454.3	23.40	14.582	396.98	75.66	2346	
6/3/09	26.92	242.3	6.84	4.630	554.22	37.68	1289	
6/4/09	31.81	631.4	10.66	7.444	765.37	51.22	1288	
6/5/09	16.15	106.9	3.15	2.132	345.29	14.37	904	
6/6/09	10.77	57.4	1.52	1.044	204.35	11.74	531	
6/7/09	8.32	46.8	1.24	0.840	143.85	7.90	468	
6/8/09	7.10	69.1	0.94	0.640	119.59	15.13	440	
6/9/09	78.30	64973.4	118.72	25.450	1580.05	286.28	3221	
6/10/09	22.76	1419.4	9.26	5.302	707.75	39.14	719	
6/11/09	521.21	234581.2	573.47	207.914	14642.22	1854.53	10860	
6/12/09	141.93	12631.4	73.09	40.165	4625.37	273.92	3307	
6/13/09	39.15	1444.0	12.42	8.333	1044.75	51.98	1223	
6/14/09	17.13	256.9	3.58	2.415	410.24	16.79	695	
6/15/09	11.26	121.0	1.81	1.400	246.09	14.71	529	
6/16/09	8.32	124.5	1.16	0.857	173.14	15.39	394	
6/17/09	8.56	150.5	1.07	0.771	171.03	20.30	439	
6/18/09	5.38	33.6	0.66	0.443	60.42	4.06	388	Estimated
6/19/09	4.89	49.2	0.50	0.284	77.67	4.60	304	
6/20/09	4.65	38.0	0.34	0.181	66.30	3.53	336	
6/21/09	2.32	11.0	0.17	0.070	29.99	1.95	161	
6/22/09	2.94	18.6	0.21	0.079	33.42	2.70	197	
6/23/09	4.89	37.3	0.16	0.076	53.69	4.18	363	
6/24/09	4.16	25.2	0.32	0.012	39.81	5.08	314	SS estimated
6/25/09	3.92	26.3	0.23	0.074	34.02	3.13	332	
6/26/09	41.60	8042.7	25.47	11.844	653.22	95.63	2125	
6/27/09	12.48	145.0	3.14	2.259	266.44	14.10	592	
6/28/09	8.81	74.7	1.37	0.863	130.82	8.81	531	
6/29/09	5.14	35.2	0.77	0.437	57.65	5.40	366	
6/30/09	5.38	27.3	0.74	0.485	52.67	4.09	385	
7/1/09	3.92	15.3	0.35	0.172	35.16	2.54	318	
7/2/09	2.94	12.4	0.22	0.109	23.20	1.91	247	
7/3/09	2.45	11.5	0.20	0.093	16.39	1.93	212	
7/4/09	2.06	5.4	0.16	0.055	10.81	1.42	197	
7/5/09	4.16	9.8	0.36	0.112	16.31	4.28	413	

7/6/09	2.10	10.4	0.17	0.040	5.70	1.49	265	
7/7/09	1.47	15.7	0.13	0.051	2.88	1.70	208	
7/8/09	1.05	5.7	0.15	0.086	7.54	0.74	111	Estimated
7/9/09	0.88	4.8	0.12	0.071	5.97	0.61	96	Estimated
7/10/09	0.69	3.7	0.10	0.053	4.29	0.48	77	Estimated
7/11/09	24.23	1820.5	13.06	5.136	23.98	58.63	2873	
7/12/09	11.50	189.9	5.72	3.347	89.71	28.18	623	
7/13/09	3.43	40.8	1.14	0.736	23.04	4.86	244	
7/14/09	1.91	16.3	0.35	0.214	8.02	2.60	163	
7/15/09	1.30	7.7	0.20	0.125	9.69	0.95	138	Estimated
7/16/09	1.20	7.1	0.18	0.116	8.74	0.87	130	Estimated
7/17/09	0.86	5.0	0.14	0.079	5.64	0.62	98	Estimated
7/18/09	0.76	4.4	0.12	0.069	4.80	0.55	89	Estimated
7/19/09	0.71	4.2	0.12	0.065	4.39	0.51	85	Estimated
7/20/09	0.51	3.0	0.09	0.045	2.86	0.37	64	Estimated
7/21/09	0.49	2.9	0.09	0.043	2.67	0.35	62	Estimated
7/22/09	3.67	79.0	1.03	0.514	1.14	2.39	519	
7/23/09	4.40	44.9	0.95	0.511	0.66	3.22	621	
7/24/09	1.79	22.5	0.44	0.263	1.45	1.89	347	
7/25/09	0.81	3.6	0.19	0.116	0.91	0.77	145	
7/26/09	1.17	10.4	0.29	0.166	0.36	1.27	174	
7/27/09	0.49	6.4	0.12	0.070	0.05	0.48	71	
7/28/09	0.27	1.8	0.06	1.169	0.04	0.20	38	Estimated
7/29/09	2.45	18.3	0.46	0.344	0.84	2.00	261	Estimated
7/30/09	3.43	27.7	0.68	0.524	1.27	2.91	345	Estimated
7/31/09	2.13	15.9	0.41	0.302	0.61	1.75	236	Estimated
8/1/09	0.51	3.5	0.11	0.056	0.08	0.40	70	Estimated
8/2/09	0.27	1.9	0.06	0.026	0.03	0.21	40	Estimated
8/3/09	0.39	3.0	0.12	0.085	0.01	0.45	54	
8/4/09	1.37	23.4	0.42	0.285	0.45	1.40	167	
8/5/09	1.17	10.9	0.40	0.315	0.01	1.09	203	
8/6/09	0.27	2.2	0.08	0.060	0.01	0.27	48	
8/7/09	0.15	1.8	0.04	0.032	0.02	0.15	24	
8/8/09	0.12	0.9	0.04	0.027	0.01	0.11	21	
8/9/09	0.12	0.9	0.04	0.028	0.01	0.11	22	
8/10/09	0.10	0.6	0.03	0.024	0.01	0.11	18	
8/11/09	0.10	1.2	0.03	0.026	0.01	0.09	19	
8/12/09	0.12	1.7	0.04	0.033	0.01	0.12	25	
8/13/09	0.10	1.1	0.03	0.026	0.01	0.09	18	
8/14/09	0.07	0.8	0.03	0.020	0.00	0.07	18	
8/15/09	0.07	0.8	0.03	0.021	0.00	0.14	17	
8/16/09	0.07	0.3	0.03	0.022	0.00	0.06	17	
8/17/09	0.07	0.4	0.03	0.025	0.00	0.05	17	
8/18/09	0.07	1.0	0.03	0.018	0.01	0.09	16	
8/19/09	0.46	5.0	0.22	0.127	0.00	0.41	100	
8/20/09	15.91	525.5	7.92	4.533	1.91	20.36	3246	
8/21/09	5.38	74.7	2.64	1.486	6.62	9.31	1108	
8/22/09	4.16	57.2	1.83	1.107	7.99	6.45	532	
8/23/09	2.45	26.1	0.99	0.602	0.81	3.13	309	
8/24/09	1.81	22.1	0.87	0.552	0.04	2.46	273	
8/25/09	1.47	16.9	0.66	0.411	0.01	1.81	232	
8/26/09	1.08	11.8	0.46	0.317	0.18	1.12	148	
8/27/09	1.17	12.1	0.55	0.381	0.14	1.41	172	
8/28/09	1.35	15.1	0.64	0.445	0.09	1.47	203	
8/29/09	12.72	201.9	6.49	4.657	7.63	14.38	1841	
8/30/09	5.14	65.6	1.63	1.432	0.57	5.59	629	Estimated
8/31/09	2.25	24.3	0.66	0.540	0.17	2.29	326	Estimated

9/1/09	1.27	9.3	0.58	0.450	0.17	1.37	140
9/2/09	0.98	8.1	0.46	0.345	0.14	1.00	114
9/3/09	0.51	2.4	0.28	0.204	0.01	0.48	67
9/4/09	0.34	1.9	0.18	0.134	0.00	0.31	46
9/5/09	0.37	2.6	0.19	0.136	0.01	0.39	49
9/6/09	0.29	1.6	0.11	0.077	0.03	0.19	27
9/7/09	0.32	1.8	0.12	0.088	0.01	0.24	33
9/8/09	2.45	15.4	1.08	0.724	0.10	2.84	410
9/9/09	1.47	9.8	0.64	0.426	0.12	1.34	287
9/10/09	0.86	6.5	0.34	0.218	0.08	0.64	181
9/11/09	0.44	2.6	0.18	0.115	0.05	0.35	97
9/12/09	0.22	1.1	0.10	0.061	0.01	0.18	53
9/13/09	0.20	1.7	0.09	0.052	0.01	0.15	48
9/14/09	0.17	1.1	0.08	0.046	0.01	0.13	39
9/15/09	0.12	0.7	0.06	0.044	0.00	0.08	27
9/16/09	0.10	0.8	0.05	0.034	0.00	0.07	21
9/17/09	0.10	1.4	0.05	0.032	0.00	0.06	20
9/18/09	0.10	1.0	0.05	0.033	0.00	0.06	20
9/19/09	0.10	1.1	0.05	0.033	0.00	0.06	18
9/20/09	0.10	0.4	0.05	0.033	0.00	0.06	17
9/21/09	0.07	0.8	0.03	0.024	0.00	0.04	12
9/22/09	1.10	8.3	0.51	0.383	0.02	0.83	186
9/23/09	0.54	3.3	0.23	0.170	0.02	0.58	146
9/24/09	0.15	1.1	0.08	0.056	0.00	0.16	41
9/25/09	1.00	5.7	0.54	0.416	0.10	1.09	269
9/26/09	1.74	11.6	0.86	0.674	0.02	1.58	529
9/27/09	0.49	3.1	0.25	0.187	0.03	0.43	141
9/28/09	2.69	19.3	1.31	0.907	1.70	2.77	741
9/29/09	1.88	13.4	0.63	0.486	0.09	1.68	735
9/30/09	0.29	2.2	0.08	0.062	0.03	0.32	107