Study for the Ongoing Assessment of Falls of the Neuse Reservoir
2010 Data Summary

Purpose

The objective of this study is to evaluate progress in attainment of water quality standards and use support in Falls of the Neuse Reservoir (Falls Lake) as required by the Falls water supply nutrient strategy (15A NCAC 02B.0275). Data for load reduction estimates are not part of this particular study. This report summarizes sample results collected in 2010.

Methods

A detailed study plan can be found at http://portal.ncdenr.org/web/wq/ess/isu. Monthly sampling of ten stations began on May 2010 for photic zone nutrients (TP, TKN, NH_3, NO_2+NO_3), chlorophyll *a*, and turbidity. Depth stratified measurements of temperature, pH, dissolved oxygen (DO), and conductivity were recorded. Duplicate photic zone samples were collected at one station per month on a rotating schedule, except for NEU013 since chlorophyll *a* is not scheduled for collection.

Results

Results for each duplicate station were averaged and used as a single result when 2010 data was analyzed. Results are presented by station in the two management areas, Upper Falls Lake (Figure 1) and Lower Falls Lake (Figure 2). Figures 1 and 2 show annual mean (average), minimum and maximum concentrations for total phosphorus (TP), total nitrogen(TN), chlorophyll *a* (Chla), and turbidity in the photic zone. Dissolved oxygen (DO) and pH values indicate surface values. Data summaries are calculated from eight sampling events (n = 8). All nitrate + nitrite and ammonium data below detection (< 0.02 mg/L) were entered as 0.01 mg/L in order to calculate TN values.

Figure 1. Upper Falls Lake 2010 Results. Percent exceedance was calculated with a sample size of 8.

NEU013

	n	TP	TN	Chla	Turb	DO	pH
Mean	8	0.12	0.99	n/a	33	8.7	7.7
Min	8	0.06	0.78	n/a	13	5.5	6.6
Max	8	0.16	1.31	n/a	50	13.8	8.4
n > standard				*n/a*	*6*	*0*	*0*
Percent Exceedance				*n/a*	*75%*	*0%*	*0%*

LC01

	n	TP	TN	Chla	Turb	DO	pH
Mean	8	0.04	0.63	22	12	8.7	7.7
Min	8	0.03	0.54	13	5.9	6.5	7.0
Max	8	0.06	0.69	33	21	13.3	8.6
n > standard				*0*	*0*	*0*	*0*
Percent Exceedance				*0%*	*0%*	*0%*	*0%*

**Note: TN has a n = 7*

NEU013B

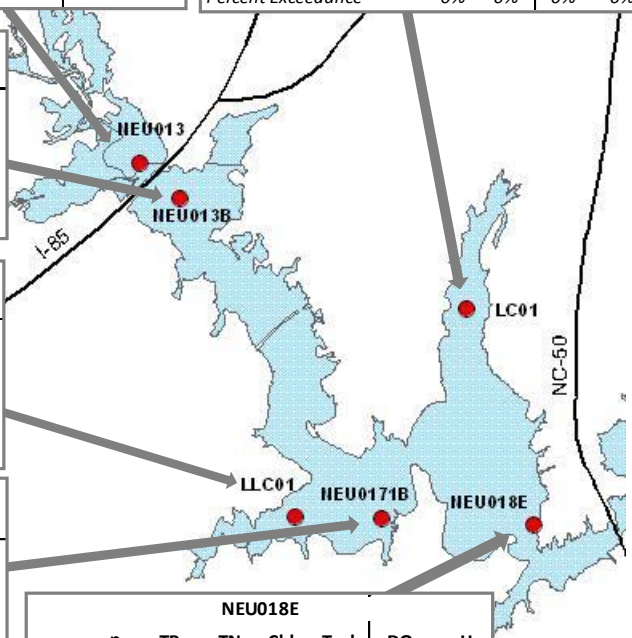
	n	TP	TN*	Chla	Turb	DO	pH
Mean	8	0.08	0.85	36	23	9.0	7.9
Min	8	0.06	0.70	17	10	5.9	6.1
Max	8	0.12	1.11	58	40	14.6	8.6
n > standard				*4*	*2*	*0*	*0*
Percent Exceedance				*50%*	*25%*	*0%*	*0%*

LLC01

	n	TP	TN	Chla	Turb	DO	pH
Mean	8	0.05	0.71	31	12	8.6	7.7
Min	8	0.03	0.57	14	4.2	5.3	6.9
Max	8	0.08	0.88	50	21	14.1	8.9
n > standard				*2*	*0*	*0*	*0*
Percent Exceedance				*25%*	*0%*	*0%*	*0%*

NEU0171B

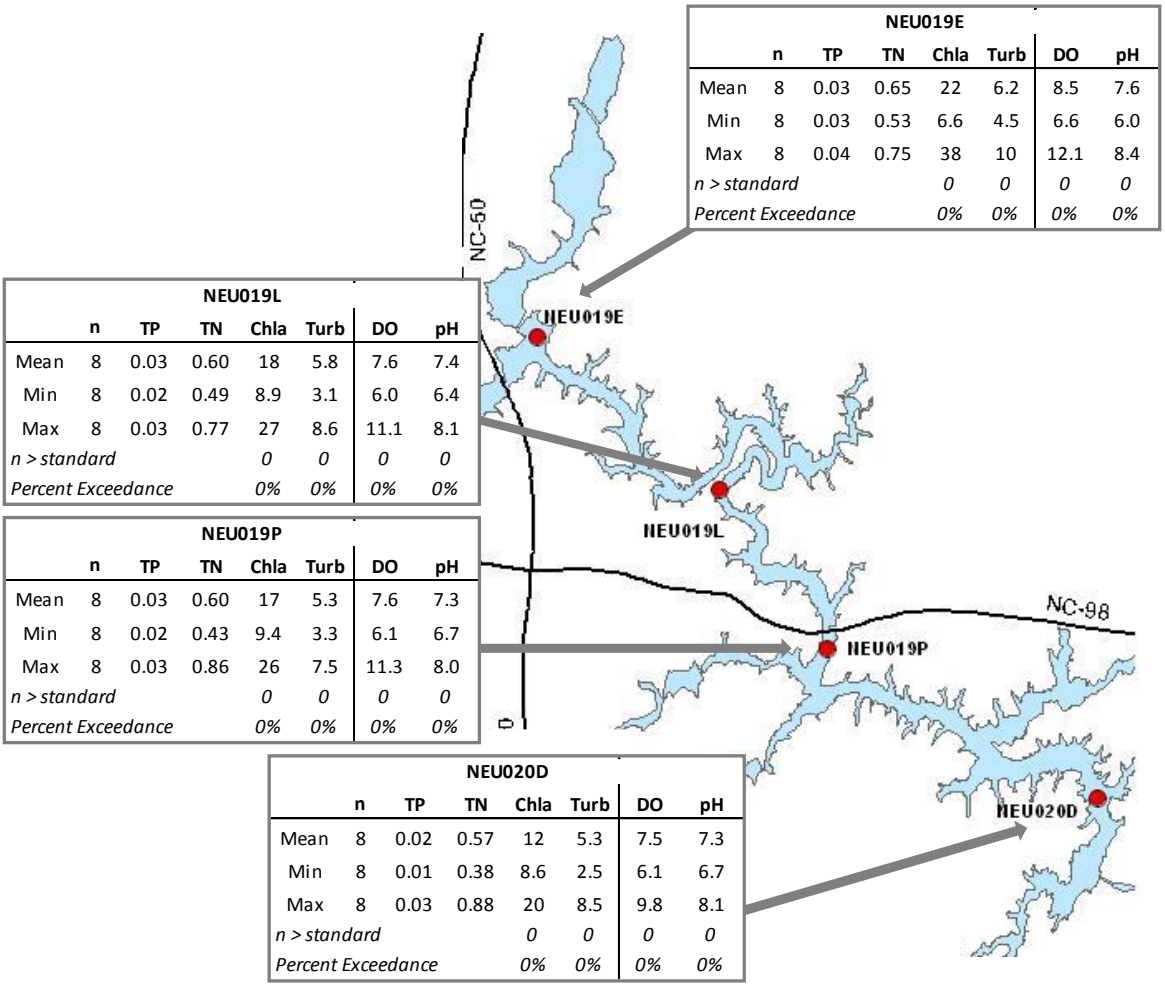
	n	TP	TN	Chla	Turb	DO	pH
Mean	8	0.04	0.73	27	12	8.6	7.6
Min	8	0.03	0.63	15	4.8	6.6	6.5
Max	8	0.05	0.81	44	18	14.0	8.8
n > standard				*1*	*0*	*0*	*0*
Percent Exceedance				*13%*	*0%*	*0%*	*0%*



NEU018E

	n	TP	TN	Chla	Turb	DO	pH
Mean	8	0.04	0.64	23	7.8	8.6	7.6
Min	8	0.03	0.56	14	4.3	5.1	6.9
Max	8	0.04	0.71	32	12	13.3	8.7
n > standard				*0*	*0*	*0*	*0*
Percent Exceedance				*0%*	*0%*	*0%*	*0%*

Figure 2. Lower Falls Lake 2010 Results.



NEU019E	n	TP	TN	Chla	Turb	DO	pH
Mean	8	0.03	0.65	22	6.2	8.5	7.6
Min	8	0.03	0.53	6.6	4.5	6.6	6.0
Max	8	0.04	0.75	38	10	12.1	8.4
n > standard				*0*	*0*	*0*	*0*
Percent Exceedance				*0%*	*0%*	*0%*	*0%*

NEU019L	n	TP	TN	Chla	Turb	DO	pH
Mean	8	0.03	0.60	18	5.8	7.6	7.4
Min	8	0.02	0.49	8.9	3.1	6.0	6.4
Max	8	0.03	0.77	27	8.6	11.1	8.1
n > standard				*0*	*0*	*0*	*0*
Percent Exceedance				*0%*	*0%*	*0%*	*0%*

NEU019P	n	TP	TN	Chla	Turb	DO	pH
Mean	8	0.03	0.60	17	5.3	7.6	7.3
Min	8	0.02	0.43	9.4	3.3	6.1	6.7
Max	8	0.03	0.86	26	7.5	11.3	8.0
n > standard				*0*	*0*	*0*	*0*
Percent Exceedance				*0%*	*0%*	*0%*	*0%*

NEU020D	n	TP	TN	Chla	Turb	DO	pH
Mean	8	0.02	0.57	12	5.3	7.5	7.3
Min	8	0.01	0.38	8.6	2.5	6.1	6.7
Max	8	0.03	0.88	20	8.5	9.8	8.1
n > standard				*0*	*0*	*0*	*0*
Percent Exceedance				*0%*	*0%*	*0%*	*0%*