LAKE & RESERVOIR ASSESSMENTS
LUMBER RIVER BASIN

Pages Lake

Intensive Survey Branch
Water Sciences Section
Division of Environmental Quality
November 29, 2016

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GLOSSARY

Algae	Small aquatic plants that occur as single cells, colonies, or filaments. May also be referred to as phytoplankton, although phytoplankton are a subset of algae.
Algal biovolume	The volume of all living algae in a unit area at a given point in time. To determine biovolume, individual cells in a known amount of sample are counted. Cells are measured to obtain their cell volume, which is used in calculating biovolume
Algal density	The density of algae based on the number of units (single cells, filaments and/or colonies) present in a milliliter of water. The severity of an algae bloom may be determined by the algal density as follows: Mild bloom = 20,000 to 30,000 units/ml Severe bloom = 30,000 to 100,000 units/ml Extreme bloom = Greater than 100,000 units/ml
Algal Growth Potential Test (AGPT)	A test to determine the nutrient that is the most limiting to the growth of algae in a body of water. The sample water is split such that one sub-sample is given additional nitrogen, another is given phosphorus, a third may be given a combination of nitrogen and phosphorus, and one sub-sample is not treated and acts as the control. A specific species of algae is added to each sub-sample and is allowed to grow for a given period of time. The dry weights of algae in each sub-sample and the control are then measured to determine the rate of productivity in each treatment. The treatment (nitrogen or phosphorus) with the greatest algal productivity is said to be the limiting nutrient of the sample source. If the control sample has an algal dry weight greater than 5 mg/L, the source water is considered to be unlimited for either nitrogen or phosphorus.
Centric diatom	Diatoms are photosynthetic algae that have a siliceous skeleton (frustule) found in almost every aquatic environment including fresh and marine waters, as well as moist soils. Centric diatoms are circular in shape and are often found in the water column.
Chlorophyll *a*	Chlorophyll *a* is an algal pigment that is used as an approximate measure of algal biomass. The concentration of chlorophyll *a* is used in the calculation of the NCTSI, and the value listed is a lake-wide average from all sampling locations.
Clinograde	In productive lakes where oxygen levels drop to zero in the lower waters near the bottom, the graphed changes in oxygen from the surface to the lake bottom produces a curve known as clinograde curve.
Coccoid	Round or spherical shaped cell
Conductivity	This is a measure of the ability of water to conduct an electrical current. This measure increases as water becomes more mineralized. The concentrations listed are the range of values observed in surface readings from the sampling locations.
Dissolved oxygen	The range of surface concentrations found at the sampling locations.
Dissolved oxygen saturation	The capacity of water to absorb oxygen gas. Often expressed as a percentage, the amount of oxygen that can dissolve into water will change depending on a number of parameters, the most important being temperature. Dissolved oxygen saturation is inversely proportion to temperature, that is, as temperature increases, water's capacity for oxygen will decrease, and vice versa.
Eutrophic	Describes a lake with high plant productivity and low water transparency.
Eutrophication	The process of physical, chemical, and biological changes associated with nutrient, organic matter, and silt enrichment and sedimentation of a lake.

Limiting nutrient	The plant nutrient present in lowest concentration relative to need limits growth such that addition of the limiting nutrient will stimulate additional growth. In northern temperate lakes, phosphorus (P) is commonly the limiting nutrient for algal growth
Manganese	A naturally occurring metal commonly found in soils and organic matter. As a trace nutrient, manganese is essential to all forms of biological life. Manganese in lakes is released from bottom sediments and enters the water column when the oxygen concentration in the water near the lake bottom is extremely low or absent. Manganese in lake water may cause taste and odor problems in drinking water and require additional treatment of the raw water at water treatment facilities to alleviate this problem.
Mesotrophic	Describes a lake with moderate plant productivity and water transparency
NCTSI	North Carolina Trophic State Index was specifically developed for North Carolina lakes as part of the state's original Clean Lakes Classification Survey (NRCD 1982). It takes the nutrients present along with chlorophyll *a* and Secchi depth to calculate a lake's biological productivity.
Oligotrophic	Describes a lake with low plant productivity and high water transparency.
pH	The range of surface pH readings found at the sampling locations. This value is used to express the relative acidity or alkalinity of water.
Photic zone	The portion of the water column in which there is sufficient light for algal growth. DEQ considers 2 times the Secchi depth as depicting the photic zone.
Secchi depth	This is a measure of water transparency expressed in meters. This parameter is used in the calculation of the NCTSI value for the lake. The depth listed is an average value from all sampling locations in the lake.
Temperature	The range of surface temperatures found at the sampling locations.
Total Kjeldahl nitrogen	The sum of organic nitrogen and ammonia in a water body. High measurements of TKN typically results from sewage and manure discharges in water bodies.
Total organic Nitrogen (TON)	Total Organic Nitrogen (TON) can represent a major reservoir of nitrogen in aquatic systems during summer months. Similar to phosphorus, this concentration can be related to lake productivity and is used in the calculation of the NCTSI. The concentration listed is a lake-wide average from all sampling stations and is calculated by subtracting Ammonia concentrations from TKN concentrations.
Total phosphorus (TP)	Total phosphorus (TP) includes all forms of phosphorus that occur in water. This nutrient is essential for the growth of aquatic plants and is often the nutrient that limits the growth of phytoplankton. It is used to calculate the NCTSI. The concentration listed is a lake-wide average from all sampling stations.
Trophic state	This is a relative description of the biological productivity of a lake based on the calculated NCTSI value. Trophic states may range from extremely productive (Hypereutrophic) to very low productivity (Oligotrophic).
Turbidity	A measure of the ability of light to pass through a volume of water. Turbidity may be influenced by suspended sediment and/or algae in the water.
Watershed	A drainage area in which all land and water areas drain or flow toward a central collector such as a stream, river, or lake at a lower elevation.

Overview

The Lumber River Basin, located along the North Carolina-South Carolina state border at the southeast corner of the state, consists of 2,283 miles of freshwater streams and rivers. The basin extends approximately 150 miles from the Sand Hills region of the state in southern Moore and Montgomery Counties to the Atlantic Ocean coastline in Brunswick County. Streams and rivers in the Lumber River Basin (with the exception of Lockwoods Folly and Shallotte Rivers) flows southwest into South Carolina and are tributaries of the Great Pee Dee River, which flow into the Atlantic Ocean near Georgetown, South Carolina.

Three lakes were sampled in this river basin by DWR staff in 2016. These lakes were Pages Lake, Lake Waccamaw and Lake Tabor. Lake Waccamaw is part of Lake Waccamaw State Park and has an Outstanding Resource Water (ORW) designation. This unique Carolina Bay Lake supports populations of endemic fish, mussels, clams, and snails.

On April 2, 2008, a state-wide fish consumption advisory was placed on fish caught in the state which may be high in mercury. These include largemouth bass, blackfish (bowfin), catfish, and jackfish (chain pickerel) See http://www.epi.state.nc.us/epi/fish/current.html for additional information on fish consumption advisories in the state.

Following the description of the assessment methodology used for the Lumber River Basin, there are individual summaries for each of the lakes.

Assessment Methodology

For this report, data from January 1, 2011 through December 31, 2016 were reviewed. Lake monitoring and sample collection activities performed by DWR field staff are in accordance with the Intensive Survey Unit Standard Operating Procedures Manual (http://portal.ncdenr.org/c/document_library/get_file?uuid=522a90a4-b593-426f-8c11-21a35569dfd8&groupId=38364) An interactive map of the state showing the locations of lake sites sampled by DWR may be found at http://www.arcgis.com/home/webmap/viewer.html?webmap=9dbc8edafb7743a9b7ef3f6fed5c4db0&extent=-87.8069,29.9342,-71.5801,38.7611 .

All lakes were sampled during the growing season from May through September. Data were assessed for excursions of the state's Class C water quality standards for chlorophyll *a*, pH, dissolved oxygen, water temperature, turbidity, and surface metals. Other parameters discussed in this report include secchi depth and percent dissolved oxygen saturation. Secchi depth provides a measure of water clarity and is used in calculating the trophic or nutrient enriched status of a lake. Percent dissolved oxygen saturation gives information on the amount of dissolved oxygen in the water column and may be increased by photosynthesis or depressed by oxygen-consuming decomposition.

For algae collection and assessment, water samples are collected from the photic zone, preserved in the field and taken concurrently with chemical and physical parameters. Samples were quantitatively analyzed to determine assemblage structure, density (units/ml) and biovolume (m^3/mm^3).

For the purpose of reporting, algal blooms were determined by the measurement of unit density (units/ml). Unit density is a quantitative measurement of the number of filaments, colonies or single celled taxa in a waterbody. Blooms are considered mild if they are between 10,000 and 20,000 units/ml. Moderate blooms are those between 20,000 and 30,000 units/ml. Severe blooms are between 30,000 and 100,000 units/ml and extreme blooms are those 100,000 units/ml or greater.

An algal group is considered dominant when it comprises 40% or more of the total unit density or total biovolume. A genus is considered dominant when it comprises 30% or more of the total unit density or total biovolume.

Quality Assurance of Field and Laboratory Lakes Data

Data collected in the field via multiparameter water quality meters are uploaded into the Labworks® Database within five days of the sampling date.

Chemistry data from the DWR Water Quality Laboratory are uploaded into Labworks®. If there are data entry mistakes, possible equipment, sampling, and/or analysis errors, these are investigated and corrected, if possible. Chemistry results received from the laboratory that are given a qualification code are entered along with the assigned laboratory code.

Information regarding the WSS Chemistry Laboratory Quality Assurance Program is available on the ISB website (https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/microbiology-inorganics-branch/methods-pqls-qa).

Weather Overview for Summer 2016

May 2016 saw temperatures in most locations of the state cooler than normal with the statewide average temperature at 65.14 °F. The cause for these lower temperatures was the abundance of cloud cover which brought some rain and storms resulting in a wet month, overall. The statewide precipitation was 5.99 inches, making this month the 12th wettest May in the past 122 years. The rain helped to reduce abnormally dry conditions in parts the Lumber River Basin in the latter part of May (Figure 1).

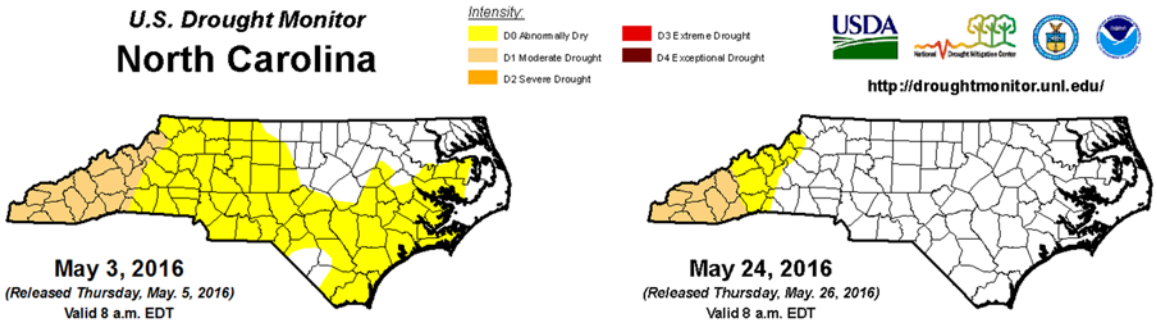

Figure 1. Changes in drought conditions in NC in May 2016 (Courtesy of NC DEQ Division of Water Resources)

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June and July 2016 experienced more summer-like temperatures as well as drier conditions statewide. Abnormally dry conditions spread eastward in June and retreated westward in July (Figures 2 and 3), while the Lumber River Basin remained in normal conditions.

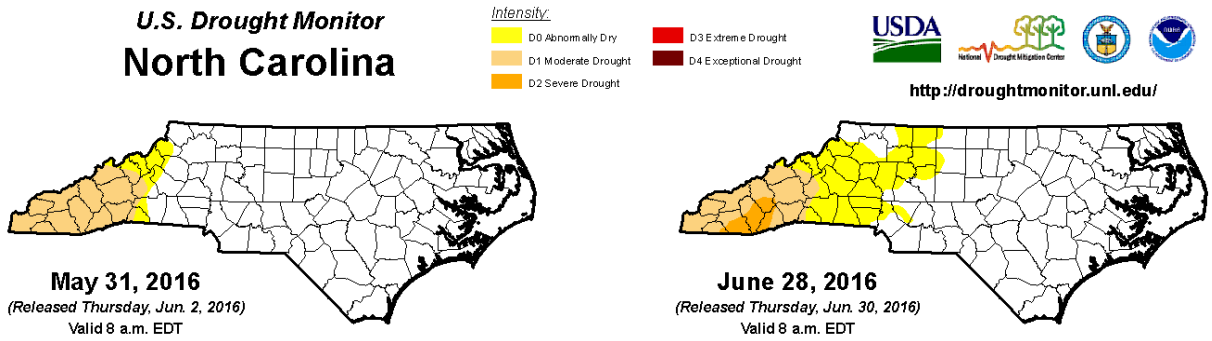

Figure 2. Changes in drought conditions in NC from May to June 2016 (Courtesy of NC DEQ Division of Water Resources)

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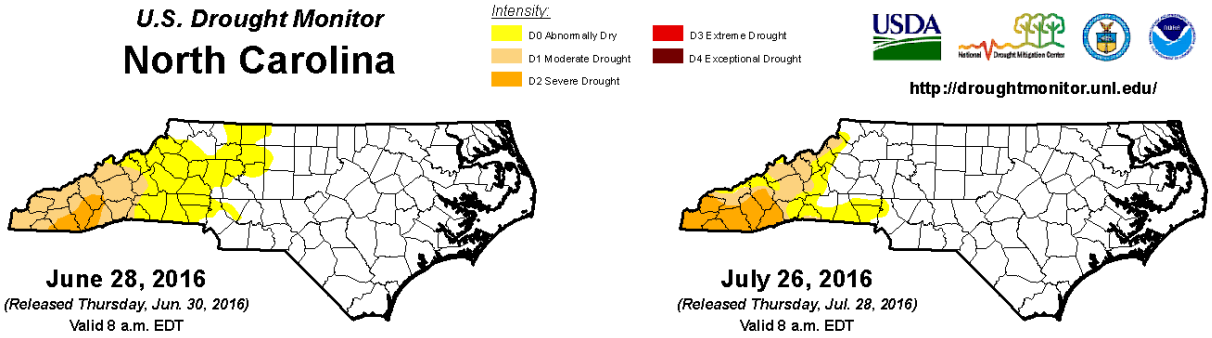

Figure 3. Changes in drought conditions in NC from June to July 2016 (Courtesy of NC DEQ Division of Water Resources)

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The first part of August 2016 started out with a statewide average precipitation of 5.5 inches, more than half of which fell during the first nine days of the month. This was followed by a prolonged period of dry weather which resulted in abnormally dry conditions in parts of the Lumber River Basin (Figure 4;).

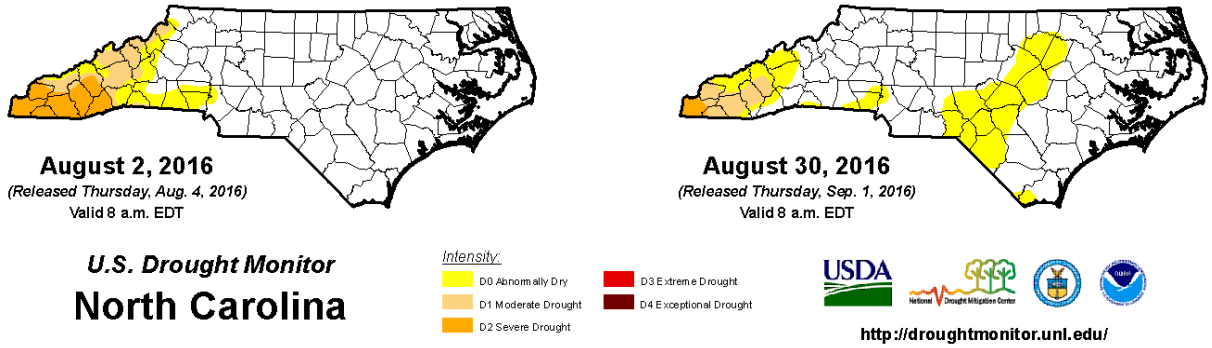

Figure 4. Changes in drought conditions in NC in August 2016 (Courtesy of NC DEQ Division of Water Resources)

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The central and eastern parts of the state saw an increase in rainfall in September, resulting in a return to normal conditions for the Lumber River Basin by the end of September (Figure 5).

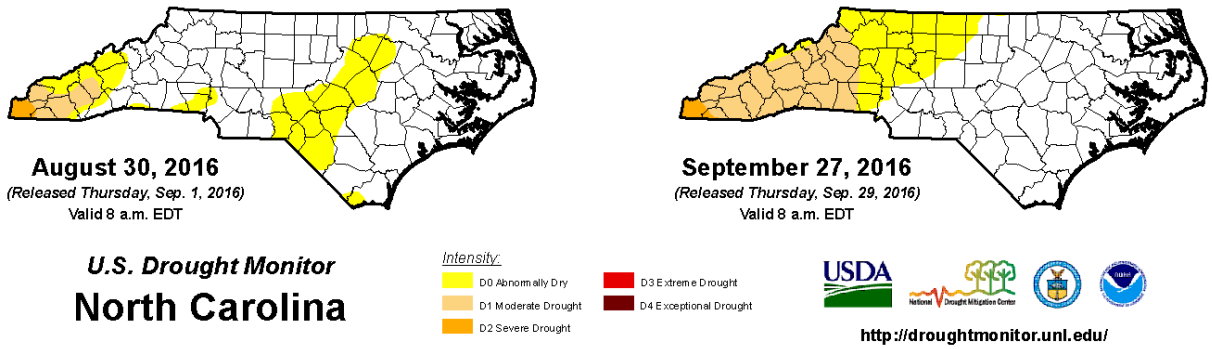

Figure 5. Changes in drought conditions in NC from August to September 2016 (Courtesy of NC DEQ Division of Water Resources)

LAKE & RESERVOIR ASSESSMENTS

HUC 03040203

Pages Lake

Ambient Lakes Program Name	Pages Lake	
Trophic Status (NC TSI)	Eutrophic	
Mean Depth (meters)	2.0	
Volume (10^6 m^3)	0.03	
Watershed Area (mi^2)	14.0	
Classification	B	
Stations	LBR027D	LBR027E
Number of Times Sampled	6	6

Pages Lake (Aberdeen Town Lake) is located on Aberdeen Creek west of US Hwy 1 in the Town of Aberdeen. The lake was built in the 1930's and is used for recreation, bank fishing, and canoeing, however,.swimming is not allowed in Pages Lake. There is a town park adjacent to the lake and a wooden footbridge that crosses the center of the lake.

DWR field staff monitored Pages Lake six times in 2016. Surface dissolved oxygen ranged from 4.5 to 6.6 mg/L and surface pH ranged from 6.0 to 7.1 s.u. (Appendix A). Secchi depths for Pages Lake ranged from 0.4 to 1.5 meters. Secchi readings from May through August were generally at or greater than a meter, suggesting that the clarity of the water was good. Surface conductivity readings ranged from 31 to 44 *u*mhos/cm.

Total phosphorus concentration ranged from 0.02 to 0.05 mg/L and total organic nitrogen ranged from 0.45 to 0.85 mg/L. These nutrients values were slightly greater than concentrations previously observed for this lake. Chlorophyll *a* values ranged from 10.0 to 38.0 *u*g/L. Pages Lake was determined to exhibit elevated biological productivity (eutrophic conditions) in 2016. Historically, the trophic state of this lake has ranged between mesotrophic and eutrophic beginning in 1981 when monitoring efforts by DWR staff began.

Pages Lake is on the 2014 303(d) List of Impaired Waters as a result of a fish consumption advisory for high levels of mercury found in fish taken from this lake.

LAKE & RESERVOIR ASSESSMENTS

HUC 03040206

Lake Waccamaw

Ambient Lakes Program Name	Lake Waccamaw		
Trophic Status (NC TSI)	Eutrophic		
Mean Depth (meters)	1.5		
Volume ($10^6 m^3$)	54.30		
Watershed Area (mi^2)	70.0		
Classification	B Sw ORW		
Stations	LBR076A	LBR076K	LBR076P
Number of Times Sampled	5	5	5

Lake Waccamaw is one of the few natural lakes in North Carolina. Located in Columbus County, this is a shallow, elliptical lake owned by the State of North Carolina as part of Lake Waccamaw State Park. Recreational uses include swimming, boating and fishing. Lake Waccamaw, a Carolina Bay Lake, is an Outstanding Resource Water (ORW). Waters designated as ORW have outstanding state or national recreational or ecological significance.

The term 'Bay' comes from the presence of bay trees commonly found growing in swampy oval depressions that may have been lakes at one time. Unlike the majority of Carolina Bay Lakes that have an acidic pH, Lake Waccamaw is unique for its neutral pH, which is important in the support of numerous endemic species including the Waccamaw Silverside (*Menidia extensa*), Waccamaw Darter (*Etheostema perlongum*), and Waccamaw Killifish (*Fundulus waccamensis*). This lake also has 15 species of mussels and clams including the endemic Waccamaw Fatmucket (*Lampsilis fullerkati)* and Waccamaw Spike (*Elliptio waccamawensis*). Two species of snails, the Waccamaw Amnicola (*Amnicola* sp.1) and the Waccamaw Siltsnail (*Cincinnatia* sp. 1) are also endemic to this lake. Lake Waccamaw provides high recreational and scenic value and is an important component of the Lake Waccamaw State Park

DWR field staff monitored Lake Waccamaw five times in 2016. Surface dissolved oxygen ranged from 6.7 to 8.3 mg/L and surface pH values ranged from 6.5 to 8.0 s.u. (Appendix A). Surface conductivity ranged from 50 to 61 *u*mhos/cm and secchi depths were 0.8 to 1.1 meters. From June through September, secchi depths for Lake Waccamaw were less than a meter.

Total phosphorus concentrations ranged from 0.02 to 0.03 mg/L and total organic nitrogen ranged from 0.66 to 0.91 mg/L. These values were slightly higher than those previously observed for this lake. Chlorophyll *a* ranged from 3.2 to 33.0 *u*g/L with the values measured for July through September higher than those previously recorded for this lake. Based on the calculated NCTSI scores, Lake Waccamaw was determined to exhibit elevated biological productivity (eutrophic conditions) in 2016. Historically, the trophic state of this lake has varied between mesotrophic and eutrophic since monitoring by DWR began in 1981.

Lake Tabor

Ambient Lakes Program Name	Lake Tabor	
Trophic Status (NC TSI)	Hypereutrophic	
Mean Depth (meters)	1.0	
Volume ($10^6 m^3$)	0.03	
Watershed Area (mi^2)	10.0	
Classification	B Sw	
Stations	LBR091B	LBR091C
Number of Times Sampled	5	5

Lake Tabor is a shallow 70-acre lake located northeast of Tabor City at the US Hwy 701 Business/Bypass split. Recreational facilities at the lake include a bait and tackle shop, piers, boat launches, picnic areas, and ball fields. The lake, built in 1952 from what had been an old millpond at the confluence of Grissett Swamp (a cypress gum swamp), Simmons Branch and Black Creek, contains tannic swamp waters. The dam was breached in 1996 during Hurricane Fran and rebuilt in 2000. There are houses around the lake with a residential area on the northwest; shoreline development is 50% to 75%.

Lake Tabor was sampled five times in 2016 by DWR Field staff. Secchi depths were less than a meter, ranging from 0.3 to 0.6 meter, suggesting fair to poor water clarity (Appendix A). Surface dissolved oxygen ranged from 5.5 to 10.2 mg/L and surface pH values ranged from 6.8 to 9.1 s.u. The highest pH value reading coincided with the highest surface dissolved oxygen reading which were observed at the sampling site near the dam (LBR091C) in August. This pH value was also greater than the state water quality standard of 9.0 s.u.

Total phosphorus ranged from 0.08 to 0.17 mg/L and total organic nitrogen ranged from 0.99 to 1.69 mg/L. Chlorophyll *a* values at the two sampling sites were greater than the state water quality standard of 40.0 *u*g/L during each of the five months the lake was monitored. The range for chlorophyll *a* in 2016 was 42.0 to 140.0 *u*g/L.

Based on the calculated NCTSI scores, the biological productivity of Lake Tabor was determined to be extremely elevated (hypereutrophic) in 2016. This lake was previously determined to be hypereutrophic during the last Lumber River lake sampling cycle in 2011. Further assessment of this lake and its watershed may be necessary to determine input sources of nutrients, which contributed to the algal bloom observed in 2016.

Appendix A - Lumber River Basin Lakes Data
January 1, 2012 through December 31, 2016

Lake	Date	SURFACE PHYSICAL DATA							PHOTIC ZONE DATA									Total Solids Suspended	
		Sampling Station	DO mg/L	Temp Water C	pH s.u.	Cond. µmhos/cm	Depth Secchi meters	Percent SAT	TP mg/L	TKN mg/L	NH3 mg/L	NOx mg/L	TN mg/L	TON mg/L	TIN mg/L	Chla µg/L	Solids Total mg/L	mg/L	Turbidity NTU
PAGES LAKE	September 29, 2016	LBR027D	6.5	23.6	6.0	32	0.4	76.7%	0.05	0.62	<0.02	0.060	0.68	0.61	0.07	30.0	53	16.0	22.0
	September 29, 2016	LBR027E	6.6	23.8	6.2	32	0.4	78.1%	0.05	0.64	<0.02	0.050	0.69	0.63	0.06	31.0	48	16.0	20.0
	September 26, 2016	LBR027D	6.6	25.1	6.3	38	0.7	80.0%	0.04	0.69	<0.02	<0.02	0.70	0.68	0.02	33.0	40	7.2	5.7
	September 26, 2016	LBR027E	6.5	24.7	7.1	38	0.8	78.3%	0.03	0.62	<0.02	<0.02	0.63	0.61	0.02	38.0	42	<6.7	5.4
	August 30, 2016	LBR027D	5.6	29.6	6.2	42	1.0	73.6%	0.03	0.59	<0.02	<0.02	0.60	0.58	0.02	32.0	42	9.5	5.4
	August 30, 2016	LBR027E	5.6	29.1	6.4	41	0.9	73.0%	0.03	0.61	<0.02	<0.02	0.62	0.60	0.02	24.0	40	7.2	5.1
	July 28, 2016	LBR027D	5.3	31.9	6.4	43	1.3	72.5%	0.02	0.51	0.020	0.020	0.53	0.49	0.04	13.0	70	<6.2	3.9
	July 28, 2016	LBR027E	5.6	31.7	6.6	44	1.2	76.3%	0.02	0.56	<0.02	<0.02	0.57	0.55	0.02	17.0	70	<6.2	4.1
	June 29, 2016	LBR027D	5.3	28.3	6.1	39	1.0	68.1%	0.03	0.51	0.02	0.050	0.56	0.49	0.07	15.0	43	7.5	6.0
	June 29, 2016	LBR027E	4.5	29.5	6.2	39	1.5	59.0%	0.02	0.46	<0.02	0.020	0.48	0.45	0.03	10.0	42	8.8	4.1
	May 5, 2016	LBR027D					1.1		0.04	0.88	0.03	0.19	1.07	0.85	0.22	12.0	40	14.0	10.0
	May 5, 2016	LBR027E					1.1		0.02	0.58	0.03	0.16	0.74	0.55	0.19	10.0	32	<6.2	3.8
LAKE WACCAMAW	September 28, 2016	LBR076A	7.0	26.5	6.5	50	0.9	87.1%	0.02	0.92	<0.02	<0.02	0.93	0.91	0.02	18.0	84	6.5	6.2
	September 28, 2016	LBR076K	7.4	27.6	7.0	52	0.8	93.9%	0.03	0.80	<0.02	<0.02	0.81	0.79	0.02	20.0	78	9.0	7.9
	September 28, 2016	LBR076P	6.7	26.7	6.7	52	0.8	83.7%	0.03	0.88	<0.02	<0.02	0.89	0.87	0.02	23.0	76	8.8	8.2
	August 23, 2016	LBR076A	7.8	30.3	7.8	59	0.8	103.8%	0.02	0.82	<0.02	0.04	0.86	0.81	0.05	19.0	76	7.2	4.9
	August 23, 2016	LBR076K	8.3	30.2	8.0	61	0.8	110.2%	0.02	0.79	<0.02	0.02	0.81	0.78	0.03	33.0	74	9.2	7.6
	August 23, 2016	LBR076P	7.9	50.5	7.9	60	0.8	144.9%	0.02	0.87	<0.02	0.04	0.91	0.86	0.05	26.0	80	8.2	2.1
	July 26, 2016	LBR076A	7.4	31.7	7.4	59	0.8	100.8%	0.02	0.81	<0.02	0.04	0.85	0.80	0.05	15.0	81	<6.2	4.7
	July 26, 2016	LBR076K	7.0	31.2	7.2	60	0.8	94.6%	0.02	0.78	<0.02	0.03	0.81	0.77	0.04	16.0	82	<6.2	5.1
	July 26, 2016	LBR076P	7.4	30.7	7.2	61	0.8	99.1%	0.02	0.84	<0.02	<0.02	0.85	0.83	0.02	17.0	80	<6.2	4.6
	June 15, 2016	LBR076A	7.2	30.1	7.0	54	0.9	95.4%	0.02	0.83	<0.02	0.02	0.85	0.82	0.03	8.6	68	<6.2	3.6
	June 15, 2016	LBR076K	7.2	30.3	7.2	55	0.9	95.8%	0.02	0.86	<0.02	<0.02	0.87	0.85	0.02	8.2	75	<6.2	3.6
	June 15, 2016	LBR076P	7.3	29.8	7.1	55	0.9	96.3%	0.02	0.80	<0.02	<0.02	0.81	0.79	0.02	12.0	74	6.2	4.4
	May 23, 2016	LBR076A	7.9	22.5	7.0	53	0.8	91.3%	0.02	0.78	0.04	0.08	0.86	0.74	0.12	3.2	68	<6.2	3.4
	May 23, 2016	LBR076K	8.2	22.4	7.1	53	1.0	94.5%	0.02	0.75	<0.02	0.08	0.83	0.74	0.09	5.8	66	<6.2	3.3
	May 23, 2016	LBR076P	7.9	22.6	7.0	54	1.1	91.4%	0.02	0.68	0.02	0.07	0.75	0.66	0.09	3.9	68	<6.2	2.9
LAKE TABOR	September 28, 2016	LBR091B	7.8	27.0	6.8	93	0.6	97.9%	0.10	1.20	<0.02	0.08	1.28	1.19	0.09	62.0	104	<12.0	7.4
	September 28, 2016	LBR091C	8.0	26.5	6.9	95	0.6	99.5%	0.08	1.00	<0.02	0.14	1.14	0.99	0.15	42.0	99	7.0	5.9
	August 23, 2016	LBR091B	7.8	30.5	8.8	103	0.4	104.1%	0.14	1.60	<0.02	<0.02	1.61	1.59	0.02	140.0	114	24.0	19.0
	August 23, 2016	LBR091C	10.2	30.7	9.1	104	0.4	136.6%	0.12	1.70	<0.02	<0.02	1.71	1.69	0.02	140.0	110	14.0	19.0
	July 26, 2016	LBR091B	8.0	31.8	8.2	93	0.3	109.2%	0.17	1.50	<0.02	<0.02	1.51	1.49	0.02	82.0	136	17.0	17.0
	July 26, 2016	LBR091C	5.5	30.7	7.2	94	0.4	73.7%	0.16	1.60	<0.02	0.02	1.62	1.59	0.03	98.0	138	17.0	15.0
	June 15, 2016	LBR091B	7.6	29.3	7.3	85	0.3	99.4%	0.13	1.40	<0.02			1.39		65	86	14.0	25.0
	June 15, 2016	LBR091C	6.5	29.5	7.0	84	0.3	85.3%	0.15	1.40	0.04	0.050	1.45	1.36	0.09	65	90	16.0	24.0
	May 23, 2016	LBR091B	7.5	22.9	7.0	81	0.3	87.3%	0.10	1.20	<0.02	0.050	1.25	1.19	0.06	61	84	10.0	16.0
	May 23, 2016	LBR091C	8.0	23.4	7.3	81	0.4	94.0%	0.10	1.20	<0.02	0.030	1.23	1.20	0.03	62	88	10.0	16.0