LAKE & RESERVOIR ASSESSMENTS
TAR-PAMLICO RIVER BASIN

Tar River Reservoir

Intensive Survey Branch
Water Sciences Section
Division of Environmental Quality
February 15, 2023

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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 Tar-Pamlico River basin encompasses a 5,440 mi^2 watershed drained by 2,355 miles of streams, and with 634,400 acres classified as salt waters. It is the fourth largest river basin in the state and is contained entirely within the state. From its headwaters within the eastern piedmont ecoregion, the Tar River flows 180 miles southeast towards the coastal plain ecoregion and Pamlico Sound. The river is called the Tar River from its source in Person County to US 17 in the Town of Washington, a distance of about 140 miles. From Washington to Pamlico Sound it is called the Pamlico River. The Pamlico River is entirely estuarine, while the Tar River is primarily freshwater.

Most (about four-fifths) of the basin is located in the coastal plain and is characterized by flat terrain, black water streams, low-lying swamplands, and estuarine areas. Streams are often slow flowing with extensive swamps and bottomland hardwood forests or marshes in their floodplains. The entire basin was designated as Nutrient Sensitive Waters (NSW) in 1989 in response to the problems associated with nutrient loading and the resulting eutrophication.

Two lakes, Tar River Reservoir and Lake Devin, were sampled in by DWR staff in 2022. The Tar River Reservoir is on the 2022 303(d) List of Impaired Waters for low dissolved oxygen and elevate chlorophyll *a* (values greater than 40 ug/L): (https://deq.nc.gov/about/divisions/water-resources/planning/modeling-assessment/water-quality-data-assessment/integrated-report-files).

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 Tar-Pamlico River Basin, there are individual summaries for each of the lakes.

Assessment Methodology

For this report, data from January 1, 2018 through December 31, 2022 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 2022

Warm weather began in the state in May following a cool April. The first 90-degree days of the year for most of the state began this month. Raleigh finished May 2022 with six days at or above 90°F. After a dry start, increased rainfall near the end of May resulted in a preliminary average precipitation of 4.08 inches, making the month the 55th-wettest May in the past 128 years. The rainfall gradient in May was from west to east with some of the Mountain areas well above normal for rainfall and many southern Coastal areas experiencing dry conditions. In the Coastal Plains, dry conditions ranged from Abnormally Dry (D0) to Moderate (D1) and Sever Drought (D2).

June started with some much-needed rain on the 2nd and 3rd with more than two inches of rain in the southern Coastal Plains. However, after this promising start, rainfall became greatly reduced across the state despite strong thunderstorms which brough more winds than rain. This month was an historically dry June, particularly in the western Piedmont. Salisbury received 0.22 inches of rain in June, making it the driest June there since 1954. Hickory's total rainfall (1.22 inches) ranked as the 5th-driest June since 1959. Further east, Tarboro received only 0.86 inches of rain, making this June its driest in 130 years.

Coupled with the limited precipitation, the statewide average temperature of 75.2°F made June 2022 the 24th-warmest June in the past 128 years. On June 22nd, Charlotte, Fayetteville, and Laurinburg recorded

temperature readings of 101°F while Raleigh recorded a temperature of 100°F. In June, Abnormally Dry conditions (D0) spread across the western part of the state. Drought conditions (D1 and D2) expanded from the eastern region of the state west into the Piedmont. June streamflows were mostly below normal across the eastern two-thirds of the state and many Coastal Plains streams were below their historical 10th percentile for the month. Most reservoirs in the Piedmont dipped approximately a foot below their seasonal target levels.

July turned out to be the 18th-warmest July since 1895 with a statewide average temperature of 78.8°F. This month was notable for several stretches of heat beginning just after July 4th. Temperatures in Raleigh reached 102°F on July 6th and 7th, tying the high temperature records in the city for these two dates. Smithfield recorded 104°F on July 6th, becoming the hottest site in the state for July 2022.

Rainfall in July was variable across the state with the wettest site being Newport in the eastern Coastal Plains. This town measured 16.57 inches of rain and making July 2022 its wettest July in 25 years. In the Piedmont, the City of Hickory had its 3rd wettest July with 10.18 inches of rain. In contrast, Elizabeth City in the northern Coastal Plains received 4.8 inches of rain. This was 0.9 inches below its usual rainfall amount, placing it 3.6 inches of rain below normal since the start of the summer. Drought conditions across the state improved in July with Abnormally Dry conditions (D0) in the western parts of the state eliminated but remaining in the in parts of the wester Piedmont and Coastal Plains. A strip of Moderate Drought (D1) was located in the western and northeastern Coastal Plains.

Early August 2022 started out hot and humid with high temperatures reaching the upper 90s on August 9th and 10th. Heat relief arrived on August 12th from a pair of cold fronts that moved in from the northwest and brought much needed rain and cooler, less humid air. August 14th was the first night with temperatures in the 50s in the eastern parts of the state. In the west, both Sparta and Mount Mitchell recorded a night low of 49°F on August 13th. August 2022 ended with temperatures once more in the 90s across the state.

A mixture of both wet and dry conditions occurred in the state in August. Parts of the Piedmont were notably dry. Raleigh saw 0.91 inches of rain for the month, making it the second driest August since 1887. Monroe had 2.33 inches of rain for its 20th driest August in 127 years. Hickory, on the other hand, received 3.45 inches of rain and finished August at 3.3 inches of rainfall above normal. By August 30th, much needed rainfall in the driest parts of the state resulted in the disappearance of areas of Moderate Drought (D1). Abnormally Dry Conditions (D0) remained in the northeastern Coastal Plains and in the southern and eastern Piedmont.

The first rain event for the month of September occurred in the southern Mountains on September 4 – 6, dropping more than six inches of rain in some areas. Following this event, the state continued to remain dry. By September 21st, Elizabeth City had received only 0.17 inches of rainfall for the month and Raleigh had received 0.78 inches of rain. On September 30th, Hurricane Ian broke the dry period in the state. The storm brought 5.92 inches of rain to Hatteras and Elizabeth City received 4.49 inches of rain. Despite the rain contribution from Hurricane Ian, the statewide average precipitation of 3.84 inches ranked this month as the 60th driest September since 1985.

LAKE & RESERVOIR ASSESSMENTS

HUC 03020101

Lake Devin

Ambient Lakes Program Name	Lake Devin	
Trophic Status (NC TSI)	Eutrophic	
Mean Depth (meters)	5.0	
Volume ($10^6 m^3$)	1.60	
Watershed Area (mi^2)	1.0	
Classification	WS-II HQW NSW CA	
Stations	TAR001C	TAR001E
Number of Times Sampled	5	5

Lake Devin is a small lake located in the City of Oxford. Primarily used for public fishing, this lake originally served as the water supply source for the city. DWQ staff sampled Lake Devin from May through September, 2022.

DWR field staff monitored this lake monthly from May through September 2022. Surface dissolved oxygen ranged from 5.6 to 9.8 mg/L and surface water temperatures ranged from 18.7°C to 29.8°C (Appendix A). Surface pH values for Lake Devin ranged from 7.0 to 8.1 s.u. and surface conductivity ranged from 57 to 121 µmhos/cm. Secchi depths ranged from 0.7 10 1.2 meters.

Total phosphorus in Lake Devin ranged from0.03 to 0.05 mg/L and total Kjeldahl nitrogen ranged from 0.48 to 1.20 mg/L. The concentration of NH_3 was consistently below the DWR laboratory detection level of <0.02 mg/L while total organic nitrogen ranged from 0.47 to 1.19 mg/L. Chlorophyll *a* values ranged from 8.3 to 48 µ/L. The value of chlorophyll *a* on June 1, 2022 at the sampling site in the upper end of Lake Devin near Oxford, NC (TAR001C) was greater than the state water quality standard of 40 ug/L (Appendix A). Both nutrients and chlorophyll *a* were greatest on June 1, 2022 at this sampling site and the secchi depths lake wide were less than a meter. Observation notes from the field staff sampling the lake on that date indicated that the lake water appeared green in color.

Lake Devin was determined to exhibit elevated biological productivity (eutrophic conditions) in 2022 based on the calculated NCTSI scores. This lake has varied from moderately productive (mesotrophic) to exceptionally productive (hypereutrophic) since it was first monitored by DWQ in 1989.

Tar River Reservoir

Ambient Lakes Program Name	Tar River Reservoir			
Trophic Status (NC TSI)	Eutrophic			
Mean Depth (meters)	6.0			
Volume ($10^6 m^3$)	16.00			
Watershed Area (mi^2)	2007.0			
Classification	WS-IV B NSW CA			
Stations	TAR015E	TAR015G	TAR017C	TAR017F
Number of Times Sampled	5	5	5	5

Tar River Reservoir is the primary water supply source for the City of Rocky Mount. Completed in 1971, this reservoir is located on the confluence of the Tar River and Sapony Creek and is open to the public for boating and fishing.

DWR field staff sampled Tar River Reservoir monthly from May through September 2022. Surface dissolved oxygen concentrations ranged from 6.1 to 11.0 mg/L and surface water temperatures ranged from 18.9°C in May to 31.6°C in August (Appendix A). Surface pH values ranged from 7.0 to 8.5 s.u. and surface conductivity ranged from 73 to 121 µmhos/cm. Secchi depths in Tar River reservoir ranged from 0.4 to 1.0 meters.

Total phosphorus in 2022 ranged from 0.04 to 0.11 mg/L and total Kjeldahl nitrogen ranged from 0.32 to 1.20 mg/L. The NH3 concentration ranged from <0.002 to 0.05 mg/L and total organic nitrogen ranged from 0.27 to 1.19 mg/L. Chlorophyll *a* values ranged from 5 to 74 µg/L, with two of the 16 recorded chlorophyll *a* values for Tar River Reservoir in 2022 greater than the state water quality standard of 40 µg/L (12.5 %). Turbidity values ranged from 3.2 to 24.0 NTUs. In August, water samples were collected at three of the four DWR lake sampling sites in Tar River Reservoir for Algal Growth Potential analysis by the Region 4 EPA laboratory in Athens, Georgia. Results indicated that the limiting nutrient for nuisance algal growth was nitrogen (Table 1).

Table 1. Algal Growth Potential Test Results for Tar River Reservoir, August 4, 2022.

Station	Maximum Standing Crop, Dry Weight (mg/L)			Limiting Nutrient
	Control	C+N	C+P	
TAR015E	7.12	15.23	7.86	Nitrogen
TAR017C	1.10	7.81	0.99	Nitrogen
TAR017F	1.00	8.06	0.86	Nitrogen

Freshwater AGPT using *Selenastrum capricornutum* as test alga

C+N = Control + 1.0 mg/L Nitrate-N

C+P = Control + 0.05 mg/L Phosphate-P

Based on the calculated NCTSI scores for May through September, Tar River Reservoir was determined to exhibit elevated biological productivity (eutrophic conditions). This reservoir has been consistently eutrophic since DWR monitoring began in 1989.

Appendix A - Tar-Pamlico River Basin Lakes Data
January 1, 2018 Through December 31, 2022

			SURFACE PHYSICAL DATA						PHOTIC ZONE DATA												
Lake	Date	Sampling Station	DO mg/L	Temp Water C	pH s.u.	Cond. µmhos/cm	Secchi Depth 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	Microcystins µg/L	Solids Total mg/L	Total Solids Suspended mg/L	Turbidity NTU	Total Hardness mg/L
LAKE DEVIN	September 21, 2022	TAR001C	8.2	25.9	7.2	61.7	0.8	101.8%	0.04	0.75	<0.02	<0.02	0.76	0.74	0.02	22.0			5.0	4.6	
LAKE DEVIN	September 21, 2022	TAR001E	8.7	26.5	7.5	62.1	1.1	109.9%	0.03	0.56	<0.02	<0.02	0.57	0.55	0.02	22.0	<0.4		4.2	3.3	
LAKE DEVIN	August 2, 2022	TAR001C	7.3	29.8	7.2	58	0.8	97.5%	0.05	0.48	<0.02	<0.02	0.49	0.47	0.02	23.0		49.0	5.6	4.7	
LAKE DEVIN	August 2, 2022	TAR001E	5.6	29.4	7.0	58	1.2	74.2%	0.03	0.57	<0.02	<0.02	0.58	0.56	0.02	8.3	<0.4	42.0	3.1	2.7	
LAKE DEVIN	July 7, 2022	TAR001C	9.8	29.4	8.1	121	1.0	128.1%	0.04	0.74	<0.02	<0.02	0.75	0.73	0.02	30.0			5.2	5.8	
LAKE DEVIN	July 7, 2022	TAR001E	8.1	29.8	7.8	60	1.1	108.5%	0.04		<0.02	<0.02	0.76	0.74	0.02		<0.4	50.0	4.5	3.8	
LAKE DEVIN	June 1, 2022	TAR001C	9.8	27.7	8.1	60	0.8	126.6%	0.05	1.20	<0.02	<0.02	1.21	1.19	0.02	48.0		59.0	10.0	10.0	
LAKE DEVIN	June 1, 2022	TAR001E	9.5	28.5	7.9	61	0.7	124.6%	0.03	1.10	<0.02	<0.02	1.11	1.09	0.02	31.0	<0.4	46.0	7.1	6.9	
LAKE DEVIN	May 9, 2022	TAR001C	7.8	18.8	7.4	57	0.8	84.3%	0.05		<0.02	<0.02			0.02	28.0		55.0	8.4	7.2	
LAKE DEVIN	May 9, 2022	TAR001E	7.8	18.7	7.3	57	1.0	84.3%	0.04		<0.02	<0.02			0.02	22.0	<0.4	74.0	5.6	5.9	
TAR RIVER RESERVOIR	September 1, 2022	TAR015E	7.8	29.1	7.1	106	0.5	100.9%	0.08	0.45	<0.02	<0.02	0.46	0.44	0.02	43.0			15	12.0	
TAR RIVER RESERVOIR	September 1, 2022	TAR015G	7.4	28.9	7.1	93	0.8	96.7%	0.05	0.71	<0.02	<0.02	0.72	0.70	0.02	23.0			6	5,0	
TAR RIVER RESERVOIR	September 1, 2022	TAR017C	7.2	29.3	7.3	110	0.8	94.4%	0.06	0.78	<0.02	<0.02	0.78	0.77	0.01	33.0			14	4.7	
TAR RIVER RESERVOIR	September 1, 2022	TAR017F	7.4	28.9	7.1	93	0.8	96.0%	0.04	0.49	<0.02	<0.02	0.50	0.48	0.02	26.0	<0.4		6.2	3.7	23.0
TAR RIVER RESERVOIR	August 4, 2022	TAR015E	6.1	29.6	7.3	87	0.5	80.1%	0.07	0.32	0.05	0.21	0.53	0.27	0.26	6.0		99.0	10.7	21	
TAR RIVER RESERVOIR	August 4, 2022	TAR015G	8.8	31.5	7.4	99	0.6	118.6%	0.06	0.69	<0.02	0.03	0.72	0.68	0.04	31.0		100.0	8.0	9.5	
TAR RIVER RESERVOIR	August 4, 2022	TAR017C	8.5	31.6	7.5	112	0.8	114.9%	0.05	0.80	<0.02	<0.02	0.81	0.79	0.02	29.0			6.2	4.1	
TAR RIVER RESERVOIR	August 4, 2022	TAR017F	7.8	30.8	7.5	98	1.0	104.7%	0.05	0.63	<0.02	<0.02	0.64	0.62	0.02	29.0	<0.4	84.0	6.0	1.2	25.0
TAR RIVER RESERVOIR	July 14, 2022	TAR015E	6.8	27.7	7.0	74	0.5	86.2%	0.09	0.63	0.05	0.16	0.79	0.58	0.21			87.0		22.0	
TAR RIVER RESERVOIR	July 14, 2022	TAR015G	8.6	28.2	7.3	85	0.4	110.3%	0.08	0.89	<0.02	0.02	0.91	0.88	0.03			105.0		20.0	
TAR RIVER RESERVOIR	July 14, 2022	TAR017C	9.8	29.4	8.1	121	0.7	128.1%	0.06	1.10	<0.02	<0.02	1.11	1.09	0.02			108.0		7.5	
TAR RIVER RESERVOIR	July 14, 2022	TAR017F	8.9	28.6	7.4	118	0.6	115.1%	0.07	0.82	<0.02	<0.02	0.83	0.81	0.02		<0.4	103.0		11.0	30.0
TAR RIVER RESERVOIR	June 2, 2022	TAR015E	6.4	27.6	7.2	79	0.4	82.2%	0.10	0.80	0.04	0.23	1.03	0.76	0.27	11.0		111.0	10.0	24.0	
TAR RIVER RESERVOIR	June 2, 2022	TAR015G	11.0	29.7	8.1	73	0.5	145.4%	0.11	1.20	<0.02	<0.02	1.21	1.19	0.02	74.0		105.0	12.0	22.0	
TAR RIVER RESERVOIR	June 2, 2022	TAR017C	8.7	29.5	7.6	112	0.8	115.5%	0.06	0.94	<0.02	<0.02	0.95	0.93	0.02	35.0		99.0	6.0	6.1	
TAR RIVER RESERVOIR	June 2, 2022	TAR017F	10.6	28.4	8.5	92	0.6	137.1%	0.07	0.77	<0.02	<0.02	0.78	0.76	0.02	36.0	<0.4	81.0	8.2	14.0	25.0
TAR RIVER RESERVOIR	May 12, 2022	TAR015E	8.6	19.4	7.3	106	0.9	92.8%	0.07		<0.02	0.16			0.17	13.0		83.0	6.8	9.6	
TAR RIVER RESERVOIR	May 12, 2022	TAR015G	8.8	19.5	7.3	104	1.0	95.9%	0.05		<0.02	0.10			0.11	20.0		67.0	5.3	5.4	
TAR RIVER RESERVOIR	May 12, 2022	TAR017C	8.7	20.3	7.5	100	1.0	95.6%	0.04		<0.02	<0.02			0.02	13.0		94.0	3.4	3.2	
TAR RIVER RESERVOIR	May 12, 2022	TAR017F	7.9	18.9	7.4	100	1.0	84.5%	0.04		<0.02	0.07			0.08	15.0	<0.4	82.0	4.7	4.6	31.0