

# NEWFOUND LAKE

## 2016 SAMPLING HIGHLIGHTS

### Black Brook Subwatershed



**Blue** = Excellent

**Yellow** = Fair

**Red** = Poor

**Light Gray** = No Data

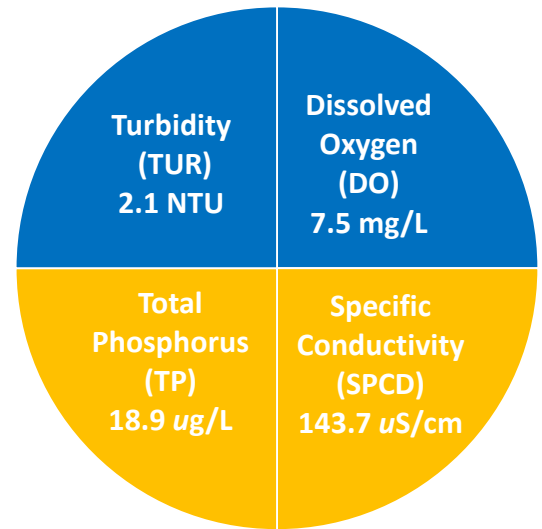


Figure 1. Black Brook Subwatershed Average Water Quality (2016)

Table 1. 2016 Black Brook Subwatershed Seasonal Average Water Quality Measurements.

Parameter	Assessment Criteria					Black Brook Subwatershed Average (range)	Black Brook Subwatershed Classification
	< 0 - 5.0 Desirable	6 - 10 Low Impact	11 - 50 Moderate impact	51 - 100 Moderate - high impact	> 101 High impact		
Turbidity * (NTU)	< 0 - 5.0 Desirable	6 - 10 Low Impact	11 - 50 Moderate impact	51 - 100 Moderate - high impact	> 101 High impact	2.1 NTU (range: 0.8 - 7.9)	Desirable
pH (standard units)	< 5.5 suboptimal for successful fish growth and reproduction		5.5 - 6.5 sufficient for successful fish growth and reproduction		6.5 - 8.5 optimal range for fish growth and reproduction	5.8 standard units (range: 5.7 - 5.8)	Sufficient for successful fish growth and reproduction
Dissolved Oxygen (mg/L)	< 5 Suboptimal for successful brook trout growth and survival			> 5 Typically sufficient for successful brook trout growth and survival		7.5 mg/L (range: 2.3 - 11.7)	Typically sufficient for successful brook trout growth and survival
Specific * Conductivity (uS/cm)	0 - 100 Normal	101 - 200 Low Impact	201 - 500 Moderate Impact	> 501 High Impact		143.7 uS/cm (range: 56.0 - 360.0)	Low Impact
Total * Phosphorus (ug/L)	< 10 ug/L Ideal	11 - 25 Average	26.0 - 50.0 More than desirable	> 51 Excessive		18.9 ug/L (range: 8.7 - 42.6)	Average

\* Water quality assessment criteria are provided by the New Hampshire Department of Environmental Services for general guidance only. Natural variations among rivers and streams will occur and should be considered when interpreting the water quality data.

Table 2. 2016 Black Brook Subwatershed Seasonal Average Water Quality Inter-comparison among Sampling Stations.

Site ID *	Average Turbidity (NTU)	Average Specific Conductivity (uS/cm)	Average Total Phosphorus (ug/L)	Average Dissolved Oxygen (mg/L)	Average pH (standard units)
BB H23	3.4	223.7	23.6	3.9	5.7
BB U10	0.8	63.7	14.2	9.2	5.8

\* Refer to Figure 4 for a map of the sampling locations.

## Black Brook Subwatershed Highlights

The Black Brook subwatershed is the eighth largest stream drainage network that feeds into Newfound Lake. The 582-acre Black Brook subwatershed is monitored with two active sampling locations that include an upstream and a downstream location along Black Brook. Sampling locations were selected to characterize the overall water quality and to screen for potential problem areas within the Black Brook subwatershed.

The 2016 Black Brook water quality measurements generally indicate moderate to high water quality between the sampling sites. However, variations in average specific conductivity concentrations (a surrogate for salt runoff) between the sites are apparent (Figure 2). Low stream-flow conditions during the 2016 sampling season coincided with increased specific conductivity measurements at the downstream sampling location, BB H-23, (Figure 2) that likely reflect the concentration of salts into reduced water volumes. The pattern of elevated 2016 specific conductivity measurements, relative to the 2010-2015 measurements, was common among the majority of the Newfound Lake tributary inlets.

The 2016 average turbidity (suspended soil and other particles) levels were low while the average total phosphorus (nutrient) concentrations were moderate in the Black Brook subwatershed (Figure 3).

Dissolved oxygen were low during low-flow periods and were suboptimal for brook trout growth and reproduction during the summer months.

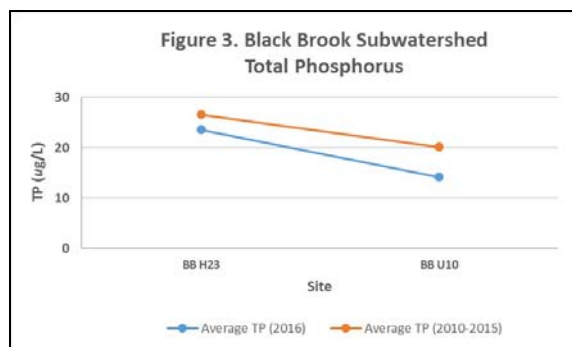
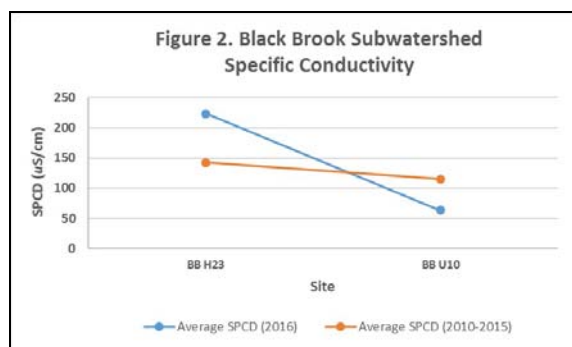


Table 3. Comparison of Seasonal Average Water Quality by Subwatershed (2016)

Subwatershed	Average * Turbidity (NTU)	Average * Specific Conductivity ( $\mu\text{S}/\text{cm}$ )	Average * Total Phosphorus ( $\mu\text{g}/\text{L}$ )	Average * Dissolved Oxygen ( $\text{mg}/\text{L}$ )	Average * pH (Standard Units)
Black Brook	2.1	143.7	18.9	7.5	5.8
Cockermouth River	0.4	52.6	5.0	7.9	5.9
Dick Brown Brook	1.2	45.2	14.4	10.8	6.3
Fowler River	1.1	72.1	12.0	8.8	5.5
Georges Brook	0.7	30.1	6.0	11.1	5.8
Hemlock Brook	0.7	47.2	7.2	9.0	6.3
Whittemore Brook	0.7	20.2	9.4	7.5	6.0
Tilton Brook	2.2	81.5	19.0	6.4	6.3

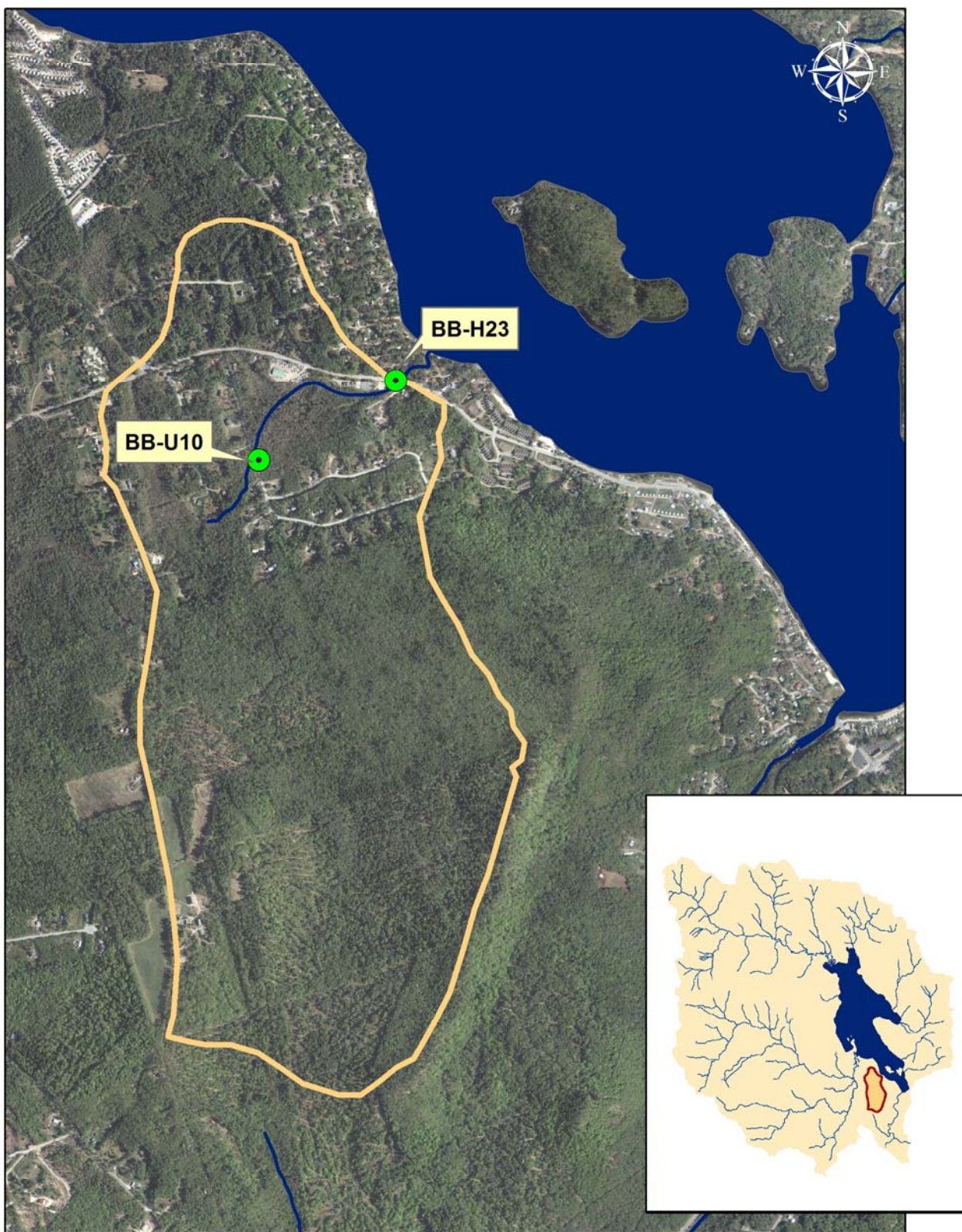
\* The displayed water quality results are average values for all sampling locations within the respective subwatersheds.

### Recommendations for Property Owners:

Implement Best Management Practices within the Newfound Lake watershed to minimize the adverse impacts of polluted runoff and erosion into the lake. Refer to "Landscaping at the Water's Edge: An Ecological Approach" and "New Hampshire Homeowner's Guide to Stormwater Management: Do-It-Yourself Stormwater Solutions for Your Home" for more information on how to reduce nutrient loading caused by overland run-off.

- [http://extension.unh.edu/resources/files/Resource004159\\_Rep5940.pdf](http://extension.unh.edu/resources/files/Resource004159_Rep5940.pdf)
- <http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/wd-11-11.pdf>

**Figure 4.**  
**2016 Sampling Highlights - Black Brook Subwatershed**



Aerial Orthophoto Source: NH GRANIT  
Site location GPS coordinates collected by the UNH Center for Freshwater Biology