Impairments Added to the 2016 303(d) List of Threatened or Impaired Waters

November 30, 2017
STATE OF NEW HAMPSHIRE

Impairments Added to the 2016 303(d) List of Threatened or Impaired Waters

STATE OF NEW HAMPSHIRE
DEPARTMENT OF ENVIRONMENTAL SERVICES
29 HAZEN DRIVE
CONCORD, N.H. 03302

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NOVEMBER 30, 2017

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**Introduction**

In accordance with Section 303(d) of the federal Clean Water Act, States must prepare a list of impaired waters that require a Total Maximum Daily Load study every two years (i.e., the 303(d) List). The last approved 303(d) List was prepared by the New Hampshire Department of Environmental Services (NHDES) in 2012. A final of the 2014 Section 303(d) List of impaired waters was submitted to the US Environmental Protection Agency (USEPA) on March 27, 2017. Downloadable copies of the past list as well as the 2016 list are available on the NHDES website for review (http://des.nh.gov/organization/divisions/water/wmb/swqa/index.htm). This document provides a list of all surface waters and parameter combinations that were added as impairments on the 2016 303(d) List and the reasons why they were added.

Assessment outcomes cover a spectrum from very good to very bad coded as an alpha numeric scale that provides additional distinctions in cases where an impairment exists. In each of the new impairments detailed within this document, the 2014 and 2016 assessment status is highlighted applying the categories in the table below.

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Category 2</td>
<td>Meets standards</td>
</tr>
<tr>
<td>Category 3</td>
<td>Insufficient Information</td>
</tr>
<tr>
<td>Category 4</td>
<td>Does not Meet Standards;</td>
</tr>
<tr>
<td>4A</td>
<td>TMDL Completed</td>
</tr>
<tr>
<td>4B</td>
<td>Other enforceable measure will correct the issue.</td>
</tr>
<tr>
<td>4C</td>
<td>Non-pollutant (i.e. exotic weeds)</td>
</tr>
<tr>
<td>Category 5</td>
<td>TMDL Needed</td>
</tr>
</tbody>
</table>

* "Category 1" only exists at the Assessment Unit Level.*
**Bacteria – Beaches (Primary Contact recreation [i.e. Swimming])**

**OPECHEE LAKE BOND BEACH (NHLAK700020201-06-02)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPECHEE LAKE BOND BEACH</td>
<td>NHLAK700020201-06-02</td>
<td>Escherichia coli</td>
<td>Laconia</td>
<td>3-PNS</td>
<td>5-P</td>
</tr>
</tbody>
</table>

2016: The city of Laconia decided to stop sampling for *E.coli* at the beaches of Opechee Lake in 2015 and there were no samples taken in 2016. There have been three exceedences of the geometric mean criteria, occurring on August 23 and 28, 2013, and another on August 19, 2015. Six samples exceeded grab sample criteria with three of those grab samples over the MAGEX at the upper detection limit of the lab method without sample dilution, all occurring since 2013. Both the flow and preceding precipitation conditions were not especially elevated during these times with the exception of July 21, 2015, when flow conditions were elevated in the Tamworth region of the state. On this date, there was one grab sample exceedence. Overall, 23% of geometric mean samples exceeded the criteria, while 10% of grab samples were in exceedence.
Notes:

E. COLI-GEO-CP = *Escherichia coli* geometric mean calculated from samples collected during the summer critical period.

E. COLI-GEO-NCP = *Escherichia coli* geometric mean calculated from samples collected outside the summer critical period.

E. COLI-GRAB-CP = *Escherichia coli* grab samples collected during the summer critical period.

E. COLI-GRAB-NCP = *Escherichia coli* grab samples collected outside the summer critical period.

“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

**Bacteria – Non-Beaches (Primary Contact recreation [i.e. Swimming])**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMMONOOSUC RIVER DAM POND</td>
<td>NHIMP801030506-02</td>
<td><em>Escherichia coli</em></td>
<td>Bath</td>
<td>3-PNS</td>
<td>5-M</td>
</tr>
</tbody>
</table>

Four geometric means are included in the 2016 assessment. Two of these are above the geometric mean water quality criteria (126 cts./100 ml). Two individual samples (8/4/2015, 6/26/2012) are above the single sample water quality criteria (406 cts./100 ml). Streamflow (gage 01137500) and rainfall (Jefferson, NH; USC00274329) records indicate bacteria measurements over the grab sample criteria are associated with high streamflows (>3 cfs/m) and recent rainfall (>0.40”) while the geometric means incorporate a mix of flow conditions. All data collected at 04-AMM.
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Notes:
E. COLI-GEO-CP = *Escherichia coli* geometric mean calculated from samples collected during the summer critical period.
E. COLI -GEO-NCP = *Escherichia coli* geometric mean calculated from samples collected outside the summer critical period.
E. COLI -GRAB-CP = *Escherichia coli* grab samples collected during the summer critical period.
E. COLI -GRAB-NCP = *Escherichia coli* grab samples collected outside the summer critical period.

“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

**EXETER RIVER (NHRIV600030803-05)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exeter River</td>
<td>NHRIV600030803-05</td>
<td><em>Escherichia coli</em></td>
<td>Brentwood</td>
<td>3-PNS</td>
<td>5-M</td>
</tr>
</tbody>
</table>

In the current assessment period there are 13 critical period grab samples and three geometric means calculated resulting in one grab sample exceedance (570 cts/100mL) and two geometric mean exceedences (146.5, 168.5 cts/100mL). All samples in the current assessment period are from station 15-EXT which is located in a residential area and does not appear to be linked to rain or flow conditions. This station is part of the trend river monitoring project. Exeter River (NHRIV600030803-05) assessment category changed from 3-PNS to 5-M based on data collected in the current assessment period.

![Graph](image-url)

**GEOMETRIC MEANS
EXETER RIVER (NHRIV600030803-05)**

- Red: Geomean MAGEX
- Orange: Geomean Std
- Blue: “Current” Line for 2016
- E.COLI-GEO-CP
- E.COLI-GRAB-CP

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Notes:

E. COLI-GEO-CP = *Escherchia coli* geometric mean calculated from samples collected during the summer critical period.

E. COLI -GEO-NCP = *Escherchia coli* geometric mean calculated from samples collected outside the summer critical period.

E. COLI -GRAB-CP = *Escherchia coli* grab samples collected during the summer critical period.
E. COLI-GRAB-NCP = *Escherchia coli* grab samples collected outside the summer critical period.

“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

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**FLAT MEADOW BROOK (NHRIV700060502-05)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLAT MEADOW BROOK</td>
<td>NHRIV700060502-05</td>
<td><em>Escherichia coli</em></td>
<td>Northwood</td>
<td>2-G</td>
<td>5-P</td>
</tr>
</tbody>
</table>

In current assessment period 4 out of 13 (31%) grab samples exceeded the standard including one exceeding the magnitude of exceedence threshold which is two times the water quality criteria. High results from grab samples all occur after some rainfall in the past three days from station NORNOR3. Flat Meadow Brook (NHRIV700060502-05) has been changed from assessment category 2-G to 5-P.
considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

**MINK BROOK (NHRIV801040401-05)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mink Brook</td>
<td>NHRIV801040401-05</td>
<td>Escherichia coli</td>
<td>Hanover</td>
<td>3-PNS</td>
<td>5-P</td>
</tr>
</tbody>
</table>

There are four geometric means in current assessment period, 50% are above the standard including one geometric mean above the max exceedance. There are two grab samples above the magnitude of exceedance (twice the water quality criteria) that help drive high geometric means. The high grab samples were collected after some rainfall. All current samples were collected at station 01T-MKB, a river trend monitoring station. Mink Brook (NHRIV801040401-05) should change assessment category from 3-PNS to 5-P.
**Notes:**

E. COLI-GEO-CP = *Escherchia coli* geometric mean calculated from samples collected during the summer critical period.

E. COLI-GRAB-CP = *Escherchia coli* grab samples collected during the summer critical period.

E. COLI-GRAB-NCP = *Escherchia coli* grab samples collected outside the summer critical period.

“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

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**Dissolved Oxygen (Aquatic Life Use Support)**

**BROWN BROOK - TO PISCASSIC RIVER (NHRIV600030708-14)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>BROWN BROOK - TO PISCASSIC RIVER</td>
<td>NHRIV600030708-14</td>
<td>DISSOLVED OXYGEN (mg/L)</td>
<td>FREMONT</td>
<td>3-PAS</td>
<td>5-P</td>
</tr>
</tbody>
</table>

2016: Class A waterbody. New data collected in 2014 and 2015 at station 10-PIS indicates that the river consistently has dissolved oxygen concentrations below 5.5 mg/L, and occasionally below 4 mg/L. The low dissolved oxygen samples
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collected during the current assessment period (2011-2016) were collected during flows between 0.04 and 0.16 CFSM at the Exeter River gauge (01073587) and with 3-day rainfall totals between 0.0 and 0.7 inch.
### NORTON BROOK (NHRIV600030901-06)

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>NORTON BROOK</td>
<td>NHRIV600030901-06</td>
<td>Dissolved Oxygen (mg/L)</td>
<td>GREENLAND</td>
<td>3-PNS</td>
<td>5-P</td>
</tr>
</tbody>
</table>

2016: New data collected in during the current assessment period (2011-2016) at station 06-NOB indicate that the brook consistently has dissolved oxygen concentrations below 5 mg/L, and occasionally below 4 mg/L. It should be noted that there appears to be a steep declining trend in dissolved oxygen between 2011 and 2016. The low dissolved oxygen samples collected during the current assessment period were collected during flows between 0.03 and 1.18 CFSM at the Exeter River gauge (01073587) and with 3-day rainfall totals between 0.08 and 1.76 inches.
WHEELWRIGHT POND (NHLAK600030902-02)

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>WHEELWRIGHT POND</td>
<td>NHLAK600030902-02</td>
<td>Dissolved Oxygen (mg/L)</td>
<td>LEE</td>
<td>3-ND</td>
<td>5-P</td>
</tr>
</tbody>
</table>

Class A waterbody. Two recent data sets for this site that fall within the 10 year timeline for data used for this reporting period, one from 2015 and one from 2016. Both are MagEx in this Class A waterbody, and are in similar range to a historical data point from early 1990s. One of the sample rounds was conducted in the critical period, but not in the critical time, though it was only 22 minutes earlier than start of critical time.
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WHEELWRIGHT POND
(NHLAK600030902-02)

Water Temperature (C)

Water Temperature (at DO samples)

Water Temperature on Exceedence Days

"Current" Line for 2016
2016: Class A waterbody. New data collected in 2015 and 2016 (three site visits each year during the Critical Period and Critical Time) to collect data for this assessment round, due to lack of historical data for this site. While the data from the epilimnion are fine, the zone of low DO in hypolimnion grows larger and more pronounced over the course of the growing season, extending further up into the water column off the bottom of the lake. Hawkins Pond
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(NHLAK700020108-04) changed assessment category from 3-ND to 5-P.
Notes:
DO-PPM-GRAB-CT-CP = Grab samples of dissolved oxygen during the early morning hours of the summer critical period.
DO-PPM-GRAB-NCT-NCP = Grab samples of dissolved oxygen not in the early morning hours and outside the summer critical period.
“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

### SAINT ANSELM BROOK - TO PISCATAQUOG RIVER (NHRIV700060607-35)

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAINT ANSELM BROOK - TO PISCATAQUOG RIVER</td>
<td>NHRIV700060607-35</td>
<td>Dissolved Oxygen (mg/L)</td>
<td>MANCHESTER</td>
<td>3-ND</td>
<td>5-P</td>
</tr>
</tbody>
</table>

2016: New data collected in 2016 at stations 03-SAB and 05-SAB indicate that the brook consistently has dissolved oxygen concentrations below 4.5 mg/L, and on occasion the concentrations fall below 3.0 mg/L. The low dissolved oxygen samples collected during the current assessment period (2011-2016) were collected during flows between 0.17 and 1.02 CFSM at the South Branch Piscataquog River gauge (01091000) and with 3-day rainfall totals between 0.01 and 2.48 inches.
Impairments Added to the 2016 303(d) List of Threatened or Impaired Waters
2016: New data collected in 2015 at stations 03-BKB, 04-BKB, 05-BKB, 09-HRG, 10-HRG and 11-HRG indicate that the brook consistently has dissolved oxygen concentrations below 4.5 mg/L, and on occasion the concentrations fall below 3.0 mg/L. The low dissolved oxygen samples collected during the current assessment period (2011-2016) were collected during flows between 0.18 and 0.89 CFSM at the South Branch Piscataquog River gauge (01091000) and with 3-day rainfall totals between 0.05 and 1.24 inches.
Impairments Added to the 2016 303(d) List of Threatened or Impaired Waters
RIDDLE BROOK (NHRIV700060905-18)

2016: New data collected in 2015 at stations 15P-RID, 17-RID, and 16-RIP indicates that the brook consistently has dissolved oxygen concentrations below 4.5 mg/L, and on occasion the concentrations fall below 3.0 mg/L. The low dissolved oxygen samples collected during the current assessment period (2011-2016) were collected during flows between 0.17 and 1.02 CFSM at the South Branch Piscataquog River gauge (01091000) and with 3-day rainfall totals between 0.01 and 2.48 inches.
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RIDDLE BROOK
(NHRIV700060905-18)

DO (mg/L)


0 1 2 3 4 5 6 7 8 9 10 11 12

"Current" Line for 2016
DO Min
DO Min- (Magee)
DO-PPM-GRAB-NCT-NCP
DO-PPM-GRAB-NCT-CP

RIDDLE BROOK
(NHRIV700060005-18)

Water Temperature (°C)


0 5 10 15 20 25 30

"Current" Line for 2016
Water Temperature (at DO samples)
Water Temperature on Exceedence Days
LONG POND (NHLAK700061205-02-01)

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>LONG POND</td>
<td>NHLAK700061205-02-01</td>
<td>Dissolved Oxygen</td>
<td>PELHAM</td>
<td>3-PNS</td>
<td>5-P</td>
</tr>
</tbody>
</table>

2016: Class B waterbody. Most samples meet standards however n=2 MAGEX results from within the CP and CT exceed the 10% limit for this waterbody. Stratification does occasionally extend deep into the water column in this waterbody. The July 31, 2014, sample from 5 meters was checked against the temperature profile and it reflects the DO samples from the bottom of the epilimnion, which extended as deep as 5 meters in this 6.5 meter deep waterbody. There was a quick transition to lower temperatures below this depth level.
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Gage CFSM on Sample
USGS 01093852
SOUHEGAN RIVER
(SITE WLR-1) NEAR MILFORD, NH

- CFSM from Gage
- Gage on Exceedence Days
- "Current" Line for 2016

Rainfall Preceding Grab Sample Days

Hudson 1 SSE

- Previous 3 Days Rain
- Exceedence Days - Previous 3 Days Rain
- "Current" Line for 2016

Temperature Preceding Grab Sample Days

Hudson 1 SSE

- "Current" Line for 2016
- Previous 3 Days Ave (Max T)
- Exceedence Days - Previous 3 Days Ave (Max T)
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**WEST RIVER - ASH SWAMP BROOK - LILY POND BROOK - UNNAMED BROOK (NHRIV801070507-01)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>WEST RIVER - ASH SWAMP BROOK - LILY POND BROOK - UNNAMED BROOK</td>
<td>NHRIV801070507-01</td>
<td>Dissolved Oxygen (mg/L)</td>
<td>HINSDALE</td>
<td>3-ND</td>
<td>5-P</td>
</tr>
</tbody>
</table>

2016: New datalogger data collected in 2016 at station 03-ASW indicates that the brook consistently has 24-hour minimum dissolved oxygen concentrations below 5.0 mg/L, and on occasion the concentrations fall below 4.5 mg/L. The low dissolved oxygen samples collected during the current assessment period (2011-2016) were collected during flows between 0.17 and 0.49 CFSM at the Ashuelot River gauge (01160350) and with 3-day rainfall totals between 0.00 and 0.79 inches.
Locke Lake was assessed as 3-PNS in 2014 although data supported impairment at that time. The decision to wait was in order to make the assessment based on a full 10 year data set. The target trophic class for Locke Lake is mesotrophic and the high median chlorophyll-a and total phosphorus support impairment. The quantity of invasive plants in this system has varied throughout the years, and reached a peak at 38 acres of infestation in June 2016 prior to herbicide treatment in September 2016. The lake management plan recommends continued herbicide treatment to knock back the bulk of the infestation. The association also plans to utilize diver assisted suction harvesting (DASH) as a management technique. While harvested plants will remove nutrients from the system, milfoil die-off from herbicide treatments combined with
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sediment release from suction harvesting activities will likely release nutrient into the water column and increase the potential for algal blooms. Already the system has experienced short-term cyanobacteria blooms. Locke Lake has been assessed as impaired (5-M) for chlorophyll-a and total phosphorus in the 2016 assessment cycle.
**JENNESS POND (NHLAK700060502-06)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>JENNESS POND</td>
<td>NHLAK700060502-06</td>
<td>Chlorophyll-a</td>
<td>Northwood</td>
<td>3-PNS</td>
<td>5-M</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total Phosphorus</td>
<td></td>
<td>2-M</td>
<td>5-M</td>
</tr>
</tbody>
</table>

The chlorophyll-a median has exceeded the threshold for oligotrophic lakes in the last two assessment cycles with no indication that levels are decreasing. Monthly VLAP monitoring suggests chlorophyll-a levels more frequently exceed the threshold since 2009. The total phosphorus median hovers at the threshold but has not exceeded it; however total phosphorus will be listed at impaired due to the stressor response matrix.

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**Cyanobacteria (Primary Contact recreation [i.e. Swimming])**

**SUNRISE LAKE (NHLAK600030601-05-01)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUNRISE LAKE</td>
<td>NHLAK600030601-05-01</td>
<td>Cyanobacteria hepatotoxic microcystins</td>
<td>MIDDLETON</td>
<td>3-ND</td>
<td>5-M</td>
</tr>
</tbody>
</table>

Multiple blooms some of which were spatially widely documented. Sunrise Lake, Beach #1 Middleton 5/27/2016 *Anabaena* 200,000 cells/mL; Sunrise Lake, Main Beach Middleton 5/27/2016 *Anabaena* 2.5 million cells/mL; Sunrise Lake, Beach #1 Middleton 5/27/2016 *Anabaena* 2.5 million cells/mL; Sunrise Lake, Main Beach Middleton 5/27/2016 *Anabaena* 2.5 million cells/mL; Sunrise Lake, Beach #1 Middleton 5/27/2016 *Anabaena* 2.5 million cells/mL; Sunrise Lake, Main Beach Middleton 5/27/2016 *Anabaena* 2.5 million cells/mL.
Lake, Dowling Cove Middleton 6/2/2016 Anabaena 5,000 cells/mL; Sunrise Lake 8/6/2014 Anabaena circinalis 540,000 cells/mL.

**DOWNING POND (NHLAK700020102-02)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOWNING POND</td>
<td>NHLAK700020102-02</td>
<td>Cyanobacteria hepatotoxic microcystins</td>
<td>NEW DURHAM</td>
<td>3-ND</td>
<td>5-M</td>
</tr>
</tbody>
</table>

Multiple documented Anabaena blooms; 6/30/2016, 120,000 cells/mL; 7/15/2016, 170,000 cells/mL; 7/21/2016, 142,200 cells/mL; 8/25/2015, 150,000 cells/mL; 8/17/2015, 4,100,000 cells/mL. This is part of the Merrymeeting River issues.

**JONES POND (NHIMP700020102-01-01)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>JONES POND</td>
<td>NHIMP700020102-01-01</td>
<td>Cyanobacteria hepatotoxic microcystins</td>
<td>NEW DURHAM</td>
<td>3-ND</td>
<td>5-M</td>
</tr>
</tbody>
</table>

8/12/2016 Oscillatoria 2.3 million cells/mL. This is part of the Merrymeeting River issues.

**HOTHOLE POND (NHLAK700060302-05)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>HOTHOLE POND</td>
<td>NHLAK700060302-05</td>
<td>Cyanobacteria hepatotoxic microcystins</td>
<td>LOUDON</td>
<td>3-ND</td>
<td>5-M</td>
</tr>
</tbody>
</table>

12 samples were collected and counted in 2016. One sample (8/25/2016) was 72,000 cells/ml of Anabaena. Cyanobacteria was present in every sample from August 12 to October 16 (last sample of season) at 4,000 to 72,000 cells/ml. There is limited other water quality data for this waterbody but the 2004 dissolved oxygen showed that the entire 8 meters of the hypolimnion was less than 1 mg/L dissolved oxygen indicating likely phosphorus regenerations from the sediments.

**DARRAH POND (NHLAK700061002-01-01)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>DARRAH POND</td>
<td>NHLAK700061002-01-01</td>
<td>Cyanobacteria hepatotoxic microcystins</td>
<td>LITCHFIELD</td>
<td>3-ND</td>
<td>5-P</td>
</tr>
</tbody>
</table>

Multiple blooms documented; 7/26/2016, Phormidium 1,400,000 cells/mL; 7/28/2016, Phormidium 1,000,000 cells/mL; 8/3/2016 Phormidium and Oscillatoria 180,000 cells/mL; 8/10/2015 likely Oscillatoria 140,000 cells/mL; 8/14/2015 Unknown cyanobacteria 83,000 cells/mL; 8/21/2015 Oscillatoria 140,000 cells/mL.
### pH (Aquatic Life Use Support)

**EAST BRANCH SACO RIVER - UNNAMED BROOK - GARDINER BROOK - WHITTEN BROOK (NHRIV600020301-03)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAST BRANCH SACO RIVER - UNNAMED BROOK - GARDINER BROOK - WHITTEN BROOK</td>
<td>NHRIV600020301-03</td>
<td>pH BARTLETT</td>
<td>3-ND</td>
<td>5-M</td>
<td></td>
</tr>
</tbody>
</table>

2016: 11 of 18 (61%) of the samples collected between 2013 and 2016 were below 6.5, which triggered new impairment for 2016 cycle. All samples were collected at station 06-EBS under varying weather and flow conditions during the summer/fall.

![pH Graph](image)

**Notes:**
- pH-GRAB = pH value from a grab sample.
- “Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.
- “Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

**BRANCH RIVER (NHRIV600030402-06)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRANCH RIVER</td>
<td>NHRIV600030402-06</td>
<td>pH MILTON</td>
<td>2-G</td>
<td>5-M</td>
<td></td>
</tr>
</tbody>
</table>

2016: New grab sample data collected in 2014, 2015 and 2016 at station 01-BRA triggered new impairment. 17 of the last 21 samples were non-supports (low pH between 6.15 - 6.44) collected in June through September of each year. The non-supporting samples were collected at flows between 0.04 - 1.51 cfs on the Cocheco River gage (01072800) and during varying weather conditions (0-2” 3 day total). Datalogger at station 00G-BRA in 2010 showed all full support.
Impairments Added to the 2016 303(d) Lists of Threatened or Impaired Waters

Notes:

\( \text{pH-24HR_MIN} = \text{pH minimum value from a datalogger deployment.} \)

\( \text{pH-24HR_MAX} = \text{pH maximum value from a datalogger deployment.} \)

\( \text{pH-GRAB} = \text{pH value from a grab sample.} \)

“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.

“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

**EAGLE ROCK BROOK (NHRIV801060402-46)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAGLE ROCK BROOK</td>
<td>NHRIV801060402-46</td>
<td>pH</td>
<td>SUNAPEE</td>
<td>3-PNS</td>
<td>5-M</td>
</tr>
</tbody>
</table>

2016: 8 of 30 (27%) grab samples collected between 2010 – 2016 were non-supports due to being below 6.5, which triggered the new impairment for the 2016 cycle. All samples were collected at station SUNSUN5151 with flows between 0.07 – 1.47 cfs on the Sugar River gage (01152500) from May to October.
Notes:
pH-GRAB = pH value from a grab sample.
“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.
“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

**BOW BOG BROOK (NHRIV700060302-21)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOW BOG BROOK</td>
<td>NHRIV700060302-21</td>
<td>pH</td>
<td>Bow</td>
<td>3-ND</td>
<td>5-M</td>
</tr>
</tbody>
</table>

2016: Grab sample data collected in 2014 and 2015 at station 02-BBB triggered the new impairment in the 2016 cycle. All 13 grab samples were non-supports collected in February through April. Two of the non-supports were just below the pH minimum magex of 5.5 with readings of 5.46. The non-supporting samples were collected at flows of 0.72 and 7.28 cfsm on the Soucook River gage (01089100) and during varying weather conditions (0.00 and 0.93” preceding three day precipitation). The river has been categorized as 5-M for the 2016 cycle.
Notes:

pH-GRAB = pH value from a grab sample.
“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.
“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

**PAVILLON BROOK (NHRIV700060905-25)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAVILLON BROOK</td>
<td>NHRIV700060905-25</td>
<td>pH</td>
<td>AMHERST</td>
<td>3-ND</td>
<td>5-M</td>
</tr>
</tbody>
</table>

2016: Grab sample data collected in 2015 and 2016 at station BABAMHPB triggered the impairment for the 2016 cycle. 4 of 6 (67%) samples were non-supports (low pH between 5.51 – 6.12) collected in June and July. The non-supporting samples were collected at flows between 0.31 – 0.94 cfsm on the Souhegan River gage (01094000) and during varying weather conditions (0.00-0.57” preceding three day precipitation).
Impairments Added to the 2016 303(d) Lists of Threatened or Impaired Waters

Notes:
pH-GRAB = pH value from a grab sample.
“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.
“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

### UNNAMED BROOK - TO ISINGLASS RIVER (NHRIV600030605-12)

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNNAMED BROOK - TO ISINGLASS RIVER</td>
<td>NHRIV600030605-12</td>
<td>pH</td>
<td>STRAFFORD</td>
<td>3-ND</td>
<td>5-P</td>
</tr>
</tbody>
</table>

2016: Grab sample data collected in 2014 and 2015 at stations 02-XIG and 02D-XIG triggered the new impairment in the 2016 cycle. 27 of 29 (93%) grab samples were non-supports (low pH between 5.19 – 6.47) collected in June through October. The non-supporting samples were collected at flows between 0.11 – 5.92 cfs on the Cochecho River gage (01072800) and during varying weather conditions (0.00 - 2.78” preceding three day precipitation).

![Graph showing pH values for UNNAMED BROOK - TO ISINGLASS RIVER (NHRIV600030605-12)](chart)

Notes:
pH-GRAB = pH value from a grab sample.
“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.
“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

### UNNAMED BROOK - TO LAMPREY RIVER (NHRIV600030703-17)

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNNAMED BROOK - TO LAMPREY RIVER</td>
<td>NHRIV600030703-17</td>
<td>pH</td>
<td>EPPING</td>
<td>3-ND</td>
<td>5-M</td>
</tr>
</tbody>
</table>


2016: Grab sample data collected in 2014 and 2015 at stations 04-XLP and 05-XLP triggered the new impairment in the 2016 cycle. 11 of 29 (38%) grab samples were non-supports (low pH between 5.69 – 6.48) collected in June through November. The non-supporting samples were collected at flows between 0.08 – 1.37 cfsm on the Lamprey River gage (01073500) and during varying weather conditions (0.00 – 0.85” preceding three day precipitation).

Notes:
- pH-GRAB = pH value from a grab sample.
- “Magex” refers to the magnitude of exceedance indicator described in the Consolidated Assessment and Listing Methodology.
- “Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

### FORDWAY BROOK (NHRIV600030801-01)

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>FORDWAY BROOK</td>
<td>NHRIV600030801-01</td>
<td>pH</td>
<td>RAYMOND</td>
<td>3-ND</td>
<td>5-P</td>
</tr>
</tbody>
</table>

2016: Grab sample data collected in 2014 and 2015 at stations 06-FDW and 06F-FDW triggered the new impairment in the 2016 cycle. 24 of 26 (92%) grab samples were non-supports (low pH between 5.06 – 6.45) collected in June through October. The non-supporting samples were collected at flows between 0.41 – 3.78 cfsm on the Merrimack River gage (01092000) and during varying weather conditions (0.00 – 2.12” preceding three day precipitation).
Notes:

- pH-GRAB = pH value from a grab sample.
- “Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.
- “Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

**MILLER BROOK (NHRIV600030404-04)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>MILLER BROOK</td>
<td>NHRIV600030404-04</td>
<td>pH</td>
<td>MILTON</td>
<td>3-ND</td>
<td>5-P</td>
</tr>
</tbody>
</table>

2016: Grab sample data collected in 2014 and 2015, at stations 04-XML and 04T-XML triggered the new impairment in the 2016 cycle. 19 of 23 (83%) grab samples were non-supports (low pH between 5.41 – 6.38) collected in June through October. The non-supporting samples were collected at flows between 0.11 – 5.92 cfsm on the Cocheco River gage (01072800) and during varying weather conditions (0.00-2.94” preceding three day precipitation).
Notes:

pH-GRAB = pH value from a grab sample.

“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.

“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

**BRANCH RIVER (NHRIV600030401-08)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRANCH RIVER</td>
<td>NHRIV600030401-08</td>
<td>pH</td>
<td>WAKEFIELD</td>
<td>3-ND</td>
<td>5-M</td>
</tr>
</tbody>
</table>

2016: Grab sample data collected in 2014, 2015, and 2016 at station 06-BRA triggered the new impairment in the 2016 cycle. All 21 grab samples were non-supports (low pH between 5.85 – 6.39) collected in June through September. The non-supporting samples were collected at flows between 0.04 – 1.51 cfsm on the Cocheco River gage (01072800) and during varying weather conditions (0.02-1.73” preceding three day precipitation).
Notes:

pH-GRAB = pH value from a grab sample.

“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.

“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

STONY BROOK (NHRIV600020803-07)

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>STONY BROOK</td>
<td>NHRIV600020803-07</td>
<td>pH</td>
<td>FREEDOM</td>
<td>3-ND</td>
<td>5-M</td>
</tr>
</tbody>
</table>

2016: Grab sample data collected in 2015 at station OL-10 triggered the new impairment in the 2016 cycle. 12 of 36 (33%) grab samples were non-supports (low pH between 5.91 – 6.48) collected in May through October. The non-supporting samples were collected at flows between 0.15 – 11.24 cfsm on the Bearcamp River gage (01064801) and during varying weather conditions (0.01-1.12” preceding three day precipitation).
Notes:

pH-GRAB = pH value from a grab sample.

“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.

“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

UNNAMED BROOK - FROM LONG POND TO PURITY LAKE (NHRIV600020803-04)

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNNAMED BROOK - FROM LONG POND TO PURITY LAKE</td>
<td>NHRIV600020803-04</td>
<td>pH</td>
<td>EATON</td>
<td>3-ND</td>
<td>5-M</td>
</tr>
</tbody>
</table>

2016: Grab sample data collected in 2013 at station GEA-1 triggered the new impairment in the 2016 cycle. 12 of 29 (41%) samples were non-supports (low pH between 5.51 – 6.46) collected in May through October. The non-supporting samples were collected at flows between 0.93 – 4.78 cfsm on the Saco River gage (01064500) and during varying weather conditions (0.01 - 1.45” preceding three day precipitation).
Impact Added to the 2016 303(d) Lists of Threatened or Impaired Waters

Notes:
- pH-GRAB = pH value from a grab sample.
- “Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.
- “Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

**DURRELL BROOK (NHRIV600020603-07)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>DURRELL BROOK</td>
<td>NHRIV600020603-07</td>
<td>pH</td>
<td>TAMWORTH</td>
<td>3-ND</td>
<td>5-P</td>
</tr>
</tbody>
</table>

2016: Grab sample data collected in 2014 and 2015 at station 00E-PGS triggered the new impairment in the 2016 cycle. 5 of 6 (83%) grab samples were non-supports (low pH between 4.97 – 5.95) collected in May through October. The non-supporting samples were collected at flows between 0.38 – 0.83 cfsm on the Bearcamp River gage (01064801) and during varying weather conditions (0.02-0.15” preceding three day precipitation).
Impairments Added to the 2016 303(d) Lists of Threatened or Impaired Waters

Notes:
pH-GRAB = pH value from a grab sample.
“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.
“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

BAKER RIVER (NHRIV700010302-14)

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAKER RIVER</td>
<td>NHRIV700010302-14</td>
<td>pH</td>
<td>WENTWORTH</td>
<td>3-ND</td>
<td>5-M</td>
</tr>
</tbody>
</table>

2016: Grab sample data collected in 2014 and 2015 at station 08-BKR triggered the new impairment in the 2016 cycle. 5 of 6 (83%) grab samples were non-supports (low pH between 5.79 – 6.31) collected in July through September. The non-supporting samples were collected at flows between 0.23 – 0.75 cfsm on the Baker River gage (01076000) and during varying weather conditions (0.00 – 0.54” preceding three day precipitation).
Notes:

pH-GRAB = pH value from a grab sample.

“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.

“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

### BAKER RIVER (NHRIV700010303-09-01)

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAKER RIVER</td>
<td>NHRIV700010303-09-01</td>
<td>pH</td>
<td>WENTWORTH</td>
<td>3-ND</td>
<td>5-M</td>
</tr>
</tbody>
</table>

2016: Grab sample data collected in 2014 and 2015 at stations 07-BKR and 07A-BKR triggered the new impairment in the 2016 cycle. 9 of 10 (90%) grab samples were non-supports (low pH between 5.93 – 6.45) collected in July through September. The non-supporting samples were collected at flows between 0.21 – 0.75 cfsm on the Baker River gage (01076000) and during varying weather conditions (0.00 – 0.57” preceding three day precipitation).
Notes:

- pH-GRAB = pH value from a grab sample.
- "Magex" refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.
“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

BAKER RIVER (NHRIV700010303-12)

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAKER RIVER</td>
<td>NHRIV700010303-12</td>
<td>pH</td>
<td>WENTWORTH</td>
<td>3-ND</td>
<td>5-M</td>
</tr>
</tbody>
</table>

2016: Grab sample data collected in 2014 and 2015 at station 06A-BKR triggered the new impairment in the 2016 cycle. 4 of 5 (80%) grab samples were non-supports (low pH between 5.88 – 6.28) collected in July through September. The non-supporting samples were collected at flows between 0.21 – 0.75 cfsm on the Baker River gage (01076000) and during varying weather conditions (0.00 – 0.21” preceding three day precipitation).
Notes:
pH-GRAB = pH value from a grab sample.
“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.
“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

SOUTH BRANCH BAKER RIVER (NHRIV700010304-12)

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
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<th>Parameter Name</th>
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</tr>
</thead>
<tbody>
<tr>
<td>SOUTH BRANCH BAKER RIVER</td>
<td>NHRIV700010304-12</td>
<td>pH</td>
<td>WENTWORTH</td>
<td>3-PNS</td>
<td>5-M</td>
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</tbody>
</table>

2016: Grab sample data collected in 2013 through 2015 at station 06-SBR triggered the new impairment in the 2016 cycle. 6 of 18 (33%) grab samples were non-supports (low pH between 6.09 – 6.41) collected in January through August. The non-supporting samples were collected at flows between 0.52 – 4.10 cfsm on the Baker River gage (01076000) and during varying weather conditions (0.01 – 1.07” preceding three day precipitation).
Impairments Added to the 2016 303(d) Lists of Threatened or Impaired Waters

Notes:
pH-GRAB = pH value from a grab sample.
“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.
“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

BAKER RIVER (NHRIV700010305-11)

<table>
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<th>2016</th>
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</thead>
<tbody>
<tr>
<td>BAKER RIVER</td>
<td>NHRIV700010305-11</td>
<td>pH</td>
<td>RUMNEY</td>
<td>3-ND</td>
<td>5-M</td>
</tr>
</tbody>
</table>

2016: Grab sample data collected in 2014 through 2016 at stations 04-BKR, 04G-BKR, and 05-BKR triggered the new impairment in the 2016 cycle. 17 of 21 (81%) grab samples were non-supports (low pH between 5.86 – 6.49) collected in June through September. The non-supporting samples were collected at flows between 0.15 – 1.73 cfsm on the Baker River gage (01076000) and during varying weather conditions (0.00 – 0.53” preceding three day precipitation).
Notes:

pH-GRAB = pH value from a grab sample.

“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing
Methodology.
“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

**BAKER RIVER (NHRIV700010307-11)**

<table>
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<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
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<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAKER RIVER</td>
<td>NHRIV700010307-11</td>
<td>pH</td>
<td>PLYMOUTH</td>
<td>3-PNS</td>
<td>5-M</td>
</tr>
</tbody>
</table>

2016: Grab sample data collected in 2014 through 2016 at stations 01-BKR, 02-BKR, 03-BKR, and 01A-BKR triggered the new impairment in the 2016 cycle. 24 of 29 (83%) grab samples were non-supports (low pH between 5.74 – 6.48) collected in May through September. The non-supporting samples were collected at flows between 0.15 – 4.12 cfsm on the Baker River gage (01076000) and during varying weather conditions (0.00 – 0.91” preceding three day precipitation).
BEAR POND BROOK (NHRIV700020108-07)

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
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</thead>
<tbody>
<tr>
<td>BEAR POND BROOK</td>
<td>NHRIV700020108-07</td>
<td>pH</td>
<td>CENTER HARBOR</td>
<td>3-ND</td>
<td>5-M</td>
</tr>
</tbody>
</table>

2016: Grab sample data collected in 2015 and 2016 at stations BEACENO and HAWCENBPI triggered the new impairment in the 2016 cycle. All six of the grab samples were non-supports (low pH between 6.08 – 6.29) collected in March through August. The non-supporting samples were collected at flows between 0.34 – 2.78 cfsm on the Baker River gage (01076000) and during varying weather conditions (0.05 – 0.37” preceding three day precipitation).
Notes:
pH-GRAB = pH value from a grab sample.
“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.
“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

UNNAMED BROOK - TO MOUNTAIN BROOK RESERVOIR (NHRIV700030101-09)

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
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<tbody>
<tr>
<td>UNNAMED BROOK - TO</td>
<td>NHRIV700030101-09</td>
<td>pH</td>
<td>JAFFREY</td>
<td>3-ND</td>
<td>5-P</td>
</tr>
<tr>
<td>MOUNTAIN BROOK RESERVOIR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2016: Grab sample data collected in 2014, 2015, and 2016 at station 08C-XMT triggered the new impairment in the 2016 cycle. All 12 of the grab samples were non-supports (low pH between 5.00 – 5.69) collected in March through October. The non-supporting samples were collected at flows between 0.12 – 3.36 cfsm on the Ashuelot River gage (01158000) and during varying weather conditions (0.00 – 1.57” preceding three day precipitation).
Notes:

pH-GRAB = pH value from a grab sample.

“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.
“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

**UNNAMED BROOK - TO HODGE POND (NHRIV700030101-22)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
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<tbody>
<tr>
<td>UNNAMED BROOK - TO HODGE POND</td>
<td>NHRIV700030101-22</td>
<td>pH</td>
<td>JAFFREY</td>
<td>3-ND</td>
<td>5-P</td>
</tr>
</tbody>
</table>

2016: Grab sample data collected in 2014, 2015, and 2016 at station 03-XHG triggered the new impairment in the 2016 cycle. 6 of 7 (86%) grab samples were non-supports (pH between 5.00 – 8.27) collected in March through October. The non-supporting samples were collected at flows between 0.15 – 2.73 cfsm on the Contoocook River gage (01082000) and during varying weather conditions (0.00 – 3.04” preceding three day precipitation).
Notes:

- pH-GRAB = pH value from a grab sample.
- “Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.
- “Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

**STONY BROOK - UNNAMED BROOK (NHRIV700030101-35)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
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<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>STONY BROOK - UNNAMED BROOK</td>
<td>NHRIV700030101-35</td>
<td>pH</td>
<td>JAFFREY</td>
<td>3-ND</td>
<td>5-P</td>
</tr>
</tbody>
</table>

2016: Grab sample data collected in 2014, 2015, and 2016 at stations 02-STO, 02-XST, 05-STO, and 06-STO triggered the new impairment in the 2016 cycle. 42 of 44 (95%) grab samples were non-supports (low pH between 5.01 – 6.47) collected in March through October. The non-supporting samples were collected at flows between 0.15 – 2.88 cfsm on the Contoocook River gage (01082000) and during varying weather conditions (0.00 – 3.04” preceding three day precipitation).
Notes:

pH-GRAB = pH value from a grab sample.

“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.
“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
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<th>Parameter Name</th>
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<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>NORTH BRANCH - INTERLOCKEN DAM TO STEELS PD</td>
<td>NHRIV700030202-18</td>
<td>pH</td>
<td>ANTRIM</td>
<td>3-PNS</td>
<td>5-M</td>
</tr>
</tbody>
</table>

2016: Grab sample data collected in 2014, 2015, and 2016 at station 04-NBC triggered the new impairment in the 2016 cycle. 11 of 13 (85%) grab samples were non-supports (low pH between 5.53 – 6.42) collected in July through October. The non-supporting samples were collected at flows between 0.07 – 8.10 cfsm on the Ashuelot River gage (01158000) and during varying weather conditions (0.00 – 2.15” preceding three day precipitation).
Notes:

pH-GRAB = pH value from a grab sample.

“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.

“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

### BEAVER MEADOW BROOK (NHRIV700060302-10)

<table>
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<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
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<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEAVER MEADOW BROOK</td>
<td>NHRIV700060302-10</td>
<td>pH</td>
<td>CONCORD</td>
<td>3-ND</td>
<td>5-P</td>
</tr>
</tbody>
</table>

2016: Grab sample data collected in 2014 and 2016 at station 01-BMW triggered the new impairment in the 2016 cycle. All 11 grab samples were non-supports (low pH between 5.05 – 6.38) collected in February through April. The non-supporting samples were collected at flows between 0.80 – 9.80 cfsm on the Soucook River gage (01089100) and during varying weather conditions (0.00 – 0.92” preceding three day precipitation).
Impairments Added to the 2016 303(d) Lists of Threatened or Impaired Waters

Notes:
- **pH-GRAB** = pH value from a grab sample.
- “Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.
- “Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

### BOW BOG BROOK - HORSE BROOK (NHRIV700060302-20)

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOW BOG BROOK - HORSE BROOK</td>
<td>NHRIV700060302-20</td>
<td>pH</td>
<td>BOW</td>
<td>3-ND</td>
<td>5-P</td>
</tr>
</tbody>
</table>

2016: Grab sample data collected in 2014, 2015, and 2016 at stations 25G-BBB and 25T-BBB triggered the new impairment in the 2016 cycle. All 22 grab samples were non-supports (low pH between 4.92– 6.26) collected in February through October. The non-supporting samples were collected at flows between 0.12 – 4.73 cfsm on the Soucook River gage (01089100) and during varying weather conditions (0.00 – 2.58” preceding three day precipitation).
Notes:

pH-GRAB = pH value from a grab sample.

“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.
“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

THE GULF (NHRIV700060502-06)

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>THE GULF</td>
<td>NHRIV700060502-06</td>
<td>pH</td>
<td>NORTHWOOD</td>
<td>3-ND</td>
<td>5-P</td>
</tr>
</tbody>
</table>

2016: Grab sample data collected in 2014 and 2015 at stations 01-NWG and 03-NWG triggered the new impairment in the 2016 cycle. 24 of 27 (89%) grab samples were non-supports (low pH between 5.18–6.39) collected in June through October. The non-supporting samples were collected at flows between 0.11 – 2.82 cfsm on the Suncook River gage (01089500) and during varying weather conditions (0.00 – 1.74” preceding three day precipitation).
Notes:

pH-GRAB = pH value from a grab sample.

“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.

“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

**LITTLE BEAR BROOK (NHRIV700060503-12)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>LITTLE BEAR BROOK</td>
<td>NHRIV700060503-12</td>
<td>pH</td>
<td>ALLENSTOWN</td>
<td>3-ND</td>
<td>5-P</td>
</tr>
</tbody>
</table>

2016: Grab sample data collected in 2014 and 2015 at stations 12-LBB and 12G-LBB triggered the new impairment in the 2016 cycle. All 17 grab samples were non-supports (low pH between 5.11 – 6.43) collected in June through October. The non-supporting samples were collected at flows between 0.21 – 1.76 cfsm on the Soucook River gage (01089100) and during varying weather conditions (0.00 – 1.41” preceding three day precipitation).
**Notes:**

- pH-GRAB = pH value from a grab sample.
- “Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.
- “Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

### CATAMOUNT BROOK (NHRIV700060607-20)

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
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<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>CATAMOUNT BROOK</td>
<td>NHRIV700060607-20</td>
<td>pH</td>
<td>GOFFSTOWN</td>
<td>3-PAS</td>
<td>5-M</td>
</tr>
</tbody>
</table>

2016: Grab sample data collected in 2014 and 2015 at stations 848-017 and 848-030 triggered the new impairment in the 2016 cycle. 7 of 19 (37%) grab samples were non-supports (low pH between 6.02 – 6.47) collected in June through October. The non-supporting samples were collected at flows between 0.15 – 7.02 cfsm on the Piscataquog River gage (01091000) and during varying weather conditions (0.00 – 1.24” preceding three day precipitation). Stations 848-001, 848-009, 848-018, and 848-020 in full support.
Notes:

pH-GRAB = pH value from a grab sample.
“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.
“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

### SAINT ANSELM BROOK - TO PISCATAQUOG RIVER (NHRIV700060607-35)

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAINT ANSELM BROOK - TO PISCATAQUOG RIVER</td>
<td>NHRIV700060607-35</td>
<td>pH</td>
<td>MANCHESTER</td>
<td>3-ND</td>
<td>5-M</td>
</tr>
</tbody>
</table>

2016: Grab sample data collected in 2015 at stations 03-SAB and 05-SAB triggered the new impairment in the 2016 cycle. 14 of 24 (58%) grab samples were non-supports (low pH between 5.81– 6.48) collected in June through October. The non-supporting samples were collected at flows between 0.45 – 3.59 cfsm on the Merrimack River gage (01092000) and during varying weather conditions (0.00 – 3.23" preceding three day precipitation).
Notes:

pH-GRAB = pH value from a grab sample.

“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.

“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

**COHAS BROOK - UNNAMED BROOK (NHRIV700060703-02)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
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<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>COHAS BROOK - UNNAMED</td>
<td>NHRIV700060703-02</td>
<td>pH</td>
<td>AUBURN</td>
<td>3-PAS</td>
<td>5-P</td>
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</tbody>
</table>

2016: Grab sample data collected in 2014 and 2015 at stations 01-XCO and 02T-XCO triggered the new impairment in the 2016 cycle. 23 of 24 (96%) grab samples were non-supports (low pH between 5.10– 6.44) collected in June through October. The non-supporting samples were collected at flows between 0.36 – 3.78 cfsm on the Merrimack River gage (01092000) and during varying weather conditions (0.00 – 2.44” preceding three day precipitation).
Notes:

pH-GRAB = pH value from a grab sample.

“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.

“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

**UNNAMED BROOKS - TO KEMP BROOK (NHRIV802020202-01)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
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<th>Parameter Name</th>
<th>Primary Town</th>
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<th>2016</th>
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<tr>
<td>UNNAMED BROOKS - TO KEMP BROOK</td>
<td>NHRIV802020202-01</td>
<td>pH</td>
<td>FITZWILLIAM</td>
<td>3-ND</td>
<td>5-M</td>
</tr>
</tbody>
</table>

2016: Datalogger data collected in 2015 at station 02-XKB triggered the new impairment in the 2016 cycle. 18 of 26 (69%) of the daily minimum and maximum logger values were non-supports (low pH of 5.73 - 6.45) collected in July. The non-supporting samples were collected at flows between 0.35 – 1.00 cfs on the Ashuelot River gage (01160350) and during varying weather conditions (0.00 – 0.84” preceding three day precipitation).
Notes:
- pH-24HR_MIN = pH minimum value from a datalogger deployment.
- pH-24HR_MAX = pH maximum value from a datalogger deployment.
- pH-GRAB = pH value from a grab sample.
“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.

“Current” Line for 2014 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for addition details.

**NORTHWOOD LAKE INLET (NHRIV700060502-50)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
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<th>2016</th>
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</thead>
<tbody>
<tr>
<td>NORTHWOOD LAKE INLET</td>
<td>NHRIV700060502-50</td>
<td>pH</td>
<td>Northwood</td>
<td>3-ND</td>
<td>5-M</td>
</tr>
</tbody>
</table>

2016: Grab sample data collected in 2014 at stations 02-NWI and 03-NWI triggered new impairment for the 2016 cycle. All 7 grab samples were non-supports (low pH between 5.09 – 6.20) collected in July and September. The non-supporting samples were collected at flows between 0.11 – 0.60 cfs on the Suncook River gage (01089500) and during varying weather conditions (0.00-1.49” preceding three day precipitation).
Notes:
pH-GRAB = pH value from a grab sample.
“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.
“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

**HAYWARD BROOK (NHRIV700060302-08)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
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<th>Parameter Name</th>
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</tr>
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<tr>
<td>HAYWARD BROOK</td>
<td>NHRIV700060302-08</td>
<td>pH</td>
<td>CONCORD</td>
<td>3-ND</td>
<td>5-M</td>
</tr>
</tbody>
</table>

2016: Grab sample data collected in 2016 at station 02-HYW triggered category 5-M in the 2016 cycle. Five of 6 (83%) grab samples were non-supports (low pH between 4.84 and 6.33) collected in February through April. The non-supporting samples were collected at flows between 1.38 – 3.93 cfsm on the Soucook River gage (01089100) and during varying weather conditions (0.00 – 0.87” preceding three day precipitation).
Notes:

pH-GRAB = pH value from a grab sample.

“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.

“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

**UNNAMED BROOK - BETWEEN LITTLE BABAOSIC LAKE AND WASHER COVE BABOOSIC LAKE (NHRIV700060905-09)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
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<th>Primary Town</th>
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<tbody>
<tr>
<td>UNNAMED BROOK - BETWEEN LITTLE BABAOSIC LAKE AND WASHER COVE BABOOSIC LAKE</td>
<td>NHRIV700060905-09</td>
<td>pH</td>
<td>AMHERST</td>
<td>3-ND</td>
<td>5-P</td>
</tr>
</tbody>
</table>

2016: Grab sample data collected in 2015 and 2016 at station BABAMHBB triggered review in the 2016 cycle. All 6 grab samples were non-supports (low pH between 5.24 – 5.94) collected in June through August. The non-supporting samples were collected at flows between 0.15 – 0.76 cfsm on the Piscataquog River gage (01091000). The historic non-support data coupled with the new non-support data from this cycle support the new category 5-P.
Notes:

pH-GRAB = pH value from a grab sample.

“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.

“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

**ELBOW POND (NHLAK700010203-01)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELBOW POND</td>
<td>NHLAK700010203-01</td>
<td>pH</td>
<td>Woodstock</td>
<td>3-ND</td>
<td>5-M</td>
</tr>
</tbody>
</table>

2016: Grab samples from station ELBWOOD, indicate impairment for the 2016 cycle. 2 of 2 (100%) of grab samples were below pH 6.5 (pH values between 6.21 - 5.73). Samples were collected over different months and years under normal weather conditions.
Notes:

pH-GRAB = pH value from a grab sample.

“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.

“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.
BAILEY POND (NHLAK700060606-01)

Assessment Unit Name | Assessment Unit ID | Parameter Name | Primary Town | 2014 | 2016
--- | --- | --- | --- | --- | ---
BAILEY POND | NHLAK700060606-01 | pH | New Boston | 3-ND | 5-M

2016: Grab samples from station BAINWBD caused the initial impairment of the 2016 cycle. Three of 3 (100%) were below pH 6.4 (Values ranged from 6.44 - 5.77). Samples were collected during June, July, and August and from various weather conditions (0.00 - 0.98” rain in a 3 day period).
Impairments Added to the 2016 303(d) Lists of Threatened or Impaired Waters

pH-GRAB = pH value from a grab sample.
“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.
“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

GLEN LAKE (NHLAK700060607-01-01)

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>GLEN LAKE</td>
<td>NHLAK700060607-01-01</td>
<td>pH</td>
<td>Someplace or other</td>
<td>3-PNS</td>
<td>5-M</td>
</tr>
</tbody>
</table>

2016: Grab samples from station GLEGOFD indicated impairment for the 2016 cycle. Seven of 9 (78%) were below pH 6.5 (values ranged from 6.48 - 5.96). Sampled were collected June, July, August and under various weather conditions (0.01 - 1.69" rain in a 3 day period).
Notes:

pH-GRAB = pH value from a grab sample.
“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.
“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

HEDGEHOG POND (NHLAK700061102-13-02)

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEDGEHOG POND</td>
<td>NHLAK700061102-13-02</td>
<td>pH</td>
<td>Salem</td>
<td>3-PNS</td>
<td>5-M</td>
</tr>
</tbody>
</table>

2016: Grab samples from station 199609008SW01, indicated impairment for the 2016 cycle. Five of 8 (63%) were below pH 6.5 (values ranged from 6.30 to 4.34). Collection was done during April, May, July, and November and under various weather conditions, (0.02 - 0.58” rain in 3 day period).
Notes:
pH-GRAB = pH value from a grab sample.
“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.
“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

COBBETTS POND (NHLAK700061204-01-01)

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>COBBETTS POND</td>
<td>NHLAK700061204-01-01</td>
<td>pH</td>
<td>Windham</td>
<td>2-M</td>
<td>5-M</td>
</tr>
</tbody>
</table>

2016: Grab samples from stations, COBWINND, COBWINSD, COBWINMESS indicated impairment for the 2016 cycle. Eight of 55 (15%) of samples were below pH 6.5, (values ranged from 6.49 - 6.21). Samples were taken during May, June, July, and August in varying weather conditions, (0.02 -1.13" rain in a 3 day period).
Notes:

pH-GRAB = pH value from a grab sample.

“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.

“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.
2016: Grab samples from station MOUNWID indicate impairment for the 2016 cycle. Three of 3 samples 100% were below pH 6.45 (values 5.86-6.09). Samples were taken in June through September under varying weather conditions, (0.00 -3.10"preceding three day precipitation) during variable flow conditions (067 cfs - 4.13 cfs) USGS 01082000 CONTOOCOOK RIVER AT PETERBOROUGH, NH.
Notes:

pH-GRAB = pH value from a grab sample.

“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.

“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

ISLAND POND (NHLAK802020103-05)

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISLAND POND</td>
<td>NHLAK802020103-05</td>
<td>pH</td>
<td>New Ipswich</td>
<td>3-PNS</td>
<td>5-M</td>
</tr>
</tbody>
</table>

2016: Grab sample data collected in 2013 through 2015 at station ISLNWID triggered the new impairment in the 2016 cycle. All three grab samples were non-supports collected in June through September. Two of the non-supports were just below the pH minimum magex of 5.5 with readings of 5.22. Collected at flows of 0.29 and 4.13 cfsm on the USGS 01082000 CONTOOCOOK RIVER AT PETERBOROUGH (NH and during varying weather conditions (0.29 and 4.13” preceding three day precipitation). Due to 5.7 being so close to the pH minimum magex threshold of 5.5, they will not count as magex non-supports. The river has been categorized as 5-M for the 2016 cycle.
Notes:

pH-GRAB = pH value from a grab sample.

“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.

“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

**LOVELL LAKE (NHLAK600030401-01-01)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOVELL LAKE</td>
<td>NHLAK600030401-01-01</td>
<td>pH</td>
<td>Wakefield</td>
<td>3-PNS</td>
<td>5-M</td>
</tr>
</tbody>
</table>

2016: Grab sample data collected from stations, LOV01NL, and LOV02SL indicated impairment for the 2016 cycle. 14 of 49 (27%) grab samples were below 6.5 (low pH between 6.15– 6.48). Collected in June through September during varying weather conditions (0.00 – 0.39” 3 day total).
Notes:

pH-GRAB = pH value from a grab sample.

“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.

“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.
MILTON POND (NHLAK600030404-01-01)

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>MILTON POND</td>
<td>NHLAK600030404-01-01</td>
<td>pH</td>
<td>Milton</td>
<td>3-ND</td>
<td>5-M</td>
</tr>
</tbody>
</table>

2016 Grab sample data collected at stations DEP02ML, and MILMILD, indicate impairment for the 2016 cycle. Three of 3 (100%) of grab samples were below 6.5 (low pH between 6.21 - 6.00). Collected in June and July during varying weather conditions (0.00 - 0.18” 3 days total).
Notes:

pH-GRAB = pH value from a grab sample.

“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.

“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

**SALMON FALLS RIVER - GREAT FALLS UPPER DAM (NHIMP600030405-03)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>SALMON FALLS RIVER - GREAT FALLS UPPER DAM</td>
<td>NHIMP600030405-03</td>
<td>pH</td>
<td>Somersworth</td>
<td>3-ND</td>
<td>5-M</td>
</tr>
</tbody>
</table>

2016: Grab samples from station 12-SFR, indicated impairment for the 2016 cycle. 14 of 15 (93%) were below pH 6.5 (values ranged from 6.40 to 5.68). Collection was done during May, June, July, September and November and under various weather conditions, (0.00 - 1.04" rain in 3 day period).
Notes:
- pH-GRAB = pH value from a grab sample.
- "Magex" refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.
- "Current" Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

### ASHUELOT RIVER DAM POND (NHIMP802010301-02)

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASHUELOT RIVER DAM POND</td>
<td>NHIMP802010301-02</td>
<td>pH</td>
<td>Keene</td>
<td>3-ND</td>
<td>5-M</td>
</tr>
</tbody>
</table>

2016: Grab and Datalogger day samples from station 19A-ASH indicate impairment for the 2016 cycle. 13 of 13 (100%) were below pH 6.5 (values ranged from 6.30 to 6.14). Collection was done in August and September under various weather conditions (0.00 to 1.72)" of rain in a three day period.
Notes:

pH-24HR_MIN = pH minimum value from a datalogger deployment.
pH-24HR_MAX = pH maximum value from a datalogger deployment.
pH-GRAB = pH value from a grab sample.
“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.
“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

TOWNHOUSE POND (NHLAK600030404-01-02)

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOWNHOUSE POND</td>
<td>NHLAK600030404-01-02</td>
<td>pH</td>
<td>Milton</td>
<td>3-ND</td>
<td>5-M</td>
</tr>
</tbody>
</table>

2016: Grab sample data collected at station THP03ML, indicate impairment for the 2016 cycle. Three of 3 (100%) of grab samples were below 6.5 (pH values between 6.16 and 5.87). Collected in June and July during varying weather conditions (0.00 - 0.18” rain 3 days total).
Notes:

pH-GRAB = pH value from a grab sample.

“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.

“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.
Impairments Added to the 2016 303(d) Lists of Threatened or Impaired Waters

NORTHEAST POND (NHLAK600030404-02)

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>NORTHEAST POND</td>
<td>NHLAK600030404-02</td>
<td>pH</td>
<td>Milton</td>
<td>3-ND</td>
<td>5-M</td>
</tr>
</tbody>
</table>

2016: Grab sample data from station NEL01ML indicates impairment for the 2016 cycle. Three of 3 (100%) of grab samples were below 6.5 (pH values between 6.23 - 5.89). Collected in June and July under varying weather conditions (0.00 - 0.18” rain 3 days total).
Notes:
pH-GRAB = pH value from a grab sample.
“Magex” refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.
“Current” Line for 2016 – Per the methodology outlined in the CALM, all data from this referenced data is considered “current”. Available older data is provided for context. See the 2016 CALM for additional details.

**Toxics (Aquatic Life Use Support)**

**COCHECO RIVER (NHRIV600030607-15)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>COCHECO RIVER</td>
<td>NHRIV600030607-15</td>
<td>Iron</td>
<td>ROCHESTER</td>
<td>3-ND</td>
<td>5-M</td>
</tr>
</tbody>
</table>

2016: Five of eight (63%) samples collected during the current assessment period from 2011 to 2016, at both stations 15P-CCH (below the WWTF outfall) and 16-CCH (above the WWTF outfall) were above the chronic criteria (1,000 ug/L) resulting in a new impairment for this assessment unit during the 2016 cycle. The non-support samples collected during the current assessment period were collected with 3-day rainfall totals between 0.00 – 0.94” and with flows ranging from 0.17 – 1.19 cfsm at the Cocheco River gage (01072800) in June through September.
Impairments Added to the 2016 303(d) Lists of Threatened or Impaired Waters

Gage CFSM on Sample
USGS 01072800
COCHECO RIVER
NEAR ROCHESTER, NH.

Current Line for 2016
CFSM from Gage
Gage on Exceedence Days

Precipitation Preceding Samples
Durham

Current Line for 2016
Previous 3 Days Rain
Exceedence Days - Previous 3 Days Rain

pH During Sampling Events

Current Line for 2016
pH
pH when exceedences

98 of 114
WILD MEADOW BROOK (NHRIV700010702-02)

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>WILD MEADOW BROOK</td>
<td>NHRIV700010702-02</td>
<td>Aluminum</td>
<td>GRAFTON</td>
<td>3-PNS</td>
<td>5-M</td>
</tr>
</tbody>
</table>

2016: 100% (two) of the total aluminum samples collected during the current assessment period from 2011 to 2016, at stations 03T-WIM, were above the chronic criteria (87 ug/L), which by themselves suggest an impairment should be added for this assessment unit during the 2016 cycle. However, on July 1, 2014 NHDES formally clarified to USEPA that the aluminum criteria in the NH surface water quality regulations is acid-soluble aluminum, consistent with USEPA's 1988 ambient water quality criteria document for aluminum. The 2016 station 03T-WIM sampling included concurrent acid-soluble aluminum analysis. The acid-soluble aluminum results were also above the chronic criteria. One of those acid-soluble aluminum samples was 2x the chronic criteria. The samples collected during the current assessment period were collected with 3-day rainfall totals between 0.01 – 0.49” and with flows ranging from 0.35 – 0.54 cfsm at the Baker River gage (01076000) in June and July. This assessment unit will be categorized as 5-M for aluminum for the 2016 cycle.
**BEAR BROOK (NHRIV700060503-16)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEAR BROOK</td>
<td>NHRIV700060503-16</td>
<td>Aluminum</td>
<td>ALLENSTOWN</td>
<td>3-ND</td>
<td>5-P</td>
</tr>
</tbody>
</table>

2016: Five of six (83%) of the total aluminum samples collected during the current assessment period from 2011 to 2016, at station 02-BBO, were above the chronic criteria (87 ug/L), which by themselves suggest an impairment should be added for this assessment unit during the 2016 cycle. However, on July 1, 2014 NHDES formally clarified to USEPA that the aluminum criteria in the NH surface water quality regulations is acid-soluble aluminum, consistent with USEPA's 1988 ambient water quality criteria document for aluminum. Station 02-BBO analysis included concurrent acid-soluble aluminum samples and two of those samples were more than 2x the chronic criteria. Of the two acid-soluble samples that were more than 2x the chronic criteria in 2014 one was collected after a storm event and under elevated flow condition (4.73 cfs respectively). Both samples occurred during low pH (5.2 and 4.7). The samples collected during the current assessment period were collected with 3-day rainfall totals between 0.00 – 1.47” and with flows ranging from 0.17 – 4.37 cfs at the Soucook River gage (01089100) in June, July and August. The assessment unit will be categorized as 5-P for the 2016 cycle.

![Graph of Total Aluminum with PAired ASA](chart.png)
2016: Groundwater from the LL&S Construction and Demolition Debris Landfill appears to be impacting surface water, which is a violation of their permit requirements (Permit #: 198405024-S-004). 100% (nine) of the samples collected during the current assessment period from 2011 to 2016, at stations 198405024SW01 and 198405024SW02, were more than 2x above the chronic criteria (1,000 ug/L), some were more than 100x the chronic criteria, resulting in a new impairment for this assessment unit during the 2016 cycle. All of the samples were collected with a 3-day rainfall total of < 0.5" during spring (April/May) and fall (November). The non-support samples collected during the current assessment period were collected with flows ranging from 0.25 – 1.59 cfsm at the Beaver Brook gage (010965852) in April, May and November.
Impairments Added to the 2016 303(d) Lists of Threatened or Impaired Waters
2016: Groundwater from the LL&S Construction and Demolition Debris Landfill appears to be impacting surface water, which is a violation of their permit requirements (Permit #: 198405024-S-004). Two of nine (22%) of the samples collected during the current assessment period from 2011 to 2016, at station 198405024SW01, were more than 2x above the chronic criteria (150 ug/L), some were 10x to nearly 100x the chronic criteria, resulting in a new impairment for this assessment unit during the 2016 cycle. All of the non-support samples were collected with a 3-day rainfall total of < 0.5” during spring (April) and fall (November). The non-support samples collected during the current assessment period were collected with flows ranging from 0.69 – 1.59 cfsm at the Beaver Brook gage (010965852) in April, May and November.
2016: 100% (six) of the total aluminum samples collected during the current assessment period from 2011 to 2016, at station 22-AMM, were above the chronic criteria (87 ug/L), which by themselves suggest an impairment should be added for this assessment unit during the 2016 cycle. However, on July 1, 2014, NHDES formally clarified to USEPA that the aluminum criteria in the NH surface water quality regulations is acid-soluble aluminum, consistent with USEPA’s 1988 ambient water quality criteria document for aluminum. Station 22-AMM analysis included some concurrent acid-soluble aluminum samples and two were still above the chronic criteria. The samples collected during the current assessment period were collected with 3-day rainfall totals between 0.00 – 1.72” and with flows ranging from 0.84 – 3.12 cfs at the Ammonoosuc River gage (01137500) in June, July and August. The assessment unit will be categorized as 5-M for the 2016 cycle.
Impairments Added to the 2016 303(d) Lists of Threatened or Impaired Waters

Gage CFSM on Sample
USGS 01137500
AMMONOSUC RIVER AT BETHLEHEM JUNCTION, NH

Precipitation nPreceding Samples
Jefferson

pH During Sampling Events
### TULLY BROOK - UNNAMED BROOKS (NHRIV802020203-05)

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>TULLY BROOK - UNNAMED BROOKS</td>
<td>NHRIV802020203-05</td>
<td>Aluminum</td>
<td>RICHMOND</td>
<td>3-ND</td>
<td>5-P</td>
</tr>
</tbody>
</table>

2016: 100% (six) of the total aluminum samples collected during the current assessment period from 2011 to 2016, at station 01-TYB, were above the chronic criteria (87 ug/L), which by themselves suggest an impairment should be added for this assessment unit during the 2016 cycle. However, on July 1, 2014 NHDES formally clarified to USEPA that the aluminum criteria in the NH surface water quality regulations is acid-soluble aluminum, consistent with USEPA’s 1988 ambient water quality criteria document for aluminum. Station 01-TYB analysis included some concurrent acid-soluble aluminum samples that were above chronic criteria. Four of those acid-soluble aluminum samples were more than 2x the chronic criteria. The samples collected during the current assessment period were collected with 3-day rainfall totals between 0.00 – 0.84” and with flows ranging from 0.12 – 0.96 cfsm at the Contoocook River gage (01082000) in June, July and August. The assessment unit will be categorized as 5-P for the 2016 cycle.
**Macroinvertebrates (Aquatic Life Use Support)**

**ISINGLASS RIVER (NHRIV600030607-01)**

<table>
<thead>
<tr>
<th>Assessment Unit Name</th>
<th>Assessment Unit ID</th>
<th>Parameter Name</th>
<th>Primary Town</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISINGLASS RIVER</td>
<td>NHRIV600030607-01</td>
<td>Benthic-Macroinvertebrate Bioassessments (Streams)</td>
<td>BARRINGTON</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Three macroinvertebrate samples were collected, one per year from 2013-2015, at station 07T-ISG on assessment unit NHRIV600030607-01. To meet water quality standards for aquatic life use, a benthic index of biotic integrity (B-IBI) threshold of 53.1 should be achieved. B-IBI scores were 41.6 (9/16/13), 52.9 (9/26/14) and 52.0 (9/29/15). Since all three B-IBI scores were below the B-IBI threshold, this segment of the Isinglass River has been assessed as impaired (5-M).

<table>
<thead>
<tr>
<th>Station ID</th>
<th>Activity ID</th>
<th>Waterbody Name</th>
<th>Collection Date</th>
<th>Threshold</th>
<th>NH B-IBI Site Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>07T-ISG</td>
<td>BEN-07T-ISG-01</td>
<td>Isinglass River</td>
<td>16-Sep-13</td>
<td>59</td>
<td>41.6</td>
</tr>
<tr>
<td>07T-ISG</td>
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<td>Isinglass River</td>
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<td>59</td>
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<tr>
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