R-WD-15-16

STATE OF NEW HAMPSHIRE

Impairments Added to Categories 4A, 4B, or 4C the 2014 305(b) Report or the 2014 303(d) Lists of Threatened or Impaired Waters

March 27, 2017

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

R-WD-15-16

STATE OF NEW HAMPSHIRE

Impairments Added to Categories 4A, 4B, or 4C the 2014 305(b) Report or the 2014 303(d) Lists of Threatened or Impaired Waters

STATE OF NEW HAMPSHIRE
DEPARTMENT OF ENVIRONMENTAL SERVICES
29 HAZEN DRIVE
CONCORD, N.H. 03301

CLARK B. FREISE
ASSISTANT COMMISSIONER

EUGENE FORBES, P.E.
DIRECTOR
WATER DIVISION

Prepared by:
Ken Edwardson

March 27, 2017

Printed on Recycled Paper

TABLE OF CONTENTS

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 2 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 draft of the 2014 Section 303(d) List of impaired waters has been issued for public comment. Downloadable copies of the draft 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 2014 305(b)/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 and impairment exists. In each of the new impairments detailed within this document the 2012 and 2014 assessment status is highlighted applying the categories in the table below.

		Severe Not Supporting, Severe	**Poor** Not Supporting, Marginal	**Likely Bad** Insufficient Information – Potentially Not Supporting	**No Data** No Data	**Likely Good** Insufficient Information – Potentially Full Supporting	**Marginal** Full Support, Marginal	**Good** Full Support, Good
CATEGORY	**Description**							
*Category 2	Meets standards						2-M or 2-OBS	2-G
Category 3	Insufficient Information			3-PNS	3-ND	3-PAS		
Category 4	Does not Meet Standards;							
4A	TMDL Completed	4A-P	4A-M or 4A-T					
4B	Other enforceable measure will correct the issue.	4B-P	4B-M or 4B-T					
4C	Non-pollutant (i.e. exotic weeds)	4C-P	4C-M					
Category 5	TMDL Needed	5-P	5-M or 5-T					

GROUP 1. Mercury

Toxic substances are taken up and may accumulate in aquatic organisms. Env-Wq 1703.21(a)(2) specifies that surface waters be free from toxic substances or chemical constituents in concentrations or combinations that persist in the environment or accumulate in aquatic organisms to levels that result in harmful concentrations in edible portions of fish, shellfish, other aquatic life. The New Hampshire Department of Environmental Services, Environmental Health Program performs detailed fish consumption assessments and where warranted publishes fish consumption advisories. For assessment purposes, these published advisories qualify as indicators that the criteria in Env-Wq 1703.21(a)(2) are not being met.

Assessment Unit Name	Assessment Unit ID	Primary Town	Parameter Name	2012	2014
Unnamed Pond	NHLAK600030608-02	Rochester	Mercury	N/A	4A-M
Whites Park Pond	NHLAK700060302-20	Concord	Mercury	N/A	4A-M
Wood Road Brook	NHRIV600030707-18	Barrington	Mercury	N/A	4A-M
Powerline Brook	NHRIV600030707-19	Barrington	Mercury	N/A	4A-M
Unnamed Brook	NHRIV600030904-27	Greenland	Mercury	N/A	4A-M
Unnamed Brook	NHRIV600031001-23	New Castle	Mercury	N/A	4A-M
Unnamed Brook	NHRIV600031001-24	Portsmouth	Mercury	N/A	4A-M
Unnamed Brook To The Outlet Of Little Squam Lake	NHRIV700010502-13	Ashland	Mercury	N/A	4A-M
Unnamed Brook	NHRIV700010802-13	Sanbornton	Mercury	N/A	4A-M
Unnamed Brook	NHRIV700020110-08	Gilford	Mercury	N/A	4A-M
Unnamed Brook	NHRIV700020110-09	Gilford	Mercury	N/A	4A-M
Smith Brook	NHRIV700060501-47	Strafford	Mercury	N/A	4A-M
Unnamed Brook	NHRIV700060502-49	Northwood	Mercury	N/A	4A-M
Unnamed Trib. To The Souhegan River	NHRIV700060902-21	Greenville	Mercury	N/A	4A-M
Unnamed Trib. To The Souhegan River	NHRIV700060906-44	Merrimack	Mercury	N/A	4A-M
Unnamed Trib. To The Souhegan River	NHRIV700060906-45	Amherst	Mercury	N/A	4A-M
Unnamed Brook	NHRIV700061001-21	Nashua	Mercury	N/A	4A-M
Unnamed Brook	NHRIV802010202-55	Harrisville	Mercury	N/A	4A-M
Ashuelot River - Keene WWTF To South Branch	NHRIV802010301-38	Swanzey	Mercury	N/A	4A-M
Kimball Pond - Hopkinton Town Beach	NHIMP700030507-02-02*	N/A	Mercury	N/A	4A-M

* 2014: When the beach AUID was originally created it was accidently assigned to Kimball Lake not Kimball Pond. When this was discovered in 2014 a new beach AUID was created (NHIMP700030507-02-02) for the beach and NHIMP700030507-01-02 was deactivated.

The above list contains new freshwater assessment units for the 2014 cycle with no other sources of mercury. NH in listing this new water on the 2014, 303(d) list proposes for comment that these waters be included in the previously approved mercury TMDL (and put in category 4a). Section 5.1 of the Northeast Regional Mercury TMDL states. In addition to the impaired waters listed in Appendix A, the TMDL may, in appropriate circumstances, also apply to waterbodies that are listed for mercury impairment in subsequent Clean Water Act Section 303(d) Lists of Impaired Waters. For such waterbodies, this TMDL may apply if, after listing the waters for mercury impairment and taking into account all relevant comments submitted on the Impaired Waters List, a state determines with EPA approval of the list that this TMDL should apply to future mercury impaired waterbodies.
(http://des.nh.gov/wmb/tmdl/documents/NortheastRegional/FINAL_Northeast_Regional_Mercury_TMDL.pdf)

GROUP 2. WWTFs currently in "significant non-compliance"

Assessment Category 4B is reserved for cases where a waterbody is impaired or threatened for one or more designated uses but does not require the development of a TMDL because other pollution control requirements are reasonably expected to result in attainment of the water quality standard in the near future.

Category 4B is triggered when a wastewater treatment facility (WWTF) is currently in “significant non-compliance” of its NPDES permit (as defined by EPA), or is on the “exceptions list” (i.e. facilities that are in significant non-compliance for two or more quarters), for one or more of its permitted water quality based pollutant effluent limits. Water quality based effluent limits are limits based on modeling or dilution calculations to meet water quality standards.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Lower Piscataqua River - South	NHEST600031001-02-02	Portsmouth	Aquatic Life	BOD, Biochemical oxygen demand	**N/A**	4B-T

2014: Portsmouth WWTF was in violation of its NPDES permit (effective July 1, 2007) in April, July, August, and October 2012, and August thru December 2013 for effluent BOD monthly average concentration limit violations. The facility was in "significant non-compliance" for exceeding its interim BOD monthly average concentration limits per EPA Consent Decree 09-cv-283-PB. EPA and Portsmouth entered into a Consent Decree (09-cv-283-PB) in September 2009 for Portsmouth to achieve secondary treatment at its Pierce Island Wastewater Treatment Facility.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Contoocook River - Unnamed Brook	NHRIV700030101-16	Jaffrey	Aquatic Life	Copper	3-PNS	4B-T

2014: Jaffrey WWTF was in violation of its NPDES permit for effluent copper monthly average concentration limit violations in July and November 2013. The facility was in "significant non-compliance" with its NPDES permit for exceeding its copper monthly average concentration limits in excess of 40 percent for at least two months during two consecutive quarter review periods. Jaffrey attributed its July 2013 copper violation to an unknown influent copper spike and its November 2013 copper violation to copper bound in its higher than normal effluent TSS concentration.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Contoocook River - Unnamed Brook	NHRIV700030101-16	Jaffrey	Aquatic Life	Ammonia (Total)	N/A	4B-T

2014: Jaffrey WWTF was in violation of its NPDES permit (effective February 1, 2010) for effluent ammonia nitrogen as nitrogen monthly average concentration limit violations in June, August, and September 2012. The facility was in "significant non-compliance" with its NPDES permit for exceeding its ammonia nitrogen as nitrogen monthly average concentration limits in excess of 40 percent for at least two months during two consecutive quarter review periods. Jaffrey was in violation of its NPDES permit for effluent ammonia nitrogen as nitrogen weekly average concentration limit violations in October 2012 and January 2013. The facility was in "significant non-compliance" with its NPDES permit for exceeding its ammonia nitrogen as nitrogen weekly average concentration limits in excess of 40 percent for at least two months during two consecutive quarter review periods. Jaffrey attributed its ammonia nitrogen as N violations to high BOD influent loadings from EMD Millipore, a Significant Industrial User (SIU) in Jaffrey.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Souhegan River - Tucker Brook	NHRIV700060902-05	Wilton	Aquatic Life	Copper	3-ND	4B-T

2014: Greenville WWTF was in violation of its NPDES permit (effective March 1, 2009) in November and December 2012 and in February and March 2013 for effluent aluminum monthly average concentration limit violations; and in October 2012 and March 2013 for effluent copper monthly average concentration limit violations. The facility was in "significant non-compliance" for exceeding its interim aluminum and copper monthly average concentration limits per EPA Administrative Order 10-017. EPA issued Administrative Order 10-017 on August 13, 2010 for Greenville to address its NPDES permit violations.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Ammonoosuc River	NHRIV801030403-16	Littleton	Aquatic Life	Copper	N/A	4B-T

2014: Littleton WWTF was in violation of its NPDES permit (effective November 1, 2009) in October and November 2012, and August, September, November and December 2013 for effluent copper monthly average concentration limit violations. The facility was in "significant non-compliance" with its NPDES permit for exceeding its copper monthly average concentration limits four months during two consecutive quarter review periods and for exceeding its copper monthly average concentration limits in excess of 40 percent for at least two months during two consecutive quarter review periods. Littleton attributed its violations to discharges from septic haulers to its septage receiving station. Littleton identified septage loads from certain companies with high copper concentrations, and now prohibits their discharges.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Johns River	NHRIV801030102-08	Dalton	Aquatic Life	Total Suspended Solids (TSS)	N/A	4B-T

2014: Whitefield WWTF was in violation of its NPDES permit (effective April 3, 2006) in January thru March, and May and June 2012 for effluent TSS monthly average concentration limit violations. The facility was in "significant non-compliance" with its NPDES permit for exceeding its TSS monthly average concentration limits four months during two consecutive quarter review periods. Whitefield WWTF attributed its TSS violations to an unusually warm winter which resulted in unusual turnover activity in its lagoons. EPA issued Whitefield an AO on January 16, 2009 to address its NPDES permit violations. Whitefield removed sludge from its lagoons to reduce its sludge blanket levels in order to maintain NPDES permit compliance during natural turnover events.

GROUP 3. Exotic Algae

Exotic algae are non-native, fast growing aquatic plants, which can quickly dominate and choke out native flora and fauna in the surface water. *Didymosphenia geminata (*also known as 'Didymo' or 'rock snot') is an example of one such exotic algae which has recently arrived in New Hampshire. Such infestations are in violation of Env-Wq 1703.19, which states that surface waters shall support and maintain a balanced, integrated and adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of similar natural habitats of a region. For the purposes of assessment, the methodologies below will be used to identify which surface water are, or are not, meeting the biological integrity criteria due to exotic macroalgae.

Assessment Category 4C is reserved for cases where a waterbody is impaired or threatened for one or more designated uses but does not require the development of a TMDL because the impairment is not caused by a pollutant.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Connecticut River	NHRIV801060702-12	Charlestown	Aquatic Life	Invasive Aquatic Algae	N/A	4C-M

2014: Infestation by Didymo (rock snot) is currently at a Episodic-moderate density/coverage. As of April 2014 there have been no control actions taken.

GROUP 4. Non-Native Aquatic Plants

Exotic macrophytes are non-native, fast growing aquatic plants, which can quickly dominate and choke out native aquatic plant growth in the surface water. Examples of exotic macrophytes include variable milfoil (*Myriophyllum heterophyllum*), Eurasian milfoil (*Myriophyllum spicatum*), fanwort (*Cabomba caroliniana*) and water chestnut (*Trapa natans*). Such infestations are in violation of Env-Wq 1703.19, which states that surface waters shall support and maintain a balanced, integrated and adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of similar natural habitats of a region.

Assessment Category 4C is reserved for cases where a waterbody is impaired or threatened for one or more designated uses but does not require the development of a TMDL because the impairment is not caused by a pollutant.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Salmon Falls River - Great Falls Upper Dam	NHIMP600030405-03	Somersworth	Aquatic Life	Non-Native Aquatic Plants	3-PNS	4C-P

2014: Infestation by Variable milfoil is currently at a High density/coverage. As of April 2014 there have been no control actions taken.

2012: Variable milfoil reported August 11, 2011. Plant surveyed in upstream impoundment and reported in downstream impoundments. Likely infestation but not yet field surveyed.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Salmon Falls River - Baxter Mill Dam Pond	NHIMP600030405-04	Rochester	Aquatic Life	Non-Native Aquatic Plants	3-PNS	4C-P

2014: Infestation by Variable milfoil is currently at a High density/coverage. As of April 2014 there have been no control actions taken.

2012: Variable milfoil surveyed in upstream impoundment and reported in downstream impoundments. Likely infestation but not yet field surveyed.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Salmon Falls River - Lower Great Falls Dam	NHIMP600030406-02	Somersworth	Aquatic Life	Non-Native Aquatic Plants	3-PNS	4C-P

2014: Infestation by Variable milfoil is currently at a High density/coverage. As of April 2014 there have been no control actions taken.

2012: Variable milfoil reported August 11, 2011. Plant surveyed in upstream impoundment and reported in downstream impoundments. Likely infestation but not yet field surveyed.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Salmon Falls River - Rollinsford Dam	NHIMP600030406-03	Rollinsford	Aquatic Life	Non-Native Aquatic Plants	3-PNS	4C-P

2014: Infestation by Variable milfoil is currently at a High density/coverage. As of April 2014 there have been no control actions taken.

2012: Variable milfoil reported August 11, 2011. Plant surveyed in upstream impoundment and reported in downstream impoundments. Likely infestation but not yet field surveyed.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Salmon Falls River - South Berwick Dam	NHIMP600030406-04	Rollinsford	Aquatic Life	Non-Native Aquatic Plants	3-PNS	4C-P

2014: Infestation by Variable milfoil is currently at a High density/coverage. As of April 2014 there have been no control actions taken.

2012: Variable milfoil surveyed in upstream impoundment and reported in downstream impoundments. Likely infestation but not yet field surveyed.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Franklin Falls Flood Ctrl - Pemigewasset River	NHIMP700010803-02	Franklin	Aquatic Life	Non-Native Aquatic Plants	N/A	4C-M

2014: Infestation by Variable milfoil is currently at a High density/coverage. As of April 2014 control actions include; herbicide treatment.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Merrimack River - Garvins Falls Dam	NHIMP700060302-07	Concord	Aquatic Life	Non-Native Aquatic Plants	N/A	4C-M

2014: Infestation by Variable milfoil is currently at a Moderate density/coverage. As of April 2014 there have been no control actions taken.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Upper Danforth Pond	NHLAK600020803-03	Freedom	Aquatic Life	Non-Native Aquatic Plants	N/A	4C-M

2014: Infestation by Variable milfoil is currently at a Low/Moderate density/coverage. As of April 2014 control actions include; herbicide treatment then diving. Infestation greatly reduced.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Otter Lake	NHLAK700030105-02-01	Greenfield	Aquatic Life	Non-Native Aquatic Plants	N/A	4C-M

2014: Infestation by Variable Milfoil is currently at a Low density/coverage. As of April 2014 control actions include; herbicide treatment, diver work pending.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Namaske Lake	NHLAK700060607-02	Goffstown	Aquatic Life	Non-Native Aquatic Plants	N/A	4C-M

2014: Infestation by Variable milfoil is currently at a Moderate density/coverage. As of April 2014 control actions include; herbicide treatment and some hand removal. More work is needed.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Hadley Falls	NHLAK700060607-05	Goffstown	Aquatic Life	Non-Native Aquatic Plants	N/A	4C-M

2014: Infestation by Variable milfoil is currently at a Moderate density/coverage. As of April 2014 control actions include; herbicide treatment and some hand removal. More work is needed.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Naticook Lake	NHLAK700061002-04-01	Merrimack	Aquatic Life	Non-Native Aquatic Plants	N/A	4C-M

2014: Infestation by Variable Milfoil is currently at a Low density/coverage. As of April 2014 control actions include; diving 2012, herbicide treatment and diving 2013.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Wilson Pond	NHLAK700061102-14	Salem	Aquatic Life	Non-Native Aquatic Plants	N/A	4C-P

2014: Infestation by Fanwort is currently at a High density/coverage. As of April 2014 there have been no control actions taken.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Long Pond	NHLAK700061403-09	Danville	Aquatic Life	Non-Native Aquatic Plants	N/A	4C-M

2014: Infestation by Variable milfoil is currently at a Low/moderate density/coverage. As of April 2014 control actions include; herbicide treatment and suction harvesting. Seed bank a problem, more work is needed.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Burnham Brook	NHRIV700060302-01	Canterbury	Aquatic Life	Non-Native Aquatic Plants	N/A	4C-M

2014: Infestation by Variable milfoil is currently at a Moderate density/coverage. As of April 2014 there have been no control actions taken.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Piscataquog River	NHRIV700060607-17	Goffstown	Aquatic Life	Non-Native Aquatic	N/A	4C-M

Plants

2014: Infestation by Variable milfoil is currently at a Low density/coverage. As of April 2014 there have been no control actions taken.

GROUP 5. Chlorophyll-a – Swimming Use Support (i.e. Primary Contact Recreation)

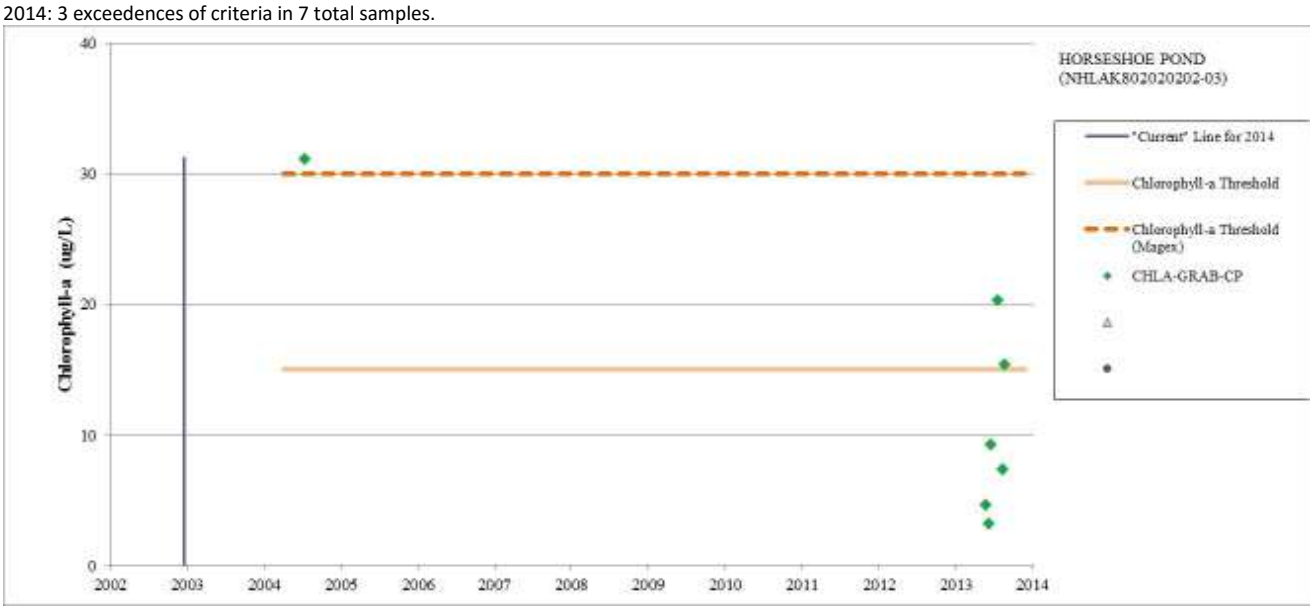
Excessive algal growth (high biomass and high chlorophyll-a values) can impair the public safety and aesthetic enjoyment of surface waters. The General Water Quality Criteria (Env-Wq 1703.03) require that surface waters be free of substances which: produce color or turbidity making the water unsuitable for the designated use, or interfere with recreational activities (Env-Wq 1703.03 (c)(1) c & e). For assessment purposes, chlorophyll-a concentrations in excess of 15 ug/L in fresh water and 20 ug/L in salt water are indicators of excessive algal growth that interferes with recreational activities.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Nashua River - Nashua Canal Dike	NHIMP700040402-03	Nashua	Primary Contact	Chlorophyll-a	N/A	5-P

2014: The initial impairment to NHIMP700040402-02 (Mine Falls Dam Pond) was in the 2004 cycle based on data collected at station MINNASD. Between the 2006 and 2008 assessment cycles, it was discovered that the data for MINNASD should have been assigned to NHIMP700040402-03 (Nashua Canal Dike). As of the 2008 assessment, the chlorophyll-a measurements over 15 ug/L at MINNASD, now assigned to NHIMP700040402-03 (Nashua Canal Dike), had aged out such that the assessment unit did not appear as impaired. In fact, with the 2008 assessment, NHIMP700040402-03 (Nashua Canal Dike) appears as insufficient information for chlorophyll-a to protect the primary contact designated use. Also in the 2008 assessment, it appeared to the assessor that the data for NHIMP700040402-02 (Mine Falls Dam Pond) had simply aged out and a waterbody can not have an impairment removed solely based on data age in the absence of new data to take its place. Hence, the chlorophyll-a impairment was maintained. Now in the 2014 assessment there are 10 samples from the summer of 2013 at a new station, NSH-MF-1 which is correctly placed on NHIMP700040402-02 (Mine Falls Dam Pond). The new NSH-MF-1 samples range from 1.6 to 15.2 ug/L chlorophyll-a resulting an assessment of category 2-M (full support - marginal). Since the data for MINNASD rightfully belongs on NHIMP700040402-03 (Nashua Canal Dike), the chlorophyll-a impairment has been transferred to that assessment unit and station MINNASD should receive follow-up monitoring to determine if the high chlorophyll-a values persist still occur under the moderate to low flows of the original dataset.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Horseshoe Pond	NHLAK802020202-03	Fitzwilliam	Primary Contact	Chlorophyll-a	3-PNS	5-M

2014: 3 exceedences of criteria in 7 total samples.



Notes:

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

GROUP 6. Chlorophyll-a and Total Phosphorus – Aquatic Life Use Support

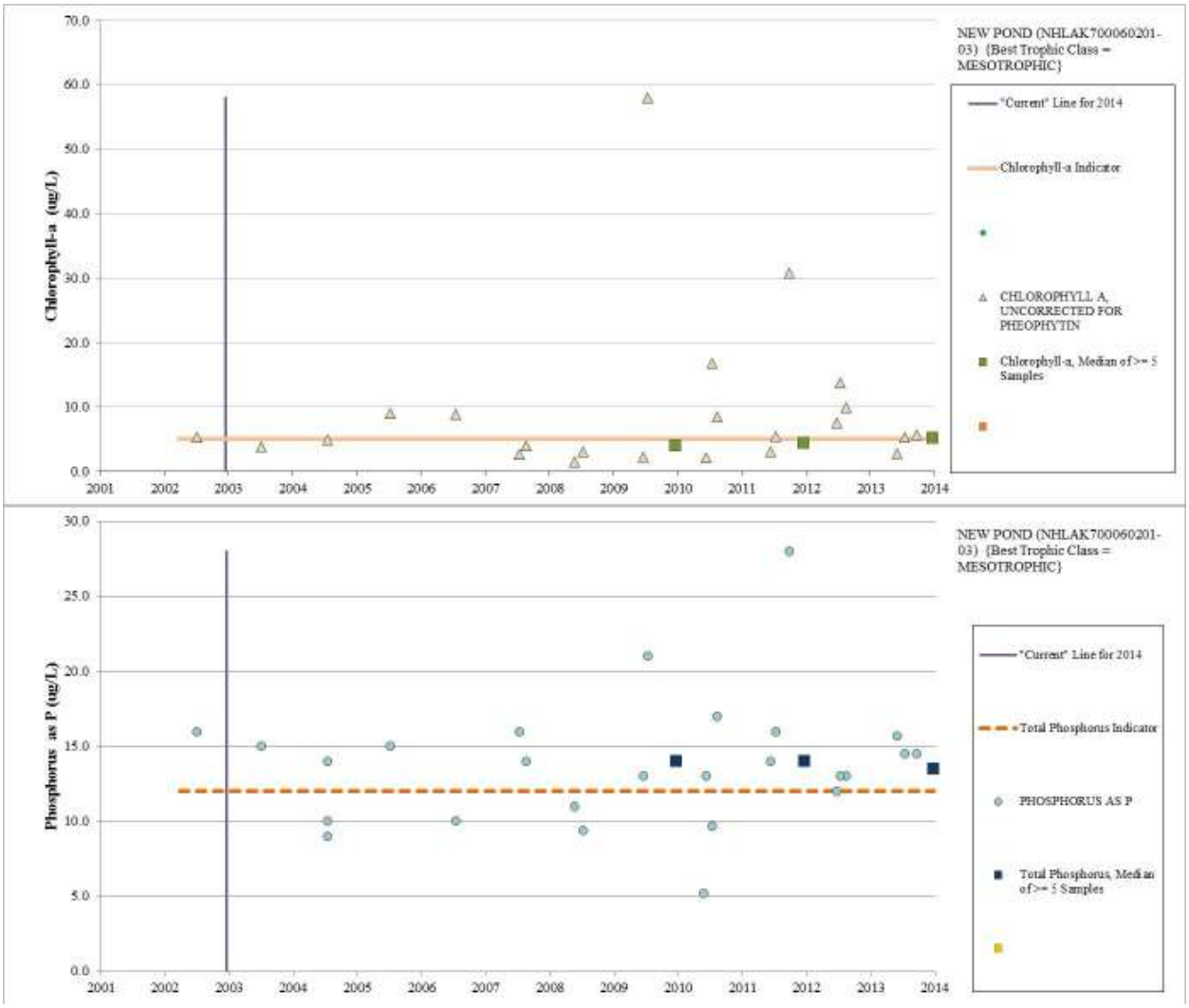
The acceptable levels of nutrients in surface waters are governed by Administrative Rule Env-Wq 1703.14 which requires that there be a natural level of nutrients in Class A waters or no nutrients in such quantities as to impair any designated uses in Class B waters. Therefore, assessments to determine compliance with Env-Wq 1703.14 need to consider both indicators of nutrients and nutrient-related impairments. In freshwater lakes, the indicators for nutrient levels are Chlorophyll-a and Total Phosphorus concentrations because phosphorus is the limiting nutrient in freshwaters.

In lake systems, the maintenance of a balanced, integrated, and adaptive community of organisms described in Env-Wq 1703.19 is reflected in a stable level of productivity. Phosphorus, as the limiting nutrient in lake systems, controls the ability of algae, the foundation of lake productivity, to grow and reproduce. The biomass of algae is indicated by the concentration of chlorophyll-a. Lakes are commonly categorized into productivity regimes or trophic classes. While trophic class will shift over long geologic periods, it should not shift within the modern era.

In order to assess compliance with Env-Wq 1703.14 for the freshwater lakes, the indicator of nutrients and nutrient-related impact indicator are combined using a stressor-response decision matrix. The response indicator is chlorophyll-a concentrations (a measure of algae growth). The stressor indicator is total phosphorus concentrations, because phosphorus is the limiting nutrient in freshwater lakes. Following the decision matrix, if there are both elevated nutrients and an adverse response in the same assessment unit, then that assessment unit would be considered to have excess nutrients in violation of Env-Wq 1703.14. For the purposes of assessment, a lake will be considered to have a balanced, integrated, and adaptive community described in Env-Wq 1703.19 if the summer median chlorophyll-a is within the normal range as describe in the methods below. The steps used for this assessment process are discussed in detail in the Consolidated Assessment and Listing Methodology.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
New Pond	NHLAK700060201-03	Canterbury	Aquatic Life	Chlorophyll-a	2-M	5-M
				Phosphorus (Total)	3-PNS	5-M

2014: Chlorophyll-a consistently greater than indicator since roughly 2009 and same for Total Phosphorus. Pond consistently monitored through VLAP so there is a good data source if future monitoring results in potential de-listing. No management/remediation activities are on-going in watershed.



Notes:

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

GROUP 7. Cyanobacteria

The General Water Quality Criteria (Env-Wq 1703.03) require that surface waters be free of substances which: float as foam, debris, or scum; produce odor, color, taste, or turbidity making the water unsuitable for the designated use; or interfere with recreational activities (Env-Wq 1703.03 (c)(1) b, c, & e). Two common examples of scums are those produced by cyanobacteria blooms which produce a human health risk and iron scums that may be the result on landfill leachate or fill activities. For the purposes of assessment, the methodologies in the Consolidated Assessment and Listing Methodology will be used to make the greatest use of all available valid data.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Silver Lake	NHLAK700061001-02-01	Hollis	Primary Contact	Cyanobacteria hepatotoxic microcystins	N/A	5-M

2014: Beach advisories for the State Park beach apply here; 4 in 2011, 4 in 2012, and 1 in 2013.

GROUP 8. Biological Assessments

Measuring whether a waterbody has a balanced, integrated, and adaptive community of benthic organisms is one of the direct measures of the Aquatic Life designated use. Env-Wq 1703.19 'Biological and Aquatic Community Integrity' provides the framework for what the biological community in New Hampshire's waters should look like and requires that those communities be subject to only non-detrimental differences in structure and function from naturally occurring conditions. For the purposes of assessment, the methodologies in the Consolidated Assessment and Listing Methodology will be used to identify which benthic communities are, or are not, meeting Env-Wq 1703.19.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Willow Brook	NHRIV600030603-10	Rochester	Aquatic Life	Benthic-Macroinvertebrate Bioassessments (Streams)	3-ND	5-P

2014: AUID: NHRIV600030603-10 at station 02-WIL was sampled on 9/28/2011. B-IBI threshold=53.1. B-IBI =33. B-IBI ratio (0.63) <0.8. New assessment, NHDES category 5-P.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Weed Brook - Unnamed Brook	NHRIV700020103-08	Moulton-borough	Aquatic Life	Benthic-Macroinvertebrate Bioassessments (Streams)	3-ND	5-P

2014: AUID: NHRIV700020103-08 at station 04-WDB was sampled on 9/10/2012. B-IBI threshold=61.1. B-IBI score =38. B-IBI ratio (0.62) <0.8 for most recent sample. New assessment, NHDES category 5-P.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Wine Brook	NHRIV801060303-04	Cornish	Aquatic Life	Benthic-Macroinvertebrate Bioassessments (Streams)	3-ND	5-P

2014: AUID: NHRIV801060303-04 at station 10-BMD was sampled on 9/23/2011. B-IBI threshold=58.1. B-IBI =43. B-IBI ratio (0.75) <0.8 for sample. New assessment, NHDES category 5-P.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Great Brook - Ram Brook - Unnamed Brook	NHRIV801070203-08	Langdon	Aquatic Life	Benthic-Macroinvertebrate Bioassessments (Streams)	3-ND	5-P

2014: AUID: NHRIV801070203-08 at station 03-BMB was sampled on 8/29/2012. B-IBI threshold=55.6. B-IBI score =35. B-IBI ratio (0.63) <0.8 for sample. New assessment, NHDES category 5-P.

2014: AUID: NHRIV801070203-08 at station 01-GRB was sampled on 10/3/2011. B-IBI threshold=55.6. B-IBI score =72. B-IBI ratio (1.297) >1.2 for sample. New assessment, NHDES category 2-G.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Black Brook - Dickinson Brook - Unnamed Brook	NHRIV802010301-05	Keene	Aquatic Life	Benthic-Macroinvertebrate	3-ND	5-P

				Bioassessments (Streams)		

2014: AUID: NHRIV802010301-05 at station 08-BCK was sampled on 9/4/2012. B-IBI threshold=56.61. B-IBI =43. B-IBI ratio (0.76) <0.8 for sample. New assessment, NHDES category 5-P.

Also see new impairments for Benthic Dissolved Oxygen Concentration, Dissolved Oxygen Saturation, and pH.

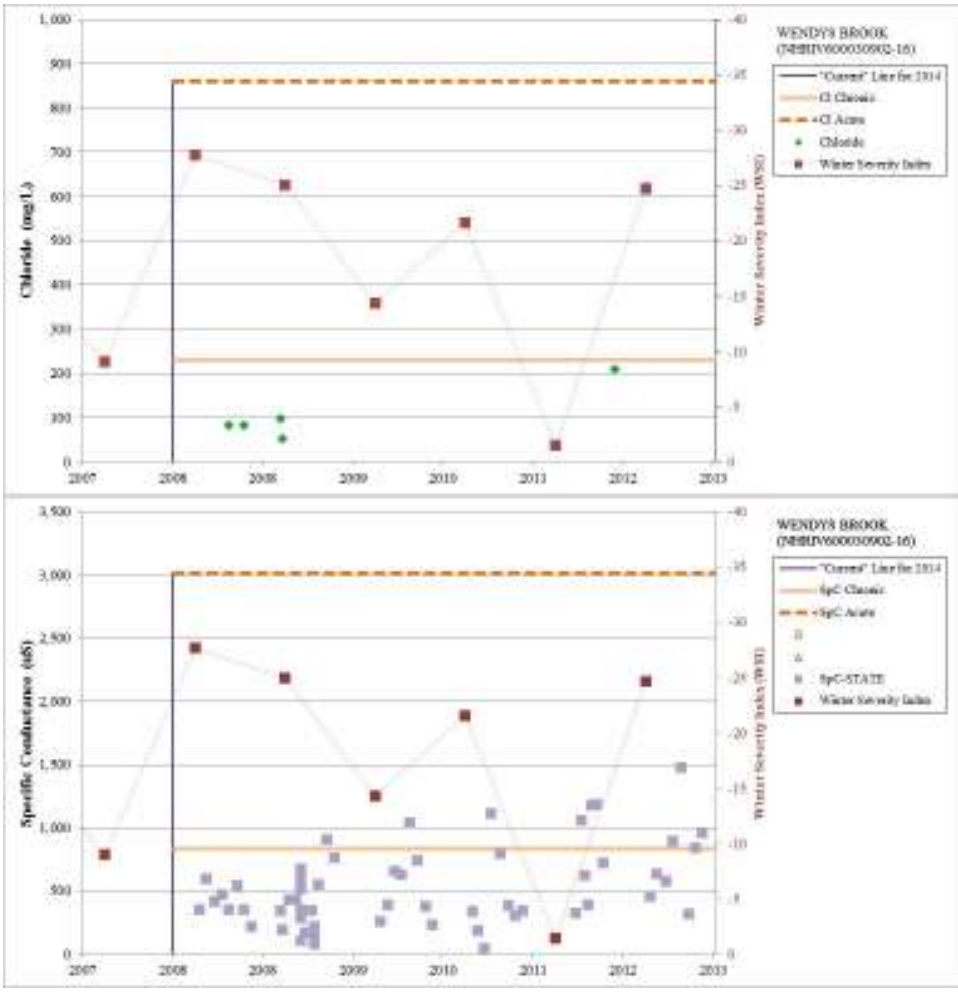
GROUP 9. Chloride

Toxic substances can have a wide range if impacts to aquatic life, plants, and humans. The chronic and acute criteria for toxic substances are identified in Env-Wq 1703.21 and Table Env-Wq 1703.1. For the purposes of assessment, the methodologies in the CALM pertain to aquatic life use support and will be used to make the greatest use of all available valid data.

Chloride in surface waters can be toxic to many forms of aquatic life. Aquatic species of concern include fish, macroinvertebrates, insects, and amphibians. Elevated chloride levels can threaten the health of food sources and pose a risk to species survival, growth, and/or reproduction. Chloride toxicity increases when it is associated with other cations, such as potassium or magnesium, which may occur once the ions of road salt have dissolved and migrated at potentially different rates. Salinity stress on sensitive aquatic communities can impact species diversity. The presence of salt also releases toxic metals from sediment and when released into the water can inhibit nutrients and dissolved oxygen within the water that aquatic species rely on. The acute (1-hour average) standard is 860 mg Cl-/L; the chronic (four-day average) standard is 230 mg/l while natural background levels fall within the range of 1-10mg/L. (http://des.nh.gov/organization/divisions/water/wmb/was/salt-reduction-initiative/impacts.htm)

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Wendys Brook	NHRIV600030902-16	Lee	Aquatic Life	Chloride	3-PNS	5-M

2014: Samples collected in 2008 and 2009 demonstrate that this site fits the State-wide chloride-specific conductance equation. Routine sampling since 2009 shows that the chloride at this site continues to rise. In 2012-2013, 7 of 15 samples exceeded the specific conductance indicator for chloride.



Notes:

SpC-STATE – Specific Conductance samples to be compared using the State-wide indicator for chloride.

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

GROUP 10. Dissolved Oxygen

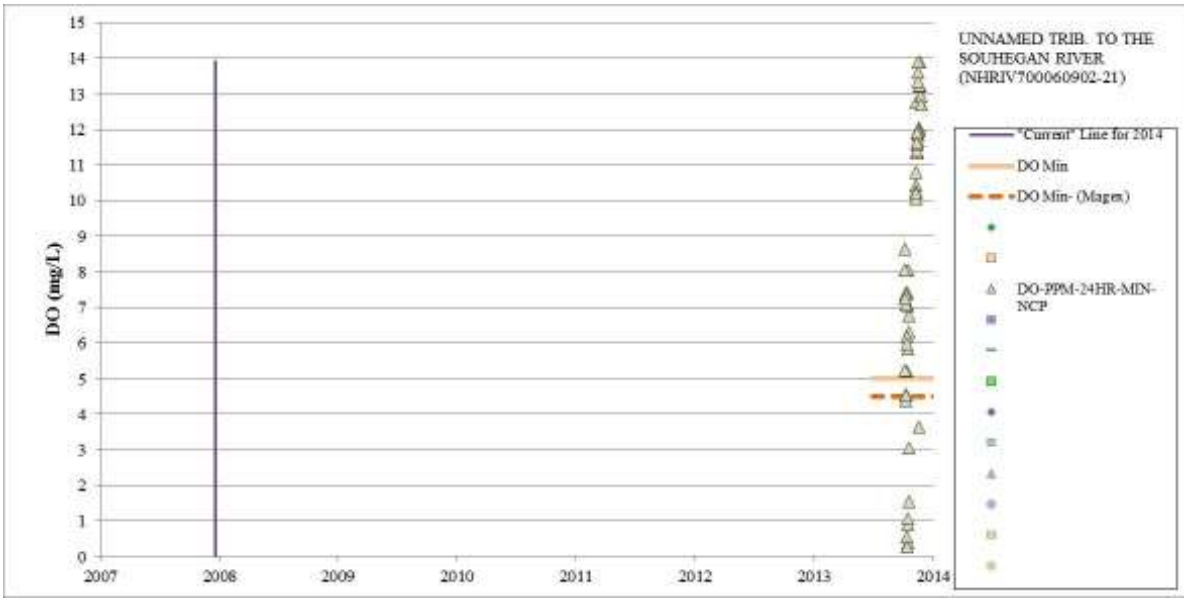
Dissolved oxygen is critical to the balanced, integrative, and adaptive community of organisms as described in Env-Wq 1703.19. As such, the water quality standard provide criteria for Class A waters, Class B waters, waters with cold water fish species, and in both thermally stratified and unstratified lakes, impoundments, and reservoirs in Env-Wq 1703.07 (a), (b), (c), and (d). For the purposes of assessment, the methodologies in the Consolidated Assessment and Listing Methodology will be used to make the greatest use of all available valid data.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Unnamed Trib. To The Souhegan River	NHRIV700060902-21	Greenville	Aquatic Life	Oxygen, Dissolved	N/A	5-P

2014: Samples collected in the fall of 2014 at 04-XS1 and 02-XS1. Site appears to receive discharges from an industrial site.

Impairments Added to Categories 4A, 4B, or 4C the 20140 305(b) Report or the 2014 303(d) Lists of Threatened or Impaired Waters

Also see new impairments for Dissolved Oxygen Saturation, pH, and Iron.

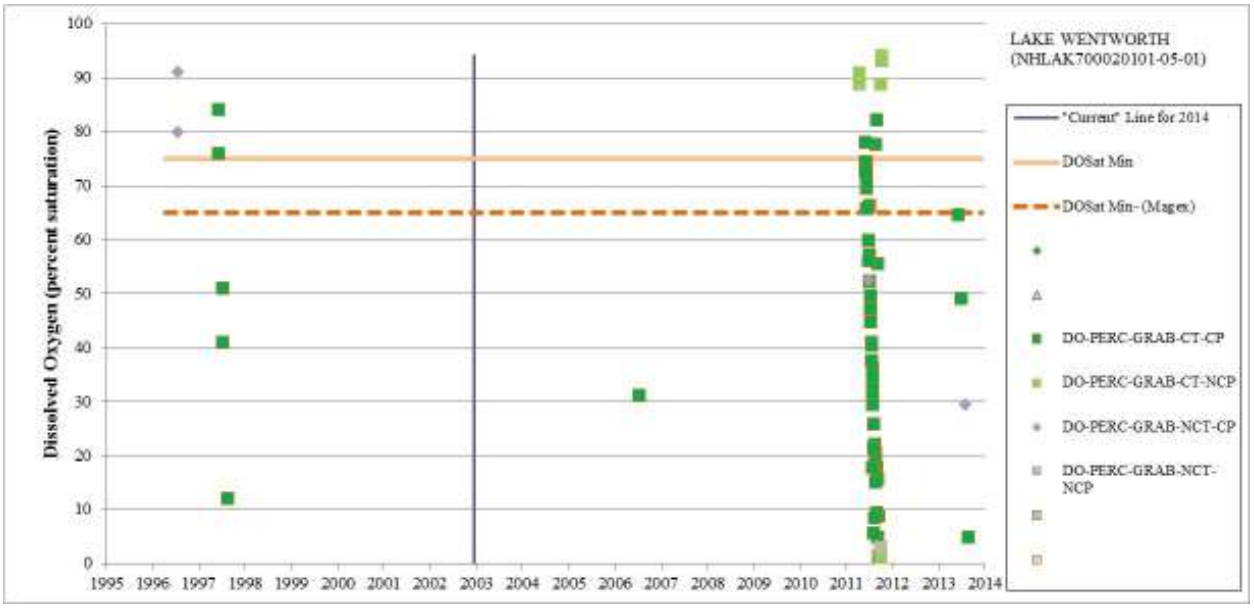


Notes:

DO-PPM-24HR-MIN-NCP = 24 hour minimum dissolved oxygen from a datalogger not deployed during the summer critical period.
"Current" Line for 2014 – Per the methodology outlined in the CALM, all data from this referenced data is considered 'current' unless. Available older data is provided for context. See the 2014 CALM for addition details.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Lake Wentworth	NHLAK700020101-05-01	Wolfeboro	Aquatic Life	Dissolved oxygen saturation	3-PNS	5-M

2014: Attainment goal for a class A waterbody is for DO to meet criteria throughout the water column. DO is well below 75 percent saturation in the bottom one to eleven meters of the profile.

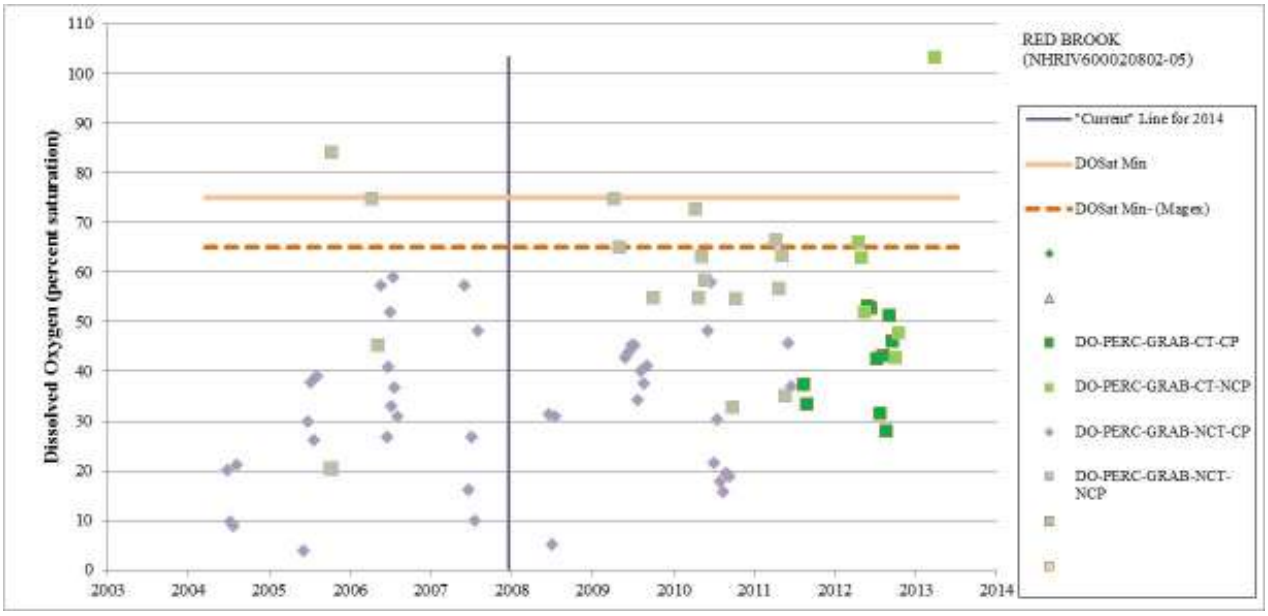


Notes:

DO-PERC-GRAB-CT-CP = Grab samples of dissolved oxygen saturation during the early morning hours of the summer critical period.
DO- PERC -GRAB-CT-NCP = Grab samples of dissolved oxygen saturation during the early morning hours and not during the summer critical period.
DO- PERC -GRAB-NCT-CP = Grab samples of dissolved oxygen saturation not in the early morning hours of the summer critical period.
DO- PERC -GRAB-NCT-NCP = Grab samples of dissolved oxygen saturation not in the early morning hours and outside the summer critical period.
"Current" Line for 2014 – Per the methodology outlined in the CALM, all data from this referenced data is considered 'current' unless. Available older data is provided for context. See the 2014 CALM for addition details.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Red Brook	NHRIV600020802-05	Effingham	Aquatic Life	Dissolved oxygen saturation	3-PAS	5-M

2014: Station OL-07 has is well sampled and has a long history of very low percent saturation readings. The station receives drainage from a chipping operation.

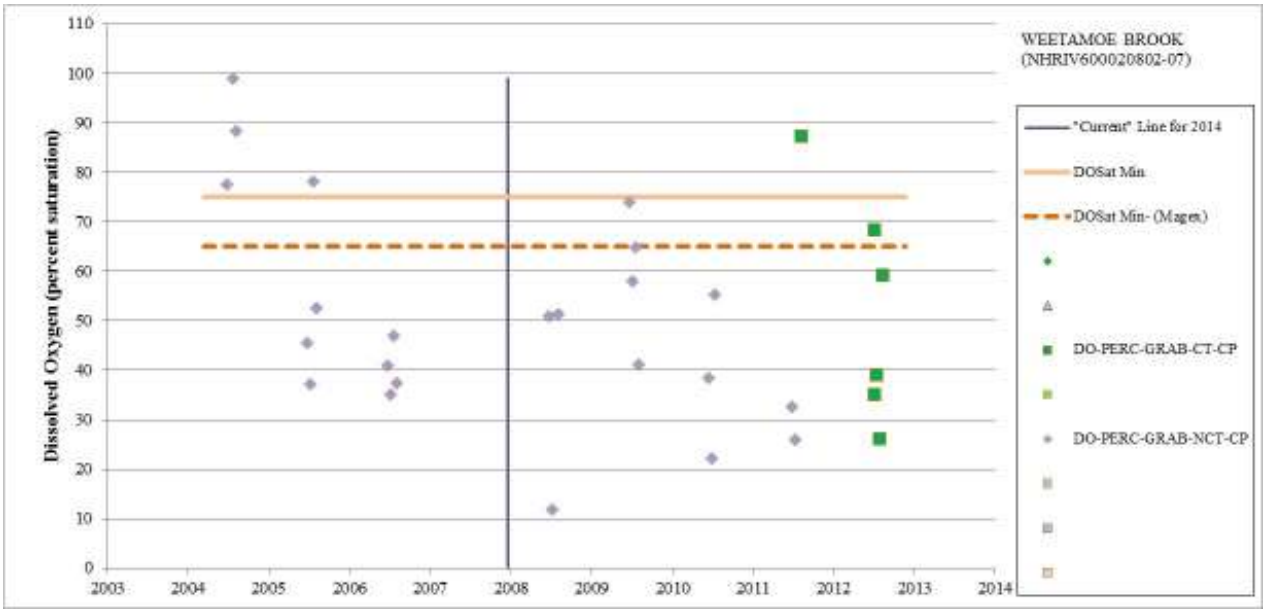


Notes:

DO-PERC-GRAB-CT-CP = Grab samples of dissolved oxygen saturation during the early morning hours of the summer critical period.
DO- PERC -GRAB-CT-NCP = Grab samples of dissolved oxygen saturation during the early morning hours and not during the summer critical period.
DO- PERC -GRAB-NCT-CP = Grab samples of dissolved oxygen saturation not in the early morning hours of the summer critical period.
DO- PERC -GRAB-NCT-NCP = Grab samples of dissolved oxygen saturation not in the early morning hours and outside the summer critical period.
"Current" Line for 2014 – Per the methodology outlined in the CALM, all data from this referenced data is considered 'current' unless. Available older data is provided for context. See the 2014 CALM for addition details.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Weetamoe Brook	NHRIV600020802-07	Ossipee	Aquatic Life	Dissolved oxygen saturation	3-PAS	5-M

2014: Weetamoe Brook is a small stream that flows from forest then through some wetland areas before then running through a golf course. The OL-05 (U and UA) sites have been regularly sampled over the years and there is a long history of very low dissolved oxygen saturation readings.



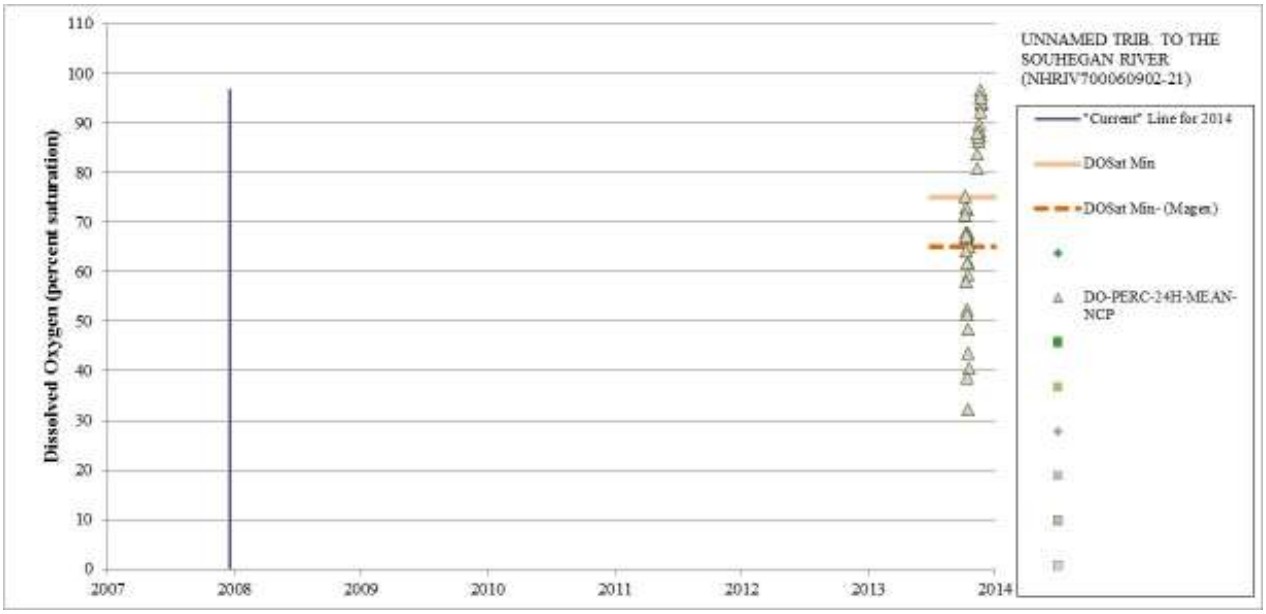
Notes:

DO-PERC-GRAB-CT-CP = Grab samples of dissolved oxygen saturation during the early morning hours of the summer critical period.
DO- PERC -GRAB-NCT-CP = Grab samples of dissolved oxygen saturation not in the early morning hours of the summer critical period.
"Current" Line for 2014 – Per the methodology outlined in the CALM, all data from this referenced data is considered 'current' unless. Available older data is provided for context. See the 2014 CALM for addition details.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Unnamed Trib. To The Souhegan River	NHRIV700060902-21	Greenville	Aquatic Life	Dissolved oxygen saturation	N/A	5-P

2014: Samples collected in the fall of 2014 at 04-XS1 and 02-XS1. Site appears to receive discharges from an industrial site.

Also see new impairments for Dissolved Oxygen Concentration, pH, and Iron.



Notes:

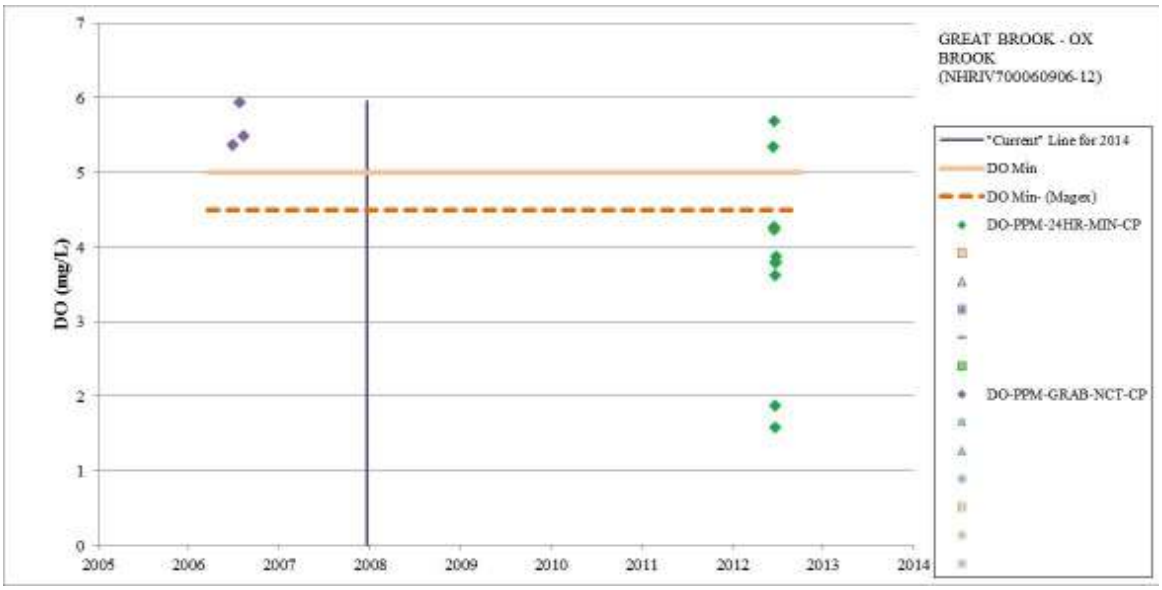
DO- PERC-24H-MEAN-NCP = 24 hour average of dissolved oxygen saturation not during the summer critical period.
"Current" Line for 2014 – Per the methodology outlined in the CALM, all data from this referenced data is considered 'current' unless. Available older data is provided for context. See the 2014 CALM for addition details.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014

Great Brook - Ox Brook	NHRIV700060906-12	Milford	Aquatic Life	Oxygen, Dissolved	3-PAS	5-P

2014: Grab samples collected in 2006 indicated possible dissolved oxygen concentration problems. A twelve day datalogger deployment in 2012 found that on nine days dissolved oxygen minimum fell below 5 mg/L (4.3- 1.6mg/L). The watershed nearby to 04-FHC includes a wood chipping business, residential, a gravel operation, agricultural fields, and forest

Also see new impairment for Dissolved Oxygen Saturation.



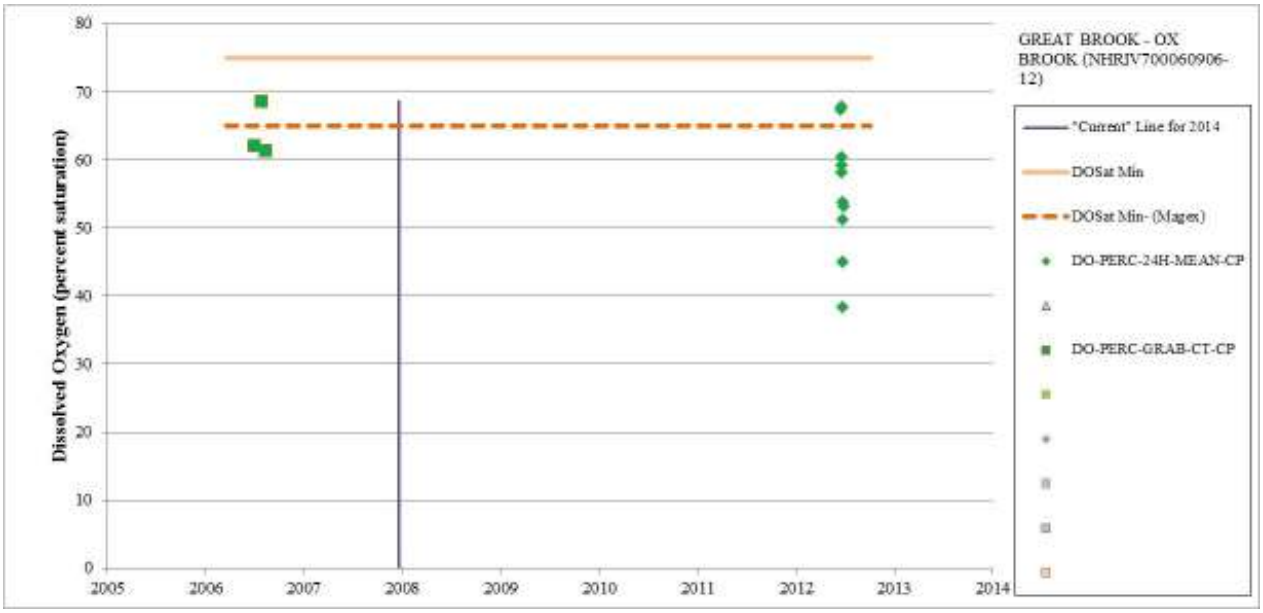
Notes:

DO-PPM-24HR-MIN-NCP = 24 hour minimum dissolved oxygen from a datalogger not deployed during the summer critical period.
DO-PPM-GRAB-NCT-CP = Grab samples of dissolved oxygen not in the early morning hours of the summer critical period.
"Current" Line for 2014 – Per the methodology outlined in the CALM, all data from this referenced data is considered 'current' unless. Available older data is provided for context. See the 2014 CALM for addition details.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Great Brook - Ox Brook	NHRIV700060906-12	Milford	Aquatic Life	Dissolved oxygen saturation	3-PAS	5-P

2014: Grab samples collected in 2006 indicated possible dissolved oxygen saturation problems. A twelve day datalogger deployment (ten of which were usable for 24 hour average calculations) in 2012 found that no daily average dissolved oxygen saturation made it to the 24 hour minimum of 75 percent. The watershed nearby to 04-FHC includes a wood chipping business, residential, a gravel operation, agricultural fields, and forest.

Also see new impairment for Dissolved Oxygen Concentration.



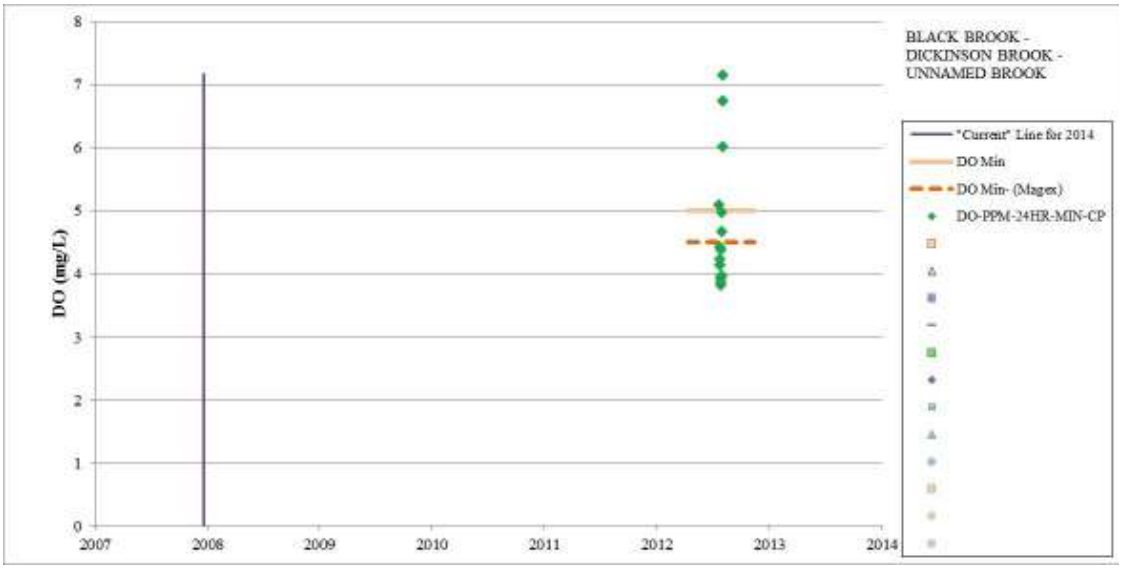
Notes:

DO- PERC-24H-MEAN-CP = 24 hour average of dissolved oxygen saturation during the summer critical period.
DO-PERC-GRAB-CT-CP = Grab samples of dissolved oxygen saturation during the early morning hours of the summer critical period.
"Current" Line for 2014 – Per the methodology outlined in the CALM, all data from this referenced data is considered 'current' unless. Available older data is provided for context. See the 2014 CALM for addition details.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Black Brook - Dickinson Brook - Unnamed Brook	NHRIV802010301-05	Keene	Aquatic Life	Oxygen, Dissolved	3-ND	5-P

2014: A datalogger was deployed at site 08-BCK in 2012. During 10 of the 14 days of the deployment the daily minimum dissolved oxygen concentration fell below 5 mg/L. Site 08-BCK drains forest, residential, fields, and commercial properties. Just upstream of the site, Black Brook has little riparian buffer.

Also see new impairments for Benthic Macro-invertebrates, Dissolved Oxygen Saturation, and pH.



Notes:

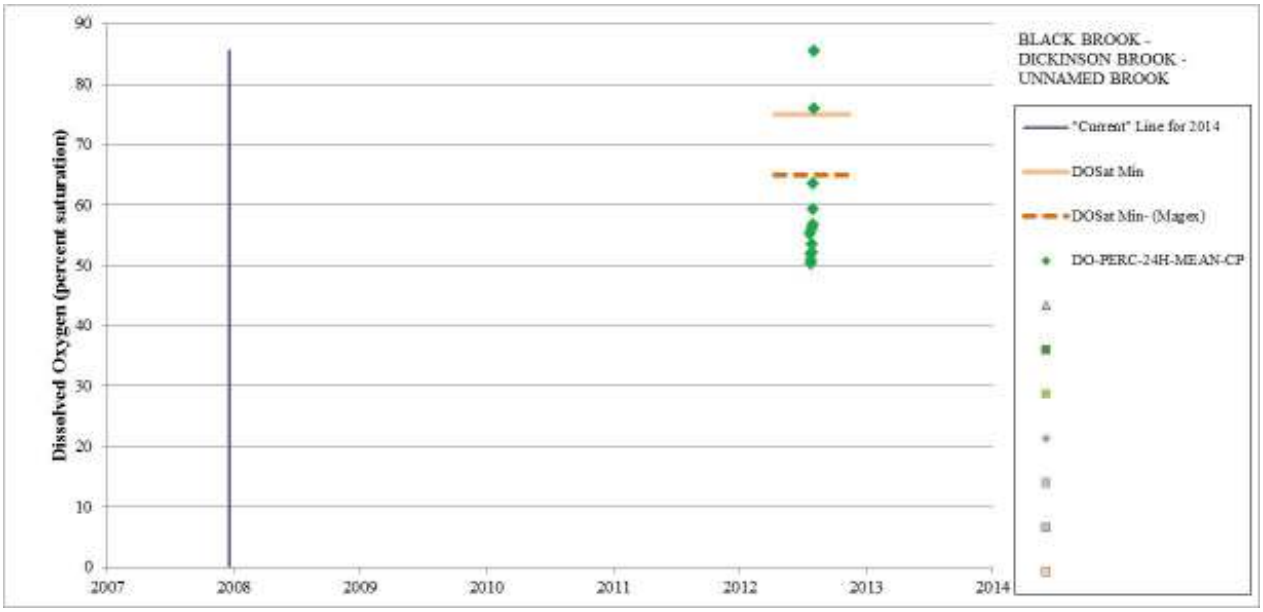
DO-PPM-24HR-MIN-NCP = 24 hour minimum dissolved oxygen from a datalogger not deployed during the summer critical period.
"Current" Line for 2014 – Per the methodology outlined in the CALM, all data from this referenced data is considered 'current' unless. Available older data is provided for context. See the 2014 CALM for addition details.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014

Black Brook - Dickinson Brook - Unnamed Brook	NHRIV802010301-05	Keene	Aquatic Life	Dissolved oxygen saturation	3-ND	5-P

2014: A datalogger was deployed at site 08-BCK in 2012. During 10 of the 12 days of the deployment for which a 24 hour average dissolved oxygen percent saturation could be calculated the site did not meet the 75 percent minimum. Site 08-BCK drains forest, residential, fields, and commercial properties. Just upstream of the site, Black Brook has little riparian buffer.

Also see new impairments for Benthic Macro-invertebrates, Dissolved Oxygen Concentration, and pH.



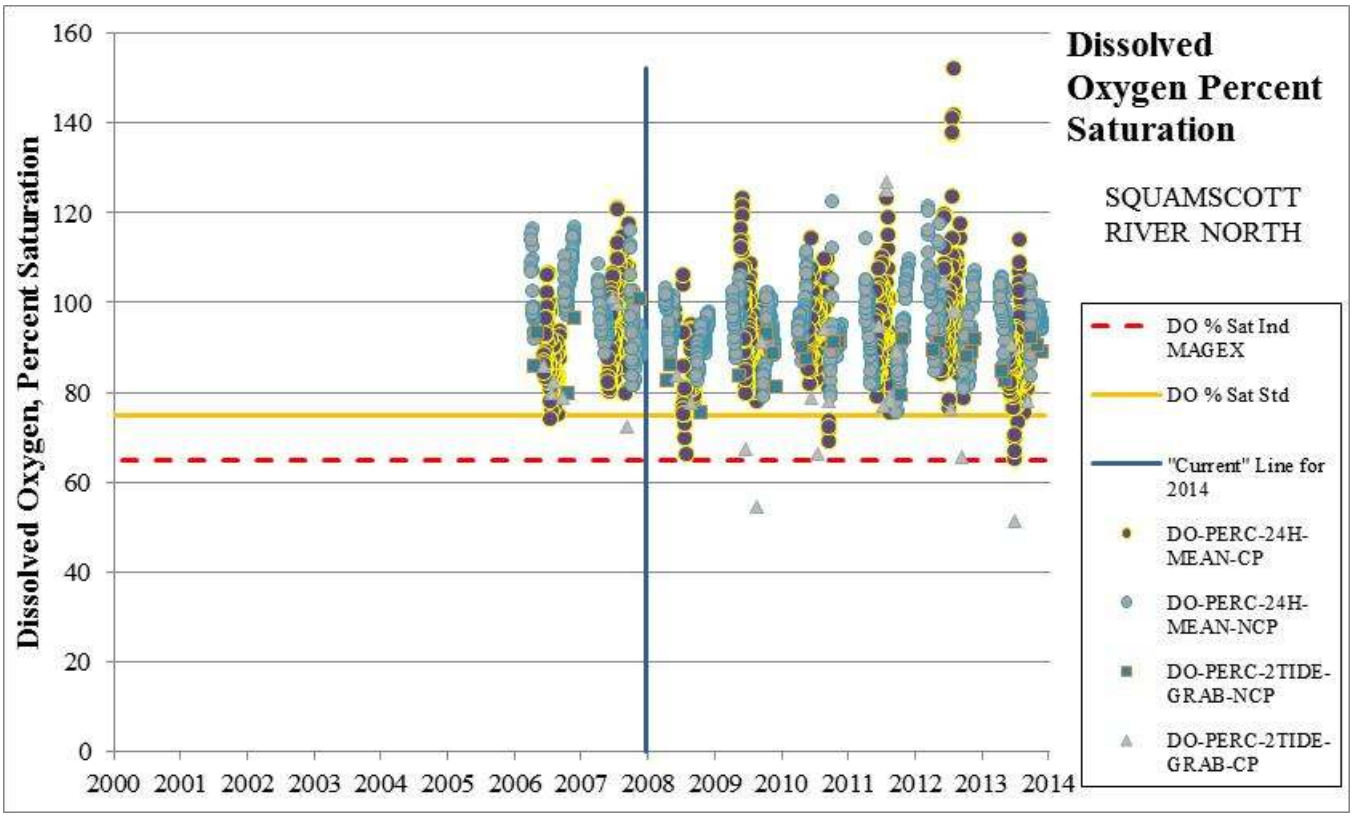
Notes:

DO- PERC-24H-MEAN-CP = 24 hour average of dissolved oxygen saturation during the summer critical period.

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

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Squamscott River North	NHEST600030806-01-02		Aquatic Life	Dissolved oxygen saturation	2-M	5-M

2014: Following the 10% method listed in the 2014 CALM this parameter would be categorized as 2-M. Part of the concept behind the 10% rule was to address random errors within the meter measurement accuracy, thereby limiting accidental impairments. The magnitude of exceedence criteria was layered into the assessment process to address major exceedences and exceedences beyond all normal measurement errors. In the case of this assessment zone there are 851 station/days of DO readings during the critical summer period. Three of the last six years of data show criteria exceedences on multiple days, which demonstrates that this phenomenon is not limited to a single summer. It is clear that it is common in this assessment zone to have 24 hour average dissolved oxygen below 75 percent. While no 24 hour average dissolved oxygen readings fell below the magnitude of exceedence indicator of 65 percent, there were several close values (e.g. 65.4 percent average on July 10, 2013).



Notes:

DO-PERC-24H-MEAN-CP = 24 hour average dissolved oxygen percent saturation from a datalogger deployed during the summer critical period.
DO-PERC-24H-MEAN-NCP = 24 hour average dissolved oxygen percent saturation from a datalogger not deployed during the summer critical period.
DO-PERC-2TIDE-GRAB-CP = The average to two grab samples for dissolved oxygen percent saturation, one at high tide and one at low tide of a single day, during the summer critical period.
DO-PERC-2TIDE-GRAB-NCP = The average to two grab samples for dissolved oxygen percent saturation, one at high tide and one at low tide of a single day, not during the summer critical period.
"Current" Line for 2014 – Per the methodology outlined in the CALM, all data from this referenced data is considered 'current' unless. Available older data is provided for context. See the 2014 CALM for addition details.

GROUP 11. Bacteria

Elevated bacteria levels in waters present a public health risk to people who have contact with those waters. Acceptable bacteria levels to protect primary contact recreation (i.e. swimming) reside in Env-Wq 1703.06 and RSA 485-A:8, I, II, & V. For the purposes of assessment, the methodologies in the Consolidated Assessment and Listing Methodology will be used to make the greatest use of all available valid data.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
NHIMP700060402-02-05	Locke Lake - Colony Beach	Barnstead	Primary Contact	Escherichia coli	2-G	4A-P

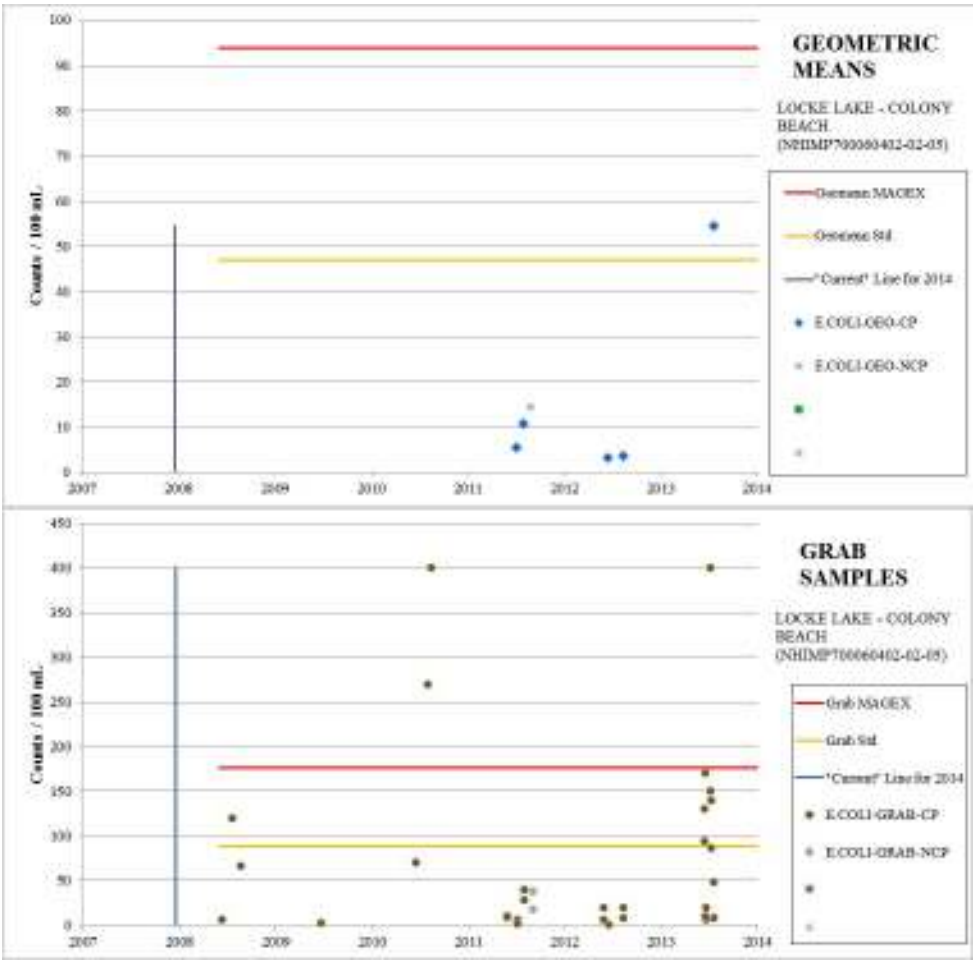
2014: Occasional grab sample exceedences in 2008 and 2010 detected under sampling with too few data points to collect a geometric mean. Sampling from 2011-2013 was frequent enough to calculate five geometric means in the prime summer swimming season. During that time 6 of 24 grab samples and 1 of 5 geometric means exceeded water quality criteria. Exceedences to data appear to have occurred after little

(<0.5 in) to no rain in the preceding three days.

On September 30th, 2015 EPA approved the 'Total Maximum Daily Load (TMDL) Report for 3 Bacteria Impaired Waters in New Hampshire'. Locke Lake - Colony Beach (NHIMP700060402-02-05) is one of the three bacteria impaired waters in that TMDL. The purpose of the TMDL is to address impairment of primary contact recreation (i.e. swimming) due to bacteria from improperly treated human waste and stormwater runoff. The TMDL report cover three distinct bacterial impairments on three assessment units from the 2010 303(d) list due to E. coli (freshwaters primary contact {i.e. swimming}). NH in impairing these waters in the 2014 assessment proposes for comment that these waters be included in the approved bacteria TMDL (and put in category 4a).

A copy of the EPA TMDL approval letter and additional detail documents may be found in http://des.nh.gov/organization/divisions/water/wmb/tmdl/categories/publications.htm .

Since the TMDL has been approved by EPA, NHDES has placed all assessment units included in the TMDL in impairment Category 4A instead of on the 303(d) list (Category 5) for primary contact recreation (i.e. swimming) due to E. coli (fresh waters).



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 not 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 not collected during the summer critical period.
"Current" Line for 2014 – Per the methodology outlined in the CALM, all data from this referenced data is considered 'current' unless. Available older data is provided for context. See the 2014 CALM for addition details.

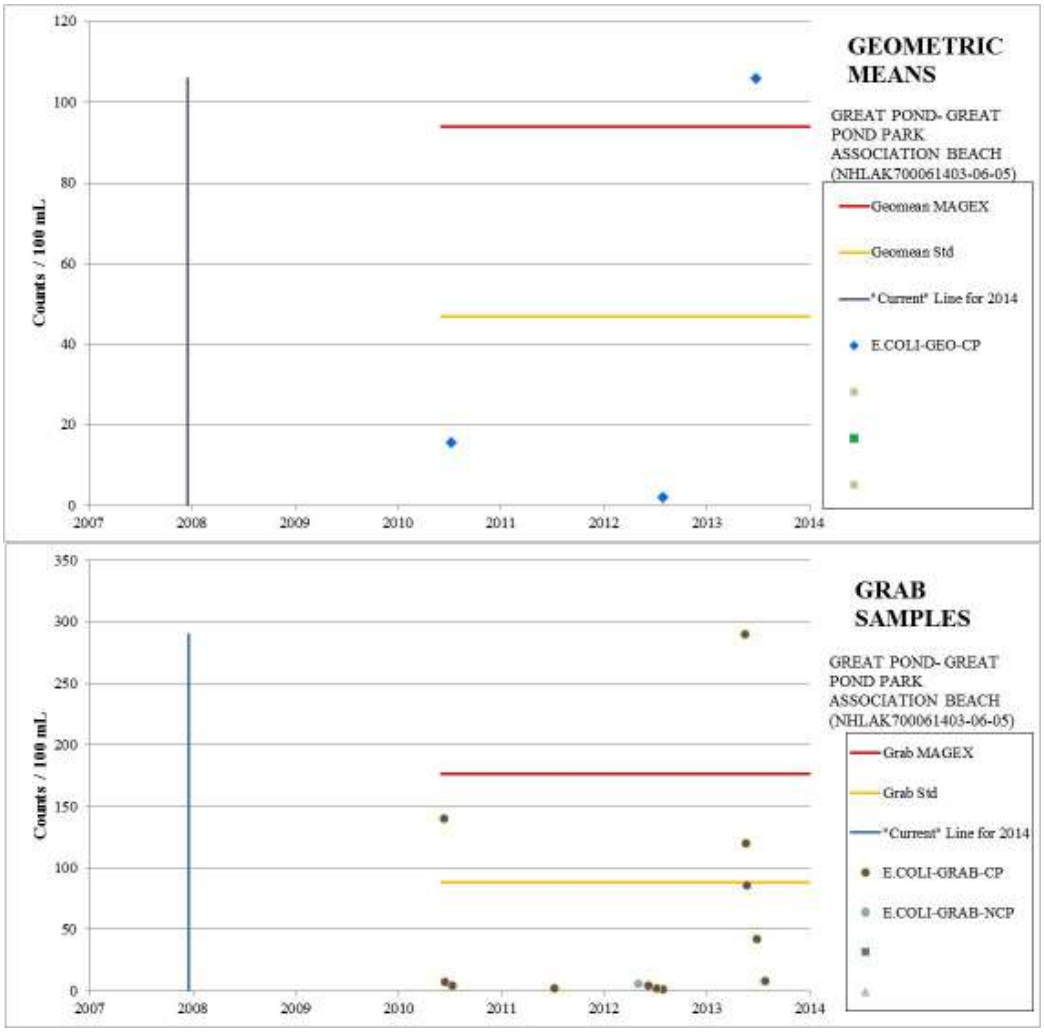
Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Great Pond- Great Pond Park Association Beach	NHLAK700061403-06-05	Kingston	Primary Contact	Escherichia coli	2-M	4A-P

2014: This beach has been lightly sampled since 2010. In 2010 there was one grab sample exceedence but the geometric mean was acceptable. In 2011 there was insufficient data to calculate a geometric mean. In 2012 the geometric mean and grab samples were acceptable. In 2013, the grab samples again exceeded the criteria on two dates and the calculated geometric mean was more than two times the water quality criteria. The elevated sample reading occurred after little (less than 0.5 in) to no rain in the preceding three days.

On September 30th, 2015 EPA approved the 'Total Maximum Daily Load (TMDL) Report for 3 Bacteria Impaired Waters in New Hampshire'. Great Pond- Great Pond Park Association Beach (NHLAK700061403-06-05) is one of the three bacteria impaired waters in that TMDL. The purpose of the TMDL is to address impairment of primary contact recreation (i.e. swimming) due to bacteria from improperly treated human waste and stormwater runoff. The TMDL report cover three distinct bacterial impairments on three assessment units from the 2010 303(d) list due to E. coli (freshwaters primary contact {i.e. swimming}). NH in impairing these waters in the 2014 assessment proposes for comment that these waters be included in the approved bacteria TMDL (and put in category 4a).

A copy of the EPA TMDL approval letter and additional detail documents may be found in http://des.nh.gov/organization/divisions/water/wmb/tmdl/categories/publications.htm .

Since the TMDL has been approved by EPA, NHDES has placed all assessment units included in the TMDL in impairment Category 4A instead of on the 303(d) list (Category 5) for primary contact recreation (i.e. swimming) due to E. coli (fresh waters).



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 not collected during the summer critical period.
"Current" Line for 2014 – Per the methodology outlined in the CALM, all data from this referenced data is considered 'current' unless. Available older data is provided for context. See the 2014 CALM for addition details.

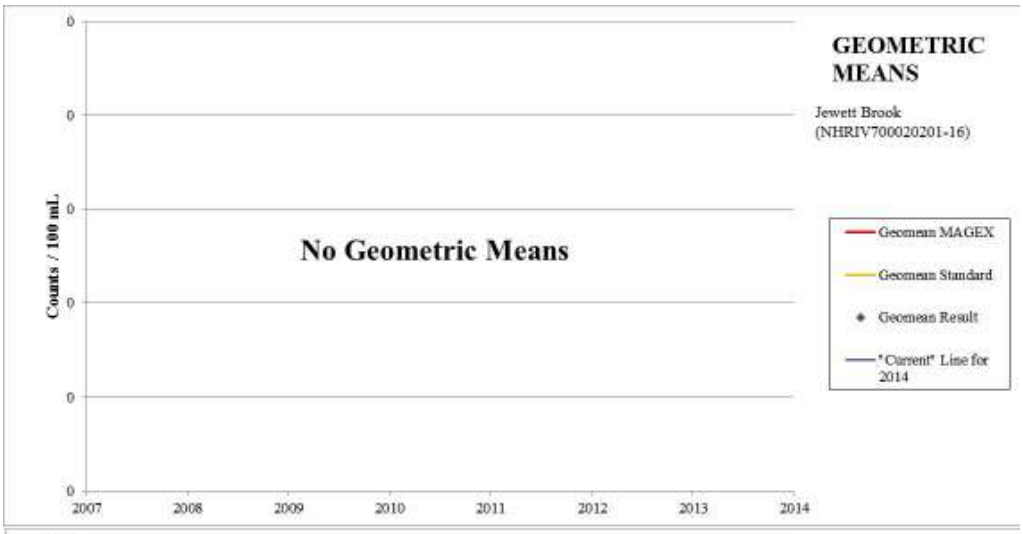
Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Jewett Brook	NHRIV700020201-16	Gilford	Primary Contact	Escherichia coli	3-ND	4A-P

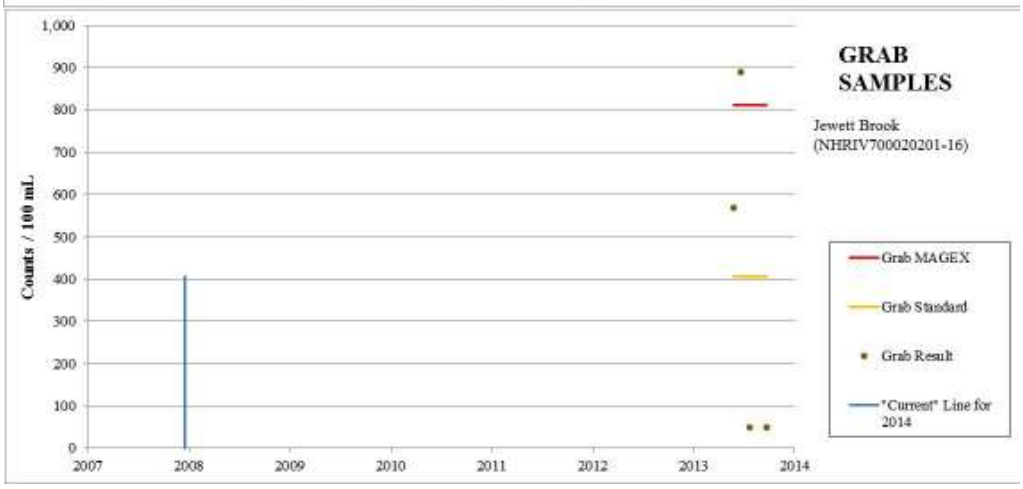
2014: High bacteria at 01-JWT after rain events. (note that when the data was pulled, this was tagged as 03-JWT)

On September 30th, 2015 EPA approved the 'Total Maximum Daily Load (TMDL) Report for 3 Bacteria Impaired Waters in New Hampshire'. Jewett Brook (NHRIV700020201-16) is one of the three bacteria impaired waters in that TMDL. The purpose of the TMDL is to address impairment of primary contact recreation (i.e. swimming) due to bacteria from improperly treated human waste and stormwater runoff. The TMDL report cover three distinct bacterial impairments on three assessment units from the 2010 303(d) list due to E. coli (freshwaters primary contact {i.e. swimming}). NH in impairing these waters in the 2014 assessment proposes for comment that these waters be included in the approved bacteria TMDL (and put in category 4a).

A copy of the EPA TMDL approval letter and additional detail documents may be found in http://des.nh.gov/organization/divisions/water/wmb/tmdl/categories/publications.htm .

Since the TMDL has been approved by EPA, NHDES has placed all assessment units included in the TMDL in impairment Category 4A instead of on the 303(d) list (Category 5) for primary contact recreation (i.e. swimming) due to E. coli (fresh waters).





Notes:

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

E.COLI-GRAB-NCP = Escherchia coli grab samples not collected during the summer critical period.

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

GROUP 12. Iron

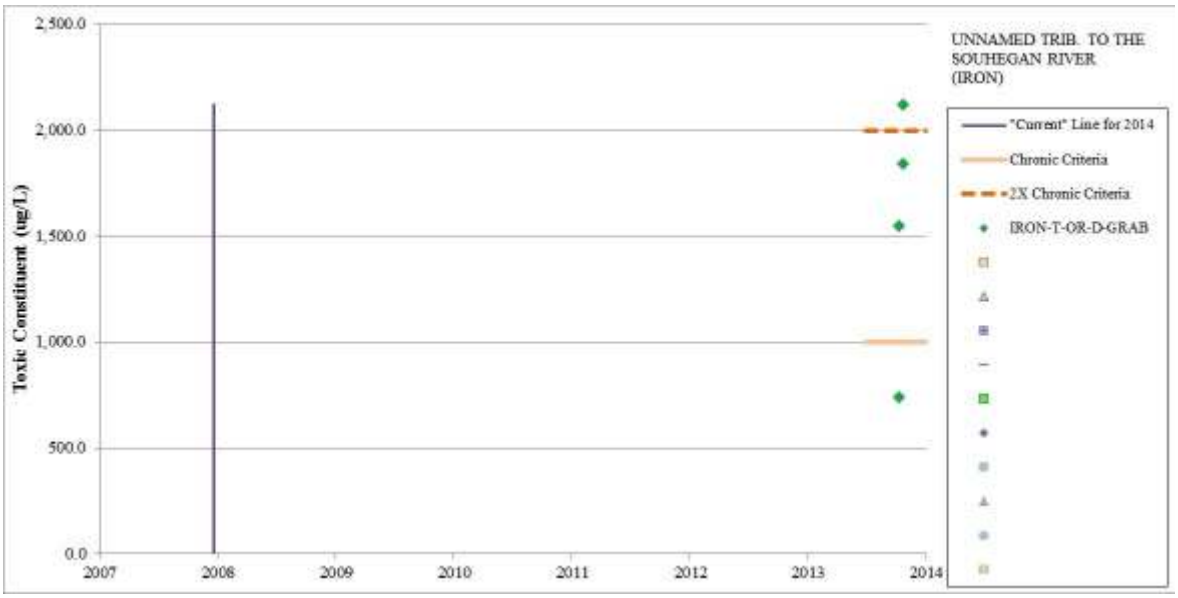
Toxic substances can have a wide range if impacts to aquatic life, plants, and humans. The chronic and acute criteria for toxic substances are identified in Env-Wq 1703.21 and Table Env-Wq 1703.1. For the purposes of assessment, the methodologies in the CALM pertain to aquatic life use support and will be used to make the greatest use of all available valid data.

When Iron rich waters mix with healthy oxygen rich waters, ferric hydroxide ($Fe(OH)_3$) floc can form and coat the gills of some fish impairing their ability to breath. Precipitates of iron can then settle smothering benthic invertebrates, plants, and fish eggs. In severe cases, precipitates may consolidate thereby creating impenetrable hard bottoms.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Unnamed Trib. To The Souhegan River	NHRIV700060902-21	Greenville	Aquatic Life	Iron	N/A	5-M

2014: Samples collected in the fall of 2014 at 04-XS1 and 02-XS1. Site appears to receive discharges from an industrial site.

Also see new impairments for Dissolved Oxygen Concentration, Dissolved Oxygen Saturation, and pH.



Notes:

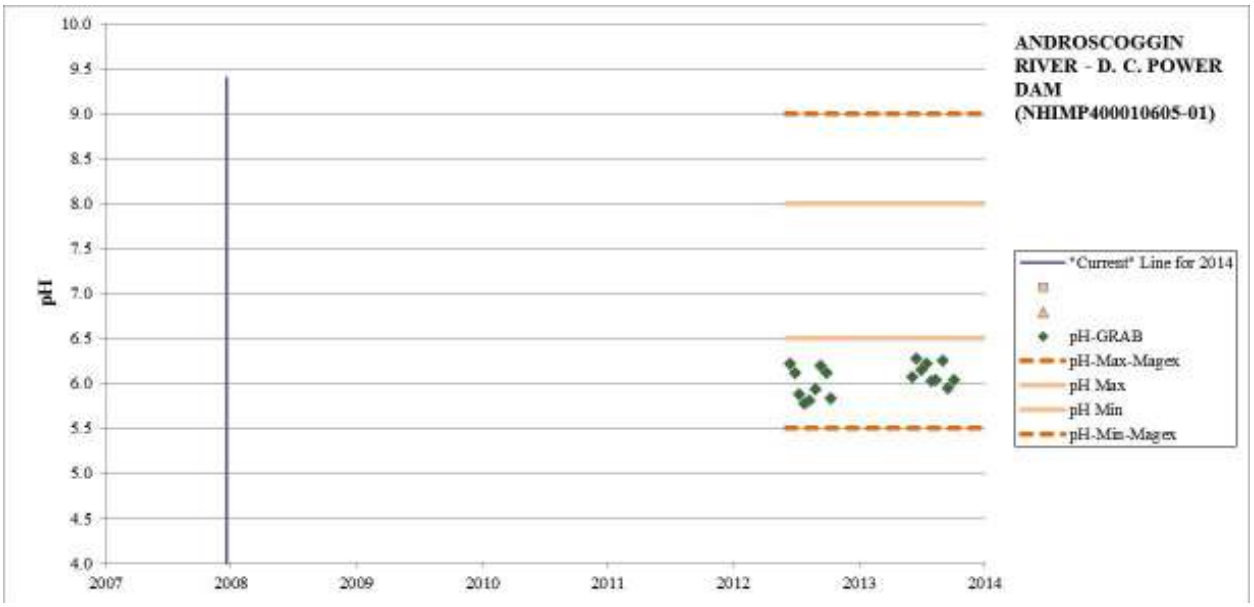
"Current" Line for 2014 – Per the methodology outlined in the CALM, all data from this referenced data is considered 'current' unless. Available older data is provided for context. See the 2014 CALM for addition details.

GROUP 13. pH

pH is an important controlling factor is the chemical and biological processes. The toxicity of some material is impacted by pH shifts which also partially controls the solubility of toxic metals. RSA 485-A, II and Env-Wq 1703.18 define the acceptable pH range of surface waters. For the purposes of assessment, the methodologies in the Consolidated Assessment and Listing Methodology will be used to make the greatest use of all available valid data.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Androscoggin River - D. C. Power Dam	NHIMP400010605-01	Berlin	Aquatic Life	pH	3-ND	5-M

2014: A total of 18 grab samples taken, all in 2012 and 2013 from June through October. All samples were below 6.5. Flows ranged from 0.36-2.93 CFSM (Diamond River, 01052500), with 3 day rainfall totals between 0.09-1.96" (N. Conway). Samples span the typical range of flow and weather conditions, therefore the samples are considered representative.

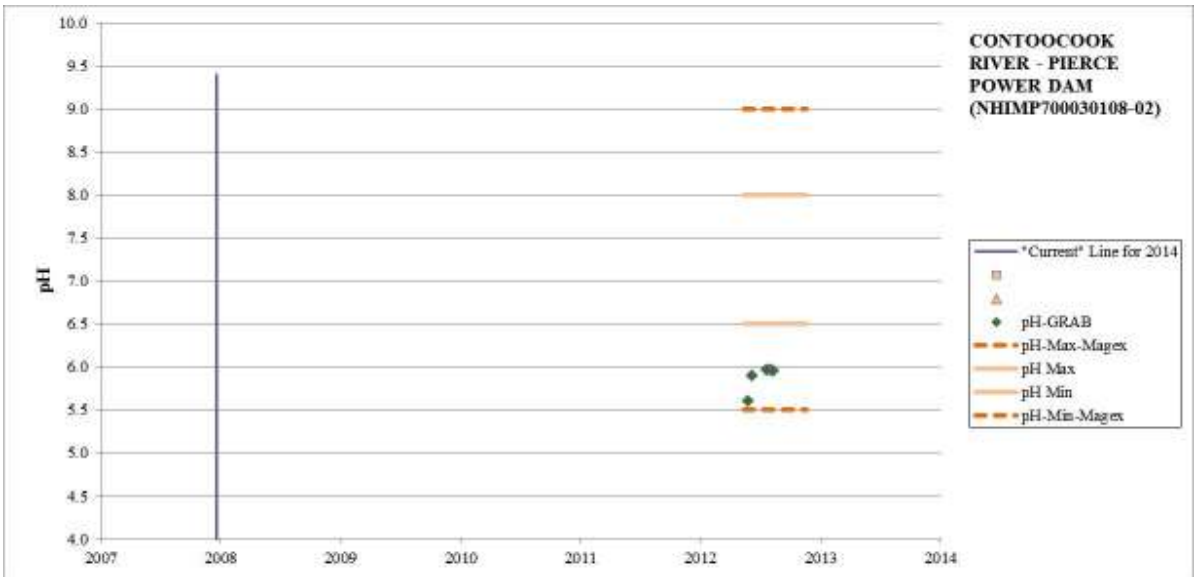


Notes:

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' unless. Available older data is provided for context. See the 2014 CALM for addition details.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Contoocook River - Pierce Power Dam	NHIMP700030108-02	Bennington	Aquatic Life	pH	3-ND	5-M

2014: A total of 5 grab samples taken, all in 2012 from June through Aug. All samples were below 6. Flows ranged from 0.16-5.27 CFSM (Contoocook, 01082000), with 3 day rainfall totals between 0.14-3.64" (MacDowell - Peterborough). Samples span the typical range of flow and weather conditions, therefore the samples are considered representative.



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 2014 – Per the methodology outlined in the CALM, all data from this referenced data is considered 'current' unless. Available older data is provided for context. See the 2014 CALM for addition details.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Powder Mill Pond	NHLAK700030107-03	Hancock	Aquatic Life	pH	3-PAS	5-M

2014: A total of 8 grab samples taken in 2013, June through Sept. at stations 25-CTC and 24N-CTC. 7 of the samples were below 6.5. Flows ranged from 0.43-2 CFSM (Contoocook, 01082000), with 3 day rainfall totals between 0.01-1.72" (MacDowell - Peterborough). Samples span the typical range of flow and weather conditions, therefore the samples are considered representative and true readings.

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 2014 – Per the methodology outlined in the CALM, all data from this referenced data is considered 'current' unless. Available older data is provided for context. See the 2014 CALM for addition details.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Third Connecticut Lake	NHLAK801010101-02	Pittsburg	Aquatic Life	pH	3-PNS	5-M

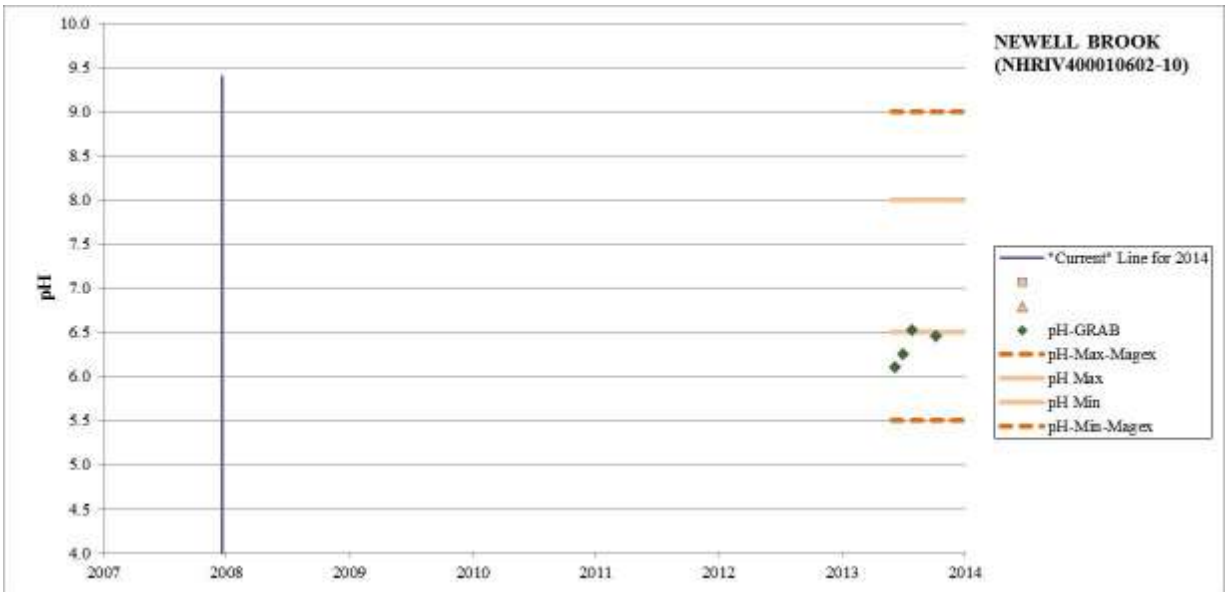
2014: 2 samples collect that were below 6.5. One in 2004 at 98-CNT and one in 2013 at CONTPITD. Samples appear to be valid, no issues identified.

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 2014 – Per the methodology outlined in the CALM, all data from this referenced data is considered 'current' unless. Available older data is provided for context. See the 2014 CALM for addition details.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Newell Brook	NHRIV400010602-10	Dummer	Aquatic Life	pH	3-ND	5-M

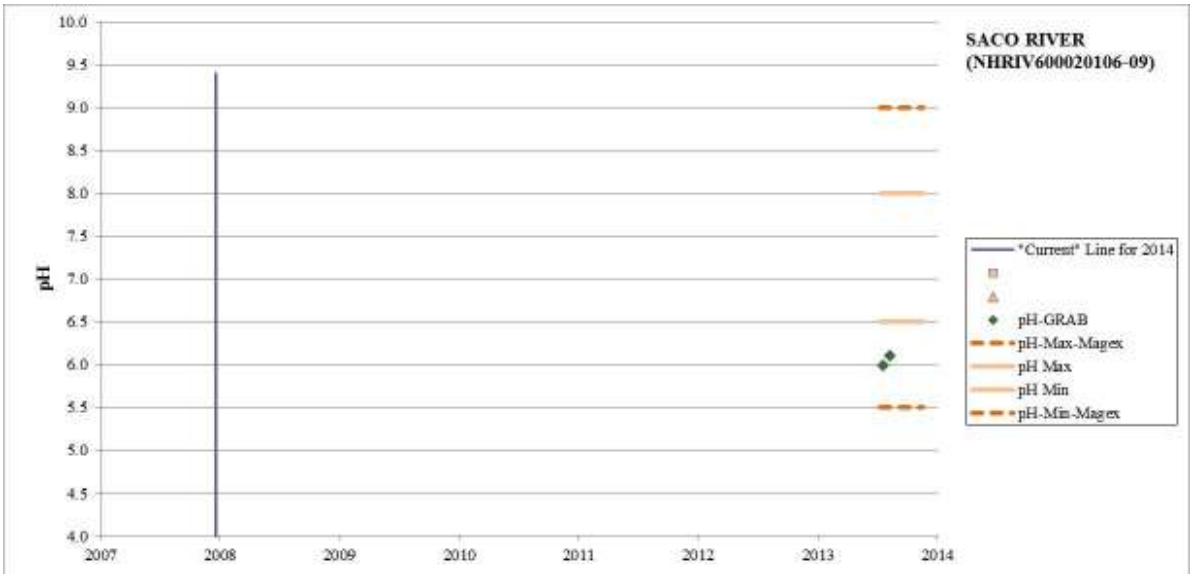
2014: A total of 4 grab samples taken in 2013, June through Oct. at station 05-NWL. 3 of the samples were below 6.5. Four additional samples have been collected which were not included in the 2014 bulk assessment. 8/13 - 6.57, 10/13 - 6.87, 1/14 - 6.18, and 7/14 - 6.38. Samples span the typical range of flow and weather conditions, therefore the samples are considered representative and true readings.



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 2014 – Per the methodology outlined in the CALM, all data from this referenced data is considered 'current' unless. Available older data is provided for context. See the 2014 CALM for addition details.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Saco River	NHRIV600020106-09	Bartlett	Aquatic Life	pH	3-ND	5-M

2014: A total of 2 grab samples taken in 2013, July and Aug. at station 09-SAC. Both of the samples were ~ 6. One additional sample was collected which was not included in the 2014 bulk assessment, 9/30 - 6.24. All of the samples are below 6.5 and collected in summer/fall when pH would normally be elevated.



Notes:

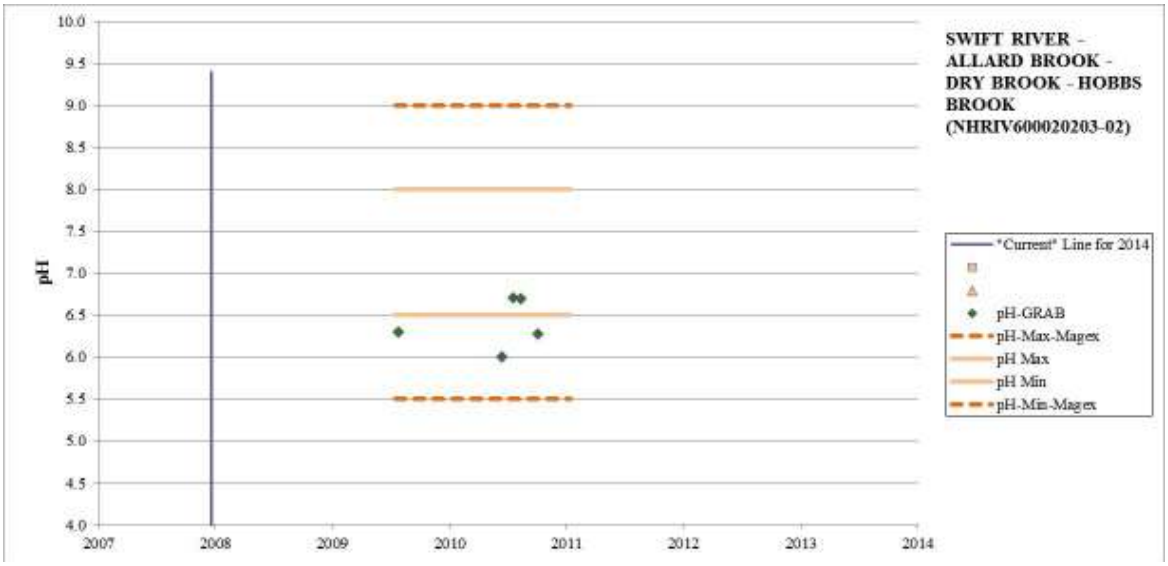
pH-GRAB = pH value from a grab sample.

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

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

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Swift River - Allard Brook - Dry Brook - Hobbs Brook	NHRIV600020203-02	Albany	Aquatic Life	pH	3-ND	5-M

2014: Three of the five samples collected at WM-HAYSTACKBK were below 6.5. The samples were collected in summer/fall when pH would normally be elevated. Samples appear to be valid, no issues identified.



Notes:

pH-GRAB = pH value from a grab sample.

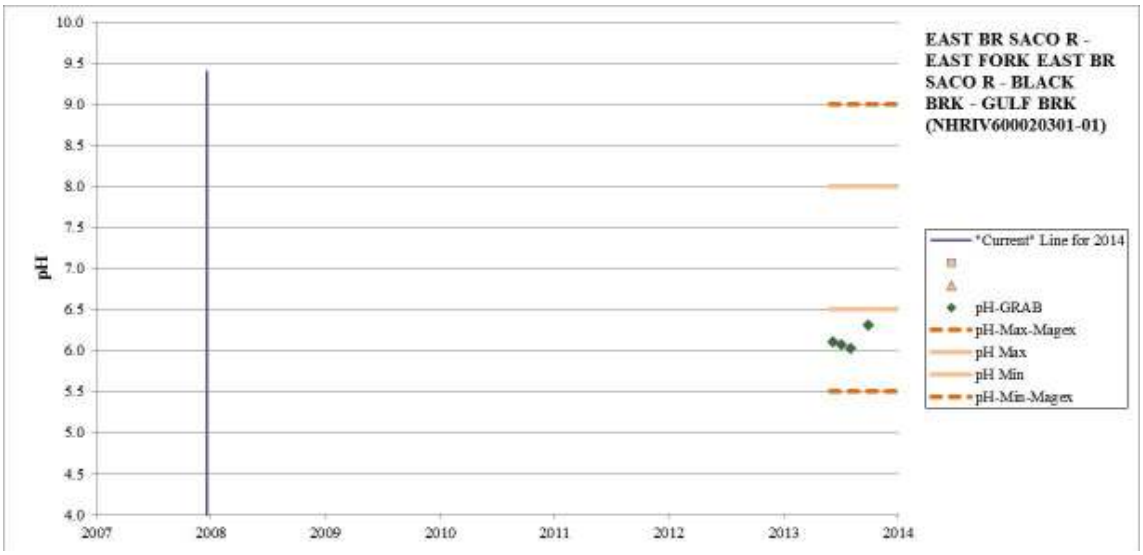
"Magex" refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.

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

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
East Br Saco R - East Fork East Br Saco R - Black Brk - Gulf Brk	NHRIV600020301-01	Jackson	Aquatic Life	pH	3-ND	5-M

2014: All of the four samples collected at 12-EBS were below 6.5. The samples were collected in summer/fall when pH would normally be

elevated. Samples appear to be valid, no issues identified.



Notes:

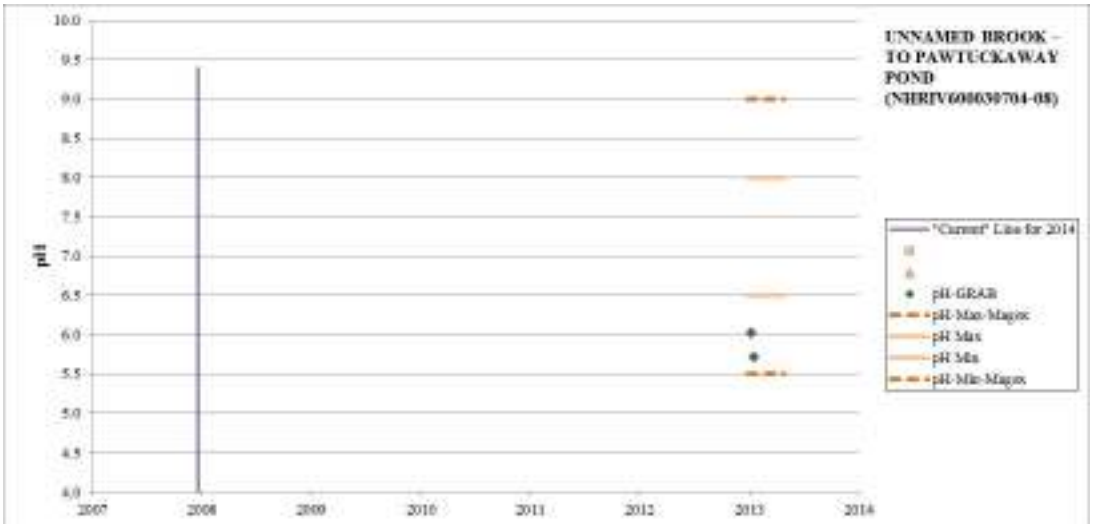
pH-GRAB = pH value from a grab sample.

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

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

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Unnamed Brook – To Pawtuckaway Pond	NHRIV600030704-08	Nottingham	Aquatic Life	pH	3-ND	5-M

2014: Both of the samples (2) collected at MTBROOK were < 6. The samples were collected in January when pH would be near its lowest. Samples appear to be valid, no issues identified.



Notes:

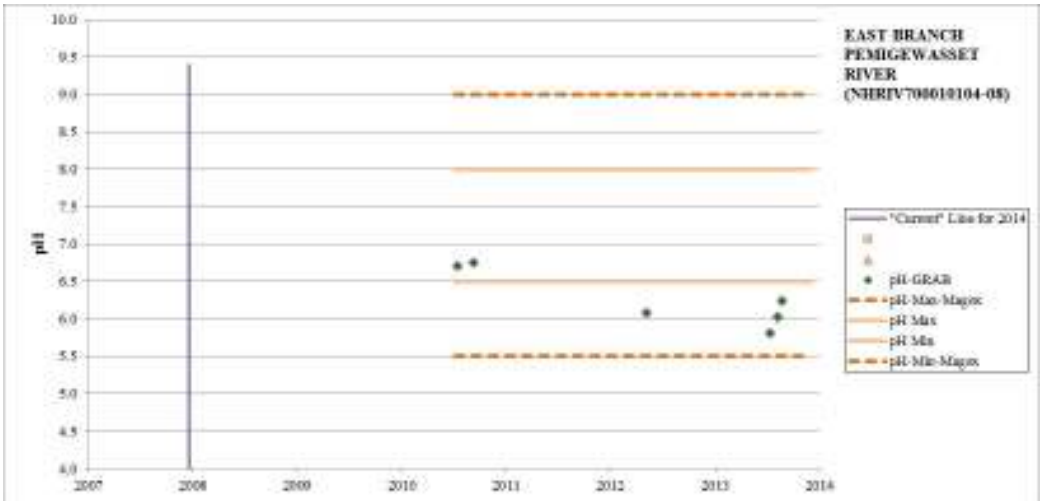
pH-GRAB = pH value from a grab sample.

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

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

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
East Branch Pemigewasset River	NHRIV700010104-08	Woodstock	Aquatic Life	pH	3-PAS	5-M

2014: Four of the 6 samples collected at 01-EBP were between 6.24 and 5.81. The samples were collected in summer/fall when pH would normally be elevated. Samples appear to be valid, no issues identified.



Notes:

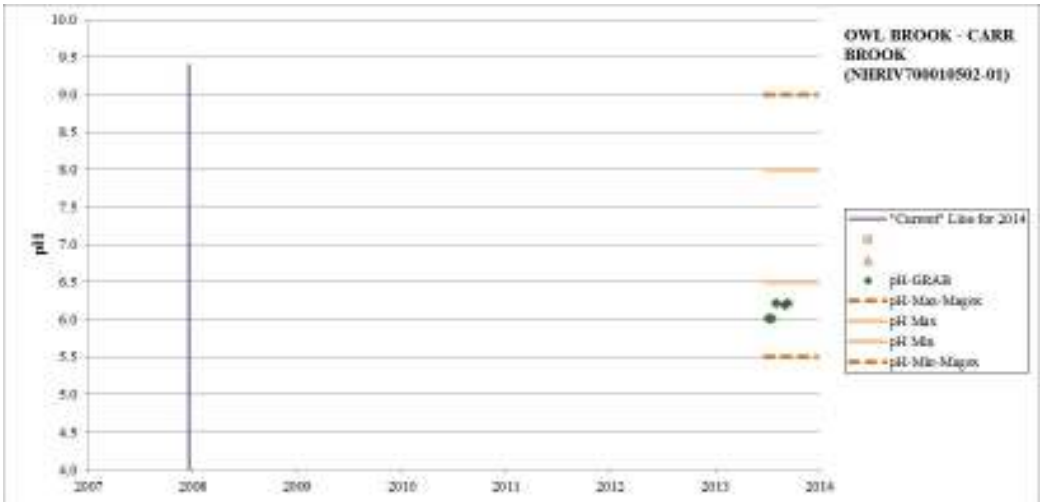
pH-GRAB = pH value from a grab sample.

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

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

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Owl Brook - Carr Brook	NHRIV700010502-01	Holderness	Aquatic Life	pH	3-ND	5-M

2014: A total of 5 grab samples taken, all in 2013 from July through Sept. All samples were between 6.22 and 6.01. Flows ranged from 0.43-1.11 CFSM (Baker River near Rumney, 01076000). The samples were collected in summer/fall when pH would normally be elevated. Samples appear to be valid, no issues identified. New Impairment for 2014



Notes:

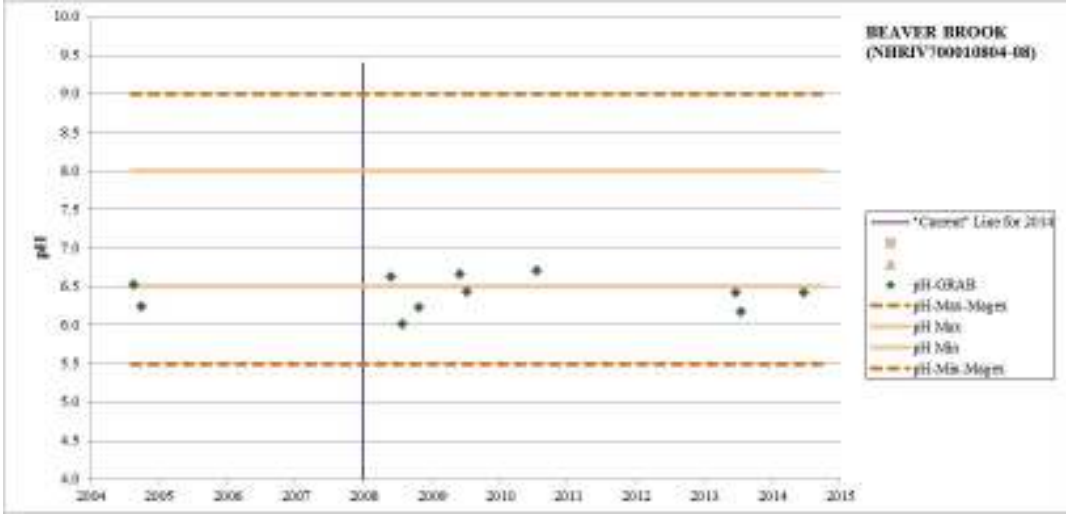
pH-GRAB = pH value from a grab sample.

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

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

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Beaver Brook	NHRIV700010804-08	Franklin	Aquatic Life	pH	3-ND	5-M

2014: Station WEBFRKBB was assigned to NHLAK700010804-02-01 for the 2012 cycle. Station was properly reassigned to NHRIV700010804-08 for the 2014 cycle, because it is representative of the river conditions prior to confluence with the lake. Six of the 10 samples are below 6.5. AUID would have been impaired in previous cycles if AUID was correctly assigned.



Notes:

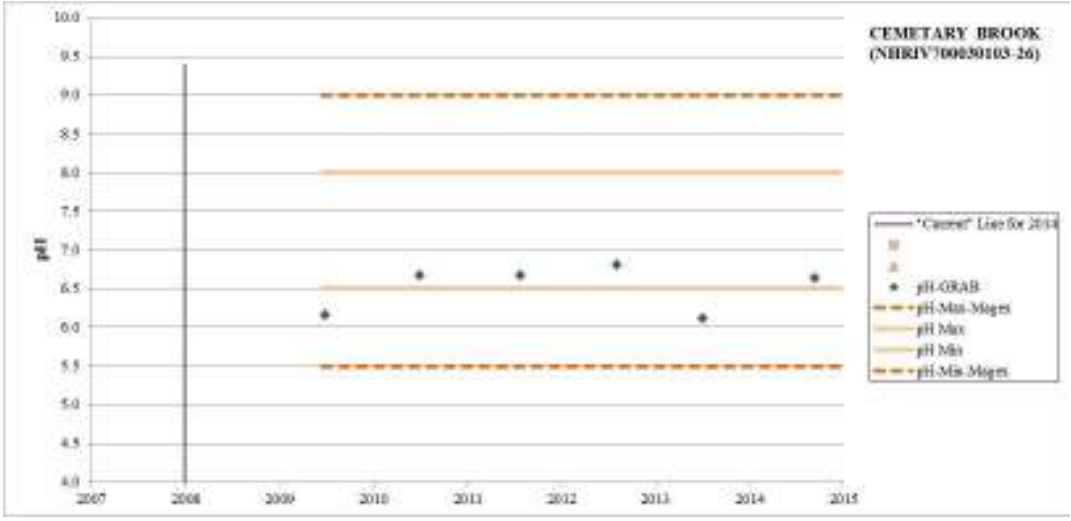
pH-GRAB = pH value from a grab sample.

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

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

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Cemetery Brook	NHRIV700030103-26	Harrisville	Aquatic Life	pH	3-PNS	5-M

2014: Two of the five samples collected at HARHARC were below 6.5. The samples were collected in the summer when pH would normally be elevated. Samples appear to be valid, no issues identified.



Notes:

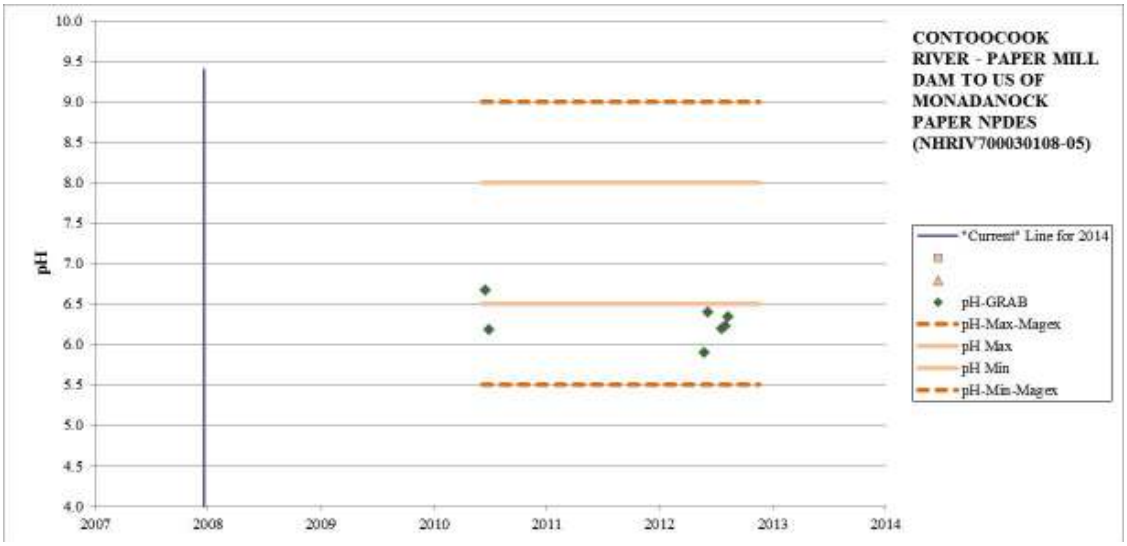
pH-GRAB = pH value from a grab sample.

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

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

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Contoocook River - Paper Mill Dam To Us Of Monadanock Paper NDPES	NHRIV700030108-05	Bennington	Aquatic Life	pH	3-PNS	5-M

2014: Six of the seven samples collected at 23-CTC were below 6.5. The samples were collected in the summer when pH would normally be elevated. Flows ranged from 0.16-5.27 CFSM (Contoocook River at Peterborough, 01082000). Samples appear to be valid, no issues identified.

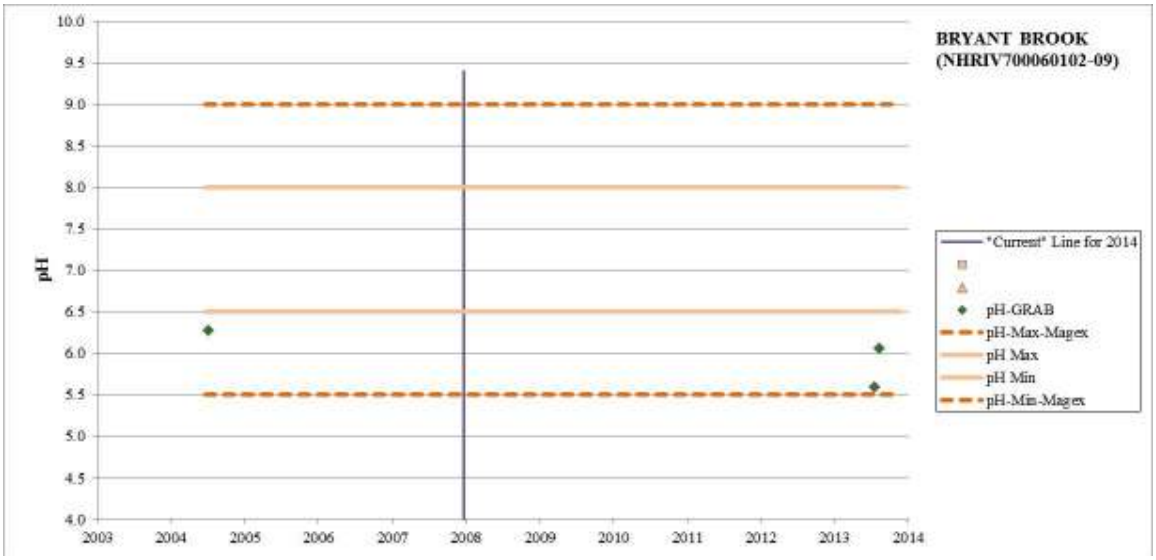


Notes:

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 2014 – Per the methodology outlined in the CALM, all data from this referenced data is considered 'current' unless. Available older data is provided for context. See the 2014 CALM for addition details.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Bryant Brook	NHRIV700060102-09	Canterbury	Aquatic Life	pH	3-ND	5-M

2014: Both of the samples collected at 03-BRT were ? 6. The samples were collected in the summer when pH would normally be elevated. An additional sample collect at 12300169 was 6.28, but was collected in 2004 so it was outside of the data used for the 2014 assessment. Samples appear to be valid, no issues identified.

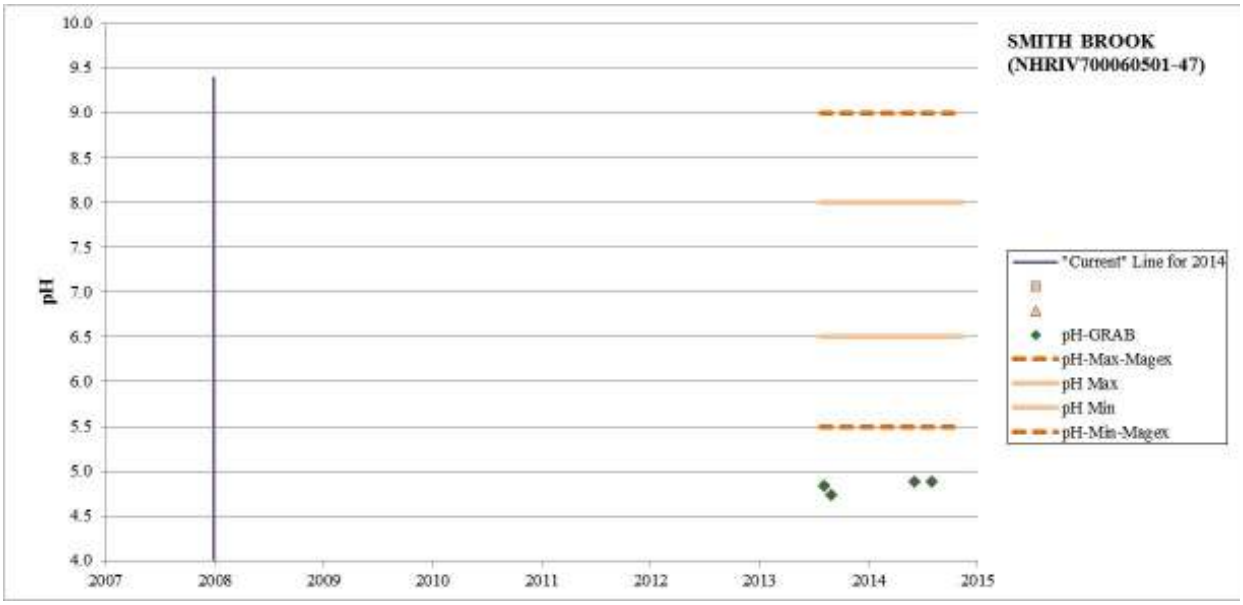


Notes:

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 2014 – Per the methodology outlined in the CALM, all data from this referenced data is considered 'current' unless. Available older data is provided for context. See the 2014 CALM for addition details.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Smith Brook	NHRIV700060501-47	Strafford	Aquatic Life	pH	N/A	5-P

2014: Both of the samples collected at WILPFDSI were below pH of 5. The samples were collected in the summer when pH would normally be elevated. Samples appear to be valid, no data issues identified.



Notes:

pH-GRAB = pH value from a grab sample.

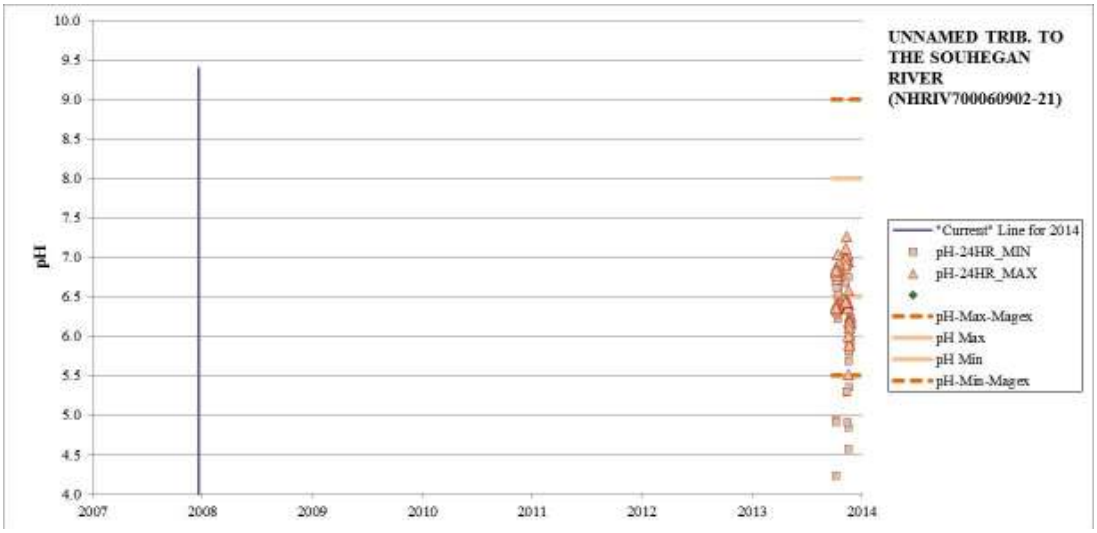
"Magex" refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.

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

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Unnamed Trib. To The Souhegan River	NHRIV700060902-21	Greenville	Aquatic Life	pH	N/A	5-P

2014: Samples collected in the fall of 2014 at 04-XS1 and 02-XS1. Site appears to receive discharges from an industrial site.

Also see new impairments for Dissolved Oxygen Concentration, Dissolved Oxygen Saturation, and Iron.



Notes:

pH-24HR_MIN = pH minimum value from a datalogger deployment.

pH-24HR_MAX = pH maximum value from a datalogger deployment.

"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' unless. Available older data is provided for context. See the 2014 CALM for addition details.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Murray Pond Brook	NHRIV801060402-38	New London	Aquatic Life	pH	3-ND	5-P

2014: All of the 13 samples collected at SUNSUN1417 were below 6.5, with 7 below 5.5. The samples were collected in the summer/fall when pH would normally be elevated. Flows ranged from 0.21-3.17 CFSM (Sugar River at West Claremont, 01152500), with 3 day rainfall totals between 0.01-1.12" (Mt. Sunapee). Samples appear to be valid, no issues identified.

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 2014 – Per the methodology outlined in the CALM, all data from this referenced data is considered 'current' unless. Available older data is provided for context. See the 2014 CALM for addition details.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Murray Pond Brook	NHRIV801060402-39	New London	Aquatic Life	pH	3-ND	5-P

2014: 33 of the 34 grab samples collected at SUNSUN1418 between 2008 and 2013 were below 6.5. The samples were collected in the summer/fall when pH would normally be elevated. Flows ranged from 0.21-3.17 CFSM (Sugar River at West Claremont, 01152500), with 3 day rainfall totals between 0.01-1.12" (Mt. Sunapee). Samples appear to be valid, no issues identified.

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 2014 – Per the methodology outlined in the CALM, all data from this referenced data is considered 'current' unless. Available older data is provided for context. See the 2014 CALM for addition details.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Pine Cliff Brook	NHRIV801060402-54	Newbury	Aquatic Life	pH	3-ND	5-P

2014: 24 of the 30 grab samples collected at SUNSUN750 between 2004 and 2013 were below 6.5. The samples were collected in the summer/fall when pH would normally be elevated. Flows ranged from 0.21-3.17 CFSM (Sugar River at West Claremont, 01152500), with 3 day rainfall totals between 0.01-1.12" (Mt. Sunapee). Samples appear to be valid, no issues identified.

Notes:

pH-GRAB = pH value from a grab sample.

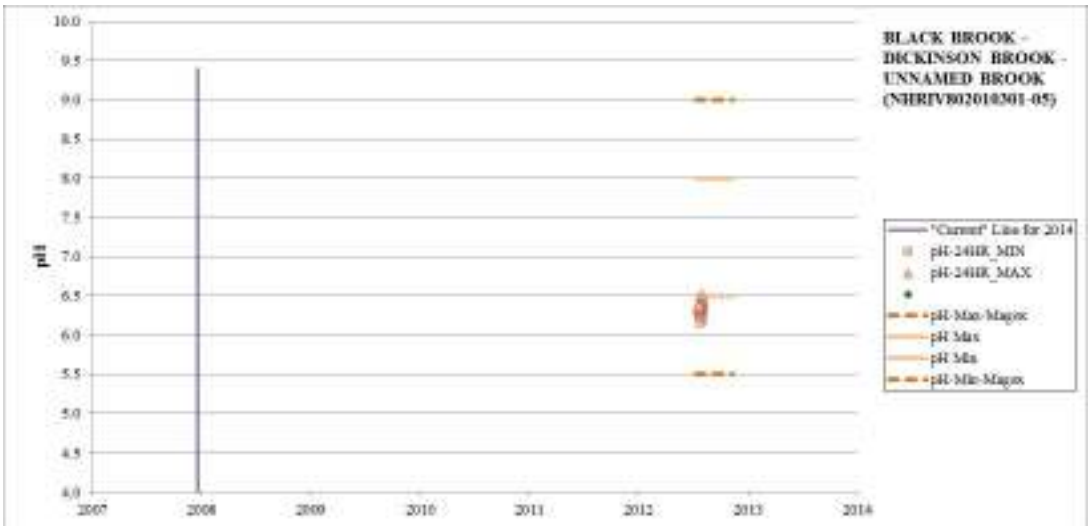
"Magex" refers to the magnitude of exceedence indicator described in the Consolidated Assessment and Listing Methodology.

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

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Black Brook - Dickinson Brook - Unnamed Brook	NHRIV802010301-05	Keene	Aquatic Life	pH	3-ND	5-M

2014: A datalogger was deployed at site 08-BCK in 2012. During 14 of the 14 days of the deployment the minimum pH fell below 6.5. Site 08-BCK drains forest, residential, fields, and commercial properties. Just upstream of the site, Black Brook has little riparian buffer.

Also see new impairments for Benthic Macro-invertebrates, Dissolved Oxygen Concentration, and Dissolved Oxygen Saturation.



Notes:

pH-24HR_MIN = pH minimum value from a datalogger deployment.

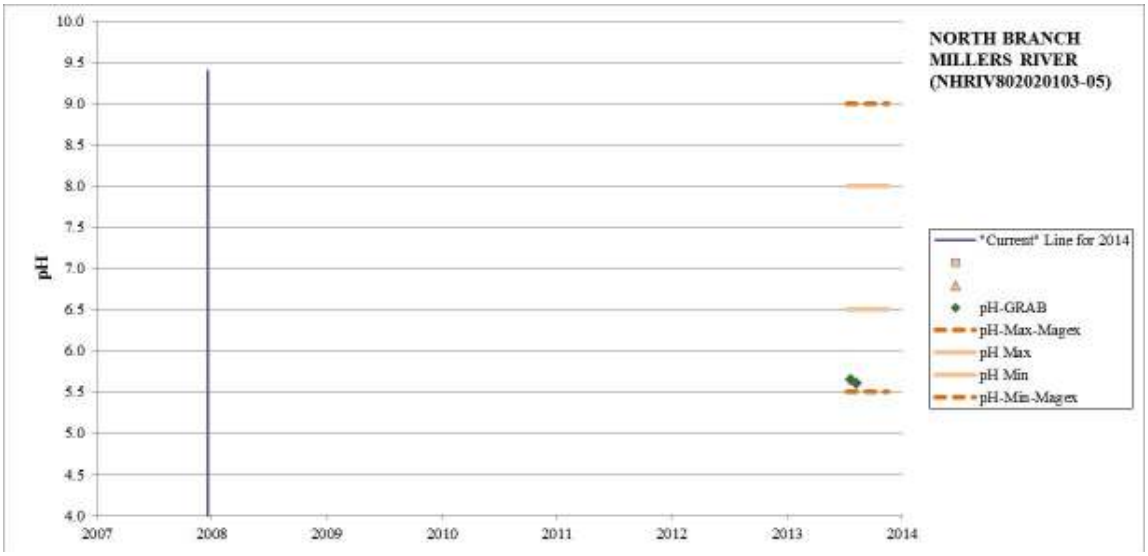
pH-24HR_MAX = pH maximum value from a datalogger deployment.

"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' unless. Available older data is provided for context. See the 2014 CALM for addition details.

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
North Branch Millers River	NHRIV802020103-05	Rindge	Aquatic Life	pH	3-ND	5-M

2014: Both of the samples collected at 03-MLN were ~ 5.6. The samples were collected in the summer when pH would normally be elevated. An additional sample was collected on 10/2/13 (5.9) but it was not included in the bulk assessment. Samples appear to be valid, no issues identified.



Notes:

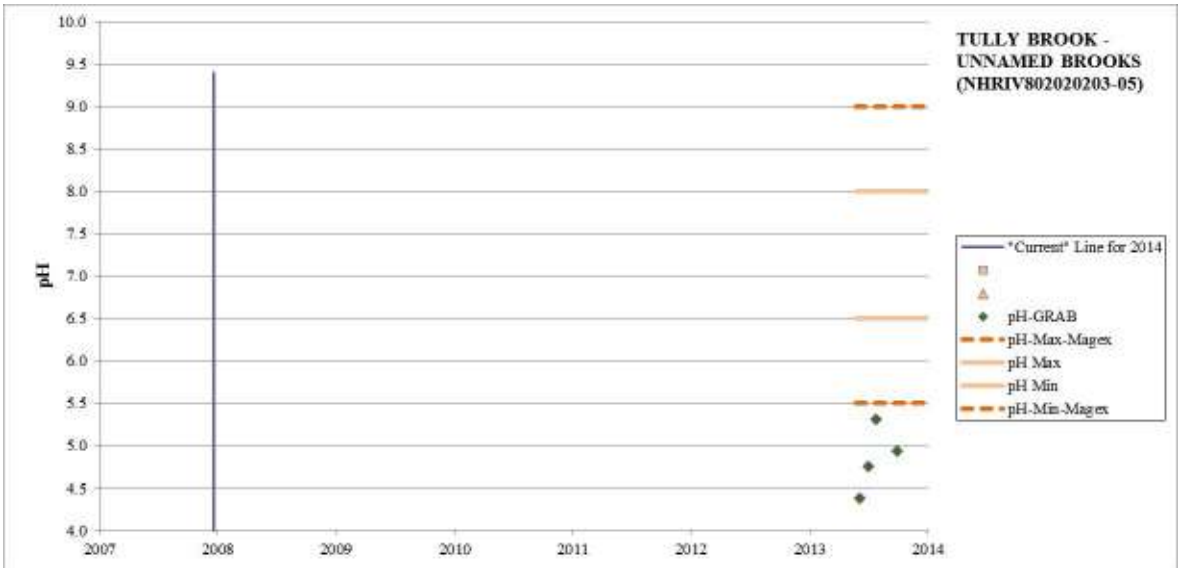
pH-GRAB = pH value from a grab sample.

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

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

Assessment Unit Name	Assessment Unit ID	Primary Town	Designated Use	Parameter Name	2012	2014
Tully Brook - Unnamed Brooks	NHRIV802020203-05	Richmond	Aquatic Life	pH	3-ND	5-P

2014: All 4 of the samples collected at 01-TYB were <5.5. The samples were collected in the summer/fall when pH would normally be elevated. Six additional sample was collected in 2014 but were was not included in the bulk assessment, pH values of these samples ranged from 4.6 to 5.05 Samples appear to be valid, no issues identified.



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 2014 – Per the methodology outlined in the CALM, all data from this referenced data is considered 'current' unless. Available older data is provided for context. See the 2014 CALM for addition details.