Howatt, Kathy

From: Drew Trested <dtrested@normandeau.com>
Sent: Friday, August 20, 2021 3:38 PM
To: Howatt, Kathy; Sferra, Christopher
Subject: Rumford Falls _ ISR Follow Up

Good afternoon Kathy –

Thank you to you and Chris for participating in the Rumford Falls ISR meeting yesterday. Looking forward to meeting you in the field next week to look at Middle Dam bypass reach transect locations so we can get moving on those field measurements.

I wanted to follow up with you on DEPs comments and questions during the ISR meeting and provide the additional information below for reference as related to your question on total phosphorus and the need for additional sample collection. We had intentionally not provided any specifics as to what the additional sampling effort will be because we had not yet finalized that with the Department and did not want to make any assumptions that may not agree with your vision for that effort. Because of that we simply referred to that additional effort as "undergoing additional consultation". I certainly did not mean to mislead or confuse folks during the meeting. See below for the full explanations that were provided in the ISR report itself which was filed with FERC.

Have a great weekend and will see you both next week.

Drew

- On page A-37 of the ISR we identify the following as a variance from the FERC-approved study plan:

  MDEP detection limit for total phosphorus is 0.001 mg/L. The laboratory used USEPA method 365.4 with a standard reporting limit of 0.1 mg/L. RFH has discussed this with MDEP and will continue to consult with the Department on this matter.

- In the August 19, 2021 ISR meeting presentation, we discussed and included a slide that specified the following:

  Variances from FERC-approved study plan
  - *Trophic Sampling*
    - *Laboratory detection limits (total phosphorus, nitrate, aluminum)*
      - *RFH is consulting with MDEP*

- p. 4-1 of ISR

TABLE 4-1
STUDY STATUS

Study	Status			Study Report in ISR
	Postponed	Ongoing	Completed	
Water Quality Study		X[1]		X
Angler Creel Survey		X[2]		
Recreation Study	X[1]			
Historic Architectural Survey			X[3]	
Aesthetic Flow Study		X		
Impoundment Bass Spawning Survey			X	X
Flow Study for Aquatic Habitat Evaluation		X		
Whitewater Boating Study		X		

[1] The majority of the Water Quality Study has been completed, although some limited additional data will be collected.

- p. A-4 of ISR

TABLE 1
BIMONTHLY TROPHIC STATE STUDY SAMPLING PARAMETERS, METHODS, AND DETECTION LIMITS

Parameter	Sampling Method	Detection Limit
Secchi disk transparency	Water scope	0.1 meter
Temperature	Profile	0.1 °C
DO	Profile	0.1 milligrams per liter (mg/L)
Total Phosphorus	Integrated core	0. 1 mg/L[1]
Chlorophyll *a*	Integrated core	0.001 mg/L
Color	Integrated core	1.0 Standard Platinum-cobalt Units (SPU)
pH	Integrated core	0.1 standard units (SU)
Total alkalinity	Integrated core	1.0 mg/L

[1] The laboratory detection limit for total phosphorus was 0.1 mg/L for the samples analyzed during this study. The laboratory detection limit specified for total phosphorus in the *DEP Sampling Protocol for Hydropower Studies* (MDEP 2019) is 0.001 mg/L.

- p. A-6 of ISR

TABLE 3
TROPHIC STATE STUDY ADDITIONAL LATE SUMMER SAMPLING PARAMETERS, METHODS, AND DETECTION LIMITS

Parameter	Sampling Method	Detection Limits
Total Phosphorus	Integrated core	0.1 mg/L[1]
Nitrate	Integrated core	0.05 mg/L[2]
Chlorophyll *a*	Integrated core	0.001 mg/L
Color	Integrated core	1.0 SPU
DOC	Integrated core	0.25 mg/L
pH	Integrated core	0.1 SU
Total alkalinity	Integrated core	1.0 mg/L
Total Iron	Integrated core	0.005 mg/L
Total and Dissolved Aluminum	Integrated core	0.300 mg/L[3]
Total Calcium	Integrated core	1.0 mg/L
Total Magnesium	Integrated core	0.1 mg/L
Total Sodium	Integrated core	0.05 mg/L
Total Potassium	Integrated core	0.05 mg/L
Total Silica	Integrated core	0.05 mg/L
Specific Conductance	Integrated core	1 mS/cm
Chloride	Integrated core	1.0 mg/L
Sulfate	Integrated core	0.5 mg/L

[1] The laboratory detection limit for total phosphorus was 0.1 mg/L for the samples analyzed during this study. The laboratory detection limit specified for total phosphorus in the *DEP Sampling Protocol for Hydropower Studies* (MDEP 2019) is 0.001 mg/L.

[2] The laboratory detection limit for nitrate was 0.05 mg/L for the samples analyzed during this study. The laboratory detection limit specified for nitrate in the *DEP Sampling Protocol for Hydropower Studies* (MDEP 2019) is 0.01 mg/L.

[3] The laboratory detection limit for total and dissolved aluminum was 0.300 mg/L for the samples analyzed during this study. The laboratory detection limit specified for total and dissolved aluminum in the *DEP Sampling Protocol for Hydropower Studies* (MDEP 2019) is 0.010 mg/L.

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5.2.2.5 Total Phosphorus

Phosphorus is typically the primary limiting nutrient in freshwater systems, and excess amounts of phosphorus can lead to water quality degradation and eutrophication (Carpenter 2005). Total phosphorus concentrations tend to be very low in freshwater lakes in Maine and concentrations greater than 0.020 mg/L are considered to be eutrophic (MDEP 2016). Total phosphorus was not detected above the laboratory detection limit of 0.100 mg/L in any of the samples analyzed. We note the laboratory reporting limit of 0.100 mg/L exceeds MDEP thresholds for assigning trophic classes (MDEP 2016); however, other parameters collected in the trophic state study assist with determining an estimated trophic class as discussed below.

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5.2.3 Trophic State

Lake trophic status is determined by evaluating a number of indicators, including chlorophyll *a*, Secchi disk transparency, and total phosphorus (MDEP 2016). Total phosphorus laboratory results were all below the reporting limit (0.100 mg/L), as well as the method detection limit (0.046 mg/L), used by the laboratory and were just above the reporting guidelines for determining the trophic state of the impoundments (i.e., total phosphorus threshold of 0.020 mg/L for eutrophic waters and 0.0045 mg/L for mesotrophic waters). However, the chlorophyll *a* and SDT data were sufficient

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7.0 Variances from FERC-Approved Study Plan

There were no variances from the FERC-approved RSP for the Benthic Macroinvertebrate Study or the Outlet Stream Aquatic Habitat Study components of the Water Quality Study. With regards to the Impoundment Trophic State Study and Temperature and DO monitoring Study, there were the following variances:

1) In October 2020, trophic sampling was conducted once, not twice, in the Middle Dam impoundment due to sampling constraints. RFH coordinated with MDEP regarding this sampling event and in a November 2, 2020 email, MDEP indicated the data collected was sufficiently representative of the conditions and no additional sampling was conducted. RFH summarized this modification to methodology in the first and second quarterly study progress reports filed with the Commission on October 30, 2020 and January 29, 2021, respectively.

2) MDEP's *DEP Sampling Protocol for Hydropower Studies* (MDEP 2019) provides minimum reporting or laboratory detection limits for the suite of water quality parameters considered as part of the trophic state study. The following parameters did not meet the desired MDEP laboratory detection or reporting limit:

   a. Total phosphorus: MDEP detection limit for total phosphorus is 0.001 mg/L. The laboratory used USEPA method 365.4 with a standard reporting limit of 0.1 mg/L. RFH has discussed this with MDEP and will continue to consult with the Department on this matter.

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