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**Subject:** FW: External: RE: Rumford WQ sampling - site visit notes

**From:** Howatt, Kathy [mailto:Kathy.Howatt@maine.gov]  
**Sent:** Monday, July 27, 2020 9:24 AM  
**To:** Drew Trested <dtrested@normandeau.com>  
**Subject:** RE: External: RE: Rumford WQ sampling - site visit notes

We have discussed this point internally and have not identified an alternate site. Please proceed with the location below middle dam for the BMI samples, and plan to use the DEP site data as well. Thanks Drew.

Kathy Davis Howatt  
Hydropower Coordinator, Bureau of Land Resources  
Maine Department of Environmental Protection  
Phone: 207-446-2642  
[www.maine.gov/dep](http://www.maine.gov/dep)

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**From:** Drew Trested <[dtrested@normandeau.com](mailto:dtrested@normandeau.com)>  
**Sent:** Friday, July 24, 2020 9:16 AM  
**To:** Howatt, Kathy <[Kathy.Howatt@maine.gov](mailto:Kathy.Howatt@maine.gov)>  
**Cc:** DiFranco, Jeanne L <[Jeanne.L.DiFranco@maine.gov](mailto:Jeanne.L.DiFranco@maine.gov)>; Mohlar, Robert C <[Robert.C.Mohlar@maine.gov](mailto:Robert.C.Mohlar@maine.gov)>; Bacon, Linda C <[Linda.C.Bacon@maine.gov](mailto:Linda.C.Bacon@maine.gov)>; Mower, Barry F <[Barry.F.Mower@maine.gov](mailto:Barry.F.Mower@maine.gov)>; Anderson, Luke (<[Luke.Anderson@brookfieldrenewable.com](mailto:Luke.Anderson@brookfieldrenewable.com)> <[Luke.Anderson@brookfieldrenewable.com](mailto:Luke.Anderson@brookfieldrenewable.com)>; Cousens, Dawn (<[Dawn.Cousens@hdrinc.com](mailto:Dawn.Cousens@hdrinc.com)> <[Dawn.Cousens@hdrinc.com](mailto:Dawn.Cousens@hdrinc.com)>  
**Subject:** RE: External: RE: Rumford WQ sampling - site visit notes

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Good morning Kathy –

I just wanted to update you on our progress at Rumford. We have installed the temp/DO loggers at the two locations we discussed during the site visit. We are planning to install our rock basket samplers downstream of the Middle Dam on Thursday of next week. Before we do that I wanted to follow up on your July 7 response to the site visit summary related to the downstream macroinvertebrate samplers. You had indicated you wanted to think a bit more on the available data (i.e., DEP site 2.6 miles downstream) and the lack of an apparent sampling spot within the boundary downstream of the tailrace/bypass reach confluence that is not influenced by the paper mill. Do you have any additional thoughts at this time? As of now we are planning to install samplers at our identified location downstream of Middle Dam.

Thanks,  
Drew

Drew Trested, PhD  
Senior Principal Scientist, Fisheries Biologist  
Normandeau Associates, Inc.  
30 International Drive, Portsmouth, NH 03801



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**From:** Howatt, Kathy [<mailto:Kathy.Howatt@maine.gov>]  
**Sent:** Tuesday, July 7, 2020 12:09 PM  
**To:** Drew Trested <[dtrested@normandeau.com](mailto:dtrested@normandeau.com)>  
**Cc:** DiFranco, Jeanne L <[Jeanne.L.DiFranco@maine.gov](mailto:Jeanne.L.DiFranco@maine.gov)>; Mohlar, Robert C <[Robert.C.Mohlar@maine.gov](mailto:Robert.C.Mohlar@maine.gov)>; Bacon, Linda C <[Linda.C.Bacon@maine.gov](mailto:Linda.C.Bacon@maine.gov)>; Mower, Barry F <[Barry.F.Mower@maine.gov](mailto:Barry.F.Mower@maine.gov)>  
**Subject:** External: RE: Rumford WQ sampling - site visit notes

Drew,  
Thank you for preparing the site visit notes and summary. Our DEA team and I have reviewed the proposed sampling locations, as discussed on site on June 24, 2020. Every agrees to these sampling location, although I remain reluctant about the downstream BMI. It turns out it's 2.6 miles downstream, which is pretty far. There's just no good spot within the project boundary. Since the rock baskets don't go in quite yet perhaps we can still think on that for a bit. The DO and aquatic habitat -bypass reach locations are good and the BMI below the middle dam pool is also good. Keep the DO samplers at least 15-20 feet from the middle dam discharge pipes. Thanks,  
Kathy

Kathy Davis Howatt  
Hydropower Coordinator, Bureau of Land Resources  
Maine Department of Environmental Protection  
Phone: 207-446-2642  
[www.maine.gov/dep](http://www.maine.gov/dep)

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**From:** Drew Trested <[dtrested@normandeau.com](mailto:dtrested@normandeau.com)>  
**Sent:** Tuesday, July 07, 2020 7:32 AM  
**To:** Howatt, Kathy <[Kathy.Howatt@maine.gov](mailto:Kathy.Howatt@maine.gov)>  
**Cc:** Anderson, Luke ([Luke.Anderson@brookfieldrenewable.com](mailto:Luke.Anderson@brookfieldrenewable.com)) <[Luke.Anderson@brookfieldrenewable.com](mailto:Luke.Anderson@brookfieldrenewable.com)>; Cousens, Dawn ([Dawn.Cousens@hdrinc.com](mailto:Dawn.Cousens@hdrinc.com)) <[Dawn.Cousens@hdrinc.com](mailto:Dawn.Cousens@hdrinc.com)>  
**Subject:** Rumford WQ sampling - site visit notes

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Good morning Kathy –

Please see the attached summary of our June 24 site visit at Rumford falls. Also attached is a supplement to that summary containing photos under minimum flow conditions of the two Middle Dam bypass locations we were considering for temp/DO monitoring and macroinvert samples. Based on our observations of the minimum flow conditions we are leaning towards installing samplers at the upstream location we looked at immediately downstream of the dam structure. You had indicated on June 24 that was your preferred location.

Our next scheduled trophic sampling date is Thursday July 9. I would like to get our temp/DO loggers in place on that date. Prior to doing so I was looking to get confirmation from you that you are comfortable that installation just below Middle Dam will provide you with representative data. If you can confirm that for me today that would be great.

My plan is to install our rock baskets/bags on our next trophic sampling date (July 23).

Thanks,  
Drew

Drew Trested, PhD  
*Senior Principal Scientist, Fisheries Biologist*  
**Normandeau Associates, Inc.**  
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**From:** Drew Trested <dtrested@normandeau.com>  
**Sent:** Tuesday, July 7, 2020 7:32 AM  
**To:** Kathy Howatt (Kathy.howatt@maine.gov) (Kathy.howatt@maine.gov)  
**Cc:** Anderson, Luke (Luke.Anderson@brookfieldrenewable.com); Cousens, Dawn  
**Subject:** Rumford WQ sampling - site visit notes  
**Attachments:** Summary notes for the June 24 Site Visit.pdf; Supplement to June 24 Site Visit.pdf

**CAUTION: [EXTERNAL]** This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good morning Kathy –

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## Summary notes for the June 24, 2020 – Rumford Falls Project MDEP Site Visit

### Attendees:

- Luke Anderson (Brookfield)
- Mike Billings (Brookfield)
- Kathy Howatt (Maine DEP)
- Rob Mohlar (Maine DEP)
- Chris Sferra (Maine DEP)
- Drew Trested (Normandeau)

**Purpose:** Visual evaluation of the bypassed reach downstream of the Middle Dam and the lower powerhouse tailrace area to determine sampling locations for three components of the proposed water quality study (temperature and dissolved oxygen monitoring, benthic macroinvertebrates, and outlet stream aquatic habitat study).

### Temperature and Dissolved Oxygen Sampling:

Maine DEP originally requested two loggers – *...in the bypass reach below middle dam, and in the free flowing tailwater reach downstream of the confluence of the bypassed reach and the lower powerhouse discharge.*

- Logger downstream of Middle Dam – preferred location
  - See Figures 1 and 2.
  - Logger should be placed in location downstream of bypass pipes and dam spouts so that unit remains submerged for duration of monitoring period.
  - Normandeau to collect photos of this area during June 29 trophic sampling to provide to MDEP for confirmation that appropriate wetted habitat is available at this location when no spill flows are present over Middle Dam.
- Logger downstream of Middle Dam – secondary location
  - See Figures 2 and 3.
  - In the event it is determined that sufficient wetted area and water depths at the preferred location are not available then logger will be installed in pool habitat located just upstream of the bedrock cascade portion of bypassed reach.
- Tailrace Logger
  - Based on visual observation of the integrated nature of the ND Paper mill discharge and unit discharge from the lower powerhouse (Figure 4) it was agreed that it would not be informative to place a temperature/DO logger in that area. There is not a suitable location outside of the influence of the paper mill discharge.
  - Maine DEP indicated that the placement of a temperature/DO logger at the downstream end of the power canal (adjacent to the lower powerhouse intake) would be representative of water quality following discharge out of the lower powerhouse (Figures 5 and 6).

### **Benthic Macroinvertebrate Sampling:**

Maine DEP originally requested two benthic macroinvertebrate sample locations - *...in the bypass reach below middle dam, and in the free flowing tailwater reach downstream of the confluence of the bypass reach and lower powerhouse discharge.*

- Sample location downstream of Middle Dam
  - Likely will install mesh bags rather than rock baskets due to the likely shallow water depths in this location.
  - Normandeau to select specific location with appropriate substrate and adequate water depth for deployment period in the vicinity of the temperature/DO logger (Figures 1 and 2).
  - In the event it is determined that sufficient wetted area and water depths at the preferred location are not available then invertebrate samplers will be installed in pool habitat located just upstream of the bedrock cascade portion of bypassed reach.
- Sample location downstream of bypass and powerhouse confluence
  - Based on their visual assessment, MDEP concluded that collection of a macroinvertebrate sample from the area downstream of the bypassed reach and powerhouse confluence would be influenced by effluent from the ND Paper mill.
  - Maine DEP has a macroinvertebrate index site located in the Androscoggin River approximately one mile downstream of the Project.
  - Maine DEP will provide coordinates for that sample location as well as the water quality standards attainment report for the most recent sampling event.
  - Maine DEP will consider their most recent sampling at their downstream index site as representative and are reducing their original request for macroinvertebrate sampling to the single location in the Middle Dam bypass reach.

### **Outlet Stream Aquatic Habitat Study:**

Maine DEP originally requested assessment of aquatic habitat *...in the bypass reach below middle dam to demonstrate that minimum flows to the bypass reach are adequate to provide habitat for fish and other aquatic species.*

- Maine DEP typically requests a minimum of three cross sections be evaluated for aquatic habitat within a bypass reach habitat. However, following review of the available habitat types in the bypassed reach Maine DEP indicated that placement of two cross sections was sufficient to quantify adequacy of bypass flows.
  - Cross section 1 – to be placed towards center of the “pool” habitat immediately downstream of Middle Dam and upstream of the bedrock/cascade area (Figures 7 and 8).
  - Cross section 2 – to be placed through the cobble/boulder section of habitat located downstream of the bedrock/cascade area and upstream of the backwater effect of the lower powerhouse tailrace (Figures 8 and 9).
- “Bankfull” conditions will be visually determined through identification of staining marks on vertical rock faces as well as the transition from aquatic to terrestrial vegetation.
- Due to the inability to adequately identify bankfull conditions within the bedrock/cascade section of the bypassed reach, a cross section in that area was not considered.





Figure 1. Preferred deployment location downstream of Middle Dam for the temperature/DO logger and macroinvertebrate samplers.

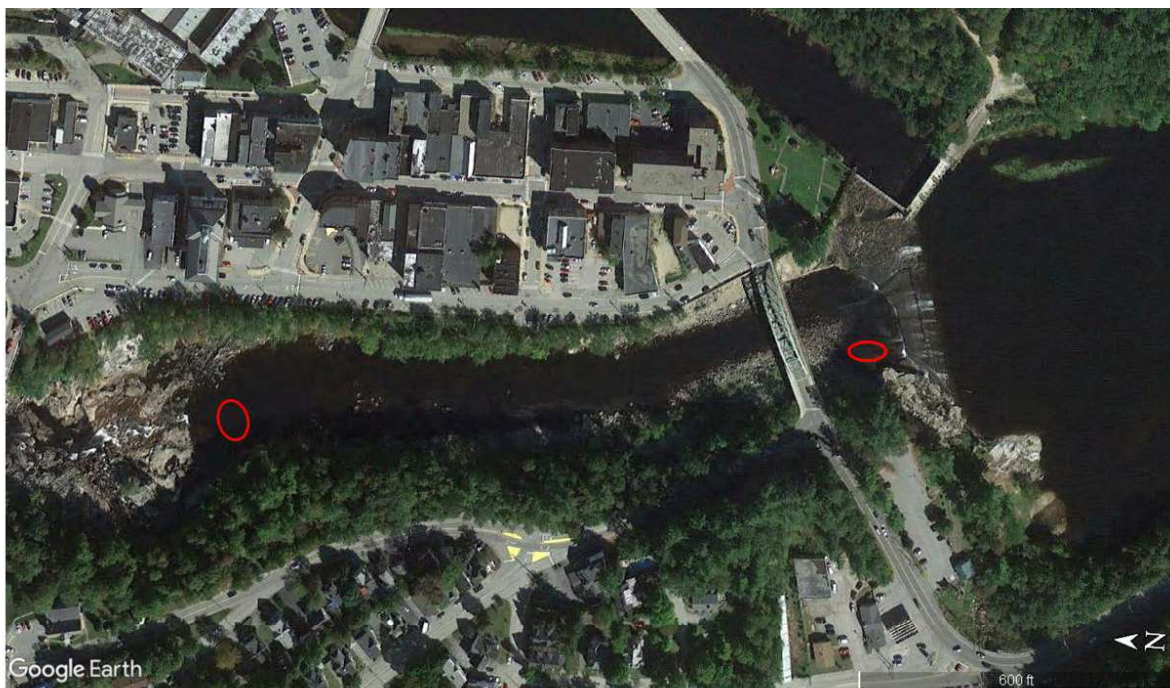


Figure 2. Preferred and alternate deployment location downstream of Middle Dam for the temperature/DO logger and macroinvertebrate samplers.





Figure 3. Alternate deployment location downstream of Middle Dam for the temperature/DO logger and macroinvertebrate samplers.

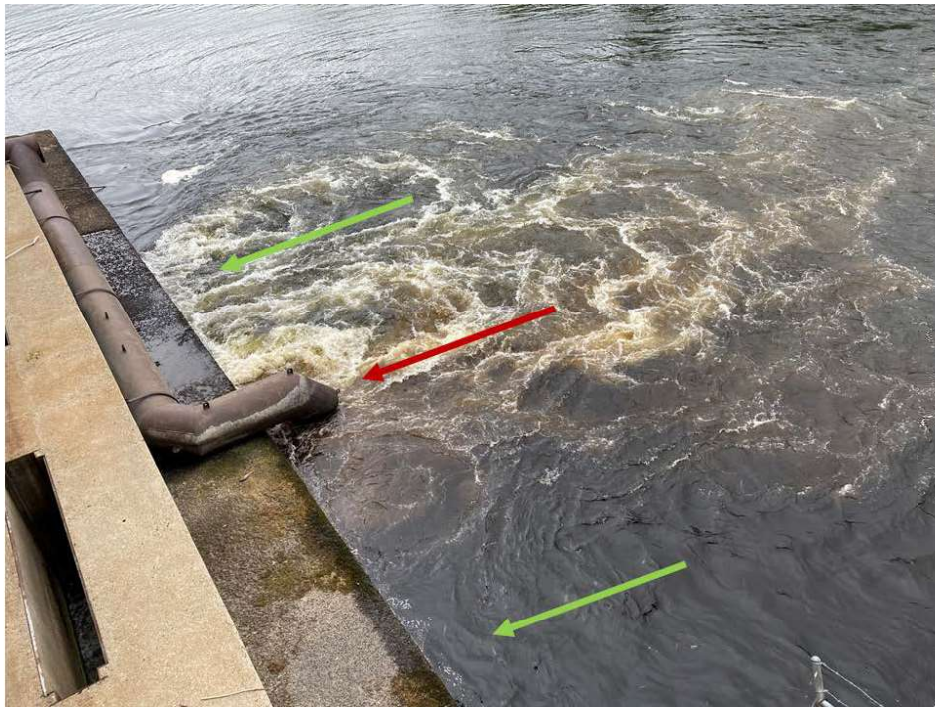


Figure 4. Lower powerhouse turbine unit (green arrows) and ND Paper mill (red arrow) discharge.





Figure 5. Power canal deployment location for the temperature/DO logger to be considered representative of conditions downstream of the confluence of the bypassed reach and lower powerhouse discharge.

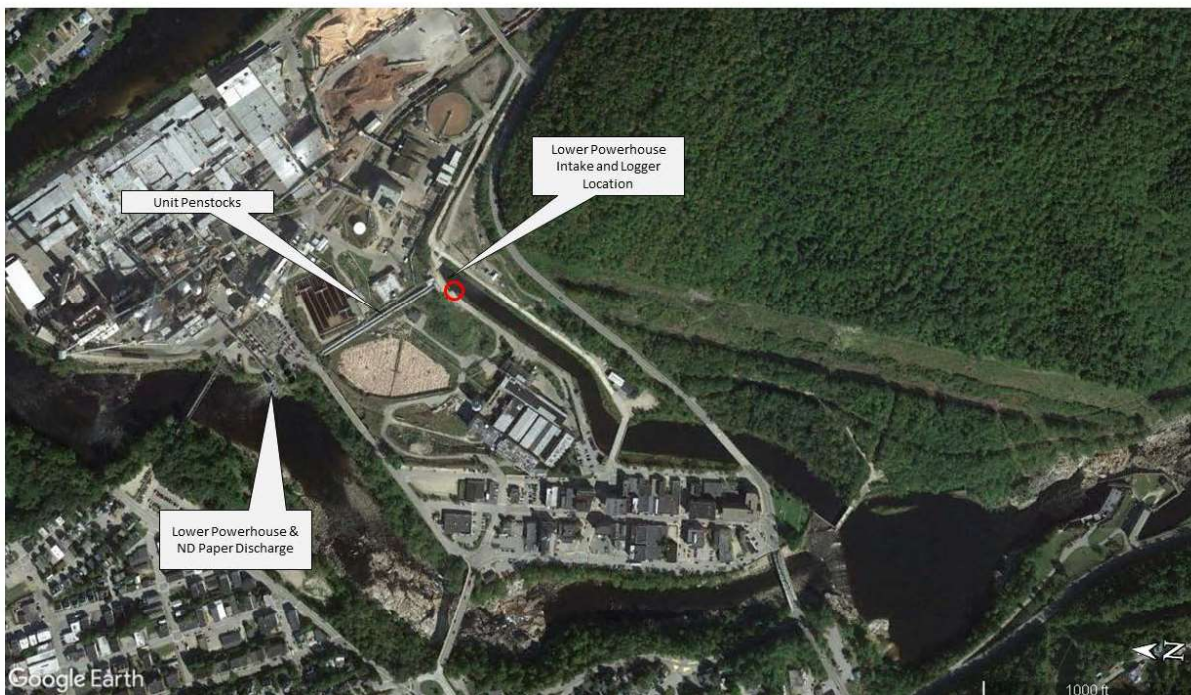


Figure 6. Relative position of the power canal deployment location for the temperature/DO logger to be considered representative of conditions downstream of the confluence of the bypassed reach and lower powerhouse discharge.





Figure 7. Approximate location of the upper cross section for evaluation of aquatic habitat within the bypassed reach.



Figure 8. Approximate locations of the upper and lower cross sections for evaluation of aquatic habitat within the bypassed reach.



Figure 9. Approximate location of the lower cross section for evaluation of aquatic habitat within the bypassed reach.



### **Supplement #1: Summary notes for the June 24, 2020 – Rumford Falls Project MDEP Site Visit**

During the June 24 site visit, spill was present at Middle Dam and as a result flow conditions through the Middle Dam bypass reach were in excess of minimum flow conditions normal for the summer period. Per the request of Maine DEP, Normandeau biologists revisited the preferred and secondary locations for deployment of a temperature/dissolved oxygen logger and benthic macroinvertebrate samplers on June 29 when the Middle Dam impoundment was drawn down two feet for trophic impoundment sampling. Conditions in the Middle Dam bypass reach on that date were representative of minimum flow.

Figures 1 and 2 present conditions in the Middle Dam bypass reach at the preferred deployment location downstream of the bypass pipe and dam spouts. Based on the photographed conditions, water depths in the preferred deployment area are sufficient for continuous submergence of the continuous monitor for a two month deployment and macroinvertebrate samplers for a  $28 \pm 4$  day deployment. Substrate in the preferred deployment location appears to be a mixture of bedrock, large and small boulder and cobble.



Figure 1. Preferred Middle Dam bypass reach logger deployment location under minimum flow conditions.





Figure 2. Preferred Middle Dam bypass reach logger deployment location under minimum flow conditions.

Figures 3 and 4 present conditions in the Middle Dam bypass reach at the secondary deployment location in pool habitat located just upstream of the bedrock cascade portion of bypassed reach. Based on the photographed conditions, water depths in the secondary deployment area are also sufficient for continuous submergence of the continuous monitor for a two month deployment and macroinvertebrate samplers for a  $28 \pm 4$  day deployment. Substrate in the secondary deployment location appears to be a mixture of large and small boulder and cobble.



Figure 3. Secondary Middle Dam bypass reach logger deployment location under minimum flow conditions.



Figure 4. Secondary Middle Dam bypass reach logger deployment location under minimum flow conditions.