

Attachment 13
New Hampshire Fish Hatchery Nutrient Stressor-Response Monitoring

The permittee shall conduct ambient monitoring to determine potential responses by the biological community to nutrient stressors from the fish hatchery. Response indicators to be monitored should be attached algae and benthic macroinvertebrates, unless it is determined that attached algae and benthic macroinvertebrates are not suitable response indicators for the site. For attached algae monitoring, NHDES is recommending photographic documentation and visual quantitation of in-situ abundance. In general, macroinvertebrate sampling consists of the deployment of three replicate artificial substrate devices (e.g. rock baskets) for a period of 6-weeks at each sample location.

Prior to sampling, an ambient nutrient stressor-response monitoring plan (Plan) shall be submitted to NHDES – Watershed Management Bureau for approval and shall include methods and procedures for monitoring selected response indicators including sampling locations, a schedule for implementation of monitoring and reporting efforts outlined in the Plan, and sampling and laboratory analysis protocols and quality control provisions.

Monitoring and reporting shall occur no less frequently than twice per year for attached algae and once per year for benthic macroinvertebrates. Monitoring shall be conducted in the summer season following six months after the effective date of the permit. See table below for specific monitoring requirements.

Unless otherwise allowed by NHDES, the Plan shall include the following:

Parameter	Frequency, Timing of Data Collection, and Sample Locations
Attached algae	<ul style="list-style-type: none"> • Monitoring shall occur annually between May-October • Sampling shall occur on two separate dates, at least four weeks apart • Monitoring shall be done at one upstream sample location and one downstream sample location • In-situ algal surveys shall be conducted after a period of 7 to 10 days without rain (defined as <1/4” in last 24 hours and <1” in last 7-10 days)
Benthic Macroinvertebrates	<ul style="list-style-type: none"> • Artificial substrate devices shall be deployed between July 15th to 31st, and collected between September 15th to 30th • Monitoring shall be done at one downstream sample location • Three replicate artificial substrate devices shall be deployed for six weeks at each sample location

The attached algae sampling plan shall be similar to that for the Maine Department of Environmental Protection:

https://www.maine.gov/dep/water/monitoring/biomonitoring/materials/sop_algae_methods.pdf

Benthic macroinvertebrate sampling shall be done in accordance with NHDES protocols:

<https://www.des.nh.gov/organization/divisions/water/wmb/biomonitoring/documents/20131118-macroinverts-col-sop.pdf>

For each sampling station, the following shall be provided:

- Site map with longitudinal and latitudinal coordinates
- Site description including weather, vegetation, flow conditions, and any other site conditions that would potentially impact water quality
- Photographs of the monitoring location on each day of sampling

The Plan shall also specify that all data shall be submitted to NHDES electronically and in a form that can be automatically uploaded into the NHDES Environmental Monitoring Database (EMD). Information on uploading data to the EMD can be found at

<http://des.nh.gov/organization/divisions/water/wmb/emd/index.htm> or by contacting Melanie Titus at (603) 271-1152 or Melanie.Titus@des.nh.gov.