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# New Hampshire Natural Heritage Bureau

Division of Forests & Lands - DNCR  
172 Pembroke Road, Concord, NH 03301  
(603) 271-2214 <https://www.nh.gov/nhdfl/>

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November 16, 2020

Peter J. Walker  
VHB  
2 Bedford Farms Drive, Suite 200  
Bedford, NH 03110  
[pwalker@vhb.com](mailto:pwalker@vhb.com)

## **RE: Oyster River Dam at Mill Pond, Durham: Draft Feasibility Study Comments**

Dear Mr. Walker:

Thank you for providing NHB the opportunity to review and comment on the draft feasibility study for the Oyster River Dam at Mill Pond (NHDES Dam #071.03).

The NH Natural Heritage Bureau (NHB), under the Rare Plant Protection Act of 1987 (RSA 217-A), works to study, protect, and provide information on native plant species and natural communities in New Hampshire. NHB develops the list of State Threatened and Endangered plants in New Hampshire, and maintains a comprehensive statewide database of known occurrences of these species, as well as exemplary natural communities and natural community systems. In cooperation with the NH Fish & Game Department's Nongame and Endangered Wildlife Program, NHB also maintains the statewide database of threatened, endangered and special concern wildlife species. NHB databases are used for environmental review of projects permitted by State, Federal, and municipal organizations; NHB provides "DataChecks" with rare species and exemplary natural community information for this purpose.

NHB provided a DataCheck for the Oyster River Dam feasibility study, with information about known populations of State Listed plant species, Special Concern and State & Federally Listed wildlife species, and exemplary natural communities and systems that could be impacted by the various scenarios explored under the study (NHB20-2530). The DataCheck scope included the area of interest provided by VHB, consisting of Mill Pond and its impoundment, and surrounding areas. The DataCheck included one exemplary natural community, six (6) State Threatened or Endangered plant species, and six (6) tracked wildlife species. (Note: this memo will not address wildlife species, as wildlife is under the jurisdiction of the NH Fish & Game Department.)

The following four State Listed aquatic and wetland plant species have historically been documented within the impoundment of Mill Pond. Surveys have not been conducted since 1998, according to NHB database information; the current status of these populations is unknown. These species have the potential to be impacted by both dredging and significant changes in water level, as well as changes in salinity. They also have the potential to occur elsewhere in the study area.

**Beck's water-marigold** (*Bidens beckii*), T – while NHB database mapping only shows this plant as occurring at one location within Mill Pond, data for the occurrence indicate it is also present upstream. This species was documented in very shallow water, but it generally occurs in aquatic bed habitat. Portions of the population have been previously impacted by dredging activities. Last observed in 1995.

**great bur-reed** (*Sparganium eurycarpum*), T – this species can occur in a variety of wetland habitats, including emergent marshes, beaver-influenced wetlands, pondshores, wet meadows, ponds, rivershores,



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forested swamps, shrub swamps, and brackish tidal marshes. This species occurs in the most varied habitats and may be the most likely to persist following a dam removal scenario. Last observed in 1995.

**ivy-leaved duckweed** (*Lemna trisulca*), E - This is a floating aquatic bed species that is unlikely to persist under a dam removal scenario. Last observed in 1998.

**lake quillwort** (*Isoetes lacustris*), E – This species occurs in lakes and slow-moving rivers, sometimes submerged but sometimes emergent in shallower waters. NHB records indicate that the placement of “Aquascreen panels” may have extirpated the population in the past. Last observed in 1978.

Two additional species have been observed in the vicinity, and could be present in areas of appropriate habitat:

**marsh horsetail** (*Equisetum palustre*), E – While documented along a nearby roadside, this species typically also occurs along rivershores and in/along edges of various wetland types.

**arctic bur-reed** (*Sparganium natans*), T – This species inhabits slow-moving rivers, ponds, fens, and other aquatic bed habitats.

Downstream of the dam, within the tidal portion of the Oyster River, is a mapped exemplary natural community. The **sparsely vegetated intertidal system** could be impacted by sediment release associated with dam removal, or dredging, to a lesser extent.

**NHB recommends that surveys for all of the rare plant species listed above occur throughout the study area.** Surveys throughout impact areas and the greater study area are crucial to assess the current status of the populations, and the potential impacts of drawdowns or dredging on plant communities. Additionally, establishing a complete picture of the vegetation communities throughout the study area will provide further information for possible restoration and mitigation activities. For example, surveys could identify appropriate transplant sites for impacted plants or previously undocumented rare species populations.

Recommended survey time frames:

Beck's water-marigold – when in flower: early August to early September

great bur-reed – when in flower (early July) or with mature achenes (mid-July to mid-September)

ivy-leaved duckweed - July to August

lake quillwort – mature megaspores required for identification: July to September

marsh horsetail – when in fruit June to July

arctic bur-reed – when flowering (beginning in mid-July) through fruiting (mid-September)

As discussed in the study, dam removal (Alternative 5) would reduce the amount of aquatic bed habitat as well as impact the hydrology of existing emergent wetlands, but convert several acres of existing aquatic bed to new emergent wetlands. A total of 10.8 acres would be affected, according to the study, resulting in additional habitat for some rare plant species while also resulting in a reduction of habitat for others. Some species may be able to persist under the change in conditions, while others would likely be unlikely to persist due to an intolerance for hydrological changes and salinity increases. Modeled sea level rise may eventually mitigate some of the anticipated drawdown conditions, but increases and salinity and the timescale of such sea level increases may not result in an overall benefit to rare plant species.

Under the restoration dredge scenario (Option 1), 2.4 acres of freshwater emergent and aquatic bed wetlands would be directly impacted, potentially impacting rare plant populations. While there may be a greater acreage of hydrologically-impacted wetlands under the dam removal scenario, NHB concurs that the overall



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effect of restoring several hundred to thousands of feet of tidal connection with the Oyster River takes precedence over the maintenance of an artificial impoundment, even if the work results in impacts to the rare plant species documented in Mill Pond.

Please provide survey results to NHB as soon as surveys are complete. Depending on survey results, NHB will work with the consultant and/or the Town of Durham to develop mitigation options. Potential mitigation scenarios depend on the life history of the species, the range of conditions they tolerate, and the size and location(s) of any populations found, but may include seed collection, seed redistribution to appropriate habitat, transplanting, and monitoring of documented rare plant populations.

Should you have any questions or need additional information, please contact NHB.

Lastly, NHB requests that detailed rare plant species information (e.g., maps, detailed directions to populations) be redacted from publicly available documents.

Thank you for the opportunity to review and comment.

Sincerely,

Amy Lamb, Ecological Information Specialist, Natural Heritage Bureau

cc: Sabrina Stanwood, Administrator, Natural Heritage Bureau  
NH Department of Natural and Cultural Resources [Sabrina.stanwood@dncr.nh.gov](mailto:Sabrina.stanwood@dncr.nh.gov)

Phenology and habitat information sources:

Seymour, Frank C. 1982. The Flora of New England: A Manual for the Identification of All Vascular Plants Including Ferns and Fern Allies Growing Without Cultivation in New England. Harold N. Moldenke and Alma L. Moldenke, NJ.

Go Botany. 2020. <https://gobotany.nativeplanttrust.org> Native Plant Trust, MA.

NORM Phenology Information. 2020. Unpublished document. Native Plant Trust, MA.

NHB Database. 2020. Natural Heritage Bureau, NH.