



To: Cheryl Bondi
NHDES Wetlands Bureau

Date: May 7, 2020

Memorandum

Project #: 52151.04

From: Peter J. Walker, Principal Environmental Scientist
Dave Cloutier, P.E., Senior Water Resources Engineer

Re: Great Dam Removal, Exeter, NH
ARM Fund Monitoring

This memo responds to your January 28, 2020 email regarding post-construction monitoring requirements for the Great Dam Removal Project (the Project) in Exeter, New Hampshire. Below, we provide additional information that we hope demonstrates success of the planting plan as requested.

Background

Removal of the Great Dam was completed in October 2016. At present time, long-term monitoring in accordance with Condition 34 of the New Hampshire Department of Environmental Services (NHDES) Dam Removal Permit has been completed. The eight success standards agreed upon by NHDES have been met in each of the three consecutive years (2017, 2018, and 2019) following dam removal.

The ARM Fund Grant Condition No. 4 requires annual monitoring of the Project property beyond the three-year period stipulated in the NHDES Wetlands Permit, for a period of five years post-construction. Therefore, the ARM Fund Grant would require additional annual inspections and reporting for 2020 and 2021.

It is VHB's understanding that the requirement to conduct monitoring for years 2020 and 2021 can be waived contingent upon the submittal of a report with additional documentation demonstrating that the Project has met success standards. The following information has been requested to demonstrate the Project has met the applicable success standards:

- A map showing the extent of coverage and location of plantings in the dam removal area;
- A list of what species of plant and density were planted in this area;
- Methods to describe how 75% vegetation survival was assessed; and
- Photo documentation of the planting area to show species and coverage.

Map Showing Extent and Coverage of Plantings in the Dam Removal Area

Attachment 1 provides an excerpt from the final approved plans for the Great Dam Removal and Exeter River Restoration Project and shows the coverage of plantings in the dam removal area. The approved planting plan was limited to re-establishing the grass lawn within the adjacent Founders Park, with areas of riparian seeding along the disturbed riverbanks to assist with stabilization and prevent the establishment of non-native species. Additionally, the planting plan called for the replacement of any ornamental trees removed from the park by the contractor. VHB's field observations and surveys indicate that planting was conducted in accordance with the approved plan.



List of What Species of Plant and Density were Planted in the Dam Removal Area

Plantings in the dam removal area consisted of riparian seed mix and upland seed mix. The upland seed mix was intended to re-establish lawn turf in the adjacent public park, whereas the riparian seed mix was specified to re-establish plant species native to the seacoast region of New Hampshire along the banks of the restored river. Jute erosion control netting was placed in riparian plating areas to help stabilize the soil surface and encourage revegetation. Additionally, a replacement ornamental tree was planted within Founders Park as detailed in **Attachment 1**. The original design plans also called for replacement of a nearby elm tree anticipated to be damaged during construction, but the project contractor successfully protected the existing tree in place and no replacement was required.

Density and growth of plant species can be observed in the photolog provided as **Attachment 2**. The components of the seed mixtures and planting densities within the Project Area are summarized below:

Upland Seed Mix – 120 lbs per acre

Botanical Name	Common Name	Minimum Purity (%)	Minimum Germination (%)
<i>Agrostis stolonifera</i>	Red Top	95	80
<i>Festuca rubra</i>	Creeping Red Fescue	96	85
<i>Lolium perenne</i>	Perennial Ryegrass	98	90
<i>Poa pratensis</i>	Kentucky Bluegrass	97	85

Riparian Seed Mix – 25 lbs per acre

Botanical Name	Common Name	Minimum Purity (%)	Minimum Germination (%)
<i>Acer rubrum</i>	Red maple	95	80
<i>Aster novae-angliae</i>	New England Aster	90	80
<i>Betula populifolia</i>	Gray birch	95	80
<i>Bidens frondosa</i>	Beggar-ticks	90	80
<i>Carex vulpinodes</i>	Fox sedge	90	80
<i>Carex crinita</i>	Fringed sedge	90	80
<i>Cornus ammomum</i>	Silky dogwood	90	80
<i>Ilex verticillata</i>	Winterberry	90	80
<i>Juncus effusus</i>	Soft rush	90	80
<i>Panicum virgatum</i>	Switch grass	90	80
<i>Scirpus cyperinus</i>	Wool grass	90	80
<i>Scirpus validus</i>	Soft Stem Bulrush	90	80

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Methods to Describe how 75% Vegetation Survival was Assessed

In 2017, 2018, and 2019, a VHB professional engineer licensed to practice in the state of New Hampshire conducted a site visit to review plantings within the Project Area. VHB personnel have noted in each of the three years that the restored temporary impact areas have exceeded 75% vegetative cover, with no invasive species noted. These evaluations were based on visual inspection of the planted areas during each reporting year.

Photo Documentation of the Planting Area to Show Species and Coverage

Attachment 2 is a photographic log depicting the planting area showing species types and coverage of plantings.

Attachment 2 - Photo Documentation of Established Vegetation

Riparian Plantings – Left (southwest) bank

Photo #1:



Immediately following construction, taken 9/16/2016

Photo #2:



Close-up immediately following construction, taken 9/16/2016

Photo #3:



1-year Monitoring Visit, taken 10/25/2017

Photo #4:



3-year Monitoring Visit, taken 5/17/2019

Attachment 2 - Photo Documentation of Established Vegetation

Riparian Plantings – Right (east) bank

Photo #1:		Photo #2:
		
Immediately following construction, taken 9/16/2016		Close-up immediately following construction, taken 9/16/2016
Photo #3:		Photo #4:
		
1-year Monitoring Visit, taken 10/25/2017		3-year Monitoring Visit, taken 5/17/2019

Attachment 2 - Photo Documentation of Established Vegetation

Upland Plantings – Restoration of Founders Park

Photo #1:		Photo #2:
		
Immediately following construction, taken 9/16/2016 (not established)		1-year Monitoring Visit, taken 10/25/2017
Photo #3:		Photo #4:
		
2-year Monitoring Visit, taken 5/16/2018		3-year Monitoring Visit, taken 5/17/2019