

April 1, 2010  
W-P Project No. 12018A

Mr. Ed Wojnowski, Town Administrator  
Town of Newmarket  
186 Main Street  
Newmarket, NH 03857

Subject: Macallen Dam  
Preliminary Cost Estimate for Structural Repairs

Dear Mr. Wojnowski:

The purpose of this letter is to provide a preliminary cost estimate for structural repairs on the Macallen Dam identified in the Structural Analysis letter report dated March 3, 2010. The repairs summarized in the letter report have been broken into two phases. The first phase includes repairs that are recommended in the near term. The second phase includes repairs that may be impacted by future improvements to the dam to increase the discharge capacity; therefore, these improvements are recommended to be completed concurrent with the capacity improvements.

The preliminary construction cost for each phase includes mobilization and dewatering, which are anticipated to be significant given the site constraints. An allowance of 25% has been added for engineering design and permitting fees.

#### Phase 1

##### *Dam Structure*

##### *I. Gate Structure*

- A. Resurface the upstream surfaces of the concrete channels at and below the normal water level with a cementitious overlay. The upstream noses of the channel will be lined with stainless steel wear plates. (Photo 16)
- B. Fill the hole in the southeast concrete channel wall where it frames into the stone retaining wall with reinforced concrete. Reinforcing steel dowels will be drilled into the existing concrete and adhered with epoxy resin. (Photo 12)
- C. The cracks in the southwest concrete channel wall that abuts the spillway should be filled with an epoxy resin. The spalls in the wall should be repaired with a structural concrete patching material. Larger areas of spalling can be addressed by removing portions and replacing them with new reinforced concrete. (Photo 15)
- D. The spalls in the edge of the concrete platform slab will be repaired with a structural concrete patching material. (Photo 13)



- E. The west platform steel guard posts repaired or replaced by installing epoxy grout in the embedded post sleeves in the concrete. (Photo 12)
- F. The gaps in the west side stone wall will be filled with stone or grout.
- G. Any vegetation will be fully removed.

#### *Retaining Wall*

- II. Upstream (East Wall): Repair the damaged brick pier by filling the gap with grout or mortared bricks. (Photo 14)

Estimated Cost for Phase 1: \$215,000

#### Phase 2

##### *Dam Structure*

##### *I. Upstream Face*

- A. The water should be drawn down as much as possible to expose as much of the dam face as possible. The dam will be cleaned with high pressure water. The need for additional repairs is often identified once the dam faces are completely exposed and inspected. We typically handle these construction costs by having the contractor provide unit prices for each type of repair anticipated for this type of dam. This eliminates the need to negotiate costs during construction. A contingency has been added to the construction cost estimate to cover these repairs.
- B. Replace the steel channel across the top of the spillway with a hot-dipped, galvanized steel channel.

##### *Retaining Walls*

##### *II. Upstream (West Wall)*

- A. The spalling concrete at the north end of the wall where the concrete was placed around several stone blocks will be removed and repaired with a structural concrete patching material. (Photos 22 & 24)
- B. Existing construction drawings for the concrete fish passage structure will be reviewed by a Structural Engineer to confirm that the structure is adequate to cantilever over the slab. (Photo 28)

Estimated Cost for Phase 2: \$290,000

#### Funding

As you are aware, there are limited sources of public funding available for dam repair projects. Much of the resources are focused on dam removal rather than repairs. We are contacting the Lamprey River Advisory Committee and NHDES to discuss potential funding assistance opportunities available to the Town for the repairs.

Mr. Ed Wojnowski  
March 30, 2010  
Page 3 of 3



If funding assistance is not available, we estimate that the cost to the Town would result in annual payments of \$15,500 and \$21,000 for Phases 1 and 2, respectively, based on a 4% loan over a 20-year period.

We look forward to meeting with you at your convenience to review the preliminary cost estimate and discuss our recommendations with you. After you have reviewed this preliminary report and cost estimate, we will provide the NHDES with a status update for the project. We are also working on the dam breach analysis and inundation mapping, which we expect to have to you in three to four weeks. In the interim, please feel free to contact us at 430-3728 with any questions or comments you may have.

Very truly yours,  
WRIGHT-PIERCE

Jennifer S. Mates, P.E.  
Project Manager

Richard N. Davee, P.E.  
Vice President

JSM/RND/als

cc: Julie Glover, Newmarket Project Coordinator  
Rick Malasky, Newmarket Director of Public Work

Attachments