

**Macallen Dam Abutments and Outlet Structure Rehabilitation Project**  
**Newmarket, NH**  
**ADDENDUM NO. 2**

To: All Prospective Bidders  
Macallen Dam Abutments and Outlet Structure Rehabilitation Project

Location: Macallen Dam, Newmarket, NH

From: Todd E. Monson – GZA GeoEnvironmental, Inc.  
Chad W. Cox – GZA GeoEnvironmental, Inc.

Re: **Addendum No. 2**

Date: April 5, 2019

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Please find the following **ADDENDUM NO. 2** for the Macallen Dam Abutments and Outlet Structure Rehabilitation Project which is to be included as part of the Contract Documents thereof.

General Bidders shall acknowledge receipt of this **Addendum No. 2** by checking the appropriate box on Sheet 2 of the Bid Form.

**Item #1: Contract Specification Section 00100 – INSTRUCTIONS TO BIDDERS**

ADD to page 7, page 8, and page 9 of Section 00100 of the Contract Documents that the Contractor shall include the New Hampshire Fish and Game Department (NHFG) as listed as an additional insured on the Certificate of Insurance to be provided by the Contractor prior to receiving a Notice to Proceed. This requirement is outlined in an Access Authorization letter provided to the Town by NHFG dated April 5, 2019 which is provided as **Attachment A** to **Addendum No. 2**.

ADD to page 9 of Section 00100 of the Contract Documents that the Contractor shall obtain and provide proof that the Contractor's design professional(s) for contractor-designed systems shall be covered by professional liability insurance with up to \$1,000,000 coverage.

**Item #2: Contract Specification Section 00300 – BID FORM**

REPLACE page 5 of Section 00300 of the Contract Documents with the updated Bid Form provided as **Attachment B** to **Addendum No. 2**.

This update includes a revised estimated quantity for *Item 35. Masonry Repointing* with a new estimated value of 870 square feet. This increased estimate shall include additional repointing of the left abutment stone masonry wall located downstream of the existing gate structure to the approximate downstream edge of the existing concrete slab located downstream of the gate structure as determined by the Engineer. Additionally, the repointing shall include the downstream and inside face of the existing stone masonry pier.

**Item #3: Contract Specification Section 02065 - SAW CUTTING, DISMANTLING, DEMOLITION, AND REMOVAL OF EXISTING STRUCTURES**

ADD to page 2 of Section 02065 of the Contract Documents a new Scope of Work item as follows:

**1.02 SCOPE OF WORK**

A.

9. Work of this Section shall include potential salvage of one or more of the granite blocks to be removed from the existing stone masonry pier as required by the Town and/or conditions of the permit documents and agreements, and transport to a location determined by the Town.

**Item #4: Contract Specification Section 02832 - CONTRACTOR-DESIGNED RETAINING WALL**

ADD to page 6 of Section 02832 of the Contract Documents additional products information for the Mechanically Stabilized Earth Wall Panels as follows:

**2.02 MECHANICALLY STABILIZED EARTH WALL PANELS**

- E. For the contractor-designed mechanically stabilized earth panels and associated mechanically stabilized earth wall geogrids, the Contractor may utilize the design for “New Cast-In-Place Concrete Wall #1” atop existing rehabilitated wall as detailed on Sheet S-5, with the addition of the contractor-designed reinforced earth supporting wall reinforced with woven geofabric using wrapping methods as detailed on Section 3 on Sheet C-7 (which depicts the section for New Cast-In-Place Concrete Wall #4 behind the fish ladder). The Contractor may use the design for Wall #1 with the supporting contractor-designed reinforced earth supporting wall reinforced with woven geofabric using wrapping methods where the Design Drawings call out for new contractor designed MSE retaining wall from the location immediately upstream of the new concrete steps at the fish ladder to the upstream face of the right abutment (approximate length of 22 feet) as shown on Sheet C-5.

This addition to the specification allows the Contractor to reduce the number of wall types to be used on the right abutment by allowing the use of the engineer designed concrete facing (Wall #1) with contractor-designed reinforced earth supporting wall reinforced with woven geofabric using wrapping methods. A construction detail for this length of wall and supporting systems is provided in **Attachment C to Addendum No. 2**

## **Item #5: Contract Specification Section 03605 – PRECAST CONCRETE VAULT**

ADD to page 5 of Section 03605 of the Contract Documents an additional products information for the precast concrete vault as follows:

### **2.06 NOISE REDUCTION SYSTEM**

- A. A noise reduction system shall be included with the design and installation of the concrete vault. The noise reduction system shall consist of a muffler placed on the exhaust line, or similar approved system, to reduce noise emitted from the structure.

## **Item #6: Contract Specification Section 11288 – PNEUMATIC GATE SYSTEM**

ADD to page 1 of Section 11288 of the Contract Documents additional summary information regarding the final location of the new pneumatic crest gate as follows:

### **1.01 SUMMARY**

- C. There is uncertainty in the internal width of the stone masonry portion of the masonry/concrete pier at the existing gate structure. The width of the stone portion of the pier is approximately 4'-2" ± at the upstream edge and approximately 5'-2" ± at the downstream edge. The Contractor shall establish actual dimensions of the existing components of the outlet structure and shall work with the engineer to determine the final geometry of the gate including the location and width prior to finalizing the gate design and order placement of the gate and associated equipment. This work shall specifically include determining the thickness of the concrete facing on the inside of the masonry pier via drilling through concrete facing or similar methods. Determination that the stone block portion of the internal section of the pier that is greater than 4'-2" may result in shifting the location of the gate structure approximately 1'-1" east and 2'-6" north to allow sufficient width for installation of a 23-foot wide gate. Alternatively, and at the Owner's sole option, the Contractor may coordinate with the engineer to determine if a 22-foot wide gate may be installed at the location shown on the contract drawings, which may result in a slightly revised top of right abutment wall elevation by up to 0.2 feet. In the event that the shorter gate and taller abutment wall option is selected, this shall be considered a "no-cost" change.
- D. The contractor shall be aware that meeting the strict schedule requirements of the project is critically dependent on field verification of conditions, including existing gate component locations and widths, prior to final design and ordering of the pneumatic gate and associated equipment.

ADD to page 9 of Section 11288 of the Contract Documents additional products information of the control system as follows:

### **2.03 CONTROL SYSTEM**

- L. Mechanical Back-up Control System: The Control System shall include a mechanical back-up control system that provides ability to sense impoundment level and control the air supply system in order to provide active water level management during periods when the PLC is without power, or is compromised, or there is a malfunction of the primary water level sensor. This system shall be designed and supplied by the

manufacturer of the pneumatic gate and control systems. The system is expected not to require electricity and shall provide proportional water level management without the PLC. This system shall utilize a bubbler pipe in the upstream pool to sense water elevation. The mechanical back-up shall use back-pressure on a bubbler pipe to sense water level.

- M. Emergency Electrical Input: The gate control system shall be equipped with an external auxiliary power supply connection to allow for generator-supplied power and a transfer switch to isolate the control vault and control systems from the power grid.
- N. The control system shall include a backup power system in the form of a Uninterruptable Power Supply to provide power to operate the PLC and water level sensor during periods of lost grid power. The UPS shall provide sufficient power for control system operation for up to 12 hours. The back-up power source shall be sufficient to allow for operation of the gate but is not required to power the air compressor.
- O. The Contractor shall include design and installation of a remote monitoring system capable of providing remote water level monitoring and gate level position in real time to a secure website. The Contractor shall coordinate design of such system with the Town to integrate with the Town's existing monitoring systems. This data system shall be configured to provide an alert in the event of power loss or other faults in the gate system. It shall be assumed that data transfer shall occur through wireless data. The Contractor shall prepay for 12 months of data transmission following substantial completion.

#### **Item #7: Additional Information – 2013 DRAWDOWN PHOTO DOCUMENTATION**

Additional photo documentation of conditions at the dam during the 2013 drawdown, including photos of the existing timber cribbing, are provided as **Attachment D** to **Addendum No. 2** for information purposes.

#### **Item #8: Additional Information – 11/05/2009 DAM INSPECTION FORM**

Additional dam inspection information is provided as **Attachment E** to **Addendum No. 2** for information purposes. The additional information includes an electronic .pdf file of a Dam Inspection Form detailing an inspection completed on November 5, 2009, which includes photo documentation of deteriorated conditions at the dam.

#### **Item #9: Pre-Bid Meeting Attendance List**

The Pre-bid meeting attendance list from March 28, 2019 is provided as **Attachment F** to **Addendum No. 2** for informational purposes.

## **Item #10: Response to Prospective Bidders' Questions / Clarifications**

No formal questions pertaining to the meaning or the intent of the technical specifications or contract documents were received by GZA GeoEnvironmental, Inc. or the Town of Newmarket by the 5:00PM deadline on April 3, 2019.

### **Q1) What staging areas are available?**

A1) There is very little area for staging within close proximity to the dam. The parcel of land located on the right abutment will be available for use by the Contractor subject to requirements outlined in an Access Agreement letter provided by the New Hampshire Fish and Game Department dated April 5, 2019. The area next to the dam at the left abutment will be fenced off. Although residents of Bryant Rock Condominiums currently park in the cul-de-sac next to the dam, this is not allowed, and resident parking will not be allowed at the cul-de-sac during construction. The Town-owned Bay Road Lot is located approximately 200 feet southeast of the Bryant Rock Condominium entrance and may be used by the Contractor for staging of construction materials and equipment. The Town notes that this lot was recently paved. Use and restoration of the lot will need to be coordinated with the Town. The Beech Street Extension Lot could also potentially be used by the Contractor, but the lot is located approximately 0.5 miles from the dam. The Contractor would coordinate use with the Town.

### **Q2) Does the Town maintain existing power to be used for the control vault?**

A2) The main electrical source is within the five-story condominium building located adjacent to the river at 6 Bay Road. The electrical source comes from the basement in an underground conduit to the existing gate structure which is hydraulically operated. The Town does not have existing plans for this electrical conduit. The Contractor shall be required to use a licensed electrician or professional engineer to design and implement electrical connections for the gate equipment.

### **Q3) Is the Contractor responsible for accounting for time in the schedule for finalization of the Obermeyer drawings?**

A3) Yes, the Contractor shall be required to coordinate with the Engineer and the Pneumatic Gate Manufacturer to finalize the design drawings prior to order for gate manufacturing and delivery.

### **Q4) Is the mud mat considered a temporary or permanent impact?**

A4) The mud mat has been permitted as a permanent impact and therefore does not need to be removed following construction completion.

### **Q5) Is the Contractor responsible for the costs for emergency response?**

A5) Yes. Please refer to Project Specifications.

**End of Addendum No. 2**

**ATTACHMENT A**  
NHFG ACCESS AUTHORIZATION LETTER



# New Hampshire Fish and Game Department

**HEADQUARTERS:** 11 Hazen Drive, Concord, NH 03301-6500  
(603) 271-3421  
FAX (603) 271-1438

[www.WildNH.com](http://www.WildNH.com)

e-mail: [info@wildlife.nh.gov](mailto:info@wildlife.nh.gov)

TDD Access: Relay NH 1-800-735-2964

April 5, 2019

Diane Hardy, Town Planner  
Town of Newmarket  
186 Main Street  
Newmarket, NH 03857

Todd Monson, P.E.  
GZA GeoEnvironmental, Inc.  
5 Commerce Park North  
Suite 201  
Bedford NH 03220

Re: Macallen Dam - Abutment and Outlet Structure Rehabilitation  
Lamprey River, Newmarket NH

Dear Ms. Hardy and Mr. Monson:

This letter is in response to the written request from GZA GeoEnvironmental, Inc., dated March 6, 2019, for the use of the Parcel, owned by NH Fish and Game (NHFG), which location is adjacent to the Durham Book Exchange building (formerly known as the Carpenters Shop) and the Macallen Dam, owned by the Town of Newmarket.

The NHFG, former owner of the Carpenters Shop, conveyed the building along with additional rights to the Town of Newmarket by quitclaim deed dated October 12, 1983, recorded at the Rockingham County Registry of Deeds at Book 2464, Page 1037. NHFG retained the adjacent "Parcel" and fish ladder in said deed. The Parcel is subject to a right of way, to pass over and across for the renovations or additions necessary to the maintenance and operation of Macallen Dam, provided that it is in a manner and location that is mutually agreed upon.

Based on the March 2019 "Proposed Rehabilitation Project Macallen Dam Abutments and Outlet Structure" drawings (90% completion) provided by GZA, project contractor for the Town of Newmarket, NHFG is in agreement on the following conditions:

- The Parcel is to be accessible by NHFG personnel and vehicles between the dates of April 1 through July 1, 2019. The Parcel cannot be blocked in any way during these dates.
- The impoundment behind the fish trap is to be maintained at full capacity for the operation of the fish ladder, which needs to be fully operational during these dates.

## **REGION 1**

629B Main Street  
Lancaster, NH 03584-3612  
(603) 788-3164  
FAX (603) 788-4823  
email: [reg1@wildlife.nh.gov](mailto:reg1@wildlife.nh.gov)

## **REGION 2**

PO Box 417  
New Hampton, NH 03256  
(603) 744-5470  
FAX (603) 744-6302  
email: [reg2@wildlife.nh.gov](mailto:reg2@wildlife.nh.gov)

## **REGION 3**

225 Main Street  
Durham, NH 03824-4732  
(603) 868-1095  
FAX (603) 868-3305  
email: [reg3@wildlife.nh.gov](mailto:reg3@wildlife.nh.gov)

## **REGION 4**

15 Ash Brook Court  
Keene, NH 03431  
(603) 352-9669  
FAX (603) 352-8798  
email: [reg4@wildlife.nh.gov](mailto:reg4@wildlife.nh.gov)

- The fish ladder cannot be used for dewatering purposes during this rehabilitation project.
- During active construction on the Parcel, after July 1, 2019, NHFG personnel can inspect the Parcel and fish ladder at any time, upon coordination with the contractor.
- As owner of the Parcel, NHFG requires a certificate of insurance from the contractor prior to the start of construction for comprehensive general liability insurance against all claims of bodily injury, death or property damage, in an amount not less than \$1,000,000 per claim and 2,000,000 general aggregate, naming NHFG as an additional insured;

NHFG understands that construction is to begin on or after July 1, 2019, and that an estimated completion date is expected to be before December 31, 2019. NHFG requests notification prior to the finalization of the substantial completion report to allow NHFG an opportunity to reasonably inspect the work as it relates to the Parcel and fish ladder, and to determine whether the work is complete as it relates to the Parcel and fish ladder, in accordance with the agreed Plan.

Notwithstanding the foregoing, nothing herein contained shall be deemed to constitute a waiver of the sovereign immunity of the State of New Hampshire, which immunity is hereby reserved to the State. By agreeing to the proposed use of the Parcel NHFG does not waive any claims against the Town or its contractors that may arise as a result of the work, including for any damage caused to the fish ladder or the functionality of the fish ladder. The State reserves all its rights as owner of the Parcel. This covenant shall survive the completion of the project.

If additional time is needed to complete the project beyond December 31, 2019, further coordination with NHFG is required.

Please continue to collaborate with Cheri Patterson, Supervisor of the Marine Program, at (603)868-1095, or by email at [cheri.patterson@wildlife.nh.gov](mailto:cheri.patterson@wildlife.nh.gov).

Sincerely,



Glenn Normandeau  
Executive Director

GN/em

cc: Cheri Patterson, NHFG Marine Program  
Newmarket - Lamprey River Fish Ladder land file



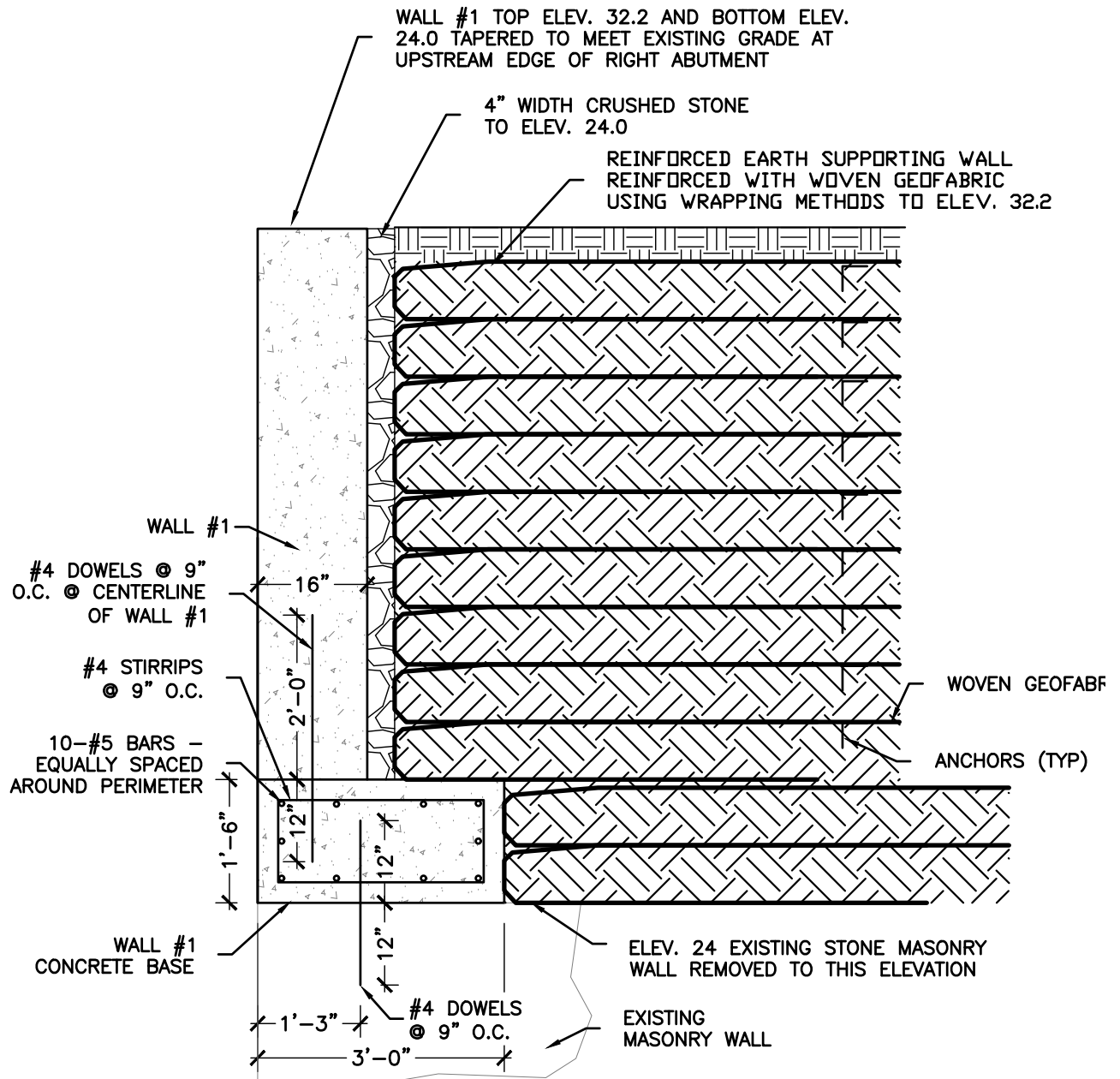
**ATTACHMENT B**  
SECTION 00300 - BID FORM

Name of Bidder: \_\_\_\_\_

**BID FORM**  
**SHEET 5 OF 8**  
**MACALLEN DAM – ABUTMENTS AND OUTLET STRUCTURE REHABILITATION**  
**TOWN OF NEWMARKET, NEW HAMPSHIRE**

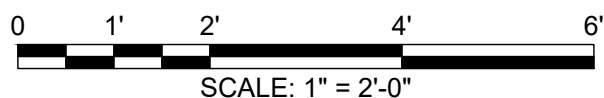
Bid Item Description – BASE BID	<u>Technical Specification Reference</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price (\$)</u>	<u>Extended Price (\$)</u>
For more complete description see: Summary of Work (Section 01010), Technical Specifications, & Drawings and Details					
31. Furnish and Install Additional Riprap	02270	20	Ton		
32. Crushed Stone Bedding	02270	200	Ton		
33. Off-Site Disposal of Excess Sediment and Debris	02200	100	Ton		
34. Off-Site Disposal of Excess On-Site Soil	02200	50	Ton		
35. Repointing Masonry Joints	04510	870	SF		
36. Unreinforced Concrete for Left Side Mud Mat	01565, 02170	200	CY		
37. Cementitious Concrete or Grout for Void Filling of Right Abutment Wall	--	50	CY		
38. Common Excavation (as needed)	02200	20	CY		
39. Archeological Assistance (as needed)	--	5	Day		
BASE BID TOTAL			\$		
BASE BID TOTAL (IN WORDS):					

**ATTACHMENT C**  
ALTERNATE WALL CONSTRUCTION DETAIL



## ALTERNATE WALL DESIGN

1" = 2'-0"



**ATTACHMENT D**

2013 DRAWDOWN PHOTOS AND TIMBER CRIBBING PHOTOS

**ATTACHMENT E**  
2009 DAM INSPECTION FORM

# Dam Inspection Form

**Dam number:** 177.01  
**Hazard Classification:** High  
**Number of structures:** 1  
**Dam name(s):** Macallen Dam  
**Town:** Newmarket  
**Date of inspection:** November 5, 2009  
**Inspector(s):** Chuck Corliss and Steve Doyon  
**Inspection Attendees:** Engineers from Wright-Pierce  
**Water level:** Drawn down condition for inspection, impoundment at invert of waste gates.  
**Report date:** September 17, 2010

DSP-10-076  
 COD  
 PREU-  
 95-04  
 NOT OPEN  
 9/17/10

## Pertinent Data:

**Maximum Height:** 27 ft. **Storage:** 480 ac-ft. perm, 1,740 ac-ft max  
**Overall Length:** 150 ft. **Drainage Area:** 211 sq. mi.  
**Pond Area:** 120 acres  
**Design event:** 2.5 x 100 year storm  
**50 Year Storm:** Unknown cfs inflow routed to unknown cfs outflow with unknown ft remaining f.b.  
**100 Year Storm:** 10,688 cfs inflow routed to unknown cfs outflow with unknown ft remaining f.b.  
**2.5 x 100 Year Storm:** 26,720 cfs inflow routed to unknown cfs outflow with unknown ft remaining f.b.  
**Discharge Capacity:** 2,740 w/1' fbd-no ops (**existing information, requires updating**)  
 3,600 cfs no fbd-no ops (**existing information, requires updating**)  
 6,270 cfs no fbd-full ops (**existing information, requires updating**)  
**Type of Construction:** Cut stone construction  
**Construction Date:** 1887  
**Outlet Works:** Top of dam elev = 100.0 ft left abutment, 97.5 ft right abutment.  
 Bottom of dam elev = 73.0 ft.

- 1 68 ft long spillway with 6 ft of freeboard, invert elev = 91.5 ft.
- 3 7 ft wide x 5'-6" high gates, electrically powered double stem gates with stoplog bay on upstream face of all gates. Invert elev = unknown ft.
- 1 2'-11" ft wide x 8'-1" high fish ladder opening with all stoplogs removed. Invert elev = 91.91 ft

## Dam Inspection Observations:

Feature	Observation	Type M/S/ NA*
Upstream right side concrete faced training wall	<ul style="list-style-type: none"> <li>Concrete cap/facing with cut stone structure below, cap overhangs 12"+/- (offset) on the river side (downstream end portion). Cap has no bearing (open) below due to construction method at time of placement did not go below existing bearing material surface, has since eroded away.</li> <li>Stone structure wall visible below and underneath of concrete cap (only visible during drawdown).</li> <li>One vertical crack in concrete portion on upstream section approximately 5-6 ft from upstream corner.</li> <li>Original stone wall below has slight lean, overall poor condition.</li> <li>Sinkholes behind wall, some 2 ft deep.</li> <li>Condition of lower stone portion of wall and bearing is not visible, drawdown was not low enough to view these critical areas.</li> </ul>	M

	<ul style="list-style-type: none"> <li>Upstream portion of wall (parallel to rte 108) appears to be in fair/good condition.</li> <li>Pipe inlet, upstream face of training wall. Fire protection?</li> </ul>	
Fish ladder	<ul style="list-style-type: none"> <li>Concrete construction, built in 1971+/-, concrete in good condition overall.</li> <li>Bearing area of upstream inlet portion has large cantilever design, bearing area reduced on the left side.</li> <li>Dimensions = 2'-11" wide x 8'-1" high.</li> <li>Top galvanized grate in good condition.</li> <li>Valve system on left side of upstream inlet.</li> </ul>	N/a
Right embankment	<ul style="list-style-type: none"> <li>Earthen embankment, downstream portion is also historic mill building foundation.</li> <li>Low points, sink holes, 2 ft in one location behind training wall.</li> <li>Vegetative cover sparse.</li> </ul>	M
Historic mill buildings downstream right side training wall	<ul style="list-style-type: none"> <li>Cut stone constructed walls, overall in good condition.</li> </ul>	N/a
Spillway	<ul style="list-style-type: none"> <li>Cut stone construction, overall good condition.</li> <li>Steel channel on top, past use for flashboards?</li> <li>Minimal seepage, no bulges.</li> </ul>	N/a
Gate housing structure	<ul style="list-style-type: none"> <li>Concrete cap, cut stone construction below.</li> <li>3 gates, 7 ft wide x 5'-6" operational height (cannot fully open to 7 ft), all gates currently operable.</li> <li>Concrete nose of each gate's upstream structure has minor to heavy spalling with fines washed from concrete surface.</li> <li>Right side gate abutment wall, during high rain event March 2010, flow/seepage noted through downstream top corner edge. Spalling of concrete noted left of same area.</li> <li>Left side gate bay, downstream left interface into training wall, concrete deterioration.</li> </ul>	M
Left side upstream training wall	<ul style="list-style-type: none"> <li>Most of the wall constructed with cut stone, overall viewable section in good condition, below waterline not viewable.</li> <li>Brick section has heavy deterioration, isolated area constructed with brick on downstream section of the overall wall.</li> </ul>	M
Left side downstream training wall	<ul style="list-style-type: none"> <li>Cut stone construction, overall in good condition.</li> <li>No concerns noted during March 2010 high flows.</li> <li>Past report noted when gates were closed, seepage on left at base of apron.</li> </ul>	M

\*Type of Deficiency: M-Maintenance; S-Structural; NA-Not Applicable



**Downstream Hazard Review:**

Feature	Observation
Upstream crossing	NH route 108 bridge located 245 ft upstream,
Crossing #1	Pedestrian bridge, located 50 ft downstream, structure constructed sufficiently above high flows. No other crossings for next 2.1 miles to Little Bay.
Building/residence #1	Historic stone mill building constructed on right end of dam, building foundation is the downstream structural component of the right side earthen embankment and right end of spillway interface.
Building/residence #2	Both the right and left downstream river edges are bordered with historic mill structures that have been renovated.
Downstream river junction	Lamprey River flows 2.1 miles to the junction with Little Bay.

**Hazard Classification/Justification, Dam Breach Analysis:****High**

Date of last breach analysis	Army Corps March 1980.
Requires updated analysis	Yes

The historic stone mill building constructed on right end of dam is currently the justification for the high hazard classification for this dam. The building's upstream foundation wall is the right side earthen embankments downstream structural component and the right end of spillway interfaces with the same wall. If the dam were to fail along its right end, a failure could possibly have an impact on this building's foundation due to the nature of the construction. The dam's connection into a building structure does fall under Env-Wr 101.09(a) *Water levels and velocities causing the structural failure of a foundation of a habitable residential structure or a commercial or industrial structure which is occupied under normal conditions.*

Other impacts as documented in the past that have justified a high hazard classification during a dam breach in combination with the peak of the 100 year storm event are currently under evaluation by Wright-Pierce Engineers. Upon DES approval of their forthcoming analysis, appropriate updated breach information will be added to this report.

**Hydrologic/Hydraulic Analysis:**

Required Discharge Capacity Env-Wr 303.11 or 403.04	2.5 x 100 Year Storm Event
Date of last analysis	Unknown, existing numbers based on Army Corp March 1980 report and from USGS river gauging, #01073500
Meets current discharge requirement with required freeboard	No
Requires updated analysis	Yes

The right embankment of the dam required sandbagging to prevent overtopping during 2006, 2007 and 2010 flood events. Flows were gauged at 9100 cfs on 5/16/2006 and 8450 cfs on 4/18/07. According to the 2008 USGS publication, "Scientific Investigations Report 2008-5206", the peak flow on May 2008 was labeled between a 50 and 100 year storm event at the upstream USGS gauging station #01073500. The publication also notes that this upstream river gauge has a predicted 100 year flow of 9,270 cfs. The dam has a drainage area 15.3% larger than the river gauge, so the multiplication/ratio finds that the dam has an estimated 100 year flow event of 10,688 cfs.

Past information notes the dam can pass a total of 6,720 cfs with all gates open and no freeboard and 5,710 cfs with 1 foot of freeboard. Without operation of the gates the dam can pass 2,740 cfs with on foot of freeboard and 3,600 cfs to the top of the dam. These discharge capacities are based on the top of the right abutment, which is 2'9" lower than the left abutment. With the above inflow for the 100 year storm at 10,688 cfs, a significant overtopping is expected.

Inflow and discharge flows from the dam are currently under evaluation by Wright-Pierce Engineers. Upon DES approval of their forthcoming analysis, updated information will be added to this report.

**Operations, Maintenance, and Response Form:**

Plan on file, updated, and meets current requirements	No
No OMR form on file	

**Emergency Action Plan:**

EAP on file, up to date, meets current requirements	No
EAP last updated March 2004	
Last test dated 1997	

**Access and Security:**

The dam is fenced off restricting access to each abutment and spillway.

**Directions:**

From Concord take rte 4 east to the NH rte 155A exit in Durham (turn right). Continue on rte 155A for 1.9 miles and then turn right onto NH rte 108. Continue on rte 108 for 3.8 miles to bridge over Lamprey River, dam approx 200 ft downstream from bridge.

**Miscellaneous:**

- Dam overtopped in May 2006, April 2007 and March 2010 storms.

**Recommendations: Letter of Deficiency (LOD)**

I recommend issuing an LOD to the dam owner requiring the following items be addressed by the time frames referenced below. (Below numbers correspond to numbers on the Plan View Drawing)

**Continue to monitor and repair:**

1. Seepage from downstream left side stone training wall, located at base of gate structure apron.
2. Concrete cracks and spalling on
  - a. Upstream right side training wall vertical crack. See photo A.
  - b. Downstream right side of gate structure housing. See photo B.
  - c. Concrete piers on the upstream face of the of the gate structure housing. See photo C.

**By March 1, 2011**

3. Submit an operation, maintenance, and response (OMR) plan to DES for review. See attached template.
4. Submit an updated Emergency Action Plan (EAP) in accordance with Env-Wr 500.

**By September 1, 2011**

5. Fill, seed and mulch the right side earthen embankment in order to provide a level, hearty grass surface consistent across the complete surface. See photo D.
6. Remove deteriorated portions to a sound substrate, clean and structurally patch the following areas:
  - a. Gate structure housing's downstream left side interface with the downstream retaining wall. See photo E.
  - b. Left side upstream training wall, bricked portion. See photo F and G.
7. Investigate and report to DES the condition of the right side upstream training wall's base, assess for possible undermining and overall condition of the wall. This is the wall section below water line, below what was field evaluated on November 5-2010 by DES and Wright-Pierce engineers. See photos H, I and J.
8. Submit a permit application with appropriate plans and specifications to increase the discharge capacity of the dam to safely pass the design flow (2.5 Q100 or IDF) with one foot of freeboard with no operations and to address any other structural deficiency found as part of your consultant's detailed evaluation.

**By September 1, 2012**

9. Complete the reconstruction and/or repair of the dam to meet the requirements of the permit issued in accordance with item #8.

Reference: All Dam rules can be viewed at: <http://des.nh.gov/organization/divisions/water/dam>

Attached: Plan view drawing  
Location photos  
Blank Operation, Maintenance and Response form (OMR)



Photo A, Crack behind ladder



Photo B



Photo C



Photo D





Photo E, Taken 2007



Photo F



Photo G



Photo H





Photo I



Photo J



Photo K, Fishladder upstream slab

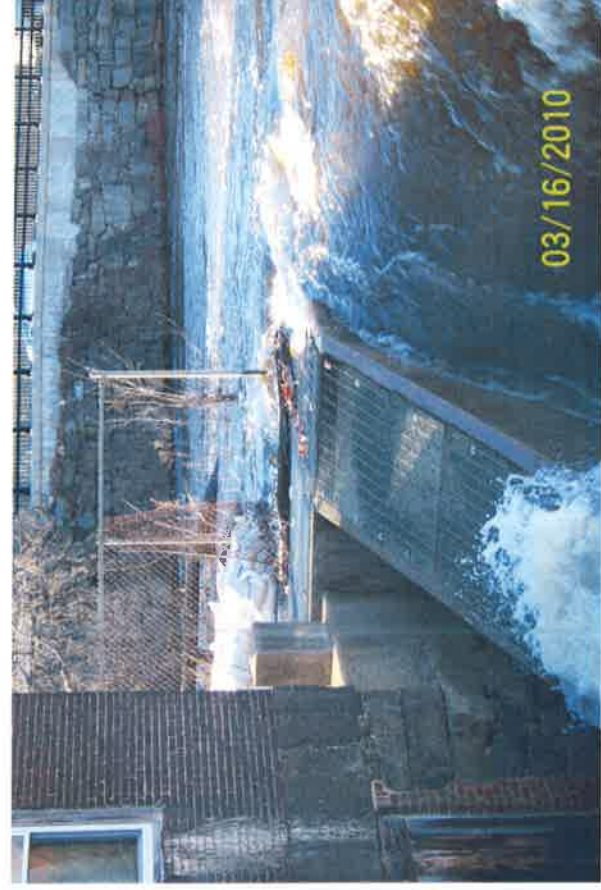


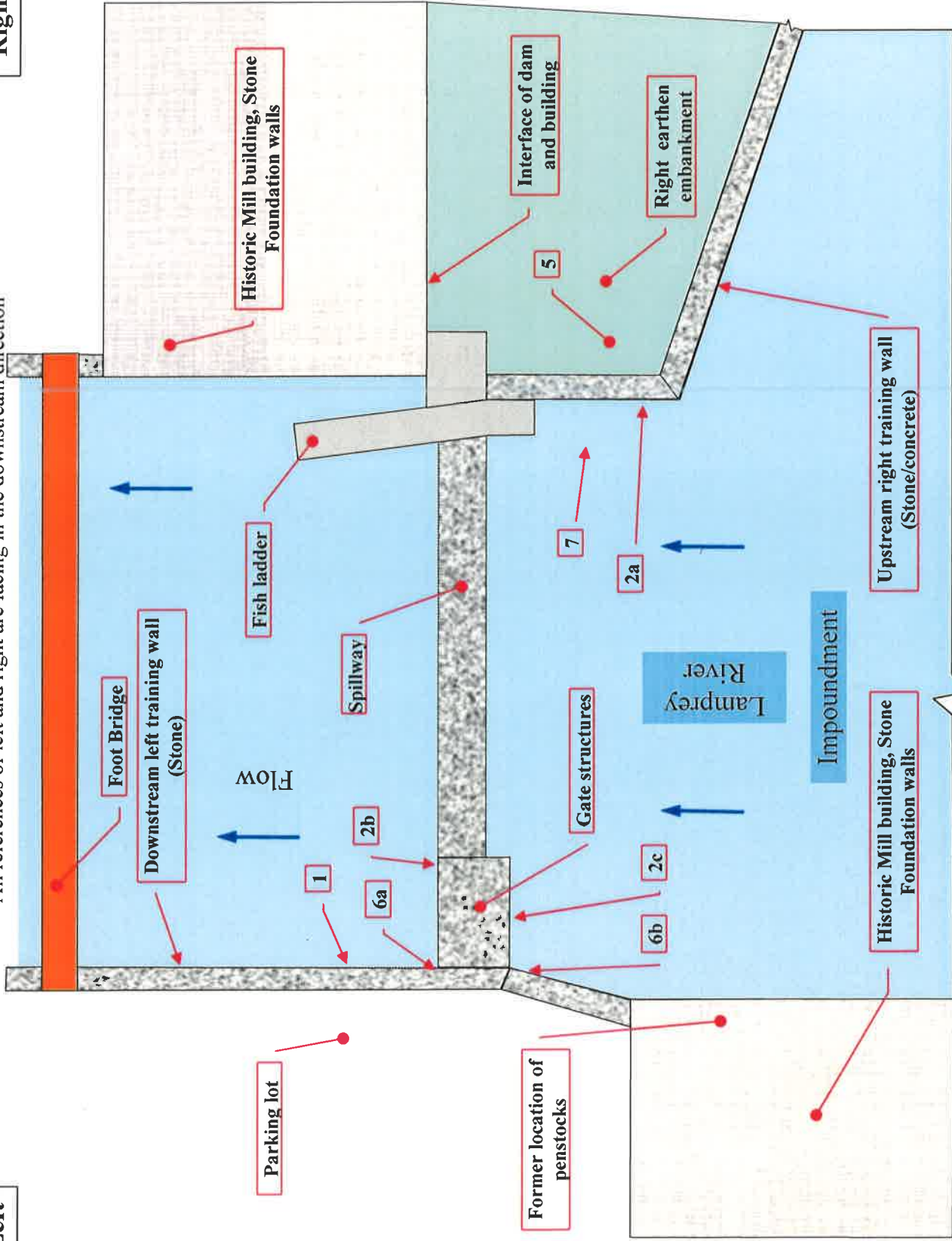
Photo L, Taken March 2010



Left

Right

All references of left and right are facing in the downstream direction



Date: 08-03-2010

## Plan View Drawing

No Scale

**ATTACHMENT F**  
ATTENDANCE LIST





Newmarket Facilities and Grounds Department

Town of Newmarket

Request for Proposals

**"MACALLEN DAM REHABILITATION"**

Mandatory site visit

March 28, 2019

At

11:00pm

Contractor: Sumco Eco-Contracting email: jjeffrey@sumcoeco.com  
Contact Name: Josh Jeffrey Contact number: 410-804-5615

Contractor: Sumco Eco-Contracting email: marck@sumcoeco.com  
Contact Name: Michelle Archambault Contact number: 978-744-1515

Contractor: Jim Kinch - Northeast Shoring Installation email: jkinch@neshorings.com  
Contact Name: \_\_\_\_\_ Contact number: 781-589-7434

Contractor: \_\_\_\_\_ email: \_\_\_\_\_

Contact Name: \_\_\_\_\_ Contact number: \_\_\_\_\_

Contractor: \_\_\_\_\_ email: \_\_\_\_\_

Contact Name: \_\_\_\_\_ Contact number: \_\_\_\_\_

A mandatory pre-bid conference will be conducted on site March 28, 2019 at 11:00am at the Newmarket Town Hall auditorium, 186 Main Street, Newmarket, New Hampshire with on-site Macallen Dam meeting conducted directly after the Town Hall meeting. Parking is very limited at the site, parking will be across the street at the Newmarket Public Library.

Town of Newmarket  
Facilities and Grounds Department  
186 Main Street  
Newmarket, New Hampshire  
1-603-659-3617 Ext 1325  
[Gmarles@newmarketnh.gov](mailto:Gmarles@newmarketnh.gov)



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Town of Newmarket

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Mandatory site visit

March 28, 2019

At

11:00pm

Contractor: Kingsbury email: Estimating@KingsburyCo.com

Contact Name: Ross Mitchell Contact number: 603 359-6500

Contractor: \_\_\_\_\_ email: \_\_\_\_\_

Contact Name: \_\_\_\_\_ Contact number: \_\_\_\_\_

Contractor: \_\_\_\_\_ email: \_\_\_\_\_

Contact Name: \_\_\_\_\_ Contact number: \_\_\_\_\_

Contractor: \_\_\_\_\_ email: \_\_\_\_\_

Contact Name: \_\_\_\_\_ Contact number: \_\_\_\_\_

Contractor: \_\_\_\_\_ email: \_\_\_\_\_

Contact Name: \_\_\_\_\_ Contact number: \_\_\_\_\_

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At  
11:00pm

Contractor: T Ford Company, Inc. email: dane@ford.com

Contact Name: Dan Galante Contact number: 978-352-5606

Contractor: \_\_\_\_\_ email: \_\_\_\_\_

Contact Name: \_\_\_\_\_ Contact number: \_\_\_\_\_

Contractor: \_\_\_\_\_ email: \_\_\_\_\_

Contact Name: \_\_\_\_\_ Contact number: \_\_\_\_\_

Contractor: \_\_\_\_\_ email: \_\_\_\_\_

Contact Name: \_\_\_\_\_ Contact number: \_\_\_\_\_

Contractor: \_\_\_\_\_ email: \_\_\_\_\_

Contact Name: \_\_\_\_\_ Contact number: \_\_\_\_\_

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**At**

**11:00pm**

Contractor: Maritime Const & Eng. email: shawnc@maritimece.com

Contact Name: Dave Mackintosh Contact number: 207-252-4925

Contractor: Apex Construction email: Jeff@Apex-Construction Inc. com

Contact Name: JEFF TODD Contact number: \_\_\_\_\_

Contractor: NEW ENGLAND INFRASTRUCTURE email: GJOHNSON@NEINFRASTRUCTURE.COM

Contact Name: GRAHAM JOHNSON Contact number: 978-293-3535 X13

Contractor: \_\_\_\_\_ email: \_\_\_\_\_

Contact Name: \_\_\_\_\_ Contact number: \_\_\_\_\_

Contractor: \_\_\_\_\_ email: \_\_\_\_\_

Contact Name: \_\_\_\_\_ Contact number: \_\_\_\_\_

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