NORTHEAST, INC.

Environmental Engineering
Geotechnical Engineering
Water Resources
Hydrogeology

June 12, 2013
Project No. 4929

Mr. Norman W. Young, Treasurer
Friends of Moeckel Pond
1 Jordan Road
Windham, New Hampshire 03087

RE: Historic Impoundment Level Considerations
Moeckel Pond Dam
NH Dam #256.08
Windham, New Hampshire

Dear Norm:

In accordance with Task A of our Proposal No. P-9614.Rev1, HTE Northeast, Inc. (HTE) is submitting herewith various information regarding historic impoundment levels of Moeckel Pond Dam. It is apparent that several, sometimes conflicting, impoundment levels are referenced throughout the historical literature on this dam.

As a point of interest, HTE notes that the April 25, 2012 "Subdivision Plan, Moeckel Pond, Map 5 Lot 9-149" references a pond level at EL 146.6 as obtained from plan references. This EL 146.6 is identified in the January 14, 2011 correspondence from Edward N. Herbert Associates, Inc. to the New Hampshire Department of Environmental Services (NHDES) as the "crest of spillway". Additionally HTE notes that the aforementioned 2002 Dam Bureau H/H analysis used a spillway level of EL 153.0 which appears to be from the 7.5' Windham USGS Quadrangle, 1953 photo revised 1985.

The January 14, 2011 Edward N. Herbert Associates, Inc. correspondence also references the Flood Insurance Rate Map (FIRM) #330144 Panel 0543 E dated May 17, 1985 as showing the 100 year flood level for both Moeckel Pond and Rock Pond as EL 147. Also referenced is the Flood Profile of Golden Brook which shows the 100 year flood level at EL 147.2.

Research of the NHDES Dam Bureau files revealed the following general information:

- The dam was overtopped during the March 15/16, 2010 storm event; however, no elevation data was provided, nor height over dam stated.
- In May 2006, the dam was reportedly overtopped by 4± inches.
- The dam was not reportedly overtopped during the October 2005 event, however, water reportedly rose to the top of dam with 2 planks removed from the stop log bay.
- In a March 20, 1970 note, it is stated the water level rose above the drill hole in the ledge. There is a hand sketched map of the location of the drill hole as being on a small

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peninsula on the right upstream side of the dam. However, there are also notes indicating the drill holes were filled by Mr. Moeckel, and relocated.

In order to obtain field information regarding historic impoundment levels, HTE performed a level circuit survey on May 1, 2013. The elevations obtained by HTE this day are based on the aforementioned concrete spillway crest level of EL 146.6. We have used this elevation, as indicated on the April 25, 2012 "Subdivision Plan, Moeckel Pond, Map 5 Lot 9-149" as being the most current and presumably the most accurate with respect to prior information. Accordingly, all of the elevations obtained by HTE are based on EL 146.6, the elevation of the crest of the concrete spillway.

With the Moeckel Pond in its current state of drawdown, HTE measured the Rock Pond surface water level on May 1, 2013 to be at approximately EL 145.7± (based on the aforementioned spillway crest level of EL 146.6 for Moeckel pond Dam).

To further assess prior drawdown pond levels, HTE surveyed various top of dark colored banding along rocks and the shoreline within Moeckel Pond and rocks and concrete within Rock Pond. As summary of these measurements is provided below and representative photographs of measurement points along the shore line of Rock Pond are attached.

Table 1
Estimated Elevations of Various Water-Related Shoreline Markings

Location	Object	Measuring Point	Elevation
Moeckel Pond:			
upstream of dam	various boulders	top of dark band	146.3±
left upstream of dam	shoreline	vegetation line	147.1±
Deer Leap	north boulder	top of dark band	147.5±
Deer Leap	south boulder	top of dark band	147.5±
Deer Leap	base of cliff	top of dark band	147.6±
Rock Pond:			
south east shoreline (refer to photo)	first boulder	top of dark band	146.2±
south east shoreline (refer to photo)	second boulder	top of dark band	146.2±
south east shoreline (refer to photo)	concrete wall	top of dark band	148.0±
north west shoreline (refer to photo)	first boulder	top of dark band	146.3±
north west shoreline (refer to photo)	second boulder	top of dark band	146.2±

Given the data presented above, it appears that the most recent historic impoundment level in Moeckel Pond would have been EL 146.6, the concrete spillway crest level (refer to the attached Figure 1). Given that there would have been significant variations in the impoundment level due to dry periods in conjunction with leakage through the dam, it can be expected that typical summer impoundment levels may have been below EL 146.6 provided that the former boards

were not otherwise removed. Similarialy higher impoundment levels would be anticipated during the typical wetter spring season due to snow melt and rains.

Once Moeckel Pond Dam is restored, the surface level in Rock Pond can be expected to be slightly higher than Moeckel Pond as water flows from Rock Pond into Moeckel Pond and over Moeckel Pond Dam.

In summary, HTE recommends proceeding with the H&H analysis and new spillway design using a historic spillway crest level of EL 146.6. Please review the data presented herein and let HTE know if you agree with our suggested permanent spillway level of EL 146.6. A soon as we obtain your approval of permanent spillway crest level, the next phase of the H&H analysis can commence. In the interim, please do not hesitate to contact me should you have any questions.

Very truly yours,
HTE NORTHEAST, INC.

Charles E. Teale, PE
Principal

Attachments: Photographs – Rock Pond Shoreline
Figure 1

South east shoreline (first boulder)

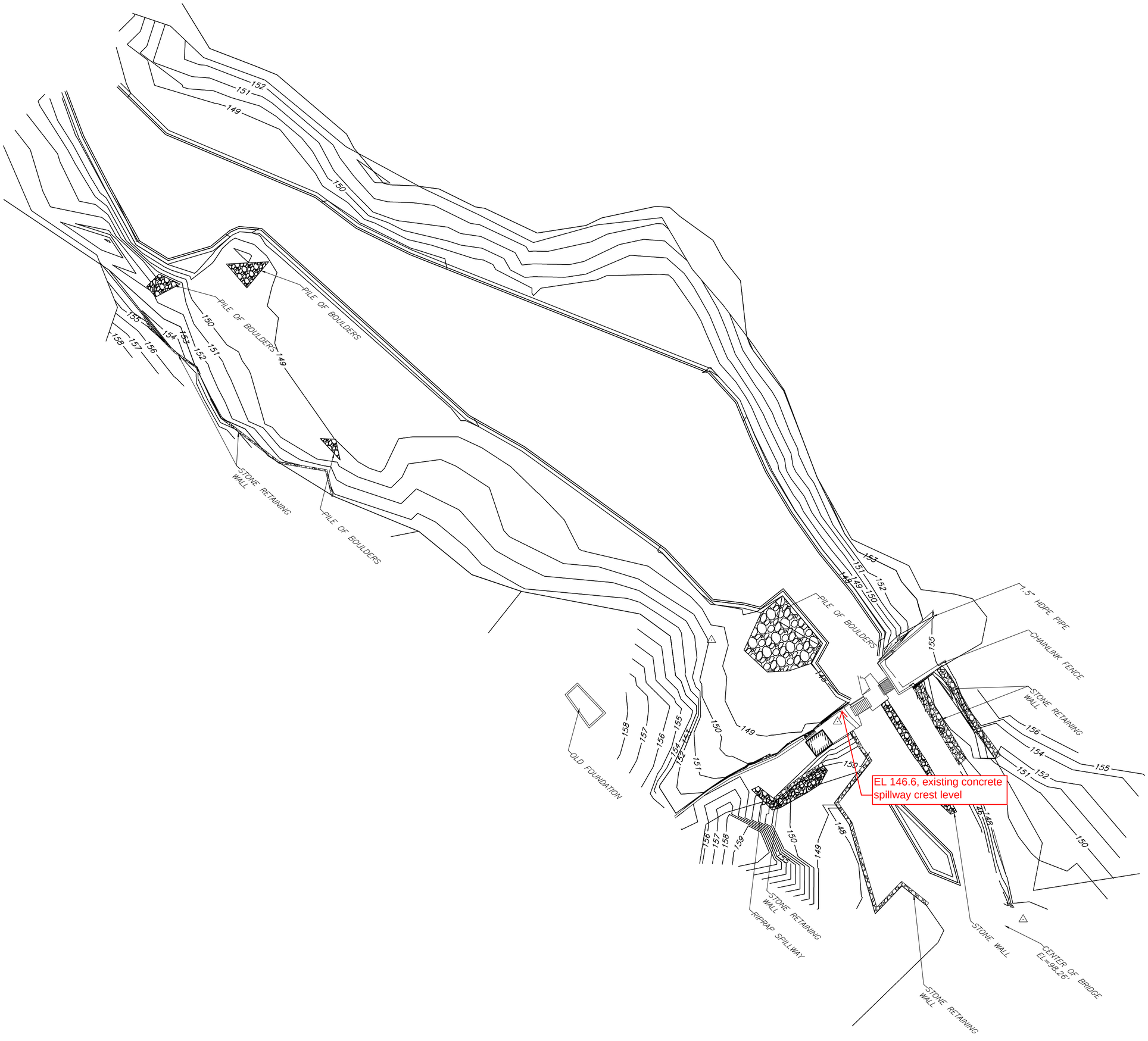
South east shoreline (first boulder)

South east shoreline (concrete wall)

North west shoreline (first boulder)

North west shoreline (second boulder)

FIGURE 1



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SURVEY NOTES:

HORIZONTAL COORDINATE SYSTEM: ASSUMED NAD83 NEW HAMPSHIRE STATE PLANES, US FOOT

VERTICAL DATUM: BASED ON EXISTING DAM PLANS, SPILLWAY EL. =153.00

SURVEY COMPLETED BY WRIGHT-PIERCE, AUGUST 4TH, 2010