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*Via Electronic Mail*

January 12, 2024

Mr. Joshua Fontaine  
U.S. Environmental Protection Agency, New England Region  
Five Post Office Square  
Suite 100  
Boston, MA 02109

**Re: GE-Pittsfield/Housatonic River Site  
Rest of River (GECD850)  
2023 Annual Visual Inspection Report for Columbia Mill Dam**

Dear Mr. Fontaine:

On November 14, 2023, GE's consultants from GZA GeoEnvironmental, Inc. performed the 2023 annual visual inspection of the Columbia Mill Dam in accordance with the EPA-approved Monitoring and Maintenance Plan for this dam. Enclosed is GZA's report on this annual inspection, including photographs, the annual dam inspection checklist, and an updated maintenance tracking table.

Please let me know if you have any questions about the enclosed inspection report.

Very truly yours,

Kevin G. Mooney  
Senior Project Manager – Environmental Remediation

Enclosure

Cc: (via electronic mail)

Dean Tagliaferro, EPA  
Anni Loughlin, EPA  
Tim Conway, EPA  
John Kilborn, EPA  
Alexander Carli-Dorsey, EPA  
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Thomas Czelusniak, HDR Inc.  
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Lenox Development, LLC  
Andrew Silfer, GE  
Andrew Thomas, GE  
Jonathan Andrews and Seth Krause, GZA  
James Bieke, Sidley Austin  
Public Information Repository at David M. Hunt Library in Falls Village, CT  
GE Internal Repository



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## Visual Inspection

# 2023 Annual Visual Inspection Report Columbia Mill Dam (MA00260) South Lee, Massachusetts

Date of Inspection: November 14, 2023

Date of Report: January 12, 2024

File No. 01.019896.70



### PREPARED FOR:

General Electric Company  
Pittsfield, Massachusetts

### GZA GeoEnvironmental, Inc.

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## **PREFACE**

The assessment of the general condition of the dam reported herein was based upon available data and visual inspections. Detailed investigations and analyses involving topographic mapping, subsurface investigations, testing and detailed computational evaluations were beyond the scope of this report unless reported otherwise.

In reviewing this report, it should be realized that the reported condition of the dam was based on observations of field conditions at the time of inspection, along with data available to the inspection team.

It is critical to note that the condition of the dam depends on numerous and constantly changing internal and external conditions and is evolutionary in nature. It would be incorrect to assume that the reported condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions be detected.



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## 1.0 INTRODUCTION

The General Electric Company (GE) retained GZA GeoEnvironmental, Inc. (GZA) to perform an annual visual inspection of the Columbia Mill Dam (the Dam) on the Housatonic River in Lee, Berkshire County, Massachusetts, which is owned and operated by Lenox Development, LLC (Lenox). GZA performed the inspection on November 14, 2023 and has developed this report summarizing the results of the inspection. This report is subject to the limitations in **Appendix A**.

## 2.0 PURPOSE

Annual visual inspections of Columbia Mill Dam are required by GE's Monitoring and Maintenance Plan (M&M Plan) for Columbia Mill Dam, Revision 1, dated June 30, 2023, as conditionally approved by the United States Environmental Protection Agency (EPA) on August 3, 2023.

## 3.0 INSPECTION SUMMARY

### 3.1 GENERAL

On November 14, 2023, Jonathan Andrews, Seth Krause, and Leslie Decristofaro from GZA, representing GE, Scott Campbell from Taconic Ridge, representing EPA, and Thom Clapper, the caretaker and owner's representative, mobilized to Columbia Mill and performed a visual inspection of the Dam. The weather was cloudy in the high 30s / low 40s, and the upstream pool level was estimated at about 12 inches above the spillway crest.

Overall, the conditions of the Dam were similar to those observed during GZA's August 2022 annual inspection (described in a report attached to the M&M Plan as Attachment D) and the most recent quarterly inspection on August 17, 2023 (described in a report submitted to EPA on September 15, 2023).

A summary of each structure is provided below. A site sketch and photo location map are provided on **Figure 1** and **Figure 2**, respectively. Photographs from the inspection are provided in **Appendix B** and the annual dam inspection checklist is provided in **Appendix C**. In addition, an updated maintenance tracking table is provided in **Appendix D**.

### 3.2 CONCRETE DAM / PRIMARY SPILLWAY (SPILLWAY)

The spillway was overtopping during the inspection; therefore, the downstream face of the spillway, spillway toe, and other areas downstream of the spillway were partially obstructed by water and difficult to observe.

Logs and woody debris were observed on the upstream face, crest, and downstream face of the spillway. Minor vegetation growth was observed upstream on the right side of the Dam.

Minor cracking, spalling, and efflorescence was observed on both the left- and right-side downstream training walls. The right training wall appears to be constructed of concrete and stone masonry with shotcrete facing. A crack was observed in the shotcrete facing near the top of the right training wall. The crack was up to about three inches wide and was located near a change in top of wall slope.

There was moderate cracking, spalling, and exposed reinforcement on the exterior wall of the mill building (on the left side of the Dam).



Monitoring was performed for signs of the vortex on the upstream left side of the spillway, which was previously observed in the August 2022 inspection. However, no surficial indications of the vortex were observed during this inspection. Monthly monitoring of the vortex will continue until repairs are completed. Repairs are anticipated to be completed in 2024, subject to river flow conditions.

### 3.3 SLUICeway OUTLET WORKS (SLUICeway STRUCTURE)

The sluiceway structure was observed to be in adequate condition. Minor cracking and spalling of the upstream dividing wall between the sluiceway and spillway were observed, and minor cracking and spalling of the downstream concrete sluiceway structure were also observed.

The gate sluice was closed at the time of the inspection. Sluice gate operation was not conducted during this annual inspection due to river flow conditions. The sluice gate was recently operated during the August 17, 2023 quarterly inspection. At that time, the gate was operated to 15.5 inches open and then fully closed. No issues with the gate operation were observed at that time. GZA probed for sediment upstream of the sluice gate. No sediment was discerned during probing upstream of the gate.

The internal flume (internal sluiceway) inside the mill building was observed during this annual inspection. Some apparent sediment buildup was observed, as was the case during previous inspections, but the sediment could not be measured due to safety concerns around an opening in the mill building floor that provides access to the flume below. There is a gate that controls flow into the flume upstream of this opening. Based on discussions with the Dam's caretaker, the internal flume gate has not been operated in 10 to 15 years. Since there is water in the flume, it is assumed that this gate leaks.

### 3.4 RIGHT EMBANKMENT

The right embankment was observed to be in adequate condition. The vegetation was recently cut by the Dam's caretaker. Minor vegetative debris was still present, but overall did not impede observation of the embankment. Some of the recently cut vegetation was discarded at the downstream toe of the embankment, which partially obscured observation of the toe.

A slight bulge in the center of the stone masonry wall downstream of the embankment was observed. No distress, cracking, offsets, or signs of displacement or continuous movement were observed.

### 3.5 DOWNSTREAM AREA / MISCELLANEOUS

The downstream area of Columbia Mill was generally found to be in good condition. No signs of slides, sloughs, scarps, or seepage downstream of the Dam were observed. Access to the Dam from the downstream toe and the right side of the Dam was adequately maintained.

No warning signs were observed in the vicinity of the Dam.



#### 4.0 RECOMMENDATIONS

The following are GZA's recommendations for continued monitoring and maintenance of the Dam.

##### 4.1 MAINTENANCE AND MONITORING RECOMMENDATIONS

GZA recommends the following recurrent maintenance and monitoring activities that do not require engineering design:

1. Continue to monitor (subject to flow conditions) the condition of the previously observed vortex on the left side upstream of the spillway, the crack in the downstream face of the spillway on the left side, and the separation of the concrete joint at the weir crest until those conditions are repaired. This should include a dewatered or low-flow inspection of the areas where the vortex was observed in August 2022. [Checklist Items 5, 7, 17]
2. Continue clearing inappropriate vegetative growth and debris on the upstream and downstream slopes of the Dam and abutment contacts and establish grass cover on the right embankment. [Checklist Items 22, 50, 57, 62]
3. Remove previously cut vegetation from downstream of the right embankment to allow an unobstructed view of the right embankment toe. [Checklist Item 51]
4. Remove debris from the spillway approach, crest, and downstream face. [Checklist Items 6, 13, 19, 23]
5. Monitor the cracks on the right downstream training wall and the left training wall of the spillway/right wall of the external sluiceway, including the horizontal crack on top of the right concrete training wall. [Checklist Item 25, 41, 42]
6. Monitor the moderate cracking, spalling, and exposed reinforcement on the downstream mill foundation walls. [Checklist Item 32]
7. Continue to monitor for signs of leaks through base of the mill foundation wall between internal sluiceway and downstream channel. [Checklist Item 31, 32]
8. Monitor the deteriorated concrete at the spillway joint with right and left training walls. [Checklist Items 17, 25]
9. Monitor the bulged masonry wall on the downstream side of the right embankment. [Checklist Item 53]

In addition, GE will inform the Dam owner of the absence of warning signs near the Dam (Checklist Item 70).





#### 4.2 REPAIR RECOMMENDATIONS

GZA recommends the following minor repairs which may improve the overall condition of the Dam but would not alter the current design of the Dam. These recommendations may require design by a professional engineer and construction by a contractor experienced in dam construction.

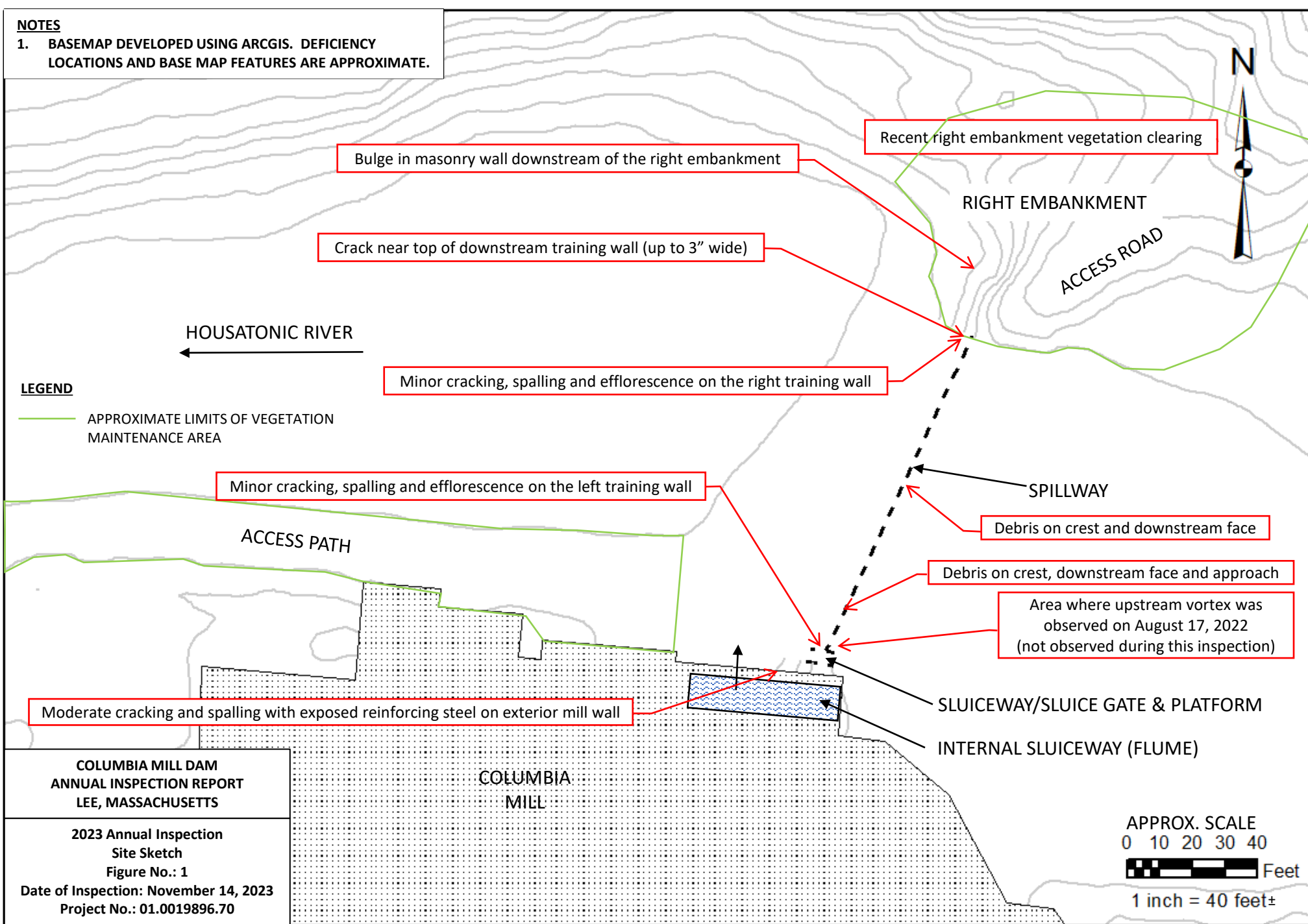
1. Following the dewatered or low-flow inspection of left side of spillway where the vortex was observed in August of 2022, develop a plan to repair the vortex-causing conditions and implement that plan. [Checklist Item 5]
2. Repair the crack in the downstream face of the spillway on the left side. [Checklist Item 7]
3. Repair the separation of the concrete joint at the weir crest. [Checklist Item 17]



## Figures

**NOTES**

1. BASEMAP DEVELOPED USING ARCGIS. DEFICIENCY LOCATIONS AND BASE MAP FEATURES ARE APPROXIMATE.



**COLUMBIA MILL DAM  
ANNUAL INSPECTION REPORT  
LEE, MASSACHUSETTS**

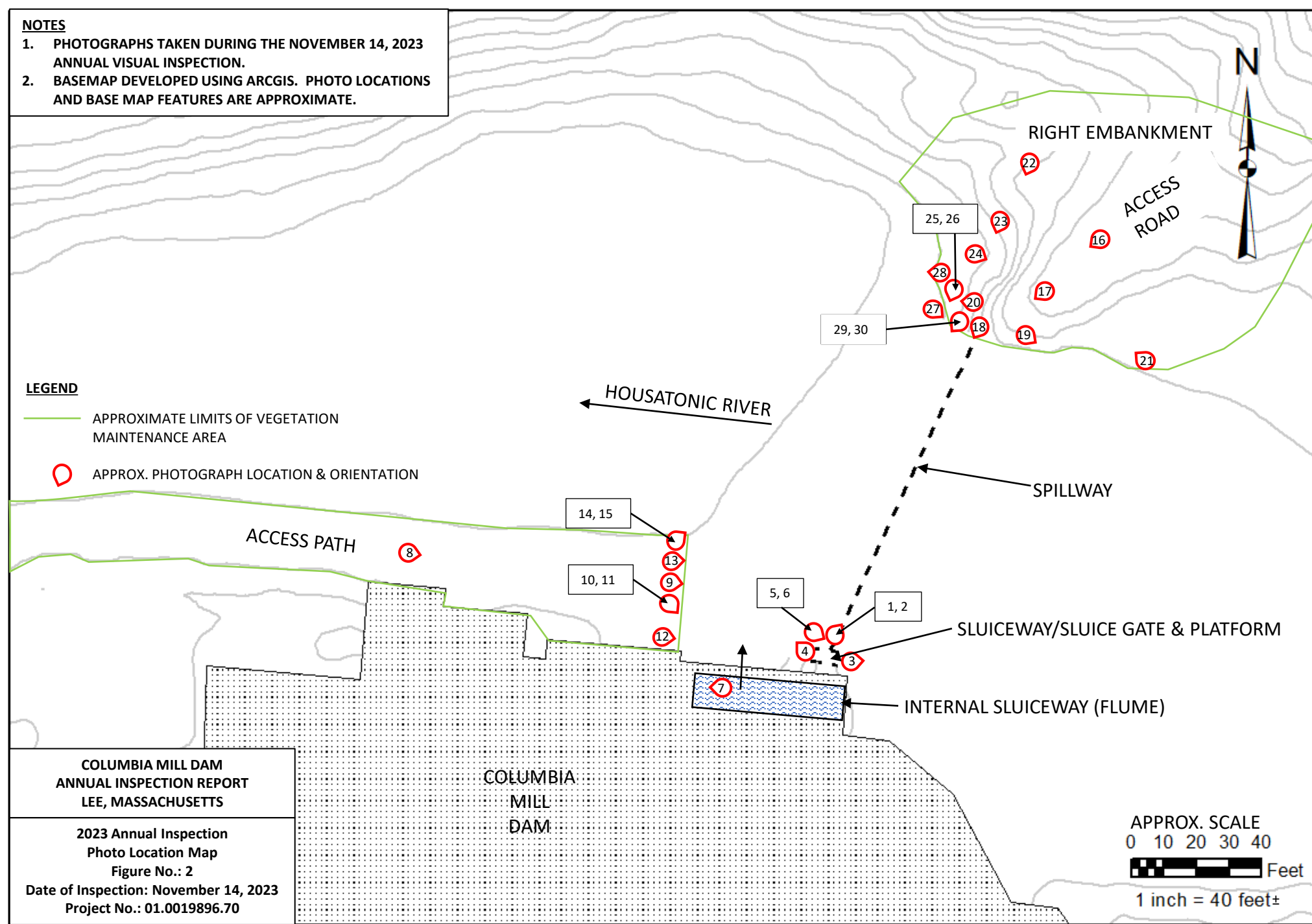
2023 Annual Inspection  
Site Sketch  
Figure No.: 1  
Date of Inspection: November 14, 2023  
Project No.: 01.0019896.70

**NOTES**

- 1. PHOTOGRAPHS TAKEN DURING THE NOVEMBER 14, 2023 ANNUAL VISUAL INSPECTION.
- 2. BASEMAP DEVELOPED USING ARCGIS. PHOTO LOCATIONS AND BASE MAP FEATURES ARE APPROXIMATE.

**LEGEND**

- APPROXIMATE LIMITS OF VEGETATION MAINTENANCE AREA
- APPROX. PHOTOGRAPH LOCATION & ORIENTATION



COLUMBIA MILL DAM  
ANNUAL INSPECTION REPORT  
LEE, MASSACHUSETTS

2023 Annual Inspection  
Photo Location Map  
Figure No.: 2  
Date of Inspection: November 14, 2023  
Project No.: 01.0019896.70

COLUMBIA  
MILL  
DAM

APPROX. SCALE  
0 10 20 30 40  
Feet  
1 inch = 40 feet±



## **Appendix A – Limitations**



## **DAM ENGINEERING REPORT LIMITATIONS**

### Use of Report

1. GeoEnvironmental, Inc. (GZA) prepared this report on behalf of, and for the exclusive use of the General Electric Company, (Client) for the stated purpose(s) and location(s) identified in the Report. Use of this report, in whole or in part, at other locations, or for other purposes, may lead to inappropriate conclusions; and we do not accept any responsibility for the consequences of such use(s). Further, reliance by any party not identified in the agreement, for any use, without our prior written permission, shall be at that party's sole risk, and without any liability to GZA.

### Standard of Care

2. Our findings and conclusions are based on the work conducted as part of the Scope of Services set forth in the Report and/or proposal, and reflect our professional judgment. These findings and conclusions must be considered not as scientific or engineering certainties, but rather as our professional opinions concerning the limited data gathered during the course of our work. Conditions other than described in this report may be found at the subject location(s).
3. Our services were performed using the degree of skill and care ordinarily exercised by qualified professionals performing the same type of services at the same time, under similar conditions, at the same or a similar property. No warranty, expressed or implied, is made.

### General

4. The observations described in this report were made under the conditions stated therein. The conclusions presented were based solely upon the services described therein, and not on scientific tasks or procedures beyond the scope of described services or the time and budgetary constraints imposed by the Client.
5. In preparing this report, GZA relied on certain information provided by the Client, state and local officials, and other parties referenced therein available to GZA at the time of the evaluation. GZA did not attempt to independently verify the accuracy or completeness of all information reviewed or received during the course of this evaluation.
6. Any GZA hydrologic analysis presented herein is for the rainfall volumes and distributions stated herein. For storm conditions other than those analyzed, the response of the site's spillway, impoundment, and drainage network has not been evaluated.
7. Observations were made of the site and of structures on the site as indicated within the report. Where access to portions of the structure or site, or to structures on the site was unavailable or limited, GZA renders no opinion as to the condition of that portion of the site or structure. In particular, it is noted that water levels in the impoundment and elsewhere and/or flow over the spillway may have limited GZA's ability to make observations of underwater portions of the structure. Excessive vegetation, when present, also inhibits observations.
8. In reviewing this Report, it should be realized that the reported condition of the dam is based on observations of field conditions during the course of this study along with data made available to GZA. It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued inspection and care can there be any chance that unsafe conditions be detected.

### Compliance with Codes and Regulations

9. We used reasonable care in identifying and interpreting applicable codes and regulations. These codes and regulations are subject to various, and possibly contradictory, interpretations. Compliance with codes and regulations by other parties is beyond our control.
10. This scope of work does not include an assessment of the need for fences, gates, no trespassing signs, swimming or boating barriers, repairs to existing fences and railings and other items which may be needed to minimize trespass and provide greater security for the facility and safety to the public. An evaluation of the project for compliance with OSHA rules and regulations is also excluded.

### Additional Services

11. It is recommended that GZA be retained to provide services during any future: site observations, explorations, evaluations, design, implementation activities, construction and/or implementation of remedial measures recommended in this Report. This will allow us the opportunity to: i) observe conditions and compliance with our design concepts and opinions; ii) allow for changes in the event that conditions are other than anticipated; iii) provide modifications to our design; and iv) assess the consequences of changes in technologies and/or regulations.



## **Appendix B – Photographs**




<b>Client Name:</b> General Electric Company		<b>Site Location:</b> Columbia Mill Dam (MA00260) Lee, Massachusetts	<b>Project No.</b> 01.0019896.70
<b>Photo No.</b> 1	<b>Date:</b> 11/14/2023		
<b>Direction Photo Taken:</b> Right.			
<b>Description:</b> Overview of the spillway and right side of the dam from the sluiceway platform.  Note debris buildup on the spillway.			

<b>Photo No.</b> 2	<b>Date:</b> 11/14/2023		
<b>Direction Photo Taken:</b> Right.			
<b>Description:</b> Closeup of the right-side training wall. Note minor concrete and shotcrete facing cracks and efflorescence.			





<b>Client Name:</b> General Electric Company		<b>Site Location:</b> Columbia Mill Dam (MA00260) Lee, MA	<b>Project No.</b> 01.0019896.70
<b>Photo No.</b> 3	<b>Date:</b> 11/14/2023		
<b>Direction Photo Taken:</b> Upstream.			
<b>Description:</b> Impoundment from the sluiceway platform.			


<b>Photo No.</b> 4	<b>Date:</b> 11/14/2023		
<b>Direction Photo Taken:</b> Downstream.			
<b>Description:</b> River downstream of the dam from the sluiceway platform.			



<b>Client Name:</b> General Electric Company		<b>Site Location:</b> Columbia Mill Dam (MA00260) Lee, MA	<b>Project No.</b> 01.0019896.70
<b>Photo No.</b> 5	<b>Date:</b> 11/14/2023		
<b>Direction Photo Taken:</b> Upstream.			
<b>Description:</b> Area where upstream vortex was observed on August 17, 2022.  No vortex observed during this inspection.			

<b>Photo No.</b> 6	<b>Date:</b> 11/14/2023		
<b>Direction Photo Taken:</b> Upstream.			
<b>Description:</b> Sluiceway gate operator. Gate in the fully closed position during the current inspection.  Gate was last operated in August 2023 to about 15.5-inches open. No issues noted during the August 2023 gate operation.			



<b>Client Name:</b> General Electric Company		<b>Site Location:</b> Columbia Mill Dam (MA00260) Lee, MA	<b>Project No.</b> 01.0019896.70
<b>Photo No.</b> 7	<b>Date:</b> 11/14/2023		
<b>Direction Photo Taken:</b> Downstream.			
<b>Description:</b> Opening in mill floor slab / internal sluiceway roof. Photo taken inside the mill building.  The internal flume gate upstream of this opening was last operated 10- to 15-years ago (per caretaker).			

<b>Photo No.</b> 8	<b>Date:</b> 11/14/2023	
<b>Direction Photo Taken:</b> Upstream.		
<b>Description:</b> Access path to the downstream left toe of the dam.		



<b>Client Name:</b> General Electric Company		<b>Site Location:</b> Columbia Mill Dam (MA00260) Lee, MA	<b>Project No.</b> 01.0019896.70
<b>Photo No.</b> 9	<b>Date:</b> 11/14/2023		
<b>Direction Photo Taken:</b> Upstream.			
<b>Description:</b> Overview of the dam from the downstream access path.			


<b>Photo No.</b> 10	<b>Date:</b> 11/14/2023		
<b>Direction Photo Taken:</b> Upstream and to the left.			
<b>Description:</b> Left side of the dam including the sluiceway and mill building wall downstream of the dam.			



<b>Client Name:</b> General Electric Company		<b>Site Location:</b> Columbia Mill Dam (MA00260) Lee, MA	<b>Project No.</b> 01.0019896.70
<b>Photo No.</b> 11	<b>Date:</b> 11/14/2023		
<b>Direction Photo Taken:</b> Upstream and to the left.			
<b>Description:</b> Closeup of the sluiceway and mill building exterior wall downstream of the dam.  Note moderate spalling of the concrete and exposed reinforcing steel of the mill building wall.			

<b>Photo No.</b> 12	<b>Date:</b> 11/14/2023		
<b>Direction Photo Taken:</b> Upstream.			
<b>Description:</b> Downstream side of the sluiceway.  About 1-inch of water flowing over the sluice gate at the time of the inspection.			



<b>Client Name:</b> General Electric Company		<b>Site Location:</b> Columbia Mill Dam (MA00260) Lee, MA	<b>Project No.</b> 01.0019896.70
<b>Photo No.</b> 13	<b>Date:</b> 11/14/2023		
<b>Direction Photo Taken:</b> Upstream.			
<b>Description:</b> Downstream face of the spillway. About 12-inches of water was flowing over the spillway crest at the time of the inspection.  Note debris build up in the center and on the left side of the spillway.			


<b>Photo No.</b> 14	<b>Date:</b> 11/14/2023		
<b>Direction Photo Taken:</b> Upstream and to the right.			
<b>Description:</b> Downstream of the right embankment and right side of the dam.			




<b>Client Name:</b> General Electric Company		<b>Site Location:</b> Columbia Mill Dam (MA00260) Lee, MA	<b>Project No.</b> 01.0019896.70
<b>Photo No.</b> 15	<b>Date:</b> 11/14/2023		
<b>Direction Photo Taken:</b> Upstream and to the right.			
<b>Description:</b> Closeup of the area downstream of the right embankment.  Note stone masonry wall.			

<b>Photo No.</b> 16	<b>Date:</b> 11/14/2023		
<b>Direction Photo Taken:</b> Left and downstream.			
<b>Description:</b> Access to the right side of the dam.			




<b>Client Name:</b> General Electric Company		<b>Site Location:</b> Columbia Mill Dam (MA00260) Lee, MA	<b>Project No.</b> 01.0019896.70
<b>Photo No.</b> 17	<b>Date:</b> 11/14/2023		
<b>Direction Photo Taken:</b> Left and downstream.			
<b>Description:</b> Top of the right embankment.			

<b>Photo No.</b> 18	<b>Date:</b> 11/14/2023		
<b>Direction Photo Taken:</b> Left.			
<b>Description:</b> Overview of the spillway and left side of the dam from the right embankment.  Note debris buildup on the spillway.			






<b>Client Name:</b> General Electric Company		<b>Site Location:</b> Columbia Mill Dam (MA00260) Lee, MA	<b>Project No.</b> 01.0019896.70
<b>Photo No.</b> 19	<b>Date:</b> 11/14/2023		
<b>Direction Photo Taken:</b> Upstream.			
<b>Description:</b> Impoundment from the right embankment.			

<b>Photo No.</b> 20	<b>Date:</b> 11/14/2023		
<b>Direction Photo Taken:</b> Downstream.			
<b>Description:</b> River downstream of the dam from the right embankment.			



<b>Client Name:</b> General Electric Company		<b>Site Location:</b> Columbia Mill Dam (MA00260) Lee, MA	<b>Project No.</b> 01.0019896.70
<b>Photo No.</b> 21	<b>Date:</b> 11/14/2023		
<b>Direction Photo Taken:</b> Downstream.			
<b>Description:</b> Upstream face / slope of the right embankment.  Note continuation of the right-side concrete training wall into the right embankment.  Training wall partially concrete-faced (left side of photo) and partially stone masonry-faced (right side of photo). Stone masonry is pointed.			

<b>Photo No.</b> 22	<b>Date:</b> 11/14/2023	
<b>Direction Photo Taken:</b> Left.		
<b>Description:</b> Downstream slope of the right embankment. Note recently cut vegetation.		



<b>Client Name:</b> General Electric Company	<b>Site Location:</b> Columbia Mill Dam (MA00260) Lee, MA	<b>Project No.</b> 01.0019896.70
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<b>Photo No.</b> 23	<b>Date:</b> 11/14/2023
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**Direction Photo Taken:**  
Left.

**Description:**  
Stone masonry and concrete features on downstream side of the right embankment.  
  
Note slight “bulge” in center of stone masonry wall. No apparent signs of tilting, offset, displacement, or missing stone masonry pieces noted.  
  
Note recently cut vegetation upslope of (above) masonry wall.




<b>Photo No.</b> 24	<b>Date:</b> 11/14/2023
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**Direction Photo Taken:**  
Upstream.

**Description:**  
Closeup of stone masonry wall on the downstream slope of the right embankment.  
  
Portion of wall to left (photo right near training wall) is mortared.





<b>Client Name:</b> General Electric Company		<b>Site Location:</b> Columbia Mill Dam (MA00260) Lee, MA	<b>Project No.</b> 01.0019896.70
<b>Photo No.</b> 25	<b>Date:</b> 11/14/2023	 <p>Crack in the shotcrete coating (see Photo 26)</p> <p>Right-Side Training cased in shotcrete</p>	
<b>Direction Photo Taken:</b> Left.			
<b>Description:</b> Right-side downstream training wall.  The wall appears to have been constructed of stone masonry and then faced with shotcrete.			

<b>Photo No.</b> 26	<b>Date:</b> 11/14/2023	
<b>Direction Photo Taken:</b> Left.		
<b>Description:</b> Closeup of the crack in the right-side training wall concrete coating.  See Photo 25 for location.		



<b>Client Name:</b> General Electric Company		<b>Site Location:</b> Columbia Mill Dam (MA00260) Lee, MA	<b>Project No.</b> 01.0019896.70
<b>Photo No.</b> 27	<b>Date:</b> 11/14/2023		
<b>Direction Photo Taken:</b> Upstream.			
<b>Description:</b> Downstream face of the right-side training wall and spillway. Note minor cracking and efflorescence of the training wall.			

<b>Photo No.</b> 28	<b>Date:</b> 11/14/2023		
<b>Direction Photo Taken:</b> Left and downstream.			
<b>Description:</b> Downstream left side access path.			



<b>Client Name:</b> General Electric Company	<b>Site Location:</b> Columbia Mill Dam (MA00260) Lee, MA	<b>Project No.</b> 01.0019896.70
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<b>Photo No.</b> 29	<b>Date:</b> 11/14/2023
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**Direction Photo Taken:**  
Left.

**Description:**  
Overview of the downstream face of the spillway and mill building.  
  
Cracking, spalling, and exposed reinforcement of the mill building observed.



<b>Photo No.</b> 30	<b>Date:</b> 11/14/2023
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**Direction Photo Taken:**  
Left.


**Description:**  
Closeup of the mill building.  
  
Note moderate cracking, spalling, and exposed reinforcement of the mill building wall concrete.





## **Appendix C – Inspection Checklist**

## ANNUAL DAM INSPECTION CHECKLIST

Name of Dam:	Columbia Mill Dam	I.D. No.:	MA00260																								
Location:	Lee, Massachusetts Town, State																										
Owner:	Lenox Development, LLC	River / Stream:	Housatonic River																								
MassDCR Classification Data:	Intermediate Size		Significant Hazard																								
PHYSICAL DATA:	timber crib, boulder-filled, concrete-faced Type of Dam	25 feet to Primary Spillway Crest Height of Dam	90 acre-feet Normal Pool Storage Capacity																								
ELEVATIONS:	908 ft (NGVD29) Normal Pool	1-ft± over crest; Approx. el. 909 ft Pool at Inspection																									
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DATE OF INSPECTION:	November 14, 2023																										
WEATHER:	Cloudy	TEMPERATURE:	30s / 40s - deg F																								
<p>This is to certify that the above dam has been inspected and the following are the results of this inspection.</p> <div style="text-align: center; margin-top: 20px;">   <hr style="width: 40%; margin: 0 auto;"/> <p>SIGNATURE OF INSPECTOR</p> </div>																											



Name of Dam: Columbia Mill Dam

I.D. No.: MA00260

Inspection Date: November 14, 2023

AREA INSPECTED	CONCRETE DAM / PRIMARY SPILLWAY 1 of 2			CHECK ( ) ACTION NEEDED		
	ITEM NO.	CONDITION	OBSERVATIONS	MONITOR	MAINTAIN	REPAIR
UPSTREAM FACE	1	Surface Conditions	Generally obscured by flow and impoundment.	X		
	2	Condition of Joints	Generally obscured by flow and impoundment.	X		
	3	Unusual Movement	Generally obscured by flow and impoundment.	X		
	4	Abutment-Dam Contacts	Generally obscured by flow and impoundment.	X		
	5	Vortices (if any)	Previously observed on the left side of the dam. None observed during this inspection.	X		X
	6	Debris	Logs/woody debris on spillway crest & upstream face near center & left side		X	
DOWNSTREAM FACE	7	Surface Conditions	Generally obscured by flow.	X		X
	8	Condition of Joints	Generally obscured by flow.	X		
	9	Unusual Movement	Generally obscured by flow.	X		
	10	Abutment-Dam Contacts	Generally obscured by flow.	X		
	11	Drains	None observed.			
	12	Leakage	Generally obscured by flow.	X		
	13	Debris	Logs on the downstream face at center and left sides of the spillway.		X	
CREST	14	Surface Conditions	Generally obscured by flow.	X		
	15	Horizontal Alignment	Appears to be in adequate alignment.			
	16	Vertical Alignment	Appears to be in adequate alignment.			
	17	Condition of Joints	Generally obscured by flow.	X		X
	18	Unusual Movement	Generally obscured by flow.	X		
	19	General	Existing effluent pipe causing debris to collect on the left side of the dam.		X	

ADDITIONAL COMMENTS: REFER TO ITEM NO. IF APPLICABLE

Items 5, 7, and 17: During the August, 2022 annual inspection, a small vortex was observed on the left side of the spillway, upstream of the crest. A diagonal crack in the downstream face of the left side of the spillway was also observed. There were plans to repair the vortex-causing condition / crack in 2023, however, due to heavy rain events and high river flows, the repairs were not able to be completed. Monthly observations are currently being performed by GE's consulting engineer, GZA, until the repairs are completed. A separation of the concrete joint at the weir crest was observed during past inspections. This condition should be repaired during the planned vortex repairs.

Items 6, 13, 19: Debris is not currently impeding flow, however debris should be removed when the vortex / crack repairs are completed.

Name of Dam: Columbia Mill Dam

I.D. No.: MA00260

Inspection Date: November 14, 2023

AREA INSPECTED	CONCRETE DAM / PRIMARY SPILLWAY 2 of 2			CHECK ( ) ACTION NEEDED		
	ITEM NO.	CONDITION	OBSERVATIONS	MONITOR	MAINTAIN	REPAIR
UPSTREAM CHANNEL	20	Slide, Slough, Scarp	None observed.			
	21	Erosion	None observed.			
	22	Vegetation Condition	Minor vegetation growth observed upstream of the right side of the dam.		X	
	23	Debris	Logs / woody debris lodged upstream of the dam, primarily on the left side.		X	
	24	Seepage	None observed.			
DOWNSTREAM CHANNEL	25	Training walls	Minor cracking, spalling, and efflorescence observed on both the left and right side.	X		
	26	Riprap Condition (e.g. displ.)	Appeared to be in-place.			
	27	Unusual Movement	None observed.			
	28	Discharge Area	Downstream boulder field appeared mostly clear - generally obscured by water.	X		
	29	Downstream Area	Housatonic River - no unusual observations.			
	30	Sinkholes, Scour Holes, etc.	None observed.			
	31	Foundation Seepage	None observed - generally obscured by water.	X		
	32	Exterior Mill Wall and Internal Sluiceway Discharge Condition	Moderate cracking, spalling, and exposed reinforcement observed on mill wall. Minor flow inside the internal sluiceway (flume), discharging through an opening in the mill building wall. Opening may be former gate location.	X		

**ADDITIONAL COMMENTS: REFER TO ITEM NO. IF APPLICABLE**

Item 22: Significant right embankment vegetation was removed by the dam's caretaker. Vegetation should continue to be maintained to allow for unimpeded observation of the dam.

Item 23: Debris is not currently impeding flow, however debris should be removed when the vortex / crack repairs are completed.

Item 25: Minor cracking, spalling, and efflorescence observed on both the left and right spillway training walls. The left training wall is considered to be the concrete wall that separates the spillway from the sluiceway. The right training wall appears to be constructed of concrete and stone masonry with shotcrete facing. A crack, up to about 3-inches wide, was observed near the top of the right training wall shotcrete near a change in top of wall slope. These conditions should continue to be monitored.

Item 32: Moderate cracking, spalling, and exposed reinforcement of the exterior wall of the mill building observed. Condition is similar to what has been previously observed. Minor seeps upstream of the opening in the mill building were observed during past inspections but not during this inspection (obscured by flow). These conditions should continue to be monitored.

Name of Dam: Columbia Mill Dam

I.D. No.: MA00260

Inspection Date: November 14, 2023

AREA INSPECTED	SLUCEWAY OUTLET WORKS 1 of 1			CHECK ( ) ACTION NEEDED		
	ITEM NO.	CONDITION	OBSERVATIONS	MONITOR	MAINTAIN	REPAIR
SLUCE GATE & CONTROLS	33	Intake Area	Appeared clear. Probing from gate platform indicated no upstream sediment buildup.	X		
	34	Stoplog Grooves	No stoplog grooves observed. Sluice gate slots appeared to be in adequate condition.			
	35	Gate U/S Face	Adequate condition.			
	36	Gate D/S Face	Adequate condition.			
	37	Gate Stem	Minor grassy/weedy debris buildup on the gate stem.	X		
	38	Gate Operator	Adequate condition; did not operate the gate during this inspection.		X	
	39	Gate Leakage	Generally obscured by flow - about 1-inch of water flowing over the gate.	X		
	40	Other	Internal flume observed from opening in mill floor.			
SLUCEWAY OUTLET STRUCTURE	41	U/S Concrete Condition	Minor cracking and spalling of the dividing wall between sluiceway and spillway.	X		
	42	D/S Concrete Condition	Minor cracking and spalling of the concrete sluiceway structure.	X		
	43	Seepage	None observed.			
	44	Discharge Area	Clear - water overtopping the gate discharged downstream.	X		
	45	Debris	None observed.	X		

**ADDITIONAL COMMENTS: REFER TO ITEM NO. IF APPLICABLE**

Item 37: Debris is not currently impeding flow, however debris should be removed when the vortex / crack repairs are completed.

Item 38: The gate was not operated during this inspection. The gate was in the fully closed position. The gate was last operated during the third quarterly inspection conducted in August 2023. At that time the gate was operated to 15.5-inches open and then closed. No observed issues with the gate operation. The gate should continue to be exercised annually.

Item 39 and 44: About 1-inch of water was flowing over the gate at the time of the inspection. The gate was in the fully closed position at the time of the inspection. The water flowing over the gate discharged downstream unimpeded.

Item 40: There is an internal sluiceway (flume) that extends through the mill building and discharges into the Housatonic. There is a gate that controls flow into the flume. Per the caretaker, the gate has not been operated in 10 to 15 years. Since there is water in the flume, it is assumed the gate leaks. This condition should continue to be monitored.

Item 41 and 42: Minor cracking and spalling of the concrete sluiceway structure was observed. This condition should continue to be monitored.

Name of Dam: Columbia Mill Dam

I.D. No.: MA00260

Inspection Date: November 14, 2023

AREA INSPECTED	RIGHT EMBANKMENT 1 of 1			CHECK ( ) ACTION NEEDED		
	ITEM NO.	CONDITION	OBSERVATIONS	MONITOR	MAINTAIN	REPAIR
UPSTREAM SLOPE	46	Surface Conditions	Adequate condition.			
	47	Surface Protection	Riprap observed in some locations.	X		
	48	Unusual Movement	None observed.			
	49	Abutment-Dam Contacts	Continuation of right-side training wall into the upstream side of the right embankment.	X		
	50	Vegetation	Vegetation recently cut / removed. Minimal grass cover observed.		X	
DOWNSTREAM SLOPE	51	Surface Conditions	Adequate condition; recently cut / removed vegetation obscured toe of embankment.			X
	52	Masonry Wall Condition	Unpointed stone masonry wall; pointing present near left side interface with left training wall.	X		
	53	Unusual Movement	Slight bulge (horizontal misalignment) in the center of the stone masonry wall.	X		
	54	Abutment-Dam Contacts	Adequate condition; continuation of right-side training wall.			
	55	Drains	None observed.			
	56	Leakage	None observed.			
	57	Vegetation	Vegetation recently cut / removed. Minimal grass cover observed.		X	
CREST	58	Surface Conditions	Adequate condition.			
	59	Horizontal Alignment	Adequate condition.			
	60	Vertical Alignment	Adequate condition.			
	61	Unusual Movement	None observed.			
	62	Vegetation	Vegetation recently cut / removed. Minimal grass cover observed.		X	

**ADDITIONAL COMMENTS: REFER TO ITEM NO. IF APPLICABLE**

Item 49: Right-side training wall partially concrete-faced and partially stone masonry-faced. Stone masonry is pointed.  
 Items 50, 57, 62: Vegetation recently cut / removed by the caretaker. Minor debris from vegetation removal still present, but did not generally impede observation of the right embankment. Vegetation should be maintained to allow for continued observation of the right embankment.  
 Item 51: Recently cut / removed vegetation was discarded at the toe of the embankment. The vegetation should be moved beyond the limits of the dam to allow for unobscured observation.  
 Item 52: Downstream of the stone masonry wall is a smaller concrete wall connected to the downstream end of the left training wall.  
 Item 53: In stone masonry wall, no tilting, offset, displacement, vertical misalignment, or missing stone masonry pieces observed.

Name of Dam: Columbia Mill Dam

I.D. No.: MA00260

Inspection Date: November 14, 2023

AREA INSPECTED	DOWNSTREAM AREA AND MISC. 1 of 1			CHECK ( ) ACTION NEEDED		
	ITEM NO.	CONDITION	OBSERVATIONS	MONITOR	MAINTAIN	REPAIR
DOWNSTREAM AREA	63	Abutment Seepage	None observed.			
	64	Training Walls	See "CONCRETE DAM / PRIMARY SPILLWAY" Item 25.			
	65	Slide, Slough, Scarp	None observed.			
	66	Drainage System	None observed. Spillway, sluiceway and internal flume discharge into the Housatonic River.			
	67	Downstream Hazard Description	Wooded on right bank; mill building complex on the left bank; residential, commercial, and Rt. 20 / W. Center Street within 1-mile of downstream.			
MISCELLANEOUS	68	Impoundment Banks	Steep and vegetated.			
	69	Access Roads	Approx. 1500-foot long grass-covered access road from Golden Hill Road to right embankment; grass covered access road to the right downstream toe area via cleared path downstream and to the right of the mill; paved access road to the mill building on the left side of the dam.		X	
	70	Signage	None observed. GE will advise owner			
	71	Fences / Railing	Gate operator platform and railings appeared to be in adequate condition.			
	72	Security / Access	Security chain / wire rope at the left and right-side access roads.		X	

ADDITIONAL COMMENTS: REFER TO ITEM NO. IF APPLICABLE

Item 69: Vegetation was recently cut / removed by the caretaker on the right-side and downstream toe access roads. Vegetation should continue to be maintained to allow access to the dam.

Item 72: Mill access road leading to left side of dam controlled by a locked security chain. Access road to right embankment controlled by a locked wire rope on Golden hill Road. Access to left spillway abutment, sluiceway gate platform, and internal flume is through locked mill building. These security measures should continue to be maintained to deter unauthorized access to the dam.



**Appendix D – Maintenance Tracking Table**

**Columbia Mill Dam – Maintenance Tracking Sheet – January 12, 2024 (based on November 14, 2023 Annual Inspection)**

<b>Condition Observed Requiring Monitoring or Maintenance/Repair</b>	<b>When Observed</b>	<b>Proposed Response</b>	<b>Status</b>
1. Vortex near left side gate platform.	August 17, 2022 visual inspection. Not observed since, including during the November 14, 2023 annual inspection.	Mitigate condition causing vortex; likely grout dam interior and/or repair concrete in area of vortex.  Monitor until condition is mitigated.	Repairs to be completed in 2024, subject to river flow.  Monthly observations will continue until mitigation measures are implemented.
2. Crack in the downstream face of the spillway on the left side.	August 17, 2022 visual inspection. <sup>1</sup> Not observed since, including during the November 14, 2023 annual inspection.	Repair the crack.  Monitor until repaired.	Repairs to be completed in 2024, subject to river flow.  Monthly observations will continue until repairs are complete.
3. Separation of the concrete joint at the weir crest.	August 17, 2022 visual inspection. Not observed since, including during the November 14, 2023 annual inspection.	Repair the joint.  Monitor until repaired.	Repairs to be completed in 2024, subject to river flow.  Monthly observations will continue until repairs are complete.
4. Vegetation and minimal grass cover on the right embankment.	August 17, 2022 visual inspection (for vegetation).  August 17, 2023 quarterly inspection (for vegetation).  November 14, 2023 annual inspection.	Continue to maintain vegetation and reestablish grass cover.	Vegetation has recently been cut/removed (see #5 below).  Vegetation management to continue in 2024. Reestablish grass cover in 2024.

<sup>1</sup> Condition also noted in the 2008 Columbia Mill Dam Phase II Inspection/Evaluation Report.

**Columbia Mill Dam – Maintenance Tracking Sheet – January 12, 2024 (based on November 14, 2023 Annual Inspection)**

<b>Condition Observed Requiring Monitoring or Maintenance/Repair</b>	<b>When Observed</b>	<b>Proposed Response</b>	<b>Status</b>
5. Previously cut/removed vegetation obstructing observation of the toe of the right embankment.	November 14, 2023 annual inspection.	Remove the previous cut vegetation from the toe of the right embankment.	Vegetation to be removed in 2024.
6. Debris on the left side and center of the spillway.	August 17, 2022 visual inspection. August 17, 2023 quarterly inspection. November 14, 2023 annual inspection.	Remove the debris.	Debris to be removed in 2024, subject to river flow.
7. Cracks in the left and right downstream training walls.	August 17, 2022 visual inspection. August 17, 2023 quarterly inspection. November 14, 2023 annual inspection.	Continue to monitor.	The cracks, including the horizontal crack on the top of the right downstream training wall, will continue to be monitored during subsequent inspections.
8. Moderate cracking, spalling, and exposed reinforcement on the Mill foundation walls.	August 17, 2022 visual inspection. August 17, 2023 quarterly inspection. November 14, 2023 annual inspection.	Continue to monitor.	The Mill wall will continue to be monitored during subsequent inspections.
9. Minor leakage through the base of the mill foundation wall.	August 17, 2022 visual inspection. Not observed since, including during the November 14, 2023 annual inspection.	Continue to monitor.	The minor leakage through the mill wall will continue to be monitored during subsequent inspections.



**Columbia Mill Dam – Maintenance Tracking Sheet – January 12, 2024 (based on November 14, 2023 Annual Inspection)**

<b>Condition Observed Requiring Monitoring or Maintenance/Repair</b>	<b>When Observed</b>	<b>Proposed Response</b>	<b>Status</b>
10. Concrete deterioration at the spillway joint with the right and left training walls.	August 17, 2022 visual inspection. Not observed since, including during the November 14, 2023 annual inspection.	Continue to monitor.	The deterioration will continue to be monitored during subsequent inspections, subject to river flow.
11. Bulge in the stone masonry wall downstream of the right embankment.	November 14, 2023 annual inspection.	Continue to monitor.	The stone masonry wall will continue to be monitored during subsequent inspections.



GZA GeoEnvironmental, Inc.