Kevin Mooney
Senior Project Manager
Corporate Holdings, GE Aerospace

1 Plastics Ave.
Pittsfield, MA 01201

T (413) 553-6610
kevin.mooney@ge.com

Via Electronic Mail

November 1, 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)
2024 Annual Visual Inspection Report for Willow Mill Dam

Dear Mr. Fontaine:

On September 3, 2024, GE's consultants from GZA GeoEnvironmental, Inc. performed the 2024 annual visual inspection of the of the Willow Mill Dam (also known as Hurlbut Dam) on behalf of GE and Onyx Specialty Papers, Inc. (the dam owner and operator) in accordance with the EPA-approved Operation, Monitoring, and Maintenance Plan for this dam. Enclosed is GZA's report on this annual inspection, including photographs and the annual dam inspection checklist.

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

Very truly yours,

Kevin G. Mooney
Senior Project Manager

Enclosures

Cc: (via electronic mail)
Dean Tagliaferro, EPA
Anni Loughlin, EPA
John Kilborn, EPA
Alexander Carli-Dorsey, EPA
Christopher Ferry, ASRC Federal
Thomas Czelusniak, HDR Inc.
Scott Campbell, Taconic Ridge Environmental
Izabella Zapisek, Taconic Ridge Environmental
Emily Caruso, MassDCR, Office of Dam Safety

Michael Gorski, MassDEP
Ben Guidi, MassDEP
Michelle Craddock, MassDEP
Jeffrey Mickelson, MassDEP
Mark Tisa, MassDFW
Eve Schluter, MassDFW
Betsy Harper, MA AG
Traci Iott, CT DEEP
Susan Peterson, CT DEEP
Graham Stevens, CT DEEP
Carol Papp, CT DEEP
Lori DiBella, CT AG
Whitney Behr, USFWS
Mark Barash, US DOI
Katie Zarada, NOAA
James McGrath, City of Pittsfield
Andrew Cambi, City of Pittsfield
Michael Coakley, PEDA
Melissa Provencher, BRPC
Christopher Ketchen, Town of Lenox
Town Manager, Lee
Town Manager, Great Barrington
Town Administrator, Stockbridge
Town Administrator, Sheffield
Jim Wilusz, Tri Town Health Dept.
Donald Zukowski, Onyx
Lance Hauer, GE
Andrew Thomas, GE
Jonathan Andrews and Seth Krause, GZA
James Bieke, Counsel for GE
Public Information Repository at David M. Hunt Library in Falls Village, CT
GE Internal Repository

Known for excellence.
Built on trust.

Visual Inspection

2024 Annual Visual Inspection Report
Willow Mill Dam (MA00262)
South Lee, Massachusetts

Date of Inspection: September 3, 2024
Date of Report: November 1, 2024
File No. 01.0019896.71

PREPARED FOR:
Onyx Specialty Papers, Inc.
Lee, Massachusetts
and
General Electric Company
Pittsfield, Massachusetts

GZA GeoEnvironmental, Inc.
249 Vanderbilt Avenue | Norwood, Massachusetts 02062
(781) 278-3700

32 Offices Nationwide
www.gza.com

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.

TABLE OF CONTENTS

FIGURES

APPENDICES

1.0 INTRODUCTION

On behalf of Onyx Specialty Papers, Inc. (Onyx) and the General Electric Company (GE), GZA GeoEnvironmental, Inc. (GZA) performed an annual visual inspection of the Willow Mill Dam (the Dam, also known as Hurlbut Dam), owned and operated by Onyx, on the Housatonic River in South Lee, Berkshire County, Massachusetts. GZA performed the inspection on September 3, 2024 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 Willow Mill Dam are required by the Operation, Monitoring, and Maintenance Plan (OM&M Plan) for the Dam, Revision 1, prepared by Onyx and GE and dated July 13, 2023, as conditionally approved by the United States Environmental Protection Agency (EPA) on October 11, 2023.

3.0 INSPECTION SUMMARY

3.1 GENERAL

On September 3, 2024, Jonathan Andrews, Seth Krause, Leslie Decristofaro, and Thomas Sinnott from GZA (representing GE), Tom Czelusniak from HDR (representing EPA), and Joshua Fontaine from EPA, mobilized to Willow Mill Dam and performed a visual inspection of the Dam. They were accompanied for part of the inspection by Donald Zukowski representing Onyx. The weather was sunny in the high 50s / low 60s, and the upstream pool level was estimated at about 2 inches above the spillway crest.

Overall, the conditions of the Dam were generally similar to those reported in the most recent Phase I Inspection Report (conducted for Onyx on July 29, 2022 by Fuss & O'Neill and provided in Attachment C to the revised OM&M Plan), GZA's 2023 Annual Visual Inspection (conducted by GZA on November 14, 2023), and the most recent quarterly observation checklist (conducted on August 26, 2024 by Onyx).

A summary of observations at 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, broken down by structure, is provided in **Appendix C**.

3.2 MASONRY 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. Based on discussions with Onyx, low-flow conditions when the upstream water levels drop below the spillway crest occur periodically throughout the year, allowing opportunity to observe the spillway's downstream features.

3.3 RIVER OUTLET WORKS (RIVER OUTLET CONTROL STRUCTURE)

The river outlet control structure at the right abutment of the dam was observed to be in generally adequate condition. Minor cracking, efflorescence, and missing mortar joints were observed on the vertical faces of the structure. Minor cracking and surface deterioration was observed on the concrete cap slab.

Minor leakage through Gate #1 and Gate #2 was observed during the inspection. The leakage appeared greater than that observed during the 2023 Annual inspection, but similar to photographs contained in the 2022 Phase I Inspection Report.

The river outlet gates were closed at the time of the inspection, and no gates were operated during the annual inspection. A review of the plant log books indicated that the gates have been operated since the 2023 annual inspection, and the August 2024 quarterly observation checklist indicated that both gates were last operated on April 12, 2024. GZA probed for sediment upstream of the river outlet control structure gates. No sediment was discerned during probing upstream of these gates.

An offset vertical joint in the right concrete training wall was observed just upstream of the river outlet control structure. The offset was measured to be about two inches longitudinally (perpendicular to the flow of the river). A small vertical crack in the right training wall was observed just downstream of the river outlet control structure. Both features appeared similar to those observed during GZA's 2023 Annual Inspection and in photographs included in the 2022 Phase I Inspection Report.

Minor cracking and efflorescence were observed in the right-side training wall downstream of the river outlet control structure.

3.4 AUXILIARY SPILLWAY / HEADRACE WALL (AUXILIARY SPILLWAY / WASTE WEIR)

The auxiliary spillway / waste weir was observed to be in generally adequate condition with some loss of mortar and masonry blocks. Missing mortar was observed on the canal walls, particularly near the water level. Missing mortar and stones were observed on the auxiliary spillway below the crest on the upstream side. Missing mortar was observed on the downstream side of the auxiliary spillway between the capstones and underlying masonry façade. Missing bricks were observed at the arched entrance to the headrace tunnel.

No distress, cracking, offsets, or signs of displacement of the auxiliary spillway were observed. Note that the downstream face of the auxiliary spillway was constructed with a slight angle or bulge.[1]

A six-inch diameter PVC canal drainpipe was observed at the right-side toe of the auxiliary spillway. The drain was discharging clear flow during the current inspection.

The right canal sluice gate (Gate #3) was nearly full open, and the left canal sluice gate (Gate #4) was fully closed at the time of the inspection. The timber skin of Gate #3 was partially exposed above water and showed some deterioration. No gates were operated during the annual inspection. A review of the plant log books indicated that the gates have been operated since the 2023 annual inspection, and the August 2024 quarterly observation checklist indicated that both gates were last operated on July 5, 2024. GZA probed for sediment upstream of the canal sluice gates. Probing indicated there was about two to four inches of sediment present upstream of the canal sluice gates.

3.5 DOWNSTREAM AREA / MISCELLANEOUS

The discharge channel downstream of the Dam appeared to be in generally adequate condition. Missing mortar and stone masonry were observed in the retaining wall below the bridge downstream of the Dam.

[1] See GZA GeoEnvironmental, Inc. (June 10, 2004). Record Drawings – Phases 1-5, "Willow Mill Dam Repairs & Improvements".

During the 2023 annual inspection, a depression related to former utility pole was observed in the grassed area to the right of the river outlet control structure. The depression was not observed during the 2024 inspection and grass cover looked adequate. The caretaker reported that depression had been filled.

GZA discussed flood operations with Onyx; no changes in flood operations were noted. Above-water and slightly submerged metal surfaces were observed during the inspection. No significant corrosion was observed and contacts with underlying masonry and concrete surfaces appeared intact.

Some railing sections were observed to be broken at the left spillway abutment/canal intake structure.

4.0 RECOMMENDATIONS

The following are GZA's recommendations for continued monitoring and maintenance of the Dam.[2]

4.1 MONITORING RECOMMENDATIONS

In addition to the requirements of the OM&M Plan, GZA recommends the following monitoring activities that do not require engineering design:

1. Visually observe typically submerged structures during low-flow conditions, including looking for signs of scour at the spillway toe and the missing piece of stone masonry in the downstream spillway face noted in the 2022 Phase I Inspection Report. These observations could be made by Onyx during the routine quarterly inspections, subject to flow conditions. Photographs should be taken to help document conditions during low-flow periods. [Checklist Items 1 to 4, 7 to 12, 15, 18, 19, 29, 31, 33, 34, 44, 49, 65 to 68, 90 to 94, 97, 99, 100.]

2. Monitor the left upstream training wall for missing masonry, as noted in the 2022 Phase I Inspection Report [Checklist Item 27].

3. Monitor the leakage observed through the river outlet control structure gates [Checklist Items 48 and 53].

4. Monitor the deteriorated mortar joints, minor cracking, and efflorescence at the outlet control structure [Checklist Items 56, 57, 58].

5. Monitor the offset vertical joint in the right upstream concrete training wall adjacent to the outlet control structure [Checklist Item 63].

6. Continue to monitor the flow from the six-inch canal drainpipe at the auxiliary spillway [Checklist Item 75].

7. Monitor the leakage through the auxiliary spillway stone masonry [Checklist Item 76].

8. Monitor the cracking and efflorescence in the downstream right-side concrete training wall [Checklist Item 111].

9. Monitor the mortar joints and loose stone in the roadway masonry retaining wall downstream of the dam at the left-side bridge abutment [Checklist Item 114].

[2] GZA's recommendations are cross-referenced to the corresponding items in the inspection checklist in **Appendix C**.

4.2 MAINTENANCE RECOMMENDATIONS

GZA recommends the following maintenance actions which are intended to maintain and 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 contractor experienced in dam construction.

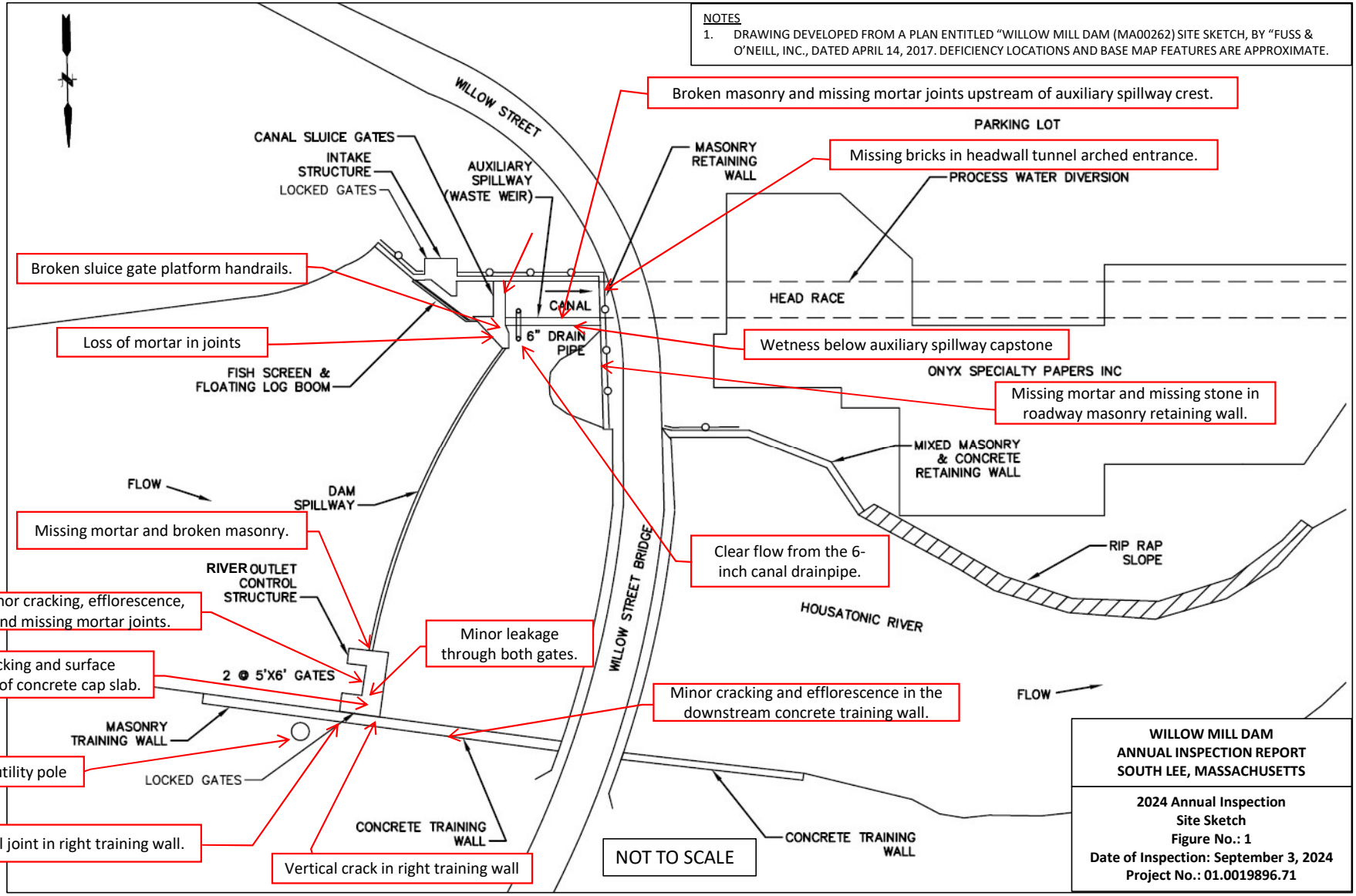
1. The masonry joints in deteriorated areas at the auxiliary spillway / headrace wall and the canal walls should be repointed during the next scheduled planned maintenance activities. Missing stone masonry pieces, including missing brick at the headrace channel arched tunnel entrance, should be replaced during the planned maintenance activities. In the interim, these conditions should be monitored, and if they are observed to worsen, expedited repairs should be made on a case-by-case basis. [Checklist Items 69, 72, 76, 79, 82, 86, 89.]

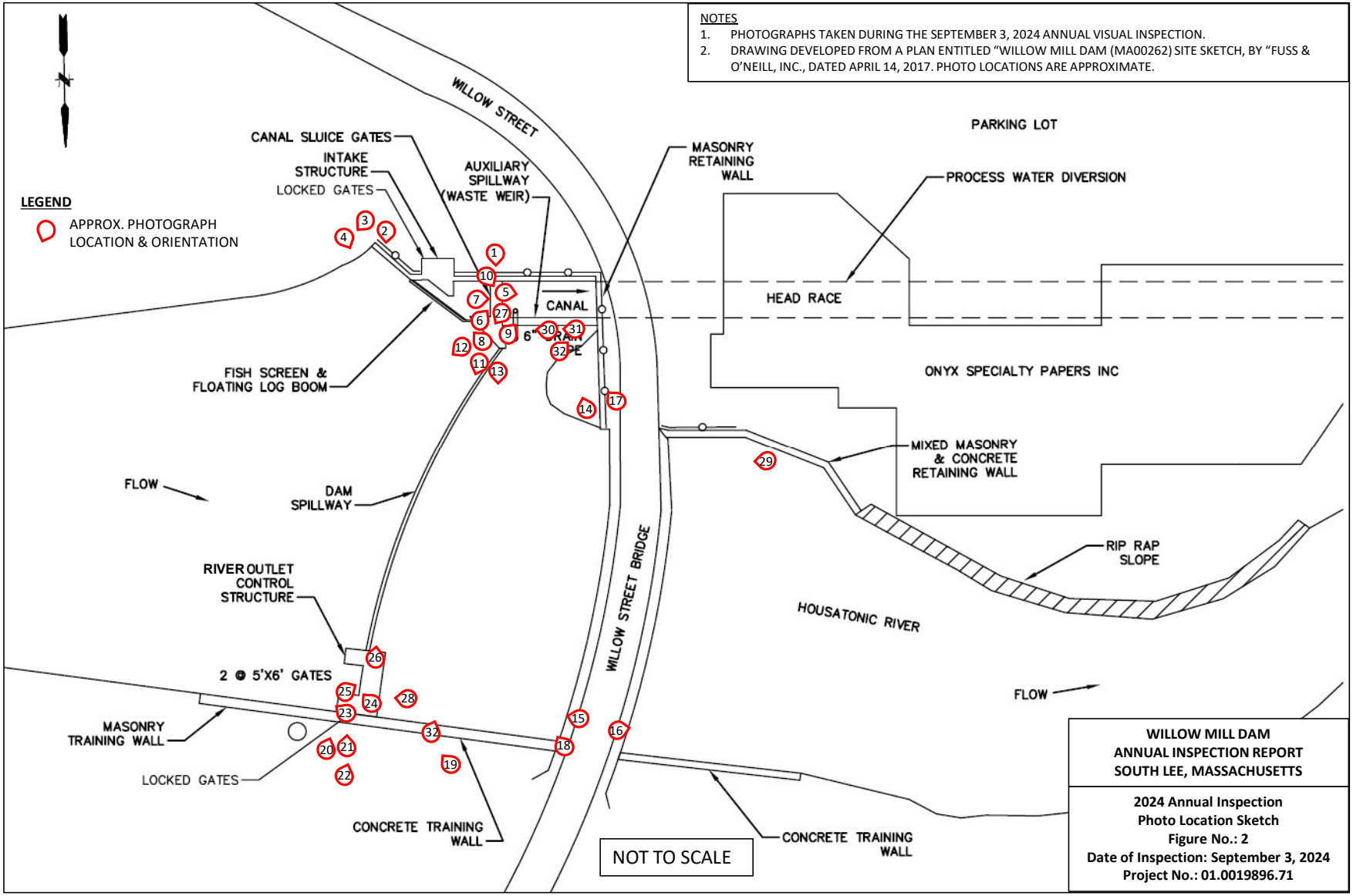
2. Continue to remove debris from six-inch drainpipe when there is safe access to the drainpipe. Monitor the water flow from the drainpipe and look for signs of sediment transport. [Checklist Item 75.]

3. Trees and woody vegetation should be removed from within 20 feet of the dam, including from the crest of the auxiliary spillway, during future planned maintenance activities [Checklist Items 84, 88, 125].

4. The broken and missing handrails around the sluice gate platform should be repaired during the planned maintenance activities [Checklist Item 122].

Figures


NOTES
1. DRAWING DEVELOPED FROM A PLAN ENTITLED "WILLOW MILL DAM (MA00262) SITE SKETCH, BY "FUSS & O'NEILL, INC., DATED APRIL 14, 2017. DEFICIENCY LOCATIONS AND BASE MAP FEATURES ARE APPROXIMATE.
Broken masonry and missing mortar joints upstream of auxiliary spillway crest.
Missing bricks in headwall tunnel arched entrance.
Broken sluice gate platform handrails.
Loss of mortar in joints
Wetness below auxiliary spillway capstone
Missing mortar and missing stone in roadway masonry retaining wall.
Missing mortar and broken masonry.
Clear flow from the 6-inch canal drainpipe.
Minor cracking, efflorescence, and missing mortar joints.
Minor leakage through both gates.
Minor cracking and surface deterioration of concrete cap slab.
Minor cracking and efflorescence in the downstream concrete training wall.
Former utility pole
Offset vertical joint in right training wall.
Vertical crack in right training wall
WILLOW STREET
CANAL SLUICE GATES
INTAKE STRUCTURE
LOCKED GATES
AUXILIARY SPILLWAY (WASTE WEIR)
MASONRY RETAINING WALL
PARKING LOT
PROCESS WATER DIVERSION
HEAD RACE
CANAL
6" DRAIN PIPE
FISH SCREEN & FLOATING LOG BOOM
ONYX SPECIALTY PAPERS INC
MIXED MASONRY & CONCRETE RETAINING WALL
FLOW
DAM SPILLWAY
RIVER OUTLET CONTROL STRUCTURE
WILLOW STREET BRIDGE
RIP RAP SLOPE
HOUSATONIC RIVER
2 @ 5'X6' GATES
MASONRY TRAINING WALL
LOCKED GATES
CONCRETE TRAINING WALL
CONCRETE TRAINING WALL
FLOW
NOT TO SCALE
WILLOW MILL DAM
ANNUAL INSPECTION REPORT
SOUTH LEE, MASSACHUSETTS
2024 Annual Inspection
Site Sketch
Figure No.: 1
Date of Inspection: September 3, 2024
Project No.: 01.0019896.71


NOTES
1. PHOTOGRAPHS TAKEN DURING THE SEPTEMBER 3, 2024 ANNUAL VISUAL INSPECTION.
2. DRAWING DEVELOPED FROM A PLAN ENTITLED "WILLOW MILL DAM (MA00262) SITE SKETCH, BY "FUSS & O'NEILL, INC., DATED APRIL 14, 2017. PHOTO LOCATIONS ARE APPROXIMATE.
LEGEND
APPROX. PHOTOGRAPH LOCATION & ORIENTATION
WILLOW STREET
CANAL SLUICE GATES
INTAKE STRUCTURE
LOCKED GATES
AUXILIARY SPILLWAY (WASTE WEIR)
MASONRY RETAINING WALL
PARKING LOT
PROCESS WATER DIVERSION
HEAD RACE
CANAL
6" DRAIN PIPE
FISH SCREEN & FLOATING LOG BOOM
ONYX SPECIALTY PAPERS INC
MIXED MASONRY & CONCRETE RETAINING WALL
FLOW
DAM SPILLWAY
RIP RAP SLOPE
RIVER OUTLET CONTROL STRUCTURE
WILLOW STREET BRIDGE
HOUSATONIC RIVER
2 @ 5'X6' GATES
FLOW
MASONRY TRAINING WALL
LOCKED GATES
CONCRETE TRAINING WALL
CONCRETE TRAINING WALL
NOT TO SCALE
WILLOW MILL DAM
ANNUAL INSPECTION REPORT
SOUTH LEE, MASSACHUSETTS
2024 Annual Inspection
Photo Location Sketch
Figure No.: 2
Date of Inspection: September 3, 2024
Project No.: 01.0019896.71

Appendix A – Limitations

USE OF REPORT

1. GZA GeoEnvironmental, Inc. (GZA) prepared this report on behalf of, and for the exclusive use of General Electric (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.

SUBSURFACE CONDITIONS

4. If presented, the generalized soil profile(s) and description, along with the conclusions and recommendations provided in our Report, are based in part on widely-spaced subsurface explorations by GZA and/or others, with a limited number of soil and/or rock samples and groundwater /piezometers data and are intended only to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized, and were based on our assessment of subsurface conditions. The composition of strata, and the transitions between strata, may be more variable and more complex than indicated. For more specific information on soil conditions at a specific location refer to the exploration logs. The nature and extent of variations between these explorations may not become evident until further exploration or construction. If variations or other latent conditions then appear evident, it will be necessary to reevaluate the conclusions and recommendations of this report.

5. Water level readings have been made in test holes (as described in the Report), monitoring wells and piezometers, at the specified times and under the stated conditions. These data have been reviewed and interpretations have been made in this Report. Fluctuations in the groundwater and piezometer levels, however, occur due to temporal or spatial variations in areal recharge rates, soil heterogeneities, reservoir and tailwater levels, the presence of subsurface utilities, and/or natural or artificially induced perturbations.

GENERAL

6. 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.

7. 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.

8. 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.

9. 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.

10. 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

11. 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.

12. This scope of work does not include an assessment of the need for fences, gates, no-trespassing signs, 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.

COST ESTIMATES

13. Unless otherwise stated, our cost estimates are for comparative, or general planning purposes. These estimates may involve approximate quantity evaluations and may not be sufficiently accurate to develop construction bids, or to predict the actual cost of work addressed in this Report. Further, since we have no control over the labor and material costs required to plan and execute the anticipated work, our estimates were made using our experience and readily available information. Actual costs may vary over time and could be significantly more, or less, than stated in the Report.

ADDITIONAL SERVICES

14. 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

Client Name: General Electric Company	**Site Location:** Willow Mill Dam (MA00262) South Lee, Massachusetts	**Project No.** 01.0019896.71

Photo No.	**Date:**
1	9/3/2024

Direction Photo Taken:
Right.

Description:
Canal sluice gates and intake structure from left abutment parking lot.

Photo No.	**Date:**
2	9/3/2024

Direction Photo Taken:
Right.

Description:
Fish screen (trash rack) platform from left abutment parking lot.

Client Name: General Electric Company	**Site Location:** Willow Mill Dam (MA00262) South Lee, MA	**Project No.** 01.0019896.71

Photo No.	**Date:**
3	9/3/2024

Direction Photo Taken:
Upstream.

Description:
Overview of the impoundment from near the fish screen platform.

Photo No.	**Date:**
4	9/3/2024

Direction Photo Taken:
Downstream.

Description:
Upstream side of the spillway from the left upstream side of the dam. Willow Street bridge and downstream channel in photo background.

Client Name: General Electric Company	**Site Location:** Willow Mill Dam (MA00262) South Lee, MA	**Project No.** 01.0019896.71

Photo No.	**Date:**
5	9/3/2024

Direction Photo Taken:
Downstream.

Description:
Canal and auxiliary spillway (waste weir) structure.

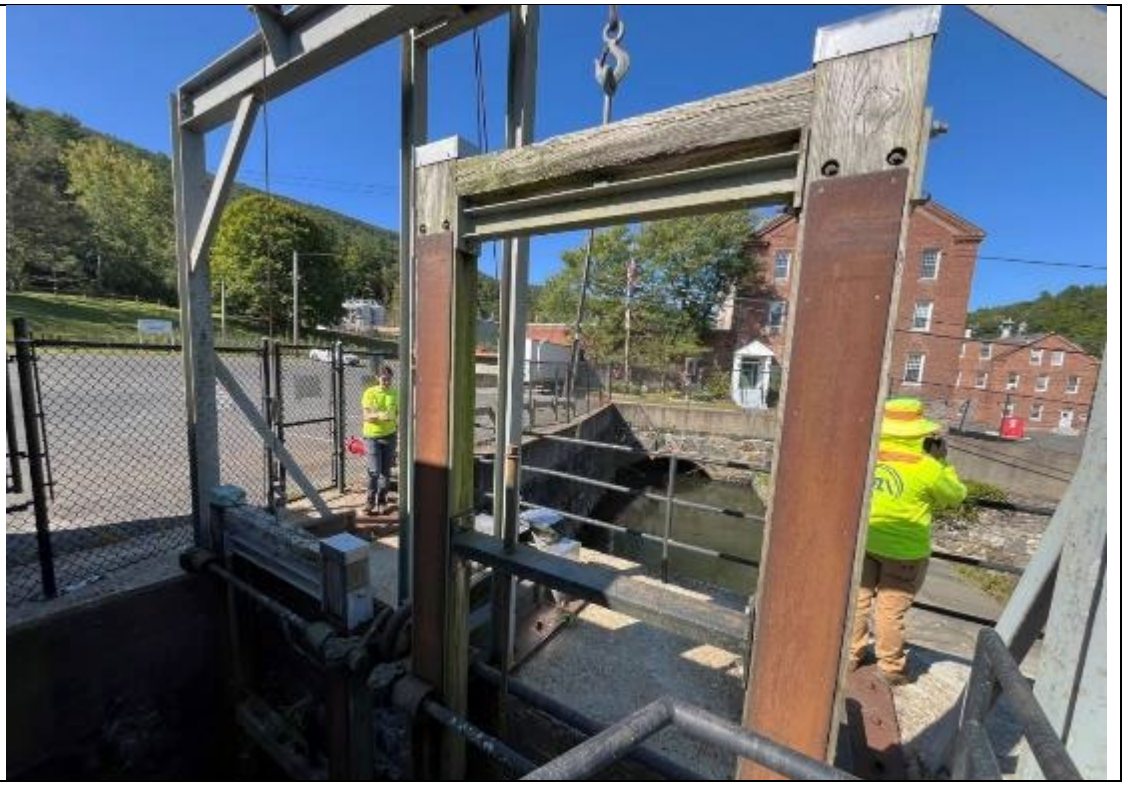
Note broken masonry near water level below the auxiliary spillway crest (circled – photo right) and missing bricks from arched entrance to the headrace tunnel (circled – photo left).

Photo No.	**Date:**
6	9/3/2024

Direction Photo Taken:
Downstream.

Description:
Canal sluice gates (Gate 3 to the right and Gate 4 to the left) and operators.

Left gate appeared closed and the right gate was open.



Client Name: General Electric Company	**Site Location:** Willow Mill Dam (MA00262) South Lee, MA	**Project No.** 01.0019896.71

Photo No.	**Date:**
7	9/3/2024

Direction Photo Taken:
Downstream facing down.

Description:
Upstream side of the canal sluice gates.

Note missing mortar between the stone masonry blocks.

Based on probing, about 2-to-4-inches of sediment was measured upstream of the gates.

Photo No.	**Date:**
8	9/3/2024

Direction Photo Taken:
Upstream.

Description:
View of the fish screen (trash rack), floating log boom, and trash rack cleaning platform.

Client Name: General Electric Company	**Site Location:** Willow Mill Dam (MA00262) South Lee, MA	**Project No.** 01.0019896.71

Photo No.	**Date:**
9	9/3/2024

Direction Photo Taken:
Downstream and left.

Description:
Overview of the auxiliary spillway (waste weir) from the canal sluice gate platform.

Missing mortar observed along the horizontal joint of the masonry cap (red arrow at joint between upper "original" crest masonry and lower ca. 2004 buttress). Also note vegetation growth in the joint.

Clear flow from PVC drainpipe at downstream toe (also see photo 30).

Photo No.	**Date:**
10	9/3/2024

Direction Photo Taken:
Downstream.

Description:
Downstream channel from the sluice gate platform.

Missing mortar and missing stone observed in the roadway masonry retaining wall (see red circle and close-up inset).

Client Name: General Electric Company	**Site Location:** Willow Mill Dam (MA00262) South Lee, MA	**Project No.** 01.0019896.71

Photo No.	**Date:**
11	9/3/2024

Direction Photo Taken:
Right.

Description:
Spillway and right side of the dam from the sluice gate platform.

About 2-inches of water flow over the spillway at the time of the inspection.

Photo No.	**Date:**
12	9/3/2024

Direction Photo Taken:
Upstream and right.

Description:
Right abutment and river outlet control structure upstream of the spillway.

Note missing mortar, and broken masonry on the outlet control structure. Steel plate on outlet control structure was placed during the 2004 repairs.

Client Name: General Electric Company	**Site Location:** Willow Mill Dam (MA00262) South Lee, MA	**Project No.** 01.0019896.71

Photo No. 13	**Date:** 9/3/2024
Direction Photo Taken: Downstream and right.	
Description: Right downstream concrete training wall. Minor cracking and efflorescence of the concrete observed.	

Photo No. 14	**Date:** 9/3/2024
Direction Photo Taken: Upstream and to the left.	
Description: Downstream side of the auxiliary spillway from Willow Street bridge. Note vegetation in joint between “original” spillway weir masonry and lower buttress. Also see Photo 9 for vegetation.	

Client Name: General Electric Company	**Site Location:** Willow Mill Dam (MA00262) South Lee, MA	**Project No.** 01.0019896.71

Photo No.	**Date:**
15	9/3/2024

Direction Photo Taken:
Upstream.

Description:
Downstream side of the river outlet control structure.

Note minor leakage through both gates.

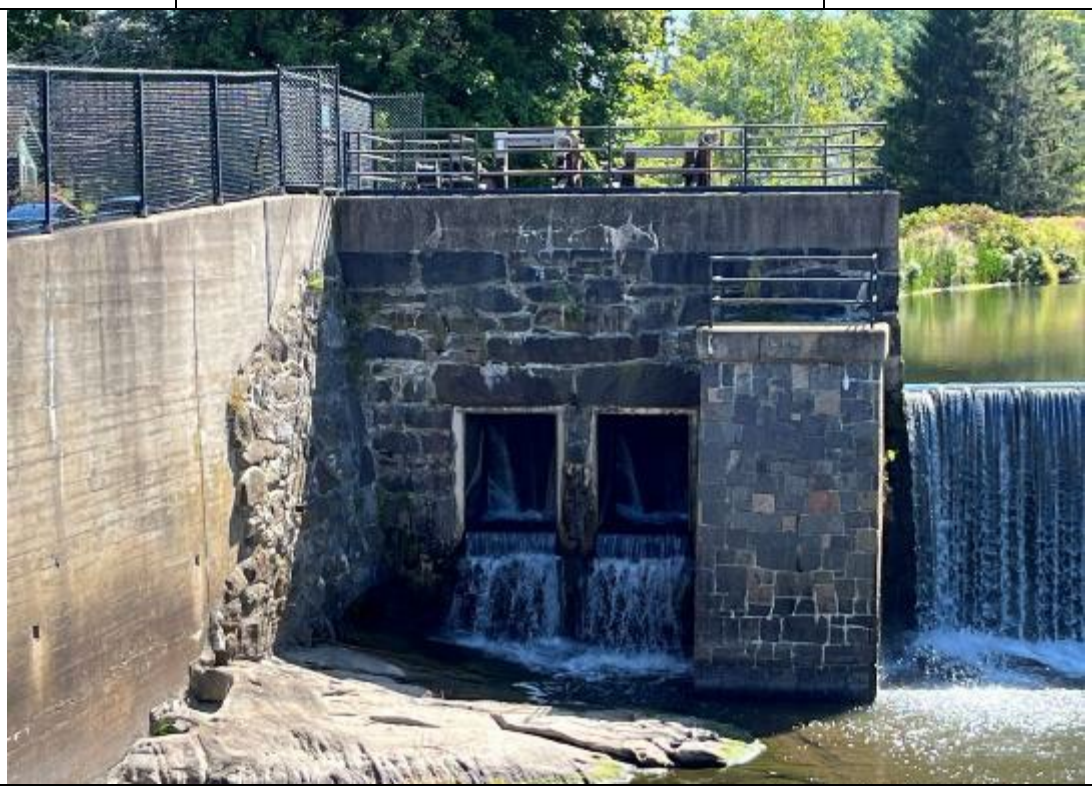


Photo No.	**Date:**
16	9/3/2024

Direction Photo Taken:
Downstream.

Description:
Channel (Housatonic River) downstream of the Willow Street Bridge.

Client Name: General Electric Company	**Site Location:** Willow Mill Dam (MA00262) South Lee, MA	**Project No.** 01.0019896.71

Photo No.	**Date:**
17	9/3/2024

Direction Photo Taken:
Upstream and left.

Description:
Auxiliary spillway from the Willow Street bridge.

Photo No.	**Date:**
18	9/3/2024

Direction Photo Taken:
Upstream and left.

Description:
Overview of the spillway from the Willow Street Bridge.

Client Name: General Electric Company	**Site Location:** Willow Mill Dam (MA00262) South Lee, MA	**Project No.** 01.0019896.71

Photo No.	**Date:**
19	9/3/2024

Direction Photo Taken:
Upstream and left.

Description:
Right side of right concrete training wall adjacent to the outlet control structure.

Note vertical crack.

Photo No.	**Date:**
20	9/3/2024

Direction Photo Taken:
Left.

Description:
Offset of a vertical joint in the right concrete training wall at upstream end of the outlet control structure (also see photo 21).

Client Name: General Electric Company	**Site Location:** Willow Mill Dam (MA00262) South Lee, MA	**Project No.** 01.0019896.71

Photo No.	**Date:**
21	9/3/2024

Direction Photo Taken:
Left.

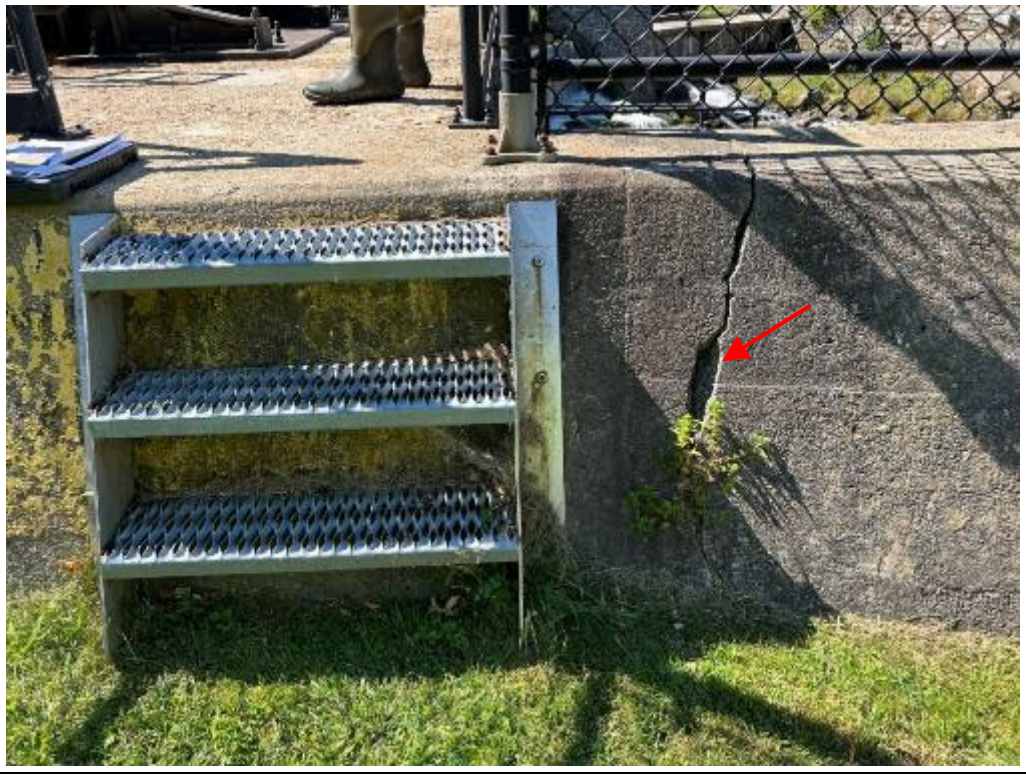
Description:
Closeup of the vertical joint offset in the right concrete training wall upstream of the outlet control structure (also see photo 20).

Photo No.	**Date:**
22	9/3/2024

Direction Photo Taken:
Left.

Description:
Outlet control structure stairs and gated access.

Note crack in right training wall at downstream end of outlet structure (downstream of stairs / photo right).



Client Name: General Electric Company	**Site Location:** Willow Mill Dam (MA00262) South Lee, MA	**Project No.** 01.0019896.71

Photo No.	**Date:**
23	9/3/2024

Direction Photo Taken:
Upstream.

Description:
Overview of the impoundment from the river outlet control structure.

Photo No.	**Date:**
24	9/3/2024

Direction Photo Taken:
Upstream.

Description:
River outlet control structure gate operators.

Client Name: General Electric Company	**Site Location:** Willow Mill Dam (MA00262) South Lee, MA	**Project No.** 01.0019896.71

Photo No.	**Date:**
25	9/3/2024

Direction Photo Taken:
Downstream and left.

Description:
Upstream side of the river outlet control structure gate operators (Gate 1 on the right and Gate 2 on the left).

Based on probing, no sediment was measured upstream of the gates.

Photo No.	**Date:**
26	9/3/2024

Direction Photo Taken:
Left.

Description:
Overview of the left side of the dam including the fish screen (trash racks), canal sluice gate structure, and spillway.

Client Name: General Electric Company	**Site Location:** Willow Mill Dam (MA00262) South Lee, MA	**Project No.** 01.0019896.71

Photo No.	**Date:**
27	9/3/2024

Direction Photo Taken:
Right.

Description:
Broken handrail along the sluice gate platform.

Photo No.	**Date:**
28	9/3/2024

Direction Photo Taken:
Upstream.

Description:
Close up of river outlet control structure gates (Gate 1 on the photo left and Gate 2 on photo right).

Note minor leakage through both gates.

Client Name: General Electric Company	**Site Location:** Willow Mill Dam (MA00262) South Lee, MA	**Project No.** 01.0019896.71

Photo No.	**Date:**
29	9/3/2024

Direction Photo Taken:
Upstream.

Description:
Willow street bridge and right side of spillway from downstream.
Photo taken along access to downstream side of auxiliary spillway.

Photo No.	**Date:**
30	9/3/2024

Direction Photo Taken:
Upstream.

Description:
Downstream face of the auxiliary spillway. Note wet spot near the center of the structure.

Clear flow through the 6-inch drainpipe (red arrow).

Client Name: General Electric Company	**Site Location:** Willow Mill Dam (MA00262) South Lee, MA	**Project No.** 01.0019896.71

Photo No.	**Date:**
31	9/3/2024

Direction Photo Taken:
Upstream.

Description:
View parallel to the downstream face of the auxiliary spillway. Slight as-constructed bulge observed in the center of the structure. No cracking of the façade was observed, indicating little to no displacement since the ca 2004 repairs.

Photo No.	**Date:**
32	9/3/2024

Direction Photo Taken:
Downstream and left.

Description:
Auxiliary spillway. Missing mortar underneath the masonry capstones.

Appendix C – Inspection Checklist

ANNUAL DAM INSPECTION CHECKLIST

Name of Dam:	Willow Mill Dam	I.D. No.:	MA00262
Location:	South Lee, Massachusetts (Town, State)		
Owner:	Onxy Specialty Papers, Inc.	River / Stream:	Housatonic River
MassDEM Classification Data:	Intermediate (Size)		Significant (Hazard)

PHYSICAL DATA:	Stone Masonry, Run-of-River (Type of Dam)	14 feet to Primary Spillway Crest (Height of Dam)	50 acre-feet (Normal Pool Storage Capacity)
ELEVATIONS:	838.0 ft NGVD (spillway crest; 839.2 ft avg. annual flow) (Normal Pool)	2 in± over crest (Pool at Inspection)	

Names of Individuals at Inspection	Title/Position	Representing
Jonathan D. Andrews, P.E.	Associate Principal	GZA GeoEnvironmental, Inc.
Seth D. Krause, P.E.	Project Manager	GZA GeoEnvironmental, Inc.
Leslie Decristofaro, E.I.T.	Engineer I	GZA GeoEnvironmental, Inc.
Thomas Sinnott, E.I.T.	Assistant Project Manager	GZA GeoEnvironmental, Inc.
Thomas Czelusniak	Remediation Systems Manager	HDR
Joshua Fontaine	Remedial Project Manager	Environmental Protection Agency
Donald Zukowski (part-time)	Operations Support Manager	Onyx Specialty Papers, Inc.

DATE OF INSPECTION:	September 3, 2024		
WEATHER:	Sunny	TEMPERATURE:	50s / 60s - deg F

This is to certify that the above dam has been inspected and the following are the results of this inspection.

SIGNATURE OF INSPECTOR

Name of Dam: Willow Mill Dam I.D. No.: MA00262 Inspection Date: September 3, 2024

AREA INSPECTED	MASONRY DAM / PRIMARY SPILLWAY 1 of 2			CHECK ( ) ACTION NEEDED		
	ITEM NO.	CONDITION	OBSERVATIONS	MONITOR	INVEST.	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					
	6					
DOWNSTREAM FACE	7	Surface Conditions	Generally obscured by flow.	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	Generally obscured by flow.	X		
	12	Leakage	Generally obscured by flow.	X		
	13					
	14					
CREST	15	Surface Conditions	Generally obscured by flow.	X		
	16	Horizontal Alignment	Appeared to be in adequate alignment.			
	17	Vertical Alignment	Appeared to be in adequate alignment.			
	18	Condition of Joints	Generally obscured by flow.	X		
	19	Unusual Movement	Generally obscured by flow.	X		
	20	General	n/a			
	21					

ADDITIONAL COMMENTS: REFER TO ITEM NO. IF APPLICABLE

General (all pages): Typically submerged structures should be observed during low-flow conditions, including signs of scour at the downstream toe of the spillway. These observations can be made during routine quarterly inspections, subject to flow conditions, or during a drawn-down annual inspection (every five years per OM&M Plan Section 3.1.2). Note that the 2022 Phase I Inspection Report indicated that there was a piece of missing masonry on the right downstream face of the spillway. This area was obscured by flow during the current inspection. There is portion of the spillway crest near the right abutment that appears to be lower than the rest of the spillway crest; this conditoin appears to be by design or a construction artifact.

Name of Dam: Willow Mill Dam I.D. No.: MA00262 Inspection Date: September 3, 2024

AREA INSPECTED	MASONRY DAM / PRIMARY SPILLWAY 2 of 2			CHECK ( ) ACTION NEEDED		
	ITEM NO.	CONDITION	OBSERVATIONS	MONITOR	INVEST.	REPAIR
UPSTREAM CHANNEL	22	Slide, Slough, Scarp	None observed.			
	23	Erosion	None observed.			
	24	Vegetation Condition	None observed.			
	25	Debris	None observed.			
	26	Seepage	None observed.			
	27	Left Upstream Training Wall	The 2022 Inspection Report noted missing masonry; not observed during this inspection.	X		
DOWNSTREAM CHANNEL	28	Sidewalls	See "DOWNSTREAM AREA & MISC."			
	29	Channel Floor	Generally obscured by flow.	X		
	30	Unusual Movement	None observed.			
	31	Discharge Area	Generally obscured by flow.	X		
	32	Downstream Area	Housatonic River - no unusual observations.			
	33	Sinkholes, Scour Holes, etc.	Generally obscured by flow.	X		
	34	Foundation Seepage	Generally obscured by flow.	X		
	35					
	36					
UPSTREAM TIMBER DAM	37	Exposed Portion	Below-water timbers observed.			
	38	Breached Section	Not observed.			
	39					
	40					
	41					

ADDITIONAL COMMENTS: REFER TO ITEM NO. IF APPLICABLE

Items 37, 38: Based on review of previous documentation, remnants of an old timber dam exist upstream of the current dam. It appeared that below-water timber remnants were observed approximately 20 feet upstream of the spillway during this inspection. This breached upstream timber dam is no longer a water-retaining structure associated with this project.

Name of Dam: Willow Mill Dam I.D. No.: MA00262 Inspection Date: September 3, 2024

AREA INSPECTED	ITEM NO.	CONDITION	OBSERVATIONS	CHECK ( ) ACTION NEEDED: MONITOR	INVEST.	REPAIR
		RIVER OUTLET WORKS 1 of 1				
SLUICE GATES & CONTROLS	42	Intake Area	Appeared clear. Probing indicated no sediment upstream of gates.			
	43	Stoplog Grooves	Appeared adequate.			
	44	Shore-side Gate #1 U/S Face	Not observed - fully submerged.	X		
	45	Shore-side Gate #1 D/S Face	Observed from downstream; closeup inspection not performed.			
	46	Shore-side Gate #1 Stems	Appeared adequate.			
	47	Shore-side Gate #1 Operator	Appeared adequate.			
	48	Shore-side Gate #1 Leakage	Minor leakage through the gate observed.	X		
	49	River-side Gate #2 U/S Face	Not observed - fully submerged.	X		
	50	River-side Gate #2 D/S Face	Observed from downstream; closeup inspection not performed.			
	51	River-side Gate #2 Stems	Appeared adequate.			
	52	River-side Gate #2 Operator	Appeared adequate.			
	53	River-side Gate #2 Leakage	Minor leakage through the gate observed.	X		
	54	Gate Operation	Logbook & quarterly inspection forms indicate gates exercised.			
	55					
RIVER OUTLET STRUCTURE	56	U/S Masonry Condition	Minor cracking and efflorescence and missing mortar joints.	X		
	57	D/S Masonry Condition	Minor efflorescence observed at mortar joints.	X		
	58	Concrete Cap Slab	Minor cracking and surface deterioration.	X		
	59	#1 Sluiceway Liner	Observed from downstream. Appeared intact.			
	60	#2 Sluiceway Liner	Observed from downstream. Appeared intact.			
	61	Seepage	None observed.			
	62	Discharge Area	Clear.			
	63	Right Training Wall	Offset of a vertical joint in the right concrete training wall.	X		
	64					

ADDITIONAL COMMENTS: REFER TO ITEM NO. IF APPLICABLE

Items 45 and 46: Leakage appeared similar to photographs included in 2022 Phase I Inspection Report, but appeared higher than flow rates observed during 2023 Annual inspection.

Item 63: Offset of a vertical joint in the right concrete training wall observed just upstream of the right side river outlet structure. Offset is about two inches longitudinally (perpendicular to the flow of the river). A vertical crack in the right training wall was observed just downstream of the right side river outlet structure. These features appeared similar to those in photographs included in the 2022 Phase I Inspection Report.

Name of Dam: Willow Mill Dam I.D. No.: MA00262 Inspection Date: September 3, 2024

AREA INSPECTED	AUXILIARY SPILLWAY / HEADRACE WALL 1 of 2			CHECK ( ) ACTION NEEDED		
	ITEM NO.	CONDITION	OBSERVATIONS	MONITOR	INVEST.	REPAIR
UPSTREAM FACE	65	Surface Conditions	Generally obscured by canal impoundment.	X		
	66	Condition of Joints	Generally obscured by canal impoundment.	X		
	67	Unusual Movement	Generally obscured by canal impoundment.	X		
	68	Abutment-Dam Contacts	Generally obscured by canal impoundment.	X		
	69	Canal Walls	Missing mortar observed on left wall (near parking lot) and downstream wall (near brick arch).			X
	70					
DOWNSTREAM FACE/BUTTRESS	71	Surface Conditions	Appeared adequate.			
	72	Condition of Joints	Mortar loss at uppermost joint (between masonry capstones and underlying masonry façade).			X
	73	Unusual Movement	None observed (slight angle/bulge in masonry façade is by design, per 2005 Record Drawings).			
	74	Abutment-Dam Contacts	Appeared adequate.			
	75	Drains	6" PVC drain pipe near the right side toe. Drain flowing freely with clear water.	X		
	76	Leakage	Leakage observed between capstone and underlying masonry façade.	X		X
	77					
	78					
CREST	79	Surface Conditions	Deteriorated mortar joints and missing stone masonry on left/upstream face near the crest.			X
	80	Horizontal Alignment	Appeared adequate.			
	81	Vertical Alignment	Appeared adequate.			
	82	Condition of Joints	Cracked / deteriorated mortar joints.			X
	83	Unusual Movement	None observed.			
	84	General	Minor vegetative growth in some deteriorated mortar joints.			X
	85					

ADDITIONAL COMMENTS: REFER TO ITEM NO. IF APPLICABLE

Item 69: Canal masonry mortar loss was prevalent near water level.

Item 75: Continue to clean the six-inch canal drainpipe at the right side downstream toe of the auxiliary spillway.

Items 72, 76, 79, 82, 84: Able to penetrate joints up to 14" with total top-to-bottom mortar loss at some locations along the overhanging crest masonry stones. Repoint the deteriorated mortar joints and replace the broken masonry in the canal and auxiliary spillway (waste weir). This includes the broken masonry and area where minor leakage through the concrete cap at the top of the auxiliary spillway was observed.

Name of Dam: Willow Mill Dam I.D. No.: MA00262 Inspection Date: September 3, 2024

AREA INSPECTED	AUXILIARY SPILLWAY / HEADRACE WALL 2 of 2			CHECK ( ) ACTION NEEDED		
	ITEM NO.	CONDITION	OBSERVATIONS	MONITOR	INVEST.	REPAIR
HEADRACE CHANNEL	86	Headwall Masonry	Occasional mortar loss, particularly near water level - no missing masonry stones observed.			X
	87	Slope Masonry Wall	Appeared adequate.			
	88	Vegetation Condition	Minor vegetation growth at spillway crest.			X
	89	Tunnel Entrance	Missing bricks in tunnel arch.			X
	90	Debris	None observed above water.	X		
	91	Sediment	None observed - Submerged.	X		
	92	Seepage	None observed above water level.	X		
	93	Channel Floor	Not observed - submerged.	X		
	94	Unusual Movement	None observed above water.	X		
	95					
	96					
HEADRACE INTAKE	97	Headrace Gates	Mostly submerged. Right gate (Gate 3, closest to spillway) open. Left gate (Gate 4) closed.	X		
	98	Headrace Gate Operators	Appeared adequate.			
	99	Headrace Sluiceways	Not observed - submerged.	X		
	100	Bar Racks	Partically submerged; appeared adequate above water.	X		
	101	Pumphouse Condition	Not entered. Exterior appeared adequate.			
	102	Access Ways	Appeared adequate.			
	103	Gate Operation	Logbook & quarterly inspection forms indicate gates exercised.			
LEFT MASONRY ABUTMENT	104	Masonry Condition	Appeared adequate.			
	105	Abutment	Appeared adequate.			
	106	Concrete Cap Slab	Appeared adequate.			
	107	Seepage	None observed.			
	108	Unusual Movement	None observed.			
	109					

ADDITIONAL COMMENTS: REFER TO ITEM NO. IF APPLICABLE

Item 97: Right gate (Gate 3) skin plate was partially exposed above water and showed some signs of timber deterioration with some missing teeth on rack. Gate 3 swirling water at surface (possible leakage). Probed upstream of the canal sluice gates; probe resistance indicated approximately two to four inches of sediment.

Name of Dam: Willow Mill Dam I.D. No.: MA00262 Inspection Date: September 3, 2024

AREA INSPECTED	ITEM NO.	CONDITION	DOWNSTREAM AREA AND MISC. 1 of 1 OBSERVATIONS	CHECK ( ) ACTION NEEDED MONITOR	INVEST.	REPAIR
DOWNSTREAM AREA	110	Abutment Seepage	None observed.			
	111	Training/Retaining Walls	Minor cracking and efflorescence in the downstream right side training wall.	X		
	112	Slide, Slough, Scarp	None observed.			
	113	Drainage System	Outlet structure, spillway, and auxiliary spillway discharge to the Housatonic River.			
	114	Willow Street Masonry Wall	Missing stone and mortar in retaining wall below Willow Street.	X		
	115	Willow Street Bridge	Closed to vehicular traffic. Vehicle access to left side of dam via alternate route.			
	116	Downstream Hazard Description	Willow Street Bridge immediately downstream of the dam; residential, commercial and Rt. 102 downstream.			
	117	Date of Last Update of Emergency Action Plan	December 31, 2019 (per July 29, 2022 Phase I Report).			
MISCELLANEOUS	118	Impoundment Banks	Appeared adequate.			
	119	Access Roads	Appeared adequate.			
	120	Boat Barrier	Not observed.			
	121	Signage	Appeared adequate.			
	122	Fences / Railing	Handrails along the left spillway abutment (canal sluice gate structure) had broken sections.			X
	123	Security / Access	Appeared adequate.			
	124	Former Utility Pole	Previously-observed depression in grassed area near River Outlet Structure was not observed.			
	125	General Vegetation	Maintain vegetation within 20 feet of the dam.			X

ADDITIONAL COMMENTS: REFER TO ITEM NO. IF APPLICABLE

Item 115: Alternate access to left side of dam from Rt 102 via Meadow St, Pine St, and Willow St.

Item 124: Depression was observed during 2023 Annual Inspection. Caretaker reported the depression was filled and grass reestablished.

GZA GeoEnvironmental, Inc.