Kevin Mooney
Senior Project Manager
Global Operations - Environment, Health & Safety

General Electric Company
1 Plastics Ave.
Pittsfield, MA 01201

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

Via Electronc Mail

February 9, 2022

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

Re: GE-Pittsfield/Housatonic River Site
Rest of River (GECD850)
Phase I Inspection/Evaluation Report for Woods Pond Dam

Dear Mr. Fontaine

Enclosed is GE's Phase I Inspection/Evaluation Report for Woods Pond Dam, prepared for GE by GZA GeoEnvironmental, Inc. This report presents the results of GZA's November 11, 2021 biennial Phase I Inspection/Evaluation of Woods Pond Dam.

Please let me know if you have any questions about this report.

Very truly yours,

Kevin G. Mooney
Senior Project Manager – Environmental Remediation

Enclosure

Cc: (via electronic mail)
Dean Tagliaferro, EPA
Tim Conway, EPA
John Kilborn, EPA
Christopher Ferry, ASRC Primus
Thomas Czelusniak, HDR Inc.
Scott Campbell, Taconic Ridge Environmental
Izabella Zapisek, Taconic Ridge Environmental
Emily Caruso, MassDCR, Office of Dam Safety

Michael Gorski, MassDEP
Elizabeth Stinehart, MassDEP
John Ziegler, MassDEP
Ben Guidi, MassDEP
Michelle Craddock, MassDEP
Jeffrey Mickelson, MassDEP
Mark Tisa, MassDFW
Jonathan Regosin, MassDFW
Betsy Harper, MA AG
Traci Iott, CT DEEP
Susan Peterson, CT DEEP
Graham Stevens, CT DEEP
Lori DiBella, CT AG
Molly Sperduto, USFWS
Mark Barash, US DOI
Ken Finkelstein, NOAA
James McGrath, City of Pittsfield
Michael Coakley, PEDA
Melissa Provencher, BRPC
Christopher Ketchen, Town of Lenox
Town Administrator, Lee
Town Manager, Great Barrington
Town Administrator, Stockbridge
Town Administrator, Sheffield
Andrew Silfer, GE
Andrew Thomas, GE
Jonathan Andrew and Laurie Gibeau, GZA
James Bieke, Sidley Austin
Public Information Repository at David M. Hunt Library in Falls Village, CT
GE Internal Repository

WOODS POND DAM

PHASE I

INSPECTION / EVALUATION REPORT

Dam Name: Woods Pond Dam

NID ID#: MA00731

Owner: General Electric Company

Town: Lee & Lenox, Massachusetts

Consultant: GZA GeoEnvironmental, Inc.

Date of Inspection: November 11, 2021

Date of Report February 9, 2022

Please add this to checklistWere they

EXECUTIVE SUMMARY

This report summarizes the results of the Phase 1 visual dam inspection conducted by GZA GeoEnvironmental, Inc. (GZA) on behalf of the General Electric Company (GE) on November 11, 2021 at Woods Pond Dam in Lee and Lenox, Massachusetts, in accordance with GE's revised Operation, Monitoring, and Maintenance Plan (OM&M Plan) for Woods Pond Dam, dated June 25, 2019 and approved by the United States Environmental Protection Agency (EPA) on July 17, 2019.

On September 4, 2020, in response to a directive from EPA, GE submitted an Amendment to the OM&M Plan stating that the biennial Phase 1 inspections of Woods Pond Dam would be conducted on a schedule that alternates between normal-flow and low-flow conditions, so that the spillway could be dewatered and observed under low-flow conditions every four years. Although the 2021 Phase 1 inspection was scheduled to be the first low-flow inspection, continued high-flow conditions in the summer and fall of 2021 resulting from unusually heavy rains precluded such an inspection. As a result, as discussed with EPA, the inspection occurred under higher-flow conditions in the fall of 2021 and took the place the place of the summer and fall 2021 quarterly inspections of Woods Pond Dam under the OM&M Plan for that dam. An inspection of the dewatered spillway and associated areas will be scheduled during a low-flow period in 2022.

In general, the overall condition of Woods Pond Dam during the November 11, 2021 Phase 1 visual inspection was **SATISFACTORY**. Based on the results of that inspection, the dam is in compliance with Massachusetts Department of Conservation and Recreation Dam Safety Regulations.

During the November 11, 2021 visual inspection, the dam was found to have the following unusual conditions of note:

1. The stone masonry wall in the raceway approach area was observed to be tilted, as it was in prior inspections. This tilt has been monitored for several years with no changes and appears to be a stable condition.
2. Minor deterioration was observed at the right downstream training wall around water level, as it was in prior inspections. This deterioration has been monitored for several years with little change and appears to be a stable condition.
3. On the eastern side slope of the raceway (outside GE property), a utility pole was seen to be leaning toward the channel (as it was in prior inspections and appears to be a stable condition), and vegetation downstream of that pole has grown toward the raceway.

GZA has recommended that specific activities be conducted to address the above-described conditions observed during the November 2021 inspection, in addition to complying with the regular maintenance and repair requirements specified in Sections 4.1 and 4.2 of the OM&M Plan. Those recommended activities and their current status are as follows:

Monitoring:

Recommendation	Current Status/Schedule
1. Observe the condition of both training walls and spillway, including the area where the minor deterioration was observed, during a warm-weather, low-flow period.	These areas will continue to be monitored. Specifically, they will be inspected during the dewatered spillway inspection to be scheduled during warm-weather, low-flow conditions in 2022.
2. Continue to monitor the tilted stone masonry wall upstream of the raceway closure structure.	Monitoring points were set by the inspector during the third quarterly inspection for 2020 (on August 7, 2020) and will continue to be monitored during quarterly and biennial inspections.
3. Continue to monitor the leaning utility pole and downstream vegetation on non-GE property on the eastern side slope of the raceway channel; and cut the vegetation if it falls into the raceway channel and impedes flow.	The pole and downstream vegetation will continue to be monitored during quarterly and biennial inspections. The vegetation will be cut if it if it falls into the raceway channel and impedes flow.

Although it is not an integral part of the dam, GZA also recommends that the raceway embankment continue to be monitored during the quarterly visual inspections.

Maintenance:

The dam should continue to be maintained in accordance with the approved Operations and Maintenance Manual.

Minor Repairs:

No minor repairs are recommended.

Remedial Modifications:

Remedial modifications are not recommended at this time.

Dam Evaluation Summary Detail Sheet

1. NID ID:	**MA00731**	**4. Inspection Date:**	**November 11, 2021**
2. Dam Name:	**Woods Pond Dam**	**5. Last Insp. Date:**	**November 5, 2019**
3. Dam Location:	**Lee/Lenox, MA**	**6. Next Inspection:**	**November 11, 2023**
7. Inspector:	**Laurie A. Gibeau, P.E.**		
8. Consultant:	**GZA GeoEnvironmental, Inc.**		
9. Hazard Code:	**Significant**	**9a. Is Hazard Code Change Requested?:**	**No**
10. Insp. Frequency:	**5 Years**	**11. Overall Physical Condition of Dam:**	**SATISFACTORY**
12. Spillway Capacity (% SDF)	**>100% SDF w/ no actions by Caretaker**		

E1. Design Methodology:	**4**	**E7. Low-Level Discharge Capacity:**	**4**
E2. Level of Maintenance:	**4**	**E8. Low-Level Outlet Physical Condition:**	**4**
E3. Emergency Action Plan:	**5**	**E9. Spillway Design Flood Capacity:**	**5**
E4. Embankment Seepage:	**4**	**E10. Overall Physical Condition of the Dam:**	**4**
E5. Embankment Condition:	**4**	**E11. Estimated Repair Cost:**	**N/A**
E6. Concrete Condition:	**4**		

Evaluation Description

E1: DESIGN METHODOLOGY
1. Unknown Design – no design records available
2. No design or post-design analyses
3. No analyses, but dam features appear suitable
4. Design or post design analysis show dam meets most criteria
5. State of the art design – design records available & dam meets all criteria

E2: LEVEL OF MAINTENANCE
1. Dam in disrepair, no evidence of maintenance, no O&M manual
2. Dam in poor level of upkeep, very little maintenance, no O&M manual
3. Dam in fair level of upkeep, some maintenance and standard procedures
4. Adequate level of maintenance and standard procedures
5. Dam well maintained, detailed maintenance plan that is executed

E3: EMERGENCY ACTION PLAN
1. No plan or idea of what to do in the event of an emergency
2. Some idea but no written plan
3. No formal plan but well thought out
4. Available written plan that needs updating
5. Detailed, updated written plan available and filed with MADCR, annual training

E4: SEEPAGE (Embankments, Foundations, & Abutments)
1. Severe piping and/or seepage with no monitoring
2. Evidence of monitored piping and seepage
3. No piping but uncontrolled seepage
Minor seepage or high volumes of seepage with filtered collection
5. No seepage or minor seepage with filtered collection

E5: EMBANKMENT CONDITION (See Note 1)
1. Severe erosion and/or large trees
2. Significant erosion or significant woody vegetation
3. Brush and exposed embankment soils, or moderate erosion
4. Unmaintained grass, rodent activity and maintainable erosion
5. Well maintained healthy uniform grass cover

E6: CONCRETE CONDITION (See Note 2)
1. Major cracks, misalignment, discontinuities causing leaks, seepage or stability concerns
2. Cracks with misalignment inclusive of transverse cracks with no misalignment but with potential for significant structural degradation
3. Significant longitudinal cracking and minor transverse cracking
4. Spalling and minor surface cracking
5. No apparent deficiencies

E7: LOW-LEVEL OUTLET DISCHARGE CAPACITY
1. No low level outlet, no provisions (e.g. pumps, siphons) for emptying pond
2. No operable outlet, plans for emptying pond, but no equipment
3. Outlet with insufficient drawdown capacity, pumping equipment available
4. Operable gate with sufficient drawdown capacity
5. Operable gate with capacity greater than necessary

E8: LOW-LEVEL OUTLET PHYSICAL CONDITION
1. Outlet inoperative needs replacement, non-existent or inaccessible
2. Outlet inoperative needs repair
3. Outlet operable but needs repair
4. Outlet operable but needs maintenance
5. Outlet and operator operable and well maintained

E9: SPILLWAY DESIGN FLOOD CAPACITY
1. 0 - 50% of the SDF or unknown
2. 50-90% of the SDF
3. 90 - 100% of the SDF
4. >100% of the SDF with actions required by caretaker (e.g. open outlet)
5. >100% of the SDF with no actions required by caretaker

E10: OVERALL PHYSICAL CONDITION OF DAM
1. UNSAFE – Major structural, operational, and maintenance deficiencies exist under normal operating conditions
2. POOR - Significant structural, operation and maintenance deficiencies are clearly recognized under normal loading conditions
3. FAIR - Significant operational and maintenance deficiencies, no structural deficiencies. Potential deficiencies exist under unusual loading conditions that may realistically occur. Can be used when uncertainties exist as to critical parameters
4. SATISFACTORY - Minor operational and maintenance deficiencies. Infrequent hydrologic events would probably result In deficiencies.
5. GOOD - No existing or potential deficiencies recognized. Safe performance is expected under all loading including SDF

E11: ESTIMATED REPAIR COST
Estimation of the total cost to address all identified structural, operational, maintenance deficiencies. Cost shall be developed utilizing standard estimating guides and procedures

Changes/Deviations to Database Information since Last Inspection

Owner conducts biennial inspections in accordance with Operations, Monitoring and Maintenance Plan.

PREFACE

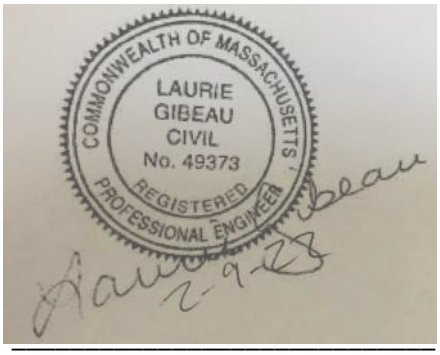
The assessment of the general condition of the dam reported herein was based upon available data and visual inspections. Detailed investigations and analyses involving topographic mapping, subsurface investigations, testing and detailed computational evaluations were beyond the scope of this report unless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

Jonathan D. Andrews, P.E.

Massachusetts License No.: 46462
Principal-In-Charge
GZA GeoEnvironmental, Inc.



Laurie A. Gibeau, P.E.

Massachusetts License No.: 49373
Project Manager
GZA GeoEnvironmental, Inc.

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1.0 DESCRIPTION OF PROJECT

1.1 GENERAL

1.1.1 Authority

The General Electric Company (GE) retained GZA GeoEnvironmental, Inc. (GZA) to perform a visual inspection/evaluation and develop a report of conditions for the dam at Woods Pond along the Housatonic River in Lee and Lenox, Berkshire County, Massachusetts, as required by GE's Operation, Monitoring, and Maintenance Plan (OM&M Plan) for Woods Pond Dam, dated June 25, 2019 and approved by the United States Environmental Protection Agency (EPA) on July 17, 2019. This inspection was performed on November 11, 2021, and this report was prepared in accordance with Section 3.2 of that OM&M Plan (which requires biennial Phase 1 engineering inspections of this dam) and with M.G.L. Chapter 253, Sections 44-50 of the Massachusetts General Laws as amended by Chapter 330 of the Acts of 2002. GE's OM&M Plan was developed and submitted pursuant to a Permit that was initially issued by EPA in 2016 under the federal Resource Conservation and Recovery Act (RCRA) for the Rest of River portion of the GE-Pittsfield/Housatonic River Site. That Permit was subsequently revised and re-issued by EPA on December 16, 2021. This report is subject to the Limitations in **Appendix A.**

1.1.2 Purpose of Work

The purpose of this Phase 1 engineering investigation/evaluation was to inspect and evaluate the present condition of the dam and appurtenant structures in accordance with Section 3.2 of the OM&M Plan and 302 CMR 10.07 to provide information that will assist in both prioritizing dam repair needs and planning/conducting maintenance and operations.

The investigation was divided into three parts: (1) obtain and review available reports, investigations, and data previously submitted to the owner pertaining to the dam and appurtenant structures; (2) perform a visual inspection of the site; and (3) prepare and submit a final report presenting the evaluation of the structure, including recommendations for maintenance, repair, and remedial actions (if warranted).

1.1.3 Definitions

To provide the reader with a better understanding of the report, definitions of commonly used terms associated with dams are provided in **Appendix E**. Many of these terms may be included in this report. The terms are presented under common categories associated with dams which include: (1) orientation; (2) dam components; (3) size classification; (4) hazard classification; and (5) miscellaneous.

Elevations used in this report are referenced to the National Geodetic Vertical Datum of 1929 (NGVD).

1.2 DESCRIPTION OF DAM

1.2.1 Location

Towns: Lee and Lenox

County: Berkshire

The left abutment of Woods Pond Dam is located off Valley Street in Lee and can be accessed by vehicle. Valley Street runs through an industrial complex into a parking lot. A locked chain link fence controls access from

the parking lot to the outlet works and dam embankment. The right abutment is off Crystal Street in Lenox, adjacent to a set of railroad tracks.

The dam location is shown on the United States Geological Survey (USGS) East Lee, MA topographic map. The approximate coordinates are 73.24459°W longitude and 42.34717°N latitude, as shown on **Figures 1** through **4**.

1.2.2 Owner/Caretaker

See **Table 1.1** for current owner and caretaker data (names and contact information).

1.2.3 Purpose of the Dam

There have been two dams impounding Woods Pond at this location. The original Woods Pond Dam was a timber crib dam built between 1876 and 1882. It was located about 80 to 250 feet upstream of the current dam. The purpose of the original dam was to divert water to an adjacent mill. The purpose of the current Woods Pond Dam (circa 1989) is to impound Woods Pond Reservoir. It is GZA's understanding that this purpose includes impounding existing sediments that are presumably impacted by polychlorinated biphenyls.

1.2.4 Description of the Dam and Appurtenances

Moving from right (west) to left (east), Woods Pond Dam is a run-of-the-river structure consisting of a concrete section as the right (west) abutment, a spillway, sheetpile cells filed with concrete as the left (east) abutment, and then a raceway closure structure, which controls flow into the raceway channel. (Right and left are assigned to dam components from the perspective of midchannel upstream of the dam looking downstream.) Additionally, a raceway embankment extends both upstream and downstream of the dam on the left side, forming a boundary between the river and the raceway channel. Flow out at the downstream end of the raceway channel is controlled by the raceway stoplog sluice structure. See **Figures 5** and **6**.

The right abutment is a concrete structure with a sloped downstream face and formed concrete walls on the upstream and downstream sides and extends approximately 60 feet between the railroad tracks and the spillway. The top elevation of the non-overflow gravity section is 954.0 feet NGVD. The right abutment is referred to as the non-overflow gravity section on the record drawings. Although this structure is termed "non-overflow," this section of the dam is designed to overflow during the applicable Spillway Design Flood (SDF).

The spillway is an uncontrolled, ogee-shaped concrete weir with a top elevation between 948.2 and 948.4 feet NGVD. The spillway is approximately 140 feet long.

The left abutment extends approximately 60 feet between the spillway and the raceway closure structure and consists of steel sheetpile cells filled and capped with concrete. The sheetpiles were driven to bedrock. The top elevation of the section is 954.0 feet NGVD and is about 21 feet wide.

The raceway closure structure is located on the left side of the dam between the left abutment and riverbank. It is a formed concrete control structure that can hold up to five, two-foot-high steel and concrete stoplogs that are lifted into place using a gantry crane and hoist. The stop logs are used to control flow into the raceway channel that runs parallel to the river downstream of the dam for approximately 350 feet between downstream section of the raceway embankment and the left riverbank. A one-inch spacer is typically located between the second and third stoplogs at an elevation of 948.0 feet NGVD to provide flow into the raceway channel to prevent water stagnation.

The raceway embankment runs parallel to the river for approximately 450 feet extending both upstream and downstream of the left abutment. Although structurally connected to the current dam, the raceway embankment serves no functional role in the current dam. The upstream section is the left abutment of the previous dam that was located immediately upstream of the current dam. The right (river) embankment slopes are protected by grouted riprap and the left side has vertical stone masonry walls that line the raceway channel upstream of the raceway closure structure. The downstream section forms the 350 foot boundary between the raceway channel and the river. Immediately downstream of the left abutment, the raceway embankment slopes are protected by grouted riprap on both sides of the embankment for approximately 25 feet. For the next 325 feet downstream, both sides of the raceway embankment consist of earth fill with riprap-protected slopes. The raceway embankment ends at the downstream raceway channel outlet (raceway stoplog sluice structure).

The downstream outlet of the raceway channel is a controlled concrete and masonry structure referred to as the raceway stoplog sluice structure. The purpose of the raceway stoplog sluice structure is to control the water level in the downstream mill pond and within the raceway. The controls consist of up to seven 14-inch-high steel stoplogs. A truck-mounted crane can be mobilized to install and remove the stoplog controls. Three of the stoplogs are typically left in-place to maintain the raceway and mill pond level between the Woods Pond impoundment and river tailwater levels.

Instrumentation at the dam consists of three open standpipe observation wells (historically referred to as piezometers) in the downstream section of the raceway embankment and a staff gage on the left spillway training wall.

A pre-construction geotechnical exploration program conducted in 1988 determined that the dam and appurtenant structures are founded on shallow “marbleized” bedrock, which is vertically bedded and is generally finely grained, hard with variable medium to close joint spacing. Details of the subsurface field investigation can be found in the 1989 General Design Report for Woods Pond Dam Rehabilitation.

In accordance with the OM&M Plan, an updated topographic survey of the dam was conducted in February 2020 and an updated bathymetric survey was completed in August 2020. A plan showing the results of those surveys is included in **Appendix F**.

In response to questions raised by EPA in Condition #22 of its July 10, 2020 conditional approval letter regarding potential scour at the toe of the spillway, the Caretaker has indicated that bedrock in the spillway channel and the dam embankments and abutments has been monitored by GE contractors twice in the past (2002 and 2007) to evaluate whether scour or other changes were occurring. As noted above, an additional bathymetric survey was completed in August 2020. These three bedrock surveys showed that the low spot had not changed appreciably, thus indicating that no appreciable scour was occurring. A plan reflecting the results of the 2002 and 2007 bedrock surveys is included in **Appendix F**, along with the plan showing the results of the 2021 bathymetric survey.

At EPA’s direction, GE has installed and maintains warning signs at Woods Pond Dam. On August 10, 2020, GE submitted a proposal for the format, wording, and locations of those signs; and EPA issued a conditional approval letter for that proposal on September 4, 2020. The signs were installed in November and December of 2020.

In spring 2021, the area just upstream of the left abutment near Valley Road was found to have missing soil from underneath the grouted riprap, and from between the two sets of upstream sheetpiles. One of those sets of sheetpiles, oriented left-right, comprises the dam; and the other set, oriented diagonally, is not integral to the dam structure and seems to have been constructed to provide protection to Valley Road in the area between the

old abutments to the previous dam and the abutment to the current dam. The size of the of area missing soil was about five feet wide, five feet deep, and one to three feet high. The upstream-most sheetpile was not in contact with the old raceway training wall, which may have contributed to soil erosion. Although this condition is not on the dam and would not affect the safety of the dam, GE excavated the area, replaced the soil and slush grouted the surface in September 2021.

1.2.5 Operations and Maintenance

GE is the owner of the Woods Pond Dam and is responsible for overseeing the operations and maintenance of the dam. The current Caretaker on GE's behalf is:

Kevin Mooney
General Electric Company
Global Operations – Environment, Health & Safety
1 Plastics Avenue
Pittsfield, MA 01201
Daytime Phone: 413-553-6610 (Direct Office Number)
Cell Phone: 413-441-4619

On GE's behalf, GZA personnel conduct visual inspections of the dam on a quarterly basis as required by the approved OM&M Plan. Inspection checklists for those quarterly inspections are included in Appendix C of the OM&M Plan. Operations and maintenance of the dam are also described in the OM&M Plan.

1.2.6 DCR Size Classification

Woods Pond Dam has a height of dam of approximately 17.6 feet and a maximum storage capacity of 5,300 acre-feet. Refer to **Appendix E** for definitions of height of dam and storage. Therefore, in accordance with the classification procedures of the Massachusetts Department of Conservation and Recreation (MassDCR) Office of Dam Safety (ODS), under the Massachusetts Dam Safety Regulations in 302 CMR 10.00 as amended by Chapter 330 of the Acts of 2002, Woods Pond Dam is a Large size structure based on maximum storage above 1,000 acre-feet.

1.2.7 DCR Hazard Potential Classification

In accordance with MassDCR classification procedures, under the Massachusetts Dam Safety Regulations, Woods Pond Dam is classified as a dam with Significant Hazard potential.

1.3 PERTINENT ENGINEERING DATA

1.3.1 Drainage Area

The drainage area for the dam is approximately 170 square miles, and encompasses land within the Housatonic River Valley Wildlife Management Area. The drainage area is hilly with marshes and bogs.

1.3.2 Reservoir

See the Summary Data Table in Section 1.4 for data regarding normal, maximum, and SDF pools. Reservoir surface area and storage volume data presented are based on previous analyses, as well as data developed for the 2007 Phase I Inspection Report.

1.3.3 Discharges at the Dam Site

Woods Pond Dam's spillway constantly discharges water unless the raceway stoplogs are removed enough to convey the full flow of the Housatonic River. A low volume of water also consistently discharges, via one-inch spacers between the closure structure stoplogs, through the raceway and over the stoplogs of the downstream raceway sluice structure back to the river downstream of the dam.

1.3.4 General Elevations (feet, NGVD)[1]

A.	Top of Dam	954.0 feet
B.	Spillway Design Flood Pool	955.8 feet
C.	Normal Pool	948.8± feet
D.	Spillway Crest	948.2 to 948.4feet
E.	Low Level Outlet Invert	944 feet
F.	Upstream Water at Time of Inspection	949± feet
G.	Downstream Water at Time of Inspection	940.7 feet
H.	Streambed at Toe of the Dam	936.4 to 942 feet
I.	Low Point along Toe of the Dam	936.5 feet

1.3.5 Main Spillway Data

A.	Type:	Concrete, ogee-shaped, uncontrolled
B.	Weir Length	140 feet
C.	Weir Crest Elevation	948.2 to 948.4feet
D.	Upstream Channel	Housatonic River/Woods Pond
E.	Downstream Channel	Housatonic River
F.	Channel Bottom Elevation	934.7 feet

1.3.6 Outlet Structure

A.	Type:	Raceway channel, stoplog controlled
B.	Opening Width	8 feet
C.	Operating Elevation at Structure	944.4 to 954 feet
D.	Upstream Control	Stoplogs at raceway closure structure
E.	Downstream Control	Stoplogs at raceway stoplog sluice structure

[1] These elevations have been updated based on the 2020 topographic and bathymetric survey.

1.3.7 Key Elevations to be Monitored

The following list is a table of elevations at key points that are required to be monitored by survey in accordance with the requirements of the O&MM Plan. Locations are shown on the most recent topographic and bathymetric plan in **Appendix F**.

Point	Location	Elevation, feet NGVD 29
A	Right side spillway abutment (Chiseled Square)	954.06
B	Left side spillway abutment (Center of concrete)	954.2
C	BH-1 (on raceway embankment)	952.8
D	BH-2 (on raceway embankment)	953.7
E	BH-3 (on raceway embankment)	953.8
F	Spillway Midpoint	948.4
G	Sill of Raceway Stoplog Sluice Structure	941.6
H	Sill of Raceway Closure Structure	944.4
I	Right Side Platform (Chiseled Square TBM 2)	954.22
J	Downstream End of Raceway (Chiseled Square)	951.83

1.3.8 Design and Construction Records and History

The dam was constructed in two stages in 1989 and in 1991 to replace the previous dam that was about 80 to 250 feet upstream of the current dam. The first phase of construction included the construction of the raceway closure structure, and the second phase was the replacement of the spillway and non-overflow gravity section. Drawings and construction records are available through the Caretaker.

1.4 SUMMARY DATA TABLE

See Table 1.1 on the next page.

Table 1.1 – Summary Data Table	
Required Phase I Report Data	**Data Provided by the Inspecting Engineer**
National ID #	MA00731
Dam Name	Woods Pond Dam
Dam Name (Alternate)	None known
River Name	Housatonic River
Impoundment Name	Woods Pond or Woods Pond Reservoir
Hazard Class	Significant
Size Class	Large
Dam Type	Concrete/sheetpile embankment with riprapped abutments
Dam Purpose	Controls water level in raceway and mill pond
Structural Height of Dam (feet)	17.6
Hydraulic Height of Dam (feet)	11.9
Drainage Area (sq. mi.)	170
Reservoir Surface Area (acres)	122
Normal Impoundment Volume (acre-feet)	460 at El. 948.8'
Max Impoundment Volume ((top of dam) acre-feet)	5300 at El. 955.8'
SDF Impoundment Volume* (acre-feet)	5300 at El. 955.8'
Spillway Type	Concrete ogee
Spillway Length (feet)	140
Freeboard at Normal Pool (feet)	5
Principal Spillway Capacity (cfs)	12,100 cfs at El. 955.8’
Auxiliary Spillway Capacity (cfs)	Not applicable
Low-Level Outlet Capacity (cfs)	850 cfs at El. 955.8’ (no stoplogs)
Spillway Design Flood* (flow rate - cfs)	500 year
Winter Drawdown (feet below normal pool)	Not applicable
Drawdown Impoundment Vol. (acre-feet)	Not applicable
Latitude	42.3471731°N
Longitude	73.2445881°W
City/Town	Lee/Lenox
County Name	Berkshire
Public Road on Crest	No
Public Bridge over Spillway	No
EAP Date (if applicable)	March 2021
Owner Name	General Electric Company
Owner Address	159 Plastics Avenue
Owner Town	Pittsfield, MA 01201
Owner Phone	413-448-5910
Owner Emergency Phone	413-441-4619
Owner Type	Private
Caretaker Name	Kevin Mooney, Facility Manager
Caretaker Address	159 Plastics Avenue
Caretaker Town	Pittsfield, MA 01201
Caretaker Phone	413-448-5910
Caretaker Emergency Phone	413-441-4619
Date of Field Inspection	11/11/2021
Consultant Firm Name	GZA GeoEnvironmental, Inc.
Inspecting Engineer	Laurie A. Gibeau, P.E.
Engineer Phone Number	781-278-3700

2.0 INSPECTION

2.1 VISUAL INSPECTION

Woods Pond Dam was inspected on November 11, 2021 by Laurie Gibeau, P.E. and Rachel Crum, E.I. of GZA. Scott Campbell of Taconic Ridge Environmental and Ralph Nelson of HDR, Inc. (representing EPA) were also present during the inspection.

It should be noted that, on September 4, 2020, in response to a directive from EPA, GE submitted an Amendment to the OM&M Plan stating that the biennial Phase 1 inspections of Woods Pond Dam would be conducted on a schedule that alternates between normal-flow and low-flow conditions, so that the spillway could be dewatered and observed under low-flow conditions every four years. It stated further that the 2021 Phase 1 inspection would be the first low-flow inspection. However, due to an unusually rainy year leading to high river flows in the summer and fall of 2021, the impoundment could not be lowered enough to allow the spillway to dry, and thus the spillway could not be fully inspected under low-flow conditions. Accordingly, the dam inspection was ultimately conducted during higher-flow conditions. Further, since that inspection was intended to replace the summer 2021 quarterly inspection but then continued to be delayed awaiting low-flow conditions (which never occurred), that inspection took the place of both the summer and the fall 2022 quarterly inspections.

At the time of the November 2021 inspection, the weather was mostly clear and the temperature approximately 55°F. Elevated river flow hindered observations of some dam components. Photographs to document the current conditions of the dam were taken during the inspection and are included in **Appendix B**. The level of the impoundment at the time of inspection was about elevation 949 feet NGVD. Underwater areas were not inspected during this inspection. A copy of the inspection checklist is included in **Appendix C**.

2.1.1 General Findings

In general, the dam was found to be in **SATISFACTORY** condition. The 1989 General Design Report indicates that floods up to and including the SPF (500-year flood) are expected to be passed without causing the failure of the dam structures, as the abutments have been designed to withstand overtopping during the SDF. Likewise, the General Design Report states that the minimum factors of safety for structural stability, as established by the Office of Dam Safety, are met or exceeded. The condition recommendation during the prior 2019 inspection was also Satisfactory.

Specific conditions identified in the recent inspection are described in more detail in the sections below:

2.1.2 Dam

The crest of the left side of the dam was observed to be in satisfactory condition, with hairline cracks in the concrete near the spillway. These cracks exhibited some efflorescence. These cracks do not appear to be structurally significant. The upstream and downstream sheetpile faces were obscured by riprap.

On the right side (non-overflow gravity section), the concrete section was observed to be in generally good condition. The riprap that protects the upstream and downstream sides of the concrete has vines and woody plants growing through it, but the vegetation appeared to have been recently cut.

2.1.3 Appurtenant Structures

- Primary Spillway

Observation of and access to the spillway was limited by flow. Generally, the ogee flow appeared to be fairly smooth and laminar. Training walls were in good condition. On the training walls, some hairline cracks exhibiting efflorescence were observed and do not appear to have changed since last inspection. Minor deterioration was observed around the waterline on the right concrete training wall. This condition appears to be stable since the 2019 inspection. Based on visual observations, sediment was not observed to interfere with the flow of water over the spillway. The reservoir level prevented observation of sediment below the flow line. Sediment was not visible in the flowing water.

As previously noted, due to an unusually rainy year and resulting high river flows, the impoundment could not be lowered enough to allow the spillway to dry, and thus the spillway could not be fully inspected. The spillway will be dewatered and an inspection of the dewatered spillway will be conducted in the summer of 2022 provided that river flows are sufficiently low.

- Raceway Channel and Outlets

Three stoplogs controlling the raceway channel closure structure were removed prior to the site inspection to reduce flow over the spillway.

About halfway down the left side of the raceway, a utility pole is leaning toward the channel, as was true during the prior (2019) Phase I inspection as well as subsequent quarterly inspections. The angle of the utility pole does not appear to have changed since the previous inspection. Vegetation downstream of the utility pole appears to be unmaintained and to have grown towards the raceway. Although this kind of tilting may indicate slope instability, no further indications of slope instability were observed. It should be noted that this utility pole and vegetation are not located on GE property and that the stability of this area does not affect the stability of the dam.

Seepage had been previously observed at the bottom of the right and left training walls downstream of the raceway stoplog sluice structure. However, this historical seepage was not observed during the November 2021 inspection, potentially due to flows from removing the stoplogs. Slight, clear seepage has also historically been observed at the vertical walls of the downstream stoplog structure in the area where the grouting program was reportedly performed in 1991. This seepage was not observed during the November 2021 inspection given the high flows during attempts to lower water level in the impoundment. The lack of cloudy seepage discharge during past inspections indicates that soil is not being transported from behind the wall. The left raceway stoplog sluice structure training wall also appears to have some longitudinal cracking and some efflorescence immediately downstream of the stoplog groove structure.

The metal bridge used to provide access to operate the stoplogs at the raceway stoplog sluice structure is underlain by rotted planking. The metal bridge extends beyond the planking and appeared to be generally stable. The staff gauge on the raceway stoplog sluice structure has been repainted.

A concrete patch is present on the left wall upstream of the approach area to the raceway. Near the waterline, a small portion of the patch is broken off. This patch is monitored and appears to be stable.

Based on visual observations, sediment was not observed to interfere with the flow of water through the raceway or at the upstream or downstream controls. The reservoir, river, and raceway levels prevented observation of sediment below the flow line. Sediment was not visible in the flowing water.

- Raceway Embankment

The raceway embankment is a related, but not integral, dam structure. On the left side of the upstream end located upstream of the dam, the stone masonry wall appears to have undergone tilting into the raceway approach channel at some point in the past, which has been noted in several previous inspections. Woody plants have previously grown between the masonry and the earth embankment. Mortar has been lost between the stones, and the top of wall has generally moved away (towards the raceway approach) from the earth behind it, with geotextile fabric exposed. A monitoring point was installed in August 2020. Measurements of the tilt have been consistently about 5.5 inches toward the raceway since installation of the monitoring point, and observations prior to August 2020 do not indicate any movement of the masonry wall in the last number of years.

The slush-grouted riprap located upstream of the dam that was previously observed to have some holes in the grout has been repaired. Vegetation has been cleared recently. Woody plants growing throughout the riprap are cut flush with the surface. The tree previously observed upstream of the raceway inlet at the top of slope (upslope of the tilted masonry wall) has been removed.

- Instrumentation

Instrumentation on the raceway embankment is functional. The instruments are observation wells constructed as open PVC standpipes contained within locked protective casing. Their locations are shown on **Figures 5** and **6**. They are marked with traffic cones for visibility. The upstream-most instrument's protective casing, which was previously observed to be split, has been repaired. Previous reports include top of PVC elevations for the observation wells; the top of PVC is considered to be the top of the extension.

The monitoring wells were measured and data collected in accordance with Section 3.1.2 of the OM&M Plan. The water elevation data in these wells, along with those in the impoundment, the raceway channel, and the river downstream of the dam, from 2010 through the date of the November 2021 inspection are presented in **Appendix G**. The water levels in the monitoring wells are between those in the raceway and those in the river and are within the historical ranges presented in Section 8 of Appendix C to the OM&M Plan.

2.1.4 Downstream Area

The downstream area is the Housatonic River. There is a mill building on the left side of the river and train tracks on the right.

2.1.5 Reservoir Area

The upstream area is the Housatonic River.

2.2 CARETAKER INTERVIEW

Kevin Mooney, GE's dam Caretaker, was available prior to the visual inspection of the dam.

2.3 INSPECTION AND MAINTENANCE PROCEDURES

The inspection and maintenance procedures for the dam are specified in the June 2019 OM&M Plan and briefly summarized below.

2.3.1 Inspection Procedures

The dam is inspected by GZA personnel on GE's behalf on a quarterly basis using the forms in Appendix C to the OM&M Plan. In addition to visually inspecting the dam, the quarterly inspections include photographing specific locations and recording monitoring well levels. Collected instrumentation data are included in **Appendix G**. Additional inspections are conducted in accordance with Section 3 of the OM&M Plan.

When severe storms with heavy rainfall are predicted, GE monitors the USGS Advanced Hydrologic Prediction Service, which forecasts river flows on the Housatonic River in Great Barrington. All stoplogs are generally kept in place, with a small spacer placed below the uppermost raceway closure structure stoplog to allow some flow into the raceway channel.

The following inspections have been conducted since the 2019 Phase I inspection/evaluation:

- Quarterly Inspections: February 12, 2020; May 8, 2020; August 7, 2020; November 10, 2020; March 10, 2021; May 19, 2021
- Ice Out Observations: May 8, 2020; May 19, 2021

As noted above, the summer 2021 quarterly inspection was intended to be replaced by the 2021 Phase I inspection under low-flow conditions. However, the inspection was delayed while awaiting a break in the unusually rainy conditions so that a dewatered spillway inspection could be completed. That break never occurred. Thus, as discussed with EPA, this Phase I inspection took the place of both the summer and the fall 2021 quarterly inspections.

2.3.2 Maintenance of Dam and Operating Facilities

Maintenance of the dam is conducted in accordance with Sections 4.1 and 4.2 of the OM&M Plan. Maintenance includes, but is not limited to, vegetative maintenance; cleaning of the spillway; stoplog system maintenance; minor erosion repair; rodent damage control; slope traffic damage control; seepage damage control; riprap damage control; sediment removal; concrete and masonry maintenance; metal component maintenance; instrumentation repair; security item repair; and signage maintenance. GE performs additional maintenance activities as they are required after identification during inspections.

A summary of all monitoring, maintenance, or repair items identified since the 2019 Phase 1 inspection, including several that continued to be observed during the November 11, 2021 Phase 1 inspection, and their current status (e.g., completed, subject to ongoing monitoring) is provided in the maintenance tracking table in **Appendix H**.

2.4 EMERGENCY WARNING SYSTEM

There is no physical early warning system at Woods Pond Dam. Quarterly inspections of the dam are conducted by dam safety engineers. An Emergency Action Plan was developed in 2000, and is updated annually, with the

most recent major revision in June 2019, which was attached as Appendix B to the OM&M Plan. Inundation mapping is included in **Appendix F**.

2.5 HYDROLOGIC/HYDRAULIC DATA

An hydrologic/hydraulic (H&H) analysis had previously been performed as part of the 1998 Phase I evaluation. According to the report on that evaluation, flood frequency was computed at the USGS Housatonic River stream gage near Great Barrington. The record from 1914 through 1996 was input into the Hydraulic Engineering Center - Water Resources Council computer program. The results of the analysis were that the 100-year peak flow is 11,700 cubic feet per second (cfs) and the 500-year peak flow is 16,400 cfs at the gage. Applying a drainage area ratio to the calculated numbers, the expected 100-year peak flow at the dam is 8,600 cfs and the 500 year flow would be about 12,100 cfs.

According to the 2007 Phase I inspection report, the estimated flood elevation for a 500-year flood event is about 955.8 feet, NGVD, which would overtop the dam by 1.8 feet. The duration of overtopping was estimated to be about 37.5 hours. The dam was designed to act as a broad-crested weir outside of the ogee-weir spillway; thus, anticipated overtopping was not considered to be a deficiency. Some bypass flooding to the west of the inundated non-overflow right section would occur during flooding events. The 2007 report indicated that evaluation of flood flows along this railroad bed area indicated that the bypass flow should not result in the failure of the project structures.

A dam break analysis was conducted by the US Army Corps of Engineers (USACE) and presented in the 1987 Phase I report. Attachment A to GE's Emergency Action Plan for Woods Pond Dam describes that analysis as follows:

> *"For failure under the sunny day condition, USACE assumed the failure to occur at a reservoir elevation of 952.7 ft, 4.4 ft above the spillway crest. Failure under this condition resulted in a maximum outflow of about 11,200 cfs and a water surface elevation of about 948.2 feet at a distance of 0.5 mile downstream from the Dam. The FEMA study indicated a 100-year flood of about 11,700 cfs and a 500-year flood of about 16,300 cfs.*
>
> *. . . .*
>
> *Under flood conditions, the USACE assumed the dam to fail when the old canal (raceway) embankment would have been overtopped by two feet. For failure under this condition, the maximum outflow would be about 16,000 cfs. This flow is nearly [the] same as the 500-year flood estimated by FEMA."*

Attachment A further states "The limits are conservative because a flood wave due to dam failure would attenuate and the water surface elevations would be lower than those shown." Thus, these conservative dam break analysis results can be considered applicable to the current Woods Pond Dam.

The H&H data below were compiled from previous reports made available by GE.

A.	SDF Return Period	500 year
B.	Precipitation (inches) and methodology	Not available
C.	SDF Inflow (cfs)	Not available

D.	SDF Outflow (cfs)	12,100 cfs
E.	Principal Spillway Capacity (cfs)	12,100 cfs*
F.	Auxiliary Spillway Capacity (cfs)	Not applicable
G.	Low-level Outlet Capacity without stoplogs(cfs)	850 cfs
H.	Percentage of the SDF passing	100%
I.	Maximum Depth of Overtopping for SDF (ft)	1.8 feet
J.	Maximum Duration of Overtopping for SDF	37.5 hours

* including overtopping of raceway and non-overflow section

2.6 STRUCTURAL STABILITY

Previous analyses indicated that the requirements for factors of safety against stability failure have been met for the spillway gravity overflow section and raceway embankment.

The June 2017 report on the December 2016 Phase 1 inspection/evaluation indicated that changes made to the embankment since the prior stability analysis included:

- Addition of riprap on the slopes of the embankment and on the riverside slope;
- Filling of the narrow area which was identified as the critical section; and
- Flattening of oversteep slopes.

GZA concurs with the previous report in its assumption that these changes constitute an improvement to the stability of the raceway embankment.

According to previous reports, the lowest spot near the dam is along the railroad tracks at the right end. The 2007 Structural Integrity Report noted that previous analyses indicate that the railroad tracks, while overtopped, will not fail due to the size and geometry of the railroad ballast and other features. GE added additional riprap behind the right abutment to further increase the factor of safety against scour in the area.

Previous stability analyses assumed linear reductions in piezometric uplift pressures for stability analysis of gravity sections and observed piezometric levels for raceway embankment stability analyses. These analyses indicated adequate factors of safety for structural stability.

3.0 ASSESSMENTS AND RECOMMENDATIONS

3.1 ASSESSMENTS

In general, the overall condition of the Woods Pond Dam is **SATISFACTORY**; the dam was also found to be in Satisfactory condition during the previous Phase 1 inspection in November 2019. During the November 11, 2021 visual inspection, the dam was found to have the following unusual conditions of note (several of which had also been noted in the prior Phase 1 inspection):

1. The stone masonry wall in the raceway approach area was observed to be tilted, as it was in prior inspections. This tilt has been monitored for several years with no changes and appears to be a stable condition.
2. Minor deterioration was observed at the right downstream training wall around water level, as it was in prior inspections. This deterioration has been monitored for several years with little change and appears to be a stable condition.
3. On the eastern side slope of the raceway outside GE property, a utility pole was seen to be leaning toward the channel (as it was in prior inspections and appears to be a stable condition), and vegetation downstream of that pole has grown toward the raceway.

The locations of these conditions are shown on **Figure 6**.

The following table presents a comparison of the unusual conditions of note identified during the prior Phase 1 inspection in 2019 to current conditions and the actions taken to address them.

Unusual Condition Identified in Prior Phase 1 Inspection	***Resolution or Current Status***
Historical, unmeasured movement of the tilted masonry wall into the approach area of the outlet structure (located upstream of the dam).	Condition is monitored during quarterly and Phase 1 inspections. No significant change observed.
Minor deterioration was observed at the right downstream training wall around water level.	Condition is monitored during quarterly and Phase 1 inspections. No significant change
Small holes in the slush-grouted riprap on the upstream end of the raceway embankment located upstream of the dam.	The slush grouted riprap has been resurfaced with slush grout, and the holes have been filled.
Missing downstream staff gauge	The staff gauge has been replaced.
The protective casing for the upstream-most raceway observation well was split.	The casing has been repaired.
A single tree was observed to be growing in riprap on the raceway embankment behind the tilting stone masonry wall.	The tree has been removed.
On the eastern side slope of the raceway outside GE property, a utility pole was seen to be leaning toward the channel (as it was in the prior inspection) and vegetation downstream of that pole is unmaintained and appears to have grown toward the raceway.	This pole and vegetation are monitored during quarterly and biennial inspections.

In addition to the foregoing conditions, the 2016 Phase 1 inspection identified slight seepage from the downstream left and right training walls of the raceway stoplog sluice structure (which is not an integral part of the dam). That condition is monitored during quarterly and Phase 1 inspections. It was not observed during the 2019 Phase 1 inspection and again was not observed during the November 11, 2021 inspection, possibly due to high flows.

3.2 RECOMMENDED ACTIVITIES

GZA has recommended the activities described below to address the unusual conditions listed at the beginning of Section 3.1, in addition to complying with the regular maintenance and repair requirements specified in Sections 4.1 and 4.2 of the OM&M Plan.

3.2.1 Studies and Analyses

GZA does not currently recommend any studies or analyses other than the dewatered spillway inspection which will be scheduled during low-flow conditions in 2022.

3.2.2 Monitoring and Maintenance

The dam should be maintained and monitored in accordance with the OM&M Plan. In addition, the following items should be monitored:

Recommendation	Current Status/Schedule
1. Observe the condition of both training walls and spillway, including the area where the minor deterioration was observed, during a warm-weather, low-flow period.	These areas will continue to be monitored. Specifically, they will be inspected during the dewatered spillway inspection to be scheduled during warm-weather, low-flow conditions in 2022.
2. Continue to monitor the tilted stone masonry wall upstream of the raceway closure structure.	Monitoring points were set by the inspector during the third quarterly inspection for 2020 (on August 7, 2020) and will be monitored going forward during quarterly and biennial inspections.
3. Continue to monitor the leaning utility pole and downstream vegetation on non-GE property on the eastern side slope of the raceway channel; and cut the vegetation if it falls into the raceway channel and impedes flow.	The pole and downstream vegetation will continue to be monitored during quarterly and biennial inspections. The vegetation will be cut if it if it falls into the raceway channel and impedes flow.

3.2.3 Minor Repairs

No minor repairs are recommended at this time.

3.3 REMEDIAL MODIFICATIONS

No remedial modifications are recommended at this time.

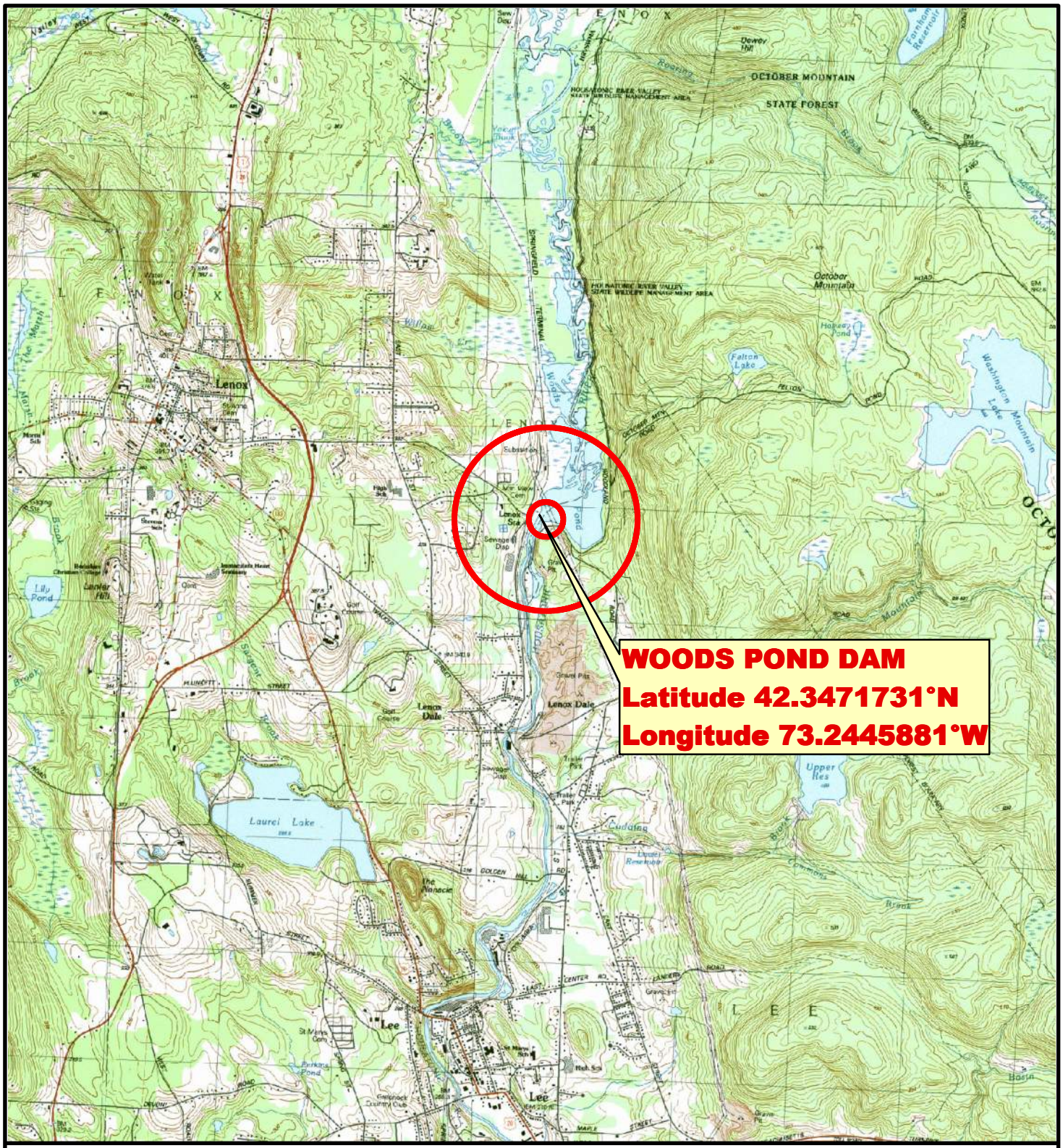
3.4 ALTERNATIVES

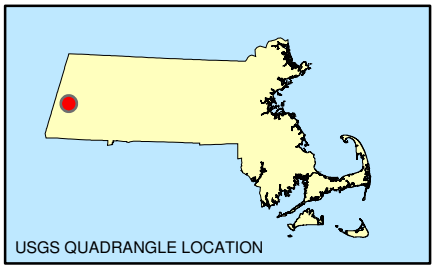
There are no alternatives at this time.

3.5 OPINION OF PROBABLE CONSTRUCTION COSTS

No repairs or remedial modifications are recommended at this time; thus, a cost estimate has not been prepared.

FIGURES





SOURCE : SCANNED USGS TOPOGRAPHIC QUADRANGLES
SCANNED BY THE MASSACHUSETTS EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS, MASSGIS. DISTRIBUTED JUNE, 2001.

Data Supplied by : MASSGIS

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GZA

PROJ. MGR.: JDA
DESIGNED BY: LGM
REVIEWED BY: ABB
OPERATOR: LGM

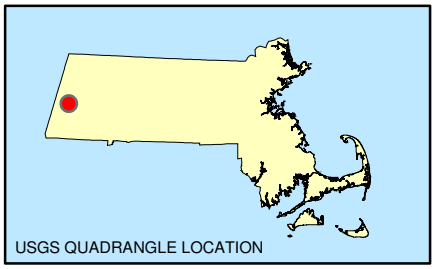
DATE: 12-04-2009

LOCUS PLAN
SHOWING 500 FOOT & 1/2 MILE RADII

JOB NO.
01.0019896.10

WOODS POND DAM
LEE/LENOX, MASSACHUSETTS

FIGURE NO.
1



SOURCE : ORTHO IMAGERY PROVIDED BY MASSGIS, THE EXECTUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS (EOEA), THE DEPARTMENT OF EVIRONMENTAL PROTECTION, THE MASSACHUSETTS HIGHWAY DEPARTMENT, AND THE DEPARTMENT OF PUBLIC HEALTH.

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PROJ. MGR.: JDA
DESIGNED BY: LGM
REVIEWED BY: ABB
OPERATOR: LGM

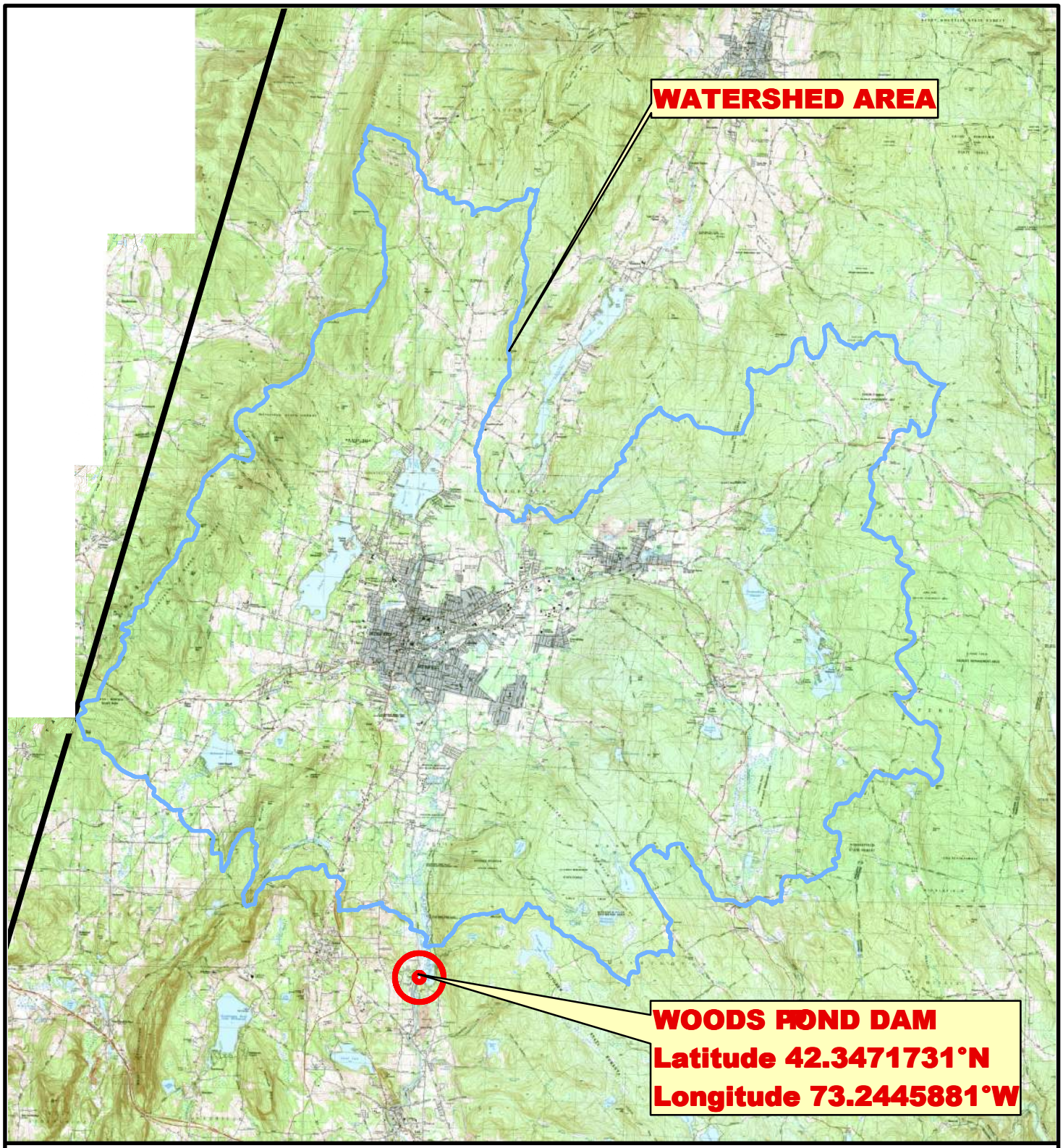
DATE: 12-04-2009

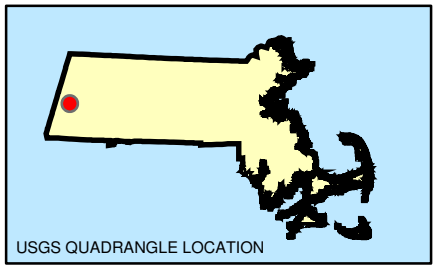
AERIAL PHOTOGRAPH

JOB NO.
01.0019896.10

WOODS POND DAM, MA00731
LEE/LENOX, MASSACHUSETTS

FIGURE NO.
2





SOURCE : SCANNED USGS TOPOGRAPHIC QUADRANGLES
SCANNED BY THE MASSACHUSETTS EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS, MASSGIS. DISTRIBUTED JUNE, 2001.

WATERSHED DELINEATED BY STREAMSTATS
PROVIDED BY THE UNITED STATES GEOLOGICAL SURVEY

Data Supplied by : MASSGIS

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GZA

PROJ. MGR.: JDA
DESIGNED BY: LGM
REVIEWED BY: ABB
OPERATOR: LGM

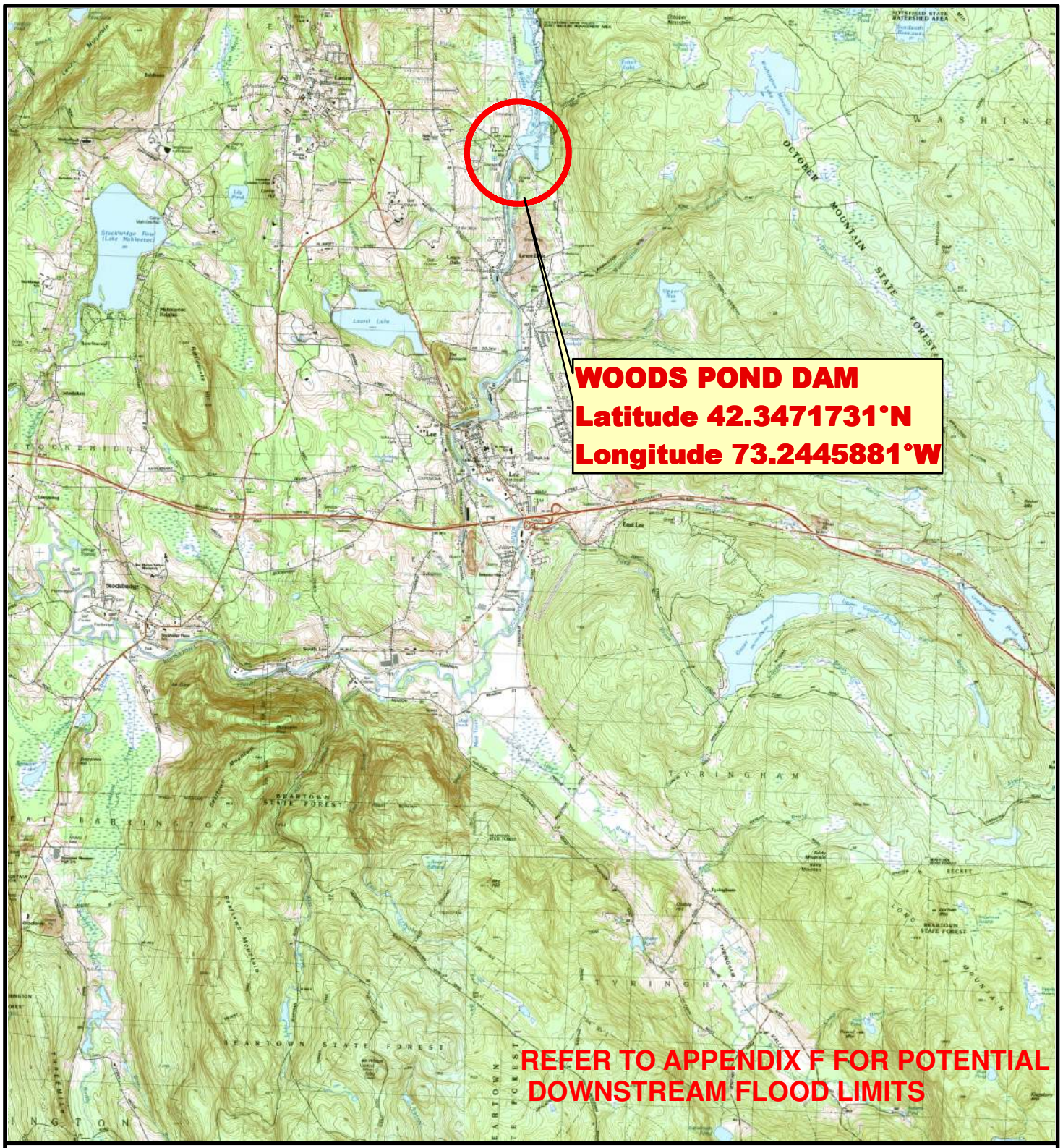
DATE: 12-04-2009

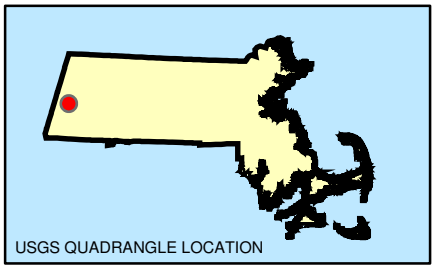
WATERSHED PLAN

JOB NO. 01.0019896.10

WOODS POND DAM
LEE/LENOX, MASSACHUSETTS

FIGURE NO. 3





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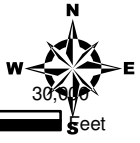
Data Supplied by : MASSGIS



GZA

PROJ. MGR.: JDA
DESIGNED BY: LGM
REVIEWED BY: ABB
OPERATOR: LGM

DATE: 12-04-2009

DOWNSTREAM AREA PLAN

JOB NO. 01.0019896.10

WOODS POND DAM
LEE/LENOX, MASSACHUSETTS

FIGURE NO. 4

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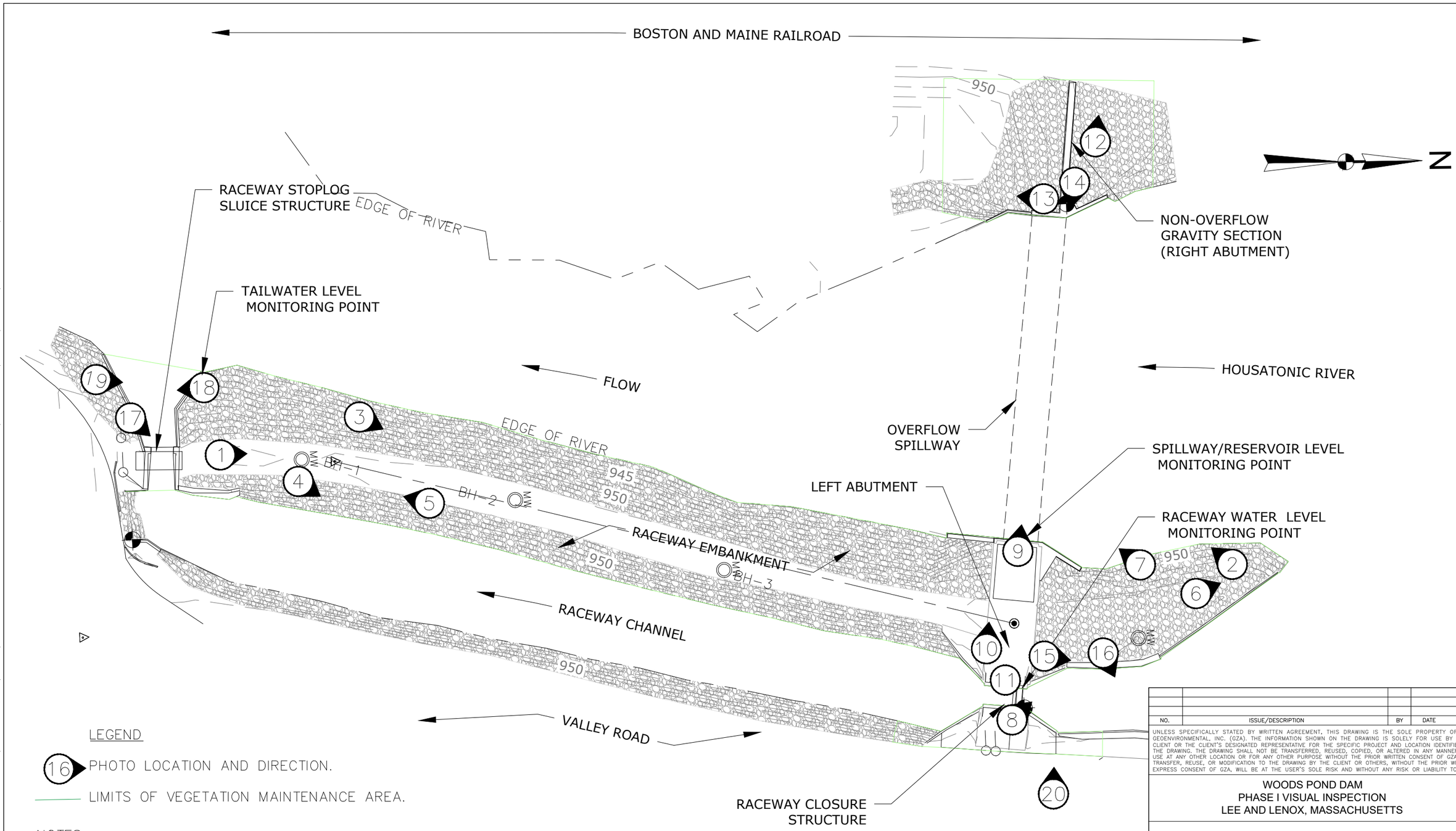


LEGEND

16 PHOTO LOCATION AND DIRECTION.

LIMITS OF VEGETATION MAINTENANCE AREA.

NOTES

1. PHOTOGRAPHS TAKEN DURING THE NOVEMBER 11, 2021 PHASE 1 VISUAL INSPECTION.
2. BASEMAP FROM A TOPOGRAPHIC SURVEY ENTITLED "WOODS POND DAM, LEE/LENOX. MASSACHUSETTS", PREPARED BY FORESIGHT LAND SERVICES, DATED MAY 1, 2020.

0 20' 40' 80'

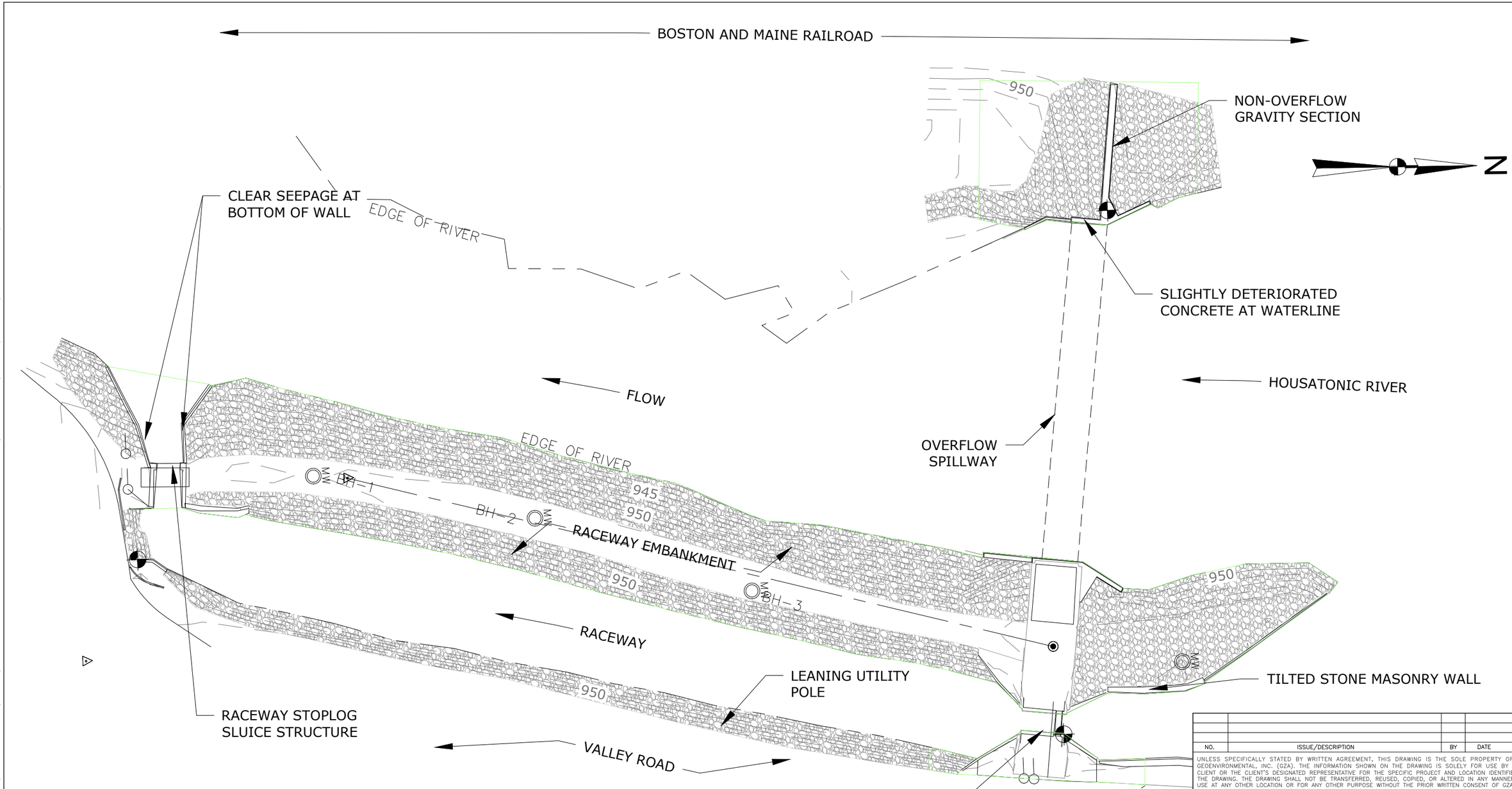
SCALE IN FEET 1" = 40'

NO.	ISSUE/DESCRIPTION	BY	DATE

WOODS POND DAM
PHASE I VISUAL INSPECTION
LEE AND LENOX, MASSACHUSETTS

SITE PLAN AND PHOTO LOCATIONS

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: GENERAL ELECTRIC COMPANY	
PROJ MGR: JDA	REVIEWED BY: JDA	CHECKED BY: LAG	FIG 5
DESIGNED BY: LAG	DRAWN BY: DR	SCALE: 1" = 40'	
DATE: November 2021	PROJECT NO. 19896.50	REVISION NO.	SHEET NO. 1 OF 1



NOTES

1. DEFICENCIES NOTED DURING THE NOVEMBER 11, 2021 PHASE 1 VISUAL INSPECTION.
2. BASEMAP FROM A TOPOGRAPHIC SURVEY ENTITLED "WOODS POND DAM, LEE/LENOX. MASSACHUSETTS", PREPARED BY FORESIGHT LAND SERVICES, DATED MAY 1, 2020.

0 20' 40' 80'

SCALE IN FEET 1" = 40'

NO.	ISSUE/DESCRIPTION	BY	DATE

WOODS POND DAM
PHASE I VISUAL INSPECTION
LEE AND LENOX, MASSACHUSETTS

SITE SKETCH SHOWING UNUSUAL CONDITIONS OF NOTE

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: GENERAL ELECTRIC COMPANY	
PROJ MGR: JDA	REVIEWED BY: JDA	CHECKED BY: LAG	FIG 6
DESIGNED BY: LAG	DRAWN BY: DR	SCALE: 1" = 40'	
DATE: November 2021	PROJECT NO. 19896.50	REVISION NO.	SHEET NO. 1 OF 1

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 Massachusetts Department of Conservation and Recreation (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, 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

13. 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

Photographic Log

Client Name:	Site Location:	Project No.
General Electric Company	Woods Pond Dam Lee/Lenox, MA	01.0019896.50

Photo No.	Date:
1	11/11/21

Direction Photo Taken:
Upstream

Description:
Overview of Woods Pond Dam from the downstream end of the raceway embankment

Photo No.	Date:
2	11/11/21

Direction Photo Taken:
Right

Description:
Overview of upstream side of Woods Pond Dam from the upstream end of the raceway embankment.

Photographic Log

Client Name:	Site Location:	Project No.
General Electric Company	Woods Pond Dam Lee/Lenox, MA	01.0019896.50

Photo No.	Date:
3	11/11/21

Direction Photo Taken:
Upstream

Description:
Overview of discharge area of Woods Pond Dam

Photo No.	Date:
4	11/11/21

Direction Photo Taken:
Upstream

Description:
Overview of raceway, looking upstream. Raceway outlet structure in distance. Note leaning utility pole

Photographic Log

Client Name:	Site Location:	Project No.
General Electric Company	Woods Pond Dam Lee/Lenox, MA	01.0019896.50

Photo No.	Date:
5	11/11/21

Direction Photo Taken:
Downstream

Description:
Downstream raceway, and left side of the raceway embankment.

Photo No.	Date:
6	11/11/21

Direction Photo Taken:
Upstream

Description:
Upstream end of the raceway embankment.

Photographic Log

Client Name:	Site Location:	Project No.
General Electric Company	Woods Pond Dam Lee/Lenox, MA	01.0019896.50

Photo No.	Date:
7	11/11/21

Direction Photo Taken:
Downstream

Description:
Spillway from the upstream end of the raceway embankment

Photo No.	Date:
8	11/11/21

Direction Photo Taken:
Upstream

Description:
Approach area to the raceway spillway structure. Right side masonry wall tilted toward channel.

Photographic Log

Client Name:	Site Location:	Project No.
General Electric Company	Woods Pond Dam Lee/Lenox, MA	01.0019896.30

Photo No.	Date:
9	11/11/21

Direction Photo Taken:
Right

Description:
Overview of spillway weir and right training wall.

Photo No.	Date:
10	11/11/21

Direction Photo Taken:
Right

Description:
Crest of left side of dam.

Photographic Log

Client Name:	Site Location:	Project No.
General Electric Company	Woods Pond Dam Lee/Lenox, MA	01.0019896.30

Photo No.	Date:
11	11/11/21

Direction Photo Taken:
Down

Description:
Raceway spillway structure. Note three stoplogs were removed to lower the impoundment prior to inspection.

Photo No.	Date:
12	11/11/21

Direction Photo Taken:
Right

Description:
Top of non-overflow (right) side of dam.

Photographic Log

Client Name:	Site Location:	Project No.
General Electric Company	Woods Pond Dam Lee/Lenox, MA	01.0019896.30

Photo No.	Date:
13	11/11/21

Direction Photo Taken:
Downstream

Description:
Right side training wall.

Photo No.	Date:
14	11/11/21

Direction Photo Taken:
Left

Description:
Spillway from right abutment.

Photographic Log

Client Name:	Site Location:	Project No.
General Electric Company	Woods Pond Dam Lee/Lenox, MA	01.0019896.50

Photo No.	Date:
15	11/11/21

Direction Photo Taken:
Upstream

Description:
Tilted masonry wall at left side of upstream. Raceway embankment / right side of raceway closure structure approach area. Note tree that was behind wall (see 2019 inspection report) has been removed.

Photo No.	Date:
16	11/11/21

Direction Photo Taken:
Right

Description:
Upstream left raceway approach training wall showing area previously repaired.

Photographic Log

Client Name:	Site Location:	Project No.
General Electric Company	Woods Pond Dam Lee/Lenox, MA	01.0019896.50

Photo No.	Date:
17	11/11/21

Direction Photo Taken:
Upstream

Description:
Downstream raceway stoplog structure. Stoplogs had been removed in an attempt to lower the impoundment.

Photo No.	Date:
18	11/11/21

Direction Photo Taken:
Downstream

Description:
Downstream raceway outlet left training wall.

Photographic Log

Client Name:	Site Location:	Project No.
General Electric Company	Woods Pond Dam Lee/Lenox, MA	01.0019896.50

Photo No.	Date:
19	11/11/21

Direction Photo Taken:
Upstream

Description:
Downstream raceway outlet left training wall. Note cracking and seepage on left of photo. Note recently painted staff gauge.

Photo No.	Date:
20	11/11/21

Direction Photo Taken:
Right

Description:
Recent repair to the area upstream of the left abutment. Note new chain link fence. Note tree (present during 2019 inspection) was removed.

APPENDIX C – INSPECTION CHECKLIST

DAM SAFETY INSPECTION CHECKLIST

NAME OF DAM: Woods Pond Dam

STATE ID #: 1-2-150-11

REGISTERED: ☑ YES ☐ NO

NID ID #: MA00731

STATE SIZE CLASSIFICATION: Large

STATE HAZARD CLASSIFICATION: Significant

CHANGE IN HAZARD CLASSIFICATION REQUESTED?: No

DAM LOCATION INFORMATION

CITY/TOWN: Lee/Lenox

COUNTY: Berkshire

DAM LOCATION: Off Valley Road
(street address if known)

ALTERNATE DAM NAME: None known

USGS QUAD.: Housatonic

LAT.: 42.3471731°N

LONG.: 73.2445881°W

DRAINAGE BASIN: Housatonic

RIVER: Housatonic River

IMPOUNDMENT NAME(S): Woods Pond or Woods Pond Reservoir

GENERAL DAM INFORMATION

TYPE OF DAM: Concrete/sheetpile embankment with riprapped abutments

OVERALL LENGTH (FT): 298

PURPOSE OF DAM: Controls water level in raceway and mill pond

NORMAL POOL STORAGE (ACRE-FT): 460 at El. 948.8'

YEAR BUILT: 1864, rebuilt 150' downstream in 1989

MAXIMUM POOL STORAGE (ACRE-FT): 5300 at El. 955.8'

STRUCTURAL HEIGHT (FT): 17.6

EL. NORMAL POOL (FT): 948.8±

HYDRAULIC HEIGHT (FT): 11.9

EL. MAXIMUM POOL (FT): 955.8

FOR INTERNAL MADCR USE ONLY

FOLLOW-UP INSPECTION REQUIRED: ☐ YES ☐ NO

CONDITIONAL LETTER: ☐ YES ☐ NO

NAME OF DAM: Woods Pond Dam | STATE ID #: 1-2-150-11

INSPECTION DATE: November 11, 2021 | NID ID #: MA00731

INSPECTION SUMMARY

DATE OF INSPECTION: November 11, 2021 | DATE OF PREVIOUS INSPECTION: November 5, 2019

TEMPERATURE/WEATHER: Clear, 50°s | ARMY CORPS PHASE I: ☐ YES ☑ NO | If YES, date

CONSULTANT: GZA GeoEnvironmental, Inc. | PREVIOUS DCR PHASE I: ☐ YES ☑ NO | If YES, date

BENCHMARK/DATUM: NGVD

OVERALL PHYSICAL CONDITION OF DAM: SATISFACTORY | DATE OF LAST REHABILITATION: Late 1980s major modifications

SPILLWAY CAPACITY: >100% SDF w/ no actions by Caretaker

EL. POOL DURING INSP.: 949.0± (9" above spillway) | EL. TAILWATER DURING INSP.: 940.7'±

PERSONS PRESENT AT INSPECTION

NAME	TITLE/POSITION	REPRESENTING
Laurie A. Gibeau, P.E.	Project Manager	GZA GeoEnvironmental, Inc.
Rachel A. Crum, E.I.	Engineer I	GZA GeoEnvironmental, Inc.
Scott Campbell		Taconic Ridge Environmental
Ralph D. Nelson, Jr.		HDR

EVALUATION INFORMATION

	Click on box to select E-code		Click on box to select E-code
E1) TYPE OF DESIGN	4	E8) LOW-LEVEL OUTLET CONDITION	4
E2) LEVEL OF MAINTENANCE	4	E9) SPILLWAY DESIGN FLOOD CAPACITY	5
E3) EMERGENCY ACTION PLAN	5	E10) OVERALL PHYSICAL CONDITION	4
E4) EMBANKMENT SEEPAGE	4	E11) ESTIMATED REPAIR COST	N/A
E5) EMBANKMENT CONDITION	4	ROADWAY OVER CREST	NO
E6) CONCRETE CONDITION	4	BRIDGE NEAR DAM	NO
E7) LOW-LEVEL OUTLET CAPACITY	4		

NAME OF INSPECTING ENGINEER: Laurie A. Gibeau, P.E. | SIGNATURE: 

NAME OF DAM: Woods Pond Dam | STATE ID #: 1-2-150-11

INSPECTION DATE: November 11, 2021 | NID ID #: MA00731

OWNER:		CARETAKER:	
ORGANIZATION	General Electric Company	ORGANIZATION	General Electric Company
NAME/TITLE	Kevin Mooney, Facility Manager	NAME/TITLE	Kevin Mooney, Facility Manager
STREET	159 Plastics Avenue	STREET	159 Plastics Avenue
TOWN, STATE, ZIP	Pittsfield, MA 01201	TOWN, STATE, ZIP	Pittsfield, MA 01201
PHONE	413-448-6610	PHONE	413-448-6610
EMERGENCY PH. #	413-441-4619	EMERGENCY PH. #	413-441-4619
FAX		FAX	
EMAIL	kevin.mooney@ge.com	EMAIL	kevin.mooney@ge.com
OWNER TYPE	Private		

PRIMARY SPILLWAY TYPE: Concrete ogee

SPILLWAY LENGTH (FT): 140 | SPILLWAY CAPACITY (CFS): 12,100 cfs at El. 955.8

AUXILIARY SPILLWAY TYPE: None | AUX. SPILLWAY CAPACITY (CFS): Not applicable

NUMBER OF OUTLETS: One | OUTLET(S) CAPACITY (CFS): 850 cfs at El. 955.8 (no stoplogs)

TYPE OF OUTLETS: Raceway closure structure (stoplogs) | TOTAL DISCHARGE CAPACITY (CFS): 12,950 cfs at El. 955.8

DRAINAGE AREA (SQ MI): 170 | SPILLWAY DESIGN FLOOD (PERIOD/CFS): 500 year

HAS DAM BEEN BREACHED OR OVERTOPPED: ☐ YES ☑ NO | IF YES, PROVIDE DATE(S):

FISH LADDER (LIST TYPE IF PRESENT): None

DOES CREST SUPPORT PUBLIC ROAD? ☐ YES ☑ NO | IF YES, ROAD NAME:

PUBLIC BRIDGE WITHIN 50' OF DAM? ☐ YES ☑ NO | IF YES, ROAD/BRIDGE NAME:

MHD BRIDGE NO. (IF APPLICABLE):

NAME OF DAM: Woods Pond Dam STATE ID #: 1-2-150-11

INSPECTION DATE: November 11, 2021 NID ID #: MA00731

RACEWAY EMBANKMENT (CREST)

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
CREST	1. SURFACE TYPE	Grass and gravel on the downstream end; slush grouted riprap on the upstream end	X		
	2. SURFACE CRACKING	None observed	X		
	3. SINKHOLES, ANIMAL BURROWS	None observed	X		
	4. VERTICAL ALIGNMENT (DEPRESSIONS)	Slight unevenness		X	
	5. HORIZONTAL ALIGNMENT	No unusual movement or misalignment observed.	X		
	6. RUTS AND/OR PUDDLES	None observed	X		
	7. VEGETATION (PRESENCE/CONDITION)	Mown grass/weeds.		X	
	8. ABUTMENT CONTACT	Appeared adequate	X		

ADDITIONAL COMMENTS:

NAME OF DAM: Woods Pond Dam STATE ID #: 1-2-150-11

INSPECTION DATE: November 11, 2021 NID ID #: MA00731

MISCELLANEOUS

AREA INSPECTED	CONDITION	OBSERVATIONS
MISC.	1. RESERVOIR DEPTH (AVG)	8'
	2. RESERVOIR SHORELINE	Wooded
	3. RESERVOIR SLOPES	Shallowly sloped
	4. ACCESS ROADS	Access through mill property.
	5. SECURITY DEVICES	Locked gates. Warning signs installed.
	6. VANDALISM OR TRESPASS	☑ YES ☐ NO WHAT: Cans, bottles
	7. AVAILABILITY OF PLANS	☑ YES ☐ NO DATE: 1989-1991
	8. AVAILABILITY OF DESIGN CALCS	☑ YES ☐ NO DATE: 1989-1991
	9. AVAILABILITY OF EAP/LAST UPDATE	☑ YES ☐ NO DATE: March 2021
	10. AVAILABILITY OF O&M MANUAL	☑ YES ☐ NO DATE: June 17, 2019
	11. CARETAKER/OWNER AVAILABLE	☑ YES ☐ NO DATE: November 1, 2021
	12. CONFINED SPACE ENTRY REQUIRED	☐ YES ☑ NO PURPOSE:

ADDITIONAL COMMENTS:

NAME OF DAM: Woods Pond Dam STATE ID #: 1-2-150-11

INSPECTION DATE: November 11, 2021 NID ID #: MA00731

RACEWAY EMBANKMENT (D/S END)

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
D/S END	1. WET AREAS (NO FLOW)	None observed	X		
	2. SEEPAGE	None observed	X		
	3. SLIDE, SLOUGH, SCARP	None observed	X		
	4. EMB.-ABUTMENT CONTACT	Good	X		
	5. SINKHOLE/ANIMAL BURROWS	None observed	X		
	6. EROSION	None observed	X		
	7. UNUSUAL MOVEMENT	None observed	X		
	8. VEGETATION (PRESENCE/CONDITION)	Mown grass and weeds	X		

ADDITIONAL COMMENTS:

NAME OF DAM: Woods Pond Dam STATE ID #: 1-2-150-11

INSPECTION DATE: November 11, 2021 NID ID #: MA00731

RACEWAY EMBANKMENT (U/S END)

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
U/S END	1. SLIDE, SLOUGH, SCARP	None observed	X		
	2. SLOPE PROTECTION TYPE AND COND.	Embankment is surfaced with slush grouted riprap.	X		
	3. SINKHOLE/ANIMAL BURROWS	None observed	X		
	4. EMB.-ABUTMENT CONTACT	Good	X		
	5. EROSION	None observed	X		
	6. UNUSUAL MOVEMENT	Left side above raceway inlet, masonry blocks remain tilted		X	
	7. VEGETATION (PRESENCE/CONDITION)	Mown grass	X		

ADDITIONAL COMMENTS:

NAME OF DAM: Woods Pond Dam STATE ID #: 1-2-150-11

INSPECTION DATE: November 11, 2021 NID ID #: MA00731

INSTRUMENTATION

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
INSTR.	1. PIEZOMETERS	None	X		
	2. OBSERVATION WELLS	Three observation wells on downstream raceway embankment, one upstream	X		
	3. STAFF GAGE AND RECORDER	Gage painted onto the left spillway abutment and at raceway outlet	X		
	4. WEIRS	None	X		
	5. INCLINOMETERS	None	X		
	6. SURVEY MONUMENTS	None	X		
	7. DRAINS	None	X		
	8. FREQUENCY OF READINGS	Monthly	X		
	9. LOCATION OF READINGS	With caretaker	X		

ADDITIONAL COMMENTS: Recent repair to well protective casing.

NAME OF DAM: Woods Pond Dam STATE ID #: 1-2-150-11

INSPECTION DATE: November 11, 2021 NID ID #: MA00731

DOWNSTREAM MASONRY WALLS

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
D/S WALLS	1. WALL TYPE	N/A			
	2. WALL ALIGNMENT				
	3. WALL CONDITION				
	4. HEIGHT: TOP OF WALL TO MUDLINE	min: avg:			
	5. SEEPAGE OR LEAKAGE				
	6. ABUTMENT CONTACT				
	7. EROSION/SINKHOLES BEHIND WALL				
	8. ANIMAL BURROWS				
	9. UNUSUAL MOVEMENT				
	10. WET AREAS AT TOE OF WALL				

ADDITIONAL COMMENTS:

NAME OF DAM: Woods Pond Dam STATE ID #: 1-2-150-11

INSPECTION DATE: November 11, 2021 NID ID #: MA00731

UPSTREAM MASONRY WALLS

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
U/S WALLS	1. WALL TYPE	N/A			
	2. WALL ALIGNMENT				
	3. WALL CONDITION				
	4. HEIGHT: TOP OF WALL TO MUDLINE	min:			
	5. ABUTMENT CONTACT				
	6. EROSION/SINKHOLES BEHIND WALL				
	7. ANIMAL BURROWS				
	8. UNUSUAL MOVEMENT				

ADDITIONAL COMMENTS:

NAME OF DAM: Woods Pond Dam STATE ID #: 1-2-150-11

INSPECTION DATE: November 11, 2021 NID ID #: MA00731

DOWNSTREAM AREA

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
D/S AREA	1. ABUTMENT LEAKAGE	Previously observed seepage at bottom of left and right d/s training walls for raceway stoplog sluice structure; previously reported clear, imperceptable flow (1) (2)		X	
	2. FOUNDATION SEEPAGE	See above		X	
	3. SLIDE, SLOUGH, SCARP	Reported bedrock scour at toe of spillway not observed (underwater). See survey		X	
	4. WEIRS	None	X		
	5. DRAINAGE SYSTEM	None	X		
	6. INSTRUMENTATION	None in downstream area. Four wells on raceway embankment.	X		
	7. VEGETATION	None observed			X
	8. ACCESSIBILITY	Locked gates at raceway embankment and spillway. The right side access is across railroad tracks.	X		
	9. DOWNSTREAM HAZARD DESCRIPTION	Industrial area, residences, and secondary highways	X		
	10. DATE OF LAST EAP UPDATE	March 2021	X		

ADDITIONAL COMMENTS: 1. Vertical crack on right (upstream) training wall. Vertical & Longitudinal cracks (maybe at joint) and efflorescence on downstream wall.

2. Flow was diverted through raceway prior to & during inspection to lower impoundment for spillway observations. This flow hindered close observations of the seeps.

NAME OF DAM: Woods Pond Dam STATE ID #: 1-2-150-11

INSPECTION DATE: November 11, 2021 NID ID #: MA00731

PRIMARY SPILLWAY

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
SPILLWAY	SPILLWAY TYPE	Concrete overflow weir	X		
	WEIR TYPE	Ogee-shaped	X		
	SPILLWAY CONDITION	Flow obscured observation	X		
	TRAINING WALLS	Left and right D/S TW some efflorescence. (1)		X	
	SPILLWAY CONTROLS AND CONDITION	Not applicable	X		
	UNUSUAL MOVEMENT	None observed	X		
	APPROACH AREA	Housatonic River, clear	X		
	DISCHARGE AREA	Housatonic River, clear	X		
	DEBRIS	None observed. Sediment does not appear to impact flow.	X		
	WATER LEVEL AT TIME OF INSPECTION	Approx. 9" flow over spillway; approx El. 949' NGVD	X		

ADDITIONAL COMMENTS: 1. Right training wall has historical orange staining around a horizontal joint. Minor deterioration around downstream end should be monitored (condition appears stable).

NAME OF DAM: Woods Pond Dam STATE ID #: 1-2-150-11

INSPECTION DATE: November 11, 2021 NID ID #: MA00731

AUXILIARY SPILLWAY

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
SPILLWAY	SPILLWAY TYPE	N/A			
	WEIR TYPE				
	SPILLWAY CONDITION				
	TRAINING WALLS				
	SPILLWAY CONTROLS AND CONDITION				
	UNUSUAL MOVEMENT				
	APPROACH AREA				
	DISCHARGE AREA				
	DEBRIS				
	WATER LEVEL AT TIME OF INSPECTION				

ADDITIONAL COMMENTS:

NAME OF DAM: Woods Pond Dam STATE ID #: 1-2-150-11

INSPECTION DATE: November 11, 2021 NID ID #: MA00731

OUTLET WORKS

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
OUTLET WORKS	TYPE	Stoplog-controlled raceway	X		
	INTAKE STRUCTURE	U/S left approach training wall concrete patch deteriorated appeared stable and similar to previous inspections		X	
	TRASHRACK	Not applicable	X		
	PRIMARY CLOSURE	Steel and concrete stoplogs typically slightly open to prevent stagnation downstream (1)	X		
	SECONDARY CLOSURE	Downstream stoplog structure	X		
	CONDUIT	Raceway channel	X		
	OUTLET STRUCTURE/HEADWALL	Sheetpile wall immediately upstream, left and right good condition	X		
	EROSION ALONG TOE OF DAM	None observed	X		
	SEEPAGE/LEAKAGE	None observed at u/s closure structure. Historical clear seeps at both walls of d/s structure		X	
	DEBRIS/BLOCKAGE	None observed	X		
	UNUSUAL MOVEMENT	Right u/s training wall (2)		X	
	DOWNSTREAM AREA	Riprap raceway channel, sheetpile wall (3)		X	
	MISCELLANEOUS	Upstream and downstream stoplogs exercised prior to inspection. Planks below the steel bridge are rotted.			

ADDITIONAL COMMENTS:
1. Three stoplogs removed to lower impoundment for inspection.
2. Monitoring point added to former dam masonry wall. At monitoring point, leaning 5.5 inches in to approach area. (Monitor)
3. D/S utility pole is leaning. Trees on east side of channel about 150' downstream.
4. Area beyond left abutment sheetpile repaired. See text for details.

NAME OF DAM: Woods Pond Dam STATE ID #: 1-2-150-11

INSPECTION DATE: November 11, 2021 NID ID #: MA00731

CONCRETE/MASONRY DAMS
(SPILLWAY ABUTMENTS TO RIGHT AND LEFT)

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
GENERAL	TYPE	Concrete-filled sheetpile walls (left); concrete wall (right)	X		
	AVAILABILITY OF PLANS	1989 to 1991 construction plans available (not reviewed during inspection)	X		
	AVAILABILITY OF DESIGN CALCS	1989 to 1991 design calculations available (not reviewed during inspection)	X		
	PIEZOMETERS	Not applicable	X		
	OBSERVATION WELLS	Not applicable	X		
	INCLINOMETERS	Not applicable	X		
	SEEPAGE GALLERY	Not applicable	X		
	UNUSUAL MOVEMENT	None observed	X		

ADDITIONAL COMMENTS:

NAME OF DAM: Woods Pond Dam STATE ID #: 1-2-150-11

INSPECTION DATE: November 11, 2021 NID ID #: MA00731

CONCRETE/MASONRY DAMS (CREST)
(SPILLWAY ABUTMENTS TO RIGHT AND LEFT)

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
CREST	TYPE	Concrete with sheetpile walls	X		
	SURFACE CONDITIONS	Good, with hairline cracks showing efflorescence near the spillway		X	
	CONDITIONS OF JOINTS	OK with hairline cracks showing efflorescence near the spillway		X	
	UNUSUAL MOVEMENT	None observed	X		
	HORIZONTAL ALIGNMENT	Straight	X		
	VERTICAL ALIGNMENT	Level	X		

ADDITIONAL COMMENTS:

NAME OF DAM: Woods Pond Dam STATE ID #: 1-2-150-11

INSPECTION DATE: November 11, 2021 NID ID #: MA00731

CONCRETE/MASONRY DAMS (DOWNSTREAM FACE)

(SPILLWAY ABUTMENTS TO RIGHT AND LEFT)

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
D/S FACE	TYPE	Sheetpiles abut downstream end of riprap raceway embankment at left;	X		
	SURFACE CONDITIONS	Left appears to be in fair condition; riprap hindered observations on right side (1)	X		
	CONDITIONS OF JOINTS	Joints appear to be in good condition on left side; riprap hindered observations at right	X		
	UNUSUAL MOVEMENT	No unusual movement or misalignment observed	X		
	ABUTMENT CONTACT	Contact appears to be in good condition at left; riprap hindered observations on right (2)	X		
	LEAKAGE	None observed	X		

ADDITIONAL COMMENTS: 1. At right above riprap, concrete appeared to be in good condition

2. Low point around dam is over train tracks on right side.

NAME OF DAM: Woods Pond Dam STATE ID #: 1-2-150-11

INSPECTION DATE: November 11, 2021 NID ID #: MA00731

CONCRETE/MASONRY DAMS (UPSTREAM FACE)

(SPILLWAY ABUTMENTS TO RIGHT AND LEFT)

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
U/S FACE	TYPE	Sheetpiles abut riprapped raceway dike at left	X		
	SURFACE CONDITIONS	Riprap embankment hindered observation (1)	X		
	CONDITIONS OF JOINTS	Riprap embankment hindered observation	X		
	UNUSUAL MOVEMENT	None observed	X		
	ABUTMENT CONTACTS	Contact appears to be adequate on right, riprap hindered observations on left	X		

ADDITIONAL COMMENTS: 1. Above riprap, concrete appears to be in adequate condition at right

APPENDIX D – PREVIOUS REPORTS & REFERENCES

PREVIOUS REPORTS AND REFERENCES

The following is a list of reports that were located during the file review or were referenced in previous reports.

1. Woods Pond Dam Quarterly Inspection/Evaluation Report prepared for General Electric Company, Pittsfield, MA by GZA GeoEnvironmental, Inc., Norwood, MA, May 19,2021.
2. Woods Pond Dam Quarterly Inspection/Evaluation Report prepared for General Electric Company, Pittsfield, MA by GZA GeoEnvironmental, Inc., Norwood, MA, March 10,2021.
3. Woods Pond Dam Quarterly Inspection/Evaluation Report prepared for General Electric Company, Pittsfield, MA by GZA GeoEnvironmental, Inc., Norwood, MA, December 10, 2020.
4. Woods Pond Dam Quarterly Inspection/Evaluation Report prepared for General Electric Company, Pittsfield, MA by GZA GeoEnvironmental, Inc., Norwood, MA, August 7, 2020.
5. Woods Pond Dam Quarterly Inspection/Evaluation Report prepared for General Electric Company, Pittsfield, MA by GZA GeoEnvironmental, Inc., Norwood, MA, May 8, 2020.
6. Woods Pond Dam Quarterly Inspection/Evaluation Report prepared for General Electric Company, Pittsfield, MA by GZA GeoEnvironmental, Inc., Norwood, MA, February 12, 2020.
7. Woods Pond Dam Phase I Inspection/Evaluation Report (2019) prepared for General Electric Company, Pittsfield, MA by GZA GeoEnvironmental, Inc., Norwood, MA, November 2019.
8. Woods Pond Dam Phase I Inspection/Evaluation Report (2016) prepared for General Electric Company, Pittsfield, MA by GZA GeoEnvironmental, Inc., Norwood, MA, December 2016.
9. Woods Pond Dam Phase I Inspection/Evaluation Report (2009) prepared for General Electric Company, Pittsfield, MA by GZA GeoEnvironmental, Inc., Norwood, MA, July 2010.
10. Woods Pond Dam Structural Integrity Assessment and Inspection/Evaluation Report (2007) prepared for General Electric Company, Pittsfield, MA by MWH, Chicago, IL, November 2007.
11. Emergency Action Plan for Woods Pond Dam, prepared for General Electric Company, Pittsfield, MA by MWH, Chicago, IL, July 2008.
12. Operations & Maintenance Plan for Woods Pond Dam, prepared for General Electric Company, Pittsfield, MA by MWH, Chicago, IL, September 2006.
13. Woods Pond Dam Structural Integrity Assessment Report (2005) prepared for General Electric Company, Pittsfield, MA by MWH, Chicago, IL, April 2006.
14. Woods Pond Dam Structural Integrity Assessment Report (2004) prepared for General Electric Company, Pittsfield, MA by MWH, Chicago, IL, February 2005.
15. Woods Pond Dam Structural Integrity Assessment Report (2002), prepared for General Electric Company, Pittsfield, MA by MWH, Chicago, IL, May 2003.
16. Letter to Andrew Silfer, General Electric Project Coordinator from Dale C. Young, Lead Administrative Trustee of The Trustees of The Commonwealth of Massachusetts Executive Office of Environmental Affairs, July 9, 2001.
17. Woods Pond Dam Structural Integrity Assessment Report (2000), prepared for General Electric Company, Pittsfield, MA by Harza Engineering Company, Chicago, IL, January 2001.
18. Railroad Design and Rehabilitation (2000), Technical Instructions TI 850-02 by U. S. Army Corps of Engineers, March 2000.

19. Downstream Raceway Embankment Slope Stability Analysis, prepared for General Electric Company, Pittsfield, MA by Harza Engineering Company, Chicago, IL, March 2000.
20. Woods Pond Dam Inspection Report (1998), prepared for General Electric Company, Pittsfield, MA by Harza Engineering Company, Chicago, IL, March 1999.
21. Inspection/Evaluation Report for Woods Pond Dam, prepared for Massachusetts Department of Environmental Management, Office of Dam Safety, by Root Engineering, based on inspection conducted on May 27, 1998 (report undated).
22. First Annual Inspection Report of Woods Pond Dam, prepared for General Electric Company, Pittsfield, MA by Harza Engineering Company, Chicago, IL, March 1991.
23. General Design Report for Woods Pond Dam Rehabilitation, prepared for General Electric Company, Pittsfield, MA by Harza Engineering Company, Chicago, IL, April 1989.
24. Phase II Investigation Report at Woods Pond Dam, Lee, Massachusetts, prepared for General Electric Company, Pittsfield, MA by Harza Engineering Company, Chicago, IL, June 1988.
25. Hydraulic Design Criteria, Sheet 712-1, Stone Stability – Velocity vs. Stone Diameter, by U. S. Army Corps of Engineers, revised 9-70.
26. Woods Pond Dam Phase I Inspection/Evaluation Report (2014), prepared for General Electric Company, Pittsfield, MA by GZA GeoEnvironmental, Inc., Norwood, MA, November, 2014.
27. Woods Pond Dam Phase I Inspection/Evaluation Report (2012), prepared for General Electric Company, Pittsfield, MA by GZA GeoEnvironmental, Inc., Norwood, MA, December, 2012.

The following reference was utilized during the preparation of this report and the development of the recommendations presented herein.

1. Commonwealth of Massachusetts Regulations, 302 CMR 10.00 – Dam Safety, Effective 02/10/17.

APPENDIX E – DEFINITIONS

COMMON DAM SAFETY DEFINITIONS

For a comprehensive list of dam engineering terminology and definitions refer to 302 CMR10.00 Dam Safety, or other reference published by FERC, Dept. of the Interior Bureau of Reclamation, or FEMA. Please note should discrepancies between definitions exist, those definitions included within 302 CMR 10.00 govern for dams located within the Commonwealth of Massachusetts.

Orientation

Upstream – Shall mean the side of the dam that borders the impoundment.

Downstream – Shall mean the high side of the dam, the side opposite the upstream side.

Right – Shall mean the area to the right when looking in the downstream direction.

Left – Shall mean the area to the left when looking in the downstream direction.

Dam Components

Dam – Shall mean any artificial barrier, including appurtenant works, which impounds or diverts water.

Embankment – Shall mean the fill material, usually earth or rock, placed with sloping sides, such that it forms a permanent barrier that impounds water.

Crest – Shall mean the top of the dam, usually provides a road or path across the dam.

Abutment – Shall mean that part of a valley side against which a dam is constructed. An artificial abutment is sometimes constructed as a concrete gravity section, to take the thrust of an arch dam where there is no suitable natural abutment.

Appurtenant Works – Shall mean structures, either in dams or separate therefrom, including but not be limited to, spillways; reservoirs and their rims; low-level outlet works; and water conduits including tunnels, pipelines, or penstocks, either through the dams or their abutments.

Spillway – Shall mean a structure over or through which water flows are discharged. If the flow is controlled by gates or boards, it is a controlled spillway; if the fixed elevation of the spillway crest controls the level of the impoundment, it is an uncontrolled spillway.

Size Classification
(as listed in Commonwealth of Massachusetts, 302 CMR 10.00 Dam Safety)

Large – structure with a height greater than 40 feet or a storage capacity greater than 1,000 acre-feet.

Intermediate – structure with a height between 15 and 40 feet or a storage capacity of 50 to 1,000 acre-feet.

Small – structure with a height between 6 and 15 feet and a storage capacity of 15 to 50 acre-feet.

Non-Jurisdictional – structure less than 6 feet in height or having a storage capacity of less than 15 acre-feet.

Hazard Classification
(as listed in Commonwealth of Massachusetts, 302 CMR 10.00 *Dam Safety*)

High Hazard (Class I) – Shall mean dams located where failure will likely cause loss of life and serious damage to home(s), industrial or commercial facilities, important public utilities, main highway(s) or railroad(s).

Significant Hazard (Class II) – Shall mean dams located where failure may cause loss of life and damage to home(s), industrial or commercial facilities, secondary highway(s) or railroad(s), or cause the interruption of the use or service of relatively important facilities.

Low Hazard (Class III) – Dams located where failure may cause minimal property damage to others. Loss of life is not expected.

General

EAP – Emergency Action Plan – Shall mean a predetermined (and properly documented) plan of action to be taken to reduce the potential for property damage and/or loss of life in an area affected by an impending dam failure.

O&M Manual – Operations and Maintenance Manual; Document identifying routine maintenance and operational procedures under normal and storm conditions.

Normal Pool – Shall mean the elevation of the impoundment during normal operating conditions.

Acre-foot – Shall mean a unit of volumetric measure that would cover one acre to a depth of one foot. It is equal to 43,560 cubic feet. One million U.S. gallons = 3.068 acre feet.

Height of Dam (Structural Height) – Shall mean the vertical distance from the lowest portion of the natural ground, including any stream channel, along the downstream toe of the dam to the lowest point on the crest of the dam.

Hydraulic Height – means the height to which water rises behind a dam and the difference between the lowest point in the original streambed at the axis of the dam and the maximum controllable water surface.

Maximum Water Storage Elevation – means the maximum elevation of water surface which can be contained by the dam without overtopping the embankment section.

Spillway Design Flood (SDF) – Shall mean the flood used in the design of a dam and its appurtenant works particularly for sizing the spillway and outlet works, and for determining maximum temporary storage and height of dam requirements.

Maximum Storage Capacity – The volume of water contained in the impoundment at maximum water storage elevation.

Normal Storage Capacity – The volume of water contained in the impoundment at normal water storage elevation.

Condition Rating

Unsafe – Major structural*, operational, and maintenance deficiencies exist under normal operating conditions.

Poor – Significant structural*, operation and maintenance deficiencies are clearly recognized for normal loading conditions.

Fair – Significant operational and maintenance deficiencies, no structural deficiencies. Potential deficiencies exist under unusual loading conditions that may realistically occur. Can be used when uncertainties exist as to critical parameters.

Satisfactory – Minor operational and maintenance issues. Infrequent hydrologic events could result in deficiencies.

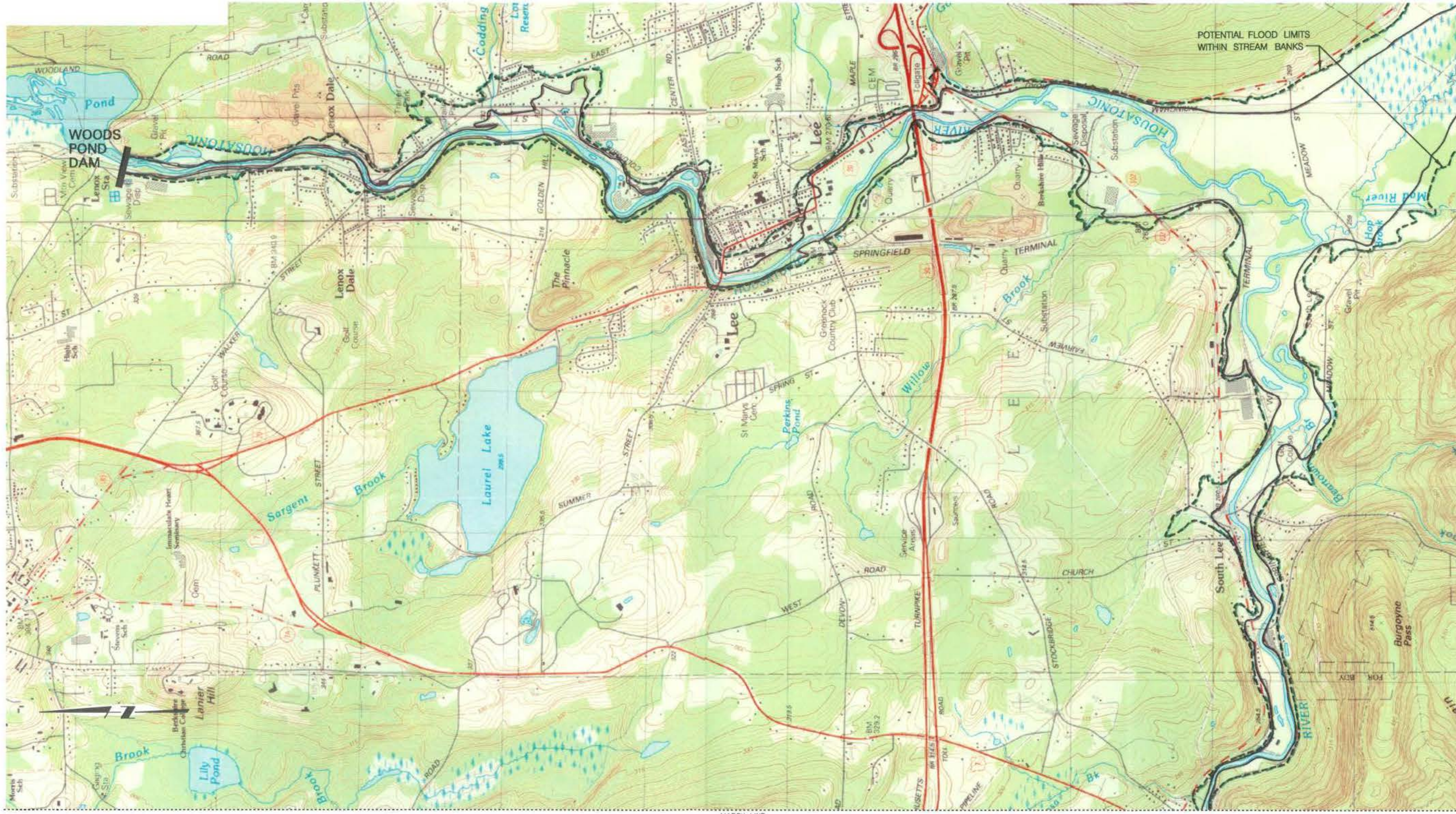
Good – No existing or potential deficiencies recognized. Safe performance is expected under all loading including SDF.

* Structural deficiencies include but are not limited to the following:

- Excessive uncontrolled seepage (e.g., upwelling of water, evidence of fines movement, flowing water, erosion, etc.).
- Missing riprap with resulting erosion of slope.
- Sinkholes, particularly behind retaining walls and above outlet pipes, possibly indicating loss of soil due to piping, rather than animal burrows.
- Excessive vegetation and tree growth, particularly if it obscures features of the dam and the dam cannot be fully inspected.
- Deterioration of concrete structures (e.g., exposed rebar, tilted walls, large cracks with or without seepage, excessive spalling, etc.).
- Inoperable outlets (gates and valves that have not been operated for many years or are broken).

APPENDIX F – MAPPING AND TOPOGRAPHIC AND BATHYMETRIC SURVEY

EXHIBIT 3



MATCH LINE

LEGEND:

- - - - - - - - FLOOD LIMITS, FAILURE UNDER FLOOD CONDITION

——————— FLOOD LIMITS, FAILURE UNDER SUNNY DAY CONDITION

KILOMETERS 1 .5 0 1

MILES 1 .5 0 1

CONTOURS IN METERS

REV. NO.	DATE	NATURE OF REVISION	BY	CHKD.	APPD.
—	8/18/06	2006 EAP AND O&M MANUAL UPDATE	LRM	KN	MF
—	6/27/06	EAP AND O&M PLAN UPDATE	LRM	KN	MF

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS

WOODS POND DAM
POTENTIAL FLOOD LIMITS

PREPARED BY:
MWH

CHICAGO, ILLINOIS | DATE OCT. 1999 | SHEET 1 OF 2

GENERAL ELECTRIC CO.\PROJECT\ 7.7 DRAWINGS\ 13495\ floodmap_Sheet-1_2.dgn.dgn

EXHIBIT 3

KILOMETERS 1 .5 0 1

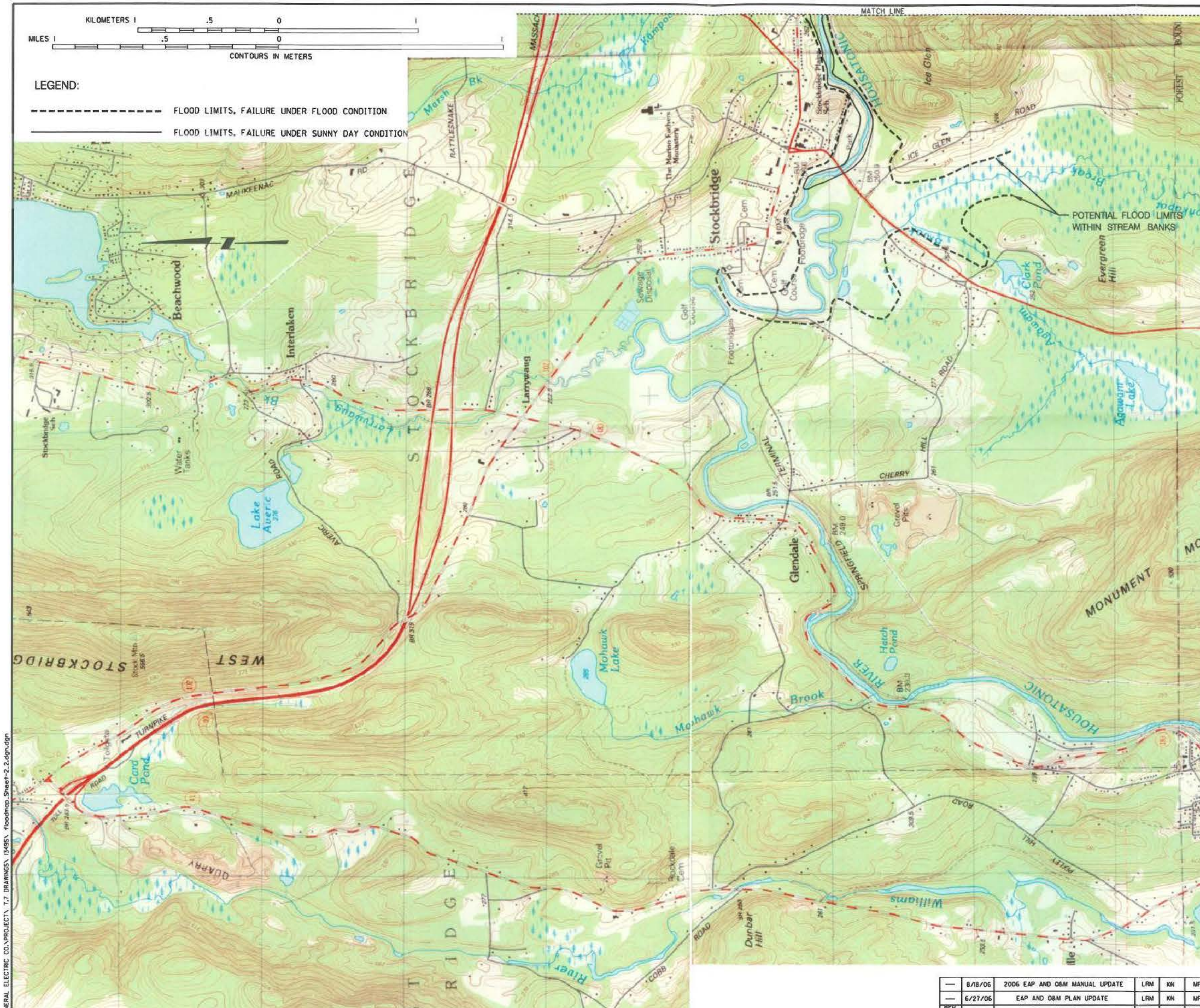
MILES 1 .5 0 1

CONTOURS IN METERS

LEGEND:

- - - - - - - - FLOOD LIMITS, FAILURE UNDER FLOOD CONDITION

———————— FLOOD LIMITS, FAILURE UNDER SUNNY DAY CONDITION



REV. NO.	DATE	NATURE OF REVISION	BY	CHKD.	APPD.
—	8/18/06	2006 EAP AND O&M MANUAL UPDATE	LRM	KN	MF
—	6/27/06	EAP AND O&M PLAN UPDATE	LRM	KN	MF

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS

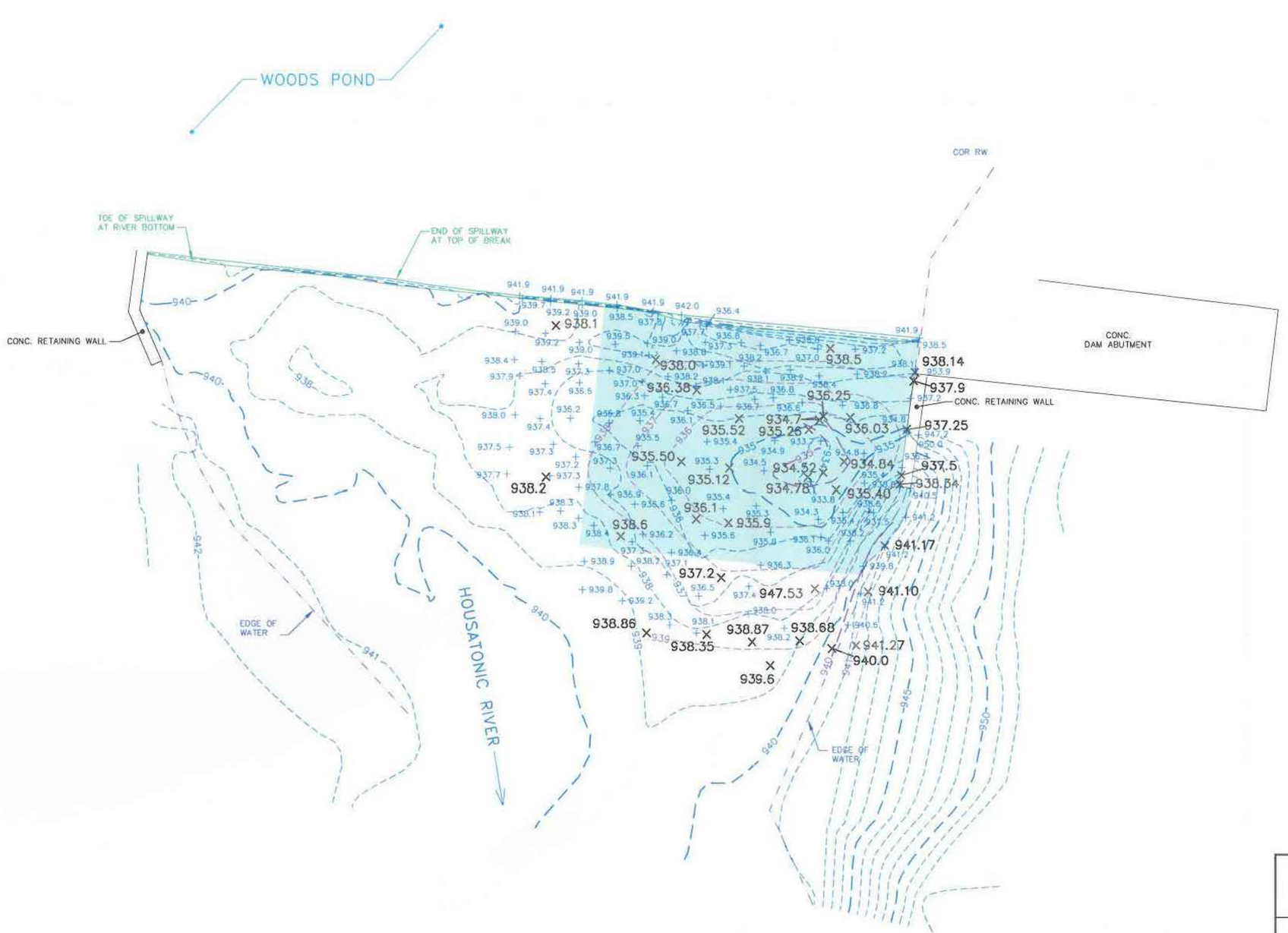
WOODS POND DAM

POTENTIAL FLOOD LIMITS

PREPARED BY: MWH

CHICAGO, ILLINOIS | DATE OCT. 1999 | SHEET 2 OF 2

GENERAL ELECTRIC CO.\PROJECT\ 7.7 DRAWINGS\ 13495\ floodmap_Sheet-2.2.dgn.dgn



LEGEND:

- APPROXIMATE AREA OF DEPRESSION
- —950— INDEX CONTOUR (2002)
- —939— INTERMEDIATE CONTOUR (2002)
- —940— INDEX CONTOUR (2007)
- —939— INTERMEDIATE CONTOUR (2007)
- + 934.9 SPOT ELEVATION (2002)
- × 951.1 SPOT ELEVATION (2007)

NOTE:

1. BASEMAP PROVIDED BY MONTGOMERY WATSON HARZA, DECEMBER 2002.
2. SURVEYING AND CONTOUR MAPPING COMPLETED BY D.L. MOWERS, OCTOBER 2002.
3. HORIZONTAL DATUM IS NAD27 MASSACHUSETTS MAINLAND ZONE.
4. VERTICAL DATUM IS NGVD 1929.
5. 2007 CONTOURS BASED ON 2007 SPOT ELEVATION INFORMATION FROM A FIELD SURVEY PERFORMED BY ARCADIS OF NEW YORK, INC. ON JULY 9 AND SEPTEMBER 14, 2007.

DRAFT

0 10' 20'
GRAPHIC SCALE

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS
WOODS POND DAM

CONTOUR MAP OF RIVERBED DOWNSTREAM OF SPILLWAY

ARCADIS BBL
Infrastructure, environment, facilities

FIGURE
1

GENERAL NOTES

1. Topographic Survey was performed by Foresight Land Services on February 24 and 25, 2020, using Electronic Total Station with Data Collector.

2. Plan was compiled on a PC-based computer using AutoCAD Civil 3D 2018.

3. Contours are computer-generated interpolations, edited to generally conform to field observations. Contour interval = 1 (one) foot. Contractor shall verify critical elevations and grades in the field prior to construction.

4 Horizontal Datum is based on NAD 83.

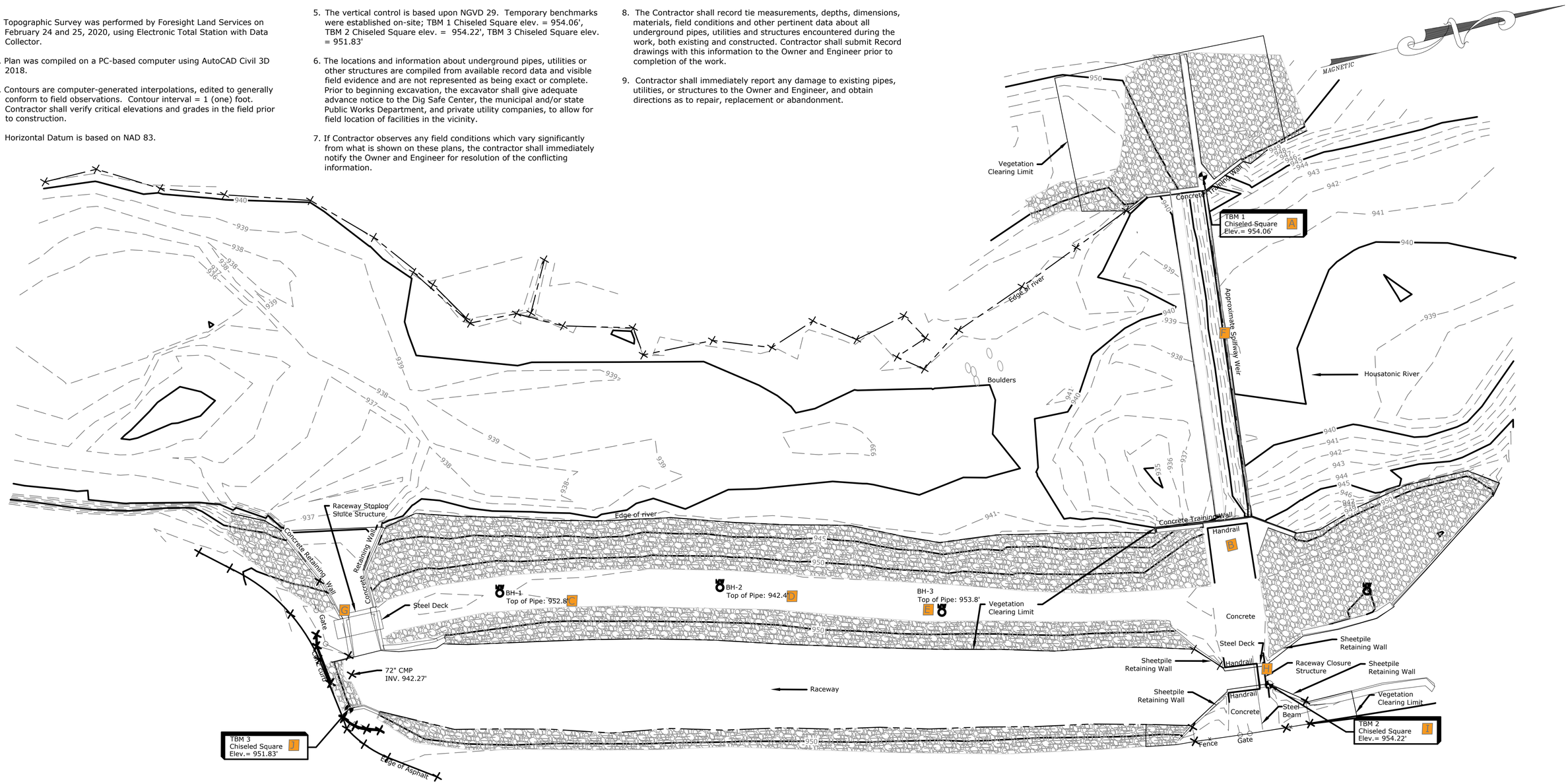
5. The vertical control is based upon NGVD 29. Temporary benchmarks were established on-site; TBM 1 Chiseled Square elev. = 954.06', TBM 2 Chiseled Square elev. = 954.22', TBM 3 Chiseled Square elev. = 951.83'

6. The locations and information about underground pipes, utilities or other structures are compiled from available record data and visible field evidence and are not represented as being exact or complete. Prior to beginning excavation, the excavator shall give adequate advance notice to the Dig Safe Center, the municipal and/or state Public Works Department, and private utility companies, to allow for field location of facilities in the vicinity.

7. If Contractor observes any field conditions which vary significantly from what is shown on these plans, the contractor shall immediately notify the Owner and Engineer for resolution of the conflicting information.

8. The Contractor shall record tie measurements, depths, dimensions, materials, field conditions and other pertinent data about all underground pipes, utilities and structures encountered during the work, both existing and constructed. Contractor shall submit Record drawings with this information to the Owner and Engineer prior to completion of the work.

9. Contractor shall immediately report any damage to existing pipes, utilities, or structures to the Owner and Engineer, and obtain directions as to repair, replacement or abandonment.



LEGEND

- TEMPORARY BENCHMARK
- IRON PIPE FOUND
- BOUND FOUND
- MONITOR WELL
- SIGN
- GATE POST
- EDGE OF ASPHALT
- EDGE OF RIVER
- LIMIT OF VEGETATION CLEARING
- 1' CONTOUR
- 5' CONTOUR
- FENCE
- RIP RAP
- A — MONITORING LOCATION - SEE REPORT

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

NO.	DATE	REVISION	BY

TOPOGRAPHIC SURVEY PLAN
Prepared For

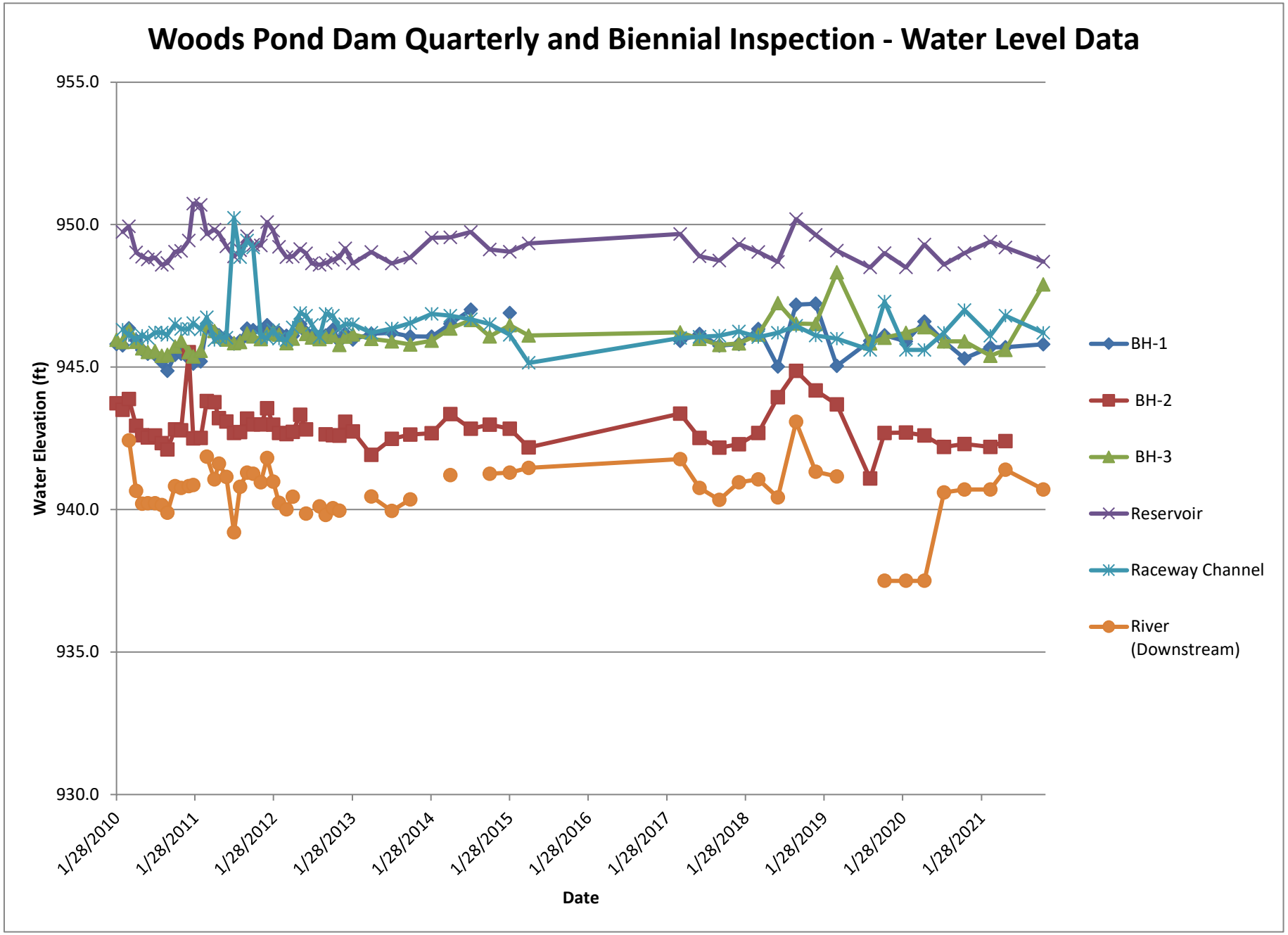
GZA GEOENVIRONMENTAL, INC.

Woods Pond
LENOX MASSACHUSETTS

FORESIGHT LAND SERVICES
ENGINEERING SURVEYING PLANNING
FORESIGHT LAND SERVICES, INC.
1496 WEST HOUSATONIC STREET · PITTSFIELD, MA 01201
TEL: (413) 499-1560 FAX: (413) 499-3307 WWW.FORESIGHTLAND.COM

SCALE: 1" = 20'	DWN. BY:DMW	CHK. BY: SAM
DATE: October 6, 2020	DWG. NO. S3013BW02 WOOD FIXED PER CAL	
JOB NO. S3013B	Layout Tab: W01	

APPENDIX G – WATER LEVEL RECORDS


Woods Pond Dam Quarterly and Biennial Inspection - Water Level Data
955.0
950.0
945.0
940.0
935.0
930.0
Water Elevation (ft)
1/28/2010
1/28/2011
1/28/2012
1/28/2013
1/28/2014
1/28/2015
1/28/2016
1/28/2017
1/28/2018
1/28/2019
1/28/2020
1/28/2021
Date
BH-1
BH-2
BH-3
Reservoir
Raceway Channel
River (Downstream)

Woods Pond Dam Phase I Inspection/Evaluation
Appendix G

Water Elevation (ft)

	BH-1	BH-2	BH-3	Reservoir	Raceway Channel	River (Downstream)
1/28/2010	945.8	943.7	946.0			
2/26/2010	945.8	943.5	945.9	949.7	946.3	
3/27/2010	946.4	943.9	946.3	949.9	946.1	942.4
4/29/2010	945.9	942.9	945.9	949.0	946.0	940.7
5/27/2010	945.6	942.6	945.7	948.9	946.1	940.2
6/23/2010	945.5	942.5	945.5	948.8	946.0	940.2
7/26/2010	945.4	942.6	945.6	948.8	946.2	940.2
8/26/2010	945.2	942.3	945.4	948.6	946.2	940.2
9/22/2010	944.9	942.1	945.4	948.7	946.1	939.9
10/27/2010	945.4	942.8	945.7	949.1	946.5	940.8
11/24/2010	945.5	942.8	945.9	949.1	946.3	940.8
12/30/2010	945.3	945.5	945.5	949.4	946.3	940.8
1/20/2011	945.1	942.5	945.4	950.7	946.5	940.9
2/23/2011	945.2	942.5	945.6	950.7	946.3	
3/24/2011	946.4	943.8	946.6	949.7	946.8	941.9
4/28/2011	946.2	943.8	946.3	949.8	946.0	941.1
5/19/2011	946.1	943.2	946.1	949.7	946.1	941.6
6/23/2011	946.0	943.1	946.0	949.2	946.0	941.2
7/28/2011	945.8	942.7	945.8	948.9	950.2	939.2
8/25/2011	945.9	942.7	945.9	949.1	948.9	940.8
9/27/2011	946.4	943.2	946.2	949.6	949.4	941.3
10/25/2011	946.3	943.0	946.1	949.3	949.2	941.3
11/29/2011	946.3	943.0	946.0	949.3	946.1	941.0
12/29/2011	946.5	943.6	946.2	950.1	946.0	941.8
1/26/2012	946.3	943.0	946.2	949.8	946.3	941.0
2/22/2012	946.2	942.7	946.1	949.2	946.0	940.2
3/28/2012	946.1	942.7	945.8	948.9	946.0	940.0
4/26/2012	946.1	942.7	946.0	948.9	946.4	940.5
5/30/2012	946.5	943.3	946.4	949.1	946.9	
6/27/2012	946.2	942.8	946.2	949.0	946.8	939.9
7/24/2012	946.1		946.0	948.6	946.5	
8/28/2012	946.1		946.0	948.6	946.1	940.1
9/26/2012	946.1	942.6	946.1	948.7	946.9	939.8
10/29/2012	946.3	942.6	946.1	948.8	946.8	940.1
11/28/2012	945.9	942.6	945.8	948.8	946.4	940.0
12/26/2012	946.2	943.1	946.1	949.2	946.5	
1/30/2013	946.0	942.7	946.2	948.6	946.5	
4/26/2013	946.2	941.9	946.0	949.0	946.2	940.5
7/30/2013	946.2	942.5	945.9	948.6	946.4	940.0
10/24/2013	946.1	942.6	945.8	948.8	946.5	940.4
1/31/2014	946.1	942.7	945.9	949.5	946.9	
4/28/2014	946.5	943.4	946.4	949.6	946.8	941.2
8/1/2014	947.0	942.8	946.7	949.7	946.7	
10/28/2014		943.0	946.1	949.1	946.5	941.3
1/29/2015	946.9	942.8	946.5	949.1	946.1	941.3
4/27/2015		942.2	946.1	949.3	945.2	941.5
3/30/2017	945.9	943.4	946.2	949.7	946.0	941.8
6/28/2017	946.2	942.5	946.0	948.9	946.1	940.8
9/28/2017	945.8	942.2	945.8	948.7	946.1	940.3
12/28/2017	945.8	942.3	945.8	949.3	946.3	941.0
3/28/2018	946.3	942.7	946.1	949.0	946.1	941.1
6/27/2018	945.0	943.9	947.3	948.7	946.2	940.4
9/20/2018	947.2	944.9	946.5	950.2	946.5	943.1
12/20/2018	947.2	944.2	946.5	949.6	946.1	941.3
3/28/2019	945.0	943.7	948.3	949.1	946.0	941.2
8/30/2019	945.9	941.1	945.8	948.5	945.6	
11/5/2019	946.1	942.7	946.0	949.0	947.3	937.5
2/12/2020	945.9	942.7	946.2	948.5	945.6	937.5
5/8/2020	946.6	942.6	946.4	949.3	945.6	937.5
8/7/2020	945.9	942.2	945.9	948.6	946.2	940.6
11/10/2020	945.3	942.3	945.9	949.0	947.0	940.7
3/10/2021	945.7	942.2	945.4	949.4	946.1	940.7
5/19/2021	945.7	942.4	945.6	949.2	946.8	941.4
11/11/2021	945.8		947.9	948.7	946.2	940.7

Notes: Water levels measured in accordance with Section 3.1.2 of the OM&M plan.
Blank cells indicate that measurement could not be made at the time of the inspection.
No action levels have been established for Woods Pond Dam. The water levels measured in the monitoring wells are (1) between the river and raceway water levels and (2) within the historical ranges presented in Section 8 of Appendix C of the OM&M plan.

Raceway channel elevations from 11/10/2020 through 11/11/2021 approximated from photographs.

APPENDIX H – MAINTENANCE RECORDS

Woods Pond Dam – Maintenance Tracking Table – Dated February 9, 2022			
Condition Observed Requiring Monitoring or Maintenance/Repair	**When Observed**	**Proposed Response**	**Status**
1. The stone masonry wall in the raceway approach area was observed to be tilted.	2019 Phase I inspection (11/5/19) All quarterly inspections for 2020 (2/12/20; 5/8/20; 8/7/20; 11/10/20) First and second quarterly inspections for 2021 (3/10/21; 5/19/21) 2021 Phase I inspection (11/11/21)	Continue to monitor the tilt at the monitoring point that was set in August 2020.	Monitoring point will be used to monitor wall movement quantitatively during quarterly and biennial inspections.
2. Minor deterioration was observed at the right downstream training wall around water level.	2019 Phase I inspection (11/5/19) First and second quarterly inspections for 2020 (2/12/20; 5/8/20); could not be observed during third and fourth quarterly inspections for 2020 and the first and second quarterly inspections for 2021 due to water depth. 2019 Phase I inspection (11/11/21)	Monitor the area with deterioration, including during low-flow conditions.	This area is monitored during quarterly and biennial inspections. It will be specifically monitored during the dewatered spillway inspection to be scheduled during warm-weather, low-flow conditions in 2022.
3. The downstream river tailwater staff gauge was missing.	2019 Phase I inspection (11/5/19) All quarterly inspections for 2020 (2/12/20; 5/8/20; 8/7/20; 11/10/20) First quarterly inspection for 2021 (3/10/21)	Replace staff gauge	A new staff gauge was installed on May 17, 2021.

Woods Pond Dam – Maintenance Tracking Table – Dated February 9, 2022			
Condition Observed Requiring Monitoring or Maintenance/Repair	**When Observed**	**Proposed Response**	**Status**
4. On the eastern side slope of the raceway (outside GE property), a utility pole appears to be leaning toward the channel, and vegetation downstream of that pole is unmaintained.	2019 Phase I inspection (11/5/19) All quarterly inspections for 2020 (2/12/20; 5/8/20; 8/7/20; 11/10/20) First and second quarterly inspections for 2021 (3/10/21; 5/19/21) 2021 Phase I inspection (11/11/21)	Monitor the pole and vegetation; cut the vegetation if it falls into the raceway channel and impedes flow..	This area is monitored during quarterly and biennial inspections. The vegetation will be cut if it falls into the raceway channel and impedes flow.
5. Minor efflorescence was observed on the right and left upstream training walls.	All quarterly inspections for 2020 (2/12/20; 5/8/20; 8/7/20; 11/10/20) First and second quarterly inspections for 2021 (3/10/21; 5/19/21)) 2021 Phase I inspection (11/11/21)	Monitor efflorescence.	Efflorescence is regularly monitored during quarterly and biennial inspections.
6. A log or logs were observed lodged on spillway near the right training wall.	All quarterly inspections for 2020 (2/12/20; 5/8/20; 8/7/20; 11/10/20) and first and second quarterly inspection for 2021 (3/10/21; 5/19/21) (Note: The log(s) observed did not appear to be impeding flow over the spillway during these inspections.)	Monitor and clear if impeding flow	Logs were not present during the 11/11/2021 Phase I Inspection. Area will continue to be monitored for log(s) and log(s) will be cleared if impeding flow.
7. Debris was observed along the right upstream training wall between the safety buoys and the spillway crest.	Third and fourth quarterly inspections for 2020 (8/7/20 and 11/10/20), with a single log observed in the first quarterly inspection for 2021 (3/10/21) (Note: This debris did not appear to be impeding flow over the spillway.)	Monitor and clear if impeding flow	As of the first quarterly inspection for 2021, the debris had been largely washed downstream except for a single log. Area will continue to be monitored for debris and debris will be cleared if impeding flow.

Woods Pond Dam – Maintenance Tracking Table – Dated February 9, 2022			
Condition Observed Requiring Monitoring or Maintenance/Repair	**When Observed**	**Proposed Response**	**Status**
8. Minor cracking and damp areas were observed on the right downstream training wall of the raceway stoplog sluice structure.	2019 Phase I inspection (11/5/19) All quarterly inspections for 2020 and 2021 (2/12/20; 5/8/20; 8/7/20; 11/10/20) First and second quarterly inspections for 2021 (3/10/21; 5/19/21)	Monitor affected areas.	These items are monitored during quarterly and biennial inspections. Due to high water flows through the raceway while attempting to lower the impoundment, this condition was not observed during the 11/11/21 Phase I inspection.
9. Minor cracking and damp areas were also observed on the left downstream training wall of the raceway stoplog sluice structure.	Second, third, and fourth quarterly inspections for 2020 (5/8/20; 8/7/20; 11/10/20) and first and second quarterly inspections for 2021 (3/10/21; 5/19/21)	Monitor affected areas	These items are monitored during quarterly and biennial inspections. Due to high water flows through the raceway while attempting to lower the impoundment, this condition was not observed during the 11/11/21 Phase I inspection.
10. Some debris was present in gap (at spacers) between the second and third stoplogs at upstream raceway closure structure	Second, third, and fourth quarterly inspections for 2020 (5/8/20; 8/7/20; 11/10/20) and first and second quarterly inspection for 2021 (3/10/21; 5/19/21) (Note: This debris did not appear to be affecting flow through the gap.)	Monitor debris and clear if impeding flow.	Debris was not present during the 11/11/2021 Phase I Inspection. Stoplog structure will continue to be monitored for debris and debris will be cleared if impeding flow.

Woods Pond Dam – Maintenance Tracking Table – Dated February 9, 2022			
Condition Observed Requiring Monitoring or Maintenance/Repair	**When Observed**	**Proposed Response**	**Status**
11. Woody debris had accumulated on the right side of the stoplogs for the downstream stoplog sluice structure.	Fourth quarterly inspection for 2020 (11/10/20) and first and second quarterly inspections for 2021 (3/10/21; 5/19/21) (Note: This debris did not appear to be impeding flow.)	Monitor debris and clear if impeding flow.	Debris was not present during the 11/11/2021 Phase I Inspection. Stoplog structure will be continue to be monitored for debris and debris will be cleared if impeding flow.
12. Orange staining was observed along the horizontal joint on the downstream segment of the right training wall, with some accompanying dampness; no sign of soil migration observed.	Fourth quarterly inspection for 2020 (11/10/20) and first and second quarterly inspections for 2021 (3/10/21; 5/19/21) Phase I inspection (11/11/21)	Monitor affected area.	This item will be monitored during quarterly and biennial inspections.
13. The lock for the gate providing direct access to the hoisting mechanism had been changed from the original GE lock to a Master lock by an unknown party.	First quarterly inspection for 2021 (3/10/21)	Add a new GE lock to the chain for the existing lock.	A new GE lock was added during the second quarterly inspection for 2021 on May 19, 2021.
14. The area just upstream of the left abutment near Valley Road was found to have missing soil from underneath the grouted riprap, and from between the two sets of upstream sheetpiles (one comprising the dam and the other not integral to the dam but installed to protect Valley Road).	Second quarterly inspection for 2021 (5/19/21)	Although this condition is not on the dam and would not affect the safety of the dam, replace the missing soil with appropriate backfill.	This area was repaired in summer 2021. During that time, the chain link fence was removed and reset. A remaining tree was also removed.
Note: Gray-shaded cells indicate that a listed condition has been resolved or is no longer present.			