FOSTERS POND DAM

FOLLOW-UP

INSPECTION / EVALUATION REPORT

Dam Name:	Fosters Pond Dam
State Dam ID#:	5-5-9-10
NID ID#:	MA00153
Owner:	Foster's Pond Corporation
Owner Type:	Private
Town:	Andover, Massachusetts
Consultant:	GEI Consultants, Inc.
Date of Inspection:	May 8, 2008

GEI Consultants

May 29, 2008
Project 06463-1

GEI Consultants

Mr. Stephen E. Cotton
Foster's Pond Corporation
19 Pomeroy Road
Andover, MA 01810

Geotechnical
Environmental and
Water Resources
Engineering

Dear Mr. Cotton:

Re: Dam Follow-up Inspection
Fosters Pond Dam, NID # MA00153
Andover, Massachusetts

This Follow-Up inspection letter report details the inspection and evaluation of Fosters Pond Dam located in Andover, Massachusetts. The inspection was conducted on May 8, 2008 by GEI Consultants, Inc. of Winchester, Massachusetts. Fosters Pond Dam is classified as an intermediate size, significant (Class II) hazard potential dam.

We conducted the follow-up inspection at your request in response to the Certificate of Non-Compliance and Dam Safety Order issued by the Department of Conservation and Recreation (DCR) Office of Dam Safety (ODS). We previously conducted a Phase I inspection of the dam on November 10, 2006. We found that the dam was in Poor condition at the time of the 2006 Phase I inspection. DCR has required that all significant hazard potential dams with Poor condition ratings have follow-up inspections.

Inspection Observations and Evaluations

Based on our May 10, 2008 follow-up inspection, in general, Fosters Pond Dam is in **Satisfactory** condition with the following deficiencies noted:

- Seepage is observed at the base of the downstream unmortared masonry wall below the main spillway.

The deficiencies at Fosters Pond Dam have been corrected by a major maintenance effort that the Fosters Pond Corporation performed since the Phase 1 inspection in November 10, 2006. The recent maintenance on the dam included the following actions:

- Mortared stone masonry wingwalls, about 1.7 feet high, have been constructed from granite curbstones on both sides of the spillway to protect the dam crest from spillway flows and to allow the dam crest to be maintained at a level grade. The effect of the wingwalls has been to increase the safe flow capacity of the primary spillway.
- The dam crest has been regraded to a level surface on both sides of the spillway. Trees and brush were removed from the crest, upstream slope, and areas immediately downstream. Sinkholes were filled. Regrading fill was placed over across the crest to create the level grade. A geotextile layer was placed under the seeded loam on the right embankment. Grass growth has been established on the both embankments.
- The emergency spillway at the right abutment has been cleaned up with minor regrading to form a 1.5-foot deep channel with a base width of 9 feet and a top width of 18 feet. The spillway channel surface has been finished with cobbles upstream, grass cover across the spillway crest, and mulch cover downstream of the spillway. Geotextile was placed under all portions of the emergency spillway prior to placing both the upstream cobble cover and the downstream seeded loam.

GEI Consultants, Inc.
400 Unicorn Park Drive, Woburn, MA 01801
781.721.4000 fax: 781.721.4073

- Cobble cover over geotextile has been placed across the entire upstream face of the embankment as erosion protection.
- Riprap has been placed in the plunge pool as scour protection.

We have included a completed **Poor and Unsafe Condition Dam Follow-up Inspection Form,** a locus plan (Figure 1), a site sketch plan (Figure 2), site photographs (Appendix A), and an updated Inspection Checklist as part of this letter report. Please refer to these attachments for details about our observations.

Recommendations

We recommend the following actions to be taken to address the deficiencies observed at the dam during this inspection and evaluation:

- Monitor seepage for changing conditions and new locations downstream of the dam and development of sinkholes within the embankment.

We also recommend that you request relief from the ODS Dam Safety Order requirements for a Phase II inspection. Based on our observations, Fosters Pond Dam is in Satisfactory condition due to the recent maintenance performed by the Foster's Pond Corporation.

Limitations

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

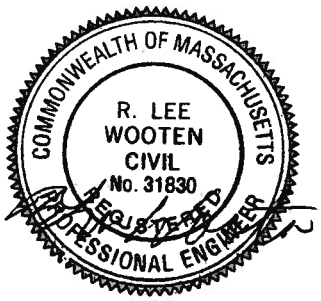
In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection, along with data available to the inspection team. In cases where an impoundment is lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions, which might otherwise be detectable if inspected under the normal operating environment of the structure.

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 present 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.

Please call (781-721-4034) or e-mail (lwooten@geiconsultants.com) me if you have any questions.

Sincerely,

GEI CONSULTANTS, INC.



R. Lee Wooten, P.E.
Massachusetts License No: C31830
Vice President

Attachments

Commonwealth of Massachusetts
Department of Conservation and Recreation
Office of Dam Safety
Poor and Unsafe Condition Dam Follow-up Inspection Form

Dam Name: Fosters Pond Dam
Dam Owner: Foster's Pond Corporation
Nat. ID Number: MA00153
Hazard Potential: Significant
Location of Dam (town): Andover
Coordinate location (lat,long): 42.6135 North, 71.1413 East
Date of Inspection: May 8, 2008
Weather: Sunny, ~70ºF

Consultant Inspector(s): GEI Consultants, Inc. – R. Lee Wooten, P.E.

Others in Attendance at Field Inspection:
Stephen Cotton - Foster's Pond Corporation President, 978-475-5679
David Brown - Foster's Pond Corporation Treasurer, 978-470-0454

Attachments:
FIGURES

Figure 1:	Site Location Map
Figure 2:	Site Plan

APPENDICES

Appendix A:	Photographs
Appendix B:	Dam Evaluation Summary Detail Sheet and Inspection Checklist

I. Previous Inspection date/Overall Condition:

- **Date of most recent formal Phase I Inspection Report:** November 10, 2006
- **List the overall condition reported in most recent Phase I Inspection Report:** Poor

II. Previous Inspection Deficiencies:

- **List identified deficiencies in the most recent Phase I Inspection Report:**

The November 11, 2008 Phase I inspection of Fosters Pond Dam identified the following deficiencies:

- The spillway cannot pass the spillway design flood.
- The embankment crest is very uneven with sinkholes, erosion gullies and eroded zones.
- Seepage is observed at the base of the downstream unmortared masonry stone wall and through the masonry wall below the main spillway.
- The main spillway has sunken portions of its concrete apron.

- The downstream masonry wall has some misplaced and misaligned stones.
- There is some tree growth on the downstream crest and right abutment.
- The left side of the training wall surrounding the plunge pool has collapsed.
- There are areas of missing riprap on the upstream slope.

III. Overall Condition of Dam at the Time of the Current Follow-up Inspection:

a. State the current condition: Satisfactory

b. Have conditions changed since the previous inspection? Yes**.**

IV. Comparison of Current Conditions to Condition Listed in Previous Phase I Inspection Report:

a. Have any of the deficiencies listed in the previous Phase I Inspection Report worsened? No**.**

b. If yes, list the changes.

The deficiencies at Fosters Pond Dam have been corrected by a major maintenance effort that the Fosters Pond Corporation performed since the Phase 1 inspection in November 10, 2006. The recent maintenance on the dam included the following actions:

- Mortared stone masonry wingwalls, about 1.7 feet high, have been constructed out of granite curbstones on both sides of the spillway to protect the dam crest from spillway flows and to allow the dam crest to be maintained at a level grade. The effect of the wingwalls has been to increase the safe flow capacity of the primary spillway.
- The dam crest has been regraded to a level surface on both sides of the spillway. Trees and brush were removed from the crest, upstream slope, and areas immediately downstream. Sinkholes were filled. Fill was placed across the crest to create the level grade. A geotextile layer was placed under the seeded loam on the right embankment. Grass growth has been established on the both embankments.
- The emergency spillway at the right abutment has been cleaned up with minor regrading to form a 1.5-foot-deep channel with a base width of 9 feet and a top width of 18 feet. The spillway channel surface has been finished with cobbles upstream, grass cover across the spillway crest, and mulch cover downstream of the spillway. Geotextile was placed under all portions of the emergency spillway prior to placing both the upstream cobble cover and the downstream seeded loam.
- Cobble cover over geotextile has been placed across the entire upstream face of the embankment as erosion protection.
- Riprap has been placed in the plunge pool across the width of the primary spillway and sluice way as scour protection.

c. Are there any additional deficiencies that have been identified in the current inspection? No**.**

d. If yes, list the deficiencies and describe. Not applicable.

V. Dam Safety Orders:

- **List dam safety orders that have been issued to the dam owner pertaining to this dam.**

The Department of Conservation and Recreation issued a Certificate of Non-Compliance and Dam Safety Order on February 22, 2008.

VI. Maintenance:

1. Indicate if there exists an operation and maintenance plan for the dam.

An operations and maintenance plan dated October 12, 2005 is currently used by the Foster's Pond Corporation to maintain and operate the dam.

2. **Indicate if it appears the dam is being maintained.**

Fosters Pond Dam was very well maintained at the time of the follow-up inspection. The Foster's Pond Corporation has undertaken an aggressive level of maintenance to correct past deficiencies.

VII. Recommendations:

We recommend that the following actions to be taken to address the deficiencies observed at the dam during this inspection and evaluation:

- Monitor seepage for changing conditions and new locations downstream of the dam and development of sinkholes within the embankment.

VIII. Other Comments or Observations:

We have included an Inspection Checklist, which we prepared by updating the November 10, 2006 checklist.

IX. Updated Site Sketch with Photo Locations: See Figure 2.

X. Updated Photos: See Appendix A

XI. Copy of Locus Map from Phase I Report: See Figure 1.

XII. Other applicable attachment: See Appendix B for the updated Dam Evaluation Summary Detail Sheet and Inspection Checklist.

FIGURES

0 1000 2000 4000 6000

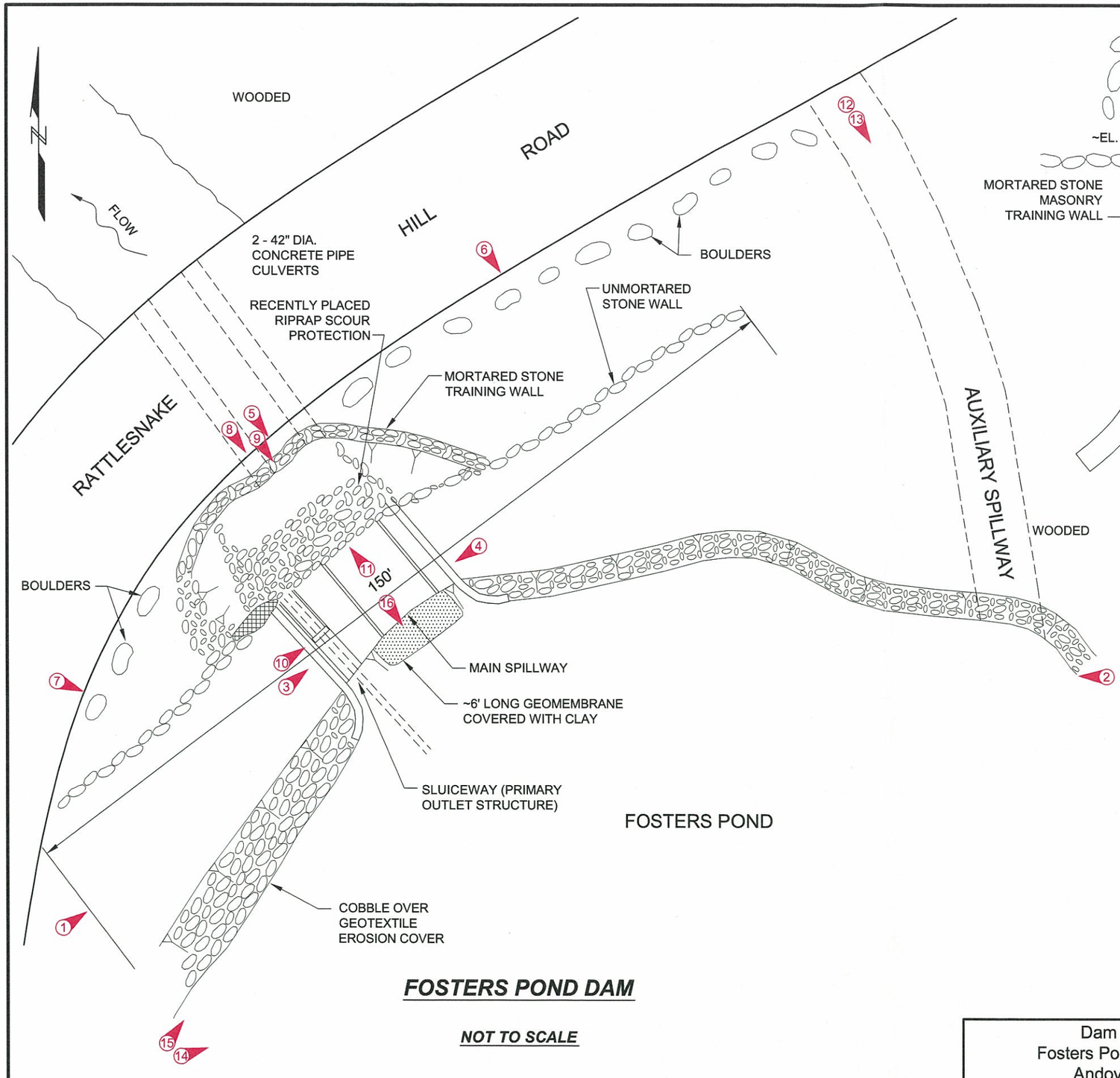
APPROXIMATE SCALE, FEET

This Image provided by MassGIS is from U.S.G.S.
Topographic 7.5 X 15 Minute Series
Reading (1987) and Lawrence (1987), MA Quadrangles.
Datum is National Geodetic Vertical Datum (NGVD).
Contour Interval is 3 Meters.

MASSACHUSETTS
QUADRANGLE LOCATION

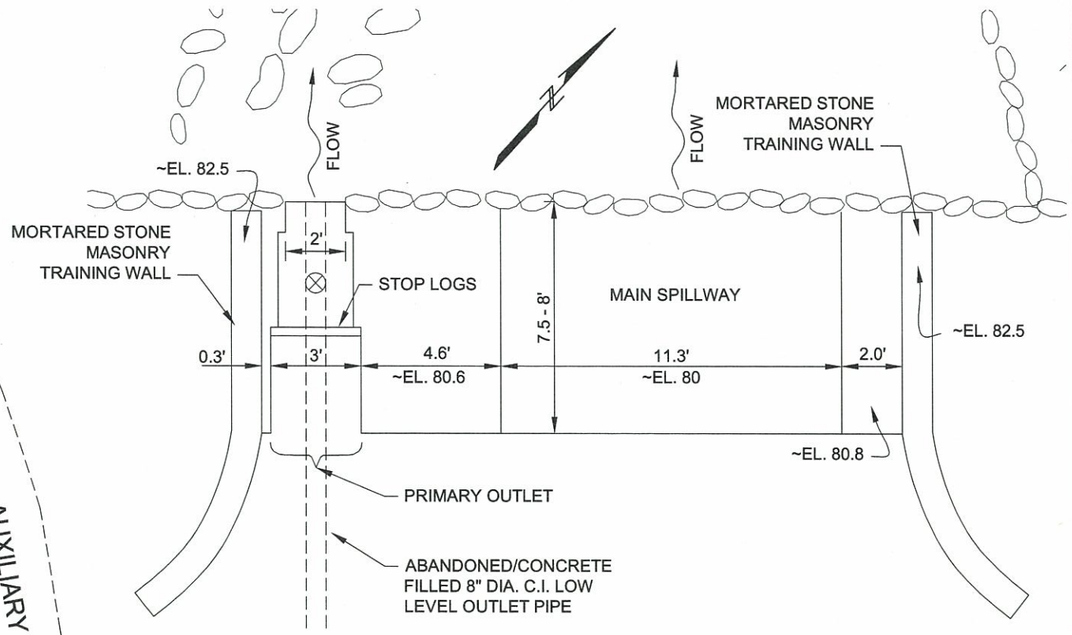
Dam Safety Inspection Fosters Pond Dam, NID MA00153 Andover, Massachusetts	GEI Consultants	SITE LOCATION MAP
Fosters Pond Corporation Andover, Massachusetts	Project 06463-1	May 2008 Fig. 1

064630-01 djm 11/21/06



FOSTERS POND DAM

NOT TO SCALE



MAIN SPILLWAY AND PRIMARY OUTLET DETAIL

LEGEND:

SEEPAGE AREA

PHOTOGRAPH NUMBER
LOCATION AND DIRECTION

NOTES:

1. BASE PLAN TAKEN FROM SITE PLAN PREPARED BY FOSTERS POND CORP. MEMBERS.
2. DIMENSIONS FROM HISTORIC INSPECTION RECORDS AND MEASUREMENTS TAKEN DURING INSPECTION ON NOVEMBER 10, 2006 AND MAY 8, 2008.
3. SPILLWAY ELEVATIONS ASSUME SPILLWAY CREST AT EL. 80.0.

Dam Safety Inspection Fosters Pond Dam, NID MA00153 Andover, Massachusetts	GEI Consultants	SITE PLAN
Fosters Pond Corporation Andover, Massachusetts	Project 06463-1	May 2008 Fig. 2

M:\DRAFTING\2006\064630 Fosters Pond Dam\06463-1\064631-01.dwg

APPENDIX A
Photographs

Photo 1 – Panoramic composite - Upstream slope and crest from left*

Photo 2 – Panoramic composite - Upstream slope and crest from right*

*Note: Distortions and color or light irregularities in panoramic composite photos are due to discontinuities between individual photographic images used to create panoramic composites.

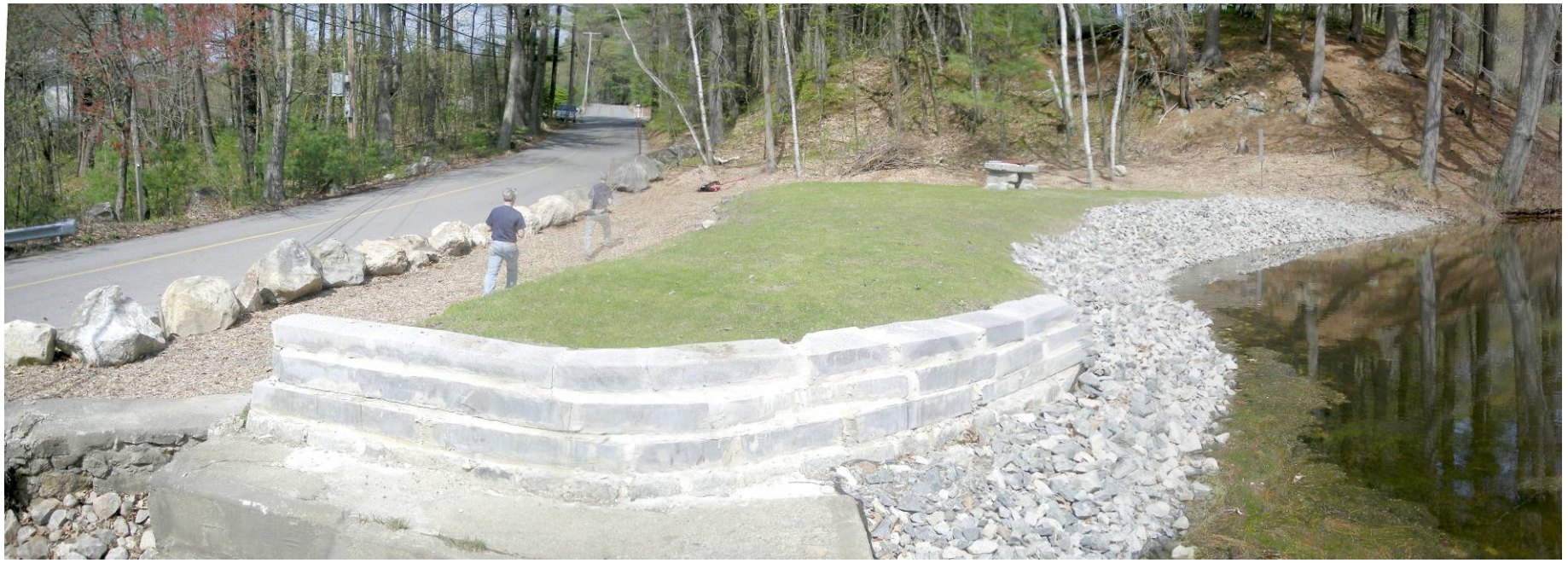


Photo 3 – Panoramic composite – Right abutment and crest*

Photo 4 – Panoramic composite – Left abutment and crest*

Photo 5 – Panoramic composite – Downstream face, spillway, and sluiceway from downstream*

Photo 6 – Panoramic composite – Right downstream face from downstream*

Photo 7 – Panoramic composite – Left downstream face, spillway, and plunge pool from downstream*

Photo 8 – Panoramic composite –Spillway, sluiceway, and plunge pool from downstream*

Photo 9 – Panoramic composite – Plunge pool from downstream*

Photo 10 – Panoramic composite – Sluiceway from above*

Photo 11 – Panoramic composite – Downstream part of plunge pool and culverts under Rattlesnake Hill Road, from spillway*

Photo 12 – Panoramic composite – Emergency spillway and dam from right downstream side*

Photo 13 – Emergency spillway from downstream

Photo 14 – Emergency spillway from upstream

Photo 15 – Panoramic composite – Upstream side of dam*

Photo 16 – Panoramic composite – Foster's Pond from the dam spillway*

APPENDIX B
Dam Evaluation Summary Detail Sheet
and
Inspection Checklist

Dam Evaluation Summary Detail Sheet

1. NID ID: MA00153	**2. Dam Name:** Fosters Pond Dam	**3. Dam Location:** Andover
4. Inspection Date: 5/8/08	**5. Last Insp. Date:** 11/10/06	**6. Next Inspection:** November 2011
7. Inspector: R. Lee Wooten, P.E.	**8. Consultant:** GEI Consultants, Inc.	
9. Hazard Code: Significant (Class 2)	**10. Insp. Frequency:** Significant-5 Yrs.	**11. Insp. Condition:** Satisfactory

E1. Design Methodology:	1	**E7. Low-Level Discharge Capacity:**	1
E2. Level of Maintenance:	5	**E8. Low-Level Outlet Physical Condition:**	1
E3. Emergency Action Plan:	3	**E9. Spillway Design Flood Capacity:**	5
E4. Embankment Seepage:	3	**E10. Overall Physical Condition of the Dam:**	4
E5. Embankment Condition:	5	**E11. Estimated Repair Cost (in thousand $):**	
E6. Concrete Condition:	5		

Evaluation Description

E1: DESIGN METHODOLOGY
1. Unknown Design – no design records available
3. Some standard design features
5. State of the art design – design records available

E2: LEVEL OF MAINTENANCE
1. No evidence of maintenance, no O&M manual
2. Very little maintenance, no O&M manual
3. Some level of maintenance and standard procedures
4. Adequate level of maintenance and standard procedures
5. 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

E4: EMBANKMENT SEEPAGE
1. Severe piping and/or seepage with no monitoring
2. Evidence of monitored piping and seepage
3. No piping but uncontrolled seepage
4. Controlled seepage
5. No seepage or piping

E5: EMBANKMENT CONDITION
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
1. Major cracks, misalignment, discontinuities causing leaks, seepage or stability concerns
2. Cracks with misalignment inclusive of transverse cracks with no misalignment
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
2. Outlet with insufficient drawdown capacity
3. Inoperable gate with potentially sufficient drawdown capacity
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 - 20% of the SDF
2. 21 - 40% of the SDF
3. 41 - 60% of the SDF
4. 61 - 80% of the SDF
5. 81 - 100% of the SDF

E10: OVERALL PHYSICAL CONDITION OF THE 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

Structural height: 10.1 feet; Hydraulic height: 7.6 feet; Drainage area: 1.57 square miles; Spillway capacity: 194 cfs; Emergency spillway capacity: 57 cfs; Sluiceway capacity: 33 cfs at maximum pool;

DAM SAFETY INSPECTION CHECKLIST INSTRUCTION PAGE

The checklist includes sections applicable to a variety of dam structure types. Complete those pages pertaining to each structure and omit pages that are not relevant. Checklist should be signed by the inspecting engineer and a clean, neat copy included in the final inspection report.

E1: DESIGN METHODOLOGY
1. Unknown Design – no design records available
3. Some standard design features
5. State of the art design – design records available

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1. No evidence of maintenance, no O&M manual
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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

Partial listing of dam orientation and terminology definitions.

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.
Height of Dam – 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 crest of the dam.
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.

DAM SAFETY INSPECTION CHECKLIST

NAME OF DAM:	Fosters Pond Dam	STATE ID #:	5-5-9-10
REGISTERED:	☐ YES ☑ NO	NID ID #:	MA00153
STATE SIZE CLASSIFICATION:	Intermediate	STATE HAZARD CLASSIFICATION:	Significant (Class II)

LOCATION INFORMATION

CITY/TOWN:	Andover	COUNTY:	Essex
DAM LOCATION:	Off Rattlesnake Hill Road	AKA NAME:	
USGS QUAD.:	Reading	LAT.: 42.6135	LONG.: -71.1413
DRAINAGE BASIN:	Shawsheen	RIVER:	Frye's Brook (inflow) to Shawsheen River about 1 mile downstream
IMPOUNDMENT NAME(S):	Fosters Pond		

GENERAL DAM INFORMATION

TYPE OF DAM:	Earthfill w/ mostly unmortared downstream stone facing	OVERALL LENGTH (FT):	~150
PURPOSE OF DAM:	Recreational	NORMAL POOL STORAGE (ACRE-FT):	~420
YEAR BUILT:	~1850s	MAXIMUM POOL STORAGE (ACRE-FT):	~550
STRUCTURAL HEIGHT (FT):	~10.1 feet (11 in NID)	EL. NORMAL POOL (FT):	~78.5-79.8 (Reference El.=80 ft, spillway crest)
HYDRAULIC HEIGHT (FT):	~ 7.6 feet (7 in NID)	EL. MAXIMUM POOL (FT):	~82.5

FOR INTERNAL MADCR USE ONLY

FOLLOW-UP INSPECTION REQUIRED: ☐ YES ☐ NO CONDITIONAL LETTER: ☐ YES ☐ NO

NAME OF DAM: Fosters Pond Dam | STATE ID #: 5-5-9-10 | NID ID #: MA00153

INSPECTION SUMMARY

DATE OF INSPECTION: May 8, 2008 | DATE OF PREVIOUS INSPECTION: November 10, 2006

TEMPERATURE/WEATHER: Sunny, ~70°F | ARMY CORP PHASE I: ☐ YES ☑ NO If YES, date

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

BENCHMARK/DATUM: Not available; 80 ft used as a reference datum equal to the main spillway crest elevation

OVERALL CONDITION: SATISFACTORY | DATE OF LAST REHABILITATION: Aggressive maintenance 2007-2008

EL. POOL DURING INSP.: ~79.9 ft | EL. TAILWATER DURING INSP.: ~72.2 ft

PERSONS PRESENT AT INSPECTION

NAME	TITLE/POSITION	REPRESENTING
R. Lee Wooten, P.E.	Vice President	GEI Consultants, Inc.
Stephen Cotton	FPC President	Foster's Pond Corporation - (FPC)
David Brown (part-time)	FPC Treasurer	Foster's Pond Corporation - (FPC)

EVALUATION INFORMATION

E1) TYPE OF DESIGN	1	E8) LOW-LEVEL OUTLET COND.	1
E2) LEVEL OF MAINTENANCE	5	E9) SPILLWAY DESIGN FLOOD	5
E3) EMERGENCY ACTION PLAN	3	E10) GENERAL CONDITIONS	4
E4) EMBANKMENT SEEPAGE	3	E11) ESTIMATED REPAIR COST ($000)	$0
E5) EMBANKMENT CONDITION	5	ROADWAY OVER CREST	☐ YES ☐ NO
E6) CONCRETE CONDITION	5	BRIDGE NEAR DAM	☑ YES ☐ NO
E7) LOW-LEVEL OUTLET CAP	1		

SIGNATURE OF INSPECTING ENGINEER: Lee Wooten

NAME OF DAM:	Fosters Pond Dam		STATE ID #:	5-5-9-10	
			NID ID #:	MA00153	
OWNER:	ORGANIZATION	Foster's Pond Corporation	CARETAKER:	ORGANIZATION	Foster's Pond Corporation
	NAME/TITLE	Stephen E. Cotton - President		NAME/TITLE	David Brown - Treasurer
	STREET	19 Pomeroy Road		STREET	31 Glenwood Road
	TOWN, STATE, ZIP	Andover, MA 01810		TOWN, STATE, ZIP	Andover, MA 01810
	PHONE	978-475-5679		PHONE	978-470-0454
	FAX			FAX	978-470-2066
	EMAIL	secotton@ix.netcom.com		EMAIL	davebrown@alum.mit.edu
	OWNER TYPE	Private			

PRIMARY SPILLWAY TYPE	Broad crested weir		
SPILLWAY LENGTH (FT)	11.9 feet	SPILLWAY CAPACITY (CFS)	~194
AUXILIARY SPILLWAY TYPE	Grass covered swale	AUX. SPILLWAY CAPACITY (CFS)	~57
NUMBER OF OUTLETS	1 (8" low level outlet pipe abandoned)	OUTLET(S) CAPACITY (CFS)	~33 with full pool
TYPE OF OUTLETS	Sluiceway with stoplogs (operational)	TOTAL DISCHARGE CAPACITY (CFS)	~284
DRAINAGE AREQ (SQ MI)	1.57	SPILLWAY DESIGN FLOOD (PERIOD/CFS)	100-yr / 191 cfs

HAS DAM BEEN BREACHED OR OVERTOPPED ☑ YES ☐ NO IF YES, PROVIDE DATE(S) overtopped 03/01, Spring '02, 04/06, 05/14/06

FISH LADDER (LIST TYPE IF PRESENT) No

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

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

NAME OF DAM: Fosters Pond Dam STATE ID #: 5-5-9-10

INSPECTION DATE: May 8, 2008 NID ID #: MA00153

EMBANKMENT

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
CREST	SURFACE TYPE	Grass cover		x	
	SURFACE CRACKING	None observed		x	
	SINKHOLES, ANIMAL BURROWS	None observed		x	
	VERTICAL ALIGNMENT (DEPRESSIONS)	Uniform crest elevation after recent maintenance		x	
	HORIZONTAL ALIGNMENT	No visible horizontal displacements	x		
	RUTS AND/OR PUDDLES	None observed		x	
	VEGETATION (PRESENCE/CONDITION)	Grass cover		x	
	ABUTMENT CONTACT	Good	x		

ADDITIONAL COMMENTS: The aggressive routine maintenance has restored a uniform grade to the embankment crest and established a grass cover over the crest. Geotextile was placed below seeded toposoil on right abutment crest.

NAME OF DAM: Fosters Pond Dam STATE ID #: 5-5-9-10

INSPECTION DATE: May 8, 2008 NID ID #: MA00153

EMBANKMENT

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
		Stone masonry wall on downstream side. See "Masonry Walls" page for additional descriptions			
	WET AREAS (NO FLOW)	None observed		x	
	SEEPAGE	None observed		x	
	SLIDE, SLOUGH, SCARP	Irregular unmortared stone masonry wall, possibility of displaced blocks		x	
D/S	EMB.-ABUTMENT CONTACT	Good	x		
SLOPE	SINKHOLE/ANIMAL BURROWS	None observed		x	
	EROSION	None observed		x	
	UNUSUAL MOVEMENT	None observed	x		
	VEGETATION (PRESENCE/CONDITION)	No vegetation in masonry wall		x	

ADDITIONAL COMMENTS:

Upstream side

NAME OF DAM: Fosters Pond Dam STATE ID #: 5-5-9-10

INSPECTION DATE: May 8, 2008 NID ID #: MA00153

EMBANKMENT

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
U/S SLOPE	SLIDE, SLOUGH, SCARP	None observed	x		
	SLOPE PROTECTION TYPE AND COND.	Cobble (3 inch to 6 inch) stone placed over geotextile as erosion protection (Note 1)		x	
	SINKHOLE/ANIMAL BURROWS	None observed		x	
	EMB.-ABUTMENT CONTACT	Good	x		
	EROSION	None observed		x	
	UNUSUAL MOVEMENT	None observed	x		
	VEGETATION (PRESENCE/CONDITION)	Grass cover above cobble erosion protection		x	

ADDITIONAL COMMENTS: 1. Recent maintenance include placing geotextile over upstream slope and covering geotextile with cobbles (3 to 6 inch).
Cobble coverage extends about 6 to 10 feet across entire upstream slope

NAME OF DAM: Fosters Pond Dam STATE ID #: 5-5-9-10

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EMBANKMENT

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
INSTR.	PIEZOMETERS	None	x		
	OBSERVATION WELLS	None	x		
	STAFF GAGE AND RECORDER	None	x		
	WEIRS	None	x		
	INCLINOMETERS	None	x		
	SURVEY MONUMENTS	None observed	x		
	DRAINS	None	x		
	FREQUENCY OF READINGS	N/A	x		
	LOCATION OF READINGS	N/A	x		

ADDITIONAL COMMENTS:

NAME OF DAM: Fosters Pond Dam STATE ID #: 5-5-9-10

INSPECTION DATE: May 8, 2008 NID ID #: MA00153

UPSTREAM AND/OR DOWNSTREAM MASONRY WALLS

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
D/S WALLS	WALL TYPE	Downsteam dam face is a mostly unmortared stone masonry wall		x	
	WALL ALIGNMENT	Irregular alignment of stones in masonry wall (probably as-built condition)		x	
	WALL CONDITION	Fair		x	
	HEIGHT: TOP OF WALL TO MUDLINE	min: 0 ft max: 8 ft avg: 4 ft	x		
	SEEPAGE OR LEAKAGE	One area of seepage adjacent to sluiceway		x	
	ABUTMENT CONTACT	Good	x		
	EROSION/SINKHOLES BEHIND WALL	None observed		x	
	ANIMAL BURROWS	None observed		x	
	UNUSUAL MOVEMENT	None observed		x	
	WET AREAS AT TOE OF WALL	Same as seepage areas		x	

ADDITIONAL COMMENTS:

NAME OF DAM: Fosters Pond Dam STAE ID #: 5-5-9-10

INSPECTION DATE: May 8, 2008 NID ID #: MA00153

DOWNSTREAM AREA

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
D/S AREA	ABUTMENT LEAKAGE	None observed	x		
	FOUNDATION SEEPAGE	None other than that described at base of downstream stone masonry wall		x	
	SLIDE,SLOUGH,SCARP	None observed	x		
	WEIRS	None	x		
	DRAINAGE SYSTEM	2-42 inch concrete culverts carry dam flow downstream under Rattlesnake Hill Rd	x		
	INSTRUMENTATION	None	x		
	VEGETATION	Mulched cover to paved Rattlesnake Hill Rd, wooded wetlands area beyond road		x	
	ACCESSIBILITY	Good; Rattlesnake Hill Road	x		
	DOWNSTREAM HAZARD DESCRIPTION	Local roads, Rattlesnake Hill Road and Woburn Street ~1300 ft downstream beyond heavily vegatated wooded wetlands area	x		
	DATE OF LAST EAP UPDATE	No EAP	x		

ADDITIONAL COMMENTS:

NAME OF DAM: Fosters Pond Dam STATE ID #: 5-5-9-10

INSPECTION DATE: May 8, 2008 NID ID #: MA00153

MISCELLANEOUS

AREA INSPECTED	CONDITION	OBSERVATIONS		
MISC.	RESERVOIR DEPTH (AVG)	~13 feet max depth reported by members of FPC		
	RESERVOIR SHORELINE	Wooded and grass, residential homes		
	RESERVOIR SLOPES	Gentle to moderate slopes; hilly along west side of impoundment (Photo 16)		
	ACCESS ROADS	Adjacent to Rattlesnake Hill Rd		
	SECURITY DEVICES	Boulders along downstream side and metal chain gate at access path near right (see note 1)		
	VANDALISM OR TRESPASS	YES: ☐	NO: ☑	WHAT: See Note 2
	AVAILABILITY OF PLANS	YES: ☐	NO: ☑	DATE:
	AVAILABILITY OF DESIGN CALCS	YES: ☐	NO: ☑	DATE:
	AVAILABILITY OF EAP/LAST UPDATE	YES: ☐	NO: ☑	DATE:
	AVAILABILITY OF O&M MANUAL	YES: ☑	NO: ☐	DATE: 12-Oct-05
	CARETAKER/OWNER AVAILABLE	YES: ☑	NO: ☐	DATE: 10-Nov-06
	CONFINED SPACE ENTRY REQUIRED	YES: ☐	NO: ☑	PURPOSE:

ADDITIONAL COMMENTS: 1. abutment prevent access of unauthorized vehicles

NAME OF DAM: Fosters Pond Dam STATE ID #: 5-5-9-10

INSPECTION DATE: May 8, 2008 NID ID #: MA00153

PRIMARY SPILLWAY

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
SPILLWAY	SPILLWAY TYPE	Concrete/Masonry			
	WEIR TYPE	Broad-crested weir, 11.9 ft long	x		
	SPILLWAY CONDITION	Good - minor cracking & spalling of concrete surface repaired		x	
	TRAINING WALLS	Good - granite curbstone training walls added as erosion protection (Note 1)		x	
	SPILLWAY CONTROLS AND CONDITION	No controls	x		
	UNUSUAL MOVEMENT	Downstream left side of spillway is slightly lower, possible past movement		x	
	APPROACH AREA	Underwater. Upstream slope covered w/ geomembrane & clay ~6 ft into basin.		x	
	DISCHARGE AREA	Stilling basin is enclosed by a mortared stone training wall (note 2)		x	
	DEBRIS	None observed		x	
	WATER LEVEL AT TIME OF INSPECTION	0.1 ft below upstream edge of spillway (~El. 80 ft - reference datum)	x		

ADDITIONAL COMMENTS:
1. Training walls constructed to protect embankment from erosion during higher spillway flows. See photos 2, 4, & 8.
2. Plunge pool has been maintained with the addition of dumped riprap below the spillway for erosion protection. See photos 7 and 9.

NAME OF DAM: Fosters Pond Dam STATE ID #: 5-5-9-10

INSPECTION DATE: May 8, 2008 NID ID #: MA00153

AUXILIARY SPILLWAY

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
SPILLWAY	SPILLWAY TYPE	Grass covered swale along right abutment (see photos, Note 1)		x	
	WEIR TYPE	Earth-lined, broad-crested	x		
	SPILLWAY CONDITION	Maintained by reshaping with a 9-foot base, 18-foot top width, ~1.5-foot depth		x	
	TRAINING WALLS	None	x		
	SPILLWAY CONTROLS AND CONDITION	None	x		
	UNUSUAL MOVEMENT	None observed	x		
	APPROACH AREA	Underwater. Not observed	x		
	DISCHARGE AREA	Rattlesnake Hill Rd, wetlands beyond	x		
	DEBRIS	None observed	x		
	WATER LEVEL AT TIME OF INSPECTION	1.1 feet below low point on swale	x		

ADDITIONAL COMMENTS: 1. Existing swale emergency spillway along the right abutment with a low point ~1 ft higher than primary spillway intake elevation, has been maintainted by minor regrading, placement of cobble cover on upstream side and establishment of grass cover across crest (see Photo13). A geotextile was also placed under the cobble and seeded topsoil cover portions of the spillway.

NAME OF DAM: Fosters Pond Dam STATE ID #: 5-5-9-10

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OUTLET WORKS

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
OUTLET WORKS	TYPE	Sluiceway contolled with stoplogs	x		
	INTAKE STRUCTURE	Concrete sluiceway, 3 ft to 2 ft wide, 2.6 feet deep (note 1)		x	
	TRASHRACK	None	x		
	PRIMARY CLOSURE	3 10-inch deep stoplogs	x		
	SECONDARY CLOSURE	None	x		
	CONDUIT	8-inch low-level outlet pipe thru sluiceway reportedly corroded & abandoned	x		
	OUTLET STRUCTURE/HEADWALL	None	x		
	EROSION ALONG TOE OF DAM	None (repaired)		x	
	SEEPAGE/LEAKAGE	Some leakage through stoplogs		x	
	DEBRIS/BLOCKAGE	None observed	x		
	UNUSUAL MOVEMENT	None observed	x		
	DOWNSTREAM AREA	Riprapped plunge pool (riprap recently placed as part of maintenance)		x	
	MISCELLANEOUS	Stone masonry training walls on left side of sluiceway recently repaired/upgraded		x	

ADDITIONAL COMMENTS: 1. Condition of concrete good. No cracks observed. See photo 10. Sluiceway repaired in the fall of 2005 to accommodate stoplogs and lowering of the water in the winter months.

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CONCRETE/MASONRY DAMS

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
GENERAL	TYPE				
	AVAILABILITY OF PLANS				
	AVAILABILITY OF DESIGN CALCS				
	PIEZOMETERS				
	OBSERVATION WELLS				
	INCLINOMETERS				
	SEEPAGE GALLERY				
	UNUSUAL MOVEMENT				

Not Applicable to this Structure

ADDITIONAL COMMENTS:

NAME OF DAM: Fosters Pond Dam STATE ID #: 5-5-9-10

INSPECTION DATE: May 8, 2008 NID ID #: MA00153

CONCRETE/MASONRY DAMS

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
U/S FACE	TYPE SURFACE CONDITIONS CONDITIONS OF JOINTS UNUSUAL MOVEMENT ABUTMENT CONTACTS				

ADDITIONAL COMMENTS:

NAME OF DAM: Fosters Pond Dam STATE ID #: 5-5-9-10

INSPECTION DATE: May 8, 2008 NID ID #: MA00153

CONCRETE/MASONRY DAMS

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
D/S FACE	TYPE SURFACE CONDITIONS CONDITIONS OF JOINTS UNUSUAL MOVEMENT ABUTMENT CONTACTS DRAINS LEAKAGE				

ADDITIONAL COMMENTS:

NAME OF DAM: Fosters Pond Dam STATE ID #: 5-5-9-10

INSPECTION DATE: May 8, 2008 NID ID #: MA00153

CONCRETE/MASONRY DAMS

AREA INSPECTED	CONDITION	OBSERVATIONS
CREST	TYPE SURFACE CONDITIONS CONDITIONS OF JOINTS UNUSUAL MOVEMENT HORIZONTAL ALIGNMENT VERTICAL ALIGNMENT	

ADDITIONAL COMMENTS:

Not Applicable to this Structure