

One South Church Street Second Floor West Chester, PA 19382 T: 610-429-8907 F: 610-429-8918

www.pennoni.com

June 16, 2016

EGOS 0613

Rick Smith Township Manager East Goshen Township 1580 Paoli Pike West Chester, PA 19380

RE: Hershey Mill Dam 2016 Annual Inspection

Dear Rick:

This correspondence summarizes Pennoni's recent Visual Inspection of the Hershey Mill Dam located in East Goshen Township, PA. This is considered the Township's 2016 annual inspection.

Hershey's Mill Dam does not currently impound water. Pennoni understands that the observations and recommendations contained herein are provided in order to take the steps necessary to bring the dam into compliance with the Pennsylvania Dam Safety & Encroachments Act (Act 325 of 1978 as subsequently amended) and the Pennsylvania Code Title 25, Chapter 105. Repair plans are provided in a six sheet drawing set titled "Restoration Plan for Hershey's Mill Dam," developed by Edward B. Walsh & Associates, Inc. and dated April 10, 2012 (Rev. 4 date June 11, 2014). Pennoni understands a permit has been obtained and is on file with the PADEP as indicated in a letter to East Goshen Township dated July 15, 2014.

On May 12, 2016, representatives from East Goshen Township, and Pennoni met on site to perform the 2016 annual visual inspection. Our observations and findings from the 2016 inspection were generally similar to the 2015 inspection. The inspection checklist is attached to this correspondence. As a result of our inspection, the following repairs are recommended:

- 1. Control vegetation on upstream and downstream embankment face in accordance with PADEP "Inspection, Maintenance, and Operation of Dams in Pennsylvania," manual.
- 2. Repair/Stabilize upstream and downstream earth and stone wall slopes.
- 3. Repair/rebuild spillway slab and adjoining stone walls. Fill voids beneath spillway floor.
- 4. Repair/restore outlet structure.
- 5. Provide a defined outlet pool to prevent water from accumulating at toe of embankment wall.

Should you have any further questions, please contact me.

Sincerely,

PENNONI ASSOCIATES INC.

1

Theodore A. Thomson, Jr., PhD, PE, DGE, LEED AP Senior Geotechnical Engineer

June 16, 2016

Nathan M. Cline, PE Township Engineer

Attachments: Dam Inspection Checklist (31 pages)

DAM INSPECTION CHECKLIST Department of Environmental Protection Bureau of Waterways Engineering Division of Dam Safety							
NAME OF DAM: Hershey Mill Dam	DEP DAM NO.: <u>15-125</u>						
LOCATION: Municipality: East Goshen Township	County: <u>Chester</u>						
DEP CLASSIFICATION DATA: Size: C	Hazard: 2 (based on published data)						
PHYSICAL DATA: Type of Dam: Earth Height of Dam: 14 feet embankment w/ concrete spillway	Normal Pool Storage Capacity: <u>18 acre-</u> <u>feet</u>						
ELEVATIONS:Normal Pool:446.78 feetNAVD88 (Final Comment 1)Comment 1)	Tailwater at Inspection: 439.5 feet +/-						
DAM OWNER: East Goshen Township OPERAT	OR: East Goshen Township						
ADDRESS: 1580 Paoli Pike	<u>West Chester, PA</u>						
PHONE: 610 692 7171 FAX NO.: 610 692 8950 E-MAIL A A completed and signed Dam Owners Notice Checklist is to accompa	DDRESS: rsmith@eastgoshen.org any this Inspection Checklist.						
PERSONS PRESENT AT INSPECTION: Name Title/Position Rick Smith Township Manager	Representing East Goshen Township						
DATE OF INSPECTION: <u>5/12/2016</u>							
WEATHER: <u>P. Sunny</u>							
TEMPERATURE ROTESTONAL ROTES	ofessional Engineer Date						

DEP DAM NO.: 15-125

DATE:

ITEM	CONDITION	COMMENTS	Montor	IVESTIGATE	REPAIR			
	EMBANKMENT: CREST							
1	Surface Cracking	None observed						
2	Sinkhole, Animal Burrow	Significant			\square			
3	Low Area(s)	Significant – see general comments below			\square			
4	Horizontal Alignment	Poor – see general comments below			\square			
5	Ruts and/or Puddles	Rutting observed, no puddles			\square			
6	Vegetation Condition	Severely overgrown – roots throughout embankment			\square			
7	Warning Signs	Yes – NE corner of dam crest – see Photograph 3						
8								
9								
		dam crest is private property with a swimming pool at the toe of e rounding the property on the embankment	inoan	IKIIIC	n			
	E	MBANKMENT: UPSTREAM FACE						
10	Slide, Slough, Scarp	Severe – see comment below			\square			
11	Slope Protection	Variable – combination of no stabilization & trees (see Photograph 3)			\boxtimes			
12	Sinkhole, Animal Burrow	Significant - see note below Photograph 6			\square			
13	EmbAbut. Contact	See comment below						
14	Erosion	See comment below			\square			
15	Vegetation Condition	Northeast side of spillway- Predominately overgrown w/ some bare areas; West side of spillway – stone wall			\square			
16								
17								

Additional Comments (Refer to item number if applicable):

Item Nos. 10 & 14 – portions of upstream face from spillway to the northeast have vertical faces with exposed earth approximately 2 to 4 feet high (see Photograph 4). Upstream face from spillway west consists of vertical stone wall approximately 2 to 4 feet high in poor condition (numerous cracking, see Photograph 5 and 5a). Large trees present at west end of crest.

- Item 13 – At northeast end of crest, grade of crest blends in to natural grade. At west end of crest stone wall terminates abruptly.

DEP DAM NO.: 15-125

DATE:

INETI	CONDITION	COMMENTS		IVESTIGATE	REPAIR			
	EMBANKMENT: DOWNSTREAM FACE							
18	Wet Area(s) (No Flow)	Standing water from spillway edge northeast 27 ft. +/- @ toe of wall. See Photograph 7			\square			
19	Seepage	None observed						
20	Slide, Slough, Scarp	Northeast side of spillway shows areas of bare earth (scarp). See Photograph 8			\square			
21	Emb Abut. Contact	See comments on "Upstream Face"						
22	Sinkhole, Animal Burrow	Significant along downstream face northeast of spillway			\square			
23	Erosion	Moderate where no vegetation present, see Photograph 8			\square			
24	Unusual Movement	See note below			\square			
25	Vegetation Control	Severely overgrown			\square			
26								
27								
 Additional Comments (Refer to item number if applicable): See Photograph Nos. 7 to 10 for general condition of downstream face. Item 24 - Portion of downstream face stone wall in disrepair, see Photograph 11. Apparent depression in ground surface at base of stone wall approximately 35-45 feet to the northeast of the spillway (previously noted as 75 ft. +/- in 2015 report), see Photograph 7. Downstream face on west side of spillway is a vertical stone wall 15 ft. +/- high. See Photograph 12. 								
	EM	BANKMENT: INSTRUMENTATION						
28	Piezometers/Observ. Wells	None observed						
29	Staff Gauge and Recorder	Not observed						
30	Weirs	None present						
31	Survey Monuments	Not observed						
32	Drains	No instrumentation observed						

No instrumentation observed

Not available

Not available

Additional Comments (Refer to item number if applicable):

- No instrumentation on embankment.

Low Flow Release

Frequency of Readings

Location of Records

33

34

35 36 37

DEP DAM NO.: 15-125

DATE:

ITEM	CONDITION	COMMENTS	Montror	IVESTIGATE	REPAIR		
	DOWNSTREAM AREA						
38	Abutment Leakage	None observed					
39	Foundation Seepage	None observed – "EMBANKMENT: Downstream Face"					
40	Slide, Slough, Scarp	None observed – flat area					
41	Drainage System	See note below					
42	Boils	None observed					
43	Wet Areas	None observed					
44	Reservoir Slopes	Not present. Area downstream of dam is relatively level					
45	Access Roads	Not applicable					
46	Security Devices	None observed					
47	Act 91 Run-of-the-River Signs or Bouys	Not applicable (N/A)					
48							
49					\Box		
	Greenhill Road. See Photog	to stream which partially flows into pipe which outlets on the sout	h side	eof			
50					\square		
50 51	Slide, Slough, Scarp Erosion	Vertical earth slopes on downstream pool and streamSame as Item 50. No active erosion observed.					
52	Vegetation Condition	Moderate					
53	Debris	None blocking flow	┟╞┽				
54	Debits				⊢⊢		
55			╞┝┥		\exists		
	itional Comments (Refer to ite	 m number if ennlieshle):					
- '	This section refers to downs	tream area from dam spillway and downstream. See Photograph N dition of downstream pool and stream.	Nos. 1.	3 to 1	5		

DEP DAM NO.: 15-125

DATE:

ITEM	CONDITION	COMMENTS	Montror	IVESTIGATE	REPAIR			
SPILLWAYS: NON-ERODABLE CHANNEL								
56	Sidewalls	Severely cracked			\square			
57	Channel Floor	Apparent void(s) beneath floor			\square			
58	Unusual Movement	Appears to be differential settlement between spillway and sidewalls			\square			
59	Approach Area	Depressed from level of spillway floor. See note below.			\square			
60	Weir or Control	None observed						
61	Discharge Channel	See "Erodible Channel" section above						
62	Boils	None observed						
63								
64								
-		9 eel sheet was observed beneath the concrete spillway floor on the r eet appears to be prevent water from entering and/or erosion from			de			

SPILLWAYS: drop inlet

65	Intake Structure	See "Outlet Works" section below	
66	Trashrack	See "Outlet Works" section below	
67	Stilling Basin	See "Outlet Works" section below	
68			
69			

Additional Comments (Refer to item number if applicable):

DEP DAM NO.: 15-125

DATE:

MELI	CONDITION	COMMENTS	MONTOR	IVESTIGATE	REPAIR			
OUTLET WORKS								
70	Intake Structure	Covered with debris, see Photograph 20			\square			
71	Trashrack	Covered with debris (not visible), see Photograph 20			\square			
72	Stilling Basin	See "SPILLWAYS: Erodible Channel" section above						
73	Primary Closure	Does not appear to be present			\square			
74	Secondary Closure	N/A						
75	Control Mechanism	See Item 81			\square			
76	Outlet Pipe	Only visible at outlet to spillway, see Photograph 16						
77	Outlet Tower	N/A						
78	Outlet Structure	N/A						
79	Seepage	None observed						
80	Unusual Movement	None observed						
81	Instrumentation	See note below						
82								
1 (upstream of the concrete spil casing. The height from top of bottom). Depth from top of	0. An approximately 8 inch diameter steel riser pipe is present imm llway towards the west side. The riser pipe does not appear to have of 8 inch diameter steel riser to pipe bottom is approximately 7.75 riser to water level approximately 5 feet. The water depth was app edly provides access to a gate valve which allows control of the in	e any feet (roxim	inner soft ately	27			
	CONCRE	TE/MASONRY DAMS: UPSTREAM FACE						
83	Surface Conditions	N/A						
84	Condition of Joints	N/A						
85	Unusual Movement	N/A						
86	Abutment-Dam Contacts	N/A						
87								
88								
Addi	itional Comments (Refer to ite	m number if applicable):						

DEP DAM NO.: 15-125

DATE:

ITEM	CONDITION	COMMENTS	Montor	IVESTIGATE	REPAIR
	CONCRET	E/MASONRY DAMS: DOWNSTREAM FACE	£		
89	Surface Conditions	N/A			
90	Condition of Joints	N/A			
91	Unusual Movement	N/A			
92	Abutment-Dam Contacts	N/A			
93	Drains	N/A			
94	Leakage	N/A			
95					
96					
0.7		CRETE/MASONRY DAMS: CREST			
97	Surface Conditions	N/A			
98	Horizontal Alignment	N/A N/A			
99 100	Vertical Alignment Condition of Joints	N/A N/A			
100	Unusual Movements	N/A N/A			
101	Unusual wovements	N/A		-	
102					
	tional Comments (Refer to ite	m number if applicable):			

DEP DAM NO.: 15-125

DATE:

ITEM	CONDITION	COMMENTS	Montor	IVESTIGATE	REPAIR				
	RESERVOIR AREA								
104	Sedimentation	See note below and "Final Comment 1"							
105	Slope Stability	Good by dam							
106	Sinkholes	None observed by dam							
107	Fractures	None observed by dam							
108	Unwanted Growth	See "Final Comment 1"							
109	Storage Gage	None observed							
110									
111									

Additional Comments (Refer to item number if applicable):

- See Photograph 20 for typical photograph of reservoir

- Item 104 – The dam does not currently impound water. Two small streams are present which drain into the intake structure. Fine grained sediments are present throughout the reservoir area to depths of a couple feet.

Final Comments:

- 1. No significant changes were observed from the 2015 inspection.
- 2. Hershey's Mill Dam does not currently impound water. Pennoni understands that the observations and recommendations contained herein are provided in order to take the steps necessary to bring the dam into compliance with the Pennsylvania Dam Safety & Encroachments Act (Act 325 of 1978 as subsequently amended) and the Pennsylvania Code Title 25, Chapter 105. Repair plans are provided in a six sheet drawing set titled "Restoration Plan for Hershey's Mill Dam," developed by Edward B. Walsh & Associates, Inc. and dated April 10, 2012 (Rev. 4 date June 11, 2014).
- 3. A permit has been obtained and is on file with the PADEP as indicated in a letter to East Goshen Township dated July 15, 2014.

Notwithstanding the drawings indicated above, recommended repairs as a result of the 2016 inspection consist of:

- 1. Control vegetation on upstream and downstream embankment face in accordance with PADEP "Inspection, Maintenance, and Operation of Dams in Pennsylvania," manual.
- 2. Repair/Stabilize upstream and downstream earth and stone wall slopes.
- 3. Repair/rebuild spillway slab and adjoining stone walls. Fill voids beneath spillway floor.
- 4. Repair/restore outlet structure.
- 5. Provide a defined outlet pool to prevent water from accumulating at toe of embankment wall.

	ME OF DAM:		DEP DAM NO.:			
		•	nstream Hazard Description is accurate and the Poste spected and the following are the results of these insp			
	Name of Dam Owne	U	nature of Dam Owner		Date	
Thi	s Dam Owners No		ompany the Inspection Checklist filed by the Eng ENCY ACTION PLAN	ineer.	•	
Dat	e of Last Update of					
		DOCTED NOT				
		POSTED NOT	TICES (Refer to section V.A in the EAP)			
ITEM	DATE INSPECTED	POSTED NOT	COMMENTS	Existing	MISSING	REPLACED
1 ITEM				Existing	MISSING	RPLACED
				E XISTING	MISSING	
1				E XISTING	MISSIING	
1 2				E XISTING		
1 2 3 4 5				E XISTING		
1 2 3 4 5 6						
1 2 3 4 5 6 7						
1 2 3 4 5 6 7 8						
1 2 3 4 5 6 7 8 9						
1 2 3 4 5 6 7 8						



Photo 1. Dam Crest Looking Northeast (Northeast Side of Spillway)

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West Chester, PA 19382	AND EXPENSES ARISING OUT OF OR RESULTING THEREFROM.	EGOS0613	P-1	
HERSHEY MILL DAM IN) LOG			



Photo 2. Dam Crest Looking West (West Side of Spillway)

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HERSHEY MILL DAM IN) LOG			



Photo 3. Warning Sign in Northeast Corner

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West Chester, PA 19382	AND EXPENSES ARISING OUT OF OR RESULTING THEREFROM.	EGOS0613		-3
HERSHEY MILL DAM IN) LOG			



Photo 4. Upstream Face on Northeast Side of Spillway Looking Northeast

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		EGOS0613	P	-4
HERSHEY MILL DAM IN) LOG			

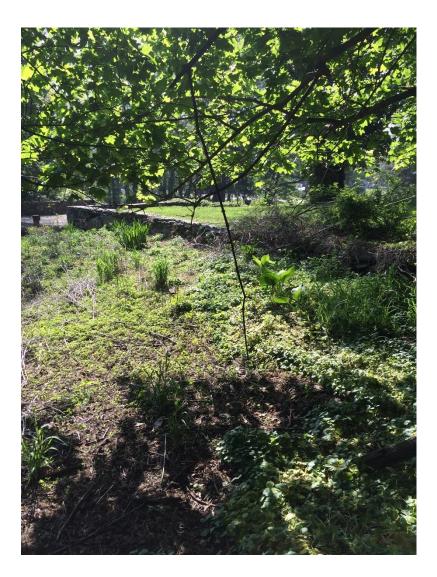


Photo 5. Upstream Face on West Side of Spillway Facing South East

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		EGOS0613	P	-5
HERSHEY MILL DAM INS) LOG			



Photo 5a. Upstream Face on Northeast Side Facing Southwest

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West Chester, PA 19382		EGOS0613	P-	-5a
HERSHEY MILL DAM IN) LOG			

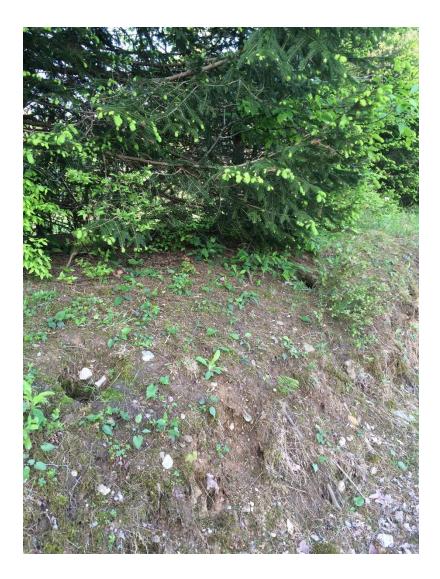


Photo 6. Typical Animal Burrows on Northeast Upstream Embankment Face

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West Chester, PA 19382	AND EXPENSES ARISING OUT OF OR RESULTING THEREFROM.	EGOS0613	P	-6
HERSHEY MILL DAM IN) LOG			



Photo 7. Downstream Face Northeast Side Looking North

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West Chester, PA 19382	AND EXPENSES ARISING OUT OF OR RESULTING THEREFROM.	EGOS0613	P	-7
HERSHEY MILL DAM IN	O LOG			

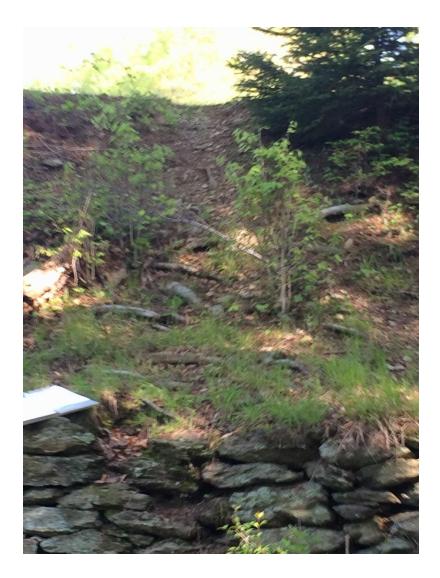


Photo 8. Downstream Face Northeast Side – Exposed Earth

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West Chester, PA 19382	AND EXPENSES ARISING OUT OF OR RESULTING THEREFROM.	EGOS0613	P	-8
HERSHEY MILL DAM INSPECTION REPORT PHOTO LOG				

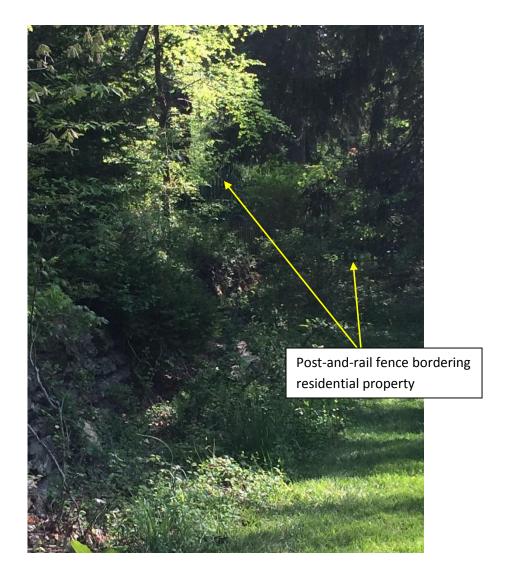


Photo 9. Downstream Face Northeast Side Looking North – Residential Property

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West Chester, PA 19382	AND EXPENSES ARISING OUT OF OR RESULTING THEREFROM.	EGOS0613	P	-9
HERSHEY MILL DAM IN) LOG			

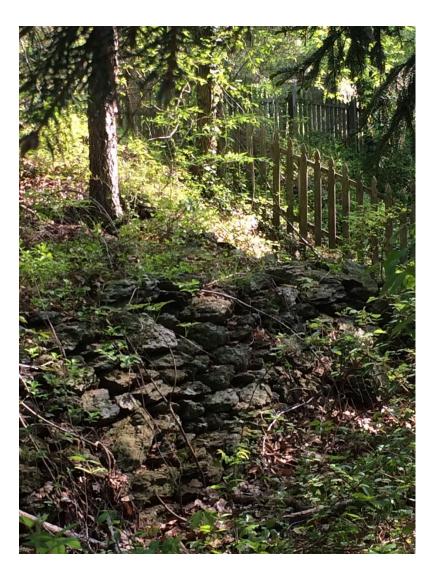


Photo 10. Downstream Face Northeast Side Looking North

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One South Church Street, 2 nd Floor	,	PROJECT No:	п	10
West Chester, PA 19382		EGOS0613	P-	10
HERSHEY MILL DAM IN	O LOG			

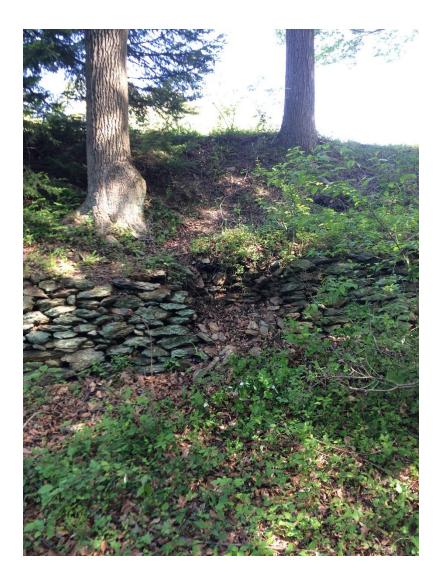


Photo 11. Downstream Face Northeast Side Looking North – Stone Wall in Disrepair

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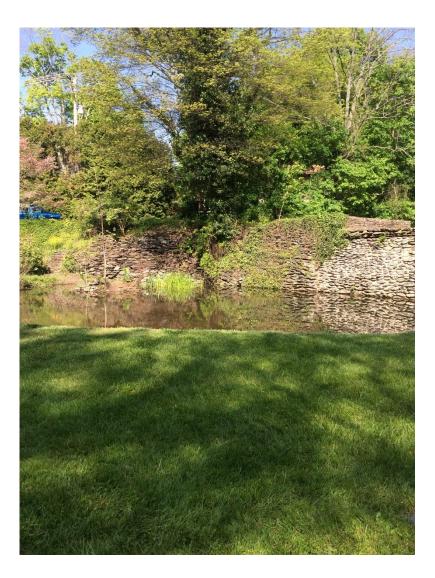


Photo 12. Downstream Face West Side Facing West

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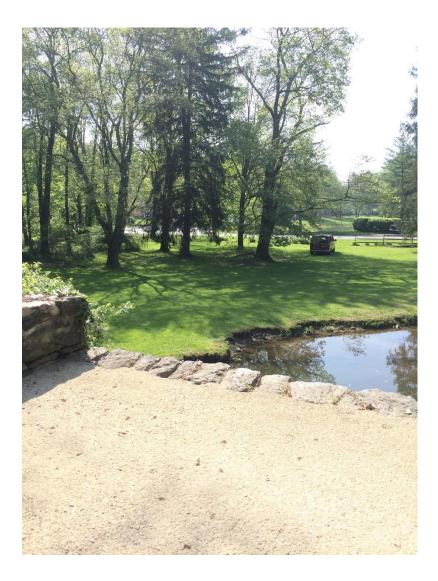


Photo 13. Downstream Side of Dam Facing Southeast

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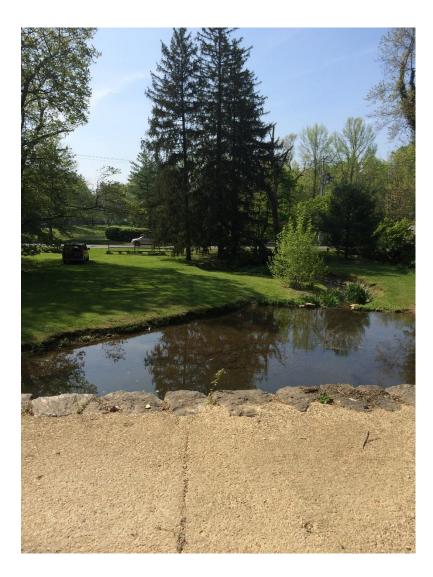


Photo 14. Downstream Side of Dam Facing South

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HERSHEY MILL DAM IN				

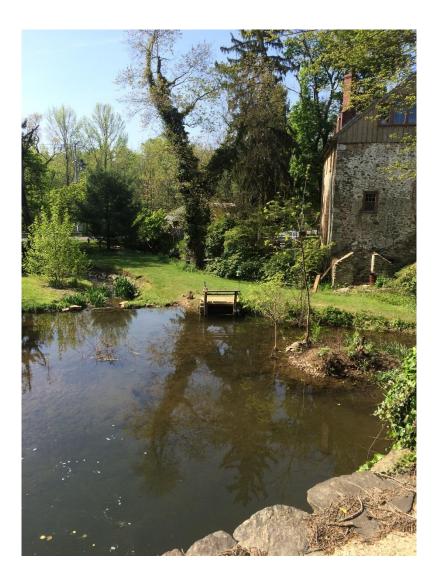


Photo 15. Downstream Side of Dam Facing Southwest

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Photo 16. Downstream Outlet Pipe Through Dam

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West Chester, PA 19382		EGOS0613	P-	10
HERSHEY MILL DAM IN				

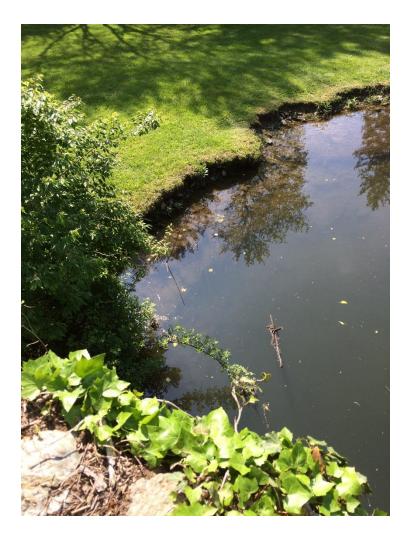


Photo 17. Downstream Edge of Discharge Pool

ASSOCI	ALL DOCUMENTS PREPARED BY PENNONI ASSOCIATES ARE INSTRUMENTS OF SERVICE IN RESPECT OF THE PROJECT. THEY ARE NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR REUSE BY	TAKEN BY:	SCALE:	DATE:
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HERSHEY MILL DAM IN) LOG			

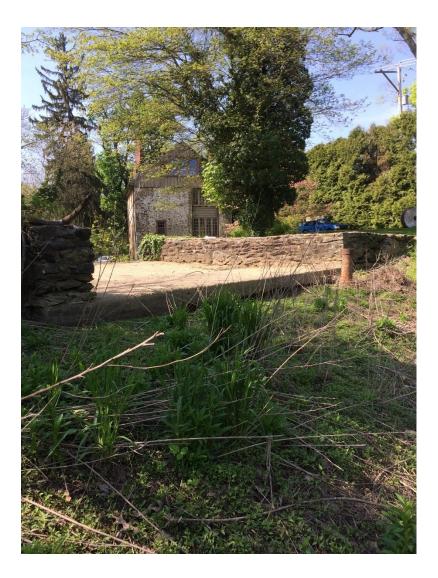


Photo 18. Edge of Concrete Spillway Facing Southwest

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Photo 19. Spillway Slab Looking West

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Photo 20. Reservoir Area Facing North

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