
Appendix F

June 2015 Dam Inspection Report

DUCK LAKE LEVEL CONTROL STRUCTURE PART 307 INSPECTION

Dam Identification No.: 1952

Hazard Potential: Low

Section 22, T.26N. – R.12W.

Green Lake Township, Grand Traverse County, Michigan

Tributary to Betsie River



Per Part 307, Act 451 of 1994

PREPARED FOR:

Grand Traverse County Drain Commissioner

Kevin P. McElyea, L.L.A.

400 Boardman Avenue, Government Center – 2nd Floor

Traverse City, Michigan 49684

kmcelyea@grandtraverse.org

PREPARED BY:

Spicer Group, Inc.

INSPECTED BY:

Larry J. Protasiewicz, P.E. #37780

Date of Inspection: May 18, 2015

Date of Report: June 2015

Project I.D. Number 122289SG2015

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**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
LAND AND WATER MANAGEMENT DIVISION
DAM INSPECTION REPORT**

This form is to be used for inspection reports required by Part 307, Inland Lake Levels, for those dams that do not meet the size criteria as defined by Part 315, Dam Safety, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. Dams six (6) feet or more in height, as defined by Part 315, and impounding five (5) acres or more at the design flood elevation, must meet the inspection report format as outlined in Section 31518 of Part 315.

A person failing to comply, or falsely representing dam conditions, is guilty of misconduct in office.

DAM NAME		DAM ID	COUNTY
Duck Lake Dam		1952	Grand Traverse
DATE OF INSPECTION	NAME OF WATERBODY	SECTION, TOWN, RANGE	LEVEL THIS DATE
May 18, 2015	Duck Lake	Sec. <u>22</u> T 26N R 12W	
DATE ELEVATION SET BY COURT	LEGAL LEVEL	DRAWDOWN LEVEL	HIGH WATER MARK ELEVATION
June 18, 1959	837.3	835.00	

EARTH EMBANKMENTS LEFT EMBANKMENT 300 FT. RIGHT EMBANKMENT 20 FT. TOTAL LENGTH 320 FT.
(LOOKING DOWNSTREAM)

	UPSTREAM	CROWN	DOWNSTREAM
VEGETATIVE COVER	Grass and small brush	Grass, Small brush and trees	
EROSION	None	None	Scour hole on right abutment
SEEPAGE			None
SLIDES, SLUMPS & CRACKS	None	None	None
ANIMAL BURROWS	None	One - small	None
WAVE ACTION PROTECTION	Rip-rap		Rip-rap
REMARKS*	The earth embankment is not a functional part of the dam. The original grade is higher than the water surface at both abutments	The outlet stream flows to within 18 feet of the edge of the lake and there are animal trails present at the narrow portions. (see map) No erosion present	

CONTROL STRUCTURE

TYPE Stop log	YEAR CONSTRUCTED 1960	STRUCTURAL HEIGHT (top of dam elevation minus stream invert)
LENGTH OF SPILLWAY 20	FREEBOARD	HYDRAULIC HEIGHT (design flood elevation minus stream invert)
VERTICAL PIPE SIZE NA	HORIZONTAL PIPE SIZE NA	HEAD 0.71 Ft. on 7/7/2015 (normal headwater minus normal tailwater)

DESCRIBE CONDITION OF THE FOLLOWING ITEMS.

STOPLOG VALVES AND GATES (open and close to check condition): Check location of top stoplog in relation to top of riser pipe intake box or fixed crest, for leakage, and condition of stoplogs, valves and gates.
Stop logs are 3"x5' Oak and in generally fair condition.

OUTLET PIPE: Check for damage from ice, logs, vandalism; inside discharge pipe for settlement and/or joint separation; condition of pipe coating. NA

CONTROL STRUCTURE (continued)

CONCRETE STRUCTURE: Check for erosion; location of cracking or spalling. If old or new; settlement; need for crack repairs. The concrete structure is in good condition. There is no indication of major structural cracking or settlement. There is some surface spalling and several small cracks. Recommend consideration be given to repairing small exposed surface cracks with epoxy.

WALKWAY & RAILING: Check if in place or removed, condition, and if adequate protection provided. Walkway railing is in place and in good condition. The railing is constructed of pipe and is only present on the upstream side of the walkway. Chain link gates with locks have been placed on each side of the dam to limit pedestrian access to the structure.	TRASHRACK OR LOG BOOM: Check if operable. NA
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EMERGENCY SPILLWAY: Size, type, and condition.

NA

INLET & OUTLET CHANNELS

	INLET	OUTLET
SIZE	20 feet wide	20 feet wide
EXISTING CONDITION	Good	Fair
EROSION	None	Some channel erosion on left bank approximately 150' downstream of dam.
DEBRIS & OBSTRUCTIONS	None	None
RIPRAP PROTECTION	Present and in good condition	Recommend additional rip-rap be placed downstream on right and left abutments.
REMARKS*	None	None

RECOMMENDATIONS

List work needed, how to be done, by whom, estimated cost, source of funds, recommended completion date. If emergency, to what extent. ADDITIONAL COMMENTS.

Tree removal and place additional 25 yards Riprap, $D_{50} = 12"$, on right abutment downstream of dam 15 cu. yards on right and 10 yards on left. Work to be done by contract. Estimated cost is \$3,500. Recommended completion date is late fall of 2015.

Inspection Ordered By: Grand Traverse County Drain Commissioner

Kevin McElyea County Delegated Agent

Larry J. Protasiewicz

INSPECTOR'S NAME (PRINTED)

Spicer Group, Inc.
1400 Zeeb Drive
St. Johns, MI 48879
(989) 224-2355

SIGNATURE

37780
P.E. REGISTRATION NO.

Please submit this completed report and photographs of the dam, downstream channel, and deficiencies cited in the report to:

DAM SAFETY PROGRAM
LAND AND WATER MANAGEMENT DIVISION
MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
PO BOX 30458
LANSING MI 48909-7958

*NOTE: If space is inadequate for remarks, attach additional sheets as needed.

APPENDIX A

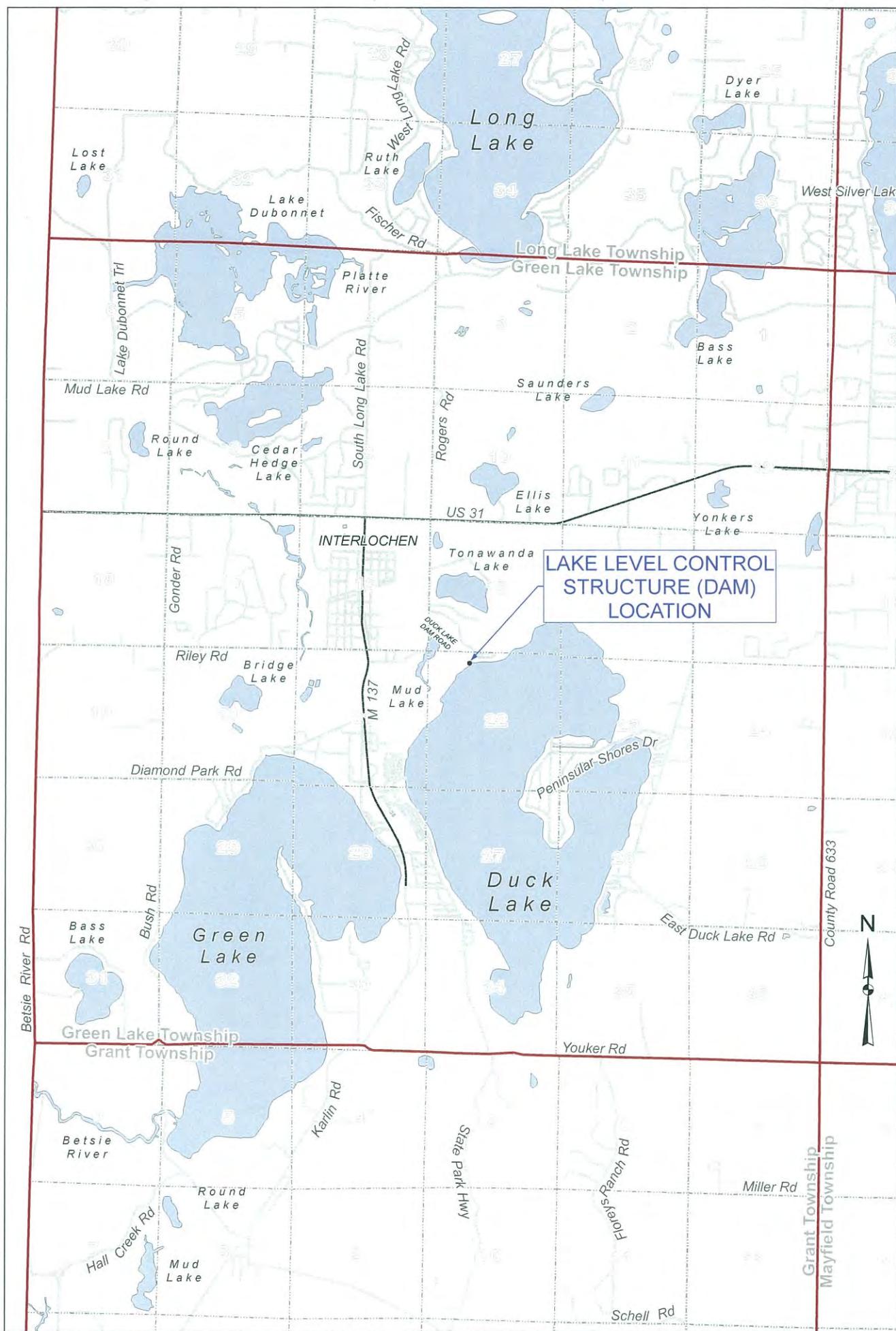
MDEQ INVENTORY OF DAM

Dam ID	1952	National ID	MI01952	County	Grand Traverse	County #	28			
Dam Name	Duck Lake Level Control Structure			File	Yes	State	Michigan			
Popular Name	Duck Lake Dam			Plan						
Pond Name	Duck Lake			Quad	L19NE					
1/4 Section	Sec	22	Town	26N	Range	12W	DEQ District	Cadillac		
City	Interlochen			Distance (mi)	0	Population	0	Print Record		
Additional Information										
1 plan files				Phase I (PL92-367) Inspection						
1 Inspection Report				0 Emergency Action Plans						
EAP	Not Required		EAP Last Updated			Jurisdiction				
Hazard	Low		Compliance Activity							
Owner ID	873	Owner	Russell & Harriet Bohlinger		Owner Type	Private				
Authority	Part 307		Del. Authority	Grand Traverse County Drain Commissioner						
Inspection Date	12/04/2012		Inspector	Jeremy L. Wade, Gourdie/Fraser						
Report Date	12/04/2012		Next Inspection Date	12/31/2015		Close Inventory				
Report Received	12/10/2012		Report Reply Date	1/28/2013		Action Requested				
Condition	Satisfactory		Condition Detail	Meets applicable tolerable risk criteria						
Year Built	1968	Type	Concrete		Purpose	Recreation				
Top Of Dam To Streambed (ft)	2		Design Flood Elevation To Streambed (ft)						2	
Head (Headwater - Tailwater At Normal Flow (ft))	1		Normal Freeboard (ft)							
Pond Acres At Normal Flow	1930	Max. Storage (ac-ft)	1545		Normal Storage (ac-ft)	770				
River	Tributary to Duck Lake		Watershed	04		Drainage Area (sq. mi)	0			
Design Flood			Design Inflow Discharge (cfs)							
Max. Spillway Capacity (cfs)	0		Design Outflow Discharge (cfs)	0						
Spillway Control	Uncontrolled		Spillway Width (ft)	0		Crest Length (ft)	20			
Permit No.			Repair Permit No.							Permit Expiration Date
DEQ/DNR Construction Approval			Property ID	2807-021-001-00						
Year Legal Lake Level Established	1959	Winter Level (ft)			Summer Level (ft)	837.3				
State Assessed	No		SCS/NRCS	None						
Public Access	No		FERC No.			Latitude	44.626667			
Trout Stream			Installed Capacity (kw-hr)	0		Longitude	-85.751667			
Lamprey Barrier			Regulatory Agency	Michigan DEQ		Locate in Bing Maps				
Fish Passage	No								ArcMap	
Private on Federal	No									

APPENDIX B

SITE LOCATION MAP

LOCATION MAP



APPENDIX C

PHOTOGRAPHS



Name: IMG_2380

Description: Downstream of Dam looking upstream into Duck Lake. Note: The narrows are located on the west side of the Dam and extend approximately 300 feet southwest.



Name: IMG_2381

Description: Retaining wall on east side of Dam.



Name: IMG_2382

Description: Retaining wall on east side of Dam looking downstream.



Name: IMG_2383

Description: Dam looking downstream.



Name: IMG_2384

Description: Duck Lake Dam looking downstream pointing west. Note: Narrows located on west side of Dam and extend approximately 300 ft southwest.



Name: IMG_2385

Description: Shoreline immediately east of Duck Lake Dam.



Name: IMG_2386

Description: Shoreline immediately east of Duck Lake Dam.



Name: IMG_2387

Description: West side of Duck Lake Dam.



Name: IMG_2388

Description: Walking along earthen Dam and found a rodent burrow.



Name: IMG_2389

Description: Shoreline of earthen Dam looking east.



Name: IMG_2390

Description: Shoreline of earthen Dam looking east.

APPENDIX D

EXISTING 2012 DAM INSPECTION REPORT



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
LAND AND WATER MANAGEMENT DIVISION
DAM INSPECTION REPORT

This form is to be used for inspection reports required by Part 307, Inland Lake Levels, for those dams that do not meet the size criteria as defined by Part 315, Dam Safety, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. Dams six (6) feet or more in height, as defined by Part 315, and impounding five (5) acres or more at the design flood elevation, must meet the inspection report format as outlined in Section 31518 of Part 315.

A person failing to comply, or falsely representing dam conditions, is guilty of misconduct in office.

DAM NAME		DAM ID	COUNTY
Duck Lake Dam		1952	Grand Traverse
DATE OF INSPECTION	NAME OF WATERBODY	SECTION, TOWN, RANGE	LEVEL THIS DATE
December 4, 2012	Duck Lake	Sec. <u>22</u> T <u>26N</u> R <u>12W</u>	
DATE ELEVATION SET BY COURT	LEGAL LEVEL	DRAWDOWN LEVEL	HIGH WATER MARK ELEVATION
June 18, 1959	837.3	835.00	

EARTH EMBANKMENTS LEFT EMBANKMENT _____ FT. RIGHT EMBANKMENT _____ FT. TOTAL LENGTH _____ FT.
(LOOKING DOWNSTREAM)

	UPSTREAM	CROWN	DOWNSTREAM
VEGETATIVE COVER	Grass and small brush	Grass, Small brush and trees	Grass
EROSION	None	None	None
SEEPAGE			None
SLIDES, SLUMPS & CRACKS	None	None	None
ANIMAL BURROWS	None	None	None
WAVE ACTION PROTECTION	Rip-Rap		Rip-Rap
REMARKS*	The earth embankment is not a functional part of the dam. The original grade is higher than the water surface at both abutments	The outlet stream flows to within 18 feet of the edge of the lake and there are animal trails present at the narrow portions. (see map) No erosion present	

CONTROL STRUCTURE

TYPE	YEAR CONSTRUCTED	STRUCTURAL HEIGHT (top of dam elevation minus stream invert)
Stop log	1960	
LENGTH OF SPILLWAY	FREEBOARD	HYDRAULIC HEIGHT (design flood elevation minus stream invert)
20		8.2 ft (Former Lake level)
VERTICAL PIPE SIZE	HORIZONTAL PIPE SIZE	HEAD (normal headwater minus normal tailwater)
NA	NA	

DESCRIBE CONDITION OF THE FOLLOWING ITEMS.

STOPLOG VALVES AND GATES (open and close to check condition): Check location of top stoplog in relation to top of riser pipe intake box or fixed crest, for leakage, and condition of stoplogs, valves and gates.

Stop logs are 3"x5' Oak and in generally good condition.

OUTLET PIPE: Check for damage from ice, logs, vandalism; inside discharge pipe for settlement and/or joint separation; condition of pipe coating.

NA

CONTROL STRUCTURE (continued)

CONCRETE STRUCTURE: Check for erosion; location of cracking or spalling. If old or new; settlement; need for crack repairs.

The concrete structure is in good condition. There is no indication of major structural cracking or settlement. There some slight surface spalling and effervescence.

WALKWAY & RAILING: Check if in place or removed, condition, and if adequate protection provided. Walkway railing is in place and in good condition. The railing is constructed of pipe and is only present on the upstream side of the walkway. Chain link gates with locks have been placed on each side of the dam to limit pedestrian access to the structure.

TRASHRACK OR LOG BOOM: Check if operable.
NA

EMERGENCY SPILLWAY: Size, type, and condition.

NA

INLET & OUTLET CHANNELS

	INLET	OUTLET
SIZE	21 feet wide	21 feet wide
EXISTING CONDITION	Good	Good
EROSION	None	None
DEBRIS & OBSTRUCTIONS	None	None
RIPRAP PROTECTION	Present and in good condition	Present and in good condition
REMARKS*	None	None

RECOMMENDATIONS

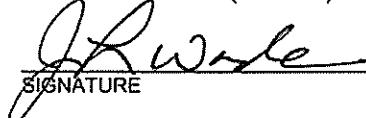
List work needed, how to be done, by whom, estimated cost, source of funds, recommended completion date. If emergency, to what extent. ADDITIONAL COMMENTS.

Tree Removal

Inspection Ordered By: Grand Traverse County Drain Commissioner

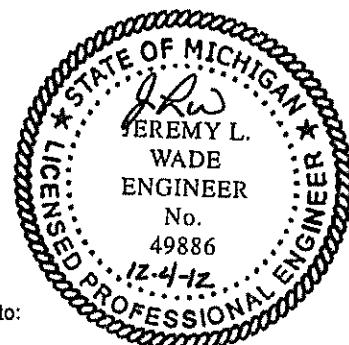
Kevin McElvea County Delegated Agent

Jeremy L. Wade
INSPECTOR'S NAME (PRINTED)

 Dec. 4, 2012
SIGNATURE

49886
P.E. REGISTRATION NO.

Gourdie-Fraser
123 West Front Street
Traverse City, MI 49684
(231) 946-5874



Please submit this completed report and photographs of the dam, downstream channel, and deficiencies cited in the report to:

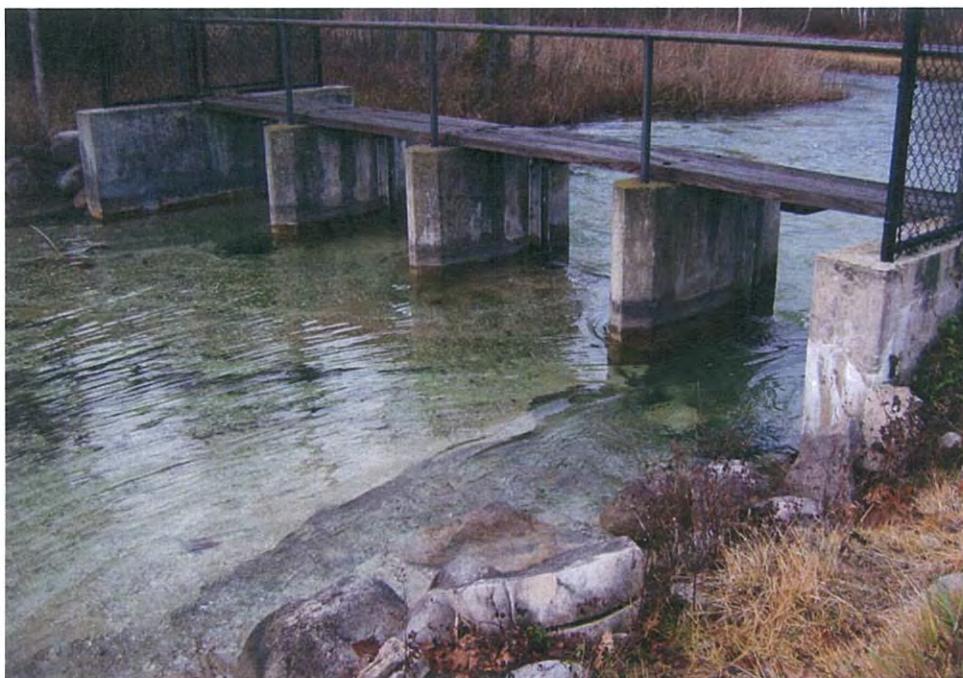
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2012 aerial photo

Site photos Dec 4, 2012





Narrows South of Structure



Old Beaver landing on south side of berm



Trees on west side of berm, south of structure



