



# Ohio Department of Natural Resources

MIKE DEWINE, GOVERNOR

MARY MERTZ, DIRECTOR

**Division of Water Resources**

*Dena C. Barnhouse, Chief*

2045 Morse Road/Building B-3

Columbus, Ohio 43229

614-265-6620

[water.dnr.state.oh.us](http://water.dnr.state.oh.us)

October 22, 2021

John Armbruster  
11070 Timberline Court  
Chardon, OH 44024

RE: Woodland Lake Dam  
File Number: 0610-009  
Columbiana County

Dear Mr. Armbruster:

Thank you for allowing Michael Becker and Keith Banachowski of the Division of Water Resources to conduct a safety inspection of Woodland Lake Dam on November 10, 2020. This inspection was conducted by representatives of the Chief of the Division of Water Resources under the provisions of Ohio Revised Code (ORC) Section 1521.062 to evaluate the condition of the dam and its appurtenances. The Chief has the responsibility to ensure that human life, health, and property are protected from dam failures. Conducting periodic safety inspections and working with dam owners to maintain and improve the overall condition of Ohio dams are vital aspects of achieving this purpose. A copy of the laws and administrative rules for dam safety is available on the division's web site or by request. I have enclosed guidelines for preparing an operation, maintenance, and inspection manual and guidelines for preparing an emergency action plan (EAP).

The enclosed inspection report was generated based on available information and is hereby provided for your use and study. Listed in the report are several repair, maintenance, and monitoring items that as a dam owner you are required by law to perform. Completion of these required items will improve the safety and overall condition of the dam. The Chief must approve any plans for modifications or repairs to the dam. Modifying or repairing a dam includes, but is not limited to, installing or replacing a spillway pipe or a portion of a spillway, raising the embankment crest elevation, raising the normal pool level, and placement of fill and/or piping in an open channel spillway. Following approval of the engineered plans, all necessary repairs must be implemented by the owner under the supervision of a registered professional engineer.

Please be advised that you may qualify for a reduced-interest loan to make required repairs through the Dam Safety Linked Deposit Program administered by the Ohio Water Development Authority (OWDA). To find out about this program, please contact the OWDA at 614/466-5822.

It is the Division's understanding that you are the owner(s) of this dam. If you are not an owner of this dam, or believe that there are additional owners of the dam not addressed in this communication, please contact our office. Please note that ORC Section 1521.062 requires a dam

EXHIBIT H

Woodland Lake Dam  
October 22, 2021  
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owner to notify the Chief of the Division of Water Resources in writing of a change in ownership of a dam prior to the exchange of the property.

To gain information that will help improve the inspection program, a short survey has been developed and is enclosed. Please complete the survey and return it in the self-addressed envelope provided. Your feedback is important.

Your cooperation in improving the overall condition of this dam is appreciated. Please contact Michael Becker at 614/265-6724 if you have any questions.

Sincerely,



Matthew J. Hook, P.E.  
Program Manager  
Dam Safety Program  
Division of Water Resources

MJH:mbb

Enclosures

P.S. I apologize for the delay in sending this report. While many factors were involved, we recognize that this is not an acceptable timeframe to provide inspection reports to dam owners. Steps are being taken to correct this issue.

# DAM SAFETY INSPECTION REPORT



## WOODLAND LAKE DAM

FILE NUMBER: 0610-009

INSPECTED: NOVEMBER 10, 2020

COLUMBIANA COUNTY

CLASS II



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## **Dam Safety Legal Obligations and Responsibilities in Ohio**

In accordance with Ohio Revised Code (ORC) Section 1521.062, the owners of dams must monitor, maintain, and operate their dams safely. Negligence of owners in fulfilling these responsibilities can lead to the development of extremely hazardous conditions to downstream residents and properties. In the event of a dam failure, dam owners can be subject to liability claims and potential criminal charges.

The Chief of the Division of Water Resources has the responsibility to ensure that human life, health, and property are protected from the failure of dams. Conducting periodic safety inspections and working with dam owners to maintain and improve the overall condition of Ohio dams are vital aspects of achieving this purpose.

Representatives of the Chief conducted this inspection to evaluate the condition of the dam and its appurtenances under authority of Ohio Revised Code Section 1521.062. This inspection does not take the place of the owner's responsibility for performing dam inspections, nor does it provide any guarantee of the safety of the dam.

In accordance with Ohio Administrative Code (OAC) Rule 1501:21-21-03, the owners of dams must implement all remedial measures listed in the enclosed report.

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## REQUIRED REMEDIAL MEASURES

The requirements listed below are based on observations made during inspection, calculations performed, and requirements of the Ohio Administrative Code (OAC). A checklist noting all observations made during the inspection is included as an appendix of this report. References to right and left in this report are oriented as if you were standing on the dam crest, looking downstream.

### ENGINEER REPAIRS AND INVESTIGATIONS

The owner must retain the services of a registered professional engineer to address the following items. Plans, specifications, investigative reports, and other supporting documentation, as necessary, must be submitted to the Division of Water Resources for review and approval prior to construction. **These items have been noted previously and the appropriate time period for completion has already been exceeded. The owner must complete these items immediately.** A record of all repairs should be included in the operation, maintenance, and inspection manual. Please refer to the fact sheets included in the Dam Safety Fact Sheet Booklet for additional information.

1. The dam's discharge/storage capacity must be sufficient to safely pass the required design flood without overtopping the embankment. Perform a hydrologic and hydraulic study to determine the adequacy of the dam's discharge/storage capacity to safely pass the required design flood. Prepare plans and specifications as necessary to increase the discharge/storage capacity to pass the required design flood. In accordance with OAC Rule 1501:21-13-02, the minimum design flood for Class II dams is 50% of the Probable Maximum Flood or the critical flood. See the Flood Capacity section for additional information.
2. Every dam shall have a spillway system which will safely operate during the design flood without endangering the safety of the dam in accordance with OAC Rule 1501:21-13-03. The principal spillway system must be replaced. Prepare plans and specifications for replacement. The condition of the principal spillway system must be monitored quarterly until repairs can be made. This item should be completed in coordination with Item 1 above. See the "Spillway Conduit System Problems" and "Problems with Metal Materials" fact sheets for additional information.
3. The pipe penetration that may be the original principal spillway must be investigated to ensure proper abandonment. If necessary, prepare plans and specifications for the proper abandonment of the original principal spillway. Regardless of the results of the investigation, the condition of the original principal spillway must be monitored quarterly. Also see Discussion Item 2.

### OWNER REPAIRS AND MONITORING

The dam owner must address the items below as part of the required dam maintenance. The owner may perform the work or hire a contractor. The owner must implement all owner repairs and monitoring items within a timely manner. Repair activities should be documented in the Operation, Maintenance, and Inspection Manual (OMI). Please refer to the fact sheets included in the Dam Safety Fact Sheet Booklet for additional information.

The monitoring items in this section must also be incorporated in the OMI. Information in the OMI must include inspection frequency, method of assessing the condition, and documentation of observations. See the Owner Dam Safety Program section of this report for additional information regarding an OMI.

### Owner Repairs

1. Remove the trees and brush from the entire embankment, emergency spillway channel, and the principal spillway inlet and outlet. Repair the shoreline as needed. Seed all disturbed areas to establish a proper grass cover. Install rock riprap along the shoreline. See Discussion Item 1 and the "Trees and Brush" and "Upstream Slope Protection" fact sheets for additional information.
2. Remove the cattails from the upstream slope by the emergency spillway inlet and establish a proper vegetal cover. See the "Upstream Slope Protection" fact sheet for additional information.
3. Establish a proper vegetal cover on the wave berm. See the "Upstream Slope Protection" fact sheet for additional information.
4. Replace the trashrack at the inlet of the principal spillway. The current trashrack is inadequate. See the "Design and Maintenance of Trashracks" fact sheet for additional information.

### Monitoring Items

5. After the trees, brush, and improper vegetation have been removed, monitor the upstream slope quarterly for erosion. If a problem develops, erosion protection may need to be installed. See the "Upstream Slope Protection" fact sheet for guidance in monitoring the condition of the embankment and for additional information.
6. Monitor the minor undulations along the crest quarterly for additional settlement or signs of embankment instability. See the "Embankment Instabilities" fact sheet for guidance in monitoring the stability of the embankment and for additional information. Please note that repairs may be needed if this problem worsens.
7. Monitor the undermining of the principal spillway outlet quarterly for further undermining. See the "Spillway Conduit System Problems" and "Problems with Metal Materials" fact sheet for guidance in monitoring the spillway system and for additional information. Please note that repairs may be needed if this problem worsens.

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*Resolving all Engineering Repair and Investigation items as well as Owner Repair items listed in the sections above makes a dam eligible to receive a 15% discount off the annual fee for the dam. The Engineering items must be resolved as directed in this report. The Owner Repair items may be resolved by submitting a description of the repairs and photographs. There are no partial discounts available.*

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## OWNER DAM SAFETY PROGRAM

Assuring the safety of dams is a cooperative effort between owners, consultants and the Division of Water Resources - Dam Safety Program, with the most important role being that of the owner. The owners see the dam regularly and through their surveillance and monitoring, can detect changing and/or deteriorating conditions.

The scope of a particular owner's dam safety program should be commensurate with the size, type, and complexity of the owner's dam(s). There is no "one size fits all" dam safety program. At a minimum, the owner's dam safety program must include:

- A person (owner or owner's designated representative) responsible for dam safety (Dam Safety Officer) with the authority to maintain dam safety (clear designation of responsibility, oversight, and authority).
- Access to sufficient technical resources and expertise.
- A proactive and informed owner inspection and engineering evaluation program.
- Adequate on-site presence and/or remote monitoring capability.
- An approved Operation, Maintenance, and Inspection Manual that is kept up-to-date, requirements and recommendations followed, and proper records kept.
- An approved Emergency Action Plan that is kept up-to-date and is well coordinated with the local emergency management agencies.

### OPERATION, MAINTENANCE, AND INSPECTION MANUAL (OMI)

A dam, like any other infrastructure, will change and deteriorate over time. Appurtenances such as gates and valves must be routinely exercised to ensure their operability. Inspection and monitoring of the dam identifies changing conditions and problems as they develop, and maintenance prevents minor problems from developing into major ones. Dam owners must have these procedures documented in an OMI.

1. Woodland Lake Dam does not have an OMI on file. Prepare an OMI and submit for approval. Guidelines for the preparation of this document can be found online at: <http://water.ohiodnr.gov/safety/dam-safety#ADD>.

### EMERGENCY ACTION PLAN (EAP)

Despite efforts to provide sufficient structural integrity and to perform inspection and maintenance, dams can develop problems that can lead to failure. Early detection and appropriate response are crucial for maintaining the safety of the dam and downstream people and property. The ORC requires the owner to fully and promptly notify the Division of Water Resources of any condition which threatens the safety of the structure. A rapidly changing condition may be an indication of a potentially dangerous problem. The Division of Water Resources - Dam Safety Program can be contacted at 614/265-6731 during business hours or at 614/799-9538 after business hours. Dam owners must have emergency preparedness procedures documented in an EAP. All contact names and phone numbers in the EAP must be verified on an annual basis. Any revisions to the EAP must be submitted to the Division of Water Resources and the local county Emergency Management Agency (EMA).

1. Woodland Lake Dam does not have an approved Emergency Action Plan (EAP). Prepare an EAP and submit for approval. Guidelines for the preparation of this document can be found online at: <http://water.ohiodnr.gov/safety/dam-safety#ADD>. The fillable EAP located on the above website is appropriate for Woodland Lake Dam.



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Having an approved OMI and EAP on file with Division of Water Resources makes a dam eligible to receive a 10% discount off the annual fee charged to the dam.


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## DISCUSSION ITEMS

1. The dense growth of cattails along the shoreline prohibits a good view of the slope for inspection purposes, and may encourage rodents to inhabit the embankment. When rodents have burrowed into the upstream slope, these burrows often collapse, and wave action can cause erosion of the dam more rapidly. The upstream slope begins to develop instabilities which are evident by sloughing and sliding of the fill material. The burrows also shorten seepage paths through the embankment.
2. The deterioration of an old or unused pipe can lead to structural collapse or seepage along the pipe. As a result, piping can occur. Piping is when soil particles are carried out of the dam with the seepage, leaving voids in the embankment. Piping will lead to failure of the dam. Unused or old piping should be removed or properly abandoned in place. Abandoning in place requires the entire pipe to be filled with concrete or grout. Both alternatives must be completed under the supervision of a registered professional engineer.


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Representatives of the Chief of the Division of Water Resources conducted this inspection to evaluate the condition of the dam and its appurtenances. The owner(s) of the dam must implement all remedial measures listed in the report.

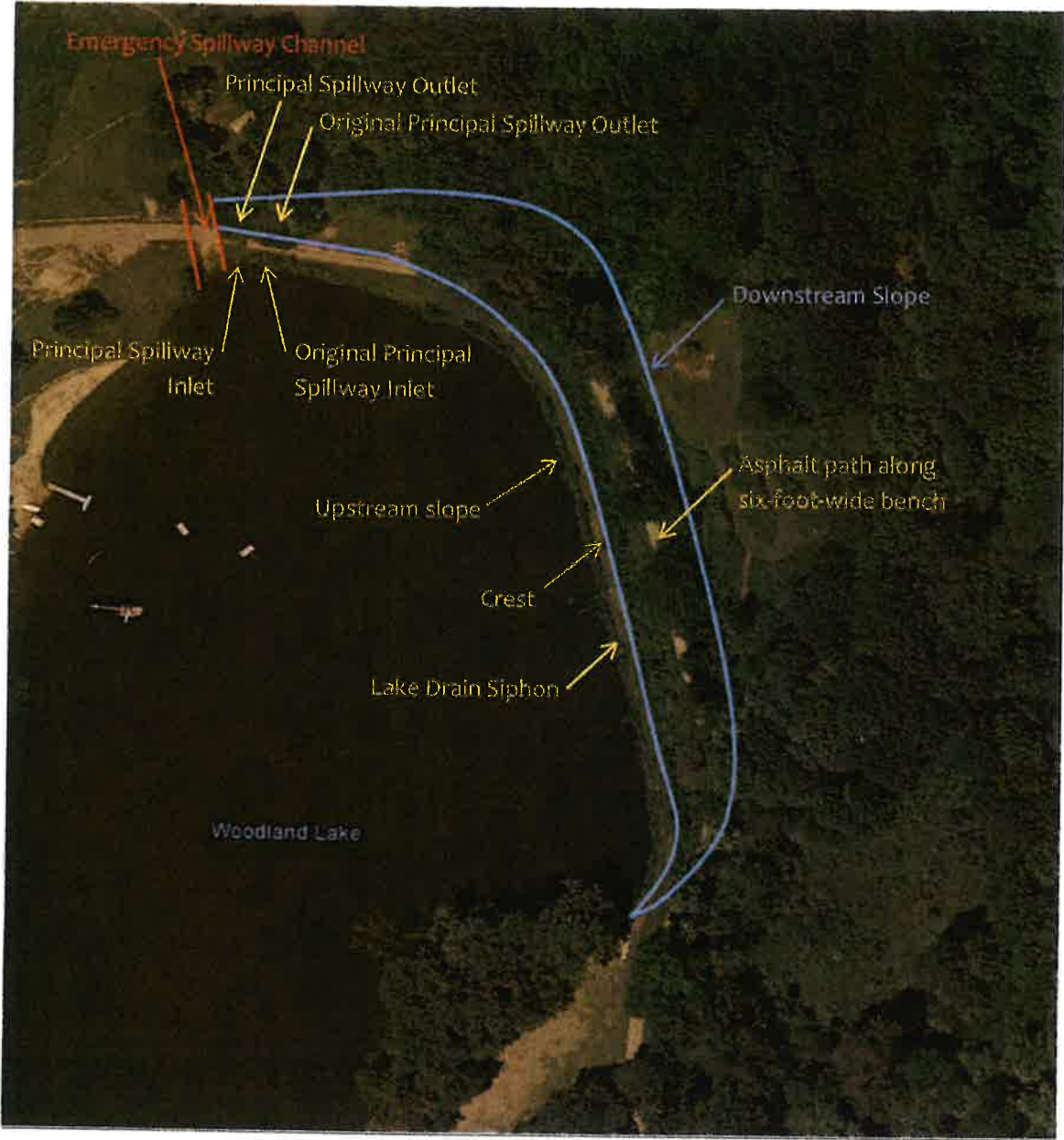
  
\_\_\_\_\_  
May 24, 2021  
Date  
Michael Becker, E.I.  
Construction Specialist  
Dam Safety Program  
Division of Water Resources

  
\_\_\_\_\_  
May 19, 2021  
Date  
Keith Banachowski, P.E.  
Project Manager  
Dam Safety Program  
Division of Water Resources

This inspection was performed pursuant to the authority granted to the Chief of the Division of Water Resources in ORC Section 1521.062.

  
\_\_\_\_\_  
10/20/2021  
Date  
Matthew J. Hook, P.E.  
Program Manager  
On behalf of Dena C. Barnhouse, P.E., Chief  
Division of Water Resources

# SITE MAP



## PHOTOGRAPHS



1. A view of the upstream slope from the left abutment. Note the trees, brush, tall vegetation, and cattails.



2. A view of the crest, upstream slope, and asphalt road leading down the downstream slope. The 10-foot-wide crest is indicated by the yellow arrow. This view is from the left abutment.



3. A view of the crest looking right.





4. A view of the upstream slope from the right abutment. Note the trees, brush, and vegetation.



5. A view of the crest (yellow arrow) and downstream slope (blue arrow) from the right abutment.



6. A view of the downstream slope looking left. Note that the dense trees and brush prevented a thorough investigation of the slope.



7. Another view of the downstream slope. Note the tall trees, new lake drain outlet pipe (red), and old lake drain outlet pipe (orange).



8. Principal spillway inlet pipe. Note the tall vegetation surrounding the inlet. The trash rack appears to be chicken wire staked on either side of the inlet pipe.



9. A view of the principal spillway outlet. Note that a short N-12 collar extension has been added to the end of the aluminum CMP.





10. A view inside the aluminum CMP principal spillway outlet pipe. Note that the bottom of the pipe has completely rusted away, and the outlet is not aligned with the inlet. There also appears to be undermining for a couple feet back from the end of the corrugated plastic pipe extension.



11. A view of the emergency spillway outlet channel. Flow direction indicated by the yellow arrow. The red arrow indicates approximately where the principal spillway outlet flows.



12. A view of the emergency spillway inlet, looking downstream. The yellow arrow indicates flow direction.





13. A view of the lake drain siphon valve located midway on the crest (circled in red).



14. A close-up view of the lake drain siphon valve. Note that the siphon system consists of ductile iron pipe on the upstream side of the crest and PVC downstream of the crest. The connection is made by a Fernco flexible coupling.

# CLASSIFICATION

## Woodland Lake Dam

		Class
Height	19.0 ft	IV
Storage	109.0 ac-ft	III
Potential Downstream Hazard		II
<b>Final Class:</b>		<b>II</b>

The classification of a dam is based on three factors:

- the dam's height,
- storage capacity, and
- potential downstream hazard.

The height of the dam is the vertical distance from the top of dam (crest) elevation to the lowest point along the downstream toe. The storage capacity is the total volume of water that the dam can impound at the top of dam (crest) elevation. The potential downstream hazard consists of roads, buildings, homes, and other structures that would be damaged

in the event of a dam failure. Potential for loss of life is also evaluated. Various dam failure scenarios must be considered, and they include failures when the dam is at normal pool level and failures during significant flood events. Each of the three factors is evaluated, and the final classification of the dam is based on the highest individual factor. Class I is the highest and Class IV is the lowest. The classification of a dam can change based on future development or other changes along the downstream channel or from changes made to the dam.

Class	Height (ft)	Storage (ac-ft)
I	> 60	> 5000
II	> 40	> 500
III	> 25	> 50
IV	≤ 25	≤ 50
Exempt	< 10 and	< 50
Exempt	< 6 or	< 15

## POTENTIAL DOWNSTREAM HAZARD

The following table shows the structures such as homes, businesses, roads, etc. that have been identified as part of the potential downstream hazard investigation. The letter in the table corresponds to the structure on the aerial photograph. The table is intended to establish or verify the appropriate classification in accordance with the OAC. It does not necessarily show all potential hazards or the full extent of inundation. Furthermore, in the event of dam failure, property owners in addition to those identified in the table should be made aware of the situation. This potential downstream hazard investigation is based on field observations, 2007 LIDAR data obtained from the Ohio Geographically Referenced Information Program, 2014 Pictometry from Microsoft Corporation, aerial imagery obtained from Ohio Statewide Imagery Program, and aerial photography from Google.

## Woodland Lake Dam Potential Downstream Hazard Classification

Hazard Class:	I	II				III	IV	←	Distance (ft)					
Potential Hazard	Probable loss of human life.	Loss of public water supply or wastewater treatment facility, release of health hazardous waste	Flooding of structure or high-value property	Damage to high-value or Class I, II, III dam or levee	Damage to major road (US or state route), disruption of only access to residential or critical facility area	Damage to railroad or public utility	Damage to rural building, not otherwise high-valued property, or Class IV dam or levee	Damage to local road (county and township)	Loss restricted mainly to the dam or agricultural, rural land	No hazard to structure noted	No hazard assessment; further investigation needed	Downstream - Dam to affected structure	Vertical - Streambed to base of affected structure	Horizontal - Stream to affected structure
Several Houses									A1		600-1200	40	335-700	
House									A		1500	14	150	
House			B								1700	8	165	
House			C								1800	8	190	
Garage						D					1930	6	58	
Garage						E					2000	5	40	
House			F								2000	7	170	
Homeworth Road							G				2400	10	0	
Garage						H					2500	8	60	
Garage						I					2500	7	25	
House			J								2600	8	70	
Dam								K			-	-	-	

### Downstream Map



See next page for enlargement of area.



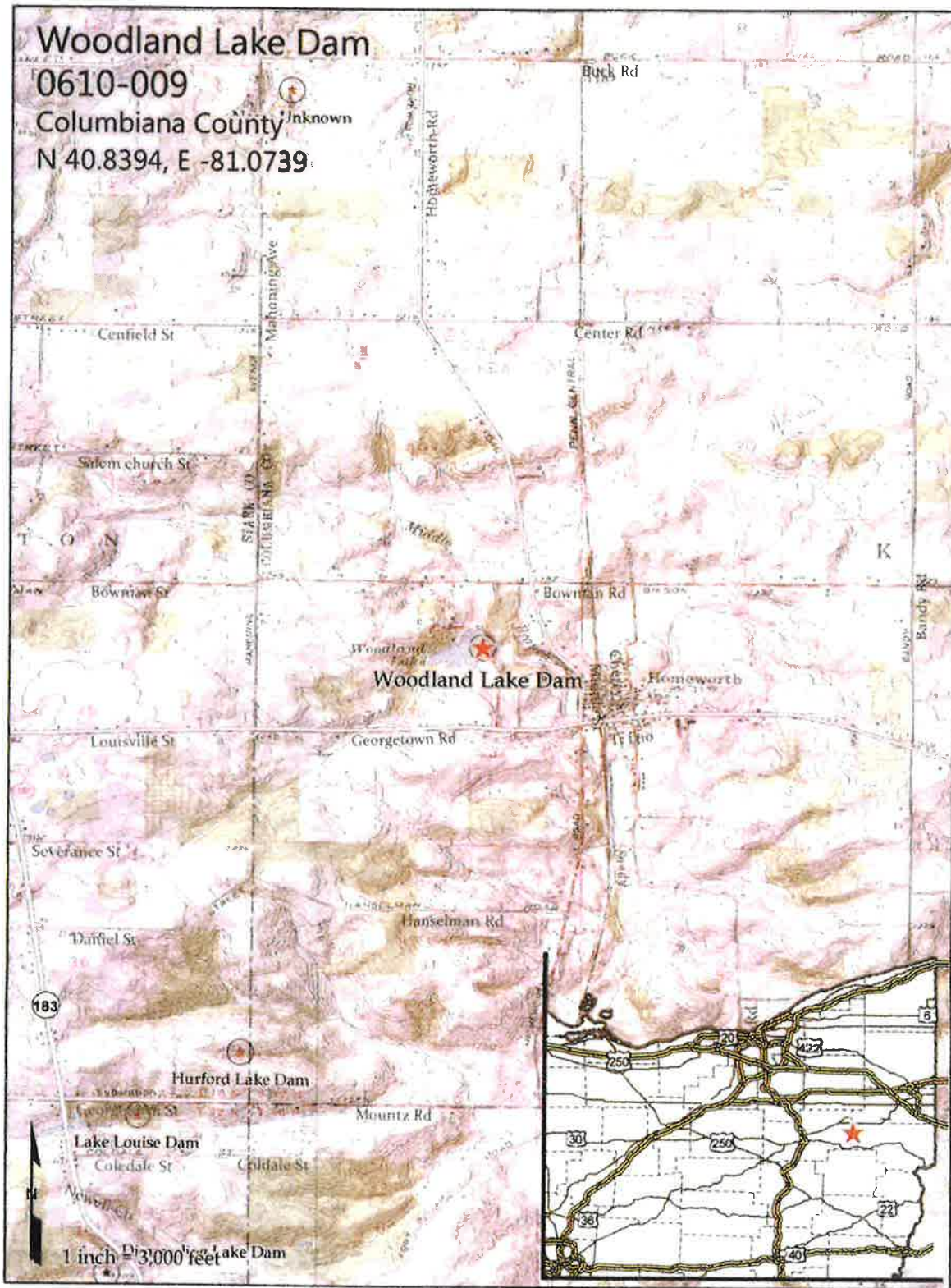




**APPENDIX - LOCATION MAP, INVENTORY, INSPECTION  
CHECKLIST, OTHER AGENCIES**



# LOCATION MAP



## Dam Inventory Sheet

**Name:** WOODLAND LAKE DAM **File No:** 0610-009  
**Reservoir:** **National #:** OH00330  
**Permit No.:** N/A  
**Class (Ht-Vol):** II (IV - III)

**Owner Information**

**Owner:** John Armbruster **Owner Type:** Private  
**Address:** 11070 Timberline Court **Multi-Dams:** -  
**Parcel No.:**  
**City:** Chardon **State:** OH **Zip:** 44024  
**Contact:** John Armbruster **Phone No.:** 440/625-1228

**Location Information**

**County:** Columbiana **Latitude Deg.:** 40 **Min.:** 50 **Sec.:** 22  
**Township:** Knox **Longitude Deg.:** 81 **Min.:** 4 **Sec.:** 26  
**Stream:** Tributary To Middle Branch Sandy Creek - Offstream  
**USGS Quad.:** Homeworth **USGS Basin No.:** 05040001

**Design/Construction Information**

**Designed By:**  
**Constructed By:**  
**Completed:** 1948 **Plan Available:** At:  
**Failure/Incident/Breach:** I-OT FALL OF 2003

**Structure Information**

**Purpose:** Recreation, Private  
**Type of Impound.:** Dam And Spillway  
**Type of Structure:** Earthfill  
**Drainage Area (sq. miles):** 0.95 **or (acres):** 610  
**Embankment Data**  
**Length (ft):** 735 **Upstream Slope:** 2H:1V  
**Height (ft):** 19 **Downstream Slope:** 1.5H:1V  
**Top Width (ft):** 10 **Volume of Fill (cub. yds.):**

**Spillway Outlet Works Data**  
**Lake Drain:** 6-INCH-DIAMETER DIP  
**Principal:** 24-INCH-DIAMETER ALUMINUM CMP  
**Emergency:** 18-FT-WIDE OPEN CHANNEL WITH 4H:1V SIDE SLOPE  
**Maximum Spillway Discharge (cfs):** 795 **Design Flood:** 0.50 **Flood Capacity:** 0.13

**Dam Reservoir Data**

	Elevation (ft-MSL)*	Area (acres)	Storage (acre-feet)
<b>Top of Dam:</b>	1174.7	11	109
<b>Emergency Spillway:</b>	1172.2	10	75
<b>Principal Spillway:</b>	1171	9.5	51
<b>Streambed:</b>	1155.7		

\*Elevations are not necessarily related to a USGS benchmark

**Inspection Information**

**Inspection:** 11/10/2020 MBB **Phase I:**  
**History:** 10/27/2015 NAS **Other Visits:** 6/24/86 INV, 4/17/80 INV  
6/15/2010 DCB  
7/21/1998 DMR  
**Inspection Year:** C

**Operation Information/Remarks**

STREAM BYPASSES LAKE DUE TO BERM. EFFECTIVE DRAINAGE AREA WITH BERM INTACT IS 60 ACRES (.09 SQ MI), UNTIL BERM IS OVERTOPPED.

**Emergency Action Plan:** Not Approved **Format:** No Plan  
**OMI:** Not Approved  
**Last Entry:** 11/24/2020

# Dam Safety Inspection Checklist

Name of Dam: Woodland Lake Dam Columbiana County  
 Date of Inspection: 11/10/2020 Required Action  
 File Number: 0610-009 None Mon. Maint. Eng.   
 Class: II Design Flood: 0.50 Flood Capacity: 0.13

**Interview with Owner (at the site):**

Owner/Representative present: (Yes, No) Name(s): Interviews completed over the phone  
 Owner's Name(s): John Armbruster  
 Address: 11070 Timberline Court,  
 City: Chardon State: OH Zip (+4): 44024  
 Contact Person: John Armbruster Telephone: 440/625-1228  
 Email Address:  
 Purpose of dam: Recreation, Private

**Owner Dam Safety Program**

Emergency Action Plan Not Approved No Plan None Mon. Maint. Eng.  
 EAP (document): Completed, not submitted Up-to-date? (yes, no)   
 Downstream development: No new development

**Operation, Maintenance, and Inspection**

OMI (document): Compiled, not submitted No None Mon. Maint. Eng.  
 All drains operable? (yes) no Up-to-date? (yes, no)

Normal rate of drawdown: ~ 2 ft / week Accessibility for operation: value on crest  
Maintenance  
 Frequency of mowing: crest is mowed every other week  
 Other maintenance: Trees on downstream slope were removed ~ 2010. Since then some saplings have re-grown from old stumps. Owner has begun process of drilling holes in stumps and adding RoundUp to kill them.  
Inspection  
 Frequency and thoroughness of day-to-day & routine inspections: During mowing

Problems found during inspections: embankment new tree growth on downstream

**Field Information**

Pool Elevation (during inspection): ~ 2" above normal pool Time: 1:30 (a.m. p.m.)  
 Site Conditions (temp., weather, ground moisture): 75° F Sunny, dry  
 Inspection Party: Mike Becker + Keith Banachowski

Confirm the Following:  Dam Height (ft): 19  NP Area (ac): 9.5

**Reference Information**

Address of dam location is 22716 Georgetown Road, Homeworth, OH 44634.  
 Field investigation in 1998 revealed that a berm around a portion of the lake that diverts flow until the berm is overtopped. The 1998 HEC-1 accounts for this diversion. It appears that the 1998 calculations should be reevaluated in regard to the emergency spillway capacity. However, it appears that regardless of reevaluating the calculations, the dam would still not have the ability to pass 50% of the PMF. Therefore, the calculations were not revised during the 2010 inspection.

Stream Bypasses Lake Due To Berm. Effective Drainage Area With Berm Intact Is 60 Acres (.09 Sq Mi), Until Berm Is Overtopped.

Impound. Type: Dam And Spillway  
 Structure Type: Earthfill  
 Township: Knox  
 Stream: Tributary To Middle Branch Sandy Creek - Offstre  
 Designed By:  
 Constr. By:  
 Year Compl.: 1948 Plans Avail.? At:  
 Fail./Incid.: 1-ot Fall Of 2003

	Elev.	Area (ac)	Stor. (ac-ft)	(in.)
TOD:	1174.7	11	109	1.1
Em. S/w:	1172.2	10	75	0.5
Prin. S/w:	1171	9.5	51	
Strmbd:	1155.7			

Basin (ac): 610



**Required Action**

**Upstream Slope**

Gradient: 2H:1V

Typical Problems: shoreline erosion, trees & brush, surface erosion, ruts, rodent burrows, earth slides, cracks

- Tall, dense trees and brush. Too dense to thoroughly inspect
- Erosion is occurring along the right side of the upstream slope
- Cattails along the left side by the abutment

None	Monitor	Repair	Engineer
		X	X
	X		
		X	

**Crest**

Width (ft): 10

Length (ft): 735

Total Freeboard (ft): 3.70

Typical Problems: low areas, trees & brush, surface erosion, ruts, cracks

- Good grass cover
- Mostly level, small undulations

None	Mon.	Rep.	Eng.
X			
		X	

**Downstream Slope**

Gradient: 1.5H:1V

Typical Problems: trees & brush, surface erosion, ruts, rodent burrows, earth slides, cracks, seepage

- There is a six-foot wide bench on the downstream slope. Along this bench is an asphalt walking/biking path. There is also a small ductile iron culvert under this path at the low point.
- Dense trees and brush prevented a thorough inspection

None	Mon.	Rep.	Eng.
X			
		X	

**Principal Spillway**

24-Inch-diameter Aluminum Cmp

Typical Problems: Inlet obstructed, unsatisfactory trashrack/anti-vortex plate, material deterioration, misalignment, open joints, outlet erosion, outlet overgrown, undermining

- Tall vegetation & debris around the obstructed principal spillway inlet
- Unsatisfactory trash rack at inlet (chicken wire)
- CMP pipe is completely rusted through
- A shut two-foot N-12 collar extension has been added to the outlet
- Trees and brush surrounding outlet
- There is undermining at the outlet
- Could not locate outlet of old principal spillway mentioned in previous report. If not properly abandoned, it must be.

None	Mon.	Rep.	Eng.
		X	
		X	
			X
X			
	X	X	
			X

Sufficient measurements to perform hydraulics (dimensions, riser depth, outlet elevation)

Required Action

18-ft-wide Open Channel With 4h:1v Side Slope  
 Freeboard (to normal pool, feet) 1.20

Typical Problems: Flowpath obstructed, material deterioration, erosion, misalignment, overgrown, undermining

- Tall, dense trees & brush throughout the channel, cutback by the inlet

None	Monitor	Repair	Engineer
		X	

Sufficient measurements to perform hydraulics (dimensions, breadth, side slopes)

**Lake Drain**  6-inch-diameter Dip

Typical Problems: Poor operating access, Inoperable, deteriorated/missing components, outlet erosion

- Valve on crest  
- Ductile iron pipe upstream of crest, PVC downstream of crest valve. The connection is made by a Fernco flexible coupling

None	Mon.	Rep.	Eng.
X			
X			

**Other**

None	Mon.	Rep.	Eng.

All Field Data Gathered (Inspector's initials): MJD

Site Sketch

Investigate Downstream Hazard

## Agencies Associated with Dams and Lakes

The Division of Soil & Water Resources has the responsibility to ensure that human life, health, and property are protected from dam failures. The division provides fact sheets and dam safety information for dam owners on the division's web site: [www.dnr.state.oh/water](http://www.dnr.state.oh/water). Other governmental agencies are involved with the lakes and streams associated with dams, but have other responsibilities. Listed below are several relevant agencies that dam owners may be interested in contacting.

### **County Emergency Management Agency**



County Emergency Management Agencies (EMAs) serve the public in disaster preparedness, public safety, and emergency management at the county level. County EMAs are responsible for coordinating relief efforts related to manmade and natural disasters. In the case of a dam emergency, the County EMA is one of the dam owner's first contacts. Telephone: 330 424-9725

State Web Site: <http://ema.ohio.gov/index.aspx>



### **Soil & Water Conservation District**

County soil and water conservation districts (SWCDs) serve communities by providing assistance to urban and agricultural land users. SWCDs specialize in soil erosion prevention and water management. Some of services offered by county SWCD offices include survey and design of grassed waterways, erosion control structures, surface and subsurface drainage, farm ponds, and livestock waste management facilities. SWCDs also sponsor a number of information and education programs. In addition to these services, SWCDs may utilize assistance from the USDA Natural Resources Conservation Service (NRCS) for some technical matters. Telephone: 330-332-8732

### **Natural Resources Conservation Service**



Since 1935, the Natural Resources Conservation Service (originally called the Soil Conservation Service) has provided leadership in a partnership effort to help America's private landowners and managers conserve their soil, water, and other natural resources. NRCS employees provide technical assistance based on sound science and suited to a customer's specific needs. NRCS provides financial assistance for many conservation activities. Web Site: <http://www.nrcs.usda.gov/>

### **Division of Wildlife**



The Division of Wildlife within the Ohio Department of Natural Resources manages fish and wildlife of the state. The division offers assistance in stream improvement and pollution investigations and provides fishery information and publications on pond stocking. Information regarding pest and rodent control can be obtained by visiting the division website or by contacting the regional office. The Division of Wildlife should be contacted before starting any construction activity where loss of aquatic life is anticipated. Telephone: 330-644-2293 - District Office 3

<http://ohiodnr.com/Home/ContactUs/tabid/18270/Default.aspx> - Web Site

### **Ohio Environmental Protection Agency**



The Ohio Environmental Protection Agency (EPA) establishes environmental guidance and enforcement standards for the state. In particular, the Division of Surface Water provides assistance for matters pertaining to rivers, lakes, and streams in Ohio. The Division of Surface Water can provide information and assistance in developing best management practices for the control of point and non-point pollution sources and spills. Suspected pollution spills can be reported directly by using the Ohio EPA Spill Hotline at 1-800-282-9378. District Office Northeast: 330-963-1200

State Web Site: <http://www.epa.state.oh.us/>

### **OSU Extension**



The Ohio State University (OSU) Extension utilizes knowledge and research developed by the Ohio Agricultural Research and Development Center, Ohio State, and other land-grant universities to assist communities, businesses, and individuals. In addition to a wide variety of community leadership and agricultural services for all ages, county OSU Extension offices offer information and assistance in agricultural water resource conservation and management, farm pond management, and safety, Ohio hydrologic cycles and non-point source pollution management. Information regarding dry hydrant fire protection and legal liabilities associated with farm ponds in Ohio can be found on the extension website. Telephone: 330-263-3831 - Extension Region: North East

<http://extension.osu.edu/locate-an-office> - Web Site