



Report of:

2023 Lake Lemon Dam Inspection

Unionville, Indiana

Prepared for:

Lake Lemon Conservancy District

7599 North Tunnel Road

Unionville, Indiana 47468

DLZ Indiana, Inc.

138 N. Delaware Street

Indianapolis, IN 46204

Phone: (317) 633-4120

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DLZ Job No. 2363-5057-90

May 2023

Prepared by:





INNOVATIVE IDEAS
EXCEPTIONAL DESIGN
UNMATCHED CLIENT SERVICE

REPORT OF: 2023 LAKE LEMON DAM INSPECTION

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May 31, 2023

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1.0 INTRODUCTION

The Lake Lemon Conservancy District requested DLZ Indiana, Inc. (DLZ) perform a field inspection of the Lake Lemon Dam. The Lake Lemon Dam is located near Unionville, Indiana in Monroe County. On April 27, 2023, the inspection of the dam embankments and spillways were performed by DLZ staff.

2.0 PROJECT INFORMATION

2.1 General

The Lake Lemon reservoir was constructed in the 1950's and its primary function at that time was to provide the City of Bloomington its primary source of drinking water. The reservoir is used today for recreation and as a secondary source of drinking water supply for the City of Bloomington. The normal pool area is approximately 1,700 acres and is located within portions of Monroe and Brown counties. The reservoir's watershed covers approximately 71 square miles.

The dam's earthen embankment is roughly 50 feet high with a crest length of approximately 660 feet. The crest width is approximately 13 feet, and the upstream and downstream slopes are inclined at approximately 1:Vertical to 3.5:Horizontal. All references to locations on the dam and spillways assume the reference point is from the reservoir and facing the upstream dam face. The principal spillway is a 329-foot long, concrete ogee-type overflow structure. The principal spillway is in a valley northeast of the earthen embankment. The auxiliary spillway consists of a 42-inch diameter reinforced concrete pipe near the left abutment from its inlet to the outlet via a gatewell. Flow through the pipe is controlled by a slide-gate located within the fenced in gatewell. The pipe discharges into a stilling basin near the downstream toe of the dam. The dam embankment and spillway location map are presented in **Appendix I**.

Photographs taken during the 2023 inspection and a Photograph Index Map can be found within **Appendix II**. This report contains all the observations and recommendations resulting from the 2023 inspection. The previous inspection report from 2021 was also reviewed as part of the inspection. The completed IDNR Dam Inspection Report for the 2023 inspection is presented in **Appendix III**.

2.2 Recent Maintenance Activities

In the 2021 Inspection Report, recommendations were made for additional monitoring and maintenance. It is understood that riprap has been added to the bank of the eastern abutment of the principal spillway in order to prevent erosion. Additionally, riprap has been placed downstream of the sluiceway to reduce scour.

2.3 Security

The access to the dam embankment is along a private drive with a locked gate. The lake manager has access to this lock, as does the City of Bloomington Utilities. While the embankment, principal spillway, and south end of the auxiliary spillway have no public access, there is public access to the north end of the auxiliary spillway structure at Spillway Road.

3.0 FIELD INSPECTION

Weather conditions during the inspection were partly cloudy. The high temperature of the day was 65.8°F. The inspection was completed on April 27 with the previous rainfall for the Bloomington area showing 0.64 inches on April 21, 2023.

3.1 Embankment

There were no serious problem areas in the physical condition of the embankment found by DLZ. The slopes were relatively uniform. Grass and vegetation on the embankment slopes and crest had been mowed. The lake supervisor stated the embankment is typically mowed two times a year.

There were no signs of animal burrows present during the inspection. Previous burrows were filled with well compacted material. The embankment should continue to be regularly monitored for animal burrows because they can create seepage pathways if not filled.

3.2 Ogee Primary Spillway

The principal spillway did not change significantly since the last inspection. The previous inspection noted minor displacements of $\frac{1}{2}$ to $\frac{3}{4}$ inches at joints located at the spillway. There appeared to be no significant changes in the joint displacements since the 2021 inspection.

Erosion at the downstream toe of the spillway could not be verified at the time of inspection due to the amount of water flowing over the spillway. The addition of riprap along the outside bank of the eastern abutment has prevented additional erosion since the previous inspection report. No new requirements are needed on this bank. There is erosion present at the western downstream slopewall of the principal spillway. Gabion baskets along the slopewall and monitoring of the erosion are recommended.

3.3 Auxiliary Spillway

The visible portions of the auxiliary spillway appeared satisfactory and the stilling basin conditions appeared to remain unchanged from previous inspections. Previously scoured areas downstream of the sluiceway are backfilled with properly-sized riprap as was recommended in the previous inspection report. There is a vertical crack and exposed earth under the downstream concrete wingwall. Backfill and gabion baskets, as well as monitoring of the erosion are recommended.

4.0 CONCLUSIONS

Based on our observations, it appears the dam facility condition has not changed significantly since the 2021 inspection. The overall surficial condition of the project was determined to be "Satisfactory."

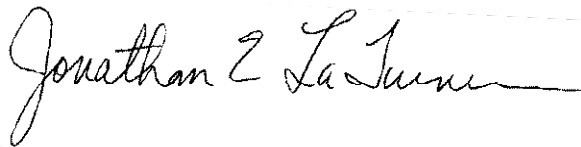
5.0 RECOMMENDATIONS

1. Remove the woody vegetation within the following locations:
 - i. Brush and young trees along the downstream toe of dam.
 - ii. Vines along the fenced area at the upstream toe of the dam.
 - iii. Young trees along the western retaining wall of the principal spillway.All undesirable vegetation growth within these areas should be removed by cutting or spraying as part of an annual maintenance program.
2. Dam should be monitored on a regular basis for the presence of any animal burrows on the embankment.
3. Downstream bank of dam should be monitored for seepage and depressions. The bank should be monitored for any loss of vegetation and/or bare flow paths that do not revegetate.
4. Implement erosion control measures at the following locations:
 - i. The downstream concrete wingwall of the Auxiliary Spillway (Western Sluiceway).
 - ii. The downstream western sloped wall of the Principal Spillway (East).Gabion baskets are recommended erosion control measures at these sites. The downstream concrete wingwall at the western sluiceway will need additional backfill for the areas of exposed earth under the wingwall. Monitoring of the Auxiliary Spillway concrete wingwall (photo 9) and the Principal Spillway's western downstream sloped wall (photo 16) and concrete panel displacement (photo 22) is recommended.

Sincerely,

DLZ INDIANA, LLC

Sarah Jones, E.I.
Civil Engineer I

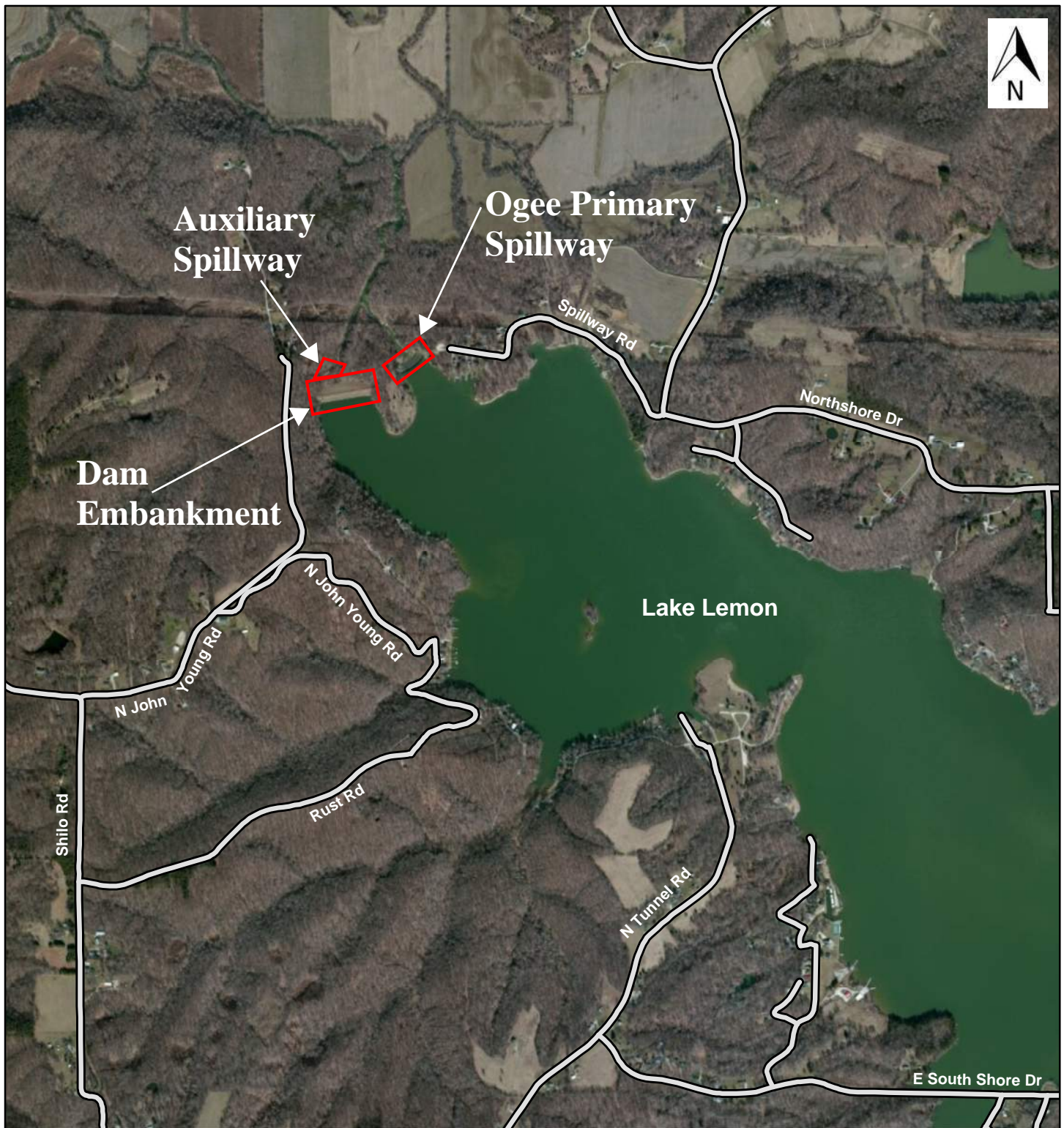


Jonathan E. LaTurner, P.E.
Division Manager

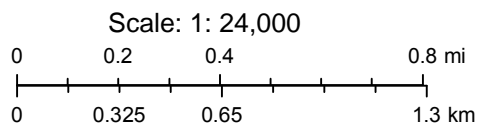
APPENDIX I

DAM EMBANKMENT AND SPILLWAY LOCATION

Lake Lemon Dam Embankment and Spillway Location



Date: May 31, 2023
Inspector: Jonathan E. LaTurner, P.E.
Sarah J. Jones, E.I.



LEGEND:
— Minor Road

Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

APPENDIX II


INSPECTION PHOTOGRAPHS



Lake Lemon Photograph Location Map



KEY:

 Photo Number and Direction*

*Note: Each box corresponds to the photographs located within this appendix. The arrow indicates the direction in which the photograph was taken.

Date: April 27, 2023
Inspector: Jonathan E. LaTurner, P.E.
Sarah J. Jones, E.I.

INSPECTION PHOTOGRAPHS



Photograph No. 1

Looking southeast at upstream slope of dam



Photograph No. 2

Looking southeast at fenced area on upstream slope of dam - vines growing



**LAKE LEMON DAM
UNIONVILLE, INDIANA**

Date Photographs Taken: 4/27/2023

Inspector: JEL and SJJ

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INSPECTION PHOTOGRAPHS



Photograph No. 3

Looking east along crest of dam



Photograph No. 4

Looking west along upstream toe of dam



**LAKE LEMON DAM
UNIONVILLE, INDIANA**

Date Photographs Taken: 4/27/2023

Inspector: JEL and SJJ

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INSPECTION PHOTOGRAPHS



Photograph No. 5

Looking north towards downstream sluiceway



Photograph No. 6

Looking southwest along side/toe of dam - brush and trees to be removed



**LAKE LEMON DAM
UNIONVILLE, INDIANA**

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INSPECTION PHOTOGRAPHS



Photograph No. 7

Looking south towards crest of dam at sluiceway



Photograph No. 8

Looking southwest at downstream end of auxiliary spillway



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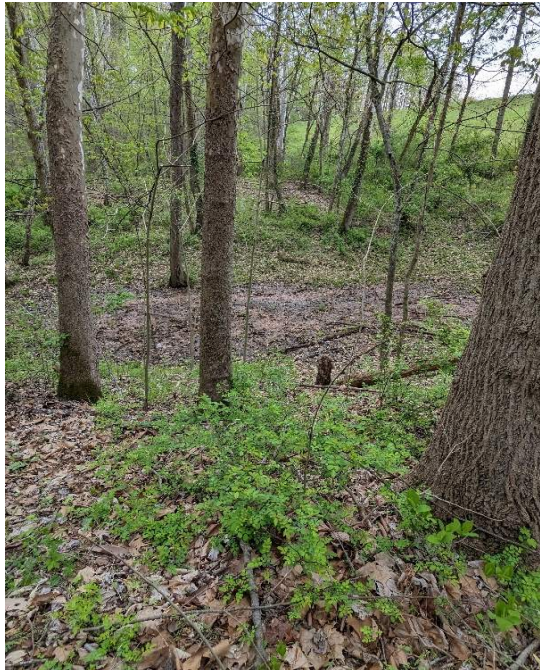
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INSPECTION PHOTOGRAPHS



Photograph No. 9

Looking west at downstream end of auxiliary spillway - concrete wingwall with vertical crack and exposed earth underneath



Photograph No. 10

Looking east towards downstream slope of dam -downstream back-up from recent rainfall event



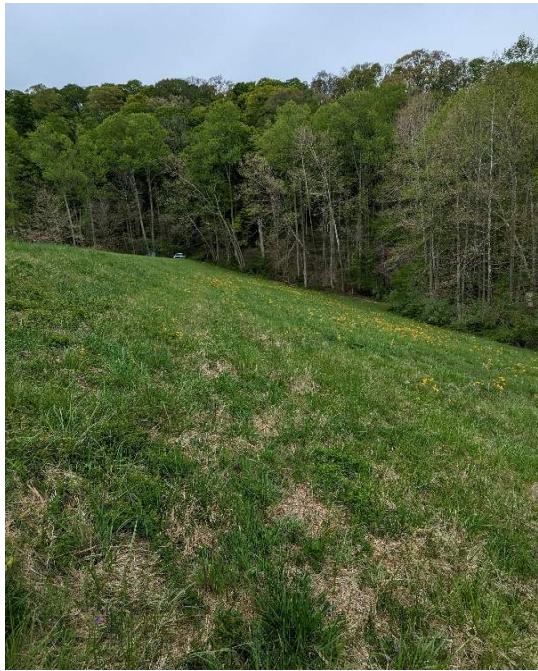
**LAKE LEMON DAM
UNIONVILLE, INDIANA**

Date Photographs Taken: 4/27/2023

Inspector: JEL and SJJ

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INSPECTION PHOTOGRAPHS



Photograph No. 11

Looking west along downstream slope of dam



Photograph No. 12

Looking north at downstream toe of dam - brush and trees to be removed



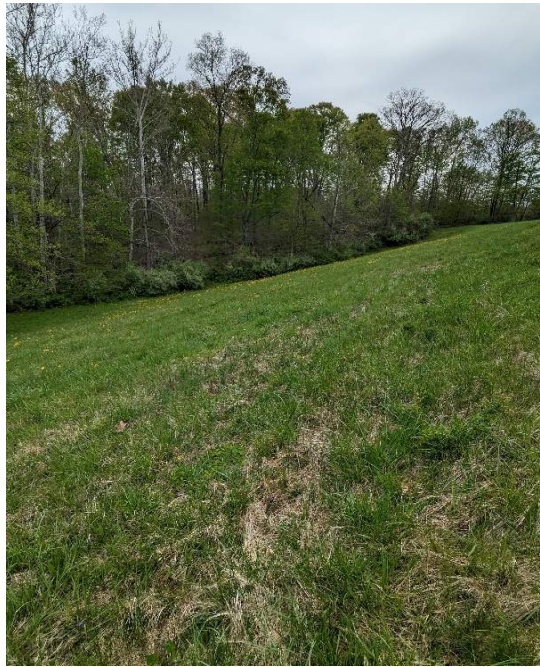
**LAKE LEMON DAM
UNIONVILLE, INDIANA**

Date Photographs Taken: 4/27/2023

Inspector: JEL and SJJ

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INSPECTION PHOTOGRAPHS



Photograph No. 13

Looking east along downstream slope of dam



Photograph No. 14

Looking northeast at ogee primary spillway western downstream sloped wall - minor brush to be removed



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INSPECTION PHOTOGRAPHS



Photograph No. 15

Looking north along ogee primary spillway western downstream slope - minor brush to remove



Photograph No. 16

Looking northwest at downstream end of ogee primary spillway slope - retaining wall needs erosion control protection



**LAKE LEMON DAM
UNIONVILLE, INDIANA**

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Inspector: JEL and SJJ

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INSPECTION PHOTOGRAPHS



Photograph No. 17

Looking east at ogee primary spillway



Photograph No. 18

Looking southeast along ogee primary spillway western upstram slope wall



**LAKE LEMON DAM
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INSPECTION PHOTOGRAPHS



Photograph No. 19

Looking southwest at ogee primary spillway



Photograph No. 20

Looking northwest along ogee primary spillway eastern downstream slope - minor brush to remove



**LAKE LEMON DAM
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Inspector: JEL and SJJ

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INSPECTION PHOTOGRAPHS



Photograph No. 21

Looking south at ogee primary spillway



Photograph No. 22

Looking southwest at ogee primary spillway eastern downstream slopewall - concrete panel displacement



**LAKE LEMON DAM
UNIONVILLE, INDIANA**

Date Photographs Taken: 4/27/2023

Inspector: JEL and SJJ

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APPENDIX III

COMPLETED IDNR DAM INSPECTION FORM

& DAM SAFETY INSPECTION CHECKLIST

SUGGESTED DAM INSPECTION REPORT (Refer to pages 5 and 6 for instructions.)

[Print Form](#)

Name of Professional Conducting Inspection Jonathan E. LaTurner, P.E.	Professional License No. (Indiana) PE910028
Business Address 138 N Delaware St., Indianapolis, IN, 46204	Phone: (day) 317 - 633 - 4120 (evening) - - -

Company Name DLZ Indiana, LLC

INSPECTION PREPARATION: Reviewed all pertinent technical documentation related to this dam and site in the State's and the Owner's files:
Yes ☒ No ☐ Comment Last inspection report was reviewed prior to inspection. IDNR's file on the project was previously reviewed, including the original construction documents. Inspection occurred April 2023

MULTIDISCIPLINARY: I am experienced in the technical disciplines or I am working with other professionals experienced in the technical disciplines to properly inspect this dam and appurtenant works. Technical disciplines, in addition to the general civil engineering, may include geotechnical, geological, hydrologic, structural, and mechanical. Yes ☒ No ☐ Comment

Dam Name Lake Lemon Dam		Quad. Hindustan	Date of Inspection 04 / 27 / 2023	
State Dam ID 58-1	Permit (if unapproved, see pg. 6) State Approved Construction Completed in 1952	County Monroe	Sec. T. R. 28 10 N 1 E	Last Inspection 03 / 08 / 2021
Owners Name City of Bloomington Utilities				Owner's Phone ()
Address/Zip Code P.O. Box 1216, Bloomington, IN, 47401				
Contact's Name Adam Casey, Manager		Contact's Phone (day) 812 - 334 - 0233 (evening) 812 - 320 - 2841		Spillway Width Top Bot. ~330 ~16
Hazard High	Drainage Area ~71 MI ²	Surface Area ~1700 AC	Height ~50 FT	Crest Length ~660 FT
			Crest Width ~13 FT	Inlet Below Crest ~16 FT
				Slope: Up 3 1/2: 1 Down 3 1/2: 1

FIELD CONDITIONS OBSERVED Water Level - Below Dam Crest ~15.8 Ft. Ground Moisture Condition: Dry <input checked="" type="checkbox"/> Wet <input type="checkbox"/> Snowcover <input type="checkbox"/> Other	DRAWDOWN STRUCTURE <input checked="" type="checkbox"/> Yes <input type="checkbox"/> None Comment 42-in. diameter RCP with gateway and stilling basin
---	--

MONITORING ☐ Yes ☒ None [☐ Gage Rod ☐ Piezometers ☐ Seepage Weirs ☐ Survey Monuments ☐ Other]

Comments

A UPSTREAM SLOPE GOOD <input checked="" type="checkbox"/> ACCEPTABLE <input type="checkbox"/> DEFICIENT <input type="checkbox"/> POOR <input type="checkbox"/>	PROBLEMS NOTED: <input type="checkbox"/> (A-1) None <input type="checkbox"/> (A-2) Riprap - Missing, Sparse, Displaced, Weathered <input type="checkbox"/> (A-3) Wave Erosion-with Scarps <input type="checkbox"/> (A-4) Cracks-with Displacement <input type="checkbox"/> (A-5) Sinkhole <input type="checkbox"/> (A-6) Appears Too Steep <input type="checkbox"/> (A-7) Depressions or Bulges <input type="checkbox"/> (A-8) Slides <input type="checkbox"/> (A-9) Animal Burrows <input checked="" type="checkbox"/> (A-10) Trees, Brush, Briars <input type="checkbox"/> (A-11) Other
	Comments:

Minor vines growing up along the fenced area.

B CREST GOOD <input checked="" type="checkbox"/> ACCEPTABLE <input type="checkbox"/> DEFICIENT <input type="checkbox"/> POOR <input type="checkbox"/>	PROBLEMS NOTED: <input checked="" type="checkbox"/> (B-1) None <input type="checkbox"/> (B-2) Ruts or Puddles <input type="checkbox"/> (B-3) Erosion <input type="checkbox"/> (B-4) Cracks with Displacement <input type="checkbox"/> (B-5) Sinkholes <input type="checkbox"/> (B-6) Not Wide Enough <input type="checkbox"/> (B-7) Low Area <input type="checkbox"/> (B-8) Misalignment <input type="checkbox"/> (B-9) Inadequate Surface Drainage <input type="checkbox"/> (B-10) Trees, Brush, Briars <input type="checkbox"/> (B-11) Other
	Comments:

Spillway Width refers to the open channel (typically the emergency or auxiliary spillway) at the control section.

Ft. FBD. refers to the vertical distance from the emergency (auxiliary) spillway control section to the lowest point of the crest of the dam.

Inlet Below Crest refers to the vertical distance from the inlet of the principal spillway to the crest of the dam.

C DOWNSTREAM SLOPE

GOOD	<input checked="" type="checkbox"/>
ACCEPTABLE	<input type="checkbox"/>
DEFICIENT	<input type="checkbox"/>
POOR	<input type="checkbox"/>

PROBLEMS NOTED: ☐ (C-1) None ☐ (C-2) Livestock Damage ☐ (C-3) Erosion or Gullies ☐ (C-4) Cracks with Displacement ☐ (C-5) Sinkholes ☐ (C-6) Appears too Steep ☐ (C-7) Depression or Bulges ☐ (C-8) Slide ☐ (C-9) Soft Areas ☒ (C-10) Trees, Brush, Briars ☐ (C-11) Animal Burrows ☐ (C-12) Other _____

Comments:

Soft soils at surface only with no seepage apparent. Woody vegetation observed at western abutment area and northwest, north, and northeast edges at toe of downstream slope.

D SEEPAGE

GOOD (NONE)	<input checked="" type="checkbox"/>
ACCEPTABLE	<input type="checkbox"/>
DEFICIENT	<input type="checkbox"/>
POOR	<input type="checkbox"/>

PROBLEMS NOTED: ☒ (D-1) None ☐ (D-2) Saturated Embankment Area ☐ (D-3) Seepage Exits on Embankment ☐ (D-4) Seepage Exits at Point Source ☐ (D-5) Seepage Area at Toe ☐ (D-6) Flow Adjacent to Outlet ☐ (D-7) Seepage Clear/Muddy **[DRAIN OUTFALLS SEEN** ☒ No ☐ Yes ☐ (D-8) Flow Clear/Muddy ☐ (D-9) Dry/Obstructed] ☐ (D-10) Other _____ Describe location of drains and indicate amount and quality of discharge.

Comments:

No apparent seepage observed.

E PRINCIPAL SPILLWAY

GOOD	<input type="checkbox"/>
ACCEPTABLE	<input checked="" type="checkbox"/>
DEFICIENT	<input type="checkbox"/>
POOR	<input type="checkbox"/>

DESCRIPTION:

PROBLEMS NOTED: ☐ (E-1) None ☐ (E-2) Deterioration ☒ (E-3) Separation ☒ (E-4) Cracking ☐ (E-5) Inlet, Outlet Deficiency ☒ (E-6) Stilling Basin Inadequacies ☐ (E-7) Trash Rack ☐ (E-8) Other _____

Comments:

The concrete ogee section and retaining walls appear unchanged since the 2021 inspection. The spillway appeared to be in satisfactory condition. Multiple areas of brush/young trees encroaching on western retaining wall. Minor concrete panel displacement on eastern retaining wall. Erosion occurring at western downstream retaining wall.

F AUXILIARY SPILLWAY

GOOD	<input type="checkbox"/>
ACCEPTABLE	<input checked="" type="checkbox"/>
DEFICIENT	<input type="checkbox"/>
POOR	<input type="checkbox"/>

DESCRIPTION:

PROBLEMS NOTED: ☐ (F-1) None ☐ (F-2) No Auxiliary Spillway Found ☐ (F-3) Erosion-with Backcutting ☐ (F-4) Crack with Displacement ☐ (F-5) Appears to be Structurally Inadequate ☐ (F-6) Appears too Small ☐ (F-7) Inadequate Freeboard ☐ (F-8) Flow Obstructed ☐ (F-9) Concrete Deteriorated/Undermined ☒ (F-10) Other See below _____

Comments:

Riprap remains on the downstream side of the stilling basin of the auxiliary spillway. A vertical crack in and exposed earth under the downstream concrete wingwall.

G MAINTENANCE AND REPAIRS

GOOD	<input checked="" type="checkbox"/>
ACCEPTABLE	<input type="checkbox"/>
DEFICIENT	<input type="checkbox"/>
POOR	<input type="checkbox"/>

PROBLEMS NOTED: ☐ (G-1) None ☐ (G-2) Access Road Needs Maintenance ☐ (G-3) Cattle Damage ☐ (G-4) Spillway Obstruction ☐ (G-5) Brush, Weeds, Tall Grass, on Upstream Slope, Crest, Downstream Slope, Toe ☐ (G-6) Trees on Upstream Slope, Crest, Downstream Slope ☐ (G-7) Rodent Activity on Upstream Slope, Crest, Downstream Slope, Toe ☐ (G-8) Deteriorated Concrete-Facing, Outlet, Spillway ☐ (G-9) Gate and/or Drawdown Need Repair ☐ (G-10) Other _____

Comments:

Refer to page 3 of 6.

H OVERALL CONDITIONS

Based on this inspection and recent file review, the overall surficial condition is determined to be: ☒ (H-1) Satisfactory ☐ (H-2) Fair ☐ (H-3) Conditionally Poor ☐ (H-4) Poor ☐ (H-5) Unsatisfactory

IMPORTANT: IF THIS RATING IS DIFFERENT THAN PREVIOUS IDNR RATING, PLEASE ATTACH EXPLANATION AND REASONS FOR CHANGE ON PAGE 4.

RECOMMENDATIONS AND ITEMS REQUIRING ACTION BY OWNER**TO IMPROVE THE SAFETY OF THE DAM****MAINTENANCE-MINOR REPAIR-MONITORING** (gabion baskets) at auxiliary spillway downstream wingwall and ogee☒ (1) Provide Additional Erosion Protection: primary spillway western downstream retaining wall☐ (2) Mow: northwest, north, and northeast edges at toe of downstream slope and along western☒ (3) Clear Trees and/or Brush From: downstream retaining☐ (4) Initiate Rodent Control Program and Properly Backfill Existing Holes: _____☐ (5) Repair: _____☐ (6) Provide Surface Drainage For: _____☒ (7) Monitor: Continue monitoring downstream slope for flow path channels, animal activities☒ (8) Other: Continue monitoring crest for tire rutting and movement of the spillway☒ (9) Other: Clear riprap from toe of ogee primary spillway at stilling basin**ENGINEERING-EMPLOY AN ENGINEER EXPERIENCED IN DESIGN AND CONSTRUCTION OF DAMS TO:**

(Plans & Specifications must be approved by State prior to construction.)

☐ (10) Prepare Plans and Specifications for the Rehabilitation of the Dam: _____☐ (11) Prepare As-Built Drawings of: _____☐ (12) Perform a Geotechnical Investigation to Evaluate the Stability of the Dam: _____☐ (13) Perform a Hydrologic Study to Determine Required Spillway Size: _____☐ (14) Prepare Plans and Specifications for an Adequate Spillway: _____☐ (15) Set up a Monitoring Program: _____☐ (16) Refer to Unapproved Status of Dam: _____☐ (17) Develop an Emergency Action Plan: _____☐ (18) Other: _____☐ (19) Other: _____

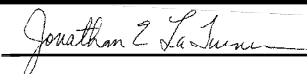
Recommended schedule for upgrades/comments (Please prioritize and note importance of each item.)

Photographs ☐ Attachments ☐ENGINEER'S INSTRUCTION Instructed owner on the safety concerns with the structure and how to monitor and inspect the dam and appurtenant works in the interim period between the regulatory two-year inspections. Yes ☒ No ☐

Comment

It is recommended the Lake Manager and Lake Staff continue visually monitoring possible seepage on a regular basis and after significant rainfall events. Contact a qualified engineering firm if any changes are noted.

Professional Engineer's Signature

Date May 31, 2023

Reviewed By _____

Owner/Owner's Representative

Date

EXPLANATION FOR CHANGE IN RATINGS (Describe all repairs, upgrades or improvements made if dam conditions and rating have improved since the last inspection. Describe deteriorating conditions if ratings have worsened.)

REASONS FOR RATING CHANGE:

PREVIOUS RECOMMENDATIONS FOR MAINTENANCE, REPAIRS, AND UPGRADES:

HAVE THEY BEEN PERFORMED ☐ YES ☐ NO (If no, please explain:)

Supporting Documentation

Photographs ☐ Attachments ☐ Calculations ☐ Drawings ☐ Other ☐

Comments:

INSTRUCTIONS FOR COMPLETING DAM VISUAL INSPECTION REPORT

1. Complete all items that are applicable; if not applicable, write in "N/A". For concrete dams, complete all applicable items and use "comments" section to cover items not included in the check boxes. Also indicate that the dam is concrete in the comments section.
2. Use page 6 to determine ratings of each dam component (items A through G) and for Overall Conditions (Item H).
3. Please write legibly and concisely.
4. Inspector must be knowledgeable with the type of dam, materials, and components being inspected. If not, qualified assistance shall be engaged.
5. The inspector shall review the dam owner's and IDNR project files prior to the inspection. Previous inspection reports shall be closely reviewed for previous problems and deficiencies.
6. If the ratings of the components (items A through G) or the Overall Conditions (item H) of the dam have changed since the last inspection, please complete page 4. If a rating has improved, dam repairs, improvements, analyses, or maintenance must have been performed and documented on page 4.
7. For a dam to have a satisfactory "Overall Conditions" rating, it must have no existing or potential dam safety deficiencies recognized. Safe performance is expected under all anticipated loading conditions, including infrequent hydrologic events (PMP for high hazard dams) and seismic events. The dam owner's project files must contain hydrologic and hydraulic analyses of the dam and its spillways to verify performance. The files must also contain slope stability analyses to verify embankment stability under full reservoir conditions and rapid-draw down conditions. The dam and all of its components must meet current IDNR and design standards. "Normal" deficiencies such as minor erosion, minor seepage, or normal concrete aging may not make a dam unsatisfactory or unacceptable. For a satisfactory "Overall Conditions" rating to be assigned, items A through G generally should all have a "good" rating; however, in some cases an "acceptable" rating may be satisfactory if the "Problems Noted" are minor, or "normal" conditions, such as minor erosion rills, small puddles on crest, or if grass needs mowed, but is in good condition.
8. An inspection report form must be submitted to IDNR along with a formal technical inspection report as described in Chapter 4.0 of Part 3 of the Indiana Dam Safety Inspection Manual.
9. Please sign and date this page in the space below to verify that you have read and understand these instructions.

Inspector's Signature: Jonathan Z. LaTurner

Date: May 31, 2023

GUIDELINES FOR DETERMINING CONDITIONS

CONDITIONS OBSERVED - APPLIES TO UPSTREAM SLOPE, CREST, DOWNSTREAM SLOPE, PRINCIPAL SPILLWAY, AUXILIARY SPILLWAY

GOOD	ACCEPTABLE	DEFICIENT	POOR
In general, this part of the structure has a good appearance, and conditions observed in this area do not appear to threaten the safety of the dam.	Although general cross-section is maintained, surfaces may be irregular, eroded, rutted, spalled, or otherwise not in new condition. Conditions in this area do not currently appear to threaten the safety of the dam.	Continued deterioration and/or unusual loading may threaten the safety of the dam.	Conditions observed in this area appear to threaten the safety of the dam. Conditions observed in this area are unacceptable.

CONDITIONS OBSERVED - APPLIES TO SEEPAGE

GOOD (NONE)	ACCEPTABLE	DEFICIENT	POOR
No evidence of uncontrolled seepage. No unexplained increase in flows from designed drains. All seepage is clear. Seepage conditions do not appear to threaten the safety of the dam.	Some seepage exists at areas other than the drain outfalls, or other designed drains. No unexplained increase in flows from designed drains. All seepage is clear. Seepage conditions observed do not currently appear to threaten the safety of the dam.	Excessive seepage exists at areas other than drain outfalls and other designed drains. Seepage needs to be evaluated. Increased flow and/or continued deterioration in seepage conditions may threaten the safety of the dam.	Excessive seepage conditions observed appear to threaten the safety of the dam and is unacceptable. Examples: 1) Designed drain or seepage flows have increased without increase in reservoir level. 2) Drain or seepage flows contain sediment. i.e., muddy water or particles in jar samples. 3) Widespread seepage, concentrated seepage or ponding appears to threaten the safety of the dam.

CONDITIONS OBSERVED - APPLIES TO MAINTENANCE AND REPAIR

GOOD	ACCEPTABLE	DEFICIENT	POOR
Dam appears to receive effective on-going maintenance and repair, and only a few minor items may need to be addressed.	Dam appears to receive maintenance, but some maintenance items need to be addressed. No major repairs are required.	Level of maintenance of the dam needs significant improvement. Major repairs may be required. Continued neglect of maintenance may threaten the safety of the dam.	Dam does not receive adequate maintenance. One or more items needing maintenance or repair has begun to threaten the safety of the dam. Level of maintenance is unacceptable.

OVERALL CONDITIONS

<p>SATISFACTORY - No existing or potential dam safety deficiencies recognized. Safe performance is expected under all anticipated loading conditions, including such events as infrequent hydrologic and/or seismic events. Project Files contain necessary hydrologic, and other engineering calculations to verify dam safety and performance.</p> <p>FAIR - No existing dam safety deficiencies are recognized for normal loading conditions. Infrequent hydrologic and/or</p>	<p>seismic events would probably result in a dam safety deficiency.</p> <p>CONDITIONALLY POOR - A potential safety deficiency is recognized for unusual loading conditions which may realistically occur during the expected life of the structure. CONDITIONALLY POOR may also be used when uncertainties exist as to critical analysis parameters which identify a potential dam safety deficiency; further investigations and studies are necessary.</p>	<p>POOR - A potential dam safety deficiency is clearly recognized for normal loading conditions. Immediate actions to resolve the deficiency are recommended; reservoir restrictions may be necessary until problem resolution.</p> <p>UNSATISFACTORY - A dam safety deficiency exists for normal conditions. Immediate remedial action is required for problem resolution.</p>
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HAZARD CLASSIFICATIONS OF DAMS (STRUCTURE)

LOW HAZARD - A structure the failure of which may damage farm buildings, agricultural land, or local roads	SIGNIFICANT HAZARD - A structure the failure of which may damage isolated homes and highways, or cause the temporary interruption of public utility services.	HIGH HAZARD -A structure the failure of which may cause the loss of life and serious damage to homes, industrial and commercial buildings, public utilities, major highways, or railroads.
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UNAPPROVED STATUS OF DAM

A dam that has been given an unapproved status (see entry for permit) means that plans, construction specifications, hydraulic analyses, and/or a geotechnical investigation on your dam, proving the safety of the structure, have not been received and approved by the Indiana Department of Natural Resources (IDNR). IDNR records indicate that no progress has been made to secure this approval. The fact that the dam is inspected under the Regulation of Dams Act (IC 14-27-7.5) in no way alters the illegal status of the structures.

If your dam is indicated to be unapproved, it is requested that your engineer contact the Indiana Department of Natural Resources,