



CREATIVITY BEYOND ENGINEERING

Inspection Report for LAUDERDALE LAKES DAM



DNR Field File No. 64.15
Walworth County, Wisconsin

Prepared by

Riley Stone, P.E. & Gary Raasch, P.E.
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Prepared for

Lauderdale Lakes Lake Management District
N7498 Country Club Drive
Elkhorn, WI 53121

July 12, 2022

INTRODUCTION

The Lauderdale Lakes Dam was inspected on June 16, 2022 by Gary Raasch, P.E. and Riley Stone, P.E., of R.A. Smith, Inc. Dean Bostrom, a board member of the Lauderdale Lakes Management District, was present during the inspection. The previous Wisconsin Department of Natural Resources (WDNR) inspection report and the WDNR file materials were reviewed prior to the inspection. The inspection followed the WDNR procedures and utilized WDNR dam inspection checklist forms.

FINDINGS

The inspection consisted of observing the both the primary dam and secondary dam as well as the vicinity upstream and downstream of the dams. The inspection findings are documented on the inspection forms and summarized as follows.

1. Dam structures are in good condition overall
2. Sparse grass cover was found along west embankment of primary dam. It is recommended to seed and fertilize the area to establish denser vegetative cover.
3. Sterlingworth Bay embankment and shoreline appear to be stabilized with natives growing around the previously placed stone.
4. No erosion problems were evident near either dam.
5. No evidence of seepage problems was observed at either dam.
6. The mill building has been removed since the last dam inspection. There is no longer a high risk of debris build up that would obstruct flow.

ATTACHMENTS

The following documents are part of this inspection report:

1. Certification for Dam Inspection
2. Inspection Form – General
3. Inspection Form – Embankments (Primary)
4. Inspection Form – Embankments (Secondary)
5. Inspection Form – Spillway-Principal-Fixed Crest
6. Inspection Form – Spillway-Principal-Gates
7. Inspection Form – Spillway-Principal, Outlet Erosion Control & Undermining
8. Inspection Photos (16)

Certification for Dam Inspection

Local Dam Name (PRINT): Lauderdale Lakes Dam

DNR Field File #: 64.15

I certify that I have completed the checklist truthfully and factually:

Certifier's Name (print): Riley Stone

Company Name: raSmith

Signature: Riley Stone

Date: 07-12-2022

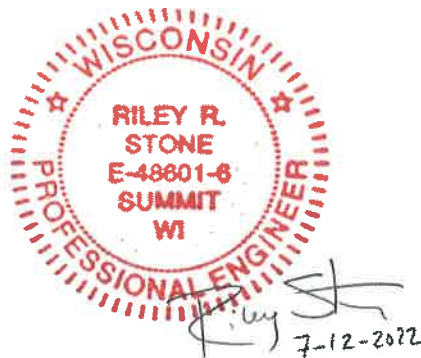
Multidisciplinary: I am experienced in the technical disciplines or I am working with other professionals experienced in the technical disciplines to properly inspect this dam and appurtenant works. Technical disciplines, in addition to general civil engineering, may include geotechnical, geological, hydrologic, structural, and mechanical:

Yes No

Engineer's Wisconsin Registration Number: 48601-6

Expiration Date: 07-31-2022

Engineer's Seal (optional):



Name of Dam: Lauderdale Lakes Dam		Date: 06/16/2022
Inspectors: Riley Stone & Gary Raasch		F.F #: 64.15
Owner's Name: Lauderdale Lakes Lake Management District		Key Seq #: 210
Street: Sterlingworth Drive		
City, State, Zip Code: Elkhorn, WI 53121		
County: Walworth		Phone: 262-317-3269
Weather and Site conditions: 79 F; Sunny		Email: riley.stone@rasmith.com

GENERAL			Action			
Item	N	P	Notes/ Observations	M	I	R
1 Monuments/Benchmarks	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
			Location: Chiseled square on west end of sill of spillway Elevation: Elevation shots were not obtained as part of this inspection Datum: N/A			
2 Pool Level	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
			Normal/Operating: Pool appeared to be at an appropriate level. Level at gauge = 4.50 Maximum: Minimum: Staff Gage			
3 Access Road	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
			Access available via Sterlingworth Road			
4 Signage/ Security						
			Portage/route: <input type="checkbox"/> <input type="checkbox"/> Dam Warning: <input type="checkbox"/> <input type="checkbox"/> Downstream Hazard: <input type="checkbox"/> <input type="checkbox"/> Fencing/Railings/Catwalks: <input checked="" type="checkbox"/> <input type="checkbox"/> Fencing is in good condition			

Additional Comments:

The dam was not surveyed as part of this inspection. All measurements listed in this report were obtained from past inspections.

Since the last inspection, the powerhouse has been removed.

N= Noted; P= Photo; M= Monitor I= Investigate; R= Repair F.F.= Field File; RT = Right; LT = Left U/S = Upstream; D/S = Downstream	Action Suggestion	1. Requires immediate action 2. Plan to do soon 3. Do when convenient
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GENERAL (Cont.)

5 Hazard Section					
A. D/S Development	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Density: Open space Distance: Immediately downstream; STH 12 is approximately 250-feet downstream Type (Residential, Commercial, Industrial):		
B. Channel Crossing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Type: Bridge, Ford, Culvert, Trestle, Other (Explain) (Circle One) Dimensions: 4.5-ft half arch D/S distance: 200 feet from dam Traffic Level (Local, CTH, Rail Road, STH, Interstate, etc): Local road (Sterlingworth Drive)		
C. Distance to nearest D/S community/impoundment:	<input checked="" type="checkbox"/>		Name: 2,800 feet to Cedar Grove Pond		
D. Anticipated Hazard (based on landuse and zoning):	<input checked="" type="checkbox"/>		Low hazard based on land use		
E. Dam Failure Analysis	<input checked="" type="checkbox"/>		Date Completed/Approved Is map available? Are map & profile adopted? List adoption date: Verify validity of failure mode: Verify validity of DFA conclusions:	DFA was approved on January 7, 2016	
F. Emergency Action Plan	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Comments, Explanation, and Description	M	I
1. Current plan posted?		<input checked="" type="checkbox"/>	Available upon request		
2. Understood by Operator?	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
3. Warning systems?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Staff gage		
4. Certification of last test?		<input checked="" type="checkbox"/>			
5. Remote operation?		<input checked="" type="checkbox"/>			
6. Revision Date?		<input checked="" type="checkbox"/>			
7. Habitable structures?		<input checked="" type="checkbox"/>			
8. Recreation areas?	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
9. Changed hazard potential?		<input checked="" type="checkbox"/>			
10. New development?		<input checked="" type="checkbox"/>			
11. Other comments?		<input type="checkbox"/>			
Additional Comments:					

N= Noted; P= Photo; M= Monitor **Action Suggestion** 1. Requires immediate action
 I= Investigate; R= Repair 2. Plan to do soon
 F.F.= Field File; RT = Right; LT = Left 3. Do when convenient
 U/S = Upstream; D/S = Downstream

EMBANKMENTS

Description: Primary embankment along spillway				Action			
				M	I	R	
Item	N	P	Location on Embankment and Deficiency				
1 Vegetation:							
No problem							
A. Trees	<input checked="" type="checkbox"/>	<input type="checkbox"/>					
Quantity (<5, sparse, dense):							
Diameter:	None						
Location:							
B. Brush	<input checked="" type="checkbox"/>	<input type="checkbox"/>					
Quantity (sparse, dense):							
Location:	None						
C. Ground cover	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					2
Type (grass, crown vetch, other):							
Quantity (bare, sparse, adequate, dense):							
Appearance (too tall, too short, good):			Sparse grass cover along west embankment. Recommend seed and fertilizer to establish denser vegetative cover				
2 Erosion							
<input checked="" type="checkbox"/>	No problem	<input type="checkbox"/>	Not applicable	<input type="checkbox"/>	Could not inspect		
A. Wave erosion (Beaching):	<input type="checkbox"/>	<input type="checkbox"/>					3
Scarp: Length/ Width:			Continue to monitor for erosion				
Location:							
B. Runoff Erosion (Gullies)	<input type="checkbox"/>	<input type="checkbox"/>					3
Quantity:							
Length/ Width/ Depth:			Continue to monitor for erosion				
Location:							
3 Instabilities							
<input checked="" type="checkbox"/>	No problem	<input type="checkbox"/>	Not applicable	<input type="checkbox"/>	Could not inspect		
A. Slides	<input type="checkbox"/>	<input type="checkbox"/>					
Transverse:							
Longitudinal:							
Scarp: Length/ Width:							
Crack Length/ Width:							
B. Cracks:	<input type="checkbox"/>	<input type="checkbox"/>					
Transverse:							
Longitudinal:							
Length/ Width/ Depth:							
Location:							
Other:							
C. Bulges/ Depressions	<input type="checkbox"/>	<input type="checkbox"/>					
Size:							
Height/ Depth:							
D. Slope (Too Steep)	<input type="checkbox"/>	<input type="checkbox"/>					
U/S, D/S							

N= Noted; P= Photo; M= Monitor	Action Suggestion	1. Requires immediate action
I= Investigate; R= Repair		2. Plan to do soon
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U/S = Upstream; D/S = Downstream		

Additional Comments:

Dam Inspection Checklist

EMBANKMENTS (Cont.)

Item	N	P	Notes/ Observations	Action		
				M	I	R
4 Slope Protection	<input checked="" type="checkbox"/>	<input type="checkbox"/>	No problem Not applicable Could not inspect	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. Type (none, riprap, wave berm, concrete slabs, loose formed concrete/asphalt):	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Condition:	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5 Other	<input checked="" type="checkbox"/>	<input type="checkbox"/>	No problem Not applicable Could not inspect	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. Rodent burrows (few, many) Location:	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Ruts Length/ Width/ Depth: Location:	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Other	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6 Alignment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	No problem Not applicable Could not inspect	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. Vertical Low area: Elevation Difference: Location:	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Horizontal	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Width Too narrow: Location:	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7 Toe	<input checked="" type="checkbox"/>	<input type="checkbox"/>	No problem Not applicable Could not inspect	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cracks/Slumps: Embankment drains: Type/Flow: Location: Seepage/ Wetness: Hummocky:	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8 Seepage	<input checked="" type="checkbox"/>	<input type="checkbox"/>	No problem Not applicable Could not inspect	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wet area:	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Boil:	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sinkhole:	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aquatic vegetation:	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rust colored deposits:	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other:	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sediment in Flow:	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flowrate: Location:	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

N= Noted; P= Photo; M= Monitor
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 F.F.= Field File; RT = Right; LT = Left
 U/S = Upstream; D/S = Downstream

Action Suggestion

- 1. Requires immediate action
- 2. Plan to do soon
- 3. Do when convenient

Additional Comments:

Dam Inspection Checklist

EMBANKMENTS

Description: Secondary embankment - Sterlingworth Bay north facing shore, south end of bay		Action		
		M	I	R
Item	N	P	Location on Embankment and Deficiency	
1 Vegetation:	X	No problem		
A. Trees	X	X		
Quantity (<5, sparse, dense):	Trees located along embankment are sparse			
Diameter:	Approximately 1-2 feet in diameter			
Location:	10-20 feet from shoreline			
B. Brush	X	X		
Quantity (sparse, dense):	Sparse			
Location:				
C. Ground cover	X	X		
Type (grass, crown vetch, other):	Mostly turf grass with shoreline natives			
Quantity (bare, sparse, adequate, dense):	Adequate			
Appearance (too tall, too short, good):	Good			
2 Erosion	X	No problem	Not applicable	Could not inspect
A. Wave erosion (Beaching):	X			3
Scarp: Length/ Width:	Continue to monitor for erosion			
Location:				
B. Runoff Erosion (Gullies)	X			3
Quantity:	Continue to monitor for erosion			
Length/ Width/ Depth:				
Location:				
3 Instabilities	X	No problem	Not applicable	Could not inspect
A. Slides				
Transverse:				
Longitudinal:				
Scarp: Length/ Width:				
Crack Length/ Width:				
B. Cracks:				
Transverse:				
Longitudinal:				
Length/ Width/ Depth:				
Location:				
Other:				
C. Bulges/ Depressions				
Size:				
Height/ Depth:				
D. Slope (Too Steep)				
U/S, D/S				

N= Noted; P= Photo; M= Monitor Action Suggestion 1. Requires immediate action
 I= Investigate; R= Repair 2. Plan to do soon
 F.F.= Field File; RT = Right; LT = Left 3. Do when convenient
 U/S = Upstream; D/S = Downstream

Additional Comments:

Dam Inspection Checklist

SPILLWAY--PRINCIPAL - FIXED CREST					Action			
Item	N	P	Notes/ Observations			M	I	R
I Fixed Crest	X		No problem	Not applicable	Could not inspect			
A. Dimensions Top Width:	X		(2) - 14.5 foot wide spillways					
B. Materials	X		Concrete					
C. Shape (sharp-crested, broad-crested, ogee, chute, gated, overflow, morning glory, dropbox, labyrinth)	X		Sharp-crested					
D. Debris Prevention (racks, booms, etc.):	X		None					
E. Concrete Condition *	X		Good condition					
F. Flashboards (none, number): Type (Metal, wood): Dimensions: Operability:			None observed					
G. Abutments Condition: * Seepage/wetness:	X		Good condition					
H. Drains Type: Weep holes, Relief drains, Other: Flow Rate:			No problem	Not applicable	Could not inspect			
I. Other								
N= Noted; P= Photo; M= Monitor I= Investigate; R= Repair F.F.= Field File; RT = Right; LT = Left U/S = Upstream; D/S = Downstream		Action Suggestion		1. Requires immediate action 2. Plan to do soon 3. Do when convenient			Controlled = Gated Uncontrolled = Overflow	
Additional Comments:								
* Type of Concrete Problems: Spalling, cracks, exposed rebar, misalignment, joints, bug holes, efflorescence, popouts, honeycombing, scaling, craze/map cracks, isolated crack, disintegration, other								
Dam Inspection Checklist								
Dam Name: Lauderdale Lakes Dam			F.F.#: 64.15		Date: 06/16/2022		8 of 10	

SPILLWAY-PRINCIPAL - GATES				Action		
Item	N	P	Notes/ Observations	M	I	R
I Gates	X		No problem			
A. Types (lift/slide, tainter(radial), stoplogs, leaf, roller, flashboards, needles, other): Number and Size:	X		None			
B. Stoplogs Dimensions: Condition:	X		None			
C. Abutments Condition: * Seepage/wetness:	X		Good No seepage or wetness			
D. Piers (number, shape) Condition: *	X		1, Good			
E. Operability Type of Operator: Condition(chain, cables,hoists): Security(locked?): Backup Operator:	X		None			
F. Access	X		Access via Sterlingworth Road			
G. Condition Rust: Seals (leakage):	X		No gate			
H. Ice protection Type (Heaters, Bubblers, Barriers, Other)	X		None			
I. Debris Prevention (Rack, boom, etc.)	X		None			
J. Condition of Flowway	X		Good			
K. Drains Type (Weep holes/ Relief drains/ Other): Flow rate: Location:	X		None observed			
L. Other						

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U/S = Upstream; D/S = Downstream

Action Suggestion
1. Requires immediate action
2. Plan to do soon
3. Do when convenient

Controlled = Gated Uncontrolled = Overflow

Additional Comments and/or Sketch:

* Type of Concrete Problems: Spalling, cracks, exposed rebar, misalignment, joints, bug holes, efflorescence, popouts, honeycombing, scaling, craze/map cracks, isolated crack, disintegration, other

Dam Inspection Checklist

SPILLWAY--PRINCIPAL - OUTLET EROSION CONTROL & UNDERMINING													
										Action			
Item	N	P	Notes/ Observations						M	I	R		
1	Outlet Erosion Control		<input checked="" type="checkbox"/>	No problem			<input type="checkbox"/>	Not applicable		<input type="checkbox"/>	Could not inspect		
	A. Type (none, endwall, plunge pool, energy dissipation structure rock lined channel, apron)		Riprap is in good condition										
	B. Scour		<input checked="" type="checkbox"/>	<input type="checkbox"/>	None observed						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	C. Material		<input checked="" type="checkbox"/>	<input type="checkbox"/>							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	a. Riprap: Avg Diameter: Condition (adequate, sparse, displaced, weathered): Bedding fabric- (Yes/ No):		8-10" diameter Adequate Unknown										
	b. Concrete * Dimensions/Location:		Concrete downstream of dam is in good condition										
	D. Sidewall/Headwall		<input checked="" type="checkbox"/>	<input type="checkbox"/>	No problems						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Misalignment: Location: Description:												
	E. Separated Joint / Loss of Joint Material:		<input checked="" type="checkbox"/>	<input type="checkbox"/>	No problems						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Location: Description:												
	F. Natural		<input checked="" type="checkbox"/>	<input type="checkbox"/>							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Undermining		<input checked="" type="checkbox"/>	No problem			<input type="checkbox"/>	Not applicable		<input type="checkbox"/>	Could not inspect		
	Location:		<input type="checkbox"/>	<input type="checkbox"/>							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Description:												
N= Noted; P= Photo; M= Monitor I= Investigate; R= Repair F.F.= Field File; RT = Right; LT = Left U/S = Upstream; D/S = Downstream			Action Suggestion Controlled = Gated			1. Requires immediate action 2. Plan to do soon 3. Do when convenient Uncontrolled = Overflow							
Additional Comments: 													
* Type of Concrete Problems: Spalling, cracks, exposed rebar, misalignment, joints, bug holes, efflorescence, popouts, honeycombing, scaling, craze/map cracks, isolated crack, disintegration, other													
Dam Inspection Checklist													
Dam Name: Lauderdale Lakes Dam			F.F.#: 64.15			Date: 06/16/2022 Page 10 of 10							

Inspection of Photogenic Dam (Key Seq #210)	
June 16, 2022	
File Name	Description
0021006162201.jpg	Upstream view of primary spillway from north bank
0021006162202.jpg	View of north chute with overflow into Honey Creek
0021006162203.jpg	Gauge and water level on primary spillway
0021006162204.jpg	West (right) embankment looking upstream
0021006162205.jpg	West embankment looking northwest
0021006162206.jpg	East (left) embankment looking upstream
0021006162207.jpg	East (left) embankment looking southeast
0021006162208.jpg	Downstream view of dam (former location of powerhouse)
0021006162209.jpg	Upstream headwall and culverts
0021006162210.jpg	Gauge on upstream culvert headwall
0021006162211.jpg	Downstream headwall and culverts
0021006162212.jpg	Outfall sewer pipe from Sterlingworth Bay
0021006162213.jpg	Roadway portion of Sterlingworth Bay embankment
0021006162214.jpg	Sloped grass embankment of Sterlingworth Bay (roadside)
0021006162215.jpg	Sterlingworth Bay south embankment
0021006162216.jpg	Stabilization measures on Sterlingworth Bay (natives over riprap)



**Upstream view of primary spillway from north bank
0021006162201.jpg**



**View of north chute with overflow into Honey Creek
0021006162202.jpg**



Gauge and water level on primary spillway
0021006162203.jpg



West (right) embankment looking upstream
0021006162204.jpg



**West embankment looking northwest
0021006162205.jpg**



**East (left) embankment looking upstream
0021006162206.jpg**



**East (left) embankment looking southeast
0021006162207.jpg**



**Downstream view of dam (former location of powerhouse)
0021006162208.jpg**



Upstream headwall and culverts
0021006162209.jpg



Gauge on upstream culvert headwall
0021006162210.jpg



Downstream headwall and culverts
0021006162211.jpg



Outfall sewer pipe from Sterlingworth Bay
0021006162212.jpg



**Roadway portion of Sterlingworth Bay embankment
0021006162213.jpg**



**Sloped grass embankment of Sterlingworth Bay (roadside)
0021006162214.jpg**



**Sterlingworth Bay south embankment
0021006162215.jpg**



**Stabilization measures on Sterlingworth Bay (natives over riprap)
0021006162216.jpg**