

TO:

Joshua Frederick, Manager, Environmental Planning and Engineering

Parks and Environmental Services

FROM:

Fraser Hall, Technical Lead, Hydrology and Dam Safety

Infrastructure Engineering

DATE:

May 9, 2017

FILE: 5240-20

Dam Inspections-Annual- All Dams

SUBJECT: 2017 ANNUAL DAM INSPECTION REPORT - GARDOM POND

In accordance with Provincial Dam Safety regulations regarding dam inspections, attached is the annual 2017 dam inspection report for Gardom Pond Dam. Dam inspection by IWS Infrastructure Engineering personnel, under the jurisdiction and requested by CRD Parks and Environmental Services.

Outstanding items have been identified and are recommended to be addressed:

Gardom Pond Dam:

- 1. Fill wheel ruts on the dam crest.
- 2. Install a permanent staff gauge to monitor reservoir water level.
- 3. Install a permanent staff gauge in the valve chamber at the downstream toe of the dam.
- 4. Remove trees at both ends of the dam and brush upstream dam face to water line.
- 5. Remove vegetation in channel leading up to spillway.
- 6. Remove trees and brush along the extent of the spillway to 2m either side.
- Stabilize spillway sidewalls.
- 8. Routine brushing required in spillway channel leading up to the road culvert.
- 9. Replace the 510mm CSP culvert under Gardom Lane.

Please contact the undersigned if you have any questions.

FH:Is

Attachment: 1

CC:

Ted Robbins, General Manager, Integrated Water Services

Larisa Hutcheson, General Manager, Parks and Environmental Services

Ian Jesney, Senior Manager, Infrastructure Engineering

Mike Walton, Senior Manager, Regional Parks

Scott Mason, Manager, Water Engineering & Planning

Ben Martin, Engineering Services

Brad Drew, Regional Parks

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REGIONAL PARKS



ANNUAL 2017 DAM INSPECTION REPORT GARDOM POND DAM

istructions: Record the condition of each item as follows:

- S Satisfactory Will fulfill intended purpose. No significant change since last inspection.
- F Fair Will fulfill intended purpose but maintenance is required.
- P Poor May not fulfill intended purpose. Repair or modification required.
- U Unsatisfactory Will not fulfill intended purpose. Repair or replacement required.
- NI Not inspected Give reasons under "Remarks/Recommendations".

and the second s	Condition						
	S	F	P	U	NI	Remarks/Recommendations	
Structure a) Upstream Face of Dam - check for:							
Cracking and Differential Movement	X						
Excessive vegetation		X				Brushing required near waterline. Unable to fully	
Signs of Deterioration						inspect embankment due to vegetation. Large tree to be removed at east end of dam Small trees to be removed at west end of dam	
b) Dam Crest - check for:		12	1	1	1.4	Driveway crosses dam with distinct wheel depressions. Depressions should be filled so water can flow freely from dam crest.	
 Cracking and Differential Movement 	X						
 Signs of wheel depressions 			X				
 Signs of deterioration 	X						
c) Downstream Face of Dam - check for:	M5/A	135	100	1973	125	2	
 Seepage 	X					No seepage at time of inspection from RPID box	
 Subsidence 	Χ					Irregular steep slope	
Excessive vegetation	Х						
d) Areas Downstream of Dam - check for:	1	10	19	147	100	There is a 200mm drain pipe under the gravel driveway directly downstream of the low level outlet indicating a need to control overland flows. Moist area observed downstream of dam.	
 Evidence of any abnormal development caused by seepage 	x						
2. Mechanical			100	Est	130		
Valve Chamber		X				Fully submerged valve chamber. No visible seepage, however the ground was quite wet directly below the valve chamber. Recommendation to install a drain from concrete chamber to daylight where seepage flows can be measured. Outlet gate valves were not operated due to concerns regarding the integrity of the valves an pipe-works. An investigation should be completed to either repair or replace the pipe-works.	
Outlet Gate Valves and Pipe			GC GC		X		
3. Spillway - check for:		160		1			
 Visible signs of earth deterioration (cracking, subsidence, etc.) 		x				Some vegetation to be removed u/s of spillway and along spillway channel. Small trees cover the slopes of the channel and several trees hav blown over destabilizing the channel side wall.	
Excessive vegetation			x			Brushing and removal of fallen trees and branches along the spillway channel from the Reservoir to Gardom Lane should be carried out. Clearing to 2m from top of spillway bank, both sides.	

Other Comments:

- A water level staff gauge should be installed at a location that will measure seasonal low levels. This will replace
 the wooden 'yard stick' attached to the dock.
- A staff gauge should be installed in the valve chamber at the downstream toe of the dam to replace the 48" wooden 'yard' stick'.
- The upstream face of the dam has a 'Dry Hydrant' located approximately 10m from the west end of the dam. It is not known how far the submerged end of the connection extends into the reservoir.
- Recommend the installation of a drain pipe from the valve chamber floor elevation to daylight downstream.
- The 510mm CSP culvert under Gardom Lane should be replaced. The culvert has deteriorated to the point that
 water entering the culvert does not exit the downstream end, but shows up as seepage along the downstream
 road embankment.

Work required:

- 1. Fill wheel ruts on the dam crest.
- 2. Install a permanent staff gauge to monitor reservoir water level.
- 3. Install a permanent staff gauge in the valve chamber at the downstream toe of the dam.
- 4. Remove trees at both ends of the dam and brush upstream dam face to water line.
- 5. Remove vegetation in channel leading up to spillway.
- 6. Remove trees and brush along the extent of the spillway to 2m either side.
- 7. Stabilize spillway sidewalls.
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- 9. Replace the 510mm CSP culvert under Gardom Lane.

Dam Consequence Classification: High

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	Date of Inspection	Reservoir Water Level	Name of Inspector(s): F. Hall
Dam, Spillway and Mechanical	Apr 27, 2017	26.5"Reservoir spilling	
Valve Chamber (downstream toe of dam)		48" of water in chamber. Fully submerged	

Copies:

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	Larisa Hutcheson, General Manager, Parks & Environmental Services
	Ian Jesney, Senior Manager, Infrastructure Engineering
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Gardom Pond Dam valve chamber at downstream toe. Water level staff gauge should be installed. Drain pipe should be installed to keep chamber dry and to monitor seepage into the chamber.



Gardom Pond Dam – Ruts in the road on the dam crest should be filled. Upstream face should be brushed to facilitate inspection.



Gardom Pond Dam – Remove vegetation on upstream face of dam.



Gardom Pond Dam – Downstream face of dam.



Gardom Pond Reservoir Water Level Gauge

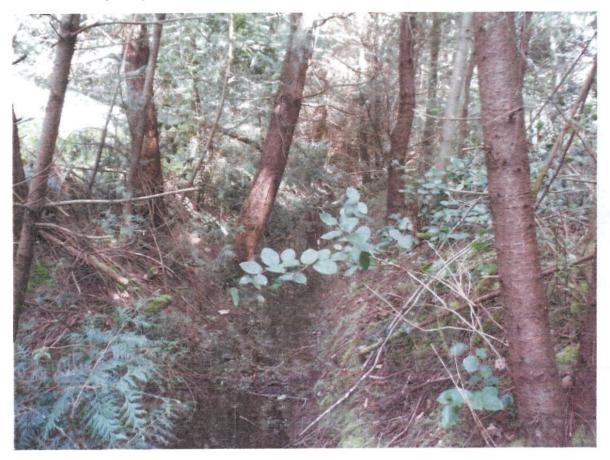


Gardom Pond Spillway Outlet

GARDOM POND DAM INSPECTION April 27, 2017



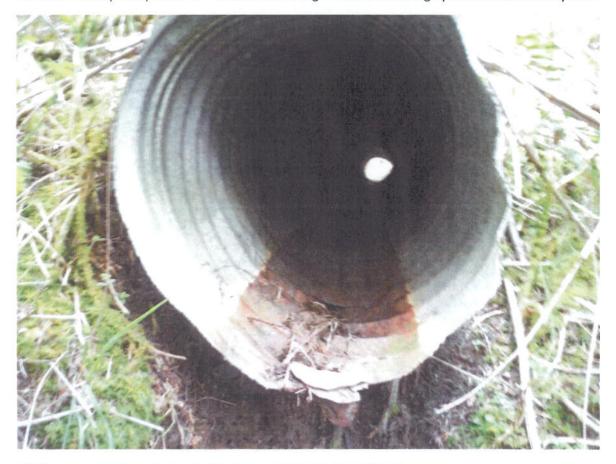
Gardom Pond Spillway Channel – Damaged channel sidewalls require remediation.



Gardom Pond Spillway Channel



Gardom Pond Spillway Channel – Routine brushing in channel leading up to road culvert required.



Gardom Lane Spillway Culvert – Road culvert should be replaced.