

# Memo



**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.
7. 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:ls

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

**RECEIVED**

MAY 12 2017

REGIONAL PARKS

## ANNUAL 2017 DAM INSPECTION REPORT GARDOM POND DAM

Instructions: 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".

	Condition					Remarks/Recommendations
	S	F	P	U	NI	
<b>1. Structure</b>						
<b>a) Upstream Face of Dam - check for:</b>						
• Cracking and Differential Movement	X					Brushing required near waterline. Unable to fully 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
• Excessive vegetation		X				
• Signs of Deterioration	X					
<b>b) Dam Crest - check for:</b>						
• Cracking and Differential Movement	X					Driveway crosses dam with distinct wheel depressions. Depressions should be filled so water can flow freely from dam crest.
• Signs of wheel depressions			X			
• Signs of deterioration	X					
<b>c) Downstream Face of Dam - check for:</b>						
• Seepage	X					No seepage at time of inspection from RPID box. Irregular steep slope
• Subsidence	X					
• Excessive vegetation	X					
<b>d) Areas Downstream of Dam - check for:</b>						
• Evidence of any abnormal development caused by seepage	X					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.
<b>2. Mechanical</b>						
• 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 and pipe-works. An investigation should be completed to either repair or replace the pipe-works.
• Outlet Gate Valves and Pipe					X	
<b>3. Spillway - check for:</b>						
• 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 have blown over destabilizing the channel side wall. 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.
• Excessive vegetation			X			



**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.
8. Routine brushing required in spillway channel leading up to the road culvert.
9. Replace the 510mm CSP culvert under Gardom Lane.

Dam Consequence Classification: **High**

	Date of Inspection	Reservoir Water Level	Name of Inspector(s): <u>F. Hall</u>
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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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 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.