Oregon
Kate Brown, Governor

Water Resources Department
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August 4, 2021

Bart Stepp, City Engineer
City of Silverton
306 S. Water Street
Silverton, OR 97381

Re: Silver Creek Dam (S– 66) – Inspection Summary

This dam was inspected on September 18, 2020. I performed the inspection, with Travis Sperle providing information on dam operations. Prior to the inspection we viewed the video scoping of the dams low level conduit that the completed for the city by Pacific Intertech.

The Water Resources Department conducts routine inspections of the dams' exterior surfaces to identify conditions that might affect the safety of the dam. Dams are assigned a hazard rating based on downstream hazard to people and property, not on the condition of the dam. Silver Creek Dam is classified as a high hazard dam. High hazard dams are inspected annually.

Results of Inspection:

Results of the inspection are summarized in the table below. Detail regarding the inspection can be found in the following photos and text. Where work is needed, additional information can also be found in the section below. Any aspects of the dam that did not present a dam safety concern are not discussed in this letter.

Category	Inspected	Result
Access	☒	Improved
Reservoir	☒	Adequate
Spillway	☒	Monitor
Conduit	☒	Monitor
Embankment	☒	Adequate
Emergency Action Plan	☒	Excellent
Seepage/Leakage	☒	Adequate

Details & Recommendations:

Access

The city now has an agreement to access the dam on an existing old road on private property. The condition of this road was not inspected

Reservoir: Reservoir level was 421.5 when inspected. Minimum freeboard was over 10 feet.

Conduit There was an area of seepage observed above the outlet pipe at the time of inspection. This area had been excavated to examine the extent of the seepage and then repairs have been completed as shown in the photo below. The seepage should be monitored for any changes to quantity or quality.

Repaired area of seepage above outlet

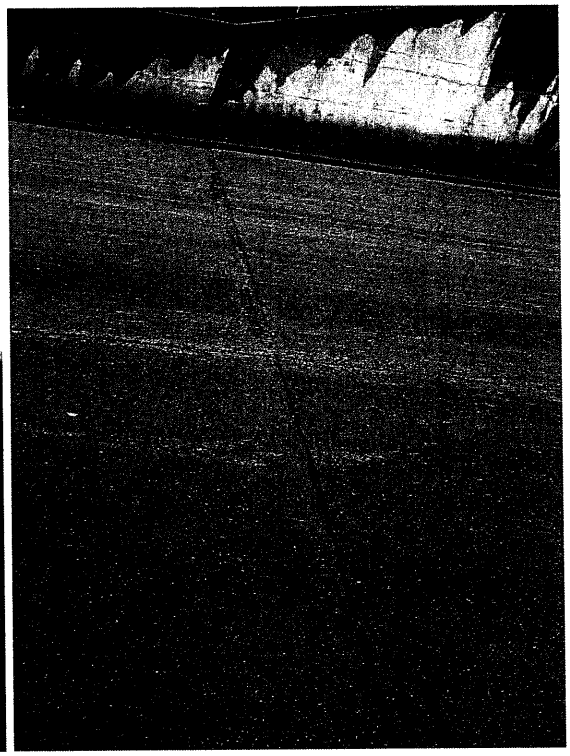
Low level outlet structure

Spillway: Crushed aggregate was placed at the spillway approach to correct accumulated erosion and low spots as shown in the photo below.

Several areas of cracking at the spillway slab joints in the spillway discharge chute were patched over three years ago. It is important to monitor the patched areas for any changes after heavy flow events. Patching concrete is not a permanent fix and can last for a year up to several years. Eventually these areas will need to be repaired rather than just patched. The repair consists of cutting around the affected areas of the concrete and chiseling this area to below the rebar (the rebar needs to remain intact). New concrete is then poured to complete the repair work. If done properly, the repair work should be permanent. We will continue to monitor the spillway concrete during our inspections as conditions permit.

The spillway slabs are critical to the stability of this dam. Several potential modes of failure of the slabs were identified during a special Corps of Engineers risk evaluation conducted about ten years ago.

Spillway approach with even coarse gravel



No change in spillway patches

Emergency Action Plan: the EAP for this dam was just updated. Thank you for sending us the EAP as an electronic document. The EAP will need to be exercised in the next 2 years.

Summary:

1. Monitor the repaired spillway joints for new cracking.

2. Monitor the conduit for changes in flow from the leak

3. Conduct an exercise of the just updated Emergency Action Plan.

This dam is well maintained and operated and is in Satisfactory condition. Please note that if any work is to be completed on the dam or surrounding areas which either directly or indirectly impacts the reservoir, downstream waterway quality, or fish passage, other state and federal agencies may have permit requirements or regulations for this work.

We use a standard inspection form, and a copy of the field inspection sheet for this dam is attached. Thanks again for meeting with me. Please let me know if you have any questions about this inspection. We look forward to future inspections of this dam.

Sincerely,

Keith Mills

Keith Mills, P.E., State Engineer for Water Resources
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C: Dam Safety File S –66

Oregon Dam Safety
Inspection Form

Name of Dam: Silver Creek			File #: S-66
Height: 65 ft.	Storage: 1300 ac. ft.	Permit: R 5948	NID #: OR00622
High Hazard Dam	Condition Assessment: Fair		District: 16
Date: 9/18/2020	Weather: ☐ Dry ☑ Rain ☐ Snow ☐ Now ☑ Recently		Prior Inspection Date: 10/15/2019
Inspector(s): Keith Mills	Others on Site: Travis Sperle		
Issues from Prior Inspection:			

***Rating Criteria**: 5: Exemplary; 4: Adequate; 4-: Minor Maintenance; 3: Maintenance Action Needed;*
2: Maintenance Action Neglected; 1: Unsafe Condition

General		**Rating**
Vehicle Access	☐ All Weather Road ☐ Dirt Road ☐ None	4-
Access Control	☑ Gate ☐ Locked and Secured ☑ Fencing ☑ Signage ☐ Other	4
Detail:	Agreement for access made, check in 2021	

Reservoir	**Pool Level**: 421.5 ft.	☐ **Approximated** ☐ **Measured** ☐ **Crest** ☑ **Gage**	**Rating**
Minimum Freeboard	**Vertical distance from debris line to lowest place on crest: 10+ft.**		4
Condition	☐ Floating Debris/Trash ☐ Log Boom ☐ Unusual Condition ☐ Other ☑ None		4
Detail:			

Spillway	☐ **Earth** ☑ **Concrete** ☐ **Culvert** ☐ **Rock** ☐ **Trickle Tube** ☐ **Other**	**Rating**
Approach Channel	☑ Clear ☐ **Trees/Brush** ☐ **Debris** ☐ Erosion ☐ Other	4
Control Section	☑ Concrete ☐ Rock ☐ Soil ☐ Culvert ☐ Other ☐ **Unstable**	4
Spillway Dimensions	Width: ft. Depth: ft. ☐ Survey Attached	
Flashboards/Gate	☐ Yes ☐ No ☐ In Place ☐ Operational ☐ Deteriorated	
Discharge Channel	☑ Clear ☐ Trees/brush ☐ Leakage ☐ **Headcutting (**__ feet from spillway control section, depth __ feet.)	4-
Stilling Basin	☐ None ☐ Functional ☐ Minor Erosion ☐ **Severe Erosion** ☐ **Undercutting**	4
Aux. Spillway	☐ Yes ☑ No (use "Detail" box below)	
Detail:	Need to watch concrete patches	

Seepage/Leakage		**Rating**
Serious Conditions	☐ **New Seepage** ☐ **Leakage** ☐ **Piping** ☐ **Discolored Water** ☐ **Boils** ☐ **Other** ☐ None	4
Seepage Locations	☑ Center ☑ Left ☑ Right ☐ Around Pipe	
Flow	☐ Wet Vegetation ☐ Spongy ☐ Standing Water ☐ Flowing Water	4
Toe Drains	☐ None ☑ Working ☐ Damaged ☐ Buried ☐ Other	4
Flow (gpm)/Detail:		

Conduit			Rating
Control	☑ **Manual** ☐ **Power** ☐ **None (hydraulic)**		
Inlet	☑ Submerged ☐ Debris on Trash Rack ☐ Deterioration		
Control/Stem	☐ Missing ☐ Operable ☐ Damaged ☐ Inoperable ☐ Unknown		4
Valve(s) Cycling	☐ Frozen ☐ Unknown ☐ Past Year ☐ Frequent ☐ During Inspection		4
Principal Conduit	Diameter/Size: 42", 18" Material: steel	Condition: just scoped	4-
Primary Outlet	☐ Overgrown ☑ Clean ☐ Submerged ☐ Buried ☐ **Pressurized** ☐ Leaking:__ gpm		
Other Outlet(s)	☐ Yes ☑ No		
Detail:	340 feet long, seepage at 310 feet		

Structure of dam	☑ **Earth** ☐ **Rock** ☐ **Concrete** ☐ **Other**		Rating
Detail:			
Deformation	☐ **Cracks** ☐ **Landslide(s)** ☐ **Sinkhole(s)** ☐ **Movement** ☑ None		4
Crest	☐ Settlement/Low Spots ☐ Narrow ☐ Wave Erosion ☑ No Issues		4
Erosion	☐ Trampling ☐ Surface Erosion ☑ None		4
Aux. Dam (s)	☐ Yes ☑ No Number___ Rating for Each 1___ 2___ 3___ 4___		
Detail:			
Animals			**Rating**
Evidence	☐ Trails ☐ Burrows ☐ Deep Burrows ☑ No Evidence	Max Depth:__ ft.	4
Locations		Extensive ☐ Yes ☐ No	
Detail:			
Vegetation			**Rating**
Cover	☑ Low Grass ☐ High Grass ☐ Brush ☐ Small Trees ☐ Large Trees ☐ None		4
Locations		Impairs Inspection ☐ Yes ☐ No	4
Detail:			

Monitoring		Rating
Instrumentation	☑ Weir ☐ Piezometer ☐ Camera ☑ Reservoir Level ☑ Other Seismic	5
Monitoring	☑ Continuous ☐ Frequent ☐ Past Year ☐ Unknown	5
Detail		

Expedited Re-inspection Needed: ☐ **Yes** ☑ No Next Inspection Date: 2021

Emergency Action Plan: Exists: ☑ Yes ☐ No Onsite: ☐ Yes ☐ No Current: ☑ Yes ☐ No

☐ **Maintenance Action – First Notice**
☐ **Maintenance Action – Subsequent Inspection with Deficiency**
☐ **Corrective Action – Unsafe Condition**

Other Issues or Additional Detail Needed:

Needs next scoping in 2024