ENGINEER'S INSPECTION REPORT

INSPECTOR: BCM

OFFICE OF THE STATE ENGINEER - DIVISION OF WATER RESOURCES - DAM SAFETY BRANCH 1313 SHERMAN STREET, ROOM 818, DENVER, CO 80203, (303) 866-3581

DAM NAME:	PINON	**T:**	110S	**R:**	0670W	**S:**	27	**COUNTY:**	EL PASO
DAM ID:	100404	**YRCompl:**	1986	**DAM HEIGHT(FT):**	42.0	**SPILLWAY WIDTH(FT):**	25.0	**DATE OF INSPECTION:**	4/8/2025
CLASS:	Significant hazard			**DAM LENGTH(FT):**	800.0	**SPILLWAY CAPACITY(CFS):**	3200.0	**PREVIOUS INSPECTION:**	5/9/2023
DIV:	2	**WD:**	10	**CRESTWIDTH(FT):**	25.0	**FREEBOARD (FT):**	5.0	**NORMAL STORAGE (AF):**	119.0
EAP:	12/28/2023			**CRESTELEV(FT):**	6850.0	**DRAINAGE AREA (AC.):**	315.0	**SURFACE AREA(AC):**	14.0
								OUTLET INSPECTED:	11/2/2017

CURRENT RESTRICTION: -- NONE --

OWNER:	FOREST LAKES METRO DISTRICT (ANN NICHOLS)	**OWNER REP.:**	ANN NICHOLS
ADDRESS:	2 NORTH CASCADE AVENUE	**CONTACT NAME:**	Douglas E. Schwenke
	COLORADO SPRINGS CO 80903-	**CONTACT PHONE:**	(719) 227-0072

INSPECTION PARTY : Brian McCormick, DSB; Larry Stiltner, FLMD; Doug Schwenke, RESPEC

REPRESENTING :

FIELD CONDITIONS OBSERVED

WATER LEVEL: BELOW DAM CREST _____ FT. Below Spillway ~0.5'(est) FT. GAGE ROD READING 20.1

GROUND MOISTURE CONDITION: [x] DRY [ ] WET [ ] SNOWCOVER OTHER 60°F, Partly Cloudy

DIRECTIONS: MARK AN X FOR CONDITIONS FOUND AND UNDERLINE WORDS THAT APPLY

UPSTREAM SLOPE

PROBLEMS NOTED: [x] (0)NONE [ ] (1)RIPRAP - MISSING, SPARSE, DISPLACED, WEATHERED [ ] (2) WAVE EROSION - WITH SCARPS

[ ] (3) CRACKS WITH DISPLACEMENT [ ] (4) SINKHOLE [ ] (5) APPEARS TOO STEEP [ ] (6) DEPRESSIONS OR BULGES [ ] (7) SLIDES

[ ] (8) CONCRETE FACING - HOLES, CRACKS, DISPLACED, UNDERMINED [ ] (9) OTHER

Pinon reservoir is filled by transfer from Bristlecone reservoir and is typically filled in spring (when levels at Bristlecone reach the transfer structure) and then drops over the course of the summer due to evaporation and seepage. The reservoir was nearly full at the time of this inspection. Pinon appears to have been constructed as a replacement for a smaller non-roster dam on site (possibly named Beaver Creek Reservoir).

The upstream face is inclined at 3:1 and surfaced in a layer of limestone riprap. No signs of instability or settlement were observed for the upstream slope. Some light brush was present but this does not yet affect observation. No dam safety concerns were observed for the upstream face.

CONDITIONS OBSERVED: [ ] Good [X] Acceptable [ ] Poor

CREST

PROBLEMS NOTED: [x] (10) NONE [ ] (11) RUTS OR PUDDLES [ ] (12) EROSION [ ] (13) CRACKS - WITH DISPLACEMENT [ ] (14) SINKHOLES

[ ] (15) NOT WIDE ENOUGH [ ] (16) LOW AREA [ ] (17) MISALIGNMENT [ ] (18) IMPROPER SURFACE DRAINAGE [ ] (19) OTHER

The dam crest appears level with a slight cross slope upstream and is surfaced in granular material. No signs of settlement, instability, or cracking were observed on the crest. No dam safety concerns were observed for the dam crest.

CONDITIONS OBSERVED: [ ] Good [X] Acceptable [ ] Poor

DOWNSTREAM SLOPE

PROBLEMS NOTED: [x] (20) NONE [ ] (21) LIVESTOCK DAMAGE [ ] (22) EROSION OR GULLIES [ ] (23) CRACKS - WITH DISPLACEMENT [ ] (24) SINKHOLE

[ ] (25) APPEARS TOO STEEP [ ] (26) DEPRESSIONS OR BULGES [ ] (27) SLIDE [ ] (28) SOFT AREAS [ ] (29) OTHER

The downstream slope is inclined at 3:1 and surfaced in a good stand of grasses. Minor rodent activity was observed however this has not yet led to erosion concerns.

No signs of erosion or instability were observed on the downstream slope.

There was an area of hollow sounding concrete observed in the paved left groin ditch, just downstream from the previous repair (see 2023 EIR) area. This area should be further investigated and repaired. Consider a repair involving removal of the ditch paving and replacement with appropriately sized bedding and riprap.

CONDITIONS OBSERVED: [ ] Good [X] Acceptable [ ] Poor

SEEPAGE

PROBLEMS NOTED: ☑ (30) NONE ☐ (31) SATURATED EMBANKMENT AREA ☐ (32) SEEPAGE EXITS ON EMBANKMENT

☑ (33) SEEPAGE EXITS AT POINT SOURCE ☑ (34) SEEPAGE AREA AT TOE ☐ (35) FLOW ADJACENT TO OUTLET ☐ (36) SEEPAGE INCREASED / MUDDY

DRAIN OUTFALLS SEEN ☐ No ☑ Yes Show location of drains on sketch and indicate amount and quality of discharge. ☐ (37) FLOW INCREASED / MUDDY ☐ (38) DRAIN DRY / OBSTRUCTED

☐ (39) OTHER

Seepage was observed at the following locations, generally consistent with observations at similar reservoir levels.

1) The toe drain lateral collection box was flowing with a depth of 3/4" over the v-notch.

2) The canyon area was observed to have flow (photos 21, 22) with a depth of 0.30' observed on the staff gage in this area.

3) Standing water was present at the toe of the right groin concrete ditch (photo 23).

4) Total seepage can be measured at the v-notch weir downstream of the toe and canyon. This weir was observed to have 7/8" depth of flow (photo 30).

5) Seepage into the spillway channel was observed at the upstream side and right side of the stilling basin. This seepage is measured at a Parshall flume downstream of the stilling basin (photo 39).

No signs of adverse seepage were observed at this inspection.

Actions:
Continue current monitoring of seepage.

CONDITIONS OBSERVED: ☐ Good ☒ Acceptable ☐ Poor

OUTLET

PROBLEMS NOTED: ☑ (40) NONE ☐ (41) NO OUTLET FOUND ☐ (42) POOR OPERATING ACCESS ☐ (43) INOPERABLE

☐ (44) UPSTREAM OR DOWNSTREAM STRUCTURE DETERIORATED (45) OUTLET OPERATED DURING INSPECTION ☑ YES ☐ NO

INTERIOR INSPECTED ☑ (120) NO ☐ (121)YES ☐ (46) CONDUIT DETERIORATED OR COLLAPSED ☐ (47) JOINTS DISPLACED ☐ (48) VALVE LEAKAGE

☑ (49) OTHER Seepage along outside of steel liner pipe

Description:
The outlet is a 12" RCP lined with a 10" steel liner and grouted annulus. Control is provided by an upstream slide gate with a manual gate operator on the dam crest. There is no air vent for the upstream gate.

Observations:
Seepage was observed at the downstream end of the conduit from the annular space grout (photo 26) consistent with recent inspections.

The outlet was operated at this inspection without issue.

The outlet conduit was last inspected internally in 2015 and is due for reinspection by 2025.

Actions:
Complete internal inspection of the outlet conduit by December 2025. This is considered important due to the seepage observed in the annular space grout.

CONDITIONS OBSERVED: ☐ Good ☒ Acceptable ☐ Poor

SPILLWAY

PROBLEMS NOTED: ☐ (50) NONE ☐ (51) NO EMERGENCY SPILLWAY FOUND ☐ (52) EROSION WITH BACKCUTTING ☐ (53) CRACK - WITH DISPLACEMENT

☐ (54) APPEARS TO BE STRUCTURALLY INADEQUATE ☐ (55) APPEARS TOO SMALL ☐ (56) INADEQUATE FREEBOARD ☑ (57) FLOW OBSTRUCTED

☐ (58) CONCRETE DETERIORATED / UNDERMINED ☐ (59) OTHER

The spillway is designed for a PMF and capacity is considered to have adequate capacity. The spillway crest was clear. A ponderosa pine is present in the spillway approach and should be considered for removal.

Willow growth, and numerous small cottonwood trees were observed in the spillway channel. While not yet obstructing flow, these should be removed before they grow larger.

Actions:
Remove woody vegetation from spillway channel - especially trees.

CONDITIONS OBSERVED: ☐ Good ☒ Acceptable ☐ Poor

MONITORING

EXISTING INSTRUMENTATION FOUND ☐ (110) NONE ☑ (111) GAGE ROD ☑ (112) PIEZOMETERS ☑ (113) SEEPAGE WEIRS / FLUMES
☑ (114) SURVEY MONUMENTS ☐ (115) OTHER

MONITORING OF INSTRUMENTATION ☐ (116) NO ☑ (117) YES PERIODIC INSPECTIONS BY: ☑ (118) OWNER ☐ (119) ENGINEER

The dam is comprehensively instrumented with a gage rod, piezometers, a v-notch weir on the toe drain, and survey monuments.

The Owner's monitoring report (through December 2024) was provided prior to this inspection. This report indicates that the dam is behaving consistently with historical performance and no dam safety concerns were evidenced by review of the monitoring data.

The dam is regularly observed by the Owner.

Survey of crest deformation monuments was performed in 2024 indicating less than 0.2' of settlement between 2014 and 2024.

Actions:
1) Continue monitoring at current frequency including Engineer's annual review of monitoring data and production of annual monitoring report.

CONDITIONS OBSERVED: ☐ Good ☒ Acceptable ☐ Poor

MAINTENANCE AND REPAIRS

PROBLEMS NOTED: ☐ (60 NONE ☐ (61) ACCESS ROAD NEEDS MAINTENANCE ☐ (62) LIVESTOCK DAMAGE
☑ (63) BRUSH ON UPSTREAM SLOPE, CREST, DOWNSTREAM SLOPE, TOE ☑ (64) TREES ON UPSTREAM SLOPE, CREST, DOWNSTREAM SLOPE, TOE
☐ (65) RODENT ACTIVITY ON UPSTREAM SLOPE, CREST, DOWNSTREAM SLOPE, TOE ☐ (66) DETERIORATED CONCRETE - FACING, OUTLET, SPILLWAY
☐ (67) GATE AND OPERATING MECHANISM NEED MAINTENANCE ☑ (68) OTHER Trees in spillway

Maintenance actions following this inspection should include:

1) Remove trees from spillway channel

2) Remove tree from right groin (growing on dam side of concrete ditch)

3) Investigate and repair hollow sounding concrete in left side groin paved ditch.

CONDITIONS OBSERVED: ☐ Good ☒ Acceptable ☐ Poor

Go to next page for Overall Conditions and Items Requiring Actions

OVERALL CONDITIONS

Overall, Pinon Dam remains in satisfactory condition for full storage.

The EAP was updated in December 2023 and the EAP and inundation mapping are considered up to date.

Based on this Safety Inspection and recent file review, the overall condition is determined to be:

☑ (71) SATISFACTORY ☐ (72) CONDITIONALLY SATISFACTORY ☐ (73) UNSATISFACTORY

ITEMS REQUIRING ACTION BY OWNER TO IMPROVE THE SAFETY OF THE DAM

MAINTENANCE - ORDINARY REPAIR - MONITORING

☐ MONITOR

4/8/2025 - **REFERENCE MONITORING SECTION OF REPORT**

☐ OTHER

4/8/2025 - **REFERENCE MAINTENANCE SECTION OF REPORT**

ENGINEERING - EMPLOY AN ENGINEER EXPERIENCED IN DESIGN AND CONSTRUCTION OF DAMS TO

☐ PERFORM AN INTERNAL INSPECTION OF THE OUTLET

4/8/2025 - **Due in 2025**

The State Engineer, by providing this dam safety inspection report, does not assume responsibility for any unsafe condition of the subject dam. The sole responsibility for the safety of this dam rests with the reservoir owner or operator, who should take every step necessary to prevent damages caused by leakage or overflow of waters from the reservoir or floods resulting from a failure of the dam.

SAFE STORAGE LEVEL: RECOMMENDED AS A RESULT OF THIS INSPECTION

☑ (101) FULL STORAGE
☐ (102) CONDITIONAL FULL STORAGE
☐ (103) RECOMMENDED RESTRICTION
☐ (104) CONTINUE EXISTING RESTRICTION

→ { _____ FT. BELOW DAM CREST
_____ FT. BELOW SPILLWAY CREST
_____ FT. GAGE HEIGHT
☐ ☐ NO STORAGE-MAINTAIN OUTLET FULLY OPEN

REASON FOR RESTRICTION

ACTIONS REQUIRED FOR CONDITIONAL FULL STORAGE OR CONTINUED STORAGE AT THE RESTRICTED LEVEL:

Engineer's Signature Brian A McCormick — INSPECTED BY
Owner's Signature _____ OWNER/OWNER'S REPRESENTATIVE
DATE: ___/___/___

GUIDELINES FOR DETERMINING CONDITIONS

CONDITIONS OBSERVED - APPLIES TO UPSTREAM SLOPE, CREST, DOWNSTREAM SLOPE, OUTLET, SPILLWAY

GOOD
In general, this part of the structure has a near new appearance, and conditions observed in this area do not appear to threaten the safety of the dam.

ACCEPTABLE
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.

POOR
Conditions observed in this area appear to threaten the safety of the dam.

CONDITIONS OBSERVED - APPLIES TO SEEPAGE

GOOD
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.

ACCEPTABLE
Some seepage exists at areas other than the drain outfalls, or other designed drains. No unexplained increase in seepage. All seepage is clear. Seepage conditions observed do not currently appear to threaten the safety of the dam.

POOR
Seepage conditions observed appear to threaten the safety of the dam. 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 MONITORING

GOOD
Monitoring includes movement surveys and leakage measurements for all dams, and piezometer readings for High hazard dams. Instrumentation is in reliable, working condition. A plan for monitoring the instrumentation and analyzing results by the owner's engineer is in effect. Periodic inspections by owner's engineer.

ACCEPTABLE
Monitoring includes movement surveys and leakage measurements for High and Significant hazard dams; leakage measurements for Low hazard dams. Instrumentation is in serviceable condition. A plan for monitoring instrumentation is in effect by owner. Periodic inspections by owner or representative. OR, NO MONITORING REQUIRED.

POOR
All instrumentation and monitoring described under "ACCEPTABLE" here for each class of dam, are not provided, or required periodic readings are not being made, or unexplained changes in readings are not reacted to by the owner.

CONDITIONS OBSERVED - APPLIES TO MAINTENANCE AND REPAIR

GOOD
Dam appears to receive effective on-going maintenance and repair, and only a few minor items may need to be addressed.

ACCEPTABLE
Dam appears to receive maintenance, but some maintenance items need to be addressed. No major repairs are requirecl

POOR
Dam does not appear to receive adequate maintenance. One or more items needing maintenance or repair has begun to threaten the safety of the dam.

OVERALL CONDITIONS

SATISFACTORY
The safety inspection indicates no conditions that appear to threaten the safety of the dam, and the dam is expected to perform satisfactorily under all design loading conditions. Most of the required monitoring is being performed.

CONDITIONALLY SATISFACTORY
The safety inspection indicates symptoms of structural distress (seepage, evidence of minor displacements, etc.), which, if conditions worsen, could lead to the failure of the dam. Essential monitoring, inspection, and maintenance must be performed as a requirement for continued full storage in the reservoir.

UNSATISFACTORY
The safety inspection indicates definite signs of structural distress (excessive seepage, cracks, slides, sinkholes, severe deterioration, etc.), which could lead to the failure of the dam if the reservoir is used to full capacity. The dam is judged unsafe for full storage of water.

SAFE STORAGE LEVEL

FULL STORAGE
Dam may be used to full capacity with no conditions attached.

CONDITIONAL FULL STORAGE
Dam may be used to full storage if certain monitoring, maintenance, or operational conditions are met.

RESTRICTION
Dam may not be used to full capacity, but must be operated at some reduced level in the interest of public safety.

HAZARD CLASSIFICATION OF DAMS

High hazard
Loss of human life is expected in the event of failure of the dam, while the reservoir is at the high water line.

Significant hazard
Significant damage to improved property is expected in the event of failure of the dam while the reservoir is at the high water line, but no loss of human life is expected.

Low hazard
Loss of human life is not expected, and damage to improved property is expected to be small, in the event of failure of the dam while the reservoir is at high water fine.

NPH hazard - No loss of life or damage to improved property, or loss of downstream resource is expected in the event of failure of the dam while the reservoir is at the high water line.

COLORADO
Division of Water Resources
Department of Natural Resources

Dam Safety

DAM PHOTOGRAPHS

PROJECT INFORMATION			
Dam Name:	Pinon	Inspector:	Brian McCormick
DAMID:	100404	Date:	04.08.2025
Dam Owner:	Forest lakes Metro District	Contact:	Ann Nichols

CONDITIONS	
Reservoir:	GH 20.1
Weather:	Part cloudy, 60°F

NOTES

1. Photos from biennial safety inspection. Append to 08 APR 2025 EIR

PHOTOGRAPHS



1. Spillway channel from right side

PHOTOGRAPHS



2. Looking left from right side of spillway crest



3. Repaired erosion, left side of spillway low flow channel. Looking downstream from crest

PHOTOGRAPHS



4. Upstream face and crest from right end of dam



5. GH 20.1 +/-

PHOTOGRAPHS



6. Upstream face at waterline, looking left from right end



7. Upstream crest edge, looking left from right end of dam

PHOTOGRAPHS



8. Crest from left end



9. Downstream crest edge from left end of dam

PHOTOGRAPHS



10. Outlet operator



11. Looking left from outlet operator

PHOTOGRAPHS



12. Looking downstream from crest, generally in line with outlet



13. Upstream face at waterline, looking right from left end

PHOTOGRAPHS



14. Dam crest from right end



15. Left side of downstream face, looking right from toe

PHOTOGRAPHS



16. Typical shallow rodent burrowing on downstream face



17. Paved ditch in left groin

PHOTOGRAPHS



18. Downstream face from left groin, looking right from mid slope



19. Paved ditch in lower left groin

PHOTOGRAPHS



20. "Canyon", spillway channel for previous dam at this site



21. Surface expression of seepage in canyon at base of willow tree

PHOTOGRAPHS

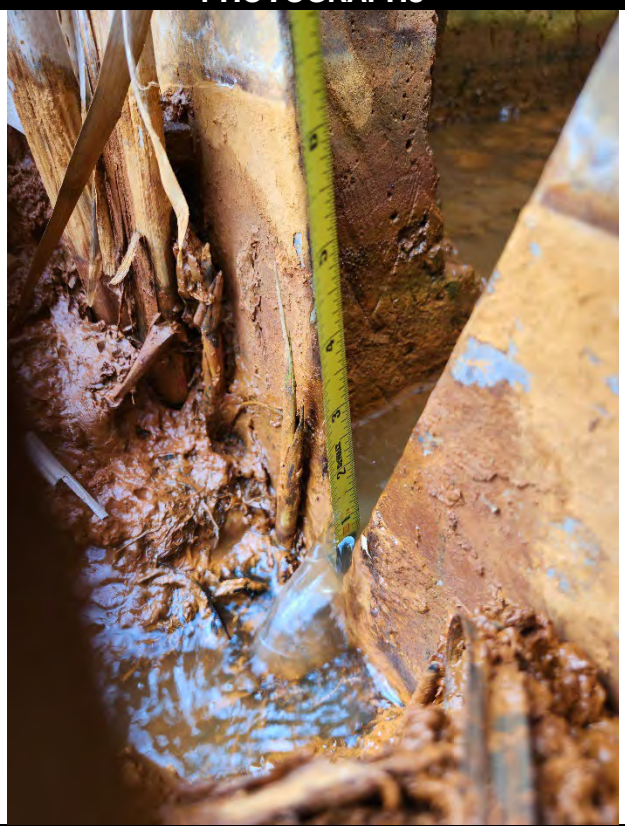


22. Staff gage downstream of willow tree in canyon, 0.30’



23. Surface expression of seepage in lower left paved ditch, above drain outlet

PHOTOGRAPHS



24. Toe drain outlet, flow depth ¾”



25. Measuring flume downstream of outlet, dry

PHOTOGRAPHS



26. Downstream end of outlet conduit, prior to gate operation. Seepage visible in annular grout outside steel pipe liner



27. Paved ditch in lower right groin, looking upstream

PHOTOGRAPHS



28. Outlet exercise



29. Plate weir (total seepage)

PHOTOGRAPHS



30. Flow depth 7/8” in totalizing weir



31. Looking upstream from total seep weir to downstream face

PHOTOGRAPHS



32. Right side of downstream face from groin, mid slope



33. Upper right downstream face, looking right

PHOTOGRAPHS



34. Right end of dam crest, looking right towards spillway



35. Spillway channel, looking downstream from left side. Bristlecone Dam in background

PHOTOGRAPHS



36. Spillway channel, pole marks upstream most surface expression of seepage



37. Heavy cattail and willow vegetation in spillway channel

PHOTOGRAPHS



38. Surface expression of seepage on right side of spillway channel



39. Spillway flume and total seepage from spillway channel, looking downstream

PHOTOGRAPHS



40. Spillway channel and stilling basin, looking upstream towards reservoir