

IDAHO DEPARTMENT OF WATER RESOURCES

--- DAM SAFETY RECORD OF INSPECTION ---

Inspector: Gio Del Papa	Dam Owner: Rathdrum Creek FCD (1.)	Hazard: Significant
Pool Level: ~10.2 ft (4.)	Dam Height: 14.3 ft to Top of Conc (2.)	Hydraulic Ht: 12 ft (3.)
Reservoir Storage: 9,090 ac-ft (5.)	Surface Area: 959 ac (5.)	NAT DAM ID: ID00153
Others Present: Tim Sullivan - FCD Dam Tender (360) 477-5970 sullitjs50@gmail.com		Weather Conditions: Clear, Mild to Warm, Sunny

PRIMARY DAM OR IMPOUNDING STRUCTURE

Type of Construction: ☐ - Earthen ☐ - Rockfill ☒ - Concrete ☐ - Timber Crib ☐ - Other:
with Earth Abutments

Instrumentation: ☐ - Piezometers ☐ - Inclinometers ☐ - Seismic ☒ - Other: Flow and Stage Gages

Is there another dam, dike, or hydraulic structure impounding a portion of this reservoir? ☒ - Yes ☐ - No
realtime data: <http://twinlakesidaho.or>

If "Yes", explain: **Two possible channels east of dam that do not show up on 1961 USGS Quadrangle.

Figure 1 depicts an aerial photo showing the east channels. Dam Tender reports they were there the 1960s and the current owner is Roger Bacon on W Gamay Ct.

	Seepage	Erosion	Animal	Vegetation
Upstream Slope	Damp	None Observed	None Observed	*See Remarks Below
Crest	Dry	None Observed	None Observed	*See Remarks Below
Downstream Slope	Dry	None Observed	None Observed	*See Remarks Below
Downstream Toe	*See Remarks Below	None Observed	None Observed	*See Remarks Below
Left Abutment	Dry	None Observed	None Observed	Dense Grass/Weeds
Right Abutment	Dry	None Observed	None Observed	Dense Grass/Weeds

Observations and Remarks:

1. FCD = Flood Control District
2. 12 ft Gate + 2.3 ft to top of Gate = 14.3 ft
3. Hydraulic Height at Top of Closed Gate.
4. Reportedly matches Old Staff Basis (Photo 2)
5. From historic data entry. Operations Plan (2005) lists V=9,400 ac-ft
- * Downstream Toe is Rathdrum Creek
- * Upstream slope, Crest, Downstream Slope all consist of concrete and have no vegetation.
- ** Re-visit the possible east channels during the next inspection cycle.

Condition Assessment

☐ - Satisfactory ☒ - Fair ☐ - Poor ☐ - Unsatisfactory ☐ - Not Rated (See Remarks)

Is This Structure Suitable for the Continued Impoundment of Water?

☒ - Yes ☐ - No
Conditionally (see recommendations)

If "No", explain w/ recommended action:

Non-functioning right gate (Photo 3), problematic nature of aluminum gates (left and right gates are still aluminum). The 1977 Operations Plan limits outflow to 165 cfs to avoid flooding Rathdrum. The 2005 Operations Plan limits outflow to 160 cfs. Dam Tender reported that the water has come one vertical inch from the living room floor of a downstream home during a release of around 400 cfs.

Name of Dam: Twin Lakes

IDWR File No: 95-0973

Date: 06/06/2013

PRIMARY SPILLWAY

Size/ Diameter: 3 -12'X6' Gates Date Last Operated: Unknown Date Last Inspected: 9/1/2008

Type of Construction: ☐ - Earthen ☐ - Rock ☐ - Concrete ☐ - Other Conc., Steel, Alum

Location: ☐ - Left Side ☒ - Center ☐ - Right Side ☐ - Other _____

Operating Mechanism: ☐ - Manual ☐ - Electric ☐ - Gas/Diesel ☒ - Other Right and Left are Manual and Center has an Electric Motor

Is there another outlet or discharge feature associated with this reservoir? ☐ - Yes ☒ - No

If "Yes", explain: _____

Inflow Design Flood (Q=cfs): 2005 Operations Plan Q500 = 2,073 cfs Static Freeboard (feet): ~2.3 ft (1.)

Observations and Remarks:

Reportedly, the center gate has failed two time in recent years, and the electric motor was replaced in 2010. According to the dam tender, hydraulic induced vibration tore the aluminum center gate "like paper". The gate was replace with like and failed a second time. The second replacement was with a stainless steel gate. The left and right gates are still aluminum, but reportedly were reinforced some during the last replacement of the center gate in 2010. The right gate is reported to be currently inoperable (Photo 3) due to possible problems with the manual crank mechanism. The Dam Tender reports that he has never fully exercised the gates. The gate manufacturer in the 2005 Operations Plan call for gate operation every three months. Also, a crack perpendicular to the direction of flow formed in the concrete abutment and piers after construction. The crack follows the axis of the gates' alignment (Photos 4,5,6,7). The Dam Tender has filled the cracks with sealant.

Spillway and Gates are one and the same (see above).

1. Static Freeboard = 14.3 ft (dam top) -12.0 ft (gate height) = 2.3 ft

2. The lake level was at 10.2 ft and Q= 19.2 cfs under gate(s) at time of visit from instrumentation. The right gate was closed (Photo 8). The left gate was open (Photo 9), and the center gate was closed but leaking (Photo 10) what appeared to be as much water as the opened left gate.

Is an auxiliary spillway or discharge feature associated with this reservoir? ☐ - Yes ☒ - No

If "Yes", explain: _____

Condition Assessment

☐ - Satisfactory ☒ - Fair ☐ - Poor ☐ - Unsatisfactory ☐ - Not Rated (See Remarks)

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Recommendations:

1. The owner should repair the damaged right gate/opening mechanism and closely observe, and in needed replace, the remaining aluminum gates (left and right gates) to prevent the type of failure that is reported to have occurred at the center gate.
2. The leak under the center gate should be investigated and repaired as necessary.
3. The owner shall follow the Operations Plan (maintenance, exercise gates, etc.) for the dam. To ensure that the Operation Plan is properly followed, the staff gages at the dam should be clearly marked as to depth basis, e.g. which staff is on the old dam basis and which one is the new dam basis.
4. The high and low lake level signs at the dam (Photo 2) should be reviewed, and if needed replaced, to ensure that they convey the proper stage and elevation data to the dam personnel and officials. The signs appear to depict new dam levels, but it is not readily apparent, as the range of levels does not match the levels provided in the 2005 Operations Plan. These signs should be clearly marked as to which gage they reference. For example, "Old Dam Staff" or "New Dam Staff".
5. Monitor the crack in the concrete abutment and piers for continued displacement. Make repairs as necessary. Keep the crack sealed to prevent corrosion of the reinforcing steel and embedments.
6. Consider reducing storage authorization to only one year. After the one year period, storage authorization may be withheld unless the owner addresses, to the satisfaction of IDWR, items 1 through 5, above. Recommend follow-up inspection in one year. The suitability of the structure to impound water is based solely upon limited observations during the site visit. Actual conditions could be found to vary and/or could vary overtime. It is the owner's/operator's responsibility to safely operate and maintain the facility to protect life and property.
7. Recommend reviewing the possibility of embankments/barriers on the east channels during the next inspection.

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Google earth

feet 1000
meters 300



Figure 1 - Dam Location Map

Twin Lakes Dam

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Photo 1 (06/06/2013) - Overview of Dam and Facility



Photo 2 (06/06/2013) - Staff Gages and Stage Signage

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Photo 3 (06/06/2013) - Inoperable Right Gate Mechanism



Photo 4 (06/06/2013) - Crack in Right Abutment at Gate Centerline

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Photo 5 - (06/06/2013) - Right Pier Crack at Gate Centerline

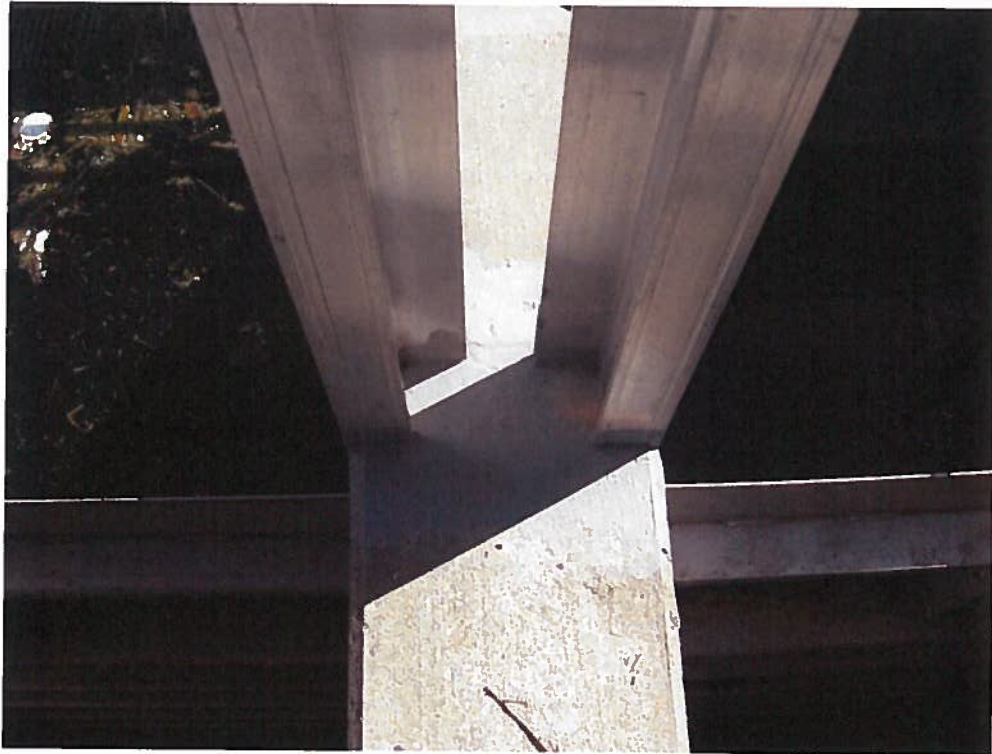


Photo 6 (06/06/2013) - Left Pier Crack along Gate Centerline

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Photo 7 (06/06/2013) - Left Abutment Crack along Gate Centerline



Photo 8 (06/06/2013) - Right Gate Closed

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Photo 9 (06/06/2013) - Left Gate Open, Note Flow at Base



Photo 10 (06/06/2013) - Center Gate Reported Closed, Note Flow at Base

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Photo 11 (06/06/2013) - Right Downstream Groin Area



Photo 12(06/06/2013) -Left Downstream Groin Area