

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
Northern Region
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September 1, 2022

Callahan Lake Association
c/o Dennis Toll
1530 Royal Poinciana Dr
Sanibel, FL, 33957

Subject: Dam Safety Inspection Report – Callahan Lake Dam, Field File #57.39, DKSJN 302, located in SW 1/4 of the NE 1/4 of Section 34, Township 41N, Range 07W, Sawyer County, WI.

Dear Mr. Toll,

The Department of Natural Resources (Department) completed an inspection of the Callahan Lake Dam on June 2, 2022. The dam was inspected in accordance with the schedule dictated by Ch 31.19(2), Wisconsin Statutes. However, the Department completed the owner required inspection as the dam does not have a clear owner on file. While the Department understands the ownership of the dam is in question, you are receiving this letter because you either own land that is in direct proximity to the dam, you are a municipal entity that has jurisdiction in the surrounding area, or a representative for the Lake Association. The report directives will apply to the landowner or entity that accepts ownership of the dam through a future dam transfer permit. Based on the inspection and information that the Department has on file, the following directives and a schedule for when the work is to be completed is found within the report. Right and left are referenced while standing on the dam looking downstream.

Callahan Lake Dam across the North Fork Chief River in the SW¼ of the NE¼ of Section 34, Township 41N, Range 07W, Town of Round Lake, Wisconsin. The previous inspection memorandum indicated the dam as unauthorized. However, the dam has been confirmed as authorized based on review of the Department's file. The Department's file includes correspondence relating to the dam as early as 1936. In 1936 a resort owner and Sawyer County worked with the Works Public Administration to determine if water levels could be raised approximately 10-ft from existing water levels, some flowage easements were obtained but the dam was never constructed through a formal process. A previous landowner inquired to the Public Service Commission (PSC) about his obligation regarding remains of the dam on his property. The PSC advised that the dam could be rebuilt to maintain previous water levels but a permit would have to be issued to raise water levels above what were maintained previously. In 1938 the road near the outlet of Callahan Lake was damaged and the County quit claimed deed of property and proposed to build a bridge at the dam site. In 1954 the bridge was removed and replaced with three 6x4-ft arch-type culverts set below lake level. In order to preserve the existing lake level, the local residents reconstructed the stone dam just ahead of the culverts and at the same time installed flash on the crest and built a fishway through one of the culvert with a stop log section. It was noted that the condition after the installation of the culverts did not appear different than before installation.

The dam is considered large according to NR 333 Wis. Administrative Code. The Department's Dam Safety Database lists the structural height as 15 feet and has a maximum storage capacity of approximately 6300 acre-feet. The hazard rating is estimated as low based on downstream land use. The dam impounds Callahan and Mud Lake a total of approximately 602-acres.

The dam includes an approximately 225-ft long earthen embankment. There are two spillways that share the same earthen embankment for the dam. The upper spillway structure consists of rock and other debris piled against steel fence posts that create a 50-ft long crest. The lower spillway consists of three perched arch culverts that have

similar dimensions to those described in previous inspections or approximately 6x4-ft. What was referred to as a “fishway” in previous reports, controls and diverts water into the furthest left culvert.

INSPECTION OBSERVATIONS

Embankments:

The dam includes an approximately 225-ft long earthen embankment. The embankment is comprised of the North Callahan Lake Road embankment.

As noted in previous inspection reports, the embankment has a downstream slope that is between 1:1 and 2:1 (horizontal to vertical). Embankments are typically recommended to have a 3:1 slope. Steeper slopes create conditions that are hard to maintain as well as instabilities due to hydrostatic pressures and erosion from overland runoff. A shorter embankment width (upstream to downstream toe) could also lead to decreased seepage control potential.

Embankment erosion is occurring due to roadway runoff directed to the steep grade downstream right of the outlet pipes. There appears to be some signs of embankment slumping / settling as longitudinal cracks in the roadway along the downstream appear to have been historically filled in. The right overflow culvert appears to show signs of slumping on both the upstream and downstream sides. This is likely due to embankment settling. It is unknown what the embankment is composed of. Tires are noted protruding from the downstream side of the road embankment. Dams are typically constructed of clayey compact soils to decrease seepage potential.

Signs of seepage were noted along the upstream right side of the center culvert and potentially between the left and center culvert. Due to the amount of flow from the culverts and rock blocking observation on the downstream side of the culverts, seepage flows from the upstream side could not be discerned from outlet pipe flows. Uncontrolled seepage flows could cause internal embankment erosion and piping around the existing culverts causing a failure of the embankment.

Grass on the embankment has not been mowed or maintained. Thick vegetation makes it difficult to inspect embankment integrity. Woody vegetation in the form of trees and brush was observed on the upstream and downstream sides of the embankment. Woody vegetation is not desirable on dam embankments as the roots can cause seepage paths leading to internal erosion and embankment failure. Trees can also fall over causing embankment voids where the root ball once was intact. These can weaken the embankment and create a susceptible area for further seepage and instability.

A small hole that appears to be from an uprooted tree was noted at the downstream right embankment toe. Embankments should not have cavities as this could cause seepage or stability issues.

Upper Spillway:

The upper spillway is comprised of steel fence posts and debris that impounds approximately 3-ft of water from the upstream lake level to just upstream of the center culvert. The crest is approximately 50-ft long. The debris does not look artificially placed but likely is due to accumulation from higher flows. The left side of the upper spillway passes water through what has been historically called a “fishway”. The structure has a debris catchment type cage on the upstream side of the fishway. Stoplogs look to be recently replaced and may have some control over lake levels. The concrete training walls appear to be slightly tipped despite having steel struts between them. The outlet of the fishway structure is into the left downstream culvert. During highwater, historically the left training wall has overtopped allowing water to bypass the stoplog section and flow into the left culvert. There appears to be some head cutting of the left embankment left of the fishway structure.

Stability issues with the fishway structure appear evident. It is also appears most of the debris built up behind the steel fence posts is rotting. It is unknown what is beneath the posts and if enough debris was clogged, how high water could rise before posts were pulled out or bent over losing a portion of the lake. Where the concrete right training wall of the fishway structure meets the embankment between the left and center culvert, there is a void due to concrete spalling. This could lead to flow seeping between the two culverts if it is not already occurring.

Lower Spillway:

The lower spillway is comprised of three perched arch culverts approximately 6x4-ft (horizontal to vertical). The furthest right culvert is perched approximately 2.75-ft. There does not appear evidence of recent flow in the overflow culvert. All three culverts have struts placed down the length of culvert. Significant deflection of the overflow culvert is noted as the invert appears peaked midway through the embankment. There is a drop of 3.2-ft from the upstream to downstream side of the approximately 45-ft long overflow culvert.

There appears to be a void around the upstream right side of the center culvert and the headwall. Seepage is likely occurring around this pipe. The left side of the center culvert is also showing signs of deterioration as holes are forming through the pipe. It is unknown what the condition is of the inside of the center and left culvert.

The headwall for the culverts appears to be slumping toward the upstream channel and a void was noted in the embankment on the far-right side of the headwall near the right overflow culvert.

Debris was noted in the left and center culvert and building up behind the struts. If enough debris is built up and not able to be passed, this could cause reduced capacity and possible roadway overtopping leading to embankment failure.

Two birch trees were noted leaning over the channel between the upper and lower spillway on the right embankment. Enough wind or high water could cause the trees to fall onto the fishway structure and cause damage or create a barrier upstream of the culverts which could catch debris and reduce flow capacity.

DIRECTIVES

DUE DATE

Immediate Actions

October 1, 2022

Coordination among landowners included in this letter will need to occur to solve the immediate actions required.

- Debris in the culverts needs to be cleaned out and remain clear until the dam is reconstructed or abandoned and removed.
- The two birch trees on the right embankment hanging over the channel between the upper and lower spillway need to be removed. Someone with professional knowledge of removing trees in a way as to not impact the current dam structure should be contracted.

Ownership

October 1, 2023

- The Department does not have an owner on file at this time for the dam. An owner is defined by NR 333.03(15), Wisconsin Administrative Code, as *“any individual, partnership, public utility, company, cooperative, trust, corporation, association, state or interstate agency, city, village, town, county or special purpose district such as a drainage district or a public inland lake protection and rehabilitation district which has title to or recorded easement for operation, maintenance and access to a dam or to the specific parcel of land on which a dam exists.”*

Ownership of the dam is the determining factor for the future of the dam. Without ownership, the dam is in an abandoned state and will continue to deteriorate over time ultimately leading to failure and a reduction of water level anywhere from 3-ft to 9-ft. If the dam were to fail and no owner in place, it would surely cause a delay in returning water levels to previous conditions as well as funding strain on whomever assumes ownership and responsibility for the reconstruction of the dam. Abandoned dams are regulated under Ch 31.187, Wisconsin Statutes, which allows the Department to remove or cause to be removed old and abandoned dams. A private or public entity will need accept ownership and responsibility for the dam through a Ch 31.21, Wisconsin Statutes, transfer permit in order that the Department does not formally determine the structure as abandoned and follow the due process.

Options to Achieve Compliance

October 1, 2025

- **Reconstruction**

The dam in its current configuration and lack of maintenance will need to be reconstructed. The new owner will need to submit a Ch 31, Wisconsin Statutes, application to reconstruct the dam. Plans and specifications will need to be submitted by a professional engineer registered in the State of Wisconsin. Plans will need to address stability, replacement of the outlet control structure, hydraulic capacity, and provide other requirements according to NR 333, Wisconsin Administrative Code, if the dam is to remain Large. Requirements for Large dams include stability analysis, dam failure analysis, emergency action plan, and an inspection operation and maintenance plan. The dam will also have a future inspection schedule dictated by the hazard rating as a result of the dam failure analysis.

The dam will also need at least one benchmark on the dam. A dam warning sign will need to be installed upstream to warn recreationists of the structure.

- **Abandonment/Removal**

The future owner of the dam could also choose to abandon and remove the dam instead of reconstructing it. A Ch 31.185, Wisconsin Statutes, application would need to be submitted for abandonment. This would need to include a public notice process of the desire to abandon and remove the dam in accordance with Ch 31.06, Wisconsin Statutes. Plans and specifications would need to be submitted by a professional engineer registered in the State of Wisconsin for review and approval.

SUFFICIENCY RATING

This inspection letter also contains a sufficiency rating based on Department guidance dated September 18, 2012. The sufficiency rating of a dam is a snapshot of the physical condition and compliance with NR 333 requirements. Sufficiency ratings help the Dam Safety Program track progress of the dam and whether the Program is meeting its goal of promoting safe dams. The rating has no regulatory significance; however, not completing directives listed above could trigger enforcement. Based on the Department guidance, the Callahan Lake Dam is classified as **Poor**.

If you have any questions concerning this letter or to request a change to the above due dates please contact me at Jacob.Druffner@wisconsin.gov or 715-461-0159.

Sincerely,



Jacob Druffner
Water Management Engineer
Spooner Service Center

Cc: Uriah Monday, P.E., State Dam Safety Engineer, WDNR
Tanya Lourigan, P.E., Dam Safety and Floodplain Mapping Section Chief, WDNR
James Yach, Secretary's Director – Northern Wisconsin, WDNR
Claudia Spaulding: 1041 Timberline Dr, West Bend, WI 53095
Victoria Palya: 9970N Callahan Lake Rd, Hayward, WI 54843
Donald & Beverly L Wojcik: 10310 Cambridge, Westchester, IL 60154
Town of Round Lake, c/o Rolfe Hanson – Town Chairman: 10625N County Rd A, Hayward WI 54843
Sawyer County, c/o Jay Kozlowski - Zoning & Conservation Administrator: 10610 Main St STE 49
Hayward, WI 54843-6584
Callahan Lake Association, c/o Dennis Toll: 1530 Royal Poinciana Dr, Sanibel, FL, 33957

Encl: Inspection Checklist
Inspection Survey
Inspection Photolog