Coe Pond Dam Inspection Findings

Kinneytown Hydroelectric Project (FERC No. 6985)

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Prepared for:

NVCOG

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LIST OF ABBREVIATIONS

cfs	cubic feet per second
CTBLB	Connecticut Brownfield Land Bank, Inc.
CTDEEP	Connecticut Department of Energy and Environmental Protection
CTDOT	Connecticut Department of Transportation
FERC	Federal Energy Regulatory Commission
FEMA	Federal Emergency Management Agency
ft	Foot/Feet
kW	kilowatt
Licensee	Kinneytown Hydro Company
NVCOG	Naugatuck Valley Council of Governments
P.E.	Professional Engineer
Project	Kinneytown Hydroelectric Project (FERC No. 6985)
USCOE	United States Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

EXECUTIVE SUMMARY

Based on a visual inspection conducted on December 21, 2023 by William Friers, P.E. and Trevor Fenoff, representatives from Gomez and Sullivan Engineers, D.P.C (GSE), GSE concluded that any one of several deficiencies could lead to a breach of the Coe Pond Dam at any time. A breach could inundate and damage the Metro-North commuter rail line that is immediately below and adjacent to the Coe Pond Dam with potential loss of human life for those on the commuter railroad line. This public safety threat should be addressed by lowering Coe Pond's water level as soon as site conditions allow, but not later than the end of April 2024.

The Coe Pond Dam is located in Seymour, Connecticut, approximately one-half mile north of the Seymour-Ansonia Town Line. The dam is part of the Kinneytown Hydroelectric Project (Project, FERC No. 6985), which is currently owned Kinneytown Hydro Company. The depth and breadth of the several deficiencies observed along the 1.2-mile-long earthen dam warrant the condition rating of the dam as Poor.

The deficiencies that were noted include:

1. The crest was covered with brush and trees up to 18 inches in diameter.
2. The vertical alignment (crest elevation) was found to be irregular with low spots at several locations.
3. The horizontal alignment (crest width) varied from approximately 14 feet to 20 feet.
4. An approximately 28-inch-deep erosion channel (washout), likely due to overtopping of the earthen dam, with an average width of approximately 16 feet was observed about 3,900 feet downstream of the gatehouse.
5. The inboard slope of the earthen dam is unprotected with areas of erosion and undermining due to wave action.
6. The inboard slope of the earthen dam is overgrown with woody vegetation and trees up to 24 inches in diameter along the shoreline.
7. The inboard slope is near vertical in numerous locations.
8. Signs of beaver activity along the inboard slope including chewing of trees and abandoned bank dens were observed.
9. Several trees growing on the outboard slope appear to be leaning away from the crest, a possible indication that the embankment in those areas is, or has, experienced minor shallow slope failure.
10. Erosion rills, surface erosion of granular materials and areas of possible seepage were observed in unvegetated areas of the outboard slope.
11. Shallow scarps on the outboard slope were observed in the vicinity of the erosion channel.

If the above conditions are not remediated as soon as site conditions allow there exists a real possibility for a dam breach to occur. Exacerbation of any one or a combination of the several deficiencies could lead to a breach of the dam. At any time, a tree and its root ball could topple, or animal burrows, roots, erosion, or overtopping could lead to a breach of the Coe Pond dam and inundation of the railway.

FERC classified Coe Pond as having a significant hazard potential. Per FERC dam safety guidelines, dams assigned the significant hazard potential classification are those where failure or mis-operation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. However, GSE proposes Coe Pond Dam should be assigned a Hazard Classification of High because: a) there is an active commuter railroad line positioned below the earthen dam, b) the observed deficiencies with the earthen dam, and c) that there is no instrumentation to monitor Coe Pond water levels, it is possible that a breach could result in the potential loss of human life for those on the commuter railroad line. GSE's recommendation is consistent with FEMA Document 333, Hazard Potential Classification Systems for Dams, which states: "*The hazard potential classification*

assigned to a dam is based on consideration of the effects of a failure or mis-operation during both normal and flood flow conditions. The classification assigned should be based on the worst-case probable scenario of failure or mis-operation of the dam, i.e., the assigned classification should be based on failure consequences that will result in the assignment of the highest hazard potential classification of all probable failure and mis operation scenarios. Each element of a project must be evaluated to determine the proper hazard potential classification for the project. However, there is only one hazard potential classification assigned to the entire project. Individual elements are not assigned separate classifications".

GSE recommends that Coe Pond's water level be lowered as soon as site conditions allow. While FERC included several issues needing to be addressed, GSE prioritized the issues based on public safety. Given the threat to public safety should the earthen dam breach, the top priority and highest level of urgency is lowering the water level in Coe Pond to reduce pressure on the earthen dam, reduce the potential for overtopping, and reduce the volume of water in Coe Pond. Based on the site inspection, the best evaluated alternative to lowering the Coe Pond water level is purposely removing a portion of a 65-foot-long northern weir north of the Ansonia Powerhouse. It is recommended that this work be completed as soon as conditions permit, but not later than the end of April 2024. As explained in this report, other actions may also be warranted.

1 BACKGROUND

Kinneytown Hydro Company[1] (Licensee) currently owns the Kinneytown Hydroelectric Project (Project, FERC No. 6985), located on the Naugatuck River in Seymour, Connecticut, approximately one-half mile north of the Seymour-Ansonia Town Line. The Federal Energy Regulatory Commission (FERC), who has jurisdiction over hydroelectric projects in the United States, issued a license (an exemption) for the Project on May 20, 1983.

As shown in Figure 1.0-1, the Project features generally include a) a mainstem dam, b) the Seymour Powerhouse (known as Unit 1[2]) on the west side of the mainstem dam, c) a fish ladder to pass migratory fish above the mainstem dam, d) a gatehouse on the east side of the mainstem dam controlling flow into a canal feeding Coe Pond (Figure 1.0-2), e) an approximate 1.2-mile long earthen dam enclosing the Coe Pond, and f) the Ansonia Powerhouse (known as Unit 2) located at the downstream terminus of the Coe Pond (Figure 1.0-3). The earthen dam, Coe Pond and the Ansonia Powerhouse existed before 1920. The addition of the Seymour Powerhouse in the 1980's triggered the original Licensee to license the Project with FERC.

The mainstem dam is the lowermost dam on the Naugatuck River, a tributary to the Housatonic River. There are no dams on the Housatonic River below the confluence with the Naugatuck River, thus migratory fish can access the base of the mainstem dam. Units 1 and 2 within the Seymour and Ansonia Powerhouses have not operated since 2019 and 2010, respectively.

Based on a review of the FERC public record associated with the Project, there is a long history of poor fish passage and lack of responsiveness and compliance from the current Licensee. For years, migratory fish are being falsely attracted to the base of the mainstem dam since Unit 1 and 2 are not operating and most flow is spilled at the mainstem dam making it difficult for fish to find the ladder entrance. Passage has been poor for several years. For years, FERC issued the current Licensee numerous letters to address a host of issues, including fish passage and re-energizing the Project, however, the Licensee did not address or comply with FERC's requests. There is also a lengthy record of federal and state fishery agencies and several non-governmental organizations, including the Naugatuck Valley Council of Governments (NVCOG), having filed numerous letters with FERC regarding the lack of fish passage and lack of responsiveness by the Licensee.

Because of concerns regarding the lack of fish passage and the Licensee ignoring FERC requirements, the Connecticut Brownfield Land Bank, Inc. (CTBLB), a non-profit brownfield redevelopment corporation affiliated with the NVCOG, opted to purchase the Project with the intent of surrendering the FERC license and eventually removing the dam to restore migratory fish passage. On July 4, 2023, the CTBLB and Kinneytown Hydro Company executed the First Amendment to Asset Purchase Agreement, extending CTBLB's due diligence period to November 2, 2023 with a closing date on or before November 15, 2023. Subsequently, the closing date was extended to May 10, 2024.

The purchase was not consummated as CTBLB became aware that the earthen dam enclosing Coe Pond was never inspected by FERC. While FERC conducted dam safety inspections at the Project over the years, for some reason, the earthen dam was never inspected. Complicating matters is an active railroad commuter line (Metro-North) and electrical lines run west of the earthen dam. West of Coe Pond the topography slopes toward the railroad line/electrical lines and Naugatuck River, thus there is a concern for public safety should the earthen dam breach. East of Coe Pond, the topography rises.

[1] Kinneytown Hydro Company is currently owned entirely by Trimaran.
[2] A unit includes a generator and turbine that generate power.

NVCOG and the CTBLB notified the FERC Regional Engineer about the earthen dam and on August 2, 2023, the following organizations conducted an inspection of the earthen dam: Connecticut Department of Energy and Environmental Protection (CTDEEP), Connecticut Department of Transportation (CTDOT), FERC, Metro-North Railroad, and NVCOG.

On October 4, 2023, FERC sent the Licensee a follow-up inspection report (Appendix A), based on its visits to the Project on June 13 and August 2, 2023. FERC raised several concerns specific to the gatehouse leading to Coe Pond and the earthen dam as follows.

- The gates in the gatehouse at the head of the Coe Pond are stuck in various positions. Two of the gates are fully closed and the three remaining gates are partially opened. FERC requested the gates be repaired.

- Overgrown vegetation and woody vegetation growth were observed throughout the Project, including woody vegetation along the crest of the embankment leading to the Ansonia powerhouse. This vegetation could lead to a failure of the earth embankment from seepage paths along tree roots and/or loss of embankment material if trees fall. FERC requested the Licensee to assess the current vegetation on the embankment, develop a plan to remove/address the woody vegetation within 10 feet of any Project structure, and perform any needed remediation to ensure the embankment is brought into satisfactory condition.

- There was evidence of a washout along the railroad tracks with erosion along the downstream face of the dam embankment leading to the Ansonia powerhouse. FERC suspected this may have been due to overtopping of the embankment. After repairing the gates in the gatehouse, FERC is requiring the gates be closed to help prevent future overtopping until the necessary Project repairs and remediation are addressed. FERC requested the Licensee to assess lowering the water level in Coe Pond due to the existing condition of the embankment and to prevent overtopping. FERC noted that if lowering Coe Pond water level is deemed beneficial, the Licensee must explain how it will be accomplished (e.g., to what level, drawdown procedures, drawdown rate, schedule, monitoring procedures).

- FERC requested the Licensee to evaluate the potential for overtopping of the earthen dam due to runoff from the local drainage basin into Coe Pond.

- FERC classified Coe Pond Dam as having a significant hazard potential due to potential economic impacts failure of the spillway may have commercial and industrial areas downstream of the dam.

- FERC requested the Licensee to conduct an engineering evaluation of the embankment dam for safe operation under sunny day and flood conditions. FERC required the evaluation include, but not be limited to, slope stability under sunny day and flood conditions, as well as the erodibility of the upstream and downstream face of the dike due to local runoff.

Note that per FERC dam safety guidelines, dams assigned the significant hazard potential classification are those where failure or mis-operation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Based on our review, given the location of the commuter railroad line relative to the earthen dam, it is possible that a breach of the earthen dam could result in the potential loss of human life.

On October 26, 2023, the CTDOT sent FERC a letter outlining similar concerns as discussed above (see Appendix A). On October 12, 2023, the United States Fish and Wildlife Service (USFWS) noted that they

had no objection to lowering the water level in Coe Pond; however, USFWS raised concerns with the removal of trees greater than 3 inches diameter-at-breast-height as they could be used by the federally endangered long-eared bat. The USFWS recommended that if trees need to be removed it should be done outside the active season of April 1 to October 31.

Due to the conditions identified and issues raised by FERC, there is concern with taking ownership of the Project given the condition of the earthen dam and potential public safety implications associated with the earthen dam. Given this, Gomez and Sullivan Engineers, DPC were contracted to conduct a site inspection of the gatehouse, earthen dam, and Ansonia Powerhouse area, render an opinion on the earthen dam, and to outline measures to address the concern as part of the pre-acquisition due diligence.

COE POND DAM ASSESSMENT
KINNEYTOWN HYDROELECTRIC PROJECT
FERC 6985

GOMEZ AND SULLIVAN ENGINEERS

N

0 375 750 1,500 Feet

Figure 1.0-1:
Project Layout

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GOMEZ AND SULLIVAN ENGINEERS

COE POND DAM ASSESSMENT
KINNEYTOWN HYDROELECTRIC PROJECT
FERC 6985

N

0 50 100 200 Feet

Figure 1.0-2:
Project Features at Dam

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GOMEZ AND SULLIVAN ENGINEERS

COE POND DAM ASSESSMENT
KINNEYTOWN HYDROELECTRIC PROJECT
FERC 6985

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0 50 100 200
Feet

Figure 1.0-3:
Project Features at Ansonia Powerhouse

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2 PROJECT LAYOUT

As shown in Figure 1.0-1, the Project features generally include a) a mainstem dam, b) the Seymour Powerhouse (known as Unit 1[3]) on the west side of the mainstem dam, c) a fish ladder to pass migratory fish above the mainstem dam, d) a gatehouse on the east side of the mainstem dam controlling flow into Coe Pond, e) an approximate 1.2-mile long earthen dam enclosing Coe Pond, and f) the Ansonia Powerhouse (known as Unit 2) located at the downstream terminus of the Coe Pond.

Mainstem Dam

The mainstem dam consists of a concrete ogee spillway section with a crest length of 413 feet. There are two angle points at approximately the third points, which give the plan of the spillway an "S" shape. The right portion of the dam is 238-feet-long and was constructed of rubble concrete in 1910. Construction records indicate that an upstream cut-off wall constructed of concrete was carried to rock or impervious stratum, and a downstream concrete toe wall contains 6-inch square weep holes. This section of the dam has provisions for 2-foot flashboards, consisting of steel rods four feet on center, extending from iron pipe sleeves cast into the spillway crest. The left 175 feet of the dam is two feet higher in crest elevation and is constructed of concrete. A railroad embankment forms the left abutment of the dam, and a 50-foot-long earth embankment connects the right training wall to the right abutment.

Powerhouses

The Seymour Unit 1 has an electrical and hydraulic capacity of 1,820 kilowatts (kW) and 870 cubic feet per second (cfs), respectively. Unit 1 discharges near the fish ladder entrance. The Ansonia Unit 2 has an electrical capacity and hydraulic capacity of 850 kW and 411 cfs, respectively. As noted above, both Unit 1 and 2 have not operated since 2010 and 2019, respectively.

Age of Coe Pond and Earthen Dam

The 1983 license states the following: "*Available records indicate that the (main) dam[4] was originally constructed around 1845 as a timber crib dam approximately 40 feet upstream of the present day dam. The timber crib dam was washed out in 1910 and in the same year a new 245-foot-long rubble concrete dam with a full length ogee spillway was constructed at the present*."

The 1859 Tackabury State Map (see inset), and other maps provided to Gomez and Sullivan, including an 1850 map of Seymour and 1852 County Map, shows Coe Pond along with the railroad line. Given the age of the structure, it is likely that the soils comprising the earthen dam are naturally deposited materials and were not specifically selected for construction of an embankment dam.

[3] A unit includes a generator and turbine that generate power.
[4] In this case, the Licensee is referring to the mainstem dam.

3 INSPECTION FINDINGS

3.1 Overview

All photographs referenced in this section are included in Appendix B. A reference map showing the photo locations is also provided.

An inspection was conducted from 8:30 AM to 1:30 PM on December 21, 2023 by William Friers, P.E. Mr. Friers was accompanied by Trevor Fenoff of Gomez and Sullivan Engineers, Ron Shems of Tarrant, Gillies, Shems, Aaron Budris of NVCOG, and Paul Woodward and Laura Wildman, P.E. of Save the Sound. Weather conditions for the inspection were generally clear, with temperatures around 40°F. There was no snow on the ground. At the time of the inspection approximately 12 inches of water was spilling over the mainstem dam (**Photos 1 and 2**). There was approximately 2 feet of freeboard between the top of the earthen dam and Coe Pond water surface during the site visit.

The site inspection included the following areas:

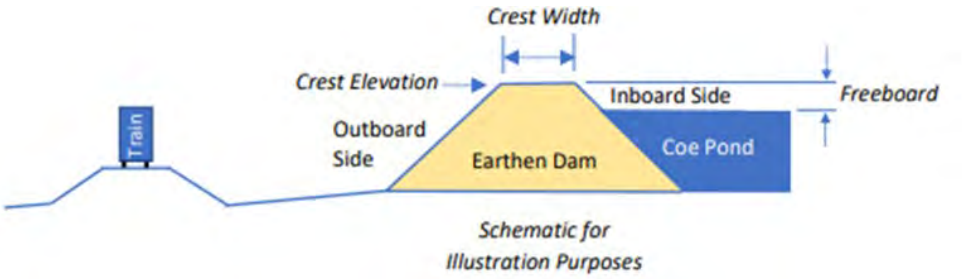
- The outside and inside of the gatehouse was inspected.
- The crest of the earthen dam was inspected including the outboard (railroad side) and inboard (pond side) slopes that were accessible.
- The area around the Ansonia Powerhouse was inspected including the spillway, three water control gates, and the northern and southern weirs located upstream and downstream of the Powerhouse intake.

3.2 Gatehouse

The gatehouse contains five gates, each approximately 3-feet-wide by 4-feet-high. The gates were historically opened and closed to maintain the magnitude of flow into the canal feeding Coe Pond which was used for generation at the Ansonia Unit 2. Based on Gomez and Sullivan's field measurements during the inspection it appears that two of the gates were fully closed; and that the three remaining gates are open approximately 2 feet (i.e. bottom of the gate is approximately 2 feet above the gate sill). Reportedly all five gates are stuck in position (FERC letter dated October 4, 2023). Gomez and Sullivan did not attempt to operate the gates during the inspection. The bottom of the headpond, at the upstream face of the gatehouse, was sounded for the water depth. The sounding found that approximately 4 feet of sediment and debris has accumulated in front of the gate openings. At the time of the inspection, little-to-no flow was observed discharging from the gatehouse to Coe Pond. The interior of the gatehouse was generally clear of debris and other materials such that the gates operators were accessible (**Photo 45**). Based on Gomez and Sullivan's experience it is unlikely that any of the 5 gates can be raised or lowered without significant restorative efforts on the gate guides and perhaps to a lesser degree, the gates themselves. If an attempt is made to open any of the gates without inspection and appropriate repairs the force required to initiate upward movement could be expected to be two-to-three times greater than that required to open a properly maintained gate. Without repair of the gates and gate guides it is unlikely that the gatehouse's structural framing can handle the anticipated higher forces. A structural analysis of the gatehouse support framing should be performed prior to attempting to lift the gates with the in-place system. If the existing framing is found inadequate an alternative system, independent of the existing structure, would be required to lift the gates.

3.3 Earthen Dam

Crest



The crest of the earthen dam was covered with brush and trees up to 18 inches in diameter measured 4.5 above ground level, at breast height (DBH) feet (**Photos 3-6**). As noted above, these mature trees, if toppled, have root balls that could compromise the integrity of the earthen dam. Specifically, trees that blow down or fall over can leave large holes in the embankment surface that will weaken the embankment and can lead to increased erosion and ultimately to a breach of the dam. A breach of the earthen dam would inundate the adjacent railroad, causing significant damage to the tracks and railbed. The vertical alignment (crest elevation) of the earthen dam was found to be irregular with low spots at several locations (**Photo 9**). The horizontal alignment (crest width) of the earthen dam varied from approximately 14 to 20 feet (**Photo 10**). Approximately 3,900 feet downstream of the gatehouse, near Coe Pond, was an approximately 28-inch-deep erosion channel (washout) with an average width of approximately 16 feet (**Photo 11**). The erosion channel may have been the result of overtopping flow from Coe Pond.

Note that overtopping of the earthen dam could be the result of build-up of an ice dam in the approximately 160-foot-long section of Coe Pond, north of the Ansonia Powerhouse. Ice dams are caused by melting snow and ice, when warm temperatures and spring rains cause snow and ice to melt very rapidly. The additional flow causes frozen rivers and streams to swell up, and the layer of ice on top of the river begins to break up. Large chunks of ice are carried downstream, and sometimes a group of ice chunks get stuck in a narrow passage of the river (in this case, the Coe Pond outlet area). The ice chunks form an ice dam, which could block the natural flow of the waterway.

Inboard Slope (sloping toward Coe Pond)

The inboard slope of the earthen dam is overgrown with woody vegetation, and trees up to 24 inches in diameter (DBH) are located along the shoreline (**Photos 7 and 8**). The slope is near vertical in some locations (**Photo 4**) and has numerous areas of erosion due to wave action (**Photo 16**). Some trees located near areas of undermining are leaning towards Coe Pond (**Photo 17**). In addition, significant portions of the slope have exposed tree roots. Much of the slope lacks protective armoring such as riprap or other stabilizing materials (**Photo 15**). As noted above, the potential for uprooting of mature trees has the potential to breach the earthen dam, jeopardizing public safety and damaging the adjacent railroad and electrical lines. There are areas appearing to have some small riprap, but the extent of the armoring is unknown. Signs of beaver activity were also observed along the inboard slope including chewing of trees, and apparent abandoned bank dens (**Photos 12, 13 and 14**). The presence of bank dens (burrows) on the inboard and/or outboard slopes of an earthen dam can dramatically alter how an earthen dam controls the water pooled behind it. Specific concerns with burrows include:

- Shortened seepage paths;
- Increased probability of slope failure; and,

- Internal erosion of embankment materials (piping), which is a progressive condition that can rapidly lead to dam failure.

Near the gatehouse adjacent to the dam, the inboard slope consists of sheetpile bulkhead (**Photo 44**).

Outboard Slope (sloping to Naugatuck River)

The railroad line is located between 40 and 80 feet (varies) beyond the outboard (downstream) toe of the earthen dam. The railbed line is approximately twelve feet lower than the normal pool water surface elevation of Coe Pond. The outboard slope varies from approximately 1 horizontal to 3 vertical (1H:3V) to approximately 1 horizontal to 2 vertical (1H:2V) (**Photo 18**). Several trees growing on the outboard slope appear to be leaning away from the crest, a possible indication that the embankment in those areas is, or has, experienced minor shallow slope failure (**Photo 19**). No active seepage was observed during the inspection; however, there were several areas of probable historic seepage along the toe of the earthen dam. As noted above, the potential for uprooting of mature trees has the potential to breach the earthen dam, jeopardizing public safety and damaging the adjacent railroad and electrical lines. Erosion rills and surface erosion of granular materials were observed in unvegetated areas of the outboard slope (**Photos 20, 21 and 22**). Embankment material observed on unvegetated, exposed surfaces consist of primarily of gravel, with stones generally less than 4 inches in diameter. Sand and silty sand, very susceptible to erosion, were observed on unvegetated/unprotected surfaces of the outboard toe and beyond (**Photos 20 and 25**). Similar silty, sandy soils were observed just west of the railroad indicative that the material may be natural to the area (**Photo 26**). Several shallow slides were observed in the vicinity of the previously mentioned erosion channel (**Photo 23 and Photo 24**). Typical characteristics of a slide are an arc-shaped crack or "scarp" along the top and a bulge along the bottom of the slide. The presence of a slide is indicative of one or more of the following: poor soil compaction, the gradient of the slope being too steep for the embankment material, seepage, sudden drawdown of the pond level, undercutting of the embankment toe, or saturation and weakening of the embankment or foundation.

3.4 Ansonia Powerhouse

The Ansonia Powerhouse consists of a powerhouse, turbine-generator (Unit 2), water control structures including the northern and southern discharge weirs, trashracks (**Photo 30**), two spillway sections (**Photos 36 and 37**), wood plank decks used to access the gates, the earthen dam, and 4 headgates (vertical slide gates). The wood plank decks are in poor condition, with numerous missing and rotted boards (**Photo 31**). The headgates (**Photo 32**) used to control flow to the turbine generator are closed and reportedly inoperable. The generating equipment in the powerhouse is in disrepair (**Photos 27, 28 and 29**). The concrete weirs and spillway sections appear to be in generally good condition (**Photos 33, 34 and 35**). Sediment has accumulated to within a foot of the weir crest on the pond side of the weirs.

3.5 Instrumentation

It is our understanding that there is no instrumentation for the gatehouse, the earthen dam or the Ansonia Powerhouse. The lack of instrumentation to monitor Coe Pond water levels is of concern. If the pond water level were monitored, and if the water levels were to drop below a threshold elevation, it could sound an alarm and notify the Licensee to investigate the reason for the lower water levels. Monitoring would provide warning of a breach and appropriate notifications to the commuter railroad line could occur.

3.6 Project Access

Access to the gatehouse is from South Main Street via an unpaved road, single lane. A chain-link fence with a padlocked gate restricts entry to the gatehouse to authorized personnel only. Access to the Ansonia Powerhouse is from North 4th Street where there is a gate and locked security fence leading to a set of wooden stairs extending down to the east side of the pondl. A 3-foot-wide bridge spanning the Coe Pond provides access to the spillways, weirs, sluice gates and powerhouse (**Photo 38**). Personnel can access the earthen dam across the above mentioned 3-foot-wide pedestrian bridge.

Gomez and Sullivan investigated alternatives for construction equipment access that would likely be required to perform remediation of the earthen dam. Potential access points to Coe Pond (assuming construction equipment can be transported by barge to the Coe Pond earthen dam) are from North 4th Street, Kathy Lane, Hotchkiss Terrace, and Hemlock Drive, and Sunset Street (**Photos 39, 40, 41, 42 and 43**). As depicted in the photographs and in Figure 3.6-1, access to Coe Pond is severely limited by residential housing developments, and the terrain. As such, primary access for construction equipment appears to be over the pedestrian bridge noted above. Modifications to the bridge, including widening and strengthening (structural reinforcement), would be required before it could be used. Additionally, the platform over the spillways and weirs would likely need to be reinforced and the deteriorated wood decking replaced.

GOMEZ AND SULLIVAN ENGINEERS

COE POND DAM ASSESSMENT
KINNEYTOWN HYDROELECTRIC PROJECT
FERC 6985

N

0 250 500 1,000 Feet

Figure 3.6-1:
Location of Potential Access Points

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4 SUMMARY OF FINDINGS

The overall condition of the earthen dam was found to be **Poor**. The deficiencies (in no particular order of importance) include:

1. The earthen dam crest was covered with brush and trees up to 18 inches in diameter (DBH).
2. The vertical alignment (crest elevation) of the earthen dam was found to be irregular with low spots at several locations.
3. The horizontal alignment (crest width) of the earthen dam varied from approximately 14 to 20 feet.
4. There was an approximate 28-inch-deep erosion channel (washout), likely due to overtopping of the earthen dam. The erosion channel had an average width of approximately 16 feet and was observed roughly 3,900 feet downstream of the gatehouse.
5. Shallow scarps[5] on the outboard slope were observed in the vicinity of the erosion channel.
6. The inboard slope of the earthen dam is unprotected with areas of erosion and undermining due to wave action from water in Coe Pond.
7. The inboard slope of the earthen dam is overgrown with woody vegetation and trees up to 24 inches in diameter (DBH) along the shoreline.
8. The inboard slope is near vertical in numerous locations.
9. Signs of beaver activity along the inboard slope was noted including chewing of trees and abandoned bank dens were observed. Dens within the earthen dam allow water from Coe Pond to potential seep through the earthen dam which can impact the integrity of the earthen dam.
10. Several trees growing on the outboard slope appear to be leaning away from the crest, a possible indication that the embankment in those areas is, or has, experienced minor shallow slope failure.
11. Erosion rills[6], surface erosion of granular materials and areas of possible seepage, were observed in unvegetated areas of the outboard slope.

Other observations made during the inspection, not directly related to dam safety, include:

1. The 5 gates in the gatehouse are reportedly inoperable, with 2 in the closed position and 3 opened approximately 2 feet.
2. Approximately 4 feet of sediment and debris has accumulated in front of the gate openings. No flow from the gatehouse was evident.
3. Wood plank decks at the Ansonia Powerhouse are in poor condition, with numerous missing and rotted boards.
4. The headgates at Ansonia Powerhouse used to control flow to the turbine generator are closed and reportedly inoperable.

The depth and breadth of the deficiencies observed along the 1.2-mile-long earthen dam warrant the condition rating of **Poor**. If measures to reduce the potential for earthen dam failure are not addressed in 2024, there exists a real possibility of a dam breach. Exacerbation of any one or a combination of several of the deficiencies could lead to a dam breach.

While there are no residential homes or business development west of the earthen dam, as noted above, there is the active commuter railroad line and overhead electrical lines. A breach of the earthen dam at any location could jeopardize public safety, damage/disrupt the commuter railroad line, and damage the overhead electrical lines. The main public safety issue is the commuter line. The earthen dam is located in a remote area where there are no “eyes” to identify a potential breach. In addition, to our knowledge there

[5] A scarp is an offset on the ground surface where one side of a fault has moved vertically with respect to the other.
[6] Rill erosion is a type of erosion that occurs as water flows over earthen slope and cuts shallow, curvy channels into the topsoil.

is no instrumentation monitoring Coe Pond water level, thus if a breach were to occur, the Licensee would not be aware.

5 HYDROLOGY/HYDRAULICS

Flow in Coe Pond is a function of the how many, and to what extent, each of the 5 gates are opened. In addition, runoff from the local drainage area empties into Coe Pond. Flow in Coe Pond was estimated to determine potential alternatives to lower the water level. As described later, the main alternative considered was lowering the northern weir to provide sufficient discharge capacity and reduce the pond water level and reduce potential for overtopping.

5.1 Gate Hydraulic Capacity

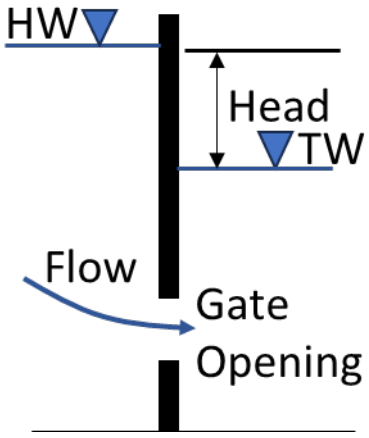
No hydraulic modeling of the pond was conducted to estimate its flow capacity; however, other methods were used to estimate the flow capacity.

Ansonia Unit Capacity

In the January 1983 application, it states that the existing Ansonia Unit 2 includes a single turbine having a capacity of 850 kW, operating head of approximately 30 feet and a design hydraulic capacity of 411 cfs.

Gatehouse Capacity- All 5 Gates Fully Open

The capacity of each gate, which are all 3-feet-wide by 4-feet-high or 12 ft^2, was estimated using the orifice equation. The orifice equation is as follows:



$Q = C \times A \times (2 \times g \times h)^{0.5}$, where:

Q= flow, cfs
C= coefficient of discharge for an orifice[7] (0.61)
A= area of a single gate opening (12 ft^2)
g= acceleration of gravity (32.2 ft/sec^2)
h= head, which is difference between headwater and tailrace elevation or as shown in the inset, HW elevation – TW elevation.

The head (h, or HW-TW elevation) was not computed while in field. Thus, a more conservative (higher) estimate of the discharge capacity was computed assuming there was no TW elevation, meaning the flow through the gate would be a free-jet discharge. In this case the flow through a single fully opened gate was computed under a head (h) of 15 feet. Under this scenario, the maximum capacity through a single gate was 228 cfs, or 1,138 cfs for all 5 gates.

Gatehouse Capacity- 2 Gates Closed, 3 Gates Open 2 feet

As noted above, during the inspection 2 gates were closed and 3 gates were stuck open approximately 2 feet (4-foot gates 50% open). In this case, the discharge capacity of these 3 gates would be approximately 705 cfs (again, a conservatively high number). However, as discussed above, there is approximately 4 feet of debris in front of the gates, as measured by Gomez and Sullivan, limiting the amount of water going through these gates.

[7] The coefficient of discharge for an orifice can range from 0.60 to 0.80. It was assumed that there would be a sudden contraction at the gate entrance, thus a coefficient of 0.61 was applied.

To estimate the flow in Coe Pond on the date of the site inspection, the water depth over the northern weir (see inset) was measured at 4 inches (0.33 ft). Weir flow occurred over a 65-foot-long portion of the northern weir, and an approximately 20-foot-long portion of the southern weir.

The total discharge capacity of the 65-foot-long northern weir and the 25-foot-long southern weir with 4 inches of spill was estimated using the weir equation as follows:

$Q = CLH^{1.5}$, where
Q= flow, cfs
C= coefficient of discharge, 3.33[8]
L= length of the weir= 85 ft = 65 ft + 20 ft
H= head on weir = 4 inches (0.33 ft)

The total flow over the weirs is approximately 54 cfs, which is considerably less than 705 cfs.

5.2 Local Drainage Area Runoff

In addition to the flow through the gates, local runoff enters the Coe Pond. Based on the USGS Streamstats program, there is one brook flowing into Coe Pond having a drainage area of 0.54 square miles and an estimated 50-, 100- and 500-year flood flow of 166, 201 and 299 cfs, respectively.

5.3 Total Flow

The total discharge flow from Coe Pond during the site inspection was approximately 54 cfs; however, that flow will increase under high flow conditions when the headpond elevation above the gatehouse increases. It also assumes that the gates will remain in their current positions. Adding the 299 cfs (500-yr flood) to the current flow of 54 cfs equates to 353 cfs.

5.4 Approximate Flow Resulting in Overtopping

As noted above there was approximately 2 feet of freeboard between the Coe Pond water level and the top of the earthen dam at the time of Gomez and Sullivan's inspection with the water surface approximately 4 inches above the top of the weir. To achieve overtopping of the earthen dam, an inflow of approximately 612 cfs would be necessary ($Q= 3.33 \times 65 \text{ ft} \times 2 \text{ ft}^{1.5}= 612$ cfs).

Alternatively, the dam would be overtopped if an ice dam formed in the lower reach of Coe Pond with an initial water level two feet below the crest of the dam coupled with an average inflow of 20 cfs over the course of two days.

[8]A coefficient of discharge for a sharp crested weir is approximately 3.33, while for a broad crested it is closer to 2.6. For purpose of this assessment, a sharp crested weir coefficient was selected as it will yield a higher flow estimate.

6 RECOMMENDATIONS AND REMEDIAL MEASURES

As noted above, FERC classified the Coe Pond Dam as having a significant hazard potential. Per FERC dam safety guidelines, dams assigned the significant hazard potential classification are those where failure or mis-operation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. However, GSE proposes Coe Pond Dam should be assigned a Hazard Classification of High because: a) there is an active commuter railroad line positioned below the earthen dam, b) the observed deficiencies with the earthen dam, and c) that there is no instrumentation to monitor Coe Pond water levels, it is possible that a breach could result in the potential loss of human life for those on the commuter railroad line. GSE's recommendation is consistent with FEMA Document 333, Hazard Potential Classification Systems for Dams, which states: "*The hazard potential classification assigned to a dam is based on consideration of the effects of a failure or mis-operation during both normal and flood flow conditions. The classification assigned should be based on the worst-case probable scenario of failure or mis-operation of the dam, i.e., the assigned classification should be based on failure consequences that will result in the assignment of the highest hazard potential classification of all probable failure and mis operation scenarios. Each element of a project must be evaluated to determine the proper hazard potential classification for the project. However, there is only one hazard potential classification assigned to the entire project. Individual elements are not assigned separate classifications*".

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In a letter to John Spain, FERC Regional Engineer, dated October 26, 2023 Bartholomew P. Sweeney, P.E., Division Chief of Bridges, Connecticut Bureau of Engineering and Construction voices the same opinion. Mr. Sweeney's judgement was based on observations made during a site visit on August 2, 2023.

Below we prioritize the key concerns with the earthen dam and recommended measures.

6.1 Priority 1- Lower Coe Pond Water Levels

While FERC included several issues needing to be addressed, we prioritized the issues based on public safety. Given the threat to public safety should the earthen dam breach, the top priority and highest level of urgency is lowering the water level in Coe Pond to reduce pressure on the earthen dam, reduce the potential for overtopping, and reduce the volume of water in Coe Pond. It is recommended that this work be completed as soon as conditions permit, but not later than the end of April 2024.Based on the site inspection, the best alternative to lowering Coe Pond water level is purposely removing a portion of a 65-foot-long northern weir north of the Ansonia Powerhouse (see inset). If Coe Pond water level rises above the northern weir, water flows into a separate channel and is discharged below the Ansonia Powerhouse and into the Naugatuck River as shown by the dotted blue line on the inset.

A photograph showing the approximate location to breach the northern weir is shown in Figure 6.1-1. The removal will lower the weir crest to be within 6 inches of the concrete base slab (sizing of the weir breach is discussed below). This removal will result in lowering the normal water level in Coe Pond and Coe Pond by

approximately 3 feet, which will reduce the likelihood of future overtopping of the earthen dam. Not only will the normal pond level be reduced and provide more freeboard but it will also increase the discharge capacity at the northern weir during periods of increased inflow. It is also anticipated that by lowering the northern weir, the potential of developing an ice dam at south end of Coe Pond (which could result in overtopping) may be reduced. Other realized benefits from lowering the water level include reduced potential of seepage and reduced potential of a breach due to uprooting of trees.

Note that there is currently no information on the depth of sediment between Coe Pond and the northern weir. It is recommended that prior to developing plans to lower the northern weir, bathymetric mapping be conducted between Coe Pond and the northern weir to determine the depth of sediment and whether a sediment "plug" could prevent lowering the water level. For example, if the sediment was 1 foot below the water surface along the width of the Coe Pond outlet, then breaching the northern weir by approximately 3 feet will not drop Coe Pond 3 feet.

As discussed in Section 3.6, the existing pedestrian bridge and gate operating platform will require modifications and reinforcing to allow construction equipment to safely access the work area.

Sizing of the Weir Breach

The length and depth of the northern weir breach was evaluated relative to the expected flow in the Coe Pond. Various calculations of the weir breach dimensions are described below.

Hydraulic Capacity of Full Breach of Weir

The northern weir is approximately 65-feet-long and 3.83-feet-deep. If the entire weir were removed, it would provide a hydraulic capacity of approximately 1,624 cfs.

$Q = 3.33 \times 65 \text{ ft} \times 3.83 \text{ ft}^{1.5} = 1{,}624 \text{ cfs}$

Length of Weir Removed to Maintain 1,138 cfs

As noted above, the hydraulic capacity of the 5 gates is approximately 1,138 cfs, which is conservatively high (does not include the local runoff). Assuming the breach depth was to set to within 6 inches of the bottom of Coe Pond (3.83 ft – 0.5 ft) or 3.33 feet, the length of the northern weir to be removed to maintain 1,138 cfs would be approximately 56 feet.

Length of Weir Removed to Maintain 353 cfs

As noted above, during the site inspection, the flow over the northern and southern weirs was approximately 54 cfs. In addition, local runoff under a 500-year event is approximately 299 cfs, for a total flow into Coe Pond of roughly 353 cfs (slightly below the hydraulic capacity of the Ansonia Unit 2 of 411 cfs). Assuming the breach depth is 3.33 feet, the length of the northern weir to be removed to maintain 353 cfs would be approximately 17.5 feet. Under this scenario, it is assumed that the existing gates would not fail and would maintain their existing "stuck" position. However, it is unknown how much additional water would pass through the gates under flood conditions where the water level upstream of the gatehouse rises.

6.2 Priority 2- Address Deficiencies, Pending Success of Priority 1

The urgency of addressing the priority 2 deficiencies is dependent on the timing and success of lowering the pond water level. If the water levels cannot be lowered in 2024, then the other deficiencies should be addressed. Alternatively, if the water level can be lowered in 2024, we recommend an inspection of the

earthen dam after the water levels are lowered to reassess the necessity of addressing the other deficiencies given the impending removal the mainstem dam, which would eliminate water from the Naugatuck River from entering the canal feeding Coe Pond.

If concerns remain after Coe Pond water level is lowered, or if the water level cannot be lowered, the following deficiencies should be addressed.

Backfilling the Washout Area

Backfill the washout (Assessment Item No. 4 in Section) with low permeability fill and the compacted fill in 8-inch layers to 95 percent modified proctor Density. The finished grade of the backfilled area should match the finished grade of the adjacent surfaces. If the crest elevation in the immediate area of the repair is lower than the median elevation of the embankment crest then additional compacted fill should be placed to correct the deficiency. Upon completion of the backfilling and compaction, the area should be topsoiled and seeded to establish a proper grass cover. The topsoil must be prepared with fertilizer and then scarified before sowing the seeds. Types of grass vegetation that have been used on dams are bluegrass, fescue, ryegrass, alfalfa, clover, and redtop. Once the seed is sown, the area should be mulched and watered regularly.

Tree/Vegetation Removal and Rodent Burrow Management

Trees and thick brush on the earthen dam should be cut and cleared at least 20 feet beyond the downstream toe of the dam. Holes should be filled with low permeability fill on the upstream slope and compacted fill on the downstream slope. Once the brush and trees have been removed, a professional engineer should inspect the embankment for deficiencies that could not be detected on the recent inspection due to the heavy vegetation.

Rodent burrows should be backfilled with low-permeability compacted fill, and rodents should be removed from the site.

It is recommended to maintain a healthy grass cover on the earth embankment to fill in the bare areas. Vegetation should be cut at least annually following the first cutting, more often if necessary, to allow a healthy grass cover to grow on the earth embankments.

6.3 Priority 3- FERC Requested Studies and Analyses

FERC identified several studies and analyses in its letter. Given the impending removal of the mainstem dam which will eliminate Naugatuck River water from entering Coe Pond, we believe this is the lowest priority. FERC requested the following studies:

- Perform a hydrologic and hydraulic analysis of the drainage area, impoundment, spillway and dam to evaluate the Spillway Design Flood, potential for overtopping, and support the design of remedial repairs and improvements. Perform a dam breach analysis to determine the Inflow Design Flood and hazard classification for the dam. The dam breach analysis should be performed using a two-dimensional HEC-RAS hydraulic model that includes all downstream structures including the Coe Pond embankment dam.

- Obtain field survey of the Coe Pond earth embankment including crest elevations, and embankment slopes.

It is further recommended that if Coe Pond water levels cannot be lowered in a timely manner, a geotechnical investigation be performed consisting of a series of borings through the earthen dam to determine soil properties. Following the geotechnical investigations, stability and seepage analyses should be completed for critical sections of the earthen dam using soil properties from the investigations. Loading conditions used in the analyses should be consistent with FERC requirements.

6.4 Summary

In summary, we recommend addressing the most urgent need of lowering Coe Pond's water level in 2024. Removing 20-30 feet of the weir would provide ample flow capacity, and more importantly lowering the weir by 3.33 feet would create considerably more freeboard Coe Pond water level and the top of the earthen dam. As noted above, it is also anticipated that by removing a portion of the northern weir, the potential of developing an ice dam at south end of Coe Pond may be reduced.

Figure 6.1-1. Proposed Breach of the Northern Weir

APPENDIX A- FERC, CTDOT, USFWS LETTERS

FEDERAL ENERGY REGULATORY COMMISSION
Office of Energy Projects
Division of Dam Safety and Inspections – New York Regional Office
19 West 34th Street – Suite 400
New York, New York 10001
Office No. (212) 273-5900 **FAX No. (212) 631-8124**

In reply refer to:
P-6985-CT: Kinneytown

October 4, 2023

VIA Electronic Mail and U.S. Mail

Timothy Carlsen
Trimaran LLC
403 Madison Ave #204
Bainbridge Island WA, 98110
timothylcarlsen@gmail.com

RE: 2023 Dam Safety Inspections Follow-Up Letter

Dear Mr. Carlsen:

This letter concerns the dam safety inspections of the above referenced project that were conducted on June 13, 2023, and August 2, 2023, by Lukas Patrizio of this office. We thank Mr. Wayne Chernek and representatives from the Connecticut Department of Energy and Environmental Protection, Connecticut Department of Transportation, and the Metropolitan Transportation Authority for their assistance and cooperation during the inspection. Following these two inspections, we have the following comments:

Maintenance Items and Observations

1. Overgrown vegetation and woody vegetation growth were observed throughout the project. This includes woody vegetation along the crest of the canal embankment leading to the Ansonia powerhouse. This vegetation could lead to a failure of the earth embankment from seepage paths along tree roots and/or loss of embankment material if trees fall. You must assess the current vegetation on the embankment, develop a plan to remove/address the woody vegetation within 10 feet of any project structure, and perform any needed remediation to ensure the embankment is brought into satisfactory condition. See Photo 1 in Attachment 1.
2. The gates in the gatehouse at the power canal leading to the Ansonia powerhouse are stuck in various positions. Two of the gates are fully closed; the three remaining gates are partially opened. You must repair all gates. See Photo 2 in Attachment 1.

3. There was evidence of a washout along the railroad tracks with erosion along the downstream face of the canal embankment leading to the old powerhouse. This may have been due to overtopping of the canal embankment. After repairing the gates in the old gatehouse (Item 2 above), the gates must be closed to help prevent future overtopping until the necessary project repairs and remediation are addressed. You must also assess lowering the water level in the canal and in Coe Pond due to the existing condition of the canal embankment and to prevent overtopping. If lowering the canal/Coe Pond is deemed beneficial, you must state how this will be accomplished (e.g., to what level, drawdown procedures, drawdown rate, schedule, monitoring procedures). See Photo 3 in Attachment 1.
4. You must evaluate the potential for overtopping of the canal dike due to runoff from the local drainage basin into the canal and Coe Pond.
5. The canal is classified as having a significant hazard potential. As such, an engineering evaluation of the canal dike for safe operation under sunny day and flood conditions must be performed. This evaluation must include, but must not be limited to, slope stability under sunny day and flood conditions, as well as the erodibility of the upstream and downstream face of the dike due to local runoff.
6. The boat barrier and the log boom were not in place during the inspection because both were damaged during high flows. The boat barrier must be installed by May 28th and must remain in place until October 15th of each year. You must reinstall the boat barrier and log boom and provide photographs showing these two devices are in place.
7. We understand that the trash rack on the intake of the new powerhouse is inoperable due to a broken chain. You must repair the trash rack.
8. We understand that the slide gate adjacent to the spillway is inoperable. The previous exemptee stated that repairs were scheduled for the third quarter of 2022. You must repair this gate.
9. Due to high flows, the downstream face and toe of the spillway structure were not visible. Per the 2019 inspection, the concrete on the downstream face of the spillway was observed to be in poor condition with several areas showing cracking, concrete loss, and exposed steel. As conditions allow, you must inspect the downstream face and toe of the spillway and document your findings with photographs in the next Dam Safety Surveillance and Monitoring Report (DSSMR). You also must address the above concrete issues, which includes rehabilitation of the downstream dam face.
10. Comment No. 1 above requires you to assess removing a significant amount of woody vegetation and mature trees. Comment No. 3 requires you to close the gates and assess lowering the water in the canal and Coe Pond. Because these actions may adversely affect environmental resources, you must consult with the U.S. Fish and Wildlife Service and the Connecticut Department of Environmental Protection regarding these actions.

Previously Overdue Items for Submission

1. Items 4, 7, and 8 from our inspection follow-up letter dated May 10, 2022 (Attachment 2) have not been addressed as of the date of this letter. You must address these outstanding items.
2. Three other items from our May 10, 2022 follow-up letter are needed to confirm an appropriate hazard classification and to develop the inundation mapping for the EAP. These items include performing a dam breach analysis to determine the Inflow Design Flood (IDF) and hazard classification for the Kinneytown Dam and obtaining survey and operations information for the downstream levee system to incorporate into the dam breach analysis. These outstanding items must be addressed.
3. The 2022 DSSMR for this project has not been submitted as of the date of this letter. You are reminded that DSSMRs are due by March 31 each year for the previous calendar year period. You must provide this report.
4. Because your project is classified as having a significant hazard potential, you are required to meet 18 CFR Part 12, Subpart C, which requires an Emergency Action Plan (EAP). For guidance on the development of the EAP, refer to FERC's Engineering Guidelines for the Evaluation of Hydropower Projects, Chapter 6. These guidelines are available at https://www.ferc.gov/dam-safety-and-inspections.
5. Your Public Safety Plan is over 10 years old. Provide an updated plan for our approval that shows your existing public safety devices and any proposed new measures to improve public safety at the project.

Provide a plan and schedule to address the above items within 30 days of receipt of this letter. File your submittal using the Commission's eFiling system at https://www.ferc.gov/ferc-online/overview. When eFiling, select Hydro: Dam Safety and New York Regional Office from the eFiling menu. The cover page of the filing must indicate that the material was eFiled. For assistance with eFiling, contact FERC Online Support at FERCOnlineSupport@ferc.gov, (866) 208-3676 (toll free), or (202) 502-8659 (TTY).

Please note that we may provide additional comments that arise during the preparation of the inspection report. Should you have any questions regarding this letter, please contact Mr. Lukas Patrizio at (212) 273-5912 or by e-mail at Lukas.Patrizio@ferc.gov.

Sincerely,

JOHN SPAIN

Digitally signed by JOHN SPAIN
Date: 2023.10.04 08:27:39 -04'00'

John Spain, P.E.
Regional Engineer

Attachment 1: P-6985-CT Photos

Photo 1: Woody vegetation along the canal embankment

Photo 2: 3 of the 5 gates stuck partially open seen from inside the gatehouse

Attachment 1: P-6985-CT Photos

Photo 3: Evidence of washout and possible overtopping of the canal embankment

Attachment 2: P-6985-CT 2022 Follow-Up Letter

FEDERAL ENERGY REGULATORY COMMISSION
Office of Energy Projects
Division of Dam Safety and Inspections – New York Regional Office
19 West 34th Street, Suite 400
New York, NY 10001
Telephone No. (212) 273-5900 **Fax No. (212) 631-8124**

In reply refer to: P-06985
NATDAM # CT00089
Kinneytown Project

May 10, 2022

Mr. Cory Lagerstorm
Hydroland Omega, LLC
4603 Homestead Drive
Prairie Village, KS 66208
cory@hydrolandcorp.com

RE: 2022 Inspection Follow Up

Dear Mr. Lagerstorm:

This letter concerns the dam safety inspection of the above referenced project that was conducted on March 29, 2022, by Nicholas Agnoli, Katherine Adnams, and Lukas Patrizio of this office. We thank Wayne Chernek of your staff for his assistance and cooperation during the inspection. The project structures were observed to be in fair condition and we have the following comments:

1. Due to high flows, the spillway structure was not visible. As of the 2019 inspection, the concrete on the downstream face of the spillway was in poor condition in several areas with cracking, concrete loss, and exposed steel. Reviewing photos from the 2010 inspection, the concrete has continued to deteriorate and has exposed more steel. Continued exposure of steel and loss of concrete may develop into a dam safety issue. Please take photos of the spillway when it is dry and include these photos in the next Dam Safety Surveillance and Monitoring Report (DSSMR). You are reminded that DSSMRs are due by March 31 each year for the previous calendar year period. Please provide a long-term plan and schedule to address the above concrete issues which includes rehabilitation of the downstream dam face.
2. The boat barrier and the log boom were not in place during the inspection due to damage during high flows. Mr. Chernek indicated there are plans to replace the two barriers by Memorial Day Weekend. You are reminded that the boat barrier must be installed by May 28th and not removed before October 15th of each year. Please provide photographs of the two boat barriers in place once they are installed.
3. We observed your efforts to control vegetation. Please continue these efforts so all vegetation within 15 feet of any project is maintained.

4. We observed your public safety improvements following the 2019 inspection including the replacement of signage shown in your approved Public Safety Plan. As the Exemptee, we remind you that it is your responsibility to address public safety. Please continue to ensure all signs remain visible by maintaining vegetation and replacing missing or deteriorated signs as needed. Finally, your Public Safety Plan is over 10 years old, please submit an updated plan for our approval that shows your existing public safety devices and any proposed new measures to improve public safety at the project.
5. We understand that the slide gate adjacent to the spillway was inoperable and that repairs are planned. Please notify us when these repairs are completed.
6. We understand that Generating Unit 2 is inoperable and that repairs are planned. Please notify us when these repairs are completed as well.
7. Your exemption requires you to maintain "a reservoir having minimal pondage and normal surface elevation of 64.6 m.s.l." However, it is not clear how this elevation relates to local datums used in the past, or whether the reservoir has been operated historically at this elevation. Please tell us your project's "normal surface elevation" historically used and: (1) how that elevation relates to the 64.6 msl elevation specified in your exemption, and (2) how that elevation relates to NAVD88 or NGVD29. Your response may be forwarded to the Commission's Division of Hydropower Administration and Compliance for a final determination on your exemption's reservoir elevation requirements.
8. Prior to installation, please provide details of the proposed crestboard replacement. You should include: (1) the elevation of the proposed crestboards, (2) confirmation that the top of the proposed crestboards form the normal surface elevation, and (3) confirmation that the proposed crestboard replacement will not exceed the historic normal pool elevation. The survey used to verify elevations must be in NAVD88 or NGVD29.
9. Please coordinate a meeting with the MTA and this office so that we may gain safe access to inspect the right canal embankment that supports the MTA rail line.

In addition to the maintenance and programmatic items discussed above, we performed a review of the hazard potential classification. Based on our review, this project has been assigned an interim classification of Significant Hazard Potential due to the potential economic impacts. We found that failure of the spillway at various flood flows may impact the commercial and industrial areas behind the downstream levee system. Additionally, we note that a failure of the right embankment of the power canal would disrupt the MTA commuter railroad line. This classification will remain in place until the dam breach analysis described below is submitted and approved by this office.

As a Significant Hazard Potential structure, you are now required to meet 18 CFR Part 12, Subpart C, which requires the development of an Emergency Action Plan (EAP). Please note this regulation requires three copies of the EAP be submitted to the New York

Regional Office. However, we are currently accepting electronic copies efiled as discussed below. For further guidance on development of the EAP, refer to FERC's Engineering Guidelines for the Evaluation of Hydropower Projects, Chapter 6. These guidelines are available at https://www.ferc.gov/dam-safety-and-inspections.

In order to confirm an appropriate hazard classification and to develop the inundation mapping for the EAP, the following items should be developed and submitted to us for review:

1. Perform a dam breach analysis to determine the IDF and hazard classification for the Kinneytown Dam. The dam breach analysis should be performed using a two-dimensional HEC-RAS hydraulic model that includes all downstream structures including the levee system and bridges. We recommend that you retain the services of a qualified consultant experienced in dam breach analysis using two-dimensional HEC-RAS hydraulic models.
2. Obtain field survey of the levee system including crest elevations, closure structure dimensions, and inverts of closure structure sills to incorporate each into the dam breach analysis.
3. Obtain the closure structure operations. Specifically, the flood events that triggers the deployment of the closure structures and time needed to deploy the closure structures should be obtained and incorporated into the dam breach analysis.

Within 60 days of this letter, please provide a plan and schedule addressing the above items. Please also schedule a conference call with this office to further discuss the scoping of the breach analysis.

Please file your submittal using the Commission's eFiling system at https://www.ferc.gov/ferc-online/overview. For all Dam Safety and Public Safety Documents, select Hydro: Regional Office and New York Regional Office from the eFiling menu. The cover page of the filing must indicate that the material was eFiled. For assistance with eFiling, contact FERC Online Support at FERCOnlineSupport@ferc.gov, (866) 208-3676 (toll free), or (202) 502-8659 (TTY).

If you have any questions regarding this letter, please contact Mr. Lukas Patrizio at (212) 273-5912 or by e-mail at lukas.patrizio@ferc.gov.

Sincerely,

John Spain

John Spain, P.E.
Regional Engineer

Attachment 3: P-6985-CT 2023 Inspection Attendance List

August 2, 2023 Inspection Attendance List

Name	Agency
Lukas Patrizio	Federal Energy Regulatory Commission
Derick Lessard	Connecticut Department of Transportation
Michael Waite	Connecticut Department of Transportation
Dominic Antonio	Connecticut Department of Transportation
Laurel Gionet	Connecticut Department of Transportation
Robert Pion	Connecticut Department of Transportation
James Heaven	Connecticut Department of Transportation
John Corbo	Metro-North Railroad
Andrew Golino	Metro-North Railroad
Randolph Pareja	Metro-North Railroad
Kartik Parekh	Metro-North Railroad
Aaron Budris	Naugatuck Valley Council of Governments

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

2800 BERLIN TURNPIKE, P.O. BOX 317546
NEWINGTON, CONNECTICUT 06131-7546

October 26, 2023

Mr. John Spain, P.E.
Regional Engineer, Office of Energy Projects
Federal Energy Regulatory Commission (FERC)
19 West 34th Street – Suite 400
New York, New York 10001
John.Spain@ferc.gov

Dear Mr. Spain:

Subject: Coe Pond Dam near Metro-North Railroad
P-6985-CT: Kinneytown
CTDEEP Dam ID #203
Town of Ansonia

The Department of Transportation (Department) was notified by the Naugatuck Valley Council of Governments of potential overtopping at the Coe Pond Dam in Ansonia Connecticut. A site visit was conducted on August 2, 2023, please see the site visit summary enclosed.

The site visit verified evidence of overtopping and it seems there has been little to no maintenance of the dam conducted for some time. This poses an immediate danger to the public and the Department's railroad line that runs parallel to the dam at varying elevations. A failure of the dam could result in loss of life and/or damage to the railroad infrastructure.

We are in receipt of the compliance letter sent to the property owner on October 4, 2023 as enclosed. The Department requests enforcement of the compliance letter and that immediate action be taken to resolve the safety concern.

Please provide written confirmation of this letter with FERC's enforcement plan by November 23, 2023 to Mr. Derick Lessard, Transportation Principal Engineer, at derick.lessard@ct.gov.

Very truly yours,

Bartholomew P. Sweeney, P.E.
Division Chief of Bridges
Bureau of Engineering and Construction

Enclosure:
Site Visit Memo 2023-08-30
20231004-3063 FERC compliance letter p-6985

cc: Lukas Patrizio, FERC (Lukas.Patrizio@ferc.gov)
Charles Lee – Anna Laskin – James Heaven, CTDEEP Dam Safety
Warren Best – Randolph Pareja – Colton Gray (MNRR Maintenance & Construction)
Dave Willard – Hong McConnell – John Corbo (MNRR I&C Projects,)
Rick Dunne – Aaron Budris, NVCOG
Timothy Carlsen, Trimaran LLC 403 Madison Ave. #204, Bainbridge Island, WA 98110 (timothy.carlsen@gmail.com)

To: Antonio Dominic and Robert Pion, CT DOT
From: Kartik Parekh and Laurel Gionet, CT DOT
Date: August 10, 2023, Revised September 6, 2023
Subject: Coe Pond Dam near MetroNorth Railroad-Ansonia

There was indication that Coe Pond (a.k.a. Canal Reservoir) Dam (DEEP ID # 203) in Ansonia overtopped. In response to this, a site visit took place on August 2, 2023. The following representatives were present at the site:

- CT Department of Transportation
- CT Department of Energy and Environmental Protection (DEEP)
- Naugatuck Valley Council of Governments (NVCOG)
- Federal Energy Regulatory Commission (FERC)
- MetroNorth Railroad

Dam Information and Visual Inspection

Canal Reservoir Dam is Hazard Class BB, Moderate Hazard (according to DEEP records) located on Coe Pond in Ansonia, Connecticut. According to the Town of Ansonia Assessor records, this dam is owned by Kinneytown Hydro Co Inc, who has a mailing address of 100 Brickstone Square, Ste. 300, Andover, MA 01810). The dam was once used to produce power but has been inactive since at least the 1980s. The dam doesn't really have any defined abutments as the left abutment appears to be in the vicinity of one of two spillways and an abandoned hydroelectric house and the right abutment appears to be adjacent to Kinneytown Dam on the Naugatuck River.

The upstream reservoir is Coe Pond, an approximately 34-acre reservoir and has approximately 2900 feet of embankment, along the southwestern edge of the impoundment. The depth of the water within the reservoir ranges from a few inches to a depth of approximately 18 feet. The northern portion of Coe Pond is where the water depth is the shallowest and is full of sediment and debris. North of Coe Pond is the unnamed channel which is approximately 3500 feet long with its upstream limits near a gate house in the vicinity of Kinneytown Dam. Downstream of the dam is the main branch of the Naugatuck River.

The southern portion of the embankment (approximately 1000 feet) is heavily vegetated with brush and numerous large trees. The crest is approximately 5 to 10 feet wide. The upstream slope is also heavily vegetated and has areas of erosion due to wave action. It is unclear if the upstream slope is armored. There are areas which appear to have some small riprap, but the extent of the armoring is unknown. Approximately 2 feet of freeboard was observed at the reservoir during the site visit.

The downstream embankment slope is steep and in many areas the slope is greater than 1 horizontal to 1 vertical (1H:1V). The trees growing on the downstream slope show evidence of sliding and numerous trees have fallen across the crest, upstream and downstream slopes.

Embankment movement is also noticeable. The extent of the sliding could not fully be determined due to the heavy overgrowth. Immediately downstream of the toe of the dam are the railroad tracks for the Waterbury line of the Metro North Railroad.

The approximately 1900 feet of northern embankment is primarily a granular material. Overtopping, rutting in the crest and erosion in the upstream and downstream slopes are evident. Although no active overtopping was present during the site visit, large deposits of sand and gravel have been previously deposited at the toe of the dam. Additionally, the toe of the dam has evidence of standing water in the past, but it is unclear how much is from dam overtopping and how much is from drainage run off from the railroad. At the time of this report, the core material of the dam is undetermined and during our site visit it was undetermined if any of the evidence of the standing water at the toe of the dam is due to seepage through the embankment.

Along the unnamed channel the MetroNorth railway appears to function as the crest of the dam. The upstream slope is an earth embankment. Much of the downstream slope consists of a steep slope earthen embankment or a stacked stone masonry wall. Access to the toe of the dam was not feasible at the time of the site visit. Near the gatehouse adjacent to Kinneytown Dam, the upstream slope consists of bulkhead.

A summary of the meeting, observations, and conclusion include:

- FERC stated Canal Reservoir Dam was overdue for inspection and that the hazard rating was incorrectly listed and should be classified as Significant. Based upon the DEEP regulations a dam failure that results in damage to railroads, would also have a hazard rating of B or Significant. The MetroNorth Railroad bridge is located only about 80 feet downstream of the dam's spillway. The railroad tracks appear to function as the crest of the dam just southeast of Kinneytown Dam. A current assessment by the appropriate regulatory agency is needed to assign a current hazard class for this dam.
- Dan Biron of DEEP attended a FERC inspection of the site on March 29, 2022 and stated that the structure is in Poor condition. Based on observations from the current site visit, previously identified deficiencies still have not been addressed.
- Discussions with NVCOG states they are looking to acquire the property from the private owner and have already received a grant for dam removal for both Canal Reservoir Dam and Kinneytown Dam. The EPA will be assisting them in the removal and testing of the sediment within the northern area of Coe Pond where sediment has been heavily deposited.

Recommendations

- Check with the regulatory agency to determine the priority of addressing observed deficiencies and other applicable requirements.

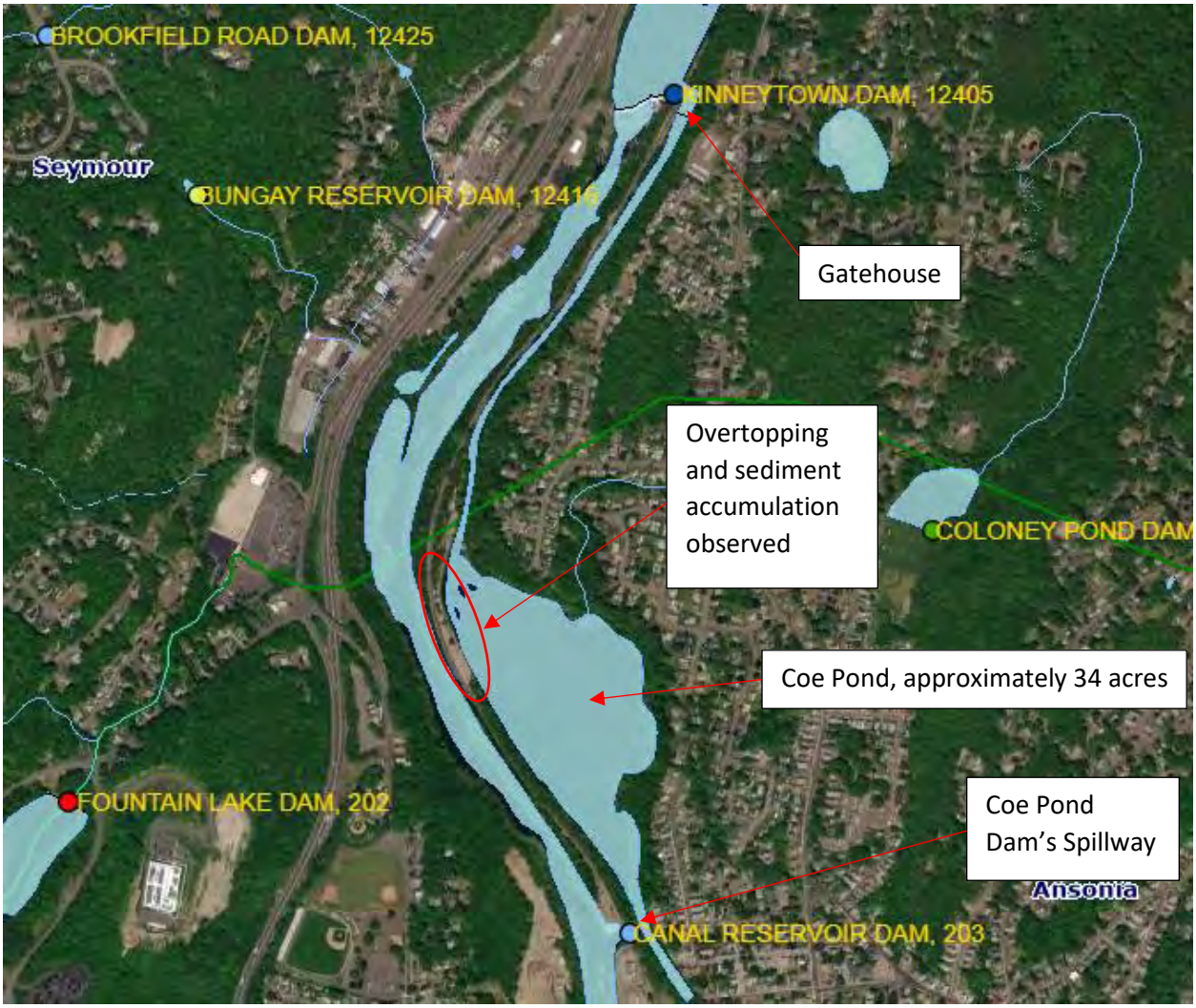

Figure 1-Location Map of Site Visit. Coe Pond has approximately 2900 feet of embankment, along the southwestern edge of the impoundment.

Photo 1-Crest of the dam is overgrown with trees and other woody vegetation.

Photo 2-Toe of embankment with accumulated sediment.

Photo 3-Dam's spillway, looking upstream.

Photo 4-Gate House, adjacent to Kinneytown Dam- Right abutment.

Photo 5- Reservoir – Coe Pond

Photo 6- Trees and down trees on the downstream slope near the tracks

Photo 7- Downstream slope extremely steep

Photo 8- Erosion of the upstream slope, large trees along the water line and across the dam crest

Photo 9- Evidence of water at the toe of the dam next to the railroad tracks.

Photo 10- Erosion and rutting in the dam crest

Document Accession #: 20231004-3063 Filed Date: 10/04/2023

FEDERAL ENERGY REGULATORY COMMISSION
Office of Energy Projects
Division of Dam Safety and Inspections – New York Regional Office
19 West 34th Street – Suite 400
New York, New York 10001
Office No. (212) 273-5900 **FAX No. (212) 631-8124**

In reply refer to:
P-6985-CT: Kinneytown

October 4, 2023

VIA Electronic Mail and U.S. Mail

Timothy Carlsen
Trimaran LLC
403 Madison Ave #204
Bainbridge Island WA, 98110
timothylcarlsen@gmail.com

RE: 2023 Dam Safety Inspections Follow-Up Letter

Dear Mr. Carlsen:

This letter concerns the dam safety inspections of the above referenced project that were conducted on June 13, 2023, and August 2, 2023, by Lukas Patrizio of this office. We thank Mr. Wayne Chernek and representatives from the Connecticut Department of Energy and Environmental Protection, Connecticut Department of Transportation, and the Metropolitan Transportation Authority for their assistance and cooperation during the inspection. Following these two inspections, we have the following comments:

Maintenance Items and Observations

1. Overgrown vegetation and woody vegetation growth were observed throughout the project. This includes woody vegetation along the crest of the canal embankment leading to the Ansonia powerhouse. This vegetation could lead to a failure of the earth embankment from seepage paths along tree roots and/or loss of embankment material if trees fall. You must assess the current vegetation on the embankment, develop a plan to remove/address the woody vegetation within 10 feet of any project structure, and perform any needed remediation to ensure the embankment is brought into satisfactory condition. See Photo 1 in Attachment 1.
2. The gates in the gatehouse at the power canal leading to the Ansonia powerhouse are stuck in various positions. Two of the gates are fully closed; the three remaining gates are partially opened. You must repair all gates. See Photo 2 in Attachment 1.

3. There was evidence of a washout along the railroad tracks with erosion along the downstream face of the canal embankment leading to the old powerhouse. This may have been due to overtopping of the canal embankment. After repairing the gates in the old gatehouse (Item 2 above), the gates must be closed to help prevent future overtopping until the necessary project repairs and remediation are addressed. You must also assess lowering the water level in the canal and in Coe Pond due to the existing condition of the canal embankment and to prevent overtopping. If lowering the canal/Coe Pond is deemed beneficial, you must state how this will be accomplished (e.g., to what level, drawdown procedures, drawdown rate, schedule, monitoring procedures). See Photo 3 in Attachment 1.
4. You must evaluate the potential for overtopping of the canal dike due to runoff from the local drainage basin into the canal and Coe Pond.
5. The canal is classified as having a significant hazard potential. As such, an engineering evaluation of the canal dike for safe operation under sunny day and flood conditions must be performed. This evaluation must include, but must not be limited to, slope stability under sunny day and flood conditions, as well as the erodibility of the upstream and downstream face of the dike due to local runoff.
6. The boat barrier and the log boom were not in place during the inspection because both were damaged during high flows. The boat barrier must be installed by May 28th and must remain in place until October 15th of each year. You must reinstall the boat barrier and log boom and provide photographs showing these two devices are in place.
7. We understand that the trash rack on the intake of the new powerhouse is inoperable due to a broken chain. You must repair the trash rack.
8. We understand that the slide gate adjacent to the spillway is inoperable. The previous exemptee stated that repairs were scheduled for the third quarter of 2022. You must repair this gate.
9. Due to high flows, the downstream face and toe of the spillway structure were not visible. Per the 2019 inspection, the concrete on the downstream face of the spillway was observed to be in poor condition with several areas showing cracking, concrete loss, and exposed steel. As conditions allow, you must inspect the downstream face and toe of the spillway and document your findings with photographs in the next Dam Safety Surveillance and Monitoring Report (DSSMR). You also must address the above concrete issues, which includes rehabilitation of the downstream dam face.
10. Comment No. 1 above requires you to assess removing a significant amount of woody vegetation and mature trees. Comment No. 3 requires you to close the gates and assess lowering the water in the canal and Coe Pond. Because these actions may adversely affect environmental resources, you must consult with the U.S. Fish and Wildlife Service and the Connecticut Department of Environmental Protection regarding these actions.

P-6985-CT

Previously Overdue Items for Submission

1. Items 4, 7, and 8 from our inspection follow-up letter dated May 10, 2022 (Attachment 2) have not been addressed as of the date of this letter. You must address these outstanding items.
2. Three other items from our May 10, 2022 follow-up letter are needed to confirm an appropriate hazard classification and to develop the inundation mapping for the EAP. These items include performing a dam breach analysis to determine the Inflow Design Flood (IDF) and hazard classification for the Kinneytown Dam and obtaining survey and operations information for the downstream levee system to incorporate into the dam breach analysis. These outstanding items must be addressed.
3. The 2022 DSSMR for this project has not been submitted as of the date of this letter. You are reminded that DSSMRs are due by March 31 each year for the previous calendar year period. You must provide this report.
4. Because your project is classified as having a significant hazard potential, you are required to meet 18 CFR Part 12, Subpart C, which requires an Emergency Action Plan (EAP). For guidance on the development of the EAP, refer to FERC's Engineering Guidelines for the Evaluation of Hydropower Projects, Chapter 6. These guidelines are available at https://www.ferc.gov/dam-safety-and-inspections.
5. Your Public Safety Plan is over 10 years old. Provide an updated plan for our approval that shows your existing public safety devices and any proposed new measures to improve public safety at the project.

Provide a plan and schedule to address the above items within 30 days of receipt of this letter. File your submittal using the Commission's eFiling system at https://www.ferc.gov/ferc-online/overview. When eFiling, select Hydro: Dam Safety and New York Regional Office from the eFiling menu. The cover page of the filing must indicate that the material was eFiled. For assistance with eFiling, contact FERC Online Support at FERCOnlineSupport@ferc.gov, (866) 208-3676 (toll free), or (202) 502-8659 (TTY).

Please note that we may provide additional comments that arise during the preparation of the inspection report. Should you have any questions regarding this letter, please contact Mr. Lukas Patrizio at (212) 273-5912 or by e-mail at Lukas.Patrizio@ferc.gov.

Sincerely,

JOHN SPAIN Digitally signed by JOHN SPAIN Date: 2023.10.04 08:27:39 -04'00'

John Spain, P.E.
Regional Engineer

Attachment 1: P-6985-CT Photos

Photo 1: Woody vegetation along the canal embankment

Photo 2: 3 of the 5 gates stuck partially open seen from inside the gatehouse

Attachment 1: P-6985-CT Photos

Photo 3: Evidence of washout and possible overtopping of the canal embankment

Attachment 2: P-6985-CT 2022 Follow-Up Letter

FEDERAL ENERGY REGULATORY COMMISSION
Office of Energy Projects
Division of Dam Safety and Inspections – New York Regional Office
19 West 34th Street, Suite 400
New York, NY 10001
Telephone No. (212) 273-5900 **Fax No. (212) 631-8124**

In reply refer to: P-06985
NATDAM # CT00089
Kinneytown Project

May 10, 2022

Mr. Cory Lagerstorm
Hydroland Omega, LLC
4603 Homestead Drive
Prairie Village, KS 66208
cory@hydrolandcorp.com

RE: 2022 Inspection Follow Up

Dear Mr. Lagerstorm:

This letter concerns the dam safety inspection of the above referenced project that was conducted on March 29, 2022, by Nicholas Agnoli, Katherine Adnams, and Lukas Patrizio of this office. We thank Wayne Chernek of your staff for his assistance and cooperation during the inspection. The project structures were observed to be in fair condition and we have the following comments:

1. Due to high flows, the spillway structure was not visible. As of the 2019 inspection, the concrete on the downstream face of the spillway was in poor condition in several areas with cracking, concrete loss, and exposed steel. Reviewing photos from the 2010 inspection, the concrete has continued to deteriorate and has exposed more steel. Continued exposure of steel and loss of concrete may develop into a dam safety issue. Please take photos of the spillway when it is dry and include these photos in the next Dam Safety Surveillance and Monitoring Report (DSSMR). You are reminded that DSSMRs are due by March 31 each year for the previous calendar year period. Please provide a long-term plan and schedule to address the above concrete issues which includes rehabilitation of the downstream dam face.
2. The boat barrier and the log boom were not in place during the inspection due to damage during high flows. Mr. Chernek indicated there are plans to replace the two barriers by Memorial Day Weekend. You are reminded that the boat barrier must be installed by May 28th and not removed before October 15th of each year. Please provide photographs of the two boat barriers in place once they are installed.
3. We observed your efforts to control vegetation. Please continue these efforts so all vegetation within 15 feet of any project is maintained.

Attachment 2: P-6985-CT 2022 Follow-Up Letter

4. We observed your public safety improvements following the 2019 inspection including the replacement of signage shown in your approved Public Safety Plan. As the Exemptee, we remind you that it is your responsibility to address public safety. Please continue to ensure all signs remain visible by maintaining vegetation and replacing missing or deteriorated signs as needed. Finally, your Public Safety Plan is over 10 years old, please submit an updated plan for our approval that shows your existing public safety devices and any proposed new measures to improve public safety at the project.
5. We understand that the slide gate adjacent to the spillway was inoperable and that repairs are planned. Please notify us when these repairs are completed.
6. We understand that Generating Unit 2 is inoperable and that repairs are planned. Please notify us when these repairs are completed as well.
7. Your exemption requires you to maintain "a reservoir having minimal pondage and normal surface elevation of 64.6 m.s.l." However, it is not clear how this elevation relates to local datums used in the past, or whether the reservoir has been operated historically at this elevation. Please tell us your project's "normal surface elevation" historically used and: (1) how that elevation relates to the 64.6 msl elevation specified in your exemption, and (2) how that elevation relates to NAVD88 or NGVD29. Your response may be forwarded to the Commission's Division of Hydropower Administration and Compliance for a final determination on your exemption's reservoir elevation requirements.
8. Prior to installation, please provide details of the proposed crestboard replacement. You should include: (1) the elevation of the proposed crestboards, (2) confirmation that the top of the proposed crestboards form the normal surface elevation, and (3) confirmation that the proposed crestboard replacement will not exceed the historic normal pool elevation. The survey used to verify elevations must be in NAVD88 or NGVD29.
9. Please coordinate a meeting with the MTA and this office so that we may gain safe access to inspect the right canal embankment that supports the MTA rail line.

In addition to the maintenance and programmatic items discussed above, we performed a review of the hazard potential classification. Based on our review, this project has been assigned an interim classification of Significant Hazard Potential due to the potential economic impacts. We found that failure of the spillway at various flood flows may impact the commercial and industrial areas behind the downstream levee system. Additionally, we note that a failure of the right embankment of the power canal would disrupt the MTA commuter railroad line. This classification will remain in place until the dam breach analysis described below is submitted and approved by this office.

As a Significant Hazard Potential structure, you are now required to meet 18 CFR Part 12, Subpart C, which requires the development of an Emergency Action Plan (EAP). Please note this regulation requires three copies of the EAP be submitted to the New York

Attachment 2: P-6985-CT 2022 Follow-Up Letter

Regional Office. However, we are currently accepting electronic copies efiled as discussed below. For further guidance on development of the EAP, refer to FERC's Engineering Guidelines for the Evaluation of Hydropower Projects, Chapter 6. These guidelines are available at https://www.ferc.gov/dam-safety-and-inspections.

In order to confirm an appropriate hazard classification and to develop the inundation mapping for the EAP, the following items should be developed and submitted to us for review:

1. Perform a dam breach analysis to determine the IDF and hazard classification for the Kinneytown Dam. The dam breach analysis should be performed using a two-dimensional HEC-RAS hydraulic model that includes all downstream structures including the levee system and bridges. We recommend that you retain the services of a qualified consultant experienced in dam breach analysis using two-dimensional HEC-RAS hydraulic models.
2. Obtain field survey of the levee system including crest elevations, closure structure dimensions, and inverts of closure structure sills to incorporate each into the dam breach analysis.
3. Obtain the closure structure operations. Specifically, the flood events that triggers the deployment of the closure structures and time needed to deploy the closure structures should be obtained and incorporated into the dam breach analysis.

Within 60 days of this letter, please provide a plan and schedule addressing the above items. Please also schedule a conference call with this office to further discuss the scoping of the breach analysis.

Please file your submittal using the Commission's eFiling system at https://www.ferc.gov/ferc-online/overview. For all Dam Safety and Public Safety Documents, select Hydro: Regional Office and New York Regional Office from the eFiling menu. The cover page of the filing must indicate that the material was eFiled. For assistance with eFiling, contact FERC Online Support at FERCOnlineSupport@ferc.gov, (866) 208-3676 (toll free), or (202) 502-8659 (TTY).

If you have any questions regarding this letter, please contact Mr. Lukas Patrizio at (212) 273-5912 or by e-mail at lukas.patrizio@ferc.gov.

Sincerely,

John Spain

John Spain, P.E.
Regional Engineer

Attachment 3: P-6985-CT 2023 Inspection Attendance List

August 2, 2023 Inspection Attendance List

Name	Agency
Lukas Patrizio	Federal Energy Regulatory Commission
Derick Lessard	Connecticut Department of Transportation
Michael Waite	Connecticut Department of Transportation
Dominic Antonio	Connecticut Department of Transportation
Laurel Gionet	Connecticut Department of Transportation
Robert Pion	Connecticut Department of Transportation
James Heaven	Connecticut Department of Transportation
John Corbo	Metro-North Railroad
Andrew Golino	Metro-North Railroad
Randolph Pareja	Metro-North Railroad
Kartik Parekh	Metro-North Railroad
Aaron Budris	Naugatuck Valley Council of Governments

Document Content(s)

P-6985-000 2023 Inspection Follow Up.pdf.....1

United States Department of the Interior

FISH AND WILDLIFE SERVICE

New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5087
https://www.fws.gov/office/new-england-ecological-services

October 12, 2023

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E., Room 1A
Washington, DC 20426

RE: Kinneytown Hydroelectric Project, FERC No. 6985-005
Naugatuck River, Fairfield County, CT
Comments on FERC Inspection Compliance Issues

Dear Secretary Bose:

This provides the U.S. Fish and Wildlife Service's (Service) response to the Federal Energy Regulatory Commission's (FERC or Commission) dam safety inspection letter dated October 4, 2023.[1] The Commission's New York Regional Office's Division of Dam Safety and Inspections (DDSI) issued the letter after completing dam safety inspections at the Kinneytown Hydroelectric Project (Project) on June 13, 2023, and August 2, 2023.

In its letter, the Commission requires Trimaran LLC (Trimaran or Exemptee) to undertake a number of measures to address safety issues associated with the Ansonia canal portion of the Project, including removing woody vegetation along the crest of the canal embankment and lowering the canal/Coe Pond. Before initiating tree clearing and lowering of Coe Pond, Trimaran must consult with the Service and the Connecticut Department of Energy and Environmental Protection.

COMMENTS

The Service has no objection to lowering the water surface elevation of Coe Pond. Regarding the required vegetation removal along the canal embankment, typically the Service recommends a time of year restriction on cutting trees greater than 3 inches diameter-at-breast-height (DBH) from April 1 to October 31 to protect the federally endangered northern long-eared bat (NLEB; *Myotis septentrionalis*) during its active season, except in situations where trees present an

[1] FERC Accession Number 20231004-3063

immediate threat to human life or property (hazard trees). In this case, the trees along the canal embankment could create seepage paths which weaken the embankment's integrity, potentially leading to bank failure.

According to the Commission's letter, the canal has a significant hazard potential, where failure or mis-operation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns.[2] It is our understanding the DDSI does not consider the Ansonia dam (i.e., the canal embankment) to be in imminent threat of failure. Therefore, to protect the NLEB, we recommend the Exemptee remove non-hazardous trees greater than 3 inches DBH outside the bat active season of April 1 to October 31. However, if at any point there is a threat to human life, property, infrastructure, etc. that constitutes a need for an emergency action, that action should proceed as needed, and measures to avoid or minimize impacts to listed species should be implemented only if they do not delay, hinder, or impede the emergency action.

If you have any questions regarding these comments, please contact Melissa Grader at (413) 239-2138, or via email at melissa_grader@fws.gov.

Sincerely yours,

AUDREY MAYER

Digitally signed by AUDREY MAYER
Date: 2023.10.12 13:45:05 -04'00'

Audrey Mayer
Supervisor
New England Field Office

cc: Reading file
(via e-mail):
FERC/DHAC, Holly Frank
FERC/NYFO, Lukas Patrizio
DOI/SOL, Andrew Tittler
Trimaran LLC, Tim Carlsen
CTDEEP, Pete Aarrestad
NVCOG, Rick Dunne
Save the Sound, Kate Fiedler
ES: MGrader:10-11-23:413-239-2138

[2] https://www.ferc.gov/sites/default/files/2020-04/fema-333.pdf

APPENDIX B- PHOTOGRAPHS

Photo 1. View of Kinneytown Dam from Right Abutment

Photo 2. View of Left Spillway at Kinneytown Dam. Note Canal Intake in Background

Photo 3. View of Embankment Crest and Outboard Slope of Dam. Note Large Diameter Trees

Photo 4. View of Embankment Crest. Note Near Vertical Bank to Water

Photo 5. View of Tree on Narrow Section of Embankment Crest (Approximately 14 Feet Wide)

Photo 6. View of Dam Crest. Note Large Diameter Trees and Woody Vegetation

Photo 7. View Inboard Slope of Embankment Dam. Note Large Diameter Trees

Photo 8. View of Dam Crest and Inboard Slope. Note Steepness of Bank and Large Diameter Trees

Photo 9. View of Dam Crest. Note Varied Vertical Alignment

Photo 10. View of Dam Crest. Note Inconsistent Horizontal Alignment

Photo 11. View of Dam Crest. Note Erosion Gully and Gravel

Photo 12. View of Tree on Inboard Slope. Note Damage to Tree Likely Caused by Beavers

Photo 13. View of Inboard Slope. Note Woody Vegetation and Apparent Rodent Burrow

Photo 14. View of Inboard Slope. Note Presence of Woody Vegetation and Evidence of Rodent Burrow

Photo 15. View of Inboard Slope. Note Near Vertical Bank and Lack of Riprap Armoring

Photo 16. View of Inboard Slope with Erosion Due to Wave Action

Photo 17. View of Trees Overhanging inboard slope

Photo 18. View of Outboard Slope of Embankment

Photo 19. View of Outboard Slope of Embankment

Photo 20. View of Outboard Slope. Note Heavy Vegetation Beyond. and Erosion Rills in Foreground

Photo 21. View of Outboard Slope. Note Presence of Silty Sand with Railroad in Background

Photo 22. View of Outboard Slope. Note Surface Erosion and Lack of Healthy Vegetation

Photo 23. View of Outboard Slope. Note Apparent Shallow Slope Failure

Photo 24. View of Outboard Slope. Note Apparent Shallow Slope Failure

Photo 25. View of Outboard Slope of Embankment

Photo 26. View of Area West of Railroad. Note Presence of Silty Sand

Photo 27. View of Ansonia Powerhouse Interior (Generator)

Photo 28. View of Ansonia Powerhouse Interior Wall and Electrical Conduit

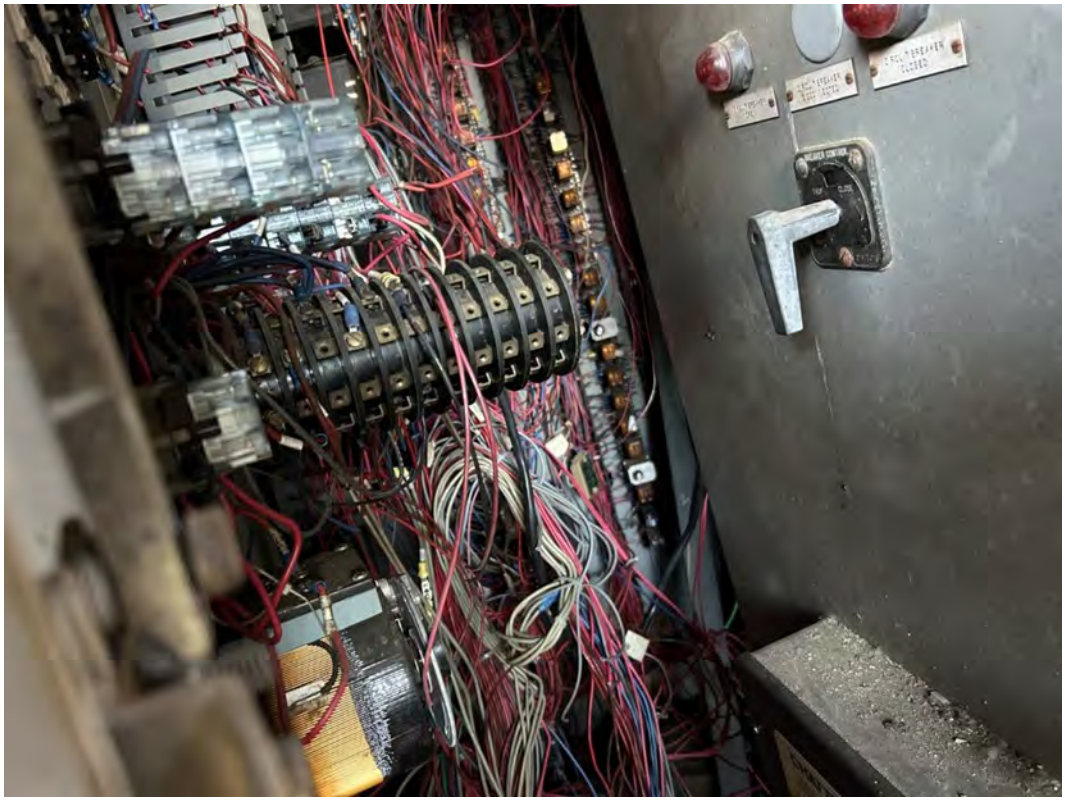

Photo 29. View of Ansonia Powerhouse Switchgear Compartment

Photo 30. View of Intake Area at Ansonia Powerhouse. Note Trashracks at Intakes

Photo 31. View of Deteriorated Decking

Photo 32. View of Headgates and Gate Platform at Ansonia Powerhouse

Photo 33. View of Concrete Retaining Wall and Upstream Weir at Ansonia Powerhouse

Photo 34. View of Upstream Weir at Ansonia Powerhouse

Photo 35. View of Downstream Weir at Ansonia Powerhouse

Photo 36. View Looking Up. Right Spillway at Ansonia Powerhouse

Photo 37. View Looking Down. Left Spillway at Ansonia Powerhouse

Photo 38. View of Bridge from North 4th Street to Ansonia Unit

Photo 39. View Looking Across the Power Canal at Ansonia Powerhouse Toward North 4th Street

Photo 40. View Looking Northeast Across Canal. Toward North 4th Street.

Photo 41. View Looking North Across Coe Pond Toward Properties on Sunset Dr. & Hemlock Dr.

Photo 42. View of North End of Coe Pond. Potential Access from Kathy Lane. and Hotchkiss Terr.

Photo 43. View of Power Canal. Looking Northeast Toward Hotchkiss Terrace

Photo 44. View of Power Canal. Looking Downstream from Gatehouse. Note Sheetpile Retaining Wall

Photo 45. View of Gatehouse Interior