April 25, 2022

Via FERC Electronic Filing

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

Re: Kinneytown Hydroelectric Project, No. P-6985-005 and -006

Dear Secretary Bose:

The Naugatuck Valley Council of Governments, Save the Sound, and the Naugatuck River Revival Group (collectively, "Commenters") hereby provide the Commission with an updated assessment of on-site operating conditions at the Kinneytown Hydroelectric Project (the "Project"), owned by Hydroland Omega, LLC ("Hydroland"). Commenters wish to inform the Commission of the specific, ongoing failures by Hydroland to comply with action deadlines set by the Commission, natural resource agencies, or even deadlines self-imposed by Hydroland. This assessment provides the Commission with a factual update following the Commenters' last filed observations (December 8, 2021) and, crucially, informs the Commission of what the Commenters are able to externally observe regarding compliance with the directives contained in the Commission's December 22, 2021 Order and prior communications.

Upstream fish passage, 2022 migration season. As of the date of this filing, the 2022 upstream sea-run fish migration is well underway, yet there has been no demonstrated progress towards any interim, let alone long-term, measures to ensure safe, timely, and effective fish passage at the Project. *Another year of migration and spawning upstream is being lost: at present, Hydroland has not even opened the grossly inadequate, poorly performing Denil fish ladder* (See Appendix I, Photos 3-8 showing fish ladder closed as recently as April 23, 2022), taking the position that the fish ladder needs to be closed so that it can undertake a long-delayed, promised engineering assessment. Yet, it is our understanding that Hydroland has failed to notify in writing either the natural resource agencies or the Commission as to when this assessment will occur (if it has not already) and who will perform it, or otherwise demonstrate a justification for closing the fishway and

stopping even the tiny percentage of the tens of thousands of fish below the spillway from passing upstream. While fish passage numbers have been dismal in years past, to close the ladder with no progress to show for it is unacceptable, especially when that engineering assessment is a lynchpin of further efforts.

The following actions by Hydroland are past-due, based on investigations conducted by Commenters on April 20, 2022 and April 23, 2022:

1. **Public safety:**

    a. <u>The boat boom has not been repaired or replaced.</u>
    Deadline: In its July 2019 inspection report, the Commission determined that the boat boom was not in place and required that it be replaced.[1] Hydroland stated that the boat barrier would be replaced by April 2022.[2] In its January 18, 2022 status report, Hydroland instead stated that it would only "obtain bids to repair/replace the boat boom" in the first quarter of 2022.[3]

    Current status: Hydroland did not provide any further updates on this task in its March 14, 2022 status report.[4] As of April 20, 2022, the broken boat barrier that previously was draped over the face of the dam has been removed. However, no replacement boat barrier has been installed to effectively protect river users. See Appendix I, Photo 1. Commenters cannot speak to whether Hydroland has obtained bids for this task. Any further delays of this task pose significant and unacceptable risk to the safety of river users.

2. **Operation of hydroelectric and fish passage facilities:**

    a. <u>Flashboards/crestboards have not been installed or repaired.</u>
    Deadline: This task was to be completed by November 30, 2021, according to Hydroland and FWS deadlines.[5] FERC previously ordered

[1] Letter to Salim Ayas, Enel, from John Spain, FERC (July 5, 2019), Project No. P-6985-000, accession no. 20190705-3026, at 1 (hereinafter FERC Inspection Follow-Up Letter, July 5, 2019).
[2] Letter to Holly Frank, FERC, from Cory Lagerstrom, Hydroland (Oct. 5, 2021), Project Nos. P-6985-005, -006, accession no. 20211005-5189, attach. A (hereinafter Hydroland Letter, Oct. 5, 2021).
[3] Letter to Secretary Bose, FERC, from Cory Lagerstrom, Hydroland (Jan. 18, 2022), Project No. P. 6985-005, accession no. 20220119-5045, at 3 (hereinafter Hydroland Status Report, Jan. 18, 2022).
[4] Letter to Secretary Bose, FERC, from Cory Lagerstrom, Hydroland (Mar. 14, 2022), Project No. P-6985-005, accession no. 20220314-5225 (hereinafter Hydroland Status Report, Mar. 14, 2022).
[5] Letter to Secretary Bose, FERC, from Audrey Mayer, FWS (Oct. 22, 2021), Project No. P-6985-005, accession no. 20211022-5034, app. A (hereinafter FWS Letter, Oct. 22, 2021); Hydroland, Response to Complaint (Answer) (Oct. 20, 2021), Project Nos. P-6985-005, -006, accession no. 20211020-5175,

the installation or repair of these flashboards/crestboards by April 15, 2021.[6] In its January 18, 2022 status report, Hydroland explained that it could not install these flashboards until Unit 1 is returned to service.[7] It expected Unit 1 to be online by February 15 and, in turn, the flashboards installed by the end of the first quarter of 2022 "barring further unanticipated problems."[8]

Current status: Hydroland did not provide any further updates on this task in its March 14, 2022 status report.[9] As of April 20, 2022, no flashboards have been installed on the east side of the dam. See Appendix I, Photos 1 and 2.

b. Unit 1 is required to be back in operation – status is unknown.

Deadline: Hydroland has provided various deadlines for returning Unit 1 to service, most recently stating that it would be back in operation "ASAP,"[10] in the "near future,"[11] or "with[in] a few days."[12] FERC previously ordered that Unit 1 return to operation by April 15, 2021.[13] In its January 18, 2022 status report, Hydroland described the tasks underway to bring Unit 1 back into operation, but also the growing list of issues with the hydropower unit, illuminating the consistent state of disrepair of the facilities.[14] Hydroland reported that it hoped Unit 1 would be back online by February 15, 2022.[15]

Current status: Since its January 18, 2022 status report, Hydroland has not notified the Commission that Unit 1 is now operating, nor has it provided any reason for further delays. Hydroland did not provide any further updates on this task in its March 14, 2022 status report.[16]

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at 17 (hereinafter Hydroland Answer, Oct. 20, 2021) (extending its own proposed deadline of October 31, 2021 from its October 5, 2021 correspondence).

[6] Letter to Tim Carlsen, Hydroland, from Holly Frank, FERC (Apr. 15, 2021), Project No. P-6985-005, accession no. 20210415-3050, at 6 (adopting FWS's proposed implementation schedule, Letter to Don Emel, Hydroland, from David Simmons, FWS (Apr. 2, 2021), Project No. P-6985-005, accession no. 20210405-5427, at 2) (hereinafter FERC Order, Apr. 15, 2021).

[7] Hydroland Status Report, Jan. 18, 2022, at 1.

[8] *Id.* at 2.

[9] Hydroland Status Report, Mar. 14, 2022.

[10] Hydroland Letter, Oct. 5, 2021, attach. A.

[11] Hydroland Answer, Oct. 20, 2021, at 14.

[12] Letter to Senator Blumenthal, from Cory Lagerstrom, Hydroland (Oct. 25, 2021), Project No. P-6985, accession no. 20211025-5146, at 2 (hereinafter Hydroland Letter to Delegation, Oct. 25, 2021).

[13] FERC Order, Apr. 15, 2021, at 6.

[14] Hydroland Status Report, Jan. 18, 2022, at 1-2.

[15] *Id.* at 1.

[16] Hydroland Status Report, Mar. 14, 2022.

As of April 20, 2022, it is our understanding from site observations and river flow conditions that Unit 1 is still not in operation: no flow was observed exiting Unit 1, and all flow appeared to be spilling over the face of the dam. See Appendix I, Photos 3, 4, 6, and 8.

c. Repair of head/canal gates – status unknown. **Downstream passage impacts observed.**

Deadline: Hydroland first stated that the head gates would be repaired in Summer 2021.[17] Later, Hydroland reported that these gates were installed and tested the week of October 18, 2021[18] and would be "operational in the near future."[19] This date was then pushed back to the end of December.[20] The Commission's Order required the filing of a status update and compliance with an updated deadline to be proposed by Hydroland.[21]

Current status: In a January 18, 2022 status report, Hydroland stated that new gates would be installed in the "first quarter of 2022."[22] It is unknown whether this work was completed according to the deadline established in this status report.

The consequences of these inoperable gates were highlighted by observations made of hundreds of fish trapped in the canal in December 2021 and January 2022, as documented in the Report attached in Appendix III.[23]

While access is available to the canal – either because these gates remain inoperable and presumably stuck open, or for some other reason – downstream migrating fish are entering the canal and becoming trapped, unable to proceed down the Naugatuck River below the Project and then into Long Island Sound. While much attention in these proceedings has been appropriately and critically placed on the

[17] Letter to Secretary Bose, FERC, from Don Emel, Hydroland (Mar. 1, 2021), Project No. P-6985-005, accession no. 20210304-5056, at 3 (hereinafter Hydroland Letter, Mar. 1, 2021).
[18] Hydroland, Declaration of Cory Lagerstrom, Response to Complaint (Answer) (Oct. 20, 2021), Project Nos. P-6985-005, -006, accession no. 20211020-5175, at 5 (hereinafter Hydroland, Declaration, Oct. 20, 2021).
[19] Hydroland Answer, Oct. 20, 2021, at 17.
[20] Hydroland Letter to Delegation, Oct. 25, 2021, at 2.
[21] Letter to Cory Lagerstrom, Hydroland, from Holly Frank, FERC (Dec. 22, 2021), Project No. P-6985-005, accession no. 20211222-3001, at 12 (hereinafter FERC Order, Dec. 22, 2021).
[22] Hydroland Status Report, Jan. 18, 2022, at 3.
[23] Bill Lucey, *Downstream fish passage observations at Kinneytown Dam and Ansonia Bypass*, April 2022, Appendix III.

complete and ongoing failure of upstream passage at the Project, the Project also appears to have no safe, timely, and effective downstream passage mechanisms in place.

This issue, and referenced observations, are discussed further in a Report authored by Soundkeeper Bill Lucey, Save the Sound (Appendix III).

d. Repair to damaged structures or concrete spalling in fish ladder – status is unknown.

Deadline: FWS set a deadline of November 30, 2021 for these repairs to be completed.[24] These repairs were to be completed while the fish ladder was dewatered for the engineering assessment.

Current Status: Hydroland reported that the fish ladder would be dewatered by March 25, 2022.[25] It is unknown whether Hydroland has completed the required rehabilitation of the damaged fish ladder structures.

e. No progress towards restoring or developing a plan for Unit 2.

Deadline: On March 1, 2021, Hydroland estimated that it would return Unit 2 to service in 2022 or 2023.[26] In an October 20, 2021 filing, Hydroland then reported that it would return Unit 2 to service in "approximately October 2022."[27] FWS, in October 22, 2021 correspondence, noted that Hydroland, at that time, had no specific plans for Unit 2, noting its relevance towards fish passage. FWS required that Unit 2 be considered as part of the alternatives analysis due on January 31, 2022.[28] In its January 18, 2022 status report, Hydroland vaguely states that it will "continue[] development and retrofit of the Ansonia powerhouse" in 2022 and 2023.[29]

Current Status: The current fish passage regime requires both hydropower units to be in operation, and these operations are also a condition of the Project's exemption. Unit 2 operations reduce spill over the face of the dam, thereby reducing the likelihood of false attraction.

[24] FWS Letter, Oct. 22, 2021, app. A.
[25] Hydroland Status Report, Mar. 14, 2022, at 1.
[26] Hydroland Letter, Mar. 1, 2021, at 3.
[27] Hydroland Declaration, Oct. 20, 2021, at 4.
[28] FWS Letter, Oct. 22, 2021, app. A.
[29] Hydroland Status Report, Jan. 18, 2022, at 3.

If and how Unit 2 will operate in the future will impact any redesign and operation of interim and permanent fish passage facilities. Hydroland does not mention any efforts to restore hydropower generation at Unit 2 in its March 14, 2022 status report.[30] The alternatives analysis, that should include some assessment of Unit 2, has not been filed (see below). Finally, as noted above, the proposed timeline for assessing and restoring Unit 2 is a moving, and ambiguous, target. Overall, it does not appear that any efforts to restore, or make any conclusion to the fate of, Unit 2 have been made. Unit 2 cannot be left as an afterthought to any efforts to ensure adequate fish passage.

3. **Fish Passage Assessments and Filings:**

a. Comprehensive engineering assessment not filed.

Deadline: FWS set a deadline of November 30, 2021 for the completion of a comprehensive engineering assessment.[31] In the December 22, 2021 Order, the Commission ordered this assessment to be provided to the agencies by January 21, 2022 and filed with the Commission by March 1, 2022.[32]

Current status: No engineering assessment has been filed with the Commission to date. Hydroland did not provide an update on the status of this assessment in its January 18, 2022 status report.[33] However, in its March 14, 2022 status report, Hydroland reported that it would be able to dewater the fish ladder by March 25, thus allowing for *the possibility* that such an assessment be undertaken.[34] Hydroland stated that it would work with a new, but unnamed, partner to prepare this assessment.

As stated above, as of April 23, 2022, the fish ladder has not been opened for the spring fish run, in order to facilitate this engineering assessment. See Appendix I, Photos 3-8, However, there has been no documentation of any contracted, scheduled, or actual activities towards the completion of this assessment provided to the agencies or FERC.

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[30] Hydroland Status Report, Mar. 14, 2022.
[31] FWS Letter, Oct. 22, 2021, app. A.
[32] FERC Order, Dec. 22, 2021, at 14.
[33] Hydroland Status Report, Jan. 18, 2022.
[34] Hydroland Status Report, Mar. 14, 2022, at 1-2.

b. Proposed ramping protocols, bypass reach modifications, and alternatives analysis not filed.

Deadline: In the December 22, 2021 Order, the Commission ordered Hydroland to file: (1) proposed ramping protocols by March 15, 2022; (2) proposed bypass reach modifications by February 1, 2022; and (3) an alternatives analysis by March 15, 2022.[35]

Current status: None of these three required documents have been filed with the Commission. In its March 14, 2022 status report, Hydroland indicated that its new, but unnamed partner, would assist in the development of these proposals – but no expected deadline was offered.[36] Hydroland also noted that it would provide an update to the resource agencies on bypass reach modifications and alternatives analysis in a March 22, 2022 meeting, where it would also solicit feedback.[37] It is unknown whether these topics were discussed at this meeting, nor whether sufficient proposals were provided to the agencies for feedback. No record of this meeting has been filed on the docket.

Despite the issuance of an Order and notification of the potential issuance of penalties, Hydroland continues to flout the directives of the Commission and the urgency of the ongoing failure of fish passage at Kinneytown Dam. We respectfully urge the Commission and the resource agencies to fully exercise their jurisdiction and escalate their enforcement efforts in such a manner that yields actual and meaningful efforts by Hydroland.

Sincerely,

Rick Dunne
Executive Director
Naugatuck Valley Council of Governments

Katherine M. Fiedler
Staff Attorney
Save the Sound

[35] FERC Order, Dec. 22, 2021, at 15.
[36] Hydroland Status Report, March 14, 2022, at 2.
[37] *Id.*

Kevin Zak
President
Naugatuck River Revival Group

CC: Via Electronic Mail

Cory Lagerstrom, Hydroland, Inc.
Tim Carlsen, Hydroland, Inc.
Holly Frank, FERC
Melissa Grader, U.S. Fish and Wildlife Service
Jessica Pica, U.S. Fish and Wildlife Service
Andrew Tittler, Department of Interior
Rick Jacobson, CT DEEP
Tim Wildman, CT DEEP
Alison Rau, CT DEEP
Bill Lucey, Save the Sound
Ron Shems, Attorney for NVCOG

APPENDIX I

Photo 1: No boat barrier; no crestboards on east side of dam. (A. Budris, 4/20/22)

Photo 2: No crestboards on east side of dam. (A. Budris, 4/20/22)

Photo 3: No flow out of Unit 1; fish ladder dewatered and closed. (A. Budris, 4/20/22)

Photo 4: No flow into Unit 1; dewatered and closed fish ladder; all flow over face of dam. (A. Budris, 4/20/22)

Photo 5: Dewatered fish ladder. (A. Budris, 4/20/22)

Photo 6: No flow into Unit 1; dewatered and closed fish ladder; all flow over face of dam. (A. Budris, 4/20/22)

Photo 7: Dewatered and closed fish ladder. (A. Budris, 4/23/22)

Photo 8: Dewatered and closed fish ladder, debris visible in bottom segments of ladder; no flow out of Unit 1, outflow blocked by debris (A. Budris, 4/23/22)

APPENDIX II

Affidavit of Aaron Budris

AFFIDAVIT OF AARON BUDRIS

1. I am a Senior Regional Planner for the Naugatuck Valley Council of Governments. As part of my duties, I have been monitoring compliance and assisting in the efforts to seek compliance at the Kinneytown Dam for approximately the last 22 months.

2. I have visited the Kinneytown dam site monthly for the last 6 months and visited the site several times before then.

3. I am an FAA licensed unmanned aerial vehicle (UAV) operator.

4. On December 1, 2021, from approximately 11:00 a.m. to 12:00 p.m., on March 4, 2022, from approximately 12:00 p.m. to 12:45 p.m., on April 20, 2022, from approximately 3:00 p.m. to 3:45 p.m., and on April 23, 2022 from approximately 2:00 p.m. to 2:20 p.m. I visited the Kinneytown Dam site to monitor efforts underway towards compliance with FERC orders and resource agency timelines.

5. During each of these visits, I went to a public parking area off Derby Avenue in Seymour, Connecticut. I could observe the Kinneytown Dam and Seymour powerhouses from that location.

6. I launched a drone with photo and video capabilities from this parking area to better observe the Dam.

7. I flew the drone over the dam and facilities at heights between 10 and 300 feet and took photos and video of the dam, canal gate house, fish ladder, Seymour (Unit 1) powerhouse, and fish schooling above Kinneytown Dam.

8. I took photos indicated as such included in NVCOG, Save the Sound, and Naugatuck River Revival Group's April 2022 comments and in a report written by

Soundkeeper Bill Lucey titled "Downstream Fish Passage Observations at Kinneytown Dam and Ansonia Bypass – April 2022", included in Appendix III of those comments.

9. The pictures accurately reflect my direct visual observations of the facility.

10. On Friday March 4, 2022, from approximately 12:55 p.m. to 1:00 p.m., I also visited the location of the entrance to the Unit 2 Powerhouse and canal on 4th street in Ansonia.

11. From the public roadway, I observed the condition of the Ansonia Powerhouse (Unit 2) and canal.

12. I took the photo of Unit 2 canal and powerhouse indicated as such in a report written by Soundkeeper Bill Lucey titled "Downstream Fish Passage Observations at Kinneytown Dam and Ansonia Bypass – April 2022", included in Appendix III of NVCOG, Save the Sound, and Naugatuck River Revival Group's April 2022 Comments. This photo was taken with a cellular phone camera from the public roadway, and it accurately reflects my visual observations of the facility.

13. I did not alter the pictures in any way.

Signature of Affiant — Date: 4/25/22

Subscribed and sworn to me this 25th day of April, 2022

Signature of Notary Public: _____

Patricia M. Bauer
NOTARY PUBLIC
My Commission Expires August 31, 2022

Date Commission Expires: 8/31/2022

APPENDIX III

REPORT

Bill Lucey, *Downstream fish passage observations at Kinneytown Dam and Ansonia Bypass*, April 2022.

Downstream fish passage observations at Kinneytown Dam and Ansonia Bypass

April 2022

Bill Lucey – Save the Sound – Long Island Soundkeeper

Downstream passage at hydroelectric facilities typically focuses on diverting fish away from turbines due to risk of injury including supersaturated dissolved gases (Schilt 2007; Huang et al. 2016) which can cause bubble disease similar to the bends (Lutz 1995; Backman and Evans 2002). The literature has also looked at direct impacts on out-migrating fish that pass over spillways, which is the preferred method since fish are passing downstream at surface water pressures avoiding supersaturation (Duncan et al. 2017). The Kinneytown Dam facility has a downstream bypass tunnel in place to the west, as well as a plunge pool at the base of the eastern half of the dam for spillway passage. The dam itself is likely too small to create pressure-related supersaturation, which is a documented problem on large dams such as those on the Columbia River, though flows over the spillway can be significant.

There is a lack of standardization in managing downstream fish passage at dams, especially hydroelectric facilities due to the lack of understanding regarding physiological responses of fish to water velocity (Enders et al. 2009). Fish have evolved intrinsic flight responses, allowing pre-emptive avoidance of potentially threatening situations. Accelerating currents, such as waterfalls, rapids, and dam spillways, indicate potential danger to riverine fish. To direct downstream migrant fish away from deleterious conditions at dams and other barriers, mechanical devices such as travelling screens and fish bypass systems are often installed. However, field observations suggest that if these structures create areas of rapidly accelerating flow, they do not effectively guide the fish (Enders et al. 2009).

Fish sense the world around them through their lateral lines and can detect small changes in velocity. In the case of the Kinneytown Dam, if the downstream bypass is not functioning, the only known passage option is to go over the spillway. Current 2022 observations suggest that the bypass is closed or not functioning since no current is seen in the exit channel adjacent to the fish ladder (Figure 1), therefore fish attempting to move downstream need to find another access or not pass.

Regardless of whether the bypass is operating or not, some fish will likely end up going over the spillway or, if they come down the river left side, encounter the slower water at the Ansonia bypass canal entrance through which they could pass if opened. The impact to fish going over the falls is unknown at this location. However, the photo in Figure 2, taken during low flows, reveals the channel areas that receive the primary impact from water spilling over the face of the dam.

Hydroland, Inc. proposes to raise the elevation of the eastern spillway which will create a uniform elevation across the entire dam. The result will be that fish that pass over the spillway

will have an equal chance of passing over the section that falls onto a wide apron of cement with a much greater chance of physical injury.

Figure 1. The downstream fish bypass exits into tailrace of the Hydroland facility. Note the eddying foam indicating that there is no current running through either the bypass or the turbines. (Photo: Aaron Budris, March 4, 2022)

Figure 2. Base of dam showing spillway impact sites. (Photo: Aaron Budris, March 4, 2022)

Figure 3. Dam toe revealed at low flows. Predators congregate here to forage on trapped fish. (Photo: Kevin Zak, undated)

Fish dropping over the eastern portion of the dam may end up in the plunge pool seen in Figure 2. However, the surface area of the dam face is rough and at higher flows fish may be driven into the bottom of the plunge pool or the cement apron at its edge. Shallow boulders line the outer edge of the apron. The west side located below the flash boards does not have a plunge pool and drops directly onto the cement toe of the dam followed by a large substrate bottom. It is possible that at certain flow conditions there is injury or possibly mortality to fish striking this cement apron. This will be dependent on the velocity and volume of the spill and the drop height from the top of the dam. To our knowledge the efficacy of spillway passage has not been evaluated for the current condition of the facility.

The base of the dam also concentrates avian predators, primarily cormorants (*Phalacrocorax spp.*), blue herons (*Ardea Herodias),* and Night Herons (*Nycticorax spp.)*. The birds have easy access to trapped fish when water levels are low.

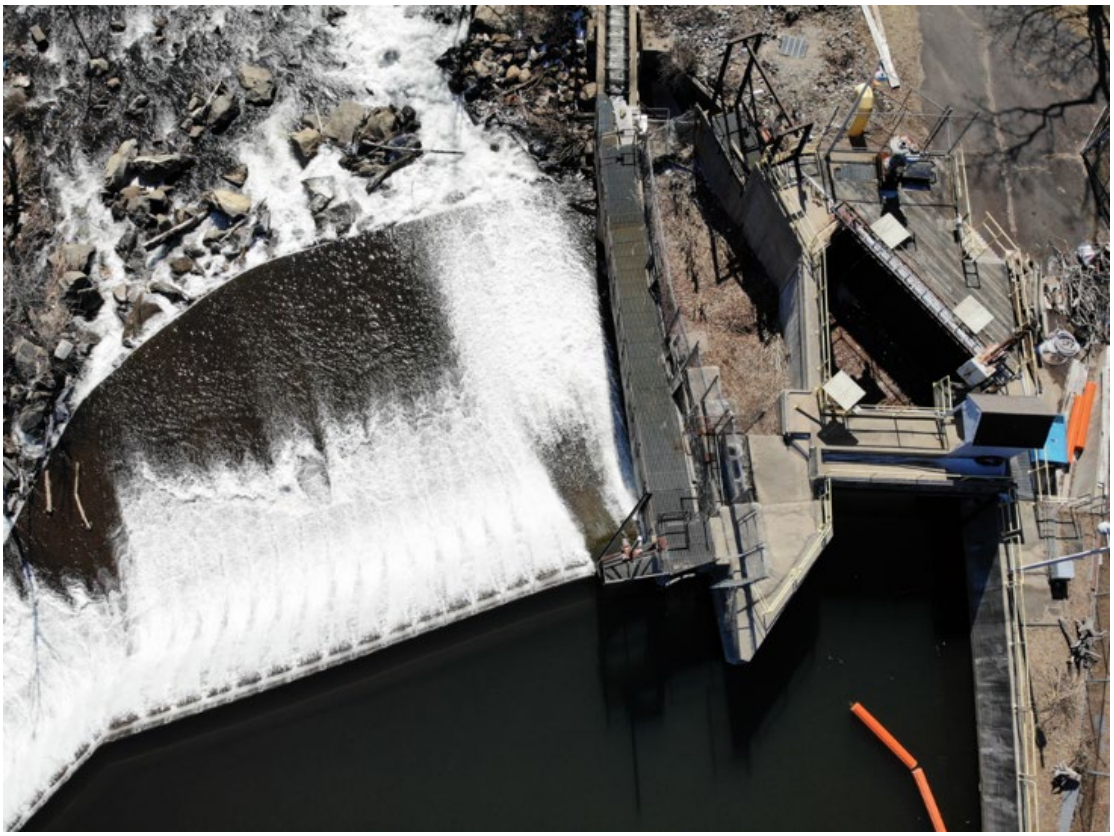

Figure 4. Cement apron below western side of dam. (Photo: Aaron Budris, March 4, 2022)

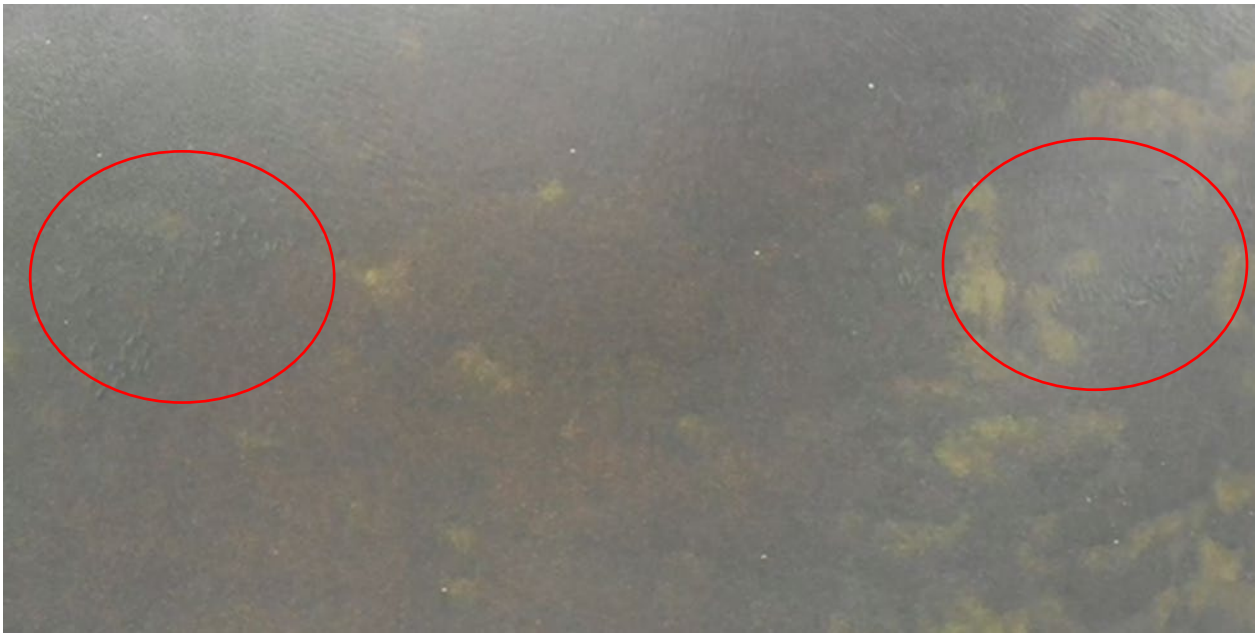

Figure 5. This drone image shows unidentified fish, possibly alewives stocked by CTDEEP as a run restoration measure, gizzard shad or some other species upstream of the dam considering options for descending the river. (Photo: Aaron Budris, December 1, 2021)

It is unknown what species of fish are in Figure 5. Small numbers of gizzard shad have been recorded using the ladder over the years as shown by historic ladder counts and based on ideal flow conditions (Lucey et al. 2021). It is also unknown if any upstream migrants passed the Tingue Falls area, but the impounded water behind the Kinneytown Dam and the channel between the Kinneytown Dam and the Tingue bypass have sufficient habitat area to produce gizzard shad offspring. There is also the possibility that these are post spawning alewives that were stocked by CTDEEP in the summer of 2021 and for some reason were delayed returning to saltwater. Timing of this outmigration may be trending later in the year compared to the normal outmigration period (pers. comm. Tim Wildman, CTDEEP Fisheries, January 5, 2020). Run-timing delays may be related to fish avoiding the falls at Tingue and the Kinneytown Dam initiating the flight response for extended periods. Figures 7 and 8 are photos taken by a biologist with the Housatonic Valley Authority indicating fish had entered the Ansonia Bypass that used to transport water to the Ansonia Power Station (Unit 2) (*see* Housatonic Valley Association Comments, January 31, 2022, accession no. 20220201-5011). It is unknown but possible that the fish observed in December are the same fish or species of fish that entered the canal. The fish at the head of the canal were reported to CTDEEP. A biologist went to the site to verify the species which were determined to be young-of-year (YOY) gizzard shad.

Figure 6. Gatehouse at entrance to Ansonia Bypass. (Photo: Aaron Budris, March 4, 2022)

Figure 7. Fish schooling at by gatehouse inside the Ansonia channel, January 4, 2022. (Photo: Housatonic Valley Association Comments, January 31, 2022, accession no. 20220201-5011)

Figure 8. Magnified view of juvenile gizzard shad in the Ansonia Canal. (Photo: Housatonic Valley Association Comments, January 31, 2022, accession no. 20220201-5011)

It is unknown how frequently, or the method by which, fish enter the Ansonia channel. There is either a bypass pipe above the canal gate into the channel or the canal gate itself is open. Given the reportedly slow current observed in the canal, if the gate is open it is likely a narrow opening. Regardless of the mode of entry, fish are getting into the Ansonia channel. In 2019,

several fry were observed in the same location by Dr. Waldman, fisheries professor at Queen's College, CUNY (pers. comm. 2020). He indicated that they looked like juvenile shad but did not have a sampling net to verify. What this tells us is that downstream migrating fish are choosing to enter the canal perhaps due to the gentler current that leads into the canal avoiding the high velocity spillway. It is likely that this is a common occurrence given the lack of downstream passage monitoring.

There are a few concerns regarding fish entering the canal. The first concern is that the canal is shallow and enters into Coe Pond. This water is very still and the habitat is conducive to largemouth bass (*Micropterus salmoides*) and chain pickerel (*Esox niger*) (pers. comm. local anglers). Both species are effective predators on river herring and trout. If the fish entering the canal eventually migrate downstream they will be subjected to increased predation pressure than if they had free passage down the main stem of the Naugatuck River to Long Island Sound. Second, the tailrace at the Ansonia plant spills over two small steep dams with very low flow. This likely also delays or deters downstream passage due to lack of volume spilling over the dams. Finally, low flow backwater habitat, such as Coe Pond is at risk of hypoxia events. Natural accumulation of sediment, vegetation, sewage spills or other pollution discharges that enter through the canal head gates would slow down and settle in Coe Pond. The increase in detritus and nutrients can result in low dissolved oxygen levels killing fish. Various fish kills have occurred over the years and there have been fish kills observed in the Ansonia channel in the recent past (pers. comm. Kevin Zak, 2022).

Figure 9. Trash accumulating at the outflow of the Ansonia Powerhouse (Unit2) and the Ansonia spillway showing little downstream flow. (Photos: (Left) Aaron Budris, March 4, 2022; and (Right), Kevin Zak, undated).

Figure 10. Location of Ansonia Powerhouse (Unit 2). (Google Earth)

The canal is essentially acting as a fish trap directing outmigrating diadromous species into a dead-ended backwater. Therefore, the few fish making it up the ineffective fish ladder may be losing what little offspring they produce to the Ansonia canal. Additionally, alewives stocked by CTDEEP upstream could also be redirected into the canal along with any YOY that have been produced. This would help further explain why runs have not been able to establish themselves above the dam. This is a critical issue and should be addressed prior to the 2022 spring fish run.

In general, the Kinneytown Dam is acting as a barrier to downstream migration of various fish species. Figure 11 shows another school of larger fish on the river left side of the impoundment avoiding the spillway portions of the dam. Since these fish are larger they would likely risk greater injury going over the spillway and may choose not to migrate downstream.

Figure 11. Unidentified fish school upstream of dam (Photo: Aaron Budris, March 4, 2022)

Ansonia Bypass Channel Condition:

The bypass channel appears not to have been maintained since at least since 2010 when the Ansonia Power House was shutdown. A 1991 image shows a channel free from brush. Current conditions show an accumulation of trash, sediment, brush, and trees. It is likely that, along with the clearing of debris in the channel, any sediment accumulation that has occurred along the channel and into Coe Pond which may require dredging. Given the manufacturing history of the river it is possible, if not probable, that these sediments are contaminated. Any work on the channel to improve hydraulic function could mobilize sediments. Prior to initiating work in the channel, there should be adequate sediment sampling within the pond and channel to characterize any toxics present. Mobilizing accumulated toxins downstream may adversely affect the shell fishing industry at the mouth of the Housatonic River depending on type of contaminant and mobilization characteristics. The following Google Earth time series shows potential accumulation zones.

Figure 12. Image from 1991 showing a clear run channel and pond. (Google Earth 1991)

Figure 13. Water discoloration in Coe Pond of unknown origin. (Google Earth 2008)

Figure 14. Coe Pond from 2020 showing possible accumulation of sediment. (Google Earth 2020)

Literature Cited

Backman T.W.H. and A.F. Evans. 2002. “Gas Bubble Trauma Incidence in Adult Salmonids in the Columbia River Basin.” North American Journal of Fisheries Management 22:579–584.

Enders, E. C., Gessel, M. H., and Williams, J. G. (2009). Development of successful fish passage structures for downstream migrants requires knowledge of their behavioral response to accelerating flow. *Canadian Journal of Fisheries and Aquatic Sciences* **66**, 21.

Huang J., R. Li, J. Feng, W. Xu, and L. Wang. 2016. “Relationship Investigation between the Dissipation Process of Supersaturated Total Dissolved Gas and Wind Effect.” Ecological Engineering 95:430–437.

Lucey, W.G., Waldman, J., MacDonald, G., Zak, K., Vander Werff, J. Kreitman, G. 2021. Review of the Connecticut Department of Energy and Environmental Protection, Fisheries Division, 2003 *Kinneytown Dam Fish Passage Facility Evaluation Study* and cumulative daily fish passage counts from 2000-2020. FERC Docket P-6985.

Lutz D.S. 1995. “Gas Supersaturation and Gas Bubble Trauma in Fish Downstream from a Midwestern Reservoir.” Transactions of the American Fisheries Society 124:423–436.

Z.D. Deng, J.L. Arnold, T. Fu, B.A. Trumbo, T.J. Carlson, Daqing Zhou. 2018. Physical and Ecological Evaluation of a Fish-Friendly Surface Spillway JP Duncan, Pacific Northwest National Laboratory, Energy & Environment Directorate, Richland, Washington, 99352, USA.

Schilt C.R. 2007. “Developing Fish Passage and Protection at Hydropower Dams.” Applied Animal Behavior Science 104(3):295–325.