

Mass DEP Public Written Comments on FirstLight 401 WQC  
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MASSACHUSETTS SENATE

**SENATOR JO COMERFORD**

*Hampshire, Franklin and Worcester District*

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JOINT COMMITTEE ON AGRICULTURE  
*Assistant Vice Chair*  
SENATE COMMITTEE ON WAYS AND MEANS

June 3, 2024

MassDEP Bureau of Water Resources  
Attn: FirstLight 401WQC  
100 Cambridge Street, Suite 900  
Boston, Massachusetts 02114

Dear Department of Environmental Protection colleagues,

Thank you for your time and work on the 401 water quality certificate process.

I write to request that the Department of Environmental Protection (DEP) include in your review of FirstLight's Water Quality Certificate Application the below comments sent by members of the western Massachusetts legislative delegation to the Federal Energy Regulatory Commission.

I understand that certain concerns and recommendations outlined in the letter, such as those related to the impact on Indigenous communities and on flood control measures, do not fall under the 401 Surface Water Quality Standards and thus cannot be considered by DEP. Thank you for your consideration of the other matters discussed in this letter.

Yours sincerely,



Jo Comerford  
**State Senator**

*Hampshire, Franklin, Worcester district*

cc:

Senator Ed Markey

Senator Elizabeth Warren

Congressman Jim McGovern

Congressman Richard Neal

Kristen Elechko, *Western Massachusetts Director, Office of the Governor*



COMMONWEALTH OF MASSACHUSETTS  
**THE GENERAL COURT**  
 STATE HOUSE, BOSTON 02133-1053

May 1, 2024

Debbie-Anne A. Reese, Acting Secretary  
 Federal Energy Regulatory Commission  
 888 First Street, NE  
 Washington, DC 20426

Dear Secretary Reese,

We write as state legislators who represent cities and towns along the Connecticut River and its tributaries which are affected by the relicensing of FirstLight Power's (FirstLight) Turners Falls Hydroelectric Project (FERC No. 1889) and Northfield Mountain Pumped Storage Project (FERC No. 2485).

We offer the following comments on the Amended Final License Application submitted by FirstLight and the Flows and Fish Passage and Recreation Settlement Agreements, and we respectfully request the Federal Energy Regulatory Commission's (FERC's) consideration on behalf of the constituents and communities we represent.

The Connecticut River is a centerpiece of life in western Massachusetts and has national status as the nation's only Blueway as well as an American Heritage River. All communities adjacent to and downstream of FirstLight's operations are affected by its activities in some measure. Communities upstream are also affected by these projects' impact on migratory fish and other species.

We understand that FirstLight has a positive economic impact on the western Massachusetts economy — with regard to taxes paid and jobs created. We also recognize that the Turners Falls and Northfield Mountain projects provide benefits to the New England electrical grid, and that they have the potential to be useful resources in the transition to a decarbonized energy system. However, we must be mindful of escalating environmental impact. If the company is allowed to increase the size of its upper reservoir, as it has proposed in the Amended Final License Application and also in the Flows and Fish Passage Settlement Agreement, this will result in longer hours of pumping and generation with potential increases in level and flow fluctuations in the Turners Falls impoundment. This potential greater use and greater impact make the following that much more important.

We wish to emphasize that, ultimately, the company profits from the use of a public resource — the Connecticut River — which is important in many ways beyond the production of energy. We appreciate FERC’s commitment to equal consideration of both sides of this equation.

We recognize and support FERC’s obligation to provide equal consideration to (a) power and development benefits and (b) environmental values, including energy conservation, fish and wildlife resources (spawning grounds and habitat), visual resources, cultural resources, recreational opportunities, and other aspects of environmental quality.<sup>1</sup>

FERC has the opportunity and authority to support these projects’ contribution to energy generation, a transition to a decarbonized energy system, and local development benefits, while also significantly improving aquatic habitat; protecting aquatic species; enacting safe, effective, and timely fish passage for migratory fish; and reducing the erosive loss of valuable riverbank property. Additionally, FERC has the authority to restore and protect the designated uses of swimming and boating; to transform the design, operation, and impact of the Northfield Mountain project; and to relieve the possible burden on future generations by establishing a decommissioning fund.

**With this in mind, the following is an enumeration of concerns and recommendations:**

### ***Impact on Indigenous Communities***

We are aware that for millennia the people of numerous Indigenous Nations lived and thrived along the banks of the Connecticut River. We are also aware that there are a number of Indigenous stakeholders participating in this process.

### ***Indigenous Communities Recommendation***

We urge FERC to heed the requests of the Indigenous stakeholders which could include but not be limited to protection of historic and cultural areas of significance for Indigenous nations.

### ***Financial Impact on Communities***

In terms of development benefits, the company emphasizes its payment of taxes to the towns, as well as the jobs it provides. One concern we have with the proposed new license is that the assessed value of the Turners Falls project will diminish, thus reducing the property taxes paid to communities like Montague, which is an environmental justice community.

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<sup>1</sup> Federal Energy Regulatory Commission, Federal Power Act section 4(e), from the *Handbook for Hydroelectric Project Licensing and 5 MW Exemptions from Licensing*, 2004, <https://www.ferc.gov/sites/default/files/2020-04/licensing-handbook.pdf>



### *Financial Impact Recommendation*

We ask that these municipalities not be financially penalized as a result of ecologically-sound practices.

### *Length of the License*

As we reflect on the anticipated and unanticipated impacts of a rapidly changing climate, we know that we cannot predict the specific technological advances or climate-driven solutions that 2070 will both offer and demand. As such, we have concerns about granting FirstLight a 50-year license. Our understanding is that there are conflicting beliefs and research regarding the storage and capacity provided by FirstLight. This leads us to believe that our constituents and the Commonwealth would be ill-served by locking in five decades of operation.

### *License Term Recommendation*

We recommend that the new license term be a maximum of 30 years. The Connecticut River has already experienced prolonged stress due to outdated requirements of the previous license. In addition, as we've seen through this twelve-year relicensing process, the license term granted by FERC actually extends beyond what is stipulated. Granting a 50-year license could amount to a license to operate for 60+ years. It is imperative that a shorter license be granted so that we have the ability to seize opportunities to address pressing issues, implement innovations, and alter the operation of FirstLight in ways that seek to balance myriad environmental and energy concerns.

### *Minimum Flows Below the Turners Falls Dam*

Proposals in the Flows and Fish Passage Settlement Agreement reflect the hard work of federal and state agencies, towns, and nonprofits, as well as FirstLight. They promise improvements. In particular, peaking will diminish at the Turners Falls project and minimum flows during the fish passage season will be much higher.

However, the flows below the dam during the summer and fall remain inadequate. Considering that the summer minimum flows from the upstream Vernon Dam (P-1904) will be 1,400 cubic feet per second (cfs), the minimum flow at Turners Falls should account for this flow, plus the additional flow of the Ashuelot River in New Hampshire and the Millers River, which flow into the Connecticut River above the Turners Falls Dam.<sup>2</sup> Given these inputs, it has been calculated that the flow at the dam equaled or exceeded 1,814 cfs 99% of the time. Thus, FirstLight's proposed minimum flow rate below the dam from July 1 to November 15 of 500 cfs is woefully insufficient to provide adequate habitat for fish species and macroinvertebrates. It is also too low to support recreational activities.

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<sup>2</sup> Connecticut River Conservancy, *MA Surface Water Quality Standards and Minimum Flows at the Turners Falls Dam CT River Conservancy Analysis*. May 7, 2021. [CRC analysis of TF minimum flows 05-07-21.pdf](#)

### *Flows below Turners Falls Dam Recommendation*

We recommend a minimum flow below the Turners Falls Dam of 1,400 cfs from July 1 to November 15. We ask that a minimum flow be mandated that enables boating and recreation, and protects the habitats of macroinvertebrates and fish. As noted above, we also ask that municipalities receiving revenue tied to flows not be financially penalized as a result of ecologically-sound practices.

### ***Turners Falls Impoundment Water Level Management and Erosion***

Farmers, landowners, and recreational users have been watching the riverbanks collapse into the Turners Falls impoundment ever since the beginning of operations at the Northfield Mountain Project in 1972, and FERC has a long history of enforcement on this issue. We have heard concerns stating that the proposed operating ranges in the Flows and Fish Passage Settlement Agreement will exacerbate the existing erosion along the banks of the Turners Falls Impoundment which will affect the Connecticut River ecosystem. The new license should set conditions that reduce soil loss, improve riparian habitat on the banks of the river, and protect archaeological resources. The license should continue to require FirstLight to monitor and mitigate bank erosion. Monitoring erosion for the entire term of the license is not only essential to the wellbeing of the river and its users during the term of the license, but will also provide essential data on the impact of FirstLight's operations on erosion.

### *Erosion Recommendation*

We recommend that FERC require FirstLight to implement a streambank monitoring plan which includes yearly monitoring and measuring of erosion impacts on water quality, recreation, and land subsidence, as well as a Full River Reconnaissance study performed every three years, both for the duration of the license.

### ***Fish Passage and Barrier Net***

We are pleased by the plans in the Flows and Fish Passage Settlement Agreement to protect migratory fish species through the installation of a barrier net, plunge pool below the dam, along with other downstream improvements, and an upstream fishlift. However, we have a few concerns.

### *Timeline*

The timelines of the completion of the installation of the fishlift after nine years and the barrier net after seven years is too lengthy and must be shortened. This urgent issue has been a top priority for environmental advocacy groups for decades and we respectfully request that FERC alter this timeline to protect these migratory fish.

### *Fish Passage Timeline Recommendation*

We recommend that the fish net and the fishlift be fully installed and operational by year two and year five of the new license, respectively.

### *Barrier Net Monitoring*

According to environmental experts in western Massachusetts, the Adaptive Management Measures in the Flows and Fish Passage Settlement Agreement do very little to effectively protect juvenile shad and shad eggs.

### *Barrier Net Monitoring Recommendation*

If the new license requires the implementation of a barrier net, then the license must also enforce and monitor that the net is working efficiently and effectively for the duration of the license. We recommend that FERC require FirstLight to perform inspections and tests on the barrier net during the season it is installed to ensure its effectiveness throughout the whole season. If it is not performing as designed, an Adaptive Management Measure must be in place to ensure that FirstLight improves the functioning of the barrier net and therefore the survival rate of fish species.

### *Reduced State and Federal Agency Authority*

Finally, we are very concerned by language in the Flows and Fish Passage Settlement Agreement that states that regulatory agencies will not exercise regulatory authority regarding fish passage for the first 25 years of the license. “MDFW [Massachusetts Division of Fisheries and Wildlife], NMFS [National Marine Fisheries Service] , and USFWS [U.S. Fish and Wildlife Service] have agreed...not to exercise any reserved or other regulatory authority regarding downstream passage to request or require any AMMs other than those listed in the table below for the first 25 years of the license.” (p. A-17)

### *Agency Authority Recommendation*

We urge FERC to ensure that the state and federal agencies retain all freedom necessary to require any measure to ensure the protection of species and river health, if it is found that FirstLight’s operations harm the ecosystem.

### *Decommissioning*

FERC considers the relicensing of FirstLight at a time when we can be almost certain that energy generation, storage, and infrastructure will drastically change for decades to come.

### *Decommissioning Fund Recommendation*

We request that FERC explore the requirement of a decommissioning fund which would ensure that the public is not solely responsible for the hydropower facility should it become uneconomical for the company or obsolete. FERC has already recognized its authority to require decommissioning funds.<sup>3</sup>

### *Flood Control Measures*

During the summer of 2023, the western Massachusetts region experienced devastating flooding from storms in July that led to the loss of close to 3,000 acres of crops on over 100 farms in the region, including those in Deerfield, Hadley, Hatfield, Northampton, and Sunderland. This resulted in millions of dollars of damages. In conversations with FirstLight in the immediate aftermath of the storms, FirstLight indicated that there was nothing its operations could do to prevent the catastrophic flooding. In a subsequent meeting with regional farmers held in April 2024, FirstLight underscored this position.

### *Flood Control Measures Recommendation*

Mindful of the increasing risk of climate change-related disasters, we ask that FERC review the relationship between Turners Falls and Northfield Mountain projects, and the Wilder Dam (P-1892-030), Bellows Falls Dam (P-1855-050), and Vernon Dam (P-1904-078) projects along the Connecticut River in Vermont and New Hampshire, all of which are being relicensed concurrently. We ask that FERC focus on possible unified efforts between facilities to mitigate downstream flood damage.

### *Public Data*

Over the terms of the next license, there will be considerable changes in the conditions and operations of these projects —changes that will fall well outside the conditions that were studied in preparation for the license. It is important that the impact on the environment be well-monitored and understood. Changing conditions also include ongoing climate change; the environmental improvements put in place by this license; and changing electric grids, policies, and markets.

Additionally, there is a need for transparent data of the flows released from and pumped by the hydropower facilities to inform potential boaters and other river users. The United States Geological Survey (USGS) gauges are too far away from the facilities, and affected by multiple other inputs, and are not good predictors of sudden unexpected changes in flow and level.

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<sup>3</sup> Federal Energy Regulatory Commission, Project Decommissioning at Relicensing; Policy Statement, *Federal Register*, January 4, 1995, Vol. 60, No. 2, <https://www.govinfo.gov/content/pkg/FR-1995-01-04/pdf/95-63.pdf>



We welcome the proposal in the Flows and Fish Passage Settlement Agreement for year-round hourly information on flows out of Turners Falls dam and request additional, publicly-available data and analyses, including:

- a) Real-time data on the flows released from the hydropower facilities, or pumping.
- b) Regular monitoring and publicly available data of macroinvertebrate populations in the Turners Falls bypass reach, downstream of Cabot station, and in the Turners Falls impoundment, as macroinvertebrates provide one of the best ways to assess stream ecosystem quality.
- c) Monitoring of, and public data on, populations and passage through the Turners Falls impoundment and its shore banks of non-fish species that provide important ecosystem services, including native mussels and riparian species.
- d) Annual reports on how operations are changing due to energy markets and policy, and due to FirstLight's flow and passage improvements; and the benefit to and impact on the environment and recreation. We also request that these annual reports be sent to State and Federal officials.

## Conclusion

FirstLight has operated under a temporary license since 2018, delaying its implementation of critical and overdue environmental measures possible with this relicensing.

We appreciate the significant work by federal and state agencies on this complex and lengthy licensing proceeding. We look forward to being kept apprised of FERC's progress in ensuring that this pending license strikes a far better deal for the river and the public than the current operating requirements have done for the last 50+ years.

The region's future depends on it.

Sincerely,



Jo Comerford  
**State Senator**  
*Hampshire, Franklin, Worcester district*



Natalie M. Blais  
**State Representative**  
*First Franklin district*



Daniel R. Carey  
**State Representative**  
*Second Hampshire district*



Mindy Domb  
**State Representative**  
*3rd Hampshire district*



Lindsay Sabadosa  
**State Representative**  
*1st Hampshire district*



Aaron L. Saunders  
**State Representative**  
*7th Hampden district*

cc:

Maura Healey, *Governor*

Rebecca Tepper, *Secretary*, Executive Office of Energy and Environmental Affairs

Melissa Hoffer, *Massachusetts Climate Chief*

Stephanie Cooper, *Undersecretary for the Environment*, Executive Office of Energy and Environmental Affairs

Michael Judge, *Undersecretary of Energy*, Executive Office of Energy and Environmental Affairs

Bonnie Heiple, *Commissioner*, Massachusetts Department of Environmental Protection

Kristen Elechko, *Western Massachusetts Director*, Office of the Governor

Senator Ed Markey

Senator Elizabeth Warren

Congressman Jim McGovern

Congressman Richard Neal

**From:** [Erin Lenzing](#)  
**To:** [dep.hydro@mass.gov](mailto:dep.hydro@mass.gov)  
**Cc:** [Craig Spinale](#)  
**Subject:** FirstLight 401 WQC  
**Date:** Monday, May 13, 2024 12:31:50 PM  
**Attachments:** [BMLD Letter in Support of FirstLight Turners Falls.pdf](#)

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**CAUTION:** This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Hello MassDEP BWR – Attached is Belmont Municipal Light Department’s comment in support of the applications for the relicensing of:

- FirstLight MA Hydro LLC for Turners Falls Hydroelectric Project (FERC No. P-1889) (“Turners Falls”) and
- Northfield Mountain LLC for Northfield Mountain Pumped Storage Project (FERC No. P-2485) (“Northfield Mountain”)

This same letter was filed with FERC today. Should you have any questions, please let us know. Thank you for your time and consideration.

Respectfully,  
Erin Lenzing

**ERIN LENZING**

Executive Assistant



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Note: Any communication is a public record and subject to the State's Public Records Law.  
Thank you.

May 13, 2024

The Honorable Debbie-Anne Reese  
Acting Secretary  
Federal Energy Regulatory Commission  
888 First Street N.E.  
Washington, DC 20426

Re: Applications for Relicensing of FirstLight MA Hydro LLC for Turners Falls Hydroelectric Project (FERC No. P-1889) ("Turners Falls") and Northfield Mountain LLC for Northfield Mountain Pumped Storage Project (FERC No. P-2485) ("Northfield Mountain")

Dear Acting Secretary Reese:

Belmont Municipal Light Department (BMLD) offers this letter in support of the relicensing of FirstLight's Northfield Mountain and Turners Falls Projects.

Together, the Projects play a critical role in delivering clean, local, competitively priced power to communities across New England while providing needed grid reliability to the region. Looking ahead as renewables make up a growing portion of our grid mix, Northfield Mountain's fast response capability, long-duration, and large capacity will play an even greater role in balancing the grid, thanks to its ability to capture over 1,100MW of power generated during off-peak hours and dispatch it during times of high demand when it is needed most while simultaneously offsetting the dirtiest emissions generated by fossil-fuel powered generators. Northfield's operations also support the need to keep costs low for consumers – by generating during the hours of highest demand, Northfield can shave peak prices and realize significant price reductions for ratepayers who are too often burdened by energy costs.

BMLD has counted FirstLight as a valued partner for years through a successful power purchase agreement that has resulted in significant clean, local, competitively priced power from FirstLight's facilities being delivered to homes and businesses across our municipality. The partnership has allowed us to deliver first-class services at affordable prices to our customers while doing right by them by selecting fossil fuel free power sources. In addition, our agreement with FirstLight supports and advances our efforts to meet and exceed the Commonwealth's mandate to obtain 50% of our power from clean sources by 2030 and 100% by 2050.

Belmont Municipal Light Department urges the Commission to consider the significant value of FirstLight's Projects to the region's clean energy future, and to communities across New England that are powered by FirstLight's clean electricity generation.

Sincerely,



Craig Spinale  
General Manager  
Belmont Municipal Light Department  
40 Prince Street  
Belmont, MA. 02478

cc: Commissioner Bonnie Heiple, Massachusetts Department of Environmental Protection





June 3, 2024

Mr. Timothy M. Jones  
 Legal and Policy Analyst  
 MassDEP Bureau of Water Resources  
 100 Cambridge Street, Suite 900  
 Boston, MA 02114

Re: Northfield Mountain Pumped Storage Project No. 2485-071  
 Turners Falls Project No. 1889-085  
**Comments on FirstLight's 401 Water Quality Certificate Application Submitted for  
 Consideration by the Franklin Regional Council of Governments**

Sent electronically via email to dep.hydro@mass.gov

Dear Mr. Jones:

The Franklin Regional Council of Governments (FRCOG) hereby submits comments and recommended terms for the 401 Water Quality Certification Application for the Turners Falls Hydroelectric Project and Northfield Mountain Pumped Storage Project. With this comment letter, FRCOG is also submitting our May 22, 2024 comments to FERC along with a technical review from Dr. Evan Dethier. These three documents are our comment package. In addition, we are filing a number of other FRCOG comment letters and documents so that they are part of the public docket for this 401 Certification. This current proceeding represents the first opportunity for MassDEP to issue a 401 Water Quality Certificate for the two projects, because the facilities have been operating under existing licenses that were issued prior to the adoption of the modern Clean Water Act.

## Executive Summary

The Connecticut River is the life blood of the communities located in the Connecticut River watershed. The River is the source of ecological and economic health, benefiting the quality of life of the Massachusetts residents and visitors to the Franklin County region. This vital resource is, however, at risk due to FirstLight's operations. The entire Massachusetts part of the river upstream of the Turners Falls Dam is listed as impaired (i.e. not in compliance with the Massachusetts Surface Water Quality Standards) in the 2022 Massachusetts Integrated List of Waters due to the current operations at the Turners Falls Dam and Northfield Mountain Pumped Storage Project. Those operations include fluctuations that can range over 4.8 ft., but more typically range 1.2 to 1.6 feet, measured at Turners Falls Dam on a daily basis.<sup>1</sup> The fluctuations in water surface elevations are, in

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<sup>1</sup> Data source: Figure 3.3.2.2.1-8 in the 2020 Amended Final License Application Exhibit E filed to by FirstLight on December 4, 2020.

turn, causing significant river bank erosion with associated pollution and impairment of designated uses.

The obvious practical and primary response to these facts should be to include conditions that require FirstLight to avoid this impact by reducing the fluctuation in daily flows. Yet, FirstLight is instead seeking to be allowed to fluctuate daily water surface elevations as much as 9 feet on a daily basis, measured at Turners Falls Dam, and expand the licensed range of the upper reservoir by 24% in a license that will have a term of decades. That result is absurd on its face due to the potentially devastating level of erosion that could result. Further, allowing that level of fluctuation in water elevations would give FirstLight carte blanche to violate Massachusetts water quality standards.

MassDEP has the opportunity and obligation to avoid this result. Section 401 of the Clean Water Act gives the Commonwealth of Massachusetts both the authority and responsibility to protect the Connecticut River. This section of the law was passed by Congress in the 1972 Clean Water Act because, prior to the passage of the Act, federally authorized projects were harming waterways across the nation and states had no say in protecting vital resources like the Connecticut River. On behalf of our member communities, FRCOG asks that MassDEP use its Section 401 Water Quality Certification authority to protect the River and uphold the Massachusetts Surface Water Quality Standards.

Pursuant to the Massachusetts Surface Water Quality Standards, specifically pursuant to the anti-degradation provisions in those standards, MassDEP is required to maintain all designated uses and cannot issue a water quality certification that allows impairment of those uses. As noted above, MassDEP has already determined that designated uses are impaired based on conditions created by the current operations. FRCOG offers recommendations below that would reduce the current operational flows documented by FirstLight by 25%, limiting the daily fluctuations to a range of no more than 2.1 feet, measured at Turners Falls Dam and no more than 2.7 feet measured at the USGS gage just upstream of the Route 10 bridge in Northfield. FRCOG also offers recommendations to ensure that FirstLight monitors the impacts of its operation and responds accordingly, controls invasive species that threaten bank stability, and require riparian buffers, among other conditions.

## About FRCOG

FRCOG is a statutorily created regional service organization comprised of and serving the 26 municipalities of Franklin County, Massachusetts. FRCOG replaced the former county government. The Connecticut River bisects Franklin County and is a major economic, recreational, and environmental resource for the residents of our member towns. We advocate on behalf of our communities and the county at the federal, state, and regional levels. FRCOG also serves as the Regional Planning Agency for the 26 municipalities in Franklin County.

For almost three decades, FRCOG (and its predecessor organization, the Franklin County Commission) and its Connecticut River Streambank Erosion Committee (CRSEC) have been actively involved with landowners and organizations concerned about the ongoing and extensive erosion in the Turners

Falls Power Pool. The Federal Energy Regulatory Commission (FERC) recognized FRCOG's CRSEC in 1999 as an Ad Hoc Committee that would work with the power company to develop and implement bioengineering bank stabilization projects pursuant to an Erosion Control Plan ordered and approved by the FERC.

As part of the work under the Erosion Control Plan, FRCOG/CRSEC secured over \$900,000 in Federal funds to help pay for innovative bank stabilization projects and active stakeholder involvement. Grant funding secured by FRCOG, much of it provided by MassDEP under s. 319 grants, helped to stabilize over 3,000-feet of shoreline in the impoundment, and led to an evolution of new riverbank restoration techniques to satisfy landowner concerns and be more protective of state-listed dragonflies.<sup>2</sup>

For more information about FRCOG and the history of FRCOG's involvement with the hydropower projects and the relicensing process, in addition to our interests, please see the Motion to Intervene that we filed with FERC on April 16, 2024, included as an attachment to this letter.

## About the Hydropower Projects and Relicensing

The relicensing of Turners Falls Dam and Northfield Mountain Pumped Storage Project began in late 2012, when FirstLight filed their Notice of Intent and Pre-Application Document (PAD) with the Federal Energy Regulatory Commission (FERC). Over 11 years and 40 studies, dozens of meetings, and multiple settlement negotiations later, on February 22, 2024, FERC issued a Notice of Application Accepted for Filing, Soliciting Motions to Intervene and Protests, Ready for Environmental Analysis, and Soliciting Comments, Recommendations, Preliminary Terms and Conditions, and Fishway Prescriptions, requiring motions to intervene to be filed on or before April 22, 2024. FERC extended this deadline to May 22, 2024 in a Notice dated April 10, 2024. FirstLight filed a 2024 Supplemental BSTEM Report with FERC on March 22, 2024. FirstLight filed their 401 Water Quality Certificate Application ("401 Application") with the Massachusetts Department of Environmental Protection (MassDEP) on April 22, 2024. MassDEP filed a letter with FERC on the very same day stating that the 401 Application was complete.

## Turners Falls Project

The Turners Falls Project is a 67.8-MW hydroelectric project that includes the Turners Falls Dam, which creates the Turners Falls Impoundment (TFI) on the Connecticut River. The Turners Falls Dam was re-constructed in 1868 for hydropower and is located at approximately river mile 122 (above Long Island Sound) on the Connecticut River in the towns of Gill and Montague, MA. The Turners Falls Dam consists of two individual concrete gravity dams that are connected by a natural rock island

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<sup>2</sup> None of this publicly-funded work was recognized on page 21 of FirstLight's 401 Water Quality Certificate application submitted to MassDEP on April 22, 2024. Grant funds include those from the EPA Targeted Watershed Grant WS-97122001-0; and three from MassDEP's s.319 grant program 96-03/319, 00-04/319 and 03-07/319.

known as Great Island. The Montague Dam connects Great Island to the west bank of the Connecticut River and includes four bascule type gates. The Gill Dam extends from the Gill shoreline (east bank) to Great Island and includes three tainter spillway gates.

Adjacent to the Montague Dam is the gatehouse equipped with 15 operable gates controlling flow from the TFI to a power canal. The power canal is approximately 2.1 miles long and has a design capacity of approximately 18,000 cubic feet per second (cfs). The bypassed section of the Connecticut River flows parallel to the power canal. FirstLight generates power from two locations along the canal, Station No. 1 (located closer to the beginning of the power canal) and Cabot Station (located at the end of the power canal). The generation and hydraulic capacity of Station No. 1 are 5,693 kW and 2,210 cfs, respectively. The generation and hydraulic capacity of Cabot Station are 62.016 MW and 13,728 cfs, respectively.

The Turners Falls Impoundment (TFI) extends approximately 20 miles upstream to just below the Vernon Hydroelectric Project (FERC No. 1904) in Vernon, VT and Hinsdale, NH. The Vernon project is owned and operated by Great River Hydro (GRH). To provide storage capacity for the Northfield Mountain Project, the TFI elevation may vary, per the existing FERC license, from a minimum elevation of 176.0 feet to a maximum elevation of 185.0 feet constituting a 9-foot range as measured at the Turners Falls Dam. The usable storage capacity in this 9-foot range, as measured at the Turners Falls Dam, is approximately 16,150 acre-feet, of which 12,600 acre-feet were created for Northfield Mountain by raising the dam.

## **Northfield Mountain**

The Northfield Mountain Project is a 1,166.8 MW pumped-storage facility located on the eastern bank of the Connecticut River in Northfield, Massachusetts, and is located at river mile 127 (upstream of Long Island Sound) approximately 5.2 miles upstream of Turners Falls Dam. The Turners Falls Impoundment (TFI) serves as its lower reservoir. This Project's Upper Reservoir is a man-made pond built on top of Northfield Mountain in Erving, MA, to the east of the Connecticut River. During pumping operations, water is pumped from the TFI to the Upper Reservoir. When generating, water is passed from the Upper Reservoir through an underground pressure shaft to a powerhouse cavern and then a tailrace tunnel delivers the water back to the TFI.

Construction of the Northfield Project began in 1968 and was completed when the first unit went into commercial operation in 1972. The remaining units became operational through 1973. The Northfield Mountain Pumped Storage Project consists of an Upper Reservoir and dam/dikes, an intake, pressure shaft, underground powerhouse and tailrace. The current license allows the Upper Reservoir elevation to vary from a minimum elevation of 938 feet to a maximum elevation of 1,000.5 feet, constituting a 62.5-foot fluctuation zone and a total volume of 12,318 acre-ft of water. FirstLight is requesting permission to permanently increase the maximum and minimum elevation to 1004.5 feet and 920 feet, respectively, which is an 84.5-foot fluctuation zone and a total volume of 15,327 acre-ft of water.



The intake channel directs water from the Upper Reservoir into the pressure conduit intake and eventually to the underground powerhouse. When operating at maximum pumping mode (water is withdrawn from the Connecticut River uphill to the Upper Reservoir), the approximate hydraulic capacity is 15,200 cfs. When operating at maximum generation mode (water is spilled back to the Connecticut River), the approximate hydraulic capacity is 20,000 cfs. Flows going in and out of Northfield Mountain often exceed the flow rate of the mainstem Connecticut River and, under certain conditions, actually reverse the flow of the river.

### **A note about project benefits**

FRCOG is concerned about FirstLight's efforts to tout Project benefits, most of which have nothing to do with water quality. The purpose of this § 401 process is to assure compliance with the Massachusetts Surface Water Quality Standards over the next many decades. This § 401 water quality certification process is not equipped to weigh so-called project benefits, and for good reason. The CWA sets a floor and does not allow for violations in the name of Project benefits. To the contrary, the CWA requires compliance, particularly here where the Connecticut River is impaired because of Project operations.

### **MassDEP must condition the 401 Water Quality Certificate to ensure that water quality is improved and protected**

The entire Massachusetts part of the river upstream of the Turners Falls Dam is listed as impaired in the 2022 Massachusetts Integrated List of Waters due to the Turners Falls Dam impoundment and pumped storage project operations. The 2018-2020 Massachusetts Integrated List contained an Assessment and Listing Methodology for the Connecticut River mainstem watershed.<sup>3</sup> Appendix 15 to the 2018-2020 Massachusetts Integrated List states that these segments are "not supporting" the Fish, other Aquatic Life and Wildlife Use because of the impairments described below.<sup>4</sup> These impairments, except for *E. coli* bacteria and PCBs, are related to the existence of the impoundment and project operations.

- Segment 34-01 is the 3.5-mile segment between the Vermont/New Hampshire/Massachusetts state line and the Route 10 bridge. This segment is listed as impaired for alteration in streamside or littoral vegetative covers, flow regime modification, and PCBs in fish tissue.
- Segment 34-02 is the 11.4-mile segment between the Route 10 bridge and the Turners Falls Dam, excluding Barton Cove. This segment is listed as impaired for alteration in stream-side or littoral vegetative covers, flow regime modification, water chestnut, and PCBs in fish tissue.

<sup>3</sup> This is the most recent such assessment for the Connecticut River segments.

<sup>4</sup> <https://www.mass.gov/doc/20182020-integrated-list-of-waters-appendix-15-connecticut-river-watershed-assessment-and-listing-decision-summary/download>

- Barton Cove is MA34-122, a 160-acre cove of the Connecticut River upstream of the Turners Falls Dam, is listed as impaired for curly-leaf pondweed, Eurasian water milfoil (*Myriophyllum spicatum*), fanwort, water chestnut, *Escherichia coli* (E. coli), and PCBs in fish tissue.<sup>5</sup>

All of these impairments have an asterisk in the Integrated list indicating that a “TMDL (Total Maximum Daily Load) is not required.” **The relicensing of these two projects, triggering this 401 Water Quality Certification Application, is really the opportunity for the project-related impairments to be addressed.**

FRCOG presents the following rationale for MassDEP to condition the 401 WQC:

1. Under the federal Clean Water Act (section 401), Massachusetts has the authority to deny a 401 Water Quality Certificate, or issue a certificate with conditions as necessary to ensure that water quality is protected.
2. Under the Massachusetts Clean Waters Act (M.G.L. Chapter 21, Section 27), and its own regulations (314 CMR 4), MassDEP has a duty to take all actions to secure to Massachusetts the benefits of the federal Clean Water Act, to adopt water quality standards identifying the uses to be protected in Massachusetts waters, and to require flows from hydropower facilities as necessary to protect those uses.
3. MassDEP has adopted water quality standards for the Connecticut River segments affected by FirstLight’s hydropower projects.
4. The Connecticut River segments at issue are designated as Class B waters, and are “designated as a habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation.”
5. Pursuant to the anti-degradation provisions of the Massachusetts Surface Water Quality Standards, MassDEP must protect these designated uses.
6. FirstLight’s hydropower projects have caused and will cause significant riverbank erosion. FRCOG’s comments below and in attached documents provide detailed descriptions about this concern.
7. The erosion is a form of pollution because it destroys aquatic vegetation and fish habitat, and contributes to suspended sediment that contributes to the dissolved oxygen impairment in Long Island Sound as addressed in the 2000 Long Island Sound Total Maximum Daily Load (TMDL) and the continual work under EPA’s Nitrogen Reduction Strategy.<sup>6</sup>

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<sup>5</sup> Final Massachusetts Integrated List of Waters for the Clean Water Act 2022 Reporting Cycle. CN 568.1. Prepared by the Massachusetts Department of Environmental Protection Watershed Planning Program. May 2023.

<sup>6</sup> <https://www.epa.gov/tmdl/tmdls-work-long-island-sound> and <https://longislandsoundstudy.net/our-vision-and-plan/clean-waters-and-healthy-watersheds/nitrogen-strategy/>.

8. The erosion is the result of the FirstLight's project operations and so is the cause of the water quality impairment.
9. The portion of the Connecticut River between the Turners Falls Dam and the New Hampshire and Vermont borders are classified by MassDEP as impaired due to "flow regime" and "alteration in stream-side or littoral vegetative covers." Project operations has been listed in the Integrated Lists as the cause of these impairments.
10. The FERC license will have a lengthy term of 30 to 50 years and the 401 Water Quality Certification is the single most important authority granted to the state to be able to protect its interests in the biological, chemical and physical integrity of the Connecticut River.
11. In the absence of conditions, such as the ones proposed by FRCOG in this letter, the FirstLight project will cause ongoing harm for decades.

## **FRCOG's Comments**

FRCOG's comments filed in this letter and its attachment focus on the issue of streambank erosion and the connection to Massachusetts Surface Water Quality Standards.

As a party to the recreation settlement agreement filed with FERC on June 12, 2023, the FRCOG fully supports the recreation provisions in the settlement agreement and requests FERC to accept the Recreation Management Plan (RMP). The RMP and recreation settlement agreement satisfy the FRCOG's recreational interests with regard to both projects, and if kept intact in the final license, its provisions will be a great asset to the region.

In accordance with Section 2.2 of the Recreation Settlement Agreement, although we were not a party to the flows and fish passage settlement agreement, the FRCOG has agreed not to oppose any of the terms of the flows and fish passage settlement agreement ("FFP Agreement"). The FRCOG has an interest in the Connecticut River being a healthy river ecosystem.

## **Summary of FRCOG's comments**

FirstLight's proposed operations and "Comprehensive Proposal" as articulated in the 401 Application, together with their Draft Water Quality Mitigation and Enhancement Plan (Attachment C) and Draft Long-Term Sampling and Analysis Plan (Attachment D) will not resolve the water quality impairments in the Massachusetts part of the Connecticut River between the Vernon Dam and the Turners Falls Dam, and may cause further impairment. FRCOG's recommendations later in this letter suggest a number of conditions that are aimed at meeting water quality standards in this part of the Connecticut River.

FirstLight describes three relicensing studies that were the basis for addressing erosion-related impacts. Those studies were as follows:

#### Study 3.1.1 – Full River Reconnaissance

#### Study 3.1.2 -- Northfield Mountain/Turners Falls Operations Impact on Existing Erosion and Potential Bank Instability Study Report (commonly referred to as the Causation Study)<sup>7</sup>

#### Study 3.1.3 – Sediment Management Plan

FirstLight's sediment and erosion studies were each over 500 pages long with numerous appendices and addenda, with subjective analyses and conclusions cloaked in a veneer of technical competence aimed at eliminating or reducing their responsibility for erosion.

The Northfield Mountain proposed operations would expand the facility's upper reservoir operating range (increasing the usable volume by 24%) and allow FirstLight to move larger quantities of water into and out of the Connecticut River during pumping and generation cycles. Use of an expanded upper range in the upper reservoir has the *potential* to result in more riverbank exposed to destabilizing wetting and drying cycles. FirstLight on page Att C-5 of the 401 Application states that "TFI storage must be used as a buffer" when touting the more stabilized flow regime in the Connecticut River below the Cabot Station. FirstLight has provided no data to back up the claim that the TFI must be a sacrificial zone to provide improved operations downstream. FirstLight has provided no indication of an alternatives analysis to explore options for TFI limits, other than proposed license article A190 that limits the rate of rise of the Turners Falls Impoundment water level to be less than 0.9 feet/hour from May 15 to August 15 from 8:00 am to 2:00 pm.<sup>8</sup> FirstLight has provided no data to understand the magnitude and frequency of daily river fluctuations in the TFI under project operations proposed under the FFP Agreement.

With its BSTEM model, FirstLight has been overly focused on arriving at a precise estimate of the percentage of responsibility for erosion under existing operations, and FirstLight is also using the BSTEM model to predict erosion under future modeled operations. Study 3.1.2 did not adequately capture the interplay between all causes of erosion in the TFI. FRCOG's extensive comments on BSTEM model and its use can be found in our attached comments submitted to FERC on May 22, 20124. In addition, we are also submitting an analysis and review of Study 3.1.2 by Dr. Evan Dethier. Previously, the Connecticut River Watershed Council, now Connecticut River Conservancy (CRC) submitted to FERC a peer review of Study 3.1.2 by Princeton Hydro.

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<sup>7</sup> FirstLight's 401 Application at Att C-2 states that the March 2024 Supplemental BSTEM report filed to FERC on March 22, 2024 (not filed with the 401 Application) "supercedes all of the previous reports." We assume they mean that the BSTEM analysis in the 2024 supercedes the BSTEM analysis in the 2017 Study 3.1.2, since there were many additional components to Study 3.1.2 that were not included in the 2024 Supplemental BSTEM report. Even so, the BSTEM analysis in Study 3.1.2 provides the basis for the 2024 Supplemental BSTEM report.

<sup>8</sup> FirstLight has never provided information indicating if this is any different than current operations, or how different.

FirstLight's proposal to address only the erosion that its BSTEM model has found to be caused by project effects is scientifically unsound and inadequate given documented water quality impairments in the TFI. Please see our comment letter filed with FERC on May 22, 2024 for more details.

## Understanding the Extent of Erosion and Compliance with the 1999 Erosion Control Plan

FRCOG is submitting our comment letters on the final Study Report and Addendum for Study 3.1.1 Full River Reconnaissance (FRR) so that MassDEP can understand the issues that FRCOG has been raising about this study from the start. Previous FRRs were conducted in 2001, 2004, and 2008, and were required under the 1999 Erosion Control Plan (ECP).<sup>9</sup> The ECP committed the licensee to conduct FRRs every 4-5 until the end of the license. The 2013 FRR was already planned and it was turned into a Relicensing Study. No FRR has taken place since 2013.

For years, members of the CRSEC had complained about shifting methodologies, making it impossible to compare the results of one FRR to previous FRRs. CRSEC members had also complained about the methodology of the FRR being too prone to subjectivity. In MassDEP's comments on FirstLight's Updated Proposed Study Plan submitted to FERC on July 12, 2013, MassDEP wrote, "It is clear that MassDEP, FRCOG, and CRWC are in agreement that the process historically used by FirstLight to study erosion (the FRR) has not generated sufficient reliable information upon which MassDEP can issue a Water Quality Certification." MassDEP's letter goes on to describe a desire for a process under which evaluations are "based upon scientifically reproducible geomorphologic criteria that has been established and is free from potential observer bias or prejudice."

Because of the concerns about subjectivity, FirstLight was required to produce a Quality Assurance Project Plan (QAPP) for the 2013 FRR. The QAPP was in the process of being drafted when relicensing began. In January of 2013, FRCOG provided FirstLight with comments on the second draft of this QAPP, and these were filed with FERC and are included in our list of attachments. In the 2013 FRR, an August 2013 version of the QAPP was included as Appendix D. The QAPP shown in Appendix D has no signatures of approval from MassDEP or USEPA. FRCOG consulted FirstLight's Table 5.5.1-1 in the 401 Application. Table 5.5.1-1 provides the consultation record between FirstLight and MassDEP on the FRR and Erosion Causation Study. It lists nothing related to the QAPP. We have no evidence that the QAPP was ever approved.

MassDEP articulated the need to have a consistent set of definitions free from observer bias so that it could eventually perform an analysis for the 401 WQC. In MassDEP's study request letter dated March 1, 2013, MassDEP requested that FirstLight "accurately map and scientifically describe that portion of the Turners Falls Pool where active or recent "bank" "erosion" is occurring...-- **all terms should be precisely defined in any such study, and linked to jurisdictional definitions whenever possible.**" (emphasis ours)

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<sup>9</sup> FRCOG has years of CRSEC meeting minutes, comment letters, and other filings related to previous FRRs that we can furnish upon request.

Despite having a (draft) QAPP, the 2013 FRR continued to be plagued by definition problems and observer bias. For example, here is an excerpt from FRCOG's CRSEC comments on Study 3.1.1 dated November 14, 2014:

In Table 6.1 (page 6-6), the FRR reports the stages of erosion in the Impoundment, and calculates that 83.5% of the banks were stable, 9.1% eroded, 5.5% potential future erosion, 1.3% in the process of being stabilized, and 0.6% active erosion. "Stable" is defined in Table 5.2 (page 5-5) as "riverbank segment does not exhibit types or indicators of erosion." Looking at the Table in Appendix I of the FRR, it is evident that many segments were characterized as having types or indicators of erosion, but were nevertheless classified as being "stable." In fact, using the FRR GIS database, we were able to calculate that, using their own definition (that stable is having no types or indicators of erosion), only 43.5% of riverbanks were "stable." The percentage of banks that had an erosion type and/or an indicator of erosion, seemingly not stable according to their definition but nevertheless labeled as stable by FirstLight, was 40.0% of the banks. The percentage of banks that had both a type of erosion and at least one indicator of erosion labeled as "stable" was 26.2% of the banks.

FirstLight's 2013 FRR did not follow their own definition of stable and considered more banks stable than was observed. We note that even FirstLight's definition of riverbank classification terms was problematic. For example, as shown in the image below, FirstLight added two categories of definitions to the list of Riverbank Classification Definitions (Stages of Erosion and Extent of Current Erosion) that are entirely subjective and used vague language like "evidence of recent erosion activity" and "active erosion present".<sup>10</sup> Rather than using a scientifically valid approach to a temporal classification of the stages of erosion, as offered in Field 2007, FirstLight's made-up categories and subjective language serve to effectively skew all of the data and results in favor of FirstLight's position that project operations do not impair water quality in the Connecticut River. This is the kind of bias FRCOG has long recommended avoiding. The QAPP had these and other biases that would likely have been eliminated if the document had undergone a rigorous review by MassDEP. We note that some of the results of the 2013 FRR were used as input data for BSTEM and this, along with our other concerns regarding BSTEM, further undermines FirstLight's assertion that project operations have limited impact on bank stability and water quality in the TFI.

<b>Stage(s) of Erosion</b>	<b>Potential Future Erosion</b> – riverbank segment exhibits multiple or extensive indicators of potential erosion
	<b>Active Erosion</b> – riverbank segment exhibits one or more types of erosion as well as evidence of recent erosion activity
	<b>Eroded</b> – riverbank segment exhibits indicators that erosion has occurred (e.g. lack of vegetation, etc.), however, recent erosion activity is not observed. A segment classified as Eroded would typically be between Active Erosion and Stable on the temporal scale of erosion.
	<b>Stable</b> – riverbank segment does not exhibit types or indicators of erosion

<sup>10</sup> Table 6: Riverbank Classification Definitions on pages 24 and 25 in the FirstLight Full River Reconnaissance QAPP, Revision No.2 included as Appendix D in the 2013 FRR Final Report September 2014 (FERC Study 3.1.1).

<b>Extent of Current Erosion</b>	<b>None/Little<sup>11</sup></b> – generally stable bank where the total surface area of the bank segment has approximately less than 10% active erosion present.
	<b>Some</b> – riverbank segment where the total surface area of the bank segment has approximately 10-40% active erosion present
	<b>Some to Extensive</b> – riverbank segment where the total surface area of the bank segment has approximately 40-70% active erosion present
	<b>Extensive</b> – riverbank segment where the total surface area of the bank segment has approximately more than 70% active erosion present

### ***Invasive Species Management and Bank Erosion***

With regard to terrestrial and aquatic invasive species management plans, we refer to FRCOG’s comments and recommendations filed with FERC on May 22, 2024.

Additionally, we refer to Attachment B of the Addendum to the Full River Reconnaissance Study 3.1.1. Attachment B showed riverbank photos taken by Field Geology Services in 2007 and compared them to photos at the same location in 2014. The images from page B-11 of Site 8, located near the old railroad bridge in Northfield, MA, are copied below. The comment at the bottom of this page states, “Bank conditions appear similar in both sets of photographs *but oriental bittersweet has become more established since 2007 at this location.*” This is the effect of a “no management” approach that FirstLight is proposing for terrestrial invasive plants in its Invasive Species Management Plans. And since 2014, another 10 years has passed.



**PHOTO SET #8**

**2007 Photo:** Downstream from the old Railroad Bridge: Located on the left bank of the River.



**2014 Photo:** Downstream from the old Railroad Bridge



**Observations:** Bank conditions appear similar in both sets of photographs but oriental bittersweet has become more established since 2007 at this location. There is a kingfisher nest cavity in the 2014 photograph (white arrow).



### **Study 3.1.2 and Operational Impacts**

FRCOG is submitting our comment letters on the interim study report, the updated study report, and the final Study Report for Study 3.1.2 so that MassDEP can understand the issues that FRCOG has been raising about this study from the start.

FRCOG's comments to FERC dated May 22, 2024 together with Dr. Evan Dethier's review (submitted as an attachment to this letter) provide an explanation for why FRCOG does not accept the results of the BSTEM model as an accurate means of assessing existing project impacts, nor do we endorse its use as a predictive model to accurately assess future project impacts. The bottom line is that the BSTEM model does not match our observations on erosion along the Connecticut River over the past 20+ years, the river segments are already considered impaired, and MassDEP should set conditions by which the river can meet water quality standards.

Our May 22, 2024 letter also explains that FRCOG does not believe that modeling future operations based on 14 years of previous operations is an accurate way to assess project impacts over the next 50 years. FirstLight's proposal provides no safeguards to ensure that project operations will remain similar to what the model may predict. In other words, there is ample room for impacts to increase, rather than decrease.

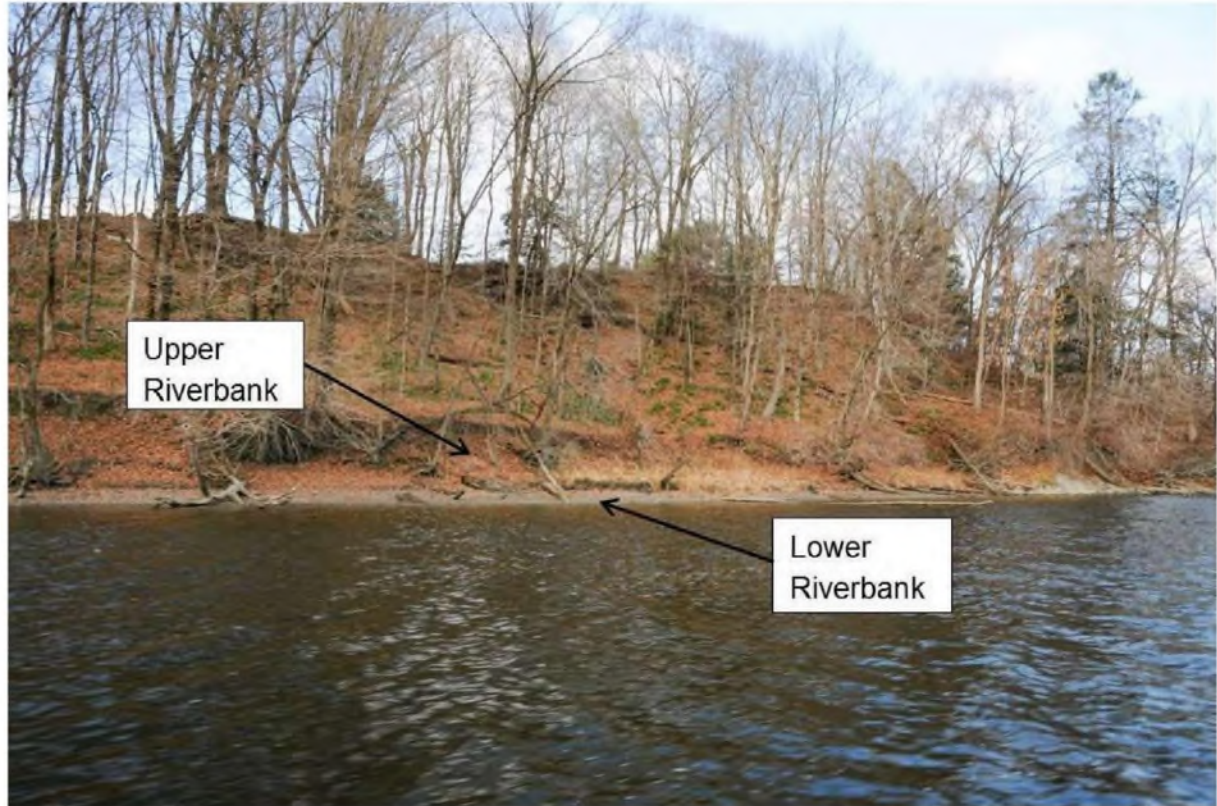
In addition to the comments we have previously provided, below are several more comments that are specifically geared towards the 401 Application.

#### ***Definition of "Bank" has been a problem from the beginning***

During a meeting FirstLight held with stakeholders in June of 2014 to discuss Study 3.1.2 field efforts and the detailed study sites report, stakeholders raised concerns over FirstLight's use of the terms "upper" and "lower" (river) bank. Afterwards, FirstLight sent a memo to Interested Stakeholders dated June 27, 2014 attempting to clarify the working definition of upper vs. lower riverbank. They described the upper bank as "that portion of the bank that is frequently above water but can be inundated during high flows" whereas the lower bank is "that portion of the bank that is frequently below water, typically lies at a relatively flat slope, and is mostly barren of vegetation other than some scattered aquatic vegetation." FirstLight never clarified where the upper extent of the upper bank ended, or where the lower extent of the lower bank ended.

The June 27, 2014 memorandum from FirstLight included several visual examples, such as the one copied below, which was Example 2 and Figure 4 in that memorandum. The arrows and text boxes were provided by FirstLight in the memorandum.

**Figure 4. Upper vs. Lower Riverbank – Example 2**



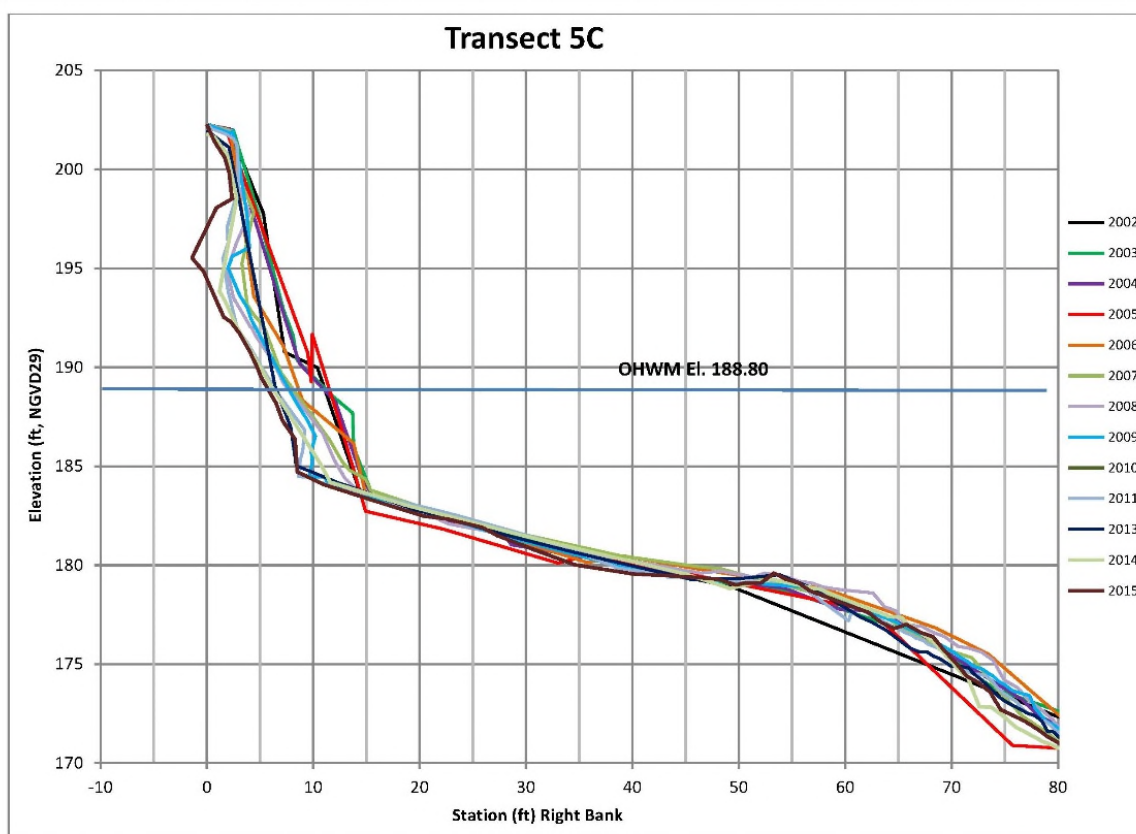
The June 27, 2014 memorandum further explained,

The definitions do not necessarily correspond to regulatory definitions used in state and federal environmental regulations. For example, the definition of “bank” used in this document may be broader than the regulatory definitions of bank used in the Massachusetts Wetlands Protection Act rules at 310 CMR 10. FirstLight believes using non-regulatory definitions is appropriate at this stage because the intent of Study No. 3.1.2 is not to assess erosion solely on “banks” as defined in the regulations but rather to take a more holistic view of the river system. FirstLight agrees that the regulatory definitions will ultimately be important during relicensing and will work with state and federal regulatory agencies and affected stakeholders in that regard.

Despite FirstLight agreeing that the regulatory definitions will ultimately be important during relicensing, there is no mention in the 401 Application about any refinement of the definitions of upper and lower bank in relation to jurisdictional authority in Massachusetts. The Wetlands Protection Act regulations, 310 CMR 10.54(2)(c), for example, define Bank in freshwater systems as follows: “the upper boundary of a bank as the first observable break in the slope or the mean annual flood level, whichever is lower. The lower boundary of a Bank is the mean annual low flow level.” Despite MassDEP’s prior requests, FirstLight has never presented study results in a way that conforms to MassDEP’s regulatory authority.

Appendix E to Study 3.1.2 showed the transects for 2002 to 2015. Below is the Transect 5C on the right bank as shown in Appendix E, for example. Figure 3.1-1 in FirstLight's 2024 Supplemental BSTEM report submitted on March 22, 2024 to FERC shows that water levels at Transect 5C vary between an elevation of 179 and 190 ft msl. On the transect image below, the Ordinary High Water Mark (OHWM) is given as 188.8 ft. This transect below, however, shows the "bank" as being between 170 and 200+ ft. It appears that FirstLight included a 9-foot high and 30-foot wide section of riverbed as "bank." How this transect geometry was entered into BSTEM is unclear, and it has never been clear how FirstLight's different definition of bank from the regulatory definition may affect study results, including and importantly, the BSTEM results.

Northfield Mountain Pumped Storage Project (No. 2485) and Turners Falls Hydroelectric Project (No. 1889)  
STUDY 3.1.2 NORTHFIELD MOUNTAIN / TURNERS FALLS OPERATIONS IMPACTS ON EXISTING EROSION AND POTENTIAL BANK INSTABILITY



Appendix E-30

### **Quality Control on BSTEM Model inputs lacking**

As FRCOG has argued above and in our May 22, 2024 letter to FERC, we do not think it is possible to accurately model the many causes of erosion in the TFI, nor do we think it is possible to predict future operations or the impact of future operations. As with any model, there are always uncertainties. The quality of the data input into the model is critically important, as is its usage compared to what it was designed to be able to do. FirstLight, in their 2024 Supplemental BSTEM

report, is asking a lot of the model by presuming that it can accurately predict how much erosion will occur and exactly which eroding banks are due to project operations.

The BSTEM User's Manual from 2013 has a section called "How to best use the Bank Stability and Toe Erosion Model."<sup>11</sup> On this page (Figure 3), it says that **the validity of model outputs is subject to the two major constraints**, as quoted below (emphasis ours):

- a) **the model is a simplification of a complex natural system, and that simplification must be appropriate to the field situation in order for the results to be meaningful.**
- b) **The output is only as good as the input data.**

#### Data Collection and BSTEM Model Input Discrepancies

There was no QAPP for Study 3.1.2, and no reviewer to date has looked at the BSTEM input values reported in Study 3.1.2 Appendix L and compared them with the long-term transects (Study 3.1.2 Appendix E); the detailed drawings, photos, and bank stratigraphy in the detailed study site assessments (Study 3.1.2 Appendix D); the equations and assumptions and the tables related to jet testing and borehole tests (for example, Tables 4.2.6.5-1 and 4.2.6.6-1), to see if these all make sense, and whether other values would be more appropriate and how that would change the results. The exception that we are aware of are the comments on pages 44 to 51 in Dr. Evan Dethier's review.

The BSTEM model input data provided by FirstLight in Appendix L of Volume III does not include bank Input Geometry. Figure 4 from the 2013 BSTEM User's Manual is copied below. As the figure below shows, this is a critical data set for BSTEM and Section 2 of the 2013 BSTEM User's Manual states that this step is key to model output.

Instead, FirstLight chose Option B – Enter a bank height and angle and let the model generate a bank profile. In section 4.2.6 BSTEM Input Data Collection, FirstLight states that rough surveys of the 25 detailed study sites were done using a tape and Brunton compass to provide bank heights, angles and stratigraphic layering. "The data collected in the field were used by Cardno to populate BSTEM-Dynamic 2.3." According to the BSTEM-Dynamic 2.0 User Manual, "[Option B]...should be used where a detailed bank profile is unavailable or hypothetical scenarios are being run." Option B generates a simplified bank profile.

Why was Option B chosen over Option A, which would have yielded a detailed bank profile? No rationale is provided by FirstLight. Option A could have been done using the survey data available for the 20 permanent transects and detailed surveys could have been done for the new study sites, which would have provided more accurate bank profiles than those from Option B.

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<sup>11</sup> Available for download at <https://www.hec.usace.army.mil/confluence/rasdocs/rassed1d/1d-sediment-transport-user-s-manual/bstem-user-s-manual#> .



**Input bank geometry and flow conditions**

Work through all 4 sections then hit the "Run Bank Geometry Macro" button.

1) Select **NEITHER** Option A or Option B for Bank Profile and enter the data in the relevant box-cells in the alternative option are ignored in the simulation and may be left blank if desired.

2) Enter bank material layer thicknesses (if bank is all one material it helps to divide it into several layers).

3) If bank is submerged then select the appropriate channel flow elevation to include confining pressure and calculate erosion amount; otherwise set to an elevation below the bank toe.

To ensure bank profile is correct you can view it by clicking the **View Bank Geometry** button.

**Option A - Draw a detailed bank profile using the boxes below**

☐ Option A

Point	Station	Elevation
A	0.00	5000.04
B	9.39	5000.04
C	9.78	4999.88
D	9.80	4999.75
E	9.80	4999.65
F	9.80	4999.45
G	9.83	4999.28
H	10.09	4999.09
I	10.20	4998.85
J	10.40	4998.65
K	10.69	4998.47
L	10.88	4998.20
M	10.93	4997.99
N	11.13	4997.91
O	11.23	4997.71
P	11.81	4997.88
Q	11.84	4997.52
R	12.72	4997.38
S	13.26	4997.14
T	13.46	4996.77
U	14.14	4996.66
V	14.97	4996.56
W	17.00	4996.56

**Option B - Enter a bank height and angle, the model will generate a bank profile**

☒ Option B

Bank height (m):

Bank angle (degrees):

Toe Length (m):

Toe angle (degrees):

Elevation of layer base (m)

Top Layer:  3.40

Parallel layers, starting from point B

1.50

1.50

1.50

1.50

Bottom Layer

**Channel and flow parameters**

Input reach length (m):

Input reach slope (m/m):

View Bank Geometry

Run Bank Geometry Macro

**Definition of points used in bank profile**

A - bank top; place beyond start of shear surface  
B - bank edge  
C-P - breaks of slope on bank (if no breaks of slope place as intermediary points)  
Q - top of bank toe  
R-U - breaks of slope on bank toe (if no breaks of slope then insert as intermediary points)  
V - base of bank toe  
W - end point (typically mid point of channel)

**Bank material**

Notes:  
Bank profile may overhang.  
If the bank profile is fully populated, the shear surface emergence point should be anywhere between points B and Q.  
The shear surface emergence point must not be on a horizontal section - the elevation of this point must be unique or an error message will display.

**Figure 4 – Screen shot of the ‘Input Geometry’ sheet where bank geometry, layer depth and flow parameters are input.**

BSTEM input data in Appendix L to Study 3.1.2 shows that for each of the study sites, four layers were used. For site 5CR, for example, the profile that we copied earlier in this letter (page 15), has layer depths that add up to 7.12 feet deep. Which 7 feet of the ~32 feet of the profile were entered into the model, and why? This is another example of inconsistencies in data collection and model input as well as an impediment to being able to replicate the study and review its results.

Our review of the field data in Section 4 of Volume II of Study 3.1.2 and the BSTEM model input data provided for each detailed study site in Appendix L indicates that model default values for Geotechnical Properties and Hydraulic Conductivity were used for Bank Model Input Data and Groundwater Model Input Data. In the case of Toe Model Input Data, it is even more confusing because the input values in the two columns in Appendix L often don't match the reported Jet Test Data in Table 4.2.6.6-1 or Table 4.2.6.6-2.

Despite over 30 pages of narrative, tables and scatter plots in Section 4 Field Studies, Data Collection and Modeling in Volume II of Study 3.1.2, **it is unclear how the data gathered from the field studies was QA/QC checked, processed and used as BSTEM model input data.** There is no clear relation between the site-specific data presented in Section 4 and the model input data presented in Appendix L. The reader should be provided with enough information to understand these connections. Uncertainty values should be provided, and information about quality checking should be given. Instead, the presentation of apparently unused site-specific data and overall general lack of clarity in the narrative supports our serious concerns about the data processing and input, and the results of the BSTEM model.

No 3<sup>rd</sup> party reviewer has ever seen the actual model output to see if the results have accurately been given in FirstLight's reports. FirstLight has said that providing model output would be very long and cumbersome and that may very well be true. However, they could have provided full input and output for a small (random or stakeholder-selected) subset of the study sites in order for reviewers to better understand the output. As a comparison, for the fish passage studies that used PIT tags, the PIT tag readings involved millions of data points. FirstLight's consultants provided the raw data to reviewers upon request. Because the agency and nonprofit reviewers had expertise in PIT tag data analysis, they were able to independently screen and review the results, and in that process, noted some errors. FirstLight's consultants re-ran the analysis, and the study results were corrected. Nothing like this has been done for the erosion study.

Unlike BSTEM-Dynamic 2.0, the modified BSTEM-Dynamic model (ver. 2.3) used on the TFI has no available user manual and was not peer-reviewed and tested in similar settings. We could find no peer-reviewed articles about the use of BSTEM-Dynamic 2.0 to predict future conditions and future responses of a river system to climate change impacts, which supports our concerns about its application and conclusions for the TFI. FirstLight coupled the HEC-RAS model to BSTEM-Dynamic (ver.2.3). Again, we are concerned about this approach since limited information was provided about the coupling of these models.<sup>12</sup> We note that a March 2015 Army Corps of Engineers Technical Reference & User's Manual for HEC-RAS and BSTEM (USDA's publically available static version) is over 60 pages long and, not surprisingly, very complex. We assert that, in the absence of a QAPP and robust technical documentation, FirstLight's coupling of HEC-RAS with their version of BSTEM-Dynamic (ver.2.3) and the results of the modeling should be viewed with a high degree of skepticism and likely do not represent conditions in the TFI and the projects' impact on water quality. Once again, the TFI has been used as an experiment – this time for a black box computer model with no documentation, no QAPP and no scientifically valid basis for its use as a predictive tool for the TFI and project operations 50 years into the future.

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<sup>12</sup> Appendix F – BSTEM Technical Background provided as part of Study 3.1.2 was inadequate and consisted, in part, of random copied and pasted sections from the 2013 BSTEM-Dynamic 2.0 User Manual. No information was provided in Appendix F about how HEC-RAS results were used in the BSTEM model. Narrative about the HEC-RAS results was provided in Section 5.4.1 BSTEM Input Data of Vol II of Study 3.1.2 but the model runs could not be replicated by a 3<sup>rd</sup> party reviewer due to the lack of technical documentation and a QAPP.

### *Riparian Buffer Area*

MassDEP's March 1, 2013 Study Request letter requested a bank stability study that had many objectives, one of which was, "Map land use practices that are directly observationally linked to 'bank' 'erosion' directly beneath and/or proximate to them, and target these areas for employment of best management practices." Consequently, Study Report 3.1.2 included Section 5.5.4 "Land Management Practices and Anthropogenic Influences to the Riparian Zone." Volume I of Study 3.1.2 on pages 35-36 describes the conclusions drawn from this part of the study:

As a result of the correlation observed between adjacent land-use and bank stability any riverbank segment where the adjacent land-use was classified as Agriculture or Developed and the riparian buffer width was 50 feet or less was classified as having land-use or land management practices as a potential contributing cause of erosion. This equated to approximately 101,000 feet (19 mi.) or 44% of all riverbank segments in the TFI.

Furthermore, riparian vegetation provides a stabilizing influence to riverbanks damping out hydraulic forces and providing soil stability through its supporting root structure. Where land-use removes or reduces vegetation in the riparian corridor, riverbank stability is generally decreased. A riparian buffer zone between land-use such as agriculture and a river provides an important component that adds to riverbank stability. The Connecticut River Joint Commissions (CRJC), in a brochure entitled "Introduction to Riparian Buffers," state:

Riparian buffer vegetation helps stabilize streambanks and reduce erosion. Roots hold bank soil together, and stems protect banks by deflecting the cutting action of waves, ice, boat wakes, and storm runoff.

They warn that, "Natural riparian buffers have been lost in many places over the years," and recommend a minimum width of riparian buffer of "at least 50 feet" to stabilize eroding riverbanks. They further state that "Riparian buffers are the single most effective protection for our water resources in Vermont and New Hampshire," and that restoring riparian buffers will be "an important step forward" regarding riverbank stability.

Despite the analysis that 44% of all riverbank segments in the TFI have less than a 50 ft riparian buffer, and FirstLight's report cited 50 ft. as the minimum width to help stabilize eroding riverbanks, and despite the fact that FirstLight owns much of the shoreline or has the flowage rights to the shoreline lands,<sup>13</sup> FirstLight has proposed nothing in the way of managing their lands with a 50 ft. buffer. On December 21, 2010, FirstLight filed a report with FERC evaluating erosion and runoff potential at properties FirstLight owns that are used for nonproject purposes, such as private clubs and seasonal or year-round "camp" dwellings. This report spoke of a 10-foot wide vegetated buffer that FirstLight was "formalizing." There is no mention of this in the 401 Application, and it appears 10 feet runs counter to their 50-foot recommendation.

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<sup>13</sup> Maps of licensee-owned lands were provided in a revision of Relicensing Study 3.6.5, located in FirstLight's response to stakeholder comment document dated May 31, 2016.

## **Managing Sediment Releases during Maintenance Activities at Northfield Mountain**

The issue of managing sediment in the upper reservoir came under regulatory scrutiny in 2010, when FirstLight drained their upper reservoir at Northfield Mountain for maintenance purposes, and things went drastically wrong. Sediment filled the shaft between the river and the upper reservoir, shutting operations down for six months. FirstLight excavated the material and dumped it into the Connecticut River until the U.S. Environmental Protection Agency (USEPA) issued a cease and desist order. Administrative and Enforcement orders came from USEPA and MassDEP. FERC required that FirstLight file a plan for future maintenance activities to avoid similar occurrences in the future.

Recognizing that sediment releases like the one described above present a problem for Long Island Sound, which has a multi-state TMDL for low oxygen impairment caused by nutrients, MassDEP's study request letter dated March 1, 2013 requested that FirstLight conduct a study that will, "Evaluate strategies to manage the release of accumulated sediment through Northfield Mountain Project works during upper reservoir drawdown or dewatering activities."

FirstLight produced Relicensing Study 3.1.3 Sediment Management Plan, which included extensive information about sediment levels in the Connecticut River, bathymetric surveys of the upper reservoir at Northfield Mountain, and possible sediment barriers at the tailrace. Despite the August 3, 2010 Administrative Order issued by USEPA, Study 3.1.3 lacked any real plan when it was submitted to FERC as a final study report in October 2016. FERC consequently required that FirstLight file an addendum with the dewatering protocol, and on June 30, 2017, FirstLight filed their Upper Reservoir Dewatering Protocol document with FERC, MassDEP, and USEPA. The 2017 Dewatering Protocol document is included as Appendix D in FirstLight's 401 Application.

Section 5.4 of FirstLight's 401 Application describes the conditions that would lead FirstLight to dewater the upper reservoir to dredge and remove sediment. Prior to a dewatering event, the 2017 Dewatering Protocols explains in section 4.3 that FirstLight will notify MassDEP, USEPA, and FERC in advance to document the specific plan and provide BMPs (Best Management Practices). Section 4.2 of the Dewatering Protocol describes a three-tiered approach to monitoring during a dewatering event – 1) visual monitoring, 2) continuous monitoring of turbidity readings, and 3) grab sample collection and laboratory analysis. The Dewatering Protocol do not explain what will happen to the sediment that is dredged, i.e., where it will be stored, where it will ultimately be disposed. To our knowledge, the sediment dredged as part of the 2010 maintenance procedure was stored at the upper reservoir.

On August 25, 2023, FERC's Regional Engineer, John Spain, filed a letter sent to FirstLight regarding follow-up to a Dam Safety Inspection that took place on August 10, 2023. This letter in section 2 (Monitoring during Upper Reservoir Drawdown and Refilling) stated, "We were informed that the Upper Reservoir will be completely dewatered in September 2023 to perform planned maintenance of the pumped storage facility." FRCOG is unaware of any other communication to FERC or DEP or USEPA regarding this drawdown. It is unclear if a specific plan and BMPs were part of FirstLight's



notification, as outlined in FirstLight’s Dewatering Protocol, or if any monitoring described in their Dewatering Protocol took place. There is no mention of this in FirstLight’s 401 Application.

## FRCOG Recommendations

FRCOG’s recommendations for terms of the new license are based on the following values:

- MassDEP’s goal should be to bring Project operations into compliance with WQS and other appropriate requirements of state law, and assure compliance over the license term.
- License conditions must be set to bring the Projects into compliance. Reducing the range of river level fluctuations will reduce project impacts.
- FirstLight should provide good stewardship of a vegetative riparian buffer the Connecticut River.
- FirstLight should conduct and make public more and better monitoring of project operations and river conditions.

## Erosion Recommendations

To achieve water quality standards, FRCOG expects MassDEP to develop a set of conditions that establish the following requirements.

### 1. Target TFI elevation and typical operating range

Present Project operations – water level fluctuations – cause erosion and led to the River designation as impaired. FRCOG recommends the following limitations on TFI fluctuations to limit erosion, address the erosion-related pollution that led to the impairment, and to meet related water quality standards.

The water quality certification for the Turners Falls Dam and Northfield Pump Station projects should include a management goal for the Turners Falls Impoundment similar to that in the Great River Hydro agreement, which is “creating more stable impoundment water surface elevations.” Great River Hydro’s agreement #9 limits a fluctuation range per project (no more than a 1.5 ft) and #21 sets a target elevation and target 1.0-ft water surface elevation bandwidth. Because Northfield Mountain is a pumped storage project, the bandwidth would need to be wider.

A target elevation and target water surface elevation bandwidth should be established for the location at the Turners Falls Dam where the current license limit is measured, as well as at a new location at the USGS Gage at the Route 10 bridge in Northfield. The target elevation should be the same as what has been typical in the past, and the target bandwidth should be less than what was typical between 2000 and 2014, to reduce project impacts and ensure that operations do not instigate a new increased round of erosion. “Target bandwidth” would mean that the river elevation as measured at the dam and at the USGS gage would stay within the bandwidth a certain percentage of the time.

Target elevation at the dam. Page 3-24 of the Pre-Application Document (PAD) cited a “target” TFI elevation of 180.3<sup>14</sup> and page 3-25 cites typical elevation of 180.5 feet msl.<sup>15</sup> Study Report 3.3.9 stated on page iii that the median elevation as measured at the dam for 2000 to 2010 was 181.3 msl. Figure 4.3.1.3-7 in the PAD showed approximately 181.5 as the 50% equaled or exceeded elevation in an annual duration curve between 2000-2009. Figures 3.3.2.2.1-1 through -4 shows modeled baseline monthly water surface elevation level (WSEL) duration curves at the Turners Falls Dam. The 50% elevation ranges from approximately 181 to 182.5 ft. msl. FRCOG assumes the annual target elevation is 181.5 ft., based on the information in the PAD.

Target bandwidth at the dam: In the AFLA Exhibit E, Figure 3.3.2.2.1-8 showed an Annual Maximum Daily Change Histogram at the Turners Falls Dam for “baseline” conditions. This graph shows that 50% of the time, the daily change is less than 1.6 ft; 75% of the time, the daily change is less than 2 ft.; and 90% of the time, the daily change is less than 2.8 ft. License conditions should ensure that the frequency of daily water surface elevation fluctuations be reduced and not skew higher. FRCOG is recommending a 25% reduction in these statistics to reduce the wetted bandwidth and reduce erosion, which translates into limits at the dam of:

- 50% of the total hours in a year < 1.2 ft daily change
- 75% of the total hours in a year < 1.5 ft daily change
- 90% of the total hours in a year < 2.1 ft daily change

A similar requirement would be set for the USGS gage at the Route 10 bridge in Northfield. The 2024 Supplemental BSTEM Modeling Report’s Figure 3.1-1 shows a distribution of water surface elevations at transect site 5CR, which is near the USGS gage location. The 50% elevation is approximately 182 ft. This would be the target elevation. For target bandwidth, Figure 5.1.3.1-6 in Volume II of Study 3.1.2 shows a Maximum Daily Change Histogram at Transect 5CR. This graph shows that 50% of the time, the daily change is less than 2 ft; 75% of the time, the daily change is less than 2.8 ft.; and 90% of the time, the daily change is less than 3.6 ft. License conditions should ensure that the frequency of daily water surface elevation fluctuations be reduced and not skew higher. FRCOG is recommending a 25% reduction in these statistics to reduce the wetted bandwidth and reduce erosion, which translates into limits at the USGS gage at the Route 10 bridge of:

- 1.5 ft daily change at least 50% of the time
- 2.1 ft daily change no more than 25% of the time
- 2.7 ft daily change no more than 10% of the time

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<sup>14</sup> “Under most common operating scenarios, FirstLight targets an impoundment elevation of 181.3 msl at the dam and 173.5 feet msl in the power canal (as measured in the Cabot forebay).”

<sup>15</sup> “Under moderate flow conditions, i.e., naturally routed flows are between 1,433 cfs and 13,728 cfs (river flow exceeds 13,728 cfs approximately 34% of the time), the Turners Falls Impoundment elevation is typically managed around elevation 180.5 feet msl, but fluctuates under these inflow conditions due to Cabot peaking operations and the pumping/generating cycle at the Northfield Mountain Project.”

To the extent that fluctuations outside of these ranges are required to respond to emergencies or re-regulation of Cabot Station as prescribed in the FFP Agreement, the language authorizing flows below or above the ranges described above should narrowly circumscribe those circumstances. FirstLight's graphs showing WSEL duration curves at the Turners Falls Dam as presented in the AFLA (Figures 3.3.2.2.1-1 through -4) show that the WSEL ranges between 179 and 184 ft. more than 90% of the time, and it should not be difficult to make that the ultimate operational limit.

## **2. Monitoring**

### **A. Project Operation, Monitoring, and Reporting Plan**

FRCOG recommends that the language about the Project Operation, Monitoring, and Reporting Plan as contemplated in A200 of the FFP Settlement Agreement be modified to include the following TFI statistics in the annual compliance reports until the end of the license: for each month of the year, the average TFI elevation as measured at the Turners Falls Dam, the average daily elevation change (maximum elevation minus the minimum daily elevation, averaged over the month), the highest elevation of the month, and the lowest elevation of the month. This report will also demonstrate compliance with any TFI target ranges that are developed. These same statistics should be included for the USGS gage site in Northfield.

### **B. Transect Surveys**

FirstLight is currently required to conduct annual transect surveys. FRCOG recommends that this requirement continue into the next license. Based on our experience reviewing previous cross-sectional charts provided by FirstLight, we have the following recommendations. Cross-sectional surveys will be conducted by a Licensed Surveyor at the 22 historical transect locations and 9 new locations established for relicensing studies 3.1.1 and 3.1.2 locations. Annual reports will be submitted to FERC, showing a cross-sectional view with consistent vertical and horizontal scales that do not obscure the horizontal bank changes. The previous 10 years' worth of cross-section survey lines should be provided on each graph in a line color or pattern that is easy to see from one survey-year to another. The maximum and minimum water surface elevations (for flows less than 18,000 cfs) for each transect location should be provided on each cross-section chart. Right and left bank (looking downstream) should be clearly identified. Each transect chart in the report shall have the licensed surveyor's business name on the chart. The raw data from the transect surveys shall be made available if requested by the public. Each year, FirstLight shall calculate and report on the amount of erosion or accretion at each site, reported in square feet or square meters. This information shall be reported for three zones: 1) the cross-section area below the typical water line, 2) the elevation range for 90% of conditions when flows are below 18,000 cfs (operation range), and 3) bank above the ordinary high water line.

C. Full River Reconnaissance

The Full River Reconnaissance should continue to be required. The methods of the FRR should be determined by an independent consultant hired and managed by an outside agency that is not the licensee. Methods that are less subjective and more objective, such as LiDAR surveys or side-scanning sonar, should be employed (methodology changes made during previous FRR efforts led to various problems with comparing results).<sup>16</sup> Ideally, a survey should be done once per year, with the TFI level held at the same level each survey – the elevation should be relatively low so that the banks can be exposed and surveyed. The methodology of the FRR should be written and viewable by the public, and there should be a Quality Assurance Project Plan reviewed and approved by MassDEP and the U.S. Environmental Protection Agency. The first FRR should be completed in the first year of the new license to establish baseline conditions for the new license.

D. Photo Documentation

For each detail study site from Study 3.1.2, there shall be a set of photos made at license issuance and every 5 years after that. Photo documentation methodology should be established in an approved photo documentation QAPP. These should be made available to the public on a map-based website, similar to what was made available as Appendix K to the 2013 FRR as Study 3.1.1 (<https://gsegis.maps.arcgis.com/apps/Viewer/index.html?appid=7e9cf7b8e4de45dd82948e5d393f44cd>) before the links were broken and never re-established.

E. Contribution to USGS gage at Route 10 bridge

FirstLight should fund annual operational costs to continue the USGS gage (gage level data only) near the Route 10 bridge, separate from other funding. This is gage 01161280. The estimated cost to operate is \$25,000 in 2020 dollars based on personal contact with MassDEP. The funding contribution should continue for the duration of the license and data will be publicly available in real-time via the USGS. This is consistent with [Standard License Article 8 under FERC's L-3: Terms and Conditions of License for Constructed Major Projects on Navigable Waters of the United States](#).

**3. License Articles**

Articles 19 and 20 from the existing Turners Falls and Northfield Mountain Project licenses should be updated based on new conditions set in the 401 Water Quality Certificate and FERC license.

**4. Maintenance of Previously Repaired Sites**

FirstLight should continue to be responsible for maintenance and repair of all bank restoration projects started and/or completed under the prior/currently existing license.

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<sup>16</sup> Massachusetts has partnered with the U.S. Geological Survey to map and track coastal erosion. See Massachusetts Shoreline Change Mapping and Analysis Project, 2013 Update, available online at <https://pubs.usgs.gov/publication/ofr20121189>.

## 5. Shoreline Management and Erosion Control

An update to the 1999 Erosion Control Plan is needed. The Plan should be modified to indicate a more holistic approach to managing the riverbank and riparian area, and could be called a Shoreline Erosion Control Management Plan. FRCOG would not be opposed if a single plan was developed for all five projects Connecticut River projects undergoing relicensing, which would potentially recognize cumulative effects of the projects, setting wider management goals, and an agreement for many parties to work collaboratively. However, the MA projects will be geared towards restoring conditions to meet MA State Surface Water Quality Standards. The new plan should have the following elements:

- A. Interested party involvement. It took more than 20 years for the formation and recognition of the Connecticut River Streambank Erosion Committee (CRSEC), which was then recognized as an ad-hoc group by FERC and MassDEP. The licensee should continue to meet and consult with CRSEC into the next license.
- B. Full River Reconnaissance. The licensee should continue to be responsible for conducting a reconnaissance survey of bank erosion at regular intervals throughout the license term. See previous recommendation details in #2C.
- C. Mitigation Projects. FirstLight will work with the CRSEC, town Historical Commissions, and indigenous groups to commit to riverbank and riparian projects to reduce and mitigate project effects. Particular attention must be given to preserving farmland, infrastructure, and historical and cultural artifacts.
- D. Invasive Species Management. See our comments below regarding FirstLight's responsibilities as steward of riparian lands. These recommendations are very much tied to erosion concerns. Additional comments are provided that address impairments in Barton Cove.
- E. Riparian Buffer Establishment. For the shoreline lands that FirstLight owns, FirstLight should establish, at a minimum, a 50-foot vegetated buffer between the river and any development or land use that prevents the maintenance of natural vegetation. MassDEP should specify how the width of the buffer is to be measured. For the flowage rights that FirstLight owns, FirstLight should work with landowners to establish the same vegetated buffer, potentially paying them to not till this area along the river. For shoreline lands that FirstLight neither owns nor has flowage rights for, FirstLight should work with area organizations like the Franklin Conservation District to conduct landowner outreach to encourage the preservation of a riparian buffer.

## Invasive Species Management

FRCOG recommends that FirstLight be required to prepare a revised Invasive Plant Species Management Plan that spans both projects and involves a public comment period. A draft should be distributed to all relevant federal and state agencies, including consortiums that are involved in invasive plant identification and removal, as well as parties intervening in the relicensing effort.



The format of a revised Plan should be closer to that developed by another land conservation organization, The Trustees of Reservations, or from Army Corps of Engineers guidance.<sup>17, 18</sup> The revised plan should commit FirstLight to early detection and response, in partnership with volunteers, agencies, and nonprofits. Management guidelines and a guide for prioritization should be developed. The Plans should be geared towards meeting water quality standards.

FirstLight should commit to the following, at a minimum:

1. Early detection and removal of new invasive species in the project area, both aquatic and upland, in coordination with relevant agencies and organizations. This commitment may include species beyond plants.
2. Continued participation, which includes staff assistance and expenses, in managing and removing aquatic invasive plants in the entire project area. FL could help fund staffing and/or signage to reduce the spread of invasive aquatic plants through boats, motors, trailers, and fishing gear.
3. A priority set of upland invasive plants should be monitored in the project area at regular intervals throughout the term of the license (once every 5 or so years).
4. FirstLight should commit to controlling and reducing the further increase of established priority invasive plants in priority areas that are identified in coordination with interested parties.
5. FirstLight should coordinate with agencies on any non-plant invasive species, when they become an active threat.
6. FirstLight should host a meeting with agencies and other interested parties once every 5 years, after the results of the surveys are completed. These meetings should include a summary of the current state of invasive species, management techniques, and input on the upcoming efforts of the next five years in coordination with parties attending. Such meetings will allow the licensee and interested parties to adjust to any unanticipated issues over the term of the license.

### **Managing Sediment Releases During Northfield Mountain Maintenance Activities**

- MassDEP should establish whether or not FirstLight followed their own Dewatering Protocol during the dewatering event that took place between September and the end of December, 2023.
- MassDEP should request a copy of FirstLight's suspended sediment monitoring data from the 2023 upper reservoir dewatering event.
- In the 401 WQC, MassDEP should set notification and monitoring protocol for future dewatering events. As a part of this, MassDEP should require that the 2012 Quality Assurance Project Plan (QAPP) (mentioned in a footnote on page 1-1 of the Dewatering Protocol Document) be revised and approved for the monitoring protocol.

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<sup>17</sup> <https://thetrustees.org/wp-content/uploads/2020/07/Invasive-Plant-Management-GUIDELINES-AND-BEST-PRACTICES.pdf>

<sup>18</sup> <https://www.nae.usace.army.mil/portals/74/docs/regulatory/invasivespecies/iscpguidance.pdf>

- MassDEP should establish turbidity limits and disposal requirements for dewatering and dredging events, as appropriate.

## Recommended 401 Water Quality Certification Conditions

**MODIFIED** FFP Article A190. Turners Falls Impoundment Water Level Management (grey shading is where the FRCOG proposes changes to the article in the Flows and Fish Passage (FFP) Settlement Agreement)

Upon license issuance, the Licensee shall operate the Turners Falls Impoundment, as measured at the Turners Falls Dam, as follows:

- (a) Target elevation: The Turners Falls impoundment shall be held at a target average elevation of 181.5 ft. "Average" is defined as the arithmetic average of all hours of a given year.
- (b) Target bandwidth: The TFI elevation shall be maintained between the following target bandwidths: for 50% of the hours per year, the daily elevation change shall be less than 1.2 ft., for 75% of hours per year the daily elevation change shall be less than 1.5 ft, and for 90% of hours per year, the daily elevation change shall be less than 2.1 ft. Daily elevation change is defined as the maximum elevation minus the minimum elevation of a calendar day.
- (c) For the remaining 10% of hours, water surface elevations shall be between 179 and 184 ft. msl. These deviations will be necessary only during certain prescribed circumstances, such as during ISO-NE grid emergencies, flood events, disaster declarations, and/or rare instances during which flow management of Cabot Station dictated by the FFP Cabot requires more flexibility as agreed-to by federal and state resource agencies.
- (d) Limit the rate of rise of the Turners Falls Impoundment water level to be less than 0.9 feet/hour from May 15 to August 15 from 8:00 am to 2:00 pm. However, if the NRF is greater than the sum of the hydraulic capacity of Cabot Station and Station No. 1 and the Minimum Flow below Turners Falls Dam in effect at the time, the Turners Falls Impoundment rate of rise requirement will not apply.
- (e) The rate of rise of the Turners Falls Impoundment may be temporarily modified if required by equipment malfunction or operating emergencies reasonably beyond the control of the Licensee. If the rate of rise of the Turners Falls Impoundment is so modified, the Licensee shall notify the Commission, MDEP, MDFW, NMFS, and USFWS as soon as possible, but no later than 10 days after such incident. The rate of rise of the Turners Falls Impoundment may also be temporarily modified for short periods upon mutual agreement with the Licensee for the Northfield Mountain Pumped Storage Project (FERC No. 2485), MDEP, MDFW, NMFS, and USFWS, and upon 5 days' notice to the Commission.
- (f) The Licensee may increase the allowable NRF deviation from  $\pm 10\%$  to  $\pm 20\%$  to better manage Turners Falls Impoundment water levels. The increased flow deviation is limited by the number of hours shown in the first table of Article A160. This allowance for an increased flow deviation is in addition to the exceptions outlined in paragraphs (a) and (b) of Article A160. As such, the increased flow allowable deviations outlined in this paragraph will not count against any time allotment for exceptions outlined in paragraphs (a) and (b) of Article A160.

Similarly, operations meeting the exception criteria outlined in paragraphs (a) and (b) of Article A160 will not count against any time allotment for allowable deviations outlined in this paragraph. Allowable flow deviations in excess of A-11  $\pm 10\%$  of NRF resulting from conflicting operational requirements will not count against any time allotment for allowable deviations outlined in this paragraph.

Condition FRCOG1. Turners Falls Impoundment Water Level Management, Northfield Gage

Upon license issuance, the Licensee shall operate the Turners Falls Impoundment, as measured at the USGS Gage at Northfield (01161280), as follows:

- (a) Target elevation: The river level shall be held at a target average elevation of 182 ft. "Average" is defined as the arithmetic average of all hours of a given month.
- (b) Target bandwidth: The TFI elevation shall be maintained between the following target bandwidths: for 50% of the hours per year, the daily elevation change shall be less than 1.5 ft, for 75% of hours per year the daily elevation change shall be less than 2.1 ft, and for 90% of hours per year, the daily elevation change shall be less than 2.7 ft. Daily elevation change is defined as the maximum elevation minus the minimum elevation of a calendar day.
- (c) When naturally-routed flow exceeds 30,000 cubic feet per second (cfs), operating Northfield Mountain Pumped Storage shall not cause any increase in river elevation as measured at the gage. (Flow rate chosen based on page 5-71 of Volume II of Study 3.1.2, where it says that "measurable erosion processes do not begin at the vast majority of sites until flows exceed 25,000 to 30,000 cfs).
- (d) To protect state-listed odonates, limit the rate of rise of the Turners Falls Impoundment water level to be less than 0.9 feet/hour from May 15 to August 15 from 8:00 am to 2:00 pm, as measured at the USGS gage. However, if the NRF is greater than 20,000 cfs (when French King Gorge becomes a hydraulic control), the restriction will not apply.
- (e) The rate of rise of the Turners Falls Impoundment may be temporarily modified if required by equipment malfunction or operating emergencies reasonably beyond the control of the Licensee. If the rate of rise of the Turners Falls Impoundment is so modified, the Licensee shall notify the Commission, MDEP, MDFW, NMFS, and USFWS as soon as possible, but no later than 10 days after such incident. The rate of rise of the Turners Falls Impoundment may also be temporarily modified

Modifications to FFP License Article A200.

The Project Operation, Monitoring and Reporting Plan shall be modified to include the following TFI statistics in the annual compliance reports until the end of the license: for each month of the year, the average TFI elevation as measured at the Turners Falls Dam, the average daily elevation change (maximum elevation minus the minimum daily elevation, averaged over the month), the highest elevation of the month, and the lowest elevation of the month. Similar statistics will be supplied for the USGS Gage at Northfield. This report will also demonstrate compliance with TFI target ranges as described in Modified FFP License Article A190 and FRCOG1.

### Condition FRCOG 2. Riparian Buffer Management

On lands abutting the Connecticut River that the licensee owns, the Licensee shall establish a 50 foot vegetated buffer. Within this buffer, the licensee shall make efforts to remove and reduce the spread of invasive plants that threaten bank stability and plant diversity, such as Oriental bittersweet.

### Condition FRCOG 3. Shoreline Management and Erosion Control

Upon license issuance, the licensee shall be responsible for the following activities in the TFI:

- (a) In order to minimize notching and undercutting of the riverbanks, which leads to cycles of bank instability and erosion, anywhere the typical operation range of the bank is not composed of bedrock or hardened from previous bank stability work (rip-rap, tires, coir logs, etc.), the Licensee shall re-inforce the bank along a 2.5 to 3-ft-wide band at the average water elevation for that location. The protected band should be wide enough to cover typical operations for more than 50% of the time and to allow for wave action from boat wakes on the upper end of the band (Figure 4.2.8.5-7 in Volume II of Study 3.1.2 shows wave height distributions; 0.3 ft. would cover most boat wakes). Such installations shall use a variety of nature-based techniques or modern techniques that are more conducive to healthy aquatic habitat (i.e., avoiding rip rap), in consultation with the MA Natural Heritage and Endangered Species Program, MassDEP, and the local Conservation Commission. The Licensee shall be responsible for maintenance and repair of these installations for the life of the license.
- (b) The above-said toe protection should be fully installed within all erodible areas of the TFI that have not previously been restored within 5 years of license issuance.
- (c) The Licensee shall conduct the following monitoring activities for the duration of the license:

- a. Transect surveys completed by a licensed surveyor at each of the 22 historical transect locations and 9 new locations established for relicensing Studies 3.1.1 and 3.1.2. These shall be completed annually and after each flow event higher than 60,000 cfs.

Annual reports will be submitted to FERC, showing a cross-sectional view with consistent vertical and horizontal scales that do not obscure the horizontal bank changes. The previous 10 years' worth of cross-section survey lines should be provided on each graph in a line color or pattern that is easy to see from one survey-year to another. The maximum and minimum water surface elevations (for flows less than 18,000 cfs) for each transect location should be provided on each cross-section chart. Right and left bank (looking downstream) should be clearly identified. Each transect chart in the report shall have the licensed surveyor's business name on the chart. The raw data from the transect surveys shall be made available if requested by the public. Each year, FirstLight shall calculate and report on the amount of erosion or accretion at each site, reported in square feet or square meters. This information shall be reported for three zones: 1) the cross-section area below the typical water line, 2) the cross section area within the elevation range for 90% of

conditions when flows are below 18,000 cfs (operation range), and 3) the cross-section area of the bank above the ordinary high water line.

- b. Full river reconnaissance (FRR) surveys conducted according to a MassDEP-approved Quality Assurance Project Plan (QAPP). The surveys will include methods such as LiDAR or side-scanning sonar that are replicable and comparable year to year in order to monitor bank stability and efficacy of shoreline erosion control and riparian buffer mitigation work. Surveys should be completed annually at a consistent water surface elevation and during leaf-off. The FRR should include sufficient data to identify the type and stages of erosion in the TFI, priority sites for stabilization and the types of nature-based solutions to be used to stabilize the banks and mitigate sedimentation of the river. If, after a period of time (no earlier than 15 years from the date of full toe protection of the shoreline), the Licensee is able to justify a reduced frequency of surveys, the Licensee shall continue to monitor once every 5 years. The FRR reports should present calculations on volume of bank material lost or gained within a statistically significant set of locations chosen by MassDEP, CRSEC, and a third-party reviewer.
- c. Photo-documentation. The licensee shall conduct photo surveys following an approved QAPP upon license issuance and every five years thereafter. The survey locations shall be the detail study sites from the relicensing studies 3.1.1 and 3.1.2. Photos shall include scales and reference points.
- (d) The Licensee will work with the Connecticut River Streambank Erosion Committee, town Historical Commissions, municipalities, indigenous groups, and MassAudubon to identify and implement riparian projects to reduce and mitigate project effects. Particular attention will be given to preserving farmland, infrastructure, and historical and cultural artifacts. Allowing some sites to erode will be an essential element to this work which will, among other things, provide habitat for bank-nesting birds. The FRR will identify these sites. The Licensee will be responsible for repair of sites stabilized under the previous license, if desired by the landowner or interested parties.

#### Condition FRCOG 4. Suspended Sediment Management during Maintenance Activities

To ensure that maintenance activities do not result in water quality violations, the licensee shall do the following:

- (a) FirstLight shall update their 2012 QAPP for Dewatering Events and every five years following.
- (b) Three months prior to the maintenance event, FirstLight shall send a letter to MassDEP, USEPA, and FERC describing the schedule for maintenance, the best management practices that are planned, the monitoring that will be done, and the disposal plan for dredged sediment.
- (c) Dewatering and dredging of the upper reservoir shall cause no water quality violations in the Connecticut River.



Condition FRCOG5. Barton Cove aquatic invasive species control

Upon license issuance, the licensee shall:

1. Continue to monitor and help remove all invasive aquatic plants in the TFI and canal system.
2. Staff or help fund staffing to reduce the spread of aquatic invasive plants through boats and fishing equipment in the TFI.

**Documents to be submitted to MassDEP as part of FRCOG's comments**

FRCOG is submitting the following documents to be part of the public record for MassDEP's preparation of a 401 Water Quality Certificate. They are listed oldest to most recent.

<b>FirstLight Document</b>	<b>Description</b>	<b>Submission Date</b>	<b>Reason for Including</b>
<b>Full River Reconnaissance Quality Assurance Project Plan (QAPP)</b>	CRSEC Comments on 2 <sup>nd</sup> Draft of QAPP	January 25, 2013	Represents FRCOG's concerns about the QAPP
<b>Pre-Application Document (PAD)</b>	FRCOG Comments on PAD and Study Requests	March 1, 2013	Represent FRCOG's study needs at the beginning of relicensing
	BSTEM-Dynamic User Manual	April, 2013	Cited in this FRCOG letter related to BSTEM modeling.
<b>Revised Phase IV site list under the Erosion Control Plan</b>	CRSEC Comments on bank stabilization projects under Phase IV	May 13, 2013	Represents FRCOG's concerns about the list of stabilization projects
<b>Updated Proposed Study Plan (PSP)</b>	FRCOG Comments on Updated PSP	July 15, 2013	Represent FRCOG's study needs at the beginning of relicensing
<b>Revised Study Plan (RSP)</b>	FRCOG Comments on RSP	August 28, 2013	Represent FRCOG's study needs at the beginning of relicensing
<b>Study 3.1.1 Full River Reconnaissance</b>	CRSEC Comments on Study Report	November 14, 2014	FRCOG's technical comments on the study report.

FirstLight Document	Description	Submission Date	Reason for Including
<b>Study 3.1.2 Causation Study</b>	CRSEC Comments on Interim Study Report	November 14, 2014	Technical comments on the study that is at the basis of FirstLight's proposal. <b>Contains peer review of study plan by University of Illinois at Urbana-Champaign.</b>
	CRSEC Request for Transect Report	January 9, 2015	Relates to 401 Application Section 5.5.1.
<b>Study 3.1.1 Full River Reconnaissance</b>	CRSEC Memo to John Howard re: FRR Prioritized Site List	March 3, 2015	FRCOG's concerns about the site list
	U.S. Army Corps HEC-RAS USDA-ARS Bank Stability & Toe Erosion Model (BSTEM) Technical Reference and User's Manual	March 2015	Referred to in this FRCOG comment letter, but is difficult to link to a website.
<b>Study 3.1.1 Full River Reconnaissance Addendum</b>	CRSEC Comments on FRR Addendum	April 2, 2015	FRCOG's technical comments on the addendum
<b>Study 3.1.2 Causation Study</b>	CRSEC Comments on Updated Study Report	November 10, 2015	Technical comments on the study that is at the basis of FirstLight's proposal
<b>Study 3.1.2 Causation Study</b>	FRCOG Comments on Final Study Report	December 15, 2016	Technical comments on the study that is at the basis of FirstLight's proposal
<b>Study 3.1.2 Causation Study</b>	Connecticut River Watershed Council's comments on Final Study Report	December 15, 2016	Technical comments on the study report. <b>Contains Princeton Hydro peer review.</b>
<b>Amended Final License Application (AFLA) 2020 and FERC Ready for Environmental Analysis (2024)</b>	FRCOG Motion to Intervene	April 16, 2024	History of FRCOG and CRSEC involvement; interests of FRCOG
<b>Amended Final License Application (AFLA) 2020 and FERC Ready for Environmental Analysis (2024)</b>	FRCOG Comments and Recommended Terms of the License	May 22, 2024	Technical comments on erosion concerns. <b>Contains review by Dr. Evan Dethier</b>

## Conclusion

FRCOG urges MassDEP to address the water quality impairments in the Connecticut River upstream of the Turners Falls Dam. This section of river has undergone a large experiment for the last 50 years. The impacts have been significant, and this is the only opportunity to course correct and set appropriate conditions for the next 30-50 year.

Thank you for this opportunity to review and provide comments on this Notice. If you have any questions, please do not hesitate to contact myself ([lindad@frcog.org](mailto:lindad@frcog.org)) or Kimberly Noake MacPhee ([kmacphee@frcog.org](mailto:kmacphee@frcog.org)).

Sincerely,



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Linda Dunlavy  
Executive Director

**TOWN OF GILL**  
**M A S S A C H U S E T T S**



**Office of the Town Administrator**

May 30, 2024

Commissioner Bonnie Heiple  
MA Department of Environmental Protection  
100 Cambridge Street, Suite 900  
Boston, MA 02114

Re: Northfield Mountain Pumped Storage Project No. 2485-071  
Turners Falls Project No. 1889-085  
**Comments and Recommendations Submitted for Consideration by the Town of Gill**

Dear Commissioner Heiple:

The Selectboard and the Conservation Commission of the Town of Gill, through its Town Administrator, hereby submit comments and recommended license terms for the Turners Falls Hydroelectric Project (P-2889) and Northfield Mountain Pumped Storage Project (P-2485). The Town of Gill is a community of approximately 1,550 residents and is situated on the western banks of the Connecticut River. There are 10.3 miles of river frontage in Gill, comprising the entire southern and eastern boundaries of the Town. The Town of Gill has standing relative to this license proceeding by virtue of a Motion to Intervene submitted on May 14, 2024.

The Town of Gill is a party to the Recreation Settlement Agreement filed with FERC on June 12, 2023. The Town fully supports the recreation provisions in the settlement agreement and requests that FERC accept the Recreation Management Plan (RMP). The RMP and Recreation Settlement Agreement satisfy the Town's recreational interests with regard to both projects, as their provisions will be a great asset to the Town and broader region. In accordance with Section 2.2 of the Recreation Settlement Agreement, although we were not a party to the Flows and Fish Passage (FFP) Settlement Agreement, the Town has agreed not to oppose any of the terms of the FFP Settlement Agreement.

The Town has and will continue to work closely with the Franklin Regional Council of Governments (FRCOG) and the Connecticut River Streambank Erosion Committee (CRSEC), and relies on the technical assistance and expertise both provide. The Town strongly supports the comments and recommendations from the Franklin Regional Council of Governments (FRCOG) filed within this comment period.

Our comments and recommendations fall into four broad categories: Erosion, Invasive Species, Traditional Cultural Properties & Historical Properties Management Plan, and Non-project Uses of Project Lands.

**Erosion Comments**

The body of water upstream of the Turners Falls Dam is referred to in most of FirstLight's filings as the Turners Falls Impoundment, or TFI. The terminology industrializes and commercializes a cherished

natural resource that we still refer to as the “river.” This section of the Connecticut River has been a sacrifice zone for too long. The Northfield Mountain Pumped Storage project was issued its original (current) FERC license in 1968; the project was constructed and the Turners Falls Dam raised prior to the passage of the federal Clean Water Act. These projects have operated for over 50 years without a mechanism to address compliance with the Clean Water Act and Massachusetts’ Water Quality Standards. The new license is a once-in-a-lifetime opportunity for the FERC to craft license articles that will improve and protect the water quality status of the Connecticut River. FirstLight’s proposed operations will not resolve the erosion problems that they cause, and may even cause further impairment. FirstLight has not proposed adequate protection, mitigation and enhancement measures to address the impairments and improve water quality.

A 2009 riverbank stabilization project known as Bank Stabilization Phase III, MassDEP file # 162-68, still has not received a Certificate of Compliance from the Town’s Conservation Commission. FirstLight has been made aware of this deficiency multiple times over many years, and has yet to respond or take action.

### **Erosion Recommendations**

1. Establish license conditions which reduce the amount of river level fluctuation due to project operations. Anecdotal reports from Gill residents who live next to the river indicate for the past several years FirstLight has tended to operate the river in a tighter elevation range, but the range has been near the upper limits of what is allowed. Residents’ observations during and following heavy rain events indicate there is more damage done to the riverbank by logs and other debris when the river has been kept at a higher elevation than when the river is kept at mid-range or lower elevations. The FRCOG’s recommendations relative to elevation and operating range are incorporated here by reference.
2. Continue the current license requirement to conduct annual transect surveys at the 31 established locations.
3. Continue to require Full River Reconnaissance on an annual basis, using consistent methodology (such as LiDAR surveys) that has been publicly reviewed and with a Quality Assurance Project Plan approved by the Massachusetts Department of Environmental Protection (MassDEP) and the U.S. Environmental Protection Agency.
4. Require FirstLight to fund the annual operational costs to continue the USGS gage number 01131280 near the Route 10 Bridge, separate from other funding.
5. Continue the existing license articles which require “The Licensee shall be responsible for and shall minimize soil erosion and siltation on lands adjacent to the stream resulting from the construction and operation of the project.” The license articles should specifically include minimizing and mitigating siltation of the 160-acre Barton Cove upstream of the Turners Falls Dam, as the siltation impairs the navigability of the cove and makes it easier for invasive plant species to establish a presence.
6. Continue to require FirstLight to be responsible for the maintenance and repair of all bank restoration projects started and/or completed under the prior/currently existing license.
7. Update the 1999 Erosion Control Plan by creating a Shoreline Erosion Control Management Plan in accordance with the recommendations filed by the FRCOG.
8. Require FirstLight to get a Certificate of Compliance from the Gill Conservation Commission for the Bank Stabilization Phase III Order of Conditions issued in 2009 (MassDEP File #162-68).



9. Establish license articles that require a review and summary of outstanding Orders of Conditions issued by the four local Conservation Commissions (Gill, Montague, Erving and Northfield) prior to any sale, transfer, or restructuring of FirstLight's ownership.
10. Provide the opportunity for the four local Conservation Commissions and the FRCOG to review and comment on any erosion-related monitoring reports submitted by FirstLight to the FERC.
11. Provide for input from the four local Conservation Commissions, FRCOG, Massachusetts Department of Conservation & Recreation (DCR), Massachusetts Environmental Police, and MassDEP on any FirstLight boat wake restriction policies.

**Invasive Species Recommendations** – the presence of invasive species has a direct and lasting impact upon the “biological integrity” of the Connecticut River and Barton Cove.

1. Require FirstLight to prepare a revised Invasive Plant Species Management Plan that spans both projects and involves a public comment period.
2. For managing invasive species, FirstLight must commit to the following:
  - a. Early detection and removal of new invasive species in all regions of the project area, both aquatic and upland. This includes plant and non-plant species.
  - b. Continued participation, which includes staff assistance and expenses, in managing and removing aquatic invasive plants in the entire project area.
  - c. Monitoring a priority set of upland invasive plants in the project area at regular intervals throughout the term of the license (once every 5 years).
  - d. Controlling and reducing the further increase of established priority invasive plants in priority areas that are identified in coordination with interested parties.
  - e. Coordinating with agencies on any non-plant invasive species at the earliest indication the species is becoming an active threat.
  - f. Hosting a meeting with agencies and other interested parties once every 5 years, after the results of the surveys are completed. These meetings should include a summary of the current state of invasive species, management techniques, and input on the upcoming efforts of the next 5 years in coordination with parties attending. Such meetings will allow the licensee and interested parties to adjust to any unanticipated issues over the term of the license.
  - g. Reducing the practice of requiring license holders of residential and club properties located on FirstLight land within the project boundaries to pay for invasive species removal, except in instances where the presence of the invasive species are directly related to the activities of the license holders.

#### **Traditional Cultural Properties and Historical Properties Management Plan Comments**

The Town strongly supports and incorporates by reference the comments and recommendations of the Gill Historical Commission (GHC) that were filed on May 20, 2024. The GHC is an appointed body of the Town of Gill and exists for the preservation, protection and development of the historical and archaeological assets of our town.

#### **Traditional Cultural Properties and Historical Properties Management Plan Comments**

1. FERC should coordinate and attend a meeting with FirstLight and cultural/indigenous groups. The meeting will serve to identify cultural/indigenous groups active in the project area and determine a set of steps that will lead to FirstLight's submittal of a revised Traditional Cultural Properties (TCP) study that is adequately informed by active engagement with cultural/indigenous groups.

2. Using the completed, revised TCP, FirstLight will then revise the Historical Properties Management Plan (HPMP). Input on the revised HPMP will be sought by FirstLight from local historical commissions and cultural/indigenous groups. A public version of the revised draft HPMP, even with redactions to protect site-specific information, will be submitted to the FERC with a public comment period.

### **Non-Project Uses of Project Lands Comments**

Section 3.3.7.1.5 in the 2020 AFLA addressed Non-Project Uses of Project Lands. This section stated FirstLight has an established Permit Program through which it administers non-project uses of lands within the Project boundaries including lands it owns in fee, or in which it has an interest. It cited a non-public document attributed to FirstLight employee John Howard that was dated 2008. Page E-547 provides a list of common elements in the license agreements for these uses.

FirstLight requested authorization from the FERC on October 10, 2008 to issue licenses for residential and private structures at 24 sites within the project boundaries, including at least 10 seasonal or year-round residences and one year-round club located in Gill. The FERC issued an Order Modifying and Approving these Non-Project Uses of Project Lands on October 28, 2009. In its Order, the FERC required FirstLight to provide a report including baseline data and an evaluation of erosion and runoff potential at each site. This report was filed with the FERC on December 21, 2010. FirstLight provided federal and state agencies with a copy of this report (no comments were received), but the CRSEC was not consulted despite erosion being one of the things evaluated at each site. The FERC issued an Order Approving of the report on May 13, 2013.

### **Non-Project Uses of Project Lands Recommendations**

1. The FERC should require FirstLight to draft a Land Use Management Plan (with a review and solicitation of public comments) that includes the information in FirstLight's 2008 Permit Program document for non-project uses of project lands, and contains a plan to regularly evaluate shoreline buffer maintenance and erosion on project lands and monitor other issues as they arise.
2. License agreements with FirstLight are described as being non-transferrable. As part of the Land Use Management Plan, FirstLight should elaborate on what happens when a residential camp goes up for sale. What is FirstLight's process for drawing up a new license, or is the use eliminated?
3. The length of the license agreements for the two private clubs, the Franklin County Boat Club (located in Gill) and the Turners Falls Rod & Gun Club, is unclear. It is important to the Town that the club licenses be for a duration that satisfies the needs of the clubs and allows them to make necessary capital investments on their buildings and docks.
4. In Massachusetts, there is already a permitting system in place for water withdrawals through the Water Management Act and its regulations (310 CMR 10). As part of the Land Use Management Plan, FirstLight should elaborate on the rationale for its separate duplicative permits, the minimum withdrawal amount that triggers the need for a permit from FirstLight, and identify all fees associated with the permit and/or water withdrawals. The Town currently does not have enough information to understand whether additional permitting is a burden to farmers and other users.
5. In Massachusetts, the Public Waterfront Act, or Chapter 91, already creates a permitting mechanism for private docks on waterbodies like the Connecticut River. As part of the Land Use Management Plan, FirstLight should elaborate on the rationale for its separate duplicative permits, its permit process, and all fees associated with the permits.

A transcript of my testimony from the May 30, 2024 public hearing are attached.

Thank you for your agency's clear commitment to the integrity of the 401 Water Quality Certification process and for giving these remarks and recommendations your due consideration.

Sincerely,

A handwritten signature in black ink, appearing to read 'R. Purington', with a long horizontal stroke extending to the right.

Ray Purington  
Town Administrator

Encl: Transcript of R. Purington testimony at 5/30/24 public hearing

CC: Gill Selectboard  
Gill Conservation Commission  
Gill Historical Commission  
Franklin Regional Council of Government

Transcript of testimony given by R. Purington at MassDEP public hearing on 05/30/24 regarding FirstLight's 401 Water Quality Certificate Application

Good afternoon. My name is Ray Purington and I am the Town Administrator for the Town of Gill. I am speaking today on behalf of the Gill Board of Selectmen, our Historical Commission, and our Conservation Commission.

Gill is a small town of approximately 1,550 residents and 14 square miles of land area. There are 10.3 miles of Connecticut River frontage in Gill, comprising the entire the eastern and southern boundaries of our town. A healthy river is of vital importance to our community, and to the region as a whole.

With regards to the 401 Water Quality Certification, the primary concern that needs to be addressed is erosion and siltation. During the 50 years these two projects have operated under the current FERC licenses, landowners have watched in dismay as foot after foot of shoreline, as much as 30 feet in some locations and including protected farmland, has eroded and washed away downriver. Some of the eroded soils eventually settle out in the various inlets and coves, especially the 160-acre Barton Cove located just above the Turners Falls Dam. The resulting siltation impairs the recreational use of the river for boating and fishing, and makes it easier for aquatic invasive species to take hold.

The erosion mitigation efforts required of FirstLight by the current FERC licenses have been largely unsuccessful. Furthermore, a 2009 riverbank stabilization project known as Bank Stabilization Phase III, MassDEP file # 162-68, still has not received a Certificate of Compliance from the Gill Conservation Commission. FirstLight has been made aware of this deficiency multiple times over many years, and has yet to respond or take action.

The operations that have been proposed for the new license will not resolve the erosion problems they cause. FirstLight has not proposed adequate protection, mitigation and enhancement measures to address the impairments, improve water quality, and sustain healthy aquatic habitats.

The Town strongly urges MassDEP to include conditions in its Water Quality Certification that will reduce river level fluctuations due to project operations, require an annual Full River Reconnaissance to monitor erosion and riverbank stability, require FirstLight to maintain and repair all riverbank restoration projects started and/or completed under the current licenses, and hold FirstLight responsible for minimizing and mitigating soil erosion and siltation resulting from project operations.

Thank you for your time today.

**From:** [Mike Cloutier](#)  
**To:** [dep.hydro@mass.gov](mailto:dep.hydro@mass.gov)  
**Subject:** FirstLight 401 WQC  
**Date:** Monday, May 13, 2024 12:27:23 PM  
**Attachments:** [image001.png](#)  
[FirstLight relicensing comments MELD.pdf](#)

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**CAUTION:** This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

To Whom It May Concern,

I am forwarding this letter of support for the relicensing of Northfield Mountain Pumped Storage Project and Turners Falls Hydroelectric Project.

I appreciate your attention to this matter.

Best, Mike

*Michael Cloutier*

General Manager

Middleton Electric Light Department

(978) 774-4313







## Middleton Municipal Electric Department

197 North Main Street, Middleton, MA 01949  
(978) 774-4313 • FAX (978) 774-5408

May 13, 2024

The Honorable Debbie-Anne Reese

Acting Secretary

Federal Energy Regulatory Commission

888 First Street N.E.

Washington, DC 20426

Re: Applications for Relicensing of FirstLight MA Hydro LLC for Turners Falls Hydroelectric Project (FERC No. P-1889) ("Turners Falls") and Northfield Mountain LLC for Northfield Mountain Pumped Storage Project (FERC No. P-2485) ("Northfield Mountain")

Dear Acting Secretary Reese:

The Middleton Electric Light Department (MELD) offers this letter in support of the relicensing of FirstLight's Northfield Mountain and Turners Falls Projects.

Together, the Projects play a critical role in delivering clean, local, competitively priced power to communities across New England while providing needed grid reliability to the region. Looking ahead as renewables make up a growing portion of our grid mix, Northfield Mountain's fast response capability, long-duration, and large capacity will play an even greater role in balancing the grid, thanks to its ability to capture over 1,100MW of power generated during off-peak hours and dispatch it during times of high demand when it is needed most while simultaneously offsetting the dirtiest emissions generated by fossil-fuel powered generators. Northfield's operations also support the need to keep costs low for consumers – by generating during the hours of highest demand, Northfield can shave peak prices and realize significant price reductions for ratepayers who are too often burdened by energy costs.

MELD has counted FirstLight as a valued partner for years through a successful power purchase agreement that has resulted in significant clean, local, competitively priced power from FirstLight's facilities being delivered to homes and businesses across our municipality. The partnership has allowed us to deliver first-class services at affordable prices to our customers while doing right by them by selecting fossil fuel free power sources. In addition, our agreement with FirstLight supports and advances

our efforts to meet and exceed the Commonwealth's mandate to obtain 50% of our power from clean sources by 2030 and 100% by 2050.

MELD urges the Commission to consider the significant value of FirstLight's Projects to the region's clean energy future, and to communities across New England that are powered by FirstLight's clean electricity generation.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael Cloutier", with a long horizontal flourish extending to the right.

Michael Cloutier

General Manager

Middleton Electric Light Department

cc: Commissioner Bonnie Heiple, Massachusetts Department of Environmental Protection



# Office of the Town Administrator

## Town of Montague

One Avenue A  
Turners Falls, MA 01376

57

Phone (413) 863-3200 ext. 108

FAX (413) 863-3231

May 29, 2024

Commissioner Bonnie Heiple  
MA Department of Environmental Protection  
100 Cambridge Street, Suite 900  
Boston, MA 02114

Re: Northfield Mountain Pumped Storage Project No. 2485-071  
Turners Falls Project No. 1889-085

### **FirstLight Comments Submitted for Consideration by the Town of Montague**

Dear Commissioner Heiple,

The Selectboard of the Town of Montague, through its Town Administrator, hereby submits comments related to FirstLight Power's application to the Federal Energy Regulatory Commission (FERC) to relicense the Connecticut River hydroelectric facilities referenced as the Turners Falls Hydroelectric Project (P-2889) and Northfield Mountain Pumped Storage Project (P-2485).

The Town of Montague is a community of 8,600 located astride the eastern banks of the Connecticut River, which throughout history has served an extraordinary purpose in defining the life and prosperity of indigenous and modern residents. Turners Falls is the largest population center in the Town of Montague and is a designated Environmental Justice Area. The Town of Montague has standing with FERC relative to this license proceeding by virtue of a Motion to Intervene submitted on April 1, 2024.

The Town of Montague is a party to the Recreation Settlement Agreement filed with FERC on June 12, 2023. The Town fully supports the recreation provisions in the settlement agreement, but would note that in accordance with Section 2.2 of that agreement, although we were not a party to the Flows and Fish Passage (FFP) Settlement Agreement, the Town has agreed not to oppose any of the terms of the FFP Settlement Agreement. This will narrow the focus of concerns we express through this comment.

The river's use and management under the terms of the current and future licenses of the Turners Falls Project and Northfield Mountain Pumped Storage Project is of tremendous economic, cultural, recreational, and environmental consequence. In the context of the 401 Water Quality Certification Process, we will limit our comments to a focus on water quality, erosion, and invasive species issues in the Turners Falls Impoundment; to the protection to traditional cultural and other historically significant assets; and to allowances for the conduct of essential public works projects that may protect river health over the term of this license.

The Turners Falls Impoundment (TFI) is a product of river management for the purpose of power generation under past, existing, and proposed future licenses. The land it occupies is not as it once was, but it nonetheless remains a cradle for the stored history of indigenous life in this region.

Likewise, although the TFI is not reflective of what the river perhaps should be, it nonetheless represents what the river actually is, at the present time. We assert that the quality of its water and its ability to support rich and diverse aquatic life should receive full and equal protection under the law, consistent with protections to be afforded to sections of the river just upstream and downstream. We understand that the TFI is effectively being used as a “sacrifice zone” in this license application, to balance operational flows and levels both upriver and downriver. This approach devalues and underregulates the TFI, and could allow management practice inconsistent with the Clean Water Act.

In this context, the Town is concerned that the present license application compromises the ecology of our river by continuing to allow a broader than necessary range of operating elevation levels in the TFI (proposed to range from 176 to 185 feet) and inadequately addressing invasive species. Further, the Town is concerned that a robust Traditional Cultural Properties Study has not been completed and believes the Historic Properties Management Plan should be allowed an extended period of consideration, with redacted copies made available to protect sensitive resource areas while also allowing for broader public consideration. There is concern that continued allowance of conditions that provoke erosion may result in the loss of meaningful and irreplaceable cultural artifacts.

The Town will not seek to re-state the well-researched and reasoned technical findings presented by fellow stakeholders who have recently articulated concerns through filings to FERC that relate to the above topics. We do, however, wish to highlight the Franklin Regional Council of Government’s stated concerns relative to erosion in the TFI, which we find are supported by credible technical analyses and critiques of the applicability of B-STEM derived erosion modeling. Likewise, we see validity in MassWildlife’s description of the impact of invasive species on the TFI, whose water quality is not sufficient to support the designated use of fish, other aquatic life, and wildlife due to impairment caused by invasives.

To elaborate on the Town’s concern regarding continuation of an operating elevation range of 176’ to 185’ in the TFI, this range accommodates what would be extremely low water levels, which have not been shown necessary to support past utility operations and which the applicant itself has previously indicated are not foreseeably necessary in the future. Such levels will have detrimental impacts on water quality in the TFI, perhaps most notably in the Barton’s Cove area, and will encourage erosion and sedimentation of extant waterways and embankments.

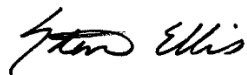
The Town would argue that 179’ is a sufficient low-end elevation threshold to operate under the normal range of operating conditions, with clearly defined protocols to govern emergency conditions that might require lower levels. Absent this standard and procedure, the utility is empowered to take action that may be detrimental to the TFI’s water quality without good cause. It is regulators’ solemn obligation to manage such allowances in accordance with the balanced imperatives for water quality and power generation, both of which are also valued by the Town. The Town believes that the current application fails to achieve this balance.

As a final note, the Village of Turners Falls is a former industrial center with several blighted mills and bridges that are approaching the end of their useful life. Some are located in or adjacent to the FERC project area. Their planned (non-emergency) removal or replacement will be necessary during the term of this license so as to protect the public, the Connecticut River, and the Turners Falls Power Canal. The Town requests FirstLight’s continued cooperation with ongoing Town efforts to remove or replace these structures in a planful manner, and asks that this license specifically include a

commitment to the license holder's continued cooperation with needed projects, including a commitment to minimize barriers and costs to such projects wherever possible.

Thank you for your agency's clear commitment to the integrity of the 401 Water Quality Certification process. Montague appreciates the opportunity for public input to the process and would be most pleased to assist the MA DEP in securing a location in the Turners Falls village center for your in-person public hearing in Fall 2024.

Respectfully,

A handwritten signature in black ink, appearing to read "Steven Ellis". The signature is fluid and cursive, with the first name "Steven" written in a more stylized, connected manner to the last name "Ellis".

Steven Ellis, MPA  
Town Administrator

CC: Montague Selectboard  
Walter Ramsey, Assistant Town Administrator



## TOWN OF NORTHFIELD

Andrea Llamas, Town Administrator, [admin@northfieldma.gov](mailto:admin@northfieldma.gov)  
[www.northfieldma.gov](http://www.northfieldma.gov)  
69 MAIN STREET  
NORTHFIELD, MASSACHUSETTS 01360-1017  
413.498.2901 x115

June 3, 2024

Commissioner Bonnie Heiple  
Mass Department of Environmental Protection  
100 Cambridge Street, Suite 900  
Boston, MA 02114

**Attn: FirstLight 401WQC Comments from the Town of Northfield**  
Re: Northfield Mountain Pumped Storage Project No. 2485-071  
Turners Falls Project No. 1889-085

Dear Commissioner Heiple:

The Select Board of the Town of Northfield authorized Andrea Llamas, Town Administrator, and Bee Jacque, Select Board member, to submit 401WQC comments regarding FirstLight Power's application to the Federal Energy Regulatory Commission (FERC) to relicense the Connecticut River hydroelectric facilities; the Turners Falls Hydroelectric Project (P-1889) and Northfield Mountain Pumped Storage Project (P-2485).

The Town of Northfield is a duly incorporated municipality in the Commonwealth of Massachusetts, with the responsibility to protect the health, safety, and well-being of the community. The Town of Northfield has standing relative to this license proceeding by virtue of a Motion to Intervene submitted on April 8, 2024.

The Town of Northfield is a party to the Recreation Settlement Agreement filed with FERC on June 12, 2023. The Town fully supports the recreation provisions in that agreement and requests FERC accept the Recreation Management Plan



(RMP). The RMP and Recreation Settlement Agreement satisfy the Town's recreational interests with regard to both projects. In accordance with Section 2.2 of the Recreation Settlement Agreement — although we were not a party to the Flows and Fish Passage (FFP) Settlement Agreement — the Town has agreed not to oppose any of the terms of the FFP Settlement Agreement.

As Jacque noted at the 7 PM hearing on May 29, 2024, Northfield is unique in that it is the **only town in Massachusetts whose residents live on both sides of the Connecticut River** and as such, the River is a uniquely vital part of the culture, history and economy of the Town. The River serves as a central recreational, tourism and natural resource for the Town's 2,866 residents and its visitors and has long been central to the life and prosperity of indigenous and modern residents.

As also noted, the Town has little agency over the River, and few access points. This means the relicensing of the Turners Falls Project and Northfield Mountain Pumped Storage Project is of tremendous economic, cultural, recreational, and environmental consequence. The Town appreciates MassDEP's serious consideration of its concerns:

- Erosion et al: ongoing erosion, sedimentation, and invasive species issues in the Turners Falls Impoundment;
- Indigenous engagement: appropriate levels of protection for traditional cultural and other historically significant assets and practices; and
- Infrastructure: to make allowance for sewer infrastructure changes and an essential bridge project over the term of this license.

Northfield townspeople made it quite clear about these concerns when they voted unanimously at its 2019 Annual Town Meeting to request the Select Board to submit a letter in 2020 to FERC asking FERC to require via license articles the following six requirements:

- 1) modify project operations of both facilities to minimize peaking,
- 2) monitor water levels,
- 3) develop a shoreline adaptive management plan,
- 4) commit funding for riverbank restoration on the Connecticut River and its tributaries,

- 5) commit funding for protective archaeological mitigation and preservation efforts, and
- 6) commit funding to compensate landowners for property damage from project-induced erosion.

We augment those with ongoing/current comments and concerns from townspeople about the River, summarized as follows:

- The River no longer resembles what elders remember and experienced and is no longer a natural river,
- Invasive species,
- Changing levels of the water,
- Sloughing off of riverbanks and the loss of land,
- Effect of land loss (>30 feet) on farm lands,
- Subsequent widening and depth of the “basin,”
- Sedimentation, sandy or mucky surfaces,
- River running backwards (i.e., North),
- Lack of swimming opportunities,
- Concern about eating fish caught,
- Lack of casual and cultural access to or on the River except FirstLight’s Riverview at the southern tip of the Town and the Commonwealth’s Pauchaug Boat Ramp at the northern tip, and
- Lack of connection between FirstLight, state land, and private property to create or connect trails.

The Town has and will continue to work closely with the Franklin Regional Council of Governments (FRCOG) and our neighbors, especially Gill and Montague, on these concerns. We also wish to spotlight FRCOG’s comments regarding erosion in the TFI — these are supported by credible technical analyses and critiques of the applicability of B-STEM derived erosion modeling. In addition, we also see validity in MassWildlife’s description of the impact of invasive species on the TFI, whose water quality is insufficient to support the fish, other aquatic life, and wildlife due to impairment caused by invasives.

As a final note, the removal and replacement of the closed and decaying Schell Memorial Bridge is a priority for the Town’s recreational, historical, and economic plans. This shovel-ready multi-modal transportation replacement project is designed to be part of the Commonwealth of Massachusetts Connecticut River Greenway State Park and to have two parks on both sides of

the River (with cultural and historical interpretation), one of which is designated in the Recreation Settlement. The other park is already included in the Commonwealth's design for the replacement project. These parks (and a third option designated in the Recreation Settlement to be identified at a future point) are essential to the overall recreational approach taken by the Town.

That approach seeks to connect the many recreational opportunities together, to connect families to the River, and to physically connect East Northfield and West Northfield. The only current physical connection is the Rt. 10 vehicle bridge which means pedestrians are walking and biking in the breakdown lanes of a 55-MPH state highway. With a unique pedestrian bridge over the River and new parks, our approach seeks to drive economic development and spur more family-based tourism in Northfield and surrounding towns, including our neighbors in Vermont and New Hampshire.

In addition, the other key infrastructure priority is the sewer plant and collection system. The Town is actively designing infrastructure improvements to both the sewer plant and its collection system. As MassDEP well knows, like many towns on the River, the Town of Northfield's vital interests are dependent on the health and state of the River and we need the support of MassDEP and others.

Given the above intricacies, including FirstLight's ownership of property along the River, the Town is particularly dependent on the support and cooperation of FERC, FirstLight, and the Commonwealth to accomplish our goals. We ask that any license or certificate specifically include a commitment to cooperate, especially with the Bridge and sewer projects, and a commitment to remove any barriers to our priorities and related projects wherever possible.

Sincerely,

**Andrea Llamas**

Andrea Llamas  
Town Administrator  
Town of Northfield



# The TOWN OF NORWOOD

*Commonwealth of Massachusetts*

## MUNICIPAL LIGHT DEPARTMENT

Kevin Shaughnessy, Superintendent  
(781) 948-1100

May 13, 2024

The Honorable Debbie-Anne Reese  
Acting Secretary  
Federal Energy Regulatory Commission  
888 First Street N.E.  
Washington, DC 20426

Re: Applications for Relicensing of FirstLight MA Hydro LLC for Turners Falls Hydroelectric Project (FERC No. P-1889) ("Turners Falls") and Northfield Mountain LLC for Northfield Mountain Pumped Storage Project (FERC No. P-2485) ("Northfield Mountain")

Dear Acting Secretary Reese:

The Town of Norwood Municipal Light Department offers this letter in support of the relicensing of FirstLight's Northfield Mountain and Turners Falls Projects.

Together, the Projects play a critical role in delivering clean, local, competitively priced power to communities across New England while providing needed grid reliability to the region. Looking ahead as renewables make up a growing portion of our grid mix, Northfield Mountain's fast response capability, long-duration, and large capacity will play an even greater role in balancing the grid, thanks to its ability to capture over 1,100MW of power generated during off-peak hours and dispatch it during times of high demand when it is needed most while simultaneously offsetting the dirtiest emissions generated by fossil-fuel powered generators. Northfield's operations also support the need to keep costs low for consumers – by generating during the hours of highest demand, Northfield can shave peak prices and realize significant price reductions for ratepayers who are too often burdened by energy costs.

Norwood Light has counted FirstLight as a valued partner for years through a successful power purchase agreement that has resulted in significant clean, local, competitively priced power from FirstLight's facilities being delivered to homes and businesses across our municipality. The partnership has allowed us to deliver first-class services at affordable prices to our customers while doing right by them by selecting fossil fuel free power sources. In addition, our agreement with FirstLight supports and advances our efforts to meet and exceed the Commonwealth's mandate to obtain 50% of our power from clean sources by 2030 and 100% by 2050.

Norwood Municipal Light urges the Commission to consider the significant value of FirstLight's Projects to the region's clean energy future, and to communities across the New England that are powered by FirstLight's clean electricity generation.

Sincerely,

Kevin Shaughnessy  
Superintendent  
Norwood Municipal Light Department

cc: Commissioner Bonnie Heiple, Massachusetts Department of Environmental Protection

**From:** [Kim Holmes](#)  
**To:** [dep.hydro@mass.gov](mailto:dep.hydro@mass.gov)  
**Subject:** FirstLight 401 WQC  
**Date:** Wednesday, May 15, 2024 9:58:31 AM  
**Attachments:** [image001.png](#)  
[FirstLight Letter of Support - TMLP.pdf](#)

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**CAUTION:** This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Good Morning,

Attached, please find comments from Taunton Municipal Lighting relative to the relicensing of FirstLight's Turners Falls Hydroelectric (Turners Falls and Cabot) and Northfield Mountain Pumped Storage Projects.

Please feel free to contact me with any questions.

Kim Holmes

General Manager



Taunton Municipal Lighting Plant  
55 Weir Street  
Taunton, MA 02780  
508-824-3101





*Serving a Public Power Community*

May 14, 2024

The Honorable Debbie-Anne Reese  
Acting Secretary  
Federal Energy Regulatory Commission  
888 First Street N.E.  
Washington, DC 20426

Re: Applications for Relicensing of FirstLight MA Hydro LLC for Turners Falls Hydroelectric Project (FERC No. P-1889) ("Turners Falls") and Northfield Mountain LLC for Northfield Mountain Pumped Storage Project (FERC No. P-2485) ("Northfield Mountain")

Dear Acting Secretary Reese:

Taunton Municipal Lighting Plant offers this letter in support of the relicensing of FirstLight's Northfield Mountain and Turners Falls Projects.

Together, the Projects play a critical role in delivering clean, local, competitively priced power to communities across New England while providing needed grid reliability to the region. Looking ahead as renewables make up a growing portion of our grid mix, Northfield Mountain's fast response capability, long-duration, and large capacity will play an even greater role in balancing the grid, thanks to its ability to capture over 1,100MW of power generated during off-peak hours and dispatch it during times of high demand when it is needed most while simultaneously offsetting the dirtiest emissions generated by fossil-fuel powered generators. Northfield's operations also support the need to keep costs low for consumers – by generating during the hours of highest demand, Northfield can shave peak prices and realize significant price reductions for ratepayers who are too often burdened by energy costs.

Taunton Municipal Lighting Plant has counted FirstLight as a valued partner for years through a successful power purchase agreement that has resulted in significant clean, local, competitively priced power from FirstLight's facilities being delivered to homes and businesses across our service territory. The partnership has allowed us to deliver first-class services at affordable prices to our customers while doing right by them by selecting fossil fuel free power sources. In addition, our agreement with FirstLight supports and advances our efforts to meet and exceed the Commonwealth's mandate to obtain 50% of our power from clean sources by 2030 and 100% by 2050.

Taunton Municipal Lighting Plant urges the Commission to consider the significant value of FirstLight's Projects to the region's clean energy future, and to communities across the New England that are powered by FirstLight's clean electricity generation.

Very truly yours,

MUNICIPAL LIGHT COMMISSION  
OF THE CITY OF TAUNTON

A handwritten signature in blue ink, appearing to read "Kimberly Holmes", is written over the typed name and title.

KIMBERLY HOLMES  
GENERAL MANAGER

cc: Commissioner Bonnie Heiple, Massachusetts Department of Environmental Protection



**From:** [Wood, David](#)  
**To:** [dep.hydro@mass.gov](mailto:dep.hydro@mass.gov)  
**Subject:** FirstLight 401 WQC  
**Date:** Monday, May 13, 2024 10:47:44 AM  
**Attachments:** [image002.png](#)  
[image003.png](#)

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**CAUTION:** This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Wellesley Municipal Light Plant (WMLP) offers this letter in support of the relicensing of FirstLight's Northfield Mountain and Turners Falls Projects.

Together, the Projects play a critical role in delivering clean, local, competitively priced power to communities across New England while providing needed grid reliability to the region. Looking ahead as renewables make up a growing portion of our grid mix, Northfield Mountain's fast response capability, long-duration, and large capacity will play an even greater role in balancing the grid, thanks to its ability to capture over 1,100MW of power generated during off-peak hours and dispatch it during times of high demand when it is needed most while simultaneously offsetting the dirtiest emissions generated by fossil-fuel powered generators. Northfield's operations also support the need to keep costs low for consumers – by generating during the hours of highest demand, Northfield can shave peak prices and realize significant price reductions for ratepayers who are too often burdened by energy costs.

WMLP has counted FirstLight as a valued partner for years through a successful power purchase agreement that has resulted in significant clean, local, competitively priced power from FirstLight's facilities being delivered to homes and businesses across our municipality. The partnership has allowed us to deliver first-class services at affordable prices to our customers while doing right by them by selecting fossil fuel free power sources. In addition, our agreement with FirstLight supports and advances our efforts to meet and exceed the Commonwealth's mandate to obtain 50% of our power from clean sources by 2030 and 100% by 2050.

Wellesley urges the Commission to consider the significant value of FirstLight's Projects to the region's clean energy future, and to communities across New England that are powered by FirstLight's clean electricity generation.

Sincerely,

*David Wood*  
*Director*  
*Wellesley Municipal Light Plant*  
*4 Municipal Way*  
*Wellesley, MA 02481*  
*Tel: 781-235-7600 ext. 3380*  
*Fax: 781-489-2154*

WMLP logo 15%



When responding, please be advised that the Town of Wellesley and the Office of the Secretary of State have determined that E-mail could be considered a public record.

ü Please consider the environment before printing this email.





June 3, 2024

MassDEP - BWR  
Attn: *FirstLight 401WQC*  
100 Cambridge Street, Suite 900  
Boston, MA 02114

*via electronic mail*

**RE: Comments on FirstLight application for a Section 401 Water Quality Certificate for Turners Falls (P-1889) and Northfield Mountain Pumped Storage (P-2485)**

To BWR Water Quality Certification staff,

The following comments and recommendations are provided by American Rivers and respond to the application for water quality certification for these two projects. American Rivers, Inc. is a national non-profit organization whose purpose is the protection and restoration of rivers and their tributary streams throughout the nation. Since 1973, American Rivers has helped protect and restore more than 150,000 miles of rivers through advocacy, science, and on-the-ground projects with local partners. Annually American Rivers engages in more than 20 hydropower relicensings across the country. American Rivers has regional programs across the country including the Northeast, and more than 100,000 supporters, members, and volunteers nationwide. The Northeast Regional Program covers the New England States and New York and is based in Holyoke, MA.

American Rivers' staff and volunteers work to enhance river flows and increase river connectivity to benefit biodiversity, protect floodplains and wetlands, and restore rivers providing climate change refugia. Members of American Rivers enjoy and are sustained by the resources of the Connecticut River at these two project sites including for angling, boating, swimming, hiking, and wildlife viewing. American Rivers recognizes that hydropower plays a role in the renewable energy markets and contributes to our need to eliminate fossil fuels and reach our climate mitigation targets. However, these benefits must be considered against the significant impacts that hydropower creates for rivers.

FirstLight is an entity that has access to financial resources sufficient to implement reasonable and necessary changes to the operation and maintenance of these two projects. The operational changes and requirements described below and by many other stakeholders are reasonable and responsible requirements that do not adversely impact the ability of the owners to make a reasonable return.

We appreciate that the MA DEP has undertaken significant effort to make this proceeding accessible to the public. The additional opportunities to engage in the process will improve the outcomes and ensure the public can understand and influence the outcome that has bearing on the public trust resources of the Connecticut River.

We also appreciate the DEP's role in making independent decisions regarding the criteria within the scope of Section 401. We recognize that your jurisdiction requires you to evaluate how any proposals within the application meet the state's water quality standards and all other applicable laws and regulations regardless of any settlement agreements between parties. The MA DEP has a record of

making robust decisions in regard to its expansive authority granted in Section 401 and clarified in the many relevant court decisions over the years.

American Rivers notes that the settlement discussions that covered facility operations as well as recreation infrastructure yielded a number of positive proposals. We appreciate that FirstLight agreed to the request by stakeholders to undertake broad-based conversations. These conversations yielded improved recreational proposals that better met community needs. As well the proposed changes to the operation of Cabot Station as well as detailed discussions on fish passage solutions can significantly improve how the facility impacts aquatic habitat and migratory fish species.

That said, it is important to note there is not a comprehensive settlement of all the outstanding issues in this relicensing for matters that include both FERC and MA DEP's jurisdiction.

#### Remaining issues

- Pumping limits in the Turners Falls Impoundment
- Flows below Turners Falls dam
- Timing of fish passage improvements and sufficiency of barrier net
- Invasive species management
- Appropriate responsibility for managing erosion impacts

#### Context on FirstLight relicensing & water quality certification

FirstLight is ultimately owned by the public pension fund of the province of Quebec with hydropower assets in Massachusetts and Connecticut as well as hydropower and renewable projects in the Canadian provinces of Ontario and Quebec. In February of this year [FirstLight announced the acquisition of Hydromega](#), another Canadian renewable energy firm. The company is a large well-resourced firm that is playing a significant role in the deployment of renewable energy in North America.

American Rivers acknowledges that it is the company's job to earn a profit while meeting their business mission of generating electricity from hydro, wind, and solar. However, we remain cautious in accepting the company's declarations of costs and risks. We are also unclear how the elaborate corporate structures created by the company over the last several years serve to insulate risk, liabilities and so argue against making the needed investments at these facilities.

These two projects were designed and built as one integrated facility. They are managed as one integrated facility given the relationship between the Turners Falls dam and the impoundment that serves as the lower resource for the pumped storage project. Despite this integration and an initial proposal to file one federal application, FirstLight in and around 2020 created limited liability corporations (FirstLight Hydro MA LLC and Northfield Mountain LLC) and a new governance and ownership structure for the two projects. Following this restructuring they then filed two separate applications with the FERC and have now filed two separate applications for WQC with the same supporting materials.

Unlike for other renewable energy sources, energy policy and markets can have dramatic impacts on river function. Price signals and subsidies can drive decisions by hydropower operators that alter river levels and flow regimes significantly. It is important to understand these policies and markets and how they can incentivize legitimate business decisions that can create bad environmental outcomes. This is

particularly relevant since a federal license can last for 30 to 50 years, more than many lifetimes of changes in energy policy and markets.

While we understand that a company needs to be prudent in how it categorizes its balance sheet and discusses its revenue strategies, we consider FirstLight to have a record of highlighting costs while going mum on revenue as much as possible. While the 401 WQC application does not ask for revenue detail, unlike some of the federal filings, understanding the money is relevant for the DEP's evaluation of these applications.

A few examples demonstrate some caution in understanding the company's posture on revenue and expenses.

Communicating revenue: at earlier parts of the federal relicensing process company representatives were asked on several occasions to not only describe potential costs in not meeting capacity obligations, but the potential revenue for a period when they had not listed this revenue. At the time the Connecticut River Conservancy (where I previously served as Executive Director) hired an outside consulting firm to evaluate the various revenue streams from these two projects given the lack of response from the company. This analysis, inter alia, showed that the company had earned more than \$100M in capacity payments over the three-year period in question.

Fighting property taxes: the local property taxes paid by FirstLight in Montague and Northfield are a very significant share of the local tax base. Assessed valuation of these facilities is based on the amount of energy that is generated, rather than just the value of the real estate as is done for a residence. American Rivers appreciates that the operational changes at these facilities, particularly in Montague, can reduce local revenue. That is an important consideration in these proceedings. However it is important to recall how FirstLight fights the tax assessment on their Montague assets. Between 2014 and 2019 FirstLight fought local assessments, including in one instance continuing to threaten litigation after losing their appeal. These challenges continue with the town still needing to maintain litigation resources even as most recently as March of 2024.

Rules of the road on settlement: As noted above, American Rivers is glad FirstLight responded to requests for settlement and there were important improvements in their proposal as a result. However, at the end of the two distinct (and partial) settlement conversations – one on recreation and one on “fish & flows” First Light announced that signatories to the recreation settlement would need to forego their rights to comment on the separately conducted “fish & flows” agreement. This was a surprising and late in the game change by FirstLight that appeared to be a way to force a higher degree of consensus than existed.

Energy policy & markets: In several places below we note how trends in energy prices as well as pending Massachusetts legislation will have direct implications on how these projects – particularly Northfield Mountain - operates within their proposed terms. These policies have significant potential to generate revenue for the company, but are not discussed or considered in the proceedings to date.

Public subsidies for renewable energy: Hydropower projects are eligible for public subsidies through the renewable portfolio standards in MA and around the region. To be eligible for these subsidies in the form of premium prices from MA and other states projects need to acquire certification from the Low Impact Hydropower Institute (LIHI). It is reasonable to expect that FirstLight will request this certification for the Turners Falls project which if granted would provide significant additional revenue.

As well it appears that the additional 2,000-acre feet of storage at Northfield Mountain may qualify as part of the Clean Peak Standard, a policy designed to incentivize grid storage. And lastly among potential public subsidies is the Hydropower Incentives Program, a grant program as part of the Bipartisan Infrastructure Law, that supports efficiency and environmental improvements at hydropower projects. American Rivers asked FirstLight if they had or were intending to apply to this program, but they have not replied.

We recommend MA DEP engage FirstLight to gain a clear-eyed understanding of both the costs and revenues associated with this relicensing. American Rivers understands there is a significant capital cost to many of these improvements, but they are reasonable, legally required, and very long past due.

FirstLight is an effective advocate for its interests – it drives a hard bargain. We are confident the MA DEP through its Section 401 water quality certification can be an equally effective advocate for the public's interests.

#### Operation of Northfield Mountain Pumped Storage project (5.1.2 Northfield Mountain Project Article B100. Project Operations)

American Rivers recognizes pumped storage hydropower as playing an important part in grid resiliency and supporting development of intermittent renewable energy sources. The continued deployment of storage technology across the grid is critical to meeting the region's renewable energy goals. Northfield Mountain Pumped Storage project has operated for fifty years in open-loop without any entrainment or impingement protection and in ways that have accelerated riverbank erosion and that has negatively impacted recreation.

FirstLight's proposal to operate Northfield Mountain Pumped Storage (NMPS) project with both unrestricted access to 2,000-acre feet of additional upper reservoir storage and to draw the lower reservoir down to elevations below 179' MSL will continue to violate water quality standards and is unsupportable. It has been well-documented what impacts occur when the Turners Falls impoundment drops below 179'. On June 12-13, 2021 FirstLight brought the impoundment to a water level of 177.5 MSL which is within the limit in their current license as well as their AFLA proposal of 176' MSL. Pumping to 177.5' MSL stranded boats at the marina located at Bartons Cove impacting a designated and existing use of recreation. While pumping to this level below 179' MSL has not occurred often in the term of the current license, it is quite likely to occur more frequently over the coming license term.

The large-scale deployment of solar and wind power has dramatically changed the patterns of energy generation, including more routine periods of excess supply from daytime solar generation. This has had the effect of decreasing day-time energy prices or even creating negative prices. For the business model of pumped storage to be successful the operator must arbitrage the cost of energy to pump water to the upper reservoir and the revenue gained during generation. So when energy prices decline or go negative as they are expected to do more and more, NMPS clears more profit. A recent study<sup>i</sup> conducted by Argonne National Laboratories evaluated how hydropower provides value to power systems and what are the drivers of that value to hydropower. Value drivers are operating scenarios that among other things maximize revenue to project owners.

A key finding of this report was that pumped storage hydropower projects garner the largest portion of their annual revenue from both capacity payments and this arbitrage work in the day ahead or real time markets, seeking the lowest prices for pumping and the highest prices for generation. Facilities such as



Northfield Mountain Pumped Storage are anticipating the continued growth of zero fuel cost energy sources in the ISO-New England market. As these sources increase, natural gas generation decreases, and electrification continues this will put both downward pressure on prices during times of high solar generation (daytime) and upward pressure on prices during higher demand periods (night time). This trend is documented in a recent ISO-New England market report.

“Large volumes of unpriced (or fixed) supply can have important implications for pricing outcomes because it increases the likelihood of low or negative prices. We expect this impact to become more prevalent as additional capacity from renewable generation (e.g., wind, solar) with low marginal costs enter the energy markets. At present, we generally find that energy price formation is robust under current levels of unpriced supply. Further, as more low marginal cost generation participates in the wholesale market, we would expect to see a market response in terms of more price-responsive supply, particularly with more energy storage devices joining the market; otherwise, there is a higher risk of energy prices not covering short run production costs.”<sup>1</sup>

This increasing opportunity to significantly impact the Turners Falls Impoundment from price arbitrage is combined with the expected trends in the capacity market, the other principal source of revenue for NMPS. In general capacity prices are significantly lower in recent years (despite recent increases in the last forward capacity auction) and are expected to trend downward as renewable energy is deployed into the New England grid. We do note recent legislation<sup>2</sup> filed in the Massachusetts legislature that appears to require the state to enter into long-term contracts with providers of mid-duration storage, which includes NMPS. It is unclear at this writing if FirstLight has a position on this legislation, but it appears to be in their interest to have predictable long-term contract price and so eliminating capacity price volatility in one of their two principal revenue streams at NMPS.

These two trends – decreasing capacity payments and greater swings in energy pricing in the day-ahead market – will we believe drive FirstLight’s focus on price seeking at both the cost and revenue points. Successful price arbitrage can make up a very substantial portion of a project’s annual revenue. Wider spreads in prices means more opportunity for Northfield Mountain to generate returns (expected and understood), however that should not be allowed to happen at the expense of the river and the designated and existing uses that are protected by the Clean Water Act.

It is unclear how a recommendation to allow water levels below 179’ MSL is supportable without the required evaluation and analysis outlined in the MA Water Quality Standards at Section 4.03 (4)(4) “National Goal Uses, Partial Uses, and Variances.” This section provides a process by which the partial elimination of a designated use must be justified, with the relevant section noting that “[D]ams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in the attainment of the use.” Feasibility is to be determined via a public hearing and evaluation through a Use Attainability Analysis, which is the purview of MA DEP and final approval by the US EPA.

**RECOMMENDATION:** NMPS should be constrained in the use of the extra 2,000-acre feet of upper reservoir storage only for ISO-designated emergency needs and the lower reservoir should be limited to elevations no lower than 179’ mean sea level.

<sup>1</sup> ISO- New England, “2022 Markets Report” page 10.

<sup>2</sup> House Bill 4503, “An Act Relative to Clean Energy Generation” introduced April 4, 2024

### Flows below the Turners Falls dam

The current proposal for flow releases of 500 cfs between July 1 and November 15 at the Turners Falls dam are inadequate to support aquatic life use attainment for fish and benthic macroinvertebrates as well as recreation and aesthetics. While an IFIM study has been completed for the river reach below the dam that has determined the amount of aquatic habitat available under differing flows, the results of that study have not been used to support a legally defensible flow regime. American Rivers concurs with the July 2023 comments provided by the Connecticut River Conservancy currently in the FERC docket<sup>3</sup> for this project. This segment of river is listed as impaired for aquatic life use attainment due to the operation of the hydropower project. It is not clear to us how a flow of 500 cfs can be considered as meeting the state water quality standards considering that the MA DEP has not weighed in on these proposed license terms.

Our understanding of the state water quality standards in section 4.03 (3)(b), “Application of Standards” provides guidance for the determination of a “critical low flow” to be determined by the Department and the controlling entity (in this case FirstLight). The regulation then goes on to note that when the Department issues a 401 Water Quality Certification of an activity subject to licensing by the Federal Energy Regulatory Commission, “flows shall be maintained or restored to protect existing and designated uses.” We also note the guidance in the 2022 Consolidated Assessment and Listing Methodology (CALM) regarding how aquatic life use attainment is to be achieved regarding fisheries and benthic macroinvertebrates<sup>4</sup>.

While we assume FirstLight’s objections to these flows is an economic one given that flows over the dam would otherwise move through the power canal to Cabot station, they have had ample opportunity to design and install additional turbine generation at Turners Falls dam which would allow for generation and spill to support legally protected uses in this reach.

**RECOMMENDATION:** Flows of 1,400 cfs between July 1 and November 15 from below the Turners Falls Dam should be required to meet aquatic life use for benthic macroinvertebrates and fluvial resident fish species, recreation, and aesthetic standards.

### Timing of fish passage structures (5.2 Fish Passage 5.2.1 Turners Falls Project Article A300. Fish Passage Facilities and Consultation)

Time is money. FirstLight has ample means to make a reasonable return on their investment without being given years and years to delay their legal obligations to public trust resources.

<sup>3</sup> Connecticut River Conservancy comments (FERC Accession No. 20230710-5073 at pp 2-4)

<sup>4</sup> In streams characterized by moderate to high gradients (predominantly riffle/run), it is necessary for the fish community to comprise two or more species specialized in fluvial habitats or at least one species highly dependent on such habitats in moderate abundance. This is essential to fully sustain the Aquatic Life Use. If these fluvial fish species are absent from these streams, it will result in a determination of impairment. In streams with low gradients (mostly glide/pool), the fish community should include at least one species specialized in fluvial habitats or macrohabitat generalist species that are intolerant or moderately tolerant to environmental changes. This diversity is crucial to completely support the Aquatic Life Use. If fish are entirely absent from these streams, or if only tolerant macrohabitat generalist species are found, the Aquatic Life Use will be deemed impaired. (pg. 23)

The current settlement signed by multiple parties including resource agencies includes some reasonable and positive proposed changes to the operation of Cabot Station, the generating facility at the end of the power canal at Turners Falls. However, the settlement agreement fails completely to realistically consider the time to complete final designs, permit, and construct the currently long-overdue fish passage structures at Turners Falls and Northfield Mountain Pumped Storage projects. These proposed additional and unnecessary nine years sit on top of the more than fifteen years that the owners of the facility have been in discussions with resource agencies on solutions to the abysmal failures of up and downstream fish passage that are well-documented in the record.

FirstLight is hiding behind the fiction of engineering, permitting, and construction times to justify their obvious strategy to save money in the deployment of the needed up and downstream fish passage structures.

Were we to concede for arguments sake that the inability of FirstLight and the resource agencies identify and reach a solution more than 15 years ago is acceptable, it would make sense to assign a value to the deferred costs in building fish passage structures that meet safe, timely, and effective standards. This value can then be acknowledged and credited to FirstLight's complaint of the expense of this requirement now pending. The time value of those years of delay to address the well-known failures of fish passage at this project is more than sufficient cost-savings in our mind and negates any claim against moving expeditiously now. It is also worth noting that the company is eligible for significant public subsidies for these and other improvements at their facility under the terms of the Hydropower Incentives Program funded by the Bipartisan Infrastructure bill and administered by the Department of Energy's Grid Deployment Office. It is likely that once these improvements are in place these facilities would qualify under the Low Impact Hydropower Institute's certification program which provides financial returns through the renewable energy credit markets.

How long should deployment of these long-needed fish passage structures take? American Rivers endorses the credentials and findings of the Zapel affidavit filed by the Connecticut River Conservancy on May 25, 2023 to the FERC docket<sup>5</sup>. Indeed, even the timeframes in this affidavit can be considered generous in timing considering the several years of detailed negotiations, review and revision of design drawings and performance evaluation of the proposed structures by the resource agencies who have the ultimate decision-making authority.

**RECOMMENDATION:** All fish passage structures should be deployed and monitored on the schedule as noted in the Zapel affidavit.

**Barrier net at Northfield Mountain Pumped Storage project (5.2.2 Northfield Mountain Project Article B200. Fish Intake Protection and Consultation)**

Setting aside the failure of the current license and many subsequent opportunities to evaluate how an open-loop pumped storage project could mitigate the impacts to fish, some form of entrainment mitigation is needed. Aside from converting the project to a closed-loop system, the barrier net appears to be the only viable proposal. The barrier net is a less than ideal solution for both the operation of the facility as well as fish. That said it should be deployed and continuously evaluated for effectiveness, as has been required at other open-loop projects (Ludington Pumped Storage Project, P-2680).

<sup>5</sup> Attachment D, FERC Accession No. 20230525-5090.

We note in the proposal for the FERC license to restrict resource agencies from exercising their regulatory authority for the first 25 years of the license. While there are understandable and important provisions (albeit far too lengthy and prospective) for monitoring and evaluation in FirstLight's applications, we do not support any limitations on a resource agency's regulatory authorities.

The WQC application references the FERC license filings which describe the terms of the mitigation fund for ichthyoplankton at Northfield Mountain. MA DEP should evaluate the sufficiency of this fund as negotiated through the settlement agreements. While it is unfortunate that there is little recourse for the fifty prior years of impacts to fish because of the operation of the facility, the forward looking proposed ichthyoplankton mitigation fund is insufficient. Studies conducted during relicensing have documented impacts to all life stages of migrating shad with the greatest impacts to the smaller, early life stages (ichthyoplankton). Adult shad will also be impacted by impingement and entrainment. It is not clear that these impacts were considered in the calculation of the \$1.2M payment to be made over the proposed 50-year license term. Studies conducted during the relicensing period did not adequately consider the improvements in passage that will occur with the installation of an elevator at the Turners Falls dam. Using the adult mortality percentages from these studies and applying them to the management goals for the watershed significantly increases the annual adult shad mortality. Setting a fixed dollar amount over a 50-year license that does not account for the impacts to all life-stages of American shad is an insufficient mitigation proposal.

RECOMMENDATION: The barrier net should be deployed in Year 1 after license issuance and continuously monitored for effectiveness. The mitigation fund should be calculated on impacts to all life stages of American shad and should be adaptive based on actual returns. A proposed way to make this fund adaptive and correspond to actual returns would be to assess payment based on a rolling average (i.e., a three-year window) of passage at Turners Falls.

#### Invasive species monitoring & control (Appendix B. Turners Falls Hydroelectric Project Invasive Aquatic Species Management Plan)

FirstLight's invasive species monitoring & control plan notes the various reaches with these impairments and provides a framework for monitoring the listed species. It does not, however, provide sufficient measures of control or rapid response which are essential elements of any management plan. FirstLight correctly notes that they are not responsible for any introduction of these species, but neglects to note that they are responsible for the creation of the impounded habitat in which these aquatic species flourish. Neither does FirstLight acknowledge the significant work over the last twenty years by volunteers, the municipalities of Gill and Montague, the staff of the Silvio O. Conte National Fish & Wildlife Service, and the Connecticut River Conservancy to dramatically control the infestation of water chestnut in Barton Cove. Effective management and control of invasive aquatic species is the responsibility of many parties, including FirstLight. Their proposed plan does not measure up to their share of responsibility. Because FirstLight's facility at Cabot Camp provides an important beach area, they need to better address the control of the significant terrestrial invasives that have taken over substantial portions of the riverfront area, this requirement should be better addressed in their plan.

RECOMMENDATION: The invasive species management plan should include on-going funding to support removal and control strategies that notes provisions for support of rapid response. In addition support should be included for boat inspections during summer months at boat launches within the Turners Falls impoundment. Include a requirement to regularly maintain and control the invasives

located at the Cabot Camp beach area. These provisions are similar to what is in place at the Holyoke hydroelectric project.

Erosion and sedimentation in the Turners Falls Impoundment

American Rivers is in full support of the recommendations made by the Town of Gill and Montague regarding the assessment and mitigation of erosion and bank failure that is caused by the operation of these two projects.

Again, thank you for the significant investments in making the process accessible to the public. The agency has many matters before it at any one time and the required timeframe to process WQC applications are tight. We look forward to continued participation in this process.

Sincerely,



Andrew Fisk, Ph.D.  
Northeast Regional Director

<sup>i</sup> "Hydropower Value Drivers" July 2023. HydroWires Series, ANL-23/18

**From:** [Rebecca Young Allen](#)  
**To:** [dep.hydro@mass.gov](mailto:dep.hydro@mass.gov)  
**Subject:** FirstLight 401 WQC  
**Date:** Tuesday, April 30, 2024 7:56:16 AM

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**CAUTION:** This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

To whom it may concern,

As a resident and homeowner in Montague for 20 years, and a person who enjoys non-motorized recreational boating on the CT river, I am writing to express my strong opinion that First Light should NOT be issued any further licenses on the CT River. The environmental impact (primarily erosion) on the river ecosystem is devastating and the entire economic and energy exchange is a farce. To use fossil fuels to pump millions of gallons of river water up to Northfield Mountain is not something I want to see continue.

In addition, the Turners falls dam has had a dramatic negative impact on the river ecosystem, changing the riparian system into more of a lake type ecosystem.

Both these hydropower systems should be dismantled and no further licenses offered to First Light.

Thank you for considering this in your decision.

Respectfully,  
Rebecca Allen

██████████ Montague

--



Rebecca Young Allen  
Executive Director  
Andes Amazon Conservancy  
PO Box 317  
Montague MA  
Puyo, Cuenca and Macas Ecuador  
[AAConserve.org](http://AAConserve.org)



Michael Bathory and Maryanne Gallagher  
 [REDACTED]

Gill, MA 01354

Alan Wallace and Barbara Watson  
 [REDACTED]

Gill, MA 01354

May 28, 2024

MassDEP - BWR  
 Attention: FirstLight 401WQC  
 100 Cambridge Street, Suite 900  
 Boston, MA 02114

Re: Landowner comments regarding MassDEP's 401 Water Quality Certification following 401 Water Quality Certification following FirstLight's application to FERC to relicense the FirstLight's application to the Federal Energy Regulatory Commission (FERC) to relicense the Connecticut River hydroelectric facilities in Turners Falls and Montague and the pumped storage facility in Northfield under the Federal Power Act, 16 U.S.C. § 797(e).

## Introduction

Landowners Michael Bathory and Maryanne Gallagher own 115 acres of conservation land which includes 1,240 feet of riverbank. Alan Wallace and Barbara Watson own 30 acres of conservation land which includes 1,000 feet of riverbank. These contiguous sites are located a short distance upstream across from the Northfield Mountain Pumped Storage Project (NMPS) tailrace.

As the owners and stewards of conservation land it is our responsibility to protect and care for these riverbank sites. The Massachusetts Department of Conservation and Recreation (DCR) holds the conservation restriction on our land. Through the conservation restrictions, this land and its streambanks are to be protected in perpetuity. As the owners and stewards of conservation land we take our responsibilities seriously to meet the requirements of the conservation restriction and to address prohibited activities which include:

“... activities or uses detrimental to drainage, flood control, water conservation, erosion control or soil conservation, or other acts or uses detrimental to retention of land or water resources.”

As the owners of this conservation land, we write to share our concerns for the

- Extensive erosion of our riverbanks and the resulting large amount of silt being deposited in the Turners Falls Impoundment (TFI) in the area near the Northfield Mountain Pumped Storage Project's (NMPS) tailrace
- Loss of conservation lands' aesthetic beauty and access to our riverbanks for recreation

### **Steambank erosion and silt deposition**

FirstLight does not own the riverbanks on our properties, which are protected by our conservation restrictions in perpetuity. There is no easement for the NMPS operation. Some years before their attempts to remediate the erosion on our banks, a FirstLight representative approached each landowner with the offer to purchase our flowage rights for a couple of thousand dollars. We independently replied with the same response: “Why would we want to do that?” That was the last we heard from FirstLight about this. We remain adamant about not selling our flowage rights, as were the previous owners of these two parcels before us, the Kaufhold and Wert families.

The effect of the NMPS operations on the Connecticut River is a question that was resolved decades ago when Northeast Utilities, the then licensee, acknowledged that much of the increased erosion along the riverbanks between the Vernon and the Turners Falls Dams were a result of project operations. In the March 1977 Army Corps Waltham MA office evaluation of erosion control projects in New England, the Corps stated (page 16):

“Northeast Utilities (NU) constructed a pump-storage facility at Northfield Mountain which uses the Turners Falls pool as the lower impoundment. Turners Falls pool was raised 5.5 feet in 1973 to accommodate the pump-storage operation. Steambank erosion began to accelerate in 1973 and this area is one of the most actively eroding reaches of the Connecticut River today. The Corps has submitted a project proposal within the pool for construction under Section 32. NU acknowledges that much of the problem is a result of power pool operations.”

The Army Corps then undertook a program of bank stabilization involving the cutting of trees that were falling onto and leaning over the riverbank, removing them by helicopter, and then hydroseeding the cleared areas. Landowners of that time, and since, have observed that this approach only served to increase erosion and it was later abandoned.

FirstLight took responsibility for the 1999 FERC Erosion Control Plan and implemented a variety of streambank remediation techniques with mixed results. In 2012-2013 FirstLight experimented with a large woody debris approach in an attempt to mitigate the effects of erosion of the riverbanks of our section of the TFI. Unfortunately, FirstLight’s delayed efforts to protect the fragile toe of the bank that had been exposed since NMPS opened in 1972, increased streambank erosion dramatically. See the attached file (*...2013-FERC-Scoping-Meeting-Photos.pdf*) for an illustration of the riverbank that has been eroded in the last 50 years.

The results of the large woody debris experiment have been mixed along our riverbanks. We observe that where the river current moves away from the shore, along the Wallace/Watson site, there has been modest success with this technique with less river and NMPS action eroding the built aquatic bench with added logs with root wads. However, where the river straightens out along the Bathory/Gallagher site, the aquatic bench has been scoured away, leaving the tree trunks and what is left of the root wads, as well as the streambank itself, fully exposed due to the pump and release action of the NMPS Project exaggerating the natural action of the river (see attached *...2024-Tree- and-Root-Wads.pdf*). As visible in these photos, FirstLight’s attempts to protect the toe of the bank failed on many sections our riverbanks leading to ongoing undermining at the toe and a continued succession of bank instability events.

FirstLight remarkably claims that motorboats are the cause of erosion and not the pump and release action of the NMPS project. It must be said that motorboats were not able to be on this stretch of river until the pool height was raised at the Turners Falls Dam for the NMPS project. So, even if motorboats are causing some minor erosion compared to the project caused erosion that we see on our riverbanks, it is NMPS Project's existence that led to the introduction of motorboats to the Turners Falls Impoundment.

The filling and draining action of the NMSP is making the sandy soil of the historic geological Lake Hitchcock even more unstable and seemingly turning this section of the TFI into a tidal river and contributing to riverbank erosion. Over the years we have observed the river flowing upstream as far as one mile north of the tailrace when water is being released from the upper reservoir through the giant turbines.

In 2010 the EPA sanctioned and ordered the NMPS Project offline from May to November for flagrant violations of the Clean Water Act. FirstLight had dumped up to 45,000 cubic square yards of silt that had been pumped up to their upper reservoir and then released back into the Connecticut River as part of a maintenance operation. It is the Clean Water Act's intent "to restore and maintain the chemical, physical and biological integrity of the Nation's waters." One can only imagine how much silt was introduced into the river before being detected.

### **Loss of conservation lands' aesthetic beauty and access to the riverbank for recreation**

Before 1972, the Kaufhold and Wert families, previous owners of these two parcels, observed a much different riverbank than what exists today: a stable terrace which gently sloped to the river's edge with a sandy beach. After 1972 the Kaufholds and Werts saw the terraces wash away and the banks undermined by the frequent pump and release action of the NMPS Project. According to the Kaufholds, prior to the operation of this project the large oak tree at the downstream end of the 1240 feet of riverbank was over 30 feet from the top edge of the sloped riverbank. Today this oak tree is leaning over the riverbank, roots exposed, with the base of its trunk now only 6 feet from the upper edge of a steep and eroded riverbank (see attached *...2024-OakTree-Photos.pdf*).

Our efforts as landowners to honor the requirements of our conservation restrictions have been constantly challenged by action of the NMPS Project. The pump and release cycles of the project have undermined the toe of the bank, destabilizing the banks, exaggerating the natural action of the river, leaving us with steep, heavily eroded 17-foot banks instead of stable terraces gently sloping to the river's edge with a sandy beach. Leaning trees and roots hanging in the open air have resulted in the loss of the aesthetic beauty of this section of the riverbank (see attached photos).

Along our steep 17-foot banks access for canoeing, fishing, and swimming is impossible. When we want to do these activities we go to ponds and lakes in Vermont and New Hampshire. In addition, there has been an ever-increasing volume, speed, and size of motorboat traffic on the river since the Turners Falls Impoundment was raised over 5 feet to accommodate the pump-storage operation. This motorboat traffic makes canoeing very difficult and unsafe.

### **Summary**

As landowners we are concerned about the loss of conservation land along the Turners Falls impoundment between the Vernon and the Turners Falls Dams near the NMPS Project tailrace.

As the Army Corps acknowledged in 1977, and we further demonstrate in this comment letter and attached photos, much of the increased erosion in this area is due to project operations resulting in large amounts of silt being deposited in the river, with an accompanying loss of conservation land, it's aesthetic beauty, and the loss of access to our riverbanks for recreation.

Thank you for your review of our concerns as you determine the 401 Water Quality Certification following FirstLight's application to FERC to relicense the Connecticut River hydroelectric facilities in Turners Falls and Montague and the pumped storage facility in Northfield under the Federal Power Act, 16 U.S.C. § 797(e).

Submitted by:

/s/ Michael Bathory and Maryanne Gallagher

██████████ Gill, MA 01354

██████████

████████████████████

/s/ Alan Wallace and Barbara Watson

██████████ Gill, MA 01354

██████████

████████████████████

attach: 2013-FERC-Scoping-Meeting-Photos.pdf

2024-Oak-Tree-Photos.pdf

2024-Tree-Trunks-and-Root-Wads.pdf

**FERC Scoping Meeting  
January 30, 2013  
Relicensing of Northfield Mountain Pumped Storage Project**

Michael Bathory, presenting landowner representing Maryanne Gallagher, Alan Wallace, and Barbara Watson River Road conservation land owners. Conservation Restrictions held by the Massachusetts Department of Conservation and Recreation in Gill, Massachusetts. Flowage rights held by the landowners.

These landowners are members of Landowners and Concerned Citizens for License Compliance (LCCLC) and the Connecticut River Streambank Erosion Committee. They are assisted by the Connecticut River Watershed Council which serves as a nonprofit umbrella organization for LCCLC.

Michael Bathory and Maryanne Gallagher

██████████

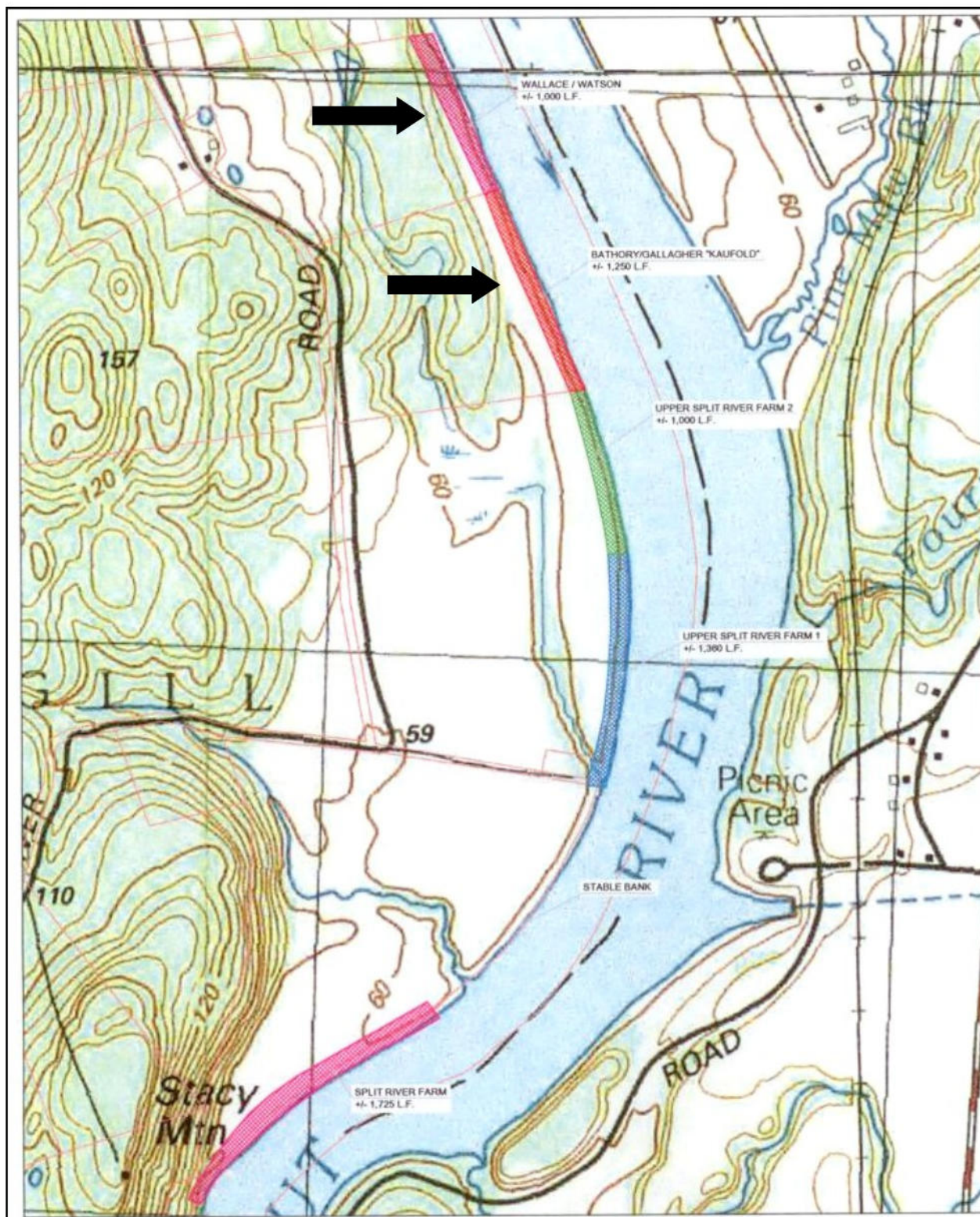
Gill, Massachusetts 01354

Alan Wallace, and Barbara Watson

██████████

Gill, Massachusetts 01354

Arrows indicate the Wallace/Watson and Bathory/Gallagher sections of riverbank upstream from Northfield Mountain picnic area and tailrace.







Phase III Bank Restoration for the Connecticut River  
in the Town of Gill, Massachusetts  
Bathory/Gallagher & Wallace/Watson  
Conservation Land



Construction access road  
as seen during October 5, 2012 Relicensing Site Tour.



Year 1 construction on Bathory/Gallagher and Wallace/Watson riverbanks December 2012. Year 2 to be completed in Fall 2013.





Attempts to buttress eroding Bathory/Gallagher banks, December 2012.<sup>5</sup>





Examples of erosion on Bathory/Gallagher riverbank  
as seen from construction road, December 2012.





More examples of erosion on Bathory/Gallagher riverbank  
as seen from construction road, December 2012.





Examples of erosion on Wallace/Watson riverbank  
as seen from construction road, December 2012.  
Arrows indicate tree stump seen in next set of photos.





Photos of tree at toe of bank in 1960 and the stump of the same tree in 2012 demonstrating the erosion that has occurred over 52 years.





2014 (leaf on): Looking north on Bathory/Gallagher site from the access road,  
1 year after Phase III Bank Restoration



2024 (March): Looking north on Bathory/Gallagher site from the access road  
Stone and dirt has been eroded and logs with root wads have become exposed and dislodged  
since the 2013 restoration project installation.





2024 (March): Logs with root wads further north along Bathory/Gallagher site are fully exposed.



2024 (March): Logs with root wads exposed.





2024

The Oak tree at the south corner of Bathory/Gallagher site.

In the 1970's the base of the tree and boundary marker were 30 feet from the top of the streambank. Today, the tree is hanging on for its dear life, using its deep and strong root system to slow it's fall to the river.



March 2024—base of the trunk is just 6' from the edge of the bank. This section is only still there because of the strong root system holding soil beneath the tree.





March 2024

The top of the streambank  
being held up  
by the Oak tree's roots

Note the tree trunk at bottom right  
of the photos. This tree recently  
succumbed to the lack of under bank  
support.





May 2024—looking up into the Oak tree's exposed root system which has been undermined by frequent and significant river level fluctuations.







June 3, 2024

MassDEP - BWR

Attn: *FirstLight 401WQC*

100 Cambridge Street, Suite 900

Boston, MA 02114

dep.hydro@mass.gov

**Re: Turners Falls Hydroelectric Project (FERC No. 1889) and Northfield Mountain Pumped Storage Project (FERC No. 2485) Relicensing and Massachusetts Clean Water Act § 401 Certification Application**

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To Whom It May Concern:

The Connecticut River Conservancy (“CRC”) respectfully submits this comment in strong opposition to FirstLight MA Hydro LLC’s (“FirstLight”) application for a 401 Water Quality Certification for the Turners Falls Hydroelectric Project (FERC No. 1889) and the Northfield Mountain Pumped Storage Project (FERC No. 2485) (collectively, “the FirstLight Projects”).<sup>1</sup> As an environmental organization dedicated to the protection and restoration of the Connecticut River and its tributaries, CRC is deeply concerned about the significant and adverse impacts the FirstLight Projects have on water quality and aquatic ecosystems. FirstLight’s 401 Application does not meet the requisite standard for ensuring the continued presence and operation of the FirstLight Projects will comply with Massachusetts Water Quality Standards (“WQS”). In addition to proposed conditions and operational changes that will result in non-compliance with Massachusetts WQS, the application fails to provide important information that

<sup>1</sup> See FirstLight, 401 Water Quality Certificate Application for Turners Falls Hydroelectric Project (FERC No. 1889) & Northfield Mountain Pumped Storage Project (FERC No. 2485) (submitted to Mass. Dep’t of Env’t Prot., 2024) (hereinafter “FirstLight 401 Application”).

will allow for informed public comment, and, conversely, includes materials that are irrelevant to DEP's determination.

Under Section 401 of the Clean Water Act ("CWA"), any applicant seeking a federal license or permit for activities that may result in discharges into navigable waters must obtain a 401 Water Quality Certification from the state in which the discharge originates.<sup>2</sup> This certification is intended to ensure that the proposed activity will comply with state water quality standards and other relevant requirements of state law.<sup>3</sup> The 401 certification process empowers states to play a critical role in maintaining the integrity of their waters by imposing conditions or denying certification if the project does not meet water quality standards.<sup>4</sup>

The FirstLight Projects involve substantial modifications to the natural flow regime, aquatic habitat, and overall ecological health of the Connecticut River. The FirstLight Projects have historically caused negative impacts on water quality, leading to the river segments both above and below Turners Falls Dam ("TFD") to be listed as Impaired on Massachusetts' CWA 303(d) List due to dewatering, flow regime modifications, and streamside alterations, among other impairments.<sup>5</sup> Moreover, as discussed in greater detail below, the FirstLight Projects have blocked migratory and resident fish passage, cutting off important access to critical aquatic habitats for many species.<sup>6</sup>

Since 1952, CRC has worked to protect and restore the Connecticut River and its tributaries. CRC represents thousands of members across four states, including hundreds in Massachusetts, and as the only nonprofit organization dedicated to protecting the entire

<sup>2</sup> 33 U.S.C. 1341.

<sup>3</sup> *Id.*

<sup>4</sup> See generally Christopher J. Eggert, *The Scope of State Authority Under Section 401 of the Clean Water Act After PUD No. 1* Washington Department of Ecology, 31 WILLAMETTE L. REV. 851, 856–57 (1995) (describing the power states retain to block or allow certain local hydroelectric projects under Section 401 of the CWA); see also Daniel Pollak, *Annual Review of Environmental and Natural Resources Law: S.D. Warren and the Erosion of Federal Preeminence in Hydropower Regulation*, 34 ECOLOGY L. Q. 763, 793–94 (2007) (discussing how states have broad latitude under Section 401) ("state courts have upheld certification requirements that imposed land use restrictions... stream flow requirements based on aesthetic goals... and recreational improvements such as access improvements for fishermen and boaters").

<sup>5</sup> Rebecca L. Tepper, et al., Final Massachusetts Integrated List of Waters for the Clean Water Act 2022 Reporting Cycle, at 167–68 (Executive Office of Energy and Environmental Affairs, et al., 2023), <https://www.mass.gov/doc/final-massachusetts-integrated-list-of-waters-for-the-clean-water-act-2022-reporting-cycle/download> (last visited May 29, 2024).

<sup>6</sup> See generally Donald Pugh, *Affidavit on Behalf of the Connecticut River Conservancy* (hereinafter Pugh Affidavit), in Comments of Connecticut River Conservancy in Opposition to certain conditions from the March 31, 2023 Offer of Partial Settlement for the Turners Falls Hydroelectric Project et al. under P-1889 et al., FERC Accession No. 20230525-5090 (filed May 25, 2023) (hereinafter CRC Flows & Fish Passage Comment), attached as Exhibit A.

Connecticut River ecosystem, our comments consider not only the localized impacts of the projects, but also the watershed-wide implications of DEP's potential CWA 401 certification.

CRC has raised many of the issues contained in this comment with DEP over the past several years, including in a June 13, 2022 letter to Executive Office of Energy and Environmental Affairs Secretary Bethany Card, and where appropriate, CRC will incorporate those earlier communications by reference. A non-exhaustive summary of CRC's positions related to FirstLight's 401 Application are provided below; however, these positions may evolve based on the course of this proceeding as further facts, positions and arguments develop, more public input is collected, and DEP articulates its positions on these issues. CRC reserves the right to update its positions accordingly. For example, CRC is currently in the process of obtaining public records from state agencies that relate to some of the issues contained in this comment as well as awaiting the results of a DEP peer review related to erosion, which may cause CRC to update its positions or otherwise provide additional information, including expert testimony, to DEP.

Finally, CRC appreciates DEP's decision, at CRC's request, to include an additional comment period on DEP's draft decision. CRC hopes DEP is able to hold firm on its proposed timing for that comment period—Nov/Dec 2024—so the agency has the time necessary to fully consider and evaluate public comments on any proposed 401 conditions before issuing a final decision.<sup>7</sup> Further, CRC urges the agency to provide a 30-day comment period—rather than the 21-day period currently contemplated on DEP's website—so Massachusetts citizens have enough time to evaluate and respond to what undoubtedly will be complex and technical issues that potentially will govern the FirstLight Projects' operations for a generation. CRC looks forward to working with DEP during this process to ensure the protection and restoration of the Connecticut River for the next half century and beyond.

<sup>7</sup> See *MassDEP FirstLight Water Quality Certification Public Involvement Timeline*, MASS. DEP'T OF ENV'T PROT., <https://www.mass.gov/doc/massdep-firstlight-water-quality-certification-public-involvement-timeline/download> (last updated Apr. 25, 2024).

## **SUMMARY OF CRC's POSITIONS**

**Water Quality Standards & Impairment:** The portions of the Connecticut River both above and below TFD are currently listed as impaired (not meeting state water quality standards) for various reasons, including dewatering, flow regime modification, and streamside alteration—impairments that are attributable in whole or in part to the operations of the FirstLight Projects. FirstLight's 401 Application does not meet its burden for showing how these portions of the river will move from “impaired” status to “attainment” status under the proposed renewed FERC license.

**Aquatic Life Uses (“ALUs”):** For the mile-stretch of river below TFD, the proposed minimum flows of 500 cubic feet per second (“cfs”) from July 1 – Nov. 15 each year are inadequate to protect and maintain ALUs, including sensitive macroinvertebrate populations. According to CRC's expert, 500 cfs will allow for only 10% of maximum available habitat for macroinvertebrates, among other indicators of not supporting this use. CRC's position is that a minimum flow of at least 1,400 cfs from July 1 through Nov. 15 is needed to protect ALUs.

**Rare Plant Species:** Rather than base its proposed minimum flows on protecting the most sensitive ALUs, FirstLight is basing its proposed minimum flows on two non-aquatic, rare plant species that would not even exist in mile stretch below TFD except for the years of impairment due to dewatering. Notably, these plants may not even qualify as aquatic life, nor is there any information that these plants survived the July 2023 floods and still exist today. Additionally, the public has virtually no information to corroborate FirstLight's analysis, including any information about whether the plants can be transplanted to another location or if that option has even been evaluated. DEP and other state agencies, such as the Natural Heritage Endangered Species Program (NHESP), must make significantly more information publicly available to allow the public to make informed comments about the plants and for DEP to adequately consider their relevance, if any, to FirstLight's 401 Application.

**Erosion above the Dam:** The Turners Falls Impoundment (TFI) experiences significant fluctuations in river height due to the Northfield Mountain Pumped Storage facility (“NMPS”),

leading to severe shoreline erosion. This 20-mile stretch of the Connecticut River, serving as the lower reservoir for the storage facility, suffers from erosion exacerbated by the facility's operations, which vary the water level by up to five feet. Historical data and studies, including reports by the Army Corps and CRC hired expert, Dr. Evan Detheir, confirm that the pumping activities are a significant cause of the erosion. Despite documented evidence, FirstLight's application for operational changes, such as expanding the upper reservoir, fails to adequately address the erosion issue, potentially worsening it.

**Recreation Below the Dam:** CRC opposes FirstLight's proposed minimum flow of 500 cfs below TFD because the low flows negatively impact recreational activities, violating both state WQS and federal obligations. FirstLight's own Boating Navigability Study showed that even a flow of 545 cfs was inadequate for safe boating navigation, with participants rating it poorly. Proposed portage trails are not a viable solution, as they alter the recreational experience and may exclude less able-bodied paddlers.

**Aesthetics:** According to Massachusetts WQS, Class B waters are designated not only for aquatic life uses and recreation but also for their aesthetic significance. Despite FirstLight's acknowledgment that higher bypass flows would enhance the river's visual and auditory appeal, the proposed 500 cfs flow is insufficient to restore the river's natural aesthetic, leaving large portions of the riverbed exposed. This undermines the Connecticut River's status as a vital natural resource and a nationally recognized Blueway, emphasizing the need for higher minimum flows, such as 1,400 cfs, to meet both ecological and aesthetic standards.

**Impingement/Entrainment at Northfield:** At NMPS, fish entrainment and impingement occur when water is pumped from the river to the holding reservoir. FirstLight proposed installing a fish barrier net from June 1 to November 15 to mitigate these impacts but CRC questions the net's efficacy, as the velocity models FirstLight used did not accurately reflect real conditions, and only preliminary field testing was conducted, which occurred before the Flows and Fish Passage Settlement Agreement changed a few of the operational conditions. Studies show that the proposed net might not prevent fish impingement during pumping operations. CRC supports

the barrier net, but additional Adaptive Management Measures (AMMs) are needed if performance targets are not met in order to adequately protect ALUs.

**Financial Assurances:** CRC emphasizes the necessity for any 401 certification to include provisions mandating decommissioning plans and financial assurances from FirstLight for when the facilities are ready for retirement and removal. This measure is crucial to prevent further water quality degradation and ensure that Massachusetts taxpayers do not bear the financial burden of decommissioning. Given the inevitable end of these projects' useful lives as energy producers, CRC stresses the importance of ensuring that funds for decommissioning are readily available.

**Timeline for Fish Passage Installation:** CRC opposes the proposed timeline for the Spillway Lift at TFD, arguing that the projected 9-year period for full implementation is excessive and will result in continuing and unnecessary harm to ALUs. Similar fish lifts in other river systems have been designed and constructed in much shorter time frames, typically ranging from 4 to 6.5 years. The design and construction of the lifts could feasibly be completed within a shorter duration, with few prospective unknowns that would justify the extended timeline proposed. Drawing comparisons to complex fish passage facilities on the Columbia River, CRC's expert opines that a schedule of approximately 4–6.5 years for full implementation is more reasonable.

**Cultural Resources:** Maintaining higher river flows would protect culturally important sites on Rawson Island and Peskeomskut Island by impeding public foot access that may otherwise cause damage to cultural artifacts. CRC stresses the importance of considering Indigenous perspectives in the relicensing process, which previously have been overlooked by regulatory agencies and are still largely being dismissed by FirstLight.



## **CWA 401 CERTIFICATION**

The CWA’s 401 Water Quality Certification process is a critical regulatory mechanism that empowers states to protect their water resources.<sup>8</sup> The certification can include conditions necessary to ensure compliance, and states have the authority to deny certification if the project fails to meet water quality standards or poses significant risks to water resources.

The 401 Water Quality Certification process is intrinsically linked to Massachusetts water quality standards (WQS), which are designed to secure the benefits of the CWA and to “designate the most sensitive uses for which the various waters of the Commonwealth shall be enhanced, maintained and protected.”<sup>9</sup> Uses identified by the state for different river segments, including aquatic life and recreation, must be protected and restored. State WQS also “contain regulations necessary to achieve the Designated Uses and maintain existing water quality including, where appropriate, the prohibition of discharges.”<sup>10</sup> To maintain a water body’s uses, Massachusetts has established specific criteria for water quality, including limits temperature, pH levels, and dissolved oxygen, among other pollutants.<sup>11</sup> These standards are crucial for maintaining the ecological health of water bodies, protecting fish and wildlife habitats, and ensuring the water is safe for recreational activities and aesthetic purposes.<sup>12</sup>

In the context of the FirstLight Projects, 401 certification requires compliance with Massachusetts’ WQS.<sup>13</sup> Because the FirstLight Projects seek renewed federal licenses that may last for the next half-century,<sup>14</sup> this 401 certification process is of generational importance and must take into account rapidly changing factors including energy technology and climate change when determining whether the proposed operations will comply with MA WQS today and several decades from now. Moreover, given the significant modifications the FirstLight Projects impose on the natural flow and ecological dynamics of the Connecticut River, CRC is concerned about whether and how the river will be “enhanced, maintained and protected” under these

<sup>8</sup> 33 U.S.C. § 1341(a)(1).

<sup>9</sup> See 314 CMR 4.01(3) (noting also that Massachusetts WQS “prescribe the minimum water quality criteria required to sustain the Designated Uses...”).

<sup>10</sup> *Id.*

<sup>11</sup> See, e.g., 314 CMR 4.05(3)(b) (providing certain requirements specific to Class B-designated waters).

<sup>12</sup> See *id.*

<sup>13</sup> 33 U.S.C. § 1341.

<sup>14</sup> 16 U.S.C. § 808(e) (“any license issued by the [Federal Power Commission] under this section shall be for a term which the [Federal Power Commission] determines to be in the public interest but not less than 30 years, nor more than 50 years, from the date on which the license is issued”).

conditions.<sup>15</sup> Thus, DEP must assess whether these hydroelectric activities comply with the state's WQS, as ensuring compliance with these standards is vital for protecting the Connecticut River now and for future generations.

## **COMPLIANCE WITH MASSACHUSETTS WATER QUALITY STANDARDS**

### **CRC's Proposed Recommendation for Flows Below Turners Falls Dam**

CRC recommends a minimum flow of at least 1,400 cfs below TFD between July 1 – November 15, as supported by the previous CRC comments on FirstLight's "Ready for Environmental Analysis" (REA) application,<sup>16</sup> its comments on the proposed Fish Passage and Flows Settlement Agreement,<sup>17</sup> and the expert testimony of Donald Pugh.<sup>18</sup> In brief, a minimum flow of 1,400 cfs will uphold state water quality standards by

- (1) increasing available habitats for fluvial fish species and macroinvertebrates,
- (2) providing adequate recreational opportunities, and
- (3) enhancing the aesthetics of the approximately one-mile river segment below TFD by fully covering the riverbed with water.

### **Proposed Minimum Flows under FirstLight's 401 Certificate Application.**

As provided in FirstLight's 401 Certificate Application, upon its requested FERC license issuance, FirstLight provides that it will discharge below TFD the following seasonal minimum flows:<sup>19</sup>

<sup>15</sup> *Id.*; 314 CMR 4.01(3), 4.03(3) & 4.04.

<sup>16</sup> See Comments of Connecticut River Conservancy on the amended final license application re the Turner Falls Hydroelectric Project, FERC Accession No. 20230525-5090 (filed May 22, 2024) at 7–20 (hereinafter CRC REA Comment), attached as Exhibit B.

<sup>17</sup> See Exhibit A (CRC Flows & Fish Passage Comment) at 4–10.

<sup>18</sup> See *id.*, Pugh Affidavit, ¶¶ 9–18.

<sup>19</sup> See FirstLight 401 Certificate Application, at 24.

Date	Minimum Flows below Turners Falls Dam
01/01-03/31 <sup>1</sup>	<ul style="list-style-type: none"> <li>• If the Naturally Routed Flow (NRF- definition provided later in this article) is <math>\leq 400</math> cubic feet per second (cfs), the Minimum Flow below Turners Falls Dam shall be 400 cfs or the NRF, whichever is less.</li> <li>• If the NRF is <math>&gt; 400</math> cfs, the Minimum Flow below Turners Falls Dam shall be 400 cfs.</li> </ul>
04/01-05/31	<ul style="list-style-type: none"> <li>• If the NRF is <math>\leq 6,500</math> cfs, the Minimum Flow below Turners Falls Dam shall be 67% of the NRF.</li> <li>• If the NRF is <math>&gt; 6,500</math>, the Minimum Flow below Turners Falls Dam shall be 4,290 cfs.</li> </ul>
06/01-06/15 <sup>2,3</sup>	<ul style="list-style-type: none"> <li>• If the NRF is <math>\leq 4,500</math> cfs, the Minimum Flow below Turners Falls Dam shall be 67% of the NRF.</li> <li>• If the NRF is <math>&gt; 4,500</math> cfs, the Minimum Flow below Turners Falls Dam shall be 2,990 cfs.</li> </ul>
06/16-06/30 <sup>3</sup>	<ul style="list-style-type: none"> <li>• If the NRF is <math>\leq 3,500</math> cfs, the Minimum Flow below Turners Falls Dam shall be 67% of the NRF.</li> <li>• If the NRF is <math>&gt; 3,500</math> cfs, the Minimum Flow below Turners Falls Dam shall be 2,280 cfs.</li> </ul>
07/01-11/15 <sup>1</sup>	<ul style="list-style-type: none"> <li>• If the NRF is <math>\leq 500</math> cfs, the Minimum Flow below Turners Falls Dam shall be 500 cfs or the NRF, whichever is less.</li> <li>• If the NRF is <math>&gt; 500</math> cfs, the Minimum Flow below Turners Falls Dam shall be 500 cfs.</li> </ul>
11/16-12/31 <sup>1</sup>	<ul style="list-style-type: none"> <li>• If the NRF is <math>\leq 400</math> cfs, the Minimum Flow below Turners Falls Dam shall be 400 cfs or the NRF, whichever is less.</li> <li>• If the NRF is <math>&gt; 400</math> cfs, the Minimum Flow below Turners Falls Dam shall be 400 cfs.</li> </ul>

*Figure 1: Minimum Flows below TFD<sup>20</sup>*

Of particular concern are the proposed minimum flows of 500 cfs during the period spanning from July 1 to November 15. As will be discussed in great detail below, FirstLight has primarily based its harmful lower flows below TFD for that portion of the year on the presence of two state-listed threatened or endangered plants (Tradescant's Aster and Tussock Hairgrass) that have established themselves in the bypass reach due to the years of dewatering that has occurred there as a result of TFD operations.<sup>21</sup>

Additionally, the Connecticut River from TFD to the Holyoke Dam is designated as a Class B water under Massachusetts WQS.<sup>22</sup> Class B waters are Inland Waters that “are designated as a habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation.”<sup>23</sup> DEP also requires that Class B waters maintain a “consistently good aesthetic value.”<sup>24</sup> In this context, the proposed minimum flow of 500 cfs in Reach 1 fails to maintain, restore, or protect its existing and designated Class B uses because it fails to support Aquatic Life Uses (ALUs), does not sufficiently support recreational activities, and fails to meet the WQS’s “consistently good aesthetic value” standard.

<sup>20</sup> See CRC REA Comment at 8.

<sup>21</sup> See CRC REA Comment at 8; See FirstLight 401 Certificate Application, at Attachments C-8 & C-10.

<sup>22</sup> 314 CMR 4.06 (see Table 7).

<sup>23</sup> 314 CMR 4.05(3)(b).

<sup>24</sup> *Id.*

### **Proposed Flows Do Not Maintain, Restore, and Protect Aquatic Life Uses.**

As a Class B water, the River Segment must provide essential conditions for “reproduction, migration, growth, and other critical [aquatic life] functions.”<sup>25</sup> However, according to the expert affidavit from Donald Pugh,<sup>26</sup> FirstLight’s proposed minimum flow of 500 cfs “is insufficient to provide a suitable amount and quality of habitat for most aquatic species inhabiting [the River Segment].”<sup>27</sup> Specifically, the proposed minimum flows would only allow for 10% of the maximum available habitat for macroinvertebrates, and less than 27% for several other fish species.<sup>28</sup> Instead, a minimum flow of 1,400 cfs is needed to address the impairments related to ALUs.<sup>29</sup>

FirstLight contends that based on Section 314 CMR 4.03(b) of Massachusetts WQS,<sup>30</sup> “the 500 cfs minimum flow represents an equivalent flow agreed upon by the [U.S. Fish & Wildlife Service], [National Marine Fisheries Service], and [Massachusetts Division of Fisheries & Wildlife] reflecting the balancing of aquatic resources and rare plants” (emphasis added).<sup>31</sup>

In Attachment C of its 401 Application, FirstLight claims that its proposed minimum flow of 500 cfs “reflects the balancing of many competing resources,” including the aforementioned state-listed plants, certain ALUs, and recreational boating.<sup>32</sup> As a means of demonstrating a sort of ecological compromise, FirstLight explains that it opted for its proposed minimum flow of 500 cfs after initially proposing a summertime flow of 250 cfs.<sup>33</sup> According to FirstLight, it proposed the flow of 250 cfs “for the purpose of protecting rare plants.”<sup>34</sup> As will

<sup>25</sup> 314 CMR 4.05(3)(b).

<sup>26</sup> Donald Pugh is an independent consultant with over twenty years of experience and expertise in analyzing fish passage at hydroelectric projects, including FERC licensing projects. Pugh formerly worked on both up- and downstream passage at the U.S. Geological Survey’s S.O. Conte Anadromous Fish Research Laboratory, which is located on the Connecticut River just downstream of Turner’s Falls Dam. Pugh has also been engaged in numerous fish passage projects or consultations, during which he has examined and analyzed fish passage requirements including aquatic habitat quality and use and minimum flow needs. *See* Exhibit A, Pugh Affidavit, at ¶ 1.

<sup>27</sup> *Id.* at ¶ 5.

<sup>28</sup> *Id.* at ¶¶ 6–7.

<sup>29</sup> *Id.*

<sup>30</sup> Providing that “[i]n waters where flows are regulated by dams or similar structures, the lowest flow condition at which aquatic life criteria must be applied is the flow equaled or exceeded 99% of the time on a yearly basis, or another equivalent flow agreed upon by the Department and the federal, state or private entity controlling the flow...”

<sup>31</sup> FirstLight 401 Certificate Application, at Att. C-8.

<sup>32</sup> *Id.* at Att. C-7 (note that FirstLight contends that the aquatic habitat is for a “variety of target species” including juvenile and adult life stages of fallfish, longnose dace, white sucker, walleye, and tessellated darter).

<sup>33</sup> *Id.* at Att. C-8.

<sup>34</sup> *Id.* (also providing that “[t]he 250 cfs flow was subject to an inspection of rare plants under Turners Falls Dam discharges ranging from 250-400 cfs”).

be discussed below in the Recreation Use section, FirstLight then made the jump from 250 cfs to 500 cfs after it conducted its Boating Navigability Study and found that the minimum navigable flow for recreational boaters was approximately 545 cfs.<sup>35</sup> Thus, as a purported means of “balancing many competing resources,” FirstLight found it best to increase its proposed minimum summertime flows from 250 cfs to 500 cfs.

FirstLight contends that the proposed minimum flows below TFD are needed due to the presence of two rare plant species in the river segment below the dam: Tussock Hairgrass (*Deschampsia caespitosa ssp. glauca*) and Tradescant’s Aster (*Symphotrichum tradescanii*).<sup>36</sup> The Tussock Hairgrass, a perennial grass that typically thrives on rocky and gravelly river shores and is recognized for its tufted growth habit and white bloom.<sup>37</sup> Tussock Hairgrass is classified as “endangered” under the Massachusetts Endangered Species Act (MESA). Generally, the Tussock Hairgrass habitat relies on regular flooding and scouring, supposedly making existing populations vulnerable to threats from damming or other changes in hydrological conditions.<sup>38</sup> The second rare species, the Tradescant’s Aster, is found in cracks or fissures within rocky streams or along river banks.<sup>39</sup> The Tradescant’s Aster is listed as “threatened” under MESA.<sup>40</sup>

As an important initial matter, there is simply not enough publicly available information about the presence, elevations, or abundance of either of these species in the river stretch below TFD for CRC or the general public to make informed comments about the impacts, if any, of

<sup>35</sup> See Gomez & Sullivan Engineers, Boating Navigability Study: Turners Falls Hydroelectric Project (No. 1889) (2021) (prepared for FirstLight) (hereinafter Boating Navigability Study), at 12.

<sup>36</sup> See FirstLight 401 Certificate Application, at Attachments C-8 & C-10; See FirstLight F&FP Response, FERC Accession No. 20230612-5216; See also CRC Flows & Fish Passage Comment, FERC Accession No. 20230525-5090, at 6–7 (citing Relicensing Study 3.5.1 Report: Baseline Inventory of Wetland, Riparian and Littoral Habitat in the Turners Falls Impoundment, and Assessment of Operational Impacts on Special-Status Species (2016), Project Nos. 1889-000 and 2485-000 (filed Mar. 2, 2016); Relicensing Study 3.5.1 Report: Inventory of Wetland, Riparian and Littoral Habitat in the Turners Falls Impoundment, and Assessment of Operational Impacts on Special-Status Species Addendum, Project Nos. 1889-000 and 2485-000 (filed Oct. 14, 2016); Relicensing Study 3.5.1 Report: Inventory of Wetland, Riparian and Littoral Habitat in the Turners Falls Impoundment, and Assessment of Operational Impacts on Special-Status Species Addendum 2, Project Nos. 1889-000 and 2485-000 (filed Apr. 3, 2017); Relicensing Study 3.5.1 Report: Inventory of Wetland, Riparian and Littoral Habitat in the Turners Falls Impoundment, and Assessment of Operational Impacts on Special-Status Species Addendum 3, Project Nos. 1889-000 and 2485-000 (filed Mar. 1, 2019)).

<sup>37</sup> Nat’l Heritage & Endangered Species Program, *Tussock Hairgrass*, Mass. Div. of Fisheries & Wildlife, <https://www.mass.gov/doc/tussock-hairgrass/download> (last updated 2015).

<sup>38</sup> Nat’l Heritage & Endangered Species Program, *Tussock Hairgrass*, Mass. Div. of Fisheries & Wildlife, <https://www.mass.gov/doc/tussock-hairgrass/download> (last updated 2015)..

<sup>39</sup> *Id.*

<sup>40</sup> See MassWildlife’s Nat. Heritage & Endangered Species Program, *List of Endangered, Threatened, and Special Concern species*, MASS.GOV (Jan. 10, 2020), <https://www.mass.gov/info-details/list-of-endangered-threatened-and-special-concern-species#list-of-species->.

different flow levels. This is especially true given the Massachusetts' Natural Heritage and Endangered Species Program's acknowledgement that the general management requirements for Tussock Hairgrass are not well understood,<sup>41</sup> and the fact that it is unknown whether any evaluation of transplanting the plants has been undertaken. But even if the plant species are present at elevations that would be adversely affected by flows greater than 500 cfs, it still does not justify maintaining such exceptionally low flows for the next half century.

FirstLight's approach neglects the impaired aquatic habitat that is protected by Massachusetts WQS and the CWA.<sup>42</sup> When considering the range of designated ALUs and recreational/aesthetic uses that these proposed minimum flows fail to protect or restore, basing the minimum flows on just these two plant species is arbitrary and does not hold up under legal scrutiny for the following reasons:

First, the plants would not even be growing in their present locations in the bypass reach *but for* the artificial dewatering caused by the hydropower facilities.<sup>43</sup> Essentially, these plants only exist as a result of the ongoing impairment of the river. Therefore, using the presence of these plants to justify low flows to protect them creates a logical fallacy: the listed impairment for that river segment (i.e. dewatering) created the condition that initially facilitated the plants' establishment, which is now preventing the impairment from being rectified.

Second, it is unclear if the plants even qualify as ALUs.<sup>44</sup> The plants are also occasionally found in non-wetland areas and thus are not strictly *aquatic* species.<sup>45</sup> If the plants do not meet ALU criteria, then they are not a designated use protected under the CWA.<sup>46</sup> Furthermore, CRC has requested from Natural Heritage—but has not yet received—the most recent data and analysis concerning the locations and elevations of the plant communities in the

<sup>41</sup> See MassWildlife's Nat. Heritage & Endangered Species Program, *List of Endangered, Threatened, and Special Concern species*, MASS.GOV (Jan. 10, 2020), <https://www.mass.gov/info-details/list-of-endangered-threatened-and-special-concern-species#list-of-species->.

<sup>42</sup> 314 CMR 4.03(4.05(3)(b))

<sup>43</sup> See CRC REA Comment at 8–10.

<sup>44</sup> See 314 CMR 4.02 (pursuant to Massachusetts WQS, “aquatic life” is defined as a “native, naturally diverse, community of aquatic flora and fauna including, but not limited to, wildlife and threatened and endangered species”).

<sup>45</sup> 314 CMR 4.02 (pursuant to Massachusetts WQS, “aquatic life” is defined as a “native, naturally diverse, community of *aquatic* flora and fauna including, but not limited to, wildlife and threatened and endangered species”) [emphasis added].

<sup>46</sup> 314 CMR 4.05(3)(b) (providing that Class B These “waters are designated as a habitat for *fish*, other *aquatic* life, and *wildlife*”) [emphasis added].



bypass reach.<sup>47</sup> Additionally, it remains unclear if there has been any actual science done to confirm that a flow of 500 cfs is appropriate for these plant species, nor is it clear if analysis was done to ascertain the viability of moving the plants or propagating the seeds. While CRC acknowledges and respects the necessity of keeping precise location information of rare species confidential in most circumstances, FirstLight is attempting to use the plant data in this proceeding to justify flows in the Connecticut River below TFD for the next 40 to 50 years, to the detriment of other aquatic life. Given the enduring consequences of 401 certification, it is imperative for CRC and any invested public parties to have the most current plant data and analysis available. Simply put, if DEP intends to rely on the rare plant species in any way to set flow levels or otherwise condition the 401 certification, it must make its data and analysis available to the public and provide the public ample time to evaluate its determinations. The decision of the requisite flow levels below TFD—an area that has been impaired for years due to dewatering and that must be restored in order to comply with Massachusetts WQS—cannot be made in a black box.

Third, if we assume for the sake of FirstLight’s argument, that the plants qualify as ALUs under Massachusetts surface WQS, DEP nevertheless has a discrete obligation to identify the *most sensitive* existing or designated use and to ensure that use is enhanced, maintained, and protected.<sup>48</sup> Thus, DEP must undertake its own independent analysis to determine the most sensitive ALUs needing protection in the bypass reach below the dam.<sup>49</sup> CRC submits that there are more sensitive truly water-dependent ALUs that require protection than the rare plants.

Fourth, even if the plants are ALUs, the plain language of the CWA evinces a preference for “fish, shellfish, and wildlife,” versus plants.<sup>50</sup> Thus, if there are competing ALUs, the CWA’s explicit hierarchy weighs against favoring aquatic flora over “fish, shellfish, and wildlife.”

<sup>47</sup> CRC originally requested information regarding the plant species from DEP but was provided no data or analysis and DEP withheld many documents as privileged or confidential.

<sup>48</sup> 314 CMR 4.01(3) (“To achieve the foregoing requirements the Department has adopted the Massachusetts Surface Water Quality Standards which designate the most sensitive uses for which the various waters of the Commonwealth shall be enhanced, maintained and protected...” [emphasis added].

<sup>49</sup> 314 CMR 4.01(3).

<sup>50</sup> See 33 U.S.C. § 1251(a)(2) (“[I]t is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983”).

Fifth, relying solely on the presence of these plants to determine flow levels disregards the needs of Massachusetts fish species of special concern known to inhabit the area below the dam. CRC expects that flows sufficient to support ALUs would provide additional habitat for at least two MESA-protected fish species: the burbot (*Lota lota*) and longnose sucker (*Catostomas catostomas*).<sup>51</sup> Burbot is a freshwater fish belonging to the cod family, unique for its elongated body and single chin barbel.<sup>52</sup> Burbot thrive in cold, deep waters and is often found in the weedy areas of streams.<sup>53</sup> The Longnose sucker is a fish recognized for its elongated snout and torpedo-shaped body.<sup>54</sup> In Massachusetts, Longnose suckers are typically found in the cool, upper regions of rivers and streams with rocky substrates.<sup>55</sup> Although pollution and habitat alteration along the mainstems have drastically reduced the populations of Burbot and Longnose suckers, the water quality in the Connecticut River has significantly improved in recent decades, and the relicensing offers a once-in-a-generation opportunity to mitigate the adverse effects of habitat alteration.

The available scientific evidence demonstrates that accommodating FirstLight's proposed minimum flows will continue the degradation of water quality necessary to maintain and restore other ALUs. The applicable law does not permit this outcome.<sup>56</sup> Further, to CRC's knowledge, there has been no demonstration that any anticipated harm to the rare plants due to higher flows cannot be mitigated by the relocation of those plant communities, as has been done in related circumstances.<sup>57</sup> Furthermore, the floods in July 2023 caused flows as high as 105,000 cfs to pass downstream by the Northfield gauge.<sup>58</sup> Given that Turners Falls maximum hydraulic

<sup>51</sup> See MassWildlife's Nat. Heritage & Endangered Species Program, *List of Endangered, Threatened, and Special Concern species*, MASS.GOV (Jan. 10, 2020), <https://www.mass.gov/info-details/list-of-endangered-threatened-and-special-concern-species#list-of-species->.

<sup>52</sup> See Nat'l Heritage & Endangered Species Program, *Burbot*, Mass. Div. of Fisheries & Wildlife, <https://www.mass.gov/doc/burbot/download> (last updated 2015) (noting that "[n]o other inland fish species in Massachusetts looks like this fish").

<sup>53</sup> *Id.*

<sup>54</sup> See Nat'l Heritage & Endangered Species Program, *Longnose sucker*, Mass. Div. of Fisheries & Wildlife, <https://www.mass.gov/doc/longnose-sucker/download> (last updated 2015).

<sup>55</sup> *Id.*

<sup>56</sup> 314 CMR 4.03(3)(b).

<sup>57</sup> See e.g. Deerfield Project, FERC Docket No. P-2323 (approving offer of settlement & issuing new license for Deerfield River Proj-2323 re New England Power Co. FERC Accession No. 19970411-0271. Article 419).

<sup>58</sup> See USGS Connecticut River Near Northfield, MA – 01161280 stream gage: <https://waterdata.usgs.gov/monitoring-location/01161280/>. See USGS Connecticut River Near Northfield, MA – 01161280 stream gage: <https://waterdata.usgs.gov/monitoring-location/01161280/>. 105,000 cfs recorded on 7/11/23 at 7:30 pm.

capacity is 13,728 cfs, this means that approximately 91,000 cfs of flow was being spilled into the Bypass reach. This is much higher than the 500 cfs proposed to protect these two species. There has been no public evidence of the plants surviving the 2023 summer floods, and therefore the plants may no longer be present there. Even if a study were conducted and the plants are found to have survived the 91,000 cfs flow, then that is evidence to argue that the plants would be able to survive 1,400 cfs as well. Thus, the purported protection of the state-listed plants found in the river segment below TFD due to the ongoing impairments to the river should not and cannot be used as justification to set future flow levels.

### **Proposed Flows Do Not Maintain, Restore, and Protect Recreational Uses.**

In addition to ALUs, the one-mile section of the river below TFD is also designated for primary and secondary contact recreational activities.<sup>59</sup> DEP defines *Primary Contact Recreation* as any water use “in which there is prolonged and intimate contact with the water with a significant risk of ingestion of water.”<sup>60</sup> Primary contact activities include, but are not limited to, wading, swimming, diving, surfing and water skiing.<sup>61</sup> DEP defines *Secondary Contact Recreation* as any water use “in which contact with the water is either incidental or accidental.”<sup>62</sup> Secondary contact activities include but are not limited to, fishing, fish consumption, boating, and shoreline activities.<sup>63</sup> Here, FirstLight’s proposed minimum flow of 500 cfs falls short of providing adequate primary or secondary recreational opportunities, making it so that a portion of the river cannot meet its criteria as a Class B-designated water.<sup>64</sup>

As discussed above in the context of ALUs, FirstLight provided in its 401 Application that it opted to increase its proposed minimum flows from 250 cfs to 500 cfs to purportedly accommodate both the rare plants and recreational uses.<sup>65</sup> FirstLight explains that it increased its proposed minimum flows after it conducted “a boating study” wherein researchers assessed the impacts of different flows released from TFD on canoeists and kayakers.<sup>66</sup> Participants in the

<sup>59</sup> 314 CMR 4.05(3)(b) (“These waters are designated...for primary and secondary contact recreation”).

<sup>60</sup> 314 CMR 4.02.

<sup>61</sup> *Id.*

<sup>62</sup> *Id.*

<sup>63</sup> *Id.*

<sup>64</sup> 314 CMR 4.05(3)(b).

<sup>65</sup> FirstLight 401 Certificate Application, at Attachment C-8.

<sup>66</sup> *See id.*; CRC believes that FirstLight is referencing its 2021 Boating Navigability Study (Gomez & Sullivan Engineers, Boating Navigability Study: Turners Falls Hydroelectric Project (No. 1889) (2021) (prepared for FirstLight) (hereinafter “Boating Navigability Study”)), attached as Exhibit C.

study expressed concerns about navigability even at the 545 cfs flows, which were the highest flows FirstLight released that day even though higher demonstration flows were planned.<sup>67</sup> One participant stated that while the 545 cfs flows were an improvement as compared to the other (lower) flows, they were still “[n]ot great,” and “not appropriate for beginners” with the rapid lines reportedly being “scratchy” and “hard to follow.”<sup>68</sup> Likewise, another participant reported that the 545 cfs flow “[s]till require[d] river reading and maneuverability skills” and another complained about the rocks and about being pinned at the “Far Right ledges” and the “opening ledges.”<sup>69</sup> Based on these results, CRC is concerned that the existing dissatisfaction may increase among beginner-level canoeists and kayakers, who may lack the experience to navigate the rocky center and right channels, and among less-able-bodied recreationists, who may struggle to portage their crafts if needed. Thus, it is highly questionable whether 545 cfs is an adequate minimum navigable flow, much less the proposed 500 cfs, and, at a minimum, DEP should require additional demonstration flows for a follow-up boating navigability study so boaters can evaluate the experience with higher flows as FirstLight’s study initially intended.

FirstLight also proposes to construct new river accesses and put-ins around Peskeomskut Island as part of maintaining the recreational use WQS.<sup>70</sup> Yet, while FirstLight claims that these new constructions will “mitigate for navigability constraints in the upper bypass reach during the low flow period, and will provide better access for whitewater boating,”<sup>71</sup> it nevertheless fails to provide supporting evidence that canoeists and kayakers would prefer to walk around the island rather than paddle. Realistically, exiting the river to haul a watercraft, paddle, and gear along a trail significantly differs from the uninhibited navigation down the river channel. Thus, these “river accesses” completely alter the boating experience, which often deter recreationists and exclude individuals with little experience or who lack the ability to undertake such potentially strenuous maneuvers. Altering the boating experience to this extent also violates the river

<sup>67</sup> See Exhibit C (Boating Navigability Study), at Table A-4 (providing participant evaluations of Flow 3); *see also id.* at 9–10, Table 3.2-1 (showing target release flows were planned from the bascule gate #1 for 500, 670, 900, and 1,000 cfs) and Table 3.3-1 (showing actual releases only reaching 545 cfs).

<sup>68</sup> *Id.* (see Paddler 8’s evaluation).

<sup>69</sup> *Id.* (see Paddlers 1 & 6’s evaluations).

<sup>70</sup> See FirstLight 401 Certificate Application, at Attachment C-8; FirstLight F&FP Response, FERC Accession No. 20230612-5216, at 6; Recreation Settlement Agreement and Explanatory Statement of FirstLight MA Hydro LLC and Northfield Mountain LLC, Project Nos. 1889-000 and 2485-000, FERC Accession No. 20230612-5219 (filed June 12, 2023) (hereinafter FirstLight Recreation Settlement Agreement), at 10; *See also* Recreation Management Plan, *in* FirstLight Recreation Settlement Agreement, FERC Accession No. 20230612-5219, at Section 6.1.

<sup>71</sup> FirstLight F&FP Response, FERC Accession No. 20230612-5216, at 6.

segment's Class B-designated recreational uses.<sup>72</sup> Ultimately, CRC is concerned that these low flows do not provide acceptable navigability in the height of the summertime recreation season on New England's largest river and the country's only national Blueway—a clear lack of access to primary and secondary recreational activities and a violation of state WQS under 314 CMR 4.05(3)(b).<sup>73</sup>

Finally, CRC notes that while FirstLight attempts to draw attention to other non-riverine recreational activities it has funded in its 401 Application, CRC acknowledges that DEP is required by law to confine its review during the certification process to determining whether there is reasonable assurance that the proposed relicensed operations will be conducted in a manner which will not violate state WQS.<sup>74</sup> Thus, CRC will refrain from responding to FirstLight's purported recreational benefits claims under the assumption that those portions of the application and any supporting materials will not be part of the administrative record for this proceeding since they are irrelevant to DEP's certification determination. If CRC is wrong about this assumption and DEP plans to include those materials as part of the record, CRC requests DEP notify CRC so CRC can respond accordingly.

### **Proposed Flows Do Not Maintain, Restore, and Protect Good Aesthetic Values.**

In addition to inadequate ALUs and recreational uses, FirstLight Project's 401 Application's proposed low flows are aesthetically unacceptable, violating Massachusetts WQS. Applicable here, DEP requires Class B waters to “have consistently good aesthetic value.”<sup>75</sup> Although “good aesthetic value” is not defined under the standards, CRC believes that the Connecticut River should maintain a level of flow that preserves its natural beauty and ensures an enjoyable and visually appealing environment for all users—a qualitative standard that cannot be met under the FirstLight Project's proposed minimum flows below TFD.

<sup>72</sup> 314 CMR 4.05(3)(b) & 4.02 (CRC argues that the requirement for boaters to exit their watercrafts violates the definitions of both primary and secondary recreation).

<sup>73</sup> See, *Connecticut River*, AM. RIVERS, <https://www.americanrivers.org/river/connecticut-river/> (last visited May 30, 2024) (providing that the Connecticut River is 410 miles long and its the United States' only Blueway).

<sup>74</sup> See MASS. DEP'T OF ENV'T PROT., MASSDEP FIRSTLIGHT WATER QUALITY CERTIFICATION: FREQUENTLY ASKED QUESTIONS 5–6 (2024).

<sup>75</sup> 314 CMR 4.05(3)(b).

The photos below, extracted from Appendix D of FirstLight's own Boating Navigability Study, illustrate the dewatered river channel at a flow rate of 545 cfs.<sup>76</sup> This depiction does not reflect the mighty nature of the Connecticut River; rather, it shows a minimal trickle of water.



**Photo 3-05: Peskeomskut Island – Left Channel – North View**

*Figure 2: Peskeomskut Island, Left Channel*



**Photo 3-07: Put-In #2 – Access Trail – Downstream View**

*Figure 3: Put-In #2 Access Trail – Downstream View*

<sup>76</sup> See Boating Navigability Study, at Appendix D-22 & D-23.



As exemplified by the photos, low flows can lead to exposed riverbeds and slow-moving or stagnant water, detracting significantly from the natural aesthetic of a flowing river. Low-flow conditions like these diminish the river's recreational value and undermine the visual enjoyment of residents and visitors who seek to connect with the Connecticut River's natural beauty. Thus, FirstLight's proposed low flows are aesthetically unacceptable, violating the state's explicit mandate that water bodies must sustain aesthetic quality as part of their ecological integrity.<sup>77</sup>

With support from the National Park Service Hydropower Assistance Program, the Hydropower Reform Coalition, Confluence Research and Consulting, and the Oregon State University, a conceptual framework was developed to illustrate the relationship between flows and aesthetics.<sup>78</sup> According to this framework, flows influence the resource conditions of an area, which in turn affect resource outputs such as recreational opportunities and aesthetic characteristics.<sup>79</sup> The framework also includes recommendations on whether and how to conduct flow-aesthetics studies during hydroelectric licensing.<sup>80</sup> Generally, these studies have been successfully implemented in FERC relicensing proceedings, positively contributing to the process by focusing on the parts of the river most valued by recreational stakeholders, providing a transparent and defensible record of the applicant's consideration of aesthetic values, and by improving information sharing across licensing proceedings.<sup>81</sup> During the 401 certification proceeding, CRC urges MassDEP to reference this framework as a means to protect the river's natural scenery now and for future generations.<sup>82</sup>

<sup>77</sup> 314 CMR 4.05(3)(b).

<sup>78</sup> See DOUG WHITTAKER & BO SHELBY, FLOWS AND AESTHETICS: A GUIDE TO CONCEPTS AND METHODS (Supported by Nat'l Park Serv. Hydropower Assistance Program, Hydropower Reform Coal., Confluence Rsch. and Consulting, & Or.St. Univ., 2017).

<sup>79</sup> *Id.* at 6.

<sup>80</sup> See generally DOUG WHITTAKER & BO SHELBY, FLOWS AND AESTHETICS: A GUIDE TO CONCEPTS AND METHODS (Supported by Nat'l Park Serv. Hydropower Assistance Program, Hydropower Reform Coal., Confluence Rsch. and Consulting, & Or.St. Univ., 2017).

<sup>81</sup> *Id.* at 15–16.

<sup>82</sup> *Id.*; See 16 U.S.C. § 808(e) (“any license issued by the [Federal Power Commission] under this section shall be for a term which the [Federal Power Commission] determines to be in the public interest but not less than 30 years, nor more than 50 years, from the date on which the license is issued”).

### **Proposed Flows Do Not Protect Cultural Resources.**

Preservation of cultural resources may also play a role in the evaluation process for Section 401 certification under the CWA. As previously discussed, Section 401 empowers states to assess and certify that any proposed activity requiring a federal license or permit complies with state water quality standards and *any other appropriate requirement of State law*.<sup>83</sup> Applicable here, the Massachusetts Antiquities Act and the Massachusetts Environmental Policy Act (MEPA) provide that any projects that require funding, licenses, or permits from any state agency must be reviewed for compliance by the Massachusetts Historical Commission (MHC).<sup>84</sup> The purpose of the Antiquities Act and the applicable provision of MEPA is to standardize the procedures for conducting archeological field investigations to ensure the conservation of archeological resources.<sup>85</sup> Thus, while Section 401 of the CWA primarily focuses on water quality, 401(d)'s inclusion of the "*any other appropriate requirement of State law*" provision allows DEP to also consider threats to archaeological and Indigenous resources due to low flows below TFD.

In its response to FirstLight's proposed Fish & Flow Passage Settlement Agreement in the FERC proceeding, the Nolumbeka Project in coordination with the Chaubunagungamaug Band of Nipmuck Indians and the Elnu Abenaki Tribe commented in opposition to FirstLight's proposed minimum flows of 500 cfs, expressing concerns about the low flow's negative impact on aquatic species and other cultural resources.<sup>86</sup> The following is a powerful quote from the Nolumbeka Project's comment:

*"When the waters that historically flowed through this stretch of the ancient riverbed are nearly completely diverted away from the river into the power canal, much historical cultural heritage is placed at risk."*

<sup>83</sup> 33 U.S.C. § 1341(d).

<sup>84</sup> See Antiquities Act, 950 CMR 70 (establishing M.G.L. c. 9, §§ 26–27C); See also Massachusetts Environmental Policy Act, 301 CMR 11.10; *Review and Compliance*, MASS. HIST. COMM'N, <https://www.sec.state.ma.us/mhc/mhcrevcom/revcomidx.htm> (last visited May 30, 2024).

<sup>85</sup> 950 CMR 70.02.

<sup>86</sup> See generally Notice to Intervene and Comments of The Nolumbeka Project Inc. at 4-5, Project Nos. 1889-000 and 2485-000, FERC Accession No. 20230525-5073 (filed May 25, 2023) (hereinafter The Nolumbeka Project's Comment), attached as Exhibit D.

*The ancient shale beds once covered with a healthy flow of water year round are now exposed to the light a day when water is diverted from the river to the canal for hydropower. This condition leaves exposed to anyone who wishes to walk out on the dry land that was once river bottom, the ability to access ancient cultural resources that represented a people, who for generations have not been here to request the protection of the ancient resources of their people, are now unceremoniously assigned to the coffee tables and bookshelves of looters and sightseers.”<sup>87</sup>*

It is within DEP’s authority under CWA 401(d) to consider the articulated harms to archaeological and Indigenous artifacts and sites that may occur at the proposed flow levels below TFD. Because higher flow levels between July 1 and November 15 will better protect sensitive ALUs and recreational uses *and* have the concomitant beneficial effect of providing protection for cultural resources, DEP should reject FirstLight’s proposed low flows that are based primarily on protecting non-aquatic plants.

### **Fluctuations in River Height Have Caused Severe Erosion.**

CRC is in complete alignment with the Franklin Regional Council of Governments (FRCOG)’s stance on the critical issue of fluctuations in river height causing severe erosion. CRC fully incorporates FRCOG’s comment by reference, acknowledging the valuable insights and recommendations provided by FRCOG and its erosion expert.<sup>88</sup>

#### **A. CRC’s Northfield Mountain Erosion Mitigation Recommendations**

##### **1. Recommendations for Target Elevation and Normal Operational Range**

The current fluctuations in river height in the TFI are causing extreme erosion and negatively impacting recreation. Thus, any surface water elevation fluctuations from facility operations in the future must not exceed current operational fluctuations and new conditions for future fluctuations need to be put in place.

<sup>87</sup> *Id.* at 4.

<sup>88</sup> See FRCOG Comments to DEP on FirstLight’s 401 Water Quality Certificate Application, attached as Exhibit E.

DEP should institute a target river height (ex. 181 ft) for TFI that is consistent with operational levels from the past 50 years. From that target river height, operational measures be put in place for fluctuations to not exceed a certain elevation above or below the baseline level. The set range should be no more, and ideally less, than the average surface water elevations from years 2000 to 2014, because the river and its ecology has already adjusted to this range. If the operating range is not consistent with what it has been, more erosion will be caused as a result of those changes.

DEP should also mandate how often and when FirstLight can cause the river height to be above and below the target elevation. DEP should create a “normal operational range” which would be a certain number of feet above and below the target height and outline what percentage of the time the facility is mandated to operate within this range. For example, *“From the target river height of 181 ft, FirstLight must operate between 1 foot above and below this height 90% of the time and is allowed to operate between 2 feet above and below this height 10% of the time. If and only if there is an emergency operational situation, as outlined by emergency guidelines that DEP writes, can FirstLight exceed the 2 foot range.”* It is imperative that fluctuations in river elevation are minimized; CRC recommends that base operations do not exceed 1 foot in difference from the target water surface elevation.<sup>89</sup>

Additionally, DEP should require that 100% of the time during daylight hours, the river height must be above 179 ft to ensure safety and navigability for boats at Barton Cove. These operational measures for TFI fluctuation will help prevent further erosion as well as ensure safety and usability of the TFI for boaters.

## **2. Recommendations for Data Collection and Monitoring of Erosion**

CRC also recommends that DEP require data collection of observed erosion and that the numbers be made public and filed with DEP. DEP should require FirstLight to report statistics in their annual compliance reports throughout the full term of the license, including the average TFI elevation for each month of the year, the average daily change, the highest elevation of the month, and the lowest elevation of the month. This report should also show that FirstLight is

<sup>89</sup> Federal Energy Regulatory Commission, “Connecticut River Conservancy submits comments on Settlement Process and Request for Ready for Environmental Analysis for the Turners Falls Project. et al. under P-1889, et al.” FERC Accession No. 20220819-503 (August 18, 2022)

operating under the new framework as outlined above. The Full River Reconnaissance should continue to be required.

## **B. Unacceptable Erosion Is Occurring as a Result of Current Operations**

Landowners along the Connecticut River in the Turners Falls Impoundment (TFI) have experienced and documented erosion since the project began in 1972.<sup>90</sup> Michael Bathory has lived along this portion of the river for 40 years and has records that the previous landowner kept of the erosion that began with the start of the pumping project.<sup>91</sup> In 1991, the Army Corps published study results that reported out of 148,000 feet of shoreline covered in the study, roughly one-third was experiencing active erosion. Furthermore, it stated that since the study was conducted in 1979, the riverbank erosion had increased by almost 300%. Since then, the issue has only continued to be exacerbated by continued operation and lack of mitigation.

This erosion of the riverbanks is a serious concern that has not been adequately addressed in FirstLight's 401 application, as it claims the erosion is not due to FirstLight's pumping. The Northfield Mountain Pumped Storage facility causes a four, sometimes five-foot variation in river level when it operates. Laura Wildman from Princeton Hydro assures that this big fluctuation in the impoundment causes the initial point in the erosion cycle.<sup>92</sup> Expert Dr. Dethier corroborates this, proving that erosion is clearly documented in both data and images produced by FirstLight.<sup>93</sup> Dethier also shows that the observations and measurements included in the FirstLight Full River Reconnaissance and Erosion Causation Study point to numerous ways in which its Project operations could exacerbate erosion.<sup>94</sup>

<sup>90</sup> Federal Energy Regulatory Commission, "Motion to Intervene of Connecticut River Conservancy under P-1889, et al." FERC Accession No. 20240522-5024 (May 21, 2024).

<sup>91</sup> *see* Michael Bathory Declaration in Federal Energy Regulatory Commission, "Motion to Intervene of Connecticut River Conservancy under P-1889, et al." FERC Accession No. 20240522-5024 (May 21, 2024).

<sup>92</sup> <https://www.youtube.com/watch?v=llyiOY7SeUk&list=PLab3dcAb-SUMJCbFpVWFYQ9m0h8YS3Eoi&index=3&t=6s>

<sup>93</sup> Dr. Evan Dethier, Review of Erosion in the Turners Falls Impoundment (2024), attached as Exhibit F.

<sup>94</sup> *Id.*

### **C. Proposed Operational Changes Will Exacerbate TFI Erosion**

FirstLight's AFLA proposes significant operational changes, including expansion of the upper reservoir at Northfield Mountain, which will continue to accelerate erosion and impact opportunities for recreation. The accelerated erosion impacts have been amply demonstrated by the conditions created on June 12 – 13, 2021, when FirstLight operations brought the impoundment down to a water level of 177.5 msl. This decrease in water level left boats stranded and exposed aquatic habitat. The lowered water level resulted from operational measures at Northfield Mountain responding to low or negative cost energy prices created during times of high solar energy generation. This scenario is likely to happen more often as energy generation shifts to these renewables, but the effect on the river in TFI is unacceptable. DEP must require FirstLight to minimize impacts to shoreline areas within the project reservoir and stream reaches in order to mitigate erosion.

### **D. Lower Water Levels in the TFI Cause Negative Recreation Impacts**

Low water level in the river negatively impacts recreation. Relicensing study 3.6.6<sup>95</sup> looked at water levels at the Pauchaug Boat ramp within the TFI and concluded that water levels needed to be above 181 feet for the boat ramp to be usable for emergency motorboats.<sup>96</sup> Figure 4.2.2-3 in Relicensing Study 3.6.6 indicates that water levels dip below 181 feet at Pauchaug about 20% of the time throughout the course of the recreation season.<sup>97</sup> In its comment letter to FERC, CRC analyzed water level logger data and demonstrated that during summer months, it is common that water levels at Pauchaug are below 181 feet.<sup>98</sup>

<sup>95</sup> Gomez and Sullivan Engineers, Relicensing Study 3.6.6 Assessment of Effects of Project Operation on Recreation and Land Use Study Report Northfield Mountain Pumped Storage Project (No. 2485) and Turners Falls Hydroelectric Project (No. 1889) (prepared for FirstLight) at 4-4 (2016)

<sup>96</sup> FirstLight, Relicensing Study 3.6.6: Assessment of Effects of Project Operation on Recreation and Land Use Study Report (Oct. 2016) at 4-4, FERC Accession No. 20161014-5125 (filed Oct. 14, 2016).

<sup>97</sup> Id. at 4-8.

<sup>98</sup> Connecticut River Watershed Council comment, FERC Accession No. 20161215-5197 (filed Dec. 15, 2016), pg. 26.





*Figure 4: Jonathan Trudel's photo of his unusable dock at low water.<sup>99</sup>*

Resident Jonathan Trudel reported in a letter filed with FERC on March 4, 2024, that his personal dock in Gill on the River is often not usable due to pumping at Northfield Mountain.<sup>100</sup> The photo above in Figure 4 shows that, even with a dock designed to withstand river fluctuations, recreational use of the river is still impeded during low river levels from project operations.

Recreational access at Barton's Cove is also impacted by changing water surface elevations. Relicensing Study 3.6.6 *Assessment of Effects of Project Operation on Recreation and Land Use Study Report* evaluated water levels at recreation sites. Section 4.2.6 of Study 3.6.6 concluded that water level elevations need to be above 179 ft msl to adequately launch an

<sup>99</sup> Comments of Jonathan Trudel with photos of the depict low water level re the Turners Falls Dam of the Northfield Mountain Pumped Storage Project, FERC Accession No. 20240311-5044 (filed Mar. 11, 2024).

<sup>100</sup> *Id.*

emergency motorboat in Barton Cove. In Study 3.6.6, Figure 4.2.6-4 shows that the boat ramp elevation is at 184 ft msl, so when the TFI is above this elevation, parts of Barton Cove on the Gill side are under water.<sup>101</sup>

Changes to operational patterns could increase erosion and have detrimental impacts on the ecological life of the banks. New 401 certification conditions should ensure that the impoundment be held at the same baseline river height that has been in place under current operations. FirstLight and previous owners of the project have received temporary license amendments to use the expanded upper reservoir during the winters of 2005-2006, 2014-2015, 2015-2016, and summers of 2001 and 2006. As noted in previous CRC comments and interventions related to these temporary amendment requests, FirstLight held the average elevation of the impoundment about a half foot higher than usual during these temporary amendment periods, based on data FirstLight was required to file regarding operations during those temporary amendment periods. Extreme high and low surface water elevation events seem to be getting more common, based on anecdotal reports from residents along the river. However, there is no publicly available information about recent or long term daily TFI fluctuations as measured at the dam to inform these concerns.

### **FirstLight's Projected 9-Year Fish Passage Installation Timeline is Excessive.**

CRC opposes the unnecessarily lengthy proposed timeframes for installing both upstream and downstream fish passage facilities.<sup>102</sup> The purpose of the fish passage facilities is to enhance migratory pathways for species in this stretch of the Connecticut River, addressing persistent challenges caused by outdated methods and years of blocked fish passage. Yet despite the potential benefits for migratory fish, FirstLight's 401 Application suggests that these fish passage facilities may not be operational for up to 9 years following its relicensing.<sup>103</sup> FirstLight has not adequately explained its lengthy construction timelines for these facilities or the perplexing decision to prioritize downstream facility construction over upstream facility

<sup>101</sup> See Connecticut River Conservancy Concerns About Settlement Process and Request for Ready for Environmental Analysis, Attachment A, FERC Accession No. 20220819-5033 (filed Aug. 19, 2022).

<sup>102</sup> See generally Exhibit A (CRC Flows & Fish Passage Comment) (CRC discussing in detail its objection to FirstLight's proposed Fish Passage implementation schedule); See generally Edwin T. Zapel, *Affidavit on Behalf of the Connecticut River Conservancy*, in CRC Flows & Fish Passage Comment (hereinafter "Zapel Affidavit").

<sup>103</sup> See FirstLight 401 Certificate Application, at 36–37.

construction.<sup>104</sup> Moreover, FirstLight does not provide sufficient justification for why construction of both upstream and downstream fish passages cannot occur simultaneously.<sup>105</sup>

Prioritizing downstream fish passage over upstream passage in the implementation schedule is unjustified, particularly for American Shad.<sup>106</sup> As CRC's expert, Edwin Zapel,<sup>107</sup> explains, if sequencing were necessary for the fish passage construction, upstream passage would provide far greater benefit to American Shad by at least three orders of magnitude.<sup>108</sup> Shad are iteroparous, migrating multiple times between the ocean and freshwater to spawn, and are highly fecund, producing 30,000 to 150,000 eggs per spawn.<sup>109</sup> They spawn in shallow areas with sandy or small gravel beds and do not exhibit strong natal homing, readily colonizing new habitats.<sup>110</sup> Given these characteristics and the availability of spawning habitat throughout the Connecticut River, enhancing upstream passage should be prioritized to increase spawning and juvenile production.<sup>111</sup> The current prioritization of downstream passage lacks substantial evidence and is counterintuitive without further biological justification.<sup>112</sup>

In addition to the unsupported downstream prioritization, the overall timelines for fish passage implementation at TFD are excessive. Again, according to Zapel, fish lifts like the types FirstLight has proposed typically follow predictable schedules and do not require a 9-year timeline.<sup>113</sup> In fact, Zapel stated that if the design were to begin upon FirstLight's license issuance, even taking into account agency reviews, a realistic schedule for full implementation should be approximately 4 to 6.5 years.<sup>114</sup> Further, rehabilitation of the Gatehouse Trapping facility could reasonably be accomplished within about 2 to 3.5 years (versus the proposed 9 years), given that no new structures should be necessary, and upgrades would likely be limited to

<sup>104</sup> Zapel Affidavit, at ¶ 4.

<sup>105</sup> *Id.* at ¶ 6.

<sup>106</sup> *Id.*

<sup>107</sup> Edwin Zapel is a Senior Hydraulic Engineer at Northwest Hydraulic Consultants with 36 years of experience in hydraulic, hydrologic, and fisheries engineering across the western United States, Alaska, and Canada. His projects include spillway and sluice gate designs, high-pressure valves, outlet works, small hydropower facilities, water temperature control structures, energy dissipation structures, river intake structures, reservoir intake and outlet structures, and river sediment control structures. He has designed numerous fish exclusion, guidance, screening, and bypass systems for dams and reservoirs handling up to 5,000 cfs for juvenile and adult salmonids (*see* Zapel Affidavit, at ¶ 1).

<sup>108</sup> Zapel Affidavit, at ¶ 7.

<sup>109</sup> *Id.*

<sup>110</sup> *Id.*

<sup>111</sup> *Id.*

<sup>112</sup> *Id.* at ¶¶ 7–8.

<sup>113</sup> *Id.* at ¶¶ 10–11.

<sup>114</sup> *Id.* at ¶¶ 11 & 20 (concluding that the fish passage construction timeline can be reduced to 2.5 to 5 years).

interior spaces, conveyance channels and hydraulic control features, and electrical upgrades with modern equipment replacing old equipment.<sup>115</sup> Likewise, the proposed 4-year implementation schedule for downstream fish passage facilities, including the design and installation of trash racks at Cabot Station and Station No. 1, is longer than necessary.<sup>116</sup> In short, given the decades of blockage of fish passage caused by FirstLight's Projects and the need for to protect and restore ALUs in that area of the river, DEP should ensure FirstLight's fish passage implementation is on the fastest track possible, and should not allow FirstLight to use agency reviews or oversight as an excuse for unnecessary delay.

### **CRC's Concerns and Recommendations Regarding FirstLight's New Barrier Net.**

#### **A. FirstLight's New Barrier Net Does Not Prevent Impingement and Entrainment.**

At Northfield Mountain Pumped Storage, fish entrainment and impingement occur when water is pumped from the river to the holding reservoir.<sup>117</sup> To mitigate these impacts, FirstLight's 401 Application includes a fish barrier net to be installed from June 1 to November 15.<sup>118</sup> Yet, while the barrier net should improve some fish passage, CRC retains several concerns about the net's effectiveness and installation timeline.

First, as discussed in CRC's REA comment, CRC's primary concern is the efficacy of FirstLight's proposed barrier net.<sup>119</sup> In 2019, on FirstLight's behalf, Alden Research Lab studied the forces acting on the barrier net, focusing on velocities due to their potential to impinge fish.<sup>120</sup> The study modeled flow velocities at the net for the Connecticut River near the Northfield intake/tailrace at 5,000 cfs, 30,000 cfs, and 50,000 cfs.<sup>121</sup> However, the Pre-Application Document (PAD) indicated that flows of 30,000 cfs and 50,000 cfs are uncommon between June and November, not appearing on flow duration curves and thus not representative

<sup>115</sup> *Id.* at ¶ 12.

<sup>116</sup> *Id.* at 14–17.

<sup>117</sup> See FirstLight files the second year report for Relicensing Study No. 3.3.20 Study to Evaluate Entrainment of Ichthyoplankton at the Northfield Mountain Project & Relicensing Study 3.3.10 Odonates in the Connecticut River 2014-2016 Study Report under P-1889, FERC Accession No. 20161228-5079 (filed Dec. 28, 2016).

<sup>118</sup> FirstLight 401 Certificate Application, at 46–48.

<sup>119</sup> See Exhibit B (CRC REA Comment), at 28–29.

<sup>120</sup> See generally FirstLight submits the Northfield Station CFD Modeling for Fish Exclusion Net Forces Report under P-2485 et al., FERC Accession No. 20190603-5024 (filed June 3, 2019) (hereinafter "Alden Report").

<sup>121</sup> Alden Report, at viii.



of typical conditions.<sup>122</sup> Additionally, the water elevation for the 5,000 cfs flow was modeled at 179 ft and 181.4 ft at the Northfield Mountain tailrace, elevations that are exceeded at least 95% of the time.<sup>123</sup> Consequently, CRC argues that the studies did not simulate realistic flow or elevation scenarios. Moreover, CRC is concerned that the only field testing conducted was preliminary testing that occurred before the Fish Passage and Flows settlement agreement. Since then, the barrier net installation time has increased from August 1 - November 15 to June 1 - November 15th and CRC is unaware of any new testing with new proposed flows has been completed.

Second, CRC opposes the timeline for installing the Northfield Mountain Project intake barrier net, which is proposed to be operational by Year 7.<sup>124</sup> Despite concerns about the barrier net's effectiveness, CRC acknowledges that it will provide some relief to out-migrating species. However, the proposed timeline is excessively long, delaying benefits to the species for nearly a decade.<sup>125</sup> CRC's expert contends that if design begins upon license issuance, it is reasonable to expect that the new barrier net could be designed within 1 year and implemented within the following 2 years.<sup>126</sup> To exemplify this, CRC urges DEP to compare FirstLight's barrier net timeline to a comparable facility in Washington wherein similar large barrier exclusion nets at the Lake Shannon-Lower Baker Lake hydropower facility in Washington State were designed within about 2 years of license issuance and constructed the following year.<sup>127</sup> Not only that, but Mr. Zapel testifies that nets in Washington were much deeper and the reservoir experienced significant water level variations, which are among the most challenging design issues for barrier nets.<sup>128</sup> This demonstrates the feasibility of a more expedited timeline for the Northfield Mountain Project. Thus, FirstLight's 7-year timeline is excessive and should be replaced with a 2-year plan, with a commitment from state regulatory agencies to help expedite this schedule.

<sup>122</sup> See FirstLight Notice of Intent and Pre-Application Document, FERC Accession No. 20121105-4034 (filed Nov. 5, 2012), at Figures 4.3.1.2-19–21.

<sup>123</sup> *Id.* at Figures 4.3.1.2-13–18.

<sup>124</sup> FirstLight 401 Certificate Application, at 46.

<sup>125</sup> *Id.* at 46 (“The barrier net design shall be... operational no later than June 1 of Year 7 after license issuance”) & 47 (“The Licensee shall complete construction of the Northfield Mountain barrier net, operate the barrier net for one season (shakedown year), and conduct representative and quantitative effectiveness testing in Years 10 and 11 to evaluate the downstream fish passage survival and time-to-pass compared to the performance goals below”).

<sup>126</sup> Zapel Affidavit, at ¶ 19.

<sup>127</sup> *Id.*

<sup>128</sup> *Id.*

**B. FirstLight Projected Adaptive Management Measures (AMMs) Timeline is Excessive, Reducing Efficacy.**

Because the proposed timelines for fish passage construction are excessively long, the AMM timelines should be adjusted accordingly. Initial effectiveness studies for the Station No. 1 rack and Cabot Rack are proposed for Years 6 and 7, with developed reports for adult American Shad, juvenile American Shad, and adult American Eel due in Years 7 and 8.<sup>129</sup> Here, FirstLight does not justify why reporting for shad and adult eels would take longer. Additionally, there is no explanation for the lack of AMM effectiveness testing in Year 9. Effectiveness testing could begin the same year as the Round 1 AMMs are implemented, and this approach should apply to further rounds of AMM effectiveness testing in Years 12, 13, and 17.<sup>130</sup>

CRC also is concerned about the timeline for effectiveness testing at the TFD Plunge Pool. For the TFD Plunge Pool, initial effectiveness testing is proposed for Years 10 and 11, with Round 1 AMM effectiveness testing in Years 14 and 15.<sup>131</sup> CRC argues that because Round 1 AMMs involve modifying the bascule gate setting and resultant spill, including increasing the minimum flow and adjusting the bascule gates, these AMMs can be implemented without significant effort.<sup>132</sup> Accordingly, this AMM should be completed in Years 12 and 13.

**FirstLight Must Condition 401 Certification on Financial Assurances for Decommissioning and Dam Removal.**

In a June 13, 2023 letter to Bethany Card at the Executive Office of Energy and Environmental Affairs, CRC outlined why financial assurances for decommissioning and removal of FirstLight's Projects are necessary and appropriate conditions in the event of 401 certification. Specifically, CRC provided a memorandum outlining the legal authority for DEP to require such financial assurances as 401 certification conditions ("Financial Assurances Memo").<sup>133</sup> As CRC stated in its Financial Assurances Memo:

Conditioning CWA § 401 certifications on such financial assurances will ensure that federal and state requirements are met and that the physical, chemical, and

<sup>129</sup> FirstLight 401 Certificate Application, at 40.

<sup>130</sup> See Exhibit A (CRC Flows & Fish Passage Comment), at 14.

<sup>131</sup> FirstLight 401 Certificate Application, at 40–41.

<sup>132</sup> See Exhibit A (CRC Flows & Fish Passage Comment) at 14.

<sup>133</sup> See Juen 12, 2022 letter to Secretary Bethany Card in Exhibit 4, attached as Exhibit G.

biological integrity of rivers, including unobstructed flows, are restored to protect existing and designated uses. Requiring such financial assurances also will ensure that the Massachusetts tax and ratepayers and host communities are not burdened with the bill for such restoration, which is good public policy already being practiced in the context of many other energy generating contexts throughout the state.<sup>134</sup>

CRC incorporates its June 13, 2022 letter and Financial Assurances Memo by reference in this comment. The FirstLight Projects will be more than a century old when their next FERC licenses are set to expire. Requiring financial assurances now is necessary to ensure the money is available in the future to completely and effectively decommission and remove these projects and restore the Connecticut River to a natural flow regime that will protect existing and designated uses.

### **Transparency and Data Availability.**

CRC supports the comments on Transparency and Data Availability by the Western Massachusetts delegates who convened to submit comments to FERC on the Amended Final License Application<sup>135</sup>. Over the terms of the next license, there will be considerable changes in the conditions and operations of these projects —changes that will fall well outside the conditions that were studied in preparation for the license. It is important that the impact on the environment be well-monitored and understood. Changing conditions also include ongoing climate change; the environmental improvements put in place by this license; and changing electric grids, policies, and markets. Additionally, there is a need for transparent data of the flows released from and pumped by the hydropower facilities to inform potential boaters and other river users. The United States Geological Survey (USGS) gauges are too far away from the facilities, and affected by multiple other inputs, and are not good predictors of sudden unexpected changes in flow and level. The Flows and Fish Passage Settlement Agreement provides for year-round hourly information on flows out of TFD, which is a good first step but

<sup>134</sup> *Id.* at 7.

<sup>135</sup> Letter from Jo Comerford, Natalie M. Blais, Daniel R. Carey, Mindy Domb, Lindsay Sabadosa, and Aaron L. Saunders, Mass. State Legislators to Debbie-Anne A. Reese, Acting Sec’y, Fed. Energy Regul. Comm’n (May 1, 2024)

DEP should require more additional, publicly-available data and analyses in the context of 401 certification, including:

- a) Real-time data on the flows released from the hydropower facilities, and pumping.
- b) Regular monitoring and publicly available data of macroinvertebrate populations in the Turners Falls bypass reach, downstream of Cabot station, and in the Turners Falls impoundment, as macroinvertebrates provide one of the best ways to assess stream ecosystem quality.
- c) Monitoring of, and public data on, populations and passage through the Turners Falls impoundment and its shore banks of non-fish species that provide important ecosystem services, including native mussels and riparian species.
- d) Annual reports on how operations are changing due to energy markets and policy, and due to FirstLight's flow and passage improvements; and the benefit to and impact on the environment and recreation. CRC also requests that these annual reports be sent to State and Federal officials.



The above comments outline the faults in FirstLight's current application for a 401 Water Quality Certification. FirstLight's 401 Application does not ensure that the continued presence and operation of the FirstLight Projects will comply with Massachusetts Water Quality Standards. CRC urges Massachusetts DEP to take close consideration of these comments as they create the draft certificate.

CRC appreciates the opportunity to comment in this 401 WQC process. Please feel free to contact me, Rebecca Todd, Executive Director of the Connecticut River Conservancy, at [rtodd@ctriver.org](mailto:rtodd@ctriver.org) or contact Nina Gordon-Kirsch, Massachusetts River Steward and the Connecticut River Conservancy, at [ngordonkirsch@ctriver.org](mailto:ngordonkirsch@ctriver.org).



6/3/2024

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Rebecca E. Todd  
Executive Director  
Connecticut River Conservancy



6/3/2024

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Nina Gordon-Kirsch  
Massachusetts River Steward  
Connecticut River Conservancy

**From:** noreply@formstack.com  
**Sent:** Thursday, May 23, 2024 12:21 PM  
**To:** dep.hydro@mass.gov  
**Subject:** FirstLight 401 WQC Inquiry Form

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.



**Formstack Submission For: FirstLight 401 WQC Inquiry Form**  
Submitted at 05/23/24 12:20 PM

Name:	Chris McInerney
Organization:	Connecticut River Defenders
Email:	chrismmcinerney@gmail.com
What is your question/comment mainly about?:	Fish, aquatic habitat, river ecosystem
Question or Comment::	The NMPS violates the Clean Water Act. First Light makes no effort to mitigate the project's horrendous fish kill. NMPS must be decommissioned.



May 15, 2024

The Honorable Debbie-Anne Reese  
Acting Secretary  
Federal Energy Regulatory Commission  
888 First Street N.E.  
Washington, DC 20426

Re: Applications for Relicensing of FirstLight MA Hydro LLC for Turners Falls Hydroelectric Project (FERC No. P-1889) ("Turners Falls") and Northfield Mountain LLC for Northfield Mountain Pumped Storage Project (FERC No. P-2485) ("Northfield Mountain")

Dear Acting Secretary Reese:

On behalf of Energy New England, LLC., (ENE) we enthusiastically offer this letter in support of the relicensing of FirstLight's Northfield Mountain and Turners Falls Projects. ENE was founded in 1998 to enhance the competitive position of public power entities in response to deregulation and to attain operating efficiencies in energy risk management and retail account management. We are a municipal light plant cooperative established under Chapter 164, Section 47C of the Commonwealth of Massachusetts General Laws. Our ownership is made up of light departments in Braintree, Concord, Hingham, Reading, Taunton and Wellesley, Massachusetts.

ENE is the largest wholesale risk management and energy trading organization serving the needs of municipal utilities in the northeast. We currently manage the power supplies of over twenty municipal electric systems serving more than 1300 MW of electric load and more than 550 MW of generation in all six New England states. We advise on and/or conduct more than one billion kilowatt hours in wholesale power transactions and 200-250 million kilowatt hours in retail transactions annually. We also manage up to 250,000 therms of natural gas per day within our customers' portfolios, as well as up to 5,000 barrels per day of fuel oil.

ENE works with numerous businesses, residents, and utilities to help promote the principles of conservation, efficiency, and environmental stewardship, and advances the many benefits available through integrated sustainability planning. The ENE service portfolio encompasses the 4 C's of sustainability: Conservation, Carbon Mitigation, Commodity Services, and Clean Technologies.

Together, these First Light Projects play a critical role in delivering clean, local, competitively priced power to communities across New England while providing needed grid reliability to the region. Looking ahead as renewables make up a growing portion of our grid mix, Northfield Mountain's fast response capability, long-duration, and large capacity will play an even greater role in balancing the grid, thanks to its ability to capture over 1,100MW of power generated during off-peak hours and dispatch it during times of high demand when it is needed most while simultaneously offsetting the dirtiest emissions generated by fossil-fuel powered generators. Northfield's operations also support the need to keep costs low for consumers – by generating during the hours of highest demand, Northfield can shave peak prices and realize significant price reductions for ratepayers who are too often burdened by energy costs.

ENE has counted FirstLight as a valued partner for years through our development of successful power purchase agreements that have resulted in significant clean, local, competitively priced power from FirstLight's facilities being delivered ENE customer homes and businesses across our municipalities throughout New England. The partnership has allowed us to deliver first-class services at affordable prices to our customers while doing right by them in selecting fossil fuel free power sources. In addition, our agreements with FirstLight support and advance the efforts of all our municipal light plants to meet and exceed the Commonwealth's mandate to obtain 50% of our power from clean sources by 2030, 75% by 2040 and Net Zero of 100% carbon free by 2050.

ENE urges the Commission to consider the significant value of FirstLight's Projects to the region's clean energy future, and to communities across New England that are powered by FirstLight's clean electricity generation.

Sincerely,

*John G. Tzimirangas*

John G. Tzimirangas  
President & CEO  
Energy New England, LLC.

cc: Commissioner Bonnie Heiple, Massachusetts Department of Environmental Protection



Commissioner Bonnie Heiple  
MassDEP - BWR  
100 Cambridge Street, Suite 900  
Boston, MA 02114

May 28, 2024

Re: FirstLight 401WQC

Dear Commissioner,

As the Executive Director of the Franklin County Chamber of Commerce & Regional Tourism Council, I write to express enthusiastic support of the relicensing of FirstLight's Northfield Mountain and Turners Falls projects.

Together, these projects play a critical role in delivering clean, local, low-cost power to communities across New England, while providing needed grid reliability to the region. Northfield's operations also support the need to keep costs low for consumers who are too often burdened by energy costs.

In addition to the benefits around grid resilience and decarbonization, the projects provide many critical economic benefits to our local communities, including environmental justice communities in Montague and Greenfield. FirstLight is an important employer in Franklin County, providing high-paying jobs including union labor, and contributing to the overall health of the economy in Western Massachusetts by purchasing goods and services from Massachusetts-based vendors. More specifically, FirstLight is the largest taxpayer in the towns of Erving, Gill, Montague, and Northfield. FirstLight's tax contributions play a critical role in supporting the economic and municipal health of a county facing population loss with a taxbase that is 75% residential.

As the Executive Director of the Franklin County Regional Tourism Council, I must also emphasize the value that FirstLight brings to the county's tourism and outdoor recreation markets. FirstLight's facilities and events support the recreation and tourism industry that brings in 3.6 million visitors and over \$83 million annually to Franklin County. The recreation facilities provided by FirstLight are a critical part of the regional network of recreational assets that enhance the lives of those who reside or work here and attract visitors to the region. Supporting projects that enhance outdoor adventure, recreation, and cultural tourism were among the top strategic goals for Franklin County's 2021 regional economic development plan and FirstLight continues to serve as a valued partner in that work.





As stated, FirstLight's Northfield and Turners Falls projects offer wide ranging economic benefits to one of the poorest counties in the Commonwealth. The Franklin County Chamber of Commerce urges the Commission to consider the significant value of FirstLight's projects to the region's clean energy future, and to communities across the New England that are powered by FirstLight's clean electricity generation.

With Gratitude,

A handwritten signature in blue ink that reads "Jessye Deane".

Jessye Deane  
Executive Director  
Franklin County Chamber of Commerce & Regional Tourism Council

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**From:** philg@gmavt.net  
**Sent:** Monday, June 3, 2024 3:37 PM  
**To:** dep.hydro@mass.gov  
**Cc:** Paul Sievert; 'Brian Donahue'; 'Evan Fox'  
**Subject:** FirstLight 401 WQC

**CAUTION:** This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Good afternoon,

The following are the thoughts and request from the Gill Conservation Commission.

Gill Conservation Commission 401 Water Quality Certification Requests

- Require FirstLight to get a Certificate of Compliance from the Gill Conservation Commission for the Bank Stabilization Phase III Order of Conditions issued in 2009 (MA DEP File #162-68)
- Make it a requirement that prior to any sale, transfer or restructuring of FirstLight ownership has a review and summary of outstanding Order of Condition issued by local Conservation Commissions (Gill, Montague, Erving and Northfield).
- Continue to hold FirstLight responsible for erosion in the Turners Falls impoundment. In 1999, the Federal Energy Regulatory Commission (FERC) did just that when they adopted an Erosion Control Plan (ECP). Conservation and farmland in Gill result in the large amount of silt being deposited in Barton Cove.
- FirstLight boat wake restriction policing and shoreline erosion monitoring should have local oversight. Conservation Commissions in Gill, Montague, Erving and Northfield working under the direction of the Franklin Regional Council of Governments (FRCOG and Massachusetts Department of Conservation & Recreation, Environmental Police and Department of Environmental Protection, must have input into any boat wake restrictions and shoreline erosion monitoring. Local Conservation Commissions and FRCOG should be able to comment on any monitoring reports submitted by FirstLight.

Please let me know if you would like additional local information for your 401 Water Quality Certification deliberations.

Respectfully,  
Phil Gilfeather=Girton  
Commissioner, Gill Conservation Commission

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**From:** Christine Copeland <christinecopeland16@gmail.com>  
**Sent:** Monday, May 20, 2024 8:29 AM  
**To:** dep.hydro@mass.gov  
**Subject:** FirstLight 401 WQC

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To bring ecological integrity to the Connecticut River system as soon as possible, the FirstLight Power and NMPS license period must be shortened and a decommissioning fund set up. When this period is up, the existing industrial river-killing infrastructure must be removed. Only then can the river be made hospitable for robust fish migration and river shorelines be restored to a more natural and resilient condition.

--

Herbert William Copeland, President  
Christine Copeland, BOD  
Greater Northfield Watershed Association  
Northfield, MA

---

**From:** John Beaudoin <jbeaudoin@ibew455.org>  
**Sent:** Tuesday, May 21, 2024 11:23 AM  
**To:** DEP Hydro (DEP)  
**Subject:** FirstLight 401 WQC  
**Attachments:** Comment letter page 1.pdf; Comment letter page 2.pdf

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Good Morning,

I am attaching a letter from International Brotherhood of Electrical Workers Local Union 455 in support of relicensing FirstLight MA Hydro LLC for Turners Falls Hydroelectric Project and Northfield Mountain LLC for Northfield Mountain Pumped Storage Project that was filed with FERC.

As you may know hydroelectric power is truly a renewable type of electric generation, although not always looked at in that light. The facility at Northfield Mountain is an integral part of our electric grid. The location itself also has many hiking trails and area for people to enjoy being in nature. Besides those benefits the location also employs many individuals many of whom are members of our Local Union. The IBEW is committed to providing quality trained electric power workers in many different classifications. Our partnership with FirstLight, at both locations Turners Falls Hydro and Northfield Mountain, we continue to work together for provide electricity to the region and do so with honesty, integrity and partnerships. I implore you to approve relicensing of the facilities for our community as well as the dedicated men and women who work at the locations.

Respectfully,

John J. Beaudoin  
Business Manager / Financial Secretary  
IBEW Local 455  
474 Page Boulevard  
Springfield, MA 01104  
Cell 413-575-0175







## International Brotherhood of Electrical Workers

### Local 455

474 Page Boulevard  
Springfield, MA 01104  
Telephone (413) 733-7398



JOHN J. BEAUDOIN  
BUSINESS MANAGER/FINANCIAL SECRETARY

DANIEL G. HAMEL, JR.  
PRESIDENT

May 21, 2024

The Honorable Debbie-Anne Reese  
Acting Secretary  
Federal Energy Regulatory Commission  
888 First Street N.E.  
Washington, DC 20426

Re: Applications for Relicensing of FirstLight MA Hydro LLC for Turners Falls Hydroelectric Project (FERC No. P-1889) ("Turners Falls") and Northfield Mountain LLC for Northfield Mountain Pumped Storage Project (FERC No. P-2485) ("Northfield Mountain")

Dear Acting Secretary Reese:

International Brotherhood of Electrical Workers Local Union 455 offers this letter in support of the relicensing of FirstLight's Northfield Mountain and Turners Falls Projects.

International Brotherhood of Electrical Workers Local Union 455 has counted FirstLight as a valued partner for years, providing important union jobs in areas of Western Massachusetts where family-sustaining jobs can be difficult to find. These facilities provide significant economic and recreation benefits to the local communities, in addition to rewarding, long-term work opportunities that align with the state's climate goals.

The Massachusetts Clean Energy Center projects the state will need over 30% more clean energy workers by 2030 in order to support the state's climate mandates<sup>1</sup>. FirstLight provides those job opportunities today, and is active in workforce development efforts, building the workforce of the future. Headquartered in Burlington, MA, FirstLight employs over 140 people in Massachusetts, and is a proud Union employer.

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<sup>1</sup> <https://www.masscec.com/resources/massachusetts-clean-energy-workforce-needs-assessment>



FirstLight's Northfield Mountain and Turners Falls Projects play a critical role in delivering clean, local, low-cost power to communities across New England while providing needed grid reliability to the region. As renewables make up a growing portion of our energy supply, Northfield Mountain will play an even greater role in balancing the grid, while offsetting the dirtiest emissions generated by fossil-fuel powered generators. Northfield's operations also support the need to keep costs low for consumers – by generating during the hours of highest demand, Northfield can shave peak prices and realize significant price reductions for ratepayers who are too often burdened by energy costs.

International Brotherhood of Electrical Workers Local Union 455 urges the Commission to consider the significant value of FirstLight's Projects to the region's clean energy future, and to the important union jobs the projects support.

Sincerely,



John J. Beaudoin

Business Manager / Financial Secretary

I.B.E.W. Local 455

cc: Commissioner Bonnie Heiple, Massachusetts Department of Environmental Protection

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**From:** Elizabeth Davis <elizabethd@whidbey.com>  
**Sent:** Thursday, May 30, 2024 12:15 PM  
**To:** DEP Hydro (DEP)  
**Subject:** FirstLight401 WQC  
**Attachments:** Conn.Riv.League position pdf..pdf

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The League of Women Voters of Amherst, with support of the League of Women Voters of the Northampton Area, and the League of Women Voters of Franklin County submit comments concerning the applications for relicensing of the above named projects. Although some public comments have urged closing these two facilities, that is not the position of the Leagues. These Leagues are urging that the relicensing must incorporate conditions for the operation of the dam and pumped storage facility that would significantly reduce or eliminate the harms these facilities cause in the Connecticut River, to its aquatic species and the environment.

The Leagues of western Massachusetts conducted a study of Connecticut River issues in 1965-66. That study resulted in a statement of our positions on issues affecting the Connecticut River. That position statement has been re-adopted by the Amherst League each year at our annual meetings up to and including 2023. [A copy of that position statement is attached] The following comments reflect the application of those adopted positions as they apply to current issues affecting the Connecticut River and the present relicensing projects.

#### Protection of the natural environment.

The League study determined that one of the goals of these projects should be the “management and development of natural resources so as to enhance and protect the unique character of the Connecticut River Basin and to protect, maintain or restore its function as a green belt.” Key features of those natural resources are the fisheries and fish migrations up and down the river. Dams on the Connecticut River have been major impediments to historically large fish runs. The newer pumped storage facility through its inadequately screened turbines causes extensive fish kills, while its huge releases of water both wipe out large numbers of aquatic species and undermine river banks. These relicensing applications should provide for prevention of extensive fish kills, and restoration of significant fish migrations, whether through additional ladders, lifts or other means.

#### Erosion of river banks.

Widely fluctuating levels and volumes of water released from the dam and pumped water storage facility contribute to erosion of the river banks. This undermines the natural

vegetation that is essential for stable banks and sustainable wildlife habitat. These Western Massachusetts Leagues support policies that will protect river banks from erosion and incompatible uses. The League supports programs and policies that will significantly reduce unstable fluctuating water levels.

#### Recreation opportunities.

Every 40-50 years the relicensing process presents an opportunity to evaluate existing recreation options and how they could be improved to better serve the public. Western Massachusetts Leagues support substantial public involvement that will explore existing facilities; determine what new facilities are needed; what areas need more and safer public access to the river; what additional safety measures and programs are needed .

#### Public participation.

The Western Massachusetts Leagues support greater efforts to involve the public in these relicensing discussions - especially indigenous peoples and organizations having particular connections with the river. Public meetings and other outreach methods for acquiring public input should occur prior to approval of the relicensing applications so that community opinions and resources can be significantly addressed and included in these applications.

#### Effects of climate change.

Because of climate change significant changes have occurred in the area of the Connecticut River Basin. More changes are expected along with warming temperatures for air and water, frequency of extreme weather events, species extinction and different species arriving, and increased flooding. In light of such increased and rapid changes, we suggest that the Commission consider shortening the present lengthy time period between relicensing activities.

Sincerely, League of Women Voters of Amherst  
Elizabeth Davis, Chair of Connecticut River Committee

# CONNECTICUT RIVER BASIN INTER-LEAGUE PROGRAM (1965, 1966)

The League supports measures which provide for:

a. Management and development of natural resources so as to enhance and protect the unique character of the Connecticut River Basin and to protect, maintain or restore its function as a green belt within the eastern megalopolis for the greater benefit of the populace whether urban, suburban, or rural.

b. Water quality suitable for swimming and water contact sports which will provide an excellent habitat for fish and wildlife

c. Land use controls which will achieve the following goals:

Maintain flood plains for flood protection, open space, and recreation. Protect salt marshes as an economic investment in fish and shellfish production.

Protect bogs and swamps to preserve water supplies and wildlife habitats. Preserve farm lands as a long-time economic investment and for visual enjoyment.

Maintain and protect open spaces, historic sites, and scenic overlooks. Protect river banks from erosion and incompatible use. (e.g., town dumps)

d. Development of a wide variety of recreation facilities with particular attention to the needs of our urban population for easily accessible recreation facilities. The type of development and its location should be governed by the character of the land in order to maintain environmental quality. Facilities for recreational boating should include protected areas for canoes and sailboats; restrictions should insure boating safety and tolerable noise levels

e. Coordination of the activities of all levels of government and the private sector through regional and inter-governmental arrangements.



The Honorable Debbie-Anne Reese  
Acting Secretary  
Federal Energy Regulatory Commission  
888 First Street N.E.  
Washington, DC 20426

Re: Applications for Relicensing of FirstLight MA Hydro LLC for Turners Falls Hydroelectric Project (FERC No. P-1889) ("Turners Falls") and Northfield Mountain LLC for Northfield Mountain Pumped Storage Project (FERC No. P-2485) ("Northfield Mountain")

Dear Acting Secretary Reese:

I am writing to convey the Massachusetts Business Roundtable's support of the relicensing of FirstLight's Northfield Mountain and Turners Falls Projects.

The Roundtable is an organization of more than 95 CEOs and Senior Executives from large employers across the Commonwealth with the mission of strengthening the state's long-term economic vitality and competitiveness by making Massachusetts a highly desirable place to live, work, and do business. Climate and sustainability issues have become a priority for our group as we promote strategies and public policy that both address the causes of climate change while providing economic benefits to the Commonwealth. FirstLight Power has been, and remains, at the forefront of both.

For years FirstLight has delivered significant benefits to Massachusetts communities through investments in accessible, year-long recreation offerings, local vendor contracts which have totaled nearly \$35 million since 2020, and provides employment opportunities in areas of Western Massachusetts where family-sustaining jobs can be difficult to find.

The Massachusetts Clean Energy Center projects the state will need over 30% more clean energy workers by 2030 in order to support the state's climate mandates<sup>1</sup>. FirstLight provides those job opportunities today, and is active in workforce development efforts, building the workforce of the future. Headquartered in

<sup>1</sup> <https://www.masscec.com/resources/massachusetts-clean-energy-workforce-needs-assessment>



Burlington, MA, FirstLight employs over 140 people in New England and supports many more Massachusetts businesses through its operations year after year.

On top of that, FirstLight's Northfield Mountain and Turners Falls Projects play a critical role in delivering clean, local, low-cost power to communities across New England while providing needed grid reliability to the region. As renewables make up a growing portion of our energy supply, Northfield Mountain will play an even greater role in balancing the grid, while offsetting the dirtiest emissions generated by fossil-fuel powered generators. Northfield's operations also support the need to keep costs low for consumers - by generating during the hours of highest demand, Northfield can shave peak prices and realize significant price reductions for ratepayers who are too often burdened by energy costs.

The Roundtable respectfully urges the Commission to consider the significant value of FirstLight's Projects to the region's clean energy future, and also the resilience of local economies, communities, businesses, and families now and in the future.

Sincerely,

A handwritten signature in black ink, appearing to read "JD Chesloff". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

JD Chesloff  
President & CEO

cc: Commissioner Bonnie Heiple, Massachusetts Department of Environmental Protection

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**From:** Joseph Graveline <oldgraywolf@verizon.net>  
**Sent:** Monday, June 3, 2024 4:20 PM  
**To:** DEP Hydro (DEP)  
**Subject:** Response and request to initiate consultation with MassDEP FirstLight 401 WQC  
**Attachments:** Comment NHESP 20923 Jessi LIII.pdf; FL 401 WQC 6-3-24.pdf; ACHP Policy Statement on Indigenous Knowledge and Historic Preservation.pdf; Dear Tribal and Native Hawaiian Leaders Letter.pdf

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Dear Secretary Tepper and Commissioner Heiple, or to whom it may concern.

Attached to this email is the Nolumbeka Project, Tribal Coalition response to the MassDEP FirstLight 401 WQC Certificate request as well as our request to initiate consultation with MassDEP to Address much culturally sensitive exchange of information with Mass DEP on this 401 Water Quality Certification Application dated April 22, 2024.

You will find attached a copy of our response letter as well as a copy of the March 21, 2024 Advisory Council on Historic Preservation Document as well as a copy of our letter to sent to Jesse Leddick of US Fish and Wildlife discussing the historical significance of the Wissatinnewag Village property located in the By-Pass Reach / Wissatinnewag Run of the Connecticut River.

Thank you for your attention to these documents.

Wliwni - Thank You. (Abenaki)

Joseph Graveline / Senior Advisor for the Nolumbeka Project Tribal Coalition

June 2, 2024

Mass DEP-BWR  
Attn: *FirstLight 401 WQC*  
100 Cambridge Street, Suite 900  
Boston, MA 02114

Re: Response and ***Request to initiate consultation*** with MassDEP FirstLight 401 Water Quality Certificate Application, dated April 22, 2024 ("Application"), submitted by "FirstLight" MA Hydro LLC and Northfield Mountain LLC ("collectively") "FirstLight" to the Massachusetts Department of Environmental Protection ("MassDEP") in connection with the licensing of the Turners Falls Hydroelectric Project, (the. "Turners Dam") and the Northfield Mountain Pumped Storage Project. ( The "Northfield Facility" and collectively with the Turner's Dam, the "Facilities" )

Dear Secretary Tepper, Commissioner Heiple, and to whom it may concern:

My name is Joseph Graveline, I am a past president and co-founder of the Nolumbeka Project Inc. I previously sat on the Board of Directors of the Friends of Wissetnewag Inc. Both the Friends and the Nolumbeka Project are 501c3 indigenous, educational, cultural preservation nonprofits. A decade ago, the Friends became the Nolumbeka Project. I am currently the Senior Advisor for the Nolumbeka Project, Tribal Coalition.

We are writing with a request to ***initiate consultation*** with MassDEP Re: FirstLight 401 WQC Certificate Application.

The Nolumbeka Project Tribal Coalition is: Elizabeth Santana Kiser, THPO for the Chaubunagungamaug Band of Nipmuck Indians, a MA State recognized Indian Tribe, and Richard Holschuh, THPO for the Elnu Abenaki Tribe, a Vt. State recognized Indian Tribe, David Brule, President of The Nolumbeka Project Inc. and Joseph Graveline, Senior Advisor.

The Coalition has been working together since 2012 with the National Park Service "Battlefield Protection Program" Our research has focused on the May 19, 1676 attack at the Great Falls, the "Turners Dam". This single event proved to be the most decisive action of the conflict known as King Phillip's War

The Elnu Abenaki and the Nolumbeka Project have over the last 12 years, both independently, and now as the Coalition, have been active stakeholders in the relicensing of a number of hydroelectric projects on the Connecticut River, including this FirstLight request for a new license.

## **Background on the Nolumbeka Project “Wissatinnewag Village Site” located in the By-Pass Reach/ Wissatinnewag Run of the Connecticut River in the Project APE**

During the early 90's, Indigenous Peoples and preservationist discovered the ongoing destruction of “Indigenous Cultural Patrimony” that was taking place during sand and gravel mining operations on the site of the ancient indigenous village known as Wissatinnewag. The Wissatinnewag village site is located at approximately river mile 116 in Greenfield Massachusetts. Wissatinnewag runs from Route 2, down to the Connecticut River and out onto the river bed, and Northeast from the mouth of Fall River, South about a half of a mile, in the area known as the Bypass Reach / the Wissatinneweag Run of the river.

In 1999 sand and gravel mining operations came to a halt at the village site when the historical and cultural significance of the site finally surfaced. On March 30, 2001, the indigenous cultural preservation organization called the Friends of Wissatinnewag purchased the property from the owner and shortly there after brought in US Fish and Wildlife to work together to create a wildlife and cultural preservation sanctuary. This 63 acre unsegmented historical site lies directly below the falls, and fully within the project Area of Potential Effect (APE). The Wissatinnewag village site has been archaeologically dated to over 10,000 years old, and was the largest and oldest continually inhabited indigenous village on the whole of the Connecticut River.

## **Our twelve year attempt, and failure to create a Cultural Preservation Agreement with FirstLight or conduct a meaningful and complete FERC required Traditional Cultural Properties Study Plan to be implemented as part of the Historic Property Management Plan (HPMP), the Recreation Agreement and the Flows and Fish Agreement.**

We need to be clear, though we signed a Memorandum of Understanding In Principle, on March 3, 2023, it never proved to be fruitful as we were unable to support a number of aspects of this project relicensing that has historically proven to have an adverse effect on our cultural resources and indigenous spiritual values. We did, however, in early April deliver to FirstLight a signed Cultural Resource Preservation Agreement that we could support, however FirstLight has chosen not to sign off on that final offer. So as of this writing we have nothing to show for our 12 years of hard work.

Every aspect of this series of new licensing agreements with other stakeholders, including the agreements we were asked to sign onto had the potential to adversely impact our cultural, spiritual and ceremonial practices and our historical patrimony.

We have been guided by Federal Regulations 36 CFR 800 / Federal 106 and as of March 21, 2024 the newest guidance from the Advisory Council on Historic Preservation (ACHP) Policy Statement on Indigenous, Knowledge and Historic Preservation. *See: the attached ACHP document.*

At this time we are requesting the opportunity to come together as a coalition in consultation with Mass DEP to discuss in-depth the sensitive nature of our cultural preservation challenges that our body of indigenous knowledge brings to this conversation in meeting the requirements of Federal, 106 and the ACHP guidelines.

Below are some of the areas of concern we need to address in our Consultation Process with Mass DEP in this *FirstLight 401WQC*.

1. Insufficient Minimal Flows to Protect and Preserve Fish and other Aquatic Life, at risk Cultural Resources and Practices known to exist in the Bypass Reach / Wissatinnewag Run of the River. *See: attached letter sent to Jesse Leddick of US Fish and Wildlife.*

2. *Hydropeaking known to be a significant source of erosion and the loss of cultural resources, both living and historic, below the dam and in the impoundment stretch of the river above the Turners Dam.*

3. The unacceptable timeline for the Construction of the Fish Lift at the Turners Dam and the impacts on cultural practices and resources such a delay will impose on our ability to continue exercising our indigenous life-ways practices.

4. The Need to shut down the Northfield Mountain Project, absent a ***closed loop system***. The Mountain Project is the main source of erosion and the degradation of native species of fish that were so important to indigenous people for thousands of years on this river. Also, the rise and fall of water levels from hydropeaking of the Northfield Mountain Project has created a new and dangerous form of erosion best described as shore to shore ice plate failures, whereby absent the super heated waters of the now shuttered Vermont Yankee Nuclear Plant, winter ice freezes shore to shore for the first time and half a century. When there is no longer buoyancy to support these massive ice plates from an extreme water draw down, these plates fail under their own weight, and slump toward the center of the river, tearing out of the river bank vegetation root systems and cultural resources, as well as posing a danger to people and wildlife.

5. The failure to protect the endangered, Shortnose Sturgeon and its habitat, both in the By-Pass Reach / Wissatinnewag Run, and above the Dam in Northfield and beyond.

6. The need to issue a shorter 30 year maximum license term agreement to facilitate the ability to assess what parts of the new license operating procedures have failed and need to be reconsidered and re-organized. Also, to take into consideration, the



very rapid changes in the environment that are occurring due to global warming and more aggressive rains and flooding in and around the project APE.

7. The lack of decommissioning requirements for both Turners Falls and Northfield that need to be in place to facilitate returning this river to a natural flowing river system.

8. The need to acknowledge the 2008 Department of the Interior's finding of eligibility for the NRHP a Ceremonial Stone Landscape (CSL) District that extends out in a 16 mile radius from the Ceremonial Hill at the Turners Falls Airport-(0B5), and its' impact on indigenous cultural preservation issues, and this relicensing process.

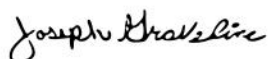
### **Conclusion**

Our coalition have been active stakeholders in the FirstLight/FERC relicensing process both independently and now as a coalition since 2012. As much of the information we need to share with Mass DEP to support our concerns are culturally very sensitive by their nature, therefore we are seeking private consultation with Mass DEP in this FirstLight WQC process.

We envision a robust exchange of ideas and knowledge with MassDEP to assist all in meeting the requirements of the ACHP guidance and directive and the Federal 106 process as well the MassDEP 401 WQC.

We encourage MassDEP to download from the FERC website our responses to the FirstLight Final License Request, and to get a better understanding of our participation and concerns as we have articulated in our FERC filings.

With Kindest Regards



Joseph Graveline / Senior Advisor The Nolumbeka Project Tribal Coalition  
[oldgraywolf@verizon.net](mailto:oldgraywolf@verizon.net)

(413) 657-6020

Dear Tribal and Native Hawaiian Leaders,

On March 21, 2024, the Advisory Council on Historic Preservation (ACHP) voted unanimously to adopt its groundbreaking [Policy Statement on Indigenous Knowledge and Historic Preservation](#). The policy statement establishes a set of principles and guidelines regarding the role that Indigenous Knowledge has in historic preservation. These principles should be applied by federal agencies, state and local governments, and nongovernmental institutions, including private contractors, to advance the integration of Indigenous Knowledge into historic preservation decision making.

The policy statement builds on the recently released government-wide [Guidance for Federal Departments and Agencies on Indigenous Knowledge](#) to tailor many of those messages to the needs of the historic preservation community. The policy was also informed by concepts discussed in the ACHP's existing information paper [Traditional Knowledge and the Section 106 Process: Information for Federal Agencies and Other Participants](#), as well as listening sessions and consultation with Indian Tribes, the Native Hawaiian community, and Tribal Historic Preservation Officers, and feedback from Federal Preservation Officers, other federal agency cultural resources staff, and State Historic Preservation Officers.

Thank you to everyone who provided comments and guidance during listening sessions and consultation. Your feedback has been essential to improving the policy statement by clarifying its scope, refining the principles, and broadening the implementation section to ensure the policy better addresses the concerns and needs of your community. The ACHP understands that this policy is a living document that must be actioned to be effective—we are committed to working with you to implement it.

Consistent with the ACHP's Consultation Procedures Pursuant to Executive Order 13175, copies of the policy statement, a themed summary of feedback and its implementation, and the consultation plan are attached to this email. The policy statement and themed summary of feedback can also be found [here](#). If you have any questions regarding the policy statement, please contact Ira L. Matt, Director, Office of Tribal and Indigenous Peoples at [imatt@achp.gov](mailto:imatt@achp.gov).

Sincerely,

A handwritten signature in blue ink, appearing to read 'Sara C. Bronin', with a stylized flourish at the end.

Sara C. Bronin  
Chair

## **ADVISORY COUNCIL ON HISTORIC PRESERVATION POLICY STATEMENT ON INDIGENOUS KNOWLEDGE AND HISTORIC PRESERVATION**

**PREAMBLE.** Indian Tribes, Native Hawaiians, and other Indigenous Peoples<sup>1</sup> are the original stewards of what is now known as the United States and its various territories and jurisdictions. They have existed as part of their environments for countless generations and have accumulated extensive experiences with, information about, and knowledge of the natural and cultural environment. This knowledge, often referred to as “Indigenous Knowledge,” results from a reciprocal relationship with their traditional territories whereby Indian Tribes, Native Hawaiians, and other Indigenous Peoples both shape and are shaped by the places and landscapes that surround them.

As a result of this interdependent relationship between people and place, sacred sites and historic properties, including properties of religious and cultural importance to Indian Tribes, Native Hawaiians, and other Indigenous Peoples, exist throughout the United States and its territories and jurisdictions. These locations are often considered to be of great importance by the Indigenous People who ascribe meaning to them and are frequently associated with significant cultural events, important spiritual locations, or are an active part of their living culture.

Indian Tribes, Native Hawaiians, and other Indigenous Peoples frequently rely upon their Indigenous Knowledge to identify and interact with these locations. Sacred sites, historic properties, and properties of religious and cultural importance are often imbued with both tangible and intangible values and resources that are not readily known outside of the community, clan, family, or individual who ascribe significance to them. Therefore, it is critical that federal agencies, state and local governments, and nongovernmental institutions, including private contractors, respect the value of and actively seek to incorporate Indigenous Knowledge into their historic preservation programs and decision making.

**SCOPE OF THE POLICY.** The field of historic preservation should ensure that the archaeological sites, historic structures, cultural landscapes, sacred sites, and other sites of religious and cultural importance to Indian Tribes, Native Hawaiian organizations (NHOs), and other Indigenous Peoples are equitably considered in decision making. These locations, and the reasons they are important, are often best understood and accounted for through consultation with, and by applying the Indigenous Knowledge of, associated Indian Tribes, Native Hawaiians, and other Indigenous Peoples.

Unfortunately, components of the broader historic preservation community have struggled to consistently request and incorporate Indigenous Knowledge into decision making in an efficient or effective manner. This partially stems from the fact that Indigenous Knowledge has not been consistently recognized or accounted for in implementing historic preservation programs, despite language about the roles and expertise of Indian Tribes and NHOs in the [National Historic Preservation Act](#) (NHPA) and the [Section 106 regulations](#). Additionally, until very recently, many federal agencies, state and local governments, and nongovernmental institutions, including private contractors, lacked protocols to account for the role of Indigenous Knowledge in meeting their program objectives and compliance responsibilities.

Despite these challenges, the Advisory Council on Historic Preservation (ACHP) has identified the integration of Indigenous Knowledge into decision making as a valuable and important part of the Section

<sup>1</sup> For the purpose of this policy, “Indigenous Peoples” include peoples who are indigenous to the United States and its territories and jurisdictions, but are not a federally recognized Indian Tribe, Native Hawaiian, or Native Hawaiian organization (as these terms are defined in the glossary attached to this policy statement).

106 process the ACHP administers as part of its responsibilities pursuant to the NHPA.<sup>2</sup> In 2019, the ACHP clarified that, while the term Indigenous Knowledge is not specifically mentioned in the NHPA or its implementing regulations, Indigenous Knowledge includes the information or knowledge shared by Indian Tribes and NHOs for the purposes of identifying, evaluating, assessing, and resolving adverse effects to historic properties of religious and cultural significance to them. The ACHP also clarified that Indigenous Knowledge informs the body of knowledge referred to at 36 CFR § 800.4(c)(1) in the Section 106 regulations as “special expertise.”<sup>3</sup> Pursuant to the requirement that federal agencies are to ensure that their Section 106 consultation provides Indian Tribes and NHOs “a reasonable opportunity to identify its concerns about historic properties, advise on the identification and evaluation of historic properties, including those of traditional religious and cultural importance, articulate its views on the undertaking’s effects on such properties, and participate in the resolution of adverse effects,”<sup>4</sup> and that agency officials “shall acknowledge that Indian Tribes and Native Hawaiian organizations possess special expertise in assessing the eligibility of historic properties that may possess religious and cultural significance to them,”<sup>5</sup> this policy statement affirms that Indigenous Knowledge has a role in all four steps of the Section 106 process when properties that may be of religious and cultural significance to Indian Tribes or NHOs may be affected by an undertaking.

Furthering the federal discussion on Indigenous Knowledge, in 2022 the White House Office of Science and Technology Policy (OSTP) and the Council on Environmental Quality (CEQ) released *Guidance for Federal Departments and Agencies on Indigenous Knowledge*, an interagency resource meant to promote and enable a broad effort to improve the recognition and inclusion of Indigenous Knowledge. It reaffirms that Indigenous Knowledge should be recognized and, as appropriate, incorporated into decision making, research, and policies. It also advised that agencies use the guidance to develop an approach to Indigenous Knowledge that is appropriate for the contexts and legal frameworks in which the agencies operate and for the Indian Tribes, NHOs, and other Indigenous Peoples with whom they partner and consult.<sup>6</sup>

In support of the 2022 guidance document, and to further inform statements made by the ACHP in 2019 regarding Indigenous Knowledge, the ACHP developed this policy statement to 1) generate consistency within the broader preservation community, 2) clarify the role Indigenous Knowledge has in the Section 106 process, 3) establish a set of principles and guidelines related to the integration of Indigenous Knowledge in historic preservation more broadly, and 4) to provide additional recommendations that will further support respect of and consideration for Indigenous Knowledge in historic preservation. This policy reinforces that Indigenous Knowledge should be recognized as an independent, self-supporting line of evidence meant to support program, policy, and procedural decisions related to historic preservation, and recognizes designated representatives of Indian Tribes and NHOs as the appropriate subject matter experts capable of informing decision making related to such knowledge.

The policy also calls on the preservation community to ensure that the appropriate amount of time and resources are dedicated to the identification, documentation, utilization, management, and safeguarding of Indigenous Knowledge, along with developing guidance to inform these activities. An overarching goal of the policy is to ensure that the Indigenous Knowledge of Indian Tribes, Native Hawaiians, and other Indigenous Peoples has an equitable and ongoing role in historic preservation decision-making process, recognizing the history of federal-Tribal/Native Hawaiian relations has not consistently or effectively

<sup>2</sup> The ACHP is an independent federal agency with the primary mission to encourage historic preservation in the government and across the nation. The NHPA authorizes the ACHP to promulgate the regulations implementing Section 106, which the agency has done at [36 CFR Part 800](#) (see 54 U.S.C. § 304108(a)). Section 106 requires federal agencies to consider the effects of projects, carried out by them or subject to their assistance or approval, on historic properties and provide the ACHP an opportunity to comment on these projects prior to a final decision on them.

<sup>3</sup> See 36 CFR § 800.4(c)(1) and [Traditional Knowledge and the Section 106 Process: Information for Federal Agencies and Other Participants](#) (ACHP, 2021).

<sup>4</sup> 36 CFR § 800.2(c)(2)(ii)(A).

<sup>5</sup> 36 CFR § 800.4(c)(1).

<sup>6</sup> [Guidance for Federal Departments or Agencies on Indigenous Knowledge](#) (Executive Office of the President Office of Science and Technology Policy [OSTP] and Council on Environmental Quality [CEQ], 2022).



accounted for this information.

**AUTHORITY.** The ACHP has the statutory responsibility to advise on matters relating to historic preservation; to advise the President, Congress, and state and local governments regarding historic preservation matters; and, to recommend methods to federal agencies to improve the effectiveness, coordination, and consistency of their historic preservation policies.<sup>7</sup>

As a federal agency, the ACHP also has a unique legal and political relationship with federally recognized Indian Tribes as set forth in the Constitution of the United States, treaties, statutes, and court decisions, and acknowledges that the federal Indian trust responsibility is a legal obligation under which the United States “has charged itself with moral obligations of the highest responsibility and trust” toward Indian Tribes.<sup>8</sup> In general, the trust responsibility establishes fiduciary obligations on the part of federal agencies to Tribes, including a duty to protect Tribal lands and cultural and natural resources for the benefit of Tribes and their members.<sup>9</sup> An element of the ACHP’s trust responsibility is to ensure that its promulgation of the regulations implementing Section 106 of the NHPA incorporates the procedural requirement that federal agencies consult with Indian Tribes and NHOs that attach religious and cultural significance to historic properties that may be affected by undertakings a federal agency proposes to carry out, license, permit, or assist.<sup>10</sup> The ACHP’s trust responsibility encompasses all aspects of historic resources, including associated Indigenous Knowledge and other intangible values.

Consistent with its statutory responsibilities, and as part of its trust responsibility to Indian Tribes, the ACHP issues this policy statement to establish a set of principles and guidelines regarding the role that Indigenous Knowledge has in historic preservation.

**INDIGENOUS KNOWLEDGE.** For the purposes of this policy, the ACHP will primarily utilize the description of Indigenous Knowledge published in the 2022 *Guidance for Federal Departments and Agencies on Indigenous Knowledge*:

*Indigenous Knowledge is a body of observations, oral and written knowledge, innovations, practices, and beliefs developed by Tribes, [Native Hawaiians,] and Indigenous Peoples through interaction and experience with the environment. It is applied to phenomena across biological, physical, social, cultural, and spiritual systems. Indigenous Knowledge can be developed over millennia, continues to develop, and includes understanding based on evidence acquired through direct and indirect contact with the environment and long-term experiences, as well as extensive observations, lessons, and skills passed from generation to generation. Each Indian Tribe, Native Hawaiian, and Indigenous community has its own place-based body of knowledge.*

*Indigenous Knowledge is based in ethical foundations often grounded in social, spiritual, cultural, and natural systems that are frequently intertwined and inseparable, offering a holistic perspective. Indigenous Knowledge is inherently heterogeneous due to the cultural, geographic, and socioeconomic differences from which it is derived, and is shaped by the Indigenous Peoples’ understanding of their history and the surrounding environment. This knowledge is unique to each [Indian Tribe, Native Hawaiian community, or] group of Indigenous Peoples, and each may elect to utilize different terminology or express it in different ways. Indigenous Knowledge is deeply connected to the Indigenous Peoples holding that knowledge.<sup>11</sup>*

This description is intended to inform and educate the reader and to provide necessary context. It is not

<sup>7</sup> 54 U.S.C. §§ 304102 and 304108.

<sup>8</sup> *Seminole Nation v. United States*, 316 U.S. 286 (1942).

<sup>9</sup> [Policy Statement Regarding the Council’s Relationship with Indian Tribes](#) (Advisory Council on Historic Preservation, 2000).

<sup>10</sup> [The Advisory Council on Historic Preservation’s Statement on Its Trust Responsibility](#) (Advisory Council on Historic Preservation, 2004).

<sup>11</sup> [Guidance for Federal Departments or Agencies on Indigenous Knowledge](#) (Executive Office of the President Office of Science and Technology Policy [OSTP] and Council on Environmental Quality [CEQ], 2022), 4.



intended to limit or constrain the application of Indigenous Knowledge.

**POLICY PRINCIPLES.** These principles should be applied by federal agencies, state and local governments, and nongovernmental institutions, including private contractors, to advance the integration of Indigenous Knowledge into historic preservation decision making. The following principles and guidelines represent and explain baselines the preservation community should seek to implement and advance as part of their site stewardship, Section 106 participation and compliance, sacred sites management, and other historic preservation-related actions, consistent with their unique mission and authorities.

1. **Respect and Relationship Building.** Indigenous Knowledge should be treated with respect in all circumstances. This knowledge is frequently revered by the individual, family, clan, or community associated with it, and it may have an active role in ongoing cultural practices and ways of understanding. Disrespect, misuse, or abuse could violate cultural and ethical protocols, or may impact an Indian Tribe, NHO, or other Indigenous Peoples in other ways, including socially, politically, or economically. Developing and maintaining a positive and mutually beneficial relationship with Indian Tribes, NHOs, and other Indigenous Peoples can help facilitate an increased understanding of what constitutes respect and how those actions can lead to the proper integration of Indigenous Knowledge into decision making.
2. **Valid and Self-Supporting.** The Indigenous Knowledge held by an Indian Tribe, NHO, or other Indigenous Peoples is a valid, sound, and self-supporting source of information and is an aspect of the best available science. It does not require verification by any other knowledge system to inform federal decision making in historic preservation. Designated representatives of Indian Tribes and NHOs are, and should be recognized as, subject matter experts regarding the application of their Indigenous Knowledge with respect to the identification and documentation, evaluation, assessment, and resolution of adverse effects to properties that may be of religious and cultural significance to them, many of which may also be sacred sites.
3. **The Section 106 Process.** For purposes of Section 106, the term “Indigenous Knowledge” includes, but is not limited to, the experiences, insights, and knowledge held by Indian Tribes and NHOs that can assist federal agencies in identifying, evaluating, assessing, and resolving adverse effects to historic properties that may be of religious and cultural significance to them. While the NHPA directs federal agencies to make the final decisions in the Section 106 review, the law also directs agencies to consult with Indian Tribes and NHOs in carrying out the review process. Deference can and should be provided to the expertise of designated representatives about Indigenous Knowledge that is provided to inform decision making in the Section 106 process. A reasonable and good faith effort includes the responsibility that federal agencies, consistent with 36 CFR § 800.2(c)(2)(ii)(A), consider Indigenous Knowledge in a successive and cumulative manner throughout the four-step Section 106 process.
  - a. **Identification and Documentation.** Indigenous Knowledge is frequently used by Indian Tribes and NHOs to identify properties that may be of religious and cultural importance to them in the Section 106 review process. The development and implementation of identification efforts, including background research and field surveys, should be guided and informed by Indigenous Knowledge, where Indian Tribes and NHOs consent to share that knowledge with federal agencies, to ensure these actions more effectively account for properties that may be of religious and cultural significance to Indian Tribes or NHOs. Where Indigenous Knowledge is freely shared with federal agencies, documentation or recordation of the property or place should reflect the qualities and characteristics identified as relevant by the associated Indian Tribe or NHO to inform subsequent decision making, including, as appropriate, evaluation, assessment of effect, and resolution of adverse effects effectively and accurately.

- b. **Evaluation.** The “special expertise” recognized in 36 CFR § 800.4(c)(1) is a component of Indigenous Knowledge and is an aspect of the best available science. The Section 106 regulations require federal agencies to acknowledge the special expertise of Indian Tribes and NHOs in identifying and assessing the eligibility of historic properties that may be of religious and cultural significance to them.<sup>12</sup> Acknowledgement in this context means to recognize and defer to Tribal or NHO interpretation of the property’s significance and integrity. Members of the preservation community are not the experts on what constitutes Indigenous Knowledge or how it should be utilized to identify or evaluate the eligibility of a property that may be of religious and cultural significance to an Indian Tribe or NHO, including, but not limited to, ancestral materials recorded and documented as “archaeological.”
  - c. **Assessment of Adverse Effects.** Indian Tribes and NHOs are the authorities and experts about their respective cultures, lifeways, geographies, and histories. To understand if and how an undertaking may affect a historic property of religious and cultural significance to an Indian Tribe or NHO, the federal agency must take into account, and should include in its assessment of how that property would be affected by the proposed undertaking, the Indigenous Knowledge and comments provided by the associated Indian Tribe(s) or NHO(s).
  - d. **Resolution of Adverse Effects.** Efforts taken to avoid or minimize adverse effects should reflect the Indigenous Knowledge and other comments provided by the Indian Tribe or NHO, recognizing they are uniquely suited to inform those decisions and can provide information to help define what may be or may not be appropriate. When considering ways to resolve adverse effects to historic properties of religious and cultural significance to Indian Tribes or NHOs, agencies should defer to the expertise of associated Indian Tribes or NHOs. Efforts to reach consensus on mitigation should prioritize and recognize the preferences of Indian Tribes or NHOs in relation to historic properties of religious and cultural significance to them. Mitigation options should not be classified as “creative,” “alternative,” or “compensatory,” where those terms could constrain resolution in the Section 106 review.
4. **Agreement Documents and Program Alternatives.** Section 106 agreement documents and program alternatives that relate to or include the identification of, assessment of effects to, or resolution of adverse effects to historic properties of religious and cultural significance to an Indian Tribe or NHO should include language or stipulations that address the role of Indigenous Knowledge in informed decision making and how designated representatives would be involved in any ongoing reviews or consultation.
5. **Compensation.** Indigenous Knowledge is a distinct form of expertise that cannot be supplanted through other forms of knowing. Designated representatives of Indian Tribes or NHOs are the appropriate subject matter experts with the experience and qualifications to inform federal agency decision making in the identification of, and assessment and resolution of adverse effects to, historic properties of religious and cultural significance to them. In many cases, identifying, vetting, and deciding whether and how to share Indigenous Knowledge requires research, work, or additional action on the part of the Indian Tribe or NHO. If a federal agency requests an Indian Tribe or NHO provide Indigenous Knowledge via research, survey, monitoring, or other efforts that are the responsibility of the federal agency under the NHPA, the Indian Tribe or NHO should be reimbursed or compensated.<sup>13</sup>

<sup>12</sup> 36 CFR § 800.4(c)(1).

<sup>13</sup> Consistent with the ACHP’s [Guidance on Assistance to Consulting Parties in the Section 106 Review Process](#), when the federal agency (or in some cases the applicant) seeks the views and advice of any consulting party in fulfilling its legal obligation to consult with them, the agency or applicant is not required to pay that party for providing its views. Federal agencies should also identify compensation mechanisms consistent with the [Executive Order on Reforming Federal Funding and Support for Tribal Nations to Better Embrace Our Trust Responsibilities and Promote the Next Era of Tribal Self Determination](#), which

6. **Administrative Record.** Any determination, finding, or agreement that relates to the identification of or assessment of effects to properties that may be of religious and cultural significance to an Indian Tribe or NHO should include sufficient documentation to enable any reviewing party to identify when and how consultation efforts facilitated opportunities for Indigenous Knowledge to inform decision making. These records should reflect if Indigenous Knowledge was incorporated into final decisions, or include detailed justifications as to why not, being cognizant to protect or withhold information deemed sensitive by the Indian Tribe or NHO in accordance with applicable law, regulation, and agency policy.
7. **Consultation Timelines.** The Section 106 implementing regulations set the minimum standards for federal agency interactions with consulting parties, including Indian Tribes and NHOs. When seeking information from an Indian Tribe or NHO regarding properties that may be of religious and cultural significance to them, the agency official must ensure the consultation is initiated early in the planning process, and the federal agencies should provide as much advanced notice of consultation meetings as possible and should extend review timelines accordingly, where appropriate, to ensure sufficient consultation and sharing of Indigenous Knowledge can occur. Timelines should reflect the complexity and nature of the undertaking and should recognize and attempt to accommodate internal cultural, political, legal, and social decision-making processes of associated Indian Tribes and NHOs including time needed to ensure the appropriate information can be identified and prepared for consultation purposes.
8. **Protocols and Processes.** The preservation community, including federal agencies, state and local governments, and nongovernmental institutions, including private contractors, should seek to develop or update policy, guidance, or other technical resources that inform their historic preservation responsibilities. It is important to recognize that historic preservation policies and programs intersect and coordinate with other related efforts, such as those taken under Executive Order (EO) 13007: Indian Sacred Sites.<sup>14</sup> The protocols and policies should account for the role that Indigenous Knowledge has in historic preservation decision making. These resources should be developed in consultation with Indian Tribes and NHOs and should account for applicable principles identified in this policy.
9. **Professional Qualifications.** The ACHP recognizes that Indian Tribes, as sovereign Nations, have the right to determine who has the expertise and is qualified to represent them and their Indigenous Knowledge in the Section 106 process. Consistent with departmental procedures, the ACHP recommends that the Department of the Interior pursue amendments to the Secretary of Interior's Professional Qualification Standards to explicitly identify the designated representatives of Indian Tribes and NHOs as subject matter experts who meet the professional standards needed to inform findings and determinations relevant to properties that may be of religious and cultural importance to them.
10. **Managing Sensitive Information.** Indigenous Knowledge frequently includes information that is confidential, sensitive, sacred, and/or internal to an Indian Tribe or NHO. To the maximum extent practicable, federal agencies should clearly inform Indian Tribes or NHOs of any limitations on the agencies' ability to keep Indigenous Knowledge confidential before discussing Indigenous Knowledge. When seeking or integrating Indigenous Knowledge, federal agencies should consider not only how it would influence decision making, but also how it would account for any cultural, governmental, legal, or ethical protocols the Indian Tribe or NHO may have that dictate its application and use. If Indigenous Knowledge is provided, maximum effort should be taken, to the

directs all federal agencies to better live up to the federal government's trust responsibilities and support Tribal self-determination by reforming federal funding programs that support Tribes.

<sup>14</sup> [The Relationship Between Executive Order 13007 Regarding Sacred Sites and Section 106](#). (ACHP, 2018)

fullest extent of the law, to limit the inappropriate disclosure of confidential or sensitive information through all available mechanisms.

11. **Sacred Sites.** Locations identified as sacred sites by Indian Tribes or NHOs may also be historic properties of religious and cultural significance under the NHPA. The responsibility to consider access to and protection of sacred sites, consistent with EO 13007: Indian Sacred Sites, is separate from and in addition to an agency's Section 106 review for any proposed undertakings. Federal land management agencies, and other agencies including the ACHP, have committed to working together and consulting with Indian Tribes and NHOs in implementing EO 13007 through the Memorandum of Understanding Regarding Interagency coordination and Collaboration for the Protection of Indigenous Sacred Sites.<sup>15</sup> As federal agencies continue to implement the Executive Order and Memorandum of Understanding, the ACHP encourages consultation with designated representatives of the associated Indian Tribes and NHOs to include integration of freely shared Indigenous Knowledge to inform the identification of, protection of, and access to these sites.
12. **United Nations Declaration on the Rights of Indigenous Peoples.** The ACHP recognizes the significance and importance of the Declaration<sup>16</sup> and the support it conveys for Indigenous Knowledge.<sup>17</sup> This policy is intended to work in concert with applicable provisions of the Declaration. While the Declaration is not legally binding, federal agencies can look to it for policy guidance in carrying out their historic preservation responsibilities, including in the Section 106 context and with respect to sacred sites. Because the Declaration was developed with input from Indigenous Peoples around the world, it stands as a guide to what is important to Indigenous Peoples, above and beyond basic human rights. The ACHP suggests that federal agencies, state and local governments, and nongovernmental institutions, including private contractors, consider the Declaration a reference to help inform the outreach, consultation, and consideration of Indigenous Knowledge.<sup>18</sup>

**IMPLEMENTATION OF THE POLICY.** Implementation of this policy statement is primarily the responsibility of ACHP leadership and staff. However, the ACHP recognizes that the appropriate expertise and experience to ensure effective implementation of this policy will require participation from the broader preservation community, including ongoing consultation and collaboration with Indian Tribes, Native Hawaiians, and other Indigenous Peoples.

Consistent with the ACHP's statutory authority to advise the President, Congress, and state and local governments on historic preservation, and to make recommendations to federal agencies to improve their preservation programs, the ACHP calls on federal agencies, state and local governments, and

<sup>15</sup> 2021 [Memorandum of Understanding Regarding Interagency Coordination and Collaboration for the Protection of Indigenous Sacred Sites](#).

<sup>16</sup> In 2010, the United States announced its [support of the United Nations Declaration on the Rights of Indigenous Peoples](#) (Declaration) and in 2013, the ACHP took the bold step to adopt a [plan to support the Declaration](#). This plan included the commitment to incorporate language and principles from the Declaration in future ACHP policy and program initiatives regarding the protection and preservation of historic properties of religious and cultural significance to Indian Tribes, NHOs, and other Indigenous Peoples to improve federal agency Section 106 consultation with Indian Tribes and NHOs. See the ACHP's [webpage on the Declaration](#) and the ACHP's [Policy Statement Regarding Burial Sites, Human Remains, and Funerary Objects: Explanations and Discussion](#) document for examples.

<sup>17</sup> "Indigenous peoples have the right to practice and revitalize their cultural traditions and customs. This includes the right to maintain, protect and develop the past, present and future manifestations of their cultures, such as archaeological and historical sites, artefacts, designs, ceremonies, technologies and visual and performing arts and literature," Article 11, [United Nations Declaration on the Rights of Indigenous Peoples](#).

<sup>18</sup> Article 18 of the Declaration has identified that the right of an individual or associated community to "participate in decision-making in matters which would affect their rights, through representatives chosen by themselves in accordance with their own procedures, as well as to maintain and develop their own decision-making instructions," is a basic human right; Article 31 of the Declaration states that "indigenous peoples have the right to maintain, heritage, traditional knowledge and traditional cultural expressions... They also have the right to maintain, control, protect and develop their intellectual property over such cultural heritage, traditional knowledge, and traditional cultural expressions." Working with Indigenous Peoples, governments "shall take effective measures to recognize and protect the exercise of these rights."

nongovernmental institutions, including private contractors, to advance the principles in this policy consistent with their unique missions, scope, and authorities.

The ACHP commits to advancing consideration of Indigenous Knowledge in conjunction with the broader preservation community, Indian Tribes, Native Hawaiians, and other Indigenous Peoples through the following:

- A. Train ACHP staff regarding the implementation of this policy.
- B. Develop guidance and informational resources that further inform the application and intent of this policy.
- C. Seek opportunities to implement applicable policy principles into Section 106 agreement documents and program alternatives.
- D. Advise federal agencies, state and local governments, Indian Tribes, Tribal and State Historic Preservation Officers, and NHOs in their development of historic preservation protocols, if invited.
- E. Encourage federal agencies and other relevant parties to give full and meaningful consideration to Indigenous Knowledge consistent with this policy statement.
- F. Participate on interagency working groups, including through the White House Council on Native American Affairs and the National Science and Technology Council Subcommittee on Indigenous Knowledge, to advance consideration and incorporation of Indigenous Knowledge through an all-of-government approach.

**DEFINITIONS.** The definitions provided below are intended to be inclusive and are meant to inform the application of this policy statement. However, many terms require the input of associated parties to more fully understand how to interpret or apply each term.

- **Confidential:** Information that is protected by law, regulation, or federal policy. Preserving authorized restrictions on information access and disclosure, including means for protecting personal privacy and proprietary information

- **Consultation:** The process of seeking, discussing, and considering the views of other participants and, where feasible, seeking agreement with them.<sup>19</sup> A foundational activity in the Section 106 review process.

- **Consulting Parties:** Persons or groups the federal agency consults with during the Section 106 process. They may include the State Historic Preservation Officer; Tribal Historic Preservation Officer; Indian Tribes and Native Hawaiian organizations; representatives of local governments; applicants for federal assistance, permits, licenses, and other approvals; and/or any additional consulting parties.<sup>20</sup> Additional consulting parties may include individuals and organizations with a demonstrated interest in the undertaking due to the nature of their legal or economic relation to the undertaking or affected properties, or their concern with the undertaking's effects on historic properties.<sup>21</sup>

- **Designated Representative:** Individual(s) authorized by an Indian Tribe or Native Hawaiian organization's governing body, or other authorized person, to represent the Tribal government or NHO or act on its behalf.

- **Historic Property:** Any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. It includes artifacts, records, and remains that are related to and located within such properties, and it includes properties of traditional religious and cultural importance to an Indian Tribe or Native Hawaiian organization that meet the National Register of Historic Places criteria.<sup>22</sup>

<sup>19</sup> 36 CFR § 800.16(1).

<sup>20</sup> 36 CFR § 800.2(c).

<sup>21</sup> 36 CFR § 800.2(c)(5).

<sup>22</sup> 54 U.S.C §§ 300308, 302706, 36 CFR § 800.16(1).



- **Indian Tribe:** An Indian Tribe, Band, Nation, or other organized group or community, including a Native Village, Regional Corporation or Village Corporation, as those terms are defined in Section 3 of the Alaska Native Claims Settlement Act,<sup>23</sup> which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians.<sup>24</sup>
- **Native Hawaiian:** Any individual who is a descendant of the aboriginal people who, prior to 1778, occupied and exercised sovereignty in the area that now constitutes the state of Hawaii.<sup>25</sup>
- **Native Hawaiian organization (NHO):** Any organization which serves and represents the interests of Native Hawaiians; has as a primary and stated purpose the provision of services to Native Hawaiians; and has demonstrated expertise in aspects of historic preservation that are significant to Native Hawaiians.<sup>26</sup>
- **Section 106:** That part of the NHPA which establishes the federal agency's responsibility to take into account the effects of undertakings on historic properties and to provide the ACHP a reasonable opportunity to comment with regard to such action.<sup>27</sup>
- **Sensitive:** Information that may be protected by law, regulation, or federal policy; and separately, information that may be identified as sensitive by the sponsoring entity/original source and considered by the source to be inappropriate for public disclosure.

*March 21, 2024*

<sup>23</sup> 43 U.S.C. § 1602.

<sup>24</sup> 54 U.S.C. §300309, 36 CFR § 800.16(m).

<sup>25</sup> 54 U.S.C. § 300313, 36 CFR § 800.16(s)(2).

<sup>26</sup> 54 U.S.C. § 300314, 36 CFR § 800.16(s)(1).

<sup>27</sup> 54 U.S.C. § 306108.

February 9, 2023

Jesse Leddick  
 Chief of Regulatory Review  
 Natural Heritage and Endangered Species Program  
 Mass Division of Fisheries and Wildlife ( NHESP )  
 1 Rabbit Hill Road  
 Westborough Mass 01581

Dear Jessie,

My name is Joe Graveline, I am Senior Advisor for the Nolumbeka Project and group coordinator for a coalition of tribes which include the Elnu Abenaki, the Chaubunagungamaug Band of Nipmuck Indians working with the Nolumbeka Project who together as stakeholders since 2013, wish to comment on the relicensing of the Turners Falls Hydroelectric Project, Project No. 1889 (Turners Falls Project), and the Northfield Mountain Pump Storage Project FERC Project No.2485 (The Northfield Mountain Project) most specifically with regard to the flow rates below the Turners Falls dam in the area of the river known as the Bypass Reach.

A little background first, the shale beds, most especially those on the western bank of the Connecticut River, is a section of the river that's highly sensitive to the history of the indigenous people, who for over ten thousand years, lived in the Connecticut River Valley and on the village site known as Wissatinnewag at the top of the hill on the West side of the river. The Wissatinnewag village site has been archaeologically documented to have been in use continually for that ten thousand year period. The Nolumbeka Project along with the U.S. Fish & Wildlife Service hold the deeds on that piece of property.

There are trail systems from the Wissatinnewag Village site that lead down to the ancient river's edge. These ancient trail systems supplied access to canoe launching, fish processing, fishing stations, and sacred ceremonial stone landscape structures used for ceremonial practices. The name Wissatinnewag was documented by colonial trading post businessman and historical figure John Pynchon in his early records of the areas in his Indian trading control. Wissatinnewag has been loosely translated to mean, Slippery Hill or Shining Rocks. The name has its' historical origin from the fact that the hill, (Wissatinnewag), had been washed in a mist for most of that ten thousand year history right up to a little over one hundred years ago when the first crib dams were built.

The shale beds that run past the Wissatinnewag Village and down to the mouth of the Deerfield River have a history of being home to countless fishing weirs. Some of these fishing stations were built of bracken with large and small stones. We and others have discovered some of the stones built into those weirs, were carved sacred effigies in the

image of turtles and fish, some are large, 100 pounds or more some as small as your thumb. Many the size one might pick up and walk away with as a curiosity.

The elders have instructed us that the stones contain the prayers of the people to help guard the welfare of the waters and the fishes. We have come to classify these as Ceremonial Stone Waterscapes, and consider them to be an extension of the Ceremonial Stone Land Scape District that received a Determination Of Eligibility Notification, National Register of Historic Places from the National Park Service on December 8, 2008.

This CSL District extends out in a 16 mile radius from the Turners Falls Ceremonial Prayer Hill at the Turners Falls Airport and is instructed to include the river, islands, and the river's edge between the confluence of the Deerfield/Pocumtuck River on the South and the Millers River on the North, the Riverside Archaeological District (NR 1975), and beyond to the radius limit.

These objects and many more artifacts along with dinosaur tracks, in oral traditional belief to be the prints of the ancient Thunder Bird who ruled this area before the people arrived, are at risk from the adverse effects of the dewatering of the river bed.

Over the last 50 years, and most especially since the Turners Falls Dam height was increased during construction in the 1970s, the shale beds have been left exposed and dry for the majority of days throughout the calendar year. Flow rates have been extremely low and often nonexistent leaving the shale beds vulnerable to looters and sightseeing visitors who wish to bring home with them something special from their visit on the river and their walks out on the dry river bottom. Modern portable power tools have made the harvesting pieces of the shale stone, dinosaur prints, fairly quick and easy.

We consider the dewatering of the river bed and the exposure of the shale beds and cultural resources, to be an adverse effect which could easily be remedied by increasing flow rates over the shale beds throughout the year at a minimum rate of 600 cfs, with a better rate of protection at 1500 cfs.

Wliwni - (Abenaki) Thank You for your consideration of our request.

Joe Graveline  
Senior Advisor The Nolumbeka Project  
[oldgraywolf@verizon.net](mailto:oldgraywolf@verizon.net)  
1 (413) 657-6020

**Via Electronic Mail**

May 29, 2024  
The Honorable Debbie-Anne Reese  
Acting Secretary  
Federal Energy Regulatory Commission  
888 First Street N.E.  
Washington, DC 20426

**RE: Applications for Relicensing of FirstLight MA Hydro LLC for Turners Falls Hydroelectric Project (FERC No. P-1889) ("Turners Falls") and Northfield Mountain LLC for Northfield Mountain Pumped Storage Project (FERC No. P-2485) ("Northfield Mountain")**

Dear Acting Secretary Reese,

The Northeast Clean Energy Council ("NECEC" or "Council") appreciates the opportunity to submit comments to the Federal Energy Regulatory Commission ("FERC") in support of FirstLight MA Hydro LLC's applications for relicensing of the Turners Falls Hydroelectric Project and the Northfield Mountain Pumped Storage Project (FERC No. P-2485) ("Northfield Mountain").

NECEC leads the just, equitable, and rapid transition to a clean energy future and a diverse climate economy. NECEC is the only organization in the Northeast that covers all of the clean energy market segments, representing the business perspectives of investors and clean energy companies across every stage of development. NECEC members span the broad spectrum of the clean energy industry, including clean transportation, energy efficiency, wind, solar, energy storage, microgrids, fuel cells, and advanced and "smart" technologies.

The Council is dedicated to growing the clean energy economy in Massachusetts and across the region, in pursuit of our mission to create a world-class and equitable clean energy hub in the Northeast. The Council's 250+ members include companies based in Massachusetts and doing business or hoping to make future investments in the state.

Together, the Projects play a critical role in delivering clean, local, low-cost power to communities across New England while providing needed grid reliability to the region. Looking ahead as renewables make up a growing portion of our grid mix, Northfield Mountain's fast response capability, long-duration, and large capacity will play an even greater role in balancing the grid, thanks to its ability to capture over 1,100MW of power generated during off-peak hours and dispatch it during times of high demand when it is needed most while simultaneously offsetting the dirtiest emissions generated by fossil-fuel powered generators.

Mid and long-duration energy storage is a critical component of enabling a clean energy transition. Pumped-hydro energy storage like Northfield Mountain is currently the only widely-commercialized source of long-duration energy storage and, [as of 2023, represented 96% of all utility-scale energy](#)

[storage in the U.S.](#) As Massachusetts looks to incorporate significant amounts of renewable energy into the grid by 2050, including approximately 24 GW of offshore wind per the [Clean Energy and Climate Plan for 2050](#), there will be an increasing need for utility-scale energy storage and generation assets that can be rapidly deployed to balance the electric grid when the wind isn't blowing and the sun isn't shining. Not only can pumped-hydro resources like Northfield Mountain provide balance, they reduce carbon emissions by displacing more carbon-intensive fossil generators, they can provide relief to ratepayers by generating during times of high demand when prices are highest, known as peak price shaving, and they also reduce reliance on fossil-fuel powered peaker plants during winter months, both offsetting carbon emissions and improving the security of our energy system which is heavily reliant on imported fossil fuels.

As the energy transition advances, we know that intermittent renewables will grow to dominate our grid mix, and electricity demand will likely at least double as systems shift from fossil-powered to electricity-powered. We must double down in support of the existing clean electricity generation and storage assets like FirstLight's Projects that can be called on today and will continue to provide significant value to the region in the transformative decades ahead.

NECEC appreciates the opportunity to convey its strong support for the relicensing of these two projects and respectfully requests the Federal Energy Regulatory Commission to approve the applications.

Sincerely,

/s/ Tim W. Snyder

Tim W. Snyder

Vice President, Public Policy and Government Affairs





The Nature Conservancy  
Kennedy Home Office  
P.O. Box 32  
Chesterfield, MA 01012

Phone (413) 588-1959  
[nature.org/science](https://www.nature.org/science)

June 3, 2024

MassDEP - BWR  
100 Cambridge Street, Suite 900  
Boston, MA 02114

**Subject: FirstLight 401 WQC**

To Whom It May Concern:

The Nature Conservancy (Conservancy or TNC) is a private, non-profit 501(c)3 international conservation organization with more than one million members worldwide. The Conservancy has been active in the Connecticut River Watershed for over 50 years, applying our collaborative, science-based, and solutions-oriented approach to conservation to achieve our mission to “conserve the lands and waters on which all life depends.” We are committed to tackling the dual global crises of climate change and biodiversity decline, achieving ambitious renewable energy goals while also maintaining and improving the health and function of our ecological systems. As such, since 2012, we have been engaged in the relicensing of the Turners Falls Hydroelectric and Northfield Mountain Pumped Storage projects, owned by affiliates of FirstLight Hydro Generating Company (FirstLight), to pursue solutions that achieve both of these goals, as well as the many interests of the diverse parties that benefit from the resources and value that the Connecticut River provides.

The Nature Conservancy was party to the discussions and final agreement of the Flow and Fish Passage (FFP) Settlement initiated by FirstLight after filing their Amended Final License Application. This agreement was the culmination of many years of collaborative discussion, intentional debate, and thoughtful compromise among all signatories, representing interests that span ecological conservation, endangered species protection, recreation, climate mitigation, and renewable energy supply.

The anticipated benefits of the agreement include:

- Vastly improved fish passage and fish protection measures for diadromous species;
- Updated fish passage standards to ensure all new or improved fish passage facilities are effective;
- Restoration of more naturalized flow to over 20 miles of the Connecticut River, which will enhance the quantity and persistence of habitat for resident and migratory fish and other river-dependent species, including two federally at-risk freshwater mussel species, the federally at-risk cobblestone tiger beetle and threatened Puritan tiger beetle, and 17 species of state-listed dragonflies and plants; and
- Substantially increased flows to the 2.7-mile-long bypass reach which will enhance aquatic habitat quantity and quality, including habitat for the federally endangered shortnose sturgeon.

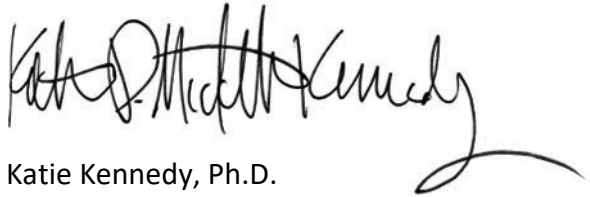
We consider these gains substantial and expect to see tangible results in the form of improved migration, reproduction, and growth rates, and corresponding increases in population size of several species with populations that are currently unstable or in decline.

At the same time, the agreement contains elements that will expand the opportunities for recreation in the bypass reach and will also maintain the value that these projects bring to the regional energy grid. Regarding the latter, these projects are critical in their role to provide grid stability to an increasingly renewable-dependent energy mix, which is necessary for achieving our renewable energy goals and combatting the negative effects of climate change.

The Nature Conservancy has a vision of thriving aquatic and terrestrial ecosystems in a low-carbon energy future, and while we must always grapple with trade-offs, we are committed to the premise that these goals are not mutually exclusive. As such, we request that the Massachusetts Department of Environmental Protection (MADEP) accept and incorporate, without material modifications, as conditions to the Section 401 Certifications, all the protection, mitigation, and enhancement measures stated in Appendices A and B of the FFP Settlement Agreement ([FERC Accession # 20230331-5600](#)) that are within the MADEP's jurisdiction pursuant to Section 401 of the Clean Water Act. Further, we request that MADEP not include as conditions to Section 401 Certificates additional conditions that are inconsistent with this FFP Settlement Agreement.

Thank you for this opportunity to provide these comments. If you have any questions, please contact me at [kkennedy@tnc.org](mailto:kkennedy@tnc.org) or (413) 588-1959.

Sincerely,

A handwritten signature in black ink, appearing to read 'Katie Kennedy', is written over a light gray rectangular background.

Katie Kennedy, Ph.D.  
Applied River Scientist  
North America Region  
The Nature Conservancy

---

**From:** Traprock Communications <traprockinfo@crocker.com>  
**Sent:** Monday, June 3, 2024 4:11 PM  
**To:** dep.hydro@mass.gov  
**Subject:** FirstLight 401 WQC

June 3, 2024

TO: [dep.hydro@mass.gov](mailto:dep.hydro@mass.gov)

FROM: Traprock Center for Peace & Justice, board members

Subject. FirstLight 401 WQC

Since 1978, the non-profit Traprock Center for Peace and Justice has provided leadership to end war and militarism and increasingly to address gender, racial, economic and environmental justice issues locally and beyond, with an emphasis on youth.

We see the possible Water Quality Certification (WQC) for FirstLight's Connecticut River hydroelectric facilities and pumped storage facility in Northfield, Massachusetts as both an economic and environmental (in)justice issue.

Economic because:

- \* since 2016 FirstLight has been wholly owned by PSP Investments, a Canadian Crown Corporation, thus profits generated from use and abuse of the waters of New England's iconic Connecticut River leave the area, enriching a corporation and its Canadian owner;
- \* FirstLight's Northfield Mountain Pumped Storage Station is a net-loss energy consumer. This waste of energy is an economic as well as environmental loss, while its peak-price energy 'production' creates exported profit.

Meanwhile the environmental costs of the project are well-known and documented and we believe violate the standards of the Clean Water Act, affecting both aquatic wildlife and water quality:

- \* Each year its turbines destroy hundreds of millions of eggs, larvae, juvenile and adult fish, and other assorted aquatic species.
- \* The river turbulence caused by the suction of 15,000 cubic feet of water per second and its subsequent release also destroys aquatic wildlife, alters the natural condition of the riverbed and has caused serious riverbank erosion.
- \* The low and frequent fluctuations of water levels and flow rates from FirstLight's Connecticut River hydroelectric facilities in Turners Falls pose additional stresses and losses on aquatic wildlife and related resources.

For these reasons, we oppose a Mass DEP Water Quality Certification (WQC) for FirstLight's Connecticut River hydroelectric facilities in Turners Falls and Montague and the pumped storage facility in Northfield, Massachusetts.

Signed by Traprock board members:

Anna Gyorgy  
Wendell, Mass.

H. Patricia Hynes

Montague, Mass.

Sarah Pirtle  
Shelburne Falls, Mass.

E. Martin Schotz, MD

Cummington, Mass.

--

*From the Traprock Center for Peace & Justice, active since 1979.  
See <https://traprock.org> for projects, recent postings,  
newsletter sign-up and calendar.  
Help Traprock grow: <https://traprock.org/donate/>*

Energy Policy and Rivers group, Energy Geographies and Politics Project  
 RiverSmart Communities  
 Department of Earth, Geographic, and Climate Sciences  
 UMass Amherst  
 Amherst, MA 01003

**TO:**

MassDEP – BWR  
 Attn: FirstLight 401WQC  
 100 Cambridge Street, Suite 900  
 Boston, MA 02114

June 3, 2024

**RE:** 401 Water Quality certificate Applications, Turners Falls Hydroelectric Project (FERC No. 1889-081) and Northfield Mountain Pumped Storage Project (FERC No. 2485-063)

Dear Mass DEP:

Please accept the following comments on the 401 Water Quality Certificate Application for Turners Falls Hydroelectric Project (FERC No. 1889-081) and Northfield Mountain Pumped Storage Project (FERC No. 2485-063).

Sincerely,

*Faculty:*

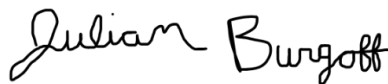


Eve Vogel, Ph.D.  
 Energy Policy and Rivers Group  
 Earth, Geographic, and Climate Sciences  
 UMass Amherst



Christine Hatch, Ph.D.  
 RiverSmart Communities  
 Earth, Geographic, and Climate  
 Sciences  
 UMass Amherst

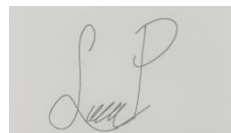
*Students:*



Julian Burgoff  
 M.S. Environmental  
 Conservation  
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 Fish & Wildlife Research Unit  
 UMass Amherst



Avery Kolenski  
 B.A. Geography expected Dec  
 2024  
 UMass Amherst



Luca Pillidge  
 B.S. Environmental Science  
 expected May 2026  
 UMass Amherst



**Comments on:** Water Quality Certificate Applications to Massachusetts Department of Environmental Protection, Turners Falls Hydroelectric Project (FERC No. 1889-081) and Northfield Mountain Pumped Storage Project (FERC No. 2485-063)

**Energy Policy and Rivers, a subgroup of the UMass Energy Geographies and Politics Project**  
With input from **UMass RiverSmart Communities**

## About us:

UMass Energy Policy & Rivers, part of the UMass Energy Geographies and Politics Project, aims to bring expertise on both river management and electric markets and policy, to advocate for a clean energy transition that also protects ecosystems, communities, and public access to decision making. The RiverSmart Communities program combines social and river science, institutional and policy research, and community outreach to research and address river flood management in New England; in this document its expertise informs our comments on natural river processes.

## Attachments:

We attach three documents we have submitted in other comment periods, as we build on these and in several places reference them. We believe you will find them the most helpful if you review them in the following order:

1. Comments on the Flows and Fish Passage Settlement Agreement (**F&FP**) (May 26, 2023)
2. Comments on the Mass DOER long-duration storage study (**LDES**) (Sep 1, 2023) (see particularly Section B, on Northfield Mtn); and
3. Comments on the FirstLight FERC license applications (**AFLAs**) (May 22, 2024)

## Comments:

As outlined below, the proposed terms of FirstLight's new licenses for Turners Falls and Northfield projects, FirstLight's water quality certificate application to MassDEP, and the two Settlement Agreements on which the water quality application relies, do not adequately protect the existing and designated uses of the Connecticut River, as required by the Clean Water Act. In the following we outline measures that MassDEP needs to require as conditions for the issuance of any WQC for the Facilities.

### 1. Passage

**Turners Falls Dam and the Turners Falls Impoundment block and impair passage for fish; for other aquatic life, including aquatic macroinvertebrates, riparian and floodplain species; and for water, sediment, and wood that naturally rejuvenate habitat. This blocked passage degrades the biological integrity of the river here, upstream, and downstream. The AFLAs and F&FP do not adequately address these problems.**

- a. ***Passage at Turners Falls Project.*** The Turners Falls dam blocks natural passage of fish and other aquatic, riparian and floodplain organisms, and turns approximately 20 miles of river into lake habitat. It also blocks natural river flows of water, sediment, and debris, modifying fluvial-geomorphic functions that would otherwise naturally rejuvenate river, riparian, and floodplain habitat. The old mill canal system, now converted into a 2 mile hydropower water-

delivery chute whose sole function is to add head to the Cabot station generators, is an unnatural environment that few fish or other organisms survive, while it leaves the adjacent stretch of the river itself, called the “bypass reach” (a name clearly focused on something other than river ecology), largely dewatered. Because of these problems, the Turners Falls Project is the most destructive bottleneck for migratory fish on the whole Connecticut River, with only 12% of the shad that pass Holyoke Dam passing Turners and 0% of American eel.

One of the great strengths of the AFLAs and F&FP is that FirstLight fully and directly acknowledges current problems with fish passage and addresses these problems in multiple ways. Importantly, through the Turners project, improved upstream fish passage will be centered around allowing fish and other organisms access to a much more natural migratory environment: “Migratory fish will follow the natural route of the Connecticut River where they can either utilize spawning habitat from the considerably higher bypass flows ... or continue to the spillway lift to access spawning habitat above” (F&FP, Proposed Article A300, Fish Passage Facilities). Accordingly, the plan includes a new state-of-the-art fish lift at the dam and subsequent decommissioning of the Cabot fish ladder (F&FP, Proposed Article A300, Fish Passage Facilities), and increased flows in the river rather than the canal and more naturalized flows out of Cabot (F&FP, Proposed Articles A110 and A120, Minimum Bypass Flows). FirstLight will also provide improved eel passage, improved downstream fish passage in the form of a plunge pool below dam, a barrier at Station 1 to prevent entrainment, and an improved Cabot system (F&FP, Proposed Article A300, Fish Passage Facilities). Implementation of these plans, as well as operating periods, are appropriately to be in consultation with fish and wildlife agencies (F&FP, Proposed Article A350, Fish Passage Facility Operation and Maintenance Plan).

**There remain three crucial issues for passage at the Turners Falls project where FirstLight’s plans fail to meet Water Quality standards for aquatic life and biological integrity:** (a) passage of other aquatic, riparian, and floodplain species besides fish, (b) providing passage through the project for natural river flows of sediment and wood (see our attached F&FP Comments); and (c) ensuring fish passage is built as soon as possible.

Currently there is no information or thought to (a) and (b) in the AFLAs or F&FP. Regarding (c), FirstLight explains that it is at the direction of the fish and wildlife agencies that the initial focus will be on downstream passage, in an effort to improve the number of successfully spawning shad that can go out to the ocean and return back to spawn again, as repeat spawners are particularly biologically productive. However, the delay of the upstream fishlift until year 9, a full 5 years after the downstream passage is to be completed, is not justified—especially since this upstream passage will delay improvements for other species besides shad as well.

**MassDEP must condition the FERC license for the Turners Falls Project to ensure adequate passage aquatic life and biological integrity within, downstream, and upstream of the Turners Falls Project and Impoundment:**

- (a) Downstream passage built concurrent with upstream passage, to be built immediately once the license is issued**
- (b) Adequate passage routes for other aquatic, riparian, and floodplain species besides fish;**
- (c) Passage through or over the project of natural sediment and wood that can maintain and rejuvenate habitat.**

- b. ***Passage at Turners Falls Impoundment.*** The Turners Falls impoundment is an altered ecosystem with deeper and slower water than its native riverine environment. Even more than in a regular dam reservoir, fish and other species in this impoundment also face regular hours-long dramatic velocity changes because of pumping and generation at Northfield Mountain. Flow direction can even reverse (negative velocity) anywhere between Turners Falls dam and the Northfield Mtn intake when the project pumps, and above the intake all the way to Vernon Dam when it generates (see LDES comments for gage data demonstrating one example nine miles upstream). Fish passage through the impoundment will become especially important once downstream passage and then upstream passage are improved at the Turners Falls project. As FirstLight mentions in its AFLA (Exhibit E), flow reversals and other velocity changes can disorient fish, and lead them to migrate in the wrong direction. When fish are disoriented or swim in reverse directions because of altered flows, they expend scarce energy and may fail to successfully migrate. Relicensing studies showed there were significant delays for migratory fish traveling through the impoundment to reach Vernon Dam's fish ladder due to distracting flows from the Northfield Mountain Pumped Storage intake (FirstLight 2016d). *This is a passage failure.*

Successful passage of fish and other organisms is also damaged by suction into the pumping system, which kills millions of native fish and other organisms. FirstLight proposes to install a barrier net to reduce entrainment, but it will be delayed for 7 years after the license is issued; and the mesh size will still allow entrainment of many small organisms. A fund will help mitigate for young fish killed but not for the impact on passage or on other organisms.

**MassDEP must condition the FERC license for the Northfield Mountain project to ensure adequate passage of fish and other aquatic life through the Turners Falls impoundment, including non-fish species native to the Connecticut River, and including native species that migrate within river systems (but not to the ocean i.e. are not diadromous). This is essential for aquatic life and biological integrity of upstream and downstream portions of the river as well. This includes requiring that:**

- (a) The barrier net must be installed as soon as possible, and improved mesh and changed seasonality must be required if the proposed plan proves inadequate;
- (b) Pumping and generating must be limited during migratory seasons of fish and other organisms

## 2. Flows and Hydropeaking

- a. ***Flows and hydropeaking at Turners Falls Project***

*Bypass reach:* The Turners Falls project's canal system is an unnatural environment that leads to high fish mortality and a largely dewatered region of the natural river, referred to as the "bypass reach." The F&FP proposes improvements shaped around a well-founded goal: to restore more natural river conditions for organisms in the river. However, the minimum flows proposed do not adequately provide for river habitat and ecological health, especially in summer months in the 0.9 miles between the Turners Falls Dam and Station 1. Nor do minimum flows protect key cultural and historic resources (see various comments by the Nolumbeka Project and others).

*Hydropeaking flows from the Turners Falls project:* One of the direct connections between using a river to generate electricity, and how a hydropower plant affects a river, is hydropeaking.

When generators are run according to electrical demand or price, this creates dramatic fluctuations in river flow and river level, threatening higher temperatures and stranding for aquatic organisms in low-water places and times, displacement and disorientation during high-flow places and times, and riverbank and riverbed erosion.

The F&FP proposes strong limits on hydropeaking from the Turners Falls project, which will dramatically improve conditions for aquatic life. However, the F&FP itself is conditioned on there being no additional requirements for the company in any flow-related requirements; thus these proposals are potentially at risk. (See more extended comments in our F&FP Comments, attached.)

**MassDEP must condition the FERC license for Turners Falls Project to ensure adequate flows for aquatic life and biological integrity, including:**

- (a) Requiring the flow changes toward reduced hydropeaking, and natural flow regime, proposed in the F&FP;**
- (b) Requiring 1400 cfs minimum flows in the portion of the river between Turners Falls Dam and Station 1, even during non-migration season—or, whatever flows are needed to maintain a high-quality diverse native macroinvertebrate community in this portion of the river.**

**b. *Flows and hydropeaking at the Northfield Mountain Project***

In contrast to large improvements planned at Turners, FirstLight proposes no improvements related to hydropeaking in the Turners Falls impoundment. The daily hydropeaking fluctuations from Northfield constitute overarching water quality impacts. High pumping and generation at Northfield can cause water levels to fluctuate up to 9 vertical ft/day (much more in horizontal feet), and, as described above, the river sometimes to flow backwards. Usual daily fluctuations are more like 4-5 feet. But 9 vertical feet, even 4-5 feet, means a far greater horizontal distance, with water sometimes extending up the streambanks, other times not; this width is watered and dewatered repeatedly, day after day. These dramatic fluctuations in river flow, river level, and wetted or dry streambanks threaten higher temperatures and stranding for aquatic organisms in low-water places and times, cause displacement and disorientation during high-flow places and times, and contribute to riverbank and riverbed erosion. These are damaging impacts on a wide variety of aquatic life, including not only fish but also a range of aquatic, riparian, and floodplain macroinvertebrates and wildlife.

Beginning with the new license and increasing in the future, Northfield Mountain is likely to cause greater, longer, and more frequent fluctuations in water flow and level in the Turners Falls impoundment (lower Northfield reservoir). This is because (a) the company proposes larger upper-reservoir storage; and (b) starting about 10-15 years from now, variable generation like wind and solar will become a larger part of the grid, while gas generation becomes a smaller part; this will bring about greater variability in ISO market prices and thus incentivize increased operations at Northfield. Additionally, (c) there are several regulatory and legislative initiatives in New England states and localities to incentivize energy storage beyond the ISO markets (for example, proposal for medium-duration storage procurements in Massachusetts H. 4503); if these provide additional funds to FirstLight to operate Northfield a larger number of hours

outside of when it is profitable under the ISO markets, these state-based initiatives will extend this hydropeaking further.

In addition to these impacts from likely changed operations in the future, the impact of flow and level fluctuations on aquatic life is likely to worsen as climate change ensues, and what are now warm water and high temperatures become hot water and hot, desiccated streambanks.

Finally, the future promises changed *timing* and *seasonality* of major flow and level fluctuations that will be impacted by both changing operations and changing climate. For example, in a discussion of flow reversals in the AFLA Exhibit E, FirstLight states that these are not much of a problem for spring migration season, because high natural river flows from the spring freshet mean that reversals are less frequent. But in the past these have also been low because in the New England grid, there has been relatively steady electric demand and supply in our spring season, when there is neither high heat nor high air conditioning needs. But now, with climate change we will have a smaller snowpack, and the spring freshet is likely to be earlier and more limited, with more water coming downriver during the winter and very early spring. And meantime, the use of Northfield is going steadily up in the spring as solar power adds to our grid and lowers ISO prices during the day while creating a high-priced evening ramp-up from the so-called Duck Curve that FirstLight mentions in its AFLA. ***Even if there are not flow reversals every day, there will almost certainly be major flow velocity reductions on a daily basis during the spring migration season under FirstLight's proposed operations., given the grid and climate futures we face.***

Finally, all this will be worse if FirstLight is allowed to permanently increase its upper storage. The company's proposal would allow unlimited extended fluctuations in level and flow. These extended periods could mean almost 10 hours straight of approx. 20,000 cfs flow additions at the Northfield intake—a flow from a single discharge point that at time exceeds that of the river itself (currently this level of flow addition at this volume is limited to a bit under 8 hours) and nearly 15 hours of pumping at full capacity (somewhat lower flow removal, very roughly 17,000 cfs—still above the river's flow at times—a level which now is limited to closer to 12 hours). ***This augmented storage is not necessary for Northfield to perform its important functions for the energy grid.*** As mentioned in the AFLAs and F&FP, FirstLight has been granted the ability by FERC to use this additional storage when most needed by the grid. ISO-NE has even written in support of this when it has most mattered to the grid, as shown in a letter referenced in its WQC certificate application; ISO-NE requested this exception from FERC in the crucial winter of 2017-18 when there were reliability concerns. Permanent expansion of this upper storage without water quality constraints promises negative and unnecessary impact on existing and designated uses of the Connecticut River.

**MassDEP must condition the FERC license for the Northfield Mountain Project to ensure flows are regulated to protect aquatic life and biological integrity, including:**

- (a) Ensure flow and level fluctuations do not threaten migration and other ecological processes and functions of fish, wildlife, endangered species, or macroinvertebrate communities that are indicators of ecological health, including as climate change and grid transformation proceed.**



- (b) Require that the upper storage *not* be permanently expanded, but rather exceptions be allowed only when important for grid reliability; at these times require that the water quality impacts be monitored and mitigated.

### 3. Monitoring and adaptive management

There will be significant changes over the terms of the next license for Turners Falls and Northfield Mountain projects in both external conditions (e.g. climate change) and operations (due to changing electric markets / technologies / grid interconnections as well as potentially additional storage if FirstLight is allowed this in the new license).

Given a multi-decadal license, there is tremendous need for ongoing publicly available data, for monitoring and assessments as new measures are implemented or as conditions change, and for adaptive management to alter operations and practices as new information arises.

The following highlights areas where there needs to be consistent data, monitoring, and adaptive management in order to monitor and meet water quality conditions.

- a. ***Monitoring and adaptive management at Turners Falls Project.*** The F&FP has significant monitoring and adaptive management provisions related to Turners flows and especially fish passage. Given past failures of fish passage here and elsewhere, FirstLight appropriately has an “effectiveness testing” plan for both downstream and upstream passage through the Turners Falls Project, with a variety of pre-planned adaptive management measures (AMMs) (Proposed Articles A200 and A320). There are also important effectiveness testing and AMMs for flows and ramping limits (Proposed Articles A320 and A330).

The AFLA includes proposed protection, mitigation, and enhancement (PM&E) measures, including Draft Biological Assessments (BAs) for shortnose sturgeon and Puritan Tiger Beetle (Explanatory Statement, p. 5). It is unclear, however, what plans for publicly available data, monitoring, evaluation, and adaptive management will be put in place for these species.

Additionally, the F&FP says FirstLight will provide hourly information on flows out of Turners Falls dam all year round (Proposed Article A210). This will be a major added beneficial source of data that will show how operations and flows are changing over time, for a host of reasons.

Among other things, this hourly flow data could enable empirical studies that can correlate flows with fish, hydrological, geomorphological, ecological, and recreation / use outcomes. However, it appears there is no plan to conduct such studies, outside of migratory fish and protected, endangered, and threatened species. More broadly, the Turners Falls project plan for data collection, monitoring and evaluation, and adaptive management seem poised to fail to monitor or address wider ecological indicators of ecosystem health (e.g. macroinvertebrate and fish communities, sediment flows, habitat rejuvenation and quality) and provide no monitoring plan for these.

There needs to be a plan to *use* the flow data, *and* to engage in broader monitoring, assessment, and adaptive management, in order to ensure attainment of water quality standards through the term of license.

MassDEP must condition the FERC license for Turners Falls Project to ensure adequate monitoring, publicly available data, analysis, and adaptive management, to ensure that water quality standards can be met throughout the license term. This includes:

- (a) Require the data and adaptive management measures of the F&FP be carried out, even if this agreement is set aside because of additional requirements;
- (b) Require the additional monitoring of shortnose sturgeon, Puritan tiger beetle, and other non-fish, non-endangered species, including aquatic macroinvertebrate communities below Turners Falls Dam, to analyze the impacts of flow, climate, operational changes, and mitigation; report on these as regular biannual water quality reports
- (c) Require adaptive management mitigation if data and analyses show underperforming aquatic life and biological integrity indicators.

- b. ***Monitoring and adaptive management at Northfield Mountain.*** The F&FP has much more limited monitoring and adaptive management provisions related to the Turner Falls impoundment and to hydropeaking into and out of the impoundment. There are monitoring, effectiveness testing, and adaptive management plans for the intake netting at Northfield (Proposed Article B210)—although if repeated effectiveness testing proves the net ineffective there is no backup plan. Additionally, FirstLight will provide hourly information on flows out of Turners Falls dam all year round (Proposed Article A210). Off-license, FirstLight will support getting Vernon flow data as part of Vernon license.

The effectiveness testing and Adaptive Management Measures (AMMs) at the barrier net are crucial, although others with greater expertise may question whether the schedule for testing, the slow timeline for installation and AMMs, and the limited AMMs that are proposed are well supported by evidence.

It will be crucial to assess the impacts of changing Northfield Mountain operations, climate change, and the new improvements that will come with the new license (e.g. passage) on water quality indicators in the impoundment. Factors that need to be assessed will include fish populations, fish migration, native aquatic macroinvertebrate communities, endangered and threatened species, and migration patterns of fish and wildlife. Almost none of this appears to be contemplated by FirstLight.

MassDEP must condition the FERC license for Northfield Mountain to ensure adequate monitoring, publicly available data, analysis, and adaptive management, to ensure that water quality standards can be met throughout the license term in the Turners Falls impoundment. This includes:

- (a) Require the data and adaptive management measures of the F&FP be carried out, even if this agreement is set aside because of additional requirements;
- (b) Make publicly available hourly data on Northfield pumping and generation. If this is considered proprietary, use it to analyze the impacts on aquatic life in annual reports which are made publicly available.
- (c) Require the monitoring of fish populations and migrations in the impoundment; endangered species; native non-fish, non-endangered species that are indicators of ecological community health, including aquatic macroinvertebrate communities;
- (d) Analyze the impacts of flow, climate, operational changes, and mitigation; report on these as regular biannual water quality reports.

- (e) Require adaptive management mitigation if data and analyses show underperforming aquatic life and biological integrity indicators.**

#### **4. 30 year license, and financial assurances for decommissioning**

Northfield Mountain is not a producer of clean energy. The plant requires 1.35 times more energy than it produces, and usually the marginal energy that must be added to the region's generation mix for it to pump is gas-generated, meaning Northfield's operations result in a net gain in greenhouse gas emissions. Also, though the company claims in its WQC application that its operations reduce cost-to-load for the region, its route to incentivize this would add greater costs to Massachusetts ratepayers than it would save the region, and in the process this would reduce cost-efficiency for the region, as higher cost-to-load is important in supply-scarce times, to disincentivize consumption (see LDES comments). Nonetheless, the plant is occasionally crucial for the grid (the AFLA and WQC application mention several instances), and in the 12% of annual hours it currently generates energy for the grid, it is doing so because it is cost-effective for the region during those hours, usually using gas generation to displace more expensive gas. The plant will continue to be cost-effective for the regional grid as long as it continues operating according to ISO markets (and not according to out-of-market state incentives or subsidies).

Nonetheless, there is a high likelihood that Northfield's usefulness to the grid will change significantly over the next 30-50 years. In the first two decades or so, Northfield's storage will likely become more useful, as offshore wind increases the price differentials in the ISO markets that make energy storage economical. It will become cost-effective more hours of the year, and will likely significantly increase its hours of operations—i.e. more pumping and more generation.

However, after those two decades or so Northfield is likely to diminish in usefulness, and in profitability, as other storage and demand-response technologies and capabilities are developed, as Hydro-Quebec imports begin through the NECEC line, and as the high-voltage grid becomes more interconnected with other regions.

Turners Falls is more steady in its economics, as it does not require such extensive and expensive power purchases, but it too may become less economical as the project ages and the impoundment collects sediment, lowering the storage capacity of the reservoir; and as a host of new sources of energy sources, technologies, grid interconnections, conservation, distributed energy, and systems of demand response come on line.

In a host of locations around the county, hydropower plants have faced similar reduced usefulness and cost efficiencies. Increasingly we are seeing decommissioning and/or removal as hydropower maintenance costs grow over time, profits diminish, and environmental impact mitigation costs multiply. In too many places projects have been sold off as bad assets to distant financial companies or bad-actor owners who have negligently let the projects sit, still impacting the river and sometimes causing severe safety risks (e.g. Edenville Dam in Michigan). In the last 25 years, the Turners Falls and Northfield projects have gone through at least four changes in ownership, and the current corporate owner is a pension company. Thus this process is not theoretical one only obtaining to distant locations.

Moreover, as described above, the Turners Falls Dam, canal system, and impoundment, and Northfield's operations, have profoundly altered the habitat of about 23 miles of the Connecticut River. The only way to truly reduce these impacts is to decommission and remove these projects. The restoration of Connecticut River ecology, fishable waters, and aquatic life, that could come from removal would be far beyond anything contemplated in current or past licenses, on the order of Penobscot or Kennebec or Elwha River restoration.

MassDEP needs to ensure that when these projects come to the end of their structural or financial life, there will be an opportunity for this level of water quality improvement, and for cost-effective restoration, rather than having abandoned, financially inviable projects left to impair water quality for decades to centuries to come, with costs falling on local and state taxpayers, as has happened in other places.

**MassDEP must condition the FERC license for Northfield Mountain to ensure that water quality will not be impaired beyond these projects' useful lives, and to ensure a fresh review of water quality impairments and mitigation needs, given the rapidly changing conditions over the next few decades. This means that the WQC certificate should condition the FERC license on:**

- a) No more than a 30 year license, so that a full review by 2053 can examine the plants' operations under changed environmental, energy, financial, and climate conditions:**
- b) Financial assurances for decommissioning when these projects come to the end of their useful or profitable lives.**

Energy Policy and Rivers group, Energy Geographies and Politics Project  
 RiverSmart Communities  
 Department of Earth, Geographic, and Climate Sciences  
 UMass Amherst  
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**TO:**

Debbie-Anne Reese,  
 Secretary Federal Energy Regulatory Commission  
 888 First Street, NE  
 Room 1A  
 Washington, D.C. 20426

May 22, 2024

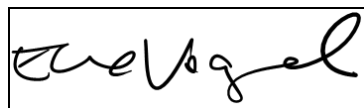
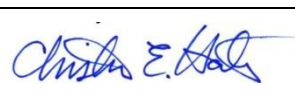
**RE:** License Applications, Turners Falls Hydroelectric Project (FERC No. 1889-081) and Northfield Mountain Pumped Storage Project (FERC No. 2485-063)

Dear Secretary Reese:

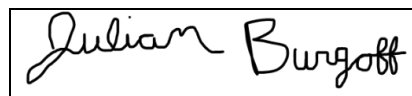
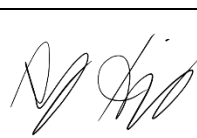
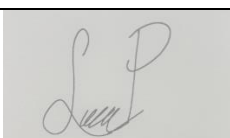
Please accept the following comments on the License Applications for Turners Falls Hydroelectric Project (FERC No. 1889-081) and Northfield Mountain Pumped Storage Project (FERC No. 2485-063).

Sincerely,

*Faculty:*

 Eve Vogel, Ph.D. Energy Policy and Rivers Group Earth, Geographic, and Climate Sciences UMass Amherst	 Christine Hatch, Ph.D. RiverSmart Communities Earth, Geographic, and Climate Sciences UMass Amherst
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*Students:*

 Julian Burgoff M.S. Environmental Conservation Massachusetts Cooperative Fish & Wildlife Research Unit UMass Amherst	 Avery Kolenski B.A. Geography expected Dec 2024 UMass Amherst	 Luca Pillidge B.S. Environmental Science expected May 2026 UMass Amherst
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**Comments on:** License Applications, Turners Falls Hydroelectric Project (FERC No. 1889-081) and Northfield Mountain Pumped Storage Project (FERC No. 2485-063)

**Energy Policy and Rivers, a subgroup of the UMass Energy Geographies and Politics Project**  
With input from **UMass RiverSmart Communities**

## About us:

UMass Energy Policy & Rivers, part of the UMass Energy Geographies and Politics Project, aims to bring expertise on both river management and electric markets and policy, to advocate for a clean energy transition that also protects ecosystems, communities, and public access to decision making. The RiverSmart Communities program combines social and river science, institutional and policy research, and community outreach to research and address river flood management in New England; in this document its expertise informs our comments on natural river processes.

## Summary:

The Turners Falls project (TFP) and Northfield Mountain pumped storage hydropower plant (NFM) have strong energy benefits, and will be especially valuable during the energy transition of the next 10-30 years. However, they also have very negative environmental impacts. The Federal Energy Regulatory Commission (FERC) should relicense them, but *with*: (a) requirements for full mitigation for environmental impacts required at both projects, and clear standards for power and development benefits; (b) constraints on their use for peaking, including prohibitions on use of additional storage in the upper Northfield reservoir outside of high-grid-need conditions; (c) licenses of 30 years, so that a new full assessment can be made in a timely manner given aging facilities, rapidly changing energy markets, technologies, and grids, and accelerating climate change; (d) robust requirements for annual public data about operations, greenhouse gas (GHG) emissions, and ecological processes and health, in addition to promised fish counts and endangered species surveys; and (e) required financial assurances for decommissioning funds.

The applications (Amended Final License Applications, FirstLight 2020a and 2020b, hereafter summarized together as “AFLAs”) and their supplemental settlement agreements (Flows and Fish Passage Agreement and Recreation Agreement, abbreviated F&FP for the former or SAs for both) fail to meet these recommendations. Specifically: (a) the AFLAs’ and F&FP mitigation proposals are inadequate, especially at NF; (b) there are no constraints on NFM additional peaking in the proposal; indeed, the proposal to increase storage in NFM’s upper reservoir promises more prolonged and impactful peaking and river level changes; (c) the company proposes licenses of 50 years, with only a few very limited (tightly-spelled-out) opportunities even for adaptive management; (d) there is very little new public data called for in the new proposals, and none on operations, GHG emissions, or ecological processes and health; and (e) the company fails to offer financial assurance funds for decommissioning in the very possible circumstance that these projects will no longer be cost-effective contributors to the grid in 50 years, a condition which risks having the future owner at that time abandoning the projects, possibly declaring bankruptcy, with costs for repair or decommissioning falling on local and state governments.

We recommend the projects not receive licenses unless these problems are fixed.

## Preface: The approach FERC should take to balancing the public benefit and negative impact of hydropower projects

Under FERC's hydropower license process, it is to balance power and development benefits with environmental values, including energy conservation, fish and wildlife resources (spawning grounds and habitat), visual resources, cultural resources, recreational opportunities, and other aspects of environmental quality (FERC 2004). Under FERC's July 13, 1995 *Mead* Corporation decision (72 FERC ¶ 61, 027, Project No. 2506-002), power and development benefits—what are understood to be the public benefits of hydropower—are defined narrowly, as energy generation, and statically, based on current energy markets. Following these guidelines, FirstLight in its Exhibit Ds emphasizes generation and generation revenues, with some attention to other revenues and passing mention of other ISO-NE markets (capacity, reserves, regulation). However, in other parts of its license applications, including the Executive Summary, Exhibit E, and its two Exhibit Hs, FirstLight is clearly claiming that its projects' benefits are broader than generation: it emphasizes its project's role in an energy transition to decarbonized energy, and its projects' ability to provide crucial grid services like quick load-following energy ramp-up (or on-demand load in case of an unexpected drop in generation), blackstart capabilities, reliability, voltage and frequency support, operating reserves, and storage. The company also mentions taxes paid to local towns as community benefits.

In these comments, we, like FirstLight, also consider broader power benefits than generation not only of the current projects but also the proposed license changes. But in contrast to FirstLight, we add considerations of (a) the limits to those benefits, including the likelihood that they will diminish dramatically over the course of a 50-year license and quite possibly over a 30-year license term; (b) their direct links if used more frequently to likely future higher environmental impacts, including many that remain unmitigated in the license application, and also their links to likely frequent windfall profits for the company in the next 10-30 years, which could easily pay to mitigate for increased impact; and (c) how based on these dynamic relationships of energy, decarbonization, revenue, and impact, the benefits and impacts of these projects can best be balanced in the next license to provide maximum public benefit. We suggest, as FirstLight does outside of Exhibit D, that FERC should define public benefits of hydropower more broadly than it has since its 1995 *Mead* decision. We also recommend, however, that in 2024, FERC's considerations of future energy benefits *also* need to account for a much more dynamic change over time than come out of *Mead*-based calculations of future benefit based on revenues and services of the recent past.

Further, to achieve FERC's mandated "equal consideration," in addition to stretching beyond the *Mead* approach in considering public benefit, we advise that FERC must equally stretch beyond the standard approach to environmental impact. Also, in addition to environmental impact, FERC should consider foregone public benefit in terms of environmental resources. In these comments, we model this approach. We consider not only impacts to a specific list of species and resources, but also the broad dynamics of a healthy ecosystem that will be robust to climate change and can sustain and replenish habitats, fish and wildlife; that can provide food resources on a great multistate river the size of the Connecticut, as was intended in the 1965 Anadromous Fish Conservation Act; and can meet full biological water quality indicators.

Overall our approach draws in spirit from Stanford University's [Uncommon Dialogue on Hydropower, River Restoration, and Public Safety](#), which aims to find ways to use hydropower when, where, and in ways it will most benefit the grid and an energy transition, while reducing hydropower, removing dams,

and restoring rivers where, when, and in ways that are most valuable to river ecosystems and the species and people that depend on them. We advocate as well for the principle that when there are high-energy-benefit operations that also create high negative impact in market contexts where the project owner can earn windfall profits for providing high benefits, that the project owner should pay to mitigate the unavoidable exceptional environmental damage. We recommend FERC adopt this more comprehensive approach in balancing public benefit and negative impact in developing these projects' licenses.

## Introduction: Public benefits and ecosystem impacts of Turners Falls Project and Northfield Mountain Pumped Storage Hydropower

The Turners Falls Project and NFM play significant roles in the New England electric system and grid. Turners Falls provides low-carbon energy, and NFM provides capacity, grid balancing, black-start, and other crucial grid functions. Thanks to these facilities' operations for the electric grid, they are able to earn for FirstLight Power a robust profit through ISO markets, bilateral and multilateral contracts, and REC markets. In 2019, Turners Falls had a profit of \$2,863,000 (FirstLight 2020a), and NFM had a profit of \$59,356,000 (FirstLight 2020b). In total, both facilities earned FirstLight \$62,219,000. The projects also provide considerable property tax revenues for the towns in which they are located, and a host of recreation benefits, which also are economic benefits for a lively western Massachusetts tourism and recreation industry.

However, the same infrastructure and operations that provide these functions also have high negative impacts on the Connecticut River, New England's longest and arguably most iconic river, which has an interconnected set of ecosystems from the Canadian border to Long Island Sound. The Turners Falls dam blocks natural passage of fish and other aquatic, riparian and floodplain organisms, and turns approximately 20 miles of river into lake habitat. It also blocks natural river flows of water, sediment, and debris, modifying fluvial-geomorphic functions<sup>1</sup> that would otherwise naturally rejuvenate river, riparian, and floodplain habitat and help sustain productive fish populations and fisheries. The old mill canal system, now converted into a 2 mile hydropower water-delivery chute ("power canal") whose sole function is to add head<sup>2</sup> to the Cabot station generators, is an unnatural environment that few fish or other organisms survive, while it leaves the adjacent stretch of the river itself, called the "bypass reach" (a name clearly focused on something other than river ecology), largely dewatered. Because of these problems, the Turners Falls Project is the most destructive bottleneck for migratory fish on the Connecticut River, with only 12% of the shad that pass Holyoke Dam passing Turners and 0% of American eel (U.S. Fish and Wildlife Service, CT River Fish and Wildlife Conservation Office 2022). Additionally, both the Turners Falls and NFM projects "hydropeak": they run their generators according to electrical demand—or, more precisely in this post-electric restructuring era, according to electrical price. This creates dramatic fluctuations in river flow and river level, threatening higher temperatures and stranding for aquatic organisms in low-water places and times, displacement and disorientation during high-flow places and times, and riverbank and riverbed erosion (Hayes et al. 2022).

Because these projects have both benefits and negative impacts, it is crucial that the next FERC license carefully balance trade-offs. The AFLAs and F&FP show tremendous thought, significant offers of investment and operations change from FirstLight, and lay out changes that promise to have considerable benefit to fish and wildlife as well as recreational boaters and anglers. FirstLight argues that the F&FP promotes "an appropriate balance of environmental improvements with the need to

maintain a low-cost and reliable source of clean, renewable power which contributes substantially to the reliability of the New England electric grid" (F&FP p.2).

However, the energy benefits to the grid and to an energy transition need to be recognized as also providing FirstLight with tremendous and growing opportunity for profit that will not accrue to the public. At the same time, there are major environmental impacts that remain unaddressed, affecting a premier environmental resource, the Connecticut River; and, since the proposed license term is 50 years, if issued, these impacts could remain unaddressed until 2074 or later. Most glaring is the fact that there are many opportunities to adjust the power operations and the environmental mitigation planned beyond, or differently from, what is proposed in the AFLA and the F&FP, to create a better balance of tradeoffs. For example, the larger storage reservoir and lack of peaking limits at NFM are not needed in order "to maintain a low-cost and reliable source of clean, renewable power which contributes substantially to the reliability of the New England electric grid." Yet the negative impacts of these proposed license conditions are predictable, and large. In short, overall, this proposal unfortunately promises deeply unequal public benefit, private benefit, and environmental impact.

Besides the need to adjust operations and mitigation in the next license, there is a need for additional data that can be used to learn from later on. Some monitoring, public data, and adaptive management provisions are included in the F&FP. But signatories had to agree that any additional measures would mean the F&FP was no longer in force, that is, parties, including FirstLight, will not be obligated to fulfill what it promised in that agreement. Yet there are still crucial gaps in our knowledge about ecological and physical processes and conditions in the project areas and about how the project operations affect them. The AFLAs and F&FP do not adequately address these ongoing gaps, nor do they put in place systems to acquire needed data on a regular and ongoing basis, assess changes in conditions as operations or external conditions change, and apply adaptive management when and if indicated. FERC must require this public data. And because of the strict limitations that have been put on adaptive management, the license term must be set at 30 years so that changed conditions can inform robust adaptations in operations and management.

## 1. Power and Community Benefits

In the AFLAs Exhibit Hs, FirstLight carefully describes the benefits of the TF and NFM projects. These include efficient, reliable, and flexible generation, voltage and frequency support and operating reserves; and in the case of TF, low-carbon energy (not zero-carbon; see Connecticut River Conservancy comments on these licenses, 5/22/24, section on reservoir emissions) that helps with the energy transition and Massachusetts' decarbonization goals; and in the case of NFM, New England's largest single source of flexible generation or load, as well as synchronized reserves and black-start functionality linked with excellent transmission to New York as well as the core New England grid, and large volumes of multi-hour storage that are already helping to balance out growing solar generation and are ready to do the same for the expected new volumes of off-shore wind. It mentions in the AFLA its incredible importance on a day the New York grid needed to be black-started, and

However, there are reasons to question how much and how long these projects will be especially valuable. As we described in [our comments on the Flows and Fish Passage Agreement](#), in the next 10-15 years or so, the projects' ability to provide on-demand power and energy storage is indeed likely to be increasingly valuable as solar energy continues to grow in New England and large volumes of off-shore

wind begin to come online. After that, however, pending changes in the grid, technologies, and the climate may begin to reduce their value. We point FERC to the Connecticut River Conservancy's comments on the license application (5/22/24), which elaborate with greater detail on our earlier points.

FirstLight proposes an increase in storage at NFM as a way “to provide regional electric reliability benefits by expanding Northfield’s ability to store large quantities of energy and enhancing its ability to deliver long-duration and flexible capacity when it is most needed” (F&FP Proposed Article B100). There is no doubt that Northfield Mountain is an excellent tool in ISO-NE's toolbox, and has an ability unsurpassed by any other resource currently on the grid to respond to major events like the shut-down of generators, neighboring systems, or transmission lines (Chadalavada 2023; Barton 2023). It also can rapidly provide load to the grid in events like “Snowtober” of 2011 when most coastal generators stayed online while demand dropped precipitously as millions of inland trees dropped their branches on power lines and caused widespread outages (personal communication, ISO-NE).

However, Northfield Mountain is already used (and highly compensated) when it is most needed. For example, although specific earnings are not public, it is likely that Northfield Mountain earned several million dollars in a few hours when the region was in scarcity and near-scarcity conditions on December 24, 2022 (Chadalavada 2023), the day “hydropower came to the rescue” (Barton 2023). Most days, however, Northfield Mountain is not needed much, and not used all that much, because the grid is relatively well balanced by other lower-cost resources that meet peak and flexibility needs.

As suggested above, Northfield may well be needed more 10 or 15 years from now, when wind power begins to replace gas generation on the grid, as the predominance of variable generation is predicted to cause regular price fluctuations in the ISO-NE markets. There may be more frequent times when supply and demand are especially out of balance, similar to what happened on December 24, 2022 (Chadalavada 2023).

It should be noted, although FirstLight does not spell this out in the AFLAs, that based on the tremendous benefit to the grid that Northfield is likely to provide through the early decade or two of a likely future wind-dominated New England, it could be argued that FirstLight must earn enough profit at Northfield in order to stay in business—and therefore it needs to be able to increase operations between now and that eventuality. However, neither greater upper-reservoir storage nor greater hydropeaking is needed for FirstLight to earn enough to stay in business until then. ISO-NE’s capacity market is designed to maintain generators like Northfield in use and availability for occasional or future need, and even under the lowered capacity revenues FirstLight predicted by 2024 in its AFLAs, it could continue to earn some \$30 million per year in the capacity markets. Indeed, it earned approximately \$33 million in 2024. Thanks to the excellent flexibility offered by hydropower, FirstLight can also bid into the profitable forward reserves market, as well as earn high windfalls in major events like December 24, 2022. Such events of course promise to increase in frequency with climate change and a grid more dependent on variable generation.

Finally, Northfield claims it provides community benefits in the form of taxes and jobs. However, what it does not say is that a) under the current proposal, taxes will shift from Montague, an environmental justice community (where TF is) to the more northern towns, where NFM is located; b) in all four towns where it has property, it has fought the Towns’ tax assessments and forced them to lower their assessments, because they effectively had to keep their budgets on multiple-year holds to respond to FirstLight’s challenge; and c) if NFM or TF becomes less competitive over time, both tax and job benefits



will diminish. The license should require guarantees that tax and job benefits will be maintained for the length of the license, and that the company will limit challenges to tax assessments.

## 2. Balancing energy benefits and environmental impacts of hydropeaking

One of the direct connections between using a river to generate electricity, and how a hydropower plant affects a river, is hydropeaking. When generators are run according to electrical demand or price, this creates dramatic fluctuations in river flow and river level, threatening higher temperatures and stranding for aquatic organisms in low-water places and times, displacement and disorientation during high-flow places and times, and riverbank and riverbed erosion (Hayes et al., 2022, 2022).

The complexity in the case of a hydropower license is that the same operation, peaking, that is a key benefit to the grid is a source of central harm to the river.

One of the great strengths of the TF AFLA and the F&FP is a proposal to reduce hydropeaking at the Turners Falls project. Moderations of peak flow that are proposed include ramping rate limits, moderation at Turners of any peak flows coming in from Vernon Dam, and limits on how far off the natural river flow (NRF) Cabot Station can run (F&FP Proposed Articles A140, A110, A120, and A160). In the case of flows out of Cabot, most of the time Cabot will have to be within 10% of NRF, but a specified number of hours a month (the number of hours varies according to month/season/time), flows can vary up to 20% from NRF (Proposed Article A160). This is a particularly sophisticated and balanced way to meet the energy-environment tradeoff: this additional variation up to 20% will allow Cabot to respond to especially high price signals in the ISO markets, thus providing the flexibility of hydropower when it is both especially needed, and especially remunerative for FirstLight. It can also use those hours to provide operating reserves, voltage and frequency support, and related services at urgent moments—also especially good for the grid, and for TF profits. At the same time, the lower variance (only up to 10% off from NRF) will mean that most of the time, the river will benefit from more natural ecological conditions.

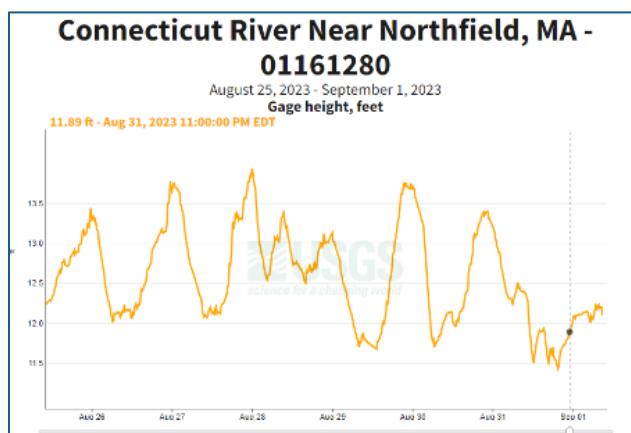
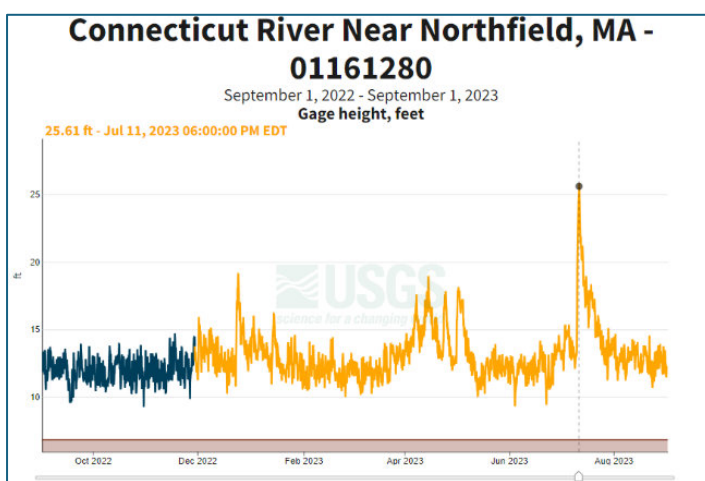
In contrast to balanced tradeoffs planned at Turners, FirstLight has a one-sided proposal for NFM. NFM is, as FirstLight argues, an enormous and currently unique tool for the ISO-NE grid under exceptional conditions like the 2003 blackout in New York City, or the Christmas Eve cold snap in 2022. ***But the benefits NFM provides with its more regular day-to-day and week-to-week hydropeaking are neither so unique nor so exceptionally beneficial.*** At best, by responding to ISO-NE daily and weekly price fluctuations, NFM provides a more cost-effective source of energy than the alternatives. However, in most cases, the alternative for regular daily flexibility would be a gas generator, and it is not at all clear that having NFM purchase (and consume) 1.35 times the amount of gas-generated power that it will generate a few hours later, usually causing a net increase in GHG emissions, is the best option for the grid.

***Yet daily hydropeaking fluctuations from Northfield, Vernon, and tributaries constitute overarching environmental impacts.*** High pumping and generation at Northfield can cause water levels to fluctuate up to 9 vertical ft/day, and the river sometimes to flow backwards.

As FERC hydropower relicensing staff know, open-loop pumped storage projects like NFM use rivers as their lower “reservoir,” and because of this, they have profound environmental impacts. Every time they

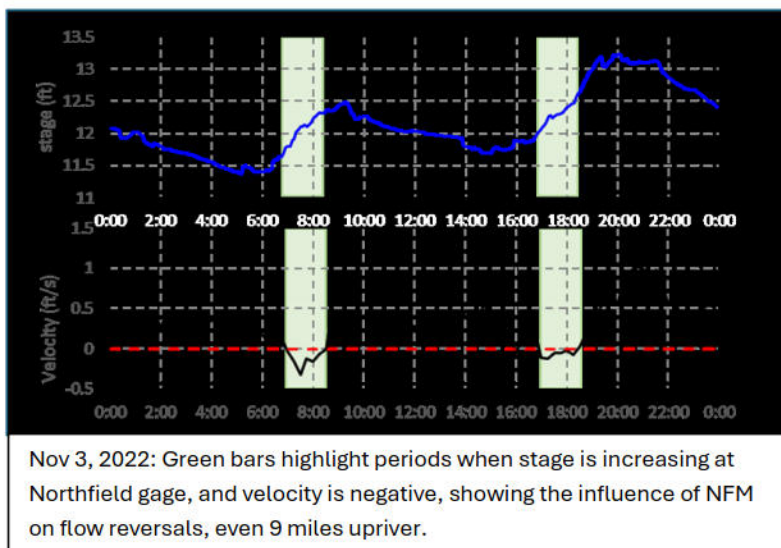
“charge” (pump) they suck up large volumes of river water, causing river levels to drop. NFM has the ability to suck up more water flow faster than the entire river can sometimes provide. When this happens, from the TF dam to the water intake, the river can flow backwards. In contrast, when the project generates energy, the opposite happens: water is poured into the middle of the river, river water levels rise dramatically, and the river from the intake to the upstream dam (Vernon Dam, farther away from the intake) can flow backwards. The AFLAs reference this phenomenon in a short section in Exhibit E discussing “flow reversals.” Under both the current and proposed license, pumping and generation at Northfield can cause water levels to fluctuate up to 9 vertical ft/day. Usual daily fluctuations are more like 4-5 feet. But 9 vertical feet, even 4-5 feet, means a far greater horizontal distance, with water sometimes extending up the streambanks, other times not; this width is watered and dewatered repeatedly, day after day. These dramatic fluctuations in river flow, river level, and wetted or dry streambanks threaten higher temperatures and stranding for aquatic organisms in low-water places and times, cause displacement and disorientation during high-flow places and times, and contribute to riverbank and riverbed erosion.

The graph to the right gives some sense of the fluctuations in water level over the last year, although this is about 9 river miles upriver from the Northfield intake / outflow, and not all the fluctuations shown here are caused by Northfield. The water level is shown varying from about 9 feet to about 26 feet. The highest levels, on July 11, correspond to this past summer’s floods. The daily fluctuations, however, are caused by “hydropeaking” — river flows that vary depending on hydropower production. The hydropeaking shown in this graph comes both from Northfield and several upriver projects, particularly Vernon Dam, the dam directly upstream on the Connecticut River.



A zoomed-in look at a relatively average few days (Aug 25-Sept 1, 2023, captured Sept 1 at about 9:30 AM), gives you some sense of more regular fluctuations. Here the river is going up and down over the course of a few days from 11.5 to 14 feet, so 2.5 vertical feet of variation. At the Northfield intake / outflow location downstream, this would be more extreme, likely closer to 5-6 feet in variance.

One situation when you can directly see the effect of Northfield, even at the USGS gage 9 miles upriver, is when the velocity actually goes negative at the same time the river level (“stage”) goes up. Hydropeaking from the upstream Vernon Dam would cause stage and velocity to increase, so this increased stage with negative velocity is the effect of Northfield overpowering the flow is coming out from Vernon. High generation from Northfield has made the river flow backwards for miles, all the way up to the USGS gage.



Under the proposed new license and increasing over the next few decades, **Northfield Mountain is likely to cause greater, longer, and more frequent fluctuations in water flow and level in the Connecticut River.**

This is because:

(a) The proposed license would allow a larger volume of upper-reservoir storage. More upper-reservoir storage will mean an increased length of time Northfield can generate from stored water—extending the current 8 hours it can run at its full capacity to a longer duration, close to 10 hours. At the same time, the physical-hydrological analog of this greater energy storage duration is longer durations of both pumping and release flows, i.e. greater fluctuations in river levels (as well as upper-reservoir levels).

(b) Once variable generation like wind and solar become a larger part of the grid, especially off-shore wind, greater variability in ISO market prices will incentivize increased use of storage. As stated in the AFLA Northfield uses about 34% more energy from the grid than it produces so it needs about a 34% price differential to be able to store and release profitably. As the daily price highs and lows become more extreme, Northfield may well end up either pumping or generating most hours of the day in the summer and winter. This means greater and more frequent fluctuations in river levels.

(c) Regulatory and legislative initiatives in New England states may incentivize energy storage beyond the ISO markets. For example, [Massachusetts’ House current Clean Energy and Climate Omnibus bill, H. 4503](#), could result in additional incentives for FirstLight to operate Northfield a larger number of hours outside of when it is profitable under the current ISO market structure. If so, these state-based initiatives will extend this hydropeaking further.

The F&FP asserts, astonishingly, that “Increasing the upper reservoir storage will have no adverse environmental effects” (Proposed Article B100). FirstLight appears to acknowledge that expanded storage will likely mean expanded operations—suggesting this in the AFLA Exhibits D and E—but in the F&FP asserts that this will have no effect: “FirstLight nor any other entity has identified potential adverse effects of the expanded operations on protected, threatened, or endangered species” (Proposed Article B100). Yet relicensing studies showed that existing hydropeaking already has a negative impact on fish spawning in the impoundment (FirstLight 2016c). It follows from the fish



spawning data in the impoundment that increased operations should at the very least be hypothesized to create larger negative impacts on a range of species and habitats.

***To balance out the modest benefits provided by daily hydropeaking with the large negative environmental impacts, the next license must both limit and mitigate hydropeaking at NFM.***

To fully address the impact of Northfield's hydropeaking would require idling or removal of the Northfield Mountain project, or construction of a lower reservoir separate from the river, to create a closed loop system. During the study selection process, the Connecticut River Watershed Council (now the Connecticut River Conservancy) requested a study to look at these options, but FERC rebuffed the need. The new license needs to make room for possible decommissioning at a future time when NFM may not be needed.

In the meantime, the new license needs to limit NFM hydropeaking to times when it is demonstrably needed for the grid, and to address the impact of hydropeaking when it is permitted.

The license should require reduced flow and level alterations in the impoundment during migration or emergence seasons. The AFLA suggests that flow reversals are uncommon during spring migration season, but they are increasing as spring solar brings low energy prices to the grid.

Unavoidable impact should be addressed through off-site mitigation of the same species of resources, as suggested by the F&FP fund to mitigate for unavoidable impact on fish sucked up into the NFM pumps, commensurate with the impact of hydropeaking.

The license should not allow permanent expansion of NFM's upper reservoir's storage, as it will shift the balance in the direction of far more impact for only modest improvements in benefit. Even in the future, when the New England grid may be dominated by wind, it will not be necessary. There is even less need now, years before wind is expected to become a dominant resource in the New England grid. FERC should select other options for its license conditions that were apparently not considered by the AFLAs for futures with more variable generation in New England. FirstLight notes in both the AFLA and the F&FP that FERC has approved temporary amendments to use the additional storage to support ISO-NE system needs. FERC should expand and automate this exception, rather than make additional storage standard practice. Because ISO-NE market prices fluctuate directly in response to grid need, and hydropeaking is being justified based on grid need, the license should allow greater hydropeaking, and greater use of the upper reservoir, not based on a set number of hours per month, as at Cabot, but on electric market price deviation from the norm. The license should automatically enable use of additional storage at times of expected high grid need (going into December 24, 2022), so that FirstLight need not wait for FERC to allow case-by-case temporary amendments.

### 3. Ecosystems and Data

The following section is abbreviated because of lack of time at the end of a busy semester. We refer you to our more complete discussion of these issues in [our comments on the Flows and Fish Passage Agreement](#).

Years of research have affirmed the importance of natural river conditions and processes in providing for diverse and self-maintained habitats and species assemblages (e.g. Yoder et al. 2008). One of the great strengths of the AFLAs and F&FP is that FirstLight addresses this in multiple ways in at TF. The Turners Falls canal system creates an unnatural environment that leads to high fish mortality and a largely dewatered region of the natural river. The AFLAs and F&FPs strong improvements, improving flows in the so-called “bypass reach.” The Turners Falls impoundment is another highly unnatural environment. In contrast to TF, this is largely unaddressed in the AFLAs and the F&FP. What is still missing in both is attention to broader species, ecological functions, and data to monitor and understand these and the impact of operations on these.

Briefly, the license needs to include:

- Ongoing data collection and performance standards for:
  - Passage and populations of aquatic, riparian, and floodplain species besides fish;
  - Fish passage through the Turners Falls impoundment.
  - Macroinvertebrates and other indicators of biological water quality
  - Habitat refuges
  - Natural sediment flows and large wood needed to maintain and rejuvenate habitat, riffles and pools (Brandt 2000).
  - Changing ecosystem health and natural biophysical processes in relation to climate change
  - Impacts of increased / changed patterns of hydropeaking at Northfield Mountain on fish and other organisms; on hydrological, geomorphological, and ecological processes; and on recreation / use outcomes, including as operations change or hydrology changes with climate change.



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TO:

Tom Ferguson, Ph.D.

Energy Storage Programs Manager, Renewable and Alternative Energy Division  
Massachusetts Department of Energy Resources

RE: Mid- and Long-Duration Energy Storage Strategy Study

Dear Dr. Ferguson,

Please accept these comments on the Mid- and Long-Duration Energy Storage Strategy Study.

I lead the UMass Energy Policy and Rivers group, part of the UMass Energy Geographies and Politics Project. The UMass Energy Geographies and Politics Project consists of professors, student researchers, and alumni who work on electricity policy, markets, politics, sustainability, and environmental justice. The UMass Energy Policy and Rivers group brings special expertise on energy markets and policies related to hydropower and rivers, and related river and community impacts, policy, and regulatory processes. In the Energy Policy and Rivers group I also work with a river NGO advisory group who help guide on issues and interface with clean energy policy in Massachusetts and beyond.

I attended the second stakeholder session, reviewed the enabling legislation, commented on and read the RFP, and read the written comments that came in during the development of the RFP. Having seen the August presentation to stakeholders, my comments in this document are not primarily on the study thus far but rather the policy implications to come. In addition to broad comments on policy coming out of the E3 presentation, I have specific concerns about recommendations in relation to pumped-hydro storage. By extension, I offer some thoughts on how the Commonwealth could begin to weigh and approach the broader environmental, social justice, and cost considerations of various storage technologies and their alternatives. Finally, I added a section reiterating some key points that Regine Spector and I made in our comments on the Study as you were developing your RFP, considerations that are unfortunately absent from this study thus far.

#### A. General policy implications from the storage study.

1. The data and graphs presented by E3 show very clearly that medium- and long-duration storage have a strong role to play in a future energy transition and grid for Massachusetts and New England. The ability to reduce net peak load on the system from a predicted 50 GW or so to something more like 30 GW would be a major benefit to the region and the climate. This is good news in comparison to the Clean Energy and Climate Plan for 2030, which, as your RFP notes, “did not call for deployment of mid- and long-duration storage and rather models the New England region as relying on continued usage of natural gas-fired generation for firming and balancing applications.” ***The Commonwealth and New England will be well-served by carefully crafted regulations, investments, and/or incentives related to medium- and long-duration storage.***

2. The consultants note that during winter reliability events when wind and solar are low for over a week, storage may need to be charged with fossil fuels. Given the fact that all storage is a net consumer of electricity, it will be important for the consultants to calculate what the net GHG emissions would be if storage is deployed during such periods (obviously it will depend on the efficiency of different technologies—and, as the consultants point out, the existing grid context), versus the business-as-usual option we have now of occasional very dirty, and problematic in terms of EJ, peaker plants being brought on line. ***Any kind of incentive program from the Commonwealth related to the use of storage for winter reliability must have the ability to provide nuance that will result in the lowest possible GHG emissions and EJ (especially health) impacts from peaker plants under different weather scenarios, grid contexts, and storage technologies.*** Existing policies like the RPS (clean peak) and PPA procurements might not be able to have that nuance without significant modification. This may be a context in which DOER, the Massachusetts AG's office, and NESCOE need to work carefully with NEPOOL and ISO for market changes (e.g. a carbon price); or it may be a context where markets simply will not give an adequate signal, and DOER and DPU should consider a regulatory approach, perhaps paired with procurements. More on this below.
3. In the stakeholder session Q&A, E3 made a very interesting observation: in their models, load flexibility could play the same role as storage. The policy implication is clear: ***the Commonwealth should find ways to incentivize load flexibility even more than storage, whether with similar instruments or entirely new ones.*** Load flexibility should come first over storage because: a) it does not cost additional net electricity consumption; and b) it will reduce the overall environmental and social impact because it generally requires less resource-intensive deployment of infrastructure or operational impacts compared to storage. Among load flexibility goals, one key one should be ***demand reduction***. This is different from efficiency and conservation and needs to be much more firmly and widely supported by the Commonwealth, as it has wide environmental and social benefits beyond GHG reduction.
4. The study suggests clearly that there may be justification for at least three kinds of storage incentives:
  - Procurements for new storage technologies and infrastructures of varying durations (medium, long, and longer) that could not otherwise get into operation, to cover their initial capital and other costs. The consultants and DOER should make sure, however, that any ratepayer-subsidized procurements are actually needed. Given E3's analysis that different durations of storage will be needed in successive times and tranches, any procurements should be timed accordingly. (A colleague looked at the interconnection queue and suggests there is plenty of storage ready to come on line and incentives may not be needed? Is some of this medium or long duration?—perhaps what is still most needed is help with that queue, and regional transmission planning?)
  - Extending the clean peak standard to cover storage for more than 4 hours—again, *if and when* this is needed. ISO energy market price differentials are already doing a good job handsomely rewarding storage when it is especially valuable to the grid. The E3 study suggests these rewards may increase sharply without further incentives as off-shore wind is built (at least at first; see next bullet). (See section B of this document.)
  - A storage capacity market beyond the existing ISO-NE capacity market. Based on the E3 August presentation, it appears that this may be especially important once each tranche of storage roles out (medium, then longer, then longer...) saturates the market, and prices diminish (including for

regulation and reserves markets, etc.). At some point there may come a time that it is difficult for each duration of storage to earn enough to stay in operation. Given the critical importance of storage suggested by the E3 models during peak seasons and reliability events, the region will need to have excess storage capacity, for multiple durations of storage. A storage-specific capacity market (or perhaps an effective load carrying capability (ELCC) market??) may be the role of ISO-NE, not Massachusetts, but this study could be used to inform ISO-NE's deliberations on how to deal with storage.

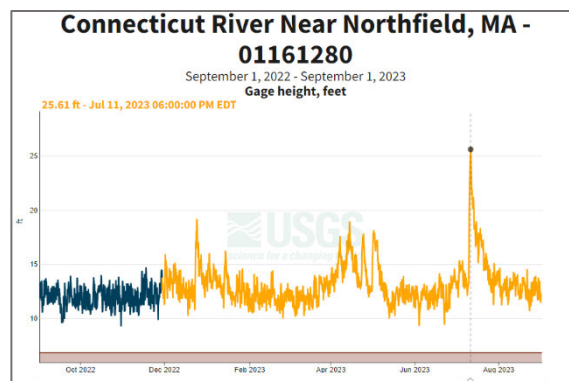
## B. Recommendations in relation to pumped-hydro storage, especially Northfield Mountain

### Background: Pumped-hydro storage and river fluctuations

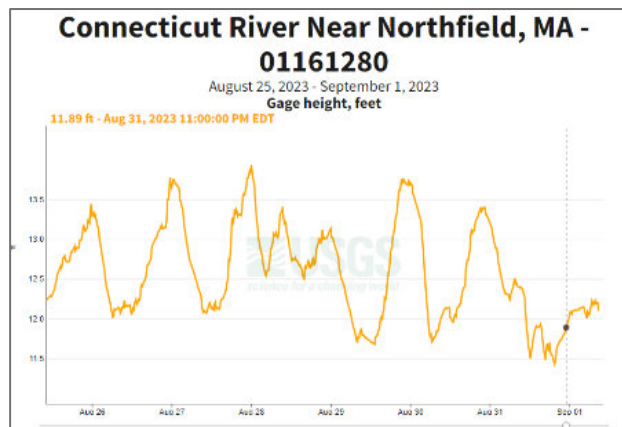
E3's models suggest strongly that the largest existing supply of energy storage in New England, pumped hydro storage, is going to play an important role in the future of New England's energy grid and the energy transition. Both Northfield Mountain and Bear Swamp projects are rated as medium-term under the study definition (8 and 6 hours, respectively), although Northfield might qualify as long-term if its next license allows it to store additional water in its upper reservoir. Together they and the tiny Rocky River project in Connecticut provide about 1800 MW of pumped hydro storage capacity for the New England grid. This is only about 10% of what Massachusetts may eventually need according to E3's models, which means probably about 5% of the region's future needs. Based on this, these projects can certainly not solve the future supply and reliability problems; however, their contributions will be valuable for some time, especially on the early edge of offshore wind development, and continuing until the projected future when storage markets start to saturate. And even then, they may well be worth keeping on line for reliability events.

However, these open-loop pumped storage projects use Massachusetts rivers as their lower "reservoir," and because of this, they have profound environmental impacts. Every time they "charge" (pump) they suck up large volumes of river water, causing river levels to drop. They have the ability to suck up more water flow than the entire river sometimes provides. When this happens, from the downstream dam (Turners Falls) to the water intake, the river can flow backwards. In contrast, when the project generates energy, the opposite happens: water is poured into the middle of the river, river water levels rise dramatically, and the river from the intake to the upstream dam (Vernon Dam, farther away from the intake) can flow backwards. Under both the current and proposed license, pumping and generation at Northfield can cause water levels to fluctuate up to 9 vertical ft/day. Usual daily fluctuations are more like 4-5 feet. Understand that 9 vertical feet, even 4-5 feet, means a far greater horizontal distance, with water sometimes extending up the streambanks, other times not; this width is watered and dewatered repeatedly, day after day. These dramatic fluctuations in river flow, river level, and wetted or dry streambanks threaten higher temperatures and stranding for aquatic organisms in low-water places and times, cause displacement and disorientation during high-flow places and times, and contribute to riverbank and riverbed erosion.

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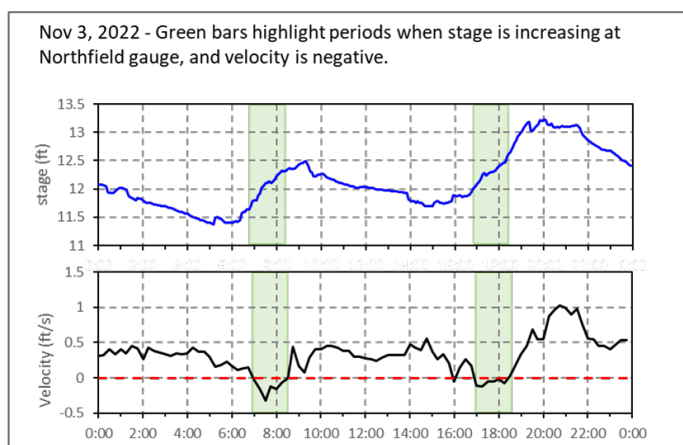


summer's floods. The daily fluctuations, however, are caused by “hydropeaking” — river flows that vary depending on hydropower production. The hydropeaking shown in this graph comes both from Northfield and several upriver projects, particularly Vernon Dam, the dam directly upstream on the Connecticut River.



A zoomed-in look at a relatively average few days, such as the last week (Aug 25-Sept 1, 2023, captured Sept 1 at about 9:30 AM), gives you some sense of more regular fluctuations. Here the river is going up and down over the course of a few days from 11.5 to 14 feet, so 2.5 vertical feet of variation. At the Northfield intake / outflow location downstream, this would be more extreme, likely closer to 5-6 feet in variance.

One situation when you can directly see the effect of Northfield, even at the USGS gage 9 miles upriver, is when the velocity actually goes negative at the same time the river level (“stage”) goes up. Hydropeaking from the upstream Vernon Dam would cause stage *and* velocity to increase, so this increased stage with *negative* velocity is the effect of Northfield overpowering whatever flow is coming out from Vernon. High generation from Northfield has made the river flow backwards for miles, all the way up to the USGS gage.



Beginning with the new license (expected 2024 or 2025) and increasing over the next few decades, Northfield Mountain is likely to cause greater, longer, and more frequent fluctuations in water flow and level in the Connecticut River.

This is because:

- (a) The proposed license would allow a larger volume of upper-reservoir storage. The upper reservoir is the artificial lake built on top of Northfield Mountain, that holds the water the Northfield project pumps up from the river, and then later releases. The volume that FirstLight is allowed to store in the upper reservoir is the maximum amount of water the project can store and then release. More upper-reservoir storage will mean an increased length of time Northfield can generate from stored water—extending the current 8 hours it can run at its full capacity to a longer duration, likely exceeding the 10 hours needed to be defined as “long duration” storage under this Study’s definitions. At the same time, the physical-hydrological analog of this greater energy storage duration is longer durations of both pumping and release flows, i.e. greater fluctuations in river levels (as well as upper-reservoir levels).



- (b) As E3 show, once variable generation like wind and solar become a larger part of the grid, especially off-shore wind, greater variability in ISO market prices will incentivize increased use of storage. Northfield uses about 30% more energy from the grid than it produces so it needs about a 30% price differential to be able to store and release profitably. As the daily price highs and lows become more extreme, Northfield may well end up either pumping or generating most hours of the day in the summer and winter, when E3 models show demand and supply with significantly different timing in daily peaks. This means greater and more frequent fluctuations in river levels.
- (c) Regulatory and legislative initiatives in New England states to incentivize energy storage beyond the ISO markets, including the Massachusetts Mid- and Long-Duration Energy Storage Strategy Study, could result in additional incentives for FirstLight to operate Northfield a larger number of hours outside of when it is profitable under the current ISO market structure. If so, these state-based initiatives will extend this hydropeaking further.

### FirstLight's commissioned Energyzt 2020 study: A critique

In a 2020 study commissioned by FirstLight, "Northfield Mountain Pumped Storage: Assessment of Contract Benefits in an Increasingly Renewable Region," Energyzt Advisors, LLC, argued that "if Northfield is contracted to provide a guaranteed amount of energy into the day-ahead energy market during high-priced hours each day as opposed to operating as a merchant plant," the region would benefit from carbon emissions reductions, peak price shaving and reductions in cost to load, improved energy security during the winter months, and fast-ramp capability that increasingly will be required for reliability.

More recently, FirstLight quoted that study in its written comments as you were developing the RFP for the Mid- and Long-Duration Energy Storage Strategy Study, saying: "In a study published by Energyzt, LLC in June 2020 (included below), the firm concluded that operating just two of Northfield Mountain's four units more frequently would produce more than \$410 million in consumer savings between 2022 and 2030. Additionally the same regimen would reduce carbon emissions by an average of 180,000 metric tonnes annually."

It appears from the study and these comments that FirstLight is poised to recommend that the Commonwealth consider a PPA procurement for Northfield to enter noncompetitive bids into the ISO-NE day-ahead market, 365 days/year. Because this is based on the Energyzt study, it is worth taking a moment to review the study.

Simply put, the Energyzt Study is based on several flawed assumptions, suspect inferences, and incorrect conclusions. Here is a summary of some of the problems in this report. I am happy to detail more if needed.

1. The Energyzt report states that the Northfield capacity factor is 8 percent, suggesting that this is terribly low. However, given the fact that Northfield needs to pump for approximately 12 hours at full power to generate approximately 8 hours at full power (its longest duration at full capacity), its maximum possible capacity factor is about 40%. A low capacity factor is normal for storage. (Hence, presumably, E3's use of ELCC instead of capacity factor.) Indeed, [the EIA says that capacity factors for pumped storage around the country range from about 8% to 17%](#). The same EIA page shows that use of pumped hydro storage is especially low in the spring and fall when demand is generally less. Northfield is on the lower end of this range not because something is wrong, but because on the

New England grid, we rely on gas as our marginal resource most of the time. Much of the time the marginal resource at both low and high price points of the day is gas, and hence the price differential that would make it economical for Northfield to operate simply isn't there. That also means, however, that the most cost-effective resource to generate is not pumped hydro.

2. The Energyzt report states that having Northfield bid into the day-ahead market more, even outside of ISO energy market signals, will lower GHG emissions, and also improve system reliability and security. This is highly unlikely. Of course bidding into the DA market would not necessarily change anything about actual energy use (see #4). But if it did result in changed use out of energy market signals, using Northfield more will not produce more wind or solar energy. Those are currently limited by their absolute volumes on the grid; and their growth—especially that of off-shore wind, which as E3 shows will be the game-changer for the region, is slowed by other factors, like siting, transmission, and interconnection delays. It is likely true that if Northfield consumed more energy during low-demand hours, that a larger portion of that consumed grid energy would be nuclear energy, since in lower-demand times the steady supply of nuclear is a larger portion of the total. But even at those times, the marginal resource is usually gas—and thus it would be gas that would need to be burned in greater amounts to generate the power that Northfield would consume. Then, at the higher demand times when Northfield generated outside of ISO market signals, Northfield would displace mainly... gas generation. Perhaps Northfield would displace somewhat less GHG-intensive gas while using more GHG-intensive gas. But, it would consume about 30% more energy than it produced while it did this. The net result will not benefit GHG emissions.

There are of course times when Northfield is an incredibly important resource that can displace very high GHG emitting resources like oil. But, those resources are expensive, and Northfield already gets strong market signals to perform at such times. Northfield additionally can provide fast reactions, pumping or generating in a matter of minutes, to stabilize the grid. Both strengths were in evidence, for example, on December 24, 2022, when there was a scarcity event. [As FirstLight's CEO exclaimed proudly](#), Northfield (and other hydro) was a significant contributor to providing reliability—and probably displaced some of the oil that might have been burned. There is no public reporting on the revenues generated by such events but [an ISO-NE report on the event](#) shows that energy and ancillary market prices spiked steeply. It is likely that FirstLight earned millions of dollars in a few hours on that single day; existing ISO-NE market signals did their work well.

When in the future there is ample off-shore wind on the grid, daily low and high prices will diverge. Then, Northfield will operate more—based on ISO market signals, fulfilling exactly the role that the Energyzt report extols. It does not need a Massachusetts contract to do this.

3. The Energyzt report claims that having Northfield bid into the Day-Ahead market outside of ISO market signals will also decrease cost to load and therefore energy cost to the region. This would seem to assume that Northfield will bid low enough into the DA market that it will shift the marginal resource on the grid during the times Northfield is generating. However, this does not take into account the cost of the contract to pay Northfield to do this, which should be subtracted from any cost that benefits the region. It should also be noted that if this actually worked, Energyzt is proposing that Massachusetts ratepayers subsidize those of the other five New England states. The claim also does not take into account the real-time market, when settlement happens—and which might be distorted by Northfield's out-of-market bids and operation. Finally, it does not take into account the fact that if this worked, it would be distorting the competitive energy market to lower prices at times of supply scarcity, when otherwise higher prices should signal a reduction in

consumption. There is a risk of actually increasing consumption because of this distortion. In short, there is a reason that Northfield should not operate when it's not able to do so according to the ISO energy markets: it's not getting the price signal it needs because there is another resource on the grid that can operate more cost-effectively. Massachusetts ratepayers should not pay it to do otherwise.

### Policy implications: Pumped hydro storage

In terms of the three policy implications described in Part A, the above analyses suggest:

- There is no justification for a PPA procurement for pumped storage hydropower. It should be noted that this also applies to the suggestion in FirstLight's comments to you as you were developing the study that, "we recommend that Massachusetts closely examine pairing the operation of existing grid-connected energy storage with large-scale offshore wind projects. Such a pairing will enable the Commonwealth to deliver offshore wind when the region, the system and consumers need it most, not limited to periods when the wind is blowing.... [T]here are already more than 1,800 MW of installed energy storage resources capable of pairing with offshore wind facilities the moment the wind generation comes online." Yes, that storage is capable and ready, and will be highly useful once the off-shore wind comes on line. It will be signaled appropriately by ISO-NE energy markets and financially rewarded to extend out the timeframe when that wind benefits the region. Subsidizing pumped storage hydropower further with a contract, however, will neither speed up the wind installation nor improve its use. And, it would mean the Commonwealth's ratepayers would be paying for the same wind twice: once from the wind energy procurements and again when a pumped storage hydro facility is paid to store that wind.
- The clean peak standard will only apply to pumped storage hydro if Northfield is permitted to expand its upper reservoir and the Commonwealth considers this "incremental." If part of what comes out of this study is that the clean peak standard is expanded so longer-duration storage becomes more valuable, DOER should carefully analyze whether this will incentivize greater pumping and generation at Northfield. If so, ***Northfield should be required to fully mitigate—offsite if necessary—the incremental environmental harm to the river.*** If this is too difficult for DOER to add to its policies, then Northfield could be required to pay a percent fee that could become a fund for mitigation.
- The ISO-NE capacity market functions to help keep relatively low-earning generation projects that are necessary for occasional generation on line. Once off-shore wind comes on line, pumped storage hydropower is expected to become high earning. For now though, and in the more distant future once other storage is developed, it is important for Northfield to continue to earn revenue from the capacity market to stay on line for the times it is truly needed. Based on its relicensing applications, Northfield gets ample profit to stay in business for the foreseeable future, although its revenue from the capacity market is expected to decrease. There may be a justification at some point for a storage capacity market to supplement the existing capacity market.

Expanding out more broadly, this view of pumped storage hydropower shows that not only the deployment of this storage technology, but also its changing operational use, has significant environmental impacts. I have not even touched on it above, but changing operations, their environmental impacts, and the financial repercussions, also have broad social impacts: impacts on Native American groups with cultural and historic resources, recreational users, fishers—including fishers up and down the river who supplement their food security with migratory fish that pass through the

Northfield portion of the Connecticut River, the erosion of riverside property owners' lands, access to the river and riverbanks, fiscal implications for local towns, and more. If Massachusetts policy subsidizes increased use of storage, it is subsidizing impacts on all of these. This is of course while your sister agencies are spending other state resident dollars to protect these resources and users.

For this reason, if Massachusetts is to provide incentives for storage, these impacts need to be accounted for in your calculations, your analyses, and your policy. (See also below.)

### C. Broader implications: Recommendations

The analysis above about pumped storage hydropower and Northfield in particular point towards ways the Commonwealth could begin to weigh and approach the broader environmental, social justice, and cost considerations of various storage technologies and their alternatives. No storage technology has zero impact, any more than does any generation.

To ensure benefit to the Commonwealth, MassCEC, DOER, and EEA must consider ecosystem impacts and environmental justice implications of all storage options, and include input from stakeholders from local communities. Different technologies have different impacts on local environments and communities. It is crucial that the study develop a list of potential technologies and likely *locations* for development or changed use, provide that information to local stakeholders and EJ groups, and hold hearings that are both local (accessible in person) and have remote options.

These significant “costs” (and some benefits) are not included in traditional economic analysis and should be included in the study report—much as I have begun to do above for pumped storage hydropower at Northfield Mountain. These kinds of interconnections were well recognized in the 2022 Act’s provisions on wind energy. These must inform the policies that come out of the report as well.

### D. Other general points absent from the storage study.

This section reiterates a couple points not covered above that Regine Spector and I made in our comments on the Study as you were developing your RFP, considerations that are unfortunately absent from this study thus far.

1. The study must consider new and diverse storage technologies and alternatives, not only medium and long-term energy storage. As the now 6-year-old State of Charge report showed, there are many new technologies that offer a wide range of storage options. Additionally, other technologies such as demand response, conservation, and distributed storage (e.g. car batteries) may provide some of the benefits of large-scale and medium- and long-duration storage. Many of these technologies will become even more beneficial in a future of potentially dramatic growth in availability of smaller-scale and distributed energy such as electric cars, busses and transport vehicles, battery walls, and smart grid-enabled metering and price signals. A narrower study focusing on current options and medium- and long-term storage risks recommendations that will keep existing long- and medium-duration storage, which are primarily pumped storage facilities that have dramatically changed the Connecticut and Deerfield Rivers, artificially competitive, possibly obstructing more creative and resilient decarbonization pathways.

2. Overall the goals of this study, and any policy that arises from it, should be:
  1. Contribute to rapid decarbonization in Massachusetts and beyond
  2. Limit over all ecological and social-justice impacts, in Massachusetts and beyond
  3. Limit long-term ratepayer and taxpayer cost
  4. Make tradeoffs visible and comprehensible, and provide for robust participation, to democratize the energy transition
  5. Ensure that expenditures of ratepayers or taxpayers through storage incentives are accountable to public purposes over time
  6. Support other energy system goals including resilience (which may be achieved e.g. through diversification and the development of distributed energy)
  7. Allow for “adaptive management,” i.e. changing programs and incentives as technologies, grids, and other factors change

Thank you so much for all your thoughtful care and attention to this Study, and to the Commonwealth.

Sincerely,

A handwritten signature in dark ink, reading "Eve Vogel". The signature is fluid and cursive, with the first name "Eve" and the last name "Vogel" clearly legible.

Eve Vogel  
Associate Professor  
UMass Energy Policy & Rivers / Energy Geographies & Politics Project  
Department of Earth, Geographic, and Climate Sciences  
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Energy Policy and Rivers group, Energy Geographies and Politics Project  
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 UMass Amherst  
 Amherst, MA 01003

**TO:**

Kimberly D. Bose, Secretary  
 Federal Energy Regulatory Commission  
 888 First Street, N.E.  
 Washington, D.C. 20426

May 26, 2023

**RE:** Flows and Fish Passage Settlement Agreement, Turners Falls Hydroelectric Project (FERC No. 1889-081) and Northfield Mountain Pumped Storage Project (FERC No. 2485-063)

Dear Secretary Bose:

Please accept the following comments on the proposed Flows and Fish Passage Settlement Agreement for Turners Falls Hydroelectric Project (FERC No. 1889-081) and Northfield Mountain Pumped Storage Project (FERC No. 2485-063).

Sincerely,

*Faculty:*



Eve Vogel  
 Energy Policy and Rivers Group  
 Earth, Geographic, and Climate Sciences



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Julia Fox  
 M. Public Policy

Jessica Podesta  
 BS. Environmental Science

## **Comments on: FirstLight Flows and Fish Passage Settlement Agreement of March 31, 2023**

### **Energy Policy and Rivers, a subgroup of the UMass Energy Geographies and Politics Project**

With input from

#### **UMass RiverSmart Communities**

#### **About us:**

UMass Energy Policy & Rivers, Spring 2023, part of the UMass Energy Geographies and Politics Project, aims to bring expertise on both river management and electric markets and policy, to advocate for a clean energy transition that also protects ecosystems, communities, and public access to decision making. The RiverSmart Communities program combines social and river science, institutional and policy research, and community outreach to research and address river flood management in New England; in this document its expertise informs our comments on natural river processes.

#### **Summary:**

The Turners Falls project and Northfield Mountain have very strong energy benefits and very negative environmental impacts. For this reason, the effort to balance trade-offs through this “Flows and Fish Passage” settlement is very important. The Agreement includes many valuable and well-justified measures that successfully provide best use of these projects for energy while mitigating a number of high environmental impacts. However, the *lack* of measures addressing numerous other critical issues means that overall, the Agreement does not achieve this balance. These missing measures include: measures to meet the needs of species and ecological processes other than migratory fish and protected, endangered, and threatened species; measures to address and mitigate the overarching impacts of the Turners Falls impoundment and Northfield hydropeaking; measures to ensure that high hydropeaking and pumped storage are prioritized over environment only when or if they are most needed for low-cost, reliable energy, and/or an energy transition to low-carbon energy; and data, monitoring, and adaptive management to understand and respond to these issues over the next 50 years, especially as climate change and an energy transition proceed.

#### **Introduction:**

The Turners Falls Project and Northfield Mountain play significant roles in the New England electric system and grid. Turners Falls provides low-carbon energy, and Northfield provides capacity, grid balancing, black-start, and other crucial grid functions. Thanks to these facilities’ operations for the electric grid, they are able to earn for FirstLight Power a robust profit through ISO markets, bilateral and multilateral contracts, and REC markets in other states. In 2019, Turners Falls had a profit of \$2,863,000 (FirstLight 2020a), and Northfield had a profit of \$59,356,000 (FirstLight 2020b). In total, both facilities earned FirstLight \$62,219,000.

However, the same infrastructure and operations that provide these functions also have high negative impacts on the Connecticut River, New England’s longest and arguably most iconic river, which has an interconnected set of ecosystems from the Canadian border to Long Island Sound. The Turners Falls dam blocks natural passage of fish and other aquatic, riparian and floodplain organisms, and turns approximately 20 miles of river into lake habitat. It also blocks natural river flows of water, sediment, and debris, modifying fluvial-geomorphic functions<sup>1</sup> that would otherwise naturally rejuvenate river, riparian, and floodplain habitat. The old mill canal system, now converted into a 2 mile hydropower water-

<sup>1</sup> Natural movements of sediment and debris in river systems, as it is carried or pushed by flowing water

delivery chute whose sole function is to add head<sup>2</sup> to the Cabot station generators, is an unnatural environment that few fish or other organisms survive, while it leaves the adjacent stretch of the river itself, called the “bypass reach” (a name clearly focused on something other than river ecology), largely dewatered. Because of these problems, the Turners Falls Project is the most destructive bottleneck for migratory fish on the whole Connecticut River, with only 12% of the shad that pass Holyoke Dam passing Turners and 0% of American eel (U.S. Fish and Wildlife Service, CT River Fish and Wildlife Conservation Office 2022). Additionally, both the Turners Falls and Northfield projects “hydropeak”: they run their generators according to electrical demand—or, more precisely in this post-electric restructuring era, according to electrical price. This creates dramatic fluctuations in river flow and river level, threatening higher temperatures and stranding for aquatic organisms in low-water places and times, displacement and disorientation during high-flow places and times, and riverbank and riverbed erosion (Hayes et al. 2022).

Because these projects have both benefits and negative impacts, the effort to balance trade-offs through this “Flows and Fish Passage” settlement is incredibly important. The Agreement shows tremendous thought, significant offers of investment and operations change from FirstLight, and lays out changes that promise to have considerable benefit to fish and wildlife as well as recreational boaters. FirstLight argues that the Flows and Fish Passage Settlement Agreement promotes “an appropriate balance of environmental improvements with the need to maintain a low-cost and reliable source of clean, renewable power which contributes substantially to the reliability of the New England electric grid” (p.2).

However, the balance between energy benefits and environmental costs proposed in this agreement is supported with inadequate evidence. There are major environmental impacts that remain unaddressed, and, since the proposed license term is 50 years, under this Agreement these impacts could remain unaddressed until 2074 or later. Additionally, although important monitoring, new publicly available data, and adaptive management provisions are proposed to be added to the license, there are still crucial gaps in our knowledge about ecological and physical processes and conditions in the project areas and about how the project operations affect them. The Settlement Agreement does not adequately address these ongoing gaps, nor does it put in place systems to acquire needed data on a regular and ongoing basis, assess changes in conditions as operations or external conditions change, and apply adaptive management when and if indicated. Finally, it is not well demonstrated that the project operations proposed here, especially the likely increased Northfield operations within the 50-year license term, are needed in order “to maintain a low-cost and reliable source of clean, renewable power which contributes substantially to the reliability of the New England electric grid.” Since this is the justification for this Agreement, and for a license with these provisions, that also is a major data gap.

In the following we focus on five areas of the projects, some much better covered by the Settlement Agreement than others. Our comments are informed by recognition of both the projects’ distinct benefits to the New England electric markets and grid, and of the importance of protecting and supporting natural river processes and robust river ecosystems as the most biologically and cost-effective way to protect and enhance biodiversity and native biological productivity.

<sup>2</sup> Height between upper and lower water elevations that creates potential energy that, when water is allowed to fall, powers hydroelectric turbines

## 1. Turners Falls Dam and Turners Falls Impoundment as Blockage: Passage for Fish and other Organisms

One of the great strengths of the Flows and Fish Passage Agreement is that FirstLight fully and directly acknowledges current problems with fish passage and addresses these problems in multiple ways. Importantly, through the Turners project, improved upstream fish passage will be centered around allowing fish and other organisms access to a much more natural migratory environment: “Migratory fish will follow the natural route of the Connecticut River where they can either utilize spawning habitat from the considerably higher bypass flows ... or continue to the spillway lift to access spawning habitat above” (Proposed Article A300, Fish Passage Facilities). Accordingly, the plan includes a new state-of-the-art fish lift at the dam and subsequent decommissioning of the Cabot fish ladder (Proposed Article A300, Fish Passage Facilities), and increased flows in the river rather than the canal and more naturalized flows out of Cabot (Proposed Articles A110 and A120, Minimum Bypass Flows). FirstLight will also provide improved eel passage, improved downstream fish passage in the form of a plunge pool below dam, a barrier at Station 1 to prevent entrainment, and an improved Cabot system (Proposed Article A300, Fish Passage Facilities). Implementation of these plans, as well as operating periods, are appropriately to be in consultation with fish and wildlife agencies (Proposed Article A350, Fish Passage Facility Operation and Maintenance Plan).

In the Turners Falls impoundment (Northfield Mountain’s lower reservoir), FirstLight will install a seasonally operated barrier net around the Northfield Mountain Project tailrace/intake to reduce loss of juvenile shad and migrating eels through entrainment at the Northfield Mountain Project (Proposed Article B200) and will provide an off-license ichthyoplankton fund to offset remaining mortality.

Despite these strengths, there is limited attention in these measures to (a) passage of other aquatic, riparian, and floodplain species besides fish; and (b) fish passage through the Turners Falls impoundment. There is inadequate information to ensure that the proposed measures will address passage for organisms beyond fish, including riparian and floodplain as well as aquatic species.

Fish passage through the impoundment will become especially important once downstream passage and then upstream passage are improved at the Turners Falls project. Relicensing studies showed there were significant delays for migratory fish traveling through the impoundment to reach Vernon Dam’s fish ladder due to distracting flows from the Northfield Mountain Pumped Storage intake (FirstLight 2016d).

Another aspect of passage that is not well justified based on existing evidence is the timing of improvements, in particular the Northfield barrier net and the upstream fishlift. It is not explained adequately why installation of the barrier net to reduce entrainment will be delayed for 7 years after the license is issued. Regarding the fishlift timing, FirstLight explains that it is at the direction of the fish and wildlife agencies that the initial focus will be on downstream passage, in an effort to improve the number of successfully spawning shad that can go out to the ocean and return back to spawn again, as repeat spawners are particularly biologically productive. Although this is well justified, the delay of the upstream fishlift until year 9, a full 5 years after the downstream passage is to be completed, is not justified, especially given the negative impact of this 5-year delay on early additional shad returners. Additionally, there is unclear explanation for why upstream passage improvements for other species should be delayed this additional length of time.

## **2. Artificial lake habitat: Turners Falls Impoundment / Northfield lower reservoir**

In contrast to the deep attention to improving natural habitat and flow in the Turners Falls Project, the ecological impact of the Turners Falls impoundment appears not to be considered in the Flows and Fish Passage Agreement. This impoundment is an altered ecosystem and habitat, in which riverine habitat has been transformed into lake habitat, with deeper and slower water, and a much wider wetted channel. This alteration dramatically alters habitat, species assemblages, and biophysical processes, and it needs to be recognized as an overarching impact of the Turners Falls project (cf. FirstLight 2015a, 2015b, 2015c, 2016b). Closely related, it also leads to water quality impairments.

These impacts could be addressed fully by decommissioning and removing the Turners Falls Dam. The Flows and Fish Passage Agreement appears to have no support for consideration or analysis of a decommissioning or removal option.

There are also ways to address the impact through mitigation, e.g. species supports for riverine species, habitat refuges, promotion of fishing for lake-enhanced predatory species, and water quality mitigation. Unavoidable impact could be addressed through off-site mitigation, commensurate with the impact of the impoundment. The license studies that focused on the impoundment offer beginning points to provide a plan for this mitigation, but the Flows and Fish Passage Agreement does not appear to pay attention to this overarching impact.

## **3. Turners Falls canal system vs. river (“bypass reach”): Minimum flows**

The Turners Falls canal system creates an unnatural environment that leads to high fish mortality and a largely dewatered region of the natural river. A major area of concern when discussing the canal system is the portion of the Connecticut River that runs alongside the Turners Falls project, referred to as the “bypass reach.” There are currently minimum flow requirements in place for the bypass that range seasonally, with the highest minimum flow being 400 cfs during fish passage season (Proposed Articles A110 and A120). The Flows and Fish Passage Settlement Agreement proposes strong improvements to these requirements, citing the need for higher flows to create more wetted river habitat. Some of these flows will be provided from the Turners Dam, and more from outflows from Station 1, 0.9 miles below the dam (Proposed Articles A110 and A120). As explained in the AIR response, FirstLight will also count contributions from a small tributary and non-FirstLight generator on the canal toward the minimum flows.

These flow improvements are shaped around a well-founded goal: to restore more natural river conditions for organisms in the river. Years of research have affirmed the importance of natural river conditions in providing for diverse and self-maintained habitats and species assemblages (e.g. Yoder et al. 2008). The attention to increase wetted width and depth will help support this. However, as demonstrated in the comments of the Connecticut River Conservancy, the minimum flows proposed in the Flows and Fish Passage Agreement do not adequately provide for river habitat and ecological health, especially in summer months in the 0.9 miles between the Turners Falls Dam and Station 1.<sup>3</sup> There is no evidence that these areas are unimportant to river ecology. Additionally, as explained in the comments of the Nolumbeka Project and confirmed by the Connecticut River Conservancy, the minimum flows do not protect key cultural and historic resources.

<sup>3</sup> CRC comments have been informed by a UMass Fisheries Science student, Julian Burgoff, who is also a collaborator with our Energy Policy and Rivers group.



We note two additional key points, informed by river science. First, one of the best ways to assess stream ecosystem quality is to survey macroinvertebrates (see e.g. MassDEP 2022). Apart from odonate surveys conducted in the bypass reach and below Cabot station, relicensing studies failed to quantify macroinvertebrate communities or evaluate their response to project operations downstream of the Turners Falls dam. The appropriate volume of minimum flows through the river can be ascertained only with data about what is needed to ensure a healthy or at least steadily recovering native macroinvertebrate population or meet the standards of a similar biological indicator.

Second, in addition to higher water flows, natural sediment flows are needed to maintain and rejuvenate habitat, riffles and pools (Brandt 2000). Large wood that comes in with rain events also supports ecosystem health and recovery, providing refugia and habitat complexity (Anlanger et al. 2022). It appears the Flows and Fish Passage Agreement is not based on any effort to quantify the impact of the long reduction of these natural river inputs of sediment and woody debris, nor consideration about how to provide these in the future.

#### **4. Hydropeaking vs. natural river flow**

##### **4a. Hydropeaking at the Turners Falls Project**

One of the direct connections between using a river to generate electricity, and how a hydropower plant affects a river, is hydropeaking. When generators are run according to electrical demand or price, this creates dramatic fluctuations in river flow and river level, threatening higher temperatures and stranding for aquatic organisms in low-water places and times, displacement and disorientation during high-flow places and times, and riverbank and riverbed erosion (Greimel et al. 2018; Hayes et al. 2022).

Besides fish passage and higher minimum flows, the other great benefit of this Flows and Fish Passage Agreement is the reduced hydropeaking at the Turners Falls project. Moderations of peak flow that are proposed in this Agreement include ramping rate limits<sup>4</sup>, moderation at Turners of any peak flows coming in from Vernon Dam, and limits on how far off the natural river flow (NRF) Cabot Station can run (Proposed Articles A140, A110, A120, and A160). In the case of flows out of Cabot, most of the time Cabot will have to be within 10% of NRF, but a specified number of hours a month (the number of hours varies according to month/season/time), flows can vary up to 20% from NRF (Proposed Article A160). This additional variation up to 20% will allow Cabot to respond to especially high price signals in the ISO markets, thus providing the flexibility of hydropower when it is both especially needed, and especially remunerative for FirstLight. At the same time, the lower variance (only up to 10% off from NRF) will mean that most of the time, the river will benefit from more natural ecological conditions.

Remaining questions on plans for Turners Project hydropeaking that are not spelled out in the Flows and Fish Passage Agreement include: Can we be assured that flows from Turners Dam and Station 1 will also be within 10% of NRF, and subject to ramping rate restrictions? Will ramping rate restrictions make the 4-hour recreation releases produce flow patterns that have genuine similarity to a natural rain event hydrograph? (FirstLight says: "the releases are anticipated by MDFW to have downstream ecological benefits by providing occasional high flows simulating rain runoff events that would benefit stream ecology and aquatic life in a natural river system" (Proposed Article A150) but there have been no modeling efforts to demonstrate this.) And, are there any biological guardrails against potential zero-flow

<sup>4</sup> The AIR response suggests that the ramping rates limits may still be problematic, as the hourly ramping will take place in only the first 5 minutes of every hour.

conditions in FirstLight’s “unrestricted capability to respond to emergencies, ISO New England, Inc. (“ISO-NE”) transmission and power system requirements, and other regulatory requirements” (Proposed Article A160) (p. 15)? If not, these issues need to be addressed, as they rest on unsubstantiated scientific foundations.

#### 4b. Hydropeaking at Northfield Mountain

In contrast to large improvements planned at Turners, perhaps the biggest gaping hole in the Flows and Fish Passage Agreement relates to hydropeaking in the Turners Falls impoundment (lower Northfield reservoir, i.e. Connecticut River between Turners Falls and Vernon dams). The daily hydropeaking fluctuations from Northfield, Vernon, and tributaries constitute overarching environmental impacts. High pumping and generation at Northfield can cause water levels to fluctuate up to 9 vertical ft/day, and the river sometimes to flow backwards.

Beginning with the new license and increasing in the future, Northfield Mountain is likely to cause greater, longer, and more frequent fluctuations in water flow and level in the Turners Falls impoundment (lower Northfield reservoir,). This is because (a) The Flows and Fish Passage Settlement Agreement allows larger upper-reservoir storage (Proposed Article B100); and (b) Starting about 10-15 years from now, variable generation like wind and solar will become a larger part of the grid, while gas generation becomes a smaller part; this will bring about greater variability in ISO market prices and thus incentivize increased operations at Northfield. Additionally, (c) there are several regulatory and legislative initiatives in New England states and localities to incentivize energy storage beyond the ISO markets; if these provide additional funds to FirstLight to operate Northfield a larger number of hours outside of when it is profitable under the ISO markets, these state-based initiatives will extend this hydropeaking further.<sup>5</sup>

The Flows and Fish Passage Agreement asserts, astonishingly, that “Increasing the upper reservoir storage will have no adverse environmental effects” (Proposed Article B100). FirstLight appears to acknowledge that expanded storage will likely mean expanded operations,<sup>6</sup> i.e. greater pumping and generation, at the same time again asserting that this will have no effect: “FirstLight nor any other entity has identified potential adverse effects of the expanded operations on protected, threatened, or endangered species” (Proposed Article B100). FirstLight appears to base this general assertion of no effects on this lack of information about protected, threatened, or endangered species, combined with a single erosion model: “FirstLight evaluated expanded upper reservoir storage operations in the operations model and within the erosion modeling, which showed no increase in shoreline erosion”

<sup>5</sup> For example there is a current Massachusetts [study of medium- and long-duration storage directed by the Mass Clean Energy Center](#). In the development of the Request for Proposals for this study, FirstLight submitted comments that this study should consider contracts that would require Northfield Mountain to operate more. Their comments cited a 2020 report commissioned by FirstLight, which argued for contracted operations in which some of Northfield’s units would be “guaranteed to generate a minimum amount of energy each day at the highest-priced hours in the day-ahead market” even if Northfield could not operate profitably based on ISO-NE market signals (MassCEC: LDES Written Feedback Request 23-11).

<sup>6</sup> In their response to FERC’s Additional Information Requests on May 11, 2023, FirstLight backed off from the implication that additional storage would mean larger operations, saying “It is not possible to predict, with any certainty, whether increasing the Upper Reservoir storage capacity will result in more or less operation of Northfield Mountain. Northfield Mountain’s operation is a function of the cost of the energy to pump and the value of the energy when generating. These values vary hour to hour, day to day, and week to week.” Note that this contrasts significantly with the company’s hoped-for future, as evidenced by its policy advocacy referenced in note 5.

(Proposed Article B100). Based on this single model evaluating erosion (FirstLight 2016a)—a study whose methodology was demonstrated to be inadequate by a peer review study by Princeton Hydro, and a previous Army Corps of Engineers study (see comments of Connecticut River Conservancy submitted 25 May 2023)—the company calls for a 50-year license with unlimited sanction to hydropeak.

This is patently inadequate. Relicensing studies showed that existing hydropeaking already has a negative impact on fish spawning in the impoundment (FirstLight 2016c). In the statement quoted in the previous paragraph (in Proposed Article B100), FirstLight reveals that we do not have adequate evidence of the impact of hydropeaking on protected, threatened, or endangered species. We have even less information on how current hydropeaking affects habitat and habitat conditions for aquatic species that may not be threatened or endangered, but are resident to the impoundment and contribute important ecosystem services (e.g. native mussels and fishes); and we have still less information on the impact on riparian and floodplain species. Yet the limited fish studies show that there is already significant impact from hydropeaking. Lack of data is inappropriate evidence for this Agreement to say nothing about the range and timing of hydropeaking in the impoundment that may be appropriate to ensure a healthy range and population of native species there.

It also follows from the fish spawning data in the impoundment that increased operations should at the very least be hypothesized to create larger negative impacts on a range of species and habitats. There is inadequate evidence to justify not addressing the potential impacts of increased Northfield hydropeaking that may be enabled by a larger upper reservoir.

To fully address the impact of Northfield's hydropeaking would require idling or removal of the Northfield Mountain project, or construction of a lower reservoir separate from the river, to create a closed loop system. During the study selection process, the Connecticut River Watershed Council (now the Connecticut River Conservancy) requested a study to look at these options, but FERC rebuffed the need. The Flows and Fish Passage Agreement appears to have no consideration or analysis of a decommissioning, removal, or idling option, even for future scenarios when this project may no longer be a cost-effective resource for the New England electric grid.

There are also ways to address the impact of hydropeaking through mitigation, e.g. reduced flow and level alterations in the impoundment during migration or emergence seasons, or a system like that at Cabot that maintains a closer percentage to NRF or allows a reduced amount of variation. (See section 4c below for more on this.) Unavoidable impact could be addressed through off-site mitigation, commensurate with the impact of hydropeaking.

Finally, if Northfield is allowed to increase the size of its upper storage reservoir, and/or if its hydropeaking operations significantly increase, the impoundment will be in a condition that is outside the conditions studied within the relicensing studies. There is a complete lack of evidence to justify any particular operations plan in these future scenarios (see section 5).

#### 4c. Inadequate energy justifications for hydropeaking and increased upper reservoir storage

FirstLight claims that the increase in storage is warranted as a way “to provide regional electric reliability benefits by expanding Northfield's ability to store large quantities of energy and enhancing its ability to deliver long-duration and flexible capacity when it is most needed” (Proposed Article B100). The Explanatory Statement continues: “The Northfield Mountain Project is ISO-NE's best tool in continually maintaining the load and generation balance throughout New England. When large generation sources,

including the region's nuclear generators, and transmission lines with neighboring systems shut down unexpectedly, the Northfield Mountain Project is able to fill the generation void without the need to start an equivalent amount of oil and natural gas fueled generators. This supports system reliability while reducing the carbon footprint of the region" (Proposed Article B100).

There is no doubt that Northfield Mountain is an excellent tool in ISO-NE's toolbox, and has an ability unsurpassed by any other resource currently on the grid to respond to major events like the shut-down of generators, neighboring systems, or transmission lines (Chadalavada 2023; Barton 2023). It also can rapidly provide load to the grid in events like "Snowtober" of 2011 when most coastal generators stayed online while demand dropped precipitously as millions of inland trees dropped their branches on power lines and caused widespread outages (personal communication, ISO-NE).

However, Northfield Mountain is already used (and highly compensated) when it is most needed. For example, although specific earnings are not public, it is likely that Northfield Mountain earned several million dollars in a few hours when the region was in scarcity and near-scarcity conditions on December 24, 2022 (Chadalavada 2023), the day "hydropower came to the rescue" (Barton 2023). Most days, however, Northfield Mountain is not needed much, and not used all that much (see note 5), because the grid is relatively well balanced by other lower-cost resources that meet peak and flexibility needs.

As suggested above, Northfield may well be needed more 10 or 15 years from now, when wind power begins to replace gas generation on the grid, as the predominance of variable generation is predicted to cause regular price fluctuations in the ISO-NE markets. There may be more frequent times when supply and demand are especially out of balance, similar to what happened on December 24, 2022 (Chadalavada 2023).

It should be noted, although FirstLight does not spell this out in the Agreement, that based on the tremendous benefit to the grid that Northfield is likely to provide through the early decade or two of a likely future wind-dominated New England, it could be argued that FirstLight must earn enough profit at Northfield in order to stay in business—and therefore it needs to be able to increase operations between now and that eventuality. However, neither greater upper-reservoir storage nor greater hydropeaking is needed for FirstLight to earn enough to stay in business until then. ISO-NE's capacity market is designed to maintain generators like Northfield in use and availability for occasional or future need, and even under the lowered capacity revenues FirstLight predicted by 2024 in its Amended Final License Applications (FirstLight 2020a, 2020b), it could continue to earn some \$30 million per year in the capacity markets. Thanks to the excellent flexibility offered by hydropower, FirstLight can also bid into the profitable forward reserves market, as well as earn high windfalls in major events like December 24, 2022. Such events of course promise to increase in frequency with climate change and a grid more dependent on variable generation.

Even in the future, when the New England grid may be dominated by wind, there is still inadequate evidence for the need to permanently expand the Northfield upper reservoir's storage. There is even less so now, years before wind is expected to become a dominant resource in the New England grid. There are other options apparently not considered by the Settlement Agreement for futures with more variable generation in New England. FirstLight notes that "FERC has approved temporary amendments in the past to operate between 1004.5 and 920 feet when needed to support ISO-NE system needs" (p. 24) (Proposed Article B100). This suggests that an approach to hydropeaking at Northfield that ought to be considered would be something more akin to the restrictions on flows out of Cabot. In the case of Northfield, because ISO-NE market prices fluctuate directly in response to grid need, and hydropeaking is

being justified based on grid need, the license might allow greater hydropeaking, and greater use of the upper reservoir, not based on a set number of hours per month, as at Cabot, but on electric market price deviation from the norm. Perhaps the license could automatically enable use of additional storage at times of high grid need (for example an OP-4, as on December 24, 2022), so that FirstLight need not wait for FERC to allow case-by-case temporary amendments. Without examining these kinds of options and analyzing the actual future of the grid and ISO-NE markets, the Settlement Agreement, which rests on an asserted need from the grid for unlimited and increased hydropeaking at Northfield, is ill founded.

A final comment. Northfield and other pumped storage facilities may well become marginally competitive in the grid before the end of a 50-license term, as new storage technologies are expected to come online (see e.g. DeRose, DOER and MassCEC n.d.). Given this, both the 50-year license term and the lack of a plan for potential future decommissioning are as ill founded as the assertion of the need for more storage in the upper reservoir.

## **5. Data, monitoring, adaptive management**

FirstLight asserts that the Flows and Fish Passage Agreement addresses “all of the issues among the Settling Parties pertaining to fish passage, flows for fishery, ecological conservation, and recreation purposes, and protected, threatened, and endangered species for relicensing of the Projects” (p. 1). It continues, “The proposed license articles are supported by substantial evidence, including 39 relicensing studies approved by the Commission as well as additional studies conducted by FirstLight and submitted into the record... adequate basis upon which the Commission can determine that the Flows and Fish Passage Settlement Agreement adequately protects fish and wildlife and enhances recreational boating, and is in the public interest” (p. 2).

However, even if the proposed measures were founded on all available current evidence, and the proposed measures covered all relevant aspects of “fish passage, flows for fishery, ecological conservation, and recreation purposes, and protected, threatened, and endangered species” —which they do not; see sections 1-4 of these comments—there remains tremendous uncertainty about how these factors will respond to the proposed new P&E measures; to likely future changed operations at Northfield Mountain; and to climate change.<sup>7</sup> Moreover, as described in the previous section, while these licenses and expanded storage in Northfield’s upper reservoir are justified by a claim that “the Northfield Mountain Project is ISO-NE’s best tool in continually maintaining the load and generation balance throughout New England,” (Proposed Article B100) there is also high likelihood that Northfield’s usefulness to the grid will change significantly over the next 50 years—likely becoming more useful, prompting more pumping and generation, 10 or 15 years from now, and then diminishing in usefulness as other storage and demand-response technologies and capabilities are developed, and as the high-voltage grid becomes more interconnected with other regions. The high likelihood of significant change in outcomes, need, operations, and external conditions belie the unsubstantiated claim that the current plan for monitoring and adaptive management is adequate.

Given the proposal for a 50 year license, there is tremendous need for ongoing publicly available data, for monitoring and assessments as new measures are implemented or as conditions change, and for adaptive management to alter operations and practices as new information arises. The Flows and Fish

<sup>7</sup> The Connecticut River Watershed Council also called for a comprehensive analysis study of climate change’s future impacts on the projects, but this was not done.



Passage Settlement Agreement has very valuable provisions in place for effectiveness testing of a number of measures, and a suite of planned adaptive management measures (AMMs). However, there is a lack of data, monitoring, and planned adaptive management in a host of other areas. There is inadequate evidence to justify these deficiencies. This is especially true for a license that will continue into the next several decades, when climate change and an energy transition are accelerating, and are likely to fundamentally alter the conditions under which these plants operate within this half-century timeframe.

Given this, the ability of FirstLight to veto all AMMs for the first 25 years in the following statement is not based on adequate evidence: “No other AMMs other than those specified in the proposed license article will be required for the first 25 years of the license unless expressly agreed to by FirstLight, MDFW, NMFS, and USFWS.” (Proposed Article A320)

The following highlights areas where the lack of data, monitoring, and adaptive management is poorly justified by the evidence.

a. Data, monitoring, and adaptive management at the Turners Falls Project

The Flows and Fish Passage Agreement has significant monitoring and adaptive management provisions related to Turners flows and especially fish passage. Given past failures of fish passage here and elsewhere (Brown et al. 2013), FirstLight appropriately has an “effectiveness testing” plan for both downstream and upstream passage through the Turners Falls Project, with a variety of pre-planned adaptive management measures (AMMs) (Proposed Articles A200 and A320). There are also important effectiveness testing and AMMs for flows and ramping limits (Proposed Articles A320 and A330).

Additionally, FirstLight will provide hourly information on flows out of Turners Falls dam all year round (Proposed Article A210). This will be a major added beneficial source of data. Among other things this could enable empirical studies that can correlate flows with fish, hydrological, geomorphological, ecological, and recreation / use outcomes. However, it appears there is no plan to conduct such studies, outside of migratory fish and protected, endangered, and threatened species. More broadly, the Turners Falls project plan for data collection, monitoring and evaluation, and adaptive management seem poised to fail to monitor or address wider ecological indicators of ecosystem health (e.g. macroinvertebrate and fish communities, sediment flows, habitat rejuvenation and quality) and provide no monitoring plan for these. This lack of a plan to use the flow data, or to engage in broader monitoring, assessment, and adaptive management, is not justified given the wide changes expected in habitat and passage through this Project.

The Flows and Fish Passage Agreement also references the Amended Final License Application (AFLA) from Dec 2020 which included proposed protection, mitigation, and enhancement (PM&E) measures, including Draft Biological Assessments (BAs) for shortnose sturgeon and Puritan Tiger Beetle (Explanatory Statement, p. 5). FirstLight will file revised BAs within 180 days of fully executed settlement agreement. It is unclear, however, what plans for publicly available data, monitoring, evaluation, and adaptive management will be put in place for these species.

b. Data, monitoring, and adaptive management at Northfield / Turners Falls impoundment

The Flows and Fish Passage Agreement has much more limited monitoring and adaptive management provisions related to the Turner Falls impoundment and to hydropeaking into and out of the

impoundment. There are monitoring, effectiveness testing, and adaptive management plans for the intake netting at Northfield (Proposed Article B210)—although if repeated effectiveness testing proves the net ineffective there is no backup plan. Additionally, FirstLight will provide hourly information on flows out of Turners Falls dam all year round (Proposed Article A210). Off-license, FirstLight will support getting Vernon flow data as part of Vernon license.

The effectiveness testing and AMMs at the barrier net are crucial, although others with greater expertise may question whether the schedule for testing, the slow timeline for installation and AMMs, and the limited AMMs that are proposed are well supported by evidence.

Public data on Turners Falls impoundment levels at the Turners Falls dam will be a major added beneficial source of data. Among other things this could enable empirical studies that can correlate hydropeaking and impoundment levels with fish, hydrological, geomorphological, ecological, and recreation / use outcomes. However, it appears there is no plan to conduct such studies. As quoted above, the Flows and Fish Passage Agreement asserts, based on a single erosion modeling study, that “Increasing the upper reservoir storage will have no adverse environmental effects” (Proposed Article B100). Based on this conclusion, there appear to be no requirements for monitoring the effects of increased use of the pumped storage station on fish passage; on endangered, threatened and protected species; on macroinvertebrate populations or other indicator biota; or on other environmental parameters—much less a plan for adaptive management in case negative impacts should be found. Yet the few studies performed, including the fish spawning study, already show negative impacts at present. This lack of a data, monitoring, and adaptive management plan in the impoundment is manifestly inadequate.

Similar publicly available hourly data on Northfield pumping and generation will be crucial to assess impacts of Northfield Mountain operations. Yet this does not appear to be contemplated. Additionally, data from Vernon flows, if made public, would be similarly useful. Concerning the Vernon data, it appears that this will mainly be used internally by FirstLight in order to calculate NRF and provide for dampened flex or peaking releases from Vernon. It is not clear whether this Vernon flow data will be made public. Its usefulness for monitoring and adaptive management will be much less if not.

c. Data, monitoring, and adaptive management of the energy justification for Northfield operations

Although grid needs are used to justify additional storage at Northfield, and to support the entire Flows and Fish Passage Agreement, there is very limited data provided in this plan that can be used to assess the needed careful balance between grid needs, and environmental protection and enhancement. There is no planned data or monitoring for this, nor measures to change operations or engage in other adaptive management if the balance shifts. This lack is especially problematic at Northfield Mountain, because in this Settlement Agreement FirstLight uses grid needs to justify unlimited pumped storage hydropeaking as well as additional storage. Current operations amply meet the needs of the grid; this undercuts FirstLight’s claims (see section 4c). But greater operations may in the future be critical for balancing a wind-dominated grid. Indeed, tremendous change is expected in the next few decades in energy policies and markets, grid interconnectivity, and generation and storage technologies, and these will all affect Northfield’s role and the importance of increased operations and storage. The lack of a plan for re-evaluating grid needs and the corresponding needs for environmental assessment and mitigation as these changes proceed leave the fundamental premise of this proposed 50-year Agreement unsupported.

**Summary List: Measures unsupported by substantial evidence, or areas where measures are lacking but substantial evidence calls for action**

**1. Turners Falls Dam and Turners Falls Impoundment as Blockage: Passage for Fish and other Organisms**

- Lack of measures to provide passage for organisms other than fish, including riparian and floodplain as well as aquatic species (Proposed Article A300)
- Delay of installation of the barrier net for 7 years after the license is issued (Proposed Article B200)
- Delay of installation of the fishlift timing until 9 years after the license issued, which is 5 years after Turners Falls project downstream passage is to be complete (Proposed Article A300)

**2. Artificial lake habitat: Turners Falls Impoundment / Northfield lower reservoir**

- Lack of consideration of decommissioning and removal of Turners Falls dam to alleviate overarching impact of impoundment on fish and other aquatic, riparian and floodplain species, and on natural ecological and biophysical functions to create, rejuvenate and maintain native riverine habitat (no article)
- If Turners Falls Dam is left in place, lack of mitigation (onsite or offsite) commensurate with overarching impact of impoundment on fish; on other aquatic, riparian and floodplain species; and on natural ecological and biophysical functions that can create, rejuvenate and maintain native riverine habitat (no article)

**3. Turners Falls canal system vs. river (“bypass reach”): Minimum flows**

- Proposed flows in the 0.9 river miles between Turners Falls and Station 1 not demonstrated to provide for a healthy or steadily recovering native macroinvertebrate population or meet the standards of a similar biological indicator of river ecological health (Proposed Articles A110 and A120)
- Lack of measures to mitigate and restore natural river inputs of sediment and woody debris to maintain and rejuvenate habitat, riffles, pools, refugia, and habitat complexity (no article)

**4. Hydropeaking vs. natural river flow**

4a. Hydropeaking at the Turners Falls Project

- Lack of evidence that ramping and flow rules from Turners Falls dam and Cabot will protect natural river function in the 0.9 mile stretch of river between Turners Falls Dam and Station 1 (Proposed Articles A110, A120, and A140)—or that the plan to have hourly ramping occur in the first five minutes of each hour (AIR response) meets ecological needs for reduced ramping
- Lack of evidence that the 4-hour recreation releases will produce flow patterns that have similar ecological benefits to a natural rain event hydrograph (Proposed Article A150)
- No biological guardrails against potential zero-flow conditions in FirstLight’s “unrestricted capability to respond to emergencies, ISO New England, Inc. (“ISO-NE”) transmission and power system requirements, and other regulatory requirements” (Proposed Article A160).

4b. Hydropeaking at Northfield Mountain

- Inadequate evidence for the assertion that “Increasing the upper reservoir storage will have no adverse environmental effects” (Proposed Article B100):

- Lack of data on effects of current pumping and generation fluctuations in impoundment on protected, endangered and threatened species; on habitat and habitat conditions for resident species in the impoundment that contribute important ecosystem services (e.g. native mussels and fishes); on riparian and floodplain species; counter-evidence from studies of fish spawning in the impoundment, which show significant adverse environmental effects (FirstLight 2016c).
- Lack of measures to address the potential impacts of increased Northfield hydropeaking that may be enabled by a larger upper reservoir.
- Lack of consideration of idling or removal of the Northfield Project, or construction of a lower reservoir separate from the river to create a closed loop system, to alleviate overarching impact of hydropeaking on fish and other aquatic, riparian and floodplain species, and on natural ecological and biophysical functions of riverine habitat (no article)
- If Northfield Mountain continues to operate, lack of mitigation (onsite or offsite) commensurate with overarching impact of hydropeaking on fish; on other aquatic, riparian and floodplain species; and on natural ecological and biophysical functions of native riverine habitat (no article)

#### 4c. Inadequate energy justifications for hydropeaking and increased upper reservoir storage

- Undemonstrated need for unlimited or increased hydropeaking at Northfield and larger permanent storage to provide low-cost, reliable energy, and/or balancing for a energy transition to low-carbon energy (no article)
- Lack of a plan for future decommissioning when Northfield Mountain is likely to become uncompetitive in the New England grid (no article)

### **5. Data, monitoring, and adaptive management**

- Lack of measures to collect data, make this data publicly available, perform regular monitoring and assessment, and implement adaptive management to
  - Ensure passage for organisms other than fish through the Turners Falls project (including the “bypass reach”)
  - Ensure passage for organisms other than fish, including riparian and floodplain as well as aquatic species, through the Turners Falls impoundment.
  - Maintain ecosystem health and natural biophysical processes in the face of climate change (e.g. macroinvertebrate populations, sediment flows, habitat rejuvenation and quality) in the Turners Falls project (including the “bypass reach”) and Turners Falls impoundment
  - Assess and mitigate the overarching impacts of Turners Falls impoundment on fish and other organisms, including riparian and floodplain species; and on hydrological, geomorphological, and ecological processes
  - Assess and mitigate the impacts of hydropeaking at Northfield Mountain on fish and other organisms; on hydrological, geomorphological, and ecological processes; and on recreation / use outcomes, including as operations change or hydrology changes with climate change
  - Ensure that high hydropeaking and pumped storage are prioritized over environment only when or if they are most needed for low-cost, reliable energy, and/or an energy transition to low-carbon energy, including accounting for how this changes as climate change and an energy transition proceed (see section 4c).

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May 16, 2024

Commissioner Bonnie Heiple  
MassDEP - BWR  
*Attn: FirstLight 401WQC*  
100 Cambridge Street, Suite 900  
Boston, MA 02114

Re: FirstLight 401 WQC

Dear Commissioner Heiple:

The Western Mass Economic Development Council (EDC) offers this letter in support of the relicensing of FirstLight's Northfield Mountain and Turners Falls Projects.

Together, the Projects play a critical role in delivering clean, local, low-cost power to communities across New England while providing needed grid reliability to the region. Northfield's operations also support the need to keep costs low for consumers who are too often burdened by energy costs.

In addition to the benefits around grid resilience and decarbonization, the Projects provide many economic benefits to local communities, including environmental justice communities in Montague and Greenfield. FirstLight is an important employer in Franklin County, providing jobs including union labor, and contributing to the overall health of the economy in Western Massachusetts by purchasing goods and services from Massachusetts-based vendors. FirstLight is the largest taxpayer in the towns of Erving, Gill, Montague, and Northfield.

Finally, FirstLight's facilities and events support the recreation and tourism industry that brings in over \$79 million annually to Franklin County. The recreation facilities provided by FirstLight

are a critical part of the regional network of recreational assets that enhance the lives of those who reside or work here and attract visitors to the region. Supporting projects that enhance outdoor adventure, recreation and cultural tourism was among the top strategic goals for the 2021 regional economic development plan for Franklin County.

The Western Mass Economic Development Council (EDC) urges the Commission to consider the significant value of FirstLight's Projects to the region's clean energy future, and to communities across New England that are powered by FirstLight's clean electricity generation.

Sincerely,

A handwritten signature in black ink, appearing to read 'Rick Sullivan', with a stylized, cursive script.

Rick Sullivan  
President & CEO  
The Western Mass Economic Development Council (EDC)

May 31, 2024

MassDEP – BWR  
Attn: *FirstLight 401WQC*  
100 Cambridge Street, Suite 900  
Boston, MA 02114

Re: 401 Water Quality Certificate Application, dated April 22, 2024 (“Application”), submitted by FirstLight MA Hydro LLC and Northfield Mountain LLC (collectively, “FirstLight”) to the Massachusetts Department of Environmental Protection (“MassDEP”) in connection with relicensing of the Turners Falls Hydroelectric Project (the “Turners Dam”) and the Northfield Mountain Pumped Storage Project (the “Northfield Facility”) and collectively with the Turners Dam, the “Facilities”)

To whom it may concern:

We are writing to provide comments to MassDEP on the above-referenced Application. We understand the federal Clean Water Act requires FirstLight to obtain a Section 401 Water Quality Certificate (a “WQC”) from MassDEP as a condition to obtaining new licenses for the Facilities from the Federal Energy Regulatory Commission (“FERC”). We also understand that MassDEP may add requirements to the licenses as a condition to issuing any WQC, if it determines doing so is necessary to insure the Facilities provide the water quality and quantity to support existing and designated uses of the Connecticut River.

As outlined below, the terms of the new licenses proposed by FirstLight are not adequate to protect the existing and designated uses of the Connecticut River, as required by the Clean Water Act. We strongly urge MassDEP to require that FERC add much greater protections for the river to any new licenses issued for the Facilities, as a condition to the issuance of any WQC for the Facilities.

1. Insufficient Minimum Flows to Protect Fish and Other Aquatic Life (Turners Dam).

The minimum flow of water that FirstLight proposes to release over the Turners Dam is insufficient to support the existing and designated use of the Connecticut River as a habitat for fish and other aquatic species living below the dam.

FirstLight proposes a minimum flow of 500 cfs from July 1 to November 15 – this is not even enough water to fill the riverbank for the 1 mile stretch from the Turners Dam to Station 1. FirstLight’s proposed minimum flow will cause severe impairment of the Connecticut River

ecosystem below the dam due to dewatering and fails to provide sufficient habitat for fluvial species and macroinvertebrates.<sup>1</sup>

FirstLight's own study demonstrates that its proposed minimum flows are wholly inadequate to support fish species below the Turners Dam. In 2015, FirstLight conducted Study No. 3.3.11 which included electrofishing surveys of reaches downstream of the Turners Dam. Table 4.2.3.1-1 of this study depicts the species abundances at various sites downstream of the Turners Dam, showing high proportional abundances of smallmouth bass and low proportional abundance of native fluvial specialist fishes.

The Massachusetts Consolidated Listing and Assessment Methodology (CALM) Guidance Manual, updated Fall of 2022, uses fish community classifications as a metric for determining the attainment of Aquatic Life Use. The extremely low proportional abundance of native fluvial specialist fishes sampled by FirstLight in its 2015 study and the proportional dominance of generalist fishes such as smallmouth bass means that *according to FirstLight's own study*, river habitat downstream of the Turners Dam fails to meet the criteria for Aquatic Life Use attainment as defined by the Massachusetts CALM.<sup>2</sup>

Increasing minimum flows over the Turners Dam from 500 cfs (as proposed by FirstLight) to 1400 cfs would result in *significant increases in Weighted Usable Area for fluvial specialist fishes*. For example, Juvenile and Adult Longnose Dace would gain 54% and 51% more habitat respectively and Juvenile/Adult Tesselated Darter would gain 63% more habitat.<sup>3</sup>

Higher minimum summertime flows from the Turners Dam would also increase usable habitat for both adult and juvenile Shortnose Sturgeon, a fish species that is listed as endangered under the federal Endangered Species Act. Laboratory studies of juvenile Sturgeon documented that certain cohorts attempted upstream migration, while others migrated downstream.<sup>4</sup> This makes it likely that a proportion of juvenile Sturgeon hatching near the rock dam and cabot station Sturgeon spawning areas below the Turners Dam would attempt upstream migration given sufficient flows. Furthermore, the dualistic migration strategy of juvenile Sturgeon likely continues into adulthood, with adult Shortnose Sturgeon having been sited below the Turners Dam during the summer months. Higher base flows spilled over the Turners Dam during the summer would increase upstream foraging habitat for both juvenile and adult Shortnose Sturgeon. FirstLight's own Draft Biological Assessment shows a Weighted Usable Area for Sturgeon occurs with flow of around 2,000 cfs, far above the paltry 500 cfs proposed by FirstLight.<sup>5</sup>

<sup>1</sup> Letter, dated May 25, 2023, from Connecticut River Conservancy ("CRC") to FERC re: Offer of Partial Settlement; Turners Falls Hydroelectric Project (FERC No. 1889-081) and Northfield Mountain Pumped Storage Project (FERC No. 2485-063) ("CRC Comments"), p.4.

<sup>2</sup> CRC Comments, Attachment A, p.5.

<sup>3</sup> CRC Comments, p.5.

<sup>4</sup> Kynard B. E. Bronzi P. & Rosenthal H. 2012. Life history and behaviour of Connecticut River Shortnose and other Sturgeons.

<sup>5</sup> Figure 7.2.2.2-1 of the Shortnose Sturgeon Draft Biological Assessment shows the habitat vs flow relationship for adult sturgeon in Reach 1 below the Turners Dam, where a maximum Weighted Usable Area occurs around 2,000 cfs.



Critical studies are also missing from the FirstLight study plan, including a survey of river macroinvertebrates and a study quantifying the impact of the long reduction of natural river inputs into the river of sediment and large wood.<sup>6</sup> But once again, the studies that FirstLight has provided demonstrate the inadequacies of FirstLight’s proposed minimum flows to support macroinvertebrate communities.<sup>7</sup>

Macroinvertebrate communities in the bypass reach contribute essential resources to higher organisms up the food web, such as fish. Maintaining adequate flows during the summer months is *essential* for sustaining the macroinvertebrate communities in the upper bypass reach. According to FirstLight’s own assessment, increasing minimum flows from the Turners Dam from 500 cfs to 1000 cfs would *double the Weighted Usable Area for macroinvertebrates in Reach 1*.<sup>8</sup>

**MassDEP must condition its issuance of a WQC on a requirement that any new license issued by FERC for the Turners Dam require a significant increase in minimum flows in order to protect the existing and designated use of the Connecticut River as a habitat for fish and other aquatic species living below the dam.**

## 2. Insufficient Minimum Flows to Protect Cultural Resources and Practices (Turners Dam).

The minimum flow of water that First Light proposes to release over the Turners Dam is insufficient to protect sacred Indigenous cultural resources and use of the Connecticut River for sacred Indigenous cultural practices.

In 2008, the United States Department of the Interior (the “Department”) issued a Determination of Eligibility Notification for The Turners Falls Sacred Ceremonial Hill Site (the “Ceremonial Hill Site”).<sup>9</sup> The Department found that this site –

“is associated with events that have made a significant contribution to the broad patterns of Narragansett, Aquinnah-Wampanoag, and Mashpee-Wampanoag history”...[and that]...“the site may have sacred meaning to other tribes of the northeastern United States, including the Western Abenaki, Nipmuck, Wabenaki, and Mahican, who in part are believed to have common ancestry with the tribes of the Pocumtuck Confederacy (including the Pocumtucks, Nonotucks, and Norrotucks) who occupied the middle Connecticut River Valley at the time of first contact and Anglo-American settlement.”

<sup>6</sup> Letter, dated May 26, 2023, from the UMass Group to FERC re: Flows and Fish Passage Settlement Agreement, Turners Falls Hydroelectric Project (FERC No. 1889-081) and Northfield Mountain Pumped Storage Project (FERC No. 2485-063), p. 5.

<sup>7</sup> CRC Comments, Attachment B, p.2-3.

<sup>8</sup> FirstLight Relicensing Study 3.3.1, Appendix B-7.

<sup>9</sup> Determination of Eligibility Notification, The Turners Falls Sacred Ceremonial Hill Site (formerly, the Airport Improvement Project — Turners Falls Municipal Airport), dated December 11, 2008 (the “Determination of Eligibility”).

The Department further recognized that the Ceremonial Hill Site is considered a contributing property within an expanded Turners Falls Cultural Landscape District (the “Landscape District”), eligible for registration with the National Register.<sup>10</sup>

As noted by both the Nolumbeka Project and CRC in comments to FERC<sup>11</sup>, the Landscape District extends out in a 16-mile radius from the Ceremonial Hill Site and includes the banks of the Connecticut River and the river herself at the very site of the Turners Dam where a natural waterfall once existed. The minimum flows proposed by FirstLight will leave this sacred area and its culturally significant artifacts dewatered, exposed and unprotected. Moreover, the dewatering of this sacred area will deprive Tribal groups of their ability to practice their ancient fishing and food processing cultural heritage.<sup>12</sup>

As the Department recognized in its finding, the site of the Turners Dam was the site of a massacre of Indigenous people on May 19, 1676, which signified -

“an important turning point in the conflicts between Indian tribes and Anglo-American settlers in the New World and brought an end to what seems to have been a long period of Native American settlement, farming, and seasonal encampment in the middle Connecticut River Valley.”

It is deeply and tragically ironic that *over 300 years after this massacre occurred*, the United States government, through FERC, is poised to issue new licenses to FirstLight for its Facilities that will perpetuate the destruction of Indigenous cultural resources and prevent the practice of Indigenous cultural practices at the site of the Turners Dam for another half century.

**MassDEP must require that any new license issued for the Turners Dam *significantly increase minimum flows* to protect sacred Indigenous cultural resources and use of the Connecticut River for sacred Indigenous cultural practices.**

### 3. Hydropeaking Detrimental to Fish and Other Aquatic Life (Northfield).

FirstLight proposes to increase the size of the upper reservoir at Northfield, allowing it to increase operations of the Northfield Facility. Any increase in Northfield’s operation will result in increased hydropeaking, the rapid increase in river flow that occurs when water is released from the Northfield Facility to create electricity, and this will have a detrimental impact on the existing and designated use of the Connecticut River as a habitat for fish and other aquatic species.

FirstLight’s own studies show that *existing* operations already negatively impact fish spawning. FirstLight Relicensing Study 3.3.13, entitled *Impacts of the Turners Falls Project and Northfield Mountain Project on Littoral Zone Fish Habitat and Spawning Habitat Study Report* (“Study 3.3.13”), investigated the impacts of existing water level fluctuations in the Turners Falls Impoundment (the “TFI”) on spawning site suitability for resident fish populations. Results

<sup>10</sup> Determination of Eligibility, p.17.

<sup>11</sup> Letter, dated May 24, 2023, from the Nolumbeka Project in coalition with the Chaubunagungammaug Band of Nipmuck Indians and the Elnu Abenaki Tribe, p. 3 and CRC comments, p.5.

<sup>12</sup> Nolumbeka Project Comments, p.4-5.

showed that project operations significantly impact the suitability of spawning habitats in the TFI, especially for early spring spawning fishes such as Yellow Perch. The study showed one nesting site was mostly dewatered during the period of April-May 2015 due to fluctuations in TFI water levels.<sup>13</sup>

FirstLight claims that the increase in pump storage will have no adverse environmental impacts, yet *no modeling studies* were conducted to test the effects of this change in operations on the suitability for fish spawning habitats in the TFI. Since historical project operations already affect the suitability of spawning habitat for resident fish populations, any increase in water level stochasticity in the impoundment will compound the detrimental effects of spawning habitat dewatering events. Depending on the severity of the water level fluctuations, this could lead to recruitment failure for fish species in the TFI such as Yellow Perch which typically spawn on high elevation emergent plant stands that are most prone to water level fluctuations.

**MassDEP must prohibit any increase in the storage capacity of Northfield as inconsistent with the existing use of the Connecticut River as a habitat for fish and other aquatic species.**

#### 4. Timeline for Construction of Fish Ladder Detrimental to Fish (Turners Dam).

FirstLight proposes installing a new and modernized fish passage facility but proposes taking almost a decade to construct it. This timeline is clearly detrimental to the existing use of the river as a habitat for fish and unacceptable, especially given that the Silvio O. Conte Research Laboratory, where state-of-the-art, world-class fish lifts are designed, is located right along the power canal of the Turners Dam. The need to modernize the Turners Dam fish lift has been well-known for decades – as an illustration, the Holyoke Dam fish lift was modernized in 1955.

**MassDEP must require FirstLight to modernize its fish lift immediately as a condition to the issuance of any WQC for the Facilities.**

#### 5. Inadequate Fish Intake Protection (Northfield).

The Northfield Facility is a death trap for all aquatic life down-river from the intake pipe. By FirstLight's own admission, fish, eggs, larvae and all other aquatic life sucked up into this pipe have no expectation of survival. FirstLight's proposed mechanism for mitigating this death trap is to install a barrier net at the intake pipe, however this net is untested technology that may have little success. The negotiated Settlement Agreement would allow the trial of this net to drag on for more than a decade. Given FirstLight's acknowledgment of the environmental devastation caused by the Northfield Facility it is unacceptable that FirstLight be granted another ten years of this 100% death rate while they play around to see if their barrier net even works.

In addition, FirstLight has provided insufficient baseline studies to show the numbers and types of fish that successfully migrate up-river from the Turners Dam *without Northfield in operation*. Without this data, it is impossible for FERC to assess whether and how FirstLight's interests in power generation can properly be balanced against the protection, mitigation, and enhancement of fish populations as required under the FPA.

<sup>13</sup> Study 3.3.13, Figure 4.3.2-11.

The Northfield Facility was shut down for repair for three months at the end of 2023.<sup>14</sup> FERC should have required this shutdown to occur a few months later, during the 2024 fish migration season, and required FirstLight to conduct and provide the necessary baseline study data during this shut-down, referenced above.

***In the absence of baseline studies to show the numbers and types of fish that successfully migrate up-river from the Turners Dam without Northfield in operation, a WQC for Northfield should be denied.***

#### 6. Failure to Protect Endangered Shortnose Sturgeon and its Habitat (Turners and Northfield)

The licenses proposed by FirstLight fail to include sufficient measures to protect the Shortnose Sturgeon, which is listed as an endangered species under the federal Endangered Species Act.

As mentioned above, FirstLight’s own studies demonstrate that the minimum flows they propose over the Turners Dam are inadequate to protect Shortnose Sturgeon. In addition, the Northfield Facility threatens the existence of Shortnose Sturgeon above the Turners Dam. For years anglers fishing above the Turners Dam have reported the catch and release of endangered Shortnose Sturgeon. In August of 2017, a fisherman caught a Sturgeon above the Turners Dam which researchers at the USGS Conte Anadromous Fish Lab confirmed as a Shortnose Sturgeon.<sup>15</sup> Following this documented catch, in January of 2018, FERC denied FirstLight permission to increase pumping operations at Northfield, citing the potential impingement and entrainment of the endangered Sturgeon. But despite this very real and documented concern, FERC is poised to issue FirstLight a license to *continue and increase* Northfield operations without adequate evidence that doing so is safe for Sturgeon.

In response to FERC’s expression of concern in 2018 about the impact of Northfield operations on Sturgeon populations, FirstLight conducted a deeply flawed study based on a wholly inadequate single round of eDNA sampling for Sturgeon about the Turners Dam. Shortnose Sturgeon are a *bottom dwelling species*. In a large, deep river like the Connecticut River, Sturgeon will be living at the bottom of the deepest channels of the river. Detection probability for eDNA samples is directly related to a target species’ preferred habitat type, so eDNA testing for Sturgeon should prioritize bottom water samples with mid-water and surface water samples collected as controls in a river system as large and deep as the Connecticut.

Either due to poor study design or for more nefarious reasons, the FirstLight study did just the opposite, *collecting only surface water samples*. FirstLight’s study report notes (*italics added*) –

“For each sampling event, no more than two liters of water were directly filtered *approximately 6 inches below the water surface*...”<sup>16</sup>

<sup>14</sup> Letter, dated August 25, 2023, from FERC to FirstLight re: Dam Safety Inspection Follow-up (2023), and follow-up confirmation by Mark Wasmer at Gomez and Sullivan (FirstLight’s engineers) that the Northfield Facility was shut down from September 16, 2023 through December 27, 2023.

<sup>15</sup> [Surprise Catch: First Shortnose Sturgeon Documented Above Dam in Connecticut River | NOAA Fisheries](#)

<sup>16</sup> Environmental DNA Sampling for Shortnose Sturgeon Study Report, prepared for FirstLight by Kleinschmidt, November 2018 (p. 2)

No bottom water samples were taken and tested by FirstLight. Based on a handful of surface water testing for fish that live at the bottom of deep river channels, the study then goes on to use a probability of detection estimate in its table that assumes an equal likelihood of Sturgeon DNA presence in surface waters as water collected at any other depth. This assumption is simply and demonstrably false. The report then concludes -

“...based on FirstLight's eDNA testing, the likelihood of a shortnose sturgeon population being present in the TFI is extremely low.”

FirstLight's conclusion that no Sturgeon are present above the dam based on its deeply flawed eDNA sampling study is nonsensical. Demonstrating the *absence* of a fish species using eDNA techniques is technically and methodologically very difficult. Sampling *surface waters* for a *bottom dwelling fish species* in a deep and stratified river system like the Connecticut River is very unlikely to result in a positive eDNA detection, which was the result of the FirstLight sponsored study. One can't help wonder if the study was deliberately designed to reach this result.

In recent years, eDNA testing for fish populations has advanced and met with recognized success. In order to comply with the requirements of the ESA, FirstLight should be required to conduct a proper and robust eDNA sampling study, conducted at varying locations and depths both above and below the Turners Dam and at regular biologically relevant intervals throughout the year (robust sampling through time and space).

**MassDEP must condition issuance of any WQC for the Facilities on a requirement that FirstLight increase minimum flows to adequately support populations of Shortnose Sturgeon below the Turners Dam. MassDEP should also require FirstLight to conduct scientifically rigorous testing for Shortnose Sturgeon both above and below the Turners Dam coupled with the incorporation of adequate methods of protecting and promoting the recovery of these endangered fish as a condition of the issuance of any WQC for the Facilities.**

#### 7. Incompatibility with Silvio O. Conte Comprehensive Plan (Turners Dam and Northfield).

The license terms proposed by FirstLight are inconsistent with the Silvio O. Conte National Fish and Wildlife Refuge Comprehensive Conservation Plan, issued January 2017 (the “Conte Plan”) which is designed to protect the use of the Connecticut River as a habitat for fish and other aquatic species. A primary objective of the Conte Plan is to –

“protect and restore in-stream and riparian habitat structure and function, and restore aquatic species passage and water quality within the Connecticut River watershed to improve the ecological integrity and environmental health of the river ecosystem and enhance habitat for migratory and inter-jurisdictional fish, mussels, and other native aquatic species of conservation concern.”

The list of goals set forth by the Conte Plan in order to achieve this primary objective, include –

- Eliminate barriers to fish and other aquatic species passage



- Protect and increase spawning habitat for aquatic species
- Protect and increase hard bottom substrate for spawning aquatic species

As illustrated above, the provisions of the licenses proposed by FirstLight are woefully inadequate to protect and restore the Connecticut River ecosystem and wholly inconsistent with the primary objective of the Conte Plan, quoted above.

**MassDEP must condition issuance of any WQC for the Facilities on the addition of license terms to address inconsistencies with the Conte Plan.**

8. Incompatibility with Massachusetts Farmland Action Plan (Turners Dam and Northfield).

The license terms proposed by FirstLight are also inconsistent with the Massachusetts Farmland Action Plan, 2023-2050, issued December 2023, sponsored by the Massachusetts Department of Agricultural Resources (the “Farmland Plan”), which is designed to protect agricultural land in Massachusetts. The first of the three goals of the Farmland Plan is *the permanent protection and stewardship* of Massachusetts farmland. The Farmland Plan recognizes that Massachusetts farmland is –

“a threatened and critical infrastructure that supports food security, natural systems and climate resilience, and Massachusetts’ economy, public health, and quality of life.”

The farmland property bordering the Connecticut River and included within the project boundaries of the FirstLight Facilities is some of the most fertile farmland in New England and includes farmland protected by State acquired agricultural preservation restrictions. Yet the FirstLight licenses, if issued, will threaten this farmland with flooding and erosion from the Facilities, as FirstLight itself has indicated.<sup>17</sup> Shoreline property owners have for years protested to FirstLight and to FERC about erosion of their land by operation of the Facilities, but to no avail. This flooding and erosion is set to dramatically increase in frequency and severity with the increased impacts of climate change. The flooding of Western Massachusetts farmland and destruction of food crops along the Connecticut River in July of 2023 is a recent and ominous example of this.<sup>18</sup>

The licenses as proposed by FirstLight contain no mechanisms for addressing the increase in flooding and erosion of Massachusetts farmland caused by operation of the Facilities. **MassDEP must condition issuance of any WQC for the Facilities on the addition of license terms to address inconsistencies with the Farmland Plan.**

9. License Term (Turners Dam and Northfield).

<sup>17</sup> In its letter, dated June 18, 2021, to FERC re: Response #2 to FERC's April 19, 2021 Letter Regarding Additional Information Requests, FirstLight states in response to TF-AIR#20, “based on a hydraulic assessment of the 50-year flood conducted in the 1970's, these parcels [land on both sides of the CT River] could be flooded, which is why FirstLight would seek to acquire flowage rights”, p.4.

<sup>18</sup> [Western Mass. flooding: Farms tally the losses \(bostonglobe.com\)](https://www.bostonglobe.com/news/local-news/western-mass-flooding-farms-tally-the-losses/2023/07/23/)

FirstLight proposes a 50-year term for its licenses without evidence to support this request. In fact, no justification exists for issuance of licenses of such length. We are living in an era of rapidly changing climate conditions, resulting in weather patterns such as the severe flooding of the Connecticut River that we experienced just last summer, referenced above. Flooding is significantly worsened by high-impact hydropower facilities like the Turners Dam and Northfield Facility and should cause FERC to question the advisability of issuing any new licenses for the Facilities and certainly ones for the duration proposed by FirstLight. We are also living through a period when the region's energy needs and sources of supply are rapidly changing, making issuance of 50-year licenses for the antiquated and destructive FirstLight Facilities inadvisable.

**MassDEP must insist on *much shorter license terms* as a condition of its issuance of any WQC for the Facilities, in order to help protect the existing uses of the Connecticut River.**

#### 10. Lack of Decommissioning Requirements (Turners and Northfield)

There are no requirements for decommissioning the Facilities included in the proposed license applications and this is a grave oversight. Requirements for decommissioning are standard in the renewable industry to insure that local communities and property owners are not burdened with the costs of decommissioning energy production facilities at the end of their useful life. The same requirements should apply to the FirstLight Facilities.

**MassDEP must condition the issuance of any WQC for the Facilities on the *addition of decommissioning requirements* to any newly issued licenses, in order to ensure the continued protection of existing uses of the Connecticut river once the Facilities have ceased operation.**

#### Conclusion

In the introductory provisions of its Application, FirstLight describes claimed benefits of the Facilities to the Commonwealth of Massachusetts and the local economies in which the company operates. FirstLight refers to itself as a “leading clean power producer”, to the Northfield Facility as a generator of “clean electricity” and to both Facilities as “emissions-free sources of energy generation” which are “critical assets in achieving the Commonwealth’s decarbonization goals”.

These descriptions fail to mention that the Northfield Facility operates on electricity supplied by the Grid, the vast majority of which comes from natural gas, which is a fossil fuel. Referring to the electricity generated by the Northfield as “clean” and “emissions-free” when it is created using fossil-fuel-supplied electricity is disingenuous at best. FirstLight’s descriptions also neglect to mention that both the Northfield Facility and the Turners Dam are high-impact hydropower facilities that cause tremendous ecological damage to the Connecticut River ecosystem. Extolling the virtues of the Facilities without mentioning their incredibly high environmental costs is equally misleading.

MassDEP is tasked with looking past FirstLight’s rose-colored description of the Facilities to address the realities of the environmental damage to the Connecticut River and its uses caused by these Facilities.

**MassDEP must ensure that no new licenses are issued for the FirstLight Facilities without the addition of license terms to substantially strengthen protections for the Connecticut River, its uses and the citizens of Massachusetts.**

Respectfully submitted,

Sarah Matthews, Amherst  
Becca Matthews, Amherst  
Jef Sharp, Amherst  
Pearl Burgoff, Northampton  
Lundy Bancroft, Northampton  
Julian Burgoff, Amherst  
Nancy Paglia, Amherst  
Jennifer Lee, Plainfield  
Beth Fairservis, Williamsburg  
Lara Wahl, Shutesbury  
Annita P. Sawyer, Northampton  
Oona Coy, Northampton  
Miriam Kurland, Williamsburg  
Jessica Somers, Amherst  
Jimmy Burgoff, Belchertown  
Tom Rossmassler, Hatfield  
Rodger A. Mattlage, Amherst  
J. William Stubblefield, Wendell  
Cynthia Lawton – Singer, Conway  
Laurel and William Facey, Wendell  
Hannah Harvester, Conway  
Lydia de Faveri Spiegel, Amherst  
Kimberly Lambert, Northampton  
Debbie Sicilia, Amherst  
The Enviro Show, Don Ogden, Co-Founder/Co-Host, Florence  
Western Mass Rights of Nature



May 7, 2024

MassDEP - BWR  
 Attn: *FirstLight 401WQC*  
 100 Cambridge Street, Suite 900  
 Boston, MA 02114  
 dep.hydro@mass.gov

Re: Turners Falls Hydroelectric Project (P-1889)  
 Northfield Mountain Pumped Storage Project (P-2485)  
 Comments on Application for Water Quality Certification

Dear Massachusetts Department of Environmental Protection:

American Whitewater, Appalachian Mountain Club, Zoar Outdoor, and Crab Apple Whitewater (“Paddling Groups”) file these comments in response to the April 22, 2024 Application for Water Quality Certification by FirstLight Power for the Turners Falls Hydroelectric Project and the Northfield Mountain Pumped Storage Project. Our organizations and outfitters have been actively involved in the federal relicensing of the projects since the licensee filed its Notice of Intent with the Federal Energy Regulatory Commission (FERC) seeking a new 30-50-year license for its hydropower projects.

American Whitewater (AW) is a national non-profit 501(c)(3) river conservation and recreation organization founded in 1954. With approximately 6,000 members and 100 affiliate clubs, representing tens of thousands of whitewater paddlers across the nation, American Whitewater’s mission is to protect and restore our nation’s whitewater resources and to enhance opportunities to enjoy them safely. Our members are primarily conservation-oriented kayakers and canoeists, many of whom live and/or engage in recreational boating in the New England region within easy proximity of the Connecticut River. American Whitewater has long been involved with the FERC-licensed hydropower projects in the Northeast, including hydropower projects located on the Connecticut, Deerfield, Moose, Beaver, Penobscot, Kennebec, Rapid, and Magalloway rivers, and are party to settlement agreements that provide for whitewater boating opportunities that partially mitigate for project impacts.

Since 1876, the Appalachian Mountain Club (AMC) has promoted the protection, enjoyment, and understanding of the mountains, forests, waters, and trails of the Appalachian region. AMC is the largest conservation and recreation organization in the Northeast with more than 90,000 members, supporters, and advocates, many of whom visit the lands and waters upstream and downstream of the projects for recreation.



Zoar Outdoor was founded in 1989 in Charlemont, Massachusetts, as an outdoor center located on the Deerfield River. Zoar Outdoor depends heavily on the releases from Fife Brook Dam to provide whitewater rafting and kayak rentals and trips on the Deerfield River. In addition, Zoar Outdoor offers zip-line canopy tours, lodging and camping, and rock climbing programs in the Charlemont area. Zoar Outdoor employs up to 130 people seasonally and 10 people year round and takes 25,000 people on various adventures each year.

Crab Apple Whitewater, Inc. is a family-owned whitewater outfitter based on the Kennebec River in Maine and on the Deerfield River in Massachusetts. Opened in 1983, three generations help run guided raft trips on Class I-IV rapids as well as inflatable kayak rentals on mild whitewater. As the largest whitewater outfitter in New England, Crab Apple carries 20,000 - 25,000 passengers per season and has carried over 500,000 people since 1983

Paddling Groups have participated in the relicensing of hydropower projects on the Connecticut River in Vermont, New Hampshire, and Massachusetts in order to restore flows to dewatered river reaches, provide river access, and enhance recreation opportunities for boaters and other recreational users along the length of the Connecticut River. Since 2012 when these relicensings commenced, AW/AMC filed comments and study requests in response to project scoping, commented on initial and revised study plans, participated in the planning and implementation of whitewater boating study for the Turners Falls project, commented on study reports, and commented on the Draft License Application and Amended Final License Application for these projects.

As part of the FERC relicensing process, FirstLight is required to apply to the Massachusetts Department of Environmental Protection for certification that the proposed relicensing of these hydroelectric projects meets Massachusetts Water Quality Standards and other appropriate requirements of state law pursuant to Section 401 of the Clean Water Act. Under Section 401 and EPA regulations effective November 27, 2023, Massachusetts has one year to grant, grant with conditions, deny, or waive certification authority.

Unlike FERC who must give equal consideration to power generation and the protection of environmental quality under Section 10(a) and 4(e) of the Federal Power Act to develop the best-adapted comprehensive plan for the river, Section 401 requires that project operations protect water quality including all designated and existing uses under the state's Anti-Degradation Policy. Protection of recreational uses is required under Massachusetts' water classification for the Connecticut River including providing high-quality waters suitable for fishing, swimming, and recreational boating. Existing uses on the Connecticut River include through-paddling along the Connecticut River Paddlers Trail and whitewater boating below the Turners Falls Dam in the natural river channel bypassed reach.

As part of the relicensing process, FirstLight completed a whitewater boating study on the section of the Connecticut River between the Turners Falls Dam and Poplar Street take-out as requested by AW/AMC. The results of the whitewater boating study demonstrate that the Connecticut River at Turners Falls provides high-quality whitewater boating experiences when appropriate flows are provided.





Boating for both flatwater paddling day trips and through-paddling on the Connecticut River Paddlers Trail is a popular recreational activity on the Connecticut River. The Connecticut River Paddlers' Trail provides one of the northeast's best options for multi-day paddling trips, with over fifty-five camping destinations and over 150 access points.



Current operations by FirstLight divert and alter flows on the Connecticut River, diminishing recreational boating opportunities for both flatwater and whitewater paddlers. At Turners Falls, project operations leave that section of the Connecticut River mostly dewatered except for a small minimum flow, harming aquatic habitat and recreation opportunities. Recreational boating at Turners Falls currently occurs when water is spilled into the bypassed reach when inflows exceed the hydraulic capacity of the Turners Falls project.

FirstLight filed an Amended Final License Application (AFLA) with FERC on December 4, 2020, seeking a new 30-50-year license for the Turners Falls Hydroelectric Project and the Northfield Mountain Pumped Storage Project. In response to the AFLA, AW/AMC filed comments with FERC on January 15, 2021, raising serious concerns about the effect of the licensing proposal on whitewater boating, through paddling, and other recreational activities.

Subsequent to the filing of the AFLA, FirstLight resumed settlement negotiations with a variety of stakeholders including state and federal resource agencies, neighboring towns, non-governmental organizations working to protect the watershed and recreation opportunities, and whitewater boating outfitters. As a result of these efforts, FirstLight entered into two settlement agreements with stakeholders. The Fish and Flow Settlement Agreement, signed by state and federal resource agencies, paddler groups, and the Nature Conservancy, addresses flows in the Turners Falls bypassed reach, fish passage, Cabot Station generation, and other fish and flow-related measures. FirstLight also entered into the Recreation Settlement Agreement with most recreation stakeholders including paddler groups, National



Park Service, neighboring towns, and climbing groups providing a series of recreation mitigation measures addressing river access and land-based activities including hiking, climbing, and mountain biking. AW/AMC, New England FLOW, Crab Apple Whitewater, and Zoar Outdoor are the only parties to both settlement agreements. These settlement agreements have been filed with FERC but have not yet been incorporated as final license conditions as project relicensing is ongoing and the preparation of an Environmental Impact Statement is only beginning.

Our understanding is that FirstLight's application to DEC is based on their AFLA filed with FERC as amended by the Fish and Flow Settlement Agreement and the Recreation Settlement Agreement. As part of those settlement agreements, our organizations agreed to support the issuance of a Water Quality Certificate by DEP subject to the terms and conditions enumerated in the Fish and Flow Settlement Agreement and the Recreation Settlement Agreement. Accordingly, we support FirstLight's application for Water Quality Certification for these projects subject to those conditions specified in the settlement agreements.

Our organizations appreciate the opportunity to provide the Massachusetts Department of Environmental Protection with these comments for inclusion in the administrative record for consideration of Water Quality Certification for the Turners Falls Hydroelectric Project and the Northfield Mountain Pumped Storage Project under Section 401 of the Clean Water Act.

Very truly yours,

Bob Nasdor Northeast Stewardship and Legal Director American Whitewater 65 Blueberry Hill Lane Sudbury, MA 01776 (617)-584-4566 <a href="mailto:bob@americanwhitewater.org">bob@americanwhitewater.org</a>	Mark Zakutansky Director of Conservation Policy Engagement Appalachian Mountain Club 100 Illick's Mill Rd. Bethlehem, PA 18017 (610)-868-6915 <a href="mailto:mzakutansky@outdoors.org">mzakutansky@outdoors.org</a>
Frank and Jennifer Mooney Crab Apple Whitewater 2056 Mohawk Trail Charlemont, MA 01339	Janey Cowie Zoar Outdoor 7 Main St. Charlemont, MA 01339

**From:** [REDACTED]  
**To:** [dep.hydro@mass.gov](mailto:dep.hydro@mass.gov)  
**Subject:** FirstLight 401 w q c  
**Date:** Friday, May 10, 2024 8:12:12 AM

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End the operation of Northfield mountain as soon as possible. The health of the people's river is more important than profit for a few. Not enough Kilowatts? T.S. people can conserve.

---

**From:** Glen Ayers <[REDACTED]>  
**Sent:** Tuesday, May 28, 2024 12:51 PM  
**To:** Stefanik, Elizabeth A (DEP) <Elizabeth.A.Stefanik@mass.gov>  
**Subject:** Please explain this to the public at the 401 WC Certificate hearing

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Hi Elizabeth,

Can you please explain the legality of how it is that an licensee/operator whose Northfield Mountain Pumped Storage Project literally stops the Connecticut River dead, stills it to lake, and then fully reverses it for miles and hours at a time killing all the aquatic life sucked in at 15,000 cubic feet per second, can receive a Massachusetts 401 WQ Certificate stating it meets all Clean Water Act requirements and be allowed to continue operating at this level of destruction and with this level pollution discharge on this interstate waterway?

The public deserves to hear from you that our laws are so feeble and outdated that they can not even protect the aquatic life in the river from wholesale grinding and obliteration. I think you need to explain to the public just how pathetic our laws and regulatory programs are, so that we can better understand the need to fix this completely broken system and work with the Legislature to pass better laws that truly protect our rivers from outrageous exploitation.

Thank you,

Glen Ayers  
[REDACTED]

Greenfield, MA 01301  
Located on the Connecticut River



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**From:** Fran Bancroft <[REDACTED]>  
**Sent:** Sunday, June 2, 2024 7:58 AM  
**To:** dep.hydro@mass.gov  
**Subject:** FirstLight 401 WQC

**CAUTION:** This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Dear DEP:

This letter is in regard to the 401 Water Quality Certification for FirstLight's facilities on the Connecticut River.

For over 60 years, I have been connected to the Connecticut River, enjoying its beauty on commutes, canoeing [downriver!] on overnight trips, exploring its wildlife, picnicing on the shoreline, swimming in its running current, and being renewed by its flowing water.

I am writing because of my concerns about the water quality in the river at this time of license renewal.

In particular, water heated behind dams or in the pumped station reservoir negatively impacts the populations of cold water fish and wildlife habitat in and on the surface.

Additionally, access to the water for recreational activities such as swimming, wading and study of local flora and fauna is impacted by both bank erosion and silty water which result from the rapid release of water from FirstLight facilities.

I urge you to ensure maximum high water quality in New England's largest river for the present and for future generations of people and other living beings.

Thank you for your consideration.

Frances M Bancroft  
[REDACTED]  
Amherst, MA 01002  
[REDACTED]

---

**From:** [REDACTED]  
**Sent:** Monday, June 3, 2024 2:36 PM  
**To:** dep.hydro@mass.gov  
**Subject:** My comments on FirstLight Power's 401 Water Quality Certificate application

**CAUTION:** This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Re: 401 Water Quality Certificate Application, dated April 22, 2024, submitted by FirstLight MA Hydro LLC and Northfield Mountain LLC to the Massachusetts Department of Environmental Protection in connection with relicensing of the Turners Falls Hydroelectric Project and the Northfield Mountain Pumped Storage Project

I am writing with many concerns about FirstLight's application for a Water Quality Certificate.

I support the comments submitted by Sarah Mathews and Western Mass Rights of Nature, which covered in great detail the failure of FirstLight to propose a plan that takes any significant steps to protect the quality water for the Connecticut River.

I also support the comments submitted, in writing and in testimony at the public hearings, by our elected officials, including my state senator and both of my U.S. senators.

I also support the comments submitted, in writing and in testimony at the public hearings, by the Connecticut River Conservancy. These comments are highly specific and deeply based in the existing scientific knowledge.

The specific concerns that I want to draw attention to personally are:

- 1) Water flows that FirstLight proposes to allow through the Turners Falls Dam are not remotely adequate to protect fish life and cultural resources below the dam. The minimum allowable flow should be 1400 cfs, to actually support life, meet legally required aesthetic standards, and create an opportunity to raise the health of the Connecticut above "impaired" status.
- 2) FirstLight is attempting to continue years of stalling on installing an effective fish ladder. They should not be granted any more time. The license should be held up until they get a modern and effective ladder built and functioning.
- 3) The current level of functioning of the Northfield Mountain Pump Storage Station is already doing huge harm to the river in the form of loss of life of fish, eggs, and larvae, in erosion of land along the river, and in causing an extensive section of the river to periodically flow backward, with deadly implications for fish and ecosystems. No increased capacity should be permitted for the upper reservoir at the Northfield facility and no other changes should be permitted that are aimed at increasing the functioning of the pump storage station.
- 4) Proper studies should be required of the current impact of the pump storage station, including proper *deep water* study of sturgeon e-dna.

5) FirstLight should be required to make a Decommissioning Fund to restore the sight after it is no longer needed.

Many thanks,

Lundy Bancroft  
Florence, MA



**From:** [REDACTED]  
**To:** [FERC-FirstLight](#)  
**Subject:** FW: FirstLight 401 WQC Inquiry Form  
**Date:** Thursday, May 2, 2024 10:20:55 AM

**From:** [noreply@formstack.com](mailto:noreply@formstack.com) <[noreply@formstack.com](mailto:noreply@formstack.com)>

**Sent:** Wednesday, May 1, 2024 8:54 AM

**To:** DEP Hydro (DEP) <[DEP.Hydro@mass.gov](mailto:DEP.Hydro@mass.gov)>

**Subject:** FirstLight 401 WQC Inquiry Form

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## Formstack Submission For: [FirstLight 401 WQC Inquiry Form](#)

Submitted at 05/01/24 8:54 AM

**Name:** david campolo

**Organization:**

**Email:** [REDACTED]

**What is your question/comment mainly about?:** 401 WQC public process

**Question or**

I am writing to ask the Department of Environmental Protection in Massachusetts to protect the Connecticut River from any further abuse by the pump storage station which is up for relicensing in Northfield Massachusetts. If your organization is going to live up to its name it can only come to one conclusion: That the pump storage station is damaging the river and the fish irreparably. Another 50 years of this would be irresponsible in the extreme. The damage of erosion, the wholesale slaughter of the fish trying to spawn

**Comment::**

upstream, the disruption of the rivers natural flow, using fossil fuel energy that consumes more power than it produces - none of this makes sense, none of this is right. A facility such as this would never make it off the drawing board if proposed today. We are counting on the department to do its job and not relicense this facility. Thank you very much for accepting my comment.

David Campolo



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Formstack, 11671 Lantern Road, Suite 300, Fishers, IN 46038



May 25, 2024

Elizabeth Stefanik  
Attn: FirstLight 401WQC  
100 Cambridge Street,  
Suite 900  
Boston, MA 02114

Dear Ms. Stefanik,

My letter is in regard to the Water Quality Certification for First Light's facilities.

I have loved and known the Connecticut River, including the area around the Pumped Power Facility. I have visited and also been on the river at that area. I know that the water level rises and falls and that creates erosion to the banks of the river and also clouds the water making it less habitable for the fish and other life that live in these waters that we want to preserve.

I have canoed on many parts of the Connecticut River and know how much this recreation means to citizens of our state. It is important to maintain good water quality for these activities in addition to their importance for the life in the river itself.

Thank you for your sincere consideration of my opinions.

Sincerely yours,

*Anne G. Cann*

Anne G. Cann

Amherst, MA 01002

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**From:** Robert Cress Catlin <[REDACTED]>  
**Sent:** Monday, May 27, 2024 3:38 PM  
**To:** dep.hydro@mass.gov; Recorder Letters  
**Subject:** FirstLight 401 WQC

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

To whom:

I am writing to object to the relicensing of the FirstLight pumped storage project in Northfield.

I feel this license should be DENIED due to the fact that this project disrupts the natural flow of the CT River, and is damaging to the ecosystem for miles downstream.

I regularly walk and paddle the river below this project, and am disturbed, as I am sure many many living creatures are, by the constant fluctuations of water levels and flow rate on the river. The river even runs in reverse at times. This is shameful and destructive.

The FirstLight project is a net consumer of electrical power from the grid, despite the misleading statements of FirstLight that this is a clean energy facility.

It is high time we reduce our dependence on fossil fuels and energy consumption generally, and this project violates both of these priorities.

We must put an end to this wasteful and destructive pumped storage facility by denying its relicensure.

--

Robert Cress Catlin  
[REDACTED]

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**From:** Willie Crosby <[REDACTED]>  
**Sent:** Thursday, May 30, 2024 7:37 AM  
**To:** dep.hydro@mass.gov  
**Subject:** FirstLight 401 WQC

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Do not grant a permit to firstlight for continued operation of the Northfield Pump Station. The impact on erosion, water life, and the natural flow of the river is too high a cost for the profits of an international company. Choose protecting our waterways, the health of our ecosystem, the vibrancy of our food systems, the culture of western mass over the profits of this corporation. I have been on the river when it flows upstream and it is a strange phenomenon. Our migratory fish species like the shad and lamprey are negatively impacted by this operation. At the minimum there needs to be a reassessment every 10 years to ensure this project is still in alignment with the water needs and uses required by this region.

Willie

Fungi Ally  
Montague MA

---

**From:** david detmold <[REDACTED]>  
**Sent:** Monday, June 3, 2024 9:39 AM  
**To:** dep.hydro@mass.gov  
**Subject:** "FirstLight 401 WQC"

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To Whom It May Concern:

I am writing to urge you in the strongest possible terms to deny FirstLight's bid for a Water Quality Certificate to operate the Northfield Mountain Pumped Storage Facility for another 50 years. Under the guidelines of the federal Clean Water Act, allowing FirstLight to continue pumping the Connecticut River backwards, using fossil fuels to do so at a net loss to the grid on a daily basis, killing millions of fish, larvae, and aquatic lifeforms, while eroding the banks of the river, and causing damage to downstream farms, is not only an unacceptable affront to our environment, but an illegal act of corporate malfeasance solely for the profit of a Canadian pension fund and its investors. Operating Northfield Mountain gains millions of dollars annually for its corporate owners, but drains the life out of our river. Under the Clean Water Act, Mass DEP must act to protect the fish, the riverside farms, and the life of the Northeast's longest river, whose natural flow (i.e. downstream to the Long Island Sound, not upstream to Northfield Mountain's upper reservoir) has been catastrophically altered since 1974.

Thank you,  
-David Detmold  
Montague



**From:** [REDACTED]  
**To:** [dep.hydro@mass.gov](mailto:dep.hydro@mass.gov)  
**Subject:** FirstLight 401 WQC  
**Date:** Tuesday, May 14, 2024 8:55:37 PM

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FirstLight's Northfield Mountain Pumped Storage Project was poorly designed at its conception. The Project should have been built with a lower reservoir, so that the fish in the water pumped from the Connecticut River in each pumping/generation cycle wouldn't be exterminated, as they have been for the last half-century. A lower reservoir would also prevent any riverbank erosion by the Pumped Storage Project operation.

The original purpose of the Pumped Storage Project was to absorb otherwise unusable or unprofitable nighttime energy production from the Vermont Yankee nuclear power plant. The nuclear plant is now closed, and so the original justification for the Pumped Storage Project no longer exists.

All of FirstLight's offerings of recreational facility improvements, fish nets, barriers and any other abatements are inadequate, meager and pitiful compensation for the environmental damage the Pumped Storage Project does to the river's aquatic life and riverbanks. The environmental agencies and NGOs who have, thus far, given in to FirstLight in this matter should reverse course and take their mandates seriously.

Now, only one of the two following courses of action should be taken:

1. A lower reservoir, with capacity matching that of the upper reservoir, should be designed and built, or
2. The Pumped Storage Project should be closed.

Sincerely,

Robert L. Dickerman

Robert L. Dickerman  
[REDACTED]

Northfield, MA 01360  
[REDACTED]  
[REDACTED]



[REDACTED]  
Amherst, MA 01002

May 26, 2024

Elizabeth Stefanik  
MassDEP – BWR  
100 Cambridge St., Suite 900  
Boston, MA 02114

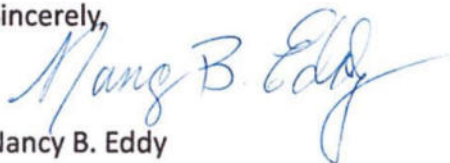
Dear Ms. Stefanik,

I am writing about my concern related to the relicensing of First Light facilities. I am a longtime resident of Amherst and a past President of the Massachusetts Municipal Association. I know how difficult and complicated these decisions can be. I am specifically concerned as follows:

- I think a 50 year licensing of the facility is too long. There are so many things happening to our environment related to climate change and the increase in our technical knowledge, that it would seem more appropriate to consider a 20 or 30 year license.
- I am concerned about the impact of warm/hot water release on the viability of cold water fish. Can there be provisions in the license to regulate the temperature of the water released?
- We should make efforts to assure the cleanliness and suitability of the Connecticut River for recreational uses. Over the years I have seen the success of efforts to clean up the River and the wonderful results for swimming, canoeing, and boating of all kinds. Let's be sure those conditions do not deteriorate.

Thank you for your efforts.

Sincerely,



Nancy B. Eddy

[REDACTED]

**From:** [matt.guertin](mailto:matt.guertin@dep.state.ma.us)  
**To:** [dep.hydro@mass.gov](mailto:dep.hydro@mass.gov)  
**Subject:** FirstLight 401 WQC  
**Date:** Monday, April 29, 2024 7:03:06 PM

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To whom it may concern,

Please consider First Light's problems keeping the hydraulic oil where it belongs. There are still oil absorbing socks around the hydraulic pistons that open and close the gates on the dam. I have had to call DEP so many times regarding the Turner's Dam leaking oil I got to know one of the DEP employees. The leak that occurred in 2022, with a MINIMUM of 412 gallons of oil leaked into the river was, at the very least, not handled in a professional manner that is respectful to all river users. I was literally covered in hydraulic oil one day going out to paddle the whitewater below the dam. First Light has continually been neglectful of its responsibilities regarding a publicly owned resource. There is no doubt in my mind that the choices First Light makes regarding how to operate negatively affect water quality.

Respectfully submitted,  
Matt Guertin  
[REDACTED]  
Cummington, MA. 01026  
[REDACTED]

**From:** [Jonathan Mark](#)  
**To:** [dep.hydro@mass.gov](mailto:dep.hydro@mass.gov)  
**Subject:** "FirstLight 401 WQC"  
**Date:** Wednesday, May 8, 2024 8:22:06 AM

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Having a reservoir to generate hydroelectric power during the day has limited benefits. First of all one has to use energy to pump the water up Northfield mountain, where it warms the water before using it to generate power. This adds unnatural heat to the Connecticut River, which is harmful to the health of the river and its inhabitants. A better solution is to use Northfield mountain for a site to generate electricity through solar energy by photovoltaic systems. Also developing better storage systems for the electricity would be a better idea than this method artificially heating our blessed Connecticut River. It is enough of an issue that the climate is warming by human activity over the centuries.

Jonathan Mark Haber

[REDACTED]

Warwick, MA 01378

### [Energy Pollution's Impact On Environment](#)

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**Comments of Margaret Hall in opposition to FirstLight 401 WQC  
P-2485 & P-1889 Northfield Mountain Pumped Storage and Turners Falls  
dam/Cabot Station/Station One power facilities**

**Overall comments**

These projects are requesting a 50 year license renewal for a project first approved before the Clean Water Act, before MEPA, and before most modern regulations existed. The applicant is requesting another 50 year license, during which time the effects of climate change on the environment may be devastating, and the changes in technology to address the need for energy storage and generation are hard to fully anticipate. Given these massive unknowns, it would be prudent to review this application not through a lens of protecting the financial investment that a private, for-profit company has already made, but rather to review the project as if it were a new project, and to realize that the use of 20 miles of the Connecticut River as a lower reservoir, instead of requiring a closed loop system with a true lower reservoir, would never be approved as a new project today.

In balancing the reality of this existing infrastructure with the needs of nature, it is time to require the Applicant to start the lengthy process of creating a true lower reservoir, perhaps to be completed at about the 25 year mark. This is the only way to recognize that an ecosystem is not made up of only threatened and endangered species that have been identified, but of all the interconnected living parts, no matter how small or seemingly inconsequential. The creation of a true lower reservoir will be a vast undertaking that has environmental consequences of its own, but the value of restoration of the river in the current “Turners Falls Impoundment” (the former “River”) cannot be overestimated.

As a condition of any WQC issued, progress should be required to be documented at given intervals, and the Water Quality Certification should be withdrawn if benchmarks are not met.

In the absence of such a requirement, this license, if issued at all, should be for no more than 30 years.

All timeframes for environmental remediation of harm should be reviewed and most should be improved upon. That the spillway lift and plunge pool are not proposed until year NINE confirms another nine years of the current slaughter. FirstLight has the financial ability to accelerate these improvements and make progress on multiple front simultaneously. From the end of the original license in 2018 to the present – indeed, until the issuance of this potential license – while operating under previous terms, has been a huge financial boon to the company, making poverty arguments increasingly absurd.

Signatories to the two Settlement Agreements, by law or specialty interest, negotiated in regard to their particular area of expertise/interest. (e.g. American and Crab Apple Whitewater are looking at specific recreation; NMFS and USFWS focus mostly on fish.) The Scope of the Settlement Agreements only covers the silos of the Settling Parties. It is more than presumptuous for FirstLight to conclude that the Commission’s approval of the Settlement Agreement with no changes is “in the public interest”. The DEP is only now hearing from the public on Water Quality implications. Any party not willing to sign a non-disclosure agreement was not able to participate in the lengthy negotiations to date.

As a party to the various Settlement negotiations, but not a signatory of the Flow and Fish Passage Agreement, I urge the FERC to pay particular attention to the comments filed by the Connecticut River Conservancy, whose scope more closely reflects the overall needs of the entire watershed. While they are an NGO, rather than a true oversight agency, their requests to serve on every oversight committee they deem appropriate should be approved, with FirstLight compelled to listen to their input on matters extending into the future. Their failure to sign Settlement Agreements is a reason to include them, not exclude them, from ongoing input.

At the end of Section II on page 6 of the Flow and Fish Passage Settlement Agreement, FirstLight implies that it is a source of “clean, renewable power”. Of particular note is that the recent influx of form letters to the FERC from various utilities, including North Attleborough Electric Department, Taunton Municipal Lighting Plant, Rowley Municipal Lighting Plant, Groveland Municipal Light Department, Merrimac Municipal Light Department, Middleton Electric Light Department, Stowe Electric Department, Belmont Municipal Light Department, Norwood Light and Broadband Department, Hingham Municipal Lighting Plant, and Braintree Electric Light Department, supporting the application, all contain the following words:

“The partnership has allowed us to deliver first-class services at affordable prices to our customers while doing right by them by selecting fossil fuel free power sources. In addition, our agreement with FirstLight supports and advances our efforts to meet and exceed the Commonwealth’s mandate to obtain 50% of our power from clean sources by 2030 and 100% by 2050.”

However, while Cabot Station/Turners Fall dam may be said to produce “fossil fuel free power”, Northfield Mountain does not. Therefore, in regard to the Northfield pumped storage facility, they all should be required to stop saying this, and should receive no credit for “fossil fuel free power generation by contracting with Northfield Mountain through FirstLight. As we know, pumped storage, by design, uses more power than it creates. As long as the source to pump the water up is from the grid, and the grid is not 100% renewable, this is not a factual statement. Grid electricity here is largely gas. Gas is a fossil fuel. There is currently a small solar field associated with the Northfield property.

- One of the conditions of relicensing should be a plan to pump only with renewable power within five (5) years. Waiting for the rest of the grid to achieve 100% renewable power is not reasonable, given the rapid advance of the climate crisis.
- Until such time as Northfield Mountain is fossil fuel free power generation, there should be no credit given to contracting utilities who claim that it is, nor any weight given to their claims that Northfield helps them get closer to fossil fuel free.
- While this may not fall directly under the heading of “Water Quality”, it nevertheless is a Massachusetts issue as much or more than a federal issue, so I am including these comments here.

### **Specific comments:**

#### **Barrier Net**

In Article B200 and continuing of the Flow and Fish Passage Settlement Agreement, the barrier net to be seasonally installed at the Northfield Mountain intake/tailrace is unproven technology. Therefore:

- Design should begin immediately; Surely this is largely complete, given that they are presuming it will address the issues;
- Installation should be started upon approval of the design, but no later than 3-4 years after license is approved, given that virtually no marine life can withstand the current operation;
- Even if the installation is retained at June 1 of year 7, then the shakedown year should be year 7, representative and quantitative effectiveness testing should be in years 8 and 9, and all other related dates should be correspondingly adjusted. There is no reason given for adding additional years of delay;
- AMMs should not be restricted to only the 2 proposed. Elsewhere it is stated that no AMMs other than those set out in the Settlement Agreement should be required until after year 25 of the new license. This is unproven technology. If it doesn’t work, all options must be kept available, and regulatory agencies must not have their hands tied.
  - If it continues not to work, the license should be rescinded or pumping halted during critical seasons.



## **Fish ladders**

The Silvio O. Conte Anadromous Fish Laboratory studies fish ladders and fish passage, right on the Power Canal. Yet FirstLight, to date, has not taken advantage of their expertise. It is apparently common knowledge there (personal communication) that, among other things, the current ladder/s is/are located in the wrong place for the fish that need to use it. FirstLight should be required to take this local expertise into consideration in all future designs.

## **Erosion**

Even just among negotiating participants, agreement was not reached about erosion including mitigation, stabilization, future controls, or even responsibility. Other than regarding flow, it was not addressed in the Flow & Fish Passage Settlement Agreement. FirstLight mentions in footnote 7 on page 5 of that agreement that discussions were “ongoing”, but they never resulted in an Erosion Settlement Agreement, in large part because FirstLight refuses to accept responsibility for most erosion. Their cover letter states that the Flow & Fish Passage agreement “resolves the most difficult and complex issues”, whereas I maintain that since no agreement could be reached even among the negotiating parties, erosion is a difficult and complex issue. In the WQC application in Attachment C-2 they reference the Erosion Causation Study submitted to the FERC in 2017 and refer to this as “reflecting baseline conditions”. What about the conditions that deteriorated between 1972 and 2017?

On page 16 of the Flow and Fish Passage Settlement Agreement, FirstLight claims that proposed new operational conditions

- would not cause an INCREASE in erosion per their modeling,
- would have “minimal impact on TFI shoreline erosion”, and
- “dominant causes of erosion would continue to be natural high flows at most locations and boat waves in the Barton Cove area.”

To be blunt, this does not pass the smell test. It does not take responsibility for current erosion. There is nothing “natural” about the TFI area, and any erosion impacts should be, by default, presumed to be caused by Northfield Mountain operations for the entire TFI unless they can prove otherwise. I refer the DEP to Comments by FRCOG and others.

FirstLight admits to having issues with siltation both in the upper reservoir and in the Barton Cove area. Speaking as a layperson, how does five feet of silt get to the upper reservoir if not through erosion of banks or riverbed, especially upstream? The river is listed as impaired by TSS. Despite usage of the term “natural flow”, all flow of the CT River in this area is impacted by the dams, including upstream, and by the Northfield Pumped Storage Facility and is not “natural”. The default should be to presume that the impairment of total suspended solids is caused by the unnatural manipulation of the River unless proved otherwise, not the reverse.

On pages 24-25 of the Flow and Fish Settlement Agreement, FirstLight asserts “Increasing the upper reservoir storage will have no adverse environmental effects.” Again, they are

- comparing only to existing conditions, which have already not been adequately addressed; and
- making this claim only as regarding shoreline erosion (with no discussion of riverbed scouring), and protected, threatened, or endangered species.

This ignores the rest of the impacted ecosystem, such as smaller fish, eggs, and all aquatic life – plant or animal – other than protected, threatened, or endangered species. It is indeed possible that since the turbines already kill almost everything that passes through, that the increased height would not make it worse, but the goal should be to reduce the devastation, and this increase only makes that less attainable. See 314 CMR 4.02 *Aquatic Life. A native, naturally diverse, community of aquatic flora and fauna including, **but not limited to**, wildlife and threatened and endangered species.*

Tangential to Erosion, but highly relevant to maintaining a *native, naturally diverse community*, **invasive species** often thrive in disturbed areas and boundary conditions as aggravated by the operation of the Facilities. The proposals for control of invasives strike me as superficial and limited in scope for area and time. This should be an ongoing area of oversight with outside experts having authority to compel corrective action throughout the project boundaries and for the full duration of any license.

Any license issued must

- Deny their application to increase the elevation of the upper reservoir to 1004.5. It is true, as FirstLight points out, that this height has occasionally been approved on an emergency basis. It is also true that on no occasion was this agreed to as a permanent change, and no conditions have changed such that this should be made permanent now.
- PROVIDE FOR OUTSIDE MONITORING AND OVERSIGHT OF all plans for bank stabilization, repair of existing eroded areas, and mitigation of future impacts, along with a regular monitoring and maintenance plan to address future impacts. Disallowing input by entities such as the CT River Conservancy does not serve the public.
- Maintain the current FOUR foot elevation change, as measured at the TF dam, OR REDUCE IT, reserving the 9 foot fluctuations for true emergency situations only. The application envisions utilizing more of the nine foot variation on a regular basis, and tries to claim this does not represent an operational change. It would. Refer in particular to Comments by American Rivers.

## **Financial considerations**

- FirstLight should be ordered to establish a decommissioning fund for each of these projects. The day will come, sooner or later, when this LLC or a successor owner/operator will not feel it can make enough money to continue the operation of the dam, the power stations, or the pumped storage operation. That is also the time when there would, by definition, be less revenue available to do the decommissioning, they could let the license lapse, and there would be little recourse but to have government, through the taxpayers, shoulder the cost of decommissioning, as has been happening with dams all over the country. A decommissioning fund is a standard practice in many similar situations, and a fund should be established now that travels with the facility, not with the current owner. “Responsible party pays” should be a guiding principle.
  - As an example, note that in Article A300, Upstream Fish Passage, (c) FirstLight proposes to *retire, either by removal or retaining in place, the Cabot Ladder and the power canal portions of the Gatehouse Ladder within 2 years after the Spillway Lift becomes operational*. Physical structures being “retired”, should be “removed”, not “retained in place.”. Perhaps the latter would be more cost effective for FirstLight, but then who would ultimately pay for the removal of these structures, and why should the public have to look at unused ladders for 30 or more years?
- Large utilities with deep pockets can outlast and outmaneuver many a dedicated, underfunded, understaffed government agency. FirstLight should be required to pay an annual fee to either the FERC, the MassDEP, or both, to cover the costs of oversight and inspections. This, too, has many legal precedents where government oversight is required.
- Oil has leaked into the Connecticut River at Turners Falls dam, presumably from leaking pistons, at least this year and last, and at a frozen time of year where repair was not immediately feasible. Penalties should be increased for any repeat problems, and the maintenance schedule reviewed and improved.
- Local towns rely very heavily on taxes generated by the FirstLight companies. Steps should be taken to mitigate any local revenue drops from operational changes undertaken to comply with best ecological practices.

## **Recreation**

While I will leave the adequacy of proposed recreational improvements mostly to others, I will comment just on 2 interrelated aspects

- The amount FirstLight proposes to spend, often seeming grudgingly, OVER A 50 YEAR PERIOD is a pittance compared to their revenues and profits. The River is a Public Trust that a private, for-profit company is being allowed to exploit. Giving back should be a stronger requirement.
- On 4/15/24, FirstLight issued an Environmental and Recreational Compliance Report to the FERC whose description reads: “FirstLight Power Services LLC o/b/o FirstLight MA Hydro LLC, submits Request for Approval to Institute Carry In & Carry Out Policy re the Turners Falls Hydroelectric Project, et al. under P-1889, et al.” This is a request to remove trash cans from Barton Cove Campground, Barton Cove Day Use Area, and portions of Riverview, and replace them with a single 4-cy container. The rationale for this is described as a desire to reduce litter from overflowing cans and tipping over by animals. 4 cy containers are not ADA compliant, and are highly prone to animal intrusion because humans will not close doors and lids. Litter from users who do not put their materials in any can, when none are convenient, is an unfortunate likelihood.

As a solid waste professional for over 35 years, I have suggested to FirstLight other containers (Big Belly solar trash and recycling containers) that do not overflow and are highly resistant to animal intrusion. While I am pleased at the prompt response I received, they claim they cannot put even one such can into operation this summer, but will have to wait for summer of 2025 “for budgeting reasons”. Yet the removal of cans is proposed to commence almost immediately. And the test container will “likely be plac[ed as] a test receptacle at the Visitor’s Center in Northfield” which does not appear to be one of the problem areas where they say they are experiencing overflowing.

Handicapped-accessible options, separate recycling or compost options, and /or more frequent emptying should be pursued before removal of cans begins. I am distressed that this reduction in public service may represent their attitude to other recreational opportunities over the next 50 years.

## **Aesthetic Impairment**

Since Aesthetic standards are part of the evaluation of Water Quality, it should be clear that a dry river is an impaired river. This is true at ALL times of year. As I testified in my oral comments, there are times that immediately below the Turners Falls dam there is a nearly dry, rocky gully with puddles. Regardless of time of year, and regardless of what endangered species of concern might or might not be trying to migrate through, and regardless of recreational season or likelihood of boaters, the river should look like a river. Improving flow at migration times is wonderful, but flow should never be so restricted at any time of year as to let there visually be no river.

Margaret J. Hall  
June 3, 2024

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**From:** Jan Higgins <[REDACTED]>  
**Sent:** Saturday, June 1, 2024 12:18 PM  
**To:** dep.hydro@mass.gov  
**Subject:** FirstLight 401 WQC - Turners Falls Dam, P-1889-085

**CAUTION:** This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

To Whom It May Concern:

I write in regard to FirstLight Power's application to relicense its hydropower facilities on the Connecticut River, specifically the dam at Turner's Falls, MA.

My husband is an avid fisherman and particularly likes to fish below the Turner's Falls dam for wild Walleye. In pursuit of these fish, he has had ample opportunity to observe the destructive manipulation of the river flow below the dam. The fluctuation of water levels resulting from FirstLight's alternating release and holding back of water on a daily, even hourly, basis disrupts the lives of the fish and other aquatic species. As the river depth fluctuates, the river bed is disturbed (tearing up weed beds) and the shoreline is disturbed, which in turn affects fish spawning activity and other behaviors.

In addition, the rapid change in water depth during water release from the dam poses extreme danger for wading fishermen and other river users. My husband experienced this firsthand when there was a large release of water, without any warning whatsoever. He was wading in the channel of the river and was washed away by the water. If not for the actions of his fishing companion, he would very likely have drowned. When he reported this to workers at the dam and also the Turner's Falls police he was ignored.

Based on my husband's firsthand observation of the environmental and ecological damage caused by FirstLight's operation of their dam at Turner's Falls, we urge the MassDEP to reject FirstLight's application to relicense its dams in Massachusetts.

Sincerely,  
Janice Higgins  
Hadley, MA

May 29, 2024

Elizabeth Stefanik

Attn: FirstLight 401WQC

100 Cambridge Street, Suite 900

Boston, MA 02114

Dear Ms. Stefanik:

I am writing in regards to the 401 Water Quality Certification for First Light's facilities.

I am concerned about renewing the licenses for FirstLight Facilities at the Turners Falls dam and the Northfield Pumping Station.

As a resident of the Pioneer Valley with a deep interest in the health of the river and its natural environment, I am very concerned about the affect these dams have on the fish populations and habitat, including migration of fish along the river.

I am also very concerned about the affect these dams have on the banks of the river which affects the canoeing experience due to bank instability, degradation, and the sudden changes in dynamics of river flow due to large water discharges.

Further, the water discharges (releases of rushing water) greatly increase water turbulence making the river water muddy, unpleasant, and aesthetically unappealing. These discharges also have a negative impact on all the other biota along the river.

Thank you for considering my concerns about renewing these licenses.

Sincerely,



Ann P. Hooke

Amherst, MA 01002



May 28, 2014

Elizabeth Stefanski  
ACE: First Light 401 WQC  
100 Cambridge St, Suite 900  
Boston, MA 02114

Dear Elizabeth Stefanski:


Please Consider the impact the Release  
of Cold water has on the quality of water.  
This sudden Release of Cold water makes

the water Silty + Murky and generally  
unpleasant for swimming in the area.

I hope that you will take this issue  
into Consideration when you Examine  
the issue of Relocating the First Light facilities  
at the Turners + Northfield pumping station.

Sincerely,

Margaret Horsnell

  
Amherst, MA 01002

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**From:** Ella Ingraham <[REDACTED]>  
**Sent:** Friday, May 31, 2024 11:37 AM  
**To:** dep.hydro@mass.gov  
**Subject:** FirstLight 401 WQC

**CAUTION:** This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Comment on FirstLight 401 WPC Hydro-Electric Relicensing

Date: May 31, 2024

I oppose relicensing the Northfield Mountain Pumped Storage Station (NMPSS). 33 U.S.C. 1251 codifying the Clean Water Act of 1972 states that its purpose is "restoration and maintenance of chemical, physical and biological integrity of Nation's waters." In stating the goals of the Act 33 U.S.C. 1251(a)(2) states: "It is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife ... be achieved by July 1, 1983." FirstLight's NMPSS continued operation violates the purpose of the Clean Water Act by destroying the biological integrity of the Connecticut River. The facilities' operation disrupts the biology of the River by sucking up and killing fish and other living organisms living in and migrating up the River when it pulls water through the turbines to the reservoir on the Mountain. When water is released through the turbines to generate power the force of the water disrupts the flow of the River disrupting fish spawning in the River and eroding the banks which impacts wildlife living along the River.

Ella Ingraham  
[REDACTED]

Turners Falls, MA 01376

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**From:** Paul Jablon <[REDACTED]>  
**Sent:** Monday, June 3, 2024 1:41 PM  
**To:** dep.hydro@mass.gov  
**Subject:** FirstLight 401 WQC

**CAUTION:** This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

The Northfield Mountain Project is an ecological and fiscal abomination. I have a Ph.D. in Science Education and degrees in Biology. I have taught biology courses on watershed topics, hydro-energy production, and migratory activities since 1969. I have read deeply and carefully about the Northfield Mountain project and personally spoken to experts on the operation of the project. I have also read about the fish ladder at the Turners Dam and personally inspected it. This fish ladder was poorly designed over 50 years ago and continues to be virtually useless for the migration of shad and other species up the Connecticut River. The ladder transports hundreds of shad at Holyoke, while the one at Turners will be transporting less than a dozen at the same time. It cannot wait any longer and must be torn out and replaced within 5 years.

Northfield Mountain needs to be stopped immediately. It is adding to global warming, costs taxpayers more than it saves as it uses more electricity than it generates, and destroys the ecosystem of the river completely. Every time it runs it grinds up millions of organisms, and the system cannot be fixed with better filters. The filters would need to be replaced daily, an impossible and costly task.

There is simply NO NEED for this turbine system that backs water up the mountain. It is erosional, destroys the habitat of the river and is ILLEGAL for sure under the Clean Water Act. This is a no brainer.

I have taught for years that this is an outdated and extremely harmful system and should NOT BE RELICENSED AT ALL. All scientific and economic research backs that statement.

In summary, DO NOT RELICENSE Northfield Mountain at all, tear it down. And do not relicense Turners Dam until they present a plan whereby they will rebuild the fish ladder within 5 years of relicensing, and have those plans submitted to the Biology and Engineering faculty at UMASS Amherst for validation.

This is in contradiction of all Massachusetts, and some federal laws. I am part of a team that monitors the Connecticut River weekly and can assure you that Northfield Mountain has destroyed the ecosystem of the river

Paul C. Jablon Ph.D.

[REDACTED]

Greenfield, MA 01301-9654

[REDACTED]

[REDACTED]



**From:** [Chris Joseph](#)  
**To:** [dep.hydro@mass.gov](mailto:dep.hydro@mass.gov)  
**Subject:** FirstLight 401 WQC  
**Date:** Thursday, May 9, 2024 10:32:52 AM

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Chris Joseph

██████████ Greenfield, MA 01301  
██████████

Good Morning,

I write today in opposition to the re-licensing of FirstLight. They were created over 50 years ago to support the energy needs of a Nuclear Power Plant, which has since been decommissioned. This battery does not, and has never "Generated electricity" in excess of its consumption. It is simply a financial arbitrage supporting retirees in Canada.

The process it engages in nightly is bad for the environment, their purpose for existence no longer exists.

Please shut it down entirely.

Reducing the license from 50 years to 30 years isn't enough.

Thank you.

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**From:** Laura J. Kaye <[REDACTED]>  
**Sent:** Monday, June 3, 2024 10:44 AM  
**To:** dep.hydro@mass.gov  
**Subject:** FirstLight 401 WQC

**CAUTION:** This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

I attended the virtual public hearings that were held on 5/29/24 but was unable to complete my testimony due to technical difficulties. However I was able to listen to the presentation by Pam Harvey at which she outlined the ins and outs of the 401 WQC process. I also heard what the public officials and citizens who chose to attend the hearings had to say and it is clear that many of their stated concerns about the effects of Northfield Mountain Pumped Storage Station (NMPS) on the waters of the Connecticut River would fall within the parameters of the Clean Water Act, as explained by Ms Harvey. Erosion, reversal of water flow, and the extreme impact on fish and aquatic life by the pumping operation at NMPS cannot be denied as the most egregious of these effects. It is difficult for me to imagine that Mass DEP will be able to issue a 401 certificate that would allow the Federal Energy Regulatory Commission (FERC) to issue a new operating license to NMPS. (It is a widely held belief, based on examining its record, that FERC will simply rubber stamp an approval to the corporation, First Light, but this is not a reason for our state agency, DEP, to do the same). Since we the members of the public do not have the power to make any of the decisions about what will happen with NMPS and the Connecticut River we rely on you to be most principled in the analysis that you will conduct for the 401. We really appreciate having the opportunity to speak with you and to send in comments. If it did not seem that there were a lot of people at these first hearings, or if you do not receive many written comments, that is not because of a lack of interest in or concern for the health of our river. The vast majority of citizens, when learning about the destructive operation at NMPS agree that this operation must, at the very least, install protective measures for fish: not in 7 or 10 years but immediately. And that would only be the first step towards decommissioning this operation and replacing the inefficient and outdated energy storage that it provides with more intelligent measures.

Sincerely,  
Laura Kaye

[REDACTED]  
Northfield, MA 01360



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-----Original Message-----

From: nina keller <[REDACTED]>

Sent: Tuesday, May 28, 2024 7:48 AM

To: Stefanik, Elizabeth A (DEP) <Elizabeth.A.Stefanik@mass.gov>

Subject: First Light Northfield Mountain DPU hearing

To Elizabeth Stefanik,

Kindly pass on my resistance to re-licensing the NMProject which has not by honest interpretation of the Clean Water Act, been adhering to the intentions and requirements of that act.

Thank you,

Nina Keller

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**From:** Miriam [REDACTED]  
**Sent:** Sunday, May 19, 2024 12:18 PM  
**To:** dep.hydro@mass.gov  
**Subject:** relicensing

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Northfield Mountain Pump Storage Station should not be allowed to be relicensed. The facility has been a disaster for the water and life within the Connecticut River. It is a travesty for public regulatory agencies to permit the environmental and biological destruction of a major living river for unnecessary human conveniences and financial greed. Please do not allow this project to continue.  
thank you, Miriam Kurland [REDACTED] Williamsburg, Ma. 01096 [REDACTED]

**From:** [Patricia Larson](#)  
**To:** [dep.hydro@mass.gov](mailto:dep.hydro@mass.gov)  
**Subject:** FirstLight 401 WQC  
**Date:** Monday, May 13, 2024 10:08:27 AM

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**CAUTION:** This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

To: Department of Environmental Protection

Re: FirstLight Relicensing Application for Pumped Storage Station in Northfield, MA

For over 15 years I lived within walking distance of the Connecticut River in Northfield (1979-1998). During that time I saw riverbanks eroded by the Pumped Storage Station in Northfield where water was pumped up to a reservoir and then sent back down into the river. I still live in Franklin County close to the Connecticut River. Over the years First Light's and previous owners of the Northfield Pumped Storage Station's impact on the Connecticut River is in direct violation of the Clean Water Act of 1972. Mass DEP activities have been insufficient over the past 50 years in fully evaluating the vital signs of the Connecticut River Ecosystem as the life has literally been sucked out of its waters. All aspects of the Clean Water Act (CWA), sometimes called 401c (referring to the section relative to State responsibility) need to be upheld including: fish and flows passage, NO erosion and silt columns, NO disruption of Native Nations' lands and Sacred Sites, NO death to aquatic life pulled into the deadly turbines including endangered species such as the short nose sturgeon, NO oil spills, and NO disrupting the natural downstream flow of the river and its ecology.

As a citizen currently living in Franklin County and a previous resident of Northfield, MA, I oppose the relicensing of the Pumped Storage Station for the reason stated above. Thank you.

Pat Larson - [REDACTED] - [REDACTED] Orange, MA 01364)

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**From:** Carol <[REDACTED]>  
**Sent:** Monday, June 3, 2024 1:01 PM  
**To:** dep.hydro@mass.gov  
**Subject:** FirstLight 401 WQC

To Members of Mass DEP,

I am submitting these comments in response to the request to renew the Water Quality Certificate for the Northfield Pumped Storage and Turner's Falls dam/Cabot Station facilities.

Before renewing the applicant's request for licensing for the next 50 years, do demand that the applicant quickly (not in ten or twenty years) act on the important requirement for creating a lower reservoir for the pumped storage facility in Northfield. This would be the only way to stop the devastation of our aquatic life that are being sucked up and killed in the pumped storage facility. Also, by isolating the electricity generation from the actual natural flow of the river, the terrible erosion of rich soil on farmland abutting the river would stop.

Recently I was shown aerial photos of the Connecticut River and its flow into Long Island Sound. Those photos revealed the rich brown river flow as it made its way into and across the Sound's very blue water. That brown river current is evidence of the devastation of riverbanks along the river's course.

Thank you for consideration of my requests,

Carol Letson

[REDACTED] Greenfield, MA 01301

a member of Greening Greenfield



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**From:** Carol Lewis <[REDACTED]>  
**Sent:** Monday, May 20, 2024 9:36 AM  
**To:** dep.hydro@mass.gov  
**Subject:** FirstLight 401 WQC

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

I am writing in opposition to the request for a water quality certificate for Northfield Mountain Pumped Storage Station. The original license was issued 50 years ago, before there were Clean Water Act requirements. The Station's operation does not comply with those requirements now and will not be able to in the future. We, who live near and depend on the Connecticut River, will continue to see unacceptable temperature spikes and fish dying off in our river. The time to close down this station is now. Please do your part and DO NOT issue this permit.

Sincerely,

Carol Lewis

[REDACTED]

Amherst, MA 01002

[REDACTED]

[REDACTED]



**From:** [REDACTED]  
**To:** [dep.hydro@mass.gov](mailto:dep.hydro@mass.gov)  
**Subject:** First light 401 WQC  
**Date:** Thursday, May 2, 2024 4:17:25 PM

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This hydro facility has been leaking oil from the plant into the Connecticut River at least since 2022. In 2022 there was one documented leak of 413 gallons. This was only documented after a report from a kayaker that there was an hydraulic oil leak.

The plant does not seem to self-reporting any leaks although the oil is often present floating on the water.

If the facility is leaking oil, it needs to be repaired. It is not much of a green source of power as it continues to leak oil. Is it even worth the "green" energy.

I am offended by the lax oversight by the State of this facility.

There are some sort of material to soak up, it has a been there for years, They know the facility leaks and they do nothing.

Please help the Connecticut River.

This constant leakage must be addressed and stopped.

Bonnie Lee MacDonad

Attorney Bonnie Lee MacDonald  
[REDACTED]

Norwalk, CT 06850  
[REDACTED]

[http://act.alz.org/site/TR?fr\\_id=8880&pg=team&team\\_id=327265](http://act.alz.org/site/TR?fr_id=8880&pg=team&team_id=327265)

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**From:** fergus marshall <[REDACTED]>  
**Sent:** Monday, June 3, 2024 3:12 PM  
**To:** dep.hydro@mass.gov  
**Subject:** FirstLight 401 WQC

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Hello, my name is Fergus Marshall and I am gravely concerned about the health of aquatic life and water quality of the Connecticut river. It is my understanding that a water quality certificate is now under review to be submitted to FERC and I would like to take a moment of your time to comment.

Northfield Mountain pumped storage station is a huge concern not only to myself, but to everyone I talk to. Some have not been aware that for nearly 50 years aquatic life has been ground up in the turbines of NMPS and the river is unnaturally forced to flow in reverse, causing great damage to riverbanks.

FERC has a history of rubber stamping these projects and will unless you the DEP refuses to sign off on the water quality certificate. I truly hope that in your final analysis you find that this facility does not meet the requirements of the clean water act and is denied its certificate.

If this facility were to be proposed today, it would never pass the requirements and would have to have a closed loop.

I could go on with many more reasons that Northfield mountain should cease operations, but I'm sure you already know. Thank you for taking my comments and hope that our beautiful river can flow freely again.

Fergus Marshall

[REDACTED]  
Chicopee, Ma  
01013

May 25, 2024

Dear Ms. Stefanik,

I am writing to express my concern about the proposed renewal of The 401 Water Quality Certification for the Firstlight facilities, the Turners Falls and the Northfield Pumping Station. This heated and pumped water has a negative impact on the fish in that area and erodes the banks, turning the water muddy and unappealing for swimmers.

Thank you for considering the desires of those who live in or visit this area and do not want to see the wild life there or its natural beauty disappear.

Sincerely Yours,

Katharine McGovern

[REDACTED]

Amherst, MA. 01002

( [REDACTED] )



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**From:** Dorothy McIver <[REDACTED]>  
**Sent:** Sunday, June 2, 2024 3:44 PM  
**To:** dep.hydro@mass.gov  
**Subject:** First Light WQC

**CAUTION:** This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

I am writing to state I do not support the DEP approving First Light's application for a water quality certification. It is your responsibility to ensure state law mandated water quality standards regarding aquatic life, degradation and water flow levels are met and this is not the case with First Light's application. Much damage has occurred with erosion, harm to aquatic life, and with invasive species becoming more common. And recreational use is also affected. No licence should be issued for another 50 years. First Light has not been a good steward, so please deny this water certification request. Thank you for your consideration in this matter.

Dorothy McIver

[REDACTED]  
Greenfield, MA 01301

Ann, Eliz. Steinhilber

May 26, 2024 268

re: #01 Water Quality Cert for 1st Light

I strongly urge that you not recertify  
First Light's water quality of the discharge from  
the pumping station on the CT River.

As you can see, I am old [REDACTED]

[REDACTED] But this issue is important  
enough to me to write a letter.

Please consider the fish as well as the  
aesthetic values and say NO to the destruction  
of habitat.

Thank you,  
Ann & Michael  
[REDACTED]

Amherst MA 01002



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**From:** dodi <[REDACTED]>  
**Sent:** Monday, June 3, 2024 4:36 PM  
**To:** dep.hydro@mass.gov  
**Subject:** FirstLight 401 WQC

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Dear MassDep;

Thank you for your effort to take comments from a concerned public.

I oppose the relicensing of FirstLights energy projects (p2485 and TF) on the Connecticut River. FirstLights operations affect primarily Franklin County with far reaching negative consequences upstream and down on this 410 mile Great four state, New England River. The North East's jewel, a National Blueway. My opposition primarily arises from a deep concern for and need to protect our natural resources, which many scientists identify as our only defense to mediate climate and biodiversity crisis .

Beyond the focus of this comment are the social and economic implications of seeking false solutions from trans corporate energy investors. It creates the illusion that we can purchase our way out of this global affront on climate and biodiversity. There are no free market solutions to the climate chaos. We must look beyond the market place to explore and vet real solutions to this corporate funded climate disaster.

The silent prolonged scream of conservation and demand reduction is often swept out of the conversation. I must emphasize that modern western countries laud unsustainable lifestyles and continue to be the biggest users, spewing mega tons of carbon and methane into the impaired atmosphere. When considering solutions let's look at the biggest offenders our institutions - Federal, Military, State, private, and public . Let's work locally to regain public utilities by and for the public. The more false solutions such as hydro battery storage, biomass, and extractives such as lithium and cobalt are marketed as clean or green the more we are mislead on the path to climate emergency, bio extinction and tribal rights abuses. Is FL is requesting a license to allow a corporate high jack of our river and loss of community control of energy solutions based on current science.

From a more ecological and biological perspective I believe that from the start of operations in 1972 FirstLight, currently owned by Canadian Gov't's, private sector pension investor's , has been in direct violation of the clean water act. MassDep has never performed a 401c water quality certification since operations started.

Foremost in my opposition is the direct violation and damage to indigenous people's historic sites, sacred sites, and fishing rights, largely by the greedy erosion of the riverbanks from the powerful pull and surge created by four Francis bi-directional pump/generator turbines. The pull can be felt miles downstream, people fishing have reported being pulled upstream in their boats from as far down as French King Bridge. FirstLight's own study reveals an upstream pull as far as three miles down the river. Similarly the high impact powerful surge back into the river has been seen disrupting nests and eggs of small mouth bass among other fish. One master diver describes seeing fish and eggs swept away. Think of the chaos experienced on the floor of the river, such an important element of a thriving riverbed.

Indigenous people, Abenaki, Nipmuc, Pocumtucs, Mohegans and other tribes have been in relationship with Kwanitekw River for 12,000 years, fish runs of salmon, shad, herring among others sustained tribal life. Ancient tribal markings have been found upstream and most likely exist in what is now Barton Cove. Erosion is covering and altering cultural sites. It is of utmost urgency that these territories be restored to and returned to the Tribes as part of their fishing rights and long ongoing relationship with (the) river. Return the land is a vital part of reparations.

Erosion caused by the frequent, aggressive, and unnatural water level fluctuations secondary to NMPS operations is responsible for damage to the riverbanks, adding mud, silt and debris to the river ecology, encouraging algae blooms and deoxygenation. A massive build up of silt was known to take FL off the grid for 6 months in 2010, the EPA had to step in to prevent FL from dumping tons of this silt back into the river. Erosion is blocking the sunlight from penetrating the water to promote gas exchanges.

While FirstLight has owned NMPS since 2006 it isn't until 2016 it was bought by PSP. In 2018 it registered in Delaware to receive tax exemption. This was after FL sued Montaque costing them up in court over tax assessment. In all this time FL has done little other than what was necessary to make money while sinking nothing into advancing possible improvements for fish. Misleading to the rate payers as FL public relations boast of spending money on maintenance look like a generosity or cost to them.

Another example of FL lack of action is the fish ladder at TFD. No changes have been made to this ineffective and ill matched ladder. I and others have described it to be

emotionally painful to watch fish such as eels, shad, and others struggle through it. It was made for salmon which have long disappeared from the river, many other fish spend a life-time entrained in the "power canal" at Cabot Station. Where the river gets cleaved at the intake to the 850 ft climb up Northfield mountain to the commodified mountain top reservoir. On its way up countless numbers of juvenile fish, larvae, eggs, and other aquatic life get pulled into the violent killing force of the pumping turbines, of the 26 species of fish known to the Ct river only a few are monitored by US Fish and Wildlife. Shad, one of the fish monitored, significantly drops after passing Holyoke Dam and into Barton Cove, "the killing pond" - a 20 mile run of the river from TFD to Vernon Dam, or aka the "bottom reservoir" truly a living (dead) river.

At this point I have exhausted my time and space. I am sure I missed some key points. The stake holders are also key players in your decision making. Make note who is absent and why. Fish passage and flows are key to a healthy river and are part of a thriving river ecosystem. Falsely manipulating the water is not the solution. Whereas River restoration is -and should be the main focus of the next 50 years!

Let's also remember the endangered species short nosed sturgeon - needs its nesting areas undisturbed and adults have been spotted upstream from the dam.

Help us be a voice and future for the river. Do not provide a clean water certificate stop the relicensing of FirstLight- no to further demise and degrade this homeland treasure.

Please have the next public hearing in a local venue/hybrid

Respectfully Submitted  
Dorothea Melnicoff  
Greenfield MA, 01301



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**From:** [REDACTED]  
**Sent:** Monday, June 3, 2024 3:01 PM  
**To:** dep.hydro@mass.gov  
**Subject:** FirstLight 401 WQC  
**Attachments:** 1-MA 401WQ-1972 flood halts NMPS startup.PDF; 2-Federal Power Comm. 1974 flow reversals.pdf; 3-FL Relicensing Study-3.3.9-flow reversals.pdf; 4-Entrainemt-20180508-SHAD TARGETS.pdf; Screenshot (3).jpg; Screenshot (4).jpg; MA DEP-401-Karl Meyer.docx

**CAUTION:** This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

From: Karl Meyer, M.S.  
 [REDACTED]  
 Greenfield MA 01301  
 [REDACTED]

June 3, 2024

Re: FirstLight 401 WQC

To: The Massachusetts DEP, and Commissioner Bonnie Heiple and Mr. Timothy M. Jones, Legal and Policy Analyst, Bureau of Water Resources

Dear MA DEP and Commissioner Bonnie Heiple and Timothy M. Jones, Legal and Policy Analyst, Bureau of Water Resources,

Enclosed and attached are my formal comments on FirstLight Power's application for 401 Water Quality Certification in order to relicense its Northfield Mountain Pumped Storage Project under the FERC. This is FERC Project P-2485.

I have been a stakeholder, intervenor and member of the Fish and Aquatics Studies Team for this project, as well as for the FL's Turners Falls Hydro operations (P-1889) since 2012. The following comments explain that Northfield Mountain Pumped Storage, NMPS, came online in 1973, after the adoption of the federal Clean Water Act of 1972, and thus has never complied with CWA standards, and its minimum of massive flow-stopping pumping for three miles(see Attachment 1 and Attachment 2), its de facto creation of miles of stilled lake, and its fully reversing of those same three miles or more of Connecticut River flow, prevent it from any attainment of the "physical" "integrity of the Nation's waters" under CWA statutes.

These impacts wholly erase the physical function of a river under MA CMR Surface Water Quality Standards" as well as rivers as accepted under Inland Water Class standards. Under these NMPS-created conditions which occur with general regularity throughout the Connecticut River's yearly water cycle, they do not meet the CMR DEP definition of "flowing water," nor do they have an integrity of structural relationship to "harmonic mean flow."

NMPS erases miles of the interstate Connecticut River, an integral part of the Waters of the United States. It fails to meet federal and state physical requirements as a river.

Further, under CMR 4:02 “Biological integrity” the Commonwealth regulations state “There shall be no lethality. NMPS massively entrains and kills 100s of millions of eggs, larval, juvenile and adult fish annually. Its full carnage has yet to be calculated, as over two dozen species are present within this projects direct and indirect sphere of massive pump and release flows. Attachment 4, page 13, documents its impacts on just a single migratory species, American shad, as example. It is biologically accepted that nothing survives a trip through NMPS’s turbine cycling.

FirstLight’s proposed 3/8 inch entrainment prevention netting will not stop the massive entrainment of unnumbered millions of eggs, larvae and juvenile fish, and has a high likelihood of failure due to increasingly high flood surges, and trees and debris entering from eroding banks. Under biological statutes, NMPS proposals do not meet federal or state standards.

Lastly, under the full umbrella of both federal and state standards addressing the integrity and protection of interstate waters, the massive up, down, stoppage, reversal, and artificial “tide” levels NMPS creates, are a clear threat to the temperature and oxygenation requirements for living waters, even in a designated warm water fishery.

Please see the final two attached graphs from the USGS Gauge on the Connecticut River at Montague City from the grim, drought weeks of July 2022.

In the drought, low flows and blistering 90-plus degree heatwave that included the dates July 19<sup>th</sup> thru July 23, 2022, stilled and heated water was being pumped out of the Turners Falls Impoundment by NMPS at misery-inducing rates exceeding what were the “naturally routed flow” inputs at those time by perhaps more than 100%--flow leaving the basin at 15,000 cfs for hours, while the baseline river flows in that time frame were measuring 1,400 cfs or less.

Miles of over-warmed river reversed and sucked uphill for all its life, while actual flow levels in the river ratcheted up and down, brutally, across continuous day and night hours between 1,400 cfs, and 17,500 cfs, in a basin thus wholly detached from the essential elements of a living river.

The USGS Montague Gauge screen shots for that time frame easily illustrate this. Sadly, there is no dissolved oxygen data available for this tepid taking of a river’s flow. Here was a central and critical New England ecosystem artery wholly captured and erased via murderous aquatic withdrawals by the operation of the Northfield Mountain Pumped Storage Project.

And, one final reason why this project cannot receive MA 401 WQ certification is that FirstLight’s pumped and stored Connecticut River water is marketed and sold to bulk operators in distant states and watersheds. As such, it does not and cannot be in compliance with the Commonwealth’s Inter Basin Transfer Act requirements. This is fully another full “taking” of the integral “chemical, physical and biological” characteristics from the four-state Connecticut River Basin, the footprint of which is wholly within the S.O Conte Connecticut River National Fish and Wildlife Refuge.

This project does not and cannot be run in compliance with Massachusetts 401 WQ Certification standards. Thus, this Certificate application must be denied.

Thank you,

Karl Meyer, M.S.  
Greenfield MA 01301



September 7, 1972

Mr. Marlowe G. Moses  
Northfield Project Officer  
Northeast Utilities Service Company  
P. O. Box 270  
Hartford, CT 06101

Northfield Mountain Pumped Storage Project No. 2485  
Report No. 13 of the Consulting Board

Dear Sir:

Since Report No. 12 of this Board dated September 14, 1971, meetings of the Board have been held on March 13 and 14, April 25 and 28, and June 7, 1972 but no report was issued on the first of these occasions and the report covering the flooding incident April 22, 1972 was a special report and not numbered. No report was made on June 7, 1972. This report therefore, continues the series of periodic Consulting Board reports as No. 13.

The Board arrived at Greenfield, Massachusetts the evening of September 5, 1972 and convened at the Northfield Mountain field office at 8:30 A.M. Wednesday, September 6.

Reparatory work following the flooding incident of April 22, 1972 was fully described by Stone & Webster engineers and it was evident that, in general, good cooperation had been received from the manufacturers in effecting overhauls of damaged parts and replacement of such parts as could not be repaired.

Regarding the spherical valves, where the unintended opening of one upstream seal had caused so much damage, the modifications worked out mutually by the owners, Stone and Webster engineers and the valve manufacturer are covered in the following paragraphs:

The flooding of the powerhouse which occurred in April, 1972, followed a chain of circumstances. If any one of these had not occurred, there would have been no flooding. Two may be mentioned here:

1. The oil-pressure operated servo-motor had a tendency to "creep" in one direction, when a drainage line was closed, and had been so connected that this creep would open the spherical valve seals. If it had been connected so that the creep would close the seals, or if it had had no tendency to creep, there would have been no trouble.

2. A valve in the oil drainage line had been closed, forcing the servo-motor to creep. If it had been open, there would have been no flooding.

M. G. Moses

2.

September 7, 1972<sup>275</sup>

The tendency to creep is being eliminated by modifying the servo-motors so that there is a piston rod on each end. Thus the areas on the two sides of the piston are equal. This alone will prevent accidental opening of the seals.

In addition, the simple gate valves in the oil-drainage lines from the servo-motors are being replaced by 3-way valves and an additional pipe connection will be made to Unit #2 oil sump tank, all in such fashion that it is impossible to shut off the drain line. This modification alone would prevent accidental opening of the spherical valve seals, and taken in connection with the servo-motor modifications, it makes assurance doubly sure.

In addition, the spherical valves themselves are being modified so that there is a very short connection within the valve itself to provide penstock water pressure forcing the upstream seals to a closed position. This device can be used as an alternate to screw-operated upstream seals as frequently used in European spherical valves as security sealing devices. This connection is valved, and the valve is normally open when the upstream seal is to be closed as a security measure. Any other source of pressure could be lost, and the upstream seals would still remain closed as long as there was pressure in the penstock.

PRESSURE SHAFT INSPECTION: Mr. Phil Wild of Stone & Webster Engineering Corporation explained to us the inspection of the pressure shaft after the rather rapid unwatering in late April of 1972. He showed to us photographs of all important construction joints and cracks. All of the cracks in the concrete lining are small and no damage to the concrete lining resulted due to the unwatering. Therefore, no grouting or any type of repairs are necessary in the pressure shaft.

The leakage from the pressure shaft was calculated and it appears to be normal.

ACCESS AND VENTILATION SHAFT: Much of the leakage from the pressure shaft drains into the vent shaft. This drainage is good from the structural standpoint of the bedrock, but it creates a very undesirable condition on the steel ladders in this shaft. We believe that some more study and effort should be made to collect the seepage into the vent shaft and prevent it falling as spray. Could a closely spaced series of vertical drainage holes or a tight fiber member on the entire wall of the shaft be justified? Some or most of the holes might drain into the former access tunnel at the top of the powerhouse.

The condensation that takes place at the top of the vent shaft at certain times should be collected to prevent any moisture from falling back. This could require a modification of the housing at the top of the shaft.

The construction schedule now proposed was fully discussed. Great care has obviously been taken in the preparation of this schedule: It aims at commercial operation of Unit No. 4 on December 1, 1972. The schedule is very tight and the only possible "cushion" now apparent in it is labelled "Start Unit in Pumping Mode", which is shown extending from November 8 to December 1. We were informed there is a possibility that General Electric

will have the unit ready to run a week earlier than November 8. To take advantage of this possibility if it develops, preliminary operation of the spherical valves must be completed earlier than the date of November 3, now shown, and the Board recommends that any necessary work on the spherical valves be pushed.

In the afternoon, an inspection was made of the powerhouse where commendable progress has been made in restoring equipment to its original condition as of April 21, 1972 and in further installation of equipment as it became available.

A general inspection was made of the upper reservoir, particularly the intake channel and the MDC outlet tower completion. It is evident that ample water is available for filling the pressure shaft when the time comes for this operation, also that the MDC tower work will be completed in ample time, except that the access bridge may be slightly delayed.

A further discussion period was held in the field office and the meeting adjourned at 4:30 P.M.

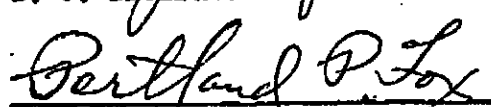
On Thursday, September 7 the Board reconvened at 8:30 A.M. and almost the whole morning was spent in a description, and discussion of the very important questions of the various checking procedures necessary before operation can begin. The responsibilities of the various parties for the several parts of the work and the precautions necessary to prevent incorrect or unauthorized operations of control equipment, valves, switches, etc. were described.

The tagging procedure developed and being used by both Stone & Webster and by Western Massachusetts Electric Company was fully described. and although this system seems complicated, it has already been used for about two months and only two violations have so far been detected. The detection of a violation is not automatic, but depends on the vigilance of the supervisory personnel.

The method of carrying out pre-operational checks of equipment, circuits, etc. was fully described and the Board is impressed with the painstaking care that has been devoted to developing this series of procedures. The Board would suggest that a master check list of equipment be developed so that no necessary test can be overlooked even though the individual tests have been performed.

The Board would suggest that the next meeting be held early in November at about the time that it is expected that trial pumping will begin.

  
D. J. Bleifuss

  
Portland P. Fox

  
Robert A. Sutherland

Document Content(s)

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*Central files - 279-6-12-12*

**FEDERAL POWER COMMISSION**  
WASHINGTON 20426

**1. DOCKETS  
FILES**

PWR-LP  
Project No. 1889 -  
Massachusetts

Mr. Robert E. Barrett, Jr.  
President  
Western Massachusetts Electric Company  
West Springfield, Massachusetts 01089

*Jan 22, 1974*

Dear Mr. Barrett:

C Commission staff is presently preparing the Draft Environmental Impact Statement for the Turners Falls Project (No. 1889) and requests the following information:

O (1) In the revised Exhibit W of the application (page 43, second paragraph), reference is made to the continuing resident fish study being conducted in Turners Falls Reservoir. Please provide a copy of the results obtained since the last Progress Report. If the study has not been completed, please indicate the date you expect a report to be available.

P (2) In Exhibit W (pages 19, 20, and Figure 5), the conditions expected to produce flow reversals in Turners Falls Reservoir as a result of Northfield operation were set forth. Since the Northfield Mountain Project became operational, which of the conditions described have been observed to produce reverse flows? Based on operational experience, are there any observed or anticipated changes in the patterns, durations, or velocities of the flows described therein?

Y Your early response in providing this information would be appreciated.

Very truly yours,

Secretary

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Connecticut River at Montague

USGS Current Conditions for USGS 01170500

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Jul 19 2022

Jul 20 2022

Jul 21 2022

Jul 22 2022

Jul 23 2022

Gage height

Period of approved data

Create [presentation-quality](#) / [stand-alone](#) graph. Subscribe to [WaterAlert](#)

See this graph on the [Monitoring Location Pages](#)

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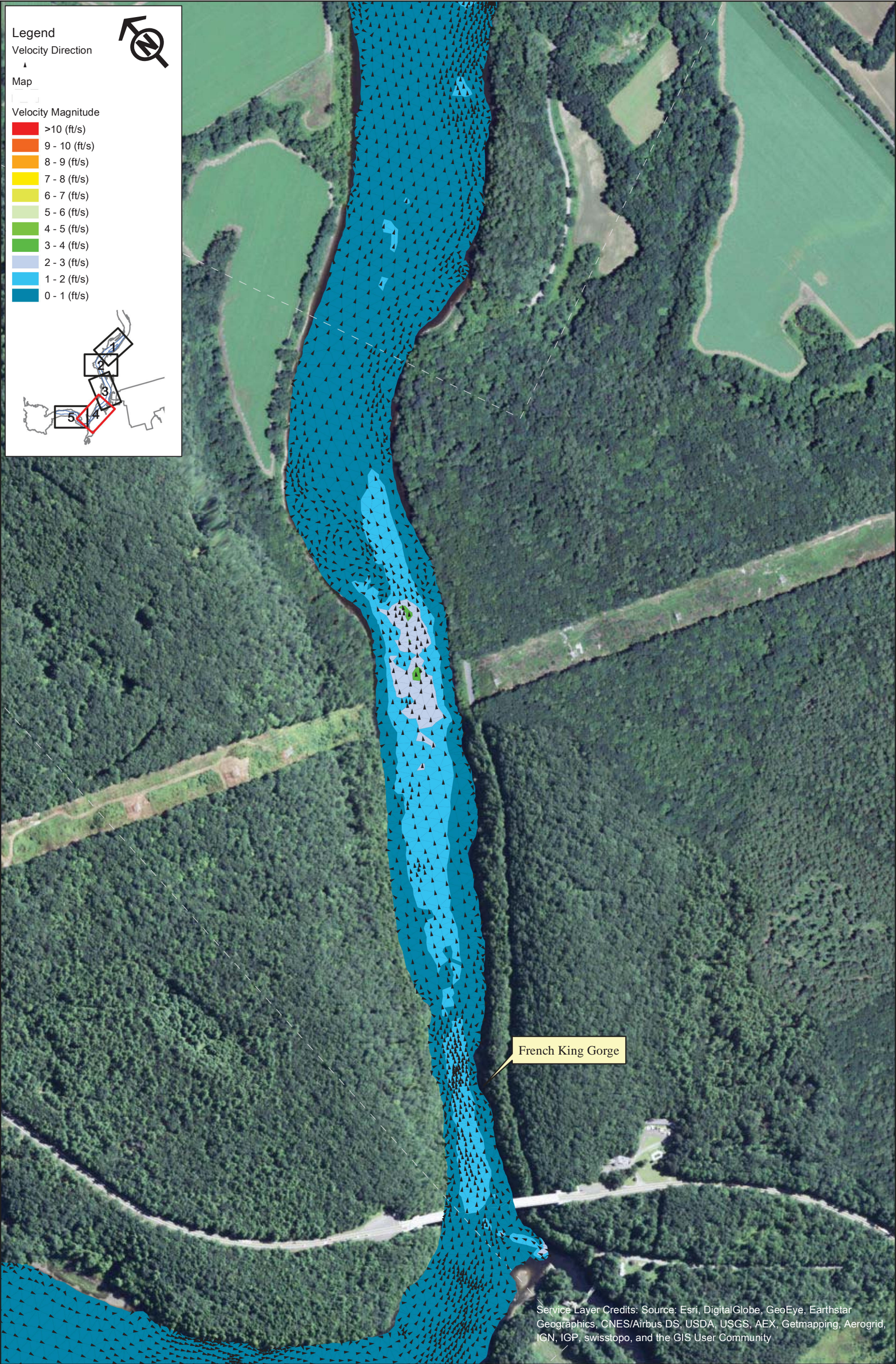
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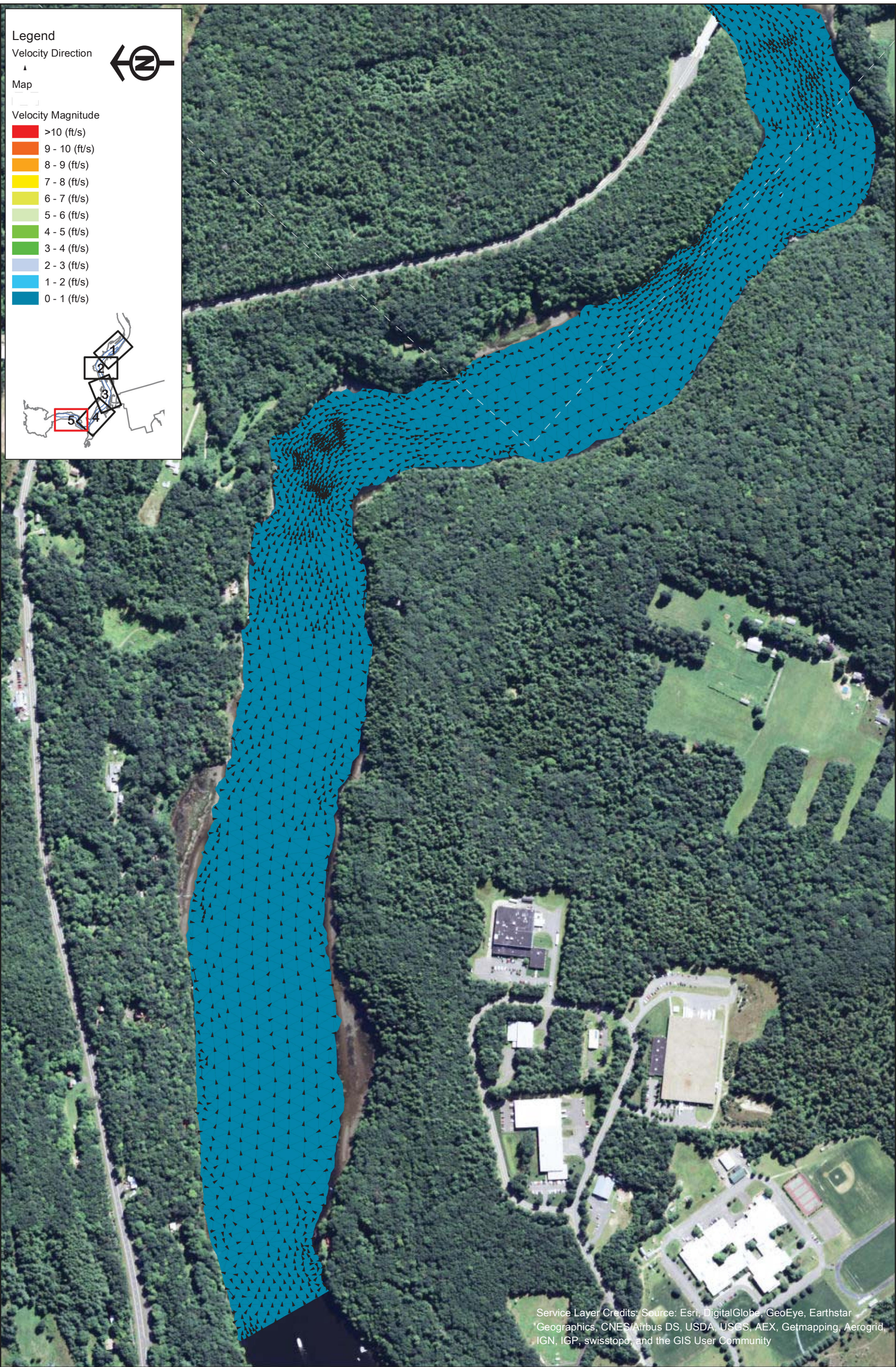
Northfield Mountain Pumped Storage Project (No. 2485)  
and Turners Falls Hydroelectric Project (No. 1889)

STUDY REPORT  
RELICENSING STUDY 3.3.9



Appendix B - Velocity in the Turner Falls  
Impoundment 5 km Upstream and 5 km  
Downstream of the Northfield Tailrace  
Scenario 15 - Map 4  
75% Exceedance Flow (4,900 cfs), 4 Units  
Pumping (15,200 cfs), 176 WSEL at Dam





Northfield Mountain Pumped Storage Project (No. 2485)  
and Turners Falls Hydroelectric Project (No. 1889)

STUDY REPORT  
RELICENSING STUDY 3.3.9



Appendix B - Velocity in the Turner Falls  
Impoundment 5 km Upstream and 5 km  
Downstream of the Northfield Tailrace

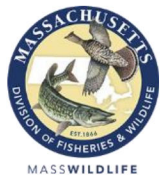
Scenario 15 - Map 5  
75% Exceedance Flow (4,900 cfs), 4 Units  
Pumping (15,200 cfs), 176 WSEL at Dam



# Juvenile American Shad Assessment in the Connecticut River – Fall 2017



**Annual Report (April 2018)**



Massachusetts Division of Fisheries and Wildlife (MassWildlife)

**Steven Mattocks and Brian Keleher**

Field Headquarters Office, Westborough, MA 01581

Connecticut Valley District Office, Belchertown, MA 01007

U.S. Fish and Wildlife Service

**Kenneth Sprankle**

Connecticut River Fish and Wildlife Conservation Office,

Sunderland, MA 0137

## ***Introduction***

American Shad (*Alosa sapidissima*) are anadromous fish that serve important ecological roles as forage for freshwater and marine fish, birds, and terrestrial mammals, and can support both recreational and commercial fisheries (ASMFC 2009, McDermott et al. 2015). They are the largest species in the clupeid family (herrings) and make annual spring migrations up rivers to spawn. Main stem dam construction disrupted annual spawning migrations beginning in the early 1800s resulting in population declines (Gephard and McMenemy 2004, Limburg and Waldman 2009, Mattocks et al. 2017). More recently, American Shad populations in New England have declined over the past several decades and were considered to be at an all-time low in 2007 by the American Shad Stock Assessment Subcommittee (SASC) due to excessive total mortality, habitat loss and degradation, and habitat access impediments (ASMFC 2007, ASMFC 2010, CRASC 2017). Further, they have been identified as a “species of greatest conservation need” by Massachusetts and other New England state agencies (MDFW 2015).

The Connecticut River Atlantic Salmon Commission (CRASC) coordinates restoration and management activities for American Shad and has a minimum annual run target to the river mouth of 1.7 million fish, with subsequent minimum escapement targets at main stem dams including targeted tributaries based on available habitat (CRASC 2017). Annual adult shad counts at Holyoke Dam have been relatively high since 2012 but remain lower than restoration minimum targets, particularly upstream of the Turners Falls Dam in Massachusetts and the Vernon Dam in Vermont/New Hampshire. While fish passage systems have improved to varying degrees in recent decades, it is unclear how main stem dams may affect the reproductive potential of the population (both spatially and temporally) as measured by juvenile production.

Movement patterns and life history traits are important considerations for managing and restoring anadromous species. American Shad are batch spawners, with historical rates of iteroparity in the Connecticut River estimated to average approximately 38% from the 1960s to early 1970s (Leggett 1976, Leggett et al. 2004), while more recent rates are estimated to range from 3-10% (CRASC 2017). Causes for this decline have not been definitively determined but are believed to include elevated mortality from ineffective downstream passage measures at hydropower facilities as well as passage delays at barriers on up and downstream migration (direct and indirect mortality) (Castro-Santos and Letcher 2010; CRASC 2017). Adult American Shad migrations from marine waters to the Connecticut River peak in May, with spawning occurring primarily from mid-May through late June (Leggett et al. 2004). Subsequently, juveniles typically develop in late June and July, and spend several months feeding before emigrating to marine waters in late fall (Crecco et al. 1983; O'Donnell and Letcher 2008). Juvenile shad length increases throughout the summer season until late fall, after which growth is insignificant (O'Donnell and Letcher 2008). Primary triggers for emigration are believed to be associated with declining autumn temperatures, with size having some effect although not a limiting factor (O'Leary and Kynard 1986, Limburg 1996). Juvenile American Shad peak

migration movements have been shown to occur in late afternoon and early evening (O’Leary and Kynard 1986), that primarily follow the river channel during out migration (Kynard et al. 2003). The timing of downstream movement has implications for survival, as the ability to transition to salt water becomes impaired at low ( $<10^{\circ}$  C) water temperatures (Zydlewski et al. 2003).

The American Shad’s complex life history coupled with multiple hydropower dams and a large pumped storage hydropower facility on the main stem Connecticut River has potential negative consequences to migrating adults (up and down running), return spawner reproductive potential, juvenile production (spatial coverage and density), and juvenile outmigration success. Juvenile shad mortality from larger main stem hydropower turbines may range widely depending on turbine design and operations and include other project sources of mortality such as spill at dam/gate structures (Franke et al. 1997). In the case of the Northfield Mountain Pumped Storage facility, with a pumping capacity of 15,000 CFS to its storage reservoir, there is no expectation of any survival for entrained eggs, larvae or juvenile shad (LMS 1993). Thus, understanding spatial ecology and quantifying natural and anthropogenic sources of mortality is essential to managing sustainable populations.

The ASMFC Amendment 3 for American Shad Management (2010) plan included, among other plan objectives: Maximize the number of juvenile recruits emigrating from freshwater stock complexes. As part of this plan’s listed strategies, juvenile shad productivity and population structure data are an important component needed for development of sustainable fishery management plan. The ASMFC plan further identified potential threats including but not limited to: barriers to migration (need for safe, timely, effective migration), water withdrawals- “especially at pumped storage facilities” with concerns for associated delays in fish movement past the facility, and impingement or entrainment at intakes causing mortality or injury. The Connecticut River American Shad Management Plan (CRASC 2017) similarly prioritizes the need to establish safe, effective and timely downstream fish passage measures for juvenile shad that maximizes through/pass project survival. The CRASC plan also notes the important ecological contributions juvenile shad have while in freshwater.

Currently, the only juvenile American Shad monitoring effort on the Connecticut River is conducted by the Connecticut Department of Energy and Environmental Protection (CTDEEP) through the use of fixed beach seine stations (CTDEEP 2017). The Juvenile Abundance Index (JAI) dates back to 1974 and serves as a long term indicator of overall shad abundance, however, it is limited by spatial (downstream of Holyoke Dam) and statistical (fixed stations) components. Because this survey is conducted below the Holyoke Dam, the localized effects of upstream dams on juvenile American Shad productivity and emigration are unclear, and specifically, how dams affect habitat use and production in inter-dam segments.

Currently on the main stem river, the Turners Falls Dam Project, Northfield Mountain Pumped Storage Project (NMPS), Vernon Dam Project and Bellows Falls Dam Project are all in the Federal Energy Regulatory Commission (FERC) relicensing process and are located within the historic range of American Shad. Several recent FERC-required relicensing study reports have provided data on direct short-term (24 hour) mortality impacts on juvenile shad from balloon tag studies with indirect impacts less clearly defined due to challenges in maintaining control groups and the use of smallest available radio tags.

#### *Goals-*

This collaborative study aims to better understand juvenile American Shad productivity in the Connecticut River from Holyoke Dam (rkm 139) to Bellows Falls Dam (rkm 228), particularly through several metrics of young-of-year (YOY) abundance, size, and condition across various dammed sections. In addition, we aim to provide supportive evidence for ongoing juvenile abundance index surveys conducted by CTDEEP and CRASC. These efforts will provide baseline data for juvenile shad production, habitat use, and condition, and will ultimately inform local and regional management agencies and restoration efforts.

#### *Objectives-*

- (1) Compare shad abundance metrics among three inter-dam segments and coinciding (nested) habitat sections across time and space.
- (2) Calculate juvenile shad length-weight relationships as a proxy for condition and compare among inter-dam segments.
- (3) Summarize sampling efficiency and variability and contrast shad abundance metrics with current monitoring efforts (CTDEEP) to ground-truth survey data and inform future monitoring priorities (random vs. fixed sites for predicting adult returns).

#### ***Methods***

##### *Study sites -*

Holyoke, Turners Falls, Vernon, and Bellows Falls are consecutive, main stem dams located on the Connecticut River from Massachusetts into New Hampshire and Vermont (Figure 1). The Holyoke to Turners Falls, Turners Falls to Vernon, and Vernon to Bellows Falls dam sections are 57.3, 31.7, and 50.2 km in length, respectively. The Northfield Mountain Pumped Storage hydropower facility is located between the Turners Falls Dam and the Vernon Dam (Figure 1).

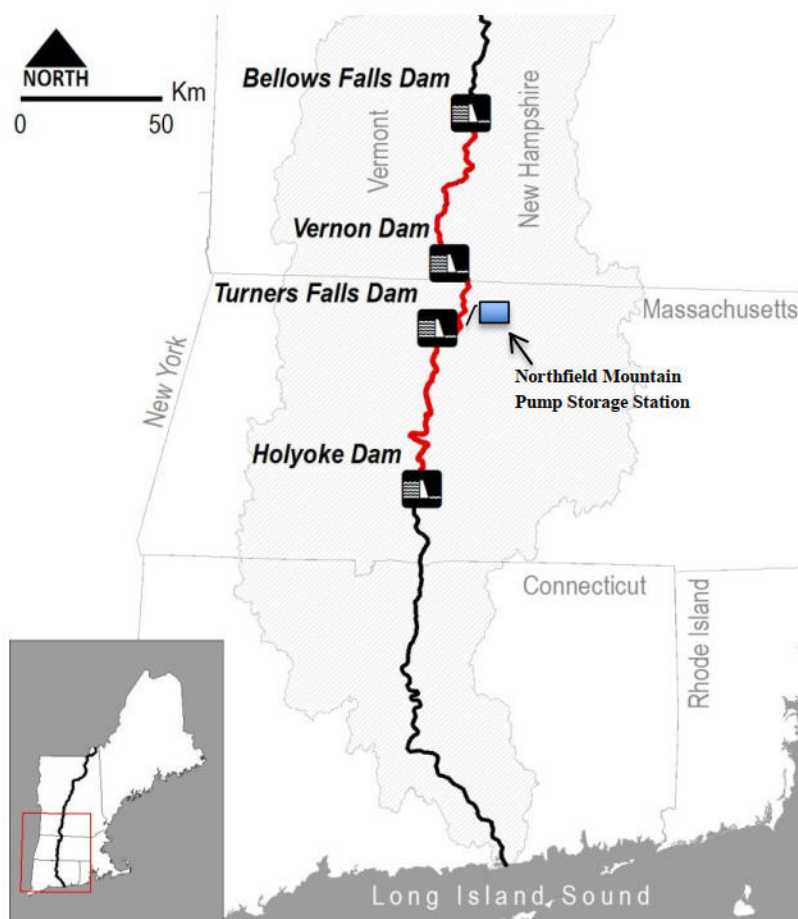


Figure 1: Connecticut River and main stem dam locations and the NMPS power station.

The amount of accessible shad habitat in relation to adult shad return/production potential in the Connecticut River has previously been described; table A (below) from Appendix 1 of the CRASC (2017) shows American Shad available rearing habitat by river segment in the Connecticut River (Table 1).



Table 1. American Shad habitat units in hectares (ha) with minimum adult annual production targets for main stem river segments (CRASC 2017).

Reach	m <sup>2</sup>	Ha	Adjustment	Ha	% of total	Adult Shad Return/Production (203 and 111 settings by habitat)	Project	Minimum target number
Main stem - mouth to Holyoke	56,766,060	5,677	0.85	4,825	54.8	979,498		
tributaries (5)		424		424	4.8	47,064		
Main stem - Holyoke to Turners Falls	13,688,717	1,369		1,369	15.5	277,881	Holyoke Fish Lift - passage	687,088
tributaries (2)		109		109	1.2	12,099		
Main stem - Turners to Vernon	7,620,241	762		762	8.7	154,691	Turners Falls Project - passage	397,108
tributaries* (1)		139		139	1.6	15,429		
Main stem - Vernon to Bellows Falls	10,421,641	1,042		1,042	11.8	211,559	Vernon Ladder - passage	226,988
tributary (1)		139		139	1.6	15,429		
<b>Totals</b>		<b>9,661</b>		<b>8,809</b>	<b>100.00</b>	<b>1,713,651</b>		

Each dammed section was delineated by habitat section (impoundment and riverine); impoundment sections were classified by lower, middle, or upper impoundments, depending on the length and habitat conditions of each segment. The Holyoke section was the only inter-dam segment where the riverine habitat section (north of Rte. 116 Bridge) was sampled due to access difficulty in other segments. Both the Holyoke impoundment and Vernon impoundment sections were assigned three sample zones (lower, middle, and upper) due to their length and logistic considerations/sampling time constraints, while the shorter length of the Turners Falls impoundment only required two zones.

#### Fish sampling -

Electrofishing surveys were conducted from 8/22/17-10/18/17, with sampling beginning 20 minutes after sunset and continuing until 5 sampling runs were completed, typically concluding by 10:00 pm. Two electrofishing boats using pulsed DC current and standardized waveform (Smith Root, Midwest Lakes) were used with two netters located at the bow. Juvenile shad were netted, identified by date and run # for next day processing, and immediately placed on ice and either frozen for later processing or processed the following day. At the end of sampling, frozen shad were thawed and total length (mm) and weight (g) were recorded.

Dammed sections were surveyed sequentially, with one section being sampled per sampling night and typically two sampling nights per week, in an on-week/off-week regiment. We used a random number generator in Microsoft Excel to select sampling locations delineated by 0.5 river kilometer (rkm) cells. Sample cell sizes (0.5 km) in these impoundment zones ranged from 30 (Vernon section) to 25 (Holyoke section). Electrofishing runs started at the most upstream selected site, and followed a zig-zag pattern across the river from shoreline to shoreline in a

downstream direction. GPS tracks were recorded and stored using WGS 1983 Geographic Coordinate System. An example of the sampling run tracks completed over the course of the study is shown in Appendix A (Figure A.1). Paired electrofishing runs with MADFW and USFWS boats and crews were conducted to test sampling effort and efficiency and were conducted over multiple sampling days.

### **Results**

Paired electrofishing runs (n=16) showed that effort and catch were comparable between the two sampling boats; mean fish/minute was 0.51 and 0.61 (SD=0.59, 0.5), and no significant differences were detected (student's T test, p=0.05).

A total of 148 runs were conducted between the three dammed sections of river, with a total of 1,006 juvenile shad collected (Table 2). Sampling of reported data was initiated on August 22, 2017 and concluded on October 18, 2017. Sample effort, in terms of total sample runs, over the study period, was highest in the Holyoke section (n=78) followed by Turners Falls section (n=39) and Vernon section (n=31). The USFWS sampled the two upstream sections and in this pilot study year, alternated sampling between weeks, reducing the overall sample effort for both.

Table 2. Summary of electrofishing runs for month, dam reach section, and habitat section.

Month	Dam Section	Habitat Section	# of Runs
August	Holyoke	Lower Holyoke Impoundment	10
August	Turners	Lower Turners Impoundment	5
August	Turners	Upper Turners Impoundment	12
September	Holyoke	Holyoke Riverine	4
September	Holyoke	Lower Holyoke Impoundment	6
September	Holyoke	Middle Holyoke Impoundment	15
September	Holyoke	Upper Holyoke Impoundment	7
September	Turners	Lower Turners Impoundment	6
September	Turners	Upper Turners Impoundment	6
September	Vernon	Lower Vernon Impoundment	6
September	Vernon	Upper Vernon Impoundment	5
October	Holyoke	Holyoke Riverine	5
October	Holyoke	Lower Holyoke Impoundment	11
October	Holyoke	Middle Holyoke Impoundment	10
October	Holyoke	Upper Holyoke Impoundment	10
October	Turners	Lower Turners Impoundment	5
October	Turners	Upper Turners Impoundment	5
October	Vernon	Lower Vernon Impoundment	10
October	Vernon	Upper Vernon Impoundment	10

We calculated Catch Per Unit Effort (CPUE) as the number of shad collected per minute. Mean CPUE (fish/minute) for the Holyoke, Turner Falls, and Vernon Sections were 0.54, 0.14, and 1.4, respectively (Figure 2).

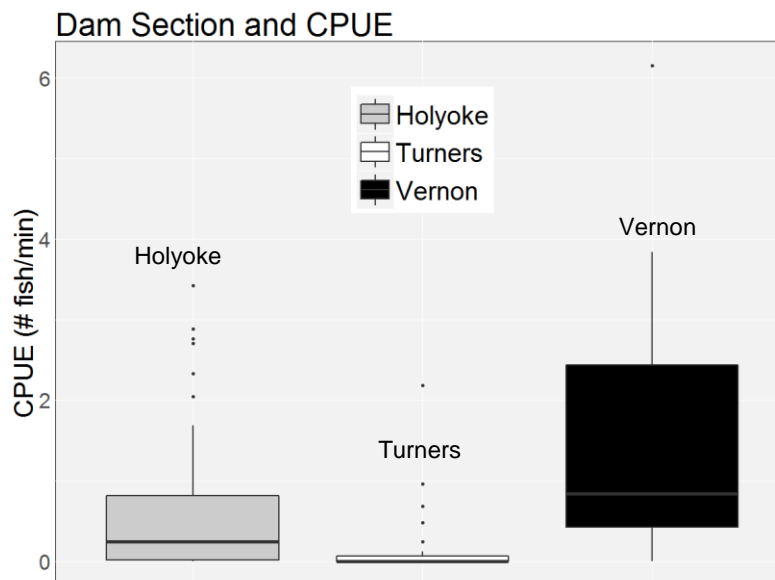


Figure 2. YOY Shad CPUE by dam section. Boxes represent 25<sup>th</sup> to 75<sup>th</sup> percentile, median (center line), and outliers (points).

We grouped impoundment sections across all three dam sections to compare CPUE across lower, middle, and upper impoundments, as well as riverine sections (Holyoke; Figure 3). CPUE across habitat sections were comparable with no visually observable differences in means, although variability was highest in lower impoundment zones.

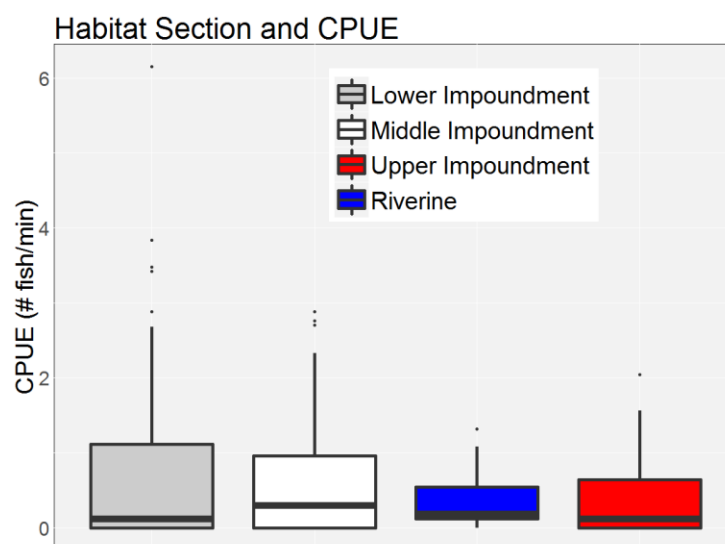


Figure 3. YOY Shad CPUE by impoundment section in the Holyoke dam section.

Mean Young-of-the-Year (YOY) shad total lengths for the Holyoke, Turner Falls, and Vernon Sections were 88.2, 84.5, and 83 mm, respectively. A pattern of larger fish downstream was observed, as expected (Figure 4).

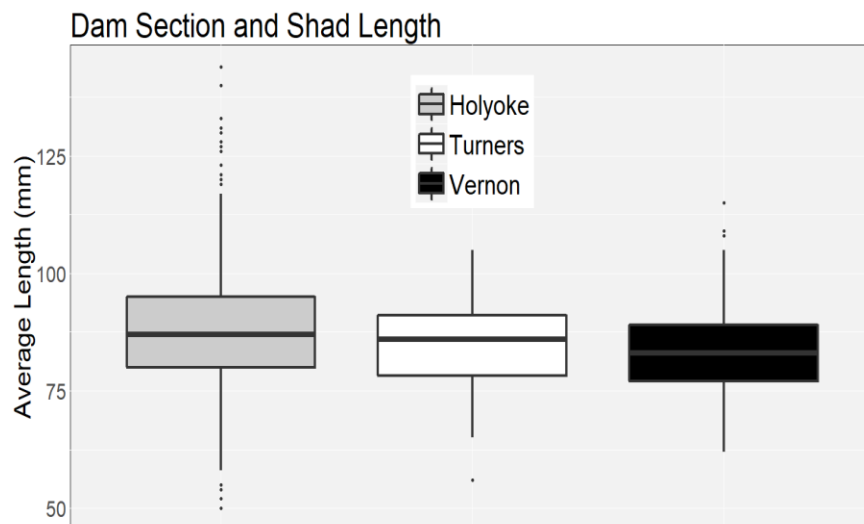


Figure 4. Average YOY shad total length by dam section.

Total shad length increased steadily from August through October, as expected with seasonal growth (Figure 5).

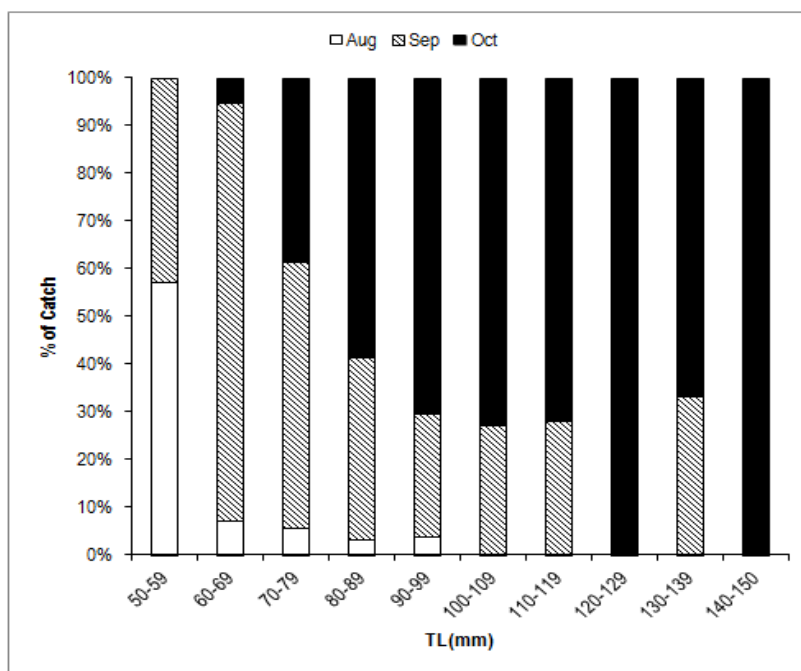


Figure 5. Shad length by % of catch from August to October.

Length and weights were logged and plotted with regression lines as an indicator of condition. Logged length and weight regressions had subtle differences between sections. At smaller sizes, shad of a given length had higher weight in the Holyoke and Turner Falls sections when compared to the Vernon section. However, larger shad had increased weights for a given length in the Vernon section (Figure 6). This pattern seems largely driven by low weights at small sized in the Vernon section.

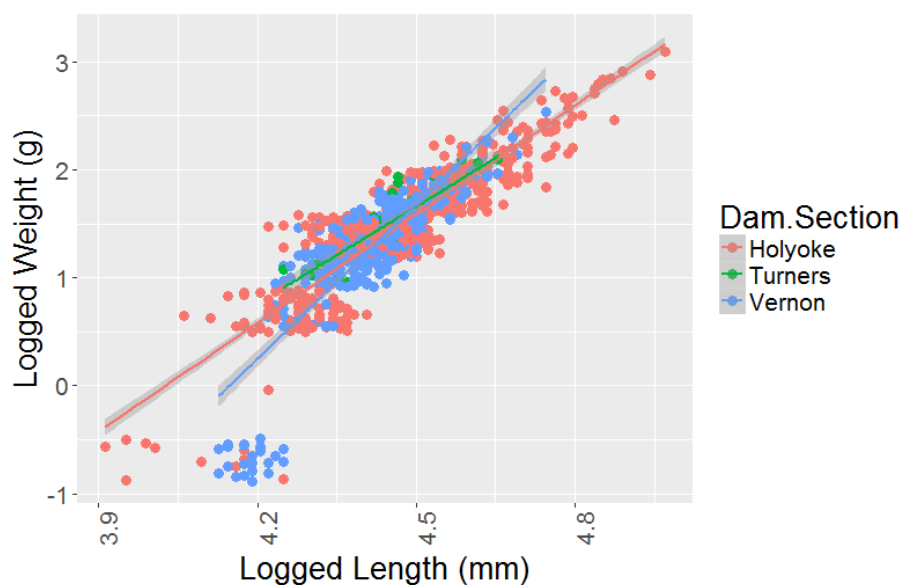


Figure 6. Regression lines for logged length and weight of YOY shad, by dam section.

In addition to fish metrics, environmental data was collected to provide baseline data for factors triggering life history events. Discharge data collected in Montague (USGS) and water temperature data collected from the Vernon tailrace (USFWS) show flow and temperature during the fish sampling period (Figure 7).



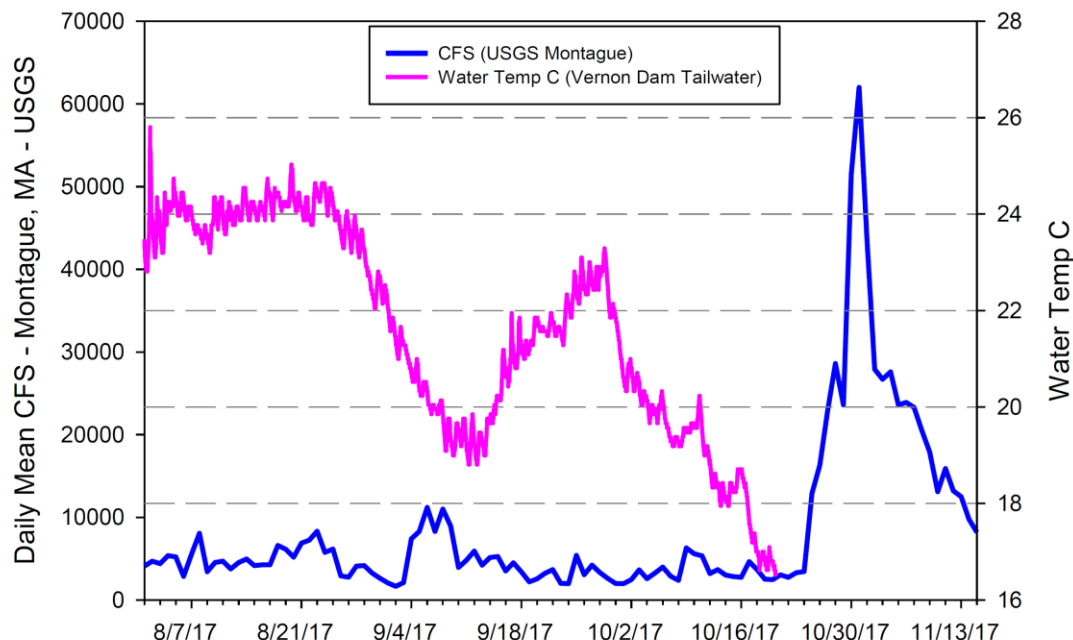


Figure 7. Discharge and temperature data in Montague and Vernon tailwater, respectively.

### Discussion

Overall, YOY American Shad CPUE was variable, with the Vernon section having the highest values, followed by Holyoke, then Turner Falls. Shad lengths were greatest in the Holyoke section, following a northerly pattern of decreasing length with the Turner Falls and Vernon section shad comprised of smaller individuals. This size pattern is expected considering the seasonal movements of shad downstream with cooling water temperatures. Further, the delay in adult migration upstream coupled with batch spawning behavior of adults indicates variable spawning times across dam sections. In 2017, American Shad upstream fishway counts included 536,670 passed by the Holyoke Fish Lift, followed by 48,727 passed at the Turners Falls Gatehouse Ladder and 28,682 passed at the Vernon Ladder. The CRASC Plan (2017) adult American Shad minimum passage count targets for each dam passage facility were not achieved in 2017 to varying degrees for known reasons; Holyoke (78%), Turners Falls (12%), and Vernon (13%). Each facility is impacted by the preceding fish passage facilities effectiveness (e.g., Turners Falls passage is a limiting factor for Vernon passage count) with Turners Falls known to have upstream fish passage issues in contrast to Holyoke. The date when 50% of the 2017 adult run counts were observed at Holyoke, Turner's, and Vernon were approximately 5/21, 5/27, and 6/3, respectively, indicating upstream delays in spawn timing. This timing likely results in variation in YOY length and outmigration timing by juveniles, although this was not directly tested. A fecundity and spawning study recently completed by McBride et al. (2016) on Connecticut River American Shad determined that females, on average, spawned at a mean interval of 4.8 days (fish upstream of Holyoke Dam) with a mean of 6.7 spawning batches, and a

mean of 45,950 eggs, during the spring of 2015. Based on this research, we hypothesize that over the course of the spawning run, a high proportion of fish will continue to move upstream until their gametes are depleted (spent) or environmental conditions become too challenging (later season water temperatures), leading to a downstream migration. It was beyond the scope of this study to understand the extent of spawning activity or spawning success that may influence the extent of juvenile production observed in the later summer.

It is clear that a disproportionate number of adult shad remained within the Holyoke to Turners Falls Dam segment (487,943) versus the number of shad that entered the Turners Falls Dam impoundment (48,727), which is an order of magnitude difference. However, for the adult shad that passed into the Turners Falls Dam segment approximately 59% eventually passed upstream of the Vernon Dam (28,682). Given this rate of upstream passage at Vernon Fish Ladder, a total of 20,045 shad remained in the Turners Falls Dam impoundment. It is unclear what the spawning contributions are of shad passing from one segment to another without biological monitoring at fishways for sex ratio and spawning condition assessments. Shad spawning success is believed to be further influenced by environmental and operational conditions (e.g., rapid water level fluctuations from hydropower peaking operations).

Observed differences in regression lines for logged lengths and logged weights may be indicative of forage availability (plankton). Higher condition of smaller shad in lower sections (Holyoke and Turners) may be due to warmer temperatures which may increase primary productivity and plankton abundance. Higher condition of larger shad observed in the Turners section could be due to a variety of interacting factors including decreased density of shad in later summer from lower adult reproductive potential, differing habitat conditions, mortality, and/or outmigration. Downstream migration has begun at this stage (October); this may reduce competition and increase growth of shad that remain in the system. Additional data collection including downstream passage monitoring, fine-scale environmental variables, and a better understanding of life history events could better inform observed differences in CPUE, length, and condition (O'Donnell and Letcher 2008).

It is unclear the extent to which juvenile shad CPUE values may be a reflection of mortality due to hydropower passage effects as they shift to downstream habitats. We can only know that the juveniles sampled upstream of Vernon Dam would not have any exposure to that force of mortality (turbine route rates) until outmigrating past the Vernon Dam. Estimates of juvenile shad mortality from dam facilities (turbine, spill other routes) exist as do estimates for the NMPS although there are complications with estimates in many cases (such as > 48 hour survival in balloon tag studies or challenges with radio tagging juveniles). The extent of American Shad eggs, yolk sac larvae, post yolk sac larvae and juvenile entrainment (losses) as a consequence of the operation of the Northfield Mountain Pumped Storage facility has been reported for a 1992 study season (LMS 1993), and more recently for a 2016 study season (Kleinschmidt 2016). The

2016 NMPS entrainment study reported entrainment for: American Shad eggs (9.5 million) and larvae (5.4 million), with no distinction made on larval stage, which has implications for stage specific survival rate application. In addition, juvenile shad entrainment was not provided due to un-reliable estimates from issues with radio tagging methods. Importantly, the 2016 study results and expansion estimates for losses did not utilize the Crecco et al. (1983) daily survival rate for the juvenile life stage of shad – a high daily rate (0.98) to be applied for a period of 70 days (refer to Kleinschmidt report table 3.4-1). This was in spite of that study’s use of Crecco rates for the four preceding larval life stages, with no explanation, for omitting the last “in-river” survival rate for juveniles. This omission of a daily survival rate for juveniles, reported as (S) 0.98, that should be applied for a period of 70 days [i.e.  $S = (0.98)^{70} = 0.24$ ] leads to a significant underestimation of the magnitude of lost juveniles – specifically for in-river period up to the time of outmigration. The company report uses the Crecco larval stage survival rates (L1, L2, L3, L4 - sizes under 25mm) but then applies a very broad temporal and spatial scale Environmental Protection Agency– lumping juvenile in-river stage, juvenile outmigration, and at-sea survival - (S) of 0.000611 (EPA 2004). The selective omission is not explained in the analyses although the U.S. Fish and Wildlife Service May 2017 letter to FERC on this study report pointed out this issue. Applying the Crecco “juvenile” survival rate, to the data reported in Kleinschmidt (2017; field study in 2016), yields an estimated loss of juveniles from larval entrained shad of 1,029,865 fish, rather than the reported 2,200 fish (up to age-1 in ocean) in 2016, and does not include an estimated additional 44,842 lost juveniles based only on egg entrainment (using Crecco river-specific, life stage survival estimates to end of juvenile stage). As the specific larval stage of entrained larvae was not identified in the Kleinschmidt report, the most conservative assignment (all larval stage 1) was used, which would under-represent the expected but unknown number of advanced stages that were entrained over the study season, resulting in this extrapolated loss actually being greater in magnitude.

The 1992 NMPS entrainment study reported entrainment for; American Shad eggs (1.1 million), yolk sac larvae (2.7 million), and post yolk sac larvae (10.5 million). That report did not include the application of river specific (stage specific) survival rates to determine the subsequent loss in juvenile shad from these early life stage entrainments. However, this study did estimate a total of 37,260 juvenile shad entrained (lost) based on net sampling at the NMPS. The application of the Crecco et al. (1983) river-specific daily survival rate for “post yolk sac” fish (>25 mm) entrained in 1992, if assumed to be >25 mm, estimates a loss of over 2.5 million juvenile shad up to the time of outmigration (70 day juvenile life stage) for that entrainment group alone.

Juvenile American Shad survival rates have been studied at Vernon Station which has both Francis and Kaplan design turbines of different sizes. Immediate survival through a Francis turbine (unit #10) for juvenile shad was estimated at 94.7% in 1995 (Franke et al. 1997). A partial depth downstream guidance louver was also installed in the 1990s to aid in directing salmon smolts to the entrance of a downstream fish passage pipe. As part of the current

relicensing process, studies on both downstream movement to the project, passage routes, timing and turbine survival have been completed in the fall of 2015. Juvenile shad were shown to experience generally minimal delay but did use turbines as a primary passage route (vs. downstream bypass options <10%). Juvenile shad survival through two turbine types, Francis Turbine (#4) and a Kaplan Turbine (#8) was examined; a one hour direct survival estimate for the Francis Unit was 91.7% and 95.2% for the Kaplan, with injury rates <5%, and longer term survival (48hr) could not be determined.

At the Turners Falls Dam, juvenile shad route selection, delay, and mortality were assessed in several project areas: 1) spill at the dam (bascul gate #1 and #4), 2) Station 1 (small power station located off the main power canal) and 3) Cabot Station, terminus of the power canal. Juvenile shad survival rates varied at bascule gates depending on gate and level of spill, ranging from 47.7% - 75.6% at bascule gate #1 to 59% - 75.6% at bascule gate #4. Radio tagged juvenile shad route selection followed flow with most study fish using the power canal, unless spill was present (varied for treatments). Juvenile shad survival through smaller Francis Turbine at Station 1 (located off the main power canal) was determined to be 67.8% and 76.6%. Radio tagged juvenile shad predominately stayed in the main power canal, making their way to the Cabot Station. Juvenile shad survival through the Cabot Station Francis Turbine (all five the same) was estimated as 95% (24 hr). As in the case of all reported turbine study estimates discussed here, longer term survival (48 hr) could not be determined.

The Holyoke Dam, Hadley Falls Station, has had several significant downstream passage measures implemented since the 1990s. Fish that may enter the power canal at the gatehouse are directed by a sharp angle, full width, full depth guidance louver system, to a downstream fishway entrance at its downstream terminus, where fish are taken via a fish pipe for release directly into the tailrace. At the turbine intakes, a full depth reduce rack spacing screen (2 inch) was installed in 2015. Two submerged downstream fishway entrance bypasses are located in that rack, that discharge into the spillway plunge pool (constructed for fish passage). In addition, the bascule gate adjacent to the turbine intakes includes increased fish passage flow discharge and an “NU-Alden Weir” insert, designed to enhance passage. Flow is directed to a flip bucket at the dam apron, whereby water velocity is reduced as it enters the downstream plunge pool and overshoots the spillway upstream passage entrance. The determination of mortality rates for juvenile shad that pass via the “new” submerged bypasses or the spill gate, both of which utilize the “new” flip bucket (overshoot) to the plunge pool have left some debate on the fates of some of the radio tagged juveniles. The company study report following meetings was updated to provide a range of potential survival results. The 24 hour survival rate was estimated as 87.5%. While an overall route of passage, proportion of where juvenile shad go was not part of the new structures evaluation. Immediate (1-hr) turbine passage mortality rates for juvenile shad at Holyoke were determined in 1994 by a balloon tagging study; rates ranged from 0.0% ± 14.5% (95%

confidence interval) at partial turbine capacity to  $2.7\% \pm 16.2\%$  at full capacity (Mathur et al. 1994).

### ***Management Implications***

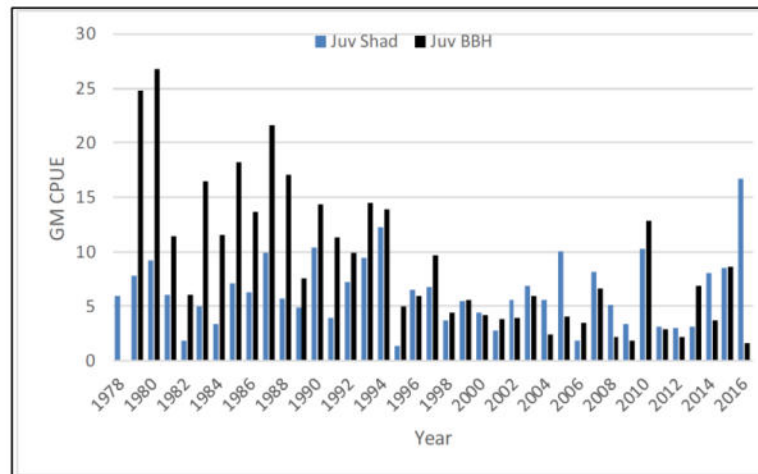
Estimating downstream mortality of juvenile shad remains an important challenge for future monitoring and restoration efforts. Observed differences in juvenile shad population metrics across and within dammed sections has management implications in achieving CRASC management plan goals and objectives, including restoring the ecological role of juvenile shad through the outmigration period. Ensuring safe, effective and timely downstream passage through/past hydropower facilities is an important objective for sustaining populations of migratory fish. Hydroacoustics, high resolution sonar cameras (DIDSON), coupled with physical sampling methods for enumerating downstream passage could be used in the future to better monitor migration rates and timing, as well as to better understand growth and mortality of juveniles in freshwater habitat.

A better understanding of movement patterns and habitat occupancy of juvenile shad within dammed river sections would further our understanding of passage and habitat access needs. This is particularly important as major dams are currently under license review and negotiation. The continued collection of data by government agencies is integral to contrast data collected by private consultants through the hydropower licensing process, and further data collection across multiple years would benefit management efforts by capturing greater spatial and temporal variability.

This assessment provides supportive evidence to existing interagency shad monitoring efforts in the Connecticut River. Connecticut Department of Energy and Environmental Protection implements annual fixed beach seine surveys initiated in 1978, however this effort has never been duplicated with a random sample design and is limited to downstream of the Holyoke Dam (Figure 8). Fixed-station sampling is ideal for monitoring changes in specific locations over time; however, random sampling offers more robust estimates of population parameters by eliminating spatial sampling bias. When both methods are used simultaneously, they can offer “ground truthing” for more sound population indices for predicting numbers of returning adults. Construction of stock recruitment relationships when adults return in 3-5 years would be particularly useful when coupled with fixed station seining data from CTDEEP.



A



B

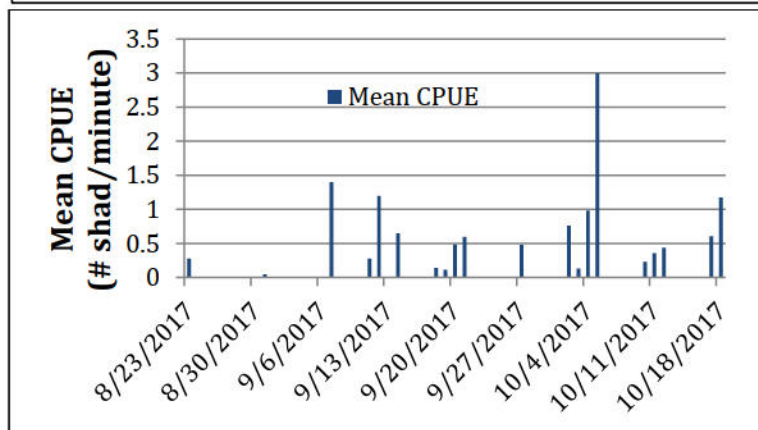


Figure 8. Long-term JAI seining data from CTDEEP (panel A) compared to short-term 2017 electrofishing data (panel B).

Juvenile productivity and population data is an important component of fisheries management, particularly for data-limited species with significant habitat fragmentation. Anthropogenic stressors such as dam infrastructure, pollution, and climate change will require flexibility and adaptive management along with continued evaluation of population and life history characteristics to maintain current and future levels of mortality from fishing. Continued monitoring and interagency collaboration will be integral to the successful management of migratory species that cross ecosystem and management boundaries, particularly those with complex life histories facing long term habitat access impediments.

### Acknowledgements

We thank Vermont Department of Fish and Wildlife, Connecticut Department of Energy and Environmental Protection, Connecticut River Conservancy, and the Department of Environmental Conservation at UMass Amherst for field assistance and technical support. We also want to thank Jacqueline Benway Roberts (CT DEEP), Bia Dias and Luke Griffin (UMass), Adam Burt, Joseph Asta-Ferrero, and Joseph Boulia for field assistance.

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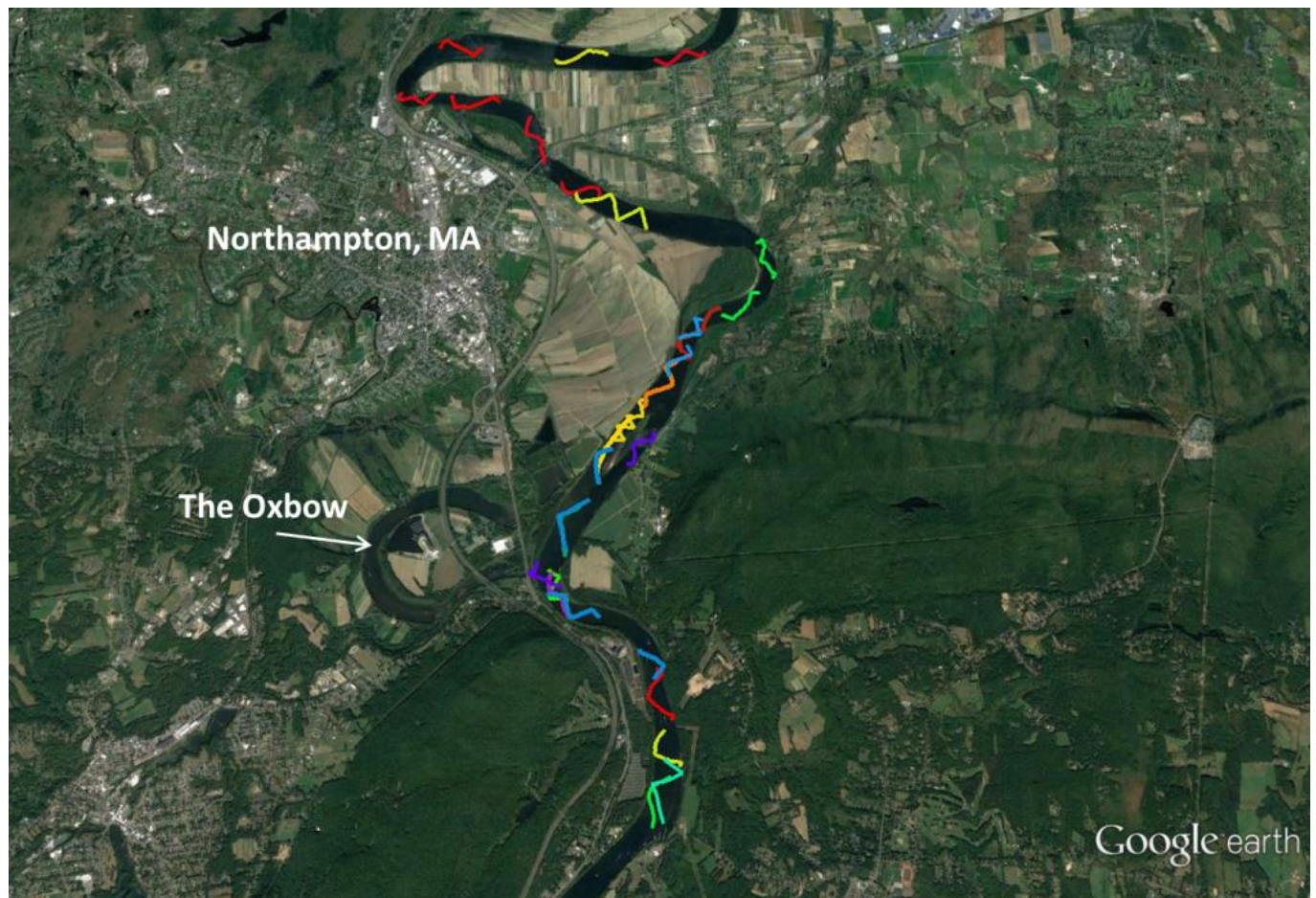
*Appendix*

Figure A1. Electrofishing runs in the middle Holyoke impoundment section. Each line represents an individual run; colors are random to distinguish runs.



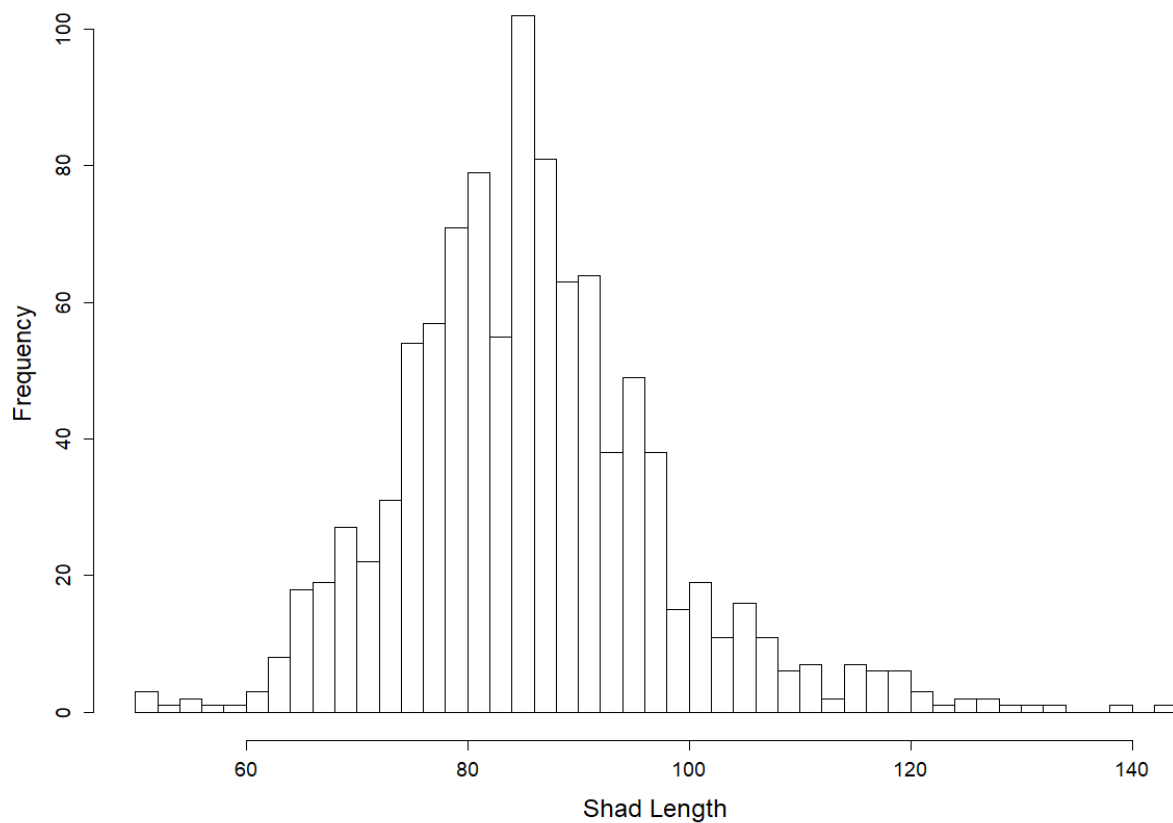


Figure A2. Length frequency histogram of juvenile shad captured from electrofishing surveys.

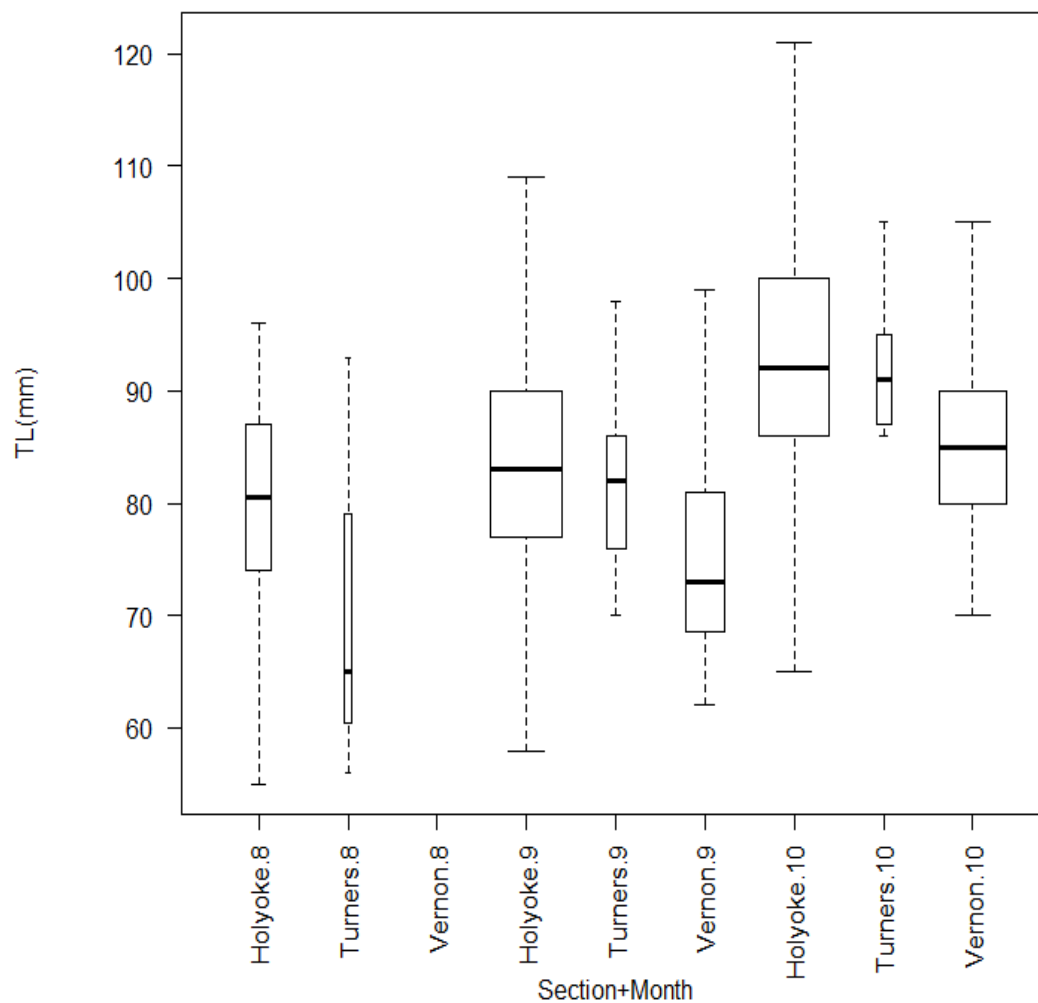


Figure A3. Total length of shad by dam section and month, and box width conditioned on sample size.

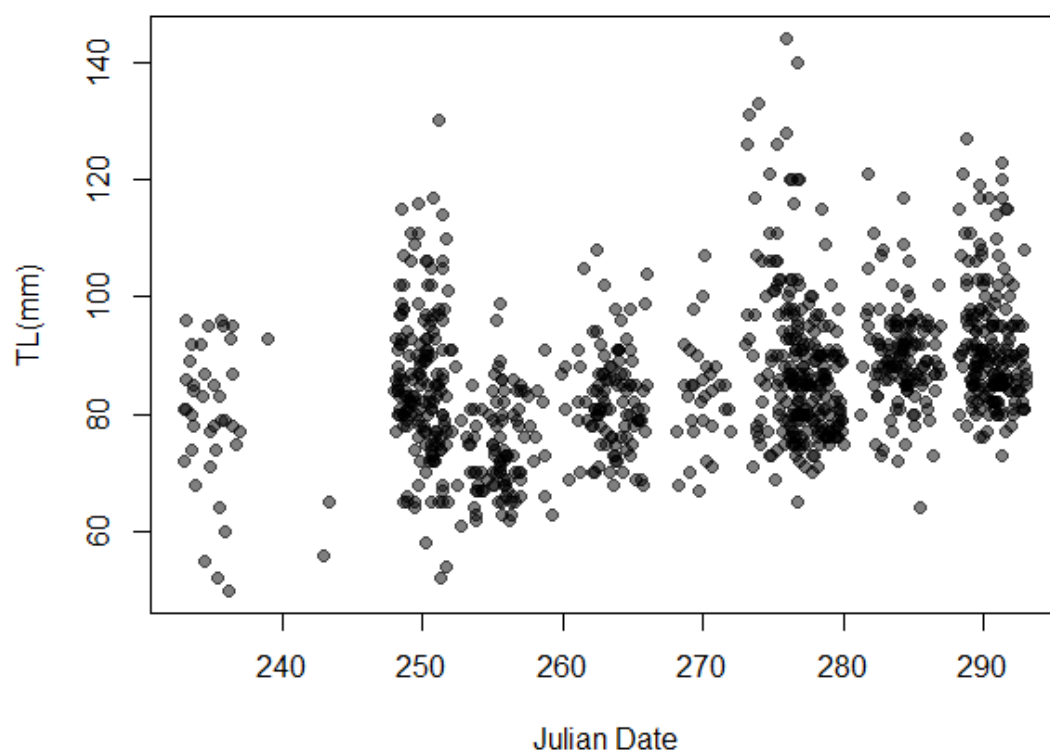


Figure A4. Shad total length by Julian date.

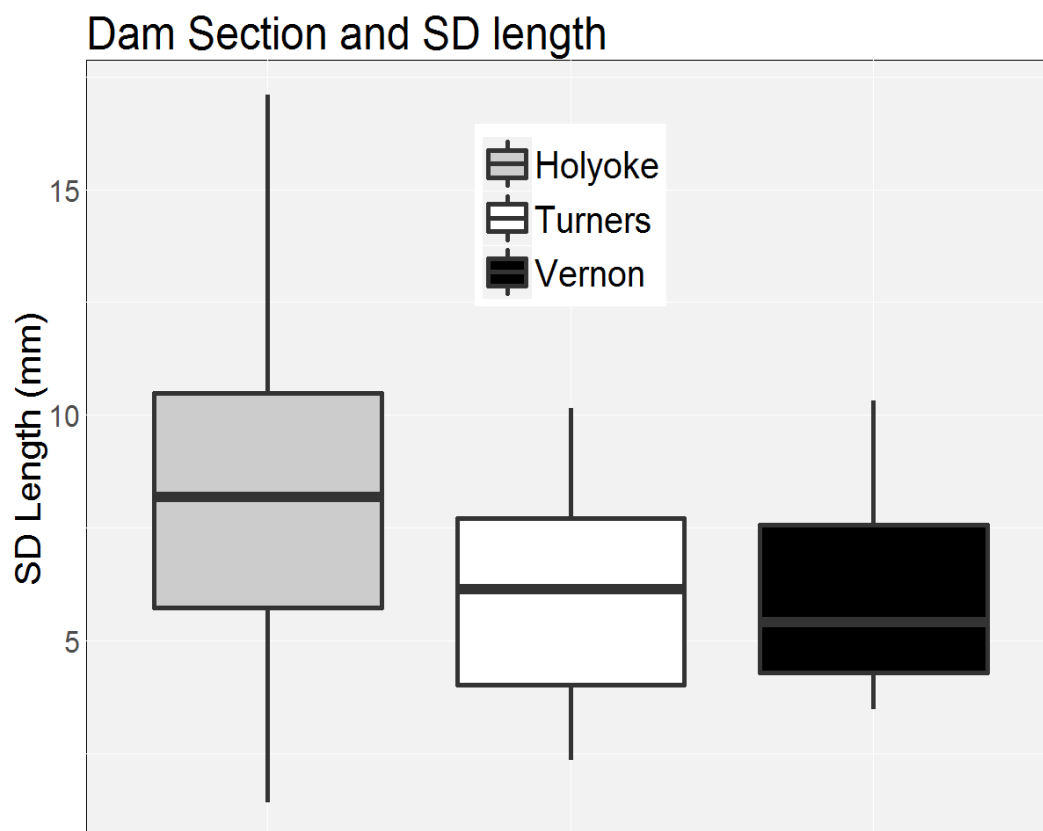


Figure A5: Standard deviation of shad length by dam section.

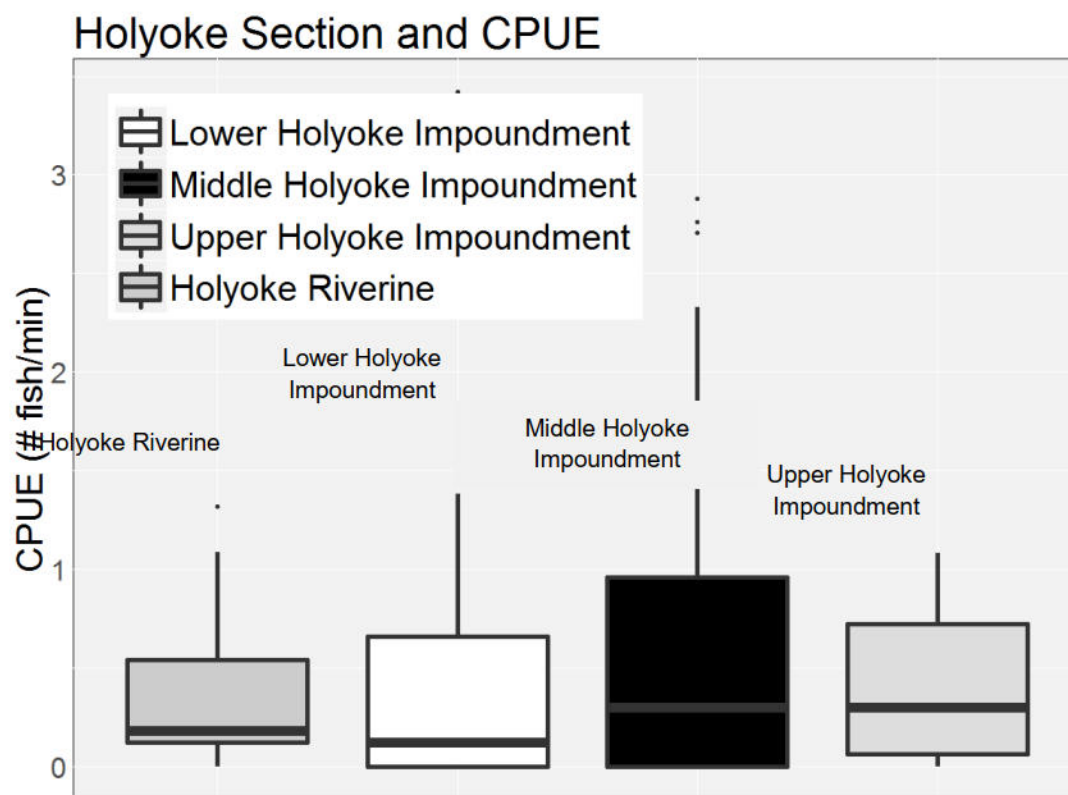


Figure A6: CPUE by impoundment/habitat within the Holyoke dammed section.



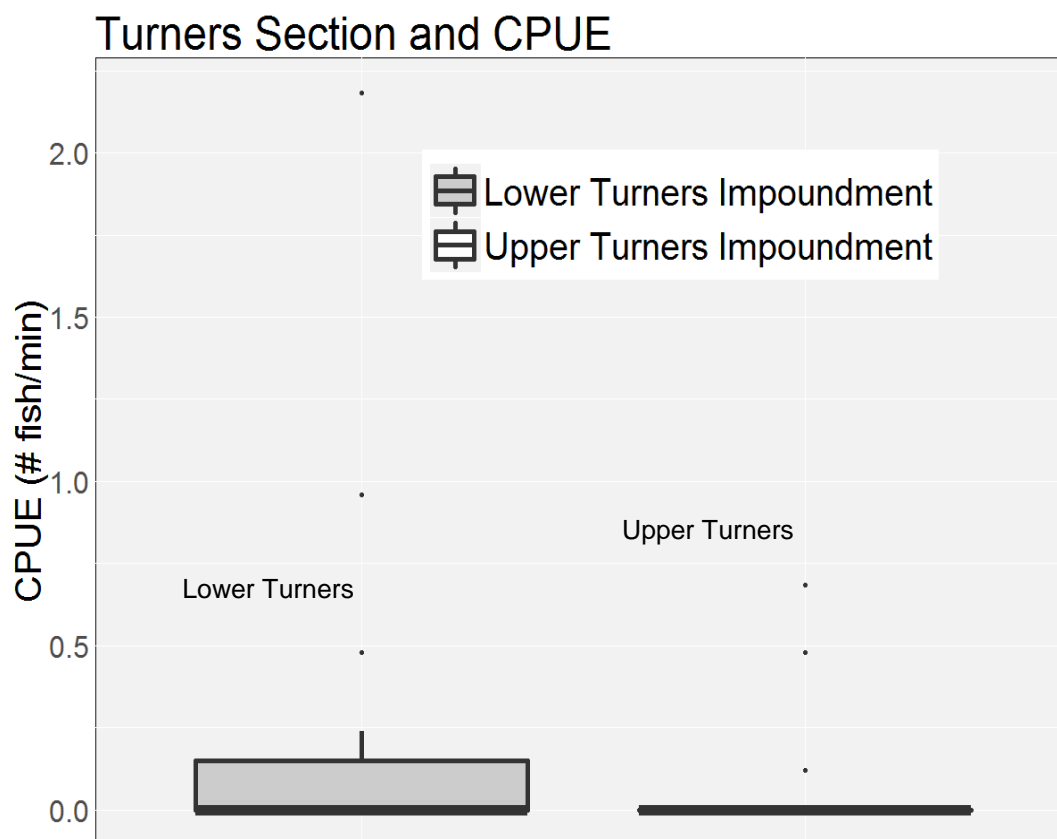


Figure A7: CPUE by impoundment/habitat within the Turners dammed section.

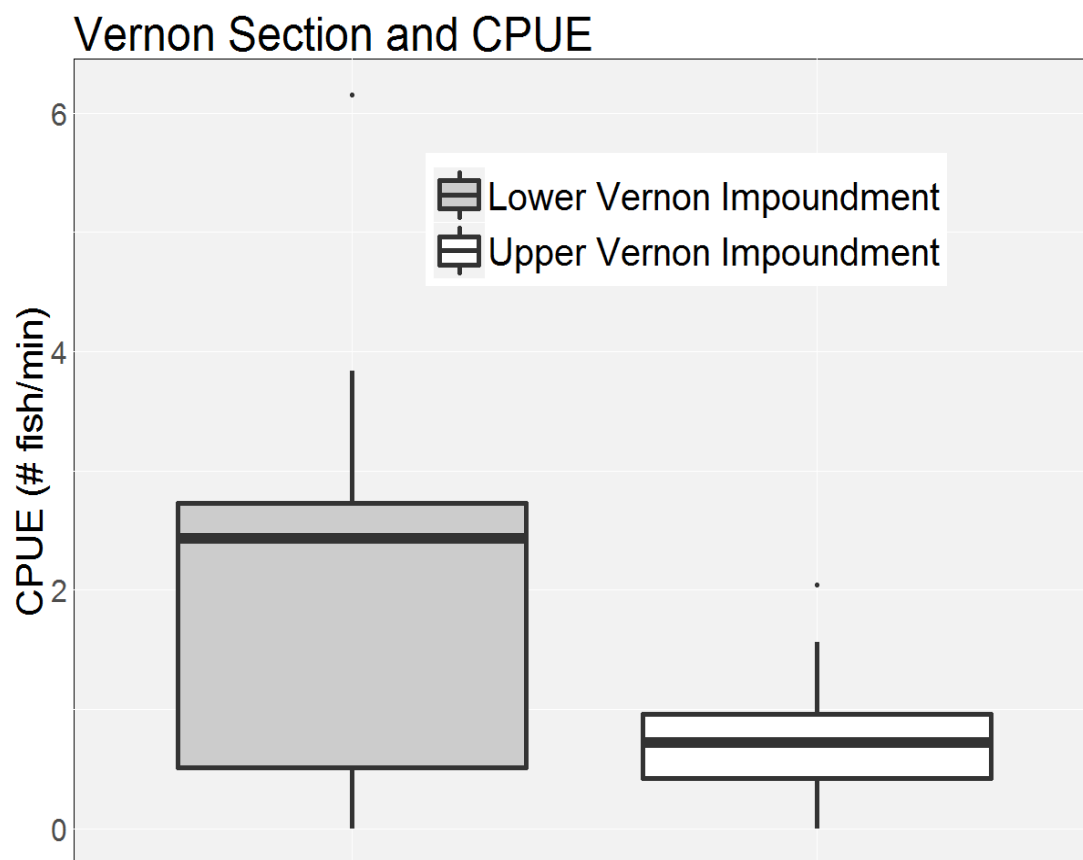


Figure A8: CPUE by impoundment/habitat within the Vernon dammed section.

5/24/24

311

Elizabeth Stefank  
Attn. First Light 401<sup>W</sup> CC  
100 Cambridge St  
Suite 900  
Boston MA 02114

Dear Ms. Stefank,

I am writing this letter as an advocate for the Connecticut River and its living components. I am concerned about deterioration of water quality in the years to come.

The CT River is a vital part of the ecosystem of Massachusetts and must be protected from any mismanagement or degradation. The priority is to always consider the impact of any action on the river & the life that depends on it - fish, invertebrates, plants & people.

The river may be resilient and be able to come back to its pristine state - unless it cannot.

As guardians of the river, or stewards - you must look first then act.

We can undo some of the damage but there may come a time when it's too late and too much damage cannot be undone.

Thank you for your consideration & hope we can achieve only positive impact. All the more important as climate change causes more damage. Thank you for reading my letter - sorry I could not print it (printer is broken).

Lenora Miller

[REDACTED]  
Amherst MA 01002

May 19, 2024


Elizabeth Stefanik  
Attn: FirstLight 401 WQC, MassDEP-BWR  
100 Cambridge Street, Suite 900  
Boston, Ma. 02114

Dear Ms. Stefanik;

I am concerned that there be a minimal guaranteed and monitored flow of water between the Turners Falls dam and the out-flow of the Cabot Staion during the spawning season of the short-nosed sturgeon population. FirstLight is responsible for the allotment of water flow and must agree to comply with the ammount of water needed for the sturgeon to successfully replete their numbers. This should take precedence over power generation or recreational use during the brief time needed for the spawning season.

I am a strong supporter of the limit of re-licensing to a most thirty years rather than Fifty.

Sincerely;

  
Robert Miller, M.D.

██████████  
Shelburne, Ma. 01370  
  
██████████  
██████████



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**From:** Diane Nassif <[REDACTED]>  
**Sent:** Friday, May 24, 2024 11:47 AM  
**To:** dep.hydro@mass.gov  
**Subject:** FirstLight 401 WQC

**CAUTION:** This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

To Whom It May Concern,

I write as a resident of Petersham, MA who lives in the area that makes up the watershed of the Connecticut River. The river and its tributaries are affected by the relicensing of FirstLight Power's Turners Falls Hydroelectric Project (FERC No. 1889) and Northfield Mountain Pumped Storage Project (FERC No. 2485).

I am writing to comment on the Amended Final License Application submitted by FirstLight and the Flows and Fish Passage and Recreation Settlement Agreements. Please take my comments into consideration as you make the licensing decision.

The Connecticut River is central to life in Western Massachusetts. The communities both upstream and downstream of the FERC Projects feel the environmental impact on the riverbanks, the water, and the species of fish and other creatures that live in the area. In addition the river holds a cultural significance for the Indigenous communities that have lived in the area for thousands of years and whose projects and celebrations take place along its banks. I am particularly concerned that the proposed increase in the size of the upper reservoir will increase the detrimental environmental and cultural impacts in the region and that will be exacerbated by climate change.

I would like to suggest that a plan be developed for decommissioning these two Projects. Sixty years ago the collective understanding of the ecological impact of climate change was not well developed. Today we are living in it, with floods occurring regularly with devastating impact. Likewise at that time the intelligence about how to best generate electricity to facilitate the movement away from fossil fuels was focused on large scale projects and power plants that were a centralized source of energy. Today electrification is being facilitated by hydro, solar and wind projects augmented by battery storage that can be implemented in a distributed fashion within communities. This changing landscape in terms of climate change and the technology of electrification indicates that these FERC Projects may have reached the end of their useful life. Preparation for decommissioning should be made now.



As a constituent of both Senator Jo Comerford and Representative Aaron Saunders, I fully support the public comment that they, along with their peers, submitted on May 2, 2024. Please take it seriously and make adjustments to the licensing agreement as they suggest.

Sincerely,

Diane Nassif

Petersham, Massachusetts

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**From:** Cynthia Nolan <[REDACTED]>  
**Sent:** Sunday, June 2, 2024 9:21 PM  
**To:** dep.hydro@mass.gov  
**Subject:** FirstLight 401 WQC

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

To whom it may concern, I am contacting you to urge you NOT to issue a water quality certificate for the Northfield Mountain Pumped Storage Station. I live in Northampton, MA, within walking distance of the Connecticut River and the thought of the damage this pumping station is doing to the ecosystem of the river is so upsetting to me. NMPS violates the clean water act, the force of the pumps pulling the river is destructive to the river. NMPS also clearly interferes with the natural flow of the river. To allow FirstLight power to continue to make a profit at the expense of the river's health, the quality of wildlife that rely on the river and the people who live and recreate along it, is just wrong. Furthermore FirstLight does not even produce energy. It takes more energy to operate NMPS than is given back. It loses 34% of the energy it took from the grid to operate the pumps, wasting fossil fuels.

In all sincerity the Northfield Mountain Pumped Storage Station needs to be DISMANTLED and the Connecticut River deserves not only to survive but to thrive. PLEASE do not give FirstLight a water quality certificate. The cost to my community and the region is too high.

Sincerely, Cynthia Nolan

Northampton, MA

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**From:** Enviro Show <[REDACTED]>  
**Sent:** Friday, May 31, 2024 4:36 PM  
**To:** dep.hydro@mass.gov  
**Subject:** FirstLight 401 WQC

**CAUTION:** This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

We strongly object to FirstLight being relicensed or in favor of the MassDEP issuing a Water Quality Certificate for the pump storage unit in Northfield, MA. Aquatic life in the CT River has been destroyed and threatened by the pump storage operation since its inception. Further, the endangered Shortnose sturgeon spawning grounds at the Rock Dam south of the Turners Falls dam are disrupted every year by recreational activities sanctioned by FirstLight. That area should be out of bounds for any human activity during the spawning season.

It is the duty of MassDEP and other state agencies to protect the CT River and the life within it. Kindly do that.

Don Ogden  
The Enviro Show  
WXOJ/WMCB/WMNB  
[REDACTED]  
Florence, MA 01062

Amherst, MA 01002  
5/30/34

ATTN, ELIZABETH STEFANIK,

I write to you in regard to the 401 water qualification for First Lights-facilities.

I live in Amherst, MA which abuts this magnificent body of water. We have ~~are~~ so fortunate to be in this area, which ~~is~~ should be left in as natural a state, consistent with "managing" it is possible. Many local citizens fish in it, swim in it, or mirabile dictu, drink and garden from its presence, while some "managing" may be necessary due to the ever-increasing number of people <sup>here</sup> ~~there~~ <sup>we</sup> ~~are~~ should be taken and side effects of this "managing" must always be carefully monitored.

This is your responsibility and I encourage you to do your best in balancing your actions with the steps you take in carrying out your responsibilities.

I am almost 93 years old now and look forward to some limited time to enjoy the presence of this natural wonder in my life - on forward to my descendants

Thank you for all the work and consideration you give to "our" river.

Sincerely yours,

Esther Pelton



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**From:** Jodi Rodar <[REDACTED]>  
**Sent:** Friday, May 31, 2024 10:09 AM  
**To:** dep.hydro@mass.gov  
**Subject:** Please Say No To Re-Licensing Of Northfield Mountain Pump Storage Station

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Hello;

The Connecticut River is the lifeblood of a vast New England ecosystem. It is a widely acclaimed and recognized river. Established in 1997 the Silvio Conte National Fish and Wildlife Refuge is the only refuge of its kind to encompass the entire four state Connecticut river's watershed, and one of three refuges to mention fish in its name. The following year in 1998 the Connecticut River was honored as a Heritage River and in 2012 it was named a "National Blueway".

FirstLight Power has filed an application with the Federal Energy Regulatory Commission (FERC) to issue another 50 year "**License to Kill**" the Connecticut River and its ecosystems. The Connecticut River Defenders stand firmly in opposition to this renewal of First Light's license.

FirstLight currently operates the **Northfield Mountain Pumped Storage Station**. This, "the most deadly machine on the river" is located in Northfield, Massachusetts 80 miles west of Boston. For more than 50 years this facility has regularly pulled the river backwards for several miles forcing it up the nearby mountain through four large turbines to a man-made mountain top reservoir. Then at peak electrical demand times it releases the water back down to travel again through these same large turbines, generating electricity and large profits for FirstLight. Nothing survives this treacherous round-trip ride. Additionally the daily tug and release of the river causes dramatic unnatural changes in water levels leading to worsening erosion, loss of farmlands, and disruption along the banks that impacts vital shoreline ecosystems. Even FirstLight



admits that all life—fish, eggs, larvae, plants—are killed by the grinding and spewing action of its four huge turbines

This ecological demise is furthered by FirstLight's reliance on fossil fuels to operate its killing turbines at a rate of 1/3 more energy to pull the river up the mountain than it creates with the downhill release. FirstLight claims that hydroelectric power is clean energy, but clearly it is not. Calling it "green" and touting their achievements as a success for the environment are LIES meant to sell their product and "green wash" the public. These deceitful and harmful lies must be brought into the open and debunked! This way we can work hard to create real alternatives to address and mitigate the effects of our global climate emergency.

FirstLight is owned by a Canadian pension investment fund (Public Sector Pension), a capitalist giant that is destroying the Connecticut River for its own financial gain. In 2018 FirstLight registered itself in a Delaware tax haven. FirstLight profited \$158 million on Northfield Mountain in 2019.



We cannot expect multi-national companies to act swiftly, promptly or honestly in response to our climate emergency unless we demand otherwise. As we have seen by FirstLight's dragged out re-licensing process with over five years of delays approved by FERC, over and over again First Light has misguided, deceived and suppressed the truth.

I am writing to ask you to say **NO** to the imminent re-licensing of the Northfield Mountain Pumped Storage Station for another 50 years. If re-licensed FirstLight will be permitted to further perpetrate its death sentence upon the Connecticut River, and continue to threaten our very own existence.

Thank you for your time regarding this urgent and critical issue.

Sincerely,

Dr. Jodi Rodar

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**From:** Mimi Sauer <[REDACTED]>  
**Sent:** Friday, May 31, 2024 7:42 PM  
**To:** dep.hydro@mass.gov  
**Subject:** FirstLight 401 WQC

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

The health of the Connecticut River is vital to the Pioneer Valley where I live. The River is essential for the agriculture here and is a place of recreation for us humans; it also has an ecology we humans must respect.

I am concerned about both the varying water temperature's effect on the cold water fishery in the River and about the quality of the River water when huge amounts of water are released. Therefore, I submit this comment about the DEP's WQC.

These two problems result from impounding water behind the dam at Turners Falls and at the pumped storage reservoir at Northfield. That water gets heated in the summer and when released into the River proper, that temperature is raised. Cold water fish have evolved for just that: cold water. Furthermore, when the impounded water from either site pours into the river, silt is stirred up, river banks are eroded and many small organisms are killed. These are tremendous disturbances to the River's ecology.

The length of this license/certificate would normally be thirty years, as I understand it. That period is much too long in this age of rapid advances in technology. Before 2055, there certainly should be methods to at least mitigate these two problems. Ideally, the Water Quality Certificate would be for a much shorter period of time; more realistically, there could be requirements for reviews of how these two problems are being addressed by FirstLight every few years.

I appreciate this opportunity to speak for the organisms of this great River.

Marlene Sauer  
Amherst, MA

**From:** [REDACTED]  
**To:** [dep.hydro@mass.gov](mailto:dep.hydro@mass.gov)  
**Subject:** FirstLight 401 WQC  
**Date:** Tuesday, April 30, 2024 11:00:42 AM

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While I understand the need to create power, I am very concerned that First Light continues to leak oil into the Connecticut River. This is unacceptable and I am adding my voice to demand this be addressed.

Thank you,  
Dr. Tom Schiff  
[REDACTED]



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**From:** Bill Stubblefield <[REDACTED]>  
**Sent:** Monday, June 3, 2024 4:00 PM  
**To:** dep.hydro@mass.gov  
**Subject:** Comments re First Light's WQC Application  
**Attachments:** JWS FERC My Turn 10Nov21.pdf; JWS Solar Rollers Remarks 20Apr24.pdf

**CAUTION:** This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Dear Sirs,

As you well know, we are now in the midst of a planetary emergency unprecedented in its scale and scope. Not only are we on a train headed over a cliff, the first few cars are already dangling over the edge, and the anguished cries of the victims fill the headlines and newscasts on a daily basis. What is more, we understand the source of all this misery: ecological overshoot. In its boundless quest for more energy and materials, industrial civilization has transgressed multiple planetary boundaries that jointly define a safe-operating space for humanity, and the very survival of civilization itself is now at risk. Only a fundamentally new way of relating to the natural world offers a plausible path to a livable future. Obviously, it is far beyond the purview of the FERC or MassDEP to transform the driving values of modern civilization and the global economic machinery upon which it depends, but it is very much in your purview, indeed it is your solemn responsibility to support and reinforce our halting steps to protect the ecological vitality of living rivers through legislation such as the Clean Water Act, the Endangered Species Act, and many other laws and regulations at both federal and state levels. This all the more urgent because of the shameful history of failure by the people and agencies charged with enforcing these laws who have repeatedly put economic concerns ahead of life itself, not once or twice but again and again for more than half a century and now seem committed to doing the same for another fifty years. Now the problem has landed on your desk. The hour is late, and we who love the Connecticut River and still hope for a future vibrant with the exuberance of living diversity, beg you to do everything in your power to restore and protect our living river.

At the very least, we must insist on the following points, among others.

1. Flows below the dam must be sufficient throughout the year to support the full complement of organisms reasonably expected to live there, not only the charismatic animals on endangered species lists, but all the other creatures that are the unsung heroes of ecological integrity.
2. In support of this, initiate biological inventory and ongoing monitoring to ensure that ecological function is maintained and improved. We can't expect to protect living diversity in the river and along its shores in the absence of knowledge about what lives there.
3. Develop and implement ecological performance measures and condition continued operation on satisfactory improvement in ecological function.
4. Given the damage already occurring on a regular basis, it is absurd to increase the capacity of Northfield Mountain Pumped Storage any amount, and certainly not 33%.
5. Begin decommissioning process for Northfield Mountain Pumped Storage immediately. Short of transforming the project into a closed-loop system between two ecologically impoverished reservoirs, which appears prohibitively costly, there is no way to avoid the harm of this ecocidal engine. The so-

called barrier net might save a few larger organisms but is not protection against overall ecological destruction. Far worse than putting lipstick on a pig, this so-called barrier serves only to deflect attention from ecosystem murder.

6. The climate emergency is already underway and all of us would like to see a fair, just and thermodynamically sensible energy transition, but NMPS does more to perpetuate the fossil dependency of the current system by extending the lifespan of existing infrastructure than it does to build the energy system of the future we so desperately need. Instead of devoting our limited resources to protecting incumbent investments, we should step back and get serious about designing and building the energy system we actually need through a genuine process of democratic deliberation and planning with all the facts on the table. Out-sourcing such fundamental concerns to the financial/commercial interests that have brought us to this sorry pass is effectively suicidal.

J. William Stubblefield, PhD  
Wendell, MA 01379

Attachments:

1. November 2021 opinion piece in the Greenfield Recorder based on testimony submitted to the FERC.
2. April 2024 Remarks at Solar Rollers Rally in Northfield.



## **We Deserve a Living River**

What follows is a slightly modified version of comments I submitted to the Federal Energy Regulatory Commission (FERC) and copied to multiple state and federal agencies that share responsibility for protecting living diversity in the Connecticut River. At issue is the re-licensing of two FirstLight facilities: Cabot Generating Station (CGS) in Montague and the Northfield Mountain Pumped Storage Station (NMPSS) in Northfield. This ongoing process is now proceeding behind closed doors.

With all due respect, I must demand that FERC and all other relevant parties act now to ensure that the requirements laid out in the Clean Water Act, the Rivers and Harbors Act, and all state and federal endangered-species and wetlands-protection laws and regulations be fully complied with in their entirety, including safe passage for migratory fish as legally mandated by the Supreme Court decision in *Holyoke Company v. Lyman* in 1872. The appalling history of ignoring these requirements over the last fifty years cannot be allowed to continue and must be remedied as soon as possible.

In the case of the state-and-federally-endangered Shortnose Sturgeon, this requires mandating guaranteed minimal flows as needed to facilitate spawning and early development at the Rock Dam in Montague, which is the only known natural spawning site in the Connecticut River drainage. This large and charismatic relic of the ancient past is, of course, only one victim of a much wider assault on living diversity by the intertwined projects CGS and NMPSS.

Other noteworthy victims include migratory fishes: the anadromous Sea Lamprey, Blueback Herring, and American Shad and the catadromous American Eel. Here threats include the impediment of dams with inadequate fish ladders and the risk of being ground to bits in the turbines of the pumped storage project in Northfield that is so powerful that it actually reverses the flow of the mighty Connecticut. We must also include the nonmigratory fishes, some of which are critical for the reproduction of threatened or endangered mussels. And the list of victims is barely begun. There are thousands of other species that make the river or its tributaries their home or otherwise depend on its water for their survival.

All these species and the network of interactions among them deserve our protection. They must not be ignored as we seek to set limits on how our river can be exploited for private profit.

The two projects require different solutions if we are to recover from a half century of neglect. Cabot Station and the associated power canal and Turners Falls Dam, need strong and binding restrictions that guarantee that the living diversity of the river can survive and thrive. A sensible approach would be a temporary license of perhaps 10 years that could be extended only if specific conditions are met. In particular, FirstLight must demonstrate significant, well-documented, and independently-verified growth of sturgeon and migratory fish populations as well as meeting any other indices of biological health as may be deemed appropriate in order to ensure a healthy river ecosystem.

When it comes to the Northfield Mountain facility, however, only a shutdown will suffice. Energy storage always incurs a cost, but the wanton destruction of a living river cannot be tolerated. Ecocide is a moral outrage that must not be glossed over as just another unfortunate side effect of economic activity. It is simply unconscionable that the great fish grinder on the mountain would be granted another fifty years of operation sucking the life out of our river to make a few bucks by arbitraging the

difference between peak and off-peak electricity rates. If this project is to have any future at all, it can only be as a last-resort-backup system to be deployed only in the event of an extreme emergency involving massive outages and widespread human suffering.

Although FERC holds the power of licensing, multiple other agencies must share responsibility for the decades of neglect, and I am copying these remarks to some of them in order to emphasize how critically important it is that they stand up and do their duty at this moment of extreme peril for the great Connecticut and its essential role as the ecological lifeblood of our entire region. All the more so because we now face a global biodiversity crisis with extinction rates comparable to those of the great extinction events of the geological past.

We deserve a living river, alive with all the vibrant complexity of a fully functioning ecosystem.

*Bill Stubblefield is a Ph.D. biologist living in Wendell*

## Remarks for Solar Rollers Rally at Riverview Picnic Area

J. William Stubblefield

20 April 2024

I want to talk about parasitism in a general way that goes beyond its usual biological meaning. Parasites are organized entities that draw critical resources from other organized entities, their hosts. Parasites may both help and harm their hosts, but the harm exceeds the help.

Northfield's pumped storage, Shutesbury's huge solar arrays, Wendell's massive battery installation, and many similar projects, are often portrayed as positive steps to a greener future, but they actually harm the environment as ecological parasites and harm the economy as financial parasites.

Northfield Mountain Pumped Storage is an ecocidal engine that literally sucks life out of the river and hopes to do so for another fifty years. The projects in Shutesbury and Wendell destroy forests and harm the climate by spewing stored carbon into the atmosphere in the near term and reducing carbon sequestration far into the future. Such projects do further harm by using energy and materials extracted from distant places in destructive ways. The energy benefits provided are exceeded by the ongoing harm to the environment. *This is ecological parasitism.*

The Sun and the Earth are the energy and material sources of all human wealth. Sunlight, air, water, and land, these are universal commons we must strive to reclaim, restore, and protect. Either we learn to live within the regenerative capacity of our only planet or we perish. *This is our predicament.*

These projects are financial parasites that suck money out of the pockets of energy users far beyond the costs to build, use, and maintain them. Suppose a utility decides to build a new generating or energy storage system. A building site must be secured, and the facility must be built. This may take a lot of money, but once paid for, the facility is available to use as needed, and the only ongoing expenses are for management and maintenance. On top of these necessary costs, however, these projects demand additional payment for

the privilege of owning the facilities and the cash flows they provide. This is unearned economic rent, a parasitic flow that makes electricity more expensive for all users and serves to transfer funds from the 99% to the 1%. *This is financial parasitism.*

Parasites want to continue the gravy train, hosts want to end it, and a kind of arms race ensues. Many biological parasites are able to manipulate their hosts to make them behave in the interest of the parasite rather than themselves. Financial parasites do the same thing by influencing government officials, regulatory bodies, and voters to consider financial parasitism as normal, natural, and even valuable and worthy of subsidies, tax advantages, and other privileges. In this way, they are able to capture more resources, grow larger and more powerful, and find new ways to secure their position and drain even more resources away from public needs. This built-in incentive for secrecy, deception and manipulation enforces financial privilege and serves to disguise and protect a financial oligarchy that is always looking out for its own interests, whatever happens to the rest of us. The power of the people versus the power of the parasites: *this is our struggle.*

There is no way to build a livable future without planning. The energy transition is not just another technical problem to be handled by a few experts, nor is it a matter of getting the financial incentives just right for Big Money. The simple fact is that energy planning is now outsourced to financial parasites that always have their own interests at heart. This is a road to oblivion, not to a livable future. Fundamental decisions are being made, decisions affecting our deepest values and our very survival. We must find the political will and solidarity to ensure that decisions that affect everyone, include everyone. We need energy democracy: Public Financing of Public Power for the Public Good!

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**From:** Mary Thomas <[REDACTED]>  
**Sent:** Monday, June 3, 2024 12:15 PM  
**To:** Dep.hydro@mass.gov  
**Subject:** FirstLight 401 WQC

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Dear MassDEP:

I am writing to request that you not issue a 401 Water Quality Certification to FirstLight Hydroelectric. About 68% of energy is lost in the U.S. through various inefficiencies, several reputable sources report. Correcting those inefficiencies is the responsible thing to do. Relicensing FirstLight's misuse of the Connecticut River would only perpetuate our irresponsible waste of energy and abuse of nature. FirstLight's Connecticut River hydroelectric facilities in Turners Falls and Montague and the pumped storage facility in Northfield should not be relicensed under the Federal Power Act, 16 U.S.C. § 797(e). Therefore, I strongly urge the MassDEP to not issue a 401 Water Quality Certification.

Thank you.

Mary Thomas  
Wendell, MA

--

"[It's] time for the human race to enter the solar system." -- Dan Quayle



I am opposed to the relicensing of the Northfield Mountain Pumped Storage Station (NMPSS). Here's why:

Beyond the obvious fact that the powerful suction of the NMPSS turbines exert on the flow of the Connecticut River (CT), which pull it unnaturally backward for miles, I object to the grinding of fish, fish eggs, larva, and other river life which is an unavoidable condition due to NMPSS' design and operation.

I say unavoidable because, in my layman's engineering mind, there's no way to screen out river biota from the pulverizing effect of the turbines. This is simple physics. Any screen or net of fine enough mesh to keep river life, a lot of which is tiny, like fish eggs, from entering the turbines will also prevent the required ferocious draw of 15,000 cubic feet per second of strained water from entering the pumps. In addition, that biotic material, including ambient leaves, would be pulled tight against the screen, clogging it, both making it effectively impenetrable by water, damaging that life, as well as violently disrupting the collection of life from their natural condition in an unviolated waterway.

The only way to remedy this mess is to create a separate draw reservoir, isolated from the river, but at a low elevation like the river and next to the existing intake. The pump up to the storage reservoir and release down to generate electricity would then cycle between the two man-made lakes without involving the CT, which would then be free to flow as rivers are meant to do, regaining it's vitality and greater ability to regenerate life without the grinding mayhem.

However, the magnitude of such a fix seems impossibly expensive and perhaps even beyond permitting. The mistake was made in the design process prior to the construction of the facility back in the late 1960's. Engineers would have known the forces of the machines they were calling for, the river's rate of flow and a thousand other values. The river at the time was polluted, the Clean Water Act (CWA) was in talks, but not an active factor to be considered. Neither the fish nor the river had a voice in the design process.

Now we have an active CWA. Work is being done to enable migrating anadromous fish to make their way upstream in order to spawn, that is, to leave masses of eggs in the water which will hatch. The young will make their way back to the sea, repeating that whole, beautiful, ancient cycle. At the same time, we're still grinding fish at NMPSS. Let's quit the grinding!

This discussion would not be complete without a mention of private enterprise. FirstLight Power is a privately owned public utility. As such, it is a "for-profit (company), part of the public service infrastructure and (is) heavily regulated" by state and federal agencies. Among their many concerns are capital and investments, shareholder interests, and corporate compensation. Profits, in other words. Fish and river life are, undoubtedly, an inconvenient and potentially expensive detraction from the bottom line. Ignoring the destruction of river life has been the norm for about 52 years. Should this continue?

Here's another thing. I'm wondering what the decision-making players think about this issue. What about the owner of FirstLight Power, Public Service Pension Investments (of Canada), do they know? How about their investors? Do they know and accept the daily grinding of fish as a normal part of their operation and business?

Does FERC know? (Federal Energy Regulatory Commission)

How about the signers of the:— Signers of the FirstLight Statement on Flows and Fish Passage Settlement Filing for Northfield Mountain and TF Hydro Projects— ? They are responsible for "protecting the natural resources, aquatic species and habitats of the Connecticut River". I think it's worth naming some of them here:

- the U.S. Fish and Wildlife Service
- the National Fisheries Service

To MassDEP: Comments regarding FirstLight 401 WQC, 5/29/2024

—the Massachusetts Division of Fisheries and Wildlife

—the Nature Conservancy

—American Whitewater

—the Appalachian Mountain Club

—Crab Apple Whitewater, Inc.

—New England Flow

—Zoar Outdoor

An impressive list, to be sure.

Are the principals and members of these groups aware of the river biota consumed by the turbines on a daily basis? If so, do they care?

The ongoing operation of NMPSS is deliberate violence, since the killing and grinding effect of its work is known and allowed to continue. It's an expensing of fish and river life as a cost of business. It's an externality, in economics lingo.

Who will speak for the fish and the Connecticut River?

Thank you,  
John H. Thompson

**From:** [Sue Vollrath](#)  
**To:** [dep.hydro@mass.gov](mailto:dep.hydro@mass.gov)  
**Subject:** Firstlight401 WQC  
**Date:** Thursday, May 2, 2024 8:39:35 AM

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CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Thank you for reading this email for public comments on First Light Power water quality.  
There is oil leaking into the Connecticut River below First Light's dam. Please research this problem for solutions to prevent oil release into the river.  
Thank you.

Sue Vollrath  
[REDACTED]  
Chester, MA  
Sent from my iPad

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**From:** Lynn Waldron <[REDACTED]>  
**Sent:** Monday, May 27, 2024 2:54 PM  
**To:** Stefanik, Elizabeth A (DEP) <Elizabeth.A.Stefanik@mass.gov>  
**Subject:** FirstLight/MA DEP 401 WQ certification

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Dear Ms. Stefanik,

When FirstLight was licensed more than 50 years ago, the Clean Water Act did not exist. Now it does, thank goodness.

How is it possible that you could issue a MA DEP 401 WQ certificate when it is clear that the Pump Storage project will violate the CWA? This project literally stops the Connecticut River dead, stills it to lake, and then fully reverses it for miles and hours at a time killing all the aquatic life sucked in at 15,000 cubic feet per second. The health of this most amazing waterway is in your hands.

Regards,  
Lynn Waldron  
[REDACTED]  
Greenfield, MA  
[REDACTED]

Carter Wall

Leverett, MA 01054

5/31/2024

Commissioner Bonnie Heiple  
MassDEP - BWR  
Attn: FirstLight 401 WQC  
100 Cambridge Street, Suite 900  
Boston, MA 02114

**Subject: FirstLight 401 WQC**

Dear Commissioner Heiple,

I am writing to encourage your support of the Section 401 Water Quality Certification Application for FirstLight's Turners Falls project (FERC No. P-1885) and Northfield Mountain Pumped Storage project (FERC No. P-2485).

I am a retired employee of FirstLight Power, a resident of Franklin County, and a former member of the Board of Directors of the Franklin County Chamber of Commerce. I was also proud to serve under Governor Patrick as the Executive Director of the Massachusetts Renewable Energy Trust (now MassCEC), and have worked on climate and environment issues professionally and as a volunteer for over 30 years. In all these roles, and as a proud member of my community, I wanted to make a few points in support of these projects.

Just to highlight a couple of areas that should argue in favor of FirstLight's application:

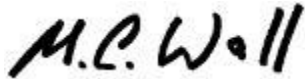
1. **Evidence-based decisionmaking:** Over 40 scientific studies have been completed by national experts for these projects over the last 12 years. Let's pay attention to the science.
2. **Robust stakeholder engagement:**  
FirstLight has invested a great deal of time and effort in listening to stakeholders and reaching agreement on many important issues.
  - Signatories to the Flows and Fish Passage Settlement Agreement were the Massachusetts Division of Fisheries and Wildlife, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and leading nature and conservation organizations, including The Nature Conservancy, American Whitewater, and Appalachian Mountain Club.



- Signatories to the Recreation Settlement Agreement include the local communities of Erving, Gill, Montague and Northfield, the National Park Service, the Massachusetts Department of Conservation and Recreation, American Whitewater, and more.

A final note: while it may not be a direct factor in the 401 WQC process, we should bear in mind that both Northfield Mountain and all of the Commonwealth's hydroelectric generators are an important part of helping the state to meet its clean energy goals. Our future air and water quality all depend on a speedy transition from fossil fuels. I hope that people in our area feel proud that these clean energy projects that we host in Franklin County are an important part of the transition to a carbon-free electric grid. We are so lucky as a region to have Northfield Mountain, ready to store excess wind and solar energy for when it's needed.

Thank you.

A handwritten signature in black ink that reads "M.C. Wall". The signature is written in a cursive, slightly slanted style.

Carter Wall



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**From:** Susan Worgaftik <[REDACTED]>  
**Sent:** Monday, June 3, 2024 9:28 AM  
**To:** dep.hydro@mass.gov  
**Subject:** FirstLight 401 WQC

**CAUTION:** This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Dear MassDEP Hydro Team:

Thank you for the efforts that you have made to involve the public in the relicensing process for the Northfield First Light facility and associated usage of the Connecticut River.

I and many of my neighbors have been concerned for many years about the impact that the Northfield Mountain hydro facility has had on the wildlife and the banks of the Connecticut River. The fish, especially the sturgeon, but others as well must pass the Northfield facility on their way to spawn. The power canal in Turners Falls does have the fish ladder, but when the fish reach Northfield, they are in great danger if they are caught in the Northfield process of bringing water to the holding facility for later use. The accommodations that First Light has offered in its FERC application have not been adequate to protect wildlife in this part of the river.

In addition, the very process of bringing water to the holding facility and then releasing it into the Connecticut River to create electricity is damaging to the banks in the path of the outflow. This, in turn, is damaging to wildlife once again and to the vegetation that hold the river on its path.

As the process of bringing the water to the holding facility often uses more energy than is made available when the water is released, I question the overall efficacy of the process.

Please limit or reject the request of First Light as it is written. It must be further modified to meet the criteria that was presented in your slide show.

Thank you for considering my comments.

Susan Worgaftik

[REDACTED]  
Greenfield, MA

[REDACTED]  
Amherst, MA

May 30, 2024

To Elizabeth Stefanik

I am writing in regard to the 401 Water Quality Certification for First Light's facilities. I live in Amherst, and frequently drive across the CT River bridge. I enjoy seeing the water when it is clear and aesthetically pleasing, rather than muddy and unpleasant.

Thank you for your consideration,

Rayna Zidenberg  
[REDACTED]



**From:** Sharin Alpert <[REDACTED]>  
**Sent:** Friday, May 24, 2024 7:45 AM  
**To:** dep.hydro@mass.gov  
**Subject:** Comments: FirstLight 401 WQC

**CAUTION:** This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Dear Friends at Mass. DEP:

The Northfield Mountain Pumped Storage (NMPS) violates the Clean Water Act.

The action of four huge Francis bi-directional turbines located in the center of a carved out mountain pumps the equivalent of 7 or 8 three story houses filled with river and aquatic life per second to a commodified hilltop reservoir on Northfield Mountain. To create the massive force required to pull the river 3 miles backwards and 850 ft uphill, First Light uses energy that it takes from the grid. This process kills countless numbers of fish, larvae, and other aquatic denizens. Of the 26 known fish species killed, including short nose sturgeon, only some are monitored (among them American shad and eels).

While First Light refers to the 20+ miles from the Turners Falls Dam to the Vernon Dam as the "lower pond", local ecologists refer to this area as the "dead river," due to the impact on the river ecosystem which relies on a downstream current to thrive. As we say, Living Rivers Flow Downstream. Huge damage is caused throughout the ecosystem as a result of the severe pulling and release. The action of the turbines causes erosion to the banks and the displacement of silt off the river bottom, impeding the river's natural functions.

When NMPS is "generating," redundant or reproduced energy is returned to the grid at a net loss of 34%. It takes more fossil and nuclear energy to operate the pumped storage than it gives back. The lost energy alone is enough to light up several towns. Then, when NMPS releases the water, it surges and adds silt and debris to the water, changing the temperature and penetration of sunlight and oxygen exchanges in the water. This erosion damages prime agricultural lands and covers sensitive Tribal gathering and spiritual sites.

In the final analysis NMPS *loses* 34% of the energy it took from the grid to operate the pumps, using fossil fuels. NMPS produces no net or virgin energy. Think of the number of houses and businesses that could run on all that wasted energy. This is not "green". What a terrible waste it would be to continue this practice for another 50 years.

First Light (FL) is making enormous profits which are shielded by being registered in Delaware. When required to report one year of profits to FERC, FL reported profits of \$158m for 2019. FL is also awarded forward capacity payments - large sums of money which are available to provide energy to the grid in times of peak emergency demand. How often and how much power is generated are unanswered questions: the public, which pays for this, is not allowed to know either when or for how



long FL is asked to be available for peak demand, nor how much the NMPS is actually used during these times. This economic abuse contributes to First Light's destruction of the Connecticut River.

During this drawn out (more than 5 years!) relicensing process, FirstLight has shown little initiative to truly do anything to improve the negative and life-costing impacts of its operations on the river. To the contrary, they have asked to be allowed to reserve more water back, which would increase their profit while further harming the river. Supposedly to spare a few larger fish from entrainment, they have proposed a net at the intake - which would not go into use for as much as 25 years. This is a clear example of their lack of commitment to protecting the health of the river. Many believe that the proposed net will not work, and that the proposed timeline is so long because they will need that much time to recoup the money it will cost.

This river-destroying operation is not clean energy and should not be advertised as such. It has been in violation of the Clean Water Act since it went online in 1972. It is time for truth and transparency from First Light, the regulating agencies, and the elected officials who are charged with serving the public. Until this dangerous and outdated pumped storage facility is decommissioned and river restoration is prioritized, we are at ever-higher risk of losing this important New England lifeline. Its loss would increase climate chaos by increasing the deadly, ongoing use of fossil fuels and nuclear power, while increasing the loss of endangered species.

Our state and federal governments continue to maintain policies which aim to meet the desire for "energy on demand"; policies which continue to be unsustainable today, as they have been for a long time. Our governments have failed to provide transparent and realistic policies with guidance and incentives toward energy reduction.

For all of these reasons, we request that MassDEP deny First Light's Water Quality Certificate. Our governments, public agencies, as well as First Light, have failed in their due diligence with regard to the growing climate emergency. The risks to the river, its ecosystem and ourselves have not honestly or transparently been evaluated and MassDEP must responsibly deny the relicensure of the Northfield Mountain Pumped Storage experiment.

Sincerely,

Sharin Alpert  
Buckland MA

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**From:** Jodi Rodar <[REDACTED]>  
**Sent:** Tuesday, May 21, 2024 10:02 AM  
**To:** dep.hydro@mass.gov  
**Subject:** Please Deny First Lights Water Quality Certificate

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

1. Hello,

I am writing with the deepest concern to ask that First Lights's Water Quality Certificate please be denied the Massachusetts Department Of Environmental Protection.

The following are the reasons I feel the certificate should be denied:

NMPS violates the Clean Water Act. The Connecticut River is used as the bottom reservoir for NMPS's daily operations (First Light calls the 20+miles from the Turners Falls Dam to the Vernon Dam the "lower pond") Local ecologists refer to this area as the "dead river" due to the impact on the river ecosystem which relies on a downstream current to thrive.

2. The action of 4 huge Francis bi-directional turbines located in the center of a carved out mountain pumps 7 to 8 three story houses filled with river and aquatic life per second to a commodified hilltop reservoir on Northfield Mountain. The massive force to pulls the river 3 miles backwards and 850 ft uphill using energy it takes from the grid. It kills countless numbers of fish, larvae and aquatic denizens in the process. Of the 26 known fish species only several are monitored (among them American shad and eels).

3. When NMPS is "generating", redundant or reproduced energy is returned to the grid at a net loss of 34%. It takes more fossil and nuclear energy to operate the pump storage than it gives back. The lost energy alone is enough to light up several towns.

4. Between the damage to the ecosystem from the severe pulling and release, causing erosion to the banks and the displacement of silt off the river bottom by the action of the turbines, the river is impeded in its natural functions. Living Rivers Flow Downstream!

5. When NMPS releases water, it surges and adds silt and debris to the water, changing the temperature and penetration of sunlight and oxygen exchanges in the water. This erosion damages prime agricultural lands and covers sensitive Tribal gathering and spiritual sites.
6. NMPS produces no net or virgin energy. In the final analysis NMPS loses 34% of the energy it took from the grid to operate the pumps, using fossil fuels. Think of the number of houses and businesses that could run on all that wasted energy. This is not green. Why would we do that for another 50 years?
7. FL is making enormous profits that have been shielded by registering it in Delaware. When required to report one year of profits to FERC, FL reported profits of \$158m for 2019. FL is also awarded forward capacity payments, which are large sums of money to be available to provide energy to the grid in times of peak emergency demand. The public, which pays for this, is not allowed to know when or for how long FL is being asked to be available for peak demand, nor how much the NMPS is actually used during these times, bringing into question the economic abuse of destroying the Connecticut River. How often and how much power is generated are unanswered questions.
8. During this drawn out, 5 yr plus relicensing process FirstLight has shown little initiative to truly do anything to improve the negative and life-costing impacts of its operations on the river. In fact they have asked to reserve more water back so they can profit more while the river is further harmed. Their proposal of an ill-fated net at the intake, which is not meant to go into use for as many as 25 years, supposedly to spare a few larger fish from entrainment, is a clear example of their lack of commitment to protecting the health of the river. Many knowledgeable people believe that the proposed net will not work and that the reason the net will take so long is that it will take that long to recoup the money it will cost.
9. We need truth and transparency from FL, the regulating agencies and the elected officials that are charged with serving the public. This river destroying operation is not clean energy and should not be advertised as such. Since it went online in 1972 it has been in violation of the Clean Water Act.
10. Until this treacherous outdated behemoth NMPS is decommissioned and river restoration is prioritized we are at heightened risk of losing this life line of New England, promoting loss of endangered species; short nose sturgeon for one, and contributing to climate chaos by the deadly hidden and ongoing use of fossil fuels and nuclear power.

Our state and federal governments continue to maintain policies which aim to meet the desire for “energy on demand”; policies which are as unsustainable today as they have been for a long time. Our governments have failed to provide transparent and realistic policies with guidance and incentives toward energy reduction.

For all of these reasons FL’s WQC should be denied by MassDEP. Our governments, public agencies and FL have failed in their due diligence with regard to the Climate Emergency. The risks to

the river, its ecosystem and ourselves have not honestly nor transparently been evaluated and MassDEP must responsibly deny the relicensure of the NMPS.

Thank you.