

Funding recommendations for 2023-2024 Trust Fund Monies

Projects recommended for funding:

Project Name	City/Town	Award Amount	Match
Adaptive Management and Maintenance of Little Mussachuck Creek Salt Marsh Restoration Project	Barrington	\$18,750	\$7,179
Removal of the Rodman Mill Dam, and Associated Site Improvements to Enhance Climate Resiliency on the Annaquatucket River in North Kingstown, Rhode Island	North Kingstown	\$49,000	\$11,075
Data Collection and Analysis to Support Fish Passage at the Pontiac Dam on the Pawtuxet River	Warwick	\$50,000	\$5,000
Breakheart Pond Dam Removal Feasibility Study	Exeter	\$38,798	\$39,000
Woonasquatucket River Streambank Stabilization – San Souci Drive	Providence	\$50,000	\$215,545
Underwater Video Collection in Support of Eelgrass Restoration	Coastal Waters	\$18,452	N/A
Total		\$277,799	\$225,000

Habitat Restoration Team Technical Advisory Committee:

Member

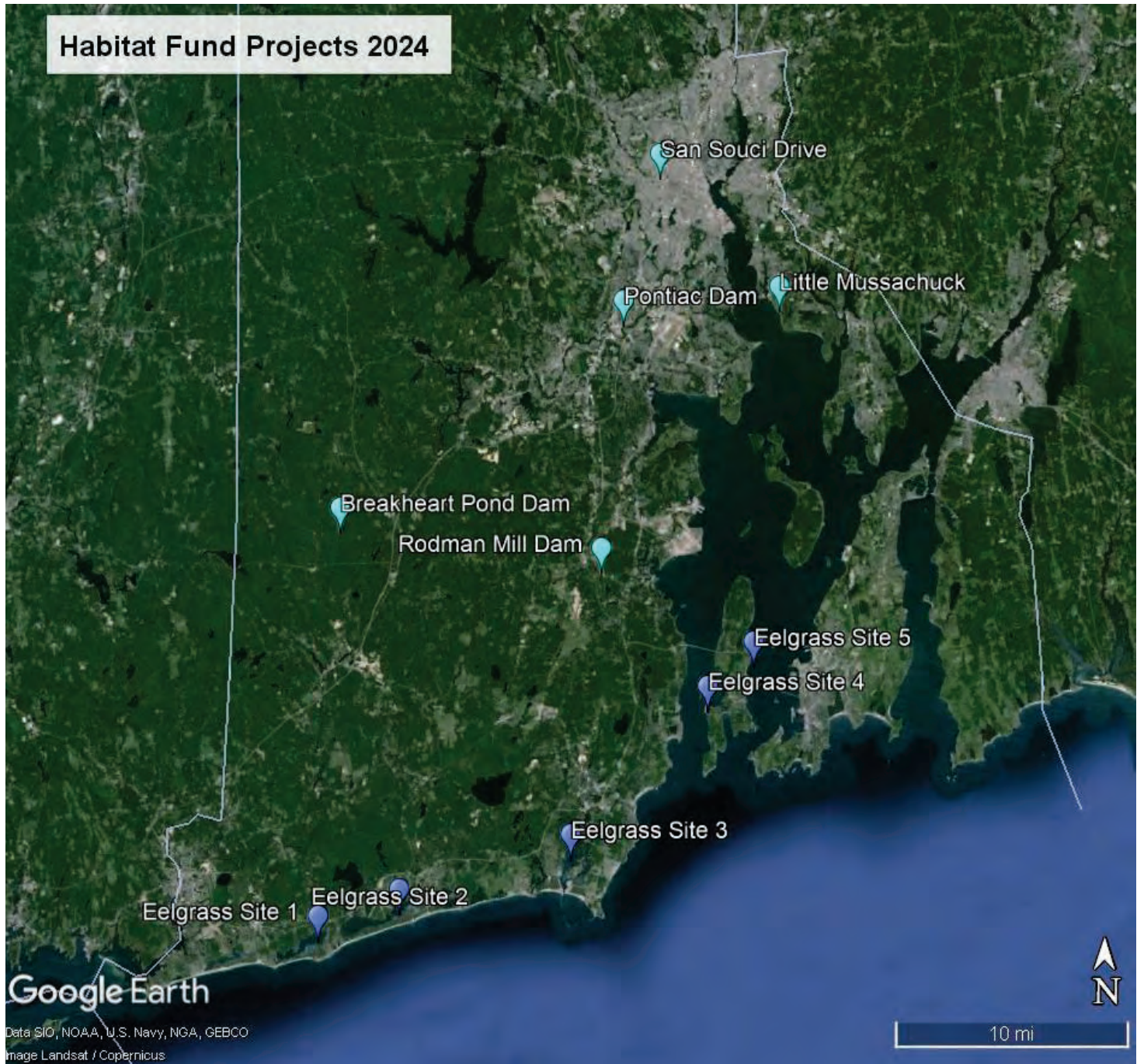
Tom Ardito
Caitlin Chaffee
Philip Edwards
Wenley Ferguson*
Alan Gettman
Emily Hall
Suzanne Paton
Danielle Perry
Margherita Pryor
Darcy Young

Affiliation

Restore America's Estuaries
Narragansett Bay National Estuarine Research Reserve
RI DEM Division of Fish and Wildlife
Save The Bay
RI DEM Mosquito Abatement Coordination Office
RI Coastal Resources Management Council
US Fish and Wildlife Service
National Oceanic and Atmospheric Administration
US Environmental Protection Agency
Narragansett Bay Estuary Program

**Member recused from full proposal review*

Habitat Fund Projects 2024



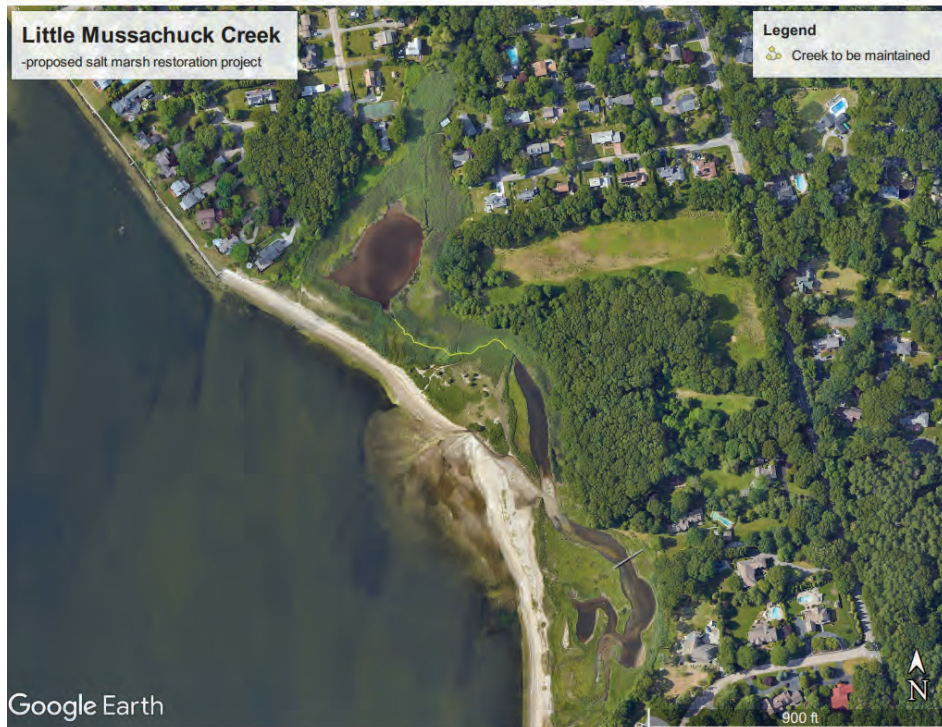
Rhode Island Coastal and Estuary Habitat Restoration Fund

Full Proposal Form 2023/2024

****for planning projects please use Full Proposal Form for Planning Projects**

I. PROJECT SUMMARY

1. **Project Title:** Adaptive Management and Maintenance of Little Mussachuck Creek Salt Marsh Restoration Project
2. **Project Location and coordinates (include map):** Little Mussachuck Creek, Barrington, RI



3. **Project type (Design, Construction or Other):** Other:
4. **If other, please specify:** Management, Maintenance and Monitoring
5. **Habitat type (River System, Salt Marsh, Seagrass, Shellfish Bed, other):** Salt Marsh
6. **If other, please specify:**
7. **Restoration technique (e.g. re-vegetation, tidal restoration, etc.):** Tidal hydrology restoration of the marsh platform using creeks and runnels
8. **Total acreage or miles(river systems) of habitat to be restored, or project area planning unit size:** 5 acres
9. **Project benefits:** Restoration of tidal hydrology of the marsh platform to enable revegetation, reduce subsidence, and restore marsh function

10. Project partners (*organizations providing financial or other support to the project*): Save The Bay, Town of Barrington

11. Is this is an ongoing project that has previously received funds from the CRMC Coastal and Estuarine Habitat Restoration Fund? No **If yes, year(s) funding was awarded:**

II. PROJECT MANAGER CONTACT INFORMATION

1. **Name:** Cindy Elder
2. **Organization:** Barrington Land Conservation Trust
3. **Address:** P.O. Box 324
4. **City:** Barrington 5. **State:** RI 6. **Zip:** 02806
7. **Phone:** 508-733-2443 8. **Email:** cindyelder@blct.org
9. **Property Owner(s):** Barrington Land Conservation Trust

Applicant must document ownership of project site or permission to perform all proposed restoration, maintenance, and monitoring activities (*include appropriate documentation*).

III. BUDGET SUMMARY

(List individuals or organizations providing financial or in-kind support to the project under Project Partners)

Amount Requested from Trust Fund		\$18,750
Matching Funds	Project Partner(s)	Amount of Match
In-kind volunteer support	Barrington Land Conservation Trust	\$2,544
In-kind staff support	RIDEM Mosquito Abatement Coordinator	\$700
In-kind volunteer support and in-kind overhead	Save The Bay	\$3,935
TOTAL PROJECT COST		\$25,929

IV. PROPOSAL NARRATIVE (five pages maximum)

1. Justification and Purpose

Describe the human impacts and previous restoration activities at the proposed project site. If multiple sites, please describe the impacts and previous restoration activities at each). Briefly describe the proposed project, its restoration goals, long-term and short-term outcomes.

Little Mussachuck Creek marsh is a highly dynamic tidal creek, salt marsh, and brackish marsh on the east side of the Providence River in Barrington. The western edge of the marsh is bounded by a narrow coastal barrier spit, separating the marsh from Narragansett Bay. The barrier/wetland complex abuts a glacial headland to the east and a brackish and freshwater wetland to the north fed by a small stream. The northern portion of the salt marsh was connected to Narragansett Bay by a tidal inlet, which has since been closed off by longshore deposition in the early 1990s. Once the inlet closed, brackish water became impounded on the marsh platform, the salt marsh vegetation died off, and the marsh platform subsided and converted to open water. The brackish conditions led to the colonization by monotypic stands of the invasive plant *Phragmites australis*, which out-competes native salt marsh vegetation in lower salinities. In 1998, the Barrington Land Conservation Trust (BLCT), in partnership with Save The Bay (STB), conducted a salt marsh restoration project to restore the hydrology of the marsh by connecting the northern marsh with Little Mussachuck Creek to the south. A new tidal creek was excavated by hand to connect the pond to the northern terminus of the Mussachuck Creek. The creek was designed to allow fresh water to drain out of the pond and to convey tidal inputs into the marsh and the pond during spring high tides. In 2004, Save The Bay, the Barrington Land Trust, and a corps of volunteers increased the width of the creek dug in 1998 and cleared *Phragmites* out of the lower section of the creek.

From 2004 to 2012, the creek was self-maintaining and remained open. Between 2012 and 2016, the creek became filled with *Phragmites*, blocking freshwater flow and allowing the *Phragmites* to expand in coverage. During this period, the outlet of Little Mussachuck Creek had moved northward over 380 feet. As the outlet moved northward, the tidal drainage at low tide was reduced due to sedimentation in the creek. The creek's muted tidal drainage could have contributed to the hand-dug creek filling in with *Phragmites*. Between 2017 and 2018, the outlet breached a narrow section of the barrier beach, causing further sedimentation of the creek and a reduction in drainage of the creek and salt marsh at low tide. The flood tide delta has begun to vegetate with salt marsh grasses. Stagnant conditions were documented in the summer of 2023 in the southern part of Little Mussachuck Creek, which has restricted drainage.

The proposed restoration project is to maintain the tidal creek that connects the restricted northern brackish marsh with Little Mussachuck Creek, which has filled in with *Phragmites*. The short-term goal of this restoration project is to improve marsh health, reduce the height and vigor of the invasive plant, *Phragmites australis*, and prevent further marsh platform subsidence by restoring connectivity between the restricted brackish marsh and Little Mussachuck Creek and draining impounded brackish water off the marsh platform. Draining the shallow impounded water will also reduce mosquito breeding habitat. The long-term goal is to enhance saltmarsh sparrow nesting habitat and to provide suitable conditions for marsh migration in areas currently dominated by *Phragmites* or impounded water.

2. Project Activities, Schedule and Work Plan

Describe the planned on-the-ground project activities, and explain how each activity will help to restore ecosystem functions. List specific project activities and when they will occur (month and year). Indicate when annual and final project reports will be submitted.

BLCT and STB will develop state and federal permits to maintain the hand-dug creek using RIDEM's low-ground pressure excavator and to cut and mulch *Phragmites*. Project implementation and pre and post-restoration monitoring will be conducted by Save The Bay. Once the creek is re-established, the partners will develop a maintenance plan and BLCT's stewardship volunteers will conduct regular maintenance of the creek and remove wrack and debris. Additional assessment of Little Mussachuck's outlet will be conducted in coordination with CRMC's Coastal Geologist and the abutting property owner to determine if maintenance of the outlet is warranted. Since the site is dynamic, any excavation at the outlet could fill in quickly and require regular maintenance.

Timeline:

Summer 2024: Finalize restoration plan and review with CRMC's Coastal Geologist.

Late Summer-Fall 2024: Conduct pre-restoration monitoring.

Fall 2024: Prepare and submit the state and federal permit applications.

Spring or Fall 2025: Implement creek maintenance and *Phragmites* mulching once permits are received.

Late summer 2026: Conduct first year of post-restoration monitoring.

Winter – Spring 2026: Conduct regular maintenance of creeks and submit final CEHRTF report.

Late summer 2027: Conduct 2nd year of post-restoration monitoring.

3. Minimization of Adverse Impacts

What are the potential impacts resulting from project activities (e.g. the disturbance of sensitive species by construction activities), and how will these impacts be minimized (e.g. scheduling construction to avoid disturbance of sensitive species).

Work in the salt marsh will occur outside the salt marsh bird nesting season to minimize disturbance to salt marsh species such as the saltmarsh sparrow and the willet that nest in the high marsh. STB will conduct vegetation and water level monitoring at the end of the growing season between August and September, and excavation and maintenance of the creeks and runnels will occur between September and May.

4. Public Support

Demonstrate public support for the project by providing evidence of communication with adjacent landowners, community members and other stakeholders. Describe planned or completed community / stakeholder education and outreach efforts.

The BLCT's Executive Director, Chair of the Stewardship Committee, and the Sanctuary Steward will recruit members of the BLCT and community volunteers to participate in the restoration implementation and long-term stewardship of the marsh. STB will also help recruit volunteers from their volunteer network to assist with volunteering. STB is also developing a salt marsh steward program to train interested volunteers in assessing salt marshes post-storm events, clearing debris runnels, and assisting with the maintenance of runnels.

5. Economic and Educational Benefits

How will the proposed project provide direct economic and/or educational benefits to a community and/or the state?

The economic benefits of restoring salt marsh hydrology include improved habitat for nekton that live in salt marshes and are forage fish for recreationally and commercially valuable species such as striped bass and bluefish. Other economic benefits include improved recreational opportunities for the public, such as fishing and birdwatching. Healthy marshes can also provide some level of protection for infrastructure

during coastal storms. Restoration of tidal hydrology will reduce mosquito breeding habitat and future mosquito breeding abatement costs.

There are many educational opportunities associated with this restoration project. The BLCT will highlight the restoration project through our monthly enews, printed annual report, press release to the *Barrington Times*, guided tours of the restoration area, volunteer stewardship and learning experiences with our Student Stewardship Team and Tuesday Trails Team, and our Land Trust Learning Series at the Barrington Public Library. STB will also highlight this restoration project through their monthly Currents email, Tides Magazine, and social media.

The BLCT will share information about the restoration project with other land trusts through the RI Land Trust Council. STB will continue to transfer lessons learned from this salt marsh restoration project and other salt marsh restoration projects throughout the region that have restored tidal hydrology of the marsh platform using shallow drainage features with restoration practitioners throughout the region through interagency SMART (Salt Marsh Adaptation and Resilience Team).

6. Climate Change and Coastal Resiliency

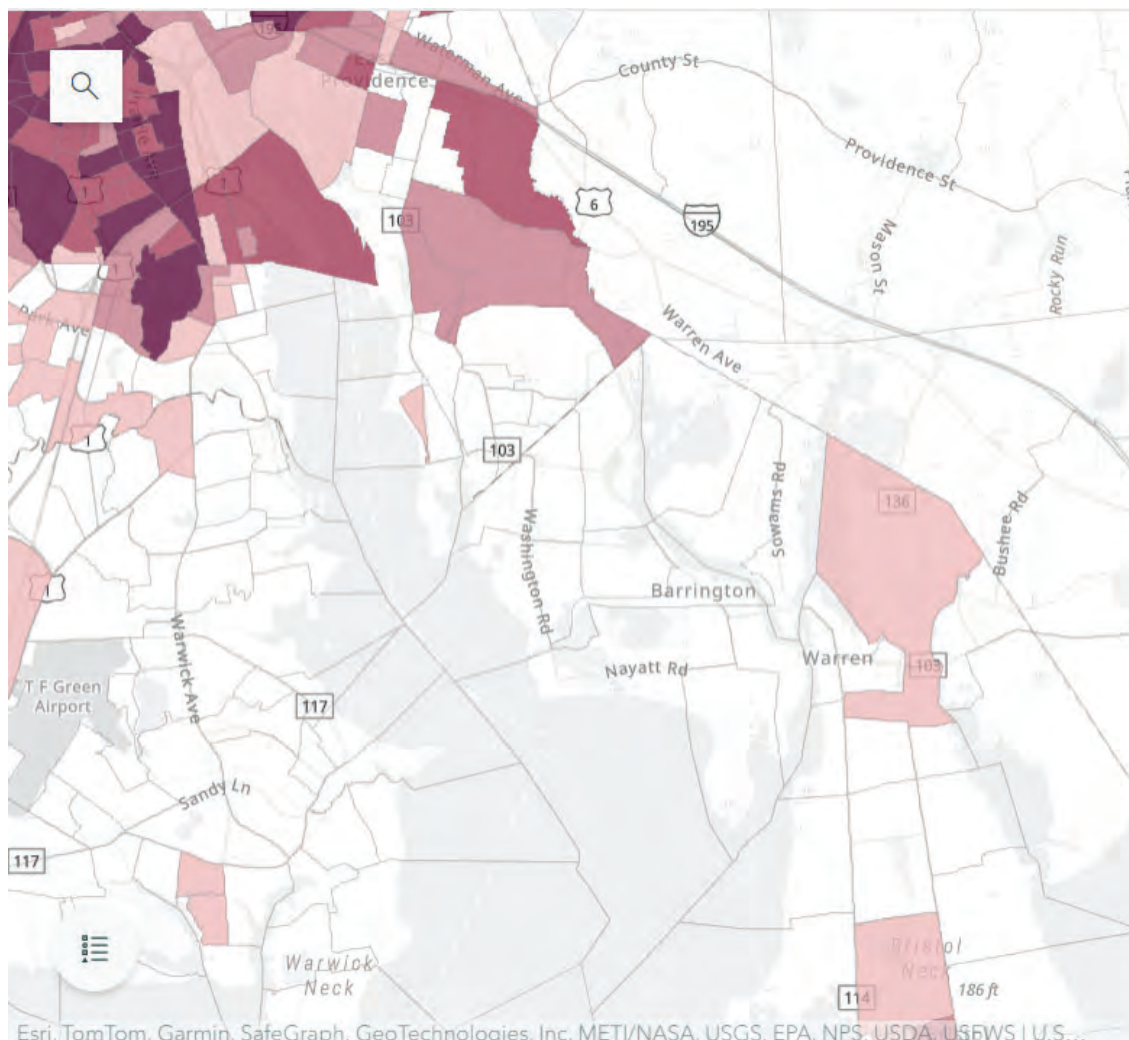
How have the present and future impacts of climate change been considered during the project planning and design phases? What impact will the project have on resilience of coastal or estuarine habitat to climate change?

Improving the health and function of salt marshes by providing shallow drainage of expanding impounded water areas will allow plants to recolonize the marsh, stabilize the peat and unconsolidated sediments, and increase the ability of the salt marsh to keep pace with accelerated sea level rise. Little Mussachuck Creek has area for marsh migration into the wetlands associated with the unnamed freshwater stream that flows into the marsh. Addressing the impounded water in the salt marsh and along the upper edge of the marsh will reduce the height and vigor of *Phragmites australis* and will help facilitate marsh migration as sea level rise accelerates. The loss of vegetated marsh threatens the ecological health of salt marshes and the functions and values they provide for fish and wildlife habitat, carbon sequestration, nutrient cycling, and storm buffering.

7. Environmental Justice

Will the proposed project take place within or otherwise benefit environmental justice “priority areas” as defined by the Narragansett Bay Estuary Program’s analysis of [Environmental Justice in the Narragansett Bay Region](#)? Does the proposed project incorporate Environmental Justice concerns as defined by the US EPA’s Guidance on [Environmental Justice and Equitable Development](#)?

Neither the marsh nor the watershed that drains into the marsh is within an environmental justice priority area. The BLCT provides educational programming for residents throughout the region, including neighboring East Providence and Warren, which are within Environmental Justice priority areas. The Barrington Land Conservation Trust seeks to work with members of the community in the planning and implementation phases of the project.



8. Planning Consistency and Restoration Priority

Is the proposed project consistent with the goals of a local, state or regional planning initiative? Please specify initiative and explain (see [CRMC website](#) for guidance). Does the proposed project involve a state, regional or federal priority habitat restoration need or special consideration? Please specify and explain (see [CRMC website](#) for guidance).

Rhode Island's Coastal Wetland Restoration Strategy (2018) describes the need for salt marsh restoration due to past stressors and accelerated sea level rise. It highlights restoration techniques including drainage enhancement through runnels and tidal hydrology restoration. The State's Wildlife Action Plan (2015) finds salt marshes as highly vulnerable to climate change, and the saltmarsh sparrow is listed as a Species of Greatest Conservation Need.

USFWS's Northeast region has identified the conservation of the saltmarsh sparrow and their habitat as a regional priority, including the most recent strategic planning document for the Coastal Program (Northeast Region Strategic Plan, 2017-2021). This plan specifically includes the intent to 'Facilitate projects to restore and enhance salt marsh, particularly high marsh habitat, to improve habitat quality for Saltmarsh Sparrow and other priority species. The Atlantic Coast Joint Venture (ACJV) recently published a [Salt Marsh Bird Conservation Plan](#) (2019) in which they identify saltmarsh sparrow among the highest priority species for conservation. The plan identifies as a priority the implementation of promising management actions, including 1) the creation of runnels to improve drainage of ponded areas, 2) improving drainage by remediating ditches, trunks, and dikes to restore more natural hydrology, and 3) the creation of micro-

topography/mounds to provide nesting areas less prone to flooding. The ACJV Conservation Plan identifies evaluating these restoration techniques as a priority science needed to advance conservation for this species.

9. Species of Concern

Will the project result in benefits to wildlife species listed as federally or state endangered, threatened, or species of concern within Rhode Island? Please specify which species will benefit and how. For a list of species, see the Rhode Island National Heritage Program's listing of animals at: http://www.rinhs.org/wp-content/uploads/ri_rare_animals_2006.pdf or a listing of plants at: http://www.rinhs.org/wp-content/uploads/ri_rare_plants_2007.pdf

Tidal marsh specialists such as the saltmarsh sparrow, *Ammodramus caudacutus*, and other bird species that nest on the marsh, such as the willet, *Tringa semipalmata*, rely on the high marsh for nesting areas (i.e., *Spartina patens*, *Juncus gerardii*). With increased inundation of the marsh platform and loss of high marsh species, the salt marsh sparrow population has significantly declined over an 18-year period, according to the SHARP (Salt Marsh Habitat and Avian Research Program). The Saltmarsh Sparrow is listed as globally Vulnerable by the International Union for Conservation of Nature and is being considered for listing as federally endangered by the USFWS. Without healthy plants on the marsh platform to trap sediment and increase marsh surface elevation through the accumulation of belowground biomass, the marsh's surface subsides and converts to shallow standing water. Since the impounded water areas become warm and hypersaline during summer, they do not support fish species that feed on mosquito larvae. The loss of vegetated marsh poses a profound threat to the ecological health of salt marshes and the functions and values that they provide for fish and wildlife habitat, carbon sequestration, nutrient cycling, and storm buffering.

10. Permitting

List any federal, state or local permits required to complete the project and the permit application status for each.

Save The Bay will prepare the following permits on behalf of the Barrington Land Conservation Trust in consultation with RIDEM's Mosquito Abatement Coordinator:

- Coastal Resources Management Council Assent
- Rhode Island Department of Environmental Management Water Quality Certificate
- General Permit from the Army Corps of Engineers (ACOE). During the permitting process through the ACOE, federal agencies, including EPA, USFWS, and NOAA, are consulted to ensure that the tidal hydrology restoration does not affect endangered species or essential fish habitat.

11. Capacity of Lead Organization (attach additional materials if necessary)

Demonstrate the capacity of the lead and/or partner organizations to successfully complete the proposed project by providing any or all of the following: a) a description of the organization(s) b) resume(s) or summary of qualifications of involved personnel c) evidence of successfully completed habitat restoration or conservation projects.

The Barrington Land Conservation Trust combines the resources of approximately 100 active volunteers, the oversight of BLCT's Chair of Stewardship Victor Lerish, and the organizational abilities of Executive Director Cindy Elder. Cindy was hired as BLCT's first executive director in 2022. She has a 30-year history of nonprofit leadership roles and is well-versed in managing a large volunteer force.

Save The Bay staff, Wenley Ferguson, Director of Habitat Restoration, Ben Gaspar, and Ian O'Hara, Restoration Ecologists, will conduct the restoration activities in coordination with the Barrington Land

Conservation Trust. Wenley has conducted tidal hydrology restoration projects since 1999 and has overseen over twenty tidal hydrology restoration projects using runnels and selective ditch maintenance since 2013. She has experience designing projects, developing permit applications, overseeing implementation, and conducting pre- and post-restoration monitoring. Wenley has worked at STB since 1990 and on watershed-wide habitat restoration projects since 1996. Ben has worked at Save The Bay for over two years and has been a Field Technician for USFWS for nine years. Ben has experience implementing and monitoring salt restoration projects. Ben and Wenley have collaborated on tidal hydrology restoration projects over the past ten years while Ben was at USFWS. Ian O'Hara will assist with the restoration activities and mapping of stormwater inputs in the watershed.

V. SUSTAINABILITY (one page maximum)

1. Maintenance

What is the estimated "lifespan" of each planned restoration activity? What are the anticipated short-term and long-term (beyond the funding period) operation and maintenance requirements of the project? Specify who will be responsible for funding and carrying out each O & M activity. Indicate when and with what frequency activities will occur.

Tidal hydrology restoration through the use of runnels and selective ditch maintenance requires ongoing maintenance of the drainage features. The Barrington Land Conservation Trust's Chair of Stewardship and Executive Director will work with Save The Bay to train Land Trust volunteers to assess how the drainage features are functioning and to maintain them if they are clogged by sediment, wrack, or vegetation. STB will request 10-year permits from the permitting agencies since these projects require multiple years of phased runnel installation and maintenance.

2. External Factors

Identify existing external (off-site) factors that could reduce the chances of achieving the project goals (e.g. stormwater inputs to the site from the surrounding drainage area). Explain how these external factors will be addressed. Describe any additional measures taken to help ensure long-term success of the project (e.g. installation of stormwater management practices or securing of conservation easements). What are the likely future effects of climate change and future sea level rise on the proposed project and how will these be addressed?

The salt marsh is bordered by protected land to the east and residential development along the tributary that flows into the marsh to the northeast. Stormwater runoff from the surrounding watershed could add excess nutrients and freshwater to the marsh, creating conditions more suitable for *Phragmites australis*. STB has worked with the Town of Barrington on stormwater management in other coastal watersheds and will identify and assess potential stormwater infiltration opportunities in the Little Mussachuck Creek watershed that could be implemented to reduce the volume of untreated runoff from discharging directly into the marsh.

The barrier spit on the western side of the marsh has experienced significant erosion over the past 25 years since the first restoration project occurred in 1998. As the barrier spit moves inland, the outlet to the creek has shifted northward. Sand from the spit has blocked the outlet and muted the tidal drainage. As the barrier spit continues to move inland, the drainage of the marsh will have to be evaluated after coastal storms to ensure adequate drainage of the marsh platform.

VI. EVALUATING PROJECT SUCCESS (one page maximum)

1. Performance Measures

How will the success of the project be measured in relation to the restoration goals set forth in this proposal? List performance measures and how they will be recorded. Include a detailed monitoring plan; if applicable (see below).

The project's success will be measured by monitoring the vegetation response and the change in water level on the marsh surface, as described in the monitoring plan below. Additional metrics will include number of land trust members and community volunteers involved in the project implementation and maintenance and press or social media about the restoration efforts. The time it will take for the tidal restoration efforts to restore functional salt marsh habitat will depend upon the existing conditions of the marsh.

2. Monitoring Plan

Describe any planned or completed pre- and post-project monitoring activities. For each monitoring activity list the frequency and month/year of start and end date and the parameters measured. List the entity or entities responsible for funding and carrying out each monitoring activity, and describe how results will be made available to CRMC and the public. If using an established monitoring protocol, please provide references (see CRMC website for information on established monitoring protocols).

Monitoring transects will be established at Little Mussachuck Creek salt marsh restoration to document changes to vegetation communities and water levels over time. Monitoring will be conducted pre- and post-restoration. STB uses a line point intercept method to monitor vegetation and conducts water level monitoring along each point of the transect as well. STB will conduct tidal marsh bird monitoring to determine if saltmarsh sparrows are present during the breeding season pre-restoration and post-restoration. In coordination with the Land Trust, STB will conduct three years of pre and post-restoration monitoring during this project. Additionally, photo stations will be established at the salt marsh and BLCT's Sanctuary Steward will take photos at least annually at the photo stations to assess vegetation response and water level. The presence and absence of mosquito larvae will be assessed pre- and post-restoration. Adaptive management techniques will be implemented during subsequent years in direct response to the monitoring data.

References:

Adamowicz, S.C., G. Wilson, D.M. Burdick, W. Ferguson, and R. Hopping. 2020. Farmers in the marsh: Lessons from history and case studies for the future. *Wetland Science & Practice* 183–195.

Besterman, A., R. Jakuba, W. Ferguson, D. Brennan, Costa, J., L. Deegan. 2021. Buying Time with Runnels: a Climate Adaptation Tool for Salt Marshes. *Estuaries and Coasts*. <https://doi.org/10.1007/s12237-021-01028-8>

Hartley, M.J. and A.J. Weldon, eds. 2020. Atlantic Coast Joint Venture's Saltmarsh Sparrow Conservation Plan.

Watson, E., W. Ferguson, L. Champlin, J. White, N. Ernst, H. Sylla, B. Wilburn, C. Wigand. 2022. Runnels Mitigate Marsh Drowning in Micro-Tidal Marsh. *Frontiers in Environmental Science*. <https://www.frontiersin.org/articles/10.3389/fenvs.2022.987246/full>

PROJECT BUDGET TEMPLATE

BUDGET CATEGORY	CRMC REQUEST	MATCH	MATCH PENDING OR SECURED? (select one)	SOURCE OF MATCH	TOTAL
Project Management: Barrington Land Conservation Trust	\$700				\$700
Project Design, Permitting, Implementation and Monitoring: Save The Bay staff time, mileage, and overhead rate of 10%	\$14,100				\$14,100
Project Implementation: Low-ground pressure excavator use	\$3,000				\$3,000
Project Implementation: Excavator transportation	\$950				\$950
Project Design/Implementation: RIDEM Mosquito Abatement Coordinator		\$700		RIDEM Mosquito Abatement Program	\$700
Project Implementation and Maintenance: Barrington Land Conservation Trust volunteers		\$2,544		Barrington Land Conservation Trust volunteers	\$2,544
Project Implementation and Monitoring: Save The Bay interns		\$1,240		Save The Bay Interns	\$1,240
Save The Bay overhead		\$2,695		21% overhead rate of Save The Bay costs	\$2,678
TOTAL	\$18,750	\$7,179		TOTAL PROJECT COST	\$25,929

VII. BUDGET NARRATIVE (one page maximum)

Please provide a description and justification for each line item included in the project budget form (e.g. for personnel costs, provide hourly and fringe rates, for travel specify rate and estimated number of miles). Please specify any match requirements for each source of funding. Please include costs associated with required annual and final reports to CRMC. Be sure to detail how CRMC funds will be used.

The Barrington Land Conservation Trust's Executive Director will spend 20 hours on project coordination, volunteer recruitment, and report writing at \$35 per hour.

Save The Bay Staff, Mileage & Overhead: Wenley Ferguson, STB's Director of Restoration, will spend 49 hours at \$53.21/hour; Ben Gaspar, Restoration Ecologist, will spend 168 hours at 48.00/hour on the implementation and monitoring phase of the project; Ian O'Hara, Restoration Ecologist will spend 40 hours at \$43.19 per hour assisting with restoration implementation and adaptive management. Mileage to Little Mussachuck Creek will be 650 miles at \$0.665/mile for a total of \$432. Save The Bay's overhead rate is 31%. The overhead rate of 10% has been applied to staff time and mileage as a project expense (\$1,283), and the remaining 21% has been applied to match (\$2,695). Total Save The Bay expenses will be \$14,100.

RIDEM Mosquito Abatement Program's excavator: RIDEM's low-ground pressure excavator will be rented for three days at \$1,000 per day.

Excavator Transportation: A hired contractor will provide a truck and trailer to transport the excavator to and from URI's East Farm, where RIDEM's Mosquito Abatement Program is located, to Barrington for \$950.

RIDEM Mosquito Abatement Coordinator (10 hours): Al Gettman, RIDEM's Mosquito Abatement Coordinator, will dedicate 10 hours at \$70/hour for mosquito breeding assessment, design review, and construction coordination associated with the use of the low ground pressure excavator.

Barrington Land Conservation Trust Sanctuary Steward and volunteers will spend 80 hours on tidal hydrology restoration, maintenance, and photo station monitoring valued at the federal volunteer rate of \$31.80 for a total of \$2,544.

Save The Bay interns will spend 38 hours on restoration implementation and monitoring, valued at the federal volunteer rate of \$31.80 for a total of \$1,240.

IX. ADDITIONAL MATERIALS

Please include the following with your application:

☒ Site and Locus Maps

☒ Ground-level photographs of existing site conditions

☒ Aerial photographs, if available

☐ Preliminary design drawings, maps or engineering plans, if available

☐ Pertinent physical, ecological, biological, and cultural / historical survey data

☒ Letters of support

AUTHORIZED SIGNATURE

AUTHORIZED AGENT OF LEAD ORGANIZATION

Cindy Elder

3.30.24

Signature

Date

Return your completed proposal by 4:00 p.m. on **April 1, 2024** to:

Caitlin Chaffee
NBNERR
RI Dept. of Environmental Management
235 Promenade Street
Providence, RI 02908

caitlin.chaffee@dem.ri.gov

Applicants are required to submit one (1) signed hard copy of the proposal form and one (1) electronic copy in Adobe PDF format. **Please submit electronic copy as a **SINGLE PDF FILE** containing all application materials.**

Contact Caitlin Chaffee at **401-222-4700 xt. 277-4417** with any questions.





Town of Barrington

TOWN MANAGER

Barrington Town Hall | 283 County Road | Barrington, RI 02806

To: Caitlin Chafee, CRMC Rhode Island Coastal and Estuary Habitat Restoration Fund
From: Philip Hervey, Town Manager, Town of Barrington
Re: Adaptive Management and Maintenance of Little Mussachuck Creek Salt Marsh Restoration Project
Date: March 25, 2024

We are writing in support of the application from the Barrington Land Conservation Trust and their partner, Save the Bay, for the proposed restoration of fragile salt marsh at Little Mussachuck Creek. We are very confident in this partnership to develop and implement a solution that will improve the salt marsh health, reduce the proliferation of *phragmites* and prevent further salt marsh degradation.

The Land Trust has been an active partner with the Town of Barrington on conservation for many years. Their volunteers steward three major town preserves in addition to caring for 300 acres of land under its ownership. The Land Trust engages the community in active stewardship and learning experiences, with adult and student stewardship teams and a Learning Series that features experts in a variety of environmental topics, including the challenges facing our salt marshes. The Town is also collaborating with the Land Trust in the installation of a Resilience Garden at Barrington Government Center, funded by the Eastern RI Conservation District.

Save the Bay has a long history of providing solutions to Barrington's coastal areas. Save the Bay was instrumental in efforts to begin the restoration of Allin's Cove in the 1990s. Save the Bay's Wenley Ferguson has been focused on the challenges at Little Mussachuck Creek over the last two decades and is the most knowledgeable person to tackle this task.

We encourage you to fund Barrington Community Land Trust's request for grant support, as this investment will result in improvements to the Little Mussachuck area for years to come.

Sincerely,

Philip Hervey
Town Manager





Audubon Society of Rhode Island

To: Caitlin Chafee, CRMC Rhode Island Coastal and Estuary Habitat Restoration Fund

From: Jeffrey C. Hall, Executive Director, Audubon Society of Rhode Island

Re: Adaptive Management and Maintenance of
Little Mussachuck Creek Salt Marsh Restoration Project

Date: March 18, 2024

We are writing to support the application for a restoration project at Little Mussachuck Creek being submitted by the Barrington Land Conservation Trust and its partner Save the Bay. This partnership can develop and implement a solution that will improve the salt marsh's health, reduce the proliferation of phragmites, and prevent further degradation.

The Barrington Land Conservation Trust is a long-time partner of the Audubon Society of Rhode Island. We work closely with them on properties where we maintain an easement, like the PIC-WIL Nature Preserve, which abuts Little Mussachuck Creek. They have responded to our recommendations and have worked collaboratively to make their conservation properties a safe and welcoming habitat for breeding and migratory birds. On the beach at Little Mussachuck Creek, the Land Trust recently installed 60 gourd birdhouses for Purple Martins, which were fully occupied last season.

Save the Bay is focused on the restoration and preservation of our coastal resources. Their expertise and resources make them an invaluable partner in this project. We have the utmost confidence in Save the Bay's ability to bring this project successfully to fruition.

I wholeheartedly encourage the funding of the Barrington Community Land Trust's request to support the restoration efforts at Little Mussachuck Creek. We look forward to seeing the habitat change as the project unfolds.

Thank you for considering this important project.

Connecting People With Nature

12 Sanderson Road, Smithfield, Rhode Island 02917 • (401) 949-5454 • www.asri.org



10 Davol Square, Suite 100
Providence, RI 02903
401-212-0832

March 20, 2024

To: Caitlin Chafee, CRMC Rhode Island Coastal and Estuary Habitat Restoration Fund
From: Kate Sayles, Executive Director, Rhode Island Land Trust Council

Re: Adaptive Management and Maintenance of Little Mussachuck Creek Salt Marsh Restoration Project

Dear Caitlin,

The Rhode Island Land Trust Council (the Council) is pleased to offer our support for the application from the Barrington Land Conservation Trust and their partner, Save the Bay, for an important restoration project at Little Mussachuck Creek. We have faith in this partnership to develop and implement a solution that will improve the salt marsh health, reduce the proliferation of *Phragmites* and prevent further degradation of the salt marsh.

The Rhode Island Land Trust Council (Council) is a coalition of over 50 land trusts – mostly all-volunteer, community-based organizations that protect and steward Rhode Island's open spaces, farms, forestland, historic sites, and natural areas for the benefit of all Rhode Islanders. The lands that we conserve protect wildlife habitat and drinking water supplies, and provide critical outdoor spaces for public recreation. The Barrington Land Conservation Trust is an active member of the Council and demonstrates the ability of volunteer-powered organizations to accomplish great things on a limited budget. They manage more than 300 acres of land, maintain a volunteer force of approximately 120 adults and youth, and work to educate the public about the challenges facing our natural resources.

Their partner, Save the Bay, brings a depth of knowledge to the project based on decades of experience tackling the challenges of our coastal areas. Their expertise and resources make them an invaluable partner in this project. We have the utmost confidence in Save the Bay's ability to bring this project successfully to fruition.

We encourage you to fund Barrington Community Land Trust's request for support in restoration efforts at Little Mussachuck Creek, and would be happy to answer any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Kate Sayles", written over a light blue rectangular background.

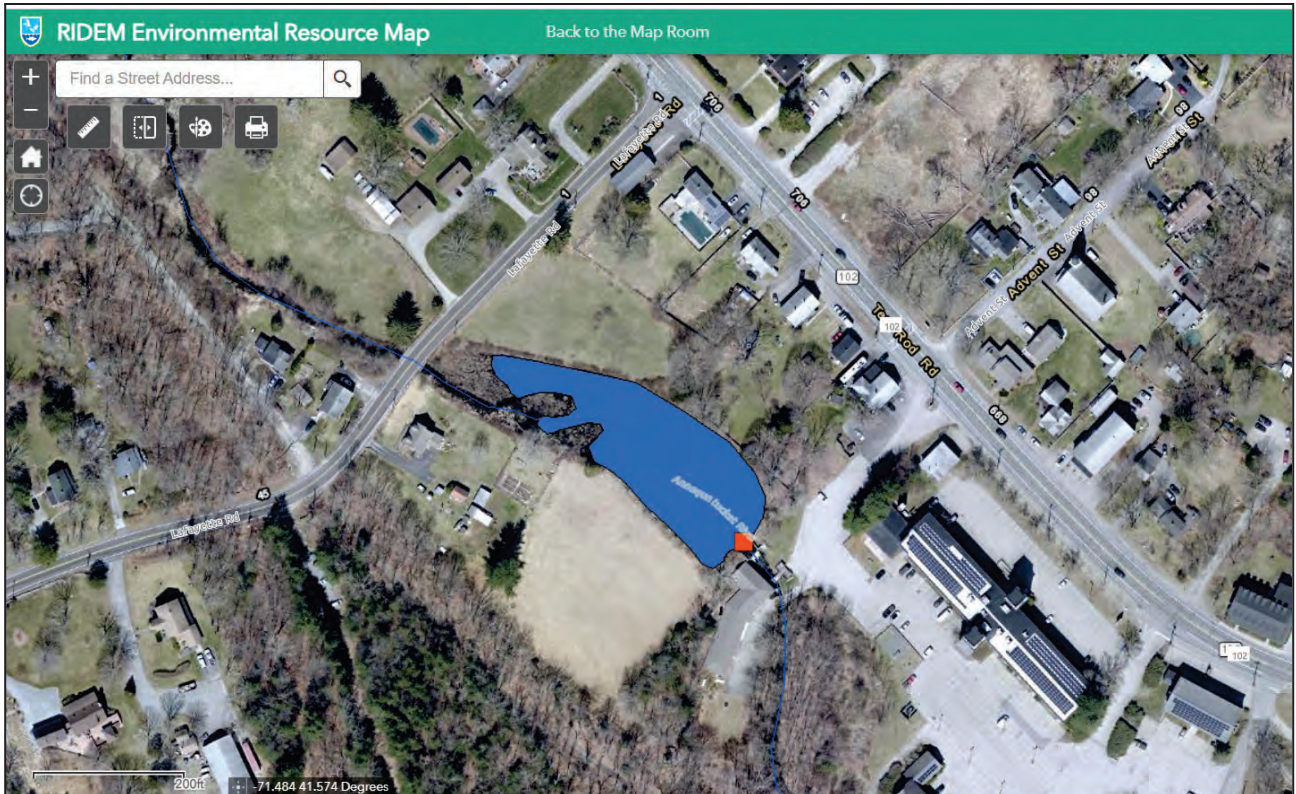
Kate Sayles, Director

Full Proposal Form 2023/2024

****for planning projects please use Full Proposal Form for Planning Projects**

I. PROJECT SUMMARY

1. **Project Title:** Removal of the Rodman Mill Dam, and Associated Site Improvements to Enhance Climate Resiliency on the Annaquatucket River in North Kingstown, Rhode Island
2. **Project Location and coordinates (include map):** The Rodman Mill Dam is located west of the Lafayette Mill Complex located at 650 Ten Rod Road in North Kingstown, Rhode Island.



3. **Project type (Design, Construction or Other):** Planning, Feasibility Study
4. **If other, please specify:** Not applicable
5. **Habitat type (River System, Salt Marsh, Seagrass, Shellfish Bed, other):** River System
6. **If other, please specify:** Not applicable
7. **Restoration technique (e.g. re-vegetation, tidal restoration, etc.):** Dam Removal
8. **Total acreage or miles(river systems) of habitat to be restored, or project area planning unit size:** Removal of the dam would restore a 1 acre millpond to a riverine system, and open up approximately 2.7 miles of stream habitat for fish passage.

IV. PROPOSAL NARRATIVE (five pages maximum)

1. Justification and Purpose

Describe the human impacts and previous restoration activities at the proposed project site. If multiple sites, please describe the impacts and previous restoration activities at each). Briefly describe the proposed project, its restoration goals, long-term and short-term outcomes.

Save The Bay seeks to reconnect anadromous fish habitat to the upper Annaquatucket River in North Kingstown, Rhode Island. The section of river proposed for restoration was dammed and channelized over 150 years ago when the Rodman Mill Dam was built to support mill operations at the Rodman Mill Complex that processed cotton and wool from the 1840s to mid-1900s. The proposed anadromous restoration will be accomplished by removing the Rodman Mill Dam and restoring the artificially straightened channel downstream of the dam. The dam removal will restore fish passage to 2.7 miles (approximately 44%) of the upper Annaquatucket River. This project will be a model of a comprehensive site approach at a mill site, balancing the current uses of the site with current regional and state conservation goals and objectives. There are thousands of mills across New England, and this project approach will serve as a template for projects at other privately owned dams sites to restore riverine migratory corridors, treat stormwater, and enhance resiliency while protecting their features and character. The goal in 2023 was to better understand restoration options onsite through conducting a dam removal reconnaissance study at Rodman Mill Dam. The property owner wishes to proceed with a dam removal, and so the feasibility study advances the long-term goal to provide upstream fish passage to the Annaquatucket River, increase the resilience of this river system by restoring a free-flowing river and improve the water and habitat quality in the impoundment.

2. Project Activities, Schedule and Work Plan

Describe the planned on-the-ground project activities, and explain how each activity will help to restore ecosystem functions. List specific project activities and when they will occur (month and year). Indicate when annual and final project reports will be submitted.

Project Activities To Date:

EA Science Engineering and Technology had identified this dam as a priority for removal given downstream restoration efforts and contacted the owner Michael Baker, who was interested in a removal project. In 2020 Mr. Baker partnered with EA Engineering and the RI Chapter of Trout Unlimited to submit grant applications for full reconnaissance, design, permitting, and dam removal, however the project was not fully funded and did not move forward at that time.

Permission from the landowner, Michael Baker to proceed with the feasibility study has been secured. Mr. Baker purchased the Rodman Mill and associated buildings (now referred to as the Lafayette Mill Complex) in 1987. After the mill's purchase, Mr. Baker oversaw years of construction and contractors on site as he orchestrated the complex redevelopment of the mill. The mill is now fully restored and provides over 50,000 square feet of office space for renters. Mr. Baker has significant experience coordinating and managing construction projects at the project site. As the property owner/manager, Mr. Baker will work closely with Save The Bay throughout the project.

In June 2023 the RI Coastal and Estuarine Habitat Restoration Trust Fund awarded the project team \$25,000 to fund a reconnaissance study to address some of the challenges of the site which included stormwater inputs from town and state roads, upstream road and culvert infrastructure, driveway access across the Annaquatucket, and buildings owned by Michael Baker immediately downstream of the dam. Save The Bay hired EA Science Engineering and Technology to assist with the reconnaissance study, which included a structural assessment of the spillway and structures tied into the spillway, collection of three sediment samples for physical and chemical analysis (two upstream and one downstream of the spillway), an estimate

of sediment volume using sediment probes and depth-to-refusal information, assessment of water uses including potential water withdrawals from within the impoundment, review of stormwater inputs to the river from state and local roads, assessment of potential effects of a lower water level on upstream infrastructure, review of endangered species habitat records, and a meeting with project partners.

Now that the reconnaissance study is complete, and Mr. Baker still wishes to proceed with dam removal, the project team will develop a scope of work for a dam removal feasibility study, which will include the following tasks:

- Conduct a topographic and bathymetric survey of the river, dam, and associated relevant structures
- Delineate wetland edge
- Complete dye test of the stormwater pipe under parking lot to confirm discharge locations
- Complete existing conditions hydrologic and hydraulic modeling
- Prepare a basis of design memorandum for fish passage including construction option of cost and scour analysis of crossing upstream of the dam.
- Prepare 35% design plans for discussion purposes
- Prepare an artistic rendering to help community understand what a dam removal might look like
- Conduct outreach to abutters and stakeholders

Project Timeline:

Summer 2024: Develop a scope of work for the dam removal feasibility study. Engineering firm conducts dye study within the catch basins on Ten Rod Road, to confirm stormwater drainage outlet.

Fall 2024: Save The Bay to flag wetland edges in coordination with the survey crew.

Winter 2025: Engineering firm conducts topographic and bathymetric survey. Engineering firm conducts H&H modeling and drafts a memo describing the inputs and outputs. Existing conditions plan developed from the survey work. Partners review and share with the dam owner, RIDEM Division of Fish and Wildlife and the Town of North Kingstown.

Spring 2025: Basis of Design & Feasibility study finalized. Artistic rendering created. 35% design plans created. Conduct public outreach meeting with information for abutters and community members. Decide next steps for engineering and permitting phase of the project.

3. Minimization of Adverse Impacts

What are the potential impacts resulting from project activities (e.g. the disturbance of sensitive species by construction activities), and how will these impacts be minimized (e.g. scheduling construction to avoid disturbance of sensitive species).

Since this phase of the project is purely information gathering, it is anticipated that minimal impacts to the wetland system will occur. Access to the river and pond will be from property owned by Bakeford Properties, east and north of Rodman Mill Pond.

Dam removal construction activity is not part of this grant application, but when it occurs, permitting agencies may restrict in-river construction to July 1st to October 31st to minimize disturbances to river species. The time of year restriction is to ensure that construction within the River will occur when flows are generally at their lowest. Later in the planning process, a potential construction sequencing scenario to minimize adverse impacts from the dam removal that addresses dewatering, sediment management, potential stormwater management to address outfalls and site stabilization measures will be developed.

4. Public Support

Demonstrate public support for the project by providing evidence of communication with adjacent landowners, community members and other stakeholders. Describe planned or completed community / stakeholder education and outreach efforts.

The project team has discussed the potential restoration project with the Town of North Kingstown and Trout Unlimited. We will share the final report and the concept design for dam removal with RIDEM Division of Fish and Wildlife, RIDEM Office of Dam Safety, and involve members of the Lafayette Mill community. This project is still in the beginning stages of planning and so no outreach to the public has started, however once we have an existing conditions plan and a conceptual proposed conditions plan we will be ready to have a community meeting. A meeting with stakeholders, abutters, and interested members of the public is planned in this next phase of the project. Save The Bay will share updates with members and supporters through Save The Bay publications and social media. The Town of North Kingstown will provide meeting space and support for outreach meetings.

5. Economic and Educational Benefits

How will the proposed project provide direct economic and/or educational benefits to a community and/or the state?

Removal of this high hazard dam will reduce long term inspection and maintenance costs of the dam for the property owner, as well as reduce the workload for RIDEM Office of Dam Safety.

Rodman Mill Dam is 1.5 miles away from the Wickford Middle School. The property is also adjacent to Ryan Park, a popular place for open space recreation. As such, a future river restoration here can highlight to the public specific adaptation strategies that can be implemented to restore riverine habitats. There may be future opportunities to install interpretive signage about the benefits of riverine restoration for water quality, increased river connectivity for anadromous and riverine species and improved habitat conditions for spawning. As an educational tool, the dam removal will show habitat restoration in action. Fishing for riverine species will likely improve as well.

Many mill sites in Rhode Island are privately held and face the same challenges that the Lafayette Mill Complex does, and this project can be a showcase for other dam owners and redevelopers to emulate and ultimately better understand how green infrastructure improvements, resiliency, and ecological restoration can come together at their mill sites while maintaining the aesthetic attributes of old mills.

6. Climate Change and Coastal Resiliency

How have the present and future impacts of climate change been considered during the project planning and design phases? What impact will the project have on resilience of coastal or estuarine habitat to climate change?

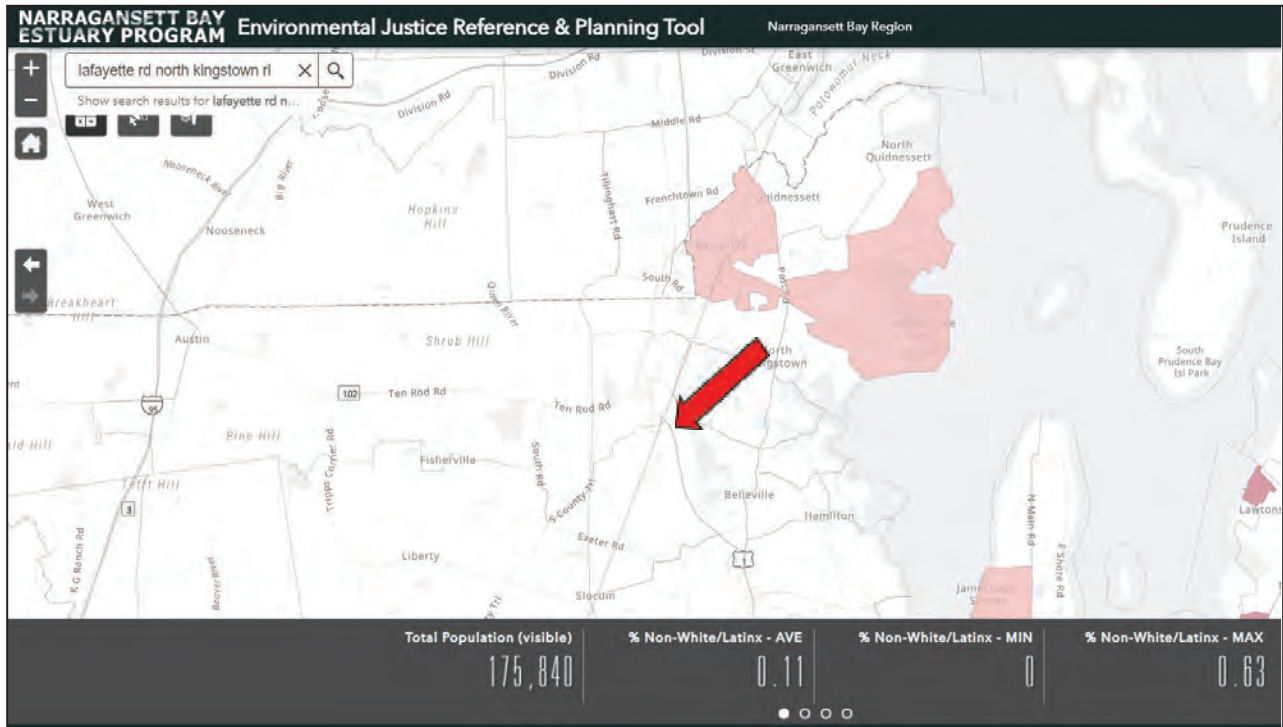
The Rodman Mill Dam is in poor condition. The Rodman Mill Dam was constructed over 150 years ago, and as a result was not built to meet today's design/construction standards or stream flows. One of the many trends of climate change is the increased intensity and recurrence of severe storm events. As such, this dam is at an increased risk of failure. The Rodman Mill Dam is a High Hazard Dam, and was assessed by a RIDEM contracted consultant in 2018. That consultant identified several deficiencies with the dam embankments, structural components, and downstream channel. Some of these issues included deterioration, undermining and cracking. Several of these dam issues have proved difficult for the Dam owner to mitigate, and repeated storm events continue to exacerbate these issues. Thus, the primary resilience issue this project addresses is that of human safety and protection of existing infrastructure by removing the Rodman Mill Dam and restoring the river and downstream areas to a natural stream channel by mimicking the natural channel once in place at the site prior to the construction of the dam.

This project will improve ecosystem and community resiliency by providing the dam owner with a better picture of what a dam removal here will look like. This site is complex, and a future dam removal would remove a piece of hazardous infrastructure from the community. The removal of the Rodman Mill Dam would eliminate the risk of loss of life related to a dam failure. In addition, the approximately 2.7 miles of

stream that are restored once the dam is removed will allow for the reproduction of hundreds of millions of blueback herring and alewives of the next 25 years. These species are critical to the health of Narragansett Bay and the public use of the Bay resources.

7. Environmental Justice

Will the proposed project take place within or otherwise benefit environmental justice “priority areas” as defined by the Narragansett Bay Estuary Program’s analysis of [Environmental Justice in the Narragansett Bay Region](#)? Does the proposed project incorporate Environmental Justice concerns as defined by the US EPA’s Guidance on [Environmental Justice and Equitable Development](#)?



The project takes place in North Kingstown, RI and is not within any environmental justice priority areas. The Annaquatucket is a relatively small watershed that flows directly into Narragansett Bay, and there are no known EJ areas within the watershed. The concerns outlined in EPA’s Guidance on Environmental Justice include equitable development. Equitable development is a place-based approach for encouraging environmental justice. In the context of environmental justice and planning, equitable development improves public involvement; supports collaborative problem solving; and makes a visible difference in communities that are underserved, under-resourced, and overburdened. Lower-income community members and people of color are successfully guiding the changes that occur within their communities rather than reacting to them. The project team will seek to work with members of the community when planning any eventual river restoration.

8. Planning Consistency and Restoration Priority

Is the proposed project consistent with the goals of a local, state or regional planning initiative? Please specify initiative and explain (see [CRMC website](#) for guidance). Does the proposed project involve a state, regional or federal priority habitat restoration need or special consideration? Please specify and explain (see [CRMC website](#) for guidance).

The Annaquatucket River has been the focus of anadromous fish restoration projects by RIDEM and TNC including fish ladders at the Bellville Pond Dam and Hamilton Reservoir Dam. This dam remains the last obstruction to fish passage in this system, and removal would restore river connectivity and provide access to approximately 2.7 river miles of spawning habitat in the Annaquatucket River up to the Lafayette Trout Hatchery.

9. Species of Concern

Will the project result in benefits to wildlife species listed as federally or state endangered, threatened, or species of concern within Rhode Island? Please specify which species will benefit and how.

The section of the Annaquatucket River that is impeded by the Rodman Mill Dam is within a Natural Heritage Area (data updated July 2020, see Figure 6). As part of the reconnaissance study, STB contacted the Rhode Island Natural Heritage Society to understand what species have been documented in the area. *Aureolaria pedicularia* and *Tephrosia virginiana* have been observed in the area, however not in the mill complex itself, and neither are aquatic species likely to be affected by a dam removal. In general, the inclusion of land within a Natural Heritage Area is an indicator of high quality habitat and the potential benefit for many species, not just rare ones. River restoration can and does benefit species including freshwater mussels, and anadromous fish, which are negatively impacted by dams within their ranges.

10. Permitting

List any federal, state or local permits required to complete the project and the permit application status for each.

At this stage of the project no federal, state, or local permits are required to complete the feasibility study. However, once a project has been selected we anticipate the following permit applications:

- State: RIDEM Wetlands Application to Alter Freshwater Wetlands
- Federal: Army Corps of Engineers General Permit
- State: Review by the Rhode Island Historical Preservation & Heritage Commission

11. Capacity of Lead Organization (attach additional materials if necessary)

Demonstrate the capacity of the lead and/or partner organizations to successfully complete the proposed project by providing any or all of the following: a) a description of the organization(s) b) resume(s) or summary of qualifications of involved personnel c) evidence of successfully completed habitat restoration or conservation projects.

Save The Bay has a long track record of successful restoration projects funded through the Trust Fund. We have been project proponents as well as supporting partners. We have been partners on dam removal and fish passage projects on the Pawcatuck, Pawtuxet, Ten Mile, Kickemuit and Blackstone Rivers. We have also successfully completed salt marsh restoration and riparian restoration projects throughout the watershed. Kate McPherson, Save The Bay's Narragansett Bay Riverkeeper and Professional Wetland Scientist will be the project lead on the completion of this project.

V. SUSTAINABILITY (one page maximum)

1. Maintenance

What is the estimated "lifespan" of each planned restoration activity? What are the anticipated short-term and long-term (beyond the funding period) operation and maintenance requirements of the project? Specify who will be responsible for funding and carrying out each O & M activity. Indicate when and with what frequency activities will occur.

This phase of the project does not have maintenance associated with it. An ultimate dam removal restoration would be designed to provide fish passage into the future with little maintenance required. At

this stage in the project it is not clear what sort of design elements or associated required maintenance would be incorporated into a dam removal proposal.

2. External Factors

Identify existing external (off-site) factors that could reduce the chances of achieving the project goals (e.g. stormwater inputs to the site from the surrounding drainage area). Explain how these external factors will be addressed. Describe any additional measures taken to help ensure long-term success of the project (e.g. installation of stormwater management practices or securing of conservation easements). What are the likely future effects of climate change and future sea level rise on the proposed project and how will these be addressed?

This site is somewhat impacted by stormwater runoff. For the potential future design of dam removal here the project team intends to explore a conceptual design that includes stormwater management and green infrastructure. Stormwater inputs include at least a stormwater outfall from Ten Rod Road owned by RIDOT, outfalls from Lafayette Road owned by the Town of North Kingstown, as well as runoff from the impervious surfaces of the mill complex. The typical contaminants in stormwater runoff from developed areas and roadways are expected to be present in the river. There are some pipes discharging flow to the river downstream of the dam or near the dam from other adjacent land uses, and part of the feasibility study will include determining ownership, source of water, and plans to address existing stormwater and flooding impacts. We are not aware of any buried infrastructure along the edge of the Pond/River, or beneath the Pond/River. The Town of North Kingstown will be made aware of the results of the feasibility study, and may provide data, as well as representatives from RIDOT if required.

VI. EVALUATING PROJECT SUCCESS (one page maximum)

1. Performance Measures

How will the success of the project be measured in relation to the restoration goals set forth in this proposal? List performance measures and how they will be recorded. Include a detailed monitoring plan; if applicable (see below).

This stage of the project will be evaluated as a success when the survey and wetland edge flagging have been completed, an existing conditions plan created, and the H&H study done with memo completed.. We will share this with stakeholders and members of the Lafayette Mill Village community and solicit feedback. It is the project team's experience that it is often easier to find funding sources for construction projects, and we will seek diverse funding sources for engineering, permitting and construction in the future.

2. Monitoring Plan

Describe any planned or completed pre- and post-project monitoring activities. For each monitoring activity list the frequency and month/year of start and end date and the parameters measured. List the entity or entities responsible for funding and carrying out each monitoring activity, and describe how results will be made available to CRMC and the public. If using an established monitoring protocol, please provide references (see CRMC website for information on established monitoring protocols).

Since this project is still in initial development a monitoring plan of the impoundment area is not required at this time, however, in other dam removal projects factors STB has monitored for include wildlife use, monitoring for nonnative invasive species, sediment accumulation that may block aquatic organisms, and fish migration monitoring, if appropriate.

VII. PROJECT BUDGET TEMPLATE

BUDGET CATEGORY	CRMC REQUEST	MATCH	MATCH PENDING OR SECURED?	SOURCE OF MATCH	TOTAL
Site Survey: EA Engineering & Save The Bay	\$27,000	\$1,100	Secured	In- Kind, Save The Bay	\$28,100
Hydrologic and Hydraulic Modeling: EA Engineering	\$16,000	\$0		Not Applicable	\$16,000
Basis of Design Memorandum: EA Engineering	\$6,000	\$6,000	Secured	EA (In Kind), Bakeford LLC (Cash)	\$12,000
Public Outreach: meeting space, advertising, artistic rendering, mileage, overhead: Sate The Bay, Town of N. Kingstown Bakeford LLC	\$0	\$3,975	Secured	In- Kind, NK Staff Time In- Kind, Save The Bay Bakeford LLC (Cash)	\$3,975
TOTAL	\$49,000	\$11,075		TOTAL PROJECT COST	\$60,075

VIII. BUDGET NARRATIVE (one page maximum)

Please provide a description and justification for each line item included in the project budget form (e.g. for personnel costs, provide hourly and fringe rates, for travel specify rate and estimated number of miles). Please specify any match requirements for each source of funding. Please include costs associated with required annual and final reports to CRMC. Be sure to detail how CRMC funds will be used.

Engineering: Site Survey and Existing Conditions \$27,000 CRMC Ask | \$1,100 Match | \$28,100 Total Cost
EA Engineering will be hired to complete a dye test within the drainage system on Ten Rod and Lafayette Roads, complete a topographic survey of the river, dam, and associated relevant structures including drainage structures, and to prepare an existing conditions plan.

Kate McPherson, Save The Bay's Riverkeeper and Professional Wetland Scientist and Ben Gaspar, Save The Bay's Restoration Ecologist will flag the wetland edge. Kate and Ben will support this portion of the project for 16 hours of in-kind match. Charges calculated using Kate's hourly billable rate of \$50 and Ben's hourly billable rate of \$48 which includes the organization's 27% fringe benefit rate for all staff and a 31% overhead and administration rate as a match towards this grant. Total staff cost is \$1,100 and will be in kind match. Save The Bay's staff time is funded by a Capacity Building Grant from the Narragansett Bay Estuary Program. Having STB complete this task saves the project \$4900 since EA quoted \$6000 for wetland edge delineation. The project work includes time for all necessary labor, mileage, and direct costs for the survey work. Mileage estimated at 84 miles for 2 round trips at the federal rate of 0.66 per mile.

Engineering: Hydrologic and Hydraulic Modeling \$16,000 CRMC Ask | \$0 Match | \$16,000 Total Cost

EA Engineering will be hired to complete the existing conditions hydrologic and hydraulic (H&H) modeling and summarize the findings of the H&H model in a technical memo. The project work includes time for all necessary labor and direct costs for the H&H work.

Engineering: Basis of Design Memorandum \$6,000 CRMC Ask | \$6,000 Match | \$12,000 Total Cost
EA Engineering will be hired to complete a basis of design memorandum. This task will summarize the existing conditions, summarize the findings from the H&H modeling, describe required permits for dam removal, include proposed restoration approach and order of magnitude costs estimates, scour analysis within the area upstream that would be affected by lowered water surface elevation post dam removal, conceptual design plan for discussion purposes, and assistance with outreach to abutters and stakeholders. The Basis of Design Memo is the written documentation of the feasibility analysis. EA Engineering will provide staff time match of \$1000, and Bakeford LLC will provide \$5000 cash match to complete this task.

Public Outreach and Project Coordination: \$0 CRMC Ask | \$3,600 Match | \$3,600 Total Costs
Save The Bay Match
Save The Bay's Kate McPherson, Narragansett Bay Riverkeeper and Professional Wetland Scientist, will support this project through communication with the property owner, project management, meetings with RIDEM and partners, assist with outreach to abutters and community members and other tasks as necessary to complete the project. Ben Gaspar, Save The Bay's Restoration Ecologist will assist with outreach presentation. Kate and Ben will support this portion of the project for 34 hours of in-kind match. Charges calculated using Kate's hourly billable rate of \$50 and Ben's hourly billable rate of \$48 which includes the organization's 27% fringe benefit rate for all staff Save The Bay and a 31% overhead and administration rate as a match towards this grant. Mileage estimated at 84 miles for 2 round trips at the federal rate of 0.66 per mile. The value of STB's staff time and mileage is \$2,300. Save The Bay's staff time is funded by a Capacity Building Grant from the Narragansett Bay Estuary Program.

Bakeford Match
An artist will be hired to provide a graphic to be used during outreach which might better illustrate what a dam removal will look like. Bakeford Properties will provide a cash match to cover the cost of the rendering at \$375.

Town of North Kingstown Staff Match
Jenna McCauley, Principal Planner with the Town of North Kingstown will support this project for 20 hours writing ads, posting them, sending to the paper, confirming room/space/ads, and other miscellaneous tasks related to public outreach. Her salary is \$49.29 per hour. Nicole LaFontaine, Director of Planning and Development with the Town of North Kingstown, will provide 5 hours of oversight. Her salary is \$87.30 per hour. The value of the Town of North Kingstown's match is \$1,422.

IX. ADDITIONAL MATERIALS

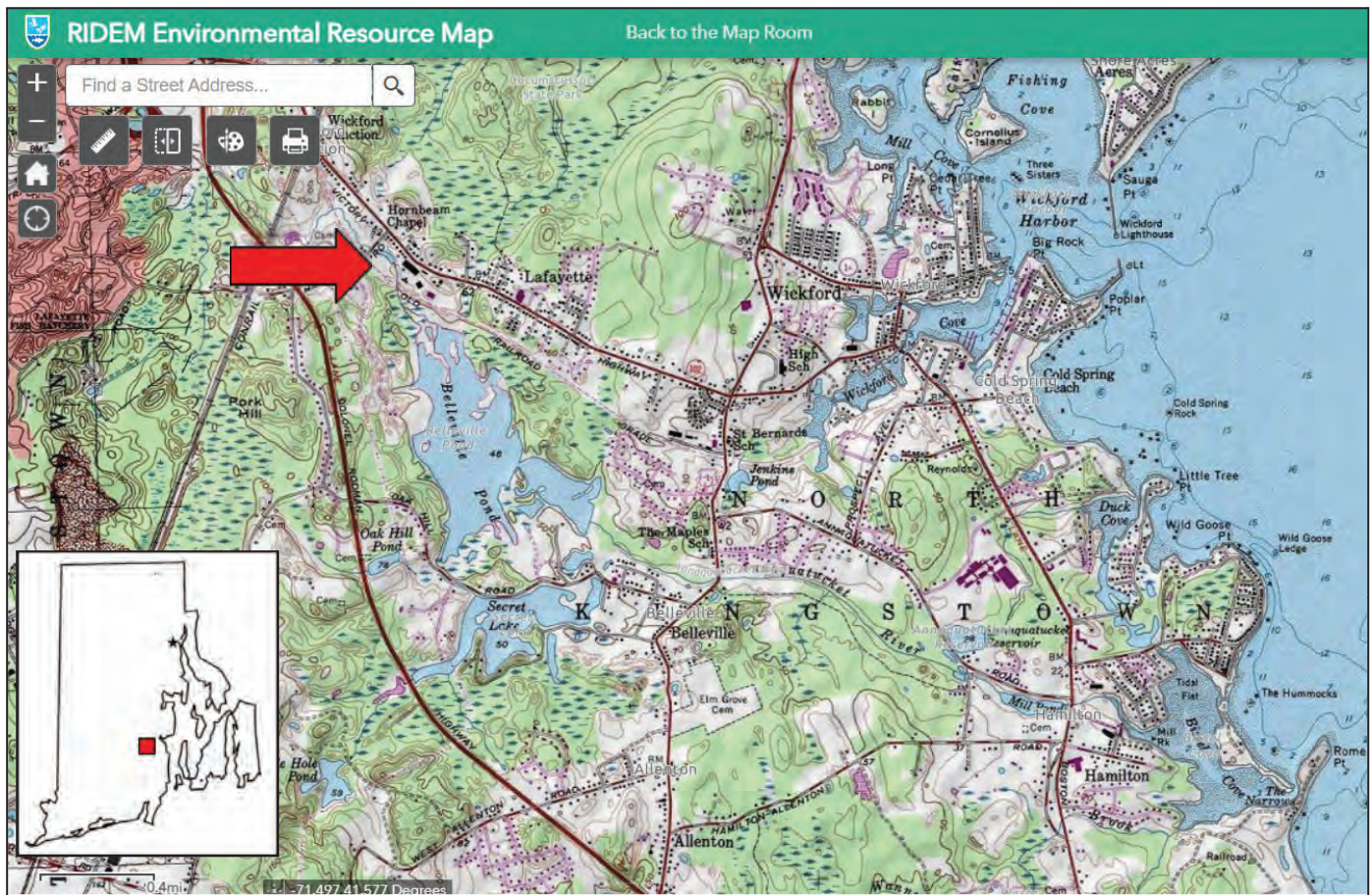


Figure 1: Locus Map featuring a USGS Topographic Map Wickford Quadrangle depicting the Annaquatucket River and the project's proximity to Narragansett Bay. Red arrow points to Rodman Mill Pond and the dam location.

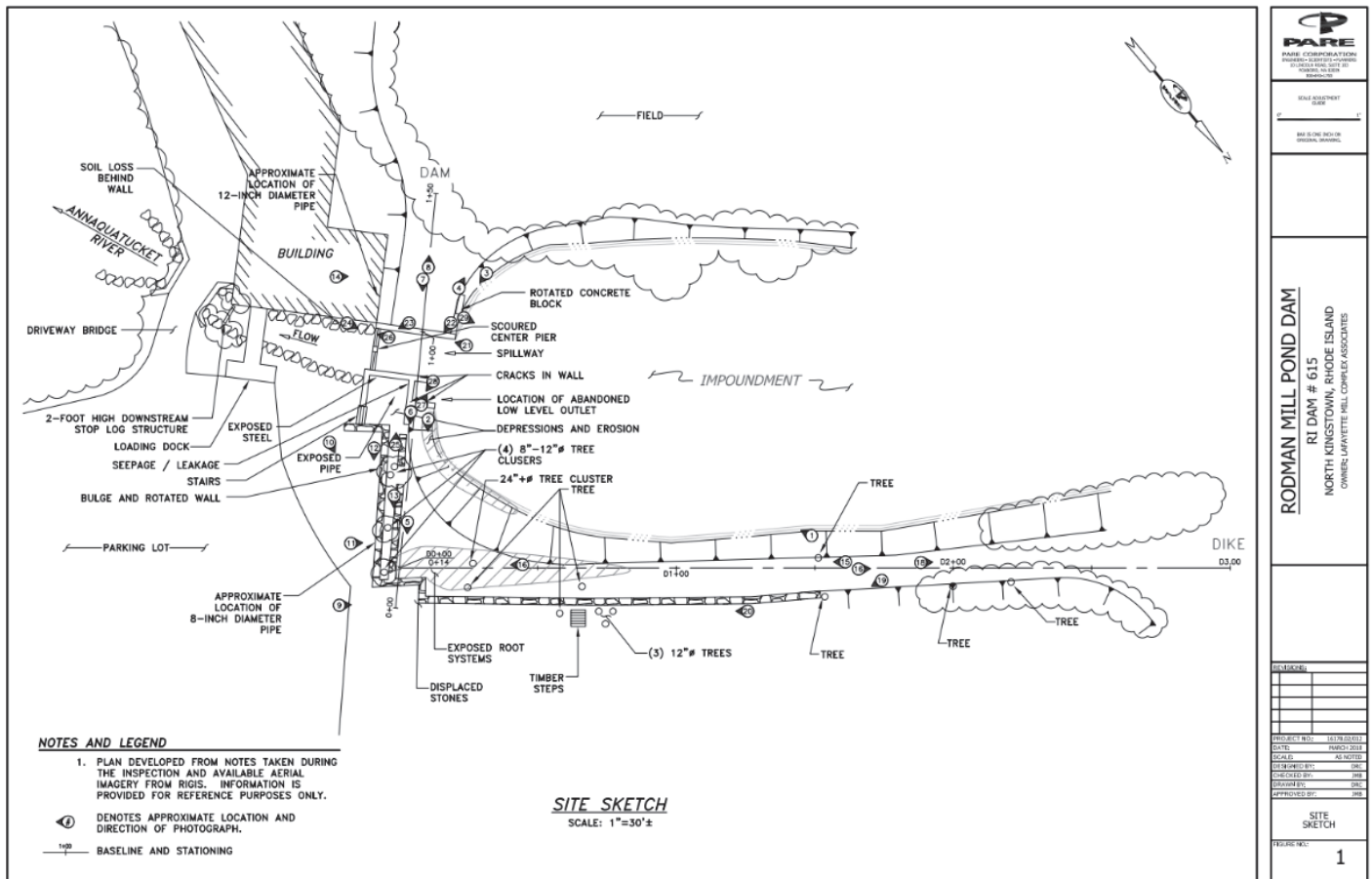


Figure 2: Site Sketch taken from “Rodman Mill Dam Visual Inspection/Evaluation Report” prepared by Pare Corporation following a March 20, 2018 dam safety site inspection. Sketch depicts the impoundment, dam and spillway structures, and infrastructure owned by Mr. Baker including a building in close proximity to the spillway and a driveway bridge that crosses the river downstream of the dam.



Figure 3: Photo taken during November 8, 2022 site meeting of the Rodman Mill Dam spillway, within the Annaquatucket River in North Kingstown. Property owner Michael Baker is located in the top right corner of the photograph describing site conditions.



Figure 4: View northwest of the impoundment looking upstream from dam structure. Photo taken November 8, 2022.

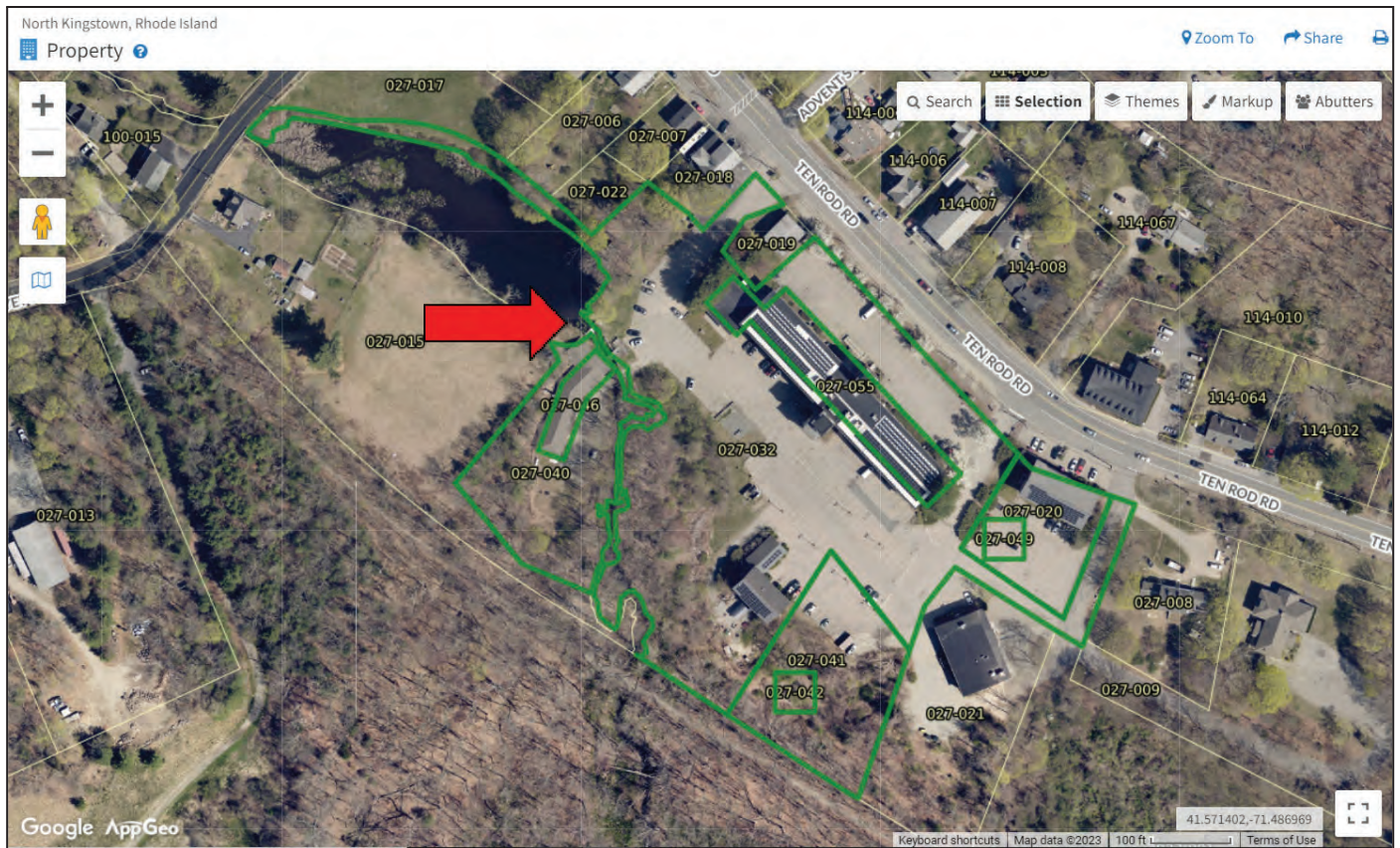
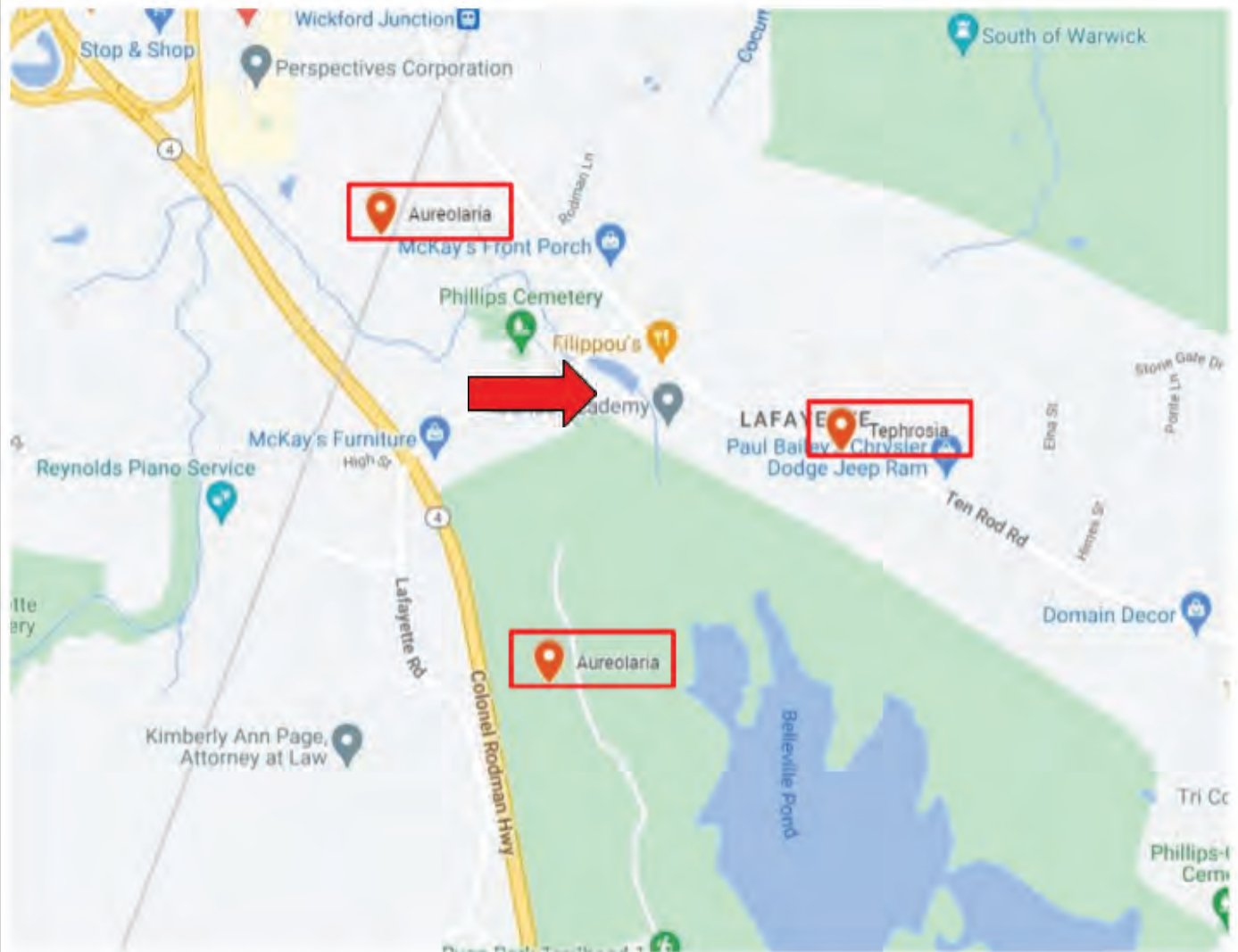


Figure 5: Spring aerial photograph (spring 2021) depicting the property owned by Condo at Lafayette Mill/Michael Baker (outlined in green). Imagery provided by Town of North Kingstown MapGeo. Red arrow points to the dam.

Natural Heritage Rare Species Areas near Rodman Mill Dam.



Aureolaria pedicularia (north): located in power line ROW just north of RR tracks.

Aureolaria pedicularia (south): located in power line ROW between Ryan Park footpath and Route 4.

Tephrosia virginiana: located just south of Route 102 at 514 Ten Rod Road.

Figure 6: Consultation with the RI Natural Heritage Survey confirmed that the project will not impact any rare species, despite its location within a Natural Heritage Area (updated December 2022). Red arrow points to the Rodman Mill Pond impoundment.

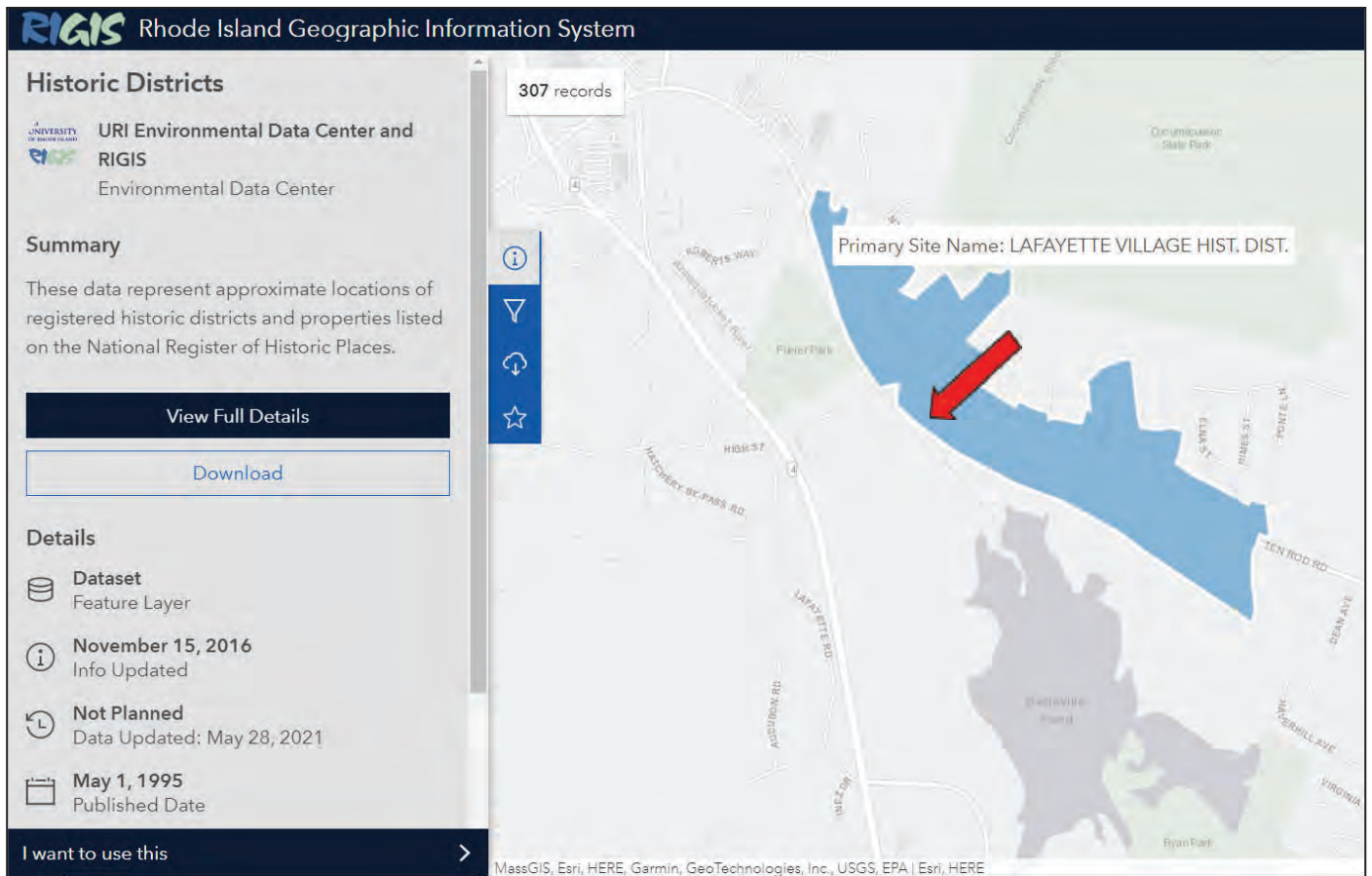


Figure 7: The property is within the Lafayette Village Historic District. Save The Bay has consulted with the state Historical Preservation and Heritage Commission and intends to facilitate coordination during permitting phases of the project.



Figure 8: Floodplain and floodways as mapped by Federal Emergency Management Agency (FEMA) of the Annaquatucket River. Red arrow points to the dam. Rodman Mill Dam is categorized as a high hazard dam by RIDEM's Office of Dam Safety.

Letters of Support

January 4, 2023

Dear Caitlin Chafee,

I am Michael Baker, owner of Bakeford Properties LLC and the Mill at Lafayette (Assessor's Plat 7, Lot 11 in North Kingstown), and I have given permission to Save The Bay to apply for Rhode Island Coastal and Estuary Habitat Restoration Funds to to better understand restoration options onsite, including conducting a dam removal reconnaissance study at Rodman Mill Dam. The long-term goal for this project is to provide upstream fish passage to the Annaquatucket River, increase the resilience of this river system by restoring the river and improve the water and habitat quality in the impoundment.

Sincerely,



Mike Baker
Bakeford Properties LLC
Mill at Lafayette
Owner/Manager

LETTERS OF SUPPORT

Save The Bay
Attn: Kate McPherson, Riverkeeper
100 Save The Bay Drive
Providence, RI 02905

March 30, 2024

Subject: Letter supporting the request for funding for a feasibility study of the removal of the Rodman Mill Dam to Enhance Climate Resiliency on the Annaquatucket River in North Kingstown, Rhode Island.

Dear Ms. McPherson,

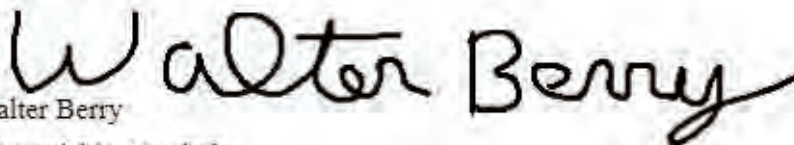
With this letter the Land Conservancy of North Kingstown (LCNK) would like to indicate that it fully supports the Save The Bay's application for funding from the CRMC Habitat Trust Fund to conduct a feasibility study of the removal of the Rodman Mill Dam. The dam is on the Annaquatucket River, a critical part of the ecosystem in North Kingstown. The mission of the LCNK is to protect open space and natural habitat in North Kingstown, and to educate the citizens of North Kingstown about the importance of that preservation. The removal of the Rodman Mill Dam would support that mission in at least two ways.

A number of species will benefit from the enhanced habitat resulting from removal of the dam, but probably none more than our two species of river herring, the Alewife and the Blueback Herring. According to NOAA Fisheries the numbers of both species are way down in recent years. This is due in part to the fact that so much of their spawning habitat is unavailable to them because of dams like the Rodman Mill Dam. These fish are critical as forage to several local fisheries, including those of Striped Bass and Bluefish. The decline of river herring has gotten lots of public attention, as evidenced by a recent prominent article in the Providence Journal. The importance of the removal of the dam to provide access to the river herrings former spawning grounds is something which could be easily explained by signage at the former dam site.

The dam is located in an area adjacent to a major mill restoration which is easily accessible to the public. The combination of the name recognition of the herring, and the publicly available location of the dam makes this a great educational opportunity, as well as an opportunity for ecological restoration of riparian land.

The LCNK is very excited about this project, and we are happy to do whatever we can do to help it come to fruition. Thank you for all that you do to benefit North Kingstown, and the entire Narragansett Bay Watershed.

Sincerely,

A handwritten signature in black ink that reads "Walter Berry". The signature is fluid and cursive, with the first letter of each word being capitalized and larger than the others.

Walter Berry
Stewardship Co-chair
Land Conservancy of North Kingstown

AUTHORIZED SIGNATURE

AUTHORIZED AGENT OF LEAD ORGANIZATION



Signature

3/29/2024

Date

Return your completed proposal by 4:00 p.m. on **April 1, 2024** to:

Caitlin Chaffee
NBNERR
RI Dept. of Environmental Management
235 Promenade Street
Providence, RI 02908

caitlin.chaffee@dem.ri.gov

Applicants are required to submit one (1) signed hard copy of the proposal form and one (1) electronic copy in Adobe PDF format. ****Please submit electronic copy as a SINGLE PDF FILE containing all application materials.****

Contact Caitlin Chaffee at **401-222-4700 xt. 277-4417** with any questions.



Rhode Island TU
203 Arcadia Road
Hope Valley, Rhode Island 02832

Officers

Glenn Place
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Gregory Houde

Gary Menard

Ronald Steere

March 28, 2024

Caitlin Chaffee, Reserve Manager
Narragansett Bay National Estuarine Research Reserve
RI Dept. of Environmental Management
235 Promenade Street
Providence, RI 02908

Dear Ms. Chaffee

The Rhode Island Chapter of Trout Unlimited is in full support of Save The Bay's application for the Rhode Island Coastal and Estuary Habitat Restoration Fund grant to conduct a reconnaissance and dam removal assessment at the Rodman Mill Dam, and the Annaquatucket River in North Kingston, at the Lafayette Mill Complex to restore ecological resilience and enhance community resilience.

This applications, and the resulting deliverables, are in direct parallel to our **Vision:** *To ensure that the habitats for cold water and estuary fish thrive in Rhode Island for future generations*, and accomplish our **Mission:** *To bring together diverse interests to conserve, protect, restore, and sustain the cold water fisheries and their watersheds in Rhode Island through collaborative, educational, and environmental activities so our children can experience the joy of wild and native trout .*

The first step to any complex river restoration project is reconnaissance and assessment. Our chapter is very familiar with the site and has worked with property owner Michael Baker to apply for grant funding in the past to get this project started. We support Save the Bay's efforts to move this project forward.

Removal of this high hazard dam, which is considered to be in poor condition, will remove a probable threat to human health and property. Restoration of natural floodplain areas above the spillway will create a more resilient river corridor. Removal of this dam will also restore over 2 miles of fish habitat to the Annaquatucket River for both native cold-water species as well as anadromous fish. With existing fish ladders positioned on dams downstream, this project has the potential to open the watershed to full restoration for anadromous fish.

The Rhode Island Chapter of Trout Unlimited fully supports Save The Bay's proposal for funding from the Rhode Island Coastal and Estuary Habitat Restoration Fund grant to explore restoring river continuity and improve resiliency of the Annaquatucket River Watershed. We look forward to continuing our work with them on restoration and resiliency efforts.

Thank you for the generosity of your time,

Glenn

Glenn Place
President
Rhode Island Chapter TU225
1-401-225-7712
TU225President@gmail.com

<https://rhodeisland.tu.org/>
<https://www.facebook.com/Trout-Unlimited-Rhode-Island-Chapter>

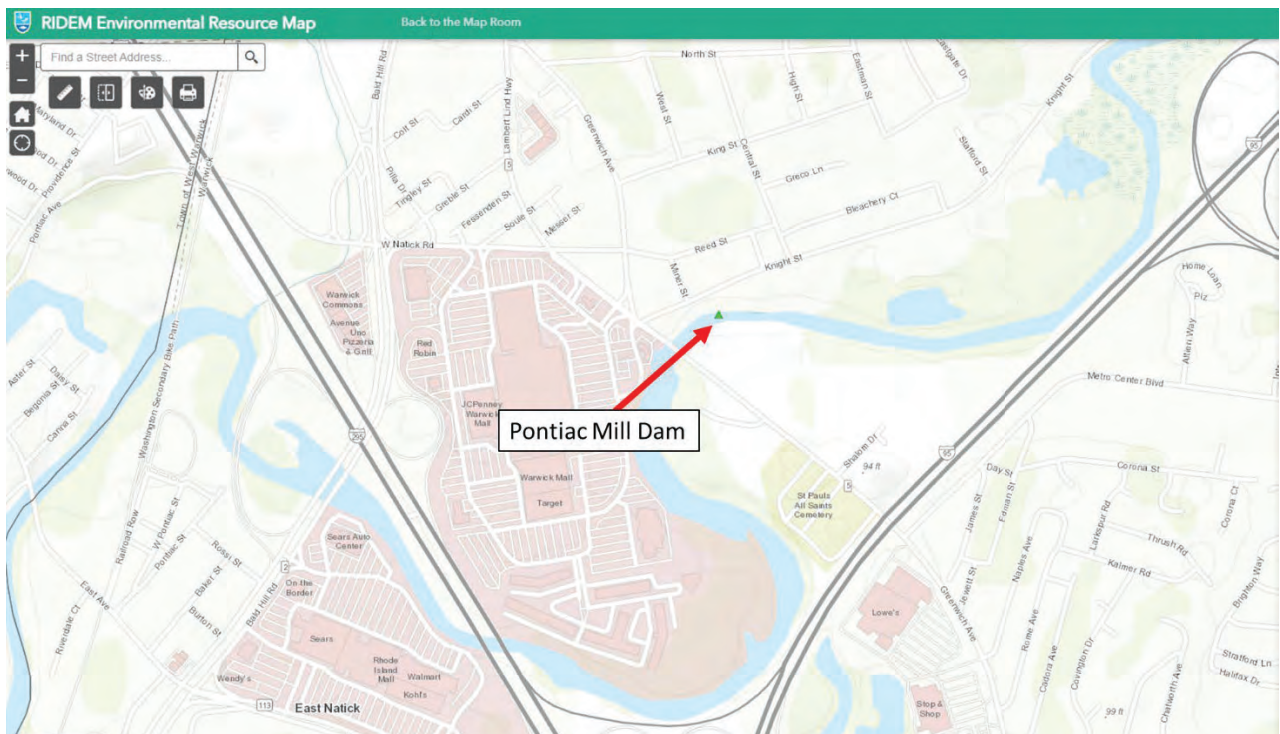
Rhode Island Coastal and Estuary Habitat Restoration Fund

Full Proposal Form for Planning Projects 2023/2024

****for design or construction projects please use Full Proposal Form**

I. PROJECT SUMMARY

1. **Project Title:** Data Collection and Analysis to Support Fish Passage at the Pontiac Dam on the Pawtuxet River
2. **Project Location and coordinates (include map):** Pontiac Dam is the lowest downstream barrier to anadromous fish and aquatic organisms on the Pawtuxet River in Warwick, Rhode Island. (41°43'34.7"N 71°28'16.9"W) Proposed data collection for fisheries information will include areas downstream of Pontiac Dam, and data collection for the sediment and bathymetric survey will be conducted upstream of Pontiac Dam.



3. **Habitat type (River System, Salt Marsh, Seagrass, Shellfish Bed, other):** River System (Riparian Migratory Corridor for Anadromous Species)
4. **If other, please specify:** N/A
5. **Targeted restoration technique (e.g. re-vegetation, tidal restoration, etc.):** Fish Passage
6. **Potential future benefits resulting from proposed planning project:** Increased river connectivity for fish (especially anadromous species) and other aquatic organisms, and water quality improvements.

IV. PROPOSAL NARRATIVE (five pages maximum)

1. Justification and Purpose

Following the removal of the Pawtuxet Falls Dam in 2011, the Pontiac Dam now remains the first obstruction to anadromous and migratory fish from the tidal waters on Narragansett Bay. Removal of the dam or restoring fish passage at this site will provide access to an additional 2.5 river miles and approximately 35 acres of habitat area upstream of the Pontiac Dam. Since the Pawtuxet Falls Dam removal, there have been two primary studies conducted assessing dam removal and fish passage alternatives at Pontiac Dam. However, these studies identified several data gaps and additional data needs required to refine the alternatives analysis and move the project forward. The PRA is seeking funding to begin to eliminate the remaining data gaps and keep this complex project moving forward. The project purpose is threefold:

- 1) Confirm presence of anadromous fish downstream and at the base, or closely downstream, of Pontiac Dam with fisheries surveys and eDNA sampling and prove presence of anadromous fish and their utilization of the Pawtuxet River beyond lower portions near the former Pawtuxet Falls Dam site.
- 2) Investigation of the current bathymetry of the Pontiac Dam Pond, including the depths, quality, and physical characteristics of impounded sediment.
- 3) Continue coordination with landowners and project partners.

Additional sediment data collection was identified by both PRA's 2020 *Restoration of Anadromous Fish Passage at the Pontiac Mill Dam* Report and Center for Ecological Restoration's (CER) 2020 *Pontiac Dam Pawtuxet River, RI Restoration Needs & Recommendations Report*.

The sediment and bathymetric information will be sufficient for future sediment transport analysis for a selected fish passage alternative at the Pontiac Dam Site. It will also aid in answering several outstanding questions post removal/passage including: 1) visual aesthetics/viewshed, 2) water level changes, 3) what type of aquatic habitat would remain (for resident and anadromous fish), and 4) explore recreational impacts. Most importantly though, this will help provide supporting data for future sediment transport analysis. The fisheries data proposed to be collected is important to document anadromous fish utilization of the Pawtuxet River, establish baseline fisheries population composition, and support future funding applications and project prioritization.

Short-Term Goal: To fill outstanding data gaps identified by previous studies and reports to progress the Pontiac Dam fish passage project. Long-term Goal: Support dam owners and stakeholders in making an informed decision on a balanced approach which satisfies the dam owners' needs and provides fish passage and resiliency benefits for the community. Collect information and maintain open lines of communication, which is critical for a complex long-term project like this. The PRA needs the proposed information to support future grant applications and engineering work to facilitate fish passage and resilience improvements at the site.

2. Project Activities, Schedule and Work Plan

The PRA will develop a scope of work for a sediment survey, bathymetric survey, sediment classification, eDNA sampling, and assistance with property owner coordination meetings. An engineering firm will be hired by the PRA to conduct the analysis, which will include the following tasks:

eDNA Fisheries Surveys (Consultant)

The PRA is proposing to conduct fisheries surveys in the spring to confirm the presence of anadromous fish at the base of Pontiac Dam. The PRA will utilize eDNA sampling to identify if anadromous fish species are present downstream of the dam. This eDNA sampling will be completed by the hired consultant. Four eDNA samples will be taken in the spring, and will be done in coordination with RIDEM surveys. Two eDNA surveys will be conducted in the summer downstream of the dam to establish baseline data to compare to the spring results. This information will be used to confirm RIDEM information, and also to collect information where RIDEM electroshocking boats cannot access due to river conditions or depth. RIDEM will provide coordination and support by identifying and selecting eDNA and electroshocking locations, technical assistance, and executing the electroshocking field work.

Electroshocking Fisheries Surveys (RIDEM)

The PRA is partnering with RIDEM, who will conduct fisheries surveys in the spring to confirm the presence of anadromous fish at the base of Pontiac Dam. This will include electroshocking surveys downstream of the dam utilizing either RIDEM's electroshocking boat or the smaller modular electroshocking "barge," depending on river condition and access. This data will be combined with the eDNA sampling data to identify if anadromous fish species are present downstream of the dam. The Pawtuxet River is shallow and can be challenging to access for electroshocking so the confirmatory eDNA samples could be critical if RIDEM is not able to fully access the river closest to the dam during their electroshocking field efforts.

Sediment Survey

The PRA is proposing to conduct a bathymetric survey of the river above Pontiac Dam, including the depths, quality, and physical characteristics of impounded sediment to create the basis of future analysis of sediment mobilization under various alternatives already proposed at the site. This information will be sufficient to be used for future sediment transport analysis for a selected fish passage alternative at the Pontiac Dam site in the future. This information will also be needed for future scour analysis at the dam site and upstream bridges. The survey is anticipated to extend approximately 1,000 meters at a minimum, based on the funding request and consultant quotations.

Coordination Meetings

The PRA will host three coordination meetings with dam owners to discuss their concerns, goals, commitment, and future path forward for the project. The PRA has been in contact with both dam owners prior to submitting the letter of interest to this grant, and confirmed both landowners' interest in discussions to move the stalled project forward. Flooding of the Pontiac Mill Complex and the adjacent apartment complex in recent months has renewed interest in the project, however meetings with project partners to keep them continually apprised of the project are critical to the project's future overall success.

Local, state, and federal agencies as well as local conservation groups have all been participants in the previous outreach components for studies conducted by the PRA and Center for Ecosystem Restoration regarding fish passage at the site, and their opinions and preferences have been well documented. Once the dam owners have been brought up to date, through this process, local agencies and organizations and federal agencies will be reengaged. RIDEM, however, will be invited to participate at the meetings as a vested project partner.

Project Timeline:

Spring 2024	Anticipated grant award notification:
Summer: 2024	<ul style="list-style-type: none"> ➤ Develop scope of services, hire consultant ➤ Conduct sediment survey ➤ Collect two baseline eDNA samples to establish semi-quantitative river resident fish assemblages ➤ Hold partner/landowner coordination meeting
Fall 2024	<ul style="list-style-type: none"> ➤ Conduct sediment survey ➤ Hold partner/landowner coordination meeting
Winter 2024	<ul style="list-style-type: none"> ➤ Initiate planning and coordination with RIDEM for spring fisheries surveys and eDNA sampling site locations ➤ Complete Sediment Survey Report
Spring 2025	<ul style="list-style-type: none"> ➤ Work with RIDEM to complete electroshocking surveys below Pontiac Dam ➤ Collect 4 eDNA samples to identify anadromous fish present downstream of Pontiac Dam ➤ CERHTF final report submitted ➤ Identify grant funding to progress project to the next phases based on partner and landowner meetings ➤ Decide next steps to advance long term goals of restoring fish passage at the site

3. Coordination and Public Support

The PRA contacted and met with the dam owners prior to this grant submittal and both fully support moving the project forward. Both owners are eager to re-engage the project and their letters of support are provided.

At this stage, the PRA will bring the property owners back up to date on the project and use the time to renew and reignite the collaborative partnerships with them, which is necessary for the project to move forward. The PRA, in parallel, will be submitting a SNEP SIG grant which will contain more extensive project outreach to municipalities, federal, and state agencies and the public. Data collected during this funding request will be incorporated into those discussions. Various federal and state agencies and outreach events were included in previous studies: the PRA's *Restoration of Anadromous Fish Passage at the Pontiac Mill Dam 2020*) and Center for Ecosystem Restoration (CER) *Pontiac Dam, Pawtuxet River, RI: Restoration Needs & Recommendations 2020*.

The project team has also discussed the project with RIDEM. RIDEM has agreed to support the project through leading fisheries surveys downstream of the dam. The exact location of these fisheries surveys will be refined closer to the survey date and will be completed using the RIDEM staff, electroshocking boat, or the smaller modular “barge” depending on river condition and launching/site access.

4. Planning Consistency and Restoration Priority

The Pawtuxet River has been the focus of previous anadromous fish restoration projects by RIDEM, NOAA, USFWS, and other local non-profits since the removal of Pawtuxet Falls Dam in 2011. The Pontiac Dam is now the first obstruction to fish passage from tidal waters, and restoring fish passage at the dam site would restore river connectivity and provide access to approximately 2.5 river miles of spawning habitat upstream in the Pawtuxet River.

In the 2019 *Coastal Resilience Assessment of the Narragansett Bay and Coastal Rhode Island Watersheds* published by the National Fish and Wildlife Foundation, the removal of Pontiac Dam was ranked as the top priority project on the community exposure index for resilience projects in Narragansett Bay.

The *Strategic Plan for the Restoration of Anadromous Fishes to Rhode Island Coastal Streams* published by RIDEM Division of Fish and Wildlife also lists Pontiac Dam as a primary obstruction within the Pawtuxet River, specifically for anadromous fish species including alewife, blueback herring, and American shad. The PRA is aware that it is one of CRMC's policies to maintain and enhance anadromous fish runs.

5. Species of Concern

The Rhode Island Wildlife Action Plan (RIWAP) (2015) lists several Species of Greatest Conservation Need (SGCN), several of which are known to inhabit the Pawtuxet River. These include anadromous SGCN: alewives, blue back herring, and American shad, and well as catadromous species American eel. The Pawtuxet River also contains several other SGCN including freshwater fish (e.g. brook trout) and turtles (e.g. spotted turtle). The RIWAP notes that the presence of dams on rivers and streams is the primary threat to these fish species because the obstructions have reduced their historic spawning range. Removing the dam or installing appropriate fish passage would allow these species to freely migrate through the river. Additionally, the eDNA samples proposed to be collected during this project will include analysis for fish, mussels, and turtles. As such, through this reconnaissance, numerous other SGCN, as well as state and federally listed protected species may be identified, and thus benefits or impacts to those species could be included to support future funding requests and decisions on the best course of action for the dam.

6. Climate Change and Coastal Resiliency

The proposed project will address resilience to climate change by removing a deteriorating dam structure and improving water quality. As documented in the Resilient Rhody Plan, it is anticipated that the State will experience more intense storms and higher rainfall events due to climate change. This will increase the risk of failure of aging infrastructure like the Pontiac Dam. The project will also improve the resiliency of river habitat by eventually reestablishing the historic natural river system through the removal of a barrier to aquatic organisms. The dam at the Pontic Mill site was originally a cribwork dam, built in 1863, and RIDEM records indicate the dam was modified to its current configuration in 1918. As such, the dam is not up to date with current design standards. Climate change has increased the intensity and recurrence of significant storm events (20-yr, 50-yr, 100-yr storms), which increases river flows and places stressors on the dam. The storm events, which used to be determined by their probable frequency, are now occurring more regularly due to climate change (e.g. a 20-yr storm is now becoming a 10-yr storm). These events have resulted in severe flooding upstream, downstream, and adjacent to Pontiac Dam in recent years, and more recently in the past few months where the dam and adjacent apartment complex have experienced severe flooding.

7. Environmental Justice

The EPA's Southeast New England Program (SNEP) Priority Areas identifies the Pontiac Dam as being located within a disadvantaged priority area. However, the dam is not in an environmental justice priority area designated by the [*Environmental Justice in the Narragansett Bay Region*](#), but several EJ communities exist throughout downstream portions of the river until its confluence with Narragansett Bay. As with many dam structures, the benefits and impacts of the structure are not restricted to the dam site itself but extend downstream, often for miles. As such, the environmental and community benefits should also

extend beyond the dam to downstream area. So although the dam itself is not identified as being within a EJ by the [Environmental Justice in the Narragansett Bay Region](#), its benefits to habitat and communities does/will directly benefit those communities. Those communities include Block Groups as mapped on the NBEP Environmental Justice Reference & Planning Tool: Block Group 440070142002, Block Group 440070138001, Block Group 440070136002, Block Group 440030210011.

8. Permitting

At this stage of the project no federal, state, or local permits are required to complete the fisheries surveys and bathymetric survey. However, once a project has been selected, the PRA anticipates the following permit applications:

State: RIDEM Wetlands Application to Alter Freshwater Wetlands

Federal: Army Corps of Engineers General Permit

9. Capacity of Lead Organization

The Pawtuxet River Authority is a 501(c)(3) organization and has been designated the official watershed council of the Pawtuxet River in Rhode Island by the RI Rivers Council and does business as the "Pawtuxet River Authority & Watershed Council." The PRA is authorized to improve, preserve, and protect the Pawtuxet River. The PRA provides recreational facilities along the river and is expressly authorized "to provide for land and water conservation, construct and maintain hiking and biking trails, flood control and water pollution control facilities, preserve wetlands, construct dams, stream diversion, dikes, walls and pumping stations."

The PRA has a long history of implementing successful restoration projects, specifically related to fish passage. Most notable was the removal of the Pawtuxet Falls Dam in 2011 which paved the way for the PRA to champion the fish passage at the Pontiac Dam. In addition to the Pawtuxet Falls dam, the PRA has led diverse teams of consultants and contractors on several planning, design, and construction projects throughout the watershed focused on public recreational access. The PRA also actively maintains their sites through a dedicated team of volunteers. The PRA is completely volunteer based, and as such, all work by volunteers and board members overseeing and managing this project is being purposed as match and will be at the current standard volunteer rate (currently at \$31.80).

10. External Factors and Climate Change

The lower portion of the Pawtuxet River watershed where the dam is located is highly urbanized and has experienced wetland and floodplain encroachment, which reduce natural ecosystem services and flood attenuation and water quality (nutrient and sediment) filtration. These external site impacts in turn can reduce a river's ability to provide viable habitat even if structures like the Pontiac Dam are removed. As mentioned above, more extreme and severe precipitation events are only anticipated to increase with greater frequency due to climate change. With fish passage restored at the site, additional funding will be available to address upstream improvements and restoration.

V. EVALUATING PROJECT SUCCESS (one page maximum)

1. Performance Measures and Deliverables

This stage of the project will be evaluated as a success when the fish survey, bathymetric survey, and sediment survey have been completed, the data synthesized, and the final consultant report is finalized. We will share this with project stakeholders and solicit feedback. Funding will be sought for future phases of the project which might include alternatives analysis, engineering designs, etc., which will utilize the critical data gathered from this project.

2. Monitoring Plan

Since this project is still in the initial development stage, a monitoring plan is not appropriate at this time. If the project is carried forward into future design and construction phases, then the PRA will implement monitoring pre and post construction for fluvial morphology, fisheries, habitat, and benefits to SGCN. The PRA will use eDNA data collected during this project as baseline data for future project monitoring and determining the eventual project's success.

VI. PROJECT BUDGET TEMPLATE

BUDGET CATEGORY	CRMC REQUEST	MATCH	MATCH PENDING OR SECURED? (select one)	SOURCE OF MATCH	TOTAL
Consultant Services (Bathymetric and sediment survey, eDNA sampling and analysis, coordination meetings)	\$50,000	\$2,000	Secured	In-Kind	\$52,000
Electroshocking Fisheries Services	\$0	\$2,000	Secured (per email)	RIDEM Fish and Wildlife (In-Kind)	\$2,000
Project Management and Grant Management, Wetlands Delineation	\$0	\$1,000	Secured	In-Kind	\$1,000
TOTAL	\$50,000	\$5,000		TOTAL PROJECT COST	\$55,000

VII. BUDGET NARRATIVE (one page maximum)

The PRA will develop a scope of work for fisheries, bathymetric, and sediment surveys that it is sufficient for the incorporation and development of future designs and permitting for fish passage at the Pontiac Dam Site.

Consultant Services Preliminary Restoration Engineering Assessment and Data Collection

\$50,000 CRMC Ask | \$2,000 Match | \$52,000 Total Cost

The PRA will hire a qualified consultant who provides the best value to the PRA. Consultant tasks will include the following:

- ❖ The consultant will conduct a sediment survey using sub bottom profiling instruments, and/or probes in shallow areas where the sub bottom profiler or boat access is limited. This data will provide information on water depth and sediment thickness. This will also include sediment characterization and composition information. This work is anticipated to take a 2-person crew approximately 3 working field days to complete. Additional time will be needed for field preparation, mobilization, and demobilization. The survey will start at the Pontiac Dam and extend upstream a distance of approximately 1,000 meters. This information will then be synthesized and analyzed into a report, including tables, figures, and maps.
- ❖ The consultant will conduct eDNA sampling and analysis. The consultant will work with RIDEM fisheries to coordinate the proper locations and time of year to collect the eDNA samples. These samples will be sent to a laboratory for eDNA sequencing and analysis and a detailed report will be provided outlining the data results. These eDNA analyses will include fish, turtles, and mussel species identification and will provide semi-quantitative species assemblage information.
- ❖ The consultant will be responsible for coordinating and providing technical support to the PRA for meetings with the dam owners to update them on the status of the project and the findings of the sediment survey, eDNA data collection, and fisheries surveys.
- ❖ The PRA's Project Manager, Bob Nero, will provide contractor oversight, attend meetings, and review consultant deliverables. This will include approximately 62 hours of his time at a rate of \$31.80/hr.

Electroshocking Fisheries Services

\$0 CRMC Ask | \$2,000 Match | \$2,000 Total

RIDEM will conduct fisheries surveys in the spring to confirm the presence of anadromous fish at the base or immediately downstream of Pontiac Dam. This will include electroshocking surveys utilizing either RIDEM's larger electroshocking boat or the smaller modular electroshocking "barge" depending on river condition and access. This data will be combined with the eDNA sampling data to identify if anadromous fish species are present downstream of the dam. This work will include field preparation, site mobilization, demobilization over 1-2 days with multiple DEM fisheries staff to execute the work depending on the vessel and collection method. This is anticipated to include three seasonal fisheries staff at \$261 and three fisheries biologists at \$720 for each field event, with additional office preparation time making up the remainder of the match.

Project Management and Grant Management

\$0 CRMC Ask | \$1,000 Match | \$1,000 Total

Robert (Bob) Nero, Chairman and Project Manager for the PRA will be supported by Katie DeGoosh (vice chairman) and other board members as appropriate. Bob will be the primary point of contact and oversee the entire project from start to finish, including grant management, and contractor solicitation. Bob and supporting PRA volunteers will provide in-kind time at the current standard volunteer rate of \$31.80/hr for a minimum of 100 hours, or more as necessary to fully execute the project and grant requirements.

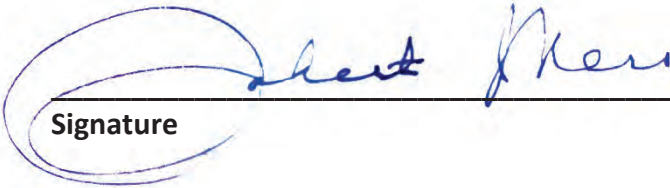
IX. ADDITIONAL MATERIALS

Please include the following with your application:

- ☒ Site and Locus Maps
- ☒ Ground-level photographs of existing site conditions
- ☒ Aerial photographs, if available
- ☒ Preliminary design drawings, maps or engineering plans, if available
- ☒ Pertinent physical, ecological, biological, and cultural / historical survey data
- ☒ Letters of support

AUTHORIZED SIGNATURE

AUTHORIZED AGENT OF LEAD ORGANIZATION


Signature

Date 04/01/24

Return your completed proposal by 4:00 p.m. on **April 1, 2024** to:

Caitlin Chaffee
NBNERR
RI Dept. of Environmental Management
235 Promenade Street
Providence, RI 02908

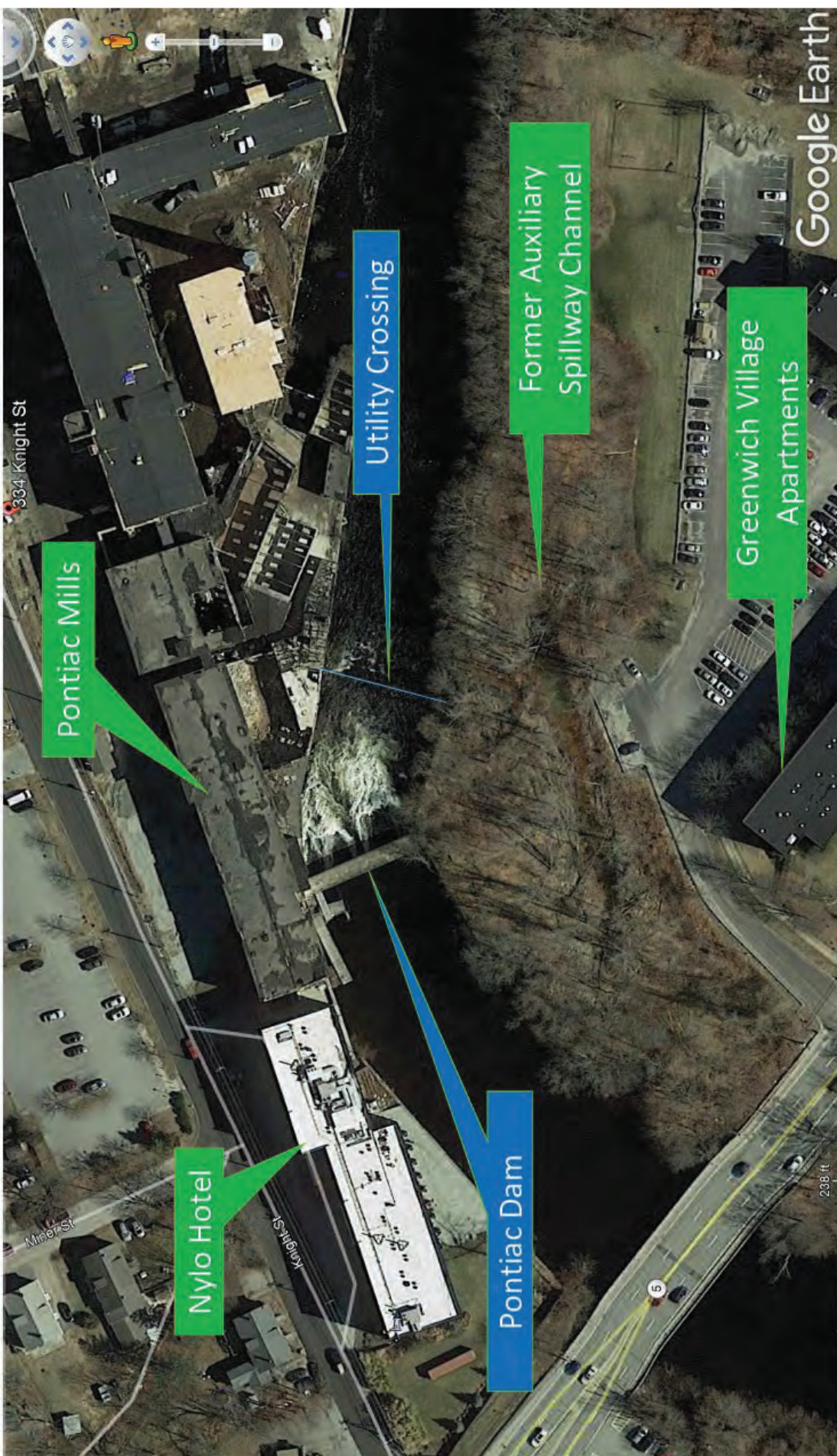
caitlin.chaffee@dem.ri.gov

Applicants are required to submit one (1) signed hard copy of the proposal form and one (1) electronic copy in Adobe PDF format. **Please submit electronic copy as a **SINGLE PDF FILE** containing all application materials.**

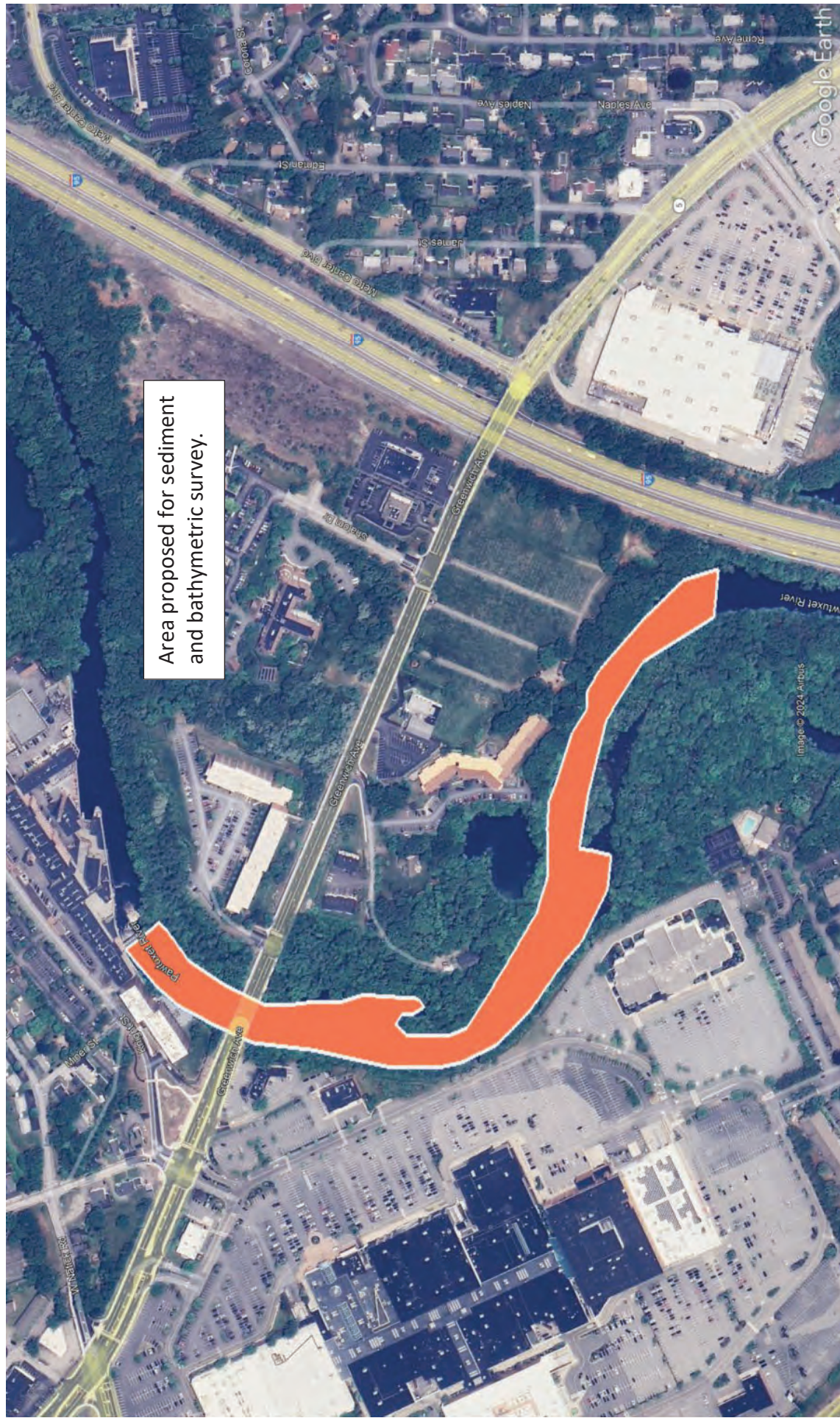
Contact Caitlin Chaffee at **401-222-4700 xt. 277-4417** with any questions.



Additional Application Materials









Looking Upstream at the Pontiac Mill Dam



Looking Downstream at the Pontiac Mill Dam



Representative sections of river upstream of the Pontiac Mill Dam

Letters of Support

Union Mill LLC ★

334 Knight Street Suite 11201

Warwick RI 02886

Pawtuxet River Authority
Attn: Robert Nero
8 Hope Furnace Road
Hope, Rhode Island 02908

RE: Rhode Island CRMC Habitat Trust Fund: PRA Pontiac Dam Proposal

Dear Mr. Nero;

Union Mill LLC is providing this letter in support of the Pawtuxet River Authority proposal to the CRMC Habitat Trust Fund, for data collection and analysis to support fish passage at the Pontiac Dam on the Pawtuxet River. Although previous studies have been conducted assessing the impact of fish passage at the site, the existing studies have left several data gaps that we as dam owners need answered before deciding on the future of the dam and fish passage on site.

Union Mill LLC owns the property along the north side of the Pawtuxet River which includes the Pontiac Mill Complex. Additionally, Union Mill LLC owns half of the Pontiac Mill Dam, and it is our understanding that the other half of the dam is owned by Picerne Real Estate Group.

Several recent flooding at our Pontiac Mill Complex from intense precipitation events have renewed our interest in evaluating dam removal and fish passage at the site. Our understanding is that some of the proposed alternatives previously developed showed various levels of flood reduction benefits, in addition to significant benefits for anadromous species. This proposal is to further refine the alternates previously developed at the site, information like the sediment and bathymetric mapping being proposed under this funding opportunity, is critical to us as landowners making informed decisions for our properties, structures, and residents/lessees.

We look forward to engaging with PRA on this project, and future grant applications that will hopefully lead to an equitable, sustainable, and restorative project for all parties, and the environment.

Let me know if I can be of additional assistance.

Sincerely,

A handwritten signature in black ink, appearing to read "Larry Phillips", written over a light blue horizontal line.

Larry Phillips



March 28, 2024

Pawtuxet River Authority
Attn: Robert Nero
8 Hope Furnace Road
Hope, Rhode Island 02908

RE: Rhode Island CRMC Habitat Trust Fund: PRA Pontiac Dam Proposal

Dear Mr. Nero;

Picerne Real Estate Group is providing this letter in support of the Pawtuxet River Authority proposal to the State of RI Coastal Resources Management Council Habitat Trust Fund, for data collection and analysis to support fish passage at the Pontiac Dam on the Pawtuxet River. Although previous studies have been conducted assessing the impact of fish passage at the site, the existing studies have left several data gaps that we as interested parties need answers to, before making recommendations of the future of the dam and fish passage on site.

Picerne Real Estate Group owns the property along the south side of the Pawtuxet River which includes the Greenwich Village Apartments. That said, we are a relevant party, interested in facts and potential outcomes of such studies.

Several recent flooding events at our Greenwich Village Apartments property, has renewed our interest in evaluating dam removal and fish passage at the site. Our understanding is that some of the proposed alternatives previously developed for the dam showed various levels of flood reduction, in addition to significant benefits to anadromous species. In order to further refine the alternates previously developed at the site, information like the sediment and bathymetric mapping being proposed under this funding opportunity, is critical to us in making informed decisions for our properties, structures, and residents/lessees.

We look forward to engaging with PRA on this project, and future grant applications that will hopefully lead to an equitable, sustainable, and restorative project for all parties, and the environment.

Let me know if I can be of additional assistance. I can be reached at 401-732-3700 or via email at rserpa@picernerri.com.

Sincerely,

Ron Serpa
District Manager
Picerne Real Estate Group



Save The Bay Center
100 Save The Bay Drive
Providence, RI 02905

P: 401-272-3540
F: 401-273-7153
SAVEBAY.ORG

April 1, 2024

Caitlin Chaffee, Manager
Narragansett Bay Estuarine Research Reserve
235 Promenade Street
Providence, RI 02908

Dear Caitlin,

Save The Bay supports the Pawtuxet River Authority's application to the Coastal and Estuarine Habitat Restoration Trust Fund entitled "Data Collection and Analysis to Support Fish Passage at the Pontiac Dam on the Pawtuxet River." Save The Bay has partnered with the Pawtuxet River Authority for over 20 years on restoring fish passage and river connectivity on the Pawtuxet River beginning with the planning, design and removal of the Lower Pawtuxet River Dam at the mouth of the Pawtuxet River in 2011. The Pontiac Dam is the next dam on the main stem of the Pawtuxet River and would provide fish passage to over 2.5 river miles and reduce upstream flooding in this highly developed section of the watershed.

The data proposed to be collected and shared with the dam owners and project partners includes bathymetric data, chemical and physical sediment data upstream of the Pontiac Dam and anadromous fish presence downstream of the dam. This data is necessary to assess the restoration options including dam removal.

Save The Bay will continue to work with the Pawtuxet River Authority on this project through serving as a member of the interagency technical review team. We are currently working with the Pawtuxet River Authority and other restoration partners on other fish passage and stream connectivity restoration on the Mashapaug Brook tributary.

The Pawtuxet River Authority has years of experience planning, designing, implementing and stewarding restoration and public access enhancement projects in the watershed. Their proposal to work with the Pontiac Dam's owners and local, state and federal partners on the steps to assess upstream habitat and sediments will support future design and engineering of fish passage and potential dam removal at Pontiac Dam.

Save The Bay is eager to continue to partner with the Pawtuxet River Authority on this phase of this multi-faceted restoration and resilience project.

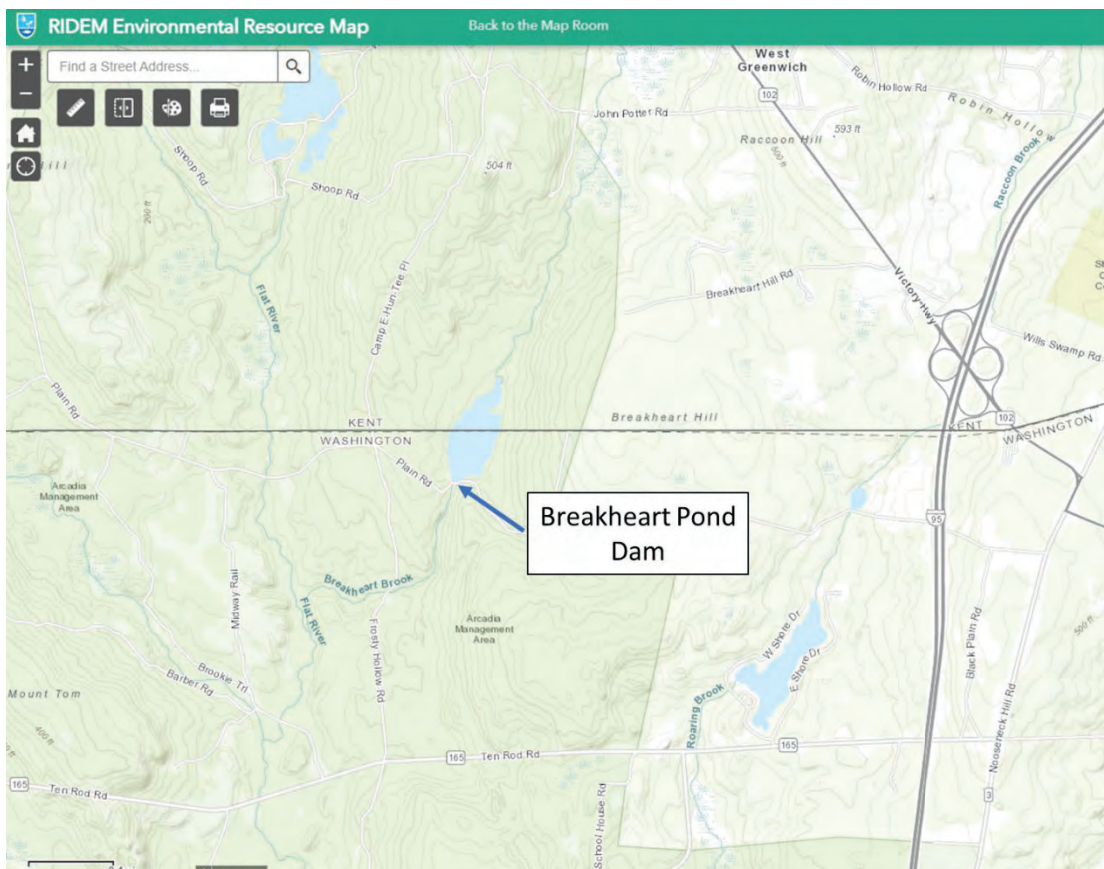
Sincerely,

Wenley Ferguson
Director of Restoration

Rhode Island Coastal and Estuary Habitat Restoration Fund
Full Proposal Form for Planning Projects 2023/2024
****for design or construction projects please use Full Proposal Form**

I. PROJECT SUMMARY

- 1. Project Title:** Breakheart Pond Dam Removal Feasibility Study
- 2. Project Location and coordinates (include map):** The Breakheart Pond Dam is located within the Acadia Management Area in Exeter, Rhode Island. The dam and all the surrounding land are owned by the State of Rhode Island. The dam is located on Breakheart Brook, which flows into the Flat River, which is a tributary to the Wood River, which is designated as a Wild and Scenic River.
Coordinates: 41°35'43.52"N; 71°42'11.71"W



- 3. Habitat type (River System, Salt Marsh, Seagrass, Shellfish Bed, other):** River System
- 4. If other, please specify:** N/A
- 5. Targeted restoration technique (e.g. re-vegetation, tidal restoration, etc.):** Dam Removal
- 6. Potential future benefits resulting from proposed planning project:** Removal of Breakheart Pond Dam would reconnect approximately 4.52 miles of stream and create over 45 acres of high value wetlands and riparian habitat once the dam is removed. The project will directly benefit diadromous

species, water quality for downstream anadromous species, and enhance habitat and water quality for SGCN including wood turtles, spotted turtles, American eels, and brook trout, all of which are known to be at the site or within the area directly benefited by the project.

7. **Project partners** (*organizations providing financial or other support to the project*): Native Fish Coalition, RIDEM (Forestry and Fish and Wildlife), USFWS, Save the Bay.
8. **Is this is an ongoing project that has previously received funds from the CRMC Coastal and Estuarine Habitat Restoration Fund?** No **If yes, year(s) funding was awarded:**
-

II. PROJECT MANAGER CONTACT INFORMATION

1. **Name:** Glenn Place, Chapter President
2. **Organization:** Rhode Island Chapter of Trout Unlimited (RITU)
3. **Address:** 203 Arcadia Road
4. **City:** Hope Valley 5. **State:** RI 6. **Zip:** 02832
7. **Phone:** 401-225-7712 8. **Email:** tu225president@gmail.com

Property Owner(s): Dam and all property surrounding Breakheart Pond is owned and maintained by the State of Rhode Island. TU has met with RIDEM, who have agreed to initiate this process. They are a vested project partner and have provided a letter of support (see attached).

III. BUDGET SUMMARY

(List individuals or organizations providing financial or in-kind support to the project under Project Partners)

Amount Requested from Trust Fund		\$38,000
Matching Funds	Project Partner(s)	Amount of Match
In-Kind	RIDEM (Forestry and Fish & Wildlife)	\$25,500
In-Kind	U.S. Fish and Wildlife Service	\$500
In-Kind	RITU	\$13,000
	TOTAL PROJECT COST	\$77,000

IV. PROPOSAL NARRATIVE (five pages maximum)

1. Justification and Purpose

RITU is proposing to conduct preliminary data collection and develop a restoration approach for the eventual removal of the Breakheart Pond Dam. Data collected through this project is required to move the dam project forward, and provide the foundation to initiate the dam removal process and support future designs, modeling, and planning. Post dam removal, RITU and RIDEM plan on developing an interpretive educational trail within the drained impoundment that connects to the existing trail network on site. Once this phase of the project is complete, RITU will work with RIDEM and project partners of additional grant funds to carry forward the preferred alternative for removal to design, permitting, and then construction.

The dam has been a barrier to aquatic organisms for over 90 years. Removal of Breakheart Pond Dam will reconnect approximately 4.52 miles of stream and significantly reduce water temperatures in Breakheart Brook, the Flat River, and adjoining watercourses. RIDEM has been monitoring Breakheart Pond and Brook for over 20 years, and has extensive data documenting the negative effects the dam has on water quality and aquatic habitat. In addition to the miles of fish passage that will be restored for SGCN and diadromous fish, the project will also create over 45 acres of high value wetlands and riparian habitat in the drained impoundment once the dam is removed. These wetlands will provide water quality benefits to downstream sections of the Pawcatuck River and anadromous fish and spawning habitat. Wetlands (such as those proposed to be created through this dam removal) have the ability to trap nutrients and sediments. Suspended sediments have been documented to stick to anadromous fish eggs and inhibit embryonic egg development.

The dam was inspected by the State/Contract Consultants in 2002, at which time the embankment condition was “fair,” the spillway condition was “poor,” and the low-level outlet condition was “fair.” The dam also has an attached fish ladder which has been nonfunctioning for well over 20 years. Portions of the fish ladder holes through the concrete, exposed rebar, and chunks of concrete are sluffing off into the auxiliary spillway. Since 2002, the dam spillway and appurtenances have continued to degrade and several sections of the spillway are showing significant erosion, rebar is exposed, and portions of the spillway walls are leaning into the pond and stream. These features and their degraded condition have also resulted in the closing off of the downstream bridge which rests on the spillway walls, which is important to the highly used recreational trails around the pond. The dam does not currently have any active or pending enforcement action on it, and the RIDEM Division of Forestry and Division of Fish and Wildlife regularly observe the dam and report any issues to the Division of Dam safety as appropriate.

Based on the existing ecological data and the current condition of the dam, RITU and RIDEM are proposing analysis and investigations to support the future removal of this dam. The dam no longer serves its original purpose, and the ecological and recreational benefits of its removal outweigh the significant cost and investment to bring the structure up to current safety standards and functionality.

Short-Term Goal: collect preliminary information to support future planning and design for the eventual removal of the Breakheart Pond Dam. This information will also support future data collection and grant applications for future funding and grant applications. Long-term Goal: Acquire additional funds (state, grants, etc.) for future phases. Support RIDEM in planning, design, permitting and the eventual removal of Breakheart Pond Dam.

2. Project Activities, Schedule and Work Plan

RITU will develop a scope of work for preliminary data collection and the development of a restoration approach for the eventual removal of the Breakheart Pond Dam. An engineering firm will be hired by RITU and will be responsible for collecting all data and ensuring that it is sufficient for the incorporation and development of future designs and permitting.

This project, will include the following components:

- Conduct a topographic survey of the dam and appurtenances (including the attached bridge)
- Conduct a structural assessment of the pedestrian bridge and associated spillway walls
- Desktop review and preliminary consultation with federal and state agencies on sensitive species and habitats within or directly adjacent to the project area
- Preliminary consultation with RI SHPO
- Develop conceptual drawings
- Develop a proposed restoration approach with summary memo and figures
- Conduct a 4-month public recreational usage assessment of pond, trail below the pond, and parking area
- Collect 6 eDNA samples (to identify fish, turtles, muscues and species of SGCN that may benefit or be impacted by the project)
- Public outreach/signage

Project Timeline:

Spring 2024	Anticipated grant award notification:
Summer: 2024	<ul style="list-style-type: none">➤ Develop scope of services➤ Hire consultant➤ Initiate recreational use monitoring (ongoing through winter 2024)➤ Collect eDNA samples➤ Initiate preliminary agency consultations➤ Install signage and initiate public outreach (ongoing through Winter 2024)➤ Conduct structural assessment of bridge and spillway walls downstream of dam➤ Wetland delineation
Fall 2024	<ul style="list-style-type: none">➤ Conduct topographic site survey➤ Develop conceptual drawings
Winter 2024	<ul style="list-style-type: none">➤ Develop Restoration Approach and Project Summary Memo which will include results from all field work➤ CERHTF final report submitted➤ Identify grant funding to progress project to the next phases with project partners➤ Decide next steps to advance long term goals

**All deliverables and work products will be coordinated and reviewed by RIDEM Division of Fish and Wildlife and Division of Forestry staff to ensure compliance and consistency with RIDEM goals, objectives, and plans for the pond and surrounding areas.*

3. Coordination and Public Support

Information on the project will be posted on RITU's Facebook page and RITU will work with RIDEM representatives to coordinate public outreach through RIDEM's social media. Signs will be posted at the site informing the public of the ongoing study to evaluate dam removal at the site, and encourage the public to provide comments via a dedicated email address that will be set up for the project. RITU will also coordinate

with the Wood Pawcatuck Watershed Association to share information about the project to their membership and with National Park Services contacts through the Wild and Scenic Rivers Steering committee. Other like-minded organizations will also be informed of the project, including Protect Rhode Island Brook Trout.

4. Planning Consistency and Restoration Priority

- Corrective measures for upstream passage at **Breakheart Dam** are listed in the RIDEM 2002 Strategic Plan for the Restoration of Anadromous Fishes to Rhode Island Coastal Streams as a benefit to diadromous American eels, brook trout, and resident fish.
- The restoration project is also consistent with Rhode Island's Wildlife Action Plan, developed by RIDEM in 2015, which categorizes American eel, brook trout, and wood turtles as species of "Greatest Conservation Need." The proposed project will benefit habitat improvements for SGCN.
- The RIDEM Wood-Pawcatuck Rivers Watershed Plan from 2022 recommended the removal of dams in the watershed as an "Action Item." Additionally, the same report listed "Indicators to measure improvements to the health of aquatic habitat", which included "Number of waterbodies without aquatic invasive species (AIS)," "Total stream miles with improved stream connectivity due to removal of barriers," and "Acres of damaged wetlands and buffers restored," all of which the proposed project will accomplish.
- The 2017 (revised) Wood-Pawcatuck Flood Resiliency Plan identified Breakheart Pond Dam as a barrier to aquatic organisms and listed it in poor condition in the "Recommended Actions Summary."

5. Species of Concern

Restoring aquatic connectivity in Breakheart Brook at the site of the Breakheart Pond Dam will have far reaching benefits. In addition to restoring upstream access for SGCN and aquatic species, including the diadromous American eel, brook trout, and wood turtle, improvements to water quality will extend downstream into all connecting watercourses. Impoundments, such as Breakheart Pond, have adverse effects on downstream water quality, especially after over a century since construction. As sediment builds up over decades, waterbodies such as Breakheart Pond become shallower, which promotes the growth of aquatic vegetation and aquatic invasives. The removal of Breakheart Pond Dam will result in the eliminating of aquatic invasive species from Breakheart Pond, and could greatly benefit water quality and prevent further spread of invasive plants down into the mainstem of the Pawcatuck River. Excessive vegetation growth has been known to reduce or eliminate passage for migratory species including river herring. Furthermore, decomposed aquatic vegetation builds up overtime, creating layers of fine organic sediments that cover coarser substrates. Substrates such as sand and gravel provide important spawning habitat for many fish species including brook trout and river herring. Additionally, decomposing organic sediment, caused by years of decomposed vegetation, reduces and eliminates areas that may otherwise be suitable for spawning. Eliminating the dam will reduce the potential for colonization downstream in mainstem habitats (i.e. the Pawcatuck River).

Breakheart Pond has also been well documented by RIDEM fisheries experts as excessively increasing water temperatures downstream of the dam. Due to the surface area of the pond, shallow water levels, and high coverage of vegetation, temperatures become extremely elevated via solar radiation and are significantly higher at the outflow than the inlet streams. RIDEM found that water temperatures at the outflow of Breakheart Pond are the highest temperatures in the upper Wood River Watershed and the most detrimental to SGCN. High water temperatures not only displace coldwater obligate species locally, but the effects are carried throughout the lower portions of the system. Higher water temperatures also promote pathogens, nutrient levels, and invasive species. By eliminating Breakheart Pond, peak annual water temperatures will be reduced, improving the water quality within the Wood and Pawcatuck Rivers. The proposed project will

indirectly benefit anadromous fish species like river herring and shad for the reasons mentioned above. These species will be able to return to spawn in the Pawcatuck River, which the designated “Wild and Scenic” Wood River flows directly into.

In addition to the known project benefits to SCGN already identified, the eDNA samples that will be collected and analyzed as part of this project will help to identify other fish, mussels, and turtles identified as SGCN that have not yet been identified at the dam site and in the connected waterways.

6. Climate Change and Coastal Resiliency

The proposed project will address resilience to climate change by removing a deteriorating dam structure and improving water quality. As documented in the Resilient Rhody Plan, it is anticipated that the State will experience more intense storms and higher rainfall events due to climate change. This will increase the risk of failure of aging infrastructure like the Breakheart Pond Dam. The project will also improve the resiliency of river habitat by eventually reestablishing the historic natural river system through the removal of a barrier to aquatic organisms. The dam is also currently increasing downstream water temperatures to extirpating levels for coldwater obligate species (e.g. brook trout) and negatively impacting coldwater obligate species fitness. Water and air temperatures are only expected to increase with climate change and removal of the dam will remove a massive heat sink from the system that is adversely impacting watershed dynamics.

7. Environmental Justice

The project area is not located within an environmental justice “priority area.” However, the project is located in Exeter, Rhode Island, which is identified through Narragansett Bay Estuary Program and the RI Department of Health as a Health Equity Zone (*see figure below*). Rhode Island's Health Equity Zones are defined by stakeholders as areas of the state that are economically disadvantaged and have documented health risks (Rhode Island Medical Journal November 2016). Additionally, the Arcadia Management Area and its recreational resources (e.g. ponds, river, trails, etc.) are used by members of disadvantaged communities to escape the concrete landscapes of the cities and explore the outdoors and recreate within the area’s green space. The eventual removal of Breakheart Dam will enhance the habitats and interpretive experience within the management area, and ensure the continuity of the recreational trails and resources, like fish, that attract the community.

8. Permitting

At this stage of the project no federal, state, or local permits are required to complete the feasibility study. However, once a project has been selected we anticipate the following permit applications:

- State: RIDEM Wetlands Application to Alter Freshwater Wetlands
- Federal: Army Corps of Engineers General Permit
- State: Review by the Rhode Island Historical Preservation & Heritage Commission

9. Capacity of Lead Organization (attach additional materials if necessary)

RITU leaders Glenn Place (President), treasurer (Lawson Carry III), and conservation chair (Rich Benson), will be responsible for project management, grant/financial reporting, oversight of the consultant, public outreach assistance, and coordination with RIDEM staff. In the last 5 years, RITU has successfully received and executed over \$300k in projects focused on habitat assessment and dam removals. RITU is a leader and model chapter

for TU across the country, and Chris Wood, the CEO of Trout Unlimited National, has recognized RITU as such. As a result, RITU is fully confident we can manage the project with the technical resources and support from project partners, all who have worked with RITU for several years in the Big River Management Area. In addition, if any unforeseen issues arise, RITU can always reach out to the hundreds of TU National technical staff for support. RITU will also have the full support of RIDEM Division of Forestry and Division of Fish and Wildlife, who will be available to review deliverables, attend meetings, lend their time and expertise to the project, and serve as subject matter experts. Jamie Masterson from the US Fish and Wildlife Service will also be providing technical support for this project, and has offered to enlist assistance from her regional engineering and fish passage team if questions or technical input is needed during this phase of the project.

10. External Factors and Climate Change

The biggest external factor impacting the site currently is the runoff from extreme precipitation events. Evidence of the runoff is the ongoing erosion that is deteriorating the dam site and causing excessive sediment to enter the stream at the dam site. Although the project cannot control the runoff from upstream or extreme precipitation, the project will make the dam more stable and reduce the risk of dam failure by removing this aging dam and infrastructure from the watershed. Additionally, the other external factor impacting this site is recreational users. The pond is frequented by the public, and despite RIDEM's efforts, foot traffic on the dam embankment, spillway, and around the pedestrian bridge, make the area susceptible to and accelerate habitat degradation and erosion on the site.

The Resilient Rhody Plan of 2018 stated that climate change is expected to contribute to more intense and wetter precipitation events, and that southern New England will experience significant increases in both flood frequency and flood severity, including a doubling of the frequency of flooding and an increase in the magnitude of flood events. The continued frequency of these events and the increasing volume of consecutive storms places continued strain on the dam infrastructure and appurtenances at the site. The eventual removal of the dam and restoration of the site to historically natural conditions will increase the site resiliency, and reduce the risk of the dam failing and damaging road systems recreational trails downstream, and reduce the risk of injuries or potential death to motorists, pedestrians, and recreational users.

a. EVALUATING PROJECT SUCCESS (one page maximum)

1. Performance Measures and Deliverables

Tasks	Output	Deliverable
<ul style="list-style-type: none"> ➤ Develop scope of services ➤ Hire consultant ➤ Initiate recreational use monitoring (ongoing through winter 2024) ➤ Collect eDNA samples ➤ Initiate preliminary agency consultations ➤ Install signage and initiate public outreach (ongoing through Winter 2024) ➤ Conduct Structural assessment of bridge and spillway walls downstream of dam ➤ Wetland delineation 	<ul style="list-style-type: none"> ➤ Recreational user data ➤ eDNA data and results ➤ Agency consultation letters and responses ➤ Signage for the dam site ➤ Structural analysis ➤ Wetland delineation 	<ul style="list-style-type: none"> ➤ All data and results will be provided in a final restoration approach document
<ul style="list-style-type: none"> ➤ Conduct topographic site survey ➤ Develop conceptual drawings 	<ul style="list-style-type: none"> ➤ Site survey ➤ Conceptual drawings 	<ul style="list-style-type: none"> ➤ All data and results will be provided in a final restoration approach document
<ul style="list-style-type: none"> ➤ Develop Restoration Approach and Project Summary Memo which will include results from all field work ➤ CERHTF Final Report submitted ➤ Identify grant funding to progress project to the next phases with project partners ➤ Decide next steps to advance long term goals 	<ul style="list-style-type: none"> ➤ Restoration Approach and Project Summary Memo ➤ CERHTF final report ➤ Call with RIDEM to discuss next steps 	<ul style="list-style-type: none"> ➤ All data and results will be provided in a final restoration approach document ➤ CERHTF Final Report ➤ RIDEM call summary memo

*all deliverables will be provided to RIDEM and USFWS for review and comment

2. Monitoring Plan

Since this project is still in the initial development stage, a monitoring plan is not appropriate at this time. However, RITU is currently looking to monitor the “bounce back” of the site post dam removal with aerial imagery using drones, eDNA for species richness and diversity, and on-site vegetation and stream geomorphological assessments.

b. PROJECT BUDGET TEMPLATE

BUDGET CATEGORY	CRMC REQUEST	MATCH	MATCH PENDING OR SECURED? (select one)	SOURCE OF MATCH	TOTAL
Preliminary Restoration Engineering Assessment and Data Collection	\$38,000	\$26,000	Secured	<ul style="list-style-type: none"> - RIDEM Division of Forestry (In-Kind) Structural Assessment and Technical Assistance - USFWS (In-Kind Technical Assistance) - RIDEM Division of Fish and Wildlife (In-Kind Technical Assistance) 	\$64,000
Project Management and Grant Management, Wetlands Delineation	0	\$13,000	Secured	Rhode Island Chapter of Trout Unlimited (In-Kind)	\$13,000
TOTAL	\$38,000	\$39,000		TOTAL PROJECT COST	\$77,000

c. BUDGET NARRATIVE (one page maximum)

RITU will develop a scope of work for preliminary data collection and the development of a restoration approach for the eventual removal of the Breakheart Pond Dam. An engineering firm will be hired by RITU and will be responsible for collecting all data and ensuring that it is sufficient for the incorporation and development of future designs and permitting.

Preliminary Restoration Engineering Assessment and Data Collection

\$38,000 CRMC Ask | \$26,000 Match | \$64,000 Total Cost

RITU will hire a qualified consultant who provides the best value to RITU and prudent use of CRMC funds. The consultant will complete the following tasks below:

- ❖ Conduct a survey which will include site topography, dam, appurtenances (including the attached bridge), and the stream bed
- ❖ Conduct structural assessment of pedestrian bridge and associated spillway walls (*RIDEM Match*)
- ❖ Desktop review and preliminary consultation with federal and state agencies on sensitive species habitat and historical/cultural resources within or directly adjacent to the project area
- ❖ Develop conceptual drawings
- ❖ Develop a proposed restoration approach with summary memo and figures
- ❖ Conduct a 4-month public recreational usage assessment of pond, trail below the pond, and parking area using trail cameras
- ❖ Collect 6 eDNA samples (to identify fish, turtles, and muscles and species of SGCN that may benefit or be impacted by the project) and send to laboratory for analysis
- ❖ Public outreach/signage

The RIDEM Division of Forestry will be providing a match (approx. \$24,500) during this task that will include a structural assessment of the bridge directly below the dam that is resting on the walls of the auxiliary spillway. This engineering assessment will be conducted by a Licensed State of Rhode Island Professional Engineer. This assessment is necessary for planning future design phases and will be provided at the end of the project. This information will also be critical to take into consideration for the channel realignment post dam removal and for the continuity of recreational trails being carried by the bridge currently. The Division of Forestry will also be providing technical assistance by reviewing project deliverables and attending project calls and meetings.

The RIDEM Division of Fish and Wildlife will also be providing technical assistance (approx. \$1K) by reviewing project deliverables, supporting eDNA site selection, and attending project calls and meetings.

The USFWS will also be providing technical assistance (approx. \$500) by reviewing project deliverables and attending project calls and meetings.

Project Management and Grant Management, Wetlands Delineation

\$0 CRMC Ask | \$12,447 Match | \$12,447 Total

Glenn Place, President and Project Manager for RITU, will be supported by James Less (Vice President), Lawson Cary III (Treasurer), and Rich Benson (Conservation Chair). These dedicated RITU volunteers will support this project at the current standard volunteer rate of \$31.80/hr. for an estimated 100 hours, or more as necessary to fully execute the project. Their work will include: communication/coordination with RIDEM, project management, grant reporting and administration, public outreach, trail camera monitoring, and review of project deliverables. RITU has also secured in-kind services from a wetland scientist who has agreed to provide a U.S. Army Corps of Engineers compliant wetland delineation for the project which TU will provide as part of its matching contribution in support of the project and upcoming phases. This deliverable will make up the remainder of the matching contribution under this task.

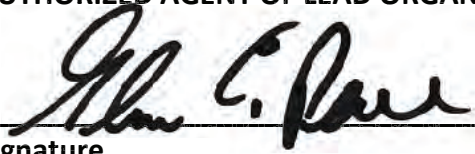
IX. ADDITIONAL MATERIALS

Please include the following with your application:

- ☒ Site and Locus Maps
- ☒ Ground-level photographs of existing site conditions
- ☒ Aerial photographs, if available
- ☒ Preliminary design drawings, maps or engineering plans, if available
- ☒ Pertinent physical, ecological, biological, and cultural / historical survey data
- ☒ Letters of support

AUTHORIZED SIGNATURE

AUTHORIZED AGENT OF LEAD ORGANIZATION


Signature

03/30/2024
Date

Return your completed proposal by 4:00 p.m. on **April 1, 2024** to:

Caitlin Chaffee
NBNERR
RI Dept. of Environmental Management
235 Promenade Street
Providence, RI 02908

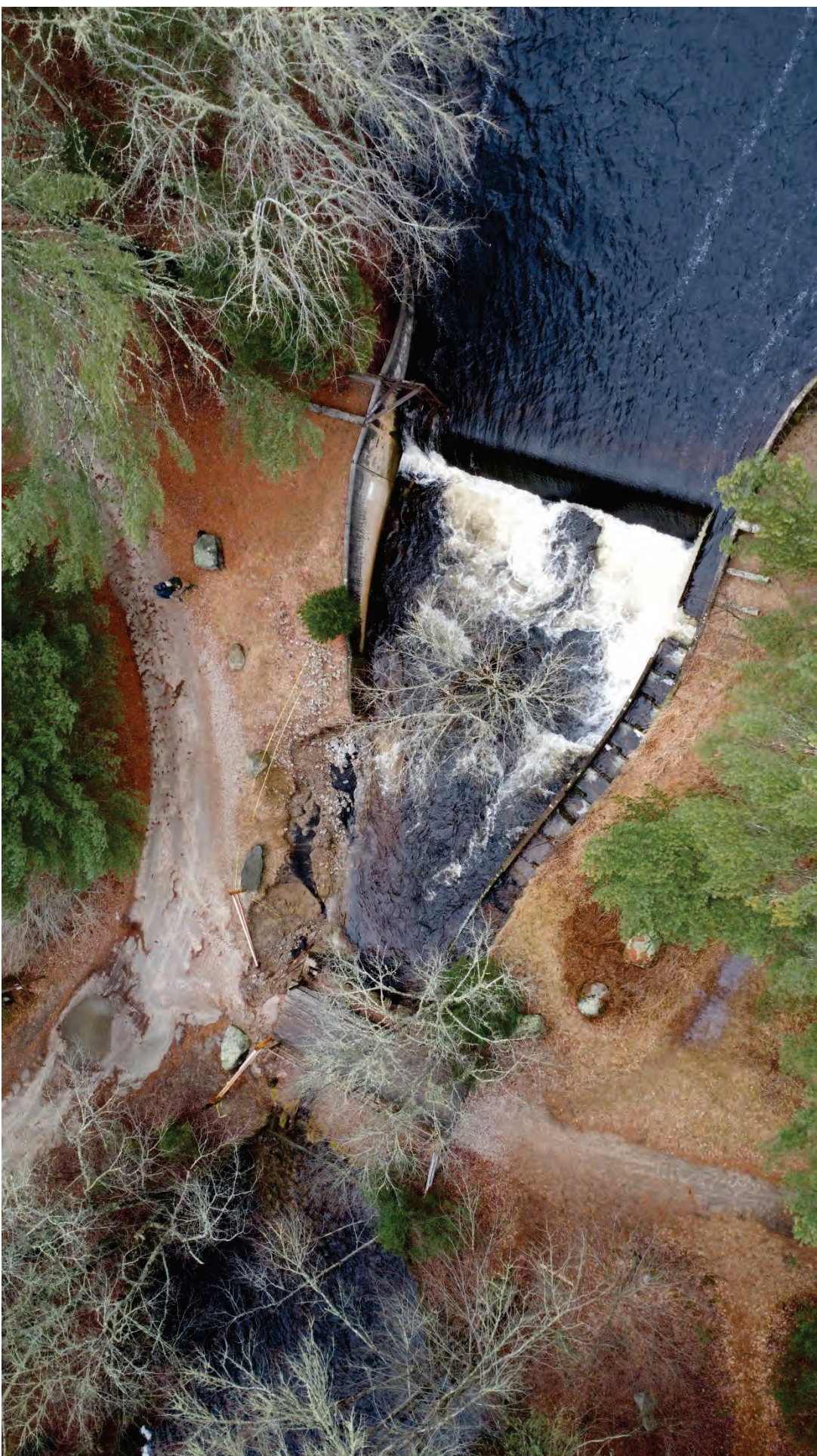
caitlin.chaffee@dem.ri.gov

Applicants are required to submit one (1) signed hard copy of the proposal form and one (1) electronic copy in Adobe PDF format. **Please submit electronic copy as a **SINGLE PDF FILE** containing all application materials.**

Contact Caitlin Chaffee at **401-222-4700 xt. 277-4417** with any questions.



Additional Application Materials





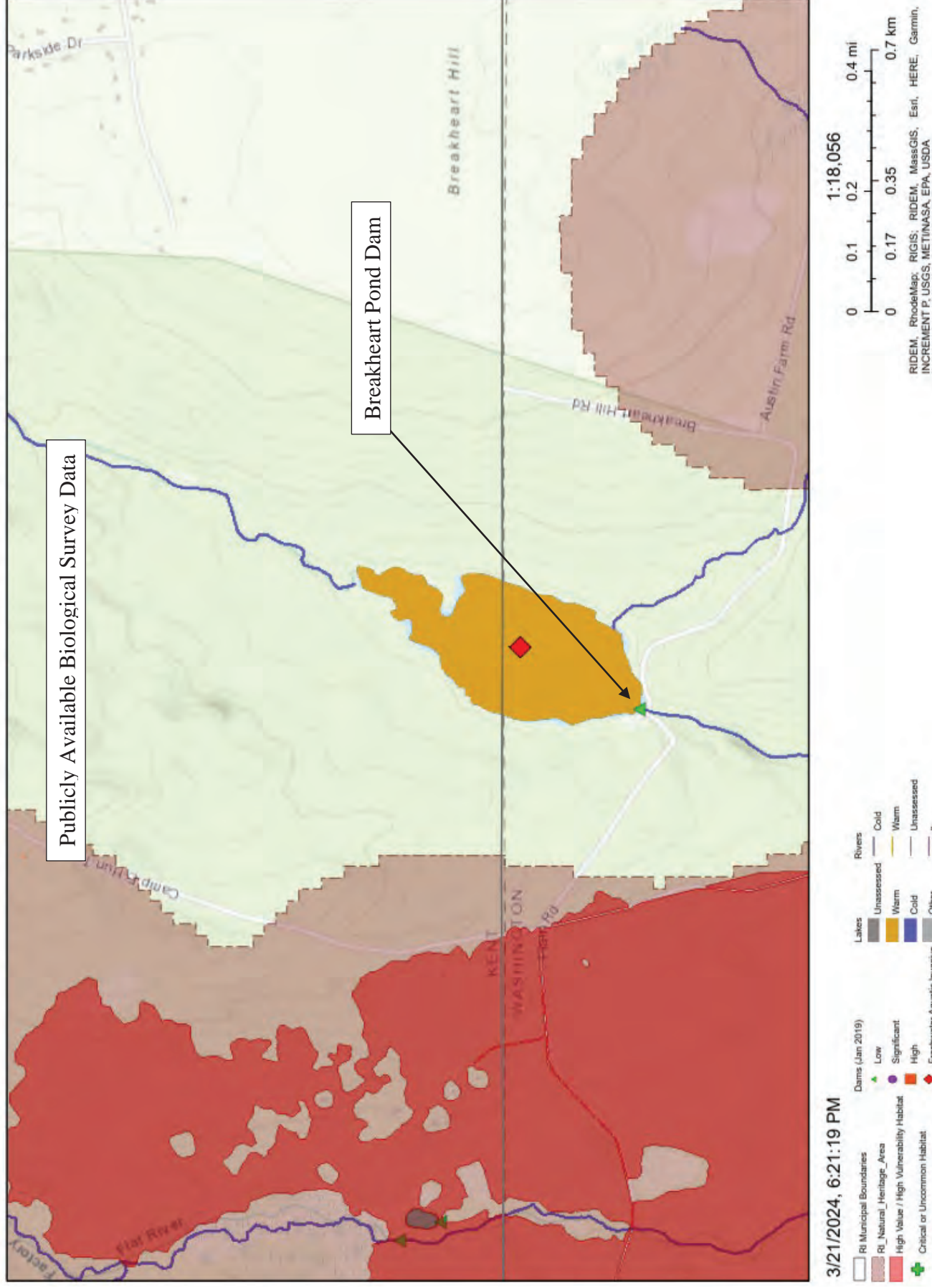




17/01/20



Breakheart Pond Dam for CEHRTF Proposal



Letters of Support



RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF THE DIRECTOR
235 Promenade Street, Room 425
Providence, Rhode Island 02908

Rhode Island Chapter of Trout Unlimited (TU225)
Attn: Glenn Place
203 Arcadia Road
Hope Valley, Rhode Island 02832

RE: Breakheart Pond Dam Feasibility Study

Dear Mr. Place,

The purpose of this letter is to indicate support of the Rhode Island Department of Environmental Management (RIDEM) for Trout Unlimited (TU) to pursue funding from the CRMC Habitat Trust Fund to conduct a feasibility study of the Breakheart Pond Dam. The dam is located in the Arcadia Management Area and the site requires improvements and enhancements from both structural and ecological aspects. Failure of the downstream wing walls and bank erosion continues because of recent storms. Furthermore, Breakheart Pond has been identified as a source of high-water temperature, effectively warming stream temperatures in the upper Wood River watershed and reducing the quality of habitat for fish and other aquatic species.

With climate change threatening ecosystems throughout Rhode Island, warming water temperatures pose a threat to aquatic species ranging from headwater to coastal streams. Projects to mitigate the current and future effects of climate change on riverine ecosystems are of top priority. Numerous species of greatest conservation need (SGCN) are present in Breakheart Brook, throughout the Wood-Pawcatuck watershed, and south to the coastal margin. A sample of these species include Eastern Brook Trout, River Herring, Shad, American Eel, Wood Turtle, and Eastern Pearlshell Mussel. RIDEM has worked with partners on numerous projects to improve fish passage and habitat quality throughout the Wood-Pawcatuck watershed and is currently looking at restoration alternatives at the Breakheart Pond Dam. Understanding project options that will address the structural integrity of the site and the ecological implications of potential alternatives will be a benefit to RIDEM. The outcome of this study is intended to produce a list of future project alternatives that will have ecosystem benefits extending throughout the watershed.

This project is very important to the goals and objectives of RIDEM to protect SGCN by restoring connectivity, restoring habitat, and improving water quality. RIDEM supports TU's plan to conduct a feasibility study of Breakheart Pond Dam and would be willing to provide necessary data for support and staff time to assist with coordination of the study.

Let me know if I can be of additional assistance.

Sincerely,

Jason McNamee, PhD
Deputy Director for Natural Resources
RIDEM Director's Office



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Central New England Fish and Wildlife Conservation Office
151 Broad Street
Nashua, New Hampshire 03063



March 26, 2024

Rhode Island Chapter of Trout Unlimited (TU225)
Attn: Glenn Place
203 Arcadia Road
Hope Valley, Rhode Island 02832

Subject: Letter of Support for the CRMC Habitat Trust Fund

Dear Mr. Place,

The Central New England Fish and Wildlife Conservation Office fully supports the Rhode Island Chapter of Trout Unlimited in their project to conduct a feasibility study of the Breakheart Pond Dam.

Breakheart Pond is located in the upper Wood River, the Wood-Pawcatuck Watershed has been listed as a priority under the USFWS Watershed Investment Map. Removal of Breakheart Pond Dam would reconnect approximately 4.52 miles of stream and connect over 45 acres of high value wetlands and riparian habitat for brook trout, American eel, wood turtle and spotted turtle. This project is one of the highest priority cold-water stream enhancement projects in the State of Rhode Island and is a priority for RIDEM.

Brook trout are listed as a Tier III, American eel is Tier II, and wood and spotted turtles are listed as At-Risk species in the US Fish and Wildlife Service (FWS) Northeast Region Fish and Aquatic Conservation (FAC) Program Strategic Plan as "Species of Conservation and Management Concern". Reconnecting priority areas will greatly improve resiliency and the ability of these species to persist into the future in the face of climate change. Opening full aquatic organism passage allows species to reach quality habitat, seek thermal refugia in the summer, and give access to spawning and rearing habitat. Watersheds throughout New England, such as the Wood-Pawcatuck Watershed, have been severely segmented by dams. Removal of these dams, such as the Breakheart Dam, will restore upstream passage, sediment transportation and water quality. Dam removal can also remove hazards from the river, reduce maintenance, and improve flood resiliency.

Thank you for your hard work on these vital conservation efforts and please feel free to contact me with any questions or concerns. The U.S. Fish and Wildlife Service are a proud partner and supporter of these efforts.

Sincerely,

Keith McGilvray
Project Leader, Central New England FWCO



Rhode Island Chapter of Trout Unlimited (TU225)
Attn: Glenn Place
203 Arcadia Road
Hope Valley, Rhode Island 02832

Subject: Breakheart Pond Dam Removal Feasibility Study

Dear Mr. Place,

This letter serves as formal support from Native Fish Coalition of the Rhode Island Chapter of Trout Unlimited (RITU) goal of gaining funding from the CRMC Habitat Trust Fund to conduct a feasibility study in regard to the removal of Breakheart Pond Dam. The dam, located in Arcadia Management Area, has been identified as a source of water temperature warming which is negatively impacting the upper Wood River watershed and stressing wild native fish and other aquatic lifeforms.

Breakheart Brook and the Wood- Pawcatuck Watershed are home to a number of fish classified as Species of Greatest Conservation Need (SGCN) including brook trout, river herring, American shad, and American eel, as well as some non-fish species such as wood turtle and Eastern pearlshell mussel. Having recently removed a barrier on the Flat River, RITU is looking to continue improving habitat for native species.

Native Fish Coalition believes that this project is critical in regard to restoring and reconnecting important habitat for native fish and other aquatic life. We fully support the initial phase of the project, and look forward to supporting future efforts involving the watershed as more funding becomes available.

Thank you for your work on behalf of wild native fish and please feel free to contact us with any questions or concerns you may have. Native Fish Coalition is proud to partner in this and related efforts that benefit our wild native fish.

Sincerely,

Bob Mallard – Executive Director, Native Fish Coalition
Emily Bastian – National Chair, Native Fish Coalition
Brian Cowden – National Vice Chair Northeast, Native Fish Coalition

March 27, 2024

Rhode Island Chapter of Trout Unlimited
(TU225) Attn: Glenn Place
203 Arcadia Road
Hope Valley, Rhode Island 02832

Subject: Letter of Support for the Breakheart Pond Dam Removal Feasibility Study

Dear Mr. Place,

Save The Bay fully supports the Rhode Island Chapter of Trout Unlimited's (RITU) application to the CRMC Habitat Trust Fund to conduct a feasibility study of the Breakheart Pond Dam. The dam is in the Arcadia Management Area and the site has been identified as a source of high-water temperature, effectively warming stream temperatures in the upper Wood River watershed and reducing the quality of habitat for fish and other aquatic species. I am personally very familiar with Breakheart Pond and the dilapidated fish ladder there, and regularly run and bike on Breakheart Trail.

Numerous species of greatest conservation need (SGCN) are present in Breakheart Brook, throughout the downstream areas below the dam, and in the watershed. Some of these species include Eastern Brook Trout, River Herring, Shad, American Eel, Wood Turtle, and Eastern Pearlshell Mussel. RITU is currently looking to continue native aquatic species and habitat restoration improvements. In light of recent structural issues at the site from heavy rain storms, there is greater interest in removing the dam and making the site more resilient.

Save The Bay understands that this project is a very important first step to reconnect and restore critical habitat and improve water quality in Breakheart Brook. We fully support this initial phase of the project, and look forward to supporting future projects at the site, as funding becomes available.

Thank you for your hard work on these vital conservation efforts!

Sincerely,

Kate McPherson

Narragansett Bay Riverkeeper

Rhode Island Coastal and Estuary Habitat Restoration Fund
Full Proposal Form for Planning Projects 2023/2024
****for design or construction projects please use Full Proposal Form**

I. PROJECT SUMMARY

1. **Project Title:** Woonasquatucket River Streambank Stabilization – San Souci Drive
 2. **Project Location and coordinates (include map):** Woonasquatucket Riverbank along San Souci Drive in Providence, 41.817242889139585, -71.44291803530052 (see attached map)
 3. **Habitat type (River System, Salt Marsh, Seagrass, Shellfish Bed, other):** River System
 4. **If other, please specify:**
 5. **Targeted restoration technique (e.g. re-vegetation, tidal restoration, etc.):** Habitat and Streambank Restoration including buffer restoration and re-vegetation.
 6. **Potential future benefits resulting from proposed planning project:** 1) Improved streambank habitat restoration, 2) Streambank stabilization, 3) Prevent slumping/erosion of Woonasquatucket River Greenway, San Souci Spur, completed in 2019, into river and also San Souci Drive that is a concern to the City of Providence and 4) Help mitigate United Way of Rhode Island's retaining wall degradation within the project area.
 7. **Project partners (organizations providing financial or other support to the project):** City of Providence Departments of Public Works and Providence Emergency Management Agency (PEMA); United Way of Rhode Island
 8. **Is this is an ongoing project that has previously received funds from the CRMC Coastal and Estuarine Habitat Restoration Fund?** Yes **If yes, year(s) funding was awarded:**
 - 2019 – \$16,900 (\$9,750 of these funds not expended and available)
 - 2022 – \$50,000 (all \$50,000 not expended and available)
-

II. PROJECT MANAGER CONTACT INFORMATION

1. **Name:** Alicia J. Lehrer, Executive Director
2. **Organization:** Woonasquatucket River Watershed Council (WRWC)
3. **Address:** 45 Eagle Street, Suite 202
4. **City:** Providence 5. **State:** RI 6. **Zip:** 02909-1082
7. **Phone:** 401-861-9046 8. **Email:** alehrer@wrwc.org
9. **Property Owner(s):** City of Providence, United Way of Rhode Island

III. BUDGET SUMMARY

(List individuals or organizations providing financial or in-kind support to the project under Project Partners)

Amount Requested from Trust Fund		\$50,000
Matching Funds	Project Partner(s)	Amount of Match
In-Kind	Providence DPW Chief Engineer Staff Time	\$5,000
Cash	Rhode Island Coastal and Estuary Habitat Restoration Fund (CEHRT) (includes previous unexpended grant remainder)	\$59,750
Cash	WRWC Project management Staff Time (from SNEP Pilot Watersheds Initiative)	\$15,570
Cash (Pending, grant application submitted February 2024)	319 Nonpoint Grant Funds	\$70,150
Cash	United Way of RI	\$50,000
In-Kind	United Way of RI	\$5,000
Cash	Additional Funding Needed to Complete Permitting, Sources Pending	\$10,075
	TOTAL PROJECT COST	\$265,545

IV. PROPOSAL NARRATIVE

1. Justification and Purpose

The Woonasquatucket Streambank Stabilization Project has significant funding/investment. Currently, funding is secured for the Alternatives Analysis/Conceptual Design that includes an Existing Conditions Survey and Wetland Assessment and for the Environmental and Geotechnical Assessment tasks. To date, the Survey has been completed and the Environmental Consultant is starting the Alternatives Analysis/Conceptual Design. For the project to progress without interruption to Phase II that includes the 60% Design and associated project management and meetings, the CRMC funding is urgently needed.

Proposed Project: The Woonasquatucket River Watershed Council (WRWC) proposes to restore the habitat and stabilize the streambank along San Souci Drive and the United Way of Rhode Island Property in urban Providence, RI. Our priority is creating a flood and climate resistant stable streambank that improves habitat for pollinators, aquatic species, and mammals along the river. As part of this effort, the streambank will also be stabilized with a mix of both hard (rip rap) and softer (geogrid, coir fiber matting, and/or other plantable structures planted with native, wildlife friendly vegetation) bank stabilization methods. The need for hard methods is not preferred; however, the high flow velocities and limited space require more substantial infrastructure, particularly at the bend of the river in the project area. Nonetheless, our priority is creating a flood and climate resistant stable streambank that improves habitat for pollinators, aquatic species, and mammals along the river.

Restoration Goal: Our goal is sustainable habitat restoration and stabilization of the streambank.

Short-term and Long-Term Outcomes: Both short-term and long-term outcomes include creating a flood and weather resistant stable streambank that improves habitat for pollinators and mammals. Over the long- term this project will prevent further bank slumping and degradation of the recently installed multi-use trail at the top of the bank along San Souci Drive and San Souci Drive adjacent to the trail, and help the United Way of RI mitigate further impacts to their retaining wall detailed under Human Impacts below.

Human Impacts: The river in this area of Providence is channelized due to dense industrial, commercial, and residential development along its banks. As climate change brings higher intensity and more frequent storms, erosion along this bend in the river has become worse over the last ten years. We need to stabilize it before it degrades completely.

- In particular, the multi-use trail completed in 2019 and San Souci Drive are at a high risk of further slumping into the river and degradation with noticeable increasing cracks visible over the last couple of months to the point where the Providence Emergency Management Agency (PEMA) assessed found it necessary to place cones on the trail in March 2024. The City of Providence Department of Public Works (DPW) is very concerned and identifies this project as a priority, with the slumping and degradation of the trail, adjacent to San Souci Drive, becoming a safety issue.
- Additionally, the United Way of RI is very concerned about their patio foundation and retaining wall and its impact on their building. The United Way, an important partner who serves the greater community, has experienced degradation of their retaining wall adjacent to the river that has worsened during the December and January 2024 storms. Concerned with the early March 2024 storm events, the United Way conducted an emergency repair of their retaining wall for fear of the wall collapsing into the river. This is an immediate issue that requires immediate attention – the proposed restoration project will help mitigate structural impacts to the retaining wall.

Previous Restoration Activities: This section of the Woonasquatucket River benefitted from previous restoration activities concurrent with building the multi-use trail on San Souci Drive in 2019. We received previous CRMC Coastal and Estuarine Habitat Restoration Trust (CEHRT) Funds in the amount of \$16,900 to purchase plants and soils and add pollinator habitat directly in and around the trail adjacent to the streambank and in the immediate vicinity such as on United Way of Rhode Island's (UWRI) property and a new walkway that includes green stormwater infrastructure between Westminster Street and San Souci Drive in Olneyville Square. Because the trail project did not cost as much as initially estimated, we did not need to use all the funds allocated at that time. We still have \$9,750 remaining from those project funds and propose to use them to provide additional design, permitting and construction funds to the current project. We also received \$50,000 in 2022 CRMC CEHRT for the first part of design for this project. To date, we have developed a scope of work, a request for proposals (RFP), reviewed bids, and chose an engineering firm to complete a survey of the project area and develop an alternatives analysis/conceptual plans for streambank restoration. The survey was recently completed that will be used for the alternatives analysis/conceptual plan development.

2. Project Activities, Schedule and Work Plan

Task	Schedule	Funding
Exiting Conditions Survey	Complete - March 2024	Secured
Wetland Assessment	Complete - March 2024	Secured
Alternatives Analysis & Conceptual Design	June 2024	Secured
Environmental Assessment – Phase I	July 2024	Secured
Geotechnical Analysis	August 2024 – September 2024	Secured
Environmental Assessment – Phase II	August 2024 – October 2024	Secured
60% Design	October 2024 – January 2025	CEHRF Request and Pending Funding
Permitting	February 2025 – September 2025	Pending and Future Funding
90% Design	October 2025 – December 2025	Future Funding
Construction Documents, Construction Bidding, and Construction/Oversight	January 2026 – April 2027	Future Funding

- March 2024: Existing Conditions Survey and Wetland Assessment is completed. This survey includes the streambank and streambed survey to conduct the hydrologic/hydraulic modeling for the Alternatives Analysis & Conceptual Design.
- June 2024: Alternatives Analysis & Conceptual Design. A report will be prepared that summarizes the alternatives analysis that includes a design review with partners & stakeholders and development of conceptual plans to further the design process. As part of this analysis, we will meet with the interagency (RIDEM/CRMC) Habitat Restoration Team to solicit input on concepts. Review and input from stakeholders and the interagency Habitat Restoration Team will help ensure the restoration of the ecosystem functions are met and set precedence for completion of the design.
- July 2024 – October 2024: Phase I & II Environmental Assessments and a Geotechnical Analysis will be performed, as necessary, to further identify any hazards and constraints to advance the design process to 60%.
- October 2024 – January 2025: 60% Design. Based on the Conceptual Design and Environmental/Geotechnical assessments, the design will be advanced to 60% with plans and specifications submitted to the regulatory agencies as part of the necessary environmental permit applications.
- February 2025 – September 2025: Permitting. Necessary permit applications will be completed and sent to the appropriate regulatory agencies for review and final approval of project permits. As part of the review process, regulatory agencies will provide input to ensure the intent of the habitat and streambank restoration activities meet criteria for the intended ecosystem function.
- October 2025 – December 2025: 90% design that includes plans and specifications will be completed.
- January 2026 – April 2027: Final Construction Documents that include Bidding Forms will be completed. In addition the RFP for construction services, bid reviews, contract selection, and final agreement will be completed. The project will be constructed within the timeframe allowed for streambank projects. Final restoration and a final project report will also be completed.

3. Coordination and Public Support

WRWC has worked in this project area for over 25 years. The multi-use trail on San Souci Drive, completed in 2019, was developed through our advocacy, partnership and funding efforts with strong community support. Through that effort, we met with all property owners surrounding the project area and have developed strong relationships with them. We also partnered closely with the City of Providence DPW and PEMA, as San Souci Drive is a Providence owned and operated street. Although we have had a long and productive relationship with United Way of Rhode Island, we deepened our relationship with them as Woonasquatucket River abutters and a property owner on San Souci Drive. Attached, you will find support letters from Providence Chief Engineer, Craig Hochman, who has committed to be part of our project team and the United Way of Rhode Island (UWRI) COO, Robert Bush, another member of the project team and our connection to the work that will take place on UWRI property. In addition, we have a support letters from PEMA.

Outreach and education strategies include programs through the Olneyville Resilience Hub, a shared community space and resource for residents to learn about and act on environmental resilience, economic security, and community health. The Hub, formed in November 2023, was launched through the efforts of the WRWC, City of Providence Office of Sustainability and PEMA to directly engage residents with projects that include San Souci, so they can learn about each phase of a restoration project through direct participation. Features of these programs support preparation to activate their community to engage with projects and project teams for education and advocacy purposes.

The WRWC will also continue investing in our community leadership training programs such as New Voices (Nuevas Voces in Spanish) Program to build leadership capacity and advocacy for environmental justice and climate resilience among Olneyville residents living in flood zones and experiencing the greatest challenges due to these issues. This impactful opportunity features an 10-month resident-to-resident cohort training/empowerment program delivered in Spanish and/or other languages as preferred by participants. We will also continue to work with a select group of Nuevas Voces graduates, Climate Action Champions (Campeones de Combate Climático or Campeones in Spanish). WRWC trains this team specifically in climate adaptation and mitigation strategies through specialized stormwater and habitat restoration training, and through following projects including the San Souci Streambank Restoration and other stormwater capture and treatment and streambank restoration projects in their neighborhoods from problem identification all the way through construction. The Campeones, who have been included in preliminary project meetings, are aware of the flooding and erosion issues in this Project area and view it as a priority project in their neighborhood. They also support WRWC in monitoring and recording at the Project Site during extreme flood events. What the Campeones learn through this project will help them identify and prioritize additional projects that we can work on together to continue to make their neighborhood and local river more resilient to the impacts of climate change.

4. Planning Consistency and Restoration Priority

This project is consistent with CRMC's restoration priorities of enhancing habitats' resiliency to climate change on projects located within Environmental Justice communities and/or that address Environmental Justice Concerns. We discuss both these priorities in sections 6 and 7 below.

5. Species of Concern

The project will help assure the success of fish runs which can lead to an increase in breeding populations of birds on the Woonasquatucket. Some of the species of concern listed in the above

report, such as black crowned night heron and the hooded merganser are already observed on the Woonasquatucket.

6. Climate Change and Coastal Resiliency

As described above, this project will create sustainable wildlife habitat and stabilize the streambank to directly mitigate the effects of and provide resilience in the face of increased flashy streamflows and flooding related to higher intensity and more frequent storms brought about by climate change. This project will have direct impacts on resilience of habitat to climate change. It will improve streambank habitat resilience to increased storm flows and protect migratory fish spawning habitat that can make up for a other coastal habitat losses due to climate change. We considered the present and future impacts of climate change during the project planning and design phases. As a result, the project is designed to withstand stronger and more frequent storms and rainfall amounts. It is also designed to improve avian, mammal and pollinator habitat along this stretch of the Woonasquatucket River.

7. Environmental Justice

This project takes place in and will benefit an environmental justice community. The proposed project takes place in the Olneyville neighborhood of Providence in an area identified by the Narragansett Bay Estuary Program as their highest environmental justice priority area: Priority Index 4 – 94.9% non-white and/or Latinx, 47.3% low income, 41.5% limited English, 47.1% less than high school education level.

This area is also listed as between the 90th and 96th percentile in EPA Region 1 for all environmental justice indices using EPA's EJ Screen tool: https://ejscreen.epa.gov/mapper/ejscreen_SOE.aspx Under the EPA Environmental and Climate Justice Program (ECJ Program), San Souci Drive is located in a designated EPA Inflation Reduction Act (IRA) Disadvantaged Community. The area is underserved and overburdened with cumulative environmental and public health impacts. San Souci Drive is situated in the heart of the Olneyville neighborhood of Providence - one of the two most racially and socioeconomically diverse neighborhoods in Providence. Olneyville is the economic center of Providence's west side, the core of the historically/geographically significant Woonasquatucket River Valley, and located near polluting industries and highways. Portions of Olneyville lie in the flood plain of the Woonasquatucket River, and as such, Olneyville is disproportionately impacted by severe storm and flooding and other environmental justice and climate concerns. Olneyville Square, including San Souci Drive, is densely developed with numerous minority-owned restaurants and businesses, offices and studio spaces where flooding has dire impacts on community life.

8. Permitting

This project will require a Rhode Island Department of Environmental Management (RIDEM) Freshwater Wetlands Permit and, most likely, a RIDEM Water Quality Certification and a US Army Corps of Engineers Permit. We plan to apply for all permits once we complete the 60% design phase.

9. Capacity of Lead Organization

(a) The Woonasquatucket River Watershed Council, a 501(c)(3) organization creates positive environmental, social and economic change by revitalizing the Woonasquatucket River, its Greenway and its communities. The WRWC is actively involved in and plays a critical role in ongoing restoration efforts in the watershed including the initiative to restore fish runs to Woonasquatucket; restore the Centredale Manor Superfund site; wetland restoration efforts such as the Deerfield Park and Department of Public Works projects in Smithfield; and riparian buffer restoration projects such as those we successfully completed at Cutler Brook in Glocester, and the Stillwater Brook in Smithfield.

The WRWC brings local knowledge and the ability to coordinate funding and partners to facilitate project success.

(b) WRWC has a team dedicated to capital improvement projects. Our team includes two professional engineers (Bridget Zwack, PE and Mark Pereira, PE), and a stormwater specialist (Sam Blair). The team also has the ongoing support and direction of the WRWC Executive Director (Alicia Lehrer). The design, permitting, and construction oversight of several of our projects are contracted out to local engineering firms through a competitive bid process.

For this project, WRWC will assign Bridget Zwack, PE as the Project Manager and dedicated staff person. Bridget is an environmental engineer with over 15 years of experience in design, permitting, construction, and project management. Her projects focus on habitat and streambank restoration, water quality, and flood mitigation. For this project, her role will include:

- Directing technical matters;
- Overseeing work by EA Engineering, the engineering firm responsible for the conceptual design/alternatives analysis. EA will continue work on the full design, permitting, and eventual construction documents, bidding, and construction oversight;
- Coordinating with project stakeholders, who include the City of Providence (owner for San Souci Drive), United Way of Providence (property owner), CRMC (funder), and RIDEM (permitting agency/potential funder);
- Hosting periodic project meetings during design and permitting; and
- Project reporting.

(c) To date, we have successfully completed five fish passage projects with deep appreciation to the Coastal and Environmental Habitat Restoration Trust for ongoing support to complete them all. The WRWC has successfully coordinated and overseen project development, RFP development, bid management, and construction for dozens of projects throughout the Woonasquatucket Watershed including eight green infrastructure projects completed in the last five years.

10. External Factors and Climate Change

Flooding is a major concern that affects the habitat of the study area. This flooding, in large part, that includes more frequent, intense rainfall events is due to climate change. Climate change is already causing increased frequency and intensity of storms that have led to the issues we are addressing with this project, especially, the destabilization of the habitat and slumping of the streambank into the river. The vegetated streambank will need ongoing maintenance as described above and extremely intense storms could compromise the project. We know that this is the case and therefore, our plan for ongoing maintenance by the WRWC River Rangers will assure project success over the long term.

As part of the design considerations, climate change affects will be considered that include the more frequent, intense rainfall events and any design measures implemented will not increase the volume of the river that would create increased flooding conditions.

V. EVALUATING PROJECT SUCCESS (one page maximum)

1. Performance Measures and Deliverables

WRWC will develop a record drawing of the Project following construction. Using this record drawing, we will summarize the following Measurable Environmental Results in our final report:

- Pollutant loads reduced via vegetated riparian buffer (sediment, TP, TN, BOD, COD);
- Linear feet of vegetated riparian buffer created;
- Linear feet of riverbank stabilized;
- Fish counts (ongoing effort for entire Woonasquatucket River); and
- Others as requested.

Long term, success of this project will be measured through annual monitoring of fish return through the fish ladder at Rising Sun Mills (see monitoring plan below).

2. Monitoring Plan

Rangers maintain the site and monitor for slumping and erosion on a weekly basis. WRWC volunteers monitor fish return annually at the Rising Sun Mills Fish Ladder using RIDEM F&W monitoring protocol.

Volunteers collect direct counts at least twice daily from the middle of March through the middle of May annually. They record data in a notebook stored in a lockbox at the site. The data are analyzed by RIDEM F&W. The WRWC reports results through our Constant Contact email list, on our website, in our newsletter and directly to project partners.

Since 2010, over 40 volunteers have collected fish return data at Rising Sun Mills annually. The WRWC will assure that this practice continues in perpetuity by coordinating with RIDEM F&W, recruiting, training and setting up a monitoring calendar annually. As more habitat becomes available, we expect to see an increase in fish return at Rising Sun annually.

Additionally, the WRWC began a new volunteer monitoring program in 2014 that we continue annually. Volunteers collect fish community data annually through an electrofishing program at two sites on the Woonasquatucket. The upstream site is located on a section of river next to Whipple Field in Smithfield, a site we consider to be a fairly pristine riverine site. The second site is just downstream of Rising Sun Mills Dam in Providence, our urban site. Volunteers inventory the fish community once annually at each site on a 100' stretch of the river. This program allows us to establish a baseline and monitor changes in the fish community. We expect that our fish passage projects will strengthen the fish community diversity and population at our downstream site because all river fish will have a greater habitat range as a result of our fish passage projects. Our protocol for this program was developed with the assistance of Alan Libby, state Fishery Biologist.

Finally, we finalized our six year grant agreement through the Southeast New England Program (SNEP) Pilot Watersheds Initiative, so we know we will have at least four years of support after construction for all our watershed restoration activities. Maintenance will include monthly inspections during the growing season for three years as well as invasive removal and plant replacement if necessary. Should the bank stabilization show signs of failing, the WRWC team will work with partners to correct any issues expediently.

VI. PROJECT BUDGET TEMPLATE

BUDGET CATEGORY	CRMC REQUEST	MATCH	MATCH PENDING OR SECURED? (select one)	SOURCE OF MATCH	TOTAL
RFP Development / Consultant Selection (completed)		\$2,060 \$1,000	SECURED SECURED	SNEP Pilot Watersheds In-Kind DPW Time	\$3,060
Consultant Project Mgmt. WRWC Project Mgmt.		\$2,050 \$4,175 \$6,000	SECURED SECURED SECURED	Previous CEHRT Grant SNEP Pilot Watersheds Previous CEHRT Grant	\$12,225
Project Team Mtgs – Cons. Project Team Mtgs – WRWC Project Team Mtgs - Parnters		\$6,000 \$5,000 \$9,000	SECURED SECURED SECURED	CEHRT Grant SNEP Pilot Watersheds In-Kind DPW & UWRI Time	\$20,000
Existing Conditions Assessment		\$20,600 \$860	SECURED SECURED	Previous CEHRT Grant SNEP Pilot Watersheds	\$21,460
Alternatives Analysis		\$17,100 860	SECURED SECURED	Previous CEHRT Grant SNEP Pilot Watersheds	\$17,960
Habitat Restoration Team Meeting		\$2,000 \$1,350	SECURED SECURED	Previous CEHRT Grant SNEP Pilot Watersheds	\$3,350
Basis of Design		\$6,000 \$1,265	SECURED SECURED	Previous CEHRT Grant SNEP Pilot Watersheds	\$7,265
Environmental Assessment – Phase I		\$5,000	SECURED	UWRI Funds	\$5,000
Geotechnical Analysis		\$20,000	SECURED	UWRI Funds	\$20,000
Environmental Assessment – Phase II		\$25,000	SECURED	UWRI Funds	\$25,000
60% (Phase II) Project Mgmt	\$14,425	\$0	-	-	\$14,425
60% (Phase II) Team Meetings	\$11,600	\$0	-	-	\$11,600
60% Design Submittal	\$23,975	\$38,225	PENDING	319 Nonpoint Grant	\$62,200
Permitting		\$31,925 \$10,075	PENDING PENDING	319 Nonpoint Grant Future Match Sources	\$42,000
SUBTOTAL CURRENT DESIGN PHASE II REQUEST	\$50,000	\$215,545		TOTAL CURRENT PROJECT COST	\$265,545
FUTURE WORK PLANNED/COSTS					
Final Engineering (90% & 100%), specs and bid package		\$22,500	PENDING	NOAA Underserved Communities Grant /NRCS Emergency Watershed Protection Program	\$22,500
Bid Administration		\$5,000	PENDING	"	\$5,000
Construction Oversight / Admin		\$40,000	PENDING	"	\$40,000
Construction		TBD	PENDING	"	
Maintenance		\$30,000	PENDING	"	\$30,000
FUTURE TOTAL	TBD	TBD		TOTAL PROJECT COST	TBD

VII. BUDGET NARRATIVE (one page maximum)

Phase I Design: Through Basis of Design Step

RFP Development & Consultant Selection: \$3,060

- No New CRMC Funds Requested
- WRWC Staff Time (paid through SNEP Pilot Watersheds grant): \$2,060
 - Alicia Lehrer, Executive Director, 10 hours @ \$85/hour (includes fringe) = \$850
 - Bridget Zwack, Environmental Engineer, 16 hours @ \$75/hour (includes fringe) = \$1,210
- Providence DPW Time (in-kind), 10 hours @ \$100/hour (including fringe) = \$1,000

Project Management: \$12,225

- No New CRMC Funds Requested
- Previously granted CRMC funds for Consultant Staff Time: \$6,000
- WRWC Staff Time (paid through previously granted CRMC fund - \$2,050, and SNEP Pilot Watersheds grant - \$4,175): \$6,225
 - Alicia Lehrer, Executive Director, 15 hours @ \$85/hour (includes fringe) = \$1,275
 - Bridget Zwack, Environmental Engineer, 66 hours @ \$75/hour (includes fringe) = \$4,950

Project Team Meetings: \$20,000

- No New CRMC Funds Requested
- Previously granted CRMC funds for Consultant Staff Time: \$6,000
- WRWC Staff Time (paid through SNEP Pilot Watersheds grant): \$5,000
 - Alicia Lehrer, Executive Director, 10 hours @ \$85/hour (includes fringe) = \$850
 - Bridget Zwack, Environmental Engineer, 55 hours @ \$75/hour (includes fringe) = \$4,150
- Providence DPW Time (in-kind), 40 hours @ \$100/hour (including fringe) = \$4,000
- UWRI Time (in-kind), 50 hours @ \$100/hour (including fringe) = \$5,000

Existing Conditions Assessment: \$21,460

- No New CRMC Funds Requested
- Previously granted CRMC funds for Consultant Staff Time: \$20,600
- WRWC Staff Time (paid through SNEP Pilot Watersheds grant): \$860
 - Alicia Lehrer, Executive Director, 4 hours @ \$85/hour (includes fringe) = \$340
 - Bridget Zwack, Environmental Engineer, 7 hours @ \$75/hour (includes fringe) = \$520

Alternatives Analysis: \$17,960

- No New CRMC Funds Requested
- Previously granted CRMC funds for Consultant Staff Time: \$17,100
- WRWC Staff Time (paid through SNEP Pilot Watersheds grant): \$860
 - Alicia Lehrer, Executive Director, 4 hours @ \$85/hour (includes fringe) = \$340
 - Bridget Zwack, Environmental Engineer, 7 hours @ \$75/hour (includes fringe) = \$520

Habitat Restoration Team Meeting: \$3,350

- No New CRMC Funds Requested
- Previously granted CRMC funds for Consultant Staff Time: \$2,000
- WRWC Staff Time (paid through SNEP Pilot Watersheds grant): \$1,350
 - Alicia Lehrer, Executive Director, 5 hours @ \$85/hour (includes fringe) = \$425
 - Bridget Zwack, Environmental Engineer, 12 hours @ \$75/hour (includes fringe) = \$925

Basis of Design: \$7,265

- No New CRMC Funds Requested
- Previously granted CRMC funds for Consultant Staff Time: \$6,000
- WRWC Staff Time (paid through SNEP Pilot Watersheds grant): \$1,265
 - Alicia Lehrer, Executive Director, 3 hours @ \$85/hour (includes fringe) = \$255
 - Bridget Zwack, Environmental Engineer, 13.5 hours @ \$75/hour (includes fringe) = \$1,010

Environmental Assessments (Phase I & II) and Geotechnical Analysis: \$50,000

- UWRI funds for Assessments: \$50,000

Phase II: 60% Design – (a) Includes Phase II Project Management, (b) Phase II Project Team Meetings, and (c) 60% Design Submittal (Fund Request in Bold):

(a) Project Management: \$14,425

- **CRMC Funds Requested for Consultant Staff Time: \$8,200**
- **CRMC Funds Requested for WRWC Staff Time: \$6,225**
 - Alicia Lehrer, Executive Director, 15 hours @ \$85/hour (includes fringe) = \$1,275

- Bridget Zwack, Environmental Engineer, 66 hours @ \$75/hour (includes fringe) = \$3,000
- (b) Phase II Project Team Meetings: \$11,600
 - **CRMC Funds Requested for Consultant Staff Time: \$6,600**
 - **CRMC Funds Requested for WRWC Staff Time: \$5,000**
 - Alicia Lehrer, Executive Director, 8.2 hours @ \$85/hour (includes fringe) = \$700
 - Bridget Zwack, Environmental Engineer, 57 hours @ \$75/hour (includes fringe) = \$4,300
- (c) 60% Design Submittal: \$62,200
 - **CRMC Funds Requested for Consultant Staff Time: \$23,975**
 - Match for Consultant Staff Time (paid through 319 Nonpoint Grant Source - Pending): \$38,225
- Permitting: \$42,000
 - Match for Consultant Staff Time (paid through 319 Nonpoint Grant Source - Pending): \$38,225
 - Match for Consultant Staff Time (Future Grant Source): \$38,225

IX. ADDITIONAL MATERIALS

Please include the following with your application:

 X Site and Locus Maps

 X Ground-level photographs of existing site conditions

- Photos taken on March 25, 2004 showing damage to San Souci bike path and United Way emergency wall repair.
- Photos taken after the December 2003 and January 2004 major storm events.
- Photos taken December 2, 2021 showing streambank erosion and undercutting.

 Aerial photographs, if available

 X Preliminary design drawings, maps or engineering plans, if available

- Consulting Engineer's Contract for Phase I Services (Existing Conditions Survey, Wetlands Assessment, and Alternatives Analysis/Conceptual Design).
- Modifications to Phase I Services that included extended Existing Conditions Survey for United Way's Property.

 Pertinent physical, ecological, biological, and cultural / historical survey data

 X Letters of support

- Providence Department of Public Works – City Engineer
- United Way of RI
- Providence Emergency Management Agency (PEMA)

AUTHORIZED SIGNATURE

AUTHORIZED AGENT OF LEAD ORGANIZATION

Alicia J. Lehrer Alicia J. Lehrer, Executive Director April 1, 2024
Signature Date

Return your completed proposal by 4:00 p.m. on **April 1, 2024** to:

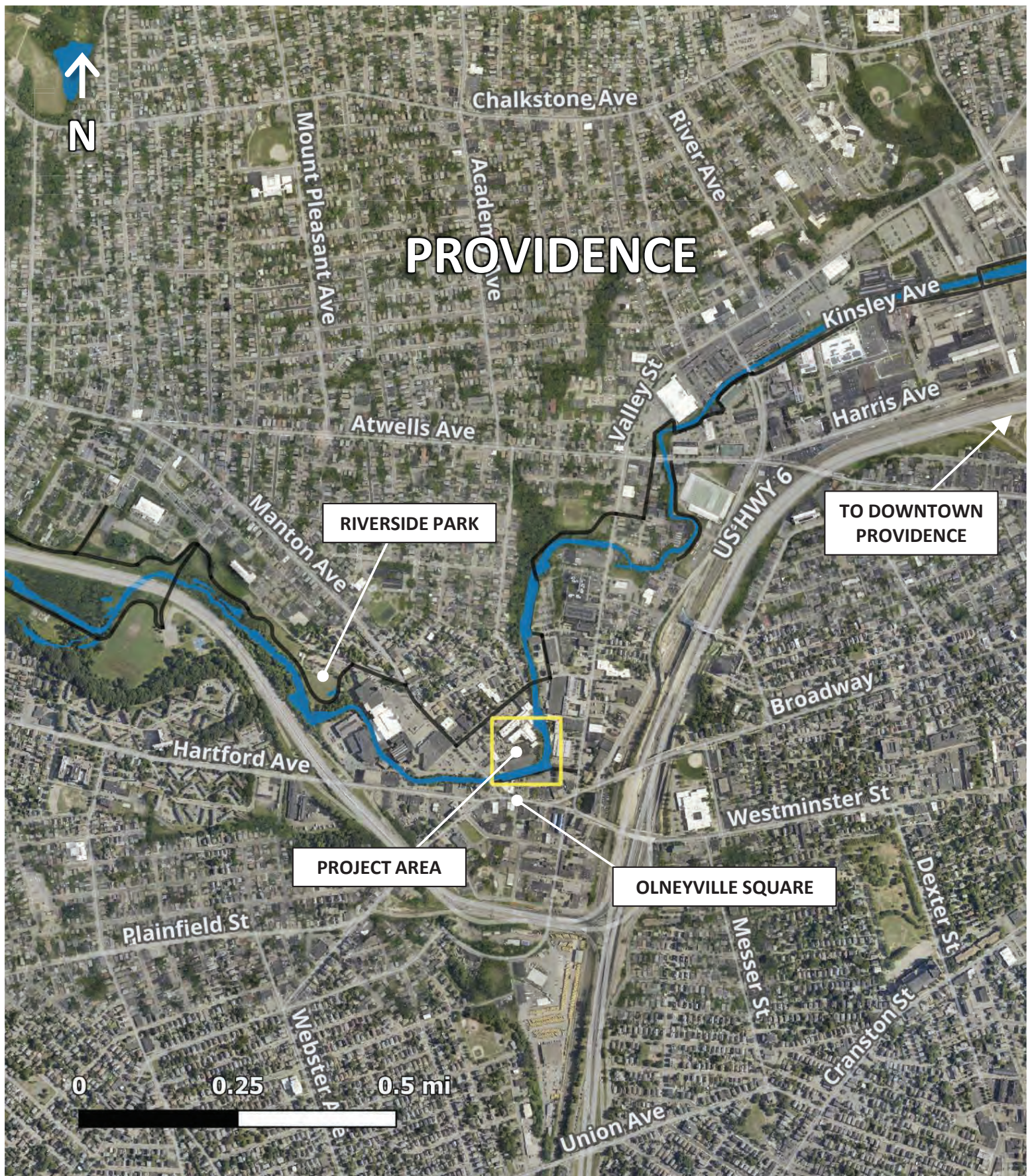
Caitlin Chaffee
NBNERR
RI Dept. of Environmental Management
235 Promenade Street
Providence, RI 02908

caitlin.chaffee@dem.ri.gov

Applicants are required to submit one (1) signed hard copy of the proposal form and one (1) electronic copy in Adobe PDF format. **Please submit electronic copy as a **SINGLE PDF FILE** containing all application materials.**

Contact Caitlin Chaffee at **401-222-4700 xt. 277-4417** with any questions.





PROJECT AREA COORDINATES	LEGEND
41.81745330 N, -71.44231044 W	 GREENWAY WOONASQUATUCKET RIVER & TRIBUTARIES



**WOONASQUATUCKET RIVER
WATERSHED COUNCIL**

SAN SOUCI RIVERBANK RESTORATION PROJECT –
OVERVIEW
PROVIDENCE, RHODE ISLAND

NOT TO SCALE

DATE: 2/16/2024



WOONASQUATUCKET RIVER
WATERSHED COUNCIL

SAN SOUCI RIVERBANK RESTORATION PROJECT –
PROJECT AREA
PROVIDENCE, RHODE ISLAND

NOT TO SCALE

DATE: 2/16/2024



**FIGURE 1A – BIKE PATH ALONG
SAN SOUCI DRIVE SHOWING
EXTENT OF PAVEMENT CRACKING.
PEMA PLACED CONES ON PATH
FOR SAFETY MEASURE. FACING
EAST.**



**FIGURE 1B – BIKE PATH ALONG
SAN SOUCI DRIVE SHOWING
EXTENT OF PAVEMENT CRACKING.
PEMA PLACED CONES ON PATH
FOR SAFETY MEASURE. FACING
WEST.**





FIGURE 1C – VIEW FROM SAN SOUCI DRIVE FACING NORTH TOWARD UNITED WAY SHOWING UNDERCUTTING OF STREAMBANK AND EXTENT OF UNITED WAY’S EMERGENCY WALL REPAIR



FIGURE 1D – CLOSER VIEW OF UNITED WAY’S EMERGENCY WALL REPAIR. LOCATED ON UNITED WAY’S PROPERTY FACING SOUTH SHOWING EXTENT OF RIPRAP PLACEMENT ALONG BUILDING AND AT CORNER OF RETAINING WALL.





FIGURE 1A – SEPARATED BIKE PATH (WOONASQUATUCKET RIVER GREENWAY SPUR) ALONG SAN SOUCI DRIVE. SINKING AND CRACKING OF PAVEMENT AS A RESULT OF BANK EROSION VISIBLE. PHOTO TAKEN AFTER DECEMBER 18, 2023 RAINFALL EVENT.



FIGURE 1B – VIEW FROM RIVER OF AN ADJACENT AREA. TREE ROOTS ARE EXPOSED/UNDERCUT. THIS AREA IS ADJACENT TO BIKEPATH AND SAN SOUCI DRIVE.



FIGURE 1C – BIORETENTION BASINS INSTALLED JUST SOUTH OF SAN SOUCI DRIVE. FLOODING FROM THE RIVER AFTER DECEMBER 18, 2023 RAINFALL EVENT HAS FILLED THE BASINS WITH SILT AND MUD.



FIGURE 1D – VIEW LOOKING EAST ALONG SAN SOUCI DRIVE AFTER THE DECEMBER 18, 2023 RAINFALL EVENT. SEDIMENT ON BIKE PATH AND ROAD SHOW THE EXTENT OF FLOODING.





FIGURE 1E – SEDIMENT DELTA AND TREE/TRASH DEBRIS ON THE LEFT SIDE OF THE RIVERBANK LOOKING DOWNSTREAM. PHOTO TAKEN FROM UNITED WAY PROPERTY.

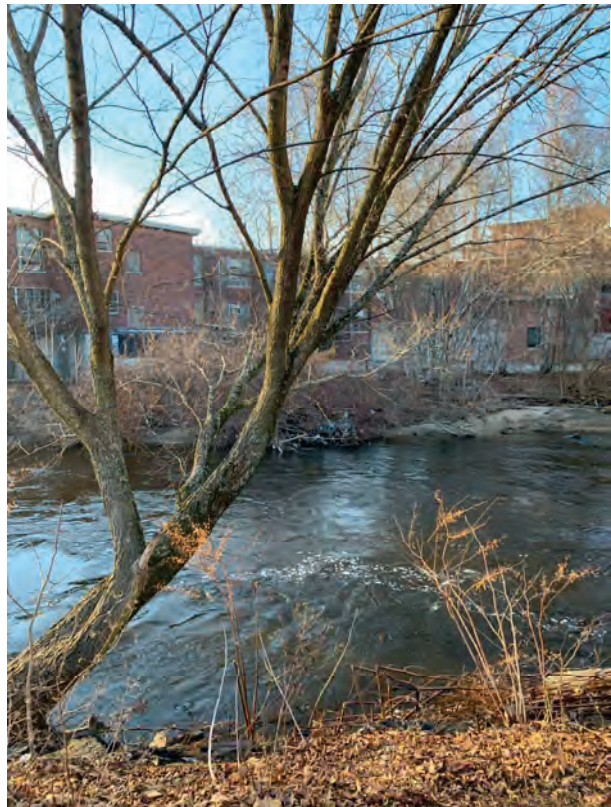


FIGURE 1F – ANOTHER VIEW OF SEDIMENT DELTA AND TREE/TRASH DEBRIS ON THE LEFT SIDE OF THE RIVERBANK LOOKING DOWNSTREAM. PHOTO TAKEN FROM UNITED WAY PROPERTY.



FIGURE 1G – ERODED RIVERBANK ALONG BIKEPATH/SAN SOUCI DRIVE FACING UPSTREAM LOOKING WEST. PHOTO TAKEN AFTER DECEMBER 18, 2023 RAINFALL EVENT.





FIGURE 1H – FLOODING ON BIKEPATH AND SAN SOUCI DRIVE. VIEW LOOKING EAST ALONG SAN SOUCI DRIVE 1 DAY AFTER THE JANUARY 10, 2024 RAINFALL EVENT.



FIGURE 1I – FLOODING ON BIKEPATH AND SAN SOUCI DRIVE. VIEW LOOKING WEST ALONG SAN SOUCI DRIVE 1 DAY AFTER THE JANUARY 10, 2024 RAINFALL EVENT.



FIGURE 1J – – VIEW LOOKING EAST ALONG SAN SOUCI DRIVE AFTER THE JANUARY 10, 2023 RAINFALL EVENT. SEDIMENT ON BIKE PATH AND ROAD SHOW THE EXTENT OF FLOODING.





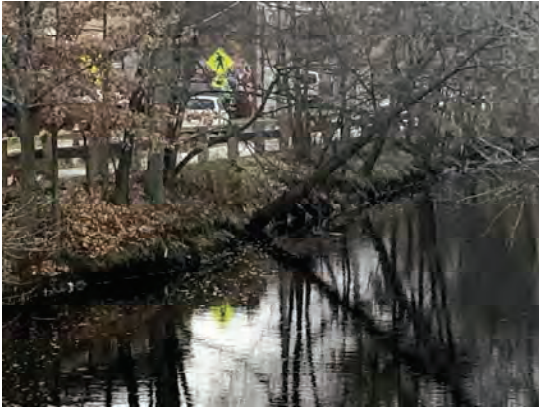
FIGURE 1K - RECENT FLOOD EVENTS LEFT SIGNIFICANT AMOUNTS OF SILT, SAND AND OTHER SEDIMENT IN UPLAND AREAS, WHICH INCLUDED STORMWATER MEASURES INSTALLED BY WRWC IN 2020 NEAR DONIGIAN PARK.



FIGURE 1L – RECENT FLOOD EVENTS CREATED A SEDIMENT AND TRASH DAM AT THE SITE OF THE RECENTLY CONSTRUCTED GOTHAM GREENS BIKE PATH.



Ground Level Photos of Existing Site Conditions PHOTOS TAKEN 12/2/2021





EA, as used herein, means **EA Engineering, Science, and Technology, Inc., PBC**.

Client as used herein means the other party to this Agreement.

WHEREAS, EA provides an extensive range of integrated and comprehensive consulting, engineering, scientific, and analytical services; and

WHEREAS, Client desires to utilize EA's services.

NOW, THEREFORE, for good and valuable consideration, EA agrees to provide the professional services described herein, and Client agrees to accept and pay for such services, all in accordance with the following terms and conditions:

1. **Definitions**—The following terms shall have the meanings set forth below whenever they are used in this Agreement:
 - a. "Scope of Work" (SOW) shall mean the description of the services to be provided by EA as mutually agreed upon by EA and Client and will be performed on either a firm fixed price (FFP) or time and materials (T&M) basis. The SOW and the Price will be set out in the attached Exhibit "A"(s) (or EA's Proposal) as described below, incorporated by reference into this Agreement.
 - b. "Documentation" shall mean deliverable documentation as described in the SOW.
 - c. "Equipment" shall mean all indoor and outdoor equipment used by EA at Client sites for the purpose of providing services as described in the SOW.
 - d. "Proprietary Information" shall mean all data, information, manuals, materials, trade secrets, patents, products, processes, plans, whether in written, graphic or oral form, and similar proprietary know-how of EA.
2. **Ordering**—EA services sought by the Client shall be ordered as follows:
 - a. In response to either a written or verbal request from Client, EA will prepare a written proposal that shall minimally contain a SOW, cost and form of compensation (FFP or T&M).
 - b. Each EA Proposal shall be dated and sequentially numbered as Exhibit A1, A2, A3, etc. and reference this EA Consulting Services Agreement number.
 - c. If acceptable, the Client will sign and date the EA proposal acknowledging acceptance of the costs of the services to be rendered by EA.
3. **Compensation/Billing**—EA's invoices will be issued at least monthly and are payable upon receipt. Invoices shall reference the appropriate EA Proposal Letter or Exhibit A numbers. Balances thirty (30) days past due are subject to interest at 1.5% per month. EA may suspend services under any Client Agreement until all past due accounts have been paid.

The SOW is often not fully definable prior to the execution of this Agreement as investigation may uncover additional facts and information requiring an alteration in the SOW and/or the Price for the services. For services on a time and materials basis, the proposed fees are EA's best estimate of the charges required to complete the SOW. EA will inform Client of any material changes to either the SOW or the Price that may be required. Client and EA shall agree to these changes in writing prior to proceeding with changes to the SOW or Price.

Costs and schedule commitments are subject to renegotiation for unreasonable delays caused by Client's failure to provide free access to sampling areas, specified facilities, or information, or for delays caused by unpredictable occurrences, or force majeure, such as fires, floods, strikes, riots, unavailability of labor or materials or services, acts of God or of the public enemy, or acts or regulations of any governmental agency. Temporary work stoppage caused by any of the above may result in additional cost beyond that outlined in this Agreement.

In the event EA is required to respond to a subpoena, government inquiry, or other legal process related to the services in connection with a proceeding to which it is not a party, Client shall reimburse EA for its costs and compensate EA at its then standard rates for the time spent gathering information and documents. Client agrees to compensate EA at the rate of one and one-half times EA's then current hourly rates for time spent in any deposition, hearing, proceeding, or trial.

For services provided on a time and materials basis, the minimum time segment is four (4) hours for field work and one (1) hour for office work. The rental or use of EA's Equipment will be charged to the project in accordance with EA's "Corporate Equipment Rate Billing Schedule," which is either incorporated into the rates shown in Exhibit B or is available upon Client's request. Equipment rates are subject to annual adjustment each September. EA's labor rates for services provided on a time and materials basis are fixed for one year with a reasonable annual adjustment upon notice to Client.

Expenses related to the services and reimbursable by Client ("Other Direct Costs") include without limitation, travel and living expenses, phone, FAX, overnight delivery services, postage, shipping, and production costs; identifiable drafting and word processing supplies; equipment usage and rental fees; and expendable materials and supplies. Other Direct Costs are reimbursable by Client and are billed at EA's cost plus 10%.

Subconsultant and/or subcontractor costs are reimbursable by Client and are billed at EA's cost plus 10%. Where applicable, any local or state taxes or fees (except state income taxes) are in addition to any quoted price/cost.

4. **Termination**—This Agreement may be terminated by either party in the event of substantial failure by the other party to fulfill its obligations under this Agreement through no fault of the terminating party. Such termination is effected upon providing: (1) not less than thirty (30) calendar days written notice, and (2) an opportunity for consultation with the terminating party prior to termination. Client will be responsible for all services and direct expenses associated with the project through the effective date of cancellation, plus reasonable fee(s) and/or expenses for reallocation and demobilization of personnel and equipment.
5. **Confidential Information/Inventions**—All Proprietary Information furnished by EA in connection with this Agreement, but not developed as a result of work under this Agreement or under prior agreements between Client and EA, shall be held confidential by Client, and returned to EA within thirty (30) days of the completion of the services or conclusion of the litigation wherein EA's services were provided.

All inventions, techniques, and improvements held by EA to be proprietary or trade secrets of EA prior to any use on behalf of Client, as well as all inventions, techniques, and improvements developed by EA independent of the services rendered to Client under this Agreement, remain the property of EA. Documents provided by Client will remain the Client's property, but EA may retain one confidential file copy.

6. **Standard of Care**—EA will prepare all work and provide services in accordance with generally accepted professional practices ordinarily exercised by reputable companies performing the same or similar services in the same geographic area. EXCEPT AS SET FORTH IN THE IMMEDIATELY PRECEDING SENTENCE, NO WARRANTIES OR GUARANTIES, EXPRESS OR IMPLIED, ARE MADE WITH RESPECT TO ANY GOODS OR SERVICES PROVIDED UNDER THIS AGREEMENT, AND ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY DISCLAIMED.

Client shall furnish documents and information reasonably within Client's control and deemed necessary by EA for proper performance of its services. EA may rely upon Client-provided documents and information in performing the services required under this Agreement and EA assumes no responsibility or liability for their accuracy.

EA shall execute and maintain its work so as to avoid injury or damage to any person or property. In carrying out its services, EA shall at all times be in compliance with all applicable local, state and federal laws, rules and regulations, and shall exercise all necessary precautions for the safety of its employees and subcontractors appropriate to the nature of the services and the conditions under which the services are to be performed.

Upon Client's request, EA's work product may be provided on magnetic media. By such request, Client agrees

that the written copy retained by EA in its files shall be the official base document. The Client will retain one conformed written copy. EA makes no warranty or representation to Client that the magnetic copy is accurate or complete. Any modifications of such magnetic copy by Client shall be at Client's sole risk and without liability to EA. Such magnetic copy is subject to all conditions of this Agreement.

7. **Indemnification**— Each party shall indemnify, defend and hold harmless the other party from and against all liability, loss, cost, expense, or damage caused by the indemnifying party's negligent acts or negligent omissions in the performance of this Agreement. However, in the event of any loss, damage or liability, whether to person or to property, arising out of the sole negligence of either EA or Client, such party will assume full responsibility for any liability arising thereof and hold harmless the other party. EA and Client further agree that if either EA or Client engages in willful misconduct, such party shall assume full responsibility for any liability arising thereof irrespective of the nature and degree of the other party's negligence, and will indemnify and hold harmless the other party. In no event shall EA or Client be liable for any special, incidental, economic, or consequential damages whatsoever, regardless of the legal theory under which such damages may be incurred. In no event will EA's or Client's liability under this provision or Agreement exceed the fees actually paid to EA under this Agreement..

EA's field personnel will avoid hazards or utilities that are visible to them at the site. EA is not responsible for any damage or loss to property owned by Client or third parties due undisclosed or unknown surface or subsurface conditions, except to the extent such damage or loss is a direct result of EA's gross negligence.

8. **Severability**— If any term or provision of this Agreement is held or deemed to be invalid or unenforceable, in whole or in part, by a court of competent jurisdiction, this Agreement shall be ineffective to the extent of such invalidity or unenforceability without rendering invalid or unenforceable the remaining terms and provisions of this Agreement.
9. **Third Party Rights**—EA's services under this Agreement are being performed solely for the benefit of Client, and no other entity shall have any claim against EA because of this Agreement or the performance or nonperformance of services provided by EA hereunder.
10. **Entire Agreement**— This Agreement contains the entire agreement of the parties. It may not be modified or terminated orally. Any modification to these terms and conditions without the written approval of EA shall be null and void. In no event will the terms of any purchase order, work order or any other document provided by Client modify or amend this Agreement, even if it is signed by EA, unless EA signs a written statement expressly indicating that such terms supersede the terms of this Agreement.
11. **Assignment**—EA reserves the right to assign this Agreement to its affiliates, subsidiaries, or successors as necessary in order to effectively carry out and complete the services specified by this Agreement.
12. **Governing Law**— This Agreement shall be deemed made in, and in all respects interpreted, construed, and governed by, the laws of the State of Rhode Island, U.S.A. All disputes arising hereunder are to be resolved in the state and federal courts having jurisdiction of such disputes sitting in the State of Rhode Island or hearing appeals therefrom. Both parties consent to the jurisdiction of such courts over them for the purposes of this Agreement, and agree to accept service of process by registered mail.

ATTACHMENTS

Exhibit A – Scope of Work

(May be added by reference to EA Proposal Letter[s])

Exhibit B – EA Price Schedule, and/or EA Labor Rates and, EA Equipment Cost Rate Schedule

(May be added by reference to EA Proposal Letter[s])

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC., PBC

By: _____

Name: _____

Title: _____

Date: _____

CLIENT: Woonasquatucket River Watershed

Alicia J. Lehrer Type text here

By: _____

Alicia J. Lehrer

Name: _____

Executive Director

Title: _____

March 23, 2023

Date: _____

EXHIBIT "A"

SCOPE OF WORK

This Scope of Work is incorporated into the Consulting Services Agreement referenced above between EA Engineering, Science, and Technology, Inc., PBC and Woonasquatucket River Watershed Council.

29 November 2022

Mr. Mark Pereira, P.E.
Woonasquatucket River Watershed Council
45 Eagle St., Suite 202
Providence, Rhode Island 02909

*RE: Design Services; Phase 1
Streambank Stabilization, San Souci Drive, Providence, Rhode Island
EA Proposal No. 0731848*

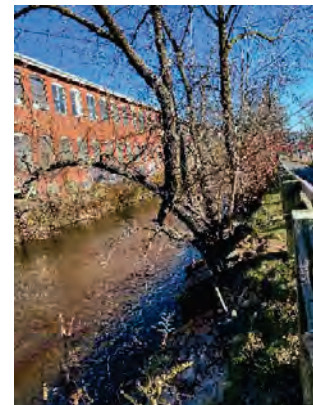
Dear Mr. Pereira:

EA Engineering, Science, and Technology, Inc., PBC is pleased to present our proposal to the Woonasquatucket River Watershed Council (WRWC) for preliminary design in support of the Woonasquatucket River streambank stabilization project near San Souci Drive upstream of Paragon Mills in Providence, Rhode Island.

PROJECT UNDERSTANDING

EA understands WRWC's goals and objectives in the restoration of the Woonasquatucket River Watershed and understands the full scope of services required to develop an alternatives analysis for the San Souci Drive Stabilization project. EA understands that the goals of the proposed project are to:

- Repair erosion on the outside bend of the river, just upstream of the former Paragon Dam
- Incorporate protective measures to achieve habitat and population objectives for fish and wildlife species or communities of concern
- Minimize further erosion of the area
- Minimize adverse environmental and recreational impacts during construction and operation of the proposed project
- Minimize construction costs.



The repair design will be based on several sections of Technical Supplement TS14 as related to Part 654 of the USDA-NRCS National Engineering Handbook.

PROJECT APPROACH

A detailed description of the scope of work proposed by EA to meet the requirements of the Request for Proposal (RFP) is provided in this section. EA's technical approach is based on the following key experience areas:

- EA has completed design, permitting, and construction support for the Paragon Mills Dam removal immediately downstream of the site, and as part of that project, incorporated existing FEMA hydraulic data into a HEC-RAS model analyzing existing and proposed conditions.

- EA has the distinct benefit of applying our first-hand knowledge of riverbank restoration projects with similar characteristics to the San Souci Drive Streambank Stabilization Project to minimize project uncertainties and risks that are common to work conducted in the Woonasquatucket River floodplain (i.e., erosion, stormwater management, and key permitting issues). Our knowledge and skill completing these projects provide distinct advantages, including schedule and cost efficiency.
- EA team members are nationally recognized experts in river restoration but also have local knowledge of the historic and natural resource issues in Rhode Island, and specifically in the Woonasquatucket River Watershed.
- EA has extensive experience working with and for community-based, non-profit watershed organizations. EA understands that Project Partners and stakeholders often have varied and sometimes divergent interests in river restoration outcomes. EA has addressed these issues through experienced facilitation and presentation, integration of community concerns in our designs, and ensuring transparency in decision-making and planning processes by relying on the best available science and data.

The EA Team will coordinate with WRWC and Project Partners, prior to the initiation of each task defined in the RFP to ensure that all available data are utilized to the maximum extent possible to minimize project costs. Our approach to completing Tasks 1 through 4 and the deliverables requested by WRWC is described in the following sections.

EA's approach to the project tasks, including deliverables, is outlined below.

Task 1 – Project Management

In our experience, good project management is almost as valuable as strong technical skills. Without efficient management, Project Partners may become frustrated, and their goals may not be met. When providing services for natural resources projects such as these, we believe that there are four critical elements to success:

1. ***Act as an extension of your staff***—Our philosophy has been to treat your problems as though they are our own, and not simply work to complete a scope of work. This includes being sensitive to and considering regulatory, organizational, or financial issues and working with you to solve problems.
2. ***Consider alternative approaches to technical challenges***—Many times, there is more than one approach to solving a particular technical challenge. These alternatives bring different risks, costs, advantages, and disadvantages. We will work with you to review these alternative approaches such that the final plan meets your objectives and budgets.
3. ***Think creatively to develop unconventional solutions***—While some tasks are very straightforward, creative thinking is often required to meet a challenge and ensure that your best interests are met. Most important is that our staff is experienced in these types of projects and knows how to work with non-profit organizations and provide collaborative, multi-disciplinary solutions.

4. **Maintain strong communications with you throughout assignments**—While some think communications during a project can be as simple as periodic progress reports, we prefer more active communications. This will enable you to directly and immediately access EA's Project Manager. Ms. Amy Hunt will be our Project Manager and will be accountable to you. Different than other firms, our Project Managers stay directly involved in projects and do not "disappear" after a project is won. This keeps our team alert to "issues" before they become "problems" and allows us to rapidly respond to your needs.

EA's Project Manager, Ms. Amy Hunt will provide project status updates to WRWC via email over the course of the project to keep WRWC and project partners up-to-date on current and projected activity. Project status updates will be provided on at least a monthly basis but will be provided more frequently to promptly notify WRWC of planned field work, unanticipated challenges, newly discovered opportunities, or other topics that may impact the project schedule and deliverables. EA's Project Manager will be available by phone, email, videoconference, or in-person meetings to discuss the project as requested by WRWC and project partners.

Deliverables

- EA's Project Manager will provide project status updates to WRWC via email on at least a monthly basis.
- EA's Project Manager will be available by phone, email, videoconference, or in-person meetings to discuss the project as requested by WRWC and project partners.

Task 2 – Meetings

EA's scope of work under this task includes the following meetings:

- **Project Kick-Off Meeting:** Upon acceptance of the proposal, a meeting will be held onsite with EA engineers and scientists, representatives of WRWC, and the landowners (preliminary review depicts the landowners as City of Providence and United Way of Rhode Island). EA will conduct a visual inspection of the restoration area to identify potential options for the restoration that may be necessary to provide satisfactory erosion control, including adjustment of work phasing as well as traditional erosion control measures.
- **Progress Calls:** A total of 10 one-hour progress calls will be held during data collection, confirmation of the conceptual designs during the H&H analysis, and development of the Alternatives Analysis.
- **Design Review Meeting**—EA will attend a virtual design review meeting with WRWC and Project Partners to discuss the alternatives analysis.

Deliverables:

- EA will prepare and distribute an agenda prior to the meeting and will prepare and distribute meeting minutes following the meeting.

Assumptions:

- Meetings may be attended by Project Managers and/or Project Engineers as applicable.

- EA's Project Manager will schedule the meetings with WRWC and the Project Partners for mutually agreeable dates, prepare presentation materials, and attend the project meeting.

Task 3 – Field Data Collection

Topographic and Bathymetric Survey

Although a site survey was completed prior to the Paragon Dam removal project in 2008, there have been several storm events and construction projects in this area since. Therefore, current, accurate cross sections will need to be incorporated into the existing HEC-RAS model completed for this site. EA will subcontract Dawood Engineering, Inc., a Rhode Island Professional Licensed Surveyor to complete a topographic survey of the restoration area.

In addition to the riverbank topography, trees greater than 6 inches in diameter, the existing bike path, roadway, utilities, and rights of way will be defined and depicted on an existing conditions plan. The topographic and utility survey will be limited to the area in the figure below. Easements and rights of way will be downloaded from publicly available information. Bathymetric/topographic cross sections of the river will be collected at 11 locations as shown in the figure below.



Survey data will be presented on an existing conditions drawing in AutoCAD compatible format, Version 2022.

Tax map information will be used to define riverfront ownership and to locate and show property lines and easements along the riverbanks on the existing conditions drawing. Property ownership, plot and lot numbers, and property information will be shown on the plan.

Deliverables:

- Plan view map and topographic survey to include other necessary site features required to develop the Alternatives Analysis described in Task 4.

Assumptions:

- The existing conditions plan will provide sufficient detail on the restoration locations and property ownership in the vicinity of the restoration area.
- Sediment samples will not be collected as part of this project.
- No geotechnical borings are currently proposed as part of this task.
- A wetlands delineation is not included in this task, as verification of wetland flags by RIDEM will be required at a later stage and should be completed closer to permitting activities.

Task 4 – Alternatives Analysis

Based on data and information compiled under Tasks 2 and 3, EA will develop restoration alternatives that achieve the stated project goals. To prepare the required plans, sketches, and drawings of restoration alternatives, EA proposes to evaluate up to three restoration alternatives. EA will identify three draft alternatives for consideration to identify the most cost-effective solution for erosion control.

Existing Conditions HEC-RAS Model

EA will utilize the previous HEC-RAS model developed for the Paragon Mills dam removal and supplement it with more up-to-date flow and cross-section data from FEMA, as well as the supplemental cross sections collected during Task 3. An existing conditions hydraulic analysis will be conducted to develop a discharge rating curve for the river over a range of flows. Flood magnification factors will be applied to perform a screening-level sensitivity analysis of the impacts of climate change-related flow increases on the rating curve.

Alternatives Analysis

An alternatives analysis will be performed to evaluate the restoration alternatives/variations available to meet WRWC's goal for restoration of the riverbank. These alternatives will be evaluated to identify the most cost-effective option. EA will research and compile existing data regarding hydrology and hydraulics (H&H), water quality, fish and wildlife surveys, issues relating to Section 106 concerns, wetlands, other appropriate resource data, and most importantly any site constraints or opportunities conveyed to EA by the property owners and the other Project Partners. These discussions will be utilized to help identify potential issues associated with the alternatives and additional field efforts that may be necessary to complete the restoration design. An Alternatives Analysis Memorandum will be prepared to document the analysis.

The Alternatives Analysis Memorandum will address the following topics:

- Summarize the existing site visit discussions (Task 2).
- Present the existing conditions plan (Task 3).
- Summarize the findings from the H&H modeling efforts.
- Describe the selection process for identifying the preferred alternative.

- Present a range of costs (i.e., high, medium, low as compared to each other) and construction schedules for the alternatives.
- Present engineering and construction considerations for each alternative, and uncertainties associated with implementation of the options.
- Prepare design sketches for up to three restoration alternatives/variations of these alternatives. The alternatives will incorporate measures that may be needed to stabilize the river and channel bank slopes. The design sketches will be prepared in AutoCAD compatible format and will include a plan and typical section for each alternative. The designs will be of sufficient detail for WRWC and Project Partners to review and comment.

Proposed Conditions HEC-RAS Model

Once a preferred alternative is identified, EA will use the HEC-RAS model of the river to evaluate water levels and velocities in the river channel over the same range of storm flows, incorporating the proposed condition. Impacts of the proposed condition on the 100-year-flood elevation will receive special attention to avoid increases to the base flow elevation and associated regulatory requirements. The results of the modeling will refine the design, as well as document that the restoration meets the repair and/or redirection design requirements in TS14.

Deliverables:

- One electronic copy of the Alternatives Analysis Memorandum will be submitted to WRWC and Project Partners in electronic format.
- As part of this Task, EA staff will prepare for and attend a Design Review Meeting to present the draft Alternative Analysis Memorandum findings and to assist WRWC and Project Partners in selecting a preferred alternative. The cost for this meeting is carried under Task 2.

Assumptions:

- Project Partner input received during the Design Review Meeting and any input received during Project Partner review of the Alternatives Analysis Memorandum will be addressed in the Feasibility Analysis/Basis of Design Memorandum under Task 5.
- State Historic Preservation Office/Tribal Historic Preservation Office consultation will not be required for this project.

Task 5 – Feasibility Analysis/Basis of Design Memo

The results of Tasks 3 and 4 will be synthesized into a Feasibility/Basis of Design (BOD) Memorandum that discusses the evaluation of the preferred alternative to the proposed conditions model. The draft report will:

- Present engineering and construction considerations for the preferred alternative, and uncertainties associated with implementation of the design (Task 4).
- Present the order of magnitude (-30%/+50%) cost estimate for the preferred alternative
- Identify concerns raised by WRWC and Project Partners.
- Incorporate solutions based on EA's previous experience at this site and the Manton Dam Site on the Woonasquatucket River where operation within tight site constraints and protection of non-cohesive soils, on-site utilities and infrastructure, and the public must be considered as part of the design. At that site, EA has also demonstrated our

team's ability to consider bike path protection and the final aesthetics of a site used for biking and pedestrian traffic, as well as native plantings and habitat considerations.

- Present a conceptual design for the preferred alternative. The conceptual design will incorporate measures that will be needed to stabilize the riverbank while protecting utilities and infrastructure. The conceptual design will be prepared in AutoCAD compatible format to the 30% design level and will include a plan and a typical section for the preferred alternative. The design will be of sufficient detail to facilitate review and comment by Project Partners and regulatory agencies.

Deliverables:

- One electronic copy of the Feasibility Analysis/Basis of Design Memo will be transmitted to WRWC for review and distribution.

Assumptions:

- Cost estimates will be based on quantity takeoffs developed from the preliminary drawings of the alternatives and unit rates for materials, labor, and equipment from construction industry cost data.
- Project Partner input received at this stage will be incorporated at a later phase of the project.

Task 6 – Pre-Permitting Meeting

Once the preferred alternative is selected, EA will facilitate a meeting with Rhode Island Department of Environmental Management's Freshwater Wetlands Program to discuss the project. Understanding the specific concerns and recommendations RIDEM may have with this project will allow WRWC to better plan the next steps, acquire appropriate funding, and be prepared for multiple scheduling scenarios.

Deliverables:

- Meeting notes from the pre-permitting meeting.

Assumptions:

- Modifications to the conceptual design based on the outcome of this meeting will be incorporated into the next phase of the project, not included in this proposal.

COSTS


EA's proposed costs for the project are summarized in the table below. A further breakdown of tasks showing additional detail is provided as an attachment to EA's proposal.

Task Number	Task Name	Cost
1	Project Management	\$5,788
2	Meetings	\$5,980
3	Existing Conditions Assessment	\$20,577
4	Alternatives Analysis	\$17,089
5	Feasibility Study/Basis of Design Memo	\$6,031
6	Pre-Permitting Meeting	\$2,032
Total		\$57,498

We appreciate the opportunity to provide WRWC with professional environmental consulting and engineering services in support of this important and exciting restoration project and believe our knowledge, experience, and qualifications outlined in this proposal will allow us to meet and exceed WRWC's expectations, goals, and requirements. Please do not hesitate to contact me at (401) 287-0365 or ahunt@eaest.com should you have any questions or wish to discuss EA's proposal in more detail.

Sincerely,

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC., PBC



Amy E. Hunt, P.E.
Project Manager

Attachments



Client: WRWC
Project: San Souci Riverbank Restoration
Proposal Number: 0731848

TASKS		LABOR						SUBCONTRACTORS				TRAVEL		TOTAL		
		STR	PM	Sr. Eng	Pr. Eng	Sr. Sci	CAD	Dawood Survey	Subs Cost	Subs Effort	Mileage	Travel Effort				
		Bowman	Hunt	Weiter	Sarawat	Patterson	Allen									
		\$ 232.59	\$ 190.47	\$ 102.60	\$ 97.93	\$ 127.22	\$ 91.20									
Task 1: Project Management		0	25	10	0	0	0	35	\$ 2,030.75	\$ 5,787.64	\$ -	\$ -	\$ -	0	\$ -	\$ 5,787.64
Subtask 1: Project Management			25	10				35	\$ 2,030.75	\$ 5,787.64		\$ -	\$ -		\$ -	\$ 5,787.64
Subtask 2:								0	\$ -	\$ -		\$ -	\$ -		\$ -	\$ -
Task 2: Meetings		0	14	24	6	2	0	46	\$ 2,095.06	\$ 5,970.92	\$ -	\$ -	\$ -	15	\$ 9.38	\$ 5,980.30
Subtask 1: Internal Kickoff Meeting			2	2	2	2		8	\$ 363.66	\$ 1,036.43		\$ -	\$ -		\$ -	\$ 1,036.43
Subtask 2: Client Kickoff and site visit			4	6	4			14	\$ 620.76	\$ 1,769.17		\$ -	\$ -	15	\$ 9.38	\$ 1,778.54
Subtask 3: Design Review Meeting			2	4				6	\$ 277.66	\$ 791.33		\$ -	\$ -		\$ -	\$ 791.33
Subtask 4: Project update calls (10)			6	12				18	\$ 832.98	\$ 2,373.99		\$ -	\$ -		\$ -	\$ 2,373.99
Subtask 5:								0	\$ -	\$ -		\$ -	\$ -		\$ -	\$ -
Subtask 6:								0	\$ -	\$ -		\$ -	\$ -		\$ -	\$ -
Subtask 7:								0	\$ -	\$ -		\$ -	\$ -		\$ -	\$ -
Subtask 8:								0	\$ -	\$ -		\$ -	\$ -		\$ -	\$ -
Task 3: Existing Conditions Assessment		0	2	0	4	0	12	18	\$ 655.10	\$ 1,867.04	\$ 17,000.00	\$ 17,000.00	\$ 18,700.00	17	\$ 10.63	\$ 20,577.66
Subtask 1: Topographic/Bathymetric Survey			2		4		12	18	\$ 655.10	\$ 1,867.04	\$ 17,000.00	\$ 17,000.00	\$ 18,700.00	17	\$ 10.63	\$ 20,577.66
Subtask 2:								0	\$ -	\$ -		\$ -	\$ -		\$ -	\$ -
Subtask 3:								0	\$ -	\$ -		\$ -	\$ -		\$ -	\$ -
Subtask 4:								0	\$ -	\$ -		\$ -	\$ -		\$ -	\$ -
Subtask 5:								0	\$ -	\$ -		\$ -	\$ -		\$ -	\$ -
Task 4: Alternatives Analysis		5	16	58	55	2	14	150	\$ 5,992.41	\$ 17,078.37	\$ -	\$ -	\$ -	17	\$ 10.63	\$ 17,088.99
Subtask 1: Update existing HEC-RAS model		1	4	20	24		2	51	\$ 1,957.57	\$ 5,579.07		\$ -	\$ -		\$ -	\$ 5,579.07
Subtask 2: Create Proposed Conditions HEC-RAS model		2	4	18	24			48	\$ 1,903.18	\$ 5,424.06		\$ -	\$ -		\$ -	\$ 5,424.06
Subtask 3: Alternative Analysis Memo		2	8	20	7	2	12	51	\$ 2,131.66	\$ 6,075.23		\$ -	\$ -	17	\$ 10.63	\$ 6,085.86
Subtask 4:								0	\$ -	\$ -		\$ -	\$ -		\$ -	\$ -
Task 5: Feasibility Study/Basis of Design Memo		2	6	12	30	2	0	52	\$ 2,116.28	\$ 6,031.40	\$ -	\$ -	\$ -	0	\$ -	\$ 6,031.40
Subtask 1: Feasibility/Basis of Design Study								0	\$ -	\$ -		\$ -	\$ -		\$ -	\$ -
Subtask 2: Opinion of Cost		2	6	12	30	2		52	\$ 2,116.28	\$ 6,031.40		\$ -	\$ -		\$ -	\$ 6,031.40
Subtask 3:								0	\$ -	\$ -		\$ -	\$ -		\$ -	\$ -
Task 6: Pre-Permitting Meeting		0	8	0	0	4	0	12	\$ 713.20	\$ 2,032.62	\$ -	\$ -	\$ -	0	\$ -	\$ 2,032.62
Subtask 1: Pre-permitting meeting			8			4		12	\$ 713.20	\$ 2,032.62		\$ -	\$ -		\$ -	\$ 2,032.62
Subtask 2:								0	\$ -	\$ -		\$ -	\$ -		\$ -	\$ -
Subtask 3:								0	\$ -	\$ -		\$ -	\$ -		\$ -	\$ -
Task 7:		0	0	0	0	0	0	0	\$ -	\$ -	\$ -	\$ -	\$ -	0	\$ -	\$ -
Subtask 1:								0	\$ -	\$ -		\$ -	\$ -		\$ -	\$ -
TASK TOTALS		7	71	104	95	10	26	313	\$ 13,602.80	\$ 38,767.98	\$ 17,000.00	\$ 17,000.00	\$ 18,700.00	49	\$ 30.63	\$ 57,498.61

EXHIBIT "B"

EA PRICE SCHEDULE

The following rates apply to the services provided by EA Engineering, Science, and Technology, Inc., PBC for the Agreement referenced above.

17 May 2021

Mr. Mark Pereira
Civil Engineer
Woonasquatucket River Watershed Council
45 Eagle Street, Suite 202
Providence, RI 02906

RE: Additional Data Collection and Design Services
San Souci Riverbank Restoration, Providence, RI
Modification 1
EA Proposal No. 0731848A

Dear Mr. Pereira:

EA Engineering, Science, and Technology, Inc., PBC is submitting this contract modification request to the Woonasquatucket River Watershed Council (WRWC) for additional survey and engineering and design services for riverbank restoration on the Woonasquatucket River, at San Souci Drive in Providence, Rhode Island. The services described herein are proposed to provide additional requested engineering services in support of the above-referenced project.

We understand that United Way (UW) has indicated there are areas of eroded bank near the patio area – just downstream of the current study area and would like to include their patio area in the alternatives analysis being provided under this contract.

Scope of Work

EA will extend the survey of the river and riverbanks (area notated in yellow on the figure below) to include United Way's patio and associated banks. In addition to the riverbank topography, trees greater than 6 inches in diameter will also be collected, as well as an additional cross section. Tax map information will be used to define riverfront ownership and to locate and show property lines and easements along the riverbanks on the existing conditions drawing. Property ownership, plot and lot numbers, and property information will be shown on the plan.



This information will then be incorporated into the existing conditions HEC-RAS model, which will be extended to incorporate this additional area.

An alternatives analysis will be performed as part of the original contract for this site to evaluate the restoration alternatives/variations available to meet WRWC's goal for restoration of the riverbank. (Options for the UW patio area will be different from other alternatives proposed for the rest of the site as this is the only location where the existing bank treatment consists of vertical walls extending into the river.) This information will be included in the Alternative Analysis Memorandum submitted under Task 4 of the original contract.

Once a preferred alternative is identified for this area, we will use the proposed HEC-RAS model of the river to evaluate water levels and velocities in the river channel over the same range of storm flows, incorporating the proposed condition for the UW site.

The results of the proposed modeling will be included in the Feasibility/Basis of Design (BOD) Memorandum described in Task 5.

Assumptions and Deliverables listed in the original scope of work still apply to this contract modification.

Costs

The lump sum fee for the above referenced work is \$7,852.

Schedule

EA is prepared to begin work immediately upon authorization to proceed.



Acceptance

We look forward to the opportunity to continue working with WRWC on the San Souci Streambank Stabilization Project, which will be carried out in accordance with EA's Consulting Services Contract signed 30 March 2023. To authorize us to proceed, please sign and return this authorization your earliest convenience.

Should you have any questions or need further information, please do not hesitate to contact me at 401-287-0365.

Sincerely,

EA ENGINEERING, SCIENCE, AND
TECHNOLOGY, INC., PBC

Amy Hunt, P.E.
Project Manager

ACCEPTANCE: I have reviewed and understand the information contained in this Modification No. 1 for Additional Data Collection and Design Services for the San Souci Streambank Stabilization Project, Providence, RI and, by my signature below, provide authorization to proceed with the work defined herein.

Signature

February 8, 2024

Date

Alicia J. Lehrer, Executive Director Woonasquatucket River Watershed Council (WRWC)
Name and Title (printed or typed) Client Name (printed or typed)

401-861-9046
Phone Number

Fax Number

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CITY OF PROVIDENCE
MAYOR BRETT P. SMILEY

March 28, 2024

Caitlin Chaffee, Reserve Manager
Narragansett Bay National Estuarine Research Reserve
Rhode Island Department of Environmental Management (RIDEM)
235 Promenade Street
Providence, RI 02908

Re: WRWC Rhode Island Coastal and Estuary Habitat Restoration Fund Grant Proposal – San Souci Drive Habitat Restoration and Streambank Stabilization Project

Dear Ms. Chaffee and Grant Review Committee Members:

The City of Providence Department of Public Works (DPW) offers our enthusiastic partnership and support for Woonasquatucket River Watershed Council's (WRWC) application for the Rhode Island Coastal and Estuary Habitat Restoration Fund Grant administered by the Rhode Island Department of Environmental Management.

The WRWC and DPW have been partners for decades on cleaning up, restoring and improving the Woonasquatucket River and its Greenway in Providence. DPW regularly offers free disposal services for WRWC's cleanup events and together we have also planned and executed some wonderful projects such as the separated multi-use trail on San Souci Drive and installing nature-based stormwater infrastructure on Manton Avenue – both in the Olneyville neighborhood of Providence.

The DPW Engineering Division is an integral partner in developing the San Souci Drive Habitat Restoration and Streambank Stabilization Project. As the property owner of the streambank, we play an active role in the decision-making on the design process for this site. WRWC's ability to engage and include resident community leaders in the decision-making process for how to develop this restoration demonstrates their willingness to collaborate to develop a comprehensive solution.

Currently, WRWC has only secured funding for the initial design and alternatives analysis. The DPW could not be happier to support their proposal to complete full design and permitting for the project through this Rhode Island Coastal and Estuary Habitat Restoration Fund Grant opportunity. We commit \$5,000, in-kind in staff time to continue our full participation in all aspects of this project on behalf of the City of Providence.

The DPW cannot think of a better investment than for this San Souci Streambank and Habitat Restoration Project. The WRWC has a demonstrated track record of effective non-profit project management, incredible stakeholder support, community decision-making, and a commitment to mitigating nonpoint pollution sources, habitat improvement, and resilience to climate hazards. We sincerely hope you choose to fund this neighborhood changing project that will serve as a regional example for so many others.



CITY OF PROVIDENCE
MAYOR BRETT P. SMILEY

Sincerely,

A handwritten signature in black ink that reads "Craig Hochman". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Craig Hochman, PE
Chief Engineer



50 Valley Street, Providence, Rhode Island 02909
(401) 444-0600 | www.unitedwayri.org



March 25, 2024

Caitlin Chaffee, Reserve Manager
Narragansett Bay National Estuarine Research Reserve
Rhode Island Department of Environmental Management (RIDEM)
235 Promenade Street
Providence, RI 02908

Re: WRWC Rhode Island Coastal and Estuary Habitat Restoration Fund Grant Proposal – San Souci Drive Habitat Restoration and Streambank Stabilization Project

Dear Ms. Chaffee and Grant Review Committee Members:

United Way of Rhode Island (UWRI) has long partnered with the Woonasquatucket River Watershed Council (WRWC) to improve the quality of life for residents in the Olneyville neighborhood of Providence since we located our state headquarters in the neighborhood in 2008. As a direct result of climate change impacts, we are now partners in restoring both the habitat and a streambank area eroding so severely that it is on the verge of compromising both the street along which UWRI is located, San Souci Drive, and our building itself.

WRWC's commitment to developing leadership among community members directly affected by flooding and urban heat island aligns directly with our mission. In fact, we have funded WRWC directly at \$150,000 through our two-year Community Impact Grant program from 2021 to 2023. They are having remarkable results as we have hosted many of their resident training programs at our facilities and have attended some of the meetings personally. I am impressed with the level of understanding and readiness these residents have shown in decision-making for climate resilience and climate justice in their own neighborhood.

WRWC has hired a design team to develop an alternatives analysis that the WRWC, the City of Providence, and UWRI will use as the basis of a design solution for this issue that will rapidly get worse if unaddressed.

UWRI is a committed partner with WRWC, staff, consultant time, and financial investments in the San Souci Drive Habitat Restoration and Streambank Stabilization Project. Our fiscal year 2024 budget includes \$50,000 to support complete design and permitting costs. We maintain a building reserve fund that will be used, in part, to contribute to the streambank construction solution we all select along UWRI's property. In addition, we will contribute at least \$20,000 in staff and consultant time to the project as full participants in developing and constructing this restoration project.

UWRI urges RIDEM to invest in WRWC's application to the Rhode Island Coastal and Estuary Habitat Restoration Fund Grant opportunity. We have no doubts that your investment in their proposal will help mitigate nonpoint pollution sources from the eroding streambank and improve the habitat.

Sincerely,

A handwritten signature in blue ink, appearing to read "Robert L. Bush".

Robert L. Bush
Chief Operating Officer





PROVIDENCE EMERGENCY MANAGEMENT AGENCY

March 25, 2024

Caitlin Chaffee, Reserve Manager
Narragansett Bay National Estuarine Research Reserve
Rhode Island Department of Environmental Management (RIDEM)
235 Promenade Street
Providence, RI 02908

**Re: WRWC Rhode Island Coastal and Estuary Habitat Restoration Fund Grant
Proposal – San Souci Drive Habitat Restoration and Streambank Stabilization Project**

Dear Ms. Chaffee and Grant Review Committee Members:

The Providence Emergency Management Agency (PEMA) offers our enthusiastic partnership and support for Woonasquatucket River Watershed Council's (WRWC) application to the Rhode Island Coastal and Estuary Habitat Restoration Fund Grant opportunity.

No agency understands the climate hazards faced by the Olneyville neighborhood of Providence more than PEMA. Olneyville was ground zero for sustained, expensive and damaging flooding in 2010. Today, with the recent December 2023 and January 2024 storms, the Woonasquatucket River has overtopped its banks in Olneyville. Olneyville will continue to experience climate related hazards that will only be more frequent and more damaging as time goes on.

That's why PEMA has been a partner with WRWC on helping to educate residents and prepare them for hazards like flooding, urban heat island and other emergencies since they began their Nuevas Voces (NV) program in 2021. Every year, one of the core learning sessions for NV is emergency preparedness. We train our resident leaders in using Code Red and how to find out what to do in an emergency. We are also planning on training NV leaders and grads through our Community Emergency Response Team (CERT) program and have had an integral role in helping to develop Providence's pilot Resilience Hub in Olneyville.

PEMA urges the Rhode Island Department of Environmental Management to fund WRWC's San Souci Drive project that will help mitigate flooding issues and provide for streambank stability, habitat health, and overall climate resiliency.

Very respectfully,

Clara Decerbo, PhD, CEM®
Director

DIRECTOR CLARA F. DECERBO



MAYOR BRETT P. SMILEY

PROVIDENCE EMERGENCY MANAGEMENT AGENCY

Providence Emergency Management Agency
Providence, Rhode Island

Rhode Island Coastal and Estuary Habitat Restoration Fund
Full Proposal Form for Planning Projects 2023/2024
****for design or construction projects please use Full Proposal Form**

I. PROJECT SUMMARY

1. **Project Title:** Underwater Video Collection in Support of Eelgrass Restoration
 2. **Project Location and coordinates** (*include map*): South Shore Coastal Ponds and Narragansett Bay, Rhode Island
 3. **Habitat type** (*River System, Salt Marsh, Seagrass, Shellfish Bed, other*): Seagrass Bed
 4. **If other, please specify:**
 5. **Targeted restoration technique** (*e.g. re-vegetation, tidal restoration, etc.*): Re-vegetation
 6. **Potential future benefits resulting from proposed planning project:** Increase in acreage of seagrass habitat
 7. **Project partners** (*organizations providing financial or other support to the project*): RIDEM
 8. **Is this is an ongoing project that has previously received funds from the CRMC Coastal and Estuarine Habitat Restoration Fund?** No **If yes, year(s) funding was awarded:**
-

II. PROJECT MANAGER CONTACT INFORMATION

1. **Name:** Michael Bradley, Jason Parent and Charles LaBash
2. **Organization:** University of Rhode Island
3. **Address:** 1 Greenhouse Road, Coastal Institute Kingston
4. **City:** Kingston 5. **State:** RI 6. **Zip:** 02881
7. **Phone:** 401-874-5054 8. **Email:** Michael_bradley@uri.edu
9. **Property Owner(s):** N/A

III. BUDGET SUMMARY

Amount Requested from Trust Fund		\$18,451.56
Matching Funds	Project Partner(s)	Amount of Match
	RIDEM	\$0
	TOTAL PROJECT COST	\$18,451.56

The total cost of this project is \$18,451.56 and covers 1.11 months of PI Bradley's salary, benefits and 0.03 person months of Dr. Jason Parent summer salary plus URI Environmental Data Center Geospatial lab service center costs associated with PI Bradley's effort on the project. Eelgrass mapping in Rhode Island has benefited greatly from the collaboration and partnerships established by the Rhode Island Eelgrass Mapping Taskforce: a consortium of estuarine scientists that work collectively to map and monitor eelgrass coastal Rhode Island waters. For the 2021 statewide mapping project for example, , RI Coastal Resources Management Council, and the Narragansett Bay Estuarine Research Reserve contributed personnel, boat time, expertise, and underwater video equipment. This project will again utilize RI Eelgrass Mapping Taskforce partners to complete the proposed work. The Taskforce, however, is an informal coalition and has a history of successful collaboration on eelgrass mapping. The bureaucracy of establishing official match accounts for Taskforce partners within the URI Controllers offices is daunting so we will not include formal match in the budget.

IV. PROPOSAL NARRATIVE

1. Justification and Purpose

Eelgrass is a critical marine habitat that provides a multitude of ecosystem services in estuaries and along coastlines throughout Rhode Island, yet it has been in steady decline throughout the State. Efforts to restore eelgrass populations would benefit from exploring approaches beyond the predominant practice of transplanting adult plants. Specifically, seed-based eelgrass restoration offers an alternative that has the potential to significantly increase the spatial and temporal scale of individual eelgrass restoration efforts. However, eelgrass seed production and reproductive phenology are not well described for the New England region. This information is key critical to the successful implementation of seed-based eelgrass restoration because collecting reproductive shoots too soon can risk missing pollination or otherwise stunting development. Collecting reproductive shoots too late can risk seeds releasing from the flowers prior to collection. This project will support this type of eelgrass restoration efforts by collection of underwater video several times during times during the growing season (June-September) in order to quantify how much of the eelgrass bed is in-flower and producing seeds. If funded, this work would supplement a larger project led by RI Department of Environmental Management (RIDEM) that is already funded through EPA (<https://www.epa.gov/snep>). The RIDEM project proposes to bring together eelgrass restoration practitioners and researchers in southern New England to build capacity for future seed-based eelgrass restoration efforts by documenting the timing of eelgrass seed maturation and density and identification of potential donor beds of mature eelgrass in the Rhode Island coastal ponds and Narragansett Bay.

2. Project Activities, Schedule and Work Plan

Underwater video will be collected at four to six beds in Rhode Island coastal ponds and Narragansett Bay (Figure 1). RIDEM will identify which eelgrass beds are in flower and producing seeds with bi-weekly diving surveys. The diver transects will only cover a small percentage of the aerial extent of the bed. Since the underwater video camera is deployed from a boat, more area can be surveyed than by using divers alone. Once eelgrass beds in flower are identified, underwater video surveys will occur concurrently with the diver surveys (every two weeks) until no flowering eelgrass shoots or seeds are observed. The goal is to quantify as a percent, how much of the bed is in flower or producing seeds by using both the diver and underwater video survey data. This is critical data to consider when identifying potential donor beds since successful restoration could potentially require a large quantity of seeds. Harvesting seeds would only be considered from eelgrass beds when most of the bed (by area) is producing seeds (by area), since the reverse (harvesting during times when there is little seed production throughout the bed) could cause undue stress.

Schedule and Work Plan

Spring 2024: GIS work to refine field site boundaries, field work logistics

Late Spring – Mid July 2024: Underwater video transect to identify eelgrass flowers and seeds (conducted every 2 weeks: 6-8 surveys in total)

Winter 2024 and 2025: Data management, analysis, and reporting

3. Coordination and Public Support

As the lead agency on the overall larger project, RIDEM will organize stakeholder groups with virtual and in-person meetings to leverage volunteers and field work. These introductory meetings will serve to educate stakeholders on the project so that they can mobilize outreach efforts for volunteers. Numerous stakeholders in Rhode Island (e.g. Salt Ponds Coalition, Save the Bay) have the expertise, skill, and resources to assist with field surveys utilizing volunteer divers and boat captains

4. Planning Consistency and Restoration Priority

It is a goal of RI CRMC to “preserve, protect, and where possible, restore SAV habitat.” Activities within eelgrass habitats are regulated by the R.I. Coastal Resources Management Council’s “Red Book” (CRMC 650-RICR-20-00-1.3.1(R))

5. Species of Concern

Seagrass beds are a well-known habitat for finfish and invertebrates of many kinds. For example, many species of threatened and vulnerable seahorses and sturgeons utilize seagrass beds (Hughes et al., 2009).

6. Climate Change and Coastal Resiliency

Seed-based eelgrass restoration has the potential to both significantly increase the spatial and temporal scale of individual restoration efforts, and the feasibility of incorporating a greater diversity of eelgrass phenotypes that have evolved in warmer sea water temperature like the mid-Atlantic. Further, the capacity to store seeds for multiple months, clean them of epibionts and parasites, and their small size and hardness relative to adult plants allows greater flexibility in adjusting planting schedules, minimizes the risk of spreading unwanted organisms among locations, and makes transport of vast quantities of seeds between relatively disparate sites manageable – all characteristics which

make seeds an ideal choice for restoration projects hoping to incorporate climate resilient strategies such as phenotypic management and assisted gene-flow.

7. Environmental Justice

This project will occur entirely in Rhode Island's coastal waters including southern Narragansett Bay and the coastal ponds of southern Rhode Island. Thus none of our underwater sampling locations intersect the environmental justice priority areas as defined by the Narragansett Bay Estuary Program which are all on land. In addition, this project is not applicable to the USEPA's guidance on Environmental Justice and Equitable development since we not working in disenfranchised neighborhoods nor are we focused on urban planning or development.

8. Permitting

No permits are necessary for this project.

9. Capacity of Lead Organization

The work proposed here will be led by the University of Rhode Island Environmental Data Center (EDC) in the College of the Environment and Life Science. The EDC is a Geographic Information System (GIS) laboratory that has been operational for over 30 years. It developed the Rhode Island Geographic Information System (RIGIS) database, provides public access to the RIGIS database, and serves as the GIS Field Technical Support Center for the National Park Service. The EDC has a staff of 10 full-time scientists who have expertise in GIS, soil science, coastal ecology, coastal habitat assessment, geology, and conservation land protection and stewardship. The EDC has managed over \$20 million dollars of extramurally-funded projects over the past two decades. It, and the URI grants office infrastructure are fully capable of administering this award.

The PI's for this project, collectively, have considerable experience in performing the technical and scientific work described here. PIs Bradley, Parent, and Labash have over 75 years of GIS experience among them. Bradley has been the lead and founding member of the RI Eelgrass Mapping Taskforce, a group of scientists who collaborate on methods, protocols, and the science necessary to map and monitor eelgrass in RI. In addition, he has been the lead on the previous four statewide efforts to map and delineate eelgrass and widgeon grass in coastal Rhode Island (Bradley et al. 2007, Bradley et al. 2013, Bradley et al. 2017).

10. External Factors and Climate Change

The presence and persistence of seagrass is an indication of resilient coastal ecosystems. Climate change has and will affect seagrass resilience in Rhode Island. Bradley et al (2021) found eelgrass acreage declined 53% in the enclosed coastal ponds of the south shore of RI from 2009 to 2021. Climate change impacts include an increase in turbidity due to flashier rain events especially the non-growing season as well warming water temperatures (Dunic and Cote, 2023). The coastal ponds of Rhode Island are especially vulnerable to both increases in turbidity and warming estuarine water temperatures. Furthermore, warming sea temperatures exceed the rate at which eelgrass populations can adapt, resulting in local eelgrass populations becoming ill-suited to survival at locations where they have historically thrived (King et al. 2018, Hughes et al. 2019, DuBois et al. 2022).

V. EVALUATING PROJECT SUCCESS (one page maximum)

1. Performance Measures and Deliverables

The project Team will develop a detailed field survey data collection plan and finalized detailed work plan and project timeline during first few weeks of the project (early Spring 2024). As part of this process, the project team will identify qualitative and quantitative metrics (i.e., targets) and project milestones to ensure work remains on schedule and the team is accountable to metrics and objective-related deliverables.

The deliverables for this project will include a short project report detailing our findings in terms of success of identifying flowering shoots and seeds in eelgrass with the survey area using underwater video equipment, correlations between diver surveys and the video surveys in terms of eelgrass phenology, and eelgrass maps for each survey area.

2. Monitoring Plan

This project involves monitoring four-six eelgrass beds in Rhode Island to determine the timing of flowering and seed production (Figure 1). We will use underwater video transects to conduct the monitoring. We will conduct three to four transects at each site that are between 75-100 meters long or enough to adequately cover the extent of the existing bed. Video monitoring will begin in early May and end in mid-July. The surveys will be bi-weekly during the monitoring period. PI Bradley will be responsible for collecting, analyzing, and managing underwater video data. Results of the monitoring will be made available with the project report.

VI. PROJECT BUDGET TEMPLATE

BUDGET ITEM	CRMC REQUEST	MATCH	MATCH PENDING OR SECURED? (select one)	SOURCE OF MATCH	TOTAL
Personnel Costs Dr. Jason Parent Mr. Michael Bradley	\$ 674.21 \$8,299.23				\$8,973.44
Fringe J. Parent M. Bradley	\$ 0.00 \$3,951.73				\$3,951.73
EDC service center	\$1,836.08				\$1,836.08
Indirect Costs (State of RI agency rate 25%)	\$3,690.31				\$3,690.31
TOTAL	\$18,451.56			TOTAL PROJECT COST	\$18,451.56

VII. BUDGET NARRATIVE (one page maximum)

Please provide a description and justification for each line item included in the project budget form (e.g. for personnel costs, provide hourly and fringe rates, for travel specify rate and estimated number of miles). Please specify any match requirements for each source of funding. Please include costs associated with required annual and final reports to CRMC. Be sure to detail how CRMC funds will be used.

Project Total - \$18,451.56

Personnel

Principal Investigator: Dr. Jason Parent, Assistant Professor, will provide 0.03 month of summer salary effort in Years 1 and 2 (0.06 total) serving advising on research design and analysis.

Projected hourly wage rate is FY25 \$70.68 and FY26 \$72.80

Co-PI: Mr. Michael Bradley, Research Associate, URI Environmental Data Center, will serve as project manager of seagrass bed underwater video imagery data collection, post-processing and analysis at 1.11 person months of effort (0.36 month in Year 1 and 0.75 month in Year 2).

Projected hourly wage rate is FY25 \$46.74 and FY26 \$48.14

Fringe

The fringe benefit rate for full-time employees is set forth by contract and is not discretionary. Fringe benefits include retirement, health insurance, group life insurance and social security taxes. The rates are calculated individually and are actual amounts. Fringe benefits are not charged for faculty summer salary.

Bradley Fringe 47.62%

Environmental Data Center service center

The University of Rhode Island Environmental Data Center (EDC) Geospatial Technology Laboratory provides bench space for Michael Bradley's effort on this project. The EDC will contribute the geospatial IT infrastructure and maintenance for this project (GIS hardware, desktop geospatial and image processing software platform, networking, geospatial data storage, backups, security). These services are provided in return for a service charge that is calculated as a fixed percentage of the staff commitment to this project. Rates for EDC service center are reviewed and approved annually by the University of Rhode Island (URI) Service Center Committee under the direction of the URI Controller. EDC computing charges cover operation of the Environmental Data Center Geographic Information Laboratory, which has been an approved Service Center at URI for 23 years.

RI State FY24 EDC Service Center rates are approved at \$1,600.07 /mo per 1 FTE and are subject to change in state FY25 based on annual review and are estimated at \$1,632.07 per 1 FTE. FY26 rates are estimated at \$1,664.71. Michael Bradley will contribute 1.11 person months (FY25 0.36 mo; FY26 0.75 mo) of service center effort toward this project.

IX. ADDITIONAL MATERIALS

Please include the following with your application:

☒ Site and Locus Maps

☐ Ground-level photographs of existing site conditions

☐ Aerial photographs, if available

☐ Preliminary design drawings, maps or engineering plans, if available

☐ Pertinent physical, ecological, biological, and cultural / historical survey data

☒ Letters of support

AUTHORIZED SIGNATURE

AUTHORIZED AGENT OF LEAD ORGANIZATION

Sara Clabby
Signature

03/29/2024
Date

Return your completed proposal by 4:00 p.m. on **April 1, 2024** to:

Caitlin Chaffee
NBNERR
RI Dept. of Environmental Management
235 Promenade Street
Providence, RI 02908

caitlin.chaffee@dem.ri.gov

Applicants are required to submit one (1) signed hard copy of the proposal form and one (1) electronic copy in Adobe PDF format. **Please submit electronic copy as a **SINGLE PDF FILE** containing all application materials.**

Contact Caitlin Chaffee at **401-222-4700 xt. 277-4417** with any questions.





Figure 1. The map of potential underwater video locations to monitor eelgrass flowering and seed production includes three sites in Narragansett Bay and three in the coastal ponds.

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Rhode Island Department of Environmental Management
Division of Marine Fisheries

Office 401.423.1920 | Fax 401.423.1925 | dem.ri.gov/marine

Fort Wetherill Marine Laboratory
3 Fort Wetherill Road, Jamestown, RI 02835

Coastal Fisheries Laboratory
1231 Succotash Road, Wakefield, RI 02879



March 28, 2024

Caitlin Chaffee

Reserve Manager, Narragansett Bay National Estuarine Research Reserve
RI Dept. of Environmental Management, 235 Promenade St, Providence, RI 02908

Re: Letter of Support for the grant proposal "Underwater Video Collection in Support of Eelgrass Restoration"

Dear Ms. Chaffee,

On behalf of the Rhode Island (RI) Department of Environmental Management (DEM), Division of Marine Fisheries (DMF), I am writing to express our support for funding the project, "Underwater Video Collection in Support of Eelgrass Restoration" from the Rhode Island Coastal and Estuary Habitat Restoration Fund. RI DEM has statutory responsibility for the conservation and management of marine resources (RIGL § 20-1-2), including eelgrass (*Zostera marina*), and thus the proposed work aligns with our mission.

Eelgrass is a critical marine habitat that provides multiple ecosystem services in our coastal and estuarine waters. Despite its importance, this habitat is in steady decline along the Atlantic Coast, including portions of RI. In response, managers along the Atlantic coast are exploring seed-based restoration approaches to significantly increase the spatial and temporal scale of eelgrass restoration, as well as increase the resiliency of existing habitat. However, information related to eelgrass reproductive phenology and seed production are not well described for the New England region, including RI.

RI DEM DMF in partnership with the Massachusetts DMF was awarded funding from the EPA Southern New England Program (SNEP) to build capacity for future seed-based eelgrass restoration. The SNEP funded work focuses on determining the timing and density of eelgrass flowering shoots and seed maturation in shallow, wadable locations in targeted eelgrass beds in the SNEP region, including RI's coastal ponds and Narragansett Bay. The proposed work builds upon the SNEP funded activities by using underwater video to expand the spatial extent of the area surveyed and provide information on the portion of a bed that is flowering and how many potential seeds are present. The information collected by the proposed work is needed to guide future, spatially specific seed collection activities.

In closing, we strongly support the proposed project. Results from the proposed work, combined with information collected by RI DEM DMF and partners, will be used to restore and conserve eelgrass, benefiting local communities and users that depend on the ecosystem services provided by eelgrass.

Sincerely,

M. Conor McManus, Ph.D., Chief