SNEP Watershed Grants
Final Report and Executive Summary

1. Cover Information

Date: February 28, 2025

Project Name: *Broad Meadow Brook Wetland and Stream Restoration*

Subaward Number: # SNEPWG21-11-MassAud2

Subaward Period (for entire Project): December 31, 2021 - December 31, 2024

Subawardee Organization: Mass Audubon

Report Contact Person/Project Leader:
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Reporting Period: December 31, 2021 - December 31, 2024

Report Type and Number: Final Report

0. Executive Summary

At 435 acres, Broad Meadow Brook Wildlife Sanctuary (BMBWS), in Worcester, Massachusetts, is New England's largest urban conservation area. The sanctuary is a collaborative partnership between the City of Worcester, National Grid, and Mass Audubon, with Mass Audubon managing the visitor/program center and five miles of trails. BMBWS occupies a valley east of the Sagatabscot Ridge/Oakland Heights area of southeastern Worcester, in the Blackstone River watershed, with the eponymous brook flowing southerly through the valley. The brook, which emerges from the City's storm drain system in the sanctuary's northern section, has low water quality and an abrupt hydrological response to precipitation events. Wetlands occur along the brook at intervals where the floodplain widens. The northernmost of these—the 40-acre Broad Meadow—is bisected by a causeway associated with a decommissioned sewer line and the popular Troiano Brookside Trail, one of the sanctuary's accessible trail segments (Figure 1). In this area, the brook flows for approximately 2,700 feet in a straight channel paralleling the causeway's western bank. While several cross-connecting culverts occur along the causeway, the brook only accesses its eastern floodplain during large storm events; common reed dominates this eastern floodplain area, while the western floodplain hosts a more diverse emergent marsh community.

Figure 1. Broad Meadow Brook flows southerly through the Broad Meadow, paralleling the decommissioned sewer line and the Troiano Brookside Trail causeway. Common reed dominates the wetland's eastern section, while the western section is a more diverse emergent marsh community.

The City's decommissioning of its sewer line through the Broad Meadow in 2018 underpins the Broad Meadow Brook Restoration Project, an ambitious undertaking aiming to improve the site's ecological and hydrological function. Mass Audubon and its project partners, the City of Worcester, the state Division of Ecological Restoration, Clark University, and others, have been advancing the Restoration Project's development for several years. As a part of that effort, this grant's purpose was to support the production and evaluation of a set of restoration options for the site, incorporating public input and resulting in a preferred restoration design. Restoration goals addressed in the design include mitigating (or at least not worsening)

chronic flooding issues experienced in the adjacent neighborhood; improving the brook's ecological function, wildlife habitat, and water quality; enhancing education and recreational opportunities; and increasing the site's climate resilience. Through site evaluation, modeling, design, and outreach activities, the project team has developed a preferred restoration design that addresses these goals (Figure 2), along with modeling, 30% engineering designs, and technical documentation to support it.

Figure 2. BMB Restoration Concept rendering by Princeton Hydro.

At the start of the grant period, Mass Audubon and its partners procured the services of a consultant and sub-consultants to conduct many of the major project tasks, including QAPP revisions, hydraulic and hydrologic (H&H) modeling of existing conditions and restoration scenarios, and conceptual design. Staff turnover, project schedule delays, and other challenges at the lead consulting firm led to frustration among project team members during the extended period of scenario development and assessment, but an energetic push toward the end of the grant period resulted in the successful completion of this phase of the project scope.

Four restoration scenarios, ranging from low/modest to high/near-total site interventions (including stream channel realignment, causeway removal, stream daylighting, etc.) were developed in late 2022 and assessed and refined through 2023. Examination of the draft existing conditions model in late 2022 revealed uncertainties about the accuracy of topographical survey data, so additional field survey work was conducted to amend and/or verify areas of uncertainty, increasing confidence in base mapping and modeling, at the cost of delaying the project schedule. Throughout spring and summer 2023, project consultants continued to develop restoration scenario H&H models, conceptual designs, and a basis of design memorandum, and conduct assessments for green infrastructure opportunities within the site. Hydrologic model results were

initially delivered in summer/fall 2023, but these results unexpectedly challenged previous assumptions about the project site (assumptions based on earlier studies), forcing the project team back to the drawing board.

By February 2024, it became apparent that the project team's focus on hydrological improvements was leading toward restoration alternatives that would rely on highly engineered site features to succeed, including the potential for constructing flow-control weirs and perpetuating the divide between the eastern and western portions of the floodplain. Project contractors prepared to conduct a "rapid-fire hydrologic analysis" of a sophisticated matrix of design variables, but just before launching this effort, project team members came to the realization that the designs under consideration did not appropriately balance hydrological and ecological restoration goals. The project team paused further hydrological modeling and pivoted back toward designing alternatives that allow Broad Meadow Brook full access to its floodplain. This approach required expanding hydrological modeling beyond the previously modeled site, which triggered additional contract modifications with contractors and added several weeks of delay to the project schedule.

By fall 2024, contract issues had been resolved, new conceptual design alternatives had been articulated, and a public outreach effort had solicited interest in and comment about the project from the Broad Meadow Brook community (see Figure 3 below). The final preferred alternative envisions a comprehensive reworking of the Broad Meadow Brook channel/floodplain system, creating areas where extreme flows can be reduced, increasing flood storage capacity within the wetland, and re-establishing a native wetland ecological community throughout the area now occupied by common reed. Important design elements include: forebays, allowing municipal workers to remove accumulated trash and sediment; essentially complete removal of the site's bisecting causeway, enabling the brook full access to both sides of its floodplain; flow restrictions/beaver dam analogs to encourage beaver occupancy in the wetland complex; substantial regrading in the wetland's eastern portion, to enable the establishment of pond, fen, marsh, and swamp communities; daylighting of the culverted section of the brook; and a modified trail system including boardwalks and observation decks to enhance visitor engagement with the restored wetland/brook area.

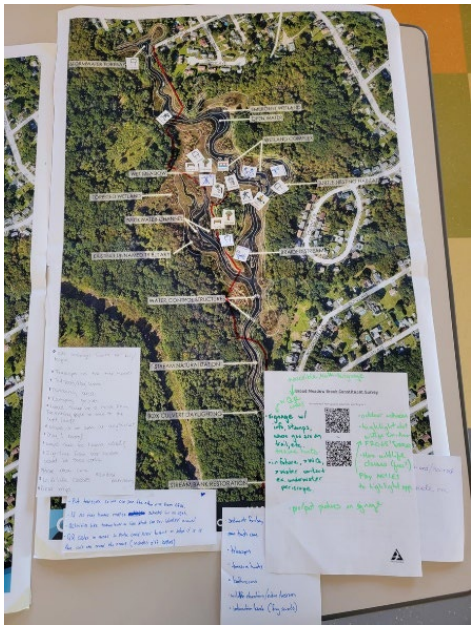


Figure 3. Community mark-up of conceptual design plan, 11/12/2024

Assessment and Outlook

With the completion of grant tasks, the project team is excited by the design selected as the preferred alternative and anticipates additional engineering and technical evaluation and iteration in the coming months to refine design concepts. Getting to this point, however, took 18 months longer than originally planned, and several occurrences are worth reflecting on:

- ***Challenges of working in an urban environment***
  Dense residential neighborhoods abut the project area, and special care is needed to ensure that the project does not increase risks for these neighborhoods in any way. At the same time (supported in part through SNEP's Opportunity to Advance Resilience grant) the project team is working on watershed-based approaches to further improve various impairments that affect the Broad Meadow Brook system, recognizing that site-based work alone will not be sufficient to achieve project goals.

- ***Interdisciplinary perspectives yield improved results.***
  The project team is highly aware of the importance of getting the hydrology right on this project, to avoid exacerbating chronic flooding issues experienced in the adjacent neighborhoods. So, when H&H modeling results indicated a potential issue, project consultants fell back on tried-and-true engineering-based alternatives to address it. Only after recognizing that none of the resulting infrastructure-heavy alternatives would meet the project's ecological restoration goals did the team realize that any truly preferred alternative would have to start from the perspective of renaturalizing the entire valley as much as feasible.
- ***Regular and frank communication with consultants is critical.***
  Shifting personnel at the project's lead consultant seemed to strand project development within a small team, overstretched among other projects and events. The project team probably should have elevated concerns about timely performance earlier, as appropriate staff resources were allocated to the project (requiring some contract revision) after the team clearly expressed frustration. In addition to introducing the new valley re-naturalization approach, the Mass Audubon team pivoted by consolidating and restructuring contracts, eliminating extraneous tasks, and communicating intensely with the consultants to get the project back on track and completed by December 2024.
- ***Project partner commitment has been varied.***
  The City of Worcester and the MA Division of Ecological Restoration have been essential, force-multiplying partners on this project, providing timely attention, field effort, funding, and decision-making as appropriate since project initiation. Sharing project efforts with this team has meaningfully improved all aspects of the work. Other project partners have been more difficult to keep engaged and contributing to this effort. Recognizing the project's ambitions, the core team hopes to recruit additional partners whose goals align with the goals of the project.

2. Project Report Narrative

2.A. Project Results

In the grant's final months, the project contractor reorganized its project team, designating a new project manager and involving additional staff. In part this renewed effort was spurred through a contract revision that created a single, clear budget and scope of work from the previous contract and successive project change orders.

In early August 2024, Mass Audubon hosted a public listening session about the project and launched an open online survey to solicit community attitudes and ideas on an ongoing basis. Most listening session participants reported coming to Broad Meadow Brook for birding and/or hiking and were strongly interested in seeing more wildlife and native plant communities at the sanctuary. Participants shared concerns about heat and air quality, the potential spread of invasive plants, and the duration of potential trail closures during project construction. Many participants expressed interest in staying informed about restoration project progress.

A site visit in early September 2024 kicked off a period of intense work for the project team, sprinting toward contract completion before the end of December. Design activities iterated on previous alternatives and team input to generate a preferred alternative, which proposes near-complete utilization of the eastern portion of the wetland to create a new brook channel and restored floodplain. Renderings depicting post-construction conditions at a few key locations within the project area were completed, as was hydrologic and hydraulic modeling of existing conditions and design alternatives.

The conceptual design and renderings were shared with participants of a second public listening session in November. This session included the opportunity for participants to contribute to decisions affecting the sanctuary trail system, project interpretation, and restoration design; most participants focused on interpretive elements or trail enhancements (a treehouse concept was much supported, for instance). Participants favored features that would increase opportunities to observe and interact with the restored wetland area, such as observation blinds, fixed spotting scopes/binoculars, and steppingstones in the brook.

The contractor's activity culminated in the delivery of a basis of conceptual design report, a conceptual design plan (30% engineering level) set of the preferred alternative, and supporting H&H models and electronic files in late December. The project team is very pleased with the resulting products and is confident that these materials will set the next project phase on a good trajectory.

Project results for the Project during the entire grant period also include the following accomplishments and results:

- **Jan-June 2024:** Project partners continued efforts to refine conceptual design alternatives and accelerate completion of contractor deliverables. An appraisal was completed on a key private property and discussions with the landowner are ongoing. Mass Audubon staff worked extensively with the project contractor to adjust contract scope in response to complications arising from earlier hydrologic and hydraulic modeling results, with discussions focused on balancing ecological and hydraulic restoration goals. Neighborhood outreach activities continued.

- **July – Dec 2023:** Project contractors delivered revised final existing conditions hydrologic modeling, reflecting updates to base mapping from additional field survey effort. Mass Audubon land protection staff met with a key landowner to discuss the restoration project

and site access; discussions are ongoing. Project contractors also delivered hydrologic modeling results from four restoration scenarios. All scenarios included daylighting the brook's culverted section in the southern portion of the project site. Modeling results suggested that the areal extent of flooding in all restoration scenarios would be less than existing conditions, due to a backwater effect from the downstream culvert, and that water retention on the eastern side of the wetland complex is due to inverted cross-culverts. Also, no modeled scenario had any effect on flooding in the stormwater management system upgradient from the project site. These results ran counter to expectations from earlier studies, warranting an expansion of the modeling effort to meet project objectives. Partners requested and received a no-cost extension for this grant and accessed additional funding to support further modeling efforts. Mass Audubon and its project partners also continued to collect water quality and streamflow data. MassWildlife staff also completed fish sampling at two locations in the project area.

- **Jan – June 2023:** Mass Audubon and its project partners continued to collect water quality and streamflow data and conduct community engagement and outreach efforts. Partners refined restoration scenario options to be evaluated in hydrologic and hydraulic modeling. The draft existing conditions model had a few features that called into question the accuracy of base mapping, so additional field survey data were collected to amend and verify the final base map. The existing conditions model results demonstrate a large backwater effect from the culverted section of Broad Meadow Brook, with the causeway interfering with flood storage capacity; these results validate the project's major goals for improving hydrologic function at the site.

- **July-Dec 2022:** Mass Audubon and its project partners obtained final EPA approval for a QAPP related to streamflow and hydraulic and hydrological modeling, initiated H&H modeling activities, conducted water quality and flow monitoring activities, continued community engagement and outreach efforts, and created a spectrum of restoration scenarios to be evaluated in the H&H model. Modeling efforts were somewhat delayed by a lengthy effort to obtain rumored recent FEMA flood modeling for the project area, but on learning that FEMA could not find/provide this data, the contractor moved quickly to model existing conditions in the watershed.

- **Jan – June 2022:** Mass Audubon and project partners issued a request for services, resulting in six qualified bids and, after evaluation and interviewing, a contract with Princeton Hydro (PH) and its subcontractors, to advance hydrologic and hydraulic modeling and conceptual design for the Broad Meadow Brook restoration project. Subsequently, EPA approved the project's amended Quality Assurance Project Plan to include field survey and other information to support model development. Field survey work was completed in June 2022.

2.B. Next Steps & Recommendations

All project tasks were completed by December 2024, resulting in a package of engineering plans, analyses, and renderings that the project team is carrying forward into the next project phase. The FY23 SNEP-SWIG grant awarded to the project will support this next phase, including additional site assessment and design advancement. We are grateful for SNEP's support, including the now-closed FY21 grant, the FY23 SWIG grant, and the SNEP Opportunity to Advance Resilience in Disadvantaged Communities (SNEP-SOAR) grant, which has allowed us to develop and refine the ecological restoration vision for the site, and to increase our capacity for community engagement on this project. We are truly excited to move this forward-looking, community supported ecological

restoration design forward.

2.C. Compliance

EPA approved an amended QAPP (based on the project's previously approved QAPP) in early June 2022, enabling the field survey to occur prior to the end of that month. EPA approved a new streamflow and hydrologic/hydraulic modeling QAPP in late October 2022. No other permits are anticipated to be needed under the present contract.

2.D. Project Partners

Mass Audubon

- Throughout the entire project, Mass Audubon staff attended team meetings and site visits, conducted regular calls with contractors, and continued stream flow and water quality monitoring with volunteers. During winter and spring 2022, Mass Audubon, with the Massachusetts Division of Ecological Restoration (DER) and other partners, developed and implemented request for quotes, facilitated site visits, selected the contractor, and obtained contract for related services. Mass Audubon coordinated with Clark University on community engagement efforts; spoke with press and hosted a public ARPA event. With the contractor, Mass Audubon modified the previous QAPP to include the field survey component.
- During summer and fall 2022, with DER and other partners, Mass Audubon reviewed the QAPP for stream flow and H&H modeling; conducted a stream clean-up event in August; and continued coordination with Clark University on community engagement efforts.
- During winter and spring 2023, Mass Audubon staff attended two neighborhood association meetings; developed a process for neighborhood communication; conducted site walks and a stream clean-up event in April; and continued community engagement efforts.
- During summer and fall 2023, Mass Audubon staff attended one neighborhood association meeting; developed a process for neighborhood communication; conducted site walks in the fall in conjunction with adult public programs; and coordinated with Worcester Technical High School on community engagement efforts. Mass Audubon staff also met with a key landowner to discuss site access for the restoration project.
- During winter and spring 2024, Mass Audubon staff conducted site walks in the spring in conjunction with adult public programs, including the Massachusetts Land Trust Coalition's annual meeting, stream clean-up days, and volunteer water quality monitoring. Mass Audubon also received an appraisal for the value of a key private parcel and continued discussions with the landowner to secure land needed for the restoration project.
- During summer and fall 2024, Mass Audubon staff continued discussions with a private landowner to secure land needed for the restoration project. Staff organized two community listening sessions and several project-related school programs and events and launched a survey for public input. Staff also revised the contract with the project consultant to ensure proper attention to scope tasks/deliverables in the final months of the contract.

City of Worcester

- Throughout the entire project, staff from the City attended project team meetings; provided project updates to other City officials and facilitated data sharing with the project contractor; as well as assisted with landowner outreach to neighbors.
- During winter and spring 2022, the City of Worcester provided comments on request for quotes and assisted with contractor interviews and selection; attended a public ARPA event; provided project updates to other City officials; and facilitated data sharing with contractor.
- During summer and fall 2022, the City of Worcester sought FEMA flood data for the watershed; attended project team meetings contributing to development of restoration scenarios; continued to provide project updates to other City officials and facilitated data sharing with the project contractor. During summer and fall 2023, staff from the City installed flow monitoring

equipment in selected locations in the upgradient stormwater management infrastructure.

Massachusetts Division of Ecological Restoration (DER)

- Throughout the project period, DER convened monthly project team meetings including developing agendas and coordinating follow-up tasks and next steps, as well as working with Mass Audubon staff on stream flow data collection. During winter and spring 2022, DER developed a scope of services for hydrologic and hydraulic modeling and restoration design elements of request for quotes, assessed responses and facilitated contractor selection, and developed QAPP component for stream flow monitoring. DER also provided a $30,000 grant to support survey and modeling work.
- During summer and fall 2022, DER further developed QAPP component for stream flow monitoring; commented on draft H&H modeling QAPP component; and compiled a narrative of restoration scenario options. DER provided a $60,000 grant in November 2022, to further support project activities.
- During summer and fall 2023, DER conducted fish sampling with MassWildlife at the upstream and downstream gages of Broad Meadow Brook. This sampling found the same three species – golden shiner, chain pickerel, and pumpkinseed – at both sites, but in different proportions. All three fish species found are habitat generalists tolerant of warmwater conditions.
- During summer and fall 2024, DER staff continued to be central thought partners in evaluating project alternatives.

Clark University

- Throughout the project period, the Blackstone River Collaborative at Clark University participated in monthly team meetings and two Clark professors engaged their students (graduate and undergraduate) in elements of the project, including developing and implementing community outreach surveys. During winter and spring 2022, the Blackstone River Collaborative assisted with contractor interviews and selection.
- During summer and fall 2024, the Blackstone River Collaborative at Clark participated in one team meeting. A Clark University professor brought an undergraduate class and a graduate seminar to the site as an example of urban ecological restoration.

2.E. Volunteer and Community Involvement

Mass Audubon and partners engaged volunteers who directly contributed to the project, as outlined below, contributing 188 total estimated volunteer hours toward the project. These hours are not used as match for the purposes of this grant and represent leveraged resources for the project.

- **Summer and Spring 2022:** Approximately 35 hours of volunteer time, including several individuals, were contributed toward project activities. Volunteers contributed to team meetings and communication, community presentations, stream gage monitoring, water quality monitoring, and training.
- **Winter and Spring 2023:** Approximately 63 hours of volunteer time were contributed including team meetings and communication, community presentations, bi-weekly stream gage monitoring, water quality monitoring, and training.
- **Summer and Winter 2023:** Approximately 30 hours of volunteer time, including the efforts of several individuals and project partners from Clark University, DER, MassWildlife, and the City of Worcester, were contributed toward project activities. Volunteers contributed to team meetings and communication, community presentations, bi-weekly stream gage monitoring, water quality monitoring, and training.
- **Winter and Spring 2024:** Approximately 30 hours of volunteer time, including the efforts of several individuals and project partners from Clark University, DER, MassWildlife, and the City of Worcester, were contributed. Volunteers contributed to team meetings and communication, community presentations, bi-weekly stream gage monitoring, water quality

monitoring, and training.
- **Summer and Winter 2024:** Approximately 30 hours of volunteer time, including 10 hours assisting with stream clean-up days and monthly water quality monitoring and 20 hours of individuals and project partners contributed to team meetings and project activities.

2.F. Outreach & Communications

- Mass Audubon presented the project at the Massachusetts Land Trust Coalition's annual meeting in March 2022, including at the well-attended sponsor talk on March 24, and a workshop on March 26.

- During fall 2022, Clark University students canvassed the neighborhood around the project site, knocking on doors and administering a survey to gauge the level and types of interactions people have with the Broad Meadow Brook Wildlife Sanctuary, its trails, the brook, and sanctuary staff, and the level of awareness of home-based actions (*e.g.*, lawncare practices) on water quality. Though most interviews lasted 30-45 minutes, one carried on for 3 hours, and interviewers were invited for a meal and were gifted garden produce! The project team anticipates learning more about survey results in the next reporting period.

- Through the fall of 2022, all 1,889 7th graders in the City of Worcester learned about this project in the *Real Math, Real Science* program at Broad Meadow Brook. In this longstanding program with the Worcester Cultural Coalition, groups of approximately 100 students at a time learned about trees, climate change, and watershed health/water quality while on their field trip. They measured trees, calculated oxygen production, worked with watershed models to learn how human activities impact water quality, and hiked to the brook (downstream of the restoration area), where they learned about stream health, how streams function in storm events, and the story of BMB channelization and the planned project.

- Mass Audubon TerraCorps member Gabrielle Hajos assisted with community engagement pieces, including outreach to individual neighbors and sanctuary volunteers, attendance at two neighborhood association meetings, and leading four stream walks and a stream clean-up in April 2023. In addition, during spring 2023, 200 City of Worcester seventh graders learned about watersheds and the importance of natural systems in climate resilience and clean water, using Broad Meadow Brook as a local example. This program is a continuation of the Real Math, Real Science collaboration between Mass Audubon and the Worcester Cultural Coalition.

- During fall 2023, 1,800 City of Worcester seventh graders learned about watersheds and the importance of natural systems in climate resilience and clean water, using Broad Meadow Brook as a local example. This program is a continuation of the Real Math, Real Science collaboration between Mass Audubon and the Worcester Cultural Coalition. The Grafton Hill Neighborhood Association received an update on the project.

- In July and August 2023, 200 summer campers explored the brook region, documenting associated wildlife and stream behavior.

- On April 26, 2024, project partners hosted a field trip to the Broad Meadow Brook restoration project site for the Massachusetts Land Trust Coalition's annual conference. Spring stream clean-ups and school group visits also occurred.

- In fall 2024, 1,700 City of Worcester 7th-grade students learned about climate resilience and how humans interact with waterways, using Broad Meadow Brook as a local model. In addition, 39 students from Worcester East Middle School delved deeper into impacts of channelization, culverting and water pollution; and participated in model community listening sessions. Another 12 high school students from YouthGrow, a local community organization, field tested newly developed activities for the *Real Math, Real Science* program.

Media resources on the project include the following:

- **Website:** ***Broad Meadow Brook Project***. Mass Audubon website page discussing the Broad Meadow Brook Restoration Project.
- **Blog Post:** ***Broad Meadow Brook Restoration Project Update: Gathering Community Feedback*****,** October 24, 2024
- **Online Article:** ***Implementing green, gray, and watershed-wide stormwater solutions in the Broad Meadow Brook Watershed***, December 13, 2024, Weston & Sampson.
- **News Article:** ***Implementing green, gray, and watershed-wide stormwater solutions in the Broad Meadow Brook Watershed*****,** November 19, 2024, Tardif, Jenkins, Simpson, Stormwater Solutions.
- **News Article:** ***Mass Audubon receives grant for stream renovation at Broad Meadow Brook***, January 25, 2022, Veer Mundambi, Worcester Magazine.
- **Community Event:** Public event at Broad Meadow Brook, Congressman Jim McGovern and other community leaders announced a $500,000 American Rescue Plan (ARPA) grant to support the project, February 24, 2022.
- **News Article and Video:** ***Broad Meadow Brook project receives $500k in ARPA funds***, Spectrum News, February 24, 2022.

3. Project Budget Report

Budget Category	Total Budgeted Funds	Total Budgeted Match	Grant Funds Expended This Period	Grant Funds Expended Cumulative	Match Funds Expended This Period	Match Funds Expended Cumulative	Match Source (note cash or in-kind)
Personnel		$3,573.00				$8,233.62	In-Kind
Fringe		$1,107.00				$2,551.40	In-Kind
Travel		$230.00		$155.00			Cash
Equipment							
Supplies							
Contractual	$68,000.00	$30,000.00		$67,845.00		$52,942.57	Cash
Other		$2,267.00				$1,621.48	Worcester In-Kind
Total Direct	$68,000.00	$37,177.00	$0.00	$68,000.00	$0.00	$65,349.07	
Indirect	$6,800.00	$3,718.00	$0.00	$6,800.00	$0.00	$6,534.91	
Total	**$74,800.00**	**$40,895.00**	**$0.00**	**$74,800.00**	**$0.00**	**$71,883.98**	

2.A Budget Narrative

Mass Audubon has expended 100% of the total $74,800 budgeted grant funds and $71,883.98 match, $30,988.98 above the $40,895 budgeted match amount. Mass Audubon has leveraged additional funding for the overall project and was awarded a grant for Broad Meadow Brook Restoration Project community engagement activities from EPA's new program, **SNEP Opportunity to Advance Resilience in Disadvantaged Communities (SNEP-SOAR).** This grant allows us to significantly increase our overall capacity for community engagement for this project. We are grateful for SNEP's support, including the FY21 grant and the FY23 SWIG grant to support the next phase of this project, which includes historical review and wetland delineation (in progress) as well as permitting-level design (will proceed in early 2025). We are deeply grateful to the Southeast New England Program and Restore America's Estuaries for your partnership on this project. Mass Audubon has also raised additional leveraged funding for the project, including a $500,000 ARPA grant and funding from DER, which will also be utilized in future phases of this project.

Southeast New England Program

Watershed Grants

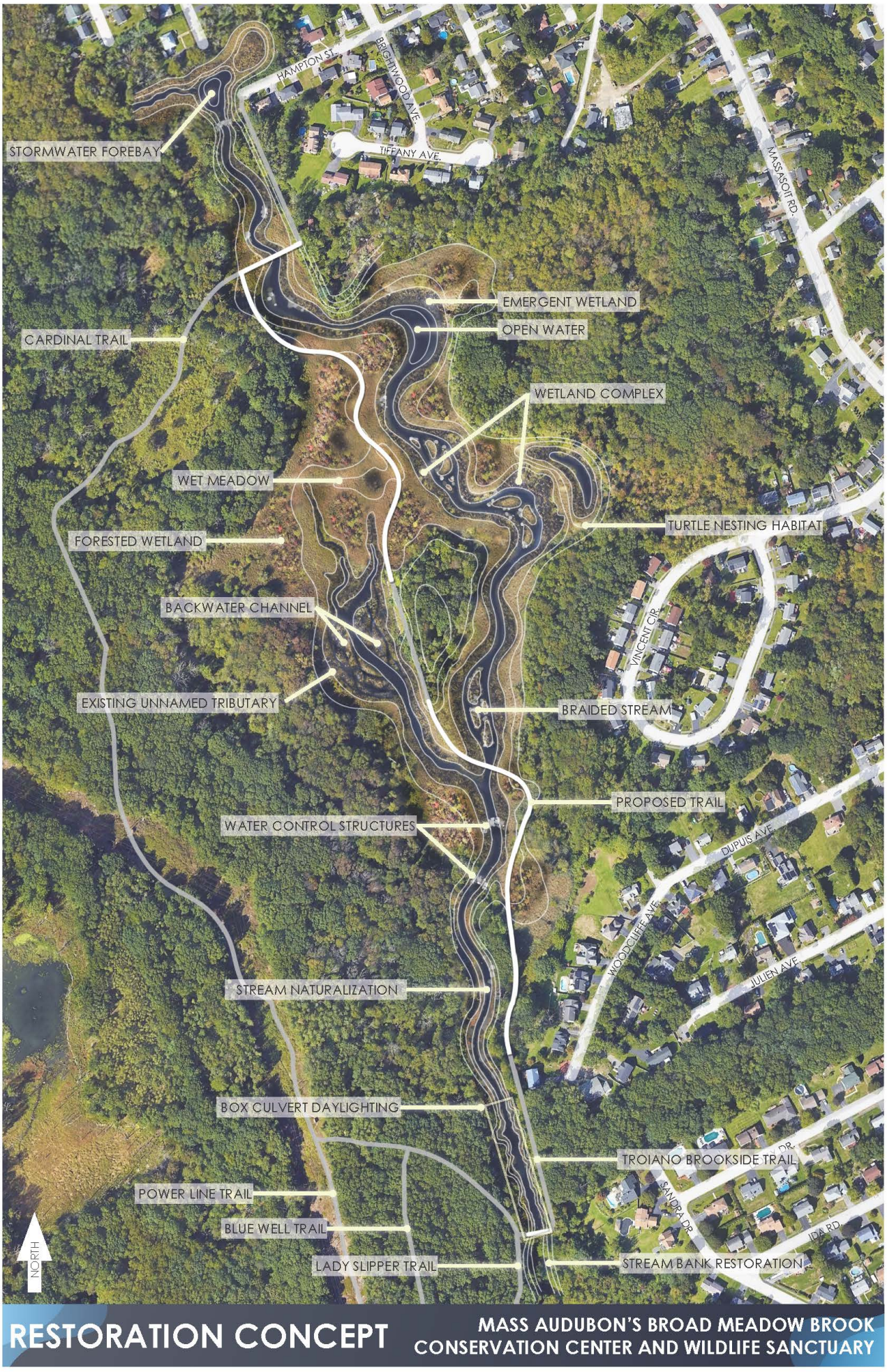
Broad Meadow Brook Wetland and Stream Restoration

 # SNEPWG21-11-MassAud2

Final Report Project Photos and Supplemental Materials

February 2025

Mass Audubon



RESTORATION CONCEPT

MASS AUDUBON'S BROAD MEADOW BROOK CONSERVATION CENTER AND WILDLIFE SANCTUARY


Broad Meadow Brook Culvert
Removal Concept Rendering


Broad Meadow Brook Culvert
Removal Concept Rendering


Broad Meadow Brook Concept
Rendering: Before

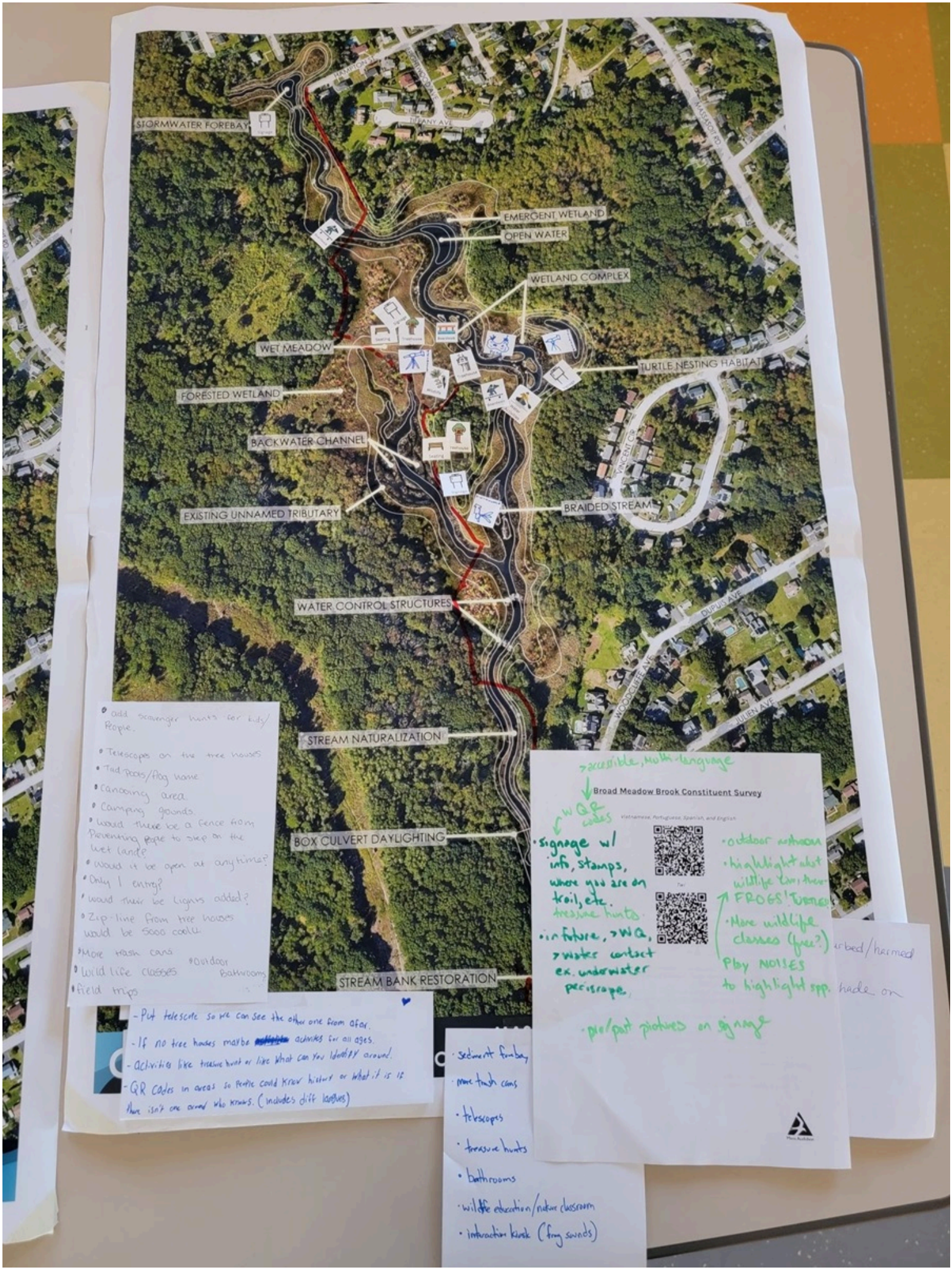

Broad Meadow Brook Concept
Rendering: After

RESTORATION CONCEPT

MASS AUDUBON'S BROAD MEADOW BROOK CONSERVATION CENTER AND WILDLIFE SANCTUARY


November 2024 Listening Session

LuLu
UDUBON'S BROAD MEADOW BROOK
CENTER AND WILDLIFE SANCTUARY


STORMWATER FOREBAY
EMERGENT WETLAND
OPEN WATER
WETLAND COMPLEX
WET MEADOW
TURTLE NESTING HABITAT
FORESTED WETLAND
BACKWATER CHANNEL
EXISTING UNNAMED TRIBUTARY
BRAIDED STREAM
WATER CONTROL STRUCTURES
STREAM NATURALIZATION
BOX CULVERT DAYLIGHTING
STREAM BANK RESTORATION
TIFFANY AVE
VINCENT CIR
DUPUIS AVE
WOODCLIFFE AVE
JULIEN AVE
Broad Meadow Brook Constituent Survey
Vietnamese, Portuguese, Spanish, and English
>accessible, multi-language
QR codes
• signage w/ info, stamps, where you are on trail, etc. treasure hunts
• in future, >WQ, >water contact ex. underwater periscope,
• outdoor restroom
• highlight what wildlife live there FROGS! TURTLES
• More wildlife classes (free?)
Play NOISES to highlight spp. trade on
pic/part pictures on signage
• Add scavenger hunts for kids/ People.
• Telescopes on the tree houses
• Tad Poles/frog home
• Canoeing area
• Camping grounds.
• Would there be a fence from Preventing people to step on the wet land?
• Would it be open at anytime?
• Only 1 entry?
• Would there be lights added?
• Zip-line from tree houses would be sooo cool!!
• More trash cans
• Outdoor Bathrooms
• Wild life classes
• Field trips
- Put telescope so we can see the other one from afar.
- If no tree houses maybe [illegible] activities for all ages.
- Activities like treasure hunt or like what can you identify around.
- QR Codes in areas so People could know history or what it is if there isn't one around who knows. (includes diff. languages)
• sediment forebay
• more trash cans
• telescopes
• treasure hunts
• bathrooms
• wildlife education/nature classroom
• interaction kiosk (frog sounds)


Fish Sampling Photos
August 2023


MASSWILDLIFE


Volunteer Cleanup Day April 2024

3. Certification

The undersigned verifies that the descriptions of activities and expenditures in this progress report are accurate to the best of my knowledge; and that the activities were conducted in agreement with the grant contract. I also understand that matching fund levels established in the grant contract must be met.

Grantee Signature:

Tom Lautzenheiser
Senior Conservation Ecologist
February 28, 2025
Mass Audubon