Great Bay 2020

A Five-Year Vision for Collective Investment, Action, and a Healthy Watershed

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clf conservation law foundation

GREAT BAY NATIONAL ESTUARINE RESEARCH RESERVE

NHDES

PREP Piscataqua Region Estuaries Partnership

The Nature Conservancy

University of New Hampshire

Great Bay 2020

Our Vision

A healthy Great Bay Estuary, distinguished by clean water, accessible lands for recreation and education, habitat for fish and wildlife, resilience in the face of a changing climate, and engaged communities that are committed to supporting the estuary and its watershed for generations to come.

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An invitation to collaborate

The "cross-grained and wily waters" of Great Bay hold the history of our region. In them you can see how people have been drawn to live and work in this area for hundreds of years. When we look into these waters, we also see a vision for the future, one centered around a healthy Great Bay Estuary, distinguished by clean water, accessible land for recreation and education, habitat for fish and wildlife, resilience in the face of a changing climate, and engaged communities that are committed to supporting this estuary for generations to come.

We invite you to help us realize this future by becoming a sponsor of *Great Bay 2020,* a five-year vision for investment and action to protect water quality in the estuary and its watershed. *Great Bay 2020* sets ambitious goals for collective action and culture change, and for good reason. Complex, ever-changing, and involving everyone living in this watershed—the challenges to water quality we face will not be met if we take small steps and work in isolation. They demand that we come together to define problems and develop solutions that lead to real change.

As a sponsor of *Great Bay 2020*, you will be in a uniquely powerful position to catalyze the change needed to protect the precious resource that is the heart of our region. Your support is essential, not only to fill critical gaps in current efforts to improve and protect water quality, but also to enhance collaboration among the many organizations and stakeholders with a vested interest in the estuary's environmental health.

In this document, you will find a five-year framework with goals, strategies, and a range of opportunities for investment. Developed through many conversations with local and regional organizations throughout the watershed, it is by no means complete. Rather, it is a "living" plan that will evolve and improve as the circle of partners we engage widens and the work begins. As conveners of the conversations that led to this framework, we hope you will be one of those partners. Please join us as we work to bring a "2020" vision into focus for Great Bay.

Respectfully,

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Introduction

In 1974, "the most important thing that happened in Seacoast New Hampshire was what did not happen."[1]

An oil refinery was not built on Great Bay. Were it not for an extraordinary coalition of citizens, the estuary would have been changed forever, and along with it, countless memories and experiences shared by generations of residents and visitors.

Instead, because of their efforts, we can claim thousands of acres of open water, wetlands, forests, and fields as our common "backyard." We can float with the long arm of the Atlantic as it reaches 15 miles inland to mix with a vast network of creeks and tidal rivers that have been the life's blood of our communities for hundreds of years. We can take satisfaction in the rich diversity of fish and wildlife that, like us, depend on Great Bay for their existence in this place. Above all, we can take pride in the knowledge that when we band together for a common purpose, we can accomplish great things.

Now Great Bay is calling for us to work together again. The ecological health of this unique estuary is in jeopardy. Protecting it will be more difficult than it was 40 years ago, primarily because today's threats come from not one, but many quarters. Sewage treatment plant discharge, increased stormwater runoff, faulty septic systems, dwindling and fragmented natural habitats—how we live and work is slowly, but surely, changing the estuary that is the cornerstone of our region's cultural, economic, and ecological heritage.

These threats are subtler than the prospect of a refinery processing hundreds of thousands of gallons of crude oil each day, but already we are seeing their impact. There is concern that eelgrass beds—those bellwethers of estuarine health and nurseries for flounder, cod, and so many other fish—are shrinking. Invasive macroalgae are flourishing, and migratory fish counts are in decline. As these and other impacts intensify, so does the fear that we are ushering Great Bay, like so many estuaries before it, toward an ecological tipping point that, once crossed, will make recovery extremely challenging and costly.

However, the future need not be one of pollution and degradation. We know from firsthand experience that, by banding together, we can effect great change. With the right motivation and support, the bay's many stakeholders and advocates—its philanthropists, citizens, community leaders, scientists, educators, activists, resource managers, and businesses—can take action to "turn the tide" in Great Bay. Together, we can build on the work of the dozens of nongovernmental organizations, nonprofits, watershed groups, academic institutions, state agencies, and businesses that conduct research on water quality, provide technical assistance to municipalities and land owners, mobilize public support for environmental issues, and educate teachers, students, and the public about water quality.

With many groups focused on protecting Great Bay in targeted and complementary ways, it may not always be apparent to stakeholders where to go for the right kind of support and for philanthropists to understand where their investments can effect the greatest change. Fortunately, there has been a trend of increasing collaboration, and we believe *Great Bay 2020* will enable us to accelerate and improve upon this trend. Today, we better understand how our work is different, how we complement each other, and as a result, what additional resources and strategies are needed to improve water quality. In the process of coming together, we've also learned that the most successful, enduring collaborations occur around place- based, stakeholder-articulated problems. These make it easier for us to understand how our individual missions and capacities align, and help us to set common goals for working more effectively together.

[1] Robinson, Dennis, J. *Seacoast New Hampshire*. Volume 6, No. 1, January 6, 2012.

Yet, to reduce the pervasive threats to water quality around Great Bay, a common goal will not be enough. We also need a framework to help guide our investments and actions, one that is shaped by collective agreement among the numerous organizations playing an active role in environmental issues and one that engages the many stakeholders with a vested interest in the watershed.

In this need, we are not alone. Many places around the country face environmental problems that can only be addressed through broad, cross-sector coordination and large-scale social change. This has led to a surge of "collective impact" initiatives, designed to rally diverse organizations and funders in developing a shared vision for change, one that includes a common understanding of the problem and a joint approach for solving it. Successful collective impact initiatives also include resources to support joint decision making, measure progress and impact, and ensure continuous and effective communications among participants.

Inspired by successful collective impact efforts in other regions, five organizations came together in 2014 to develop the vision and goals in *Great Bay 2020*: the New Hampshire Department of Environmental Services, Great Bay National Estuarine Research Reserve, Piscataqua Region Estuaries Partnership, Conservation Law Foundation, and The Nature Conservancy in New Hampshire. Our intent was to use the principles of collective impact to galvanize the many stakeholders active in the understanding, management, and protection of Great Bay around a vision for clean water, a healthy watershed, and thriving communities.

Great Bay 2020 is our first step in this direction. Its vision, goals, and strategies build on long-standing conversations about what's needed to protect and maintain the Great Bay Estuary and its surrounding watershed. Shaped by the input of dozens of partners over the last year, it considers how the priorities, resources, and programs of our organizations and others align and how they could be leveraged to enact a suite of near-term, high impact activities; which methods could be used to track and measure the impact of these activities; and what resources we need to implement them fully.

We already have begun to use the ideas in this framework to guide how we allocate our own programmatic resources and to seek additional funding for the strategies it lays out. We are eager to begin the process of sharing it with a wider circle of partners and sponsors, to see it take root and grow.

Great Bay 2020 overview

Vision: A healthy Great Bay Estuary that is distinguished by clean water, accessible lands for recreation and education, habitat for fish and wildlife, resilience in the face of a changing climate, and engaged communities that are committed to supporting the Estuary and its watershed for generations to come.

To reach this vision, we have set four interrelated, complementary goals that emphasize collaboration and collective action:

- **Goal 1**: Build a culture of environmental stewardship: Residents of communities in the Great Bay watershed will embrace a culture of stewardship that is focused on appreciating the values that a healthy estuary provides and protecting those values through individual and collective actions in support of improved water quality.

- **Goal 2**: Collaborate to reduce pollution: Municipalities, regulators, advocacy groups, and technical support organizations will collaborate to strategically address the major sources of water pollution in the Great Bay watershed.

- **Goal 3**: Connect action to results through collaborative science: Community leaders, resource managers, regulators, large landholders, and others will collaborate with the science and environmental monitoring community to better understand the health of Great Bay and how that health is impacted by our individual and collective actions.

- **Goal 4**: Protect and restore critical lands and habitats: Municipalities, nongovernmental organizations, public agencies, and land managers support and advance the protection and restoration of critical lands and key habitats that are necessary to improve the health and resilience of Great Bay Estuary.

In the following pages, you will find an overview of each goal that describes why we set it, the strategies we intend to use to reach it, the partners we will engage, the associated budget, and the changes we anticipate as a result of our collective actions.

Goal 1: Build a culture of environmental stewardship

Residents of communities in the Great Bay watershed will embrace a culture of stewardship that is focused on appreciating the benefits that a healthy estuary provides and protecting those benefits through individual and collective actions in support of improved water quality.

Strategy overview

So many challenges we face regarding water quality begin with a lack of shared understanding and values among the many stakeholders who benefit from a healthy Great Bay. For elected officials to make the investments necessary to protect water quality, they need the support of residents, who in turn, need to recognize their connection to the estuary, the benefits it provides, and what they can do to protect it. In our watershed, however, just as in many other places, traditional communications strategies intended to influence values or change behavior have not succeeded at a scale large enough to maintain good water quality and a healthy ecosystem. Fortunately, campaign-based approaches, modeled on private sector marketing strategies, are emerging as successful tools for creating a culture of stewardship around water resources that translates into measurable benefits, such as halting a decline in water quality, or even improving it.

We aim to build on existing outreach, education, and grassroots mobilization programs to start such a campaign here on Great Bay. Using successful models from other regions as a guide and partnering with an innovative marketing and communications firm, we will develop a campaign to promote a public culture of stewardship around Great Bay's environmental health. Just as Apple sells a lifestyle with its products, we will "sell" a Great Bay quality of life by identifying shared values, leveraging social pressure, and promoting certain behaviors as a desirable norm. In doing so, we will encourage people to act individually, for example, by minimizing lawn fertilizer or upgrading septic systems, and collectively by supporting local initiatives and investments to improve water quality. Ultimately, we intend to enhance our already desirable regional culture by making water resource stewardship as much a part of Great Bay life as the local food movement, historic traditions, and the arts and culture scenes.

The campaign will use a "hubs and spokes" approach that will begin in designated "hub" communities and spread to "spoke" communities via social media and traditional media markets. Given sufficient funding, the hubs will be Seacoast communities (Kittery, Portsmouth); larger upstream towns that identify as a single media market (Dover, Rochester, and Somersworth); and rural and suburban towns (Exeter, Newfields, Stratham, and Newmarket). The campaign will engage target audiences in multiple ways to create touch points for those with different interests. Residents will, for example, be able to interact with core messages online, in person, in print, on TV, at a sporting event, or over a pint or menu. To help develop these messages, we will leverage existing work focused on the economic impact of regional water resources to provide defensible talking points that speak to the estuary's economic value and why investment and action to improve water quality are critical to our economy and quality of life.

The campaign will leverage two regional programs that educate and mobilize residents: the Great Bay-Piscataqua Waterkeeper and Great Bay National Estuarine Research Reserve's Teachers on the Estuary (TOTE). The Waterkeeper program educates, engages, and mobilizes citizens in efforts to improve water quality through locally focused public outreach and organizing. It also assists emerging citizen groups in addressing water issues in their communities. This program will play a key role in local and watershed-wide implementation of the campaign and in linking it to public support for municipal actions (as described for goal 2 on page 7). TOTE creates a "living classroom" for teachers in which they can learn about estuarine science and bring their experiences back to their students. As part of their training, teachers develop a stewardship project that encourages students to study or support Great Bay.

We will develop a TOTE module with stewardship projects that will be linked to campaign messages and, potentially, municipal actions to reduce pollution fostered in Goal 2, or the oyster restoration work catalyzed under Goal 4 (see page 11). Lastly, we are committed to evaluating this work in a meaningful way that helps us track our efforts against our goals. This evaluation will be linked to the collaborative science and monitoring work described in Goal 3 of this framework (see page 9).

Partners

Recognizing that many organizations communicate about Great Bay water quality, we will engage numerous partners in this campaign. In addition to *Great Bay 2020's* convening organizations, these will include the Stewardship Network of New England, Southeast Land Trust, Natural Resources Outreach Coalition, New Hampshire Sea Grant, University of New Hampshire (UNH) Cooperative Extension, scientists, and businesses. Communities regulated by the Clean Water Act Program to reduce municipal stormwater pollution (also known as the MS4 program) that have asked for help in communicating about water related issues to residents will be both partners and target audiences. Ultimately, our goal is for this campaign to be useful to any group that wants to work collectively to build political will for investments in clean water.

Why this, why now

This campaign will provide a foundation of shared values among stakeholders from which new and existing initiatives to protect water quality can take root and grow. It is a critical first step toward changing how we live in this watershed. Ultimately, we intend for it to catalyze actions at a personal level and rally support for municipal initiatives to upgrade infrastructure and address other water quality challenges. While more effective communication with the public has long been recognized as a top priority for many organizations focused on Great Bay, it is beyond our current capacities to execute it at the level needed to make an impact on the bay's environmental health. This effort will not happen unless adequate resources are secured so it can be implemented and scaled to a level that catalyzes meaningful change.

Anticipated outcomes of this work

As a result of this strategy and related efforts, we anticipate that:

- More than 75 teachers and 1,500 students will engage in Great Bay data discovery and stewardship projects.
- 90 percent of all MS4 communities will promote use of the campaign by 2020.
- Seventy-five local residents will be part of the Great Bay-Piscataqua Waterkeeper's network of citizen activists, CleanWater Advocates for Great Bay.
- Locally based groups will be active in every subwatershed and make use of campaign tools.
- 1000 percent annual increase in media hits referencing campaign messages by 2020.

Goal 2: Collaborate to reduce pollution

Municipalities, regulators, advocacy groups, and technical support organizations will collaborate to strategically address the major sources of water pollution in the Great Bay watershed.

Strategy overview

Rivers and streams flow across the political boundaries of 52 communities before reaching Great Bay. As they travel, they collect pollution from sources including stormwater runoff, sewage treatment plants, and septic systems. Across the country, this kind of pollution has led to low dissolved oxygen levels, loss of reefs and seagrass beds, and the spread of invasive macroalgae. As our region's population grows and development spreads, so does the potential for these and other impacts to intensify. Acting by itself, no single community can reverse the estuary's declining health. Yet what if solutions were shared as freely as pollution? What if communities were supported in working individually and together to invest in a healthy future for the Great Bay?

We believe this is essential to meet the challenges at hand—reducing pollution from existing sources, while preventing pollution associated with future development. To this end, we will build on past collaborations among municipalities, regional planning commissions, watershed groups, clean water advocates, and others to reduce the major sources of pollution to the bay. We will engage communities regulated under the Clean Water Act for stormwater (so-called "MS4 communities"[1]) and/or sewage treatment, as well as those without regulatory obligations, through a combination of regulatory frameworks, incentives, and technical assistance that promotes inter-municipal coordination and the widespread adoption of innovative pollution reduction strategies. In so doing, we aim to build the collective capacity needed to take action at a scale that will significantly improve and protect water quality for the future.

This work will occur on two geographic scales. Watershed-wide, we will work for a robust, well-implemented Clean Water Act Program to reduce municipal stormwater and wastewater pollution and to identify opportunities for MS4 communities to comply with their regulatory obligations more effectively. For example, MS4 requires permitted communities to address stormwater pollution through local ordinances and, ideally, to adopt "green infrastructure" to reduce runoff. It also requires that they monitor outfalls and develop public education tools. To help communities meet such obligations, we will work with regional planning commissions and others to improve natural and built infrastructure in ways that reduce pollution, to provide technical assistance, and to support the pooling of resources to capture economic efficiencies across municipalities.

We also will work at the subwatershed level, with a likely focus on the Exeter/Squamscott area and another subwatershed, yet to be determined. Within each area, we will engage regulated and unregulated communities in proactively addressing the condition of local water bodies, while also recognizing and addressing individual community needs and capacities. This will involve support for planning that ideally engages multiple communities, as well as grassroots efforts to promote the adoption of community-based tools, such as local ordinances and programs that reduce pollution from stormwater and septic systems, improve the use of buffers, and enhance public investment in water quality. Incentivizing unregulated communities is key to broadening this effort to a scale necessary to protect water quality and to ensure all communities do their part.

This work will build on existing initiatives, including the planning process that Exeter/Squamscott River communities are using to collectively meet wastewater and stormwater permit requirements; the state's Pollutant Tracking and Accounting Pilot Program; Rockingham Planning Commission's model stormwater ordinance (developed for the Southeast Watershed Alliance); Great Bay-Piscataqua Waterkeeper's citizen education and mobilization; and technical assistance provided by numerous groups, including the Great Bay Reserve, Piscataqua Region Estuaries Partnership, New Hampshire Department of Environmental Services, New Hampshire Sea Grant, UNH Cooperative Extension, and the UNH Stormwater Center.

[1] "MS4" refers to "municipal separate storm sewer systems." Most, but not all, municipalities in the Great Bay estuary watershed are subject to this program and are so-called "MS4 communities."

It also will leverage strategies to support *Great Bay 2020's* other goals. For example, municipal engagement forthis strategy will inform the campaign outlined in Goal 1 and be better enabled by the culture of stewardshipthat campaign will create. It also will be informed by the monitoring work linking human action to environmental impact described in Goal 3 (page 9) and may result in further community investment in oyster restoration and land acquisition fostered by Goal 4 (page 11).

Partners

This strategy will require the buy-in and participation of a broad range of partners. In addition to *Great Bay 2020's* convening organizations, these include elected officials, planners, public works directors, and consultants from permitted and unregulated communities; the Rockingham and Strafford Planning Commissions; Southeast Watershed Alliance; and local river advisory committees and watershed groups. This strategy was developed with the input of representatives of many of these groups (see Appendix A, page 15) and will continue to be refined with them, and other partners, as funding is secured.

Why this, why now

This strategy addresses the primary sources of pollution flowing into Great Bay. It also acknowledges that municipal action, underpinned by public support, is essential to restoring water quality. While there are manytools communities could draw on to take action, there is no "one size fits all" approach that all can use. There- fore, this strategy will maximize efforts across municipal boundaries, create replicable models for action, and ensure all communities participate at a level needed for impact. Recent conflicts over how to address nitrogen reduction from wastewater treatment and pending MS4 permits underscore the urgent need to address this issue collaboratively and with significant public involvement.

Anticipated outcomes of this work

As a result of this strategy and related efforts, we anticipate that:

- Five major sewage treatment plants will receive substantial upgrades by 2020, leading to significant nitrogen pollution reduction.
- At least twelve additional MS4 communities will adopt innovative local ordinances to reduce stormwater pollution by 2020.
- The state's first intermunicipal subwatershed plan to reduce nitrogen pollution will be implemented by 2020, with a plan well underway for a second subwatershed (e.g., the Lamprey watershed) or in an extended portion of the first subwatershed (i.e., upper portions of the Exeter/Squamscott watershed).
- A replicable model to reduce pollution from septic systems will be developed by 2020.
- At least four unregulated communities will implement water quality best practices by 2020.

Goal 3: Connect action to results through collaborative science

Community leaders, resource managers, regulators, large landholders, and others will collaborate with the science and environmental monitoring community to better understand the health of Great Bay and how that health is impacted by individual and collective actions.

Strategy overview

The desire to see the difference we make on the world around us is powerful and universal. When we can't connect our actions to outcomes, our motivation to forge ahead can ebb like an outgoing tide. Conversely, when we can draw a clear line between what we do and its impact on a place we value, our capacity to solve problems can be boundless.

We intend to tap into that potential by adopting a more collaborative approach to understanding the health of Great Bay—one that engages decision makers as partners in the design of research questions that explore the interface between human action and environmental outcomes, in strategies to collect and analyze information to answer those questions, and in the translation of this analysis into products that help us all understand whether our actions are making a difference. In so doing, we intend to foster a "science to action" culture that builds a sense of ownership and trust in local science among the many stakeholders who influence Great Bay's health.

To meet this goal, we will leverage existing environmental research and monitoring efforts and recent advances in the field of collaborative science to establish the Great Bay Science to Action Collaborative (GBSAC). This collaboration will address critical gaps in our ability to generate, analyze, translate, and share scientific data so it can be used to understand water quality trends and support short-term decisions, anticipate emerging problems, and reflect whether the steps we take have a positive impact on water quality. It will facilitate the collaboration of organizations that conduct research and share science with municipalities, private landowners, and other stakeholders who need this information to support decisions and investments to protect water quality. Where possible, it will build on existing partnerships, including, for example, the recent investments in eelgrass monitoring by the towns of Portsmouth, Rochester, Dover, Stratham, Exeter, Newmarket, and Durham and their collaboration with New Hampshire Department of Environmental Services to plan future studies.

Initially, GBSAC will focus on issues that are relevant to strategies for Goals 1 and 2 of this framework, such as stormwater runoff, septic systems, and the use of buffer lands around sensitive water bodies. Within these subject areas, we will prioritize those places where there is the greatest potential to influence water quality and there are municipal and private decision makers who are eager to connect the actions they take to environmental outcomes. For example, if under Goal 2, a community improves septic system regulations and provides technical assistance to residents to improve poorly functioning systems, GBSAC can work with stake- holders to monitor local water quality and translate this information into high-impact products, such as visualizations, that illustrate the impact of their actions.

Partners

GBSAC will not be "owned" by one organization. Instead, it will coordinate the work of local environmental research and monitoring organizations (the Piscataqua Region Estuaries Partnership, New Hampshire Department of Environmental Services, Great Bay National Estuarine Research Reserve, and the University of New Hampshire) with the interests and needs of municipal staff, elected officials, nongovernmental organizations, and large landowners such as farms or golf courses. It also will engage communities in other parts of the watershed so they can provide input on research questions of interest, have access to products, and be more inclined to trust this collaborative approach to science should resources to implement it in their areas become available.

Why this, why now

The science is clear that the Great Bay Estuary is in an ecological decline, and we must take action to reverse this trend. However, given recent conflicts over local research related to water quality and broader trends related to lack of public understanding, skepticism, or outright denial of science, we can't assume stakeholders will inherently trust scientific data or use it to guide their decisions. This strategy seeks to break through this "trust barrier" by adopting a more collaborative approach to local research and monitoring, one that uses mediation to incorporate the knowledge, needs, and actions of a range of stakeholders and ensures that data is accessible at a scale and level of technical detail in keeping with their needs.

This strategy also addresses the need for a strong monitoring program and new research to help us answer key questions related to the impact of our actions on water quality. For example, there is a great deal of evidence to indicate that by enhancing "green" infrastructure, decreasing pollution from septic systems, and maximizing use of buffers, we can improve water quality in a cost effective manner. (This is why we have emphasized these approaches in Goals 1 and 2 for *Great Bay 2020*.) Municipalities with limited resources, however, may have to prioritize one approach over the other. Unfortunately, science and monitoring organizations lack adequate resources to conduct new research, or maintain consistent monitoring, to help stakeholders prioritize their actions and evaluate the impact of their work. Additionally, rising costs for technology and human resources are making it increasingly difficult to continue the current pace of data collection, or to analyze and effectively share this data in ways decision makers can readily use. Lastly, for *Great Bay 2020* to succeed, it is critical to be able to demonstrate whether our investments are having an impact on water quality and environmental health. This strategy gives us the opportunity to look at the results of our actions and environmental trends in a coordinated way.

Anticipated outcomes of this work

As a result of this strategy and related efforts, we anticipate that:

- Existing data collection is better coordinated.
- Communities have increased trust in scientific data and its interpretation.
- Science from different sources is better integrated to enable management decisions.
- Emerging, critical data is incorporated into Great Bay community discussions.

Goal 4: Protect and restore critical lands and habitats

Municipalities, nongovernmental organizations, public agencies, and land managers support and advance the protection and restoration of critical lands and key habitats that are necessary to improve the health and resilience of Great Bay Estuary.

Strategy overview

Situated at the dynamic interface of fresh and salt waters and coastal lands, estuaries like Great Bay teem with life. Their complex, fragile ecosystems are capable of supporting remarkable biodiversity and highly productive fisheries. Healthy estuarine systems also help us address some of the biggest challenges we face in protecting water quality and mitigating the impacts of climate change. When we protect the environmental health of Great Bay and its tributaries, we protect our own quality of life.

One of the most direct and tangible ways to promote a healthy Great Bay is to protect and restore those features of the landscape and nearshore waters with the potential to yield the greatest ecological benefits. With new local research and tools to help us pinpoint the most strategic places for action, we intend to "put nature to work" by encouraging and sustaining natural systems, such as marshes, floodplains, riparian areas, headwater streams, and oyster reefs. Ultimately, our aim is to enable these natural features to be self-sustaining "partners" in our efforts to improve water quality.

Because estuarine health is greatly influenced by what happens on land and in the water, we have two objectives for this work. On land, we will establish a network of conservation areas that will be selected for their capacity to maintain water quality, buffer coastal areas from flooding, protect and link critical habitats, and provide for recreation, education, and research. In the water, we will restore nearshore reef habitat so that oyster populations can become more self-sustaining and able to improve water quality through their tremendous filtration capacity. Looking ahead, we also hope to restore and improve the condition of eelgrass beds, which scientists believe cannot be restored at a meaningful scale without improvement in water quality.

On land, we will focus on protecting a network of lands identified in the science-based "Land Conservation Plan for New Hampshire's Coastal Watershed" as most important for habitat and water quality protection. (An update to this plan will be released by late 2016.) We will leverage the Great Bay Resource Protection Partnership's ability to coordinate land conservation as we reach out to landowners to explore conservation options and assess their interests; capitalize on the newly launched Coastal Watershed Regional Conservation Partnership, which is focused on farms with significant water resources; undertake due diligence in land appraisal, transactions, and surveys; acquire legal interests in land; and ensure long-term land stewardship.

The nearshore oyster reef restoration will follow a four-step process that begins by placing cultch (primarily recycled clam shell) in beds in Great Bay to provide substrate for oyster attachment and growth. These new reef areas will be seeded with locally raised, spat-on-shell, juvenile oysters. The developing reefs will be augmented with juvenile oysters raised through a community-based volunteer oyster conservationist program. Finally, we will conduct monitoring of restored reefs to evaluate progress and, if needed, to adapt our approach.

Partners

This strategy will leverage several partnerships already at work to advance regional land conservation and oyster restoration, including the Great Bay Resource Protection Partnership, Coastal Watershed Regional Conservation Partnership, Oyster Reef Restoration Partnership, and Coastal Conservation Association. Key partners will include the convening organizations of *Great Bay 2020*, along with the New Hampshire Department of Fish and Game, oyster farmers, Society for the Protection of New Hampshire Forests, Southeast Land Trust of New Hampshire, Trust for Public Land, University of New Hampshire Jackson Estuarine Lab, and the USDA Natural Resources Conservation Service.

Why this, why now

Nothing is more effective at making nature more resilient than nature itself. By conserving ecologically significant parts of the landscape and restoring critical nearshore habitats, we are encouraging nature to provide its own solution for two urgent challenges to water quality—the spread of impervious surfaces that channel polluted stormwater into sensitive water bodies and the declining ability of Great Bay to manage this pollution through filtration.

By encouraging strategic land conservation, we can mitigate the impact of impervious surfaces, such as roads, parking lots, and rooftops. In 2010, these reached 9.6 percent in the Piscataqua regional watershed; 10 percent is a well-recognized threshold for water quality deterioration. Building on past success, we can extend the 14 percent of the Great Bay watershed (88,000 acres) that consists of conservation and public lands into a larger network that helps to protect water quality and provide other key services. It is essential that we act to do so now. While the recent economic downturn stabilized land values and slowed the pace of development, we expect those trends to reverse as the economy improves. This is particularly critical given that many large-scale, family landholdings in New Hampshire will change hands in the next 25 years.

By restoring nearshore oyster reefs and eelgrass beds, we intend to catalyze the bay's natural capacity to filter water and provide habitat for fish, migratory waterfowl, and other species. Before restoration efforts began in 2007, there were only 50 acres of oyster reef in the bay—a tiny fragment of the nearly 1,000 acres that had been lost to disease, sedimentation, inadequate shoreline protection, and unsustainable harvest. It is estimated that 95 percent of the bay's capacity to filter water was lost with the oysters. Fortunately, recent advances in restoration techniques, improved land use practices, and greater genetic tolerance to disease combine to offer hope for the recovery for these "natural engineers." In the past seven years, restoration has returned 20 acres of reef and 3 million oysters to the estuary and led to a vibrant volunteer program among residents.

Anticipated outcomes of this work

As a result of this strategy and related efforts, we anticipate that:

- 5,000 acres of high value conservation land will be permanently protected.
- 25 or more acres of new oyster reef will be established in Great Bay.
- Three to five million oysters will be added to the bay, with the potential to filter up to 100M gallons of water each day.
- Growing numbers of citizens, schools, and businesses will be engaged in estuary restoration.

5. Coordination support for collective impact and success

Strategy overview

The conveners of *Great Bay 2020* will establish a steering committee to work in specific, strategic ways to advance the goals laid out in this framework. A critical lesson from collective impact initiatives in other regions is that a committee of this nature requires support to galvanize and coordinate the contributions of an initiative's diverse range of partners and ensure maximum effectiveness of its strategies. To this end, we will seek funding to support five functions that are essential to the successful realization of *Great Bay 2020*: coordination and support for governance of the steering committee; facilitation of group decision-making; fostering of effective communication between committee members; tracking progress toward goals; and coordination of budgets and finance.

These functions have been modeled on other successful collective impact initiatives around the country. We believe they can be fulfilled by a fifty percent time contractor who represents, and responds directly to the needs of, the steering committee. The Piscataqua Region Estuaries Partnership will be the fiscal administrator of this contract. However, the individual or entity that supports these functions will be equally responsible to each of the partner organizations represented by the steering committee. Specific tasks associated with each function are as follows:

1) Coordination and governance implementation

- Assist the steering committee in developing a "Memorandum of Understanding" or similar agreement that will support the governance and implementation of strategies.
- As needed, work with the steering committee to establish and support workgroups or processes related to the implementation of these strategies.
- Share information about the progress of work in support of different goals among project teams, at the direction of the steering committee.

2) Decision-making facilitation

- Provide facilitation and coordination in support of clear, transparent decision making between the steering committee and teams working in support of Great Bay 2020 goals.

3) Fostering effective communication

- Support effective communication between steering committee members.
- Ensure adequate communication between project teams and other partners through communication mechanisms, including, for example, personal contact and a web-based hub.
- Support effective communication between the steering committee and funding organizations, especially with regard to measuring progress (see function 5).

4) Tracking progress and fostering improvements

- Work with steering committee to develop and implement a simple but effective system for tracking progress towards goals.
- Report progress to steering committee and in support of backbone funding grant requirements.
- Support steering committee in making mid-course changes based on evaluation data.

5) Budget coordination

- Track decisions the steering committee makes in terms of allocation of "lightly restricted" funds made available by donors interested in advancing overall goals.
- Support steering committee in coordinating opportunities to leverage the influx of significant resources or take advantage of future opportunities to secure additional resources.

- Manage and keep records for Great Bay 2020's financial components (including tracking grant requirements for coordination support), reporting to steering committee as appropriate.

Enhanced fundraising

We expect that this coordination support will lead to a more integrated approach to fundraising that explores a range of public and private funding opportunities. Coordination will ensure the regular contact needed to give the steering committee and partners the opportunity to discuss fundraising needs and opportunities and decide which organizations can take a lead role in developing an appropriate fundraising strategy for a particular opportunity.

Appendix A: Partners

Who is *Great Bay 2020?* Far more than the individuals who convened the preliminary planning conversations in 2014. In developing this framework, the conveners have engaged a broad range of individuals with the resources, expertise, and professional focus necessary to refine its strategies. These individuals are affiliated with businesses, municipalities, nonprofits, nongovernmental organizations, legislative bodies, watershed groups, and public agencies throughout the Great Bay region. We engaged them for their capacity to be champions for a particular strategy within their networks, their professional and experiential expertise, and their ability to implement this work because of their organizational mandates and resources. We will continue to engage these partners and new ones as we begin to implement these strategies.

Name	**Affiliation**
Jeff Barnum	Great Bay-Piscataqua Waterkeeper Program
Dea Brickner-Wood	Great Bay Resource Protection Partnership
David Burdick	Manager, University of New Hampshire Jackson Estuarine Laboratory
David Cedarholm	Board of Selectmen, Lee, New Hampshire, and senior project manager, Tighe & Bond
Malin Clyde	The Stewardship Network of New England
Richard Cook	New Hampshire Department of Fish and Game
Mark Ellingwood	New Hampshire Department of Fish and Game
Kevin Gardner	Office of the Senior Vice Provost for Research, University of New Hampshire
Ray Grizzle	University of New Hampshire Jackson Estuarine Laboratory
Doug Grout	New Hampshire Department of Fish and Game
Brian Hart	Southeast Land Trust of New Hampshire
James Houle	University of New Hampshire Stormwater Center
Duane Hyde	Southeast Land Trust of New Hampshire
Julie LaBranche	Rockingham Planning Commission
Jon Pennock	University of New Hampshire School of Marine Science and Ocean Engineering
Dean Peschel	Consultant, City of Dover
Robert Roseen	Horsley Witten Group
Todd Selig	Durham Town Manager
Fred Short	University of New Hampshire
Cliff Sinnott	Rockingham Planning Commission
Judith Spang	State representative and Lamprey River Advisory Committee
Paul Stacey	Great Bay National Estuarine Research Reserve
Mark Traeger	Exeter-Squamscott River Local Advisory Committee
Alison Watts	University of New Hampshire Environmental Research Group & Southeast Watershed Alliance
Matt Wood	New Hampshire Department of Environmental Services