

Final Evaluation Findings

Wells National Estuarine Research Reserve

May 2008 to May 2017

Published October 2017



Office for Coastal Management
National Ocean Service
National Oceanic and Atmospheric Administration
United States Department of Commerce

Table of Contents

Summary of Findings.....	1
Program Review Procedures.....	3
Evaluation Findings	5
Operations – Volunteers, Our Citizen Stewards	5
Facilities, Infrastructure, and Funding	6
Publicity, Programs, and Public Access	6
Grant Administration and Funding Sources.....	7
Solar Powered.....	8
Partnerships	8
Succession Planning	9
Findings for Operations – Volunteers, Our Citizen Stewards	9
Sustaining Our River Resources	10
Examples of Key Efforts	11
Findings for Sustaining our River Resources.....	12
A Climate of Change and Challenges for Sustaining Healthy Coasts	12
Examples of Key Efforts	12
Findings for a Climate of Change and Challenges for Sustaining Healthy Coasts	14
Evaluation Metrics	14
Metric 1.....	14
Metric 2.....	15
Metric 3.....	16
Conclusion.....	18
Appendix A: Response to Written Comments.....	19

Summary of Findings

The Coastal Zone Management Act requires the National Oceanic and Atmospheric Administration's Office for Coastal Management to conduct periodic evaluations of the performance of state programs participating in the National Estuarine Research Reserve System. This evaluation examined the operation and management of the Wells National Estuarine Research Reserve (Wells Reserve) by the Wells National Estuarine Research Reserve Management Authority (Wells Reserve Management Authority), the designated lead state agency in Maine, for the period from May 2008 to May 2017. The evaluation focused on three target areas: operations – volunteers, our citizen stewards; sustaining our river resources; and a climate of change and challenges for sustaining healthy coasts.

Final evaluation findings for the national estuarine research reserves highlight each reserve's accomplishments in the target areas and include recommendations, which are of two types:

Necessary Actions address programmatic requirements of implementing regulations of the Coastal Zone Management Act. These must be carried out by the dates specified. Failure to address necessary actions may result in a future finding of non-adherence and the invoking of interim sanctions, as specified in the Coastal Zone Management Act §312(c).

Recommendations are actions that the office believes would improve the program but which are not mandatory. The state is expected to have considered the recommendations by the time of the next evaluation or dates specified.

The findings in this evaluation document will be considered by the NOAA Office for Coastal Management in making future financial award decisions concerning the reserve. The evaluation came to these conclusions:

Accomplishment: The Wells Reserve continues to foster a fulfilling, rewarding, robust, and tailored volunteer program that supports all aspects of the reserve. The reserve is a model for the National Estuarine Research Reserve System for the way that it engages, fosters, and grows the volunteer force. In 2016 alone, volunteers contributed over 14,000 hours, translating to over \$300,000 in donated service.

Accomplishment: The Wells Reserve provides dynamic educational programming that is well attended by the community and visitors. These educational experiences are offered in historic properties on site that have been renovated to create interactive laboratory and other meeting spaces. These spaces greatly enhance the user experience and generate additional revenue for the reserve.

Accomplishment: The Wells Reserve has increased public access to the reserve and its surrounding waters, expanded its offerings to visitors, and increased contributions to program

funds by extending the boardwalk and installing a floating dock to accommodate kayak tours, with three staff members becoming certified by the state to lead the kayak tours.

Accomplishment: The Wells Reserve excels at leveraging the NOAA base funds to secure additional funds from outside resources that help the reserve accomplish its management plan goals. Additionally, the reserve has had great success at competing across the reserve system to obtain funds, science collaborative funding, and Procurement, Acquisition, and Construction funding.

Accomplishment: The Wells Reserve is the first nonprofit in the state of Maine to have 100 percent of its electrical power needs met by solar energy, achieving an annual offset of 90,000 pounds of carbon dioxide. Furthermore, the reserve met the goal of 100 percent solar electrical power two years ahead of schedule.

Accomplishment: The Wells Reserve reconnected estuarine and freshwater sections of the Branch Brook, allowing passage and use of the stream habitat by sea-run fish once again, while providing clean and reliable drinking water for area residents. Additionally, the process resulted in a model agreement to guide other dam owners and operators working on fish ladder improvement projects.

Accomplishment: The Wells Reserve's Coastal Training Program is recognized across the National Estuarine Research Reserve System as the leader in development and application of the collaborative learning model. Furthermore, the collaborative learning model has been adopted by partners in Southern Maine as well as by other reserves.

Accomplishment: The Wells Reserve is a national leader in the system in a number of aspects, including unmanned aerial systems, soundscape ecology, telemetry, collaborative learning, and social science methods. Additionally, over the evaluation period, staff members have been recognized four times with national awards.

Recommendation: NOAA Office for Coastal Management encourages the Wells Reserve to continue to build upon its strong relationships with the Maine Coastal Program and the Maine Department of Marine Resources to highlight synergies and increase visibility of the high quality science at the reserve, including fisheries and larval research, invasive species, and changing coastal conditions.

Recommendation: The NOAA Office for Coastal Management strongly encourages the Wells Reserve and the Wells Reserve Management Authority to continue to work with their local funding match partner Laudholm Trust, and the reserve's nonprofit friends group to secure dedicated funding for reserve operations, which could include continuing to build the endowments and working with the state to develop and implement a funding plan that outlines strategies for long-term maintenance and renovation of the building assets.

Recommendation: The NOAA Office for Coastal Management encourages the Wells Reserve Management Authority to create a succession plan that ensures continuity for the excellent work the reserve provides.

This evaluation concludes that the Wells Reserve Management Authority is adhering to the requirements of section 312(a) of the Coastal Zone Management Act, 16 U.S.C. § 1458(a), in the operation of the Wells National Estuarine Research Reserve.

Program Review Procedures

The NOAA Office for Coastal Management evaluated the Wells National Estuarine Research Reserve in federal fiscal year 2017. The evaluation team consisted of Pam Kylstra, evaluation team lead; Betsy Nicholson, North regional director; Adrienne Harrison, regional specialist with the NOAA Office for Coastal Management; and Mark Silberstein, executive director, Elkhorn Slough Foundation. The support of the reserve staff was crucial in conducting the evaluation, and this support is most gratefully acknowledged.

NOAA sent a notification of the scheduled evaluation to the director of the Wells National Estuarine Research Reserve Management Authority, and published a notice of “Intent to Evaluate” in the *Federal Register* on April 12, 2017. NOAA also notified members of Maine’s congressional delegation. The reserve posted a notice of the public meeting and opportunity to comment in the *York County Coast Star* on March 26, 2017.

The evaluation process included a review of relevant documents and a survey of stakeholders, which helped identify three target areas for the evaluation: operations – volunteers, our citizen stewards; sustaining our river resources; and a climate of change and challenges for sustaining healthy coasts. A site visit was also conducted and the evaluation team held meetings with staff members and group discussions with stakeholders and program staff members about the target areas. In addition, a public meeting was held on Tuesday, May 23, 2017, at 5:00 p.m. at the Mather Auditorium, Wells Reserve, 342 Laudholm Farm Rd, Wells, Maine 04090 to provide an opportunity for members of the public to express their opinions about the implementation of the reserve. No comments were expressed during the public meeting. Stakeholders and members of the public were given the opportunity to provide written comment via email or U.S. mail through Friday, June 2, 2017. No written comments were received. The Office for Coastal Management then developed draft evaluation findings, which were provided to the Wells Reserve Management Authority and to the reserve for review, and their comments were considered in drafting the final evaluation findings.

Final evaluation findings for the national estuarine research reserves highlight each reserve’s accomplishments in the target areas and include recommendations, which are of two types:

Necessary Actions address programmatic requirements of implementing regulations of the Coastal Zone Management Act. These must be carried out by the dates specified. Failure to

address necessary actions may result in a future finding of non-adherence and the invoking of interim sanctions, as specified in the Coastal Zone Management Act § 312(c).

Recommendations are actions that the office believes would improve the program but which are not mandatory. The state is expected to have considered the recommendations by the time of the next evaluation or dates specified.

Evaluation Findings

The Wells Reserve Management Authority and reserve staff members continue to successfully implement the federally approved Wells Reserve Management Plan. The reserve's work is respected in the region and across the system. The staff is regarded by stakeholders as exceptional, trusted, highly capable, dedicated, and reliable. Stakeholders described the reserve as an anchor for the community and a beacon for the integrity of science.

Operations – Volunteers, Our Citizen Stewards

As the previous evaluation findings note, this reserve was built by volunteer support, and ongoing volunteer support continues to be the hallmark of the reserve. Since the beginning, the volunteer base of the reserve has been at about 400 volunteers who donate on average 14,000 hours annually, worth more than \$300,000 based on the Independent Sector organization's estimates of the value of a 2016 volunteer hour for Maine of \$21.61 per hour. The work of a core base of approximately 50 volunteers is supplemented by individuals who volunteer less regularly or for one-time events. Volunteers and their dedication are the reason the Wells Reserve exists and thrives. Every part of the reserve is supported by volunteers, ranging from docent-led programs such as Exploring Estuaries to window restoration for the historic buildings.

The evaluation team noted that the volunteers view themselves as a part of the reserve in every way. For example, every volunteer the evaluation team met spoke in terms of "we," not "us" or "them," when discussing the reserve staff. It is apparent that the reserve staff members who manage the volunteer program foster this culture of inclusiveness and empowerment by understanding and meeting the needs of the volunteers. The reserve is a model for the system for the way it engages, fosters, and grows its volunteer force.

Examples – a sample of 14,000 volunteer hours in 2016:

- The Dorothy Fish Coastal Resource Library is run exclusively by three volunteers. Because of their expertise and innovation, the more than 3500 volumes can be viewed and requested through the Maine InfoNet Library System. This system serves coastal professionals and students in the region and the nation.
- The volunteer-supported education program served 3,000 kids in 2016. The program hosted school groups and engaged students in programs such as Life Between the Tides, nature walks, and the summer tour program.
- The reserve employs one facilities maintenance staff member. He is extraordinarily resourceful and talented in mentoring and fostering a large, dedicated cohort of volunteers, including regular reserve volunteers and seasonal AmeriCorps members. Most of the maintenance and restoration work is done by this team.
- The volunteers prepare for and staff events such as the Laudholm Nature Crafts Festival and the Punkinfiddle Family Festival that foster stewardship of coastal areas by celebrating estuaries, Maine's cultural traditions, and the historic features of the reserve. These events are significant fundraisers for the reserve's nonprofit fundraising

partner, Laudholm Trust. For instance, the crafts festival grossed over \$100,000 for the trust in September 2016.

Facilities, Infrastructure, and Funding

The reserve has done a tremendous job of renovating and repurposing some of the buildings, such as the Maine Coastal Ecology Center, and renovating historic buildings and acquiring others to enhance and expand the ability of the reserve to support consistently excellent programming. This also serves the community and the region by preserving the historic resources in the state.

One of the overriding concerns the evaluation team heard from multiple parties is the issue of maintaining and operating the substantial building assets the reserve has acquired. During the evaluation period, the reserve received over 125 external grants totaling more than \$1.2 million; however, much of that is restricted to supporting core education, conservation, and research programs, and there is limited funding for the long-term maintenance and operation of building assets. Multiple approaches for securing funding specifically for operations are merited.

All of the previous evaluation findings have urged the Wells Reserve Management Authority and the Laudholm Trust to pursue dedicated state funds for reserve operations, and they have done so without success. While the reserve and the trust have continued their efforts to communicate the value of the reserve to legislators, the governor, and others, the Wells Reserve Management Authority and Laudholm Trust members indicated that the political climate and state budget have largely remained the same as in past years. The reserve, the Wells Reserve Management Authority, and the Laudholm Trust are encouraged to invite the state, and Town of Wells to be a part of the process to develop a funding plan that outlines strategies for long-term maintenance and operation of the building assets. NOAA's Office for Coastal Management is available to work with the reserve to explore examples within the reserve system that have been successful.

Publicity, Programs, and Public Access

The reserve and Laudholm Trust continue to be successful in fundraising approaches used by many nonprofits, including grant writing, annual and planned giving, naming opportunities, donation of stocks, and annual events. Laudholm Trust also works to bring awareness of the reserve to the region by hosting and widely publicizing special events such as the 2017 Summer of Art and Science event series, which includes the Power of Place Sculpture Exhibition and Sale, concerts, workshops, and festivals. However, since the reserve and trust are located well outside of the Portland and Portsmouth markets and there is no corporate community, significant fundraising continues to be limited.

The reserve has had great success in offering dynamic educational programming for the community such as the adult learning programs, including the Climate Stewards series and the lunch and learn programs. For instance, during the site visit, the evaluation team attended a

lunch and learn program that was filled to capacity with about 60 attendees. The reserve is encouraged to build on that success to expand the topical breadth of adult learning programs currently offered as one way to engage more of the local and visitor populations. For instance, the reserve could more completely explore hazard resilience as a topic by drawing on the Preparing for the Storm material from the Waquoit Bay National Estuarine Research Reserve. Additionally, to enhance current cross-sector integration, the reserve should continue to create strong strategic connections between the research and education programs. For example, the research results from the Sustaining the Saco River Estuary project could inform the Teachers on the Estuary programming or adult learning programs, such as a lecture series.

Although the reserve has dedicated volunteers and is active in the community, the number of public visitors is still low in comparison with other sites such as the Rachel Carson Trail at the Rachel Carson National Wildlife Refuge's headquarters in Wells. The evaluation team heard consistently from stakeholders a concern that the visitors to the area and a portion of the local population seem to be unaware that the reserve's programming is multifaceted and offers education in addition to research. This creates an opportunity for the reserve to deepen its understanding of how to reach the local population and seasonal visitors more effectively. The reserve could increase and more specifically target outreach to the summer tourism sector. For instance, the reserve could work with hotels in the area to ensure their customers are aware of the reserve's education and recreation offerings and that visitors are aware that the reserve is a stop on the Shoreline Explorer trolley route. To aid in public awareness as well as funding, the reserve could work with local government and businesses to add a small amount to transactions during the summer tourism season. In 2016, The reserve was successful in securing a Maine Tourism Marketing Partnership Program grants that was used for destination marketing in 2017 and it should continue to pursue funds via that grant program in subsequent years. Additionally, since visitation is higher at Wells Harbor, a QR code that links to information about visiting the reserve could be put on the reserve's tide gauge that is located at the Wells Harbor boat launch.

As mentioned above, the reserve has consistently worked to increase the ways that visitors can experience the reserve. A significant part of that has been through building and maintaining the seven-mile trail system and augmenting it with various program activities for groups and individuals. For instance, the discovery program provides visitors with self-paced trail guides paired with activity backpacks that are equipped with gear and materials to enhance exploration. The reserve has increased public access to the reserve and surrounding waters, expanded its offerings to visitors, and increased contributions to program funds by leading kayak tours since it has extended the boardwalk and installed a floating dock. Additionally, the three staff members who guide the kayak tours have become certified by the State of Maine, which allows the reserve to charge for the tours.

Grant Administration and Funding Sources

Each fiscal year, the reserve manages 40 to 50 external grants and agreements, along with donor-restricted funds from Laudholm Trust. The reserve director has unleashed the

entrepreneurial spirit of the staff, and his willingness and ability to administer and manage grants allows them to harness their expertise and energy to further reserve objectives. However, the management of these grants is a large workload, and while the director does this expertly, with additional support the director could increase his focus on enhancing reserve programming and visibility of the reserve in the region. One possibility is that the volunteer manager could create a volunteer position to assist with grant administration that would provide additional support to the reserve manager in pursuing or managing grants. Another option is to hire a part-time contractor to administer the grants. Furthermore, it may be worthwhile to explore the idea of sharing the resource and expense of that contractor expertise with other reserves in the Northeast. Ultimately, the reserve, the Wells Reserve Management Authority, and Laudholm Trust will need to determine which approaches are the best fit for them.

The reserve excels at leveraging the NOAA base funds to secure additional funds from outside resources that then help the reserve accomplish its management plan goals. For example, the reserve was able to achieve conservation goals along the Merriland River by using base funds to initiate and plan a project, successfully compete for Coastal and Estuarine Land Conservation Program funding to purchase parcels, and secure local matching funds from the Wells Conservation Commission.

Solar Powered

The reserve started its Conserve and Convert Initiative in 2012 with the intention of reaching the project goal of meeting 100 percent of its electrical power needs with solar power by 2017. With the installation of four solar arrays and energy efficient equipment, along with building improvements, the reserve met its goal in 2015—a full two years early. The clean electricity generated by the system also offsets 90,000 pounds of carbon dioxide annually. The reserve has created interpretive signage to educate visitors and incorporates the information about the benefits of its solar energy initiative into educational programming such as the Climate Stewards lecture series.

Partnerships

One of the reserve's key partners and members of the Wells Reserve Management Authority is the Rachel Carson National Wildlife Refuge. In fact, sixty percent of the reserve's land is owned by the refuge. In the past, the differing missions and regulatory structure of the reserve and the refuge have contributed to issues with permitting for research on the refuge property. In the current evaluation period, research collaboration, continued cooperation, and deliberate communication have improved the relationship and resulted in a deeper understanding of mutual interests and better use of refuge land for research. For instance, the reserve needed a site to install telemetry equipment, and through communication with the refuge, an appropriate location within the refuge was identified.

The relationship between the Laudholm Trust and the reserve is stronger than in past evaluation periods. It is clear that the leadership of the reserve and the trust have established a

standard of transparency in communication and collaboration that is effective and facilitates coordination on strategic planning efforts and other important initiatives. For instance, the trust engaged stakeholders, Reserve Management Authority members, and reserve staff members in its strategic planning process in 2013. The resulting plan reflects the trust's intent to support the reserve's management plan and focus on expanding public awareness and engagement and financial support of the reserve. As the nonprofit partner in the shared reserve management model, the trust provides the reserve's non-federal match in addition to funds for other projects. This allows both financial nimbleness and buffering for the reserve. It may be a management model to consider as new reserves become established in the system.

The reserve's culture continues to reflect its strong commitment to collaboration both within and outside of reserve boundary area. The reserve should seek additional opportunities to continue to build upon its strong relationships with the Maine Department of Marine Resources and the Maine Coastal Program to highlight synergies and increase visibility of the high-quality science at the reserve, including fisheries and larval fish research, invasive species, and changing coastal conditions.

Succession Planning

The evaluation team heard consistently from stakeholders that the reserve director plays a critical role in creating and sustaining programs and projects that are key to the success of the reserve and contribute to the health of coastal environments, building and fostering the reserve's relationship with partners, and harnessing the talent and entrepreneurial spirit of staff members. The reserve should create a succession plan that ensures continuity for the excellent work it provides. Considerations could include identifying and documenting existing knowledge, skills, abilities, and characteristics of a core program embodied in current senior staff members, mentoring of newer staff members, and determining areas appropriate for cross-training. With that information in hand, when the time comes to select new leadership, the reserve will be positioned well to stand by its commitment to finding a good fit. In addition, much of the reserve's success hinges on a strong, sustained relationship with the Laudholm Trust. This relationship has strengthened significantly over the evaluation period, enabling stronger programs, higher visibility, stable finances, and a visible and positive partnership. The characteristics of this dynamic should also be captured in the succession plan.

Findings for Operations – Volunteers, Our Citizen Stewards

Accomplishment: The Wells Reserve continues to foster a fulfilling, rewarding, robust, and tailored volunteer program that supports all aspects of the reserve. The reserve is a model for the National Estuarine Research Reserve System for the way that it engages, fosters, and grows the volunteer force. In 2016 alone, volunteers contributed over 14,000 hours, translating to over \$300,000 in donated service.

Accomplishment: The Wells Reserve provides dynamic educational programming that is well attended by the community and visitors. These educational experiences are offered in historic properties on site that have been renovated to create interactive laboratory and other meeting

spaces. These spaces greatly enhance the user experience and generate additional revenue for the reserve.

Accomplishment: The Wells Reserve has increased public access to the reserve and its surrounding waters, expanded its offerings to visitors, and increased contributions to program funds by extending the boardwalk and installing a floating dock to accommodate kayak tours, with three staff members becoming certified by the state to lead the kayak tours.

Accomplishment: The Wells Reserve excels at leveraging the NOAA base funds to secure additional funds from outside resources that help the reserve accomplish its management plan goals. Additionally, the reserve has had great success at competing across the reserve system to obtain funds, science collaborative funding, and Procurement, Acquisition, and Construction funding.

Accomplishment: The Wells Reserve is the first nonprofit in the state of Maine to have 100 percent of its electrical power needs met by solar energy, achieving an annual offset of 90,000 pounds of carbon dioxide. Furthermore, the reserve met the goal of 100 percent solar electrical power two years ahead of schedule.

Recommendation: NOAA Office for Coastal Management encourages the Wells Reserve to continue to build upon its strong relationships with the Maine Coastal Program and the Maine Department of Marine Resources to highlight synergies and increase visibility of the high quality science at the reserve, including fisheries and larval research, invasive species, and changing coastal conditions.

Recommendation: The NOAA Office for Coastal Management strongly encourages the Wells Reserve and the Wells Reserve Management Authority to continue to work with their local funding match partner Laudholm Trust, and the reserve's nonprofit friends group to secure dedicated funding for reserve operations, which could include continuing to build the endowments and working with the state to develop and implement a funding plan that outlines strategies for long-term maintenance and renovation of the building assets.

Recommendation: The NOAA Office for Coastal Management encourages the Wells Reserve Management Authority to create a succession plan that ensures continuity for the excellent work the reserve provides.

Sustaining Our River Resources

The Wells Reserve is recognized as an essential resource for stakeholder process and engagement in the Southern Maine region and is highly regarded for its innovative approach, dedication to knowledge transfer, and delivery of science to decision-makers in useful formats. The reserve is recognized in the region as a leader in habitat restoration, filling a capacity gap in differing geographies of the state. Its collaborative approach serves as a model that can be adopted by reserve partners.

Examples of Key Efforts

In 2013, the reserve collaborated with the Kennebunk, Kennebunkport, and Wells Water District to redesign and completely restore the Branch Brook fish ladder with funding from the Maine Coastal Program, The Nature Conservancy, and the U.S. Fish and Wildlife Service. The original fish ladder that was constructed in 1954 had deteriorated to the point that it was no longer functional. Repairs in the 1990s temporarily improved it. This restoration reconnected estuarine and freshwater sections, allowing passage and use of the stream habitat by sea-run fish once again, while maintaining access to clean and reliable drinking water for area residents. The reserve served to bring disparate groups together to make the project work and encouraged participation of landowners. Additionally, one of the project partners is using the process and the agreement between the water district and the reserve as a guide in working with other dam owners and operators on fish ladder improvement projects.

The process and the relationships fostered by the reserve in doing this restoration work also provides the reserve with an opportunity to work with the water district and organizations such as the Maine Coastal Heritage Trust to support the permanent protection of land, in addition to the 25 percent of the Branch Brook Watershed currently protected through easement. In an effort to protect drinking water supplies for residents of Maine and New Hampshire, the reserve collaborated across state lines with New Hampshire, Maine, and the Piscataqua Region Estuaries Partnership to bring together natural resource experts, municipalities, land trusts, and local water districts to form the Salmon Falls Watershed Collaborative. The reserve's coastal training and stewardship staff members, using the collaborative learning approach, provided facilitation for calls and the stakeholder workshop, Working Beyond Borders to Protect Water in the Salmon Falls Watershed, which built a shared purpose among the participants. The ideas generated and priorities identified during the workshop were synthesized and developed into an action plan by the reserve staff members. In 2012, the Salmon Falls Watershed Collaborative was awarded a U.S. Water Prize by the U.S. Water Alliance. In addition to improvements in water quality, one of the significant benefits of this project is that knowledge transfer has occurred, in that the collaborative learning process used is being applied by project partners to the way they do future work. For example, a partner from New Hampshire specifically cited the collaborative learning process used in this project as having positively influenced the way he now approaches projects and managing staff members. Additionally, a similar effort with the Saco River is emerging and will use the Salmon Falls Watershed Collaborative as a model.

The Sustaining the Saco River Estuary project exemplifies the reserve's dedication to adding value to projects, as well as cooperation between sectors, the delivery of science in useful formats, and the dissemination of results that can be used for decision-making. The reserve's coastal training and research programs partnered with University of New England students and researchers to contribute to the five-year project to study the ecology of the Saco River estuary and the policy, regulation, and economic influences on it. Over the five-year study period, the reserve's engagement of students, researchers, and stakeholders built a shared understanding about management and protection of natural assets of the estuary, ways to build a resilient economy linked to those natural assets, and conservation of the estuary's cultural heritage. A

partner from the Saco River Corridor Commission specifically cited the results of this project as having a tangible, positive impact on his testimony and negotiations with the Maine State Legislature regarding the work of the commission. The partner used a Saco River map produced as a part of the project that was annotated with summaries of the research results to illustrate key points during testimony. The reserve should extend this idea to other projects and build in a plan for delivery of project results in a user-friendly format.

The reserve has served to galvanize the effort for pursuing the wild and scenic designation for the York River that began in 2009 and serves as a fiscal agent for the York River Study authorized by Congress in 2014. The reserve director attracted National Park Service funding for the study and is engaged in the development of the management plan. Partners in the York River Wild and Scenic Initiative expressed during the site visit that the reserve was indispensable to the initiative's success thus far and has modeled patience and persistence to maintain the initiative's forward momentum despite periodic setbacks. It was noted that the technical capacity in mapping and watershed work that the reserve brings to the initiative has been critical, since that expertise is not readily available among the thinly stretched town governments involved. The reserve has highlighted the process in raising awareness of the York River.

Findings for Sustaining our River Resources

Accomplishment: The Wells Reserve reconnected estuarine and freshwater sections of the Branch Brook, allowing passage and use of the stream habitat by sea-run fish once again, while providing clean and reliable drinking water for area residents. Additionally, the process resulted in a model agreement to guide other dam owners and operators working on fish ladder improvement projects.

Accomplishment: The Wells Reserve's Coastal Training Program is recognized across the National Estuarine Research Reserve System as the leader in development and application of the collaborative learning model. Furthermore, the collaborative learning model has been adopted by partners in Southern Maine as well as by other reserves.

A Climate of Change and Challenges for Sustaining Healthy Coasts

The reserve suffered a loss of institutional knowledge and continuity within the research program with the death of the long-time research director, Dr. Michelle Dionne, and the short tenure of her immediate successor. With a new research director in place whose research interests and expertise intersect well with the issues related to changing climate and oceanographic conditions in the Gulf of Maine, it seems the research program is in good hands.

Examples of Key Efforts

The reserve has been quick to adopt innovative and integrative technologies, and its work continues to be useful to resource managers and the national reserve system in numerous ways. The reserve leads the effort to integrate use of unmanned aerial systems (drones) into the reserve system and NOAA. It created an Unmanned Aerial Systems Roadmap for the

reserves that serves to inform the community about drone operation, opportunities for applications, its regulatory environment, and drone program development as it applies to the reserves. Ultimately, the document provides information and resources to help reserves figure out how the use of drones can help them contribute to the system's vision of resilient, thriving human and natural coastal communities.

The spread of invasive marine species is a global problem. Coordinated by the reserve and funded in part by the Casco Bay Estuary Partnership, the Marine Invader Monitoring and Information Collaborative (MIMIC) has been a dynamic way to engage the local communities of the Maine Coast in citizen science. Tracking the presence and spread of invasive marine species will be an increasingly important action as coastal climate changes and temperatures warm. The integration of the System-wide Monitoring Program data sets with the progress of marine invasions provides a powerful view of this threat to natural resources of the coast. The reserve's leadership with MIMIC extends well beyond the reserve boundaries and puts the reserve at the forefront of collaboration with other reserves and coastal partners in helping them anticipate and potentially minimize impacts of marine invasives as they spread in their direction.

Finding ways to sequester atmospheric carbon dioxide in near coastal environments may be a significant buffer to increased warming, and this work converges with the reserve's mission to increase and improve coastal marshes and eelgrass meadows. Using a National Estuarine Research Reserve System Science Collaborative grant, the reserve co-hosted a blue carbon workshop in 2014 that brought together experts from the Northeast to create a United States and Canada working group, identify research gaps, and establish a regional approach to blue carbon science and policy. Bringing together the Northeast reserves at Wells was a significant and positive step. Finding sources of funding and building partnerships will be key to moving this forward.

The new research director brings with him a number of projects underway. For example, the reserve's collaborative work with several New England research institutions examining the impact of rising water temperature on lobster reproduction and population stocks focuses on a key economic challenge for the Maine coast—a decline in catch. The expertise brought by the new research director positions the reserve to play a key role in this issue. Additionally, the new research director has funding from Maine Sea Grant to increase understanding of the lifecycle and natural history of the Jonah Crab to inform management of those populations, since they are an emerging fishery due to the declining Southern Maine lobster fishery.

The ongoing ichthyoplankton monitoring work of the reserve that represents the longest time series in the Gulf of Maine has recently shown for the first time that black bass larvae are present in the Gulf, which may indicate an expansion of their range. The reserve is encouraged to seek effective ways to showcase long-term data sets such as the larval fish survey and research results with the management and science communities. The results of these research projects also have implications for the economy of the coast. This work, coupled with the relocation of the Maine Coastal Program to the Maine Department of Marine Resources,

provides the reserve with an opportunity to strengthen its relationship with the department.

The reserve's research associate served in a leadership role in developing the coastal and estuary component of the Science and Implementation Plan for the Integrated Sentinel Monitoring Network. This plan development included input from more than 60 scientists and managers from 45 state and federal agencies, universities, nongovernmental organizations, and Canada. The plan provides a long-term strategy for monitoring benthic, pelagic, and coastal components of the ecosystem.

Assisting coastal communities to prepare for changing climate impacts is a critical role that reserves play. The Wells Reserve worked with the Jacques Cousteau National Estuarine Research Reserve to develop a peer-to-peer learning exchange in which they brought together leaders from the communities of the southern Maine coast with officials from areas of New Jersey impacted by Hurricane Sandy. Powerful connections were made between the communities and many lessons to aid future preparedness efforts were learned.

The reserve is an emerging leader in the region and the reserve system in soundscape ecology methods. The GIS and natural resources coordinator worked with Purdue University to launch an acoustic monitoring project at the reserve. Soundscape ecology can answer the same questions about populations that other methods such as transects can, including diversity, species richness, and presence, while providing additional information that deepens understanding of the ecological characteristics of the landscape.

Findings for a Climate of Change and Challenges for Sustaining Healthy Coasts

Accomplishment: The Wells Reserve is a national leader in the system in a number of aspects, including unmanned aerial systems, soundscape ecology, telemetry, collaborative learning, and social science methods. Additionally, over the evaluation period, staff members have been recognized four times with national awards.

Evaluation Metrics

Beginning in 2012, national estuarine research reserves began tracking their success in addressing three evaluation metrics specific to their programs. The evaluation metrics include a five-year target and provide a quantitative reference for each program about how well it is meeting the goals and objectives it has identified as important to the program.

The following goals and objectives are from the Wells Reserve 2012-2017 Management Plan.

Metric 1

Goal: The Wells Reserve is a model site and resource for exemplary coastal stewardship that fosters an understanding of the ecological connections among land, water, and people.

Objective: Reduce carbon emissions and resource consumption through conservation measures and renewable energy.

Strategy: Purchase and install renewable energy systems to reduce reliance on electricity from external sources, and conserve energy by reducing the use of interior spaces through organizational and scheduling efficiencies, improved operations, and greater staff commitment. As of June 30, 2012, Wells NERR produced 0 kilowatt hours of its electricity from renewable energy systems on-site. Wells NERR will build its renewable energy capacity so that by 2017, 30% of total electricity used is produced by renewable energy systems on-site.

Performance Measure: Percent of total electricity used, produced by renewable energy systems on-site.

Target: By 2017, 30% of total electricity used, produced by renewable energy systems on-site.

First year results: Data unavailable

Second year results: At the end of the year (2014), after second array installed, 60% of electrical power needs met by on-site renewable energy systems.

Third year results: At the end of the year after fourth solar array installed, 100% of electrical power needs met by on-site renewable energy systems.

Fourth year results: 100% of electrical power needs met by on-site renewable energy systems.

Fifth year results: 100% of electrical power needs met by on-site renewable energy systems.

Discussion: The reserve exceeded the goal of 30% of total electricity needs to be met by onsite renewable energy systems by 2017. In 2015, 100% of the reserve's total electricity needs were met with on-site renewable energy systems. Although the measures and targets were met early, the Conserve and Convert Initiative continued through the end of 2016.

Metric 2

Goal: People appreciate and understand natural environments, make informed decisions, and take responsible actions to sustain coastal communities and ecosystems.

Objective: Provide high-quality, field-based science education programs that promote stewardship of the Gulf of Maine watershed and coastal environments through understanding and appreciation of ecosystems.

Strategy: The reserve's Education Program will provide community education programs that align with the NERRS climate change implementation plan, focusing on the understanding, adaptation, mitigation, and communication of climate change. Aside from including climate

change elements in Teachers on the Estuary workshops (2010 and 2011), the Wells NERR education program has not yet integrated this topic into its existing suite of program offerings. This will be a new direction for Wells NERR educators.

Performance Measure: Number of community education programs with a climate change theme held between 2012 and 2017.

Target: Twenty community education programs with a climate change theme held between 2012 and 2017.

First Year Results	Second Year Results	Third Year Results	Fourth Year Results	Fifth Year Results
5	7	7	7	7

Discussion: The reserve’s education program provided 33 community education programs within five years, exceeding the target by 13.

Metric 3

Goal: People appreciate and understand natural environments, make informed decisions, and take responsible actions to sustain coastal communities and ecosystems.

Objective: Increase the use of natural and social science-based information in coastal decision-making to sustain ecosystem services relevant to source water protection, riparian buffer management and tidal wetlands conservation.

Strategy: The reserve’s Coastal Training Program (CTP) will hold targeted workshops promoting the understanding and use of scientific information and the formulation of research activities to address priority coastal management issues, including source water protection, tidal wetlands conservation and restoration, and riparian buffer management. We anticipate using this methodology to develop and hold at least five trainings, workshops, field-based trainings or collaborative events per year. The Wells CTP will develop interdisciplinary trainings that bring social science methodologies to coastal managers working with land use issues, watershed management and restoration, and climate change adaptation.

Performance Measure: Number of targeted workshops, field-based trainings, and facilitated collaborations developed and held between 2012 and 2017 that build coastal decision-maker capacity to balance tradeoffs and integrate the use of relevant natural and social science research and methodologies.

Target: Twenty-five targeted workshops, field trainings, and facilitated collaborations developed and held between 2012 and 2017 that build coastal decision-maker capacity to balance tradeoffs and integrate the use of relevant natural and social science research and methodologies.

First Year Results	Second Year Results	Third Year Results	Fourth Year Results	Fifth Year Results
4	11	6	8	10

Discussion: The reserve's coastal training program held 39 workshops, exceeding the target by 14. First year data is from second half of year only. The second year results was not reported by the reserve, but collected from the Coastal Training Program database.

Conclusion

For the reasons stated herein, I find that the Wells Reserve Management Authority is adhering to the programmatic requirements of the Coastal Zone Management Act and its implementing regulations in the operation of its approved Wells National Estuarine Research Reserve.

These evaluation findings contain three recommendations that must be considered before the next regularly scheduled program evaluation. Program recommendations that must be repeated in subsequent evaluations may be elevated to necessary actions.

This is a programmatic evaluation of the Wells National Estuarine Research Reserve that may have implications regarding the state's financial assistance awards. However, it does not make any judgment about or replace any financial audits.

signed by Dr. Jeffrey L. Payne
Jeffrey L. Payne, Ph.D.
Director, Office for Coastal Management

dated October 26, 2017
Date

Appendix A: Response to Written Comments

The NOAA Office for Coastal Management received no written comments regarding the Wells National Estuarine Research Reserve.