

1. Project Management


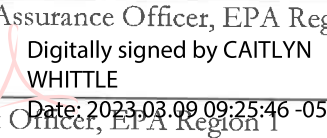

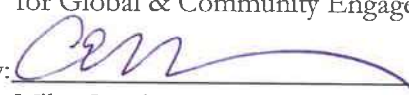
1.1. Title and Approval

Quality Assurance Project Plan State of Narragansett Bay Estuary Program's Study Area Indicator Update Project

Prepared by:
Narragansett Bay Estuary Program

23 February 2023
Version 1.2

EPA Grant Numbers: CE00A00967; CE00A00846¹

Approved by:		<u>2/28/2023</u>
	Bryan Hogan, EPA Quality Assurance Officer, EPA Region 1	date
Approved by:	CAITLYN  WHITTLE	<u>2/23/23</u>
	Caitlyn Whittle, EPA Project Officer, EPA Region 1	date
Approved by:		<u>02/23/23</u>
	Dr. Allen Hance, Associate Provost for Global & Community Engagement, Roger Williams University	date
Approved by:		<u>2/23/23</u>
	Mike Gerel, Program Director, NBEP	date

¹ It is intended that this plan be valid for the duration of EPA Cooperative Agreement numbers listed above, which currently extend through 9/30/2025, and 9/30/2027 respectively. The QAPP will be reviewed annually and updated as needed. Any significant deviations will be reported.

1.2. Preface and Table of Contents

Preface

The [Narragansett Bay Estuary Program](#) (NBEP) is a catalyst for scientific inquiry and collective action to restore and protect the water quality, wildlife and quality of life of the Narragansett Bay, Little Narragansett Bay, the Coastal Salt Ponds, and their respective watersheds, in Rhode Island, Massachusetts and Connecticut (Study Area). Founded in 1987, NBEP is one of 28 nationally designated programs operating under the [National Estuary Program](#). This national program was established by Section 320 of the federal Clean Water Act and seeks collaborative solutions to protect and restore the water quality and ecological integrity of estuaries of national significance.

NBEP is charged with examining, synthesizing, and sharing environmental and social-environmental data for the Study Area. This Quality Assurance Project Plan (QAPP) covers any indicator updates (Project) completed between January 2023 and December 2024 that utilize data collected by others to build upon the [State of Narragansett Bay and Its Watershed](#) (Report) and supporting data (NBEP 2017). The Report includes 24 stressor and condition indicators. Indicator updates include any revisions, summaries, or addenda that serve to update the Report with new and actionable information responsive to emerging data and conditions in the region. Updated data will be analyzed using the same procedures to the Report. All indicator updates will be fully evaluated by staff and an internal review team consistent with this QAPP and made available to inform study and decision making in the Study Area.

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1.3. QAPP Distribution List

QAPP distribution list

Signed copies of this QAPP and all subsequent revisions will be sent to the following individuals by electronic mail:

Dr. Allen Hance, Roger Williams University Associate Provost for Global and Community Engagement, ahance@rwu.edu

Caitlyn Whittle, EPA Project Officer, USEPA – Region 1, Whittle.Caitlyn@epa.gov

Mike Gerel, Narragansett Bay Estuary Program (NBEP) Executive Director, mike.gerel@nbep.org

Dr. Courtney Schmidt, NBEP Staff Scientist, courtney.schmidt@nbep.org

Darcy Young, NBEP Watershed Outreach Manager, dyoung@nbep.org

Mariel Sorlien, NBEP Geospatial and Design Manager, msorlien@nbep.org

Caitlin Chaffee, NBEP Steering Committee Chair, Narragansett Bay Estuarine Research Reserve, Caitlin.Chaffee@dem.ri.gov

Bryan Hogan, EPA Quality Assurance Officer, USEPA, hogan.bryan@epa.gov and RIQAPPS@epa.gov

1.4. Project Organization and Responsibilities

The Narragansett Bay Estuary Program (NBEP) staff and key partners will be responsible for carrying out nearly every aspect of this Project (Figure 1). More details on primary responsibilities are provided below.

- **Roger Williams University Associate Provost for Global and Community Engagement:** Allen Hance
 - Reviewing the QAPP and supervising the NBEP Executive Director. Acts as QA manager for this project.
- **EPA Project Officer:** Caitlyn Whittle
 - Reviewing and approving the QAPP and reviewing indicator updates.
- **NBEP Executive Director:** Mike Gerel
 - Reviewing the QAPP, and composing, editing, and approving draft and final indicator updates.
- **NBEP Staff Scientist:** Courtney Schmidt
 - Composing the QAPP, seeking and evaluating data, conceiving and drafting indicator updates, and coordinating review of materials by the NBEP Executive Director and committees. Maintaining NBEP's secondary data databases, resource library, and distribution of indicator updates. Maintains approved QA project plan.
- **NBEP Watershed Outreach Manager:** Darcy Young
 - Receives/reads the QAPP, considering new information, and creating and reviewing indicator updates that emphasize audience comprehension.
- **NBEP Geospatial and Design Manager:** Mariel Sorlien
 - Receives/reads the QAPP, analyzing data, creating indicator updates that emphasize data visualization, and documentation of analytical methods. Maintaining NBEP's secondary data databases, resource library, and distribution of indicator updates.
- **NBEP Steering Committee Chair:** Caitlin Chaffee
 - Receives/reads the QAPP and overseeing the work of NBEP staff and committees.
- **Internal Review Team** (*includes, but is not limited to, the individuals listed above and members of NBEP's standing committees listed in Section 6, Appendix A*)
 - Providing ideas for indicator updates and reviewing draft updates as requested.

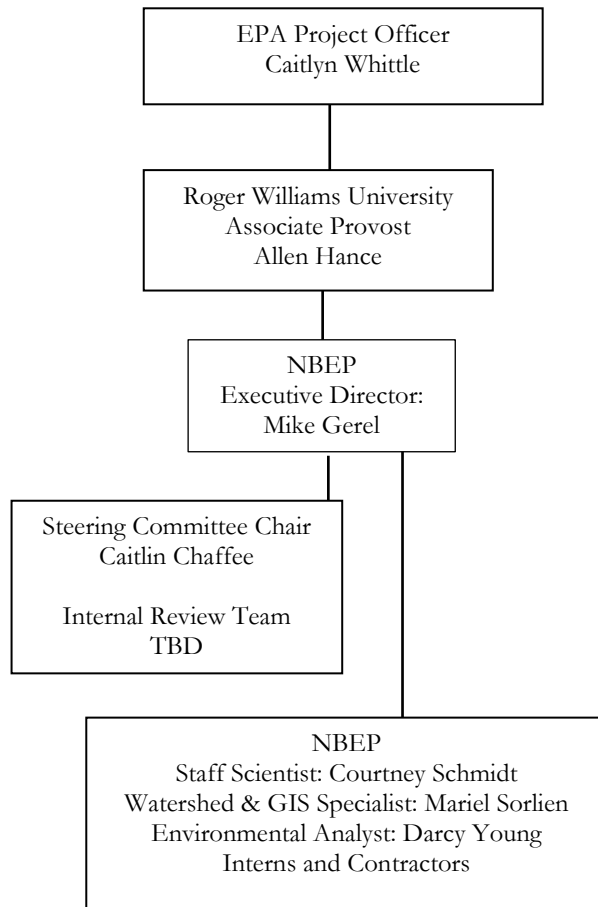


Figure 1. Organizational Chart

1.5. Problem Definition/Background

NBEP and its standing committees are charged with assessing the status of water quality, habitat and natural resource use in the Study Area, identifying problems, and enabling responsive actions. In 2017, NBEP published the [State of Narragansett Bay and Its Watershed](#), or Report, and is made up of three deliverables: a [Technical Report](#), a [Summary Report](#), and short [Executive Overview](#). The Report covers 24 indicators—10 stressor and 14 conditions indicators—that describe the status, trends, and associated problems that NBEP and its partners seek to address in the region (Table 1). It builds on previous indicator work published by NBEP in [2009](#).

As described further in Section 1.6 of this document, NBEP’s Study Area includes the Narragansett Bay, Little Narragansett Bay, the Coastal Salt Ponds, and their watersheds. As part of the 2015 QAPP (NBEP 2015) for the Report, NBEP compiled data and analyses for all three of these subareas. Note that data pertaining to Little Narragansett Bay and the Coastal Salt Ponds that may be unique to those areas were not formally published in the Report, and instead are maintained in NBEP files and is available upon request. However, NBEP may prepare indicator updates for the entire study area under this QAPP as needed to best address priority problems.

Table 1. List of Indicators included in the *State of Narragansett Bay and Its Watershed*

Stressor Indicators	Condition Indicators
<i>Climate Change Stressor Indicators</i>	<i>Bay Ecosystem Condition Indicators</i>
Temperature	Seagrasses
Precipitation	Salt Marsh
Sea Level	Benthic Habitat
<i>Landscape Stressor Indicators</i>	Estuarine Fish Communities
Population	Dissolved Oxygen
Land Use	Chlorophyll
Impervious Cover	Water Clarity
Wastewater Infrastructure	<i>Watershed Ecosystem Condition Indicators</i>
Nutrient Loading	Water Quality Conditions for Aquatic Life
<i>Chemical Stressor Indicators</i>	Stream Invertebrates
Legacy Contaminants	Freshwater Fish Communities
Emerging Contaminants	Open Space
	<i>Condition Indicators for Public Health</i>
	Water Quality Conditions for Recreation
	Marine Beaches
	Shellfishing Areas

1.6. Project Description

Deliverables

Deliverables for this project will include a range of indicator updates based on data collected by others (secondary data), which may include, but are not limited to, revisions, summaries, and addenda to the existing 24 indicators or, geographic, topic, or indicator-specific reports, websites, story maps, peer-reviewed manuscripts, or related written/digital materials that build upon the Report. NBEP will not directly collect data (primary data) under this QAPP. The exact content and format of indicator updates will be determined based on the availability of data, the intended use of the updated information, emergent conditions and circumstances in the Study Area, partner needs, and other factors. It is anticipated that not all indicators will need to be updated during the period covered by the QAPP. Data will be analyzed following the quality assurance/quality control (QA/QC) process used for the Report as described in Sections 2, 3, 4 of this QAPP. All indicator updates will be evaluated by NBEP staff, committees, and topical experts as part of an Internal Review Team. Once final, any new indicator updates will be considered addenda to the Report and published to inform study and decision-making in the region.

Description

The main objectives of indicator updates are to:

1. Report on status against stressor and condition indicators in the Study Area;
2. Uncover and compile new sources of environmental and social-environmental data, identify any data gaps, and inform steps to address them;
3. Illuminate and document trends and associated problems, successes, and otherwise track progress toward goals;
4. Assure NBEP and partner's work plans, included actions, and attendant decisions are responsive to the most current needs and information; and
5. Serve as an education and outreach tool to increase knowledge and appreciation of natural resources, foster stewardship of shared resources, and increase support for NBEP's and its partners' work.

Schedule

The term of this QAPP is two years, from January 2023 to December 2024. National Estuary Programs typically update foundational documents like the Report every five to ten years. New indicator updates will be developed, reviewed, and finalized as the availability of new information, need, and NBEP staff capacity allows. The decision when to update indicators will be informed by the factors noted under Deliverables above and ultimately rest with NBEP staff and its standing committees. In general, we expect to create several updates a year, with information from annual updates available for future comprehensive reports.

Geographical Locations

The Study Area covered by this QAPP includes three estuaries and their watersheds: the Narragansett Bay, Little Narragansett Bay, and Coastal Salt Ponds. Further information is available in Tables 2-4 and Figure 2 below.

Table 2: Narragansett Bay Watershed

Estuary / Watershed	Acres	Square Miles	Percent of watershed in each state	Major Tributaries
Massachusetts	655,666	1,024	60	Taunton
Rhode Island	435,445	680	40	Blackstone Pawtuxet

Table 3: Little Narragansett Bay Watershed

Estuary / Watershed	Acres	Square Miles	Percent of watershed in each state	Major Tributaries
Rhode Island	156,846	245	77	Wood
Connecticut	46,074	72	23	Pawcatuck

Table 4: Coastal Salt Ponds Watershed

Estuary / Watershed	Acres	Square Miles	Percent of watershed in each state	Major Tributaries
Rhode Island	95,922	56	100	N/A

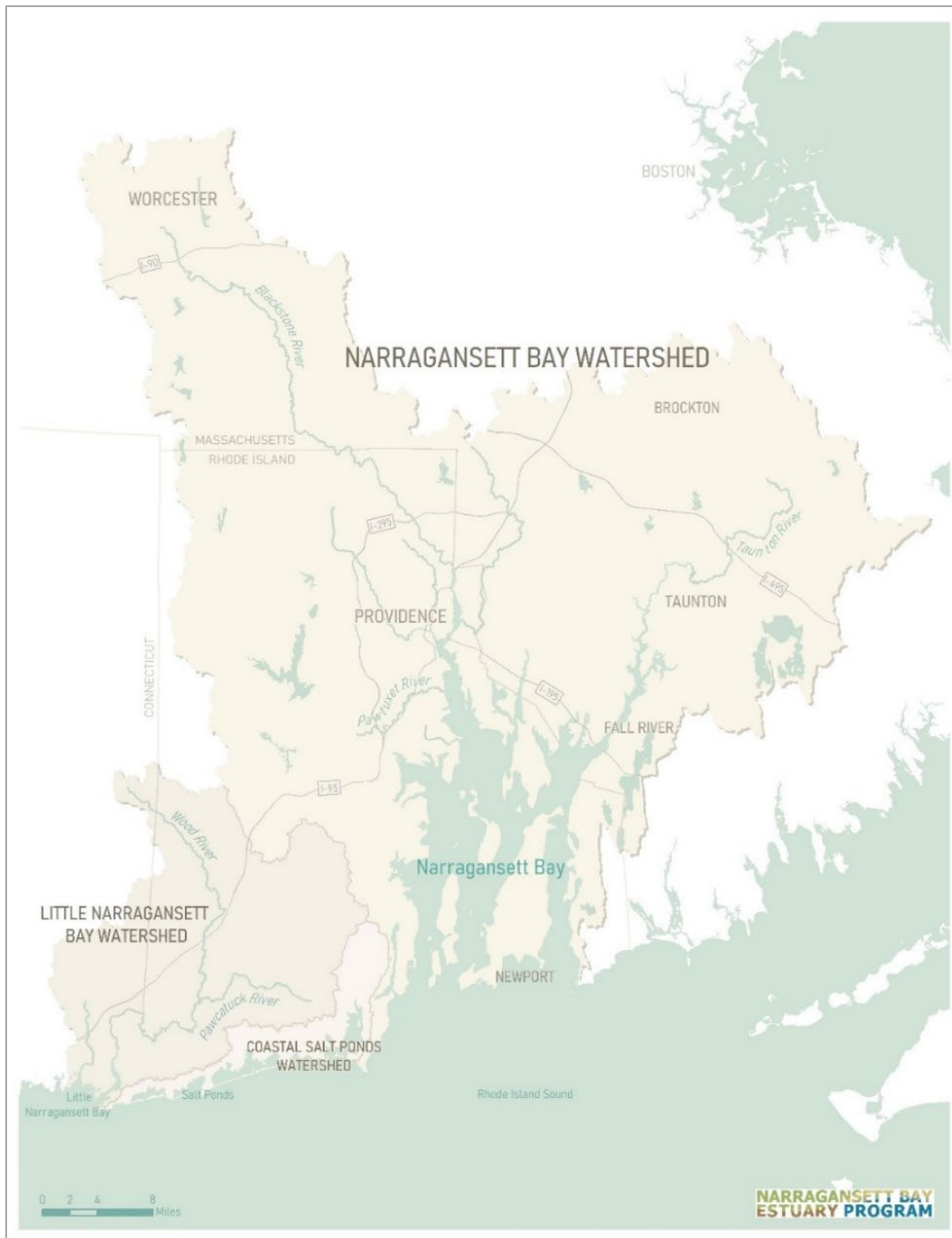


Figure 2. Map of the Narragansett Bay Estuary Program Study Area.

Resources and Time Constraints

Resource and time constraints are generally not applicable to this project. However, the availability of appropriate new data and/or staff capacity may impact the number, breadth, and depth of indicator updates that are completed under this QAPP. Every effort will be made to efficiently complete updates prioritized by NBEP staff and committees.

1.7. Quality Objectives and Criteria

NBEP published the Report in 2017, culminating a multi-year effort between the NBEP, its committees, and numerous partners to compile, evaluate, and analyze secondary data from 24 stressor/conditions indicators to document status and trends in the Narragansett Bay Watershed (Table 1). Data was also compiled from the Little Narragansett Bay, Coastal Salt Ponds, and their watersheds.

A specific process was utilized to determine whether secondary data should be included in the Report and whether it demonstrated a trend. If data were collected in accordance with a QAPP or standard operating procedure that aligns with NBEP's 2015 QAPP (NBEP 2015), they were included in the Report. In other words, during the scoping process for the Report, NBEP met with partners who had expertise on each indicator and discussed any relevant data sources, including the purpose of the data collection and how it was collected. If the topic-area experts felt the data were sharable and compatible with NBEP's goals, we included these data within the Report. For data that was handled differently, was derived/generated from different sources, included deficiencies or gaps, or otherwise required additional analysis, our topic-area experts applied best professional judgement to determine whether the data should be included in the Report. Available data of known and documented quality were preferred, and any data with limitation were clearly noted. Similarly, for assessing trends, if data were collected in a manner that aligned with our purpose and procedure, we relied on the conclusions drawn by those that created the secondary data. For data that were not aligned with our QAPP or were not of sufficient quantity to conclusively establish a trend, best professional judgement was used to assess trends.

Because environmental conditions, the most informative stressors, methodologies, and priorities change over space and time, new datasets and analysis are expected to be pursued to gain and share new insights. With this in mind, NBEP plans to pursue additional secondary data to build on the Report where needed (including exploring new indicators), add data for the Little Narragansett Watershed and the Coastal Salt Ponds Watershed, and otherwise complete indicator updates. Moving forward, any additional secondary data will be evaluated under the quality assurance/quality control (QA/QC) requirements set forth in the QAPP for the original Report and updated as per Section 2.2 of this document.

1.8. Special Training/Certification

NBEP staff, its committees, and collaborating partners have the necessary training to implement this Project. No additional training or certification is required.

1.9. Documentation and Records

New indicator updates may be presented in formats consistent with the Report (Word or PDF) or take on new formats, including digital forms (including, but not limited to, fact sheets, websites, dynamic maps, and story maps). All data included will be summarized and displayed as tables, maps, and figures as possible, with original data saved in Excel/CSV and/or geodatabases.

Project-related documents and records, such as drafts, data figures/maps, and communication with internal and external reviewers related to an indicator update will be kept by NBEP for a minimum of three years. Records and datasets will be kept on NBEP computer hard drives and cloud storage systems. Records and datasets will be sorted by topic and will include dates in file names. All work

products created with federal funding will be posted publicly or made available to the public upon request.

If this QAPP is updated, NBEP will distribute the updated copies of the QAPP to the participants listed in the distribution list (Section 1.3 of this QAPP).

2. Data Acquisition

2.1. Sources of Secondary Data

This project will rely entirely on existing environmental and social-environmental data, (“data”), which will be obtained from trusted and respected sources such as: agencies, academic institutions, non-government organizations, and other entities already conducting monitoring programs, including volunteer science programs. Examples of data sources include the Rhode Island Department of Environmental Management (RIDEM), the Massachusetts Department of Environmental Protection (MassDEP), the Connecticut Department of Energy and Environmental Protection (CTDEEP), the University of Rhode Island, the University of Massachusetts, Brown University, the University of Connecticut, the US Environmental Protection Agency (EPA) and other government agencies, non-governmental organizations, and other partners. Data sources also include published papers, reports, and datasets/databases. Databases can typically be downloaded in their entirety, or queried for specific subsets of data, either by NBEP or by the owner of the data and provided to NBEP. Datasets/databases will be accepted from our partners with websites, FTP sites, geodatabases, email, and other digital forms. Papers and undigitized datasets/databases may be accepted, provided they meet the quality requirements of this QAPP.

All data sources will be fully referenced in any indicator update, including links to datasets/databases, and any documentation of data quality. All documents will be available to the public digitally and, if appropriate, a limited number of any final indicator update documents will be printed. Every effort will be made to avoid introducing bias into the conclusions by selectively focusing on certain data.

Should the decision be made that NBEP needs to develop primary data for this project, a separate QAPP will be developed.

2.2. Quality of Secondary Data

Biophysical and social-environmental data should meet the following quality requirements. However, given the paucity of data within our study regions for some indicators, it is likely that some datasets will not meet one or more requirements. These data may still be valuable for our purposes and, if used, any shortcomings will be clearly noted.

- Quality
 - Data were generated by a reliable source. Although the identity of the data generator does not guarantee data quality, it provides a simple screening criterion when multiple data sources are available. (See Section 2.1)
 - Data have been collected for purposes similar to ours; i.e., to assess the status and trends in a particular environmental indicator.
 - Data collection (such as a monitoring program, including volunteer science programs, or data collected for a specific purpose) has a QAPP or similar plan documenting

methodology and QA/QC procedures to maximize data precision, accuracy, representativeness, and comparability (see also metadata below).

- Data have been widely used and/or trusted by scientists and professionals in the subject. For example, these data will have been cited or used in peer-reviewed studies, have a QAPP or similar QA/QC plan (see above bullet), or have been shared with us by scientists and professionals in the specific subject area.
- Completeness
 - Spatial coverage: Dataset provides good coverage of the Study Area of interest and the same sites are included in each sampling effort;
 - Temporal coverage: In general, the more frequent the sampling, the better; however less frequent (i.e. monthly or yearly) data may be adequate to assess long-term trends or offer insights that may help clarify or illustrate certain concepts. Enough historical data are available to allow assessing any trends in the various environmental indicators. For instance, data are available for at least a decade or in the case of infrequently-collected data (such as population), 3 complete datasets exist. Finally, data are more or less evenly distributed throughout the sampling period (in other words, there are no major periods where no data were collected). Evenly spaced sampling intervals are desirable but not strictly necessary;
 - Representative coverage: The distribution and quantity of sampling is adequate to accurately reflect the characteristics of the larger group. For biophysical data: e.g. – distribution and quantity of benthic sampling is adequate to produce a representative sample. For social-environmental data: e.g. – enough people were surveyed for a representative sample, and the demographics of the survey population relative to the full population is well-documented and relatively close;
 - Metadata: Metadata determines the reliability, accuracy, and comparability of existing data with other data sources. For GIS applications, data that contains metadata describing how the data were created, for what purpose the data were created, and the sources of the data, etc. will be preferred;
- Monitoring program that developed the existing data is ongoing (this is not strictly required, but highly desirable as the availability of future data would facilitate the preparation of upcoming reports on the environmental condition of the watershed)

Any limitations in data quality will be fully disclosed. If a decision is made to use data of unknown quality, then this limitation will be indicated in a disclaimer that will be added to any project deliverable. The disclaimer will read: “These data are of unknown quality and presented here for illustrative purposes only. No inferences regarding the environmental condition of the Narragansett Bay Estuary Program study regions (the specific study region will be named) should be made based on these data until their quality can be determined.”

2.3. Data Management

NBEP staff will collectively manage data, based on individual leading an indicator project. The following project-related documents and records will be kept by NBEP for as long as possible and for a minimum of three years.

- Original files and materials (either electronic or in print) obtained from the data providers, including datasets, data quality information, reports, and other relevant information pertaining to the data and data interpretation.

- Working data spreadsheets will document any data reduction, anomalous data removal, and other issues.
- GIS datasets (original and processed).
 - Data will be validated to ensure their accuracy and consistency across the study area. Features that share borders, and have other geographical relationships, will be validated using topology methods. Errors will be corrected manually or data that do not meet criteria will be discarded. The process of updating data manually, if needed, will be described in the metadata.
 - During data processing, a Word doc or Excel file will be created to track data files, sources, processing, dates, and other metadata. A Jupyter Notebook or other script (e.g., R) can be substituted to track processing steps, and must be accompanied by thorough markdown/commenting in the code.
 - Final GIS data published via the NBEP Data Hub must have full metadata created in accordance with NBEP templates and FGDC standards.
 - Processed GIS data will be converted to a geodatabase format in projection NAD 1983 - UTM Zone 19N or WGS84 (specifically for R Shiny apps) while raw data will be kept in its original format; updated GIS data will remain in this database and archived.
- Draft and final versions of the report or product
- List of report reviewers (described in Section 1.4 of this QAPP) and their written comments.
- Other relevant documents and materials.

NBEP has read Roger Williams University's [Data Storage Policy](#). A signed agreement to follow the stipulations in the Policy is included in Appendix B.

3. Assessment and Oversight

3.1. Assessments and Response Actions

NBEP may implement, at their discretion, various audits or reviews of this Project to assess conformance and compliance to this QAPP.

During the data analysis and writing of indicator updates, NBEP staff will be responsible for assessing data, completing appropriate analysis, and creating editorial content consistent with this QAPP. Documents are reviewed as developed – from conception to publication – to assure adherence to this QAPP.

3.2. Reports to Management

NBEP prepares quarterly reports, which include updates on indicator projects, that are shared with the Steering Committee and are posted on the website to keep RWU and partners apprised of work progress and communicate any QA/QC-related issues. Once completed, all indicator updates are shared with the Steering Committee, RWU, and partners.

4. Data Reduction, Reporting, and Validation

4.1. Data Reduction

In general, data included in indicator update documents will be manipulated as little as possible. Data reduction may be required if adequate data is available to graphically display the information in a condensed, more easily understandable format and, in some cases, to establish or show specific data trends or characteristics.

The following are some examples of anticipated or possible data reduction procedures:

- For most indicators, the presence or absence of a trend over time will be shown by means of an x-y chart. It is anticipated that all available data will be plotted. However, for indicators for which there are large numbers of data points (e.g., sea level, water quality parameters), it will be considered whether plotting either monthly, or yearly average values provides a clearer depiction of trends.
- Indicators that involve counts or otherwise depend on the level of effort will be normalized and reported per unit effort whenever possible. For example, fish catch or landings will be divided by the number of fishing trips.
- Certain data involving multiple categories and/or locations may need to be combined (summed). For example:
 - Data on the types of debris collected during coastal cleanup events may be reduced by grouping certain materials (e.g., items made of plastic) into a single category
 - Floatable debris collected by various agencies may be reported as a single value
- Data units may need to be changed for report consistency and/or to allow comparisons across data sources.
- Certain datasets may be reduced and presented as percentages (e.g., percentage of time a beach was closed during the swimming season, or percentage of plastic items in collected debris).
- Some data reduction may also be needed to display data in map form (maps will normally be intended to summarize some of the available information). Possible data reductions include:
 - Average values for a given water quality parameter (e.g., fecal coliform cell concentrations) across sampling locations within a sub-region of the watershed (e.g., Greenwich Bay or a certain area of the Pawtuxet River) at a given date.
 - Data may be reduced to show whether or not they comply with a given benchmark. For example, concentrations toxic compounds in sediments may be compared to the effects range-median (ER-M) and data displayed as above or below this benchmark.
 - GIS data may be reduced using geoprocessing techniques to combine, analyze, and/or select relevant data for the environmental indicators. These data may be organized into one or several layers.

4.2. Verification and Validation Methods

A visual inspection of data will be done before inclusion in the final report. Specifically:

- Data manipulation will be minimized to decrease the chances of inadvertently introducing errors. If any data reduction or manipulation is needed, then it will be calculated starting

from the raw, protected dataset. All formulas, along with units and conversion factors, will be shown in the spreadsheet; in addition, the formulas will be visible in each cell containing the reduced values.

- Prior to inclusion in the final Indicator Update Documents, raw and/or reduced data will be displayed in graphic form and inspected to detect any anomalous value. Most environmental indicators to be displayed have been measured in the past and values are expected to fluctuate between “generally accepted values.” If apparently anomalous values are detected, then any data reduction will be verified. If the seeming anomaly is present in the original dataset, the data generator will be contacted for clarification and/or the issue will be discussed with appropriate parties. Any decision to eliminate “anomalous values” will be documented in the working data spreadsheets that will be kept as part of the project files and will be noted in the list of sources of secondary data (Section 2.3 of this QAPP).
- In rare occasions, a dataset may only be available in hard copy format. In these cases, data will be manually entered into a spreadsheet. To ensure an error-free copy, summary statistics will be checked if possible. In addition, a few randomly-selected individual values will be cross-checked as well.
- When necessary, GIS data will be clipped for the Study Area. The manipulation of datasets will be noted, and new metadata will be created reflecting the purpose, sources, and geoprocessing of the outputs shown in the indicator update document.
- Any limitations on data usability or remaining data uncertainty will be communicated in the final indicator update document.

4.3. Reconciliation with User Requirements

When possible, trends will be evaluated using appropriate statistical analyses. The particular analyses are dependent upon the data and the rules associated with the analysis. All statistical procedures will be specified.

Any limitations in data quality will be fully disclosed (see Section 2.2 of this QAPP for further details). If a decision is made to use data of unknown quality, then this limitation will be indicated in a disclaimer that will be added to any project deliverable. The disclaimer will read: “These data are of unknown quality and presented here for illustrative purposes only. No inferences regarding the environmental condition of the Narragansett Bay Estuary Program study regions (the specific study region will be named) should be made based on these data until their quality can be determined.”

5. References

Narragansett Bay Estuary Program (NBEP). 2015. Quality Assurance Project Plan for the Narragansett Bay Estuary Program’s *State of the Watershed*. Attached to this QAPP.

Narragansett Bay Estuary Program (NBEP). 2017. *State of Narragansett Bay and Its Watershed*. <http://nbep.org/the-state-of-our-watershed/>.

6. Appendix A. Members of NBEP's Standing Committees

Steering Committee

Chair - **Caitlin Chaffee**, Reserve Manager
[Narragansett Bay National Estuarine Research Reserve](#)

Vice Chair – **Dave Monti**, Recreational fishermen, charter captain, journalist
[No Fluke Charters](#)

Molly Allard, District Manager
[Northern Rhode Island Conservation District](#)

Walter Berry, Representative
[Rhode Island Rivers Council](#)

Colleen Brown, Conservation Agent
[Town of Swansea, MA](#)

Rachel Calabro, Climate Change Program Manager
[Rhode Island Department of Health](#)

Joe Callahan, President
[Taunton River Watershed Alliance](#)

Richard Carey, Acting Director
[Massachusetts Department of Environmental Protection, Watershed Planning Program](#)

Stefanie Covino, Blackstone Watershed Manager
[Blackstone Watershed Collaborative](#)

Richard Friesner, Director of Water Quality Programs
[NEIWQCC](#)

Walter Galloway, Public Member

Ben Greenstein, Dean of School of Social and Natural Sciences
[Roger Williams University](#)

Allison Hamel, Environmental Scientist
[Rhode Island Department of Transportation](#)

Robert Johnston, Professor of Economics and Director
[George Perkins Marsh Institute, Clark University](#)

Cristina Kennedy, Coastal Wetlands Restoration Specialist
[Massachusetts Department of Fish and Game, Division of Ecological Restoration](#)

Susan Kiernan, Deputy Administrator
[Rhode Island Department of Environmental Management, Office of Water Resources](#)

Hillary King, Central Regional Coordinator
[Massachusetts Executive Office of Energy and Environmental Affairs, Municipal Vulnerability Preparedness Program](#)

Ton Kutcher, Wetlands Scientist
[Rhode Island Natural History Survey](#)

Alicia Lehrer, Executive Director
[Woonasquatucket River Watershed Council](#)

Regina Lyons, Chief, National Estuary Program and Marine Protection Section
[U.S. Environmental Protection Agency – Region 1](#)

Conor McManus, Deputy Chief
[Rhode Island Department of Environmental Protection, Division of Marine Fisheries](#)

Kate Michaud, Town Manager
[Town of Warren, RI](#)

Eliza Moore, Senior Environmental Scientist
[Narragansett Bay Commission](#)

Bill Napolitano, Rivers, Trails, and Watershed Coordinator
[Southeastern Regional Planning and Economic Development District](#)

John O'Brien, Policy/Partnership Specialist
[The Nature Conservancy – Rhode Island Chapter](#)

E. Heidi Ricci, Director of Policy
[Mass Audubon](#)

Karla H. Sangrey, Engineer-Director/Treasurer
[Upper Blackstone Clean Water](#)

Jonathan Stone, Executive Director
[Save The Bay](#)

Nate Vinhateiro, Science Director
[University of Rhode Island – Coastal Institute](#)

Donna Williams, Board Member
[Blackstone River Coalition, Blackstone River Valley National Heritage Corridor](#)

Executive Committee

Chair - **Caitlin Chaffee**, Reserve Manager
[Narragansett Bay National Estuarine Research Reserve](#)

Vice Chair – **Dave Monti**, Recreational fishermen, charter captain, journalist
[No Fluke Charters](#)

Richard Carey, Acting Director
[Massachusetts Department of Environmental Protection, Watershed Planning Program](#)

Allen Hance, Associate Provost for Global and Community Engagement
[Roger Williams University](#)

Susan Kiernan, Deputy Administrator
[Rhode Island Department of Environmental Management, Office of Water Resources](#)

Regina Lyons, Chief, National Estuary Program and Marine Protection Section
[U.S. Environmental Protection Agency – Region 1](#)

E. Heidi Ricci, Director of Policy
[Mass Audubon](#)

Jonathan Stone, Executive Director
[Save The Bay](#)

Science Advisory Committee

Michaela Cashman, Chemist
[United States Environmental Protection Agency](#)
Atlantic Coastal Environmental Sciences Division

Baylor Fox-Kemper, Professor of Earth, Environmental, and Planetary Science
[Brown University](#)

Joseph Haberek, Administrator of Surface Water Protection & Water Quality
[Office of Water Resources, Rhode Island Department of Environmental Management](#)

Reza Hashemi, Assistant Professor
[Department of Ocean Engineering & Graduate School of Oceanography, University of Rhode Island](#)

Robert Johnston, Professor of Economics
Director and Research Professor, George Perkins Marsh Institute
[Clark University](#)

Anne Kuhn, Research Physical Scientist
[United States Environmental Protection Agency](#)
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Paul Mathisen, Associate Professor
[Department of Civil and Environmental Engineering, Worcester Polytechnic Institute](#)

Kate Mulvaney, Social Scientist
[United States Environmental Protection Agency](#)
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Candace Oviatt, Professor of Oceanography

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Danielle Perry, Marine Habitat Resource Specialist
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Warren Prell, Professor of Oceanography, Emeritus

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Kenny Raposa, Research Coordinator

[Narragansett Bay National Estuarine Research Reserve](#)

Caitlin Riddick, Environmental Analyst in Surface Water Quality Standards for the Watershed
Planning Program

[Division of Watershed Management, Massachusetts Department of Environmental Protection](#)

David Taylor, Professor of Biology

[Roger Williams University](#)

Alicia R. Timme-Laragy, Assistant Professor

[Division of Environmental Health Sciences, Department of Public Health](#)

School of Public Health and Health Sciences, University of Massachusetts – Amherst

Jamie Vaudrey, Assistant Research Professor

[Department of Marine Sciences, University of Connecticut](#)

7. Appendix B. Roger Williams University Data Storage Policy



**NARRAGANSETT BAY
ESTUARY PROGRAM**

DATA STORAGE POLICY AGREEMENT

I, **Courtney Schmidt** of **Narragansett Bay Estuary Program**, have read Roger Williams University's [Data Storage Policy](#) and agree to all its stipulations for the project entitled **Narragansett Bay Estuary Program's Study Regions Indicator Update Project**.

Signed,
Courtney E Schmidt

Courtney E Schmidt

Signature

23 February 2023

Date