


**2021 State of the Bay Report
Barnegat Bay Partnership
Quality Assurance Project Plan**

**Barnegat Bay Partnership
October 2020**

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U.S. EPA REGION 2 - QUALITY ASSURANCE PROJECT PLAN APPROVAL FORM

PROJECT INFORMATION

Quality Assurance Officer: _____

Project Officer: _____

Title of Quality Assurance
Project Plan: _____

Assistance Agreement or
Contract #: _____

QA File Number: _____

REGIONAL QA MANAGER OR DELEGATED APPROVER

Approved Conditionally
 Approved*

* Conditional Approval may be provided when there are unresolved comments that do not impact the data collection or the quality of the data and where the project has a small window of opportunity to collect such data. Conditional Approval expires 30 days from the signature date. If updated quality documentation (QD) is not provided by the expiration date or another due date is not agreed upon by EPA, then the QD will be considered delinquent.

Comments:

Signature EPA QA Officer

Signature EPA PO or Project lead

REVIEW SUMMARY:

A review was conducted on the above referenced Quality Assurance Project Plan. The subject QAPP was reviewed for conformance with the [EPA Requirements for Quality Assurance Project Plans](#) (EPA QA/R-5), EPA/240/B-01/003, March 2001; USEPA Region 2 Guidance for the Development of QAPPs for Environmental Monitoring Projects, April 2004 and other EPA QAPP guidance documents as appropriate.

This approval form documents EPA's decision of approval or conditional approval* for the aforementioned QAPP. After the QAPP is approved by EPA via this approval form, obtain the required signatures from your organization on the QAPP Title/Signature page. Send the signed QAPP to the EPA Project Officer and others on the QAPP distribution list within the timeframe stipulated in the AA terms and conditions.

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QAPP distribution list

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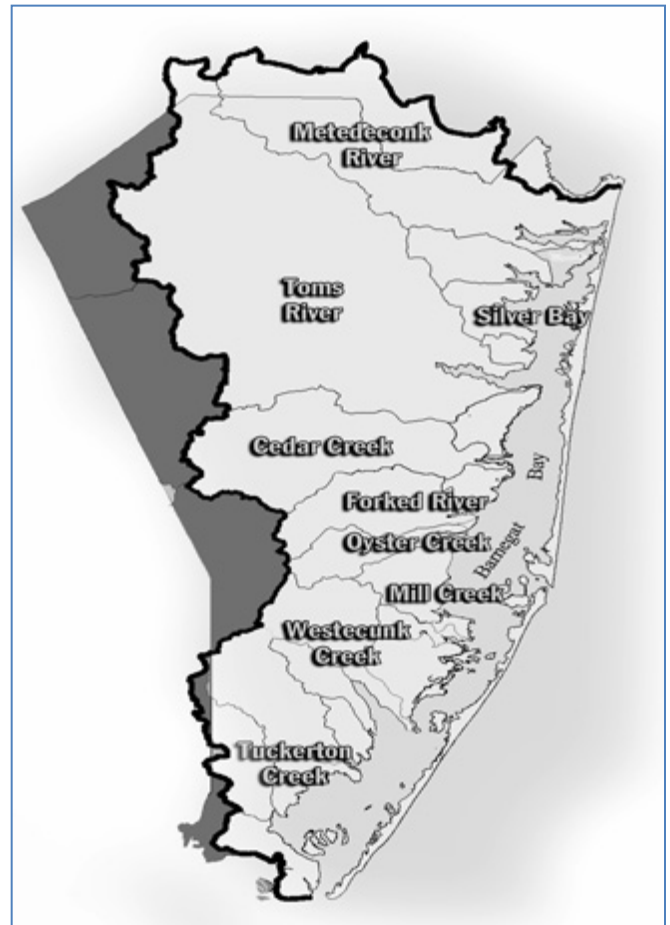
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1. Project Objectives, Organization, and Responsibilities

1.1. Purpose of Study and Background Information

The Barnegat Bay Partnership (BBP), authorized in 1995 as the Barnegat Bay Estuary Program by the U.S. Environmental Protection Agency, is one of 28 National Estuary Programs throughout the US. The BBP is a partnership of federal, state, county, municipal, academic, business, and private stakeholders in the Barnegat Bay watershed working together to help restore, maintain, protect, and enhance the natural resources of the Barnegat Bay estuary and its contributing watershed. The Barnegat Bay-Little Egg Harbor estuary ("Barnegat Bay") covers over 42 miles of shoreline from the Point Pleasant Canal to the north to Little Egg Harbor Inlet in the south and is composed of three shallow, micro-tidal bays: Barnegat Bay, Manahawkin Bay, and Little Egg Harbor. A nearly continuous barrier island complex runs along the eastern edge of Barnegat Bay, separating it from the Atlantic Ocean. Seawater enters the Barnegat Bay system through the Point Pleasant Canal via the Manasquan Inlet in the north and the Barnegat Inlet and Little Egg Inlet in the south.



The primary planning document produced by BBP to guide its efforts is the Comprehensive Conservation and Management Plan (CCMP), which was initially signed by the governor of New Jersey and the EPA Region 2 Administrator in the spring of 2002 (Barnegat Bay National Estuary Program, 2002). The CCMP outlines a comprehensive strategy to achieve BBP's goal of establishing and maintaining a healthy and productive ecosystem with full beneficial uses. The CCMP was revised and updated in 2020 to include important concepts not addressed in the original document (*i.e.* climate change and sea level rise) and to incorporate an ecosystem-based management approach

In 1995 the Barnegat Bay Partnership convened a science and technical workshop to develop a Monitoring Program Plan (MPP) for the estuary. The MPP identifies a set of environmental parameters that could serve as indicators to measure the success of CCMP implementation. The initial MPP, completed in May 2003, included recommendations to periodically assess and report on a number of these environmental indicators to evaluate whether BBP's goals and objectives

are being met (Barnegat Bay National Estuary Program, 2003). As part of the recent CCMP revision, the Monitoring Program Plan is also being reviewed to make it consistent with an ecosystem-based management approach. While not currently finalized (anticipated for 2021), one of the recommended changes to the document is a realignment of the MPP from a list of individual primary and secondary indicators to a document focused on the more holistic ecosystem-based targets in the revised CCMP together with the measurable parameters needed to track our progress towards meeting those goals.

Thus, the 2021 State of the Bay Report will synthesize our progress on improving the environmental condition of the Barnegat Bay by presenting data on the status and trends of the ecosystem-based targets. This report is intended for a general audience which may not be aware of environmental issues in the Barnegat Bay. Therefore, environmental data displayed in figures, charts, and maps will be accompanied by additional information, such as: 1) discussion of any trends, 2) current and past efforts by BBP and its partners to improve environmental conditions, 3) photographs, 4) references and other online resources, and 5) tips on how to get involved.

1.2. Project Objectives

The main objectives of the State of the Bay report are to:

1. Report on the status and trends of the ecosystem-based targets identified in the CCMP that present an overall picture of the environmental condition of Barnegat Bay;
2. Serve as an education and outreach tool by presenting this information to a wide audience to:
 - a. Increase knowledge and appreciation, and foster stewardship, of the shared resources in the Barnegat Bay,
 - b. Increase awareness and support of the BBP's work; and
3. Identify and present current as well as new sources of environmental data

To meet these objectives, secondary data will be presented to show whether we have met the goals set forth in the CCMP, what the status of the bay's resources are in relation to those goals, and whether the metrics associated with the condition of the resource are improving, deteriorating, or showing no trend over time.

1.3. Secondary Data Needed

The secondary data to be used for this project are environmental data that are measured in the same or similar manner periodically and serve as indicators of the bay's ecological condition. Priority will be given to data that directly address the status and trends of the ecosystem-based targets identified in the CCMP (*e.g.* acreage of seagrass beds). Indicators that provide additional information regarding the target resource, or may help to explain the current resource status absent a direct metric (*e.g.* seagrass biomass), may be utilized as well. It is our intent to address all eight targets in the *State of the Bay Report*.

Examples of environmental data that may be needed include measures of water quality (concentrations of nitrogen and other nutrients, fecal coliform and other bacteria), extent of various habitats (e.g., acreage of tidal wetlands, sea grass beds), and abundance of key species (e.g., hard clams and other fish and crustaceans).

Because environmental data tend to fluctuate widely, it is often the case that trends can only be detected upon evaluating long time-series of data. Thus, new data which have been added to existing datasets since the publication of our previous *State of the Bay* reports should not be presented and assessed in isolation but within the context of all available historical data. Therefore, this edition of the *State of the Bay* will include (for applicable indicators) data already presented in the 2005 and 2011 reports and the newly available data. However, if a more complete or otherwise superior dataset is uncovered, it will be preferred. This may result in (presumably slightly) different results than those presented in the previous editions. Even if the same dataset is used, the inclusion of new data may change the conclusions drawn previously (e.g., a formerly inconclusive trend could now be clearly defined). Regardless of the dataset used, all trends will be explained and compared to our previous findings. In particular, any changes resulting from the inclusion of a different dataset will be noted in the report.

Broad spatial coverage throughout the entire bay would allow a more representative depiction of conditions and would be preferred, but even data from a few or a single location could be useful, as long as data are collected in a consistent manner (e.g., same sites, or same sampling design). In order to show temporal trends of the various indicators, datasets should ideally include recent measures (a few years old at most), go back in time for as long as available, and be relatively frequent (see Section 3.1 Quality Requirements).

Data of the best quality available will be preferred. However, data with deficiencies or gaps will not necessarily be excluded; these data could still be valuable to illustrate the state of knowledge and uncertainties in bay conditions, and/or make the case for better or additional monitoring programs.

1.4. Planned Approach

Assessing the status and trends in various environmental indicators is the only project objective that involves data analysis. The goal is to use the value of a given environmental parameter (e.g., dissolved oxygen, areal coverage of seagrass) to determine if the CCMP ecosystem-based target is being met, and whether the values for the indicator in question have increased, decreased, remained the same over time, or showed no consistent trend. In most cases, the data which will be used in this project have been collected for similar purposes as ours, studied in detail, and/or assessed for status and trends by the data generator and/or other scientists and subject area experts (e.g., data on fecal coliform levels collected by Ocean County Health Department has been examined at length by this agency and other parties). This project will rely on such studies and conclusions whenever possible.

Where previous analyses are not readily available, we will consult with scientists and other knowledgeable individuals (including those in our review team) as needed, to determine if there is a consensus position within the scientific community about the trends. For trend determination this process may require visual inspection of the time series and possibly trend tests (*e.g.*, regression analysis, and Mann-Kendall-based tests, provided that sufficient data are available to apply such statistical tools). It is anticipated that for some indicators, a trend may be apparent, but data will not be sufficient to conclusively establish a trend. In those cases, the apparent trend may be mentioned, but the uncertainties and need for additional data will be noted. It is also expected that in some cases determining whether the data show a trend, or are otherwise “telling a story” may not be straightforward and may require a careful analysis of different datasets and professional judgment. We will rely on scientists and experts who have been studying these issues at length for these interpretations.

In all cases, the report will be subject to review by both the Working Group and the STAC to ensure that the contents are scientifically sound and reflect the most current views within the scientific community.

1.5. Project Organization and Responsibilities

The BBP Principal Investigator is responsible for overseeing the completion of this report, with assistance from a working group solicited from STAC member organizations. More details are provided in the following list of project participants and their responsibilities.

- o **Principal Investigator:** James Vasslides, Program Scientist, BBP
 - Responsible for overseeing implementation of the project work plan, reviewing drafts of the report, managing the project budget, issuing contracts and agreements for any needed professional services, and processing invoices.
 - Responsible for implementing the project work plan with assistance from the State of the Bay Working Group, Science and Technical Advisory Committee (STAC), other BBP partners, data providers, and team of reviewers. Specific responsibilities include:
 - Assuring State of the Bay QAPP secondary data quality, performing data analyses where necessary and appropriate, creating maps and charts, providing the data, maps and charts to the graphic designer, and working with the web developer to prepare a version of the report for the web site.
 - Reporting, writing, substantive editing and copy editing, assigning articles, managing the review process, obtaining photographs and images, providing ideas to the graphic designer for layout and design, and managing outside contractors, including a printer, and possibly illustrator and photographer.

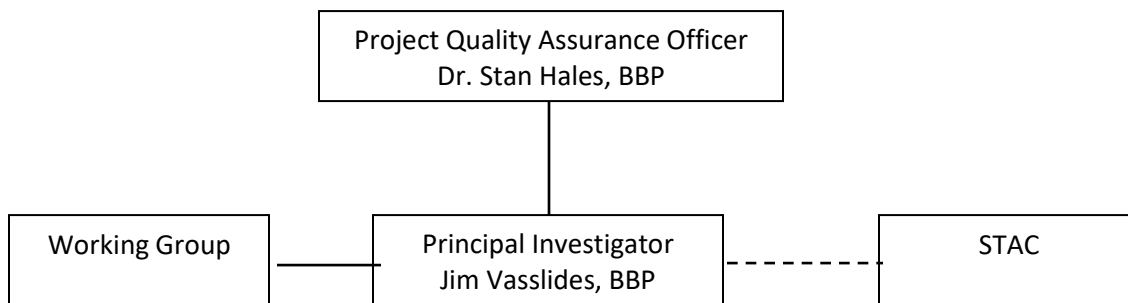
- o **Project Quality Assurance Officer:** Dr. L. Stanton Hales Jr, Director, Barnegat Bay Partnership
 - Responsible for reviewing drafts of the report and approving the final report prior to printing.

o **State of the Bay Report Working Group:** Members of the working group will be recruited from the BBP Science and Technical Advisory Committee, or their proxies at the start of the project.

- Responsible for providing general guidance and advice on all scientific and technical aspects of the report, including: selecting an adequate set of indicators for the report, suggesting possible sources of data, and reviewing the draft and final report. The Working Group will utilize the guidelines set forth in this QAPP when providing guidance and recommendations.

o **STAC:** The BBP’s Science and Technical Advisory Committee will review the contents of the report to ensure that it is scientifically sound, assessing it for adequate data interpretation and accurate background information. If the STAC does not feel it has the expertise to review a particular topic it will seek the assistance of knowledgeable individuals. A list of individuals who have reviewed the report as part of this process will be available and kept as part of the project files.

Organizational Chart. Connecting lines represent the proper lines of communication between individuals. Dotted lines represent general guidance and feedback



1.6. Project Schedule

The tentative schedule for the project is provided in Table 1.

Table 1: Timeline for the 2021 <i>State of the Bay Report</i>			
	Task	Start Date	End Date
QAPP	QAPP preparation	September 2020	October 2020
	Define contents	September 2020	October 2020
Report contents	Collect and review data	October 2020	December 2020
	Select Indicators	October 2020	December 2020
	Write sections	October 2020	January 2021
	Conduct review and edit	January 2021	March 2021
Report graphics	Obtain pictures	October 2020	March 2021
	Create charts & maps	October 2020	March 2021
Layout	Work with designer	October 2020	May 2021
	Produce 1st draft layout	February 2021	March 2021

	Produce 2nd draft layout	April 2021	April 2021
Report Printing	Printing	May 2016	May 2021
Report Distribution	Create distribution lists & labels	May 2021	May 2021
	Report distribution	June 2021	

2. Sources of Secondary Data

2.1. Data Sources

This project will rely entirely on existing data, which will be obtained primarily from agencies, institutions, and companies already conducting monitoring programs such as the United States Geological Survey, New Jersey Department of Environmental Protection’s Bureau of Marine Water Monitoring and Bureau of Freshwater and Biological Monitoring, the BBP, and academic institutions. Data sources include published reports and databases. Databases can typically be downloaded in their entirety, or queried for specific subsets of data, either by the user (BBP) or by the data generators/managers via a formal or informal data request.

The sources of data used in the 2016 *State of the Bay Report* are included in Table 2 below. It is anticipated that many of these data sources will be used for the 2021 report as well.

Indicator	Data source
Nitrogen Load	USGS reports
Algal Blooms	NJDEP Bureau of Marine Water Monitoring and Rutgers University
Dissolved Oxygen	NJDEP Bureau of Marine Water Monitoring, Bureau of Water Quality Standards and Assessment,
Turbidity	NJDEP Bureau of Marine Water Monitoring
Temperature and pH	USEPA STORET data warehouse
Freshwater Macroinvertebrates	NJDEP Bureau of Freshwater and Biological Monitoring
Bathing Beach Closures	Ocean County Health Department
Shellfish Bed Closures	NJDEP Bureau of Marine Water Monitoring
Streamflow	USGS
Water Withdrawals	NJDEP Office of Water Allocation, NJDEP Division of Water Quality, USGS, and US Census Bureau Population Division
Seagrass	Rutgers University, Barnegat Bay Partnership, Stockton University
Tidal Wetland Condition	Barnegat Bay Partnership
Land Use – Land Cover	NJDEP Bureau of GIS

Wetland Area	Richard Stockton College
Protected Lands	Ocean County Natural Lands Trust, US Fish and Wildlife Service, NJDEP Green Acres Program
Shellfish Resources	NJDEP Bureau of Shellfish
Estuarine Fish Communities	Barnegat Bay Partnership

This project is exploratory in nature and one of its objectives is precisely to uncover new data sources that may be used to track progress in the environmental health of the Barnegat Bay. Therefore, it is possible that additional data sources will be identified during the course of the project, as we interact more closely with scientists and experts. In addition, not all data obtained will necessarily be used, even if of adequate quality. The first task of the Working Group will be to review the data sources available and decide on the specific indicators to be included based on data availability and quality, ease of conveying a clear and relevant message to the public, and indicators included in similar reports that are also targeted to the general public. This process will be documented in Working Group meeting minutes that will be kept as part of the project files.

All data sources will be fully referenced, including links to databases, and any documentation of data quality.

2.2. Data Generators

Data generators are, generally speaking, the agencies, research institutions, and other organizations that collect (or have collected) suitable (in terms of type of data being relevant to BBP’s goals, covering an adequate geographic and temporal scale, and being of adequate quality) environmental data.

The Science and Technical Advisory Committee to the Barnegat Bay Partnership held a series of workshops in 2001 and 2002 to obtain input in developing the Program’s Monitoring Program Plan. A diverse group of scientists, managers, and others attended these workshops and identified a suite of approximately 30 indicators that could be used to monitor environmental improvement within BBP’s geographic area of concern, along with regional monitoring programs which could provide appropriate data for each of the indicators. A subset of these programs were selected for inclusion in the 2006, 2011, and 2016 reports based on the suitability of the data. With the revision of the CCMP in 2020, the Monitoring Program Plan is also being revised to align with the ecosystem-based management approach of the CCMP. This change in focus will likely lead to the exclusion of some previously reported indicators (*e.g.* algal blooms, freshwater temperature and pH) and the inclusion of new indicators (*e.g.* wetland and riparian buffer area). In addition, a new Monitoring Inventory is being compiled, updating the potential sources of data that can be drawn from for future State of the Bay Reports.

It is anticipated that the same data generators included in Table 2 will be used to update those indicators if they are used in the 2021 report. In addition, it is possible that data providers, scientists, and other researchers contacted in the preparation of this report may be able to point to

other suitable monitoring programs unbeknownst to us, that we will, in turn, pursue and evaluate for relevance and adequacy. Furthermore, the BBP will issue a “call for data” through our various media outlets as part of the revised Monitoring Inventory, which may lead to new datasets as well.

2.3. Hierarchy of Data Sources

In general, data from ongoing environmental monitoring programs going as far back in time as possible, carried out by trusted agencies, universities, or research institutions, and with known and adequate quality control and quality assurance procedures will be preferred. If these conditions are not met, less desirable data may be gathered if they can provide at least partial indication of the condition of the Estuary. Any limitations and gaps in data included in the report will be fully disclosed, and it will be noted that the data should be used with caution. For example, for certain indicators, available data may only cover a limited window in time but still be crucial to complement and put in perspective other available data. Even if data are not of the best quality, they may represent the best available knowledge of the system and may not only provide a glimpse into current conditions, but also point to the need for improved data collection efforts.

2.4. Rationale for Selecting Data Sources

Given the specificity of this project’s data needs (*i.e.*, various types of environmental monitoring data collected from the Barnegat Bay, covering several years), in many cases there may be a single data source available. If more than one data source is available, all will be evaluated and the highest quality, most complete (in terms of spatial and temporal coverage) data sources will be used.

2.5. List of Sources of Secondary Data

The sources of all secondary data presented will be identified in any report or other project deliverables. Links to published data or online databases will be provided.

3. Quality of Secondary Data

3.1. Quality Requirements

Data should meet the following quality requirements where available or possible. However, given the paucity of environmental data within our study area 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 noted.

- 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. The following are indicators of data source reliability.

- o The data generator is generally trusted and respected (federal, state, and local agencies, or research institutions; examples include, but are not limited to, U.S. EPA, NOAA, USGS, NJDEP, Rutgers University, Monmouth University, Montclair State University, Stockton University).
- o Data are published in peer-reviewed articles or publications.
- Data have been collected for purposes similar to ours; *i.e.*, to assess the status and trends in a particular environmental indicator.
- Monitoring Program has a QAPP or similar plan documenting quality assurance and quality control procedures to ensure data accuracy, precision, representativeness, and comparability.
- Data have been widely used and/or trusted by scientists and professionals in the subject.
- Completeness
 - o Spatial coverage
 - Dataset provides good coverage of the geographic area of interest (*e.g.*, as many of the main bays and tributaries in the Estuary as possible are represented) and the same sites are included in each sampling effort.
 - o Temporal coverage
 - Enough historical data are available (the farther back in time, the better) to allow assessing any trends in the various environmental indicators.
 - Adequate sampling frequency. In general, the more frequent the sampling, the better. In general, yearly (or even less frequent) data may be adequate to assess long-term trends. More frequent data may allow showing short-term changes; while this is not the main goal of the report, it may provide an interesting piece of information and may help clarify or illustrate certain concepts (*e.g.*, how seasonal conditions affect algal growth and, consequently, chlorophyll and dissolved oxygen concentrations).
 - 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.
- Monitoring program 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 state of the bay.

Due to the broad range of data types to be used in the State of the Bay Report, specific data acceptance criteria are not applicable. However, the following table includes data sources that have been identified as potentially of use in the report and examples of the types of acceptability criteria that might be considered.

Target	Indicator	Data Type	QAPP	Original Purpose	Acceptability Criteria
Public Beach Closures	Coastal Cooperative Water Quality Monitoring	Counts of beach closure days	Yes	Public safety; status and trends	All data accepted
Approved Areas	National Shellfish Sanitation Program	Bay area classified in each category	Yes	Public safety; status and trends	All data accepted
SAV Extent	SAV demographic data	% cover, biomass (g/m ²)	Yes	Status and trends	All data accepted
	Turbidity	NTU	Yes	Status and trends	Records at least monthly and bay wide
Wetland and Riparian Buffer Preservation	Land Use- Land Cover GIS mapping	Aerial interpretation of land use types	Yes	Status and trends	All data accepted
Wetland Protection	Land Use- Land Cover GIS mapping	Aerial interpretation of land use types	Yes	Status and trends	All data accepted
Hard Clam Restoration	Hard Clam stock assessments	Counts of animals per unit area	Yes	Status and trends	All data accepted
Ecological flows	Surface water/stream flow	Flow, discharge	Yes	Status and trends	No more than 10 consecutive days missing each year
Water Conservation and Reuse	Surface water/stream flow	Flow, discharge	Yes	Status and trends	All data accepted

3.2. Data Review and Evaluation

The quality of the secondary data will be based on data quality requirements defined in Section 3.1 of this document. In determining data quality, the completeness of the dataset will be assessed first, by inspecting data description (usually metadata) or the dataset itself (whichever is more easily available). If completeness is deemed adequate, other quality requirements will be assessed by inspecting the QAPP, other QA/QC documentation, metadata, and/or other information obtained from data providers. This will be accomplished by the Principal Investigator through the use of a Region 2 Data Usability Assessment Checklist (Appendix 1). The completed checklist will be maintained with the dataset per the records management standards (Section 4.4).

3.3. Disclaimers

All project deliverables will include a statement informing readers of the existence of this QAPP. As stated previously, any limitations in data quality will be fully disclosed. If a decision is made to use data of unknown quality, this 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 Barnegat Bay should be made based on these data until their quality can be determined.”

4. Data Reporting, Data Reduction, Data Validation, and Records Management

4.1. Data Reduction

In general, data will be manipulated as little as necessary and appropriate. A stand-alone technical companion document will be produced which will include a description of the source of the data, a description of the type of data manipulation required, and supplemental figures and tables as appropriate. The actual datasets will be available upon request. Data reduction may be required 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 (provided that adequate data are available):

- 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 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 landings will be divided by the number of fishing trips or other form of effort.
- 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 water open to shellfish harvesting)
- 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 the following.
 - o Average values for a given water quality parameter (*e.g.*, fecal coliform cell concentrations) across sampling locations within a sub-region of the Estuary (*e.g.*, Manahawkin bay) at a given date.
 - o Data may be reduced to show whether or not they comply with a given benchmark. For example, concentrations of toxic compounds in sediments may be compared to the effects range-median (ER-M) and data displayed as above or below this benchmark.

4.2. Data Validation

The reporting of accurate project data will generally be ensured by carefully conducting and clearly expressing data reduction (if and when needed) and visual inspection of data before including in final report. Specifically, we will follow the following validation process.

- A copy of every original dataset obtained from each data source will be saved as a read-only, protected file in the event the integrity of the working datasets is compromised.
- Working data will be stored in spreadsheet format and will include all relevant raw data, which will be locked for editing.
- Data manipulation will be minimized to decrease the chances of inadvertently introducing errors. If any data reduction or manipulation is needed, it will be calculated starting from the raw, protected dataset. For manual calculations, 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. For manual calculations (those not automated as part of a software package) the formulas used will be checked by the BBP Quality Assurance Officer, as will 10 percent of the calculations. If errors are encountered the percentage to be checked will increase to 25.
- Prior to inclusion in the final report, raw and/or reduced data will be displayed in graphic form and inspected to detect any anomalous values. 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, 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 the STAC and other appropriate parties. Any decision to eliminate “anomalous values” will be documented in the working data spreadsheets which will be kept as part of the project files.
- 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, and 10 percent of the data will be spot- checked by the BBP Quality Assurance Officer. If errors are encountered the percentage to be checked will increase to 25.

4.3. Deliverables

The deliverable of this project will be a report. A special edition of BBP’s newsletter will be produced based on summary findings of the final report. Both the report and the summary will be available in hard copy and online.

4.4. Records Management

The following project-related documents and records will be kept by the Barnegat Bay Program office for as long as possible and for a minimum of three years from the date of the final Financial Status Report to EPA, as stipulated by 40 CFR § 31.42:

- 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 the data and data interpretation;
- Working data spreadsheets which will document any data reduction, anomalous data removal, and other issues;
- Draft and final versions of the report;
- Minutes from any meetings held in relation with the preparation of the report, including Working Group meetings;
- List of report reviewers and their written comments;
- Files exchanged with graphic designer, printer, and other contractors; and
- Other relevant documents and materials.

5. References

Barnegat Bay National Estuary Program. 2002. Final Comprehensive Conservation and Management Plan. May 2002. <https://www.barnegatbaypartnership.org/about-us/ccmp/>

Barnegat Bay National Estuary Program. 2003. Monitoring Program Plan. May 2003. <https://www.barnegatbaypartnership.org/wp-content/uploads/2017/07/Barnegat-Bay-National-Estuary-Program-Monitoring-Program-Plan-2003.pdf>

Barnegat Bay National Estuary Program. 2005. 2005 State of the Bay Technical Report. August 2005. <https://www.barnegatbaypartnership.org/wp-content/uploads/2017/07/BBP-2005-SOTB-Report.pdf>

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Appendix 1: USEPA Region 2 Data Usability Checklist