NFWF Hurricane Sandy Coastal Resiliency Program

Quality Assurance/Quality Control Webinar

October 8, 2015

Photo Credit: NFWF

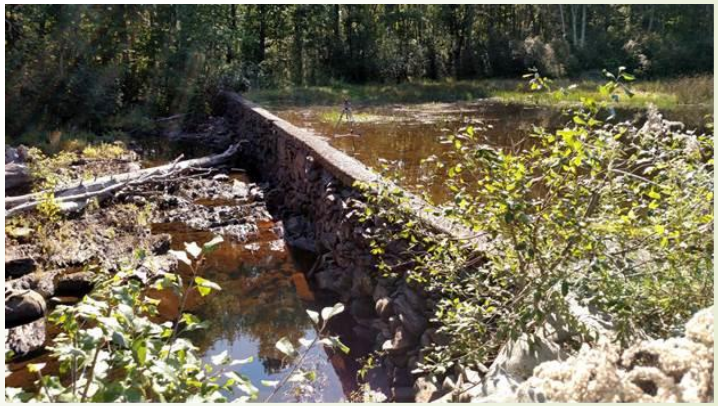

Photo Credit: NFWF

Webinar Agenda

- Who? Introductions
- What? QAPP Requirement and QA/QC
- Why? Purpose
- What? QAPP
- How? QAPP Template Step-by Step
- When? Developing Your QAPP
- Questions?

Who? Presenters

Candace Leong, NFWF

- Hurricane Sandy Coordinator
- Candace.Leong@nfwf.org
- (202) 857-0166

Jennifer Wallace, Cardno, Inc.

- QAPP Technical Assistance
- Jennifer.Wallace@cardno.com
- (703) 927-3085
  - Environmental Project Scientist with Cardno, Inc., www.cardno.com
  - National Oceanographic and Atmospheric Administration (NOAA)
  - Master Marine Policy
  - B.S. Oceanography and Environmental Science

Who? Cardno Team

- Natural Resource Damage Assessment
- Dam Removal/Passage
- Living Shorelines and Shellfish
- Green Infrastructure
- Assessment and Restoration
- Water Quality and Monitoring
- Restoration Operations and Management
- Stakeholder Outreach and Survey
- Stormwater Assessments
- Coastal Zone
- Reefs

Photo Credit: Cardno, Inc.

Who? Experience with NFWF QAPPs

- **QA/QC support to NFWF's Chesapeake Bay Stewardship Fund (CBSF) since 2011**
- **NFWF Greenpoint Community Environmental Fund**
- **Other QAPPs from Cardno**
  - **U.S. Fish and Wildlife Service**
  - **U.S. Environmental Protection Agency**

What? NFWF Hurricane Sandy Program QAPP Requirement

From Grant Agreement

- "The NFWF Subrecipient Shall complete a Quality Assurance Project Plan (QAPP) in accordance with the requirements as detailed in The Hurricane Sandy Competitive Grants Program – Quality Assurance Project Plan (QAPP) Development Guide at http://www.nfwf.org/hurricanesandy/Pages/new_grantees.aspx"
- "The QAPP shall be completed by the NFWF Subrecipient and approved by NFWF prior to any data collection activities"
- QAPPs must be approved by NFWF in order to be deemed complete

What? QA/QC

Quality Assurance (QA) – an integrated system of management activities involving planning, implementation, documentation, assessment, reporting, and quality improvement to ensure that a process, item, or service is of the type and quality needed and expected by the client

Quality Control (QC) – the overall system of technical activities that measures the attributes and performance of a process, item, or service against defined standards to verify that they meet the stated requirements established by the customer; operational techniques and activities that are used to fulfill requirements for quality

Why? Purpose

Adequate QA/QC ensures transparency, consistency, comparability, completeness, and confidence in project recommendations and conclusions

The success of a project or program depends on the quality of the data collected

Why? Purpose

- Ensures that the data collected for the characterization of environmental processes and conditions are of the *appropriate type* and *quality for their intended use* and environmental technologies *are designed, constructed* and *operated according to defined expectations*

- A QA/QC Plan provides a project-specific "blueprint" for obtaining the type and quality of environmental data needed for a specific decision or use

What? Quality Assurance Project Plan (QAPP) Development Guide

- Describes how NFWF will plan, implement, and assess the effectiveness of its quality assurance and quality control operations applied to the Hurricane Sandy Coastal Resiliency Competitive Grant Program.

- Hurricane Sandy Coastal Resiliency Competitive Grants Program awardees whose projects will **collect, analyze, or use primary and/or secondary environmental data** for the purpose of making decisions or drawing conclusions about environmental contamination and/or health outcomes be required to submit a QAPP for approval by NFWF.

What? QAPP Overview

- **Ensures that data collected, analyzed, or used in a project are**
  - **of the needed and expected quality for their desired use.**
  - **supports the project's intended application of these data**.
- Defines and assigns QA and QC responsibilities
- Describes the processes and procedures used to plan, implement, and assess the effectiveness of the quality system.

What? Environmental Data

Environmental data are any measurements or information that describe the following:

- environmental processes, location, or conditions;
- ecological or health effects and consequences; or
- the performance of environmental technology.

What? Environmental Data

Environmental data includes:

- *Primary data* - information collected directly from measurements
- *Secondary/Existing data*

  - data that were collected for other purposes or obtained from other sources

  - includes literature, industry surveys, models, data bases, and information systems

What? Environmental Data Examples

- Developing and evaluating models of environmental processes to characterize environmental processes or conditions;
- Establishing the ambient conditions in air, water, sediments, or soil, in terms of physical, chemical, or biological characteristics
- The use of the technology to generate and/or collect data (e.g., treatability and pilot studies)
- Map environmental processes and conditions (e.g., GIS);
- Developing IT and management system operations that impact the quality of the results of environmental programs

What? Environmental Data

- Primary data collection, secondary data usage, derivation of uncertainty tolerance limits for data and data processing project activities funded by NFWF must be described or referenced in QAPPs.

- **Even if secondary data comes from well-respected data sources (i.e. U.S. Census, USGS, NJ DEP, etc.) it must be evaluated for appropriate use for your project**

What? Data Quality Objectives (DQOs) – Pre QAPP

- Establishes criteria for data quality and for developing data collection designs
- Defines data collection design including

  - when to collect samples,

  - where to collect samples,

  - the acceptable level of data uncertainty and decision errors for the study, and

  - how many samples to collect

- **Ensures that the type, quantity, and quality of environmental data used in decision-making will be appropriate for the intended application**

What? QAPP Overview – Regulations and Tools

- EPA Quality Management Tools http://www.epa.gov/quality/qatools.html
- EPA Requirements for Quality Management Plans (QA/R-2) (EPA 2001, reissued 2006) (*http://www.epa.gov/quality/qs-docs/r2-final.pdf); or*
- EPA's QAPP Requirements (EPA QA R-5) (EPA 2001, reissued 2006) and Guidance (EPA QA G-5) (EPA 2002) documents for information on data-specific quality assurance activities. (*http://www.epa.gov/quality/qapps.html*).

What? QAPP Template Overview

- http://www.nfwf.org/hurricanesandy/Pages/new_grantees.aspx
- *Hurricane Sandy Coastal Resiliency Competitive Grants Program 2014 Example QAPP Template*
  1. Project Management
  2. Data Acquisition
  3. Analytical Requirements
  4. Quality Control Requirements
  5. Instrumentation and Equipment Preventative Maintenance
  6. Data Management
  7. Data Validation and Usability
  8. References

What? QAPP Overview

- *Hurricane Sandy Coastal Resiliency Competitive Grants Program 2014 Example QAPP Template*
  1. Project Management
     1. Title and Approval Sheet
     2. Contact Information
        - Who can answer QA/QC questions? Who are the project leaders?
     3. Project Objectives and Approach – from proposal
        - What is the purpose of the project?
        - What type of data are you collecting/using?
        - How will the data be used to support the project objective?
        - Description of intended Decisions and/or Conclusions
        - What is the envisioned outcome?
     4. Data Quality Objectives
        - Measurement Metrics for Data Collection
        - May need to be requested from lab
     5. Documentation and Records
        - Where are the files stored and for how long?

How? QAPP Template

- *Hurricane Sandy Coastal Resiliency Competitive Grants Program 2014 Example QAPP Template*

1. Project Management
2. **Data Acquisition**

2.1 Data Collection Information

- What are you collecting?

2.2 Sample Storage, Preservation, and Holding Times/Data Collection Documentation

- How are you collecting data?
- What tools/instruments/sample containers are you using?
- Calibration? Field documentation/data sheets?

2.3 Sample Custody and documentation

- Tracing data sheets from field collector to final holding location/Project Manager – chain of custody

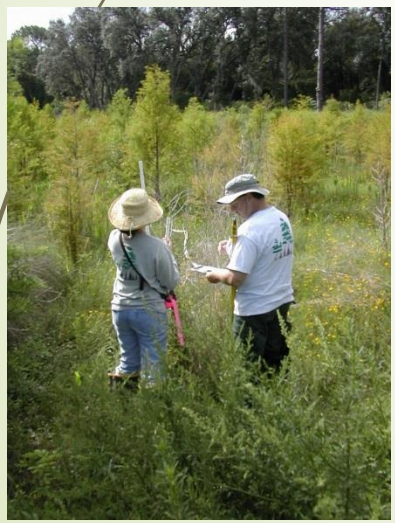

Photo Credit: Cardno, Inc.

Project Primary Data

Data Methods

- What are you collecting?
- How are you collecting it?
- Who is collecting the data and what training have they received?
- Who trained the data collectors?

Photo Credit: NFWF

Primary Data

Data Methods

- What tools/instruments are you using to collect the data?
- What standards/ procedures are you adhering to?
- Where is the collected data being stored and who is maintaining it?
- Include comment or data sheets if applicable
- Include citations/references for methods

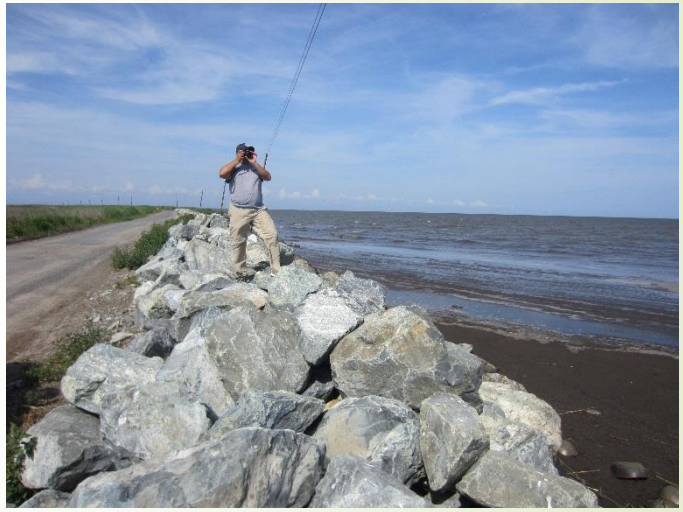

Photo Credit: NFWF

Sampling Strategy

The sampling strategy for a project needs to include:

Evidence to demonstrate that the strategy is appropriate for meeting primary project objectives,

- Identify sampling/monitoring points
- Frequency of sampling/monitoring events
- Numbers for each sample type and/or location, including QC and reserve/blank samples.
- The planned approach for evaluating project objectives

Sampling Procedures

- Site preparation needed prior to sampling/monitoring
- Calibration procedures
- Describe how cross-contamination between samples is avoided.
- Containers used for sample collection, transport, and storage for each sample type
- Method for uniquely identifying each sample
- Sample preservation methods (e.g., refrigeration, acidification, etc.)
- Holding time requirements

Primary Data

Parameter	Method	Detection Limit	Sensitivity	Precision	Accuracy	Completeness
Flow						80%
Temperature	e.g. Thermometer (-5 to 50)					80%
Dissolved Oxygen						80%
pH						80%
Turbidity						80%
Total Dissolved Solids						80%
Total Suspended Solids						80%
Chloride						80%
Ammonia						80%
Nitrate						80%
Phosphate						80%
Sulfate						80%
Toxicity						80%
Toxaphene						80%
Pyrethroids						80%

Secondary Data

Data Source

- References
  - If citing an internet source print a hard copy and include date printed
  - Create phone or email log if applicable
- Reliability – Where did the data come from? Who collected it? How? What is the margin of error on their data?
- Representation – How is this data related to your study?
- Develop a cumulative analysis of data sources
- GIS – What data was used to create maps? What was their QA/QC process? What is the precision of the data shown on the maps?

Data Application

- References
- Supporting decisions or conclusions

What? QAPP Overview

- *Hurricane Sandy Coastal Resiliency Competitive Grants Program 2014 Example QAPP Template*
  1. Project Management
  2. Data Acquisition
  3. **Analytical Requirements [as applicable]**
     - **3.1 Chemistry Analysis**
     - **3.2 Toxicity Testing**
     - **3.3 Laboratory Standards and Reagents**
     - **3.4 Sample Preparation Methods**

What? QAPP Overview

- *Hurricane Sandy Coastal Resiliency Competitive Grants Program 2014 Example QAPP Template*
  1. Project Management
  2. Data Acquisition
  3. Analytical Requirements
  4. **Quality Control Requirements**
     - **4.1 Quality Assurance Objectives**
     - **4.2 Development of Precision and Accuracy Objectives – field duplicates**
     - **4.3 Internal Quality Control**
     - **4.4 Field Quality Control – blanks – duplicates**
     - **4.5 Lab Quality Control**

What? QAPP Overview

- *Hurricane Sandy Coastal Resiliency Competitive Grants Program 2014 Example QAPP Template*

1. Project Management
2. Data Acquisition
3. Analytical Requirements [as applicable]
4. Quality Control Requirements
5. **Instrumentation and Equipment Preventative Maintenance – All field sampling equipment**

5.1 Sample Equipment Cleaning Procedures

5.2 Analytical Instrument and Equipment Testing Procedures and Corrective Actions

5.3 Instrument Calibrations and Frequency

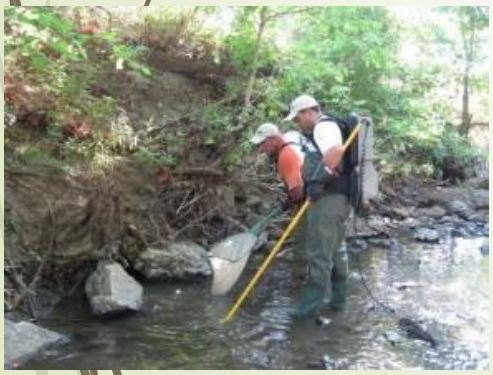

Photo Credit: Cardno, Inc.

What? QAPP Overview

- *Hurricane Sandy Coastal Resiliency Competitive Grants Program 2014 Example QAPP Template*
  1. Project Management
  2. Data Acquisition
  3. Analytical Requirements [as applicable]
  4. Quality Control Requirements
  5. Instrumentation and Equipment Preventative Maintenance
  6. **Data Management**
     - **6.1 Data Assessment Procedures**
     - **6.2 Data to be Included in QA Summary Reports**
     - **6.3 Reporting Format**

What? QAPP Overview

- *Hurricane Sandy Coastal Resiliency Competitive Grants Program 2014 Example QAPP Template*

1. Project Management
2. Data Acquisition
3. Analytical Requirements [as applicable]
4. Quality Control Requirements
5. Instrumentation and Equipment Preventative Maintenance
6. Data Management
7. **Data Validation and Usability**

7.1 Laboratory Data Review, Verification, and Reporting

7.2 Self-Assessment, Data System Audits

What? QAPP Overview

- *Hurricane Sandy Coastal Resiliency Competitive Grants Program 2014 Example QAPP Template*

1. Project Management
2. Data Acquisition
3. Analytical Requirements [as applicable]
4. Quality Control Requirements
5. Instrumentation and Equipment Preventative Maintenance
6. Data Management
7. Data Validation and Usability
8. **References**
9. **Appendices**
    - **Project Site Map(s)**
    - **Standard Operating Procedures**
    - **Field Data Sheet**
    - **QA Summary Report**

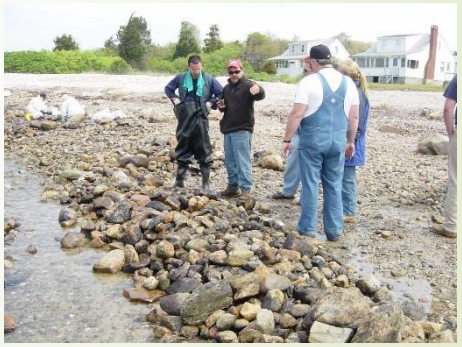

Photo Credit: Cardno, Inc.

When? QAPP Delivery

- Project QAPP must be completed and approved by NFWF prior to data collection
- QAPP Technical Assistance Provider - Jennifer Wallace

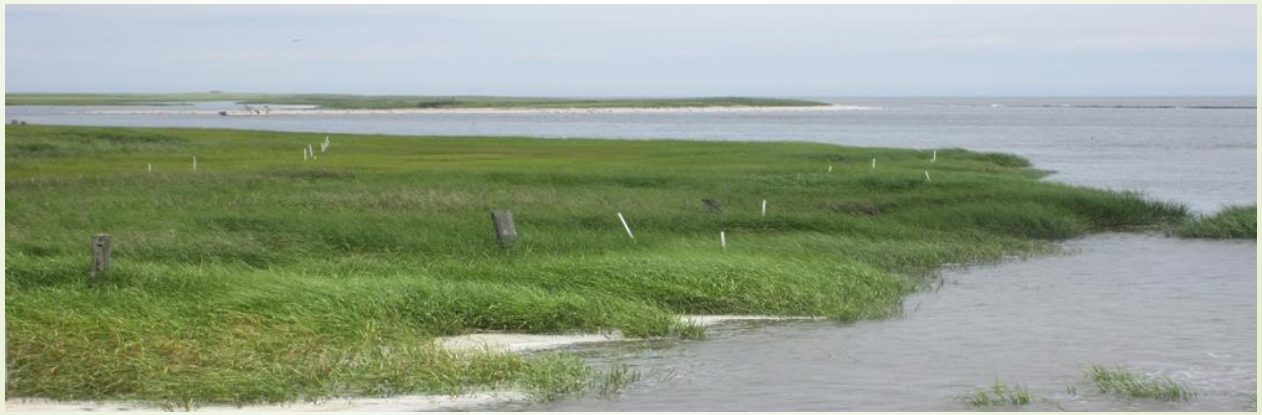

Photo Credit: NFWF

NFWF Hurricane Sandy Coastal Resiliency Program

Questions?

Candace Leong, NFWF - Hurricane Sandy Coordinator
- Candace.Leong@nfwf.org, (202) 857-0166

Jennifer Wallace, Cardno, Inc. - QAPP Technical Assistance
- Jennifer.Wallace@cardno.com, (703) 927-3085

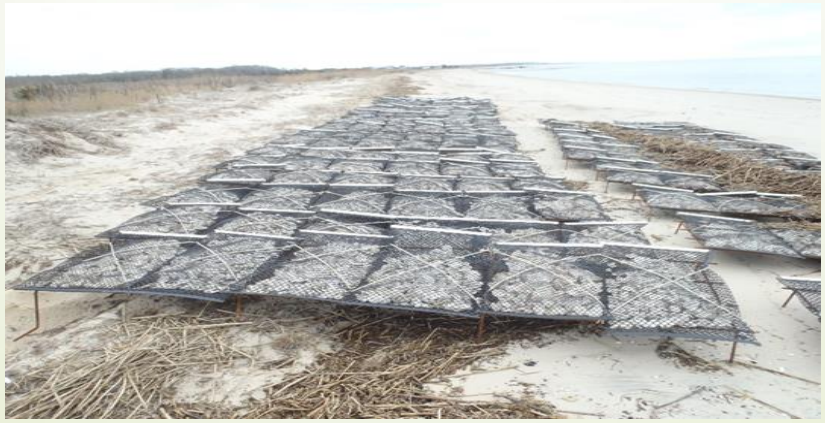

Photo Credit: NFWF