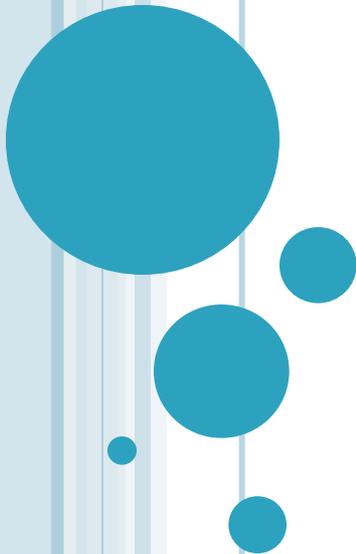




# REIMAGINING THE QUALITY ASSURANCE PROJECT PLAN





# The Value of QAPPs for Project Design

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Nora Conlon, Ph.D.

Quality Assurance Project Plan Coordinator

EPA New England - Region 1

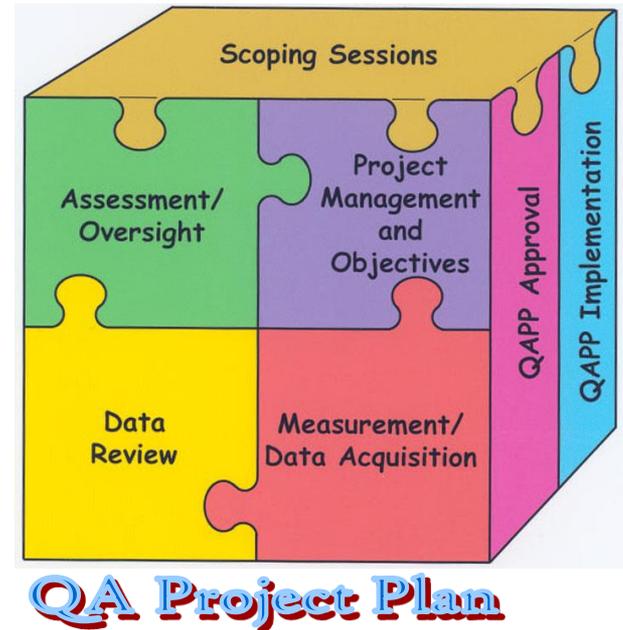
5 Post Office Square, Suite 100

Boston, MA 02109-3912

## EPA requires that all environmental data collection activities be documented in a QA Project Plan.

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- QAPPs are “blueprints” for projects that help ensure data quality
- Address **4** core groups of elements common to all environmental data collection activities
- QAPPs must be reviewed and approved before the project begins
- Approved QAPPs must be followed with any changes documented and approved

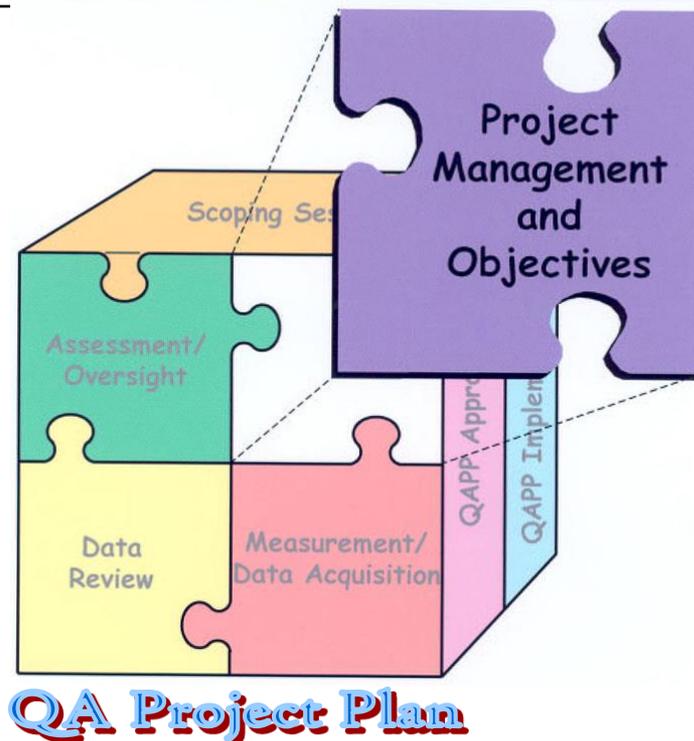


**QA Project Plan Group A describes how the project will be managed and defines project objectives.**

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### **Project organization**

- **Responsibilities, qualifications, and authorities**
  - **Communication pathways**
- **Objectives, data quality requirements, and performance criteria**
- **Environmental problem**
  - **Performance criteria used to determine whether data are good enough to make a decision**



QA Project Plan Group B describes how data will be collected and managed, and what Quality Control activities will be conducted.

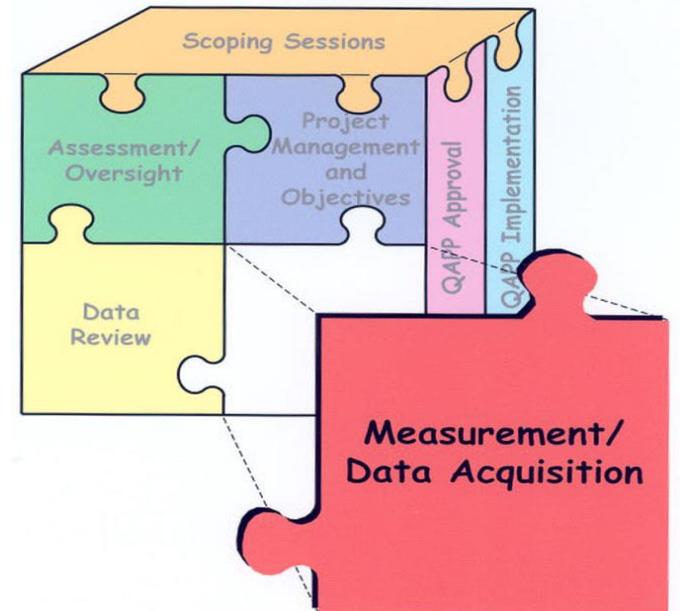
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## ○ Experimental Design and Procedures

- Design Rationale
- Procedures for data collection, documentation, and data management tasks

## ○ QC Activities

- Describes agreed upon minimum QA/QC for different types of samples



**QA Project Plan Group C describes how project activities will be overseen and assessed.**

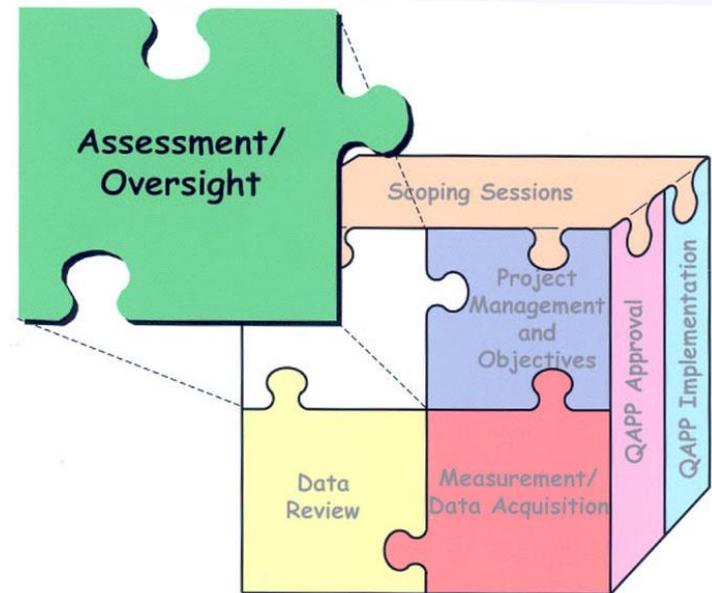
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○ **Planned assessments**

- **Type, frequency, responsibilities**
- **Field, Laboratory, and Data Audits**

○ **Deficiencies**

- **Reported and corrected**



**QA Project Plan Group D describes how data will be reviewed and evaluated for use in decision making.**

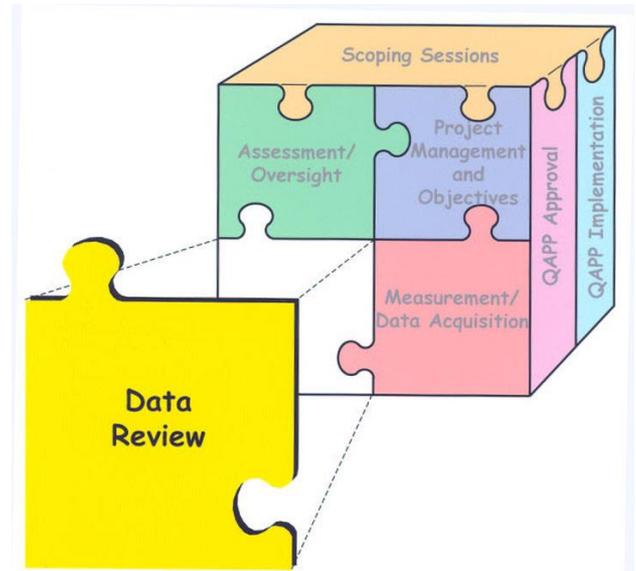
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**1. Data Review**

**Are the data good?**

**2. Usability Assessment**

**Do they answer the project question?**





## QAPP Goal

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- A well planned project captured in a document that provides confidence in the data long after any individual's participation.

# The Importance of QAPPs for Data Reliability

Kimberly Groff, Ph. D.

Massachusetts Department of Environmental Protection

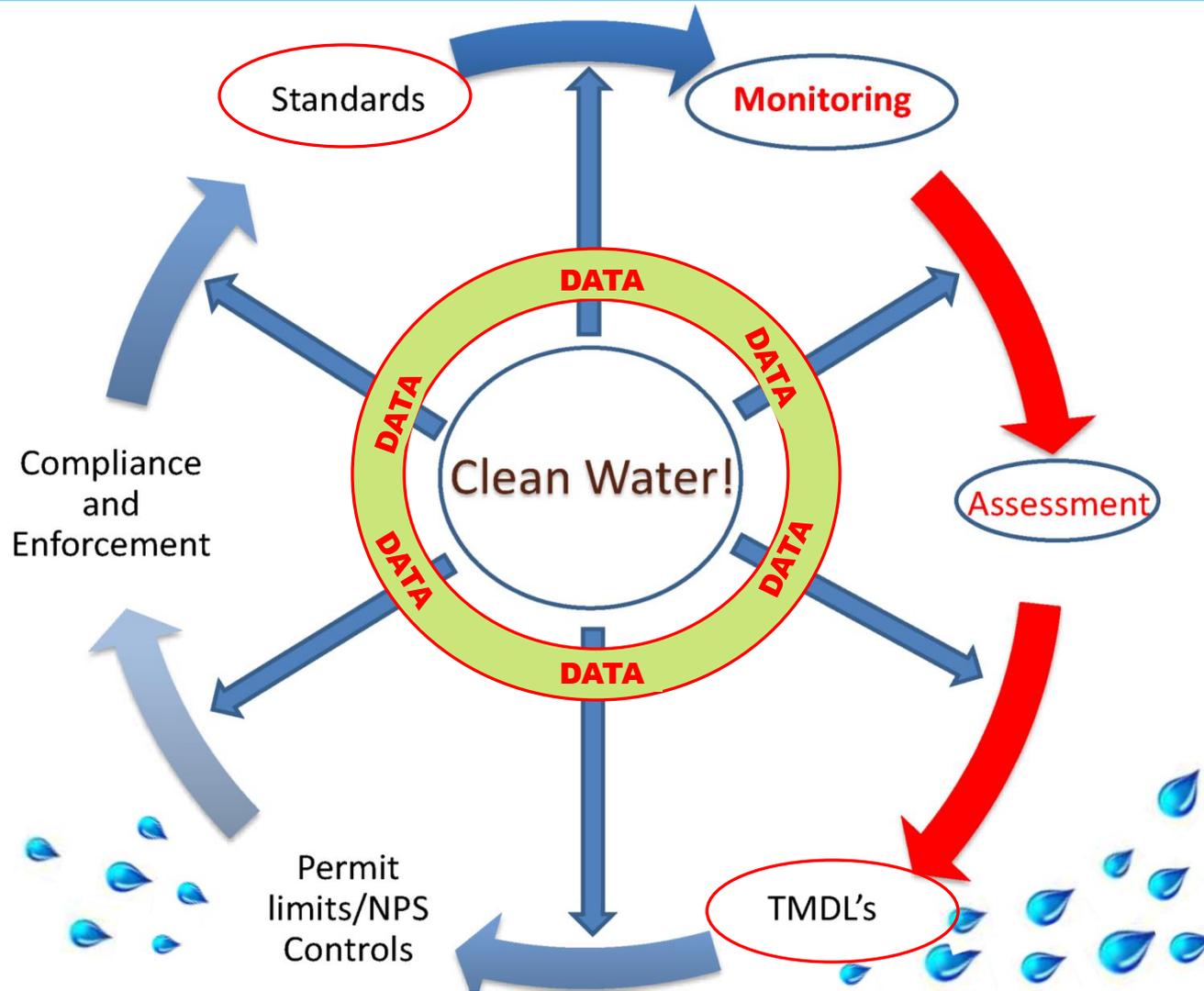
Bureau of Water Resources

Division of Watershed Management

Watershed Planning Program

Worcester, MA

# MassDEP Watershed Planning Program Scope



# The Importance of QAPPs for Data Reliability

- \* QAPPs help define the uniqueness of each project in great detail
- \* Should be an integral part of project planning
- \* Provide transparency outside your organization (how, what, where, when and why the data are being collected)
- \* QAPP guides data validation (e.g., usability determinations)

# Quality Assurance = Data Usability

Make a Plan

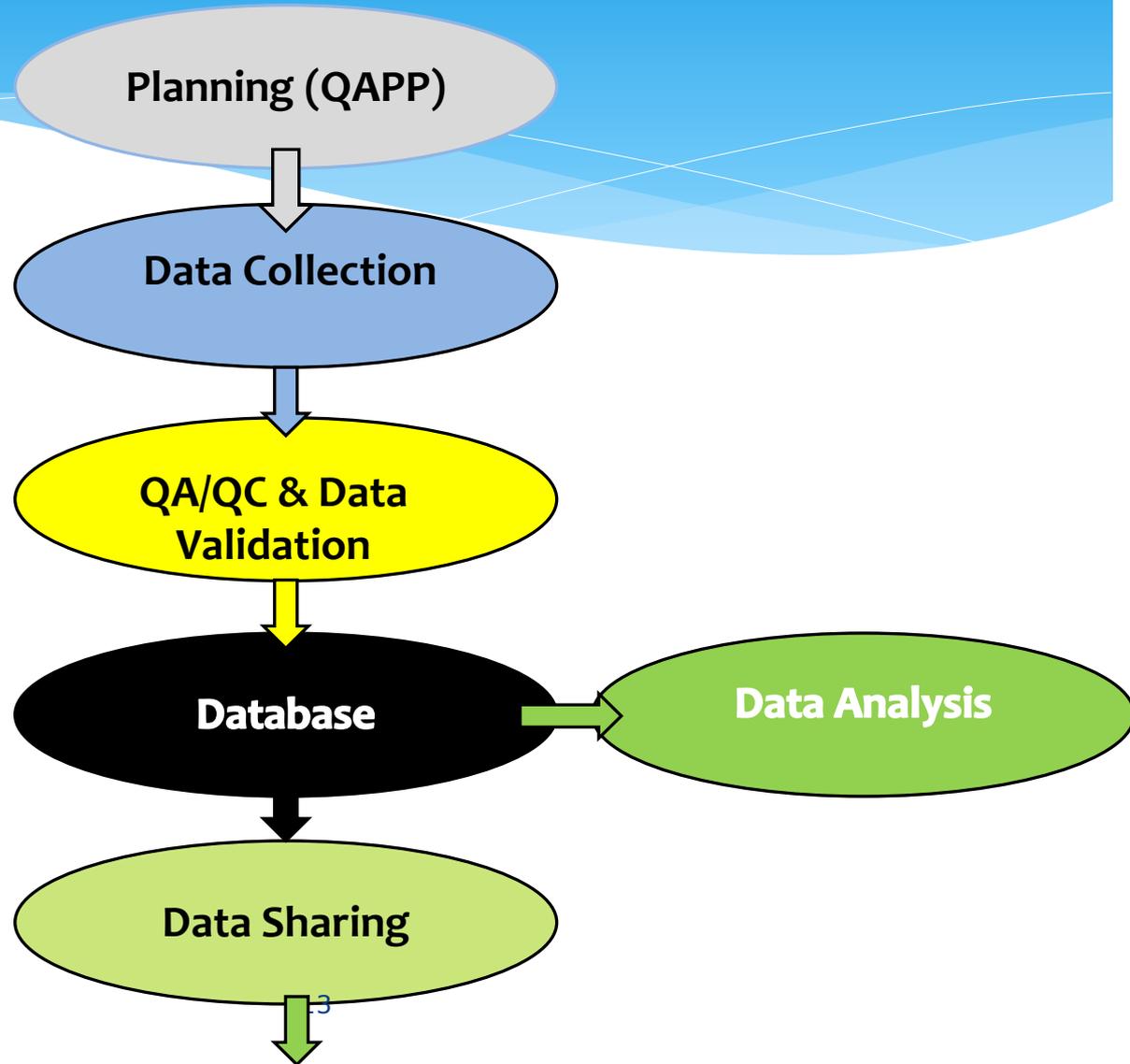
Follow the Plan

Identify What if Anything Went Wrong



- Improve and or Fix Issues
- Determine Data Usability

# Data Management Model



*Data cannot be validated without a detailed QAPP*

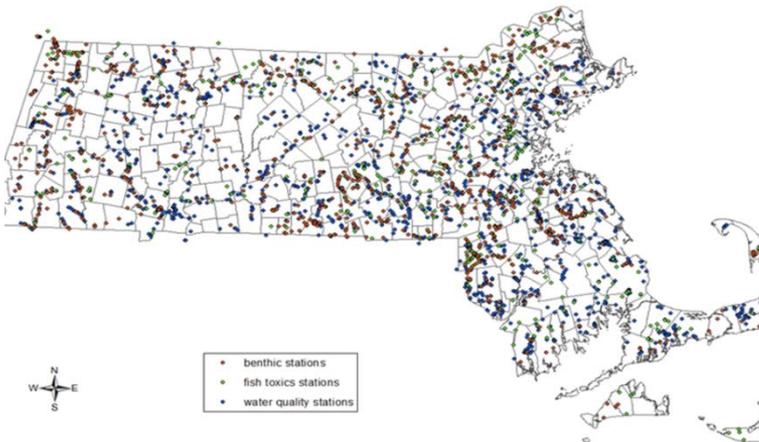
# The Importance of QAPPs for Data Reliability

- \* MassDEP's review and usability determination for surface water quality data collected from non-DEP sources (*External Data*)
- \* *Step 1 – approved QAPP*
- \* *Step 2 – Sample Analytics*
- \* *Step 3 – QC sample documentation (can you repeat measurements with precision?)*

# Why QAPP? Environmental Monitoring is Complex

- \* Data collection methods (grab, continuous)
- \* Lab analysis (instruments and methods), detections in the ppt
- \* Data Types (Biological and Chemical)

MassDEP-DWM-WPP Historical Water Quality, Benthic and Fish Toxics Sampling Stations 1994-2013



United States  
Environmental Protection  
Agency

Office of Wetlands,  
Coastal and Watersheds  
Division

EPA 841-B-96-003  
September 1996



**The Volunteer  
Monitor's Guide To**

**Quality Assurance  
Project Plans**



# Potential Issues Affecting Data Quality

## Errors that can be checked during data validation:

- \* Reporting errors, *sonde was not submerged; miscalculated results*
- \* Non-representative sampling, *variability algal counts (area and depth)*
- \* Inappropriate lab procedures, *samples not diluted ( result >10,000 ug/L when detection limit is 1 ug/L)*
- \* Failure to train field crews, *inconsistent technique*
- \* Lack of post-survey checks on probe accuracy, *in accurate measurements*
- \* Lack of field QC samples, *inability to assess accuracy and precision and perform QA*
- \* Use of unclean sample containers, *contaminants in trip blank and samples*
- \* Insufficient expert verifications, *accuracy of IDs unknown, uncertainty on location*
- \* Holding times exceeded, *laboratory results suspect*

# Data Review & Validation

## **Data Validation Decision-Making**

- \* Qualify
- \* Censor, or
- \* Accept without caveat

***(EPA guidance QA-G-8)***

# Benefits Of Quality Assurance

- \* Study plans designed to meet project and data quality objectives
- \* Standardization of procedures (SOPS), field and lab
- \* Data of known and documented quality to answer the questions of the study
- \* Training ensuring consistency among staff
- \* Data Integrity, [www.mass.gov/eea/agencies/massdep/water/watersheds/external-data-submittals-for-the-wpp.html](http://www.mass.gov/eea/agencies/massdep/water/watersheds/external-data-submittals-for-the-wpp.html)
- \* Optimize Usability of data – **Level 3 highest** - Defensible data

# Water Resource Management Trends:

- \* Solving Water quality problems expensive
- \* Requires science-driven solutions
- \* Technology allows for data sharing
- \* Increasing number of data collectors (federal, state, NGO, regulated community, private)
- \* Increasing need to leverage partnerships in data collection
- \* Collection data is expensive, get it right to optimize usability

# The Value of QAPPs in the (gulp!) Real World



**Jo Ann Muramoto, Ph.D.**  
**MassBays Regional Coordinator, Cape Cod**  
**Association to Preserve Cape Cod**  
**482 Main Street**  
**Dennis, MA 02638**





# APCC Salt Marsh Monitoring Program

## 18 sites

### Objectives:

- Obtain scientifically useful information on key indicators of salt marsh health
- Increase awareness of and stewardship for salt marshes through direct study of ecology and function
- Document the need for and effectiveness of restoration



# APCC Volunteer Herring Count Program

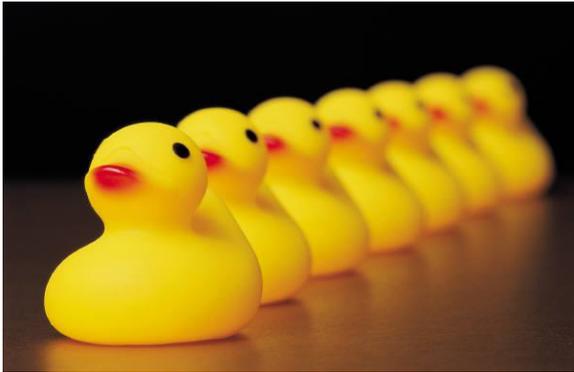
## 17 sites

### Objectives:

- Obtain scientifically valid herring count data for estimation of populations to help managers protect and manage herring fisheries
- Increase public awareness and stewardship of fish runs and aquatic habitat;
- Document the need for and effectiveness of restoration;



# Value of QAPPs



- Volunteer labor = in-kind match
- Helps in obtaining grant \$:
  - NOAA
  - MassBays
  - Massachusetts Environmental Trust
  - MA Wetland Restoration Program
  - MA Division of Ecological Restoration
  - Private foundations

Upfront investment in QAPPs saves time and \$ at the end, by defining data collection, analysis and use.

# It Takes a Village!

- **Many volunteers!**
- **Massachusetts Bays National Estuary Program**
- **Massachusetts Division of Marine Fisheries**
- **NOAA Restoration Center**
- **Massachusetts Environmental Trust**
- **Towns of Brewster, Chatham, Dennis, Eastham, Falmouth, Harwich, Mashpee, Orleans, Sandwich, Wellfleet, and Yarmouth**
- **Gulf of Maine Council**
  
- **APCC members and donors**
- **Bass River Rod & Gun Club, Yarmouth**
- **Cape Cod Cooperative Extension / WHOI Sea Grant**
- **Cape Cod Salties**
- **Coonamessett River Trust, Falmouth**
- **Dennis Conservation Trust, Dennis**
- **Dolphin Trust**
- **Eddy Foundation of Brewster**
- **Friends of Herring River, Wellfleet**
- **Friendship Fund**
- **Harwich Conservation Trust, Harwich**
- **North and South Rivers Watershed Association**
- **Orleans Waterways and Shellfish Advisory Committee and Herring Monitors**
- **Prospect Hill Foundation**
- **Red Lily Pond Project Association**
- **River Herring Warden Network, Cape Cod Commercial Fishermen's Alliance**
- **Stony Brook Herring Count Volunteers**
- **Many others**

