

Request for Approval under the “Generic Clearance for Citizen Science and Crowdsourcing Projects” (OMB Control Number: 2080-0083)

TITLE OF INFORMATION COLLECTION:

Using Citizen Scientists to Measure Coastal Acidification in Estuaries

PURPOSE:

This project provides high quality, and more affordable, new technology to citizen scientist organizations to measure variability of coastal acidification among estuaries in New England. Organizations will measure pH and collect water samples for total alkalinity. We will also collaborate with a complementary citizen science project organized by the Northeast Coastal Acidification Network (NECAN).

NEED AND AUTHORITY FOR COLLECTION:

Data collected under the auspices of the Clean Water Act. For example, CWA §104, authorizes EPA to encourage, cooperate with and render technical services to individuals, including the general public, to promote the coordination and acceleration of demonstrations, studies and training relating to the causes, effects, prevention and elimination of water pollution. CWA §320, which establishes the National Estuary Program, also authorizes research and monitoring activities, and CWA §304, authorizes research to determine factors that impact aquatic life. This project is coordinating with research conducted by ORD under the research theme SSWR (sustainable water resources).

USES OF RESULTING DATA:

Results from measurements of these parameters will help estimate levels of carbonate saturation in coastal waters at selected estuaries.

DATA COLLECTION METHODS:

Participants will collect water samples from docks and piers using bottles and a protocol provided by EPA Region 1. The samples will be delivered to EPA Region 1 Regional Laboratory for analysis of Total Alkalinity. Participants will also record observations of pH in the same water sample using a meter provided by EPA Region 1. Participants will also record observations of temperature, salinity and oxygen using their own water quality sensors. EPA Region 1 will provide a data form to record observations. We expect that the training will begin around July 2019, initial samples will be collected in August and September of 2019, and most samples will be collected in 2020. The project will wrap up in the fall of 2020.

PARTICIPANT UNIVERSE:

Category of Respondent	No. of Respondents	Number of responses per respondent	Participation Time per response	Burden Hours
Training of volunteers, including citizen science organization staff	10 to 20	1	8 hours	80 to 160
Data collection by volunteers, including citizen science organization staff	10 to 20	5 to 15	1 to 3 hours	50 to 900
Totals	10 to 20			130 to 1060

AGENCY COST: The estimated annual cost to the Federal government is \$50,000 for the internal Regional-State Innovation Project grant, plus additional costs for purchase of equipment and supplies totaling an additional \$10,000. Finally, we estimate 0.5 FTE for two EPA staff, costing approximately \$100,000. Total: \$160,000

STATISTICAL ANALYSIS:

EPA Region 1 will compile the data, and conduct the statistical analyses of the data. We will calculate standard population statistics, such as mean, median and measures of variability. Analysis of variance will be employed to evaluate factors that contribute to the variability of results, including estuary, temperature, salinity, and other factors.

DATA QUALITY ASSESSMENT PROCEDURES:

EPA Region 1 will review data to evaluate whether data quality objectives were met and evaluate whether data quality indicators (for example, precision, accuracy, sensitivity, completeness) performance goals and were met. EPA Region 1 will develop and approve a QAPP for this project. We will be assisted by on-site contractors (Techlaw, under the ESAT contract), as well as colleagues at AED Narragansett.

ADMINISTRATION OF THE INSTRUMENT: (Check all that apply)

- Web-based or Social Media
- Telephone
- In-person
- Mail
- Other, Explain

The instrument is a pH sensor, linked to a data analyzer that records observations. The system does not automatically log data. As the project progresses, however, we may be able to connect a tablet or other computer to the data analyzer and log data, depending on funding and technical capacity. All water quality measurements (described above) will be recorded on paper data sheets. Total Alkalinity will be measured in the EPA Region 1 laboratory. The ESAT contractors will assist with development of the sampling protocols.

INSTRUMENT: See attached draft of the submission template and datasheet on the following page. Final versions will include EPA Form Numbers, the OMB Control Number and expiration date, and a Burden Statement.

CONTACT NAME: Matthew Liebman **EMAIL:** liebman.matt@epa.gov

Coastal Acidification Network 2019 Field Datasheet

Name of organization _____

Sampler name(s) _____

Site information

Date _____ Time (24 hours) _____

Station _____

Site Description _____

Latitude _____ Longitude _____

Weather/Conditions _____

Sample Water Depth (m) _____

Organization data (if not filled out on separate organization sheet)

Sonde used: (YSI model number, e.g.) _____ Calibrated? _____

Observed tidal stage (flooding, ebbing, slack high or low) _____

Temperature (°C) _____ Salinity (ppt, or psu) _____

Dissolved oxygen (mg/l) _____ pH _____

Chlorophyll *a* (if available) _____ Secchi depth (m) _____

Sonde Data logged? (yes/no) _____ File name _____

Coastal Acidification Network data

Durafet reading pH units (report to .001) _____

Durafet reading period *time start* _____ *time end* _____

Total Alkalinity bottle sample label ID _____

QC sample? (duplicate, blank) _____ Chain of custody form filled out? _____

COMMENTS