



Developing a Framework for Use of External Water Quality Monitoring Data for SCDHEC

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Background

- Clean Water Act- attain a level of water quality that “provides for the protection and propagation of fish, shellfish, and wildlife, and provides for recreation in and on the water”
 - Purpose of Monitoring
- Utilize untapped monitoring resource

Overview

- Goals of the model framework
- Varying framework structures
 - National Pollutant Discharge Elimination System
 - Citizen Monitoring
 - Tiered Data
 - Non-Tiered Data
 - Certification
 - Model Variables
- Water Quality Monitoring Council



http://tripcart.typepad.com/tripcart_the_blog/2007/06/picture_of_the__16.html



Goals of the Framework

- Obtain water quality data from outside of the current monitoring framework
- Utilize groups that are already monitoring the water
- Put this data to use in a manner valuable to the Department
 - Regulatory applications

Data Uses

- Regulatory purposes
 - 303(d) listing
 - TMDL development
 - Setting permit limits (NPDES)
 - Water quality modeling
- Non-regulatory purposes
 - Baseline condition documentation
 - Assessing BMP
 - Public education and awareness purposes



National Pollutant Discharge Elimination System, NPDES

- Requires permits for water pollution discharges
 - Monitor effluent
 - May require instream monitoring
 - Ensure water quality standard is not exceeded





North Carolina's Monitoring Coalition Program

- NPDES permits require instream monitoring
- Permittees form a voluntary coalition
 - Create MOA with Department
 - Permit-based instream monitoring not required
- Monitoring locations determined in conjunction with the Department

K. Stecker, Personal Communication, February 2, 2011



North Carolina's Monitoring Coalition Program

- Beneficial to the permittees as well as the Department
 - Department receives water quality data
 - Permittees save money
 - Obtain data important to the permittees
- Implementing in South Carolina
 - Would require adding instream monitoring on permits

K. Stecker, Personal Communication, February 2, 2011



Citizen Monitoring

- Consist of
 - Academia
 - Watershed associations
 - Riverkeepers
 - Conservancy groups
 - Concerned citizen groups
- Work in conjunction with SCDHEC
 - Quality Assurance needs



Implementing Organization

- SCDHEC
 - Implemented and funded within the Department
- Organization(s) outside of Department
 - Academia
 - **Greatest Potential**
 - Conservancy Groups
 - NGOs (among others)
 - Responsible for overseeing and implementing program
 - SCDHEC's role



Quality Assurance

- Quality Assurance Project Plan, QAPP
 - Ensure integrity of collected data
 - Includes:
 - Quality objectives, locations to be sampled, sample parameters, any limits on data usage
 - SCDHEC approval is necessary prior to sampling

SC DHE:C Office of Quality Assurance- Project Plans. SCDHEC. 3 Mar. 2010 Web 12 Feb 2011.

<www.dhec.sc.gov/environment/envserv/qapp.htm>

Training – One Approach

- Train the trainer
 - How and why of monitoring
 - Proficiency test
- Annual initial training
- Annual refresher course
- Can be held at a geographically accessible location



http://www.westchestergov.com/CVMP/photogallery/CVMP_5.htm



Staff

- One full time and one part time staff member
 - Collaborate with the citizen groups
 - Data Management
 - Create and update QA methods manual
 - Coordinate training sessions
- Funding option
 - Grant research
 - Charity/fundraising events



Substructure One: Data Tiering

- Tiers 1-3
 - 1: Introductory
 - 2: Additional sampling methods
 - 3: Approved methodologies
- Only third tier data will be accepted for regulatory purposes
 - QAPP
- Tier one and two data can be accepted for non regulatory purposes



Substructure One: Tiered Training

- Tier 1
 - Half day in class
 - Half day in field
- Tier 2
 - Additional day of training
 - Additional monitoring methods
- Tier 3
 - Additional day of training
 - Emphasis on proper methods and QA
 - Sampling in the same manner as SCDHEC employees

Data Tiers

Tier	Uses	QA Needs
1	Public education and awareness	No DHEC approved QAPP needed, yet certain methodologies are encouraged No need for maintenance of calibration logs, current SOPs, or Chain Of Custody
2	Track performance of TMDL implementation Raise red flags for follow up by a SCDHEC employee Baseline creation	Utilize SCDEHC approved sampling methodologies There may exist deviations; such as sampling frequency or utilizing a laboratory that is not certified No need for maintenance of calibration logs, current SOPs, or Chain Of Custody
3	Listing of water on the 303(d) list Use with TMDL development Used for WQ modeling	SCDHEC pre-approved QAPP Utilization of a certified laboratory Calibration logs, current SOPs, and proper Chain Of Custody must be maintained



Substructure Two: Non-Tiering System

- Only data collected with a QAPP will be accepted
- Training will be to the level needed to collect regulatory data
 - Same as SCDHEC employee
- Only citizen groups with the goal of meeting these requirements will participate in the program



Pros and Cons of Data Tiering

Pros

- Citizen involvement
 - Less pressure on volunteers
 - More flexibility of commitment
- Additional uses of the data
- Ensure experienced volunteers

Cons

- Data cannot be directly compared between tiers
- Less dedicated volunteers
- Volunteers take responsibilities too lightly
- Goes against SCDHEC's true purpose of program



Substructure Three: Certification

- Volunteer are certified to collect data for differing parameters
 1. Introduction/Transparency methods
 2. Chemistry and nutrient sampling
 3. Physical parameters
 4. Biological monitoring
- All certifications are for regulatory quality data



Substructure Three: Pros and Cons of Certification

Pros

- Citizen involvement
- Data can be used for regulatory purposes
- Comparable data
- Ensure experienced volunteers

Cons

- Not becoming certified past the introductory certification
- More complicated system

Model Variables



- Organizational division
 - Region
 - Water body type
- Umbrella QAPP for the program
- Funding
 - Clean Water Act
 - USDA Grants
 - NRCS
 - SC Grants
- Data submittal format

Water Quality Monitoring Council

- Collaboration organization
 - Potential to implementing volunteer training sessions
 - Communication network
 - Leveraging resource and knowledge
 - Work towards uniformity
 - Training and SOPs
 - Data sharing network
- Help to organize program





Water Quality Monitoring Council Structure

- Composed
 - Federal, state, and local agencies, conservation groups, academia, and concerned citizen groups
- Formal Vs Non Formal
- Funding
 - Grants
 - Membership fees/donations
- Database can be used to avoid duplicate efforts

Advice

- Program structure is dynamic
- Create good working relationship with citizen groups
- Work to address skepticism
- Budgeting issues

http://extension.usu.edu/waterquality/htm/citizen_monitoring/



Deliverable

- Document of the Potential Frameworks
 - Two major model structures
 - Three citizen monitoring sub structures
 - Pros and Cons
 - Variables of each
 - Water Quality Monitoring Council structure
- Listing of potentially interested organizations

References

Personal Communications with:

Lynn Sisk

Jon Marshack

Shakoora Azimi-Gaylan

Barb Horn

Mike Beauchene

John Schneider

Ed Whereat

Gail Sloan

Elizabeth Booth

Harold Harbert

Jason Pappani

Gregg Good

Jody Arthur

Mary Skopec

Amy Stewart

Dave Courtemanch

Scott Williams

Matt Stover

Dan Boward

Arthur Johnson

Gary Kohlhepp

Laurie Sovell

Natalie Segrest

John Ford

Stephen Fernandez

Robert Ray

Ken Edwardson

Sarah Steiner

Ted Walsh

Leslie McGeorge

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Tony Shaw

Rodney Kime

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Shannon Minerich

Jim Harris

Neil Kamman

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David Waterstreet

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- *United States. 39° 16' 13.73" N 97° 17' 03.70" W. Google Earth. March 24, 2011.*
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