

# Participatory Science Data Management Case Studies

*(TU) Eastern Shale Gas Monitoring Program (SGMP)*



# Trout Unlimited (TU) Eastern Shale Gas Monitoring Program (SGMP)

*Improving Data Management for Participatory Science*

TU's Shale Gas Monitoring Program uses traditional paper field data sheets and templates on the CitSci.org platform to gather and manage water quality data collected by chapter members and other volunteers in impacted states, followed by extensive QA checks.

## **Project Overview & Goals**

Trout Unlimited (TU) is a nationwide non-government organization made up of over 380 chapters dedicated to bringing together communities across America to engage in the work of repairing and renewing rivers, streams and other waters and cold-water fish populations. The Shale Gas Monitoring Program (SGMP) began in Pennsylvania in 2010 as concerns about the environmental impact of shale gas extraction and pipeline development increased. The program expanded into West Virginia and Virginia in 2013 in partnership with the West Virginia Rivers Coalition and Wild Virginia. SGMP sees its role as that of a technical resource to help local communities meet their objectives while aggregating data for broader applicability. SGMP uses CitSci.org, a global platform for supporting participatory science (PS) hosted by the Natural Resource Ecology Lab at Colorado State University, as its data management platform.

## **Role of Project Participants**

Data collection is performed by volunteers from the TU chapters in the states impacted by shale gas extraction and by partner organizations in certain geographic areas. Participants are provided with initial and annual training, sensors, lab kits and other supplies. There is also a heavy visual observation component for documenting

erosion, sedimentation, failing controls, etc. The volunteers may also record qualitative descriptions of some aspects such as streamflow, precipitation, and pebble counts. Some groups perform their own analysis using CitSci tools, but most of the quality control, analysis, and reporting is done by SGMP staff.

## **Data Management**

Traditional data collection techniques are used. The volunteers record the results on paper field data sheets and then enter the information into matching templates via CitSci. SGMP staff then extract the data in CSV and perform quality control. Information on the data sheets is entered bi-weekly or monthly. In addition, there are quality steps taken by SGMP staff before data are provided to users outside of the CitSci system.

## **Data Use**

The main avenue for data distribution is CitSci. The data is open and can be downloaded. Some users request the data from SGMP staff. The data are used by

**Issue:**  
Water quality

**Location:**  
Pennsylvania,  
West Virginia, and  
Virginia

**Tools:**  
Traditional field  
data and  
CitSci.org platform

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state agencies for reporting and deployment of inspectors, by researchers, and by partners and groups for advocacy purposes. Individual volunteers may use the data as part of permit application comments or for their own analysis.

### *Issues and Lessons Learned*

Technical issues revolve around equipment and calibration solution issues. Much has been done to solve these problems and to streamline the data entry process even though it remains a more traditional approach. Non-technical issues focus on volunteer retention, which can become an issue when there has been a commitment for a long-term baseline collection. Single-day Snapshot events are very successful in gathering a lot of data quickly for a particular location. Adequate training with both classroom and hands-on portions is important. Active technical support is important for data quality and volunteer retention. Proactive engagement and responsive technical support are key to engaging and retaining volunteers.

### *Outcomes and Success Factors*

Since 2010, TU has trained more than 1,600 volunteers. Project participants have completed more than 12,000 sampling trips to more than 1,000 sites throughout Pennsylvania, West Virginia, and Virginia. They are actively engaged in establishing baseline watershed conditions in streams where future shale gas or pipeline development is likely. Volunteers have identified pollution events and notified appropriate authorities, resulting in swifter action that has limited ecosystem damage.

SGMP attributes its success to having a purpose that resonated with volunteers from the beginning. Engaged partners provide

on-the-ground personnel in places where SGMP is not located. Full-time staff provide focus and additional trained staff have helped to expand SGMP's capacity. Standard formats and publicly accessible data are foundational.

### *Opportunities*

- Coordination is needed if groups try to standardize PS in a particular area such as water or air.
- Adequate funding to staff these programs.
- Standardization of processes at the appropriate level (state or region)—led by partners who have reach in the area—in collaboration with state/federal/tribes to provide buy-in.
- More partners need to be involved to ensure sustainability while continuing to meet local needs and the interests of volunteers.
- A portal to identify partners for a geographic area by issue of concern would be useful, if the portal is used and maintained.