

CHAPTER 3 – PURPOSES FOR VOLUNTEER WATERSHED MONITORING

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Monitoring Purposes*

Why do you want to go through all the trouble of designing a study, convincing people to participate and others to use the information, recruiting and training volunteers (and getting trained yourself), doing the sampling and measurements, managing the data, interpreting the data, writing up your story and presenting it to decision-makers and doing most of this over and over again every year? This is not a rhetorical question, and we are not trying to discourage you. The point is that most successful monitoring programs have a clear purpose to keep participants focused and motivated.

This chapter describes why it's important to have a purpose, who might use the information you produce, how data quality relates to monitoring purpose and four purposes for volunteer monitoring in Pennsylvania.

A. The Importance of Having a Purpose

A monitoring purpose expresses your intention for the information you gather. We suggest that having a clear monitoring purpose is important for two main reasons:

- ◆ A purpose helps you focus and choose among the myriad types of information you could collect.
- ◆ Data collected without a purpose is difficult to turn into information.

B. Users and Uses of Watershed Monitoring Data

Data *uses* and data *users* are different things that are closely tied together. A data *use* is an action or program that achieves an end with the help of the information you collect. Data *users* are the people and institutions who make the decisions and/or take the actions.

Examples of data uses:

- ◆ Promote stewardship by raising awareness of the connection between lawn and garden maintenance and water quality;
- ◆ Develop a nonpoint source remediation plan; and/or
- ◆ Determine if a public beach is safe for swimming.
- ◆ A watershed group producing a brochure that demonstrates the connection or homeowners changing their practices;
- ◆ A municipal planning board or regional planning agency; and/or

- ◆ The town health officer, the bathers, a watershed association and the general public.

Your challenge is to determine which decision-makers are important enough to convince, and then figure out what they need to know in order to be convinced.

C. Data Quality

Data quality refers to the level of rigor and sensitivity of your methods and the time, expense and quality assurance required to accomplish your purpose. While quality assurance (QA) is described in some detail in chapter 2 and Appendix 4, here we'll just explain two terms: internal and external QA. Internal QA refers to measures you take at your own lab or with your samplers to assure data quality. External QA refers to the use of an outside lab to check the accuracy and precision of your results, or inspection by a team of people outside your program.

Data quality requirements typically increase with the sophistication of the users and uses.

D. DEP Citizens Volunteer Monitoring Program Monitoring Purposes

According to recent guidance for effective state monitoring programs¹, there are five general purposes for monitoring:

- 1) Define present watershed conditions.
- 2) Characterize existing and emerging problems by type, magnitude and geographic extent.
- 3) Provide information to help design strategies to reduce and control pollution and to manage land and water.
- 4) Provide information for evaluating the effectiveness of reduction, control and management strategies.
- 5) Reveal trends in watershed quality.

While these are useful general purposes for all types of monitoring, DEP's Citizens Volunteer Monitoring Program suggests four specific purposes for volunteer monitoring in Pennsylvania:

Purpose A: Education and Awareness to promote watershed stewardship, raise awareness of watersheds as living communities, give participants experience in scientific inquiry and improve the awareness of local officials of the impacts of their decisions (including cumulative impacts) on the watershed.

This purpose means that the information collected will be used to increase people's understanding and appreciation of the way watersheds work. The goal is that they will act on this understanding to minimize their impacts on the integrity of the ecosystem.

Purpose B: Baseline data collection for trend analysis, problem and positive attribute identification and screening.

This purpose means that the information collected will be used at the community or watershed level to track trends over a relatively long period of time, to see if the ecosystem and human uses of it are improving, staying the same or getting worse. Or, the information will be used to quickly identify problems in order to assess the need for

¹ Yoder, 1997.

some corrective action or further study. Conversely, the information can be used to identify successes or community assets to enhance human uses of the watershed.

Purpose C: Community and/or Watershed Level Assessment of current conditions and the effectiveness of solutions, development of community-level nonpoint source remediation plans.

This purpose means that the information will be used at the community or watershed level to assess the current condition of the watershed in order to identify the nature and extent of problems (impairments of ecological functions and human uses). This may lead to the development of a nonpoint source remediation plan by communities. Finally, this same information, gathered over time, will be used to assess the effectiveness of the plan, or specific measures, in restoring watershed integrity and human uses.

Purpose D: State and Federal Agency Assessment of current conditions and the effectiveness of solutions. The data collected supplements agency data collection and is used by research entities. The focus for DEP use will be on assessment and planning, rather than enforcement actions that require strict protocols and chain-of-custody procedures.

This purpose means that the information will be used by DEP in conjunction with its own data, as part of its biennial assessment for Congress of the state of the state's waters (under section 305(b) of the federal Clean Water Act). Impaired waters that do not support their designated uses (e.g. swimming, fishing, irrigation) go on a special list² that requires the development of plans to correct the problems. Though volunteer data may be used by DEP to place waters on this list, which might ultimately lead to some enforcement action, the volunteer data itself will not be used directly in these types of actions nor will it be collected expressly for use in enforcement actions by DEP.



²The “303(d)” list (named for the relevant section of the Clean Water Act) also known as the “impaired waters list.”

In the following table, we break each purpose down into who, what, and quality needed to achieve it:

Purpose	Data User	Data Use	Quality Needed
Purpose A: Community Education and Awareness	<ul style="list-style-type: none"> • participants • students • watershed residents • local decision-makers 	<ul style="list-style-type: none"> • promote stewardship • raise their level of understanding of watersheds as living communities 	<ul style="list-style-type: none"> • low level of rigor, but use sound science • a wide variety of study designs and are acceptable • quality assurance (QA) optional
Purpose B: Baseline Data Collection	<ul style="list-style-type: none"> • participants • watershed residents • local decision-makers • landowners 	<ul style="list-style-type: none"> • gain understanding of how conditions are changing • screen for and identify problems and positive attributes 	<ul style="list-style-type: none"> • low to medium level of rigor • a variety of study designs is acceptable • internal QA desirable
Purpose C: Community and/or Watershed Level Assessment	<ul style="list-style-type: none"> • participants • landowners • local decision-makers 	<ul style="list-style-type: none"> • assess current conditions • develop community nonpoint source remediation plans • assess effectiveness of solutions 	<ul style="list-style-type: none"> • medium level of rigor • data needs to reliably detect changes over time and space • study design is focused on pollution sources, may be prescribed by state agency • internal QA required, external QA optional
Purpose D: State and Federal Agency Assessment	<ul style="list-style-type: none"> • participants • state and federal agency decision-makers 	<ul style="list-style-type: none"> • assess current conditions and impairments • assess effectiveness of solutions • supplement agency data collection • research 	<ul style="list-style-type: none"> • medium to high level of rigor • for certain types of data and uses, quality needs to be comparable to that produced by agencies • study design and methods need to be equivalent to those used by agencies • internal and external QA required