The Stream Visual Assessment Protocol – from Data Collection to Data Use

Presented by Katie Buckley, RCE Water Resources Program

January 30, 2007

Musconetcong River Watershed Kick Off Meeting

Introduction

• www.water.rutgers.edu
• The Water Resources Team:
  ➢ Christopher C. Obropta, Ph.D., P.E., Assistant Extension Specialist and Assistant Professor
  ➢ 2 Senior Project Managers, 5 Program Associates, 1 US EPA Liaison
  ➢ PhD Candidates, Graduate, and Undergraduate Students involved in Bioenvironmental Engineering and Environmental Science
The USDA in 1998 developed a protocol for assessing the health of streams. Under this protocol, a “grade” from 1 to 10 is given to stream reaches in most of the 15 categories. Additional information including ditches and pipes leading to the stream, the stream’s geographic location, a sketch of the site, and ideas for improvements, is also entered into a data form.

Why SVAP?

• This is an inexpensive way to begin collecting data on your local streams.
• Collects valuable information that can be used as a comparison of past conditions or for future assessments of the stream.
• Begins the process of photo-inventorying the characteristics within the watershed.
• Data gathered as a result of these efforts may lead to identifying problems and solutions within the watershed.
• This is a community-based approach to getting to know your water resources and the impact that land use has within a drainage area.
What influences stream integrity?

- Chemical Variables
  - DO
  - Temp
  - Nutrients
  - pH
- Biotic Factors
  - Reproduction
  - Predation
- Energy Source
  - Sunlight
  - Nutrients
- Seasonal Cycles
- Flow Regime
  - Stormwater
  - Land Use
- Habitat Structure
  - Canopy
  - Stability
  - Channel Morphology
- Instream Cover
- Substrate
  - Bank Stability
- Velocity

(Adapted from USDA, 1998)

Assessment Categories

- Channel Condition
- Hydrologic Alteration
- Riparian Zone
- Bank Stability
- Water Appearance
- Nutrient Enrichment
- Barriers to Fish Movement
- Instream Fish Cover
- Pools
- Invertebrate Habitat
- Canopy Cover
- Manure Presence
- Salinity
- Riffle Embeddedness
- Macroinvertebrates Observed

Building on the Past – Providing Solutions for the Future
Riparian Zone

- The width of the natural vegetation zone from the edge of the active channel out onto the floodplain.
- What to look for: compare the width of the riparian zone with the width of the stream channel. The width should only include vegetation that is natural and diverse.

Riparian Zone Examples

1. Filtering function is severely compromised.

7. Natural vegetation extends between half the active channel width and one active channel width on both sides.
Water Appearance

- Compares turbidity, color, and other visual characteristics.
- Consider depth in this characterization – use depths that objects are visible at only if the stream is deep enough to evaluate.
- Allow a stream to “settle” before scoring this parameter.

Examples

10: Very clear, or clear but tea-colored; no oil sheen on surface; no noticeable film on submerged rocks.

2: Turbid or muddy appearance most of the time; slow moving water appears pea-green to bright green; some surface scum; submerged objects covered with green film.
Establishing A Volunteer SVAP Monitoring Program

- Recommended materials and strategies:
  - Access to at least one GPS unit and digital camera
  - 1.5 hours of classroom training and group sessions in the field to discuss and score two locations (featuring different characteristics)
  - Dedicated volunteers who don’t mind getting their feet wet and able to work in pairs
  - Homeowner willingness to participate (may wish to contact homeowners at the start of the project rather than later)

- Recommended materials and strategies (cont’d):
  - Written account of what activity the volunteer is performing and contact information to be handed out to any homeowners who request more information
  - A platform for decision-making for your volunteers – such as cold water fishery or warm water fishery. Be consistent!
  - If available, define a pristine site to compare all sites to. We have already found reference reaches for the upland and lowland Musconetcong River and tributaries.
Riparian Buffer Projects

Low riparian scores: increase steambank stability, diversity, and habitat with a shoreline restoration project using native plants. Improve this project with goose management measures such as fencing and “no mow zones”.

Potential Funding Sources: Five Star Challenge Grants; NFWF Bring Back the Natives; CREP

Bank Stability Projects

Low bank stability scores: increase steambank stability and further reduce potential for erosion and lower water appearance and riffle embeddedness scores through structural solutions such as a timber crib wall.

Potential Funding Sources: FishAmerica & NOAA, especially if anadromous fish are local to the watershed.
RCE Water Resources Program & SVAP

• The RCE Water Resources Program uses the Stream Visual Assessment Protocol for many projects.
• This allows our team to get out in the field and observe the stream characteristics and identify land use and stormwater impacts.
• It also allows for easy data sorting and organization across many stream miles.
• An online data entry system saves time and can be exported directly into GIS.

Questions

For more information, please check our website at www.water.rutgers.edu.

Also, you may contact me by email at kbuckley@envsci.rutgers.edu.