ENVM 651
Watershed Planning Management

Session 4: Identifying Problems in a Watershed
Define and Identify Problems in a Watershed

Remember that the goal of watershed management is to plan and work toward an environmentally and economically healthy watershed that benefits all who have a stake in it.

By now you and your partners have taken this into consideration in the development of the purpose statement for your group's watershed efforts.

Once you and your partners have pulled together as much information as possible about your watershed, you're ready to start putting together a plan.
Identify Problems in Watershed

- Remember, your group's efforts will be based on the best available assessment of the natural, economic and social features of your watershed.
- It's unrealistic to hope to have all the information you'll need. Be sure to recognize, note and weigh missing information throughout the planning process.
- Another key point to remember is that the stages in watershed management planning are not always done in one rigid order. They change depending on situations.
- The group will go back and forth between identifying concerns/problems, seeking data, analyzing data and establishing objectives.
Identify Problems

• Your watershed partnership will need to identify and address concerns about the water and other natural resource systems, local economy and social structure.
• Some concerns will be based on perceptions and others will be based on science. Since it is difficult to separate perceptual from scientific concerns, all concerns need to be addressed by the group.
• Sometimes what you and/or your neighbor may think is a problem (concern), isn't a natural resource issue and thus, needs to be addressed in another way.
• Or when researching perceived problems, you may discover a new problem that the group will want to address.
Identify Problems

• When developing the list of concerns to be explored, be sure everyone with a stake in the watershed is involved from the beginning.

• Envision future generations using the natural resources within the watershed. You may want to check with your state water quality agency to determine the designated water uses for your watershed.
Identify Problems

• Consider major economic forces:
  – Who are the major employers?
  – Where are they located?
  – What are the trends?
  – How can your group affect their future?
  – How can your group impact the economic future of the watershed?
  – How do the economic, social and natural resources impact each other?
  – What is the role of education and media now and in the future?
Identify problems

• During this phase all concerns, regardless how minor, need to be identified.
• Everyone needs to list their concerns. This list should be compiled for all to see. It's important that debate on the merits of the concerns be held for later discussion.
• The objective is to get all concerns on paper at this point.
Identify Problems

• Note that problems can be general or site-specific

• General problem should be identified first and site-specific areas can be identified through citizen surveys and validated through field reconnaissance surveys

• Combine some problems and classify problems as primary, secondary, and tertiary through field reconnaissance surveys

• Some typical watershed-related problems are given in Table 9.1 in the textbook
Seek and analyze data

• Seek information and data about the concerns through
  – a team of advisors (technical team) or
  – subcommittee to research the concern and report back to the larger group or
  – use consultants

• Seek and use any existing monitoring data. This can serve as a baseline for comparison later.

• Data availability and quality varies considerably depending on the extent of past monitoring efforts and resources.
Prioritize challenges/opportunities

- Since there are not enough funds or time to address all potential watershed management needs:
  - Priorities must be set that target efforts to the most critical problems/opportunities.
- This is why your group will need to strive for consensus on prioritizing which problems/opportunities to pursue.
Establish criteria for prioritizing problems:

• **Ability to influence change.** Ask yourselves if there is anything the group can do to influence the changes needed to overcome the challenges.

• **Delay between actions and results.** Checking with your advisory team, try to determine the amount of time between when changes occur and when results can be seen. For example, it may take decades to see results from changes on the land that ultimately affect a deep aquifer, but changes near a stream bank may quickly affect the quality of the stream's water.

• **Willingness to change.** Ask yourselves if the reasons are strong enough to motivate and if those who will need to change would be willing to do so.

• **Cost/benefit ratio.** Are the costs going to outweigh the benefits or are the benefits going to outweigh the costs?
Determine critical areas

• Critical areas have the greatest impact and can be done by
  – looking at the landscape e.g. near stream
  – major water uses such as water supply locations, recreational areas and fragile wildlife habitats
  – or the group may identify areas with vulnerable characteristics (unstable streambanks or shallow groundwater)
Determine critical areas

- Water quality in critical areas may be affected by
  - "point source" e.g. from a pipe or ditch connected to an industrial facility, storm sewer or feedlots, or
  - "nonpoint source" discharges from agricultural lands.

- The goal in determining critical areas is to match resource needs with targeted efforts to get the greatest benefits. These will depend on the watershed and the consensus of the partners.
Challenges and Opportunities

- A challenge is an obstacle that prevents positive changes on parts of society, the economy, or the environment.
- An opportunity is a condition that can be created to make a positive effect on society, the economy, or the environment.
- Document both the resource being affected and the existing condition (quantity or quality).
- Describe damage in both economic ($20,000 annual loss) and resource terms (30 acres or 750 fish).
- The statement should also include who, how, where and what is being affected.
Develop Objectives

- Once your problems/opportunities have been defined and documented, establishing objectives is relatively easy.
- Problems often translate into goals and objectives.
- Goals and objectives need to be defined early and be revised as new information and/or problems are uncovered.
- The main purpose for establishing objectives is to clarify the goals of the group.
Setting Goals and Objectives

- Goals define what the group wants to achieve
- Objectives describe how the group will achieve the goals
Setting Goals and Objectives involves:

• Identifying and evaluating solutions to each of the problems

• Identifying appropriate indicators of success

• Setting goals based on measurable indicators

• Setting objectives by selecting the controls and actions required to meet each goal
Components of an Objectives:

- Changes that need to occur
- Who will make the changes
- Incentives/means that will be provided to facilitate the change
- The means to evaluate the outcomes
Remember these points when establishing objectives

• Consider all views of stakeholders and reach consensus on watershed goals.
• Existing legal constraints need to be considered.
• Describe the objective in measurable terms (i.e. Increase number of wild turkeys by 25% or reduce soil erosion on forested land by 60%).
• Recognize the objective may change later as more information becomes available.
  – E.g., an initial objective "increase trout population." Later your group will have the necessary information to refine the objective to "increase trout population by 225%".
• Keep objectives acceptable and achievable. Partners need to ask themselves if they can live with the objective and if they think it is achievable.
Objective prioritization should be based on:

- Magnitude of environmental improvements to be made
- Budgetary constraints
- Social and economic factors
Reading assignments

• Chapter 9 in textbook

• Chapters 5 and 6 in “Watershed Protection: A Project Focus EPA 841-R-95-004, Office of Water (4503F) at: