Photo by E.C. Stanley

Section 9A: Ways of knowing: Strategies for acquiring local knowledge

There are many opportunities for members of community watershed groups to become involved in gathering, interpreting, and using data. Standard secondary data on populations, industrial and agricultural uses, climate, soil classifications and land formations, social and economic conditions are available for building multi-layered knowledge of the watershed. Members can participate in water monitoring, land use, and habitat assessments. In addition, community watershed groups can assist in collecting data on knowledge, attitudes, and beliefs about the watershed as well as economic and social measurements that are not available in standard data sets.

There are several ways that watershed groups can expand their knowledge: participatory research, collaboration with established researchers, and funding of research to answer specific questions. Most groups will use more than one strategy.

Participatory research is a process whereby some of the group members learn appropriate techniques to gather data on questions the group has about particular aspects of the watershed. The group members formulate the questions, then seek to gather data that can answer those questions. Once data are collected, they work together to make sense of it. Findings often lead to other questions and additional data collection. The group turns their data into information the watershed group can use in planning and collective actions. Members often feel they can "trust" their data because they know and understand the conditions under which it is gathered. Participatory research has the distinct attribute of involving residents in ways that build in-depth understanding and confidence to direct change for the watershed. But there are cautions. Care needs to be taken so that an adversarial relationship is not created with interest groups and perhaps also with those who are in technical and scientific roles. Watershed physics are complex and participant led research can be flawed and vulnerable to criticism if it is not done rigorously or if it does not use reliable methods. Once the group formulates research questions, they should seek advice on accepted methods for collecting different kinds of data.

A second or "middle" ground approach is for watershed group members to learn to do certain technical and data gathering activities **in collaboration** with or under the guidance of credible and established researchers. Water monitoring and nature mapping training offer members standardized methods for increasing local knowledge (see pp. 7-20, 7-29). Thus, the group builds a local and regional database for themselves and others to use.

A third strategy is to identify the questions that need answering and then commission the research from a **credible vender**. If the group is well established, interest is high, and the research product is delivered in a timely fashion, then information from the contracted research will likely be used in meaningful ways. If the research questions are highly technical, then this may be an advisable approach. If the interest is less technical, or if the council is at a more exploratory stage, then the other approaches may be quite viable and less costly. Participatory research may be easier to implement for understanding human context issues than hydrologic processes.

Applying usable and reliable information must be one cornerstone of citizen led watershed planning. Although essential, information for making decisions is not limited to hydrological and geophysical characteristics and trends of the watershed. Also important are knowing and understanding the social, cultural, economic, and political dynamics of residents and other stakeholders. Fortunately, indicators for certain of these characteristics may already be available and readily assembled. Other data, however, will likely need to be generated from residents and stakeholders themselves.

In this section we discuss several alternative ways of knowing. Knowledge is built through listening and learning about what is happening in the watershed. In the context of physical and biological change, this may require sophisticated equipment for measuring baseline conditions and tracking changes. In the social context, much can be learned by "listening" to residents themselves. Several "listening" alternatives build on advantages of the participatory research approach, especially if there is interest in understanding stakeholder knowledge, values, attitudes, motivations, commitments, actions, and behaviors helpful in addressing watershed issues. The watershed planning group should recognize there is a variety of evidence individuals find helpful and acceptable for knowing and understanding, and, subsequently, determining what becomes important factors when they act.

Similar to other kinds of problem solving, generating systematic feedback can be broken into parts. The time-tested parts of the lead in newspaper reporting can be helpful, namely addressing "who," "what," "when," "where," "why" and "how." These considerations are addressed below, although in a slightly rearranged order.

Why listen to watershed residents and stakeholders?

"Listening" or generating systematic feedback provides at least two principle functions, both of which are necessary for effective watershed planning. One is, of course, the new information that will be considered in the planning deliberations. The second is residents will more likely follow and be committed to solutions they have helped form. Planning and watershed problem solving are never solely a matter of knowing the physical conditions and processes and then finding engineering solutions. While knowing the physical conditions and engineering alternatives are central ingredients to watershed problem solving, policy decisions also involve choices that are tempered by understanding and incorporating human factors. It is rare that an analysis of physical conditions and engineering alternatives will yield an unequivocal single best course of action. Rather, a range of actions is often feasible, and individually many actions can make at least an incremental contribution to maintaining sound stewardship, reducing risks, or ameliorating emerging problems. Although most residents will not possess highly technical information, they often do possess an indigenous understanding and history of the watershed as well as the kinds of solutions that will be accepted from social, economic, and political perspectives.

What to listen for?

"Why" a watershed group listens to residents and stakeholders will determine to a great extent "what" to listen for. Thus, one of the first decisions in planning for citizen input, is determining for what purpose the information will be used. For example, is the reason to:

? generate ideas for possible solutions and courses of action?

? document land use or profile certain conditions and behaviors?

? assess values and attitudes?

? inform as well as listen?

? generate interest, motivation, and involvement?

? recruit resources and solicit commitment to action?

In a stakeholder or citizen-driven initiative to address watershed issues, each of the above interests is a legitimate reason to conduct information gathering activities, but no single technique or approach will yield full information about all. Consequently, the group must focus and prioritize what information will be most strategic for planning. Then they can match what they want to know with the right data collection techniques.

Choosing the information and knowledge that will have greatest interest and priority will also help in selecting whom to listen to. For example, survey methodology is not an especially efficient technique to generate new and creative ideas, but is very helpful to document people's beliefs, attitudes and actions. Town meetings may allow for informing as well as listening and, perhaps, generating ideas for potential and even creative solutions. But, information from town meetings will not provide a statistical basis to profile socio-political factors, let alone current land use or agricultural practices.

A pitfall to avoid is trying to gather too much information, or gathering information that covers too wide a spectrum. Although broad-based information is helpful for "perspective," most citizen led groups cannot afford the luxury of time and resources it takes to generate everything that potentially may be useful.

Once what information is to be used for is decided upon, then specific information to be generated can be addressed. Groups often find it helpful to differentiate the kind of information they are seeking in order to better frame their questions and information gathering. Again, do not lose sight of what the group wants to know.

Beliefs are people's perceptions about the world and how it works. They are statements about what is regarded as true and not true. Beliefs arise from a number of sources, ranging from scientific fact, systematic (or unsystematic) observation, learned behavior, or unverified assumptions. When a verification technique is attached to beliefs, then beliefs are regarded as knowledge. People are often assumed to act rationally based on their beliefs; therefore, knowing resident and stakeholder perceptions about conditions, causes, and solutions can be strong predictors regarding future behaviors. Assessing beliefs and knowledge can also be useful in determining the information and misinformation that may be present within the watershed setting. Also, a fairly typical technique where substitute courses of action are being considered is to offer "what if" or future alternative courses of action. This is sometimes called projective techniques, and taps respondents' perceptions of hypothetical situations.

Values are deep seated and pervasive ideas or orientations about what is important and right or wrong. In the realm of watershed management the strength of one's endorsement of such concepts as environmental stewardship, sustainability, natural resource preservation, property rights, and economic development provide a framework from which individuals organize their lives and interpret new ideas, courses of action or social change. Within a watershed, these may be shared among residents or they may differ greatly. Often a person's values are organized consistently, but, at least externally, sometimes they may appear inherently at odds with one another.

Attitudes are usually regarded as an assessment or subjective evaluation about a more concrete or object, idea, or policy. Additionally, an attitude is a sensing or a feeling response of good/bad or positive/negative rather than an analytical objective or factual analysis. For example, one may believe regulation of livestock operations is an effective policy to control pollution in a watershed, but oppose or have a negative attitude about the policy because of one's values regarding property rights.

Figure 9.1. Beliefs, values, and attitudes

Understanding the distinction between beliefs, values, and attitudes is important in how questions are asked as well as interpreting the meaning of answers to those questions.

Another arena of inquiry is behavior. Asking residents to report on activities is a typical approach to measure behavior. Often, questions relate to past or current actions. In the world of watershed planning, questions could be about behaviors ranging from what individuals do that contribute to adverse conditions to their level of civic involvement to address water quality issues in the watershed.

To whom do you listen?

When generating local knowledge about a watershed, deciding whom to listen to is a critical decision. Earlier we referred to residents and stakeholders as reference groups for watershed planning. The meaning and identity of residents is reasonably self-evident as is their interest in the future of the watershed. Identifying other stakeholders may be more involved, but fundamentally we are referring to persons who have a fairly direct and vested interest in the environmental health of the watershed and perhaps to the broader region. Quite obviously, residents are a stakeholder subset. Additionally, there are those who are affected by the health of the watershed such as persons whose drinking water comes from the watershed. Also, persons who own land or businesses within the watershed but do not reside there will be affected by policies affecting the watershed; thus, they are an important stakeholder group as well.

Typically, in agricultural watersheds there are many landowners, farm operators, and other investors who do not reside in the watershed but who could be substantially affected by consequences of new projects and policies. Not surprisingly, their perceptions of problems and assessments of alternative solutions may differ from those who have less economic investment but may be more personally subjected to consequences of poor management practices of the watershed.

Identifying and segmenting these stakeholder groups is important. Because their interests are tempered by their connections relative to the watershed, it is instructive to understand local knowledge and how it is similar or different among stakeholder groups.

How do you listen?

There are a number of useful formats from which to listen and learn from residents and stakeholders and generate information. There is no one best method. Depending upon one's objectives, resources, and constraints, each of several formats has advantages and disadvantages. Several years ago, the Wisconsin Cooperative Extension Service offered "fifty-one" techniques to generate information from citizens (Figure 9.2).

Nonetheless, most planning groups rely upon a few that are more popular. Among these are public record, survey, focus group, participant observation, and community forum.

advisory committee	direct mail	ombudsman
alternative plan assistance	display models or drawings	open-door policy
arbitration and mediation	drop-in center	planning balance sheet
behavioral observation	field trip	priority-setting committee
call-in radio show	fishbowl planning	public hearings
charette	focused group interviews	public information program
citizen employment	game simulation	public meetings
citizen honoraria	group dynamics	referendum
citizen review board	hot line	representation on boards
citizen training	interactive cable TV	short conference
community-sponsored meeting	issue ballots in newspaper	staff reports
computer-based techniques	key contacts	surveys
coordinator	mail analysis	task force
day-to-day public contacts	media analysis	telephone networks
delphi	neighborhood planning council	value analysis
demonstration project	neighborhood sponsored meetings	videotaped meetings
design-in	nominal group process	workshops

Hariett Moyer, University of Wisconsin Extension, unpublished.

Figure 9.2. Fifty-one techniques to obtain information and increase citizen knowledge

Be aware, people use different ways to know and understand the world around them. Information generated from these different techniques will be more credible and persuasive for some people than for others. In part, but not entirely, believability is influenced by the inherent advantages and disadvantages the different techniques have for the particular knowledge that is being sought.

Community forum or town meeting is a hallmark of public policy deliberation. It has the advantage that everyone has the opportunity to “be heard.” This watershed manual uses the community forum at the beginning of the process to involve citizens. Sections 2 and 4 offer guidance for preparing a community meeting. Community forums have an advantage of being inexpensive and relatively easy to organize and administer. Input comes from a wide range of people if proper planning is conducted. Community forums can elicit positive public relations as well as planning benefits. Conversely, motivating residents to attend can be difficult when there has not been high concern or a “critical” event. Some individuals may choose to use the forum as a “gripe” session or promote “vested” interest if the forum is not planned and executed well. A few individuals can dominate and intimidate the conversation at a community forum and subvert the goals of the organizers. The community forum is a quick and relatively inexpensive way to tap the sentiments of the community. However, the generalizability of what is heard is problematic. It does, however, allow the feedback and deliberation to be conducted without the criticism of “back room” dealing.

Another model that could be adapted is the widely known “national issues forum” approach developed by the Kettering Foundation. Information is available on the Internet at: http://www.nifi.org/issues.html. Also, in Iowa, a recently developed coalition of individuals and organizations has formed a partnership to assist with public deliberation forums. A contact is David Wilkinson; his email address is: dwilkinson@isea.org.

Public records is a technique of searching and assembling information that has been archived by other agencies for other purposes. These may be secondary data such as Census Bureau and soil classification, or newspaper, zoning and planning actions and court records. Because of the public nature of the information, it can be accessed and used to inform the watershed group about a number of social, economic, political, and land use patterns within the watershed.

Increasingly this information is electronically stored in readily retrievable formats. However, often these data are gathered and stored for geographical units or political entities other than watersheds. Consequently, approximating watershed boundaries can be problematic, and making the interpolations necessary to approximate the watershed may be at times quite crude.

For example, the smallest unit of census information is the census tract, and several tracts may need to be aggregated to construct an approximation of the watershed boundary. Other information may be available at a county boundary level, and thus have major influencing factors, especially if a major population base or point-source pollution is outside the watershed boundary. Although some county based data points may be publicly available at a site-specific level, to convert those indicators to a site within the watershed can be tedious, time-consuming, expensive, and will often fall short of reasonable cost-benefit considerations.

Public record information is largely objective indicators and do not tap such social indicators as beliefs, values, and attitudes. Public records have an advantage in that often the data include the full universe rather than a sample. Additionally, it is unobtrusive as the information has already been collected and stored for other purposes (and at someone else’s expense). There is a flip side to the unobtrusiveness, however. That is, it doesn’t involve citizens in seeking their ideas and assessments. Like other methods of generating new knowledge, there may be a role for volunteers to help assemble and information for the planning group.

Survey is a technique that generates new information from residents and stakeholders on a fairly broad range of indicators useful to understand dynamics occurring within the watershed as well as assessing courses of action and likely acceptance or rejection of those ideas. If appropriate sampling techniques are used, survey also has the advantage of making generalizations to the larger universe of the watershed within known degrees of error. But conducting a survey can be a major undertaking and could involve tasks requiring some technical assistance. For example, writing questions that elicit answers that reliably measure a person's behavior or attitude is a skilled craft. Likewise, developing sampling frames from which to select persons to be part of the survey need to be systematic and follow statistical procedures. The tabulation of answers can be tedious and time consuming. Finally, interpreting the meaning of the statistical distribution can be challenging for persons not trained in this empirical research.

Several options for collecting survey data are available. Self-administered mail questionnaires are popular and less expensive than telephone or personal interviews, but they yield a less than complete response rate, sometimes making validity of the findings suspect. Web based surveys are becoming more popular. They have a cost advantage both in the data collection and in the automatic tabulations that are usually built-in. However, respondents must have access to and be comfortable with the Internet. Unfortunately, at the present time web based surveys are not appropriate for most household based studies, but are becoming a viable alternative for certain stakeholder groups. If you feel a web survey might work for you, the University of Virginia has a very user-friendly web-based service. For a modest fee ($125), you can easily develop a set of questions, provide your respondents a web address, and get instant tabulations. The contact URL is: http://www.virginia.edu/insideuva/1999/33/hotlinks.html.

If you are contemplating a more conventional survey, the University of Illinois has an extraordinarily helpful website for planning a survey. It includes steps in conducting a survey, help for writing questions, and more technical assistance in determining sample size. The assistance is no cost to the user and may be found at: http://www.communitydevelopment.uiuc.edu/toolbox/.

Focus groups have been an increasingly popular means to generate local information. Currently a wide variety of group-based feedback is conducted under the label "focus group." Unlike survey and experimental methodologies, there are fewer "standards" associated with the focus group technique. Although most focus group procedures lack the statistical base for generalization that surveys offer, if done well focus groups can generate credible and useful information. Focus groups have a special advantage of spontaneity and interaction among participants. In addition, they are more likely to generate new ideas and solutions, whereas survey techniques are stronger in validating what is proposed on the questionnaire form. Focus groups are often arranged with 8-12 participants, and a conversation is organized for a period of 45 minutes to 1-½ hours. A small set of prearranged questions are posed by a facilitator who guides the conversation by making sure everyone participates and appropriate probes are asked in order to establish meaning, detail, and clarity in answers. Some guidelines for focus groups stress the importance of sameness in how the questions and probes are asked and how the conversation is conducted. Other guidelines are more relaxed and stress the importance of eliciting ideas for understanding. It is, however, important that the facilitator not have an "agenda," be neutral, and be regarded as neutral by participants. Further, the facilitator should not naive about watershed and water quality issues.

Usually participants from a single stakeholder group are invited to participate in a focus group. Homogeneity rather than heterogeneity among participants is usually but not always recommended. There may be conscious reasons for bringing together stakeholders with different viewpoints into a single focus group. If so, these assemblies potentially require greater facilitation skill. In total, 8 to 12 groups may be arranged over a period of a few days or a few weeks. Sometimes, the focus group session may be recorded and transcribed and detailed content analysis conducted. Other times, a recorder will write ideas as they are offered and this becomes the "data" for summarization. Often there is a convergence of ideas, or at least major themes that emerge among the various focus groups. This pattern gives credibility to the process and provides the watershed group assurance in instituting courses of action consistent with these response patterns.

The St. Paul, Minnesota-based *Management Assistance Program for Nonprofits* gives more details on organizing and conducting focus groups. The website address is: http://www.mapnp.org/library/evaluatn/focusgrp.htm.

Participant observation is a time-tested methodology in the social sciences. It usually relies upon a single observer, or perhaps an observer and an assistant, who spends large amounts of time interacting on location with those being studied, in this case watershed residents and stakeholders. The researcher conducts in depth observations and conversations with persons in the course of living (and working) within the watershed. That participant observer may also spend time collecting data from public records, archived reports, newspaper articles, etc. Although time consuming, the trained and neutral observer captures a wealth of information, often in convincing detail. Participant observation studies simultaneously have the disadvantage of potential bias because the information is collected and interpreted through the eyes of a single individual, but it has the advantage of its richness of detail unmet by other methods.

When to listen

Watershed groups need to listen and gather information throughout the watershed group development process. As the group learns about their watershed, they will ask more in-depth and detailed questions and become more skilled in generating knowledge that can guide management decisions and actions. The importance of dialogue, both through the more deliberate and structured techniques discussed above as well as ongoing day-to-day conversations, must be open and transparent. This cannot be over-emphasized, and it calls to attention a corollary of listening and learning. The watershed group needs to communicate back to residents and stakeholders regarding what is being heard. This takes patience and persistence, but no other activity has a higher cost-benefit ratio for a citizen led watershed planning process.

Where to listen

"Where to listen" rounds out the six criteria for gathering data and learning about the watershed. The lesson is simply to make sure the feedback opportunities are as convenient as possible. That is, schedule meetings at times of the year, days of the week, hour of the day, and location that will invite the greatest participation. Today, the personal and professional lives of many households are such that civic involvement comes at a sacrifice and premium with other legitimate demands of everyday living. Although completing a questionnaire, attending a town meeting, or participating in a focus group seems minimal, it is out of the routine for many persons and may hold less salience to many residents than to dedicated watershed group members.