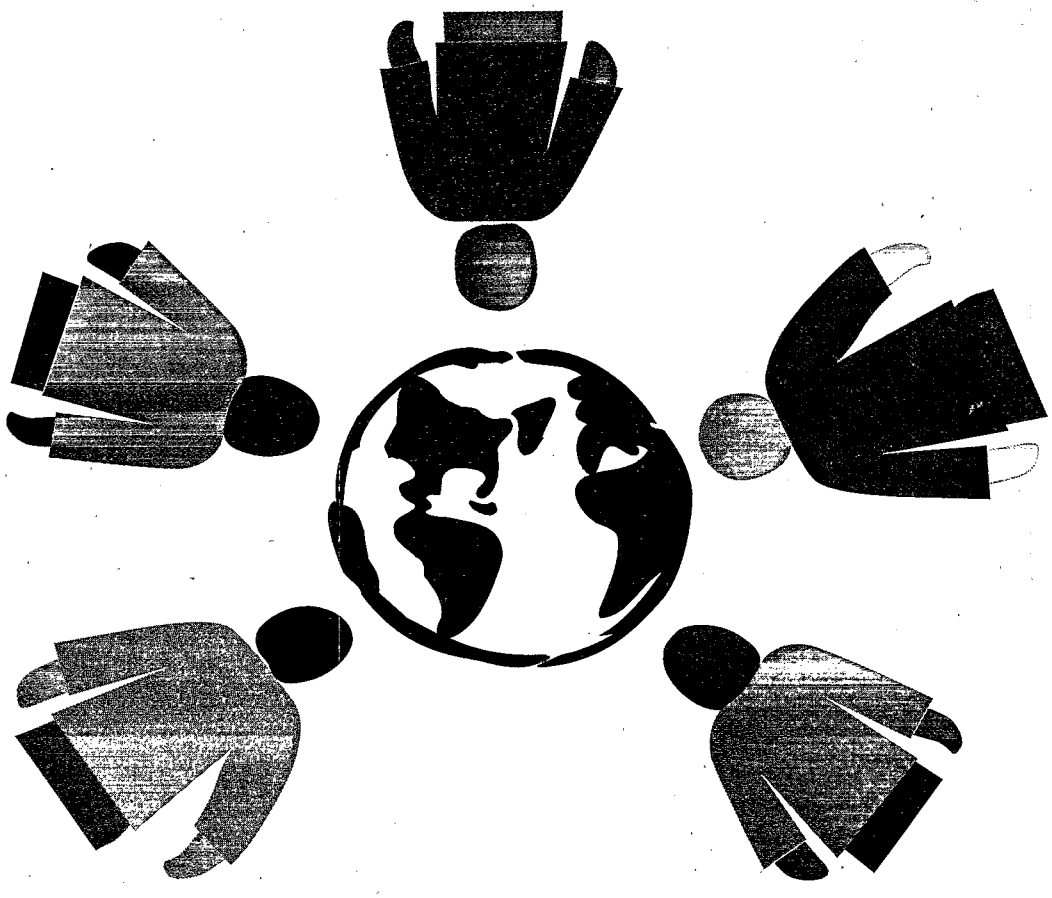
Community Culture and the Environment

A Guide to Understanding a Sense of Place



DISCLAIMER

The Environmental Protection Agency (EPA) has compiled this technical document of tools and methods for understanding the human dimension of environmental protection. It is designed to provide leaders in the environmental field a means for better understanding community values and processes as they relate to environmental issues, thus resulting in more effective partnerships and approaches to solving environmental problems. The tools are intended to assist communities in meeting or exceeding current environmental protection standards. Mention of organizations or products in this resource book does not constitute an endorsement by EPA but is intended to provide information, resources, or assistance the users may then evaluate in terms of their own needs.

ACKNOWLEDGMENTS

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PROLOGUE

An Allegory or a Fairy Tale?

Once upon a time a proud people lived on the top of a mountain. From that summit, it seemed, they could see everything everywhere. Daily clouds obscured the distant horizon, but occasionally they would glimpse a huge mountain far in the distance. These momentary revelations notwithstanding, they were content in believing that the whole world was what they could see on their own mountain. Because of this they did not realize tha their mountain was in reality a foothill, one of many that circled the huge mountain in the distance. Nor did they know that other people on other foothills shared the same belief that what they saw from their own summit was the whole world, everything everywhere, even though it was but one of many foothills.

One day a terrible cataclysm struck the land. A violent tremor shook the foothills until they began to crumble. All the proud people had to descend from their particular mountain to seek refuge in the lowlands at the base of the huge mountain. There they discovered that other people from other foothills had also descended to the lowlands to escape the wrath of nature. Now suddenly the land became quiet, the clouds lifted, and all the people could see for the first time the huge mountain in all of its towering glory whereas before they had known it only in part through a fleeting glimpse.

But nature was not finished with these people. A great flood came thundering into the valley, and all the people scrambled onto the higher land on the side of the huge mountain to escape the deluge. Day after day the flood waters rose. All of the people realized that they would need to ascend the mountain together to save themselves. But as they began to climb, great disputes broke out between the different people, for each had their own idea about how best to climb the mountain. After all, each of the people had long believed that they had seen everything everywhere and therefore they knew everything everywhere. It was difficult for them to admit they had seen only a portion of the huge mountain and only from the angle of vision of their particular foothill.

As the flood waters continued to rise, the clamorous disputes yielded to the urgencies of survival. Despite their different points of view, they had one thing in common: they had to climb the hill to survive. As they debated their dilemma, they came to a new revelation. Each of the different people knew a different part of the huge mountain — one knew where the rockslides were, one knew where water was to be found, another knew the passage through difficult terrain. Now they came to a new vision of everything everywhere, a new vision of truth. They realized that they had been looking differently at the same mountain, and, once they exchanged views with the common purpose of climbing to the mountaintop of truth, they developed a more complete understanding of the mountain than any of them had developed separately. They formed a community of climbers and began the difficult ascent. They are still climbing and we do not know the end of the story.

Wong, F.F. 1991. Diversity and community: right objectives and wrong arguments. *Change: The Magazine of Higher Learning,* July/August. Heldref Publications, Washington, DC. Reprinted with permission.

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CHAPTER 1

Introduction

> CULTURE IS LIKE A TREE. IF THE GREEN BRANCHES — A PEOPLE'S LANGUAGE, LEGENDS, CUSTOMS — ARE CARELESSLY CHOPPED OFF, THEN THE ROOTS THAT BIND PEOPLE TO THEIR PLACE ON EARTH AND TO EACH OTHER ALSO BEGIN TO WITHER. THE WIND AND RAIN AND THE ELEMENTS CARRY THE TOPSOIL AWAY; THE LAND BECOMES DESERT.
>
> — *Mariano Lopez*
> *Tzotzil Indian*
> *Chamula, Chiapas, Mexico*
> *(Western, 1994)*

Human communities — whether clusters of homes, towns, cities, or other collections or networks of people — are part of the natural environment. We live among, and are deeply connected to, the many streams, rivers, lakes, meadows, forests, wetlands, and mountains that compose our natural environment and make it the beautiful and livable place so many of us value. More and more often, human communities realize that the health and vibrancy of the natural environment affects the health and vibrancy of the community and vice versa. We value the land, air, and water available to us for material goods, beauty, solace, retreat, recreation, and habitat for all creatures. Throughout the nation, communities are engaging in efforts to protect these treasured natural resources and the quality of life they provide.

Some of today's most pressing environmental problems, such as nonpoint source pollution, urban sprawl, habitat destruction, and vehicle emissions are rooted in the cultural fabric of the country. The need to resolve these problems has led to new environmental protection approaches.

The United States Environmental Protection Agency (EPA) is developing tools and training to support community-based approaches and to supplement the Agency's traditional regulatory role (**Figure 1-1**).

- ☑ The belief that holistic, place-based environmental protection efforts will lead to more effective long-term protection is the basis of community-based environmental protection and watershed protection approaches.
- ☑ These approaches tend to be voluntary and involve the people who live and work in the community.
- ☑ Community-based approaches address air, water, land, pollution, and living resource concerns in a multimedia strategy.
- ☑ These approaches integrate ecological issues with local economic and social concerns to resolve or prevent local environmental problems.
- ☑ Tailoring environmental protection efforts to local realities and partnering with community members lead to greater public support and involvement and, ultimately, to better environmental protection.

Figure 1-1—The Elements of Community-based Environmental Protection

- Identifying the geographic area that is the focus of the environmental protection efforts, usually using natural boundaries or ecological features of the place.
- Involving diverse stakeholders in developing a vision, goals, priorities, and strategies.
- Assessing the local ecosystems, including the ecological, human health, economic, and sociocultural aspects of the community that relate to the environment.
- Developing a plan aimed at meeting environmental, economic, and social goals in a sustainable manner.
- Taking actions through a potentially wide array of voluntary, educational, and regulatory activities.
- Monitoring conditions, evaluating results, and redirecting efforts through adaptive management.
- Increasing EPA's efficiency and effectiveness by building partnerships and leveraging resources, and developing better ways of informing, assisting, and involving the public.

For more information, see *People, Places, and Partnerships: A Progress Report on Community-based Environmental Protection* (EPA-100-R-97-003, July 1997).

For more details, see *Community-based Environmental Protection: A Resource Book for Protecting Ecosystems and Communities* (EPA 230-B-96-003, September 1997), as well as *Watershed Approach Framework* (EPA 840-S-96-001), *Top 10 Watershed Lessons Learned* (EPA 840-F-97-001), and *Clean Water Action Plan: Restoring and Protecting America's Water* (ISBN 0-16-049536-9). Also see http://www.epa.gov/ecocommunity/links.htm and http://www.epa.gov/owow/org.html.

What Is the *Community Culture and the Environment Guide*?

Community Culture and the Environment: A Guide to Understanding a Sense of Place addresses the social and cultural aspects of community-based environmental protection. The *Guide* offers a process and set of tools for defining and understanding the human dimension of an environmental issue. It gives leaders in government agencies and in nongovernmental organizations and tribes (such as directors of watershed groups, public health officials, outreach coordinators, environmental educators, and environmental justice workers) technical tools for more effectively working with the public on environmental protection efforts. The *Guide* is based on the elements of social science theory and methodology (e.g., anthropology, cultural geography, political science, and sociology) that are most relevant to defining and understanding community life as it relates to environmental issues. (The full spectrum of social science theory and methods is well beyond the scope of the *Guide*.)

A Tool to Develop Effective Community-based Environmental Protection Strategies

The *Guide* can help you work more closely and effectively with community members to develop environmental protection goals, educational and outreach tools, and indicators to measure progress. It also can help you engage community members in planning for, making decisions about, and participating in environmentally sustainable practices (**Figure 1-2**).

Figure 1-2—What Is Sustainable Development?

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Brundtland Commission Report).

An Approach to Understanding the Meaning of "Sense of Community" and "Sense of Place"

Community-based environmental protection recognizes that values held both individually and as a group contribute to the

quality of community life. Expression of values through social and cultural practices can create a "sense of community." Many of these values relate directly to the "place" in which people live, thus creating a strong "sense of place." Use of the *Guide* can lead to a clearer understanding of how such feelings can translate into environmental solutions and actions.

A Tool for Defining Community

Community means many things to many people. Defining it is an early — and essential — part of any community-based project. The *Guide* discusses the concept of "community" and includes a worksheet and tools to help you define community in a way that best fits your needs. Defining community is an iterative process; you might repeatedly refine your definition as you use the *Guide*.

A Tool for Identifying and Understanding Community Attitudes, Values, and Behaviors

The *Guide* attempts to understand a local community by looking at issues that are "below the surface" to understand what people care about and why, and what motivates people to form partnerships to take action. It takes a systematic approach to answering key questions about a community's values, attitudes, and beliefs; how they are expressed in daily life; and how they relate to environmental issues.

How Will the *Guide* Help?

By working with the *Guide*, or conducting what will be referred to as a **community cultural assessment** or simply **assessment**, you will

- ☑ Evaluate your starting point, or readiness, for conducting an assessment project.
- ☑ Set goals as a starting point of the assessment process.
- ☑ Establish a project team and develop a work plan to guide your assessment project.
- ☑ Define the community you want to assess.
- ☑ Choose the community characteristics and questions you want to investigate.
- ☑ Select appropriate methods and tools for your assessment project.

- ☑ Organize, analyze, and present the results of your assessment project.
- ☑ Incorporate assessment results into your environmental protection strategies.

And, depending on your assessment project goals, you will be able to answer important questions like

- ☑ How can the community be described? What are its size and geographic boundaries? Its natural resources? Its demographic makeup? Its educational and economic profile?
- ☑ How can the community be understood? What are its values and priorities? Its interests and needs? What motivates the community and why? What does the community care about and why?
- ☑ How does the community understand and perceive issues relating to its quality of life? How does it see the environment contributing to its quality of life? How does it feel and think about different environmental issues?
- ☑ Who should be involved in helping develop and implement an environmental protection project? Who is likely to be a great help and why? Who else can be part of a network of support? Who might hinder the process if not included?
- ☑ Who is the audience for environmental protection strategies? What kinds of messages and language will work for them?
- ☑ Is there a good understanding of all the important stakeholders? Will the strategy be representative of the community? Will it reflect and address a balanced array of community interests and issues?

What Will You Find in the *Guide*?

The *Guide* is arranged by the following chapters:

- ☑ **CHAPTER 1. Introduction.** What is a community cultural assessment? This chapter includes an overview of the *Guide* and background information on its development.
- ☑ **CHAPTER 2. What Are Community and Culture?** This chapter discusses key terms such as community, culture, and social process. It describes how understanding these different elements of community life can enhance community-based efforts.

Figure 1-3—Community Characteristics

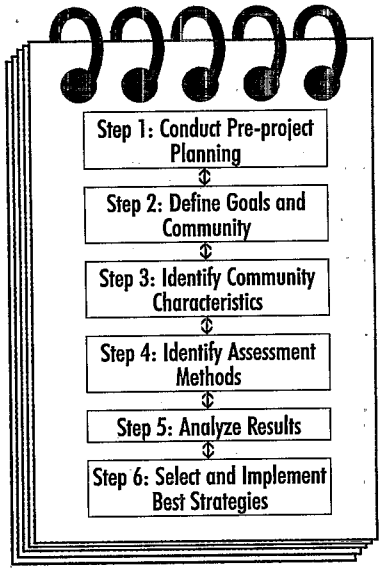
- Community Boundaries
- Community Capacity and Activism
- Community Interaction and Information Flow
- Demographic Information
- Economic Conditions and Employment
- Education
- Environmental Awareness and Values
- Governance
- Infrastructure and Public Services
- Local Identity
- Local Leisure and Recreation
- Natural Resources and Landscapes
- Property Ownership, Management, and Planning
- Public Safety and Health

Figure 1-4—Assessment Methods

- Background Research
- Census Data Research
- Content Analysis
- Environmental Values Typology
- Focus Groups
- Interviewing
- Maps and Geographic Research
- Meetings
- Observation
- Regional Economic Data Research
- Social Mapping
  - Asset
  - Cognitive
  - Concept
  - Social Network
- Surveys and Polls
- Visual Methods

☑ **CHAPTER 3. How to Use Assessment Results.** This chapter discusses how assessment information can contribute to and support a variety of environmental protection strategies at the community level.

☑ **CHAPTER 4. The Tool Kit.**



- **STEP 1:** ***Conduct Pre-project Planning*** helps you assess your readiness to begin an assessment project and leads you through such necessary steps as forming a team, defining your goals, establishing your budget and evaluating your financial resources, and understanding the ethics of assessment.
- **STEP 2:** ***Define Goals and Community*** includes information and worksheets to help you set your goals and understand the community with which you plan to work.
- **STEP 3:** ***Identify Community Characteristics*** outlines 15 community characteristics and related questions to consider using in your assessment project (**Figure 1-3**). This section can be used as a checklist for determining your assessment goals and questions — you can pick and choose from it and supplement, as needed, with your own questions.
- **STEP 4:** ***Identify Assessment Methods*** describes in step-by-step detail how to use 13 different tools to answer questions about your community and to develop a community cultural assessment (**Figure 1-4**). Bibliographic resources are included.
- **STEP 5:** ***Analyze Results*** presents guidance on how to store, organize, and analyze the raw information the assessment methods generate. It also suggests ways to summarize, present, and describe your findings in an understandable and convincing manner.

- **STEP 6:** ***Select and Implement Best Strategies*** is discussed in **Chapter 3** and in **Appendix A, Community Case Studies.**

☑ **Appendices.**

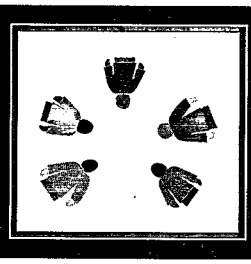
- **APPENDIX A: Community Case Studies.**
- **APPENDIX B: Conceptual Foundation for Assessment Methods: Qualitative and Quantitative Data and Triangulation** (including sampling, validity, and questionnaire design).
- **APPENDIX C: Matrix of Assessment Methods.**
- **APPENDIX D: Bibliography.**

☑ **Definition Boxes, Figures, and Tables** illustrate key points and explain important terms.

☑ **Bibliographic Resources** suggest resources for further reading.

Please keep in mind that the overall approach and specific information presented are suggestions only. The Guide is designed to be a flexible tool for you to use and to modify to meet your own needs.

CHAPTER 2



What Are Community and Culture?

> IN SHORT, NOT ONLY IS CULTURAL DIVERSITY A VALUABLE WORLD RESOURCE, BUT WHEN HARNESSED AND DIRECTED BY LOCAL PEOPLE, CULTURAL ENERGY POTENTIALLY CAN DRIVE MORE CONSERVATION EFFORTS THAN NONSUSTAINABLE ENERGY SOURCES SUCH AS FOSSIL FUELS AND NATIONAL BUDGETS.
>
> —*Charles D. Kleymeyer (Western, 1994)*

This chapter discusses two basic concepts of the *Guide* — community and culture. Both are important to keep in mind when working with communities.

Community

To develop a definition of community requires consideration of both people and place. The people might include the total population of any geographic place or one or more identifiable smaller groups of people. Sometimes a community might include people outside the geographic place. The people who are interested in, affected by, or affecting the issue of concern or community-based project are often called "stakeholders" (**Figure 2-1**). The "sense of community" these people share or the "sense of place" to which they relate can be discovered through community cultural assessment (**Figure 2-2**). The assessment leads to a more comprehensive picture of a community, which is essential for any community-based project.

Figure 2-1—Who Are Stakeholders?

Stakeholders are people who are interested in, affected by, or could possibly affect activities related to local community-based environmental protection efforts. Potential stakeholders include community members; local, state, and federal governments; industrial and commercial businesses; citizen and environmental groups; and academic institutions, among others.

Sense of Place

When thinking of community as place, people find it easy to think of administrative units or political jurisdictions. This is not surprising, since so many of our civic functions (e.g., voting), revenue generation (e.g., local taxes), and other activities occur within clearly defined political boundaries. However, people also define their place by its physical characteristics or a special feature. Place can be defined in many ways, including one or a combination of the following:

- ☑ An area having formal political or administrative boundaries, such as a city, town, or neighborhood.
- ☑ An area having natural boundaries, such as landscape features, rivers and streams, watersheds, or sensitive areas such as special wildlife habitats.
- ☑ An area defined by physical infrastructure, such as highways or solid waste facilities or key landmarks such as statues, parks, or other historical sites.
- ☑ An area defined by a specific problem, such as a Superfund site.

Figure 2-2—Defining Community

Here are some factors to help define community:

- **Sense of place:** geographic setting or natural/physical boundaries, standard of living, political jurisdictions.
- **Sense of community:** social interaction, common ties, mutual satisfaction of needs, and often a shared place.

Sense of Community

Community as people typically entails groups of people self-identified, or identified by others, who interact socially, have common historical or other ties, meet each other's needs, share

similar values, and often share physical space. This sharing can result in what is called "a sense of community." Some communities are broad-based, such as Chesapeake Bay watermen who share a common history. Others are more specifically defined subcommunities, such as environmental activists who share similar political views or goals, or country dancers or Internet chat room users who interact socially. To find this sense of community, it is helpful to look at one or a combination of the following:

- ☑ Community groups and organizations such as religious groups, volunteer activities, and neighborhood councils.
- ☑ Informal gatherings in neighborhoods and other "community spots."
- ☑ Key local activities such as football games and county fairs.
- ☑ Leadership and participation roles in these endeavors.

Community Culture

Values, attitudes, behaviors, beliefs, and assumptions people share about themselves and others, and about the natural world in which they live, make up a community's culture. It includes the institutions, customs, and communication patterns people have created to meet their needs. Broadly, it can include language and speech patterns, everyday behavior, social etiquette, religion, education, laws, morals, values, and exchange of goods and services. Culture includes values of right or good conduct such as ideas of justice, freedom, sanctity of life, and responsibility to future generations. And, similar to community, both a broad cultural framework and various subcultures might exist in any one place (**Figure 2-3**).

Figure 2-3—Culture

Culture encompasses the wide range of shared and distinct values, beliefs, attitudes, behaviors, and assumptions that people have about themselves and others.

Culture is expressed through the social structure (e.g., social organizations, and social roles and norms) that links people together. Social organizations are created to meet community needs formally (e.g., religious organizations, school systems, government) and informally (e.g., neighborhood welcome wagons, Friday night bingo games, civic groups). It is important to know about and understand the social organizations of a community because they are the cultural mechanisms within which community life grows and community decisions are made.

Within these organizations lie the daily behavior and social processes of life. Social processes are characterized by different social roles/status and social norms. The many possible social

roles/statuses in any community relate to the formal (elected officials) and informal (neighbor) positions people occupy within a social structure: who are the leaders and followers, who has authority and who does not, who actively participates and who is less involved. Social norms are the daily behaviors that manifest and reinforce the local culture; examples include bowing or shaking hands in greeting, remaining silent or frowning to show disapproval, not littering, and obeying laws. Both social roles/statuses and norms can help you identify key community leaders and understand daily life, including whether and how environmental protection efforts have been or will be accepted.

Community cultural assessment can provide insight into the complexity of community life, an essential element in developing carefully crafted and well-designed environmental protection strategies that meet the needs and interests of the community. Understanding the formal and informal networks people use for communicating can be key to identifying local leaders. Studying artistic expression in art and music can reveal how people interpret the meaning of their lives and whether it relates to environmental issues. Understanding the role of a public library or a scout troop can be key to designing education and awareness programs.

When considering all of these aspects of a community's culture, always remember that communities are dynamic and constantly evolving as people move in, move out, become more educated, enter new phases of their lives, or face different challenges. A community cultural assessment tells you about a community at a single point in time. Capturing the dynamic culture of a community is an iterative process.

CHAPTER 3

How to Use Results from the *Guide*

ETHNIC HISTORY IS LIKE A BOW AND ARROW. THE FARTHER BACK YOU PULL THE BOXSTRING, THE FARTHER THE ARROW FLIES. THE SAME IS TRUE WITH HISTORICAL VISION: THE FARTHER BACK YOU LOOK, THE FARTHER YOU CAN SEE INTO THE FUTURE. IF YOU PULL THE BOWSTRING BACK ONLY A LITTLE, THE ARROW ONLY GOES FORWARD A SHORT WAY. THE SAME WITH HISTORY: IF YOU ONLY LOOK BACK A SHORT DISTANCE, YOUR VISION INTO THE FUTURE IS EQUALLY SHORT.

— Navajo Teacher
(Western, 1994)

This chapter suggests some ways of using assessment results. The chapter does not describe the steps and process for each use but suggests some resources to consult for more detailed information. The chapter corresponds with **Step 6: Select and Implement Best Strategies** of the overall assessment process. As you will see, these uses are only one part of your overall strategy for protecting the environment. Please see **Appendix A, Community Case Studies** for details on a variety of projects that have used assessment methods. Uses discussed include

- ☑ Community Definition
- ☑ Community Targeting
- ☑ Communication
- ☑ Coalition/Consensus Building: Partnerships
- ☑ Environmental Education
- ☑ Public Participation
- ☑ Community Service Projects/Volunteers
- ☑ Resource Identification
- ☑ Strategies for Sustainable Economic Development
- ☑ Goal Setting and Visioning
- ☑ Comprehensive Planning
- ☑ Information Gaps
- ☑ Indicators

Community Definition

- ☑ What are the elements of the "community" with which you are working?
- ☑ What are its social and geographic boundaries?
- ☑ What people or groups consider themselves part of the community?
- ☑ What activities constitute community life?
- ☑ What capacity does the community have to address local issues?

You might have some answers to these questions — but a closer look might reveal that you know less than you think. Using the

Guide, and particularly the **Defining Goals and Defining Community Worksheets (Chapter 4, Step 2)** and **Identify Community Characteristics (Chapter 4, Step 3)**, will ensure you have the most comprehensive definition.

Audience Targeting

An important part of any environmental protection strategy — be it for education, outreach, or public involvement — is to identify a target audience. An assessment reveals information about geographic area, socioeconomic status, gender, age, race, language, and other variables associated with groups of people you might want to include in your efforts. In addition, it can indicate the specific roles and opinions of different key groups and individuals within the community that can help you increase participation in different projects.

Communication

Communication is vital to ensure that people understand what is happening in the community. Clear communication about environmental protection strategies is especially important for generating enthusiasm and participation and for preventing confusion. An assessment can assist you in linking your message to local beliefs, issues, and values so that it is meaningful to the intended audience. Since the message is just as important as the messenger, always take advantage of a community's natural flow of information. For example, use the local newspaper and radio station, post information on bulletin boards in community centers such as the post office, or work with local opinion leaders to spread the message through a community social network. You might also want to link your message to a significant event. Also, be sure your message is in appropriate languages for the target audience (e.g., fish consumption advisories in English, Spanish, and Vietnamese). For more details, see *Principles for Effective Communication with Communities About Ecological Issues* (EPA, Office of Policy, Planning, and Evaluation, EPA 236-F-96-001).

Coalition/Consensus Building: Partnerships

Developing community-based coalitions can be instrumental in protecting the environment. However, it can be difficult to develop the necessary relationships between people who

seemingly have very different opinions about an issue. To resolve conflicts and build consensus, you must first identify people's interests and positions and differentiate between them (**Figure 3-1**). In general, people's **positions** perpetuate conflict; but, if their **interests** (which are often mutual) can be tapped and cultivated, they can reach a reasonable agreement. An assessment can uncover these distinctions and address other cultural differences that might prevent successful collaboration.

Figure 3-1—Interests Versus Positions

Interests: the desires, needs, fears, and concerns that community members want to have addressed. Interests motivate people; interests often lie under the surface of outwardly expressed positions and behaviors.

Positions: represent a community member's stand or decision about a topic.

(Fisher et al. 1991; Moore, 1996)

Environmental Education

Environmental education is most effective when it speaks to local issues, problems, and priorities. People are more likely to participate in and benefit from environmental education if they see the direct link to personal as well as community well-being. The assessment process and results can be used to develop locally relevant educational materials and to help link education programs with current needs and priorities. An assessment might also identify who might get involved in developing a curriculum and who would benefit from being educated.

Public Participation

Many assessment methods and uses relate to public participation. Assessment results can help you design public participation strategies and select socially and culturally appropriate processes. Long-term public participation is accomplished when groups are organized and bound by formal rules, positions, guidelines, and procedures that provide direction and a framework, regardless of membership changes. These groups might have been created by a government agency or organized by community members. An assessment can help identify whether such groups are needed, who their members might be, and what issues they might address. The following are two examples of such groups:

- ☑ **Stakeholder advisory groups** involve community members in environmental issues and decision-making through formal committees, groups, or associations designed to represent community interests. Public Advisory Committees (PACs) related to EPA's comparative risk process and Community Advisory Groups (CAGs) at Superfund sites are two examples of EPA stakeholder advisory groups.
- ☑ **Watershed councils** bring community members in a particular watershed together to create a long-term, collaborative, consensus-based approach to preserve, restore,

and manage the watershed and its natural resources. watershed councils are typically facilitated by one or two interested organizations. They undertake or sponsor restoration and other environmental protection projects. watershed councils also provide a forum for community members to voice concerns and complaints, and to discuss and learn about environmental issues and new management practices. By bringing groups with differing opinions and viewpoints together, watershed councils can forge relationships where none previously existed.

Community Service Projects/Volunteers

Volunteer programs are an excellent way to involve community members in protecting their environment — and learning about environmental management. An assessment can determine who would be willing to volunteer and for what, at what times, and in what ways. Volunteer monitoring is one of the best known voluntary programs, giving people an active role in protecting their local environment as they collect, and often analyze, environmental data. Other volunteer activities include watchdog groups that report problems such as sewer overflows (and ensure proper measures are taken to reduce their effects) and volunteers who monitor traffic patterns, conduct soil surveys, and document recreational use.

Resource Identification

You might discover a wealth of interest and support for the issues you are assessing. This can easily be translated into volunteer time, financial resources, and other in-kind contributions such as equipment or vehicles for project work.

Strategies for Sustainable Economic Development

Because the economy has such a huge impact on people's daily lives, strategies for sustainable economic development are key to ensuring the balance between the local environment and the economy. To be fully supported by the community, economic development initiatives also must be consistent with local values and opinions. An assessment can give you feedback on specific development proposals. You can test ideas in focus groups and use the results when you talk to local officials and developers.

Goal Setting and Visioning

An assessment can help you determine whether your environmental protection goals are feasible and how they relate to a community's own goals and vision. Assessment results can tell you how people relate to environmental issues and whether they can help fulfill environmental protection goals.

Visioning is a very popular way to establish a future vision and goals for a community. This process brings community members together to express both their understanding of their community and their hopes and dreams for it. This information is then organized in a variety of ways, allowing community members to have input into establishing priorities, measuring progress, and achieving goals. Assessment results can help identify the numerous and diverse community members who should attend, issues to address, and means for successful implementation. A number of assessment methods such as social network mapping, asset mapping, environmental typology, and meetings can be used to help structure the visioning and other goal-setting processes. (Refer to **Chapter 4.**)

Comprehensive Planning

Comprehensive planning encompasses all issues related to a community. An assessment can help you identify critical topics (particularly quality of life concerns) and the local capacity, including resources, for addressing them. Assessment data can be used at various stages of planning to better characterize a situation or topic. Some methods, such as meetings and social mapping, can contribute to the planning process. Most important, assessing social issues can help reveal elements of a community that are beneath the surface and need to be addressed in any planning process. An assessment can also ensure that community members and groups that have historically been left out of community-wide efforts have an opportunity to contribute to the planning process.

Information Gaps

An assessment might uncover new topics or community concerns. As a result, you might realize you have insufficient information about that topic(s) and will need to investigate further before addressing it. An assessment can fill these gaps, ensuring that your decisions are based on accurate and reliable information.

Indicators

Assessment results can be used to develop and measure indicators of socioenvironmental change in a community. The results of your assessment are essentially a source of data, or a baseline, of the community's priorities, values, and social processes. And assessment methods can help you measure change related to your indicators. For example, indicators can be quantitative (e.g., percent of people who know watershed issues as the result of an education campaign) or qualitative (e.g., the narrative description of someone's appreciation for wetlands). Steps recommended for developing community-based indicators include defining the issue/goals to be measured, identifying the audience for the indicators, evaluating indicator options, and identifying appropriate data sources. Each step requires extensive community participation.

Conclusion

As you implement strategies and programs, new information about the community will most likely emerge. A community is not static. As it changes, so does its culture. A community cultural assessment is a snapshot that shows you the community as it exists today. Over time, you might find that many of the conclusions drawn from your assessment exercise are no longer valid because certain aspects of the community (e.g., the job base) might change, new environmental problems might arise, or an influx of new community members might bring new ideas and perspectives. Thus, you should periodically reevaluate and update your community assessment. You might decide to conduct the assessment again from the beginning, or you might simply want to gather more or updated information about a particular community characteristic. No standard set of procedures or rules will tell you when to reevaluate or update your profile; you and your team must make those decisions as needs or problems arise.

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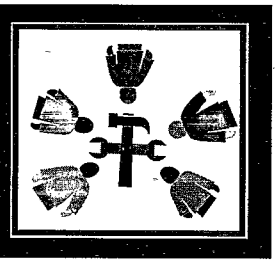
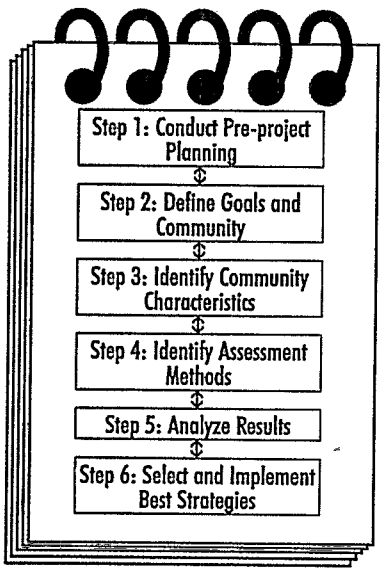
CHAPTER 4



The Tool Kit

> WE SEE IT LIKE THIS: IT IS AS IF WE ARE ALL IN A CANOE TRAVELING THROUGH TIME. IF SOMEONE BEGINS TO MAKE A FIRE IN THEIR PART OF THE CANOE . . . IT WILL AFFECT US ALL. AND IT IS THE RESPONSIBILITY OF EACH PERSON IN THE CANOE TO ENSURE THAT IT IS NOT DESTROYED.
>
> *— Ailton Krenak,*
> *Union of Indigenous Nations in Brazil*
> *(Solo, 1992)*



You've already learned what an assessment is and how you can use it to meet your own community-based environmental protection goals. This chapter provides the "how to."

Key Steps in Conducting Your Assessment Project

Although it is important for you to develop the approach to your assessment project that best suits your needs, certain steps will help your assessment project run more smoothly and produce more complete and accurate results.

STEP 1: Conduct Pre-project Planning

Step 1 outlines the pre-project planning steps, from assessing your readiness to ensuring the entire process is performed in an ethical manner. It also includes keys to maintaining momentum.

STEP 2: Define Goals and Community

Step 2 includes information and worksheets on how to define your assessment goals and the community with which you will work. It is important to do this within the context of your overall environmental protection goals.

STEP 3: Identify Community Characteristics

In helping you decide what you want to know about your community, this step is in many ways the heart of your assessment project. Step 3 includes descriptions and example questions about various topics you might choose to explore. It also suggests useful methods for exploring these topics (**Figure 4-1**).

STEP 4: Identify Assessment Methods

Step 4 introduces you to 13 different assessment methods and helps you select methods that will explore the characteristics you have selected. You will need to select the methods that are most appropriate for your assessment project, can be achieved within your project's constraints, and will collect the data you need. The accuracy of the data will determine the accuracy of your conclusions. You might want to seek technical assistance on some methods (**Figure 4-2**).

Figure 4-1—Community Characteristics

- Community Boundaries
- Community Capacity and Activism
- Community Interaction and Information Flow
- Demographic Information
- Economic Conditions and Employment
- Education
- Environmental Awareness and Values
- Governance
- Infrastructure and Public Services
- Local Identity
- Local Leisure and Recreation
- Natural Resources and Landscapes
- Property Ownership, Management, and Planning
- Public Safety and Health
- Religious and Spiritual Practices

STEP 5: Analyze Results

Step 5 helps you make sense of the information you've collected in terms of your overall environmental protection goals as well as your original assessment goals. Here, you'll learn to organize, analyze, and summarize the information you've collected. **Chapter 5** also advises you on public disclosure of results.

STEP 6: Select and Implement Best Strategies

You can use the results to develop strategies to achieve your environmental protection goals. In general, it is valuable to match assessment findings with other ecological and economic findings to develop the best strategies. Review **Chapter 3** when you are developing your strategies.

Figure 4-3 summarizes the important points in each of the 6 steps. Refer to **Figure 4-4** for a sample of a completed assessment project and see **Appendix A, Community Case Studies**, for more details.

As you can see, the community cultural assessment process is designed to help you better understand the communities with which you work. It is also meant to help you develop better strategies — ones that are consistent with local values and concerns — so that your environmental protection efforts will be more successful.

As you use the *Guide* — and the tools it gives you, you will also discover that an assessment is an iterative process. You might have to revise your list of community characteristics and questions more than once. You might need to add questions about a specific characteristic that becomes important. You might even need to change your methods for collecting information. And almost certainly, you will have to revisit your goals periodically to ensure that you're asking the right questions to help you develop the most effective strategies for achieving your goals.

Figure 4-2—Assessment Methods

- Background Research
- Census Data Research
- Content Analysis
- Environmental Values Typology
- Focus Groups
- Interviewing
- Maps and Geographic Research
- Meetings
- Observation
- Regional Economic Data Research
- Social Mapping
  - Asset
  - Cognitive
  - Concept
  - Social Network
- Surveys and Polls
- Visual Methods

Figure 4-3—Steps in a Community Cultural Assessment: Action Plan

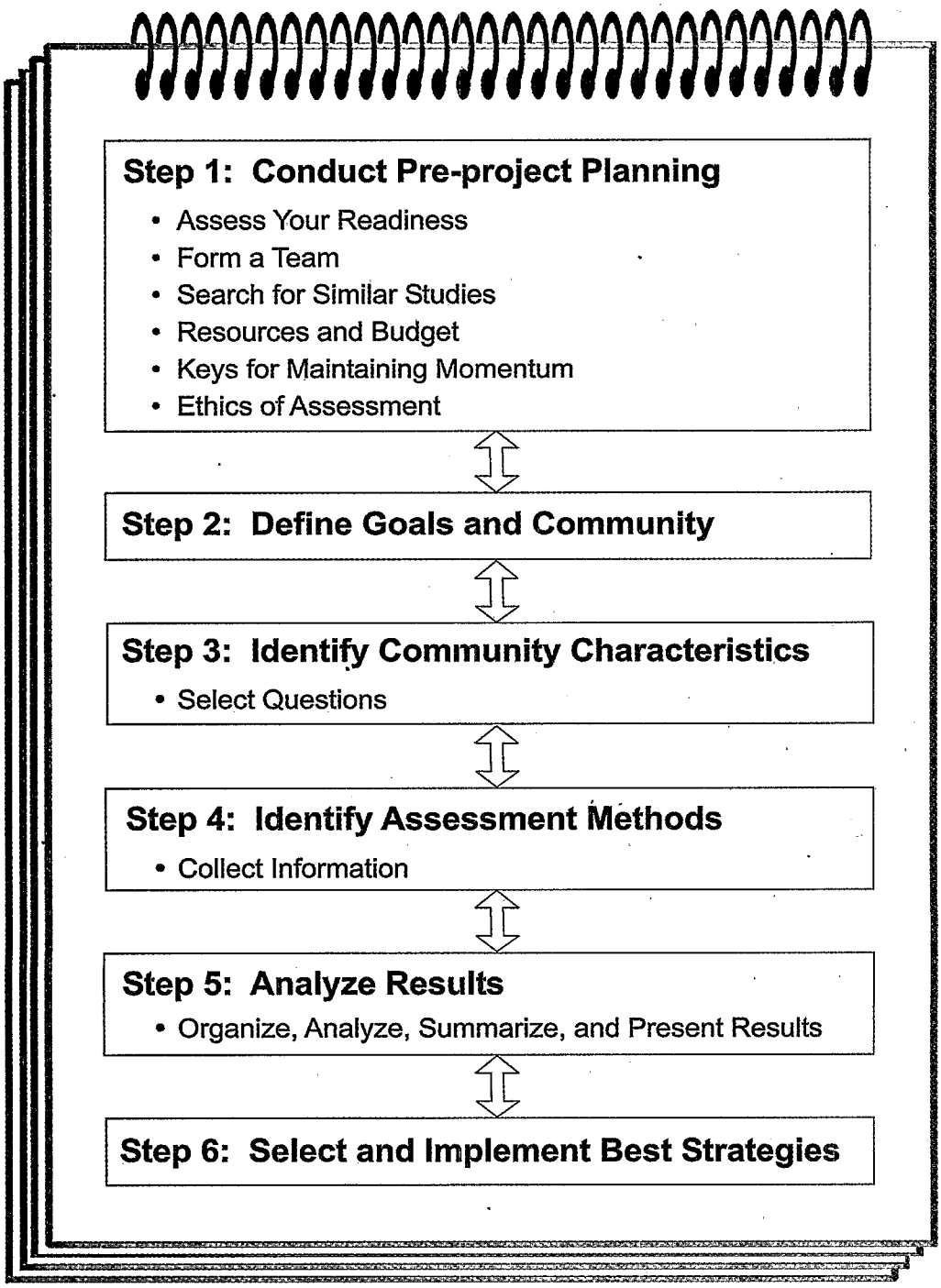
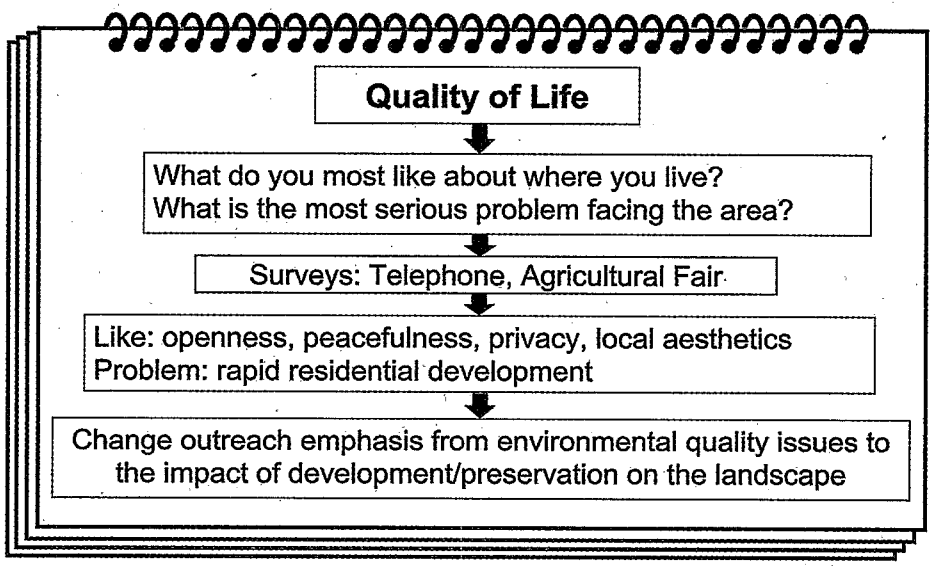


Figure 4-4—Sample of a Completed Assessment Project
(Octoraro Watershed Association)



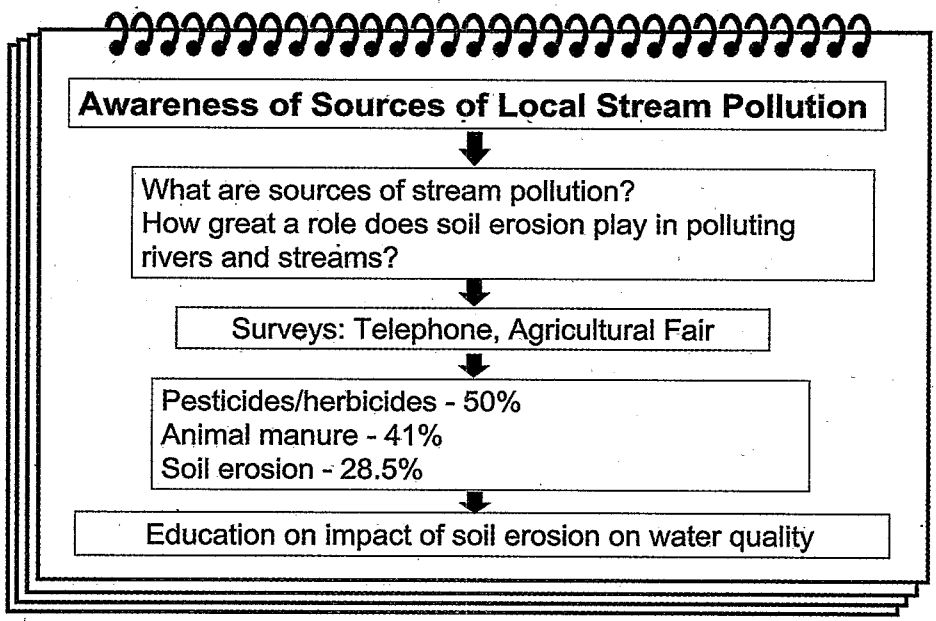
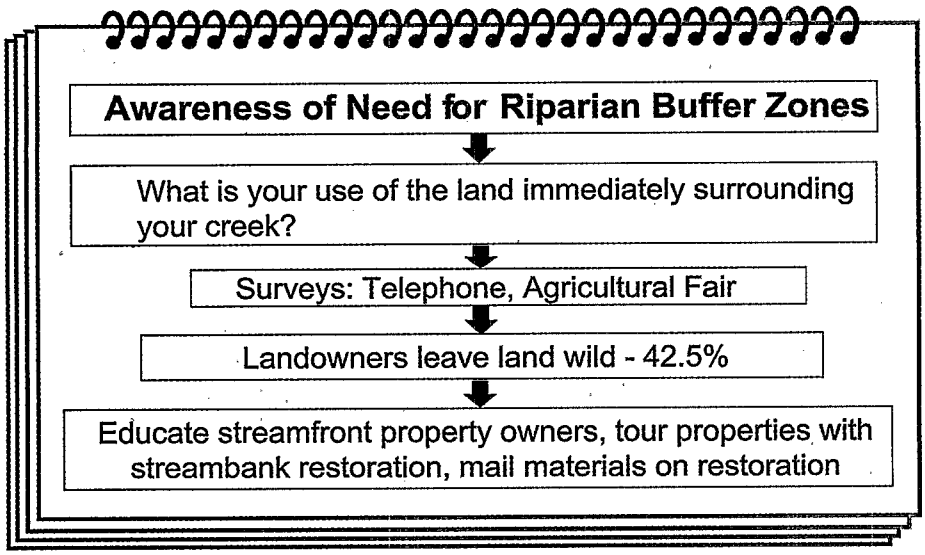
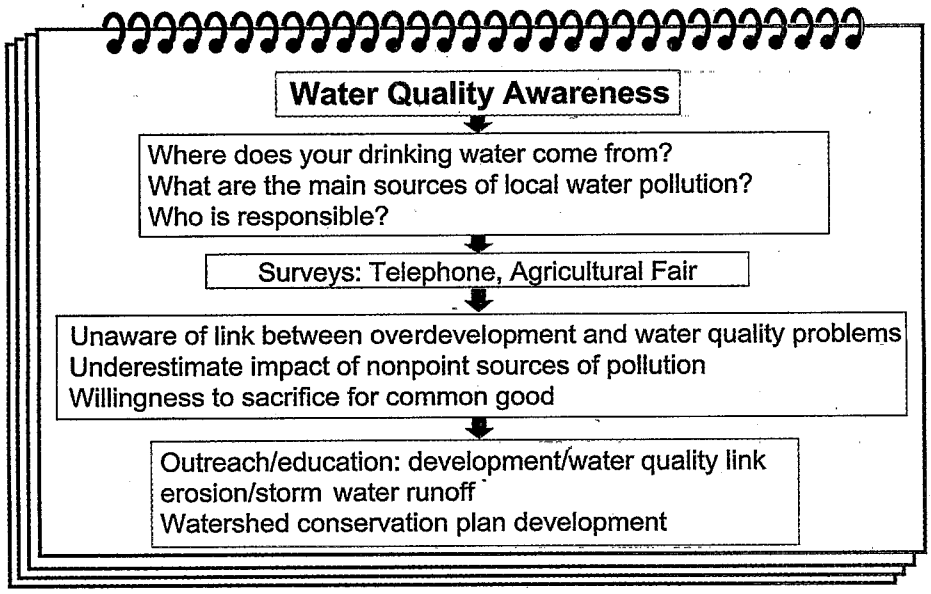
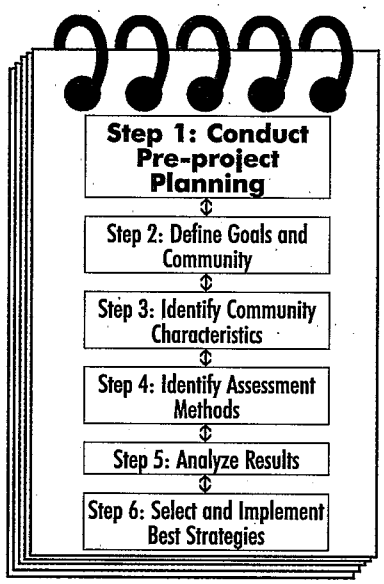


Figure 4-4—Sample of a Completed Assessment Project
(Octoraro Watershed Association) (continued)





STEP 1:
Conduct Pre-project Planning



As the **Introduction** to the Tool Kit (and **Figure 4-3**) illustrates, five major elements are involved in planning your project.

Assessing Your Readiness to Begin an Assessment

Perhaps you know that you want to protect the environment, but you don't know exactly how to go about it. You might want to use the assessment project to collect background information that will help you refine your goals and identify stakeholders, thus equipping you to develop your environmental protection strategies.

Perhaps you know exactly why you are assessing your environmental community. You've already defined your project goals and know what environmental protection strategies you want to use. In this case, you are using this assessment to help determine the best ways to implement your strategies.

Your situation will likely fall somewhere in between these two scenarios. **Figures S1-1** and **S1-2** will help you assess your own starting point for a community cultural assessment.

Figure S1-1—Assessing Your Readiness To Begin an Assessment

The following questions will help you evaluate how ready you are to begin your project:

- **To what extent have you defined your ultimate environmental protection goal(s)?**
  - How clearly articulated are these goals? Are they specific, measurable, and action-oriented?
  - Do you have any idea what strategies or activities you plan to do, or are required to do, to reach your goal (e.g., develop a public participation plan per National Environmental Policy Act (NEPA) requirements)?
  - Do you have a clear idea of what kinds of information you need to develop effective strategies to meet your goals?
- **How well do you understand why you are undertaking an assessment project?**
  - To what extent have you already defined particular questions?
  - Do you know what you want to get from the project and how you will use the results?
  - Have you defined a goal for your assessment project?
- **How well do you understand the community you are assessing?**
  - Can you identify any subcommunities within the larger community?
  - How familiar are you with the community's social organizations, roles, and processes?
  - Can you cite convincing evidence that what you "know" is right?

Figure S1-2—Example Starting Points for a Community Cultural Assessment Project

SCENARIO 1: You Have a Clear Idea of What and Why You Are Assessing. For example...

You might be complying with a regulatory requirement that presents you with a clearly articulated goal. For example, many federal and state regulations require public participation as an active part of the regulatory process. Most notable of these regulations is the National Environmental Policy Act (NEPA). NEPA outlines broad goals and specific requirements for public participation with the intent of identifying the concerns of interested or affected persons, agencies, groups, or organizations. The Department of Energy's NEPA guidance (1998) provides an assessment road map by outlining what you need to assess and how to use the results. Some of these recommendations include:

- Ensuring that public participation efforts meet the needs of various affected segments of the population, especially taking into account low-income and minority populations.
- Establishing working relationships with key audiences such as state, local, and tribal governments.
- Actively seeking interactions with the public through speaking engagements, civic groups, mall exhibits, workshops, focus groups, etc.

The guidance also suggests using a variety of techniques such as public meetings, hearings, and workshops; developing a mailing list to distribute newsletters, fact sheets, press releases; and preparing and displaying exhibits.

In this scenario, not only is the goal of developing a public participation plan defined, but specific strategies are also recommended. An assessment can help by identifying who to include in the strategy, how to develop messages for the appropriate target audience(s), and how to identify where people live and work so that meetings can be scheduled and located to maximize participation.

Other federal statutes and programs that share public participation goals:

- Executive Order 12898: Federal Actions to Address Environmental Justice in Minority and Low-income Populations.
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).
- Federal Advisory Committee Act (FACA) and Collaborative Public Involvement.
- National Estuary Program requirements for Comprehensive Conservation and Management Plans.

SCENARIO 2: You Have a Broad and Loosely (or Undefined) Idea of What and Why You Are Assessing. For example...

You might have been asked to develop a comprehensive environmental protection strategy to reduce the impacts of multimedia pollution on key environmental resources in the community. But, you have only limited information about what the community thinks and feels about these resources, and what they value, who is involved in protecting and restoring these resources, and what they think the problems are, among other topics.

You do not feel that you know enough about the community to identify specific environmental protection goals or to even begin to suggest workable environmental protection strategies. You might want to conduct a broad "fact-finding" assessment with the intent of answering questions such as "What do residents know about environmental resources in this community? How much do they care? What do they value and how much are they willing to do to protect these resources?"

In this example, the assessment is not linked to a specific environmental protection goal or strategy; rather, it is used to develop baseline information that might help identify goals and develop effective strategies. For example, you might decide to survey the community on a wide range of topics. This kind of broad-brush approach can tell you such things as the following:

- Community members value and use certain environmental resources more than others.
- There is widespread misinformation about sources of pollution to these resources.
- People do not believe that they are contributing to environmental pollution but rather that the problem is all from "industry."
- Community members were not able to name any groups involved in cleaning up polluted environmental resources in their area.

The survey shows that community members are very misinformed about the issues at hand. As a result of your findings, you might determine that your highest priority (or goal) is to educate and inform the public about current environmental conditions.

Forming a Team

It is advisable to build a team to help develop and implement an assessment project. Try to put together 5 to 10 people with diverse backgrounds and interests in the community. People do not necessarily need to have assessment expertise, though you might wish to include one or two people who do if possible. As you build this team, seriously consider the following issue.

Will You Work Independently or Collaboratively?

This is not an "either-or" choice. You as an individual or organization might choose to conduct an assessment project independently or you might assemble a project team that includes a variety of stakeholders. Both approaches have pros and cons (**Figure S1-3**). In either scenario, people might work alone, as a team, or half and half. (**Figure S1-4** presents ideas about potential team members.)

Figure S1-3—Working Independently vs. Collaboratively

WORKING INDEPENDENTLY:

Pros:

- Gives you more control over goals, characteristics, questions, and methods.
- Enables you to have clearly defined roles and responsibilities at the outset of the project.
- Saves time by not having to coordinate with others or decide by consensus.
- Enables you to stay highly focused on objectives with less potential for conflicts of interest.

Cons:

- Places the burden of understanding and interpreting community information on one or few people.
- Potentially limits scope by having fewer resources and less time.
- Makes it more difficult to learn about the diversity of community members — investigations might be incomplete or misdirected.
- Might make access to community more difficult.
- Might contribute to community members feeling excluded from the process so they question results or fight outcomes.
- Might provide less project visibility than with collaboration.

WORKING COLLABORATIVELY:

Pros:

- Synergy of more people can produce a better defined project.
- Can broaden the scope of the project.
- More can be done with shared resources and added resources from your partners.
- Results can have multiple uses.
- Working together provides access to additional data.
- Enhances the potential to reach out to, interest, and involve more of the community.
- Facilitates consensus-based decision-making that can lead to "win-win" solutions that people are happy with and more likely to support.

Cons:

- Working with and coordinating larger groups of people might be more time-consuming.
- By requiring more time, collaborative projects might be more expensive.
- It might be hard to reach consensus.

Collaboration can increase the scope and usefulness of the assessment. Working with other groups also ensures that your project is comprehensive and balanced, and represents a wide range of community interests. By including others in planning and conducting your project, you build ownership in the project, interest in its results, and in the long term — future community unity around an issue. In addition, if you are not from the community — meaning you might be perceived as an "outsider" — collaboration will help you get to know the community and thus ask the right questions.

You should decide early in your project whether you want to work alone or collaborate. If you decide to bring partners in, the earlier you do so the more likely they will feel part of the process and contribute meaningfully to defining the approach and securing necessary resources (e.g., brain power, human resources, and financial assistance). If you decide to collaborate, take the following steps:

1. Share your ideas and the *Guide* with potential partners (**Figure S1-4**).
2. Meet with your potential partners. Discuss and reach agreement on how the team will work and different roles and responsiblities (e.g., Will there be an assessment working group? Who will chair it? How often will you meet? Who will be responsible for different activities and reports?).
3. Determine what technical expertise exists within your partner group. If technical expertise is not available from a team member, you might need to hire outside help. (**Figure S1-5** presents hints on choosing a consultant.)
4. Reach agreement about when and how to involve the public in the project and when and how to make the results available to the public.
5. To facilitate communication and teamwork, create and distribute a list of team members with their contact information.

Use **W-1 Worksheet—Potential Collaborator Contact List** (found at the end of this section) to keep track of possibilities and your decisions.

Figure S1-4—Potential Collaborators

- Business and industry representatives, especially those potentially affected by, or capable of affecting, the outcome of the project.
- Local Chambers of Commerce, tourism boards, or other economic development organizations.
- Relevant local, state, tribal, or federal government officials.
- Members of existing citizen organizations that use or are concerned with the issue or resource in question, including
  - Local (and local chapters of national) environmental interest groups.
  - Outdoor recreation organizations.
  - Community service groups.
  - Land-trust organizations.
  - Condominium or homeowner associations.
  - Neighborhood groups.
  - Church organizations.
  - School clubs and organizations.
  - Historical and cultural societies.
- Local subject matter experts:
  - Social scientists.
  - Scientists and engineers.
  - Teachers and academic researchers.
  - Physicians.
  - Local, county, and state health and environmental organizations.
  - Librarians, historical archivists, museum curators.
- Citizen "spark plugs"— active community residents.
- Other.

Searching for Similar Studies

Before you put together your project, find out if similar studies have been done or are currently in process. This helps you in three significant ways:

- ☑ Similar studies provide a base on which your assessment can build. If nothing else, you eliminate duplication, but you might also find new areas to investigate and thus sharpen the focus for your project.
- ☑ Previous studies might help you determine the goals and scope of your project, including identifying additional characteristics and questions to investigate.
- ☑ Previous studies might identify key sources of information, additional resources, and potential partners to help you plan and conduct your project.

Check with a variety of sources to learn what has been done or is in progress.

- ☑ Local college and university faculty (in anthropology, economics, history, marketing, political science, sociology, environmental studies, geography, planning) might have substantive research interests and technical expertise in assessment methods.
- ☑ Public health and extension agents at land grant universities might also be good sources of information and expertise.
- ☑ Local firms or national membership organizations concerned with the same topics and market researchers might have conducted studies themselves or could refer you to others who have. You might even be able to collaborate with a similar project already under way.
- ☑ Demographic and other assessment information might be available from universities, other organizations, or state and local governments.
- ☑ Spend some time at the library to determine (and evaluate) previous community assessment work.

Use **W-2 Worksheet—Summary of Similar Studies** (found at the end of this section) to keep track of other studies.

Figure S1-5—Tips for Choosing a Consultant

- **Demonstrated Technical Expertise:**
  1. Have they done this kind of work before?
  2. Can they demonstrate their previous experience?
     - a. Project descriptions or examples (portfolio).
     - b. Staff expertise
       - — Resumes (look for years of relevant experience).
     - c. Testimonials (letters of recommendation, awards, name recognition).
- **Cost:**
  1. Are their rates reasonable compared to similar vendors?
  2. Can you afford them?

Financial Resources and Budget

Your financial resources determine the scope of your assessment project. Community cultural assessments are often conducted with a mix of volunteer help and paid consultants. And assessment methods differ by cost and resource implications. By carefully balancing the primary goals of your project with assessment options, you can plan your project within your available resources. Look at the community stories in the *Guide* (**Appendix A**) for an idea of how assessment projects range in cost; many list the total cost of their projects. Consider these points when developing your budget:

- ☑ Review **Assessment Methods Worksheets (Chapter 4, Step 4)** to determine the complexity of the methods you might use.
- ☑ If using technical/professional assistance (not in-kind), solicit bids (**Figure S1-5**).
- ☑ Estimate expected costs, and keep track of actual costs.
- ☑ Determine the scope of your budget for this project in both actual dollars available and the tasks you expect to cover.
- ☑ Investigate co-funding with collaborators in or outside your organization.
- ☑ Suggest in-kind services or reduced rates from local universities or consulting companies.
- ☑ Seek grants from government or private sources.

To develop your budget, first list all elements of the project that will cost money: staff, travel, and costs associated with particular methods. Estimate the cost for each element and then compare it with available resources in terms of dollars, staff, and other non-cash resources such as cars and in-kind contributions. Finally, allocate existing funds to project elements as needed.

Keys for Maintaining Momentum

Many factors contribute to the success or failure of a community cultural assessment, and the development of strategies and programs to achieve longer-term goals. Here are a few "tried and true" techniques that can help make your project a success.

- ☑ Set project goals that are attainable under all known constraints.

- ☑ Throughout all stages of your project, keep those project goals in mind. Keep referring back to them; they should guide all of your actions.
- ☑ Set frequent milestones so that progress is noticeable.
- ☑ Put energetic, charismatic people in positions involving public relations.
- ☑ Clearly assign tasks so that responsibilities are unmistakable.
- ☑ Schedule regular meetings, even if widely spaced, to maintain personal contact.
- ☑ Run the meetings effectively (refer to **Meetings in Chapter 4, Step 4**).
- ☑ Make the project fun! Intersperse picnics or other social events into the work schedule so that the project does not seem all drudgery.

Ethics of Assessment

As you design your assessment project, keep in mind the ethical considerations associated with a community cultural assessment. Following are common guidelines for conducting an assessment, based on those established by professional societies of social researchers. You should review these guidelines with the members of your team and agree to abide by them.

- ☑ **Voluntary Participation** — Methods that collect information from community members interrupt their daily lives and often ask them to reveal personal information. Therefore, no one should be forced to participate in a data collecting project.
- ☑ **No Harm to the Participants** — A community assessment should never injure the people participating. This guideline refers particularly to revealing information collected that would embarrass them or endanger their homes or lives, friendships, jobs, and so forth.
- ☑ **Anonymity and Confidentiality** — To protect the interests of community members participating in a community assessment, their identity must be protected. Anonymity means that the assessor is not able to link a response, such as a self-completed survey, with a respondent. Confidentiality means that the assessor can link responses to respondents but promises not to reveal the identity of the respondents, such as in an interview or focus group.

☑ **No Deceiving Subjects** — You must always explain the purpose of the project and your own involvement. This might affect how community members respond to your inquiries. But if you follow the preceding ethical guidelines, potential participants should feel comfortable responding honestly to your questions.

☑ **Analysis and Reporting** — As an assessor, you also have ethical concerns related to how you present the data collected during an assessment and how you describe the process. Social research such as an assessment, rarely, if ever, follows even the best plans. In actuality, it might have numerous shortcomings. Ethically analyzing and reporting data means that you mention the problems, shortcomings, or negative findings of the assessment so that the reader can accurately interpret your findings.

[Ethical guidelines adapted from Babbie, 1995:448-454]

Human Subjects Research

If conducting an assessment under the auspices of the U.S. government or with U.S. government funding, and it involves human subjects, it must be approved by the Agency Human Subjects Research Review Official (HSRRO) under the Common Rule: Protection of Human Subjects from Research Risks (40 CFR Part 26) and by an Institutional Review Board. If your work is not supported by federal money, it is still important to take the following into consideration.

"Human subject means a living individual about whom an investigator (whether professional or student) obtains
1) data through intervention or interaction with the individual, or
2) identifiable private information." [40 CFR Part 26.102(f)]

"(2) Research involving the use of educational tests . . ., survey procedures, interview procedures, or observation of public behavior is exempt unless:

"(i) Information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' response outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation." [40 CFR Part 26.101(b)]

The use of an informed consent mechanism is advisable under all circumstances related to working with human subjects. An informed consent mechanism is generally a letter written by the assessor describing the project, the kinds of questions that will be asked, how the answers will be used, and how the person's anonymity will or will not be preserved. The letter must be signed by all parties involved. The assessor needs to respect the wishes of the individuals with whom they are working. Please refer to the Ethics of Assessment in the *Guide*.

Contact Roger Cortesi at (202) 564-6852 or the Human Subjects Research Review Official in EPA's Office of Research and Development if you have any questions.

Paperwork Reduction Act/Information Collection Request

The 1995 Paperwork Reduction Act (PRA) was designed to minimize the burden of federal information collection efforts on the public. Under the Paperwork Reduction Act, federal agencies are required to obtain approval from the Office of Management and Budget (OMB) to collect information from the public.

To obtain permission, the federal agency prepares an Information Collection Request (ICR) for OMB's approval. The ICR explains what information will be collected, why the information is needed, and who will need to respond, and it includes an estimate of the burden of hours the public will need to respond. This process includes two *Federal Register* notices and responses to any public comment received. After reviewing an ICR, OMB might disapprove, approve, or place conditions which must be met for approving the ICR. The ICR process takes six months. An ICR is requried when

- ☑ Identical information will be collected from 10 or more persons.
- ☑ Information is gathered by EPA/agencies directly, or with agency funding through cooperative agreements and grants.
- ☑ EPA funding is used to collect information in any way.

Contact EPA's Regulatory Information Division, (202) 564-0388, if you have any questions.

Bibliographic Resources

Babbie, E. 1995. *The Practice of Social Research*. 7th ed. Wadsworth Publishing Company, Belmont, CA.

U.S. Department of Energy, Environment, Safety, and Health. 1998. *Effective Public Participation Under the National Environmental Policy Act*, 2nd ed. U.S. Department of Energy, Environment, Safety and Health, Office of NEPA Policy and Assistance, Washington, DC. http://tis.eh.doe.gov/nepa/tools/guidance/pubpart2.html.

U.S. Environmental Protection Agency. 2001. *Common Rule: Protection of Human Subjects from Research Risks*. U.S. Environmental Protection Agency, Office of Research and Development. Code of Federal Regulations, July 1, 2001, 40 CFR 26.

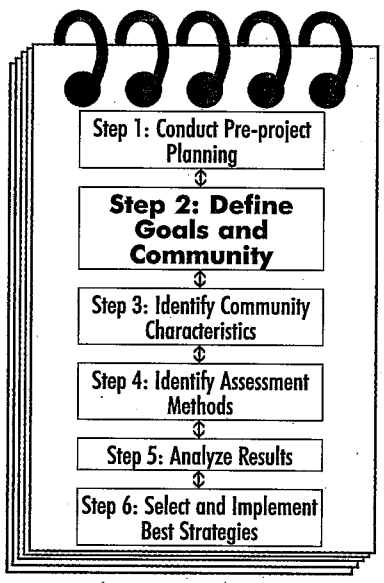
W-1 WORKSHEET—Potential Collaborator Contact List

Potential Collaborator Category	How They Can Help	Actual Contact
For example, Local Colleges	Social science departments (e.g., sociology, anthropology) might have conducted similar studies or have expertise that can help you conduct some of the assessment techniques	Dr. Jane Doe, Assistant Professor of Sociology
Environmental Organizations		
Civic Groups		
Religious Organizations		
Political Organizations		
Social Service Organizations		
Local Government		
State Government		
Federal Government		
Homeowners Association		
Neighborhood Councils		
Parent–Teacher Associations		
Recreation and Tourism Interests		
Historic and Cultural Organizations		
Business and Industry		
Labor Unions		
Other		

W-2 WORKSHEET—Summary of Similar Studies

Study Name	Reference (author, date)	Contact Person	Study Summary (approach, area)	Relevance to Your Project

STEP 2:
Define Goals and Community



A major step in an assessment project is defining project goals and the community. Goals and the community itself must be examined in concert because each can affect the other. In addition, you want to make sure your assessment goals and community are directly related to your overall environmental protection goals. The results of your project might be interesting in and of themselves, but their greatest use is in how they contribute to your overall strategies and actions for protecting the environment.

Defining Your Goals

Goal setting is an iterative process, moving from the general to the more specific as you learn more about the community you are assessing. Although it is important to reevaluate them periodically, always remember your starting goals. They provide a base from which to measure your progress. **Figure S2-1** provides examples of project goals that might be supported by community cultural assessment.

For example, an assessment project goal could be stated as

> "To use a community cultural assessment to obtain information on the demographics, beliefs, and interests of minority populations in the community so that a well-targeted environmental justice program (environmental protection goal) can be developed."

Another example might be

> "To learn community perceptions about threats to the watershed to establish riparian buffer zones (environmental protection goal)."

If you are working with others to define your goals, you might wish to use an organized approach that will help you move progressively from a broadly stated vision or goal toward more specific and narrowly defined goals. Typically, the steps in the goal-setting process include the following:

- ☑ Review your situation and needs.
- ☑ Brainstorm all possible goals.

Figure S2-1—Assessment Project Goals and Environmental Protection Strategies

If your overall environmental protection project goal is to protect and restore environmental resources, your assessment project goal might be stated as "To develop an information base that will help me identify and involve community members in an effective way." Examples of possible assessment goals include

- Identify and involve diverse stakeholders.
- Identify and refine vision (to appropriately frame a visioning or goal-setting process).
- Identify and refine environmental protection goals.
- Identify coalition-building opportunities.
- Create environmental education and public outreach campaigns.
- Support environmental dispute resolution.
- Provide input for media communications.
- Develop indicators, e.g., social and community participation.
- Identify and understand specific populations, e.g., at-risk populations.
- Identify resources, e.g., volunteers and donors.
- Perform comprehensive planning.
- Decide on a decision-making process.
- Identify other assessment needs.

☑ Develop and apply evaluation criteria to help you prioritize your goals.

☑ Refine and narrow your goals as you learn more.

Some evaluation criteria for your goals include

☑ How will the results of the assessment be used?

☑ How will the results support your goals?

☑ Are they specific, measurable, action-oriented goals?

☑ Can you further refine them to develop more specific objectives and milestones?

☑ Do you have time frames for meeting each of your goals?

☑ If you are working with others on defining your goals, do you all agree on the goals?

Use **W-3 Worksheet—Defining Goals** (found at the end of this section) and other references to goal setting in **Meetings Instructions, Chapter 4, Step 4**, and *Community-based Environmental Protection: A Resource Book for Protecting Ecosystems and Communities* (EPA 230-B-96-003, September 1997).

Remember that goals are more effective if they are clearly stated, tied to specific objectives and milestones, and understandable to all participants in the project.

☑ **Objectives** are specific accomplishments that, when combined, accomplish your broader goals.

☑ **Milestones** are the dates by which you plan to accomplish each objective or goal.

Defining Your Community

The definition and boundaries of the community you want to assess are as important as your assessment goals. It is therefore important to define your community when defining your goals. **Chapter 2** provides an overview of the different ways a community can be described. **W-4 Worksheet—Defining Community** (found at the end of this section) is a key tool for being more specific about the community by defining the physical and administrative boundaries, local groups and organizations, local activities, and various community participation roles. Your definition might change throughout an assessment process as you gain more information.

W-3 WORKSHEET—Defining Goals

The process of defining project goals and identifying the community you want to study is an important early step in your assessment project.

WHAT IS THE GOAL(S) OF THIS ASSESSMENT PROJECT?

List your environmental protection goal(s):

Goal #1: _____

_____

Goal #2: _____

_____

Goal #3: _____

_____

List your assessment project goal(s), objectives, and milestones:

SUMMARY OF ASSESSMENT PROJECT GOALS		
Goal	**Objective(s)**	**Milestone**

W-4 WORKSHEET—Defining Community

"Community" can mean different things to different people. To effectively work within a community, it helps to define who and what is "the community." Human communities can be defined by physical or cultural phenomena, and the definition might change over time. This exercise is designed to help you define community in the context of community-based environmental protection efforts. In an assessment project, community might be defined at the beginning of the project and refined throughout as assessors learn more about the community with which they are working. Defining "community" is an iterative process.

I. **Identify the "place" in a community's "sense of place."** Use the list below to identify and discuss the physical characteristics of your place. Add details as appropriate, e.g., names of places.

- Political boundaries (e.g., city and county lines)
- Administrative boundaries (e.g., school districts, soil and water conservation districts)
- Natural boundaries (e.g., landscape features, parks, rivers and streams, watersheds)
- Sensitive areas and resources (e.g., historic sites of importance, drinking water supplies, special wildlife habitats)
- Physical/municipal infrastructure boundaries (e.g., transportation networks, sewer sheds, solid waste facilities, and sewage treatment plants)
- Key landmarks (e.g., statues, cultural/historical/natural sites of significance)
- "Problem" areas that might have actual or potential public health and ecological impacts
- Nearby areas (e.g., those not within the defined boundaries of your study area, but which might influence or be affected by your community's decision-making)
- Other places

II. **Identify the "sense of community": groups/organizations.** A place is a community because people live and use the place. People participate in groups and organizations, which often results in creating a "sense of community." Review the list of groups/organizations below. Write in specific names of ones related to your community. Add entries in Other category. The groups/organizations do not all have to be within the geographic boundaries defined in #I, but they should have some relationship to those boundaries.

- Religious organizations _____
- Political organizations _____
- Civic organizations _____
- Environmental grassroots/interest groups _____
- Social service organizations _____
- Outdoor recreation organizations _____
- Ethnic groups _____
- Parent-teacher associations _____
- Children's groups (e.g., Girl Scouts, 4-H) _____
- Historical societies _____
- Government agencies (federal, state, county, and local) _____

(Continued on next page)

W-4 WORKSHEET—Defining Community (continued)

- Business associations and interests _____
- Senior citizen groups _____
- Academic associations (e.g., universities and schools) _____
- Neighborhood councils _____
- Special constituencies (e.g., environmental justice orgs.) _____
- Other _____

III. Identify key local activities. Local activities are also important for community cohesion and are often where people exchange information about community happenings. Identify local activities that characterize your community, such as fishing or football.

_____

_____

_____

_____

_____

_____

_____

IV. Identify community leadership and participation roles. Community leadership and participation are important to building and maintaining community cohesion. List various leadership roles and ways to participate in community life. Many might correspond with the above list.

_____

_____

_____

_____

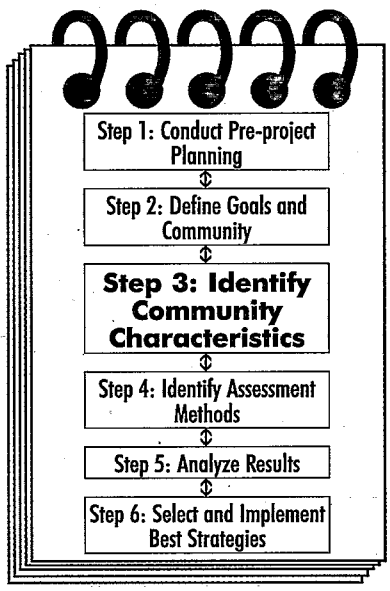
_____

_____

_____

This exercise is only an initial step in defining your community. The assessment will provide you with more detail about these different factors. Revisit this worksheet throughout the assessment process. Upon completion of the process, redo this exercise as a measure of what you already knew about your community and what you learned through the assessment. The rest of this volume is designed to assist you in further defining your community.

STEP 3:
Identify Community Characteristics



The term "community-based environmental protection" clearly implies that it is just that — *community-based.* It must draw upon the community's experience and reflect its members' values and interests. So if you are to develop strategies that address specific environmental concerns, you need to know what those concerns are, why they're important, and who considers them important. Use this step to identify what information will help you understand your community and its interests.

How to Use This Step

Brief fact sheets designed to be easily reproduced give you basic information about each community characteristic listed in **Figure S3-1**:

- ☑ Characteristic description
- ☑ Why this information is important
- ☑ Questions about the characteristic
- ☑ Suggested methods to answer them

Also provided is **W-5 Worksheet—Community Characteristics and Assessment Methods,** which will help you sort out your priority concerns.

Although you will select the ones most relevant to your needs, the community characteristics appear in alphabetical order for ease of reference. You might want to look at the geographic boundaries and landscape characteristics first because these will help you define the community boundaries. Next, establish a baseline of information about the community by collecting such objective information as demographics, employment, education, infrastructure, and public services. Finally, gather more subjective information such as environmental awareness, values, and religious and spiritual practices. This less obvious, intangible information works in concert with objective information to enable you to understand and interpret your results. Take these suggestions as guidance; the exact characteristics you choose should be based on the specific needs of your own project.

Figure S3-1—Community Characteristics

- Community Boundaries
- Community Capacity and Activism
- Community Interaction and Information Flow
- Demographic Information
- Economic Conditions and Employment
- Education
- Environmental Awareness and Values
- Governance
- Infrastructure and Public Services
- Local Identity
- Local Leisure and Recreation
- Natural Resources and Landscapes
- Property Ownership, Management, and Planning
- Public Safety and Health
- Religious and Spiritual Practices

Keep in mind that the questions listed for each community characteristic are neither exhaustive nor comprehensive. The lists are but a starting point to create, tailor, and select appropriate investigative questions to meet your own needs.

Figure S3-2 gives you an example of how a community might select particular community characteristics to achieve its goals.

Figure S3-2—Community Cultural Assessment in a Fictitious Community

Reports by the Department of Public Works have revealed that combined sewer overflows (CSOs) from the community's sewer system are a serious problem and getting worse. Raw sewage is released to local rivers more than 50 times per year.

To address the problem, local officials and community members agreed that a community cultural assessment was needed to determine the extent of the problem. This would include identifying who in the community was being impacted by the CSOs, what their perceptions were about the problem, and what possible alternatives might be developed to minimize the danger of CSOs to at-risk subpopulations of the community.

Since the sewer system is confined to the city limits, identifying the geographic boundaries of the study area was straightforward. Through focused discussions, it was agreed that an assessment should be conducted for five community characteristics:

- Infrastructure and public services
- Demographic information
- Public health and safety
- Local leisure and recreation
- Education

An assessment of the community's infrastructure and public services was needed to identify the number of CSO outfalls, their location within the community, and potential structural problems with the system. It was also necessary for identifying the water bodies where the outfalls were located. An investigation of demographics was conducted to determine which groups in the community lived near the outfalls or had the most direct exposure to the water bodies that received discharges from the outfalls.

The need for an assessment of public health and safety issues was obvious. When combined with the demographic information, the assessment revealed that the community's African American and Latino populations were disproportionately affected by the CSOs. Because of this, these groups faced more significant exposure to health risks (e.g., *E. coli* bacteria) than other groups in the community. These groups fished both for recreation and subsistence, consuming fish on a regular basis.

The assessment of local leisure and recreation was conducted because of the popularity of boating and swimming in the water bodies where the outfalls were located. Finally, the education assessment was conducted to determine the appropriate language and content of the public education campaign.

Using the information gathered through the assessment effort, local officials, with input from concerned community members, devised several alternative strategies to address public health and safety concerns, and recreation-related issues. It was decided that the most cost-effective remedy for minimizing the CSOs and their harmful health effects was a twofold approach:

1. To construct a temporary storage tank to which untreated sewage could be directed and held until it was safe to release.
2. To initiate a public education program targeted to the at-risk African American and Latino populations, advising them about steps they could take to minimize their risks from CSOs.

To address the issue of recreationists and subsistence fishermen using the water bodies near the outfalls, local officials posted large signs near the outfalls warning of the health risks associated with the high concentration of CSOs. Signs were also posted in Spanish for the safety of the non-English-speaking Latino population.

Overview of Community Characteristics

This step discusses 15 characteristics that describe and define communities. **Figure S3-1** lists these community characteristics. The list of community characteristics includes, but is not limited to, the types of community information federal agencies must compile under the National Environmental Policy Act and Executive Order 12898 (Environmental Justice). Some characteristics are designed to provide basic information about a community, such as its geographic boundaries, landscape, demographics, economic conditions and trends, and natural resources. Federal, state, and local agencies regularly collect these data and generally make them readily accessible.

Other community characteristics describe a community more as a "sense of place." This information delves below the surface to probe underlying attitudes, values, perceptions, and interests. It explores what community members think and feel, and why. Environmental awareness and values surface here, as do local traditions and history, religious and spiritual practices, the way information travels, and how decisions are made — the very local identity that makes each community unique.

It is important to note that all community characteristics are inextricably linked and influence each other. For example, the geographic boundaries of a rural community surrounded by mountains or a river might strongly influence residents' level of environmental awareness and values. People might live there because they enjoy and appreciate the natural environment. The value they place on the natural beauty of the mountains might influence their art, their community celebrations, even how their schools and businesses operate. Because they want to live in this area, residents might be willing to be underemployed, have seasonal employment schedules, or commute to job centers outside the community. An assessment reveals the relationships between these various elements of community life.

W-5 WORKSHEET—Community Characteristics and Assessment Methods

Community Characteristics	Key Questions	Assessment Method(s)
		Type: Responsible Party: Desired Product: Due Date:
		Type: Responsible Party: Desired Product: Due Date:
		Type: Responsible Party: Desired Product: Due Date:

Community Boundaries

Community boundaries are the natural, physical, administrative, social, and economic characteristics that separate one community from another.

- ☑ **Natural boundaries** might include geologic features (e.g., watershed, mountain range) and landscape features, (e.g., estuary, river, plains, foothills).
- ☑ **Physical boundaries** might include those which are created by humans (e.g., major transportation corridors, bridges, plazas) and are characterized by location or use (e.g., downtown, uptown, the waterfront, rural, urban).
- ☑ **Administrative boundaries** are those created by government entities for political jurisdiction (e.g., congressional districts, town lines, school districts) and for providing public services (e.g., waste disposal, drinking water supply).
- ☑ **Social boundaries** refer to the ethnic complexion of a certain place (e.g., Little Italy, Chinatown), and organized social relationships around a place (e.g., civic associations, Boy/Girl Scouts).
- ☑ **Economic boundaries** refer to economic class (e.g., upper class, working class).

These boundaries coexist at different scales. For instance, if community members define their *community boundaries* based on a common ethnicity, it is still possible to identify administrative and geographic boundaries for the same community.

WHY IS THIS INFORMATION IMPORTANT?

Information about *community boundaries* might explain such things as why the community is located where it is and its connection to its natural resources (e.g., a seaport historically used for commerce, along a river where water is diverted for crop production, in the mountains where miners settled in the late 1800s). It might also explain what types of people live there and why (e.g., climate, natural resource base, aesthetic preferences for the landscape, rural or urban lifestyles). This information is also helpful when determining which stakeholders to involve in community-based efforts. Knowing that a community spans multiple administrative boundaries will help identify key decision-makers to involve in the process. Identifying boundaries around the community also helps target human and financial resources. In some cases, limited resources might require that a particular restoration strategy be implemented in phases, making boundaries very useful.

Review the discussion of community in **Chapter 2** and the **Defining Community Worksheet, Chapter 4, Step 2**, to fully consider the possible boundaries that exist for any one community.

ASSESSMENT QUESTIONS AND METHODS CHECKLIST (methods key at end of table)

Example Questions to Answer	Possible Methods to Use												
	A	B	C	D	E	F	G	H	I	J	K	L	M
How do community members define the geographic boundaries of their community?		✓		✓	✓	✓	✓	✓			✓	✓	✓
Are groups within the community grouped or clustered in any specific locations (e.g., "neighborhoods")? Can these boundaries be drawn on a map, or do the community boundaries of certain groups change given economic or other influential factors?	✓					✓	✓		✓		✓		
How do people in the community define their surroundings (e.g., landscape features; topography and vistas; arrangements of streets and buildings and architectural styles; distance and physical separation from other communities; social, cultural, and educational institutions; business centers; meeting places)?		✓		✓	✓	✓	✓	✓	✓		✓	✓	✓
What are the different political, social, and economic boundaries in the community? How are they described by community members (ethnic clusters, rural vs. urban)? What are the advantages of each? The disadvantages?	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓
How do the various boundaries connect to the history, cultural values, or local identity?		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
Are there people beyond the boundaries who affect/are affected by/are concerned with the community?				✓	✓		✓	✓	✓		✓	✓	✓

ASSESSMENT METHODS KEY AND LOCATION IN THE *GUIDE*:

A=Census Data Research
B=Content Analysis
C=Environmental Values Typology
D=Focus Groups
E=Interviewing
F=Background Research
G=Maps and Geographic Research
H=Meetings
I=Observation
J=Regional Economic Data Research
K=Social Mapping
L=Surveys and Polls
M=Visual Methods

Community Capacity and Activism

Community capacity and activism describes the ability of local leaders and citizen groups within the community to influence local decision-making. The community's capacity refers to its pool of leaders who are not necessarily elected or appointed officials, but usually are prominent business persons, religious leaders (e.g., priests, ministers, or rabbis), tribal elders, presidents of civic organizations (e.g., Jaycees or Kiwanis) or labor unions, academics, or landowners. Community members see these leaders as influencing community decisions on behalf of a particular group, or the community as a whole.

Community capacity and activism is demonstrated by the existence of community groups such as coalitions dedicated to a particular environmental issue, watchdog organizations that track and inform the community on a range of issues, or bodies such as homeowners' associations. Activism is often practiced through local demonstrations, meetings with local officials, and informal discussions among community members.

Community capacity and activism also describes the capacity of new leaders to emerge within the community, opportunities for empowering community members not previously involved with community decision-making (e.g., minority groups), and the ability of the community to work collectively to create and sustain beneficial change.

WHY IS THIS INFORMATION IMPORTANT?

By answering questions such as those listed here, you can identify the key leaders and organizations in the community who are responsible for "getting things accomplished" and for motivating other community members to act. And, you can access existing social networks and determine receptivity toward environmental protection strategies. You can also identify examples of successful initiatives in the community that could be models for future environmental protection efforts. Once you understand how community members care about their community and how they work together in making decisions, you'll have an idea of how willing they might be to collaborate on making an environmental protection strategy work for your community.

ASSESSMENT QUESTIONS AND METHODS CHECKLIST (methods key at end of table)

Example Questions to Answer	Possible Methods to Use												
	A	B	C	D	E	F	G	H	I	J	K	L	M
In general, what kinds of opportunities exist to get involved in community activities? What kinds of volunteer activities thrive in the community (e.g., litter pickup, the recycling center, trail club, Big Brother/Big Sister activities)?		✓		✓	✓	✓			✓		✓	✓	
What civic groups exist in the community (e.g., parent-teacher associations, religious organizations, philanthropic groups, 4-H groups, environmental justice organizations, and other organizations such as Lions Club, Kiwanis, Rotary Club) and what are their roles/missions? Which organizations receive the most community participation and support?		✓	✓	✓	✓	✓			✓		✓	✓	
What is the membership of civic groups (e.g., number and characteristics of members)? Is membership representative of the community's population, or do certain members of the community belong to particular groups? Why?		✓	✓	✓	✓				✓		✓	✓	
Who are the key nongovernmental decision-makers and leaders (e.g., tribal elders, religious, corporate, and academic leaders)? How did such leaders become influential?		✓		✓	✓						✓	✓	
Which community organizations (e.g., homeowners' associations) and their leaders are influential in community decision-making? How did they become influential?		✓		✓	✓	✓					✓	✓	
Are there any issues or local interests in particular (e.g., environmental, economic, or political issues) that are frequently addressed by these organizations or their leaders? Are there any issues or local interests that could be represented by these organizations but are not? Why?		✓	✓	✓	✓	✓			✓		✓	✓	
What are some examples of successful community initiatives? What made them successful for the community? Do any initiatives address environmental concerns?		✓		✓	✓	✓			✓			✓	
Are there different approaches to dealing with conflict in the community? What are they?					✓				✓				

ASSESSMENT METHODS KEY AND LOCATION IN THE *GUIDE*:

A=Census Data Research
B=Content Analysis
C=Environmental Values Typology
D=Focus Groups
E=Interviewing
F=Background Research
G=Maps and Geographic Research
H=Meetings
I=Observation
J=Regional Economic Data Research
K=Social Mapping
L=Surveys and Polls
M=Visual Methods

Community Interaction and Information Flow

Community interaction and information flow describes how people in the community interact with one another (e.g., do neighbors know and visit with each other or do they generally keep to themselves?). It also describes how members of a community exchange information, what information sources are the most popular in a community, and who influences the type of information available within a community. Information can flow between community members through formal means (e.g., newspaper, TV, radio, public meetings) or informal exchanges (e.g., at coffee shops, in grocery stores, on sidewalks).

WHY IS THIS INFORMATION IMPORTANT?

Information flow reveals how perceptions of the environment are influenced by the views of others, the media, and other sources of information. And it also shows how access to and use of various information sources affect community members' environmental awareness — including which media sources inform and influence their environmental perceptions and values. For example, being familiar with formal information dissemination mechanisms can help you see how broad local trends might develop, such as the impact of a local TV station broadcasting local environmental news as a regular segment on the evening news.

Being familiar with *community interaction* and knowing where and how people get their information helps you target community outreach and environmental education. An assessment will tell you who participates (e.g., race, class, age, part of town) and where groups gather (e.g., church, along the river, at a restaurant) — the important "hangouts" that are often important places of informal exchanges.

ASSESSMENT QUESTIONS AND METHODS CHECKLIST (methods key at end of table)

Example Questions to Answer	Possible Methods to Use												
	A	B	C	D	E	F	G	H	I	J	K	L	M
Where are the specific places where people meet to chat and gossip? The supermarket? The post office? The local bar?		✓			✓	✓	✓		✓		✓	✓	✓
Are there public forums for exchanging information, e.g., town bulletin boards, town meetings, Internet networks?		✓			✓				✓		✓	✓	✓
How do the groups/organizations communicate with their members? Through newsletters? Monthly meetings? Other?		✓			✓				✓		✓	✓	✓
What are the important media in the community (e.g., newspaper, radio, television)? Are there any media personalities who are particularly popular or influential? What percentage of people in the community have access to cable television and public access channels?		✓			✓				✓		✓	✓	
What types of environmental issues receive coverage by the local media? What has been the nature of that coverage (e.g., support, oppose, factual, opinion, interview-based)? Are there local media people who specialize in environmental coverage?		✓	✓	✓	✓	✓			✓			✓	
Besides local media, who else provides information about local environmental issues? Are there any nongovernmental organizations or interest groups disseminating environmental information?		✓			✓	✓			✓		✓	✓	
What percentage of people in the community use the Internet? Do public libraries provide Internet access? What other kinds of "interactive" media do people in the community use to communicate with one another (e.g., telephone, talk-radio, TV call-in shows)? How often are environmental issues topics of discussion?	✓	✓				✓			✓			✓	
What percentage of the community receives a newspaper? Owns a TV? Owns a radio? Are there any groups in the community who might not have access to information provided through normal media channels (e.g., low-income households)? Why?		✓				✓			✓		✓	✓	
What languages are used in which communication vehicles or media? Why?		✓				✓							

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Demographic Information

Demographic information describes the community's population. It is primarily collected by local, state, or federal agencies such as the Census Bureau and local public health departments. It covers a range of topics about people in communities — population size, gender, age composition, ethnic backgrounds, household characteristics, geographic distribution, and vital statistics such as incidence of diseases.

WHY IS THIS INFORMATION IMPORTANT?

Use *demographic information* to design public participation, outreach, and education strategies that reflect the various age, educational, and economic backgrounds present in the community. For example, different ethnic groups might indicate the need for developing communication materials in languages other than English.

You can use *demographic information* to identify a specific subpopulation or "community within a community" (e.g., a particular ethnic group) that might warrant more intensive investigation and targeting of resources.

Demographic information might also predict how an existing population can be expected to change in the future (e.g., population growth or decline, ethnic or age makeup) or how seasonal residential patterns (summer cabins, tourists) affect sewer and water quality and quantity. *Demographic information* is also useful for assessing the community's need for public services and natural resources (e.g., clean water, land), estimating how population changes might increase pressures on natural resources, and developing strategies that address the environmental concerns associated with growth. It might also be used to describe populations you know to be disproportionately affected by environmental issues, including risks to health.

ASSESSMENT QUESTIONS AND METHODS CHECKLIST (methods key at end of table)

Example Questions to Answer	Possible Methods to Use												
	A	B	C	D	E	F	G	H	I	J	K	L	M
What are the basic population statistics (e.g., size, density, spatial distribution, age distribution, ethnicity, typical family size and structure) in the community?	✓					✓							
What are the relevant subgroups in the community (e.g., ethnic, religious, racial)? How do these groups compare in their values, priorities, and desired future conditions?	✓	✓	✓	✓	✓			✓	✓		✓	✓	✓
What is the projected population growth or change in the community in the future? What is the basis for the projection?	✓	✓				✓							
How has the community's population changed during the past year? Five years? Ten years? Are any trends evident?	✓	✓			✓	✓	✓					✓	✓
Are people leaving this community or coming to the community (e.g., young people or retirees moving in)? Would the community best be described as a permanent or transient community? If permanent, how long have people been living here? If people in the community are fairly new, from where did they come? What drew them to the community? If people are leaving the community, where do they go and why?	✓	✓		✓	✓	✓	✓		✓			✓	✓
Does the community attract a seasonal population (e.g., university students, wintering retirees, or summering vacationers)? Who composes the seasonal population? What attracts seasonal residents to this community?	✓	✓		✓	✓				✓			✓	
What languages are spoken in the community? What percentage of the community speaks English?	✓					✓						✓	

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Economic Conditions and Employment

Economic conditions and employment describes a community's economic history, current economic well-being, and future potential. This information takes into account employment levels, types of jobs, per capita income, poverty, unemployment rates, the range of incomes in the community, and trends in employment opportunities (e.g., family-owned businesses versus national chain businesses).

WHY IS THIS INFORMATION IMPORTANT?

Information about a community's economy can determine employment conditions and causes of past job dislocations (e.g., restrictions on logging or mining activity or a declining salmon industry), anticipate important changes in the employment base, and identify how employment activities might affect or be affected by the local environment. You can also use this information to target areas of environmental concern and identify elements (e.g., population growth, urban sprawl) that might compete with environmental protection strategies.

In addition to learning what economic endeavors have succeeded in the past and which look promising for the future, use information on *economic conditions and employment* to develop environmental protection strategies that balance local economic needs with environmental values. By determining the major employers and the proportion of the community that rely on certain economic sectors (e.g., natural resource-based jobs, manufacturing, high technology), you'll figure out the ways in which environmental protection strategies might affect jobs in the local economy. Employment data can tell you how much of the economy is based on extractive industries and on outdoor recreational businesses and other nature-based activities, such as ecotourism. Comparing these figures to proposed economic development plans can help the community decide how it can grow its economy while still protecting its natural resources.

ASSESSMENT QUESTIONS AND METHODS CHECKLIST (methods key at end of table)

Example Questions to Answer	Possible Methods to Use												
	A	B	C	D	E	F	G	H	I	J	K	L	M
How would you describe the economic health and vitality of the community (e.g., what is the average per capita income, number of people/families on welfare, etc.)? Do you think the community's economy is healthy? What is the average cost of living? How does it compare regionally? Nationally?	✓					✓				✓			
Describe the different businesses and industry in this community. How long have they been around? Are they large or small? Family-owned? Where are they located? How do the different types of businesses influence the culture of the community (e.g., banking, manufacturing, mining, or forestry)?	✓				✓	✓	✓		✓	✓		✓	
Is there one (or more) sector of the community's economy that is doing better or worse than others? What factors influence these trends?	✓			✓	✓	✓	✓					✓	
Does the community have any businesses that specialize in environmental technology? Are there any businesses that market their goods and services as being produced in an environmentally friendly manner? What types of goods and services are produced? How many people in the community are employed by these businesses or by government-based environmental programs?	✓	✓	✓		✓	✓			✓	✓		✓	
What is the unemployment rate in the community? How has it changed over time? What is it projected to be like in the future? Describe differences in unemployment between gender, ethnicity, etc.	✓				✓	✓							
What types of jobs do people in the community hold?	✓				✓	✓						✓	
What is the percentage of dual-income households? What is the percentage of working single parent households? How have things changed over time?	✓				✓	✓						✓	
Are there people working in natural resource-oriented sectors (e.g., mining, fishing, forestry, farming, ecotourism)? If so, how many, and which ones?										✓		✓	
What percentage of people who live in this community work in the community? Outside the community? How has the dynamic changed over time? Are there indications as to why these trends are occurring? Is telecommuting on the rise?				✓	✓	✓						✓	

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Education

Education describes the community in terms of the *education* levels of its members and what role formal or informal *education* plays in the community. This information extends beyond demographic description to describe the makeup of the school system (e.g., the number of schools in the community, curriculum focus, and how school activities integrate into the community). It might describe less formal aspects of education, such as home schooling, day care, adult education, and experiential educational programs. And it might include the value of *education* to community members.

WHY IS THIS INFORMATION IMPORTANT?

Information about *education* in a community gives you a sense of the community's approach to *education* and which approaches are most available and useful for environmental education. It might also give you background data on the knowledge community members might have on a range of issues resulting from different educational experiences and can be used to tailor public outreach messages and materials.

A community cultural assessment will also tell you which environmental issues formal and informal education programs focus on — and why. And knowing where educational programs exist, such as at a nature center, gives you new outlets for distributing materials; it might even give you more help in developing programs and certainly steer you away from costly duplication.

ASSESSMENT QUESTIONS AND METHODS CHECKLIST (methods key at end of table)

Example Questions to Answer	Possible Methods to Use												
	A	B	C	D	E	F	G	H	I	J	K	L	M
What percentage of adults in your community have a high school diploma? What percentage of adults have additional education or a college degree? How can those percentages be explained?	✓		✓	✓	✓	✓		✓				✓	
How many elementary schools, junior high schools, high schools, colleges, and universities are in your community? How many vocational and technical schools? How many home schooling or continuing adult education/literacy programs? Where are these schools and programs located?	✓					✓	✓		✓		✓		
What is the mix of public and private institutions? What percentage of students attend each type of institution?	✓					✓	✓						
Do the local schools prepare graduates to enter the local or other job markets? Why or why not? If not, where do students seek the education they need to successfully enter these job markets?				✓	✓							✓	
What roles do schools play in this community (e.g., is there an active PTA, sports program, or some other source of civic pride)? What problems do these schools face? How are they trying to resolve them?		✓		✓	✓	✓		✓			✓	✓	
How racially and ethnically diverse are the schools in this community? How is the school curriculum in this community tailored to local racial and ethnic groups?	✓			✓	✓			✓	✓			✓	
What kinds of environmental curricula are offered in the primary and secondary schools in this community?					✓							✓	
What kind of opportunities are available in this community to learn about the environment (e.g., nature centers, parks, sponsored lectures)?		✓			✓		✓		✓		✓	✓	✓
How many libraries does your community have? Where are they located? How often are they used by members of this community?						✓	✓	✓			✓	✓	

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Environmental Awareness and Values

Environmental awareness and values describes people's knowledge, concerns, and perceptions of their local environment. It also addresses whether and how community members integrate their *environmental awareness and values* into their daily activities. Such activities can include joining environmental groups, purchasing environmentally friendly goods and services, or performing specific behaviors, such as recycling household waste, taking used motor oil to collection centers, and using public transportation.

Environmental awareness and values also describes the different ways community members value the environment. They might appreciate the role of wetlands in protecting the quality of their drinking water supply or the role of trees in reducing their home heating bills by providing summertime shade. They might also value the environment for the recreation opportunities it affords or simply the way it makes them feel.

WHY IS THIS INFORMATION IMPORTANT?

Specifically, knowing about *environmental awareness and values* will help you communicate with community members about their environment in a way that makes sense to them and relates to their various interests and values. Meaningful communication increases participation and interest in environmental protection. Understanding the degree to which a community knows or does not know about threats to their environment will help you better target specific groups within the community for education and outreach, and assist you in effectively designing such materials. It might also help with conflict resolution.

In many cases, opposing groups might find that beneath their conflicting positions on an issue they actually share common environmental values. Once these similarities become evident, efforts can be made to build partnerships and consensus. For example, anglers might be concerned that agricultural practices are negatively affecting the health of the local fishery. You might learn that farmers also value the fishery for recreation. In this case, both the anglers and the farmers share a *naturalistic** environmental value, which might bring the two groups together to forge a solution.

*Refer to the **Environmental Values Typology** method description in **Chapter 4, Step 4.**

ASSESSMENT QUESTIONS AND METHODS CHECKLIST (methods key at end of table)

Example Questions to Answer	Possible Methods to Use												
	A	B	C	D	E	F	G	H	I	J	K	L	M
How do citizens in the community feel local natural resources should be managed (e.g., water resources and usage, scenic waterways, water and air quality, endangered species, migratory bird habitat)? What ethic is present in the community: one promoting limits to use or one promoting unlimited use?		✓	✓	✓	✓				✓		✓	✓	✓
How do people feel about the natural resources in the community? How do they enjoy those resources? Is any part of nature symbolically represented as part of the community (e.g., school mascots, flags)?		✓	✓	✓	✓				✓		✓	✓	✓
What do community members know about the natural history of the area (e.g., native species, habitats, ecosystems, and any changes that have occurred over time)? Are there any endangered or rare biological species or habitats? Are community members knowledgeable about biological species that are either native or exotic to the area? Where do they get their information on these subjects?		✓		✓	✓	✓					✓	✓	✓
What do residents feel are the most serious environmental problems facing the community? How have people addressed these problems?		✓		✓	✓			✓	✓		✓	✓	✓
What level of support for environmental protection currently exists in the community? How do factors such as religious beliefs and concern for future generations play into that support? What percentage of the community participates in environmental programs (e.g., birding clubs, environmental organizations, river cleanups, recycling)? What are the popular programs? Why? What kinds of activities are pursued? Why?	✓	✓	✓	✓	✓	✓		✓	✓			✓	✓
What do residents know about potential local, state, and federal facility environmental problems (e.g., wastewater treatment facilities, military installations, power generation facilities)? How does this knowledge fit into what "experts" in the field document about the environmental problems in the community?		✓		✓	✓	✓		✓			✓	✓	
What local businesses offer "environmentally friendly" products or services? Which recycled or less environmentally harmful products or services do community members use or buy?				✓	✓				✓	✓		✓	

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Governance

Governance describes the formal process of decision-making from the local level (e.g., mayoral and city council decisions), through state, tribal, and federal government levels. Decisions can range from federal regulations to local curfews. In addition to assessing the formal decision-making process, you might also want to consider the more subtle influences on those decisions by persons or groups (e.g., landowners, a wealthy middle class, an active minority group). For more information on assessing nongovernmental community leaders and groups, refer to the earlier discussion on *community capacity and activism*.

WHY IS THIS INFORMATION IMPORTANT?

Understanding how *governance* functions within the community is critical to achieving results with community-based environmental protection. It is good to understand how elected and appointed officials in government interact and work with other important players in the community, and the role community members play in the political process. It might also be necessary to understand the various functions of the several governments and agencies that govern the local community (e.g., authorities of tribal and local governments, as well as applicable state and federal laws and regulations). Identifying and including in your assessment people who are in positions of power and influence in the community might facilitate cooperation and build future momentum for the assessment effort and the projects that follow.

In addition, the relationship between local government and community members might influence the design and content of your project (e.g., whether ballot initiatives or referendums are an appropriate or necessary method for accomplishing certain goals). Understanding *governance* can be critical to ensuring that approval for certain actions is obtained in good faith, efficiently, and with the support of local officials. On the other hand, it's important to identify potential opponents ahead of time and make the effort early to resolve any conflicts.

ASSESSMENT QUESTIONS AND METHODS CHECKLIST (methods key at end of table)

Example Questions to Answer	Possible Methods to Use												
	A	B	C	D	E	F	G	H	I	J	K	L	M
What is the system of local government in the community? Do the boundaries of the study area encompass more than one system of local government (e.g., if the community is defined as the area contained within a watershed, are there several towns, each with its own governing system, included within those boundaries)?					✓	✓	✓				✓		
What proportion of this community votes in local, state, and national elections?	✓					✓						✓	
Who are the key political decision-makers and leaders in the community (e.g., elected officials, political appointees, city council members)? Who are the federal and state legislative representatives?		✓				✓	✓						
Has the environment been an issue in any election in this community? If so, which issue(s) was raised? Has the environment been an issue at a public hearing?		✓		✓	✓	✓		✓	✓		✓	✓	
What state and federal environmental laws and regulations are relevant to this community? How might those laws and regulations affect community-based environmental protection strategies?					✓	✓	✓						
What percentage of local government expenditures goes to environmental protection programs? How has local government used its regulatory authority to protect the environment? Does local government sponsor environmental education programs?		✓			✓	✓						✓	
Where do community members see the greatest successes and problems in solving environmental problems?		✓		✓	✓			✓			✓	✓	

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Infrastructure and Public Services

Infrastructure and public services describes a community's publicly supported services such as roads and highways, waste disposal, public transportation, utilities, drinking water, and sewage treatment. It also describes schools, hospitals, parks, and libraries, and additional public services such as those provided through the local police force and fire department.

WHY IS THIS INFORMATION IMPORTANT?

Infrastructure and public services are important because the extent and quality of infrastructure might reflect the community's cultural values (e.g., recycling centers promote environmental consciousness; efficient trash pickup and convenient disposal areas control litter and illegal dumping; household and business energy conservation can reduce consumption of precious natural resources). *Infrastructure and public services* relate to residential, commercial, and industrial development, access to roads, need for sewer lines, and other issues involved with growth and development. They affect community cohesion and the sense of community and place (e.g., YMCAs, public libraries, and community centers).

Information on the condition of *infrastructure* and adequacy of *public services* can support planning efforts such as building a better mass transit system to deal with congestion and air pollution problems or determining impacts of growth on cultural and natural resources. You can also combine this information with demographic data to determine whether low-income or minority groups host a disproportionate share of waste facilities in their neighborhoods or live with inadequate *infrastructure and public services*.

ASSESSMENT QUESTIONS AND METHODS CHECKLIST (methods key at end of table)

Example Questions to Answer	Possible Methods to Use												
	A	B	C	D	E	F	G	H	I	J	K	L	M
Which utilities provide gas, electricity, and water in the community? What are the sources of the electricity and water? Have there been shortages? What effect will population growth in the community have on electricity and water supplies?	✓				✓	✓	✓			✓	✓		
How old are the roads in the community? How old are the sewer and drinking water systems? Describe their condition. Do they adequately service the community? In what ways do they need improvement or changing?					✓		✓	✓	✓		✓	✓	✓
What waste management services does the community provide (e.g., recycling, household hazardous waste disposal, trash pickup)? Are these services provided by the city or private contractors? Are people using these services? If there are no such services, how are people managing their waste?				✓	✓	✓		✓	✓			✓	
Where are utility and waste management facilities located? Do low-income or minority neighborhoods host a disproportionate number of such facilities?	✓					✓	✓		✓		✓		✓
What kind of public transportation does the community offer? What are estimates of ridership? How do people feel about the public transportation system? Are there plans to change the public transportation system? What percentage of auto commuters carpool? What is the average time and mileage of daily commutes?	✓			✓	✓	✓			✓			✓	
What other types of public services and infrastructure does the community provide (e.g., public bathroom facilities, libraries, convenient post offices, community centers, indoor recreational facilities, public parking, bike and walking trails, parks)? Do community members feel that these services are adequate in terms of accessibility, services provided, cost, etc. (e.g., affordable parking, safety and accessibility, acreage and parks per capita)? Why or why not? How would they change things?		✓		✓	✓	✓	✓	✓			✓	✓	✓
Does the community have adequate emergency services? Who provides them? Do outlying areas have the same protection as the incorporated area? Do community members volunteer for these services?				✓	✓	✓	✓	✓				✓	

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Local Identity

Local identity includes quality of life preferences, local arts, history, and traditions.

- ☑ **Quality of life** might include community attributes such as cleanliness, safety, the friendliness of neighbors, strength of the economy, cost of housing, geography (e.g., mountainous region, coastal plain), or climate (e.g., cold/hot, dry/wet).
- ☑ **Local arts** include pottery, sculpture, painting, wood and metal working, storytelling, music, and song and dance that are specific to the area (e.g., textiles made of dye from local plants, local reeds/grasses used to weave baskets, or bluegrass music).
- ☑ The **history** of the community includes dates of important events (e.g., town founding date, the year a railroad was built, drought or flood years), family genealogies, and isolated episodes that helped create and influence community culture.
- ☑ **Traditions** include the customs, practices, and stories/myths about a community's past that are expressed orally (stories, song), visually (photographs, paintings), and in writing (life histories, scrapbooks).

WHY IS THIS INFORMATION IMPORTANT?

Local identity provides insight into "sense of place" and "sense of community." The pride and uniqueness reflected in local arts and events can be important for identifying local values and the influence of local ethnic or religious history in shaping community culture. Community members whose families have lived in the community for generations can provide important information and materials (e.g., photographs, newspaper clippings) that depict changes in the community over time. Such information might explain changes in community perceptions, values, and connection to the land and other natural resources. This information can also be a starting point for discussions about a community's future.

Local identity can also mobilize community support for local environmental protection and can help develop environmental protection strategies consistent with community identity. Art festivals, historical tours, and seasonal celebrations are forums in which to advocate for environmental protection and to increase people's environmental awareness. For instance, a community's annual fishing derby can be a catalyst for increased watershed protection. The need for a strategy to protect the watershed/lake/river can be linked to the community's desire to preserve one of its local traditions and presented in a manner that will rally community support. T-shirt design and poetry writing contests among schoolchildren can illustrate the symbolic and personal meanings of the environment to local youth.

ASSESSMENT QUESTIONS AND METHODS CHECKLIST (methods key at end of table)

Example Questions to Answer	Possible Methods to Use												
	A	B	C	D	E	F	G	H	I	J	K	L	M
What do residents of the community feel is important or special about the community (e.g., culture, diverse population, urban or rural qualities, natural environment)?		✓		✓	✓	✓					✓	✓	✓
What do the local chamber of commerce, tourist bureau, or similar organizations emphasize as key community attributes?		✓			✓								
Are there any special natural features that distinguish the community? Are there features that offer recreational opportunities (e.g., location next to a river or lake, access to beaches and ocean, mountains, or desert)? Features important for the conservation of biological and other natural resources (e.g., endangered or threatened species, unique geologic features)?					✓		✓		✓		✓	✓	✓
In what ways has the community been recognized (e.g., "Healthy City" award)?					✓	✓							
How do people in the community describe themselves in the context of the community (e.g., like-minded to their neighbors, outdoor enthusiasts, young professionals)? In what ways do people feel that living in the community has affected them?		✓	✓	✓	✓							✓	
In general, how do people in the community feel about their quality of life? What do people consider important to quality of life (e.g., clean air or water, good jobs, security, good relations with neighbors, etc.)?		✓		✓	✓			✓				✓	✓
Do people feel that the quality of life has improved or worsened over the past 20 to 30 years? How? Why?		✓		✓	✓		✓	✓				✓	✓
What feelings do people have about the future quality of life in the community (e.g., economic growth, population changes, protection of open space and other natural resources, impacts resulting from urban sprawl)?		✓		✓	✓			✓			✓	✓	✓
Are there any plans or other documents that describe the community's overall vision (e.g., economic development plans, park and greenway strategies, comprehensive plans)?		✓			✓	✓							
What organizations have a financial stake in preserving local identity (e.g., merchants, hotels, tour guides, bed and breakfasts)? In what ways? How do they communicate their stake?		✓			✓	✓	✓		✓	✓	✓		

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Local Leisure and Recreation

Local leisure and recreation describes how community members spend their leisure time, and how much of it is spent in the natural environment. You will learn about their participation in such activities as hunting and fishing, camping, picnics at a local park, hiking, snow and water skiing, boating, swimming, and biking — and visits to the local library, shopping, arts or musical events, working out at a gym, playing team sports, watching television, listening to the radio, or using a home computer.

WHY IS THIS INFORMATION IMPORTANT?

How community members spend their *leisure and recreation* usually indicates their interests and what's really important to them (e.g., staying healthy through physical exercise, connecting with nature through hiking or bird watching, informally interacting with friends and neighbors). This information can give you essential insights into how the natural environment fits into the lifestyles of people who live there. It is likely that a community member's relationship to the outdoors, in terms of *leisure and recreation,* will influence his or her interest in community-based environmental protection.

Information on *local leisure and recreation* can be used to galvanize support and involve people in developing strategies that meet a wide range of needs. *Leisure and recreation* activities can bridge class, race, and income differences in a community and help bring people together around something they enjoy. Information you gather might signal the need to develop a watershed management plan to protect areas used by recreationists. The plan might include educating private landowners in conservation practices such as erosion control to protect downstream recreation (e.g., fishing, swimming) for the entire community.

ASSESSMENT QUESTIONS AND METHODS CHECKLIST (methods key at end of table)

Example Questions to Answer	Possible Methods to Use												
	A	B	C	D	E	F	G	H	I	J	K	L	M
How would people in the community define leisure and recreation?				✓	✓							✓	
What kinds of outdoor activities occupy residents' leisure and recreation time (e.g., hiking, boating, camping, snowmobiling, playing baseball with coworkers, picnicking, making home improvements)?					✓				✓			✓	
What kinds of indoor activities occupy residents' leisure and recreation time (e.g., playing indoor basketball, reading books, making home improvements, lifting weights, taking in arts or music, going to the movies, watching TV, listening to the radio, bowling, going to the mall)?					✓				✓			✓	
Do people in the community spend more time indoors or outdoors? How much time do people spend outdoors, and with whom (e.g., alone or as part of a sports team)?					✓				✓			✓	
What percentage of time combines leisure and work-related activities (e.g., coed sports team sponsored by the company, golfing with coworkers, doing research on a project without compensation)?					✓							✓	
What kind of annual or periodic special events or entertainment activities exist (e.g., sporting, cultural)?		✓		✓	✓				✓			✓	
What natural features of the community are important to residents and their leisure or recreational time (e.g., local lakes, rivers, parks, forests, bike paths, hiking trails, nature preserves, wildlife, etc.)?		✓	✓	✓	✓		✓		✓		✓	✓	✓
Do the community's natural recreational features attract tourism (e.g., kayaking opportunities, fishing and hunting, rock climbing, skiing)? How do residents feel about tourism?				✓	✓		✓		✓	✓	✓	✓	
Are there any federal or state-managed parks, forests, or wilderness areas that are easily accessible to community members?				✓		✓	✓				✓		
Do people want more outdoor recreational opportunities available to them? What would people like to see? Are there any reasons or conflicts that keep people from enjoying the outdoors (e.g., inaccessibility, crime, pollution)?		✓	✓	✓	✓		✓	✓	✓		✓	✓	✓

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Natural Resources and Landscapes

Natural resources and landscapes refers to the natural features and physical layout of the area in which a community is located. Some of the features might include water resources (e.g., rivers, lakes, wetlands, aquifers, oceans), geologic resources (e.g., minerals), and geographical features (e.g., forests, mountains, plains, or coastline). This information can include endangered species habitat, location of key flyways and traveling routes for certain animals, and historic natural landmarks (e.g., Grand Canyon).

WHY IS THIS INFORMATION IMPORTANT?

The *natural resources and landscape* of a place might contribute to a community's local identity or way of life (e.g., farming), recreational activities (e.g., sportfishing), and economic pursuits (e.g., mining, ecotourism). Information will provide insight into how members of the local community value their natural resources (e.g., aesthetically, economically, spiritually) and the relationship between the landscape and the culture of the community. *Natural resources and landscapes* might relate to why people choose to live where they do. Residents might appreciate the openness and sense of freedom of rural areas; others might relish the power of majestic mountains, the soothing rhythm of rolling hillsides, or the thunderous sound of waves crashing along a coast. Local *natural resources and landscape* information can therefore influence land-use planning decisions and community development strategies.

Natural resources and landscapes are often the features of a community that invoke local pride, attract outside attention, and stimulate economic activity. They can therefore serve as a catalyst for community involvement in environmental protection and restoration. And the presence of resources such as endangered species or significant waterways can lead to outside recognition and increased funding for restoration or preservation work.

ASSESSMENT QUESTIONS AND METHODS CHECKLIST (methods key at end of table)

Example Questions to Answer	Possible Methods to Use												
	A	B	C	D	E	F	G	H	I	J	K	L	M
What are the primary landscape characteristics of this community? What are the important natural resources in the community? Why? To whom are they most important?		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
How do people in the community define their surroundings (e.g., landscape features, topography and vistas, arrangements of streets and buildings and architectural styles, distance and physical separation from other communities)?			✓	✓	✓						✓	✓	
What are the primary landscape characteristics of the community? What are the major categories of ecosystems in the community (e.g., oak/hickory forest, tall grass prairie, cypress swamp)? How do seasonal climatic changes alter the community's landscape during different times of the year (e.g., heavy snowfall, frozen lakes)?					✓	✓	✓		✓				✓
Are there any nationally, regionally, or locally recognized natural resources in the community (e.g., a wild and scenic river)?		✓			✓	✓	✓						
Are there particular areas of natural beauty or species of special significance that residents revere or that draw visitors?		✓	✓	✓	✓		✓		✓		✓		✓
What are the major threats to natural resources in the community?	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	
Has the community ever experienced a time of scarcity for any of its natural resources? What were the effects? Can community members imagine any effects that might happen to the community today if natural resources were to become scarce? Is the community currently experiencing any such effects? What are they doing to overcome them?		✓		✓	✓	✓		✓	✓	✓		✓	✓
What is the connection between land use in the area to history and culture? Has any aspect of the landscape influenced the community's cultural values or identity?		✓	✓	✓	✓	✓	✓				✓	✓	✓

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Property Ownership, Management, and Planning

Information about *property ownership, management, and planning* describes who owns and manages land (e.g., private landowners, state or federal agencies) as well as who is responsible for land-use planning within the community (e.g., the city or county planning agency). This information might also indicate how long landowners and managers have controlled use of the land; what types of development occupy tracts of land; and whether tenants rent, lease, or actually own the property.

WHY IS THIS INFORMATION IMPORTANT?

This information describes a "community's sense of place" and empowerment in terms of ownership and control over current and future land-use planning decisions. Information about *property ownership, management, and planning* tells you who is responsible for managing the land, what types of restrictions limit land use, and whether community members feel a sense of ownership and accountability for the land and other resources in the community (e.g., Who rents or owns? Who lives in an apartment building, on a quarter-acre lot in town, or in the country?). This information can also indicate trends in land use over time, as well as the various factors that have contributed to such changes (e.g., economic growth, out-migration from the urban core, increases in light industrial, commercial, or residential development).

Use information about *property ownership, management, and planning* to determine and seek the involvement of key stakeholders (e.g., private and public land managers) in developing community-based environmental protection strategies that ensure sustainable land-use practices. You can also use this information to identify opportunities for developing greenways and nature trails; setting up conservation easements on private lands; redeveloping brownfields; and implementing sustainable grazing, farming, and logging practices on public/private lands.

ASSESSMENT QUESTIONS AND METHODS CHECKLIST (methods key at end of table)

Example Questions to Answer	Possible Methods to Use												
	A	B	C	D	E	F	G	H	I	J	K	L	M
Who owns and manages the land in the community? What percentage of land in the community is owned by the federal government? The state government? The local government? How are they involved in community affairs?					✓	✓	✓						
What percentage of land in this community is owned by timber, mining, or other resource-extraction industries? How are they involved in community affairs?					✓	✓	✓		✓	✓			
What percentage of land is used for agricultural purposes? Small or large farms? Is agricultural land being converted to residential, commercial, or other uses?		✓			✓	✓	✓		✓	✓			
What percentage of land in this community is owned by land preservation or conservation organizations or is held as a conservation easement or protected in some other way such as wilderness areas or military bases? How are such organizations involved in community affairs?		✓			✓	✓	✓		✓				
Is most property (including land) privately owned or rented/leased? Is there a trend? What is the basis for these trends (e.g., can members of this community afford to purchase homes or property in this community)? What are the current housing types and housing ownership patterns in the community? What is the percentage of home ownership?	✓				✓	✓	✓						✓
What are the local zoning ordinances? Is there a regional planning program? If so, does the state exercise any land-use authority? Is there a Main Street Program?					✓	✓	✓						
What is the average density of people per square mile? Is "sprawl" a concern for the community?	✓	✓	✓			✓	✓						✓
Is there a land-use planning office in this community? What has this office done? Do community members participate in planning efforts? How are land-use conflicts handled?		✓		✓	✓	✓			✓				
What are the principal land-use/planning issues in the community? What are the long-range land-use plans for this community?		✓	✓	✓	✓	✓	✓	✓			✓	✓	

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Public Safety and Health

Public safety and health describes the factors that contribute to a community's sense of personal safety (e.g., crime, dangerous roads) and its environmental health (e.g., drinking water contamination, pesticide use, carbon monoxide emissions, hazardous household materials, lead poisoning, asthma rates). This information also describes the safety of public recreational areas (e.g., use of parks after dark, hiking on secluded nature trails). The effectiveness of environmental management facilities such as wastewater treatment plants or the affordability and convenience of landfills might also be factors. And community members' perceptions of safety and health issues are important.

WHY IS THIS INFORMATION IMPORTANT?

Information about *public safety and health* can identify potential community environmental hazards. Whether real or perceived, this information tells you how residents believe various environmental issues affect their health and safety, what they or government agencies are doing about them, and how these issues influence their feelings about where they live. It also can reveal whether vulnerable groups (e.g., children, senior citizens) are affected by environmental health issues (e.g., toxic waste sites, lead exposure, air or water quality). This information can be used to develop community programs that minimize actual risk.

ASSESSMENT QUESTIONS AND METHODS CHECKLIST (methods key at end of table)

Example Questions to Answer	Possible Methods to Use												
	A	B	C	D	E	F	G	H	I	J	K	L	M
Do people feel safe in the community? Why or why not? What factors contribute to residents' feeling of safety or lack of safety?				✓	✓				✓		✓	✓	
What is the crime rate in the community (for both violent and nonviolent crimes)? Are there any particular neighborhoods in the community that have a higher crime rate than others? How does the crime rate compare to neighboring communities? How have crime rates increased or decreased over time? Is there crime in recreational/nature places?					✓	✓	✓				✓		
How does the actual crime rate compare to the perception of crime (i.e., statistics vs. public opinion)?				✓	✓	✓		✓				✓	
How do residents feel about potential harm to human health or the environment from local manufacturing, agriculture, business, or household practices? Are there any data to indicate unusual rates of certain diseases that might be associated with such practices?		✓	✓	✓	✓	✓	✓			✓		✓	
What health problems concern people in the community? Which ones are specific to the community? Which ones are specific to particular neighborhoods within the community? What are the top five leading causes of disease and death in the community in each age group? What stress-related or mental illnesses affect members of the community?		✓		✓	✓	✓	✓	✓			✓	✓	
What environmental management facilities exist in the community (e.g., landfills, incinerators, compost sites, etc.)? What concerns are associated with these facilities? How many local jobs are linked to these facilities?		✓		✓	✓	✓	✓	✓	✓	✓		✓	✓
Is there a history of fish or swimming advisories for water bodies around the community?		✓			✓	✓						✓	
What is the infant mortality rate in the community? How has it changed over time? What are the suspected causes?	✓			✓	✓	✓					✓		

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Religious and Spiritual Practices

Religious and spiritual practices describes the importance of religion and spirituality to community members, the kinds of religious and spiritual organizations that exist within the community (e.g., churches, synagogues, prayer groups), and the various religious and spiritual beliefs and values of community members. It also describes community activities sponsored by religious or spiritual organizations (e.g., fairs, educational programs, community service), the memberships of such organizations, and how religious and spiritual beliefs influence values and perceptions about the environment and protection of natural resources (e.g., the environment is God's creation, and as such it must be revered and preserved). This characteristic can also include religious or spiritually significant places (e.g., cemeteries, churches, "holy places").

WHY IS THIS INFORMATION IMPORTANT?

Religious and spiritual practices often play a central role in the lives of community members. Relating environmental protection efforts to a community's strongly held religious and spiritual practices can tap an existing network of active and devoted volunteers and advocates. Understanding a community's *religious and spiritual practices* can help determine which religious leaders in the community could be contacted for public outreach and involvement concerning environmentally related issues. Information on community members' spiritual relationship to their environment can also lead to the integration of environmental education into formal religious/spiritual teachings, ultimately increasing the community's environmental awareness. Nature often plays a central role in spiritual practices, including meditation, lessons on the interdependence of humanity and nature, and the giving of thanks for a successful harvest. Identifying and involving religious organizations can also legitimize community-based environmental protection efforts in the eyes of the community.

ASSESSMENT QUESTIONS AND METHODS CHECKLIST (methods key at end of table)

Example Questions to Answer	Possible Methods to Use												
	A	B	C	D	E	F	G	H	I	J	K	L	M
Which religious and spiritual beliefs are represented in the community? Which are most active (e.g., which hold fundraisers such as dinners or cookie sales, sponsor youth activities such as bible study or camp, care for seniors and low-income persons)? What are their membership numbers (total, active)?			✓	✓	✓			✓			✓	✓	
What kind of influence do religious or spiritual groups have in the community?		✓		✓	✓	✓			✓		✓	✓	
Do any of these religious or spiritual organizations do work related to the environment? What parts of the environment?		✓	✓	✓	✓	✓		✓	✓			✓	
What types of religious or spiritual traditions, practices, or rituals take place within the community? Are there areas/sites in the community that have religious/spiritual significance?			✓		✓					✓	✓	✓	✓
How do the different religious traditions or scriptures of each religious organization view the natural environment (e.g., dominion over the environment and its creatures, reverence for the environment, or stewardship and protection of God's creation)?		✓	✓	✓	✓	✓							
How do the different religious and spiritual organizations perceive the future of the world (e.g., how far off is the end of our time and the world)? How do those perceptions relate to the protection of the natural environment for future generations?		✓	✓	✓	✓			✓				✓	

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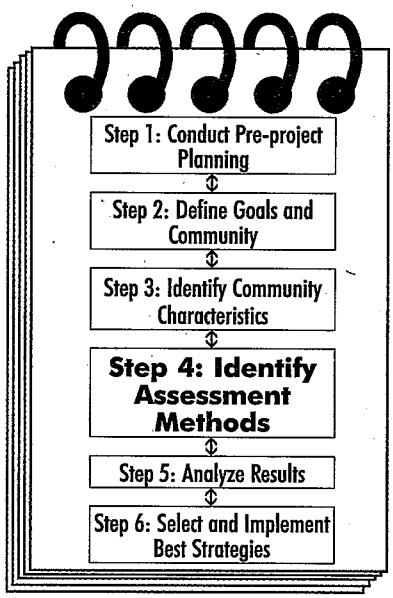
STEP 4:
Identify Assessment Methods



Many useful methods exist to identify, collect, and interpret information about people's behaviors and values and community characteristics. This step describes 13 such methods (**Figure S4-1**). Use them to collect both qualitative and quantitative data. The information is designed to help you use the methods yourself or to equip you to work with a professional.

The methods described in this step range from methods to collect data independent of actual community involvement (unobtrusive), such as collecting census data from a local library, to methods that directly engage community members (interactive), such as focus groups and interviews. Some methods — observation, for example — can be used both ways, depending on the specific purpose and the situation in which they are conducted. A brief **Overview of Assessment Methods** will give you basic information on each method. Refer to specific instructions for more detail. The *Guide* suggests using at least three methods to compare and contrast results. Refer to **Appendix B** for more details on triangulation.

Figure S4-1—Assessment Methods

- Background Research
- Census Data Research
- Content Analysis
- Environmental Values Typology
- Focus Groups
- Interviewing
- Maps and Geographic Research
- Meetings
- Observation
- Regional Economic Data Research
- Social Mapping
  - Asset
  - Cognitive
  - Concept
  - Social Network
- Surveys and Polls
- Visual Methods

Using This Step

The instructions for each assessment method include the following:

- ☑ General explanation and usefulness of method.
- ☑ How to collect the information needed.
- ☑ Resources needed.
- ☑ Sources of extra help.
- ☑ Some pros and cons of using the method.
- ☑ Bibliographic resources.
- ☑ Matrices listing recommended methods for each community characteristic.

The instructions show you how to apply each method discussed in this chapter. **Appendix C** has a summary of method applicability, and gives the advantages and disadvantages of each method.

Refer to **Appendix B** for an introduction to the conceptual foundation for using assessment methods. It describes qualitative and quantitative data and triangulation, and introduces sampling, validity, and question design.

Use **W-5 Worksheet from Step 3** to organize your methods selection.

Overview of Assessment Methods

☑ **Background Research** is the collection of information from existing written and electronic sources. If information you seek is in a book, a current or past issue of a magazine, newspaper, or journal, or in any kind of manuscript or electronic database, background research might be an appropriate assessment tool for your needs. This might include historical accounts of local events, opinions about certain issues, or previous research on the same topic. Use background research to prepare environmental education materials, collect information on environmental issues, gather ideas, and learn more about a community.

☑ **Census Data Research** outlines the community's demographic and economic makeup to provide a solid foundation for your assessment. Census data cover 200 specific topics, including employment, education, population size, ethnic group makeup, and whether the community is rural, urban, or suburban — every aspect is important to defining a "community."

☑ **Content Analysis** helps you analyze the text of written or spoken messages to determine the attitudes and perceptions of individuals and groups within a community. You'll gain insight into cultural themes that dominate a community's perceptions of the natural environment or environmental protection. Social and cultural symbols a community uses to illustrate and talk about different issues will become apparent, as will the social context of their various activities and how members of the community communicate.

☑ **Environmental Values Typology** can be used as a data collection or analysis tool to help you distinguish among the different types of environmental values present within a community. Use this set of nine basic environmental values to categorize different environmental values held by individuals or groups. The Typology can also help you understand how these values might motivate community behavior.

☑ **Focus Groups** explore community members' feelings, beliefs, and attitudes about the environment. A moderator facilitates this structured group process in which individuals discuss issues selected by the focus group sponsor. Focus groups identify how participants feel and think about a particular issue(s) and can provide a deeper understanding of their views, experiences, beliefs, knowledge, and attitudes about the topic(s) you are investigating. The results can help design other assessment or strategic planning efforts, validate other findings, and aid in collaborative environmental problem-solving.

☑ **Interviewing** is the process of asking individuals (or small groups) questions and recording their responses. Use interviewing to gather descriptive data about community life and the lives of community members. Interviews can focus on community members' beliefs, feelings, and experiences about issues and their relationships with others. Look for patterns or themes in the responses and compare them to other data and analysis. Interviews can reveal perceptions and opinions about the issues or topics of interest.

☑ **Maps and Geographic Research** define the physical boundaries of the community and show the many different elements contained within those boundaries (e.g., homes, commercial locations, roads, natural features). Maps and geographic research can also show how the community fits within the larger context of its surroundings (e.g., its relationship to other communities or its location within a watershed) and how it has changed over time (e.g., road construction, residential and commercial development).

☑ **Meetings** assemble groups of people representing a variety of interests to discuss community issues. They can be large or small, and might be structured in many different ways depending on location, time frame, and most important, purpose. Meetings are a relatively cost-effective method to assess public opinion and local concerns, values, viewpoints, priorities, and interests. Use meetings to solicit input from various groups of people on community values, attitudes, and beliefs; identify and describe the community; define overall environmental protection goal(s); bring people together to establish a vision and action plan for the community; and identify and coordinate with potential collaborators. This method includes techniques for reaching consensus and agreement.

☑ **Observation** collects data by purposefully and selectively watching and tracking the behavior of community members or other phenomena. Use observation to understand characteristics of a community and its members that other methods might not reveal. Observation can also confirm and complement the results of other assessment methods and inform the sampling techniques and questionnaire design of such methods as surveys and focus groups.

☑ **Regional Economic Data Research** gives you useful information regarding jobs, employers, revenue, per capita income, total personal income, and other data that help construct an overview of the economic conditions and trends of a community. It organizes specific information about industries by sector (e.g., manufacturing, services, mining) and includes the number of employees for that industry and their total wages. Use regional economic data to indicate how and what natural resources support the community's economic base.

☑ **Social Maps** are tools that collect, organize, and analyze social data about a community. They illustrate different types of relationships and connections in a community and identify those related to efforts to conserve and protect the environment. These connections might be between issues and problems, causes and effects, perceptions and realities, or relationships between organizations, institutions, and individuals. You might invite community members to create social maps, or use such maps to design an assessment project or analyze the data collected by other methods.

Depending on the goal of your assessment and your information needs, you can choose from four different social maps:

- **Asset Maps** focus on identifying a community's capacities and assets. These maps can help community members recognize and tap the value of certain aspects of their community (e.g., individuals, organizations, institutions) of which they were not previously aware.
- **Cognitive Maps** graphically represent the community based on people's personal perceptions and experiences.
- **Concept Maps** identify the causes and effects of an idea, belief, concept, or problem that exists within a community.
- **Social Network Maps** describe patterns of communication, relationships, and information flow within a community.

☑ **Surveys and Polls** collect information directly from people, usually through a written questionnaire or an in-person or telephone interview guided by a written questionnaire. Use surveys to quantify various aspects of the community, such as its values and feelings about natural surroundings or its awareness of specific environmental issues. An advantage of surveys is that they can link the characteristics (e.g., race, occupation, age, income, education, community residence) of survey respondents with questionnaire responses about particular behaviors and beliefs that relate to the local environment and community-based efforts. And they collect representative data.

☑ **Visual Methods** capture social, cultural, economic, and ecological features and produce valuable information from community members who view those images. Captured through photographs, video, or illustrations, images depict the appearance of a watershed or other land area, spatial relationships, land-use patterns, and historical changes. They can include images of streets, houses, stores, open spaces, civic features, and the people that inhabit these places. Use visual methods to help community members describe and analyze their relationships with others and with their surroundings, and to stir up their thoughts and feelings about a particular place. This information can help protect existing community features or provide a tangible vision for the future of the community.

The following section contains instructions for each assessment method.

Background Research
(includes Internet)

Figure S4-2—What Formats Exist for Background Data?

- Maps
- Newspapers
- Magazines/journals
- Books
- Audiovideo cassettes
- Microfiche, microfilm, CD-ROM
- Government documents
- Topographic maps
- Local newsletters
- Photographs

Background research is the gathering of information from published printed and electronic sources. If information you seek is, or might be, in a book, a current or past issue of a magazine, newspaper, journal, or any kind of manuscript or electronic database, background research might be an appropriate assessment tool for your needs (**Figures S4-2** and **S4-3**).

Background research can be a useful resource for preparing environmental education materials, collecting information on environmental issues, gathering ideas, and learning more about a specific community.

How to Collect This Information

☑ **Libraries** provide a variety of services.

- **Public libraries** have magazines, newspapers, and vertical or "clipping" files of newspaper and magazine articles organized by subject. They might also have a local history room, and they can assist in finding and obtaining documents from other sources.
- **College/university libraries** typically emphasize research and have a broad range of publications, as well as large collections of older publications not found in public libraries because of space constraints.
- **State libraries**, usually found in state capitals, can provide information about a specific state. In many cases, they have departments specifically concerned with natural resource issues.

Figure S4-3—Places to Conduct Background Research

- Public libraries (including federal and local libraries)
- College/university libraries
- Historical societies
- Chambers of Commerce
- Tourism offices
- Information and referral offices
- Internet
- Federal, state, county, and local government offices
- Nonprofit organizations

☑ **Historical societies** have information relating to local history, arts, and traditions. Materials can include books, journals, scrapbooks, photographs, maps, and vertical files.

☑ **Chambers of Commerce** provide information about housing, transportation, demographics, recreation, tourism, and other subjects.

☑ **Tourism offices** maintain information on population, housing, transportation, and the history, arts, and traditions that make a locality unique.

☑ **Information and referral (public affairs) offices** specialize in social services such as housing, transportation,

community legal services, medical services, public assistance, and much more.

☑ The **Internet**, which includes the World Wide Web, is an international information superhighway that provides access to many communication and information services (**Figure S4-4**).

Figure S4-4—Using the Internet

- You can access the Internet through a personal computer that is linked to the Internet via an electronic connection to a regular phone line.
- You can visit a library through the Internet from a personal computer.
- Details on using the Internet can be found at a library or bookstore.

Sources of Extra Help

1. Libraries

Libraries for the Future (LFF), a nonprofit organization, has published *The Environmentalist's Guide to the Public Library* (1997) to help communities take full advantage of environmental information and electronic resources, such as databases and the Internet, available at public libraries. To order the *Guide* contact LFF at

Libraries for the Future
121 West 27th Street, Suite 1102
New York, NY 10001
Phone: (212) 352-2330
Fax: (212) 352-2342
E-mail: lff@lff.org
Web site: http://www.lff.org

2. Computers

☑ **Computerized card catalogs.** Typically, you type in key words or subjects and the system will list relevant publications. Try different related key words and subject headings for the topic you are assessing.

☑ **Remote information access with a computer and modem.** Many public libraries and college/university libraries have dial-in systems (**Telnet**) that allow outside users to browse their holdings, as well as those at affiliated libraries. An example of such a service is the "Sailor" computerized database of library sources in Maryland, a project of the Maryland public library community. The Internet address for Sailor is "http://sailor.lib.md.us," and its Telnet address is "sailor.lib.md.us."

☑ **CD-ROMs.** Many libraries have CD-ROM-dedicated computers on-site. Often the contents are bibliographies of different subject areas.

Bibliographic Resources

Balachandran, M., and S. Balachandran, eds. 1990. *State and Local Statistical Sources: 1990-1991*. Gale Research, Inc., Detroit, MI. This publication is a very useful source of guidance when identifying resources to look for once you arrive at a library or other information collection site. It is a subject guide to statistical data on states, cities, and localities covering agriculture, business, education, energy, environment, finance, labor, law enforcement, manufacturing, public welfare, real estate, taxation, transportation, and many other topics.

U.S. Department of Commerce. Recurring publication. *County and City Data Book*. Economics and Statistics Administration, Washington, DC. This publication contains similar information to the *Statistical Abstract of the United States*, but at the county and city level (only cities with populations greater than 25,000 are included).

———. Recurring publication. *State and Metropolitan Area Data Book*. U.S. Census Bureau. Economics and Statistics Administration, Washington, DC. This publication contains similar information to the *County and City Data Book* but is organized differently.

———. Published annually. *Statistical Abstract of the United States: The National Data Book*. U.S. Census Bureau. Economics and Statistics Administration, Washington, DC. This publication contains information at the national, regional, and state levels on population, births, life expectancy, health and nutrition, education, law enforcement, geography and environment, parks, recreation and travel, elections, state and local government finances and employment, social insurance and human services, labor force, employment and earnings, income, prices, and much more.

Whiteley, S., ed. 1994. *The American Library Association Guide to Information Access: A Complete Research Handbook and Directory*. Random House, New York, NY. The *Guide* selects more than 3,000 of the best standard and electronic sources in the 36 most researched subject categories. It tells where to find them and explains the latest research methods. This is an excellent resource for almost any type of research and is particularly useful for those who might be new to library/data research — see "Part 1, Advice to Researchers."

In addition, each state publishes various materials about itself and its localities. For example, these three sources are produced by Maryland:

Maryland Department of Economic and Employment Development. Recurring publication. *Maryland Statistical Abstract*. Office of Research, Maryland Department of Economic and Employment Development, Annapolis. MD. This publication contains information on population and vital statistics, education and health, climate and natural resources, labor force and employment, and much more.

Maryland Department of Health and Mental Hygiene. Published annually. *Maryland Vital Statistics*. Division of Health Statistics,

Maryland Department of Health and Mental Hygiene, Annapolis, MD. This report contains data on births, deaths, total population and population by age group, life expectancy, diseases, marriages, and much more.

Maryland State Government. Recurring publication. *Maryland Manual: A Guide to Maryland State Government.* Maryland State Archives, Annapolis, MD. This publication describes all parts of the state government in great detail, including details about current agency/department heads.

See the Maps and Geographic Research Instructions for more details on maps.

Census Data Research

Census data include information such as demographics, employment, education, and economic conditions and trends throughout the United States. The data are available by specific geographic location (e.g., state, county, Zip code) or by a subset of the population (e.g., Asian American, African American, Hispanic) (**Figure S4-5**). The U.S. Census Bureau collects and publishes census data every 10 years (e.g., 1990, 2000). Also, see instructions on **Maps and Geographic Research** regarding U.S. Census Bureau maps.

Figure S4-5—What Can Census Data Research Tell You?

- **Demographic information** such as number of persons or families living in an area, household size, and ethnic, sex, and age groups.
- **Economic conditions and trends** such as business activity and production, land ownership (farms), and manufacturing and retail development.
- **Employment information** such as rates of employment and unemployment and time spent commuting to work.
- **Education information** such as literacy and educational level attained.

How to Collect this Information

1. The Internet

(Refer to **Figure S4-6.**)

☑ Go to the Census Bureau's home page at http://www.census.gov.

☑ Accessing data via the Internet allows you to link to other sites that might contain relevant information. By selecting Access Tools from the Census Bureau's home page, you can access Census data and you can also select **Government Information Sharing Network**, which links to the Bureau of Economic Affairs web site. From there you can view socioeconomic data by county.

Figure S4-6—Hard Copy vs. Internet vs. CD-ROM

- **Hard Copy:** designed to answer only the most frequently asked questions.
- **Internet:** view multiple tables at one time.
- **CD-ROM:**
  - Provides more subject detail.
  - Provides more geographic detail.
  - Is released to the public faster than hard copy reports.

2. Libraries or Depositories of Government Documents

A phone call to your library or to the Census Bureau at (301) 457-4100 will identify the nearest library that is a depository of government documents. A complete listing of the Census Bureau/Department of Commerce products and services can be found in their Catalog of Products and Services available at your library or via the Internet.

3. Census Bureau Customer Service Line

The Census Bureau Customer Service Line (301) 457-4100 can give you Census data over the phone or assist you in finding and understanding the data.

4. CD-ROM

The Census Bureau uses the CD-ROM as its primary way to disseminate information for the 2000 Census. You can get

CD-ROM material at any library. Unlike the Internet, you will be able to view only one table at a time with the CD-ROM.

Keys to Making This Work (Lessons Learned)

1. Understanding "Universe"

Depending on the format, census data **subject table** titles also mention the universe from which the data are drawn. The universe represents the total set of Persons or Households described in the particular table. In some cases, the universe might only be a subset of the total universe of Persons. In the example subject tables that follow, the universe tells you that the data on race, sex, and age refer specifically to the portion of the total counted Persons that are Males of Hispanic Origin, in one case, and to the portion of the total counted Persons that are Females of Hispanic Origin, in the other.

Race (1) by Sex (1) by Age (31) # of data cells – 31
Universe: Males of Hispanic Origin

Race (1) by Sex (1) by Age (31) # of data cells – 31
Universe: Females of Hispanic Origin

The universe also indicates the type of data (e.g., Persons or Households) being measured. In the previous examples, Persons are being counted. Misinterpreting universe is a common mistake Census users make.

2. Making Sense of Data Cells

The total number of data cells indicates the detail in which data are reported in subject tables. The following subject tables, for example, provide data about the race of all Persons living in a particular area.

A1) Race (5) # of data cells – 5
Universe: Persons

B1) Race (25) # of data cells – 25
Universe: Persons

Although these tables measure the same subject (race), in the same universe (Persons), the B1 table, as denoted by its higher number of data cells, provides much greater detail. In this example, the Census gives its users the option of collecting data on five general categories of race, or gathering more detailed data.

☑ In the example, A1 provides five data cells, based on the general race categories used by the Census:

A1) Race (5)
Universe: Persons
White = 3,693
Black = 0
American Indian, Eskimo, or Aleut = 0
Asian or Pacific Islander = 105
Other Race = 12

☑ Whereas, B1 provides 25 data cells:

B1) Race (25)
Universe: Persons
White = 3,693
Black = 0
American Indian, Eskimo, or Aleut = 0
Asian or Pacific Islander
Asian: Chinese = 0
Filipino = 6
Japanese = 11
Korean = 6
Laotian = 82
Pacific Islander:
Polynesian = 0
Hawaiian = 0
and so on. . .

Some Pros and Cons of Using This Method

☑ **PROS:**

- Census data can be extremely useful for quantitatively characterizing a community's demographic and economic makeup.
- The data are strictly statistical but describe particular aspects of communities that would be time-consuming and expensive to quantify using other methods.
- Much of the information can be obtained at low cost and in various formats suitable for specific information needs.

☑ **CONS:**

- The biggest disadvantage to using the Census is its inaccuracy. Because the Census is taken only once per decade (e.g., 1990 and then not again until 2000), it does not reflect changes in the demographic makeup of communities in years since the previous Census.
- Another disadvantage is that the Census collects data only from documented legal citizens of the United States at the time the Census was conducted. Depending on the

community you are assessing, this could omit a sizable subpopulation.

Bibliographic Resources

Lavin, M.R. 1996. *Understanding the Census: A Guide for Marketers, Planners, Grant Writers and Other Data Users*. Epoch Books, Inc., New York, NY.

U.S. Environmental Protection Agency. 1999. *Sociodemographic Data Used for Identifying Potentially Highly Exposed Subpopulations*. EPA-600-R-99-060. Office of Research and Development, Washington, DC. Center for Environmental Research Information (CERI), (800) 490-9198. Assists scientists and concerned communities in identifying subsets of the general population who might experience more frequent contact with, and greater exposure to, environmental contaminants. The document provides specific demographic data to help users determine the number of people in these potentially highly exposed subsets of the general population.

Numerous other data sources exist in research laboratories around the country. Consult your librarian for additional sources.

Content Analysis

Content analysis is used to examine the text of written or spoken messages (**Figure S4-7**). It can

- ☑ Reveal social and cultural symbols a community uses to illustrate and talk about different issues.
- ☑ Provide insight into the social context of different activities.
- ☑ Reveal patterns of communication.

Content analysis can be done on transcripts of interviews or audio or visual recordings such as focus group videos, newspaper articles, announcements, memoirs, or other written texts, such as published and unpublished documents related to the community or surrounding area. During content analysis of a document, you search for patterns or themes, opinions, words, or phrases community members use to describe their sentiments about a variety of issues, including their surrounding environment (e.g., ecosystem, watershed).

You can use content analysis alone or in conjunction with other assessment methods, such as focus groups and interviews, to complement their findings or to help develop topics and specific questions. Content analysis can also identify groups, organizations, and individuals who might be interested in your project or might be good sources of information about the community. (See **Appendix A, Community 1** for an example.)

Figure S4-7—How Can Content Analysis Be Used?

- To reveal cultural patterns of communication of groups, institutions, or cultures (e.g., Is there a certain way that members of a particular group talk/write about specific issues, such as the environment?).
- To identify the focus of an individual, group, or institution (e.g., What are the top five issues that receive the most attention in the publications of a particular group?).
- To describe trends in communication (e.g., Have the editors of the local newspaper always written negatively about proposed city parks, or is it a recent trend?).
- To identify individuals, groups, or organizations who might be valuable additions to your assessment project or to your environmental protection effort.

How to Collect This Information

1. Determine the Community Issue(s) to Analyze

Refer to your assessment goals. Clear goals will help you identify the issue(s) you wish to analyze. You might want to analyze the level of environmental concern in the community. Or, you might want to find out how people refer to the environment so you can build an environmental awareness campaign. For example, do they use such words as "nature" or "the woods" or the name of a particular place (e.g., "Buzzards Roost")?

2. Select the Document/Material You Wish to Analyze

Analyzing multiple versions (e.g., 10 to 20 days of a daily newspaper), or multiple documents (e.g., three different

committee reports) is useful for comparison and verification, and for tracking trends. Select the material that most closely relates to the issue(s) of interest. For example, if you want to understand local community sentiments, analyzing a local newspaper would be the best choice.

3. Create Codes

Codes are specific words or phrases that represent community sentiments, perceptions, and beliefs about the issues you are assessing. They are based on your own understanding of the issue. To effectively conduct content analysis, you should create different codes to analyze the manifest and latent content of the text (**Figures S4-8** and **S4-9**).

- ☑ **Manifest content** refers to the visible surface content, such as the frequency of words or phrases (e.g., "sustainable," "wildlife habitat") in a text. Coding texts for their manifest content is relatively easy: you read the text and count the number of times each term or phrase appears. It also is reliable, but not necessarily valid (e.g., the frequent mention of the name of a natural area might not necessarily mean it's of local environmental importance).
- ☑ **Latent content** refers to the underlying meaning or context of the entire text (e.g., pro-environmental, environmentally aware). Although this analysis might be more valid, it is not as reliable as the analysis of manifest content. If different readers are involved in the analysis, they might not agree on the latent meaning of a particular piece of text.

To create codes, start by listing key terms and ideas that relate to the issue(s) in which you are interested. For example, you want to investigate the degree of environmental awareness in a particular community. You believe that the mention of specific environmental problems indicates environmental awareness. Thus, the mention of specific environmental problems is one criterion you will use to determine environmental awareness.

Based on this criterion, your manifest codes might be specific words like "nonpoint source pollution," "runoff," and so on. Your latent codes might be "high" or "low" environmental awareness based on the underlying meaning, or main point, of the text. Your criteria for latent codes will depend on your own, or the recorders', subjective opinion that the meaning of the text indicates high or low environmental awareness. The codes you

Figure S4-8—Terms to Know

- **Codes** — specific words or phrases that represent community sentiments, perceptions, and beliefs about the particular issues you are assessing.
- **Manifest content** — the visible, surface content, such as the frequency of words or phrases included in a text.
- **Latent content** — the underlying meaning or context of the entire text.
- **Recording units** — the units of text to be analyzed (sentence, paragraph, newspaper article, interview, meeting transcript).

Figure S4-9—Manifest vs. Latent Codes

Manifest Codes:

- Represent specific words or phrases in a text.
- Are highly reliable (the analysis can be repeated by someone else with similar results).
- Have low validity (the mere mention of words or phrases might not be an accurate indication of the particular issue).
- Should be used to complement latent codes.

Latent Codes:

- Represent specific meanings of a text.
- Have low reliability (the analysis might not be repeated with similar results by someone else who interprets the meanings differently).
- Are usually valid (evaluation of the underlying meaning is an accurate indication of the relation of the text to the particular issue).
- Should be used to complement manifest codes.

create should be distinct from one another so as to capture related but separate ideas.

4. Organize Codes

First, group codes according to whether they are manifest or latent. Then, to use them easily, arrange them in a matrix by terms, organizations/groups, places, meanings, beliefs, or ideas. Sample manifest codes might include "runoff" or "pollution" (terms), "Environmental Protection Agency" or "The Nature Conservancy" (organizations), "Piney Branch Creek" or "Targhee Forest" (places). A sample latent code could be "pro/anti-environmental" (meaning). A matrix like **Table S4-1** appears in the **W-6 Worksheet—Content Analysis Recording Sheet** (found at the end of this section).

Table S4-1—Code Organizing Table (sample)

Document #
Title

MANIFEST CODES	LATENT CODES
Terms:	**Meanings:**
• runoff	• pro-environmental
• pollution	• anti-environmental
Organizations:	**Meanings:**
• Environmental Protection Agency	
• The Nature Conservancy	
Places:	**Meanings:**
• Piney Branch Creek	
• Targhee Forest	

5. Determine the Recording Units

Recording units are units of text being analyzed, including

- ☑ Sentences
- ☑ Paragraphs
- ☑ Headlines
- ☑ Interview responses
- ☑ Entire text (article, speech, interview, etc.)

Your selection of recording units will depend on your goals and the number and types of documents/materials you will be analyzing. For example, if you want to find out how much attention local newspapers give to the environment, you could select entire articles or headlines as your recording unit(s). If you want to analyze the different responses of community members to a particular question asked during an interview, you could select each individual response as your recording unit.

Your selection of recording units also depends on your time and the amount of material you wish to analyze. For example, if you are analyzing multiple newspaper articles, coding each sentence of an article will be extremely time-consuming. A more appropriate recording unit would be the entire article itself. It is important to determine the recording units before conducting the actual analysis so that the same word or idea is not counted more than once (e.g., counting a coded word in a sentence, as well as in the paragraph in which it appears, will result in double counting).

6. Select the Individuals to Help Conduct the Analysis

Multiple recorders analyzing the same document/material will reduce the chance of bias or error in the data collected. When many individuals are recording codes, it is important that they understand how to conduct the analysis. To ensure this, you might wish to clearly explain the codes and recording units (especially when using latent codes) and conduct one or more preliminary analyses solely to define codes and recording units.

7. Develop Recording Sheets

Tally sheets will help you keep track of how often your codes appear in the texts you analyze. Use a new cover sheet for each text (e.g., a newspaper); on the cover sheet, list the source and date of the document and the name of the recorder. Recording sheets are provided in the **W-6 Worksheet.** See **Figure S4-10** for a sample cover sheet.

You must also record the total number of recording units that you analyze (**counting base**) on your cover sheet. This is important because, for example, the appearance of an editorial with a pro-environment meaning needs to be analyzed in the context of how many total editorials you read. The latent coding of 5 pro-environment editorials out of a counting base of 15 editorials in one local newspaper might suggest that the community highly values the health of its environment.

Figure S4-10—Content Analysis Cover Sheet

- Material/Source Title
- Material/Source Date
- Type (daily/weekly newspaper, magazine, radio show, interview, etc.)
- Recorder's Name
- Date Analyzed
- Location
- Counting Base

Figure S4-11—Recordings from Analysis

PEOPLE AND ORGANIZATIONS:

- Issue
- Name
- Title
- Organization
- Contact Information
- Position on Issue
- Citation

KEY COMMUNITY EVENTS:

- Event
- Sponsor
- When
- Where
- Key Themes
- Major Participants
- Potential for Networking/ Communication

However, five out of a base of 40 might suggest a lower degree of pro-environment sentiment in the community.

8. Read the Text(s) and Record the Data

Read the text(s) and code each recording unit. For manifest codes, count the number of times each code appears in the recording unit. Then enter the number in your recording sheet for that particular code and recording unit. For latent codes, code the underlying meaning of each recording unit and record the number of units with each meaning (e.g., anti-environmental) on the recording sheet. You should also note any new terms, organizations, places, or meanings that seem related to the issues you are analyzing. You will be able to further investigate the related information through other assessment methods or later content analysis. See **Figure S4-11** for a format which you can use to record information about people, organizations, and events.

9. Analyze the Results

How you analyze the results of content analysis will depend on your goal for using this method:

- ☑ Analyze the frequency of the manifest codes to understand/identify the terms and language people use to talk about the environment.
- ☑ Use latent codes to interpret the underlying meaning of the text and the discussion of environmental issues.

Resources Needed

Several computer programs that can greatly improve the speed and reliability of content analyses are available. Although they are complex and generally cannot be quickly mastered, it might be worth the effort to use them in analyzing large or multiple texts.

Sources of Extra Help

Faculty or graduate students at local college/university social science departments (sociology, anthropology, political science, psychology) might be able to give you technical assistance, particularly with code design and analysis. If you have the financial resources, private sector polling and analysis firms also provide such services.

Some Pros and Cons of Using This Method

☑ PROS:

- Can support survey, interview, and focus group questions and results.
- Content analyses can be conducted at low cost and without highly trained staff.
- It is unobtrusive, seldom directly affecting the community being studied.

☑ CONS:

- Content analysis is limited to the examination of recorded communications.
- For information to be most useful, care must be taken to establish useful and mutually exclusive codes, and to ensure that all individuals conduct the analysis the same way.
- If the text to be analyzed is quite large (for example, more than 50 pages), the analysis might be very time-consuming.

Bibliographic Resources

Babbie, E. 1995. Unobtrusive Research. Pages 305-336 in *The Practice of Social Research*. 7th ed. Wadsworth Publishing Company, Belmont, CA.

Krippendorff, K. 1980. *Content Analysis: An Introduction to its Methodology*. Sage Publications, Beverly Hills, CA.

Weber, R., and P. Sage. 1990. *Basic Content Analysis*. 2nd ed. Sage Publications, Newbury Park, CA.

If you have access to the Internet, visit the Content Analysis Resources site at http://www.gsu.edu/~wwwcom

W-6 WORKSHEET—Content Analysis Recording Sheet

(The following sample is for articles and headlines. Adapt this worksheet to fit your recording units.)

MANIFEST CODE: TERMS	ARTICLE FREQUENCY	HEADLINE FREQUENCY
MANIFEST CODE: ORGANIZATIONS	**ARTICLE FREQUENCY**	**HEADLINE FREQUENCY**
MANIFEST CODE: PLACES	**ARTICLE FREQUENCY**	**HEADLINE FREQUENCY**
LATENT CODE: MEANINGS	**ARTICLE FREQUENCY**	**HEADLINE FREQUENCY**

NOTES: Networks, Issues, Values, Spirituality, Etc.

Environmental Values Typology

Environmental Values Typology is a tool to help you distinguish among different types of environmental values present within a community. Environmental values are those values that structure how people and groups relate specifically to the natural environment. Knowing the different types of environmental values present in any community will help you understand attitudes and behaviors related to the environment (**Figure S4-12**). People often express their values in their everyday decisions and actions.

Environmental Values Typology **Table S4-2,** which defines nine basic environmental values, is one example of how basic values related to nature and the environment can be categorized. The typology can give you insight into how these values are likely to motivate certain community behaviors. Understanding shared environmental values can help form partnerships between different groups in pursuit of community-based environmental protection.

Environmental Values Typology **Table S4-2** defines a utilitarian environmental value as the practical and material exploitation of nature for physical sustenance and security. For example, farmers might use the natural flow of the river to grow crops that they eat and sell to earn a living. The farmers might also revere nature because they know their way of life depends on its continued health. These feelings suggest that the farmers also share a moralistic environmental value, defined as spiritual reverence, and an ethical concern for nature.

On the other hand, a local environmental group might be concerned that the reduced water level caused by farm irrigation will negatively affect the habitat of migrating birds. According to **Table S4-2**, their concern for protecting the birds' habitat indicates that they share a moralistic environmental value as well. In this case, using the Environmental Values Typology shows an assessor that farmers and the environmental group share a common value that can be used to bring these two groups together to address the issue constructively.

Figure S4-12—Why Use the Environmental Values Typology?

- To differentiate among different environmental values.
- To understand the basis for behavior related to the environment.
- To understand how people view the environment in different ways.
- To mediate differences among people concerned about the environment.
- To assist in developing questions to be used with other assessment methods.
- To determine whether your environmental protection efforts are consistent with local environmental values.
- To analyze information you gather from other assessment methods.

Table S4-2—Environmental Values Typology

The table has four columns:

(1) VALUE, which lists the term used to identify a particular value.

(2) DEFINITION, which explains the meaning of the term.

(3) FUNCTION, which describes the possible attitudes, behaviors, or actions that might result from having this value.

(4) FREQUENCY/RANKING, which can be used for recording data based on content analysis, small group exercises, or other collected data.

If necessary, you can change the table to better suit your needs. For instance, if your data provide more detail on the definition or function of a particular value, add that information to the table. If you've identified values that do not appear on this table, add them.

VALUE	DEFINITION	FUNCTION	FREQUENCY/RANKING
Utilitarian	Practical and material exploitation of nature	Physical sustenance/security	
Naturalistic	Direct experience and exploration of nature	Curiosity, discovery, recreation	
Ecologistic–Scientific	Systematic study of structure, function, and relationship in nature	Knowledge, understanding, observational skills	
Aesthetic	Physical appeal and beauty of nature	Inspiration, harmony, security	
Symbolic	Use of nature for language and thought	Communication, mental development	
Humanistic	Strong emotional attachment and "love" for aspects of nature	Bonding, sharing, cooperation, companionship	
Moralistic	Spiritual reverence and ethical concern for nature	Order, meaning, kinship, and altruism	
Dominionistic	Mastery, physical control, dominance of nature	Mechanical skills, physical prowess, ability to subdue	
Negativistic	Fear, aversion, alienation from nature	Security, protection, safety, awe	

Source: Kellert, 1996.

How to Collect This Information

You can collect information about environmental values in three ways. Use the Environmental Values Typology **Table S4-2** to assist you.

1. Incorporate the Environmental Values Typology

Incorporate the Environmental Values Typology into other assessment methods to gather data on environmental values from community members. Use the Environmental Values Typology to help design the questions for a survey, interview, or focus group. For example, you might include the definitions of the nine values in a survey. Or, you might use the definitions to form questions to ask respondents during an interview. Refer to the description of question design, statements, and scales in **Appendix B**.

2. Analyze Data Collected by Other Assessment Methods

Use the Environmental Values Typology **Table S4-2** to analyze the data collected from other methods such as content analysis to understand how community members express their relationship to the environment. Based on the data already collected, determine whether the attitudes, values, and opinions expressed by community members fit into the table or identify other values. (Refer to the explanation of latent and manifest codes in the **Content Analysis Instructions**.)

3. Get Community Members Involved

Engage community members in ranking their own environmental values. Use the Environmental Values Typology **Table S4-2** in a small group setting as an exercise in selecting or ranking environmental values. Distribute photocopies of the Environmental Values Typology Table to participants. Ask them to indicate or rank their own environmental values. After this exercise, engage participants in a discussion about the different environmental values about which they feel strongly. Refer to the **Meetings and Workshops Instructions** for details on how to organize and conduct a small group meeting.

Some Pros and Cons of Using This Method

☑ **PROS:**

- The Typology Table can be altered to add additional values or to include or clarify environmental values to suit your community.

☑ CONS:

- The Typology Table might not adequately include a value you have identified as present in your community.
- You might come across a different name for a similar value listed.

Bibliographic Resources

Kellert, S.R. 1996. *The Value of Life: Biological Diversity and Human Society.* Island Press, Washington, DC.

Kempton, W., J.S. Boster, and J.A. Hartley. 1995. *Environmental Values in American Culture.* Massachusetts Institute of Technology, Boston, MA.

Focus Groups

Focus groups are a structured group process facilitated by a moderator, during which individuals discuss issues selected by the focus group sponsor. Focus groups rely on interaction among the participants to stimulate discussion, to explore feelings and thoughts about issues, and to gain a deeper understanding of personal views, experiences, beliefs, knowledge, and attitudes about various topics. The results can help design assessment or strategic planning efforts, validate other findings, and aid in collaborative environmental problem-solving.

How to Collect This Information

The following steps will help guide you through the focus group process. You might want to seriously consider securing technical assistance from individuals who have experience in focus group design or facilitation.

Focus Group Preparation

☑ **Determine the purpose/topic(s) of the focus group(s).** Topics can be general or specific to a particular issue or combination of issues. Refer to your assessment goals.

☑ **Determine who to invite to the focus group.** You can use a variety of techniques for selecting a good sample of your community. Please refer to the description of sampling techniques in **Appendix B**. Some possible criteria to consider include community members who

- Represent different subgroups within the community.
- Are newcomers to focus groups and not "professional" respondents (e.g., politicians) who might lead or monopolize the discussion.
- Do not know the specific subject of the discussion in advance (knowing the subject beforehand allows them to form ideas ahead of time).
- Do not know each other (knowing others in the group might inhibit individuals from talking freely).
- Are from similar economic strata (people of similar income and educational backgrounds are likely to speak more freely than those with widely varying backgrounds).
- Are from similar cultural groups (when cultural affiliations such as race and gender are similar, people might speak

more freely than when large differences exist, particularly when cultural differences correspond with power in the community [e.g., minority groups, women]).

☑ **Determine the number, size, and cost of focus groups to convene.** You might need to convene several focus groups to ensure a reasonable spectrum of views. The size of each group should be large enough to foster diverse opinions and lively discussion, but limited to a number that allows all members to participate: ideally, about 8 to 12 persons.

- **Recruitment.** A professional moderator, often connected with a market research firm, might be able to assist you in identifying and recruiting participants; the cost will be between $500 and $700. These firms select focus group participants from a particular area based on specific criteria developed by the assessor.
- **Participant compensation.** Focus group participants are almost always compensated for their participation by being paid between $35 and $50 or provided refreshments or lunch, small gifts, or travel expenses. The cost of focus group moderators and participant compensation packages can range between $3,500 and $5,000 (if using a focus group firm).

☑ **Design focus group questions.** What is it you want to find out about the community, or a particular subpopulation? Brainstorm about the questions/categories of questions for which you want to find answers. Questions should be fairly simple, open-ended, and consistent with the purpose of the focus group. If conducting multiple focus groups, it is important to use the same questions for comparison. The list of questions ultimately decided upon becomes the **focus group protocol**.

Begin with more general questions to engage the participants and make them comfortable with the process. Follow with more specific questions. Save potentially controversial questions until last so as not to jeopardize the entire process. Use open-ended questions that participants cannot answer with a simple "yes" or "no" — and try to phrase them to encourage detail and elaboration. Probing questions, such as "Is there anything else . . . ?" or "Can you give me an example of what you mean by . . . ?" often reveal richer information and perhaps surprising insights. Please refer to **Appendix B** for details on question design. An experienced focus group moderator can also help you prepare the actual questions.

☑ **Determine the length of the focus group.** Focus groups generally last one to a maximum of two hours, depending on the number of questions and the degree of participant involvement. Some sponsors schedule focus groups for an hour and a half, but plan on the discussion lasting two hours. The last half-hour allows time for participants to finish their thoughts, and for the moderator to add important impromptu questions.

☑ **Select a focus group moderator(s).** A moderator facilitates the focus group discussion by keeping the discussion on track, asking participants the protocol questions, probing their responses with more specific questions to elicit greater detail, and ensuring that participants follow the rules for interacting during the discussion. A moderator must be prepared to follow new lines of discussion that are relevant to the topic and fostered by the group's discussion, but unanticipated when the questions were formulated.

A qualified moderator should be able to remain neutral, develop rapport with the participants, and exhibit strong facilitation skills. Some moderators have academic backgrounds; others are experienced in market research or conflict resolution. Professional moderators expect to be paid from $1,000 to $3,000 per focus group. This fee includes the actual moderation as well as a written summary and analysis of the recorded discussion and a written report presenting the results and conclusions. Since the effectiveness of a focus group depends heavily on the abilities of the moderator, you should seriously consider hiring one.

The level of moderator involvement is a key element. An active and aggressive moderator can help ensure that all important topics are discussed adequately but might inadvertently stifle valuable discussion on other issues. A passive moderator might allow the group to range over more topics, which can provide useful information, but the group might choose to neglect certain topics that are less popular. Trained and experienced moderators are able to be both aggressive and passive to suit the needs of the focus group sponsor.

☑ **Determine the location and time of a focus group.** A focus group should be held at a neutral and conveniently located facility, such as a local school or recreation center. The meeting room should have tables and chairs that can be arranged so that all participants have eye contact with each other. Similarly, the meeting time should be convenient for the participants you plan to invite.

Another location for focus groups is a market research facility. Especially designed for focus groups, these facilities include two-way mirrors that allow the sponsor to observe the focus group from another room. If you can't use such a facility, a professional moderator or research firm can set up some other viewing arrangement. Market research facilities normally cost between $400 and $500 per focus group.

☑ **Determine how to record the discussion.** Focus groups are generally audio- and videotaped. Both record the discussion as it occurs and preserve its subtleties for later content analysis. Recording a focus group also frees the moderator from taking notes, thus allowing him or her to listen carefully to, and ask probing questions of, participants. If you conduct your focus group at a market research/focus group facility, recording devices and a video operator will be available for about $200. Otherwise, you can rent the equipment from an audiovisual store.

☑ **Determine how to disclose the sponsor of the focus group.** The sponsor(s) of a focus group is usually anonymous. It is believed that people will respond in a less biased fashion if they do not know who is interested in their responses. In many cases, the sponsor(s) is in another room simultaneously watching the process through a two-way mirror or a TV monitor. Sometimes the moderator will reveal the sponsor at the end of the focus group, but often the sponsor is never revealed. The decision to reveal the sponsor(s) depends on the community and your assessment goals. In some situations, such as small towns and close-knit communities, preserving the sponsor's anonymity could arouse the suspicion of community members.

☑ **Invite participants.** Carefully planned notification procedures and incentives help encourage focus group attendance. Depending on your available time and resources, adapt the following steps to suit your needs:

- Send a personalized introductory letter to potential participants.
- Telephone several weeks prior to the meeting to discuss the letter and ask participants to commit to attend the focus group. During the phone call provide all pertinent information, such as incentives, date, time, and location of the focus group.
- Follow the confirmation phone call with a confirmation letter that explains the general purpose of the focus group

and gives the date, time, location, and directions to the facility.

- Telephone the day of the focus group to remind the participants.

Some participants who have confirmed their attendance might still fail to show up for the focus group. Therefore, it is safer to invite a couple more people than you need. If you want a group of 8, invite 12. If you want a group of 12, invite 15. If they all show up, you can send some home according to the sequence of their arrival. The people turned away should still receive their compensation package.

Focus Group Process

☑ **Participants arrive.** The moderator or his or her assistant greets the participants as they arrive and invites them to have something to eat or drink while they wait for the rest of the participants (preferably not in the room where the focus group will take place). When all participants are present, they take a seat in the focus group room and the moderator begins the discussion. Arrange seating in a circle or a square so that participants can see each other and the moderator.

☑ **Conduct the focus group.** The moderator begins the focus group with introductions, an overview of participants' roles, and an explanation of the process and suggested rules. Rules might include

- Time limits on speaking.
- Respect for the moderator's role in facilitating the discussion.
- Mutual respect and nonjudgment of the opinions of others.
- Other rules the participants mutually agree upon.

Following the introduction, the moderator proceeds to engage the participants in a discussion of the questions designed by the sponsor.

The moderator allows time at the end of the session for additional comments and thanks the group for participating. The moderator or his or her assistant gives participants their compensation as they leave.

Resources Needed

☑ Required:

- One or more persons suitable to serve as moderators. Such persons should be skilled at managing group interactions.
- Audio- and videotapes, recording machines, and technical assistance.
- Cash or other form of reimbursement for participants.
- Food and drink for participants when they arrive at the facility.

☑ Optional:

- A person designated to serve as a recorder.
- A designated host/hostess to welcome participants as they arrive.

Sources of Extra Help

Extra help in designing and conducting focus groups might be available from the communications and marketing departments of nearby colleges and universities. To find focus group facilities and professional moderators around the country, visit the web site at http://www.focusgroups.com.

Some Pros and Cons of Using This Method

☑ PROS:

- Group interaction can generate useful information that might not emerge from other assessment methods.
- Focus groups can give community members a sense of inclusion in the community process by providing them with a forum to express their opinion.

☑ CONS:

- Shy persons might not always express their opinions.
- Participants are sometimes influenced by their peers to agree with ideas they would normally oppose, which can skew the results and make your analysis inaccurate.
- Focus groups can be expensive: between $3,000 and $5,000 each.

Bibliographic Resources

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Greenbaum, T.L. 1988. *The Practical Handbook and Guide to Focus Group Research.* D.C. Heath and Co., Lexington, MA.

Krueger, R.A. 1994. *Focus Groups: A Practical Guide for Applied Research.* Sage Publications, Thousand Oaks, CA.

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Interviewing

Interviewing is the process of asking individuals or small groups of community members questions and recording their responses. Use this technique to gather descriptive data about community life and the lives of community members (**Figure S4-13**). Focus on community members' thoughts, feelings, and experiences about issues and their relationships with others. Analyze interview results by looking for patterns or themes in the responses and comparing them to other data and analysis (see **Content Analysis Instructions**).

Figure S4-13—What Can Interviews Tell?

- What people are thinking, why and when.
- What people do with their lives, why and when.
- What their priorities are, both personally and about the community as a whole, and why.
- How people feel about their community, their local economy, or their watershed, and why.

Figure S4-14—Who Interviews Whom?

Interviews can be conducted by community members or experienced interviewers. Having community members interview each other allows them to get to know one another better, possibly creates new relationships, and might even contribute to a sense of cohesion within the community. On the other hand, experienced interviewers might produce more reliable data. All interviewers involved in the assessment project, experienced or not, should go through a short training session based on this method description. Training will help ensure that a similar approach and similar techniques are used in all the interviews.

How to Collect This Information

You can choose from three types of interviews, depending on your purpose, resources, and time. Each type of interview can be conducted in person or over the telephone, in groups or individually, by community members or experienced interviewers (**Figure S4-14**). The types are unstructured interviews, semistructured interviews, and structured interviews.

- ☑ **Unstructured interviews** do not follow a predetermined order of topics but rather the flow of the discussion with the interviewee. Sometimes it can be helpful to have a list of topics ready to keep the discussion flowing if necessary. Use unstructured interviews when you are gathering new information, such as how people think about different issues. Unstructured interviews enable an interviewer to collect in-depth information that can be used to tailor other interviews or combine with other assessment methods.
- ☑ **Semistructured interviews** use a predefined set of questions that, when discussed during the interview, lead to additional unplanned questions. Use semistructured interviews to explore ideas in-depth that you've already gleaned from general observation or other data.
- ☑ **Structured interviews** give a predefined set of questions to a specific number of respondents. Patterns of similarity and difference in responses become the basis for analysis. Similar to face-to-face and telephone surveys, structured interviews are useful when you know enough to ask fairly specific questions.

Interview Techniques

Regardless of the type of interview you decide to conduct, the following techniques will help you use this method more effectively and achieve more accurate results.

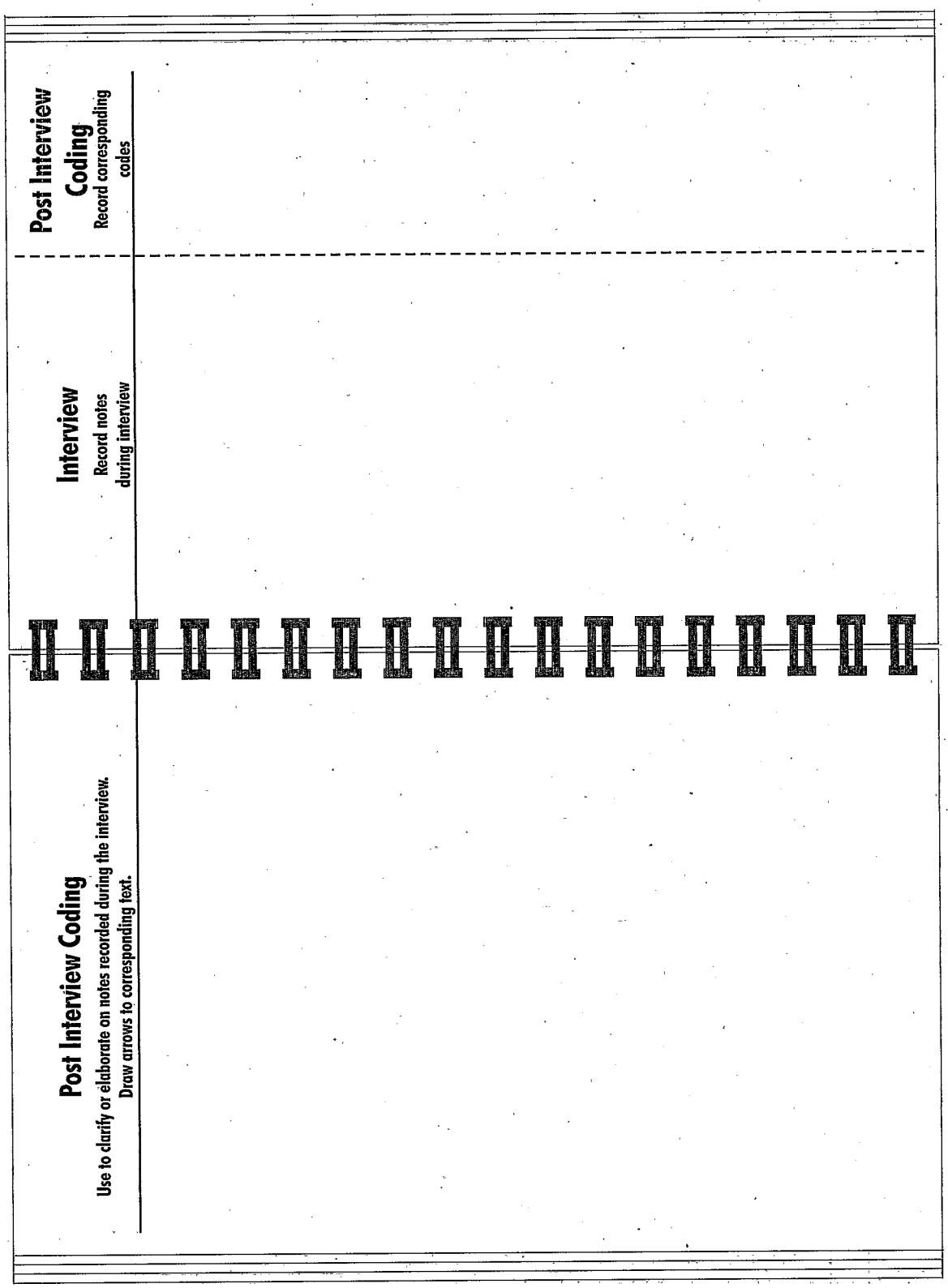
☑ **Pre-interview:**

- **Research.** Thoroughly research the background of the community, the groups, and the individuals you will be interviewing so that you can ask pertinent questions and establish rapport quickly with those you're interviewing. Knowing names and places can help keep the interview focused and can refresh an interviewee's memory.
- **Sampling.** Use sampling to determine who and how many people to interview based on your goals and resources. (Refer to the detailed discussion of sampling in **Appendix B**.)
- **Interview type.** Select the interview type — unstructured, semistructured, structured, or a combination — based on your needs. Also decide who will conduct the interviews and whether they will be over the phone or in person. Decide if the interviewers will be compensated or if their work will be in-kind.
- **Question design.** Interview questions can be broad and open-ended or specific and multiple-choice, depending on the type of interview you are conducting. Be sure to allow yourself sufficient time to develop the best questions for your purpose. Refer to the discussion of question design in **Appendix B**.
- **Pretest questions.** Pretest interview questions on members of the community to be sure that the language and subject matter are appropriate. Pretests will also double check that the wording is not confusing.
- **Recording.** Determine how you will record the interview. See **Recording** under **The Interview**. Use **Figure S4-15a Interview Log Sheet** to keep track of interviews. Use **Figure S4-15b Recording Interview Notes** when recording interview by hand.
- **Location.** Arrange a time and place that is convenient for the interviewee; you can do this by telephone. Be sure to explain the purpose of the interview and how or why the interviewee was selected. Although you can conduct the interview most anywhere that's mutually agreeable, including the interviewee's home, make sure it's a quiet place with minimal distractions. The more comfortable the interviewee, the easier it will be to build and maintain rapport.

Figure S4-15a—Interview Log Sheet

Date/Time of Interview	Interviewee Name	Organization/ Affiliation	Mailing and E-mail Addresses; Phone and Fax Numbers	Interviewer Name

Figure S4-15b—Recording Interview Notes



- **Timing.** Interviews should start and end on time. You and your interviewee should establish the time frame together: generally between 30 minutes and 1.5 hours.

☑ **The Interview:**

- **Rapport.** It is important to build rapport with interviewees to make them comfortable with your presence and your questions. This greatly increases the likelihood that they will answer your questions honestly and positively, rather than feel threatened by them. Establish good rapport by
  - ➢ Approaching interviewees properly.
  - ➢ Informing them of the purpose of the interview and the process to be followed.
  - ➢ Advising interviewees of their roles and rights in the interview process, such as confidentiality (see **Ethics of Assessment, Chapter 4, Step 1**).
  - ➢ Giving a written or verbal explanation of your project to interviewees so they fully understand what you are doing and how the information will be used.
  - ➢ Using nontechnical language and local slang when appropriate.
  - ➢ Respecting the time frame established for the interview.
- **Probing.** If the interview includes open-ended questions and is not highly structured, the interviewer might ask probing questions when interviewees respond with answers that could have multiple meanings. Probing questions ask interviewees for additional information and follow up on details and unexpected avenues of information. Examples of probing questions include: "Would you explain further?" and "Could you give me an example?" Use probing questions sparingly and carefully, not as interrogation techniques. When used properly, probing might actually build rapport by allowing the interviewee to speak in more detail about personal knowledge or concerns.
- **Restraint.** Always remember that as the interviewer, you record only what the interviewees say. Despite your own knowledge and interest, you must remain neutral, or you could bias the results of your interviews. Later, as you analyze the interview results, you can add your own comments and opinions.

- **Retreat.** Each interview deserves a graceful closing. Watch for clues during the interview that the interviewee's attention or interest is waning. You'll see these in a yawn, repetition of the same answer, or more requests that you repeat the questions. To close the interview, ask concluding questions like, "Is there anything else you would like to add?"or "Would you like to continue this discussion at another time?"
- **Recording.** Record the interview in writing or by tape (*always* ask permission to record, especially to tape an interview). You might want to use a notetaker or a recording device to free you from intensive notetaking, thereby allowing you to concentrate on what the interviewee is saying. If you use a tape recorder, position it unobtrusively. For example, a voice-activated tape recorder placed on a table between the interviewer and the interviewee is less obtrusive than a microphone held close to the interviewee's face.

☑ **Post-interview:**

- **Review.** After the interview, record your observations of the interview:
  - ➢ How did the interviewee act?
  - ➢ What was the physical setting of the interview?
  - ➢ Were there interruptions?

  Read or transcribe your notes/tapes as soon as possible while the situation is still fresh in your memory. Reviewing each interview might suggest possible themes or new probing questions for future interviews. Also, offer your interviewee the opportunity to read the transcript to make corrections or clarifications. This makes the interviewee a partner in the interview, checks the validity of the data you have collected, and generates further interest on the part of the interviewee about the outcome of the overall assessment project.

Resources Needed

☑ Experienced interviewers (either voluntary or paid).

☑ Prepared statement of introduction.

☑ Time and funding for question design and development.

☑ Office or interview space and interview materials (e.g., telephones, recording devices, pens, paper, maps).

☑ Method for storing and analyzing data (e.g., a computer).

☑ List of interviewees.

Sources of Extra Help

Local university/college departments of sociology, anthropology, psychology, political science, journalism, and marketing will often have faculty or students experienced in conducting different types of interviews. They can also provide technical assistance regarding sampling techniques, question design, and data analysis.

Some Pros and Cons of Using This Method

☑ **PROS:**

- **Telephone interviews** are useful for asking some initial questions and getting to know the interviewee, and for conducting structured interviews. Such interviews are relatively inexpensive as long as telephones are available and the survey does not require long distance calling. They are also less time consuming than in-person interviews and can reach a large number of people relatively easily.
- **In-person interviews** are more flexible than other types of survey methods because they allow the interviewer to ask questions or administer a survey in a variety of ways (e.g., on the street, by appointment, in people's homes) and to use visual materials to help respondents answer questions. In-person interviews allow the interviewer to also note the emotional reactions and non-verbal cues, such as body language, sarcasm, stance, and gestures in response to certain questions. In-person interviews are more effective in establishing rapport between the interviewer and interviewee; this is especially important when the interview is about a sensitive subject. In-person interviews also give the interviewee a greater sense of involvement in the assessment, and the interviewer can more easily probe for additional information.

☑ **CONS:**

- **Telephone interviews** are not as appropriate for in-depth interviewing. The lack of face-to face, personal contact makes it difficult for the interviewer to establish appropriate rapport with the interviewee. Question format must be kept relatively simple since the interviewee cannot see non-verbal conversational cues. It also might be difficult for someone to stay on the phone for very long.

Telephone interviews can sample only those members of a community who have telephones.

- **In-person interviews** might be more time-consuming and expensive compared to other types of methods (e.g., self-completion surveys). The presence of the interviewer can foster biased responses in cases where they have not achieved rapport with the interviewee or where some other subjective element influences the responses. Interviewers must be trained to follow the same set of interview techniques so that their personal attributes and behaviors do not inadvertently affect the collection of the data. Interviews collect a large amount of data that take time to analyze, but they usually involve only a small percentage of the community, making community-wide generalizations unreliable.

Bibliographic Resources

Backstrom, C.H., and G. Hursh-Cesar. 1981. *Survey Research*. 2nd ed. John Wiley & Sons, New York, NY.

Bernard, H.R. 1995. *Research Methodology in Anthropology: Qualitative and Quantitative Approaches*. 2nd ed. AltaMira Press, Walnut Creek, CA.

Frey, J.H. 1983. *Survey Research by Telephone*. Sage Publications, Beverly Hills, CA.

Hawtin, M., G. Hughes, and J. Percy-Smith. 1994. *Community Profiling: Auditing Social Needs*. Open University Press, Philadelphia, PA.

Figure S4-16—What Kinds of Information Can Maps Show?

Many features of a community can be represented on a map. Some of the most commonly mapped features include:

- **Natural resources and features of the land** such as rivers or streams, mountains, plains, wildlife habitat, mineral deposits, and soils.
- **Political or economic boundaries** such as state and county lines and the boundaries of incorporated/unincorporated municipalities.
- **Demographic information** such as population density.
- **Different land uses** such as residential, commercial, industrial, open space, or recreation areas.

Figure S4-17—Sources of Community Maps

It should not be difficult to obtain maps of communities on almost any scale desired. Good maps of a community are often published and maintained by:

- Local/county/state libraries
- Special collections
- Planning and surveyor offices
- Chambers of Commerce
- Trade associations
- Historical societies
- Banks
- Civic groups
- Similar organizations

You can also obtain geographic information by using an atlas or travel maps prepared by businesses such as Rand McNally or contacting the state highway department. Visit a local library to find out what geographic information and maps are available.

Maps and Geographic Research

Maps and geographic research can be used to define the physical boundaries of the community, including the many different social and physical elements contained within those boundaries (e.g., where people live, where businesses are located, roads, and natural features). Maps and geographic research show how the community fits within the larger context of its surroundings (e.g., the geographic relationship to other communities or its watershed) and how it has changed over time (e.g., road construction, residential and commercial development) (**Figure S4-16**).

Geographic data, such as photographs or high-resolution satellite images, can be mapped to reveal how community members have organized themselves economically, socially, or geographically. Maps and geographic research can also estimate (1) the ability of the community's natural landscape to accommodate future growth and (2) how changes in land use might affect the health of the surrounding ecosystem. A good visual tool for stimulating discussion on local identity with community members, maps and geographic research can help put the quantitative and qualitative data obtained through other methods into a geographic context.

Many government agencies and private organizations conduct geographic research and develop and use maps as part of their daily work. Unless your community assessment has unique information needs, you can save time and money by using existing sources discussed in this section (**Figures S4-17, S4-18, and S4-19**). Please see the **Background Research Instructions** also.

How to Collect This Information

1. Identify Community Features

List the features of the community that you want to illustrate on a map or through geographic research. These might include

- ☑ **Natural boundaries** (e.g., mountains, rivers and streams, watersheds, agricultural land).
- ☑ **Political/administrative boundaries** (e.g., city and county lines, soil and water conservation districts).

☑ **Physical/infrastructure boundaries** (e.g., transportation networks, sewersheds).

☑ **Sensitive areas and resources** you want to protect (e.g., historic sites, drinking water sources, special wildlife habitats, forest buffers).

☑ **Facilities and resources** that protect public health or environmental quality (e.g., solid waste facilities and sewage treatment plants).

☑ **Problem areas** that might have actual or potential public health and ecological impacts (e.g., Superfund sites, flood zones).

☑ **Other places** (e.g., military bases, Indian reservations).

2. Determine the Scale of the Geographic Data

To be useful, maps must show locations and distances accurately on a sheet of paper or computer screen. Simply defined, **scale** is the relationship between the distance on the map and the distance on the ground. Scale is shown as a ratio of 1 inch on the map to actual inches on the ground (e.g., a scale of 1:600 is 1 inch on the map for every 600 inches, or 50 feet, on the ground). A very detailed map, such as 1:600, can show the location of sewers, power lines, water lines, streets, and buildings drawn to scale. A smaller-scale map represents such features by symbols.

3. Determine Format and Source for Geographic Data

☑ **Format of Geographic Data**

- **Printed maps.** Geographic and other mapped information is traditionally published in printed (hard copy) format by federal, state, county, and local government agencies. City or county planning and survey offices will have the most detailed and current geographic data for your particular community.
- **GIS.** Technology makes it possible to retrieve, store, analyze, and display geographic and other data using computer-based systems called **geographic information systems** (GIS). GIS can answer the following five questions about the community you are assessing:
  - ➢ What is at [location]?
  - ➢ Where is it?
  - ➢ What has changed since [date]?

Figure S4-18—Internet Map and Geographic Research Information

Although EPA does not produce maps as part of its mission, the Agency does maintain a web site that allows for geographically based searches, or queries, regarding EPA-regulated facilities, specific watersheds, and environmental information.

- For regulated facilities: **http://www.epa.gov/enviro/html/mod/mod.html**. This web page allows users to search EPA-regulated facilities by identification number, name, ZIP code, county, or state depending on the database being searched. Each database provides an explanation of the database prior to the query.
- For watersheds: **http://www.epa.gov/surf**. The "Surf Your Watershed" web page provides users with access to geographic information and GIS projections for specific watersheds around the country.
- For environmental information: **http://www.epa.gov/enviro/wme**. The "Windows to My Environment" web page allows users to obtain air and water quality information for specific sites searchable by ZIP code or city and state. An interactive map for each site shows waterbodies, monitoring sites, and population density information.

The University of Texas at Austin has developed a Library Map Collection on the Internet. It includes information and references to map-related web sites. You'll find sources of geographic information on city maps, historical maps, cartographic maps, and others. Visit the collection at **http://www.lib.utexas.edu/maps/index.html**.

Figure S4-19—GIS Information Internet Addresses

- **http://www.urisa.org**
  Urban and Regional Information Systems Association.
- **http://www.esri.com**
  ESRI ArcView and ArcInfo.
- **http://www.epa.gov/enviro/wme**
  EPA Window to My Environment.
- **http://www.ced.berkeley.edu**
  University of California, Berkeley Environmental Planning and GIS.

- What spatial patterns exist?
- What if [specific event]?

A GIS map combines a **base map** with a series of **overlays**. The **base map** shows the geographic features of an area; an **overlay** is a set of thematically associated data, such as soil composition, stream locations, roads, or land use. A GIS can combine the base map with different overlays, separately or together, to produce a custom map of the information you want. Technically trained coordinators create GIS maps by using scanners, digitizers, and manual entry of coordinates from satellite information.

☑ Sources of Geographic Data

- **Federal Emergency Management Administration (FEMA).** FEMA produces maps portraying flood zones, areas that experience 100- and 50-year floods. These maps can usually be found in state or university libraries designated as depositories for government documents and in city/county planning or surveyors' offices.
- **Zoning and land-use maps.**
  - **Zoning maps** use standardized zoning codes to show restricted land uses for particular areas of the community such as " high-density, one-family, detached dwellings" or "major business, office complexes." Zoning maps overlay the zoning codes onto actual street maps of the area. Open to public comment, the ultimate decision to designate zones rests with locally elected officials.
  - **Land-use maps** characterize general land uses according to the codes used by the zoning maps (e.g., the different densities of residential, industrial, and mixed uses). Most communities also have "master plans" that will help you understand land-use restrictions and plans. Both zoning and land-use maps are usually available at the county or city government library, or at county/city planning or surveying offices.
- **Sanborn Fire Insurance maps.** In 1867 the Sanborn Map Company began developing fire insurance maps to help fire insurance agents determine the degree of hazard associated with a particular property. These regularly updated maps depict the commercial, residential, and industrial sections of some 12,000 cities and towns in the United States, including specific details about the size, shape, and construction of residential dwellings, commercial buildings, and factories. They also list street

names, property boundaries, and building use. Check your local historical society, county/city planning or surveyor's office, or courthouse for fire insurance maps of your community.

You can also buy these maps from Environmental Data Resources (800) 352-0050, which recently purchased the Sanborn Map Company.

- **State Natural Heritage Programs.** In the early 1970s, The Nature Conservancy developed the Natural Heritage Program to provide detailed, scientific information on the patterns and processes of biological and ecological diversity. Today the Natural Heritage Program is used to make wise land-use decisions that minimize the degradation of biological resources. Within the United States, the Heritage Network has grown to cover all 50 states, the District of Columbia, and the Navajo Nation. Most programs are now independent entities that work in collaboration with the Conservancy. They are housed primarily within state government agencies, public universities, and the Conservancy itself. In a few instances, the federal government has established specific data centers within national parks or national forests. For more information, contact the Conservancy's national hotline at (703) 841-6360 or visit http://nature.org.
- **U.S. Census Bureau.** The Census Bureau data are organized by census tracts and block numbers. Census maps show the location and the boundaries of these tracts and blocks. Census maps also include political boundaries and general geographic information. Local census maps might be available at public libraries, and at a local courthouse or county government library, depending on the size of the political jurisdiction.

  See the **Census Data Research Instructions** or the Bureau's mapping home page at http://www.census.gov/geo/www/tiger/index.html for more information.
- **U.S. Department of Agriculture Natural Resources Conservation Service (USDA NRCS).** NRCS develops county-level soil survey maps that scientifically inventory soil resources according to the potential for, and problems with, use. Soil survey maps can be obtained through your county's Soil and Water Conservation

District or viewed at a local public library or county/city planning/surveyor's office.

For more information about the geographic data provided by NRCS, visit http://www.nrcs.usda.gov and link to its National Cartography and Geospatial Center at http://www.ftw.nrcs.usda.gov/ncg/ncg.html or contact

- USDA/NRCS Statistical Lab
  P.O. Box 2890
  Washington, DC 20013
  (202) 720-2426
- NRCS Public Affairs: (202) 720-3210
- NRCS Resources Inventory: (202) 720-5420

- **U.S. Geological Survey (USGS).** The USGS National Mapping Program provides a variety of cartographic, geographic, earth science, and remotely sensed data, products, and services in support of federal, state, and public interests. These products and services include information about the earth's natural and cultural features, base maps and special maps in several scales, and other digital data that can be used as part of a more sophisticated geographic analysis system.

  Printed USGS maps are organized into nationally standardized quadrangles. Viewing a quadrangle is like seeing the land from the air. These maps show the location of houses, churches, airports, roads, railroads, bridges, and cemeteries, elevation of the land by contours, and latitude and longitude. Topographic maps also use aerial photographs and infrared photography to show natural land cover and land-use patterns. USGS can provide older, out of date maps for tracking changes and trends in land use of a particular community. USGS maps are usually available at public libraries.

  USGS operates a network of 75 Earth Science Information Centers (ESIC) around the country. An ESIC (pronounced like *seasick*) is often located within a state or federal agency other than USGS. Regardless of its location, one purpose of an ESIC is to provide state and local information about the earth, both above and below its surface. An ESIC sells USGS maps, provides available aerial photographs of a particular area, and refers inquiries about detailed geologic and hydrologic data to the information offices of the appropriate USGS division. For a

list of state ESICs, call (800) ASK-USGS or visit http://www.usgs.gov/esic/esic-index.html on the Internet.

For more information on the USGS National Mapping Program, contact USGS at

➢ USGS National Center
12201 Sunrise Valley Drive
Reston, VA 2192
Phone: (703) 648-4000
Internet: http://www.usgs.gov

Resources Needed

☑ **Required resources for Geographic Information Systems**. GIS software is a specialized tool. Several GIS software packages are commercially available on the market, among them the popular (and user-friendly) Map Info and the more advanced ArcView and ArcInfo by Environmental Systems Research Institute and CarisGIS by Universal Systems.

Bibliographic Resources

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Figure S4-20—Potential Uses of Meetings

- Identify and coordinate with your partners.
- Define overall environmental protection goal(s).
- Plan your assessment (e.g., goals, workplan).
- Identify and describe the community you are assessing.
- Identify and select community characteristics to assess, and methods to use.
- Solicit input from various groups of people on issues of concern, visions for the future, and decisions that will affect them.
- Bring people together to conduct assessment methods (e.g., to develop an asset map).

Meetings

Meetings — whether large or small — can be used in community cultural assessments both to collect information about a community and to involve community members in all aspects of the process (e.g., defining goals, strategic planning). Meetings can be structured in many different ways depending on location, time frame, and, most important, purpose. Meetings are a cost-effective way of getting diverse input on community issues.

Types of Meetings

Figure S4-20 lists the many different ways meetings can be used in community cultural assessments. This worksheet discusses types of meetings and techniques for conducting them.

☑ **Types of meetings** discussed include

- Small group meetings
- Workshops or issue forums
- Community (public) meetings and information sessions
  - Town meetings and public hearings
  - Road shows and open houses
  - Kickoffs and summits
  - Visioning

☑ **Types of techniques** for soliciting input at meetings include

- Brainstorming
  - Free-wheeling
  - Round Robin
- Charrette
- Delphi
- Nominal Group Technique

Small Group Meetings

☑ Small group meetings provide the best setting for decision-making and consensus-building because they enable people to focus on a main topic (**Figure S4-21**).

☑ They are also useful for setting agendas for upcoming meetings and planning future events.

Figure S4-21—Suggestion for Decision-making Criteria Process

Although you should adopt the approach that will best suit your overall project needs, a typical problemsolving or decision-making approach comprises the following steps:

- Define the problem to be solved or the decision to be made.
- Determine the decision-making process (e.g., straw vote, majority rules, total consensus).
- Review your situation, issues, and needs (e.g., What are the environmental problems and goals you are trying to address in your assessment project?).
- Develop criteria with which to evaluate the options. The criteria should be determined near the beginning of the meeting so the choice of criteria is not influenced by the outcome of the brainstorming process.
  - For example, one commonly used criterion is cost (i.e., given the budget available for my project, how much can I expect to accomplish?).
  - Choose a reasonable number of criteria (three to six are generally recommended).
  - Once overall criteria are defined, weigh each to show how important it is relative to the others. Weights might be qualitative, like "high, medium, low," or quantitative, where a number is applied to each criterion so that the total equals 100.
- Brainstorm all possible options/solutions without judgment or evaluation.
- Apply evaluation criteria to help you prioritize your options.
- Select your options.

EXAMPLE CRITERIA RATING FORM

Criteria	Weight	Alternative Options (rating scale: 1 to 10)		
		Option A	Option B	Option C
Cost	30%			
Applicability	40%			
Other Resources (labor)	10%			
Time	20%			

☑ To optimize the opportunity for thoughtful dialogue, this type of meeting should be limited to 20 participants, preferably 7 to 15.

Workshops or Issue Forums

Workshops and issue forums are good techniques for soliciting feedback on a narrow selection of issues. Workshops and forums generally seek input on a series of predetermined questions or topics. Use workshops and forums to bring together technical experts, carefully selected stakeholders, or the public.

Community (Public) Meetings and Information Sessions

Community meetings engage a wide range of people in open discussion about a particular issue or topic and are typically larger than small group meetings, workshops, and forums. Public meetings take a variety of forms: town meetings, public hearings, road shows, open houses, kickoffs and summits, and visioning.

☑ **Town meetings and public hearings** are typically presented in a highly organized format that allots community members specific amounts of time to voice their opinions. Participants normally prepare and submit written testimony or comments for the official record. Testimony is usually preserved for the public record; such transcripts might be useful sources of data for your assessment.

☑ **Road shows and open houses** also seek input from a wide variety of community members, but in less formal ways than town meetings or public hearings. Road shows and open houses use exhibits and other types of visual or verbal presentations (e.g., slide shows, maps, and drawings) to solicit comments. Road shows usually visit community groups and neighborhoods; open houses invite community members to a specified location. Open-house sponsors might hand out prepared issue briefs, abstracts, or summary statements about environmental issues facing the community — and engage attendees in informal discussions. These types of meetings are good for informally collecting responses to ideas or proposals that can be visually presented.

☑ **Kickoffs and summits** are community-wide meetings that initiate projects or indicate the transition from one phase of a project to another. They can also increase public awareness of an issue by attracting media coverage. For maximum exposure, link these community-wide events with traditional local events, such as Earth Day, Rural–Urban Day, or an annual fair. These are opportunities to bring speakers into a

community to present expert vision on addressing environmental issues.

☑ **Visioning** is a series of open, collaborative, community-wide meetings bringing citizens and community leaders together to form a shared vision of what they would like their community to look like in 20 to 50 years. This "vision" then becomes the guiding force for short- and long-term action plans.

Publicize public meetings through newspaper advertisements, radio announcements, flyers, leaflets, and word of mouth within existing community and business entities. Make your meetings accessible by scheduling them at well-known locations and at a time convenient for most people, such as a weekday evening or a weekend morning. Offering child care and transportation also promotes participation.

General Hints for Running Successful Meetings

Regardless of the type of meeting selected, its effectiveness will depend on an organized approach that includes a well-planned agenda (**Figure S4-22**) and clearly defines roles and responsibilities for all participants (**Figure S4-23**). Careful planning prevents participants from feeling rushed or thinking that their attendance and input are insignificant. Participants must know why they should attend and what is expected of them. Time the mailing of any pre-meeting materials to allow them enough time for thoughtful review. Depending on the size and the purpose of the meeting, you might want to consider using a leader and a facilitator, plus one or more recorders.

Ensuring Balanced and Representative Participation

Any meeting will benefit from full community participation. Generally, you can identify who to include by determining who has an interest in or might be affected by the meeting topic or issue being addressed. These community members are called "stakeholders." By including all stakeholders, you have a better chance of capturing the range of opinions and interests in the community and thus conducting a more complete and accurate assessment.

Figure S4-22—Basic Considerations for Conducting Effective Meetings

- **Identify goals and objectives.** What do you want to accomplish in the meeting? Consider how much time you have and what is reasonable to accomplish.
- **Develop an agenda** that provides the following information:
  - Statement of meeting goals and objectives.
  - Action items (i.e., list of items to achieve meeting goals and objectives).
  - Anticipated attendee list, roles and responsibilities (defining leader, facilitator, recorder).
  - Logistics.
  - Allocated time.
- **Determine appropriate participants.** Depending on your goals, you might invite the public, technical specialists, select community leaders, and so on. If your meeting is a large public meeting, identify which community members should be included (e.g., certain segments of the community, specific neighborhoods, or a random sampling of the whole community).
  - *Invite or advertise.* Carefully advertise the meeting so that the target population knows about it and has sufficient time to plan for it. Make sure you understand your population well enough to identify the best ways to inform people about the location, time, and content of meetings. Advertising is especially important for large public meetings. Written invitations, e-mails, phone calls, general mailings, and public notices can be useful for ensuring participation of key people and for inviting people to smaller meetings.
- **Distribute necessary background materials,** including the agenda, to meeting participants sufficiently in advance of the meeting.
- **Clearly define and reach agreement on roles and responsibilities** for all meeting participants, including meeting leader(s), facilitator, recorder, and participants; establish the meeting schedule, ground rules, and guidelines.
- **Review the agenda and ground rules** at the beginning of the meeting and follow the agreed-upon agenda.
- **Keep meetings focused** on priority issues.
- **Allow sufficient time** to cover the subject.
  - *Plan for facilitated discussions* for idea generation and refinement and open and balanced participation from all participants.
  - *Plan for meeting closure* with summary of discussion and next steps.
- **Produce and distribute meeting summaries.**
- **Evaluate the meeting** to ensure that participants were satisfied with the approach.
- **Fully consider each stage of meeting development:**
  - Preparing for the meeting
  - Conducting the meeting
  - Evaluating the meeting

  No stage should be ignored or minimized.

Sources: Chang, 1994; Fisher, 1991; Chechile, 1991; Doyle, 1976.

Figure S4-23—Meeting Roles and Responsibilities

MEETING LEADER OR COLEADERS

- Establish meeting objectives and agendas and designate person responsible for the overall direction of the meeting.
- Start meeting on time.
- Provide introductions, summarize meeting objectives and agenda items, and define roles and responsibilities.
- Facilitate or work with facilitator to ensure meeting agenda is followed in a timely manner.
- Participate as a group member.
- Summarize key decisions and actions.

MEETING PARTICIPANTS

- Review agenda and other meeting materials before attending meetings.
- Know purpose of meeting ahead of time and do "homework" to prepare.
- Confirm attendance and designate an alternate if cannot attend.
- Attend meeting on time and participate in a timely fashion.
- Keep an open mind, avoid premature judgment, and try to understand other perspectives.
- Provide technical input when necessary.
- Speak up; share useful ideas.
- Help facilitator eliminate distractions and encourage active involvement.
- Support ground rules and other meeting guidelines.
- Volunteer for tasks only if capable of follow-through.
- Agree to participate in consensus-building exercises.

FACILITATOR

- Coordinate with leaders and get any needed background/preparatory information.
- Review planned agenda and action items.
- Review team's ground rules.
- Manage how people work and communicate in the meeting.
- Guide the flow of the meeting.
- Focus the group.
- Monitor participation.
- Evaluate effectiveness of process and suggest alternatives as necessary.
- Protect people from "attack" and deal with problem people.
- Remain neutral at all times, particularly during disagreements.

RECORDER

- Keep track of important information throughout the meeting, prepare flip charts and other necessary visual aids during the meeting, and prepare post-meeting summaries and action items.
- Capture ideas visually without editing or paraphrasing.
- Check to ensure that appropriate information has been recorded; obtain clarification from the participant if needed.
- Help leader and facilitator keep track of information.

Source: Adapted from Chang, 1994.

Figure S4-24—Balanced and Representative Stakeholders Are . . .

Individuals or groups that have a stake, or interest, in the topic of interest and its intended outcome. To ensure balance and representation, it is important to understand the end goal of any project (e.g., to develop a river protection strategy) so that all potential players affecting or being affected by the decision-making process, as well as those key to implementing the results, are included. It is essential to represent all sides of the community so no one group or opinion will dominate.

How to Identify Stakeholders

☑ **Assess Issues and Goals.** Identify the key issues surrounding the meeting and identify who might be interested in, or affected by, the issues (**Figure S4-24**).

☑ **Identify Potential Stakeholder Categories.** Information on issues and goals provides the basis for identifying the types of stakeholders that should be represented in the meeting, such as fishing or chemical industry representatives, property owners, or environmental groups.

☑ **Identify Actual Representatives from Stakeholder Categories.** Analyze available information on stakeholder groups and identify and invite specific people. Personal knowledge and recommendations from affiliated groups or individuals will help identify specific persons associated with each stakeholder category.

☑ **Consideration When Selecting Participants.** Consider who they are as individuals, their position in their organization, whom they represent, their area of expertise, their possible contribution, and so forth.

Techniques for Soliciting Input at Meetings

☑ **Brainstorming.** A brainstorming session is an open discussion among a group of people designed to produce as many ideas as possible (free of judgment). Two common techniques for brainstorming are

- **Free-wheeling**: Share ideas in a free-form way and make a flipchart list as they are offered.
- **Round Robin**: Go around the room in an orderly fashion, giving everyone an opportunity to present one idea (people can pass on their turn, if so desired). Keep going around the room until ideas are exhausted or time is up. Make a flipchart list of all the ideas as they are offered.

Basic ground rules for brainstorming sessions include the following:

- Avoid judging or criticizing ideas.
- Keep discussion of ideas to a minimum.
- Try to generate as many ideas as practical in the allocated time.
- Try to build on the ideas of others.
- Use a recorder to list ideas.

☑ **Charrette.** A charrette is a series of small working group meetings — usually over 3 to 5 days — within a larger meeting. Based on intensive, around-the-clock meetings of participants with different points of view, a charrette is designed to solve problems, resolve conflicts, and produce a set of recommendations in a short period of time. A charrette can also establish new lines of communication, produce new insights into solving problems, and build relationships between participants.

☑ **Delphi Technique.** This technique is useful for bringing a diverse group of people to consensus. In a Delphi sequence, the interaction between members of the group is handled anonymously through a series of written questionnaires relating to the particular issue. Through the process, participants are informed only of the group's collective opinion and the arguments for and against each point of view, but not individual opinions or responses. Participants can express their opinions and change their minds without publicly admitting to it. Each subsequent questionnaire is based on the previous set of responses until consensus is ultimately reached. The technique can be used at a meeting or workshop, through the mail, or over the Internet to bring a group to consensus on priorities, goals, or plans of action.

A typical Delphi sequence entails four rounds of questionnaires:

- **Round 1**: Participants complete questionnaire on various aspects of the issue. The facilitator develops the questionnaire and summarizes the responses.
- **Round 2**: The facilitator presents the summary to the group, and participants complete a second questionnaire developed by the facilitator. The second questionnaire is based on the summary of the previous responses.
- **Round 3**: The facilitator again summarizes responses and uses the summary to develop a third round of questionnaires. Participants complete the questionnaire.
- **Round 4**: The facilitator summarizes responses for the final time. This time the issues are either voted upon or ranked by participants.

☑ **Nominal Group Technique.** This structured process is most useful for generating ideas, thoughts, and concerns about a specific issue(s) that might be contentious or difficult to talk about. It is essentially a brainstorming exercise in which

people write their ideas independently on pieces of paper and a facilitator compiles and categorizes the ideas. This approach prevents more outspoken participants from dominating the group's decisions. Discussion might follow or participants should repeatedly write down ideas until all ideas merge into some agreed-upon set.

To collect information using the nominal group technique, use the following 6-step approach (or some version of it) with groups of 5 to 10 participants:

1. **State or write on a flipchart the question or problem** to be addressed by the group. The question or problem should be clearly defined and followed by an explanation, if necessary.
2. **Generate ideas** for 5 to 10 minutes by having each participant, working independently, write down ideas and thoughts on pieces of paper or cards.
3. **Submit ideas** to facilitator, who categorizes ideas and thoughts on a large sheet of paper or flipchart.
4. **Clarify ideas** listed on the flipchart by allowing the group to discuss categories, if necessary.
5. **Prioritize the list** by asking each member to select two to seven items and rate them on a small piece of paper or card. The facilitator shuffles the cards or paper to preserve anonymity, tallies the votes, and lists results on the flipchart in front of the group.
6. **Discuss and vote** on the priorities. This phase allows participants to discuss the priorities, make clarifications, and voice agreement or disagreement. Finally, the group should vote on the priorities independently and anonymously.

Some Pros and Cons of Using This Method

☑ **PROS:**

- **Small group meetings** enhance the democratic process of community decision-making by creating a more intimate environment than public meetings. They are useful for working on issues and concerns in some depth; more voices can be heard with less competition for speaking time. Small group meetings encourage attendees to participate, get involved and informed, and contribute to a sense of community. Because these are more informal

than large public meetings, they often can be conducted at fairly low cost.

- **Workshop or issue forums** allow greater depth of insight and learning about specific topics of concern to the public (e.g., forestry, agriculture, water quality issues).
- **Community (public) meetings and information sessions** engage the public in their local setting. They bring together larger numbers of people than small group meetings, workshops, or forums. If planned and executed effectively (e.g., scheduled at times and locations convenient to large numbers of people and well publicized) these larger community meetings provide a way to obtain information from a variety of people in a "one-shot" setting. Road shows and open houses provide opportunities for more personal contact with stakeholders and the public. They allow for interaction, flexibility, and mutual exchange and education about respective interests.

☑ **CONS:**

- **Small group meetings** sometimes limit participants' opportunity to understand a wide range of other views since they include only a small number of people. This concern can be minimized by including a balanced and representative stakeholder group at the meeting. Depending on the size of the community and the complexity of the issue, it might be necessary to have more than one small group meeting. Since these types of meetings benefit greatly from experienced facilitation, you should consider the cost of multiple meetings if you plan to use a professional facilitator.
- **Workshop or issue forums** are limited in scope and might alienate community members who have not been involved in the project all along. Participants might not feel like they can voice their concerns if the agenda does not cover an issue of interest to them.
- **Community (public) meetings and information sessions** are time-consuming to organize and conduct. They might not provide comprehensive community input since some participants might not have an opportunity to voice their concerns or opinions. Attendance at community meetings might be too low to justify the effort, despite the quality of information gathered. In addition, public meetings, especially road shows and open houses, might require the presenter to respond to a range of questions,

some not necessarily on the agenda. Lack of preparedness on many issues might lead the audience to draw false conclusions or develop unrealistic expectations.

Sources of Extra Help

Many organizations provide meeting and facilitation support. In addition, a number of nationally recognized organizations offer meeting support and facilitation experience, including:

☑ **National Civic League**
1445 Market Street, Suite 300
Denver, CO 80202-1728
Phone: (303) 571-4343
Fax: (303) 571-4404

☑ **Program for Community Problem Solving**
915 15th Street, NW, Suite 601
Washington, DC 20005
Phone: (202) 783-2961
Fax: (202) 347-2161

☑ **The Keystone Center, Science and Public Policy Program**
P.O. Box 8606
Keystone, CO 80435-7998
Phone: (303) 468-5822
Fax: (303) 262-0152

☑ **CDR Associates**
100 Arapahoe Avenue, Suite 12
Boulder, CO 80302
Phone: (303) 442-7367

☑ **Resolve, Inc.**
2828 Pennsylvania Avenue, NW
Suite 402
Washington, DC 20007
Phone: (202) 965-6211

☑ **Interaction Associates**
600 Memorial Drive
Cambridge, MA 02139
Phone: (617) 761-3400

Some organizations have used a community visioning process to set goals for long-term community planning:

☑ **Atlanta Regional Commission**
3715 Northside Parkway
200 Northcreek, Suite 300
Atlanta, GA 30327
Phone: (404) 364-2525

☑ **Chattanooga Venture**
506 Broad Street
Chattanooga, TN 37402
Phone: (615) 267-8687

☑ **Tempe 2000**
City of Tempe
Office of the City Manager
P.O. Box 5002, 31 East Fifth Street
Tempe, AZ 85280
Phone: (602) 350-8522

Bibliographic Resources

Chang, R., and K. Kehoe. 1994. *Meetings That Work!* Richard Chang Associates, Inc., Irvine, CA.

Chang, R., and K. Kelly. 1995. *Step-by-Step Problem Solving*. Richard Chang Associates, Inc., Irvine, CA.

Chechile and Carlisle. 1991. *Environmental Decision-Making: A Multidisciplinary Prespective*. Van Hostand Reinhold, New York, NY.

Doyle, M., and D. Straus. 1976. *How to Make Meetings Work!* Berkeley Books, New York, NY.

Fisher, R., W. Ury, and B. Patton, eds. 1991. *Getting to Yes: Negotiating Agreement Without Giving In*. 2nd ed. Penguin Books, New York, NY.

Shipley Associates. 1995. *Environmental Public Involvement Strategies*. Franklin Quest Co., Bountiful, UT.

U.S. Department of Agriculture. 1993. *Strengthening Public Involvement: A National Model for Building Long-Term Relationships with the Public.* Washington, DC.

Western Center for Environmental Decision-Making. 1996. *Public Involvement in Comparative Risk Projects: Principles and Best Practices: A Sourcebook for Project Managers*. Meridian West Institute, Boulder, CO.

In addition, the following publications might be helpful in considering community visioning:

Ames, S., ed. 1993. *A Guide to Community Visioning: Hands On Information for Local Communities*. Oregon Visions Project. Oregon Chapter, American Planning Association, Portland, OR.

Nelessen, A. 1994. *Visions for an American Dream*. American Planning Association, Chicago, IL.

Walzer, N., S.C. Deller, H. Fossum, et al. 1995. *Community Visioning/Strategic Planning Programs: State of the Art.* North Central Regional Center for Rural Development, Ames, IA.

Observation

Observation is the purposeful and selective watching and tracking of human behavior or other phenomena (**Figure S4-25**). Observation can help you understand behavior patterns of a community that might not be revealed through other methods. Observation can also confirm and complement other assessment methods and inform sampling techniques and questionnaire design.

Observational data can be collected during all phases of a study, but primarily during actual visits to the community. The assessor documents "everyday" events and occurrences such as interactions between people (e.g., language and body language, the use or lack of humor, the structure of an event). Observation is especially valuable for studying small communities and organizations in action, and for assessing how people live and behave in various situations. It can reveal what community members are actually doing, such as how they respect and treat their natural environment.

Figure S4-25—What Does Observation Show?

- Social relationships between individuals and within groups.
- Social roles.
- Individual behavior patterns/practices.
- Priorities and modes of communication between members of the community.

How to Collect This Information

1. Identify the Subject(s) of Your Observation

(Refer to **Figure S4-26**.)

- ☑ General community features (e.g., landscape, layout, location and condition of parks).
- ☑ Community behavior in a specific situation (e.g., Saturday morning use of the local park, weekly community meeting in the community center, special events, recreational activities).
- ☑ Both.

Figure S4-26—Examples of Observable Community Features and Events

FEATURES:

- Condition of streets.
- Existence of curbs and sidewalks.
- Existence of bike paths.
- Size, quality, type, and condition of housing.
- Existence of gardens, trees, and parks.

EVENTS:

- Community meetings (e.g., PTA, Civic Association).
- Organizational meetings (e.g., environmental groups, Rotary Club).
- Block parties.
- Holiday celebrations.
- Athletic games.
- Music festivals and carnivals.
- Craft fairs.
- School events.
- Earth Day celebrations.
- Community cleanups.
- Religious events (worship services, retreats, community service).

2. Develop an Observation Strategy

- ☑ Determine when (schedule dates and times).
- ☑ Determine where (plan for observation at various locations, events, or times at the same location).

3. Determine Your Role

Determine your role based on the particular situation you are observing. Observations can be conducted in four different ways. Different situations require different roles:

☑ **Complete participant.** In this role the assessor is a genuine participant in what he/she is observing. Other participants see the assessor as a participant rather than as an observer. For example, a complete participant observing a riverside cleanup actually participates in the cleanup but does not tell others that they are also gathering observational data. The advantage of this role is that it allows the assessor to observe other participants without influencing their behaviors. A disadvantage of this role is that the presence of the assessor can affect the social situation in which the observation is taking place. For example, a complete participant at a community meeting will affect the social situation in some way by what they say, or do not say. Professional social scientists tend to avoid this role because of its ethical implications.

☑ **Participant as observer.** In this role the assessor participates fully with the group under study, but makes it clear that he/she is also collecting observational data. In this role, the assessor tends to already be a part of the group being observed, such as an assessor who is also a member of a local environmental group observing one of its organizational meetings. The advantage here is ethical compliance. A potential disadvantage is that the assessor's presence might cause people to behave unusually, thereby affecting the data that the assessor collects.

☑ **Observer as participant.** In this role the assessor clearly identifies him or herself as an observer while interacting with the people being observed. In this role the assessor does not claim to be an actual participant. For example, an observer might participate in a river cleanup day, but their primary role is to observe. Again, a potential disadvantage is the impact of the assessor on the situation.

☑ **Complete observer.** In this role the assessor observes a social process or event but does not participate. Those being observed might not be aware that the assessor is collecting data about their behavior. For example, an assessor directly observes the number, age group, and race of people who use a newly created bike path. The advantage of this role is that the observer will not affect those being studied. A potential disadvantage is that the observer will not fully understand why people behave as they do in a given situation.

4. Select Tools/Techniques in Conducting Observation

Use the following tools and techniques to collect information through observation:

☑ **Recording and measuring instruments.** Hand-written notes, video, camera, tape recorder, thermometer, noise meter, stopwatch, map, and ruler are useful tools for collecting information (**Figure S4-27**).

☑ **Community walk.** Simply walking around the community might lend useful insight into the character and people of a place. The layout of the community, types of residences, and residents themselves, or discussions with residents, can contribute significantly to a community assessment.

☑ **Windshield survey.** Driving slowly through a community is another technique that uses observation to learn about a community. In this technique, an assessor uses a local map and simply drives through the community, area by area, recording observations by hand or dictating them to a tape recorder.

Figure S4-27—Observing the Community Using Video

Going out into a community with a video camera can encourage people to express their views and opinions about their community. You can also capture events graphically as they happen. Photos of children playing outside, people shopping at malls, and people crossing busy roads or sitting on porch swings can all influence the community assessment.

With little knowledge and skill you can edit the tapes to produce a strong graphic record of those views and events. However, producing a good-quality video can be time-consuming and expensive. Video cameras can also make people nervous and suspicious about your intentions for videotaping them. Please refer to the **Visual Methods Instructions** for additional information about how to use video and other visual methods to collect data about a community.

5. Record Observation(s)

Adapt **Table S4-3** to suit your needs, using one of these techniques:

☑ By video

☑ Dictation to tape recorder

☑ By hand

Table S4-3—Observation Record

Date: _____

Time: from: _____ to: _____

Place: _____

Role of observer: _____

Features Observed (e.g., what, where)	**Behaviors Observed** (e.g., who, when, where, what, why)	**Events Observed** (e.g., what, who, when)

Sources of Extra Help

Technical assistance is available at college or university departments of sociology, anthropology, and history. You might even be able to recruit a college or university methods class to conduct the observation as a class project.

Some Pros and Cons of Using This Method

☑ PROS:

- Observation is a useful method for obtaining information about actual behavior in a community.
- It is relatively inexpensive and can be done any time that the behaviors in which you are interested are occurring.
- Participatory observation can help build rapport between assessors and community members.

☑ CONS:

- Observation is not reliable as a single source of information on a community. It is best used to complement other assessment methods.
- It is time-consuming and usually requires that observers have some level of experience so that they know which community features and behaviors to observe.
- Not all activities and behaviors are demonstrated in public or frequently enough to be observed consistently.

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Hawtin, M., G. Hughes, and J. Percy-Smith. 1994. *Community Profiling: Auditing Social Needs*. Open University Press, Philadelphia, PA.

National Association of Conservation Districts. 1994. *Information Gathering Techniques*. League City, TX.

Regional Economic Data Research

Regional Economic Data Research provides useful information regarding jobs, employers, revenue, per capita income, total personal income, and other data that can help you understand the economic conditions and trends within a community. Information about industries within a county, the number of employees for that industry, and their total wages are specific examples of information that can describe economic conditions. Regional economic data might indicate how and what natural resources are used to support the community's economic base and can suggest why certain environmental values or perceptions exist in the community.

How to Collect This Information

The Census Bureau publishes *County Business Patterns*. And, the Bureau of Economic Affairs (BEA) provides data from its Regional Economics Program called the *Regional Economic Information System (REIS)*.

County Business Patterns

County Business Patterns provides the following information for each county in the country:

- ☑ The types of industries within the county (e.g., manufacturing, services, mining).
- ☑ The number of people employed in each industry category.

This information is available at federal depository libraries and on the Internet at http://www.census.gov. Or call the Census Bureau at (301) 457-4100 or 1305 for assistance.

BEA Regional Economic Information System (REIS)

BEA's regional economic program provides economic estimates, analyses, and projections by region, state, metropolitan area, and county. *REIS* can give you several different reports:

- ☑ **Total Personal Income by Type of Income and Earnings by Industry,** including total personal income of county/state residents, per capita personal income, and personal income by industry (such as manufacturing, services, and mining).

☑ **Full and Part-time Employment by Industry.**

☑ **Regional Economic Profiles,** including total personal income, per capita income, place of work assessment, total employment (full and part-time), and average earnings per job.

☑ **Transfer Payments by Type of Payment,** including government payments to individuals, medical payments, income maintenance benefit payments (SSI, food stamps, etc.), unemployment benefit payments, and veterans' benefit payments.

☑ **Farm Income and Expenses.**

Also included in the system are one-page worksheets called **BEARFACTS** that summarize economic conditions for an area. **BEARFACTS** give you a simple, but comprehensive overview of the economic trends and conditions of a county and how its economy compares statewide and nationally.

The *REIS* is available via the Internet or on a CD-ROM that can be purchased from BEA's Regional Economic Program by calling (202) 606-5360, or reviewed at a library with CD-ROM materials or government documents. One of the most user-friendly Internet links is **http://sasquatch.kerr.orst.edu/reis-stateis.html.** This site is maintained by the Oregon State University Information Services as part of the Government Information Sharing Project.

Some Pros and Cons of Using This Method

☑ **PROS:**

- Collecting regional economic data is one of the least expensive ways to obtain detailed information about a community's economic makeup.
- It includes information that might not be provided through standard demographic information from the U.S. Census Bureau.
- It can be easily obtained by visiting the library.

☑ **CONS:**

- Data gathered at the regional level mask the economic variations that might be apparent in town or community data.

Bibliographic Resources

U.S. Department of Commerce. Recurring pulication. *County Business Patterns.* U.S. Census Bureau. Economics and Statistics Administration, Washington, DC. For a complete listing of the U.S. Census Bureau Department of Commerce products and services, review their Catalog of Products and Services available at the library or via the Internet.

For information regarding BEA's additional products and reports, call (202) 606-9900.

Social Mapping

Figure S4-28—Why Conduct a Social Mapping Exercise?

- To identify relationships between different elements of the community (e.g., issues, organizations/ institutions, or individuals) (Asset Map).
- To identify the direction, flow, and control of information in a community (formal or informal)(Social Network Map).
- To identify the causes and effects of an issue and the role of beliefs, perceptions, and individual and organizational relationships that structure and affect the issue (Concept Map).
- To identify potential partners (Asset Map or Social Network Map).
- To identify different perceptions of the natural and physical environment among different groups of community members (Cognitive Map).
- To trigger strategic thinking (all maps).
- To analyze assessment data (all maps).

Social maps are tools that collect, organize, and analyze social data about a community. They illustrate different types of relationships and connections in general, as well as those related to the environment (**Figure S4-28**). Social maps illustrate issues and problems; causes and effects; relationships between organizations, institutions, and individuals; or perceptions in general. The creation of social maps can involve actual community members, or the maps can be used as tools to design the assessment or analyze the data collected from other methods. The four types of maps are asset, cognitive, concept, and social network.

☑ **Asset Maps** identify a community's capacities and assets to create changes for itself. Community assets that are visually represented on an asset map might include

- The individual assets of community members (e.g., specialized skills, political influence, management or fundraising experience, teaching ability).
- The collective assets of associations or groups of citizens working together (e.g., volunteer base, meeting space, technical knowledge, office equipment — phones, faxes, computers).
- The assets and capacity of institutions (e.g., financial and technical assistance, mediation).

☑ **Cognitive Maps** are community members' drawings of their personal perceptions of their community and its surroundings. Cognitive or "mental" maps are similar to the "pictures" community members recall from their memories to solve spatial problems, such as navigating their surroundings and giving directions to others. Without these stored mental maps, everyday behavior, such as traveling from home to work, would be impossible. Cognitive maps are subjective; they depend on, and vary by, the perceptions, behaviors, and experiences of individual community members. A cognitive map helps the assessor understand what contributes to someone's sense of place, including places of significance, such as cultural or historic landmarks and important symbols.

☑ **Concept Maps** identify the relationships among causes and effects, ideas, beliefs, concepts, or problems, such as particular land-use decisions (cause) and nonpoint source pollution (effect) within a community. Concept maps also

reveal the significant beliefs of a single community member or a community group regarding a particular problem(s) or issue(s). The mapping process structures and analyzes this information and illustrates the links between the various factors (e.g., tradition, personal experiences, access to information) that form and perpetuate the belief or problem. Concept maps can help you and community members visually reduce a complicated issue into more manageable and understandable parts, thereby clarifying the steps to take toward its resolution.

☑ **Social Network Maps** can be used to describe patterns of communication or relationships within a community. They can help identify which individuals have the strongest influence in the community and how new ideas or information spread through the community. Creating a social network map is particularly effective with small networks of people (less than 50), such as very small communities, subsets of a community, or rural areas. Analyzing this map can help tailor successful outreach and education programs by illustrating the way information travels through the community.

How to Collect This Information

For the purpose of your community assessment, the following method descriptions will give you the necessary steps to create each type of social map. Your selection(s) will depend on the needs and interests of your assessment.

ASSET MAP

Asset maps identify assets a community has to create beneficial changes, illustrate the value of certain aspects of the community, and identify local assets of which community members were unaware. For this tool, assets are grouped into three general **categories**: individuals, groups/organizations, and institutions.

Each category has specific **entities**. Examples include

- ☑ Individuals (a geologist, a political leader).
- ☑ Groups/organizations (a civic organization, an environmental group).
- ☑ Institutions (a government agency, a school, a bank).

And each entity has specific **assets** that it can contribute to the community's capacity to improve itself and its environment (**Figure S4-29**). For example, an individual might have political influence, a civic group might be able to share its community activity center for local meetings, and local government might finance a community project or award a grant.

Figure S4-29—Sample Community Assets by Category

INDIVIDUALS:

- Technical skills (e.g., landscaping, water quality sampling).
- Political influence.
- Social research skills (e.g., surveying/polling).
- Management experience/skills.
- Fundraising experience/skills.
- Journalism/public relations.

GROUPS/ORGANIZATIONS:

- Volunteer base.
- Meeting space.
- Office space and equipment (phone lines, fax, computers).
- Outreach capabilities (membership lists).
- Organizational clout/respect.

INSTITUTIONS:

- Funding (grants, donations, in-kind contributions).
- Sponsorships.
- Clout and influence.
- Media exposure.

How to Collect This Information

1. Decide Who Will Create the Map

- ☑ **Group process.** Involving community members in the exercise gives them an opportunity to analyze the assets in the community and how they are exchanged between people and entities. If you are conducting this exercise with a large group, you might choose to divide the participants into small groups that will collaboratively create one map. Each small group can then share its map with the larger group for overall discussion and possibly to create one final map for the community.
- ☑ **Assessor.** Assessors can use asset maps to analyze the self-reliance capacity in a community by analyzing the data already collected. Or they can use it as a community activity to engage community members in analyzing their own use of local assets.

2. Choose the Subject of the Asset Map

The subject of your asset map might be a particular organization or a community issue. For example, a community-based

environmental group could place itself at the center of an asset map to identify how the other entities in the community relate to, and might be able to support, its efforts. The subject of an asset map could also be an issue or strategy for resolving an environmental problem. Constructing an asset map around an issue can identify the other entities within a community that have a stake in the problem and might be willing to contribute their assets to a community effort.

3. Choose a Category

See the categories in **Figure S4-29**. You might choose to create a separate asset map for each category and then combine them into a comprehensive asset map of the entire community for your subject or issue.

4. List the Entities within the Selected Category

With the help of those participating in the mapping process, list the entities of the category you have selected. For example, if you selected "individuals" as your category, specific entities might be the mayor, the civic association president, senior citizen volunteers, and a local watershed organization president.

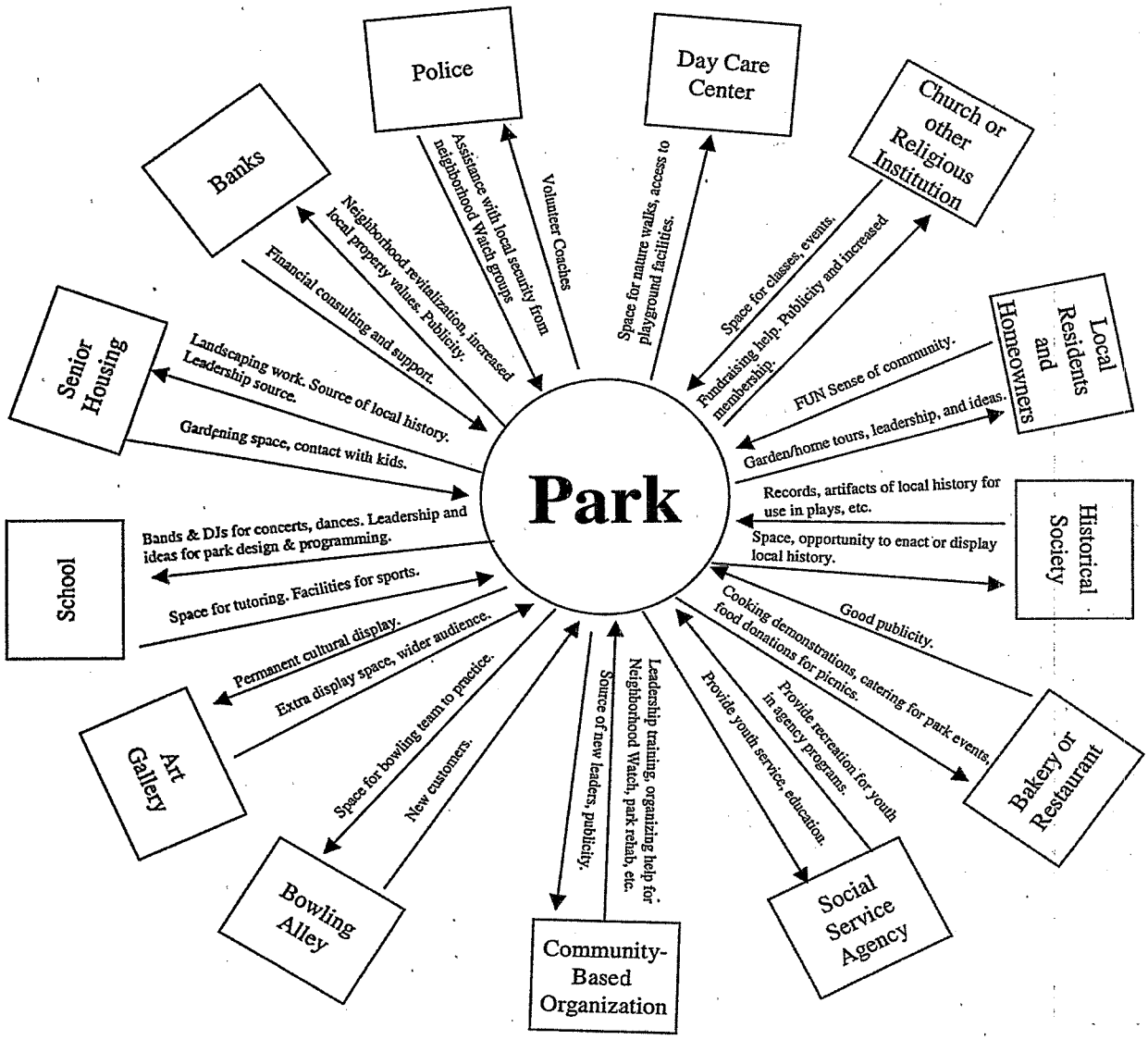
5. List the Specific Assets of Each Entity

For each specific entity you listed, list the specific assets that entity might be able to provide your asset map subject. For example, if your map's category is individuals, an elected official might be able to give you publicity and help you educate the community. If the category is groups/organizations, local businesses might contribute rent-free office space or other in-kind services (**Figure S4-29**).

6. Construct the Asset Map

You should now have multiple lists in front of you. The lists should include the different entities you have identified in the community and the assets of each. To construct the asset map, place the subject of your map in the center of a piece of paper or a blackboard. Write or tape labels for the specific entities around the subject. Draw lines connecting the subject with each entity. Use solid lines to signify existing relationships and dotted lines to identify potential partnerships. Write the assets of each entity along the connecting arrows from each entity to the subject and vice versa. The result is a visual representation of the assets of each entity and how they relate to each other (**Figure S4-30**).

Figure S4-30—ASSET MAP
(Source: Kretzmann, 1993)



Resources Needed

☑ A preliminary list of the community categories, entities, subjects, and assets to be mapped; **OR**

☑ Surveys and interviews of community members regarding their involvement and relationship with other community members, associations, and institutions; **OR**

☑ A group of community members participating in the mapping process.

Some Pros and Cons of Using This Method

☑ **PROS:**

- Asset mapping is particularly useful for large groups of people, where visual and easy-to-understand graphics enhance communication and the expression of community values.
- It can help your assessment process by identifying community partners that can assist your community-based environmental protection effort.
- It also can be done with a limited budget.

☑ **CONS:**

- If the amount of information to be mapped is too large to be done by hand, you will need to use computer software or hire a facilitator trained in conducting the mapping exercise.

Bibliographic Resources

Ackermann, F., C. Eden, and S. Cropper. 1993-1996. *Decision Explorer: Getting Started with Mapping*. University of Strathclyde, Scotland. http://www.banxia.com/depaper.html.

Kretzmann, J.P., and J.L. McKnight. 1993. *Building Communities from the Inside Out: A Path Toward Finding and Mobilizing a Community's Assets*. Center for Urban Affairs and Policy Research, Northwestern University, Evanston, IL.

Witkin, B.R., and J.W. Altschuld. 1995. *Planning and Conducting Needs Assessments: A Practical Guide*. Sage Publications, Thousand Oaks, CA.

COGNITIVE MAP

Cognitive maps are drawings of people's personal perceptions of their community and its surroundings. Cognitive maps are subjective; they depend on, and vary by, the perceptions, behaviors, and experiences of individual community members. Cognitive or "mental" maps are similar to the "pictures" community members recall from their memories to solve spatial problems, such as navigating through their surroundings and giving directions to others. Without these stored mental maps, everyday behavior, such as traveling from home to work, would be impossible. A cognitive map does not need to be an exact replica of the community, such as a street map. It might represent only the portion of a community with which individual community members are most familiar or which they deem primary to their personal sense of place. (Refer to **Figures S4-31** and **S4-32** at the end of this section.)

In a cognitive mapping exercise, individual participants reproduce cognitive maps of their community (town, city) with pencil and paper. A cognitive map allows an assessor to see a community through the eyes of community members and lends insight into how community members relate to, use, and value their surrounding natural environment. A cognitive map also helps the assessor understand the features of a community that contribute to participants' sense of place, including the community's boundaries and places of significance, such as cultural or historic landmarks. Although cognitive maps involve predominantly visual representations of the environment, cognitive representations also include the sensory and symbolic aspects of a place.

How to Collect This Information

1. Decide Who Will Create the Map

Cognitive maps are typically created by community members. You might choose to have each individual draw a map independently. Or, you might divide the participants into small groups in which each individual will draw a map and then discuss it in the small group. Or, each small group can collaboratively create one map. If you choose to have a small group create one map, be aware that you will lose the personalization of individual maps that can provide valuable

information about the differences and similarities within the group.

2. Explain the Exercise and Answer Participants' Questions

Instructions for this exercise:

> "For this exercise I will ask each of you to draw a map of your community. The map will be a picture of how you see your community each day. These maps should be similar to the 'pictures' you recall from your memory to navigate your surroundings and to give directions and descriptions to others." To prevent confusion among participants, use specific wording about the intended subject of the map (e.g., community, neighborhood, town, city).
>
> "You will have 10 minutes to draw a map of your community [neighborhood, city, or town — whichever is most appropriate to the assessment] in which you are now living. Do not worry about artistic quality or spatial accuracy. Following the exercise, we will discuss your maps."

Participants might request more detailed instructions. However, one of the goals of the exercise is to understand the different ways participants perceive their surroundings and attach meaning to the features of their community. Providing instructions that are too specific or actual examples might inadvertently influence their sketches.

3. Begin the Exercise

Hand out pieces of blank paper. Limit the drawings to 10 minutes or less. Give 1-minute warnings in the last 3 minutes.

4. Stop the Exercise After 10 Minutes

5. Discuss the Maps

If participants drew maps independently, ask for at least five maps to be volunteered for discussion. Collect the volunteered maps and tape them to a wall or a flipchart easel so they can be seen by all the participants, and thus compared. The informal nature of the exercise should make participants comfortable with sharing their maps; however, you might have to assure the group that content, not artistic quality, is the element to be discussed.

The number of maps you discuss will depend on your time and the enthusiasm of the participants. If participants drew maps in small groups, have small groups discuss the map(s). Follow this with a larger group discussion about observations. Use the following questions to guide discussion.

6. Discussion of Cognitive Maps

Discussion of cognitive maps in large or small groups can focus on the following questions:

☑ **Questions for each map:**

- What does this map tell you about this person's community?
- What appears to be the "center" of the community? What are its boundaries?
- What does this map suggest about this person's "sense of place" or "sense of community"?
- What does this map suggest about this person's perception of the environmental character of the community?

☑ **Questions for all the maps:**

- What similarities and differences do you see among the maps (e.g., labels, symbols, words, pictures, themes)?
- Which maps give you the strongest "sense of community" or "sense of place"? Why?
- How do these maps differ from conventional road maps of your community?

During the discussion, focus particularly on the different areas, pathways, boundaries, and landmarks participants included in "their community." As you discuss multiple maps you might notice trends or features. Asking the group to explain these commonalities and differences can help you gain a real understanding of the community's values, history, meeting places, and landmarks.

Record the information shared in this discussion for later analysis. Audio- or videotape the session, or have someone take notes. Remember to ask permission of the participants before recording the discussion.

7. Assessor's Analysis

Map discussion might provide information that the assessor would otherwise overlook or misinterpret. For example, the assessor might assume that the reason behind the common inclusion of a grassy field in a cognitive map is that it is a green space in the community. Discussions with the community members might reveal that the field is the site of the annual county fair, a major event in community life.

Similarly, in an urban community, a forested area might appear on most cognitive maps. The assessor might assume that community members appreciate the natural area in an otherwise urban landscape. However, discussions might tell the assessor that the forested area is associated with criminal activity and therefore avoided. In these cases, discussion of the cognitive maps reveals information the assessor might never have realized.

Some Pros and Cons of Using This Method

☑ PROS:

- This method allows the assessor to see the community through the eyes of community members and provides insight into the different perceptions of "community."
- It can be conducted relatively quickly, and the data can be analyzed on the spot.
- An inexpensive group exercise, it also has a large participation component.
- Participants themselves get the first chance to analyze the data, which might provide unique insights that only a community member would have.

☑ CONS:

- People might spend too much time on artistic detail or spatial accuracy, limiting their ability to complete the map in the short time period.
- The size, shape, and flatness of the paper limit what can be included in the map, such as symbolic, emotional, and spiritual aspects.

Bibliographic Resources

Gould, P., and R. White. 1986. *Mental Maps*. 2nd ed. Allen & Unwin, Boston, MA.

Holahan, C.J. 1982. *Environmental Psychology.* Random House, New York, NY.

EXPLANATION: Figures S4-31 and **S4-32** are two examples of cognitive maps of Washington, DC, created during a cognitive mapping exercise. Since participants lived in different communities in the DC metropolitan area, they were asked, for purposes of comparison, to draw a map of Washington, DC. Comparing these two maps shows that the National Mall is a common landmark. Other common features include the Potomac River and Rock Creek Park. One participant provided more precise details of the DuPont Circle neighborhood. Later discussion revealed that she had once lived in that neighborhood. Both maps show the major transportation corridors running through and around the city. Both maps also provide more detail of the Northwest quadrant and the Mall areas of the city, whereas the Southwest, Southeast, and Northeast quadrants of the city and the Anacostia River receive little detail or are not depicted at all.

Figure S4-31—Cognitive Map

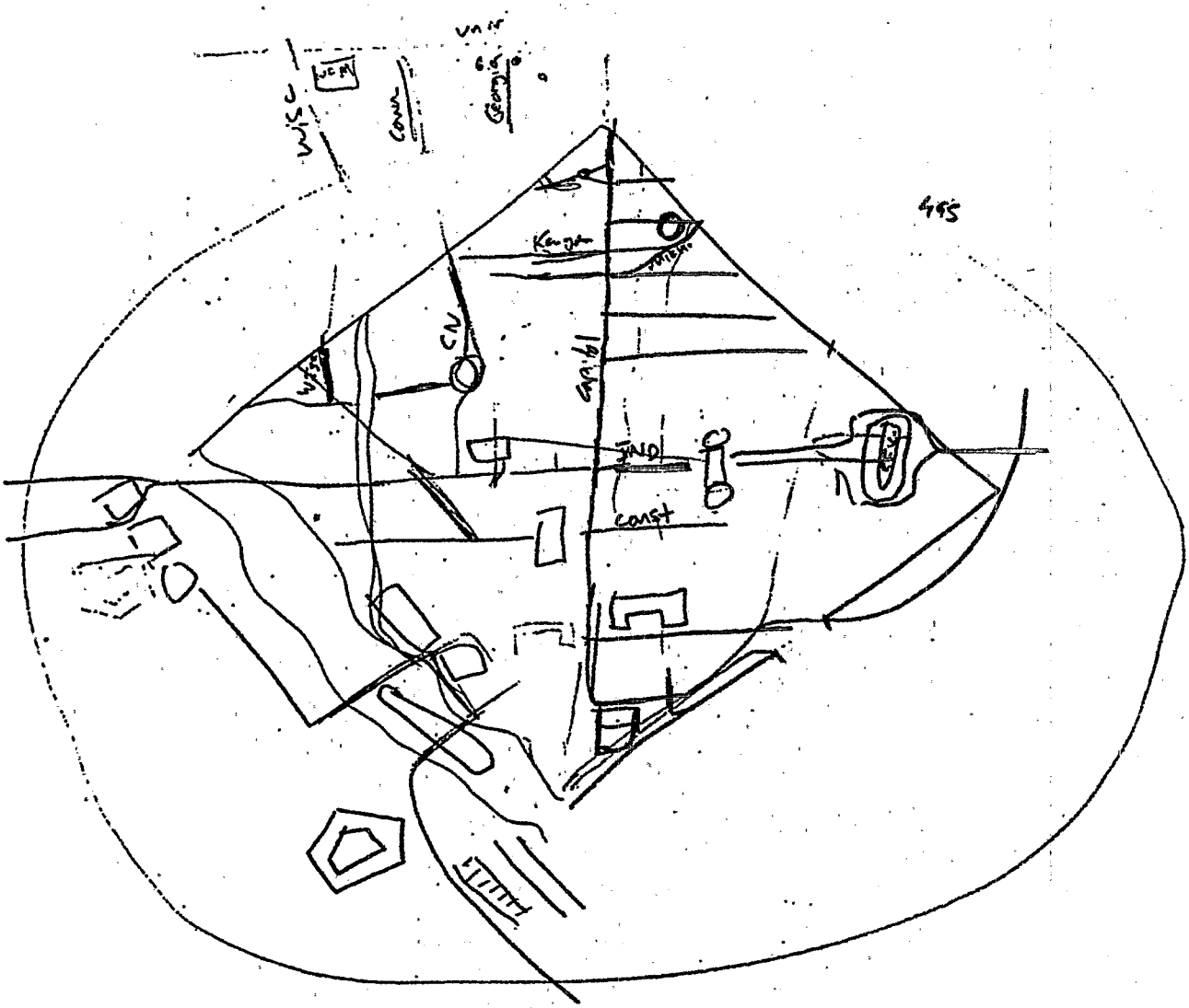
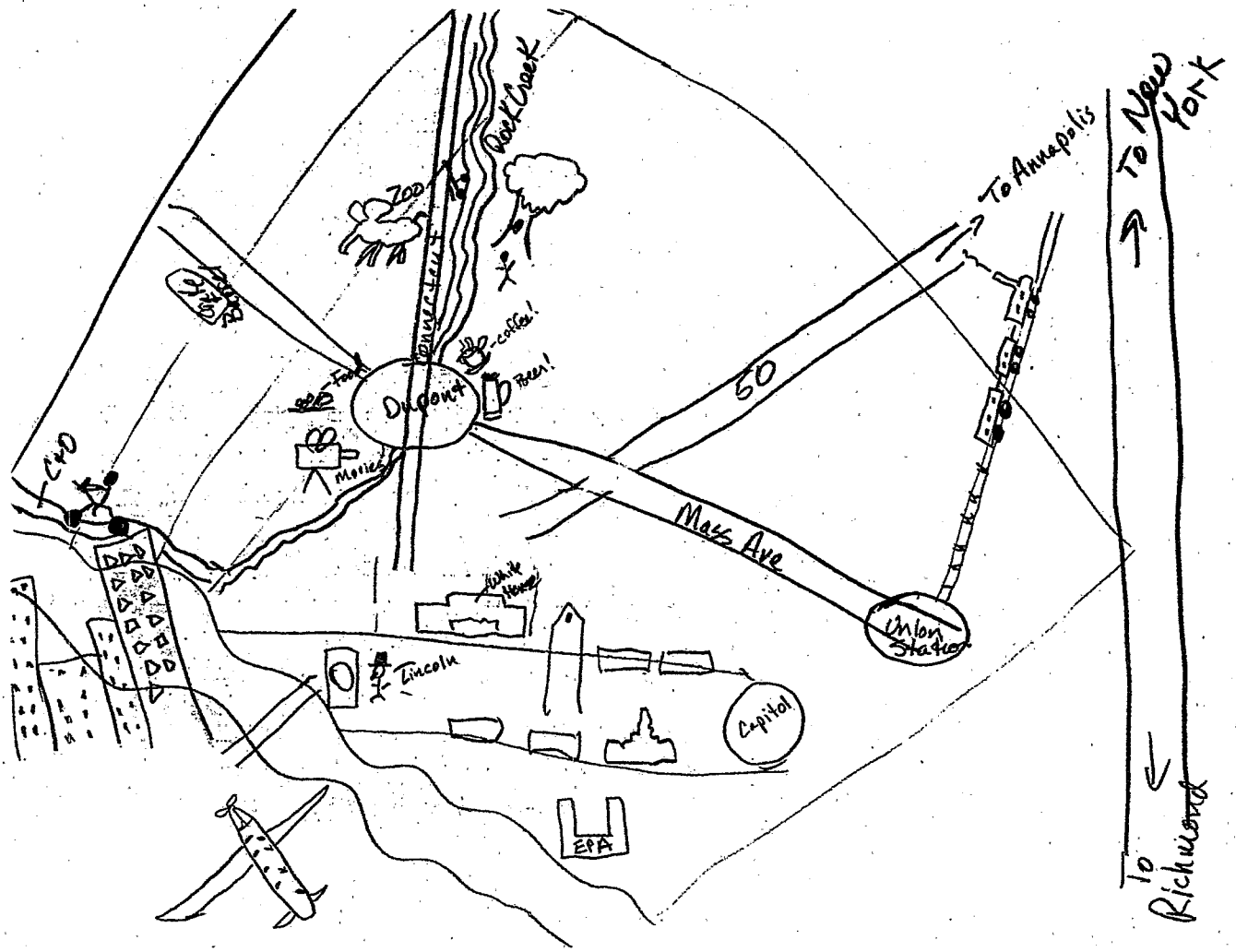


Figure S4-32—Cognitive Map



CONCEPT MAP

Concept maps identify the relationships among causes and effects of environmental problems, such as land-use decisions (cause) and nonpoint source pollution (effect) within a community. Concept maps also reveal the perceptions and beliefs of a single community member or a community group regarding a particular problem(s) or issue(s). The mapping process structures and analyzes this information and illustrates the links between the various factors (e.g., tradition, personal experiences, access to information) that create perceptions and problems. Concept maps can help you and community members visually reduce a complicated issue into more manageable and understandable parts. They can be very useful for developing strategies to solve problems.

How to Collect This Information

1. Decide Who Will Create the Map

- ☑ **Group process.** Involving community members in the exercise gives them an opportunity to think through their perceptions of cause and effect of a particular problem or issue. If you are conducting this exercise with a large group, you might choose to divide the participants into small groups that will collaboratively create one map. Each small group can then share its map with the larger group for overall discussion and possibly to create one final map for the community.
- ☑ **Assessor.** Assessors can use concept maps to collect new data from community members or to illustrate and analyze already collected data.

2. List "Concepts" to Be Mapped

Brainstorm or refer to your assessment data to list the issues or "concepts" to be mapped. Possible "concepts" could include nonpoint source pollution, urban sprawl, habitat/wetlands destruction, land-use choices, or decline of a particular species.

3. Select a Concept to Map

Participants might vote to select a concept, they might prioritize and select a concept according to its importance, or they might choose a complex concept in hopes that a concept map will clarify it.

4. Identify the Known Causes/Effects of the Concept

List the suspected causes of the selected concept either by brainstorming or from assessment data. List the suspected effects. For example, the concept of the decline of the wood rat population is attributed to some of the following *causes*: feral cats and dogs, nematodes from raccoons, and the public's lack of education about the wood rat. The *effects* of the decline include loss of biodiversity and indication of declining ecosystems.

5. Create the Concept Map

After generating the lists, you might want to write each cause and each effect on a separate square or circle of colored paper that can be taped to a larger piece of paper or a chalkboard to form a map. This allows you to move the components of the map easily, keeping the visual presentation neat and readable. Once the causes and effects are taped to the larger surface, draw lines to connect them to the concept and to each other if they are related (**Figure S4-33**). The more immediate, or short-term, causes and effects should be linked directly to the central concept. The larger, or long-term, causes and effects should be linked to the immediate causes and effects and placed farther away from the central concept. You might alternate between circles and squares to distinguish between the different layers of causation (**Figure S4-33**).

6. Analyze the Map

Use the map to analyze the causes more completely and to strategize about ways to eliminate the causes.

Resources Needed

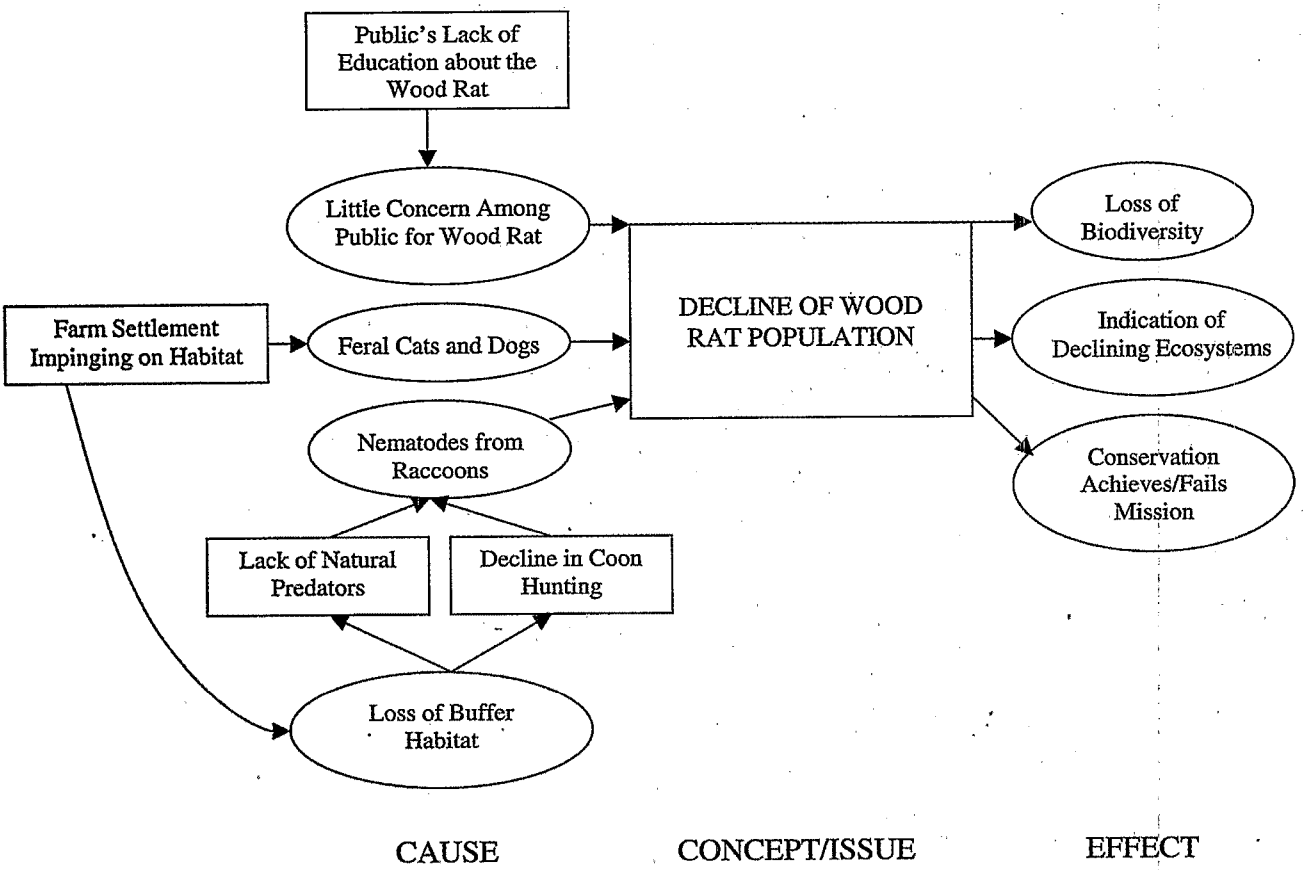
☑ **Required:**

- A list of concepts, generated through content analysis, surveys and polls, individual interviews, focus groups, or meetings and workshops.
- A large writing area for mapping (e.g., a chalkboard, large flipchart, banner paper) or a computer.

☑ **Optional:**

- Concept-mapping computer software that generates two-dimensional concept maps.
- Colored paper and tape.

Figure S4-33—Concept Map



Some Pros and Cons of Using This Method

☑ PROS:

- Concept mapping is particularly useful for large groups of people, where visual and easy-to-understand graphics enhance communication and the expression of community values and concerns.
- It can be a powerful tool to demonstrate the relationship between human causes and effects on the natural environment.
- It is also advantageous because it can be done with a limited budget.

☑ CONS:

- Concept mapping can be expensive depending on the sophistication of the project.
- If the amount of information to be mapped is too large to do by hand, it might be wise to use computer software and a facilitator trained in conducting mapping exercises.

Bibliographic Resources

Ackermann, F., C. Eden, and S. Cropper. 1993-1996. *Decision Explorer: Getting Started with Mapping*. University of Strathclyde, Scotland. http://www.banxia.com/depaper.html.

Kretzmann, J.P., and J.L. McKnight. 1993. *Building Communities from the Inside Out: A Path Toward Finding and Mobilizing a Community's Assets*. Center for Urban Affairs and Policy Research, Northwestern University, Evanston, IL.

Witkin, B.R., and J.W. Altschuld. 1995. *Planning and Conducting Needs Assessments: A Practical Guide*. Sage Publications, Thousand Oaks, CA.

SOCIAL NETWORK MAP

Figure S4-34—Why Use Social Network Analysis?

- To help identify who talks to whom in a community.
- To determine how information flows through a community (formally, informally).
- To determine whose opinions are valued (opinion leaders), and who passes information on to others (information disseminators).
- To help determine the amount of communication on a particular topic in a community.

Social network maps describe patterns of communication, relationships, or information flow within a community. They can help identify which individuals, groups, or institutions have the strongest influence in the community and how new ideas spread through the community. Creating a social network map is particularly effective with small networks of people or groups (fewer than 50), such as very small communities, subsets of a community, or rural areas. Analysis of this map can help you plan successful outreach and education programs by illustrating the informal individual or group relationships that serve as information conduits within a community (**Figure S4-34**).

There are two formal ways to create a social network map. One is through a specific social network survey or in combination with other data collecting efforts. The second is more informal, based on information collected over time, such as casual conversations with community members and group leaders.

How to Collect This Information

1. Decide Who Will Create the Map

☑ **Group process.** Involving community members in the exercise offers an opportunity for them to analyze the flow of information in their community. They might draw the relationships between people or organizations based on their natural knowing. It is best to ask individuals to draw their own social network map because each personal network will be different from any other. However, you might choose to conduct this exercise with a large group, wherein you can divide participants into small groups that will collaboratively create one map. Each small group can then share its map with the larger group for overall discussion and possibly to create one final map for the community.

☑ **Assessor.** Assessors can use social network maps to illustrate flow of information in a community as learned from already-collected data or as gathered specifically for this map.

The following instructions are a structured way of collecting information specifically for creating a social network map.

2. Formulate Your Assessment Question(s)

For example, "Who do local cattle ranchers talk to about rangeland conservation?" or "Who do cattle ranchers go to for advice about rangeland conservation?"

3. Identify Your Target Network

For example, cattle ranchers who own private land in the watershed. List the names or count (if the number is fairly high) the number of people who fit into this category. This is your target network.

4. Determine How You Will Collect Data

Consider designing a specific questionnaire or using other assessment data.

☑ **Design a questionnaire** pertinent to your social network analysis. Questions might include: "Who do you talk to about rangeland conservation practices?" or "Who have you talked to within the past year (or who do you normally talk to, or who do you talk to on a regular basis [weekly, monthly, etc.])?" See **Figure S4-35** for an example of a specific social network questionnaire.

The questionnaire should be easy to use. For example, to answer the questions in **Step 2**, use a list of the people in the target network identified in **Step 3** (if a reasonable number) next to which respondents will check yes or no. Or, insert blank lines for respondents to write in names (**Figure S4-35**).

The value of this specific questionnaire is that you might get actual people's names, which is what you want. However, because this is personal information, remember to be sensitive to your respondents' preferences and willingness to share information, especially if sufficient rapport does not exist between you.

5. Use Other Assessment Data

Instead of developing a specific questionnaire to collect data about the social networks within a community, include pertinent questions in other assessment methods, such as surveys, interviews, and focus groups you are using. Casual conversations and observations can also collect social network data. Combining these questions with other efforts will reduce the time and expense of creating and distributing two separate assessment instruments.

Figure S4-35—Sample Questionnaire

Sample questionnaire designed to determine the members of a network a respondent talks to about rangeland conservation and asks for advice.

NAME OF RESPONDENT:

Information About Respondent (examples):

Age: _____ **Years of community residence:** _____

Race: _____ **Occupation:** _____

Gender: _____

Names of Network Members	Who do you talk to about rangeland conservation?		Who do you ask for advice about rangeland conservation?	
	YES	NO	YES	NO
Theresa Trainor				
Mark Plotkin				
Derrick McGinty				
Cary Gaunt				
George Salas				
Diane Adams				
Mary O'Kicki				
Kellie DuBay				
Moira Schoen				

6. Collect the Data

Interview or distribute the questionnaire to community members or groups within the target network.

7. Organize the Data

Organize the data you collect in a social network map or in a social network matrix.

☑ **Social Network Map:** A social network map visually demonstrates patterns of communication between individuals and groups (**Figures S4-36** and **S4-37**). And it can quickly depict the different roles community members play in the flow of information.

The basic process is as follows:

- Write all the people's names on pieces of paper you can move around on a flipchart, or on a blackboard (use tape).
- Place names and draw lines between individuals who indicated that they speak with each other.
- Place arrows at the ends of these lines to indicate the direction that information flows. Place arrows on both ends of the line if the information flows both ways.

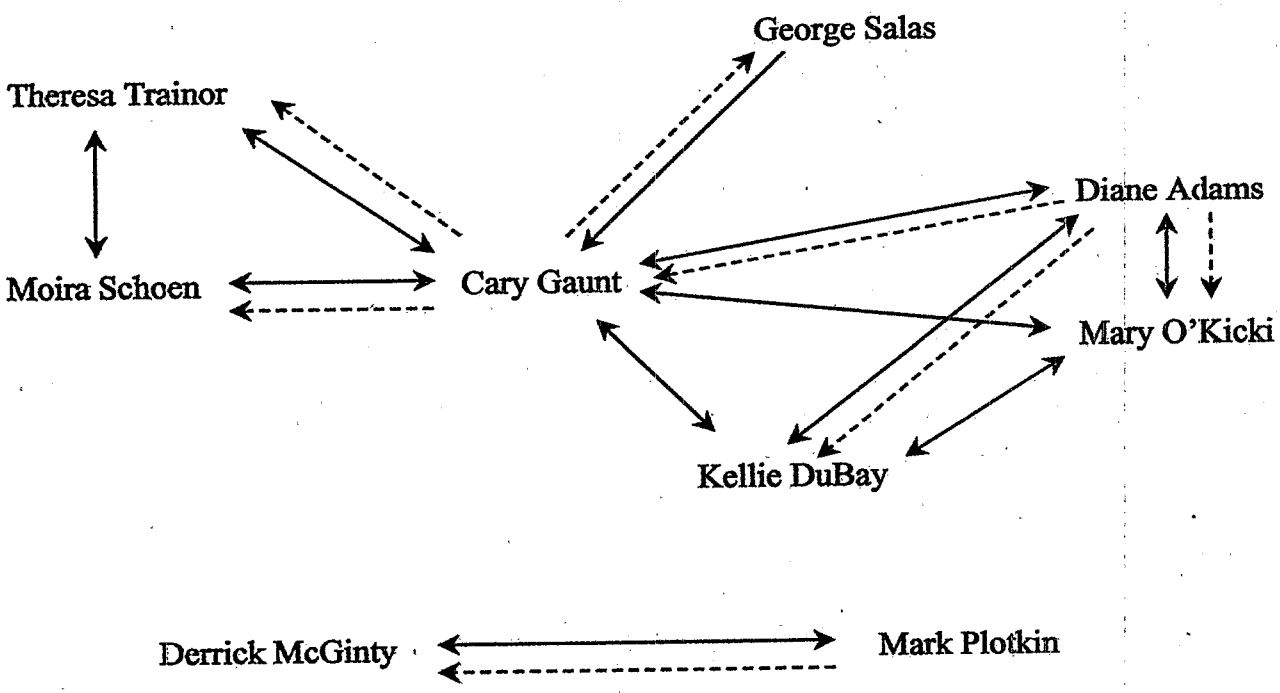
You can draw a map either for each separate question, or for more than one question by using a different kind of line for each question (e.g., solid or dotted, **Figure S4-36**).

One variation on this approach is to put the person with the most connections in the center and draw arrows to indicate who communicates with this person. You might wish to group individual community members by their affiliation or relationship to each other or their membership/relationship to an organization, e.g., a civic group, and then draw arrows between these clusters (**Figure S4-37**).

☑ **Social Network Matrix:** For each question, organize the data into a matrix of the members of the network (**Figure S4-38**). This approach can be used only if you conducted a specific social network questionnaire.

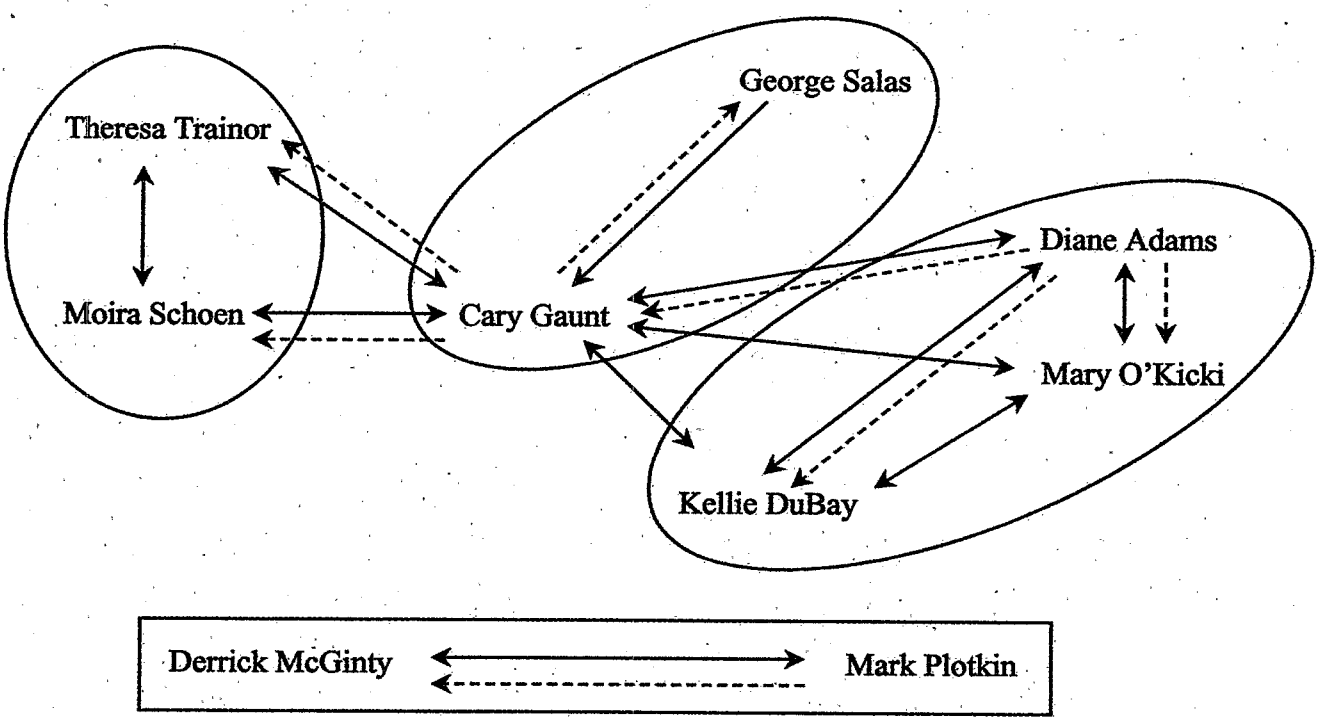
- List all the people in the network in the first column and across the top row in the same order. Use initials or corresponding numbers to save space.
- Beginning on the first row, look at the survey response of that particular individual. Place a "1" under the

Figure S4-36—Social Network Map
INDIVIDUALS



EXPLANATION: This example combines the questions, "Who do you talk to about rangeland conservation?" (represented by a solid line) and "Who do you go to for advice about rangeland conservation?" (represented by a dashed line). The arrows signify the direction that information flows in this particular network (e.g., Diane Adams gives advice to Kellie DuBay). According to the data collected, Cary Gaunt is an information disseminator for this subject. In this example, Cary disseminates information with a variety of other members of the network. She is also the opinion leader for Theresa Trainor and Moira Schoen, but not the opinion leader for Mary O'Kicki and Kellie DuBay, who go to Diane Adams for advice. The map also shows that Derrick McGinty and Mark Plotkin are isolated from the rest of the network.

Figure S4-37—Social Network Map
GROUP AFFILIATIONS



EXPLANATION: This map is identical to the previous example, except that the group affiliations of this network have been overlaid on the individual relationships. This additional information shows that Cary Gaunt from the Forest Service is a gatekeeper between the environmental group, Trout Unlimited, and local ranchers. Theresa Trainor and Moira Schoen receive advice about rangeland conservation from Cary. Cary receives her advice from Diane Adams, a local rancher. The female ranchers receive advice from Diane Adams. Derrick McGinty and Mark Plotkin do not discuss, or receive advice about, rangeland conservation from the rest of the local ranchers or the other groups. Other assessment methods could investigate the reasons for their isolation.

corresponding names that the individual referred to as sources of information. Place a "0" in the columns that correspond with all the individuals not referred to as sources of information. Repeat this process for each respondent. Place "X"s down the diagonal line at each intersection of row and column that represents the same person (it is assumed that people do not ask themselves for advice). Sum up the columns to compute the total frequency with which each individual is mentioned as a source of information (**Figure S4-38**).

8. Analyze the Social Network Map

☑ **Opinion leaders** are those members of the target network named the highest number of times for questions like, "Who do you go to for advice about . . ." Their opinions are highly valued and respected by others in the community. Opinion leaders will not necessarily always be the same for every subject. For example, a respected farmer might be an opinion leader about farm management practices, while a river guide might be an opinion leader about the health of the local fishery. Identifying opinion leaders and involving them in an outreach, public awareness, or education strategy can influence the opinions, attitudes, and beliefs of other members of the community.

☑ **Information disseminators** (also known as the "most central persons") are people named the most for questions like, "Who have you talked to about . . ." Opinion leaders and information disseminators will not necessarily be the same person. Information disseminators are not necessarily looked to for advice, and vice versa. Information disseminators are the most "connected" people in the community. This might be due to their multiple group/organizational associations, the length of time they have lived in the community, or their personality. Identifying information disseminators and involving them in an outreach, awareness, or education strategy can help you "spread the word" through the community's informal social networks. Identifying informa- tion disseminators is also important when they might be the source of incorrect information that counters your efforts.

☑ **Gatekeepers** are the "bridges" between two distinct groups. Gatekeepers are individuals who are from different social groups or organizations but are named by a wide variety of people. For example, a member of the local chapter of an environmental group might also be a respected farmer in the community. If this individual is named as a source of

Figure S4-38—Social Network Matrix

QUESTION: Who do you ask for advice about rangeland conservation?

	TT	MP	DM	CG	GS	DA	MO	KD	MS	WH			
1. Theresa Trainor	X			1									
2. Mark Plotkin		X											
3. Derrick McGinty			X										
4. Cary Gaunt				X									
5. George Salas					X								
6. Diane Adams						X							
7. Mary O'Kicki							X						
8. Kellie DuBay			0					X					
9. Moria Schoen									X				
10. Wilson Horn										X			
11.											X		
12.												X	
TOTAL:				1									

EXPLANATION: "X"s indicate intersection of the same name, which is excluded from analysis. Each remaining square receives either a "1" (if the person is a source of information) or "0" (if they are not mentioned as a source of information). For example, the "1" noted in row 1, column 4, indicates that Theresa Trainor seeks advice from Cary Gaunt (CG). The opposite is true in the case of Kellie DuBay, who does not seek advice from Derrick McGinty (as indicated by the "0" in row 8, column 3). Note that spaces are left at the bottom of the table to fill in additional names as necessary.

information by members of both groups, he or she could serve as a bridge between these groups. Gatekeepers can be key individuals to include in public outreach or educational programs because they can disseminate information to more than one group and help disprove inaccurate group stereotypes.

☑ **Isolates** are individuals who are named the least number of times and who appear to be less connected or involved in the social dynamics of the community. You won't want to use them in disseminating information, but they might be an important target for education. Identifying the isolates of a community might also reveal that a particular group or subgroup of the community is not included in the information flow and might not have a voice in decisions made by the community. Isolates might also be important sources of information since they might have a more objective view of relationships within the community.

Individuals identified in one role for one topic might play a different role for another topic.

Resources Needed

☑ **Optional:**

- Social network data from different assessment methods or a social network questionnaire.
- A large writing area for mapping (e.g., a chalkboard, large flipchart, banner paper) or a computer.

☑ **Required:**

- If a large network is to be analyzed, computers and specialized programs will be necessary. The two most common computer programs that can be used for social network analysis are UCINet (for quantitative analysis of the matrices) and, for creating visual plots, Krackplot. Both programs can be learned by a novice, or you can hire experienced users. Both programs are distributed by Analytic Technologies, 104 Pond Street, Natick, MA 01760; phone: (508) 647-1903; Fax: (508) 647-3154.

Sources of Extra Help

☑ Anthropology, sociology, communications, and marketing departments at nearby colleges and universities might be able to provide technical assistance.

Some Pros and Cons of Using This Method

☑ PROS:

- Social network analysis is one of the most effective ways to determine how information flows through a community and its subgroups.
- Results from a social network analysis can be very useful in establishing an effective public outreach or education program.

☑ CONS:

- If the social network you wish to analyze is larger than about 30 people, you will probably need to use a skilled consultant or obtain a computer program to help you complete the analysis. See "Resources Needed."

Bibliographic Resources

☑ Internet:

The International Network for Social Network Analysis (INSNA) maintains a very helpful web site at http://www.heinz.cmu.edu/project/INSNA.

☑ Publications:

Knoke, D., and J.H. Kuklinski. 1982. *Network Analysis*. Sage Publications, Beverly Hills, CA.

Scott, J. 1991. *Social Network Analysis: A Handbook*. Sage Publications, Thousand Oaks, CA.

Valente, T.W. 1994. *Network Models of the Diffusion of Innovations*. Hampton Press, Creskill, NJ.

Surveys and Polls

A survey (or poll) collects information directly from people, usually through a written questionnaire or an in-person or telephone survey guided by a written questionnaire. Survey results can describe community perspectives, such as the percentage of people who like their natural surroundings or who care about specific environmental issues (**Figure S4-39**). One advantage of surveys is that they can link the characteristics (e.g., race, occupation, age, income, education, community residence) of the sampled population with particular responses about actions and opinions that relate to the local environment and community-based environmental protection efforts. They also collect data representative of the given population.

Figure S4-39—What Can Surveys and Polls Tell You?

- Opinions/knowledge about a particular environmental issue.
- Beliefs and perceptions.
- Actions taken or that would be taken under certain circumstances.
- Social, educational, and economic characteristics of respondents.
- Percentages of people who support/believe something about a particular issue.
- Willingness to do certain things.

There are two general types of surveys, self-completed and administered. Both types have their advantages and disadvantages, but neither has been shown to be better or more accurate than the other. Your decision about the type of survey you conduct will depend on the purpose of your survey, available time and financial resources, convenience, and the types of questions you are asking. The following will help you understand the detail involved with both types.

☑ **Self-completed surveys** are written questionnaires with closed or open-ended questions or statements and scales. They are either mailed or hand delivered to the homes of the sampled population and include instructions and paid postage to return them in the mail. They can also be distributed and picked up at convenient locations, such as homes, the post office, or a drop-off box at a park. Another variation of a self-completed survey is one conducted in a group setting, such as a community meeting. In this setting, the survey is distributed to, and completed by, a particular group at a particular time. The methods you use to distribute and retrieve the questionnaire depend on the population you want to sample (e.g., a representative sample of the entire community or only those who visit a riverside park or attend community meetings). (Refer to **Example 1** at the end of this section.)

☑ **Administered surveys** involve one-on-one communication between the person conducting the survey and the person(s) being surveyed. This can be done face to face or over the telephone. In this method, the assessor reads the questionnaire word for word to the person being surveyed and precisely

records the responses. Like the self-completed survey, face-to-face and telephone surveys ask each participant exactly the same questions in the same order, based on a written questionnaire. (Refer to **Example 2** at the end of this section.)

How to Collect This Information

Since the effectiveness of this method depends on its technical design at every stage (e.g., the language and placement of questions, sampling techniques, analysis of results), technical assistance from a professional social scientist, market researcher, or professional pollster is strongly recommended. Please review **Appendix B** for **Conceptual Foundation for Assessment Methods**. The "Extra Help" and "Bibliographic Resources" sections are also useful resources to review before deciding to do this on your own.

1. Steps for Conducting a Survey

☑ **Decide on topics for the survey.** Think about your purpose for conducting the assessment. What do you want to find out about the community, or a particular subpopulation within it? Brainstorm about the questions you want to ask.

☑ **Determine the timeline for administering and completing the survey.**

☑ **Decide on the type of survey** (self-completed, administered) (**Figure S4-40**).

☑ **Select a sample: Probability or Non-probability.** Refer to **Appendix B** for more information.

☑ **Design an introductory letter (for a self-completed survey) or script (for an administered survey)** that explains the reason for the survey, how respondents were selected, the importance of completing and returning the survey, the mechanics of returning the survey, and the guarantee of respondent anonymity/confidentiality.

☑ **Design the survey questionnaire (write questions, instructions).** Test the design of the questionnaire and the wording of questions for clear instructions, clarity, and conciseness with a colleague or a familiar community member.

☑ **Decide whether to identify the survey sponsor.** Standard practice is to identify the sponsor. However, you might choose not to identify the sponsor to protect against

Figure S4-40—Things to Consider when Deciding on Survey Type

- The purpose of the assessment.
- The types of information you want to collect — quantitative or qualitative, facts or perceptions, numbers or reasons.
- Whom you want to obtain information from — individual residents, groups of residents, community representatives.
- Available resources — time, money, staff, or volunteers.
- Available skill base in your group of assessors — questionnaire design, surveying skills, data analysis.

bias. Be sure to consider the ethical implications of your decision. See **Ethics of Assessment in Chapter 4, Step 1.**

☑ **Administer the survey** (mail, drop-off/pick-up, group, face-to-face, or telephone).

☑ **If the survey is self-completed, send out followup mailings to encourage returns.** A 50 percent response rate is the minimum for the results to be representative of the sample.

☑ **Collect the completed surveys.**

☑ **Analyze and interpret the results.**

Resources Needed

☑ Staff or volunteers to help design and conduct the survey. You might want to consider hiring a professional firm.

☑ Updated phone and mailing lists from which to sample the population. Lists can be purchased from marketing firms, such as Donnelley Marketing, the firm that publishes telephone books across the country. These lists define residents by census block and cost approximately $60 for 1,000 names. Lists of residents of a particular locale are also available from telemarketing centers, which use computer software to generate lists based on the desired sample size.

The cost of conducting a survey can vary widely, depending on such factors as the amount of pre-survey planning and preparation required, the type of survey, the sample size of the population being surveyed, and the type of data analysis to be conducted.

Sources of Extra Help

Local university/college departments of sociology, anthropology, political science, psychology, and marketing often have faculty or students who have experience in conducting surveys and polls. They might have already surveyed the same group you are assessing and can share valuable knowledge and data. Other possible sources of technical assistance include county planning departments/commissions, county cooperative extension offices, regional councils of government, state departments of community development, and private survey consultants.

Some Pros and Cons of Using This Method

☑ PROS:

- **Self-completed surveys** are usually quick and easy to administer. They are particularly useful for obtaining a broad-brush indication of issues from a relatively large group of people. The anonymity of a self-completed survey reduces assessor bias and encourages honest responses.
- **Administered surveys** are more flexible than self-completed surveys because of the actual interaction between the assessor and the respondent. Their structure can vary, as well as the way in which they are administered (e.g., in people's homes or at a meeting place, in groups, or on an individual basis). Administered surveys generally yield a higher response rate since they establish an actual human connection. Administered surveys allow the assessor to clarify unclear questions and to use probing questions to collect more complete data.
- **Telephone-administered surveys** can reach a large number of people and reduce surveyor bias while still fostering a degree of the human connection of face-to-face surveys. (Refer to the **Interviewing Instructions** for additional details.)

☑ CONS:

- **Self-completed surveys** tend to result in low response rates because most people never get around to completing or returning the survey to its sender. At least a 50 percent response rate is required for results to be representative of the sample. Otherwise, you'll have to send follow-up letters (along with a new copy of the survey) to encourage respondents to complete and return the survey. Self-completed surveys also require a literate audience. They can be problematic to analyze and compare if open-ended questions are asked.
- **Administered surveys** are more time-consuming and expensive than self-completed surveys because they require trained surveyors and personal contact with every person being surveyed. For this reason, face-to-face administered surveys cannot reach as large a sample as self-completed surveys. Administered surveys are sometimes considered intrusive, and the presence of the surveyor can bias the data being collected.

- **Telephone-administered surveys** assume that every person in the sampled population has a telephone. A sample drawn from a local phone book might overlook those residents without telephones and others with unlisted numbers. Telephone surveys must be relatively short, or respondents will hang up if they think the survey is taking too much time or conflicting with other activities. Generally, a telephone survey should not last more than 20 minutes, although some last as long as an hour.

Bibliographic Resources

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Berdi, D.R., and J.F. Anderson. 1974. *Questionnaire Design and Use*. Scarecrow, Metuchen, NJ.

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Bradburn, N.M., and S. Sudman. 1988. *Polls and Surveys: Understanding What They Tell Us*. Jossey-Bass Publishers, San Francisco, CA.

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EXAMPLE 1: Self-Completed Survey

University of Nebraska–Lincoln Conducts Nebraska Water Survey
Students from the University of Nebraska–Lincoln Department of Agricultural Economics conducted this Nebraska Water Survey with residents living in the Platte River Basin. The survey includes 34 questions on impacts of water use on community life. Categories included: water use, quality of life, priorities and future uses, the economy, social and environmental implications and behavior, business, and demographics.

Question #8: QUALITY OF LIFE					
Please indicate if you strongly disagree, disagree, neither disagree/nor agree, agree, or strongly agree with the following statements:	**Strongly Disagree ▼**	**Disagree ▼**	**Neither Disagree/Nor Agree ▼**	**Agree ▼**	**Strongly Agree ▼**
a. My quality of life would remain the same even if costs increased for household water.	1	2	3	4	5
b. My quality of life would suffer if I could not engage in recreational activities such as swimming (other than pool), hunting, fishing, and boating.	1	2	3	4	5
c. If agricultural producers reduced their water use, my quality of life would improve.	1	2	3	4	5
d. Even if upstream agricultural producers increased their water usage, it would not affect my quality of life.	1	2	3	4	5
Question #10: PRIORITIZATION & FUTURE USES					
a. If the amount of water allocated for the City of Lincoln grew, agricultural producers would not be affected.	1	2	3	4	5
b. Those who had access to water before me should have first rights to water.	1	2	3	4	5
c. Everyone should be considered equally for water rights.	1	2	3	4	5
d. During shortages everyone should be required to cut back equally so that everyone has access to water.	1	2	3	4	5
e. Agriculturalists should be given priority to water rights even if it means reducing households' and commercial business' access to water.	1	2	3	4	5
f. Households should be given priority to water rights even if it means reducing agriculturists' and commercial business' access to water.	1	2	3	4	5
g. I believe that current water resources could support future population growth.	1	2	3	4	5

EXAMPLE 2—Telephone-administered Survey

District: South Central Nebraska

Date:_____ **Time Started:**_____ **Time ended:**_____

Interviewer's Name:_____

1. How long have you lived in this area of Nebraska?
   (1) less than 5 years
   (2) between 5-15 years
   (3) between 16-25 years
   (4) more than 26 years, or
   (5) have you lived here all your life?

2. With the exception of crime, which one of the following issues do you think is the biggest problem facing your community?
   (1) education
   (2) traffic and congestion
   (3) water quality and availability
   (4) jobs and the economy
   (5) taxes and government regulation
   (6) loss of natural areas and open space
   (7) affordable housing
   (8) other
   (9) unsure

3. OPEN-ENDED — Please tell me the first thing that comes to your mind when you think of the Platte River.

4. What do you think is the primary reason people use the land around the Platte River?
   (1) for business and industrial purposes
   (2) for farming purposes
   (3) for recreational activities like hunting, fishing, or canoeing
   (4) to enjoy nature by bird-watching or observing other wildlife
   (5) other
   (6) unsure/refused

5. In your opinion, which of the following do you think is the best use of the Platte River?
   (1) irrigation of farm land
   (2) habitat for birds and wildlife
   (3) mining for gravel
   (4) recreational activities like hunting, fishing and canoeing
   (5) residential housing
   (6) other
   (7) unsure/refused

6. This area of Nebraska has grown rapidly during the past few years. Do you feel
   (1) this growth has been good because it helps the economy and creates job opportunities?
   (2) this growth has gotten out of hand and is now affecting the quality of life in the area?
   (3) unsure

7. Which of the following statements best represents your view of the Endangered Species Act?
   (1) We should abolish or weaken the Endangered Species Act because it imposes too many regulations on how people can use their own land.
   (2) The Endangered Species Act should not be abolished or weakened because it protects the habitats of birds and wildlife including endangered plants and animals.
   (3) unsure

Some people say the Platte River contributes to the quality of life in this part of Nebraska. I am going to read you some of the things they say. Please tell me how important this reason is to you in protecting and preserving the Platte River.

8. The Platte is a national treasure. Every year it attracts 500,000 sandhill cranes which is the largest concentration of cranes in the world.
   (1) very important
   (2) somewhat important
   (3) not very important reason to protect and preserve the Platte River
   (4) unsure

9. The Platte River provides habitat for endangered and threatened species of birds like the bald eagle and the whooping crane. There are six endangered and threatened species of birds that use the river for nesting and migration.
   (1) very important
   (2) somewhat important
   (3) not very important reason to protect and preserve the Platte River
   (4) unsure

(continued)

EXAMPLE 2—Telephone-administered Survey (continued)

10. Every year in March tourists come to this area to see the crane migration. Tourists spend almost twenty million dollars which helps small businesses and the local economy.

    (1) very important
    (2) somewhat important
    (3) not very important reason to protect and preserve the Platte River
    (4) unsure

11. The Platte has historical significance since the Great Platte River Road, which is a combination of the Oregon, Mormon, and California Trails, carried 360,000 settlers west in the 1800s.

    (1) very important
    (2) somewhat important
    (3) not very important reason to protect and preserve the Platte River
    (4) unsure

Over the last century the natural landscapes where you live have changed. I am going to read you a few of these changes and tell you about some efforts being made to protect the remaining natural areas. Please tell me if you think these efforts will improve the quality of life for people in this community.

12. Agriculture, housing, and development have eliminated almost all of the native prairie that once covered this area. Efforts are being made to protect and restore some of the last prairies.

    (1) improve the quality of life for people in this community
    (2) hurt the quality of life for people in this community
    (3) not really affect the quality of life for people
    (4) unsure

13. The water flow in the Platte River has been altered primarily because of irrigation and hydropower generation. Efforts are being made to guarantee certain flows in the river at critical times for birds, fish and other wildlife.

    (1) improve the quality of life for people in this community
    (2) hurt the quality of life for people in this community
    (3) not really affect the quality of life for people
    (4) unsure

14. Wet meadows bordering the Platte River have been reduced by 75 percent. Efforts are being made to protect and enhance the remaining wet meadows as feeding areas for cranes and other migratory birds.

    (1) improve the quality of life for people in this community
    (2) hurt the quality of life for people in this community
    (3) not really affect the quality of life for people
    (4) unsure

15. Do you think water quality or water quantity is a serious problem in this community?

    (1) quality
    (2) quantity
    (3) both
    (4) unsure

16. Water flows in the Platte River have been significantly altered over the last century. Do you think this is

    (1) a very serious problem
    (2) a somewhat serious problem
    (3) not a very serious problem
    (4) unsure

ASK Question 17 only of people who say (1) very serious problem or (2) somewhat serious problem to Question 16; otherwise skip to Question 18.

17. One of the reasons for the alteration of water flows in the river is because farmers have diverted the water for irrigation purposes. Do you think

    (1) there should be less water removed for irrigation even if it means fewer acres would be farmed
    (2) irrigation is so important for agriculture that farmers must be allowed to continue using water from the Platte River
    (3) unsure

18. How would you feel using tax dollars to build hiking and bicycling trails along the Platte River?

    (1) strongly favor
    (2) somewhat favor
    (3) somewhat oppose
    (4) strongly oppose
    (5) unsure

(continued)

EXAMPLE 2—Telephone-administered Survey (continued)

Please tell me how you feel about the following statements.

19. If we do not protect the open space and natural areas along the Platte River now they might be lost forever to development.
    (1) strongly agree
    (2) somewhat agree
    (3) somewhat disagree
    (4) strongly disagree
    (5) unsure

20. Birds like the whooping crane and sandhill crane rely on wet meadows and sandbars for their survival. We must do everything we can to protect the habitat of these birds along the Platte River.
    (1) strongly agree
    (2) somewhat agree
    (3) somewhat disagree
    (4) strongly disagree
    (5) unsure

21. Open space and clean water are essential if we are to maintain the rural character, sense of community, and overall quality of life in this area.
    (1) strongly agree
    (2) somewhat agree
    (3) somewhat disagree
    (4) strongly disagree
    (5) unsure

22. It is possible to have farming, manage growth, and protect the environment.
    (1) strongly agree
    (2) somewhat agree
    (3) somewhat disagree
    (4) strongly disagree
    (5) unsure

23. The area along the Platte River is a peaceful place with clean air, beautiful scenery, and abundant wildlife. It is the habitat for many endangered plants and animals. It needs to be preserved and protected from development for our children and grandchildren.
    (1) strongly agree
    (2) somewhat agree
    (3) somewhat disagree
    (4) strongly disagree
    (5) unsure

24. Environmental groups are more concerned with protecting birds and animals than they are about the rights of farmers to use their land to earn a living.
    (1) strongly agree
    (2) somewhat agree
    (3) somewhat disagree
    (4) strongly disagree
    (5) unsure

25. In the past, trees have been removed in certain locations along the Platte River and on sandbars to provide suitable habitat for sandhill cranes. Would you
    (1) support or
    (2) oppose the continued removal of certain trees if it would help protect the habitat of these birds?
    (3) unsure

I am going to read you the names of some groups. Please tell me your response to them.

26. The Nature Conservancy
    (1) very positive
    (2) somewhat positive
    (3) somewhat negative
    (4) very negative
    (5) don't recognize

27. Farm Bureau
    (1) very positive
    (2) somewhat positive
    (3) somewhat negative
    (4) very negative
    (5) don't recognize

28. Nebraska Game and Parks Commission
    (1) very positive
    (2) somewhat positive
    (3) somewhat negative
    (4) very negative
    (5) don't recognize

29. Platte River Whooping Crane Trust
    (1) very positive
    (2) somewhat positive
    (3) somewhat negative
    (4) very negative
    (5) don't recognize

(continued)

EXAMPLE 2—Telephone-administered Survey (continued)

30. Nebraska Public Power District
    (1) very positive
    (2) somewhat positive
    (3) somewhat negative
    (4) very negative
    (5) don't recognize

31. National Audubon Society
    (1) very positive
    (2) somewhat positive
    (3) somewhat negative
    (4) very negative
    (5) don't recognize

32. Central Platte Natural Resource District
    (1) very positive
    (2) somewhat positive
    (3) somewhat negative
    (4) very negative
    (5) don't recognize

I need to know a couple of things, just for statistical purposes.

33. Into which of the following age categories do you fall?
    (1) 18–34
    (2) 35–49
    (3) 50–64
    (4) 65 or older
    (5) refused

34. Which category describes your highest level of formal education —
    (1) did not graduate from high school
    (2) high school graduate
    (3) some college or vocational training
    (4) college graduate
    (5) completed a graduate degree or a professional degree, such as a lawyer or doctor

35. Does your family currently farm or ranch to earn all or part of your income?
    (1) yes
    (2) no
    (3) refused

Those are All the Questions I Have. Thank You and Have a Nice Evening.

Visual Methods

Visual images of a community capture social, cultural, ecological, and economic features. Photographs, videos, or drawings can describe the appearance of a watershed or other land area and be used to quickly analyze spatial relationships, land-use patterns, and historical changes. Images of streets, houses, stores, open spaces, civic features, and the people who inhabit these places might stir up an individual's thoughts and feelings about a particular place. This information can be used to assist in protecting existing community features, to identify popular or vulnerable environmental elements of the community, or to provide a tangible vision for the future of the community. You can produce the images yourself or use visual images already made by community members.

Community photo or video projects can also be excellent ways of getting community members to identify what they like, generate pride in their community and environment, and share talent as a community asset.

How to Collect This Information

A visual method uses an image to obtain information about a community — either from the image itself or through an individual's interpretation of or reaction to the image. Visual methods include

- ☑ Visual Preference Survey
- ☑ Community Photographic Mapping
- ☑ Photo-interviewing

These three visual methods might seem familiar to you because, in fact, they are adaptations of other assessment methods — surveying, mapping, and interviewing.

Surveying

- ☑ **Visual preference surveys** rely on visual images from a particular community or region that illustrate a wide range of conditions, including current and ideal, in the community. Images can be photographs, video clips, or even illustrations of community features. As few as 40 images can be used for the survey. The following steps outline how to conduct a visual preference survey:

1. Ask survey participants to view each image for a few seconds (by slide projector, overhead, or actual picture, depending on your resources). After briefly viewing the image, ask each participant to rate the image on a scale (e.g., -10 to +10, with 0 being neutral), depending on how well he or she likes or dislikes the image. Be sure to tell participants there are no right or wrong answers.
2. Record the scores for each image.
3. Add the scores for each image and calculate the group's average score. The average score for each image might be considered the group's collective opinion. Images with the highest negative and positive averages might have group consensus.
4. Show each image again to participants, disclosing the average score. Ask them why they rated each image the way they did. By asking for further explanation on each image, you can learn what community qualities are important to each individual.

Mapping

☑ **Community photographic mapping** uses photographs to capture many aspects of a community — physical characteristics, economic well-being, and cultural vitality — that do not appear on geophysical maps. Photographic mapping of a community can be done over both time and space and can answer many questions (**Figure S4-41** contains more details). These maps can also be displayed publicly for feedback and discussion about preferences, which can help establish a vision for the community. Two common methods of photographically mapping a community are (1) compiling a pictorial map and (2) creating a photographic overlay for geophysical maps.

- **Pictorial maps** consist of a variety of photographs (e.g., angle shots, medium-range shots, and detailed shots) taken from a particular area. You can photograph an area alone or ask other people to participate in this activity. Mount photographs on a wall or poster board in appropriate geographical relationship to one another. Depending on the number and size of photographs, a pictorial map might stretch up to 20 feet in length. In addition to your own observations, you can use questions from **Figure S4-41** to guide the shooting of community photographs and facilitate a group discussion of the resulting pictorial map.

Figure S4-41—What Should I Try to Capture in Visual Images of a Community?

Location: Show boundaries, landmarks, geographical features, signs, anything that defines location.

Appearance: Record the range of building types, character of streets, and visible subsections. Is it hilly or flat? Are streets straight, winding, or a mix? Are buildings short, tall, narrow, old, new? In repair or run down?

Organization: What are the components of the community? How is it arranged? Where are businesses, public places, religious institutions, residences, and the like? Capture wide shots to define relative location and closeups to show detail.

Functions: Record a range of activities, services, functions. Who do businesses, residences, restaurants, schools, and recreational facilities serve? Record the orientation of places toward clientele and the character of who comes, goes, for what, where, when? Wide shots show relationships and context; closer shots show details and identification.

People: Who lives here? Who comes here? Works here? Is the population homogeneous? Mixed? Young? Old? Transient?

Transportation: How do people get around? What are the major transport arteries and pedestrian routes? Where are bus lines, crossroads, transfer points, parking lots, congestion?

Residential Areas: What are the character and condition of buildings, sidewalks, and streets? What is the range of building styles, age, nature of units (single, double, multiple)? Look for details that might provide clues as to the cultural and economic character of inhabitants, age ranges, living styles.

Daily Cycles: Record the flow of people, activities, functions during the cycle of a day. Who goes, comes, when and where? When and where are the peaks of activities?

History: What can be seen that reflects the past? Old buildings, signs, statues, sidewalk markings, stores with declining patronage, physical characteristics of past functions.

Change: What is changing and what is not? What is newly constructed and where? What is demolished and where? Are people and businesses moving in or out? How has the landscape changed?

Source: Adapted from Collier, 1986

- **Photographic overlays** actually transfer photographs of a community to geophysical maps, showing a more detailed layer of information about the community. The primary difference between this method and pictorial maps is the use of a geophysical map to provide context. In this method, photographs can relate culture, ecology, and economy to a community as it is depicted on a geophysical map. Obtain or develop an enlarged map of your community. Photograph the selected area to capture the aspects you want to examine (e.g., housing conditions or mix of building types). Use push pins or clear tape to arrange the photographs along the boundaries defined on the map. The resulting photographic overlay provides a reference for comparison between actual conditions described by the photographs and the geophysical features delineated by the map.

Interviewing

☑ **Photo-interviewing** integrates visual images with interviewing to reveal an individual's thoughts and emotions about a particular event, place, or relationship. In photo-interviewing, the photos you choose serve as reference points in the interview. Your questions might center on one photo or a series of photos, depending on the type of information you want to gather from the interviewee. Photos can also be used creatively in focus groups, surveys, and other methods. See appropriate instructions for more detail.

Resources Needed

Visual Preference Survey

☑ **Required:**

- Visual images of the community. Images might include photographs, video clips, drawings, slides, and so forth. Depending on time and resources, you might choose to shoot or draw the images yourself, enlist the help of local artists, or ask community members to contribute images they might have collected over time.

☑ **Optional:**

- Slide projector.

Community Photographic Mapping

☑ **Required:**

- Photographs of the community.
- Pictorial maps — material for mounting photographs (e.g., foam board, long rolls of paper, push pins, tape).
- Photographic overlays — enlarged maps of the photographed area, push pins.

Photo-interviewing

☑ **Required:**

- Visual images of the community. If you want to collect information on a particular topic or feature, the images used should focus on that topic or feature.

Some Pros and Cons of Using This Method

☑ PROS:

- Photographic images provide something tangible for a person to comment on and are easier to provide feedback on than a verbal description.
- People might feel less pressure/stress when asked to answer questions about a picture than about themselves or the people around them.
- Gives people the opportunity to see places and people in their communities for the first time or from a new perspective.
- Provides a reference point for discussion — people can say, "See, look at this."
- Provides a visual analysis of trends that might not be readily apparent otherwise.

☑ CONS:

- Time to compile enough photos that thoroughly describe a community.
- In a group setting, people might be reluctant to offend others or speak negatively of an area.

Bibliographic Resources

The Center for Livable Communities. *The Community Image Survey.* http://www.lgc.org/techserve/cis/index.html or 1414 K Street, Suite 250, Sacramento, CA 95814; fax (916) 448-8246.

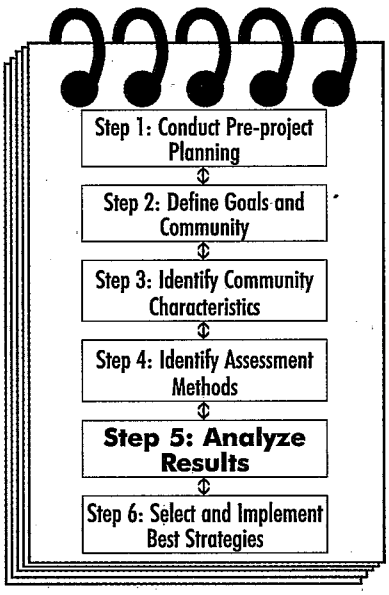
Collier, J., and M. Collier. 1986. *Visual Anthropology: Photography as a Research Method.* University of New Mexico Press, Albuquerque, NM.

Kaplan, R., and S. Kaplan. 1989. *The Experience of Nature: A Psychological Perspective.* Cambridge University Press, Cambridge, MA.

Nelessen, A. 1994. *Visions for an American Dream.* American Planning Association, Chicago, IL.

Project for Public Spaces, Inc. http://www.pps.org or 153 Waverly Place, 4th Floor, New York, NY 10014; phone: (212) 620-5660; fax: (212) 620-3821; e-mail: pps@pps.org. This organization has an extensive slide library consisting of more than 500,000 slides of public spaces from cities in the United States, and around the world. These slides are available as a resource for a fee. Project for Public Spaces (PPS) organizes its slide library into the following categories: amenities, public art, markets, open spaces, gardens, transportation, buildings, geographic locations, management, parks, people, and retail.

STEP 5:
Analyze Results



This step provides an overview of how to transform raw or partially analyzed data into meaningful information and an accurate assessment of a community. **Figure S5-1** presents some hypothetical scenarios that you might be facing at this stage of your assessment project.

As you take the next steps, consider data storage, organization, analysis, and presentation simultaneously so that you choose compatible formats.

1. **Store** the data you have collected in a way (e.g., paper, a computer diskette) that makes it readily accessible.
2. **Revisit** Goals, Community Characteristics, and Questions to reestablish what you originally wanted to know.
3. **Organize** the data by method.
4. **Analyze** the data by type (quantitative, qualitative, graphic). Use the simplest methods that will accomplish your needs. This chapter discusses methods that don't require extensive knowledge of data analysis and more complicated methods for which you might need a consultant.
5. **Summarize and present** your findings in a way others can understand.

During and upon completion of Step 5, refer back to **Chapter 3** for **Step 6: Select and Implement Best Strategies**.

Figure S5-1—Hypothetical Scenarios After Data Collection

- You conducted a series of interviews and surveys to answer specific questions about the community. You now have stacks of interview notes and completed surveys organized in no particular order.
- You downloaded a large amount of demographic data on a particular county from the Census Bureau's World Wide Web site onto a computer diskette. You have done nothing further with the data and are unsure about how to proceed.
- You conducted public meetings to solicit community input on the future of a national forest adjoining the community. You summarized your notes from these meetings into a written report, and you feel you are now ready to recommend a management plan for the forest area to the local U.S. Forest Service field office.

General Comments on Data Analysis

Comparing Results from Different Methods to Confirm Validity (Triangulation)

Triangulation is a technique used to ensure that assessment results are consistent, lessening the chance of bias. Triangulation is accomplished by comparing the results from at least three methods. Analysis of the results of only one assessment method might not fully answer specific questions, or might be misleading. In the triangulation process, you can also combine quantitative and qualitative data to tell a more complete story about a particular topic. For example, a poll shows that 69 percent favor a recreational park; a vote observed during a

school PTA meeting showed a majority of parents favored a recreational park; select interviews with county decision-makers, local residents, and the organizers of the local adult softball league also found support for a recreational park. Comparison of these data confirms without a doubt the presence of support for a recreational park. Further information on triangulation can be found in **Appendix B**.

What if Clear Answers to Your Questions Are Not Emerging?

What should you do if, in the course of analyzing your data, no clear answers to your questions emerge? Before you panic, remember that the answers you don't find are sometimes as important as the ones you do find. References at the end of this chapter can help you understand and deal with uncertainty in your analysis; however, you might only need to look a bit harder at your data.

Raw data, particularly in large quantities, will not provide easy answers without effort on your part. If you carefully organize and analyze your data, many clear answers should emerge. However, you might find ambiguous, seemingly conflicting answers, or no answers at all. For example, respondents might have conflicting opinions on the same issue(s). To resolve this problem, try to determine the characteristics of the people surveyed to see if they are from different neighborhoods or socioeconomic backgrounds. Or analyze the answers to other questions to see if they suggest the reasons behind conflicting opinions. In general, you can usually use other data you have gathered about the individual, group, or topic to help clarify the picture.

Sometimes, however, you won't have enough data on the individual, group, or topic; in other words, a data gap exists. In this situation, you should take the following steps:

- ☑ Determine if your analysis has answered your questions.
- ☑ Determine if you have missed any key groups or sources of data.
- ☑ Examine your sampling techniques (**Appendix B** contains information about sample size and composition) to make sure you properly sampled your targeted groups.

- ☑ If gaps are in critical areas (e.g., who the community decision-makers are), or if results highlight new important questions, revisit the methods and gather more data.
- ☑ If gaps are not critical, decide if you can leave them unfilled.

Reaching Agreement/Consensus on Results

Always remember that your assessment team is just that — a team. Moreover, it's a team with a variety of backgrounds and training. One or more members of the assessment team might not be satisfied with the results of the analysis or might feel that important questions were ignored. To avoid conflict within the team, and possible dispute about key findings, the entire team should answer and agree on the following questions before the analysis phase is completed:

- ☑ Did we miss anything important?
- ☑ Is there anything else we want to know?
- ☑ Do we all agree on the findings from our assessment?
- ☑ Other questions (think of any other potential sources of disagreement among team members, and try to address them before bringing this phase of the project to a close).

Use tools in **Step 4, Meetings**, to assist you if needed.

Storing Information

You must store your data in a way that will facilitate data analysis and answer your specific questions. The data you've gathered from individuals, documents, and databases probably exist as piles of documents, lists of numbers, recorded audiotapes, written meeting notes, completed questionnaires, newspaper clippings, marked-up paper maps, or computer data. In storing data, think in terms of both their immediate and long-term use.

Paper Documents and Files

You'll probably use paper to organize and store much of your data, such as interview responses and notes from meetings and workshops. Be sure to include information about the source of the data (e.g., the date and time of an interview, the name of an interviewer, the author and date of a newspaper article). Store all documents so they can be quickly and easily found.

Computerized Documents and Files

When dealing with anything more than a small amount of data, you really should store it in a computer. This makes finding, and later analyzing, data much faster than handling sheets of paper. Even a small survey with only 10 questions mailed to a sample of 200 individuals can easily result in 2,000 answers that must be organized and analyzed. To avoid duplicating the effort of writing on paper and later entering data into a computer, try (when possible) to enter data directly into a computer as they are collected. An example would be an interviewer typing into a computer while conducting a telephone interview.

Computer programs can also help you store and analyze data. Spreadsheet programs like Microsoft Excel, Lotus 1-2-3, and Quattro Pro, and databases like Microsoft Access, dBASE, and SPSS can store information and perform fairly sophisticated statistical analyses.

Revisiting Goals, Community Characteristics, and Questions

As you organize and analyze your data, remember your goals and your original community characteristics and questions. Use these to guide your analysis. Did you get answers to your questions? Also allow your findings to direct you to ask new questions. Pay attention to data that do not necessarily support your goals. These data can help you understand how community perception and sentiment about an issue might differ from your own.

Conduct quality assurance and quality control (QA/QC) checks. After entering all of your data, check the accuracy of your data entry. One way to do this is to have somebody other than the person who entered the data review it. Or use "redundant data entry," whereby you enter your data several times (thereby creating copies of the same data on different pieces of paper or separate computer data sets) and then compare the results. You can also look for inconsistencies visually or have a computer find them for you. QA/QC is critical to the accuracy of the conclusions you draw from your analyses.

Organizing Data by Method

Data from each method should be organized independently. For example, survey data are organized separate from focus group results. You might want to write a summary statement for each assessment method you used; this can help answer specific questions about the results of a particular method. Categorizing data

by methods allow you to check the validity of the data by comparing the results of one method against those of other methods, known as triangulation (refer to **Appendix B** for more details).

Analyzing Data by Type

Depending on the format of the raw data you have collected, the data might be numbers (quantitative), words (qualitative), or pictures (graphic). Certain methods collect certain types of data (e.g., focus groups collect qualitative data, census research collects quantitative data). To be of use in answering your questions about the community, these types of raw data need to be properly organized and analyzed.

Analysis is the systematic examination of raw data for themes and patterns, and explanations about why they exist (i.e., relationships). **Analysis attaches *meaning* to the raw data.**

Although you should be able to use most of the techniques described here, you might eventually need help with analysis. Some particularly useful texts on data analysis are listed at the end of this chapter. Seek professional expertise if you are not confident in your ability to accurately analyze your data.

Organizing Quantitative Data

☑ **Quantitative data** are data in the form of numbers. They measure units such as money, time, and number of people. For example, a survey on environmental values might generate the following quantitative data:

- Number of people surveyed: 400
- Number of respondents responding "Yes" to the question "Do you favor the cessation of logging in forests that have been identified as habitat for endangered species?": 275
- Number of males responding "Yes" to that question: 123
- Number of females responding "Yes" to that question: 152

In general, quantitative data should be entered into tables because such data are much easier to analyze when organized into columns and rows on paper or computer. The following steps are recommended for organizing quantitative data into tables.

☑ **Create tables to store data.** Tables are simply collections of rows and columns designed to store data in an organized manner. Design your tables to be compatible with the analytical methods you plan to use. The first two rows of a

table of survey data could look like **Table S5-1**, with the columns labeled C1 through C5:

Table S5-1—Survey Data (Sample)

C1: ID#	C2: Gender	C3: Age	C4: Years of Education	C5: Annual Income
0001	F	31	16	$ 38,000
0002	M	56	12	$ 51,000

☑ **Document the way data will be organized in the table.** It is important to document the way you organize data from a particular assessment method in a table. In the example table, labels describe different columns. For instance, Column label C1 lists the identification number unique to each completed survey (keeping the identity of each respondent confidential). Column label C2 lists the gender of the respondent, label C3 lists the age of the respondent, and so on. Labeling your data in this way facilitates rapid analysis.

☑ **Clean data/prepare data for analysis.** It is quite common for mistakes to be made when data are collected. In this step, you visually scan the data for apparently inappropriate values or responses. For instance, if a self-completed survey question asked, "On average, how many hours per week do you typically spend at the office?" and a respondent answered, "400," you should flag the answer as inappropriate, review the original data source, and correct it or leave the particular answer blank. This step is critical because inaccurate data can lead to faulty analyses and inaccurate results.

When using computer software to perform statistical analyses, you must assign a **missing variable** to inappropriate or missing answers rather than leaving them blank or inserting what you assume to be the correct answer. Missing variables are numbers that you choose to designate inaccurate or incomplete responses when performing quantitative analysis. The numbers themselves should be so high or low that you will not confuse them as an actual answer to the question. For example, if a few respondents did not answer a question about their age, you might insert the arbitrary number "00" into the spreadsheet and designate "00" as a missing variable. Failure to create and use missing variables will make your results inaccurate because the computer will not correctly factor in the missing responses when it performs statistical operations.

☑ **Enter data into tables.** There are two primary ways you can accomplish this:

- If there is a relatively small amount of data or you feel more comfortable working on paper, you can enter the data on paper.
- If there is a moderate to large amount of data, you should enter the data into a computer since this will make analysis much easier. Useful computer programs are mentioned under "Storing Information: Computerized Documents and Files."

Performing Quantitative Analysis

Statistics — both descriptive and inferential — are commonly used in quantitative analysis.

☑ **Descriptive statistics** draw a picture of the study sample or population using summary data such as counts, averages, and percentages. These types of statistics can also show the relationships between multiple variables, such as gender, recreational activity, and environmental values. For example, statistical analysis of survey questions asking about each of these three variables can tell you the percentage of surveyed women who both fish and care about the environment. Depending on the question you are trying to answer, you might want to compare this percentage with the percentage of surveyed men who fish and care about the environment. This comparison allows you to look for similarities and differences related to the gender of the respondent. Or, you might compare the percentage of women who fish and care about the environment with the percentage of women who do not fish but do care about the environment. This comparison could shed some light on the relation between fishing and environmental values among women. Descriptive statistics are generally easy to use and can help answer many common questions about raw data.

☑ **Inferential statistics** are primarily used to further analyze the results from descriptive statistics, such as how accurate the average you calculated actually is, how it differs from another sample, whether there are correlations between the two samples, and so forth. It is less common for inferential statistics to be used in an assessment, but they are sometimes used, depending on the needs of the assessment. See **Table S5-2** for guidance on using descriptive and inferential statistics.

Table S5-2—Types of Statistics Used for Quantitative Analysis

TYPE OF STATISTIC		WHEN TO USE	COMMON MEASURES OR TESTS
Descriptive Statistics		To answer simple questions about your raw data by calculating a summary measure of one group of data, looking at one element, or variable, at a time. Examples include "how many people said...," "what's the average number of...."	• Mean (average) • Median (midpoint) • Percentage (proportion) • Minimum • Maximum
Inferential Statistics	**Parametric Analysis**	To compare the elements or variables related to two or more groups of people, or the same group before and after an event. Example: to determine whether the percentage of people supporting a particular idea differs between several groups; or, to determine whether sentiments differ before and after a public presentation on the issue.	• T-test (to compare two averages or percentages between two groups) • Paired T-test (to compare two averages or percentages of the same group before and after an event) • Analysis of Variance (to compare averages between two or more groups) • Chi-Square (to compare percentages between two or more groups)
	Nonparametric Analysis	Use when your data cannot meet the assumptions of parametric statistical tests, such as when the size of your sample is small.	Wilcoxon rank sum test (the nonparametric equivalent to a T-test)

Computer software programs can help you organize and code data and perform specific operations. However, none of these software packages will analyze the data for you. The decisions about which operations and which data to use and how to understand the results will still depend on your own analytical capabilities. If you want to perform statistical operations on your data, such as cross-tabulations and tests of statistical significance, use SAS, Systat, STATA, dBASE, or Statistical Package for Social Sciences (SPSS) software. Cross-tabulations allow you to control for one variable, such as gender, while comparing two other variables. Tests of statistical significance determine the extent to which the relationship between two variables is real or coincidental. Other software programs — such as ETHNOGRAPH — can help you organize, code, and analyze qualitative data. The information resources listed at the end of this chapter provide more details on the methods described in **Table S5-2.**

Just as quantitative data are numerical, so is quantitative analysis. Quantitative analysis techniques can analyze qualitative data as well, provided the data are coded appropriately. If you

wanted to quantitatively analyze interview responses about river use, you would assign numerical or letter codes to each answer:

- ☑ 1 = fishing
- ☑ 2 = swimming
- ☑ 3 = boating
- ☑ 4 = peace of mind

These numbers are codes for the actual words and can be entered into a computer database. This process prepares qualitative data for quantitative analysis; even though the original data are qualitative, the coding process has translated it into numbers and the end product will be numerical (e.g., 75 percent of those interviewed said they use the river because it gives them "peace of mind").

Quantitative analysis can be applied only to data derived from one method at a time. For instance, if you conducted a self-completed survey of a random representative sample of 200 people and you also personally interviewed 15 people selected by a snowball sampling technique, you cannot quantitatively analyze the raw data from both methods together. In this case, you would have to analyze the surveys and the interviews separately and then compare the results and summarize the similarities or differences, trends, and patterns. Even if you asked identical questions in the survey and the interviews, the different sampling techniques (random vs. snowball) and different methods (self-completed vs. face-to-face) would affect the data you collected. Were you to combine these raw data before analyzing them, your results would be skewed and your conclusions would be inaccurate.

Organizing Qualitative Data

Qualitative data are in the form of words (e.g., terms, notes, stories, quotations). Qualitative data are usually not as easy to analyze and summarize as quantitative data but are often crucial to describing certain aspects of a community that quantitative data cannot. You can organize qualitative data through the following general steps:

- ☑ **Produce a written transcript** of audiotapes or videotapes of interviews, focus groups, meetings, and other sources of raw data that were not originally recorded in writing. To create a written transcript, listen to the audio/video recordings and write down (preferably on a computer word processor)

exactly what you hear on the tapes. Transcribing audio/video tapes will make it easier for you to compare such data with data from written sources, or other tapes, as you look for common themes and patterns.

☑ **Create codes,** or labels, that represent themes that are of interest to you, that keep "popping up," or are answers to particular questions asked in an interview or a survey. Codes serve as shorthand to help you conveniently organize data. The codes can be recorded in the margins of your written transcript, or you can create a separate "code book" that lists each code and what it represents. See **Chapter 4, Step 4 Content Analysis** for more details.

Codes can be assigned by hand, or computers can code transcripts for you. If you choose to use a computer, the required programs can be somewhat expensive, but necessary when you have large amounts of data. One publisher of such software programs is Sage Publications. Further information is available at http://www.sage.pub.com.

Performing Qualitative Analysis

Just as qualitative data are in the form of words, so is their analysis. Although not as straightforward as quantitative analysis, qualitative analysis produces very useful results. It can combine different sources of qualitative data, such as interview responses, observations, and conclusions from cognitive maps. In the analysis, you can review the combined raw qualitative data, looking for patterns, themes, or relationships. Keep an open mind about what the raw data might reveal.

One of the benefits of qualitative analysis is that it allows you to include the contextual meaning of collected data in the analysis. For example, you ask community members, "How do you use the nearby river?" Their responses might include "fishing," "swimming," "boating," and "for peace of mind." These answers are qualitative data because they are expressed in words. Should you choose to qualitatively analyze these data, you might choose "recreation" and "spirituality" as codes to categorize the different responses. In this case, "fishing," "swimming," and "boating" could be coded as "recreation" and "peace of mind" as "spirituality." However, if you learn in an interview that one of the respondents is a long-time waterman who considers "boating" to be a spiritual connection with God's creation, you might prefer to code that data as "spirituality" rather than

"recreation." In some cases, the context of data can give the data a different meaning.

Some common qualitative analysis methods include the following:

- ☑ **Content analysis** enables you to organize and analyze key themes and patterns. For example, conducting content analysis on a long focus group transcript might reveal that community members have several types of complaints about a new recycling center. These can be categorized and coded as "complaints" and then further subcategorized and coded by the most common complaints as "noise," "inconvenient location," "bad smell," and "other." Other sources of raw data, such as meeting notes and interview responses, can be examined to see if the data collected by these methods also fit into, and support the use of, these codes. See the **Chapter 4, Step 4 Content Analysis** for step-by-step guidance on using this method to both collect and analyze qualitative data.
- ☑ **Issue analysis** can be done by summarizing all data on a particular topic, such as a community characteristic or perceptions of the value of a riverside cleanup project. These summaries can be used to get the "full picture" on any given topic. Summaries can help you determine the relative value of an issue by comparing different issue summaries.

Organizing and Analyzing Graphic Data

Graphic data can include pictures, maps, and diagrams. Graphic data are collected by such methods as background research, maps and geographic research, visual methods, and social mapping.

Organize and analyze graphic data in ways that make sense to you. For example, if you use a street map to count the number of parks in a community, you have collected quantitative data. If you note from a concept map created by community members that they perceive the cause of their drinking water contamination to be "rusted pipes," you have collected qualitative data.

Summarizing and Presenting Results

Present your results so that they are understandable and useful for decision-making. Here are suggestions for presenting your analyzed data most effectively.

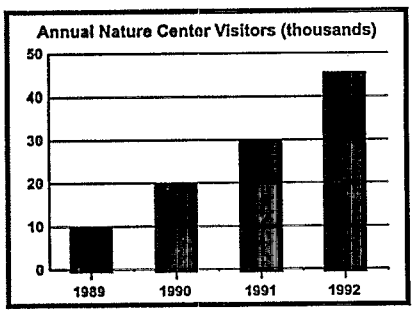
Written Summaries

Almost every presentation of analyzed results involves some written text. And there are a variety of formats from which to choose. If your purpose is informal, use brief fact sheets, short summaries, memoranda, or letters. If the results are being reviewed by a wider audience, it might be appropriate to write a summary report on your findings. Summary documents usually contain some of the elements of visual summaries, such as tables, graphs, and charts. Written reports and other documents can include comprehensive information that allows the reader to delve deeper into the assessment detail, thus possibly arriving at more sophisticated understandings.

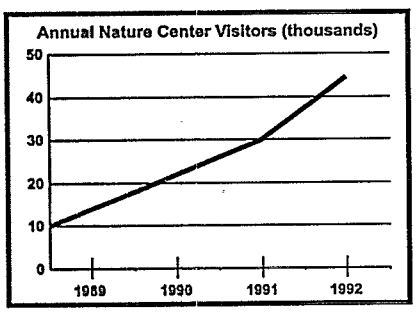
Visual Summaries

Visual summaries present data in ways that are quickly understood. Common formats include tables, charts, graphs, maps, drawings, and photographs — all dedicated to the premise that "One picture is worth a thousand words" (see the three examples that follow). Visual summaries needn't be expensive or high tech, but if done well, they will likely be understood, thus producing feedback on your assessment efforts and project goals.

Bar Chart



Line Graph



Table

Annual Nature Center Visitors	1989	1990	1991	1992
Number of visitors per year	10,000	20,000	30,000	45,000

Disclosure

At this stage of the project, you must consider how to release the results of your analysis to those outside your team. Community cultural assessment is grounded in the philosophy that community members are partners in the project. Therefore, they have a right to know the findings, especially since they have contributed their own time to answer your questions. At the same time, once the results of a community assessment are released, you will lose control of how and by whom they are used. For this reason it is important to be sensitive to the ethics discussed in **Chapter 4, Step 1**. You must especially protect the identities and privacy of those who participated in your project. In addition, when using the assessment results, you should be

sensitive to community concerns, including business concerns about proprietary information. Further discussion on communicating with the public can be found in **Chapter 3, How to Use Results from the *Guide***. Review this discussion before releasing results to a larger audience.

Bibliographic Resources

☑ Internet:

In addition, the following web site contains links to descriptions of numerous computer statistical programs: http://ourworld.compuserve.com/homepages/Rainer_Wuerlaender/statsoft.htm.

☑ Publications:

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APPENDIX A

Community Case Studies

> NEVER DOUBT THAT A SMALL GROUP OF THOUGHTFUL, COMMITTED CITIZENS CAN CHANGE THE WORLD. INDEED, IT IS THE ONLY THING THAT EVER HAS.
>
> — *Margaret Mead*

Today, community involvement goes beyond having good public stakeholder meetings. It means engaging people in their daily activities and working *with* them to establish sound practices that are consistent with local environmental values. It means understanding the community's vision for itself and working with that vision. This appendix describes how the community-based approaches and methods described in the *Guide* have been used to integrate economic, ecological, and sociocultural concerns in 15 communities. These cases demonstrate how knowledge about community issues, language, influential subgroups, historical trends, and other social factors within a community are key to establishing successful environmental protection goals, action plans, and implementation strategies.

COMMUNITY I

Adams County, Ohio

A community cultural assessment using focus groups, a telephone survey, in-person interviews, and content analysis was conducted to better understand the environmental values of the community surrounding The Nature Conservancy Edge of Appalachia Preserve. The results led to a visioning process that addressed land-use planning to meet both conservation and economic needs in the county.

Environmental Context

The Nature Conservancy (TNC) Edge of Appalachia Preserve is an extensive natural area of nearly 13,000 acres located along the western edge of the Appalachian Escarpment in southeastern Adams County, Ohio. The Preserve harbors 15 distinct plant communities, several of global concern. The Preserve also contains extensive areas of alkaline cliff and alkaline talus slope community types. Although not highly ranked global communities, the latter two community types contain known occurrences of the state-listed endangered Allegheny woodrat and the green salamander. The site contains more than 100 known occurrences of state or federally listed rare plant and animal species.

The three greatest threats at the Preserve are heavy or clearcut timbering, increasing subdivision of farms for homes and recreation, and watershed degradation by poor farming practices. Hunting and destructive root-digging have been somewhat problematic for the Preserve. Illegal dumping, always a waste disposal solution for poor families, became an increasingly critical issue after Ohio EPA closed the Adams County landfill in the mid-1980s. Illegal dumping remains a systemic problem because residents claim that it is too expensive to haul their trash 50 miles to the closest landfill or pay someone else to do it for them.

Assessment Readiness

As pressure increases to develop the area surrounding the Preserve for new jobs and weekend cottages, the decisions residents and local officials make will inevitably affect the environment. The absence of land-use planning in this community makes protecting the area's rare and threatened species particularly challenging. Both TNC and its partner, the Cincinnati Museum Center (CMC), must take an active role in decision-making to ensure that one value, the environment, is not sacrificed for another, the economy.

The Preserve exists side by side with established communities and economic enterprises. This proximity requires the Preserve staff to seek the communities' active support to achieve local conservation goals. Partnerships with local, state, and federal agencies will also be essential to protecting this larger landscape. As the Preserve's management prepared to implement conservation initiatives and sought to develop viable, long-term solutions to many of the area's problems, it recognized that it must establish a more community-oriented conservation plan. Such a plan required a better understanding of the community's attitudes and values, particularly its economic development and conservation goals. A community assessment would help the Preserve's

management make tough decisions by identifying local environmental issues; economic concerns; key persons and institutions, and the degree of public confidence in them; community priorities; attitudes toward land-use planning; and public perceptions of TNC and CMC.

Assessment Approach

In June 1996 U.S. EPA's Office of Policy entered into a cooperative agreement with TNC to build both organizations' capability to engage in community-based conservation and environmental protection. EPA and TNC agreed to conduct a community cultural assessment in the community adjacent to the Preserve.

Participants formed an assessment team composed of TNC staff from the Preserve, the Ohio Chapter, and the national office; CMC staff at the Preserve; and staff from EPA's Region 5 and Office of Policy. Later in the project a representative of a private public opinion research firm and a university professor of rural sociology joined the group to provide technical assistance in the social sciences. During the team's initial meeting, Preserve staff presented a snapshot of the Preserve and their impressions of the community to the assessment team and identified conservation and other community issues they wanted to test in focus groups, surveys, and one-on-one interviews. The issues and concerns the Preserve staff raised served as the starting point for much of the public opinion research.

The assessment team decided to conduct two focus groups to establish the basis for developing questions and language that would be used in the survey. The purpose of the focus groups was to examine in depth resident's range of attitudes on quality of life, economic and conservation issues, how people react to and evaluate specific pieces of information, and how people reach judgments based on that information.

The team wanted one focus group to include representatives of Adams County's larger farms and the second group to include non-farmers. In addition to personal or family land ownership, participants in both groups were to have lived in the county for at least 15 years. The participants were to include people from all parts of the county. Based on these criteria, a Cincinnati-based research firm recruited 15 participants and TNC staff assisted in identifying long-established farming families.

The assessment team worked with the public opinion research firm to develop a focus group discussion guide. The focus groups had the following characteristics:

- ☑ One focus group included residents from large land-owning families (100+ acres), most of whom were farmers.
- ☑ The second group included non-farming residents whose families owned fewer than 100 acres of land.
- ☑ Most participants were middle-aged with diverse incomes and levels of education.
- ☑ Each focus group lasted approximately 90 minutes.
- ☑ The groups were videotaped, and the conversation was transcribed onto paper.
- ☑ Participants were paid $75, an unusually high fee mandated by the strict recruitment criteria.

After reviewing the focus group discussions, the assessment team developed a survey questionnaire with 24 questions. The objectives of the survey were to quantify opinions heard in the focus groups and to obtain a baseline of county residents' attitudes on the community, environment, economy, and local land-use and conservation issues. Using a random-digit dial sample of phone numbers in Adams County, professional telephone interviewers surveyed

400 county residents. Each interview required approximately 15 minutes.

As a third component of the assessment, an Ohio University professor of rural sociology and graduate students conducted 24 personal interviews of county residents with diverse occupations, ages, lengths of residence in the county, and levels of education. The interviews tested the conclusions of the focus groups and poll and provided a mechanism for more in-depth discussion than the other assessment methods.

The researchers based their interview questions on issues explored in the focus groups and poll, reviewed their questions with TNC staff, and pretested them with an Adams County resident. After the test they made some minor changes in the order and wording of the questions. Each interview lasted about an hour. Interviewers recorded the interviews on tape and took extensive notes on the conversations. After completing the interviews, the researchers analyzed the information by topic and compared the results with the telephone survey and focus group data.

In addition to the focus groups, survey, and interviews, two local newspapers underwent three months of content analysis (refer to **Content Analysis** on page 205).

Analysts contacted the Manchester Public Library to confirm access to both papers' back issues. They scanned the papers for articles that might have any environmental, conservation, natural resource, or quality-of-life content and analyzed the material to determine the frequency of articles and a list of terms, organizations, individuals, and community events related to community life and the environment. The entire exercise took six hours.

Results of Assessment

Generally, the assessment found that the residents of Adams County:

- ☑ Had a deep appreciation for the small town atmosphere in a natural setting.
- ☑ Were very offended by illegal dumping.
- ☑ Felt that the economy was not doing well, that something must be done to attract development, and that creating jobs in the community was the most important issue.
- ☑ Wanted to see some development, but not at the cost of the environment, and envisioned only fairly traditional solutions (e.g., manufacturing, but prefer small business to large).
- ☑ Supported strongly the notion of a community-generated land-use plan.
- ☑ Lacked confidence in local government and did not believe local authorities can or will solve county problems.
- ☑ Valued places in nature such as Ohio Brush Creek, Buzzardsroost Rock, Cedar Falls, and Lynx Prairie.
- ☑ Did not know who owns the Edge of Appalachia Preserve, were unclear about its size and function, and in some cases did not like the use of the name "Appalachia" because it implies "hillbillies."
- ☑ Felt that the Preserve fills a role in protecting nature and wildlife and educating children but that it is not an economic benefit.
- ☑ Had generally favorable impressions of TNC and CMC.

Value of Assessment

TNC, CMC, and other local organizations are using the information the assessment generated to develop a strategy to address community

Content Analysis

Analysts reviewed two local newspapers in Adams County, Ohio — *The Signal* and *The People's Defender* — for a three-month period (approximately August 1 to October, 1996).

Each reader took one newspaper set and scanned each page for articles that might have any environmental, conservation, natural resource, or quality of life content. The readers conducted content analysis of the stories to determine the frequency of articles mentioning key groups, places, and terms the assessment team had identified, as well as other relevant information. Each reader used content analysis worksheets to record the information collected. The findings from the content analysis are presented below.

The Manchester Signal
8/1/96–10/24/96 (weekly publication)

Groups and Places: The Signal

In *The Manchester Signal*, the most frequently mentioned groups, as found in a weekly column outlining their meetings, were:

- Adams County Commissioners
- Adams County Extension

Other groups mentioned included:

- Adams County Historical Society (10 times)
- Adams County 4-H Society (4 times), Adams County Buckeyes 4-H (additional 2 times)
- The United Nations, Davis Memorial State Nature Preserve, Granges (Pomona and Jerusalem), and Ohio EPA (each 3 times)

Several other groups and places were mentioned 2 times (partial):

- Ohio Department of Natural Resources
- Ohio Department of Natural Areas/Preserves (beaver program)
- Adams County Engineers' Garage (trash hauling)
- Adams Brown Recycling
- Adams County Soil and Water Conservation
- Shawnee Nature Program
- Audubon Society

The following places and groups, although scanned for, did not appear in headlines or articles for this period of *The Signal*:

- The Nature Conservancy
- Cedar Falls
- Lynx Prairie
- Buzzards Roost Rock
- Edge of Appalachia
- Ohio Brush Creek
- Natural Resources Conservation Service
- Farm Bureau

A review of the raw data sheets indicates other groups and places were mentioned in *The Signal* during this time frame.

Terms: The Signal

The readers began the content analysis with 20 preselected terms for which to scan. They added six other terms or phrases related to the environment that they also found. The terms included:

- Environment, environmental, or environmental protection (5 times)
- Litter (4 times)
- The Peebles sewer line proposal and its environmental impact statement (8 times)
- Riverboat gambling (5 times, primarily letters to the editor); was included as an example of a citizen-mobilized action campaign, which might be a model for similar campaigns in Adams County
- Illegal dump sites and illegal dumping (4 times). Specific dump sites mentioned were Abner Hollow, Blacks River, and Waggoner
- Nuclear waste and disposal (3 times) in a series of letters to the editor
- Water pollution, in the context of drinking water (2 times)

Other terms that were found only once included:

- Conservation
- Extinct species
- Recycling
- Clean air
- Water pollution (general, not drinking water)
- Mussels

(Continued)

Content Analysis (continued)

The following terms were looked for, but not found in this content analysis:

- Agriculture
- Best management practices (BMPs)
- Ecology/ecological
- Ecosystem
- Mushrooms
- Tourism
- Trash, trash disposal/household waste
- Weekend residents
- Waste management
- Watersheds

Key Community Events: The Signal

The following is a sample of key community events listed in *The Signal*:

- Manchester Annual Kinfolks Landing Days Annual Gospel Sing (Sponsor: A.C. Christian School).
- Ripley's 15th Annual Quilt Show (Sponsor: Ripley Heritage, Inc.).
- 6th Annual Gathering of Appalachian Artists.

People Cited in Articles: The Signal

- Don Young, Director, Adams County Economic Development.
- Bonnie Shively, Columnist, *The Signal*, "Love Reflections."
- Paul Worley, Boy Scouts Eagle Badge Project.
- Stephen Kelley, President, Adams County Historical Society.
- F. R. Duplantier.
- Barbara Lund, Audubon Society, Appalachian Front.
- Robert Sokolowski, Director, Local Development Districts.
- Nancy Henry, Highlands Nature Sanctuary.
- Robin Stephenson, Agricultural Extension News.
- Mary Moyer, President, M.A.
- Rev. Ben Little, County Coordinator, River Boat Gambling.

Reader Analysis: The Signal

Reading through three months of *The Signal* resulted in the following insights from the analysis:

- **Religion** apparently plays a strong role in shaping the daily lives of residents, particularly the Christian tradition. The front page of *The Signal* has a standard column, "Prayer Changes Things." There is also a column by Bonnie Shively, "Love Reflections," which on two occasions linked spiritual beliefs with the natural environment. Page 3 of *The Signal* lists all churches in the area and church events.
- **Local festivals** appear to be a prime gathering and networking event for the community. At least four festivals were written up in the time frame, many of which were annual events stretching back decades, linked to historical and harvest events.
- **Taxes** are a prominent issue, with lots of coverage, especially due to the Manchester tax debate at the time.
- **FDA** and federal action about tobacco were mentioned only once (8/29/96 *Signal*), "FDA action [on tobacco] could bankrupt farmers."
- **Appalachian Gateway Center** proposed for Shawnee State Community College might be an interesting opportunity. It might have an information center, museum, meeting rooms, etc.
- **Schools** seem to be a very big part of the community, with school news taking up a lot of page space, news reported by school and class, and regular columns on education by Superintendent of Schools.
- **Scouts and 4-H** received much coverage. Projects relating to environment, plants, and animals were given coverage.
- **Traffic deaths** in Adams County seemed to make every other *Signal* front page.

This content analysis was conducted with a minimal amount of resources with readily available materials. The information gained can be used, along with results from other methods, to construct a social network map, understand and use terms with which the community is familiar, identify and interact with key groups and individuals engaged in conservation and environmental issues, target public gatherings for potential information campaigns, develop potential outreach strategies that engage local media, and begin to determine which aspects of the community are most important to Adams County. Using the results of this method, TNC has initiated discussions with the editorial staff of local newspapers regarding newspaper coverage of the Edge of Appalachia Preserve.

Source: People's Defender, 1996.

conservation issues. The finding that residents are receptive to local land-use planning, one of the surprising discoveries, might be key to stimulating local planning. The assessment also suggested ways to address what residents perceived to be the most significant local problem: the need for economic development and jobs.

The assessment team has shared the results of the assessment with leaders and opinion-makers, including the Adams County Commissioners, state and federal elected representatives, the county's solid waste authorities (who are involved in illegal disposal issues), other conservation partners, and the local newspaper editor. This outreach has already begun to affect local opinion because the editor has published articles favorable to TNC and the concept of land-use planning. TNC staff also plan to share the information with leaders of community civic organizations.

In early December 1997 TNC conducted a county visioning exercise to explore land-use and economic development issues further. The day-long meeting attracted 50 participants, and at the conclusion 30 people said that they were interested in being involved in the follow-up steps. Because the opinion research provided insights into community attitudes and concerns, it established the basis for this visioning process and gave people confidence that it could succeed.

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Reference

The People's Defender. 1996. Published at 229 North Cross Street, P.O. Box 308, West Union, OH. phone: (937) 544-2391. Internet: www.peoplesdefender.com.

COMMUNITY 2

Nebraska's Central Platte River

A telephone survey, focus groups, and in-person interviews were used to assess the environmental attitudes and knowledge about wildlife habitat and water quality and quantity issues of people living in Nebraska's Central Platte region. Based on the results, The Nature Conservancy of Nebraska is increasing its education and public outreach efforts about threats to the Platte River.

Environmental Context

The central Platte River region of Nebraska supports the Great Plains flyway of central North America. The expansion of irrigated, chemical-based agriculture and urban population growth have caused large-scale conversion of prairie habitat to other uses. The use of pesticides and synthetic fertilizers has degraded the Platte River's water quality, altered the food supply of migrating birds, and lowered the quality of drinking water supplies. Irrigation development and urban demands on water have also decreased the quantity of water delivered to the central Platte area of Nebraska, reducing migratory bird habitat.

Assessment Readiness

The Nature Conservancy (TNC) preserves exist side-by-side with established communities and economic enterprises, particularly intensive irrigated farming. This proximity requires that TNC's staff seek the communities' active support to achieve local conservation goals. As agriculture and other development pressures continue to reduce habitat, the decisions urban dwellers, farmers, and local officials make will inevitably affect the environment. Partnerships with local, state, and federal agencies will also be essential to the protection of this larger landscape. TNC's conservation goals for the mid-Platte, the need for Conservancy staff to be more involved in the community, and EPA's need to develop solutions to the Platte's complex water quality and allocation problems made the mid-Platte a good location for conducting community cultural assessment techniques.

Assessment Approach

A community cultural assessment would help TNC staff better understand the community and develop conservation plans consistent with the community's needs. Specifically, a community assessment would help by identifying local environmental issues; economic concerns; key persons and institutions, and the degree of public confidence in them; community priorities; attitudes toward the Platte River and the habitat it provides for wildlife, water quality and quantity issues; and public perceptions of local organizations.

The assessment team, composed of TNC and EPA staff, a private consultant, and a university professor (both of whom provided technical assistance in the social sciences) decided to conduct two focus groups, a public opinion survey, and 31 one-on-one interviews in the Platte River region. The design of these methods was based on TNC staffs' impressions of the community, and their identification of other community issues about which they wanted to collect information. The issues and

concerns the Conservancy staff raised served as the starting point for much of the public opinion research. The team planned to compare the information generated by the three research methods to develop a more accurate view of the community, a process known as triangulation.

To begin the assessment, the team developed a survey questionnaire with 35 questions. The objective of the survey was to obtain a baseline of county residents' attitudes on the community, environment, economy, water quality and quantity issues, and other conservation issues. The assessment team used the survey to identify issues that they wanted to explore in greater depth during the focus group sessions.

Using a random-digit dial sample of phone numbers in the mid-Platte area, the private consultant surveyed 500 area residents. The consultant stratified the survey sample geographically to obtain 100 interviews in each of 5 distinct communities within the region. The objective was to gain a representative evaluation of the attitudes held by rural and urban residents toward conservation issues. Professional telephone interviewers conducted the survey. Each interview lasted approximately 17 minutes.

The assessment team worked with the private consultant to develop a focus group discussion guide based on the results of the survey. The team then conducted two focus groups. The purpose of the focus groups was the in-depth examination of residents' range of attitudes on quality of life, economic and conservation issues, how people react to and evaluate specific pieces of information, and how people reach judgments based on that information.

A marketing research firm recruited the participants using the criteria the assessment team had developed. Based on these criteria, all focus group participants were over the age of 21 and had lived in the area for at least 15 years. The first group consisted of nine residents from two cities, Grand Island and Kearney. The group was diverse, including middle-aged and older people, both genders, and both long-time and relatively recent residents. The second group consisted of farmers from small towns. The eight men and two women in the second group were recruited through the use of the following question: "Do you or does someone in your immediate family currently own and operate a farm or ranch?" Each focus group lasted approximately 90 minutes. The groups were videotaped, and the conversation was transcribed onto paper. Participants were paid a $50 fee to compensate them for their time.

Following the poll and focus groups, a professor of rural sociology from the University of Nebraska-Lincoln conducted 22 face-to-face, semistructured interviews with influential community members and representatives of interest groups (agricultural producers, public power utilities, and environmental groups). The professor also conducted nine additional interviews to identify any differences in community perceptions that might exist. The professor structured the sample to ensure that at least one interview occurred within each primary municipality in the study area. In contrast to the structure of the focus groups and poll, which addressed a range of community and conservation issues, the interview questions focused much more on the interviewees' opinions and relationships with the Platte and regional water issues. Each interview lasted about an hour.

Results of Assessment

Research participants in the mid-Platte River area shared a strong appreciation of the region's natural beauty. They respected the land, recognized their historical relationship

with the river, and valued the birds, especially the cranes, which use the riparian habitat as a migratory stopover. Respondents were generally satisfied with and wanted to ensure the quality of the environment. They wanted to protect open space, crane habitat, wildlife, air and water quality. Residents appreciated the quality of life in their rural community, but they were concerned about taxes, government regulation, and the need for economic growth to offer opportunities for their children.

Respondents, and especially the representatives of interest groups involved in the one-on-one interviews, were aware of potential conflicts between water use and environmental protection. But they did not acknowledge them as threats to their environmental values or view them as being especially serious. Relatively few residents viewed the community's water problems as very significant. Even most of those who considered water issues to be serious did not support water use reductions by the major user, agriculture. Similarly, they did not seem to recognize the importance of the reduction in bird habitat.

The Platte River residents who took part in the research wanted both economic growth and environmental protection. If water conflicts were to lead to a crisis in their competing values, respondents hoped for a compromise that would enable cities and their economies to grow, allow irrigated agriculture to continue, protect the cranes, and preserve the river's aesthetic and environmental qualities. At the moment, however, many appeared to think that the competing interests are in balance, or at least not far off-balance. No sense of crisis existed, but there was a sense of unease as those with economic stakes in the status quo, particularly farmers, saw government and environmentalists threatening to bring changes.

Strong agreement existed on the need to build community consensus among all the interest groups for a long-term plan for the river, although they could not envision how this consensus would come about. No trusted sources of information or community leaders or institutions that could serve as a catalyst for forging this consensus appeared to exist.

Value of Assessment

Following the assessment, TNC and EPA held a meeting for the assessment team to discuss the results of the project and to develop community outreach and participation strategies. The assessment team defined nine separate (but somewhat overlapping) strategies and brainstormed specific outreach objectives:

- ☑ **Education:** hold open houses; educate the public, farmers, and future farmers regarding grasslands; disseminate conservation messages through trusted sources; target elementary and other schoolchildren; create a range of educational forums, some led by farmers, some by TNC and EPA.
- ☑ **Restoration and management** (stewardship)
- ☑ **Public outreach and involvement:** hold a TNC working session on increasing water flows; create a brochure to describe conservation benefits to the public; create videos, T-shirts, and other marketing materials; summarize assessment information and disseminate it to the community; create opportunities for conversations about conservation at informal social events; keep the regional EPA office involved in the project; build the self-esteem of farmers, perhaps with field trips to farms.
- ☑ **Communications:** establish relations with media; issue press releases; write conservation columns in local papers; consult with

public relations experts within TNC; do radio and newspaper interviews; place a TNC placard at Cornhusker games; produce and release human interest stories about the Platte.

- ☑ **Build organizational capacity:** increase the budget to increase staff by one full-time employee; increase the volunteer pool in the Kearney/Grand Island area; find a social science volunteer; educate the TNC board about Platte assessment and budget needs; establish a mid-Platte Working Group (and later, an Advisory Group); build capacity to obtain more native grass seeds.
- ☑ **Stakeholder involvement:** target key individuals for one-on-one relationships; finish the stakeholder analysis; develop a systematic approach to landholder outreach; involve farmers on advisory boards; convene stakeholder group, including critics, to dispel myths and to create common statements; involve agency personnel and teachers in outreach, science, and agriculture.
- ☑ **Research and science:** undertake irrigation management research in cooperation with farmers; conduct alternative restoration methods; develop indicators of success.
- ☑ **Partnerships:** work with corn growers on filter strips (an activity that could generate new sources of funding).
- ☑ **Policy involvement:** work with agencies and private sector on mitigation projects that will benefit Platte River ecosystems.

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COMMUNITY 3

Community and Pollution Prevention in Nogales, Arizona — Household and Business Perspectives

Semistructured interviews of business representatives and residents were used to help the City of Nogales develop educational materials, products, and programs to encourage residents and businesses to use pollution prevention techniques.

Environmental Context

Nogales, Arizona, is located within the upper Santa Cruz River Basin on the U.S.-Mexican border. As the largest city in Santa Cruz County and an important port of entry between the United States and Mexico, Nogales faces "big city" environmental problems. A major environmental problem in Nogales is groundwater contamination. Coliform bacteria and volatile organic compounds have been found in groundwater samples in various parts of Nogales, indicating that the contamination originates on both sides of the border. Because of the diffuse nature of the contamination, groundwater quality in Nogales depends on community efforts to prevent the release of sewage and toxic chemicals. Although Nogales has a history of environmental problems, the public is largely uninformed about these issues.

Assessment Readiness

To address Nogales' environmental problems, the city established the Environmental Justice Through Pollution Prevention (EJ/P2) Program. The primary goal of the EJ/P2 Program is to encourage both residents and businesses to use pollution prevention techniques. Elements of the program include

- ☑ Technical assistance to local businesses on pollution prevention.
- ☑ Incentives to businesses for practicing pollution prevention.
- ☑ Public education activities to empower local residents to implement pollution prevention in their homes, and to advocate the adoption of pollution prevention by Nogales' businesses.

As part of the EJ/P2 program, the city of Nogales began a new program, Community Leadership and Environmental Awareness in Nogales Neighborhoods (CLEANN), to achieve the following goals:

- ☑ Create an audience receptive to environmental information.
- ☑ Promote community involvement in addressing environmental problems.
- ☑ Educate residents of neighborhoods about environmental problems and create pollution prevention advocates.
- ☑ Gain an understanding of what sustainable development means in Nogales.

To be successful, more information was needed to refine the EJ/P2 Program.

Assessment Approach

At the outset of the EJ/P2 Program, city officials wanted to identify local perceptions of pollution problems in Nogales and assess the

willingness to practice pollution prevention. To collect this information, researchers from the University of Arizona's Bureau of Applied Research and Anthropology conducted semistructured interviews of business representatives and residents in Nogales.

Researchers developed two types of interviews — one for local businesses and one for households. For both types of interviews, researchers needed to ensure effective communication with the bilingual community of Nogales and to gain the trust of participants. To ensure effective communication, the researchers

- ☑ Had all written materials translated into Spanish by native and proficient speakers of Spanish.
- ☑ Conducted interviews using a bilingual team that asked each interview participant which language they preferred.
- ☑ Coded all interviews by the same team responsible for leading the interview.
- ☑ Worked through community contacts and guaranteed participant confidentiality.

Businesses Interviews

A four-part interview was developed to collect information from businesses in Nogales about the following:

- ☑ Characteristics of the businesses, including their primary activities and size.
- ☑ Perceptions of pollution.
- ☑ Suggested steps the city should take in a pollution prevention program.
- ☑ Personal demographic information.

With help from the City of Nogales, business lists, and the local telephone directory, researchers selected businesses from four targeted sectors — automotive, dry cleaners, finishers and processors, and pesticide applicators. Interviews lasted approximately one hour and were conducted over several weeks using two bilingual teams of two researchers each. One researcher per team asked questions and recorded answers on the interview form. The other researcher took notes on the interview, described the physical appearance of the shop, and recorded other notes of potential interest to a pollution prevention program (e.g., waste stream assessment).

Household Interviews

Using the business interview protocol as a foundation, researchers designed the household interviews to complement the data gathered during the business interviews and to collect information from participants about problems facing Nogales' neighborhoods and communities. The four-part household interview asked the following:

- ☑ Background information about the neighborhood and the participant, including length of residence, family ties, and perceived role in the community, definition of boundaries or limits of their neighborhood, and frequency and destination of their trips outside Nogales.
- ☑ Perceptions of the problems facing their neighborhood and Nogales, including pollution.
- ☑ Opinions about the future, including perceived changes in the environment and the area's population.
- ☑ Personal demographic information, including gender, age, education, and community involvement.

Researchers attempted to interview individuals from a variety of subsections in the Monte Carlo neighborhood of Nogales, a representative microcosm of the city. They selected households based on previous contacts in the community and door-to-door visits. The

researchers conducted the interviews in the same manner as the business interviews, although there were occasionally one or more participants in the household interviews.

Results of Assessment

Business interviews resulted in the following:

- ☑ Factors such as age, gender, ethnicity, educational level, and size of business do not play a role in business participants' perception of pollution. Researchers concluded that these factors cannot be used to identify businesses willing to participate in a pollution prevention program.
- ☑ Researchers identified factors that might influence potential participation in pollution prevention programs. They include
  - an individual's past experiences
  - work schedules
  - technical assistance
- ☑ Options for recycling and disposal of business-related waste need to be made available locally.
- ☑ More information on pollution prevention options should be made available in Nogales.
- ☑ Problems need to be resolved at the federal and international level before local pollution prevention efforts can make a difference.

Household interviews resulted in the following:

- ☑ Less than 10 percent of interviewees included pollution among the three biggest problems they face. Most participants cited crime, youth gangs, and automobile traffic as concerns.
- ☑ Residents have a disparate view of their neighborhood. Researchers concluded that neighborhood identity does not exist in Monte Carlo.
- ☑ Residents want assistance in establishing programs and opportunities for youth, improving community infrastructure, and increasing security in the neighborhood to foster community spirit.

Value of Assessment

The results of the business interviews contributed to the development of community-appropriate pollution prevention guides for targeted business sectors. Using interview data, researchers selected four formats to convey pollution prevention information to Nogales businesses.

- ☑ Posters
- ☑ A pollution prevention hotline
- ☑ Sector-specific seminars
- ☑ Public service announcements on local radio stations

The City of Nogales used the household interview data to support the business interview data and to assist in developing the objectives of CLEANN.

This project cost approximately $25,000. Funding was in part from an EPA grant for environmental justice through pollution prevention. Through a partnership with the City of Nogales and the University of Arizona's Bureau of Applied Research in Anthropology, many university students worked on this project as interns; this type of labor reduced the project costs.

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Reference

Bureau of Applied Research in Anthropology. 1997. *Community and Pollution Prevention in Nogales, Arizona: Household and Business Perspectives*. University of Arizona, Tucson, AZ.

COMMUNITY 4

The "Chip Mill" Issue and Sustainable Forestry in North Carolina

Background research, observation, and both formal and informal interviews were used to identify stakeholders and their concerns about a growing chip mill controversy in this North Carolina community. Results will by used in the Department of Environment and Natural Resources chip mill impact study.

Environmental Context

Increased consumption and multiple use demands on western North Carolina forest resources threaten the region's ecological sustainability. The recent proliferation of wood chip mills appears to cause some of the greatest controversy among disparate groups and community members.

This project focused on one particular stakeholder group, a grassroots organization named the Concerned Citizens of Rutherford County (CCRC), which formed in opposition to the proposed construction and operation of a Willamette Industries, Inc., wood chip mill in the rural farming community of Union Mills.

The group's successful opposition prompted the North Carolina Department of Environment and Natural Resources (DENR) to undertake an impact study of the proposed chip mill that would analyze the current conditions of forest resources and show the cumulative socio-economic and ecological impacts of the project.

Assessment Readiness

The CCRC had identified its concerns about the chip mill issue and was facing a very controversial situation. A multitude of stakeholders were involved, including community groups; members of environmental and wildlife organizations; forestry, pulp, and paper industry personnel; and state and federal government agencies. The CCRC needed help clarifying the situation.

Assessment Approach

An anthropologist gathered ethnographic data through numerous methodologies:

- ☑ Collecting contextual information from literature and other sources.
- ☑ Undertaking participant observation at various meetings and public events.
- ☑ Performing numerous formal and informal interviews with individual stakeholders.

The study focused on the following questions:

- ☑ Who participates in and what are their perceptions of development and sustainable forestry issues?
- ☑ What information do participants use to make development decisions?
- ☑ How is information interpreted and applied in solution-seeking processes?

Results of Assessment

The first significant and useful finding of the chip mill study regarded the identification and characterization of stakeholder groups. The

researcher discovered that the chip mill issue in Union Mills affected an unanticipatedly broad range of groups. Furthermore, these groups held differing perceptions of key terms and ideas, such as sustainability and forest health, both between groups and among their own members. These differences often created misunderstandings and escalated tensions between groups. The findings also concluded that inaccurate information and predictions about forest health and other issues have led local communities to respond with increased environmental protests, alternative land-use choices, and other forms of action, while forcing scientists and the timber industry to reevaluate their approaches to sustainability and local communities.

As for delineating issues in the chip mill controversy, data indicate five broad areas:

- ☑ Air quality and noise problems associated with chip mill operations.
- ☑ Quality of life, safety, and infrastructure capacity concerns related to increased truck and train traffic.
- ☑ Conflicts and confusion over property rights, land management, and societal responsibility.
- ☑ Issues associated with clear-cutting hardwood forests.
- ☑ Water quality improvement and wildlife protection issues.

Value of Assessment

The anthropologist was able to identify stakeholders and their concerns and organize and facilitate several consensus-building public meetings that explored potential impacts of the proposed chip mill. The anthropologist suggests that progress on the chip mill issue as a whole depends upon reaching agreement over core issues such as the vulnerability of the forest and the need for broad stakeholder participation in crafting solutions. Results ultimately will be incorporated into the upcoming two-year DENR chip mill impact study, funded in part by EPA's Region 4 and undertaken jointly by Duke University's Nicholas School of the Environment and North Carolina State University's Forestry School.

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COMMUNITY 5

Social Assessments of Well-being in Forest-dependent Communities of the Sierra Nevada Region

The Sierra Nevada Ecosystem Project used Census data, maps and geographic research, and workshops to identify population segments in the Sierra Nevada region and to assess community capacity in 180 study communities. Regional leaders are using the results to incorporate the needs of communities with a low level of well-being into local management plans.

Assessment Readiness

Requested by Congress in 1992, the Sierra Nevada Ecosystem Project (SNEP) was an assessment of the entire Sierra Nevada ecoregion, including social, economic, and ecological components. The overall goal of SNEP was to provide an accurate assessment that would facilitate sustainable ecosystem management. To assess the state of community well-being throughout the Sierra Nevada region, SNEP researchers sought to analyze both socioeconomic measures and community capacity.

Assessment Approach

Assessment of well-being in the Sierra Nevada forest-dependent communities required the use of several assessment methods, including Census data research, community capacity workshops, and mapping. Determination of a "community" within the Sierra Nevada region entailed the use of both Census data research and local knowledge. Researchers also used Census data to calculate the socioeconomic status of communities within the region. To identify community capacity, researchers called upon local expert knowledge. Finally, researchers wanted to explore the relationships among socioeconomic factors, community capacity, and the surrounding ecosystem through a spatial analysis.

To begin the assessment, SNEP researchers had to geographically define communities within this region. This step required the use of data from the 1990 Census of Population and Housing. Researchers reviewed the different geographic levels of data, including county, places (incorporated areas and Census-designated places), and blocks available from the U.S. Census Bureau, looking for a level that would provide consistent data and adequately represent variations of social conditions within counties. Researchers selected one of the smallest units used by the Census Bureau, the block group, to help them begin to define communities in the Sierra Nevada region. Through their Census data research, SNEP researchers discovered that block groups are defined by geophysical features. This created a problem because communities do not always define themselves according to the physical features of their environment. As a result, several Census Bureau block groups might fall into one community.

To resolve this issue, researchers developed a process to cluster block groups. This clustering process involved input from local experts who knew the characteristics of each community. From 720 block groups, researchers and local

experts developed 180 clusters, or communities, for use in the assessment. The clusters were formed from block groups in which the majority of the population represented a single community and had a minimum total population of 500. In areas without clearly identifiable communities, the researchers based clusters on geographic features.

To characterize the socioeconomic status of these block group clusters ("study communities") and compare socioeconomic trends across the Sierra Nevada, researchers developed a socioeconomic scale using Census data. The scale incorporated the following socioeconomic measures: housing tenure (level of owner-occupied housing versus renter-occupied housing); poverty; education; employment; and children in homes with public assistance income. Using the socioeconomic scale, researchers could assign each study community a score of 1 to 7, 1 being the lowest and 7 the highest.

Community capacity, as it is used in the SNEP social assessment, is a community's ability to respond to stresses, create and take advantage of opportunities, and meet the needs of residents using physical, human, and social capital. To assess community capacity in the 180 study communities, researchers organized a series of workshops. These workshops assembled between 3 and 18 participants, depending on the area and number of study communities to be assessed. Researchers selected participants they considered to be knowledgeable about the physical, human, and social capital of the study communities based on the nature of their profession, local involvement, or history of residence (e.g., community planners, health and human service providers, long-term residents).

Through the workshops, participants completed a community capacity evaluation for a particular study community. Participants were assigned a study community with which they were most knowledgeable, and they completed a community capacity worksheet that included a narrative assessment and a rating. After completing the rankings, the group as a whole discussed the findings for each study community and determined a final ranking.

In addition to characterizing by socioeconomics and community capacity, researchers attempted to geographically characterize each study community. Geographic characterization involved mapping the community itself and the following geographical features: population centers, infrastructure, services, transportation corridors, and areas dominated by public lands.

Results of Assessment

Results of the Sierra Nevada Ecosystem Project social assessments results include the following:

- ☑ Six distinct regions exist based on transportation corridors, commute patterns, economies, and community identification.
- ☑ Socioeconomic conditions and community capacity vary among the six social assessment regions, as well as across the Sierra and within each of the regions.
- ☑ Study communities with lower socioeconomic status and low community capacity have the lowest level of well-being, and vice versa. Those with low community capacity and high socioeconomic status might not have the same level of well-being as those with high community capacity; however, the state of well-being in these study communities is less affected because residents can purchase services to meet their needs.

Value of Assessment

The overall results of the assessment were intended to aid in developing policy options for

resource management in the Sierra Nevada region. An example of this comes from the Tahoe Basin, where researchers identified one area of lower well-being among communities of high well-being. These findings have prompted leaders in the area to develop plans that will respond to lower well-being issues identified through the assessment process.

The community assessments (180 communities in 20 counties) cost approximately $125,000. County planners provided technical assistance during the iterative process of defining study communities using Census Bureau block groups and developing the associated maps.

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COMMUNITY 6

Forces of a River — The Kenai River Community Forum

The Kenai River Community Forum (a meetings assessment method) brought together public and private stakeholders in the watershed to develop a vision and actions for ensuring the long-term health of the community's natural resources.

Environmental Context

Draining 2,200 square miles, Alaska's Kenai River watershed encompasses mountains, glaciers, spruce forests, numerous tributaries, large and small lakes, and extensive wetland complexes. Glaciers on the Kenai Peninsula created the special characteristics of the Kenai River that today make it a source of exceptional biological diversity. The watershed system supports 37 species of fish, including 5 species of salmon and 31 species of mammals. Some of the species, such as brown bears, beluga whales, timber wolves, and river otters, are rarely found elsewhere in the United States.

Assessment Readiness

Humans have also settled on the Kenai. Unfortunately, the effects of overcrowding, increased recreational use, erosion, urban pollution, and development of wetlands, floodplains, and riparian habitat are causing problems. These stresses are accumulating with increasing pressure and threaten the long-term health of the Kenai River and its resources.

Assessment Approach

Faced with this situation, private and public stakeholders of the Kenai River watershed reached consensus that immediate actions were required to prevent irreversible damage to the watershed. The stakeholders realized that comprehensive community involvement was the only way to ensure the long-term effort necessary to achieve and maintain positive change. To this end, The Nature Conservancy (TNC) of Alaska spent nine months working with a Steering Committee composed of community residents that represented the various interests on the Kenai River to plan and design the Kenai River Community Forum.

The purpose of the Kenai River Community Forum was to bring outside experts and community members together to share information and knowledge about the Kenai River, and to encourage community involvement in maintaining the river's health and productivity.

The Steering Committee's responsibilities included selecting and inviting Forum speakers with expertise on river issues and community organizing, promoting the Forum to the community, and designing provocative questions that would engage the Forum's participants in meaningful discussion and encourage thoughtful action.

More than 145 people participated in the weekend-long Forum, which was part entertainment, part information-sharing, and part discussion. People had an opportunity to celebrate their connection with the river, become better informed, and engage in thoughtful dialogue about the future of the Kenai River. Entertainment included the Kenaitze Indian Tribe dance group, a play by the K-Beach Elementary School

Adopt-a-Stream program, and great food donated by local restaurants.

Invited speakers included Dan'l Markham of the Willapa Alliance, who explained the principles and concepts behind community-based conservation; Luther Propst of the Sonoran Institute, who provided examples of how other communities had come together to solve their conservation challenges; and Chris Frissell, a watershed scientist expert on the relationship between land use and salmon population declines in the Pacific Northwest. The Forum also included informational workshops on the following topics:

- ☑ How watersheds function
- ☑ Low-impact recreation and site planning
- ☑ Economic values of the Kenai River
- ☑ Habitat restoration
- ☑ Conflict resolution

Following the workshops, Forum participants divided into seven discussion groups to answer questions that led them to a discussion of how, as a community, they could work together to maintain the health of the Kenai River. The discussion was the most illuminating part of the weekend. It focused on three primary questions:

- ☑ What do you value most about the Kenai River?
- ☑ What is your vision for the Kenai River watershed in the next 20 years?
- ☑ What are some specific actions that can move us as a community toward that vision?

Results of Assessment

Forum participants engaged in thoughtful, civil dialogue about these questions and focused primarily on areas of agreement and consensus. The result was the following broad action steps:

- ☑ Encourage comprehensive, watershed-wide land-use planning.
- ☑ Create a non-governmental citizens' organization to be a voice for the Kenai River.
- ☑ Support and encourage river-friendly economic development.
- ☑ Improve watershed education.
- ☑ Work with agencies to ensure consistency in management.
- ☑ Protect riverfront lands through purchase of conservation easements.
- ☑ Improve management of angling.
- ☑ Develop funding mechanisms to support conservation activities in the watershed.

Value of Assessment

Since the Forum, working groups have made progress on a number of these action steps. The working groups have

- ☑ Organized and obtained nonprofit status for a new broad-based citizens' organization, the Kenai Watershed Forum.
- ☑ Held additional workshops that continue to develop the ideas from the Forum.
- ☑ Conducted Adopt-a-Stream training for teachers and compatible economic development criteria training for local planners and decisionmakers.
- ☑ Secured the assistance of the Kachemak Heritage Land Trust to offer land-trust tools to Kenai River watershed residents. The Trust, based in Homer, recently opened a Kenai River branch office in Soldotna.

The Nature Conservancy of Alaska has used the information learned at the Forum to assist the community in conservation activities.

The total cost of the Kenai River Community Forum to the Conservancy was approximately $8,000, which included staff time, material costs, copy costs, and consultant fees. Members of the Steering Committee provided additional technical assistance to ensure that the Forum met the needs and spoke to the interests of the community. EPA funded the Forum, and local businesses provided in-kind donations in the form of food, advertising, and gifts for door prizes.

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COMMUNITY 7

Protecting Louisiana Wetlands

The religious characteristics common to coastal Louisiana communities served as a foundation for a series of public forums (a meetings assessment method), held in local places of worship, to address competing environmental and business interests in the prevention of coastal wetland loss. The resulting Louisiana Coastal Wetlands Interfaith Stewardship Plan has strong grassroots support and has spurred statewide measures and attracted federal funding for wetland preservation and restoration.

Environmental Context

Each year, about 35 square miles of coastal Louisiana wetlands wash into the sea. The rapid erosion is threatening natural ecosystems and hundreds of communities located on the delta where the Mississippi River meets the Gulf of Mexico.

Assessment Approach

The Louisiana Coastal Wetlands Interfaith Stewardship Plan, formed in 1986, helped congregations across Louisiana understand the magnitude of the problem and look for possible solutions. Churches and synagogues throughout coastal Louisiana sponsored 20 forums between 1986 and 1988, attracting more than 2,000 people interested in learning why and how to protect and restore wetlands.

The forums were held to engage local citizens in efforts to protect Louisiana's coastal wetlands. There was a great need for constructive dialogue on the issues, after many years of bitter debate between environmentalists and business interests. The forums were sponsored by and held in churches and synagogues because it was perceived that they would provide a more neutral atmosphere that would foster cooperation.

In organizing and conducting the forums, members of the Interfaith Stewardship Plan took the following steps:

☑ **Established a committed leadership group** to organize and run the forums. Members of the leadership group also set the agenda and format for the forums. They encouraged local leaders to supplement the standard agenda with issues of particular local importance.

☑ **Selected locations for forums.** Churches and synagogues were selected because

- They are considered by many to be neutral venues.
- They have congregations associated with them that served as natural pools for participants.
- Members of churches and synagogues were perceived to be receptive to dialogue because of the natural connection between environmental issues and the moral teachings of religious institutions.

☑ **Recruited existing local and regional leaders to participate.** By involving existing church, business, environmental, and community leaders, the forums attracted

larger crowds, including the constituents of these leaders.

- ☑ **Recruited necessary state, federal, and other technical experts.** Experts in coastal wetland loss were valuable participants, making the forums more informative and productive.
- ☑ **Conducted public relations with the congregations of the selected churches and synagogues.** It was critical to attract sufficiently large crowds to impress upon the participating government agencies that attention should be paid to this initiative. Ensuring the participation of local congregations increased turnout.
- ☑ **Conducted forums.** Forums generally consisted of two sessions. First, technical experts from state and federal agencies, as well as other organizations, would give educational presentations. The presentations would be followed by a question, answer, and discussion period involving all forum participants. Forum organizers usually limited the length of meetings to between an hour and an hour and a half to prevent participant fatigue.

  There were no designated recorders at the forums, although representatives from state government usually took notes to take back to their respective agencies.

At first the presence of churches and synagogues in a resource conflict puzzled some: "Among my earliest experiences was a meeting at the Department of Natural Resources in Baton Rouge," recalls Rob Gorman, a social worker for Catholic Social Services for the region. "On one side of the room were executives from the Louisiana Chemical Association, Mid-Continent Oil and Gas, and the Louisiana Landowners Association. On the other side were activists from the Environmental Defense Fund, Louisiana Wildlife Federation, and Sierra Club. I was introduced as [being] from Catholic Social Services and virtually all heads turned and someone asked the question: 'What is the church doing here?'

"I explained that religious congregations had to be present because of our understanding of stewardship and our social justice commitment to preserving the jobs of family fishermen and all others dependent upon the resources of the wetlands. Let's call it a moral obligation. Environmental degradation and poverty go hand in hand."

Results of Assessment

The forums focused on generating solutions, rather than assigning blame. Citizens throughout Louisiana learned a great deal about the problem of coastal wetland loss. Leaders from churches and synagogues, and participating state and federal agencies, learned that Louisianans are strongly in favor of protecting Louisiana's coastal wetlands.

A list of solutions to coastal wetland loss proposed by a citizens' group, the Coalition to Restore Coastal Louisiana, emerged with great support from the forums. The Louisiana Coastal Wetlands Interfaith Stewardship Plan was a charter member of the Coalition. The recommendations included the following:

- ☑ Creation of an Office of Coastal Affairs in the Governor's office (adopted).
- ☑ Establishment of a revolving state trust fund to ensure adequate funding for coastal wetland restoration (adopted).
- ☑ Creation of an Office of Coastal Restoration in a state agency with no ties to the issuance of permits for oil and mineral exploration (adopted in part — the office was created, but located in the Department of Natural Resources).

Value of Assessment

The participation of churches and synagogues helped build stronger grassroots support for coastal protection, which spurred a series of important measures. In 1989 voters in the state approved by a three-to-one margin the Louisiana Wetlands Conservation and Restoration Fund. The following year Congress approved the Coastal Wetlands Planning, Protection, and Restoration Act, which included $1.5 billion to help restore Louisiana's wetlands.

The cost of organizing and conducting the forums was minimal. Costs included purchasing coffee and doughnuts for participants; copying flyers announcing the forums, including staff time for copying and posting; and placing notices in church bulletins. Participation by government experts resulted in expenditures within the participating agencies, but these costs primarily consisted of staff time for meeting attendance. These costs were absorbed by the agencies themselves and not passed on to forum organizers.

Participating churches and synagogues, assisted by Catholic Social Services, ran all forums without any assistance from outside technical personnel. However, technical experts from state and federal government did assist in making topical presentations at the forums.

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References

The President's Council on Sustainable Development. 1996. *Sustainable America: A New Consensus for Prosperity, Opportunity and a Healthy Environment for the Future.* Washington, DC. Supplemented with an interview with Robert Gorman, Catholic Social Services, Houma, LA.

COMMUNITY 8

The Strategy for Vermont's Third Century

Town meetings/public forums and a survey were used as part of a comparative risk assessment and helped to prioritize a list of 20 environmental problems to be addressed by the state of Vermont. The results also revealed the need for better outreach and education to increase the public's understanding of actual environmental risks.

Environmental Context

The Strategy for Vermont's Third Century was a two-year comparative risk project initiated to answer the question, "What environmental problems put Vermont and Vermonters at greatest risk?" The goals of the strategy included developing a more accurate understanding of the risks posed by Vermont's environmental problems; sharing information on Vermont's environmental problems with Vermonters; and using shared information to reduce risks.

Assessment Readiness

To achieve the goals of the strategy, the Public Advisory Committee (PAC) coordinating this effort conducted a comparative risk assessment. The PAC, a group composed of multi-stakeholder representatives, focused the risk assessment on ecosystems, human health, and Vermonters' quality of life. The assessment involved the following actions:

- ☑ Identifying Vermonters' perception relating to environmental risks.
- ☑ Estimating the risks posed by each environmental problem.
- ☑ Ranking the problems in order of the seriousness of their risks.

Assessment Approach

To achieve the first step in the assessment process, the PAC needed to select an appropriate method for gathering information on public opinions and perceptions. Vermont has traditionally used town meetings as a way for Vermonters to express their feelings and concerns on important issues. Therefore, the PAC conducted 22 town meetings, or public forums, throughout the state to ask Vermonters what their principal concerns were about environmental problems.

The PAC planned and facilitated each town meeting a little differently, depending on the audience and their knowledge of the issues. In general, the town meeting would begin with a discussion of well-known environmental problems within Vermont. Following this discussion, the facilitator would ask participants to list additional environmental problems of concern to them. In addition to these discussions, participants responded to a brief survey to help set environmental priorities. Questions on the survey included the following:

- ☑ When I think about environmental issues, my principal concern is (check one):
  - Outdoor recreation
  - Fairness
  - Ecosystem health

- The future
- How much it will cost me
- Jobs and prosperity
- Natural beauty
- Human health

☑ When state government sets priorities for reducing health risks, it should tackle pollution-related problems in this order (rank 1 to 5 with 1 being the most important to address):

- Problems that might be fatal to people when they are old.
- Problems that might be fatal to people when they are young.
- Problems that might cause long-term physical pain or disabilities.
- Problems that might cause permanent mental disabilities in children.
- Problems that might cause many people to get sick for a while.

The last element of the survey was a chart developed for the participants to express their top five environmental priorities. **Table A-1** provides an abbreviated example of the chart distributed to Vermonters. Participants voted for five "boxes" by putting numerals 1 through 5 next to their top concerns.

To develop this chart, members of the PAC reviewed numerous past quality of life surveys conducted in Vermont. Information from these surveys gave the PAC a better understanding of which environmental issues were most likely to be of importance. Once participants had completed the chart, members of the PAC evaluated this information.

In addition to survey participants, members of the PAC also ranked Vermont's environmental problems. Using a sense of the public's values — based on information such as quality of life survey results — to decide important risks and values, the PAC produced an integrated risk ranking. This ranking combined risks to human health, ecosystems, and Vermonters' quality of life.

Results of Assessment

Survey results revealed that ecosystem health is of primary concern to Vermonters. Through the risk ranking, survey participants indicated the following five environmental problems are the

Table A-1—Example Chart from Vermont's Environmental Priorities Survey

I'm most worried about...	...because of its impact on...						
	STATE AND LOCAL ECONOMY	HUMAN HEALTH	OUTDOOR RECREATION	VERMONT'S NATURAL ECOSYSTEMS	FUTURE GENERATIONS	VERMONT'S SCENIC LANDSCAPE	FAIRNESS
Air pollution							
Loss of wildness							
Solid waste							
Global warming							
Ozone depletion							

most important in Vermont: drinking water contamination, pollution of lakes and streams, air pollution, hazardous waste, and solid waste.

Through the comparative risk process, the PAC discovered differences between the public's perception of environmental risks and the perception of the PAC — a group with access to technical information. For example, the PAC gave the highest ranking to indoor air pollution and radon. The public ranked this environmental issue the least important in terms of risk.

Value of Assessment

The PAC used the results of the town meetings, and eventually the overall comparative risk process, to help prioritize environmental decision-making in Vermont. In some cases, public opinion drives the development of environmental policy. The PAC determined that both the government and the public needed to develop a better understanding of risk to ensure environmental programs target the most serious problems. The comparative risk process resulted in a list of 20 environmental problems to be investigated by the PAC.

Vermont's comparative risk project cost approximately $300,000 over a two-year period. EPA grant monies funded this project. The State of Vermont matched with in-kind assistance, which included the labor of numerous state employees and office space.

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COMMUNITY 9

Columbus Priorities '95

The Columbus (Ohio) Health Department surveyed the public about its perceptions of environmental risks. Results provided decision-makers with an understanding of how a broad array of residents perceived and prioritized the city's environmental problems. The resulting recommendations were incorporated into the city's environmental management plan.

Assessment Readiness

Columbus Priorities '95 was a two-year comparative risk project initiated by the Columbus Health Department. The Department recognized the need to develop a well-defined environmental policy for the city of Columbus. With the help of more than 200 community volunteers and numerous community organizations, the Columbus Health Department devised a process to identify, analyze, and rank the city's main environmental risks.

Comparative risk projects involve the collection of both scientific and public values data. Project staff needed to gather input from the public about their perceptions of risk and their environment. The first task was to compile a list of city environmental problems using input from the public. This list would reveal what problems Columbus citizens felt impacted their health, environment, and quality of life, and what issues should be addressed through a city environmental policy.

To obtain public input, the Ohio State University extension program developed an extensive survey. The survey asked citizens to provide information on their perception of Columbus' environmental problems. The first section of the survey asked citizens to circle a number from 1 to 5 (1 = strongly disagree, 5 = strongly agree) that described how much they agreed with the following statements:

- ☑ Overall, Columbus has good environmental quality.
- ☑ The environmental threats in Columbus primarily come from:
  - industry
  - households/individuals
  - municipal operations
  - transportation
- ☑ The best way to change behaviors (individuals and industry) is:
  - to pass laws
  - through education
  - by fines
  - with incentives
- ☑ Overall, Columbus has severe environmental problems.
- ☑ There is little I can do to affect the environment.

The next section of the survey asked citizens to rank 10 overarching issues (e.g., agricultural practices, population growth, consumer practices) according to their significance in threatening the environment. In the third section, citizens rated environmental risks of

concern to them and Columbus. The fourth section of the survey solicited citizens' opinions on the three greatest environmental threats facing Columbus and the three environmental concerns the city should address first. This section also inquired about an individual's source of environmental information. The final section requested citizens' demographic information.

Using addresses from water bills, project staff compiled an initial mailing list and distributed 900 surveys through the mail. Project staff estimate that approximately 20 percent of the surveys were returned. Project staff also administered surveys through community forums and workshops, and provided copies of the survey to city agencies for distribution.

After the project's 30 issues were identified and analyzed, a second mail-in survey was developed asking the public to list the most serious. Using a menu of the 30 issues, this survey instructed citizens to circle the three most important and to underline the three least important issues in Columbus. Citizens were then given the opportunity to answer the following seven questions on a scale of 1 to 5 (1 = strongly disagree, 5 = strongly agree) regarding the issues they had circled and underlined:

- ☑ This issue affects me in my everyday life.
- ☑ This issue affects my community in my everyday life.
- ☑ Radio, television, newspapers, and magazines have helped me understand this issue.
- ☑ I can control the impact of this issue on my life.
- ☑ There are actions I can undertake to influence the community on this issue.
- ☑ Government should be involved in addressing this issue.
- ☑ There are some simple, straightforward answers to this problem.

Results and Value of Assessment

The surveys revealed that participants were most concerned about issues regarding water quality; these issues were more heavily weighted during a participatory ranking process. Using the results, the Steering Committee developed 192 recommendations for the city of Columbus. After an internal review, the city of Columbus agreed to implement numerous recommendations from the final Priorities '95 report. Priorities Partners, a volunteer "watchdog" group, monitors the city's progress in meeting its commitment and promotes the implementation of other Priorities '95 recommendations.

Survey development, printing, and tabulation cost approximately $2,500. Survey questions were developed using student labor from the Community Development program at the Ohio State University Extension. The overall comparative risk project was funded in part by a $50,000 EPA grant. In addition to funding, Priorities '95 staff also received technical assistance from EPA staff. Employees of state agencies also volunteered time to assist with Priorities '95.

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COMMUNITY 10

The Power of Local Identity and the Function of Information Flow

Several assessment methods — maps and geographic data, observation, informal interviewing, and social network mapping — were used to better understand this Colorado mining community and to help the U.S. Environmental Protection Agency cooperatively design a remediation plan consistent with community values, issues, and concerns.

Environmental Context

EPA designated the former site of the Smuggler Mine in Aspen, Colorado, as a Superfund site in 1989. EPA suspected that the land surrounding the site was contaminated by lead tailings from the mine. The mining site is in a community that is physically separated from the larger community of Aspen by the Roaring Fork River. Outside access to the community is limited to only two main entrances and a bike/foot path.

Assessment Readiness

EPA announced that each individual homeowner in the community was responsible for contributing a share of the $16 million cleanup. The cleanup was to include the removal and replacement of two feet of dirt from residential lawns suspected to be contaminated. The dirt was to be replaced with fill, but the process would potentially disrupt trees and homes. These decisions evoked fear and eventually anger among the residents of the community.

In response, the Smuggler Mine community organized in opposition to the EPA cleanup strategy. The community recruited influential people from the greater community of Aspen and the nation to support their efforts. Their opposition forced EPA to shift to a "bio-social ecosystem" approach that recognized that the social aspects of the community deserved equal consideration with the physical ecosystem.

Assessment Approach

EPA realized the need to fit its regulatory efforts into the community's culture. EPA subcontracted with James Kent Associates (JKA), a consulting firm that takes an issue-based approach and specializes in understanding the informal social networks of a community. JKA used a combination of assessment methods, including maps and geographic data, observation, informal interviewing, and social network mapping, to collect information about the culture of the Smuggler Mine community.

Using a common street map, JKA assessors identified gathering places where community residents shared information with one another. The assessors then visited the different gathering places for three to five hours each day for about three months. During the visits, the assessors observed and participated in the normal routines of the community and involved themselves in situations in which community residents conversed naturally about their community. Specific situations included attending local sports games, school events, dining at restaurants, and going to gas stations,

laundromats, and taverns to "hang out." While in these situations, the assessors had informal discussions with community residents to determine their interests and concerns.

Results of Assessment

The information collected through these different methods identified community characteristics such as settlement patterns, work routines, recreational activities, and support services. The information also allowed the assessors to construct a social network map of how information and influence spread through the Smuggler Mine community and how community residents create, discuss, and manage issues.

Value of Assessment

EPA used the assessment information collected and analyzed by JKA to understand community beliefs, traditions, and culture. This information was used to develop a long-term strategy to improve communication and participation with community residents. This approach decentralized the decision-making process and allowed community residents to participate over the next three years in designing the site cleanup in a way that both they and EPA could accept. In this case, EPA did not initially understand the relationship of the community members' sense of place to their local identity, and their perception of the natural landscape as a protective boundary from outside influence. Once EPA realized the physical and social boundaries community members used to maintain their sense of community, it was able to step inside the boundary and work within the cultural context of the community to resolve the community's environmental issues.

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References

Kent, J.A., C. Hunka, and K. Preister. 1997. *Culture, Strategies and Community Empowerment at the EPA Smuggler Superfund Site, Aspen, Colorado: A Case for Understanding the Impact of Oral Communication Networks and Pathways on Informal Decision Making Systems.* James Kent Associates, Aspen, CO.

COMMUNITY 11

Octoraro Watershed Association

The Octoraro Watershed Association (in Maryland and Pennsylvania) used a variety of surveys to collect cultural and socioeconomic data to support their Rivers Conservation Plan and to determine people's knowledge and attitudes about issues affecting the watershed. Results have been used to redesign OWA's education and outreach strategy.

Environmental Context

The Octoraro River is a tributary of the Susquehanna River and is part of the Chesapeake Bay watershed. Numerous covered bridges, farmhouses, and Amish horse-drawn buggies dot the hilly and scenic landscape in the Octorano River watershed. It is primarily a rural agricultural watershed (80 percent comprising grazing and row crops by small independent farmers) covering two states (Pennsylvania and Maryland), three counties (Lancaster and Chester, Pennsylvania and Cecil, Maryland), and 18 municipalities. The current population is estimated at 40,000, and the watershed is a one- to two-hour drive from several major metropolitan areas.

Assessment Readiness

The Octoraro Watershed Association (OWA) has worked to preserve and protect the area's natural and historic resources since 1967. Recent residential growth rates sparked OWA's concern about the absence of watershed-wide planning. It was unclear to OWA how much residents knew about watershed and other environmental issues facing the community. They believed that people think about community in political terms, rather than in "natural" terms.

OWA had also begun to develop a Rivers Conservation Plan (RCP) for the Pennsylvania Department of Conservation and Natural Resources (DCNR). The plan would make OWA eligible for the Pennsylvania Rivers Conservation Registry and, thus, state funding for conservation work. The RCP requires an assessment of natural, physical, cultural, and historic resources.

Assessment Approach

Having previously worked with the Alliance for the Chesapeake Bay, a nonprofit environmental organization, OWA was recognized as a community organization with growing capacity for community-based environmental protection. As a result, OWA was invited to a community-based environmental protection tools training sponsored by EPA and managed by the National Association of Counties. Each participating community-based organization received a small grant to pilot test some of EPA's tools or to supplement their ongoing projects. Two OWA board members participated and learned about EPA's *Community Culture and the Environment: A Guide to Understanding a Sense of Place.*

Based on the training and organizational assessment, OWA decided to allocate its funding among a variety of needs: watershed road signs, scientific monitoring, community assessment, database software, and computer hardware. OWA allocated $8,000 for the

community assessment and related personnel costs.

The goal of the assessment project was to collect cultural and socioeconomic data to support the Rivers Conservation Plan and to determine people's knowledge and attitudes regarding issues affecting the watershed.

Using the *Guide,* OWA selected surveys as their main assessment method. OWA formed a team consisting of its board members, a service provider from the Alliance for the Chesapeake Bay, and the coauthor of the *Guide* from EPA. In addition, they sought the collaboration of local universities for both technical advice on survey design and access to similar studies. They ultimately partnered with a University of Delaware political science professor whose research focused on property owners, including Amish farmers, along waterways in the area. Under their agreement, the professor would help OWA construct their questions in exchange for including some of her questions, and OWA and the professor would share all data.

A brainstorming session with the team resulted in decisions about kinds of surveys and survey questions. A total of four surveys would be conducted: a watershed-wide random telephone survey (refer to **Octoraro Watershed Cummunity Survey** on page 236), a written survey for OWA membership, a written survey for municipal officials, and a raffle survey at a local fair. The telephone survey would serve as the basic set of questions for all the surveys. Subsequent meetings generated a list of 70 questions as a starting point. General community characteristics to be explored included:

- ☑ How people in the watershed "view their landscape" in terms of desirable and undesirable features.
- ☑ Residents' interaction with nature.
- ☑ Their knowledge about the present and future condition of their landscape.

These were further broken down into:

- ☑ Knowledge of environmental terms and issues.
- ☑ Cultural perception and affiliations.
- ☑ Landowner and resident demographics.
- ☑ Landowner and resident activities.

OWA then explored how to administer the survey. The University of Delaware offered to do it for $8,000. Upon further searching, The Center for Opinion Research at Millersville University agreed to help design the survey, create the survey frame, conduct a 12-minute survey, and turn the data over in any format desired for $4,000. The survey frame was specially constructed since the watershed does not follow standard political, postal, or telephone exchange boundaries. This, in essence, defined the community. The team spent weeks revising the questions while The Center did time-testing until a final survey of 32 questions was administered to a random sample of 423 people. The survey form appears at the end of this case study.

The raffle survey was developed later and consisted of seven questions — six from the telephone survey and one an open-ended question regarding point-specific problems in the watershed. OWA members administered the survey at the annual Solanco Fair. To encourage participation in the survey, OWA conducted a raffle for a pair of binoculars. Anyone over the age of 18 who filled out the questionnaire would be eligible to win the prize. One hundred and forty-five surveys were completed.

Octoraro Watershed Community Survey

Introductory script: [IF NO ONE LIVES THERE (BUSINESS, ETC.) THEN TERMINATE]

1. What do you like most about where you live?
2. Please tell me whether you feel the following possible problems are very serious, serious, not very serious, or not at all serious problems for your area.
   a. environmental pollution
   b. rapid residential development
   c. lack of recreational opportunities
   d. unemployment
   e. poor roads
   f. crime
   g. lack of open space
3. Now thinking about the environment, what do you think is the most serious problem facing your area today?
4. How long have you lived at your current address?
5. Is your property used as a residence only, meaning that it is not used as a farm or home business?
6. If not, for what else is it used?
7. Do you rent or own your residence?
8. On approximately how many acres is your residence located?
9. Does your household water come from a private well, a municipal/public service, or are you not certain?
   a. well
   b. municipal
   c. uncertain
10. Are you concerned about the current quality of your drinking water?
11. [IF YES] Why are you concerned about the current quality of your drinking water?
12. I'm going to read you several statements about how you like your property to look and I'd like you to tell me if you strongly agree, agree, somewhat agree, somewhat disagree, or strongly disagree with the statement.
    a. I think it is important to have a neat and well-kept property.
    b. I like to have as much lawn as possible.
    c. I really don't like to mow grass, but I don't know what else to do with my lawn.
13. How many creeks are on your property?
14. Which best describes your use of land immediately surrounding the (largest) creek?
    a. leave wild
    b. mow once or twice a year
    c. mow more than twice a year
    d. use as part of animal pasture
    e. grow crops
    f. mixed pasture/cultivation
15. Would you say the water quality in the flowing streams in your general area is:
    a. very good
    b. good
    c. fair
    d. bad
    e. very bad
    f. don't know
16. Do you strongly agree, agree, disagree or strongly disagree with the following statement? "When working on my land, I do things a certain way, because I know what I do affects those who live downstream from me."
17. How great a role do each of the following play in polluting rivers and streams? Use a scale of 1 to 10 where 1 means it plays no role at all and 10 means it plays a major role.
    a. Discharge from industrial facilities
    b. Discharge from sewage and treatment plants
    c. Fertilizer from lawns
    d. Pesticides and herbicides from farms
    e. Animal manure
    f. Soil erosion
18. Since January of this year, did you engage in outdoor activities such as walking, hunting, fishing or gardening . . .
    a. on your own property
    b. at a local river or reservoir
    c. at a county park
    d. at a state park
    e. at some other place we haven't mentioned

Octoraro Watershed Community Survey *(continued)*

19. Now I'm going to ask you several questions about "Open Space." First, what does the phrase "Open Space" mean to you?
20. Would you like to see more or less of each of the following landscapes in your area?
    a. undeveloped wooded areas, streams and meadows
    b. natural areas with developed trails and public access
    c. developed park land and recreational facilities
    d. farmland
    e. large residential lots
21. Now we'd like to ask you some questions about the role of farming in your community. I will read a series of statements to you, and I'd like you to tell me whether you strongly agree, agree, disagree or strongly disagree with the statement.
    a. Farmers should receive government support to help maintain their way of life.
    b. Farms are an irreplaceable characteristic of our area.
    c. On the whole, farmers care about the environment.
    d. If agriculture/farming is a major source of water pollution, it should be dealt with just like pollution from any other industry or business.
22. Please state whether you strongly agree, agree, disagree or strongly disagree with the statement:
    a. The oceans are gradually dying from oil pollution and dumping of waste.
    b. The problems of the environment are not as bad as most people think.
    c. We are quickly using up the world's natural resources.
    d. People worry too much about human progress harming the environment.
    e. The world would be a more peaceful place if its wealth were divided more equally among nations.
    f. We need to dramatically reduce inequalities between the rich and the poor, whites and people of color, and men and women.
    g. The free market is almost always the best way to supply people with the things they need.
    h. Society would be better off if there was much less government regulation of business.
    i. People who are successful in business have a right to enjoy their wealth as they see fit.
    j. If people volunteer to conserve their land, government should assist them with both money and resources.
    k. Current laws and regulations designed to protect public health and the environment are too strict.
23. How far do you typically travel (one-way) to shop for:
    a. Food
    b. Clothing
    c. To get to work
24. What was your age on your last birthday?
25. What is the last grade level of schooling that you have completed?
    a. non-high school graduate
    b. high school diploma
    c. some college
    d. two-year or tech degree
    e. four-year college degree
    f. graduate or postgraduate degree
26. In which township or municipality do you live?
27. Are you currently working full-time, part-time, going to school, keeping house or something else?
28. What is the name of your job?
29. Is your total family income above or below $30,000 per year?
30. [IF ABOVE] Is it $30-$40, $40-$50, $50-$75, or over $75,000 per year?
31. [IF BELOW] Is it under $15,000 or $15-$30 per year?
32. Are you male or female?

Results of Assessment

The results of the two surveys are stored electronically and interfaced between a Lotus spreadsheet used for administrative data and a statistical package (SYSTAT). Analysis of the data indicates that residents like the openness, peacefulness, and local aesthetics of the area; that they are willing to sacrifice for the common good; and that community perceptions of farmers and farming are positive. The data also show that most residents of the watershed have misperceptions about the major causes of nonpoint source pollution in the watershed.

- ☑ Soil erosion is a significant cause of stream pollution, but survey results indicate that people perceive pesticides/herbicides and animal manure as the main sources of stream pollution, and soil erosion as less of a problem.
- ☑ Although residents see rapid residential development as a problem, they are unaware of the link between overdevelopment and water quality problems.
- ☑ Nearly half of the responding landowners leave land surrounding the creek wild, as opposed to cultivating riparian buffers.

OWA will use the assessment results in a variety of ways. They will be incorporated into the RCP as appropriate, and they are being used to evaluate the effectiveness of the OWA public education plan. As a result, some strategies OWA will put in place include the following:

- ☑ Change the outreach emphasis from environmental quality issues to the impact of development and preservation of the landscape.
- ☑ Improve education efforts regarding the impact of soil erosion on water quality and the links between development and water quality, and erosion and storm water runoff.
- ☑ Educate streamfront property owners regarding the benefits of riparian buffer zones, with perhaps a tour of streambank restoration projects.
- ☑ Improve education about best management practices and the impact of farming on the environment.
- ☑ Be stronger advocates for farm preservation.
- ☑ Develop educational projects.

The University of Delaware will use the survey results in its ongoing study of people's attitudes toward their surrounding landscape, and how these attitudes affect their opinion of public policy. The results might be published in an article coauthored by the University and OWA project leaders.

OWA will continue the assessment work by administering the survey to the municipal officials. OWA has received a William Penn Foundation grant that will support informal community-based focus groups and stakeholder identification/mapping and analysis to support membership development and community-wide planning.

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COMMUNITY 12

Assessing Awareness of Lead Poisoning in Providence, Rhode Island

The Heart of Elmwood (Rhode Island) Lead Project used a survey to assess an economically disadvantaged community's awareness of lead poisoning hazards. The results helped the project to successfully target households for lead abatement and education, develop locally appropriate educational materials, and recognize the need to hire culturally appropriate staff to work in the predominantly Latino community.

Environmental Context

The Heart of Elmwood Lead Project is a three-year federally funded program intended to serve as a national model for locally driven efforts to reduce the incidence of lead poisoning among young children. Lead poisoning is one of the leading environmental health risks to children under the age of six. Lead, most commonly found in household dust and soil, can damage a child's nervous system and result in problems associated with learning, behavior, and coordination. Scientists have also found that non-white children younger than six who live in economically disadvantaged communities are most at risk of lead poisoning.

This project focuses on a nine-square-block area of Providence's Elmwood neighborhood, addressing lead poisoning through a comprehensive program of lead abatement and public education. Community members actively participate in both the development and implementation of the project's activities.

Assessment Approach

The Heart of Elmwood Lead Project used a survey to collect information about the demographic characteristics of an economically disadvantaged community and to assess the community's awareness of the hazards of lead poisoning.

The Heart of Elmwood Lead Project's initial activity was to establish a baseline assessment of the neighborhood. According to project staff, the assessment needed to include information such as ethnicity, gender, age, and level of awareness about lead. Using this information, project staff could tailor a lead program to the needs and characteristics of Elmwood residents. At the time, Elmwood residents had never been surveyed about their lead awareness and project staff did not trust Census data to provide an accurate demographic characterization. Therefore, project staff wanted to collect the baseline assessment information directly from Elmwood residents.

Staff from the Heart of Elmwood Lead Project worked with a local university to develop an initial survey. Once an initial set of questions were drafted, project staff asked for residents' input. Working in Elmwood, a predominantly Latino community, required project staff to consider the cultural appropriateness of their activities. Residents identified culturally insensitive questions and worked with project staff to develop a final survey, which was then translated into Spanish.

The Heart of Elmwood Lead Project hosted a community meeting to inform residents about the survey. Attendees became paid volunteers for the project and were trained to conduct the baseline assessment survey. The survey, administered to approximately 350 homes, collected the following types of information:

- ☑ Country of origin.
- ☑ Whether a major renovation had occurred in the home during the past year.
- ☑ If the home was owner-occupied.
- ☑ How long an individual/family intended to stay within the Elmwood neighborhood.
- ☑ If a child age six or under resided in the home.
- ☑ Whether they knew about lead poisoning and where they got their information.

Results of Assessment

From the survey, project staff discovered that most Elmwood residents did not plan to stay in the neighborhood longer than six months because of crime. Project staff also learned that most residents knew very little about the problems associated with lead. What little they did know was through word-of-mouth, some printed information, and seeing volunteers in the neighborhood every summer — part of the Rhode Island Department of Health's summer lead program. For the most part, Elmwood residents were most concerned about safety issues in their neighborhood because drugs and violence are a more tangible threat than lead poisoning.

The survey revealed the priorities and concerns of Elmwood residents. The Heart of Elmwood Lead Project recognized that these concerns and priorities must be addressed to establish trust and to eventually make progress in lead abatement and education. In other words, the survey results altered the focus of the Heart of Elmwood Lead Project for the short term.

Instead of devoting a majority of time and energy to lead issues, the project staff confronted the problem of crime in Elmwood. The project wrote about neighborhood crime in its quarterly newsletters, established a community surveillance project and a community advisory committee, and worked diligently with the mayor's office and police to address this concern. It took the project approximately three months to transition from the issue of crime to lead as its primary focus.

Value of Assessment

Results from the surveys helped the Heart of Elmwood Lead Project and other Elmwood community-based organizations target households for lead abatement and public education efforts to reduce lead exposure. In addition to targeting, the survey results also guided development of educational materials, including appropriate format and content, and the hiring of culturally appropriate staff.

The Heart of Elmwood Lead Project receives approximately $3.2 million in grant monies. The grant is through a partnership between the Department of Housing and Urban Development and the Centers for Disease Control and Prevention. The grant will fund several activities related to this national demonstration project for 36 months. The survey conducted by the Heart of Elmwood Lead Project cost approximately $5,000. A local university provided technical assistance in developing the draft survey.

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COMMUNITY 13

Tangier Island Watermen Community Stewardship 2020 Initiative

The Tangier Island (Virginia) Watermen Community Stewardship 2020 Initiative used surveys and public meetings to understand and incorporate the community's spiritual value system into a vision document for sustaining the community

Environmental Context

Tangier Island, Virginia, is located in the southern portion of the Chesapeake Bay between the shores of Maryland and Virginia. Tangier is best known for its famous blue crab. Ninety-five percent of the people on Tangier depend on the blue crab for their living. However, the decline of the Bay's blue crab fishery threatens the way of life and the heritage of Tangier watermen and their families.

Assessment Readiness

Rather than sitting back and waiting for the last crab and oyster to be harvested, the people of Tangier formed the Stewardship 2020 Initiative to plan for a sustainable fishery, island, and culture. The purpose of the Initiative was to bring the community together to develop a vision for the future sustainability of Tangier Island's way of life.

The Initiative is unique in that it is based on the Tangier community's value system, which is distinctly Christian. The Stewardship Initiative created three subcommittees to address the three key elements in the life of the community:

- ☑ Caring for creation.
- ☑ Sustainable development and preserving the watermen's culture.
- ☑ Fishery stewardship.

In support of these values, 58 of 125 watermen took a Waterman's Stewardship Covenant, a covenant among all watermen regardless of their profession of religious faith. Watermen who joined this covenant agreed to

- ☑ Be good stewards of God's creation by setting a high standard of obedience to civil laws (fishery, boat and pollution laws).
- ☑ Commit to brotherly accountability.

For the professing Christian watermen, the covenant also means that they agree to set a high standard of obedience to God's laws and, therefore, to civil laws and to pursue a selfless life that they yield to the lead of the Holy Spirit.

Assessment Approach

To create the vision for the future of Tangier Island, the core group of community members organizing the Community Stewardship 2020 Initiative realized that they had to include all of Tangier's community members in the process since not everyone was able to participate in the meetings. The organizers split into three subcommittees, based on the three elements of the Initiative, and developed surveys to distribute to members of the community. Organizers distributed the surveys through the island's school and in local stores. The surveys were distributed to schoolchildren, who were instructed to take them home for the parents to complete and return.

Results of Assessment

The results of the survey were used to create a vision document that outlined specific goals, objectives, and strategies for each subcommittee to accomplish. The vision document now provides the Stewardship Initiative with clear direction for the future.

The specific goals and select examples of objectives and strategies are listed by subcommittee:

Caring for Creation Subcommittee

- ☑ Maintain and enhance the beauty of Tangier Island's neighborhoods and natural environment.
  - *Objective 1*: Designate year-round cleanup efforts by neighborhood area.
  - *Strategy 1*: Develop neighborhood groups with leaders who will organize neighborhood cleanups.
- ☑ Encourage private and business consumption that minimizes and reuses waste products overall, minimizes use of nonrecyclable waste products, and reduces use of energy.
- ☑ Keep the island and its waters free from toxic substances.
- ☑ Raise awareness and educate about caring for creation.

Sustainable Economic Development and Preserving Waterman Culture Subcommittee

- ☑ Diversify employment opportunities and income generation for individuals.
- ☑ Capture more income from tourism.
- ☑ Encourage affordable housing for young and old.
- ☑ Promote local artisans.
  - *Objective 2*: Develop place for artisans to work and sell their products on Tangier.

Fishery Stewardship Subcommittee

- ☑ Encourage the Tangier watermen community to organize and actively engage in political, social, economic, and environmental affairs affecting Tangier fisheries and heritage.
- ☑ Maintain healthy shellfish and finfish populations and protect their habitat.
  - *Objective 3*: Encourage watermen of Tangier and in all watermen communities to join the Waterman's Stewardship Covenant.
- ☑ Promote flexible licensing to maintain watermen's livelihood and way of life.
- ☑ Work for affordable health insurance for watermen and families.
- ☑ Diversify and expand income-generating opportunities from the fisheries.
  - *Objective 4*: Conduct a study on the feasibility of shellfish aquaculture in and around Tangier Island.

Some of the results of the survey ran contrary to the organizers' initial assumptions about the community. One of the surprising things the Fishery Stewardship Subcommittee learned through the survey was that the watermen would accept the assistance of their wives in working with government, environmentalists, and scientists to maintain the watermen way of life. As a result, members of the subcommittee and watermen wives created the advocacy group F.A.I.I.T.H. (Families Actively Involved in Improving Tangier's Heritage) to represent the interests of the watermen as a strategy to accomplish one of that subcommittee's goals. The Initiative has also reconciled the conflict between the watermen and environmentalists and led to a new working partnership between

the two interests to restore oysters in Tangier Sound.

Value of Assessment

The Initiative is now being implemented by a new nonprofit organization called the Tangier Watermen's Stewardship for the Chesapeake (TaSC) and the Au Sable Institute of Environmental Studies – Atlantic Coasts.

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COMMUNITY 14

Farming in the 21st Century: A Documentary Photography Project

A survey conducted in three Midwest states found that advice from more experienced farmers is key to successful diffusion of a new practice or product. As a result, the U.S. Department of Agriculture used participatory observation, photography, and tape-recorded interviews to document producers engaged in sustainable agriculture. Farming in the 21st Century combines actual voices with photographs, creating an effective tool for disseminating information to peers and to the larger agricultural community.

Environmental Context

Farming practices that have depended on the use of chemical fertilizers and pesticides have been found to damage the earth's natural resources, ultimately affecting the long-term use of land and the long-term living of local communities. Furthermore, intense use of chemical products increases the potential for the consumption of hazardous materials in the food and water system. Since 1988 the U.S. Department of Agriculture (USDA) has received funds from a congressional mandate to develop and provide farmers and ranchers with information that enables producers to make informed choices on more sustainable production practices.

Assessment Readiness

Farmers who have chosen alternative farming systems, known as sustainable or organic agriculture, have developed a wealth of knowledge. This knowledge has been difficult to access through established information exchange within the USDA Extension Service, the traditional outreach and educational mechanism in USDA. Research shows that local knowledge is what farmers use in making the transition to a more sustainable system. In a survey conducted in three Midwest states it was observed that advice from more experienced farmers is a key to successful diffusion of a new practice or product. Furthermore, local knowledge is a recommended tool to help Extension create and expand sustainable agriculture networks.

Assessment Approach

Visual methods provide a qualitative component to understanding the human condition within a community. This project documented the daily living of producers, ranchers, and their families with participatory observation techniques, using photographs and tape-recorded interviews. Producers and family members were photographed over a period of two to five days and cooperated in interviews that were tape-recorded. Frequently photographs served as a catalyst for additional discussion. When producers were visited for a second time, the photographs from the first visit served as a springboard for additional narrative in a follow-up interview.

Results of Assessment

Two central themes are expressed through the stories:

- ☑ Producers were found to be very supportive of farmer-driven research and all knowledge that would enable the producer to farm in a more sustainable system.
- ☑ Producers tended to define success from a quality of life perspective rather than a strict economic position.

Producers who have participated in farmer-driven research also expressed more awareness of the well-being of the people and environment of the local community. As a communication strategy, it has been observed that hearing the authentic voices of the people living a social experience, combined with their photographs, is an effective tool for disseminating information to peers and the larger community.

Value of Assessment

The results of this project were used to express and address quality of life issues for USDA's Sustainable Agriculture Research and Education (SARE) program. To convey this information to the public, a visual text of photographs was combined with a narrative made up exclusively from the voices of the producers to create a multiple slide-tape presentation. The presentation — *Farming in the 21st Century* — was transferred to video for broad distribution.

Total funding for this project was $29,000 for three years and included travel and production costs. Funding was provided from the USDA Western Sustainable Agriculture Research and Education Program from 1994 to 1997. Assistance in selecting and contacting participants was provided by the USDA Western Sustainable Agriculture Research and Education Program communications office and primary investigators of Sustainable Agriculture Research and Education-funded research projects.

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COMMUNITY 15

Worcester County and Maryland's Coastal Bays

The Maryland Coastal Bays National Estuary Program used visual preference surveys at two public workshops to give residents an opportunity to be involved in growth and development planning in Worcester County. Results were incorporated into the Program's action plans and used to develop alternative scenarios for the future growth of the region.

Environmental Context

The Maryland coastal bays are experiencing rapid population growth and increased development that threaten important environmental, recreational, and economic resources. Recognizing the potential for additional stress on this fragile ecosystem and the importance of a healthy ecosystem, federal, state, and local government agencies have joined with the people who depend on these resources for their livelihood and quality of life to form The Maryland Coastal Bays Program (MCBP), a National Estuaries Program project. The goal of MCBP is to develop a plan of action that will protect and restore the health of the coastal bays by addressing the following priority issues: degradation of living resources, deteriorating water quality, loss and modification of habitat, increasing chemical contamination, impacts of water-based activities, and pathogen contamination.

Assessment Approach

MCBP used visual methods to develop alternative growth scenarios for Worcester County, Maryland, which (1) illustrate the trade-offs inherent in various options for development in the County; (2) minimize the infrastructure costs associated with development; and (3) maximize the protection of natural resources to ensure the economic viability of the region for the future. The ultimate goal is to obtain community agreement on a preferred scenario that will incorporate conservation and growth management objectives and measures. Recommendations will be developed and forwarded to the county officials based on the community consensus.

The Program held two public workshops at which a private consultant used a Visual Preference Survey to elicit community values regarding growth and development in Worcester County. Through the Visual Preference Survey, participants viewed slides of various landscape and built-environment scenes from throughout the county in various categories (open space, water's edge, rural, streets, parking, mobility, etc.). Participants then rated (on a scale from plus 10 to minus 10) their reaction to the slides and the extent to which they felt such a scene was an appropriate part of the county's future.

Once the rating exercise was complete, the consultant reviewed select slides, pointing out the design elements that evidenced either good or poor planning. Through a show of hands, he asked participants to share their ratings. Participants typically rated scenes exhibiting "good planning" much more positively than those that reflected "poor planning" (e.g., roadways with tree-lined median strips rated higher than denuded roadways).

Results of Assessment

The Visual Preference Survey offers a way for community residents to concretely express their values and preferences and feel more involved in community planning processes. Elected officials and members of the planning commission were present and learned firsthand about the community's preferences on a variety of topics. Participants also learned how their neighbors feel about community characteristics. Participants were enthusiastic about the opportunity to express their opinions and to have them included in such a unique comprehensive planning project.

Value of Assessment

Workshop results were tabulated and a report with the results is available to the public. Feedback from the workshops was incorporated into the action plans being developed by the MCBP. Workshop results were used to develop several alternative scenarios for the county's future (scenarios that incorporate both ecological and built-environment values). These alternative scenarios were presented for public feedback at community meetings.

Anton Nelessen, principal of A. Nelessen Consultants conducted the workshops. Each workshop cost $10,000 in consultant fees. Technical assistance was also provided by the Maryland Mass Transit Administration. MCBP staff and committee members were instrumental in workshop planning and the scene selection process for slide production.

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More information about the Maryland Coastal Bays National Estuary Program can be found on their home page:

- ☑ http://www.dnr.state.md.us/coastalbays/

More information about the Visual Preference Survey can be found at:

- ☑ http://www.anavision.com/

APPENDIX B

Conceptual Foundation for Assessment Methods

This appendix describes qualitative and quantitative data and triangulation. It also introduces sampling, validity, and question design.

Qualitative and Quantitative Data

Qualitative data describe the community in words, not numbers. They tell you about relationships between different elements of a community, the community's history, and the reasons behind the values, attitudes, and perceptions that influence community members. Qualitative data measure individuals' thoughts and feelings on a particular topic, answering questions like who, why, and how. Although sometimes difficult to precisely recognize, characterize, and explain, once collected and analyzed, qualitative data can be key to effectively understanding a community in depth.

Quantitative data describe the community in numbers, not words. They give you numerical values, such as averages, ranges, percentages, and correlations and measure particular units, such as money, time, and number of people. They answer questions like how much and how many. And you can use these data to make quick and easy comparisons since they are in

similar units of measurement. Quantitative data help you understand the breadth of the community.

Some methods, such as surveys and interviews, can collect both qualitative and quantitative data (**Figure B-1**), depending on the questions you ask and how you analyze the data. For example, when interviewing people about local commuting patterns, you can ask them how much time it takes them to commute from their home to their workplace (quantitative data). You can also ask them how they commute — by car, car pool, bus, bike, subway, or other way — and why they commute the way they do (qualitative data).

Figure B-1—Qualitative vs. Quantitative Data

QUALITATIVE DATA:

- Describe a community in words.
- Measure individual thoughts and feelings.
- Answer who? why? and how?
- Provide an understanding of a community in depth.

QUANTITATIVE DATA:

- Describe a community in numbers.
- Measure units of money, time, and people.
- Answer how much? and how many?
- Provide an understanding of a community in breadth.

Quantitative and qualitative data are often used together to complement and support assessment results. For example, if you interview individual community members to determine "how the community spends its leisure time," one person could respond, "I spend most of my weekends fishing on the lake with my wife and our kids." This datum is qualitative because the community member has described his leisure activity in words and, because of the way the question was asked (open-ended), he also showed the relationship between his leisure activity and his wife and children and indicated when and where his leisure activity occurs. This one piece of data explained who fished, where they fished, and with whom they fished. It also told the assessor that the person was married and had children, and that weekend fishing was a form of leisure. The response also suggested that fishing was a way for his family to spend time together in nature — a potential finding that could be pursued further.

Complementary quantitative data might include looking at local businesses. If sales at the local bait and tackle stores increase on the weekends, these data might support the qualitative data, indicating that fishing is indeed a popular community activity on the weekends. You could also collect quantitative data by visiting the local lake and counting the number of people you observe fishing. Another complementary quantitative question might ask "How many hours do you spend fishing a week?" If you plan to compare the number of hours that community members spend fishing as opposed to bike riding or swimming, this is a good way to use quantitative data. However, this information does not tell you where, when, or with whom fishing occurs, or that, as in the example, fishing doubles as a family social activity. Together, qualitative and quantitative data can tell you a great deal about a community.

You can also transform qualitative data into quantitative data by how you organize and analyze the data. The response "I spend most of my weekends fishing on the lake with my wife and our kids" is an example of qualitative data. However, if 14 other men (a total of 15) out of the 50 you interview respond similarly, you can transform the qualitative data into quantitative data (i.e., 30 percent of those men interviewed said they spend their weekends fishing on the lake with their wives and children). In this case, you have quantified the number of men to gain a sense of the breadth of fishing activity in the community. Be careful that you do not generalize your results for the entire community unless your sample is representative of the community (see the following discussion of **sampling**).

Triangulation

Triangulation is an assessment strategy that compares the results of three or more methods to test or support the accuracy of the information collected. Triangulating data from multiple methods ensures that you are getting a balanced, comprehensive assessment and reduces the chance of bias. The data collected by each of the methods should be reasonably consistent with the others. If they are not, you might need to collect more data to understand the inconsistencies (see also the following discussion of **validity**).

In many cases, part of the triangulation process occurs during the assessment. For instance, the results from one method might produce data that you wish to test and confirm by including a particular question in another method. For example, if five people in a focus group tell you something, you might want to test this result by surveying a larger sample.

In another case, you might look at a geographic or Census tract map to determine the location of a neighborhood. You might conduct a windshield survey and discover that in fact a fence in the middle of the neighborhood (which was not shown on the map) actually creates two neighborhoods. It's a good idea to conduct your analysis soon after completing each method. See more about analysis in **Chapter 4, Step 4**.

Sampling and Validity

The following sections explain **sampling** and **validity**. You'll find more detailed information in the sources listed in the

bibliography. If you know nothing about these methods, you should seek technical assistance in designing and using them from professional researchers at local colleges, universities, and research firms. The purpose of this somewhat technical section is to familiarize you with the terminology and theory behind these methods and provide a source of technical information for reference.

Figure B-2—Sampling Terminology

- **Sampling:** The process of selecting people from whom to collect information.
- **Population:** The entire group of people about which or from which you are interested in collecting information.
- **Representative sample:** A sample of a population that represents the diversity within the larger population.
- **Probability sampling:** A type of sample based on probability theory and random selection that allows results to be generalized to the study population provided that every person in the study population has an equal chance of being selected into the sample. This type of sample is best suited for forming representative samples.
- **Sampling frame:** The best available and most comprehensive list of all the people in the population. Often used to define the study population.
- **Study population:** The portion of the population included in the sampling frame and for which results from a probability sample can be generalized.
- **Random selection:** The process by which a sample is formed by selecting people from a sampling frame in an unbiased manner.
- **Nonprobability sampling:** A type of sample not based on probability theory that does not allow results to be generalized for more than the people actually included in the sample.

Sampling

When collecting information from community members, you will have to decide from whom in the community to collect the information. Whom will you interview? To whom will you send a survey? Whom will you invite to a focus group? **Sampling** is the process you will use to select people to participate in an assessment method. Taking only a sample, or a portion, of the entire population you are assessing is more convenient, less expensive, less time-consuming, and more accurate than trying to include every person.

In sampling terminology (**Figure B-2**), the **population** is the entire group of people about whom, or from whom, you are interested in collecting information. The population can be all the people in a watershed, a community, a neighborhood, or a particular subgroup (e.g., age, ethnic, racial, occupational, religious, recreational, environmental) that you want to involve in the particular method. However, it's usually difficult to get a complete list of every person in any given population. You'll probably have to settle for a list, or a combination of lists, that comes the closest to including the entire population of interest, such as a telephone directory, a list of registered voters, or an organization's membership list. Telephone directories, for example, do not list every person in a neighborhood because the directories omit people with unlisted numbers and people who do not own telephones or do not have telephone numbers registered in their names.

The portion of the population that is included in the best available list is called the **study population**. The actual list of people (e.g., telephone directory, membership list) is called the **sampling frame**. Such lists (sampling frames) might be available from county, state, or federal governments and businesses such as marketing research firms (**Figure B-3**).

There are two general kinds of techniques to select people from the sampling frame to create your sample — probability and nonprobability. The type of sample and the specific sampling

technique you use should be determined by your purpose for using a particular assessment method.

Probability Sampling Techniques

Based on probability theory, **probability sampling** techniques employ **random selection**, thereby allowing sample results to be generalized for the people listed in the sampling frame (the study population). No matter how uniform or alike a group of people might appear, they always differ by age, sex, race, economic standing, occupation, spatial location, duration of residence, and their moral, political, and religious beliefs, attitudes, and values.

Probability sampling techniques are best suited for forming **representative samples** that reduce the size of the group you are assessing while still including its internal diversity. A sample will be representative of the entire study population if every person listed in the sampling frame has an equal chance of being selected into the sample. Remember, in probability sampling you can generalize the results of an assessment method to only those people listed in the sampling frame (the study population) because only those people had an equal chance of being selected for the sample. **Table B-1** provides guidance on the size of a statistically valid (95 percent accurate) representative sample based on population size.

Random selection means selecting people from the sampling frame in an unbiased manner. Random selection acts as a check on the conscious or unconscious bias of the assessor in selecting the sample, and it allows the assessor to use probability theory to compute "statistical estimates of error" in the accuracy of the results. Although fairly comprehensive population lists might be available from governing institutions or an organization's membership rolls, a major disadvantage of probability sampling is the difficulty of finding a complete sampling frame. Common probability sampling techniques follow.

- ☑ **Simple random sampling** randomly selects individuals listed in the sampling frame. To take a random sample, first assign a number to each individual listed in the sampling frame. Then, use a random number table or a calculator with a random number function to randomly select numbers from the sampling frame. Random number tables can be found in the appendices of most social science textbooks.
  - To select from a random number table, first decide whether to move up, down, left, or right on the table of numbers. Then close your eyes and point with a pencil on the table.

Figure B-3—Sources of Sampling Frames

Lists of people can be purchased from marketing firms, such as Donnelley Marketing, the firm that publishes telephone books across the country. These lists define residents by Census block and cost approximately $60 for 1,000 names. Lists of residents of a particular locale are also available from telemarketing centers. Telemarketing centers use computer software to generate lists based on the desired sample size.

Table B-1—Determining Sample Size from a Given Population*

TRUE POPULATION SIZE (N)	RANDOM SAMPLE SIZE NEEDED (n)
10	10
40	36
100	80
400	196
600	234
1,000	278
10,000	370
100,000	383

* For estimating proportions, the following table shows the sample size necessary to accurately estimate to within 5 percent of the true population proportion with 95 percent confidence. This table only refers to the sample size needed to accurately characterize binomial proportional data (e.g., the proportion of respondents answering "yes/no" or "true/false"). Different equations would be needed to characterize multinomial or continuous data, such as estimating the average score of a continuously scaled response to a question (e.g., the mean score respondents give a question from 0 to 100, or a multiple choice question with more than two possible responses). The standard formula used to calculate the number of random samples needed to estimate the true population proportion is:

$$n = \frac{1}{\frac{1}{N} + 0.0026}$$

That's your starting point. Proceed from that point in the direction you previously determined (up/down columns, left/right across rows) and match the numbers on the table to those on your list. Include the person assigned that number in your sampling frame in your sample.

- If you have a calculator with a random number function, press the key and the calculator will select a number at random. Include the person assigned that number in your sample.
- If you or the calculator randomly selects a number twice, or the number you pick does not correspond with a number on your sampling frame, simply pick again until you have reached your desired sample size (**Table B-1**). Depending on the size of your sampling frame, you might need to use only a couple of digits of the numbers listed in a random number table. For example, if you have a sampling frame of 100 people and the random number table lists only 5-digit numbers, you can choose to take only the last or the first three digits of the random number (e.g., taking the last three digits, 19473 would correspond with 473 on your sampling frame). If your calculator selects only decimals at

random, you can simply multiply each number by a factor of 10 (e.g., $0.8 \times 10 = 8$, $8.5 \times 10 = 85$, $80.2 \times 10 = 802$).

☑ **Systematic random sampling** uses a sampling interval to select the sample from a sampling frame. To perform a systematic random sample, determine your **sampling interval** and randomly pick a starting place in the sampling frame. For example, your sampling frame of a large community lists 4,000 people. Rather than taking the time to number each individual on the list, as you would for a simple random sample, determine how large you want your sample, say 351 people (**Table B-1**). Divide 4,000 by 351 and you get 11 (roughly) — this is your sampling interval. Start at a random spot on the sampling frame by randomly selecting a page of the list and a place on the page. Proceeding from that place, select the 11th person, then the 22nd person, and so on, until you have a sample of 351 people. If you run out of room on your sampling frame before you reach your desired sample size, simply continue your interval counting (without restarting) on to the beginning of the list, still selecting, in this case, the 11th individual in the interval.

☑ **Stratified sampling** ensures that a subpopulation(s) of specific interest is adequately represented in a random sample. Simple and systematic random samples might not include individuals from this subpopulation(s). To create a stratified sample, separate the subpopulation(s) of interest from the general sample population. This will give you at least two sampling frames — one listing individuals of the subpopulation and the other listing individuals of the general population. Then, use a simple or systematic random sampling technique to select a number of people from each sampling frame according to each population's percentage of the entire sample population. Suppose, for example, you are selecting a sample of 400 people from a sample population of 40,000 and you are particularly interested in farmers, a subpopulation that comprises 25 percent of the sample population. Separate the farmers from the non-farmers and use simple or systematic random sample to select 100 farmers from among the farmer group and 300 persons from the non-farmer group. This gives you a total sample of 400 people and ensures that the farmers are adequately represented in the sample.

Nonprobability Sampling Techniques

Nonprobability sampling techniques are not based on probability theory, and therefore the results cannot be generalized beyond the people actually included in the sample. Nonprobability sampling can be advantageous when you're assessing a small population and you know you want to collect data from particular subpopulations. One advantage of nonprobability sampling is that you do not need a list (sampling frame) of all the members of a population from which to draw a representative sample. Common nonprobability sampling techniques follow.

- ☑ **Judgment (purposive) sampling** is used when you know, or think you know, who will be able to answer your questions the best. In this case, you make a judgment as to someone's knowledge and ability to meet your needs. Your judgment is the criterion for including them in your sample.
- ☑ **Snowball sampling** is a technique in which you ask key members of the community who they think should be included in the assessment sample. Those persons in turn recommend others. Ultimately you have a snowball effect where you identify people through referrals, so to speak, until you have identified what you determine to be an adequate representation of the population you want to study.
- ☑ **Quota sampling** is similar to stratified random sampling except that you choose the sample through judgmental or snowball sampling rather than by random selection. Use quota sampling when you're interested in a particular subpopulation (e.g., farmers). By estimating what percentage the particular subpopulation is of the total population (e.g., 25 percent of the community are farmers) you can arrive at a quota based on the desired size (e.g., 400) of your sample. Then you go into the community and select people to fill the quotas (e.g., select 100 farmers and 300 non-farmers) by using the judgmental or snowball sampling techniques. This technique ensures that the subpopulation of interest is proportionally included in your nonprobability sample.

In determining the size of your sample, consider your financial resources and the time you have to do the sampling. Also think about the diversity of the population you are choosing from and how many population subgroups you want to deal with simultaneously. If you have some assistance conducting the methods you might wish to expand the number. If you are unfamiliar with sampling and social science methods, you might

wish to reduce the size of the sample or seek assistance from an experienced social researcher. Ultimately, your decision will depend on the purpose of the sample, your familiarity with sampling techniques, the methods you use, and your available resources.

Validity

Validity refers to the accuracy and trustworthiness of the findings of a community assessment, regardless of the type of data, method, or sampling technique used. Validity tests check that the sampling technique and the method you use, and the data you collect, accurately represent the community characteristic, concept, subject, or topic in which you are interested. Consequently, they should be used throughout the data collecting process to ensure the accuracy of your findings. There are five different types of validity tests: face, criterion-related, construct, content, and statistical validity.

- ☑ **Face validity** tests the apparent value, or face value, of a sampling technique or method as it relates to the particular topic you are assessing. For example, an interview designed to collect data on environmental attitudes will collect more valid data if it asks community members if they agree or disagree with the statement "the environment deserves protecting" than if it asks them to name their favorite television program.

- ☑ **Criterion-related (predictive) validity** is based on external, behavioral criteria that you consider to support the validity of the data after they are collected. Actual, observed behaviors serve to validate or invalidate reported responses. To use the preceding example, an attitude survey that suggests that a community is "pro-environmental" might be validated by observations that show a large percentage of the community participating in a riverside cleanup. On the other hand, low fishing license sales might suggest that fishing is not a popular activity in a community. However, actual observations might show that many community members do fish; they simply do not purchase a license. This finding reduces the validity of using only fishing license sales to make conclusions about the popularity of fishing in a community.

- ☑ **Construct validity** is based on the relationship you expect to exist between variables. This test of validity is useful when criterion-related validity is unavailable because a particular concept or characteristic is difficult to observe. Take, for example, an interview designed to collect data about

environmental attitudes in a community. In the interview you ask participants to identify themselves as either "pro-environmental" or "anti-environmental." You also ask them to agree or disagree with the statement, "I have/will change my personal behavior to protect the environment." You expect community members who describe themselves as "pro-environmental" to also agree with the statement "I have/will change my personal behavior to protect the environment." You also expect that those who consider themselves "anti-environmental" will disagree with the statement. If these expected relationships are indeed true then it is evidence of the construct validity of your interview question and the data you collect about "pro-environmental" attitudes."

☑ **Content validity** refers to the degree to which an assessment method covers the range of meanings included in a particular characteristic, topic, or issue on which you are gathering data. For example, does an interview about "pro-environmental" attitudes include questions that measure attitudes about pollution, consumption habits, and population growth, or simply attitudes about recycling? If the purpose of your interview is to collect data about pro-environmental attitudes, but your interview asks only questions about recycling, a test for content validity will show you that these data alone will not indicate pro-environmental attitudes, but only attitudes toward recycling.

☑ **Statistical validity** relates specifically to probability samples that use random selection. One of the advantages of random sampling is that it allows you to validate your findings with statistical theory. It also indicates how large a sample must be in relation to the total population for the results to be valid for the entire population. Sampling error is the degree of error in the sample design. It is described in terms of confidence intervals and confidence levels. An explanation of how to compute statistical error is beyond the scope of the *Guide*. See **Table B-1** in the preceding discussion of sampling to determine the proper size of a probability sample with 95 percent statistical accuracy.

Questionnaire/Question Design and Asking Questions

Many assessment methods will use a questionnaire, such as a survey or an **interview protocol** (a list of questions used to

guide an interview). A properly designed protocol is an extremely important tool for effectively conducting a community assessment. In some cases, people participating in the assessment will actually see the questions, such as a self-completed survey. In other cases, the assessor will use the questionnaire to guide a focus group or a semistructured interview. Since questionnaires and interview protocols are only as good as the questions they ask, this short introduction will explain some basic points for creating and ordering questions. Professional assistance in designing questions for your assessment is a good idea, as well as pretesting all questionnaires/protocols to determine if people can understand the questions.

Types of Questions

You can use basically three different types of questions in your questionnaire or interview protocol: close-ended questions, open-ended questions, and statements and scales.

☑ **Close-ended** are pre-selected multiple-choice answers from which the respondent chooses. Close-ended questions can test ideas and terms and get specific information, but they must have mutually exclusive and exhaustive answer options.

- **Mutually exclusive** means that the respondent will not feel compelled to select more than one option (unless the instructions say otherwise). For example, you ask how many camping trips a person makes a year and you give the following range of answers to choose from: (a) 0-2, (b) 2-4, (c) 5-7, (d) 8 and over. In this case, your options are not mutually exclusive for the person who makes two camping trips a year. In this case, that person might feel compelled to select more than one answer (choosing option 'a' and 'b') or might skip answering the question because the options are confusing. A mutually exclusive scale would look like: (a) 0-2, (b) 3-5, (c) 6-8, (d) 9 and over.
- **Exhaustive** means that the answer options must include every possible response that could be expected. Some questionnaires include an option of "other" as a net to catch every possible response. In the example above, "(d) 9 and over" was used to catch all those who take more than nine camping trips a year.

If your answer options are neither mutually exclusive nor exhaustive, you will run into problems of clarity, thus damaging the effectiveness of your survey or interview.

For example, a close-ended question might ask:

- Please circle your answer to the following question(s).
  Do you fish in the river? Yes No

In this simple case, the assessor presents the respondent with only two options for answering the question. However, there can be more than two options for a different question:

- Please circle your answer to the following question(s).
  How many times a week do you fish in the river?
  None 1-2 times 3-4 times more than 4 times

The second example demonstrates a close-ended question that offers a multiple range of options. When using ranges, you must ensure that the answer options and the ranges themselves are mutually exclusive and exhaustive. Notice how the second question collects quantitative data.

☑ **Open-ended** questions are those in which the assessor does not provide preselected answers. This approach is helpful when you want to get an idea of the diverse opinions, interests, histories, and personal stories of the respondents without limiting them to a group of pre-selected answers. Open-ended questions should be included early in the order of questions to prevent close-ended questions or statements from influencing responses. This also draws respondents into, and generates excitement about, the project by asking them to state their own responses. Open-ended questions like these can be used to gather both qualitative and quantitative data:

- How do you feel when you visit the nearby river?
- During fishing season, about how many days a month do you fish at the local lake?

As you design your survey questionnaire or interview protocol, bear in mind that answers to open-ended questions will vary more than answers to close-ended questions. This is precisely the benefit of using open-ended questions. Your use of open-ended questions depends on the assessment method you use. If you are conducting a personal interview or a focus group, open-ended questions are excellent for engaging people and encouraging them to share their opinions and beliefs through detailed responses and personal stories. On the other hand, with methods such as a self-completed survey, open-ended questions might need to be used judiciously since they generally take respondents longer to answer and might prevent respondents from fully responding to the entire questionnaire.

☑ **Statements and scales** are statements that respondents assess on a scale, such as the **Likert Scale**, to measure degrees of attitudes, feelings, and values. A scale normally contains 3 to 10 different statements at once. A Likert scale uses space efficiently, allows respondents to complete the questionnaire quickly, and produces easily comparable data (**Table B-2**).

Table B-2—Example of Likert Scale

Beside each of the statements below, please indicate whether you: Strongly Agree (SA), Agree(A), Disagree (D), Strongly Disagree (SD), or are Undecided (U). Check the appropriate box beside each question.

	SA	A	D	SD	U
A. Cattle should be allowed to graze on public land.	[ ]	[ ]	[ ]	[ ]	[ ]
B. Cattle ranchers care about the environment.	[ ]	[ ]	[ ]	[ ]	[ ]
C. Cattle ranchers are rich.	[ ]	[ ]	[ ]	[ ]	[ ]
D. Everybody should eat beef.	[ ]	[ ]	[ ]	[ ]	[ ]

Further Suggestions and Pitfalls

Designing a questionnaire or an interview protocol requires time, thought, preliminary research, multiple drafts, and pilot tests. A long questionnaire distributed to a large sample also requires extensive time to analyze all the responses. Nonetheless, if you choose to use a questionnaire or interview protocol in your project, here are some additional suggestions to help make them more effective (and some common pitfalls to avoid).

☑ **Clear Instructions:** Specify how many answers respondents can select and how they should indicate them (e.g., circle, check mark). If people do not understand or are confused by how to mark their answer to a question, they will skip the question or answer it improperly. This hurts the effectiveness of your questionnaire. To avoid this pitfall, make sure that your instructions are clear. It is helpful to test run your questionnaire with somebody, perhaps a close friend or spouse, or an actual community member with whom you are familiar, to ensure that your instructions are clear.

☑ **Clarity:** As with instructions, be sure your questions are clear. If people misunderstand a question, they will either skip the question or answer it improperly.

- ☑ **Conciseness:** Keep the questions short and concise. This avoids confusion and ensures that the respondents will not overlook key parts of the question in their haste to answer. Keeping the questions concise also ensures that you are asking only one question at a time. If your question is more than one sentence, keep the sentences brief.

- ☑ **Ordering Questions:** Place open-ended questions near the beginning of the assessment instrument to engage people from the very beginning. Basic demographic questions, such as age, race, religion, and sex, should be asked at the end.

- ☑ **Indicating Answers:** In close-ended questions and when using scales, it is best to ask respondents to circle their answer or to check the appropriate box or circle. A box can be created using brackets "[ ]" or a circle with open parenthesis "( )". Avoid leaving blanks with slashes or underscores since respondents often enter large check marks which make it difficult to determine their selection.

- ☑ ***Avoid* double-barreled questions** that ask for a single answer to a combination of questions. For example, "Should the mayor increase local taxes and build more parks?" In this question, some respondents might agree that there should be more parks, but they might not agree to raising taxes. As a rule, whenever *and* appears in a question you should check to make sure the question is not double-barreled. A better question would read: "Should the mayor increase local taxes to build more parks?" Avoid double-barreled questions in both open- and close-ended questions.

- ☑ ***Avoid* negative words** in questions since people tend to respond to questions quickly and might overlook such words, especially when the instrument is self-completed. Examples of negative words include no, not, prohibit, and disallow. If you must include negative words in your questions or statements, be sure to highlight the presence of the negative word by placing it in **bold** type, UPPERCASE letters, underlining it, or **ALL** three.

- ☑ ***Avoid* using judgmental language** when phrasing or writing questions. Judgmental language might have a negative or derogatory connotation that will influence how respondents answer the question. Judgmental language might also indicate an emotional position behind the question that pressures respondents to respond in a particular manner. For example, "Should irresponsible industries be forced to compensate local communities who are unfairly affected by the industries' air

emissions?" Avoid judgmental language in both open- and close-ended questions.

☑ ***Avoid* loaded questions** that begin with "Don't you agree with . . ." or "The rest of your community thinks . . . . Do you agree?" Another type of loaded question makes assumptions about respondents that might bias their responses. For example, "How do you use the river?" assumes respondents use the river, when they actually might not. A better worded question would be composed of multiple parts. The first part would ask, "Do you use the river?" If the respondent answers affirmatively to the first part, the respondent is then instructed verbally, or in writing, to answer the question "How do you use the river?" In self-completed assessment instruments these instructions are provided in writing. For example, "If you responded YES in question #1, please answer question #2. If you responded NO in question #1, please skip question #2 and proceed to question #3." These types of questions are contingency questions. Their use is contingent upon the response to the preceding question(s).

Ethics of Assessment

There are ethical limitations on the types of data and the techniques that can be used to collect data. Please see **Chapter 4, Step 1, Ethics of Assessment**, for a detailed discussion.

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APPENDIX C

Matrix of Assessment Methods

The following matrix organizes the assessment methods alphabetically for easy reference. It provides a brief description and an explanation of the applicability of each method to a community assessment. The matrix also presents the general advantages and disadvantages of using each method.

METHOD	DESCRIPTION	APPLICABILITY	ADVANTAGES / DISADVANTAGES	
			(+)	(–)
Asset Mapping	A graphical representation of a community's capacities and assets. The process can involve community members or assessors.	Useful for helping community members consider the assets they have in their very own community that can assist them in their community-based efforts.	Can be conducted on a limited budget. Useful for large groups of people where visual representation helps hold attention and enhance communication and expression of values.	Difficult to map large amounts of information by hand.
Background Research	Research at local and regional depositories of social, economic, demographic, and historical information, such as town halls, libraries, museums, and historical societies.	Useful for a wide range of data collection, particularly when the desired information is known to exist in written form. Many libraries also provide Internet access to more current sources of data.	Many types of useful information can be obtained only in this way. Provides a cross-check of results obtained through other methods.	Might be time-consuming.
Census Data Research	A collection of demographic and economic data about the U.S. population. Data include race, gender, age, educational attainment, household relationships, marital status, citizenship, length of residency, as well as employment information. This information is readily accessible by block, tract, ZIP code, county, or state. Data are collected by the Census Bureau every 10 years to determine proper districts for Congressional elections.	Provides basic statistics concerning the demographic and economic makeup of a community.	Research can be conducted at low cost because Census data are available for free at public libraries and on the Internet. Statistics are reliable. Little room for error since results have already been tabulated.	Age of data. The most recent data might not accurately reflect the current demographics of a community that underwent significant growth or change. The Census counts only residents who are documented, legal U.S. citizens at the time the Census is conducted.
Cognitive Mapping	A method used to collect qualitative data and gain insight into how community members perceive their community and surrounding natural environment through the production of community maps.	Useful for understanding the prominent features and boundaries of a community from the perspective of community members.	Inexpensive and not time-consuming since community members supply and analyze the data themselves. Involves community members in the assessment. Useful for representing symbolic aspects of the community.	People might place too much emphasis on spatial accuracy and artistic detail.

METHOD	DESCRIPTION	APPLICABILITY	ADVANTAGES / DISADVANTAGES	
			(+)	(–)
Concept Mapping	A method that collects data about how community members perceive the causes or related factors of particular issues, topics, and problems and presents the data graphically. Can also organize collected data for strategic planning purposes.	Useful for understanding what community members consider to be the cause of particular issues and problems. Can visually depict the linkages between human behaviors and the environment. Can visually reduce a complicated issue into understandable parts.	Useful for large groups of people where visual representations will hold attention and enhance participation in the process. Can be conducted on a limited budget.	Difficult to map large amounts of information by hand. Might have to resort to expensive computer software.
Content Analysis	A review of written documents or speech transcripts to identify underlying meaning of a message, or occurrence of key words or phrases.	Provides insight into cultural themes that dominate a community's thinking and talking about the natural environment. Reveals patterns of communication and can determine attitudes and perceptions of community members. Also useful for summarizing relevant information from a large amount of written material (e.g., multiple newspaper articles on a topic).	Can help ensure objective analysis of written materials by different reviewers. Fairly quick and inexpensive. Can be used to collect related information about community and inform the design of other methods.	Important information might be ignored; reviewers are restricted to analyzing message or key words/ phrases.
Environmental Values Typology	Environmental values are those values that structure how people and groups relate specifically to the natural environment. The Environmental Values Typology is a set of nine "basic" environmental values that can be used to categorize the different environmental values held by different community members and shared by community groups.	Helps distinguish among the different types of environmental values present within a community. Also provides insight into how these values are likely to motivate certain community behaviors. This insight can be used to design effective community-based environmental protection efforts.	Can be altered to add additional values, to include or clarify environmental values to suit a community.	Might not adequately include a value present in a community.

METHOD	DESCRIPTION	APPLICABILITY	ADVANTAGES / DISADVANTAGES	
			(+)	(–)
Focus Groups	A structured group process whereby 8 to 12 individuals are asked to discuss their opinions on a list of predetermined issues.	Collect very detailed information on a limited number of topics from small groups of individuals or specific subpopulations of a community. Provide crucial insight into how and why people feel, think, and talk about an issue the way they do.	Group interaction can generate useful information that might not otherwise emerge. Provide community members with a sense of involvement. Can support findings of other methods.	Time-consuming. Only a small number of individuals can be involved at a time. It costs between $3,500 and $5,000 to plan and run a single focus group. Might require technical assistance by skilled moderators.
Interviewing	A method of eliciting answers to predetermined questions from one individual at a time. Different formats and types of questions can be used to fit given situation..	Collects detailed information from individuals that is not available in written or published format. Provides crucial insight into individual feelings and experiences of community members. Asks specific questions related to the purpose of the community assessment.	Can be inexpensive and convenient. Depending on type of interview, allow for flexibility in the process. Effectively establishes rapport to increase the accuracy and honesty of answers.	Can be time-consuming and expensive depending on the number of people contacted and whether transcripts of the interviews are required. The presence of the interviewer can bias responses.
Maps and Geographic Research	Collection of data from visual representations of the location of a community and its different physical and social features.	Useful for showing the relationship of a community to its natural surroundings and for understanding how the community and the surroundings have changed over time.	All of the data have already been collected and mapped by someone else. Data can be collected for little expense, or viewed for free at certain locations, such as libraries and government agencies.	Data are sometimes difficult to interpret. Customized GIS maps are costly.
Meetings and Workshops	Forums for bringing a group of individuals together to discuss a project, address specific issues, collect data, brainstorm ideas, or make decisions.	Useful for defining assessment scope, goals, and objectives; identifying issues and questions; determining study methods; soliciting input on investigative questions; and reaching consensus on issues and future steps.	Provides a forum to interact with and seek input from a larger and more diverse number of people in a relatively short period of time. Allows for simultaneous information collection and consultation.	If not conducted properly, can degrade into an unorganized and unproductive use of time. Impersonal if too large; might frustrate those unable to be as involved as they would wish. Renting a meeting facility might be expensive.

METHOD	DESCRIPTION	APPLICABILITY	ADVANTAGES / DISADVANTAGES	
			(+)	(–)
Observation	An information-gathering technique based on personal observation and recording of visible social activity and behavior. Sometimes requires participation in activities with the subjects being studied.	Collects information about social groups and community behaviors from the perspective of an insider.	Can provide a relatively objective view of social group dynamics and behaviors in different situations.	Time-consuming. Not all activities or behaviors can be observed.
Regional Economic Data Research	Collection of information regarding jobs, employers, revenue, per capita income, total personal income, and other economic data of a regional economic nature.	Provides detailed information about a community's economy that might not be available through the Census Bureau.	Cheap and easy access to data at local libraries and government offices. Also available on the Internet.	Data collected at the regional level hide the variations at the community level.
Social Network Map	A method used to collect, analyze, and graphically represent data that describe patterns of communication and relationships within a community.	Useful for identifying community opinion leaders and other influential individuals, as well as those most responsible for disseminating information. Can determine how new ideas or information will spread through a community, and how fast.	Can help target public outreach resources to key individuals.	Analysis of large networks (e.g., more than 50 people) can be slightly expensive, because it requires a computer, specialized software, and (most likely) a trained user.
Surveys and Polls	Similar methods that use a list of questions to collect specific information from multiple individuals through the mail, over the phone, or in person.	Links characteristics of individuals to responses to questions about their attitudes, perceptions, beliefs, values, and behaviors regarding the environment.	Useful for moderate to large populations and for collecting representative data.	Technical assistance from an individual skilled in designing and conducting surveys is necessary. Moderately time-consuming (about 4 to 6 weeks to design) and expensive (about $10K for sample size of 500). Response rates can be low due to technique and population.

METHOD	DESCRIPTION	APPLICABILITY	ADVANTAGES / DISADVANTAGES	
			(+)	(–)
Visual Methods	Photographs, video, illustrations, or images that describe the appearance of a watershed or other land area; analyze spatial relationships, land-use patterns, and historical changes; and portray community images of streets, houses, stores, open spaces, civic features.	Useful for helping individuals describe and analyze their relationships with other individuals and their surroundings. Useful for stirring up an individual's thoughts and feelings about a particular place that can assist in the protection of existing community features, or provide a tangible vision for the future of the community.	Visual images of the community and land cover information can be one of the easiest types of information to understand, and one of the most effective ways to convey issues to stakeholders.	Acquisition of aerial photographs or satellite images can be very expensive. Costs can run from tens to thousands of dollars.

APPENDIX D

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