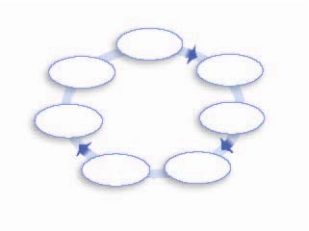
The Social Indicator Planning and Evaluation System (SIPES) for Nonpoint Source Management

A Handbook for
Projects in USEPA Region 5



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This Handbook was edited by Ken Genskow and Linda Prokopy.

Regional Social Indicators team members include:

Ken Genskow, Ph.D., Co-Leader, University of Wisconsin-Madison
Linda Prokopy, Ph.D., Co-Leader, Purdue University
Jeremiah Asher, Michigan State University
Adam Baumgart-Getz, Purdue University
Joe Bonnell, Ph.D., The Ohio State University
Karlyn Eckman, Ph.D., University of Minnesota
Kristin Floress, Purdue University
Karyn McDermaid, University of Illinois at Urbana-Champaign
Rebecca Power, University of Wisconsin-Extension
Rachel Walker, Ph.D., University of Minnesota
David White, Ph.D., University of Illinois at Urbana-Champaign
Danielle Wood, University of Wisconsin-Madison

Former team members who also contributed towards this project include: Shorna Broussard, Ph.D., Cornell University, Jerry Long, and Mark Stevens, Ph.D.

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Information about the team and development of this Handbook can be found online at http://www.uwex.edu/ces/regionalwaterquality/Flagships/Indicators.htm.

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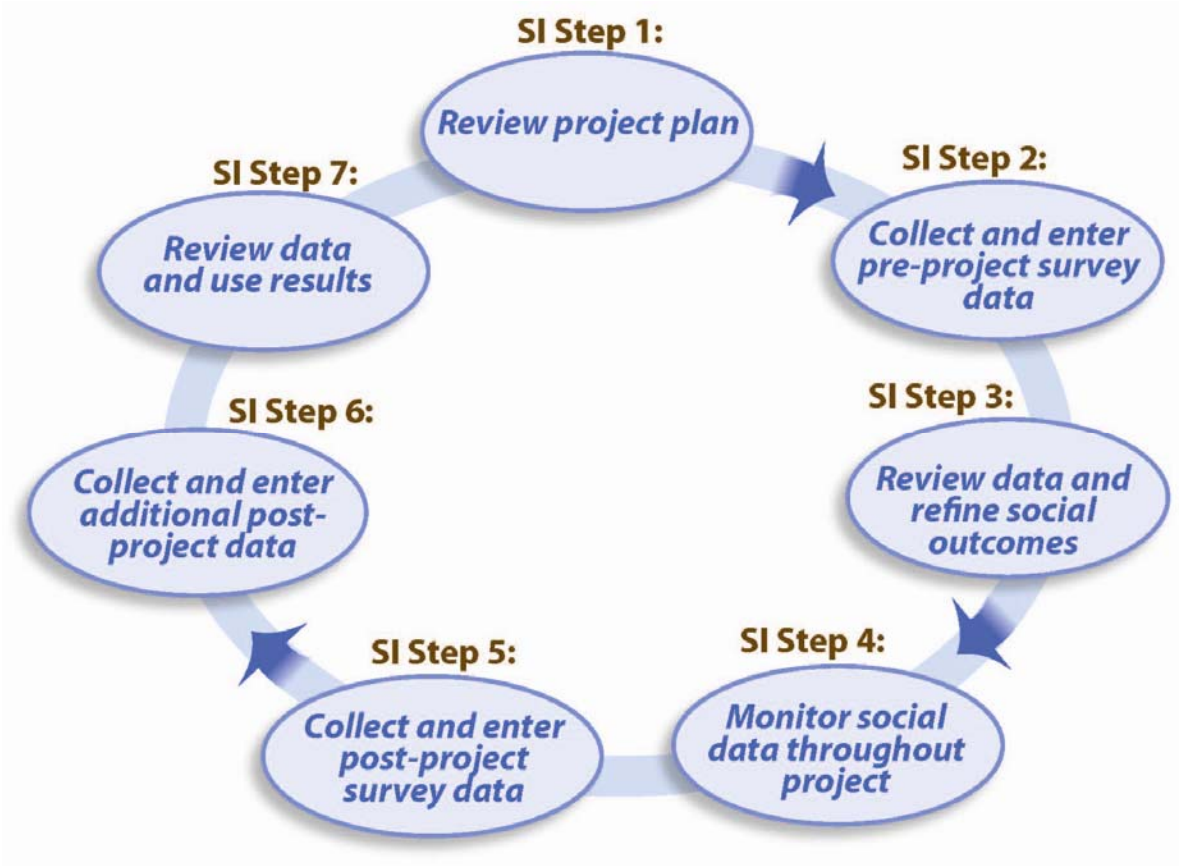
Handbook Overview

This Handbook describes a step-by-step system for using social indicators to help you plan, implement and evaluate Nonpoint Source (NPS) management projects. The Social Indicator Planning and Evaluation System (SIPES) is intended to be used by resource managers working in state or regional NPS management programs. The SIPES process and seven steps are illustrated below. These steps begin with a review of project plans and then guide projects through a process to collect, analyze and use social indicators data at the beginning and end of an NPS project.



Lettered handbook sections (A-J) describe the seven steps in greater detail. Following the lettered sections, there are a number of appendices that contain additional supporting materials.

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Introduction: The Social Indicators Planning and Evaluation System (SIPES)

Why Social Indicators?

Effective management of Nonpoint Source (NPS) water pollution requires addressing both environmental conditions *and* the choices people make that impact the environment. If your state environmental agency has asked you to use this Handbook, your project is likely trying to improve water quality by changing people's behavior. To do this, your project may have to influence people's awareness, skills, attitudes, capacity, or constraints related to water quality improvement. Monitoring social indicators, like monitoring environmental indicators, gives us valuable information about how well our management strategies are working. Using the system outlined in this Handbook can help improve your project planning and evaluation.

Water quality problems have accumulated over many decades and may take decades to amend. Confirming that awareness and attitudes are changing and behaviors are being adopted in a watershed is one way that projects can demonstrate progress toward water quality goals. Social indicators provide consistent measures of social change within a watershed and can be used by managers at local, state, and federal levels to estimate the impacts of their efforts and resources. Figure 1 illustrates the link between social indicators and eventual improvement of water quality.

Social indicators are part of an ongoing effort among state water quality agencies and the USEPA to evaluate and improve their NPS programs. State NPS programs in USEPA Region 5 have agreed to use social indicator data to document progress towards NPS water quality improvement goals. SIPES was developed for USEPA Region 5 to provide standardized, regionally comparable social data that will complement other administrative and environmental data used by state programs.

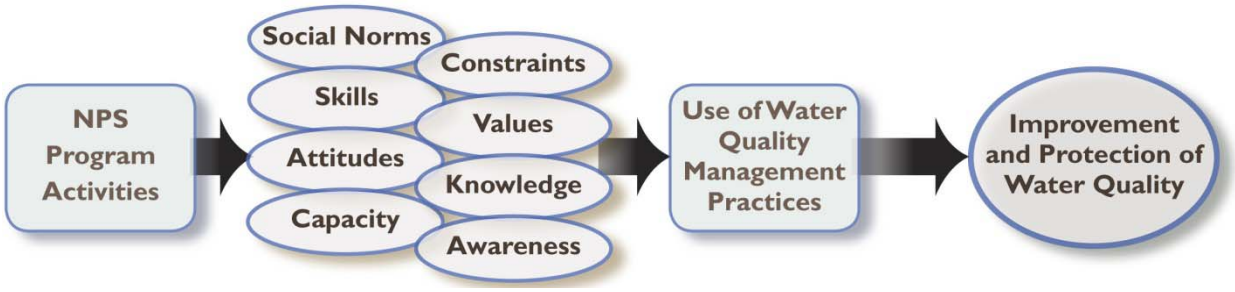


Figure 1: Conceptual model of social indicators and water quality

What are Social Indicators?

Broadly, *social indicators* are measures that describe the capacity, skills, awareness, knowledge, values, beliefs, and behaviors of individuals, households, organizations, and communities. For the purposes of this Handbook, social indicators for NPS management provide information about awareness, attitudes, constraints, capacity, and behaviors that are expected to lead to water quality improvement and protection. By measuring these indicators over time, water quality

managers can target their project activities and assess whether their projects are accomplishing changes expected to improve and protect water quality.

Core Social Indicators

A list of core social indicators used in SIPES, along with specific project goals and intended outcomes for each type of indicator are included in Table 1. This core set was selected to provide a manageable number of indicators that address important components of the behavior change process. Social indicators will help project staff focus and evaluate their efforts toward the following intended outcomes:

- Increased awareness of relevant technical issues and/or recommended practices in critical areas;
- Changed attitudes to facilitate desired behavior change in critical area;
- Reduced constraints to behavior change;
- Increased capacity to leverage resources in critical areas;
- Increased capacity to support appropriate practices in critical areas; and
- Increased adoption of practices to maintain or improve water quality in critical areas.

The set of core social indicators (Table 1) is not comprehensive. While some indicators may appear more relevant to some projects than others, all projects using the SIPES system will collect all the core indicators. Other social indicators can also provide important information for planning, implementing, and evaluating NPS projects. Appendix 2 of this Handbook includes more information about how these core indicators were selected as well as information about supplemental indicators that may be used by NPS projects.

Using Social Indicators in NPS Projects

By focusing on social indicators, this Handbook complements existing planning and implementation processes supported by state and federal NPS programs (for example, USEPA's *Handbook for Developing Watershed Plans To Restore and Protect Our Waters).* Primary users are NPS projects funded through grants from their state NPS programs. As part of the grant application and award process, state NPS programs will consult with individual projects to determine the expectations for each project regarding the use of social indicators. Projects mainly focused on developing a watershed plan or TMDL would have different expectations than projects focused on implementing practices to improve water quality. A project's target audience will also influence the social indicator collection process and methods. Specific information about the steps for using social indicators and information about determining target audiences are found in Section A: *Steps for Using the Social Indicator Planning and Evaluation System*, and Section B: *NPS Project Planning*.

SIDMA: Social Indicator Data Management and Analysis

The Social Indicator Data Management and Analysis (SIDMA) tool is a web-based project management aid that supports SIPES in USEPA Region 5 states. SIDMA will be used by project coordinators to collect, organize, and use social indicators related to water quality improvements.

Section C of this Handbook provides instructions for accessing and getting started with SIDMA. Other task-specific instructions are integrated throughout the Handbook.

Table 1: Goals, intended outcomes, and core social indicators

Goal 1:	Increase target audience awareness
	Awareness Outcome 1: Increase awareness of relevant technical issues and/or recommended practices in critical areas
	Awareness Indicator 1: Awareness of consequences of pollutants to water quality **Awareness Indicator 2:** Awareness of pollutant types impairing water quality **Awareness Indicator 3:** Awareness of pollutant sources impairing water quality **Awareness Indicator 4:** Awareness of appropriate practices to improve water quality
Goal 2:	Change target audience attitudes
	Attitudes Outcome 1: Change attitudes to facilitate desired behavior change in critical area
	Attitudes Indicator 1: General water-quality-related attitudes **Attitudes Indicator 2:** Willingness to take action to improve water quality
Goal 3:	Reduce target audience constraints
	Constraints Outcome 1: Reduce constraints to behavior change
	Constraints Indicator 1: Constraints to behavior change
Goal 4:	Increase organizational capacity
	Capacity Outcome 1: Increase capacity to leverage resources in critical areas
	Capacity Indicator 1: Resources leveraged by grant recipient in the watershed as a result of project funding (including cash and in-kind resources)
	Capacity Outcome 2: Increase capacity to support appropriate practices in critical areas
	Capacity Indicator 2: Funding available to support NPS practices in critical areas **Capacity Indicator 3**: Technical support available for NPS practices in critical areas **Capacity Indicator 4**: Ability to monitor practices in critical areas
Goal 5:	Increase target audience adoption of NPS management practices
	Behavior Outcome 1: Increase adoption of practices to maintain or improve water quality in critical areas
	Behavior Indicator 1: Percentage of critical area receiving treatment **Behavior Indicator 2:** Percentage of target audience implementing practices in critical areas **Behavior Indicator 3:** Ordinances in place that will reduce nonpoint source stressors

Eventually, SIDMA will integrate with existing systems already in use for tracking and reporting NPS data. While SIPES is under development, SIDMA will remain separate from those systems. SIDMA includes the following features:

- ***Geographic information and mapping tools:*** Provides watershed boundaries and population data;
- ***Survey builder:*** Provides survey questions to be selected and adapted for use by a watershed project;

- ***Data input screens and database:*** Use to input and store responses from questionnaires and other social indicator data;
- ***Data analysis tools:*** Use to generate statistics from survey data;
- ***Mechanism for reporting social indicator data:*** Use to report social indicator data to USEPA Region 5; and
- ***Report writing tools:*** Provides assistance for communicating social indicator data.

Roles for State NPS Programs

NPS programs within each state have agreed to support social indicators in the following ways:

- Work closely with project staff to help them understand which steps in the SIPES apply to their projects.
- Help project staff determine what types of mid-project evaluations are necessary.
- Help insure that projects collect data using the SIPES protocols.
- Communicate with USEPA and the regional social indicators team on refining and improving SIPES.
- Begin using social indicator data as part of their state program evaluation framework to help identify opportunities to improve program impacts.
- Consider long-term monitoring approaches and opportunities for using social indicators.

State NPS programs may eventually identify additional uses and users for SIPES.

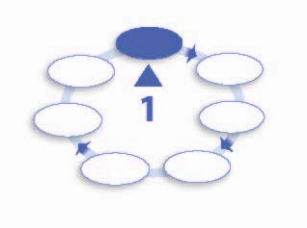
Section A: Steps for Using the Social Indicator Planning and Evaluation System

The Social Indicators Planning and Evaluation System (SIPES) consists of the seven steps illustrated in Figure A.1 below. This section explains each step and identifies which Handbook section contains detailed information to implement the step.

Figure A.1: The 7 steps in SIPES

Steps 1-3 relate mostly to project planning and steps 4-7 relate to project implementation and evaluation. Projects focused solely on developing a watershed plan (or a TMDL planning effort) would complete Steps 1-3 toward the end of their planning process. Most NPS projects focused on plan implementation or education and outreach efforts will complete all seven steps. As a general rule, you will work with your state NPS program to determine which of the steps above relate to your project.

These steps are part of an ongoing process of planning, implementing, evaluating, and adapting your management efforts. The information used in Step 1 emerges from previous work and the results generated in Step 7 can be used in future efforts.



Step 1: Review Project Plan

Before collecting social data, you need to review your planning materials to answer four questions about your project:

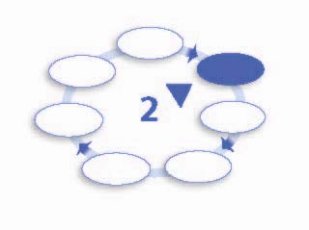
1. What are the specific NPS problem(s) your project is trying to address?
2. What are the critical area(s) that contribute to the problem(s)?
3. Who are the target audiences for the NPS problem(s) your project will address? (Target audiences are the people that influence management decisions for the critical area.)
4. What actions do you want the target audience(s) to take regarding the NPS problems?

The answers to these questions will help set the stage for focusing and evaluating your implementation efforts. Section B of this Handbook provides more information to help you with these questions.

After completing your review, you will need to register your project in SIDMA. Section C of the Handbook walks you through that process. Table A.1 summarizes these activities.

Table A.1: Step 1 checklist

	Activity	Handbook Section
☐	Identify NPS problem	Section B
☐	Identify critical area(s) for project focus	Section B
☐	Identify target audiences	Section B
☐	Identify the potential actions you want your target audience to take	Section B
☐	Register your project in SIDMA	Section C



Step 2: Collect and Enter Pre-Project Survey Data

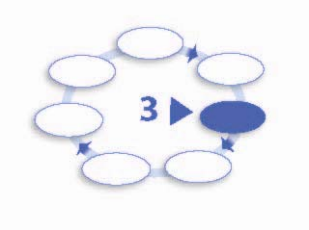
During this step, you will develop a questionnaire to collect data about the NPS awareness, attitudes, constraints, and behaviors of your target audience. SIPES supports using a set of core social indicators, but you can also use this step to collect additional supplemental social indicators to provide additional social data for your project. Section D helps you determine the appropriate survey method for your project.

SIDMA helps you develop a formatted questionnaire by providing pre-developed survey questions for the core indicators and for other supplemental indicators and social data. Some questions must be customized to fit your project. Section E of this handbook provides more instruction on developing the questionnaire.

Section F describes how to administer your data collection method and enter your data into SIDMA. Table A.2 summarizes these activities.

Table A.2: Step 2 checklist

	**Activity**	**Handbook Section**
☐	Choose method	Section D
☐	Compile contact list(s) for your target audience(s)	Section D
☐	Determine sample size	Section D
☐	Select sample	Section D
☐	Create questionnaire	Section E
☐	Determine dates for administering various pieces of your survey	Section F
☐	Create advance letters, cover letters, and postcards	Section F
☐	Develop Quality Assurance Project Plan (QAPP)	Section F
☐	Administer questionnaire	Section F
☐	Enter responses into SIDMA	Section F



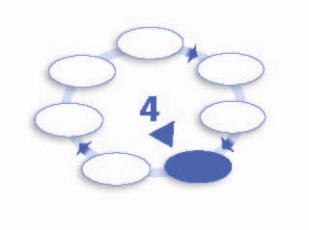
Step 3: Review Data and Refine Social Outcomes

SIDMA will generate a report of your data that will help you refine your social outcomes and your plan for outreach and education activities.

Section G of the Handbook describes how to analyze and interpret your results, establish social outcomes, and develop an outreach and education plan. Table A.3 summarizes these activities.

Table A.3: Step 3 checklist

	Activity	Handbook Section
☐	Analyze results	Section G
☐	Interpret results	Section G
☐	Establish social outcomes	Section G
☐	Develop an outreach and education plan	Section G



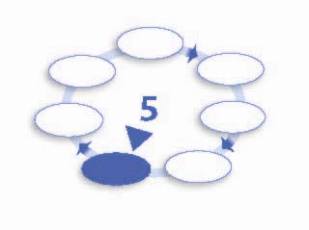
Step 4: Monitor Social Data Throughout Project

Most NPS projects using SIPES will continue for several years. Step 4 involves monitoring social data throughout your project to make sure your activities are leading toward the intended social outcomes you established in Step 3.

The general expectation is that you will evaluate your implementation activity at some point over the course of the funding cycle. If your project involves more than one implementation activity, you should evaluate the outcomes of as many of these as time and resources allow. This allows you to assess whether or not the changes you expect to see are actually happening and will provide information that will help you interpret post-project results. In addition, your project may be developing successful approaches that could be used by other projects. The exact expectations for mid-project evaluations should be discussed and agreed upon with your state NPS program office. Section H provides more information about how to do this. Table A.4 summarizes these activities.

Table A.4: Step 4 checklist

	Activity	Handbook Section
☐	Develop your monitoring plan	Section H
☐	Collect data based on plan	Section H
☐	Review data based on plan	Section H
☐	Adapt project activities as necessary	Section H



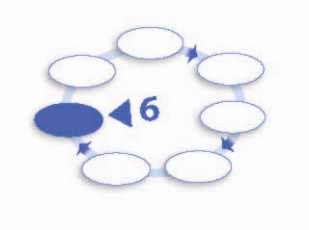
Step 5: Collect and Enter Post-Project Survey Data

After the completion of the implementation phases of your project, you will resurvey your target audience using the same awareness, attitudes, constraints, and practices questions used in Step 3. By comparing your post-project survey data with your pre-project data, the social impact of your project is measured.

SIDMA allows you to regenerate the same questionnaire that you created and used in Step 3 with additional questions to help evaluate your project activities. To assure consistency, the questionnaire must be administered in the same way as the original. Please note that in some cases you will be resurveying the exact same people that you surveyed in Step 3, and in other cases you may survey a new random sample of your target audience. See Section I of the Handbook for more discussion. The data from your post-project survey is entered into SIDMA in the same manner as earlier for data analysis and reporting. Table A.5 summarizes these activities.

Table A.5: Step 5 checklist

	Activity	Handbook Section
☐	Create questionnaire (if necessary—may make minor adjustments to questionnaire used in Step 3.)	Section I
☐	Update contact list(s) for target audience(s)	Section I
☐	Review sample size; modify if necessary	Section I
☐	Select new sample if necessary	Section I
☐	Determine dates for administering various pieces	Section I
☐	Create advance letters, cover letters, and postcards	Section I
☐	Administer questionnaire	Section I
☐	Enter responses into SIDMA	Section I



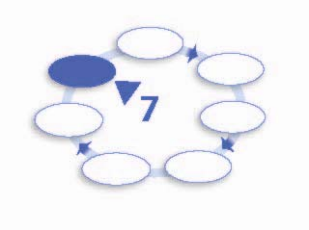
Step 6: Collect and Enter Additional Post-Project Data

At the completion of your project, you will complete a post-project worksheet and enter the responses into SIDMA. The worksheet is found in Section I of this handbook and in Appendix 4 and asks questions related to the capacity indicators, project outcomes, and lessons learned. The end-of-project worksheet should incorporate information from more than just the project coordinator since all involved may have different perspectives.

The first four questions address factors that have supported or hindered your project's accomplishments. In order to answer these questions, it is necessary to incorporate feedback from partners and cooperators. A focus group is the recommended method for gathering this feedback. Focus groups and alternative methods are described in section I of this Handbook. The other questions can be answered with information from project records and opinions of project staff. Table A.6 summarizes these activities.

Table A.6: Step 6 checklist

	**Activity**	**Handbook Section**
☐	Schedule input session for end-of-project questionnaire	Section I
☐	Invite participants to input session	Section I
☐	Develop questions for input session	Section I
☐	Conduct focus group or other method to gather information from stakeholders	Section I
☐	Complete post-project worksheet	Section I
☐	Enter worksheet information into SIDMA	Section I



Step 7: Review Data and Use Results

The data that you enter into SIDMA will automatically be reported to your state and regional EPA and/or state NPS programs for their use in reporting progress being made across the state and region in improving NPS water quality. SIDMA will also produce a statistical analysis of your survey data for your use in reporting your project's success and planning subsequent projects. To help you understand the analysis and data, please refer to Section J of this Handbook.

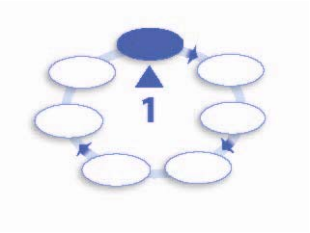
You may be required to submit a final report for your project to your state EPA or state NPS program and other funding agencies. Since reporting requirements vary from state to state, SIDMA cannot create your final report. However, SIDMA's tools generate charts and graphs that can aid the process and create more effective reports. You can download data and export the charts and/or graphs into an electronic document or print them to include as part of a progress or project report.

The results will be helpful to future projects in your watershed and will help your state NPS program and USEPA Region 5 learn about the effectiveness of specific NPS project activities. Table A.7 summarizes these activities.

Table A.7: Step 7 checklist

	Activity	Handbook Section
☐	Review statistical analysis produced by SIDMA	Section J
☐	Interpret statistics	Section J
☐	Report data	Section J
☐	Use knowledge gained to adapt approaches for future projects	Section J

Section B: NPS Project Planning: Setting the Stage for Working With Target Audiences



Introduction

Section A led you through an overview of the steps required to use the tools and processes described in this Handbook. Section B will help you relate your project's environmental goals to the social outcomes that will help you achieve them. ***Note that you will need to complete each of the elements of this section before proceeding further with SIPES.***

NPS projects are typically part of a comprehensive watershed plan and are intended to help achieve the goals outlined in that plan. Because solving and preventing most NPS problems requires people to change behaviors and adopt practices that improve water quality, such projects usually benefit from an education or outreach component. In addition, Section 319 nine-element watershed management plans require such a component. Our focus in this section is on planning the education and outreach aspects of your project.

Not every NPS project will be at the same phase of the watershed management cycle; some will be in the early planning stages, while others will be nearing completion. Water quality projects also vary considerably in terms of scale and size of target audiences. You will need to determine the types of activities that are appropriate depending on where you are in the project cycle.

Context for NPS Project Planning

Planning is an iterative and adaptive process that sets goals and organizes people and resources to achieve those goals. When an issue has many stakeholders, planning typically includes a process by which people form a consensus about the nature of a problem, agree about how it should be tackled, and assign responsibility to carry out various activities. In these situations, stakeholders are often involved or informed throughout the entire process. Other elements of a full project cycle include various pre-project assessments or surveys, budgeting, monitoring and evaluation, reporting to the public, and incorporating evaluation information into decisions about an ongoing or later project.

Watershed planning is a systematic effort to identify watershed-based issues, set goals and objectives, and prepare an implementation approach to address those issues. Watershed planning should occur within the context of other state, regional, or local plans or requirements. Local land use plans and zoning, regional transportation planning, and economic development planning are just a few examples of processes that can impact NPS efforts. The ability to achieve both environmental and social goals is affected by broader community planning and decision-making. Consequently, it is essential that NPS project planning be coordinated with these other efforts as much as possible. At a minimum, project managers should be aware of complementary efforts affecting their project area.

There is no shortage of guidance on effective watershed planning; however, most of this guidance overlooks the social component of planning. USEPA's *Handbook for Developing*

Watershed Plans to Restore and Protect Our Waters[1] should be your main reference for planning NPS projects. In it, USEPA identifies nine minimum elements for watershed plans:

a) An identification of the sources that will need to be controlled to achieve load reductions established in the state's nonpoint source TMDL inventory or any other goals identified in the watershed-based plan.
b) An estimate of the load reductions expected from the management measures prescribed.
c) A description of the NPS management measures that will need to be implemented to achieve load reduction and identification of the critical areas in which the measures will need to be implemented to achieve the NPS pollution abatement goals.
d) An estimate of the assistance (financial and technical) and authorities needed for implementation of the plan.
e) An information and education component, which the state will use to enhance public understanding of the project and encourage public involvement in NPS efforts.
f) An implementation schedule.
g) A schedule of interim, measurable milestones for determining whether NPS measures or other control actions are being implemented.
h) A set of criteria for measuring progress toward water quality standards.
i) A monitoring component to evaluate how effective the implementation efforts are.

SIPES is designed to complement USEPA's *Handbook*, and is specifically focused on evaluating water quality projects. The social information you collect through the steps outlined in this Handbook contributes to elements d, e, f, g, h, and i of the above list. USEPA's *Handbook* provides an in-depth discussion of this planning process.

Figure B.1 shows how the collection of social indicator data corresponds with the watershed planning process as outlined in USEPA's *Handbook*. Steps 1-2 address the early stages of goal-setting and data collection that provide a foundation for NPS interventions. Step 3 uses social data to refine your project's social outcomes and design education and outreach interventions.

If your project is developing a watershed plan, Step 3 of the SIPES Handbook is as far as you need to go at this time. If your project is building on an existing plan, you'll implement planned activities and monitor the results of those activities in Step 4. In Steps 5-7, you'll collect additional information to determine the progress you made toward project goals and outcomes, and evaluate what worked well and what you might change in future projects.

[1] *Handbook for Developing Watershed Plans to Restore and Protect Our Waters.* (2008) USEPA (EPA 841-B-08-002).This reference is available at: http://www.epa.gov/owow/nps/watershed_handbook/#contents

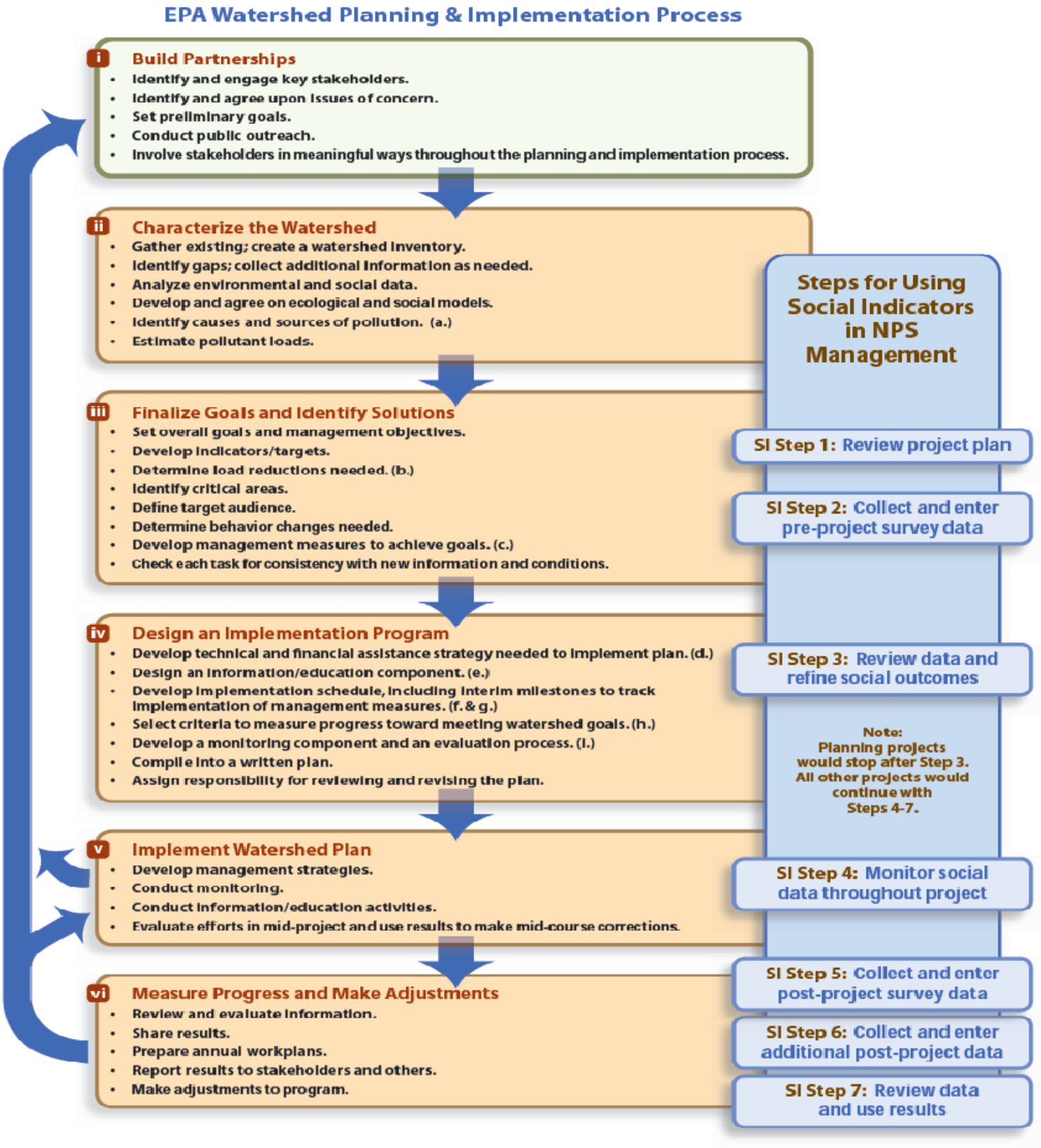


Figure B.1: Relating SIPES steps to the USEPA *Handbook*.

Planning NPS Projects Using Social Indicators

SIPES was developed primarily as an evaluation tool for 319 NPS projects to assess changes in a target audience's awareness, attitudes, capacity, constraints, and behavior over time. However, SIPES can also aid in planning NPS projects by collecting valuable information about the target group that will help guide management activities that have an education or outreach component.

Your project's activities should be clearly linked to the specific goals identified in your watershed or other site-specific implementation plan. As with watershed planning itself, there are many different methods and approaches to planning education and outreach interventions. The system outlined in this handbook emphasizes the following four planning activities that will precede your pre-project survey:

- Identifying NPS problem
- Identifying critical areas
- Identifying target audiences
- Identifying potential actions that you want the target audience to take

You will be asked to supply information about each of these issues as you register your project in SIDMA.

Identifying NPS Problems

Your project was funded to address specific NPS problems affecting or threatening water quality. These problems are identified in your watershed plan or NPS project plan. Specifying the focus of your efforts and selecting critical areas are crucial for determining the target audiences who are expected to be engaged in your project activities, and the actions you want them to take.

Selecting Critical Areas

NPS projects are most effective when environmental and social activities target the geographic areas that are expected to have the greatest impact on solving or preventing specific water quality problems.

For the purposes of this handbook, **critical areas** are defined both as *lands contributing disproportionately to water quality impairment because they are environmentally vulnerable and/or inappropriately managed based on their environmental vulnerability and consistency with long-range goals of the watershed management plan*. Critical areas may be either highly localized patches or more diffuse areas. Critical areas may be defined for individual pollutants and habitat goals or for combinations of factors.

Developing criteria for identifying critical areas can be an element in your water quality work. The criteria will be based on expected environmental outcomes and the relative contribution specific land areas are expected to make to overall load reductions and water quality protection.

Examples of critical area criteria include:

- Potential contribution to pollutant loads (restoration);
- Contribution to ecosystem services, such as pollutant filtering (e.g. wetlands, existing riparian buffers) (prevention); and
- Contribution to fish or wildlife habitat goals, habitat-related criteria such as the composition and structure of riparian vegetation may also be appropriate (restoration or prevention).

Examples of critical areas frequently include:

- Highly erodible soils and steep slopes close to a lake or stream and actively managed or used (restoration);
- High concentrations of nutrient and pesticide loads on land surface, coupled with high rates of flow and a delivery mechanism (restoration);
- Overgrazed areas or areas where livestock have access to a waterbody (restoration);
- Areas where significant development is planned (prevention); and
- Headwater areas (prevention).

Engaging the public in this process can provide important local information, keep stakeholders informed, and build ownership of the plan. The USEPA publication, *Community Culture and the Environment: A Guide to Understanding a Sense of Place*[2] is a valuable resource for ideas on involving interested groups and citizens. Additional information about identifying critical areas is covered in Chapter 10 of USEPA's *Handbook*.

Identifying Your Target Audiences

A **target audience** *is a group of individuals whose awareness, attitudes, capacity, constraints, and behavior must support your project's environmental outcomes*.

The environmental information you've collected as part of your watershed planning will indicate broadly defined groups of people within your project area that are influencing water quality and your ability to achieve environmental outcomes. These are the groups you will survey using the SIPES questionnaire. Examples are "all farmers in a priority subwatershed" or "all households in seven suburban neighborhoods in the project area" or both.

To begin identifying your target audiences, determine who owns or manages land in critical areas, or has an influence on land management. You may find the following resources helpful in completing this task:

- Census data;
- Plat books;
- Register of deeds;
- Homeowners associations;

[2] *Community Culture and the Environment: A Guide to Understanding a Sense of Place.* (2002) USEPA (EPA 842-B-01-003). This reference is available at: http://www.epa.gov/air/care/library/community_culture.pdf

- Mailing lists;
- Zoning classifications;
- Local knowledge (personal communication with other landowners, state agency staff, relevant county or municipal staff, other community members etc.); and
- Information gathered from a social profile or similar method.

In agricultural areas, local knowledge about who manages the land (owners vs. renters) is essential. In suburban and urban areas, mailing lists and zoning classifications can be more effective. Each project area is unique, so carefully think through this task to ensure that you will be reaching the people with the power to make or influence land management decisions.

Selecting Potential Actions

This task is closely related to target audience identification. In addition to identifying *who* needs to take action to improve water quality, you will need to determine *what* you want them to do to reduce or prevent water quality problems. For this Handbook that "what" is the management practices you would like them to adopt. You will need to consider both the ability of a practice to reduce pollutant loading and its potential for adoption to determine which combination of practices is optimal for your situation. For a list of selection criteria for environmental management practices, see Chapter 10 in USEPA's *Handbook*.

Section C: Getting Started with SIDMA – the Online Social Indicators Data Management and Analysis Tool

Creating an Account

The Social Indicators Data Management and Analysis (SIDMA) tool helps organize, analyze, and visualize social indicators related to water quality improvements through spatial relationships.
The home page for SIDMA is http://35.9.116.206/si/index.asp
In order to use the website you will need to create a new account.

Figure C.1: SIDMA homepage with user logged off

To create a new account:

- Find and click "Login", located in the top menu bar (see Figure C.1).
- Select "Create New Account".
- Complete the required information.
- Submit request by sending an e-mail to the Administrator that your id is waiting to be approved: curtis.cynthia@epa.gov.
- Test login; once the administrator gives you the go ahead, try logging in.

You should see on the home page in the Login status that you are logged on (see Figure C.2).

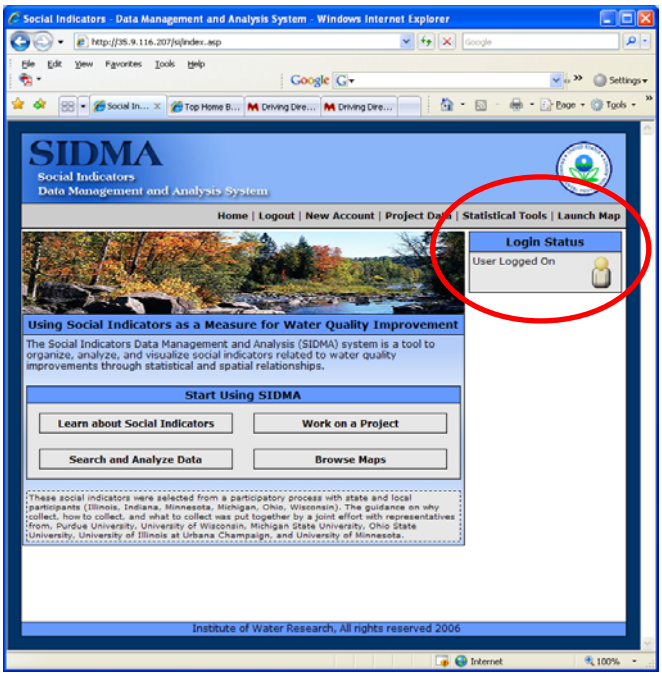


Figure C.2: Illustration of user logged on

Creating a Project in SIDMA

Once you have successfully logged in, you can create your own project or review other projects in the system. To do this from the home page, select "Projects". This will take you to a page that will allow you to create your own or view existing projects.

To create a new project simply click "Create a new project" and fill in the relevant information. (The identifier field is optional for those states that have unique ID numbers for their projects and would like to track them that way.) When you have entered all the required information, select "Save project form". You will see a summary of the project you just created. Section E describes how to create your SIPES questionnaire using SIDMA.

Note: You will only be able to edit or create surveys for projects you create; however, you can browse and look at surveys and survey results from other projects. You can see all the editable projects you have created by clicking the "My Projects" button from the Search Projects Page.

Answering the Planning Questions from Section B

Before you begin working in SIDMA, you should answer the four questions about the focus of your project:

1. Have you identified the specific NPS problem(s) your project is trying to address?

2. Have you identified the critical area(s) that contribute to the problem(s)?

3. Have you identified target audiences for the NPS problem(s) your project will address?

4: Have you identified the actions you want the target audience(s) to take to address the NPS problems?

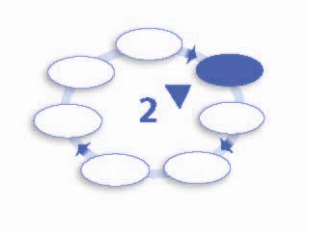
SIDMA provides space for you to describe your NPS problems, critical areas, target audiences, and actions you would like the audiences to take.

Additional SIDMA Information

Additional information about using SIDMA is provided throughout this Handbook. Most notably Section E (Developing Your Social Indicators Questionnaire) and Section G (Using Survey Results to Develop Education and Outreach Strategies) contain valuable information about SIDMA.

If SIDMA is malfunctioning, please contact Jeremiah Asher at Michigan State University, asherjer@msu.edu. If you are having difficulties getting logged on, please contact Cyd Curtis at USEPA, Curtis.Cynthia@epa.gov.

Section D: Choosing a Survey Method and Sample Size



This section describes methods for choosing a survey method and the appropriate sample size for your survey. In the following section, Section E, you will learn how to create project-specific questionnaires in SIDMA. In Section F, you will learn how to administer the survey you have created. This section contains an overview of different types of surveys – mail, e-mail, in-person, group setting, and telephone. Each methodology has advantages and disadvantages and may only be appropriate in specific situations (see text below and Table D.1). After you select the type of survey you will conduct, you will need to gather contact information for your target audience. Depending on your target audience size, you may need to select a random sample of people to survey.

Mail Surveys

In most cases, projects will conduct a mail survey. The mail survey is relatively easy to administer by following a "five-wave design" which consists of five separate mailings to survey respondents. A mail survey is lower in cost than in-person or phone surveys when the sample size is large. Usually it is easier to obtain a representative sample for a mail survey than for an e-mail or phone survey. The portion of your target audience that has access to reliable e-mail with an e-mail address that you can obtain is likely to be low. Similarly, fewer and fewer households have landlines each year and so a phone survey may not be reflective of the larger target audience. There are several drawbacks associated with conducting a mail survey. One of the drawbacks is a potentially low response rate, but this can be mediated by using the methods detailed later in this section. Another disadvantage of the mail survey is bias created when illiterate or semi-literate respondents cannot complete the survey.

Telephone Surveys

Telephone survey software has the capacity to dial random phone numbers within specified parameters to conduct a random sample; however, this software is costly and it is often not possible to know if residents reside in your watershed. It is recommended that you only use phone surveys with small populations for which you have contact information and will not need to use telephone survey software. The exact size of population you can use for phone surveys will vary for different groups based on staff capacity to make the calls at various times of the day and evening.

Phone surveys are gradually becoming less capable of accurately representing an entire community as increasing numbers of people switch from landlines to cell phones. There is not yet a reliable way to locate cell phone numbers for geographically targeted respondents. An additional disadvantage of the phone survey is determining the best time to contact people. You may need to call during times other than business hours, which might be difficult for staffing purposes. Unless your sample size is small, phone surveys require a great deal of staff time which is expensive and detracts from other work duties.

In-person Surveys

In-person surveys can enable us to collect high quality data but are very labor and time intensive. There are also concerns about reliability as each interviewer may have a distinct style that could bias results. One of the advantages of in-person surveys is that response rates are generally higher than for other types. Individuals who are conducting the survey must be trained. If you have a small target population and a handful of well-trained interviewers, this could be a very useful methodology. Other times to consider using in-person surveys are when you have a target audience that is unlikely to respond to mail surveys or other non-personal forms of interaction. A final consideration that is unique to in-person surveys is the need to ensure the safety of the interviewers.

E-mail Surveys

For the purposes of this Handbook, e-mail surveys are surveys that participants are invited to respond to via an e-mail that links to a website. E-mail surveys can be useful for specific purposes; however, challenges involved in obtaining reliable lists of e-mail address and limited access for some people make them problematic for general use. Even if a good list of e-mail addresses is obtained, spam filters often do not allow e-mails to be received from unknown senders or from bulk mailings. For the most part, e-mail surveys will not be appropriate for collecting social indicator data and there are criteria that need to be met for e-mail surveys to be effective. You need to have working e-mail addresses for your target audience and you must be confident that everyone has functional Internet access. Usually, you will only be able to conduct an e-mail survey when the population is small.

Group Surveys

A group survey is one that is administered to individuals in a group setting. This is appropriate only for very small groups that are likely to be gathered in one place at the same time. The exact group size will differ based upon context, but it needs to be small enough that you can ensure everyone will attend the meeting. Advantages include an assured response rate and the ability to work with the group on other issues related to your watershed project after they complete the survey. A caveat of administering a survey this way is that it is very important that people not influence each other's responses during the survey and that the people running the group not bias the answers in any way.

Hybrid Approaches

It is possible to combine different survey methodologies. For example, a mailed survey can also include an Internet address enabling respondents to reply either by mail or on the Internet. Future versions of SIDMA will allow you to conduct your survey this way. However, if you choose to combine methodologies using this version of the Handbook and SIDMA, you should consult with a survey professional to avoid potential risks associated with this type of approach, such as response bias.

Table D.1: Advantages and disadvantages of different survey types

Survey Type	Advantages	Disadvantages	Other Considerations
Mail	• Relatively easy to administer • Lower cost than phone/in-person except for small groups • Usually easier to obtain a representative sample	• Gathering appropriate addresses • Data comes in over a period of time • Literacy levels • Response rates • Not certain who actually completes the questionnaire	• Following the five-wave design • Cost about $9 per address on mailing list (includes cost of all five waves). • Costs may increase if responses are low and have to do followup phone surveys
E-mail	• Inexpensive • Appropriate for a finite population for whom you have all e-mail addresses	• Not representative • Gathering e-mail addresses • Respondents with slow Internet connections will have difficulties	• Appropriate software • Costs negligible
In-person	• High response rates • Interviewer can explain questions	• Higher cost due to labor and time • Need to train interviewer • Can be difficult to schedule • Interviewer bias • Potential concerns about interviewer safety	• Presentation of interviewer • Establishing rapport • Gaining trust • Recording interview data • Useful to survey small target populations • Costs incurred are primarily to train or hire competent interviewers and for data entry of responses
Group	• Data is gathered all at once • Gathering people together allows for discussion of other topics	• Can only be used with very small populations • Scheduling survey time may be difficult • Bias can be introduced by attendees and group leaders	• Costs will include printing of questionnaires and data entry
Telephone	• Relatively low cost for small samples • Quick data collection • Good response rates	• Need to train interviewers • Miss people in population due to cell phones, not having phone service, and unlisted landline numbers • Determining optimum contact times • Generally more expensive than mail surveys	• Usually need appropriate software • Cost averages about $30 per completed questionnaire if use a non-profit firm; less if volunteers from the watershed group conduct the surveys.

Census and Samples

If you are working with a relatively small target audience of roughly 535 or fewer, you should include the entire target-audience population in your survey. This is called taking a *census* of the

population versus a sample. In this case, it is important to try to get as many people to respond as possible since you will not be relying on statistics to generalize to a larger population. The methods for conducting a census are the same as for a sample, but you may consider using more personalized forms of surveys such as in-person or phone contact. When you cannot do a census because your target audience is too large, it is important to recognize that tools for statistical analysis rely on random samples, and without a random sample, results do not generalize to a larger population. While it is important to survey people who are most active in project-related activities, responses solely from these people are not likely to be representative of the larger population you are targeting.

Sample Size

The **sample size** is the number of returned questionnaires needed to accurately represent your entire population. Since you can't expect all of the questionnaires to be returned, you will need to send more questionnaires than the sample size. It is standard to assume that 10 percent of the questionnaires will be undeliverable due to incomplete or inaccurate contact information, or for other reasons. It is also standard to assume that 10 percent of the returned questionnaires received will be incomplete or unusable. While formulas and tables exist to allow for the calculation of sample sizes, you will not need to do this work. Table D.2 provides guidelines for the number of surveys you need to mail to get the appropriate sample size to represent your population. This table provides the number of questionnaires to mail for a sampling error of +/- 5 percent.

Table D.2: Sample size

Size of Target Audience	Target Number of Responses Needed	Number of Questionnaires to Mail
<535	217	Use all names (conduct a census)
750	254	627
1,000	278	686
2,500	333	822
5,000	357	881
10,000	370	914
25,000	378	933
50,000	381	941
100,000	383	946
1,000,000	384	948
100,000,000	384	948

*Number of questionnaires to mail is based upon a 95% confidence level and a sampling error of +/- 5%.
Table adapted from Dillman.[3]

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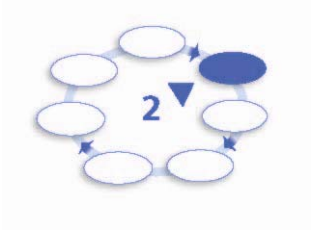
Once you have determined your sample size, you will need to draw a random sample of addresses from your target audience mailing list. To do this using Microsoft Excel:

[3] Dillman, D.A.(2000) Mail and Internet Surveys: The Tailored Design Method. 2nd Ed. New York, NY: John Wiley and Sons.

1. Insert two columns at the beginning of a spreadsheet containing the names and addresses of your target audience.
2. Fill the first column with randomly generated numbers using “=RAND()”. There should be nothing entered in the parentheses.
3. Copy the numbers from the column and paste them into the second column using “paste special” and “values.”
4. Sort in either ascending or descending order and select the number of addresses you need from the top of the table.

Section E: Developing Your Social Indicators Questionnaire



Introduction

This section provides detailed instructions on how to create a questionnaire for collecting social indicator data. Questionnaires can be developed through SIDMA and downloaded for additional formatting and printing. This section describes how to select and customize questions in SIDMA and how to create and print the questionnaire in SIDMA, including formatting suggestions.

In order to develop your questionnaire, you will first need to enter your log-in information and create your project in SIDMA. These instructions can be found in Section C of the Handbook. To help you select questions from the master list of survey questions, you might want to print out the entire survey (agricultural or non-agricultural) for your project. You can also find copies of the questionnaires in the appendix. Familiarize yourself with the questions and layout, but do not be alarmed by the questionnaire's length. The full questionnaire contains all possible options for questions and you will be customizing the questionnaire for your purposes.

As you work through the instructions below, select the questions that you'll be using in your survey on your paper copy of the questionnaire. Also, make the appropriate changes to the questions that you wish to customize. Doing this on paper first will make it much easier to select your questions in SIDMA later. You will have the ability to make some types of edits to your questions and format your questionnaire when you download what you produce in SIDMA to your word processing program.

Selecting and Customizing Questions in SIDMA

Below, you will find instructions for each set of questions in the social indicator questionnaire.

Rating of Water Quality

This question is required in its entirety. Essentially, this is a "warm-up" question for the survey respondent that prompts their thinking about water quality issues and orients them to the subject matter. This question also measures your target audience's awareness of water quality problems in your watershed.

Your Watershed

Like *Rating of Water Quality*, this question also gets respondents thinking about the issue and is required in its entirety. It will also give you some basic information regarding how familiar your target audience is with the basic concept of a watershed and how familiar they may with your particular watershed.

Your Opinions

This question is required in its entirety. It provides data regarding the attitudes of your target audience about general water quality issues. The responses from the questions in this table will be scored together as an index to create one overall attitudinal score.

Water Impairments

This question provides a measure of your target audience's awareness about water impairments. This question is required, but the options within it are customizable for your watershed. On the hardcopy of your questionnaire, select no less than three (3) and no more than ten (10) impairments that are applicable in your watershed. This information should be available in your watershed plan or preliminary planning materials.

In some cases, the impairment options may not be consistent with the terminology that you are using in your watershed. If this is the case, select the options that most closely match the impairments in your watershed, and refer to the section below on formatting your survey after downloading the questionnaire to the word processing program on your computer.

Sources of Water Pollutants

This question provides information about your target audience's awareness about the causes of water quality impairments. This question is required, but the options should be customized for your watershed. On the hardcopy of your survey, select no less than three (3) and no more than eighteen (18) sources that are applicable in your watershed.

Consequences of Poor Water Quality

This question is intended to measure your target audience's awareness of what happens as a result of poor water quality. This question is required, but the options should be customized for your watershed. On the hardcopy of your survey, select no less than three (3) and no more than twelve (12) sources that are applicable in your watershed.

Practices to Improve Water Quality

This question is required. It is intended to measure overall awareness, experience, and willingness to use practices tied to improved water quality. On the hardcopy of your survey, you will find categories in bold print, such as **Household Management** or **Nutrient Management.** Under each category are associated practices that are meant to alleviate water quality impairments. Locate and select the practices that you will be promoting through your project. **You do not need to select a practice from each category.** The bolded headings are there to help you locate the types of practices that will be applicable to your project, and will not appear on the questionnaire. Depending on the scope of your project, this question may become lengthy and require two pages in your questionnaire. The maximum number of practices that you can choose is around 12-17; the exact number will depend upon the number of words in the practice descriptions that you choose.

Making Decisions about My Property

This set of questions is required in its entirety and is designed to collect information regarding the constraints individuals have for implementing practices to improve water quality.

About You/About Your Agricultural Operation

These sections are required and include demographic, household, and/or agricultural operation characteristics. This type of information will be helpful for you when targeting your management education efforts. For example, you may find out that the lowest levels of awareness and adoption are present in one demographic segment of your target audience. The questions that are included (both required and optional) have been shown in research to be related to adoption decisions.

The *About You* questions differ for the agricultural operation and non-agricultural questionnaires. Both provide information to help you better understand the people you will be working with. Each set of questions is discussed separately.

About You: Non-Agricultural

The following questions are required:

- Do you make the home and lawn care decisions in your household?
- What is your gender?
- In what year were you born?
- What is the highest grade in school you have completed?
- What is the approximate size of your residential lot?
- Do you own or rent your home?
- How long have you lived at your current residence?
- Do you use a professional lawn care service?

The remaining questions are optional but may provide important information relevant to your project. You should select those that meet your needs.

About Your Agricultural Operation

The following questions are required:

- Which of the following best describes your position as an agricultural operator?
- Please estimate the tillable acreage of your agricultural operation this year.

The remaining questions in *About Your Agricultural Operation* are optional and may provide important information relevant to your project. You should select those questions that meet your needs.

About You: Agricultural

The following questions are required:

- What is your gender?

- In what year were you born?
- What is the highest grade in school you have completed?

The remaining questions are optional and can be used in both Agricultural and Non-Agricultural surveys. You should select those questions that meet the needs of your project.

Septic Systems

The section pertaining to septic systems is optional. If on-site septic systems will be addressed by your project, or if you would like to quantify information about the potential extent of septic management issues in your watershed, you should consider using some or all of these questions in your questionnaire.

Information Sources

The question pertaining to information sources is optional. If you are interested in understanding where your audience gets information regarding water quality issues in order to better target your information and outreach activities, you may want to include this question. Select and customize the information sources that are of interest to your project.

Comments Page

The comments page is required, and will automatically be included with your questionnaire. This section leaves a space for respondents to leave open-ended comments.

Creating Your Own Questions

The survey questions provided in SIDMA have been extensively pre-tested and reviewed and will produce sufficient information for you to use social indicators in your project. If you would like to include additional questions, this should be done through consultation with experienced survey developers. Please note that, at this time, you will not be able to use SIDMA to add these questions to your questionnaire or to enter and analyze the responses to these questions.

Creating the Questionnaire in SIDMA

Now that you have selected your questions from the hardcopy, log into SIDMA. From the homepage, select “Create/Work on a Project”, and then select the option “View/Edit Existing Project” (see Figure E.1).

Figure E.1: SIDMA homepage

You can see the editable projects you have created by selecting the "My Projects" button from the "Search Projects" page.

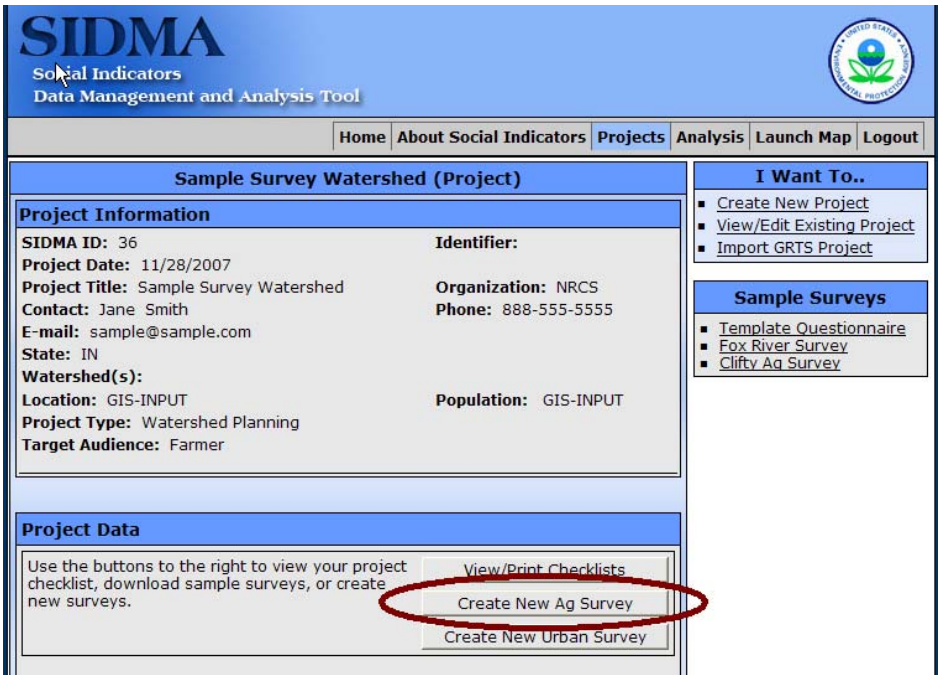
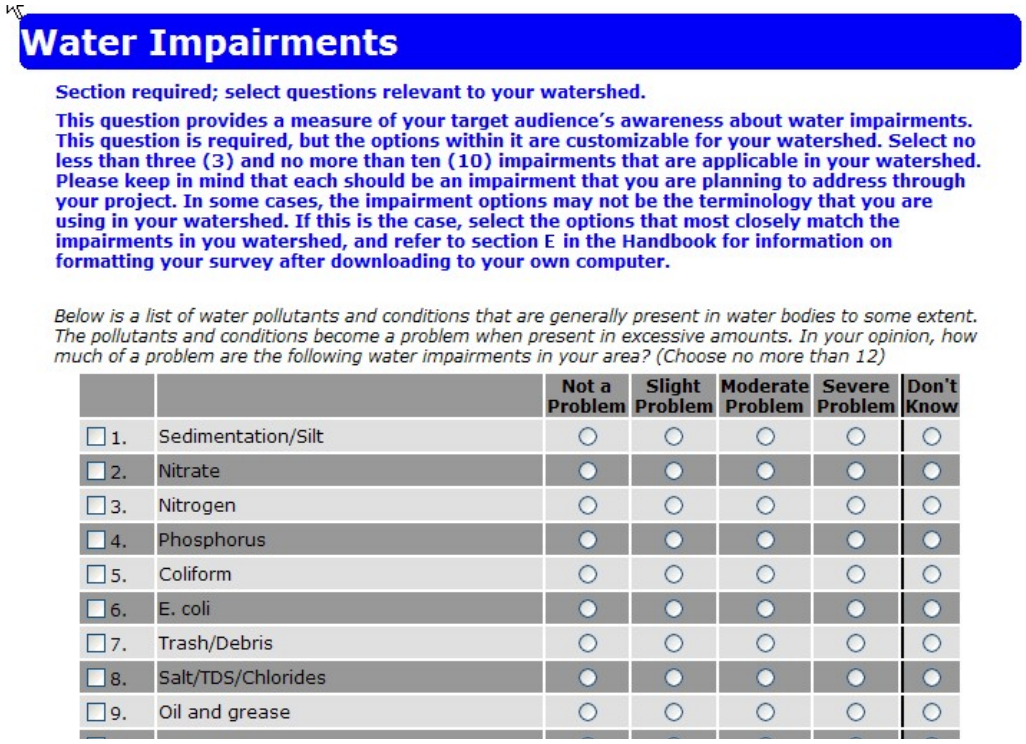


Figure E.2: Project page in SIDMA with Create New Ag Survey highlighted

Find your project, and select open. On the next screen, select "Create New Agricultural Survey" or "Create New Non-Agricultural Survey", whichever is appropriate for your project (see Figure

E.2). SIDMA will assemble the appropriate question options for your type of survey and display all of the questions on one continuous page. Referring to your hardcopy, select the options and questions that are customizable for your survey.

Notice that for the first three questions, you will not be able to deselect the options. As stated earlier, these are required in their entirety. In Figure E.3, you will see that the *Water Impairments* question does not have any selected options. Using the boxes beside the impairments, check the options you have decided to use. Follow this procedure for all of the questions that have customizable options, in addition to questions that are completely optional. Again, it is easier to work through a hardcopy first, as the lists are quite long.



Water Impairments

Section required; select questions relevant to your watershed.

This question provides a measure of your target audience's awareness about water impairments. This question is required, but the options within it are customizable for your watershed. Select no less than three (3) and no more than ten (10) impairments that are applicable in your watershed. Please keep in mind that each should be an impairment that you are planning to address through your project. In some cases, the impairment options may not be the terminology that you are using in your watershed. If this is the case, select the options that most closely match the impairments in you watershed, and refer to section E in the Handbook for information on formatting your survey after downloading to your own computer.

Below is a list of water pollutants and conditions that are generally present in water bodies to some extent. The pollutants and conditions become a problem when present in excessive amounts. In your opinion, how much of a problem are the following water impairments in your area? (Choose no more than 12)

		Not a Problem	Slight Problem	Moderate Problem	Severe Problem	Don't Know
☐ 1.	Sedimentation/Silt	○	○	○	○	○
☐ 2.	Nitrate	○	○	○	○	○
☐ 3.	Nitrogen	○	○	○	○	○
☐ 4.	Phosphorus	○	○	○	○	○
☐ 5.	Coliform	○	○	○	○	○
☐ 6.	E. coli	○	○	○	○	○
☐ 7.	Trash/Debris	○	○	○	○	○
☐ 8.	Salt/TDS/Chlorides	○	○	○	○	○
☐ 9.	Oil and grease	○	○	○	○	○

Figure E.3: Water Impairments question in SIDMA survey builder

Now that you have created your questionnaire in SIDMA, the next step is to open a word processing program. Since most people are familiar with *Microsoft Word*, the process of formatting your survey is discussed for that program. To assist with formatting of your questionnaire, you can view and download examples of completed questionnaires from within the survey builder in SIDMA.

Copy your questionnaire from SIDMA by selecting the entire questionnaire with your mouse and paste into Word. If the questionnaire is off-center, left-click on the top of the questionnaire and move it over. The questionnaire is essentially one large table, and thus can be easily moved.

If a row hangs over from one page to the next, you will need to use the Table menu to create or delete rows. By playing with the formatting on the rows, you can fix the over-hang without too much trouble.

If you need to make any adjustments to your SIDMA selections (e.g. making the impairment consistent with local language) you can do this easily now that the survey is in Word. Simply delete the impairment chosen in SIDMA and replace with local language. Be sure to check that this doesn't cause the question to continue onto the next page.

After you have adjusted the formatting, print a test copy. Check carefully to be sure the questions are all readable and that no part of the questionnaire has been cut off. You also want to make sure that all questions, except *Practices to Improve Water Quality,* are contained on one page.

To produce your survey cover, download the cover template (in Microsoft Word format) from the survey builder in SIDMA and insert the appropriate title, map (or other suitable image), and instructional language. The back page of your survey should include a space for survey respondents to add comments.

After you have printed a draft version of your questionnaire, you should check with your state funding agency for information regarding possible questionnaire review procedures in your state.

Printing Your Questionnaire for Mailed, In-Person, and Group Surveys

You should expect your questionnaire to be approximately 12 pages long, including a cover page. Try not to exceed this number. If you do not select any optional questions, you may be able to get your questionnaire to fit on 8 pages. If you are printing your questionnaire as an 8.5 inch by 11 inch booklet, we recommend using folded sheets of 17 inch by 11 inch paper. By printing on front and back, each folded sheet of paper will provide 4 pages for your survey. The booklet would then be saddle stitched or stapled in the center of the sheets. You can find an example of this type of questionnaire in Figure E.4. For mailing purposes and presentation, it is best not to fold the questionnaire to fit in a smaller envelope.

Even if there are only a few dozen individuals on your mailing list, you should consider having the questionnaire printed by a professional print shop for a polished look. If your local project sponsor has printing capability in-house, this can also be a viable option. The final survey does not need to be in color but should be very readable and appealing to the respondents. Remember, the design and look of your questionnaire will impact your response rate.

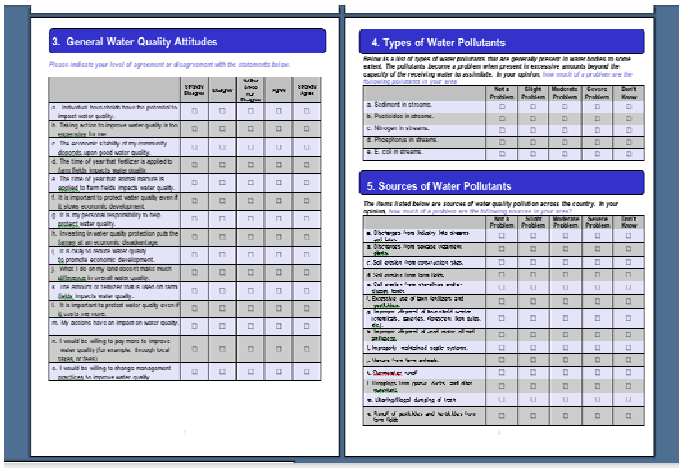


Figure E.4: Image of booklet survey

Sample cover pages can be seen in Figure E.5.

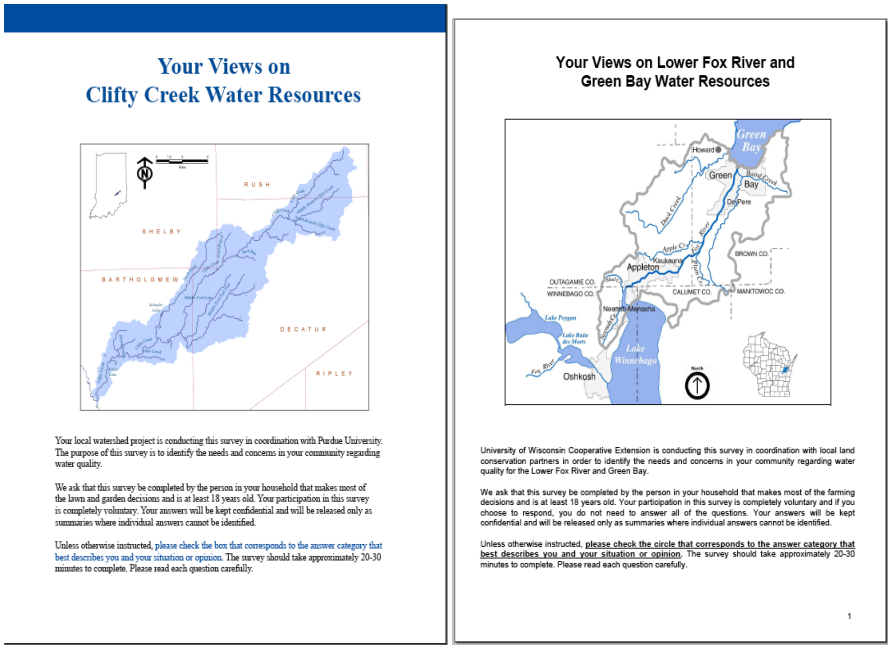


Figure E.5: Images of covers for questionnaires

Modifying and Printing Your Questionnaire for a Phone Survey

At this point, if you are planning to conduct a phone survey, you will need to produce paper questionnaires that phone interviewers will complete by hand based on responses of the person they have called. Questions read to respondents over the phone will follow a slightly different script than those sent in the mail. Also, phone surveys do not need the same type of formatting or a cover with a map image.

Writing the Script for Your Questionnaire

Phone Introduction

Hello, my name is _____ and I am calling on behalf of the <insert name> watershed group. A while ago we sent you a letter briefly explaining our project. I am happy to read you the letter if you didn't receive it or don't remember the details. (Re-read letter if they wish)

I am calling you to ask you some questions about your views on water resources in the <insert name> watershed. Your answers will be strictly confidential. If now is not convenient, I am happy to re-schedule at your convenience.

Do you have 20-30 minutes right now?

(If yes, proceed with interview)

(If no): When would be a convenient time to call back?

(If they refuse to participate): Thank you for your time, and have a nice (evening, afternoon).

Your Watershed

(Rating of Water Quality):

First, how would you rate the water quality in your area for the following issues. Please respond with Good, OK, Poor, or You Don't Know.

(Definition of watershed)

I am going to read several statements. When I have finished, please tell me which one fits your definition of what a watershed is. (Read statements)

Your Opinions

I am going to read several statements. Please tell me your level of agreement with each by responding: Strongly Agree, Agree, Neither Agree nor Disagree, Disagree, or Strongly Disagree. (Read items and record answers. Repeat response categories if necessary.)

Water Impairments

I am going to read a list of water pollutants that are present in water bodies to some extent. The pollutants become a problem when present in excessive amounts. In your opinion, how much of a threat to water quality are the following pollutants in your area, from: Not a Problem, Slight Problem, Moderate Problem, Severe Problem, or you Don't Know.

Sources of Water Pollutants

I am going to read a list of sources of water quality pollution across the country. Please tell me how much each pollution source is a problem in your area. Please respond: Not a Problem, Slight Problem, Moderate Problem, Severe Problem, or you Don't Know.

Consequences of Poor Water Quality

Poor water quality can lead to a variety of consequences for communities. In your opinion, how much of a problem are the following issues in your area? Please tell me whether it is: Not a Problem, a Slight Problem, a Moderate Problem, a Severe Problem, or you Don't Know.

Practices to Improve Water Quality

Now we will discuss (HOUSEHOLD or FARM) practices that have the potential to improve water quality.

(Interviewer: Preface each practice with, "Have you heard of (practice)"?

If yes: Does this apply to your (household or farm)?

If yes: Do you currently use this practice?

If No: Have you tried it in the past?

If yes, check "I have tried it, but I no longer do it")

If No: Are you familiar with the practice? (If not familiar, check: I've heard of it but am not very familiar with it. If familiar, check: I am familiar with it, but I've never done it).

For all items: After each practice where the respondent answers anything other than DOES NOT APPLY, ask:

Would you be willing to try or continue using this practice? Please answer Yes, No, or Maybe. (Interviewer: Move on to next practice)

Making Decisions for My Property

I will read a list of factors believed to influence landowners when making decisions about management practices. Please tell me whether the factor is Not at all important, Somewhat important, Important, or Very important to you. You can also tell me you are undecided.

About You (For Non-farm surveys)

Now, I am going to ask you a series of questions about your household. Please remember that all responses are confidential.

(Interviewer: Read each question followed by response options.)

About Your Farm Operation (For producer surveys)

Now, I am going to ask you a series of questions about your farm operation. Please remember that all responses are confidential.

(Interviewer: Read each question followed by response options.)

About You/Farm

Now, I am going to ask you a few questions about you. Please remember that all responses are confidential.

(Interviewer: Read each question followed by response options.)

Septic Systems

Do you have a septic system?

> If yes: Continue through the septics questions by reading the question. If no, skip septics questions.

Information Sources

People get information about water quality issues from a variety of sources. I am going to read a list of several organizations. For each organization, please tell me how important they are to you as a source of information: not at all important, somewhat important, you are undecided, important, or very important.

Comments Page

Thank you so much for your time. Would you like me to record any comments you have about this survey or the issues in the survey? Interviewer: legibly handwrite comments; if they do not have comments, finish with: Again, thank you. If you have any questions about this project, you can contact (Name) at (phone number).

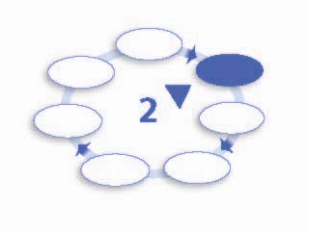
Printing your Phone Questionnaire

Once you have finalized the language for introducing each question, print off copies for the interviewers conducting the phone survey on a regular office printer.

Modifications for E-mail Surveys and Hybrid Approaches

SIDMA does not currently support e-mail survey delivery. If your project determines that an e-mail survey is appropriate, you would need to recreate your questionnaire using a commercial web-survey service such as a *Zoomerang*® or *Survey Monkey*®. For most programs, you could copy the language from each question you produce in SIDMA and paste that language directly into the web-survey program. It will be important to review your final web-based questionnaire to make sure it matches the one developed in SIDMA.

Section F: Administering the Social Indicators Questionnaire



By this point of the Handbook, you should have chosen the type of survey you will conduct, and you should have created your survey using SIDMA. In this section, we provide detailed instructions for administering or conducting your questionnaire. We start out with general information that pertains to all types of survey methods and then focus in on specifics related to different survey methods .You only need to read the instructions for the type of survey you have chosen to conduct. Finally, the appendix to this section contains many detailed examples to support your efforts. After you have developed all the components for your selected data collection method, you will need to file a Quality Assurance Project Plan (QAPP) with your state NPS program. To generate a social indicators QAPP, go to your project management page within SIDMA and follow the directions there.

Privacy Issues

Regardless of the type of survey that you conduct, you need to consider how you will protect the privacy of your survey respondents. **It is essential that the collected data are never associated with any individual respondent.**

Once you have created your sample list, you should assign an identification number to each participant. Each questionnaire should include an identification number on the front or back cover. If you are doing a mail survey, be sure to match the questionnaire's identification number to the identification number of the participant on the mailing label. To track who has responded to the survey and to record survey responses, you will use the identification number and not the individual's name. This ensures confidentiality for your respondent and limits bias as respondents are more comfortable providing truthful answers. As questionnaires are returned, you will record that they have been received so you will not mail those respondents a second and/or third questionnaire.

You will want to keep the spreadsheet with names and identification numbers for the duration of your project as you will need to use it again to conduct your post-project survey. This spreadsheet should be kept in a secure location – preferably only accessible to people with a password. You should never try to link the data back to the individual. Similarly, you should never report who has and has not responded to the survey – even this is a violation of someone's privacy.

If you are using a form of data collection that involves staff talking to respondents, such as phone surveys or in-person surveys, it is essential that the staff be trained to not disclose anything they learned during the interview to anyone other than the interviewee.

What if people aren't responding to your survey?

Low response rates raise concerns about how much your results reflect the actual situation in your project area. By the end of your process, your response rate should be higher than 40 percent.

Monitoring your response rates throughout the survey delivery process allows you make adjustments if necessary. Following the process described in this section, you should expect to see a 20-percent or higher response after your first reminder. If you don't you should review your process:

- Is the cover letter clear?
- Was your cover letter printed on recognizable local letterhead and signed by someone from the area?
- Did you use real stamps on the survey packet and on the return envelope?
- Is the return address local?
- Is the questionnaire too cluttered?

Don't wait until the process is completed—make adjustments along the way to increase your response rate.

If you followed all the correct procedures and you still have a low response rate, it will be important to compare those who responded and those that did not. Showing that a small group of respondents closely resembles the large group of non-respondents increases confidence that the responses reflect the larger group. In agricultural settings, you may have access to measures of farm and/or herd size. In other settings, you might look at Census information such education levels, length of time at current address, or other characteristics that describe your group. You can compare your respondents to the larger population using these measures.

Whatever your final response rate, make sure to disclose the response rate and any additional measures that compare respondents and non-respondents.

Determining Contact Information for Target Audience

After you select your method of survey delivery, you must next identify every member of your target audience. This is often the most difficult part of conducting a survey. It is one thing to say that your target audience is everyone living in a certain geographical or political boundary, but it is much more difficult to personally identify each of these people. For the purposes of conducting a survey, it is recommended that you think in terms of households instead of individuals. In most cases, you will want one adult living in the household to respond. So, in essence, you are searching for addresses, phone numbers, or e-mail addresses within your target area. We provide information for each type of survey method about how to determine contact information.

Calculating Response Rates

To calculate the response rate for mail and e-mail surveys, use the following formula:

$$\frac{number\ returned\ completed}{(number\ delivered) - (number\ returned\ as\ undeliverable)}$$

The response rate should be reported on all documents that summarize survey results.

For other types of surveys, the response rate calculation is similar. For phone and in-person surveys, the response rate is based on the number of people willing to complete the survey divided by the number of people reached by phone or in-person. For group surveys, the response rate is based on the number of people who attended the meeting and completed the survey divided by the total number of people invited.

Data Entry for Project Surveys

As soon as the questionnaires are returned, the responses should be entered into your data management system or statistical software package. SIDMA has been designed to provide easy entry and analysis of your data and will provide long-term storage of this data for later use.

Data Cleaning

The familiar adage "garbage in, garbage out" is an appropriate one when dealing with survey data. It is important that the numbers that are entered into either SIDMA or a different analysis package are correct. To help with this, SIDMA will prompt you if it detects any errors during data entry, such as questionable dates.

In addition, for every ten surveys you enter, SIDMA will randomly select one for data verification. You will need to re-enter the data for this survey. If there is less than 1% difference between the two sets of survey responses, all ten surveys will be marked as quality checked. However, if there is a greater than 1% difference between the two surveys, these ten surveys will be flagged for further checking by your project staff.

You should keep the paper copies of the survey until your project is complete.

Mail Surveys

Acquiring Addresses

Techniques for gathering addresses for a mail survey differ according to your target audience. The general division is between urban and rural audiences. However, within the rural audience, there might be both agricultural producers and rural non-agricultural residents.

In **urban areas,** there are several options for gathering addresses. If you have a well-defined target audience it can be beneficial to work with local agencies, utilities, or businesses that can supply addresses. If the county you are working within has a public GIS function on their

website, addresses can be obtained through this method. By referring to the map, you can create a watershed-specific list of addresses. You may need to type the addresses into a separate file, which can be time-consuming. Generally, these records will be for home owners; if the owner has rented the property to someone else, then the respondent name won't match the address.

If you are unable to work with local entities to gather addresses, it is possible to purchase a mailing list from a survey sampling company. You can use an Internet search engine to find such a company. The advantage of this method is that it is very easy, though it may be somewhat expensive. The major disadvantage to consider is that survey sampling companies cannot provide addresses based on watershed boundaries. Purchasing addresses can be a useful tool when you have a well-defined target area in the watershed. Most survey sampling companies use a variety of sources (such as phone listings, utility bills) for their addresses to provide the most complete list possible.

If you are working with a **rural agricultural population**, often the best method for gathering addresses is through the local Soil and Water Conservation District, the Natural Resources Conservation Service (NRCS), and/or the Farm Service Agency (FSA). These agencies often send mailed communication to area producers, and therefore may already have a mail list. A disadvantage with this method is that often times, the agricultural producers on these lists are limited to those that have received cost-share assistance (or provided their contact information for other purposes) through the particular agency in the past.

If your local FSA branch is unable to give you the addresses due to the increasing stringency of federal laws, you have the right to submit a FOIA (Freedom of Information Act) request. If you choose to submit a FOIA request, you will need to do so through your state contact for FSA; you can ask your local FSA to provide you with these contacts. The process of gathering addresses through a FOIA request can take several months, so be sure to allow this time for a response. You will want to specify in your request that you want names and addresses in electronic format. It is advisable to let your local FSA know you are doing this and why to ensure you do not compromise your relationship with the local FSA. You will find a sample request letter at the end of this section. The process of filing a FOIA request is different within each agency but is mostly similar for both FSA and NRCS. Please note that state agencies may not need to conform to FOIA requests.

You may also consult with the local county clerk's office. Their offices maintain landowner lists for property tax purposes. If you can find the range of property tax id numbers for your critical area, the county clerk's office should be able to match these numbers to landowners and provide you a mailing list. Please note that not all counties will have this information in digital form. This method works best when your critical area boundaries are closely related to county or township boundaries.

Rural non-farming residents may be one of the more difficult audiences for which you might need to develop an address list. Consulting the county GIS website, if one is available, or plat maps are two options. Plat maps are available for every county from the county land registration office or the county clerk. They contain information about who owns each piece of land. If plat maps are not digitized (and sometimes even if they are), it can take considerable time to gather

names and addresses associated with parcels in your critical area. First, you would overlay your critical area boundaries with the plat map (making sure that your maps are of a similar scale). Plat maps typically show only landowner names, so after you have identified the names within your critical area, you would still have to search white page listings – which are now online - for their mailing addresses. Obtaining a mailing list from the county clerk's office, as described above, is another method to use for a rural non-farming target audience.

Details of Conducting a Mail Survey

One of the drawbacks of mail surveys is the potential for low response rates. High response rates are important for quality social data because they ensure that the responses will reflect more than a small minority of the group. For these types of surveys, your goal should be a 40–60 percent response rate. Response rates that drop below this range are assumed not to accurately characterize the target audience.

The "five-wave design" that we suggest using for mail surveys in the handbook consists of the following five mailings:

1. Pre-notice about the survey; this is a letter sent in advance of the survey informing the respondent about the purpose of the survey. This letter is sent about one week before the survey.
2. A cover letter included with the actual survey. This cover letter contains similar information to the advance letter.
3. A letter or postcard thanking/reminding the respondent is sent about two weeks after the first survey mailing.
4. A second survey with a cover letter is sent to non-respondents about 1-2 weeks after the postcard reminder.
5. A third survey with cover letter or a reminder letter or postcard is sent to non-respondents about 1-2 weeks after the second survey.

(modified from Dillman 2000)

As the above schedule indicates, it takes about two months from the time the advance letter is mailed until the final survey is mailed. As you plan your mailing schedule, you will want to carefully consider major events that will occur during these two months. You want to avoid holidays as much as possible; November and December are generally bad times to do survey mailings as people are often over-extended with activities at this time of year. You also need to be sensitive to your target audience's busy-times. For example, it is never a good idea to survey row crop agricultural producers during either planting or harvest season.

The appendix contains samples of all the different letters and postcards that are used in the five-wave design. These should be modified to fit the needs of a particular project.

An additional consideration related to the five-wave design is the printing of surveys. Once you determine your sample size, you will need to determine how many questionnaires to print. After your first mailing, it is common to expect that 20 percent of the questionnaires will be returned to you within three weeks. After that, you will begin subsequent mailings of additional copies of the questionnaires to non-respondents. Since half or more of the people on your mailing list will

receive a second copy of the questionnaire, you should print roughly twice the number of questionnaires that the sample size formula tells you that you need. You should print even more than this if you plan to mail the survey three times.

Additional considerations for achieving an acceptable response rate by mail, include:

(1) Respondent-friendly questionnaire.
There are techniques such as color, font style and size, pictures, well-designed questions (which we have provided), and white space that can all help improve response rate. When reviewing a draft questionnaire, be sure that it is of appropriate length (takes less than 20 minutes to complete), is visually appealing, and interesting to the respondent.

(2) Return envelopes with real first-class stamps instead of machine generated postage or bulk-mail stamps.
It has been found that people are more likely to respond to surveys that are personally addressed (instead of "To the Household") and have first-class stamps. This increases the respondents' perception that they are not part of a bulk mailing and that the survey is not junk mail. You should always include a pre-addressed postage-paid envelope for the respondent to use when mailing the questionnaire back to you.

(3) Personalization of correspondence
The initial contact letter is extremely important. It should be personalized and avoid the look of a form letter. If possible, it should contain an original ink signature. The wording of the cover letter should describe:

a) why you are contacting them,
b) how you obtained their contact information,
c) an explanation about the project/study,
d) why the project/study is important,
e) why it is important for them to respond,
f) how you will use the data,
g) your confidentiality policy,
h) your contact information in case they have questions, and
i) a thank-you.

That's a lot of information for a one-page letter. Again, you can find sample letters in the appendix.

(Modified from Dillman 2000)

If after using the "five-wave design", your mail survey has not produced at least a 40 percent response rate, you will need to randomly call non-respondents to complete the questionnaire over the telephone. Once you have reached enough people to comprise a 40 percent response rate, you may stop calling.

Phone Surveys

Acquiring Phone Numbers

If you choose to do a phone survey with a large target audience, you can follow the steps above for mail surveys to gather names and then use the white pages (which are now available online) to find phone numbers.

Details of Conducting a Phone Survey

The language of the phone survey will need to be slightly different than that used in a mail survey. As respondents will not be reading the questions but will rather be answering a question that is read to them, directions will need to be embedded into the questions. We have included some example script in section 5.

The people conducting the phone survey need to be trained in how to talk to respondents in a way that treats them with respect and does not bias the answers. One of the main considerations with phone surveys is how to reach people who do not answer their telephone. The best approach for reaching a truly representative audience is to call each person at least 3 different times at different times of the day and on different days of the week. If you have addresses in addition to phone numbers, sending an advance letter will help increase the response rate.

Phone surveyors generally continue calling those on a list until the target number of responses is obtained.

E-mail Surveys

Acquiring E-mail Addresses

There are many issues associated with obtaining a list of e-mail addresses that accurately represents your target audience. Households may have several e-mail addresses, and they may change frequently. For the purposes of the SIPES survey, you should only consider conducting a survey via e-mail if you are confident that you have a complete and current list of e-mail addresses for your target audience and that all members of your target audience or sample have access to reliable Internet service.

Details of Conducting an E-mail Survey

If you choose to conduct the SIPES survey by e-mail, there are several design issues that you'll need to consider. It is important to remember that the survey designer and respondent may see different things on their computer screens due to differences in hardware and software. The following disparities may be noted:

- Colors that are different
- Changes in the relative difference between horizontal scale categories
- Text that becomes misaligned
- Questions that are not fully visible on the respondent's screen

- A change in the visual appearance of questions because of features installed by the questionnaire designer that are disabled by the respondent's computer.

(list from Dillman 2000)

There are web survey programs available to help control for some of these disparities; these include *Survey Monkey* and *Zoomerang*. These programs and others like them charge fees based on the number of questions being used and whether data can be downloaded. In the future, SIDMA will provide a system for conducting an e-mail survey.

Successful administration of an e-mail survey involves the following principles:

- Use a multiple contact strategy much like that used for regular mail surveys; you can also consider sending a letter via U.S. mail before sending e-mail notices.

- Personalize e-mail contacts so that none are part of a mass mailing.

- Introduce the web questionnaire with a welcome screen that is motivational, emphasizes the ease of responding, and instructs respondents about how to proceed to the next page.

- Restrain the use of color.

- Avoid differences in the visual appearance of questions that result from different screen configurations, operating systems, browsers, partial screen displays and wrap-around text.

- Provide specific instructions on how to take each necessary computer action for responding to the questionnaire, and give other necessary instructions at the point where they are needed. A flow chart of the questionnaire can be helpful.

- Do not require respondents to provide an answer to each question before being allowed to answer any subsequent ones.

- Use graphical symbols or words to convey a sense of where the respondent is in the completion process, but avoid those that require significant increases in computer resources.

(Modified from Dillman 2000)

In-Person Surveys

Details of Conducting an In-Person Survey

Conducting an in-person survey requires some of the same considerations as conducting a phone survey. The interviewer needs to be trained and needs to be personable. It is very important that questions are asked the same way every time and in the same order. To actually conduct the survey, you can print out the survey you created in SIDMA and interviewers will write the

answers in as they ask the questions. If people are not home on the first visit, it will be necessary to revisit homes. The interviewer(s) needs to be someone the respondents will identify with or feel comfortable with, e.g. Amish agricultural producers are unlikely to agree to be interviewed by a female interviewer. It is advisable to send an advance letter similar to one that could be sent for a mail survey informing the respondent about the purpose of the interviews and when an interviewer is expected to stop by.

Surveys in a Group Setting

Details of Conducting Surveys in a Group Setting

It is important to collect this information in as consistent a manner as possible. It is fine for participants to introduce themselves to each other at the beginning of the meeting if they don't know each other already. The following protocol for group administration of a questionnaire can be used:

Introduction: a nearly identical introduction is provided to all groups consisting of these elements:

- Expression of appreciation
- Brief description of the task
- Provide summary of the steps
    - Read the cover letter
    - Take the questionnaire out of the envelope
    - Complete the questionnaire
    - Immediately put the questionnaire in the envelope and seal it for data entry.

Special instructions: These special instructions are typically offered:

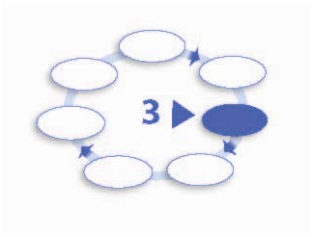
- This is not a test with right or wrong answers. Please think of it as being a questionnaire sent to your apartment or home and fill it out just like you would if we sent it there.
- As soon as you have answered the last question, please be sure that you put the questionnaire immediately into the envelope, seal it, and wait for additional instructions.

Distribution: Each respondent is given a packet consisting of the questionnaire inside an unsealed envelope, which will double as a return envelope, and a cover letter clipped to the front of the envelope. They are told they can start when they receive it.

Retrieval: Questionnaires are passed in when everyone is done or picked up from where each respondent is sitting.

Debriefing: More information about the questionnaire and its purpose may be provided. Appreciation is expressed once again to respondents.

(From Dillman 2000)



Section G: Using Survey Results to Develop Education and Outreach Strategies

At this point you have gone through the process of identifying your target audiences and the management practices they might implement. You have also completed your pre-project social indicators survey. At this point, you can use SIDMA to produce a report and review your results. This section outlines a process for understanding and using your results to develop your education and outreach strategy. Results produced by SIDMA will allow you to*:*

- Familiarize yourself with the frequencies and averages presented in "questionnaire" form.
- Examine the following relationships:
    - The number of people that have adopted or may be willing to adopt practices that would reduce priority pollutant loads as well as their awareness of those practices.
    - The relationships between willingness to adopt practices and *constraints* to practice adoption.
    - The relationships between willingness to adopt practices and *awareness* of practices.
    - The demographic characteristics associated with willingness to adopt practices, constraints to practice adoption, and awareness of practices.
- Use your analysis to refine your target audiences, finalize the management practices you will promote, and develop social outcomes. These are the last steps in identifying a combination of environmental and social conditions that will allow you to most effectively accomplish (or make progress toward) your environmental goals and social outcomes.
- Develop your outreach and implementation strategies based on your environmental goals and social outcomes.
- Identify the characteristics of your population that will either facilitate or impede practice adoption. Find out how much the population knows about the practices you hope to get installed, as well as identify the barriers to practice adoption.

Frequencies and Averages Presented In Questionnaire Form

The SIDMA report presents the frequency of results and the averages for each survey question. The report also produces calculated scores for the social indicators as described in Appendix 2. Appendix 2 describes how the numeric values are associated with each response, how those scores are calculated from survey questions, and a description of each indicator. Average values for each question provide a quick and easy way to understand how respondents answered each question. For example in Table G.1 for the question about discharges from industry, the average score is 2.92 which tells us that, on average, respondents think this is a slight to moderate problem. The SIDMA report allows you to get an idea of the overall strengths and weaknesses of your watershed. Are people familiar with the practices you are hoping to have installed? Does the population as a whole understand the sources and consequences of the pollutants of concern? These are the sorts of questions answered by frequency and average data.

Table G.1: Example of initial frequency and averages for survey question:
The items listed below are sources of water quality pollution across the country. In your opinion, how much of a problem are the following sources in your area?

	n	Not a Problem (1)	Slight Problem (2)	Moderate Problem (3)	Severe Problem (4)	Don't Know (NA)	Mean (N;SD)
a. Discharges from industry	166	6.0	18.1	39.2	23.5	13.3	2.92 (144; .870)
b. Discharges from sewage treatment plants.	165	12.0	21.1	34.3	14.5	17.5	2.63 (136; .942)
c. Soil erosion from construction sites.	165	14.5	52.4	18.7	2.4	11.4	2.10 (146; .692)
d. Soil erosion from farm fields.	166	18.1	55.4	18.7	1.2	6.6	2.03 (155; .669)
e. Soil erosion from shorelines and/or stream banks.	166	16.9	46.4	17.5	5.4	13.9	2.13 (143; .798)
f. Excessive use of lawn fertilizers and pesticides.	166	3.6	21.1	32.5	33.1	9.6	3.05 (150; .873)
g. Improper disposal of used motor oil and anti-freeze.	166	19.3	28.9	16.3	10.2	25.3	2.23 (124; .989)
h. Improperly maintained septic systems	166	20.5	28.0	18.7	4.2	18.7	2.08 (135; .829)
i. Storm water runoff from urban areas	165	11.4	36.1	26.5	12.7	12.7	2.47 (144; .900)
j. Droppings from geese, ducks, and other waterfowl.	166	18.1	32.5	21.1	14.5	13.9	2.37 (143; .998)
k. Littering/Illegal dumping of trash	164	10.8	40.4	24.1	12.0	11.4	2.43 (145; .880)
l. Runoff of pesticides from farm fields	166	24.1	52.4	12.0	0.6	10.2	1.88 (148; .648)
m. Land applied wastes (industrial, municipal, septic wastes)	166	21.7	39.2	16.3	4.8	18.1	2.05 (136; 2.05)
n. Land application of animal waste	166	27.1	50.6	15.1	1.2	6.0	1.90 (156; .702)
o. Runoff from animal feedlots	166	23.5	55.4	10.8	1.8	8.4	1.90 (152; .669)
p. Milk house waste	166	38.6	44.0	6.6	0.0	10.8	1.64 (148; .617)
q. Sileage runoff from bunker silos	166	32.5	40.4	10.2	4.8	12.0	1.86 (146; .830)

Relationships Among Responses

While the averages can help you identify characteristics that can facilitate or impede practice adoption for your watershed, it may miss important trends that can help you focus your efforts. The SIDMA report will help you to find important relationships in the survey results.

The first analysis of the survey results is based on practice adoption. SIDMA examines the results for those who have already adopted a given practice. This analysis helps you identify the key traits of respondents who overcame barriers to practice adoption. Next SIDMA compares those who have adopted a practice to those who are willing to adopt (wta) a practice, those who will consider adoption (maybe) and respondents not willing to adopt a practice (Nwta). Again, SIDMA will present the relationships that appear important based on the survey results. You can always elect to look at relationships not flagged by SIDMA.

Since this part compares different stages of adoption (adopted, wta, maybe, & Nwta) it answers different questions. Is there an identifiable group that is more likely to adopt a given practice (such as farmers with more acreage)? Do those who have already adopted a riparian buffer believe financial assistance is more or less important than those who have not adopted one already? By comparing these different groups we get a picture of which factors are most likely to lead to adoption. The results will be presented in both table form (Table G.2 below) as well as a graph (Figure G.1 below). Both the table and graph present the averages for each variable.

Table G.2: Constraints for riparian buffers

Variable		Average
Out of pocket	**Overall**	3.125
	adopt	2.1
	wta	2.9
	maybe	3.65
	Nwta	3.85
Fits with farming	**Overall**	3.3125
	adopt	3.2
	wta	3.4
	maybe	3.42
	Nwta	3.23
Approval of neighbors	**Overall**	2.6075
	adopt	3.43
	wta	3.01
	maybe	2.34
	Nwta	1.65
Concern of reduced yield	**Overall**	2.3175
	adopt	1.21
	wta	1.65
	maybe	2.54
	Nwta	3.87
Aware of practice	**Overall**	2.8825
	adopt	4
	wta	4
	maybe	2.3
	Nwta	1.23

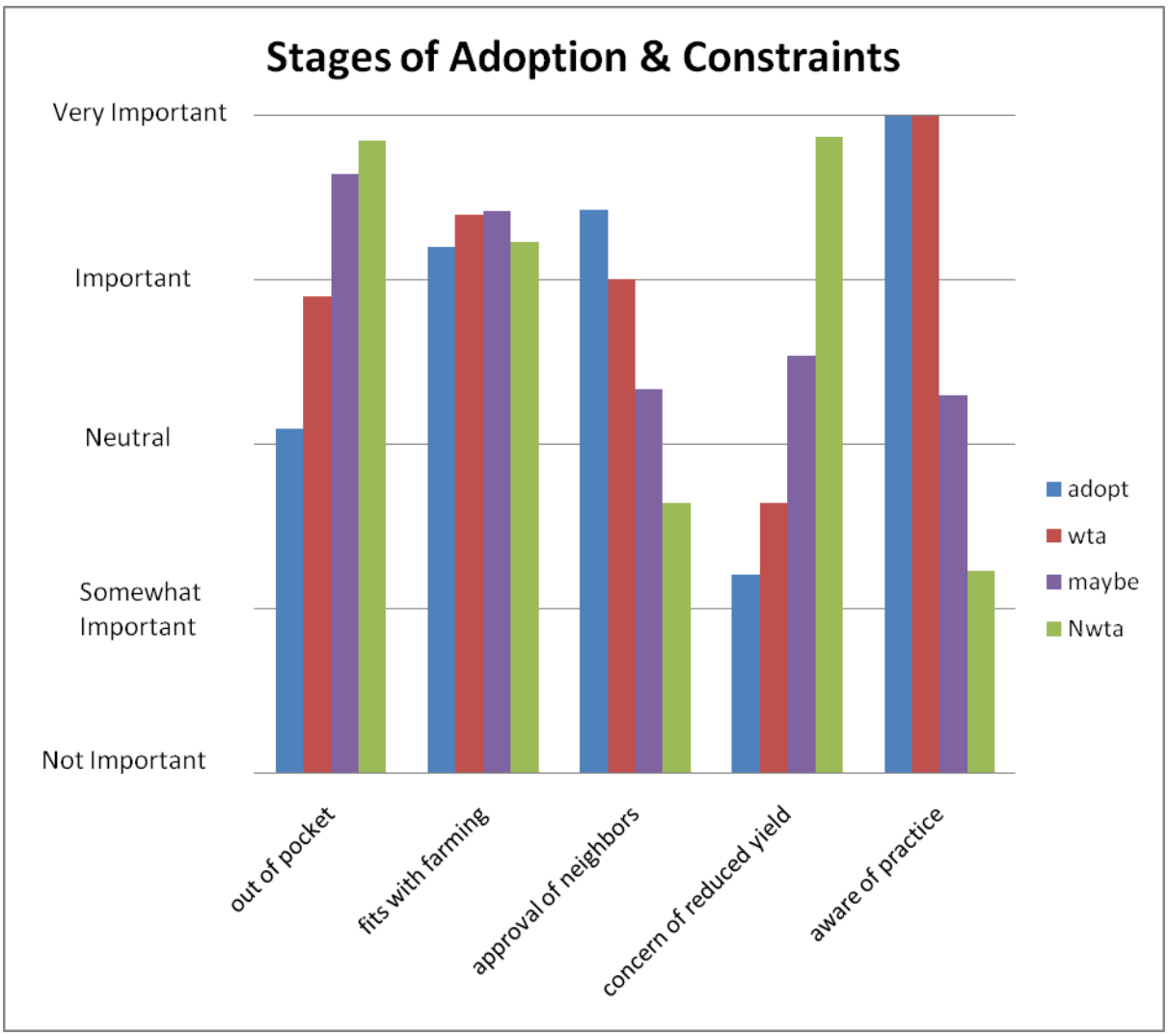


Figure G.1: Relative importance of constraints for riparian buffers

Additionally, the SIDMA report uses Pearson's Chi-square test to look at the relationship between two different variables. Briefly, this test examines if one variable exerts an influence on another variable. For example, are larger farms more or less concerned about practice cost than smaller farms? Are longer-term residents more or less knowledgeable about a practice of interest? Pearson's chi-square test can help us answer these types of questions. Again, this will be done automatically. If you want to know more about this test any good introductory level statistics book can provide information about it.

The SIDMA report will present the relationships SIDMA flagged as potentially important. If there is a specific relationship you wish to see, you can opt to see additional tables and figures. Figure G.2 is an example of how familiarity of riparian buffers can vary based on years at residence.

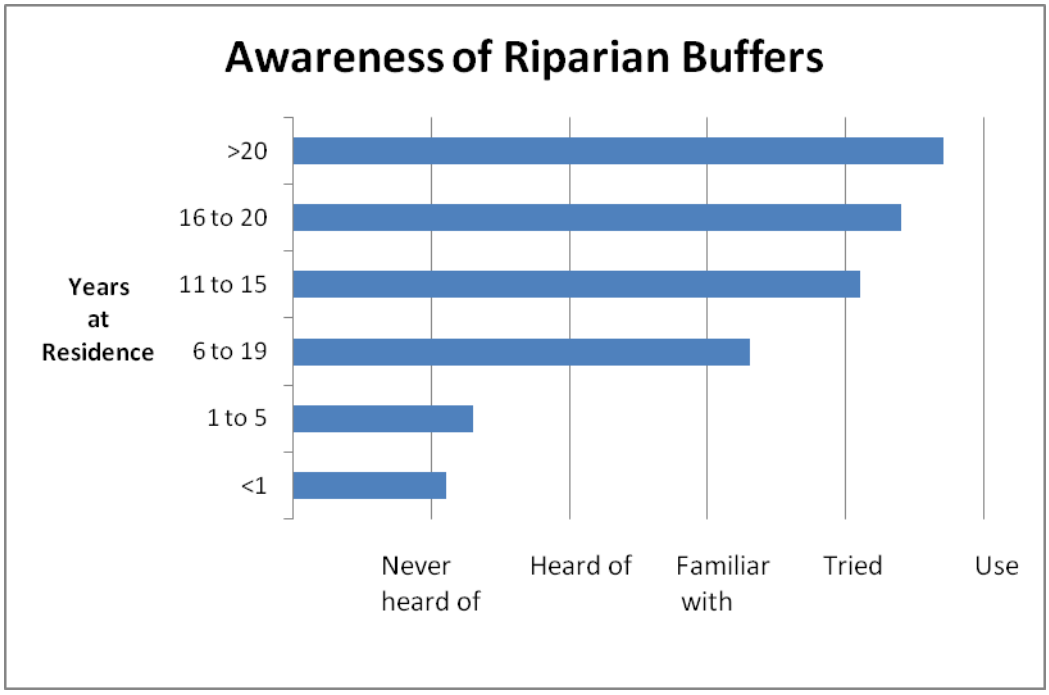


Figure G.2: Years of residency vs. familiarity with riparian buffers

Focusing Your Outreach Strategy

Section B defined a **target audience** as a group of individuals whose awareness, attitudes, capacity, constraints, and behavior change are required to achieve your project's environmental goals and desired outcomes. Focusing on subgroups within your target audience can lead to outreach strategies that meet specific needs.

For example, Snow White River watershed has seven neighborhoods with associations that manage lakeshore property. Phosphorus runoff is the primary pollutant of concern, and you've designated the entire lakeshore as a critical area because your environmental data is not detailed enough to distinguish differences among neighborhoods. Therefore, you have selected all of the households in all seven neighborhoods around the lake as your target audience and collected SIPES pre-project survey data from them. The results of your survey indicate longer-term residents have much more interest in installing native plant (riparian) buffers than the other residents (Figure G.3). These residents, a subset of your target audience, might become the focus of one component of your outreach strategy.

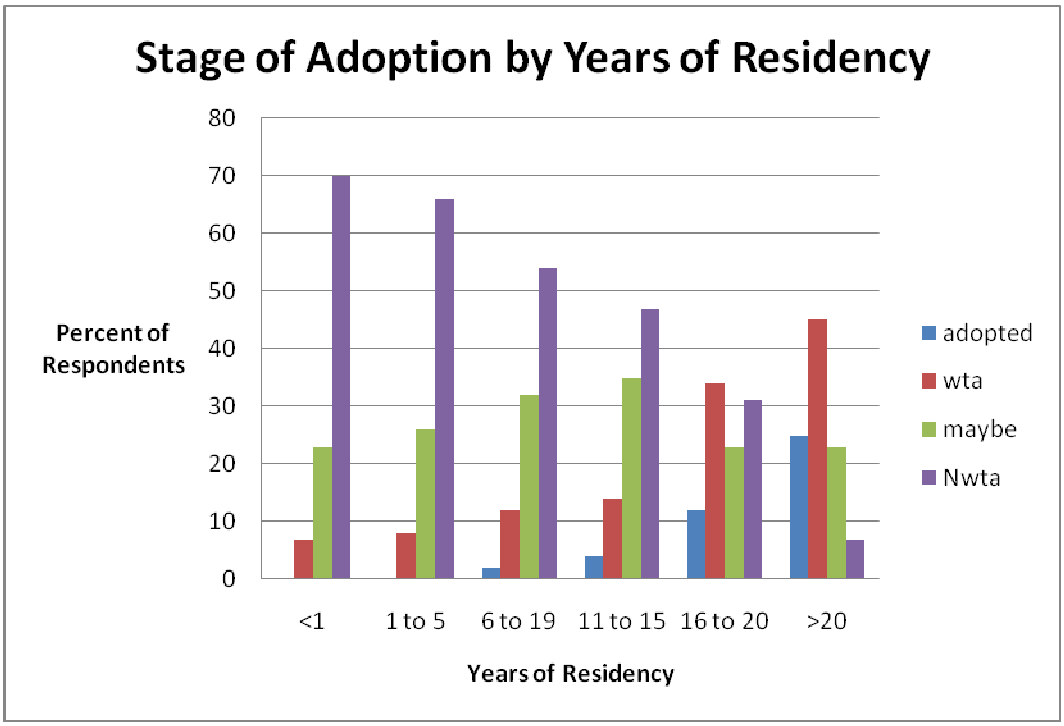


Figure G.3: Time of Residency vs. Stage of Adoption

Using Pre-Project Survey Results to Establish Social Outcomes

You will use your pre-project survey results to establish social outcomes. **Social outcomes** are broadly defined as *the social changes needed to bring about and sustain the environmental conditions you are trying to achieve in your project area.* These outcomes will address the changes in awareness, attitudes, capacity, constraints, and behaviors that will help achieve your project's environmental goals and management objectives.

These social changes are outcomes that project activities are expected to achieve. Social outcomes that provide the foundation for the social indicators in this Handbook are listed in the Handbook Introduction and in Appendix 2. Social outcomes include:

- Increase awareness of relevant technical issues and/or recommended practices in critical areas;
- Change attitudes to facilitate desired behavior change in critical areas;
- Reduce constraints to behavior change;
- Increase capacity to leverage resources in critical areas;
- Increase capacity to support appropriate practices in critical areas; and
- Increase adoption of practices to maintain or improve water quality in critical areas.

To develop social outcomes for your project, first determine the types of social changes your project would like to achieve. Based on your project goals, do you expect that you will need to increase awareness of the type of pollutants impacting your watershed, the impacts of those

pollutants or both? Are your target audiences ready to adopt practices? Are you trying to change a behavior? You can tailor the outcomes above to fit the specifics of your project and develop others as needed. While there is no hard and fast formula for developing social outcomes for your project, they will typically address who, what, where, and when components of what you are trying to achieve. The "who" will often correspond to your target audience. The "what" will often be the necessary management practices or knowledge gaps you've identified through your pre-project survey. A social outcome for the Snow White River example could be: 75% of Snow White River riparian property owners use phosphorus-free lawn fertilizer (up from 25% baseline).

Designing Your Outreach Strategies

Now that you've analyzed your SIPES pre-project survey data and developed social outcomes, the next step is to design your outreach strategies. Overall, the National Extension Water Outreach and Education website houses extensive information on outreach approaches organized by project goal and target audience. A Best Education Practices (BEP) decision tree (http://wateroutreach.uwex.edu/use/DecisionTreestart.cfm) can help you think through your approach. Getting Your Feet Wet With Social Marketing (http://ag.utah.gov/conservation/GettingYourFeetWet1.pdf), USEPA's Getting In Step (http://www.epa.gov/nps/toolbox/print/getnstepguide.pdf) and NPS Outreach Toolbox (http://www.epa.gov/nps/toolbox/) also offer valuable guidance on using marketing approaches to achieving behavior change.

A good first step is to determine which types of outreach strategies are best suited to accomplishing your social outcomes. Table G.3 compares the SIPES social outcome categories to the types of outreach activities that are most appropriate for addressing them. Note that this is not an exhaustive list. Your options are only limited by your own creativity. However, it should orient you to *a way of thinking* about selecting activities that will have the best chance of success.

Table G.3: The relationship between social outcomes and types of outreach activities

	Workshop	Field Day	Informational Meetings	Websites	Brochures Fact Sheets	Newsletters	Informational Signage	Media	Incentives
Outcome: Increase Awareness	✓	✓	✓	✓	✓	✓	✓	✓	
Outcome: Increase Technical Knowledge	✓	✓	✓						
Outcome: Increase Skills	✓	✓							
Outcome: Reduce constraints	✓	✓							✓
Outcome: Change Attitudes	✓	✓	✓					✓	✓

Table G.4 below provides an example of how a variety of activities might be applied toward the social outcome, "Residents of Oak Creek watershed will increase rain barrel use by 30%."

Table G.4: Application of selected types of outreach activities to a rain barrel adoption project

Activity	Example application
Workshop	Provide information regarding how to install rain barrel
Field Day	Show a rain barrel in place
Informational Meetings	Announce that organization is installing rain barrels in this area or ask how should we deal with urban runoff?
Newsletters	Communicate what a rain barrel is, how one is used, or announce new rain barrel installation.
Brochures and Fact Sheets	Provide information regarding how to install rain barrel – essentially an overview of a workshop experience
Websites	Provide details regarding rain barrel installation to a group of organization members
Informational Signage	Identifying a rain barrel and project in a particularly or highly trafficked area with signage.
Mass Media	Announce a rain barrel workshop or place an article in the paper regarding the value of rain barrel.
Incentives	Provide some resource in exchange for rain barrel installation. The resource could be a price break on the barrel, free tickets to a local community event, etc.

Appropriate Uses and Expectations for Different Outreach Activities

1. Workshops, field days, and informational meetings

Workshops, field days, and informational meetings are all opportunities to interact with groups of stakeholders, members of your target audience and your community. Your communication or educational objective will help you to determine which will be appropriate to use and when. For NPS projects, these activities are typically used in the following ways:

- Workshops are useful for presenting information and teaching skills that can help people improve water quality. They provide opportunities to interact on a personal level and can vary in length and duration – as single events, components of multiple-day conferences, or parts of long-term training programs. Workshops can potentially raise awareness, increase skills, and support an ultimate change in behavior.
- Field days typically involve demonstrations of specific practices at an accessible location, and they may last all or part of a day. Generally, they are used to demonstrate or create awareness of a new technology, address questions and concerns about management practices, and build relationships with the target audience.
- Informational meetings are generally intended to provide details about a local water quality project and to receive input and feedback from participants. They may include presentations, public discussion, open-house viewing of posters and displays, individual questions and answers, or a combination of those. They may be expected to raise awareness of relevant issues or identify potential barriers or concerns related to management options.

2. Newsletters

Newsletters provide a means for basic communication with stakeholders. They are most useful for sharing general information about a project and related issues, announcing events, making people aware of resources, and reinforcing messages provided through other communication activities. Detailed or technical information, however, is best communicated in a different medium.

Newsletters on their own would not be expected to bring about adoption of new practices. They can, however, provide information that could assist someone with an interest. For example, a project that has the objective of increasing inspection and maintenance of on-site septic tanks could use a newsletter to provide a few key pieces of information. This might include watching for potential problems, planting grass cover, and keeping trees from growing over the tank, as well as provide contact information for local septic services.

Before using a newsletter, ask yourself the following questions:

- Are the objectives you have reasonable? For example, if you are trying to change behavior with unmotivated audiences, you will most likely not reach that goal. Your objectives should be modified and either a different outreach and education tool should be used or the content should be modified to reflect realistic objectives.

- Will the appropriate target audience receive the newsletter? If your objective is to inform a new audience of your project, make sure you are distributing the newsletters beyond your existing network

- Will the newsletter be a part of a larger education program to change water quality behaviors?

3. Brochures and Fact Sheets

Outreach materials such as brochures or fact-sheets are often used to provide an accessible source of information about issues (or practices). These materials can be used to increase awareness and to provide information that may encourage behavior change. As part of a larger strategy, brochures, fact sheets, and other printed outreach materials can help the target audience understand an issue of interest (e.g., degraded water quality), which actions will help to alleviate the problem, and how to conduct those actions.

As with newsletters, you can self-assess basic issues regarding whether the materials are meeting their intended purpose. What are you expecting the materials to do? Simply providing people with information is not likely to change behaviors, though it may create awareness. Will your materials be distributed and placed correctly to reach your target audience? You may have created an appealing brochure that contains exactly the right information, but if it doesn't reach the right audience it will not have the expected impact.

4. Websites

As a form of media that the user must actively seek out, websites are generally for engaged audiences. A website is not an effective outreach tool for an audience that would not seek this information on their own. Websites are, however, good at providing general to detailed information to an audience that is actively seeking or involved with the information provided on the site. For example, if an organization hosts a workshop on a specific practice and people attend based on their interest in that practice, those participants are an engaged audience that might actively seek additional information on the website.

There are some exceptions to the need for an already engaged audience. For example, an organization that already has a website used by an engaged general audience for some other purpose unrelated to water quality, such as a zoo or school, may use their website and educate their users about watershed issues. Also, there are a few examples of websites that are used to attract the attention of unengaged persons through the media. Generally, such sites tend to be technologically interesting and interactive, not information repositories.

When is the investment greater than the gain? This should be a key question in website planning. Other considerations regarding expectations and whether a website would be useful include:

- target audience access to the Internet;
- speed of access in the audience/target region;
- type/amount of information to be conveyed;
- your organization can afford to maintain and update its site;
- level of audience engagement with the Internet; and
- complexity and consistency of information that needs to be communicated to your audience

While the Internet is increasingly an important source of information for many, developing a website should not be considered a foregone conclusion. Many organizations do not have staff with website development skills internally and must contract out for the work, leading to considerable costs. Further, even if the funds or a volunteer for website development are available, there are still ongoing costs. Annual fees for hosting a website, registering a website with search engines, and the cost of updating and maintaining a site are often overlooked by organizations in the eagerness to develop a web presence.

5. Informational Signage

Informational signage is used to convey a simple message to your target audience. You might use signs to raise awareness about a place (a road sign), highlight a management practice (e.g., a stream restoration), or provide basic information about an issue (e.g., an educational sign about watersheds at a park or zoo).

Signs can be used for simple educational messages and/or to encourage a particular behavior, and are more interpretive in nature. If you have a demonstration site, such as a restored wetland, you may want to install signs that detail the benefits of wetlands for habitat and for humans. You can expect signs to increase awareness of an issue and to encourage easy behaviors.

6. Mass Media

Does your message need to reach the general public or a very large target group? Mass media options such as newspaper, television, and radio are important tools for raising awareness of your issue. For communication, they have some specific strengths and weaknesses. An important strength, however, is that mass media can target an unengaged or passive audience.

In determining an appropriate mass media strategy, it is important to know how people obtain their information. For environmental news, people tend to get their information from mass media sources. Generally, television is by far the most common source – comprising almost half of the environmental news. Just over a quarter of the environmental news people consume comes from local newspapers, and radio comprises just under twenty percent. This is typical and may vary regionally.

The strength of mass media is in its ability to reach an audience that may or may not be interested in your issues. It also can provide a public forum for debate on controversial issues, such as the removal of a dam. If your organization has a small target audience or has primarily detailed technical information to convey, mass media may not be the right choice.

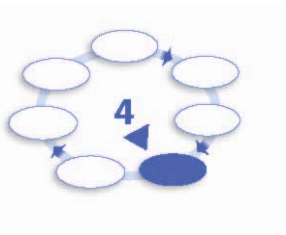
While an audience can increase their knowledge of an issue through the media, expectations regarding the audience's retention of the message should correspond to the frequency of that message. Mass media strategies usually work best for increasing public awareness or for special announcements.

7. Incentives

Incentives are most often used to reduce constraints and to change behavior in relatively short periods of time. They are used to level the perceived costs and benefits of adopting a practice or changing a behavior. In terms of social outcomes, they are used to reduce or overcome constraints and change attitudes. Do not assume that your target audience automatically needs an incentive to change their behavior. Perhaps they are unaware of the economic benefits of a practice or need more skills to feel comfortable engaging in a practice.

Incentives are most effective when coupled with other forms of outreach. For example, brochures or fact sheets are effective tools for increasing awareness about an incentive. Use your SIPES pre-project data on practices and constraints to determine which constraints might be overcome with incentives. You can explore attitude data on your own, but SIDMA does automatically analyze attitude responses at this time.

Section H will describe how to evaluate the effectiveness of these activities as they are implemented during the course of your project.



Section H: Evaluating Outreach Activities During Project Implementation

This section describes methods for evaluating outreach and education activities used during the implementation of your project. The purpose of evaluating your activities *during* project implementation is to understand whether or not they are helping you reach the goals and intended social outcomes established in Step 3 (Section G). Evaluation results can help you consider how to adapt your activities during your project.

The purpose of this section is to help you:

- Evaluate how your activities are helping reach your social outcomes
- Consider how to adapt your activities during your project

The first part describes what to evaluate and provides an overview of relevant evaluation tools. The second part describes how to apply the tools to evaluating the activities listed in Tables G.3 and H.1. The third part discusses what to do if your evaluations suggest you need to adapt your approach. The final part describes options for documenting and reporting your mid-project evaluation results.

What to Evaluate and Which Tools to Use

Your outreach and education plan outlines the mix of activities your project will use to accomplish your goals. There are three important elements to consider when evaluating those activities:

1. whether or not the activity reached the intended audience;
2. the activity's impact on awareness, attitudes, constraints, and/or capacity; and
3. the activity's impact on behavior.

You can use a relatively small set of evaluation tools to help answer those questions, often asking about several activities at the same time. Table H.1 summarizes the application of these tools to activities commonly used in NPS projects in USEPA Region 5. Tools that provide direct feedback about an activity are shaded; tools that can be used indirectly, to include questions about related project activities are not shaded.

Questionnaires

Three types of questionnaires are most useful for evaluating your project activities.

- *End-of-session questionnaires* are administered as part of an event, such as a workshop, field day, or informational meeting. End-of-session questionnaires are generally brief and can include questions about the event, the person attending the event, and their use and awareness of other related project activities and materials.
- *Follow-up questionnaires* are used to contact event participants after some specified period of time (3 months, 6 months, etc.) to ask them about the event and what they are doing differently. These questionnaires can also include additional questions about related project activities and materials.

- *SIPES post-project questionnaires* are used with your target audiences at the end of your NPS project. Your SIPES post-project questionnaire can include questions about use and awareness of your project activities and materials.

Group Discussion/Focus Group

Small groups of your target audience and project stakeholders can provide very helpful feedback on the design and implementation of your project activities. Feedback of this nature can come through formal "focus group" processes related to specific conservation practices or incentive options, or through informal discussions among participants at a project event.

Specialty Approaches

Some of your activities can be evaluated with special tools and approaches. For example, you can use free specialized software programs to track and analyze usage statistics related to a project website or you can use tear-off surveys to evaluate newsletters.

Table H.1 Tools for evaluating impacts

<table>
<tr><th></th><th>Workshop</th><th>Field Days</th><th>Info Meetings</th><th>Websites</th><th>Brochures Fact Sheets</th><th>Newsletters</th><th>Informational Signage</th><th>Media</th><th>Incentives</th></tr>
<tr><td>Specialty approaches</td><td></td><td></td><td></td><td>Usage statistics</td><td></td><td>Tear-off surveys; utility bill inserts</td><td></td><td></td><td></td></tr>
<tr><td>End-of-session questionnaire</td><td colspan="3">Direct feedback about activity</td><td colspan="6">Indirect: questions included about these activities</td></tr>
<tr><td>Follow-up questionnaire</td><td colspan="3">Direct feedback about activity</td><td colspan="6">Indirect: questions included about these activities</td></tr>
<tr><td>Group discussion during events</td><td colspan="3">Direct feedback about activity</td><td colspan="6">Indirect: questions included about these activities</td></tr>
<tr><td>General focus group discussion</td><td colspan="9">Direct feedback about activity</td></tr>
<tr><td>SIPES post-project questionnaire</td><td colspan="9">Direct feedback about activity</td></tr>
</table>

*End of session tips and techniques: http://www.uwex.edu/ces/pdande/resources/quicktipsnumerical.html , http://www.uwex.edu/ces/pdande/evaluation/evaldocs.html

Applying the Tools: Workshops, Field Days, and Informational Meetings

Reaching Intended Audience

Understanding who attends your workshop, field day, or informational events can be as simple as asking attendees to sign-in on a pad of paper with address and contact information. More detailed analysis could include other questions to help determine if your target audience is attending, for example, questions about use and willingness to use various conservation practices.

Impacts on Awareness, Attitudes, Constraints, Capacity, and Behavior

End-of-session questionnaire. One effective and time-efficient method for collecting information at events is using a single questionnaire administered at the end of the workshop that incorporates a "retrospective pre-test" Using this approach, participants are asked to rate their knowledge, skill, attitude, or behavior from two perspectives: after the educational event and before the event (see Example H.1 below). This approach has the advantage of providing a single form that allows participants to provide a response based on the information presented at the event. As a general guide, keep this to about 2 pages in length. Include questions to determine if participants are part of your target audience. When analyzing, look for increases in knowledge and skills, reductions in barriers and constraints, etc.

In a workshop setting, make sure to provide an appropriate amount of time for participants to complete an end-of-session questionnaire. In demonstrations or open informational events where people are coming and going at different times, develop a short questionnaire that can be completed quickly and left with an interviewer or deposited as people leave.

Example H.1: A format for an end-of-session questionnaire

Please take a few minutes to provide feedback on this workshop. Your feedback helps us improve future workshops. Please fill in a circle and provide requested information.

For each question below, use the following scale:	Not at all	Minimally	Generally	Very Much
1. Before today to what extent were you able to understand a nutrient management plan?	○	○	○	○
2. Now to what extent are you able to understand a nutrient management plan?	○	○	○	○
3. Before today how knowledgeable were you about nitrogen impacts on water quality?	○	○	○	○
4. Now how knowledgeable are you about nitrogen impacts on water quality?	○	○	○	○

Group discussion and interviews. Instead of a paper questionnaire, a facilitator could lead participants through a similar list of questions in a group setting or through individual interviews. This approach may prompt additional feedback and generate more information about your target audience. The analysis of this data would be similar to end-of-session questionnaires.

Follow-up questionnaire. Some workshops may warrant a follow up questionnaire. If you wish to capture mid-range outcomes of a specific activity before your formal post-project questionnaire (e.g., six months after a workshop), you could conduct a separate post-activity assessment with participants. Depending on the type of participants and their use of the Internet, post-workshop surveys can be conducted via mail, e-mail, or a web-based survey. For some groups, phone interviews or onsite face-to-face interviews with participants are preferred options. Participants could specify their preferred method for a follow-up contact during the outreach event.

Depending on the goals of your event, you would analyze your responses for the percent of participants taking action or implementing practices as a result of attending. You could also ask about any barriers or constraints encountered in taking action.

SIPES Post-project questionnaire. Your post-project questionnaire is a convenient opportunity to collect information from your target audience about their participation in project events and any resulting actions. SIDMA will include model questions for this purpose.

Cost and resource considerations

In general, costs of collecting information at events will involve staff time in preparing, administering and processing the assessment. There will also be minimal costs for materials. (See example below and the more detailed examples in Appendix 1)

Adding one or two questions to the post-project questionnaire developed through SIDMA will involve only the time involved in refining that questionnaire. If you choose to conduct a separate follow-up assessment before the end of the project, you will encounter costs for staff time in designing the assessment, administering the assessment, and processing the data (see Example H.2). For a small group of participants (for example, 15 riparian property owners), providing information by phone or via e-mail, the actual material costs will be negligible. The costs could be relatively high if you are mailing follow-up questionnaires to a large group of participants, and continue with repeated mailing to gain high response rates.

Example H.2: Cost estimate for follow-up

Example: A project conducts a one-day workshop on nutrient management planning with 15 farmers

Strategy: The project uses an end-of-session questionnaire and a follow-up interview one year later

Costs:

- Time for designing end-of-session questionnaire and follow-up interview questions: 3 hours
- Time for summarizing and reporting data from end-of-session questionnaire: 4 hours
- Time for conducting on-farm follow-up interviews one year later (including travel time): 1.5 hours per farmer: 12 hours
- Time for summarizing and reporting data from 15 follow-up interviews: 30 minutes per farmer x 15 farmers: 7.5 hours
- Cost of materials: minimal (in-house printing for questionnaires, interview protocols, and reports)
- Cost of travel: variable

Total Costs: Approximately 25.5 hours of staff time plus cost of office materials and travel.

Applying the Tools: Newsletters

Reaching intended audience

If you deliver newsletters by mail, e-mail, or in person, you already know whether they are reaching your intended audience. To determine whether they are actually reading and using the information, you can include a tear-off questionnaire (see Table H.2), ask about the newsletters at event evaluations, or convene a focus or discussion group specifically to discuss your newsletter. You can also ask people who contact you how they heard about your project and where they found your contact information.

Impacts on Awareness, Attitudes, Constraints, Capacity, and Behavior

Determining the impacts on awareness, attitudes, constraints, and behaviors attributed to newsletters is difficult.[4] As noted, some newsletters include a tear-off, stamped postcard in the newsletter that asks evaluation questions. Most readers do not respond to those requests, resulting in low response rates that may not be worth the expense of the effort. If you choose to use a tear-off, postcard evaluation, your questions should encompass the entire series of newsletters received, not just the newsletter that contains the postcard.

As with other activities, you can include questions about newsletters in evaluation efforts for other activities (questionnaires, group discussions, etc.) and in the SIPES post-project questionnaire. SIDMA will include model questions for this purpose. Your SIPES questions can ask whether respondents found the newsletter to be useful and also assess specific knowledge that newsletters were meant to convey. For example, if you included information about servicing septic systems in your newsletter, you can include a question about that in your final questionnaire.

Table H.2: Example questions related to newsletters

Evaluation Method	Example Impact Questions
Tear-off Postcard or inserts in utility bills	Did you find the information in this newsletter/series helpful? Prior to this newsletter, were you aware that you shouldn't plant trees over your septic system?
Post-project questionnaire	Did you receive the newsletter? Was information in the newsletter useful? Prior to the newsletter, were you aware that you shouldn't plant trees over your septic system?

Cost and Resource Considerations

If you choose to use a stamped, tear-off postcard in your newsletter for evaluation, the cost will include postcard postage, postcard printing, and staff time for data entry and analysis. Including questions about newsletters in other evaluation settings and in SIPES post-project questionnaire will be negligible.

[4] Broussard, S.R., & Floress, K. (2006). *Are newsletters effective? Assessing their role as a communication tool.* Purdue Extension Publication FNR-269-W. Available online at: http://www.ces.purdue.edu/extmedia/FNR/FNR-269-W.pdf.

Applying the Tools: Websites

Reaching Intended Audience

In addition to asking about your website during other evaluation effort, there are several specialty tools available for determining who uses your website and what they do when they visit. Free services such as Google Analytics (http://www.google.com/analytics/index.html) allow you to track data, calculate goal metrics, and provide usage reports. This information can help you understand more about where your website visitors come from and their use of the site, for example, if they "hit" the parts of your website you want people to visit or download files you have posted.

Impacts on Awareness, Attitudes, Constraints, Capacity, and Behavior

Evaluating whether your website has raised awareness, reduced constraints, or helped with other intended social outcomes is best measured using the tools described in Table H.1 – asking about the website during other events and in other questionnaires, or organizing a discussion group to provide feedback on the website.

Another external measure related to community capacity and networks is whether important other websites include a hyperlink to your site. For a rural area, this might be the farmers' cooperative, and for an urban area this might be the municipal website.

Cost and Resource Considerations

Depending on the approach taken to assessing your website, the primary cost is staff time. Discussion groups or user testing may require special incentives for participants, but generally costs for such testing relate to the time investment. Adding survey questions for the target audience to the SIPES post-project questionnaire involves negligible additional cost.

Applying the Tools: Brochures, Fact Sheets, Informational Signage, and Media Materials

Reaching Intended Audience

Approaches for determining whether you are reaching your target audiences will vary depending on the activity. As you distribute them, you can record who receives brochures and fact sheets. Including questions in your SIPES post-project questionnaire can also help you determine whether your target audience is aware of these materials and how they used them.

For some purposes, assessing who is reached by a mass media strategy can be quite straightforward. For example, if you are using media to announce an event – such as hosting 'clean-up days' for a local water body, then you can ask people attending how they heard about the event.

Impacts on Awareness, Attitudes, Constraints, Capacity, and Behavior

The options for assessing impacts for these activities are summarized in Table H.1. For the most part, it makes sense to include questions about use and awareness of these materials as part of other related evaluation efforts, such as follow-up questionnaires for workshops, or to wait to assess as part of the SIPES post-project questionnaire. As noted in Section G, these outreach materials are intended to serve specific purposes related to raising awareness, illustrating how to do something, or generally sharing information.

If you are interested in specific feedback on a particular outreach activity, a focus group or informal discussion group addressing the specific activity can be an economical solution. Evaluation questions would relate to how your target audience was aware of the materials, whether they found them to be useful, and whether they acquired the specific knowledge of interest.

Cost and Resource Considerations

Costs will vary depending on your evaluation choices for these materials. Including questions in other evaluation settings and in SIPES post-project questionnaire will be negligible. Informal discussion groups may also involve minimal costs, whereas a formal focus group process can include costs for incentives, a facilitator, and summary report. In general, informative information about these activities can be collected for little costs by adding questions about usage and awareness to related evaluations at project events.

A Note About Incentives

Although primarily provided to reduce specific constraints to adoption, you can also evaluate your use of incentives using the approaches in this section. Discussion and focus groups, in particular, can yield insights on why the incentives are attracting landowners or not. You can also ask people about their awareness of incentive programs at project events.

Adapting Your Activities

What happens if you determine from your evaluations that your activities are not helping you achieve your project goals and intended social outcomes? You should begin by revisiting the outreach plan you developed in Step 3. Are you using the appropriate activities for your purposes? Are you doing them well? Have your evaluations produced any specific suggestions for how to improve the way you are implementing your project?

For example, your project may have offered a workshop on the benefits of conservation buffers, which drew 20 people. Your actual target audience this project is riparian landowners within a specific sub-watershed, but in reviewing your participation data, you realize that none of the participants are actually part of your target audience. You can use that information to review how people were notified of the workshops and consider changes in contacting those you hope will attend.

Example H.3 on the next page includes another example, in which project staff realized they needed to expand their outreach programs to train people interested in installing rain barrels for others in their community.

A series of helpful questions for meeting your goals is available through the USDA water outreach assessment worksheet: http://wateroutreach.uwex.edu/use/assessworksheet.cfm. You can also review resources on conducting outreach activities, such as USEPA's *Getting in Step* (2003).

Summarizing and Reporting on Your Activities

In addition to using your evaluation information for improving your project implementation, you can summarize and report your results to your state NPS program and your local partners. The most straightforward way to report your results is to relate them to the goals of your broader outreach and education effort and overall water quality goals.

Eventually, the SIDMA tool will allow projects to upload periodic reports that demonstrate the quality and/or impacts of your activities. This kind of report could also be sent to your state NPS program as an attachment to your usual periodic reporting. State NPS program would include the information as attachment to their reports to USEPA.

The following information about your evaluation results would be helpful. Depending on your project, not all of these categories would need to be included in a report.

1. A brief description of the activity and what you did to evaluate it.
2. Information about any general measures you wish to report (for example, quality and extent you reached your target audience).
3. Information about outcomes related to awareness, attitudes, constraints, and capacity (how has the activity influenced these among intended audience?).
4. Information about outcomes related to how the activity led to actions by the target audience (where relevant).
5. Comments and insights on factors that helped or hindered activities.

Example H.3: A sample periodic report using social indicators

Example:

Example: A watershed group wants to increase adoption of rain barrels by 30% over the course of a two-year implementation grant. They use a Public Service Announcement on local radio stations to inform people that pollution is a problem in the watershed and asks people to prevent urban runoff. They also use a demonstration of a rain barrel at a local hardware store. The group expects the demonstration to have a more direct impact on adoption rates of rain barrels than the PSA. The group includes questions about the demonstration and PSA on their post-project survey to help assess impact. Following their use of the PSA and the demonstration workshop for rain barrels, the watershed group decides that it wants to assess effectiveness of their demonstration only. They provide this narrative:

1. Provide a brief description of the activity and what you did to evaluate it:

Our group hosted a demonstration "How to" project for installing rain barrels on residential downspouts. Following the demonstration, 90% of the participants volunteered to fill out a questionnaire. Our organization followed this with a mailing 6 months later to determine if barrels had been installed.

2. Provide information about any general measures you wish to report (for example, quality and extent you reached your target audience):

The questionnaire was developed using guidelines from UW Extension's Program Development and Evaluation Unit. We collected information on the demographics of the participants. While our target audience was broad, we were interested in homeowners in the denser neighborhoods within a half mile of the lake. 21 of the 22 participants lived in the target area.

3. Provide information about outcomes related to awareness, attitudes, constraints, capacity:

This was a capacity building exercise. All 22 participants indicated they had increased their understanding of the purpose and function of rain barrels; 22 indicated that they understood how to install a rain barrel; and 20 indicated that they felt that they could install a rain barrel. For the two participants that did not indicate that they felt capable of installing a rain barrel, there may have been an age or gender relationship (both were women in their late 60s to early 70s).

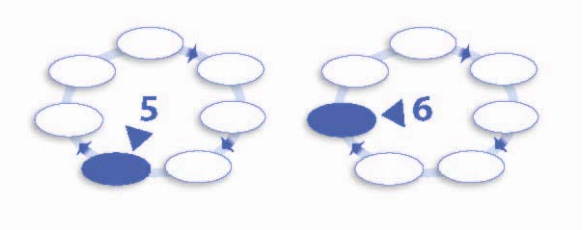
4. Provide information about outcomes related to how the activity led to actions by target audience:

The follow-up survey was mailed; there was a 77% response rate from the participants (17 of 22). Of those, 10 (58.8%) installed rain barrels at their home. 4 of those participants helped to install rain barrels for 2 to 5 other households in their neighborhood, and 1 helped to install 5 or more rain barrels in their neighborhood. In total, 30 rain barrels installed.

5. Comments and insights on factors that helped or hindered activities.

We did not take into account the fact that some participants might come because they were interested in rain barrels, but potentially not physically capable of installing their own. Also, we didn't expect that there would be nearly as large a percentage of the participants helping others to do rain barrels as there were installing barrels at their own homes. I think we may want to think about the idea of a structure that trains a team of volunteers to install them for others (especially the elderly or infirm).

Section I: Collecting Data at the End of Your Project



Congratulations!! Unless you're taking a sneak peak ahead in the Handbook, you are nearing the end of your project and you're ready to collect post project data and see how well your project performed in terms of social indicators. You will be happy to know that collecting your end of project survey data is very similar to collecting survey data at the beginning of your project. There are a few differences that you need to be aware of and we point these out in this section, but other than these differences, you should refer to sections D-F for information on conducting your questionnaire.

You also need to collect non-survey data at the end of your project. You will collect some of this data through focus groups and the rest will come from your project records. This section explains the type of data you need to collect and how you should collect and report it.

Post Project Survey Data

Create Questionnaire

The questionnaire you used at the beginning of your project is still stored in SIDMA. You may make minor adjustments to this questionnaire if you need to. For example, if you had some questions about possible outreach activities in your questionnaire at the beginning of the project, you may want to remove them now. You may also want to add some specific questions about elements of your project, e.g. you may want to know how many of your survey respondents attended a field day or other outreach event that you planned. The majority of your survey, in particular the questions related to social indicators, should remain unchanged.

Update Address Lists, Review Sample Size, and Select New Sample

If you used a census to collect data at the beginning of your project, you will want to send your survey *only* to the people who responded – in other words, you will not need to mail out as many surveys the second time around. SIDMA will match up the responses in the two time periods for each individual respondent.

If you used a random sample of your population to collect data at the beginning of your project, you will need to resample the target audience. Prior to doing this, you will need to ensure that your address list is current. Unless you've been keeping up with the addresses all the way along, you will need to re-assemble a complete list of your target audience using the method you used in section F. After you have done this you should select a new sample based on Table 2 in section D.

Create Advance Letters, Cover Letters and Postcards

The letters and postcards you mail out at the end of your project can be very similar to the ones you send at the beginning. You can consider including extra statements about the status of the project and the fact that this is an end-of-project questionnaire. You can state that this survey is

similar to one that was mailed out before the project and survey responses will be compared over time.

Administer Questionnaire and Enter Responses in SIDMA

Refer to section F for information on administering the questionnaire and entering responses into SIDMA.

Additional Post-Project Data

At the end of the project, you will collect additional data to understand what worked and did not work about your project. You will report this data in SIDMA using the end-of-project questionnaire. You will gather this information in two primary ways: a group discussion and a review of your records.

Focus Groups / Group Discussion

Focus groups are a common method of gathering opinions on a topic of interest. They are frequently used by businesses but are also used in social science research. Focus groups are used to gather qualitative data—rich, contextual data about topics of interest. You should consider holding one focus group for each of your target audiences. For more projects, these focus groups could look like informal discussions and be conducted by project staff.

Generally, each focus group (or group discussion) should consist of 4 to 10 people in a comfortable room seated in a circle with refreshments. Invitations should be sent well ahead of time, with reminders closer to the date of the meeting. Five to six questions without a "correct" answer should be prepared in advance. These questions should cover the topics identified in the end-of-project questionnaire and any other issues you want to discuss with your stakeholders. The facilitator will then guide people in discussing these questions. The advantage of a focus group over individual interviews is that as one person shares his or her answer, others modify theirs, think about new things, and more dimensions and opinions on the answer emerge.

End-of-Project Questionnaire

Project coordinators will submit answers to the following questions using SIDMA:

For the first four questions, please gather input from project partners.

1. Please list up to three factors related to your group that most contributed to the success of your project. *For example: great volunteers, coordinator who knew how to mediate conflict, steering committee member with background in publicity.*

2. Please list up to three factors related to your group that most hindered the success of your project. *For example: low attendance at meetings, high turnover rate of staff, not enough money.*

3. Please list up to three factors external to your group that most contributed to the success of your project. *For example: newspaper reporter that covered all of our major events,*

farmers who were willing to come to our workshops even though they were not initially supportive of our objectives, conservation group in the area that supported us with resources.

4. Please list up to three factors external to your group that most hindered the success of your project. *For example: county government was very resistant to idea of changing ordinances, small segment of homeowners wrote repeated letters to the editor against our project, dropping corn prices made farmers unwilling to adopt riparian buffers.*

For the remaining questions, please refer to project records:

5. What percentage of adopters is in the target audience?

6. What percentage of treated acres is in the critical area?

7. What percentage of installed practices is in the critical area?

8. Based on project records, what is the percentage of critical area receiving treatment?

9. Based on project records, what is the percentage of target audience implementing practices in critical areas?

10. What ordinances are in place related to NPS practices?

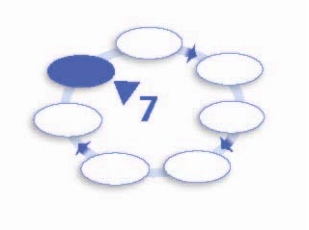
11. What additional cash and in-kind resources were leveraged as a result of project funding?

12. What other funding is available to support NPS practices in the critical areas?

13. What other technical support is available for NPS practices in the critical areas?

14. What provisions are in place to monitor NPS practices in the critical areas? What other information would you like to report about the implementation of your project?

Section J: Analyzing and Using End-of-Project Data



After collecting your second round of SIPES survey data, you can now examine the data to see if there have been any notable changes over the course of your project. As all the pilot projects are a couple of years away from collecting end-of-project data, this section of the Handbook is still a work in progress. However, it provides an overview of what SIDMA will do in the future and how the survey data can be used to understand whether your project led to expected changes.

SIDMA will generate a comparison of pre and post scores for all of the survey questions and all of the indicators. If your survey was conducted using a census, then any difference between the pre and post scores represents an actual change in your target audience over the course of your project. If your survey was conducted using a random sample, then SIDMA will explore whether the differences between pre and post scores is statistically significant. For readers with an interest in statistics, this will be done using a difference of means t-test. SIDMA will report all the differences but will note which ones are statistically significant.

There are several caveats to bear in mind when interpreting end of project data:

(1) A positive change in any variable or indicator over the course of your project is a great sign that you did something right. However, changes could be due to factors outside the scope of your project. For example, maybe people stopped using as much fertilizer because the cost sky-rocketed not due to the social marketing campaign that you used.

(2) A negative change in any variable or indicator over the course of your project may mean that your project was unsuccessful. It may also mean that other forces were at work within your watershed. For example, you may have been trying to get farmers to install riparian buffers and instead you find that over the course of your project, the number of riparian buffers has decreased not increased despite all your efforts. A finding like this could be attributable to increasing commodity prices changing farmers' motivations in ways your project could not expect to alleviate.

(3) No change may not mean that your project was not effective. It may be that without your project, there would have been a negative change in the variables and indicators and your project overcame these forces and maintained the status quo.

All these caveats reinforce the need to fully understand and document everything that has occurred within your project area over the course of your project. The end-of-project questionnaire discussed in Section I will help you do this. As you interpret your pre and post data, please refer to the end-of-project questionnaire to help you contextualize them. Understanding why or why not changes in intended outcomes have occurred over the course of your project will help you improve future projects in your watershed.

Appendix 1: Examples of the Social Indicator Planning and Evaluation System

This appendix provides several examples of SIPES applied to a variety of projects. The first four examples describe the type of project, water quality issues, critical areas, target audiences, and the steps project staff take to apply social indicators. They also include estimates for staff time and other costs associated with each activity. The fifth example provides a more narrative, case-study illustration of how project staff used social indicators and a logic-model planning framework to focus and evaluate their efforts.

Examples include:

Example 1: Implementation of an Agricultural Project

Type of Project: This example pertains to a 319 funded implementation project that focuses on getting farmers to adopt BMPs. The implementation is being done by a watershed group sponsored by a county SWCD. They have two full time staff people working on the implementation.

Water Quality Issues: Through an intensive planning process, this watershed group has determined that the major impairments in the watershed are nutrients and sediments. However, one subwatershed has high levels of *E. Coli.* They have prioritized subwatersheds to work in and are focusing on the subwatershed with high levels of *E. Coli* and two other subwatersheds which have high levels of nutrients and sediments.

Critical Areas: Within the priority subwatersheds, they have further identified critical areas that are contributing disproportionate levels of *E. Coli*, nutrients and / or sediment to the creek. They identified the critical areas using a combination of GIS analysis and windshield surveys.

Target Audiences: They want to target the operators of the farms in the critical areas during the implementation stage of the project.

Applying Social Indicators:

Staff Time: 1 hour **Other Costs: $0**	**Step 1: Review Project Plan** This group has written a management plan so they will review the plan to identify the critical areas where the NPS issue is a problem and to identify the people that they will need to reach and influence with their project activities.
Staff Time: 1 hour (a lot of work already done during planning stage) **Other Costs: $0**	**Step 2: Collect and Enter Pre-Project Survey Data** During the planning stage of the project, this group gathered address lists for the target audience by combining plat maps with their GIS data. There are 150 farmers in their target audience across all three priority subwatersheds. This population is small enough that they need to conduct a *census* and survey everyone instead of drawing a random sample.
Staff Time: 5 hours **Other Costs: $0**	They use SIDMA to develop their survey. The pollutants of interest are *E. Coli*, nutrients and sediments and they are able to program this information along with the BMPs they are trying to get farmers to adopt into SIDMA to develop a personalized survey. They decide that they also want to know what the farmers know about their watershed group and the watershed plan and they write a couple of personalized questions specifically relating to their group that get added to the end of their survey.
Staff Time: 2 hours **Other Costs: $0**	They consult with a university to check the general layout and design of the survey.
Staff Time: 5 hours **Other Costs: $0**	They know it is important to design a good advance letter and they spend considerable time working on this. After they write the letter, they show it to some farmers who visit the SWCD offices (but are outside their target audience) to judge the farmers' reaction to the letter.
Staff Time: 10 hours **Other Costs: $700**	They contract with a local printer to print the cover letter, surveys and postcard in color. They purchase envelopes and stamps themselves and collate everything in house.
Staff Time: 30 hours (for just the social indicators portion of the visits) **Other Costs: $200 (gas)**	After they mail the original letter, they decide to drop off the survey in person. They are working with a target audience that they are already familiar with and they decide this gives them a chance 'to kill two birds with one stone' and deliver the survey and also introduce (or reintroduce if they met during the planning stage) themselves to the farmers. They are also concerned about obtaining a decent response rate which is especially critical with such a small survey population.
Staff Time: 3 hours	They mail a follow-up postcard two weeks after dropping off the survey to everyone. They then track survey respondents in a confidential file so they

Other Costs: $150	can minimize costs with a second survey mailing. They mail a second survey to farmers who do not respond within two weeks following the postcard mailing.
Staff Time: 50 hours **Other Costs: $0**	Ten farmers enter their survey data themselves through the Internet interface. The group receives a further 100 surveys via mail. They need to enter all this data themselves into SIDMA.
Staff Time: 4 hours **Other Costs: $0**	After entering the data, SIDMA selects 5 of the surveys (which is 5% of the total entered by hand) and the group has to reenter the data for these surveys to make sure the data is error free. They find that it is.
Staff Time: 10 hours **Other Costs: $0**	**Step 3: Review Data and Refine Social Outcomes** The coordinator queries SIDMA for the descriptive statistics from the survey. SIDMA reports means, medians, modes and standard deviations for all the questions. Studying the data reveals that farmers in the watershed are well aware of the nutrient and sedimentation problem but less aware of the *E. Coli* problem. They find that farmers think water quality is important but that they face several constraints to adopting best management practices including the rapidly increasing price of corn.
Staff Time: 10 hours **Other Costs: $0**	Based on the survey results, they decide that in the priority subwatershed with the *E. Coli* problem, there needs to be more general education, but in the subwatersheds with the nutrients and sediment issues, they should be focusing on removing barriers to adoption of BMPs. Specifically, they decide that they cannot contend with the increasing price of corn and so they're going to focus on practices that allow the farmer to still plant corn. They decide to promote the use of Nutrient Management Plans as the most feasible BMP that has a chance of being adopted in the watershed.
Staff Time: 7 hours **Other Costs: $0**	**Step 4: Monitor Social Data Throughout Project** To promote the use of Nutrient Management Plans, the watershed group plans to hold two workshops and work with as many farmers individually as possible. They decide to evaluate their workshops to see if they are actually changing farmers' awareness, attitudes and behaviors. They design a pre-workshop questionnaire that they will distribute at the beginning of each workshop. They also design a post-workshop questionnaire that they plan to mail to each participant four weeks after the workshop to see if the workshop has led to changes. They consult with their state program to make sure that their workshop questionnaire makes sense.
Staff Time: 10 hours (not including time to redesign second workshop)	The first workshop is held six months before the second one. The questionnaire conducted four weeks after the first workshop reveals that farmers' awareness has been positively changed but that behaviors are not changing. The group talks to some farmers in more depth about why not and learns that they need more personal assistance to actually develop

Other Costs: $150 (photocopying and mailing)	Nutrient Management Plans. They redesign the second workshop to include more time for one-on-one consultation; they also give each participant a list of NRCS certified planners in the area who can be hired to write NMPs. The second workshop results reveal that more farmers now plan to adopt NMPs.
Staff Time: 10 hours **Other Costs: $1250**	**Step 5: Collect and Enter Post-Project Data** The survey from before the project will also work after the project, but they need to write a new cover letter. They again show this letter to farmers who visit the SWCD office to make sure that it is effective. They work with a local printer to print the cover letter, surveys and postcard in color. They purchase envelopes and stamps themselves as they did before the project. This time, they decide to mail the survey to save on staff time. The remainder of this task follows the same steps as above in step 3.
Staff Time: 12 hours **Other Costs: $500**	**Step 6: Collect and Enter Additional Post-Project Data** They hire a facilitator from the local university to conduct their end-of-project focus group. They work with the facilitator to write the questions and agree on the information to be collected. They spend time contacting participants by phone to ensure a representative turnout at the focus group. They take beverages and homemade cookies for the focus group and conduct it in the local library. The remainder of the end of project data is gathered from project records.
Staff Time: 5 hours **Other Costs: $0**	**Step 7: Review Data and Use Results** SIDMA generates the statistics and the project staff spend some time interpreting the results which show that the project led to increased levels of nutrient management plan adoption.
Staff Time: 10 hours **Other Costs: $50 (for photocopying)**	Project staff write a report using data and charts from SIDMA.

Example 1: Summary hours and expenses

Staff time: 185 hours (about 74 of these hours could be completed by a volunteer or intern)

Volunteer and in-kind:
University survey consultant: 2 hours
Steering Committee Members: 20 hours

Other Costs: $3000

Example 2: Implementation of Dam Removal Project

Type of Project: This example pertains to a 319 funded implementation project that involves the removal of two lowhead dams and subsequent in-stream and riparian corridor restoration. The project is being coordinated by the Friends of Milo Creek (FMC), a non-profit watershed group. They will be subcontracting the dam removal and restoration work to an engineering firm. The group has one full-time watershed coordinator on staff.

Water Quality Issues: The watershed upstream of the dams covers approximately thirty square miles of urban (~50%), rapidly developing rural land (~40%), and park land (~10%).Water quality assessments conducted by Ohio EPA found that Milo Creek was impaired immediately upstream of both lowhead dams. The lowhead dams result in sediments loaded with nutrients settling to the stream bottom, reducing in-stream habitat for many desirable macroinvertebrate species and causing dissolved oxygen levels to drop frequently throughout the summer behind the dams. Both dams are located adjacent to city park land on one bank. The land opposite the parks is privately owned. Most of the land immediately up- and down-stream of the dams is residential. The FMC would like to plant native trees and shrubs along this corridor to reduce streambank erosion and allow for some movement of the stream channel. Restoration of the riparian buffer will also improve habitat for wildlife and help shade Milo Creek, which will, in turn, reduce algae growth and lower water temperature during the summer. The FMC are also interested in the potential for increased recreational use of the stream by canoeists and kayakers after the dams are removed.

Critical Areas: Areas immediately upstream and downstream of the dams, including the stream corridor, up to 50 feet from the stream bank. These areas are considered critical because of the potential for the stream channel to migrate after the dams are removed and because landowners up and downstream of the dams have removed much of the woody vegetation along the streambanks to expand their lawns. The FMC would like to restore the riparian corridor to 50 feet by planting native tree and shrub species.

Target Audiences: Homeowners adjacent to and immediately upstream and downstream of the lowhead dams.

Applying Social Indicators:

Staff Time: **2 hours**	**Step 1: Review Project Plan** Lowhead dam removal was identified as a priority project in the Milo Creek watershed action plan. FMC has a meeting to discuss the target audience and what they know about them. FMC realizes that to be successful, the project will need support from homeowners immediately adjacent to and ¼ mile upstream and immediately downstream of the lowhead dams. Some of the landowners are long-time residents and are well connected. They could potentially block the dam removal project if they have major concerns. These landowners will be encouraged to allow a 50 foot buffer along the stream bank to grow without mowing.

Staff Time: 4 hrs. **Other costs: $0**	**Step 2: Collect and Enter Pre-Project Survey Data** In preparation for the 319 grant proposal, the Friends of Milo Creek identified property owners adjacent to the creek up- and down-stream of the dam. Some of the land is city park land owned by the city of Springfield. The FMC have a mailing list of potential recreational users of the creek who have participated in past Friends events, including recreational canoe floats and cleanup events. They were also able to obtain an e-mail list of members of a local outdoor recreation club.
Staff Time: 5 hrs **Other Costs: $0**	The FMC use SIDMA to develop their survey. They are interested in knowing their target audiences' general level of awareness and attitudes toward the river. Specifically, they are interested in their knowledge of the impacts of the lowhead dams and the benefits of a natural (wooded) riparian corridor. Because they are also interested in recreational uses of the river, they add some questions related to how people use the river and parks and trails along the river. Because there are only 15 landowners adjacent to the lowhead dams, FMC decide to conduct phone interviews with all of these landowners to determine their level of awareness and attitudes about the river and to find out if they would be open to creating a riparian buffer and if they have any concerns about the dam removal project.
Staff Time: 4 hrs **Other Costs: $0**	FMC uses SIDMA to develop an on-line survey instrument to target potential recreational users since they have e-mail addresses but not mailing addresses for most of their target audience. The watershed coordinator spends some time working on the invitation to participate in the survey and the introduction to the survey. They also consult with university experts to review their survey questions.
Staff Time: 2 hrs **Other Costs: $0**	The FMC Watershed Coordinator invites a volunteer from the group to practice taking the on-line survey in her office. The coordinator notes some changes needed to clarify questions. She also calls one of the Board members and practices the phone survey, noting needed changes in the questions. She makes the adjustments to the on-line survey.
Staff Time: 4 hrs. **Other Costs: $0**	The Watershed Coordinator sends out the e-mail invitation to the target audience requesting their participation in the on-line survey and makes phone calls to the 15 landowners adjacent to the dam removal project areas. Some of the landowners are difficult to reach and require several phone calls to schedule a time to complete the survey. Two of the landowners choose not to participate in the survey.
Staff Time: 0 hrs **Other Costs: $0**	Initial response to the first e-mail is very low – only 10% of the target audience has completed the survey after one week. The FMC Board President sends out a second e-mail to the non-respondents to encourage them to complete the survey. After two weeks, 30% of the target audience (123 people) has completed the survey.
Staff Time: 1 hr **Intern: 8 hrs ($80)**	Responses to the on-line survey and phone interviews are entered into SIDMA. FMC pays a student intern $10/hr for eight hours to enter the data.

Other Costs: $0	
Staff Time: 1 hr **Intern: 2 hrs ($20)** **Other Costs: $0**	After entering the data, SIDMA selects 5 of the surveys (which is 5% of the total entered by hand) and the group has to reenter the data for these surveys to make sure the data is error free. They find that it is. FMC pays the student intern for another hour of work.
Staff Time: 10 hrs **Cost: $0**	**Step 3: Review Data and Refine Social Outcomes** The Watershed Coordinator queries SIDMA for the descriptive statistics from the data that were entered earlier. SIDMA reports means, medians, modes and standard deviations for all questions. The Watershed Coordinator meets with a university staff member with expertise in statistics to get help interpreting the data, which reveal that most respondents are not aware of the existence of lowhead dams or their impacts on the ecology of the river. Only a small percentage identified sedimentation as a major problem in the river. They were surprised to learn that over 25% of the respondents had been involved in some type of recreational activity near the river in the past month. They also learned that most of the landowners near the lowhead dams believed that the dams reduced the risk of flooding downstream. They were largely unaware of the ecological benefits of a wooded riparian corridor.
Staff Time: 3 hrs **Cost: $0**	Based on the analysis of the survey results, the FMC board members consider an education campaign to both landowners and potential recreational users. However, after reviewing their education budget, they decide instead to focus their efforts just on the landowners adjacent to the dam removal project sites. They are concerned that adjacent landowners might mistakenly think that removing the lowhead dams could increase the risk of flooding their properties and might therefore try to prevent the project from moving forward. The FMC would need to educate landowners about the benefits of a wooded riparian corridor to gain their support in maintaining a 50 ft. buffer along the stream banks.
	FMC group members decide to address adjacent landowners' perceptions about lowhead dams and riparian corridors. Their goal is that all 15 landowners demonstrate an understanding of the purpose for the two lowhead dams that will be removed and the safety hazards that the dams pose. They should also indicate a willingness to allow the planting of native trees and shrubs in a 50 foot buffer along the stream. To accomplish their educational goals, the group will hold two meetings near the two dams. They will personally invite all of the adjacent landowners. The city engineer also agrees to mail all the landowners a one-page factsheet about the dam removal project, expected impacts on river ecology and safety and confirming that there will be minimal impact on the risk of flooding downstream of the dams. The mailing includes a brochure created by the Ohio Department of Natural Resources on the values of wooded streamside buffers.

Staff Time: 8hrs **Other Costs: $0**	**Step 4: Monitor Social Data Throughout Project** The FMC decide to use two methods for evaluating progress on their educational goals. They will use a pre- and post-questionnaire at the workshops to measure participants' change in knowledge, awareness, and willingness to accept creation of a 50ft. wooded buffer strip along the stream bank. They will also use a phone survey to determine if adjacent landowners have read the letters from the City of Springfield and their perceptions of the dam removal project after reading the letter. The Watershed Coordinator consults with an evaluation expert at the local university to be sure that the evaluation questions will provide the answers the FMC need to measure progress on their educational goals.
Staff Time: 8 hrs **Intern: 6 hrs ($60)** **Other costs: $25 (copies of fact sheet, refreshments for workshop)**	After the first workshop, results from the pre- and post-questionnaire indicate that participants were much more knowledgeable about the lowhead dams and would be willing to allow a 50 ft. wooded buffer strip on their property. However, only four of the fifteen targeted landowners attended the first workshop. A student intern was hired to conduct phone interviews with landowners to determine if they had received the letter from the City about the dam removal projects. Most of the landowners the intern spoke to had received the letter but many were confused about where the projects would happen and how it might affect their property. Because of the low turnout at the first meeting, the intern was instructed to ask the property owners how they would like to learn more about the dam removal project. About half indicated that they would attend a short meeting if it was held on a Saturday morning. The other half would prefer to learn more about the project through the FMC web-site.
Staff Time: 8 hrs **Additional Costs: $0**	The second workshop was held on a Saturday morning and nine of the landowners were present. Pre- and post-workshop questionnaires indicated that the landowners increased their understanding of the minimal impact of the project on flooding and all had positive attitudes about the reduced risk of drowning from removing the dams. Information about the project was posted on the FMC web-site and all targeted landowners were sent an e-mail with a link to the information. Follow-up phone calls with the landowners who had not attended any of the workshops indicated that none of the landowners had concerns about the dam removal project.
Staff Time: 6 hrs. **Additional Costs: $0**	**Step 5: Collect and Enter Post-Project Survey Data** Because the FMC chose not to target the general audience in the watershed, no follow-up survey was developed for this audience. Instead, phone interviews were conducted with the target audience of landowners adjacent to the dam removal project. Since some of these landowners had been contacted recently as part of the education activities, and their attitudes toward the project were known, only the landowners who had attended the workshops needed to be called. Results from the phone surveys are entered into SIDMA.

Staff Time: 6 hrs **Other Costs: $50 (refreshments and flip chart for focus group mtg)**	**Step 6: Collect and Enter Additional Post-Project Data** The Watershed Coordinator convenes a focus group meeting to discuss the positive and negative aspects of the education project. The university evaluation expert agrees to facilitate the focus group interview.
Staff Time: 2 hrs **Other Costs: $0**	**Step 7: Review Data and Use Results** The statistics produced by SIDMA indicate a statistically significant difference between respondents' scores for knowledge and awareness before and after the educational programs. On average, scores were higher after the programs than before. The statistics produced by SIDMA indicated that the landowners showed an increase in their level of awareness about the lowhead dams, their purpose, impacts on stream ecology, safety, and flooding. Landowners also demonstrated a willingness to allow the planting and growth of trees and shrubs in the 50 foot buffer along the stream.
Staff Time: 6 hrs **Other Costs: $50 (color copies of final report for 319 funding agency, key stakeholders, and City of Springfield.)**	The Watershed Coordinator uses charts generated from SIDMA to write a final report on the education efforts associated with the dam removal project. The report included information from the initial on-line survey which indicated respondents were generally not aware of the major issues affecting Milo Creek. Recommendations were made for future education and outreach efforts to address these misconceptions. A second, shorter report was developed and sent to the City of Springfield to demonstrate that landowners adjacent to the dam removal projects would be unlikely to oppose the project.

Example 2: Summary hours and expenses

Staff (Watershed Coordinator) time: 80 hrs

Volunteer and In-Kind:
University evaluation and survey consultant: 10 hrs.
Friends of Milo Creek Board of Directors: 9 board members donate a total of 25 hours
Friends of Milo Creek member: 1 hr (to test on-line survey)

Paid Intern: 16 hrs @ $10/hr = $160

Other costs: $125

Example 3: Planning Project in an Urbanizing Watershed

Note: Planning projects only need to complete the first 3 steps in SIPES.

Type of Project: This example describes a planning project in an urbanizing watershed partially funded by Section 319. The planning will be conducted by a coalition of local, state, and federal agencies, the Friends of Big House Creek (a nonprofit watershed group), and two neighborhood associations flanking the creek near where it enters the Wisconsin River. The Friends of BHC has hired one full time person to coordinate grant writing and planning efforts. The goal of the grant is to engage in a watershed planning process that results in 1) a completed watershed plan that addresses the nine elements identified in the USEPA draft Handbook for Developing Watershed Plans, and 2) increased participation in the watershed planning process.

Water Quality Issues: Based on existing information, the coalition has identified agriculture, construction site erosion, and increased nutrient loading from stormwater as the primary water quality issues in the watershed. The group hopes the planning process will help them synthesize existing data and identify and prioritize critical areas based on 1) environmental data such as slope, soil type, and rainfall data; 2) land use data including trends; 3) demographic data and trends; and 4) how people living in critical environmental areas feel about water quality in the creek and behaviors that affect water quality in the creek. The group will use this data to set measurable, achievable goals and design an implementation program.

Critical Areas: In the two sub-watersheds with agriculture as the primary land use, one of the coalition's tasks will be to determine whether sensitive environmental areas are managed by receptive land owners. If so, these land managers can be approached directly; if not, other methods will need to be used to reach them (such as working with local farm cooperatives, or community opinion leaders). In the two urbanizing sub-watersheds, both neighborhood associations are interested in working with the city to develop a stormwater utility, but do not yet know how the residents will respond. Both neighborhoods still have some development occurring and the consensus among coalition members is that most neighborhood residents are diligent about applying fertilizer to their lawns.

Target Audiences: Farmers who manage critical areas are the target audience in agricultural sub-watersheds. Homeowners are the target audiences in the two urbanizing sub-watersheds.

Applying Social Indicators: *The costs, time commitments, and work items outlined below describe what social indicators add to a watershed planning process.*

	Step 1: Review Project Plan
Friends Staff Time: 5 hours **Agency Staff Time:** 5 hours **Other Costs:**$0	Since the Coalition is just now beginning the planning process, they don't have a project plan to review. They do, however, have some water quality reports from the state environmental protection agency. They review this data with assistance from agency staff to be sure that they are focusing on the right NPS issues. After getting confirmation that they are on the right track, they focus on identifying their target audiences and critical areas. The Coalition has a general idea about who their target audiences are based on the water quality data, but they decide to gather information about social issues in the agricultural sub-watersheds by using both the

	Step-by-Step Guide to Conducting a Social Profile and SIDMA survey questions. In the urbanizing sub-watersheds, they agree to use existing demographic information that SIDMA will provide, but do not develop a social profile.
Friends Staff Time: 10 hours **Agency Staff Time:** 4 hours **Other Cost:** $50 (materials)	Friends group staff facilitate development of preliminary concept and social network maps to help understand the problem and community communication patterns in the watershed. They do this within and among agricultural and urbanizing areas of the watershed.
Friends Staff Time: 14 hours **Other Costs:** $1500	**Step 2: Collect and Enter Pre-Project Survey Data** The Coalition decides to do much of this work itself. It contracts with a university to review the survey and help analyze the data. In the agricultural sub-watersheds, the Friends group gets addresses manually by combining plat maps with their GIS data on critical areas. There are 220 farmers managing critical areas in these watersheds. In the urbanizing watersheds, there are about 550 households. These populations will be considered separately because they are receiving different surveys. Because of the number of households in the urbanizing area, the survey will be mailed to a random sample of households (223) as calculated using instructions in the Social Indicators Handbook. Neighborhood associations will provide up-to-date mailing lists. Because of the high number of neighborhood residents with e-mail addresses, 100% of the random sample could also be sent surveys via e-mail. This alternative method was used to increase response rates as well as minimize data entry time and errors.
Friends Staff Time: 12 hours **Agency Staff Time:** 4 hours **Other Costs:** $0	The Coalition uses SIDMA to develop surveys for both types of sub-watersheds. The pollutants of interest in all sub-watersheds are sediment, nitrogen, and phosphorus. They are able to consider this information along with the BMPs they are trying to get their target audiences to adopt into SIDMA to develop a personalized survey. They would also like to know if their target audiences are interested in becoming involved in the watershed planning process or receiving an e-newsletter. Finally, they would like to know if residents in the urbanizing sub-watersheds would be willing to fund a stormwater utility. They include additional questions at the end of both surveys to address these issues. The university reviews general layout and design of the surveys.
Friends Staff Time: 10 hours **Other Costs:** $500 (printing and postage)	The coordinator prints the cover letters, surveys and reminder postcards in color and collates everything in-house. She purchases commemorative stamps from the local post office for both the surveys and postcard. She imports the e-mail lists from the neighborhood association's spreadsheets into the Friends group database in preparation for sending an e-mail with the survey web address to the sample of residents in the urbanizing sub-watersheds.
Friends Staff Time: 5 hours **Agency staff**	In addition to mailing and e-mailing a link to the survey, both neighborhood associations have their annual meetings in the early spring and agree to have the Friends group coordinator come talk about the

Time: 4 hours (2 per meeting) **Other Costs:** $0	project. She also encourages people to fill out the survey.
Friends Staff **Time:** 3 hours **Other Costs:** $0 (postage already accounted for)	They mail a follow-up postcard two weeks after mailing the survey. They then track who has responded to the first mailingto ensure that the second mailing only goes out to non-respondents. They mail a second survey with a revised cover letter to farmers and homeowners who do not respond within two weeks following the postcard mailing.
Friends Staff **Time:** 50 hours **Cost:** $0	Thirty-five farmers and 120 residents of the urbanizing watersheds enter their survey data themselves through the Internet interface. The coordinator receives an additional 110 surveys from the agricultural watersheds and 45 surveys from the urbanizing watersheds via mail. The coordinator enters the data from the urbanizing watersheds into SIDMA.
Friends Staff **Time:** 2 hours **Cost:** $0	After entering the data, SIDMA selects 8 of the surveys (5% of the total entered by hand) and the coordinator has to reenter the data for these surveys to make sure the data is error free. They find that it is.
Friends Staff **Time:** 20 hours **Cost:** $0	**Step 3: Review Data and Refine Social Outcomes** *Task 1: Generate and interpret descriptive statistics* The coordinator queries SIDMA for the descriptive statistics from the survey. SIDMA reports means, medians, modes and standard deviations for all the questions. Results reveal that farmers in the watershed are well aware of the nutrient and sedimentation problems but less aware of the *E.coli* problem. The Coalition finds that farmers think water quality is important but that logistical constraints and financial constraints were widely cited by farmers as barriers to changing practices. Farmers strongly valued the opinions of their neighbors. Farmers also indicated that they thought that urbanizing areas were having a greater impact on water quality than agricultural areas. Residents in urbanizing areas were less aware of the factors that cause water quality problems in their watersheds. However, they indicated that they were willing to reduce fertilizer use on their lawns and pick up pet waste. They were also willing to pay a small annual fee to help manage water quality in the river (i.e. a stormwater utility). Similar to the farmer responses, they believed that erosion from farm fields and manure from farm animals were causing more problems than urban sources of pollution. Social networking maps developed by Coalition members showed few regular connections among the agricultural and urbanizing areas.

Friends Staff Time: 20 hours (includes writing social components of the watershed plan) **Agency Staff Time:** 4 hours **Cost:** $0	The Coalition decided to review environmental and preliminary social watershed data at their summer quarterly meeting. Based on priority critical areas, contextual data, and survey data, they decide that to change farmer behavior, they need 1) additional staff to work individually with farmers and 2) to work more closely with farmers identified as opinion leaders in the watersheds. They agree to begin looking for funding to hire a new staff person to work in the agricultural sub-watersheds. In the urbanizing sub-watersheds, they decide to seek funding to hire a consultant to develop a small social marketing campaign targeted at watershed residents. Municipal officials agreed to begin developing a proposal for a stormwater utility. In addition, the Friends group would seek new funding for the staff coordinator to facilitate peer networks in the urbanizing sub-watersheds to support positive behavior changes and gather additional information about barriers. Finally, the Coalition agreed to convene community leaders from both agricultural and urbanizing sub-watersheds to address a number of community development issues of mutual interest, including water quality. These approaches were all incorporated into the Big House Creek Watershed Management Plan.

Example 3: Summary hours and expenses

Total Friends Staff Time: 151 hours (≈19 days)

Total Agency Staff Time: 21 hours (≈ 4 days)

Total Other Costs: $2050

Example 4: Implementation of Project with Unique Target Audience

Note: Currently, SIPES is designed for two key target audiences – agricultural landowners and urban homeowners. We plan to extend the methods to additional target audiences during the next few years. One of these target audiences will be snowplow operators. This example shows how the step-by-step process outlined in the social indicator handbook could be applied to this target audience.

Type of project: This example describes a 319 implementation project in a large metropolitan area that focuses on encouraging snowplow drivers to adopt BMPs. Implementation is being done by a local watershed district in partnership with four municipalities within the district boundaries. There is one staff member, assisted by an intern, working on implementation of this project.

Water quality issues: Road salt mixtures are drained into storm sewers by melting snow and enter the main stem of the Mississippi river as nonpoint source pollution. Excess road salts have been linked to habitat degradation, as well as changes in lake and river ice through increased density of water.

Critical areas: Critical areas and sub-watersheds have already been identified from the district watershed plan. Through intensive planning, the watershed district has determined that road salts applied improperly by snowplow drivers contribute to watershed impairment. District staff hope that implementation of a training program for snowplow drivers focusing on best management practices will result in a change in the awareness, attitudes and practices of the plow operators, as measured by social indicators. If the training is successful, the quantity of road salt mixtures on roadways and parking lots should be reduced. To assess the changes in awareness, attitudes and practices of snowplow operators, pre- and post-training surveys will be developed and administered through the SIDMA tool. The pre-survey will be done prior to curriculum development for the training course; the post-survey will be administered to certified operators at the end of the next plowing season.

Target audiences: Snowplow drivers.

Applying social indicators:

Staff time: 2 hours	**Step 1: Review Project Plan** The watershed district has a plan that identifies road salt as a priority water quality issue. The watershed district identifies two groups of snowplow drivers: those working for public agencies (state, county and municipal governments) that plow public roadways; and hundreds of contractors that plow private parking lots (shopping malls, office ramps and lots, etc.). Both groups apply a variety of salt mixtures during the plowing process. The watershed district has partnered with three local municipalities to require certification for all snowplow operators (public and private). Training in proper application rates and practices will become a prerequisite for licensing.

	Step 2: Collect and Enter Pre-Project Survey Data
Staff time: 3 hours Other costs: 0	It is determined from licensing and certification lists that there are 980 snowplow operators in the metropolitan area. The staff member determines the sample size and selects a random sample of 260 operators (based on the formula included in the social indicator handbook).
Staff time: 12 hours Other costs: $200 for consultant to review survey	Because all public employees and most private firms have Internet access, the watershed district decides to do a web-based survey rather than a mail survey. SIDMA is used to develop the baseline survey. They decide to add a few questions about outdoor recreational habits of plow operators as a means of linking NPS issues with natural resource conditions and trends. The staff member and intern are not yet familiar with SIDMA and so require an hour or two to become familiar with the tool. The draft survey is prepared and reviewed by two other staff members and a consultant. The staff member and intern prepare and send an e-mail message about the survey to plow operators with a request to participate. Follow-up messages are also sent.
Staff time: 0 Other costs: 0	There is no cost to enter data into SIDMA because it is done by the respondents.
	Step 3: Review Data and Refine Social Outcomes
Staff time: 10 hours Other costs: 0	The staff member queries SIDMA for the descriptive statistics from the baseline survey. Studying the data, the staff realize that plow operators (especially those working for private companies) do not fully understand the characteristics of different road salt mixes, and tend to use higher than recommended application rates. There is a general attitude that "more is better." Few operators are aware of the watershed impacts of road salts.
Staff time: 15 hours ($675) Other costs: 0	Findings from the survey are used to design the training program for certification of snowplow operators. Based upon operator responses, trainers realize that due to prevailing attitudes, certain topics (such as the characteristics of different mixes under different temperature conditions, and application rates) will need to be reinforced. Survey findings show that 60% of operators are anglers with concerns about fishing habitat in the Mississippi River and regional lakes. The survey also reveals that private operators generally score lower on awareness, attitudes and practices than do operators working for public agencies. The staff considers whether to narrow the target audience, but determine that all operators should be targeted.
	Step 4: Monitor Social Data Throughout Project
Staff time: 8 hours Other costs: 0	The watershed district organizes a series of training workshops for snowplow operators. Staff develop workshop questionnaires that they will use before and after each workshop to evaluate change in awareness and willingness to change behaviors.

Staff time: 4 hours Other costs: 0	The workshop data show that the workshops are effective at changing awareness. Several operators report that they are more willing to adopt best practices at the end of the workshops. Staff decide the workshops are effective and do not change anything.
Staff time: 3 hours Other costs: 0	**Step 5: Collect and Enter Post-Project Survey Data** Using the same approach and the same survey they used in Step 3, staff collect survey data.
Staff time: 6 hours Other costs: 0	**Step 6: Collect and Enter Additional Post-Project Data** Staff conduct a focus group with a small group of both private and public operators to assess the overall effectiveness of the project.
Staff time: 4 hours Other costs: 0	**Step 7: Review Data and Use Results** Staff use SIDMA to generate descriptive statistics and measures of change between the baseline survey data and the end of project survey data. They find that awareness among operators has changed considerably and more operators report that they are using appropriate amounts of road salt. They do not find a considerable shift in attitudes.
Staff time: 4 hours Other costs: 0	Staff prepare an end-of-project report using charts available through SIDMA.

Example 4: Summary hours and expenses

Staff time: 71 hours
Other costs: $200

Example 5: Social Indicators and the Clearwater Creek Watershed Project

To illustrate the steps for collecting and analyzing social indicators and to show the potential benefits of using social indicators for planning, the following is an example of how one fictional watershed project—Clearwater Creek—used SIPES.

Step 1: Review Project Plan

The Clearwater Creek Watershed Group (CCWG) formed to develop and implement a comprehensive watershed action plan to improve water quality and habitat in and around the creek. During the planning process, several water quality issues were identified, including high bacteria levels and high concentrations of sediment and nutrients, especially phosphorus. The watershed action plan includes reduction goals for these pollutants, conservation practices that would be effective in preventing pollutants from entering Clear Creek, and the land areas (called "critical areas" in the watershed plan) that need to be managed differently to reach water quality goals. Water quality and septic system inspection data collected as part of the watershed planning process pinpointed failing septic systems as the primary cause of high bacteria and phosphorus levels. Critical areas, then, are properties on which the failing systems are located that 1) are in close proximity to areas of the creek showing high bacteria counts and phosphorus levels, and 2) that state agencies and local soil and water conservation staff determine are likely to affect the creek based on groundwater flow and soil conditions. Learning more about the people that own these septic systems and communicating effectively with them will be essential to successful implementation of the Clearwater action plan.

The people that own and manage critical areas in the Clearwater Creek watershed are the CCWG's "target audiences". In this case, the target audiences are people that maintain septic systems near areas of Clearwater Creek with high bacteria and phosphorus levels. However, the group's Education and Outreach Subcommittee will need additional information about their target audiences to prepare the questionnaire they will use to collect baseline information. The Subcommittee first uses the Clearwater Township plat book and records from the register of deeds to document parcel ownership. Based on discussions with the full watershed group and local leaders, the Subcommittee determines that this list will effectively reach the people responsible for maintaining the septic systems. They now have identified their target audience as rural homeowners and can use this information in Step 3. Using their environmental goals, critical areas, and preliminary social outcomes, the CCWG developed the following draft logic model shown in Figure 1.1 for their project.

<table>
<tr><td>Situation</td><td colspan="5">Impairment of Clearwater Creek because of high bacteria levels and high concentrations of sediment and nutrients, especially phosphorus. Primary cause of high bacteria levels is failing septic systems.</td></tr>
<tr><td>Priorities</td><td colspan="5">Implementation of the Clearwater Creek action plan, including effective outreach programs that foster volunteer cooperation from farmers and homeowners in the watershed.</td></tr>
<tr><td rowspan="2">Inputs</td><td colspan="2">Outputs</td><td colspan="3">Outcomes</td></tr>
<tr><td>Activities</td><td>Participants</td><td>Short-term</td><td>Medium-term</td><td>Long-term</td></tr>
<tr><td rowspan="2">Watershed action plan

Volunteer cooperation

Health Department funding

Watershed group time and resources

Extension time and resources

SWCD time and resources</td><td></td><td rowspan="2">Homeowners who have not recently upgraded their septic systems</td><td></td><td>25 failing HSTS systems replaced with more appropriate technologies

50 failing HSTS systems undergo routine maintenance

200 HSTS inspections

These numbers were suggested by the state environmental protection agency as appropriate targets for reducing bacteria levels by 50% (see long-term outcomes).</td><td>Reduce bacteria levels in tributaries by 50%. This outcome was determined by the state environmental protection agency as part of a TMDL study.</td></tr>
<tr><td></td><td></td><td></td><td>Eliminate bacterial impairment in Clearwater Creek.</td></tr>
<tr><td colspan="3">Assumptions and External Factors</td><td colspan="3">Evaluation</td></tr>
<tr><td colspan="3">Farmers will be willing to work with watershed group.</td><td colspan="3">Health Department data: Number of septic systems upgraded or replaced; Number of septic systems maintained; Number of septic systems inspected</td></tr>
<tr><td colspan="3">Septic systems make a significant contribution to bacteria loading.</td><td colspan="3"></td></tr>
</table>

Figure 1.1: First draft logic model

Step 2: Collect and Enter Pre-Project Survey Data

During this step, the Education and Outreach Subcommittee of the CCWG discusses and agrees upon the content of a questionnaire to collect data about the awareness, attitudes, constraints, and current behaviors (e.g., how often property owners had their septic tanks pumped) of septic system owners related to septic system maintenance and water quality. Working with a county Extension Educator and the Social Indicators Handbook, the project manager then uses a menu of pre-developed questions from SIDMA to prepare a formatted questionnaire that will be distributed by mail. The project manager also adds two questions to gauge target audience awareness of CCWG. She develops a post card notifying homeowners that a survey would be coming, a cover letter for the survey, and a thank you and reminder letter for follow-up mailings. She then uses the target audience mailing list developed in Step 1 (200 households) and implements the social data collection process using the suggested "five-wave" design, which includes several reminders to help increase the response rate. As survey responses come in, the project manager enters the data into SIDMA. She uses SIDMA to generate and display descriptive statistics (means, standard deviations, percentages responding)and prepares a report for the CCWG. After all the questionnaires are returned, the group ends up with a 60% response rate.

Step 3: Review Data and Refine Social Outcomes

Members of the Education and Outreach Subcommittee meet several times during the next few months to analyze the data from the surveys of home septic system owners in the targeted sub-watersheds. Most survey respondents have been in the watershed for at least 20 years and have a high school education. Average annual household income is $45,000. Average age is 52, and most respondents are Caucasian. They find that the overall level of awareness about the impacts of failing septic systems was very low. Only 27 percent of survey respondents know that failing home septic systems were a source of bacteria in their watersheds. They also learn that most (65 percent) would consider conducting regular maintenance on their septic systems if they knew that it would contribute to improved water quality in the creek, but cost was frequently identified as a barrier to maintaining or upgrading failing systems.

With this information, members of the Subcommittee review the outcomes they had identified for their home septic system education campaign. Before the survey, committee members speculated that homeowners were aware of the impacts that failing septic systems had on nearby streams and that cost was a major barrier to maintaining and upgrading failing systems. The survey results confirm the cost issue, but also identify a gap in the target audience's awareness of impacts. As a result, Subcommittee members add a short-term outcome to their education plan related to residents' awareness of the impacts of failing septic systems on water quality and human health. In addition, the Subcommittee decides to narrow their target audience by eliminating from their campaign contact list those respondents that indicated on their survey that they had recently completed routine maintenance or upgrades to their septic systems. They use the unique identification number assigned to each questionnaire to protect the privacy of respondents.

Given that the CCWG and their partners have a modest budget, they decide that the best way to increase the awareness of homeowners in the critical area is to develop a brochure that they can distribute through existing activities, such as local fairs, open houses, and other public events. The brochure includes information about the public health and environmental impacts of failing septic systems, as well as information about available cost sharing (from the county Health

Department) for those interested in upgrading or replacing their systems. They discuss conducting a mid-project questionnaire to see if the brochures would be effective, but instead decide to wait and see how many septic systems are replaced before agreeing to take on the additional work and expense.

Figure 1.2 shows the next logic model for their project, which outlines a home septic system maintenance and upgrade campaign. After all the partners agree to this approach, the group begins developing the brochure and scheduling booths and volunteers at events they think will most likely attract members of their target audience.

Situation	Impairment of Clearwater Creek because of high bacteria levels and high concentrations of sediment and nutrients, especially phosphorus. Primary cause of high bacteria levels is failing septic systems.				
Priorities	Implementation of the Clearwater Creek action plan, including effective outreach programs that foster volunteer cooperation from farmers and homeowners in the watershed.				
Inputs	**Outputs**		**Outcomes**		
	Activities	**Participants**	**Short-term** (awareness/attitude change)	**Medium-term** (behavior change)	**Long-term**
▪ Watershed action plan ▪ Volunteer cooperation ▪ Health Department funding ▪ Watershed group time and resources ▪ Extension time and resources ▪ SWCD time and resources	Distribute brochures at local fairs, open houses, and other public events. Advertise available cost sharing from Health Department for system upgrades.	Homeowners who have not recently upgraded their septic systems	70% of target audience responds correctly to survey questions about the impacts of failing septic systems on water quality and human health. 200 residents in target area indicate willingness to have their HSTS inspected by the Health Department.	25 failing HSTS systems replaced with more appropriate technologies 50 failing HSTS systems undergo routine maintenance 200 HSTS inspections *These numbers were suggested by the state environmental protection agency as appropriate targets for reducing bacteria levels by 50% (see long-term outcomes).*	Reduce bacteria levels in tributaries by 50%. *This outcome was determined by the state environmental protection agency as part of a TMDL study.* Eliminate bacterial impairment in Clearwater Creek.
Assumptions and External Factors			**Evaluation**		
Homeowners will be willing to work with watershed group.			Health Department data: Number of septic systems upgraded or replaced; Number of septic systems maintained; Number of septic systems inspected		
Septic systems make a significant contribution to bacteria loading.			Pre- and post-project survey measuring changes in awareness and willingness to have septic system inspected		
Brochures at events will be effective.			Mid-project survey? Wait to see if outcomes are being met.		

Figure 1.2: Logic model illustrating home septic maintenance and upgrade campaign

Step 4: Monitor Social Data Throughout Project

Twelve months after the CCWG Subcommittee met to finalize their education project plan outcomes and activities, they want to know how effective their education and incentive program has been at addressing failing septic systems. They want to know if the money spent on education and outreach is moving them toward accomplishing their short-, medium-, and long-term goals. They decide to conduct a second survey of their target audience to determine progress on the first short-term outcome: *70% of target audience responds correctly to survey questions about the impacts of failing septic systems on water quality and human health*. To measure respondents' awareness of septic system impacts, only a few questions are necessary. The Subcommittee decides to conduct a phone survey instead of a mail survey in order to save money on postage, though they realize they will not be able to relate phone survey information with the confidential mail questionnaire information. The project manager conducts the phone survey and collects data on the number of respondents who express a willingness to have their systems inspected. Records from the past year indicate which homes had conducted routine maintenance on their systems and which ones had upgraded failing systems.

The Clearwater Creek group members learn that while they were making good progress on inspections, they have only made marginal progress on increasing awareness of the impacts of failing systems. They also learn that only 10 systems have been upgraded. More than 30 have undergone routine maintenance.

Based on this information, the Education and Outreach Subcommittee decides to use a different approach to reaching the target audience. During the past year, members distributed educational brochures at various fairs and public events. From the phone survey, they learned that only ten percent of respondents remembered seeing the pamphlet. However, those same ten percent scored very high on the awareness questions. They decide not to change the content of the brochure, but instead of distributing the brochure at various public events, they mail the brochure to every member of the target audience. Health Department staff also convince county commissioners to provide additional funds to increase the cost share for homeowners to upgrade failing systems. Figure 1.3 illustrates these modifications to the CCWG campaign.

<table>
<tr><td>Situation</td><td colspan="5">Impairment of Clearwater Creek because of high bacteria levels and high concentrations of sediment and nutrients, especially phosphorus. Primary cause of high bacteria levels is failing septic systems.</td></tr>
<tr><td>Priorities</td><td colspan="5">Implementation of the Clearwater Creek action plan, including effective outreach programs that foster volunteer cooperation from farmers and homeowners in the watershed.</td></tr>
<tr><td rowspan="2">Inputs</td><td colspan="2">Outputs</td><td colspan="3">Outcomes</td></tr>
<tr><td>Activities</td><td>Participants</td><td>Short-term
(awareness/attitude change)</td><td>Medium-term
(behavior change)</td><td>Long-term</td></tr>
<tr><td rowspan="2">▪ Watershed action plan
▪ Volunteer cooperation
▪ Health Department funding
▪ Watershed group time and resources
▪ Extension time/rsrcs
▪ SWCD time and rsrcs</td><td>Distribute brochures at local fairs, open houses, and other public events. Change: Mail brochure to every member of target audience.</td><td rowspan="2">Homeowners who have not recently upgraded their septic systems</td><td>70% of target audience responds correctly to survey questions about the impacts of failing septic systems on water quality and human health. Progress: Only marginal increases in awareness.

200 residents in target area indicate willingness to have their IISTS inspected by the Health Department. Progress: Willingness to have septic systems inspected already exists.</td><td>25 failing HSTS systems replaced with more appropriate technologies Progress: 10 systems upgraded

50 failing HSTS systems undergo routine maintenance Progress: 20 systems maintained

200 HSTS inspections Progress: 120 inspections

These numbers were suggested by the state environmental protection agency as appropriate targets for reducing bacteria levels by 50% (see long-term outcomes).</td><td>Reduce bacteria levels in tributaries by 50%.

This outcome was determined by the state environmental protection agency as part of a TMDL study.</td></tr>
<tr><td>Advertise available cost sharing from Health Department for system upgrades. Change: Increase cost share to upgrade systems.</td><td></td></tr>
<tr><td colspan="3">Assumptions and External Factors</td><td colspan="3">Evaluation</td></tr>
<tr><td colspan="3">Homeowners will be willing to work with watershed group.</td><td colspan="3">Health Department data: Number of septic systems upgraded or replaced; Number of septic systems maintained; Number of septic systems inspected</td></tr>
<tr><td colspan="3">Septic systems make a significant contribution to bacteria loading.</td><td colspan="3">Pre- and post-project survey measuring changes in awareness and willingness to have septic system inspected</td></tr>
<tr><td colspan="3">Brochures at events will be effective.</td><td colspan="3">Mid-project survey? Wait to see if outcomes are being met. Change: Conduct survey.</td></tr>
</table>

Figure 1.3: Logic model illustrating project modifications

Step 5: Collect and Enter Post-Project Survey Data

After two years, the home septic system maintenance and upgrade project funding is nearly spent. Members of the CCWG are now ready to take stock of their final outcomes. They get much of the information they need from the Health Department, including the number of septic systems upgraded or maintained in the target area. They develop and administer a third questionnaire to determine final target audience awareness of impacts from failing systems, and attitudes and behaviors related to routine maintenance. As in Step 3, they use SIDMA to develop the final questionnaire. It is nearly identical to the first one so they can compare pre- and post-project data.

Steps 6 and 7: Collect and Enter Additional Post-Project Data, and Review Data and Use Results

After data from the Health Department and the final project evaluation survey were entered into SIDMA, members of the CCWG sit down to discuss project outcomes and what they learned from the project, using questions in an end-of-project worksheet to guide the conversation. While the project fell just short of accomplishing all short- and medium-term outcomes, group members feel the project was successful and a worthwhile investment of money and time. They learned that some initial investigation into methods for reaching target audiences with educational materials would be valuable for future projects. For this project, it turned out to be more effective to mail brochures directly to the homes of target audiences. They also learned that very few homeowners were willing to spend more than $1,000 to upgrade failing systems unless Health Department technicians could demonstrate that their systems were directly contributing to high bacteria and phosphorus levels in nearby streams. Project outcomes can be found in Figure 1.4. In addition, the CCWG used the meeting to celebrate that the project had strengthened their relationship with the Health Department and increased homeowner awareness of the organization. In fact, 27 homeowners had become active volunteers in other CCWG activities. They end the meeting agreeing to use a similar approach to address the sediment and nutrient issues in the watershed.

<table>
<tr><td>Situation</td><td colspan="5">Impairment of Clearwater Creek because of high bacteria levels and high concentrations of sediment and nutrients, especially phosphorus. Primary cause of high bacteria levels is failing septic systems.</td></tr>
<tr><td>Priorities</td><td colspan="5">Implementation of the Clearwater Creek action plan, including effective outreach programs that foster volunteer cooperation from farmers and homeowners in the watershed.</td></tr>
<tr><td rowspan="2">Inputs</td><td colspan="2">Outputs</td><td colspan="3">Outcomes</td></tr>
<tr><td>Activities</td><td>Participants</td><td>Short-term
(awareness/attitude change)</td><td>Medium-term
(behavior change)</td><td>Long-term</td></tr>
<tr><td rowspan="3">Watershed action plan

Volunteer cooperation

Health Department funding

Watershed group time and resources

Extension time and resources

SWCD time and resources</td><td>Distribute brochures at local fairs, open houses, and other public events.
Change: Mail brochure to every member of target audience.</td><td>Farmers who have not recently upgraded their septic systems</td><td rowspan="3">70% of target audience responds correctly to survey questions about the impacts of failing septic systems on water quality and human health.
Progress: Only marginal increases in awareness.
Final: 65% responded correctly.
200 residents in target area indicate willingness to have their HSTS inspected by the Health Department.
Progress: Willingness to have septic systems inspected already exists.
Final: No change.</td><td rowspan="3">25 failing HSTS systems replaced with more appropriate technologies
Progress: 10 systems upgraded
Final: 22 systems upgraded

50 failing HSTS systems undergo routine maintenance
Progress: 20 systems maintained
Final: 45 systems maintained (needs future monitoring)

200 HSTS inspections.
Progress: 120 inspections
Final: 196 inspections
Medium-term outcomes suggested by state environmental agency to reducing bacteria levels by 50% (see long-term outcomes).</td><td rowspan="2">Reduce bacteria levels in tributaries by 50%.

This outcome was determined by the state environmental protection agency as part of a TMDL study.</td></tr>
<tr><td>Advertise available cost sharing from Health Department for system upgrades.
Change: Increase cost share to upgrade systems.</td><td>Homeowners who have not recently upgraded their septic systems</td></tr>
<tr><td></td><td></td><td>Eliminate bacterial impairment in Clearwater Creek.</td></tr>
<tr><td colspan="3">Assumptions and External Factors</td><td colspan="3">Evaluation</td></tr>
<tr><td colspan="3">Farmers will be willing to work with watershed group.</td><td colspan="3">Health Department data: Number of septic systems upgraded or replaced; Number of septic systems maintained; Number of septic systems inspected</td></tr>
<tr><td colspan="3">Septic systems make a significant contribution to bacteria loading.</td><td colspan="3">Pre- and post-project survey measuring changes in awareness and willingness to have septic system inspected</td></tr>
<tr><td colspan="3">Brochures at events will be effective.</td><td colspan="3">Mid-project survey? Wait to see if outcomes are being met. Change: Conduct mid-project survey.</td></tr>
</table>

Figure 1.4: Project outcomes

Appendix 2: Indicator Descriptions and Development

Introduction

This section of the Handbook provides an overview of the core and supplemental indicators that can be used in the management and evaluation of NPS projects with an education, outreach or behavior change component. The core indicators are those collected by every project using the social indicator system, though it is not expected that every project will show progress on *all* of them. The purpose of this section is to provide program and project staff with background information about how the indicators were developed, detailed information about each of the indicators, and conceptual underpinnings for this approach.

Development of the Indicators

Recognizing the importance of incorporating measures of social change into their management efforts, program leaders overseeing NPS initiatives in USEPA Region 5 approached the USDA-CSREES Great Lakes Regional Water Leadership Team to work with the state NPS Programs to develop social indicators to measure the effectiveness of projects funded through their programs in this region (Illinois, Indiana, Michigan, Minnesota, Ohio and Wisconsin). Prior to the initiative, each state NPS program in the region had outlined an evaluation framework describing an outcome-based evaluation approach that included provisions for tracking program performance through the ongoing use of administrative indicators (e.g., funds utilized, activities completed), environmental indicators (e.g., water quality, habitat, and related physical conditions), and social indicators. The use of social indicators was a new concept that was not initially well accepted, understood, or defined. A regional social indicators team (Regional SI Team) was created to clarify options for using social indicators, generate buy-in and support from program staff in each state, and develop a set of social indicators that could be collected for all funded projects, could be aggregated to evaluate regional level impacts, and could support program-level evaluation.

To develop the indicators, the Regional SI Team followed an intensive stakeholder involvement process to ensure that the final indicators met users' needs. The SI Team conducted workshops and trainings in all six states in the region to solicit ideas about potential indicators from stakeholders. These workshops, along with a comprehensive literature review, led to an exhaustive list of possible social indicators. This list of indicators was again vetted by stakeholders through a web survey. Through this process, the Regional SI Team developed an initial set of core indicators that would apply to all projects using this approach. The Regional SI Team also identified an additional set of supplemental indicators that would augment core indicators with a broader set of measures.

All selected indicators had to meet the following criteria: clear and understandable, measurable, practical (in terms of accessibility and cost), valid, aggregatable, and reflective of stakeholder ownership.

The final set of indicators is grouped into five categories and descriptions of the individual indicators are correspondingly organized:

- Awareness
- Attitudes
- Constraints
- Capacity
- Behavior

Core indicators

The core indicators will be collected by all projects using SIPES. While all of the core indicators are to be collected by each project, it is not expected that every project will show progress on *all* of them. It is understood that each project will have its own emphasis, but tracking a broad range of indicators helps to understand secondary impacts of an effort. For each core indicator, the following information is provided: 1) a description of the indicator, 2) a summary of how to use the indicator and the rationale for including it as a core indicator, and 3) how to interpret the indicator.

Awareness

This set of indicators measures the awareness of the target audience regarding the relevant technical issues and/or recommended practices in the critical area (see Table 2.1). The indicators follow a logical progression of issues a target audience might be expected to become aware of during the course of a project—pollutants, consequences of pollutants, and, ultimately, the appropriate practices to mediate the impacts of these pollutants. In striving toward the ultimate goal of behavior change, awareness is the first step. If people are not aware of a problem or what can be done about it, we cannot expect them to change their behaviors. As awareness increases, the probability that attitudes and subsequent behavior change also increases. These indicators address the intended outcome of a *positive change in awareness* within the target audience regarding the relevant technical issues and/or recommended practices in the critical area.

Table 2.1: Core awareness indicators

Goal: Increased awareness among the target audience

Intended Outcome: Awareness gained regarding the relevant technical issues and/or recommended practices of the target audience in the critical area

Awareness	Name of Indicator	Method	When Reported
Awareness Indicator 1	Awareness of consequences of pollutants to water quality	Survey	Beginning and end of project
Awareness Indicator 2	Awareness of types of pollutants impairing waterways	Survey	Beginning and end of project
Awareness Indicator 3	Awareness of sources of pollutants impairing waterways	Survey	Beginning and end of project
Awareness Indicator 4	Awareness of appropriate practices to improve water quality	Survey	Beginning and end of project

Awareness Indicator 1: Awareness of consequences of pollutants to water quality

Description*:* This indicator measures the target audience's level of awareness about consequences of locally relevant pollutants.

Use and Rationale: Results obtained from a baseline survey can help diagnose pertinent areas of misinformation or lack of information so that education and outreach can be better focused. Knowing where the target audience has incorrect perceptions about the impact of different pollutants is critical to ultimately changing attitudes and behavior. Results from a survey conducted at the end of the project can help to demonstrate the degree of success of that education and outreach effort. At the state level, data received from projects around the state can provide a general idea of knowledge levels. Data may be used to determine what education and outreach approaches are most effective.

Measurement and Calculation: Awareness Indicators 1-3 are calculated using the coding illustrated below. Each response is entered into the database using the coding on row 1 in Table 2.2. The indicator value for an individual respondent is calculated by 1) assigning a new value of either 1, 1.5, or 2 as listed on row 2 in Table 2.2; and 2) summing the new values for each respondent and dividing by the number of "key" items for which they provided a response. The project value for the indicator would be the average of

individual indicator scores. Project managers or project planning teams will identify "key" items.

Table 2.2: Coding for awareness indicators 1-3

	Not a Problem	Slight Problem	Moderate Problem	Severe Problem	Don't Know
Row 1 – coding for original response	1	2	3	4	9
Row 2 – coding for indicator calculation	1	1.5	2	2	0

Awareness Indicator 2: Awareness of types of pollutants impairing waterways

***Description*:** This indicator measures the target audience's level of awareness about types of relevant pollutants.

***Use and Rationale*:** Results obtained from a baseline survey can help diagnose pertinent areas of misinformation or lack of information so that education and outreach can be better focused. For example, from a pre-project survey, project staff may learn that a high percentage of the target audience is aware of one locally relevant pollutant but not another. The project staff would then focus their education and outreach efforts on educating about the second pollutant. Results from a survey conducted at the end of the project can help to demonstrate the degree of success of that education and outreach effort. At the state level, data received from projects across the state can provide a general idea of knowledge levels. Data can be used to determine what education and outreach approaches are most effective.

***Measurement and Calculation*:** Same as Awareness Indicator 1.

Awareness Indicator 3: Awareness of sources of pollutants impairing waterways

***Description*:** This indicator measures the target audience's level of awareness about sources of relevant pollutants.

***Use and Rationale*:** Results obtained from a baseline survey can help diagnose pertinent areas of misinformation or lack of information so that education and outreach can be better focused. For example, from a pre-project survey, project staff may learn that a high percentage of the target audience is aware of one locally relevant pollutant but not another. The project staff would then focus their education and outreach efforts on educating about the second pollutant. Results from a survey conducted at the end of the project can help to demonstrate the degree of success of that education and outreach effort. At the state level, data received from projects across the state can provide a general idea of knowledge levels. Data can be used to determine what education and outreach approaches are most effective.

***Measurement and Calculation*:** Same as Awareness Indicator 1.

Awareness Indicator 4: Awareness of appropriate practices to improve water quality

Description: This indicator measures the target audience's awareness about locally appropriate practices that are expected to improve water quality.

Use and Rationale: Results obtained from a baseline survey can help diagnose pertinent areas of misinformation or lack of information so that education and outreach can be better focused. This information can also be used to adjust the implementation approach of a given project. Results from a survey conducted at the end of the project can help demonstrate the degree of success of that education and outreach effort. At the state level, data received from projects around the state can provide a general idea of knowledge levels. Data can be used to determine what education and outreach approaches are most effective.

Measurement and Calculation: This indicator will be measured and entered into the database using the coding on row 1 in Table 2.3. The indicator value for an individual respondent is calculated by 1) assigning a new value of either 1, 1.5, or 2 as listed in Table 2.3; and 2) summing the new values for each respondent and dividing by the number of practices that "apply"(i.e., the respondent did not indicate "does not apply" -- the denominator for individual respondents is the total number of rows in the question for which the individual provided a response other than "does not apply.") The project value for the indicator would be the average of individual indicator scores.

Table 2.3: Coding for awareness indicator 4

	A. Please indicate which statement most accurately describes your level of experience with each practice (select only one).						B. Would you be willing to try or continue using this practice?		
	Does Not Apply	**Never Heard Of It**	**Heard Of It, But Not Very Familiar With It**	**Am Familiar With It, But Never Done It**	**Tried It, But No Longer Do It**	**Currently Use It**	**Yes**	**No**	**Maybe**
Row 1 – original response	NA	1	2	3	4	5	--	--	--
Row 2 – coding for indicator calculation	--	1	1.5	2	2	2	--	--	--

Attitudes

This set of indicators (Table 2.4) assesses progress towards a project goal of changing or reinforcing attitudes in a way that is expected to facilitate desired behavior change. First a target audience becomes aware that there are water quality problems in their area. Then, if constraints are alleviated, they need to *care* about the issues and be *willing* to adopt new behaviors in order to increase the probability that they will actually change their behavior. These indicators

represent the intended outcome of *a positive attitude change* within the target audience as a measure of expectation of behavior change.

Table 2.4: Core attitudes indicators

Goal: Attitudes among target audience supportive of NPS management actions **Intended Outcome:** Attitudes changed in a way that is expected to facilitate desired behavior change of target audience in the critical area			
Attitudes	**Name of Indicator**	**Method**	**When Reported**
Attitudes Indicator 1	General water-quality related attitudes	Survey	Beginning and end of project
Attitudes Indicator 2	Willingness to take action to improve water quality	Survey	Beginning and end of project

Attitudes Indicator 1: General water-quality-related attitudes

Description: This indicator is assessed using a set of survey questions that are designed to elicit the respondent's strength of feeling about benefits, personal responsibility, and norms associated with the protection of water quality at the *producer* or *household* level.

Use and Rationale: Results obtained from the baseline survey can help diagnose general attitudes of the population about water quality so that appropriate activities can be designed for education and outreach. Results from a follow-up survey can help demonstrate the degree of success of that education and outreach effort in raising the recognition and importance of water quality among the target audience in your watershed.

Measurement and Calculation: This indicator breaks down into five underlying concepts (constructs). Each is calculated in the same way as the overall indicator values. The indicator value for an individual respondent is calculated by averaging the values of their responses (based on coding and the reverse coding in Tables 2.6 and 2.7). Project values are the average of individual scores. Some of the questions used to score this indicator are scored in reverse because of negative phrasing.

Each response is entered into the database using the coding in Table 2.5.

Table 2.5: Coding for attitude indicator 1

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Coding for original response	1	2	3	4	5

Table 2.6: Agricultural grouping for constructs for attitude indicator 1

Construct	SIDMA number	Reverse coding	Attitudinal Statement
1. Personal Impact	8		My actions have an impact on water quality.
	5	R	What I do on my land doesn't make much difference in overall water quality.
2. Value importance of water quality	1		The economic stability of my community depends upon good water quality.
	14		The quality of life in my community depends on good water quality in streams and rivers.
3. Farm Management Impact	2		Using recommended management practices on farms improves water quality.
	7	R	Farm management practices do not have an impact on water quality.
4. Economics vs water quality	6	R	Investing in water quality protection puts the producer at an economic disadvantage.
	10	R	It is okay to reduce water quality to promote economic development.
	4		It is important to protect water quality even if it slows economic development.
5. Personal Action / Responsibility	3		It is my personal responsibility to help protect water quality.
	12		I would be willing to pay more to improve water quality (for example: through local taxes or fees).
	13		I would be willing to change management practices to improve water quality.
	11		It is important to protect water quality even if it costs me more.
	9	R	Taking action to improve water quality is too expensive for me.

Table 2.7: Non-agricultural grouping for constructs for attitude indicator 1

Construct	Question number		Attitudinal Statement
	SIDMA non-Ag	Reverse coding	
1. Personal Impact	7		My actions have an impact on water quality.
	5	R	What I do on my land doesn't make much difference in overall water quality.
2. Value importance of water quality	1		The economic stability of my community depends upon good water quality.
	13		The quality of life in my community depends on good water quality in local streams, rivers and lakes.
3. Lawn & Yard Management Impact	2		The way that I care for my lawn and yard can influence water quality in local streams and lakes.
	6	R	Lawn and yard-care practices (on individual lots) do not have an impact on local water quality.
4. Economics vs water quality	9	R	It is okay to reduce water quality to promote economic development.
	4		It is important to protect water quality even if it slows economic development.
5. Personal Action / Responsibility	3		It is my personal responsibility to help protect water quality.
	11		I would be willing to pay more to improve water quality (for example: through local taxes or fees).
	12		I would be willing to change the way I care for my lawn and yard to improve water quality.
	10		It is important to protect water quality even if it costs me more.
	8	R	Taking action to improve water quality is too expensive for me.

Attitudes Indicator 2: Willingness to take action to improve water quality

Description: This indicator measures the respondent's willingness to act on behalf of his or her *household* or *farm* to protect or improve water quality. The survey questions measure the likelihood of respondents to adopt practices to improve water quality if they are not currently implementing the practice.

Use and Rationale: Results obtained from the baseline survey can help diagnose the willingness or likely responsiveness of the target audience so that the appropriate interventions can be designed for education and outreach. Results from a follow-up survey can help demonstrate the degree of success of the education and outreach effort in increasing the likelihood that a water quality practice will be implemented where one was not implemented before.

Measurement and Calculation: This indicator is based on responses to "Practices to Improve Water Quality." Each response is entered into the database using the coding on row 1 in Table 2.8. The indicator value for an individual respondent would be calculated by 1) assigning a new value of either 1, 1.5, or 2, as indicated in Table 2.8; and 2) summing the new values for each respondent and dividing by the number of practices that "apply", (i.e., the respondent did not indicate "does not apply" -- the denominator for

individual respondents is the total number of rows for which the individual provided a response other than "does not apply"). Because a mean response can result from several different response patterns, it is also beneficial to know the percentage of respondents who answered in each response category.

Table 2.8: Coding for attitudes indicator 2

Those not using practice Awareness and Willingness to Try	For those NOT currently using: Would you be willing to try or continue using this practice?				
	n	**Currently do**	**% Yes**	**% No**	**% Maybe**
Row 1 - Coding from reponses	--	--	2	1	1.5

Constraints

This set of indicators (Table 2.9) tries to capture a range of potential constraints to the adoption of desired practices. By collecting this information, programs will be able to design an implementation approach that may overcome these impediments to behavior change unrelated to attitudes and awareness. This information may help to identify the best areas to place emphasis in programs for this purpose.

Table 2.9: Core constraints indicators

Goal: Reduced constraints for using appropriate practices

Intended Outcome: Constraints to behavior change will be reduced.

Constraints	Name of Indicator	Method	When Reported
Constraints Indicator 1	Constraints to behavior change	Survey	Beginning and end of project

Constraints Indicator 1: Constraints to behavior change

Description: This indicator elicits constraints that are preventing individuals in the target audience from adopting agricultural or household practices beneficial to water quality.

Use and Rationale: Results obtained from the baseline survey can help diagnose locally relevant constraints that can be addressed through the implementation approach including the education and outreach component. Results from a follow-up survey can help demonstrate the degree of success of the education and outreach effort in reducing the recognized obstacles to behavior change.

Measurement and Calculation: Constraints are grouped by construct based on responses to "Making Management Decisions" (see Tables 2.11 and 2.12) and will be coded using

the scaling shown in Table 2.10. Individual values are average values of their responses to compute an average (mean) strength of constraints.

Table 2.10: Coding for constraints indicator 1

	Not at all important	Somewhat important	Undecided	Important	Very Important
Row 1 – coding for original response	5	4	3	2	1

Table 2.11: Constructs for constraints

1. Economics/Profitability
2. Financial incentives
3. Independence/own ideas
4. Environmental considerations
5. Status Quo/Traditional
6. Assistance Incentives
7. Caution about Government programs
8. Peer/norms considerations

Table 2.12: Construct grouping for constraints indicator 1

Agricultural Questionnaire			Non-Agricultural Questionnaire	
Question Item	**Construct**		**Question Item**	**Construct**
1. Personal out-of-pocket expense	1		1. Personal out-of-pocket expense	1
2. My own views about effective farming or land management methods	3		2. My own views about effective lawn and yard maintenance	3
3. How easily a new practice fits with my current farming methods	5		3. How easily a new practice fits with my current practices	5
4. The need to learn new skills or methods	5		4. My own physical abilities	5
5. Lack of government funds for cost share	2		5. The need to learn new skills or techniques	5
6 Too much time required for implementation	5		6 Too much time required for implementation	5
7. Not having access to the equipment that I need.	6		7. Not having access to the equipment that I need.	6
8. Lack of available information about a practice	6		8. Lack of available information about a practice	6
9. No one else I know is implementing the practice	8		9. No one else I know is implementing the practice	8
10. Concerns about reduced yields	1		10 Approval of my neighbors	8
11 Approval of my neighbors	8		11. Restrictive covenants in my subdivision	8
12. Don't want to participate in government programs	7		12. Don't know where to get information and/or assistance	5
13. Requirements or restrictions of government programs	7		13. Environmental damage caused by practice	4
14. Possible interference with my flexibility to change land use practices as conditions warrant	3		14. Environmental benefit of practice	4
15. Environmental damage caused by practice	4			
16. Environmental benefit of practice	4			
17. Profitability	1			

Capacity

This set of indicators (Table 2.13) tries to capture the financial, technical, and organizational capacities of the NPS project host that may impact short and long-term effectiveness in reducing NPS water pollution. By collecting data on changes in organizational capacities during the project as well as the other categories, programs may develop a better understanding of what particular capacities an organization needs to be effective.

Table 2.13: Core capacity indicators

Goal: Increased capacity to address NPS management issues in the project area

Intended Outcome 1: The project improved the recipient's capacity to leverage resources in the watershed.

Capacity	Name of Indicator	Method	When Reported
Capacity Indicator 1	Resources leveraged by grant recipient in the watershed as a result of project funding (including cash and in-kind resources)	Records	End of project
Capacity Indicator 2	Funding available to support NPS practices in critical areas	Records	End of project
Capacity Indicator 3	Technical support available for NPS practices in critical areas	Records	End of project
Capacity Indicator 4	Ability to track practices in critical areas	Records	End of project

Capacity Indicator 1: Resources leveraged by the grant recipient in the watershed as a result of project funding (including cash and in-kind resources)

Description: This indicator will elicit whether the project procured resources that the project would not have had access to without the current 319 grant. Resources include additional grants, loans, direct contributions, and in-kind services *during* the life of the 319 grant.

Use and Rationale: This indicator provides information on whether the project has been able to use 319 funds as a stimulus to increase its long-term capacity by increasing

available resources, such as additional funding, volunteers, and donations of equipment, time, and materials. This indicator only tracks resources that a project has been able to access because of the current 319 grant, but does not include the 319 funding.

Measurement and Calculation: This indicator will be measured in U.S. dollars. Information will be collected from local budget and volunteering records and informal interviews with project partners and stakeholders. Contributors of in-kind staff time and equipment should estimate the value of the donation. Standard estimates of the value of volunteer time can be found easily on the Internet. When project data is aggregated, this indicator may provide information on the ability of 319 funding in individual states or across USEPA Region 5 to leverage other resources for water quality improvement.

Capacity Indicator 2: Funding available to support NPS practices in critical areas

Description: This indicator measures whether funding is available to support efforts beyond the project time frame.

Use and Rationale: Availability of continued funding indicates that the project objectives will be addressed by other resources beyond the duration of the project. This information is collected and reported by grant recipients.

Measurement and Calculation: The indicator is reported as "yes" or "no." "Yes" means that some resources are available to continue addressing project objectives, and scored as a 1. "No" means that other resources are not available, and scored as a 0.

Capacity Indicator 3: Technical support available for NPS practices in critical areas

Description: This indicator measures whether resources have been identified for providing adopters with additional information and support related to their adopted practices.

***Use and Rationale*:** Members of a target audience who adopt a practice or change a behavior may still require support or additional information to continue or improve their practice. Without this support, adopters might discontinue beneficial practices they are otherwise willing to continue. This information is collected and reported by grant recipients.

Measurement and Calculation: The indicator is reported as "yes" or "no." "Yes" means that some resources are available to continue addressing project objectives, and scored as a 1. "No" means that other resources are not available, and scored as a 0.

Capacity Indicator 4: Ability to track practices in critical areas

Description: This indicator measures the existence of provisions for tracking adherence to operation and maintenance practices.

***Use and Rationale**:* These results provide a measure of the persistence of interest and effort in water quality improvement.

Measurement: Measuring the indicator will require a staff assessment of resources to track whether practices are still in use over time. This indicator will be rated either "Yes" or "No". "Yes" would mean that an organization (public or private) has plans and ability to track this information over time. "No" would mean that no organization has plans to track the ongoing use practices.

Behavior

The behavior change indicators (Table 2.14) measure actual changes in behavior that occur during the lifespan of a funded project and perhaps afterward. It is anticipated that these behavior changes will lead to water quality improvements. These indicators measure progress toward the intended outcome of *adoption of practices* by the target audience to improve or maintain water quality in the critical area.

Table 2.14: Core behavior indicators

Goal: Increased adoption of NPS management practices by the target audience

Intended Outcome: This project resulted in adoption of practices to maintain or improve water quality in critical areas.

Behavior	Name of Indicator	Method	When Reported
Behavior Indicator 1	Percentage of critical area receiving treatment	Records	Beginning and end of project
Behavior Indicator 2	Percentage of target audience implementing practices in critical areas	Survey / Records	Beginning and end of project
Behavior Indicator 3	Ordinances in place that will reduce nonpoint source stressors	Interview	End of project

Behavior Indicator 1: Percentage of critical area receiving treatment

Description: This indicator measures the amount (or percent) of critical area that received the required level of treatment to improve or maintain water quality as a result of the project.

Use and Rationale: This result provides a measure of on-the-ground completeness of the remediation effort.

Measurement and Calculation: The indicator value for a project would be measured in acreage and calculated by identifying the acreage of the land applying BMPs and dividing that by the total acreage of the land in the critical area. This information comes from project records.

Behavior Indicator 2: Percentage of target audience implementing practices in critical areas

Description: This indicator measures the number (or percent) of people in the target audience who are implementing practices in the critical area.

Use and Rationale: This result provides a measure of completeness of the remediation effort by documenting actions for by those who influence water quality.

Measurement and Calculation: The project value for this indicator will be calculated as the number of people in the critical area who are implementing the appropriate practice divided by the total number of people in the critical area. The number of people in the critical area can be described as individuals or households. The indicator value for an individual respondent would be measured by 1) assigning a new value of either 1 for currently do, and 2) summing the new values for each respondent and dividing by the number of practices that "apply", (i.e., the respondent did not indicate "does not apply" – the denominator for individual respondents is the total number for which the individual provided a response other than "does not apply").Care should be taken to determine who is implementing the practice(s) as a result of the project and who was already doing the recommend practice(s). See Table 2.15 for an illustration.

Table 2.15: Coding for behavior indicator 2

Those using practice	For those NOT currently using: Would you be willing to try or continue using this practice?				
	n	**Currently do**	**% Yes**	**% No**	**% Maybe**
Coding from reponses	--	5	-	--	--
Code for indicator calculation	--	1			

Behavior Indicator 3: Ordinances in place that will reduce nonpoint source stressors

Description: This indicator provides information about the creation or revision of local zoning/development ordinances that implement a more restrictive regulatory regime relating to water quality. This indicator will be reported as the extent to which local ordinances address water quality issues.

Use and Rationale: The purpose of this indicator is to provide some measure of public will and commitment to improving water quality. To that end, information about two types of durable change that should improve water quality over the long term is collected. First, to create or revise local ordinances such that land use is restricted in or near riparian areas requires the support of a large percentage of the community. Consequently, change in the local regulatory regime toward increased restrictions aimed at improving water quality demonstrates a durable change in the attitudes of that community. Second, the willingness to adopt ordinances that mandate behavioral change indicates that the community wants these behavioral changes to become permanent. These types of ordinances suggest that behavioral change will persist, independent of any specific 319 projects or program.

Measurement and Calculation: The simplest method to obtain this information is communication throughout the project's time frame between project staff and local planning/development staff. Local staff will be aware of any recent changes in the zoning, development, building codes, or other ordinances affecting land use in or near riparian areas. Project coordinators will need to be able to answer the question: How well do local ordinances address the water quality issues of concern to your project?

Water-quality-related ordinances could be part of the zoning code, subdivision requirements, building code, or other related ordinances. The ordinances could to numerous topics: conservation overlays; increased building setbacks from wetlands, streams, or riparian areas; limitation on development in riparian areas; open space requirements; impervious surface requirements; storm water retention areas; or other ordinances designed to reduce development-related runoff or pollution. An analysis of all development-related local ordinances at the start and end of a project would reveal any new ordinances that were intended to address NPS pollution.

After analyzing the ordinances and communicating with local planning/development staff, 319-funded project staff will make a subjective determination—both at the beginning and the end of the project—of the extent to which local ordinances address the water quality issues of concern. This determination could be reported as the response to: How well do local ordinances address the water quality issues of concern to your project?

- Local ordinances do not address issues of concern to this project.
- Local ordinances somewhat address issues of concern to this project.
- Local ordinances address issues of concern to this project.
- Local ordinances substantially address issues of concern to this project.

This indicator illustrates the *change* in the number of and the restrictiveness of ordinances required for development that potentially affects wetlands, riparian areas, streams, or other bodies of water. Not all approaches are equal. A conservation overlay along a stream corridor might have restrictions that are more stringent than simple setback or other zoning requirements. In addition, not all

conservation overlays are equally restrictive. Consequently, it would not be sufficient to simply count the number of new or revised ordinances that address water quality. Rather, the analysis should consider both the number of new ordinances as well as their restrictiveness.

Supplemental Indicators

The supplemental indicators are those indicators that projects may choose to use in order to answer questions that may be particular to that project. For example, a project that has as one of its goals the use of local regulatory tools to address NPS issues might supplement the core "Behavior Indicator 3: Ordinances in place that will reduce nonpoint source stressors" with supplemental attitude indicator "Active enforcement of water quality ordinances." This could provide a better reflection of political will and commitment to improving water quality; for some areas, useful regulatory tools may already be in place but are not actively enforced. The collection and analysis methods for these have not been developed but could be developed in cooperation with projects, state NPS programs, and the Regional SI Team.

Supplemental Awareness Indicators

The supplemental awareness indicators are presented in Table 2.16.

Table 2.16: Supplemental awareness indicators

Name of Indicator
Intended Outcome: Increase water quality knowledge and awareness in such a manner that is expected to facilitate desired behavior change. 1. Media coverage of water quality issues **Intended Outcome:** Impart a meaningful knowledge of the technical issues and/or recommended practices. 2. Knowledge of economic impacts of BMPs 3. Media coverage of technical issues. **Intended Outcome:** Increase awareness of institutions and policies. 4. Number of contacts at relevant agency program 5. Ability to identify governmental and other programs that provide technical and/or financial assistance with BMP installation

Supplemental Awareness 1. Media coverage of water quality issues

Description: This indicator would measure hours/week (TV and/or radio) and/or inches of newsprint devoted to water quality issues in the target area.

Supplemental Awareness 2. Knowledge of economic impacts of BMPs

Description: This indicator would measure individuals' knowledge of the economic costs and benefits of different Best Management Practices.

Supplemental Awareness 3. Media coverage of technical issues

Description: This indicator would measure hours/week (TV and/or radio) and/or inches of newsprint devoted to technical issues and recommended practices in the target area.

Supplemental Awareness 4. Number of contacts at relevant agency program

Description: This indicator would measure "calls received" including phone calls, walk-ins and e-mails that the relevant agency receives related to the topic being measured.

Supplemental Awareness 5. Ability to identify governmental and other programs that provide technical and/or financial assistance with BMP installation

Description: This indicator would measure individuals' ability to do this. This information could be collected as part of a more comprehensive survey.

Supplemental Attitudes Indicators

The supplemental attitudes indicators are shown in Table 2.17.

Table 2.17: Supplemental attitudes indicators

Name of Indicator
Intended Outcome: Attitudes changed in a way that is expected to facilitate desired behavior change of target audience in the critical area. 1. Active enforcement of water quality ordinances **Intended Outcome:** Increased level of satisfaction with agencies or organizations. 2. Level of satisfaction with agency or project 3. Trust of local agencies/project groups

Supplemental Attitudes 1. Active enforcement of water quality ordinances

Description: In communities that have ordinances to protect water quality, this indicator would examine the number of inspections, enforcement actions and appropriate resolutions. This information is typically available in each organization.

Supplemental Attitudes 2. Level of satisfaction with agency or project

Description: This indicator would assess individuals' perceptions of the quality of technical assistance, availability of technical assistance and knowledge of staff of a pre-defined agency. Information would be collected using a checklist of options.

Supplemental Attitudes 3. Trust of local agencies/project groups

Description: This indicator would measure the extent to which constituents trust local agencies or project groups. Options for collecting this information include: as part of a survey or through focus groups related to project implementation.

Supplemental Capacity Indicators

The supplemental capacity indicators are shown in Table 2.18.

Table 2.18: Supplemental capacity indicators

Name of Indicator
Intended Outcome: Improve the overall *financial* capacity of the recipient.
1. Financial stability of implementing organization
2. Number of staff funded or leveraged
Intended Outcome: Increase the *technical* capacity of this group's members.
3. Appropriate skill set of group's staff
4. Facilities and equipment
Intended Outcome: Increase the *human resource* capacity of the organization or project.
5. Leadership turnover
6. Index of staff capacity
7. Number of members
8. Number of volunteers
9. Hours dedicated by volunteers
10. Percentage of board members attending meetings
Intended Outcome: Increase the *process* capacity of the recipient.
11. Group process/structure index
Intended Outcome: Increase the representative and coordination capacity of the recipient.
12. Number of agencies/organizations participating in the project
13. Diversity of participants
14. Group representative of target audience population
15. Public providing input representative of target audience population
16. Involvement of early adopters in projects
17. Issue leadership credibility of sponsoring of organization

Supplemental Capacity 1. Financial stability

Description: This indicator would examine the extent to which the organization or partnership has stable funding for different areas. This information would be collected and reported by the grant recipient.

Supplemental Capacity 2. Number of staff funded or leveraged

Description: This indicator would look at the number of staff positions (full and part time) funded or leveraged as a result of a project. This information exists as part of work plan proposals submitted.

Supplemental Capacity 3. Appropriate skill set of group's staff

Description: This index would measure whether the staff and leaders have appropriate skill levels and would include area of expertise and years of experience for each staff member in local implementing agencies or watershed organizations. This information could be collected as a questionnaire included in a grant application process and at the end of a project.

Supplemental Capacity 4. Facilities and equipment

Description: This index would measure whether the group has sufficient facilities and equipment. This information could also be collected as part of proposal work plan and project evaluation.

Supplemental Capacity 5. Leadership turnover

Description: This indicator would examine the number of times leadership has changed hands in the recent past. Leadership refers to the person who is responsible for running the organization or project, such as a committee chairperson or project coordinator. Data could be collected through a questionnaire or annual report.

Supplemental Capacity 6. Index of staff capacity

Description: This index would include measures for the number of positions that are new as a result of a project, the number of staff that are new as a result of a project, planning time dedicated by paid staff to a project, implementation time dedicated by paid staff, and availability of staff for projects. This information could be collected from work plan details.

Supplemental Capacity 7. Number of members

Description: This indicator measures the number of members of the watershed organization.

Supplemental Capacity 8. Number of volunteers

Description: This indicator measures the number of active volunteers in the watershed project. Active volunteers are those who participate in volunteer workdays and other volunteer opportunities. Information would be collected from volunteer time logs maintained as part of current and past projects.

Supplemental Capacity 9. Hours dedicated by volunteers

Description: This indicator will measure the aggregate number of hours dedicated to the project by volunteers in a given time period (e.g. month). Information would be maintained by project staff.

Supplemental Capacity 10. Percentage of board members attending meetings

Description: This indicator will reflect the average percentage of board members who attend regularly scheduled board meetings. This information could be collected as part of semi-annual updates on progress.

Supplemental Capacity 11. Group process/structure index

Description: For watershed organizations and partnerships, this indicator would include the formality of the organization (to what extent the organization/partnership has developed a formal organizational arrangement), clarity of roles (to what extent the participants have clear roles and responsibilities relative to the partnership), the extent to which shared goals are established, the use of vision/mission, decision rules (has the organization/partnership developed clear rules for making decisions and resolving disputes), ownership (to what extent do participants share a stake in both the process and outcome of the organization's/partnership's work), and open communication (to what extent do partners share and communicate their interests and ideas).

Supplemental Capacity 12. Number of agencies/organizations participating in the project

Description: This indicator would include the board/governing body, formal partners, and informal partners. This information could be found in work plans; however, it may not always be comprehensive. It could be included as part of the semi-annual update or annual report.

Supplemental Capacity 13. Diversity of participants

Description: This indicator would assess to what extent the diversity of the participants (including board/governing body and other partners) reflects the complexity of the issues under consideration. This data might best be collected through a survey administered locally or by a state program.

Supplemental Capacity 14. Group representative of target audience population

Description: This indicator would assess whether collaborative watershed planning efforts are representative in terms of age, income, and ethnicity/race, education, gender, occupation. Basic census data could be contrasted with data collected for the project.

Supplemental Capacity 15. Public providing input representative of target audience population

Description: For organizations or partnerships, this indicator would assess whether the public provides input in a representative way in collaborative watershed planning efforts in terms of age, income, ethnicity/race, education, gender, and occupation. This information could be collected using data from public meetings or from project participants.

Supplemental Capacity 16. Involvement of early adopters in projects

Description: This indicator will look at the involvement of community leaders and respected peers in helping to organize demonstrations, field days, workshops and in communicating messages. Information on local leaders could be assessed by project staff or by collecting information from project landowners.

Supplemental Capacity 17. Issue Leadership

Description: This indicator would examine the extent to which the project-sponsoring organization/partnership is seen as a credible leader on related issues among relevant/knowledgeable parties in the community. This information could be collected through surveys and local discussions.

Supplemental Behavior Indicators

The supplemental behavior indicators are shown in Table 2.19.

Table 2.19: Supplemental behavior indicators

Name of Indicator
Intended Outcome: Change behavior in a way that is expected to improve or maintain water quality. 1. Violations in project area 2. Watershed planning in project area **Intended Outcome**: Establish provisions to maintain behavior change beyond the project's time frame. 3. Continued funding for NPS management 4. Contact available 5. Tracking **Intended Outcome**: Maintain behavior change beyond an initial project. 6. Maintenance of practices 7. Maintenance of watershed plans

Supplemental Behavior 1. Violations in project area

Description: In situations where this indicator applies, number (and type) of violations will be ascertained.

Supplemental Behavior 2. Watershed planning in project area

Description: This indicator measures the presence of a watershed plan.

Supplemental Behavior 3. Continued funding for NPS management

Description: This indicator would assess whether funding is secured to support efforts beyond the project timeframe. This information could be collected by a review of closed projects.

Supplemental Behavior 4. Contact available

Description: This indicator would measure whether resources have been identified for providing landowners additional information and support related to adopted practices.

Supplemental Behavior 5. Tracking

Description: This indicator would measure the existence of provisions for tracking compliance. This information is available through state water quality and volunteer programs and work plans of projects.

Supplemental Behavior 6. Maintenance of practices

Description: This indicator would measure whether installed structural and non-structural practices are maintained and continued. This information could be collected by follow-up visits and inspections or post-project surveys.

Supplemental Behavior 7. Maintenance of watershed plans

Description: This indicator would measure whether plans are kept current, the extent to which project plans are used by local government, and the extent to which plans are referenced in local documents. This information would be collected by a post-project assessment.

Background and Contextual Data

The context in which nonpoint source pollution control projects take place can influence their implementation and effectiveness. Consequently, contextual issues need to be captured by projects using SIPES. While SIPES is in pilot testing, this information will be collected in conjunction with the regional social indicators team. Much of the background information can be drawn from the project's watershed management plan and from demographic information available through SIDMA.

Underlying Concepts for Using Social Indicators in NPS Management

This brief review is for those interested in the conceptual underpinnings of these social indicators for NPS evaluation. SIPES presents a new tool for measuring and evaluating the progress of NPS watershed management. The core and supplemental indicators reflect three main theories from psychology and sociology:

1. The Theory of Planned Behavior;
2. The Value-Belief-Norm Theory; and
3. Diffusion of Innovations

Together, these three theories provide a general explanation of the types of psychological and social influences affecting voluntary adoption of conservation practices for NPS management. As noted previously, projects using this Handbook are trying to improve water quality by changing people's behavior. The indicators in SIPES provide information about awareness, attitudes, constraints, and capacities related to "target audiences" that influence behavioral change expected to lead to water quality improvement. By measuring change in these indicators over time, projects can demonstrate progress toward water quality goals and assess their impact on those factors that are precursors to the use of water quality management practices. Figure 2.1

illustrates the conceptual model for this framework and reflects the theories discussed in the following sections.

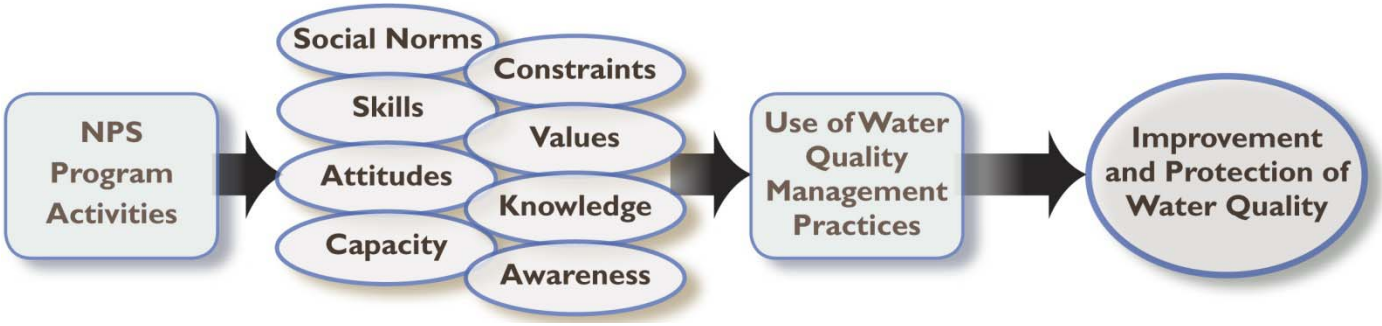


Figure 2.1: Conceptual model

Theory of Planned Behavior

The Theory of Planned Behavior (TpB) is the dominant framework for understanding human action, and lays the foundation for much of the logic in the development of the social indicators (see Figure 2.2). The TpB:

> Briefly, according to the theory, human behavior is guided by three kinds of considerations: beliefs about the likely consequences or other attributes of the behavior (behavioral beliefs), beliefs about the normative expectations of other people (normative beliefs), and beliefs about the presence of factors that may further or hinder performance of the behavior (control beliefs). (Ajzen, 2002)

The TpB builds upon a previous Theory of Reasoned Action. Both theories have a central focus on the *intention* to act; intention is presumed to capture the motivational factors that lead to a behavior. TpB adds the element of "perceived behavioral control," which recognizes that a person can bring about intended actions only if they have control over the actions happening. Perceived behavioral control is comprised of both a sense of capability and a sense of control over factors. SIPES addresses both of these aspects.

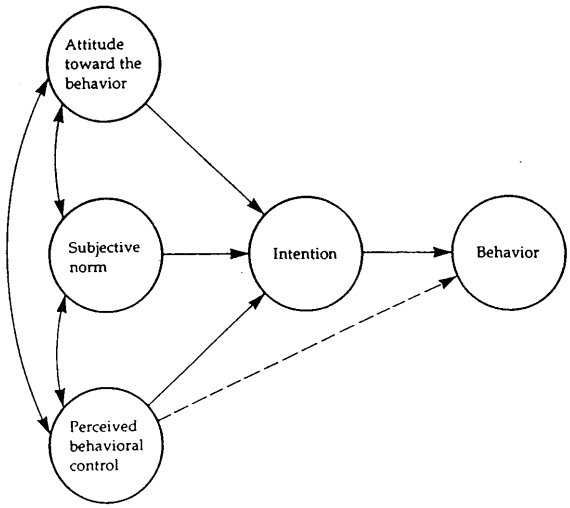


Figure 2.2: Theory of Planned Behavior model[5]

TpB applied to watershed outreach and education projects

These precursors to behavior outlined in the TpB suggest that watershed outreach and education projects should seek to influence specific areas. These are: 1) understanding the consequences of behavior(s), 2) influencing social norms or beliefs about social norms regarding behavior, and/or 3) influencing beliefs about the difficulty of the behavior. By emphasizing these "leverage points," watershed outreach and education projects can be more effective. SIPES incorporates these concepts.

Value-Belief-Norm Theory

The Value-Belief-Norm (VBN) theory focuses on the element of personal norms and its role in behavior (see Figure 2.3). The VBN theory offers that the success of social movements, such as willingness to take environmental action, dependsupon the ability to influence personal norms. The theory is a causal chain of five variables leading to behavior: personal values, worldview, belief of adverse consequence, perceived level of control, and personal norms. Since each variable directly affects the next, personal values are connected to activating personal norms, though they are mediated by beliefs and perceived level of control.

Empirical evidence testing the VBN Theory suggests that different types of voluntary environmental behaviors may be influenced by difficult factors. These variations reinforce the importance of making distinctions regarding the specific social-psychological factors leading to a specific behavior. Social indicators incorporate elements of the VBN causal chain.

[5] Ajzen, I. (1991). "The Theory of Planned Behavior." Organizational Behavior and Human Decision Processes **50**: 179-211.

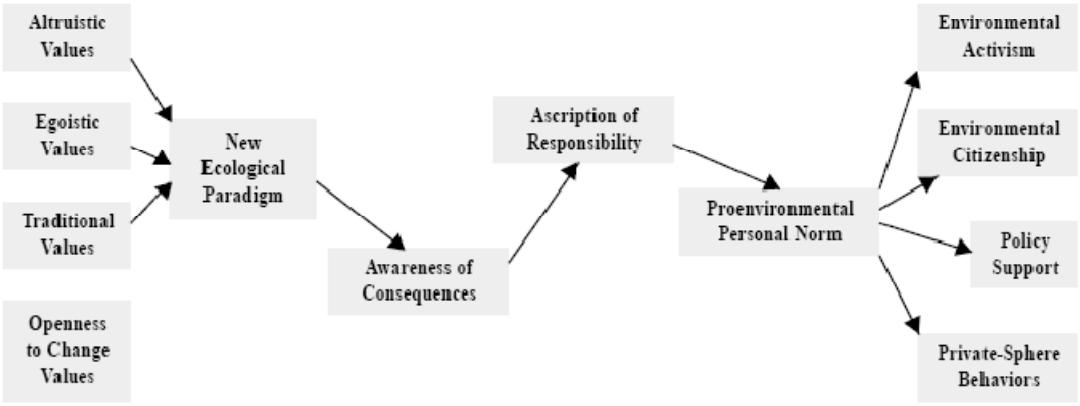


Figure 2.3: Model of VBN Theory variables[6]

VBN applied to watershed outreach and education projects

Because different factors may be associated with specific behaviors, VBN theory suggests that the use of multiple intervention types is necessary to address constraints to behavior change. These constraints vary with the context and the person (attitude, knowledge, money, trust, etc.) and affect one another. The SIPES survey instruments incorporate questions related to these other considerations in order to understand and address influences on personal norms.

Diffusion of Innovation

Diffusion of Innovation hypothesizes that the adoption of new technology (such as conservation practices) has a pattern of change that begins with "innovators" and spreads through categories of individuals that adopt the technology at different rates: early adopters, early majority, late majority, and laggards (see Figure 2.4). The theory links adoption to knowledge about the technology, perceived risks associated with use of the technology, attitudes toward the technology, and perceptions of peer group attitudes toward the technology.

The insights provided by Diffusion of Innovation relate to the speed of adoption by a group. For example, it provides understanding of the role of the "early adopters" and "early majority" and their potential influence on the rate at which others adopt a technology, practice, or technique. Individuals in the "early adopters" group are described as well-educated and generally hold formal leadership roles in a community; those in the "early majority" group tend to be locally well-respected with informal leadership roles. The "early adopters" tend to be less risk averse than the "early majority."

[6] Stern, P. C., T. Dietz, et al. (1999). "A Value-Belief-Norm Theory of Support for Social Movements: The Case of Environmentalism." Research in Human Ecology **6**(2): 81-97.

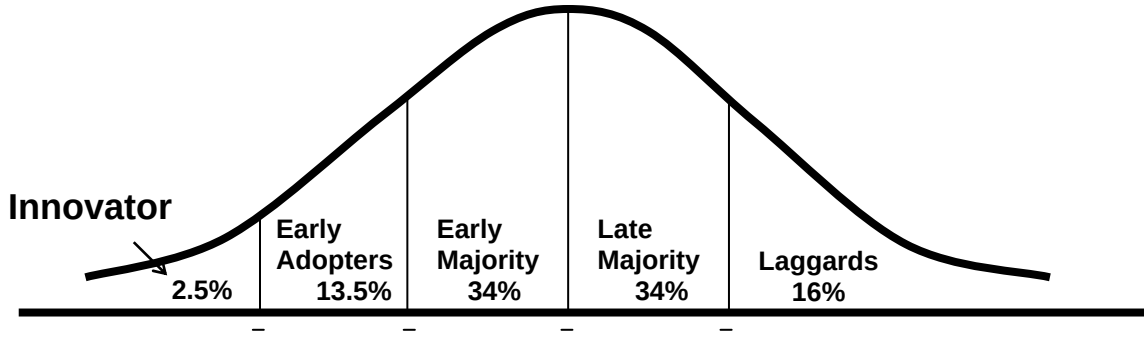


Figure 2.4: The process of Diffusion of Innovation[7]

Diffusion applied to watershed outreach and education projects

Diffusion of Innovation in watershed outreach and education projects reinforces the importance of issues suggested by other theories (e.g.,attitudes, awareness, constraints). It also provides more concrete points of leverage for social norms by identifying and providing a demographic for potentially influential persons within a community. Working with opinion leaders in the community (both formal and informal leaders) may accelerate adoption. Aspects of the theory are captured through both the core and supplemental indicators in SIPES.

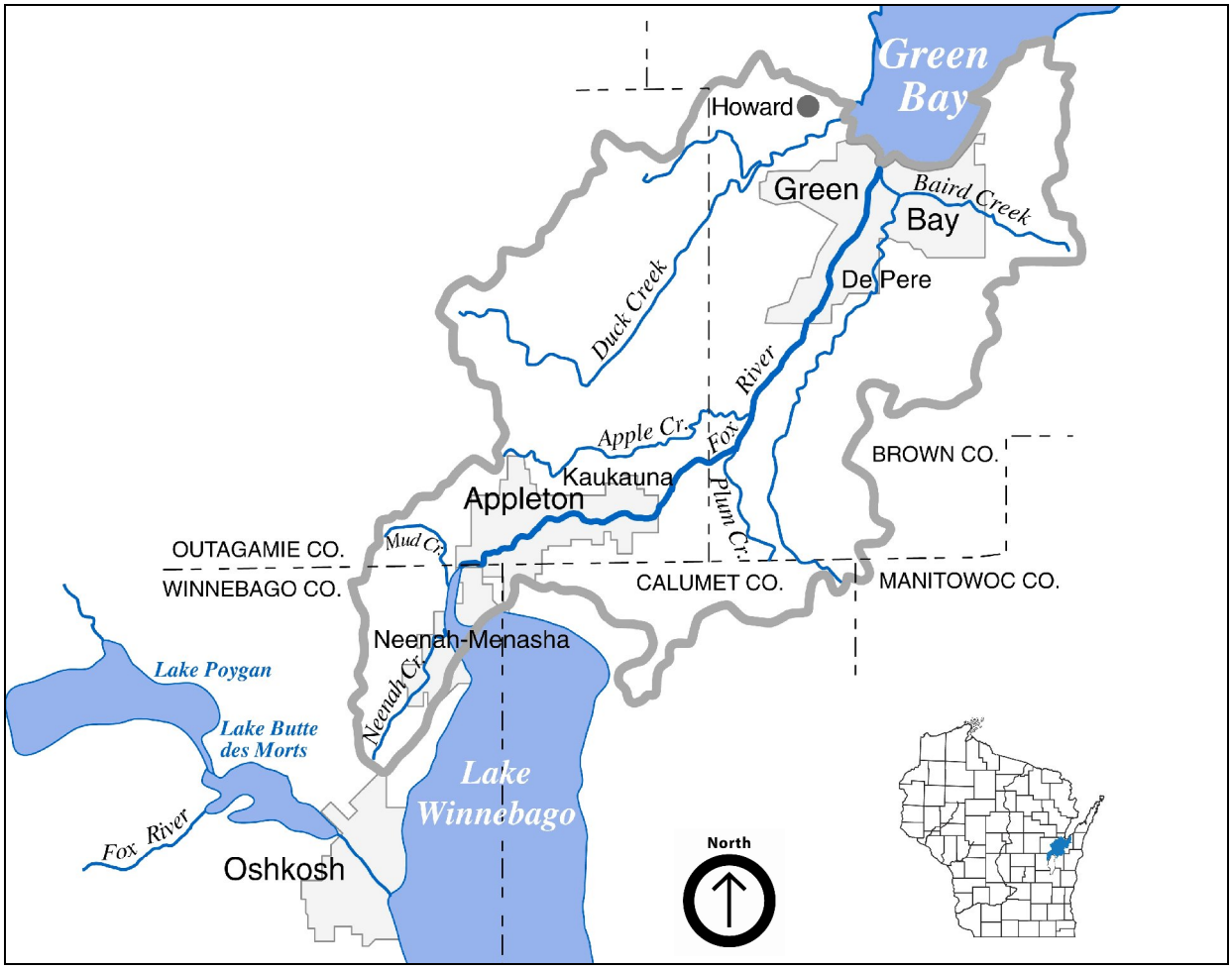
[7] Rogers, E. (1995). Diffusion of Innovations. New York, The Free Press.

Appendix 3: Sample Questionnaires and Supporting Documents

In this appendix, there is a sample questionnaire intended for agricultural producers and one intended for urban residents. These are for illustration purposes only as you will design your own unique survey using SIDMA.

This appendix also includes a set of sample cover letters that could be customized and used with the SIPES process. For mail surveys, the set includes an advance letter, a letter to include with the first survey questionnaire, an initial reminder, a letter to include with the second mailed questionnaire, and a final letter to send with the third mailed questionnaire. For phone surveys, we include a sample letter to mail in advance of calling a potential respondent.

Your Views on Lower Fox River and Green Bay Water Resources



University of Wisconsin Cooperative Extension is conducting this survey in coordination with local land conservation partners in order to identify the needs and concerns in your community regarding water quality for the Lower Fox River and Green Bay.

We ask that this survey be completed by the person in your household that makes most of the farming decisions and is at least 18 years old. Your participation in this survey is completely voluntary and if you choose to respond, you do not need to answer all of the questions. Your answers will be kept confidential and will be released only as summaries where individual answers cannot be identified.

Unless otherwise instructed, **please check the circle that corresponds to the answer category that best describes you and your situation or opinion.** The survey should take approximately 20-30 minutes to complete. Please read each question carefully.

1. Rating of Water Quality

Overall, how would you rate the quality of water in your local streams?

	Poor	Okay	Good	Don't Know
a. For drinking	○	○	○	○
b. For eating fish caught in the water	○	○	○	○
c. For swimming	○	○	○	○
d. For boating	○	○	○	○
e. For fish habitat	○	○	○	○
f. For scenic beauty	○	○	○	○
g. For wildlife habitat	○	○	○	○

2. Your Watershed

a. ***Of the following, which best fits your definition of a watershed? Please fill in the circle that corresponds to your answer.***

- ○ An area that retains water like a swamp or a marsh
- ○ The land area that drains into a specific water body
- ○ Water intake area that feeds a water treatment plant
- ○ A small building where water is stored
- ○ None of the above
- ○ I don't know

b. ***Do you know the name of your watershed****?*

- ○ Yes, I know the name of my watershed. The name of my watershed is:

  _____

- ○ No, I don't know the name of my watershed.

3. General Water Quality Attitudes

Indicate your level of agreement or disagreement with the statements below for Tables 1 and 2.

Table 1	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
a. Individual farms do not have much impact on water quality.	○	○	○	○	○
b. Taking action to improve water quality is too expensive for me.	○	○	○	○	○
c. The economic stability of my community depends upon good water quality.	○	○	○	○	○
d. The time of year that fertilizer is applied to farm fields impacts water quality.	○	○	○	○	○
e. The time of year that animal manure is applied to farm fields impacts water quality.	○	○	○	○	○
f. It is important to protect water quality even if it slows economic development.	○	○	○	○	○
g. It is my personal responsibility to help protect water quality.	○	○	○	○	○
h. Investing in water quality protection puts the farmer at an economic disadvantage.	○	○	○	○	○
i. It is okay to reduce water quality to promote economic development.	○	○	○	○	○
j. What I do on my land doesn't make much difference in overall water quality.	○	○	○	○	○
k. The amount of fertilizer that is used on farm fields impacts water quality.	○	○	○	○	○
l. It is important to protect water quality even if it costs me more.	○	○	○	○	○
m. My actions have an impact on water quality.	○	○	○	○	○
n. I would be willing to pay more to improve water quality (example: through local fees).	○	○	○	○	○
o. I would be willing to change management practices to improve water quality.	○	○	○	○	○
p. The quality of life in my community depends on good water quality in streams and rivers.	○	○	○	○	○

4. Consequences of Poor Water Quality

Poor water quality can lead to a variety of consequences for communities. In your opinion, how much of a problem are the following issues in your area?

	Not a Problem	Slight Problem	Moderate Problem	Severe Problem	Don't Know
a. Polluted swimming areas	○	○	○	○	○
b. Contaminated fish	○	○	○	○	○
c. High drinking water treatment costs	○	○	○	○	○
d. Loss of desirable fish species	○	○	○	○	○
e. Reduced beauty of rivers and streams	○	○	○	○	○
f. Reduced opportunities for water recreation	○	○	○	○	○
g. Reduced quality of water recreation activities	○	○	○	○	○
h. Excessive aquatic plants or algae	○	○	○	○	○
i. Reduced herd health for livestock	○	○	○	○	○
j. Contaminated private drinking water supplies	○	○	○	○	○
k. Reduced economic development opportunities	○	○	○	○	○
l. Lower property values	○	○	○	○	○

5. Types of Water Pollutants

Below is a list of types of water pollutants that are generally present in water bodies to some extent. In your opinion, how much of a problem are the following pollutants in your area?

	Not a Problem	Slight Problem	Moderate Problem	Severe Problem	Don't Know
a. Sediment in local streams and Green Bay	○	○	○	○	○
b. Pesticides in local streams and Green Bay	○	○	○	○	○
c. Nitrogen in local streams and Green Bay	○	○	○	○	○
d. Phosphorus in local streams and Green Bay	○	○	○	○	○
e. Bacteria and viruses in local streams and Green Bay	○	○	○	○	○
f. Salt in local streams and Green Bay	○	○	○	○	○

6. Sources of Water Pollution

The items listed below are sources of water quality pollution across the country. In your opinion, how much of a problem are the following sources in your area?

	Not a Problem	Slight Problem	Moderate Problem	Severe Problem	Don't Know
a. Discharges from industry	○	○	○	○	○
b. Discharges from sewage treatment plants.	○	○	○	○	○
c. Soil erosion from construction sites.	○	○	○	○	○
d. Soil erosion from farm fields.	○	○	○	○	○
e. Soil erosion from shorelines and/or stream banks.	○	○	○	○	○
f. Excessive use of lawn fertilizers and pesticides.	○	○	○	○	○
g. Improper disposal of used motor oil and anti-freeze.	○	○	○	○	○
h. Improperly maintained septic systems	○	○	○	○	○
i. Storm water runoff from urban areas	○	○	○	○	○
j. Droppings from geese, ducks, and other waterfowl.	○	○	○	○	○
k. Littering/Illegal dumping of trash	○	○	○	○	○
l. Runoff of pesticides from farm fields	○	○	○	○	○
m. Land applied wastes (industrial, municipal, septic wastes)	○	○	○	○	○
n. Land application of animal waste	○	○	○	○	○
o. Runoff from animal feedlots	○	○	○	○	○
p. Milk house waste	○	○	○	○	○
q. Sileage runoff from bunker silos	○	○	○	○	○

7. Practices to Improve Water Quality

The practices below have the potential to improve water quality in your area. Please indicate in Charts 1 and 2 which statement most accurately describes your level of experience with each practice. <u>Be sure to answer part "a" and part "b" for these sets of practices.</u>

Chart 1	7a. Please indicate which statement most accurately describes your level of experience with each practice (select only one). →						7b. Would you be willing to try or continue using this practice?		
	Does Not Apply	Never Heard Of It	Heard Of It, But Not Very Familiar With It	Am Familiar With It, But Never Done It	Tried It, But No Longer Do It	Currently Use It	Yes	No	Maybe
a. Using grass waterways	○	○	○	○	○	○	○	○	○
b. Managing tile drainage to control the flow of nutrients	○	○	○	○	○	○	○	○	○
c. Using no-tillage farm practices	○	○	○	○	○	○	○	○	○
d. Using reduced tillage farm practices	○	○	○	○	○	○	○	○	○
e. Using Integrated Pest Management (IPM)	○	○	○	○	○	○	○	○	○
f. Using a nutrient management plan for applying fertilizers and manure	○	○	○	○	○	○	○	○	○
g. Keeping my livestock from entering streams (fencing, etc.)	○	○	○	○	○	○	○	○	○

Chart 2	7a. Please indicate which statement most accurately describes your level of experience with each practice (select only one). →						7b. Would you be willing to try or continue using this practice?		
	Does Not Apply	Never Heard Of It	Heard Of It, But Not Very Familiar With It	Am Familiar With It, But Never Done It	Tried It, But No Longer Do It	Currently Use It	Yes	No	Maybe
h. Planting or maintaing vegetative buffers along streams	○	○	○	○	○	○	○	○	○
i. Using cover crops	○	○	○	○	○	○	○	○	○
j. Regularly service my septic system	○	○	○	○	○	○	○	○	○
k. Capping of abandoned wells	○	○	○	○	○	○	○	○	○
l. Containing leachate from bunker silos	○	○	○	○	○	○	○	○	○
m. Rotational grazing	○	○	○	○	○	○	○	○	○
n. Reducing phosphorus in dairy feeds	○	○	○	○	○	○	○	○	○
o. Investing in alternative energies from animal waste (e.g., manure digesters)	○	○	○	○	○	○	○	○	○

8. Making Management Decisions

When you make decisions about <u>new management practices</u> for your farm operation, how important is each of the following?

	Not At All Important	Somewhat Important	Undecided	Important	Very Important
a. Personal out-of-pocket expense	○	○	○	○	○
b. My own views about effective farming or land management methods	○	○	○	○	○
c. How easily a new practice fits with my current farming methods	○	○	○	○	○
d. The need to learn new skills or methods	○	○	○	○	○
e. Lack of government funds for cost share	○	○	○	○	○
f. Too much time required for implementation	○	○	○	○	○
g. Not having access to the equipment that I need.	○	○	○	○	○
h. Lack of available information about a practice	○	○	○	○	○
i. No one else I know is implementing the practice	○	○	○	○	○
j. Concerns about reduced yields	○	○	○	○	○
k. Approval of my neighbors	○	○	○	○	○
l. Don't want to participate in government programs	○	○	○	○	○
m. Requirements or restrictions of government programs	○	○	○	○	○
n. Possible interference with my flexibility to change land use practices as conditions warrant	○	○	○	○	○
o. Profitability	○	○	○	○	○
p. Benefits to local water resources	○	○	○	○	○
q. NR 151 and associated requirements	○	○	○	○	○
r. Other _____ (Please specify)	○	○	○	○	○

9. Information and Activities

People get information about water quality from a number of different sources. To what extent do you trust the organizations listed below as a source of information about water quality?

	Not At All	Slightly	Moderately	Very Much	Am Not Familiar
a. Dairy Businessmen Association	○	○	○	○	○
b. Farm Bureau	○	○	○	○	○
c. Local Farm Cooperatives/Crop Consultants	○	○	○	○	○
d. Wisconsin Department of Natural Resources	○	○	○	○	○
e. Natural Resources Conservation Service (NRCS)	○	○	○	○	○
f. Wisconsin Department of Agriculture, Trade, and Consumer Protection	○	○	○	○	○
g. County Land Conservation Department	○	○	○	○	○
h. Southern Brown Sportsmen Club	○	○	○	○	○
i. The Nature Conservancy	○	○	○	○	○
j. U.S. Fish and Wildlife Service	○	○	○	○	○
k. Glacierland RC&D	○	○	○	○	○
l. UW Extension	○	○	○	○	○
m. Trout Unlimited	○	○	○	○	○
n. Izaak Walton League	○	○	○	○	○
o. Clean Water Action Council	○	○	○	○	○
p. Other _____ (Please specify)	○	○	○	○	○

10. About Your Farm Operation

a. How many years have you been farming at your current location? _____

b. Did any family member own and operate the farm before you did?

- ○ No
- ○ Yes. Number of years in the family_____

c. Which of the following best describes your position as a farm operator? (check all that apply)

- ○ Sole owner and operator
- ○ Operator only
- ○ Partnership with spouse
- ○ Partnership with family member
- ○ Partnership with non-family member
- ○ Rent farmland to others who are farm operators
- ○ Rent farmland from others
- ○ Farm manager
- ○ Other_____

d. How likely is it that any family member may continue farm operations when you retire or quit farming?

- ○ Will not happen
- ○ Unlikely
- ○ Unsure
- ○ Likely
- ○ Will definitely happen

e. Estimate the tillable acreage (owned and/or rented) of your farming operation this year.

- ○ 1-99 acres
- ○ 100-499 acres
- ○ 500-999 acres
- ○ 1,000-1,999 acres
- ○ 2,000 or more acres

f. This year, how many acres of the following do you manage? Please write a number using "0" to indicate none of that type.

Corn _____ acres
Soybeans _____ acres
Small grains _____ acres
Canning crops _____ acres
Alfalfa (new seeding) _____ acres
Alfalfa (established stands) _____ acres
Clover _____ acres
Pasture _____ acres
Conservation set aside/CRP _____ acres
Forest/woodland _____ acres
Other _____ acres

g. How many of the following animals are part of your farming operation? Please write the number "0" to indicate none of that type.

_____ Dairy cattle, including heifers and young stock (average herd size)
_____ Beef cattle, including young stock
_____ Hogs
_____ Poultry
_____ Other livestock (specify) _____

h. Have you changed your planned crop rotation for energy or ethanol production?

- ○ No
- ○ Yes

i. Five years from now, which statement will best describe your farm operation?

- ○ It will be about the same as it is today
- ○ It will have more acres planted
- ○ It will have a larger herd size
- ○ It will have a smaller herd size
- ○ It will no longer be a farming operation

j. Do you have a nutrient management plan for your farm operation?

- ○ No → if no, please skip to question 11
- ○ Yes
- ○ I don't know

k. Does your nutrient management plan meet NRCS technical standard 590?

- ○ No
- ○ Yes

l. Who developed your current nutrient management plan?

- ○ My county Land Conservation Department, UW-Extension, or Natural resources Conservation Service
- ○ A private-sector agronomist or crop consultant
- ○ I created my own plan
- ○ I don't know

m. What is included in your nutrient management plan?

- ○ Commercial nutrients
- ○ Livestock manure
- ○ Septic waste
- ○ Municipal sludge
- ○ Industrial sludge

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11. About You

a. What is your gender?

- ○ Male
- ○ Female

b. Which of the following best describes where you live? (check only one)

- ○ In a town, village, or city
- ○ In a rural non-farm residence
- ○ On a farm

c. How long have you lived at your current residence?

- ○ Less than 1 year
- ○ 1-5 years
- ○ 6-10 years
- ○ 11-15 years
- ○ 16-20 years
- ○ Over 20 years

d. In addition to your residence, which of the following do you own or manage? (check all that apply)

- ○ An agricultural operation
- ○ Forested land
- ○ Rural recreational property
- ○ None of these

e. What is your age?

- ○ 18-24 years old
- ○ 25-34 years old
- ○ 35-44 years old
- ○ 45-54 years old
- ○ 55-64 years old
- ○ 65-74 years old
- ○ 75 years or older

f. How many days, if any, did you work *at least 4 hours per day off this farm operation* for pay in the last year? (Include work on someone else's farm for pay.)

- ○ None
- ○ 1-49 days
- ○ 50-99 days
- ○ 11-15 years
- ○ 100-199 days
- ○ Over 200 days

g. What is your highest level of formal education?

- ○ Some formal schooling
- ○ High school diploma or GED
- ○ Some college
- ○ 2 year college degree
- ○ 4 year college degree
- ○ Graduate degree

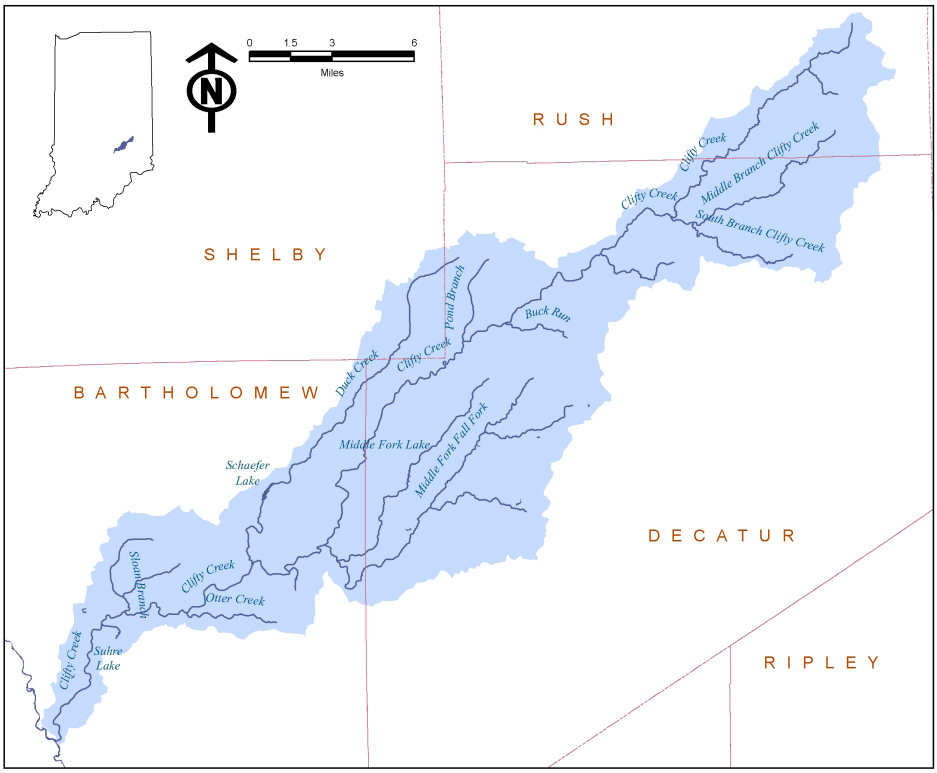
h. I've heard about water quality problems from the following (check all that apply).

- ○ Newsletters
- ○ Brochures
- ○ Internet
- ○ Radio
- ○ Newspaper
- ○ Television
- ○ Friends/Family
- ○ Other
- ○ None of the Above

Thank you for your time and assistance! Please return your completed survey in the postage-paid envelope provided. Please use the space below for any additional comments about this survey or water resource issues in your community.

Local Project Coordinator:
Kevin Erb
Senior Outreach Specialist
Ag & Extension Service Center
1150 Bellevue Street
Green Bay, WI 54302
Phone: (920) 391-4652
Email: kevin.erb@ces.uwex.edu

Your Views on
Clifty Creek Water Resources



Your local watershed project is conducting this survey in coordination with Purdue University. The purpose of this survey is to identify the needs and concerns in your community regarding water quality.

We ask that this survey be completed by the person in your household that makes most of the lawn and garden decisions and is at least 18 years old. Your participation in this survey is completely voluntary. Your answers will be kept confidential and will be released only as summaries where individual answers cannot be identified.

Unless otherwise instructed, please check the box that corresponds to the answer category that best describes you and your situation or opinion. The survey should take approximately 20-30 minutes to complete. Please read each question carefully.

1. Rating of Water Quality

Overall, how would you rate the quality of water in Clifty Creek Watershed?

	Poor	Okay	Good	Don't Know
a. For drinking	○	○	○	○
b. For eating fish caught in the water	○	○	○	○
c. For swimming	○	○	○	○
d. For boating	○	○	○	○
e. For fish habitat	○	○	○	○
f. For scenic beauty	○	○	○	○

2. Your Watershed

a. Of the following, which best fits your definition of what a watershed is? Check the box that corresponds to your answer.

- ○ An area that retains water like a swamp or a marsh
- ○ The land area that drains into a specific water body
- ○ Water intake area that feeds a water treatment plant
- ○ A small building where water is stored
- ○ None of the above
- ○ I don't know

b. Do you know the name of your watershed?

- ○ No, I don't know the name of my watershed
- ○ Yes, I know the name of my watershed

The name of my watershed is:_____

3. General Water Quality Attitudes

Indicate your level agreement or disagreement with the statements below

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
a. The economic stability of my community depends upon good water quality.	○	○	○	○	○
b. The way that I care for my lawn and yard can influence water quality in local streams and lakes.	○	○	○	○	○
c. It is my personal responsibility to help protect water quality.	○	○	○	○	○
d. It is important to protect water quality even if it slows economic development.	○	○	○	○	○
e. What I do on my land doesn't make much difference in overall water quality.	○	○	○	○	○
f. Lawn and yard-care practices (on individual lots) do not have an impact on local water quality.	○	○	○	○	○
g. My actions have an impact on water quality.	○	○	○	○	○
h. Taking action to improve water quality is too expensive for me.	○	○	○	○	○
i. It is okay to reduce water quality to promote economic development.	○	○	○	○	○
j. It is important to protect water quality even if it costs me more.	○	○	○	○	○
k. I would be willing to pay more to improve water quality (for example: through local taxes or fees).	○	○	○	○	○
l. I would be willing to change the way I care for my lawn and yard to improve water quality.	○	○	○	○	○
m. The quality of life in my community depends on good water quality in local streams, rivers and lakes.	○	○	○	○	○

4. Consequences of Poor Water Quality

Poor water quality can lead to a variety of consequences for communities. In your opinion, how much of a problem are the following issues in your area?

	Not a Problem	Slight Problem	Moderate Problem	Severe Problem	Don't Know
a. Contaminated drinking water	○	○	○	○	○
b. Beach closures	○	○	○	○	○
c. Polluted swimming areas	○	○	○	○	○
d. Contaminated fish	○	○	○	○	○
e. High drinking water treatment costs	○	○	○	○	○
f. Loss of desirable fish species	○	○	○	○	○
g. Reduced beauty of lakes or streams	○	○	○	○	○
h. Reduced opportunities for water recreation	○	○	○	○	○
i. Reduced quality of water recreation activities	○	○	○	○	○
j. Excessive aquatic plants or algae	○	○	○	○	○

5. Types of Water Pollutants

Below is a list of water pollutants and conditions that are generally present in water bodies to some extent. The pollutants and conditions become a problem when present in excessive amounts. In your opinion, how much of a problem are the following water impairments in your area?

	Not a Problem	Slight Problem	Moderate Problem	Severe Problem	Don't Know
a. Sedimentation/Silt	○	○	○	○	○
b. Nitrogen	○	○	○	○	○
c. Phosphorus	○	○	○	○	○
d. E. coli	○	○	○	○	○
e. Herbicides and Insecticides in lakes and streams	○	○	○	○	○

6. Sources of Water Pollution

The items listed below are sources of water quality pollution across the country. In your opinion, how much of a problem are the following sources in your area?

	Not a Problem	Slight Problem	Moderate Problem	Severe Problem	Don't Know
a. Discharges from industry into streams and lakes	○	○	○	○	○
b. Discharges from sewage treatment plants	○	○	○	○	○
c. Soil erosion from construction sites	○	○	○	○	○
d. Soil erosion from farm fields	○	○	○	○	○
e. Soil erosion from shorelines and/or streambanks	○	○	○	○	○
f. Excessive use of lawn fertilizers and/or pesticides	○	○	○	○	○
g. Improper disposal of household wastes (chemicals, batteries, florescent light bulbs, etc.)	○	○	○	○	○
h. Improper disposal of used motor oil and/or antifreeze	○	○	○	○	○
i. Improperly maintained septic systems	○	○	○	○	○
j. Manure from farm animals	○	○	○	○	○
k. Stormwater runoff from rooftops and/or parking lots	○	○	○	○	○
l. Stormwater runoff from streets and/or highways	○	○	○	○	○
m. Droppings from geese, ducks and other waterfowl	○	○	○	○	○
n. Littering/Illegal dumping of trash	○	○	○	○	○
o. Highway/Road/Bridge Runoff	○	○	○	○	○

7. Sources of Water Pollution

The practices below have the potential to improve water quality in your area. Please indicate which statement most accurately describes your level of experience with each practice. Be sure to answer part "A" and part "B" for this set of practices.

	A. Please indicate which statement most accurately describes your level of experience with each practice.						B. Would you be willing to try or continue using this practice?		
	Does not apply	**I've never heard of it.**	**Heard of it, but I'm not very familiar with it.**	**I am familiar with it, but I've never done it.**	**I have tried it, but I no longer do it.**	**I currently use it.**	**Yes**	**No**	**Maybe**
a. At or below the manufacturer's guidelines for fertilizer application for my lawn	○	○	○	○	○	○	○	○	○
b. Create a rain garden	○	○	○	○	○	○	○	○	○
c. Keep grass clippings and leaves out of the roads, ditches, and gutters	○	○	○	○	○	○	○	○	○
d. Follow pesticide application instructions for lawn and garden	○	○	○	○	○	○	○	○	○
e. Use phosphate free fertilizer	○	○	○	○	○	○	○	○	○
f. Regular servicing of septic system	○	○	○	○	○	○	○	○	○
g. Recycle automotive oil	○	○	○	○	○	○	○	○	○

	A. Please indicate which statement most accurately describes your level of experience with each practice.						B. Would you be willing to try or continue using this practice?		
	Does not apply	**I've never heard of it.**	**Heard of it, but I'm not very familiar with it.**	**I am familiar with it, but I've never done it.**	**I have tried it, but I no longer do it.**	**I currently use it.**	**Yes**	**No**	**Maybe**
h. Properly dispose of pet waste	○	○	○	○	○	○	○	○	○
i. Properly dispose of household waste (chemicals, batteries, florescent light bulbs, etc)	○	○	○	○	○	○	○	○	○
j. Use rain barrels	○	○	○	○	○	○	○	○	○
k. Inspect septic system for size and condition	○	○	○	○	○	○	○	○	○
l. Establish grass cover for septic system	○	○	○	○	○	○	○	○	○
m. Not planting trees and shrubs over septic system	○	○	○	○	○	○	○	○	○
n. Protect streambanks and/or shorelines with vegetation	○	○	○	○	○	○	○	○	○
o. Protecting septic field when ground is soft	○	○	○	○	○	○	○	○	○

8. Making Management Decisions

When you make decisions about changing your lawn care and/or stormwater practices, how important is each of the following?

	Not at all important	Somewhat important	Undecided	Important	Very Important
a. Personal out-of-pocket expense	○	○	○	○	○
b. My own views about effective lawn and yard maintenance	○	○	○	○	○
c. How easily the new action fits with my current practices	○	○	○	○	○
d. My own physical abilities	○	○	○	○	○
e. The need to learn new skills or techniques	○	○	○	○	○
f. Too much time required for implementation	○	○	○	○	○
g. Not having access to the equipment that I need	○	○	○	○	○
h. Lack of available information about a practice	○	○	○	○	○
i. No one else I know is implementing the practice	○	○	○	○	○
j. Approval of my neighbors	○	○	○	○	○
k. Restrictive covenants in my subdivision	○	○	○	○	○
m. Don't know where to get information and/or assistance about the practice	○	○	○	○	○
n. Environmental damage caused by practice	○	○	○	○	○
o. Environmental benefit of practice	○	○	○	○	○

9. Information and Activities

People get information about water quality from a number of different sources. To what extent do you trust the organizations listed below as a source of information about water quality?

	Not at all	Slightly	Moderately	Very Much	Am Not Familiar
a. Clifty Creek Watershed Project	○	○	○	○	○
b. Indiana Department of Management	○	○	○	○	○
c. Soil and Water Conservation District (SWCD)	○	○	○	○	○
d. Natural Resource Conservation Service (NRCS)	○	○	○	○	○
e. Purdue University	○	○	○	○	○
f. Elsbury's Greenhouse	○	○	○	○	○
g. Sierra Club	○	○	○	○	○
h. Columbus in Bloom	○	○	○	○	○
i. Kid's Commons	○	○	○	○	○
j. US Geological Survey	○	○	○	○	○
k. Hoosier Riverwatch	○	○	○	○	○
l. Department of Natural Resources	○	○	○	○	○
m. Bartholomew Co. Cattlemen's Association	○	○	○	○	○
o. Other landowners/residents	○	○	○	○	○
p. Other_____ Please Specify	○	○	○	○	○

10. About You

a. Do you make the home and lawn care decisions in your household?
- ○ Yes
- ○ No

b. Do you use a professional lawn care service?
- ○ Yes, just for mowing
- ○ Yes, for mowing and fertilizing
- ○ Yes, just for fertilizing and pest control
- ○ Yes, for mowing, fertilizing, and pest control
- ○ No

c. What is your gender?
- ○ Male
- ○ Female

d. How long have you lived at your current residence
- ○ Less than 1 year
- ○ 1-5 years
- ○ 6-10 years
- ○ 11-15 years
- ○ 16-20 years
- ○ Over 20 years

e. In the past three years, have you heard about water quality issues in any of the following? (Check all that apply)
- ○ Newsletters
- ○ Brochures
- ○ Internet
- ○ Radio
- ○ Newspapers
- ○ Television
- ○ Other

f. What is the highest grade in school you have completed?
- ○ Less than high school graduate
- ○ High school graduate
- ○ Some college/post high school
- ○ 4 year college graduate
- ○ Post-graduate

g. What was your total household income last year?
- ○ Less than $24,999
- ○ $25,000 to $49,999
- ○ $50,000 to $74,999
- ○ $74,999 to $99,999
- ○ $100,000 or more

h. What is the approximate size of your residential lot?
- ○ Less than 1/4 acre
- ○ 1/2 acre
- ○ 3/4 acre
- ○ 1 acre
- ○ 2 acres
- ○ 3 acres
- ○ 4 acres
- ○ 5 acres or more

i. Do you own or rent your home?
- ○ Own
- ○ Rent

j. What type of waste treatment system do you have at your home?

	Yes	No	Don't Know
Septic system	○	○	○
Septic mound	○	○	○
Drain field	○	○	○
Connection to municipal system	○	○	○
Other	○	○	○

k. How old is your waste treatment system?

_____ Years

l. Within the last five years, have you had any of the following problems? Check all that apply,

- ○ Slow drains
- ○ Sewage backup in house
- ○ Bad smells near tank or drain field
- ○ Sewage on the surface
- ○ Sewage flowing to ditch
- ○ Frozen septic
- ○ Other
- ○ None
- ○ Don't know

m. In the future, would you like a reminder from your local health department regarding inspection/maintenance of your septic system?

- ○ Yes
- ○ No
- ○ Don't know

n. Do you have a garbage disposal?

- ○ Yes, I use it daily
- ○ Yes, I use it occasionally
- ○ Yes, but I don't use it
- ○ No

o. Does your septic system have an absorption field ("finger system")?

- ○ Yes
- ○ No
- ○ Don't know

p. How would you know if your septic system was NOT working properly? Check all that apply

- ○ Slow drains
- ○ Sewage backup in house
- ○ Bad smells
- ○ Toilet backs up
- ○ Wet spots in lawn
- ○ Pumping tank monthly or more
- ○ Straight pipe to ditch
- ○ Frozen septic
- ○ Don't know
- ○ Other_____

q. Do you think a local government agency should handle inspection and maintenance of septic systems?

- ○ Yes
- ○ No
- ○ Don't know

Thank you for your time and assistance!
Please return your completed questionnaire in the postage-paid envelope provided. Please use the space below for any additional comments about this survey or water resources in your community.

For more information about the Clifty Creek Watershed Project, please see www.cliftycreek.org or call Josh Richardson at (812) 378-1280 extension 3.

For more information about this survey, please call Linda Pokopy at (765) 496-2221.

Survey results will be available February 2008 at www.cliftycreekresults.com.

Sample Advance Letter

Date

«First»«Last»
«Mailing_Address»
«City», «State» «Zip»

Dear «First»«Last»,

We need your help to better understand agricultural land management decisions in the [Project] watershed. The [Project name] is working to improve and protect the water quality in [river/stream name – use local name] by providing technical and financial assistance for land management activities. As someone involved with an agricultural operation in the [project] watershed area, your insights are particularly important, and we would greatly appreciate your participation in a survey to help us learn how we might best serve the needs of agricultural producers and rural residents in the watershed.

In the next week, you will be receiving a survey questionnaire from the [project name]. When it arrives, please complete the questionnaire and return it to us in the prepaid envelope. By participating in this survey, you will be helping to shape the kinds of technical assistance and outreach efforts provided by the [project name].

Let me assure you that your responses will remain confidential. Responses from all agricultural producers completing the survey will be analyzed together, and no individual responses will be identified in any way. Your name will not be used in any report.

Your participation in this survey is very important to ensure we understand the land management activities and the needs and interests of the agricultural community in the watershed. If you have any questions about the survey please contact me at xxx-xxx-xxxx. Thank you in advance for your help.

Sincerely,

[insert signature]

[Name of project leader or local official; note that this should be someone the local target audience will respond to such as SWCD director, head of Farm Bureau, etc.]
[local contact information]

Sample Cover Letter to Include With the First Mailed Questionnaire

[letterhead]

«First»«Last»
«Mailing_Address»
«City», «State» «Zip»

Date

Dear «First» «Last»,

About a week ago you received a letter regarding the enclosed survey questionnaire. [Project] is conducting the survey to learn about current land management practices and the needs of agricultural producers in the [project] watershed. The questionnaire will take about 20 minutes to complete, and we appreciate your time and the information you will provide. Please return the completed questionnaire in the enclosed, pre-stamped envelope as soon as possible.

By participating in this survey, you help shape outreach programs and technical assistance options provided through the [project]. Responses will be confidential. Your name will never be placed on the questionnaire itself, nor will it ever be used in any report. You will find a number on the back of your survey. This number is used for tracking purposes so that we can check your name off the mailing list when your questionnaire is returned.

Thank you in advance for providing this valuable information. I would be happy to answer any questions you have about this survey.

Sincerely,

[signature]

[name of project leader or local official]
[contact information]

Sample of an Initial Reminder Letter and Postcard

Date

«First»«Last»
«Mailing_Address»
«City», «State» «Zip»

Dear «First»«Last»,

About a week ago, you should have received a survey from [project]. We know that you are busy, and we hope that you will help us by completing and returning the survey. Your information is important because it will be used to serve the needs of agricultural producers in your area. By participating in this survey, you will help shape outreach programs and technical service options.

If you have not done so already, please complete the survey and return it in the pre-stamped / addressed envelope (enclosed with the survey you received last week). The survey will take about 20 minutes to complete. If you have already returned the survey, thank you, we appreciate your time in doing so.

Your responses will be confidential. Your answers will not be associated with your name in any way and your name will never be used in any report.

Feel free to contact me if you have any questions, concerns or if you have misplaced your survey. I will gladly provide another copy.

Sincerely,
[Signature]
[project leader or local official]
[contact information]

Note: this information could also be modified and sent in a post card format, such as below:

Recently a questionnaire asking for your thoughts about land management issues was mailed to you. Your response is important to accurately represent the opinions about these issues in the [project].

If you have already completed the questionnaire, please accept my sincere thanks. If not, please take approximately 20 minutes to complete and mail it today. If you did not receive the questionnaire, if it was misplaced, or if you have any questions about the study, please call me at [PHONE NUMBER]. I am glad to answer your questions or to mail you another copy of the questionnaire. Thank you for your help!

[project leader or local official][contact information]

Sample of a Cover Letter to Include With the Second Mailed Questionnaire

Date

«First»«Last»
«Mailing_Address»
«City», «State» «Zip»

Dear «First»«Last»,

About three weeks ago I sent a questionnaire to you asking for your input about land and water issues in [project]. As of today, we have not yet received your completed questionnaire. I am sending a second copy of the questionnaire in case you have misplaced it.

I am writing again because your response is critical to the accuracy of the survey results. To be sure that the results are truly representative of interests an opinions in the area, we need to hear from you. Those who have already responded have shared their thoughts, but we also need to know yours!

By responding to the survey, you are assured of complete confidentiality. The questionnaire has an identification number for mailing purposes only. This is so we can check your name off the mailing list when your questionnaire is returned. Your name will never be placed on the questionnaire itself, nor will it ever be used in any written or oral discussion of survey results.

Your response will provide information to help the [LOCAL Project] make decisions that reflect your opinions.

I would be happy to answer any questions that you may have about this study. Please call me at [PHONE NUMBER].

Sincerely,

[insert signature]

[Name of project leader or local official]
[local contact information]

Sample Final Reminder Letter

Date

«First»«Last»
«Mailing_Address»
«City», «State» «Zip»

Dear «First»«Last»,

I am writing once again to encourage you to complete and return the [survey name]. If you have already returned the survey, thank you – our letters crossed in the mail. If not, please take a few moments to complete and return your questionnaire today.

I understand this survey may not be a top priority or that you may be hesitant to share information about your farming practices. This survey is important because information received will be used to serve the needs of agricultural producers in your area. By participating in this survey, you will help shape outreach programs and technical service provided by [project] as we work toward protecting and improving local water quality.

[number] of agricultural producers from your area are participating in this survey and many have already returned their completed survey to me. Your completed survey is needed to ensure that a variety of different types of farms, as well as your views and opinions, are represented.

Please be assured that your responses will be confidential. The number, on the back page of the survey, allows us to know who has returned their survey. Your name and answers will NOT be associated with that number in any way.

Feel free to contact me at xxx-xxx-xxxx if you have any questions, concerns or comments. I would appreciate hearing from you.

Sincerely,

Signature

[project leader or local official]
[contact information

Sample Letter for Telephone Survey

Date

«First»«Last»
«Mailing_Address»
«City», «State» «Zip»

Dear «First»«Last»,

We need your help to better understand home and lawn care activities in [Project area]. The [Project] is working to improve and protect the water quality in [river/stream name] by gathering information from both rural and urban residents to help direct technical and financial assistance for home and lawn care activities. As a resident in the [project] watershed area, your insights are particularly important, and we would greatly appreciate your participation in a survey to help us learn how we might best serve the needs of urban and rural residents in the watershed.

In the next week, you will be receiving a phone call from the [project name]. If you are willing to participate, we will set up a time that is convenient for you. The survey will take about 30 minutes depending on your answers. Your participation in this study is voluntary and your answers will be confidential. If you agree to participate, you are free to withdraw from the study at any time. By participating in this survey, you will be helping to shape the kinds of technical assistance and outreach efforts provided by the [project name].

Let me assure you that your responses will remain confidential. Responses from all agricultural producers completing the survey will be analyzed together and no individual responses will be identified in any way. Your name will not be used in any report.

Your participation in this survey is very important to ensure we understand the home and lawn care activities and the needs and interests of the community in the watershed. If you have any questions about the survey please contact me at xxx-xxx-xxxx. Thank you in advance for your help.

Sincerely,

Signature

[project leader or local official]
[contact information

Appendix 4: Additional Supporting Documents

This appendix includes the following: a sample Freedom of Information Act (FOIA) request letter to request names and addresses of farmers in your watershed and the end of project questionnaire.

Sample FOIA Letter for Federal Agencies

Date

Re: Names and Addresses in <insert name> Watershed

To Whom It May Concern <or insert name of state contact>:

I am requesting under FOIA the names and addresses of landowners [and/or agricultural producers] in the <insert name> Watershed. I am conducting a study that will involve the mailing of two questionnaires to this group of people. The results of the first questionnaire will help inform watershed planning and project implementation activities, and the second questionnaire will help to measure the change in awareness, attitudes, and behaviors as a result of our project. I am attaching a copy of the draft questionnaire for your reference. All survey data will be kept confidential and will only be available to researcher(s) involved in this project.

We are working on this project in collaboration with the <insert name of any collaborating SWCD's,, etc.>. The study is funded by <insert name of state agency or other funding source>.

It would be very helpful if we could obtain an electronic version of your mailing list differentiated by Owners (landowners), Operators (agricultural producers), and Owner/Operators for the following counties: <insert county names>.

<NOTE: You can also use the following text to ask the agency to use GIS to provide addresses only within the watersheds**.>**

- The information needed from <agency> can be in one of the forms below;
    1. CLU polygons (no attribute data associated)
    2. List of names and addresses of agricultural producers (landowners and operators)

- Our hope would be that you could utilize GIS to clip the polygons or address information to the specified watersheds.>

Please let me know if I can provide you any further information to help you consider this request for information.

Thank you in advance for your help.

<insert your name, address, phone number, e-mail>

End-of-Project Questionnaire

Project coordinators will submit answers to the following questions using SIDMA:

For the first four questions, please gather input from project partners.

1. Please list up to three factors related to your group that most contributed to the success of your project. *For example: great volunteers, coordinator who knew how to mediate conflict, steering committee member with background in publicity.*
2. Please list up to three factors related to your group that most hindered the success of your project. *For example: low attendance at meetings, high turnover rate of staff, not enough money.*
3. Please list up to three factors external to your group that most contributed to the success of your project. *For example: newspaper reporter that covered all of our major events, farmers who were willing to come to our workshops even though they were not initially supportive of our objectives, conservation group in the area that supported us with resources.*
4. Please list up to three factors external to your group that most hindered the success of your project. *For example: county government was very resistant to idea of changing ordinances, small segment of homeowners wrote repeated letters to the editor against our project, dropping corn prices made farmers unwilling to adopt riparian buffers.*

For the remaining questions, please refer to project records:

5. What percentage of adopters is in the target audience?
6. What percentage of treated acres is in the critical area?
7. What percentage of installed practices is in the critical area?
8. Based on project records, what is the percentage of critical area receiving treatment?
9. Based on project records, what is the percentage of target audience implementing practices in critical areas?
10. What ordinances are in place related to NPS practices?
11. What additional cash and in-kind resources were leveraged as a result of project funding?
12. What other funding is available to support NPS practices in the critical areas?
13. What other technical support is available for NPS practices in the critical areas?
14. What provisions are in place to monitor NPS practices in the critical areas? What other information would you like to report about the implementation of your project?

Glossary

Administrative indicators: Indicators based upon the collection of financial and administrative data, and generally gathered by project staff. The data is submitted to the state through state systems and entered into the USEPA's Grants Reporting and Tracking System (GRTS).

Baseline: An initial set of observations or data that can be used for comparison or as a control; a starting point (Source: USEPA *Handbook*). The information collected at the beginning of a project provides a benchmark against which changes can be measured during the project period.

Critical area: Lands contributing disproportionately to water quality impairment because they are environmentally vulnerable and/or inappropriately managed based on their environmental vulnerability and consistency with long-range goals of the watershed management plan.

Environmental indicators: These are generally biophysical measures collected by state agency and project staff. Data is entered into state information management systems and the USEPA's STORET database.

Evaluation: A systematic process for assessing the effects of activities and progress toward identified goals.

Indicator: Direct or indirect measurements of some valued component or quality in a system. Can be used to measure the current health of the watershed and to provide a way to measure progress toward meeting the watershed goals (Source: USEPA *Handbook*).

Logic model: A conceptual tool for summarizing program goals and allocating resources. Logic models provide a planning framework for program or project goals, objectives, and activities; assessing needs; determining intended results; and identifying the resources and activities needed to achieve them.

Monitoring: The periodic collection and evaluation of data relative to project goals, objectives, and activities. Monitoring assists project coordinators in tracking progress and making comparisons with some predefined benchmark through the interlinked process of *monitoring and evaluation (M & E).*

Nonpoint source: Diffuse pollution source; a source without a single point of origin or not introduced into a receiving stream from a specific outlet. The pollutants are generally carried off the land by storm water. Common nonpoint sources are agriculture, forestry, urban areas, mining, construction, dams, channels, land disposal, saltwater intrusion, and city streets (Source: USEPA *Handbook for Developing Watershed Plans to Restore and Protect Our Waters*).

Project: A unique set of activities intended to accomplish a specific outcome, led by professional staff, and, for the purposes of this handbook, addressing NPS pollution. For the purposes of SIPES, a project encompasses only one funding cycle.

Program: In this Handbook, program refers to agency responsibility areas, for example, state NPS programs or the USEPA Region 5 NPS program.

Sample size: Number of returned questionnaires needed to accurately represent your entire project.

Social dimension or human dimension: Refers to the interaction of humans with their natural environment. Human use of the natural environment is the primary contributor to many negative environmental effects, including reduced water quality.

Social indicators: Measures that describe the capacity, skills, awareness, knowledge, values, beliefs, and behaviors of individuals, households, organizations, and communities. By measuring these indicators, we can determine whether policies, programs and initiatives are likely to lead to the intended behavioral change in a watershed's most critical areas and, ultimately, to improvements in water quality.

Social outcomes: The social changes needed to bring about and sustain the environmental conditions you are trying to achieve in your project area.

Stakeholder: Individual or organization that has a stake in the outcome of the watershed plan (Source: USEPA *Handbook*).

STORET (Acronym for STOrage and RETrieval): A repository for water quality, biological, and physical data that is used by state environmental agencies, the USEPA, and other federal agencies, universities, private citizens, and many others.

Target audience: People within a critical area who are responsible for managing those areas and for whom outreach and education efforts will be provided.

Watershed planning: A systematic effort to identify watershed-based issues, set goals and objectives, and prepare an implementation approach to address these issues.

Author Attributions

While all members of the Social Indicators team contributed to this Handbook and towards every section, the primary authors of each section are noted below.

Introduction: Social Indicators for Planning and Evaluation System

Linda Prokopy and Ken Genskow

Section A: Steps for Using the Social Indicator Planning and Evaluation System

Karyn McDermaid and Rebecca Power

Section B: NPS Project Planning: Setting the Stage for Working With Target Audiences

Rebecca Power

Section C: Getting started with SIDMA – the On-line Social Indicators Data Management and Analysis Tool

Cynthia Curtis and Jeremiah Asher

Section D: Choosing a Survey Method and Sample Size

Linda Prokopy, Kristin Floress, Ken Genskow, and Karyn McDermaid

Section E: Developing a Social Indicators Questionnaire

Kristin Floress, Ken Genskow, and Karyn McDermaid

Section F: Administering the Social Indicators Questionnaire

Karyn McDermaid, Kristin Floress, Ken Genskow, and Linda Prokopy

Section G: Using Social Indicators Survey Results to Develop Education and Outreach Strategies

Adam Baumgart-Getz, Rebecca Power, and Linda Prokopy

Section H: Evaluating Outreach Activities During Project Implementation

Ken Genskow, Danielle Wood, and Kristin Floress

Section I: Collecting Data at the End of Your Project

Linda Prokopy