



# **State and Federal Source Water Assessment and Protection**

## **Program Measures– Final Reporting Guidance**

## **Disclaimer**

This document is not a regulation. Thus, it cannot impose legally-binding requirements on EPA, states, Territories, authorized Tribes, or the public. To the extent this document summarizes statutory or regulatory requirements, and anything in that summary is in conflict with the statutes or regulations, the statutes and regulations control. This Guidance document does not change or substitute for those legal requirements, is not itself legally binding, and does not confer legal rights or legal obligations upon any member of the public, EPA, states, or any other agency. In following this Final Reporting Guidance, EPA decision makers retain the discretion to adopt approaches on a case-by-case basis that differ from it where appropriate. As necessary and appropriate, EPA may change this Reporting Guidance in the future.

## Table of Contents

Part A. Introduction .....	1
1. Purpose of Final Guidance .....	1
2. How This Document is Organized .....	2
3. Background, EPA 2003-2008 Strategic Plan, and National Water Program Guidance for Fiscal Year 2005 and forthcoming National Water Program Guidance for Fiscal Year 2006 .....	2
4. National Source Water Assessment and Protection Program Measures and Other Information in this Guidance .....	3
5. Framework Serving as the Basis for the State and National Source Water Assessment and Protection Measures and Other Information .....	5
6. Rationale for How the Measures and Other Information are Indicators to Help Answer the Key National Questions .....	8
Part B. Summary of National and State Source Water Measures and Information .....	13
Question 1: Are the State Source Water Assessments Being Completed Under Section 1453 of the SDWA? .....	14
Question 2: What Threats to Sources of Drinking Water Are Being Found in Assessment Results? .....	18
Question 3: How Are Current and Future Drinking Water Supplies Being Protected? .....	20
Question 4: Are Source Water Protection Actions Making a Difference to Public Health Protection? .....	26
Part C. Integrated Structure and Framework for Source Water Measures and Information Reporting .....	29
Appendix I—Issues and Answers Raised on the Initial Reporting Guidance of 2003 .....	31
Appendix II—Crosswalk of National Questions, Measures, and Information Elements .....	39
Appendix III—Representations of Reporting Spreadsheets .....	40
Appendix IV—Definition of Substantial Implementation of a SWP Strategy .....	49
Appendix V—Acronyms .....	50



## **Part A. Introduction**

### **1. Purpose of Final Guidance**

Over 270 million Americans receive drinking water from approximately 161,000 public water supplies. Americans enjoy some of the world's safest drinking water. Nonetheless, drinking water safety cannot be taken for granted. For instance, drinking water that is not adequately treated or that travels through an inadequate distribution system can endanger the health of a community. However, in many cases, public health protection starts at the drinking water source. A community is likely to be at higher risk if it relies on a source that is contaminated.

Preventing contamination of drinking water sources depends on the awareness, participation and actions of Federal agencies, state agencies, local governments, interest groups, individual citizens and the business community. Indeed, source water protection is based on the premise that no single entity can effectively be the driver of drinking water source protection efforts in every case. We all need to work together. Source water includes all current sources of drinking water from ground waters and surface waters. However, as the results of source water assessments are used to launch source water protection programs, such programs should not be deterred from comprehensive efforts to protect surface and ground waters that are not now used for drinking water.

Source water protection should be a standard part of providing safe drinking water to the public. If not eliminated, risks to source waters should be reduced to minimize risks to public health. Building consensus to do this requires a long and sustained effort.

Source water protection means different things in different situations. This is appropriate because the threats to drinking water sources and the means to address those threats are site specific and most effectively implemented at the local level, with assistance from other government and private stakeholders.

The Safe Drinking Water Act (SDWA), amended in 1996, promotes a multiple-barrier approach to safeguarding the nation's water supply. This multiple-barrier approach goes beyond the traditional emphasis on treatment to address new challenges and reflects a better understanding of the need for a coordinated source water protection effort. The multiple-barrier approach encompasses delineation and prevention of contamination of drinking water sources, treatment appropriate to the quality of the source water, well-engineered distribution and storage systems, operator training and certification and an informed and involved public. Preventing contamination, therefore, is one of the key elements of the multiple-barrier approach.

The purpose of this guidance is to promote coordinated efforts that should drive state and Federal actions to assist localities, implement protection actions where a state or Federal program has a specific responsibility, establish tangible measures of state and local source water assessment results and protection actions and institutionalize practical information sharing systems so states and Federal agencies can communicate results and the status of the program. By doing so, EPA and its many partners can more effectively and efficiently maintain and improve the quality of America's drinking water.

## **2. How This Document is Organized**

Part A, this introduction, includes four remaining sections: (1) background on the development of this final reporting guidance and a description of the EPA Strategic Plan; (2) the source water assessment and protection measures in the "National Water Program Guidance for FY 2005 and FY 2006;" (3) the framework that serves as the basis for the state and national source water assessment and protection measures, and other information; and (4) the rationale for how the measures and other information will answer key national questions for the source water assessment and protection program.

Part B includes the information associated with each measure or information element, a description of how the information should be reported in the spreadsheet format, and the definitions for the concepts in the measure and information quality guidelines.

Part C describes reporting options, including using spreadsheets or providing information to EPA through a source water module reporting framework.

Finally, there are five Appendices: I - Issues and answers raised on the initial 2003 reporting guidance; II - Crosswalk of the national questions, measures and information elements; III - Reporting tables as a proxy for the spreadsheets that states and regions should use to report the measures and other information; IV - The definition of substantial implementation of a source water protection strategy; and V - Acronyms used in this Guidance.

## **3. Background, EPA 2003-2008 Strategic Plan, and National Water Program Guidance for Fiscal Year 2005 and forthcoming National Water Program Guidance for Fiscal Year 2006**

Early in 2000, EPA's regional Drinking Water and Underground Injection Control (UIC) Branch Chiefs, the Ground Water Protection Council (GWPC) and the Association of State Drinking Water Administrators (ASDWA) articulated and discussed the need for a clear vision, goals and measures for the Source Water Program. From 2000 through early 2003, EPA held meetings with state organizations, one public stakeholder meeting and numerous internal EPA meetings. In 2002 and 2003, the Agency worked on a new Strategic Plan.

In March and April 2003, EPA met with states at the ASDWA and GWPC Spring meetings, and all states were provided a review of draft reporting guidances for the Source Water Assessment and Protection and Underground Injection Control Programs. At the same time, EPA met with these state-level organizations to ensure consistency between the measures and other information in the draft guidances and those measures in the draft Agency Strategic Plan and related documents. The state/EPA workgroups met in early May 2003 to discuss the measures again. Subsequently, GWPC and ASDWA wrote to EPA supporting initiation of the source water assessment and protection and underground injection reporting processes. EPA then released the State and Federal Source Water Assessment and Protection Program Measures - Initial Reporting Guidance in August 2003, and encouraged states to pilot test it in the Fall of 2003.

The vision for the Source Water Assessment and Protection Program was set in Goal 2 (Clean and Safe Water) of EPA's Strategic Plan, published in October 2003. The vision is included under Objective 2.1 (Protect Human Health) and Sub-objective 2.1.1 (Water Safe To

Drink), which reads, "By 2008, 95% of the population served by community water systems will receive drinking water that meets all applicable health-based drinking water standards through effective treatment and source water protection." The key source water protection strategic target under this sub-objective is that "by 2008, 50% of source water areas for community water systems will achieve minimized risk to public health (minimized risk is achieved by substantial implementation, as determined by the State, of source water protection actions in a source water protection strategy)."

Measures supporting this strategic target were published in the National Water Program Guidance for Fiscal Year 2005 and will be published in a forthcoming National Water Program Guidance for Fiscal Year 2006. These measures, known as "Program Activity Measures" (PAMs) will measure the aggregate results of source water assessments, state-wide, regionally and nationally, and measure source water protection strategy implementation. The Source Water Strategic Target and PAMs are:

<b>State and Local Source Water Assessment and Protection Strategic Target and Program Activity Measures - National Water Program Guidance, FY 2006</b>	
<b>Strategic Target F:</b> Percentage of source water areas for community water systems that achieve minimized risk to public health (minimized risk achieved by substantial implementation, as determined by a state, of source water protection actions in a source water protection strategy).	
PAM SDW-9 (FY 2006)	Percent of community water systems for which source water protection strategies are in place and are being implemented (cumulative). (Formerly PAMs 10 and 11 combined)
PAM SDW-11 (FY 2006)	Identify at the State level the most prevalent and/or threatening categories of existing/potential sources of contamination for surface and ground water for community water systems (annually.) (Formerly PAM 15)
Notes: Information on the associated population will also be requested for Strategic Target F and PAM SDW-9. Information for PAM SDW-11 may not change after the first reporting year.	

In 2004, EPA reconvened the source water measures workgroup and had several meetings throughout the year and at the Spring and Fall meetings of ASDWA and GWPC. Comments were received on a draft final reporting guidance subsequent to the Fall meetings. These discussions and comments addressed refinements to the definition of substantial implementation of source water protection strategies and issues from the initial reporting guidance used during the pilot year of 2003. The discussions by the workgroup and at the meetings are reflected in this final reporting guidance.

#### **4. National Source Water Assessment and Protection Program Measures and Other Information in this Guidance**

In the course of discussions between stakeholders and EPA from 2000-2004, four key questions were identified to guide development of the indicator measures and other information, and provide a structure for subsequent analysis. They are:

1. Are the state source water assessments being completed under Section 1453 of the SDWA?
2. What threats to sources of drinking water are being found in assessment results?

3. How are current and future drinking water supplies being protected?
4. Are source water protection actions making a difference to public health protection?

This final guidance sets forth specific indicator measures and information elements, consistent with the Agency's Strategic Plan and National Water Program Guidance, to provide information to answer these questions and provide indications of whether Strategic Target F is being attained. Below is a table showing the indicator measures and other information that will be used to answer the national questions.

**Summary of National and State  
Source Water Measures and Other Information for State and Local Actions**

Question	Source Water Measures and Other Information
1. Are the state source water assessments being completed under Section 1453 of the SDWA?	1.1 Mapped source water areas (SWAs) for CWSs by state. (Other information)
	1.2 PWSs with complete assessments, and associated population served - cumulative. (Other information)
2. What threats to sources of drinking water are being found in assessment results?	2.1 For CWSs, most prevalent categories of significant potential sources of contamination (aggregated at the state level and nationally, using the assessment information, split by ground water and surface water systems). (PAM SDW-11)
	2.2 For CWSs, most threatening categories of significant potential sources of contamination (aggregated at the state level and nationally, using the assessment information, split by ground water and surface water systems). (PAM SDW-11)
3. How are current and future drinking water supplies being protected?	3.1 Percent of CWSs that have source water protection strategies in place and are being implemented, and associated population served - cumulative. (PAM SDW-9)
	3.2 For CWSs, percentage of source water areas that have source water protection strategies substantially implemented, and associated population served - cumulative. (Strategic Target F)
	3.3 State source water protection activities. (Other information)
4. Are source water protection actions making a difference to public health protection?	4.1 Over time, percent change in CWSs or SWAs for CWSs, and associated population served, with substantial implementation of source water protection strategies (proxy for minimized risk to public health). (Strategic Target F)

See Part B for definitions of the information elements.

In addition to the national and state measures for source water assessment and protection, the National Water Program Guidance noted above includes national measures for Clean Water Act (CWA) and SDWA integration. These measures and other information are the culmination of internal efforts since 2001 to better integrate the program requirements and policies of the two statutes to increase the focus on protection actions for sources of drinking water. These measures and other information indicate that EPA is: (a) strengthening the Nationally Recommended Water Quality Criteria (NRWQC) that are published under Section 304(a) of the CWA by amending current criteria or publishing new criteria (FY 2005 PAMs 22 and 23); (b)

assuring that state water quality standards support the public water supply use for contaminants of concern originating in surface water from human activity (FY 2005 PAMs 21 and 24); and (c) enlisting the CWA tools to address those state water quality standards (FY 2005 PAMs 25, 26 and 27). The latter three PAMs possibly will entail actions under the Nonpoint Source, Stormwater and CWA permitting programs.

Complementing the integration measures and actions across the Water statutes, EPA's Office of Water (OW) is continuing to work across other programs to coordinate efforts to protect source waters. Coordination actions are occurring with: (a) the Office of Pesticide Programs (OPP) to protect source water through registration procedures for pesticides; (b) the Office of Underground Storage Tanks (OUST) to protect source water by focusing program resources on tanks within state delineated source water areas; (c) the Office of Solid Waste (OSW) to identify and better mitigate the effects of ground water plumes migrating off-site of contaminated sites in delineated source water areas; (d) the Office of Science Coordination and Policy (OSCP) to develop an endocrine disruptor screening program that includes drinking water contaminants; and (e) the Office of Research and Development (ORD) to implement research on numerous aspects of source water assessment and protection.

EPA is also continuing to coordinate actions with other Federal agencies and departments to increase technical and policy support for source water protection activities. Such coordination activities include, but are not limited to, working with: (a) the U.S. Department of Agriculture (USDA) to facilitate use of Farm Bill resources; and (b) the Department of Interior's U.S. Geological Survey (USGS) regarding its source water related monitoring programs and other technical support activities.

## **5. Framework Serving as the Basis for the State and National Source Water Assessment and Protection Measures and Other Information**

The source water measures and other information at the state, regional and national levels should provide guideposts for judging the progress of strategic actions to minimize risks to source waters, as envisioned by the provisions of the SDWA Amendments of 1996. The source water measures and information also provide information for targeting actions in source water areas (SWAs) to prevent contamination from the most serious potential threats to drinking water. State-wide, regional and national information regarding source water assessment results and protection actions also provides accountability to legislative bodies (state legislatures and Congress) and is a means to demonstrate that tax dollars are being well spent and that EPA is meeting certain objectives and strategic targets under the EPA Strategic Plan. In addition, EPA should be able to measure its own program outputs and whether they are leading toward contamination prevention and minimized risk, and thereby should be able to provide feedback and opportunities for national, regional, state and local program refinement and improvement.

### **A. Congress required assessments to be used at the state and Federal levels for protection.**

Congress provided the states with the lead responsibility for implementing source water assessments under Section 1453 of the Safe Drinking Water Act (SDWA). Section 1453 of the SDWA, as described in the Final National State Source Water Assessment and Protection Programs guidance, published August 6, 1997:

"requires states to develop, submit to EPA, and implement, once approved, SWAPs [Source Water Assessment Programs]. These required state SWAPs...must meet all the requirements under sections 1453 and 1428(b) and (c) of the SDWA Amendments of 1996."

Further, the Guidance pointed to the goal of the SWAP program in SDWA Section 1453 that "[e]ach source water assessment needs to be, as stated in the statute, 'for the protection and benefit of public water systems' [section 1453(a)(1)]." In other words, Congress clearly desired that an assessment be a precursor to the development of a full source water protection program to protect the drinking water for that area. (See below for more on Congress' intent that source water assessments would lead to voluntary protection programs.)

**B. Congress expected that voluntary protection actions would follow assessments, even though they are not mandated, and that all the tools of state and Federal governments could be brought to bear on implementing source water protection programs based on the source water assessments.**

Although the SDWA includes many provisions that indicate that source water protection is voluntary, the clear intent in the SDWA is that the mandatory assessments will lead to voluntary protection programs.

Indeed, House and Senate committee reports make this point. For example, House Report 104-632, Part 1 states "the Committee recognizes that [source water protection] can be a cost-effective strategy for ensuring safe drinking water supplies...to address [source water protection], the bill creates a new program in which states with primacy will conduct an assessment, coordinated with existing information and programs, to determine the vulnerability of sources of drinking water within state boundaries...designed to protect source water from threats identified during the assessment."

The 1997 Guidance also states "while these [Source Water Protection and Petition Programs] are voluntary, EPA believes it is wise for states to plan for protection programs at the same time they plan for and implement their SWAPs. Such simultaneous planning would provide both efficient use of taxpayers' SWAP funds and accountability to the public regarding productive use of source water assessment information." Also in the guidance is a statement that "the new prevention provisions of the Amendments has two key elements: (1) a clear state lead, with flexibility and resources to achieve results. This is necessary because prevention is ultimately about land use and water quality management, which generally are exercised at the state and local levels and (2) a strong ethic of public information and involvement within the state's decision making processes."

The 1997 Guidance describes all the tools in the amended SDWA for states to use to develop and implement source water protection programs. It reads: "in the 1996 Amendments to the SDWA, Congress included a number of important provisions related to SWP beyond the SWAPs including, (1) continuation of the Wellhead Protection Program (Section 1428), a new, optional petition program (Section 1454)... and (3) and authority for states to use DWSRF funds for source water protection programs [Sections 1452(g)(2)(b), and four subsections under Section 1452 (k)(1)-(A)(i),(A) (ii), (A)(iii), (D)]."

Finally, the 1997 Guidance included two chapters which fully described programs under the SDWA as well as other Federal programs that can assist states and localities implementing source water assessment and protection programs:

- Chapter Four describes the relationship between source water assessment and protection and other Public Water Supply Supervision (PWSS) Program efforts, including SDWA rulemaking efforts, Wellhead Protection and UIC.
- Chapter Five summarizes some of the programs outside of the SDWA, administered by EPA and other Federal agencies, that states can build on in developing and coordinating their source water programs. For example, it describes all of the tools under the Clean Water Act using the Watershed Approach components of water quality standards, monitoring programs, National Pollutant Discharge Elimination System (NPDES) Program, Nonpoint Source Program, Total Maximum Daily Load (TMDL) Program, National Estuary Program, Clean Lakes Program and the Wetlands Program. It also describes other EPA and Federal programs, many of which are jointly administered with the states.

**C. To utilize all of the state and Federal statutory authorities and tools to assist with state and local protection efforts, one critical activity is for states to take the lead in understanding the results of assessments, understand the status of source water protection actions at the state and local levels, and provide that information to the Federal government.**

While source water protection implementation will be primarily a local effort, the measures and other information in this guidance should assist EPA and states in collaborating with the many partners needed for source water protection. For example, states could use the maps of source water areas or the list of priority sources of contamination to partner with other state agencies, such as Agriculture or Transportation. The Federal government could use such information to partner with programs such as those managing Federal lands or Federal facilities. Collaboration could also occur for programs that can take direct protection actions under Federal statutes (e.g., Superfund) or through state statutes such as those relative to hazardous waste facilities.

In addition, states and the Federal government can target assistance for source water protection. For example, by understanding which communities have advanced implementation of a source water protection strategy, it would be possible to direct state assistance either to those communities doing more or to those doing less, depending upon a state's strategic approach. The information could also help EPA to target efforts to assist states with implementation of SWP.

## **6. Rationale for How the Measures and Other Information are Indicators to Help Answer the Key National Questions**

### ***Source Water Assessments and Source Water Areas***

*Question 1: Are the state source water assessments being completed under Section 1453 of the SDWA?*

Question 1 Information:

- 1.1 Mapped SWAs for CWSs by state. (Other information)
- 1.2 PWSs with complete assessments, and associated population served - cumulative. (Other information)

The requirements for a source water assessment for a PWS, under Section 1453 of the SDWA, were described in the 1997 Final Guidance to include these actions:

"delineate the boundaries of the areas providing source waters for PWSs, identify, to the extent practical, the origins of regulated and certain unregulated contaminants in the delineated area, determine the susceptibility of the PWS to such contaminants...make the results of the source water assessments available to the public."

That guidance also set forth several components of an approvable state program such as maps of delineated source water areas.

Each state must provide EPA with information regarding whether it is completing the assessments under its EPA approved program based on Sections 1452(k)(1)(c) and 1453 of the SDWA.

In addition, states and EPA can use the maps of source water areas as part of the source water assessments to demonstrate to other state and Federal programs where, geographically, they could prioritize protection actions. The mapped source water areas will permit other programs to overlay the locations of facilities addressed by their program (e.g., underground injection wells or Clean Water Act permitted sites) or locations of critical areas (e.g., wetlands) with these source water areas. Also, by placing source water areas in the same database as watershed areas, it will be easier to see how source water areas compare geographically to watersheds that are impaired or threatened, as defined under the Clean Water Act.

Thus, the visual overlay displays showing the proximity of source water areas and significant potential sources of contamination regulated by a program (e.g., underground storage tanks or landfills) may increase the likelihood that the program will take source water quality into consideration when making decisions.

States and EPA can therefore develop state-based and national GIS coverages and share these coverages with other programs, within the bounds of security considerations. EPA is requesting that the states provide their source water areas to EPA using a EPA/state jointly developed specific approach. (See the issues and answers regarding these procedures in

Appendix I under national Question 1.) EPA is continuing a process to develop clear guidelines for sharing source water area maps at the Federal level across programs.

### ***Threats to Source Waters***

*Question 2: What threats to sources of drinking water are being found in assessment results?*

Question 2 Measures:

- 2.1 For CWSs, most prevalent categories of significant potential sources of contamination (aggregated at the state level and nationally, using the assessment information, split by ground water and surface water systems). (PAM SDW-11)
- 2.2 For CWSs, most threatening categories of significant potential sources of contamination (aggregated at the state level and nationally, using the assessment information, split by ground water and surface water systems). (PAM SDW-11)

States and the Federal government can use these measures to target limited resources to focus source water program efforts on collaborating with programs that address potential sources of contamination that are most prevalent or most threatening to source waters. While some states do not have information on both measures, or have not yet analyzed their information in this way, these indicator measures should help guide such analyses. In addition, to the extent that states will be updating assessments, these measures form a recommendation for what minimum set of state-aggregated information may be useful to states and the Federal government.

With a prioritized list of sources of contamination, collaboration with other programs should be more effective in reducing risks to source waters. For example, states in the New England Region have identified underground storage tanks (USTs) as one of the most prevalent potential sources of contamination in ground water-based source water areas. Those states, the regional office and EPA Headquarters are now focusing efforts, such as inspections, to address USTs in ground water-based source water areas. In some cases, state and Federal governments can directly implement best management practices, such as in situations where the facilities are government-owned, or where land is government-owned, such as certain forested lands.

### ***Source Water Protection***

*Question 3: How are current and future drinking water supplies being protected?*

Question 3 Measures and Other Information:

- 3.1 Percent of CWSs that have source water protection strategies in place and are being implemented, and associated population served - cumulative. (PAM SDW-9)

- 3.2 For CWSs, percentage of source water areas that have source water protection strategies substantially implemented, and associated population served - cumulative. (Strategic Target F)
- 3.3 State source water protection activities. (Other information)

(Discussion for Questions 3 and 4 combined is presented below.)

*Question 4: Are source water protection actions making a difference to public health protection?*

Question 4 Measure:

- 4.1 Over time, percent change in CWSs or SWAs for CWSs, and associated population served, with substantial implementation of source water protection strategies (proxy for minimized risk to public health). (Strategic Target F)

Since Congress intended for the required assessments to lead to voluntary protection actions, which can reduce risks to source waters and thereby to public health, this guidance includes three measures of source water protection implementation: one at the state level and two at the local level. Unless assessments lead to voluntary protection actions, the purpose of the SWAP program described in Section 1453 of the SDWA will not be realized.

States and localities across many programs and agencies have implemented many source water protection actions to protect the source water for CWSs, at least since the early 1970s when the SDWA and CWA were enacted. The measures and other information in this guidance should permit states to document current and future actions at the state level, and thus can be summarized at state and national levels.

The two measures of local source water protection noted under Question 3 above measure two different statuses in each community for implementation of source water protection strategies: first, initial implementation, meaning some protection actions are occurring under a strategy; and second, substantial implementation actions occurring under that same or a modified strategy.

The key difference between each status for source waters of CWSs will be defined by each state. States should take the lead in defining when actions for implementing source water protection strategies will be deemed as meeting the substantial implementation level – and reported as such. This guidance provides a very broad definition of substantial implementation to guide development of more detailed state definitions. Although protection programs are voluntary, these two source water protection measures are based on state leadership in defining these statuses differently. Also, the measures establish the expectation that states will institute a process to acquire information sufficient to make judgements about the status of strategy implementation. This also implies the establishment of a state data system to maintain this information by CWS along with the ability to report to EPA.

A state's approach to the collection, storage and reporting of this information could be as basic as asking a local entity to "check-off" that a CWS is at the initial level or substantial level of implementation, using a state's definitions. This information could be collected by personnel doing sanitary surveys, possibly even using a "Personal Digital Assistant" to capture this information for each CWS and transfer it to a state database electronically.

To aggregate this information at the state level and provide it to EPA, states should structure information flow from a local entity to the state. That local entity likely would be a governmental unit or a water supplier. One possibility is for a state to rely on large CWSs to supply the information separately, the State Rural Water Association to provide information on the CWSs it works with, and county planners and health or environmental officials to supply information for the remaining CWSs. There are many other creative ways states can structure a relationship with their localities to gain information regarding the status of implementation of source water protection strategies for CWSs. EPA is working closely with ASDWA and GWPC to describe different state approaches or perhaps to develop new approaches.

Regarding the state narratives for state-level source water protection actions, states and the Federal government could possibly use this information to both understand the status of collaborative relationships with other state-level programs and non-government organizations, and increase the sharing of ideas across states on state-level strategic approaches.

For example, these narratives could explain the cooperative role of State Rural Water Associations in local source water protection strategy development and implementation. In many states, Rural Water Association staff are working full-time on source water protection implementation actions. A narrative that explains the state's connections to these efforts would help other states and the Federal government improve these relationships.

Alternatively, a state could emulate another state or group of states that are implementing specific approaches to program integration with the Clean Water Act. This information should also equip EPA with better information to explain to stakeholders the full range of source water protection actions at the state level and possibly inspire such stakeholders to assist states where there are untapped coordination opportunities.

Another use of the information on the status of state and local source water protection implementation is to set priorities at the state and Federal levels. As noted before, indicator measures could assist states in working with local communities, or assist EPA in working with the states to target staff and financial assistance toward those priorities. Targeting could either occur to assist communities with CWSs that have already reached the substantial level of implementation to maintain that status or to assist those communities not yet at that level, thereby increasing the pace of actions to attain that level of implementation.

This source water protection information is also important for state and Federal communications to senior program managers and stakeholders relative to reporting progress toward meeting the congressional goal for SWAPs. Thus, if states report that more communities have attained the substantial level of implementation of source water protection strategies, it can be reported, under these measures, that progress is being made toward minimizing risks to source waters and public health.

EPA realizes that measuring the status of local source water protection actions is a very rough proxy for measuring water quality changes. Increasing source water protection actions even to the substantial level as defined by a state will not guarantee either water quality improvements or necessarily forestall water quality degradation. Therefore, these measures do not substitute for current Federal and state programs that monitor for water quality, but are in addition to those programs. Source water protection programs are just beginning to grow based on completed source water assessments, and monitoring for regulated drinking water contaminants in source water areas is generally limited. Use of direct measures of water quality by states and the Federal government will be considered in future discussions of strategic plan measures of the results of source water protection implementation.

## **Part B. Summary of National and State Source Water Measures and Information**

The following pages present each of the source water protection measures and other information for the four national questions. This Part includes a description of how the information should be reported in the spreadsheet format; relevant definitions associated with the information to be reported; the requested information elements, or specific pieces of information; and the information quality expected.

**Question 1: Are the State Source Water Assessments Being Completed Under Section 1453 of the SDWA?**

	<b>How the Information Should Be Reported</b>	<b>Definitions</b>
<b>1.1 Mapped SWAs for CWSs by state. (Other information)</b>	States should report polygon information to EPA using the approach developed in cooperation with states in 2003. EPA works with each state on an agreed upon information management process for the transfer of SWA polygons.	<p><b>SWA polygons</b> are the mapped delineated portion of a ground water area or watershed around each drinking water source (one or more sources per SWA) that may contribute pollution to the water supply. The states should at least report the outer boundary of each SWA.</p> <p><i>For ground water-based CWSs</i>, the map would include land areas where, if pollutants are spilled or discharged on the surface, they could filter through the soil to the ground water and be drawn into a particular well. The ground water SWA is delineated in accordance with approved state programs under the Final National Source Water Assessment and Protection Programs Guidance, August 1997.</p> <p><i>For surface water-based CWSs</i>, the map presents the entire watershed area upstream of the CWS's intake structure to the boundary of the state borders, i.e., the topographic boundary up to the state's border. It is the perimeter of the catchment basin that provides water to the intake structure.</p> <p><b>Attribute information</b> includes the method the state used to delineate each SWA and other information to indicate the SWA characteristics and to align the polygon information with the other CWS and drinking water source inventory data already reported by the state to EPA's SDWIS/Fed database of drinking water information for the PWSS Program.</p>

Information Elements	Information Quality
<p>SWA polygons in digital format are digital shape files that electronically define the area that encompasses a ground water or surface water SWA. To be usable, the shape files should align to the unique PWS ID and drinking water source ID already available through SDWIS/Fed for each CWS water source.</p> <p>Key attribute information includes the SWA ID and name (linked to the CWS and facility IDs), the SWA type (e.g., ground water, surface water, or both), the delineation method code and the characteristics of the specific SWA (e.g., assessment zone, protection area, etc.). Additional attribute information that would be useful, but that is not essential to describing the SWA polygon, is defined in EPA's Polygon Data Model developed with the states in 2003.</p> <p>Metadata associated with the SWA polygons includes the delineation method used (e.g., calculated fixed radius) and the projection (e.g., Albers), used in mapping the polygon.</p>	<p>EPA will perform a quality assurance (QA) review of the information states provide to ensure that all requested information is present. EPA will convert the polygons to a standard projection, using the Reach Indexing Tool, for national consistency and convert attribute information to a standard table structure. EPA will only use SWA polygon information that is aligned to a SDWIS/Fed PWS and facility IDs.</p> <p>EPA is working closely with the states throughout the QA process to ensure the integrity of the polygon information, including the GIS formatting. See the questions on the polygon collection effort in Appendix I.</p>

**Question 1: Are the state Source Water Assessments Being Completed Under Section 1453 of the SDWA?**

	<b>How the Information Should Be Reported</b>	<b>Definitions</b>
<b>1.2 PWSs with complete assessments, and associated population served - cumulative. (Other information)</b>	<p>The information includes the percent of PWSs, and the associated population served, with assessments completed for all SWAs.</p> <p>The percentages will be computed based on the number of PWSs or SWAs for PWSs in SDWIS/Fed using the frozen database at the end of calendar 2000, the year in which EPA finished approving state Source Water Assessment Programs.</p> <p>This information should be reported until assessments are complete. Only states that reported less than 100 percent of their assessments complete in the previous reporting year will be expected to report assessments complete.</p>	<p>As defined in each state's EPA-approved SWAP, an assessment for a PWS can only be counted and considered as complete if the four steps of the assessment have been completed. The four steps include: (1) delineation of a SWA, (2) identification of significant potential sources of contamination, (3) determination of the PWSs susceptibility and (4) release of the results to the public.</p>

Information Elements	Information Quality
<p>The percentage of assessments complete by type of water system—CWS, non-transient non-community water system (NCWS) and transient NCWS. The percentages will be computed based on the number of systems in SDWIS/Fed using the frozen database from the end of 2000.</p> <p>The population served by those systems with complete assessments, for each water system type.</p>	<p>States should provide percentages of PWS or SWAs with completed assessments and the associated population served, from the state source water assessment database.</p>

**Question 2: What Threats to Sources of Drinking Water Are Being Found in Assessment Results?**

	How the Information Should Be Reported	Definitions
<p><b>2.1 For CWSs, most prevalent categories of significant potential sources of contamination (aggregated at the state level and nationally, using the assessment information, split by ground water and surface water systems). (PAM SDW-11)</b></p> <p><i>Note: reporting will likely be for either this measure or Measure 2.2; however, reporting for both is acceptable.</i></p>	<p>States should report the rank order of the <b>top 5</b> most prevalent categories of significant potential sources of contamination at CWSs or SWAs for CWSs in their state.</p> <p>States should provide a ranking from 1 through 5 of the most prevalent categories of significant potential sources of contamination, separately for surface water- and ground water-based water supplies.</p> <p>The rankings for each water source type should reflect actual state-generated information from the assessment results. For example, the potential contamination source identified at the highest percentage of CWS SWAs would be ranked number 1.</p> <p>Appendix III lists and defines the categories of significant potential sources of contamination.</p> <p><i>Note: this state information may or may not change after the first reporting year.</i></p>	<p><b>A significant potential source of contamination</b> is defined in a state's EPA-approved Source Water Assessment Program (based on options for the definition in EPA's Final National Source Water Assessment and Protection Programs Guidance of August 6, 1997 on pages 2-15, 2-16 and 2-17).</p> <p><b>Most prevalent potential sources of contamination</b></p> <p>For a CWS, or SWA for CWS:</p> <p>The most prevalent categories of potential sources of contamination are those found most often.</p> <p>For a State:</p> <p>The top-ranked categories of significant potential sources of contamination, aggregated for all CWSs or CWS SWAs, in the state. For example, if large-capacity septic systems are identified most frequently as a significant potential source of contamination, then these would be the top ranked category in the state.</p>
<p><b>2.2 For CWSs, most threatening categories of significant potential sources of contamination, (aggregated at the state level and nationally, using the assessment information, split by ground water and surface water systems). (PAM SDW-11)</b></p> <p><i>Note: reporting will likely be for either this measure or Measure 2.1; however, reporting for both is acceptable.</i></p>	<p>States should report the rank order of the <b>top 5</b> most threatening categories of significant potential sources of contamination at CWSs or SWAs for CWSs in their state.</p> <p>States should provide a ranking from 1 through 5 of the most threatening significant potential sources of contamination, separately for surface water- and ground water-based water supplies.</p> <p>The rankings for each water source type should reflect actual information from the assessment results. For example, the potential contamination source that threatens the highest percentage of CWS SWAs would be ranked number 1.</p> <p>Appendix III lists and defines the categories of significant potential sources of contamination.</p> <p><i>Note: this state information may or may not change after the first reporting year.</i></p>	<p><b>A significant potential source of contamination</b> is defined above.</p> <p><b>Most threatening categories of significant potential sources of contamination</b></p> <p>For a CWS or SWA for CWS:</p> <p>The most threatening significant potential sources of contamination as defined by a state refers to the categories of existing and potential sources of contamination that pose the most risk to the CWS or SWAs for a CWS found in an assessment. Some states defined "most threatening" in their approach to susceptibility in their EPA-approved SWAPs.</p> <p>For a State:</p> <p>The top-ranked categories of significant potential sources of contamination, aggregated for all CWSs or CWS SWAs, in the state. For example, if large-capacity septic systems are identified most frequently as a threatening significant potential source of contamination, then these would be the top ranked category in the state.</p>

Information Elements	Information Quality
<p>State rankings of the most prevalent categories of potential sources of contamination, 1-5, with separate rankings for ground water and surface water CWSs or SWAs for CWSs.</p>	<p>States should provide the information based on information derived from the state source water assessment database.</p>
<p>State rankings of the most threatening categories of significant potential sources of contamination, 1-5, with separate rankings for ground water and surface water CWSs or SWAs for CWSs.</p>	<p>States should provide the information based on information derived from the state source water assessment database.</p>

**Question 3: How Are Current and Future Drinking Water Supplies Being Protected?**

	How the Information Should Be Reported	Definitions
<p><b>3.1 Percent of CWSs that have source water protection strategies in place and are being implemented, and associated population served - cumulative. (PAM SDW-9)</b></p>	<p>The information for this measure should be the percent of CWSs or SWAs for CWSs, and the associated population served, with SWP strategies in place and being implemented, by water source type.</p>	<p>Source water protection strategies should be developed to guide protection actions. A <b>source water protection strategy for a CWS/SWA</b> addresses (as described in 3.2) the identified significant potential sources of contamination and other key actions based on the findings of a source water assessment or management plan and could provide the foundation for future protection strategies, to the extent necessary, for CWSs/SWAs of low relative risk or minimally threatened due to the natural characteristics of the source water. It can be based on an adopted written strategy, adopted written laws, or actions taken by various entities independent of one, written, strategy, and could include a process for updating assessment results. It can also be established through a source water management system or plan that is designed to reduce risks identified in a source water assessment, and that may include specific actions or indicators. A strategy for a CWS should either: (1) include an emergency response plan in compliance with the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (Bioterrorism Act); or (2) describe how it will comply with any relevant actions described in a state's emergency drinking water plan approved by EPA pursuant to federal regulations at 40 CFR 142.10(e), which may include a specific CWS-based emergency plan.</p> <p>A <b>source water area</b> is defined under Section 1453 of the Act and in each EPA-approved state SWAP program (this could be the same as a state-defined wellhead protection area for ground water-based CWSs in some states and could be a conjunctive delineation). Single source water areas can also be grouped into another area defined by the state or substate entity (e.g., wells in a single aquifer, intakes within the same watershed, etc.).</p>

Information Elements	Information Quality
<p>Percentage of CWSs or SWAs for CWSs, and the associated population served, with a strategy in place and being implemented.</p> <p>The universe for calculating the percentage is the number of CWSs and population served in the SDWIS/Fed frozen database at the end of the year for which the information is being reported.</p>	<p>States should provide the information based on information in their source water-related databases.</p>

**Question 3: How Are Current and Future Drinking Water Supplies Being Protected?**

	How the Information Should Be Reported	Definitions
<p><b>3.2 For CWSs, percentage of source water areas that have source water protection strategies substantially implemented, and associated population served - cumulative. (Strategic Target F)</b></p>	<p>The information for this measure should be the number or percent of CWSs or SWAs for CWSs, and related population, with substantially implemented SWP strategies, by water source type. Where numbers are reported, EPA will calculate percentages based on SDWIS data.</p>	<p><b><u>Substantial implementation is occurring when the state determines:</u></b> <i>for each CWS (and related population), strategic protection actions have been or are being taken to appropriately address state-identified significant sources of contamination, and possibly other concerns in a source water assessment, taking into consideration the sensitivity of the source water to contamination.</i></p> <p>Explanatory Definitions for Concepts in the Definition of Substantial Implementation:</p> <p><b>1. “State determines.”</b> The state decides, working with CWSs and their communities, when a CWS, separately or as a network or group, has achieved substantial implementation of a SWP strategy.</p> <p><b>2. “Strategic protection actions have been or are being taken to appropriately address.”</b> Strategic protection actions for CWSs are based on relevant SWP strategies. Actions may reflect implementation of a WHP plan, a local watershed plan that includes SWP, or a source water management control system or plan designed to reduce risks as detailed in a source water assessment, possibly with specific action indicators in the control system or plan. States may choose to determine a tailored set of minimum prevention actions, detailed in a publicly released document developed through a public involvement process consistent with state law. Specific actions could include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• zoning and related land-use measures that prohibit or restrict uses (e.g., by overlay zoning or related actions);</li> <li>• state or local health regulations (e.g., sanitary setbacks);</li> <li>• land acquisition/conservation easements;</li> <li>• enforceable (i.e., enforceable under state and/or local laws), or voluntary BMPs;</li> <li>• public outreach, involvement and education programs related to each significant threat; and/or</li> <li>• other actions taken under Federal or state statues such as under the Clean Water Act (e.g., TMDLs, NPS management).</li> </ul> <p>These appropriate actions may occur for one CWS or multiple CWSs and be: (a) state-wide, including Federal actions taken within a state; (b) regionally across jurisdictions; or (c) locally.</p> <p><b>3. “Identified significant sources of contamination”</b> can be the same as the “significant potential sources of contamination” defined in a state’s EPA-approved SWAP (see EPA’s national SWAP guidance of August 6, 1997 on pages 2-15, 2-16 and 2-17). Or the state can identify, for SWP, a more narrow subset of the significant sources of contamination.</p> <p><b>4. “Sensitivity of the source water to contamination.”</b> Whether the hydrology or hydrogeology provides a natural barrier (e.g., a confined aquifer) that minimizes the risk to public health directly, rather than, or in addition to, source water strategic protection actions.</p>

Information Elements	Information Quality
<p>Percentages of CWSs or SWAs for CWSs, and the associated population served, with a strategy that has been substantially implemented.</p> <p>The universe for calculating the percentage is the number of CWSs and population served in the SDWIS/Fed frozen database at the end of the year for which the information is being reported.</p>	<p>States should provide information based on information from their source water-related databases.</p>

**Question 3: How Are Current and Future Drinking Water Supplies Being Protected?**

	<b>How the Information Should Be Reported</b>	<b>Definitions</b>
<b>3.3 State source water protection activities.</b> <i>(Other information)</i>	States should provide a narrative report on state-level source water protection actions including, but not limited to: collaboration among state programs and with Federal programs; state and local partnerships with governments or private entities for protection; direct protection actions; and any other relevant actions during the year for which information is being reported.	This narrative information will permit states to document the current actions each year. Actions that will likely be described would encompass both actions at the state level to coordinate and leverage across state government and with Federal agencies, but also actions to increase local protection efforts. A full accounting of these actions will provide a good context for the percentages of CWSs or SWAs for CWSs with implemented or substantially implemented SWP strategies.

Information Elements	Information Quality
<p>A narrative description of how the state defines the concepts in measures 3.1 and 3.2, particularly what is meant by a “strategy developed and initially implemented,” and a “substantially implemented strategy.” The narrative should also describe the state’s source water protection activities for the year.</p>	<p>States should report using all available information and, likely, a variety of information sources.</p>

**Question 4: Are Source Water Protection Actions Making a Difference to Public Health Protection?**

	<b>How the Information Should Be Reported</b>	<b>Definitions</b>
<b><i>4.1 Over time, percent change in CWSs or SWAs for CWSs, and associated population served, with substantial implementation of source water protection strategies (proxy for minimized risk to public health). (Strategic Target F)</i></b>	Based on the state-level percentage provided in Measure 3.2, this measure reflects the year-to-year change in the percentages of CWSs or SWAs for CWSs with substantially implemented source water protection strategies.	Aggregated by state and then nationally, changes in the percentages CWSs or SWAs for CWSs with substantially implemented SWP strategies. The trend is the change in percentage.

Information Elements	Information Quality
<p>This measure includes no new information elements. Information from Measure 3.2, percentage of SWAs for CWSs with substantially implemented SWP strategies, will be used to compute the measure.</p>	<p>See information quality under Questions 3.1 and 3.2.</p>



## **Part C. Integrated Structure and Framework for Source Water Measures and Information Reporting**

Two options available to states for reporting source water information are: (1) completing spreadsheets and submitting them to EPA and (2) electronic reporting and data transfer using water system level data.

### **1. Spreadsheets and Narratives**

EPA will distribute the spreadsheets, which are essentially electronic versions of Appendix III. States are encouraged to provide the information in the spreadsheets, using this Guidance and the instructions provided with the spreadsheets. In addition, states are encouraged each year to provide, for Measure 3.3, a narrative description of their source water protection strategies and actions.

### **2. Optional Electronic Reporting on Pilot Basis using Water System Level Data**

At their discretion, states may use an electronic reporting approach, developed by EPA and GWPC based on a **Source Water Protection (SWP) data module** in 2003. This information may be at the system-level or the source water area-level and may vary by measure. Electronic reporting enables EPA to accept both the delineated SWA polygons in Geographic Information System (GIS) format and the CWS-level or SWA-level tabular data needed to develop the spreadsheets for the source water measures and other information. Of course, states could provide other information, such as for non-community water systems, if desired. Thus, if a state uses this Source Water Protection data module, EPA fully expects to generate the spreadsheets from the more detailed data submitted.

GWPC and OGWDW have generated a report on the 2003 Source Water Protection data module pilot effort, which is available to the states and regions upon request. A copy is available from Carl Reeverts (Reeverts.Carl@epa.gov).

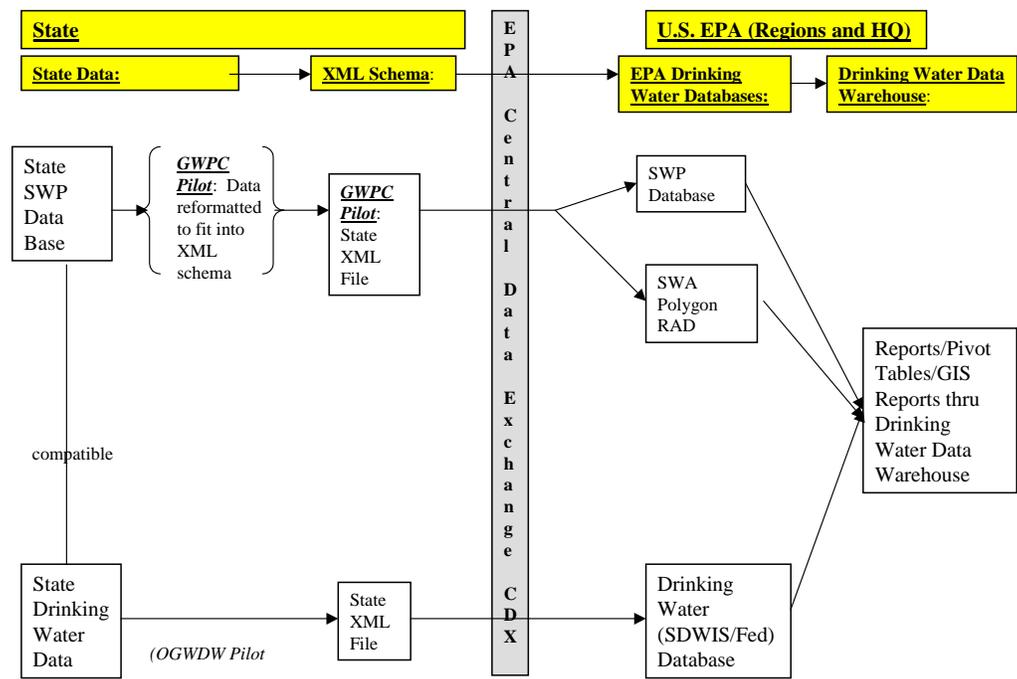
Following publication of this Guidance, EPA and GWPC fully expect to produce a document explaining the details of how to use the Source Water Protection data module for reporting. EPA intends to continue to work with GWPC through the FY 2008 reporting cycle to improve the system, making adjustments based on the suggestions in the pilot report and from subsequent discussions between EPA and state users.

The SWP data module is illustrated in the “SWP Database Model” diagram below. The data module will also include a table of the data elements and attributes EPA is collecting (not shown here). These tables will be included in detail in the subsequent EPA/GWPC document.

Source water assessment and protection data will flow from the states to EPA’s data module via an XML schema and through EPA’s central data exchange (CDX) into the SWP data module. GWPC supported development of the pilot XML schema consistent with EPA’s SWP data module and provided technical assistance and support to the pilot states in populating the XML schema. OGWDW, in turn, facilitated the transfer of the populated XML schema through CDX into EPA’s ORACLE-based SWP data module, which is kept in a secure database with a contractor.

Since this process is still in the pilot stage, EPA intends to provide whatever support is necessary to those states that volunteer to pursue this option.

**2. Source Water Protection Relational Database Management System (RDBMS):  
 – Conceptual Data Flow from State to SWP Database Thru CDX**



## **Appendix I—Issues and Answers Raised on the Initial Reporting Guidance of 2003**

There were various issues raised after the release of the Initial Reporting Guidance in August, 2003. Below are answers to those questions that are directly relevant to the Final Guidance.

### **General Issues**

#### **Information on community water systems (CWSs) and public water systems (PWSs).**

States will have the opportunity to share with EPA information on CWSs and, if a state prefers, also for PWSs. Because of limited resources for prevention, and since stakeholders are only beginning to focus such prevention efforts, initial efforts will likely focus mostly on CWSs. The mapped areas for assessments for non-CWSs are still critical in order to ensure that key Federal and state agencies know the locations of source water areas and assessment results for non-CWSs so they can implement prevention efforts in those areas. For example, the U.S. Department of Agriculture's Forest Service could implement such prevention actions for the non-CWSs operated by them or located near forests and provide effective prevention actions to protect the consumers of those non-CWSs.

#### **Measuring by source water areas (SWAs) or CWSs for measures other than Measure 1.2, Completed Assessments.**

While both source water area and CWS information is expected to address the information needs for these measures, states are encouraged to share one type of information only: either for CWSs or for source water areas. EPA intends to work with individual states using SWAs to convert to CWSs.

#### **Measuring EPA progress in integrating SDWA and CWA actions to protect the Nation's drinking waters and public health.**

States and EPA are working to fully utilize programs under these two statutes to help protect drinking water sources. The many actions EPA is undertaking are described in Section 4 of Part A. The National Water Program Guidance for 2005, which is available on the Office of Water's Web site, includes measures for EPA implementation to integrate these statutes.

#### **Substance of state-wide and national reports on program measures and other information.**

While state and national reports on the measures and other information will vary in content and structure, the reports should help state and national programs prioritize actions to better achieve program goals and objectives. These reports could help EPA and other Federal programs adjust the level of staff; financial resources; and technical assistance, training and technology transfer functions to help states and localities implement source water protection programs. For example, if agriculture is identified as being among the most prevalent significant sources of contamination in one region of the country, resources for programs addressing agriculture could be focused in that region. Or, if septic systems were identified as a prevalent potential source of contamination for ground water-based CWSs, national program resources could be directed to better address septic systems. Completing the first national reports should set in place a process for jointly working with states and their national organizations to produce

future reports. Likewise, if states decide to do reports, this could form a process for jointly working across state agencies and with local communities to gather information relevant for source water protection.

### **Reporting using “population” as a metric for source water assessments completed and for source water protection implementation.**

The Guidance includes reporting both for water systems and for population served by those systems. This should permit state and national reports to use summary information that includes both; that is, the populations associated with a particular number or percentage of water systems. Just as the national reports would be based on the water system information in SDWIS, so would the population information.

### **Reporting on future sources of drinking water, either ground water or surface water.**

There is no expected reporting under this Guidance for waters that a state has not assessed either under its SWAP Program or under any updated assessments. However, while the Source Water Assessment Program required by the 1996 Amendments to the SDWA focused on current sources of drinking water as delineated under EPA-approved SWAP programs, EPA’s 1997 SWAP Guidance recommended updates to assessments including assessments for new drinking water systems. The SWAP Program is not intended to deter states from prudent planning for future water supplies that may focus protection efforts in a comprehensive protection approach on surface and ground waters that are not now used for drinking water, but may be in the future.

### **Question 1: Are the State Source Water Assessments Being Completed under Section 1453 of the SDWA?**

#### **Source water areas for assessment and/or protection.**

For the polygon information collection for all states, EPA expects to accept those areas the state will share so long as it is clear what is being shared and how it was developed. At a minimum, EPA requests the SWA boundaries used by a state in developing its source water assessments (i.e., the area in which the state conducted its most detailed contaminant source inventory and susceptibility determination). This could include multiple delineation zones nested into one outer source water area boundary. Since the delineation methods for CWSs of similar size vary dramatically by state, EPA intends to work with each state based on the state’s information. States that have separate SWA boundaries for assessments, as compared to boundaries for protection, can submit both. EPA has not identified information needs for separate source water area boundaries, but expects to make provisions for identifying such separate boundaries in the Agency’s SWA information repository, which is with a contractor and will be secure.

#### **Availability of mapped SWAs to EPA programs, Federal agencies and state programs.**

One of the key benefits of making mapped SWAs for CWSs available to Federal and state agencies is that knowing the location of such areas could help these agencies focus future assessment and prevention actions within SWAs. EPA’s objective is to build a nationally-consistent geospatial data coverage to represent, for the PWSS Program, the intake and well inventory point locations and SWAs. EPA recognizes its responsibility to manage sensitive locational information in a secure manner. Therefore, EPA expects to implement a

policy which will both achieve the benefits of making the SWAs available to EPA programs and Federal agencies, and ensure that the information will be used in a responsible manner.

### **What is the status of the SWA polygon information collection?**

OGWDW initiated the development of national GIS coverage of the state-delineated source water areas in October 2002. As of December, 2004 EPA has GIS coverages of some or all the SWAs from 24 states. A second round of SWA information collection will continue to be voluntary for the states. All SWA polygon information collection from the states will be coordinated through the EPA regions.

### **How will the polygon information received from the states be processed and where will it be stored?**

OGWDW expects to store the SWA polygon shape files and associated attribute information from the states in a secure server developed and maintained by Research Triangle Institute (RTI), a contractor to EPA. OGWDW expects to hold the validated SWA polygon information in the secure server at RTI until OGWDW and each state agrees that it is appropriate to transfer it to a server at EPA for EPA use.

The process of soliciting and validating the SWA information received from each state involves a number of steps:

- OGWDW expects to first pre-screen the raw state information to align it to locational information already submitted by the states to SDWIS/Fed. Since each state's file format and attribute information are unique, OGWDW intends to work as necessary with the individual state to resolve information and format consistency issues.
- After aligning the state information to SDWIS/Fed, RTI should use software to convert each shape file to a standard geographic projection that identifies a unique area. This should be used to populate the database, along with applicable Federal Geographic Data Committee (FGDC) data and other attribute data. The polygons and their attributes should not be altered from what the state provides to EPA. Data gaps should be addressed on a case-by-case basis with the states.
- Finally, EPA expects to provide its geospatial projection and associated attribute table to the state for review. OGWDW is requesting that each state affirm that EPA's representation of the state data is consistent with what the state is using.

### **What if the polygons are not tagged specifically to SDWIS/Fed public water supply identification numbers?**

EPA intends to only use SWA polygon information that is aligned to SDWIS/Fed PWS and facility IDs. Other than aligning the information to the existing inventory records in SDWIS/Fed, all other information that EPA will use should be converted (through collaboration with the regions and states) to a standard table structure.

### **What if national and state maps do not agree?**

OGWDW intends to maintain SWA information from a state, and EPA will not change the shape of any state polygons. It is possible that OGWDW will maintain converted SWA polygon information that has been affirmed by the state as representative of the data maintained by the

state. OGWDW will likely also maintain a record of when the information was received from the state to assure continuing information comparability. Updates to OGWDW's SWA database will likely be based only on information updates received from the states.

### **Why is the measure of Tribal assessments completed not included in this Guidance?**

While source water assessments for public water supplies on tribal lands were not required, EPA's 1997 Final National Source Water Assessment and Protection Programs Guidance recommended that "each tribe implement such a program to the extent appropriate resources are available to do so."

Federal Direct Implementation programs have been working with tribes to do assessments and, in some cases, have done much of the actual assessment work in cooperation with tribal staff. Because this Final Guidance is written for states, and there is a separate overall EPA Tribal Strategic Plan with measures, information on the tribal measure is not included here. The measure for tribal assessments is PAM SDW-10 in the National Water Program Guidance for 2006, "number of Tribal community water systems that have completed a source water assessment consistent with national guidelines."

### **Question 2: What Threats to Sources of Drinking Water Are Being Found in Assessment Results?**

#### **Measuring most prevalent and most threatening significant potential sources of contamination.**

Some states may find it difficult to summarize results on the significant potential sources of contamination identified in their source water assessments. However, this information is useful in helping to focus the appropriate state and Federal resources for prevention actions.

Based on a state's approved SWAP, there is a possibility that states will only have one data set and not the other, e.g., most prevalent or most threatening, but not both. However, both are included in the measures so all states can report using their current data system.

For these measures, states are strongly encouraged to share information by ranking the top five categories of significant potential sources of contamination in source water areas for CWSs or for CWSs. Providing this information will increase its utility to states and the Federal government to focus protection actions relative to priority sources of contamination.

#### **Eliminate from PAM 11 in the upcoming 2006 National Water Program Guidance the most threatening categories of sources of contamination.**

As noted above, while some states may only be able to report the most prevalent sources of contamination, other states may only have aggregated information on the most threatening sources. At the state and national levels, understanding the differences in the categories will be important. The most prevalent category can be a proxy for the most threatening category, but not a substitute. If a state defined the most threatening sources in its SWAP Program, that information should be critical at the state level. At the national level, it is useful to know how many states will report similar categories of information. With a substantial number of states reporting this information, possibly even a third, it should provide the national program an understanding of whether the top five categories of most prevalent sources of contamination are different than or similar to the most threatening categories.

### **Question 3: How Are Current and Future Drinking Water Supplies Being Protected?**

#### **Counting when a source water protection strategy is in place and initial implementation is occurring for a CWS(s) or SWA(s) of a CWS(s).**

While this final Guidance provides flexibility to states in defining this status, the key ingredient is that the state have a clear definition of a SWP strategy in place. Source water protection strategies should be developed to guide protection actions. A source water protection strategy for a CWS/SWA addresses identified significant potential sources of contamination and other key actions based on the findings of a source water assessment or management plan, and could provide for future protection strategies, to the extent necessary, for CWSs/SWAs of low relative risk or minimally threatened due to the natural characteristics of the source water. It can be based on an adopted written strategy, adopted written laws, or actions taken by various entities independent of one, written, strategy, and could include a process for updating assessment results. It can also be established through a source water management control system or plan designed to reduce risks as detailed in a source water assessment, possibly with specific action indicators in the control system or plan. A strategy for a CWS should either: (1) include an emergency response plan in compliance with the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (Bioterrorism Act); or (2) describe how it will comply with any relevant actions described in a state's emergency drinking water plan approved by EPA pursuant to federal regulations at 40 CFR 142.10(e), which may include a specific CWS-based emergency plan.

Source water protection actions can be implemented either before, during, or after a strategy has been developed; however, ongoing implementation should occur for it to be countable. For example, most CWSs are implementing source water protection actions in delineated source water areas for specific sources of contamination, such as point sources (shallow underground injection wells) or nonpoint sources (stormwater runoff). Such program actions may have been in place prior to source water protection strategy development, but are ongoing. Therefore, for CWSs or SWAs for CWSs, we fully expect to count them as achieving initial implementation if such actions are ongoing, and a strategy is in place.

#### **Necessity of including a contingency plan or CWS-specific emergency plan in a source water protection strategy for a CWS.**

As noted in the previous answer, for CWSs covered by the Public Health Security and Bioterrorism Preparedness and Response Act of 2002, this Guidance states that a strategy is not counted unless it is in compliance with that Act. For all other CWSs, the Guidance states that a "State, substate, or CWS-specific emergency plan should be in place." Contingency planning has been a part of the SDWA Section 1428 since 1986 for ground water-based PWSs covered by EPA-approved state wellhead protection programs. Nothing in the 1996 Amendments to the SDWA or in the 2002 Bioterrorism Act changed that language in Section 1428.

#### **Measuring substantial implementation of source water protection strategies as a proxy for minimizing risks to public health in a SWA.**

To measure "substantial implementation," this Guidance recommends that states define substantial implementation of a source water protection strategy using, as a beginning point, the definition in Part B (which is also in Appendix IV). States will have great latitude to set policies for determining which sources of contamination are significant for protection actions and for

determining the nature and extent of the actions needed to meet the substantial level of strategy implementation.

The assumption underlying this measure is that substantial implementation of protection actions that address significant sources of contamination will reduce loadings of contaminants to source waters. Thus, as loadings are reduced, the quality of waters should be maintained or increase, and risks to public health should decrease, or at least be maintained at current levels.

It would be better to measure risk minimization directly, using water quality changes. However, there is very limited monitoring data available to do this, and future resources to implement such a monitoring system are uncertain.

EPA and the states could use other information to characterize risk changes also, such as increases or decreases in watershed ratings described in the CWA Section 305(b)/303(d) biennial reports, or contamination detects and compliance rates reported in state or Federal drinking water supply databases.

**States will likely establish more or less stringent definitions for the content of source water protection strategies, strategies initially implemented, or strategies substantially implemented.**

Providing states flexibility in these definitions is critical, given the lack of statutory requirements. This could indeed lead to different definitions. State narrative information, however, should permit EPA to explain in any report the variation among the states in the percentages of CWSs at the initial or substantial levels of implementation. It should not be assumed that states with more stringent definitions will have lower numeric results. Those states may, in fact, have the same or better results due either to past or current implementation of preventive actions that meet the more stringent definitions.

**Reporting on strategies initially implemented should permit states to count CWSs that only have a strategy in place, or only have protection actions and no strategy.**

State definitions of a strategy initially implemented should include protection actions already implemented, and in fact, could constitute a strategy as well as implementation. That is, by doing the initial protection actions for a CWS, the totality of these actions can constitute the strategy. This may be more appropriate where there are only a few sources of contamination that are significant and a few source water protection actions would be needed to address them.

For a community that has a written strategy, but has done nothing to implement it, either before or after the strategy was established, we fully expect not to count it as having a strategy initially implemented.

**Question 4: Are Source Water Protection  
Actions Making a Difference to Public Health Protection?**

**Measuring how SWP actions will make a difference to public health protection.**

As noted above, EPA expects to use substantial implementation of source water protection strategies as a proxy for minimizing risk to public health. To use these measures nationally each year, states would need to report the extent to which these strategies are being implemented, i.e., the percent of CWSs or SWAs for CWSs achieving substantial implementation of SWP strategies. The percentage change from year-to-year, therefore, would

measure whether prevention actions are making a difference. This percentage change would provide a general description regarding whether or not past prevention actions are making a difference in minimizing risks to public health.

## **Reporting and Database Issues**

### **For the 2006, 2007, and 2008 reporting, what are the states' reporting options?**

As described in Part C of this Guidance, states may: (1) use the spreadsheet files provided by EPA, or (2) report using the source water reporting module process. The source water reporting module will likely continue to be piloted for the 2006 to 2008 period and any state may use it. Since information provided via the reporting module is for each CWS, or for each SWA for a CWS (or for PWSs if a state prefers), more information is provided to EPA than just the spreadsheet summary data. EPA expects to place the SWP module information in a secure database with a contractor until a place in EPA's database has been developed. EPA would then generate the spreadsheet of summary information, in cooperation with the states, so comparable information is available for analysis across all states.

For states that want to continue using the pilot source water reporting module, EPA has developed a source water data framework for efficient and cost-effective sharing of source water data elements between states and EPA. Working with the Ground Water Protection Council, EPA has developed and pilot tested a data exchange mechanism to accommodate the transfer of state data to EPA's central data exchange (CDX), using an XML schema that converts state-specific formats to the EPA standard.

### **Is the reporting required?**

For Strategic Measure F of the 2003 to 2008 Strategic Plan (Substantial Implementation of Source Water Protection Strategies), EPA will likely report on this measure as part of any report under the Strategic Plan. States are obligated, to the extent that they obligate themselves through agreements with EPA, to provide information for this measure or for the Program Activity Measures or other information. EPA strongly recommends that states provide this information, whether required by agreement or not.

Every state must report on assessments completed. States were required under SDWA Section 1453 to implement the Source Water Assessment Program and all spent funds for such a program under Section 1452(k)(1)(c), the Drinking Water State Revolving Fund (DWSRF). States therefore have an obligation to share information with the Federal government regarding the status of completing the assessment program.

### **Information quality.**

Information is expected to be of high quality, but it is understood that as the quality of the information increases, the burden on the states to provide the information increases as well. EPA strongly recommends that states collect and store the information for each CWS in a state-level database. Various processes can be developed to aggregate information. For measures and other information on the assessment program, states should be able to aggregate information collected, although there are a variety of challenges for states in the endeavor, depending on how the assessment information is stored at the state level. For the protection measures for sub-state areas, such as for CWSs, states may need to establish a process for collecting local information. One option could be to use a state-based certification

process, or a local self-certification process for CWSs, on the status of local source water protection implementation actions.

**Reporting on CWSs that are in communities substantially implementing protection actions will be difficult given resource limitations and practical issues in obtaining local protection information, such as reporting capability.**

States are requested in this Guidance to back up summary information reported to EPA with CWS-by-CWS information. States can report this more detailed information if they choose to do so. The effort needed to document local specific actions is a significant burden, and many states will likely not have such a data system. Instead, states are likely to have a definition of what constitutes implementation at different levels, and report whether a CWS is or is not meeting that definition.

EPA understands the states' financial constraints based on previous published reports from the states and their national organizations. However, for the status of protection actions to be understood at the state and national levels, EPA recommends that states develop some systematic approach to collecting the information. That approach does not have to be very elaborate. A state could, for example, ask CWS managers to report whether the community for the CWS meets the definitions of implementation levels set by the state.

**Using best professional judgement as compared to having a state database to back up state reported summary information on the levels of source water protection implementation.**

When states report summary information on assessments completed, that information is based on a database. Similarly, the quality of summary information on the levels of source water protection implementation will be much better if, in fact, states will have the backup information specifically on which CWSs are at which status. Without this backup information, states will not be able to target assistance to CWSs, nor be able to identify, if asked, the basis for the summary information.

## Appendix II–Crosswalk of National Questions, Measures, and Information Elements

Question	Source Water Measures and Other Information	Information Element
1. Are the state source water assessments being completed under Section 1453 of the SDWA?	1.1 Mapped SWAs for CWSs by state. (Other information)	SWA polygons in digitized format (ground water and surface water).  Attribute information and other relevant information
	1.2 PWSs with complete assessments, and associated population served - cumulative. (Other information)	Percent of PWSs with complete assessments and the associated population served.
2. What threats to sources of drinking water are being found in assessment results?	2.1 For CWSs, most prevalent categories of significant potential sources of contamination (aggregated at the state level and nationally, using the assessment information, split by ground water and surface water systems). (PAM SDW-11)	State rankings of the top 5 most prevalent categories of potential sources of contamination for CWSs or SWAs for CWSs (using national agreed upon list attached to this guidance).
	2.2 For CWSs, most threatening categories of significant potential sources of contamination (aggregated at the state level and nationally, using the assessment information, split by ground water and surface water systems). (PAM SDW-11)	State rankings of the top 5 most threatening categories of potential sources of contamination for CWSs or SWAs for CWSs (using national agreed upon list attached to this guidance).
3. How are current and future drinking water supplies being protected?	3.1 Percent of CWSs that have source water protection strategies in place and are being implemented, and associated population served - cumulative. (PAM SDW-9)	Percent of CWSs or SWAs for CWSs, and the associated population served, with a strategy in place and being implemented.
	3.2 For CWSs, percentage of source water areas that have source water protection strategies substantially implemented, and associated population served - cumulative. (Strategic Target F)	Percent of CWSs or SWAs for CWSs, and the associated population served, with a strategy that has been substantially implemented.
	3.3 State source water protection activities. (Other information)	State narrative.
4. Are source water protection actions making a difference to public health protection?	4.1 Over time, percent change in CWSs or SWAs for CWSs, and associated population served, with substantial implementation of source water protection strategies (proxy for minimized risk to public health). (Strategic Target F)	No new information elements. Percent change in substantial strategy implementation is a proxy for minimized risk to public health.  (Information elements under 3.2 above.)

See Part B for definitions of the information elements.

## Appendix III–Representations of Reporting Spreadsheets

The following pages are generic representations of the spreadsheets that regions and states should use to report the indicator measures and other information. Additional information to be contained in or with the spreadsheet files to be distributed includes:

- SDWIS/Fed data on the number of systems and population:
  - December 2000 frozen database information for assessments completed (Measure 1.2).
  - The most recent year's fourth quarter frozen database information for the source water protection measures (Measures 3.1 and 3.2).
- Each state's prior year data, to be used as a reference, beginning in Year 2 of the information collection.
- Complete instructions for filling out the spreadsheets that reflect the definitions and other information in Part B.
- Each spreadsheet will indicate the FY for which the information is to be reported.

Note: This collection of information will be consistent with the Paperwork Reduction Act.

**Complete Source Water Assessments  
Public Water Systems (PWSs) or Source Water Areas for PWSs**

-----  
States that reported 100% for all three rows in the previous year do not  
need to fill in this table

State \_\_\_\_\_

Reporting level (circle one): System / Source water area

	Percent of Systems/SWAs with Complete Assessments	Population Served
Community water systems		
Non-transient non-community water systems		
Transient non-community water systems		

**Most Prevalent Significant Potential Sources of Contamination**

-----  
**Pick and mark the top five in priority order number 1 through 5 source categories of CWSs or SWAs for CWSs**

**State:** \_\_\_\_\_

Significant Potential Sources of Contamination	SWAs		CWSs	
	GW-based	SW-based	GW-based	SW-based
<b>1. AGRICULTURE</b>				
Concentrated animal feeding operations				
Other animal feeding operations				
Grazing				
Crop production				
Fertilizer/pesticide/herbicide applications				
Farm chemicals and equipment (storage and sales)				
Agricultural drainage				
Agricultural irrigation wells				
Aquaculture				
Silviculture/managed forests				
<b>2. WASTEWATER</b>				
Municipal sanitary waste treatment and disposal (commercial, domestic, and industrial waste)				
Septic (on-site sewage disposal) systems				
Large-capacity septic systems				
Sewer collection systems/sewer lines				
Combined sewer overflows				
Land application of sludge (offsite of waste treatment plants)				
Class I injection wells				
<b>3. STORMWATER</b>				
Stormwater discharges (permitted and others)				
Stormwater retention basins				
<b>4. COMMERCIAL/INDUSTRIAL</b>				
Automobile related activities				
Gas stations (includes historic gas stations)				
Other automotive activities				
Chemical/petroleum processing/storage				
Dry cleaners				
Manufacturing				
Wood/lumber/paper processing				
Industrial discharge and disposal (process water); includes land treatment				
Underground storage tanks (not leaking)				
Above ground storage tanks (not leaking)				
Chemical and petroleum pipelines				
Landscape maintenance				
Mining/resource extraction				
Active mining				
Inactive/abandoned mining				
Sand and gravel mining				
Petroleum extraction (includes Class II wells)				

**Most Prevalent Significant Potential Sources of Contamination**

-----  
**Pick and mark the top five in priority order number 1 through 5 source categories of CWSs or SWAs for CWSs**

**State:** \_\_\_\_\_

Significant Potential Sources of Contamination	SWAs		CWSs	
	GW-based	SW-based	GW-based	SW-based
<b>5. TRANSPORTATION</b>				
Airports				
Railroads/subways				
Freeways/State highways				
Roads/streets				
Transportation maintenance facilities				
Ports/harbors				
<b>6. WASTE PROCESSING/MANAGEMENT</b>				
Landfills				
Hazardous waste disposal sites				
Unauthorized dumping				
Junkyards				
<b>7. CONTAMINATED SITES</b>				
Leaking underground storage tanks				
Known contamination sites/plumes/spills				
<b>8. PHYSICAL LAND &amp; WATER ALTERATION</b>				
Erosion and sedimentation (includes construction and sediment resuspension)				
Production wells				
Injection wells/dry wells/sumps/abandoned wells				
<b>9. RESIDENTIAL HOUSING</b>				
Underground and above ground storage tanks				
Septic (on-site sewage disposal) systems				
Lawn and garden care				
<b>10. RECREATION</b>				
Recreation activities (other than boating)				
Golf courses				
Surface water recreation areas				
Body contact recreation areas				
Recreational boating areas				
<b>11. OTHER MAJOR FACILITIES</b>				
Military installations				
Federal facilities				
Utilities/powerplants				
Hospitals				
Laboratories				
Cemeteries and mortuaries				
<b>12. MISC. ENVIRONMENTAL THREATS</b>				
Natural sources (e.g., arsenic, radon, wildlife)				
Atmospheric Deposition				

**Most Threatening Significant Potential Sources of Contamination**

-----  
**Pick and mark the top five in priority order number 1 through 5 source categories of CWSs or SWAs for CWSs**

**State:** \_\_\_\_\_

Significant Potential Sources of Contamination	SWAs		CWSs	
	GW-based	SW-based	GW-based	SW-based
<b>1. AGRICULTURE</b>				
Concentrated animal feeding operations				
Other animal feeding operations				
Grazing				
Crop production				
Fertilizer/pesticide/herbicide applications				
Farm chemicals and equipment (storage and sales)				
Agricultural drainage				
Agricultural irrigation wells				
Aquaculture				
Silviculture/managed forests				
<b>2. WASTEWATER</b>				
Municipal sanitary waste treatment and disposal (commercial, domestic, and industrial waste)				
Septic (on-site sewage disposal) systems				
Large-capacity septic systems				
Sewer collection systems/sewer lines				
Combined sewer overflows				
Land application of sludge (offsite of waste treatment plants)				
Class I injection wells				
<b>3. STORMWATER</b>				
Stormwater discharges (permitted and others)				
Stormwater retention basins				
<b>4. COMMERCIAL/INDUSTRIAL</b>				
Automobile related activities				
Gas stations (includes historic gas stations)				
Other automotive activities				
Chemical/petroleum processing/storage				
Dry cleaners				
Manufacturing				
Wood/lumber/paper processing				
Industrial discharge and disposal (process water); includes land treatment				
Underground storage tanks (not leaking)				
Above ground storage tanks (not leaking)				
Chemical and petroleum pipelines				
Landscape maintenance				
Mining/resource extraction				
Active mining				
Inactive/abandoned mining				
Sand and gravel mining				
Petroleum extraction (includes Class II wells)				

**Most Threatening Significant Potential Sources of Contamination**

-----  
**Pick and mark the top five in priority order number 1 through 5 source categories of CWSs or SWAs for CWSs**

**State:** \_\_\_\_\_

Significant Potential Sources of Contamination	SWAs		CWSs	
	GW-based	SW-based	GW-based	SW-based
<b>5. TRANSPORTATION</b>				
Airports				
Railroads/subways				
Freeways/State highways				
Roads/streets				
Transportation maintenance facilities				
Ports/harbors				
<b>6. WASTE PROCESSING/MANAGEMENT</b>				
Landfills				
Hazardous waste disposal sites				
Unauthorized dumping				
Junkyards				
<b>7. CONTAMINATED SITES</b>				
Leaking underground storage tanks				
Known contamination sites/plumes/spills				
<b>8. PHYSICAL LAND &amp; WATER ALTERATION</b>				
Erosion and sedimentation (includes construction and sediment resuspension)				
Production wells				
Injection wells/dry wells/sumps/abandoned wells				
<b>9. RESIDENTIAL HOUSING</b>				
Underground and above ground storage tanks				
Septic (on-site sewage disposal) systems				
Lawn and garden care				
<b>10. RECREATION</b>				
Recreation activities (other than boating)				
Golf courses				
Surface water recreation areas				
Body contact recreation areas				
Recreational boating areas				
<b>11. OTHER MAJOR FACILITIES</b>				
Military installations				
Federal facilities				
Utilities/powerplants				
Hospitals				
Laboratories				
Cemeteries and mortuaries				
<b>12. MISC. ENVIRONMENTAL THREATS</b>				
Natural sources (e.g., arsenic, radon, wildlife)				
Atmospheric Deposition				

<b>Explanatory Notes on Specific Categories for Significant Potential Sources of Contamination for those that needed examples</b>	
<b>Sources</b>	<b>Notes</b>
<b>1. AGRICULTURE</b>	
Concentrated animal feeding operations	
Other animal feeding operations	Includes confined animal feeding operations.
Grazing	Includes riparian and/or upland pasture and range grazing.
Crop production	Includes irrigated and non-irrigated crop production and specialty crop production (e.g., horticulture, citrus, nuts, fruits).
Fertilizer/pesticide/herbicide applications	
Farm chemicals and equipment (storage and sales)	
Agricultural drainage	
Agricultural irrigation wells	
Aquaculture	
Silviculture/managed forests	Includes harvesting, restoration, residue management; forest management (e.g., pumped drainage, fertilization, pesticide application); logging road construction/ maintenance; and silvicultural point sources.
<b>2. WASTEWATER</b>	
Municipal sanitary waste treatment and disposal (commercial, domestic, and industrial waste)	Includes dry and/or wet weather discharges of commercial, domestic, and industrial waste from major and/or minor municipal point sources; Includes on site lagoons/liquid wastes and land disposal of sludge ( <i>offsite sludge application should be noted separately</i> ). Also includes package plants.
Septic (on-site sewage disposal) systems	
Large-capacity septic systems	
Sewer collection systems/sewer lines	Includes collection system failures and leaking sewer lines.
Combined sewer overflows	
Land application of sludge (offsite of waste treatment plants)	
Class I injection wells	
<b>3. STORMWATER</b>	
Stormwater discharges (permitted and others)	Includes permitted nonindustrial and industrial discharges and other urban runoff/storm sewers; also includes illicit connections, illegal hookups, and dry weather flows.
Stormwater retention basins	
<b>4. COMMERCIAL/INDUSTRIAL</b>	
Automobile related activities	
Gas stations (includes historic gas stations)	
Other automotive activities	
Chemical/petroleum processing/storage	
Dry cleaners	
Manufacturing	Includes electronics manufacturing, plastics/synthetics producers, metal plating and finishing, homes, and furniture.
Wood/lumber/paper processing	
Industrial discharge and disposal (process water); includes land treatment	Includes major and minor industrial point sources, and land treatment of process water.
Underground storage tanks (not leaking)	
Above ground storage tanks (not leaking)	
Chemical and petroleum pipelines	
Landscape maintenance	Includes landscaping around commercial facilities such as malls and office parks.

<b>Explanatory Notes on Specific Categories for Significant Potential Sources of Contamination for those that needed examples</b>	
Mining/resource extraction	
Active mining	Includes active surface mining, subsurface mining, placer mining, dredge mining activities, and Class III injection wells; mill tailings, mine tailings, and acid mine drainage.
Inactive/abandoned mining	Includes the impacts of past surface, subsurface, placer, and dredge mining activities and associated mine tailings, mill tailings, and acid mine drainage.
Sand and gravel mining	
Petroleum extraction (includes Class II wells)	
<b>5. TRANSPORTATION</b>	
Airports	
Railroads/subways	
Freeways/State highways	
Roads/streets	
Transportation maintenance facilities	Includes salt storage and equipment storage and maintenance.
Ports/harbors	
<b>6. WASTE PROCESSING/MANAGEMENT</b>	
Landfills	
Hazardous waste disposal sites	
Unauthorized dumping	
Junkyards	
<b>7. CONTAMINATED SITES</b>	
Leaking underground storage tanks	
Known contamination sites/plumes/spills	
<b>8. PHYSICAL LAND &amp; WATER ALTERATION</b>	
Erosion and sedimentation (includes construction and sediment resuspension)	Includes highway, road, and bridge construction and land development and sediment resuspension.
Production wells	Includes wells for withdrawing ground water.
Injection wells/dry wells/sumps/abandoned wells	
<b>9. RESIDENTIAL HOUSING</b>	
Underground and above ground storage tanks	
Septic (on-site sewage disposal) systems	Large-capacity septic systems should be included under wastewater.
Lawn and garden care	
<b>10. RECREATION</b>	
Recreation activities (other than boating)	
Golf courses	
Surface water recreation areas	
Body contact recreation areas	
Recreational boating areas	
<b>11. OTHER MAJOR FACILITIES</b>	
Military installations	
Federal facilities	
Utilities/powerplants	
Hospitals	
Laboratories	Includes research labs, private biomedical labs, and national labs.
Cemeteries and mortuaries	
<b>12. MISC. ENVIRONMENTAL THREATS</b>	
Natural sources (e.g., arsenic, radon, wildlife)	
Atmospheric Deposition	

Percent of CWSs or SWAs for CWSs with Source Water Protection Strategies In Place and Being Implemented				
State: _____				
Level of Implementation	Strategy in Place and Being Implemented		Substantial Strategy Implementation	
(Columns or rows do not need to add to 100%)				
	CWS/SWA for CWS	Population	CWS/SWA for CWS	Population
Ground water-based				
Surface water-based				
Total				

Percent Change in CWSs or SWAs for CWSs Achieving Substantial Implementation of Source Water Protection Strategies		
State: _____		
	Substantial Strategy Implementation	
	CWS/SWA for CWS	Population
State total (current year)		
Percent change* $\frac{\text{current year} - \text{previous year}}{\text{first year}}$		
* EPA will calculate the percent change based on the previous and first years' data reported by the state.		

## Appendix IV–Definition of Substantial Implementation of a SWP Strategy

*Note: this is identical text to that presented under Measure 3.2 in Part B.*

***Substantial implementation is occurring when the state determines:*** for each CWS (and related population), strategic protection actions have been or are being taken to appropriately address state-identified significant sources of contamination, and possibly other concerns in a source water assessment, taking into consideration the sensitivity of the source water to contamination.

Explanatory Definitions for Concepts in the Definition of Substantial Implementation:

**1. “State determines.”** The state decides, working with CWSs and their communities, when a CWS, separately or as a network or group, has achieved substantial implementation of a SWP strategy.

**2. “Strategic protection actions have been or are being taken to appropriately address.”** Strategic protection actions for CWSs are based on relevant SWP strategies. Actions may reflect implementation of a WHP plan, a local watershed plan that includes SWP, or a source water management control system or plan designed to reduce risks as detailed in a source water assessment, possibly with specific action indicators in the control system or plan. States may choose to determine a tailored set of minimum prevention actions, detailed in a publicly released document developed through a public involvement process consistent with state law. Specific actions could include, but are not limited to:

- zoning and related land-use measures that prohibit or restrict uses (e.g., by overlay zoning or related actions);
- state or local health regulations (e.g., sanitary setbacks);
- land acquisition/conservation easements;
- enforceable (i.e., enforceable under state and/or local laws), or voluntary BMPs;
- public outreach, involvement and education programs related to each significant threat; and/or
- other actions taken under Federal or state statutes such as under the Clean Water Act (e.g., TMDLs, NPS management).

These appropriate actions may occur for one CWS or multiple CWSs and be: (a) state-wide, including Federal actions taken within a state; (b) regionally across jurisdictions; or (c) locally.

**3. “Identified significant sources of contamination”** can be the same as the “significant potential sources of contamination” defined in a state’s EPA-approved SWAP (see EPA’s national SWAP guidance of August 6, 1997 on pages 2-15, 2-16, and 2-17). Or the state can identify, for SWP, a more narrow subset of the significant sources of contamination.

**4. “Sensitivity of the source water to contamination.”** Whether the hydrology or hydrogeology provides a natural barrier (e.g., a confined aquifer) that minimizes the risk to public health directly, rather than, or in addition to, source water strategic protection actions.

## Appendix V–Acronyms

ASDWA	Association of State Drinking Water Administrators
BMP	Best Management Practice
CDX	Central Data Exchange
CWA	Clean Water Act
CWS	Community Water System
DWSRF	Drinking Water State Revolving Fund
EPA	U.S. Environmental Protection Agency
FGDC	Federal Geographic Data Committee
GIS	Geographic Information System
GWPC	Ground Water Protection Council
NCWS	Non-Community Water System
NPDES	National Pollutant Discharge Elimination System
NPS	Non-Point Source
NRWQC	Nationally Recommended Water Quality Criteria
OGWDW	Office of Ground Water and Drinking Water
OPP	Office of Pesticide Programs
ORD	Office of Research and Development
OSCP	Office of Science Coordination and Policy
OSW	Office of Solid Waste
OUST	Office of Underground Storage Tanks
OW	Office of Water
PAMs	Program Activity Measures
PWS	Public Water System
PWSS	Public Water Supply Supervision
RDBMS	Relational Database Management System
SDWA	Safe Drinking Water Act
SDWIS	Safe Drinking Water Information System
SWA	Source Water Area
SWAP	Source Water Assessment Program
SWP	Source Water Protection
TMDL	Total Maximum Daily Load
UIC	Underground Injection Control
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
UST	Underground Storage Tank
XML	Extensible Markup Language





EPA-816-R-05-001  
March, 2005