

Elements of an Effective State Source Water Protection Program

A joint ASDWA/GWPC Workgroup, made up of state drinking water administrators and state source water protection staff, supported by ASDWA and GWPC staff, developed this document. The workgroup was charged to expand and elaborate on what makes a state source water protection program “effective.” Knowing that states are not the only player in effective source water protection implementation, but that the state programs can play a vital, this document is intended to focus on source water programs at the state level.

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Purpose

The purpose of this document is to highlight various elements that make up an effective state source water protection program. The document is not intended to be a formulaic “how to” or a prescriptive set of requirements for all states to adopt. Rather, it is meant to present ideas for states to consider as they develop and implement their programs. ASDWA and GWPC intend to use this as a working document and will continue to update and supplement it as state programs mature as well as add example case studies from varied state experiences.

Background

Under the 1986 amendments to the Safe Drinking Water Act (SDWA), states developed wellhead protection programs that provided a structure for water systems using groundwater to protect their sources from contamination. In the 1996 amendments to the SDWA, the scope of source water protection was expanded to include surface water systems and specific source water assessments were required. The source water assessments were designed to be evaluations of each water system that identified water quality threats to drinking water sources and described the seriousness of each threat.

These assessments were mandatory and supported with dedicated funding from the Drinking Water State Revolving Loan Fund (DWSRF) set-asides. However, the Federal funds dedicated to source water assessments are no longer available, and in many states, no regulatory mechanisms exist to compel water systems to use the building blocks of the source water assessment to implement a source water protection plan. The level of participation in source water protection efforts by water systems and states has been mixed. Despite the value that state

and local officials see in source water protection, they may not all be able to go very far beyond the preexisting wellhead protection programs and mandatory source water assessments, due to regulatory and resource constraints.

Nevertheless, even when significant dedicated state resources are not available to specifically support source water protection, state drinking water and water protection programs still feel that source water protection is a valuable program to help assure safe drinking water. In particular, source water protection is an integral part of the “multi-barrier” approach to ensuring safe drinking water. It is simply not feasible or cost-effective to identify and treat all existing and emerging contaminants in sources of drinking water.

The following categories and overarching principles provide a broad overview of the key elements that usually make up a state source water protection program. Not all state programs necessarily cover all elements. For each element, this document provides suggestions concerning the types of approaches states may wish to consider and activities that states may undertake to enhance the effectiveness of their state source water protection programs.

Overarching Principles

- State source water protection program efforts may encompass any number of activities in the following categories (#1-6 below). However, in general, effective state programs tend to have activities underway in most or all of these categories. The “Measurement and Characterization” category includes the main overarching elements that cross-link to one or all of the other elements (#2-6), depending on the construct of the state source water protection program. In addition, many of the other category elements mutually support one another, particularly #5 -- managing (sharing) information.
- “Effective Elements” of a state source water protection program should provide for an assortment of approaches for different state circumstances. Effective approaches will vary from state-to-state, depending on a number of factors, such as 1) available resources within states, and 2) administrative, statutory and regulatory frameworks.
- This guidance should not be considered a final, one-time document; rather, it is a “living” document that should be updated over time.
- In describing successful and sustainable state examples, the workgroup that developed this document sought to identify those conditions that make them effective.
- This document was developed as a complimentary framework for existing materials compiled by ASDWA, GWPC, EPA, and other organizations, which provide examples of effective state source water protection practices.

Categories of Activities of State Source Water Protection Programs

1. Measurement and Characterization (both statewide and at the system level)

Measurement and characterization of source water protection activities can provide essential data and information that is needed to inform state decision makers about where to target new activities and how to refine ongoing activities. As such, measurement and characterization activities link to activities within all of the other categories of a state source water protection program. To effectively assess the progress of a state source water program as a whole or in part, as well as to help set statewide goals for local implementation, states use one or more of the program elements for measurement and characterization listed below.

States are using measurement and characterization information to track progress against EPA's strategic plan targets (which relate to state definitions of "substantial implementation" of source water protection programs). Data about the status of source waters can also be used as a tool to help leverage the assistance of other parties by demonstrating where and in what ways protection activities are needed. This offers other parties a way to prioritize their efforts to achieve increased protection of source water areas. Ultimately, state source water protection programs need to consider how they will use the data/information they gather. Each of the following measurement and characterization elements, whether used separately or in combination, can effectively measure and characterize source water protection implementation at the state level:

a) **Keeping Assessment Information Current** (*either system-based or source water area-based*);

- Evaluating source water assessment program (SWAP)-type information -- including "how-to" protocols; assessing new sources; monitoring and implementing source protection; and refining/enhancing original assessments.
- Federal agencies also gather data and information that is useful in characterization (e.g., USGS, USDA, EPA's RCRA program, EPA's UST program, etc.). Leveraging and taking advantage of their information is an important part of the assessment process in terms of measurement/characterization.

b) **Periodically Evaluating Primacy Agency Program Effectiveness**

- Using indicators to gauge program effectiveness based on program element goals.
- Using the Wellhead Protection Program evaluation process as a model.
- Developing a strategic plan for the state source water protection program.

c) **Tracking Local Source Water Protection Efforts at the State Level**

- Tracking activity at the local level.
- Collecting ambient monitoring data.

d) **Tracking Statewide or Regional Source Water Protection Efforts**

- Tracking statewide or regional activities.
- Developing a narrative to discuss effectiveness of proactive measures.

2. State Implementation Strategies

Implementation strategies serve a valuable purpose and provide direction for states to further source water protection objectives. Strategic plans for source water protection are typically done within the state drinking water primacy agency, but for some states, the water resources or environmental agency may have the lead for developing such a strategy (e.g., Oregon, Louisiana). An effective state implementation strategy can help focus available resources, both financial and human, for maximum efficiency.

The strategy should consider the current progress of the state's source water protection program and current threats (informed by monitoring and characterization data). The strategy should identify how the state and other parties are using the SWAP assessment data to set state priorities and target source water protection efforts and activities (both short-term and long-term). The strategy can establish how and when to engage other programs and suggest possible opportunities for leveraging. The strategy *itself* may also attract resources and offers to collaborate, because the strategy can serve as an outreach document to sister programs, EPA, and other Federal agencies. Some states specifically reflect their source water protection strategies and plans in their state-EPA work plans and in grant applications. The strategy should be updated periodically. The states of Connecticut, South Carolina, North Carolina, and New Hampshire, for example, indicated that they typically reevaluate their strategic plan every year or every other year. States may wish to consider the following areas for an effective implementation strategy:

- Assessing human and financial resources available for state source water protection programs,
- Using measurement and characterization information and/or source water assessment results to set state priorities, both short-term and long-term, and to target elements of the strategy, e.g. to particular geographic areas, types of systems/sources, or types of threats,
- Identifying key players that would be the target of leveraging activities; determining how and when to engage other programs, and
- Implementing, reevaluating, and updating state program's source water protection strategic plans.

3. Partnerships, Integration, and Leveraging

Effective coordination efforts between state source water programs and other Federal and state programs such as EPA (drinking water and clean water programs), USDA, BLM, USFS, and their affiliated state counterparts vary widely from state to state. Statewide approaches that truly partner, integrate, and leverage, to the extent possible, Federal, state, and local programs, can be the most effective way for states to achieve source water protection goals. The type of leveraging, for instance, whether from the top-down (e.g., statutory mandates), laterally (e.g., MOAs, cost sharing across grant programs), or from the bottom-up (e.g., informal meetings), will also be a factor in the effectiveness of the leveraged activity. The most effective type of coordination between state source water protection programs and one or more other agencies or programs will depend on the authority, needs,

ability, willingness, and desire to address mutual concerns that ultimately achieve source water protection goals.

To sustain partnerships, leveraging, and coordination efforts across programs, it is important to establish relationships built on trust. Sharing information (#5) with other programs can greatly improve coordination effectiveness. To be most effective, state source water programs should make a commitment to learn about and understand the workings of other programs before approaching them or sharing information with them. It is important to consider how to “package” the state source water program needs and share information in ways that motivate action on the part of partners and speak in a common language. Examples include one or more of the following:

- Incorporating source water protection considerations into other elements of state drinking water programs, where appropriate. (e.g., SDWIS, sanitary surveys, new well approvals, waivers, operating permits, etc.).
- Coordinating Clean Water Act program coordination of watershed approaches, including funding.
- Integrating GIS information.
- Performing public education and outreach.
- Performing education and outreach for local land use decision makers and stakeholders.
- Using general partnership strategies (i.e., state committees, MOUs, informal coordination).
- Leveraging state source water protection objectives to grant requirements or strategic planning goals of other programs and organizations (e.g., UST programs may have quantitative goals for clean-up or prevention in source water areas).

4. Motivating Local Activity (including funding)

Source water protection starts at the local, public water supplier level and ideally, can be linked to local land use and zoning. State efforts to enlist local support for drinking water protection involves continued and active participation of the entities identified in the partnerships section above. State source water protection programs have a variety of ways to motivate and assist local source water protection implementation. Land use controls are one of the means communities can use to help manage the siting of future potential contamination sources that present a risk to drinking water sources. In addition, the management of land and water resources to protect water quality from nonpoint source pollution, such as agricultural pesticide applications, is essential to source water protection and also typically falls under the responsibility of local units of government.

The effectiveness of any of these methods can often be increased or maximized by using it in combination with one or more other items. The general idea is to provide incentives for action and data/information about the kinds of actions that are needed. For example, partnering with other agencies or programs such as the state clean water program to provide funding (i.e., Clean Water SRF loan and §319 watershed protection projects) is an effective way to provide financial incentives that can achieve multiple goals. Another important feature of many of the key components of an effective strategy for motivating local actions is

easy-to-use tools that are appropriate for local capabilities and interests. Finally, sustained “presence” of state representatives over time is often an important component of a strategy for building trust and motivating local actions. State source water protection programs may employ one or more of the following methods to motivate local action:

- Committing state grant and loan funding to local SWP activities.
- Developing or supporting outreach/educational programs and materials including conferences and publications.
- Providing model land use ordinances to local governments and recommendations concerning proposed development projects that may affect drinking water supplies.
- Developing awards or recognition programs for water systems, municipalities, and/or businesses.
- Providing technical assistance and working with technical assistance providers such as state AWWA, NRWA, State Geological Surveys, and RCAP affiliates.
- Reaching out to other organizations that are instrumental in motivating local activity, such as regional planning commissions.
- Sharing other organizations’ information and/or detailed locational data where appropriate, such as with USGS’ NWQA database.
- Holding statewide meetings with stakeholders.
- Providing Continuing Education Units (CEU’s) to operators who attend training sessions on source water protection.
- Developing newsletter(s)
- Developing a state source water protection program-specific website with detailed background materials, templates for protection plans, resources, and links to related information.

5. Managing and Sharing Information

The degree of analysis, and ultimately, measurement and characterization of source water data/information, is highly dependent on the quality and quantity of data on hand, the format it is kept in (i.e., database or spreadsheet), and the approach to reporting and analyzing outputs. The SWAP program, as required under the 1996 SDWA amendments, spurred the development of a great deal of information. The challenge now is to build on that data and keep it current. Ready access to source water protection and implementation information helps convince decision-makers and the owners of potential contamination sources that protective actions are needed and that drinking water protection efforts actually work. A state source water program will need to perform one or more of the following functions to effectively manage and share this data and information. Ideally, data systems should be easy to maintain, linked to other state data and information, capture local data, and provide imbedded analysis tools. Many states employ the following strategies as part of a process of managing and sharing information:

- Updating, expanding, and validating all of the various types of information gathered through the assessments, including inventories of potential contamination sources.
- Resolving/fixing locational data inaccuracies with other agencies.

- Establishing data sharing security protocols for sensitive data in concert with state freedom of information requirements.
- Sharing information; making information publicly available and accessible helps to motivate action and provides greater opportunity to engage other partners.

6. State Regulatory Programs

Some states have laws or regulations that require water systems to implement an approved source water protection plan that addresses potential sources of contamination. Other states have language in their laws and regulations (e.g., drinking water, agriculture, water rights, and others) that address different aspects of source water protection. Whether the driving force behind the laws and regulations came as a request of the state drinking water program, or to address a broader water quality concern, states have been able to use regulatory methods to address source water protection from a variety of angles. Many states have been able to use state laws or regulations that were not specifically designed with source water protection in mind, but which can provide broad authorization for certain state source water protection programs. The following are examples of the areas where states have been able to effectively implement source water protection laws and build protection into existing regulations.

- State statutes and rules covering water systems and other related areas. (e.g. Massachusetts Zone II land use restrictions or Vermont WHPPs)
- County ordinances and/or CWS source water protection plans (i.e., Utah)
- Land use ordinances
- New sources/wells (e.g., North Carolina and Connecticut)
- Monitoring waivers (e.g., Connecticut and New Hampshire)
- Water system construction and operating permits
- Ground water quality protection standards

Glossary of Acronyms

ASDWA	Association of State Drinking Water Administrators
AWWA	American Water Works Association
BLM	Bureau of Land Management
EPA	Environmental Protection Agency
GWPC	Ground Water Protection Council
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
NRWA	National Rural Water Association
NWQA	National Water Quality Assessment
RCAP	Rural Community Assistance Program
RCRA	Resource Conservation and Recovery Act
USDA	United States Department of Agriculture
USFS	United States Forest Service
USGS	United States Geologic Survey
UST	Underground Storage Tank