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Overview of California's Drinking Water Source Assessment and Protection (DWSAP) Program



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This booklet is part of a series of educational brochures and slide sets that focuses on various aspects of water source protection. The series has been prepared jointly by the University of California Agricultural Extension Service and the California Department of Health Services.

For further information about this and other documents in the series, contact the project team leader (see below) or visit the following website:

www.dhs.ca.gov/ps/ddwem/dwsap/DWSAPindex.htm

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California's Drinking Water Source Assessment and Protection (DWSAP) Program was developed by the California Department of Health Services (DHS) in response to federal legislation. It is administered by DHS's Division of Drinking Water and Environmental Management.

Background

The 1986 Amendments to the federal Safe Drinking Water Act (SDWA) established a Wellhead Protection Program. That program was designed to protect groundwaters that supply drinking water to wells at public water systems across the nation. Under SDWA Section 1428, each state was required to prepare its own Wellhead Protection Program (WHPP) and to submit a written summary of the program to the US Environmental Protection Agency (EPA) by June 19, 1989.

In 1996, the federal government amended the SDWA. The amendments established a mandatory program for states, called the Source Water Assessment Program (SWAP). SWAP is similar to WHPP in that the key elements of assessments—delineation of protection areas and zones, inventory of possible contaminating activities (PCAs), and vulnerability analyses—are also essential elements of a state's Wellhead Protection Program.

The EPA's SWAP guidance document indicates that the intent of the 1996 SDWA amendments was to promote source water protection, with assessments of those water sources being the initial step.

Section 116762.60 of the California Health and Safety Code requires DHS to develop and implement a program to protect sources of drinking water. The code specifies that the program must include both a source water assessment program and a wellhead protection program.

A drinking water source assessment is the first step in the development of a complete drinking water source protection program. Each assessment includes a delineation of the area around a drinking water source through which contaminants might move and reach that drinking water supply. In addition, the assessment includes an inventory of activities that might lead to the release of microbiological or chemical contaminants within the delineated area. Finally, it includes a



Water treatment plant on the American River at Sacramento, California. This plant provides drinking water for a large portion of the City of Sacramento.

determination of the activities to which the source is most vulnerable.

California's DWSAP program addresses both groundwater and surface water sources. The groundwater portion of the DWSAP serves as the state's wellhead protection program. In developing the surface water components of the DWSAP, DHS relied on its experience with similar activities, such as watershed sanitary surveys.

The California DWSAP program was submitted to the EPA in January, 1999. The EPA approved the DWSAP as a wellhead protection program that same month. Later, in November, 1999, the EPA approved the DWSAP as a source water assessment program.

Source assessments must be completed by May, 2003, for approximately 16,000 active drinking water sources. DHS is responsible for performing those assessments. However, DHS anticipates that some water systems may wish to perform their own assessments. Those that do will need to conduct the assessments in conformance with DHS procedures.

State Contacts

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Water systems may choose to perform more complex drinking water source assessments than the basic analyses performed by DHS's staff. The water system should contact DHS prior to conducting such an assessment, to make sure they receive the latest program documentation.

If a water system completes an evaluation of their water source by following a methodology that is different from, but functionally equivalent to, all or part of DHS's source assessment, then that information may be submitted for purposes of the DWSAP program.

Description of DWSAP Program Document

California's DWSAP program is fully described in the DWSAP program document, which is available from DHS or through the Division of Drinking Water and Environmental Management's web site at <http://www.dhs.ca.gov/ps/ddwem/>. The web site also includes sample source water assessments and information pertinent to California's drinking water.

The DWSAP document is summarized below. Portions of it are discussed in greater detail elsewhere in this series of booklets.

Assessments

The DWSAP Program document describes DHS's procedures for conducting drinking water source assessments. The procedures include:

- Description of the water source's location (latitude, longitude, and associated information).
- Delineation of source area and protection zones for both surface water and groundwater sources. The surface water source areas are defined by the boundaries of the watershed. Protection

zones, if delineated, are closer to the drinking water supply. The groundwater source areas and protection zones are delineated based on readily available hydrogeologic information. Such information typically includes groundwater flow data, recharge data, and discharge data. Other information may be relevant in some cases.

- Inventory of possible contaminating activities (PCAs) that are considered potential origins of contamination within each drinking water source area and its protection zones. PCAs include activities associated with microbiological or chemical contaminants that could have adverse effects upon human health.
- Determination of the PCAs to which the drinking water source is most vulnerable. The vulnerability determination considers several factors: the characteristics of the source and site, the risk ranking of PCAs identified in the inventory, and the proximity of the PCAs to the source.

Protection

The DWSAP Program document also outlines California's recommendations for encouraging voluntary protection of drinking water sources:

- It describes the actions the state can take to support local entities in developing local protection programs. These include technical assistance, financial assistance, training, and demonstration projects.
- It identifies management approaches that can be used to protect a water supply from contaminants associated with PCAs. These approaches may include public education and implementation of control measures, both regulatory and non-regulatory.

Minimum Components of Drinking Water Source Assessments

Listed below are the minimum components of a drinking water source assessment. More detail on each component is provided within other booklets in this series, and in the DWSAP document.

- Location (latitude, longitude and associated information)
- Delineation of Source Area and Protection Zones
- Physical Barrier Effectiveness Checklist
- Inventory of Possible Contaminating Activities (PCAs)
- Vulnerability Ranking and Vulnerability Summary
- Assessment Map
- Assessment Summary
- Public Notification

- It lists criteria for developing contingency plans for each water system in the event that one or more of the normal sources of supply becomes unavailable.

Implementation of Assessment and Protection Programs

The DWSAP Program document describes California's approach for implementing assessment and protection activities. Specifically, it includes:

- A description of the methods that DHS will use to assess California's 16,000 active drinking water sources. These methods comprise the minimum components of drinking water assessments.
- Information for large public water systems and others who choose to perform their own assessments. For example, the document states that watershed sanitary surveys already completed satisfactorily for compliance with DHS regulations fulfill most of the assessment components for surface water supplies.
- Suggestions for implementing successful drinking water source protection programs at the local level.

Drinking-Water-Related Efforts in California

Previously adopted California regulations specify that water purveyors who rely on surface water for a drinking water supply must complete a Watershed Sanitary Survey. This survey includes a determination of watershed boundaries and identification of activities of concern. The deadline for completing the survey was January 1, 1996, with updates required every five years thereafter. As of June 1997, almost all of the state's larger water systems (those that have more than 1,000 service connections) had completed their surveys. Some small systems have not completed the required surveys; theirs will be completed as part of this program.

A number of government agencies, groundwater management districts, and others have already mapped groundwater basins and water supplies within those basins. Some water suppliers have completed a preliminary identification of activities of concern to their



River and adjacent homes, Sacramento, California. Preparing a drinking water source assessment for such an area can be challenging, as the assessor will need to consider both surface sources, such as the river, and groundwater.

drinking water sources. Studies identifying activities of concern have also been carried out by DHS's Drinking Water Program and by California's Regional Water Quality Control Boards.

The Groundwater Management Act (Assembly Bill 3030, or AB 3030) took effect in January, 1993. Under this act, local water agencies or groups of agencies can create their own groundwater management plans according to their own requirements, and may raise money to run them. A Wellhead Protection Program is an allowable element of an AB 3030 Groundwater Management Plan. As of June, 1997, 88 such Groundwater Management Plans had been adopted throughout the state. In addition, there are 42 resolutions of intention to adopt plans, and another 55 agencies considering plan adoption.

Goals of DWSAP Program

The goals of the DWSAP Program are listed below (not in order of priority):

- To protect and benefit the state's public water systems

The focus of the program is information gathering and attention to activities that may affect drinking water quality, and to enable communities and public water systems to better protect and manage the surface water and groundwater drinking water supplies.

- To improve drinking water quality and support effective management of water resources

The assessments can be used to develop protection strategies that are more economical

and more desirable than solely relying on the monitoring and treatment of drinking water supplies.

- To inform communities and drinking water systems of contaminants and activities that may affect their drinking water quality or their ability to develop new drinking water sources

As communities and public water systems gather information about activities that have contaminated, or which may, in the future, contaminate drinking water sources, they will be able to make better decisions about how to protect and manage existing and future water sources.

- To encourage a proactive approach to protecting the State's drinking water sources, and to enable protection activities by communities and drinking water systems

Water suppliers, communities, planners, and the public are encouraged to use careful land use planning techniques to evaluate proposed projects. Appropriate conditions to protect drinking water sources should be set on activities that will store, use, or produce contaminants. Similarly, communities or water systems may choose to implement protection programs to lessen the impacts of existing PCAs.

- To help refine the monitoring requirements for drinking water sources

State and federal regulations require water suppliers to collect water samples at regular intervals and to analyze those samples for a long list of inorganic and organic chemicals. With proper identification of PCAs, such monitoring requirements perhaps can be simplified and targeted to the specific needs of a drinking water source. The result is enhanced public health protection combined, at least potentially, with lower monitoring costs.

Regulations also require monitoring for microbiological contaminants. Some of that monitoring potentially could be targeted to specific PCAs. Regulatory limits on other parameters such as turbidity must also be met by drinking water systems. To the extent that these "non-chemical" constituents can be controlled by effective assessment and protection programs, such programs may relieve some of the need for certain types of treatment. Similarly, effective assessment and protection programs could also help to reduce the organic matter in a drinking water source, which may result in lower concentrations of disinfection byproducts.

- To focus cleanup and pollution prevention efforts

on the most serious threats to surface water and groundwater sources of drinking water

By identifying those activities that pose greater health risks than others to drinking water sources, communities and agencies may be able to prioritize their environmental activities. For example, hazardous waste cleanup, pollution prevention efforts, and other activities of environmental and public health significance that directly improve or protect drinking water supplies may be addressed earlier or allocated more resources than others not related to drinking water supplies.

- To meet federal requirements for establishing wellhead protection and drinking water source assessment programs

Compliance with federal requirements is desirable for two reasons. First, it ensures that the California program meets the minimum national standard for source water protection. Second, it is necessary in order to receive future federal source water protection funds.

- To assist in meeting other regulatory requirements

Information collected by state and local agencies, communities, and water systems to comply with the DWSAP Program will be useful to those entities as they strive to satisfy various other regulatory requirements. Such requirements include: California Environmental Quality Act (CEQA), and upcoming federal regulatory requirements, such as the Ground Water Rule and the Enhanced Surface Water Treatment Rule.

Public Participation

Public participation in the DWSAP Program is crucial to the success of the program, because it:

- Ensures that interested parties understand the proposed program,
- provides technical review of the program elements,
- helps forge consensus among parties affected by the program,
- ensures that concerns of the public are fully addressed, and
- fosters a closer working relationship between government agencies and the public.

Public involvement in the program itself is required at three different levels. The first level is during the development of the statewide DWSAP Program. The second level is the availability or distribution of drinking water source assessments for public review after they

are completed. The third level is during development of voluntary local drinking water source protection programs.

During the development of the DWSAP Program, DHS solicited public involvement in several ways. These included: developing a list of stakeholders, forming technical and policy advisory committees, holding meetings of those committees, developing a mailing list of interested parties, sending out the draft program

for comments, maintaining a web site of information, giving presentations and public workshops, and finally, holding a public comment period.

Water systems or other organizations interested in developing source water assessment and protection programs are encouraged to actively solicit public participation. Table 1 is a list of potential stakeholders to include in the process.

Potential Stakeholders in Source Water Assessment & Protection	
Public Agencies	
Counties	Integrated Waste Management Board
Cities	Office of Environmental Health Hazard Assessment
Regional Water Quality Control Boards	Department of Water Resources
Water Districts	Department of Food and Agriculture
Sewage Districts	State Water Resources Control Board
Sanitation Districts	Teale Data Center
Flood Control Districts	National Resources Conservation Service
Groundwater Management Districts	US Bureau of Reclamation
Resource Conservation Districts	US Environmental Protection Agency
Department of Fish and Game	US Fish and Wildlife Service
Department of Toxic Substances Control	US Forest Service
Department of Pesticide Regulation	US Geological Survey
Private Companies	
Agriculture	Well Drillers
Mining	Manufacturing, Petroleum, and other Industries
Gravel Production	Landfill Operators
Private Water Companies	
Private Organizations	
Farm Bureau	Recreational Groups
Chambers of Commerce	Watershed Conservancies
Construction and Real Estate Organizations	Consumer Groups
Well Drillers' Groups	Rate-payer Groups
Mutual Water Companies	Water-Oriented Associations
Agricultural Groups	Planning Associations
Environmental Groups	
Individuals	
Pumpers	Consumers
Farmers	Educators
Rate-payers	
Others	
UC Agricultural Extension	Business Groups Representing Chemical Manufacturing
Public Health Groups	Tribes
Vulnerable Population Groups	

Reasons for a Public Water System to Do a Source Water Assessment

DHS is responsible for conducting drinking water source assessments for existing sources. However, a water system might prefer to conduct its own assessment, and to do a more comprehensive assessment than DHS's. There are several reasons for this:

- DHS's assessments typically will be brief, general overviews, due to limitations in staff resources and the limited time available. Consequently, these assessments often will be conservative, to ensure that no potential risk to the source has been overlooked. In being conservative, DHS may include large source areas or define large protection zones. DHS staff also may make assumptions about the existence of contaminant activities within the zones. For all these reasons, DHS's assessment, in some cases, may result in a longer list of contaminant activities to which the source is vulnerable than is actually the case.
- In accordance with federal requirements, the water system's Consumer Confidence Report (CCR) must include a summary of the vulnerability of the drinking water sources. If DHS conducts the source water assessment, the vulnerability summary will be prepared by DHS. If a water system conducts its own assessment, the water system may write the vulnerability summary.
- A water system may have already performed an evaluation, such as a watershed sanitary survey or a groundwater management plan, that satisfies many of the components of the drinking water assessment.
- Once an assessment has been completed for a source, it will be used by DHS when deciding whether to grant any renewals of monitoring waivers for that source. DHS's conservative default assessment could potentially limit waivers.
- Water systems seeking a permit for a new water source must include a source water assessment as part of their permit application. The information collected to prepare assessments for existing sources may be useful in preparing assessments for new sources.
- Source water assessments will be a prerequisite for gaining access to monies for local source water protection projects through the Drinking Water State Revolving Fund.
- An assessment provides the basic information needed for a community to begin source water protection activities.
- An assessment can serve as a document to share with land use planning agencies.
- An assessment will contribute to the institutional record of a drinking water system, because it brings a variety of information together in a single place.
- An assessment can provide a drinking water system with a useful public relations and public information tool.