

State of Utah



Source Water Assessment Program

Drinking Water Source Protection for Surface Water User's Guide

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Introduction

Preliminary Evaluation Reports

Introduction

Submit a Preliminary Evaluation Report for all proposed new surface water sources that will be used as a source of drinking water by a public water system. A new surface source is any source for which plans and specification were submitted after June 12, 2000. Submit the Preliminary Evaluation Report and the pre-design submittal (refer to R309-515-5) at the same time, which allows for review at the same time. The Division of Drinking Water will not grant approval to begin construction, and, subsequently, to use a source, until the Preliminary Evaluation Report, the pre-design submittal, and the pre-construction submittal are reviewed and approved.

Purpose

Source Protection ensures that Public Water Systems will be able to protect their proposed new surface water source after the source is constructed. Because of this, Preliminary Evaluation Reports and pre-design submittals must be submitted to Division of Drinking Water before a new source is constructed. ***Do not begin construction of the source before a Preliminary Evaluation Report is approved. The money that has been invested in the construction cost of a new source may be lost if a subsequent review of the Preliminary Evaluation Report reveals that it cannot be approved.***

Report Sections

Delineation Report

Refer to the Delineation Report discussion in this guide under Drinking Water Source Protection Plans.

Susceptibility Analysis

Refer to the Susceptibility Analysis discussion under Drinking Water Source Protection Plans.

Susceptibility Determination

Refer to the Susceptibility Determination discussion under Drinking Water Source Protection Plans.

Land Use Map:

A land use map that shows all land within zones one and two. Since a Preliminary Evaluation Report for a surface source should show that the source location has been chosen such that the number of uncontrolled sources in zones 1 and 2 is minimized, it is important to document land use within those zones to verify the presence or absence of Potential Contamination Sources. You may rely on existing maps or data, including Geographic Information System data, to satisfy this requirement.

A land use map is not required if ordinances are used to protect these areas. It is the responsibility of the Public Water System to cite and quote references and interpret the zoning ordinance to substantiate land use restrictions. Please do not send a zoning ordinance and expect the Division of Drinking Water to do this research.

Documentation of Division of Water Quality Classification of Source Water

With reference to R317-2, you must provide documentation of the classification of the source waters by the Division of Water Quality. If the source water is not currently classed as IC (drinking water) under UAC

R317-2, the Public Water System must request such a classification from the Water Quality Board for zones 1 and 2.

Upgrading to Drinking Water Source Protection Plans

A refined report that meets the requirements of a Drinking Water Source Protection plan must be submitted to the Division within one year of the date of the Preliminary Evaluation Report approval letter. Information regarding developing the Drinking Water Source Protection plan can be found later in this User's Guide.

Checklist

CHECKLIST FOR LOCATING AND DEVELOPING A NEW DRINKING WATER SOURCE To Do Before Construction

- ❑ **Preliminary Evaluation Report**
 - ❑ **Delineation Report**

Request and obtain delineation report from the Division of Drinking Water (801-536-4200), or
Prepare a report meeting the requirements of R309-605
 - ❑ **Susceptibility Analysis and Determination**
 - ❑ Evaluate intake and sensitivity of the setting.
 - ❑ Request and obtain inventory of larger potential contamination sources from the Division of Drinking Water.
 - ❑ Compile inventory of smaller Potential Contamination Sources within zones 1, 2 and 3 (as applicable) from local information (you may use the inventory report form provided by Division of Drinking Water (Appendix I), or your own method). You may rely on the information provided by Division of Drinking Water for Potential Contamination Sources in zone 4.
 - ❑ For each Potential Contamination Source (including those in zone 4), evaluate whether the Potential Contamination Source is controlled or not controlled (the evaluation criteria are included on the inventory form).
 - ❑ For each Potential Contamination Source, evaluate how susceptible your drinking water source is to that Potential Contamination Source (you may use one of the susceptibility forms (Appendix H) provided by the Division of Drinking Water for this, or you may provide your own explanation for your susceptibility determinations).
 - ❑ Organize your inventory to reflect which Potential Contamination Sources represent the most serious concern to your source water.
- ❑ **Land Use Map** - A land use map which includes all land within zones one and two is required. You may use existing maps or Geographic Information System data to satisfy this requirement. A land use map and list are not required if ordinances are used to protect these areas. It is the responsibility of the Public Water System to cite and quote references and interpret the zoning ordinance to substantiate these restrictions. Please do not send a zoning ordinance and expect Division of Drinking Water to do this research.

- ❑ **Documentation of Division of Water Quality classification of source water** - with reference to R317-2, provide documentation of the classification of the source waters by the Division of Water Quality . If the source water is not currently classed as 1C under UAC R317-2, the Public Water System must request such a classification from the Division of Water Quality for zones 1 and 2, and must document the request. The Public Water System must also request that the source water be categorized as Category 1 or 2 under UAC R317-2-3. Categorization of the source will reduce the potential for source water degradation from new pollution sources.

- ❑ **Engineering Plans and Specifications** -The pre-design submittal must be prepared and submitted to the Engineering section. The Preliminary Evaluation Report must be concurrently prepared and submitted to the Special Services Section. Following approval of the pre-design submittal and the Preliminary Evaluation Report, the pre-construction submittal must be approved by the Engineering section.

Drinking Water Source Protection Reports

Introduction

Your drinking water sources are valuable assets to you and the people you serve. Although water systems commonly consider treatment to be the best defense against contaminants, preventing contamination from reaching your treatment plant better protects the resource and the public, and in the long term will keep treatments costs in check. A Drinking Water Source Protection Plan is the first step in identifying risk, and in reducing the risk of contamination.

Are you required to do a plan?

A Drinking Water Source Protection plan must be done by each community water system and non-transient non-community system (which are commonly large businesses with their own water systems) using a surface water source, including sources designated as “under the direct influence of surface water”. If you are not sure how your system is classified, please call the Division of Drinking Water at 801-536-4200 for assistance. Transient non-community systems (which are commonly systems like campgrounds, summer cabins, and the like) are not required to do Drinking Water Source Protection plans.

Schedule

Submit your Drinking Water Source Protection plan according to the following example. Under some circumstances, extensions may be granted. **However, all plans must be submitted by May 6, 2003!**

<i>Population served by public water system:</i>	<i>Drinking Water Source Protection plans due by:</i>
Over 10,000	December 31, 2001
3,300 to 10,000	May 6, 2002
Less than 3,300	May 6, 2003

Purpose

When you develop your Drinking Water Source Protection plan, you evaluate the risk of contamination reaching your intake, and develop a plan to lower that risk. Contamination that doesn’t reach your intake is contamination you will never have to filter or treat. Contamination that doesn’t reach your intake is contamination your customers will never have to be concerned about, and the newspapers will never write about. The effect of a Drinking Water Source Protection plan may never be obvious, since these plans are not meant to improve water quality, they are only meant to prevent problems. However, any problem you are able to prevent by identifying it ahead of time is one that will never interfere with your customers enjoyment of their drinking water.

Report Sections

Introduction

The Introduction should include a brief description of your system, including system number and address. Describe the source that you are writing the plan for. Identify the person who will act as the primary contact for your Drinking Water Source Protection Plan (the “Designated Person”). Note that this information must be updated promptly, by notifying the Division in writing within 90 days of a personnel change.

Delineation report

Generally, the Division will do the Delineation Report for you. If you haven’t received one, please call us at (801) 536-4200 to request a copy. You are not required to use our delineation, if you provide one that is at least as protective as the one we would provide.

The protection zones for your source are based on these definitions:

Zone	Length of zone (distance from intake)	Width (each side of drainage)
1	100 feet below intake, and from 0 to 15 miles above ¹	½ mile
2	From 15 to 65 miles ¹	1,000 feet
3	Greater than 65 miles ¹	500 feet
4	Area of watershed outside of zones 1 through 3 ¹	Margin of contributing watershed

If you choose to provide your own delineation report, please use one of these two methods:

Method 1: You may use the definitions provided in the table shown above. All applicable zones must be defined. Such a submittal must meet the following requirements, and must include a map or maps showing the full extent of the zones as described in the table, and as follows:

Zone 1: For streams and rivers: zone 1 is the area on both sides of the source, ½ mile on each side, laterally from the high water mark of the source (bank full), and from 100 feet downstream of the intake³ to 15 miles upstream¹.

For reservoirs and lakes, zone 1 is the area ½ mile from the high water mark. Any tributary to the reservoir or lake will be included in zone 1 for 15 miles upstream¹, ½ mile on each side.

Zone 2: Zone 2 begins at the end of zone 1, and extends an additional 50 miles upstream¹, 1000 feet on each side measured from the high water mark of the source.
feet on each side of the source.

Zone 3: Zone 3 begins at the end of zone 2, and extends to the limits of the watershed², 500 feet on each side of the source.

Zone 4: Zone 4 is defined as all of the watershed² that contributes to the source that is not otherwise part of zones 1 through 3. The watershed is the entire area in which water will flow downhill to the source.

¹ Or to the limits of the watershed or ²the state line, whichever comes first

³ Note that the intake includes any conveyance that is open to the air, such as a canal or ditch.

Method 2: Confer with the Division of Drinking Water staff before using an alternative delineation scheme in order to make sure that your method will be accepted. You may use site-specific data to support a different delineation of your protection zones, if the delineation zones are no less protective than those outlined above. The entire watershed must be included in your delineation. You must include a detailed explanation of how you derived your protection zones, and explain why the protection zones are at least as protective as the zones 1-4 described above.

Susceptibility Analysis

Introduction

The susceptibility of a source of drinking water is an assessment of the possibility for that drinking water source to be accidentally contaminated by a potential contamination source. Assessing that potential is a critical part of the development of a Drinking Water Source Protection plan for a surface drinking water source.

Ask yourself the following questions:

What is the structural integrity of the intake? Is it good enough to prevent accidental contamination?

Include canals and aqueducts that convey water from the source to treatment plants or to the distribution system in this assessment.

How sensitive is the natural setting? Large amounts of vegetation, wetlands, non-permeable rocks, and shallow slopes may help protect or buffer the water body. Steep slopes, rocky soil, permeable rocks or a lack of vegetation may make it possible for contaminants to move overland more freely.

What sources of potential contamination exist within the protection zones that have been delineated for the source?

Are those sources of contamination controlled (meaning that someone or something is ensuring that the contamination is confined to its location, and under most reasonable scenarios cannot escape), or are they uncontrolled (meaning that there is some clear potential for an accidental release).

What hazards are associated with the sources of contamination?

How do these factors interrelate? How susceptible is this drinking water source to the potential contamination sources that you have identified?

Your Drinking Water Source Protection report should supply the answers to these questions.

Structural Integrity of intake

The first step in a susceptibility analysis is an evaluation of the *structural integrity of the intake*. Does the intake meet minimum rule requirements as described in the source development rule (R309-515-5)? Can you bypass the intake if there is a spill upstream? The intake includes any portion of the conveyance from the point of diversion to the distribution system(s) that is open to the atmosphere or is otherwise vulnerable to contamination (i.e., canals).

Sensitivity of Natural Setting

The second step in a susceptibility analysis is an *evaluation of the sensitivity of the natural setting*. Are the slopes in the area steep, which can increase runoff? Areas with a lot of pavement will also have more runoff. Is the area heavily vegetated, which may decrease runoff? Sensitivity is influenced by any natural or man-made feature that increases or decreases the likelihood of contamination.

Inventory

The third step in your analysis of the susceptibility of your source of drinking water is to survey and *inventory local potential contamination sources within your protection zones, in addition to those included in the Geographic Information System inventory provided by the Division of Drinking Water*. A

Potential Contamination Sources may store or use material or employ an activity or procedure that may potentially contaminate surface water. The hazardous substances may be chemical (for example, gasoline), biological (for example, manure or sewage), or radiological.

The Geographic Information System inventory provided by the Division is a listing of Potential Contamination Sources that the State or other agencies regulate and track. *It is by no means complete!* Numerous Potential Contamination Sources may not appear on a Geographic Information System inventory, such as animal feeding operations, developments using septic systems, businesses that use floor drains to dispose of chemicals, non-point sources of contamination (such as agricultural areas), and the like. These, among others, are the types of Potential Contamination Sources you should be on the lookout for.

List only additional Potential Contamination Sources within protection zones 1 through 3 (the inventory of Potential Contamination Sources provided by the Division of Drinking Water is sufficient for the remainder of the watershed).

The purpose of the inventory is to alert you to the possible risk of contamination of your water supply, and to enable you to plan ahead. Therefore, to be useful, the list should include the following information:

1. Name and location of site or facility
2. The chemical, biological or radiological hazards associated with the site
3. A contact person at the site or a contact at the agency regulating the site.
4. The zone the facility is located in.

A form that guides you through the inventory process, and which ensures that you collect the information you need, is provided in Appendix I. You are not required to use this form, but you may wish to refer to it as a guide to the information you should collect.

Provide a map that shows the locations of the Potential Contamination Sources you identify. The maps provided by the Division for your delineation report may be used for documenting the locations of Potential Contamination Sources that you may identify, or you may provide your own map. In either case, show the locations of the Potential Contamination Sources within the protection zones. Either label the maps with the names of the Potential Contamination Sources, or if the map will be crowded, provide a key so that a reader can easily identify a Potential Contamination Source from your report.

You may wish to conduct a survey in order to complete your inventory. Windshield surveys may be the most effective mechanism for identifying potential contamination sources, especially for areas where highways parallel rivers. Phone, mail, and door-to-door surveys may be useful for smaller watersheds with fewer sources of potential contamination.

Residential areas are considered uncontrolled sources of potential contamination, because of the common practice of using and storing chemicals such as fertilizers and pesticides. However, it is not necessary to list individual residential properties on your inventory. You may designate them as residential areas, indicate the common household chemicals that may be used there, and show them as residential areas on your maps.

Sources of information and data about Potential Contamination Sources are shown in Appendix F.

Assess Controls

The fourth step in development of your susceptibility analysis is **deciding whether each² potential contamination source is controlled or uncontrolled**. You may have done this during your inventory of individual Potential Contamination Sources, especially if you used the inventory sheet provided, but if not,

² You may group similar, related Potential Contamination Sources, and assess them together. As an example, you may chose to collectively assess all abandoned mines with one mining district, rather than assessing them separately.

you must do it in this step. Include all your Potential Contamination Sources in this analysis, including those identified by the Division of Drinking Water for zone 4, and any nonpoint sources identified by land use. Generally, if some one or some thing is overseeing and minimizing the potential for release of a hazardous material or polluting substance at a Potential Contamination Source, then that source may be adequately controlled. If no one and nothing are minimizing the potential for release of a hazardous material or polluting substance, then that Potential Contamination Source is not adequately controlled. Four types of controls are possible. If none of the four can be positively identified, consider the Potential Contamination Source uncontrolled. If one control applies, it isn't necessary to consider or identify others.

In order to positively identify a control, you must address the following questions and provide the following information in your Drinking Water Source Protection plan, or else your assessment may be rejected.

Regulatory controls: Is the Potential Contamination Source regulated by an agency? You must verify this³. Cite the regulation, rule or ordinance that governs the Potential Contamination Source. Explain why the regulatory control reduces the risk of contamination migrating from the site, assess the control, and set a date to reassess the control.

Best management/pollution prevention controls: List the specific best management/pollution prevention practices that the Potential Contamination Source management is using to control the hazard and indicate that they are willing to continue the use of these practices; explain how these practices prevent the spread of contamination; assess the control; and set a date to reassess the control.

Physical controls - Describe the physical control(s) which have been constructed to control the hazard; explain how these controls prevent contamination; assess the control; and set a date to reassess the control.

Negligible quantity control - Identify the quantity of the hazard that is being used, disposed, stored, manufactured, and/or transported; explain why this amount should be considered a negligible quantity; assess the control; and set a date to reassess the control.

A common area of misunderstanding regarding controls is residential use and storage of chemicals, pesticides, and herbicides, as well as residential septic systems. In general, these types of Potential Contamination Sources will always be considered uncontrolled, because there is no oversight of the use or storage of chemicals at a household, or of the maintenance of residential septic systems.

For the purpose of meeting the requirements of R309-605, a Potential Contamination Source that is covered by a permit or approval under one of the regulatory programs listed below⁴ demonstrates that the source is adequately controlled unless otherwise determined by the Executive Secretary. For all other regulatory programs, the Public Water System's assessment is subject to review by the Division of Drinking Water; as a result, a Public Water System's Drinking Water Source Protection Plan may be disapproved if the Division of Drinking Water does not agree with its assessment(s).

The Utah Ground-Water Quality Protection program established by Section 19-5-104 and R317-6;

³ If an underground storage tank (leaking or not), CERCLA, RCRA, or point discharge site is identified by the Division of Drinking Water and provided in an inventory list, that is sufficient to demonstrate that the Potential Contamination Source is under regulatory control, since the Division of Drinking Water's Geographic Information System data are obtained from the agencies that regulate such sites. It is not necessary to verify the agency's oversight.

⁴ Appendix C contains contact information for various regulatory programs, current as of February 3, 2006. Unless the Potential Contamination Source is in a list provided to you by the Division of Drinking Water, you must verify that it is actually regulated by the specific program.

- Closure plans or Part B permits under authority of the Resource Conservation and Recovery Act (RCRA) of 1984 regarding the monitoring and treatment of ground water;
- The Utah Pollutant Discharge Elimination System (UPDES) established by Section 19-5-104 and R317-8; at the discretion of the Public Water System, this may include Confined Animal Feeding Operations/Animal Feeding Operations (CAFO/AFO) to be assessed under the Utah DWQ CAFO/AFO Strategy.
- The Underground Storage Tank Program established by Section 19-6-403 and R311-200 through R311-208; and
- The Underground Injection Control (UIC) Program for classes I-IV established by Sections 19-5-104 and 40-6-5 and R317-7 and R649-5.

Finally, if you are not able to identify the controls associated with a Potential Contamination Source, or if you chose not to identify the controls, then that Potential Contamination Source must be considered uncontrolled.

Susceptibility Determination

Combine the **evaluation of the structural integrity of the intake, the sensitivity of the natural setting, and the nature of the Potential Contamination Source (including presence or absence of adequate controls) to determine how susceptible your drinking water source may be to contamination from each Potential Contamination Source.** Include controlled Potential Contamination Sources in your susceptibility determination, since you are creating a permanent record of possible sources of contamination. A controlled Potential Contamination Source could become uncontrolled in the future.

You may use any defensible method to weigh these factors and make your decision regarding how susceptible your source is to each Potential Contamination Source, including best professional judgement. You may wish to use a scoring method, if you have many Potential Contamination Sources and you want to be sure that your assessment will be consistent from one Potential Contamination Source to the next. For your convenience, two examples of methods for assessing susceptibility are included in Appendix H, one that assigns a score (with a higher score indicating a higher susceptibility), and one that uses a narrative description to arrive at a relative susceptibility (for example, high, medium or low).

Prioritization

When you have completed your inventory of Potential Contamination Sources, and assigned a susceptibility rating to each one, prioritize your list from the Potential Contamination Source that poses the greatest risk (the Potential Contamination Source that your source is the most susceptible to) to the one that poses the least risk. Arranging your list in priority order will help you direct your resources to Potential Contamination Sources that represent the highest risk to your drinking water source. Include controlled and uncontrolled Potential Contamination Sources in your prioritized inventory, recognizing that controlled Potential Contamination Sources will generally be of lower priority. Although you must explain the basis for the way you prioritize the inventory, your judgement is usually all that is necessary to prioritize this list

Finally, assess your drinking water source for its overall susceptibility to contamination. This information will be used in your public notification, and will also allow you to compare the susceptibility of one drinking water source to another.

Maintenance

Maintaining a list of Potential Contamination Sources is a continuous effort. This list should be updated often enough to ensure that it reflects current conditions in your protection areas, but at least every two years. This includes adding Potential Contamination Sources that have moved into your protection areas,

deleting sources that have moved out, and generally updating the data to improve your knowledge about the potential sources in your protection areas.

Your Drinking Water Source Protection plan will be resubmitted to the Division of Drinking Water every six years after the original due date. Revising your inventory will be simpler if you collect information during the six year interval. For example, have an employee conduct a windshield survey every two years to see if any significant changes have occurred. Document the results of the survey in your recordkeeping section. Keep the records. When you prepare the revised report, much of the information will be right at hand.

Management Plan for Existing Potential Contamination Sources

The Drinking Water Source Protection rule (Utah Administrative Code R309-605) requires that management strategies be planned for the three highest priority potential contamination sources that are *not adequately controlled*. Public water systems have complete discretion to choose the strategies that will work best for them. The Division of Drinking Water understands that these are local problems that require local solutions.

Your prioritized list of Potential Contamination Sources will show which three Potential Contamination Sources are of the greatest concern. You may decide to manage additional Potential Contamination Sources. The Division of Drinking Water may also require you to manage more than three, if there are other Potential Contamination Sources that pose a conspicuous and acute risk to your drinking water source.

Management does not mean that you have to pass ordinances or zoning requirements. Management does not mean that you have to interfere with how someone conducts their business or manages their private property. Management does mean, though, that property owners who inadvertently threaten your drinking water source will be notified of that possibility, and encouraged to assist you in protecting your source. Management may mean that people you may never meet will be encouraged to change their behavior to protect drinking water sources, through signs or newsletters or other means of public education. Management may mean obtaining the assistance of those who do have zoning authority to reduce the kinds of potentially polluting activities that may take place in your watershed.

Making Use of Existing Programs

Educate yourself regarding what protection and management programs may already exist in your watershed. Examples might include U.S. Forest Service Forest Management plans, existing watershed protection plans, existing zoning under other authorities, existing management plans for reservoirs and lakes, waterbody classification by the Division of Water Quality, and other existing forms of protection. If you can establish that those programs will provide the level of control you need, you may defer to those programs for the specific types of Potential Contamination Sources and the specific areas the program covers. The Division of Drinking Water has some information about some programs of this type, although local land management authorities and soil conservation groups would be good sources of up-to-date information. If you chose to defer to an existing program, then provide a detailed explanation regarding how the program meets your goals of managing uncontrolled potential contamination sources and protecting your drinking water source.

Once you have identified these programs, don't miss the opportunity to participate! If a work group addressing water quality issues exists for your watershed, by all means participate. You may be the only one interested in drinking water issues, and your input would therefore become critical. Appendix C contains general contact information for watershed programs through the Division of Water Quality, and the information about specific watersheds can be found at <http://www.deq.state.ut.us/eqwq/watersheds/state.htm>

Future Revisions to your Drinking Water Source Protection plan

Drinking Water Source Protection plans are to be resubmitted every six years after the first submittal. To prepare the resubmittal, you will update your inventory, and reassess the Potential Contamination Sources. You will then re-prioritize your Potential Contamination Source list. If the same three uncontrolled Potential Contamination Sources are still at the top of your list, you need change nothing in the management plan. If a different Potential Contamination Source is now within the top three, you will propose a management strategy for that uncontrolled Potential Contamination Source. You will continue management strategies for the previously managed Potential Contamination Sources, unless you provide evidence that a Potential Contamination Source is now considered controlled.

Management Plan for Future Potential Contamination Sources

What if a subdivision using septic systems wanted to locate or operate in your protection area? What if a new sewage treatment plant goes in upstream? How about new logging or mining operations, which can contribute sediment to streams? Most people worry about what they will do when or after something happens. This part of your plan should help you decide what to do before something happens that could affect your water quality. You'll be better prepared, and with a plan in hand you may be able to change the outcome, or minimize the potential effect to your drinking water source.

R309-605 requires that a program be established to manage PCSs that may want to locate within your protection zones some time in the future (go back to page 11 to refresh your memory regarding what "manage" means). Although zoning or use of ordinances is not required, those methods are probably the most effective way to protect your drinking water source.

Minimum Requirements

The minimum requirement for this section of your plan includes a commitment to:

- Contact each Potential Contamination Source as it moves into your protection area
- Determine whether it is actually a Potential Contamination Source
if it is, add it to your inventory
- Identify and assess its controls, and
- Plan and implement land management strategies, if the Potential Contamination Source is not adequately controlled.

Alternatives

Planning and Zoning Ordinances

Adopting a zoning ordinance is the most effective way to control future PCSs. Zoning ordinances allow the regulating agency to:

- < Control subdivision development and industrial growth at desirable levels,
- < conduct site plan reviews,
- < evaluate design and operating standards,
- < ensure adequate spill protection and waste disposal procedures, and
- < prohibit facilities that would discharge contamination to your aquifer.

You may well need the cooperation of county or municipal government to adopt such an ordinance. Examples of successful ordinances abound, and may provide a leg-up to local agencies considering adopting such an ordinance. As of this date (February 3, 2006), Box Elder and Kane Counties have

adopted Drinking Water Source protection ordinances, and Salt Lake County is in the process. Several municipalities have done the same thing. Review their examples for ideas about how local government can assist you with your goals.

Municipalities have the authority to pass and enforce zoning ordinances to control potential contamination. Section 10-8-15 of the Utah Code gives cities and towns the extraterritorial authority to enact ordinances to protect a stream or source from which their drinking water is taken "...for 15 miles above the point from which it is taken and for a distance of 300 feet on each side of such stream...". Class I cities (population greater than 100,000) are granted authority to protect their entire watersheds.

Suggestions for effective management

The most effective management plan is the one you have the highest commitment to! If you chose to meet only the minimum requirements, keep in mind that those minimum requirements represent an on-going commitment to review and contact future potential contamination sources. If you can work cooperatively with a zoning authority to adopt zoning ordinances adjacent to your source, you have increased the effectiveness of the plan and also obtained the assistance of another agency in helping you protect your drinking water source.

Implementation Schedule

This section of your report could be renamed "What will you do, and when will you do it?" For each of your management strategies, identify when the strategy will start. If the strategy will be done routinely, include a description of the frequency (ie, monthly, semi-annual, or whatever is appropriate). This Implementation Schedule is a commitment, so make sure it is reasonable, includes all your strategies (existing and future potential contamination sources) and suits your schedule.

Resource Evaluation

This section allows you to evaluate the financial and other resources you need to plan and carry out your Drinking Water Source Protection Plan. It also helps you assess the resources you will need to acquire before it can be implemented. Do you have adequate staff support? Will community volunteers help make up any resources you are lacking? Do you need to increase your fees or water rates? The Resource Evaluation may be as brief or as detailed as you choose.

Recordkeeping

This section of your plan should describe what records you will keep. Your binder contains a divider for record keeping, or you may devise your own method. The types of things you should keep records of include copies of zoning ordinances, public education program materials, permits, memoranda of agreements, contracts, notes, scheduled visits to potential contamination sources, and the like. Also document the required public notification, both the action and the documents.

Contingency Plan

Contingency plans are only required if they have not been submitted previously, as long as they cover all your drinking water sources.

Contingency Plans address problems public water systems need to solve in the event of water shortages or contamination incidents that may impact their ability to supply safe drinking water to the public. Contingency plans should cover all drinking water sources for your system, which is why you only do one. Prior planning helps Public Water Systems avoid crisis planning during emergency situations. Refer to

Guide To Ground-Water Supply Contingency Planning For Local And State Governments, (EPA 440/6-90-003) for more information.

There are four possible parts to Contingency Plans: 1. Emergency Response; 2. Rationing; 3. Remediation; and 4. Source Development Plans. *Guidelines for developing the four possible parts of a Contingency Plan are discussed in the remainder of this chapter. Since these guidelines may not apply to every Public Water System or every emergency situation, each Public Water System should design a contingency plan that addresses their needs. **Include as much or as little detail as meets the needs of your system.***

Emergency Response Plans

Emergency response planning focuses on short-term solutions to likely problems the Public Water System may encounter because of accidents and natural disasters. The solutions will likely require repairing the physical structure of the water system and sampling or issuing a "boil order" to assure that water is safe to drink. Please refer to the Emergency Response Handbook, available from DDW at 536-4200, for detailed guidelines on emergency response planning.

Rationing Plans

Rationing plans establish a course of action to be implemented when water shortages occur. A shortage may be caused by drought, seasonal overuse, contamination, or accidents. Plans should contain clearly defined, step-by-step procedures that assure the public a sufficient water supply for basic hygienic and culinary needs. You may wish to consider the following:

1. Determine the "action level" caused by a water shortage that will trigger their rationing plan. An "action level" is the critical water shortage that signals a Public Water System to start their rationing plan.
2. Who will be responsible for implementing the rationing plan?
3. If there is a severe water shortage, what alternate water supplies can you use, what emergency water supply equipment do you need, and what technical assistance might you need?
4. Develop a step-by-step procedure for implementing the water conservation measures to be taken.
5. Identify the public education, follow-through, and actions to be taken to make sure consumers are following the rationing plan.
6. Decide how consumers and the media will be kept informed of the status of the emergency situation.

Water Supply Decontamination Plans

After protection zones have been identified, and potential contamination sources have been inventoried, you should decide what you will do if that contaminant reaches your drinking water source. There is only one alternative to not decontaminating a contaminated water supply and that is to abandon the drinking water source.

Technology is available for reducing some contaminants in drinking water to acceptable levels. The most common example of this approach is disinfection to remove microbiological contamination. Another example is air stripping to remove volatile organic compounds, such as solvents. As contamination continues to threaten drinking water sources throughout the country, new remediation technology is being developed. It is a good idea to keep up on what is currently available in the field of remediation technology.

Source Development Plans

1. If worse came to worst, are there alternate source of drinking water you can develop or use? Start by listing backup wells and springs currently in the system, then list abandoned wells and springs that could possibly be reclaimed and redeveloped. Finally, list potential springs and new well sites along with possible surface sources. Public Water Systems may want to keep this information

confidential to prevent others from filing a claim on a water right first. This information need not be submitted to DDW with the Contingency Plan.

Alternatively, some water systems have reached agreements with neighboring water systems to supply water in an emergency. These kinds of arrangements can rarely be permanent, but may be able to carry you through an emergency.

2. What is the probable production of each of these sources and the percentage of your current and projected needs that would be supplied by each potential source?
3. List the steps required to obtain ownership and water rights for each potential new source. Public Water Systems may be granted water rights based on anticipated water demand.
4. Determine the approximate protection zones around each potential new well or spring. Consider purchasing land or development rights, and enacting protective ordinances or land use agreements to protect the water source within the protection zones.
5. Inventory all PCSs within each approximate protection zone which may affect the quality of the drinking water now or in the future.
6. Identify the microbiological, chemical, and radiological quality of each potential drinking water source. Ensure that all parameters are below established maximum contaminant levels (MCLs).
7. Estimate when each new drinking water source will need to be introduced into the system to meet projected supply requirements.
8. Determine the financial resources that may be required for each drinking water source development project. List possible sources of revenue.
9. List the positions and administrative duties of each person responsible for implementing the drinking water source development plan.
10. Submit a Preliminary Evaluation Report to DDW concurrently with engineering plans and specifications before construction begins on any new surface water source of drinking water.

Public Notification

The Safe Drinking Water Act Amendments of 1996 for State Source Water Assessment Programs place a high priority on notifying the public regarding how susceptible their drinking water may be to potential sources of contamination. *The intention behind advising the public regarding susceptibility is to educate and inform people regarding the benefits of preventing contamination and the kinds of activities that may adversely affect sources of drinking water.* It may be useful to emphasize what this does not mean, before we discuss what is required:

- < Public notification does not mean that you must highlight individual businesses, sites or locations as potential sources of contamination.
- < Public notification does not mean that you must specifically identify the location of intakes, if you have concerns about making that information widely available.
- < Public notification does not mean that public should be alarmed about their drinking water and where it comes from; rather, they should be informed about how human activities can and do affect all sources of water.

Appendix G contains an example of a suitable public notice, as well as guidance regarding how to distribute them . You may use this example as a template, or you may create your own notice. You must supply an example of your proposed public notice with your DWSP report; if the notice is not acceptable

you will be asked to revise it. An incomplete Public Notice may also delay concurrence with your plan. If you chose to do your own, please be aware that the following information **must** be included (use this as a checklist):

- I. A map showing the watershed area and general areas of concern, including generalized locations of PCSs. You may use the maps provided by DDW, or we can assist you in modifying them. If you regard this as a security issue, we will waive this requirement.
- II. A general discussion of the sensitivity of your watershed (perhaps topography, geology, and vegetative cover, which is information you gathered in your susceptibility analysis).
- III. A discussion regarding the general categories of PCSs found in your inventory, and how susceptible your source may be to them.
- IV. A general discussion of the health concerns associated with the PCSs in the watershed your source area
- V. A general discussion of your land management or other protection strategies.
- VI. Specific information regarding how any individual can obtain a copy of your report(s).

DDW can assist you in completing an appropriate public notice, on request.

Since Utah contains numerous Public Water Systems of different types, each in a unique geographic setting with a vastly different population basis, it is important to use a means of notifying the public that is customized to reach the specific customers of a Public Water System. The following are general suggestions for specific circumstances, but they are by no means the only ways for a Public Water System to notify its customers, and a Public Water System should recommend and then use the most effective means for their circumstances. You must specify within your DWSP report how you will notify the public/your customers. A combination of methods may be most effective, rather than relying on one method, especially if your system is large.

Community Water Systems:

- Publish the availability of the assessment in the annual Consumer Confidence Report (CCR), as required by the 1996 amendments to the Safe Drinking Water Act. Note that the CCR rule requires that the CCR must, at a minimum, include a summary of a systems susceptibility to potential sources of contamination, and information on how to obtain a copy of the assessment
- Provide a summary of the results as an attachment to consumer's water bills.
- Post notices at public health departments, county buildings and libraries
- Provide notices directly to hospitals, retirement homes, and any other location where the population may be considered sensitive.
- Post a summary of results on web sites
- Publish an article in the local newspaper.
- Advise the public using community service messages on radio or television.

Non-transient non-community water systems:

- Publish notices on boards.
- Include flyers with employees pay checks
- Include the information in newsletters
- Enlist the assistance of employee or member organizations.

In every instance, it is very important to:

Make sure the information is understandable.

Make sure the summary describes, in a general sense, how susceptible the public water system is to potential contamination sources (it is not necessary to specifically identify the specific sources in the summary, although that information will be in the complete assessment, should the public wish to review it).

Make sure the information is distributed in a timely way.

Make sure the public understands how and where it can review the entire completed assessment.

It is crucial that you provide a complete example of your intended public notice with your DWSP report, and also that you propose a thorough mechanism for reaching the consumers of your water. DDW may ask you to revise your notice, before it is sent to the public, if it doesn't cover the material identified in this User's Guide.

Checklist

CHECKLIST FOR DEVELOPING A DRINKING WATER SOURCE PROTECTION PLAN

Process Report What to include in the report section
 Section

□ Drinking Water Source Protection Report Sections and Development

For each major heading below, obtain or develop the information listed next to each check box. Each check box represents a piece of your report that must be provided to the Division of Drinking Water.

Delineation Report

request and obtain protection zone delineations from the Division of Drinking Water (801-536-4200), if not already provided, or prepare a report meeting the requirements of R309-605

Susceptibility Analysis and Determination

request and obtain inventory of larger potential contamination sources from the Division of Drinking Water, if not already provided.
compile inventory of and collect data regarding smaller Potential Contamination Source in Zones 1 through 3 from local information (you may use the inventory report form (Appendix I) provided by the Division of Drinking Water, or your own method);
for each Potential Contamination Source in each zone (including the Potential Contamination Source list provided by the Division of Drinking Water), evaluate whether the Potential Contamination Source is controlled or not controlled (the evaluation criteria are included on the inventory form in Appendix I)
for each Potential Contamination Source, evaluate whether your drinking water source is susceptible to that Potential Contamination Source (you may use one of the susceptibility forms (Appendix H) provided by the Division of Drinking Water for this, or you may provide your own explanation for your susceptibility determinations).
prioritize your inventory to reflect which Potential Contamination Sources represent the most serious concern to your source water; show each Potential Contamination Source on a map, and identify on your inventory which protection zone the Potential Contamination Source is located in.
Your report will include the map and information collected above, including information regarding the locations of the Potential Contamination Sources, the protection zone they are found in, whether the Potential Contamination Source is controlled or not, what criteria exist to show that the Potential Contamination Source is controlled, and what specific hazards are present.

Management Plan for existing uncontrolled Potential Contamination Sources

For the three highest priority uncontrolled Potential Contamination Sources, identify a plan to manage that uncontrolled Potential Contamination Source. Please review page 11 for ideas regarding management of Potential Contamination Sources.

Management Plan for future Potential Contamination Sources

For potential future Potential Contamination Sources, identify a plan to manage those Potential Contamination Sources. Please review pages 12 and 13 for ideas regarding management of future Potential Contamination Source, and for the minimum requirements. *Include at least the minimum requirements!*

Implementation

For each management plan, existing or future, identify a schedule for implementing that plan. See page 13 for further information.

Resource Evaluation

Discuss the resources (financial, personnel, etc) you will need to implement your plan, and how they will be obtained if not currently available. See page 13 for further information.

Record keeping

Identify your method of record keeping. At a minimum, discuss how you will update your report, what the frequency will be (at least every second year after approval), and what records you will keep. See page 13 for further information.

Contingency Plan:

Contingency Plans need only be done once per system, but they must cover all your sources, whether well, spring, and/or surface. If a plan was already submitted and approved, you do not need to do another one. If not, provide the following discussion:

Emergency response: What do you plan to do if a sudden emergency affects the quality of your water, and/or your ability to deliver it to your customers.

Rationing plan: What do you plan to do if you must ration water to your customers? See page 14 for discussion of what this may entail.

Decontamination procedures: Now that you have identified potential contamination sources, what will you do to decontaminate your water supply, should you need to? A chemical-specific discussion is appropriate.

- ❑ Source development plans: how and where might you develop new sources if the need arises? See page 14 for discussion of the issues you should consider.

Please note that this plan should be considered an action plan; a commitment to a particular line of action should the unforeseen take place. Therefore, involve the appropriate stakeholders in developing your contingency plan.

Public Notice: prepare a public notice that discusses the conclusion of your Drinking Water Source Protection plan. See page 15 for a discussion of the necessary elements. You may use a template provided by the Division of Drinking Water, or you may write your own. The following elements must be included:

- ❑ A map showing the watershed area and general areas of concern, including generalized locations of Potential Contamination Sources (map is optional)
- ❑ A general discussion of the topographic and geologic characteristics of your watershed (generally, the factors you would use in determining how sensitive your source area is).
- ❑ A discussion regarding the general categories of Potential Contamination Sources found in your inventory, and how susceptible your source may be to them.
- ❑ A general discussion of the health concerns associated with the Potential Contamination Sources in the watershed your source area
- ❑ A general discussion of your land management or other protection strategies.
- ❑ Specific information regarding how any individual can obtain a copy of your report(s).

Don't distribute your public notice until it has been reviewed and approved by the Division of Drinking Water!

**Compile the report sections listed above, and submit to the Division of Drinking Water
Receive concurrence letter after review, or respond to comments within 90 days**

After concurrence from the Division of Drinking Water, distribute the public notice to your customers.

Pages 15-17 provide a discussion of different methods to achieve this, or you may use any method that seems appropriate for your community. Document that you have distributed the notice in your record-keeping section.

Future updates:

Every two years, review your plan to see if it is still applicable. Make adjustments for changes in land use, add new potential sources of contamination, delete old ones that may be gone. Document this review and any changes in the recordkeeping section.

Every six years, resubmit your plan for review by the Division of Drinking Water.

Appendices

Appendix A - Involving the community

Community involvement is the primary characteristic of a successful Drinking Water Source Protection program. A source protection team⁵ helps get the community involved. Team members should represent the various interests of the community. Public water system personnel, local governmental representatives, health department personnel, community residents, and industrial, agricultural, and commercial representatives, etc. may all be included.

Source Protection Team Responsibilities

A team leader should be appointed by the Public Water System or chosen by the team. This person should have organizational and consensus-building skills and have the support of the other team members and the community. Once the source protection team is established, its members should determine the team's goals. These should include inventorying Potential Contamination Sources, and deciding on management approaches.

Source Protection Team Functions

Many Public Water Systems use a source protection team for the planning process and then disband it. However, since source protection is not static and is never really complete, it is a good idea to keep a source protection team active as long as protecting ground water is an objective of your system. With the experience team members acquire during the planning process they will be valuable resources in working with both existing and new Potential Contamination Sources, continuing community education programs, and following through to ensure that management approaches are effectively implemented.

Here are a few ideas to further involve the community:

- < Announce all of the meetings of the source protection team and report its progress in your local newspaper.
- < Train a service group, such as Retired Senior Volunteer Program (RSVP) members, a Boy Scout troop, or a school science class, etc., to compile information for the plan.
- < Some areas have organized Watershed - Water Quality Work Groups through the Division of Water Quality (DWQ). Contact DWQ at 801-538-6146 if you would like to participate in these work groups in order to help meet your goals of source water protection.
- < Educate the community or appropriate segments of the community concerning subjects, such as the use and disposal of household hazardous waste, the use and maintenance of septic tank systems, disposal of used oil, etc.
- < Some people in the community may come forward with information about historic potential contamination sites if they read or hear about your source protection objectives.

⁵ Participating on a watershed protection team can accomplish similar goals, with the added benefit of emphasizing overall water quality issues throughout the watershed.

Appendix B – Which agency does what?

State Agencies

The Division of Water Quality

Standards of Quality for Waters of the State - R317-2, Utah Administrative Code (UAC)

Ground Water Quality Protection Rule - R317-6, UAC - The Ground Water Quality Protection Rule establishes a permit system to regulate contaminated discharges to ground water. Any contamination source that discharges contaminants to ground water must obtain a permit from the Division of Water Quality. The Ground Water Quality Protection Rule contains five sections: 1. ground water quality standards; 2. ground water classification; 3. protection levels; 4. ground water classification procedures; and 5. ground water discharge permit system.

Underground Injection Control Rule - R317-7, UAC - The Underground Injection Control Rule regulates the subsurface emplacement of fluids through bored, drilled, or driven wells; or through dug wells, where the depth of the dug well is greater than the largest surface dimension. Examples of underground injection wells include floor drains in service stations that discharge into sumps dug into the ground or drilled wells into which wastewater or other fluids are discharged.

This rule establishes a permit system to regulate underground injection wells. The Underground Injection Control Rule contains five parts: 1. classification of injection wells; 2. prohibition of unauthorized injection; 3. permit requirements; 4. technical requirements; and 5. hazardous waste injection restrictions.

Class II underground injection wells are regulated by the Division of Oil, Gas and Mining.

Utah Pollutant Discharge Elimination System Rule - R317-8, UAC - The Utah Pollutant Discharge Elimination System (UPDES) program requires permits for the discharge of pollutants from any point source into waters of the State. The program also applies to owners or operators of any treatment works treating domestic sewage.

Large Underground Wastewater Disposal System Rule - R317-5 of the UAC - The Large Underground Wastewater Disposal System Rule applies to large underground disposal systems for domestic wastewater discharges which exceed 5,000 gallons per day (gpd) and all other domestic wastewater discharges not covered under the definition of an "Individual wastewater disposal system." Usually these systems should not be designed for over 15,000 gpd. In general, it is not acceptable to dispose of industrial wastewater in an underground disposal system.

Utah Concentrated Animal Feeding Operations- A program emphasizing voluntary compliance with standards governing discharges into streams related to animal feeding operations.

Nonpoint source 319 program – Grants are available to public agencies who are trying to mitigate non-point sources of pollution. Priority is given to source of drinking water, although listing as an approved TMDL is also a priority. Funding can be used for educational outreach.

The Division of Solid and Hazardous Waste

Hazardous Waste Rules - Resource Conservation and Recovery (RCAC) - R315-1 through R315-15 and R315-50, UAC - The Hazardous Waste rules provide for "cradle-to-grave" management of substances classified as hazardous wastes. Their objective is to prevent contamination of the environment, which includes ground water, and potential adverse effects on human health. These rules also identify those solid wastes which are subject to regulation as hazardous wastes and to notification, transportation, and disposal requirements. Facilities that treat, store, or dispose of hazardous waste are regulated by this rule.

Solid Waste Permitting and Management Rules (Landfills) - R315-301 through R315-320, UAC - The Solid Waste Permitting and Management Rules are promulgated under the authority of the Solid and Hazardous Waste Act, Chapter 6 of Title 19, to protect human health, to prevent land, air and water pollution, and to conserve the state's natural, economic and energy resources by setting minimum performance standards for the proper management of solid wastes originating from residential, commercial, agricultural, and other sources.

The Division of Environmental Response and Remediation

Underground Storage Tank Rules - R311-200 through R311-211, UAC - The Underground Storage Tank Rules protect ground water resources by preventing and detecting leaks and spills from underground storage tanks. Sites that are contaminated by leaking underground storage tanks must be cleaned up. Also, a fund has been established in the state to make sure that owners and operators of underground storage tanks can pay for correcting the problems they create if their underground storage tanks leak.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA commonly called Superfund) - Section 19-6-301 through Section 19-6-325 of the Utah Code Annotated - The Hazardous Substances Mitigation Act authorizes the executive director of the Department of Environmental Quality to regulate hazardous substances releases by making rules consistent with the substantive requirements of CERCLA, to establish the requirements for remedial investigation studies and remedial action plans.

40 CFR Part 300 of the Code of Federal Regulations - The National Oil and Hazardous Substances Pollution Contingency Plan establishes the organizational structure and specifies the procedures for remediating pollution when oil or hazardous substances are discharged or released into the environment.

SARA Title III - 40 CFR part 355 of the Code of Federal Regulations - SARA Title III provides early comprehensive emergency planning for responding to potential releases of toxic chemicals.

Facilities must notify the local emergency planning committee (refer to Appendix D for local emergency planning committees in Utah) when an "extremely hazardous substance" is present in an amount greater than the appropriate "threshold planning quantity." These facilities are required to prepare or have available a material safety data sheet (MSDS) for each hazardous chemical and submit it to the appropriate local emergency planning committee.

This regulation requires public access to information submitted to local emergency planning committees. Each emergency response plan, MSDS, inventory form, toxic chemical release form, and follow-up emergency release notification is to be made available to the general public during normal working hours at the location designated for the local emergency planning committee.

The Division of Water Rights

Water Well Rule - R655-4, UAC - The Water Well Rule assists in the orderly development of underground water, insures that minimum construction standards are achieved in the drilling and repairing

of water wells, **prevents pollution of aquifers within the state**, prevents wasting of flowing wells, obtains accurate records of well drilling operations, and insures compliance with the state engineer's authority for appropriating water.

Abandoned Water Wells - R655-4-12, UAC - These requirements are part of the Water Well Rule. When any well is temporarily removed from service, the top of the well shall be sealed with a water-tight cap or seal. If the well is temporarily abandoned during construction, it shall be assumed that the well is permanently abandoned after 90 days. Any well that is to be permanently abandoned shall be completely filled in such a manner as to prevent vertical movement of water within the borehole as well as preventing the annular space surrounding the well casing from becoming a conduit for possible contamination of the groundwater supply.

The Division of Oil, Gas, and Mining

Oil, Gas and Mining: Abandoned Mine Reclamation - R643, UAC - The Abandoned Mine Reclamation Rule establishes land and water eligibility requirements, reclamation project objectives and standards, and project selection factors. These provisions apply to all reclamation projects to be carried out with money from the Account and administered by the Division. Lands and water are eligible for reclamation activities if:

- < They were mined or affected by mining processes;
- < They were mined prior to August 3, 1977, and left or abandoned in either an unreclaimed or inadequately reclaimed condition; and
- < There is no continuing responsibility for reclamation by the operator, permittee, or agent of the permittee under statutes of the state or federal government, or the state as a result of bond forfeiture. Bond forfeiture will render lands or water ineligible only if the amount forfeited is sufficient to pay the total cost of the necessary reclamation. In cases where the forfeited bond is insufficient to pay the total cost of reclamation, additional moneys from the Account may be sought.

Oil, Gas and Mining: Non-Coal - R647, UAC - The Non-Coal Rule establishes land and water eligibility requirements for non-coal reclamation. Non-coal lands and water are eligible for reclamation if:

- < They were mined or affected by mining processes;
- < They were mined prior to August 1977, and left or abandoned in either an unreclaimed or inadequately reclaimed condition;
- < There is no continuing responsibility for reclamation by the operator, permittee, or agent of the permittee under statutes of the state or federal government or the state as a result of bond forfeiture. Bond forfeiture will render lands or water ineligible only if the amount forfeited is sufficient to pay the total cost of the necessary reclamation. In cases where the forfeited bond is insufficient to pay the total cost of reclamation, additional moneys from the Account may be sought;
- < The reclamation has been requested by the Governor;
- < The reclamation is necessary for the protection of the public health and safety or all coal related reclamation has been accomplished; and
- < Moneys allocated to the Division are available for the work.

Oil, Gas and Mining; Coal - R645, UAC - The Coal Rule applies to coal exploration and coal mining and reclamation operations.

Oil, Gas and Mining; Oil and Gas - R649, UAC - The Oil and Gas Rule applies to all lands in the state in order to conserve the natural resources of oil and gas in the state, to protect human health and the environment, to prevent waste, to protect the correlative rights of all owners and to realize the greatest ultimate recovery of oil and gas.

Class II Injection Wells - R649-5, UAC - These requirements are part of the Oil and Gas Rule. Class II injection wells must be completed and operated to prevent pollution or damage to any Underground Source of Drinking Water. The application for injection must include evidence that the proposed injection will not initiate fractures in overlying strata that could allow the injected fluid to enter the fresh water strata. The application must also include a review of all wells within a one-half mile radius of the injection well to determine that a conduit does not exist for fluids to move up or down the well bore to enter other strata. The casing of the injection well must be pressure tested before use, and thereafter the well must be tested at least once every five years, or the pressure may be monitored during injection operations.

Pollution Surface Damage Control - R649-3-15 - These regulations control pollution effects associated with the on-site portion of oil drilling and oil production, prior to introduction into a pipeline.

The Department of Agriculture

Pesticide Control Rule - R68-7 of the UAC - The Pesticide Control Rule requires that pesticide application be consistent with the label for that pesticide and that pesticide application not violate the restrictions on the use of that pesticide. Note, however, that there is no mechanism to ensure that these requirements are followed.

Public Service Commission

Pipeline Safety, R746-409 of the UAC - Regulates intrastate pipeline transfers of natural gas.

Local Health Departments

Section 26A-1-114-(1)(a) of the Utah Code authorizes local health departments to "enforce state and local laws, regulations, and standards relating to public health and sanitation." Cities, towns, and counties are encouraged to enact local ordinances in conjunction with their source protection programs. Local health departments can strengthen local protection programs since they can enforce the ordinances relating to public health and sanitation.

Individual Wastewater Disposal Systems (Septic Tank/Drain-fields) - R317-501, UAC - These rules apply to individual wastewater disposal systems for domestic wastewater discharges which do not exceed 5,000 gallons per day. Plans, specifications, and a site evaluation are submitted to the local health department having jurisdiction for review and approval prior to construction of these systems. Construction standards apply to the building sewer, septic tank, and drain-field. Isolation distances are required to protect wells, springs, surface water, and any other waters that might be affected by the pollutants discharged by individual wastewater disposal systems.

The site evaluation reports information about the proposed location of the system, such as soil percolation rates, soil classifications, and distances to ground water and bedrock. A final inspection by a registered sanitarian from the local health department is required to ensure the system is constructed as per plans and specifications prior to backfilling the system.

Scavenger Waste Disposal - R317-550, UAC - The Scavenger Waste Disposal Rule pertains to the collection, storage, transportation, and disposal of all wastes by liquid scavenger operators and requires that

they be accomplished in a sanitary manner. It also requires these processes do not create a public health hazard or nuisance, or adversely affect the quality of the waters of the State.

Vault and Earthen Pit Privies - R317-560, UAC - The Vault and Earthen Pit Privy Rule permits privies as a substitute for water closets, for temporary or limited use in remote locations where provisions for water supply or wastewater disposal pose a significant problem. The intended primary use of vault and pit privies in this rule is for facilities such as labor camps, semi-developed and semi-primitive recreational camps, temporary mass gatherings, and other approved uses. Potable water under pressure may or may not be available.

Requests for the use of vault privies or earthen pit privies shall be evaluated on a case-by-case basis by the local health department having jurisdiction and must receive the written approval of the local health officer or his designated representative prior to the installation of such devices.

Federal Requirements

Under the Federal Safe Drinking Water Act Amendments of 1996, any department or agency of the federal government having jurisdiction over any potential source of contaminants within drinking water source protection zones or management areas identified by a State Drinking Water Source Protection Program, is subject to, and must comply with, all requirements of the State's Program. This includes the payment of reasonable charges and fees levied in connection with the management or remediation of potential sources of ground-water contamination within drinking water source protection zones or management areas.

Federal Agencies

Bureau of Land Management Resource Management Plans

National Forest Standards and Guidelines

Appendix C - Who should I call?

Division of Environmental Response and Remediation:

CERCLA Sites, Underground Storage Tanks, 801-536-4100

Division of Water Quality:

Utah CAFO Strategy: Rand Fisher (801) 538-6065

Watershed Planning Committees: Harry Judd (801) 538-6146

Utah Farm Bureau

Utah CAFO Strategy: Water Quality Director - Mark Peterson (801-233-3014),
markp@sisna.com

Division of Solid and Hazardous Waste

RCRIS/RCRA Sites: 801-538-6170

Division of Oil, Gas and Mining

Abandoned Mines: 801-538-5340

Division of Public Utilities

Pipeline Safety: 801-530-6651

These phone numbers and names were valid on Friday, February 03, 2006; you may request an updated list from the Division of Drinking Water at 801-536-4200, if necessary.

Appendix D - Emergency Planning Committees

SARA Title III requires Local Emergency Planning Committees to maintain information about toxic chemicals that are stored, used, or manufactured at Potential Contamination Sources above certain threshold amounts. The information they maintain is available to the public upon request. They may also be able to furnish you with Material Safety Data Sheets (MSDSs) for the chemicals at the Potential Contamination Sources within their county. MSDSs can also be obtained on the Internet at "<http://MSDS.PDC.CORNELL.EDU/issearch/msdssrch.htm>"

When hazardous material spills occur on roads and highways within your protection zones, the chairperson of your local emergency planning committee will take charge of coordinating emergency response. You should contact this committee, provide them with a map of your protection zones, and ask them to notify you if there is a spill so you can provide them with important information about your well or spring. Your Drinking Water Source Protection plan contains information that is a valuable resource in emergency response decisions. This information includes the distance from the spill to your intake.

LOCAL EMERGENCY PLANNING COMMITTEES FOR COUNTIES

(Information current on May 10, 2000)

County	Chairperson	Address	Phone
Beaver	Dale R. Maples Beaver Co. Sheriff's Dept.	PO Box 391 Beaver, UT 84731	(435) 438-2862
Box Elder	Lynn Yeates, Co-Chairperson Box Elder Co. Sheriff's Dept.	Box 888 -21 South Main Brigham City, UT 84302	(435) 734-3800
Cache	Jeff Peterson, Chairperson Cache Co. Fire Dept.	50 W 200 N Suite D Logan, UT 84321	(435) 750-7493
Carbon	Dennis Dooley, Chairperson Carbon Co. Emergency Mgmt	120 E Main Price, UT 84501	(435) 636-3290
Daggett	Winston Slaugh, Deputy Director	PO Box 176 Manila, UT 84046	(435) 784-3389
Davis	Brian Law, Chairperson Davis Co. Sheriff's Office	PO Box 618 Farmington, UT 84025	(801) 451-4129
Duchesne	Georg Adams, County Director	PO Box 298 Duchesne, UT 84021	(435) 738-1181
Emery	Bryant Anderson, Acting	PO Box 417 Castle Dale, UT 84513	(435) 381-5374
Garfield	Chris Hatch, Acting	PO Box 370 Panguitch, UT 84759	(435) 676-2678
Grand	Doug Squire, Co-Chairperson Grand Co. Sheriff's Office	125 E Center Moab, UT 84532	(435) 259-8115
Iron	Dude Benson, County Director Iron County Sheriff's Dept.	PO Box 622 Cedar City, UT 84720	(435) 586-6511

Juab	Gary Corbin, Acting Juab Co. Sheriff's Office	PO Box 133 Nephi, UT 84648	(435) 623-1349
Kane	Dave Owens Kane Co. Emergency Mgmt.	76 N Main Kanab, UT 84741	(435) 644-2551
Millard	Forrest Roper, Chairperson Millard Co. Sheriff's Office	Star Route Box 50 Fillmore, UT 84631	(435) 743-5302
Morgan	Terry Turner, Co-Chairperson Morgan Co. Emergency Mgmt	Courthouse, PO Box 886 Morgan, UT 84050	(435) 845-4048
Piute	Sheriff Marty Gleave	PO Box 145 Junction, UT 84740	(435) 577-2893
Rich	Dan Ames	109 N 200 E Laketown, UT 84038	(435) 946-2907
Salt Lake	Dennis Stanley	440 S 300 E SLC, UT 84111	(801) 535-5969
San Juan	Rick Bailey	PO Box 9 Monticello, UT 84535	(435) 587-3225
Sanpete	Bevin Blackham	241 N. 100 W. Fairview, UT 84646	(435) 283-7243
Sevier	Jim Porter	180 N Main Richfield, UT 84701	(435) 896-4890
Summit	Al Cooper	110 Zermat Strasse (Summit Park) Park City, UT 84098	(435) 649-9439
Tooele	Harry Shinton	47 S Main Tooele, UT 84047	(435) 882-3335
Uintah	Rick Salazer	PO Box 1230 Vernal, UT 84078	(435) 781-2294
Utah	Coy Porter	80 S 300 W Provo, UT 84601	(801) 852-6321
Wasatch	Kent J. Berg, Acting	805 W 100 S Heber City, UT 84032	(435) 654-1661
Washington	Dean Cox	197 E Tabernacle St George, UT 84770	(435) 673-4824
Wayne	Vicky Bower	PO Box 387 Loa, UT 84747	(435) 836-2831
Weber	Sherrie Ellis	457 26 th St. Ogden UT 84401	(801) 399-8473

Appendix E - Electronic forms on disc

The disc provided by the Division of Drinking Water in your source water protection binder contains forms and information sheets to assist you in developing your Drinking Water Source Protection plan. You are not required to use the forms, but if you are unsure about how to start some of the required work, the forms may help guide you through the process.

Fact Sheets: General information about Potential Contamination Sources is contained in the Fact Sheets listed below. They are intended to be used to provide information about Potential Contamination Sources and to make general best management and pollution prevention practice recommendations. They are **not** intended to be used as a "cookbook" for source protection. You may find them helpful in getting started with public education activities; however, best management and pollution prevention strategies should be tailored to fit the specific situations at each Potential Contamination Source. *You are encouraged to develop well thought out protection strategies that will effectively protect the quality of your drinking water.*

- Dry Cleaning (dryclean.wpd or .doc)
- Fertilizer (fertiliz.wpd or .doc)
- Household Hazardous Waste (househaz.wpd or .doc)
- Junkyards (junkyard.wpd or .doc)
- Metal Finishers (metalfin.wpd or .doc)
- Pesticides (pesticid.wpd or .doc)
- Pollution Prevention (P2_shw.wpd or .doc)
- Printing Shops (printshp.wpd or .doc)
- Septic Tank/Drain-field Systems (septic_s.wpd or .doc)
- Vehicle Maintenance & Repair (vehicle.wpd or .doc)

Susceptibility forms: two forms are provided: a matrix (suscept-Matrix.wpd) approach, and a narrative (suscept-narra.wpd) approach. The matrix approach allows you to evaluate factors that contribute to how susceptible your source water may be, assign a score to those factors, and rank potential contamination sources by their score. The narrative approach allows you to discuss, in a more qualitative way, the same types of factors. The susceptibility matrix is also provided as an interactive worksheet in Excel format (suscept.xls). If you use the interactive version, the form will calculate the final susceptibility score for you.

Public Notification form/template: the public notification form provided is an acceptable public notice for any water system. If you use this form, you must replace the information in it to refer to your own system.

Inventory Form: the inventory form (survey_fm.wpd) provides guidance on collecting relevant information on potential contamination sources, and assessing whether the Potential Contamination Source is controlled or not.

Standard Report Formats: Following these formats for your Preliminary Evaluation Report or your Drinking Water Source Protection plan allows for more timely and speedier review of your submittals. Please use these formats for the applicable sections of your report.

Appendix F - Information available on the web

The State of Utah Automated Geographic Reference Center (AGRC) has geographic information system data available on their web site at no charge. They also provide links to various county web sites where you can obtain Geographic Information System data (there is a charge for some of the county data). You can find the AGRC site at: <http://www.its.state.ut.us/agrc>. This office is located in the State Office Building, 450 N Main, SLC, UT, and can be contacted at 538-3163.

The Salt Lake County Recorders office provides on-line access to property owner information. You can find their site at: <http://recims.co.slc.ut.us/parims/parims.html>

EPA maintains a web site dedicated to source water assessment and protection (SWAP). The SWAP web site is located at <http://www.epa.gov/safewater/protect.html>

The Ground Water Protection Council (GWPC) also maintains a web site with source water protection information. The GWPC site is located at: <http://gwpc.site.net/sourcewater>

EPA provides watershed specific information at <http://www.epa.gov/adopt/> The “Adopt a Waterbody “ site highlights citizen involvement in watershed protection.

The Enviromapper web site, located at <http://www.epa.gov/enviro/html/em/index.html> showcases interactive maps that allow you to locate areas of interest by zip code and identify possible sources of contamination. The same site also offers an interactive map that allows a user to select the area of the country they are interested in and identify watershed quality issues for that location.

The U.S. Department of Agriculture, in cooperation with several other agencies, has developed a manual on stream restoration. Their web site, at http://www.usda.gov/stream_restoration/newgra.html provides information on ordering a copy (paper or CD-ROM). Sections of the manual can be reviewed on the web site and downloaded individually, for free.

Free software is available from the Software for Environmental Awareness site at <http://www.epa.gov/grtlakes/seahome/index.html> Software includes covers many environmental topics, including agricultural pollution prevention, on-site waste management, wellhead protection, and surface water contamination.

EPA’s Office of Pollution Prevention offers numerous fact sheets, including many with chemical specific information: <http://www.epa.gov/opptintr/facts.htm>

Local Emergency Planning Committees (see also Appendix D): These committees maintain information about toxic substances that are stored or used at Potential Contamination Source facilities. SARA Title III requires these committees to maintain

information about toxic chemicals that are stored, used, or manufactured at these facilities above certain threshold amounts. The information they maintain is available to the public upon request. Local Emergency Planning Committees may also be able to furnish you with Material Safety Data Sheets (MSDSs). These information sheets provide information about the properties and health effects of the toxic chemicals used at these sites. If they can't furnish you with the specific MSDSs you need, the chemical manufacturer is required to provide them to you upon request. MSDSs are also available on the Internet at <http://MSDS.PDC.CORNELL.EDU/issearch/msdssrch.htm> . Refer to Appendix D for a list of the Local Emergency Planning Committees in Utah.

The Division of Water Rights: This division of state government maintains information about the locations of wells that have been drilled in Utah. Additionally, they maintain files containing the Report of Well Driller for these wells. This division is located at 1636 W North Temple, SLC, UT, and can be contacted at 538-7240. The division also provides on-line access to many of their records at no charge:
<http://nrwrt1.nr.state.ut.us/>.

The Department of Community and Economic Development: This department publishes the *Directory of Business and Industry*. It contains listings for business and manufacturing firms that have more than ten employees. These listings are classified by a "standard industrial code." This department is located at 324 S State, SLC, UT, and can be contacted at 538-8700.

County Planning Offices: Some counties maintain a Geographic Information System database of land use, zoning, and development within county boundaries. They may be able to provide you with maps showing land use, land fills, locations of developments with septic systems, and the like.

Appendix G - Example of Public Notification

Modify this example so that it represents your system!

Source Water Assessment Summary for Surface Water

Source Water Assessment Public Summary **XYZ Public Water System**

Insert date

Introduction

The XYZ Public Water Supplier is completing assessments of potential contamination threats to the raw water quality of its public drinking water sources as required by the 1996 Safe Drinking Water Act and by R309-600 and 605 of the State of Utah Drinking Water regulations. XYZ has prepared this Source Water Assessment Public Summary to provide information to its customers regarding local and state efforts to protect the raw water quality of XYZ's drinking water source. This assessment is for the watershed that provides water to the XYZ Public Water Supplier. The assessment is of "source" (river, lake, reservoir) rather than "tap" water. Information on "tap" water quality is available in XYZ Public Water Supplier's Consumer Confidence Report that can be obtained by calling insert number.

What is the Source of Your Drinking Water?

The source of water for the XYZ Public Water Supplier is type of surface water from location (see attached map). An average of _____ gallons of water is withdrawn from the river, lake, reservoir each day. The water system serves a population of approximately _____ customers. The location of XYZ's water supply intake is _____ - as shown on the attached map (*it is not mandatory to identify the location of the intake*). The map also shows the boundaries of the watershed. The watershed area is _____ acres, and covers parts of _____, _____, and _____ counties. _____ is the largest stream in the watershed and is fed by _____ as well as numerous smaller tributaries. Approximately _____ percent of the watershed is forested, _____ percent is used for agriculture (pasture and row crops), _____ % of the area is developed for residential, commercial or industrial uses, and the remaining _____ % is _____ (*These numbers can be obtained from the land use reports provided by the Division of Drinking Water*). There are approximately _____ people living within the watershed.

Water Quality and Water Treatment Information

Water withdrawn from source name is describe treatment(filtered, chlorinated, etc) prior to distribution to customers. Water quality testing performed by XYZ indicated that results of tap water sampling done in year were acceptable/not acceptable.

Evaluation of Significant Potential Sources of Contamination

This assessment evaluates contaminants that **may** enter the water drawn directly from source name before treatment. The contaminants addressed in this assessment include those regulated under the federal Safe Drinking Water Act as well as those that XYZ has determined may present a concern to health. Descriptions of the **significant potential** sources of contamination associated with the insert name watershed are provided below. Each significant potential source of contamination has been analyzed and given a qualitative susceptibility rating (explain ranking).

if necessary) according to its potential to impact the water supply. Potential sources of contamination are summarized below.

Potential Sources of Contamination	Contaminants of Concern	Description	Potential Impact to Source Water Quality
<i>Sewage discharges (see map)</i>	<i>bacteria, virus pathogens, including giardia and cryptosporidium</i>	<i>Water discharged from wastewater treatment plants and untreated wastewater from failing septic tank systems</i>	<i>Use your ranking from susceptibility assessment: appropriate terms may include high, medium or low, numerical, or alphabetical rankings (A,B,C and so on)</i>
<i>Agricultural Activities</i>	<i>nitrogen and phosphorus</i>	<i>fertilizer: phosphorus causes algal bloom and eutrophication in Lake Ontelaunee, nitrates and phosphorus assoc. with agricultural use</i>	
<i>(same as above)</i>	<i>pesticides, herbicides, insecticides</i>	<i>weed control and insect control applied to crop lands</i>	

As indicated above, both treated and untreated sewage discharges into the watershed may be significant sources of pathogens (germs) that can cause waterborne diseases. A combination of (describe treatment) at XYZ's water treatment plant removes and/or destroys most of these pathogens. A concern remains about cryptosporidium and giardia since these pathogens cause intestinal diseases which can be very serious for people with a weakened immune system, those undergoing chemotherapy or dialysis, transplant patients, and people with Crohn's disease or HIV infection. Fortunately, filtration removes about 99% of such pathogens before water reaches the tap.

Giardia and cryptosporidium pathogens have been found in source name and its tributaries. This is probably attributable to sewage discharges from wastewater treatment facilities and failed septic systems, fecal matter from farm animals close to or entering the waterways, and perhaps wildlife. Levels of these pathogens appear to increase in stream water following a heavy precipitation event. Elevated levels of fecal coliform (a form of bacteria from human waste) were detected downstream of sewer treatment plants within the watershed, and in Source Name immediately downstream of the villages of _____ and _____.

In terms of nutrient contaminants in the watershed, phosphorus levels were generally normal with the exception of elevated levels in streams below waste water treatment facilities and small unsewered villages. Elevated levels of nitrates were linked to sewage, agricultural activities, and possibly fertilizer applications at golf courses in the watershed.

Ongoing Watershed Protection Activities

State and federal agencies regulate direct discharge of regulated contaminants in this watershed. The _____ (a non-profit environmental organization) is active in further characterizing water quality within the watershed and recommending measures to reduce

contaminants that may adversely impact the quality of XYZ's water supply. Other volunteer and government agencies are working cooperatively to address contamination within the Source Name watershed.

Source Water Protection Needs

Based on the evaluation that was completed as part of this Source Water Assessment, XYZ has determined that existing state and local programs should provide adequate protection of this drinking water source. Several "hot spots" in the watershed, however warrant special attention to reduce levels of pathogens in stream water. Emphasis should be placed on improving poorly functioning septic systems and optimizing wastewater treatment plant performance to minimize the discharge of fecal contaminants and pathogens such as cryptosporidium. Better understanding of the risks associated with cryptosporidium may result in the need to enhance protection (or treatment).

How to Obtain Additional Information

This *Source Water Assessment Public Summary* was completed in insert date. Individuals interested in learning more about this water system and watershed can contact XYZ Public Water System at provide phone number.

Appendix H - Examples of Susceptibility Analyses

Susceptibility Analysis - Narrative Approach Example

(One susceptibility analysis per potential contamination source or related potential contamination sources)

Infrastructure Integrity

Infrastructure refers to the conveyance structures and equipment to move water from the source to the surface water intake and into the distribution system.

Integrity means the quality of design, construction, maintenance and the state of repair of the infrastructure. Public water systems should review the following factors in assessing infrastructure integrity.

Design : Does the infrastructure design meet current state code ?

Is the infrastructure design appropriate for the hydrogeologic setting?

Is the intake located in deep water, away from shore, or is shallow water closer to shore?

Construction : Is there construction documentation for the infrastructure ?

Are the materials and equipment that were used appropriate for the hydrogeologic setting?

Maintenance : Has there been an *operative* maintenance schedule in place since construction ?

Is the maintenance schedule appropriate for the design and construction of the specific infrastructure ?

State of Repair : Has the infrastructure been operating reliably during the last 5 years ?

:

If not, why not ?

Hydrogeologic / Hydrologic Sensitivity

Hydrogeologic sensitivity and hydrologic sensitivity refers to the transport of contamination from any point within a recharge area or watershed to a surface water intake; higher sensitivity ratings apply to geologic settings through which contamination can move more readily or quickly and lower sensitivity ratings apply to geologic settings through which contamination can move less quickly. *Sensitivity* does not address the question of whether contamination is present in the watershed or recharge area. Public water systems should review the following factors in assessing hydrogeologic / hydrologic sensitivity.

SURFACE WATER

Intake Environment : Intakes in turbid water or near shore are more sensitive than intakes away from shore in clear water.

Slopes : Water fed from steep slopes is more sensitive than water fed from shallow slopes.

Plant Coverage : Water fed from land w/ no vegetation is more sensitive than water fed from land w/ thick vegetation.

Soil Permeability : Water fed from paved surfaces is more sensitive than water fed from highly permeable top soils.

Potential Sources of Contamination, Assessment of Controls and Prioritization

SURFACE WATER

- CONTROLS: Using the criteria in Chapter 5, step 4, determine if the source is controlled. Then use the following criteria to prioritize your uncontrolled Potential Contamination Sources (and any other criteria that may apply)
- Acute Health Effects : Sources of contamination with acute health effects may present greater public health risk than sources of contamination with chronic health effects.
- Distance to Intake : Potential Contamination Sources located closer to drinking water wells or intakes usually present greater risk than Potential Contamination Sources further away.
- Point / Nonpoint Source : Point sources usually have greater disaster potential than nonpoint sources, but are also more easily managed.
- Federal / State Regulation : Potential Contamination Sources falling under federal or state regulatory programs are likely to be better managed than unregulated Potential Contamination Sources.
- Containment Infrastructure: Are there physical barriers to contaminant release ?
- Containment Practices : Are the standard operating practices designed to prevent contaminant release ?
- Contingency Plans : Are there contingency plans for accidental release and are operations personnel familiar with them ?

SUSCEPTIBILITY ANALYSIS

SURFACE WATER Evaluate the interrelationship between the intake integrity, sensitivity of the setting, and the potential contamination sources.

Dominant Factors :

Sensitivity Rating:
(high, medium or low)

Susceptibility Analysis - Matrix Approach Example
(One susceptibility analysis per potential contamination source)

Public Water Systems are not required to use a matrix, or any other quantitative approach to assessing the susceptibility of their source water to potential contamination sources. However, if you have many potential contamination sources to assess, a matrix approach provides some assurance that your assessment is unbiased, and based on objective criteria. An example of a matrix is provided for your benefit, should you wish to use such an approach. Other examples exist, and the Division of Drinking Water would be happy to assist you in identifying other mechanisms for conducting a susceptibility assessment.

In a matrix approach, the factors that go in to an assessment are assigned a numeric value, and the sum of the values gives you a susceptibility “score”. When a score has been assigned to each potential contamination source, you can rank the sources based on their score to determine which contamination sources your source waters may be most susceptible to.

Susceptibility Analysis:

Name of potential contamination source:

Infrastructure/intake condition (20% of score)

<u>Does the design meet applicable codes and/or regulations?</u>	<u>Is there construction documentation, and are the materials appropriate for the setting?</u>	<u>Is there an operative, appropriate, maintenance schedule?</u>	<u>Has the infrastructure been operating reliably in the last 5 years?</u>	<u>Able to bypass intake in event of upstream spill</u>
Yes = 0 pts	Yes = 0 pts	Yes = 0 pts	Yes = 0 pts	Bypass present & functional = 0
Unknown = 4 pts	Unknown = 4 pts	Unknown = 4 pts	Unknown = 4 pts	Bypass present/not functioning = 2 pts
No = 4 pts	No = 4 pts	No = 4 pts	No = 4 pts	No bypass = 4 pts

Total Intake Points _____ (MAXIMUM IS 20)

Hydrogeologic/hydrologic sensitivity (20% of score)

<u>Intake Environment</u>	<u>Slopes</u>	<u>Vegetative cover</u>	<u>Soil Permeability</u>
Far from shore, deep water, clear = 0 pts	Less steep or flat terrain = 0 pts	Highly vegetated = 0 pts	Highly permeable soil = 0 pts
Near shore, shallow water, turbid = 5 pts	Steep slopes = 5 pts	Light or little vegetation = 5 pts	Impermeable soil or pavement = 5 pts

Total Sensitivity Points _____ (MAXIMUM IS 20)

Potential Sources of Contamination and Controls (60% of score)

Is Potential Contamination Source controlled? (see criteria on inventory sheet)	Do contaminants have acute health effects?	Is there a Contingency Plan, and are operations personnel familiar with the plan?	<u>How close is the Potential Contamination Source to the intake?*</u>
Yes = 0	No = 0	Yes = 0	With 100 feet of intake: 15 pts
No = 25	Yes = 10	No = 10	Elsewhere in zone 1: 10 to 15
Unknown = 25	Unknown = 10	Unknown = 10	Zone 2: 5 to 10
			Zone 3: 0 to 5
			Zone 4: 0 to 5

**Assign the lower range of the score in areas that you have determined are not hydrologically sensitive. Use the higher range for more sensitive hydrologic settings.*

Total Potential Contamination Source Hazards and Controls Points _____ (MAXIMUM IS 60)

When infrastructure, sensitivity, and Potential Contamination Source/Controls are evaluated, sum the scores assigned to each factor.

TOTAL SUSCEPTIBILITY SCORE FOR THIS POTENTIAL CONTAMINATION SOURCE (SUM OF POINTS FOR INFRASTRUCTURE, SENSITIVITY, AND POTENTIAL CONTAMINATION SOURCE HAZARDS AND CONTROLS): _____ (MAXIMUM IS 100)

When each potential contamination source is scored, use your scores to prioritize your inventory of all potential contamination sources (higher scores are higher priority), which will allow you to identify the potential contamination sources of the most concern.

Appendix I - Example Potential Contamination Source Inventory Form

POTENTIAL CONTAMINATION SOURCE SURVEY FORM (One form per potential contamination source, or related PCS!)

Priority Rank # _____ Protection Zone _____

Potential Contamination Source _____ Activity _____

Contact Person _____ Owner/Operator _____

Address/Location _____ Telephone _____

Identify Potential Contamination Source Hazards

Circle the material(s) listed below that are used, disposed, stored, transported, or manufactured within the protection area. 20,000 gal stored & sold/month, 400 gal discharged/day, or 10 lbs applied/acre/year are examples of how to enter amounts:

1. PCB Amount _____	12. Naptha Amount _____	23. Organic solvents Amount _____
2. Dioxin Amount _____	13. Mineral Spirits Amount _____	24. Caustics Amount _____
3. Crude Oil Amount _____	14. Vermin Poison Amount _____	25. Alcohols Amount _____
4. Gasoline Amount _____	15. Nematicides Amount _____	26. Amines Amount _____
5. Diesel Oil Amount _____	16. Herbicides Amount _____	27. Aldehydes Amount _____
6. Other Distillate Fuel Amount _____	17. Fungicides Amount _____	28. Radioactive Material Amount _____
7. Asphalt or other residuals Amount _____	18. Insecticides Amount _____	29. Brines Amount _____
8. Animal or vegetable oils Amount _____	19. Antibiotics Amount _____	30. Sewage/wastewater Amount _____
9. Waste Oil Amount _____	20. Fertilizers Amount _____	31. Unknown/other (describe) Amount _____
10. Other Oil Amount _____	21. Metals Amount _____	32. Unknown/other (describe) Amount _____
11. Petroleum Solvents Amount _____	22. Acids Amount _____	33. Unknown/other (describe) Amount _____

List any copies of Material Safety Data Sheets (MSDSs) for the substances circled above that the potential contamination source furnished you:

(Chemical manufacturers or importers will furnish missing MSDSs upon request)

If this potential contamination source produces any waste streams, list them:

Does this potential contamination source result in any nonpoint source pollution? Describe:

Identify Controls

There are four types of controls which may be used to assess a potential contamination source hazard as adequately controlled. Check the control which applies to this hazard (choose only one):

- 9 Regulatory
- 9 Operational
- 9 Physical
- 9 Negligible Quantity

If this is a regulatory control, cite specific references in the regulation, rule, or ordinance which pertain to controlling this hazard:

If this is a regulatory control, identify the enforcement agency:
If this a regulatory control, have you verified that this hazard is actually being regulated by the enforcement agency: Yes 9 or No 9

If this is an operational control, list the best management practices/pollution prevention techniques which are being used to control this hazard:

If this is a physical control (excluding geology), describe it:

If this is a negligible quantity control, identify the hazardous substance and quantity being used:

Explain how this control will prevent surface-water contamination:

Is this hazard adequately controlled: Yes 9 or No 9
If yes, no further land management strategies will be planned and implemented unless conditions change.

Set a reassessment date for this control: