

WYOMING WATER ASSESSMENT AND PROTECTION PROGRAM (SWAP)



SOURCE WATER ASSESSMENT PROGRAM EXECUTIVE SUMMARY

Source Water Assessment Prepared For:
Shoshoni

Assessment Completed By:
Lidstone and Associates, Inc.
Engineering, Geology & Water Resource Consultants
4025 Automation Way, Building E
Fort Collins, CO 80525

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SOURCE WATER ASSESSMENT SUMMARY FOR Shoshoni

PWS Source Water Assessment Summary

The Town of Shoshoni maintains a community water system and is located in Fremont County, approximately 22 miles northeast of Riverton on U.S. Highway 26. This system provides water to about 500 people on a year round basis through 300 service connections.

Source water for the Town is obtained from four wells that are completed in the Wind River Formation. Groundwater pumped from Shoshoni #1 and Shoshoni # 5 is piped to Shoshoni # 6 where chlorine gas is injected into a common transmission line, which then delivers the treated water to a 500,000-gallon storage tank. Gravity flow pressurizes the distribution system. Currently, Shoshoni #4 is used as a supplemental source during high use periods.

In general, the Town of Shoshoni's water sources rated low for land use susceptibility. The overall point source contaminant susceptibility rating is low due to the lack of contamination sources being present within the delineated zones.

Delineation Methods

The Town of Shoshoni maintains a community water system that obtains water from a porous sandstone formation. For this aspect of the project, Lidstone obtained and reviewed a source water area delineation previously completed in 1999 by the Wyoming Geological Survey. Lidstone's Professional Geologist amended the existing delineation as necessary to meet SWAP criteria.

EPA's Wellhead Analytic Element Model, or WhAEM method, was used to delineate the source water areas associated with each of Shoshoni's wells because they draw water from a porous sandstone aquifer and because the previous delineation did not include maps that clearly identified Zones 2 and 3 for contaminant inventory purposes. The WhAEM model uses well and limited hydrogeologic data to estimate time-of-travel capture zones in relatively simple hydrogeologic settings for either confined or unconfined aquifers. For this source water assessment, the WhAEM model was used to develop two year and five year groundwater capture zones.

Groundwater Sources

Shoshoni obtains its water supply from four wells that are completed to depths ranging from 620 to 1,051 feet. The wells draw water from saturated sandstone beds that are interbedded with siltstone, claystone, and shale within the Wind River Formation. Rinehart and Edgar noted in the previous delineation that the wells did not appear to be in hydraulic communication with surface water in Boysen Reservoir because the water table for the aquifer slopes toward the reservoir and because the elevation of the groundwater surface in the wells lies below that of the reservoir. Groundwater generally moves eastward to these wells through porous media flow. Additional information on these wells is included on the attached Well Information Sheets.

As shown on the enclosed source water area map, Lidstone identified contaminant inventory zones that essentially lie within the same areas that Rinehart and Edgar had delineated. For Shoshoni #1, Zones 2 and 3 include part of an inlet on Boysen Reservoir just south of the location where Poison Creek enters the reservoir. For Shoshoni #4, Zones 2 and 3 include part of the alluvium along Poison Creek which could be a source of recharge to the Wind River Formation during high flow periods. For Shoshoni #5 and Shoshoni #6, Zones 2 and 3 are essentially centered on the wellheads.

Integrity Summary

The Town of Shoshoni uses four wells to supply water to the municipal system. Shoshoni #1 and #4 wells more constructed before 1983 when less stringent construction standards were not required by the State of Wyoming. Shoshoni's #5 and #6 wells were completed between 1983 and 1993 when more stringent construction standards were required by the State of Wyoming. Records show that the wells were properly sealed from surface infiltration of potential contaminants and flooding around the wellhead. As shown on the Integrity Summary Table, the well scores ranged between 2 and 3, which is a direct reflection of the well completion dates. The early the construction date the higher the score.

Water Source Sensitivity Summary

The Town of Shoshoni Water System obtains its source water from four wells that are completed in the confined Wind River Formation. As shown on the Source Sensitivity Summary Table, the wells received a sensitivity score of 6.

The wells received a score of 6 for two reasons. First, the porous confined aquifer is less vulnerable to contamination. The second reason is that laboratory analysis of water samples within the last five years detected a few contaminants that are listed on EPA's primary and secondary drinking water standards. These include beryllium and sulfate. These contaminants were generally detected at concentrations below the EPA's maximum contaminant levels.

Water System Susceptibility Rating

Susceptibility is defined as the potential for a public water supply to draw water contaminated at concentrations that would pose a threat or concern to human health. In general, the Town of Shoshoni scores low for land use susceptibility. The overall point source contaminant susceptibility rating is low due to the lack of contamination sources being present within the delineated zones. Rinehart and Edgar indicated that Boysen Reservoir presents a potential contaminant threat, but generally discounted it due to the lack of any apparent hydrologic communication between it and the wells. While this appears to be the case, this area should be monitored due to the recreational access at this location. Susceptibility ratings for each type of potential contaminant source are summarized on the attached susceptibility tables.

A review of your PWS's routine water analysis results revealed that one or more chemicals that are considered contaminants in drinking water were detected at some time within the last five years. Chemical detections have a large impact on your PWS's sensitivity score because it may indicate that there is a pathway for contaminants to reach the water supply. However, it is likely

that these chemicals are present only in small amounts and are not a danger to your health. Some of these chemicals may also occur naturally in water.

For more information about which chemicals were detected, please contact the PWS for a copy of the most recent Consumer Confidence Report or water analysis results. Chemical detections at levels that are a concern to human health are reported on the EPA's website: http://www.epa.gov/enviro/html/sdwis/sdwis_query.html. To see if your PWS has exceeded the federal primary or secondary drinking water standards, just click on the State of Wyoming and then type in the name of your PWS. Consumer Confidence Reports are prepared by the PWS on a yearly basis. The reports should include information about any chemicals found in the water, even those found at very low levels. Please contact Kim Parker at DEQ, 307-777-7781, or WARWS for assistance. You may also contact EPA to find out what contaminants were detected. You may have to fill out a Freedom of Information Act request to obtain the water test results for your PWS. Please call EPA's Safe Drinking Water Hotline at 1-800-426-4791.

**POINT SUSCEPTIBILITY SUMMARY TABLE
FOR Shoshoni
Point Source Susceptibility Summary**

It may appear from the results of this point source susceptibility summary table that your system has too many PSOCs influencing the final ratings. In some cases, a specific PSOC falls within a specific contaminant inventory zone shared by multiple wells or intakes. When this is the case, that PSOC will be scored for each intake. For example, an underground storage tank may appear within a contaminant inventory zone shared by four different wells. This would cause that single storage tank to be entered into the table four times, or once for each well or intake.

Point Source Type	Low	Medium	High
None Identified	N/A	N/A	N/A

- * Illustrates the number of PSOCs in a particular rating class for all water sources
- * N/A - Not Applicable