

WYOMING WATER ASSESSMENT AND PROTECTION PROGRAM (SWAP)



SOURCE WATER ASSESSMENT PROGRAM EXECUTIVE SUMMARY

Source Water Assessment Prepared For:
Pavillion

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SOURCE WATER ASSESSMENT SUMMARY FOR Pavillion

PWS Source Water Assessment Summary

The Town of Pavillion maintains a community water system and is located about 25 miles northwest of Riverton. The system provides water to about 150 residents through 120 service connections on a year round basis. Source water for the system is obtained from the Wind River Aquifer through a wellfield that is located within the community. Water from five wells is pumped directly to storage and disinfection occurs at each wellhead.

Pavillion's water source ratings ranged from low to high for land use susceptibility. The primary reason the ratings varied this much is attributed to the percentage of irrigated cropland that lies within each well's source water area. The overall point source and transportation corridor contaminant susceptibility ratings are low due to the lack of contamination sources within the delineated zones.

Delineation Methods

The Town of Pavillion maintains a community water system that obtains its source 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.

U.S. EPA's Wellhead Analytic Element Model, or WhAEM method, was used to amend the previous source water delineation because Pavillion derives its source water from a porous sandstone aquifer. 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 redelineate the two year and five year groundwater capture zones for each well because the previous delineation made no distinction between the two zones. Due to this methodology, the delineated source water areas may be larger than the true capture zones for each well. However, use of this method typically results in source water protection areas that can be used to more reliably protect the water supply.

Groundwater Sources

Pavillion is situated in north central Fremont County and obtains groundwater for its municipal supply from five wells that are completed to depths ranging from 495 to 517 feet. The wells obtain water from saturated sandstone beds of the Wind River Formation. Recharge to the Wind River Formation occurs through the direct infiltration of precipitation on outcrops. Groundwater flows through these sandstone beds to the wells under confined artesian conditions through porous media, and in some cases, through the infiltration of surface water from a nearby irrigation ditch. Additional information pertaining to each of Pavillion's five wells is available on the enclosed Well Information Sheets.

As shown on the attached source water area maps, contaminant inventory zones for the wells encompass areas immediately adjacent to the wells. Zones 2 and 3 are generally centered on each well. Individual differences in the shape and size of the source water areas is due to differences in well pumping rates, aquifer transmissivities, and groundwater flow directions.

Integrity Summary

Pavillion uses five wells to supply water to the municipal system. Town of Pavillion #1 and NM #4 were constructed before 1983 when more stringent construction standards were not required by the State of Wyoming. Pavillion #6 and #7 were completed between 1983 and 1993 when more stringent construction standards were required. Well #8 was completed after 1993 when more stringent construction standards were required. Records show that the wells were generally 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 1 and 3, which is a direct reflection of the well completion dates.

Water Source Sensitivity Summary

The Town of Pavillion Water System obtains its source water from five 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 contaminant that is listed on EPA's primary and secondary drinking water standards, nitrate. This contaminant was 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. The Town of Pavillion Well #1 scores low; NM #4 scores high; and Pavillion #6, #7, and Well #8 score medium for land use susceptibility. The medium and high land use susceptibility ratings resulted from the relatively high percentage of irrigated cropland in the area. The recent contamination of one of the Town's supply wells illustrated the wells' vulnerability to local agricultural practices. The overall point source contaminant susceptibility rating is low due to the lack of contamination sources within the delineated zones. 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 Pavillion
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