

WYOMING WATER ASSESSMENT AND PROTECTION PROGRAM (SWAP)



SOURCE WATER ASSESSMENT PROGRAM EXECUTIVE SUMMARY

Source Water Assessment Prepared For:
South Pass City Hist Site

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SOURCE WATER ASSESSMENT SUMMARY FOR South Pass City Hist Site

PWS Source Water Assessment Summary

The South Pass City Historical Site Water System is classified as a transient non-community groundwater supply. The Site is located about 35 miles south of Lander along Wyoming Highway 28. This facility provides water through five connections (year round) and a tourist population of 200 per day from May to September. Source water for the facility is obtained from a well that is completed in alluvium along Willow Creek. Water is pumped by a submersible pump to the below-ground storage tanks that are located on a hillside above the townsite. Water flows to distribution by gravity. This water is currently not treated or disinfected; however, disinfection equipment is installed and available at the storage tanks.

In general, the South Pass City Historical Site scores low for land use susceptibility for Zones 1 and 2, and high in Zone 3 because much of the land surrounding the water source is forest. The South Pass City Historical Site should also be aware of several line sources that lie inside the zone of influence of the water supply well.

Delineation Methods

The South Pass City Site is a non-community water system that obtains its water supply from an alluvial source that could be hydraulically connected to metasedimentary rocks. Hydrogeologic mapping techniques were consequently used to identify the source water area for the well.

Hydrogeologic mapping techniques use surface observations in combination with subsurface geologic and hydrogeologic data to identify aquifer boundaries and areas that contribute water to the aquifer. These techniques were used when a PWS's source was derived from a spring, fractured bedrock, or from a limestone or dolomite aquifer. Conduit flow aquifers have extremely variable flow patterns and rates, making the calculation of time of travel difficult. In some instances, only one contaminant inventory zone was identified beyond Zone 1 due to the inherent difficulty in attempting to assign a particular time of travel to a given area. Because of this issue, aquifer vulnerability mapping techniques were also used as part of the hydrogeologic mapping effort to identify and delineate vulnerable areas. These areas (faults, fractures, exposed bedrock, etc.) are anticipated to be more susceptible to the rapid infiltration of contaminants released at the ground surface.

Groundwater Sources

The Site obtains groundwater from one well that is completed in alluvium to a depth of 35 feet. Recharge for the well originates from infiltrating precipitation on metasedimentary rock outcrops and from stream losses to the alluvium along Willow Creek and its tributaries. Groundwater flows to the well through porous media and possibly fracture flow conditions, where the metasedimentary rocks contribute groundwater to the alluvium. Additional information on this well is included on the enclosed Well Information Sheet.

As shown on the attached source water area map, contaminant inventory zones for this well were

developed to encompass those areas most likely to contribute water to the alluvium along Willow Creek. Zone 2 includes an area that is located immediately upgradient of the well and includes Willow Creek and Little Hermit Gulch. Zone 3 includes the remaining Willow Creek watershed in addition to half of the Big Hermit Gulch watershed to the north and east.

Integrity Summary

The South Pass City Historical Site Water System is classified as a transient non-community groundwater supply. The South Pass City #1 well was constructed before 1983, when less stringent construction standards were required by the State of Wyoming. Records show that the well was properly sealed to protect against surface infiltration of potential contaminants. As shown on the Integrity Summary Table, South Pass City #1 received a score of 5 reflecting the well completion date, the wellhead not being protected and the well not being protected from flooding.

Water Source Sensitivity Summary

The South Pass City Historical Site Water System obtains source water for the facility from a well that is completed in alluvium along Willow Creek. As shown on the Source Sensitivity Summary Table, the well received a sensitivity score of 10. The well had a high score of 5 because the shallow well is located in a porous alluvium. The well had the highest score of 5 for chemical sensitivity due to documented chemical detections in the groundwater of nitrate and coliform. Despite detection, these contaminants were 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 South Pass City Historical Site scores low for land use susceptibility for Zones 1 and 2, and high in Zone 3 because much of the land surrounding the water source is forested. The presence of a solid/hazardous waste site within Zone 2 resulted in a high point source contaminant susceptibility for the well. Because a railroad runs through Zones 2 and 3, the well was assigned a high susceptibility for Zone 2 and low susceptibility for Zone 3 for the transportation corridor contaminants. 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 South Pass City Hist Site
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
Sol/Haz Waste Site	N/A	N/A	1

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