WYOMING WATER ASSESSMENT AND PROTECTION PROGRAM (SWAP)

SOURCE WATER ASSESSMENT PROGRAM EXECUTIVE SUMMARY

Source Water Assessment Prepared For:
Bighorn NF Sitting Bull CG

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 Bighorn NF Sitting Bull CG

PWS Source Water Assessment Summary

The Big Horn National Forest Sitting Bull Campground water facility is a non-community system that is located about 16 miles east of Ten Sleep on U.S. Highway 16. The system provides water for up to 100 recreationists per day between June 1 to September 30 through six service connections. Source water for this facility is obtained from a well that is completed in granitic rocks. Produced water is piped a short distance to a 1,570 gallon storage tank. A centrifugal pump charges two, 87 gallon hydropneumatic tanks which pressurize the distribution system. No treatment or disinfection procedures other than seasonal shock chlorination are used.

In general, the campground water source rated high for land use susceptibility. The high rating occurred because much of the land surrounding the water source is forested. The water source was also assigned a medium point source susceptibility due to wastewater discharge in the area. Transportation corridor contaminant susceptibility was rated low due to a state highway that crosses through the source water area.

Delineation Methods

Big Horn National Forest Sitting Bull Campground is a transient non-community water system that obtains its water supply from fractured bedrock. Hydrogeologic mapping techniques were consequently used to identify a 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 Big Horn National Forest Sitting Bull Campground well is located in the Big Horn Mountains. The well is set to a depth of 200 feet within the Oldest Gneiss Complex. Recharge for the well originates as infiltrating precipitation on Oldest Gneiss Complex outcrops to the northeast and flows southwest to the well under fracture flow. 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 Sitting Bull Campground were developed to encompass those areas most likely to contribute water to the

Oldest Gneiss Complex and the well. Zone 2 includes the Lake Creek drainage immediately upgradient of the well. Zone 3 includes the entire watershed and terminates at groundwater divides to the north, south, and east.

Integrity Summary

The Big Horn National Forest Sitting Bull Campground uses one well to supply water to the system. The well, Sitting Bull Campground, was constructed after 1993, when 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 and flooding around the wellhead. As shown on the Integrity Summary Table, the well received a low score of 2, which is a direct reflection of the well completion date and wellhead accessibility.

Water Source Sensitivity Summary

The Sitting Bull Campground obtains water from the Madison Limestone which is known to have karst/fracture flow components. As shown on the Source Sensitivity Summary Table, the well received a sensitivity score of 10.

This well received the maximum sensitivity score for two reasons. First, the karst/fracture flow is known to be vulnerable to contamination because of high velocities associated with water flowing through fractures. The second reason is that laboratory analysis of water samples from the Campground within the last five years detected nitrate, a contaminant that is listed on EPA's primary and secondary drinking water standards. Despite detection, 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. In general, the campground's water source scored high for land use susceptibility because much of the land surrounding the water source is forested. The presence of a wastewater discharge point in Zone 3 was rated a medium risk of point source contamination. Transportation corridor contaminant susceptibility rated low due to a state highway that crosses through Zone 3. 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 Bighorn NF Sitting Bull CG

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
Wastewater Discharge	N/A	1	N/A

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