

**SOURCE WATER ASSESSMENT
EXECUTIVE SUMMARY
FOR
YNP Lewis Lake**

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PROJECT: 424-001

ASSESSMENT COMPLETED BY: TRIHYDRO CORPORATION

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SOURCE WATER ASSESSMENT SUMMARY FOR YNP Lewis Lake

PWS Source Water Assessment Summary

The Yellowstone National Park Lewis Lake Campground water system is classified as a non-community groundwater supply. The facility provides potable water to a transient population of 300 people through one service connection, and a treated water storage tank. Sodium hypochlorite is used at the wellhead for disinfection. The water source scored high with respect to the combined integrity and aquifer sensitivity ratings. The campground scored high with respect to land use susceptibility, point source susceptibility and transportation corridor susceptibility.

Delineation Methods

This water system is a non-community system that draws water from a fractured igneous formation. Hydrogeologic mapping methods were implemented to estimate the 2-year and 5-year time of travel zones for the groundwater flow system.

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

Yellowstone National Park Lewis Lake draws water from rhyolite flows, tuff and igneous intrusions. Recharge to the well occurs from infiltrating precipitation and surface water, and reaches the well through conduit flow. Additional information on this well is included on the attached Well Information Sheet. As shown on the enclosed source water area delineation map, contaminant inventory zones 2 and 3 are delineated using hydrogeologic methods. Zone 2 includes a 1000 foot buffer along an unnamed fault southeast of the well and encompasses Lewis Lake. Zone 3 encompasses the surface drainage into Lewis Lake and the 1000 foot buffer zone around the unnamed fault.

Integrity Summary

Yellowstone National Park Lewis Lake uses one well, approximately 139 feet deep, to supply its water. The well was constructed prior to 1983 when less stringent construction standards were required by the State of Wyoming. Records indicate that the well was properly sealed to protect from surface infiltration of potential contaminants and flooding around the wellhead. However, the well lacks adequate protection from flood and protection of the vicinity immediately around the wellhead from contaminant sources. The well also has a long conveyance structure length. Therefore, as shown on the Integrity Summary Table; the YNP Lewis Lake well received a score of 6.

Water Source Sensitivity Summary

The Yellowstone National Park Lewis Lake Campground uses one well that draws water from the rhyolite flows, tuff and intrusive igneous rocks which are fractured. As shown on the Source Sensitivity Summary Table, the well received a sensitivity score of 10. The well received the score for two reasons. First, the well is completed in an aquifer that is known to be vulnerable to contamination because of the high velocities associated with conduit flow. Second, the well scored the score of 5 for chemical sensitivity due to documented detections in groundwater.

Water System Susceptibility Rating

Susceptibility is defined as the potential for a public water supply to draw contaminated water at concentrations that would pose a threat or concern to human health. In general, the Yellowstone National Park Lewis Lake scores high for land use susceptibility because much of the land surrounding the water sources is forested. Forested areas were included to evaluate the potential risks of increased runoff and water quality problems following forest fires. The presence of one permitted underground injection facility within Zone 2 resulted in a high point source contaminant susceptibility for the well. The well was assigned high and medium susceptibilities for state highway types of transportation corridor contaminants for Zones 2 and 3, respectively. 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 YNP Lewis Lake
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
Underground Injection	N/A	N/A	1

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