

**SOURCE WATER ASSESSMENT
EXECUTIVE SUMMARY
FOR
YNP Madison Water Sys**

June 30, 2004

PROJECT: 424-001

ASSESSMENT COMPLETED BY: TRIHYDRO CORPORATION

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PWS Source Water Assessment Summary

Yellowstone National Park Madison Water System is a non-community public water system located in Yellowstone National Park, 14-miles east of west entrance to of the Park. The system serves 600 people per day through 88 service connections from May 1st to October 30th. The water is supplied by the Madison Springs which draw water from rhyolite flows, tuff, and intrusive igneous rocks. Facilities include a chlorine gas injection unit, storage tanks, and the interconnecting transmission system. The water source scored medium with respect to the combined integrity and source sensitivity ratings. The system scored high with respect to land use susceptibility, low for point source susceptibility, and high for transportation corridor susceptibility.

Delineation Methods

This water system is a non-community system that draws water from a spring. 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

The Yellowstone National Park Madison Water System draws water from rhyolite flows, tuff, and intrusive igneous rocks. Recharge for the spring occurs as infiltrating precipitation and surface water from the surrounding drainage basin reaches the spring through conduit flow. Additional information on this spring is included on the attached Spring Information Sheet. As shown on the enclosed source water area delineation map, contaminant inventory zones 2 and 3 were delineated using hydrogeologic mapping methods. Zone 2 was mapped to include the immediate surface drainages and the outcrop of alluvium. Zone 3 is bounded by the Caldera Fault on the north and west, by surface water divides to the east and by the continental divide to the south.

Integrity Summary

The Yellowstone National Park Madison Water System obtains water from the Madison Spring. As shown on the Integrity Summary Table, the spring received an integrity score of 5. This score reflects records that indicate the spring was developed before 1983 when less stringent construction standards were required, and that the spring has unrestricted access.

Water Source Sensitivity Summary

As shown on the Source Sensitivity Summary Table, the spring received a sensitivity score of 10. The spring received this score for two reasons. The first reason is that the spring is more vulnerable to contamination due to unpredictable flow pathways and its proximity to the ground surface. The second reason is that there are documented chemical detections in the groundwater.

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 Yellowstone National Park Madison Water System 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 overall point source contaminant susceptibility rating is low due to the lack of contamination sources being present within the delineated zones. However, the system should be aware of water quality issues that may be associated with the presence of the geothermal activity in the immediate area. The spring was assigned a high susceptibility for transportation corridor contaminants due to the proximity of the Park Highway to the spring. 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 Madison Water Sys
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