

**SOURCE WATER ASSESSMENT
EXECUTIVE SUMMARY
FOR
Eatons Dude Ranch**

June 30, 2004

PROJECT: 424-001

ASSESSMENT COMPLETED BY: TRIHYDRO CORPORATION

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PWS Source Water Assessment Summary

Eaton's Dude Ranch maintains a non-community surfacewater system for a resident population of 15, with a staff of about 60, and seasonal guest population of 100 – 150 from May 15 to September 15. Facilities include one well, five 2,200 gallon precast concrete cisterns, and the distribution system. Water is treated by filtration with chemical pretreatment and disinfection. The water sources scored medium with respect to the combined integrity and aquifer sensitivity ratings. The system scored high with respect to land use susceptibility, low for point source susceptibility, and high for transportation susceptibility.

Delineation Methods

This water system is a non-community system that draws water from a limestone aquifer. Hydrogeologic mapping methods were implemented to estimate the 2-year and 5-year time of travel zones for the groundwater flow system. Hydrogeologic parameters are similar to those reported by the Water Resources Research Institute Study of groundwater in the Powder River Basin.

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

Eaton's Dude Ranch draws water from the Madison Limestone formation. Recharge for the aquifer occurs at the outcrop of the Madison Limestone formation to the west of the well, and reaches the well through conduit flow under artesian conditions from southwest to northeast. Additional information on this well is included on the attached Well Information Sheets. As shown on the enclosed source water area delineation map, zones 2 and 3 were delineated using hydrogeologic mapping methods. Zone 2 encompasses the Madison Limestone outcrop, with the north and south boundaries terminating according to a potentiometric surface map. Zone 3 encompasses the surface drainage into the outcrop of the Madison.

Integrity Summary

Eaton's Dude Ranch uses one well that is approximately 1,740 feet deep, to supply water to the system. The well, Eaton's Dude Ranch Madison #1, was constructed after 1993 when more stringent construction standards were required by the State of Wyoming. Records indicate 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 score of 1, which directly reflects the well completion date only.

Water Source Sensitivity Summary

As shown on the Source Sensitivity Summary Table, the well received a 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 received a 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 Eaton's Dude Ranch scores high for land use susceptibility because much of the land surrounding the well is forested. Forested areas were included to evaluate the potential risks of increased runoff and water quality problems following forest fires. Due to the lack of contamination sources being present within the delineated zones, the overall point source contaminant susceptibility rating is low. The well was assigned a high transportation corridor susceptibility score because four state highways pass through the delineation zones.

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 Eatons Dude Ranch
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