

**SOURCE WATER ASSESSMENT
EXECUTIVE SUMMARY
FOR
Antelope Coal Co**

June 30, 2004

PROJECT: 424-001

ASSESSMENT COMPLETED BY: TRIHYDRO CORPORATION

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SOURCE WATER ASSESSMENT SUMMARY FOR Antelope Coal Co

PWS Source Water Assessment Summary

The Antelope Coal Company is a non-transient, non-community public water supply system located in Converse County. The system serves 160 people per day through four service connections. The system is supplied by one well that draws its water from the Fort Union Formation. The system provides water for fire protection, coal processing, and showering/toilets, etc; it is not used for drinking, primarily because of the poor taste. However, users do have access to the source for drinking purposes. The water is pumped from the well into a nearby control house where it is chlorinated before being pumped to the storage tank. Downstream from the tank, a booster pump provides the necessary pressure for the system. In addition to four service connections, the system serves seven fire hydrants. The water source scored medium with respect to the combined integrity and sensitivity ratings. The Antelope Coal Company scored low for land use susceptibility and point source contaminant susceptibility, and high for transportation corridor contaminant susceptibility.

Delineation Methods

This water system is a non-transient non-community supply that draws water from a porous sedimentary formation. Calculated fixed radius (CFR) methods were implemented to estimate the 2-year and 5-year time of travel radii for the groundwater flow system. The CFR used well information from the SEO database and aquifer parameters were similar to those reported by the Water Resources Research Institute Study of groundwater in the Powder River Basin.

Calculated fixed radius (CFR) is an appropriate method to use when groundwater flow to the well, spring or tunnel can be characterized as porous. This process was implemented for small communities that derive water from deeper, confined aquifers, or for non-community water systems. A factor of safety (FS) of 1.5 was applied to all systems where portions of the data were suspect. At the ground surface, the radius can be used to delineate an area around the well to be used for wellhead protection. The radius is the distance from the well to a point where groundwater (and contaminant) can reach the well over a specified time period. Input data requirements are limited, consisting of the pumping rate, open (screened) interval of the well, porosity of the aquifer, and the selected time of travel (2 years and 5 years).

Groundwater Sources

The Antelope Coal Company draws water from sedimentary units within the Fort Union Formation. Recharge to this well occurs in the outcrops of the Fort Union Formation and travels through porous media flow under artesian conditions generally from the south to north. 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 were delineated using CFR methods. Zone 2 has a calculated radius of 1,502 feet. Zone 3 has a calculated radius of 2,375 feet.

Integrity Summary

Antelope Coal Company uses one well to supply water. The well is approximately 2,620 feet deep and 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 against surface infiltration of potential contaminants and flooding around the wellhead. However, the well does not have adequate protection of the vicinity immediately around the wellhead from contaminant sources. Therefore, as shown on the Integrity Summary Table, the WS 1 well received a score of 4.

Water Source Sensitivity Summary

As shown on the Source Sensitivity Summary Table, the well received a sensitivity score of 6. The well received a score of 1 for aquifer sensitivity because it draws water from a confined aquifer through porous media flow. The well also received a score of 5 for chemical sensitivity due to documented chemical detections in the 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 Antelope Coal Company scored low for general land use susceptibility. The overall point source contaminant susceptibility rating is low due to the lack of contamination sources present within the delineated zones. The well was assigned a high susceptibility for transportation corridor contaminants due to its close proximity to a railroad spur. 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 Antelope Coal Co
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