

**SOURCE WATER ASSESSMENT
EXECUTIVE SUMMARY
FOR
Belle Fourche PL Donkey Creek**

June 30, 2004

PROJECT: 424-001

ASSESSMENT COMPLETED BY: TRIHYDRO CORPORATION

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SOURCE WATER ASSESSMENT SUMMARY FOR Belle Fourche PL Donkey Creek

PWS Source Water Assessment Summary

The Belle Fourche Pipeline Donkey Creek is a non-transient, non-community groundwater supply system located in Crook County. The system serves 38 people per day through six service connections. Facilities include two wells that draw water from the Fort Union Formation, a steel 16,000 gallon water storage tank, and the interconnecting transmission system. The water is pumped into a pit where it is pressurized for distribution to employee residences or to the storage tank for distribution to the rest of the pipe line site, without disinfection. The water sources scored medium with respect to the combined integrity and aquifer sensitivity ratings. Belle Fourche PL Donkey Creek scored low with respect to land use susceptibility, medium for point source contaminant susceptibility, and high for transportation corridor contaminant susceptibility.

Delineation Methods

This water system is a non-transient non-community system 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 was calculated using assumed well information and aquifer parameters used in the calculation were assumed for those of similar type deposits.

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

Belle Fourche Pipe Line Donkey Creek draws water from sedimentary units within the Fort Union Formation. Recharge to the aquifer occurs in the outcrops of the Fort Union Formation, and reaches the wells through porous media flow. Groundwater flow within the sedimentary aquifer is generally from east to west under artesian conditions. Additional information on these wells 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 for both wells. Both wells had a Zone 2 calculated radius of 819 feet and a Zone 3 calculated radius of 1,295 feet.

Integrity Summary

Belle Fourche Pipe Line Donkey Creek uses two wells, approximately 439 feet deep, to supply water. The wells were constructed prior to 1983 when less stringent construction standards were required by the State of Wyoming. Records indicate that the wells were properly sealed to protect from surface infiltration of potential contaminants. However, the wells do not have additional protection in the vicinity immediately around the wellhead from contaminant sources. Therefore, as shown on the Integrity Summary Table, the Donkey Creek PWS #1 and #2 wells both received a score of 4.

Water Source Sensitivity Summary

As shown on the Source Sensitivity Summary Table, both wells each received a sensitivity score of 6. The wells both received a score of 1 for aquifer sensitivity due to being screened at relatively deep depths and drawing water from a confined aquifer through porous media flow. Both wells had 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, Belle Fourche Pipe Line Donkey Creek scores low for land use susceptibility. The overall point source contaminant susceptibility rating is medium due to an oil and gas well being located within Zone 3 of both wells. The wells were assigned a high transportation corridor susceptibility score because a pipeline passes through Zone 2. 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 Belle Fourche PL Donkey Creek
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
Oil & Gas Well	N/A	2	N/A

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