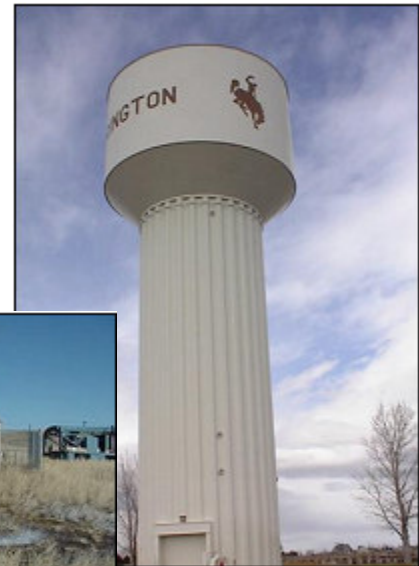


WYOMING WATER ASSESSMENT AND PROTECTION PROGRAM (SWAP)



SOURCE WATER ASSESSMENT PROGRAM EXECUTIVE SUMMARY

Source Water Assessment Prepared For:
A Bar A Ranch

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SOURCE WATER ASSESSMENT SUMMARY FOR A Bar A Ranch

PWS Source Water Assessment Summary

The A Bar A Ranch is situated in the valley of the North Platte River in south-central Wyoming. This transient non-community water system obtains water from two alluvial wells, uses a 6,500 gallon storage tank, and has 32 service connections. Guests are housed at the ranch from June 15th to September 30th. A maintenance staff lives on the ranch during the winter when the unnecessary parts of the water system are shut down, drained, and winterized. In the spring, the winterized section is chlorinated, inspected, and returned to functionality.

In general, the A Bar A Ranch water system scores high for land use susceptibility because much of the land surrounding the water sources is irrigated agriculture. The overall point source contaminant susceptibility rating is high due to wastewater discharge being present within the delineated zones.

Delineation Methods

Because the A Bar A Ranch is classified as a transient non-community groundwater system and obtains water from a porous media aquifer, Lidstone delineated the source water areas for this system using calculated fixed radius (CFR) methods. This method was used to estimate the two and five year time of travel radii for the groundwater system based on data obtained from the Wyoming SEO, the PWS sanitary survey, and the SWAP guidance document.

The CFR method is appropriately used when groundwater flow to the well 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. The CFR calculation, $r = [(Qt)/(\pi nH)]^{1/2} (FS)$, requires discharge (Q) during a period of time (t), aquifer porosity (n), and length of the well's open interval (H), to determine the radius (r) of a cylinder containing the volume of water discharged from the well during a chosen time period. A factor of safety 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 from which groundwater (and contaminants) can reach the well over a specified time period. Input data requirements are limited, consisting of the pumping rate, open area (screened interval) of the well, porosity of the aquifer, and the selected time of travel (two years and five years).

Groundwater Sources

The A Bar A Ranch obtains its source water from two wells that are completed in the alluvial aquifer along the North Platte River to depths ranging from 50 to 58 feet. Groundwater reaches the wells through porous media flow. Additional information on these two wells is included on the attached Well Information Sheets.

As shown on the enclosed source water area maps, the contaminant inventory zones for these wells are centered around the wellheads and overlap due to their close proximity. Zone 2 extends

approximately 1,420 feet radially from the wellheads, while Zone 3 extends approximately 2,243 feet and includes a portion of the North Platte River.

Integrity Summary

The A Bar A Ranch uses two alluvial wells to supply water to the system. One well was completed prior to 1983, when more stringent construction standards were not required by the State of Wyoming. The other well was completed in 1993, when more stringent construction standards were required by the State of Wyoming. Records also indicate that the wells were properly sealed to protect against the surface infiltration of potential contaminants and the flooding of the wellheads. However, no annular seal was present for either well. As shown on the Integrity Summary Table, the wells received Integrity Scores of 4 and 2, due to the well completion dates and lack of an annular seal. The higher score for the North Well resulted from its earlier completion date.

Water Source Sensitivity Summary

The A Bar A Ranch uses two shallow alluvial wells that are completed to depths of less than 65 feet. As shown on the Source Sensitivity Summary Table, the wells both received sensitivity scores of 10.

These wells received the maximum sensitivity score for two reasons. First, the alluvial aquifer is known to be vulnerable to contamination. The second reason is that laboratory analysis of water samples from the Ranch within the last five years detected a contaminant that is listed on EPA's primary and secondary drinking water standards, nitrate. Despite detection, this contaminant was detected at concentrations below the EPA's maximum contaminant levels.

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 A Bar A Ranch water system scores high for land use susceptibility because much of the land surrounding the water sources is irrigated agriculture. The overall point source contaminant susceptibility rating is high due to wastewater discharge being present within the delineated zones. 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 A Bar A 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
Wastewater Discharge	N/A	N/A	2

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