

WYOMING WATER ASSESSMENT AND PROTECTION PROGRAM (SWAP)



SOURCE WATER ASSESSMENT PROGRAM EXECUTIVE SUMMARY

Source Water Assessment Prepared For:
Farson Eden School

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SOURCE WATER ASSESSMENT SUMMARY FOR Farson Eden School

PWS Source Water Assessment Summary

The Farson Eden School water system is classified as a non-transient non-community groundwater supply, and is located one half mile northeast of the intersection of U.S. Highway 191 and Wyoming Highway 28. The facility consists of a School and 14 residences. Water is provided to an average school season population of 180 and to an average resident population of 30 year round. Source water for this facility is obtained from two wells, one completed in the Green River Formation and one completed in the Wasatch Formation. Source water from these wells is pumped to distribution on demand and three hydropneumatic tanks are used to maintain system pressure. There is no water storage nor emergency power at this facility.

The Farson Eden School scores low for land use susceptibility. The overall land use susceptibility rating is low due to the lack of contamination sources being present within the delineated zones. The school should also be aware that U.S. Highway 191 and numerous point source contaminants lie within the delineated zones.

Delineation Methods

Because the Farson Eden School is classified as a non-transient non-community groundwater system and obtains water from porous sandstone aquifers, Lidstone delineated the source water area 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 calculated fixed radius (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 (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 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 School obtains its source water from two wells. One of these wells is completed in the Green River Formation to a depth of 150 feet. The second well is completed in the Wasatch Formation to a depth of 1,366 feet and flows under artesian conditions. Recharge to these formations occurs through the direct infiltration of precipitation, and groundwater reaches the wells through porous media flow. Additional information on these wells is included on the

attached Well Information Sheet.

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 1,272 feet radially from the wellheads, while Zone 3 extends approximately 2,053 feet.

Integrity Summary

The Farson Eden School uses two wells to supply water to the system. Both the Farson Eden School #1 and the SD #1-A wells were constructed prior to 1983, when less stringent construction standards were required by the State of Wyoming. While records indicate both these wells were properly sealed to protect against surface infiltration of potential contaminants, the Farson Eden School Well #1 is accessible and subject to flooding. As shown on the Integrity Summary Table, the school well received an integrity score of 5, while the other well received a score of 3. While both wells were completed before 1983, the school well received a higher score because of its accessibility and potential to be flooded.

Water Source Sensitivity Summary

The school obtains water from two wells, one completed in the unconfined Green River Formation, and one completed in the confined Wasatch Formation. As shown on the Source Sensitivity Summary Table, the Farson Eden School Well #1 received a score of 10, while the SD #1 Well #1-A received a sensitivity score of 6.

These wells received intermediate to maximum sensitivity score for two reasons. The SD #1 Well #1-A received a low aquifer sensitivity score because it is completed in a low vulnerability confined aquifer. The School well is completed in an area where its unconfined aquifer is vulnerable to contamination. The second reason is that laboratory analysis of water samples from both wells at the school within the last five years detected a few contaminants that are listed on EPA's primary and secondary drinking water standards. These included nitrate, fluoride, and sulfate among others. Despite detection, these contaminants were 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. The Farson Eden School scores low for land use susceptibility. The presence of underground storage tanks and underground injection within Zones 2 and 3 resulted in a high point source contaminant susceptibility for Zone 2 and a medium score for Zone 3. The wells were assigned a low susceptibility for the Transportation Corridor contaminants because U.S. Highway 191 runs through Zone 3. 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 Farson Eden School
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
Underground Tank	N/A	12	N/A
Underground Injection	N/A	N/A	2

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