

# WYOMING WATER ASSESSMENT AND PROTECTION PROGRAM (SWAP)



## SOURCE WATER ASSESSMENT PROGRAM EXECUTIVE SUMMARY

Source Water Assessment Prepared For:  
Gilchrist Elementary

Assessment Completed By:  
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**June 30, 2004**

## **SOURCE WATER ASSESSMENT SUMMARY FOR Gilchrist Elementary**

### **PWS Source Water Assessment Summary**

The Gilchrist Elementary School water facility is a non-community system that is located about 15 miles west of Cheyenne on Wyoming Highway 210 at 1108 Happy Jack Road. It provides water to about 165 people, including students, teachers, and staff from September to June through a single service connection. The building is occupied by one or two custodial staff members during the summer months. Source water for the facility is obtained from a single well that is completed in the White River Formation. Produced water is piped to a pressure tank and then distributed throughout the building where it is used for washing and in the restroom facilities. No treatment or disinfection procedures are used.

The Gilchrist Elementary School scores medium for land use susceptibility because the land surrounding the well is classified as urban. While this PWS may have urban zoning and therefore received a higher susceptibility rating, the impacts associated with this land use classification are presumed to be minimal since the surrounding area is generally undeveloped.

### **Delineation Methods**

Because the Gilchrist Elementary School is classified as a non-transient non-community groundwater system and obtains water from a porous sandstone aquifer, 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 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 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 area (screened interval) of the well, porosity of the aquifer, and the selected time of travel (2 years and 5 years).

### **Groundwater Sources**

The School obtains its source water from one well that is completed in the White River Formation to a depth of 360 feet. Recharge to the White River Formation occurs through the direct infiltration of precipitation. Groundwater reaches the well through porous media flow. Additional information on this well is included on the attached Well Information Sheet.

As shown on the enclosed source water area maps, the contaminant inventory zones for this well are centered around the wellhead. Zone 2 extends approximately 254 feet radially from the

wellheads, while Zone 3 extends approximately 401 feet.

## **Integrity Summary**

The Gilchrist Elementary School water facility well was constructed between 1983 and 1993, when more stringent construction standards were required by the State of Wyoming. Records show that 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 Gilchrist School # 2 received a score of 2 reflecting the well completion date only.

## **Water Source Sensitivity Summary**

The Gilchrist Elementary School water facility is a non-community system that obtains its source water for the facility from a single well that is completed in the White River Formation which is a confined aquifer. As shown on the Source Sensitivity Summary Table, the wells received a sensitivity score of 6. The wells had a low score of 1 for aquifer sensitivity because they draw water from a confined aquifer through porous media flow. The wells had the highest score of 5 for chemical sensitivity due to documented chemical contaminant detections in the groundwater. These included nitrate, sodium, and fluoride among others. These contaminants were generally 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 Gilchrist Elementary School scores medium for land use susceptibility. Overall susceptibility due to land use is anticipated to be minimal due to the lack of development in the area. The overall point source contaminant susceptibility rating is low due to the lack of contamination sources 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](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 Gilchrist Elementary  
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