

**SOURCE WATER ASSESSMENT  
EXECUTIVE SUMMARY  
FOR  
Big Piney**

---

**June 30, 2004**

**PROJECT: 424-001**

---

**ASSESSMENT COMPLETED BY: TRIHYDRO CORPORATION**

1252 Commerce Drive, Laramie, WY 82070

---



**ENGINEERING SOLUTIONS. ADVANCING BUSINESS.**

**Home Office** | 1252 Commerce Drive | Laramie, WY 82070 | phone 307/745.7474 | fax 307/745.7729 | [www.trihydro.com](http://www.trihydro.com)

## **SOURCE WATER ASSESSMENT SUMMARY FOR Big Piney**

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

The Town of Big Piney is a community groundwater system that serves approximately 425 residents through 200 service connections. Facilities include five wells, one elevated water storage tank, and the interconnecting distribution systems. The water is treated for taste and odor by use of chlorine gas disinfection at the wellhead. The water sources scored low with respect to integrity and medium for aquifer sensitivity. The town scored high for land use susceptibility and point source susceptibility.

### **Delineation Methods**

This water system is a community system that draws water from a porous sedimentary formation. Groundwater modeling methods were used to estimate the 2-year and 5-year time of travel capture zones for the groundwater flow system. The model used well information from the SEO database and aquifer parameters used in the model were similar to those reported by the Water Resources Research Institute Study of groundwater in the Green River Basin.

U.S. EPA's Wellhead Analytic Element Model or WhAEM method was used for community water systems that derive their sources from alluvial or shallow bedrock aquifers. The WhAEM model uses well and limited hydrogeologic data to estimate time-of-travel capture zones in relatively simple hydrogeologic settings for either confined or unconfined aquifers. For the source water assessment, the WhAEM model was used to develop two year and five year groundwater capture zones. Due to this methodology, the delineated source water areas may be larger than the true capture zones for each well. However, use of this method typically results in source water protection areas that can be used to more reliably protect the water supply.

### **Groundwater Sources**

Big Piney draws water from the sedimentary units within the Wasatch Formation. Recharge to the aquifer occurs in the outcrops of the Wasatch Formation through porous media flow under artesian conditions generally from west to east. 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 WhAEM methods for all five wells. Zones 2 and 3 represent 2-year and 5-year groundwater travel times, respectively. The capture zones extend west from the five wellheads.

## **Integrity Summary**

The Town of Big Piney uses five wells, approximately 150, 162, 237, 510 and 910 feet deep, to supply water to the municipal system. Four of the wells were constructed prior to 1983, when less stringent construction standards were required by the state of Wyoming. However, records show that all of the wells were properly sealed to protect against surface infiltration of potential contaminants and flooding around the wellhead. As shown on the Integrity Summary the overall system of Big Piney scored low. Big Piney Wells #3, and #8 received the highest score of 5 due to the well completion date and the lack of surrounding wellhead and flood protection.

## **Water Source Sensitivity Summary**

As shown on the Source Sensitivity Summary Table, the wells received a sensitivity score of 6. The wells had the lowest score of 1 for aquifer sensitivity because they draw water from a confined aquifer through porous media flow. The wells also had the highest 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 Town of Big Piney scored high for land use susceptibility because much of the land surrounding the water sources is irrigated cropland. The overall point source contaminant susceptibility rating is high due to underground tanks and sol/haz waste sites within zones 2 and 3 of the water sources. 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 Big Piney  
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	N/A	6
Sol/Haz Waste Site	N/A	6	N/A

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