

**SOURCE WATER ASSESSMENT  
EXECUTIVE SUMMARY  
FOR  
Tumble Bar Inn**

---

**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 Tumble Bar Inn**

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

The Tumble Inn Bar water facility is a transient, non-community groundwater supply located west of Casper. The system serves up to 100 people per day during peak periods through seven service connections. Facilities include one well, a fiberglass tank for hauled water and the distribution system. The water source scored medium with respect to the combined integrity and aquifer sensitivity ratings. The bar scored low with respect to land use and point susceptibility, and scored high with respect to transportation corridor susceptibility.

### **Delineation Methods**

This water system is a 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 well information in the sanitary survey 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**

The Tumble Inn Bar draws water from dune sand and loess deposits. Recharge to the aquifer originates as infiltrating precipitation and surface water from the surrounding drainage basin, and reaches the well through porous media flow. Groundwater flow within the formation is generally from southwest to northeast. Additional information on this well 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. Zone 2 has a calculated radius of 580 feet. Zone 3 has a calculated radius of 917 feet.

## **Integrity Summary**

Tumble Inn Bar uses one well that is approximately 40 feet deep to supply its water. The well was constructed prior to 1983 when less stringent construction standards were required by the State of Wyoming. Records show that the well was properly sealed from surface infiltration of potential contaminants and flooding around the wellhead. As shown on the Integrity Summary Table, Powder River #1 received a score of 4 based on the well completion date.

## **Water Source Sensitivity Summary**

As shown on the Source Sensitivity Summary Table, the well received a sensitivity score of 10. The well received the score for two reasons. First, the well is relatively shallow and draws water through porous media flow from an unconfined alluvial aquifer that is known to be vulnerable to contamination. The second reason is that there are 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 Tumble Inn Bar scored low for land use susceptibility. The presence of a railroad passing through zones 2 and 3 resulted in a high transportation corridor contaminant susceptibility rating. The overall point source contaminant susceptibility rating is low due to the lack of contamination sources being present within the delineated zones.

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 Tumble Bar Inn  
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