Hideout Casino
Transient PWS-6 Report

Source Water Delineation and Assessment Report

Public Water Supply: Hideout Casino (PWSID #MT0002133)

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Introduction

This delineation and assessment report is intended to meet the technical requirements of the Montana Source Water Protection Program (DEQ, 1999) and the federal Safe Drinking Water Act (SDWA) Amendments of 1996 (P.L. 104-182). Jeff McCleary prepared the final report. The information on land use and potential contaminant sources and the information on the well and vicinity was also gathered by Jeff McCleary.

Purpose

The purpose of this delineation and assessment report is to assess threats to the Hideout Casino water supply using information obtained from local residents familiar with the surrounding area and published reports. Delineation is a process whereby areas that contribute water to aquifers or surface waters used for drinking water, called source water protection areas, are identified on a map. Assessment involves identifying locations or regions in source water protection areas where contaminants may be generated, stored, or transported and then determining the potential for contamination of drinking water by these sources.

Public Water Supply Information

Hideout Casino is located at 942 Hub Lane, approximately 6 miles south of Hamilton, Montana. DEQ public water supply records indicate the water system serves 100 non-residents through one service connection. Hideout Casino is classified as a transient, non-community public water supply because they serve 25 or more persons per day but do not regularly serve the same persons for at least six months a year. Water demand is approximately 1000 gallons per day assuming 10 gallons per day per patron (EPA, 1991).

The system's well is located outside (to the west) of the entrance to the casino building. (See System Diagram Figure 2) Water is pumped to a H2ow-To #15753477 hydropneumatic tank where it is pressurized before entering the distribution system. The well is equipped with a 3/4 HP submersible pump. The well for the system describes an open bottom well, finished in gravel at a depth of 60 feet with a 6 inch casing. The well log indicates that when the well was drilled it had a static water level of 45 feet and a pumping water level of 55 feet, with a yield of 12 gpm.

The water system currently uses no treatment. Sanitary wastes from the system are discharged to a septic system located to the south of the building.

Hideout Casino is required to monitor for nitrate and coliform bacteria. Nitrate levels detected in the public water supply well within the past five years have ranged from .29 to .38 mg/L, well below the maximum concentration level of 10 mg/L. The system's coliform sampling history shows several coliform positive events from 1999 to the summer of 2002. Since the summer of 2002 the system has had no further coliform positive samples.

Delineation

A 100-foot radius control zone and one-mile radius inventory region were delineated for the Hideout Casino PWS as required for transient, non-community public water supplies under the Montana Source (See Figure 1) Water Protection Program (DEQ, 1999). The control zone is the most critical area within which direct introduction of contaminants into the well or immediate area can occur. The Inventory Region encompasses the area that water or contaminants can flow to Hideout Casino's well over a period of months to years.

Inventory

The Montana Source Water Protection Program (DEQ, 1999) requires that land uses and all potential sources of nitrate and microbial pathogens be identified within the control zone and inventory region of non-community, transient public water supplies.

The land within the Control Zone belongs to Hideout Casino. According to the information in the most recent sanitary survey for Hideout Casino there are no potential sources of pathogens or nitrate in the control zone.

The following inventory for the Hideout Casino inventory region is based on a windshield survey of the inventory area

Land use in the vicinity of Hideout Casino is primarily unsewered residential. (See Figure 3) The right-of-way for Highway 93 also is within one mile of the public water supply well.

There are no animal feeding operations within one mile of the Hideout Casino PWS. Therefore, the only apparent significant potential sources of nitrate or pathogens are septic systems.

Susceptibility Assessment

Susceptibility of the Hideout Casino as defined in the Montana Source Water Protection Program is very high for pathogens and moderate for nitrate.

Support Figures

Table 1. Methods and criteria for delineating source water protection regions for PWSs.

If Your Source of Water Is:	Delineate These Water Protection Regions	Method For Each Region:	Minimum Distance Values & Type of Inventory Required: **LU** – Land Uses; **P&N** – Pathogens and Nitrate sources
1. Ground Water that is either: • Unconfined / Semi-confined	Control Inventory	Fixed radius	Distance - 100 feet Distance - 1 mile
Or: • Confined	Control Inventory	Fixed radius Fixed radius	Distance - 100 feet Distance - 1000 feet
2. Ground Water that is hydraulically Connected to Surface Water	Buffer Zone	Fixed Distance	One-half mile buffer extending upstream a distance corresponding to a 4-hour TOT but not to exceed ten miles or the nearest intake. Buffer will not exceed the extent of the watershed.
1. Surface water	Spill Response	Fixed Distance	One-half mile buffer extending upstream a distance corresponding to a 4-hour TOT but not to exceed ten miles or the nearest intake. Buffer will not exceed the extent of the watershed.

Table 2. Source Water (Aquifer) Sensitivity Table.

High Source Water Sensitivity	**Moderate Source Water Sensitivity**	**Low Source Water Sensitivity**
▪ Surface water and GWUDISW ▪ Unconsolidated Alluvium (unconfined) ▪ Fluvial-Glacial Gravel ▪ Terrace and Pediment Gravel ▪ Shallow Fractured or Carbonate Bedrock	▪ Semi-consolidated Valley Fill sediments (semi-confined) ▪ Unconsolidated Alluvium (semi-confined)	▪ Consolidated Sandstone Bedrock ▪ Deep Fractured or Carbonate Bedrock ▪ Semi-consolidated (confined)

Table 3. Land Use Types and Map Codes.

Land Use Type	Map Code
Unsewered residential	UR
Agricultural irrigated crop	AIC
Forest	F
Roads and Right-of-ways	RRW

Table 4. Identification of Significant Potential Sources of Microbiological and Nitrate Contamination.

Potential contaminant sources are designated as significant if they fall into one of the following categories:

1) Animal feeding operations.
2) Wastewater treatment facilities, sludge handling sites, or land application areas.
3) Septic systems.
4) Sewer mains.

Table 5. (MT SWPP Table 5). Significant potential contaminant sources for Hideout Casino

Source	Contaminants	Description	Hazard Rating	Barriers	*Susceptibility*
Septic Systems	*Pathogens and Nitrates*	*Area surrounding PWS designated UR on Inventory Map*	*Moderate*	*None*	*High*

Table 6. (MT SWPP Table 6). Hazard of potential contaminant sources.

Source of Water	Potential Contaminant Source	High Hazard	Moderate Hazard	Low Hazard
Surface Water (SW)	**All Sources**	Potential for direct discharge to Source Water	Potential for discharge to GW that is hydraulically connected to SW	Potential contaminant sources present within the watershed
Ground Water (GW) UnConfined	**All Sources**	Within 1 year TOT	Between 1 to 3 years TOT	Over 3 years TOT
GW Confined	**All Sources**	PWS well: no seal through confining layer	Other wells (Inventory Region): no seal through confining layer	All wells (Inventory Region): sealed through confining layer
GW and SW	**Septic Systems**	More than 300 per sq. mi.	50 – 300 per sq. mi.	Less than 50 per sq. mi.
GW and SW	**Municipal Sanitary Sewer** (percent land use)	More than 50 percent of region	20 to 50 percent of region	Less than 20 percent of region
GW and SW	**Cropped Agricultural Land** (percent land use)	More than 50 percent of region	20 to 50 percent of region	Less than 20 percent of region

Table 7. (MT SWPP Table 5). Relative susceptibility to specific contaminant sources as determined by hazard and the presence of barriers.

Presence Of Barriers	Hazard		
	High	**Moderate**	**Low**
No Barriers	Very High Susceptibility	High Susceptibility	Moderate Susceptibility
One Barrier	High Susceptibility	Moderate Susceptibility	Low Susceptibility
Multiple Barriers	Moderate Susceptibility	Low Susceptibility	Very Low Susceptibility

References:

Montana DEQ, 1999. Montana Source Water Protection Program, Approved by EPA in November 1999.

U.S. EPA, Office of Water, 1991. Manual of Small Public Water Supply Systems, EPA 570/9-91-003, 211 p.