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Source Water Delineation and Assessment Report

**Public Water Supply: Wild Horse Hot Springs
(PWSID #MT0001096)**

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Contact Person: Jamie Seely
P. O. Box 629
Hot Springs, MT 59845
(406) 741-3777

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). Andrea Mazur, an intern with the Montana Department of Environmental Quality (DEQ) Source Water Protection Program prepared the report, which was reviewed by Eric Sivers, a DEQ hydrogeologist. Information on land use and potential contaminant sources comes from a variety of sources, including the most recent sanitary survey, county records, DEQ Public water supply files (including sanitary surveys), and other public sources of information. A web-based GIS application was used to query available GIS data and generate maps to support this report. This application is called the Source Water Protection Program Query System and is available at the following web address or URL: <http://nris.state.mt.us/wis/swap/swapquery.asp>. The application was developed by the DEQ Source Water Protection Program (SWPP) and provides access to data from the U.S. EPA, DEQ, Montana Bureau of Mines and Geology (MBMG), and other sources.

Purpose

The purpose of this delineation and assessment report is to identify and assess threats to Wild Horse Hot Springs water supply using information obtained from the most recent sanitary survey, which was completed in November of 2000 by Laurie Ellenwood, and from other sources as described above. 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 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

Wild Horse Hot Springs (PWS ID# MT0001096) is located off of Highway 28 near the town of Hot Springs. The water system serves 10 RV spaces, two residences, an office, six private plunges, and two kitchenettes. The water system consists of one active well, an inactive well, and a distribution system that provides drinking water to 15 service connections.

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DEQ public water supply (PWS) records indicate the system serves 30 people and 5 residents year round. The water system for Wild Horse Hot Springs is classified as a transient non-community water supply because it serves 25 or more persons daily but does not regularly serve the same persons for at least six months a year.

According to the well log for the public water supply well (attached), Well #1 (WL002) was drilled April of 1913 to 240 feet below ground surface (bgs). The well was constructed of 4 inch steel casing. The well is a flowing well with water that is approximately 120°F.

The operator for the PWS is required to monitor for nitrate and coliform bacteria. Bacteriological samples are collected on a monthly basis. A nitrate sample is collected annually. Total coliform results have negative for the past five years. Nitrate levels in the past five years have not exceeded 0.20 mg/L. The EPA MCL for nitrate is 10 mg/L. Nitrate and microbiological monitoring results are kept on file at DEQ and are attached.

Delineation

Two source water protection areas are delineated for Wild Horse Hot Springs. They include a 100-foot radius control zone and a 1000 foot radius inventory region. The well supplying water to Wild Horse Hot Springs PWS is withdrawing water from a confined aquifer. The control zone is the most critical area for protecting the water source. The inventory region encompasses the area from which water or contaminants can flow into Wild Horse Hot Springs PWS over a period of months to years. For a confined aquifer, the default inventory region size is a 1000 foot radius circle surrounding the wellhead. Thus the inventory region for this PWS is a 1000 foot radius circle around the PWS wellhead.

Inventory

The Montana Source Water Protection Program (Montana 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 area within the inventory region includes: a large capacity septic system.

It is likely that Wild Horse Hot Springs has at least one large capacity septic system servicing the facilities, as connection to community sewer is not possible in this area. A large capacity septic system is defined as one that serves more than 20 people daily.

Susceptibility Assessment

Susceptibility to potential contaminant sources is assessed both for the aquifer and the public water supply well. The significant contaminant source in the inventory region comes from the large capacity septic system associated with Wild Horse Hot Springs. The large capacity septic system poses a threat to the public water supply well, as it could cause contamination of the well with nitrates and pathogens. The Wild Horse Hot Springs PWS well appears to have multiple barriers in place between the well intake and

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potential contaminant sources: an intake depth of greater than 50 feet below the static water level, clay layers overlying the aquifer, and an upward ground water gradient.

It is assumed that there is a large capacity septic system associated with Wild Horse Hot Springs. This septic system poses a high hazard. With multiple barriers between the potential contaminant source and the PWS well intake, the well has a moderate susceptibility to contamination from this source.

Table 1. Susceptibility Assessment of Significant Potential Contaminant Sources

Potential Contaminant Source	Potential Contaminants	Hazard	Hazard Rating	Barriers	Susceptibility	Management Recommendation
Large Capacity Septic System	Nitrates, Pathogens	System leaks or failure could result in discharge of untreated effluent	High Hazard	Intake depth of >50 feet below static water level Clay layers overlying the aquifer Upward ground water gradient	Moderate Susceptibility	Properly operate and maintain the on-site septic systems and distribution lines. A two to three year septic tank pumping maintenance schedule is recommended. Encourage and support local government efforts to provide educational materials and workshops to the public on proper handling and disposal of industrial and household hazardous wastes and recycling. Discourage disposal of chemicals via drains and toilets. Promote the upgrading to and installation of advanced septic treatment systems.

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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.

DEQ Permitting and Compliance Division, 2003. Sanitary Survey for Wild Horse Hot Springs PWS – PWSID: #MT0001096

Montana State Library – Natural Resources Information System (NRIS) 2000 map base of the USGS Topographical coverage at 1:24,000 scale in MrSID format

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[Figure 1. Map](#)