JUDITH GAP

PWS

WELLHEAD PROTECTION PLAN

PWSID # 00258

George Mongar,
Certified Operator

2006 Operator
Doug White

phone:(406) 473-2318

ACKNOWLEDGMENTS
This Wellhead Protection Plan was completed by George Mongar, Judith Gap's operator, with the assistance of Bill O'Connell, Montana Rural Water Systems.

PURPOSE
To meet the requirements of the SDWA as amended, Montana has implemented a wellhead protection program in which each community submits a plan for certification review following a format prescribed by the Department of Environmental Quality (DEQ).

This report is intended to meet the technical requirements for the completion of the wellhead protection plan for Judith Gap, MT as required by the Safe Drinking Water Act (SDWA).

A wellhead protection plan is designed to protect the groundwater used by communities from contamination. The plan establishes protected areas overlying the aquifer yielding water to the well and extends upgradient a prescribed distance. The extent of the upgradient protection area is determined by modeling of the aquifer and projecting the well's capture zone as determined for three, five, and ten year scenarios. This long term planning is necessary to provide an early warning mechanism in the event of upgradient contamination, however, preventing the contamination of a water supply through education and public awareness remains the primary goal.

Most instances of aquifer contamination become known when trace levels of a contaminant are detected through routine monitoring. Drinking water systems that have completed a wellhead protection plan will have information on groundwater flow and aquifer hydraulic characteristics as well as a contaminant source inventory and thus will be in a good position to determine the best response to ensure the continued quality of the water supply.

CHAPTER 1
INTRODUCTION

The Community

Describe the population, basis of the economy, any industrial activities, and major transportation routes. Include a description of all unusually large or major water users and/or waste generators. The purpose of this subsection is to give the unfamiliar reader a feeling for the community and activities in the area. Larger communities may be able to use a local chamber of commerce publication to find examples of material describing the community and the commercial activities in the area.

Judith Gap has 261 residents and the water system has 87 hook-ups. The town is located between the Little Belt and Big Snowy Mountains. Logging in these mountains supplies a lumber mill in Judith Gap that is the town's largest employer. State highway 191 between Harlow/on and Lewistown runs north-south through the town. A gas station and two restaurants serve the town and some travelers.

Geographic Setting

Describe the general geographic setting. include reference to vicinity map as appendix. If you are uncertain as to how to describe the local geography you may find an existing description associated with the local soil survey available through the Natural Resource Conservation Service office in the county seat. Other sources for geographic information may include local or regional history publications, agricultural publications, or regional geology books.

The vicinity map is used to show the relative location of your PWS in Montana and generally uses a major town or city as a reference. This means that the vicinity map will be a copy of a portion of a state or regional map that shows highways, rivers, a major town or city, and the location of your PWS. Maps used for the vicinity map may include the Official Montana Highway Map or any other map with a scale of around 1: 1, 000, 000.

Judith Gap is located in central Montano, near the geographic center of the State. The well is located 2.5 miles north of town on a small hillock. The area is part of the Unglaciated Missouri Plateau of the Great Plains Physiographic Province. Judith Gap is on the uplifted area between the Little Belt and Big Snowy Mountains.

The Little Belt Mountains which rise to the west are part of a large crustal arch that trends just west of north toward the Canadian border. The Big Snowy Mountains rise east of Judith Gap. These mountains are part of the Big Snowy Uplift, which is a part of the Central Montana Uplift See the vicinity map in appendix 1.

General Description of the Aquifer

Generally describe aquifer and geology. include reference to geologic maps or other documentation attached as appendix. This subsection will be very general and will use information obtained for Chapter 2, Delineation. Again, the purpose here is to provide the unfamiliar reader with a general feeling for the source of water to your well or spring.

Judith Gap's water comes from the base member of the Kootenai Formation also called the Third Cat Creek sand of the Cat Creek oil field. The unit is identified as black and white sandstone it out crops in the surrounding mountains and is 405feet below the ground surface at the well. Below the site lie 30 feet of Cretaceous shale of the Colorado formation followed by over 410 feet of the Cretaceous Kootenai formation. The Kootenai formation consists of interbedded sandstone and shale units.

The aquifer has a static water level of +30 feet, and flows at a 100 g.p.m. with a closed in pressure of* 12 *psi at the well head. This corresponds to a pressure of* 187 *psi at the aquifer. The well is

located* 5 *miles northwest of town on a small hillock.

The PWS

Describe the number of residents and service connections on the system; describe the source and distribution system. Include reference to a layout map as an appendix which shows mains, valves, wells, storage tanks, treatment works, etc. The written description of your PWS may be in your own words or may be a portion of an existing engineer's report, sanitary survey report, etc. The layout map may also be a copy of an existing distribution system map or you may create your own by drawing it yourself. It does not need to be a professionally created drawing but should be clear and readable and show the items noted above. Some of this information may be readily available in the PWS files at DEQ.

The water system serves* 261 *people with* 87 *hook-ups. A deep flowing artesian well located 2.5 miles northwest of Town and is the only water source. The water is treated with a poly-Phosphate at the well house because of a Fe and Mg problem. Because of the poly-Phosphate, the water is also chlorinated. The treated water is then pumped the* 5 *miles to the Towns elevated water tank, from the tank the water is distributed to Town. A drawing of the distribution system is located in appendix 1.

Influencing Factors

Include the names of the people who made major decisions relating the formation of this plan and include a description of the factors influencing those decisions. Some of these factors might include water user concerns, rapid growth, increasing contaminant sources, desire for waivers, desire to maintain existing water quality, etc.

George Mongar is the water system's operator and the main driving force for the WHPP. George took over the system from Jack Miller in 1997, Jack was also, a proponent of WHPP. The prospect of waivers for testing requirements is what brought support from the Town council.

WHP Management

Include the name of the person(s) who will be responsible for implementing the plan.

George Monger

CHAPTER 2
DELINEATION

The purpose of this chapter is to describe how the wellhead protection area for the Judith Gap well was determined. This "delineated area" defines the portion of the aquifer or groundwater flow system which contributes water to our well. The delineated area includes the zone of contribution to the well through the recharge region to the groundwater divide as determined by application of the analytical equations for groundwater flow and simple hydrogeologic mapping. The delineated wellhead protection area for Judith Gap has been subdivided into three regions for prioritization and ease in management. These three areas include the control zone, special protection region, and protection region.

The control zone is also known as the well exclusion zone and is the 100-foot radius around the well. Certain spills or land use activities in this zone have the potential to quickly impact the well, hence control of potential contaminants is critical.

The special protection region represents the calculated zone of contribution to the well for a distance of *enter data* which also approximates a time of travel of 5 years. The delineation is based on both pumping and aquifer characteristics. Spills or leaks of certain contaminants and some land uses within this region are also considered likely to contaminate the well but early detection, response, and remediation will prevent the long term loss of water quality.

The protection region represents the recharge area for the portion of the aquifer which contributes water to *the Judith Gap* water system as delineated by hydrogeologic mapping.

The rest of the delineation chapter generally required the assistance of a person familiar with hydrogeology. Field work or data collection may be necessary. Some PWSs may choose to retain the services of a qualified consultant to provide the components of the delineation chapter. Others may be able to find a qualified person within the community to assist with the delineation without charge. Other providers of assistance may include MRWS and, under certain circumstances, DEQ.

Geologic Conditions and Aquifer Characteristics

Include a description of geologic conditions such as lithologies, lateral extent and thickness of aquifer, confining conditions, structural trends, etc.; include reference to geologic maps, hydrogeologic maps or other supporting documentation attached as appendix. Sources of geologic information may include MBMG or USGS publications available through an interlibrary loan from the Montana State Library in Helena or purchased from the MBMG publication office in Butte. Lithological and well information may be available through the ground water information center at the MBMG.

Judith Gap is located in central Montana, near the geographic center of the State. The well is located 5 miles north of town on a small hillock of the Little Belt Mountains. The area is part of the Unglaciated Missouri Plateou of the Great Plains Physiographic Province. Judith Gap is on the uplifted area between the Little Belt and Big Snowy Mountains.

The Little Belt Mountains which rise to the west are part of a large crustal arch that trends just west of north toward the Canadian border. The Big Snowy Mountains rise east of Judith Gap. These mountains are part of the Big Snowy Uplift, which is apart of the Central Montana Uplift See the vicinity map in appendix 1.

The well taps an aquifer in one of the formations of the Little Belt Mountains. While the formations are similar for both the Little Belt and Big Snowy Mountains, the stratigraphy as taken from the Judith

Gap well log is more consistent with oil and gas well logs for the Little Belt Mountains. Oil and gas well logs were used because of the reliability of the geological interpretation of formations encountered during drilling.

Source Well(s)

Describe the well(s) depth, construction details, general location; attach log(s) as appendix; NOTE: well logs must be readable! Well logs may be available through the Ground Water Information Center at the Montana Bureau of Mines and Geology in Butte (406 496-4336).

Judith Gap's water comes from the base member of the Kootenai Formation, also called the Third Cat Creek sand of the Cat Creek oil field and the Cut Bank Sandstone Member in the Geologic Map of the Belt 30X60-minute Quadrangle by Vuke, Berg, Cotlon and O'Brien. The unit is identified as a black and white sandstone it out crops in the surrounding mountains and Is 405 feet below surface at the well. Below the site lie 30 feet of Cretaceous shale of the Colorado formation followed by over 410 feet of the Cretaceous Kootenai formation. The Kootenai formation consists of interbedded sandstone and shale units.

The confined aquifer has a static water level of +30 feet, and flows at a 100 g.p.m. with a closed in pressure of 12 psi at the well head. This corresponds to a pressure of 187 psi at the aquifer. The well is located 5 miles northwest of town on a small hillock. See the well log in appendix 8.

Delineation Method

Generally describe the method/model used to delineate the WHPA. The Montana Wellhead Protection Program generally requires the delineation be completed using the analytical and hydrogeoloic mapping method meeting minimum criteria of 3-10 years time of travel and the hydrologic boundaries respectively

The U.S. EPA WHPA Code is a computer model available through DEQ which can be used to complete analytical equations.

The delineation was completed using the WHPA code, General Particle Tracking (GPT) and a time of travel of 5years. The five year time-of-travel used in model is the length of time required for a confined aquifer by the Montana Wellhead Protection Program.

Model or Equation Input Parameters

Fully describe the input parameters needed for the delineation method and support each value used. Include a reference or describe the basis for using that value. Include the completed equations or input/output information.

Transmissivity is a measurement of the rate at which an aquifer will transmit water through it. Transmissivity can be determined from aquifer tests, where the drawdown in a well is plotted with respect to the time since pumping started. If an aquifer test was not completed transmissivity can be determined from the specific capacity which is calculated from the well performance tests completed during well completion and reported on the well log. The drillers log for Judith Gap shows the well's static water level (SWL) is +30 feet (12psi). After pumping the well at 200 g.p.m. for 24 hours the pumping water level (pwl) was 78feet below the ground surface. This gives a specific capacity of (200 g.p.m.I78+30 ft) = 1.85 gallons per minute per foot of drawdown. Using to two empirical equations based upon specific capacity yields a transmissivity of:

The first equation by Raznic uses a pumping rate based on cubic feet per day (Q) and s is the

amount of drawdown in the well over the 24 hour period:

$T=33.6(Q/s)^{0.67}=33.6(38503\ ft^3$ per day/108 ft)$^{0.67}=1722.8\ ft^2$ per day; note that the value for T is in square feet per day.

The second equation is from the USGS, this method uses a pumping rate expressed as gallons per minute:

$T= 2000(Q/s)=2000(200$ g.p.m./108 ft)$= 3703.\ 7\ ft^2$ per day.

Both equations are used because this method of determining T is not as accurate as the value obtained from an aquifer test This way we have a range of calculated values to use in performing a sensitivity analysis to determine the significance of the different values.

Base Map

Selection of a base map will depend on needs and availability. Your base map can be a 7.5 *minute quad map, city plat map, aerial photo, etc. Show the delineated well head protection area on the base map referenced as appendix. Use distance or time of travel criteria to .subdivide the delineated area into regions as described by the Montana Wellhead Protection Program. You should tailor boundaries to existing, recognized, and logical geographic or political features .such as a river, road, section line with fence, or ridge top.*

The base map is the Judith Gap Quadrangle, Montana, 7.5 minute series (Topographic) from the USGS. In addition a copy of an aerial photo is included.

Assumptions

Describe the assumptions associated with the delineation method such as isotropic and homogenous.

The model assumes that the aquifer is homogenous and isotropic. Basically this means that the composition of the aquifer and therefore it's hydraulic properties are the same over an infinite extent and that the groundwater flows horizontally. The Third Cat Creek formation covers a large area and has a relatively consistent composition and the confined condition of the aquifer allows only horizontal groundwater flow. Therefore, the aquifer meets these modeling assumptions.

The model was constructed with the well pumping at maximum capacity for 14 hours per day for 5 years. The well is used only a few hours per day even during the high demand summer months. This means that the capture zone delineated is larger than the actual use would indicate. This was done to allow the model to error on the conservative side, so that if the hydraulic parameters used in the model were incorrect the delineated area would still offer a high degree of protection.

Limiting Factors

Describe how the values selected for your delineation method might limit or affect the accuracy of the delineation. For instance, do conditions described in the 'assumption' section exist and how valid are these assumptions? Compare assumptions with described aquifer characteristics. Particularly vulnerable sites may need to conduct a sensitivity analysis to see how systematic changes in critical input parameters affect the final delineation results..

Major assumptions used in the application of many groundwater flow models are; 1) flow in the aquifer is uniform. and 2) flow in the aquifer is horizontal. A groundwater flow model for any specific set of conditions should be considered within these limitations as groundwater flow is generally not uniform nor strictly horizontal. Any particular modeling effort merely represents the best estimate of groundwater flow conditions based on known and estimated hydrogeologic and pumping conditions and should be modified as additional information becomes available.

Specific limitations to this delineation include *insert specific limitations, e.g., discuss the weakest values and potential impact on the validity of the delineation.*

This model assumes that the aquifer is recharged from exposed sections of the formation far from the well, which could be located high in the Little Belt Mountains. This assumption ignores the possible contribution to recharge from fractures and faults located throughout the region. The model for this well can ignore faults and fractures because of the depth of the aquifer and the flowing artesian conditions at the well head indicate that any contribution from fracture flow would be far away from the well site near the exposed sections of the formations. Therefore, the fractures would have no impact on water quality form the consideration that fractures can allow rapid infiltration of surface water and any contaminants that the surface water picks up.

The delineation shown on the base map represents the estimated capture zone which assumes the flow direction is valid within 45 degrees and is based on a maximum daily pumping rate. This should yield a capture zone that will still be safe as the water demand increases.

GWUDISW

Describe the reasons why this source is or is not under the influence of surface water and support assessment; attach completed "groundwater under the direct influence of surface water" (GUDISW) preliminary assessment as appendix.

The well is not under the influence of surface water. The well is 405 feet deep and is flowing artesian, also the well head is on a small hillock and there is no surface water within 1000 feet of the well. See the GWUDlSW in appendix 9.

CHAPTER 3
INVENTORY

A potential contaminant source inventory generally identifies all land uses in the delineated area and lists the location of certain land uses as well as potential contaminant sources in relation to the well. *Describe the conditions in the community and/or area that influenced your decisions about how you did your inventory. For instance you may do an intensive inventory in the control zone and special protection region and a much lesser effort in the protection region due to risk considerations.*

The well is on the Maus Ranch. The ranch has three residences west of the well site, each with a separate septic system. Also, the ranch has two 80 foot deep wells. The ranch covers most of the delineated area, they raise hay, grain and cattle. There is no irrigating done on the ranch. The ranch stores hay, grain, chemicals and fuel for the equipment. They have no underground storage tanks for fuel or chemicals.

Inventory Method

Describe the method used to inventory the three zones of your well head protection area and names of the participants. Inventory methods may include business directory research, agency database research, door to door survey, windshield survey, etc.

Land uses within the delineated area should be identified on your base map. Generally, land uses can be described as: sewered-residential, sewered-commercial, sewered-mixed, unsewered residential, unsewered-commercial, unsewered-mixed, industrial, railroad right-of-way, highway right-of-way, agriculture-dryland crop, agriculture-irrigated crop, agriculture-irrigated pasture, agriculture-dryland pasture, forest.

Specific activities or sites of concern that have potential to contaminant your source water should then have an inventory sheet completed. A site identification number should be entered on both the inventory sheet and the base map. When complete you will have a base map showing general land uses in your WHP area and specific sites noted by a map locator number which corresponds to the inventory sheet ID number. Reference the completed inventory forms attached as appendix.

The inventory was completed by George Mongar, the operator for Judith Gap. The inventory used aerial photos, on-site surveys with the Maus Ranch owner and contacting State and County agencies about land use and soil conditions.

Inventory Results/Control Zone

Describe land uses and potential contaminant sources for each property within the Control Zone.

The 100 foot radius around the well contains no contaminant sources. The well is sited on a small hillock several miles from town. The land is on a large farm but the area around the well is unused, and the area around the well house is fenced. See the maps in appendix1.

Inventory Results/Special Protection Region

Describe land uses and potential contaminant sources for each property within the Special Protection Region.

The Special Protection Region runs east up the slope of the Little Belt Mountains, some agriculture operations are within the capture zone. These operations are in the valley between the hillock and the Mountains, the flowing artesian conditions at the wellhead show surface infiltration is unable to reach the aquifer. The agricultural activities are described at the beginning of this section and the area is defined on the maps in appendix 2.

Inventory Results/Protection Region

Describe land uses and potential contaminant sources for each property within the Protection Region.

The Protection Region includes areas of active agriculture and logging. However, these activities would not be able to impact the aquifer supplying the well. The area is defined on the maps in appendix 1.

Inventory Update

Describe how the inventory will be updated annually and resubmitted to DEQ every five years. Include the position of the person(s) who is responsible for the update. The inventory will be updated every year by the certified operator. Changes in land uses or potential contaminant sources will be noted and additions made as needed. The complete inventory will be submitted to DEQ every five years to ensure recertification of the wellhead protection plan.

Organic Chemical Monitoring Waivers

For organic chemical monitoring waiver application purposes, all land uses within one mile of the well must be shown on a 7.5 *minute quad map. If your base map is not a* 7.5 *minute topographic map, you must include one as an appendix. Completed MDHES Forms I and two for each identified land use within the* 1 *mile radius of the well should be referenced as an appendix.*

The completed forms and maps for the testing waivers are in appendix 9.

Inventory Limitations

It may not be possible to inventory all properties due to access limitations, describe the limitations of your inventory effort and assess the impact to your source water protection effort.

All properties within the WHPP regions were evaluated by the operator with assistance from the land owner.

CHAPTER 4
MANAGEMENT

Generally describe the philosophy of your approach to management. Describe the conditions in the community and/or area that influenced your decisions about how you will manage potential contaminants. Include the reasoning behind your decisions and indicate that all land uses have been identified on the base map but inventory sheets were completed for only very specific activities that have the potential to contaminate your source water.

The goal of the Wellhead Protection Plan is to, 1) protect the source water by keeping potentially polluting materials and activities out of the control zone, and, 2) to manage the special protection region to ensure land use activities pose minimal threat to the source water.

Control Zone Management

Describe each identified contaminant source in the control zone and how it will be managed If action is required, such as inspections by the operator or state regulatory personnel, or if education is specified, include a description of the mechanism that will ensure the required action occurs. Be specific to your inventory items.

The well site is fenced in and the hillock is used only for and by the water system

Special Protection Region Management

Describe each identified contaminant source in the special protection region and how it will be managed if action is required such as inspections by the operator or state regulatory personnel, or if education is specified, include a description of the mechanism that will ensure the required action occurs. Be specific to your inventory items.

The land owner who controls the land within the region has been very co-operative with the WHP effort. However, due to the depth of the aquifer and the confined conditions the land uses In this area would not impact the water quality or quantity.

Protection Region Management

Describe each identified contaminant source in the protection region and how it will be managed if action is required, such as inspections by the operator or state regulatory personnel, or if education is specified, include a description of the mechanism that will ensure the required action occurs. Be specific to your inventory items. If no management is required, describe your reason for this conclusion.

Due to the depth and hydraulic conditions of the aquifer and the limited land use in this region a management plan was not developed at this time. However, should mineral exploration activities begin in the region the operator will notify the DEQ and MRWS to determine if any BMPs would be required.

Management Implementation

If a local ordinance or ongoing education is part of your management plan, describe the process by which it will occur and include an implementation schedule.

The Town council has passed a resolution supporting WHP. The land owner of the well site has a good relationship with the Town and on any issues concerning the WHPP. The operator will keep him Informed of the WHPP's progress.

CHAPTER 5
EMERGENCYPLANNING

The emergency plan identifies the principal threats to the source water, designates an emergency coordinator, and then describes a series of potential responses planned in the event of a problem arises. Another important aspect of the plan is an estimate of the equipment and materials that would be needed in the event of an emergency, a description of how a short-term replacement water supply would be handled, and a description of the funding available to deal with an emergency response.

Identification of Possible Disruption Threats

The principal threat to the PWS has been identified as a spill, leak, or discharge in the control zone which could contaminate the source water by entering through the well bore or perhaps along with contaminated shallow groundwater through a failed casing. Included are spills from vehicles, spills from mobile liquid holding tanks, leaks from above or underground tanks, leaks from waste carrying pipes, and *insert specific identified threats.*

The major threat to the water system is a failure to the well or the pipe that carries the water to Town.

Describe any other major or secondary identified threats in the special protection or protection regions. Most PWSS will include a transportation route and potential spill as a secondary threat and some will have a specific activity occurring in the wellhead protection area which poses a significant threat. Not all potential sources should be listed here only one or two for which you should genuinely be prepared

The depth of the well and the confined conditions of the aquifer eliminate known land uses in the area from being a threat. This leaves mechanical failure or a failure of the distribution system as the main threats to the water system.

Designation of an Emergency Coordinator

The emergency coordinator for Judith Gap is George Mongar. The contact phone number is (406)473-2381. The backup emergency coordinator is Jack Miller at 473-2253.

The emergency coordinator is familiar with the county and state DES procedures and is responsible for contacting the appropriate officials should a spill or other threat to the source water occur. The *Judith Basin* County DES coordinator 24hour phone number is _____. The State of Montana 24 hour Spill Hotline phone number is (406)444-6911.

Equipment and Material Resources

The principal identified threats to the well are generally limited to spills in the control zone. Resources that may be needed to respond to a spill are heavy equipment for berm and excavation work and absorbent materials. *Describe the local availability of equipment and materials and specific details about how you can access them.* Should additional resources be needed due to the magnitude or chemical nature of a spill the *Judith Gap Town Council* will contract with an emergency response firm properly trained and equipped. A list of possible contractors is maintained and updated by the DEQ Enforcement Division (406)444-0379.

If secondary threats have been identified, describe the equipment and material resource needs of the PWS and how you would access them.

A catastrophic loss of water will require the contracted services of a water hauler, a design engineer, and a well driller.

Procedures to Shut Down the Well

The well can be turned off and isolated from the water supply system. Important valves are located as shown on appendix_2_. Under ideal conditions the system can operate without the well by using water in the water storage tank can for approximately 5 *days.* Well shut down is the responsibility of the certified operator or backup.

The well can be isolated from the distribution system at the well house or at the fire station next to the storage tank. See the site plan in appendix 2.

Coordination Procedures

The *insert PWS name* WHP Plan has been made available to the *insert county name* County DES coordinator. Additionally, reportable spills will be handled as per the mandated reporting requirements as follows:

- Agricultural chemical or fertilizer spills will be reported to the MT Department of Agriculture (406)444-5400
- Any refined petroleum product such as gasoline, diesel, asphalt, road oil, kerosene, fuel oil, and derivatives of mineral, animal, or vegetable oil spills in excess of 25 gallons will be reported to the DES hotline (406)444-6911.

Procedures to Communicate with Water Users

The nature of the PWS should allow the well to be isolated from the distribution system in the event of a spill in the control zone which threatens source water quality. If it is determined that the source water was exposed to a contaminant the well will remain off line until sampling proves the water to be safe, an evaluation done in cooperation with the MT DEQ, PWS Section.

Describe how an emergency would be communicated to water users. You may describe a network scheme where certain individuals (e.g., board members) will be responsible to call a portion your water users. You may also reference a local radio or TV station with phone numbers.

An emergency affecting the water system would be communicated to the water users by using Town officials and the fire department.

Source of emergency water

The following is general in nature. You should consider what real options would be available to you today if one of your identified disruption threats actually happened and then tailor this section to those options.

Some PWSS have inactive wells that may be used in an emergency. If available, describe how an inactive well might be returned to service. Generally, an inactive well will need to be flushed, disinfected, flushed, and shown to be free of bacteria and below the nitrate MCL by sampling to be brought into service. A Health Advisory would be in effect until the sample results were available. If the well were in use for more than two weeks, full sampling would need to occur to ensure compliance with the standards established by the SDWA.

If the well is out of service for more than 6 *days,* an emergency supply of water may need to be arranged. The short-term plan is to haul water using a DEQ approved water hauler from a DEQ approved water source. Should this be necessary, a hauler will be contracted and a short-term plan relating to the source water and disinfection requirements will be submitted to DEQ-PWS Section for approval. *Describe the availability of a water hauler in your area that would be capable of meeting your needs.*

Should a total loss of water occur, the services of a design engineer and well driller will be retained to assess the options. Plans and specifications for any new well will require DEQ-PWS Section review and approval prior to construction.

In the early 1980's a leaking underground storage tank contaminated the shallow aquifer beneath the Town While the site of the new well (existing) was being developed, water was supplied by a well located at the lumber mill on the west side of Town. This well could be used again, should the Town well require repairs.

Disinfection and Resumption of Water Service

The well and storage tank can be disinfected for bacteriological contamination as per the *insert PWS name* standard disinfection and tank cleaning procedures under the direction of the certified operator.

Normal water service resumption will occur after sample results indicate the supply is safe as approved by DEQ-PWS Section and the certified operator.

Funds

Describe the funding available to implement the emergency actions you've considered Indicate why this is sufficient.

The Town has the equipment and personal required to repair disruptions to the distribution system. Minor disruptions, repairs and maintenance for the water system are included in the budget, additional funds would be handled by the Town council.

Important Emergency Contacts and Phone

CONTACT NAME	TITLE	PHONE	RESPONSIBILITY
George Mongar	Operator	473-2389	Water system
Jack Miller	Retired Operator	473-2253	
	DES		DES
Insert “Montana Spill Hotline”		444-6911	
Insert “DEQ Enforcement Division			

Chapter 6
ALTERNATE WATER SOURCES

Describe the adequacy of the current water supply including an assessment of meeting peak demand during periods of summer irrigation. Describe the anticipated growth in the community for the next 10 years and your ability to meet increasing demand.

If an additional water supply is anticipated, describe how the future well site was selected. Describe how the wellhead protection area for the well was delineated (see Chapter 3 for supporting information requirements or the Montana Wellhead Program, Section 7 for an alternate delineation method). Include a description of how an inventory of the WHPA was completed and reference land uses as identified on the base map as well as completed inventory sheets as an appendix.

The current well meets the current and anticipated future requirements for Judith Gap.

REFERENCES

The bibliography and references generally support your document and illustrate the thoroughness of your research. They also direct readers to additional information should that be needed or desired

All outside sources of information you used should be listed here in the format shown.

1. ***Alt, David and Hyndman, Donald W., ROADSIDE GEOLOGY of MONTANA, 1992***
2. ***Feltis, R.D., Geology and Water Resources of Eastern Part of Judith Basin, Montana 1973***
3. ***Porter, Karen W., Reconnaissance Geologic Map of the Grass Range-Winnett Area, Central Montana, 1991***
4. ***Taylor, Robert L., Ashley, Joseph M., Geological Map of Montana and Yellowstone National Park***
5. ***Montana Wellhead Protection Program***
6. ***Vuke, Susan M., Berg, Richard B., Colton, Roger B., O'Brien, Hugh E., Geologic Map of the Belt 30X60 Quadrangle, Central Montana 1995***
7. ***Zimmerman, E.A., Preliminary Report on the Geology and Ground-Water Resources of Southern Judith Basin, Montana, 1962***
8. ***Porter, Karen W., Wilde, Edith M., Vuke, Susan M., Preliminary Geologic Map of the Big Snowy Mountains 30X60 Quadrangle, Montana, 1996***

Figure 1

Figure 2

Figure 3