CITY OF PAUL (PWS 5340014)
SOURCE WATER ASSESSMENT FINAL REPORT

May 22, 2002

State of Idaho
Department of Environmental Quality

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Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the act. This assessment is based on a land use inventory of the designated assessment area, sensitivity factors associated with the wells, and aquifer characteristics.

This report, *Source Water Assessment for the City of Paul, Idaho* describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

Final susceptibility scores are derived from equally weighting system construction scores, hydrologic sensitivity scores, and potential contaminant/land use scores. Therefore, a low rating in one or two categories coupled with a higher rating in other categories results in a final rating of low, moderate, or high susceptibility. With the potential contaminants associated with most urban and heavily agricultural areas, the best score a well can get is moderate. Potential contaminants are divided into four categories, inorganic contaminants (IOCs, i.e. nitrates, arsenic), volatile organic contaminants (VOCs, i.e. petroleum products), synthetic organic contaminants (SOCs, i.e. pesticides), and microbial contaminants (i.e. bacteria). As different wells can be subject to various contamination settings, separate scores are given for each type of contaminant.

The City of Paul (PWS 5340014) drinking water system consists of three ground water well sources. The main well (the West Minico Well) is located south of West Minico Junior High School at the south end of the City of Paul. It is a newer well, constructed in 1998. The other wells are supplemental, back-up wells. The Idaho Street Well, constructed in 1963, is located at the corner of Idaho Street and East Fifth. The Meadowbrook Well, constructed in 1972, is located near the Meadow brook Subdivision in the western portion of town. A one million gallon reinforced concrete reservoir was built at the West Minico site in 1998. The water from the reservoir is delivered to three can-style water lubricated turbine pumps that boost the water from the West Minico Well into the distribution system. The Idaho and Meadowbrook wells discharge directly into the distribution system. A gaseous chlorine disinfection is used in the system. The drinking water system also uses a supervisory control and data acquisition (SCADA) system to detect low and high water levels in the reservoir, chlorine leaks at all three well locations, a fuel tank leak, and high and low building temperature. It has report generating capability to control and track pressure, flow, tank level, run time, etc.

The Idaho and Meadowbrook drinking water wells have a moderate susceptibility rating to all potential contaminant categories: inorganic contaminants (IOCs), volatile organic contaminants (VOCs), synthetic organic contaminants (SOCs), and microbial contaminants. The large number of potential contaminant sources within the vicinity of these wells as well as the surrounding irrigated agricultural land contributed to the overall susceptibility of these wells. The main well (West Minico Well) rated moderate susceptibility to IOCs and it rated low susceptibility to VOCs, SOCs, and microbial contamination. The moderate rating to IOCs is due to the proximity of the West Minico Well to a municipal discharge site, two transportation corridors as well as the surrounding irrigated agricultural land.

The IOCs barium and fluoride were detected in water samples collected from the well manifold at concentrations below Maximum Contaminant Levels (MCLs). Nitrate levels in all three wells have been consistently below 2.0 milligrams per liter (mg/L), less than background levels. The MCL for nitrate is 10 mg/L. No VOCs or SOCs have been detected in the wells. Total coliform bacteria were detected in the distribution system in August 1995, August 1996, July 1997, and July 1998.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources. If the system should need to expand in the future, new well sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected for this specific use.

For the City of Paul, drinking water protection activities should first focus on maintaining the requirements of the Sanitary Survey (an inspection conducted every five years with the purpose of determining the physical condition of a water system's components and its capacity). Any spills from the potential contaminant sources listed in Tables 3, 4, and 5 in Appendix A of this report should be carefully monitored, as should any future development in the delineated areas. Other practices aimed at reducing the leaching of agricultural chemicals from agricultural land within the designated source water areas should be implemented. Also, disinfection practices should be maintained if microbial contamination becomes a problem. No chemicals should be stored or applied within the 50-foot radius of the wellhead. Most of the designated areas are outside the direct jurisdiction of the City of Paul making partnerships with state and local agencies and industry groups critical to success of drinking water protection.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan as the delineations are near urban and residential land uses areas. Public education topics could include proper lawn and garden care practices, household hazardous waste disposal methods, proper care and maintenance of septic systems, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. There are transportation corridors near the delineations, therefore the State Department of Transportation should be involved in protection activities. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil Conservation District, and the Natural Resources Conservation Service.

A system must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Twin Falls Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR THE CITY OF PAUL, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** Maps showing the delineated source water assessment areas and the inventory of significant potential sources of contamination identified within those areas are attached. The lists of significant potential contaminant source categories and their rankings, used to develop this assessment, are also attached.

Level of Accuracy and Purpose of the Assessment

The Idaho Department of Environmental Quality (DEQ) is required by the EPA to assess the over 2,900 public drinking water sources in Idaho for their relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area, sensitivity factors associated with the wells, and aquifer characteristics. All assessments must be completed by May of 2003. The resources and time available to accomplish assessments are limited. Therefore, an in-depth, site-specific investigation to identify each significant potential source of contamination for every public water system is not possible. **This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The ultimate goal of this assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The DEQ recognizes that pollution prevention activities generally require less time and money to implement than treating a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a source water protection program should be determined by the local community based on its own needs and limitations. Drinking water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. Conducting the Assessment

General Description of the Source Water Quality

The City of Paul drinking water system includes three community wells that serve a population of approximately 1,100 through 450 connections. The West Minico Well is the newest well, drilled in 1998. Located in the south end of town near the West Minico Junior High, it is the main well of the distribution system. Water from this well is pumped into a reinforced concrete reservoir and then delivered into the distribution system by three can-style water lubricated turbine pumps. The Idaho Street Well, drilled in 1963, is located at the intersection of Idaho Street and East Fifth. The Meadowbrook Well, drilled in 1972, is located in the western portion of town near the Meadowbrook subdivision. The Idaho Street and Meadowbrook wells are backup wells that discharge directly into the distribution system. Gaseous chlorine is used to disinfect the water and a SCADA system is used to detect any leaks from potential contaminants around the distribution system.

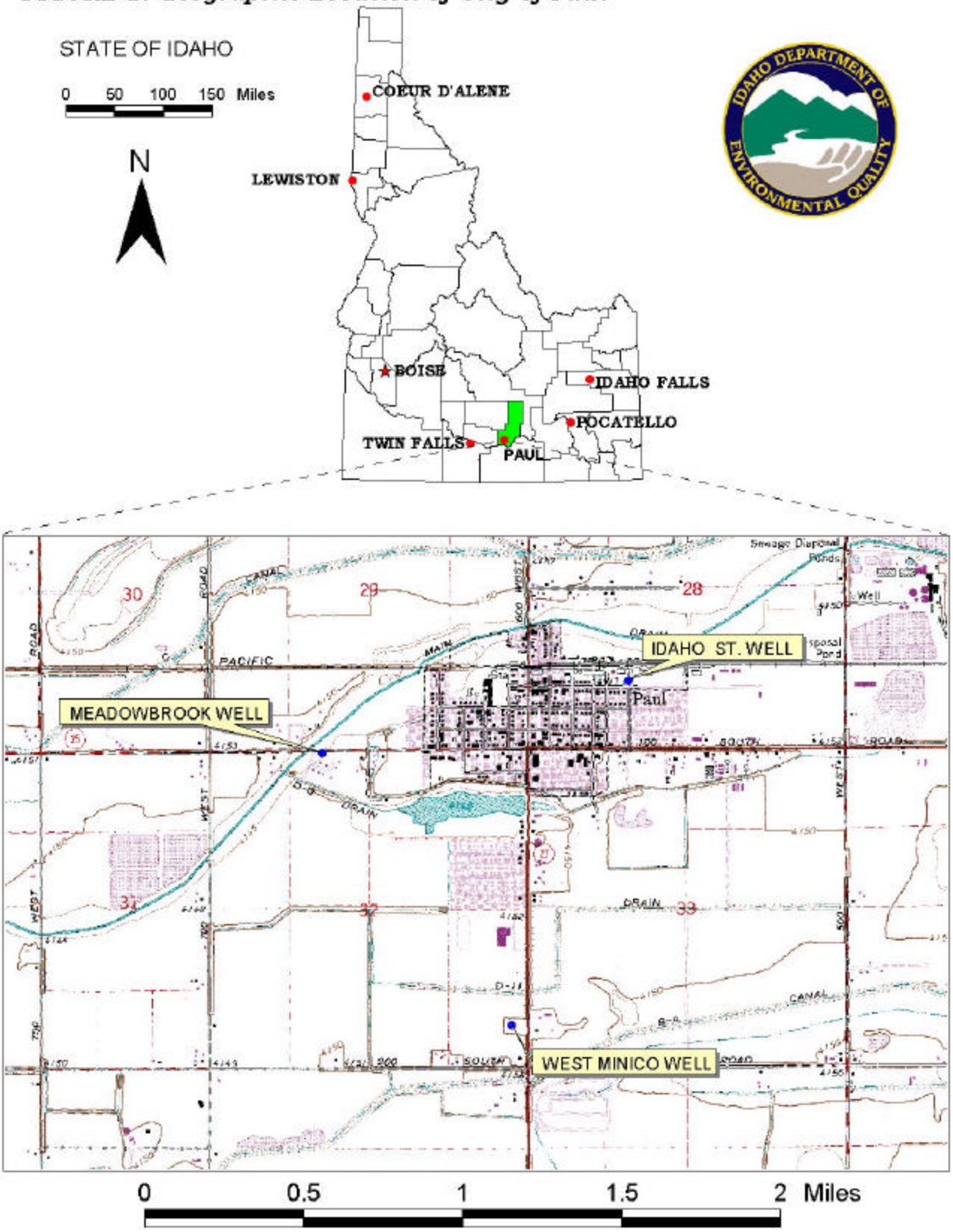
No water chemistry issues have been recorded in the City of Paul public water system thus far. Barium, fluoride, and nitrate were detected in water samples collected from the well manifold at concentrations far below the current MCLs. No VOCs or SOCs have been detected in the wells. Total coliform bacteria were detected in the distribution system in August 1995, August 1996, July 1997, and July 1998, but no repeat detections from the wellheads have been recorded. Countywide nitrogen fertilizer use, county level herbicide use, and total county level agricultural chemical use are rated as high for the area. Additionally, the delineations cross a nitrate priority area.

Defining the Zones of Contribution – Delineation

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. Washington Group, International (WGI) used a refined computer model approved by the EPA in determining the time-of-travel (TOT) zones for water associated with the Southwest Eastern Snake River Plain (SW ESRP) aquifer. The computer model used site-specific data, assimilated by DEQ and WGI from a variety of sources including City of Paul well logs, local area well logs and hydrogeologic reports summarized below.

The ESRP is a northeast trending basin located in southeastern Idaho. The 10,000 square miles of the plain are filled primarily with highly fractured layered Quaternary basalt flows of the Snake River Group, which are intercalated with sedimentary rocks along the margins (Garabedian, 1992, p. 5). Individual basalt flows range from 10 to 50 feet thick, averaging 20 to 25 feet thick (Lindholm, 1996, p. 14). Basalt is thickest in the central part of the eastern plain and thins toward the margins. Whitehead (1992, p. 9) estimates the total thickness of the flows to be as great as 5,000 feet. A thin layer (0 to 100 feet) of windblown and fluvial sediments overlies the basalt.

FIGURE 1. Geographic Location of City of Paul



The layered basalts of the Snake River Group host one of the most productive aquifers in the United States. The aquifer is generally considered unconfined, yet may be confined locally because of interbedded clay and dense unfractured basalt (Whitehead, 1992, p. 26). Whitehead (1992, p. 22) reports that well yields of 2,000 to 3,000 gal/min are common for wells open to less than 100 feet of the aquifer. Lindholm (1996, p. 18) estimates aquifer thickness to range from 100 feet near the plain's margin to thousands of feet near the center. Models of the regional aquifer have used values ranging from 200 to 3,000 feet to represent aquifer thickness (Cosgrove et al., 1999, p. 15).

Regional ground-water flow is to the southwest paralleling the basin (Cosgrove et al., 1999; deSonneville, 1972, p. 78; Garabedian, 1992, p. 48; and Lindholm, 1996, p. 23). Reported water table gradients range from 3 to 100 ft/mile and average 12 ft/mile (Lindholm, 1996, p. 22). Gradients steepen at the plain's margin and at discharge locations.

The majority of aquifer recharge results from surface water irrigation activities (incidental recharge), which divert water from the Snake River and its tributaries (Ackerman, 1995, p. 4, and Garabedian, 1992, p. 11). Natural recharge occurs through stream losses, direct precipitation, and tributary basin underflow.

The Southwest Margin of the ESRP hydrologic province is the regional aquifer's primary discharge area. Interpretation of well logs indicates that a 1- to 23-foot-thick layer of sediment overlies the fractured basalt aquifer in Jerome County, and that an 8- to 410-foot-thick layer of sediment overlies the same aquifer in southern Minidoka and Power Counties. Published geologic maps of the Snake River Plain (Whitehead 1992, Plates 1 and 5) indicate there is 100 to 500 feet of Quaternary to Tertiary Basalt aged compacted to poorly consolidated sediments located in the Heyburn area (north of the Snake River near Burley). The saturated thickness of the regional basalt aquifer for the Southwest Margin is estimated to range from less than 500 feet near the Snake River to 1,500 feet near Minidoka.

A published water table map of the Kimberly to Bliss region of the aquifer (Moreland, 1976, p. 5) indicates that the ground-water flow direction in the Southwest Margin is similar to that depicted at the regional scale (e.g., Garabedian, 1992, Plate 4).

Annual average precipitation for the period 1951 to 1980 is 9.6 inches in both Twin Falls and Burley (Kjelstrom, 1995, p. 3). The estimated recharge from precipitation in the Southwest Margin ranges from less than 0.5 inch to more than 2 in./yr (Garabedian, 1992, p. 20). Kjelstrom (1995, p. 13) reports an annual river loss of 110,000 acre-feet to the aquifer for the 34.8-mile Minidoka-to-Milner reach of the Snake River. River gains of 210,000 acre-feet for the 21.5-mile Milner-to-Kimberly reach, and 880,000 acre-feet for the 20.4-mile Kimberly-to-Buhl reach are reported for the same period.

The delineated source water assessment areas for the three wells of the City of Paul can best be described as pie-slice shaped corridors extending to the east of the Idaho Street Well and to the east of the Meadowbrook Well, ending approximately 9 miles from the wells at the Snake River (Figure 2 and Figure 3, Appendix A). The delineation for the West Minico Well can be described as a pie-slice shaped corridor extending to the east-southeast and ending approximately 8 miles from the well at the Snake River (Figure 4, Appendix A). The actual data used by WGI in determining the source water assessment delineation areas is available from DEQ upon request.

Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and the City of Paul and from available databases.

The dominant land use outside the City of Paul is irrigated agriculture. Land use within the immediate area of the wellheads consists of residential property and agricultural land.

It is important to understand that a release may never occur from a potential source of contamination provided best management practices are used at the facility. Many potential sources of contamination are regulated at the federal level, state level, or both, to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, such as educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

Contaminant Source Inventory Process

A contaminant inventory of the study area was conducted in June and July of 2001. This involved identifying and documenting potential contaminant sources within the City of Paul Source Water Assessment Areas through the use of computer databases and Geographic Information System maps developed by DEQ.

The delineation of the Idaho Street Well has 107 potential point sources (Figure 2, Table 3, Appendix A), the delineation of the Meadowbrook Well has 136 potential point sources (Figure 3, Table 4, Appendix A), and the West Minico Well delineation has 13 potential point sources (Figure 4, Table 5, Appendix A). These potential contaminant sources include several leaking underground storage tanks (LUSTs), underground storage tanks (USTs), a number of dairies, a feed dealer/distributor, other various automotive retail/repair and farm equipment retail/repair businesses, the old landfill for the City of Paul, a few National Pollution Discharge Elimination System (NPDES) sites, some printing companies including the newspaper, and the airport.

Highway 24/25 is a major transportation corridor that crosses the delineations of all three wells, in the 0 to 3-year TOT zone for the Idaho Street Well and the Meadowbrook Well, and in the 3 to 6-year TOT zone for the West Minico Well. Additionally, Highway 27 crosses the West Minico Well delineation in the 0 to 3-year TOT zone. If an accidental spill occurred from these sources, IOCs, VOCs, SOCs, or microbial contaminants could be added to the aquifer system. The Snake River is a major surface water source that crosses the Idaho Street and the West Minico delineations in the 6 to 10-year TOT zone. It could potentially add IOCs, VOCs, and SOCs to the aquifer system via surface runoff.

Section 3. Susceptibility Analyses

Each well's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. Appendix B contains the susceptibility analysis worksheets. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity

The hydrologic sensitivity of a well is dependent upon four factors: the surface soil composition, the material in the vadose zone (between the land surface and the water table), the depth to first ground water, and the presence of a 50-foot thick fine-grained zone above the producing zone of the well. Slowly draining soils such as silt and clay typically are more protective of ground water than coarse-grained soils such as sand and gravel. Similarly, fine-grained sediments in the subsurface and a water depth of more than 300 feet protect the ground water from contamination.

The hydrologic sensitivity was low for all three wells (Table 2). This rating reflects the poor to moderately drained nature of the soil, which decreases the downward movement of contaminants, the presence of low permeable geologic units above the producing zone, and the predominant clay soil composition of the vadose zone found in the soils surrounding the wells.

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. System construction scores are reduced when information shows that potential contaminants will have a more difficult time reaching the intake of the well. Lower scores imply a system is less vulnerable to contamination. For example, if the well casing and annular seal both extend into a low permeability unit, then the possibility of contamination is reduced and the system construction score goes down. If the highest production interval is more than 100 feet below the water table, then the system is considered to have better buffering capacity. If the wellhead and surface seal are maintained to standards, as outlined in Sanitary Surveys, then contamination down the well bore is less likely. If the well is protected from surface flooding and is outside the 100-year floodplain, then contamination from surface events is reduced.

The City of Paul drinking water system consists of three wells. The West Minico Well is the main well that extracts ground water for community uses. The Idaho and Meadowbrook wells are backup wells used for the same purpose. The West Minico Well and the Meadowbrook Well rated low susceptibility for system construction. The Idaho Street Well rated moderate susceptibility for system construction (Table 2). The 1999 Sanitary Survey indicated that the wellhead and surface seals were maintained to standards and that the wells were properly protected from surface flooding. Table 1 below includes a summary of the system construction for each well.

Table 1. City of Paul Well Construction Summary Information

Well	Well Depth (ft)	Water Table Depth (ft)	Casing: diameter/ thickness (in)	Casing: depth (ft)/ formation	Surface seal: depth (ft)/ formation	Screened Interval (ft)	Drill Year	Sanitary Survey Elements (A/B)[1]
West Minico Well	540	232	20/0.375 16/0.375	375/Grey clay w/some sand	75/Brown clay	NI	1998	Yes/Yes
Idaho Street Well	451	195	14/NI 10/NI	420/Grey clay	NI	NI	1963	Yes/Yes
Meadow brook Well	475	199	12/0.250 10/0.250	300/Firm grey clay 386/Black basalt	28/Blue grey clay	NI	1972	Yes/Yes

[1] A = Well and surface seal in compliance; B = Protected from surface flooding
NI = no information was available

Though the wells may have met construction standards at the time of installation, current well construction standards are stricter. The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all Public Water Systems (PWSs) to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction. Some of the requirements include casing thickness, well tests, and depth and formation type that the surface seal must be installed into. Table 1 of the *Recommended Standards for Water Works* (1997) lists the required steel casing thickness for various diameter wells. Ten-inch diameter wells require a casing thickness of at least 0.365 inches. Twelve to 20-inch diameter wells require a casing thickness of at least .375 inches. Well tests are required at the design pumping rate for 24 hours or until stabilized drawdown has continued for at least six hours when pumping at 1.5 times the design pumping rate.

Potential Contaminant Source and Land Use

The West Minico Well rated high for IOCs (e.g. arsenic, nitrate), moderate for VOCs (e.g. petroleum products), high for SOCs (e.g. pesticides), and low for microbial contaminants (e.g. bacteria). The NPDES municipal discharge site and Highway 27 in the 0-3 year time of travel (TOT) that could contaminate with leachable IOCs and other leachable chemicals as well as the predominant irrigated agricultural land contributed the largest numbers of points to the contaminant inventory rating. Both the Idaho Street Well and the Meadowbrook Well rated High for IOCs, VOCs, and SOCs, and moderate for microbials contaminants (Table 2). The large number of potential contamination sources within the 0-3 year and the 3-6 year TOT zones that contain leachable contaminants contributed the most points to the high ratings. The predominant irrigated agricultural land also contributed to the overall land use ratings. County level nitrogen fertilizer use, county level herbicide use, and total county level ag-chemical use are rated as high for all of the wells. The delineations also cross a nitrate priority area.

Final Susceptibility Rating

An IOC detection above a drinking water standard MCL, any detection of a VOC or SOC, or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well, despite the land use of the area, because a pathway for contamination already exists. Additionally, the storage or application of any potential contaminants within 50 feet of the wellhead will lead to an automatic high score. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0- to 3-year time-of-travel zone (Zone 1B) and much agricultural land contribute greatly to the overall ranking. In terms of total susceptibility, the West Minico Well rated moderate susceptibility to IOCs and low susceptibility to VOCs, SOCs, and microbial contaminants. The Idaho and Meadowbrook wells rated moderate susceptibility to all potential contaminant categories.

Table 2. Summary of the City of Paul Susceptibility Evaluation

Source	**Susceptibility Scores[1]**									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	**Final Susceptibility Ranking**			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
West Minico Well	L	H	M	H	L	L	M	L	L	L
Idaho Street Well	L	H	H	H	M	M	M	M	M	M
Meadowbrook Well	L	H	H	H	M	L	M	M	M	M

[1]H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility
IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Susceptibility Summary

In terms of total susceptibility, the West Minico Well rated moderate for IOCs and low for SOCs, VOCs, and microbial contaminants. The Idaho and Meadowbrook Wells rated moderate for all potential contaminant categories. Concerning the West Minico Well, the NPDES municipal discharge site and Highway 27 located in the 0 to 3-year TOT zone contributed to the moderate rating for IOCs. The large number of sources within the vicinity of the Idaho Street and Meadowbrook wells as well as the surrounding irrigated agricultural land contributed to the overall susceptibility of these wells.

No water chemistry issues have been recorded in the City of Paul public water system thus far. Barium, fluoride, and nitrate were detected in water samples collected from the well manifold at concentrations far below the current MCLs. No VOCs or SOCs have been detected in the wells. Total coliform bacteria were detected in the distribution system in August 1995, August 1996, July 1997, and July 1998, but no repeat detections from the wellheads have been recorded. Countywide nitrogen fertilizer use, county level herbicide use, and total county level agricultural chemical use are rated as high for the area. Additionally, the delineation crosses a nitrate priority area.

Section 4. Options for Drinking Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective drinking water protection program is tailored to the particular local drinking water protection area. A community with a fully developed drinking water protection program will incorporate many strategies, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For the City of Paul, drinking water protection activities should first focus on maintaining the requirements of the Sanitary Survey. Any spills from the potential contaminant sources listed in Tables 3, 4, and 5 in Appendix A of this report should be carefully monitored, as should any future development in the delineated areas. Other practices aimed at reducing the leaching of agricultural chemicals from agricultural land within the designated source water areas should be implemented. Also, disinfection practices should be maintained if microbial contamination becomes a problem. No chemicals should be stored or applied within the 50-foot radius of the wellhead. Partnerships with state and local agencies and industry groups should be established and are critical to success.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan as the delineations are near urban and residential land uses areas. Public education topics could include proper lawn and garden care practices, household hazardous waste disposal methods, proper care and maintenance of septic systems, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. There are transportation corridors near the delineations, therefore the State Department of Transportation should be involved in protection activities. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil Conservation District, and the Natural Resources Conservation Service.

A system must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Twin Falls Regional Office of the DEQ or the Idaho Rural Water Association.

Assistance

Public water suppliers and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Twin Falls Regional DEQ Office	(208) 736-2190
State DEQ Office	(208) 373-0502

Website: http://www.deq.state.id.us

Water suppliers serving fewer than 10,000 persons may contact Melinda Harper, (mlharper@idahoruralwater.com) Idaho Rural Water Association, at (208) 343-7001 for assistance with drinking water protection (formerly wellhead protection) strategies.

POTENTIAL CONTAMINANT INVENTORY
LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ASuperfund≅ is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

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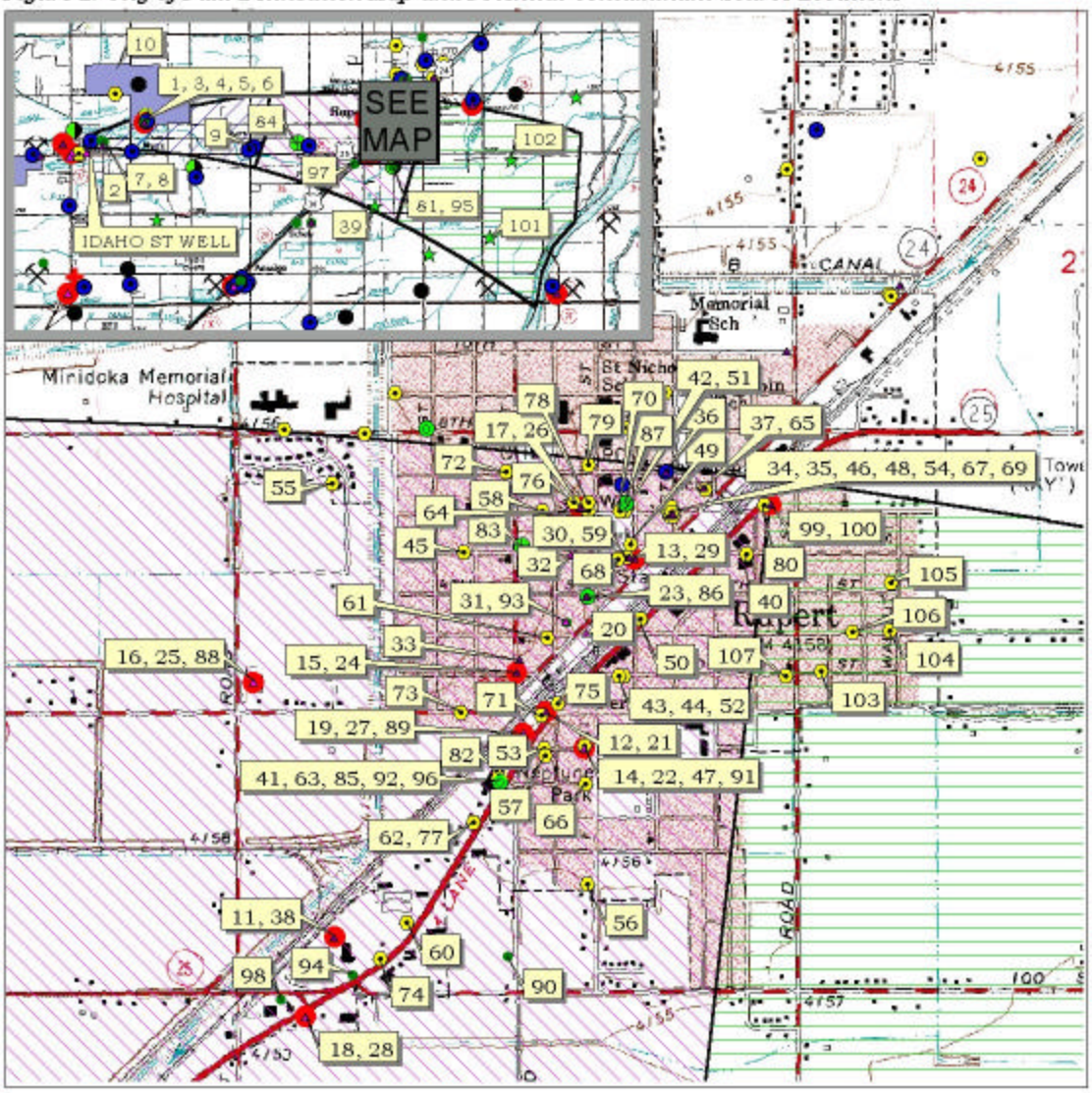
Appendix A

City of Paul
Figure 2, Table 3
Figure 3, Table 4
Figure 4, Table 5

Figure 2. City of Paul Delineation Map and Potential Contaminant Source Locations



0 0.2 0.4 0.6 0.8 1 Miles

LEGEND

Time of Travel Zones
1 (2 yr TOT)
2 (6 yr TOT)
3 (10 yr TOT)
Wellhead
Enhanced Inventory
CERCLIS Site
RICRIS Site
Dairy
LUST Site
Closed UST Site
Open UST Site
Business Mailing List
NPDES Site
Mine
AST
Toxic Release Inventory
SARA Title III Site (EPCRA)
Recharge Point
Injection Well
Group1 Site
Cyanide Site
Landfill
Wastewater Land App Site

N

PWS# 5340014
WELL: IDAHO ST

Table 3. Idaho St. Well. Potential Contaminant Inventory

Site	Source Description[1]	TOT[2] Zone	Source of Information	Potential Contaminants[3]
1, 3, 4, 5, 6	LUST - Site Cleanup Completed , Impact: Unknown; UST - Closed; npdes - INDUSTRIAL discharge;TRI ;SARA	0-3	Database Search	IOC, VOC, SOC
2	UST - Closed	0-3	Database Search	VOC, SOC
7, 8	SARA	0-3	Database Search	VOC, SOC
9	group1- N=25 0.65 mi to NE	0-3	Database Search	IOC
10	wlap - sugar beat waste	0-3	Database Search	IOC, Microbials
11, 38	LUST - Site Cleanup Incomplete , Impact: GROUND WATER; UST - Closed	3-6	Database Search	VOC, SOC
12, 21	LUST - Site Cleanup Completed , Impact: Unknown; UST - Closed	3-6	Database Search	VOC, SOC
13, 29	LUST - Site Cleanup Completed , Impact: GROUND WATER; UST - Closed	3-6	Database Search	VOC, SOC
14, 22, 47, 91	LUST - Site Cleanup Completed , Impact: GROUND WATER; UST - Open; Oils-Fuel; SARA - PETROLEUM BULK STATIONS & TERM	3-6	Database Search	VOC, SOC
15, 24	LUST - Site Cleanup Completed , Impact: Unknown; UST - Closed	3-6	Database Search	VOC, SOC
16, 25, 88	LUST - Site Cleanup Completed , Impact: Unknown; UST - Open; SARA	3-6	Database Search	VOC, SOC
17, 26	LUST - Site Cleanup Completed , Impact: Unknown; UST - Closed	3-6	Database Search	VOC, SOC
18, 28	LUST - Site Cleanup Completed , Impact: Unknown; UST - Open	3-6	Database Search	VOC, SOC
19, 27, 89	LUST - Site Cleanup Completed , Impact: Unknown; UST - Open; SARA	3-6	Database Search	VOC, SOC
20	UST - Open	3-6	Database Search	VOC, SOC
23, 86	UST - Closed; rcris site	3-6	Database Search	VOC, SOC
30, 59	UST - Closed; Automobile Repairing & Service	3-6	Database Search	IOC, VOC, SOC
31, 93	UST - Open; SARA	3-6	Database Search	VOC, SOC
32	UST - Open	3-6	Database Search	VOC, SOC
33	UST - Closed	3-6	Database Search	VOC, SOC
34, 35, 46, 48, 54, 67, 69	UST - Closed; Automobile Body-Repairing & Painting; Machine Shops; Wrecker Service; Automobile Parts & Supplies-Wholesale; Truck Equipment & Parts-Wholesale	3-6	Database Search	IOC, VOC, SOC
36	UST - Closed	3-6	Database Search	VOC, SOC
37, 65	UST - Closed; Tire-Dealers	3-6	Database Search	VOC, SOC
39	Dairy - <=200 cows	3-6	Database Search	IOC
40	Hardware-Retail	3-6	Database Search	IOC, VOC, SOC
41, 63, 85, 92, 96	Oils-Fuel (Wholesale);Cheese Processors; rcris site; SARA; SARA -GASOLINE SERVICE STATIONS	3-6	Database Search	IOC, VOC, SOC
42, 51	Photographers; Newspapers (Publishers)	3-6	Database Search	IOC, VOC
43, 44, 52	Motorcycles & Motor Scooters-Rpr; Automobile Body-Repairing; Car Washing & Polishing	3-6	Database Search	IOC, VOC, SOC
45	Painters	3-6	Database Search	VOC, SOC
49	Electric Companies	3-6	Database Search	IOC, VOC
50	Railroads	3-6	Database Search	IOC, VOC, SOC
53	Automobile Body-Repairing & Painting	3-6	Database Search	IOC, VOC, SOC
55	Livestock Breeders	3-6	Database Search	IOC
56	Automobile Dealers	3-6	Database Search	VOC, SOC

Site	Source Description[1]	TOT[2] Zone	Source of Information	Potential Contaminants[3]
57	Storage-Household & Commercial	3-6	Database Search	IOC, VOC, SOC
58	Funeral Directors	3-6	Database Search	IOC, SOC
60	Gasoline	3-6	Database Search	VOC, SOC
61	Transmissions-Automobile	3-6	Database Search	IOC, VOC, SOC
62, 77	Automobile Dealers-New Cars; Automobile Repairing & Service	3-6	Database Search	IOC, VOC, SOC
64	Automobile Repairing & Service	3-6	Database Search	IOC, VOC, SOC
66	Painters	3-6	Database Search	VOC, SOC
68	Garbage Collection	3-6	Database Search	IOC, VOC, SOC
70	Newspapers (Publishers)	3-6	Database Search	IOC, VOC
71	Service Stations-Gasoline & Oil	3-6	Database Search	VOC, SOC
72	Trucking-Liquid & Dry Bulk	3-6	Database Search	IOC, VOC, SOC
73	Livestock Breeders	3-6	Database Search	IOC
74	Tire-Dealers-Retail	3-6	Database Search	VOC, SOC
75	Farm Equipment (Wholesale)	3-6	Database Search	VOC, SOC
76	Commercial Printing	3-6	Database Search	IOC, VOC
78	Parking Area Maintenance & Marking	3-6	Database Search	IOC, VOC, SOC
79	Cleaners	3-6	Database Search	VOC
80	Farm Equipment (Wholesale)	3-6	Database Search	VOC, SOC
81, 95	npdes - MUNICIPAL discharge; SARA	3-6	Database Search	IOC,
82	TRI	3-6	Database Search	IOC, VOC, SOC
83	CERCLA - FORMER DUMP	3-6	Database Search	IOC, VOC, SOC
84	CERCLA	3-6	Database Search	IOC, VOC, SOC
87	rcris site -ELECT DEPT	3-6	Database Search	IOC, VOC
90	SARA - PETROLEUM BULK STATIONS & TERM	3-6	Database Search	VOC, SOC
94	SARA - PETROLEUM BULK STATIONS & TERM	3-6	Database Search	VOC, SOC
97	SARA - FARM SUPPLIES	3-6	Database Search	IOC, VOC, SOC
98	SARA - MISCELLANEOUS RETAIL STORES	3-6	Database Search	IOC, VOC, SOC
99, 100	LUST - Site Cleanup Completed , Impact: Unknown; UST - Closed	6-10	Database Search	VOC, SOC
101	Dairy - 201-500 cows	6-10	Database Search	IOC
102	Dairy - <=200 cows	6-10	Database Search	IOC
103	Automobile Detail & Clean-Up Service	6-10	Database Search	IOC, VOC, SOC
104	Feed-Dealers (Wholesale)	6-10	Database Search	IOC, SOC
105	Signs (Manufacturers)	6-10	Database Search	VOC, SOC
106	Septic Tanks-Cleaning & Repairing	6-10	Database Search	IOC, SOC
107	Home Improvements	6-10	Database Search	VOC, SOC
	Highway 24/25	0-3	GIS Map	IOC, VOC, SOC, Microbials
	Snake River	6-10	GIS Map	IOC, VOC, SOC

[1] **LUST = leaking underground storage tand, UST = underground storage tank, TRI = toxic release inventory, NPDES = national pollution discharge elimination system, SARA = superfund amendments reauthorization act, WLAP = wastewater land application site, RCRIS = resource conservation and recovery information system**

[2] **TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead**

[3] **IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical**

Figure 3. City of Paul Delineation Map and Potential Contaminant Source Locations

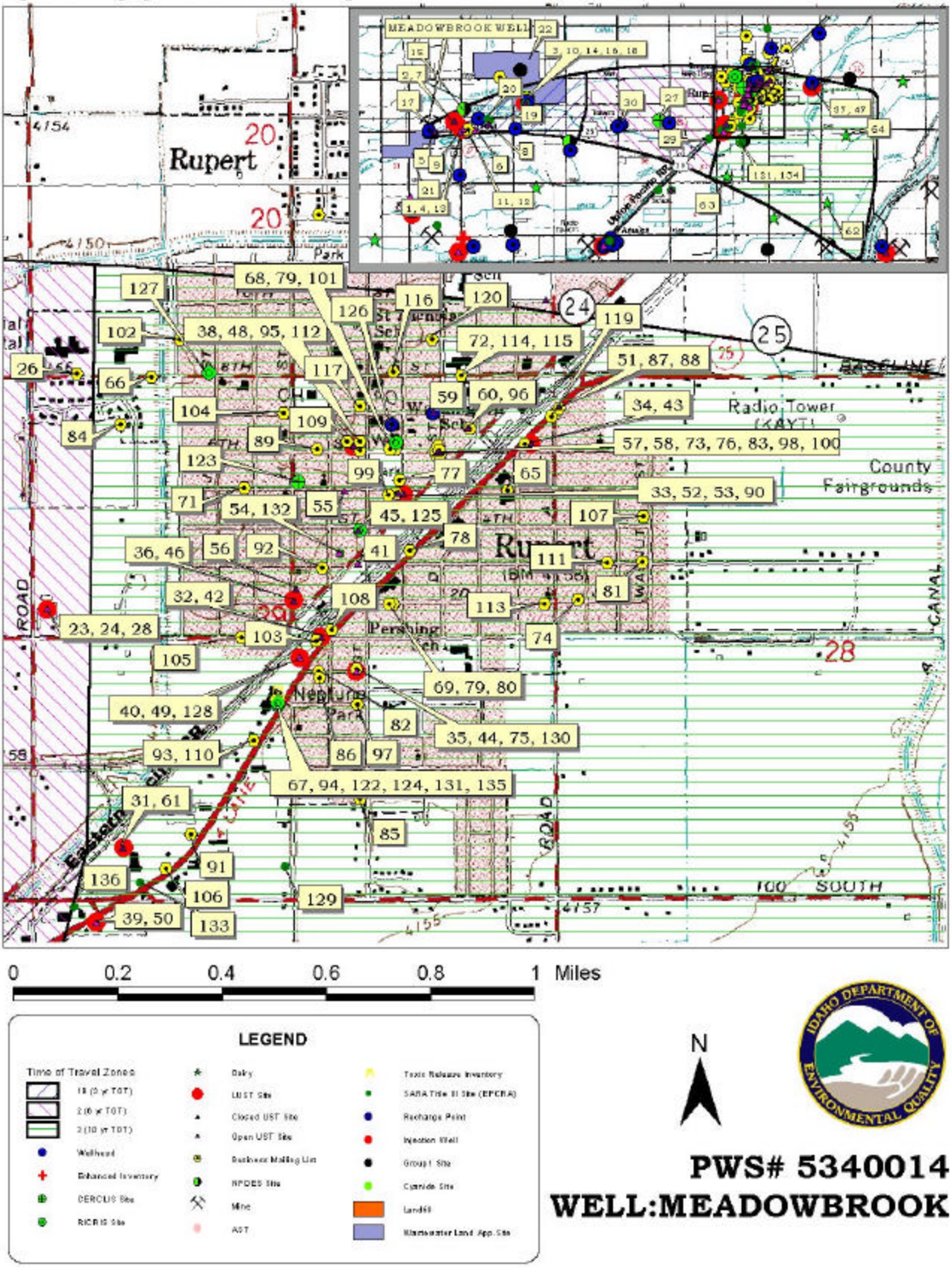


Table 4. Meadowbrook Well. Potential Contaminant Inventory.

Site	Source Description[1]	TOT[2] Zone	Source of Information	Potential Contaminants[3]
1, 4, 13	LUST - Site Cleanup Completed , Impact: Unknown; UST - Open; Automobile Repairing & Service	0-3	Database Search	VOC, SOC
2, 7	LUST - Site Cleanup Completed , Impact: Unknown; UST - Closed	0-3	Database Search	VOC, SOC
3, 10, 14, 16, 18	LUST - Site Cleanup Completed , Impact: Unknown; UST - Closed; npdes -INDUSTRIAL discharge; TRI site	0-3	Database Search	IOC, VOC, SOC
5	UST - Closed, Farm	0-3	Database Search	IOC, VOC, SOC
6	UST - Open	0-3	Database Search	VOC, SOC
8	UST - Closed	0-3	Database Search	VOC, SOC
9	UST - Open	0-3	Database Search	VOC, SOC
11, 12	Farms; Truck Equipment & Parts-Wholesale	0-3	Database Search	IOC, VOC, SOC, Microbials
15	npdes -INDUSTRIAL discharge	0-3	Database Search	IOC, Microbials
17	mine	0-3	Database Search	IOC, VOC, SOC
19	SARA	0-3	Database Search	VOC, SOC
20	SARA - FARM SUPPLIES	0-3	Database Search	IOC, SOC, Microbials
21	wlap -Municipal	0-3	Database Search	IOC, VOC, SOC, Microbials
22	wlap -sugar beat waste	0-3	Database Search	IOC, Microbials
23, 24, 28	LUST - Site Cleanup Completed , Impact: Unknown; UST - Open; SARA	3-6	Database Search	VOC, SOC
25, 26	Hospitals; Ambulance Service	3-6	Database Search	IOC, VOC, SOC, Microbials
27	cercla site	3-6	Database Search	IOC, VOC, SOC
29	SARA - FARM SUPPLIES	3-6	Database Search	IOC, SOC
30	group1- N=25 0.65 mi to NE	3-6	Database Search	IOC
31, 61	LUST - Site Cleanup Incomplete , Impact: GROUND WATER; UST - Closed	6-10	Database Search	VOC, SOC
32, 42	LUST - Site Cleanup Completed , Impact: Unknown; UST - Closed	6-10	Database Search	VOC, SOC
33, 52, 53, 90	LUST - Site Cleanup Incomplete , Impact: GROUND WATER; UST - Closed; UST - Closed; Automobile Repairing & Service	6-10	Database Search	VOC, SOC
34, 43	LUST - Site Cleanup Completed , Impact: Unknown; UST - Closed	6-10	Database Search	VOC, SOC
35, 44, 75, 130	LUST - Site Cleanup Incomplete , Impact: GROUND WATER; UST - Open; Oils-Fuel (Wholesale); SARA - PETROLEUM BULK STATIONS & TERM	6-10	Database Search	VOC, SOC
36, 46	LUST - Site Cleanup Completed , Impact: Unknown; UST - Closed	6-10	Database Search	VOC, SOC
37, 47	LUST - Site Cleanup Completed , Impact: Unknown; UST - Closed	6-10	Database Search	VOC, SOC
38, 48, 95, 112	LUST - Site Cleanup Completed , Impact: Unknown; UST - Closed; Automobile Repairing & Service; Parking Area Maintenance & Marking	6-10	Database Search	IOC, VOC, SOC
39, 50	LUST - Site Cleanup Completed , Impact: Unknown; UST - Open	6-10	Database Search	VOC, SOC
40, 49, 128	LUST - Site Cleanup Completed , Impact: Unknown; UST - Open; SARA	6-10	Database Search	VOC, SOC
41	UST - Open	6-10	Database Search	VOC, SOC

Site	Source Description[1]	TOT[2] Zone	Source of Information	Potential Contaminants[3]
45, 125	UST - Closed; rcris site	6-10	Database Search	VOC, SOC
51, 87, 88	UST - Closed; Bus Lines; Motorcycles & Motor Scooters-Dealer	6-10	Database Search	VOC, SOC
54, 132	UST - Open; SARA	6-10	Database Search	VOC, SOC
55	UST - Open	6-10	Database Search	VOC, SOC
56	UST - Closed	6-10	Database Search	VOC, SOC
57, 58, 73, 76, 83, 98, 100	UST - Closed; UST - Closed; Automobile Body-Repairing & Painting; Machine Shops; Wrecker Service; Automobile Parts & Supplies-Wholes; Truck Equipment & Parts-Wholesale	6-10	Database Search	IOC, VOC, SOC
59	UST - Closed	6-10	Database Search	VOC, SOC
60, 96	UST - Closed; Tire-Dealers-Retail	6-10	Database Search	VOC, SOC
62	Dairy - 201-500 cows	6-10	Database Search	IOC
63	Dairy <=200 cows	6-10	Database Search	IOC
64	Dairy <=200 cows	6-10	Database Search	IOC
65	Hardware-Retail	6-10	Database Search	IOC, VOC, SOC
66	Aerial Applicators	6-10	Database Search	IOC, SOC
67, 94, 122, 124, 131, 135	Oils-Fuel (Wholesale); Cheese Processors; TRI site; rcris site; SARA - CHEESE, NATURAL AND PROCESSED; SARA - GASOLINE SERVICE STATIONS	6-10	Database Search	IOC, VOC, SOC
68, 79, 101	Photographers-Portrait; Newspapers (Publishers);	6-10	Database Search	IOC, VOC
69, 70, 80	Motorcycles & Motor Scooters-Rpr &; Automobile Body-Repairing & Painting; Car Washing & Polishing	6-10	Database Search	IOC, VOC, SOC
71	Painters	6-10	Database Search	IOC, VOC, SOC
72, 114, 115	Automobile Parts & Supplies-Retail; Automobile Repairing & Service; Automobile Radiator-Repairing	6-10	Database Search	IOC, VOC, SOC
74	Automobile Detail & Clean-Up Service	6-10	Database Search	IOC, VOC, SOC
77	Electric Companies	6-10	Database Search	IOC, VOC
78	Railroads	6-10	Database Search	IOC, VOC, SOC
81	Feed-Dealers (Wholesale)	6-10	Database Search	IOC, SOC
82	Automobile Body-Repairing & Painting	6-10	Database Search	IOC, VOC, SOC
84	Livestock Breeders	6-10	Database Search	IOC
85	Automobile Dealers-New Cars	6-10	Database Search	VOC, SOC
86	Storage-Household & Commercial	6-10	Database Search	IOC, VOC, SOC
89	Funeral Directors	6-10	Database Search	IOC, SOC
90	Automobile Repairing & Service	6-10	Database Search	IOC, VOC, SOC
91	Gasoline-Wholesale	6-10	Database Search	IOC, VOC, SOC
92	Transmissions-Automobile	6-10	Database Search	IOC, VOC, SOC
93	Automobile Dealers-New Cars	6-10	Database Search	VOC, SOC
97	Painters	6-10	Database Search	IOC, VOC, SOC
99	Garbage Collection	6-10	Database Search	IOC, VOC, SOC
102	Hospitals	6-10	Database Search	IOC, SOC
103	Service Stations-Gasoline & Oil	6-10	Database Search	IOC, VOC, SOC
104	Trucking-Liquid & Dry Bulk	6-10	Database Search	VOC, SOC
105	Livestock Breeders	6-10	Database Search	IOC
106	Tire-Dealers-Retail	6-10	Database Search	IOC, VOC, SOC
107	Signs (Manufacturers)	6-10	Database Search	IOC, VOC
108	Farm Equipment (Wholesale)	6-10	Database Search	VOC, SOC
109	Commercial Printing NEC	6-10	Database Search	IOC, VOC
111	Septic Tanks-Cleaning & Repairing	6-10	Database Search	IOC, VOC, SOC

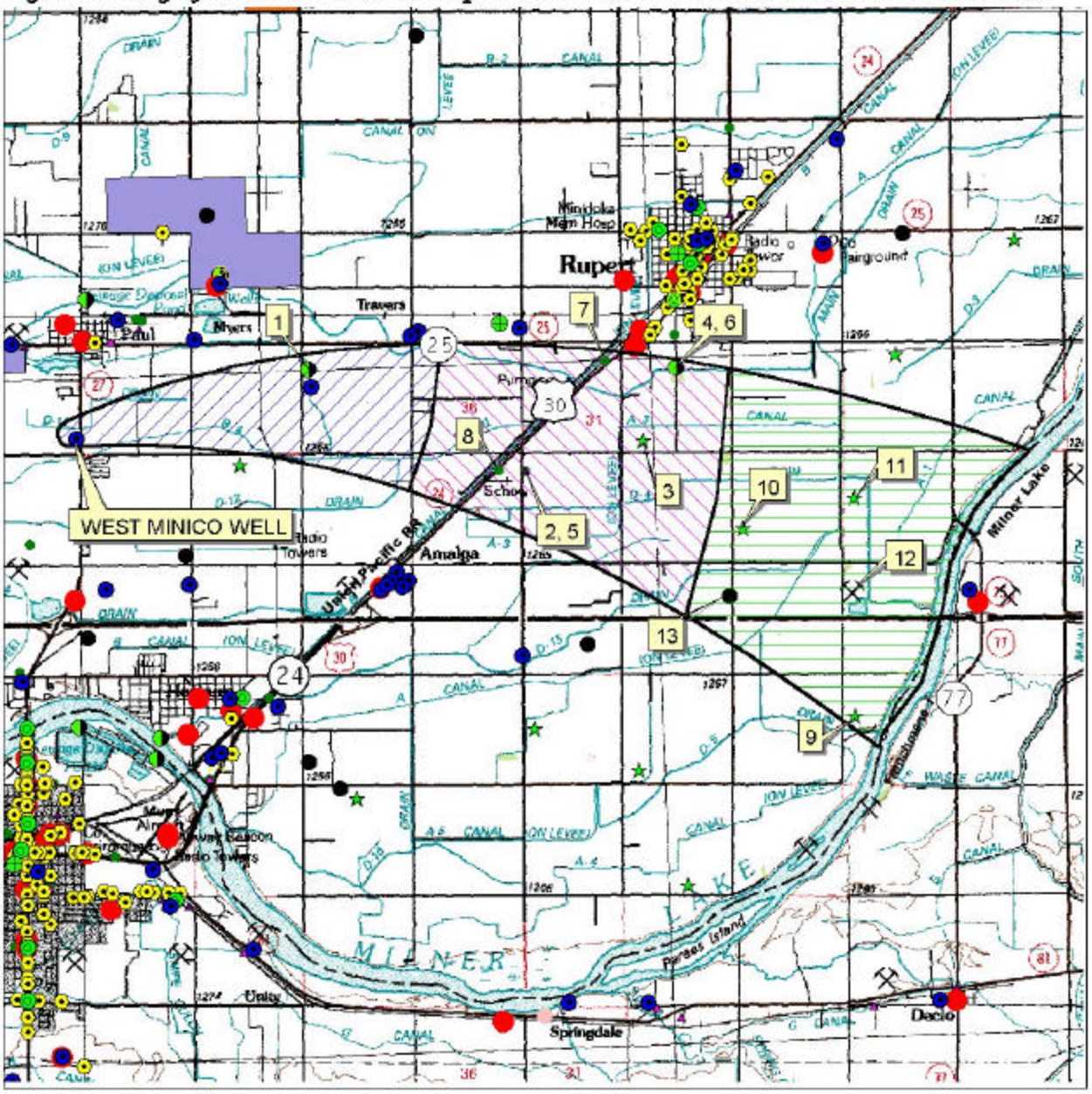
Site	Source Description[1]	TOT[2] Zone	Source of Information	Potential Contaminants[3]
113	Home Improvements	6-10	Database Search	IOC, VOC, SOC
116	Motorcycles & Motor Scooters-Rpr	6-10	Database Search	IOC, VOC, SOC
117	Cleaners	6-10	Database Search	VOC
118	Farm Equipment (Wholesale)	6-10	Database Search	VOC, SOC
119	Farm Equipment-Manufacturers	6-10	Database Search	IOC, VOC, SOC
120	Flags & Banners (Manufacturers)	6-10	Database Search	IOC, VOC
121, 134	npdes - MUNICIPAL discharge; SARA	6-10	Database Search	IOC
123	cercla site - FORMER CY DUMP	6-10	Database Search	IOC, VOC, SOC
126	rcris site	6-10	Database Search	IOC, VOC
127	rcris site	6-10	Database Search	IOC, VOC, SOC
129	SARA - PETROLEUM BULK STATIONS & TERM	6-10	Database Search	VOC, SOC
133	SARA - PETROLEUM BULK STATIONS & TERM	6-10	Database Search	VOC, SOC
136	SARA - MISCELLANEOUS RETAIL STORES	6-10	Database Search	IOC, VOC, SOC
	Highway 25	0-3	GIS Map	IOC, VOC, SOC, Microbials
	Highway 30	3-6	GIS Map	IOC, VOC, SOC

[1] LUST = leaking underground storage tand, UST = underground storage tank, TRI = toxic release inventory, NPDES = national pollution discharge elimination system, SARA = superfund amendments reauthorization act, WLAP = wastewater land application site, CERCLA = Comprehensive Environmental Response Compensation and Liability act, RCRIS = resource conservation and recovery information system

[2] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead

[3] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Figure 4. City of Paul Delineation Map and Potential Contaminant Source Locations



0 1 2 3 4 5 Miles

LEGEND

Time of Travel Zones
- 1B (3 yr TOT)
- 2 (6 yr TOT)
- 3 (10 yr TOT)
- Wellhead
- Enhanced Inventory
- CERCLIS Site
- RICRIS Site
- Dairy
- LUST Site
- Closed UST Site
- Open UST Site
- Business Mailing List
- NPDES Site
- Mine
- AST
- Toxic Release Inventory
- SARA Title III Site (EPCRA)
- Recharge Point
- Injection Well
- Group1 Site
- Cyanide Site
- Landfill
- Wastewater Land App. Site

N

PWS# 5340014
WEST MINICO WELL

Table 5. West Minico Well. Potential Contaminant Inventory.

Site	Source Description[1]	TOT[2] Zone	Source of Information	Potential Contaminants[3]
1	Npdes - MUNICIPAL discharge	0-3	Database Search	IOC, Microbials
2, 5	UST – Closed; SARA	3-6	Database Search	VOC, SOC
3	Dairy<=200 cows	3-6	Database Search	IOC
4, 6	Npdes - MUNICIPAL discharge; SARA	3-6	Database Search	IOC
7	SARA – Farm Supplies	3-6	Database Search	IOC, SOC
8	SARA – Liqpetrol gas (bot gas) dealer	3-6	Database Search	VOC, SOC
9	Dairy <=200 cows	6-10	Database Search	IOC
10	Dairy <=200 cows	6-10	Database Search	IOC
11	Dairy –200-500 cows	6-10	Database Search	IOC
12	mine	6-10	Database Search	IOC, VOC, SOC
13	Group 1	6-10	Database Search	IOC
	Highway 27	0-3	GIS Map	IOC, VOC, SOC, Microbials
	Highway 30	3-6	GIS Map	IOC, VOC, SOC
	Snake River	6-10	GIS Map	IOC, VOC, SOC

[1] LUST = leaking underground storage tand, UST = underground storage tank, TRI = toxic release inventory, NPDES = national pollution discharge elimination system, SARA = superfund amendments reauthorization act, WLAP = wastewater land application site

[2] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead

[3] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Appendix B

City of Paul
Susceptibility Analysis
Worksheets

The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)

2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

≥ 13 High Susceptibility

Ground Water Susceptibility Report Public Water System Name : CITY OF PAUL Well# : IDAHO ST WELL

Public Water System Number 5340014 10/30/2001 2:32:38 PM

1. System Construction		SCORE
Drill Date	6/16/1963	
Driller Log Available	YES	
Sanitary Survey (if yes, indicate date of last survey)	YES	1999
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	YES	0
Casing and annular seal extend to low permeability unit	YES	0
Highest production 100 feet below static water level	NO	1
Well located outside the 100 year flood plain	YES	0
Total System Construction Score		2

2. Hydrologic Sensitivity		
Soils are poorly to moderately drained	YES	0
Vadose zone composed of gravel, fractured rock or unknown	NO	0
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	YES	0
Total Hydrologic Score		1

3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	IRRIGATED CROPLAND	2	2	2	2
Farm chemical use high	YES	2	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		4	2	4	2
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	5	5	5	4
(Score = # Sources X 2) 8 Points Maximum		8	8	8	8
Sources of Class II or III leacheable contaminants or	YES	7	4	3	
4 Points Maximum		4	4	3	
Zone 1B contains or intercepts a Group 1 Area	YES	2	0	0	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		18	16	15	12
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	Greater Than 50% Irrigated Agricultural Land	2	2	2	
Potential Contaminant Source / Land Use Score - Zone II		5	5	5	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	YES	1	1	1	
Total Potential Contaminant Source / Land Use Score - Zone III		3	3	3	0
Cumulative Potential Contaminant / Land Use Score		30	26	27	14
4. Final Susceptibility Source Score		9	8	8	8
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

Ground Water Susceptibility Report Public Water System Name : CITY OF PAUL Well# : MEADOWBROOK

Public Water System Number 5340014 10/30/2001 2:32:21 PM

1. System Construction		SCORE
Drill Date	12/31/1972	
Driller Log Available	YES	
Sanitary Survey (if yes, indicate date of last survey	YES	1999
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	YES	0
Casing and annular seal extend to low permeability unit	YES	0
Highest production 100 feet below static water level	YES	0
Well located outside the 100 year flood plain	YES	0
Total System Construction Score		1

2. Hydrologic Sensitivity		
Soils are poorly to moderately drained	YES	0
Vadose zone composed of gravel, fractured rock or unknown	NO	0
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	YES	0
Total Hydrologic Score		1

3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	IRRIGATED CROPLAND	2	2	2	2
Farm chemical use high	YES	2	2	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		4	4	4	2
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	7	11	13	5
(Score = # Sources X 2) 8 Points Maximum		8	8	8	8
Sources of Class II or III leacheable contaminants or	YES	9	9	4	
4 Points Maximum		4	4	4	
Zone 1B contains or intercepts a Group 1 Area	YES	2	0	0	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		18	16	16	12
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	Greater Than 50% Irrigated Agricultural Land	2	2	2	
Potential Contaminant Source / Land Use Score - Zone II		5	5	5	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	YES	1	1	1	
Total Potential Contaminant Source / Land Use Score - Zone III		3	3	3	0
Cumulative Potential Contaminant / Land Use Score		30	28	28	14
4. Final Susceptibility Source Score		10	10	10	9
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

Ground Water Susceptibility Report Public Water System Name : CITY OF PAUL Well# : W MINICO WELL

Public Water System Number 5340014 10/30/2001 2:02:34 PM

1. System Construction		SCORE
Drill Date	1/7/1998	
Driller Log Available	YES	
Sanitary Survey (if yes, indicate date of last survey)	YES	1999
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	YES	0
Casing and annular seal extend to low permeability unit	YES	0
Highest production 100 feet below static water level	YES	0
Well located outside the 100 year flood plain	YES	0
Total System Construction Score		1

2. Hydrologic Sensitivity		
Soils are poorly to moderately drained	YES	0
Vadose zone composed of gravel, fractured rock or unknown	NO	0
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	YES	0
Total Hydrologic Score		1

3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	IRRIGATED CROPLAND	2	2	2	2
Farm chemical use high	YES	2	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		4	2	4	2
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	2	1	1	2
(Score = # Sources X 2) 8 Points Maximum		4	2	2	4
Sources of Class II or III leacheable contaminants or	YES	2	1	1	
4 Points Maximum		2	1	1	
Zone 1B contains or intercepts a Group 1 Area	YES	2	0	2	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		12	7	9	8
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	Greater Than 50% Irrigated Agricultural Land	2	2	2	
Potential Contaminant Source / Land Use Score - Zone II		5	5	5	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Sources Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	YES	1	1	1	
Total Potential Contaminant Source / Land Use Score - Zone III		3	3	3	0
Cumulative Potential Contaminant / Land Use Score		24	17	21	10
4. Final Susceptibility Source Score		7	5	6	6
5. Final Well Ranking		Moderate	Low	Low	Low