USFS FENN RANGER STATION AND YCC CAMP (PWS 2250091)
SOURCE WATER ASSESSMENT FINAL REPORT

February 24, 2003

State of Idaho
Department of Environmental Quality

Disclaimer: This publication has been developed as part of an informational service for the source water assessments of public water systems in Idaho and is based on data available at the time and the professional judgement of the staff. Although reasonable efforts have been made to present accurate information, no guarantees, including expressed or implied warranties of any kind, are made with respect to this publication by the State of Idaho or any of its agencies, employees, or agents, who also assume no legal responsibility for the accuracy of presentations, comments, or other information in this publication. The assessment is subject to modification if new data is produced.

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 source water assessment area and sensitivity factors associated with the well and aquifer characteristics.

This report, *Source Water Assessment for USFS Fenn Ranger Station and YCC Camp, Lowell, 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.**

The USFS Fenn Ranger Station and YCC Camp drinking water system consists of one active ground water well. The well is located approximately five miles southeast of Lowell off of Highway 11 near Johnson Creek. Water from the well is stored in a 60,000-gallon concrete storage tank and the system is chlorinated. The system currently serves 50 people through 26 connections.

Final susceptibility scores are derived from equally weighing 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/Land Uses are divided into four categories, inorganic contaminants (IOCs, e.g. nitrates, arsenic), volatile organic contaminants (VOCs, e.g. petroleum products), synthetic organic contaminants (SOCs, e.g. pesticides), and microbial contaminants (e.g. bacteria). As different wells can be subject to various contamination settings, separate scores are given for each type of contaminant.

In terms of total susceptibility, the USFS Fenn Ranger Station well rated moderate for IOCs, VOCs, SOCs, and microbials. System construction and hydrologic sensitivity rated moderate, and land use rated moderate for IOCs, VOCs and SOCs, and low for microbials.

No VOCs or SOCs have ever been detected in the well. Trace concentrations of the IOCs fluoride, nitrate, and sodium have been detected in tested water, but at concentrations significantly below maximum contamination levels (MCLs) as set by the EPA. Alpha and beta particles (radionuclides) have also been detected in the distribution system at levels below the MCLs. Total coliform bacteria have been detected in the system from 1994 to 2002 with six confirmatory results in the distribution system in May 1994, March 1995, May 1996, June 1997, October 1998, and as recent as August 2002. However, no coliform bacteria detections have occurred at the well.

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 USFS Fenn Ranger Station and YCC Camp, drinking water protection activities should first focus on correcting any deficiencies outlined in 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). Actions should be taken to keep a 50-foot radius perimeter clear of all potential contaminants from around the wellhead. Any contaminant spills within the delineation should be carefully monitored and dealt with. If problems with microbial contamination in the distribution system continue, the USFS Fenn Ranger Station may need to reevaluate the disinfecting system. As much of the designated protection areas are outside the direct jurisdiction of the USFS Fenn Ranger Station and YCC Camp drinking water system, collaboration and partnerships with state and local agencies, and industry groups should be established and are critical to the success of drinking water protection. In addition, the well should maintain sanitary standards regarding wellhead 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 on any drinking water protection plan as the delineation contains some urban and residential land uses. Public education topics could include proper lawn care practices, household hazardous waste disposal methods, 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. As there are transportation corridors through the delineation, the Idaho Department of Transportation should be involved in protection activities.

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

SOURCE WATER ASSESSMENT FOR USFS FENN RANGER STATION AND YCC CAMP, LOWELL, 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 rankings of this assessment mean.** Maps showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are attached. The list of significant potential contaminant source categories and their rankings used to develop the assessment is also included.

Background

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the EPA to assess every source of public drinking water for its 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 and sensitivity factors associated with the wells and aquifer characteristics.

Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, there is limited time and resources to accomplish the assessments. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, 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 the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The local community, based on its own needs and limitations, should determine the decision as to the amount and types of information necessary to develop a drinking water protection program. Wellhead or 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 USFS Fenn Ranger Station and YCC Camp drinking water system consists of one active ground water well. The well is located approximately five miles southeast of Lowell off of Highway 11 near Johnson Creek (Figure 1). Water from the well is stored in a 60,000-gallon concrete storage tank and the system is chlorinated. The system currently serves 50 people through 26 connections.

No VOCs or SOCs have ever been detected in the well. Trace concentrations of the IOCs fluoride, nitrate, and sodium have been detected in tested water, but at concentrations significantly below MCLs as set by the EPA. Alpha and beta particles (radionuclides) have also been detected in the distribution system at levels below the MCLs. Total coliform bacteria have been detected in the system from 1994 to 2002 with six confirmatory results in the distribution system in May 1994, March 1995, May 1996, June 1997, October 1998, and as recent as August 2002. However, no coliform bacteria detections have occurred at the well.

Defining the Zones of Contribution – Delineation

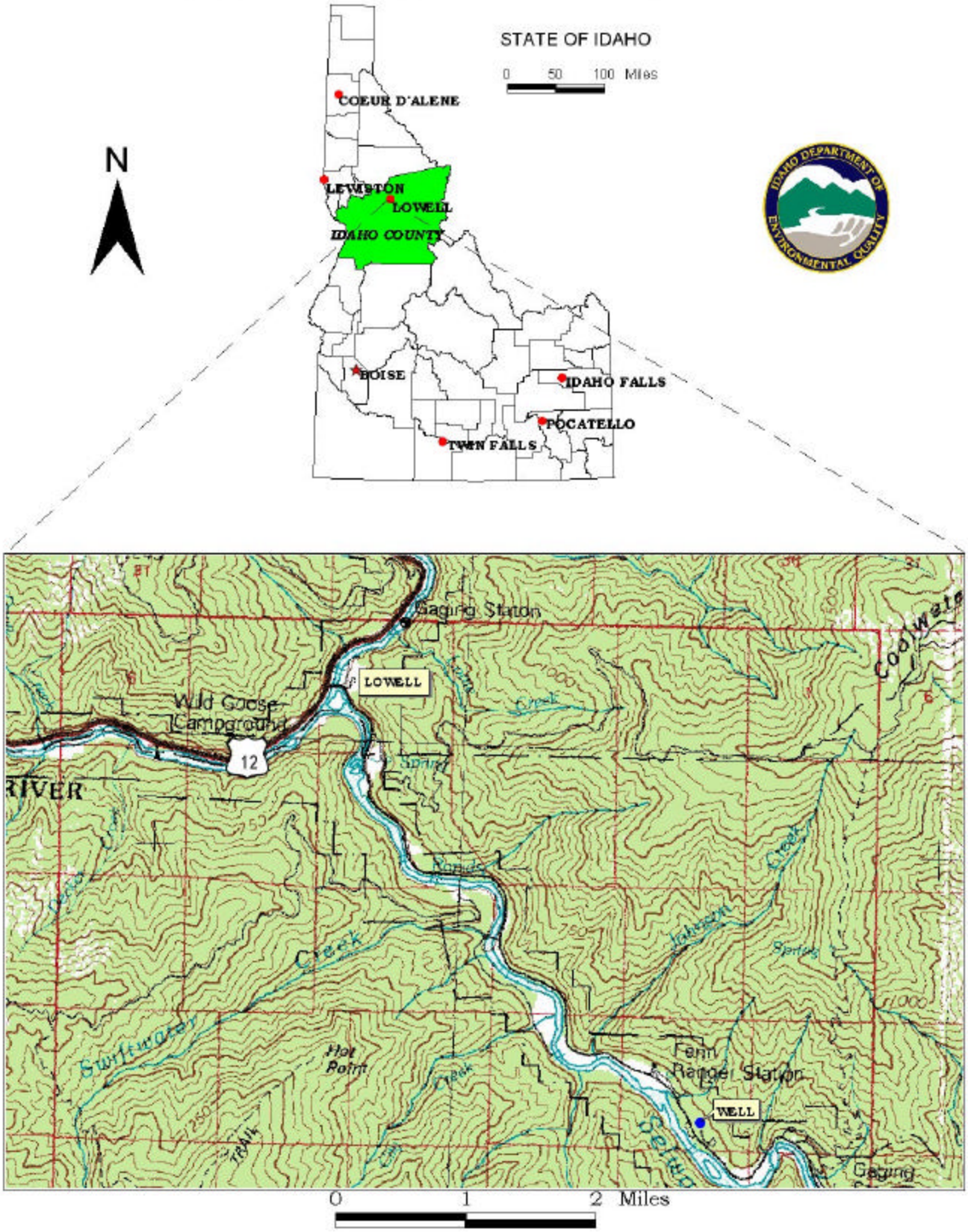
The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel (TOT) zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. DEQ contracted with the University of Idaho to perform the delineations using a refined computer model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) TOT for water in the vicinity of the USFS Fenn Ranger Station and YCC Camp wells. The computer model used site specific data, assimilated by the University of Idaho from a variety of sources including operator input, local area well logs, and hydrogeologic reports (detailed below).

The conceptual hydrogeologic model for the Fenn source well in the Selway District of the Nez Perce National Forest near Lowell, Idaho is based on interpretation of available well logs. The source well log indicates water is derived from fractured crystalline rock. Based on the geologic map of the Hamilton quadrangle at a scale of 1:250,000 (Rember and Bennett, 1979), the well is in metamorphic rocks associated with the Idaho batholith, specifically the Wallace Formation. Rock described as “granite” on the source well log and the test point well logs is probably not granite, but is probably gneiss or schist. This is frequently-made error among drillers and road-builders in this area.

The ground elevation is approximately 1520 feet above mean sea level (msl) at the Fenn well. Discharge from the source well is 37 gpm. Little information is known about the hydrogeology of the area.

There are several mapped structural features in the Fenn area. The Selway River at this location is correlated to the contact of the Wallace Formation (coarse-grained, garnet mica schist, diopside gneiss, biotite gneiss) and the undifferentiated Ravalli Group (Rember and Bennett, 1979). The source well appears to be on the Wallace Formation (north) side of the contact. This contact appears to be a no-flow boundary because wells on the south side of the contact have heads that are approximately 200 feet higher than heads on the north side of the Selway River in the immediate vicinity of the source. A north-trending fault appears to control the confluence of the Selway and Lochsa Rivers.

FIGURE 1. Geographic Location of the USFS Fenn Ranger Station & YCC Camp



The source is on the bank of the Selway River, near to the confluence of the Lochsa and Selway Rivers. It is not known whether the rivers are gaining or losing near the source but they are believed to be gaining based on the topography near the creek.

The fault and contact are not represented in the Best Model. The fault that appears to control the confluence of the two rivers may be a preferential pathway or a barrier to flow – faults in metamorphic rock can be either. The contact between the Wallace and Ravalli formations that appears to be a no-flow boundary on the basis of the test point heads was not modeled as such. A sensitivity study was performed for including this no-flow boundary, and it had little effect on the capture zone because it is down-gradient of the source. What little impact it had was to orient the gradient as coming from the northwest, which is inconsistent with our conceptual model at this time.

The Lochsa River was modeled as a positive flux boundary (gaining river) with a flux rate of 0.6 $ft^3/d/ft$. The Lochsa is assumed to be gaining because it is so high in the regional topographic profile. It was given a relatively low gaining magnitude because high elevation rivers and creeks in this region receive much of their water as surface water from springs.

The Selway River was also modeled as a positive flux boundary (gaining river) with a flux rate of 0.6 $ft^3/d/ft$ for the same reasons.

A constant head boundary was placed about 3500 m south-southwest of the source well to give the model a reference head and to establish a ground water flow direction, which allowed for a fair model calibration. The location and elevation of the constant head were chosen to establish the gradient steepness and orientation indicated by the test points.

No recharge data are available for the Fenn Ranger Station area. Wyatt-Jaykim used a recharge value of 1 in/yr for the Lewiston Basin and 2 in/yr for higher elevations in the immediate vicinity of Lewiston (Wyatt-Jaykim, 1994). This location on the Selway is modeled at 4 in/yr because it is several hundred feet higher, because of the significant snowpack, and because of the shallow weathered bedrock horizon.

The amount of areal recharge used in the model for the Fenn Ranger Station source is 4 in/yr.

Neighboring private wells are used for test points in the WhAEM simulations. Information on test points was obtained from a search of the Idaho Department of Water Resources database available on the Internet. The locations of the test points are limited to information supplied on the well logs, typically the quarter-quarter section (0.25 $mile^2$). Therefore, the accuracy of the test point elevations and the static water elevations is dependent upon the accuracy of the driller's log and the amount of topgraphic relief in the quarter-quarter section.

Simulations of the Fenn source well are performed to evaluate the 3, 6, and 10-yr times of travel. The model settings for the source well are listed in Table 1. The WhAEM model is used to delineate the capture zones.

The capture zone delineated herein are based on limited data and must be taken as best estimates. If more data become available in the future these delineations should be adjusted based on additional modeling incorporating the new data. The WhAEM model is used to delineate the capture zones.

The delineated source water assessment area for the well of USFS Fenn Ranger Station and YCC Camp water system can best be described as a northward trending corridor approximately 2.5 miles long and 1.5 miles wide, extending from the Selway River up Johnson Creek (Figure 2). The actual data used by the University of Idaho in determining the source water assessment delineation area 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 from available databases.

Land use within the immediate area and the surrounding area of the USFS Fenn Ranger Station and YCC Camp well is predominantly woodland.

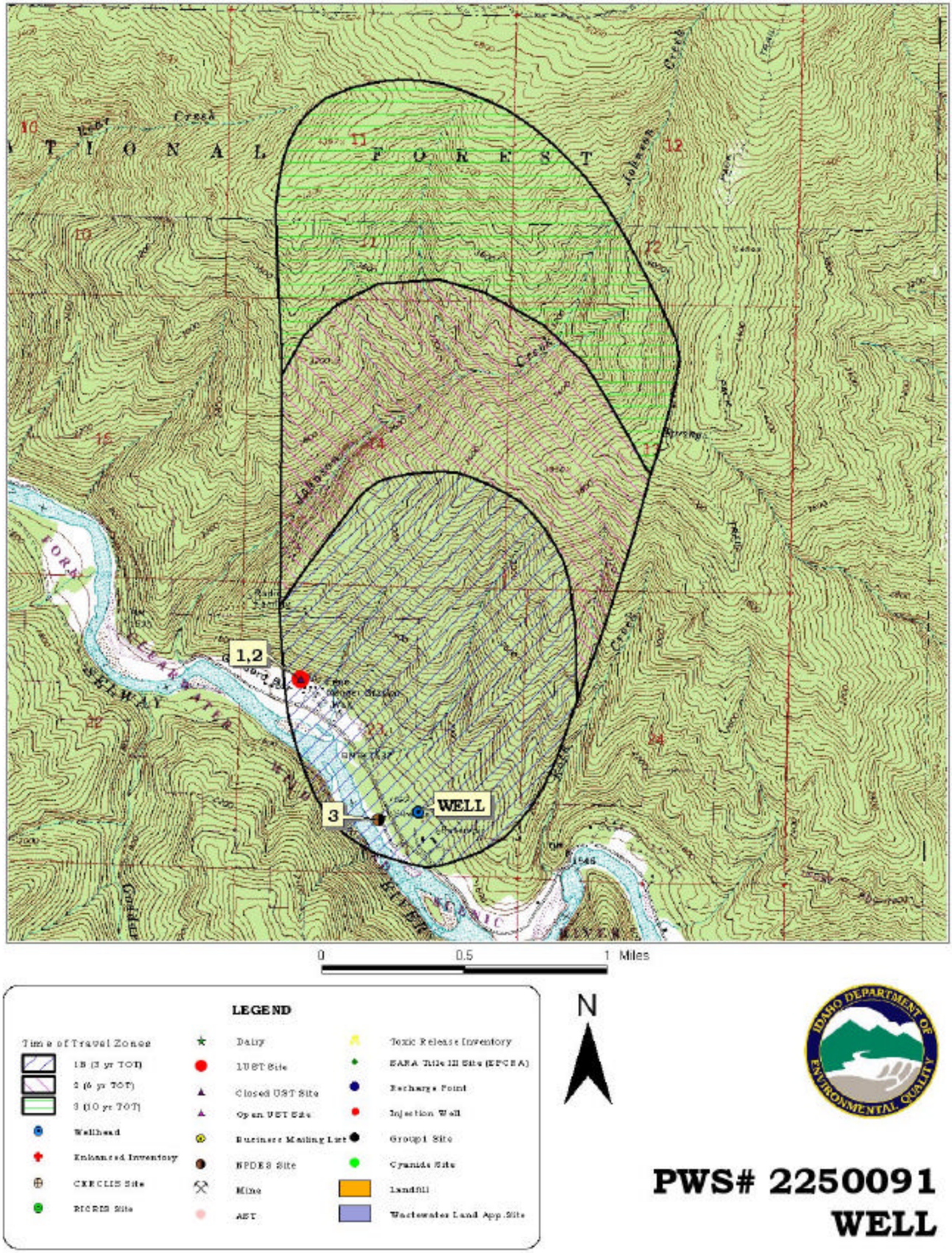
It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, 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, including 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 two-phased contaminant inventory of the study area was conducted in October and November 2002. The first phase involved identifying and documenting potential contaminant sources within the USFS Fenn Ranger Station and YCC Camp source water assessment area (Figure 2) through the use of computer databases and Geographic Information System (GIS) maps developed by DEQ. The second, or enhanced, phase of the contaminant inventory involved contacting the operator to identify and add any additional potential sources in the area.

The delineated source water assessment area of the USFS Fenn Ranger Station and YCC Camp well contains a leaking underground storage tank (LUST), an underground storage tank (UST), a national pollution discharge elimination system (NPDES), Johnson Creek, the Selway River, and Highway 11. These potential contaminant sources could contribute leachable contaminants to the aquifer in the event of an accidental spill, release, or flood (Table 1, Figure 2).

FIGURE 2. USFS Fenn Ranger Station & YCC Camp Delineation Map and Potential Contaminant Source Locations



PWS# 2250091
WELL

Table 1. USFS Fenn Ranger Station and YCC Camp, Well, Potential Contaminant Inventory and Land Use

Site	Description of Source	TOT[1] Zone	Source of Information	Potential Contaminants[2]
1, 2	LUST-Site Cleanup Completed, Impact: Ground Water, UST-Closed	0-3 YR	Database Search	VOC, SOC
3	NPDES-Sewage Discharge	0-3 YR	Database Search	IOC, Microbials
	Selway River	0-3 YR	GIS Map	IOC, VOC, SOC, Microbials
	Highway 11	0-3 YR	GIS Map	IOC, VOC, SOC, Microbials
	Johnson Creek	3-10 YR	GIS Map	IOC, VOC, SOC

[1] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[2] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Section 3. Susceptibility Analysis

A 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 A contains the susceptibility analysis worksheets for the system. 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 (aquitard) 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.

Hydrologic sensitivity rated moderate for the USFS Fenn Ranger Station well. Area soils are moderate to well drained. However, the vadose zone is made up of mostly gneiss layers. (The University of Idaho indicates that well drillers often mistake these gneiss layers for granite in this geographical area). Additionally, the well log indicates the presence of an aquitard made up of several layers of clay and granite (referred to as gneiss by the University of Idaho), reducing the downward movement of contaminants to the aquifer. First ground water is found between 64 and 69 feet below ground surface (bgs).

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. A sanitary survey was conducted in 2000 for the system.

The USFS Fenn Ranger Station well was drilled in 1993 to a depth of 140 feet bgs. It has a 0.250-inch thick, six-inch diameter casing set to 38 feet bgs into medium to hard granite (referred to as gneiss by the University of Idaho). The annular seal extends to 21 feet bgs into sandy clay. The highest production zone of the well is found between 64 and 69 feet bgs and the static water level is found at 34 feet bgs.

The USFS Fenn Ranger Station well rated moderate for system construction. Information from the 1999 sanitary survey (conducted by the U.S. Forest Service) indicates that the wellhead and surface seals are maintained to standards. However, one of the deficiencies listed in the survey is that the wellhead is not properly vented. The purpose of the vent is to open the space between the casing and the column and prevent a vacuum from forming when the well turns on and draws down the water table. A vacuum could draw in contamination through joints or leaks in the casing or cause the well to slough. However, the well is located outside of the 100-year floodplain and is properly protected from flooding. Additionally, the casing and annular seal both extend to a low permeability zone, protecting the well from leachable contaminants. The highest production zone of the well is less than 100 feet below the static water level.

Though the well may have been in compliance with standards when it was completed, current PWS well construction standards are more stringent. The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all 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. These standards include provisions for well screens, pumping tests, and casing thicknesses to name a few. Table 1 of the *Recommended Standards for Water Works* (1997) lists the required steel casing thickness for various diameter wells. A six-inch diameter well requires a casing thickness of 0.288 inches. In this case, the casing thickness did not meet the IDWR well construction standards.

Potential Contaminant Source and Land Use

The well rated moderate for IOCs (e.g. nitrates, arsenic), VOCs (e.g. petroleum products, chlorinated solvents) and SOCs (e.g. pesticides), and low for microbial contaminants (e.g. bacteria). The Selway River and Highway 11 as well as the NPDES and the UST/LUST in the 3-year TOT zone contributed to the overall potential contaminant source and land use ratings. However, the predominant woodland land use of the area and the limited number of potential contaminants within the entire delineation make the well less susceptible to contamination.

Final Susceptibility Ranking

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, if there are contaminant sources located within 50 feet of the source then the wellhead will automatically get a high susceptibility rating. 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 agricultural land contribute greatly to the overall ranking. The USFS Fenn Ranger Station and YCC Camp well has moderate susceptibility to all potential contaminant categories.

Table 2. Summary of USFS Fenn Ranger Station and YCC Camp Susceptibility Evaluation

Well	Susceptibility Scores[1]									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	**Final Susceptibility Ranking**			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Well #1	M	M	M	M	L	M	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

The USFS Fenn Ranger Station and YCC Camp drinking water system consists of one active ground water well. The well is located approximately five miles southeast of Lowell off of Highway 11 near Johnson Creek. Water from the well is stored in a 60,000-gallon concrete storage tank and the system is chlorinated. The system currently serves 50 people through 26 connections.

In terms of total susceptibility, the USFS Fenn Ranger Station well rated moderate for IOCs, VOCs, SOCs, and microbials. System construction and hydrologic sensitivity rated moderate, and land use rated moderate for IOCs, VOCs and SOCs, and low for microbials.

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.

For the USFS Fenn Ranger Station and YCC Camp, drinking water protection activities should first focus on correcting any deficiencies outlined in the sanitary survey. Actions should be taken to keep a 50-foot radius perimeter clear of all potential contaminants from around the wellhead. Any contaminant spills within the delineation should be carefully monitored and dealt with. If problems with microbial contamination in the distribution system continue, the USFS Fenn Ranger Station may need to reevaluate the disinfecting system.

As much of the designated protection areas are outside the direct jurisdiction of the USFS Fenn Ranger Station and YCC Camp drinking water system, collaboration and partnerships with state and local agencies, and industry groups should be established and are critical to the success of drinking water protection. In addition, the well should maintain sanitary standards regarding wellhead 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. As there are many houses within the delineation, a strong public education program should be a primary focus of any drinking water protection plan. Public education topics could include proper lawn and garden care practices, 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.

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

Assistance

Public water supplies 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.

Lewiston Regional DEQ Office (208) 799-4370

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 Superfund 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 5 mg/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.

References Cited

Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, 1997. "Recommended Standards for Water Works."

Idaho Department of Environmental Quality, 1997. Design Standards for Public Drinking Water Systems. IDAPA 58.01.08.550.01.

Idaho Department of Water Resources, 1993. Administrative Rules of the Idaho Water Resource Board: Well Construction Standards Rules. IDAPA 37.03.09.

Idaho Division of Environmental Quality, 1999. Sanitary survey for USFS Fenn Ranger Station and YCC Camp.

Freeze, R.A., and Cherry, J.A.; 1979. Ground water, Prentice Hall, Englewood Cliffs, NJ, 604p.

Rember, W.C., and Bennett, E.H.; 1979. Geologic Map of the Hamilton Quadrangle, Idaho, Idaho Bureau of Mines and Geology, Moscow, ID.

Williams, Dr. Barbara, Robin Nimmer, Dr. James Osiensky, Amy Owen, 2002. Clearwater Uplands Source Water Assessment: Capture Zone Delineations for Source Wells at Wells Bench.

Wyatt-Jaykim Engineers; 1994; Lewiston Basin deep aquifer study, Prepared for Lewiston Orchards Irrigation Didstrict (LOID).

Appendix A

USFS Fenn Ranger Station and YCC Camp Susceptibility Analysis Worksheet

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 0.375)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

$\geq$ 13 High Susceptibility

Ground Water Susceptibility Report Public Water System Name : USFS FENN RANGER STATION AND YCC CAMP Well# : WELL

Public Water System Number 2250091 12/17/02 8:48:28 AM

1. System Construction		SCORE
Drill Date	8/5/93	
Driller Log Available	YES	
Sanitary Survey (if yes, indicate date of last survey)	YES	1995
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	NO	1
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		3

2. Hydrologic Sensitivity		
Soils are poorly to moderately drained	NO	2
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		3

3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	RANGELAND, WOODLAND, BASALT	0	0	0	0
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		0	0	0	0
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	3	3	3	3
(Score = # Sources X 2) 8 Points Maximum		6	6	6	6
Sources of Class II or III leacheable contaminants or	YES	3	3	3	
4 Points Maximum		3	3	3	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - Zone 1B		9	9	9	6
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	Less than 25% Agricultural Land	0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		3	3	3	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	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		2	2	2	0
Cumulative Potential Contaminant / Land Use Score		14	14	14	6
4. Final Susceptibility Source Score		9	9	9	8
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate