Eldorado Area Water & Sanitation District
Source Water Protection Plan
Public Water System # NM 3537326

Prepared for **Eldorado Area Water & Sanitation District**
Santa Fe, New Mexico

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Executive Summary

This Source Water Protection Plan (SWPP) for Eldorado Area Water & Sanitation District (EAWSD) was developed by Daniel B. Stephens & Associates, Inc. (DBS&A), under contract with the New Mexico Environment Department (NMED), using the *New Mexico Source Water and Wellhead Protection Toolkit*.

The purpose of the SWPP is to provide an overview of a utility's water system, including identification of sources of water, to delineate source water protection areas (SWPAs) around water sources, to identify and evaluate potential sources of contamination (PSOCs) within the SWPAs, and to provide recommendations for the implementation of the SWPP. The SWPP identifies a six-member Source Water Protection Team, which has the responsibility for program development and implementation, thereby providing the community with the tools needed to prevent contamination of EAWSD's water sources, namely groundwater.

EAWSD is a governmental body and "quasi-municipality," governed by a five-member Board of Directors elected by its taxpayers and ratepayers. It was established in 1997 under the New Mexico Water and Sanitation District Act, NMSA 1978. EAWSD owns and operates a drinking water utility, which provides water to 23 unincorporated communities in the Eldorado area and has a service area of more than 24 square miles. EAWSD serves just under 3,000 connections. Approximately 98 percent of connections are residential and 2 percent are commercial or public authority; there are no industrial connections.

EAWSD is an all groundwater system with 10 production wells distributed between the Central Well Field and the Galisteo Creek Alluvium Well Field. The Central Well Field can currently sustainably produce about 665,000 gallons per day (gpd) and, with increased production from two wells in the process of being developed, will be able to sustainably produce approximately 800,000 gpd in the near future. The Galisteo Creek Alluvium Well Field is capable of producing a maximum of 200,000 gpd, or sustained production of about 120,000 gpd during periods of adequate runoff to allow pumping in "wet" years.

EAWSD uses sodium hypochlorite solution to disinfect drinking water in the distribution system. No contamination events were reported to NMED from 2011 through 2015, the years evaluated for this report.

Per NMED recommendations, an SWPA is defined as the area within a 1-mile radius of each groundwater well. In this plan, the delineated SWPAs are subdivided into four buffer zones around each wellhead:

- Zone A: radius of 0 to 200 feet from the water source
- Zone B: radius of 201 to 500 feet from the water source
- Zone C: radius of 501 to 1,000 feet from the water source
- Zone D: radius of 1,001 to 5,280 feet from the water source

PSOCs are defined as any possible site or event that could, under any circumstance and time frame, lead to contamination of a water system's sources. Not all sites identified as PSOCs pose the same level of risk. PSOCs can be either naturally occurring or human-caused. There are no known naturally occurring contaminants within EAWSD's SWPAs. There are 12 types of human-caused PSOCs known to occur in EAWSD's SWPAs.

To identify and assess potential contamination risks to a system's water sources, susceptibility rankings of low, moderately low, moderate, moderately high, or high were assigned to each water source based on professional opinion of the available well, aquifer, and PSOC information. These rankings are meant to serve as a method to identify and prioritize risks to a system's water sources for planning purposes. Susceptibility of a water system to sources of contamination is defined in terms of both a well's vulnerability and sensitivity, where vulnerability is based on an inventory of the type, number, and proximity of PSOCs near a wellhead and sensitivity is based on an assessment of well construction and aquifer characteristics.

Table ES-1 summarizes the sensitivity, vulnerability, and overall susceptibility rankings for each EAWSD well.

Table ES-1. Sensitivity, Vulnerability and Susceptibility Ranking for EAWSD Wells

Well	Vulnerability Ranking	Sensitivity Ranking	Susceptibility Ranking
1	High	Low	Moderately low
2A	High	Low	Moderately low
2B	High	Low	Moderately low
3	High	Low	Moderately low
4	High	Low	Moderately low
5	High	Low	Moderately low
6	High	Low	Moderately low
7	High	Low	Moderately low
8	High	Low	Moderately low
9	Moderately high	Moderate	Moderately high
10	High	Moderate	Moderately high
12	High	Low	Moderately low
13	High	Low	Moderately low
14	High	Low	Moderately low
15	High	Low	Moderately low
17	High	Low	Moderately low
18	High	Low	Moderately low
19	High	Low	Moderately low

The following conclusions were made based on the susceptibility evaluation of EAWSD's water sources:

- There are no known natural sources of contamination within EAWSD's SWPAs.
- Wells in the EAWSD system are generally well-constructed and well-maintained. The construction of the wells, including seals near the surface, concrete pads, and security measures, along with area geology, generally protects the groundwater from contaminants on the surface.
- The evaluation in this plan did not consider the direction of groundwater or surface flows when assessing the risk posed by PSOCs. However, based on local knowledge, some subjectivity was applied to vulnerability ranking to account for localized conditions. For example, septic systems located near arroyos or near private domestic wells pose a

greater threat to source aquifers, as private domestic wells, particularly of poor construction, can provide a conduit for contaminants at or near the surface to the groundwater aquifer(s).

- There are 12 types of human-caused PSOCs within EAWSD's SWPAs. All wells ranked "high" in terms of vulnerability except for Well 9, which ranked "moderately high."
  - The most notable PSOC types in EAWSD's SWPAs are septic systems, private domestic wells, arroyos, roadways, rail lines, and the Eldorado Community Improvement Association (ECIA) horse stables. Additionally, there are 5 active wastewater discharge permits and 1 wastewater discharge permit in the application phase. With an estimated 2,825 occurrences, unsewered single family residences (RSF), or septic systems, are the most common human-caused PSOC in EASWD's SWPAs. Because no sewer services are available in the area, nearly every residence and building has its own septic system.
  - Numbers of PSOC occurrences within the SWPAs are high. The majority of wells (13 out of 18) had more than 400 PSOC occurrences. Well 9 had the least number of PSOCs within its SWPA (103); Well 14 had the most (994).
  - Four wells (wells 6, 8, 9, and 10) had PSOC occurrences in Zone A. All wells except for Wells 3 and 9 had PSOC occurrences in Zone B.
- The 16 Central Well Field wells ranked "low" in terms of sensitivity; the 2 wells in the Galisteo Creek Alluvium Well Field ranked "moderate."
  - All EAWSD wells have excellent well construction. Wells have been designed and built so as to protect against contamination. Seals and concrete pads ensure that surface water cannot enter at the wellhead, and there are security features in place restricting public access and protecting against tampering.
  - There is a 50- to 150-foot clay-rich dry zone between the ground surface and groundwater in the Central Well Field, which serves to mitigate much of the risk of surface contamination, (including septic system contamination) to EAWSD's water sources, except possibly in areas of poorly constructed private domestic wells and/or along arroyos.

Based on NMED guidelines and the conclusions from this evaluation, DBS&A has the following recommendations for EAWSD's implementation of the Source Water Protection Plan:

- The Source Water Protection Team should meet annually to review the PSOCs and any changes to the system's sources.
- This SWPP document and the map of PSOCs should be updated on an annual basis.
- The Source Water Protection Team should participate as necessary in regulatory meetings and hearings on facilities and wastewater discharge applications within the SWPAs.
- Members of the Source Water Protection Team should work with the ECIA Horse Stables to address contamination risks associated with this site.
- Members of the EAWSD and the Source Water Protection Team should work with the appropriate parties to ensure that the new disposal field proposed by Cimarron Village under discharge permit 1838 (DP-1838), currently in the application phase, does not lead to groundwater contamination.
- The members of the Source Water Protection Team may change over time. Representation on the team should be considered to inform the plan and implement recommended actions. For example, it may be prudent to include someone from Santa Fe County, as EAWSD has no land use jurisdiction in the SWPAs. It may also be helpful to include a representative of the local soil and water conservation district.
- A public information program should be developed related to source water protection. This program would educate the public about EAWSD's water sources, potential threats to those sources, and measures that the public can take to protect water sources, and would encourage the public to report PSOCs to the EAWSD. Options for communicating with the public include articles in EAWSD's monthly newsletter, posting on EAWSD's website, meetings, advertisements, flyers, brochures, posters, questionnaires, and community and school events, as appropriate.

Eldorado Area Water & Sanitation District
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1. Introduction

The New Mexico Environment Department (NMED) Drinking Water Bureau (DWB) assists communities in the protection of their drinking water systems through the Source Water Protection Program. By participating in the program, communities can evaluate a water system to identify and manage actual or potential sources of contamination to the drinking water supply.

The program consists of a two-step process; the first step involves identifying the area(s) to be protected, identifying actual and potential contamination sources, and evaluating the susceptibility of the drinking water source area to contamination. The second step of the planning process is developing and implementing a Source Water Protection Plan (SWPP). The SWPP benefits the public water system by providing management and implementation strategies to ensure the security of the drinking water supply. Preventing contamination is much less expensive and easier than cleaning up a contaminated source or finding a new source.

This SWPP for Eldorado Area Water & Sanitation District (EAWSD) has been developed by Daniel B. Stephens & Associates, Inc. (DBS&A) using the *New Mexico Source Water and Wellhead Protection Toolkit* (NMED DWB, 2013). The SWPP identifies a Source Water Protection Team, which has the responsibility of program development and implementation, thereby providing the community with the tools needed to prevent contamination of EAWSD's source water protection areas (SWPAs).

1.1 Purpose

The purpose of the Source Water Protection Program is to protect drinking water sources before they become contaminated. The SWPP provides the management tool for current and future approaches to prevent source water contamination, thereby protecting the drinking water system and customer health.

1.2 Source Water Protection Program Background

The U.S. Congress amended the Safe Drinking Water Act in 1996 to provide for the assessment and protection of sources of public water supply. The U.S. Environmental Protection Agency (EPA) provides information and encourages partnerships for source water protection planning. States completed source water assessments between 2002 and 2006 for all public water systems. A source water assessment was completed in 2002 for the utility that previously owned the EAWSD water system; this assessment is provided as Appendix A. States are now implementing strategies to help local communities use the information obtained from these assessments. States also may provide resources to help fund local protection activities, such as wellhead protection programs for groundwater and watershed management programs for surface water.

2. Source Water Protection Team

Table 1 lists the members of the EAWSD Source Water Protection Team.

Table 1. Source Water Protection Team

Name	Affiliation
David Chakroff	EAWSD General Manager
John Calzada	EAWSD Director, Communications & Customer Service Advisory Committee Chair
Jerry Cooper	Capital Planning Advisory Committee Chair
Douglas Gaumer	CH2M Operations Manager for EAWSD
Meghan Hodgins	GGI Hydrogeologist for EAWSD

3. Water System Information

The Eldorado area consists of 23 unincorporated communities served by EAWSD, and lies mostly within the Cañada de los Alamos Grant, a Spanish Land Grant dating back to 1785. In 1901, the grant was purchased by Onderdonk Land & Cattle Company, which operated it as Onderdonk Ranch until 1956, at which time it was sold to the Simpson Family. The Simpson Family continued to operate the land as a ranch until 1969 when they sold it to American Realty

and Petroleum Corporation (AMREP), a private developer. AMREP sold the first lots in the Eldorado at Santa Fe Community in 1972. AMREP also sold land to other developers who started various subdivisions in the area (SMA, 2013).

AMREP established El Dorado Utilities, Inc. in the 1970s to provide water to its developments. AMREP expressed interest in selling the utility in 1994. In July 1997, residents in the Eldorado area formed EAWSD, a special governmental district established under New Mexico's Water and Sanitation District Act, in order to take a proactive role in shaping their water supply future and pursue the purchase of the water system from AMREP. In August 2002, voters approved a bond issue supporting the purchase of the utility. However, AMREP entered into negotiations with a private utility conglomerate and refused to negotiate with EAWSD. Using its power of eminent domain, EAWSD filed a condemnation suit in District Court in 2003 and was awarded possession and control of the utility in December 2004. EAWSD paid just over $11 million for the water system (SMA, 2013).

EAWSD is a governmental body and "quasi-municipality," governed by a five-member Board of Directors elected by its taxpayers and ratepayers. It was established in 1997 under the New Mexico Water and Sanitation District Act, NMSA 1978. EAWSD owns and operates a drinking water utility, which provides water to 23 unincorporated communities in the Eldorado area and has a service area of more than 24 square miles (Figure 1).

Since EAWSD began operating the water system in December 2004, the number of customer accounts has remained relatively constant, ranging from 2,819 in December 2004 to 2,971 in December 2015. Approximately 98 percent of connections are residential and 2 percent are commercial or public authority; there are no industrial connections. The number of connections in the water system that take water on a seasonal basis, rather than all year, varies between 140 and 200 connections per year (SMA, 2013).

In the 2013 Utility Master Plan Preliminary Engineering Report (PER) (SMA, 2013), 2010 census data were used to estimate the population in EAWSD's service area at more than 7,000, including those not served by EAWSD. The population served by EAWSD has been estimated at approximately 6,200, assuming the 2010 census value of 2.12 persons per connected household. SMA (2013) estimated that there were roughly 531 residences not connected to the

EAWSD system; therefore, given the estimated household size of 2.12 people, there are about 1,126 people within the service area dependent on private water wells. Almost all of the residences not connected to the water system are located in the "Welled Area," a region in the northwest portion of the EAWSD service area. There are significant water quality issues with some private wells in this area (arsenic, nitrate, and total coliform) (SMA, 2013).

The EAWSD water system (Figure 2) consists of the following infrastructure:

- 10 production wells
- 8 inactive wells
- 16 monitoring wells
- 7 active chlorination disinfection systems
- 6 storage tanks
- 130+ miles of distribution lines
- 7 booster pump stations (4 active, 1 backup, and 2 inactive)
- 4 main pressure zones, including 36 pressure reducing values and 600+ isolation valves
- 600+ fire hydrants

EAWSD's production wells are distributed between a Central Well Field and the Galisteo Creek Alluvium Well Field. EAWSD has 583.23 acre-feet per year (ac-ft/yr) of water rights in the Central Well Field and 200.20 ac-ft/yr of water rights in the Galisteo Creek Alluvium Well Field (SMA, 2013). The Central Well Field currently consists of eight active wells (wells 2B, 6, 7, 8, 14, 15, 17, and 18) that can sustainably produce about 665,000 gallons per day (gpd). EAWSD is currently completing an additional well (Well 19) and reactivating Well 2A so that it can be pumped in conjunction with Well 2B during periods of high demand. These additions are expected to increase the sustainable production in the Central Well Field by about 150,000 gpd, for a total sustained production of approximately 800,000 gpd. The Galisteo Creek Alluvium Well Field consists of two active wells (wells 9 and 10) capable of producing a maximum of 200,000 gpd, or sustained production of about 120,000 gpd (CH2M, 2016). The Galisteo Creek Alluvium wells can only produce water when there is sufficient runoff into Galisteo Creek and recharge to the associated alluvium to allow pumping (referred to as "wet" years). Historically, these wells can be used 4 out of 10 years (SMA, 2013), and even less in recent years.

Table 2 provides basic well construction information for all active, inactive, and in-progress EAWSD wells. Table 3 lists the condition of each well according to the 2016 asset management plan with input from EAWSD. Well completion diagrams and lithologic logs are provided in Appendix B.

Each active well is disinfected at the wellhead, except for wells 17 and 18, for which production is combined and then disinfected at the Tank 2 site. All wells are disinfected with a 10 percent sodium hypochlorite solution to residual chlorine levels below 1 parts per million (ppm).

EAWSD's six storage tanks have a total design storage capacity of 2.50 million gallons and an effective working storage capacity of 2.36 million gallons. In conjunction with pressure reducing valves, the tanks regulate the pressure in the water system's four pressure zones. Table 4 shows the design capacity and pressure zone associated with each tank.

Combined, the storage tanks provide sufficient water for at least 2 days' supply at the system's average daily demand (ADD) during the summer season and more in the winter.

Table 5 provides an overview of the types and sizes of water lines in the water system. Pipe diameter ranges from 2 to 12 inches. Nearly half of all the water lines are 6-inch lines, and 42.8 percent are 8-inch lines. Most (89 percent) pipes are polyvinyl chloride (PVC); 6.7 percent are asbestos cement, 3.1 percent are ductile iron, and 1.1 percent are of unknown material (having been installed in earlier years by the previous utility without adequate records).

Table 2. Well Information

Well ID		Status	Well Depth (feet)	Casing Depth (feet)	Casing Diameter (inches)	Pump Depth (feet)	Screened Interval (feet)	Most Recent Static Water Level (feet bgs)	2015 Pumping Rate (gpm)	Drill Date	Improvements
Well 1	RG-18528	Inactive	786	700	10.750	553, NE	350–700	168.9	—	1984	Redrilled 1984
Well 2A	RG-18529-POD1	In-progress	350	311	10.750	252	154–274	158.1	70	1997	Redrilled 1997
Well 2B	RG-18529-POD3	Active	301	290	8.625	240	170–280	157.7	70	2014	Supplemental to Well 2A
Well 3	RG-18543	Inactive	325	320	10.750	214, NE	113–320	84.6	—	1970	—
Well 4	RG-18550	Inactive	375	365	10.750	167, NE	76–365	78.2	—	1970	—
Well 5	RG-18515	Inactive	192	192	6.000	175, NE	Unknown	107.9	—	pre-1969	—
Well 6	RG-18571	Active	280	280	8.625	273	220–260	223.3	15	1981	—
Well 7	RG-18595	Active	280	268	8.625	252	185–250	182.7	30	1981	—
Well 8	RG-18531	Active	325	312	8.625	210	165–278	66.9	25	1983	—
Well 9 [a]	RG-18556	Active	161	134	10.750	90	37–127	28.4	120 [a]	1994	Replaced 1994
Well 10 [a]	RG-18524	Active	100	97	10.625	84	64–94	28.5	80 [a]	1995	Replaced 1995
Well 12	RG-18517	Inactive	197	197	6.000	80, NE	Unknown	79.9	—	pre-1969	—
Well 13	RG-18529-POD2	Inactive	1,000	340	6.625	275	160–290	—	—	1995	—
Well 14	RG-18528-POD3	Active	430	385	8.625	315	235–385	230.0	140	1999	—
Well 15	RG-18528-POD4	Active	420	407	8.625	273	287–407	215.6	220	2000	—
Well 17	RG-18528-POD5	Active	675	647	6.625	320	396–637	150.7	85	2007	—
Well 18	RG-18528-POD6	Active	713	710	8.625	400	420–700	183.0	185	2010	—
Well 19	RG-95577	In-progress	981	970	6.625	NE	384–970	155.6	—	2016	In permitting process

[a] Well produces only in “wet” years
bgs = Below ground surface
gpm = Gallons per minute
NE = Not equipped

Table 3. Well Condition

Well	Comments	Condition	Grade [a]
1 [b]	Out of service; not functional. [b]	Low production rate of poor quality water. If justified, would require complete rehabilitation or repair. [b]	5
2B	—	Very good. New or nearly new. Only normal maintenance required.	1
3	Out of service; not functional.	Low water level and production rate. Not feasible for rehabilitation or repair.	5
4	Out of service; not functional.	Low water level and production rate. Not feasible for rehabilitation or repair.	5
5	Out of service; not functional.	Low water level and production rate. Not feasible for rehabilitation or repair.	5
6	—	Very good. New or nearly new. Only normal maintenance required.	1
7	—	Very good. New or nearly new. Only normal maintenance required.	1
8	—	Very good. New or nearly new. Only normal maintenance required.	1
9	—	Very good. New or nearly new. Only normal maintenance required.	1
10	—	Very good. New or nearly new. Only normal maintenance required.	1
12	Out of service; not functional.	Very poor. Requires complete rehabilitation or repair.	5
13	Pump and motor have been pulled; not functional.	Good. Minor wear.	2
14	—	Very good. New or nearly new. Only normal maintenance required.	1
15	—	Very good. New or nearly new. Only normal maintenance required.	1
17	—	Very good. New or nearly new. Only normal maintenance required.	1
18	—	Very good. New or nearly new. Only normal maintenance required.	1

Notes: Wells have an estimated typical life cycle of 30 years. Wells previously designated Nos. 11 and 16 are no longer part of the EAWSD system. Wells 2A and 19 are in-progress, and are not included in this table.

[a] *Grade 1:* Asset is in like new condition. Continuation of the current maintenance and operating procedures is indicated. 95% of original useful service life remaining.
Grade 2: Asset is in good condition. Some minor additional maintenance may be required along with the current maintenance and operating procedures. 75% of original useful service life remaining.
Grade 3: Asset is in fair condition. Have one or more issues which require immediate attention. It is also possible that the current maintenance and operating procedures or intervals may need to be modified or adjusted to avoid a reoccurrence of the identified issues. 50% of original useful service life remaining.
Grade 4: Asset is in poor condition. Planning for a major overhaul or replacement should begin. Review of current maintenance practices and procedures is needed. If this is a critical asset, a predictive maintenance program should be evaluated to prevent the asset from reaching this condition in the future. 30% of original useful service life remaining.
Grade 5: Asset is in very poor condition. Failure of the asset to provide the desired level of service is likely. Greater than 50% of assets will require replacement. If this is a critical asset, a comprehensive maintenance analysis is recommended to prevent the asset from reaching this condition in the future. 5% of original useful service life remaining.

[b] Updated by EAWSD, July 2016.

Table 4. Storage Tank Information

Storage Tank	Design Capacity (gallons)	Pressure Zone
1	250,000	1
1A	250,000	1
2	250,000	2
2A	380,000	2
3	525,000	3
4	850,000	4

Table 5. Water Line Information

Pipe Type	Diameter (inches)	Length (feet)
Asbestos cement	4	4,293
	6	24,909
	8	13,182
Polyvinyl chloride (PVC)	2	4,870
	3	369
	4	5,757
	6	290,997
	8	238,916
	10	21,985
	12	2,123
Ductile iron	6	181
	8	19,013
	Unknown	237
Unknown	Unknown	7,215
Total Length		634,047

Source: CH2M Hill, 2016

EAWSD has seven booster pump stations, as summarized in Table 6.

Table 6. Booster Pump Station Information

Pump Station	Location	Rated Capacity (gpm)	Status	Year Installed
1	Tank 1	250	Backup	1970
2	Compadres/Vista Grande	30	Inactive	1984
3	Torreon/Eldorado	634	Active	2015
4	Old Road Ranch/285	610	Active	2014
5	Well 1 Site	76	Inactive	1984
6	Well 9 Site	350	Active	1983
7	Tank 2 Site	320	Active	1998

Source: SMA, 2013
gpm = Gallons per minute

There are currently four main pressure zones in EAWSD, including 36 pressure reducing valves and more than 600 manual isolation valves. About a quarter of the EAWSD system experiences pressures in excess of NMED-recommended standards for normal working pressures (60 to 80 pounds per square inch [psi]) (Chakroff, 2016). Some areas have experienced pressures as high as 150 psi. EAWSD has ongoing capital improvement projects (CIPs) (Section 6) addressing pressure issues within the system by adding pressure reducing valves and realigning pressure zones.

4. Hydrogeology

4.1 Regional Hydrogeology

In 2001, John Shomaker & Associates, Inc. (JSAI) completed the report *Hydrogeology, Ground-Water Flow Model, and Model-Based Predictions of Drawdown and Streamflow Depletion: Eldorado Area, Santa Fe County, New Mexico* (JSAI, 2001). The following discussion of hydrogeology of the region is from the executive summary of that report:

> The Eldorado area occupies part of the San Marcos watershed, and the Galisteo basin. It is part of the Rio Grande administrative basin, declared by the State Engineer. The aquifer system that supplies the older wells in Eldorado is the Santa Fe group, consisting of geologically young valley-fill and alluvial-fan material, overlying older bedrock units. Bedrock strata beneath the

Santa Fe group dip southwesterly into the Santa Fe embayment, which is rimmed on the north and east by outcrops of very old (Precambrian-age) rocks in the Sangre de Cristo mountain range. The permeability of Santa Fe group beds varies widely, depending on the clay content of the beds.

Older bedrock units, particularly the Madera Limestone, also provide water to wells. Several, but not all, of the wells completed in the Madera (such as Eldorado Utilities Wells 13, 14, and 15) have relatively high yields because of the solution-enhancement of permeability, but the volume of water in storage in the unit seems likely to be a relatively small extension of the supply stored in the overlying Santa Fe group. Other bedrock units, particularly relatively permeable sandstone beds, may someday provide significant supplies, but have not been yet shown to be prolific producers.

The small body of alluvium in the Galisteo Creek valley is recharged when the creek is flowing, but has little storage volume; the amount of water that can be held, east of the position of Highway 285 to Lamy, is about 1,145 ac-ft. A much smaller amount can be practically, and legally, produced from existing wells. Eldorado Utilities Wells 9, 10, and 11 produce efficiently from the alluvium, but yields of these wells decline rapidly each year as the supply in storage is exhausted.

The Santa Fe embayment, mentioned above, may be thought of as a geologic trough, lying south of Santa Fe and opening to the north and northwest into the Rio Grande structural trough. Bedrock units form a basin, filled with young valley-fill and alluvial-fan materials, and with young volcanic rocks. Several known, and inferred, faults cut the sequence of geologic units within the embayment; the faults are believed to have an important influence on the flow of groundwater.

Recharge to the aquifer system occurs in several ways: as leakage from certain reaches of the Santa Fe River, Galisteo Creek, and major arroyos, as leakage from minor arroyos, and through factures along the Sangre de Cristo mountain front. There is also some direct recharge of precipitation in the Cerrillos uplands.

In 2007, EAWSD hired Glorieta Geoscience, Inc. (GGI) to complete an extensive hydrologic and groundwater modeling study. Table 7 summarizes some of the lithologic units contributing water to EAWSD wells, as detailed by that report (GGI, 2007).

Table 7. Hydrologic Characteristics of Geologic Units in the Eldorado Area

Geologic Age	Geologic Unit	Estimated Saturated Thickness (feet)	Typical Well Yields (gpm)	District Wells [a]
Quaternary	Alluvium (Galisteo Creek)	0 to 80	25 to >200	9, 10
Quaternary/Tertiary	Ancha-Tesque Fm.	0 to 100	25 to >200	1, 2A, 2B, 6, 7
Tertiary	Espinaso/Galisteo Fm.	0 to 1,000	<1 to 25	6
Permian	Sangre de Cristo Fm.	0 to 500	<1 to 20	8
Pennsylvanian/Permian	Madera Fm. limestone - highly fractured (± solution-enhanced)	0 to 200	25 to 250	13, 14, 15, 19
Pennsylvanian/Permian	Madera Fm. limestone - fractured	0 to 800	<15	3, 4, 8
Precambrian	Precambrian-fractured	0 to >800	<1 to 15	5, 12
Precambrian	Precambrian-highly fractured	0 to 600	80 to 120	17, 18

[a] Updated by EAWSD in July 2016
gpm = Gallons per minute

4.2 Water Sources

4.2.1 Source Water Quality

EAWSD is an all groundwater system. EAWSD uses a 10 percent sodium hypochlorite solution to disinfect drinking water in the distribution system to residual chlorine levels of less than 1 ppm. No other treatment of the good-quality groundwater has been required.

Appendix C provides EAWSD water quality or consumer confidence reports (CCRs) for 2011 through 2015. No contamination events were reported in any of these years.

SMA (2013) previously found that water quality within the distribution system was being negatively impacted by excessive water age in all six storage tanks:

> Excessive water age within water storage reservoirs can cause a number of chemical, biological and physical water quality concerns including: formation of disinfection by-products (DBPs), reduction in residual disinfectant, bacterial growth, pathogen contamination, nitrification, temperature stratification, and taste and odor issues, These issue can be affected by the ways water is supplied to the reservoirs, fluctuations in the tank levels, and effectiveness of mixing within the reservoirs.

Large volumes of excess storage can result in excessive water age and cause deterioration in water quality. Circulation of water throughout the reservoirs is important and can assist in the control of water quality issues related to excessive water age in water storage reservoirs with high storage volume compared to demand. In order to ensure proper mixing and avoid problems with excessive water age, reservoirs are often constructed with separate inlet/outlet piping, internal baffling, and/or inactive/active mixing systems. The storage tanks in the EAWSD do not have these components and may experience excessive water aging during low demand periods.

In 2007, ID Modeling performed a preliminary water age analysis on the existing water storage reservoirs and found excessively high water age in all of them; over 45 days in Tank 3, about 10 days in Tanks 1, 1A, 2 and 2A, and under 6 days in Tank 4. During the winter, reservoirs are already operated at roughly 50% of capacity to prevent excessive water age. This reduced capacity results in emergency storage volumes of between two to four days, roughly similar to summer storage when they are operated approximately 90% of capacity. Storage volumes year-round are still excessive for this system and can result in excessive water aging when they exceed two days of storage.

Water quality issues related to excessive water age often come as a result of incomplete water mixing within the reservoirs. EAWSD reservoirs have a single pipe serving as both the inlet and outlet, or a single inlet and single outlet configuration resulting in either limited mixing near the combination inlet outlet, or “short circuiting” due to the single inlet outlet configuration. Due to the lack of mixing systems or internal baffles in the existing reservoirs, there is a potential for water age related problems within the reservoirs.

Since 2013, EAWSD has addressed the aging issue operationally by reducing tank levels in the winter months and by fluctuating tank levels to a greater extent.

4.2.2 Measured Water Levels and Production Rates

Table 2 provides static water levels for all active and inactive wells.

Table 8 shows 2015 production statistics for EAWSD’s 10 active wells.

Table 8. 2015 Production Data for Active Wells

Well	Pumping Rate (gpm)	Total 2015 Production (acre-feet)	% of Total Production
Well 2B	70	30.51	6.7
Well 6	15	4.29	0.9
Well 7	30	7.01	1.5
Well 8	25	5.25	1.2
Well 9 [a]	120	0.00	0.0
Well 10 [a]	80	0.00	0.0
Well 14	140	70.89	15.6
Well 15	220	114.32	25.2
Well 17	85	66.89	14.8
Well 18	185	154.15	34.0
Total	970	453.31	100.0

[a] Well produces only in "wet" year
gpm = Gallons per minute

Of the 10 wells, 6 have pumping rates less than 100 gpm (wells 2B, 6, 7, 8, 10 and 17), 3 have pumping rates between 100 and 200 gpm (wells 9, 14, and 18), and 1 has a pumping rate over 200 gpm (Well 15). Well 18 produced 34 percent of EAWSD's total annual production in 2015, followed by Well 15 with 25 percent.

5. EAWSD Water Production

According to CH2M (2016), in a "wet" year the current system is capable of sustained production of about 835,000 gpd and maximum production of 1.4 million gallons per day (mgd). This capacity will increase to approximately 985,000 gpd sustained production and 1.6 mgd maximum production when the two in-progress wells are added to the system. In a "dry" year, these numbers drop with the loss of production from wells 9 and 10, which are drilled into the Galisteo Creek alluvium and are dependent on sufficient runoff in the creek. In a "dry" year, the current system is capable of sustained production of about 665,000 gpd and maximum production of 1.1 mgd. EAWSD defines "sustained" production to mean wells operating 60 percent of the time and resting/recovering 40 percent of the time, typically on a daily cycle.

In the last 12 years (2004–2015), EAWSD's water production has ranged from 476 ac-ft/yr (2015) to 593 ac-ft/yr (2004), with an average of 536 ac-ft/yr. During this time period, the number of connections served has stayed relatively constant, growing from 2,819 connections in 2004 to 2,971 connections in 2015, an increase of just 152 connections in 11 years. From 2004 through 2015, the average monthly water production per connection was 4,989 gallons. Production per connection was reduced during this period due to conservation efforts by customers and the implementation of a tiered rate structure in 2009. Table 9 shows EAWSD's annual production and average production per connection from 2004 through 2015.

EAWSD experiences seasonal demand. In the winter, daily water production to meet demand averages approximately 400,000 gpd. In the summer, the average daily production is between 600,000 and 700,000 gpd, with peak production having reached over 1,000,000 gpd.

Table 9. Annual Production and Average Production per Connection, 2004–2015

Year	Production		Number of Connections	Average Production per Connection	
	ac-ft/yr	million gallons		ac-ft/yr	gallons per month
2004	593	193	2,819	0.210	5,712
2005	571	186	2,862	0.200	5,418
2006	534	174	2,900	0.184	5,000
2007	574	187	2,925	0.196	5,329
2008	568	185	2,930	0.194	5,264
2009	528	172	2,936	0.180	4,883
2010	516	168	2,937	0.176	4,771
2011	544	177	2,924	0.186	5,052
2012	528	172	2,930	0.180	4,893
2013	500	163	2,943	0.170	4,613
2014	498	162	2,950	0.169	4,584
2015	476	155	2,971	0.160	4,351

ac-ft/yr = Acre-feet per year

6. Water Supply Changes and Impacts

6.1 Historical Change and Impacts

EAWSD began operating the water system in December 2004. Between December 2004 and December 2015, the number of connections increased by approximately 5 percent in 11 years, while the total water system production decreased by nearly 20 percent. This trend indicates the success of water conservation measures and EAWSD's tiered rate structure.

While overall growth in the area is projected to be low (0.61 percent annually) over the next 20 years, there is potential for additional future water connections. In the northwest part of the EAWSD service area (the "Welled Area"), new connections may occur if residents switch from use of private wells to connecting to EAWSD's system (SMA, 2013). The existing infrastructure is not able to support many new customers in this part of the service area, and infrastructure would need to be added to support new connections. In addition, new connections may occur through lot splits, development of infill lots, and expansion of EAWSD infrastructure to serve new land parcels and subdivisions. Most of the infrastructure required to serve any new developments would be furnished by the developers.

6.2 Need for Future Water Sources

In 2007, GGI conducted a comprehensive hydrologic study for the EAWSD to evaluate the amount of available groundwater. The executive summary lists the following six specific findings (GGI, 2007):

- The District can meet its management objective of producing 600 afy (plus 200 gpm reserve capacity) with the addition of 6 new wells. Most of the wells are required by 2026.

- The available geohydrologic data indicate that the District should be able to extend its well field outwards, to a modest degree, and deeper to obtain sufficient groundwater to maintain acceptable levels of service to its existing customer base.

- Approximately 10% of the District's average daily production will continue to be provided by low to moderate (10-20 gpm) yield wells.

- The projected 100-year drawdowns resulting from the District's well diversions are localized, not regional, with effects of typically less than 1.5 miles.

- The District will continue to "mine" groundwater from the aquifers underlying its wells at a rate faster than the aquifers can be replenished by groundwater inflow from the surrounding areas. Older wells will go dry or become marginalized due to low production (Wells 1, 6, 12 and 13) over the 100-year period.

- Adding new wells will allow the District to reduce pumping from its older wells, thereby extending their service life. These older, low yield wells (<10 gpm) will still be available for monitoring, peaking use, and meeting unforeseen contingencies.

The 2007 GGI study results, which indicate at least 100 years of groundwater supply in the area at EAWSD's target production rate of 600 ac-ft/yr or less, were encouraging; however, EAWSD is committed to water conservation efforts, proactive water planning and wellfield management.

EAWSD has an active CIP. The following projects are recently completed, underway, or being planned:

- Completed projects
  - Addition of Wells 17 and 18
  - Rehabilitation of prime production wells
  - Old Road Booster Pump Station
  - SCADA improvements project
  - Torreon Booster Pump Station replacement
  - Well No. 2 redrill/replacement project
  - Phase 1 of pressure zone optimization project
  - Well 19 exploratory well

- Active projects
  - Meter replacement project

  - Pressure zone optimization project
  - Well 19 production facilities
  - Well 2A/2B dual production project

- Future potential projects
  - Adding new productions wells, as needed
  - SCADA additions project
  - Well, tank, and booster station improvements
  - Transmission infrastructure upgrades
  - Distribution line replacement
  - Santa Fe County regional intertie project
  - Combined facilities project

7. Source Water Protection Area

Per NMED recommendations in the *New Mexico Source Water and Wellhead Protection Toolkit* (NMED DWB, 2013), an SWPA is defined as the area within a 1-mile radius of each groundwater well. In this plan, the SWPAs are subdivided into four buffer zones:

- Zone A: radius of 0 to 200 feet from the water source
- Zone B: radius of 201 to 500 feet from the water source
- Zone C: radius of 501 to 1,000 feet from the water source
- Zone D: radius of 1,001 to 5,280 feet from the water source

These “zones” are buffer zones around a wellhead for protection from potential contamination from sources at or near the surface. In the 2002 source water assessment for the utility that previously owned the EAWSD water system, NMED used only three zones: Zones A through C. These zones were “established on the basis of the amount of time required for a hypothetical ‘slug’ of contaminated water to travel from a contaminant source to the well bore.” NMED used the U.S. EPA’s Wellhead Analytical Element Model (WhAEM) to determine these zones. Zone C is defined by estimated contaminant travel times of 5 to 10 years. Zone B is defined by estimated travel times of 2 to 5 years. Zone A is defined as a circle around the wellhead having

a radius of 200 feet. See the 2002 source water assessment (Appendix A) for NMED's methodology.

Zone D has been added to this plan per the updated NMED recommendations (NMED DWB, 2013) requiring a SWPA with a 1-mile radius. For conservative planning purposes, Zone D is useful in alerting water systems to additional possible contamination sources.

DBS&A requested and received geographical information system (GIS) data used in NMED DWB's Source Water Protection Atlas (NMED DWB, 2016), an interactive mapping tool that contains active and inactive drinking water sources, regulated sites, and other information. These GIS data were used to generate maps showing EAWSD's SWPAs and potential sources of contamination (PSOCs), not including residential septic systems (Figure 3). GIS data for septic systems (map code RSF) were not included in any of the state's databases. Because no sewer service is available in the area, RSF sites were assumed for each building using aerial imagery from the U.S. Department of Agriculture (USDA) National Agriculture Imagery Program (NAIP) (dated 2014) (Figure 4).

8. Assessment of Potential Contamination Sources

For purposes of this plan, PSOCs are defined as any possible site or event that could, under any circumstance and time frame, lead to contamination of a water system's sources. Not all sites identified as PSOCs pose the same level of risk. Due to geology and well construction, some PSOCs may pose little to no contamination risk, while others may pose an imminent threat. The susceptibility analysis evaluates the risk PSOCs pose to each wellhead.

Several different resources were used to compile a list of all possible PSOCs within the water system's SWPAs. The Source Water Protection Atlas is a database maintained by the NMED DWB (2016) containing information on sites that are registered with the state, such as wastewater discharge permits and fuel storage tanks. Because information included in the Source Water Protection Atlas is not inclusive of all potential sources of contamination, the assessment also included the EPA interactive map (U.S. EPA, 2016), geologic reports, previous reports provided by EAWSD, and input from the Source Water Protection Team and the public.

PSOCs can be either naturally occurring or human-caused. No known natural contaminants are known to exist in EAWSD's SWPAs. NMED has compiled an extensive list of human-caused PSOCs (Appendix D), with each assigned a unique three-letter map code. In Appendix D, the highlighted categories signify the sources that are not included in the Source Water Protection Atlas. The highlighted PSOCs include commercial uses such as auto salvage, and municipal/residential uses such as drainage features and detention/retention ponds. Those human-caused PSOCs known to occur in EAWSD's SWPAs are listed in Table 10.

Table 10. Human-Caused Potential Sources of Contamination Occurring within EAWSD's SWPAs

Map Code	Land Use	Description	Contaminants of Concern
AMA	Manure or livestock waste - land application areas	Land application of manure	Nitrate, ammonia, phosphate, chloride, pathogens, pharmaceuticals
ARL	Animal rangeland	Rangeland and pasturage	Nitrate, ammonia, phosphate, chloride, pesticides, pathogens
Arroyo	Ephemeral stream	Runoff and infiltration	Pesticides, herbicides, fertilizers, nitrate, pathogens
CFA	Fuel storage tanks - above ground	Non-service station tanks	Gasoline, diesel fuel, organic/ inorganic chemicals
CSS	Gasoline service stations	Above/below ground storage tanks/operations	Gasoline, oils, solvents, automotive wastes, septage
IRY	Railyard, railroad tracks, or rail siding	Train depot, yard maintenance facility or railroad right-of-way	Metals, acids, bases, waste fuels, oils, lubricants and coolants, miscellaneous organic/inorganic chemicals
MCC	Community or senior citizens center/library - unsewered	On-site liquid waste disposal system or cesspool	Septage, pathogens, nitrate, ammonia, chloride, heavy metals, lawn/garden products, household cleaning agents, solvents
MMP	Motor pools	Operations/maintenance/ storage/disposal	Gasoline, diesel fuel, oils, waste oils, automotive waste, batteries, metals
MPW	Polluted surface water sources	Naturally occurring/anthropogenic	Sewage, pathogens, nitrate, metals, acids, bases, organic/inorganic chemicals
MRP	Primary road, highway, or arterial	Public street, thoroughfare, highway, or main road	Gasoline, diesel fuels, metals, storm water runoff, hazardous materials, radiological materials
PDW	Private domestic well	Private well that is registered with the Office of the State Engineer	Conduit for any contaminant to enter aquifer
RSF	Single-family residence - unsewered	Wastewater discharged to septic tank, or leach field or cesspool	Septage, pathogens, nitrate, ammonia, chloride, heavy metals, household pesticides, herbicides, cleaning agents and solvents, fuels

In addition to the 12 human-caused PSOCs listed in Table 10, there are five active wastewater discharge permits and one wastewater discharge permit in the application phase that are located within EAWSD's SWPAs.

- Active wastewater discharge permits
  - Eldorado Community School
  - Agora Shopping Center
  - Rancho de Bosque
  - Lamy Town Center Wastewater System
  - La Tienda at Eldorado

- Wastewater discharge permit in the application phase
  - Cimarron Village Wastewater Treatment Plant

Cimarron Village has applied for NMED discharge permit 1838 (DP-1838), which proposes a new disposal field to mitigate wastewater effluent created by the development. The disposal field site is located in Zone D of Well 12 (inactive), Zone C of Well 17, and Zone B of Well 18. EAWSD has serious concerns about the current location and plans for the disposal field, as outlined in the following excerpt from a letter from EASWD to NMED (Appendix F):

> The Eldorado Area Water and Sanitation District (EAWSD; the District) is providing these comments on the Draft Discharge permit (DP-1838) for Cimarron Village. The District has serious concerns over the future water quality of the fractured granite aquifer in the vicinity of EAWSD Wells 17 and 18 due to the proposed discharge plan (DP-1838) for Cimarron Village. A preliminary review of the Discharge Permit by hydrologists at Glorieta Geoscience, Inc. on behalf of EAWSD has revealed several concerns, with the most serious being that the discharge permit is not protective of ground water quality, and approval of the permit will lead to contamination of the aquifer in which EAWSD Public Water Supply (PWS) Wells 17 and 18 are completed. The District therefore respectfully requests a public hearing on the discharge permit to address the concerns over potential for contamination of the aquifer that is tapped by EAWSD Wells 17 and 18.
>
> 1) Potential to contaminate the aquifer: Draft DP-1838 proposes to dispose of 30,000 gallons per day of treated effluent into a disposal field with an area of approximately 25,600 square feet. This

means that every day approximately 1.2 gallons of effluent will be applied per 1 square foot of the field. The purpose of a disposal field is to infiltrate effluent into the ground to prevent ponding of effluent on the surface. The DP uses the liquid waste disposal regulations to design the disposal field. These regulations are not protective of the aquifer below the disposal field and are not appropriate for a 30,000 gallon per day discharge.

a) The disposal field is located up-gradient of two EAWSD PWS wells (Wells 17 and 18).

b) The disposal field is situated in an area of predominantly sand and gravel alluvium over a fractured bedrock aquifer.

c) Water level monitoring conducted by EAWSD at the request of the Office of the State Engineer (OSE) in the vicinity of Wells 17 and 18, which includes five domestic wells, shows that the entire area of the Cimarron Village development is within the aquifer cone of depression of the EAWSD PWS Wells 17 and 18.

d) EAWSD PWS Wells 17 and 18 well logs show that the lithology penetrated by the wells consists of primarily sand and gravel overlying the fractured Precambrian granite. There are no significant clay layers above the aquifer and the aquifer is unconfined. This configuration will allow any surface application of effluent to quickly travel through the unsaturated zone and into the aquifer. Fractures in the bedrock connect the PWS wells directly to the aquifer beneath the proposed disposal field.

e) The EAWSD isotope study, which included sampling from EAWSD Wells 17 and 18, showed that the ground water in these wells is less than 10 years old, indicating that these wells are recharge dependent and the recharge to the fractured Precambrian granite is rapid. Recharge dependent wells are at risk from near surface sources of contamination due to the relatively short travel time from the recharge are to the well.

8.1 Susceptibility Ranking

To assess potential contamination risks to a system's water sources, susceptibility rankings have been assigned to each water source. Each well is assigned a susceptibility ranking of low, moderately low, moderate, moderately high, or high based on professional opinion from the available well, aquifer, and PSOC information. These rankings are meant to serve only as a method to identify and prioritize risks to a system's water sources for planning purposes. Susceptibility of a water system to sources of contamination is defined in terms of both a well's vulnerability and sensitivity.

8.1.1 Vulnerability

Vulnerability ranking is based on an inventory of the type, number, and proximity of PSOCs near a water source, and a subjective ranking based on that inventory. Vulnerability rankings of low, moderately low, moderate, moderately high, or high have been assigned. Table 11 summarizes the PSOC occurrence by zone for each of EAWSD's wellheads and shows the wellhead's assigned vulnerability ranking. Note that because Wells 2A and 2B are located so close together, their SWPAs are effectively the same and they have been listed together in this table.

For EAWSD, septic systems, domestic wells, arroyos, roadways, railyards, and Eldorado Community Improvement Association (ECIA) horse stables are the most notable PSOC types, as follows:

- There are 2,825 septic systems mapped in EAWSD's SWPAs, by far the most common PSOC type; EAWSD reports that there are more than 3,500 septic systems within the EAWSD service area. However, the risk of septic systems is mitigated by several factors. Septic systems are typically installed only 3 to 5 feet below the ground surface. When a septic system's leach field is not operating properly, the effluent will surface, rather than percolate down toward the aquifer. In the event of a septic system failure, the geology of the area provides a safeguard. In the Central Well Field, there is a dry zone of clay-rich soil 50 to 150 feet thick between the ground surface and aquifer, which protects groundwater from surface contamination, including septic system leakage (Cooper, 2016). Given this geology, the septic systems located in the Galisteo Creek alluvium and those located near arroyos pose the greatest cause for concern.

- Private domestic wells can act as a conduit for contaminants to directly reach the aquifer.

- Arroyos catch and transport runoff. Furthermore, the geology of arroyos may facilitate percolation of contaminants to the groundwater.

- Roadways and railyards provide opportunity for vehicle-related and industrial runoff.

Table 11. Potential Sources of Contamination for EAWSD Wells
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Buffer Zone	PSOC Code	PSOC Description	Actual (A) or Potential (P) Contamination	Number of Occurrences	Percentage within Well's SWPA (%)	Vulnerability Ranking	Explanation of Vulnerability Rating
Well 1							
A	RSF	Single-family residence - unsewered	P	1	0.3	High	• PSOC occurrence in Zone A • High number of private domestic wells • High number of septic tanks • Arroyo in SWPA
B	PDW	Private domestic well	P	1	0.3		
	RSF	Single-family residence - unsewered	P	5	1.4		
C	Arroyo	Ephemeral stream	P	1	0.3		
	PDW	Private domestic well	P	7	2.0		
	RSF	Single-family residence - unsewered	P	17	4.8		
D	Arroyo	Ephemeral stream	P	1	0.3		
	PDW	Private domestic well	P	82	23.4		
	RSF	Single-family residence - unsewered	P	236	67.2		
Well 2A and 2B							
B	PDW	Private domestic well	P	3	0.6	High	• High number of private domestic wells • High number of septic tanks • Arroyo in SWPA
	RSF	Single-family residence - unsewered	P	5	0.9		
C	Arroyo	Ephemeral stream	P	1	0.2		
	PDW	Private domestic well	P	5	0.9		
	RSF	Single-family residence - unsewered	P	17	3.1		
D	Arroyo	Ephemeral stream	P	1	0.2		
	PDW	Private domestic well	P	115	21.2		
	RSF	Single-family residence - unsewered	P	395	72.9		
Well 3							
A	Arroyo	Ephemeral stream	P	1	0.2	High	• PSOC occurrence in Zone A • Some private domestic wells • High number of septic tanks • Arroyo in SWPA
C	PDW	Private domestic well	P	3	0.6		
	RSF	Single-family residence - unsewered	P	20	4.2		

Table 11. Potential Sources of Contamination for EAWSD Wells
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Buffer Zone	PSOC Code	PSOC Description	Actual (A) or Potential (P) Contamination	Number of Occurrences	Percentage within Well's SWPA (%)	Vulnerability Ranking	Explanation of Vulnerability Rating
Well 3 (cont.)							
D	Wastewater discharge permit (active)	El Dorado Community School	P	1	0.2	High	• PSOC occurrence in Zone A • Some private domestic wells • High number of septic tanks • Arroyo in SWPA
	MCC	Community or senior citizens center/library - unsewered	P	1	0.2		
	PDW	Private domestic well	P	9	1.9		
	RSF	Single-family residence - unsewered	P	442	92.7		
Well 4							
A	RSF	Single-family residence - unsewered	P	1	0.2	High	• PSOC occurrence in Zone A • Some private domestic wells • High number of septic tanks • Arroyo in SWPA
B	RSF	Single-family residence - unsewered	P	3	0.7		
C	Arroyo	Ephemeral stream	P	1	0.2		
	RSF	Single-family residence - unsewered	P	6	1.4		
D	Arroyo	Ephemeral stream	P	1	0.2		
	MCC	Community or senior citizens center/library - unsewered	P	1	0.2		
	PDW	Private domestic well	P	11	2.6		
	RSF	Single-family residence - unsewered	P	403	94.4		
Well 5							
A	MCC	Community or senior citizens center/library - unsewered	P	2	0.4	High	• PSOC occurrence in Zone A • Some private domestic wells • High number of septic tanks • Arroyo in SWPA
	RSF	Single-family residence - unsewered	P	1	0.2		
B	PDW	Private domestic well	P	1	0.2		
	RSF	Single-family residence - unsewered	P	5	0.9		
C	Arroyo	Ephemeral stream	P	1	0.2		
	PDW	Private domestic well	P	1	0.2		

Table 11. Potential Sources of Contamination for EAWSD Wells
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Buffer Zone	PSOC Code	PSOC Description	Actual (A) or Potential (P) Contamination	Number of Occurrences	Percentage within Well's SWPA (%)	Vulnerability Ranking	Explanation of Vulnerability Rating
Well 5 (cont.)							
C	RSF	Single-family residence - unsewered	P	10	1.9	High	• PSOC occurrence in Zone A • Some private domestic wells • High number of septic tanks • Arroyo in SWPA
D	Arroyo	Ephemeral stream	P	2	0.4		
	Wastewater discharge permit (active)	El Dorado Community School	P	1	0.2		
	Wastewater discharge permit (active)	Agora Shopping Center	P	1	0.2		
	PDW	Private domestic well	P	14	2.7		
	RSF	Single-family residence - unsewered	P	488	92.6		
Well 6							
B	RSF	Single-family residence - unsewered	P	8	0.9	High	• Moderate number of private domestic wells • High number of septic tanks • Arroyo in SWPA
C	Arroyo	Ephemeral stream	P	1	0.1		
	PDW	Private domestic well	P	3	0.4		
	RSF	Single-family residence - unsewered	P	23	2.7		
D	Arroyo	Ephemeral stream	P	1	0.1		
	IRY	Railyard, railroad tracks or rail siding (inactive)	P	1	0.1		
	PDW	Private domestic well	P	17	2.0		
	RSF	Single-family residence - unsewered	P	791	93.6		
Well 7							
B	RSF	Single-family residence - unsewered	P	2	0.3	High	• Some private domestic wells • High number of septic tanks • Arroyo in SWPA
C	RSF	Single-family residence - unsewered	P	21	3.4		
D	Arroyo	Ephemeral stream	P	2	0.3		

Table 11. Potential Sources of Contamination for EAWSD Wells
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Buffer Zone	PSOC Code	PSOC Description	Actual (A) or Potential (P) Contamination	Number of Occurrences	Percentage within Well's SWPA (%)	Vulnerability Ranking	Explanation of Vulnerability Rating
Well 7 (cont.)							
D	IRY	Railyard, railroad tracks or rail siding (inactive)	P	1	0.2	High	• Some private domestic wells • High number of septic tanks • Arroyo in SWPA
	PDW	Private domestic well	P	11	1.8		
	RSF	Single-family residence - unsewered	P	575	94.0		
Well 8							
A	Arroyo	Ephemeral stream	P	1	0.3	High	• PSOC occurrence in Zone A • Moderate number of private domestic wells • High number of septic tanks • Horse stables/burials within SWPA • Arroyo in SWPA
B	RSF	Single-family residence - unsewered	P	1	0.3		
C	RSF	Single-family residence - unsewered	P	14	4.4		
D	AMA	Horse stables	P	1	0.3		
	Arroyo	Ephemeral stream	P	2	0.6		
	Wastewater discharge permit (active)	Rancho de Bosque	P	1	0.3		
	MRP	Primary road, highway, or arterial	P	1	0.3		
	PDW	Private domestic well	P	24	7.5		
	RSF	Single-family residence - unsewered	P	273	85.8		
Well 9							
A	ARL	Animal rangeland	P	1	1.0	Moderate	• PSOC occurrence in Zone A • Moderate number of private domestic wells • Moderate number of septic tanks • Arroyo in SWPA
	Arroyo	Ephemeral stream	P	1	1.0		
D	ARL	Animal rangeland	P	1	1.0		
	Arroyo	Ephemeral stream	P	4	3.9		
	Wastewater discharge permit (active)	Lamy Town Center Wastewater System	P	1	1.0		

Table 11. Potential Sources of Contamination for EAWSD Wells
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Buffer Zone	PSOC Code	PSOC Description	Actual (A) or Potential (P) Contamination	Number of Occurrences	Percentage within Well's SWPA (%)	Vulnerability Ranking	Explanation of Vulnerability Rating
Well 9 (cont.)							
D	IRY	Railyard, railroad tracks or rail siding	P	1	1.0	Moderate	• PSOC occurrence in Zone A • Moderate number of private domestic wells • Moderate number of septic tanks • Arroyo in SWPA
	MRP	Primary road, highway, or arterial	P	1	1.0		
	PDW	Private domestic well	P	24	23.3		
	RSF	Single-family residence - unsewered	P	69	67.0		
Well 10							
A	Arroyo	Ephemeral stream	P	1	0.6	High	• PSOC occurrence in Zone A, one of which is an industrial land use • Moderate number of private domestic wells • Moderate number of septic tanks • Arroyo in SWPA
	IRY	Railyard, railroad tracks or rail siding	P	1	0.6		
B	ARL	Animal rangeland	P	1	0.6		
C	Arroyo	Ephemeral stream	P	2	1.3		
	PDW	Private domestic well	P	4	2.5		
	RSF	Single-family residence - unsewered	P	1	0.6		
D	ARL	Animal rangeland	P	2	1.3		
	Arroyo	Ephemeral stream	P	5	3.2		
	Wastewater discharge permit (active)	Lamy Town Center Wastewater System	P	1	0.6		
	IRY	Railyard, railroad tracks or rail siding	P	1	0.6		
	MPW	Polluted surface water sources	P	1	0.6		
	MRP	Primary road, highway, or arterial	P	1	0.6		
	PDW	Private domestic well	P	27	17.2		
	RSF	Single-family residence - unsewered	P	109	69.4		

Table 11. Potential Sources of Contamination for EAWSD Wells
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Buffer Zone	PSOC Code	PSOC Description	Actual (A) or Potential (P) Contamination	Number of Occurrences	Percentage within Well's SWPA (%)	Vulnerability Ranking	Explanation of Vulnerability Rating
Well 12							
A	Arroyo	Ephemeral stream	P	1	0.2	High	• PSOC occurrence in Zone A • Moderate number of private domestic wells • High number of septic tanks • Horse stables/burials within SWPA • Arroyo in SWPA
	RSF	Single-family residence - unsewered	P	1	0.2		
B	CFA	Fuel storage tanks - above ground (inactive)	P	1	0.2		
	MMP	Motor pools	P	1	0.2		
	RSF	Single-family residence - unsewered	P	3	0.5		
C	AMA	Horse stables	P	1	0.2		
	MRP	Primary road, highway, or arterial	P	1	0.2		
	RSF	Single-family residence - unsewered	P	8	1.4		
D	Arroyo	Ephemeral stream	P	2	0.4		
	CSS	Gasoline service stations	P	1	0.2		
	Wastewater discharge permit (active)	Agora Shopping Center	P	1	0.2		
	Wastewater discharge permit (active)	La Tienda at Eldorado	P	1	0.2		
	Wastewater discharge permit (applied)	Cimarron Village Wastewater Treatment Plant	P	1	0.2		
	PDW	Private domestic well	P	21	3.8		
	RSF	Single-family residence - unsewered	P	509	92.0		

Table 11. Potential Sources of Contamination for EAWSD Wells
Page 7 of 11

Buffer Zone	PSOC Code	PSOC Description	Actual (A) or Potential (P) Contamination	Number of Occurrences	Percentage within Well's SWPA (%)	Vulnerability Ranking	Explanation of Vulnerability Rating
Well 13							
A	RSF	Single-family residence - unsewered	P	2	0.2	High	• PSOC occurrence in Zone A • Some private domestic wells • High number of septic tanks • Horse stables/burials within SWPA • Arroyo in SWPA
B	RSF	Single-family residence - unsewered	P	7	0.8		
C	RSF	Single-family residence - unsewered	P	29	3.2		
D	AMA	Horse stables	P	1	0.1		
	Arroyo	Ephemeral stream	P	3	0.3		
	CFA	Fuel storage tanks - above ground (inactive)	P	1	0.1		
	Wastewater discharge permit (active)	Agora Shopping Center	P	1	0.1		
	Wastewater discharge permit (active)	La Tienda at Eldorado	P	1	0.1		
	Wastewater discharge permit (active)	El Dorado Community School	P	1	0.1		
	IRY	Railyard, railroad tracks or rail siding (inactive)	P	1	0.1		
	MCC	Community or senior citizens center/library - unsewered	P	2	0.2		
	MMP	Motor pools	P	1	0.1		
	MRP	Primary road, highway, or arterial	P	1	0.1		
	PDW	Private domestic well	P	13	1.4		
	RSF	Single-family residence - unsewered	P	856	93.0		

Table 11. Potential Sources of Contamination for EAWSD Wells
Page 8 of 11

Buffer Zone	PSOC Code	PSOC Description	Actual (A) or Potential (P) Contamination	Number of Occurrences	Percentage within Well's SWPA (%)	Vulnerability Ranking	Explanation of Vulnerability Rating
Well 14							
A	Arroyo	Ephemeral stream	P	1	0.1	High	• PSOC occurrence in Zone A • Some private domestic wells • High number of septic tanks • Arroyo in SWPA
	MCC	Community or senior citizens center/library - unsewered	P	2	0.2		
B	PDW	Private domestic well	P	2	0.2		
	RSF	Single-family residence - unsewered	P	4	0.4		
C	Wastewater discharge permit (active)	El Dorado Community School	P	1	0.1		
	PDW	Private domestic well	P	1	0.1		
	RSF	Single-family residence - unsewered	P	18	1.8		
D	Arroyo	Ephemeral stream	P	2	0.2		
	IRY	Railyard, railroad tracks or rail siding (inactive)	P	1	0.1		
	MCC	Community or senior citizens center/library - unsewered	P	1	0.1		
	PDW	Private domestic well	P	10	1.0		
	RSF	Single-family residence - unsewered	P	951	95.7		
Well 15							
B	RSF	Single-family residence - unsewered	P	7	0.8	High	• Some private domestic wells • High number of septic tanks • Horse stables/burials within SWPA • Arroyo in SWPA
C	RSF	Single-family residence - unsewered	P	24	2.8		
D	AMA	Horse stables	P	1	0.1		
	Arroyo	Ephemeral stream	P	2	0.2		
	CFA	Fuel storage tanks - above ground (inactive)	P	1	0.1		

Table 11. Potential Sources of Contamination for EAWSD Wells
Page 9 of 11

Buffer Zone	PSOC Code	PSOC Description	Actual (A) or Potential (P) Contamination	Number of Occurrences	Percentage within Well's SWPA (%)	Vulnerability Ranking	Explanation of Vulnerability Rating
Well 15 (cont.)							
D	Wastewater discharge permit (active)	El Dorado Community School	P	1	0.1	High	• Some private domestic wells • High number of septic tanks • Horse stables/burials within SWPA • Arroyo in SWPA
	Wastewater discharge permit (active)	La Tienda at Eldorado	P	1	0.1		
	MCC	Community or senior citizens center/library - unsewered	P	2	0.2		
	MMP	Motor pools	P	1	0.1		
	MRP	Primary road, highway, or arterial	P	1	0.1		
	PDW	Private domestic well	P	13	1.5		
	RSF	Single-family residence - unsewered	P	812	93.8		
Well 17							
A	Arroyo	Ephemeral stream	P	1	0.2	High	• PSOC occurrence in Zone A • Moderate number of private domestic wells • High number of septic tanks • Horse stables/burials within SWPA • Arroyo in SWPA
B	MRP	Primary road, highway, or arterial	P	1	0.2		
	PDW	Private domestic well	P	1	0.2		
	RSF	Single-family residence - unsewered	P	1	0.2		
C	CSS	Gasoline service stations	P	1	0.2		
	Wastewater discharge permit (applied)	Cimarron Village Wastewater Treatment Plant	P	1	0.2		
	PDW	Private domestic well	P	1	0.2		
	RSF	Single-family residence - unsewered	P	11	2.3		

Table 11. Potential Sources of Contamination for EAWSD Wells
Page 10 of 11

Buffer Zone	PSOC Code	PSOC Description	Actual (A) or Potential (P) Contamination	Number of Occurrences	Percentage within Well's SWPA (%)	Vulnerability Ranking	Explanation of Vulnerability Rating
Well 17 (cont.)							
D	AMA	Horse stables	P	1	0.2	High	• PSOC occurrence in Zone A • Moderate number of private domestic wells • High number of septic tanks • Horse stables/burials within SWPA • Arroyo in SWPA
	CFA	Fuel storage tanks - above ground (inactive)	P	1	0.2		
	Wastewater discharge permit (active)	Agora Shopping Center	P	1	0.2		
	Wastewater discharge permit (active)	La Tienda at Eldorado	P	1	0.2		
	MMP	Motor pools	P	1	0.2		
	MRP	Primary road, highway, or arterial	P	1	0.2		
	PDW	Private domestic well	P	31	6.6		
	RSF	Single-family residence - unsewered	P	415	88.3		
Well 18							
A	RSF	Single-family residence - unsewered	P	1	0.2	High	• PSOC occurrence in Zone A • Moderate number of private domestic wells • High number of septic tanks • Horse stables/burials within SWPA • Arroyo in SWPA
B	Wastewater discharge permit (applied)	Cimarron Village Wastewater Treatment Plant	P	1	0.2		
C	Arroyo	Ephemeral stream	P	1	0.2		
	MRP	Primary road, highway, or arterial	P	1	0.2		
	RSF	Single-family residence - unsewered	P	3	0.7		
D	AMA	Horse stables	P	1	0.2		
	CFA	Fuel storage tanks - above ground (inactive)	P	1	0.2		
	CSS	Gasoline service stations	P	1	0.2		

Table 11. Potential Sources of Contamination for EAWSD Wells
Page 11 of 11

Buffer Zone	PSOC Code	PSOC Description	Actual (A) or Potential (P) Contamination	Number of Occurrences	Percentage within Well's SWPA (%)	Vulnerability Ranking	Explanation of Vulnerability Rating
Well 18 (cont.)							
D	Wastewater discharge permit (active)	Agora Shopping Center	P	1	0.2	High	• PSOC occurrence in Zone A • Moderate number of private domestic wells • High number of septic tanks • Horse stables/burials within SWPA • Arroyo in SWPA
	Wastewater discharge permit (active)	La Tienda at Eldorado	P	1	0.2		
	MMP	Motor pools	P	1	0.2		
	MRP	Primary road, highway, or arterial	P	1	0.2		
	PDW	Private domestic well	P	48	11.5		
	RSF	Single-family residence - unsewered	P	354	85.1		
Well 19							
A	Arroyo	Ephemeral stream	P	1	0.1	High	• PSOC occurrence in Zone A • Some private domestic wells • High number of septic tanks • Horse stables/burials within SWPA • Arroyo in SWPA
B	RSF	Single-family residence - unsewered	P	4	0.6		
C	RSF	Single-family residence - unsewered	P	20	3.0		
D	AMA	Horse stables	P	1	0.1		
	Arroyo	Ephemeral stream	P	2	0.3		
	CFA	Fuel storage tanks - above ground	P	1	0.1		
	Wastewater discharge permit (active)	La Tienda at Eldorado	P	1	0.1		
	MMP	Motor pools	P	1	0.1		
	MRP	Primary road, highway, or arterial	P	1	0.1		
	PDW	Private domestic well	P	9	1.3		
	RSF	Single-family residence - unsewered	P	627	93.9		

- The ECIA horse stables are notable in the EAWSD's SWPAs because significant historical and current horse burial has occurred at this site. This site also conducts manure composting, which, in the absence of proper controls, can contribute to contaminated runoff.

The number of PSOC occurrences is another consideration in determining the vulnerability of a water source. Well 9 had the least number of PSOCs within its SWPA (103); Well 14 had the most (994). Wells 2A and 2B had over 100 occurrences of private domestic wells (PDW). Wells 1, 2A and 2B, 3, 4, 5, 6, 7, 8, 12, 13, 14, 15, 17, 18, and 19 had over 250 septic systems (RSF) within their SWPAs. Table 12 shows the overall numbers of PSOC occurrence by well.

Table 12. PSOC Occurrences by Well

Well	Number of PSOCs
1	351
2A and 2B	542
3	477
4	427
5	527
6	845
7	612
8	318
9	103
10	157
12	553
13	920
14	994
15	866
17	470
18	416
19	668

The third consideration in vulnerability ranking is proximity to a wellhead. Wells 6, 8, 9, and 10 had PSOC occurrences in Zone A. All wells except for Wells 3 and 9 had PSOC occurrences in Zone B, identified as 200 to 500 feet from the wellhead. Table 13 summarizes the vulnerability rankings assigned to each well.

Table 13. Vulnerability Rankings by Well

Well	Vulnerability Ranking
1	High
2A	High
2B	High
3	High
4	High
5	High
6	High
7	High
8	High
9	Moderately high
10	High
12	High
13	High
14	High
15	High
17	High
18	High
19	High

8.1.2 Sensitivity

Sensitivity is an assessment of well construction and aquifer characteristics. Wells are ranked low, moderately low, moderate, moderately high, or high for sensitivity. Table 14 shows the presence of known construction and/or aquifer concerns by EAWSD well and lists the associated sensitivity ranking.

There is a dry zone of clay-rich soil 50 to 150 feet thick between the ground surface and aquifer, which protects groundwater in the Central Well Field from surface contamination (Cooper, 2016). However, Wells 9 and 10 are located in the Galisteo Creek alluvium, a much shallower water-bearing layer, making these wells more sensitive to potential contamination.

Table 14. Sensitivity Rankings

Well	Well Construction Issues	Aquifer Concerns	Sensitivity Ranking
1	No	No	Low
2A	No	No	Low
2B	No	No	Low
3	No	No	Low
4	No	No	Low
5	No	No	Low
6	No	No	Low
7	No	No	Low
8	No	No	Low
9	No	Yes	Moderate
10	No	Yes	Moderate
12	No	No	Low
13	No	No	Low
14	No	No	Low
15	No	No	Low
17	No	No	Low
18	No	No	Low
19	No [a]	No	Low

[a] Well 19 is currently under construction. Assuming Well 19 is completed according to EAWSD plans, the well will have a low sensitivity ranking when brought online.

Specific well construction and integrity data are provided in Appendix E. EAWSD wells have been designed and built so as to protect against contamination. Seals and concrete pads ensure that surface water cannot enter at the wellhead, and there are security features in place restricting public access and protecting against tampering.

8.1.3 Susceptibility

A well's susceptibility is determined by the combination of its sensitivity and vulnerability rankings. Table 15 summarizes the susceptibility rankings for each well.

Table 15. Susceptibility Rankings by Well

Well	Susceptibility Ranking
1	Moderately low
2A	Moderately low
2B	Moderately low
3	Moderately low
4	Moderately low
5	Moderately low
6	Moderately low
7	Moderately low
8	Moderately low
9	Moderately high
10	Moderately high
12	Moderately low
13	Moderately low
14	Moderately low
15	Moderately low
17	Moderately low
18	Moderately low
19	Moderately low

Wells 9 and 10 in the Galisteo Creek Alluvium Well Field have susceptibility rankings of "moderately high." While these wells have the two lowest total numbers of PSOC occurrence (103 and 157, respectively), the geology surrounding these wells makes them more susceptible if any contamination were to occur in the creek or surrounding areas.

All wells in the Central Well Field have moderately low susceptibility rankings. While there are high occurrences of PSOCs in this well field, the clay-rich dry zone, good well construction, and proper timely maintenance mitigate the risk of contamination.

8.2 Natural Sources of Contamination

No known natural sources of contamination exist within EAWSD's SWPAs.

8.3 Human Sources of Contamination

Table 10 lists all of the human-caused PSOCs found within EAWSD's SWPAs. Section 8.1.1 includes a discussion of the most notable PSOCs in EAWSD's SWPAs.

By far, unsewered single family residences (RSF), or septic systems, are the most common human-caused PSOC in EASWD's SWPAs. Because no sewer services are available in the EAWSD area, nearly every residence and building has its own septic system. However, as discussed previously, the geology of the area, specifically the 50- to 150-foot clay-rich dry zone between the ground surface and groundwater, which is present in the Central Well Field, serves to mitigate much of the risk of septic tank contamination to EAWSD's water sources. The septic systems warranting concern are those located along an arroyo, in an alluvial formation, or near poorly constructed private domestic wells.

Cimarron Village's proposed new wastewater discharge disposal field located in the eastern portion of EAWSD's service area is a major concern for the utility, as discussed at the beginning of Section 8.

While outside of the SWPA for any of EAWSD's wellheads, there is a leaking underground storage tank (LUST) site (Wilfred Padilla Fina) located at the intersection of Old Las Vegas Highway and U.S. Hwy 285, which poses a possible threat to EAWSD aquifers if any wells are drilled in the area, possibly connecting the contamination in the shallow, perched water near the surface to the deeper aquifers. This area is within the recharge area for the aquifers that are tapped by Wells 17 and 18.

9. Source Water Monitoring Plan

EAWSD currently conducts water monitoring at the entry points of the system for heavy metals, radionuclides, synthetic organic contaminants (SOCs), volatile organic compounds (VOCs), cyanide, fluoride, nitrate, and nitrite. Appendix G provides the sampling schedule as shown on the NMED Drinking Water Watch (NMED DWW, 2016).

10. PSOC Monitoring and Control Plan

EAWSD monitors water quality in accordance with state and federal requirements. In addition, EAWSD tests water quality at the individual wells on a regular basis. No additional monitoring of the sources is warranted.

11. Conclusions and Recommended Action Items

The purpose of NMED's Source Water Protection Program is to protect drinking water sources before they become contaminated. Communities choose to voluntarily participate in the program, the culmination of which is the development of a SWPP. The plan inventories and assesses PSOCs within SWPAs—defined areas around the community's water sources.

An SWPA is defined as the area within a 1-mile radius of each groundwater well, subdivided into four buffer zones:

- Zone A: radius of 0 to 200 feet from the water source
- Zone B: radius of 201 to 500 feet from the water source
- Zone C: radius of 501 to 1,000 feet from the water source
- Zone D: radius of 1,001 to 5,280 feet from the water source

PSOCs are defined as any possible site or event that could, under any circumstance and time frame, lead to contamination of a water system's sources. Not all sites identified as PSOCs pose the same level of risk.

PSOCs can be either naturally occurring or human-caused. There are no known natural contaminants in EAWSD's SWPAs; there are 12 types of human-caused PSOCs (Table 10), as well as 5 active wastewater discharge permits and 1 wastewater discharge permit in the application phase.

Each EAWSD well was assigned a susceptibility ranking of low, moderately low, moderate, moderately high, or high. The rankings serve only as a method to identify and prioritize risks to

a system's water sources for planning purposes.

Susceptibility of a water system to sources of contamination is defined in terms of both a well's vulnerability and sensitivity. Vulnerability is based on an inventory of the type, number, and proximity of PSOCs near a wellhead, and considers the level of risk imposed by those PSOCs based on local knowledge. Sensitivity is based on the quality of well construction and aquifer characteristics.

All EAWSD wells ranked "high" in terms of vulnerability except for Well 9, which ranked "moderately high." Septic systems, private domestic wells, arroyos, roadways, rail lines, and the ECIA horse stables were found to be the most notable PSOC types. Septic systems are the most common type of PSOC in EAWSD's SWPAs, with 2,825 sites mapped. Numbers of PSOC occurrences within the SWPAs were high. The majority of wells (13 out of 18) had more than 400 PSOC occurrences. Well 9 had the least number of PSOCs within its SWPA (103); Well 14 had the most (994). Four wells (wells 6, 8, 9, and 10) had PSOC occurrences in Zone A. All wells except for Wells 3 and 9 had PSOC occurrences in Zone B.

The 16 Central Well Field wells ranked "low" in terms of sensitivity; the two wells in the Galisteo Creek Alluvium Well Field ranked "moderate." All EAWSD wells have excellent well construction. Wells have been designed and built so as to protect against contamination, with seals and concrete pads to ensure that surface water cannot enter at the wellhead, and there are security features in place restricting public access and protecting against tampering (detailed well construction and integrity data are provided in Appendix E). The differences in sensitivity rankings are due to varying aquifer conditions. There is a dry zone of clay-rich soil 50 to 150 feet thick between the ground surface and aquifer, which protects groundwater in the Central Well Field from surface contamination (Cooper, 2016). The Galisteo Creek alluvium is a much shallower water-bearing layer, making wells located here more sensitive to potential contamination.

Table 16 summarizes the vulnerability, sensitivity, and overall susceptibility rankings of all EAWSD wells.

Table 16. Vulnerability, Sensitivity, and Susceptibility Rankings of EAWSD Wells

Well	Vulnerability Ranking	Sensitivity Ranking	Susceptibility Ranking
1	High	Low	Moderately low
2A	High	Low	Moderately low
2B	High	Low	Moderately low
3	High	Low	Moderately low
4	High	Low	Moderately low
5	High	Low	Moderately low
6	High	Low	Moderately low
7	High	Low	Moderately low
8	High	Low	Moderately low
9	Moderately high	Moderate	Moderately high
10	High	Moderate	Moderately high
12	High	Low	Moderately low
13	High	Low	Moderately low
14	High	Low	Moderately low
15	High	Low	Moderately low
17	High	Low	Moderately low
18	High	Low	Moderately low
19	High	Low	Moderately low

Based on NMED guidelines and the conclusions from this evaluation, DBS&A makes the following recommendations for EAWSD's implementation of the Source Water Protection Program:

- The Source Water Protection Team should meet annually to review the PSOCs and any changes to the system's sources.
- This SWPP document and the map of PSOCs should be updated on an annual basis.
- The Source Water Protection Team should participate as necessary in regulatory meetings and hearings on facilities and wastewater discharge applications within EAWSD's SWPAs.

- Members of the Source Water Protection Team should work with the ECIA Horse Stables to address contamination risks associated with this site.

- EAWSD and the Source Water Protection Team should work with the appropriate parties to ensure that the new disposal field proposed by Cimarron Village under DP-1838, currently in the application phase, does not lead to groundwater contamination.

- The members of the Source Water Protection Team may change over time. Representation on the team should be considered to inform the plan and implement recommended actions. For example, it may be prudent to include someone from Santa Fe County, as EAWSD has no land use jurisdiction in its SWPAs. It may also be helpful to include a representative of the local soil and water conservation district.

- A public information program should be developed related to source water protection. This program would educate the public about EAWSD's water sources, potential threats to those sources, and measures that the public can take to protect water sources, and would encourage the public to report PSOCs to EAWSD. Options for communicating with the public include articles in EAWSD's monthly newsletter, postings on EAWSD's website, meetings, advertisements, flyers, brochures, posters, questionnaires, and community and school events, as appropriate.

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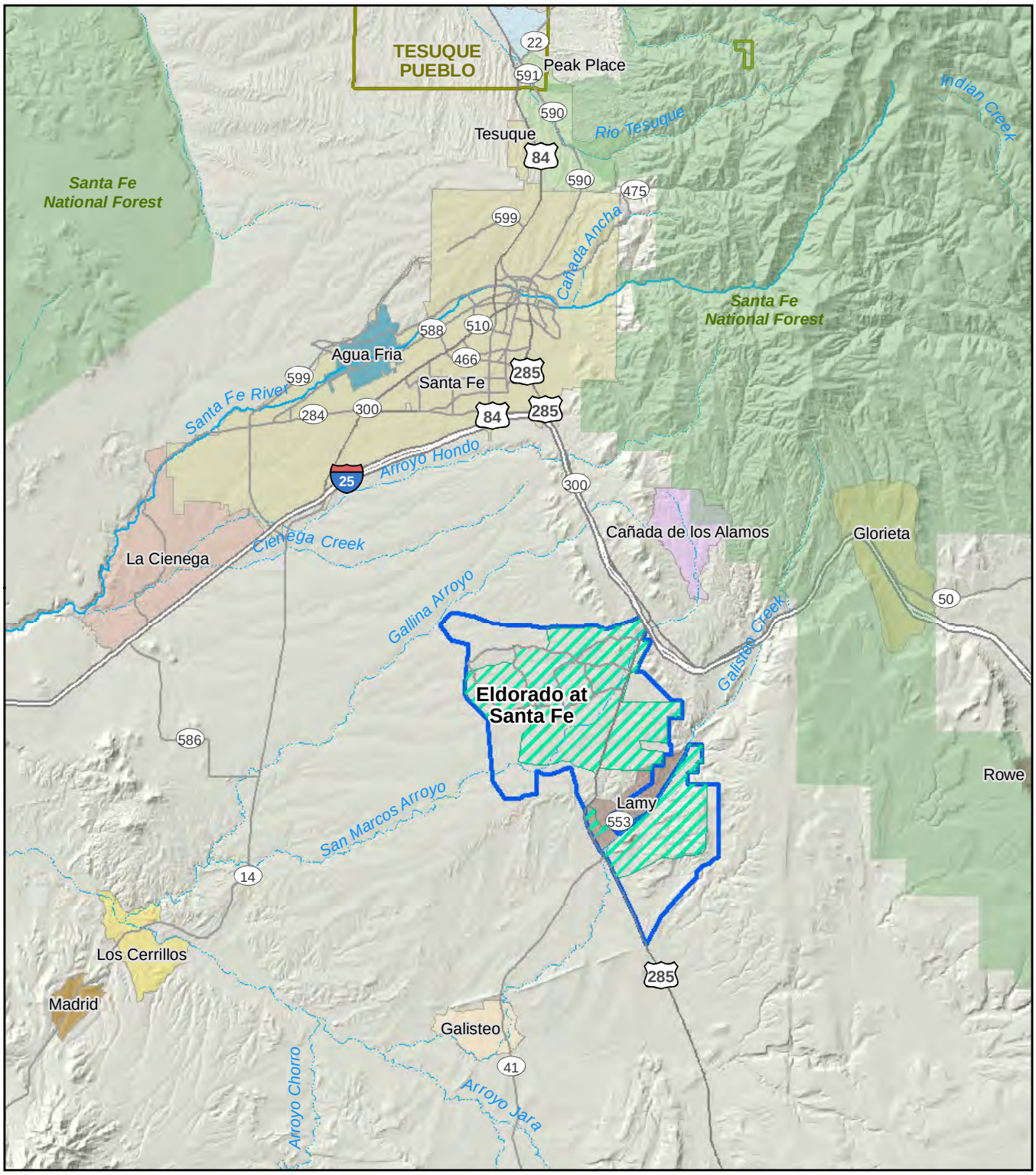
Figures



Explanation

EAWSD service area
District
Served
Stream
Road

N

0 2 4 Miles

ELDORADO AREA WATER AND SANITATION DISTRICT
SOURCE WATER PROTECTION PLAN

Vicinity Map

Daniel B. Stephens & Associates, Inc.

10/27/2016

JN NM15.0090

Figure 1

S:\PROJECTS\NM15.0090_NMED_DWB_CAP_DEVIGIS\ELDORADO\MXDS\FIGURES\FIG01_VICINITY.MXD

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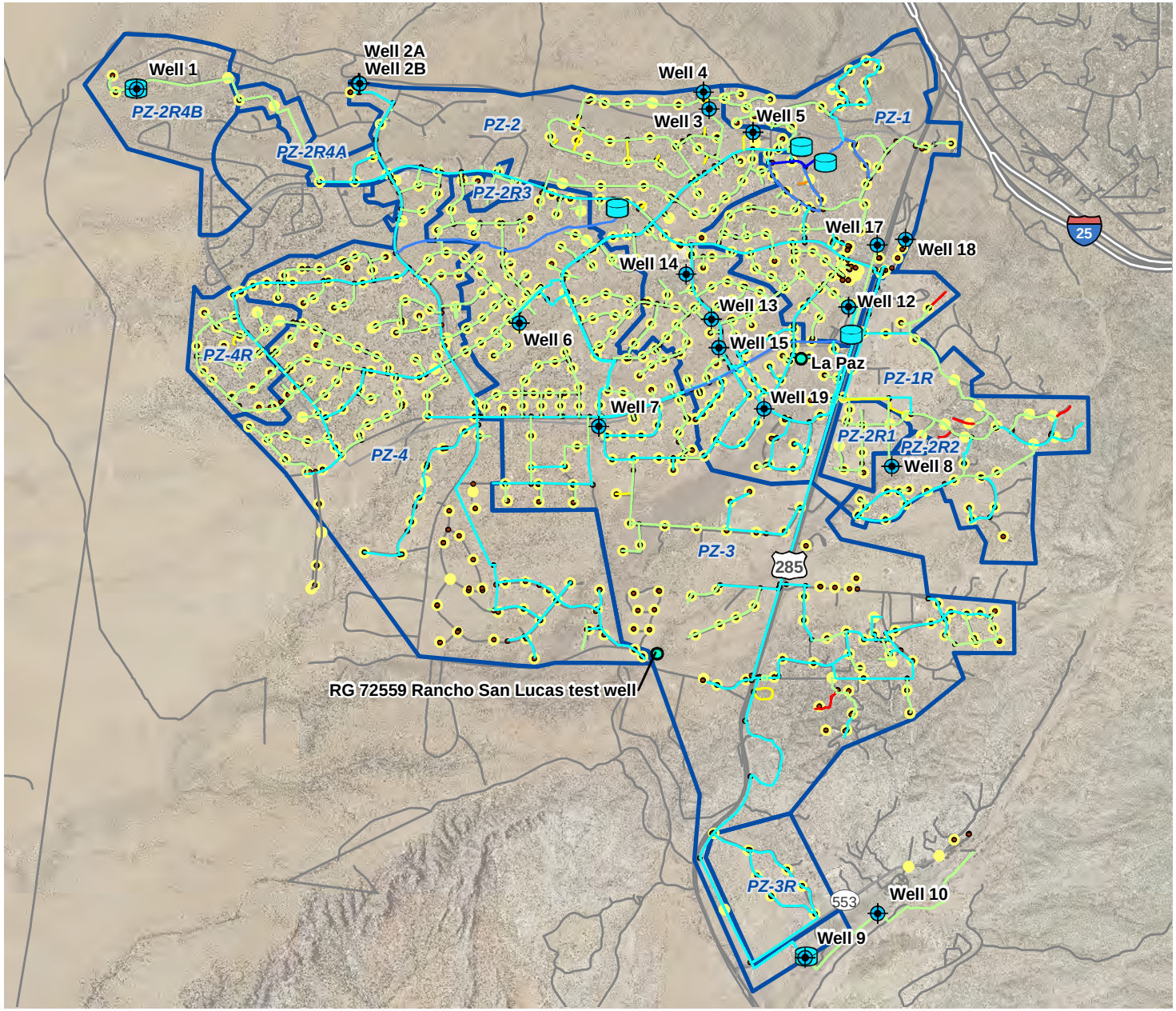

Explanation

- Public water supply well
- Test well
- Water system valve
- Fire hydrant
- Water tank
- Water pressure zone
- Road

Water pipeline Diameter (in)

- 2
- 3
- 4
- 6
- 8
- 10
- 12
- Unknown

N

0 0.5 1 Miles

2014 USDA NAIP aerial photography

ELDORADO AREA WATER AND SANITATION DISTRICT
SOURCE WATER PROTECTION PLAN

Water System

Figure 2

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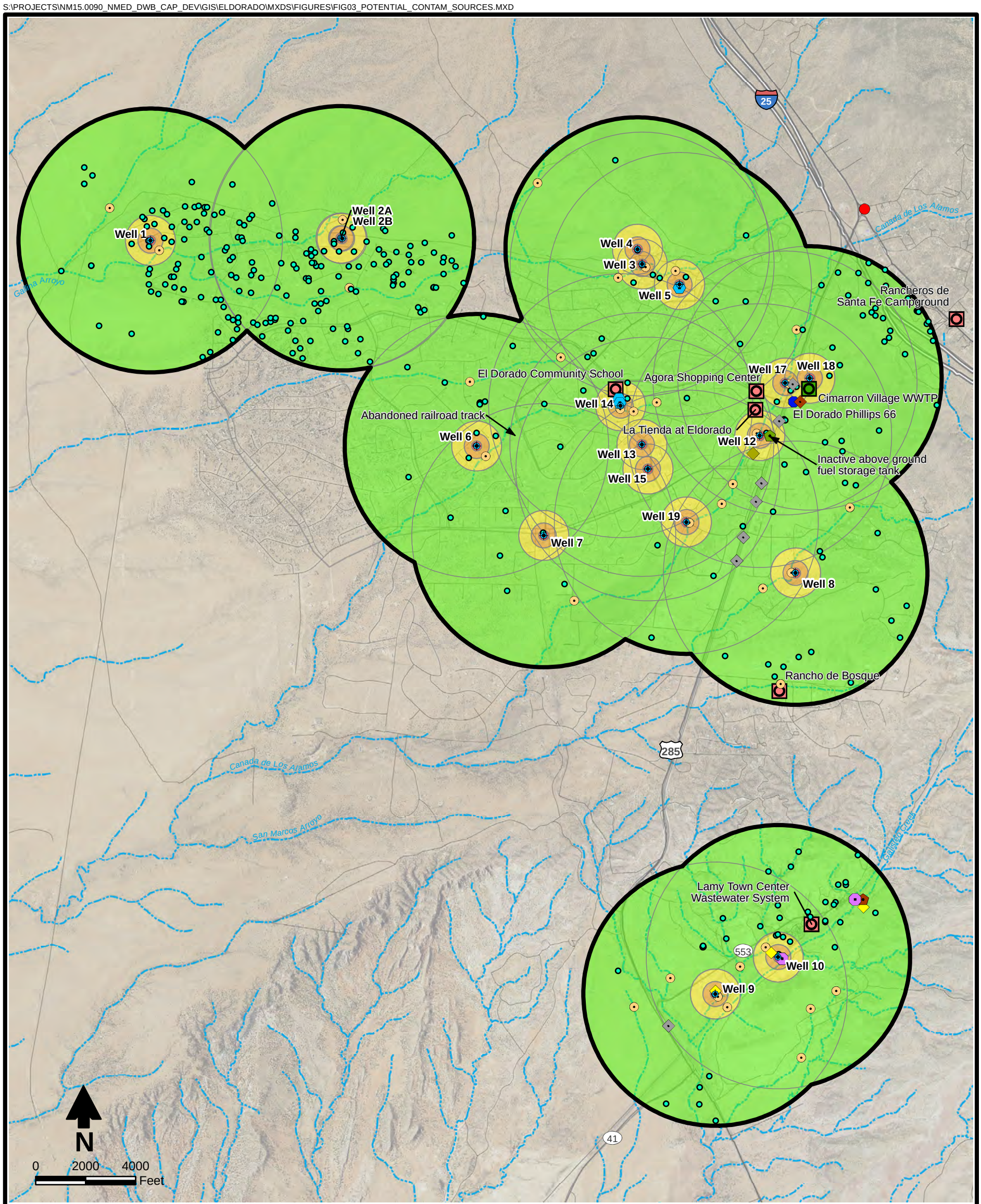
10/27/2016

JN NM15.0027

S:\PROJECTS\NM15.0090_NMED_DWB_CAP_DEV\GIS\ELDORADO\MXDS\FIGURES\FIG03_POTENTIAL_CONTAM_SOURCES.MXD



2014 USDA NAIP aerial photography

Explanation

- Public water supply well
- Road
- Arroyo
- Source water protection area

Buffer zone

- Zone A (200 ft)
- Zone B (500 ft)
- Zone C (1000 ft)
- Zone D (one mile)

PSOCs

- Arroyo
- Animal rangeland
- Community or senior citizens center/library - unsewered
- Gasoline service station
- Horse stables
- Underground storage tank facility
- Leaking underground storage tank site

Wastewater discharge permit (status)

- Active
- Applied

- Motor pool
- Polluted surface water source
- Primary road, highway, or arterial
- Rail yard, railroad tracks or rail siding
- Private domestic well in source water protection area

ELDORADO AREA WATER AND SANITATION DISTRICT
SOURCE WATER PROTECTION PLAN

Potential Sources of Contamination Without Residential Septic Systems

Figure 3

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10/27/2016 JN NM15.0090

S:\PROJECTS\NM15.0090_NMED_DWB_CAP_DEV\GIS\ELDORADO\MXDS\FIGURES\FIG04_RSFS.MXD

2014 USDA NAIP aerial photography

N

0 2000 4000 Feet

Explanation

Single family residence - unsewered, wastewater discharge to septic tank/leach field or cesspool

Road

Arroyo

Source water protection area

Buffer zone

Zone A (200 ft)

Zone B (500 ft)

Zone C (1000 ft)

Zone D (one mile)

ELDORADO AREA WATER AND SANITATION DISTRICT
SOURCE WATER PROTECTION PLAN

Septic Systems Within Source Water Protection Areas

Figure 4

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10/27/2016

JN NM15.0090

Appendix A

NMED Source Water Assessment

Source Water Assessment of
El Dorado Utilities, Inc Water System
Public Water System 37326

Working to Protect and Preserve
New Mexico's Drinking Water Supply

New Mexico Environment Department
Drinking Water Bureau, October, 2002
Funded by EPA Assistance Agreement: FS996925-01-0

Protecting New Mexico's Water Supplies

Source Water Assessment of Eldorado Utilities, Inc. Water System
Public Water Supply System # 373-26

Background

The New Mexico Source Water Assessment and Protection Program is part of a national effort to gather information on public drinking water source areas, and to inform water consumers about any risks to their water supply posed by various potential sources of contamination. The program is an information-gathering tool that follows on earlier drinking water initiatives mandated by the federal Safe Drinking Water Act.

The Safe Drinking Water Act, enacted by the United States Congress in 1974, had as its primary purpose the promulgation of national, enforceable standards for drinking water, and the implementation of a monitoring scheme to ensure that public water systems continue to meet those standards. The Act established Maximum Contaminant Levels for twenty-two known chemical contaminants, and set non-enforceable Secondary Maximum Contaminant Levels for chemical constituents that may adversely affect the aesthetic qualities of drinking water. The Act was amended in 1986 with the establishment of the Drinking Water Priorities List, which is a list of contaminants "known or anticipated to occur" in public water systems that pose a health risk and that may warrant regulation under the Act. The 1986 amendments also provided for periodic revision of the Priorities List, and expanded the Act's original mandate for chemical monitoring and reporting activities to include ground water pollution prevention measures.

The 1996 Reauthorization and Second Amendment of the Act extended the 1986 concept of source water protection of systems relying exclusively on groundwater to include systems that draw water from lakes, rivers and reservoirs. To carry out the new law, Congress authorized the U.S. Environmental Protection Agency to require each state to develop and implement a Source Water Assessment and Protection Program, through which an assessment of all public water sources within the state must be completed.

Source Water Assessments of public water systems throughout New Mexico involve four basic steps:

1. determining the source water protection area for the community's water system;
2. taking inventory of potential contaminant sources within the source water protection area;
3. determining the susceptibility of the water supply to potential sources of contamination; and
4. making the assessment available to the public.

This assessment of the Eldorado Utilities, Inc. water system is based on information collected during on-site inspections of the system and the surrounding area by New Mexico Environment Department personnel during April and July 2002.

Water System Description

The water system supplying the Eldorado community serves approximately 6,000 persons through 2,656 metered service connections. The water system has a total of fifteen ground water supply wells. The main production supply wells #1, #2, #4, #7, #8, #12, #13, and #14 are all located in the Eldorado community area. A large producing well #15 was recently put on line for production this summer, 2002. Wells #3 and #5 are currently inactive due to lack of production capacities. Wells #6 and #10 are seasonally operated based on recharge availability to the aquifer.

The adjacent Lamy area well field consists of three wells of which two wells #9 and #10 are currently actively producing supply water. Well #11 has been completed with casing and capped with a surface locked standpipe. This well is scheduled to be equipped for production some time in 2002 or early 2003.

Based on available records at the New Mexico State Engineer's Office or through Eldorado Utilities, Inc. office have the wells average drilling depths averaging from 100 feet deep in the Lamy area to 700 feet in the Eldorado area. The community has a total system storage capacity of 2, 500,000 gallons of water. The average daily demands was estimated to be 446,210 gallons per day with the peak demand estimated to be 670,000 gallons per day. Eldorado source water production was averaging 934,344 gallons per day.

Ground water in the Eldorado community is derived from the Santa Fe embayment, further described as an irregular bowl of mixed unconsolidated and consolidated sediments containing Quaternary-age alluvium and Tertiary-age basin fill sediments identified as the Ancha, Tesuque, Espinaso and Galisteo Formations and intrusive igneous rocks. Other geologic units that contribute water to the community include, older (pre-Tertiary-age) bedrock sedimentary units, fractured granite at the base of the Sangre de Cristo Mountains, and intrusive rocks associated with Los Cerrillos.

Condition of Facilities

The Eldorado Utilities, Inc. is properly maintained and operated adequately with an experienced management team and field crew. The water system utilizes chlorine gas for disinfecting their drinking water.

Compliance History

The Eldorado Utilities, Inc. water system has an excellent compliance history under Title 20 Chapter 7.1 of the New Mexico Administrative Code (Drinking Water Regulations), and there are no Maximum Contaminant Level or Total Coliform Rule violations of record for several years of operations based on current information found in the Drinking Water Bureau's database. The new EPA arsenic standard of 10 parts per billion (ppb) lowered from the former standard of 50 ppb will be officially enforced through State adoption in 2006. The new Arsenic Rule is currently affecting Well #1 with the most current arsenic levels reported on February 20, 2002 at 12.0 ppb. This well will be required to have a formalized treatment plan by 2004.

Source Water Protection Areas

Source water protection areas for ground water supply wells are subdivided into three zones of influence, or "capture zones," denoted zones A, B and C. Each zone is established on the basis of the amount of time required for a hypothetical "slug" of contaminated water to travel from a contaminant source to the well bore. The outermost capture zone C is defined on contaminant travel times estimated at between five-to-ten years; capture zone B is defined on estimated travel times between two-to-five years. Because of the uncertainty involved in contaminant flow and transport prediction, the innermost zone of influence, or capture zone A, is defined as a circle around the wellhead having a radius of 200 ft.

Capture zones for pumping wells are affected by a number of variables, and the method used to estimate contaminant travel times necessarily varies according to the complexity of area hydrogeology and the amount of information available on the well and underlying aquifer. Where sufficient hydrogeologic data exists, regional ground water flow and well capture zones may be simulated using a simplified mathematical modeling procedure. Wells #1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14, and 15 have capture

zones delineated using the US Environmental Protection Agency (US EPA) Wellhead Analytical Element Model (WhAEM). In plan-view, capture zones delineated using mathematical ground water modeling techniques typically form an elliptical or elongate pattern about the wellhead, reflecting the most probable area from which ground water flows toward the well.

Well #11, which is currently not in use, has capture zones estimated using an arbitrary fixed radius method. Fixed radius methods produce a circular pattern about the wellhead when viewed in plan view. Capture zone A, is defined as a circle around the wellhead having a radius of 200 ft. Capture zone B is defined as a circle with a radius of 500 feet from the wellhead, and capture zone C is defined as a circle with a radius of 1000 feet from the wellhead.

The source water protection areas delineated for the Eldorado Utilities, Inc. water system wells are mapped using the ArcView Geographic Information System (GIS) in the figures shown in Appendix B. For all wells capture zone A is depicted as a *black circle* with a 200-foot radius surrounding each well.

Capture zone B depicting the two to five year contaminant travel time to each well is mapped as a field of ***red lines*** radiating outwards from each well. In other words, capture zone B reflects a capture zone of 2 to 5 years for a hypothetical "slug" of contaminated water to travel from a contaminant source to the well bore.

Capture zone C depicting the ten-year contaminant travel time to each well is similarly mapped as a field of ***green lines*** radiating outwards from the limits of capture zone B. Capture zone C is larger in area reflecting a capture zone of 5 to10 years for a hypothetical "slug" of contaminated water to travel from a contaminant source to the well bore.

Potential Contaminant Source Inventory

Potential Sources of Contamination (PSOC) are broad land-use categories, facilities or activities that store, use or produce as a product or by-product any contaminant regulated under the federal Safe Drinking Water Act, including the microbiological contaminants *giardia lamblia*, *cryptosporidium* and *total coliform bacteria*, and synthetic organic contaminants included in the New Mexico Pesticide Management Plan. These regulated "Contaminants of Concern" are listed alphabetically in Appendix C according to chemical class. Appendix D lists PSOC and their associated Contaminants of Concern according to land use category. Note that most PSOC are associated with multiple Contaminants of Concern. For example, most residential liquid waste systems are a source not only of nutrient and heavy metals contamination, but also of solvents, cleaning agents and other synthetic organic compounds. All potential contaminants that could impact the water supply are shown in the following tables according to zone of influence.

The color of the PSOC Map symbol indicates the Zone of Influence that the PSOC resides in (i.e., Black indicates a PSOC within Zone A, Red indicates a PSOC within Zone B, and Green indicates a PSOC within Zone C.

Note: This report is for information purposes only, and is intended to make water consumers and system managers aware of some of the possible risks to their water supply. Identification of potential contaminant sources within a source water protection zone is not an assertion on the part of NMED that the water supply will be impacted by a particular contaminant. PSOC are commonly--but not always--associated with one or more of the Contaminants of Concern listed in Appendix C, and all land uses,

facilities and activities listed as a potential contaminant source in Appendix D are included in the inventory, regardless of existing safeguards, materials-handling practices or compliance history.

Table 1. PSOC Inventory for Well # 1

Map Symbol	Description	Zone of Influence	Number of Type
RSF	single family residence-unsewered	A	2
RSF	single family residence-unsewered	B	17
RSF	single family residence-unsewered	C	31

Table 2. PSOC Inventory for Well #2

Map Symbol	Description	Zone of Influence	Number of Type
RSF	single family residence-unsewered	B	10
RSF	single family residence-unsewered	C	15

Table 3. PSOC Inventory for Well # 3

Map Symbol	Description	Zone of Influence	Number of Type
None	None	(n/a)	(n/a)

Table 4. PSOC Inventory for Well # 4

Map Symbol	Description	Zone of Influence	Number of Type
RSF	single family residence-unsewered	A	1
RSF	single family residence-unsewered	B	13

Table 5. PSOC Inventory for Well # 5

Map Symbol	Description	Zone of Influence	Number of Type
RSF	single family residence-unsewered	A	1
MCC	community center-unsewered	A	1
RSF	single family residence-unsewered	B	3
RSF	single family residence-unsewered	C	12

Table 6. PSOC Inventory for Well # 6

Map Symbol	Description	Zone of Influence	Number of Type
RSF	single family residence-unsewered	A	6
RSF	single family residence-unsewered	B	3
RSF	single family residence-unsewered	C	4
IRY	railroad tracks	C	1

Table 7. PSOC Inventory for Well # 7

Map Symbol	Description	Zone of Influence	Number of Type
RSF	single family residence-unsewered	B	14
RSF	single family residence-unsewered	C	14

Table 8. PSOC Inventory for Well # 8

Map Symbol	Description	Zone of Influence	Number of Type
RSF	single family residence-unsewered	B	2
RSF	single family residence-unsewered	C	5

Table 9. PSOC Inventory for Well # 9

Map Symbol	Description	Zone of Influence	Number of Type
ARL	animal rangelend	A	1
RSF	single family residence-unsewered	B	1
RSF	single family residence-unsewered	C	4

Table 10. PSOC Inventory for Well # 10

Map Symbol	Description	Zone of Influence	Number of Type
ARL	animal rangelend	A	1
IRY	railroad tracks	A	1
RSF	single family residence-unsewered	B	9

Table 11. PSOC Inventory for Well # 11

Map Symbol	Description	Zone of Influence	Number of Type
ARL	animal rangelend	A	1
MPW	surface water source	A	1
IRY	railroad tracks	B	1
RSF	single family residence unsewereed	B	1
MPW	surface water source	B	1
ARL	animal rangeland	B	1
IRY	railroad tracks	C	1
ARL	animal rangeland	C	1
MPW	surface water source	C	1
RSF	single family residence-unsewered	C	8-10

Table 12. PSOC Inventory for Well # 12

Map Symbol	Description	Zone of Influence	Number of Type
RSF	single family residence-unsewered	A	1
CFA	Fuel storage tank-above ground	A	1
MMP	motor pool	A	1
MRP	primary road	B	1
CSS	gasoline service station	B	1

Table 13. PSOC Inventory for Well # 13

Map Symbol	Description	Zone of Influence	Number of Type
RSF	single family residence-unsewered	B	20
RSF	single family residence-unsewered	C	20

Table 14. PSOC Inventory for Well # 14

Map Symbol	Description	Zone of Influence	Number of Type
RSF	single family residence-unsewered	B	27
RSF	single family residence-unsewered	C	45

Table 15. PSOC Inventory for Well # 15

Map Symbol	Description	Zone of Influence	Number of Type
RSF	single family residence-unsewered	B	20
RSF	single family residence-unsewered	C	20

Susceptibility Analysis

Susceptibility Analysis is a means to evaluate the potential for a public water system to draw contaminated water into the system at concentrations posing a health risk to its consumers. Susceptibility is defined for purposes of the Source Water Assessment as a combination of the **sensitivity** of the water source to contamination due to characteristics of the source area and of the well and related equipment, and the **vulnerability** of the water source to contamination due to the prevalence and proximity of contaminants. Factors affecting the sensitivity rank are: 1) depth of screened interval(s); 2) integrity of well construction; 3) availability of information regarding well construction; and 4) regional hydrogeologic sensitivity to surface-derived contamination. Deep wells constructed to industry standards are less susceptible to surface contamination than shallow wells not constructed to such standards; so shallower wells are given a higher sensitivity rank. A similarly conservative approach is taken where information on well construction is unavailable or deficient: without evidence to the contrary, sensitivity analysis assumes substandard or outdated construction methods and assigns a higher sensitivity rank.

Sensitivity analysis also considers the broader, regional picture by taking into consideration the depth to ground water, aquifer recharge rate, aquifer and soil media, and aquifer hydraulic conductivity. Factors affecting the vulnerability rank are the number of PSOC and the distance between PSOC and supply wells.

Sensitivity and vulnerability of water sources to contamination are analyzed using a series of decision matrices that compare individual variables and assign a relative rank to the associated risk. A comparison of the risks assigned to each component of the analysis results in the assignment of a "high," "moderately high," "moderate," "moderately low," or "low" susceptibility of the water source to each of the PSOC discussed above. Susceptibility Worksheets used to determine the sensitivity and vulnerability rankings for the water system are attached in Appendix E.

Results of Analysis

Well #1: Well #1 was assigned a sensitivity rank of "moderately low," a vulnerability rank of "high," and an overall susceptibility to contamination rank of "moderately high." This ranking reflects the permeable geologic media at the well site, and the number of potential contaminant sources located within all of the capture zones calculated for the well. All of the PSOC in the vicinity of Well #1 are unsewered single-family residences that rely on septic tanks and drain fields, or "on-site" liquid waste disposal systems.

Well #2: Well #2 was assigned a sensitivity rank of "moderately low," a vulnerability rank of "high," and an overall susceptibility to contamination rank of "moderately high." This ranking reflects the permeable geologic media at the well site, and the number of potential contaminant sources located within both the 500 ft. and 1,000 ft. capture zones calculated for the well. PSOC in the vicinity of Well #2 are all unsewered single-family residences.

Well #3: Well #3 was assigned a sensitivity rank of "moderately low," a vulnerability rank of "low," and an overall susceptibility to contamination rank of "moderately low." This ranking reflects the permeable geologic media at the well site, and the absence of potential contaminant sources located within any the capture zones calculated for the well.

Well #4: Well #4 was assigned a sensitivity rank of "moderately low," a vulnerability rank of "high," and an overall susceptibility to contamination rank of "moderately high." This ranking reflects the permeable geologic media at the well site, and the number of potential contaminant sources located within both the 200 ft. and 500 ft. capture zones calculated for the well. PSOC in the vicinity of Well #4 are all unsewered single-family residences.

Well #5: Well #5 was assigned a sensitivity rank of "moderate," a vulnerability rank of "high," and an overall susceptibility to contamination rank of "moderately high." This ranking reflects the permeable geologic media at the well site, and the number of potential contaminant sources located within all of the capture zones calculated for the well. The majority of the PSOC in the vicinity of Well #5 are unsewered single-family residences that rely on septic tanks and drain fields, or "on-site" liquid waste disposal systems.

Well #6: Well #6 was assigned a sensitivity rank of "moderately low," a vulnerability rank of "high," and an overall susceptibility to contamination rank of "moderately high." This ranking reflects the permeable geologic media at the well site, and the number of potential contaminant sources located within all of the capture zones calculated for the well. The majority of the PSOC in the vicinity of Well #1 are unsewered

single-family residences that rely on septic tanks and drain fields, or "on-site" liquid waste disposal systems.

Well #7: Well #7 was assigned a sensitivity rank of "moderately low," a vulnerability rank of "high," and an overall susceptibility to contamination rank of "moderately high." This ranking reflects the permeable geologic media at the well site, and the number of potential contaminant sources located within both the 500 ft. and 1,000 ft. capture zones calculated for the well. PSOC in the vicinity of Well #7 are all unsewered single-family residences.

Well #8: Well #8 was assigned a sensitivity rank of "moderately low," a vulnerability rank of "moderately low," and an overall susceptibility to contamination rank of "moderately low." This ranking reflects the permeable geologic media at the well site, and the number of potential contaminant sources located within both the 500 ft. and 1,000 ft. capture zones calculated for the well. PSOC in the vicinity of Well #8 are all unsewered single-family residences.

Well #9: Well #9 was assigned a sensitivity rank of "moderate," a vulnerability rank of "high," and an overall susceptibility to contamination rank of "moderately high." This ranking reflects the permeable geologic media at the well site, and the number of potential contaminant sources located within all of the capture zones calculated for the well. PSOC in the vicinity of Well #2 are animal rangeland and unsewered single-family residences.

Well #10: Well #10 was assigned a sensitivity rank of "moderate," a vulnerability rank of "high," and an overall susceptibility to contamination rank of "moderately high." This ranking reflects the permeable geologic media at the well site, and the number of potential contaminant sources located within all of the capture zones calculated for the well. PSOC in the vicinity of Well #10 are animal rangeland, railroad tracks, and unsewered single-family residences.

Well #11: Well #11 was assigned a sensitivity rank of "moderate," a vulnerability rank of "high," and an overall susceptibility to contamination rank of "moderately high." This ranking reflects the permeable geologic media at the well site, and the number of potential contaminant sources located within all of the capture zones calculated for the well. PSOC in the vicinity of Well #11 are animal rangeland, a surface water source, railroad tracks and unsewered single-family residences.

Well #12: Well #12 was assigned a sensitivity rank of "moderate," a vulnerability rank of "high," and an overall susceptibility to contamination rank of "moderately high." This ranking reflects the permeable geologic media at the well site, and the number of potential contaminant sources located within the 200 ft. and 500 ft. capture zones calculated for the well. PSOC in the vicinity of Well #12 are animal rangeland, an above ground fuel storage tank, a motor pool, a primary road, and unsewered single-family residences.

Well #13: Well #13 was assigned a sensitivity rank of "moderately low," a vulnerability rank of "high," and an overall susceptibility to contamination rank of "moderately high." This ranking reflects the permeable geologic media at the well site, and the number of potential contaminant sources located within both the 500 ft. and 1,000 ft. capture zones calculated for the well. PSOC in the vicinity of Well #13 are all unsewered single-family residences.

Well #14: Well #14 was assigned a sensitivity rank of "moderate," a vulnerability rank of "high," and an overall susceptibility to contamination rank of "moderately high." This ranking reflects the permeable geologic media at the well site, and the number of potential contaminant sources located within both the

500 ft. and 1,000 ft. capture zones calculated for the well. PSOC in the vicinity of Well #14 are all unsewered single-family residences.

Well #15: Well #15 was assigned a sensitivity rank of "moderately low," a vulnerability rank of "high," and an overall susceptibility to contamination rank of "moderately high." This ranking reflects the permeable geologic media at the well site, and the number of potential contaminant sources located within both the 500 ft. and 1,000 ft. capture zones calculated for the well. PSOC in the vicinity of Well #15 are all unsewered single-family residences.

Routine chemical monitoring of the Example Community wells to-date indicates no contamination of the water supply from individual on-site liquid waste systems. None-the-less, the number of unsewered homesites within the capture zones projected for the wells is the principal cause for concern in this area.

Reporting:

The SWA Report is intended primarily to provide water utility companies, and water customers with information about the susceptibility of their water supplies to contamination. The report was provided to the Eldorado Utilities Water Supply System for initial review, and is now available at the State of New Mexico Environment Department Drinking Water Bureau, 525 Camino de Los Marquez, Suite 4, Santa Fe, NM 87505.

Copies may also be requested by emailing the Drinking Water Bureau at SWAPP@nmenv.state.nm.us or by calling (505) 827-7536 (toll free 1-877-654-8720). Please include your name, address, telephone number, and email address, and the name of the Water System. *NMED-DWB may charge a nominal fee for paper copies*.

Table 5 **SOURCE SUSCEPTIBILITY RANKING**

SOURCE NAME	**Sensitivity Rank**	**Vulnerability Rank**	**Susceptibility Rank**	**Final Rank**
WELL #1	Moderately Low	High	Moderately High	Moderately High
WELL #2	Moderately Low	High	Moderately High	Moderately High
WELL #3	Moderately Low	Low	Moderately Low	Moderately Low
WELL #4	Moderately Low	High	Moderately High	Moderately High
WELL #5	Moderate	High	Moderately High	Moderately High
WELL #6	Moderately Low	High	Moderately High	Moderately High
WELL #7	Moderately Low	High	Moderately High	Moderately High
WELL #8	Moderately Low	Moderately Low	Moderately Low	Moderately Low
WELL #9	Moderate	High	Moderately High	Moderately High
WELL #10	Moderate	High	Moderately High	Moderately High
WELL #11	Moderate	High	Moderately High	Moderately High
WELL #12	Moderate	High	Moderately High	Moderately High
WELL #13	Moderately Low	High	Moderately High	Moderately High
WELL #14	Moderate	High	Moderately High	Moderately High
WELL #15	Moderately Low	High	Moderately High	Moderately High

In conclusion, the Eldorado Utilities Supply water system is well maintained and operated, and sources of drinking water are generally protected from potential sources of contamination based on well construction, hydrogeologic settings, and system operations and management. The susceptibility rank of the entire water system is **Moderately High.**

Although throughout the United States it is common to find potential sources of contamination located atop wellheads, continued regulatory oversight, wellhead protection plans, and other planning efforts continue to be primary methods of protecting and ensuring high quality drinking water.

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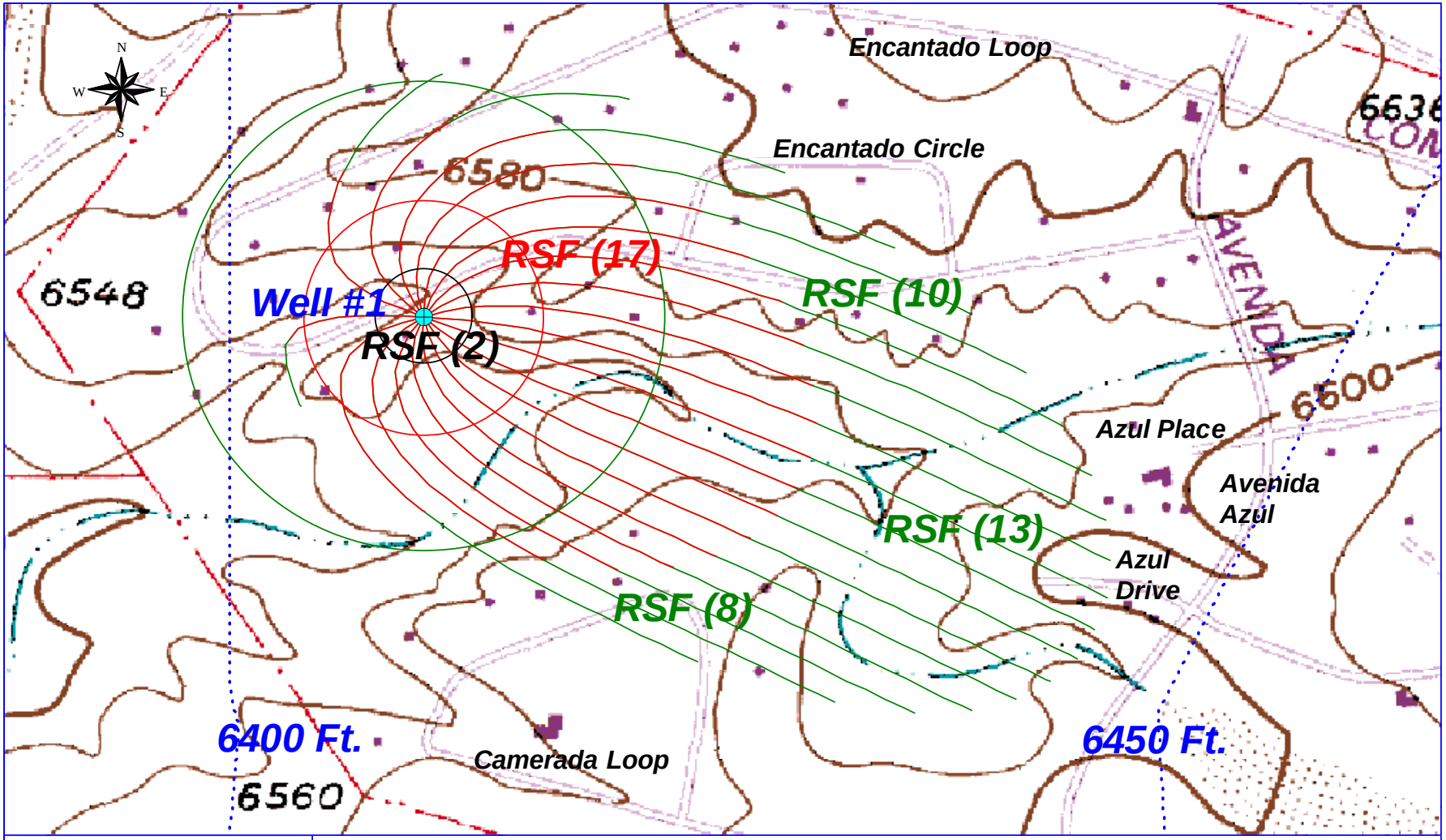


Eldorado Utilities Source Water Assessment Area
Well #1
WSS # 373-26
Spring 2002

NOTE: Refer to Appendix D for 3-Letter Potential Source of Contamination Codes

MAP LEGEND

Capture Zone A 200 Ft. from Well

Capture Zone B 500 Ft. from Well

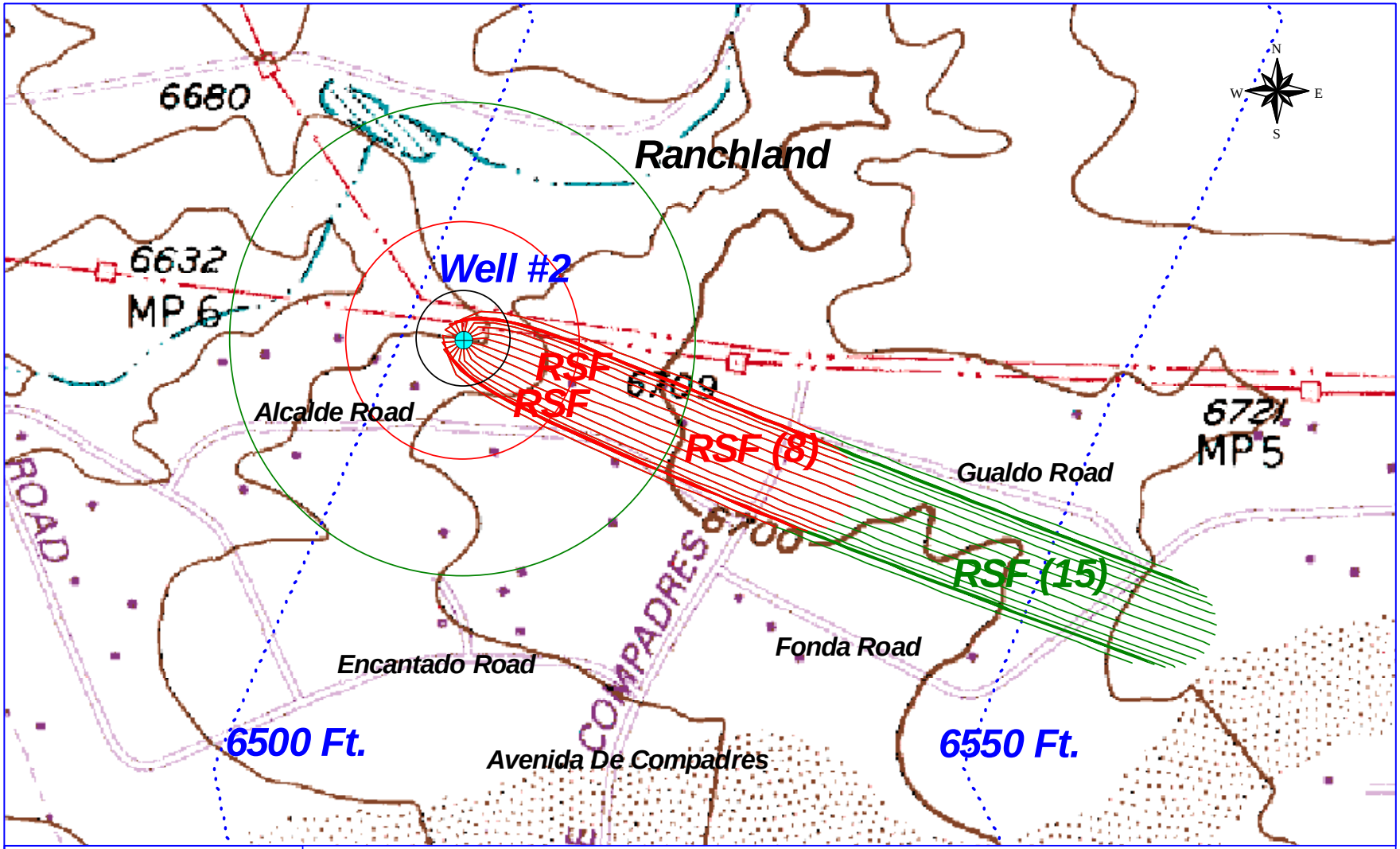
Capture Zone B 5 Yr. Capture Zone

Capture Zone C 1000 Ft. from Well

Capture Zone C 10 Yr. Capture Zone

Water Level Contours

500 0 500 1000 1500 2000 Feet



Eldorado Utilities Source Water Assessment Area
Well #2
WSS # 373-26
Spring 2002

NOTE: Refer to Appendix D for 3-Letter Potential Source of Contamination Codes

MAP LEGEND

Capture Zone A 200 Ft. from Well

Capture Zone B 500 Ft. from Well

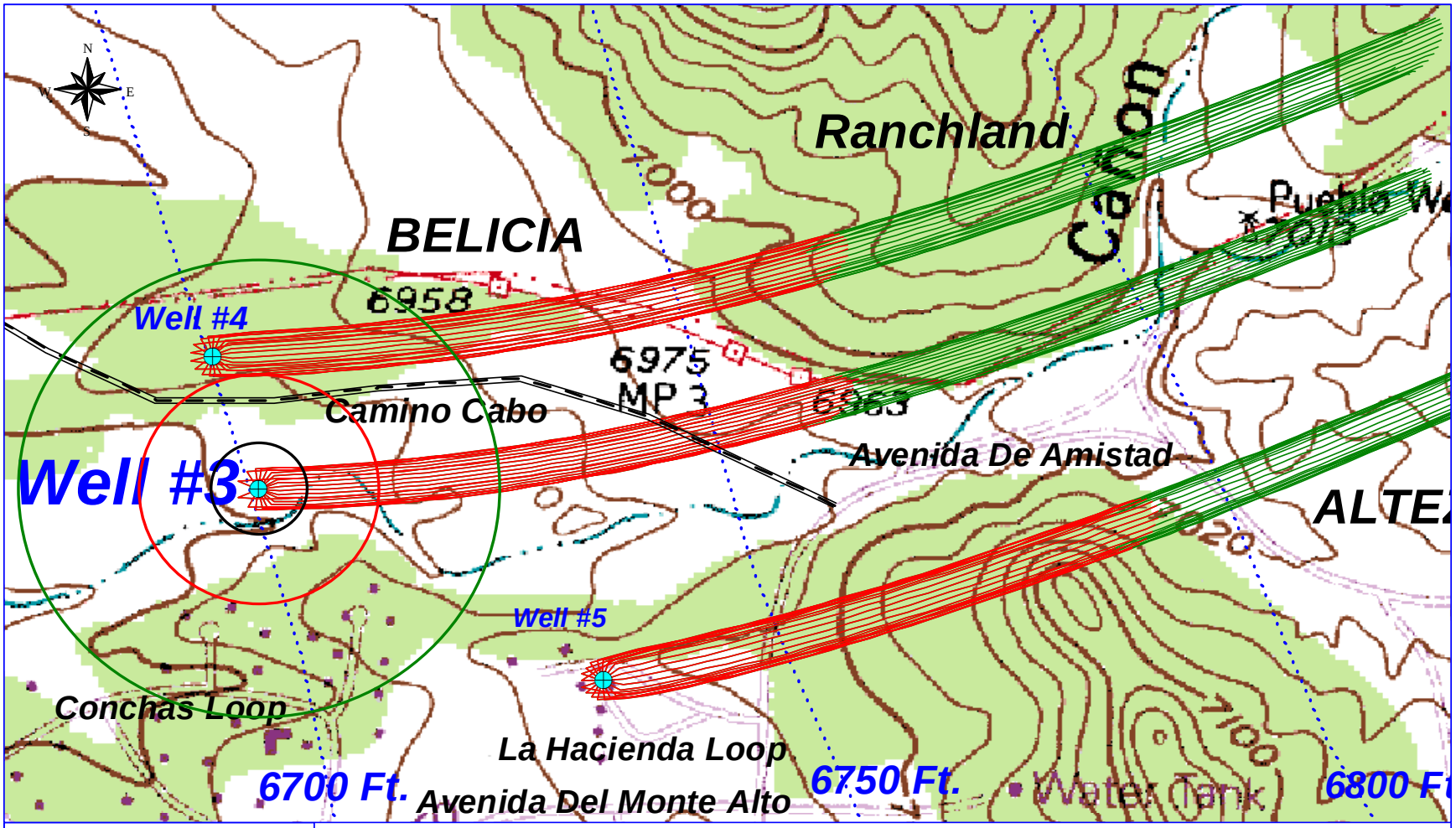
5 Yr. Capture Zone

Capture Zone C 1000 Ft. from Well

10 Yr. Capture Zone

Water Level Contours

500 0 500 1000 1500 2000 Feet



Eldorado Utilities Source Water Assessment Area
Well #3
WSS # 373-26
Spring 2002

NOTE: Refer to Appendix D for 3-Letter Potential Source of Contamination Codes

MAP LEGEND

Capture Zone A 200 Ft. from Well

Capture Zone B 500 Ft. from Well

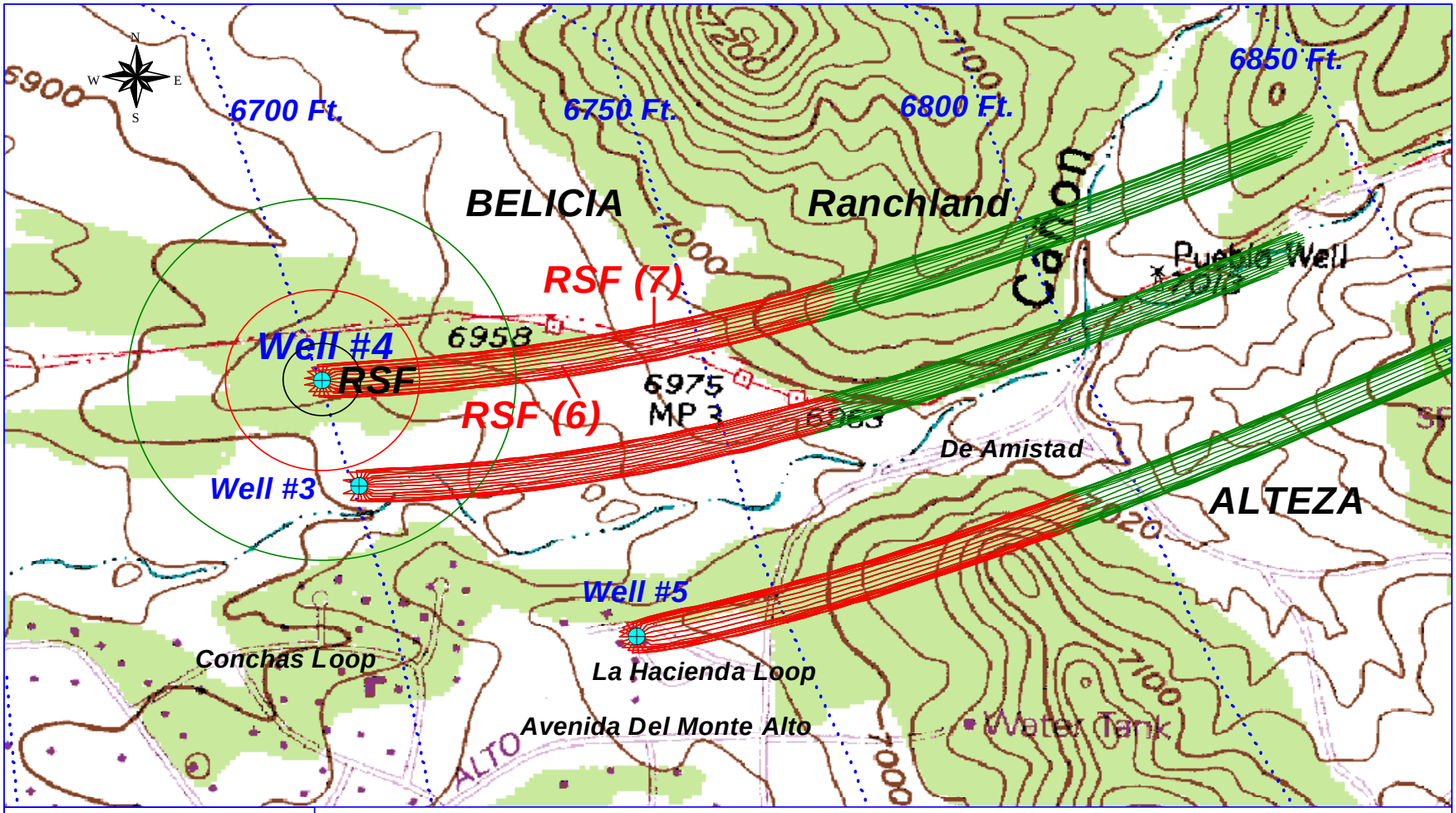
5 Yr. Capture Zone

Capture Zone C 1000 Ft. from Well

10 Yr. Capture Zone

Water Level Contours

500 0 500 1000 1500 2000 2500 Feet



Eldorado Utilities Source Water Assessment Area
Well #4
WSS # 373-26
Spring 2002

NOTE: Refer to Appendix D for 3-Letter Potential Source of Contamination Codes

MAP LEGEND

Capture Zone A 200 Ft. from Well

Capture Zone B 500 Ft. from Well

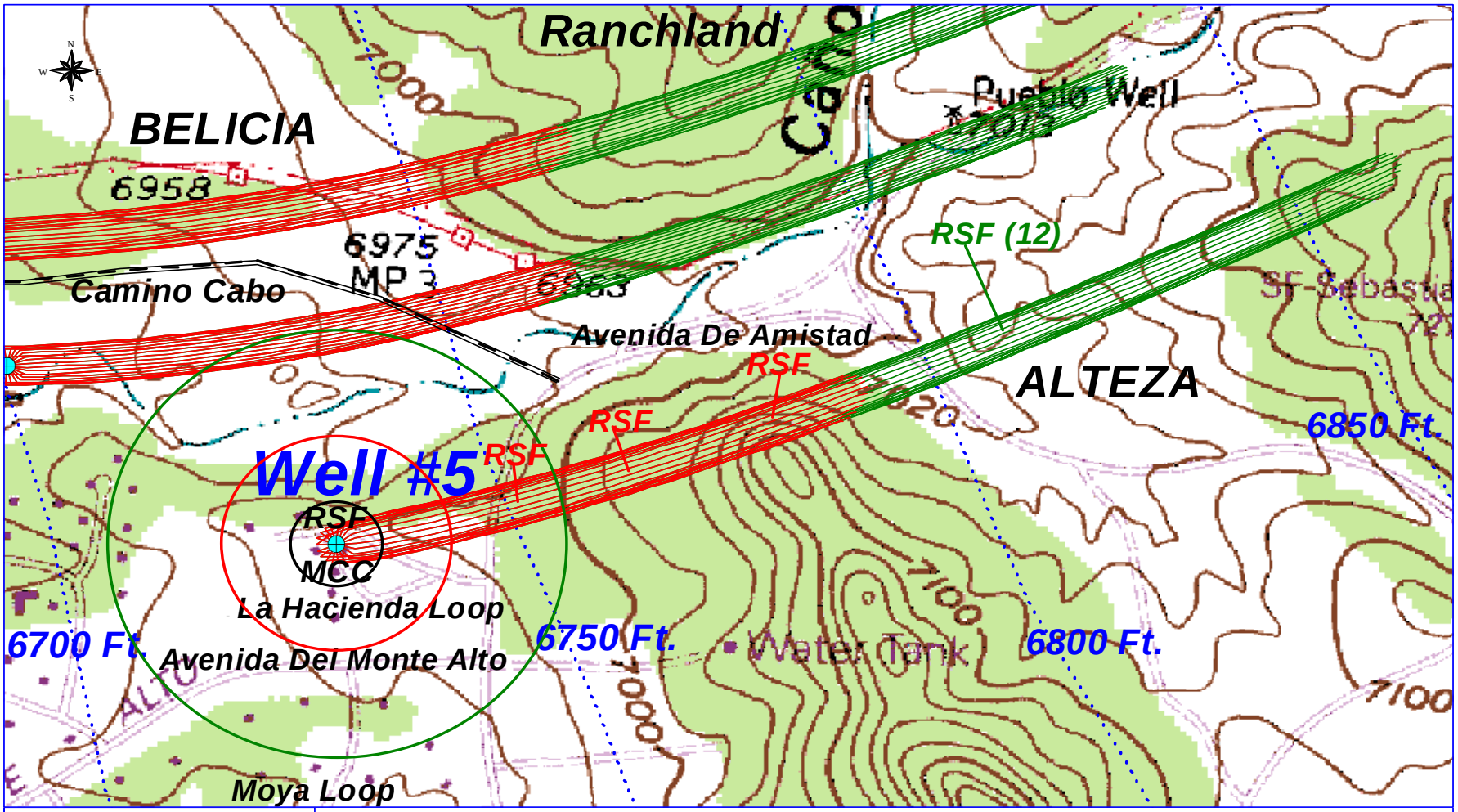
Capture Zone B 5 Yr. Capture Zone

Capture Zone C 1000 Ft. from Well

Capture Zone C 10 Yr. Capture Zone

Water Level Contours

500 0 500 1000 1500 2000 2500 Feet



Eldorado Utilities Source Water Assessment Area
Well #5
WSS # 373-26
Spring 2002

NOTE: Refer to Appendix D for 3-Letter Potential Source of Contamination Codes

MAP LEGEND

Capture Zone A 200 Ft. from Well

Capture Zone B 500 Ft. from Well

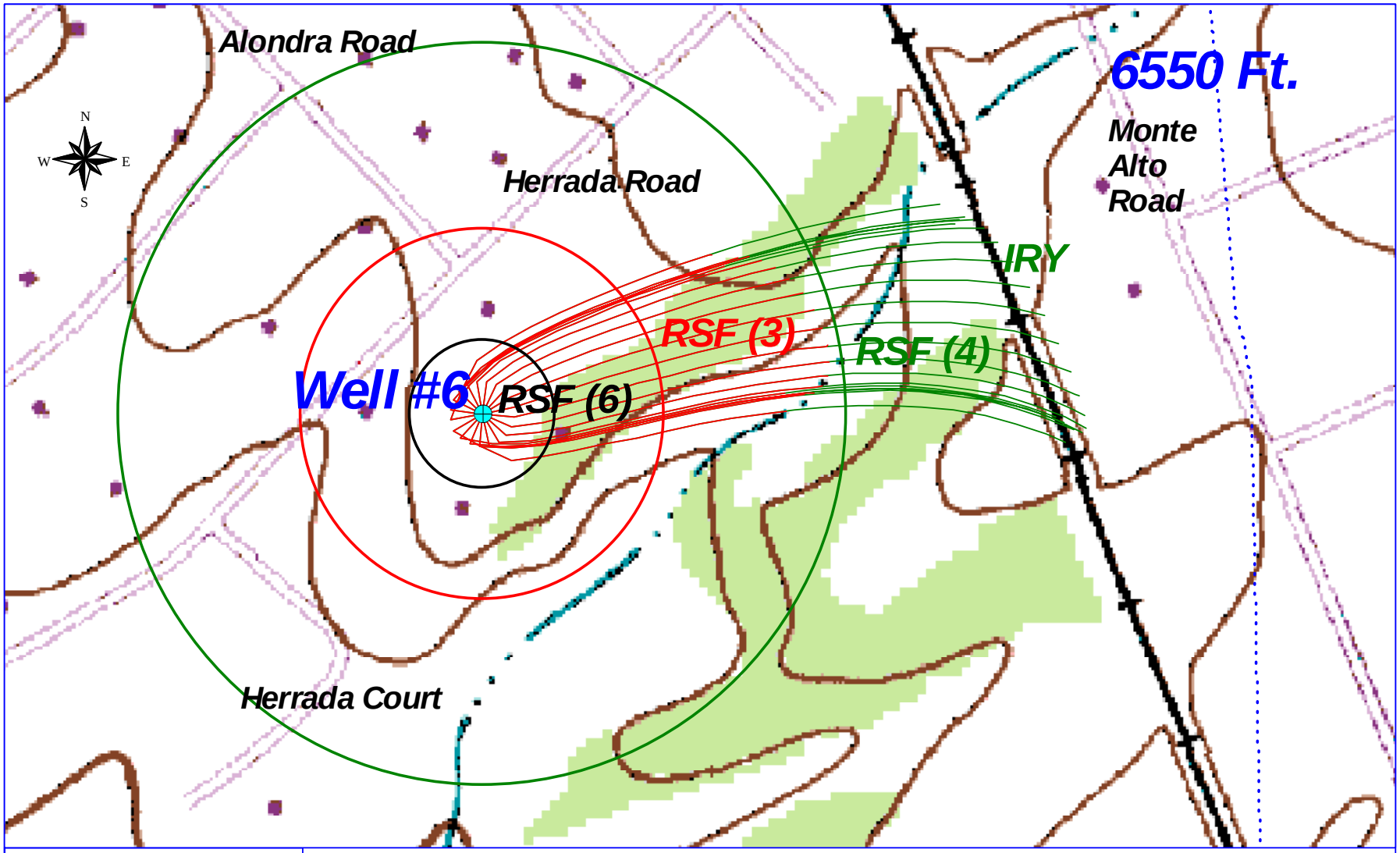
Capture Zone B 5 Yr. Capture Zone

Capture Zone C 1000 Ft. from Well

Capture Zone C 10 Yr. Capture Zone

Water Level Contours

500 0 500 1000 1500 2000 2500 Feet



Eldorado Utilities Source Water Assessment Area
Well #6
WSS # 373-26
Spring 2002

NOTE: Refer to Appendix D for 3-Letter Potential Source of Contamination Codes

MAP LEGEND

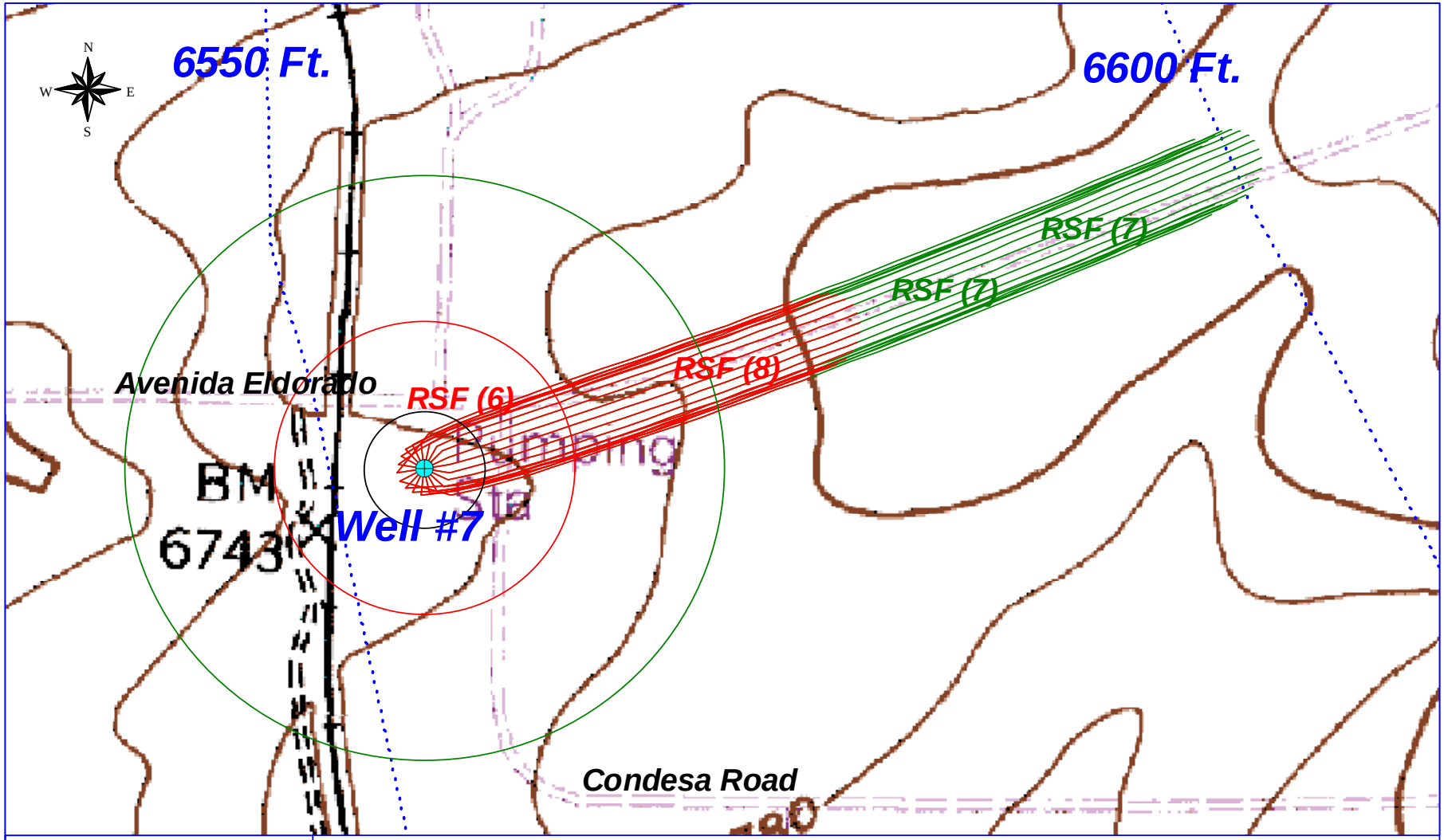
Capture Zone A
200 Ft. from Well

Capture Zone B
500 Ft. from Well
5 Yr. Capture Zone

Capture Zone C
1000 Ft. from Well
10 Yr. Capture Zone

Water Level Contours

500 0 500 1000 1500 Feet



Eldorado Utilities Source WaterAssessment Area
Well #7
WSS # 373-26
Spring 2002

NOTE: Refer to Appendix D for 3-Letter Potential Source of Contamination Codes

MAP LEGEND

Capture Zone A 200 Ft. from Well

Capture Zone B 500 Ft. from Well

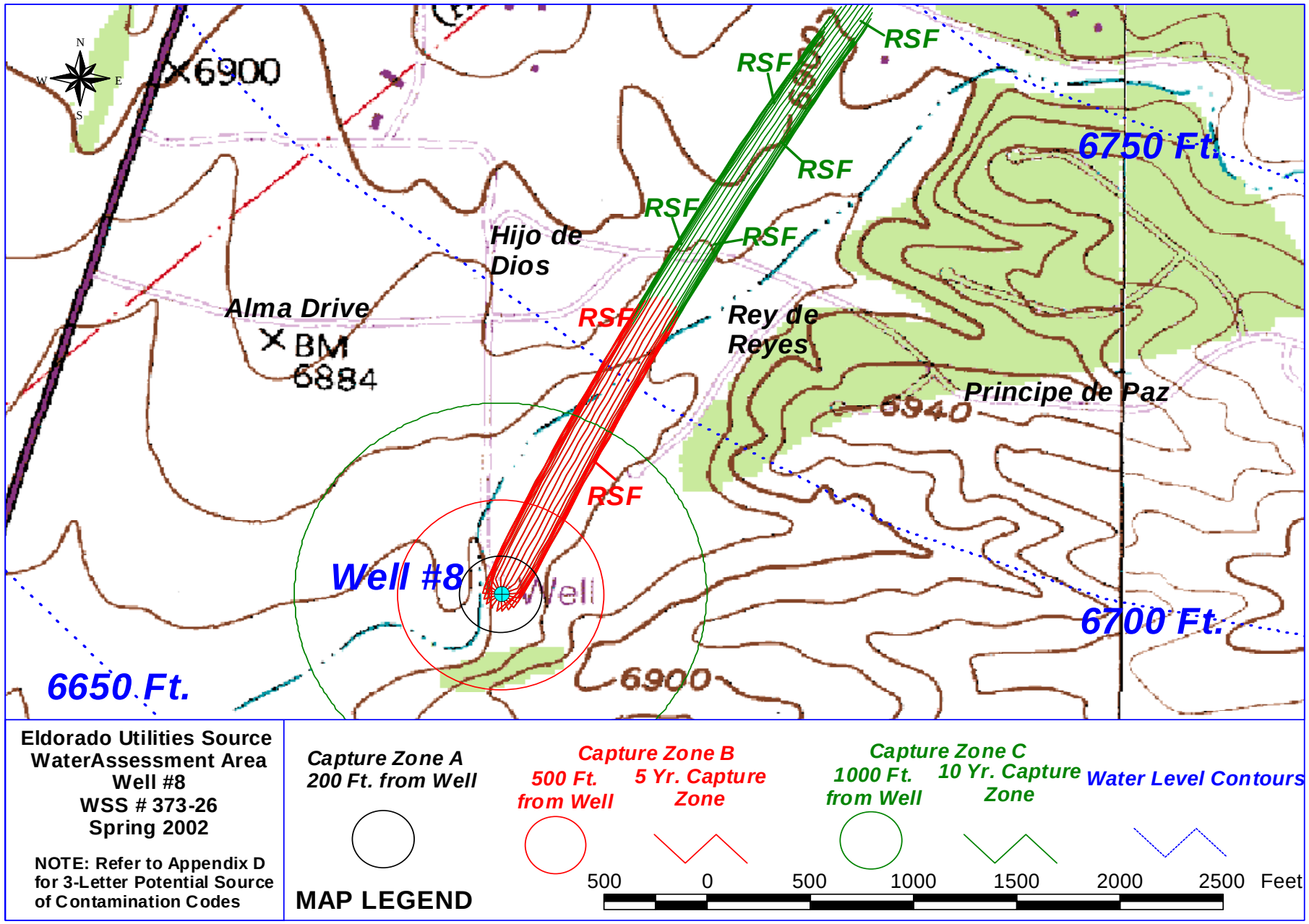
Capture Zone B 5 Yr. Capture Zone

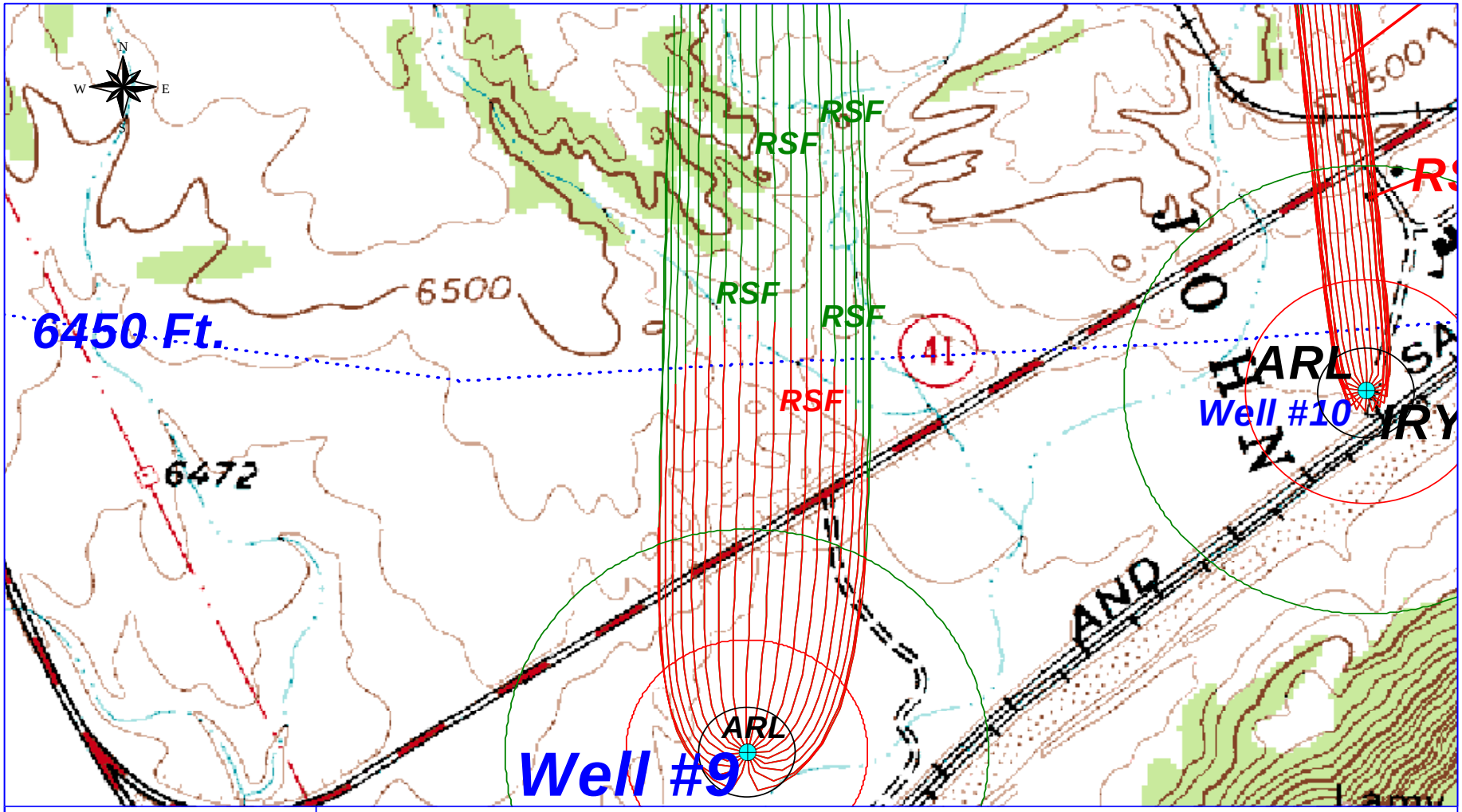
Capture Zone C 1000 Ft. from Well

Capture Zone C 10 Yr. Capture Zone

Water Level Contours

500 0 500 1000 1500 Feet


N
W
E
S
6900
RSF
RSF
RSF
RSF
RSF
RSF
RSF
RSF
6750 Ft.
Hijo de Dios
Alma Drive
BM
6884
Rey de Reyes
Principe de Paz
6940
Well #8
Well
6700 Ft.
6650 Ft.
6900
Eldorado Utilities Source WaterAssessment Area
Well #8
WSS # 373-26
Spring 2002
NOTE: Refer to Appendix D for 3-Letter Potential Source of Contamination Codes
Capture Zone A
200 Ft. from Well
Capture Zone B
500 Ft. from Well
5 Yr. Capture Zone
Capture Zone C
1000 Ft. from Well
10 Yr. Capture Zone
Water Level Contours
MAP LEGEND
500
0
500
1000
1500
2000
2500
Feet



Eldorado Utilities Source Water Assessment Area
Well #9
WSS # 373-26
Spring 2002

NOTE: Refer to Appendix D for 3-Letter Potential Source of Contamination Codes

MAP LEGEND

Capture Zone A 200 Ft. from Well

Capture Zone B 500 Ft. from Well

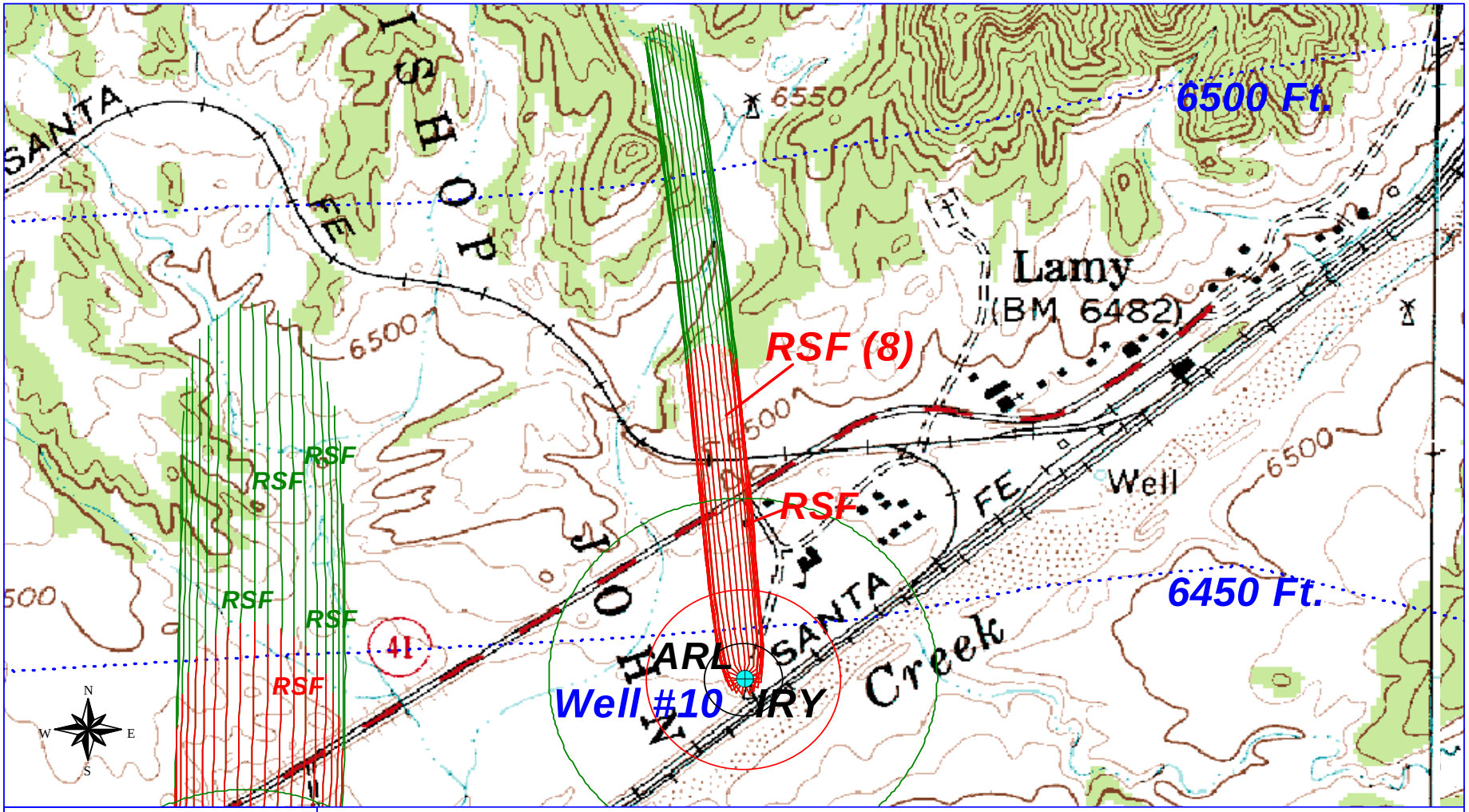
Capture Zone B 5 Yr. Capture Zone

Capture Zone C 1000 Ft. from Well

Capture Zone C 10 Yr. Capture Zone

Water Level Contours

500 0 500 1000 1500 2000 2500 Feet



Eldorado Utilities Source Water Assessment Area
Well #10
WSS # 373-26
Spring 2002

NOTE: Refer to Appendix D for 3-Letter Potential Source of Contamination Codes

MAP LEGEND

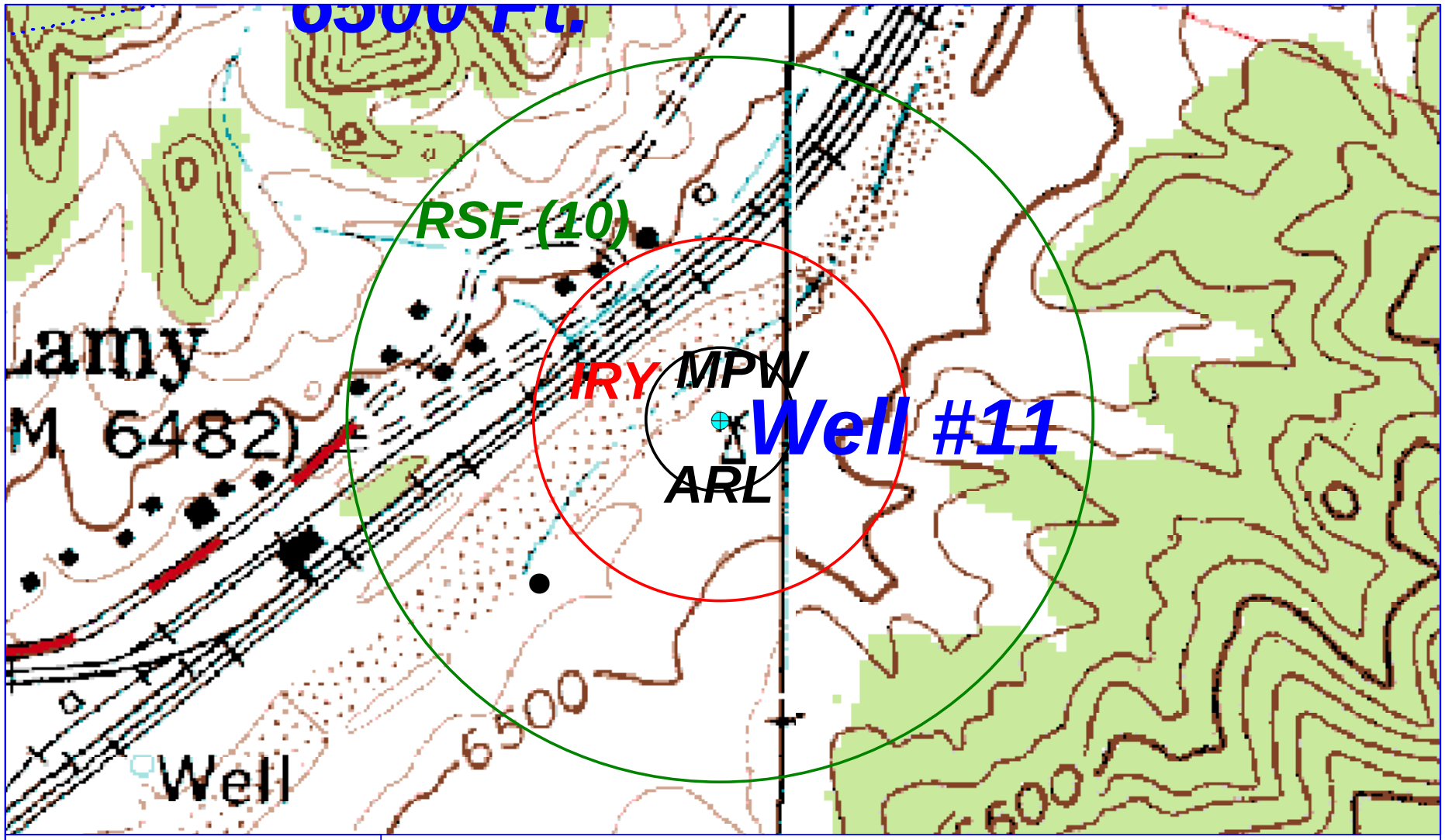
Capture Zone A
200 Ft. from Well

Capture Zone B
500 Ft. from Well
5 Yr. Capture Zone

Capture Zone C
1000 Ft. from Well
10 Yr. Capture Zone

Water Level Contours

500 0 500 1000 1500 2000 2500 3000 Feet



Eldorado Utilities Source Water Assessment Area
Well #11
WSS # 373-26
Spring 2002

NOTE: Refer to Appendix D for 3-Letter Potential Source of Contamination Codes

N
W E
S

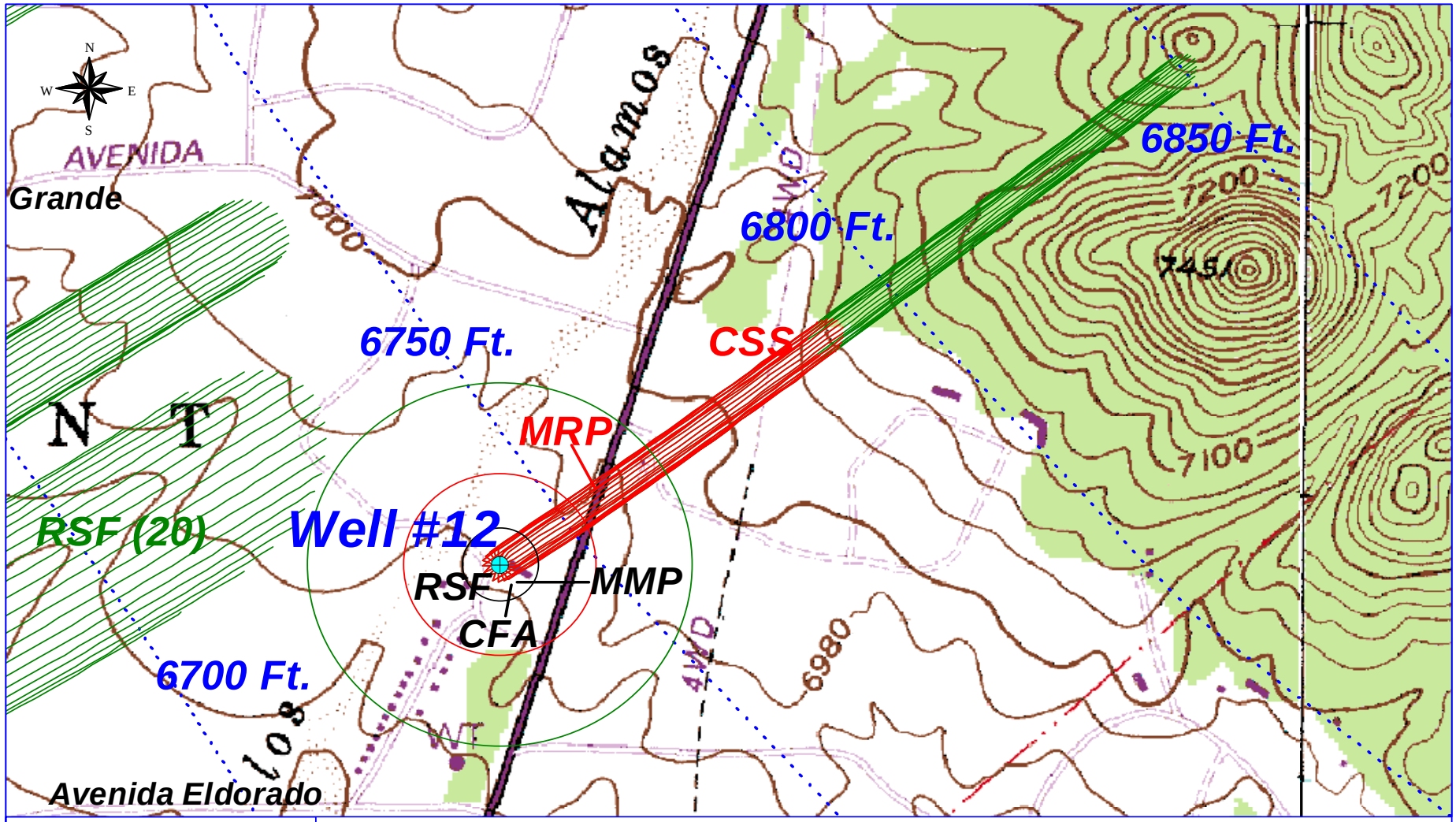
MAP LEGEND

Capture Zone A
200 Ft. from Well

Capture Zone B
500 Ft. from Well

Capture Zone C
1000 Ft. from Well

200 0 200 400 600 800 1000 1200 Feet



Eldorado Utilities Source Water Assessment Area
Well #12
WSS # 373-26
Spring 2002

NOTE: Refer to Appendix D for 3-Letter Potential Source of Contamination Codes

MAP LEGEND

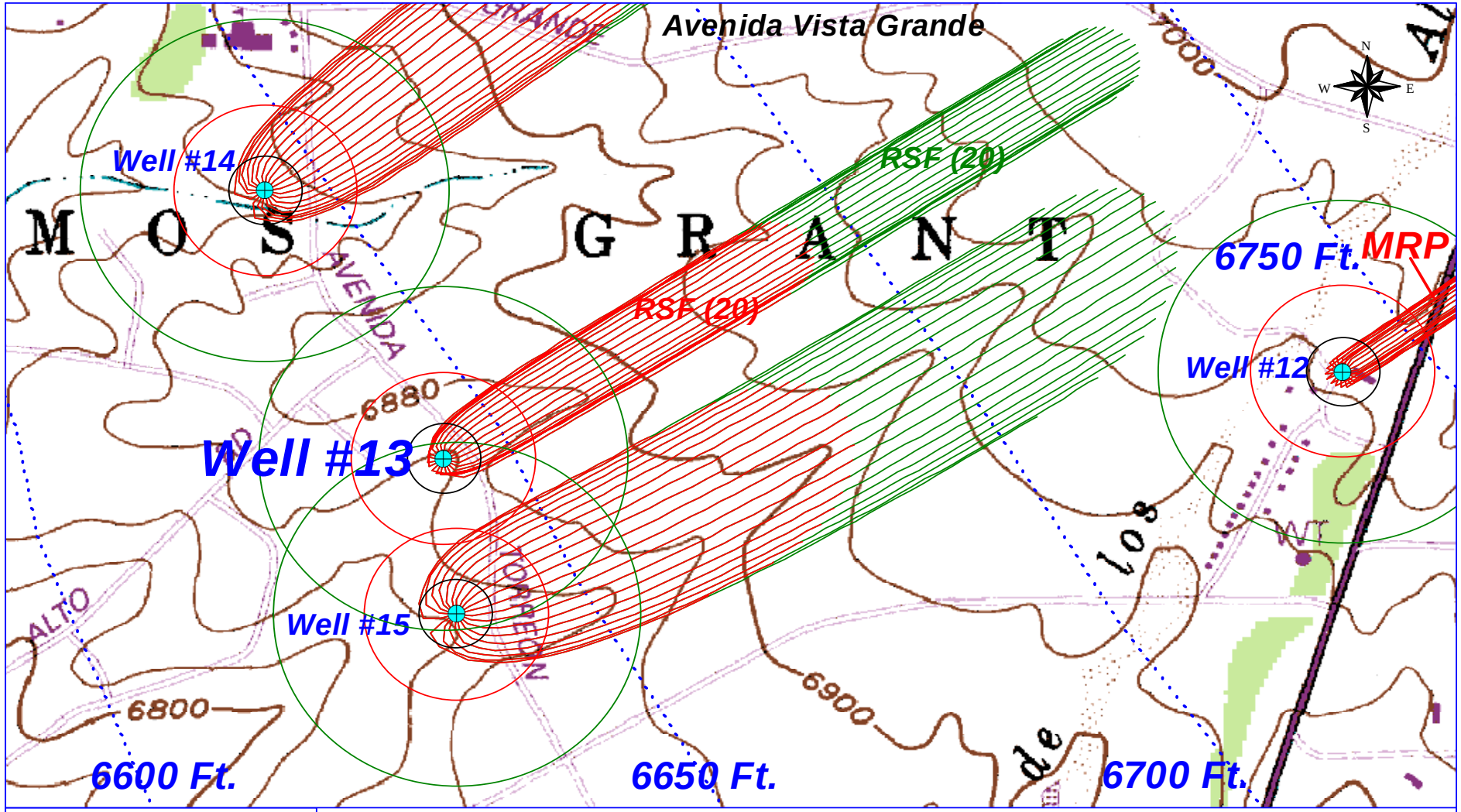
Capture Zone A
200 Ft. from Well

Capture Zone B
500 Ft. from Well
5 Yr. Capture Zone

Capture Zone C
1000 Ft. from Well
10 Yr. Capture Zone

Water Level Contours

500 0 500 1000 1500 2000 2500 3000 Feet



Eldorado Utilities Source Water Assessment Area
Well #13
WSS # 373-26
Spring 2002

NOTE: Refer to Appendix D for 3-Letter Potential Source of Contamination Codes

MAP LEGEND

Capture Zone A 200 Ft. from Well

Capture Zone B 500 Ft. from Well

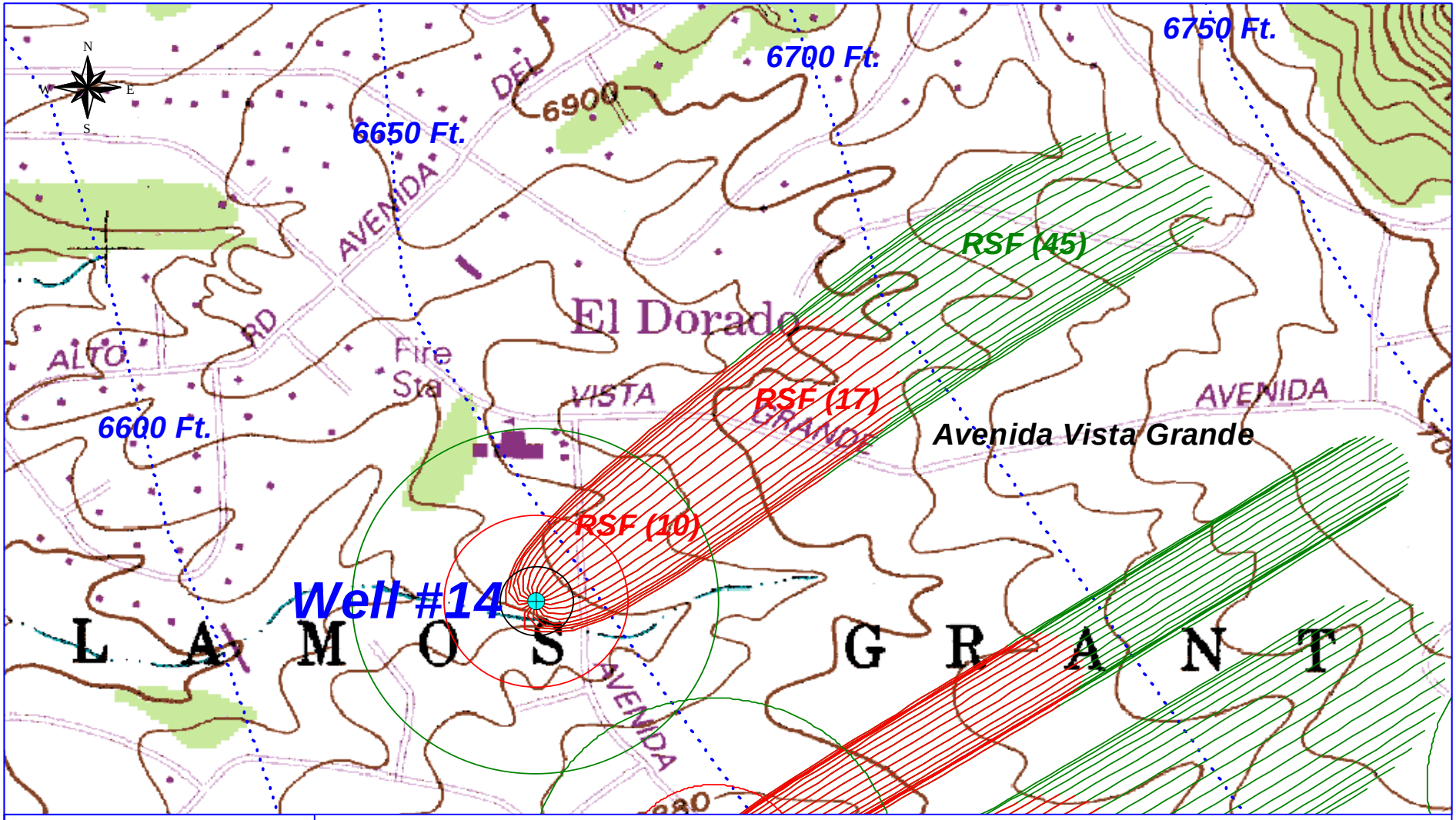
Capture Zone B 5 Yr. Capture Zone

Capture Zone C 1000 Ft. from Well

Capture Zone C 10 Yr. Capture Zone

Water Level Contours

500 0 500 1000 1500 2000 2500 3000 Feet



Eldorado Utilities Source Water Assessment Area
Well #14
WSS # 373-26
Spring 2002

NOTE: Refer to Appendix D for 3-Letter Potential Source of Contamination Codes

MAP LEGEND

Capture Zone A 200 Ft. from Well

Capture Zone B 500 Ft. from Well

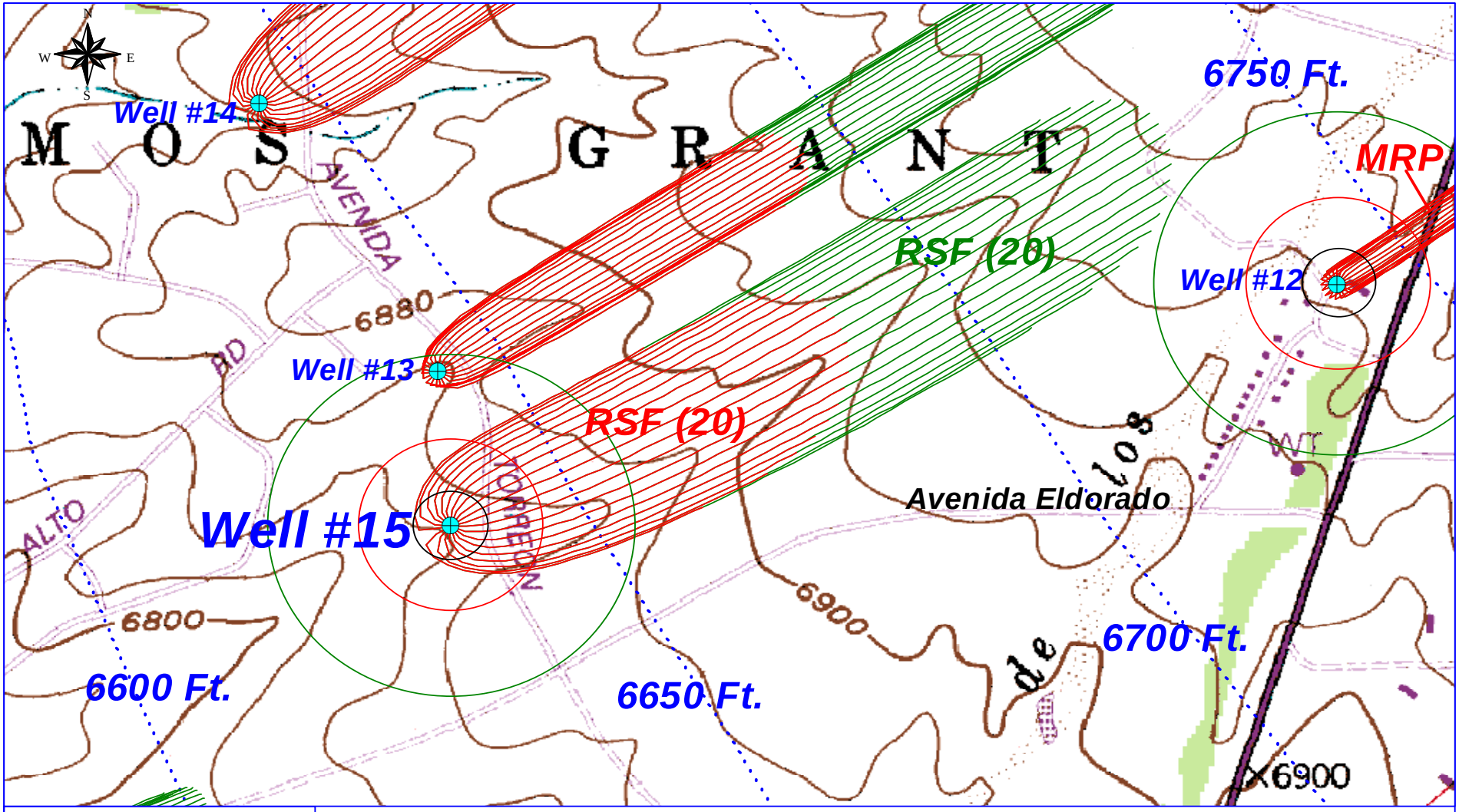
Capture Zone B 5 Yr. Capture Zone

Capture Zone C 1000 Ft. from Well

Capture Zone C 10 Yr. Capture Zone

Water Level Contours

500 0 500 1000 1500 2000 2500 3000 Feet



Eldorado Utilities Source Water Assessment Area
Well #15
WSS # 373-26
Spring 2002

NOTE: Refer to Appendix D for 3-Letter Potential Source of Contamination Codes

MAP LEGEND

Capture Zone A 200 Ft. from Well

Capture Zone B 500 Ft. from Well

Capture Zone B 5 Yr. Capture Zone

Capture Zone C 1000 Ft. from Well

Capture Zone C 10 Yr. Capture Zone

Water Level Contours

500 0 500 1000 1500 2000 2500 3000 Feet

Well #13
Secured Treatment House with Well in Foreground
Single Family Residence Unsewered (Up-gradient)

Well #4
Fenced Well/Treatment House (to left)
Single Family Residence Unsewered in Background
(Identified as PSOC for this report)

Well #9
Secured Fenced Well/Treatment House/Booster Station/Small Storage Tank
Primary Cattle Rangeland – Private Landowner (PSOC)

Well #5 (off-line) with Frost Free Tap.
Up-gradient area surrounded by Single Family Unsewered Residences (PSOCs)

Volatile Organic Chemicals (VOC's)

Name of Contaminant	MCL *	Potential Contaminant Source (by Contaminant Code)***	Health Effects
benzene	0.005	AAP, APP, CAI, CAL, CAR, CAS, CBS, CBY, CCY, CDC, CHM, CHN, CPP, CPR, CPS, CRL, CVS, ICC, ICE, ICL, ICP, IEE, IFW, IFM, IHD, IJM, IMI, IMM, IMW, IMP, IPL, IPM, IPP, IPU, IRG, IRY, ISD, ISF, ISM, IST, ISY, ITS, ITT, IUD, IUI, IUR, MMF, MMP, MSW	Anemia; decrease in blood platelets; nervous system disorders; immune system depression; increased risk of cancer
tetrachloromethane (carbon tetrachloride)	0.005	AAP, APP, CAI, CAL, CDC, CHM, CHN, CPP, CPR, CRL, CVS, ICE, ICL, ICP, IEE, IHD, IJM, IMI, IMM, IMP, IMW, IPL, IPM, IPP, IPU, IRG, IRY, ISD, ISF, ISM, IST, ITS, ITT, IUD, MLF, MMF, MMP, MSC, MSW	Liver problems; kidney, lung damage; increased risk of cancer
1,2-dichlorobenzene (ortho-dichlorobenzene)	0.6	CAR, CAS, CAL, CBS, CBY, CCY, CDC, CFR, CHM, CPP, CPR, CPS, CRL, ICE, ICP, ICL, IEE, IFM, IHD, IJM, IMI, IMM, IMP, IMW, IPL, IPM, IPP, IPU, IRG, IRY, ISD, ISF, ISM, IST, ISY, ITS, ITT, IUD, MHM, MMF, MMP, MSC	Liver, kidney, nervous system or circulatory problems
1,4-dichlorobenzene (para-dichlorobenzene)	0.075	ACS, AFI, AFN, AHC, AHF, ASC, ASP, CAL, CAR, CAS, CDC, CPP, CPR, CPS, CRL, ICL, ICP, IMP, IMW, IPL, IPP, IPU, IRG, IRY, ISF, ISY, ITS, ITT, MMF, MMP, MSC	Eye, respiratory, gastrointestinal tract irritation; anemia; skin lesions; liver, kidney, spleen damage; blood changes
1,2-dichloroethane (ethylene dichloride)	0.005	ACS, AFI, AFN, AHC, AHF, ASC, ASG, ASP, CAL, CFR, CHN, CPP, CPR, CRL, CVS, ICL, ICP, IEE, IFM, ITT, IMW, IPL, IPP, IRG, IRY, ISD, ISF, IUD, MMF, MSC	Nervous system disorders; lung, kidney, liver, circulatory, gastrointestinal effects; increased risk of cancer
1,1-dichloroethene (ethylidene dichloride)	0.007	CAL, CPP, CPR, CRL, ICP, ICL, IHD, IMW, IPL, IPM, IPU, IRG, IRY, ISD, ISF, ISM, ITS, ITT, IUD, MSC	Liver, kidney damage; increased risk of cancer; fetal toxicity
cis-1,2-dichloroethene	0.07	AAP, CAI, CAL, CAR, CAS, CBS, CCY, CFR, CHG, CHM, CPP, CPR, CPS, CRL, CSS, ICP, ICL, IEE, IFM, IHD, IJM, IMI, IMM, IMP, IMW, IPL, IPM, IPP, IPU, IRG, IRY, ISD, ISF, ISM, ISY, ITS, ITT, IUD, IUI, MMF, MMP, MSP, MST	Nervous system disorders; liver, circulatory system damage
trans-1,2-dichloroethene	0.1	AAP, CAI, CAL, CAR, CAS, CBS, CCY, CFR, CHG, CHM, CPP, CPR, CPS, CRL, CSS, IEE, IFM, ICP, ICL, IHD, IJM, IMI, IMM, IMP, IMW, IPL, IPM, IPP, IPU, IRG, IRY, ISD, ISF, ISM, ISY, ITS, ITT, IUD, IUI, MMF, MMP, MSP, MST	Nervous system disorders; liver, circulatory system damage
dichloromethane (methylene chloride)	0.005	AAP, APP, ACS, AFI, AFN, AHC, AHF, ASC, ASG, ASP, CAI, CAL, CAR, CAS, CBS, CBY, CCE, CCY, CFC, CFR, CHN, CHM, CPP, CPR, CPS, CRL, CSS, CVS, ICC, ICE, ICP, ICL, IEE, IFM, IHD, IJM, IMI, IMM, IMP, IMW, IPL, IPM, IPP, IPU, IRG, IRY, ISD, ISF, ISM, IST, ISY, ITS, ITT, IUD, MHM, MMF, MMP, MSC, MSP, MSW	Nervous system, liver, blood damage; increased risk of cancer
1,2-dichloropropane	0.1	ACS, AFI, AFN, AHC, AHF, ASC, ASG, ASP, CAL, CAW, CPP, CPR, CRL, ICL, ICP, IHD, IPM, IPP, IRG, IRY, ISD, ISF, ISM, ITT, IUD, IUI, MLF, MSP	Liver, kidney, adrenal glands, bladder, gastrointestinal tract, respiratory tract damage; increased risk of cancer
ethylbenzene	0.1	CAI, CAL, CFR, CHM, CRL, ICC, ICP, ICL, IEE, IFM, IHD, IJM, IMI, IMM, IMP, IMW, IPL, IPM, IPP, IRG, IRY, ISD, ISF, ISM, ITS, ITT, IUD, IUI, MSC, MSP	Eye, liver, kidney, central nervous system damage; respiratory irritation
chlorobenzene	0.005	CAL, CAR, CAS, CBS, CDC, CHM, CPP, CPR, CRL, ICP, ICL, IEE, IHD, IJM, IMI, IMM, IMP, IMW, IPL, IPP, IPU, IRG, IRY, ISD, ISF, ISY, ITS, ITT, IUD, IUI, MMF, MSC, MSP	Liver, kidney, central nervous system damage
styrene (vinyl benzene)	1	CAL, CHM, CPP, CPR, CRL, ICC, ICP, ICL, IEE, IHD, IJM, IMI, IMM, IMP, IMW, IPL, IPM, IPP, IRG, IRY, ISD, ISF, ISM, ITS, ITT, IUD, IUI, MSP	Liver, kidney, circulatory problems; nerve damage; increased risk of cancer

Volatile Organic Chemicals (VOC's), continued

Name of Contaminant	MCL *	Potential Contaminant Source (by Contaminant Code)***	Health Effects
tetrachloroethene (perchloroethylene, PCE)	0.005	AAP, APP, CAI, CAL, CAR, CAS, CBS, CCC, CCY, CDC, CHM, CHN, CPP, CPR, CRL, CSS, CVS, ICC, ICL, ICP, IEE, IHD, IJM, IMI, IMM, IMO, IMP, IMW, IPL, IPM, IPP, IPU, IRG, IRY, ISD, ISF, ISM, ISY, ITS, ITT, IUD, IUI, IVF, MMF, MMP, MSC, MSP, MWP	Liver, kidney, circulatory problems; nerve damage; increased risk of cancer
methyl benzene (toluene)	1	AAP, APP, CAL, CAS, CCC, CFR, CHM, CHN, CPP, CPR, CRL, CSE, CVS, ICC, ICP, ICL, IEE, IFM, IHD, IJM, IMI, IMM, IMP, IMW, IPL, IPM, IPP, IPU, IRG, IRY, ISD, ISF, ISM, ISY, ITS, ITT, IUD, IVF, MMF, MSC, MSP, MWP	Nervous system, liver, kidney damage
1,2,4-trichlorobenzene	0.07	CAL, CRL, ICL, ICP, IHD, IPM, IPP, IRG, IRY, ISD, ISF, ISM, ITS, IUD	Liver, kidney, adrenal gland changes
1,1,1-trichloroethane (methyl chloroform)	0.2	AAP, APP, CAL, CAR, CAS, CAI, CBS, CBY, CCY, CDC, CFR, CHM, CHN, CPP, CPR, CRL, CVS, ICP, ICL, IEE, IFM, IHD, IHM, IJM, IMI, IMM, IMO, IMP, IMW, IPM, IPP, IRG, IRY, ISD, ISF, ISM, ISY, ITS, ITT, IUD, IVF, MHM, MMF, MMP, MSC, MSP, MWP	Liver, nervous system, circulatory problems
1,1,2-trichloroethane	0.005	AAP, CAL, CDC, CPP, CPR, CRL, ICP, ICL, IEE, IFW, IHD, IJM, IMI, IMM, IMP, IMW, IPL, IPP, IRG, IRY, ISD, ISF, ITS, IUD, IVF, MSP	Liver, kidney, gastrointestinal tract, immune system problems; lung damage; increased risk of cancer
trichloroethene (TCE)	0.005	AAP, AFM, APP, CAI, CAL, CAR, CAS, CBS, CBY, CCC, CFR, CHG, CHM, CPP, CPR, CRL, CSE, ICE, ICL, ICP, IEE, IFM, IHD, IJM, IMI, IMM, IMP, IMW, IPL, IPM, IPP, IPU, IRG, IRY, ISD, ISF, ISM, ISY, ITS, ITT, IUD, IUI, IVF, MHM, MMF, MMP, MSC, MSP	Liver damage; increased risk of cancer
chloroethene (vinyl chloride)	0.002	CAL, CRL, ICP, ICL, IEE, IHD, IJM, IMI, IMM, IMP, IMW, IPL, IPP, IRG, IRY, ISF, IST, ITT, IUD, IVF	Liver, nervous system damage; increased risk of cancer
xylenes (total)	10	AAP, APP, ASC, CAI, CAL, CAR, CAS, CBS, CBY, CCY, CFR, CHM, CHN, CPP, CPR, CPS, CRL, CSE, CVS, IAS, ICC, ICL, ICP, IEE, IFM, IHD, IJM, IMI, IMM, IMP, IMW, IPL, IPM, IPP, IPU, IRG, IRY, ISD, ISF, ISM, IST, ISY, ITT, IUD, IVF, MHM, MMF, MSC, MSP	Central nervous system, liver, kidney damage

Synthetic Organic Chemicals (SOC's): Pesticides

Name of Contaminant	MCL *	Potential Contaminant Source (by Contaminant Code)***	Health Effects
alachlor	0.002	ACS, ADC, AFI, AFN, AHC, ARL, ASC, ASP, CAL, CCE, CCG, CGC, CRL, ICL, ICP, IHD, IPP, IRG, IRY, ISD, ISF, ITS, ITT, IUD, IUI, IUR, MHM, MHR, MMF, MRP, MSD, MSP	Eye, skin irritation; liver, kidney, spleen, nose, eye damage; increased risk of cancer
aldicarb	0.003	ACS, ADC, AFI, AFN, AHC, ASC, ASP, CAL, CAW, CGC, CRL, ICL, ICP, IHD, IPP, IRG, IRY, ISD, ISF, ITS, ITT, IUD, MPW, MSC, MSP	Gastrointestinal, central nervous system, eye problems
aldicarb sulfone	0.003	ACS, ADC, AFI, AFN, AHC, ASC, ASP, CAL, CAW, CGC, CRL, ICL, ICP, IHD, IPP, IRG, IRY, ISD, ISF, ITS, ITT, IUD, MPW, MSC, MSP	Gastrointestinal, central nervous system, eye problems

Synthetic Organic Chemicals (SOC's): Pesticides continued

Name of Contaminant	MCL *	Potential Contaminant Source (by Contaminant Code)***	Health Effects
aldicarb sulfoxide	0.003	ACS, ADC, AFI, AFN, AHC, ASC, ASP, CAL, CAW, CGC, CRL, ICL, ICP, IHD, IPP, IRG, IRY, ISD, ISF, ITS, ITT, IUD, MPW, MSC, MSP	Gastrointestinal, central nervous system, eye problems
atrazine	0.003	ACS, ADC, AFI, AFN, AHC, ARL, ASC, ASP, CAI, CAL, CAW, CCG, CCE, CFC, CGC, CRL, ICL, ICP, IHD, IPP, IPU, IRG, IRY, ISD, ISF, ITS, ITT, IUD, IUI, IUR, MHD, MHM, MLF, MMF, MPW, MRP, MSD, MSP	Cardiovascular system, kidney, adrenal gland damage; increased risk of cancer
carbofuran	0.04	ACS, ADC, AFI, AFN, AHC, ASC, ASP, CAI, CAL, CAW, CCE, CCG, CGC, CPC, CRL, ICL, ICP, IHD, IPP, IPU, IRG, IRY, ISD, ISF, ITS, ITT, IUD, IUI, IUR, MHR, MLF, MMF, MRP, MSD, MSP	Central nervous system, reproductive system damage
chlordane	0.002	ACS, ADC, AFI, AFN, AHC, ASC, ASP, CAI, CAL, CAW, CBY, CCY, CPC, CRL, ICP, ICL, IHD, IPP, IPU, IRG, IRY, ISD, ISF, ITS, ITT, IUD, IUR, MHM, MLF, MMF, MRF, MRP, MSD, MSP	Central nervous system, blood disorders; liver, kidney, heart, lung, spleen, adrenal gland damage; increased risk of cancer
2, 4-dichlorophenoxyacetic acid (2,4-D)	0.07	ACS, ADC, AFI, AFN, AHC, ARL, ASC, ASP, CAI, CAL, CAW, CCE, CCG, CCY, CGC, CRL, ICL, ICP, IHD, IPP, IPU, IRG, IRY, ISD, ISF, ITS, ITT, IUD, IUR, MHM, MHR, MLF, MMF, MPW, MRP, MSD, MSP	Nervous system, kidney, liver damage
dalapon	0.2	ACS, ADC, AFI, AFN, AHC, ARL, ASC, ASP, CAI, CAL, CAW, CCE, CCG, CCY, CGC, CRL, ICL, ICP, IHD, IPP, IPU, IRG, IRY, ISD, ISF, ITS, ITT, IUD, IUI, IUR, MHD, MHM, MHR, MLF, MMF, MPW, MRP, MSD, MSP	Kidney changes
1,2-dibromo-3-chloropropane (DBCP)	0.0002	ACS, ADC, AFI, AFN, AHC, ASC, ASP, CAI, CAL, CAW, CCE, CGC, CPC, CRL, ICL, ICP, IHD, IPP, IPU, IRG, IRY, ISD, ISF, ITS, ITT, IUD, IUR, MHM, MMF, MRP, MSD, MSP	Kidney, liver, reproductive system damage; increased risk of cancer
dinoseb	0.007	ACS, ADC, AFI, AFN, AHC, ARL, ASC, ASP, CAL, CRL, ICL, ICP, IHD, IRG, IRY, ISD, ISF, ITT, IUD	Reproductive system problems
diquat	0.02	ACS, ADC, AFI, AFN, AHC, AHF, ARL, ASC, ASG, ASP, CAL, CAW, CGC, CRL, ICL, ICP, IHD, IPP, IPU, IRY, ISD, ISF, ITS, ITT, IUD, IUR, MHM, MMF, MPW, MSD, MSP	Cataracts
endothall	0.1	ACS, ADC, AFI, AFN, AHC, AHF, ARL, ASC, ASG, ASP, CAI, CAL, CAW, CBY, CCE, CCG, CCY, CGC, CRL, ICL, ICP, IHD, IPP, IPU, IRG, IRY, ISD, ISF, ITS, ITT, IUD, IUR, MHM, MHR, MLF, MMF, MPW, MRP, MSD, MSP	Stomach, intestinal problems
endrin	0.002	ACS, ADC, AFI, AFN, AHC, AHF, ARL, ASC, ASG, ASP, CAL, CAW, CPC, CRL, ICL, ICP, IHD, IPP, IPU, IRG, IRY, ISD, ISF, ITS, ITT, IUD, IUR, MHM, MMF	Central nervous system problems; liver damage
1,2-dibromoethane (ethylene dibromide, EDB)	0.00005	ACS, ADC, AHC, APP, ASC, ASG, ASP, CAI, CAL, CAW, CFR, CPP, CPR, CPS, CRL, ICL, ICP, IFM, IHD, IPL, IPP, IRG, IRY, ISD, ISF, ITS, ITT, IUD, MMF, MSP	Liver, stomach, adrenal gland, reproductive system, respiratory, nervous system, heart, kidney damage; increased risk of cancer
glyphosate	0.7	ACS, ADC, AFI, AFN, AHC, AHF, AHF, ARL, ASC, ASP, CAI, CAL, CAW, CCE, CCG, CCY, CGC, CRL, ICL, ICP, IHD, IPP, IPU, IRG, IRY, ISD, ISF, ITS, IUD, IUI, IUR, MHM, MHR, MLF, MMF, MPW, MRP, MSD, MSP	Respiratory problems; kidney, reproductive system damage

Synthetic Organic Chemicals (SOC's): Pesticides continued

Name of Contaminant	MCL *	Potential Contaminant Source (by Contaminant Code)***	Health Effects
heptachlor	0.0004	CAI, CAL, CCY, CGC, CPC, CRL, ICE, ICL, ICP, IHD, IPP, IPU, IRY, ISF, ITT, IUD, IUR, MHM, MMF, MSC	Central nervous system, liver damage; increased risk of cancer
heptachlor epoxide	0.0002	CAI, CAL, CCY, CGC, CPC, CRL, ICE, ICL, ICP, IHD, IPP, IPU, IRY, ISF, ITT, IUD, IUR, MHM, MMF, MSC	Central nervous system, liver damage; increased risk of cancer
hexachlorobenzene	0.001	ACS, ADC, ASC, ASG, ASP, CAL, CPP, CPR, CRL, ICL, ICP, IHD, IMW, IPL, IPP, IRG, IRY, ISF, ITS, ITT, IUD, MMF	Skin lesions; nerve, liver, kidney damage; reproductive system problems; endocrine gland tumors; increased risk of cancer
hexachlorocylopentadiene	0.05	CAL, CRL, ICL, ICP, IHD, IPL, IPP, IRG, IRY, ISF, ITS, ITT, IUD	Gastrointestinal problems; liver, kidney, heart damage
lindane	0.0002	ACS, ADC, ADF, AFI, AFL, AFN, AHC, ARL, ASC, ASP, CAL, CCY, CPC, CPP, CPR, CRL, CVS, ICL, ICP, IHD, IPM, IPP, IRG, IRY, ISF, ISM, ITS, ITT, IUD, MHM, MMF, MSC, MSP	Liver, kidney damage; pulmonary problems
methoxychlor	0.04	ACS, ADC, ADF, AFI, AFL, AFN, AHC, AHF, ASC, ASG, ASH, ASP, ASW, CAL, CBY, CCG, CGC, CPC, CRL, ICL, ICP, IHD, IPP, IPU, IRG, IRY, ISD, ISF, ITS, ITT, IUD, IUR, MHD, MHR, MMF, MRP, MSD	Central nervous system, gastrointestinal tract problems; liver, kidney, heart damage
oxamyl (vydate)	0.2	ACS, ADC, AFI, AFN, AHC, ASC, ASP, CAL, CAW, CCE, CGC, CPC, CRL, ICL, ICP, IHD, IPP, IPU, IRG, IRY, ISD, ISF, ITS, ITT, IUD, IUI, IUR, MHM, MLF, MMF, MSC, MSP	Central nervous system problems
pentachlorophenol	0.001	ACS, ADC, AFI, AFN, AHC, ASC, ASP, CAL, CBY, CCY, CFR, CRL, ICL, ICP, IFM, IHD, IPM, IPP, IPU, IRG, IRY, ISF, ISM, ITT, IUD, MHM, MLF, MMF	Central nervous system damage, liver, kidney, reproductive system damage; increased risk of cancer
picloram	0.5	ACS, ADC, AFI, AFN, AHC, ARL, ASC, ASP, CAI, CAL, CAW, CCE, CCG, CCY, CGC, CRL, ICL, ICP, IHD, IPP, IPU, IRG, IRY, ISD, ISF, ITS, ITT, IUD, IUI, IUR, MHD, MHM, MHR, MLF, MMF, MRP, MSD, MSP	Central nervous system, liver damage
simazine	0.004	ACS, ADC, AFI, AFN, AHC, ARL, ASC, ASP, CAI, CAL, CAW, CBY, CCG, CCE, CCY, CGC, CRL, ICL, ICP, IHD, IPP, IPU, IRG, IRY, ISD, ISF, ITS, ITT, IUD, IUI, IUR, MHD, MHM, MHR, MLF, MMF, MPW, MRP, MSD, MSP	Reproductive system, blood, kidney, liver, thyroid damage; gene mutation; increased risk of cancer
2,3,7,8-TCDD (dioxin)	3x10-8	CAI, CAL, CRL, ICL, ICP, IEE, IHD, IPP, IPU, IRY, ISF, IUD, IUR, MIN, MMF, MSW	Reproductive system problems; birth defects; increased risk of cancer
toxaphene	0.003	ACS, ADC, AFI, AFL, AFN, APF, ARL, ASC, ASP, CAL, CPC, CRL, ICL, ICP, IHD, IPP, IRY, ISF, IUD	Central nervous system, thyroid problems; liver, kidney degeneration; increased risk of cancer
2,4,5-TP (Silvex)	0.05	ACS, ADC, ARL, ASC, ASP, CAL, CBY, CCE, CGC, CPC, CRL, ICL, ICP, IHD, IPP, IPU, IRY, ISF, ITT, IUD, IUR, MHM, MLF, MMF	Liver, kidney damage; central nervous system problems

Synthetic Organic Chemicals (SOC's): Non Pesticides

Name of Contaminant	MCL *	Potential Contaminant Source (by Contaminant Code)***	Health Effects
benzo (a) pyrene (PAHs)	0.0002	AFM, CAI, CAL, CAR, CAS, CBS, CCY, CFC, CRL, CSE, IAS, ICC, ICL, ICP, IFW, IHD, IMI, IMM, IMP, IPL, IPP, IPU, IRG, ISF, IST, ISY, ITT, IVF, MHM, MIN, MLF, MMF, MMP, MSC	Anemia; immune system depression; reproductive, developmental problems; increased risk of cancer
di (2-ethylhexyl) adipate	0.4	AAP, CAI, CAL, CAR, CAS, CBY, CCY, CPS, CRL, ICL, ICP, IHD, IJM, IMI, IMM, IMP, IMW, IPL, IPP, IPU, IRG, IRY, ISF, ISY, ITS, ITT, IUD, IVF, MIN, MLF, MMF, MMP, MSL, MSP, MSS, MST	Liver, reproductive system damage; increased risk of cancer
di (2-ethylhexyl) phthalate	0.006	AAP, APP, CAL, CHM, CPP, CPR, CRL, ICE, ICL, ICP, IEE, IHD, IMP, IMW, IPL, IPP, IRG, IRY, ISF, IST, ITT, IUD, MHM, MIN, MLF, MMF, MRF, MSW	Liver, reproductive system damage; increased risk of cancer
polychlorinated biphenyls (PCB's)	0.0005	ACS, ASC, CAI, CAL, CCY, CHM, CRL, ICL, ICP, IEE, IHD, IJM, IMI, IMM, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISF, ISM, ITS, IUD, IUR, IVF, MHM, MIN, MLF, MMF, MSS, MST, MSW	Skin problems, thymus gland, reproductive system, immune system problems; liver function changes; increased risk of cancer

Inorganic Chemicals (IOC's)

Name of Contaminant	MCL *	Potential Contaminant Source (by Contaminant Code)***	Health Effects
antimony	0.006	CAL, CRL, ICL, ICP, IEE, IFW, IHD, IJM, IMI, IMM, IMP, IPL, IPP, IRG, IRY, ISF, IST, IUD, IVF, MIN, MLF, MSW	Blood changes; increased risk of cancer
arsenic	0.05	AAP, ACS, ADC, AFI, AFN, AHC, APP, ASC, ASP, CAI, CAL, CAR, CAS, CBS, CCE, CCY, CFC, CGC, CHM, CHN, CPP, CPR, CRL, CVS, ICL, ICP, IEE, IHD, IJM, IMI, IMM, IMP, IMW, IPM, IPP, IRG, IRY, ISF, ISM, ISY, IUD, IPU, IVF, MLF, MMF, MSC, MSW	Skin damage; circulatory problems; increased risk of cancer
asbestos	7 MLF (million fibers/Lite	CAI, CAL, CAR, CAS, CBS, CBY, CCY, CHM, CHN, CRL, ICC, ICL, ICP, IHD, IHM, IJM, IMI, IMM, IMO, IMW, IPU, IRG, IRY, ISF, IST, ISY, ITT, IUD, IVF, MHD, MHM, MIN, MLF, MMF, MMP, MSC, MSW, MWP	Lung disease, increased risk of cancer
barium	2	CAI, CAL, CAR, CAW, CBS, CCY, CFR, CHM, CHN, CPP, CPR, CRL, CVS, ICC, ICL, ICP, IEE, IFW, IFM, IGO, IHD, IHM, IJM, IMI, IMM, IPL, IPM, IPP, IPU, IRG, IRY, ISF, ISM, IST, ITT, IUD, IUI, IUR, IVF, MHM, MIN, MLF, MMF, MMP, MSC, MSW	Gastrointestinal problems; high blood pressure
beryllium	0.004	CAL, CRL, ICL, ICP, IEE, IFW, IHD, IHM, IJM, IMI, IMM, IMO, IMP, IMW, IPP, IPU, IRG, IRY, IRW, ISF, IST, IUD, IVF, MIN, MLF, MMF, MSW	Lung, bone damage; increased risk of cancer
cadmium	0.005	AAP, APP, CAI, CAL, CAR, CAS, CBS, CBY, CCY, CHG, CHM, CPP, CPR, CPS, CRL, CSS, ICC, ICE, ICL, ICP, IEE, IFW, IHD, IHM, IJM, IMI, IMM, IMO, IMP, IMW, IPL, IPM, IPP, IPU, IRG, IRY, ISF, ISM, IST, ISY, ITT, IUD, IUR, IVF, MHM, MIN, MLF, MMF, MMP, MSC, MSP, MSS, MST, MSW, MWP	Gastrointestinal problems; kidney, liver, bone, blood damage
chromium	0.1	CAL, CAS, CPP, CPR, CRL, ICC, ICL, ICP, IEE, IFW, IHD, IHM, IJM, IMI, IMM, IMO, IMP, IMW, IPP, IPU, IRG, IRY, ISF, IST, ISY, ITS, ITT, IUD, IVF, MIN, MLF, MMF, MPW, MSC, MSP, MSS, MST	Skin problems; liver, kidney, circulatory, nerve damage.

Inorganic Chemicals (IOC's), continued

Name of Contaminant	MCL *	Potential Contaminant Source (by Contaminant Code)***	Health Effects
copper	1.3 TT** Action Level	AAP, ACS, ADC, AHC, APF, APP, ASC, ASP, CAL, CAR, CBS, CCY, CHM, CHN, CPP, CPR, CRL, CVS, ICL, ICP, IEE, IFM, IFW, IHD, IHM, IJM, IMI, IMM, IMO, IMP, IMW, IPL, IPM, IPP, IPU, IRG, IRY, ISF, ISM, IST, ITS, ITT, IUD, IVF, MIN, MLF, MMF, MSP, MSS, MST, MSW	Gastrointestinal problems; liver, kidney damage; anemia
cyanide	0.2	ACS, ADC, AFI, AFN, AHC, ASC, ASP, CAL, CCY, CHN, CPP, CPR, CPS, CRL, CVS, ICL, ICP, IEE, IFW, IHD, IJM, IMI, IMM, IMP, IMW, IPL, IPM, IPP, IPU, IRG, IRY, ISD, ISF, ISM, IST, ITS, ITT, IUD, IVF, MHM, MLF, MMF, MPW, MSC, MSS, MST	Thyroid problems; nerve damage
fluoride	4	ACS, ADC, ASC, ASF, CAL, CCY, ICC, ICL, ICP, IFW, IHM, IMI, IMM, IMO, IMP, IRY, IST, IUD, MWP	Tooth mottling; bone disease
lead	0.015 TT**	CAI, CAL, CAR, CBS, CBY, CCY, CFR, CHG, CHM, CHN, CPP, CPR, CPS, CRL, ICC, ICL, ICP, IEE, IFM, IFW, IHD, IHM, IMI, IMM, IMO, IMP, IMW, IPL, IPM, IPP, IPU, IRG, IRY, ISF, ISM, IST, ITS, ITT, IUD, IUR, IVF, MHD, MHM, MIN, MLF, MMF, MMP, MRF, MSC, MSP, MSS, MST, MSW, MWP	Blood, neurological development problems; kidney disease; stroke; increased risk of cancer
mercury	0.002	AAP, ACS, ADC, AFI, AFN, AHC, APP, ASC, ASP, CAI, CAL, CAR, CAS, CBS, CBY, CCY, CFR, CHM, CHN, CPP, CPR, CRL, CVS, ICE, ICL, ICP, IEE, IFM, IFW, IHD, IHM, IMI, IMM, IMO, IMP, IMW, IPL, IPM, IPP, IPU, IRG, IRY, ISF, ISM, IST, ISY, ITS, ITT, IUD, IUR, IVF, MHM, MIN, MLF, MMF, MPW, MRF, MSC, MSP, MSS, MST, MSW	Kidney damage
nickel	0.1	CAI, CAL, CAR, CAS, CBS, CBY, CCY, CPP, CPR, CRL, ICE, ICL, ICP, IEE, IFW, IHD, IHM, IJM, IMI, IMM, IMO, IMP, IMW, IPL, IPM, IPP, IPU, IRG, IRY, ISF, IST, ISY, ITS, ITT, IUD, IVF, MHM, MIN, MLF, MMF, MMP, MPW, MRF, MSC, MSP, MSS, MST, MSW	Gastrointestinal irritation; nerve, liver, kidney, reproductive system damage
nitrate	10	AAP, ACS, ADC, ADF, AEF, AFI, AFL, AFN, AHC, AMA, AMS, AOA, APF, APP, ARL, ASC, ASF, ASH, ASW, CAI, CAL, CAW, CBY, CCE, CCG, CCW, CCY, CFC, CGC, CHG, CHN, CPP, CPR, CRL, CVS, ICL, ICP, IHD, IHM, IMI, IMM, IMO, IMP, IMW, IPL, IPM, IPP, IPU, IRY, ISD, ISF, ISM, ITS, ITT, IUD, IUR, IVF, MAS, MCC, MHM, MLF, MMF, MPS, MPW, MSC, MRP, MSD, MSL, MSP, MSS, MST, MSW, MWP, RAC, RMF, RMH, RSF	Methemoglobinemia; spleen damage
nitrite	1	AAP, ACS, ADC, ADF, AEF, AFI, AFL, AFN, AHC, AMA, AMS, AOA, APF, APP, ARL, ASC, ASF, ASH, ASW, CAI, CAL, CAW, CBY, CCG, CCE, CCW, CCY, CFC, CGC, CHG, CHN, CPP, CPR, CRL, CVS, ICL, ICP, IHD, IHM, IMI, IMM, IMO, IMP, IMW, IPL, IPM, IPP, IPU, IRY, ISD, ISF, ISM, ITS, ITT, IUD, IUR, IVF, MAS, MCC, MHM, MLF, MMF, MPS, MPW, MSC, MRP, MSD, MSL, MSP, MSS, MST, MSW, MWP, RAC, RMF, RMH, RSF	Methemoglobinemia; spleen damage
selenium	0.05	ADC, AFI, AFN, ARL, CAL, CPP, CPR, CRL, ICC, ICL, ICP, IEE, IFW, IHD, IHM, IMI, IMM, IMO, IMP, IMW, IPL, IPM, IPP, IPU, IRG, IRY, ISF, IST, IUD, IVF, MHM, MIN, MLF, MMF, MPW, MSC, MSS, MST, MSW	Peripheral nervous system, kidney, liver, circulatory system damage
thallium	0.002	CAL, CHN, CPP, CRL, ICC, ICE, ICL, ICP, IEE, IFW, IHD, IHM, IMI, IMM, IMO, IMP, IPL, IPP, IPU, IRG, IRY, ISF, IUD, IUR, IVF, MIN, MLF, MMF, MSS, MST, MSW	Blood chemistry changes; nerve, liver, kidney, intestinal, reproductive system damage

Radiological Contaminants

Name of Contaminant	MCL *	Potential Contaminant Source (by Contaminant Code)***	Health Effects
beta particles and photon emitters	4 Millirems per year	CAL, CAW, CHN, CRL, IGO, IHM, IMO, IRG, IRW, ISF, MMF, MWP	Increased risk of cancer
gross alpha particle activity	15 Picocuries per Liter	CAL, CAW, CHN, CRL, IGO, IHM, IMO, IRG, IRW, ISF, MMF, MWP	Increased risk of cancer
radium 226 and radium 228 (combined)	5 Picocuries per year	CAL, CAW, CHN, CRL, IGO, IHM, IMO, IRG, IRW, ISF, MMF, MWP	Increased risk of cancer

Microbiological (Pathogenic) Organisms

Name of Contaminant	MCL *	Potential Contaminant Source (by Contaminant Code)***	Health Effects
crytosporidium parvum		AAP, ADC, ADF, AFL, AMA, AMS, AOA, APF, APP, ARL, ASH, ASW, CAL, CAW, CBY, CCG, CFC, CHN, CSS, CVS, ISD, ITS, IUI, IUR, MAS, MCC, MHR, MMF, MPS, MPW, MRP, MSC, MSD, MSL, MSP, MSS, MST, MWP, RAC, RMF, RMH, RSF	Cryptosporidiosis (a gastroenteric disease)
giardia lambia	TT**	AAP, ADC, ADF, AFL, AMA, AMS, AOA, APF, APP, ARL, ASH, ASW, CAL, CAW, CBY, CCG, CFC, CHN, CSS, CVS, ISD, ITS, IUI, IUR, MAS, MCC, MHR, MMF, MPS, MPW, MSC, MSD, MSL, MSP, MSS, MST, MWP, RAC, RMF, RMH, RSF	Giardiasis (a gastroenteric disease)
legionella sp.	TT**	ADC, CAL, CBY, ITS, MPW, MSD, MSP, MWP	Legionnaire's Disease; pneumonia
total coliforms (including fecal coliform & E. coli)	5% (see Note 1)	AAP, ADC, ADF, AEF, AFL, AMA, AMS, AOA, APF, APP, ARL, ASH, ASW, CAL, CAW, CBY, CCG, CFC, CHN, CSS, CVS, ISD, ITS, IUI, IUR, MAS, MCC, MHR, MMF, MPS, MPW, MSC, MSD, MSL, MSP, MSS, MST, MWP, RAC, RMF, RMH, RSF	Used as an indicator that other potentially harmful bacteria may be present (see Note 2)
turbidity	TT**	ADC, CBY, CAL, CCG, CCW, CCY, CGC, ICC, IHD, IHM, IMO, IPM, IUD, IUR, MHD, MHM, MHR, MIN, MLF, MMF, MPW, MRF, MRP, MSD, MSL, MSP, MSS, MST, MSW	Turbidity has no health effects but can interfere with disinfection and provide a medium for bacterial growth. It may indicate the presence of microbes
viruses (enteric)	TT**	AAP, ADC, ADF, AEF, AFL, AMA, AMS, AOA, APF, APP, ARL, ASH, ASW, CAL, CAW, CBY, CCG, CFC, CHN, CSS, CVS, ISD, ITS, IUI, IUR, MAS, MCC, MHR, MMF, MPS, MPW, MRP, MSC, MSD, MSL, MSP, MSS, MST, MWP, RAC, RMF, RMH, RSF	Gastroenteric disease

Footnotes

* Maximum Contaminant Level in milligrams per liter (mg/L) unless otherwise noted.

** Treatment Technique: the Surface Water Treatment Rule requires systems using surface water or ground water under the direct influence of surface water to (1) disinfect their water, and (2) filter their water or meet criteria to avoid filtration so that the following contaminants are controlled at the following levels: Giardia lambia-99.9% killed/inactivated; Viruses-99.99% killed/inactivated; Legionella: no limit, but EPA believes that if Giardia and viruses are inactivated, Legionella will also be controlled; Turbidity: at no time can Turbidity (cloudiness of water) go above 5 nephelometric turbidity units (NTU) [systems that filter must ensure that the turbidity is no higher than 1 NTU (0.5 NTU for conventional or direct filtration) in at least 95% of the daily samples for any month]; HPC: no more than 500 bacterial colonies per milliliter.

*** Potential Sources of Contamination (PSOC) are coded by category of land use where the prefix A, C, I and M refer to Agricultural, Commercial, Industrial, and Municipal/Residential, respectively. Specific PSOC inventoried in the vicinity of the source water protection area are explained in Appendix D.

Note 1: No more than 5.0% of samples collected may be total coliform-positive in any given month. (For water systems that collect fewer than 40 routine samples per month, no more than one sample can be total coliform-positive). Every sample that is total coliform-positive must also be analyzed for fecal coliform bacteria. Presence of fecal coliform is an MCL violation.

Note 2: Fecal coliform and E. coli are bacteria whose presence indicates that the water may be contaminated with human/animal wastes. Microbes in these wastes can cause diarrhea, cramps, nausea, headaches, or other symptoms. They pose a special health risk for infants, young children, and people with severely compromised immune systems.

AGRICULTURAL LAND USES

Map Code	Land Use	Description	Chemical Compounds, Mixtures & Solutions	Contaminants of Concern*
AAP	Animal Processing or Rendering Plant	commercial slaughterhouse, packing plant or food processor	nitrate; pathogens; miscellaneous organic/inorganic chemicals	VOC; IOC; Microbiological
ABS	Bulk Agrochemical Storage-Fertilizer, Pesticides	warehouse, co-op or commercial storage or sales - 500+ gallons	fertilizers; herbicides; pesticides; petroleum products; miscellaneous organic/inorganic chemicals	VOC; SOC; IOC
ACS	Farm/Ranch Agrochemical Storage Facility or Site	non-commercial storage for farm or ranch use - 100+ gallons	fertilizers; herbicides; pesticides; petroleum products; miscellaneous organic/inorganic chemicals	VOC; SOC; IOC
ADC	Drainage Canal, Ditch or Acequia-Unlined	unlined conveyance structure	pesticides; herbicides; fertilizers; nitrate; pathogens	VOC; SOC; IOC, Microbiological
ADF	Livestock Production - Dairy	commercial producer - greater than 10 head	nitrate; phosphate; chloride; pathogens; pharmaceuticals	SOC; IOC; Microbiological
AEF	Equestrian Facility, Corral or Stable	commercial facility - greater than 10 head	nitrate; phosphate; chloride; pathogens; pharmaceuticals	SOC; IOC; Microbiological
AFI	Farming - Irrigated Cropland	commercial producer - greater than 5 acres planted	nitrate; ammonia; chloride; fertilizers; pesticides; herbicides	SOC; IOC
AFL	Animal Feeding Operation or Feedlot	commercial producer - greater than 100 head	nitrate; phosphate; chloride; pathogens; pharmaceuticals	SOC; IOC; Microbiological
AFM	Farm Machinery Maintenance, Sales or Storage	repair facility; storage site; equipment sales or auction lot	waste fuels, oils, lubricants and coolants	VOC; IOC
AFN	Farming-Non-irrigated Cropland	commercial producer - greater than 5 acres planted	nitrate; ammonia; chloride; fertilizers; pesticides; herbicides	SOC; IOC
AHC	Horticultural/Garden/Nursery/Greenhouse	commercial producer or retail sales facility	pesticides; herbicides; fertilizers	SOC; IOC
AMA	Manure or Livestock Waste-Land Application Area	commercial producer	nitrate; ammonia; phosphate; chloride; pathogens; pharmaceuticals	SOC; IOC; Microbiological
AMS	Manure or Livestock Waste-Storage Facility or Site	bulk manure storage or solids-separation facility	nitrate; ammonia; phosphate; chloride; pathogens; pharmaceuticals	SOC; IOC; Microbiological
AOA	Livestock Production - Other Animal	commercial producer	nitrate; ammonia; phosphate; chloride; pathogens; pharmaceuticals	SOC; IOC; Microbiological
APF	Livestock Production - Poultry	commercial producer - greater than 50 hens	nitrate; ammonia; phosphate; chloride; pathogens; pharmaceuticals	SOC; IOC; Microbiological
APP	Processing Plant or Mill - Hay, Grain or Produce	commercial food or feed processor	organic/inorganic chemicals, lubricants, machinery wastes	VOC; SOC; IOC
ARL	Animal Rangeland	watering or feeding site or shelter where livestock congregate	nitrate; ammonia; phosphate; chloride; pathogens; pharmaceuticals	SOC; IOC; Microbiological
ASG	Bulk Agricultural Product Storage-Grain or Produce	off-farm grain elevator, warehouse or commercial storage	fungicides; waste fuels, oils, lubricants and coolants	VOC; SOC; IOC
ASH	Livestock Production - Sheep	commercial producer - greater than 10 head	nitrate; ammonia; phosphate; chloride; pathogens; pharmaceuticals	SOC; IOC; Microbiological
ASW	Livestock Production -Swine	commercial producer - greater than 10 head	nitrate; ammonia; phosphate; chloride; pathogens; pharmaceuticals	SOC; IOC; Microbiological

* Contaminants of Concern (from Appendix C) are regulated chemical substances typically found within the compounds, mixtures and solutions listed in column 4, and that are commonly, but not always, associated with the Land Use listed in column 2

COMMERCIAL LAND USES

Map Code	Land Use	Description	Chemical Compounds, Mixtures & Solutions	Contaminants of Concern*
CAI	Airport	municipal or general aviation; aircraft parking or maintenance; flight school or training facility	aircraft and automotive fuels, lubricants and coolants; deicers; chlorinated solvents; septage; pathogens; herbicides; fertilizers	VOC; SOC; IOC; Microbiological
CAL	Analytical, Research or Medical Laboratory	commercial or governmental facility	miscellaneous organic/inorganic chemicals and reagents; pharmaceuticals; pathogens; radiological materials	VOC; SOC; IOC; Radiological; Microbiological
CAR	Automotive Repair Shop	passenger vehicle, light truck or motorcycle service facility	solvents; degreasers; waste fuels, oils, lubricants and coolants	VOC; IOC
CAS	Automotive Salvage Yard/Wrecking or Towing	active/inactive commercial or governmental facility	waste fuels, oils, lubricants and coolants; metals; miscellaneous automotive wastes	VOC; IOC
CAW	Abandoned/Improperly Closed Well	inadequate or suspect borehole, annular space and/or casing top seals; unsealed aquifer conduit	brines; waste oil; sewage effluent; storm water runoff; miscellaneous process wastes; metals; pathogens; nitrate	VOC; SOC; IOC; Microbiological
CBS	Automotive Body Shop	passenger vehicle, light truck or motorcycle service facility	paints; solvents; degreasers; waste fuels, oils, lubricants and coolants	VOC; IOC
CBY	Boat Yard/Marina	boat storage, rental or sales; refueling and service facility	waste fuels, oils, lubricants and coolants; septage; wood treatment products; paints; varnishes; solvents	VOC; SOC; IOC
CCC	Cleaning-Carpet, Upholstery, Industrial Sweeping	commercial cleaning service operation or facility	solvents; detergents; miscellaneous organic/inorganic chemicals	VOC; IOC
CCG	Camp Ground - Unsewered	underground injection of untreated domestic wastewater	septage; pathogens; nitrate; ammonia; chloride; heavy metals; lawn/garden products; household cleaning agents; solvents	VOC; SOC; IOC; Microbiological
CCE	Cemetery	active/inactive burial ground - greater than one acre	leachate; arsenic; pesticides; fertilizers	VOC; IOC; Microbiological
CCW	Car Wash	unsewered - without water reclaim or recycle system	soaps; detergents; waxes; solvents; miscellaneous organic/inorganic chemicals	VOC; IOC; Microbiological
CCY	Construction/Demolition Yard/Staging Area	contractor storage or staging yard; equipment storage or parking; demolition or deconstruction	waste fuels, oils, lubricants and coolants; wood treatment products; paints; varnishes; solvents; explosives	VOC; SOC; IOC
CDC	Dry Cleaning	commercial or retail service establishment	chlorinated solvents; aromatic hydrocarbons; miscellaneous organic chemicals	VOC; IOC
CFA	Fuel Storage Tank-Above Ground	non-service station tank(s) - miscellaneous facilities	gasoline; diesel fuel; heating fuels and oils; lubricants; coolants; miscellaneous organic/inorganic chemicals	VOC; IOC
CFB	Fuel Storage Tank-Below Ground	non-service station tank(s) - miscellaneous facilities	gasoline; diesel fuel; heating fuels and oils; lubricants; coolants; miscellaneous organic/inorganic chemicals	VOC; IOC
CFC	Funeral Home/Crematory	commercial facility	pathogens; septage; miscellaneous organic/inorganic chemicals	VOC; IOC; Microbiological
CFR	Furniture Repair/Refinishing	commercial or retail operation or facility	wood treatment products; paints; varnishes; solvents; waste lubricating oils and fluids	VOC; IOC
CGC	Golf Course	public/private - greens, clubhouse and maintenance facilities	fertilizers; pesticides; waste fuels, oils, lubricants and coolants; septage	VOC; SOC; IOC; Microbiological
CHG	Historic Gasoline Service Station	inactive/vacant or remodeled former service station with UST	waste fuels, oils, lubricants and coolants; miscellaneous organic/inorganic chemicals	VOC; IOC
CHM	Home Manufacturing	commercial or retail construction operation or facility	wood treatment products; paints; varnishes; solvents; waste lubricating oils and fluids	VOC; IOC
CHN	Hospital/Nursing Home - Unsewered	on-site liquid waste disposal system or cesspool	septage; pathogens; nitrate; ammonia; chloride; heavy metals; pharmaceuticals; cleaning agents; solvents	VOC; SOC; IOC; Microbiological

COMMERCIAL LAND USES, continued

Map Code	Land Use	Description	Chemical Compounds, Mixtures & Solutions	Contaminants of Concern*
CLD	Laundromat - Unsewered	on-site liquid waste disposal system or cesspool	soaps; detergents; waxes; solvents; miscellaneous organic/inorganic chemicals	VOC; IOC; Microbiological
CPC	Pest Control	commercial or retail operation or facility	pesticides; herbicides; fungicides; miscellaneous organic chemicals	SOC; IOC; Microbiological
CPP	Photo Processing Laboratory	commercial or retail operation or facility	solvents and reagents; miscellaneous organic/inorganic chemicals	VOC; IOC
CPR	Printing Shop	commercial or retail operation or facility	solvents; inks; dyes; miscellaneous organic/inorganic chemicals	VOC; IOC
CPS	Paint Store	commercial or retail operation or facility	paint; solvents	VOC; IOC
CSE	Small Engine Repair/Appliance Service	commercial or retail operation or facility	waste fuels, oils, lubricants and coolants; solvents; metals	VOC; IOC
CSF	Food Establishment/Restaurant - Unsewered	on-site liquid waste disposal system or cesspool	septage; pathogens; nitrate; ammonia; chloride; heavy metals; lawn/garden products; household cleaning agents; solvents	VOC; SOC; IOC; Microbiological
CSM	Hotel/Motel - Unsewered	on-site liquid waste disposal system or cesspool	septage; pathogens; nitrate; ammonia; chloride; heavy metals; lawn/garden products; household cleaning agents; solvents	VOC; SOC; IOC; Microbiological
CSO	Office Building/Complex - Unsewered	on-site liquid waste disposal system or cesspool	septage; pathogens; nitrate; ammonia; chloride; heavy metals; lawn/garden products; household cleaning agents; solvents	VOC; SOC; IOC; Microbiological
CSR	Retail Establishment - Unsewered	on-site liquid waste disposal system or cesspool	septage; pathogens; nitrate; ammonia; chloride; heavy metals; lawn/garden products; household cleaning agents; solvents	VOC; SOC; IOC; Microbiological
CSS	Gasoline Service Station or Truck Stop	commercial or retail sales and/or service facility	waste fuels, oils, lubricants and coolants; solvents; septage	VOC; IOC; Microbiological
CVS	Veterinary Service	veterinary hospital/clinic with livestock pens, corrals or kennels	nitrate; phosphate; chloride; pathogens; pharmaceuticals; septage	SOC; IOC; Microbiological

* Contaminants of Concern (from Appendix C) are regulated chemical substances typically found within the compounds, mixtures and solutions listed in column 4, and that are commonly, but not always, associated with the Land Use listed in column 2

INDUSTRIAL LAND USES

Map Code	Land Use	Description	Chemical Compounds, Mixtures & Solutions	Contaminants of Concern*
IAS	Asphalt Plant	batch production or storage facility - temporary or permanent	petroleum derivatives	VOC
ICC	Cement/Concrete Plant	batch production or storage facility - temporary or permanent	waste fuels, oils, lubricants and coolants	VOC; IOC
ICE	Communications Equipment Manufacturing	manufacturing or assembly; equipment maintenance or storage	solvents; waste fuels, oils, lubricants and coolants; antimony; arsenic; miscellaneous metals	VOC; IOC
ICL	Chemical Landfills	commercial or governmental - short/long term disposal facility for chemical wastes	leachate of organic/inorganic chemicals; acids; bases; metals; solvents; waste fuels and oils; pesticides; PCB's	VOC; SOC; IOC
ICP	Chemical Production Plant	bulk production, manufacturing, handling or short-term storage facility	solvents; waste fuels, oils, lubricants and coolants; metals; miscellaneous organic/inorganic chemicals	VOC; SOC; IOC

INDUSTRIAL LAND USES, continued

Map Code	Land Use	Description	Chemical Compounds, Mixtures & Solutions	Contaminants of Concern*
IEE	Electronic/Electrical Equipment Manufacturers	manufacturing or assembly; equipment maintenance or storage	solvents; waste fuels, oils, lubricants and coolants; antimony; arsenic; metals; miscellaneous organic/inorganic chemicals	VOC; SOC; IOC
IFM	Furniture and Fixture Manufacturers	manufacturing or assembly; equipment maintenance or storage	solvents; waste fuels, oils, lubricants and coolants; metals; miscellaneous organic/inorganic chemicals	VOC; SOC; IOC
IFW	Foundry/Smelting Plant	metals extraction, refining, casting or molding facility	solvents; waste fuels, oils, lubricants and coolants; metals; miscellaneous organic/inorganic chemicals; acids; bases	VOC; SOC; IOC
IGO	Gas/Oil Wells - Active/Abandoned/Test	active or abandoned production well or exploration test hole	solvents; waste fuels, oils, lubricants and coolants; metals; miscellaneous organic/inorganic chemicals; drilling wastes	VOC; IOC
IHD	Historic Dump/Landfill	inactive/abandoned dump site operated with or without oversight or regulatory control	leachate of organic/inorganic chemicals; acids; bases; metals; solvents; waste fuels and oils; pesticides; PCB's	VOC; SOC; IOC
IHM	Historic Mining Operation	inactive/abandoned mine or mill; waste rock or tailings pile or pond	metals; miscellaneous inorganic chemicals; acids; bases; radiological materials; waste fuels, oils, lubricants and coolants	VOC; IOC; Radiological
IJM	Jewelry Manufacturing	manufacturing or assembly; equipment maintenance or storage	metals; solvents; miscellaneous organic/inorganic chemicals; acids; bases	VOC; IOC
IMI	Primary Metal Industries	steel or metal works; rolling/wire mill	metals; acids; bases; waste fuels, oils, lubricants and coolants; cyanide; miscellaneous inorganic chemicals	VOC; IOC
IMO	Mining Operations (Surface And Subsurface)	active mining/milling operation; waste rock or tailings pile/pond	metals; miscellaneous inorganic chemicals; acids; bases; radiological materials; waste fuels, oils, lubricants and coolants	VOC; IOC; Radiological
IMP	Metal Plating/Processing	manufacturing, maintenance or equipment refurbishing facility	metals; acids; bases; waste fuels, oils, lubricants and coolants; cyanide; miscellaneous inorganic chemicals	VOC; IOC
IMM	Miscellaneous Manufacturing	manufacturing or assembly; equipment maintenance or storage	metals; acids; bases; waste fuels, oils, lubricants and coolants; cyanide; miscellaneous inorganic chemicals	VOC; IOC
IMW	Machine/Metal Working Shop	manufacturing, maintenance or equipment refurbishing facility	metals; acids; bases; waste fuels, oils, lubricants and coolants; cyanide; miscellaneous inorganic chemicals	VOC; IOC
IOG	Oil/Gas Pipeline	pressurized buried or above-ground conveyance	oils and lubricants; gasoline and diesel fuel; solvents; natural gas; propane; heating oils	VOC; IOC
IPL	Plastics Manufacturer/Molder	manufacturing or assembly; equipment maintenance or storage	metals; acids; bases; waste fuels, oils, lubricants and coolants; cyanide; miscellaneous inorganic chemicals	VOC; IOC
IPM	Paper Mill	manufacturing or assembly; equipment maintenance or storage	chromium; miscellaneous metals; acids; miscellaneous organic/inorganic chemicals	VOC; IOC
IPP	Petroleum Production/Refining/ Bulk Plant	bulk production, refining or distribution facility	oils and lubricants; gasoline and diesel fuel; solvents; drilling/refining wastes; antimony; selenium; misc. metals	VOC; SOC; IOC
IPU	Public Utilities	power generating station, transformer or relay facility	PCB's; solvents; diesel fuel; propane; natural gas; oils and lubricants; miscellaneous metals	VOC; SOC; IOC
IRG	RCRA Waste Generator - Other	miscellaneous manufacturing, production, storage or disposal	miscellaneous organic/inorganic chemicals; solvents; misc. metals; PCB's; acids; bases; radiological materials	VOC; SOC; IOC; Radiological
IRW	Radioactive Waste Disposal Site	commercial or governmental - short/long term disposal facility for anthropogenic radionuclides	high and low level radiological wastes; biomedical wastes	IOC, Radiological
IRY	Rail Yard, Railroad Tracks or Rail Siding	train depot, yard, maintenance facility or railroad right-of-way	metals; acids; bases; waste fuels, oils, lubricants and coolants; miscellaneous organic/inorganic chemicals	VOC; SOC; IOC
ISD	Sumps/Dry Wells	cistern, cesspool, pit, reservoir or trap for collection, storage or disposal of miscellaneous waste fluids	septage; pathogens; nitrate; heavy metals; storm water runoff; misc. process wastes; solvents; waste fuels and oils	VOC; SOC; IOC; Microbiological

INDUSTRIAL LAND USES, continued

Map Code	Land Use	Description	Chemical Compounds, Mixtures & Solutions	Contaminants of Concern*
ISF	Superfund Site	documented hazardous waste site under CERCLA investigation/remediation	miscellaneous organic/inorganic chemicals; solvents; misc. metals; PCB's; acids; bases; radiological materials	VOC; SOC; IOC; Radiological
ISM	Primary Wood Industries	saw mill; wood product manufacturing or treatment facility	metals; acids; bases; waste fuels, oils, lubricants and coolants; miscellaneous inorganic chemicals	VOC; IOC
IST	Stone, Tile, or Glass Manufacturer	manufacturing or assembly; equipment maintenance or storage	acids; bases; waste fuels, oils, lubricants and coolants; arsenic; miscellaneous metals and inorganic chemicals	VOC; IOC
ISY	Industrial Salvage Yard	wrecking/salvage of industrial machinery or heavy equipment	metals; acids; bases; waste fuels, oils, lubricants and coolants; cadmium; miscellaneous organic/inorganic chemicals	VOC; IOC
ITS	Treatment/Storage/Disposal Pond or Lagoon	wastewater impoundment - miscellaneous source	sewage; pathogens; nitrate; ammonia; chloride; heavy metals; miscellaneous organic/inorganic chemicals; solvents	VOC; SOC; IOC; Microbiological
ITT	Transport/Distribution Warehouse; Truck Terminal	short/long term storage or transfer facility	metals; acids; bases; waste fuels, oils, lubricants and coolants; miscellaneous organic/inorganic chemicals	VOC; SOC; IOC
IUD	Unregulated Dump/Excavation	active dump site operated without local government oversight or regulatory control	leachate of organic/inorganic chemicals; acids; bases; metals; solvents; waste fuels and oils; pesticides; PCB's	VOC; SOC; IOC
IUI	Underground Injection (UIC) Well	injection well or disposal field other than Class V	oilfield brine; pathogens; nitrate; heavy metals; storm water runoff; misc. process wastes; solvents; waste fuels and oils	VOC; SOC; IOC; Microbiological
IUR	Utility/Transportation Right-of-Way	power line or utility corridor	metals; acids; bases; storm water runoff; PCBs; miscellaneous organic/inorganic chemicals	VOC; SOC; IOC
IVF	Vacant Manufacturing Facility/Factory	inactive/abandoned manufacturing or assembly facility; equipment maintenance or storage site	acids; bases; waste fuels, oils, lubricants and coolants; paints; solvents; miscellaneous organic/inorganic chemicals	VOC; SOC; IOC

* Contaminants of Concern (from Appendix C) are regulated chemical substances typically found within the compounds, mixtures and solutions listed in column 4, and that are commonly, but not always, associated with the Land Use listed in column 2

MUNICIPAL/RESIDENTIAL LAND USES

Map Code	Land Use	Description	Chemical Compounds, Mixtures & Solutions	Contaminants of Concern*
MAS	Animal Shelter	commercial or governmental facility	nitrate; phosphate; chloride; pathogens; pharmaceuticals; septage	SOC; IOC; Microbiological
MCC	Community or Senior Citizens Center/Library - Unsewered	on-site liquid waste disposal system or cesspool	septage; pathogens; nitrate; ammonia; chloride; heavy metals; lawn/garden products; household cleaning agents; solvents	VOC; SOC; IOC; Microbiological
MHM	Highway/Road Maintenance Yard	governmental road maintenance yard or staging/storage area	waste fuels, oils, lubricants and coolants; paints; solvents; road salt; asphalt; pesticides; herbicides	VOC; SOC; IOC
MHR	Highway Rest Area - Unsewered	on-site liquid waste disposal system or cesspool	septage; pathogens; nitrate; ammonia; chloride; heavy metals; pesticides; herbicides	VOC; SOC; IOC; Microbiological
MIN	Incinerator	commercial or governmental facility	leachate of organic/inorganic chemicals; acids; bases; metals; solvents; waste fuels and oils; pesticides; PCB's	VOC; SOC; IOC
MLF	Municipal Waste Landfill	regulated facility operated by municipality or contract utility	leachate of organic/inorganic chemicals; acids; bases; metals; solvents; waste fuels and oils; pesticides; PCB's	VOC; SOC; IOC
MMF	Military Facilities	structure, storage facility or emplacement containing military equipment, hardware, weaponry or devices	aircraft fuels; diesel fuels; metals; explosives; radiological materials; sewage/septage; oils; solvents; fertilizers; deicers	VOC; SOC; IOC; Radiological; Microbiological

MUNICIPAL/RESIDENTIAL LAND USES, continued

Map Code	Land Use	Description	Chemical Compounds, Mixtures & Solutions	Contaminants of Concern*
MMP	Motor Pools	municipal or local government vehicle storage and maintenance	waste fuels, oils, lubricants and coolants; cadmium; miscellaneous organic/inorganic chemicals	VOC; IOC
MMW	Monitoring Well	aquifer conduit	gasoline; aircraft fuels; diesel fuels; metals; explosives; radiological materials; sewage/septage; solvents	VOC; SOC; IOC; Radiological; Microbiological
MPS	Sewage Pump Station	regulated facility operated by municipality or contract utility	sewage; pathogens; nitrate; metals; miscellaneous organic/inorganic chemicals	VOC; IOC; Microbiological
MPW	Polluted Surface Water Source	water course impacted by naturally occurring or anthropogenic sources of contamination	sewage; pathogens; nitrate; metals; acids; bases; fertilizers; pesticides; miscellaneous organic/inorganic chemicals	VOC; SOC; IOC; Radiological; Microbiological
MRF	Recycling Facility	commercial or governmental facility	waste fuels, oils, lubricants and coolants; household solvents; miscellaneous organic/inorganic chemicals	VOC; IOC
MRP	Primary Road, Highway or Arterial	public street, thoroughfare, highway or main road	gasoline; diesel fuels; metals; storm water runoff; hazardous materials; radiological materials	VOC; SOC; IOC; Radiological; Microbiological
MSC	School - Unsewered	on-site liquid waste disposal system or cesspool	septage; pathogens; nitrate; ammonia; chloride; heavy metals; lawn/garden products; household cleaning agents; solvents	VOC; SOC; IOC; Microbiological
MSD	Storm Drainage Collection Area or Outlet - Unlined	unlined point of discharge for collected storm water runoff	storm water runoff; pesticides; fertilizer; pathogens; nitrate; phosphate; gasoline; diesel fuels; oils and lubricants	VOC; SOC; IOC
MSL	Sewer Line	municipal trunk line or sewer main	sewage; pathogens; nitrate; metals; miscellaneous organic/inorganic chemicals	VOC; IOC; Microbiological
MSP	Wastewater Seepage/Retention Pond (Unlined/Lined)	regulated facility operated by municipality or contract utility	sewage effluent; nitrate; ammonia; pathogens; miscellaneous organic/inorganic chemicals; pesticides; lawn/garden products	VOC; SOC; IOC; Microbiological
MSS	Sewage Effluent/Sludge Land Application Area	regulated facility operated by municipality or contract utility	sewage; sewage sludge; nitrate; phosphate; pathogens; miscellaneous organic/inorganic chemicals; metals	VOC; IOC; Microbiological
MST	Sewage Treatment Plant	regulated facility operated by municipality or contract utility	sewage; sewage sludge; nitrate; phosphate; pathogens; miscellaneous organic/inorganic chemicals; metals	VOC; IOC; Microbiological
MSW	Solid Waste Transfer Station	regulated facility operated by municipality or contract utility	leachate of organic/inorganic chemicals; acids; bases; metals; solvents; waste fuels and oils; pesticides; PCB's	VOC; SOC; IOC
MWP	Water Treatment Plant - Drinking Water Utility	regulated facility operated by municipality or contract utility	miscellaneous organic/inorganic chemicals; chlorine	VOC; IOC; Disinfectants & Disinfection Byproducts
RAC	Apartment Complex - Unsewered	on-site liquid waste disposal system or cesspool	septage; pathogens; nitrate; ammonia; chloride; heavy metals; lawn/garden products; household cleaning agents; solvents	VOC; SOC; IOC; Microbiological
RMF	Multi-Family Residence - Unsewered	on-site liquid waste disposal system or cesspool	septage; pathogens; nitrate; ammonia; chloride; heavy metals; lawn/garden products; household cleaning agents; solvents	VOC; SOC; IOC; Microbiological
RMH	Mobile Home Park - Unsewered	on-site liquid waste disposal system or cesspool	septage; pathogens; nitrate; ammonia; chloride; heavy metals; lawn/garden products; household cleaning agents; solvents	VOC; SOC; IOC; Microbiological
RSF	Single Family Residence - Unsewered	on-site liquid waste disposal system or cesspool	septage; pathogens; nitrate; ammonia; chloride; heavy metals; lawn/garden products; household cleaning agents; solvents	VOC; SOC; IOC; Microbiological

* Contaminants of Concern (from Appendix C) are regulated chemical substances typically found within the compounds, mixtures and solutions listed in column 4, and that are commonly, but not always, associated with the Land Use listed in column 2

Water System Name:	El Dorado Utilities Water System
WSS Number:	373-26
System Type:	Community
Date of Analysis:	8/08/02
Analysis Done By:	D. Ohori
Date of Field Inspection:	4/04/02; 4/11/02; 7/11/01
Number of Wells on System	15
Number Abandoned Wells on System	0

Well Construction Data

Parameter	**Well Name or Identifier**					
	Well #1	Well #2	Well #3	Well #4	Well #5	Well #6
Date Drilled	1984	1970	1970	1970	pre-1969	1981
Drilling Method	(n/a)	(n/a)	(n/a)	(n/a)	(n/a)	(n/a)
Total Depth (ft)	700 ft.	350 ft.	320 ft.	375 ft.	192 ft.	280 ft.
Static Water Level (ft)	137 ft.	150 ft.	100 ft.	87 ft.	127 ft.	219 ft.
Date of Water Level Measure	1987	1970	1970	1970	pre-1969	1981
Casing Material	(n/a)	(n/a)	(n/a)	(n/a)	(n/a)	(n/a)
Casing Length (ft)	700 ft.	246 ft.	320 ft.	363 ft.	(n/a)	280 ft.
Casing Height Above Ground Surface (ft)	1.5 ft.	1.5 ft.	1.5 ft.	1.5 ft.	1.5 ft.	1.5 ft.
Casing Diameter (in)	10.75 in. OD	8.625 in. OD	10.75 in. OD	10.75 in. OD	6.625 in. OD	8.625 in. OD
Screen Material or Perforation Type	slotted steel	slotted steel	slotted steel	slotted steel	(n/a)	slotted steel
Screened Interval(s) (ft)	350-700 ft.	approx. to 200+ ft.	113-320 ft.	76-365 ft.	(n/a)	220-260 ft.
Screen Diameter (in)	10.75 in. OD	8.625 in. OD	10.75 in. OD	10.75 in. OD	(n/a)	8.625 in. OD
Grouting/Sealing Materials	(n/a)	(n/a)	(n/a)	(n/a)	(n/a)	(n/a)
Grouting/Sealing Depth Interval (ft)	(n/a)	(n/a)	(n/a)	(n/a)	(n/a)	(n/a)
Pump Setting (ft)	547 ft.	196 ft.	214 ft.	167 ft.	175 ft.	226 ft.
Rated Pump Capacity (gpm)	60 gpm	130 gpm	25 gpm	25 gpm	20 gpm	50 gpm
Average Pumping Rate (ft^3/day)	11,551	11,551	963	2,118	578	5,775

Information Source (s) for Well Construction Data:	Shomaker & Assoc. Report, July 2001	1997 Sanitary Survey
	1995 DWB Vulnerability Assessment	

Well Construction Data

Parameter	**Well Name or Identifier**					
	Well #7	Well #8	Well #9	Well #10	Well #11	Well #12
Date Drilled	1981	1983	1994 (re-completed)	pre-1969	pre-1969	1970
Drilling Method	(n/a)	(n/a)	(n/a)	(n/a)	(n/a)	(n/a)
Total Depth (ft)	270 ft.	312 ft.	130 ft.	58 ft.	53 ft.	250 ft.
Static Water Level (ft)	188 ft.	39 ft.	32 ft.	13 ft.	16 ft.	70 ft.
Date of Water Level Measure	1997	1997	2000	(n/a)	1991	1970
Casing Material	(n/a)	(n/a)	(n/a)	steel	steel	(n/a)
Casing Length (ft)	270 ft	312 ft.	130 ft.	(n/a)	(n/a)	250 ft.
Casing Height Above Ground Surface (ft)	1.5	1.5	1.5 ft.	1.5 ft.	1.5 ft.	1.5 ft.
Casing Diameter (in)	8.625 in. OD	8.625 in OD	(n/a)	15 in. OD	6 in. OD	6 in. OD
Screen Material or Perforation Type	slotted steel	slotted steel	slotted steel	slotted steel	slotted steel	slotted steel
Screened Interval(s) (ft)	102-250 ft.	165-278 ft.	45-114 ft.	20-58 ft.	(n/a)	(n/a)
Screen Diameter (in)	8.625 in. OD	8.625 in OD	(n/a)	(n/a)	6 in. OD	6 in. OD
Grouting/Sealing Materials	(n/a)	(n/a)	(n/a)	(n/a)	(n/a)	(n/a)
Grouting/Sealing Depth Interval (ft)	(n/a)	(n/a)	(n/a)	(n/a)	(n/a)	(n/a)
Pump Setting (ft)	197 ft.	133 ft.	(n/a)	(n/a)	(n/a)	80 ft.
Rated Pump Capacity (gpm)	60 gpm	50 gpm	200 gpm	25 gpm	25 gpm	20 gpm
Average Pumping Rate (ft^3/day)	4,428	3,080	38,503	4,812	4,812	1,733

Information Source (s) for Well Construction Data:	Shomaker & Assoc. Report, July 2001	1997 Sanitary Survey
	1995 DWB Vulnerability Assessment	

Well Construction Data

Parameter	Well Name or Identifier					
	Well #13	Well #14	Well #15			
Date Drilled	1995	1996	2000			
Drilling Method	(n/a)	(n/a)	(n/a)			
Total Depth (ft)	340 ft.	400 ft.	400 ft.			
Static Water Level (ft)	195 ft.	165 ft.	190 ft.			
Date of Water Level Measure	1995	1996	2000			
Casing Material	(n/a)	(n/a)	(n/a)			
Casing Length (ft)	330 ft	(n/a)	(n/a)			
Casing Height Above Ground Surface (ft)	1.5 ft.	1.5 ft.	1.5 ft.			
Casing Diameter (in)	6.625 in. OD	(n/a)	(n/a)			
Screen Material or Perforation Type	slotted steel	(n/a)	(n/a)			
Screened Interval(s) (ft)	160-290 ft.	(n/a)	280-400 ft.			
Screen Diameter (in)	(n/a)	(n/a)	(n/a)			
Grouting/Sealing Materials	(n/a)	(n/a)	(n/a)			
Grouting/Sealing Depth Interval (ft)	(n/a)	(n/a)	(n/a)			
Pump Setting (ft)	260 ft.	(n/a)	(n/a)			
Rated Pump Capacity (gpm)	200 gpm	215 gpm	250 gpm			
Average Pumping Rate (ft^3/day)	19,251	38,503	48,128			

Information Source (s) for Well Construction Data:	Shomaker & Assoc. Report, July 2001	1997 Sanitary Survey
	1995 DWB Vulnerability Assessment	

Part A: Sensitivity Analysis

1. Sensitivity Ranking for Depth of Screened Interval

Screened Interval Depth	Sensitivity Rank	Well #1	Well #2	Well #3	Well #4	Well #5	Well #6
less than 100 feet	high				✓	(n/a)	
101 – 200 feet	moderately high		✓	✓			
201 – 500 feet	moderate	✓					✓
501 – 700 feet	moderately low						
greater than 700 feet	low						

2a. Sensitivity Ranking for Available Construction Records

Construction Information Available (y/n)	Points Possible	Well #1	Well #2	Well #3	Well #4	Well #5	Well #6
Casing diameter, length and materials	2	1	1	1	1	1	1
Location of screened interval(s)	3	3	2	3	3	0	3
Total completion depth	3	3	3	3	3	3	3
Static water level at completion	2	2	2	2	2	2	2
Pump type, size and setting	2	2	2	2	2	2	2
Drilling log or equivalent	3	2	2	2	2	1	2
Total Points	15	13	12	13	13	9	13
Rank Assigned (see Ranking Guide, below)		low	moderately low	low	low	moderate	low

Ranking Guide

Point Value	Sensitivity Rank
0-3	high
4-6	moderately high
7-9	moderate
10-12	moderately low
13-15	low

1. Sensitivity Ranking for Depth of Screened Interval

Screened Interval Depth	Sensitivity Rank	Well #7	Well #8	Well #9	Well #10	Well #11	Well #12
less than 100 feet	high			✓	✓	✓	(n/a)
101 – 200 feet	moderately high	✓	✓				
201 – 500 feet	moderate						
501 – 700 feet	moderately low						
greater than 700 feet	low						

2a. Sensitivity Ranking for Available Construction Records

Construction Information Available (y/n)	Points Possible	Well #7	Well #8	Well #9	Well #10	Well #11	Well #12
Casing diameter, length and materials	2	1	1	1	1	1	1
Location of screened interval(s)	3	3	3	3	3	0	0
Total completion depth	3	3	3	3	3	3	3
Static water level at completion	2	2	2	2	2	2	2
Pump type, size and setting	2	2	2	1	1	1	2
Drilling log or equivalent	3	2	2	1	1	1	2
Total Points	15	13	13	11	11	8	10
Rank Assigned (see Ranking Guide, below)		low	low	moderately low	moderately low	moderate	moderately low

Ranking Guide

Point Value	Sensitivity Rank
0-3	high
4-6	moderately high
7-9	moderate
10-12	moderately low
13-15	low

1. Sensitivity Ranking for Depth of Screened Interval

Screened Interval Depth	Sensitivity Rank	Well #13	Well #14	Well #15			
less than 100 feet	high		(n/a)				
101 – 200 feet	moderately high	✓					
201 – 500 feet	moderate			✓			
501 – 700 feet	moderately low						
greater than 700 feet	low						

2a. Sensitivity Ranking for Available Construction Records

Construction Information Available (y/n)	Points Possible	Well #13	Well #14	Well #15			
Casing diameter, length and materials	2	1	0	0			
Location of screened interval(s)	3	3	0	3			
Total completion depth	3	3	3	3			
Static water level at completion	2	2	2	2			
Pump type, size and setting	2	2	1	1			
Drilling log or equivalent	3	2	1	1			
Total Points	15	13	7	10			
Rank Assigned (see Ranking Guide, below)		low	moderate	moderately low			

Ranking Guide

Point Value	Sensitivity Rank
0-3	high
4-6	moderately high
7-9	moderate
10-12	moderately low
13-15	low

2b. Sensitivity Ranking for Well Integrity

Physical Integrity of Supply Well	**Points Possible**	**Well #1**	**Well #2**	**Well #3**	**Well #4**	**Well #5**	**Well #6**
Is the well located outside of an area susceptible to flooding?	2	2	2	2	2	2	2
Does well casing terminate at least 18 inches above floor or ground level?	2	2	2	2	2	2	2
Is annular space pressure-grouted to depth of at least 20 feet?	3	(n/a)	(n/a)	(n/a)	(n/a)	(n/a)	(n/a)
Is the wellhead properly sealed?	3	3	3	3	3	3	3
Is there a concrete pad around the wellhead that slopes away from the casing?	1	1	1	1	1	1	1
Does well vent terminate at least 18 inches above ground level, and is vent screened and oriented to open downward?	1	1	1	1	1	1	1
Are check valves, blow-off valves and flow meters properly maintained and operated?	1	1	1	1	1	1	1
Is the wellhead fenced, housed or properly protected?	2	2	2	2	2	2	2
Total Points	15	12	12	12	12	12	12
Rank Assigned (see Ranking Guide, below)		moderately low	moderately low	moderately low	moderately low	moderately low	moderately low

Ranking Guide

Point Value	**Sensitivity Rank**
0-3	high
4-6	moderately high
7-9	moderate
10-12	moderately low
13-15	low

2b. Sensitivity Ranking for Well Integrity

Physical Integrity of Supply Well	**Points Possible**	**Well #7**	**Well #8**	**Well #9**	**Well #10**	**Well #11**	**Well #12**
Is the well located outside of an area susceptible to flooding?	2	2	2	2	2	2	2
Does well casing terminate at least 18 inches above floor or ground level?	2	2	2	2	2	2	2
Is annular space pressure-grouted to depth of at least 20 feet?	3	(n/a)	(n/a)	(n/a)	(n/a)	(n/a)	(n/a)
Is the wellhead properly sealed?	3	3	3	3	3	3	3
Is there a concrete pad around the wellhead that slopes away from the casing?	1	1	1	1	1	1	1
Does well vent terminate at least 18 inches above ground level, and is vent screened and oriented to open downward?	1	1	1	1	1	1	1
Are check valves, blow-off valves and flow meters properly maintained and operated?	1	1	1	1	1	1	1
Is the wellhead fenced, housed or properly protected?	2	2	2	2	2	2	2
Total Points	15	12	12	12	12	12	12
Rank Assigned (see Ranking Guide, below)		moderately low	moderately low	moderately low	moderately low	moderately low	moderately low

Ranking Guide

Point Value	**Sensitivity Rank**
0-3	high
4-6	moderately high
7-9	moderate
10-12	moderately low
13-15	low

2b. Sensitivity Ranking for Well Integrity

Physical Integrity of Supply Well	**Points Possible**	**Well #13**	**Well #14**	**Well #15**			
Is the well located outside of an area susceptible to flooding?	2	2	2	2			
Does well casing terminate at least 18 inches above floor or ground level?	2	2	2	2			
Is annular space pressure-grouted to depth of at least 20 feet?	3	(n/a)	(n/a)	(n/a)			
Is the wellhead properly sealed?	3	3	3	3			
Is there a concrete pad around the wellhead that slopes away from the casing?	1	1	1	1			
Does well vent terminate at least 18 inches above ground level, and is vent screened and oriented to open downward?	1	1	1	1			
Are check valves, blow-off valves and flow meters properly maintained and operated?	1	1	1	1			
Is the wellhead fenced, housed or properly protected?	2	2	2	2			
Total Points	15	12	12	12			
Rank Assigned (see Ranking Guide, below)		moderately low	moderately low	moderately low			

Ranking Guide

Point Value	**Sensitivity Rank**
0-3	high
4-6	moderately high
7-9	moderate
10-12	moderately low
13-15	low

3. Sensitivity Ranking by DRASTIC Index

The National Ground Water Association, under contract to the U.S. Environmental Protection Agency, developed the DRASTIC Index in 1987 as a standardized method to evaluate the potential for ground water contamination in any hydrogeologic setting (U.S. Environmental Protection Agency, 1987; DRASTIC: A Standardized System for Evaluating Ground Water Pollution Potential Using Hydrogeologic Settings. U.S. Environmental Protection Agency, Washington, DC. EPA-600/2-87-035). "DRASTIC" is an acronym for seven field data parameters that, when combined with the method's **rating** and **weight** factors, indicate the relative sensitivity of a given supply well to surface-derived contamination. The DRASTIC Index for a water source is calculated from the equation:

$$\mathbf{D_R D_W + R_R R_W + A_R A_W + S_R S_W + T_R T_W + I_R I_W + C_R C_W = DRASTIC\ Index}$$

Where** D **= Depth to Water;** R **= (Net) Recharge;** A **= Aquifer Media;** S **= Soil Media;** T **= Topography;** I **= Impact of Vadose Zone Media;** C **= (Hydraulic) Conductivity of the Aquifer;** $_R$ **is a Rating Factor and** $_W$ **is a Weight Factor

Each DRASTIC parameter is assigned a relative weight ($_W$) ranging from 1 to 5, where the most significant parameters are assigned a weight of 5 and the least significant a weight of 1. Weight factors were established by the method authors using a consensus approach and cannot be changed. Similarly, each parameter is assigned a relative rating factor ($_R$) ranging from 1 to 10, where a rating of 10 is assigned to elements of greater susceptibility to contamination, and a rating of 1 to less susceptible elements. For example, where depth to ground water ranges from 0 to 5 feet, $\mathbf{D_R}$ is assigned a rank of 10; where depth to ground water ranges from 75 to 100 feet, $\mathbf{D_R}$ is assigned a rank of 2; for ground water occurring at depths greater than 100 feet, $\mathbf{D_R}$ is assigned a rank of 1.

The DRASTIC Index calculated from the above equation is related for source water assessment purposes to a high, moderately high, moderate, moderately low, or low sensitivity ranking on the following table. Higher DRASTIC Index values equate to a higher sensitivity to contamination.

Sensitivity Ranking by DRASTIC Index

	Well #1	**Well #2**	**Well #3**	**Well #4**	**Well #5**	**Well #6**
Depth to Water (ft)	137 ft.	150 ft.	100 ft.	87 ft.	127 ft.	219 ft.
Net Annual Recharge (in/yr)	0.0 (12-14 in. annual ppt less evapotrans)	0.0 (12-14 in. annual ppt less evapotrans)	0.0 (12-14 in. annual ppt less evapotrans)	0.0 (12-14 in. annual ppt less evapotrans)	0.0 (12-14 in. annual ppt less evapotrans)	0.0 (12-14 in. annual ppt less evapotrans)
Aquifer Media (material type)	sand and gravel	sand and gravel	sand and gravel	sand and gravel	sand and gravel	sand and gravel
Soil Type (texture)	Fivemile loam; Silver-Pojoaque assoc.	Fivemile loam; Silver-Pojoaque assoc.	Fivemile loam; Silver-Pojoaque assoc.	Fivemile loam; Silver-Pojoaque assoc.	Fivemile loam; Silver-Pojoaque assoc.	Fivemile loam; Silver-Pojoaque assoc.
General Topography (%)	2	2	2	2	2	2
Vadose Zone Impact (material type)	sand and gravel; clay and silt	sand and gravel; clay and silt	sand and gravel; clay and silt	sand and gravel; clay and silt	sand and gravel; clay and silt	sand and gravel; clay and silt
Hydraulic Conductivity (gpd/ft^2)	75	75	75	75	75	75
Index Value:	74	74	84	84	74	74
Rank Assigned (see Ranking Guide, below):	low	low	low	low	low	low

Ranking Guide

DRASTIC Index	**Sensitivity Rank**
greater than 200	high
171-200	moderately high
131-170	moderate
100-130	moderately low
less than 100	low

Sensitivity Ranking by DRASTIC Index

	Well #7	**Well #8**	**Well #9**	**Well #10**	**Well #11**	**Well #12**
Depth to Water (ft)	188 ft.	39 ft.	32 ft.	13 ft.	16 ft.	70 ft.
Net Annual Recharge (in/yr)	0.0 (12-14 in. annual ppt less evapotrans)	0.0 (12-14 in. annual ppt less evapotrans)	0.0 (12-14 in. annual ppt less evapotrans)	0.0 (12-14 in. annual ppt less evapotrans)	0.0 (12-14 in. annual ppt less evapotrans)	0.0 (12-14 in. annual ppt less evapotrans)
Aquifer Media (material type)	sand and gravel	sand and gravel	sand and gravel	sand and gravel	sand and gravel	sand and gravel
Soil Type (texture)	Fivemile loam; Silver-Pojoaque assoc.	Fivemile loam; Silver-Pojoaque assoc.	Fivemile loam; Silver-Pojoaque assoc.	Fivemile loam; Silver-Pojoaque assoc.	Fivemile loam; Silver-Pojoaque assoc.	Fivemile loam; Silver-Pojoaque assoc.
General Topography (%)	2	2	2	2	2	2
Vadose Zone Impact (material type)	sand and gravel; clay and silt	sand and gravel; clay and silt	sand and gravel; clay and silt	sand and gravel; clay and silt	sand and gravel; clay and silt	sand and gravel; clay and silt
Hydraulic Conductivity (gpd/ft^2)	75	75	75	75	75	75
Index Value:	74	94	94	114	104	84
Rank Assigned (see Ranking Guide, below):	low	low	low	moderately low	moderately low	low

Ranking Guide

DRASTIC Index	**Sensitivity Rank**
greater than 200	high
171-200	moderately high
131-170	moderate
100-130	moderately low
less than 100	low

Sensitivity Ranking by DRASTIC Index

	Well #13	**Well #14**	**Well #15**			
Depth to Water (ft)	195 ft.	165 ft.	190 ft.			
Net Annual Recharge (in/yr)	0.0 (12-14 in. annual ppt less evapotrans)	0.0 (12-14 in. annual ppt less evapotrans)	0.0 (12-14 in. annual ppt less evapotrans)			
Aquifer Media (material type)	sand and gravel	sand and gravel	sand and gravel			
Soil Type (texture)	Fivemile loam; Silver-Pojoaque assoc.	Fivemile loam; Silver-Pojoaque assoc.	Fivemile loam; Silver-Pojoaque assoc.			
General Topography (%)	2	2	2			
Vadose Zone Impact (material type)	sand and gravel; clay and silt	sand and gravel; clay and silt	sand and gravel; clay and silt			
Hydraulic Conductivity (gpd/ft^2)	75	75	75			
Index Value:	74	74	74			
Rank Assigned (see Ranking Guide, below):	low	low	low			

Ranking Guide

DRASTIC Index	**Sensitivity Rank**
greater than 200	high
171-200	moderately high
131-170	moderate
100-130	moderately low
less than 100	low

4. Composite Sensitivity Ranking for Ground Water Supplies

Each sensitivity rank determined from the preceding ranking guides is given a numerical value, and a composite sensitivity rank is assigned using the formula

Sensitivity Rank = Well Depth Rank + Well Construction/Integrity Rank + DRASTIC Index Rank

	Well #1	**Well #2**	**Well #3**	**Well #4**	**Well #5**	**Well #6**
Rank for Depth of Screened Interval						
High (25 points)				25	25(n/a)	
Moderately High (20 points)		20	20			
Moderate (15 points)	15					15
Moderately Low (10 points)						
Low (5 point)						
Rank for Well Construction Records						
High (25 points)						
Moderately High (20 points)						
Moderate (15 points)					15	
Moderately Low (10 points)		10				
Low (5 point)	5		5	5		5
Rank for Integrity of Construction						
High (25 points)						
Moderately High (20 points)						
Moderate (15 points)						
Moderately Low (10 points)	10	10	10	10	10	10
Low (5 point)						
Rank for DRASTIC Index						
High (25 points)						
Moderately High (20 points)						
Moderate (15 points)						
Moderately Low (10 points)						
Low (5 point)	5	5	5	5	5	5
Point Sum	35	45	40	45	55	35
Rank Assigned (see Ranking Guide, below)	moderately low	moderately low	moderately low	moderately low	moderate	moderately low

Ranking Guide

Sum of Sensitivity Points	**Composite Sensitivity Rank**
90-100 (20-30)	high
70-85	moderately high
50-65 (11-19)	moderate
30-45	moderately low
20-25 (0-10)	low

4. Composite Sensitivity Ranking for Ground Water Supplies

Each sensitivity rank determined from the preceding ranking guides is given a numerical value, and a composite sensitivity rank is assigned using the formula

Sensitivity Rank = Well Depth Rank + Well Construction/Integrity Rank + DRASTIC Index Rank

	Well #7	**Well #8**	**Well #9**	**Well #10**	**Well #11**	**Well #12**
Rank for Depth of Screened Interval						
High (25 points)			25	25	25	25(n/a)
Moderately High (20 points)	20	20				
Moderate (15 points)						
Moderately Low (10 points)						
Low (5 point)						
Rank for Well Construction Records						
High (25 points)						
Moderately High (20 points)						
Moderate (15 points)					15	
Moderately Low (10 points)			10	10		10
Low (5 point)	5	5				
Rank for Integrity of Construction						
High (25 points)						
Moderately High (20 points)						
Moderate (15 points)						
Moderately Low (10 points)	10	10	10	10	10	10
Low (5 point)						
Rank for DRASTIC Index						
High (25 points)						
Moderately High (20 points)						
Moderate (15 points)						
Moderately Low (10 points)				10	10	
Low (5 point)	5	5	5			5
Point Sum	40	40	50	55	60	50
Rank Assigned (see Ranking Guide, below)	moderately low	moderately low	moderate	moderate	moderate	moderate

Ranking Guide

Sum of Sensitivity Points	**Composite Sensitivity Rank**
90-100 (20-30)	high
70-85	moderately high
50-65 (11-19)	moderate
30-45	moderately low
20-25 (0-10)	low

4. Composite Sensitivity Ranking for Ground Water Supplies

Each sensitivity rank determined from the preceding ranking guides is given a numerical value, and a composite sensitivity rank is assigned using the formula

Sensitivity Rank = Well Depth Rank + Well Construction/Integrity Rank + DRASTIC Index Rank

	Well #13	**Well #14**	**Well #15**			
Rank for Depth of Screened Interval						
High (25 points)		25 (n/a)				
Moderately High (20 points)	20					
Moderate (15 points)			15			
Moderately Low (10 points)						
Low (5 point)						
Rank for Well Construction Records						
High (25 points)						
Moderately High (20 points)						
Moderate (15 points)		15				
Moderately Low (10 points)			10			
Low (5 point)	5					
Rank for Integrity of Construction						
High (25 points)						
Moderately High (20 points)						
Moderate (15 points)						
Moderately Low (10 points)	10	10	10			
Low (5 point)						
Rank for DRASTIC Index						
High (25 points)						
Moderately High (20 points)						
Moderate (15 points)						
Moderately Low (10 points)						
Low (5 point)	5	5	5			
Point Sum	40	55	40			
Rank Assigned (see Ranking Guide, below)	moderately low	moderate	moderately low			

Ranking Guide

Sum of Sensitivity Points	**Composite Sensitivity Rank**
90-100 (20-30)	high
70-85	moderately high
50-65 (11-19)	moderate
30-45	moderately low
20-25 (0-10)	low

Part B: Vulnerability Analysis

Vulnerability Ranking Guide

	Zone of Influence			Ranking
	Zone A	**Zone B**	**Zone C**	
Number of PSOC in Zone	1+	10+	15+	high
	0	8 - 9	12 - 14	moderately high
	0	5 - 7	8 - 11	moderate
	0	3 - 4	5 - 7	moderately low
	0	0 - 2	0 - 4	low

Using the Vulnerability Ranking Guide above, assign a vulnerability rank to each PSOC by entering inventory data into the tables below. Do not count PSOC more than once; e.g., PSOC located within the five-year capture zone are also contained within the ten-year capture zone, but are only counted as occurring within Zone B.

Note: if three or more categories of PSOC occur within the same zone of influence, a single vulnerability ranking for the water source will be assigned by increasing the highest ranking obtained when PSOC categories are considered independently by a minimum of one rank. For example, if three non-sewered residences (RSF), one dry cleaning establishment (CDC) and one gasoline service station (CSS) are all located within Zone B, the vulnerability ranking assigned to the water source is increased from *moderately low* to *moderate*.

Vulnerability Ranking Table - Well #1

Zone of Influence	PSOC Code	Description of Land Use	Point Source (y/n)	UIC or UST (y/n)	Number of PSOC	Vulnerability Rank
Zone A	RSF	single family residence-unsewered	n	n	2	high
Zone B	RSF	single family residence-unsewered	n	n	17	high
Zone C	RSF	single family residence-unsewered	n	n	31	high
Rank Assigned						**high**

Vulnerability Ranking Table – Well #2

Zone of Influence	PSOC Code	Description of Land Use	Point Source (y/n)	UIC or UST (y/n)	Number of PSOC	Vulnerability Rank
Zone A						
Zone B	RSF	single family residence-unsewered	n	n	10	high
Zone C	RSF	single family residence-unsewered	n	n	31	high
Rank Assigned						**high**

Vulnerability Ranking Table - Well #3

Zone of Influence	PSOC Code	Description of Land Use	Point Source (y/n)	UIC or UST (y/n)	Number of PSOC	Vulnerability Rank
Zone A	None	None				
Zone B						
Zone C						
Rank Assigned						**low**

Vulnerability Ranking Table - Well #4

Zone of Influence	PSOC Code	Description of Land Use	Point Source (y/n)	UIC or UST (y/n)	Number of PSOC	Vulnerability Rank
Zone A	RSF	single family residence-unsewered	n	n	1	high
Zone B	RSF	single family residence-unsewered	n	n	13	high
Zone C						
Rank Assigned						**high**

Vulnerability Ranking Table - Well #5

Zone of Influence	PSOC Code	Description of Land Use	Point Source (y/n)	UIC or UST (y/n)	Number of PSOC	Vulnerability Rank
Zone A	RSF	single family residence-unsewered	n	n	1	high
	MCC	community center-unsewered	n	n	1	high
Zone B	RSF	single family residence-unsewered	n	n	3	moderately low
Zone C	RSF	single family residence-unsewered	n	n	12	moderately high
Rank Assigned						**high**

Vulnerability Ranking Table - Well #6

Zone of Influence	PSOC Code	Description of Land Use	Point Source (y/n)	UIC or UST (y/n)	Number of PSOC	Vulnerability Rank
Zone A	RSF	single family residence-unsewered	n	n	6	high
Zone B	RSF	single family residence-unsewered	n	n	3	moderately low
Zone C	RSF	single family residence-unsewered	n	n	4	low
	IRY	railroad tracks	n	n	1	low
Rank Assigned						**high**

Vulnerability Ranking Table - Well #7

Zone of Influence	PSOC Code	Description of Land Use	Point Source (y/n)	UIC or UST (y/n)	Number of PSOC	Vulnerability Rank
Zone A						
Zone B	RSF	single family residence-unsewered	n	n	14	high
Zone C	RSF	single family residence-unsewered	n	n	14	moderately high
Rank Assigned						**high**

Vulnerability Ranking Table - Well #8

Zone of Influence	PSOC Code	Description of Land Use	Point Source (y/n)	UIC or UST (y/n)	Number of PSOC	Vulnerability Rank
Zone A						
Zone B	RSF	single family residence-unsewered	n	n	2	low
Zone C	RSF	single family residence-unsewered	n	n	5	moderately low
Rank Assigned						**moderately low**

Vulnerability Ranking Table - Well #9

Zone of Influence	PSOC Code	Description of Land Use	Point Source (y/n)	UIC or UST (y/n)	Number of PSOC	Vulnerability Rank
Zone A	ARL	animal rangeland	n	n	1	high
Zone B	RSF	single family residence-unsewered	n	n	1	low
Zone C	RSF	single family residence-unsewered	n	n	4	low
Rank Assigned						**high**

Vulnerability Ranking Table - Well #10

Zone of Influence	PSOC Code	Description of Land Use	Point Source (y/n)	UIC or UST (y/n)	Number of PSOC	Vulnerability Rank
Zone A	ARL	animal rangeland	n	n	1	high
	IRY	railroad tracks	n	n	1	high
Zone B	RSF	single family residence-unsewered	n	n	9	moderately high
Zone C						
Rank Assigned						**high**

Vulnerability Ranking Table - Well #11

Zone of Influence	PSOC Code	Description of Land Use	Point Source (y/n)	UIC or UST (y/n)	Number of PSOC	Vulnerability Rank
Zone A	ARL	animal rangeland	n	n	1	high
	MPW	surface water source	n	n	1	high
Zone B	IRY	railroad tracks	n	n	1	low
Zone C	RSF	single family residence-unsewered	n	n	10	moderate
Rank Assigned						**high**

Vulnerability Ranking Table - Well #12

Zone of Influence	PSOC Code	Description of Land Use	Point Source (y/n)	UIC or UST (y/n)	Number of PSOC	Vulnerability Rank
Zone A	RSF	single family residence-unsewered	n	n	1	high
	CFA	fuel storage tank-above ground	n	n	1	high
	MMP	motor pool	n	n	1	high
Zone B	MRP	primary road	n	n	1	low
	CSS	gasoline service station	n	n	1	low
Zone C						
Rank Assigned						**high**

Vulnerability Ranking Table - Well #13

Zone of Influence	PSOC Code	Description of Land Use	Point Source (y/n)	UIC or UST (y/n)	Number of PSOC	Vulnerability Rank
Zone A						
Zone B	RSF	single family residence-unsewered	n	n	20	high
Zone C	RSF	single family residence-unsewered	n	n	20	high
Rank Assigned						**high**

Vulnerability Ranking Table - Well #14

Zone of Influence	PSOC Code	Description of Land Use	Point Source (y/n)	UIC or UST (y/n)	Number of PSOC	Vulnerability Rank
Zone A						
Zone B	RSF	single family residence-unsewered	n	n	27	high
Zone C	RSF	single family residence-unsewered	n	n	45	high
Rank Assigned						**high**

Vulnerability Ranking Table - Well #15

Zone of Influence	PSOC Code	Description of Land Use	Point Source (y/n)	UIC or UST (y/n)	Number of PSOC	Vulnerability Rank
Zone A						
Zone B	RSF	single family residence-unsewered	n	n	20	high
Zone C	RSF	single family residence-unsewered	n	n	20	high
Rank Assigned						**high**

Part C: Susceptibility Analysis

Using the highest Vulnerability Ranking assigned to the water source in Part B and the composite Sensitivity Ranking assigned in Part A, determine the overall Susceptibility Rank for each water source using the Susceptibility Ranking matrix, below.

Susceptibility Ranking Guide

Sensitivity Ranking

Vulnerability Ranking	**High**	**Moderately High**	**Moderate**	**Moderately Low**	**Low**
High	high	high	moderately high	moderately high	moderate
Moderately High	high	moderately high	moderately high	moderate	moderate
Moderate	moderately high	moderately high	moderate	moderate	moderately low
Moderately Low	moderately high	moderate	moderate	moderately low	moderately low
Low	moderate	moderate	moderately low	moderately low	low

Susceptibility Ranking for Ground Water Source

	Well #1	**Well #2**	**Well #3**	**Well #4**	**Well #5**	**Well #6**
Sensitivity Rank	moderately low	moderately low	moderately low	moderately low	moderate	moderately low
Vulnerability Rank	high	high	low	high	high	high
Susceptibility Rank	**moderately high**	**moderately high**	**moderately low**	**moderately high**	**moderately high**	**moderately high**

Susceptibility Ranking for Ground Water Source

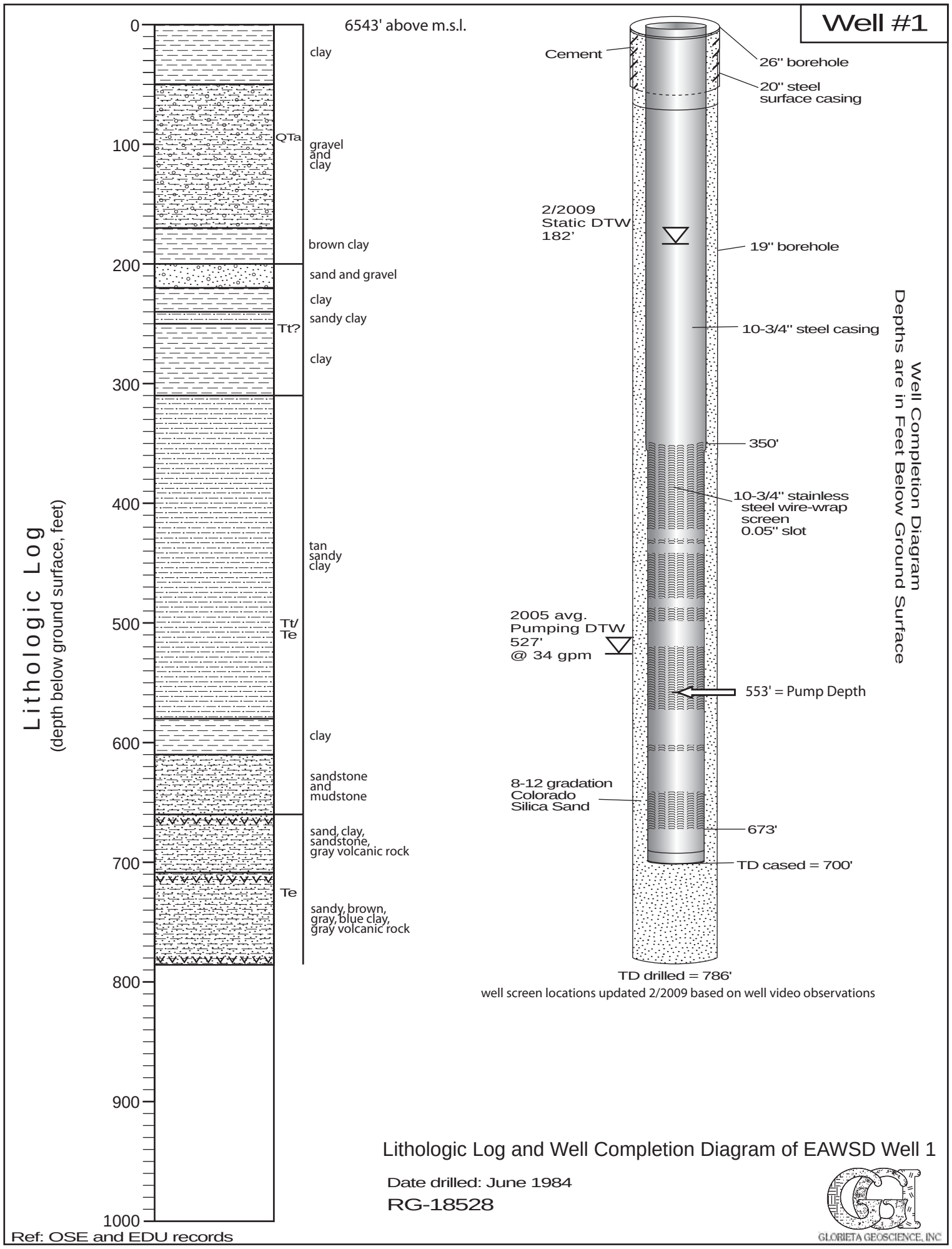
	Well #7	**Well #8**	**Well #9**	**Well #10**	**Well #11**	**Well #12**
Sensitivity Rank	moderately low	moderately low	moderate	moderate	moderate	moderate
Vulnerability Rank	high	moderately low	high	high	high	high
Susceptibility Rank	**moderately high**	**moderately low**	**moderately high**	**moderately high**	**moderately high**	**moderately high**

Susceptibility Ranking for Ground Water Source

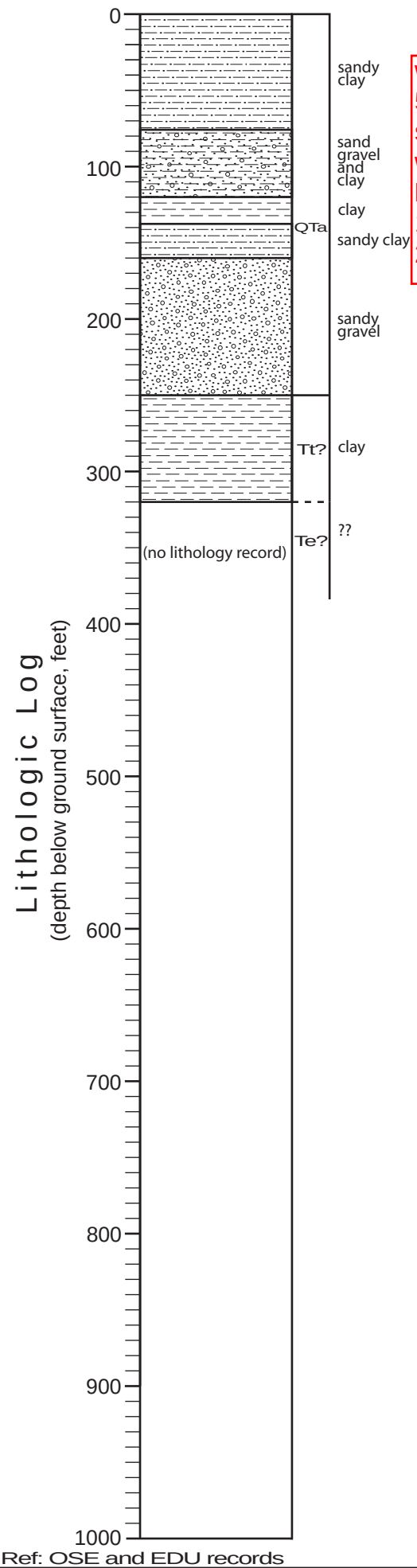
	Well #13	**Well #14**	**Well #15**			
Sensitivity Rank	moderately low	moderate	moderately low			
Vulnerability Rank	high	high	high			
Susceptibility Rank	**moderately high**	**moderately high**	**moderately high**			

Appendix B

Well Diagrams


Well #1
6543' above m.s.l.
Lithologic Log
(depth below ground surface, feet)
0
100
200
300
400
500
600
700
800
900
1000
clay
QTa
gravel and clay
brown clay
sand and gravel
clay
sandy clay
Tt?
clay
tan sandy clay
Tt/ Te
clay
sandstone and mudstone
sand, clay, sandstone, gray volcanic rock
Te
sandy, brown, gray, blue clay, gray volcanic rock
Cement
26" borehole
20" steel surface casing
2/2009 Static DTW 182'
19" borehole
10-3/4" steel casing
350'
10-3/4" stainless steel wire-wrap screen 0.05" slot
2005 avg. Pumping DTW 527' @ 34 gpm
553' = Pump Depth
8-12 gradation Colorado Silica Sand
673'
TD cased = 700'
TD drilled = 786'
well screen locations updated 2/2009 based on well video observations
Well Completion Diagram
Depths are in Feet Below Ground Surface
Lithologic Log and Well Completion Diagram of EAWSD Well 1
Date drilled: June 1984
RG-18528
Ref: OSE and EDU records
GLORIETA GEOSCIENCE, INC

Well #2



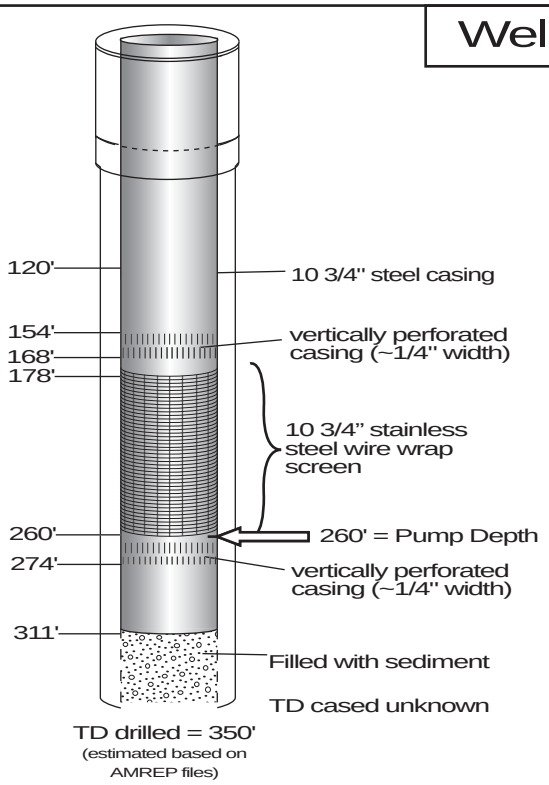
6661' above m.s.l.

well vid 5-07 showed wire wrap between 181 and 263 ft

4/2005 Static DTW 160'

2005 avg. Pumping DTW 232' @ 66 gpm

well video 5-07 showed vertical slots 266-277



*completion records incomplete
(diagram based on observations)

Lithologic Log and Well Completion Diagram of EAWSD Well 2

Date drilled: February 1970, Redrilled ~May 1997

RG-18529

*well records incomplete
1970 well casing was pulled and new well drilled in ~May 1997 by Beylik Drilling
(well records were not submitted to OSE)

Ref: OSE and EDU records

GLORIETA GEOSCIENCE, INC

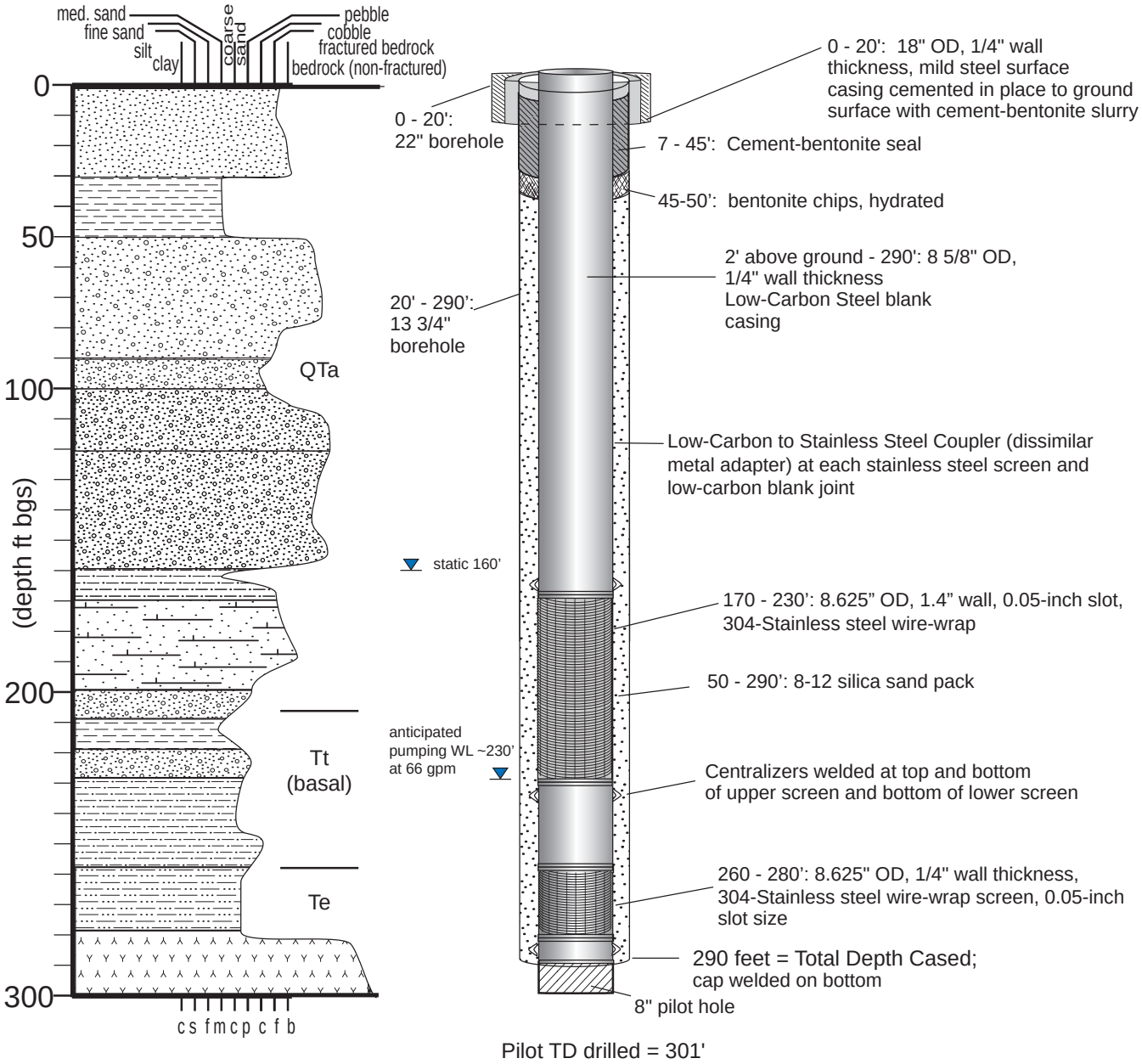
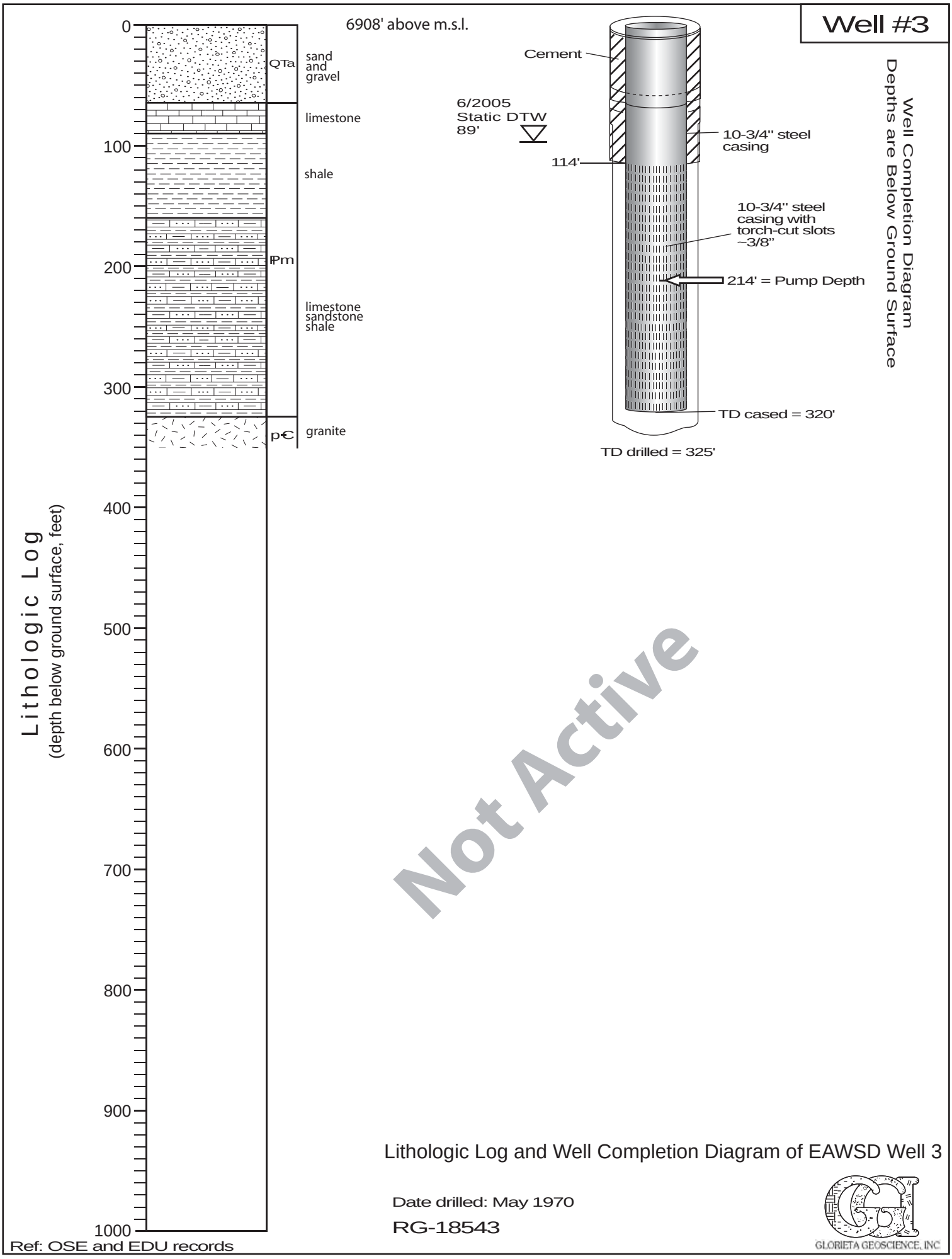


Figure 4. Schematic lithologic log of EAWSD Well #2B.

GLORIETA GEOSCIENCE, INC.

Well #3

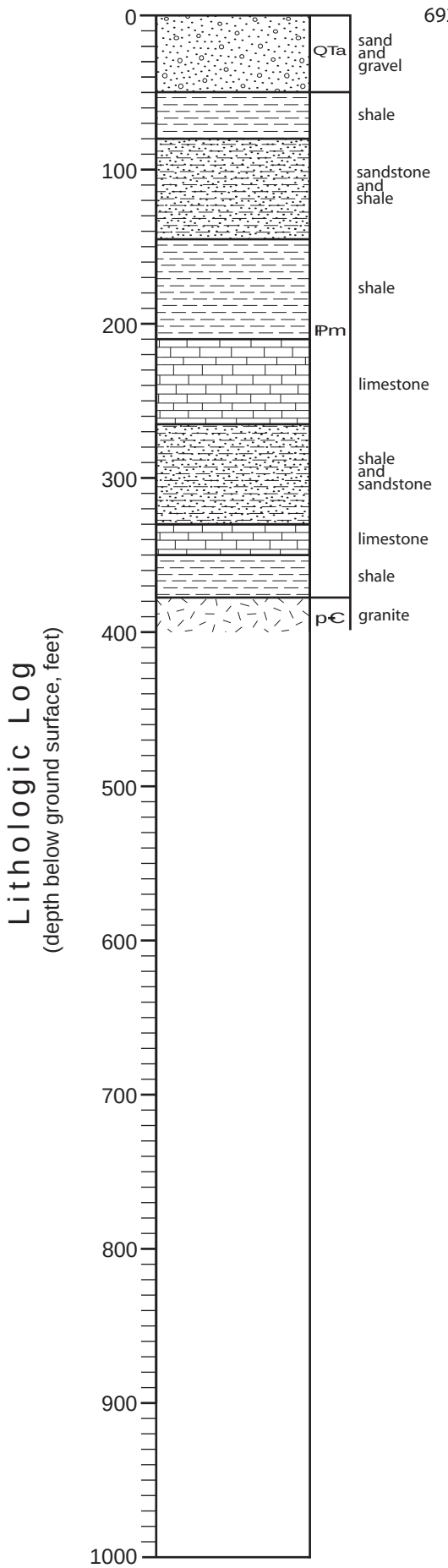


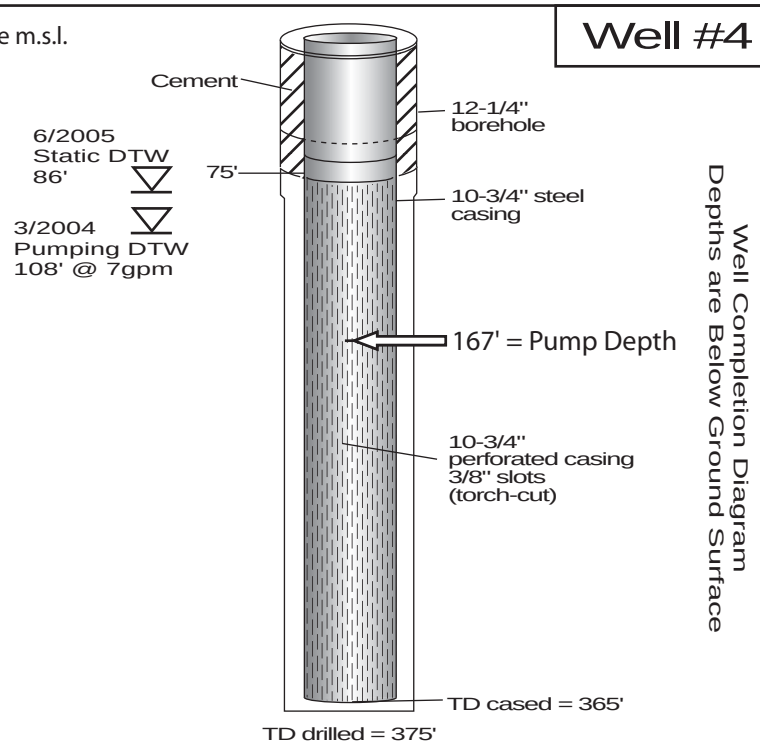
Lithologic Log and Well Completion Diagram of EAWSD Well 3

Date drilled: May 1970

RG-18543

Well #4





Lithologic Log and Well Completion Diagram of EAWSD Well 4

Date drilled: June 1970

RG-18550

Ref: OSE and EDU records

GLORIETA GEOSCIENCE, INC

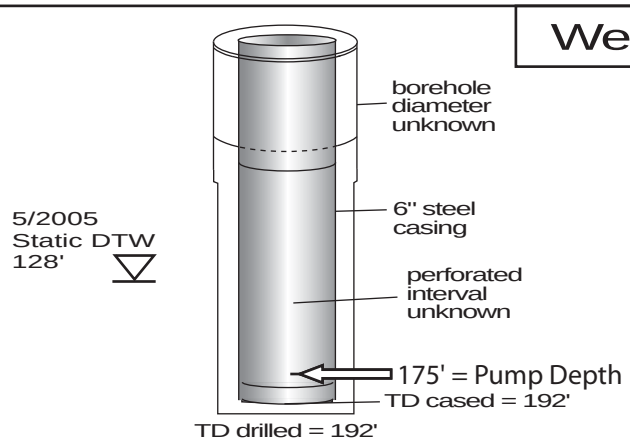
Well #5

6969' above m.s.l.

Lithologic Log
(depth below ground surface, feet)

0
100
200
300
400
500
600
700
800
900
1000

driller's log not available



Well Completion Diagram
Depths are Below Ground Surface

Not Active

Lithologic Log and Well Completion Diagram of EAWSD Well 5

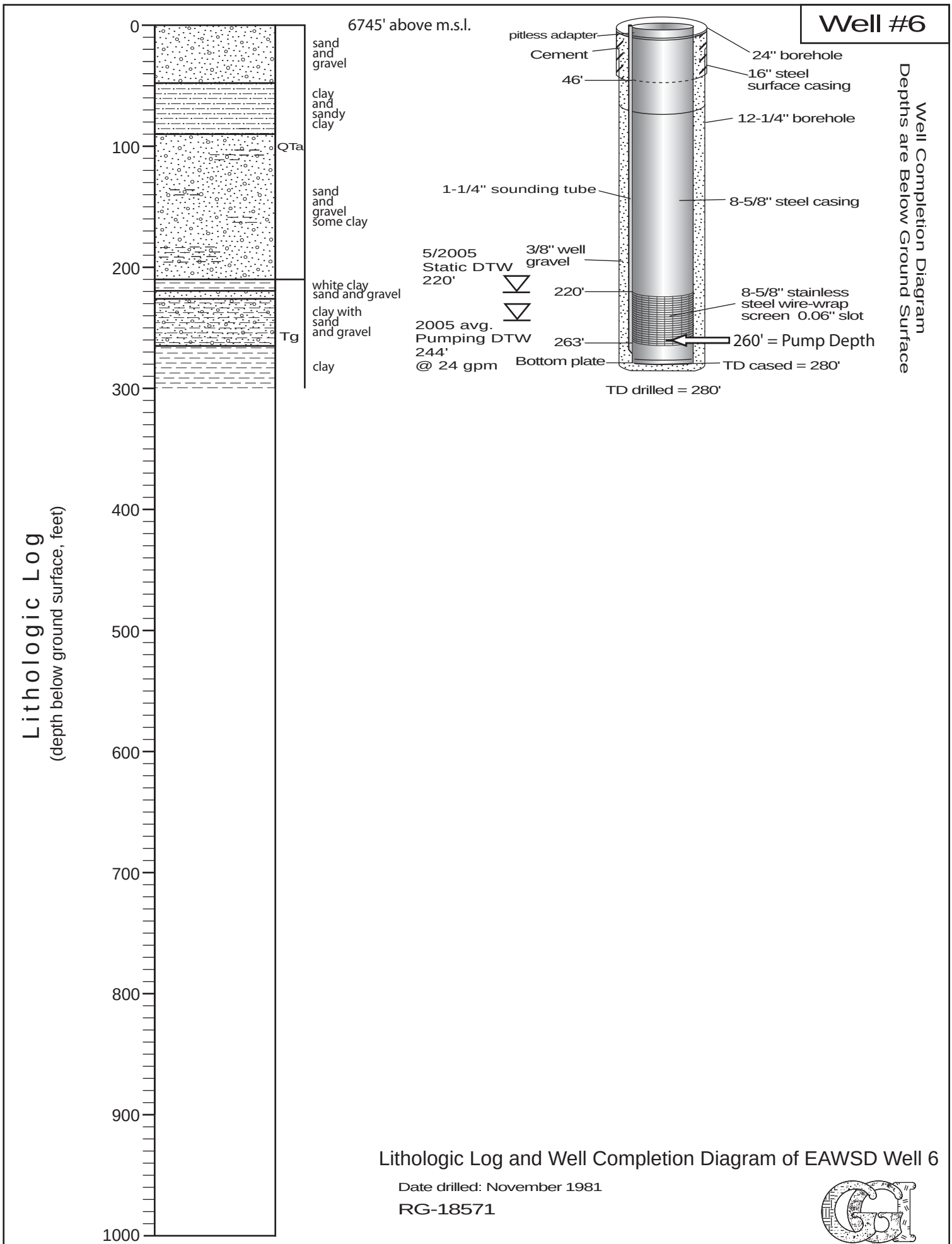
Date drilled: pre-1969

RG-18515

Ref: OSE and EDU records

GLORIETA GEOSCIENCE, INC

Well #6



Lithologic Log and Well Completion Diagram of EAWSD Well 6

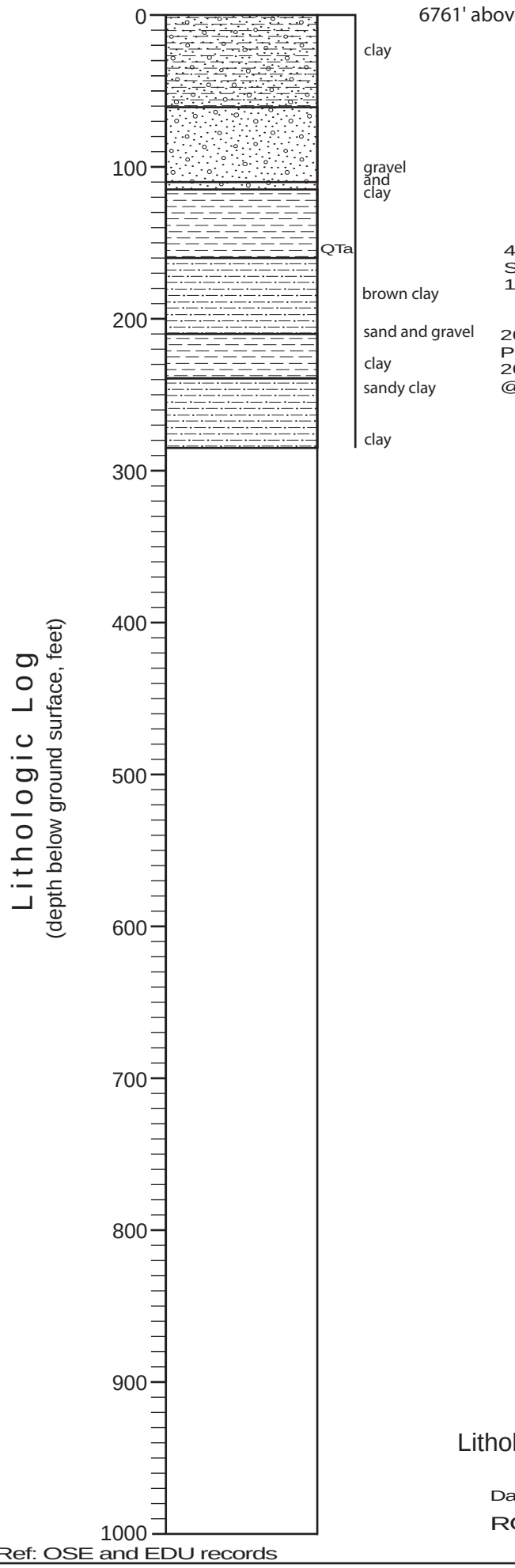
Date drilled: November 1981

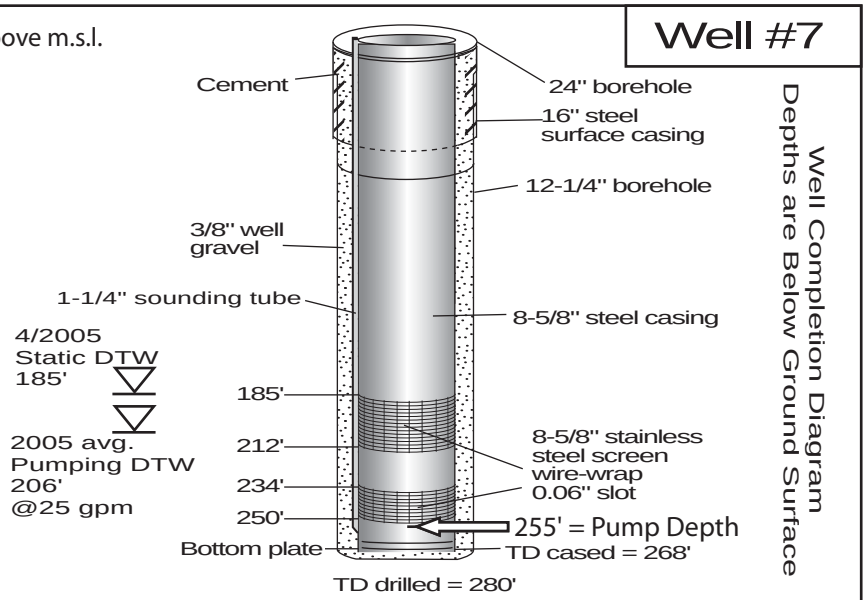
RG-18571

GLORIETA GEOSCIENCE, INC.

Ref: OSE and EDU records

Well #7





Lithologic Log and Well Completion Diagram of EAWSD Well 7

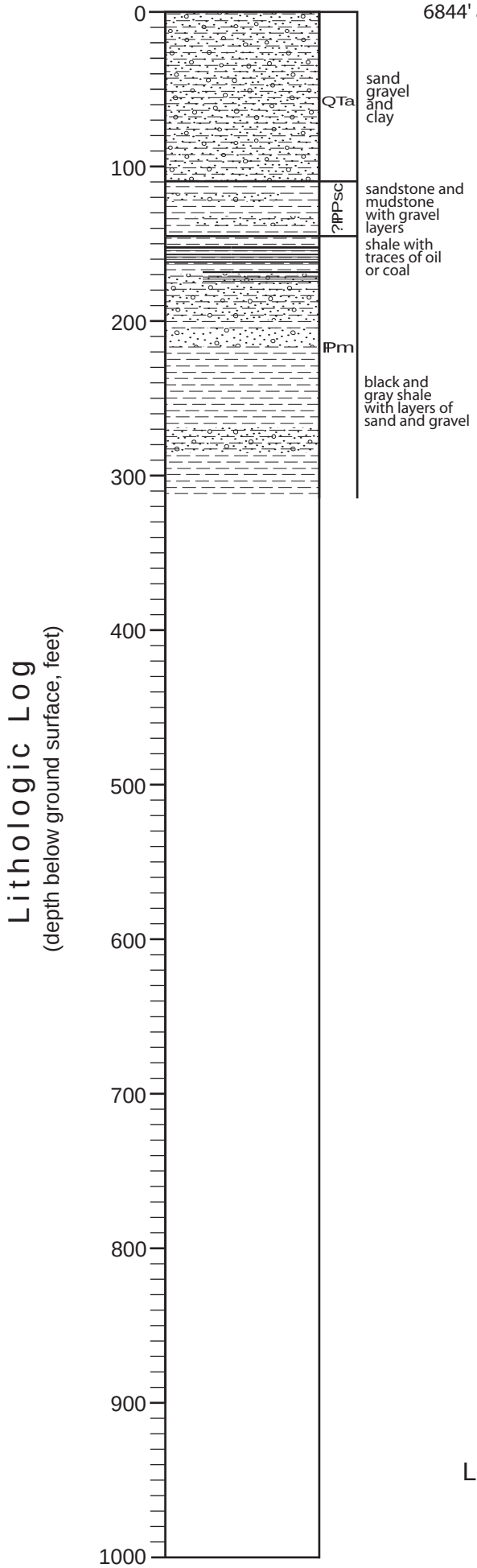
Date drilled: December 1981

RG-18595

GLORIETA GEOSCIENCE, INC.

Ref: OSE and EDU records

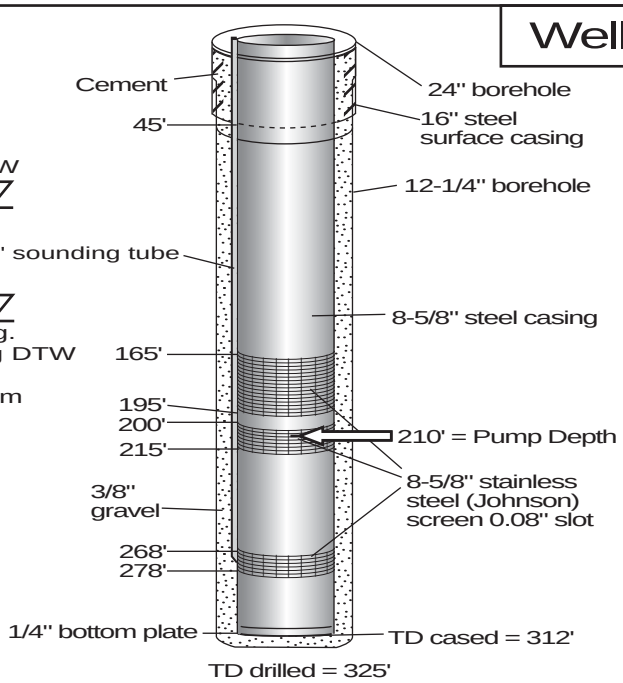
Well #8



6844' above m.s.l.

5/2005
Static DTW
89'

2005 avg.
Pumping DTW
148'
@ 15 gpm



Lithologic Log and Well Completion Diagram of EAWSD Well 8

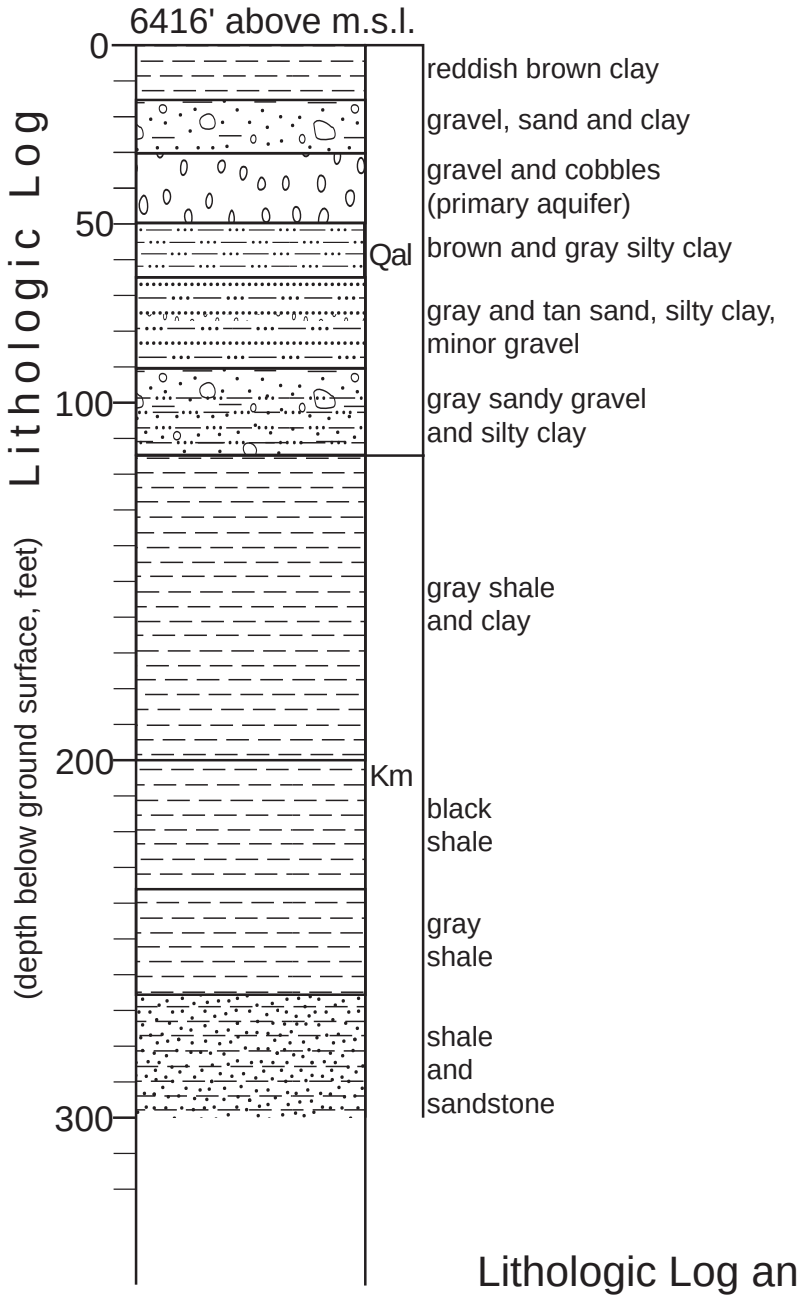
Date drilled: August 1983

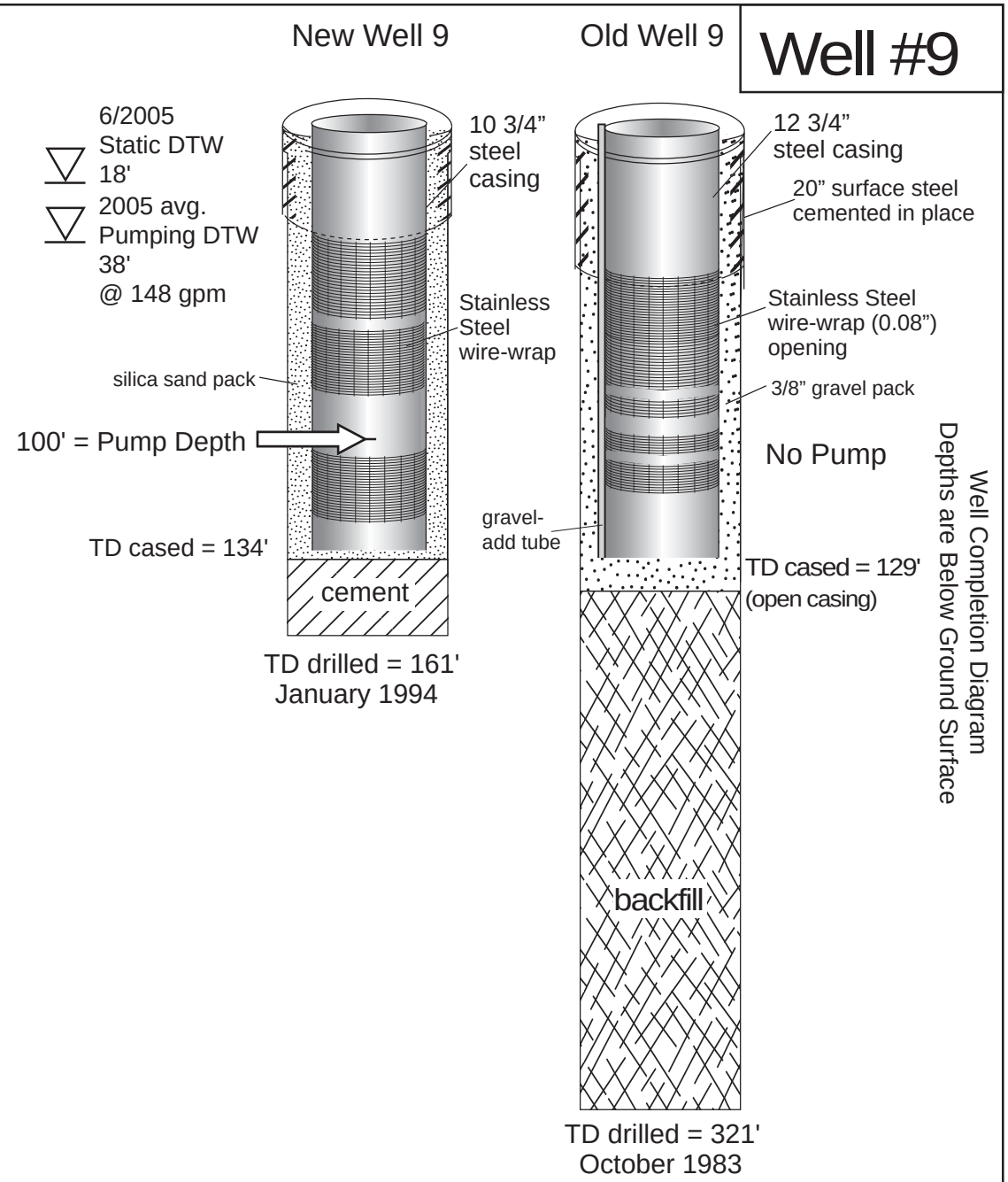
RG-18531

Ref: OSE and EDU records

GLORIETA GEOSCIENCE, INC.

Well #9





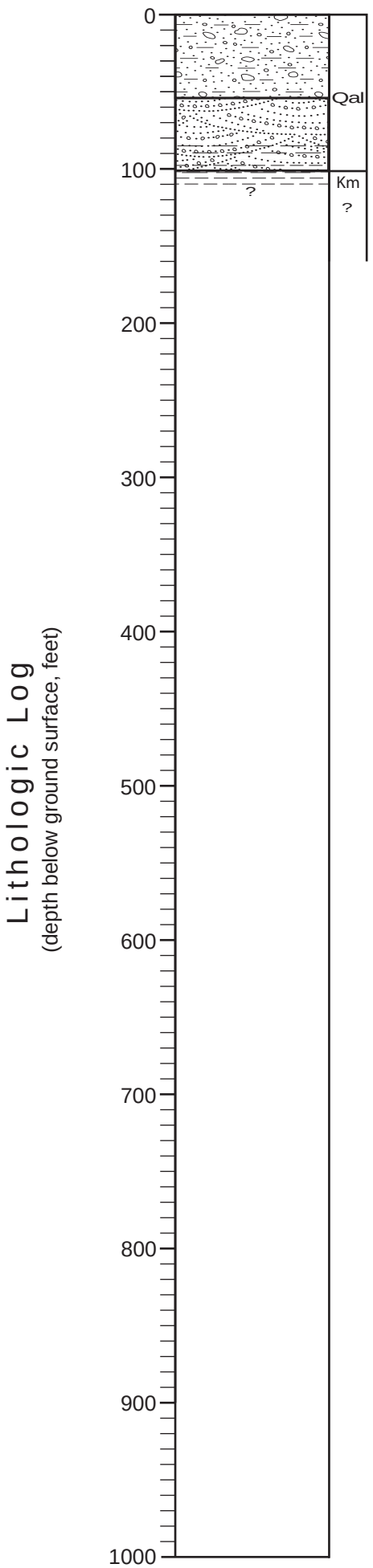
Ref: OSE and EDU records

Lithologic Log and Well Completion Diagram of EAWSD Well 9

RG-18556 Date drilled: July 1970, replaced (moved) October 1983, replaced (original location) January 1994

GLORIETA GEOSCIENCE, INC.

Well #10



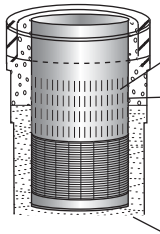
6447' above m.s.l.

clay, silty sand and gravel

fine to coarse sand, clay (inc. w/depth)

trace of shale

6/2005 Static DTW 22'



perforations (~1" x 0.125")

3/8" gravel

10 5/8" steel casing

4-6 silica sand

10 5/8" stainless steel wire wrap screen

TD cased = 97'

TD drilled = 100'

24" surface casing grouted 5 to 12'

16" conductor casing grouted in place to 22'

Pump Depth Not Available

Well Completion Diagram
Depths are Below Ground Surface

Lithologic Log and Well Completion Diagram of EAWSD Well 10

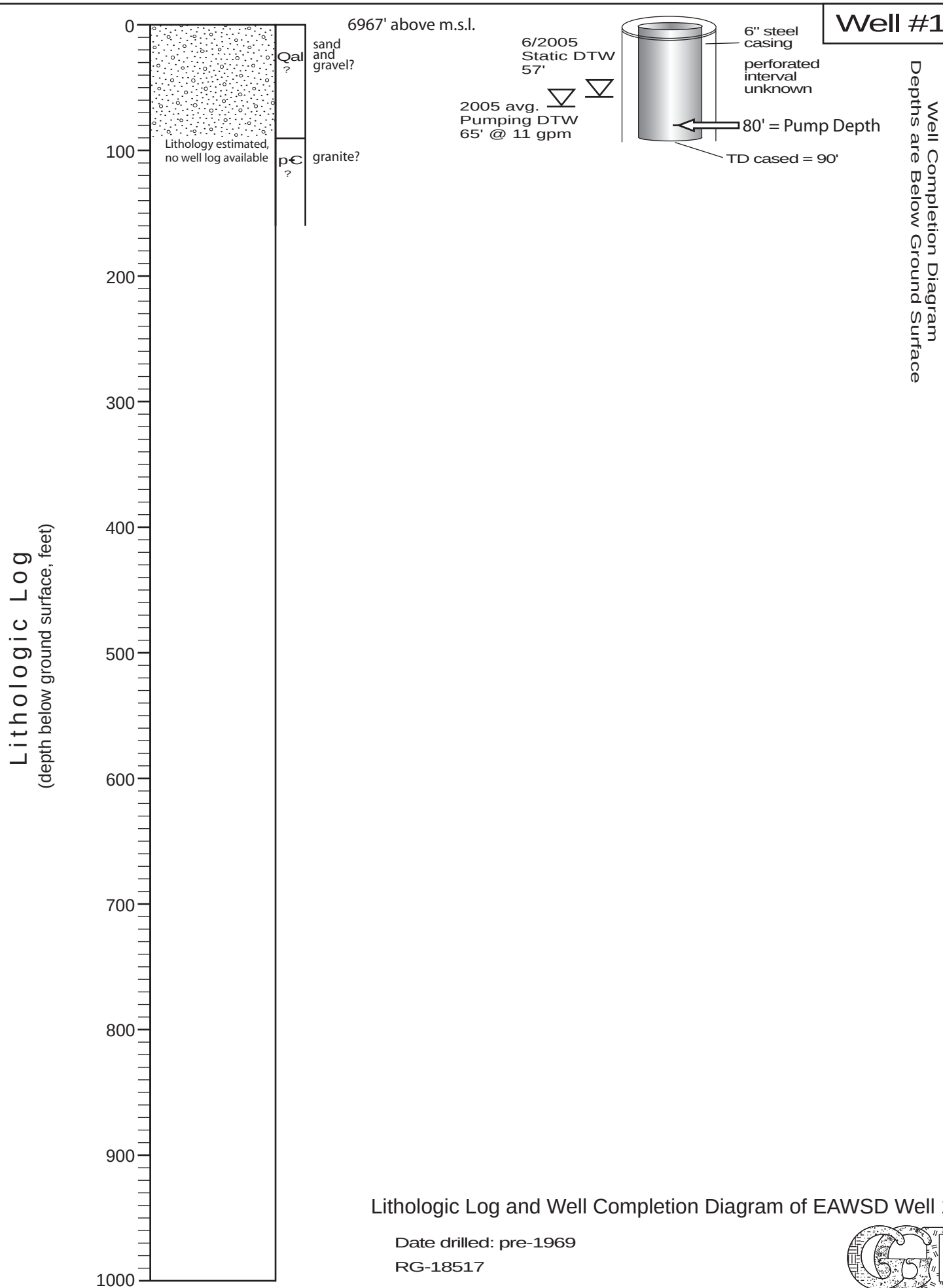
Date drilled: pre-1969, replaced 8-4-1995, modified (added perforations)10-18-1995

RG-18524

Ref: OSE and EDU records

GLORIETA GEOSCIENCE, INC.

Well #12



Lithologic Log and Well Completion Diagram of EAWSD Well 12

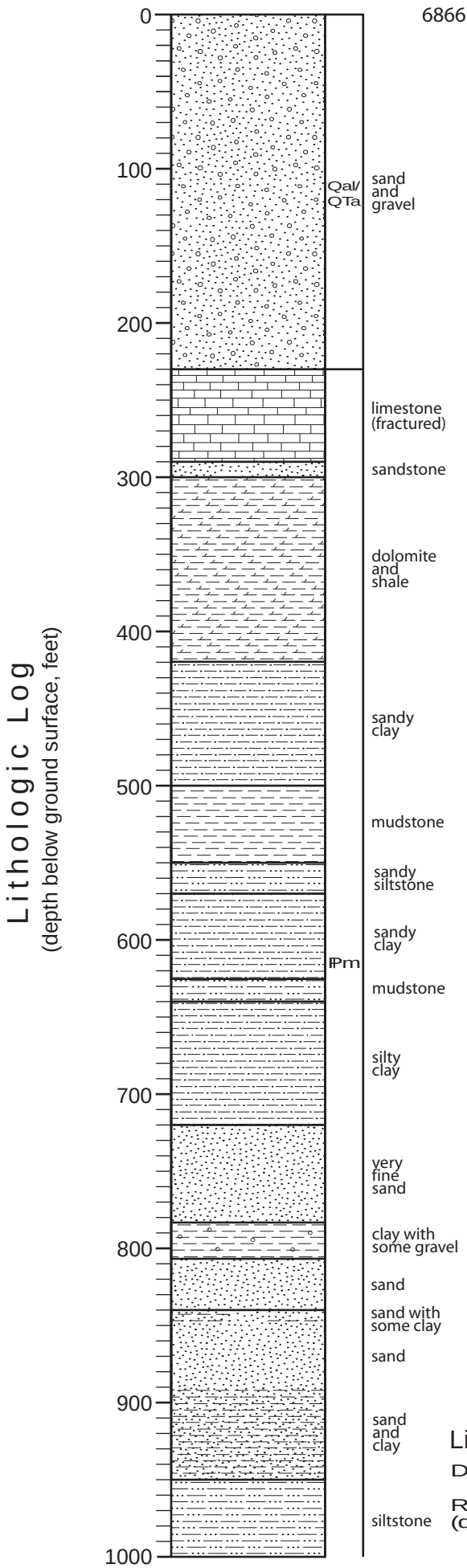
Date drilled: pre-1969

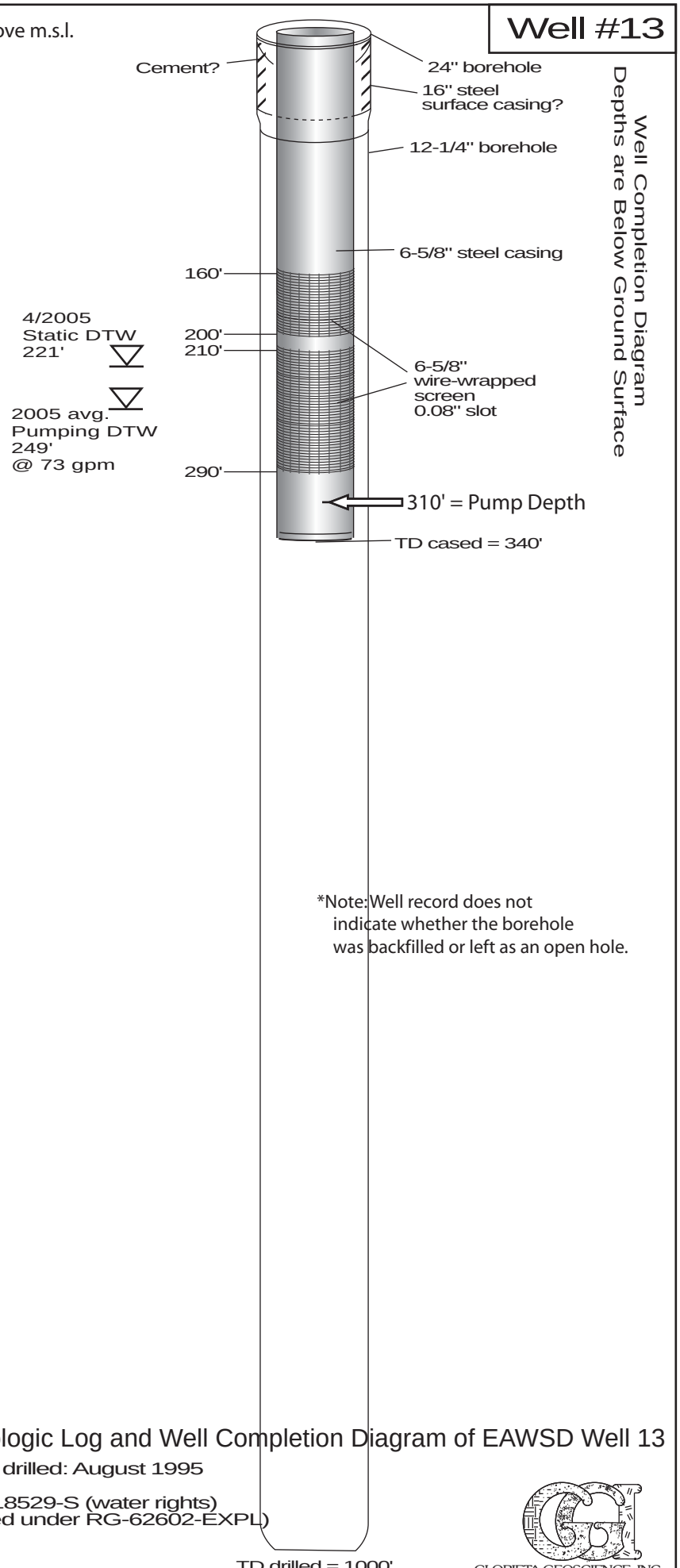
RG-18517

Ref: OSE and EDU records

GLORIETA GEOSCIENCE, INC

Well #13





*Note: Well record does not indicate whether the borehole was backfilled or left as an open hole.

Lithologic Log and Well Completion Diagram of EAWSD Well 13

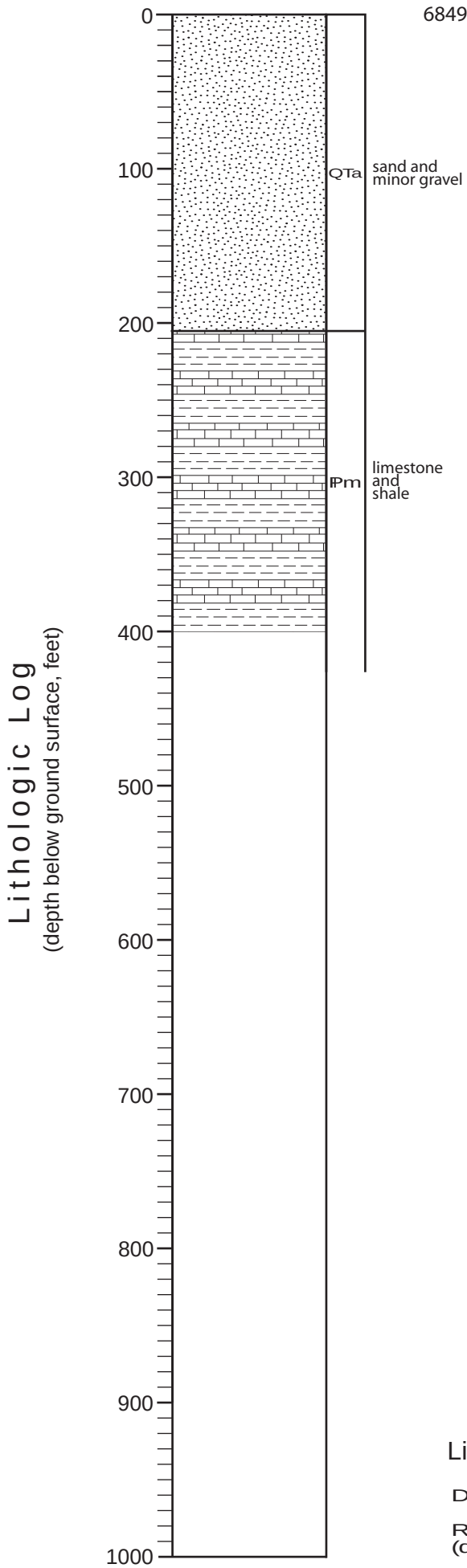
Date drilled: August 1995

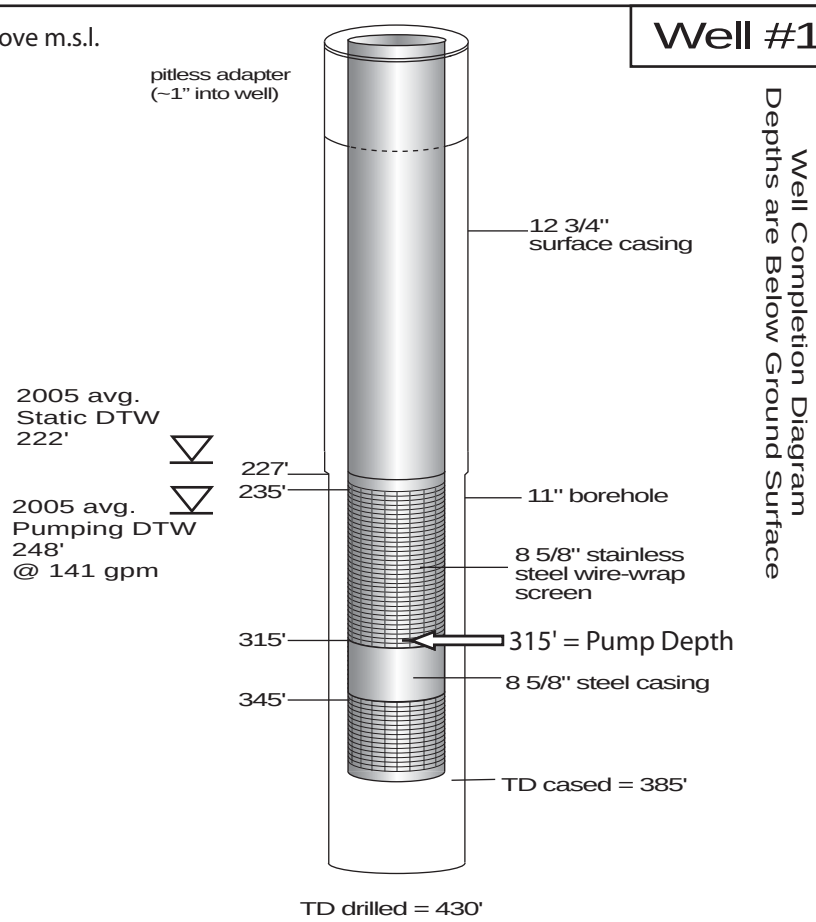
RG-18529-S (water rights)
(drilled under RG-62602-EXPL)

GLORIETA GEOSCIENCE, INC.

Ref: OSE and EDU records

Well #14





Lithologic Log and Well Completion Diagram of EAWSD Well 14

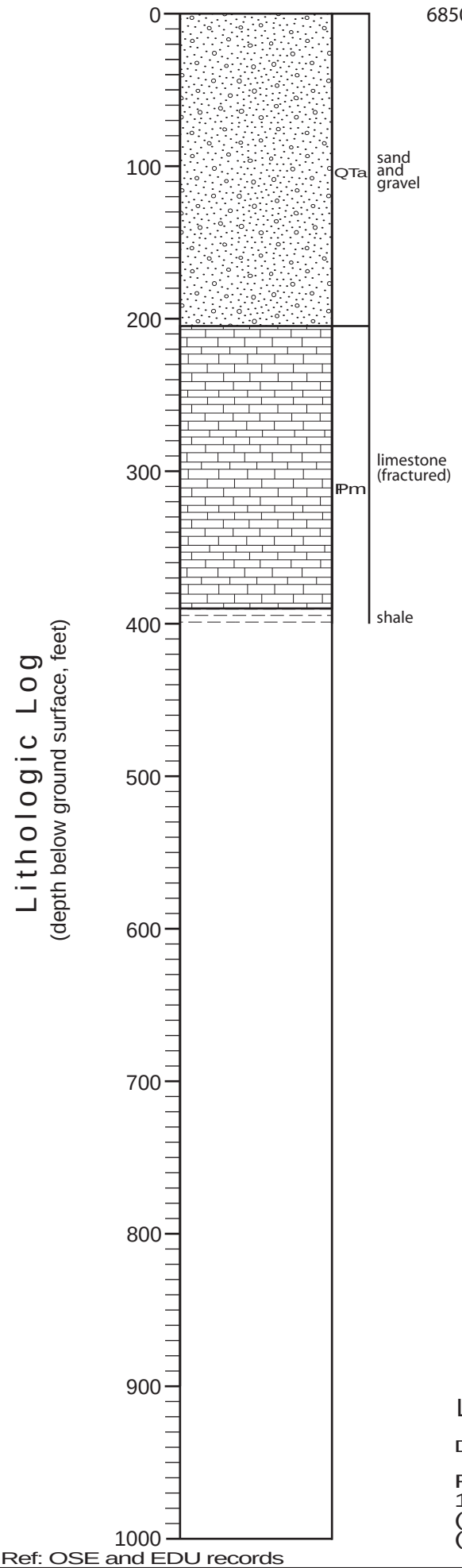
Date drilled: March1999

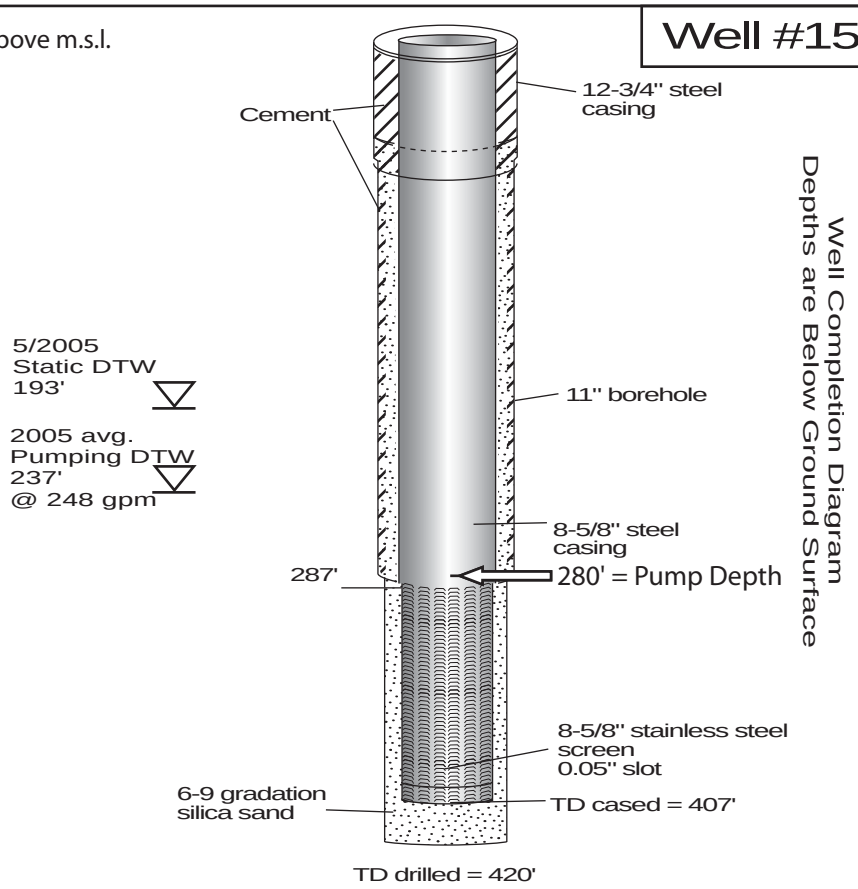
RG-18528-S, 18543-S, 18550-S (water rights)
(drilled under RG-65707-EXPL1)

Ref: OSE and EDU records

GLORIETA GEOSCIENCE, INC

Well #15





Lithologic Log and Well Completion Diagram of EAWSD Well 15

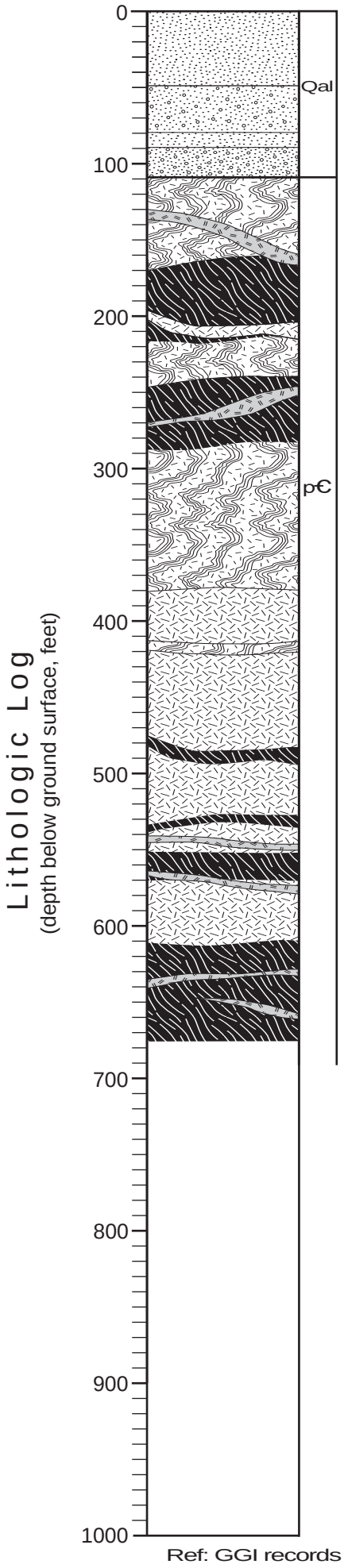
Date drilled: January 2000

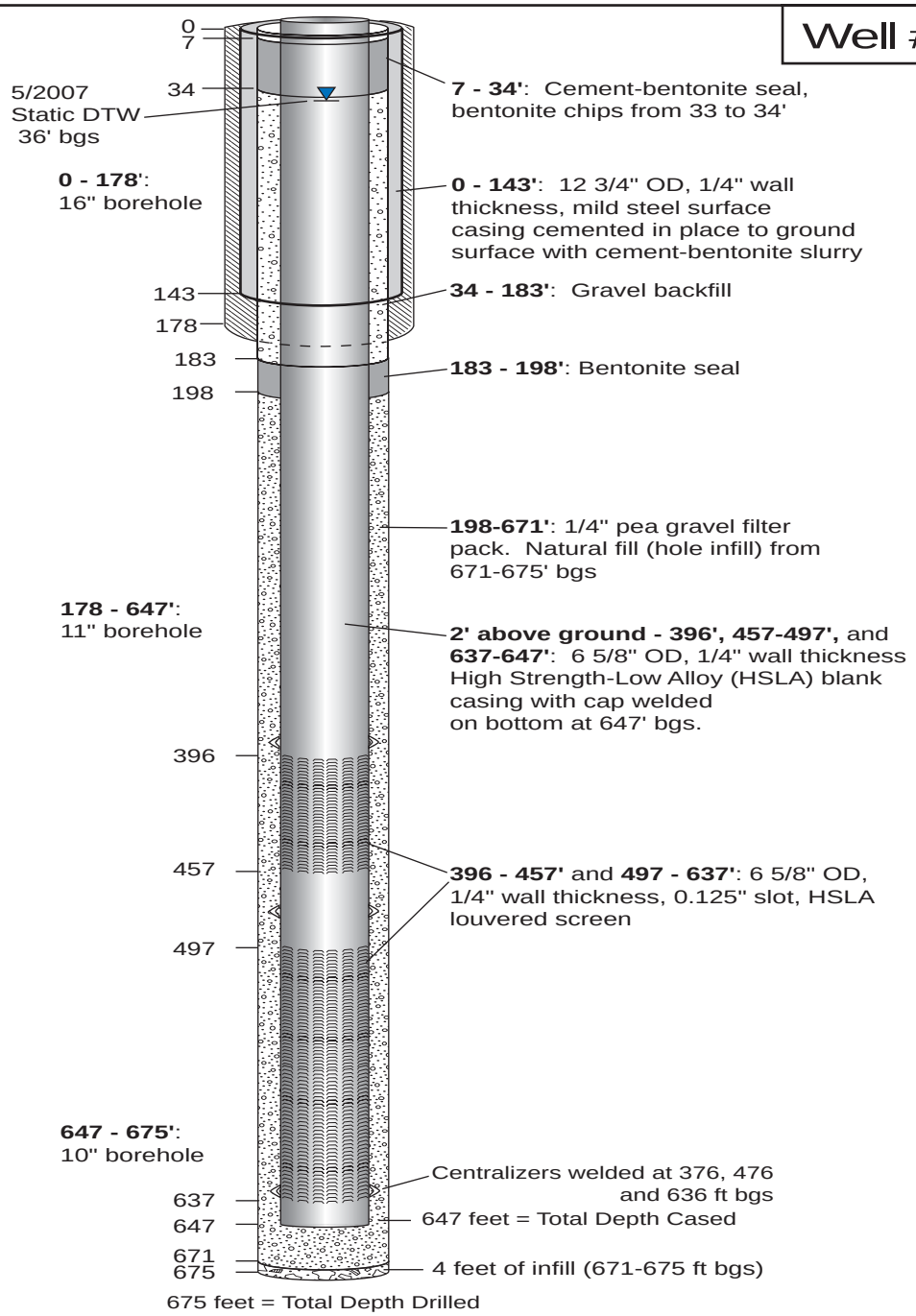
RG-18515-S, 18528-S, 18529-S,
18531-S, 18543-S, 18550-S, 18571-S, 18595-S
(water rights)
(drilled under RG-65707-EXPL2)

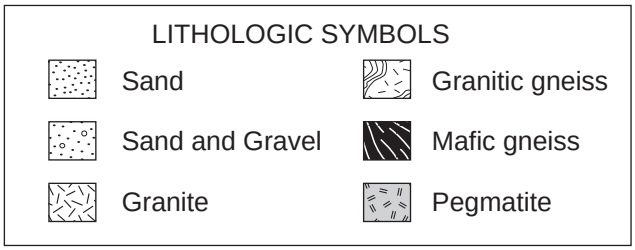
Ref: OSE and EDU records

GLORIETA GEOSCIENCE, INC

Well #17







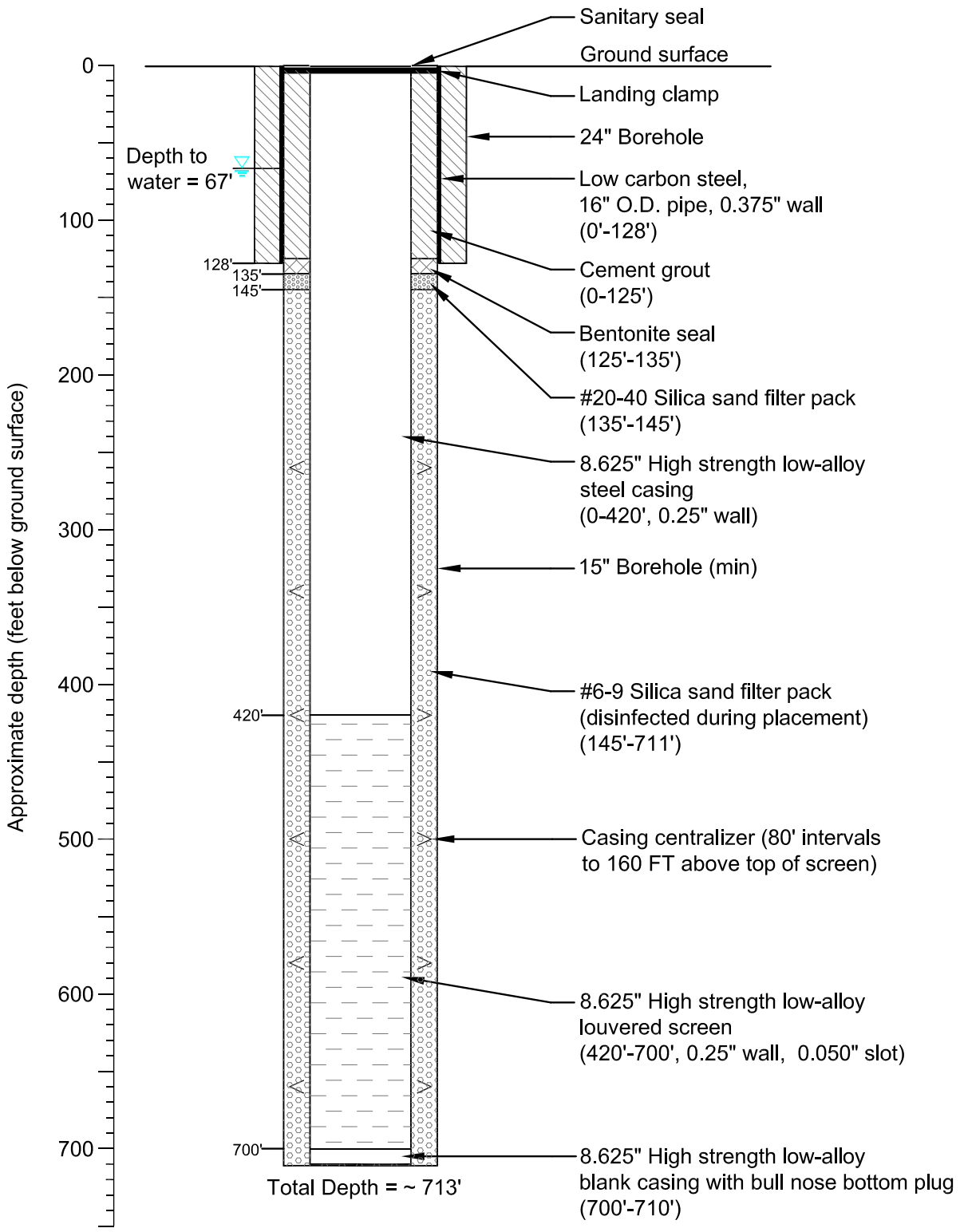
Lithologic Log and Well Completion Diagram of EAWSD Well 17

Date drilled: May 2007

RG-88450 (Exploratory)

Water rights transfer pending

GLORIETA GEOSCIENCE, INC



Notes:

1. Drawing is not to scale.
2. Casing diameters listed are "OD".
3. Well completed in granitic gneiss and granodiorite.

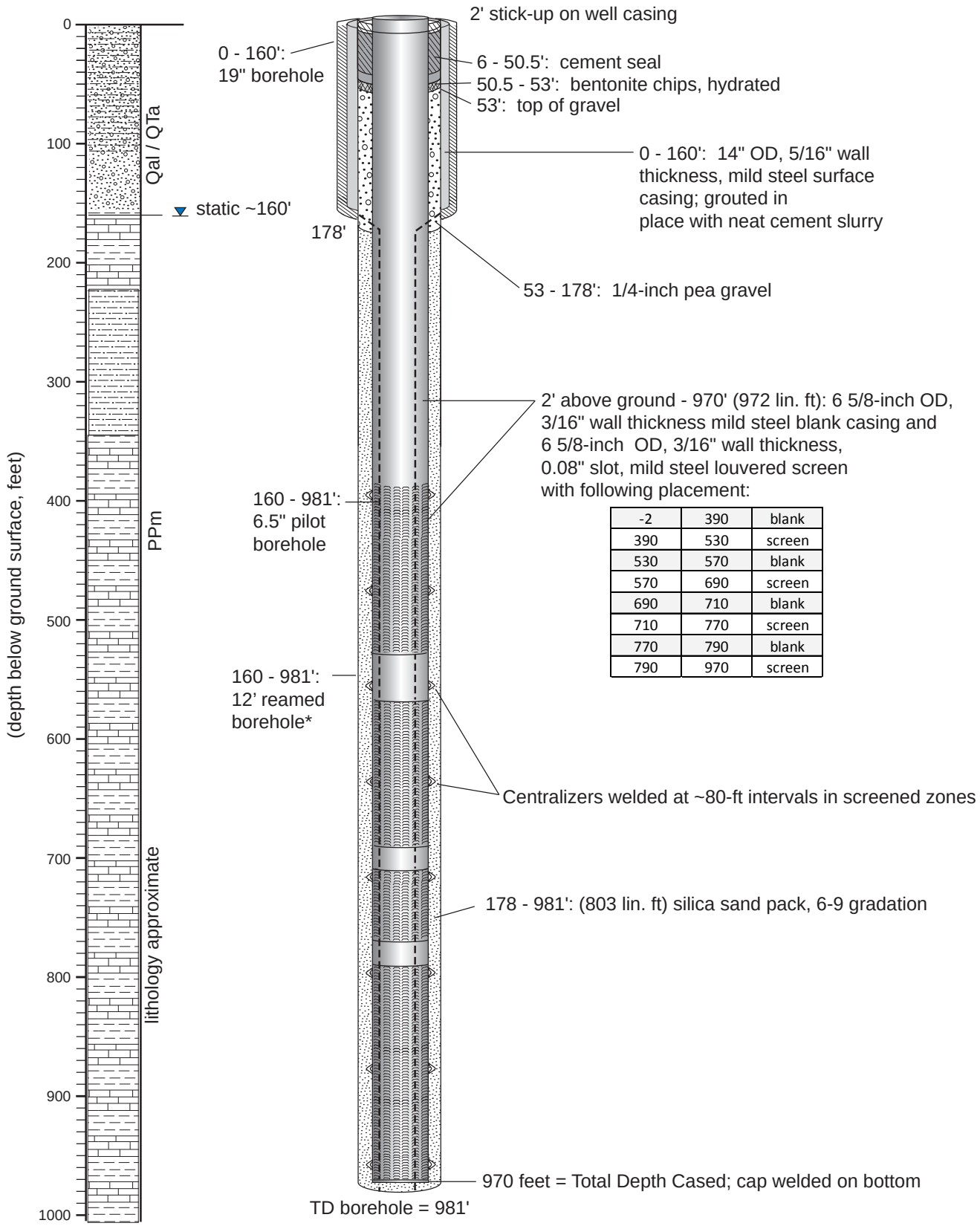
ELDORADO AREA WATER AND
SANITATION DISTRICT
SANTA FE COUNTY, NEW MEXICO

Well #18 Completion

Daniel B. Stephens & Associates, Inc.

12-14-10 JN WR09.0150

S:\Projects\WR09.0150_Eldorado_Well_and_Pipeline_Design\VR_Drawings\WR09_0150_07B.dwg



-2	390	blank
390	530	screen
530	570	blank
570	690	screen
690	710	blank
710	770	screen
770	790	blank
790	970	screen

Figure 4. Well 19 (RG-95577-EXPL) schematic completion diagram

GLORIETA GEOSCIENCE, INC.

Appendix C

Consumer Confidence Reports

Eldorado Area Water and Sanitation District

2012 Water Quality Report

for water treated in 2011

Your water meets state and federal regulations for health and safety

Last year (2011) EAWSD conducted 850 tests for over 60 drinking water contaminants. This report is a snapshot of the quality of the water that was provided in 2011. Included are details about where your water comes from, what it contains, and how it compares to Environmental Protection Agency (EPA) standards. EAWSD is committed to providing you with this information because we want you to be informed about your drinking water quality. For more information about your water, call 505.466.1085 to speak with a member of the EAWSD operations staff.

Special population advisory

Immuno-compromised persons such as those with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

***Cryptosporidium* and *Giardia*, two organisms commonly linked to water-borne illness, are found primarily in surface waters. Because EAWSD drinking water comes from a deep groundwater aquifer, these organisms do not pose a significant health risk.**

Drinking water sources

Your drinking water comes from groundwater in the Rio Grande basin. A network of local production wells pumps water from underground aquifers. The water is disinfected and either distributed directly to the customer or pumped to storage tanks from which the water is sent through the distribution system to you. Source water assessment information may be obtained from the New Mexico Environment Department at 505.476.8620

Public participation opportunities

The EAWSD Board of Directors holds public meetings twice a month at which public attendance and participation is welcome and encouraged. EAWSD provides information and communication to customers through its website, monthly newsletter, postings on community bulletin boards, email communications and direct mailings as needed. Customers are invited to call or visit the EAWSD office with questions or to obtain information about your water system.

Telephone: 505-466-1085
Address: 1 Caliente Road
Website: www.eldoradowaterdistrict.com

Contaminants in water

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline 800.426.4791.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water before we treat it include:

- *Microbial contaminants*, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- *Inorganic contaminants*, such as salts and metals, which can be naturally occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.
- *Pesticides & herbicides*, which may come from a variety of sources such as agriculture and residential use.
- *Radioactive contaminants*, which are naturally occurring.
- *Organic chemical contaminants*, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and also can come from gas stations, urban storm water runoff, and septic systems.

Water quality

To ensure that tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. We treat our water according to EPA's regulations. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.

Water quality data

The table in this report lists all the drinking water contaminants detected during the 2011 compliance period. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. The data presented in this table are from testing done in 2011 and years prior. The New Mexico Drinking Water Bureau requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. Some of the data, though representative of the water quality, are more than one year old.

TERMS AND ABBREVIATIONS

- **AL**: Action Level – "Action Level at consumers tap" the concentration of a contaminant which, when exceeded, triggers treatment or other requirements that a water system must follow.
- **MCLG**: Maximum Contaminant Level Goal - the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
- **MCL**: Maximum Contaminant Level - the highest level of a contaminant that is allowed in drinking water. MCL are set as close to the MCLGs as feasible using the best available treatment technology.
- **MRDLG**: Maximum residual disinfection level goal. The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
- **MRDL**: Maximum residual disinfectant level. The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants
- **N/A**: Not applicable
- **ND**: Not detectable at testing limit
- **NTU**: Nephelometric Turbidity Units
- **pCi/L**: Picocuries per liter - a measure of radioactivity
- **ppb**: Parts per billion or micrograms per liter – corresponds to one minute in 2,000 years
- **ppm**: Parts per million or milligrams per liter – corresponds to one minute in 2 years
- **(µg/L)**: Micrograms per liter or parts per billion – corresponds to one minute in 2,000 years

DETECTED CONTAMINANTS

The table below lists all of the drinking water contaminants that we detected during the 2011 calendar year of this report. The presence of contaminants in the water does not necessarily indicate that the water poses a health risk. Unless otherwise noted, the data presented in this table are from testing done in 2011. The EPA or the State requires EAWSD to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not change frequently.

Contaminants	Maximum Goal (MCLG) or MRDLG	Highest Level Allowed MCL or MRDL	Range		Sample Date	Violation	Typical Source
			Low	High			
Disinfectants & Disinfectant By-Products (There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants)							
TTHMs [Total Trihalomethanes] (ppb)	NA	80	ND	ND	2010	No	By-product of drinking water disinfection
Haloacetic Acids (HAA5) (ppb)	NA	60	ND	1.1	2010	No	By-product of drinking water chlorination
Chlorine (as Cl2) (ppm)	4	4	0.6	0.7	2011		Water additive used to control microbes
Inorganic Contaminants							
Nitrate [measured as Nitrogen] (ppm)	10	10	1.5	3.2	2011	No	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Fluoride (ppm)	4	4	0.45	0.90	2011	No	Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories. (EAWSD does not add fluoride to its drinking water)
Contaminants	**Ideal Goal (MCLG)**	**Highest Level Allowed**	**Range**		**Sample Date**	**Violation**	**Typical Source**
			Low	**High**			
Selenium (ppb)	50	50	0	0.0054	2008-2011	No	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines
Barium (ppm)	2	2	0.081	0.26	2008-2011	No	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Arsenic (ppb)	0	10	ND	3.3	2011	No	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes

Microbiological Contaminants							
Total Coliform (positive samples/month)	0	1	ND	0	2011	No	Naturally present in the environment
Fecal coliform/E. coli - in the distribution system (positive samples)	0	0	ND	ND	2011	No	Human and animal fecal waste
A violation occurs when a routine sample and a repeat sample, in any given month, are total coliform positive, and one is also fecal coliform or E. coli positive.							
Radioactive Contaminants							
Radium (combined 226/228) (pCi/L)	0	5	0.18	2.4	2011	No	Erosion of natural deposits
Uranium (combined) (µg/L)	0	30	0	8.0	2007-2011	No	Erosion of natural deposits
Gross Alpha (pCi/L)	0	15	0.05	8.3	2007-2011	No	Erosion of natural deposits

Contaminants	MCLG	AL	90th Percentile	Sample Date	# Samples Exceeding AL	Exceeds AL	Typical Source
Copper - action level at consumer taps (ppm)	1.3	1.3	0.34	2009	0	No	Corrosion of household plumbing systems; erosion of natural deposits
Lead - action level at consumer taps (ppb)	0	15	4.7	2009	0	No	Corrosion of household plumbing systems; erosion of natural deposits

2011 EVENTS

No events occurred in 2011.

Spanish (Español)

Este informe contiene información muy importante sobre la calidad de su agua potable. Por favor lea este informe o comuníquese con alguien que pueda traducir la información.

Education Information

Additional Information for Lead

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. EAWSD is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your drinking water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead

UNDETECTED CONTAMINANTS

The following contaminants were monitored for, but not detected, in your water.

Contaminants	MCLG or MRDLG	MCL or MRDL	EAWSD Water	Violation	Typical Source
Cyanide [as Free Cn] (ppb)	200	200	ND	No	Discharge from plastic and fertilizer factories; discharge from steel/metal factories
Mercury [Inorganic] (ppb)	2	2	ND	No	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills; runoff from cropland
Beryllium (ppb)	4	4	ND	No	Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries
Antimony (ppb)	6	6	ND	No	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder; test addition.
Thallium (ppb)	0.5	2	ND	No	Discharge from electronics, glass, and leaching from ore-processing sites; drug factories
Chromium (ppb)	100	100	ND	No	Discharge from steel and pulp mills; erosion of natural deposits
Cadmium (ppb)	5	5	ND	No	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints
Benzene (ppb)	0	5	ND	No	Discharge from factories; leaching from gas storage tanks and landfills
Toluene (ppm)	1	1	ND	No	Discharge from petroleum factories
p-Dichlorobenzene (ppb)	75	75	ND	No	Discharge from industrial chemical factories
Vinyl Chloride (ppb)	0	2	ND	No	Leaching from PVC piping; discharge from plastics factories
Xylenes (ppm)	10	10	ND	No	Discharge from petroleum factories; discharge from chemical factories
cis-1,2-Dichloroethylene (ppb)	70	70	ND	No	Discharge from industrial chemical factories
Carbon Tetrachloride (ppb)	0	5	ND	No	Discharge from chemical plants and other industrial activities
1,1,1-Trichloroethane (ppb)	200	200	ND	No	Discharge from metal degreasing sites and other factories
1,2-Dichloroethane (ppb)	0	5	ND	No	Discharge from industrial chemical factories
1,2,4-Trichlorobenzene (ppb)	70	70	ND	No	Discharge from textile-finishing factories
Styrene (ppb)	100	100	ND	No	Discharge from rubber and plastic factories; leaching from landfills
Ethylbenzene (ppb)	700	700	ND	No	Discharge from petroleum refineries
Tetrachloroethylene (ppb)	0	5	ND	No	Discharge from factories and dry cleaners
o-Dichlorobenzene (ppb)	600	600	ND	No	Discharge from industrial chemical factories

Contaminants	MCLG or MRDLG	MCL or MRDL	EAWSD Water	Violation	Typical Source
Trichloroethylene (ppb)	0	5	ND	No	Discharge from metal degreasing sites and other factories
1,1-Dichloroethylene (ppb)	7	7	ND	No	Discharge from industrial chemical factories
1,1,2-Trichloroethane (ppb)	3	5	ND	No	Discharge from industrial chemical factories
Hexachlorocyclopentadiene (ppb)	50	50	ND	No	Discharge from chemical factories
Glyphosate (ppb)	700	700	ND	No	Runoff from herbicide use
Picloram (ppb)	500	500	ND	No	Herbicide runoff
Di (2-ethylhexyl) adipate (ppb)	400	400	ND	No	Discharge from chemical factories
Oxamyl [Vydate] (ppb)	200	200	ND	No	Runoff/leaching from insecticide used on apples, potatoes and tomatoes
Endothall (ppb)	100	100	ND	No	Runoff from herbicide use
Di (2-ethylhexyl) phthalate (ppb)	0	6	ND	No	Discharge from rubber and chemical factories
2,4-D (ppb)	70	70	ND	No	Runoff from herbicide used on row crops
Heptachlor epoxide (ppt)	0	200	ND	No	Breakdown of heptachlor
Pentachlorophenol (ppb)	0	1	ND	No	Discharge from wood preserving factories
Dinoseb (ppb)	7	7	ND	No	Runoff from herbicide used on soybeans and vegetables
Ethylene dibromide (ppt)	0	50	ND	No	Discharge from petroleum refineries
Heptachlor (ppt)	0	400	ND	No	Residue of banned pesticide
Carbofuran (ppb)	40	40	ND	No	Leaching of soil fumigant used on rice and alfalfa
Atrazine (ppb)	3	3	ND	No	Runoff from herbicide used on row crops
Simazine (ppb)	4	4	ND	No	Herbicide runoff
Dalapon (ppb)	200	200	ND	No	Runoff from herbicide used on rights of way
Chlordane (ppb)	0	2	ND	No	Residue of banned termiticide
Endrin (ppb)	2	2	ND	No	Residue of banned insecticide
2,4,5-TP (Silvex) (ppb)	50	50	ND	No	Residue of banned herbicide
Diquat (ppb)	20	20	ND	No	Runoff from herbicide use
Methoxychlor (ppb)	40	40	ND	No	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock
Benzo(a)pyrene (ppt)	0	200	ND	No	Leaching from linings of water storage tanks and distribution lines
Hexachlorobenzene (ppb)	0	1	ND	No	Discharge from metal refineries and agricultural chemical factories
Toxaphene (ppb)	0	3	ND	No	Runoff/leaching from insecticide used on cotton and cattle
1,2-Dichloropropane (ppb)	0	5	ND	No	Discharge from industrial chemical factories
trans-1,2-Dicholoroethylene (ppb)	100	100	ND	No	Discharge from industrial chemical factories

WATER CONSERVATION TIPS

Did you know that the average U.S. household uses approximately 400 gallons of water per day or 100 gallons per person per day? Luckily, there are many low-cost and no-cost ways to conserve water. Small changes can make a big difference – try one today and soon it will become second nature.

- Take short showers - a 5-minute shower uses 4 to 5 gallons of water compared to up to 50 gallons for a bath.
- Shut off water while brushing your teeth, washing your hair and shaving and save up to 500 gallons a month.
- Use a water-efficient showerhead. They're inexpensive, easy to install, and can save you up to 750 gallons a month.
- Run your clothes washer and dishwasher only when they are full. You can save up to 1,000 gallons a month.
- Water plants only when necessary.
- Fix leaky toilets and faucets. Faucet washers are inexpensive and take only a few minutes to replace. To check your toilet for a leak, place a few drops of food coloring in the tank and wait. If it seeps into the toilet bowl without flushing, you have a leak. Fixing it or replacing it with a new, more efficient model can save up to 1,000 gallons a month.
- Adjust sprinklers so only your lawn is watered. Apply water only as fast as the soil can absorb it and during the cooler parts of the day to reduce evaporation.
- Teach your kids about water conservation to ensure a future generation that uses water wisely. Make it a family effort to reduce next month's water bill!
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SOURCE WATER PROTECTION TIPS

Protection of drinking water is everyone's responsibility. You can help protect your community's drinking water source in several ways:

- Eliminate excess use of lawn and garden fertilizers and pesticides – they contain hazardous chemicals that can reach your drinking water source.
- Pick up after your pets.
- If you have your own septic system, properly maintain your system to reduce leaching to water sources or consider connecting to a public water system.
- Dispose of chemicals properly; take used motor oil to a recycling center.
- Volunteer in your community. Find a watershed or wellhead protection organization in your community and volunteer to help. If there are no active groups, consider starting one. Use EPA's Adopt Your Watershed to locate groups in your community, or visit the Watershed Information Network's *How to Start a Watershed Team*.

This water quality report was prepared by CH2M HILL, as a service to the Eldorado Area Water and Sanitation District.

CH2MHILL

Eldorado Area Water and Sanitation District

2013 Water Quality Report

for water treated in 2012

Your water meets state and federal regulations for health and safety

Last year (2012) EAWSD conducted 1,200 tests for over 60 drinking water contaminants. This report is a snapshot of the quality of the water that was provided in 2012. Included are details about where your water comes from, what it contains, and how it compares to Environmental Protection Agency (EPA) standards. EAWSD is committed to providing you with this information because we want you to be informed about your drinking water quality. For more information about your water, call 505.466.1085 to speak with a member of the EAWSD operations staff.

Special population advisory

Immuno-compromised persons such as those with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

***Cryptosporidium* and *Giardia,* two organisms commonly linked to water-borne illness, are found primarily in surface waters. Because EAWSD drinking water comes from a deep groundwater aquifer, these organisms do not pose a significant health risk.**

Drinking water sources

Your drinking water comes from groundwater in the Rio Grande basin. A network of local production wells pumps water from underground aquifers. The water is disinfected and either distributed directly to the customer or pumped to storage tanks from which the water is sent through the distribution system to you. Source water assessment information may be obtained from the New Mexico Environment Department at 505.476.8620

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Telephone: 505-466-1085
Address: 1 Caliente Road
Website: http://www.EAWSD.org

Contaminants in water

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline 800.426.4791.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water before we treat it include:

- *Microbial contaminants*, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- *Inorganic contaminants*, such as salts and metals, which can be naturally occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.
- *Pesticides & herbicides*, which may come from a variety of sources such as agriculture and residential use.
- *Radioactive contaminants*, which are naturally occurring.
- *Organic chemical contaminants*, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and also can come from gas stations, urban storm water runoff, and septic systems.

Water quality

To ensure that tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. We treat our water according to EPA's regulations. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.

Water quality data

Unless otherwise indicated, the table in this report lists all the drinking water contaminants detected during the 2012 compliance period. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. The data presented in this table are from testing done in 2012 and years prior. The New Mexico Drinking Water Bureau requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. For this reason, some of the data, though representative of the water quality, are more than one year old.

TERMS AND ABBREVIATIONS

- **AL**: Action Level – "Action Level at consumers tap" the concentration of a contaminant which, when exceeded, triggers treatment or other requirements that a water system must follow.
- **MCLG**: Maximum Contaminant Level Goal - the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
- **MCL**: Maximum Contaminant Level - the highest level of a contaminant that is allowed in drinking water. MCL are set as close to the MCLGs as feasible using the best available treatment technology.
- **MRDLG**: Maximum residual disinfection level goal. The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
- **MRDL**: Maximum residual disinfectant level. The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants
- **N/A**: Not applicable
- **ND**: Not detectable at testing limit
- **NTU**: Nephelometric Turbidity Units
- **pCi/L**: Picocuries per liter - a measure of radioactivity
- **ppb**: Parts per billion or micrograms per liter (µg/L) – corresponds to one minute in 2,000 years
- **ppm**: Parts per million or milligrams per liter (mg/L) – corresponds to one minute in 2 years
- **µg/L**: Micrograms per liter or parts per billion – corresponds to one minute in 2,000 years

DETECTED CONTAMINANTS

The table below lists all of the drinking water contaminants that we detected during the 2012 calendar year of this report. The presence of contaminants in the water does not necessarily indicate that the water poses a health risk. Unless otherwise noted, the data presented in this table are from testing done in 2012. The EPA or the State requires EAWSD to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not change frequently.

Contaminants	Maximum Goal (MCLG) or MRDLG	Highest Level Allowed MCL or MRDL	Range		Sample Date	Violation	Typical Source
			Low	High			
Disinfectants & Disinfectant By-Products (There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants)							
TTHMs [Total Trihalomethanes] (ppb)	NA	80	ND	ND	2010	No	By-product of drinking water disinfection
Haloacetic Acids (HAA5) (ppb)	NA	60	ND	1.1	2010	No	By-product of drinking water chlorination
Chlorine (as Cl2) (ppm)	4	4	0.03	1.68	2012	No	Water additive used to control microbes
Inorganic Contaminants							
Arsenic (ppb)	0	10	ND	3.3	2011	No	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes
Barium (ppm)	2	2	0.081	0.26	2008-2011	No	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Fluoride (ppm)	4	4	0.45	0.90	2011	No	Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories. *(EAWSD does not add fluoride to its drinking water)*
Nitrate [measured as Nitrogen] (ppm)	10	10	1.5	3.3	2012	No	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Selenium (ppb)	50	50	0	0.0054	2008-2011	No	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines

Inorganic Contaminants	Maximum Goal (MCLG) or MRDLG	Highest Level Allowed MCL or MRDL	Range		Sample Date	Violation	Typical Source
			Low	High			
Chloride (mg/L)	NA	250	41	58	2012	No	Abundant naturally occurring element; used in water purification; byproduct of oil field activity
Sulfate (mg/L)	NA	250	28	31	2012	No	Runoff/leaching from natural deposits; industrial wastes.
Zinc (mg/L)	NA	5	0.016	0.036	2012	No	Runoff/leaching from natural deposits; industrial wastes.
Microbiological Contaminants							
Total Coliform (positive samples/month)	0	1	ND	ND	2012	No	Naturally present in the environment
Fecal coliform/E. coli - in the distribution system (positive samples)	0	0	ND	ND	2012	No	Human and animal fecal waste
A violation occurs when a routine sample and a repeat sample, in any given month, are total coliform positive, and one is also fecal coliform or E. coli positive.							
Radioactive Contaminants							
Radium (combined 226/228) (pCi/L)	0	5	0.18	2.4	2011	No	Erosion of natural deposits
Uranium (combined) (µg/L)	0	30	0	8.0	2007-2011	No	Erosion of natural deposits
Gross Alpha (pCi/L)	0	15	0.05	8.3	2007-2011	No	Erosion of natural deposits

Contaminants	MCLG	AL	90th Percentile	Sample Date	# Samples Exceeding AL	Exceeds AL	Typical Source
Copper - action level at consumer taps (ppm)	1.3	1.3	0.23	2012	0	No	Corrosion of household plumbing systems; erosion of natural deposits
Lead - action level at consumer taps (ppb)	0	15	3.0	2012	0	No	Corrosion of household plumbing systems; erosion of natural deposits

2012 EVENTS

No events occurred in 2012.

Spanish (Español)

Este informe contiene información muy importante sobre la calidad de su agua potable. Por favor lea este informe o comuníquese con alguien que pueda traducir la información.

EDUCATION INFORMATION

Additional Information for Lead

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. EAWSD is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your drinking water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead

UNDETECTED CONTAMINANTS

The following contaminants were monitored for, but not detected, in your water.

Contaminants	MCLG or MRDLG	MCL or MRDL	EAWSD Water	Violation	Typical Source
Cyanide [as Free Cn] (ppb)	200	200	ND	No	Discharge from plastic and fertilizer factories; discharge from steel/metal factories
Mercury [Inorganic] (ppb)	2	2	ND	No	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills; runoff from cropland
Beryllium (ppb)	4	4	ND	No	Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries
Antimony (ppb)	6	6	ND	No	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder; test addition.
Thallium (ppb)	0.5	2	ND	No	Discharge from electronics, glass, and leaching from ore-processing sites; drug factories
Chromium (ppb)	100	100	ND	No	Discharge from steel and pulp mills; erosion of natural deposits
Cadmium (ppb)	5	5	ND	No	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints
Benzene (ppb)	0	5	ND	No	Discharge from factories; leaching from gas storage tanks and landfills
Toluene (ppm)	1	1	ND	No	Discharge from petroleum factories
p-Dichlorobenzene (ppb)	75	75	ND	No	Discharge from industrial chemical factories
Vinyl Chloride (ppb)	0	2	ND	No	Leaching from PVC piping; discharge from plastics factories
Xylenes (ppm)	10	10	ND	No	Discharge from petroleum factories; discharge from chemical factories
cis-1,2-Dichloroethylene (ppb)	70	70	ND	No	Discharge from industrial chemical factories
Carbon Tetrachloride (ppb)	0	5	ND	No	Discharge from chemical plants and other industrial activities
1,1,1-Trichloroethane (ppb)	200	200	ND	No	Discharge from metal degreasing sites and other factories
1,2-Dichloroethane (ppb)	0	5	ND	No	Discharge from industrial chemical factories
1,2,4-Trichlorobenzene (ppb)	70	70	ND	No	Discharge from textile-finishing factories
Styrene (ppb)	100	100	ND	No	Discharge from rubber and plastic factories; leaching from landfills
Ethylbenzene (ppb)	700	700	ND	No	Discharge from petroleum refineries
Tetrachloroethylene (ppb)	0	5	ND	No	Discharge from factories and dry cleaners
o-Dichlorobenzene (ppb)	600	600	ND	No	Discharge from industrial chemical factories

Contaminants	MCLG or MRDLG	MCL or MRDL	EAWSD Water	Violation	Typical Source
Trichloroethylene (ppb)	0	5	ND	No	Discharge from metal degreasing sites and other factories
1,1-Dichloroethylene (ppb)	7	7	ND	No	Discharge from industrial chemical factories
1,1,2-Trichloroethane (ppb)	3	5	ND	No	Discharge from industrial chemical factories
Hexachlorocyclopentadiene (ppb)	50	50	ND	No	Discharge from chemical factories
Glyphosate (ppb)	700	700	ND	No	Runoff from herbicide use
Picloram (ppb)	500	500	ND	No	Herbicide runoff
Di (2-ethylhexyl) adipate (ppb)	400	400	ND	No	Discharge from chemical factories
Oxamyl [Vydate] (ppb)	200	200	ND	No	Runoff/leaching from insecticide used on apples, potatoes and tomatoes
Endothall (ppb)	100	100	ND	No	Runoff from herbicide use
Di (2-ethylhexyl) phthalate (ppb)	0	6	ND	No	Discharge from rubber and chemical factories
2,4-D (ppb)	70	70	ND	No	Runoff from herbicide used on row crops
Heptachlor epoxide (ppt)	0	200	ND	No	Breakdown of heptachlor
Pentachlorophenol (ppb)	0	1	ND	No	Discharge from wood preserving factories
Dinoseb (ppb)	7	7	ND	No	Runoff from herbicide used on soybeans and vegetables
Ethylene dibromide (ppt)	0	50	ND	No	Discharge from petroleum refineries
Heptachlor (ppt)	0	400	ND	No	Residue of banned pesticide
Carbofuran (ppb)	40	40	ND	No	Leaching of soil fumigant used on rice and alfalfa
Atrazine (ppb)	3	3	ND	No	Runoff from herbicide used on row crops
Simazine (ppb)	4	4	ND	No	Herbicide runoff
Dalapon (ppb)	200	200	ND	No	Runoff from herbicide used on rights of way
Chlordane (ppb)	0	2	ND	No	Residue of banned termiticide
Endrin (ppb)	2	2	ND	No	Residue of banned insecticide
2,4,5-TP (Silvex) (ppb)	50	50	ND	No	Residue of banned herbicide
Diquat (ppb)	20	20	ND	No	Runoff from herbicide use
Methoxychlor (ppb)	40	40	ND	No	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock
Benzo(a)pyrene (ppt)	0	200	ND	No	Leaching from linings of water storage tanks and distribution lines
Hexachlorobenzene (ppb)	0	1	ND	No	Discharge from metal refineries and agricultural chemical factories
Toxaphene (ppb)	0	3	ND	No	Runoff/leaching from insecticide used on cotton and cattle
1,2-Dichloropropane (ppb)	0	5	ND	No	Discharge from industrial chemical factories
trans-1,2-Dicholoroethylene (ppb)	100	100	ND	No	Discharge from industrial chemical factories

WATER CONSERVATION TIPS

Did you know that the average U.S. household uses approximately 400 gallons of water per day or 100 gallons per person per day? Luckily, there are many low-cost and no-cost ways to conserve water. Small changes can make a big difference – try one today and soon it will become second nature.

- Take short showers - a 5-minute shower uses 4 to 5 gallons of water compared to up to 50 gallons for a bath.
- Shut off water while brushing your teeth, washing your hair and shaving and save up to 500 gallons a month.
- Use a water-efficient showerhead. They're inexpensive, easy to install, and can save you up to 750 gallons a month.
- Run your clothes washer and dishwasher only when they are full. You can save up to 1,000 gallons a month.
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This water quality report was prepared by CH2M HILL, as a service to the Eldorado Area Water and Sanitation District.

CH2MHILL

Eldorado Area Water and Sanitation District

2014 Water Quality Report

for water treated in 2013

Your water meets state and federal regulations for health and safety

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- **MFL**: Million fibers per liter.
- **MRDLG**: Maximum residual disinfection level goal. The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
- **MRDL**: Maximum residual disinfectant level. The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants
- **N/A**: Not applicable
- **ND**: Not detectable at testing limit
- **NTU**: Nephelometric Turbidity Units
- **pCi/L**: Picocuries per liter - a measure of radioactivity
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Contaminants	Maximum Goal (MCLG) or MRDLG	Highest Level Allowed MCL or MRDL	Range		Sample Date	Violation	Typical Source
			Low	High			
Disinfectants & Disinfectant By-Products (There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants)							
TTHMs [Total Trihalomethanes] (ppb)	NA	80	ND	6.61	2013	No	By-product of drinking water disinfection
Haloacetic Acids (HAA5) (ppb)	NA	60	ND	1.6	2013	No	By-product of drinking water chlorination
Chlorine (as Cl2) (ppm)	4	4	0.11	1.26	2013	No	Water additive used to control microbes
Inorganic Contaminants							
Arsenic (ppb)	0	10	ND	3.3	2011	No	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes
Barium (ppm)	2	2	0.084	0.19	2011	No	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Fluoride (ppm)	4	4	0.45	0.90	2011	No	Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories. *(EAWSD does not add fluoride to its drinking water)*
Nitrate [measured as Nitrogen] (ppm)	10	10	2.08	3.67	2013	No	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Selenium (ppb)	50	50	0.0012	0.0047	2011	No	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines

Inorganic Contaminants	Maximum Goal (MCLG) or MRDLG	Highest Level Allowed MCL or MRDL	Range		Sample Date	Violation	Typical Source
			Low	High			
Chloride (mg/L)	NA	250	41	58	2012	No	Abundant naturally occurring element; used in water purification; byproduct of oil field activity
Sulfate (mg/L)	NA	250	28	31	2012	No	Runoff/leaching from natural deposits; industrial wastes.
Zinc (mg/L)	NA	5	0.016	0.036	2012	No	Runoff/leaching from natural deposits; industrial wastes.
Microbiological Contaminants							
Total Coliform (positive samples/month)	0	1	ND	ND	2013	No	Naturally present in the environment
Fecal coliform/E. coli - in the distribution system (positive samples)	0	0	ND	ND	2013	No	Human and animal fecal waste
A violation occurs when a routine sample and a repeat sample, in any given month, are total coliform positive, and one is also fecal coliform or E. coli positive.							
Radioactive Contaminants							
Radium (combined 226/228) (pCi/L)	0	5	0.20	2.62	2013	No	Erosion of natural deposits
Uranium (combined) (µg/L)	0	30	2.0	4.0	2013	No	Erosion of natural deposits
Gross Alpha (pCi/L)	0	15	3.4	8.1	2013	No	Erosion of natural deposits
Beta/Photon Emitters (pCi/L)	0	50	2.3	5.4	2013	No	Decay of natural and manmade deposits

Contaminants	MCLG	AL	90th Percentile	Sample Date	# Samples Exceeding AL	Exceeds AL	Typical Source
Copper - action level at consumer taps (ppm)	1.3	1.3	0.23	2012	0	No	Corrosion of household plumbing systems; erosion of natural deposits
Lead - action level at consumer taps (ppb)	0	15	3.0	2012	0	No	Corrosion of household plumbing systems; erosion of natural deposits

Unregulated Contaminant Monitoring*			
Name	Reported Level	Range	
		Low	High
Dicamba	0.13	ND	0.13

*Unregulated contaminants monitoring helps EPA to determine where certain contaminants occur and whether it needs to regulate those contaminants.

2013 EVENTS

During 2013, a boil water order was requested by the state as a precaution due to a water main break that resulted in no or low water pressure in a large section of our service area. All samples taken following the incident were negative.

Spanish (Español)

Este informe contiene información muy importante sobre la calidad de su agua potable. Por favor lea este informe o comuníquese con alguien que pueda traducir la información.

EDUCATION INFORMATION

Additional Information for Lead

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. EAWSD is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your drinking water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead

UNDETECTED CONTAMINANTS

The following contaminants were monitored for, but not detected, in your water.

Contaminants	MCLG or MRDLG	MCL or MRDL	EAWSD Water	Violation	Typical Source
Asbestos (MFL)	7 million fibers per liter (MFL)	7.0	ND	No	Decay of asbestos cement in water mains; erosion of natural deposits
Cyanide [as Free Cn] (ppb)	200	200	ND	No	Discharge from plastic and fertilizer factories; discharge from steel/metal factories
Mercury [Inorganic] (ppb)	2	2	ND	No	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills; runoff from cropland
Beryllium (ppb)	4	4	ND	No	Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries
Antimony (ppb)	6	6	ND	No	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder; test addition.
Thallium (ppb)	0.5	2	ND	No	Discharge from electronics, glass, and leaching from ore-processing sites; drug factories
Chromium (ppb)	100	100	ND	No	Discharge from steel and pulp mills; erosion of natural deposits
Cadmium (ppb)	5	5	ND	No	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints
Benzene (ppb)	0	5	ND	No	Discharge from factories; leaching from gas storage tanks and landfills
Toluene (ppm)	1	1	ND	No	Discharge from petroleum factories
p-Dichlorobenzene (ppb)	75	75	ND	No	Discharge from industrial chemical factories
Vinyl Chloride (ppb)	0	2	ND	No	Leaching from PVC piping; discharge from plastics factories
Xylenes (ppm)	10	10	ND	No	Discharge from petroleum factories; discharge from chemical factories
cis-1,2-Dichloroethylene (ppb)	70	70	ND	No	Discharge from industrial chemical factories
Carbon Tetrachloride (ppb)	0	5	ND	No	Discharge from chemical plants and other industrial activities
1,1,1-Trichloroethane (ppb)	200	200	ND	No	Discharge from metal degreasing sites and other factories

Contaminants	MCLG or MRDLG	MCL or MRDL	EAWSD Water	Violation	Typical Source
1,2-Dichloroethane (ppb)	0	5	ND	No	Discharge from industrial chemical factories
1,2,4-Trichlorobenzene (ppb)	70	70	ND	No	Discharge from textile-finishing factories
Styrene (ppb)	100	100	ND	No	Discharge from rubber and plastic factories; leaching from landfills
Ethylbenzene (ppb)	700	700	ND	No	Discharge from petroleum refineries
Tetrachloroethylene (ppb)	0	5	ND	No	Discharge from factories and dry cleaners
o-Dichlorobenzene (ppb)	600	600	ND	No	Discharge from industrial chemical factories
Trichloroethylene (ppb)	0	5	ND	No	Discharge from metal degreasing sites and other factories
1,1-Dichloroethylene (ppb)	7	7	ND	No	Discharge from industrial chemical factories
1,1,2-Trichloroethane (ppb)	3	5	ND	No	Discharge from industrial chemical factories
Hexachlorocyclopentadiene (ppb)	50	50	ND	No	Discharge from chemical factories
Glyphosate (ppb)	700	700	ND	No	Runoff from herbicide use
Picloram (ppb)	500	500	ND	No	Herbicide runoff
Di (2-ethylhexyl) adipate	400	400	ND	No	Discharge from chemical factories
Oxamyl [Vydate] (ppb)	200	200	ND	No	Runoff/leaching from insecticide used on apples, potatoes and tomatoes
Endothall (ppb)	100	100	ND	No	Runoff from herbicide use
Di (2-ethylhexyl) phthalate	0	6	ND	No	Discharge from rubber and chemical factories
2,4-D (ppb)	70	70	ND	No	Runoff from herbicide used on row crops
Heptachlor epoxide (ppt)	0	200	ND	No	Breakdown of heptachlor
Pentachlorophenol (ppb)	0	1	ND	No	Discharge from wood preserving factories
Dinoseb (ppb)	7	7	ND	No	Runoff from herbicide used on soybeans and vegetables
Ethylene dibromide (ppt)	0	50	ND	No	Discharge from petroleum refineries
Heptachlor (ppt)	0	400	ND	No	Residue of banned pesticide
Carbofuran (ppb)	40	40	ND	No	Leaching of soil fumigant used on rice and alfalfa
Atrazine (ppb)	3	3	ND	No	Runoff from herbicide used on row crops
Simazine (ppb)	4	4	ND	No	Herbicide runoff
Dalapon (ppb)	200	200	ND	No	Runoff from herbicide used on rights of way
Chlordane (ppb)	0	2	ND	No	Residue of banned termiticide
Endrin (ppb)	2	2	ND	No	Residue of banned insecticide
2,4,5-TP (Silvex) (ppb)	50	50	ND	No	Residue of banned herbicide
Diquat (ppb)	20	20	ND	No	Runoff from herbicide use
Methoxychlor (ppb)	40	40	ND	No	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock

Contaminants	MCLG or MRDLG	MCL or MRDL	EAWSD Water	Violation	Typical Source
Benzo(a)pyrene (ppt)	0	200	ND	No	Leaching from linings of water storage tanks and distribution lines
Hexachlorobenzene (ppb)	0	1	ND	No	Discharge from metal refineries and agricultural chemical factories
Toxaphene (ppb)	0	3	ND	No	Runoff/leaching from insecticide used on cotton and cattle
1,2-Dichloropropane (ppb)	0	5	ND	No	Discharge from industrial chemical factories
trans-1,2-Dicholoroethylene (ppb)	100	100	ND	No	Discharge from industrial chemical factories

WATER CONSERVATION TIPS

Did you know that the average U.S. household uses approximately 400 gallons of water per day or 100 gallons per person per day? Luckily, there are many low-cost and no-cost ways to conserve water. Small changes can make a big difference – try one today and soon it will become second nature.

- Take short showers - a 5-minute shower uses 4 to 5 gallons of water compared to up to 50 gallons for a bath.
- Shut off water while brushing your teeth, washing your hair and shaving and save up to 500 gallons a month.
- Use a water-efficient showerhead. They're inexpensive, easy to install, and can save you up to 750 gallons a month.
- Run your clothes washer and dishwasher only when they are full. You can save up to 1,000 gallons a month.
- Water plants only when necessary.
- Fix leaky toilets and faucets. Faucet washers are inexpensive and take only a few minutes to replace. To check your toilet for a leak, place a few drops of food coloring in the tank and wait. If it seeps into the toilet bowl without flushing, you have a leak. Fixing it or replacing it with a new, more efficient model can save up to 1,000 gallons a month.
- Adjust sprinklers so only your lawn is watered. Apply water only as fast as the soil can absorb it and during the cooler parts of the day to reduce evaporation.
- Teach your kids about water conservation to ensure a future generation that uses water wisely. Make it a family effort to reduce next month's water bill!
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SOURCE WATER PROTECTION TIPS

Protection of drinking water is everyone's responsibility. You can help protect your community's drinking water source in several ways:

- Eliminate excess use of lawn and garden fertilizers and pesticides – they contain hazardous chemicals that can reach your drinking water source.
- Pick up after your pets.
- If you have your own septic system, properly maintain your system to reduce leaching to water sources or consider connecting to a public water system.
- Dispose of chemicals properly; take used motor oil to a recycling center.
- Volunteer in your community. Find a watershed or wellhead protection organization in your community and volunteer to help. If there are no active groups, consider starting one. Use EPA's Adopt Your Watershed to locate groups in your community, or visit the Watershed Information Network's *How to Start a Watershed Team*.

This water quality report was prepared by CH2M HILL, as a service to the Eldorado Area Water and Sanitation District.

CH2MHILL

Eldorado Area Water and Sanitation District

2015 Water Quality Report

for water treated in 2014

Your drinking water meets state and federal regulations for health and safety

Last year (2014) EAWSD conducted 1,264 tests for over 76 drinking water contaminants. This report is a snapshot of the quality of the water that was provided in 2014. Included are details about where your water comes from, what it contains, and how it compares to Environmental Protection Agency (EPA) standards. EAWSD is committed to providing you with this information because we want you to be informed about your drinking water quality. For more information about your water, call 505.466.1085 to speak with a member of the EAWSD operations staff.

Special population advisory

Immuno-compromised persons such as those with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

***Cryptosporidium* and *Giardia*, two organisms commonly linked to water-borne illness, are found primarily in surface waters. Because EAWSD drinking water comes from a deep groundwater aquifer, these organisms do not pose a significant health risk.**

Drinking water sources

Your drinking water comes from groundwater in the Rio Grande basin. A network of local production wells pumps water from underground aquifers. The water is disinfected and either distributed directly to the customer or pumped to storage tanks from which the water is sent through the distribution system to you. Source water assessment information may be obtained from the New Mexico Environment Department at 505.476.8620

Public participation opportunities

The EAWSD Board of Directors schedules public meetings twice a month at which public attendance and participation is welcome and encouraged. EAWSD provides information and communication to customers through its website, monthly newsletter, postings on community bulletin boards, email communications and direct mailings, as needed. Customers are also invited to call or visit the EAWSD office with questions or to obtain information about your water system.

Telephone: 505-466-1085
Address: 1 Caliente Road
Website: http://www.EAWSD.org

Contaminants in water

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline 800.426.4791.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water before we treat it include:

- *Microbial contaminants*, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- *Inorganic contaminants*, such as salts and metals, which can be naturally occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.
- *Pesticides & herbicides*, which may come from a variety of sources such as agriculture and residential use.
- *Radioactive contaminants*, which are naturally occurring.
- *Organic chemical contaminants*, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and also can come from gas stations, urban storm water runoff, and septic systems.

Water quality

To ensure that tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. We treat our water according to EPA's regulations. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.

Water quality data

Unless otherwise indicated, the table in this report lists all the drinking water contaminants detected during the 2014 compliance period. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. The data presented in this table are from testing done in 2014 and years prior. The New Mexico Drinking Water Bureau requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. For this reason, some of the data, though representative of the water quality, are more than one year old.

TERMS AND ABBREVIATIONS

- **AL**: Action Level –the concentration of a contaminant which, when exceeded at the consumer's tap, triggers treatment or other requirements that a water system must follow.
- **MCLG**: Maximum Contaminant Level Goal - the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
- **MCL**: Maximum Contaminant Level - the highest level of a contaminant that is allowed in drinking water. MCL are set as close to the MCLGs as feasible using the best available treatment technology.
- **MFL**: Million fibers per liter.
- **MRDLG**: Maximum Residual Disinfection Level Goal. The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
- **MRDL**: Maximum Residual Disinfectant Level. The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
- **N/A**: Not applicable.
- **ND**: Not detectable at testing limit.
- **NTU**: Nephelometric Turbidity Units.
- **pCi/L**: Picocuries per liter - a measure of radioactivity.
- **ppb**: Parts per billion or micrograms per liter (µg/L) – corresponds to one minute in 2,000 years.
- **ppm**: Parts per million or milligrams per liter (mg/L) – corresponds to one minute in 2 years.
- **µg/L**: Micrograms per liter or parts per billion – corresponds to one minute in 2,000 years.
- **mg/L**: Milligrams per liter or parts per million—corresponds to one minute in 2 years.

DETECTED CONTAMINANTS

The table below lists all of the drinking water contaminants that we detected during the 2014 calendar year of this report. The presence of contaminants in the water does not necessarily indicate that the water poses a health risk. Unless otherwise noted, the data presented in this table are from testing done in 2014. The EPA or the State requires EAWSD to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not change frequently.

Contaminants	Maximum Goal (MCLG) or MRDLG	Highest Level Allowed MCL or MRDL	Highest Level Detected	Range		Sample Date	Violation	Typical Source
				Low	High			
Disinfectants & Disinfectant By-Products (There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants)								
Haloacetic Acids (HAA5) (ppb)	NA	60	1.8	1.7	1.8	2014	No	By-product of drinking water chlorination
Chlorine (as Cl2) (ppm)	4	4	1.09	0.11	1.09	2014	No	Water additive used to control microbes
Inorganic Contaminants								
Arsenic (ppb)	0	10	4	ND	4	2014	No	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes
Barium (ppm)	2	2	0.2	ND	0.2	2014	No	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Chromium (ppb)	100	100	2	ND	2	2014	No	Discharge from steel and pulp mills; erosion of natural deposits
Fluoride (ppm)	4	4	1.11	0.56	1.11	2014	No	Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories. *(EAWSD does not add fluoride to its drinking water)*
Nitrate [measured as Nitrogen] (ppm)	10	10	3.97	2.16	3.97	2014	No	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits

Inorganic Contaminants	Maximum Goal (MCLG) or MRDLG	Highest Level Allowed MCL or MRDL	Highest Level Detected	Range		Sample Date	Violation	Typical Source
				Low	High			
Chloride (mg/L)	NA	250	58	41	58	2012	No	Abundant naturally occurring element; used in water purification; byproduct of oil field activity
Sulfate (mg/L)	NA	250	31	28	31	2012	No	Runoff/leaching from natural deposits; industrial wastes.
Zinc (mg/L)	NA	5	0.036	0.016	0.036	2012	No	Runoff/leaching from natural deposits; industrial wastes.
Microbiological Contaminants								
Total Coliform (positive samples/month)	0	1	0	NA		2014	No	Naturally present in the environment
Fecal coliform/E. coli - in the distribution system (positive samples)	0	0	0	NA		2014	No	Human and animal fecal waste
A violation occurs when a routine sample and a repeat sample, in any given month, are total coliform positive, and one is also fecal coliform or E. coli positive.								
Radioactive Contaminants								
Radium (combined 226/228) (pCi/L)	0	5	2.42	2.23	2.42	2014	No	Erosion of natural deposits
Uranium (combined) (µg/L)	0	30	3	3	3	2014	No	Erosion of natural deposits
Gross Alpha (pCi/L)	0	15	9.5	3.2	9.5	2014	No	Erosion of natural deposits
Beta/Photon Emitters (pCi/L)	0	50	6.4	5	6.4	2014	No	Decay of natural and manmade deposits

Contaminants	MCLG	AL	90th Percentile	Sample Date	# Samples Exceeding AL	Exceeds AL	Typical Source
Copper - action level at consumer taps (ppm)	1.3	1.3	0.23	2012	0	No	Corrosion of household plumbing systems; erosion of natural deposits
Lead - action level at consumer taps (ppb)	0	15	3	2012	0	No	Corrosion of household plumbing systems; erosion of natural deposits

Unregulated Contaminant Monitoring*		Range		Sample Date
Name Reported Level		Low	High	
Dicamba (ppb)	0.13	ND	0.13	2013

*Unregulated contaminants monitoring helps EPA to determine where certain contaminants occur and whether it needs to regulate those contaminants.

2014 CONTAMINATION EVENTS

None

Spanish (Español)

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EDUCATION INFORMATION

Additional Information for Lead

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UNDETECTED CONTAMINANTS

The following contaminants were monitored for, but not detected, in your water.

Contaminants	MCLG or MRDLG	MCL or MRDL	EAWSD Water	Violation	Typical Source
TTHMs [Total Trihalomethanes] (ppb)	NA	80	ND	No	By-product of drinking water disinfection
Selenium (ppb)	50	50	ND	No	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines
Asbestos (MFL)	7 million fibers per liter (MFL)	7.0	ND	No	Decay of asbestos cement in water mains; erosion of natural deposits
Cyanide [as Free Cn] (ppb)	200	200	ND	No	Discharge from plastic and fertilizer factories; discharge from steel/metal factories
Mercury [Inorganic] (ppb)	2	2	ND	No	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills; runoff from cropland
Beryllium (ppb)	4	4	ND	No	Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries
Antimony (ppb)	6	6	ND	No	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder; test addition.
Thallium (ppb)	0.5	2	ND	No	Discharge from electronics, glass, and leaching from ore-processing sites; drug factories
Cadmium (ppb)	5	5	ND	No	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints
Benzene (ppb)	0	5	ND	No	Discharge from factories; leaching from gas storage tanks and landfills
Toluene (ppm)	1	1	ND	No	Discharge from petroleum factories
p-Dichlorobenzene (ppb)	75	75	ND	No	Discharge from industrial chemical factories
Vinyl Chloride (ppb)	0	2	ND	No	Leaching from PVC piping; discharge from plastics factories
Xylenes (ppm)	10	10	ND	No	Discharge from petroleum factories; discharge from chemical factories
cis-1,2-Dichloroethylene (ppb)	70	70	ND	No	Discharge from industrial chemical factories
Carbon Tetrachloride (ppb)	0	5	ND	No	Discharge from chemical plants and other industrial activities
1,1,1-Trichloroethane (ppb)	200	200	ND	No	Discharge from metal degreasing sites and other factories
1,2-Dichloroethane (ppb)	0	5	ND	No	Discharge from industrial chemical factories
1,2,4-Trichlorobenzene (ppb)	70	70	ND	No	Discharge from textile-finishing factories
Styrene (ppb)	100	100	ND	No	Discharge from rubber and plastic factories; leaching from landfills
Ethylbenzene (ppb)	700	700	ND	No	Discharge from petroleum refineries
Tetrachloroethylene (ppb)	0	5	ND	No	Discharge from factories and dry cleaners

Contaminants	MCLG or MRDLG	MCL or MRDL	EAWSD Water	Violation	Typical Source
o-Dichlorobenzene (ppb)	600	600	ND	No	Discharge from industrial chemical factories
Trichloroethylene (ppb)	0	5	ND	No	Discharge from metal degreasing sites and other factories
1,1-Dichloroethylene (ppb)	7	7	ND	No	Discharge from industrial chemical factories
1,1,2-Trichloroethane (ppb)	3	5	ND	No	Discharge from industrial chemical factories
Hexachlorocyclopentadiene (ppb)	50	50	ND	No	Discharge from chemical factories
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Heptachlor epoxide (ppt)	0	200	ND	No	Breakdown of heptachlor
Pentachlorophenol (ppb)	0	1	ND	No	Discharge from wood preserving factories
Dinoseb (ppb)	7	7	ND	No	Runoff from herbicide used on soybeans and vegetables
Ethylene dibromide (ppt)	0	50	ND	No	Discharge from petroleum refineries
Heptachlor (ppt)	0	400	ND	No	Residue of banned pesticide
Carbofuran (ppb)	40	40	ND	No	Leaching of soil fumigant used on rice and alfalfa
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This water quality report was prepared by CH2M HILL, as a service to the Eldorado Area Water and Sanitation District.

Eldorado Area Water and Sanitation District

2016 Water Quality Report

for water treated in 2015

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***Cryptosporidium* and *Giardia*, two organisms commonly linked to water-borne illness, are found primarily in surface waters. Because EAWSD drinking water comes from a deep groundwater aquifer, these organisms do not pose a significant health risk.**

Drinking water sources

Your drinking water comes from groundwater in the Rio Grande basin. A network of local production wells pumps water from underground aquifers. The water is disinfected and either distributed directly to the customer or pumped to storage tanks from which the water is sent through the distribution system to you. Source water assessment information may be obtained from the New Mexico Environment Department at 505.476.8620

Public participation opportunities

The EAWSD Board of Directors schedules public meetings twice a month at which public attendance and participation is welcome and encouraged. EAWSD provides information and communication to customers through its website, monthly newsletter, postings on community bulletin boards, email communications and direct mailings, as needed. Customers are also invited to call or visit the EAWSD office with questions or to obtain information about your water system.

Telephone: 505-466-1085
Address: 2 North Chamisa Road
Website: http://www.EAWSD.org

Contaminants in water

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline 800.426.4791.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water before we treat it include:

- *Microbial contaminants*, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- *Inorganic contaminants*, such as salts and metals, which can be naturally occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.
- *Pesticides & herbicides*, which may come from a variety of sources such as agriculture and residential use.
- *Radioactive contaminants*, which are naturally occurring.
- *Organic chemical contaminants*, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and also can come from gas stations, urban storm water runoff, and septic systems.

Water quality

To ensure that tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. We treat our water according to EPA's regulations. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.

Water quality data

Unless otherwise indicated, the table in this report lists all the drinking water contaminants detected during the 2015 compliance period. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. The data presented in this table are from testing done in 2015 and years prior. The New Mexico Drinking Water Bureau requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. For this reason, some of the data, though representative of the water quality, are more than one year old.

TERMS AND ABBREVIATIONS

- **AL**: Action Level –the concentration of a contaminant which, when exceeded at the consumer's tap, triggers treatment or other requirements that a water system must follow.
- **MCLG**: Maximum Contaminant Level Goal - the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
- **MCL**: Maximum Contaminant Level - the highest level of a contaminant that is allowed in drinking water. MCL are set as close to the MCLGs as feasible using the best available treatment technology.
- **MFL**: Million fibers per liter.
- **MRDLG**: Maximum Residual Disinfection Level Goal. The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
- **MRDL**: Maximum Residual Disinfectant Level. The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
- **N/A**: Not applicable.
- **ND**: Not detectable at testing limit.
- **NTU**: Nephelometric Turbidity Units.
- **pCi/L**: Picocuries per liter - a measure of radioactivity.
- **ppb**: Parts per billion or micrograms per liter (µg/L) – corresponds to one minute in 2,000 years.
- **ppm**: Parts per million or milligrams per liter (mg/L) – corresponds to one minute in 2 years.
- **µg/L**: Micrograms per liter or parts per billion – corresponds to one minute in 2,000 years.
- **mg/L**: Milligrams per liter or parts per million—corresponds to one minute in 2 years.

DETECTED CONTAMINANTS

The table below lists all of the drinking water contaminants that we detected during the 2014 calendar year of this report. The presence of contaminants in the water does not necessarily indicate that the water poses a health risk. Unless otherwise noted, the data presented in this table are from testing done in 2014. The EPA or the State requires EAWSD to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not change frequently.

Contaminants	Maximum Goal (MCLG) or MRDLG	Highest Level Allowed MCL or MRDL	Highest Level Detected	Range		Sample Date	Violation	Typical Source
				Low	High			
Disinfectants & Disinfectant By-Products (There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants)								
TTHMs [Total Trihalomethanes] (ppb)	NA	80	10	9.3	10	2015	No	By-product of drinking water disinfection
Haloacetic Acids (HAA5) (ppb)	NA	60	1.4	0.78	1.4	2015	No	By-product of drinking water chlorination
Chlorine (as Cl2) (ppm)	4	4	1.3	0.5	1.3	2015	No	Water additive used to control microbes
Inorganic Contaminants								
Arsenic (ppb)	0	10	3	NA		2015	No	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes
Barium (ppm)	2	2	0.1	NA		2015	No	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Fluoride (ppm)	4	4	0.79	NA		2015	No	Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories. *(EAWSD does not add fluoride to its drinking water)*
Nitrate [measured as Nitrogen] (ppm)	10	10	3.56	0.48	3.56	2015	No	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits

Inorganic Contaminants	Maximum Goal (MCLG) or MRDLG	Highest Level Allowed MCL or MRDL	Highest Level Detected	Range		Sample Date	Violation	Typical Source
				Low	High			
Chloride (mg/L)	NA	250	58	41	58	2012	No	Abundant naturally occurring element; used in water purification; byproduct of oil field activity
Sulfate (mg/L)	NA	250	31	28	31	2012	No	Runoff/leaching from natural deposits; industrial wastes.
Zinc (mg/L)	NA	5	0.036	0.016	0.036	2012	No	Runoff/leaching from natural deposits; industrial wastes.
Microbiological Contaminants								
Total Coliform (positive samples/month)	0	1	0	NA		2015	No	Naturally present in the environment
A violation occurs when a routine sample and a repeat sample, in any given month, are total coliform positive, and one is also fecal coliform or E. coli positive.								
Radioactive Contaminants								
Radium (combined 226/228) (pCi/L)	0	5	2.42	2.23	2.42	2014	No	Erosion of natural deposits
Uranium (combined) (µg/L)	0	30	3	3	3	2014	No	Erosion of natural deposits
Gross Alpha (pCi/L)	0	15	9.5	3.2	9.5	2014	No	Erosion of natural deposits
Beta/Photon Emitters (pCi/L)	0	50	6.4	5	6.4	2014	No	Decay of natural and manmade deposits

Contaminants	MCLG	AL	90th Percentile	Sample Date	# Samples Exceeding AL	Exceeds AL	Typical Source
Copper - action level at consumer taps (ppm)	1.3	1.3	0.23	2015	0	No	Corrosion of household plumbing systems; erosion of natural deposits
Lead - action level at consumer taps (ppb)	0	15	4.8	2015	0	No	Corrosion of household plumbing systems; erosion of natural deposits

2015 CONTAMINATION EVENTS

None

Spanish (Español)

Este informe contiene información muy importante sobre la calidad de su agua potable. Por favor lea este informe o comuníquese con alguien que pueda traducir la información.

EDUCATION INFORMATION

Additional Information for Lead

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. EAWSD is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your drinking water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead

UNDETECTED CONTAMINANTS

The following contaminants were monitored for, but not detected, in your water.

Contaminants	MCLG or MRDLG	MCL or MRDL	EAWSD Water	Violation	Typical Source
Selenium (ppb)	50	50	ND	No	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines
Asbestos (MFL)	7 million fibers per liter (MFL)	7.0	ND	No	Decay of asbestos cement in water mains; erosion of natural deposits
Cyanide [as Free Cn] (ppb)	200	200	ND	No	Discharge from plastic and fertilizer factories; discharge from steel/metal factories
Mercury [Inorganic] (ppb)	2	2	ND	No	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills; runoff from cropland
Beryllium (ppb)	4	4	ND	No	Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries
Antimony (ppb)	6	6	ND	No	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder; test addition.
Thallium (ppb)	0.5	2	ND	No	Discharge from electronics, glass, and leaching from ore-processing sites; drug factories
Cadmium (ppb)	5	5	ND	No	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints
Benzene (ppb)	0	5	ND	No	Discharge from factories; leaching from gas storage tanks and landfills
Toluene (ppm)	1	1	ND	No	Discharge from petroleum factories
p-Dichlorobenzene (ppb)	75	75	ND	No	Discharge from industrial chemical factories
Vinyl Chloride (ppb)	0	2	ND	No	Leaching from PVC piping; discharge from plastics factories
Xylenes (ppm)	10	10	ND	No	Discharge from petroleum factories; discharge from chemical factories
cis-1,2-Dichloroethylene (ppb)	70	70	ND	No	Discharge from industrial chemical factories
Carbon Tetrachloride (ppb)	0	5	ND	No	Discharge from chemical plants and other industrial activities
1,1,1-Trichloroethane (ppb)	200	200	ND	No	Discharge from metal degreasing sites and other factories
1,2-Dichloroethane (ppb)	0	5	ND	No	Discharge from industrial chemical factories
1,2,4-Trichlorobenzene (ppb)	70	70	ND	No	Discharge from textile-finishing factories
Styrene (ppb)	100	100	ND	No	Discharge from rubber and plastic factories; leaching from landfills
Ethylbenzene (ppb)	700	700	ND	No	Discharge from petroleum refineries
Tetrachloroethylene (ppb)	0	5	ND	No	Discharge from factories and dry cleaners

Contaminants	MCLG or MRDLG	MCL or MRDL	EAWSD Water	Violation	Typical Source
o-Dichlorobenzene (ppb)	600	600	ND	No	Discharge from industrial chemical factories
Trichloroethylene (ppb)	0	5	ND	No	Discharge from metal degreasing sites and other factories
1,1-Dichloroethylene (ppb)	7	7	ND	No	Discharge from industrial chemical factories
1,1,2-Trichloroethane (ppb)	3	5	ND	No	Discharge from industrial chemical factories
Hexachlorocyclopentadiene (ppb)	50	50	ND	No	Discharge from chemical factories
Glyphosate (ppb)	700	700	ND	No	Runoff from herbicide use
Picloram (ppb)	500	500	ND	No	Herbicide runoff
Di (2-ethylhexyl) adipate (ppb)	400	400	ND	No	Discharge from chemical factories
Oxamyl [Vydate] (ppb)	200	200	ND	No	Runoff/leaching from insecticide used on apples, potatoes and tomatoes
Endothall (ppb)	100	100	ND	No	Runoff from herbicide use
Di (2-ethylhexyl)	0	6	ND	No	Discharge from rubber and chemical factories
2,4-D (ppb)	70	70	ND	No	Runoff from herbicide used on row crops
Heptachlor epoxide (ppt)	0	200	ND	No	Breakdown of heptachlor
Pentachlorophenol (ppb)	0	1	ND	No	Discharge from wood preserving factories
Dinoseb (ppb)	7	7	ND	No	Runoff from herbicide used on soybeans and vegetables
Ethylene dibromide (ppt)	0	50	ND	No	Discharge from petroleum refineries
Heptachlor (ppt)	0	400	ND	No	Residue of banned pesticide
Carbofuran (ppb)	40	40	ND	No	Leaching of soil fumigant used on rice and alfalfa
Atrazine (ppb)	3	3	ND	No	Runoff from herbicide used on row crops
Simazine (ppb)	4	4	ND	No	Herbicide runoff
Dalapon (ppb)	200	200	ND	No	Runoff from herbicide used on rights of way
Chlordane (ppb)	0	2	ND	No	Residue of banned termiticide
Endrin (ppb)	2	2	ND	No	Residue of banned insecticide
2,4,5-TP (Silvex) (ppb)	50	50	ND	No	Residue of banned herbicide
Diquat (ppb)	20	20	ND	No	Runoff from herbicide use
Methoxychlor (ppb)	40	40	ND	No	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock
Benzo(a)pyrene (ppt)	0	200	ND	No	Leaching from linings of water storage tanks and distribution lines
Hexachlorobenzene (ppb)	0	1	ND	No	Discharge from metal refineries and agricultural chemical factories
Toxaphene (ppb)	0	3	ND	No	Runoff/leaching from insecticide used on cotton and cattle
1,2-Dichloropropane (ppb)	0	5	ND	No	Discharge from industrial chemical factories
trans-1,2-Dicholoroethylene (ppb)	100	100	ND	No	Discharge from industrial chemical factories

WATER CONSERVATION TIPS

Did you know that the average U.S. household uses approximately 400 gallons of water per day or 100 gallons per person per day? Luckily, there are many low-cost and no-cost ways to conserve water. Small changes can make a big difference – try one today and soon it will become second nature.

- Take short showers - a 5-minute shower uses 4 to 5 gallons of water compared to up to 50 gallons for a bath.
- Shut off water while brushing your teeth, washing your hair and shaving and save up to 500 gallons a month.
- Use a water-efficient showerhead. They're inexpensive, easy to install, and can save you up to 750 gallons a month.
- Run your clothes washer and dishwasher only when they are full. You can save up to 1,000 gallons a month.
- Water plants only when necessary.
- Fix leaky toilets and faucets. Faucet washers are inexpensive and take only a few minutes to replace. To check your toilet for a leak, place a few drops of food coloring in the tank and wait. If it seeps into the toilet bowl without flushing, you have a leak. Fixing it or replacing it with a new, more efficient model can save up to 1,000 gallons a month.
- Adjust sprinklers so only your lawn is watered. Apply water only as fast as the soil can absorb it and during the cooler parts of the day to reduce evaporation.
- Teach your kids about water conservation to ensure a future generation that uses water wisely. Make it a family effort to reduce next month's water bill!
- Visit www.epa.gov/watersense for more information.

SOURCE WATER PROTECTION TIPS

Protection of drinking water is everyone's responsibility. You can help protect your community's drinking water source in several ways:

- Eliminate excess use of lawn and garden fertilizers and pesticides – they contain hazardous chemicals that can reach your drinking water source.
- Pick up after your pets.
- If you have your own septic system, properly maintain your system to reduce leaching to water sources or consider connecting to a public water system.
- Dispose of chemicals properly; take used motor oil to a recycling center.
- Volunteer in your community. Find a watershed or wellhead protection organization in your community and volunteer to help. If there are no active groups, consider starting one. Use EPA's Adopt Your Watershed to locate groups in your community, or visit the Watershed Information Network's *How to Start a Watershed Team*.

This water quality report was prepared by CH2M HILL, as a service to the Eldorado Area Water and Sanitation District.

Appendix D

NMED List of Potential Sources of Contamination

AGRICULTURAL LAND USES

Map Code	Land Use	Description	Chemical Compounds, Mixtures & Solutions	Contaminants of Concern*
AAP	Animal Processing or Rendering Plant	commercial slaughterhouse, packing plant or food processor	nitrate; pathogens; miscellaneous organic/inorganic chemicals	VOC; IOC; Microbiological
ABS	Bulk Agrochemical Storage-Fertilizer, Pesticides	warehouse, co-op or commercial storage or sales - 500+ gallons	fertilizers; herbicides; pesticides; petroleum products; miscellaneous organic/inorganic chemicals	VOC; SOC; IOC
ACS	Farm/Ranch Agrochemical Storage Facility or Site	non-commercial storage for farm or ranch use - 100+ gallons	fertilizers; herbicides; pesticides; petroleum products; miscellaneous organic/inorganic chemicals	VOC; SOC; IOC
ADC	Drainage Canal, Ditch or Acequia-Unlined	unlined conveyance structure	pesticides; herbicides; fertilizers; nitrate; pathogens	VOC; SOC; IOC, Microbiological
ADF	Livestock Production - Dairy	commercial producer - greater than 10 head	nitrate; phosphate; chloride; pathogens; pharmaceuticals	SOC; IOC; Microbiological
AEF	Equestrian Facility, Corral or Stable	commercial facility - greater than 10 head	nitrate; phosphate; chloride; pathogens; pharmaceuticals	SOC; IOC; Microbiological
AFI	Farming - Irrigated Cropland	commercial producer - greater than 5 acres planted	nitrate; ammonia; chloride; fertilizers; pesticides; herbicides	SOC; IOC
AFL	Animal Feeding Operation or Feedlot	commercial producer - greater than 100 head	nitrate; phosphate; chloride; pathogens; pharmaceuticals	SOC; IOC; Microbiological
AFM	Farm Machinery Maintenance, Sales or Storage	repair facility; storage site; equipment sales or auction lot	waste fuels, oils, lubricants and coolants	VOC; IOC
AFN	Farming-Non-irrigated Cropland	commercial producer - greater than 5 acres planted	nitrate; ammonia; chloride; fertilizers; pesticides; herbicides	SOC; IOC
AHC	Horticultural/Garden/Nursery/Greenhouse	commercial producer or retail sales facility	pesticides; herbicides; fertilizers	SOC; IOC
AMA	Manure or Livestock Waste-Land Application Area	commercial producer	nitrate; ammonia; phosphate; chloride; pathogens; pharmaceuticals	SOC; IOC; Microbiological
AMS	Manure or Livestock Waste-Storage Facility or Site	bulk manure storage or solids-separation facility	nitrate; ammonia; phosphate; chloride; pathogens; pharmaceuticals	SOC; IOC; Microbiological
AOA	Livestock Production - Other Animal	commercial producer	nitrate; ammonia; phosphate; chloride; pathogens; pharmaceuticals	SOC; IOC; Microbiological
APF	Livestock Production - Poultry	commercial producer - greater than 50 hens	nitrate; ammonia; phosphate; chloride; pathogens; pharmaceuticals	SOC; IOC; Microbiological
APP	Processing Plant or Mill - Hay, Grain or Produce	commercial food or feed processor	organic/inorganic chemicals, lubricants, machinery wastes	VOC; SOC; IOC
ARL	Animal Rangeland	watering or feeding site or shelter where livestock congregate	nitrate; ammonia; phosphate; chloride; pathogens; pharmaceuticals	SOC; IOC; Microbiological
ASG	Bulk Agricultural Product Storage-Grain or Produce	off-farm grain elevator, warehouse or commercial storage	fungicides; waste fuels, oils, lubricants and coolants	VOC; SOC; IOC
ASH	Livestock Production - Sheep	commercial producer - greater than 10 head	nitrate; ammonia; phosphate; chloride; pathogens; pharmaceuticals	SOC; IOC; Microbiological
ASW	Livestock Production -Swine	commercial producer - greater than 10 head	nitrate; ammonia; phosphate; chloride; pathogens; pharmaceuticals	SOC; IOC; Microbiological

* Contaminants of Concern (from Appendix C) are regulated chemical substances typically found within the compounds, mixtures and solutions listed in column 4, and that are commonly, but not always, associated with the Land Use listed in column 2

COMMERCIAL LAND USES

Map Code	Land Use	Description	Chemical Compounds, Mixtures & Solutions	Contaminants of Concern*
CAI	Airport	municipal or general aviation; aircraft parking or maintenance; flight school or training facility	aircraft and automotive fuels, lubricants and coolants; deicers; chlorinated solvents; septage; pathogens; herbicides; fertilizers	VOC; SOC; IOC; Microbiological
CAL	Analytical, Research or Medical Laboratory	commercial or governmental facility	miscellaneous organic/inorganic chemicals and reagents; pharmaceuticals; pathogens; radiological materials	VOC; SOC; IOC; Radiological; Microbiological
CAR	Automotive Repair Shop	passenger vehicle, light truck or motorcycle service facility	solvents; degreasers; waste fuels, oils, lubricants and coolants	VOC; IOC
CAS	Automotive Salvage Yard/Wrecking or Towing	active/inactive commercial or governmental facility	waste fuels, oils, lubricants and coolants; metals; miscellaneous automotive wastes	VOC; IOC
CAW	Abandoned/Improperly Closed Well	inadequate or suspect borehole, annular space and/or casing top seals; unsealed aquifer conduit	brines; waste oil; sewage effluent; storm water runoff; miscellaneous process wastes; metals; pathogens; nitrate	VOC; SOC; IOC; Microbiological
CBS	Automotive Body Shop	passenger vehicle, light truck or motorcycle service facility	paints; solvents; degreasers; waste fuels, oils, lubricants and coolants	VOC; IOC
CBY	Boat Yard/Marina	boat storage, rental or sales; refueling and service facility	waste fuels, oils, lubricants and coolants; septage; wood treatment products; paints; varnishes; solvents	VOC; SOC; IOC
CCC	Cleaning-Carpet, Upholstery, Industrial Sweeping	commercial cleaning service operation or facility	solvents; detergents; miscellaneous organic/inorganic chemicals	VOC; IOC
CCG	Camp Ground - Unsewered	underground injection of untreated domestic wastewater	septage; pathogens; nitrate; ammonia; chloride; heavy metals; lawn/garden products; household cleaning agents; solvents	VOC; SOC; IOC; Microbiological
CCE	Cemetery	active/inactive burial ground - greater than one acre	leachate; arsenic; pesticides; fertilizers	VOC; IOC; Microbiological
CCW	Car Wash	unsewered - without water reclaim or recycle system	soaps; detergents; waxes; solvents; miscellaneous organic/inorganic chemicals	VOC; IOC; Microbiological
CCY	Construction/Demolition Yard/Staging Area	contractor storage or staging yard; equipment storage or parking; demolition or deconstruction	waste fuels, oils, lubricants and coolants; wood treatment products; paints; varnishes; solvents; explosives	VOC; SOC; IOC
CDC	Dry Cleaning	commercial or retail service establishment	chlorinated solvents; aromatic hydrocarbons; miscellaneous organic chemicals	VOC; IOC
CFA	Fuel Storage Tank-Above Ground	non-service station tank(s) - miscellaneous facilities	gasoline; diesel fuel; heating fuels and oils; lubricants; coolants; miscellaneous organic/inorganic chemicals	VOC; IOC
CFB	Fuel Storage Tank-Below Ground	non-service station tank(s) - miscellaneous facilities	gasoline; diesel fuel; heating fuels and oils; lubricants; coolants; miscellaneous organic/inorganic chemicals	VOC; IOC
CFC	Funeral Home/Crematory	commercial facility	pathogens; septage; miscellaneous organic/inorganic chemicals	VOC; IOC; Microbiological
CFR	Furniture Repair/Refinishing	commercial or retail operation or facility	wood treatment products; paints; varnishes; solvents; waste lubricating oils and fluids	VOC; IOC
CGC	Golf Course	public/private - greens, clubhouse and maintenance facilities	fertilizers; pesticides; waste fuels, oils, lubricants and coolants; septage	VOC; SOC; IOC; Microbiological
CHG	Historic Gasoline Service Station	inactive/vacant or remodeled former service station with UST	waste fuels, oils, lubricants and coolants; miscellaneous organic/inorganic chemicals	VOC; IOC
CHM	Home Manufacturing	commercial or retail construction operation or facility	wood treatment products; paints; varnishes; solvents; waste lubricating oils and fluids	VOC; IOC
CHN	Hospital/Nursing Home - Unsewered	on-site liquid waste disposal system or cesspool	septage; pathogens; nitrate; ammonia; chloride; heavy metals; pharmaceuticals; cleaning agents; solvents	VOC; SOC; IOC; Microbiological

COMMERCIAL LAND USES, continued

Map Code	Land Use	Description	Chemical Compounds, Mixtures & Solutions	Contaminants of Concern*
CLD	Laundromat - Unsewered	on-site liquid waste disposal system or cesspool	soaps; detergents; waxes; solvents; miscellaneous organic/inorganic chemicals	VOC; IOC; Microbiological
CPC	Pest Control	commercial or retail operation or facility	pesticides; herbicides; fungicides; miscellaneous organic chemicals	SOC; IOC; Microbiological
CPP	Photo Processing Laboratory	commercial or retail operation or facility	solvents and reagents; miscellaneous organic/inorganic chemicals	VOC; IOC
CPR	Printing Shop	commercial or retail operation or facility	solvents; inks; dyes; miscellaneous organic/inorganic chemicals	VOC; IOC
CPS	Paint Store	commercial or retail operation or facility	paint; solvents	VOC; IOC
CSE	Small Engine Repair/Appliance Service	commercial or retail operation or facility	waste fuels, oils, lubricants and coolants; solvents; metals	VOC; IOC
CSF	Food Establishment/Restaurant - Unsewered	on-site liquid waste disposal system or cesspool	septage; pathogens; nitrate; ammonia; chloride; heavy metals; lawn/garden products; household cleaning agents; solvents	VOC; SOC; IOC; Microbiological
CSM	Hotel/Motel - Unsewered	on-site liquid waste disposal system or cesspool	septage; pathogens; nitrate; ammonia; chloride; heavy metals; lawn/garden products; household cleaning agents; solvents	VOC; SOC; IOC; Microbiological
CSO	Office Building/Complex - Unsewered	on-site liquid waste disposal system or cesspool	septage; pathogens; nitrate; ammonia; chloride; heavy metals; lawn/garden products; household cleaning agents; solvents	VOC; SOC; IOC; Microbiological
CSR	Retail Establishment - Unsewered	on-site liquid waste disposal system or cesspool	septage; pathogens; nitrate; ammonia; chloride; heavy metals; lawn/garden products; household cleaning agents; solvents	VOC; SOC; IOC; Microbiological
CSS	Gasoline Service Station or Truck Stop	commercial or retail sales and/or service facility	waste fuels, oils, lubricants and coolants; solvents; septage	VOC; IOC; Microbiological
CVS	Veterinary Service	veterinary hospital/clinic with livestock pens, corrals or kennels	nitrate; phosphate; chloride; pathogens; pharmaceuticals; septage	SOC; IOC; Microbiological

* Contaminants of Concern (from Appendix C) are regulated chemical substances typically found within the compounds, mixtures and solutions listed in column 4, and that are commonly, but not always, associated with the Land Use listed in column 2

INDUSTRIAL LAND USES

Map Code	Land Use	Description	Chemical Compounds, Mixtures & Solutions	Contaminants of Concern*
IAS	Asphalt Plant	batch production or storage facility - temporary or permanent	petroleum derivatives	VOC
ICC	Cement/Concrete Plant	batch production or storage facility - temporary or permanent	waste fuels, oils, lubricants and coolants	VOC; IOC
ICE	Communications Equipment Manufacturing	manufacturing or assembly; equipment maintenance or storage	solvents; waste fuels, oils, lubricants and coolants; antimony; arsenic; miscellaneous metals	VOC; IOC
ICL	Chemical Landfills	commercial or governmental - short/long term disposal facility for chemical wastes	leachate of organic/inorganic chemicals; acids; bases; metals; solvents; waste fuels and oils; pesticides; PCB's	VOC; SOC; IOC
ICP	Chemical Production Plant	bulk production, manufacturing, handling or short-term storage facility	solvents; waste fuels, oils, lubricants and coolants; metals; miscellaneous organic/inorganic chemicals	VOC; SOC; IOC

INDUSTRIAL LAND USES, continued

Map Code	Land Use	Description	Chemical Compounds, Mixtures & Solutions	Contaminants of Concern*
IEE	Electronic/Electrical Equipment Manufacturers	manufacturing or assembly; equipment maintenance or storage	solvents; waste fuels, oils, lubricants and coolants; antimony; arsenic; metals; miscellaneous organic/inorganic chemicals	VOC; SOC; IOC
IFM	Furniture and Fixture Manufacturers	manufacturing or assembly; equipment maintenance or storage	solvents; waste fuels, oils, lubricants and coolants; metals; miscellaneous organic/inorganic chemicals	VOC; SOC; IOC
IFW	Foundry/Smelting Plant	metals extraction, refining, casting or molding facility	solvents; waste fuels, oils, lubricants and coolants; metals; miscellaneous organic/inorganic chemicals; acids; bases	VOC; SOC; IOC
IGO	Gas/Oil Wells - Active/Abandoned/Test	active or abandoned production well or exploration test hole	solvents; waste fuels, oils, lubricants and coolants; metals; miscellaneous organic/inorganic chemicals; drilling wastes	VOC; IOC
IHD	Historic Dump/Landfill	inactive/abandoned dump site operated with or without oversight or regulatory control	leachate of organic/inorganic chemicals; acids; bases; metals; solvents; waste fuels and oils; pesticides; PCB's	VOC; SOC; IOC
IHM	Historic Mining Operation	inactive/abandoned mine or mill; waste rock or tailings pile or pond	metals; miscellaneous inorganic chemicals; acids; bases; radiological materials; waste fuels, oils, lubricants and coolants	VOC; IOC; Radiological
IJM	Jewelry Manufacturing	manufacturing or assembly; equipment maintenance or storage	metals; solvents; miscellaneous organic/inorganic chemicals; acids; bases	VOC; IOC
IMI	Primary Metal Industries	steel or metal works; rolling/wire mill	metals; acids; bases; waste fuels, oils, lubricants and coolants; cyanide; miscellaneous inorganic chemicals	VOC; IOC
IMO	Mining Operations (Surface And Subsurface)	active mining/milling operation; waste rock or tailings pile/pond	metals; miscellaneous inorganic chemicals; acids; bases; radiological materials; waste fuels, oils, lubricants and coolants	VOC; IOC; Radiological
IMP	Metal Plating/Processing	manufacturing, maintenance or equipment refurbishing facility	metals; acids; bases; waste fuels, oils, lubricants and coolants; cyanide; miscellaneous inorganic chemicals	VOC; IOC
IMM	Miscellaneous Manufacturing	manufacturing or assembly; equipment maintenance or storage	metals; acids; bases; waste fuels, oils, lubricants and coolants; cyanide; miscellaneous inorganic chemicals	VOC; IOC
IMW	Machine/Metal Working Shop	manufacturing, maintenance or equipment refurbishing facility	metals; acids; bases; waste fuels, oils, lubricants and coolants; cyanide; miscellaneous inorganic chemicals	VOC; IOC
IOG	Oil/Gas Pipeline	pressurized buried or above-ground conveyance	oils and lubricants; gasoline and diesel fuel; solvents; natural gas; propane; heating oils	VOC; IOC
IPL	Plastics Manufacturer/Molder	manufacturing or assembly; equipment maintenance or storage	metals; acids; bases; waste fuels, oils, lubricants and coolants; cyanide; miscellaneous inorganic chemicals	VOC; IOC
IPM	Paper Mill	manufacturing or assembly; equipment maintenance or storage	chromium; miscellaneous metals; acids; miscellaneous organic/inorganic chemicals	VOC; IOC
IPP	Petroleum Production/Refining/ Bulk Plant	bulk production, refining or distribution facility	oils and lubricants; gasoline and diesel fuel; solvents; drilling/refining wastes; antimony; selenium; misc. metals	VOC; SOC; IOC
IPU	Public Utilities	power generating station, transformer or relay facility	PCB's; solvents; diesel fuel; propane; natural gas; oils and lubricants; miscellaneous metals	VOC; SOC; IOC
IRG	RCRA Waste Generator - Other	miscellaneous manufacturing, production, storage or disposal	miscellaneous organic/inorganic chemicals; solvents; misc. metals; PCB's; acids; bases; radiological materials	VOC; SOC; IOC; Radiological
IRW	Radioactive Waste Disposal Site	commercial or governmental - short/long term disposal facility for anthropogenic radionuclides	high and low level radiological wastes; biomedical wastes	IOC, Radiological
IRY	Rail Yard, Railroad Tracks or Rail Siding	train depot, yard, maintenance facility or railroad right-of-way	metals; acids; bases; waste fuels, oils, lubricants and coolants; miscellaneous organic/inorganic chemicals	VOC; SOC; IOC
ISD	Sumps/Dry Wells	cistern, cesspool, pit, reservoir or trap for collection, storage or disposal of miscellaneous waste fluids	septage; pathogens; nitrate; heavy metals; storm water runoff; misc. process wastes; solvents; waste fuels and oils	VOC; SOC; IOC; Microbiological

INDUSTRIAL LAND USES, continued

Map Code	Land Use	Description	Chemical Compounds, Mixtures & Solutions	Contaminants of Concern*
ISF	Superfund Site	documented hazardous waste site under CERCLA investigation/remediation	miscellaneous organic/inorganic chemicals; solvents; misc. metals; PCB's; acids; bases; radiological materials	VOC; SOC; IOC; Radiological
ISM	Primary Wood Industries	saw mill; wood product manufacturing or treatment facility	metals; acids; bases; waste fuels, oils, lubricants and coolants; miscellaneous inorganic chemicals	VOC; IOC
IST	Stone, Tile, or Glass Manufacturer	manufacturing or assembly; equipment maintenance or storage	acids; bases; waste fuels, oils, lubricants and coolants; arsenic; miscellaneous metals and inorganic chemicals	VOC; IOC
ISY	Industrial Salvage Yard	wrecking/salvage of industrial machinery or heavy equipment	metals; acids; bases; waste fuels, oils, lubricants and coolants; cadmium; miscellaneous organic/inorganic chemicals	VOC; IOC
ITS	Treatment/Storage/Disposal Pond or Lagoon	wastewater impoundment - miscellaneous source	sewage; pathogens; nitrate; ammonia; chloride; heavy metals; miscellaneous organic/inorganic chemicals; solvents	VOC; SOC; IOC; Microbiological
ITT	Transport/Distribution Warehouse; Truck Terminal	short/long term storage or transfer facility	metals; acids; bases; waste fuels, oils, lubricants and coolants; miscellaneous organic/inorganic chemicals	VOC; SOC; IOC
IUD	Unregulated Dump/Excavation	active dump site operated without local government oversight or regulatory control	leachate of organic/inorganic chemicals; acids; bases; metals; solvents; waste fuels and oils; pesticides; PCB's	VOC; SOC; IOC
IUI	Underground Injection (UIC) Well	injection well or disposal field other than Class V	oilfield brine; pathogens; nitrate; heavy metals; storm water runoff; misc. process wastes; solvents; waste fuels and oils	VOC; SOC; IOC; Microbiological
IUR	Utility/Transportation Right-of-Way	power line or utility corridor	metals; acids; bases; storm water runoff; PCBs; miscellaneous organic/inorganic chemicals	VOC; SOC; IOC
IVF	Vacant Manufacturing Facility/Factory	inactive/abandoned manufacturing or assembly facility; equipment maintenance or storage site	acids; bases; waste fuels, oils, lubricants and coolants; paints; solvents; miscellaneous organic/inorganic chemicals	VOC; SOC; IOC

* Contaminants of Concern (from Appendix C) are regulated chemical substances typically found within the compounds, mixtures and solutions listed in column 4, and that are commonly, but not always, associated with the Land Use listed in column 2

MUNICIPAL/RESIDENTIAL LAND USES

Map Code	Land Use	Description	Chemical Compounds, Mixtures & Solutions	Contaminants of Concern*
MAS	Animal Shelter	commercial or governmental facility	nitrate; phosphate; chloride; pathogens; pharmaceuticals; septage	SOC; IOC; Microbiological
MCC	Community or Senior Citizens Center/Library - Unsewered	on-site liquid waste disposal system or cesspool	septage; pathogens; nitrate; ammonia; chloride; heavy metals; lawn/garden products; household cleaning agents; solvents	VOC; SOC; IOC; Microbiological
MHM	Highway/Road Maintenance Yard	governmental road maintenance yard or staging/storage area	waste fuels, oils, lubricants and coolants; paints; solvents; road salt; asphalt; pesticides; herbicides	VOC; SOC; IOC
MHR	Highway Rest Area - Unsewered	on-site liquid waste disposal system or cesspool	septage; pathogens; nitrate; ammonia; chloride; heavy metals; pesticides; herbicides	VOC; SOC; IOC; Microbiological
MIN	Incinerator	commercial or governmental facility	leachate of organic/inorganic chemicals; acids; bases; metals; solvents; waste fuels and oils; pesticides; PCB's	VOC; SOC; IOC
MLF	Municipal Waste Landfill	regulated facility operated by municipality or contract utility	leachate of organic/inorganic chemicals; acids; bases; metals; solvents; waste fuels and oils; pesticides; PCB's	VOC; SOC; IOC
MMF	Military Facilities	structure, storage facility or emplacement containing military equipment, hardware, weaponry or devices	aircraft fuels; diesel fuels; metals; explosives; radiological materials; sewage/septage; oils; solvents; fertilizers; deicers	VOC; SOC; IOC; Radiological; Microbiological

MUNICIPAL/RESIDENTIAL LAND USES, continued

Map Code	Land Use	Description	Chemical Compounds, Mixtures & Solutions	Contaminants of Concern*
MMP	Motor Pools	municipal or local government vehicle storage and maintenance	waste fuels, oils, lubricants and coolants; cadmium; miscellaneous organic/inorganic chemicals	VOC; IOC
MMW	Monitoring Well	aquifer conduit	gasoline; aircraft fuels; diesel fuels; metals; explosives; radiological materials; sewage/septage; solvents	VOC; SOC; IOC; Radiological; Microbiological
MPS	Sewage Pump Station	regulated facility operated by municipality or contract utility	sewage; pathogens; nitrate; metals; miscellaneous organic/inorganic chemicals	VOC; IOC; Microbiological
MPW	Polluted Surface Water Source	water course impacted by naturally occurring or anthropogenic sources of contamination	sewage; pathogens; nitrate; metals; acids; bases; fertilizers; pesticides; miscellaneous organic/inorganic chemicals	VOC; SOC; IOC; Radiological; Microbiological
MRF	Recycling Facility	commercial or governmental facility	waste fuels, oils, lubricants and coolants; household solvents; miscellaneous organic/inorganic chemicals	VOC; IOC
MRP	Primary Road, Highway or Arterial	public street, thoroughfare, highway or main road	gasoline; diesel fuels; metals; storm water runoff; hazardous materials; radiological materials	VOC; SOC; IOC; Radiological; Microbiological
MSC	School - Unsewered	on-site liquid waste disposal system or cesspool	septage; pathogens; nitrate; ammonia; chloride; heavy metals; lawn/garden products; household cleaning agents; solvents	VOC; SOC; IOC; Microbiological
MSD	Storm Drainage Collection Area or Outlet - Unlined	unlined point of discharge for collected storm water runoff	storm water runoff; pesticides; fertilizer; pathogens; nitrate; phosphate; gasoline; diesel fuels; oils and lubricants	VOC; SOC; IOC
MSL	Sewer Line	municipal trunk line or sewer main	sewage; pathogens; nitrate; metals; miscellaneous organic/inorganic chemicals	VOC; IOC; Microbiological
MSP	Wastewater Seepage/Retention Pond (Unlined/Lined)	regulated facility operated by municipality or contract utility	sewage effluent; nitrate; ammonia; pathogens; miscellaneous organic/inorganic chemicals; pesticides; lawn/garden products	VOC; SOC; IOC; Microbiological
MSS	Sewage Effluent/Sludge Land Application Area	regulated facility operated by municipality or contract utility	sewage; sewage sludge; nitrate; phosphate; pathogens; miscellaneous organic/inorganic chemicals; metals	VOC; IOC; Microbiological
MST	Sewage Treatment Plant	regulated facility operated by municipality or contract utility	sewage; sewage sludge; nitrate; phosphate; pathogens; miscellaneous organic/inorganic chemicals; metals	VOC; IOC; Microbiological
MSW	Solid Waste Transfer Station	regulated facility operated by municipality or contract utility	leachate of organic/inorganic chemicals; acids; bases; metals; solvents; waste fuels and oils; pesticides; PCB's	VOC; SOC; IOC
MWP	Water Treatment Plant - Drinking Water Utility	regulated facility operated by municipality or contract utility	miscellaneous organic/inorganic chemicals; chlorine	VOC; IOC; Disinfectants & Disinfection Byproducts
RAC	Apartment Complex - Unsewered	on-site liquid waste disposal system or cesspool	septage; pathogens; nitrate; ammonia; chloride; heavy metals; lawn/garden products; household cleaning agents; solvents	VOC; SOC; IOC; Microbiological
RMF	Multi-Family Residence - Unsewered	on-site liquid waste disposal system or cesspool	septage; pathogens; nitrate; ammonia; chloride; heavy metals; lawn/garden products; household cleaning agents; solvents	VOC; SOC; IOC; Microbiological
RMH	Mobile Home Park - Unsewered	on-site liquid waste disposal system or cesspool	septage; pathogens; nitrate; ammonia; chloride; heavy metals; lawn/garden products; household cleaning agents; solvents	VOC; SOC; IOC; Microbiological
RSF	Single Family Residence - Unsewered	on-site liquid waste disposal system or cesspool	septage; pathogens; nitrate; ammonia; chloride; heavy metals; lawn/garden products; household cleaning agents; solvents	VOC; SOC; IOC; Microbiological

* Contaminants of Concern (from Appendix C) are regulated chemical substances typically found within the compounds, mixtures and solutions listed in column 4, and that are commonly, but not always, associated with the Land Use listed in column 2

Appendix E

Sensitivity Analysis

Sensitivity Questionaire for Water Systems

EAWSD Well Construction Information

Name		Status	Well Depth (feet)	Casing Depth	Casing Diameter (inches)	Casing Material	Casing Height above Ground Surface (feet)	Pump Depth (feet)	2016, or most recent, Static Water Level (feet bgs)	2015 Pumping Rate (gpm)	Drill Date	Improvements
Well 1	RG-18528	Inactive	786	700	10.750	steel	2.09	553, NE	168.9	—	1984	redrilled 1984
Well 2A	RG-18529-POD1	In Progress	350	311	10.750	steel	1.98	252	158.1	70	1997	Redrilled 1997
Well 2B	RG-18529-POD3	Active	301	290	8.625	steel	1.95	240	157.7	70	2014	supplemental to Well 2A
Well 3	RG-18543	Inactive	325	320	10.750	steel	1.78	214, NE	84.6	—	1970	—
Well 4	RG-18550	Inactive	375	365	10.750	steel	1.77	167, NE	78.2	—	1970	—
Well 5	RG-18515	Inactive	192	192	6.000	steel	1.77	175, NE	107.9	—	pre-1969	—
Well 6	RG-18571	Active	280	280	8.625	steel	1.43	273	223.3	15	1981	—
Well 7	RG-18595	Active	280	268	8.625	steel	1.39	252	182.7	30	1981	—
Well 8	RG-18531	Active	325	312	8.625	steel	1.99	210	66.9	25	1983	—
Well 9 *	RG-18556	Active	161	134	10.750	steel	1.25	90	28.4	120	1994	Replaced 1994
Well 10 *	RG-18524	Active	100	97	10.625	steel	1.1	84	28.5	80	1995	Replaced 1995
Well 12	RG-18517	Inactive	197	197	6.000	steel	2	80, NE	79.9	—	pre-1969	—
Well 13	RG-18529-POD2	Inactive	1,000	340	6.625	steel	1.85	275	—	—	1995	—
Well 14	RG-18528-POD3	Active	430	385	8.625	steel	1.73	315	230.0	140	1999	—
Well 15	RG-18528-POD4	Active	420	407	8.625	steel	2.32	273	215.6	220	2000	—
Well 17	RG-18528-POD5	Active	675	647	6.625	steel	2.3	320	150.7	85	2007	—
Well 18	RG-18528-POD6	Active	713	710	8.625	steel	2.87	400	183.0	185	2010	—
Well 19	RG-95577	In Progress	981	970	6.625	steel	2.4	NE	155.6	—	2016	In permitting process

NE = not equipped
* = well produces only in 'wet' years

Sensitivity Questionaire for Water Systems

EAWSD Well Construction Information

Name		Status	Well Depth (feet)	Drilling Method	Pump Rated Capacity (gpm)	Pump Type	Pump Size (HP)	Screen Material or Performation Type	Screened Interval (feet)	Screen Diameter (inches)	Grouting/Sealing Materials	Grouting/Sealing Depth Interval
Well 1	RG-18528	Inactive	786	rotary	76	submersible	25	SS wire-wrap, 0.05"	350-700	10.75	cement	0-36'
Well 2A	RG-18529-POD1	In Progress	350	rotary	150	submersible	40	SS wire-wrap, slotted steel	154-274	10.75	unknown	unknown
Well 2B	RG-18529-POD3	Active	301	rotary	100	submersible	15	SS wire-wrap, 0.05"	170-280	8.625	cement, bentonite	6-50'
Well 3	RG-18543	Inactive	325	unknown	25	submersible	5	slotted steel, 3/8"	113-320	10.75	unknown	unknown
Well 4	RG-18550	Inactive	375	unknown	25	submersible	3	slotted steel, 3/8"	76-365	10.75	unknown	unknown
Well 5	RG-18515	Inactive	192	unknown	20	submersible	2	unknown	unknown	unknown	unknown	unknown
Well 6	RG-18571	Active	280	rotary	40	submersible	7.5	SS wire-wrap, 0.06"	220-260	8.625	cement	0-46'
Well 7	RG-18595	Active	280	rotary	50	submersible	5	SS wire-wrap, 0.06"	185-250	8.625	cement	0-41'
Well 8	RG-18531	Active	325	rotary	27	submersible	3	SS wire-wrap, 0.06"	165-278	8.625	cement	0-44'
Well 9 *	RG-18556	Active	161	unknown	125	submersible	10	SS wire-wrap, 0.08"	37-127	10.375	unknown	unknown
Well 10 *	RG-18524	Active	100	rotary	100	submersible	5	SS wire-wrap	64-94	10.625	cement	0-22'
Well 12	RG-18517	Inactive	197	unknown	10	submersible	1.5	unknown	unknown	6	unknown	unknown
Well 13	RG-18529-POD2	Inactive	1,000	rotary	85	submersible	20	SS wire-wrap	160-290	6.625	cement	0-13'
Well 14	RG-18528-POD3	Active	430	rotary	225	submersible	40	SS wire-wrap	235-385	8.625	cement	0-225
Well 15	RG-18528-POD4	Active	420	rotary	350	submersible	60	SS wire-wrap, 0.05"	287-407	8.625	cement	0-227'
Well 17	RG-18528-POD5	Active	675	rotary	135	submersible	15	steel louvered, 0.125"	396-637	6.625	cement	7-34'
Well 18	RG-18528-POD6	Active	713	rotary	300	submersible	30	steel louvered, 0.05"	420-700	8.625	cement, bentonite	0-145'
Well 19	RG-95577	In Progress	981	rotary	NA	NA	NA	steel louvered, 0.08"	384-970	6.625	cement, bentonite	6-53'

NE = not equipped
* = well produces only in 'wet' years

Sensitivity Questionaire for Water Systems

	EAWSD Well																	
Well Integrity Information	**1**	**2A**	**2B**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**12**	**13**	**14**	**15**	**17**	**18**	**19**
Is the well located outside of an area susceptible to flooding?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Does well casing terminate at least 18 inches above floor or ground level?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y
Is annular space pressure-grouted to depth of at least 20 feet?	Y	N	Y	N	N	N	Y	Y	Y	N	Y	N	N	Y	Y	Y	Y	Y
Is the wellhead properly sealed?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Is there a concrete pad around the wellhead that slopes away from the casing?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N*
Does the well vent terminate at least 18 inches above floor or ground level, and is the vent screened and oriented to open downward?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N*
Are the check valves, blow-off valves and flow meters properly maintained and operated?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N*
Is the wellhead fenced, housed or properly protected?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N*

* Well 19 currently under construction. These items will be addressed before the well is brought online.

Y = "yes" and N = "no"

Appendix F

EAWSD Comments on Draft Discharge Permit

ELDORADO AREA WATER & SANITATION DISTRICT
2 North Chamisa Drive, Suite A • Santa Fe, NM 87508 • (505) 466-2411

David Chakroff
GENERAL MANAGER

April 4, 2016

Michelle Hunter, Chief Ground Water Quality Bureau
Steve Huddleson, Program Manager, Pollution Prevention Section
Sara Arthur, Project Manager
GWQB NMED
Harold Runnels Building
1190 Saint Francis Drive
Santa Fe NM 87505

(VIA EMAIL AND HAND DELIVERED)

RE: Preliminary Comments on Draft Discharge Permit (DP-1838) for Cimarron Village, Eldorado

Dear Ms. Hunter:

The Eldorado Area Water and Sanitation District (EAWSD; the District) is providing these comments on the Draft Discharge permit (DP-1838) for Cimarron Village). The District has serious concerns over the future water quality of the fractured granite aquifer in the vicinity of EAWSD Wells 17 and 18 due to the proposed discharge plan (DP-1838) for Cimarron Village. A preliminary review of the Discharge Permit by hydrologists at Glorieta Geoscience, Inc. on behalf of EAWSD has revealed several concerns, with the most serious being that the discharge permit is not protective of ground water quality, and approval of the permit will lead to contamination of the aquifer in which EAWSD Public Water Supply (PWS) Wells 17 and 18 are completed. The District therefore respectfully requests a public hearing on the discharge permit to address the concerns over potential for contamination of the aquifer that is tapped by EAWSD Wells 17 and 18.

1) **Potential to contaminate the aquifer:** Draft DP-1838 proposes to dispose of 30,000 25,600 square feet. This means that every day approximately 1.2 gallons of effluent will be applied per 1 square foot of the field. The purpose of a disposal field is to infiltrate effluent into the ground to prevent ponding of effluent on the surface. The DP uses the liquid waste disposal regulations to design the disposal field. These regulations are **not protective** of the aquifer below the disposal field and are not appropriate for a 30,000 gallon per day discharge.

    a. The disposal field is located up-gradient of two EAWSD PWS wells (Wells 17 and 18).

b. The disposal field is situated in an area of predominantly sand and gravel alluvium over a fractured bedrock aquifer.

c. Water level monitoring conducted by EAWSD at the request of the Office of the State Engineer (OSE) in the vicinity of Wells 17 and 18, which includes five domestic wells, shows that the entire area of the Cimarron Village development is within the aquifer cone of depression of the EAWSD PWS Wells 17 and 18.

d. EAWSD PWS Wells 17 and 18 well logs show that the lithology penetrated by the wells consists of primarily sand and gravel overlying the fractured Precambrian granite. There are no significant clay layers above the aquifer and the aquifer is unconfined. This configuration will allow any surface application of effluent to quickly travel through the unsaturated zone and into the aquifer. Fractures in the bedrock connect the PWS wells directly to the aquifer beneath the proposed disposal field.

e. The EAWSD isotope study, which included sampling from EAWSD Wells 17 and 18, showed that the ground water in these wells is less than 10 years old, indicating that these wells are recharge dependent and the recharge to the fractured Precambrian granite aquifer is rapid. Recharge dependent wells are at risk from near surface sources of contamination due to the relatively short travel time from the recharge area to the well.

2) **Existing nitrate contamination in the fractured granite aquifer:** Water quality data from EAWSD PWS Wells 17 and 18 show that the aquifer penetrated by these wells is already contaminated with nitrate at a concentration of 2.3 mg/L.

a. The most likely source of the nitrate contamination is existing septic systems in the vicinity of the wells. There are currently approximately four septic systems on the Cimarron Village property.

b. The existence of nitrate in ground water shows that subsurface disposal of effluent will infiltrate through the soil and into the aquifer.

c. The proposed disposal field will increase the rate of nitrate contamination of the aquifer due to the increase in disposal rate of the proposed system.

d. If the discharge permit is approved, the nitrate from the effluent disposal field will quickly reach the fractured granite aquifer and cause an increase in nitrate contamination in EAWSD PWS Wells 17 and 18. If the contamination level reaches 10 mg/L, EAWSD will be forced to shut down these two wells due to exceedance of Drinking Water Quality Maximum Contamination Levels.

e. EAWSD water system has a very limited ground water resource and **Wells 17 and 18 provide greater than 30% of the water supply** to the District's customers. If these two wells have to be shut down due to nitrate (or other) contamination there will be insufficient water to meet the District's demand.

f. It is the District's opinion that the discharge limitation of 10 mg/l nitrate and the contingency plan are not protective of ground water quality. If approved, the District requests that the effluent quality for DP-1838 be raised to Class 1A and the nitrate limit be lowered to less than 1.0 mg/l. We will provide additional recommendations during the Public Hearing process.

3) **Existing domestic wells on the Cimarron Village property:** The Engineering drawings included in the appendices of the Discharge Permit application show four domestic wells that are proposed to be "capped."

   a. Three of these domestic wells belong to EAWSD and are part of a New Mexico Office of the State Engineer (OSE) mandated monitoring plan. The developer does not have authority to "cap" these wells since he does not own them.

   b. Ownership issues aside, "capping" a well does nothing to prevent contamination from entering the aquifer around the well annulus. These domestic wells are likely not completed with proper surface seals and will act as conduits for surface or subsurface contamination (effluent) to enter the aquifer directly.

4) **Effluent reuse for irrigation:** The engineering drawings show a 200-ft set-back from EAWSD PWS Wells 17 and 18. Given the rapid recharge to the fractured granitic aquifer, this setback does not provide adequate water quality protection.

Thank you for your consideration of the District's concerns and our request of a Public Hearing.

Sincerely,

ELDORADO AREA WATER & SANITATION DISTRICT

David Chakroff
General Manager

Appendix G

Sampling Schedules

New Mexico Environment Department	UOCP Operator Lookup	Drinking Water Program
County Map of NM	Water System Search	Help

Water System Detail Information

Water System No.:	NM3537326	Federal Type:	C
Water System Name:	ELDORADO AREA WATER AND SANITATION DIST.	Federal Source:	GW
Principal County Served:	SANTA FE	System Status:	A
Principal City Served:	SANTA FE	Activity Date:	06-01-1977

Expanded Sample Schedules / FANLs / Plans

Routine TCR Sample Schedules

Begin/End Date	Seasonal Period	Requirements
08-01-2011 - Continuous	1/1 - 12/31	8 RT/MN
04-01-2005 - 07-31-2011	1/1 - 12/31	9 RT/MN
01-01-1991 - 03-31-2005	1/1 - 12/31	7 RT/MN

RP TCR Schedules From To SEARCH

Repeat TCR Sample Schedules

Begin Date	End Date	Requirements	Original Sample ID/Date

GWR Triggered Source Sample Schedules (Last 6 Months)

Facility	Schedule	Begin Date	End Date	Initial MP Begin Date

GWR Follow-up Triggered Source Sample Schedules (Last 6 Months)

Facility	Schedule	Begin Date	End Date

Group Non-TCR Sample Schedules

Facility	Begin End Date	Seas.	Init. MP Begin Dt	Req's	Analyte Group
37326000	01-01-2014 Continuous	8/1 8/31	01-01-2014	2 RT/YR	DBP2 - DBP STAGE 2
37326000	01-01-2008 Continuous	6/1 9/30	01-01-2008	20 RT/3Y	PBCU - LEAD AND COPPER
37326052	01-01-2011 Continuous		01-01-2011	1 RT/3Y	HM - HEAVY METALS
37326052	01-01-2011 Continuous		01-01-2011	1 RT/3Y	NRAD - NEW RAD RULE
	01-01-2014		01-01-	1	

37326052	12-31-2016		2014	RT/3Y	RSOC - REGULATED SOCS
37326052	01-01-2017 Continuous		01-01-2017	2 RT/3Y	RSOC - REGULATED SOCS
37326052	01-01-2017 Continuous		01-01-2017	1 RT/3Y	VOC1 - VOLATILE ORGANICS
37326054	01-01-2014 12-31-2016		01-01-2014	1 RT/3Y	HM - HEAVY METALS
37326054	01-01-2011 12-31-2016		01-01-2011	1 RT/6Y	NRAD - NEW RAD RULE
37326054	01-01-2014 12-31-2016		01-01-2014	1 RT/3Y	RSOC - REGULATED SOCS
37326054	01-01-2014 12-31-2016		01-01-2014	1 RT/3Y	VOC1 - VOLATILE ORGANICS
37326055	01-01-2014 Continuous		01-01-2014	1 RT/3Y	HM - HEAVY METALS
37326055	01-01-2011 Continuous		01-01-2011	1 RT/6Y	NRAD - NEW RAD RULE
37326055	01-01-2017 Continuous		01-01-2017	2 RT/3Y	RSOC - REGULATED SOCS
37326055	01-01-2014 12-31-2016		01-01-2014	1 RT/3Y	RSOC - REGULATED SOCS
37326055	01-01-2014 Continuous		01-01-2014	1 RT/3Y	VOC1 - VOLATILE ORGANICS
37326056	01-01-2011 Continuous		01-01-2011	1 RT/3Y	HM - HEAVY METALS
37326056	01-01-2011 Continuous		01-01-2011	1 RT/6Y	NRAD - NEW RAD RULE
37326056	01-01-2014 12-31-2016		01-01-2014	1 RT/3Y	RSOC - REGULATED SOCS
37326056	01-01-2017 Continuous		01-01-2017	2 RT/3Y	RSOC - REGULATED SOCS
37326056	01-01-2011 Continuous		01-01-2011	1 RT/3Y	VOC1 - VOLATILE ORGANICS
37326057	01-01-2014 Continuous		01-01-2014	1 RT/3Y	HM - HEAVY METALS
37326057	01-01-2011 Continuous		01-01-2011	1 RT/6Y	NRAD - NEW RAD RULE
37326057	01-01-2017 Continuous		01-01-2017	2 RT/3Y	RSOC - REGULATED SOCS
37326057	01-01-2014 12-31-2016		01-01-2014	1 RT/3Y	RSOC - REGULATED SOCS
37326057	01-01-2014 Continuous		01-01-2014	1 RT/3Y	VOC1 - VOLATILE ORGANICS
37326058	01-01-2014 Continuous		01-01-2014	1 RT/3Y	HM - HEAVY METALS
37326058	01-01-2011 Continuous		01-01-2011	1 RT/6Y	NRAD - NEW RAD RULE
37326058	01-01-2017 Continuous		01-01-2017	2 RT/3Y	RSOC - REGULATED SOCS
37326058	01-01-2014 12-31-2016		01-01-2014	1 RT/3Y	RSOC - REGULATED SOCS
	01-01-2014		01-01-	1	

37326058	Continuous		2014	RT/3Y	VOC1 - VOLATILE ORGANICS
37326059	01-01-2014 Continuous		01-01-2014	1 RT/3Y	HM - HEAVY METALS
37326059	01-01-2014 Continuous		01-01-2014	1 RT/3Y	NRAD - NEW RAD RULE
37326059	01-01-2014 Continuous		01-01-2014	2 RT/3Y	RSOC - REGULATED SOCS
37326059	01-01-2014 Continuous		01-01-2014	1 RT/3Y	VOC1 - VOLATILE ORGANICS
37326061	01-01-2011 Continuous		01-01-2011	1 RT/3Y	HM - HEAVY METALS
37326061	01-01-2011 Continuous		01-01-2011	1 RT/6Y	NRAD - NEW RAD RULE
37326061	01-01-2011 12-31-2016		01-01-2011	1 RT/3Y	RSOC - REGULATED SOCS
37326061	01-01-2017 Continuous		01-01-2017	2 RT/3Y	RSOC - REGULATED SOCS
37326061	01-01-2011 Continuous		01-01-2011	1 RT/3Y	VOC1 - VOLATILE ORGANICS
37326063	10-01-2015 10-01-2016		10-01-2015	1 RT/1T	BSEC - BASELINE SECONDARIES
37326063	01-01-2014 Continuous		01-01-2014	1 RT/3Y	HM - HEAVY METALS
37326063	10-01-2015 Continuous		10-01-2015	1 RT/QT	NRAD - NEW RAD RULE
37326063	01-01-2017 Continuous		01-01-2017	2 RT/3Y	RSOC - REGULATED SOCS
37326063	01-01-2017 12-31-2018		01-01-2017	1 RT/YR	VOC1 - VOLATILE ORGANICS
37326063	01-01-2020 Continuous		01-01-2020	1 RT/3Y	VOC1 - VOLATILE ORGANICS

Individual Non-TCR Sample Schedules					
Facility	Begin End Date	Seas	Init MP Begin Dt	Req.	Analyte
37326052	01-01-2011 Continuous		01-01-2011	1 RT/3Y	1024-CYANIDE
37326052	01-01-2011 Continuous		01-01-2011	1 RT/3Y	1025-FLUORIDE
37326052	01-01-2011 Continuous		01-01-2011	1 RT/YR	1038-NITRATE-NITRITE
37326054	01-01-2014 12-31-2016		01-01-2014	1 RT/3Y	1024-CYANIDE
37326054	01-01-2014 12-31-2016		01-01-2014	1 RT/3Y	1025-FLUORIDE
37326055	01-01-2014 Continuous		01-01-2014	1 RT/3Y	1024-CYANIDE
37326055	01-01-2014 Continuous		01-01-2014	1 RT/3Y	1025-FLUORIDE

37326055	01-01-2012 Continuous		01-01-2012	1 RT/YR	1038-NITRATE-NITRITE
37326056	01-01-2011 Continuous		01-01-2011	1 RT/3Y	1024-CYANIDE
37326056	01-01-2011 Continuous		01-01-2011	1 RT/3Y	1025-FLUORIDE
37326056	01-01-2011 Continuous		01-01-2011	1 RT/YR	1038-NITRATE-NITRITE
37326057	01-01-2014 Continuous		01-01-2014	1 RT/3Y	1024-CYANIDE
37326057	01-01-2014 Continuous		01-01-2014	1 RT/3Y	1025-FLUORIDE
37326057	01-01-2012 Continuous		01-01-2012	1 RT/YR	1038-NITRATE-NITRITE
37326058	01-01-2014 Continuous		01-01-2014	1 RT/3Y	1024-CYANIDE
37326058	01-01-2014 Continuous		01-01-2014	1 RT/3Y	1025-FLUORIDE
37326058	01-01-2012 Continuous		01-01-2012	1 RT/YR	1038-NITRATE-NITRITE
37326059	01-01-2014 Continuous		01-01-2014	1 RT/3Y	1024-CYANIDE
37326059	01-01-2014 Continuous		01-01-2014	1 RT/3Y	1025-FLUORIDE
37326059	01-01-2016 Continuous		01-01-2016	1 RT/YR	1038-NITRATE-NITRITE
37326061	01-01-2011 Continuous		01-01-2011	1 RT/3Y	1024-CYANIDE
37326061	01-01-2011 Continuous		01-01-2011	1 RT/3Y	1025-FLUORIDE
37326061	01-01-2011 Continuous		01-01-2011	1 RT/YR	1038-NITRATE-NITRITE
37326063	01-01-2014 Continuous		01-01-2014	1 RT/3Y	1024-CYANIDE
37326063	01-01-2014 Continuous		01-01-2014	1 RT/3Y	1025-FLUORIDE
37326063	01-01-2015 Continuous		01-01-2015	1 RT/YR	1038-NITRATE-NITRITE
37326063	10-01-2015 10-01-2016		10-01-2015	1 RT/1T	1041-NITRITE

Facility Analyte Levels(FANLS)									
Site	Analyte	Level Type	Value	Units	Days/Month	Samples/Day	Begin Date	End Date	MDBP Type
37326000	0999	MAX	4.0	MG/L	0	0	01-01-2011	Continuous	MRDL

Sample Plans					
Rule	Analyte/Analyte Group	Eff. Begin	Eff. End	App. Date	For Comp.