City of Rio Rancho
Source Water Protection Plan
Public Water System # NM3537326

Prepared for **City of Rio Rancho, New Mexico**

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Table of Contents

List of Figures

Figure

List of Tables

Table **Page**

List of Appendices

Appendix

A NMED Source Water Assessment

B Consumer Confidence Reports

C NMED List of Potential Sources of Contamination

D Sampling Schedules

E Public Involvement

City of Rio Rancho
Source Water Protection Plan
Public Water System # NM3509623

1. Introduction

The New Mexico Environment Department (NMED) Drinking Water Bureau (DWB) encourages communities in the protection of their drinking water system through the Source Water Protection Program. By participating in the program, communities can assess 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.

NMED encourages communities to then complete the second step of the planning process by 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 the City of Rio Rancho (the City), New Mexico, was developed by Daniel B. Stephens & Associates, Inc. (DBS&A) using the *New Mexico Source Water and Wellhead Protection Toolkit* (NMED DWB, 2013) and was updated in May 2019. The SWPP identifies a Community Planning Team that has the responsibility of program development and implementation, thereby providing the community with the tools needed to prevent contamination of the City's source water.

1.1 City of Rio Rancho Source Water Protection Program Vision

> *Through leadership, dedication, and integrity, we are committed to providing utility and environmental services of superior quality. We remain constantly focused on the value of our associates, the well-being of our community and the preservation of our environment.*

This formalized vision statement is the declaration and call to action of the City's Utilities Administration Division.

The mission statement for the City of Rio Rancho is as follows:

> *The City of Rio Rancho's mission is to ensure the health, safety and welfare of the community by providing excellent service to achieve a high quality of life for residents, businesses, and visitors.*

1.2 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.

1.3 Source Water Protection Program Background

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. The City's source water assessment was completed in 2003, and 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 City of Rio Rancho source water protection team. The City's water system is operated by a contract operator, Jacobs Engineering Group.

Table 1. Source Water Protection Team

Name	Affiliation	E-mail
Marian Wrage	City of Rio Rancho Utilities Department	mwrage@rrnm.gov
Steve Gallegos	City of Rio Rancho Utilities Department	sgallegos@rrnm.gov
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Charles Fernandez	City of Rio Rancho Parks Department	cfernandez@rrnm.gov
Koryn Misbach	City of Rio Rancho Parks Department	kmisbach@rrnm.gov
	Town of Bernalillo	
	Waste Management Corporation	
	Sandoval County	

3. Water System Information

Rio Rancho is the third largest city in the State of New Mexico, and is located adjacent to the Albuquerque metropolitan area within the Middle Rio Grande Basin (Figure 1). Rio Rancho has a current land area of approximately 105 square miles, of which approximately one-third has been developed. The City population is approximately 96,000, with single-family residential property accounts as the major water user classification. Commercial businesses are a smaller component of the water accounts, as many of the local residents shop in Albuquerque. The City has one single industrial customer. The City is relatively young, as it was incorporated in 1981.

The City water supply consists entirely of groundwater withdrawn from the Santa Fe Group aquifer. The City has 15 wells currently in operation and diverts about 11,000 acre-feet per year (ac-ft/yr). Because the City pulls the water from deep wells, the supply is not as susceptible to climate change or drought as a surface water supply. The City has an emergency water

shortage ordinance for times of drought or limited supply. The ordinance was invoked in 2008 due to equipment issues on two of three wells that supplied water to one area of the City. The City can store up to 44 million gallons of water.

Single-family housing predominates in Rio Rancho. The oldest subdivisions were built in the 1970s, with a majority of growth in the 1980s and 1990s. During 2005 to 2007, Rio Rancho was the fastest growing city in the state.

The City has a 26,039 acre-feet water rights diversion permit (Permit No. RG-6745 et.al., and Declaration No. RG26259). As part of the pumping permit, the City is required to purchase 728 acre-feet of water rights per 5-year period. To date, the City has purchased more water rights than required for the current time frame.

The City water system consists of the following infrastructure:

- 15 active production wells
- 8 booster pump stations
- 19 storage tanks (total capacity of 44 million gallons)
- 10 pressure zones for water distribution
- 1 reverse osmosis system
- 10 arsenic treatment facilities
- 582 miles of water distribution lines (ranging from 6 inches to 24 inches in diameter)

City production wells are located within the Rio Rancho and Rio Rancho Estates limits (Figure 2). Table 2 summarizes well construction information for all City production wells. Since this plan was issued, Well 13 has been redrilled and Well 3 has been rehabilitated.

Table 2. City Production Well Information

Well No.	Date Drilled	Capacity (gpm)	Well Elevation (feet msl)	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	
					Top	Bottom
1 (off-line)	1962	85	5,244	350	297	339
2 (off-line)	1963	510	5,260	813	570	813
3	1966	640	5,370	828	584	820
4 (monitoring well)	1969	1,400	5,415	990	685	990
5 (plugged)	1969	—	5,416	980	380	975
6A	1991	1,240	5,602	1,476	810	1,450
7	1975	840	5,650	1,197	898	1,182
8 (off-line)	1978	840	5,827	1,618	982	1,599
9	1984	840	6,054	1,540	1,220	1,520
10A	2003	2,250	5,504	2,495	1,212	2,454
11 (monitoring well)	1985	—	5,131	350	257	315
12 (off-line)	1987	2,250	5,240	1,459	564	1,439
13 (monitoring well)	1989	600	6,055	1,747	1,342	1,721
13R	2018	—	—	—	—	—
14 (off-line)	1991	1,400	5,770	1,740	1,035	1,710
15	1993	512	5,794	1,310	820	1,290
16	1994	2,020	5,536	2,010	820	1,990
17 (off-line)	1994	3,000	5,308	1,710	510	1,690
18 (monitoring well)	1994	—	5,535	2,070	562	2,050
19 (off-line)	1995	1,500	5,676	2,070	800	2,050
20 (monitoring well)	1997	—	5,812	970	850	980
21	1999	1,982	5,306	1,970	470	1,857
22	2005	2,365	—	2,988	1,444	2,968
23	2008	—	—	2,020	777	1,999

Source: DBS&A, 2015; BHI, 2011; City of Rio Rancho, 2019
gpm = Gallons per minute
msl = Above mean sea level
bgs = Below ground surface

4. Hydrogeology

4.1 Regional Hydrogeology

This description of regional hydrology is adopted from the report *Evaluation of Future Production Well Locations, Well Replacement Needs, and Future Water Sources, City of Rio Rancho, NM* (GGI, 2008).

4.1.1 Structural Setting

The City of Rio Rancho lies within the Albuquerque Basin section of the Rio Grande Rift tectonic province (Keller and Cather, 1994). The rift is characterized by a well-defined series of asymmetrical fault-block (half-graben) basins and ranges that extend from Colorado to Mexico for a distance of more than 600 miles (Hawley, 1978; Chapin and Cather, 1994).

Throughout Rio Rancho, stratigraphic units are offset by numerous north-south and northwest-southeast trending normal faults that have been mapped at the surface (e.g., Kelley, 1977; Personius et al., 2000) and identified in gravity and aeromagnetic surveys of the area (e.g., Grauch, 1999; Grauch et al., 1999). Some of these faults are observed in pumping tests as barriers to groundwater flow (e.g., Riesterer et al., 2003, 2004, 2005; Riesterer and Drakos, 2008). The most important structural feature in the northern Albuquerque basin, with respect to its influence on groundwater production and quality, is the Ziana structure (Ziana anticline of Black and Hiss, 1974; Kelley, 1977; Ziana horst of Connell, 2001). The Ziana structure plunges gently to the south, with beds dipping to the east and west of the structural axis. As a result, older stratigraphic units are closer to the surface farther north in the basin along the structural axis, and younger units are thin or missing. These relationships are important factors controlling the production and quality of groundwater in the area. Cementation along faults bounding the Ziana structure and/or juxtaposition of higher and lower permeability sediments across these faults appears to limit movement of groundwater across some of the Ziana bounding faults (Heywood et al., 2002).

4.1.2 Regional Stratigraphy

The Albuquerque Basin contains up to 14,000 feet of Tertiary age (Miocene to Pliocene), syn-rift sediments of the Santa Fe Group. In the northern Albuquerque Basin, deposits of the Santa Fe

Group thin to the west and north; a thickness of approximately 3,000 feet is present beneath the Shell Santa Fe #1 oil test well. In the northern Albuquerque Basin, the Santa Fe Group is underlain by volcanclastic rocks of the Espinaso Formation (Oligocene age) and sedimentary rocks of the Galisteo Formation (Eocene age) (May and Russell, 1994). The Tertiary section is underlain by Mesozoic and Paleozoic sedimentary units that were deposited on Pre-Cambrian crystalline basement rocks (Kelley, 1977; Russell and Snelson, 1994). Basin-bounding and intrabasinal faults in the Albuquerque Basin offset all of the Santa Fe Group sediments, and some faults also offset the overlying Quaternary deposits (Kelley, 1977; Machette et al., 1998).

4.1.3 Santa Fe Group Stratigraphy

The nomenclature assigned to the Santa Fe Group in the Calabacillas subbasin of the Albuquerque Basin has evolved significantly since the early portion of the 20th century (e.g., Bryan and McCann, 1937; Galusha, 1966; Kelley, 1977; Manley, 1978; Gawne,1981; Tedford and Barghoorn, 1997, 1999; Connell et al., 1999; Personius et al., 2000; Connell, 2001, 2004, 2006, 2008). The Glorieta Geoscience, Inc. (GGI) study uses the formation and member names assigned to the Santa Fe Group by Connell (2008) based on his work in the northern Albuquerque Basin.

In the northern Albuquerque Basin, the Santa Fe Group is subdivided, from oldest to youngest, into the Zia Formation, the Cerro Conejo Formation, the Arroyo Ojito Formation, and the Ceja Formation (Connell, 2008). The Zia Formation is further subdivided into, from oldest to youngest, the Piedra Parada, Chamisa Mesa, and Cañada Pilares Members. The Arroyo Ojito Formation is subdivided into (from oldest to youngest) the Navajo Draw, Loma Barbon, and Picuda Peak Members (Connell, 2008, Figure 1-6). The Arroyo Ojito Formation is separated from the overlying Ceja Formation by the Rincones paleosurface, which is defined by a well-developed carbonate paleosol (Connell, 2008). The Ceja Formation is subdivided into (from oldest to youngest) the Santa Ana Mesa, Atrisco, and Rio Puerco Members (Connell, 2008).

Most of the City's wells are deep and well-protected from human-caused contamination. Protection from human-caused contamination generally increases with depth. The likelihood of being exposed to naturally occurring contaminants also increases with increasing well depth.

4.2 Water Sources

4.2.1 Source Water Quality

The City's wells have occurrences of arsenic, chromium, sodium, total suspended solids (TSS), sulfate, and gross alpha. The main concern in the City's water quality is arsenic, and the City has installed 10 arsenic treatment facilities to treat water from 12 wells (3, 6, 7, 9, 10A, 13, 14, 15, 16, 17, 21, and 22) to meet the arsenic maximum contaminant level (MCL) of 10 micrograms per liter (µg/L). According to the 2017 consumer confidence report (Appendix B), from January 3, 2013 to July 10, 2017, the City's contractor did not properly monitor and/or complete all required testing for total coliform and chlorine residuals at certain areas within the distribution system, resulting in reported violations for 2016 and 2017. No violations were reported for 2018.

4.2.2 Production Rates

Table 3 shows annual total production by well for 2003–2018. Pumping rates are provided in Table 2. Pumping rates range from 85 to 3,200 gallons per minute (gpm). The highest producing wells are 10A, 17, and 22. Of the 15 active wells, 8 have pumping rates lower than 1,000 gpm, 5 have pumping rates between 1,000 and 2,000 gpm, and 5 have pumping rates over 2,000 gpm. The biggest producers in 2018 were wells 10A and 19, each producing 14 percent of annual total water production. Total annual diversion was 10,804 ac-ft/yr in 2018, which is 42 percent of the allowable diversion under existing water right permits.

5. Water Production

Section 4.2.2 presents historical production rates by well. Total system production is shown on Figure 3.

Table 3. Annual Production by Well, 2003–2018

Well ID	Annual Diversion (acre-feet)															
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2	1	343	10	225	130	126	237	0	0	149	226	224	283	358	241	55
3	88	368	239	375	309	325	0	0	676	924	686	660	679	184	119	609
4	33	510	648	270	269	0	0	0	0	0	0	0	0	—	—	—
5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6A	635	463	576	846	426	768	1,258	1,514	1,602	1,802	1,344	640	1,105	1,311	753	1,467
7	297	545	602	616	568	408	279	0	156	298	0	0	0	98	1,072	958
8	1,199	1,365	1,202	901	1,321	277	9	0	0	0	0	0	381	—	—	—
9	1,239	1,006	258	293	375	289	909	974	760	83	1,319	779	334	821	753	367
10A	—	—	—	1,364	2,775	987	1,517	1,273	1,385	1,286	324	769	678	671	1,436	1,515
11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12	862	661	966	1,056	449	1,414	1,871	1,173	1,395	1,694	1,768	1,854	1,760	1,641	1,396	86
13	26	0	0	0	36	645	688	461	627	457	0	0	0	—	—	—
14	225	301	1,691	1,414	1,272	1,237	909	1,452	332	860	0	1,068	314	—	—	—
15	15	15	140	121	183	56	22	226	651	558	516	333	359	419	472	539
16	2,087	1,351	1,266	1,554	1,606	1,888	1,672	1,225	1,208	168	1,405	1,496	1,226	1,298	605	1,440
17	952	776	846	691	521	822	978	1,939	1,698	1,694	544	249	30	72	196	307
18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
19	1,651	1,569	1,431	1,588	1,366	1,456	1,752	2,037	1,886	1710	1,599	1,980	1,933	2,164	1,996	1,481
20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
21	1,841	1,988	1,712	791	1,221	1,239	172	0	0	801	1,333	360	567	852	666	1,287
22	—	—	—	—	—	1,158	272	1,288	1,241	2,191	1,675	1,216	958	1,165	1,175	694
23	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total diversion	11,149	11,259	11,587	12,105	12,826	13,095	12,545	13,563	13,617	14,675	12,739	11,628	10,608	11,054	10,879	10,804

Source: DBS&A, 2015; City of Rio Rancho, 2019

6. Water Supply Changes and Impacts

6.1 Historical Change and Impacts

The City obtains 100 percent of its municipal water supply from groundwater produced from wells completed in the regional aquifer within and west of the City limits. The City is growing steadily, which has resulted in steady growth of groundwater diversion. In recent years, despite the City's growing population, implementation of conservation measures and the declining demand by the City's largest industrial user (Intel) have resulted in an overall decrease in water use. The City's projected population growth, associated water demands, and permitted diversions are shown on Figures 4 and 5.

6.2 Need for Future Water Sources

Bohannan Huston, Inc. (BHI) developed projected water demands based on land use categories, and identified changing development patterns from almost exclusively residential to mixed residential and commercial use (BHI, 2011). The BHI study estimated water demand approaching 54,000 ac-ft/yr once the land within City limits is fully developed. The City should meet this demand by acquisition of the amount of water rights required by Permit RG-6745 et al. (i.e., minimum of 728 acre-feet every 5 years).

7. Source Water Protection Area

Per NMED recommendations in the *New Mexico Source Water and Wellhead Protection Toolkit* (NMED DWB, 2013), the source water protection area (SWPA) is defined as the area within a 1-mile radius of each groundwater well. In this plan, the delineated source area is further 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

8. Susceptibility Analysis

Susceptibility rankings have been assigned to each water source to identify and assess potential contamination risks to the system's water sources. 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 sensitivity and vulnerability.

8.1 Sensitivity Rankings

Sensitivity is an assessment of well construction and integrity and aquifer characteristics. Wells are ranked low, moderate, or high for sensitivity. A response of "no" for both sensitivity assessment criteria receives a low ranking, one "yes" and one "no" receives a moderate ranking, and two "yes" responses receives a high ranking. Table 4 shows the presence of known construction and/or aquifer concerns for each City well and lists the associated sensitivity ranking.

8.2 Vulnerability Rankings

Vulnerability is an assessment of the number, proximity, and type of PSOCs near a wellhead. Vulnerability rankings of low, moderately low, moderate, moderately high, or high are assigned based on Table 5. Table 6 summarizes the PSOC occurrence by zone for each of the City's water sources. Table 7 summarizes the vulnerability rankings assigned to each well.

Potential sources of contamination (PSOCs) were identified within the protection area as potential threats to the water supply. The assessment used the Source Water Protection Atlas maintained by the NMED DWB (DWB, 2016) and other sources, including the EPA interactive map (U.S. EPA, 2016), geologic reports, previous reports provided by the City, and input from the Source Water Protection Team.

Table 4. Sensitivity Rankings

Well	Well Construction Issues	Aquifer Concerns	Sensitivity Ranking
1 (off-line)	Yes	No	Moderately low
2	No	No	Low
3	No	No	Low
4	No	No	Low
5 (plugged)	—	—	—
6A	No	No	Low
7	No	No	Low
8	No	No	Low
9	No	No	Low
10A	No	No	Low
11 (off-line)	Yes	No	Moderately low
12	Yes	No	Moderately low
13	No	No	Low
14	No	No	Low
15	No	No	Low
16	No	No	Low
17	No	No	Low
18	No	No	Low
19	No	No	Low
20	No	No	Low
21	No	No	Low
22	No	No	Low
23	No	No	Low

Table 5. Vulnerability Ranking Description

Number of PSOC Events				Vulnerability Ranking
Zone A (0 to 200 feet)	Zone B (201 to 500 feet)	Zone C (501 to 1,000 feet)	Zone D (1,001 to 5280 feet)	
1+	10+	13+	15+	High
0	8–9	11–12	12-14	Moderately high
0	5–7	7–10	8-11	Moderate
0	3–4	4–6	5-7	Moderately low
0	0–2	0–3	0-4	Low

Table 6. PSOC Occurrences Within City Well Source Water Protection Areas
Page 1 of 9

Buffer Zone	PSOC Code	Description	Number of Occurrences
Well 1			
A	RSF	Septic system	6
	IOG	Gas pipeline	1
B	RSF	Septic system	16
	IOG	Gas pipeline	1
C	RSF	Septic system	84
	IOG	Gas pipeline	1
D	RSF	Septic system	1,137
	CFB	Underground storage tank facility	3
	—	OSE well	21
	CFA	Aboveground storage tank facility	1
	GWP	Groundwater permit (active) - Wastewater treatment plant	1
	Arroyo	Ephemeral stream	1
	MRP	Primary road, highway, or arterial	1
	AHD	Park	5
	IOG	Gas pipeline	1
	MPS	Lift station	2
Well 2			
A	RSF	Septic system	1
	IOG	Gas pipeline	1
B	RSF	Septic system	27
	IOG	Gas pipeline	1
C	RSF	Septic system	85
	IOG	Gas pipeline	1
D	RSF	Septic system	1,253
	—	OSE well	17
	CFB	Underground storage tank facility	3
	CFA	Aboveground storage tank facility	1
	GWP	Groundwater permit (active) - Wastewater treatment plant	1
	Arroyo	Ephemeral stream	1
	MRP	Primary road, highway, or arterial	2
	AHD	Park	5
	IOG	Gas pipeline	1
	MPS	Lift station	2

Table 6. PSOC Occurrences Within City Well Source Water Protection Areas
Page 2 of 9

Buffer Zone	PSOC Code	Description	Number of Occurrences
Well 3			
A	IOG	Gas pipeline	1
B	RSF	Septic system	1
	IOG	Gas pipeline	1
C	RSF	Septic system	20
	—	OSE well	1
	CFB	Underground storage tank facility	1
	MRP	Primary road, highway, or arterial	
	RSF	Septic system	804
	IOG	Gas pipeline	1
D	—	OSE well	19
	GWP	Groundwater permit (active) - Chamisa Hills Country Club	1
	CFB	Underground storage tank facility	4
	Arroyo	Ephemeral stream	1
	MRP	Primary road, highway, or arterial	1
	AHD	Park	7
	IOG	Gas pipeline	1
	MPS	Lift station	1
Well 4			
A	IOG	Gas pipeline	1
B	IOG	Gas pipeline	1
C	IOG	Gas pipeline	1
D	RSF	Septic system	287
	—	OSE well	11
	CFB	Underground storage tank facility	4
	GWP	Groundwater permit (active) - Chamisa Hills Country Club	1
	Arroyo	Ephemeral stream	2
	MRP	Primary road, highway, or arterial	1
	AHD	Park	6
	IOG	Gas pipeline	1
	MPS	Lift station	1
Well 5			
B	IOG	Gas pipeline	1
C	IOG	Gas pipeline	1
D	RSF	Septic system	587
	—	OSE well	6

Table 6. PSOC Occurrences Within City Well Source Water Protection Areas
Page 3 of 9

Buffer Zone	PSOC Code	Description	Number of Occurrences
Well 5 (cont.)			
D	CFB	Underground storage tank facility	6
	GWP	Groundwater permit (active) - Chamisa Hills Country Club	1
	Arroyo	Ephemeral stream	2
	MRP	Primary road, highway, or arterial	2
	AHD	Park	5
	IOG	Gas pipeline	1
	MPS	Lift station	2
Well 6			
A	IOG	Gas pipeline	1
B	RSF	Septic system	17
	IOG	Gas pipeline	1
C	RSF	Septic system	38
	—	OSE well	2
	CFA	Aboveground storage tank facility	1
	IOG	Gas pipeline	1
D	RSF	Septic system	596
	CFB	Underground storage tank facility	1
	—	OSE well	23
	Arroyo	Ephemeral stream	3
	MRP	Primary road, highway, or arterial	2
	AHD	Park	2
	IOG	Gas pipeline	1
	MHM	Rio Rancho Public School Transportation	1
Well 7			
B	RSF	Septic system	3
	IOG	Gas pipeline	1
C	RSF	Septic system	9
	—	OSE well	1
	IOG	Gas pipeline	1
D	RSF	Septic system	602
	—	OSE well	19
	CFB	Underground storage tank facility	1
	CFA	Aboveground storage tank facility	1
	Arroyo	Ephemeral stream	3
	MRP	Primary road, highway, or arterial	2
	AHD	Park	4

Table 6. PSOC Occurrences Within City Well Source Water Protection Areas
Page 4 of 9

Buffer Zone	PSOC Code	Description	Number of Occurrences
Well 7 (cont.)			
D	IOG	Gas pipeline	1
	MHM	Rio Rancho Public School Transportation	1
Well 8			
B	RSF	Septic system	6
	IOG	Gas pipeline	1
C	RSF	Septic system	21
	IOG	Gas pipeline	1
D	RSF	Septic system	606
	—	OSE well	10
	Arroyo	Ephemeral stream	2
	MRP	Primary road, highway, or arterial	1
	AHD	Park	1
	IOG	Gas pipeline	1
	IUD	Illegal dump	1
Well 9			
D	RSF	Septic system	2
	Arroyo	Ephemeral stream	4
	IGO	Oil & gas exploration	1
Well 10A			
B	MRP	Primary road, highway, or arterial	1
	Arroyo	Ephemeral stream	1
	IOG	Gas pipeline	1
C	IOG	Gas pipeline	1
D	RSF	Septic system	25
	—	OSE well	39
	CFB	Underground storage tank facility	1
	CFA	Aboveground storage tank facility	1
	GWP	Groundwater permit (pending) - Rio Rancho (City of) - Direct Injection Recharge Demonstration Project	1
	MLF	Landfill	1
	Arroyo	Ephemeral stream	4
	MRP	Primary road, highway, or arterial	1
	AHD	Park	1
	IOG	Gas pipeline	1

Table 6. PSOC Occurrences Within City Well Source Water Protection Areas
Page 5 of 9

Buffer Zone	PSOC Code	Description	Number of Occurrences
Well 11			
A	IOG	Gas pipeline	1
B	—	OSE well	3
	CFB	Leaking underground storage tank site	1
C	—	OSE well	1
	Arroyo	Ephemeral stream	1
	IOG	Gas pipeline	1
	MPS	Lift station	1
D	RSF	Septic system	80
	—	OSE well	172
	CFB	Underground storage tank facility	3
	ABS	Abatement site- Former Price's Valley Gold North Dairy	1
	VRS	Voluntary remediation site- Price's Valley Gold North Dairy - North Area	1
	Arroyo	Ephemeral stream	1
	MRP	Primary road, highway, or arterial	2
	ADC	Irrigation ditch	1
	IOG	Gas pipeline	1
	MPS	Lift station	1
	MWP	Bernalillo Well #4	1
Well 12			
C	Arroyo	Ephemeral stream	1
D	RSF	Septic system	116
	—	OSE well	59
	CFB	Underground storage tank facility	1
	VRS	Voluntary remediation site - Price's Valley Gold North Dairy - North Area	1
	BRF	Brownfield - Del Norte Gun Club	1
	Arroyo	Ephemeral stream	2
	MRP	Primary road, highway, or arterial	1
	AHD	Park	2
	IOG	Gas pipeline	
	IUD	Illegal dump	1
	MPS	Lift station	2
	MWP	Bernalillo Well #4	1

Table 6. PSOC Occurrences Within City Well Source Water Protection Areas
Page 6 of 9

Buffer Zone	PSOC Code	Description	Number of Occurrences
Well 13			
B	Arroyo	Ephemeral stream	1
C	RSF	Septic system	37
	Arroyo	Ephemeral stream	4
D	RSF	Septic system	37
	Arroyo	Ephemeral stream	3
	IGO	Oil & gas exploration	1
Well 14			
A	RSF	Septic system	1
B	RSF	Septic system	1
C	RSF	Septic system	8
	—	OSE well	2
D	RSF	Septic system	90
	—	OSE well	6
	Arroyo	Ephemeral stream	3
	MRP	Primary road, highway, or arterial	1
	IOG	Gas pipeline	1
Well 15			
C	—	OSE well	1
	Arroyo	Ephemeral stream	1
	IOG	Gas pipeline	1
D	—	OSE well	3
	Arroyo	Ephemeral stream	4
	MRP	Primary road, highway, or arterial	1
	IOG	Gas pipeline	1
Well 16			
B	Arroyo	Ephemeral stream	1
D	RSF	Septic system	3
	—	OSE well	6
	Arroyo	Ephemeral stream	3
	MRP	Primary road, highway, or arterial	1
	AHD	Park	3
	IOG	Gas pipeline	1
Well 17			
A	RSF	Septic system	1
	—	OSE well	1

Table 6. PSOC Occurrences Within City Well Source Water Protection Areas
Page 7 of 9

Buffer Zone	PSOC Code	Description	Number of Occurrences
Well 17			
B	RSF	Septic system	4
	—	OSE well	6
	Arroyo	Ephemeral stream	1
C	RSF	Septic system	5
	—	OSE well	9
	Arroyo	Ephemeral stream	1
	MRP	Primary road, highway, or arterial	1
D	RSF	Septic system	265
	—	OSE well	274
	CFB	Underground storage tank facility	2
	GWP	Groundwater permit (active) - Wastewater Treatment Plant	1
	Arroyo	Ephemeral stream	1
	MRP	Primary road, highway, or arterial	1
	AHD	Park	1
	IOG	Gas pipeline	1
Well 18			
B	IOG	Gas pipeline	1
C	—	OSE well	1
	Arroyo	Ephemeral stream	1
	IOG	Gas pipeline	1
D	RSF	Septic system	7
	—	OSE well	13
	Arroyo	Ephemeral stream	2
	IOG	Gas pipeline	1
	IUD	Illegal dump	1
Well 19			
C	RSF	Septic system	13
	IOG	Gas pipeline	1
D	RSF	Septic system	427
	—	OSE well	8
	Arroyo	Ephemeral stream	4
	MRP	Primary road, highway, or arterial	1
	AHD	Park	2
	IOG	Gas pipeline	1
	IUD	Illegal dump	1
	MRP	Lift station	3

Table 6. PSOC Occurrences Within City Well Source Water Protection Areas
Page 8 of 9

Buffer Zone	PSOC Code	Description	Number of Occurrences
Well 20			
A	IUD	Illegal dump	1
B	IUD	Illegal dump	1
C	IUD	Illegal dump	1
D	RSF	Septic system	235
	—	OSE well	6
	Arroyo	Ephemeral stream	4
	AHD	Park	1
	IOG	Gas pipeline	1
	IUD	Illegal dump	1
Well 21			
B	Arroyo	Ephemeral stream	1
	IOG	Gas pipeline	1
C	IOG	Gas pipeline	1
D	—	OSE well	7
	MRP	Primary road, highway, or arterial	1
	GWP	Groundwater Permit (active) - Chamisa Hills Country Club	1
	GWP	Groundwater permit (pending) - Rio Rancho (City of) - Direct Injection Recharge Demonstration Project	1
	Arroyo	Ephemeral stream	2
	AHD	Park	3
	IOG	Gas pipeline	1
Well 22			
A	IOG	Gas pipeline	1
B	RSF	Septic system	6
	—	OSE well	5
	Arroyo	Ephemeral stream	1
	IOG	Gas pipeline	1
C	RSF	Septic system	23
	—	OSE well	12
	IOG	Gas pipeline	1
D	RSF	Septic system	539
	—	OSE well	341
	GWP	Groundwater permit (terminated) - Rio Rancho (City of) - Sludge	1
	MRP	Primary road, highway, or arterial	2
	Arroyo	Ephemeral stream	5

Table 6. PSOC Occurrences Within City Well Source Water Protection Areas
Page 9 of 9

Buffer Zone	PSOC Code	Description	Number of Occurrences
Well 22 (cont.)			
D	AHD	Park	2
	IOG	Gas pipeline	1
	—	Rio Rancho Public Safety Department	1
Well 23			
A	Arroyo	Ephemeral stream	1
D	RSF	Septic system	7
	—	OSE well	18
	Arroyo	Ephemeral stream	2
	AHD	Park	1
	IOG	Gas pipeline	1

Table 7. Vulnerability Rankings by Well

Well	Vulnerability Ranking
1 (off-line)	High
2	High
3	High
4	High
5 (plugged)	High
6A	High
7	High
8	High
9	Low
10A	High
11 (off-line)	High
12	High
13	High
14	High
15	Moderate
16	High
17	High
18	High
19	High
20	High
21	High
22	High
23	High

PSOCs can be either naturally occurring or human-caused. The NMED has compiled an extensive list of natural and human-caused PSOCs (Appendix C). Types of PSOCs known to occur in the City's SWPAs are listed in Table 8; they are listed by the three-letter code assigned by NMED, when possible. A map of PSOCs is provided as Figure 6.

8.2.1 Natural Sources of Contamination

Natural sources of contamination within the City's SWPAs include arroyos and naturally occurring contaminants listed in Section 4.2.1. The main naturally occurring concern in the City

Table 8. Types of Potential Source of Contamination Occurring within the City's SWPAs

Map Code	Land Use	Description	Contaminants of Concern
Arroyo	Ephemeral stream	Runoff and infiltration	Pesticides, herbicides, fertilizers, nitrate, pathogens
CFA	Fuel storage tanks - above ground	Non-service station tank(s) - miscellaneous facilities	Gasoline, diesel fuel, heating fuels and oils, lubricants, coolants, miscellaneous 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
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
ADC	Drainage canals, ditches or acequias -unlined, wells (private, stock wells, and irrigation)	Runoff and infiltration	Pesticides, herbicides, fertilizers, nitrate, pathogens
GWP	Groundwater permit	Runoff and infiltration	Pesticides, herbicides, fertilizers, nitrate, pathogens
VRS	Voluntary remediation site	Runoff and infiltration	Pesticides, herbicides, fertilizers, nitrate, pathogens
BRF	Brownfield	Runoff and infiltration	Leachate of organic/inorganic chemicals, acids, bases, metals, solvents, waste fuels and oils, pesticides, PCBs
ABS	Abatement site	Runoff and infiltration	Pesticides, herbicides, fertilizers, nitrate, pathogens
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, PCBs
RSF	Single-family residence - unsewered	Wastewater discharge to septic tank/leach field or cesspool	Septage, pathogens, nitrate, ammonia, chloride, heavy metals, household pesticides, herbicides, cleaning agents and solvents, fuels
IOG	Oil/gas pipelines	Transport	Oils, gasoline, volatile organic chemicals, natural gas, propane
IUD	Unregulated dumps/ excavated sites, snow dumps	Storage/collection/disposal	Organic/inorganic chemicals, automotive wastes, oil, gasoline, runoff from adjacent sites
MHM	Highway/road maintenance yards	Operations/maintenance/ storage	Gasoline, diesel fuels, solvents, road salt, asphalt, pesticides, automotive wastes
MPS	Sewage pump stations	Operations/storage	Sewage, pathogens, nitrate, metals, organic/inorganic chemicals
AHC	Horticultural/gardens/ nurseries/greenhouses	Operations/storage	Pesticides, herbicides, fertilizers
MWP	Water treatment plants and water supply wells	Operations/maintenance/ disposal	Organic/inorganic chemicals, chlorine

wells is arsenic. The City has installed 10 arsenic treatment facilities to treat water from 12 wells (3, 6, 7, 9, 10A, 13, 14, 15, 16, 17, 21, and 22).

8.2.2 Human Sources of Contamination

The most prolific human-caused PSOC type is septic systems; most of these septic systems are located in areas where sewer service is not available, but some are located in areas where sewer service is provided, but homeowners have not opted to connect. The threat from septic systems to the public water supply in Rio Rancho is likely low due to the deep well depths; however, the threat is increased in areas where private wells exist, particularly if those wells are not properly abandoned or properly sealed. The locations of sewers, aerial imagery, and the locations of private wells were used to map septic systems in the City's service area (Figure 7).

The source water protection atlas shows four groundwater permits within the SWPAs. Three of these—for the City's Wastewater Treatment Plants 1, 2, 3, and 6, Club Rio Rancho Golf Course, and Rio Rancho direct injection recharge permit demonstration project—are active. The Rio Rancho sludge facility is a terminated permit.

One voluntary remediation site is located in the SWPAs for Wells 11 and 12. The former Price's Dairy North site has undergone voluntary remediation and is a closed site, with abatement completed and approved by the NMED Ground Water Quality Bureau in May 2013. Regionally, groundwater gradient flow would be toward the river; however, near the well, the gradient could be reversed due to the typical drawdown of the operating well. The former dairy could therefore be upgradient of the wells. The current status of the dairy is abatement completed with approval from the NMED; however, it remains a possible PSOC.

The Del Norte Gun Club shows as a brownfield site within the SWPA for Well 12. The former Price's Dairy North site also shows as an abatement site. Other land uses that represent PSOCs include landfills and illegal dumping grounds, primary roads that can lead to contaminant spills, sewage lift stations, oil/gas pipelines, large areas of fertilized turf, such as parks, fuel storage tanks, and arroyos. Arroyos are not PSOCs in themselves, but can convey pollutants.

8.3 Overall Susceptibility

A well's susceptibility is determined by the intersection of its sensitivity and vulnerability rankings as shown on Table 9. Table 10 lists the susceptibility rankings of each City well.

9. Source Water Monitoring Plan

The City currently conducts water monitoring at the entry points of the system for heavy metals, radionuclides, synthetic organic compounds (SOCs), and volatile organic compounds (VOCs). Appendix D provides the sampling schedule as shown on the NMED Drinking Water Watch (NMED DWW, 2016).

10. PSOC Monitoring and Control Plan

The City monitors water quality in accordance with state and federal requirements. The City also tests and monitors for secondary contaminants in the source water.

The City should review the monitoring data from the NMED Petroleum Storage Tank Bureau for compliance of the gasoline service stations in the City. The Source Water Protection Atlas should also be reviewed on an annual basis to identify future PSOCs within the SWPAs.

The City of Rio Rancho Source Water Protection Team should do the following:

- Participate as necessary in regulatory meetings and hearings on facilities within the SWPAs
- Review proposed future development within the SWPAs, including exploratory oil and gas drilling, and exercise the City's land use controls as needed
- Encourage the City's facilities (e.g., the Sports Complex, parks, and transportation department) to minimize fertilizer and other chemical use within the SWPAs.

Table 9. Susceptibility Ranking Description

		Sensitivity Ranking		
		High	Moderate	Low
Vulnerability Ranking	High	High susceptibility	High susceptibility	Moderate susceptibility
	Moderately high	High susceptibility	High susceptibility	Moderate susceptibility
	Moderate	Moderately high susceptibility	Moderate susceptibility	Moderate susceptibility
	Moderately low	Moderate susceptibility	Moderate susceptibility	Low susceptibility
	Low	Moderate susceptibility	Low susceptibility	Low susceptibility

Table 10. Susceptibility Rankings by Well

Well	Susceptibility Ranking
1 (off-line)	High
2	Moderate
3	Moderate
4	Moderate
5 (plugged)	—
6A	Moderate
7	Moderate
8	Moderate
9	Low
10A	Moderate
11 (off-line)	High
12	High
13	Moderate
14	Moderate
15	Moderate
16	Moderate
17	Moderate
18	Moderate
19	Moderate
20	Moderate
21	Moderate
22	Moderate
23	Moderate

11. Public Involvement

A workshop with the Source Water Protection Team was held on February 13, 2019 at the Loma Colorado Library for the purpose of updating the SWPP. A comment period was established ending February 22, 2019, after which the PSOC map and plan document were updated and distributed to SWP Team members.

For the preparation of the original plan, a public meeting was held on December 3, 2016 at the Esther Bone Memorial Library in Rio Rancho. During the meeting, DBS&A explained the source ater protection planning process and introduced the draft SWPP to the public. After the public meeting, a 30-day comment period was granted, during which two comments were received. Comments were reviewed by the Source Water Protection Team and the plan was updated accordingly. The sign-in sheet from the meeting and both comments are included in Appendix E. On January 18, 2017, the City held a meeting with the largest industrial customer, City, County, and neighboring community representatives, during which the PSOC map was updated. The sign-in sheet for the meeting is included in Appendix E. The finalized plan will be presented at a second public meeting and will be made available on the City's website.

12. Conclusions and Recommendations

Threats to the City of Rio Rancho water supply are naturally occurring arsenic, septic systems (particularly in the vicinity of private wells), and the growing population. While much of the City is on municipal service, there are numerous residents who have chosen to not be connected to the system and are still using septic systems. While the septic systems do not pose a significant threat to the deep City wells, they are PSOCs for much shallower private wells.

Where wastewater service is available, the City should consider incentives to homeowners to connect to the City sewer system and to properly abandon septic systems. Where water service is available, the City should consider incentives for homeowners to connect to the public water system and disconnect from their private wells. There may be homeowners connected to both the public water system and a private well, which represents a potential for cross-contamination of the public water system.

The City continues to grow on a steady basis. The growing regional population will drive the need to continue implementing water conservation measures. Water infrastructure improvements, such as connecting all the residents to the City sewer system, will provide the assurance of a protected water system in the future. Water sampling for constituents such as arsenic will need to continue as part of a regular monitoring program.

No additional major threats were determined. There are 18 underground storage tank (UST) sites located within the City's SWPAs that have had no recorded releases and undergo routine inspections. No major industries or mines that could present a potential for impacting the water system are located within the region. The one large industrial customer does not present a threat to the water supply.

DBS&A makes the following recommendations for the City'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 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 within the SWPAs.
- 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 the local soil and water conservation district. It may also be helpful to include representatives from the largest consumers, particularly the large industrial user.
- A public information program should be developed related to source water protection. This program would educate the public about the City'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 Source Water Protection Team.

Options for communicating with the public include meetings, advertisements, flyers, brochures, posters, questionnaires, and community and school events.

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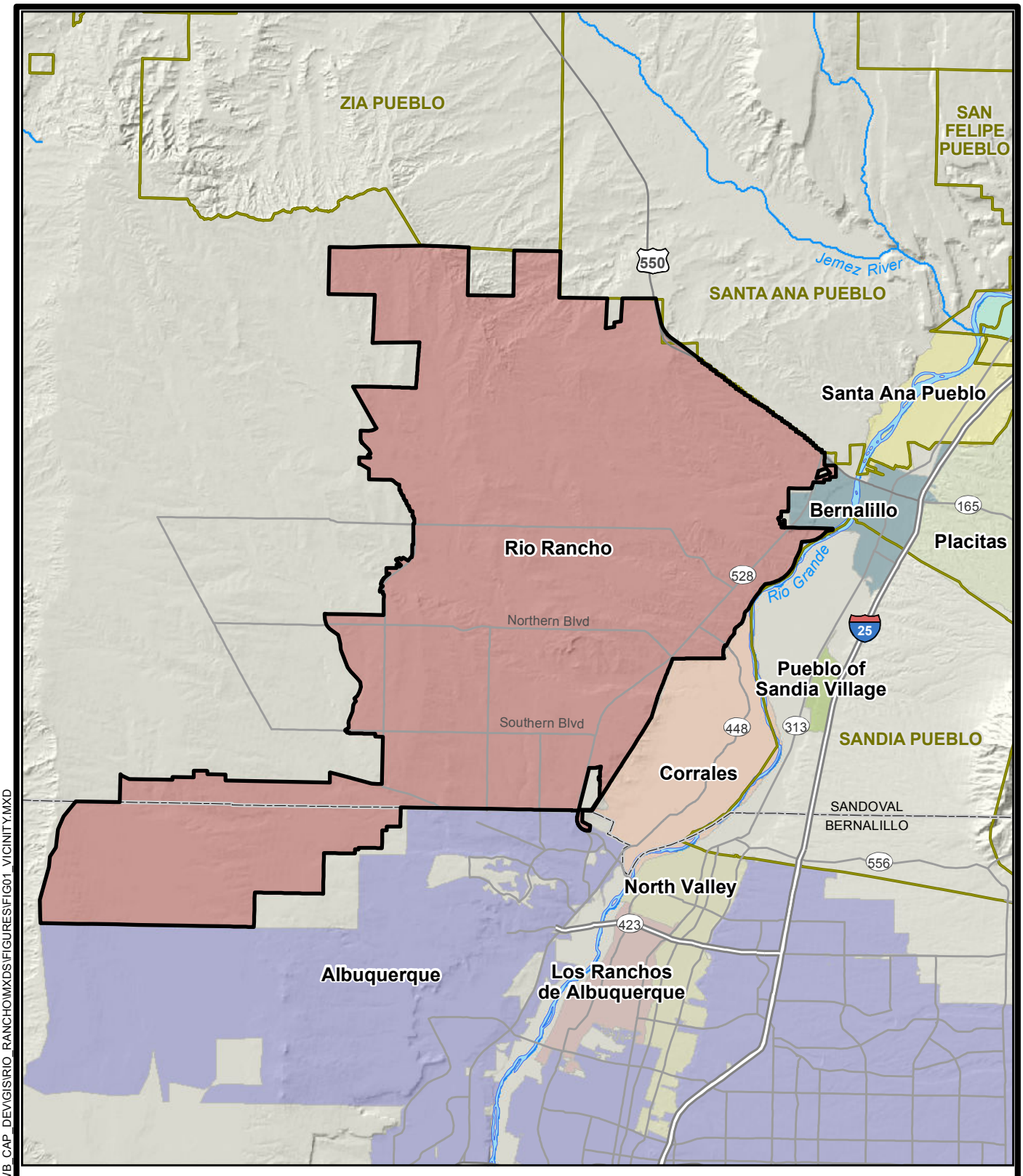
Figures



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CITY OF RIO RANCHO
SOURCE WATER PROTECTION PLAN

Vicinity Map

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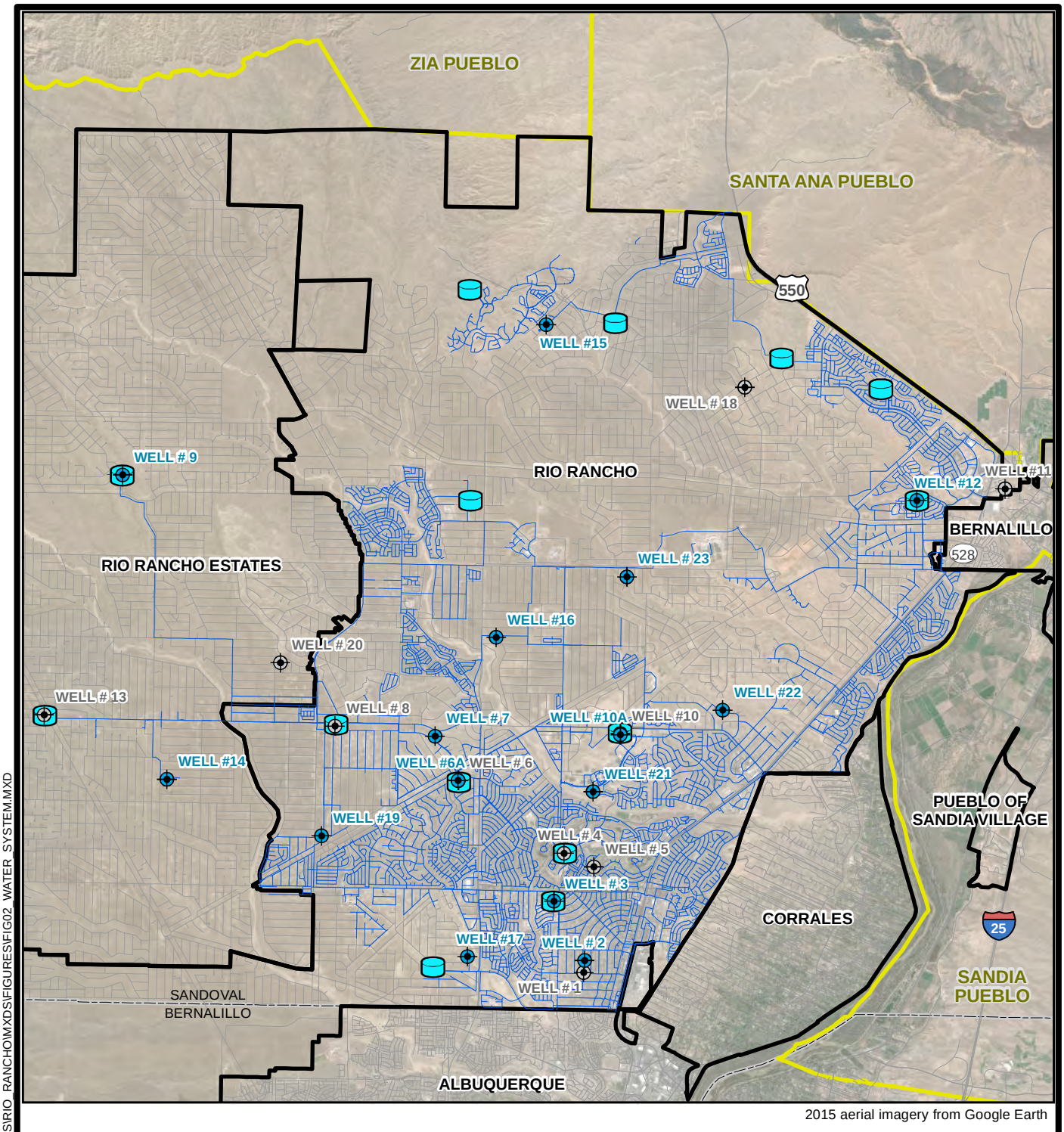
JN NM15.0090

Figure 1



2015 aerial imagery from Google Earth

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Explanation

- City
- Pueblo
- County
- Road
- City well
  - Active
  - Inactive
- Water main
- Tank

CITY OF RIO RANCHO
SOURCE WATER PROTECTION PLAN
Water System

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Figure 2

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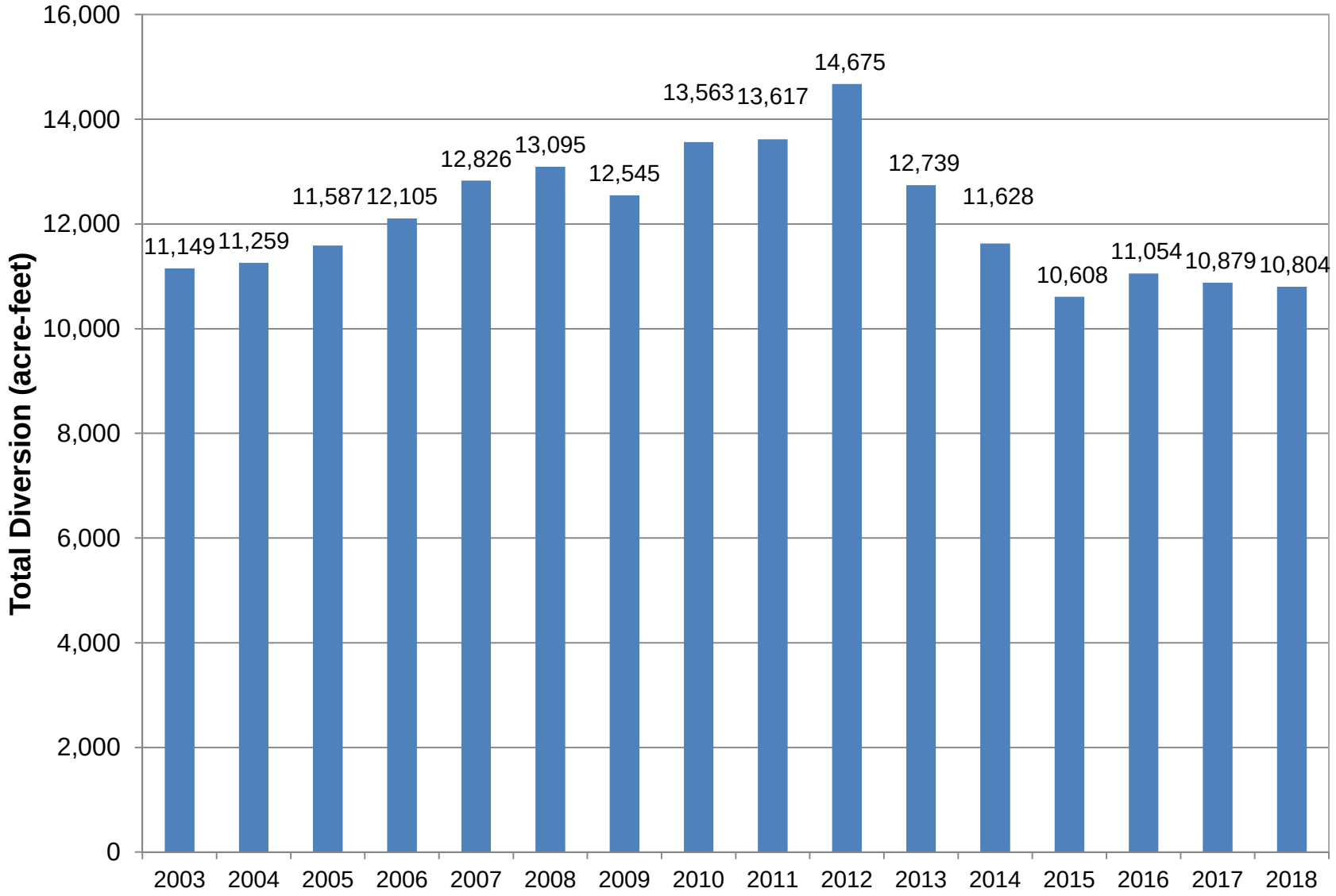

Figure 3

CITY OF RIO RANCHO
SOURCE WATER PROTECTION PLAN
Total Production, 2003–2018

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5/20/19

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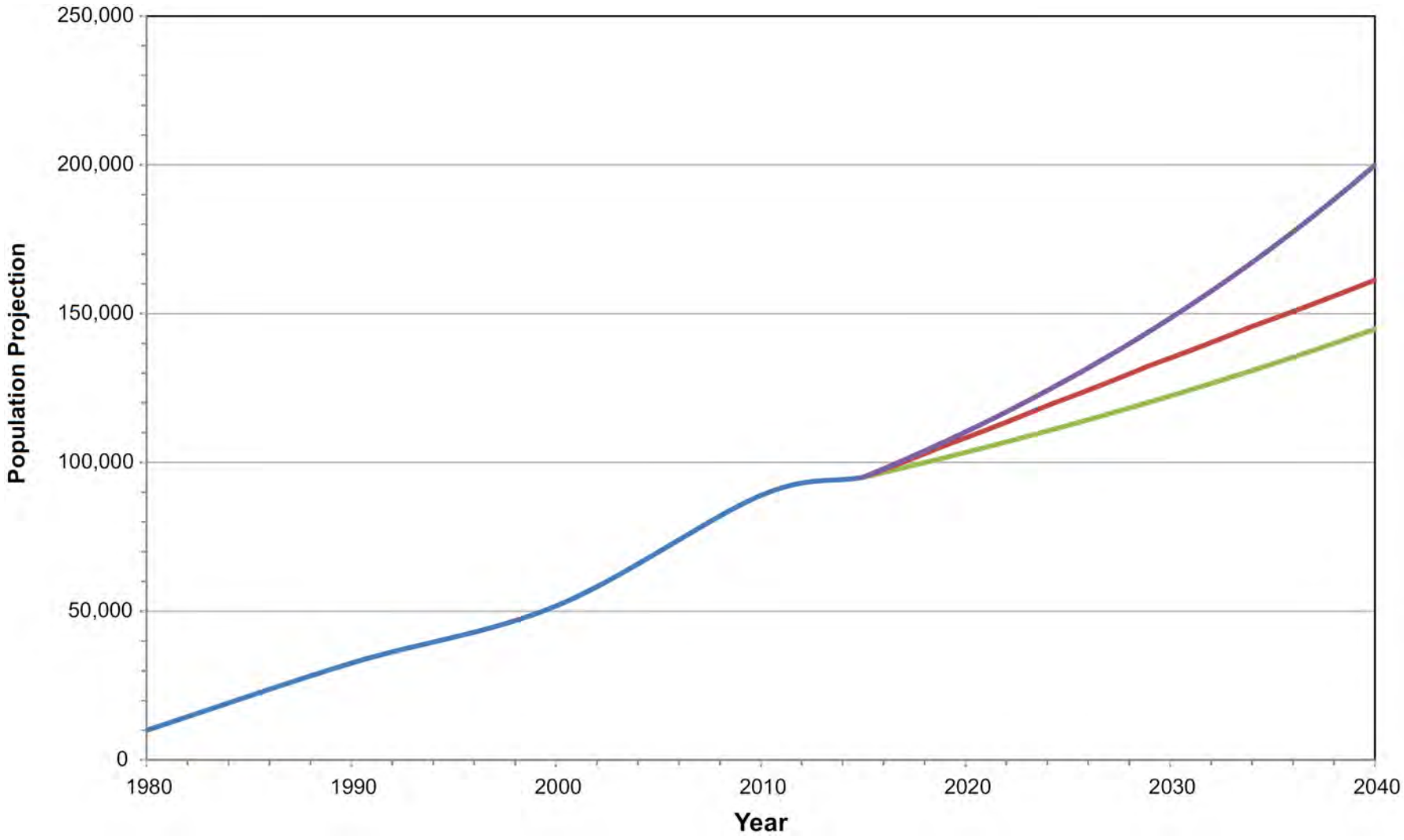

Figure 4

CITY OF RIO RANCHO
SOURCE WATER PROTECTION PLAN

Historical and Projected Population Growth Scenarios, 1980 - 2040

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2/1/2017
JN NM15.0090

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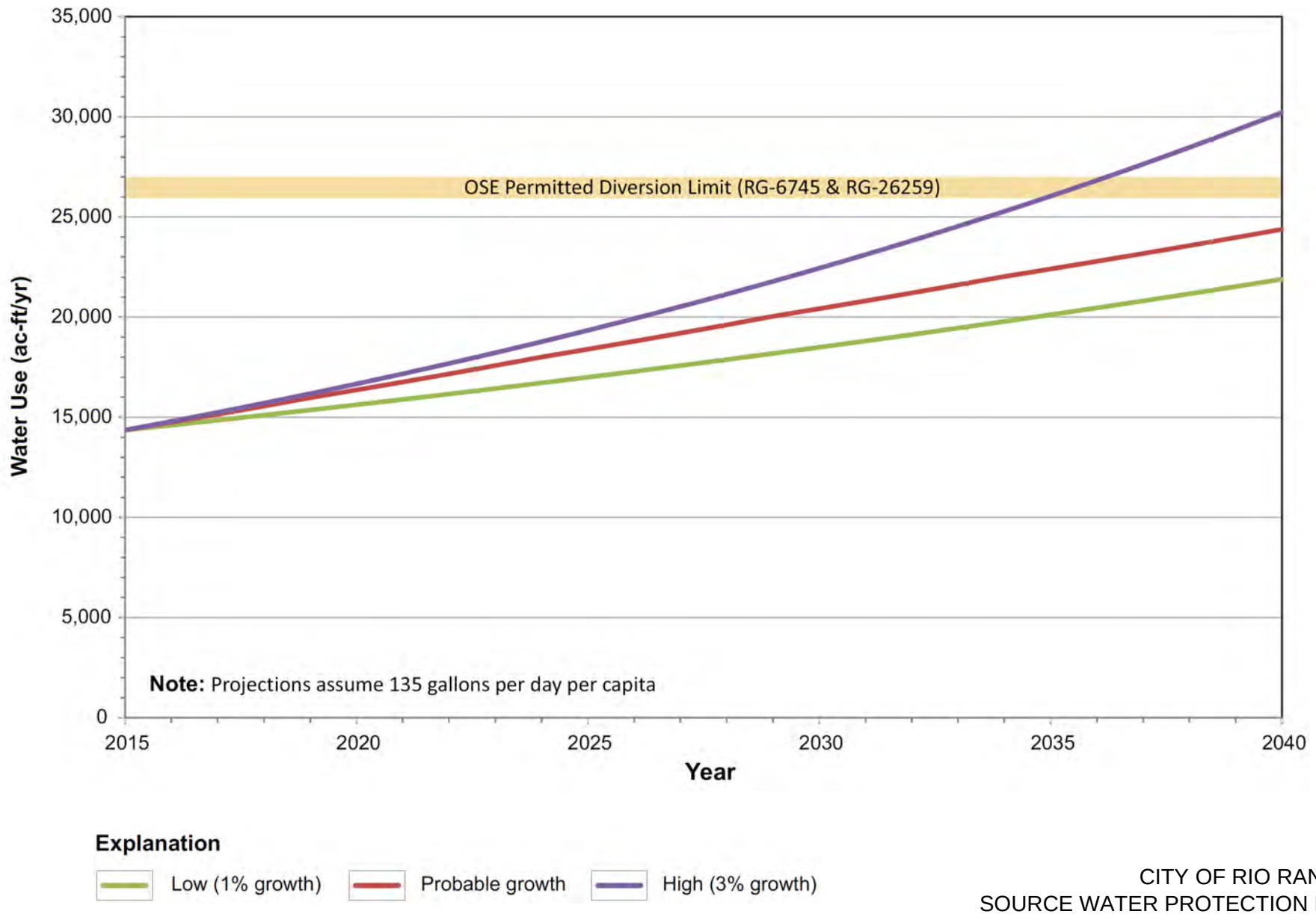

CITY OF RIO RANCHO
SOURCE WATER PROTECTION PLAN

Water Use Projections Based on Population Growth Scenarios, 2015 - 2040

Figure 5

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2/1/2017 JN NM15.0090

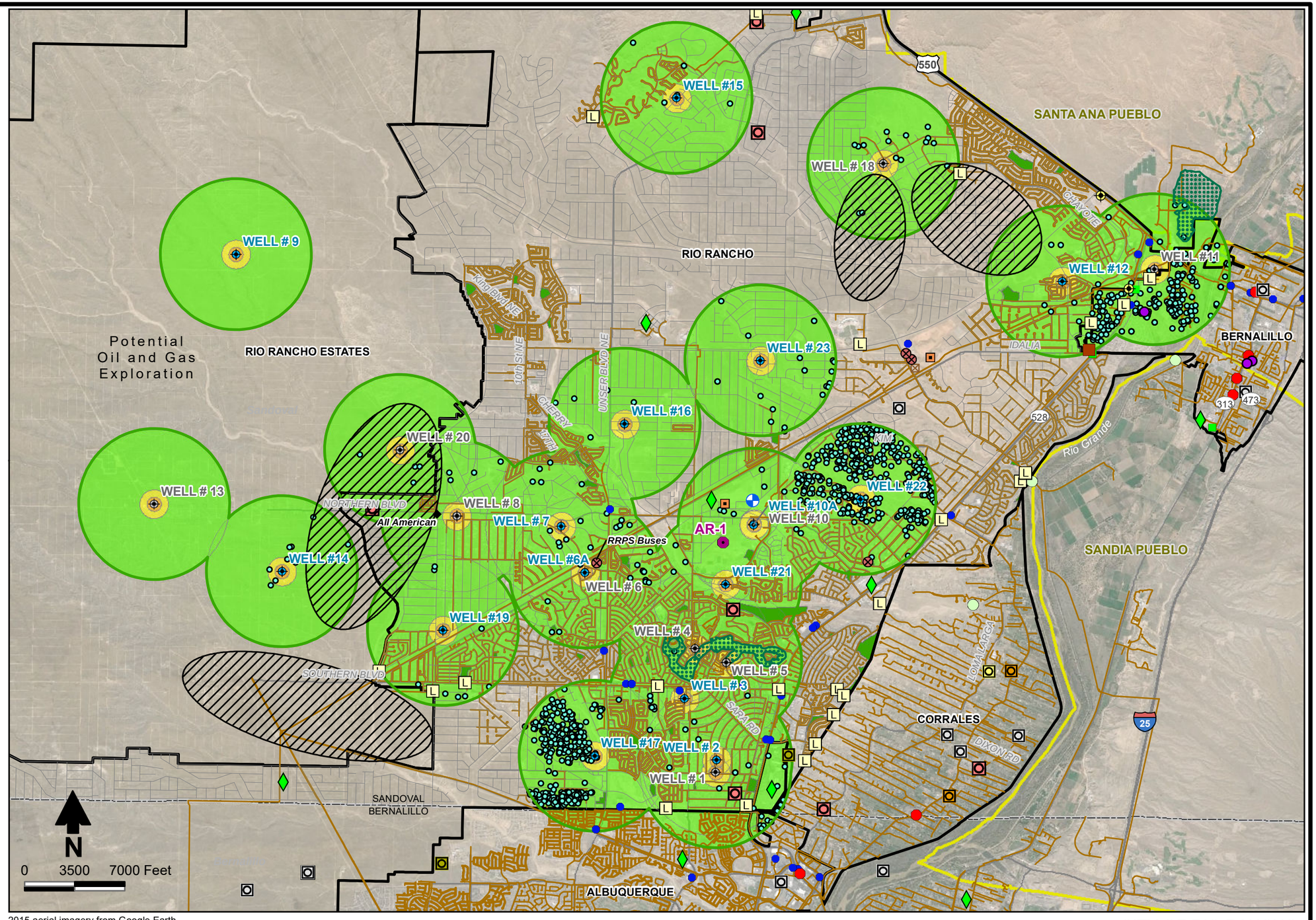
Explanation

City well
- Active
- Inactive
- Existing direct injection well

Bernalillo well
- Bernalillo well
- City
- Pueblo
- County
- Road
- Gas pipeline
- Park or sports complex
- Golf course
- Illegal dump area (household hazardous waste)
- Arroyo
- Source water protection area

Buffer zone
- 200
- 500
- 1000
- 5280
- Lift station
- Government facility with chemicals
- Abatement site
- Brownfield
- Leaking underground storage tank site
- Underground storage tank facility
- AST facility
- Landfill
- Landfill monitor well
- NPDES permit
- Solid Waste Facilities
- Voluntary remediation site
- OSE well in source water protection area

Groundwater permit
- Active
- Ceased
- Pending
- Inactive
- Terminated
- Transferred to LWP



2015 aerial imagery from Google Earth

CITY OF RIO RANCHO
SOURCE WATER PROTECTION PLAN
Potential Sources of Contamination

Daniel B. Stephens & Associates, Inc.
2/23/2019 JN DB18.1297

Figure 6

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N

0 3500 7000 Feet

Explanation

- Septic system
- Sewer line

City well

- Active
- Inactive
- City
- Pueblo
- County
- Road
- Arroyo
- Source water protection area

Buffer zone

- 200
- 500
- 1000
- 5280

WELL # 9
WELL # 13
WELL #14
WELL # 20
WELL #8
WELL #15
WELL # 7
WELL #6A
WELL # 6
WELL #19
WELL # 18
WELL #10A
WELL #10
WELL #22
WELL #21
WELL #12
WELL #11
WELL # 23
WELL #16
WELL # 4
WELL # 5
WELL # 3
WELL #17
WELL # 2
WELL # 1

RIO RANCHO ESTATES
RIO RANCHO
SANTA ANA PUEBLO
SANDIA PUEBLO
BERNALILLO
CORRALES
SANDOVAL
BERNALILLO
ALBUQUERQUE

UNSER BLVD NE
10th St NE
IDALIA RD
NORTHERN BLVD
SOUTHERN BLVD
LOMA LARGA
WEST ELLARD
DIXON RD
Rio Grande
KIM

550
528
313
473
25

2015 aerial imagery from Google Earth

CITY OF RIO RANCHO
SOURCE WATER PROTECTION PLAN
Septic Systems

Daniel B. Stephens & Associates, Inc.
2/1/2017 JN NM15.0090

Figure 7

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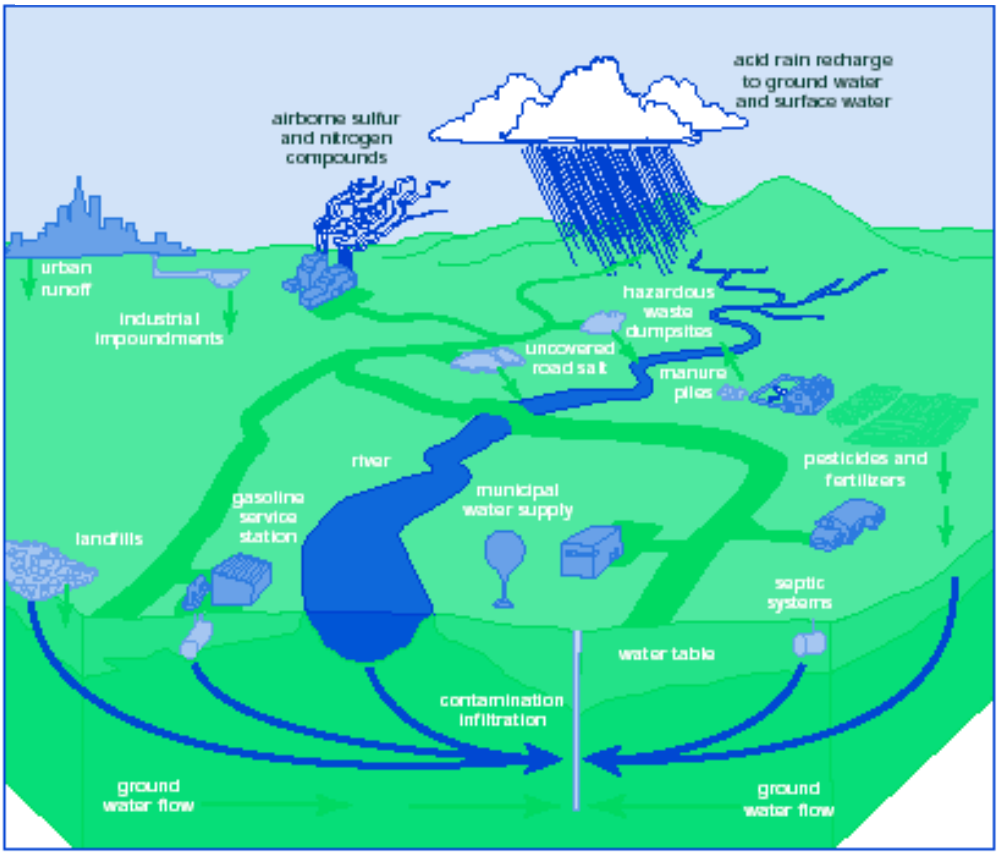
Appendix A

NMED Source Water Assessment

Source Water Assessment & Protection Program
Report of Rio Rancho Sewer & Wastewater Services Water Utility

Public Water System # 096-23

Potential Threats to Drinking Water Sources



New Mexico Environment Department -
Drinking Water Bureau
August 2003
Funded under *the Federal Safe Drinking Water Act Amendments of 1996*

TABLE OF CONTENTS

ACRONYMS

ARCGIS	ArcView Geographic Information System
BMP	Best Management Practices
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
DWB	Drinking Water Bureau
EPA	Environmental Protection Agency
GGAP	Ground-Water Protection Policy and Action Plan
GPAB	Ground Water Protection Advisory Board
GPD/FT^2	Gallons Per Day Per Foot Squared
GPS	Global Positioning System
LU	Land Use
MCL	Maximum Contaminant Level
NMED	New Mexico Environment Department
NMED-DWB	New Mexico Environment Department Drinking Water Bureau
PIC	Policy Implementation Committee
PSOC	Potential Sources of Contamination
RCRA	Resource Conservation and Recovery Act
SDWA	Safe Drinking Water Act
SWA	Source Water Assessment
SWAPP	Source Water Assessment and Protection Program
WSS	Water Supply System

SOURCE WATER ASSESSMENT AND PROTECTION PLAN PROCESS FOR THE RIO RANCHO SEWER & WASTEWATER SERVICES WATER SYSTEM

INTRODUCTION

The New Mexico Environment Department Drinking Water Bureau's (NMED-DWB) *Source Water Assessment and Protection Program* (SWAPP)[1] is a federally funded national program. The program is part of a national effort to prevent adverse effects to human health and the environment and to manage and protect the environmental integrity of states' ground water resources.

The SWAPP is intended to be an information-gathering tool that identifies, evaluates, and prevents contaminants[2] from polluting public drinking water systems. As the lead agency under SWAPP responsible for source water protection of public drinking water supplies, NMED-DWB is attaching this *Request for Participation in the New Mexico Source Water Protection Plan Process* to your completed Source Water Assessment Report, and hopes that your water utility will join the Source Water Protection Plan (SWAPP) portion of this program.

Your choice to continue with SWAPP is voluntary, however, your participation will be a valuable contribution to both your community and the state. Source water protection benefits all of New Mexico and may be measured in many ways.[3] In recognition of the importance of this program toward the protection of the state's water resources, the executive branch agency will give special recognition and commendation to water utilities with approved source water protection plans that are also in compliance with the Safe Drinking Water Act. **Plan approval is conducted by NMED-DWB and is based on the satisfactory completion of all steps outlined in the Source Water Protection Plan Template** (see Appendix J).

SOURCE WATER PROTECTION PLAN PROCESS

A SWAPP incorporates six steps. Steps 2-4 have been completed for your water utility by NMED-DWB, and are incorporated in this addendum. NMED-DWB will continue to work with you toward the development, adoption, and management of an approved SWAPP, should you choose to proceed. The remainder of this report describes the six steps for developing a SWAPP, incorporates the findings of the assessments conducted by NMED-DWB, and gives examples of SWAPP tools and documents. The six steps of the SWAPP are as follows:

1. Formation of a Community Planning team
2. Delineation of Source Water Protection Areas (*completed by NMED-DWB under SWA*)
3. Inventory of Actual and Potential Sources of Contamination (*completed by NMED-DWB under SWA*)
4. Completion of a Susceptibility Analysis (*completed by NMED-DWB under SWA*)
5. Management of Source Water Protection Areas
6. Planning for Existing and Future Events / Contingency Protocol

[1] SWAPP incorporates the goals and mandates of the *Safe Drinking Water Act* such as the *Source Water Assessment Program* and the *Wellhead Protection Program* described in Sections 1453 and 1428 of the *Federal Safe Drinking Water Act Amendments of 1996*, respectively. The general goals of SWAPP are the identification and management of existing and potential sources of pollution as they may impact public drinking water sources.

[2] The Contaminants of Concern (COC) (refer to your utility's Source Water Assessment) are defined as broad land-use categories, facilities, or activities that store, use, or produce as a product or by-product any contaminants regulated under the federal *Safe Drinking Water* Act, including microbiological contaminants giardia lamblia, cryptosporidium, and total coliform bacteria, and synthetic organic contaminants included in the New Mexico *Pesticide Management Plan*.

COC identified in this report have been determined by NMED-DWB as posing a *significant* likelihood of having the potential to impact drinking water sources. For example, COC that were not considered as having the potential to impact drinking water sources are small quantities of highly volatile organic chemicals that would most likely volatilize upon release into the environment.

[3] Source water protection is a relatively new and pro-active approach for ensuring safe and reliable sources of drinking water. Benefits range from protecting human health and the quality of life to maintaining tourism and property values. Benefits may also be measured by considering what the costs might be if the water source was to become polluted. Costs incurred from polluted water may include the costs of treatment, land purchase and well drilling (for locating a new water supply) or, in the worst case, the costs of the complete loss of a water supply utility.

Compliance with other programs may also result in savings. For instance, the federal *Safe Drinking Water Act Amendments of 1996* requires treatment under the Disinfection Byproducts Rule, however, systems with cleaner water sources will naturally require less disinfection to begin with. Further, sampling waivers issued because of the SWAP Plan may reduce the frequency of sampling requirements, which would result in the reduction of sampling costs.

STEP 1 FORM A COMMUNITY PLANNING TEAM

Forming a community planning team (team) may be as simple as calling someone who may be interested in participating on the team such as a resident near a public water source(s). The team should include everyone that is interested in and/or may be affected by the SWAPP. Other potential team members may include a utility or public works employee, a geologist, hydrologist, or engineer, a citizen with computer and/or public relations skills, an attorney, and Realtor. In addition, local governments that are not directly involved in your water utility may in fact be the legal authority for authorizing and enforcing protection measures and, thereby, may help with the adoption of a protection plan. Examples of local governmental entities include commissioners, council members, and mayors.

The team determines the goals of the program and the roles and responsibilities of the participants. The team must make every effort to involve the public in plan development and implementation, and to secure the public's support.[4] Other tasks include the development of protection plan management strategies (refer to Step 5, Manage the Source Water Protection Area), the establishment and continued evaluation of both short- and long-term goals (see Step 6, Planning for Existing and Future Events / Contingency Protocol), record keeping, and ensuring that the public receives proper notification during all of the relevant stages of the process. The team submits the SWAPP[5] to NMED-DWB for approval (documentation of source water management control tools such as agreements, ordinances, regulations, and public notice(s), etc., should be attached).

STEP 2 DELINEATE SOURCE WATER PROTECTION AREAS (*COMPLETED BY NMED-DWB*)

The State of New Mexico's *Designated Fixed Radius* method was used to delineate each of the system's water sources. The method utilizes a 1,000-foot radius (72.12 acres) as the delineated source area or *capture zone,* which is further subdivided into three zones. Zone A represents a radius that is from 0 to 200 feet from the wellhead, Zone B 200 to 500 feet from the wellhead, and Zone C is the area between 500 to 1,000 feet of the wellhead. Geographical Information Systems ArcView 8.0 was used to generate the maps (Appendix A). You may decide to customize or use another delineation method to produce the maps or use these to satisfy the requirements for this Step.

The identified contaminants were assembled through database[6] tables and shapefiles, sanitary surveys, water system and DWB staff review within the context of the limitations of resources, and available information. As shown in Appendix A, PSOC identified from the databases, such as UST facilities are shown as points, while the three-letter text code (ISM in the example) indicates the PSOC was identified during an onsite survey. The map legend remains consistent throughout the SWAPP.

STEP 3 INVENTORY ACTUAL AND POTENTIAL SOURCES OF CONTAMINATION (*COMPLETED BY NMED-DWB*)

PSOC regulated by the *Safe Drinking Water Act* (SDWA) were inventoried as required under the SWA process. Only facilities and/or land use where potential use of SDWA regulated contaminants may pose a **significant** likelihood of impacting ground water were identified as PSOC. PSOC, along with their associated codes, and Contaminants of Concern generally associated with the PSOC are listed in Appendices C and D, respectively.

The identified contaminants were assembled through database[7] tables and shape files, sanitary surveys, water system and DWB staff review within the context of the limitations of resources and available information. Table 1 shows PSOC identified from the map example (Appendix A). PSOCs identified from the databases, such as UST facilities are shown as points, while the three-letter text code (RSF) indicates the PSOC was identified during an onsite survey. Water systems, which choose to develop a Source Water Protection Plan, may to be provided with additional information.

STEP 4 CONDUCT A SUSCEPTIBILITY ANALYSIS (*COMPLETED BY NMED-DWB*)

Susceptibility analyses provide a method to identify and prioritize potential risks to human health and the environment by identifying the water sources most likely to be impacted by a contaminant. Once completed, consideration should be given to

[4] Keeping records of public participation (i.e., sign-in sheets) is important and may help you to recall public involvement, in addition to serving as a list of possible future team members.

[5] A cover sheet should be attached and signed by an official of the governing entity when returning the SWAPP. For water utilities helping to develop SWAP Plans on a watershed scale, there may be several governing entities.

[6] Drinking water supply systems, Federal Toxic Release Inventory, Underground Injection Control (including Monitoring Wells and Impoundments, Federal Permit Facility, Federal Industrial Permit Facilities, Oil Conservation District Wells, Petroleum Storage, Roads (by county), Railroads, State Impaired Waters (303 d List), Land Use/Land Cover (by county), and Hazardous and solid waste facilities. Base maps were produced using *All Topo Maps*. All data was projected to North American Datum 83 /Universal Transverse Mercator Zone 13.

[7] Drinking water supply systems, Federal Toxic Release Inventory, Underground Injection Control (including Monitoring Wells and Impoundments, Federal Permit Facility, Federal Industrial Permit Facilities, Oil Conservation District Wells, Petroleum Storage, Roads (by county), Railroads, State Impaired Waters (303 d List), Land Use/Land Cover (by county), Hazardous and solid waste facilities. Base maps were produced using *All Topo Maps*. All data was projected to North American Datum 83 /Universal Transverse Mercator Zone 13.

the effects on human health the contaminants may pose, such as *acute* (appearing within hours or days) verses *chronic* (exposure over many years) health effects. Management plans should reflect the findings of the assessments, by directing the development and implementation of the management plan to the sources with the highest susceptible ranking and with the potential for causing acute adverse human health effects.

Table 1

INVENTORY OF ACTUAL AND POTENTIAL SOURCES OF CONTAMINATION

Description of Contaminant	Actual Contamination	Potential Contamination	Distance from Wellhead and/or Zone of Influence	Number of Sources of Contamination (may be expressed by a range i.e., 2-4).
Monitoring Well	No	Yes	Zone A	1+
Hazardous/Solid Waste Generator	No	Yes	Zone B	2-4
Petroleum Storage	No	Yes	Zone B	2-4
Primary Highway	No	Yes	Zone B	2-4
Railroad	No	Yes	Zone B	2-4
Single family Residences – Unsewered	No	Yes	Zone B	2-4
Abandoned Well	No	Yes	Zone C	3-4
Arroyo	No	Yes	Zone C	3-4
Federal Toxic Release Inventory Site	No	Yes	Zone C	3-4
Railroad	No	Yes	Zone C	3-4
Secondary Highway	No	Yes	Zone C	3-4

NMED-DWB susceptibility analysis was performed using decision matrices. Susceptibility was defined as a combination of the **vulnerability** of a water source to contamination due to characteristics of the contaminant, and the **sensitivity** of a water source to contamination due to characteristics of the source water area (Appendix B).

Vulnerability Rank

Once identified according to zone of influence, a vulnerability[8] rank was determined based on the number of PSOC located in a particular zone. The vulnerability rank may have been increased due to one or more of the following:

1. State of New Mexico Environment Department *Drinking Water Regulations* (regulations) for compliance samples were exceeded: 3 or more violations within 12 months, with a set period of review.

2. Three or more categories of PSOC occurred within the same zone of influence.

[8] This report uses the term *vulnerability* to express the characteristics of contaminants in terms of the likelihood of 1) discharge, 2) spill or accidental release, and 2) the number of potential contaminant sources according to their location to ground water. Although determining vulnerability based on the number and location of the PSOC in relation to the wellhead neglects the basic chemical characteristics of the contaminants such as density and volatility, and the likelihood of accidental spills or releases, the number and location of contaminant sources capable of impairing a supply well are easily counted and provide information relevant to initial protection planning efforts. ***Please note that vulnerability is not used to describe hydrogeologic related factors. Hydrogeologic factors are incorporated in the sensitivity analysis using DRASTIC (see footnote 9).***

3. Records maintained for facilities operating under a New Mexico Environment Department (NMED) Ground Water Discharge Plan, Abatement Plan, Solid Waste Facility Permit, or Underground Storage Tank registration, or operating under an United States Environmental Protection Agency National Pollutant Discharge Elimination System permit or any other federal or state permitting system indicate the effectiveness of treatment processes used and the compliance status of the facility with the terms and conditions of its permit. .

4. Land Use and/or land cover in the area of delineation that fell under one or more of the following categories: 1) agricultural, 2) rangeland, 3) commercial, industrial, transportation, and utility, 4) open water and/or irrigation, 5) urban/recreational grass areas.

Tables 2 and 3 show the vulnerability-ranking scheme and an example of a PSOC inventory determined from the map shown in Appendix A. As shown in Table 3, the vulnerability rank that corresponds to the example inventory is "low" as Zone B and C are the zones where the highest Vulnerability Rank (refer to Appendix A).

Table 2

PSOC RANKING DETERMINATION				
	Zone			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

Sensitivity Rank

The sensitivity of a water source to contamination was determined from ranks calculated for the following four matrices: 1) depth to groundwater (the upper most screened interval), 2) well construction/integrity information, 3) construction and integrity of the well, and 4) calculated DRASTIC [9] Index (refer to Appendix B for matrices).

Table 3

PSOC VULNERABILITY INVENTORY AND RANKING

Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Base Map	Primary Highway	B	0-2	Low
Base Map	Secondary Highway	B	0-2	Low
Appendix K	ISM	C	0-4	Low
Map Legend	Petroleum Storage	C	0-4	Low

Table 4 provides definitions, explanatory notes, references, and additional information related to the sensitivity evaluation criteria.

[9] *DRASTIC* is a method developed in 1987 by the National Ground Water Association to evaluate the potential for ground water contamination in any hydrogeologic setting in the United States, and is an acronym for: depth to water (D); net recharge (R); aquifer media (A); soil media (S); topography (T); impact of vadose zone media (I); and aquifer hydraulic conductivity (C). The method assigns a relative rank and weight to each of these factors to determine the relative sensitivity (high, moderately high, moderate, moderately low, or low) of a given supply well to surface-derived contamination. The higher the DRASTIC Index, the more sensitive the well is to contamination.

Table 4	
SENSITIVITY ANALYSIS DEFINITIONS, EXPLANATORY NOTE, and INFORMATION SOURCE (S)	
General Information	
Water Supply Source Name	The name of the well assessed.
Source Type	Where the drinking water comes from, i.e. ground water, surface water, or ground water under the direct influence of surface water.
Susceptibility Analysis ate	The date the susceptibility was completed.
Date of PSOC Inventory	The date the onsite inventory was completed.
Hydraulic Conductivity	A description of the rate at which water can move through a permeable medium (vertical movement).
Depth of Screened Interval	The top of the well screen where water is allowed to enter the well casing.
Information Assessment – Administrator and operator knowledge of the water supply system	
Well Casing	Generally determined from well logs.
Location of Screened Interval (s)	Generally determined from well logs.
Total Completion Depth	The depth to water measured from ground surface. Generally determined from well logs.
Pump, Type, Size, and Setting	Generally determined from well logs.
Drilling Log or Equivalent	A log produced by the driller of the well – usually filed at the Office of State Engineer.
DRASTIC Index Parameters (also see footnote 8)	
Depth to Water	The depth to water from ground surface. Generally determined from well logs.
Net Recharge	The amount of annual rainfall.
Aquifer Media	The aquifer's primary media.
Soil Media	Values generally determined estimated from the Soil Conservation Service's Soil Surveys.
General Topography	The slope of the ground surface (estimated from U.S. Topographic maps).
Hydraulic Conductivity	A description of the rate at which water can move through a permeable medium (vertical movement).
Impact of Vadose Zone Media	Primary vadose zone material type.
Source Area Delineation Data	
Map Legend	Map legend criteria reflect PSOC such as petroleum storage sites, hazardous and solid waste generator sites, and toxic inventory release facilities. In addition, topography and general land use are shown. The map legend remains constant throughout the assessment (see footnote 6).
Source Area Delineations	The State of New Mexico's *Designated Fixed Radius* method for the State Sanitary Survey is a 1,000 feet, and is based on an arbitrarily chosen radius.

Rankings were then entered as shown in Table 5, and a final *point sum* determined. Table 6 shows the final ranking criteria for sensitivity.

Table 5	
COMPOSITE SENSITIVITY RANKING	
Rank for Depth of Screened Interval	
High (25 points)	
Moderately High (20 points)	
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)	
Moderately Low (10 points)	
Low (5 point)	
Rank for Integrity of Construction	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	
Rank for DRASTIC Index	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	
Point Sum	
Rank Assigned (see Ranking Guide, below)	

Table 6		
COMPOSITE SENSITIVITY RANK ASSIGNED		
Sum of Sensitivity Points	**Composite Sensitivity Range**	**Composite Rank Assigned**
90-100	high	
70-85	moderately high	
50-65	moderate	
30-45	moderately low	
20-25	low	

Susceptibility Rank

Together, the rankings determined from the vulnerability and sensitivity analysis were merged as shown in table 7. Susceptibility ranks were increased where professional judgment or extenuating circumstances and/or facts warranted an increased rank such as if a nearby contaminant plume was know to exist but falls outside the delineated areas. Further, ranks were increased where systems were reported on quarterly chemical monitoring and/or NMED-DWB Escalation reports and where land use and/or land cover in the source area of delineation that fell under one or more of the following categories: 1) agricultural, 2) rangeland, 3) commercial, industrial, transportation, and utility, 4) open water and/or irrigation, and 5) urban/recreational grass area.

Table 7						
SUSCEPTIBILITY RANKING						
Sensitivity Ranking						
		High	**Moderately High**	**Moderate**	**Moderately Low**	**Low**
Vulnerability Ranking	**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

Increases in rank are noted in the *Final Rating & Comments* column of Table 8. Ranking of the entire water was determined by using the median of the source ranks (only applicable where water utilities have multiple water sources). The final rank is noted in *Assessment Findings and Summary* (refer to page 11).

Table 8	**SOURCE SUSCEPTIBILITY RANKING**				
SOURCE NAME	**Sensitivity Rank**	**Vulnerability Rank**	**Susceptibility Rank**	**Operational Exceptions**	**Final Rank**
WELL # 1	Moderately Low	High	Moderately High	LU – Mixed Rangeland LU – Residential	High
WELL # 2	Low	High	Moderate	LU – Mixed Rangeland LU – Residential	Moderately High
WELL # 3	Low	High	Moderate	LU – Industrial LU – Mixed Rangeland LU – Residential	Moderately High
WELL # 4	Low	High	Moderate	LU – Urban or Built up Land LU – Mixed Rangeland LU – Residential	Moderately High
WELL # 6A	Low	High	Moderate	LU – Mixed Rangeland LU – Residential	Moderately High
WELL # 7	Low	Low	Low	LU – Mixed Rangeland	Moderately Low
WELL # 8	Low	Low	Low	LU – Mixed Rangeland	Moderately Low
WELL # 9	Low	Low	Low	LU – Mixed Rangeland	Moderately Low
WELL # 10	Low	Low	Low	LU – Mixed Rangeland	Moderately Low
WELL # 11	Moderately Low	High	Moderately High	LU – Mixed Rangeland LU – Commercial & Service >= 3 PSOC in a Zone	High
WELL # 12	Moderately Low	Low	Moderately Low	LU – Mixed Rangeland	Moderate
WELL # 13	Low	Low	Low	LU –Forest Land	Low
WELL # 14	Low	Low	Low	LU – Mixed Rangeland	Moderately Low
WELL # 15	Low	Low	Low	LU – Mixed Rangeland LU – Forest Land	Moderately Low
WELL # 16	Low	Low	Low	LU – Mixed Rangeland	Moderately Low
WELL # 17	Low	Low	Low	LU – Mixed Rangeland >= 3 PSOC in a Zone	Moderately Low
WELL # 19	Low	Low	Low	LU – Mixed Rangeland	Moderately Low

Table 8	SOURCE SUSCEPTIBILITY RANKING				
SOURCE NAME	**Sensitivity Rank**	**Vulnerability Rank**	**Susceptibility Rank**	**Operational Exceptions**	**Final Rank**
WELL # 21	Low	Low	Low	LU – Mixed Rangeland	Moderately Low

STEP 5 MANAGE THE SOURCE WATER PROTECTION AREA

The goals of managing a source water protection area are pollution prevention and management of threats to source water. Management "measures or tools" range from promoting pubic education through public service radio campaigns where there are little to no associated costs, to developing complex protection plans involving new land acquisitions, where financing may be a considerable factor of the management plan. In addition, management of source water protection areas may involve a variety of strategies each targeted to address a specific goal. It may be most effective to adopt a simple plan and continue to update it; however, efforts should focus on water sources with the highest susceptibility to contamination. Primary categories of protection measures/tools include the following (also refer to Appendix G, Examples of Source Water Protection Planning Categories, Measures and Tools):

- Public education such as giving presentations at schools, business meetings, and government forums, and participation in water-related events sponsored by other groups and organizations;
- Best management practices (BMPs) such as preventing leaks or spills by installation of "secondary containment" equipment;
- *Regulatory controls such as* zoning ordinances and subdivision controls, construction and operating standards, health regulations (such as setting setback requirements for septic tanks and/or sewer lines from drinking water wells), and permitting or inspections;
- Point source pollution restrictions, requirements, and/or controls for fixed PSOC such as waste processing plants and inorganic sources such as salts, nutrients, and heavy metals; and
- Land acquisitions, land leasing, economic incentives such as cost-share programs, and conservation easements.

Implementing protection measures, along with water quality monitoring, capacity[10] building, and treatment can significantly protect a water source.

STEP 6 PLAN FOR EXISTING AND FUTURE EVENTS / CONTINGENCY PROTOCOL

Where the management of source water protection areas may help reduce the likelihood of water pollution and help focus efforts on the successful treatment of contaminated water, planning for future events that are both expected and unexpected is also a necessary part of the SWAPP. Contingency planning provides the information that is helpful during these events. This includes emergency contact information, protocols and strategies, and revenues from budgeting.

Determine if there are local emergency response teams that your water utility could contact for assistance. On the state level, the State of New Mexico Environment Department Office of Emergency Preparedness organizes assistance for damage caused by events such as wildfires, and will provide water utilities with information regarding damage assessments related to drinking water systems. Further, the New Mexico National Guard is the entity responsible for providing public water utilities with a source of water under emergency conditions.[11] When water outages may not be classified as "emergency conditions," water utilities should know and develop their options of supplying their customers with safe drinking water. Categories of contingency planning that should be addressed in your SWAPP include the following:

- Water outages due to contamination, mechanical or physical breakdown of a system, and natural disasters such as floods and drought;
- Water conservation;
- Accidental leaks or spills;

[10] Capacity Development program support services are available on a priority basis to assist eligible public water systems enhance *technical, managerial*, and *financial* capacities.

[11] The State of New Mexico recognizes emergency conditions according to categories Type A and Type B. Type A conditions are major state or county disasters, including nuclear, earthquakes, volcano eruptions, floods, hurricanes, and tornadoes. Type B disasters are water outages due to drought, major contamination of a system's basic water source, and major destruction or impairment of a system's physical facilities.

- Land acquisition for future water supplies; consider and/or identify where a new well could be drilled should a new water source be required; and
- Land acquisition as a source water protection measure.

ASSESSMENT FINDINGS AND SUMMARY

The Susceptibility Analysis of the Rio Rancho Sewer & Wastewater Services water utility reveals that the utility is well maintained and operated, and the 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 LOW.**

NMED-DWB staff is available to help your water utility continue with the development of the SWAP Plan, which may include providing additional mapping, (refer to Step 2), evaluation of BMP (refer to Step 5), or providing emergency planning options (refer to Step 6). This SWAPP Report is intended primarily to provide water utilities with information about the susceptibility of their water supplies to contamination, and to help water utilities initiate Source Water Assessment and Protection Plans for the protection of theses water resources.

The remainder of this report 1) offers a template and information for developing a source water protection plan for your water utility, 2) provides examples of management categories commonly utilized in protection planning, and 3) includes an exercise (Appendix I) to help illustrate some of the SWAPP steps.

REPORTING:
The report was provided to the Rio Rancho Sewer & Wastewater Services 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 utility. *NMED-DWB may charge a nominal fee for paper copies.*

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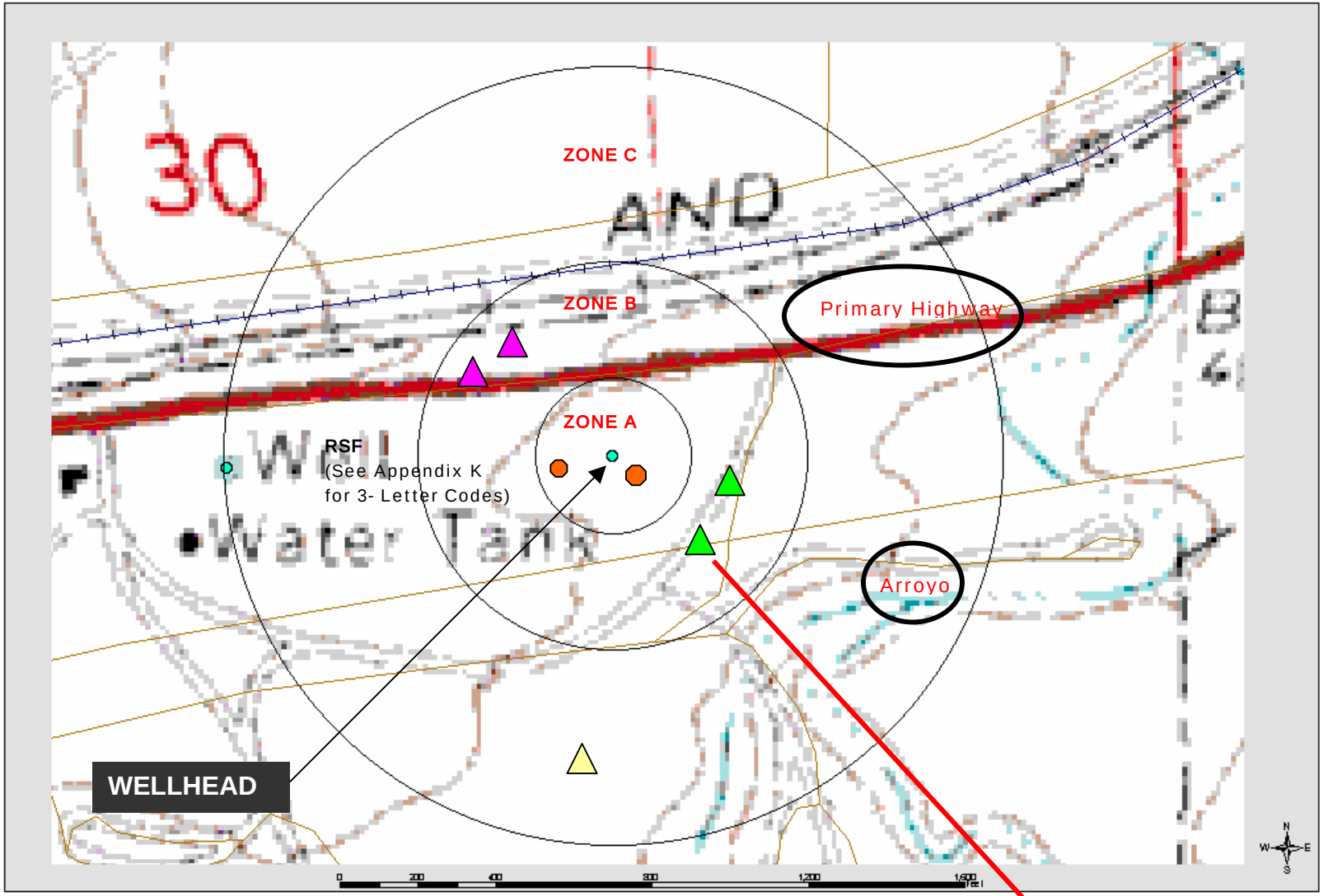


EXAMPLE ONLY

Information depicted characterizes data available from multiple sources, including current Sanitary Surveys and state and federal databases. No assertion of the accuracy of the databases is made by NMED-DWB.

Map Legend ***Refer to Appendix C for 3-Letter Source Codes***

- Well Head
- Federal Industrial Permit Facility
- Federal Permit Facility
- Federal Toxic Release Inventory
- Hazardous/Solid Waste Facility
- Impoundment
- Monitoring Well
- NM Impaired Water
- Oil Conservation Well
- Petroleum Storage
- Underground Injection Well
- Railroad
- Roadway

WELL #1	WSS # **096-23**
Source Type	Ground Water
Susceptibility Analysis Date	**November 6, 2002**
Susceptibility Analysis Completed by	NMED-DWB
Date of PSOC Inventory	**May 1, 2002**

SENSITIVITY ANALYSIS

1. Depth of Screened Interval

Screened Interval Depth	Sensitivity Range	Rank Assigned
less than 100 feet	High	
100 - 200 feet	Moderately High	
201 - 500 feet	Moderate	Moderate
501 - 700 feet	Moderately Low	
greater than 700 feet	Low	

2. Well Construction Information and Integrity

A) Information Ranking

Construction Information Available	Points Possible	Points Assigned
Casing diameter, casing length and casing materials	2	2
Location of screened interval(s)	3	3
Total completion depth	3	3
Static water level at completion	2	2
Pump type, size and setting	2	2
Drilling log or equivalent	3	2
Total Points	15	14

Information Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

B) Integrity Ranking

Physical Integrity of Supply Well	Points Possible	Points Assigned
Is the well located outside of an area susceptible to flooding?	2	2
Does well casing terminate at least 18 inches above floor or ground level?	2	2
Is annular space pressure-grouted to depth of at least 20 feet?	3	0
Is the wellhead properly sealed?	3	0
Is there a concrete pad around the wellhead that slopes away from the casing?	1	1
Does the well vent terminate at least 18 inches above floor or ground level, and is the vent screened and oriented to open downward?	1	1
Are check valves, blow-off valves and flow meters properly maintained and operated?	1	1
Is the wellhead fenced, housed or properly protected?	2	2
Total Points	15	9

Integrity Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	Moderate
10-12	Moderately Low	
13-15	Low	

3. DRASTIC Index = **89**

Depth to Water (ft)	284
Net Recharge (inch/yr (approximated))	<2
Aquifer Media	Sand & Gravel with significant Clay
Soil Media	Sandy Loam
Topography (ground slope) (%)	2
Impacts of Vadose Zone Media	Sand & Gravel with significant Clay
Hydraulic Conductivity (Aquifer) (gpd/ft^2)	30-112

DRASTIC Index	Sensitivity Range	Sensitivity Rank
201 or greater	High	
171-200	Moderately High	
131-170	Moderate	
101-130	Moderately Low	
0-100	Low	Low

Composite Sensitivity Ranking for Ground Water Source (Converted, Uniform Scale) for Well
Sensitivity Rank = Well Depth Rank (Screen) + Well Construction/Integrity Rank + DRASTIC Index Rank

Rank for Depth of Screened Interval	
High (25 points)	
Moderately High (20 points)	
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)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for Integrity of Construction	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	15
Moderately Low (10 points)	
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
Point Sum	40
Rank Assigned (see Ranking Guide, below)	Moderately Low

Sum of Sensitivity Points	Composite Sensitivity Range	Well Composite Rank Assigned
90-100	High	
70-85	Moderately High	
50-65	Moderate	
30-45	Moderately Low	Moderately Low
20-25	Low	

Sensitivity Rank = **MODERATELY LOW**

VULNERABILITY ANALYSIS for Well

PSOC Ranking Determination				
	Zone			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

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Appendix K	CHG	A	1+	High
Appendix K	IOG	A	1+	High
Appendix K	RSF	A	1+	High
Appendix K	MSD	B	0-2	Low
Appendix K	IOG	B	0-2	Low
Appendix K	RSF	B	10+	High
Appendix K	IOG	C	0-4	Low
Appendix K	MWP	C	0-4	Low
Appendix K	RSF	C	15+	High
Map Legend	Federal Industrial Permit Facility	C	0-4	Low

Vulnerability Rank = **HIGH**

Susceptibility Ranking						
	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

WELL #2	WSS # **096-23**
Source Type	Ground Water
Susceptibility Analysis Date	**November 6, 2002**
Susceptibility Analysis Completed by	NMED-DWB
Date of PSOC Inventory	**February, 2002**

SENSITIVITY ANALYSIS

1. Depth of Screened Interval

Screened Interval Depth	Sensitivity Range	Rank Assigned
less than 100 feet	High	
100 - 200 feet	Moderately High	
201 - 500 feet	Moderate	
501 - 700 feet	Moderately Low	Moderately Low
greater than 700 feet	Low	

2. Well Construction Information and Integrity

A) Information Ranking

Construction Information Available	Points Possible	Points Assigned
Casing diameter, casing length and casing materials	2	2
Location of screened interval(s)	3	3
Total completion depth	3	3
Static water level at completion	2	2
Pump type, size and setting	2	2
Drilling log or equivalent	3	3
Total Points	15	15

Information Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

B) Integrity Ranking

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

Integrity Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

3. DRASTIC Index = **84**

Depth to Water (ft)	322
Net Recharge (inch/yr (approximated))	<2
Aquifer Media	Sand & Gravel with significant Clay
Soil Media	Sandy Loam
Topography (ground slope) (%)	2
Impacts of Vadose Zone Media	Sand & Gravel with significant Clay
Hydraulic Conductivity (Aquifer) (gpd/ft^2)	64.6

DRASTIC Index	Sensitivity Range	Sensitivity Rank
201 or greater	High	
171-200	Moderately High	
131-170	Moderate	
101-130	Moderately Low	
0-100	Low	Low

Composite Sensitivity Ranking for Ground Water Source (Converted, Uniform Scale) for Well
Sensitivity Rank = Well Depth Rank (Screen) + Well Construction/Integrity Rank + DRASTIC Index Rank

Rank for Depth of Screened Interval	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	10
Low (5 point)	
Rank for Well Construction Records	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for Integrity of Construction	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for DRASTIC Index	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Point Sum	25
Rank Assigned (see Ranking Guide, below)	Low

Sum of Sensitivity Points	Composite Sensitivity Range	Well Composite Rank Assigned
90-100	High	
70-85	Moderately High	
50-65	Moderate	
30-45	Moderately Low	
20-25	Low	Low

Sensitivity Rank = **LOW**

VULNERABILITY ANALYSIS for Well

PSOC Ranking Determination				
	Zone			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

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Appendix K	MSD	B	0-2	Low
Appendix K	IOG	B	0-2	Low
Appendix K	RSF	B	10+	High
Appendix K	CHG	C	0-4	Low
Appendix K	IOG	C	0-4	Low
Appendix K	MWP	C	0-4	Low
Appendix K	RSF	C	15+	High
Map Legend	Federal Industrial Permit Facility	C	0-4	Low

Vulnerability Rank = **HIGH**

Susceptibility Ranking						
	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

WELL #3	WSS # **096-23**
Source Type	Ground Water
Susceptibility Analysis Date	**November 6, 2002**
Susceptibility Analysis Completed by	NMED-DWB
Date of PSOC Inventory	**February, 2002**

SENSITIVITY ANALYSIS

1. Depth of Screened Interval

Screened Interval Depth	Sensitivity Range	Rank Assigned
less than 100 feet	High	
100 - 200 feet	Moderately High	
201 - 500 feet	Moderate	
501 - 700 feet	Moderately Low	Moderately Low
greater than 700 feet	Low	

2. Well Construction Information and Integrity

A) Information Ranking

Construction Information Available	Points Possible	Points Assigned
Casing diameter, casing length and casing materials	2	2
Location of screened interval(s)	3	3
Total completion depth	3	3
Static water level at completion	2	2
Pump type, size and setting	2	2
Drilling log or equivalent	3	3
Total Points	15	15

Information Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

B) Integrity Ranking

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

Integrity Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

3. DRASTIC Index = **84**

Depth to Water (ft)	374
Net Recharge (inch/yr (approximated))	<2
Aquifer Media	Sand & Gravel with significant Clay
Soil Media	Sandy Loam
Topography (ground slope) (%)	2
Impacts of Vadose Zone Media	Sand & Gravel with significant Clay
Hydraulic Conductivity (Aquifer) (gpd/ft^2)	30

DRASTIC Index	Sensitivity Range	Sensitivity Rank
201 or greater	High	
171-200	Moderately High	
131-170	Moderate	
101-130	Moderately Low	
0-100	Low	Low

Composite Sensitivity Ranking for Ground Water Source (Converted, Uniform Scale) for Well
Sensitivity Rank = Well Depth Rank (Screen) + Well Construction/Integrity Rank + DRASTIC Index Rank

Rank for Depth of Screened Interval	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	10
Low (5 point)	
Rank for Well Construction Records	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for Integrity of Construction	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for DRASTIC Index	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Point Sum	25
Rank Assigned (see Ranking Guide, below)	Low

Sum of Sensitivity Points	Composite Sensitivity Range	Well Composite Rank Assigned
90-100	High	
70-85	Moderately High	
50-65	Moderate	
30-45	Moderately Low	Moderately Low
20-25	Low	

Sensitivity Rank = **LOW**

VULNERABILITY ANALYSIS for Well

PSOC Ranking Determination				
	Zone			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

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Appendix K	MMP	A	1+	High
Appendix K	CFA	B	0-2	Low
Appendix K	CST	B	0-2	Low
Appendix K	CYY	B	0-2	Low
Appendix K	IRG	B	0-2	Low
Appendix K	IUR	B	0-2	Low
Appendix K	MHM	B	0-2	Low
Appendix K	RSF	B	0-2	Low
Appendix K	CST	C	0-4	Low
Appendix K	CSS	C	0-4	Low
Appendix K	CYY	C	0-4	Low
Appendix K	IUR	C	0-4	Low
Appendix K	MSC	C	0-4	Low
Appendix K	RSF	C	15+	High

Vulnerability Rank = **HIGH**

Susceptibility Ranking						
	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

WELL #4	WSS # **096-23**
Source Type	Ground Water
Susceptibility Analysis Date	**November, 2002**
Susceptibility Analysis Completed by	NMED-DWB
Date of PSOC Inventory	**February, 2002**

SENSITIVITY ANALYSIS

1. Depth of Screened Interval

Screened Interval Depth	Sensitivity Range	Rank Assigned
less than 100 feet	High	
100 - 200 feet	Moderately High	
201 - 500 feet	Moderate	
501 - 700 feet	Moderately Low	Moderately Low
greater than 700 feet	Low	

2. Well Construction Information and Integrity

A) Information Ranking

Construction Information Available	Points Possible	Points Assigned
Casing diameter, casing length and casing materials	2	2
Location of screened interval(s)	3	3
Total completion depth	3	3
Static water level at completion	2	2
Pump type, size and setting	2	2
Drilling log or equivalent	3	3
Total Points	15	15

Information Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

B) Integrity Ranking

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

Integrity Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

3. DRASTIC Index = **115**

Depth to Water (ft)	396
Net Recharge (inch/yr (approximated))	<2
Aquifer Media	Sand & Gravel with significant Clay
Soil Media	Sandy Loam
Topography (ground slope) (%)	2
Impacts of Vadose Zone Media	Sand & Gravel with significant Clay
Hydraulic Conductivity (Aquifer) (gpd/ft^2)	30

DRASTIC Index	Sensitivity Range	Sensitivity Rank
201 or greater	High	
171-200	Moderately High	
131-170	Moderate	
101-130	Moderately Low	Moderately Low
0-100	Low	

Composite Sensitivity Ranking for Ground Water Source (Converted, Uniform Scale) for Well
Sensitivity Rank = Well Depth Rank (Screen) + Well Construction/Integrity Rank + DRASTIC Index Rank

Rank for Depth of Screened Interval	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	10
Low (5 point)	
Rank for Well Construction Records	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for Integrity of Construction	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for DRASTIC Index	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Point Sum	25
Rank Assigned (see Ranking Guide, below)	Low

Sum of Sensitivity Points	Composite Sensitivity Range	Well Composite Rank Assigned
90-100	High	
70-85	Moderately High	
50-65	Moderate	
30-45	Moderately Low	
20-25	Low	Low

Sensitivity Rank = **LOW**

VULNERABILITY ANALYSIS for Well

PSOC Ranking Determination				
	Zone			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

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Base Map	CGC	A	1+	High
Base Map	CGC	B	0-2	Low
Base Map	CGC	C	0-4	Low

Vulnerability Rank = **HIGH**

Susceptibility Ranking						
	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

WELL #6A	WSS # **096-23**
Source Type	Ground Water
Susceptibility Analysis Date	**November, 2002**
Susceptibility Analysis Completed by	NMED-DWB
Date of PSOC Inventory	**February, 2002**

SENSITIVITY ANALYSIS

1. Depth of Screened Interval

Screened Interval Depth	Sensitivity Range	Rank Assigned
less than 100 feet	High	
100 - 200 feet	Moderately High	
201 - 500 feet	Moderate	Moderate
501 - 700 feet	Moderately Low	
greater than 700 feet	Low	

2. Well Construction Information and Integrity

A) Information Ranking

Construction Information Available	Points Possible	Points Assigned
Casing diameter, casing length and casing materials	2	2
Location of screened interval(s)	3	3
Total completion depth	3	3
Static water level at completion	2	2
Pump type, size and setting	2	2
Drilling log or equivalent	3	3
Total Points	15	15

Information Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

B) Integrity Ranking

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

Integrity Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

3. DRASTIC Index = **83**

Depth to Water (ft)	658
Net Recharge (inch/yr (approximated))	<2
Aquifer Media	Sand & Gravel with significant Clay
Soil Media	Sandy Loam
Topography (ground slope) (%)	≈10
Impacts of Vadose Zone Media	Sand & Gravel with significant Clay
Hydraulic Conductivity (Aquifer) (gpd/ft^2)	133.1

DRASTIC Index	Sensitivity Range	Sensitivity Rank
201 or greater	High	
171-200	Moderately High	
131-170	Moderate	
101-130	Moderately Low	
0-100	Low	Low

Composite Sensitivity Ranking for Ground Water Source (Converted, Uniform Scale) for Well
Sensitivity Rank = Well Depth Rank (Screen) + Well Construction/Integrity Rank + DRASTIC Index Rank

Rank for Depth of Screened Interval	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for Well Construction Records	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for Integrity of Construction	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for DRASTIC Index	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Point Sum	20
Rank Assigned (see Ranking Guide, below)	Low

Sum of Sensitivity Points	Composite Sensitivity Range	Well Composite Rank Assigned
90-100	High	
70-85	Moderately High	
50-65	Moderate	
30-45	Moderately Low	
20-25	Low	Low

Sensitivity Rank = **LOW**

VULNERABILITY ANALYSIS for Well

PSOC Ranking Determination				
	Zone			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

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Appendix K	MWP	A	1+	High
Appendix K	UNKNOWN	B		
Appendix K	RSF	C	15+	High ?

Vulnerability Rank = **HIGH**

Susceptibility Ranking						
	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

WELL #7	WSS # **096-23**
Source Type	Ground Water
Susceptibility Analysis Date	**November, 2002**
Susceptibility Analysis Completed by	NMED-DWB
Date of PSOC Inventory	**February, 2002**

SENSITIVITY ANALYSIS

1. Depth of Screened Interval

Screened Interval Depth	Sensitivity Range	Rank Assigned
less than 100 feet	High	
100 - 200 feet	Moderately High	
201 - 500 feet	Moderate	
501 - 700 feet	Moderately Low	
greater than 700 feet	Low	Low

2. Well Construction Information and Integrity

A) Information Ranking

Construction Information Available	Points Possible	Points Assigned
Casing diameter, casing length and casing materials	2	2
Location of screened interval(s)	3	3
Total completion depth	3	3
Static water level at completion	2	2
Pump type, size and setting	2	2
Drilling log or equivalent	3	3
Total Points	15	15

Information Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

B) Integrity Ranking

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

Integrity Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

3. DRASTIC Index = **85**

Depth to Water (ft)	740
Net Recharge (inch/yr (approximated))	<2
Aquifer Media	Sand & Gravel with significant Clay
Soil Media	Sandy Loam
Topography (ground slope) (%)	2.5-4
Impacts of Vadose Zone Media	Sand & Gravel with significant Clay
Hydraulic Conductivity (Aquifer) (gpd/ft^2)	127

DRASTIC Index	Sensitivity Range	Sensitivity Rank
201 or greater	High	
171-200	Moderately High	
131-170	Moderate	
101-130	Moderately Low	
0-100	Low	Low

Composite Sensitivity Ranking for Ground Water Source (Converted, Uniform Scale) for Well
Sensitivity Rank = Well Depth Rank (Screen) + Well Construction/Integrity Rank + DRASTIC Index Rank

Rank for Depth of Screened Interval	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for Well Construction Records	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for Integrity of Construction	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for DRASTIC Index	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Point Sum	20
Rank Assigned (see Ranking Guide, below)	Low

Sum of Sensitivity Points	Composite Sensitivity Range	Well Composite Rank Assigned
90-100	High	
70-85	Moderately High	
50-65	Moderate	
30-45	Moderately Low	
20-25	Low	Low

Sensitivity Rank = **LOW**

VULNERABILITY ANALYSIS for Well

PSOC Ranking Determination				
	Zone			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

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Base Map	IUR	B	0-2	Low
Base Map	IUR	C	0-4	Low

Vulnerability Rank = **LOW**

Susceptibility Ranking						
	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**

WELL #8	WSS # **096-23**
Source Type	Ground Water
Susceptibility Analysis Date	**November 6, 2002**
Susceptibility Analysis Completed by	NMED-DWB
Date of PSOC Inventory	**May 1, 2002**

SENSITIVITY ANALYSIS

1. Depth of Screened Interval

Screened Interval Depth	Sensitivity Range	Rank Assigned
less than 100 feet	High	
100 - 200 feet	Moderately High	
201 - 500 feet	Moderate	
501 - 700 feet	Moderately Low	
greater than 700 feet	Low	Low

2. Well Construction Information and Integrity

A) Information Ranking

Construction Information Available	Points Possible	Points Assigned
Casing diameter, casing length and casing materials	2	2
Location of screened interval(s)	3	3
Total completion depth	3	3
Static water level at completion	2	2
Pump type, size and setting	2	2
Drilling log or equivalent	3	3
Total Points	15	15

Information Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

B) Integrity Ranking

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

Integrity Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

3. DRASTIC Index = **81**

Depth to Water (ft)	800
Net Recharge (inch/yr (approximated))	<2
Aquifer Media	Sand & Gravel with significant Clay
Soil Media	Sandy Loam
Topography (ground slope) (%)	≈3
Impacts of Vadose Zone Media	Sand & Gravel with significant Clay
Hydraulic Conductivity (Aquifer) (gpd/ft^2)	38.9

DRASTIC Index	Sensitivity Range	Sensitivity Rank
201 or greater	High	
171-200	Moderately High	
131-170	Moderate	
101-130	Moderately Low	
0-100	Low	Low

Composite Sensitivity Ranking for Ground Water Source (Converted, Uniform Scale) for Well
Sensitivity Rank = Well Depth Rank (Screen) + Well Construction/Integrity Rank + DRASTIC Index Rank

Rank for Depth of Screened Interval	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for Well Construction Records	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for Integrity of Construction	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for DRASTIC Index	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Point Sum	20
Rank Assigned (see Ranking Guide, below)	Low

Sum of Sensitivity Points	Composite Sensitivity Range	Well Composite Rank Assigned
90-100	High	
70-85	Moderately High	
50-65	Moderate	
30-45	Moderately Low	
20-25	Low	Low

Sensitivity Rank = **LOW**

VULNERABILITY ANALYSIS for Well

PSOC Ranking Determination				
	Zone			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

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Base Map	IUR	B	0-2	Low
Base Map	IUR	C	0-4	Low

Vulnerability Rank = **LOW**

Susceptibility Ranking						
	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**

WELL #9	WSS # **096-23**
Source Type	Ground Water
Susceptibility Analysis Date	**November, 2002**
Susceptibility Analysis Completed by	NMED-DWB
Date of PSOC Inventory	**February, 2002**

SENSITIVITY ANALYSIS

1. Depth of Screened Interval

Screened Interval Depth	Sensitivity Range	Rank Assigned
less than 100 feet	High	
100 - 200 feet	Moderately High	
201 - 500 feet	Moderate	
501 - 700 feet	Moderately Low	
greater than 700 feet	Low	Low

2. Well Construction Information and Integrity

A) Information Ranking

Construction Information Available	Points Possible	Points Assigned
Casing diameter, casing length and casing materials	2	2
Location of screened interval(s)	3	3
Total completion depth	3	3
Static water level at completion	2	2
Pump type, size and setting	2	2
Drilling log or equivalent	3	3
Total Points	15	15

Information Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

B) Integrity Ranking

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

Integrity Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

3. DRASTIC Index = **81**

Depth to Water (ft)	1080
Net Recharge (inch/yr (approximated))	<2
Aquifer Media	Sand & Gravel with significant Clay
Soil Media	Sandy Loam
Topography (ground slope) (%)	3
Impacts of Vadose Zone Media	Sand & Gravel with significant Clay
Hydraulic Conductivity (Aquifer) (gpd/ft^2)	36.9

DRASTIC Index	Sensitivity Range	Sensitivity Rank
201 or greater	High	
171-200	Moderately High	
131-170	Moderate	
101-130	Moderately Low	
0-100	Low	Low

Composite Sensitivity Ranking for Ground Water Source (Converted, Uniform Scale) for Well
Sensitivity Rank = Well Depth Rank (Screen) + Well Construction/Integrity Rank + DRASTIC Index Rank

Rank for Depth of Screened Interval	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for Well Construction Records	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for Integrity of Construction	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for DRASTIC Index	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Point Sum	20
Rank Assigned (see Ranking Guide, below)	Low

Sum of Sensitivity Points	Composite Sensitivity Range	Well Composite Rank Assigned
90-100	High	
70-85	Moderately High	
50-65	Moderate	
30-45	Moderately Low	
20-25	Low	Low

Sensitivity Rank = **LOW**

VULNERABILITY ANALYSIS for Well

PSOC Ranking Determination				
	Zone			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

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Base Map	Arroyo	C	0-4	Low

Vulnerability Rank = **LOW**

Susceptibility Ranking						
	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

WELL #10	WSS # **096-23**
Source Type	Ground Water
Susceptibility Analysis Date	**November, 2002**
Susceptibility Analysis Completed by	NMED-DWB
Date of PSOC Inventory	**February, 2002**

SENSITIVITY ANALYSIS

1. Depth of Screened Interval

Screened Interval Depth	Sensitivity Range	Rank Assigned
less than 100 feet	High	
100 - 200 feet	Moderately High	
201 - 500 feet	Moderate	
501 - 700 feet	Moderately Low	
greater than 700 feet	Low	Low

2. Well Construction Information and Integrity

A) Information Ranking

Construction Information Available	Points Possible	Points Assigned
Casing diameter, casing length and casing materials	2	2
Location of screened interval(s)	3	3
Total completion depth	3	3
Static water level at completion	2	2
Pump type, size and setting	2	2
Drilling log or equivalent	3	3
Total Points	15	15

Information Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

B) Integrity Ranking

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

Integrity Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

3. DRASTIC Index = **85**

Depth to Water (ft)	510
Net Recharge (inch/yr (approximated))	<2
Aquifer Media	Sand & Gravel with significant Clay
Soil Media	Sand
Topography (ground slope) (%)	10
Impacts of Vadose Zone Media	Sand & Gravel with significant Clay
Hydraulic Conductivity (Aquifer) (gpd/ft^2)	33.1

DRASTIC Index	Sensitivity Range	Sensitivity Rank
201 or greater	High	
171-200	Moderately High	
131-170	Moderate	
101-130	Moderately Low	
0-100	Low	Low

Composite Sensitivity Ranking for Ground Water Source (Converted, Uniform Scale) for Well
Sensitivity Rank = Well Depth Rank (Screen) + Well Construction/Integrity Rank + DRASTIC Index Rank

Rank for Depth of Screened Interval	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for Well Construction Records	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for Integrity of Construction	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for DRASTIC Index	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Point Sum	20
Rank Assigned (see Ranking Guide, below)	Low

Sum of Sensitivity Points	Composite Sensitivity Range	Well Composite Rank Assigned
90-100	High	
70-85	Moderately High	
50-65	Moderate	
30-45	Moderately Low	
20-25	Low	Low

Sensitivity Rank = **LOW**

VULNERABILITY ANALYSIS for Well

PSOC Ranking Determination				
	Zone			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

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Base Map	IUR	B	0-2	Low
Base Map	Arroyo	B	0-2	Low
Base Map	IUR	C	0-4	Low
Base Map	Arroyo	C	0-4	Low

Vulnerability Rank = **LOW**

Susceptibility Ranking						
	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**

WELL #11	WSS # **096-23**
Source Type	Ground Water
Susceptibility Analysis Date	**November, 2002**
Susceptibility Analysis Completed by	NMED-DWB
Date of PSOC Inventory	**February, 2002**

SENSITIVITY ANALYSIS

1. Depth of Screened Interval

Screened Interval Depth	Sensitivity Range	Rank Assigned
less than 100 feet	High	
100 - 200 feet	Moderately High	
201 - 500 feet	Moderate	Moderate
501 - 700 feet	Moderately Low	
greater than 700 feet	Low	

2. Well Construction Information and Integrity

A) Information Ranking

Construction Information Available	Points Possible	Points Assigned
Casing diameter, casing length and casing materials	2	2
Location of screened interval(s)	3	3
Total completion depth	3	3
Static water level at completion	2	2
Pump type, size and setting	2	2
Drilling log or equivalent	3	3
Total Points	15	15

Information Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

B) Integrity Ranking

Physical Integrity of Supply Well	Points Possible	Points Assigned
Is the well located outside of an area susceptible to flooding?	2	2
Does well casing terminate at least 18 inches above floor or ground level?	2	2
Is annular space pressure-grouted to depth of at least 20 feet?	3	3
Is the wellhead properly sealed?	3	0
Is there a concrete pad around the wellhead that slopes away from the casing?	1	1
Does the well vent terminate at least 18 inches above floor or ground level, and is the vent screened and oriented to open downward?	1	0
Are check valves, blow-off valves and flow meters properly maintained and operated?	1	0
Is the wellhead fenced, housed or properly protected?	2	2
Total Points	15	10

Integrity Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	Moderately Low
13-15	Low	

3. DRASTIC Index = **111**

Depth to Water (ft)	87.5
Net Recharge (inch/yr (approximated))	<2
Aquifer Media	Sand & Gravel with significant Clay
Soil Media	Sandy Loam
Topography (ground slope) (%)	1
Impacts of Vadose Zone Media	Sand & Gravel with significant Clay
Hydraulic Conductivity (Aquifer) (gpd/ft^2)	450

DRASTIC Index	Sensitivity Range	Sensitivity Rank
201 or greater	High	
171-200	Moderately High	
131-170	Moderate	
101-130	Moderately Low	
0-100	Low	Low

Composite Sensitivity Ranking for Ground Water Source (Converted, Uniform Scale) for Well
Sensitivity Rank = Well Depth Rank (Screen) + Well Construction/Integrity Rank + DRASTIC Index Rank

Rank for Depth of Screened Interval	
High (25 points)	
Moderately High (20 points)	
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)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for Integrity of Construction	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	10
Low (5 point)	
Rank for DRASTIC Index	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	10
Low (5 point)	
Point Sum	40
Rank Assigned (see Ranking Guide, below)	Moderately Low

Sum of Sensitivity Points	Composite Sensitivity Range	Well Composite Rank Assigned
90-100	High	
70-85	Moderately High	
50-65	Moderate	
30-45	Moderately Low	Moderately Low
20-25	Low	

Sensitivity Rank = **MODERATELY LOW**

VULNERABILITY ANALYSIS for Well

PSOC Ranking Determination				
	Zone			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

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Appendix K	MSL	A	1+	High
Appendix K	CFA	B	3-4	Moderately Low
Appendix K	ICC	B	0-2	Low
Appendix K	IOG	B	0-2	Low
Appendix K	CAR	C	0-4	Low
Base Map	ADC	C	0-4	Low
Base Map	ADF	C	0-4	Low
Base Map	MWP	C	0-4	Low
Map Legend	Petroleum storage	C	0-4	Low

Vulnerability Rank = **HIGH**

Susceptibility Ranking						
	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

WELL #12	WSS # **096-23**
Source Type	Ground Water
Susceptibility Analysis Date	**November, 2002**
Susceptibility Analysis Completed by	NMED-DWB
Date of PSOC Inventory	**February, 2002**

SENSITIVITY ANALYSIS

1. Depth of Screened Interval

Screened Interval Depth	Sensitivity Range	Rank Assigned
less than 100 feet	High	
100 - 200 feet	Moderately High	
201 - 500 feet	Moderate	
501 - 700 feet	Moderately Low	Moderately Low
greater than 700 feet	Low	

2. Well Construction Information and Integrity

A) Information Ranking

Construction Information Available	Points Possible	Points Assigned
Casing diameter, casing length and casing materials	2	2
Location of screened interval(s)	3	3
Total completion depth	3	3
Static water level at completion	2	2
Pump type, size and setting	2	0
Drilling log or equivalent	3	3
Total Points	15	13

Information Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

B) Integrity Ranking

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

Integrity Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

3. DRASTIC Index = **81**

Depth to Water (ft)	200
Net Recharge (inch/yr (approximated))	<2
Aquifer Media	Sand & Gravel with significant Clay
Soil Media	Sandy Loam
Topography (ground slope) (%)	3
Impacts of Vadose Zone Media	Sand & Gravel with significant Clay
Hydraulic Conductivity (Aquifer) (gpd/ft^2)	59.7

DRASTIC Index	Sensitivity Range	Sensitivity Rank
201 or greater	High	
171-200	Moderately High	
131-170	Moderate	
101-130	Moderately Low	
0-100	Low	Low

Composite Sensitivity Ranking for Ground Water Source (Converted, Uniform Scale) for Well
Sensitivity Rank = Well Depth Rank (Screen) + Well Construction/Integrity Rank + DRASTIC Index Rank

Rank for Depth of Screened Interval	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	10
Low (5 point)	
Rank for Well Construction Records	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for Integrity of Construction	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for DRASTIC Index	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Point Sum	25
Rank Assigned (see Ranking Guide, below)	Moderately Low

Sum of Sensitivity Points	Composite Sensitivity Range	Well Composite Rank Assigned
90-100	High	
70-85	Moderately High	
50-65	Moderate	
30-45	Moderately Low	Moderately Low
20-25	Low	

Sensitivity Rank = **MODERATELY LOW**

VULNERABILITY ANALYSIS for Well

PSOC Ranking Determination				
	Zone			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

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Appendix K	-	-	-	-

Vulnerability Rank = **LOW**

Susceptibility Ranking						
	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

WELL #13	WSS # **096-23**
Source Type	Ground Water
Susceptibility Analysis Date	**November, 2002**
Susceptibility Analysis Completed by	NMED-DWB
Date of PSOC Inventory	**February, 2002**

SENSITIVITY ANALYSIS

1. Depth of Screened Interval

Screened Interval Depth	Sensitivity Range	Rank Assigned
less than 100 feet	High	
100 - 200 feet	Moderately High	
201 - 500 feet	Moderate	
501 - 700 feet	Moderately Low	
greater than 700 feet	Low	Low

2. Well Construction Information and Integrity

A) Information Ranking

Construction Information Available	Points Possible	Points Assigned
Casing diameter, casing length and casing materials	2	2
Location of screened interval(s)	3	3
Total completion depth	3	3
Static water level at completion	2	2
Pump type, size and setting	2	2
Drilling log or equivalent	3	3
Total Points	15	15

Information Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

B) Integrity Ranking

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

Integrity Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

3. DRASTIC Index = **75**

Depth to Water (ft)	1100
Net Recharge (inch/yr (approximated))	<2
Aquifer Media	Sand & Gravel with significant Clay
Soil Media	Sandy Loam
Topography (ground slope) (%)	3
Impacts of Vadose Zone Media	Sand & Gravel with significant Clay
Hydraulic Conductivity (Aquifer) (gpd/ft^2)	30

DRASTIC Index	Sensitivity Range	Sensitivity Rank
201 or greater	High	
171-200	Moderately High	
131-170	Moderate	
101-130	Moderately Low	
0-100	Low	Low

Composite Sensitivity Ranking for Ground Water Source (Converted, Uniform Scale) for Well
Sensitivity Rank = Well Depth Rank (Screen) + Well Construction/Integrity Rank + DRASTIC Index Rank

Rank for Depth of Screened Interval	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for Well Construction Records	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for Integrity of Construction	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for DRASTIC Index	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Point Sum	20
Rank Assigned (see Ranking Guide, below)	Low

Sum of Sensitivity Points	Composite Sensitivity Range	Well Composite Rank Assigned
90-100	High	
70-85	Moderately High	
50-65	Moderate	
30-45	Moderately Low	
20-25	Low	Low

Sensitivity Rank = **LOW**

VULNERABILITY ANALYSIS for Well

PSOC Ranking Determination				
	Zone			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

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Base Map	IUR	B	0-2	Low
Base Map	Arroyo	B	0-2	Low
Base Map	IUR	C	0-4	Low
Base Map	Arroyo	C	0-4	Low

Vulnerability Rank = **LOW**

Susceptibility Ranking						
	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**

WELL #14	WSS # **096-23**
Source Type	Ground Water
Susceptibility Analysis Date	**November, 2002**
Susceptibility Analysis Completed by	NMED-DWB
Date of PSOC Inventory	**February, 2002**

SENSITIVITY ANALYSIS

1. Depth of Screened Interval

Screened Interval Depth	Sensitivity Range	Rank Assigned
less than 100 feet	High	
100 - 200 feet	Moderately High	
201 - 500 feet	Moderate	
501 - 700 feet	Moderately Low	
greater than 700 feet	Low	Low

2. Well Construction Information and Integrity

A) Information Ranking

Construction Information Available	Points Possible	Points Assigned
Casing diameter, casing length and casing materials	2	2
Location of screened interval(s)	3	3
Total completion depth	3	3
Static water level at completion	2	2
Pump type, size and setting	2	2
Drilling log or equivalent	3	3
Total Points	15	15

Information Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

B) Integrity Ranking

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

Integrity Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

3. DRASTIC Index = **81**

Depth to Water (ft)	835
Net Recharge (inch/yr (approximated))	<2
Aquifer Media	Sand & Gravel with significant Clay
Soil Media	Sand
Topography (ground slope) (%)	3
Impacts of Vadose Zone Media	Sand & Gravel with significant Clay
Hydraulic Conductivity (Aquifer) (gpd/ft^2)	36

DRASTIC Index	Sensitivity Range	Sensitivity Rank
201 or greater	High	
171-200	Moderately High	
131-170	Moderate	
101-130	Moderately Low	
0-100	Low	Low

Composite Sensitivity Ranking for Ground Water Source (Converted, Uniform Scale) for Well
Sensitivity Rank = Well Depth Rank (Screen) + Well Construction/Integrity Rank + DRASTIC Index Rank

Rank for Depth of Screened Interval	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for Well Construction Records	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for Integrity of Construction	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for DRASTIC Index	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Point Sum	20
Rank Assigned (see Ranking Guide, below)	Low

Sum of Sensitivity Points	Composite Sensitivity Range	Well Composite Rank Assigned
90-100	High	
70-85	Moderately High	
50-65	Moderate	
30-45	Moderately Low	
20-25	Low	Low

Sensitivity Rank = **LOW**

VULNERABILITY ANALYSIS for Well

PSOC Ranking Determination				
	Zone			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

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Map Legend	Petroleum Storage	C	0-4	Low

Vulnerability Rank = **LOW**

Susceptibility Ranking						
	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**

WELL #15	WSS # **096-23**
Source Type	Ground Water
Susceptibility Analysis Date	**November, 2002**
Susceptibility Analysis Completed by	NMED-DWB
Date of PSOC Inventory	**February, 2002**

SENSITIVITY ANALYSIS

1. Depth of Screened Interval

Screened Interval Depth	Sensitivity Range	Rank Assigned
less than 100 feet	High	
100 - 200 feet	Moderately High	
201 - 500 feet	Moderate	
501 - 700 feet	Moderately Low	
greater than 700 feet	Low	Low

2. Well Construction Information and Integrity

A) Information Ranking

Construction Information Available	Points Possible	Points Assigned
Casing diameter, casing length and casing materials	2	2
Location of screened interval(s)	3	3
Total completion depth	3	3
Static water level at completion	2	2
Pump type, size and setting	2	2
Drilling log or equivalent	3	3
Total Points	15	15

Information Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

B) Integrity Ranking

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

Integrity Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

3. DRASTIC Index = **75**

Depth to Water (ft)	647
Net Recharge (inch/yr (approximated))	<2
Aquifer Media	Sand & Gravel with significant Clay
Soil Media	Sandy Loam
Topography (ground slope) (%)	3
Impacts of Vadose Zone Media	Sand & Gravel with significant Clay
Hydraulic Conductivity (Aquifer) (gpd/ft^2)	74.8

DRASTIC Index	Sensitivity Range	Sensitivity Rank
201 or greater	High	
171-200	Moderately High	
131-170	Moderate	
101-130	Moderately Low	
0-100	Low	Low

Composite Sensitivity Ranking for Ground Water Source (Converted, Uniform Scale) for Well
Sensitivity Rank = Well Depth Rank (Screen) + Well Construction/Integrity Rank + DRASTIC Index Rank

Rank for Depth of Screened Interval	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for Well Construction Records	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for Integrity of Construction	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for DRASTIC Index	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Point Sum	20
Rank Assigned (see Ranking Guide, below)	Low

Sum of Sensitivity Points	Composite Sensitivity Range	Well Composite Rank Assigned
90-100	High	
70-85	Moderately High	
50-65	Moderate	
30-45	Moderately Low	
20-25	Low	Low

Sensitivity Rank = **LOW**

VULNERABILITY ANALYSIS for Well

PSOC Ranking Determination				
	Zone			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

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Base Map	Arroyo	C	0-4	Low

Vulnerability Rank = **LOW**

Susceptibility Ranking						
	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**

WELL #16	WSS # **096-23**
Source Type	Ground Water
Susceptibility Analysis Date	**November, 2002**
Susceptibility Analysis Completed by	NMED-DWB
Date of PSOC Inventory	**February, 2002**

SENSITIVITY ANALYSIS

1. Depth of Screened Interval

Screened Interval Depth	Sensitivity Range	Rank Assigned
less than 100 feet	High	
100 - 200 feet	Moderately High	
201 - 500 feet	Moderate	
501 - 700 feet	Moderately Low	
greater than 700 feet	Low	Low

2. Well Construction Information and Integrity

A) Information Ranking

Construction Information Available	Points Possible	Points Assigned
Casing diameter, casing length and casing materials	2	2
Location of screened interval(s)	3	3
Total completion depth	3	3
Static water level at completion	2	2
Pump type, size and setting	2	2
Drilling log or equivalent	3	3
Total Points	15	15

Information Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

B) Integrity Ranking

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

Integrity Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

3. DRASTIC Index = **71**

Depth to Water (ft)	434
Net Recharge (inch/yr (approximated))	<2
Aquifer Media	Sand & Gravel with significant Clay
Soil Media	Sandy Loam
Topography (ground slope) (%)	3
Impacts of Vadose Zone Media	Sand & Gravel with significant Clay
Hydraulic Conductivity (Aquifer) (gpd/ft^2)	74.8

DRASTIC Index	Sensitivity Range	Sensitivity Rank
201 or greater	High	
171-200	Moderately High	
131-170	Moderate	
101-130	Moderately Low	
0-100	Low	Low

Composite Sensitivity Ranking for Ground Water Source (Converted, Uniform Scale) for Well
Sensitivity Rank = Well Depth Rank (Screen) + Well Construction/Integrity Rank + DRASTIC Index Rank

Rank for Depth of Screened Interval	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for Well Construction Records	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for Integrity of Construction	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for DRASTIC Index	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Point Sum	20
Rank Assigned (see Ranking Guide, below)	Low

Sum of Sensitivity Points	Composite Sensitivity Range	Well Composite Rank Assigned
90-100	High	
70-85	Moderately High	
50-65	Moderate	
30-45	Moderately Low	
20-25	Low	Low

Sensitivity Rank = **LOW**

VULNERABILITY ANALYSIS for Well

PSOC Ranking Determination				
	Zone			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

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Base Map	Arroyo	A	1+	Low
Base Map	Arroyo	B	0-2	Low
Base Map	Arroyo	C	0-4	Low

Vulnerability Rank = **LOW**

Susceptibility Ranking						
	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**

WELL #17	WSS # **096-23**
Source Type	Ground Water
Susceptibility Analysis Date	**November, 2002**
Susceptibility Analysis Completed by	NMED-DWB
Date of PSOC Inventory	**February, 2002**

SENSITIVITY ANALYSIS

1. Depth of Screened Interval

Screened Interval Depth	Sensitivity Range	Rank Assigned
less than 100 feet	High	
100 - 200 feet	Moderately High	
201 - 500 feet	Moderate	
501 - 700 feet	Moderately Low	Moderately Low
greater than 700 feet	Low	

2. Well Construction Information and Integrity

A) Information Ranking

Construction Information Available	Points Possible	Points Assigned
Casing diameter, casing length and casing materials	2	2
Location of screened interval(s)	3	3
Total completion depth	3	3
Static water level at completion	2	2
Pump type, size and setting	2	2
Drilling log or equivalent	3	3
Total Points	15	15

Information Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

B) Integrity Ranking

Physical Integrity of Supply Well	Points Possible	Points Assigned
Is the well located outside of an area susceptible to flooding?	2	2
Does well casing terminate at least 18 inches above floor or ground level?	2	2
Is annular space pressure-grouted to depth of at least 20 feet?	3	3
Is the wellhead properly sealed?	3	3
Is there a concrete pad around the wellhead that slopes away from the casing?	1	1
Does the well vent terminate at least 18 inches above floor or ground level, and is the vent screened and oriented to open downward?	1	1
Are check valves, blow-off valves and flow meters properly maintained and operated?	1	0
Is the wellhead fenced, housed or properly protected?	2	2
Total Points	15	14

Integrity Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

3. DRASTIC Index = **89**

Depth to Water (ft)	358
Net Recharge (inch/yr (approximated))	<2
Aquifer Media	Sand & Gravel with significant Clay
Soil Media	Sandy Loam
Topography (ground slope) (%)	0-2
Impacts of Vadose Zone Media	Fine – Medium Sand with Clay streaks
Hydraulic Conductivity (Aquifer) (gpd/ft^2)	29.9

DRASTIC Index	Sensitivity Range	Sensitivity Rank
201 or greater	High	
171-200	Moderately High	
131-170	Moderate	
101-130	Moderately Low	
0-100	Low	Low

Composite Sensitivity Ranking for Ground Water Source (Converted, Uniform Scale) for Well
Sensitivity Rank = Well Depth Rank (Screen) + Well Construction/Integrity Rank + DRASTIC Index Rank

Rank for Depth of Screened Interval	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	10
Low (5 point)	
Rank for Well Construction Records	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for Integrity of Construction	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for DRASTIC Index	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Point Sum	25
Rank Assigned (see Ranking Guide, below)	Low

Sum of Sensitivity Points	Composite Sensitivity Range	Well Composite Rank Assigned
90-100	High	
70-85	Moderately High	
50-65	Moderate	
30-45	Moderately Low	
20-25	Low	Low

Sensitivity Rank = **LOW**

VULNERABILITY ANALYSIS for Well

PSOC Ranking Determination				
	Zone			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

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Appendix K	IUR	B	0-2	Low
Appendix K	IUR	C	0-4	Low
Appendix K	RSF	C	0-4	Low
Base Map	Arroyo	B	0-2	Low
Base Map	Arroyo	C	0-4	Low
Map Legend	Petroleum Storage	C	0-4	Low

Vulnerability Rank = **LOW**

Susceptibility Ranking						
	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**

WELL #19	WSS # **096-23**
Source Type	Ground Water
Susceptibility Analysis Date	**November, 2002**
Susceptibility Analysis Completed by	NMED-DWB
Date of PSOC Inventory	**February, 2002**

SENSITIVITY ANALYSIS

1. Depth of Screened Interval

Screened Interval Depth	Sensitivity Range	Rank Assigned
less than 100 feet	High	
100 - 200 feet	Moderately High	
201 - 500 feet	Moderate	
501 - 700 feet	Moderately Low	
greater than 700 feet	Low	Low

2. Well Construction Information and Integrity

A) Information Ranking

Construction Information Available	Points Possible	Points Assigned
Casing diameter, casing length and casing materials	2	2
Location of screened interval(s)	3	3
Total completion depth	3	3
Static water level at completion	2	2
Pump type, size and setting	2	2
Drilling log or equivalent	3	3
Total Points	15	15

Information Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

B) Integrity Ranking

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

Integrity Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

3. DRASTIC Index = **81**

Depth to Water (ft)	780
Net Recharge (inch/yr (approximated))	<2
Aquifer Media	Sand & Gravel with significant Clay
Soil Media	Sandy Loam
Topography (ground slope) (%)	0-2
Impacts of Vadose Zone Media	Fine – Course Sand with Clay
Hydraulic Conductivity (Aquifer) (gpd/ft^2)	112

DRASTIC Index	Sensitivity Range	Sensitivity Rank
201 or greater	High	
171-200	Moderately High	
131-170	Moderate	
101-130	Moderately Low	
0-100	Low	Low

Composite Sensitivity Ranking for Ground Water Source (Converted, Uniform Scale) for Well
Sensitivity Rank = Well Depth Rank (Screen) + Well Construction/Integrity Rank + DRASTIC Index Rank

Rank for Depth of Screened Interval	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for Well Construction Records	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for Integrity of Construction	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for DRASTIC Index	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Point Sum	20
Rank Assigned (see Ranking Guide, below)	Low

Sum of Sensitivity Points	Composite Sensitivity Range	Well Composite Rank Assigned
90-100	High	
70-85	Moderately High	
50-65	Moderate	
30-45	Moderately Low	
20-25	Low	Low

Sensitivity Rank = **LOW**

VULNERABILITY ANALYSIS for Well

PSOC Ranking Determination				
	Zone			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

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Map Legend	Petroleum Storage	C	0-4	Low

Vulnerability Rank = **LOW**

Susceptibility Ranking						
	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**

WELL #21	WSS # **096-23**
Source Type	Ground Water
Susceptibility Analysis Date	**November, 2002**
Susceptibility Analysis Completed by	NMED-DWB
Date of PSOC Inventory	**February, 2002**

SENSITIVITY ANALYSIS

1. Depth of Screened Interval

Screened Interval Depth	Sensitivity Range	Rank Assigned
less than 100 feet	High	
100 - 200 feet	Moderately High	
201 - 500 feet	Moderate	Moderate
501 - 700 feet	Moderately Low	
greater than 700 feet	Low	

2. Well Construction Information and Integrity

A) Information Ranking

Construction Information Available	Points Possible	Points Assigned
Casing diameter, casing length and casing materials	2	2
Location of screened interval(s)	3	3
Total completion depth	3	3
Static water level at completion	2	2
Pump type, size and setting	2	2
Drilling log or equivalent	3	3
Total Points	15	15

Information Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	
13-15	Low	Low

B) Integrity Ranking

Physical Integrity of Supply Well	Points Possible	Points Assigned
Is the well located outside of an area susceptible to flooding?	2	2
Does well casing terminate at least 18 inches above floor or ground level?	2	2
Is annular space pressure-grouted to depth of at least 20 feet?	3	0
Is the wellhead properly sealed?	3	3
Is there a concrete pad around the wellhead that slopes away from the casing?	1	1
Does the well vent terminate at least 18 inches above floor or ground level, and is the vent screened and oriented to open downward?	1	1
Are check valves, blow-off valves and flow meters properly maintained and operated?	1	1
Is the wellhead fenced, housed or properly protected?	2	2
Total Points	15	12

Integrity Points	Sensitivity Range	Rank Assigned
0-3	High	
4-6	Moderately High	
7-9	Moderate	
10-12	Moderately Low	Moderately Low
13-15	Low	

3. DRASTIC Index = **67**

Depth to Water (ft)	373
Net Recharge (inch/yr (approximated))	<2
Aquifer Media	Sand with significant Clay
Soil Media	Sandy Loam
Topography (ground slope) (%)	0-2
Impacts of Vadose Zone Media	Fine Sand with Clay layers
Hydraulic Conductivity (Aquifer) (gpd/ft^2)	74

DRASTIC Index	Sensitivity Range	Sensitivity Rank
201 or greater	High	
171-200	Moderately High	
131-170	Moderate	
101-130	Moderately Low	
0-100	Low	Low

Composite Sensitivity Ranking for Ground Water Source (Converted, Uniform Scale) for Well
Sensitivity Rank = Well Depth Rank (Screen) + Well Construction/Integrity Rank + DRASTIC Index Rank

Rank for Depth of Screened Interval	
High (25 points)	
Moderately High (20 points)	
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)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for Integrity of Construction	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	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
Point Sum	35
Rank Assigned (see Ranking Guide, below)	Moderately Low

Sum of Sensitivity Points	Composite Sensitivity Range	Well Composite Rank Assigned
90-100	High	
70-85	Moderately High	
50-65	Moderate	
30-45	Moderately Low	Moderately Low
20-25	Low	

Sensitivity Rank = **MODERATELY LOW**

VULNERABILITY ANALYSIS for Well

PSOC Ranking Determination				
	Zone			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

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Appendix K	-	-	-	-

Vulnerability Rank = **LOW**

Susceptibility Ranking						
	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**

The Inventory of Actual and Potential Sources of Contamination was completed by NMED-DWB and is incorporated in Appendix J at Step 3, Number 9.

INVENTORY OF ACTUAL AND POTENTIAL SOURCES OF CONTAMINATION				
Description of Contaminant	Actual Contamination	Potential Contamination	Distance from Wellhead and/or Zone of Influence	Number of Sources of Contamination (may be expressed by a range i.e., 2-4).
Monitoring Well	No	Yes	Zone A	1+
Hazardous/Solid Waste Generator	No	Yes	Zone B	2-4
Petroleum Storage	No	Yes	Zone B	2-4
Primary Highway	No	Yes	Zone B	2-4
Railroad	No	Yes	Zone B	2-4
Single family Residences – Unsewered	No	Yes	Zone B	2-4
Abandoned Well	No	Yes	Zone C	3-4
Arroyo	No	Yes	Zone C	3-4
Federal Toxic Release Inventory Site	No	Yes	Zone C	3-4
Railroad	No	Yes	Zone C	3-4
Secondary Highway	No	Yes	Zone C	3-4

Adoption of management strategies for specific contaminate sources should be based on a thorough review of the exiting management types. For instance, when considering management of storm water runoff, [12] management methods range from non-structural methods (sewer stenciling, good housekeeping, education,) to engineered devices (buffer and filter strips, infiltration, BMPs) and for municipal systems compliance with U.S. EPA's *National Pollutant Discharge Elimination System (NPDES) Permitting Program* is a regulatory requirement.

MANAGEMENT STRATEGY AND SCHEDULE (EXAMPLE)

Management Measure/Tool	Management Strategy	Assigned to /Implemented by	Time Line	Update Schedule and Planned Date
Wellhead Protection Ordinance	Identify the wellhead protection area, draft a source water protection ordinance (see example, Appendix G), identify the entity responsible for hearing ordinances, gain citizen support, and petition for adoption of ordinance.	Mr. XYZ and Ms. ABC	July 2003	Not Applicable
Wellhead Protection Sign Posting	Identify the source water delineation area; identify how many signs will be needed and where they may be purchased, the costs and budget considerations, and guidelines and/or laws for posting the signs. Post the signs.	Mr. XYZ and Ms. ABC	August 2003	Every 10 years (August 2013)
Adopt a Zoning Ordinance	Research zoning ordinances. Identify any existing zoning ordinances, and procedures necessary for adoption. Talk with city planners and landowners, gain public support, and petition to adopt the zoning ordinance.	Mr. XYZ Attorney, and Ms. ABC City Planning	September 2003	Not Applicable
Well Abandonment Procedures	Determine if an additional water source is necessary. Check local and state guidelines and regulations for proper well abandonment procedures, properly abandon the well, and report well abandonment to NMED-Drinking Water Bureau.	Ms. Hydrologist	July 2003	Not Applicable
Strom Water Drain Protection	Contact the city-planning department and inquire about storm water drains. Check local and state guidelines and regulations for requirements, and research storm water protection measures/tools.	Mr. Hydrologist	July 2003	Bi-Yearly (July 2005)

[12] *Storm water runoff* is rain or snowmelt flowing from rooftops and other structures, pavement on roads, sidewalks, and parking lots, and degraded land covers such as dirt parking lots, walking paths, baseball fields and suburban lawns, and areas of insufficient land cover such as vegetation.

Your Water Utilities *Contingency Protocol and Schedule* should include the first three categories in Column 1 of the table below, in addition to categories you may wish to include.

CONTINGENCY PROTOCOL **AND SCHEDULE (EXAMPLE)**						
Contingency Planning Categories	**Protocol Elements**	**Current Issue**	**Future Issue**	**Assigned to - Implemented by**	**Time Line**	**Update Schedule and Planned Update**
Emergency Water Outage	Develop a protocol: list all potential types of water outages, identify responsible agencies/parties, and provide contact information. Estimate how much water per day will be needed by your customers, and budget for this potential expense.	No	Yes	Ms. ABC	July 2003	Quarterly September 2003, November 2003, etc.
Accidental Leak or Spill Near or Into Water Source	Develop a protocol: list all potential types of leaks and spills, identify responsible agencies/parties, and provide contact information.	Yes	Yes	Mr. XYZ and Ms. ABC	August 2003	Yearly August 2004
Water Conservation	Develop a Water Conservation Plan: research the status of your aquifer, identify existing conservation methods, and promote the plan.	Yes	Yes	Ms. DEF	August 2003	Bi-Yearly August 2005
Land Acquisition for New Water Source	Develop a Land Acquisition Strategy: Identify when the source will be needed, where potential new water sources exist, and research land acquisition methods such as ownership, lease, and/or easements. Identify and discuss future zoning issues surrounding the new source site, and prepare a budget for the costs of acquiring the new source.	No	Possibly	Mr. XYZ Attorney, and Ms. ABC Public Works Director	September 2003	Yearly September 2004

Shown below are two examples of Media Aids developed by the International City/County Management Association to promote source water protection, and which may be used as part of your Source Water Protection Plan. Other forms of media aids include posters, fact sheets, informational flyers, brochures, and resources lists.

For Immediate Release: Contact: [*Name*]
[*Date*] [*Phone #*]

Protect Your Drinking Water… Protect the Source!

[*City*],[*State*]—Have you ever thought about where your drinking water comes from, beyond the faucet? Did you know that what you do in and around your home can affect not only the quality of your water but also the quality of your neighbor's water? Find out where your drinking water really comes from and learn about how you can help protect it during a [*Duration of campaign*]-month-long drinking water source awareness campaign, starting [*Start date*], sponsored by [*Name of sponsor*]. The campaign will provide information on

- The source of your local drinking water
- The value of safe drinking water
- Potential threats to your local drinking water
- Steps you can take to protect your drinking water
- Contact information for additional resources on drinking water protection.

Safe drinking water is essential to a community's quality of life and continued economic growth. Yet citizens may not always be aware of safe drinking water issues in their community and may not realize what needs to be done to protect drinking water and keep it safe for their families and businesses. Drinking water wells across the country are being contaminated daily by common activities, such as pouring motor oil and household chemicals down drains, using too much pesticides and fertilizers, and littering streets with refuse that will eventually run off into rivers and streams. When water supplies are not safe, the health of the community — especially of the young, the old, and the sick — is jeopardized. In addition, communities may experience a loss of tax revenues from real estate and new jobs as businesses refuse to locate to or remain in communities with known or suspected water contamination problems. Protecting drinking water sources is the first line of defense in ensuring safe drinking water. If communities are aware of their drinking water sources and of potential threats to these sources, they can take steps to keep the sources safe and improve their local environment. There is something everyone — from retirees to school kids to individuals in their homes — can do to help. To find out what you can do, contact [*Contact name and phone number*].

[*Acknowledgment*]

EXAMPLE PRESS RELEASE

Hi, my name is (Name) with a few words on protecting your drinking water.

Consider where your drinking water comes from.

Get to know the source of your drinking water, and get involved in activities to protect it. Drinking water source protection is a low-cost means to preserving the safety of a vital resource. Here are a few simple things you can do to help keep pollution out of the river, lake, stream, or aquifer that is your drinking water source:

- Take used motor oil to a recycling center. If you let it drain into a storm sewer or bury it in the trash, it can leak into lakes, rivers, and wells. Just one pint of used motor oil can expand over great distances, and potentially harm human health and the environment.
- Properly dispose of toxic household trash. For example, batteries contain lead and mercury. Some household cleaners also contain substances that contaminate water. Many communities have special collection sites for these items.
- Do not dispose of chemicals such as paints, cleaning products, and pesticides into septic systems, dry wells, stormwater drainage wells, or other shallow disposal systems that discharge to groundwater.
- Properly install and maintain septic systems. Be sure to inspect them regularly and pump them out when necessary.
- Find out what your community is doing to protect your water source and get involved. Work with schools, civic groups, and others to start a protection program. Safe drinking water is everyone's responsibility.

For more information, contact (Name) and (Contact information) Together, we can make a difference. This is a public service announcement brought to you by (Name of sponsoring organization).

EXAMPLE PUBLIC SERVICE ANNOUNCEMENT

Examples of Categories of Management Measures & Tools Used for Source Water Protection Planning

PUBLIC EDUCATION
- Newspaper Articles
- Radio
- Pamphlets
- Brochures
- Community Meetings
- Seminars –Slide Shows and Video
- Storm Drain Stencil Program

BEST MANAGEMENT PRACTICES
- Agricultural

Tillage Practices / Erosion Control Measures
Range & Pasture Management

- Forestry

Forest Revegetation
Logging & Road Construction Management
Streamside Area Management

- Urban

Buffer Zones / Setbacks
Primary & Secondary Containment
Storm Drain Maintenance

- Waterbody

River/Reservoir Management Program(s)
Shoreline Restoration

ZONING (Regulatory)
- Overlay/Protection District
- Prohibition of Various Land Use
- Special Permitting
- Large-Lot Zoning
- Transfer of Development Rights
- Growth Control
- Performance Standards

HEALTH REQUIREMENTS (Regulatory)
- Privately Owned Wastewater Treatment Plant
- Septic Cleaner Ban
- Septic System Upgrade
- Toxic & Hazardous Materials Handling Requirements
- Private Well Protection

LAND TRANSFER (Non-Regulatory/ Voluntary)
- Sale/Donation
- Conservation Easement
- Limited Development

LEGISLATIVE (Regulatory)
- Regional Source Water Protection Districts
- Land Banking

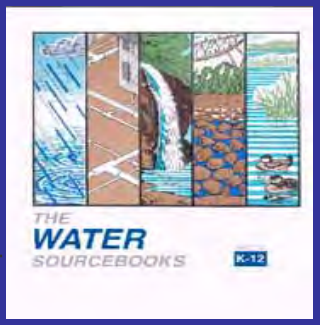
POINT SOURCE POLLUTION RESTRICTIONS
- Waste Processing Plants

LAND ACQUISITION (Non-Regulatory & Regulatory)

OTHER (Non-Regulatory)
- Increased Monitoring
- Hazardous Waste Collection

A Variety of Resources are Available

Wellhead Protection Signs



Water Sourcebooks Contain 324 Activities for Grades K-12

U.S. EPA STORM DRAIN STENCILING PROGRAMS

Planning tools such as ordinances, zoning decisions, regulations, and descriptions of BMP used to support your Source Water Protection Plan should be attached *(the Ordinance shown below is an example based on a Wellhead Protection Ordinance adopted by the City of Wilber, Saline County, Nebraska).*

ORDINANCE NO. __

AN ORDINANCE FOR THE CITY OF (NAME), (NAME) COUNTY, (NAME OF STATE) TO CREATE SECTION XXX OF THE MUNICIPAL CODE OF THE CITY OF (NAME), BY ADDING A NEW SECTION TO DESIGNATE A WELLHEAD PROTECTION AREA.

BE IT ORDAINED BY THE MAYOR AND COUNCIL OF THE CITY OF (NAME), STATE OF (NAME), as follows:

Section 1. Definition. Source Water Protection Area means the surface and subsurface area surrounding a water well or well field supplying a public water system through which contaminants are reasonably likely to move toward and reach such water or well field.

Section 2. The City of (Name) designates a Wellhead Protection Area for the purpose of protection of the public water supply system. The boundaries of the source Water Protection Area are delineated based upon a map prepared by the (Name) presented to the City of (Name) on (Date), which is on file at the office of the (Name) City/County Clerk, and is available for public inspection.

Section 3. Any other Ordinance or section passed and approved prior to the passage, approval, and publication of this Ordinance and in conflict herewith, is hereby repealed.

Section 4. This Ordinance shall take effect and be in full force from and after its passage, approval, and publication as required by law.

PASSED AND APPROVED THIS (Date)

_____
Mayor

ATTEST:

_____
City Clerk

(SEAL)

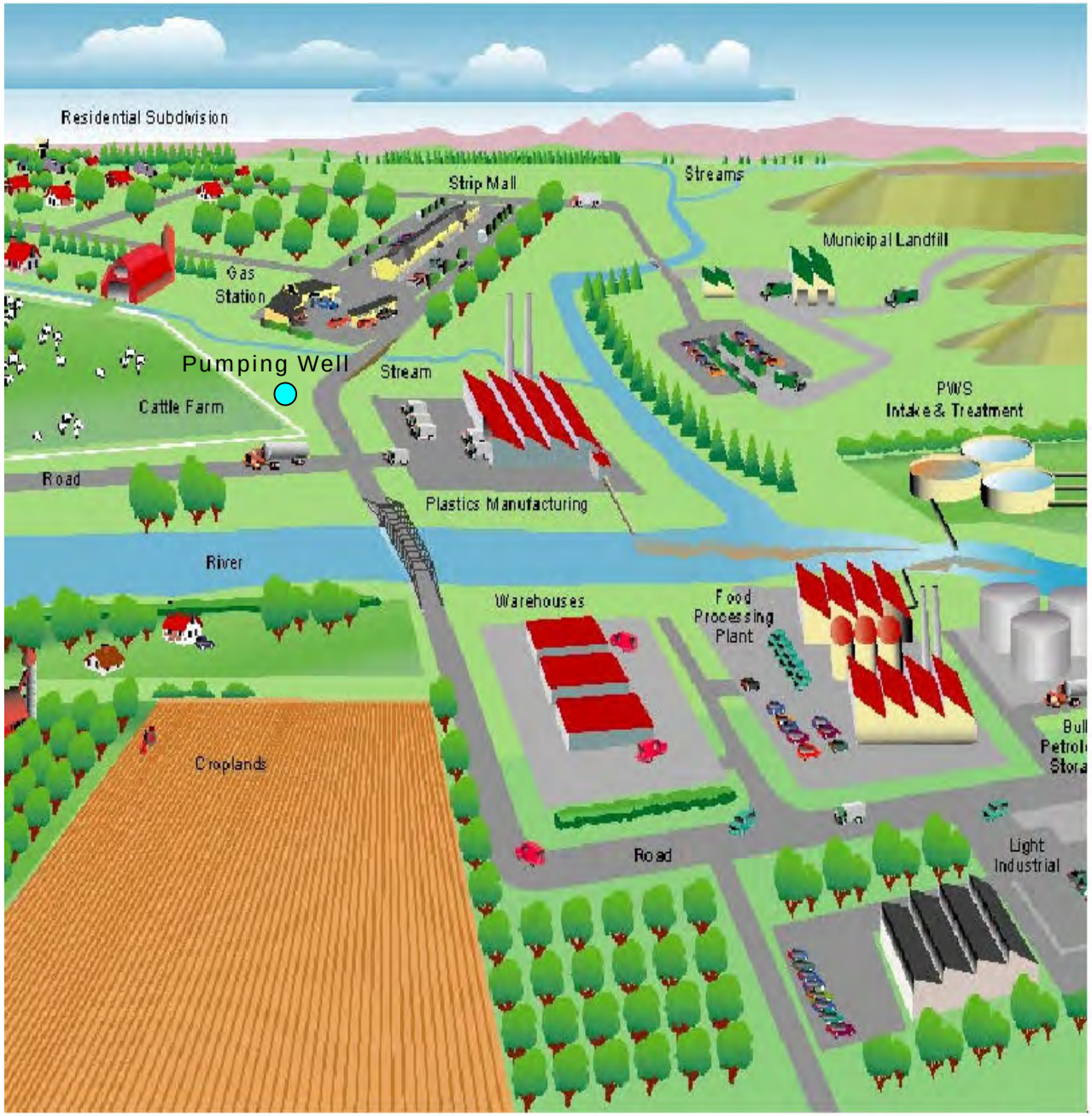
By completing the following exercise many of the tasks and goals of the source water protection planning team (team) should become more apparent.

For the exercise imagine that, as the "Pumping Well (center/ left in the graphic) pumps, contaminants are pulled toward the wellhead and eventually may enter the drinking water system. The team should complete the following: 1) Delineate the source water area as it may extend outward from the wellhead, 2) Identify actual (these are not pictured in the illustration) and potential sources of contamination and their potential impacts to your source water, 3) Identify management measures/tools that may be implemented to protect the water source, 4) Identify potential barriers (physical /economic /political) to implementing the measures, and 5) Identify solutions to the potential barriers.

[As an example, imagine the following: The Plastic Manufacturing Plant (plant) is within 1,00 feet of the pumping well. Although no actual contaminants have been detected in your utilities drinking water samples, potential contaminants from the plant include solvents, oils, organic/inorganic chemicals, acids, and bases, which are considered significant sources of contamination. The plant may or may not be adequately designed to prevent releases of theses chemicals into the environment/groundwater.

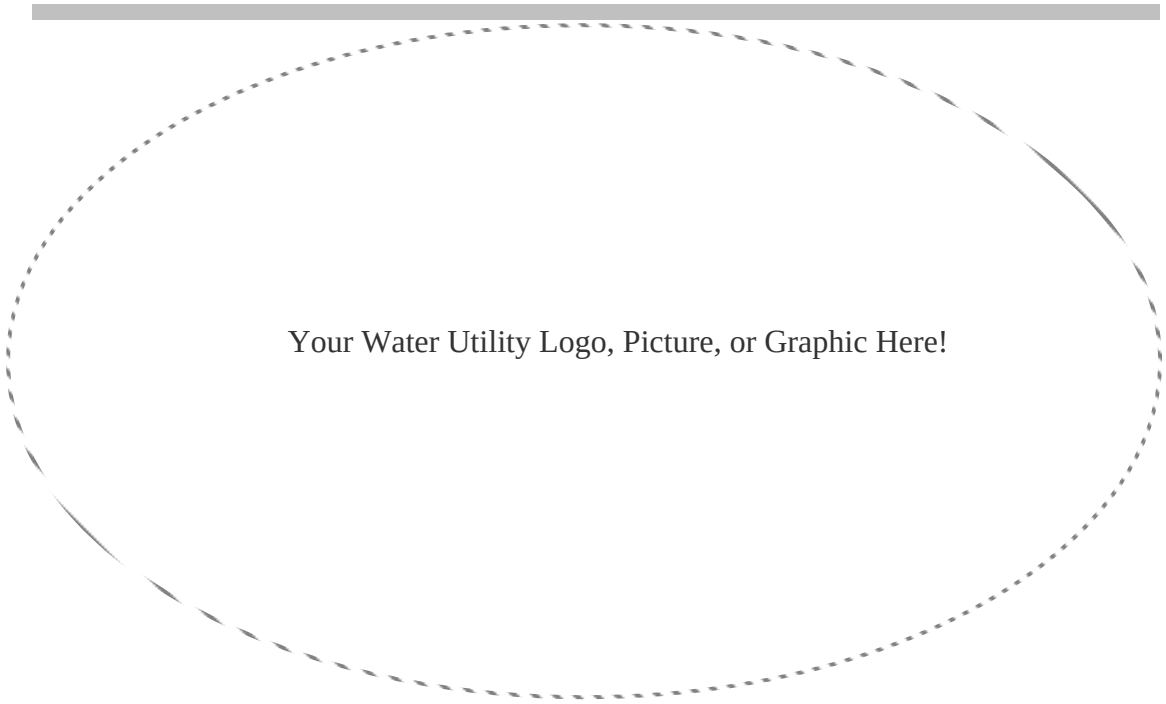
The team might begin by 1) notifying officials at the plant that the plant is located within a planned source water protection area, 2) Make arrangements with the officials to gather information, discuss concerns, 3) Seek information regarding potential protection measures, and 4) Develop management measures (i.e., BMPs) that may help prevent potential releases. The team should work with the plant officials to document any management measures implemented, select a time for updating the measure(s), properly inform the public of the **proactive** protective measure taken by the plant (any responses from the public should be reviewed and considered), enter the management measure in the Source Water Protection Plan].

Source Water Protection Planning Exercise



This Protection Plan Template lists the necessary elements of a Source Water Protection plan. You may complete this template and return it to NMED-DWB or create a template of your own design.

Source Water Protection Plan of the
Rio Rancho Sewer & Wastewater Services Water Utility
Public Water System # 096-23
Date:



Prepared by
Rio Rancho Sewer & Wastewater Services Water Utility &
The New Mexico Environment Department Drinking Water Bureau
Funded under the Federal Safe Drinking Water Amendments of 1996

The Rio Rancho Sewer & Wastewater Services Water Utility
Address
Utility Administrator and Operator Contact Information
Number of Water Supply Sources (#)
Current Date
Scheduled Update by (Date)

On (Date) a *Source Water Assessment and Protection Plan* (SWAPP) was adopted by the Rio Rancho Sewer & Wastewater Services water utility. The SWAPP complies with the requirements for source water protection defined under the *Safe Drinking Water Act Amendments of 1996*. In recognition for its contribution toward preventing adverse effects to human health and the environment, and for protection of the environmental integrity of the State of New Mexico's ground water resources, the executive branch agency presents the (NAME) Utility with the attached (Certificate/Letter of Commendation).

SOURCE WATER PROTECTION PLAN OF THE RIO RANCHO SEWER & WASTEWATER SERVICES WATER UTILITY

(The following information is required for NMED-DWB to approve your protection plan. Once a draft protection plan is prepared, and before public review, your utility must submit the plan to NMED-DWB for review and approval)[13]

STEP 1

1) List the names of the Community Planning team.

2) List the name(s) and provide signature(s) of the governing entity.

3) Describe the public's involvement/participation in the development and implementation of the Source Water Protection Plan. Attach copies of all relevant public notice(s).

4) Describe how the public will continue to participate in and/or be informed of Source Water Protection Plan issues (one example is to petition to have your Source Water Protection Plan on a weekly or monthly agenda, such as your town or city council meeting).

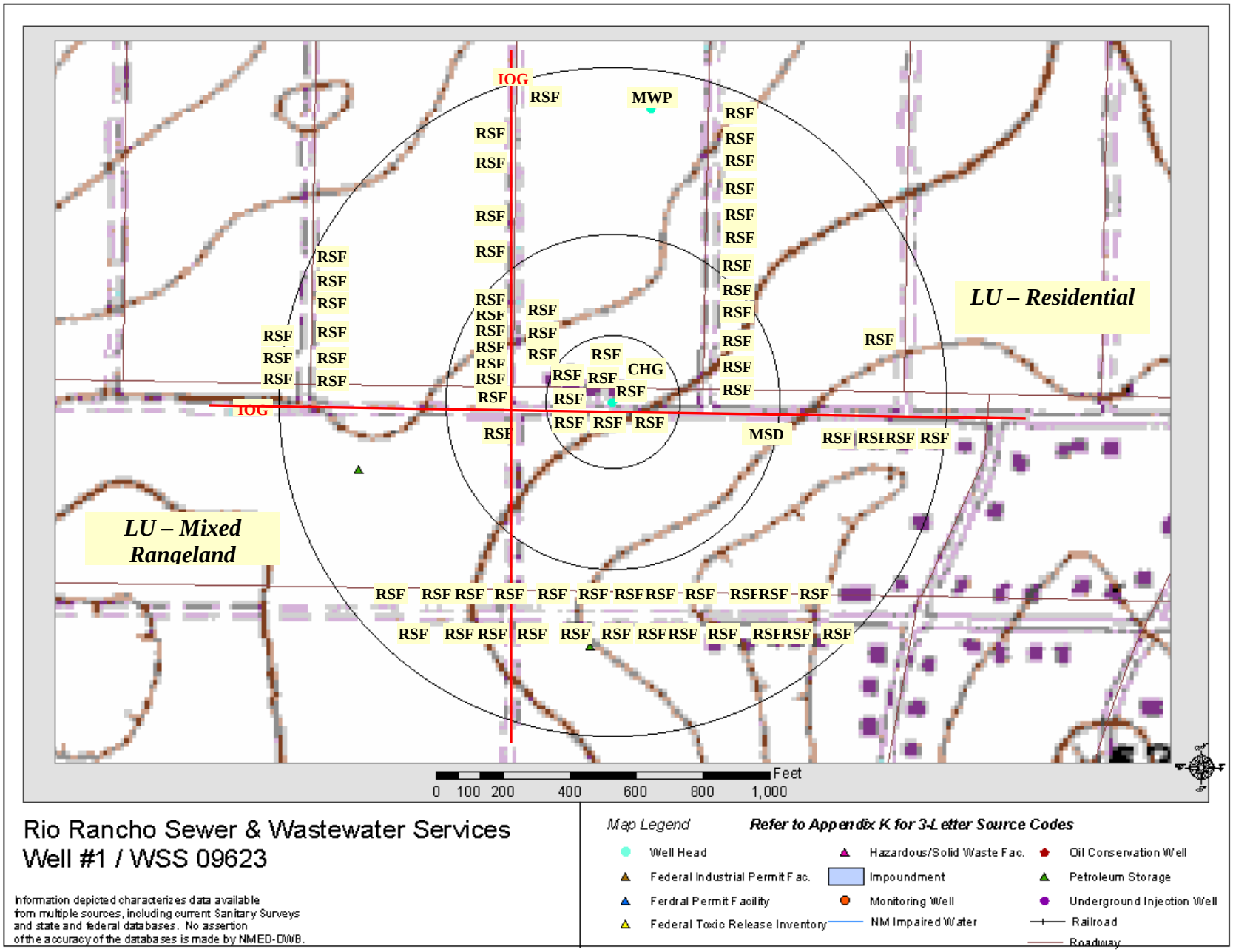
STEP 2

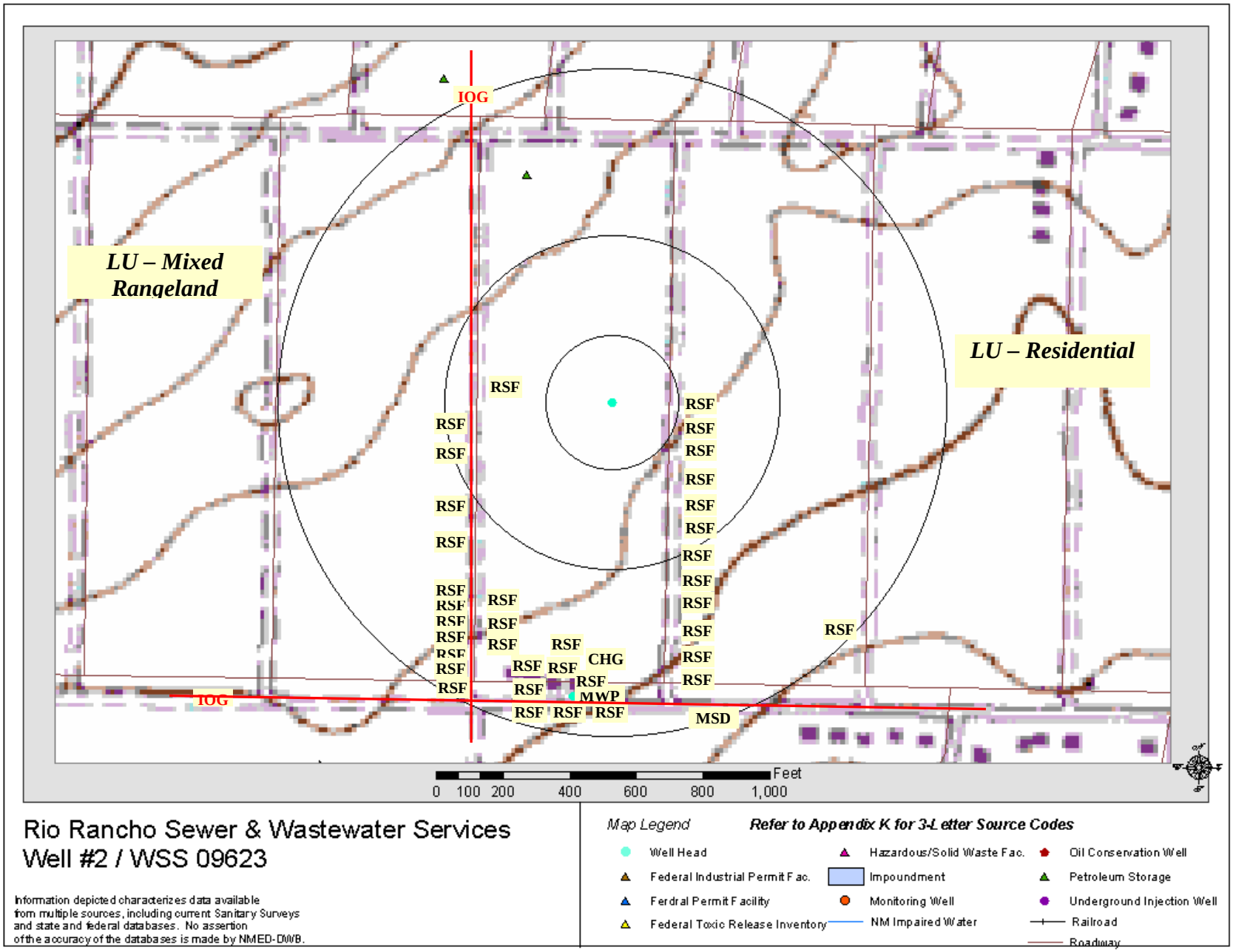
5) Describe the water supply system.

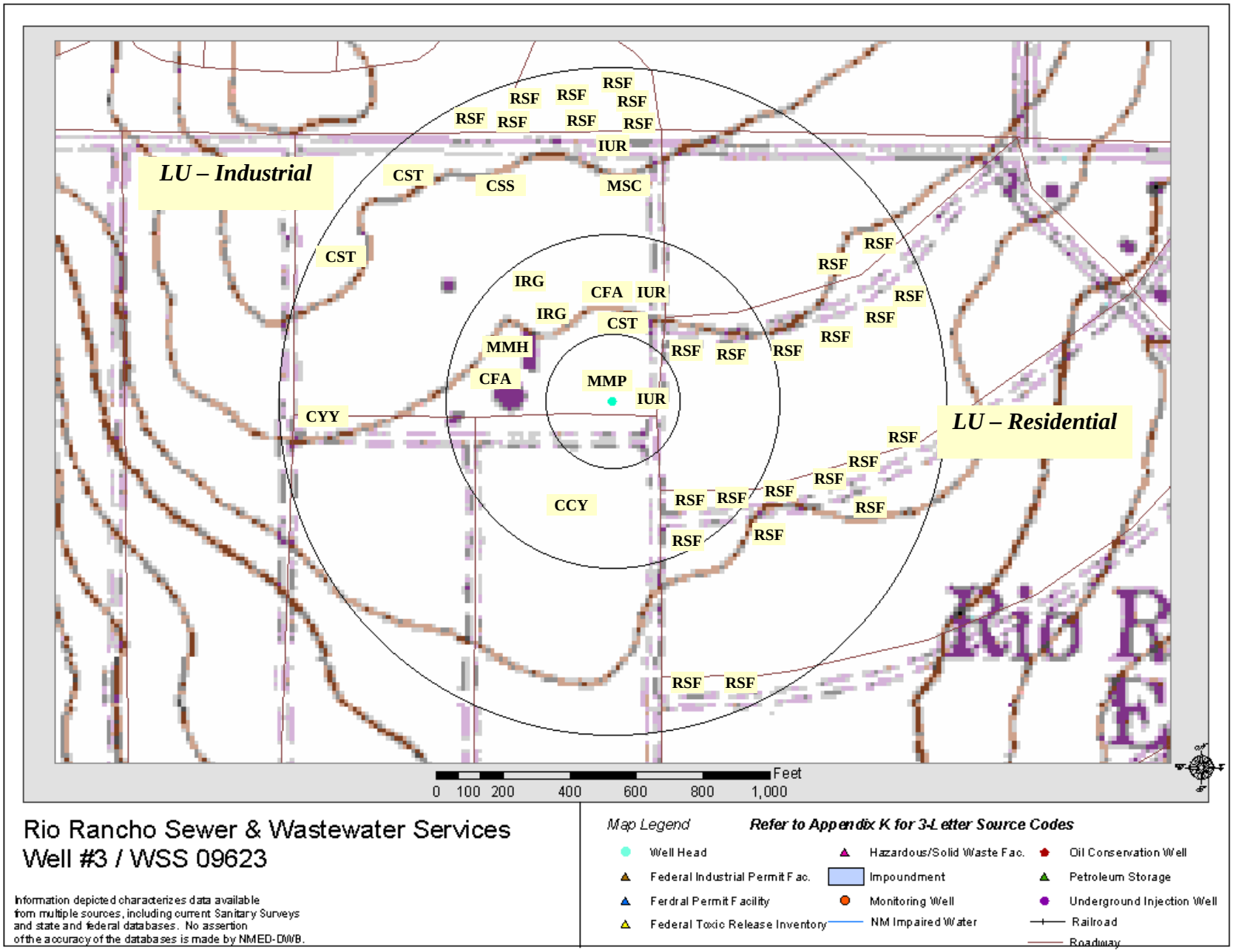
6) Describe the hydrogeology of the area.

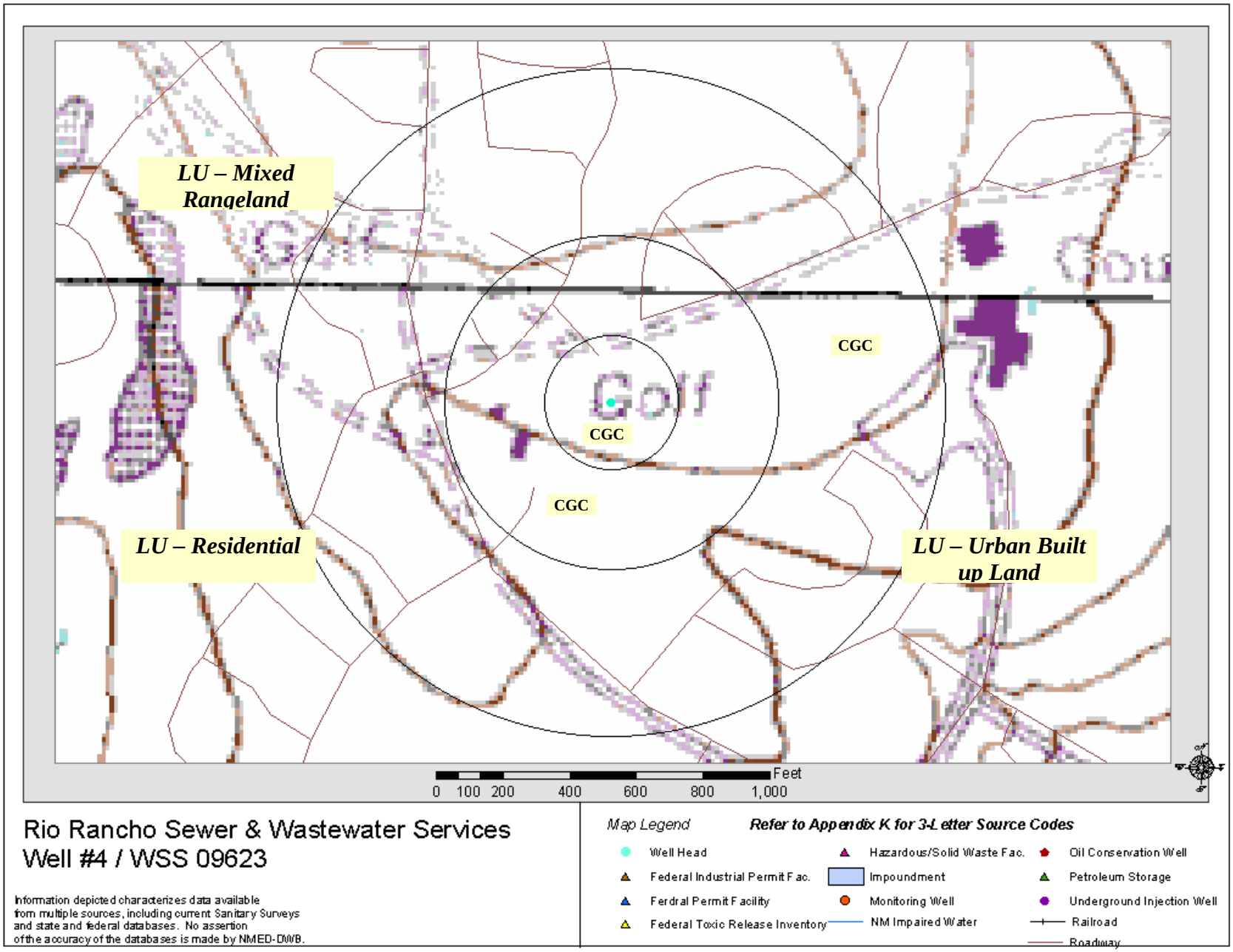
7) Describe how the source water protection area(s) were determined (your answer may include topographic maps, ArcView Geographical Information Systems, Wellhead Analytical Element Model, Modflow, *etc*). Attach a copy of all source water maps (see example, Appendix A). ***NMED-DWB has inserted the Source Area Delineation Maps for your water utility. You may use these maps to satisfy this required element, or develop your own approach.***

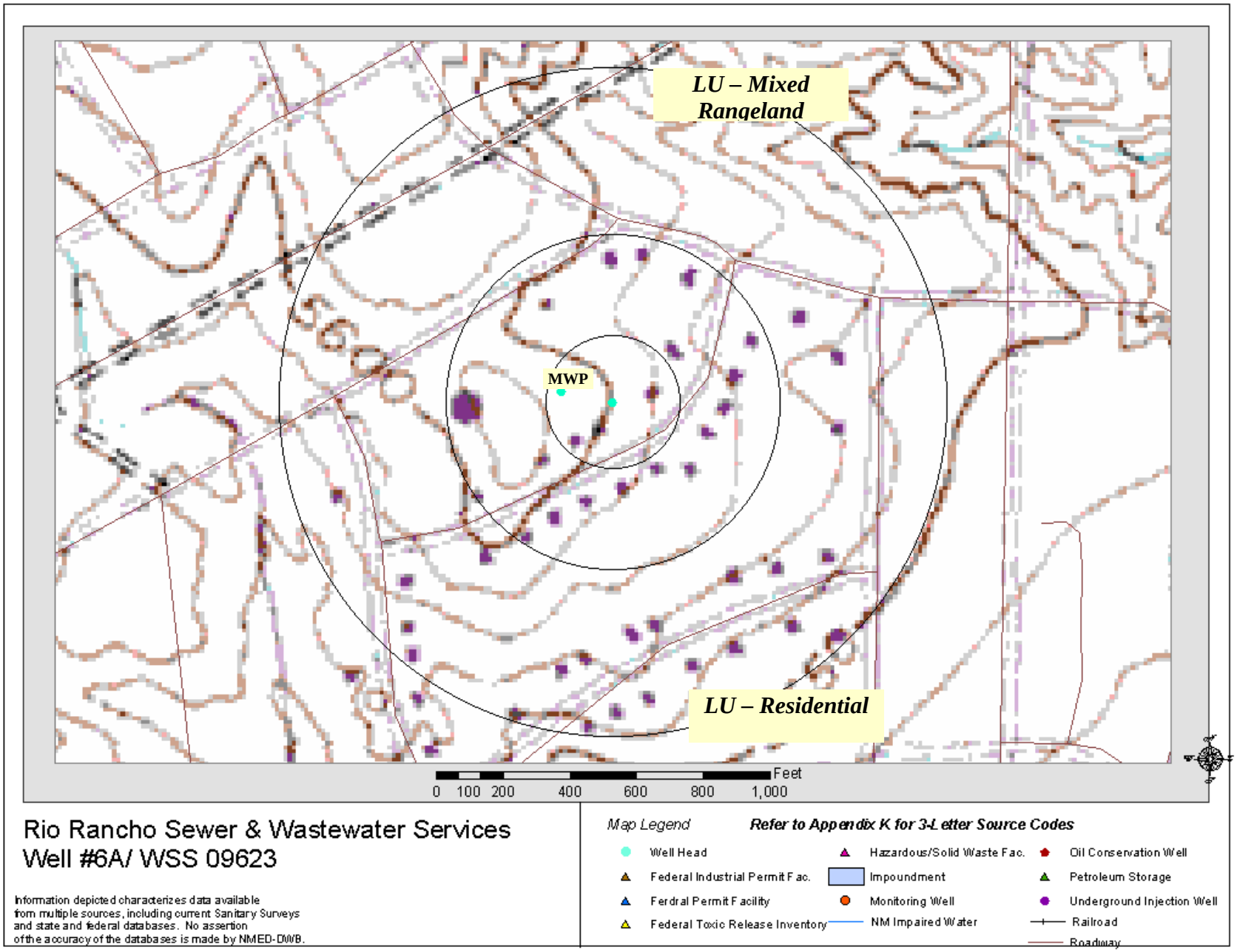
[13] Please allow 45 days for the NMED-DWB approval process, once you have completed and submitted a SWAPP for review.

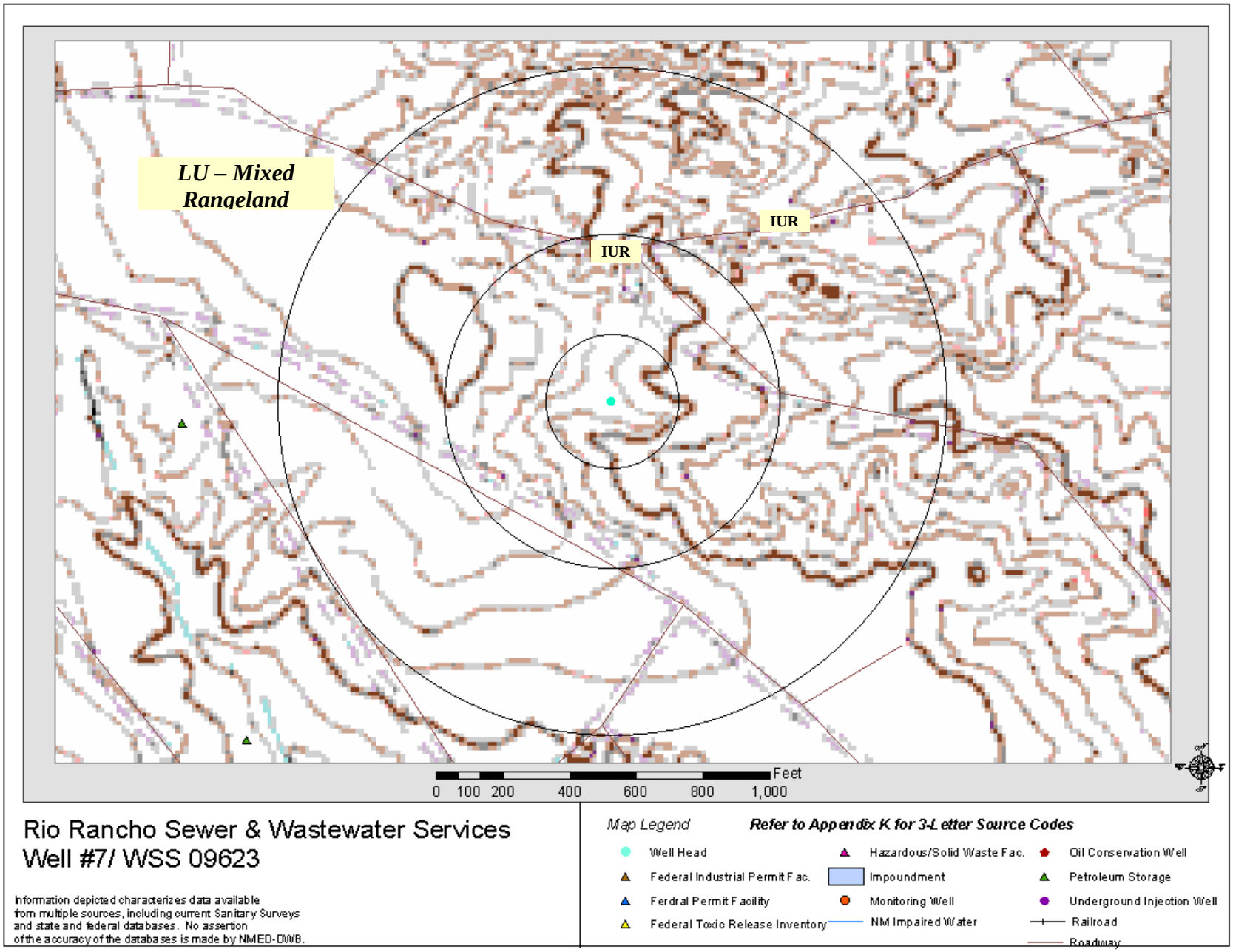

IOG
MWP
RSF
CHG
MSD
IOG
LU – Residential
LU – Mixed Rangeland
0 100 200 400 600 800 1,000
Feet
Rio Rancho Sewer & Wastewater Services
Well #1 / WSS 09623
Information depicted characterizes data available from multiple sources, including current Sanitary Surveys and state and federal databases. No assertion of the accuracy of the databases is made by NMED-DWB.
Map Legend
Refer to Appendix K for 3-Letter Source Codes
Well Head
Federal Industrial Permit Fac.
Ferdral Permit Facility
Federal Toxic Release Inventory
Hazardous/Solid Waste Fac.
Impoundment
Monitoring Well
NM Impaired Water
Oil Conservation Well
Petroleum Storage
Underground Injection Well
Railroad
Roadway

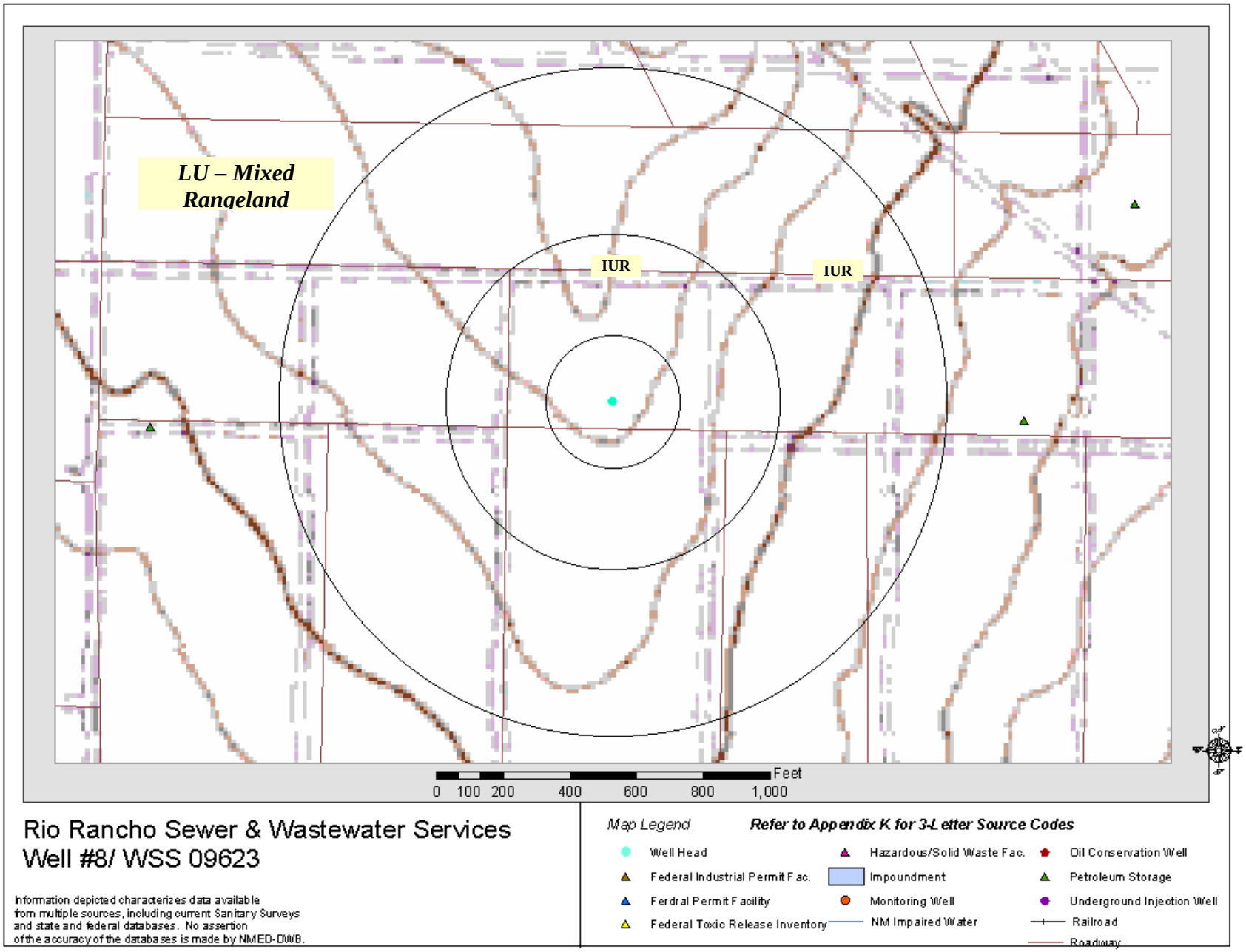

IOG
LU – Mixed Rangeland
LU – Residential
RSF
CHG
MWP
MSD
IOG
Feet
0 100 200 400 600 800 1,000
Rio Rancho Sewer & Wastewater Services
Well #2 / WSS 09623
Information depicted characterizes data available from multiple sources, including current Sanitary Surveys and state and federal databases. No assertion of the accuracy of the databases is made by NMED-DWB.
Map Legend
Refer to Appendix K for 3-Letter Source Codes
Well Head
Federal Industrial Permit Fac.
Ferdral Permit Facility
Federal Toxic Release Inventory
Hazardous/Solid Waste Fac.
Impoundment
Monitoring Well
NM Impaired Water
Oil Conservation Well
Petroleum Storage
Underground Injection Well
Railroad
Roadway

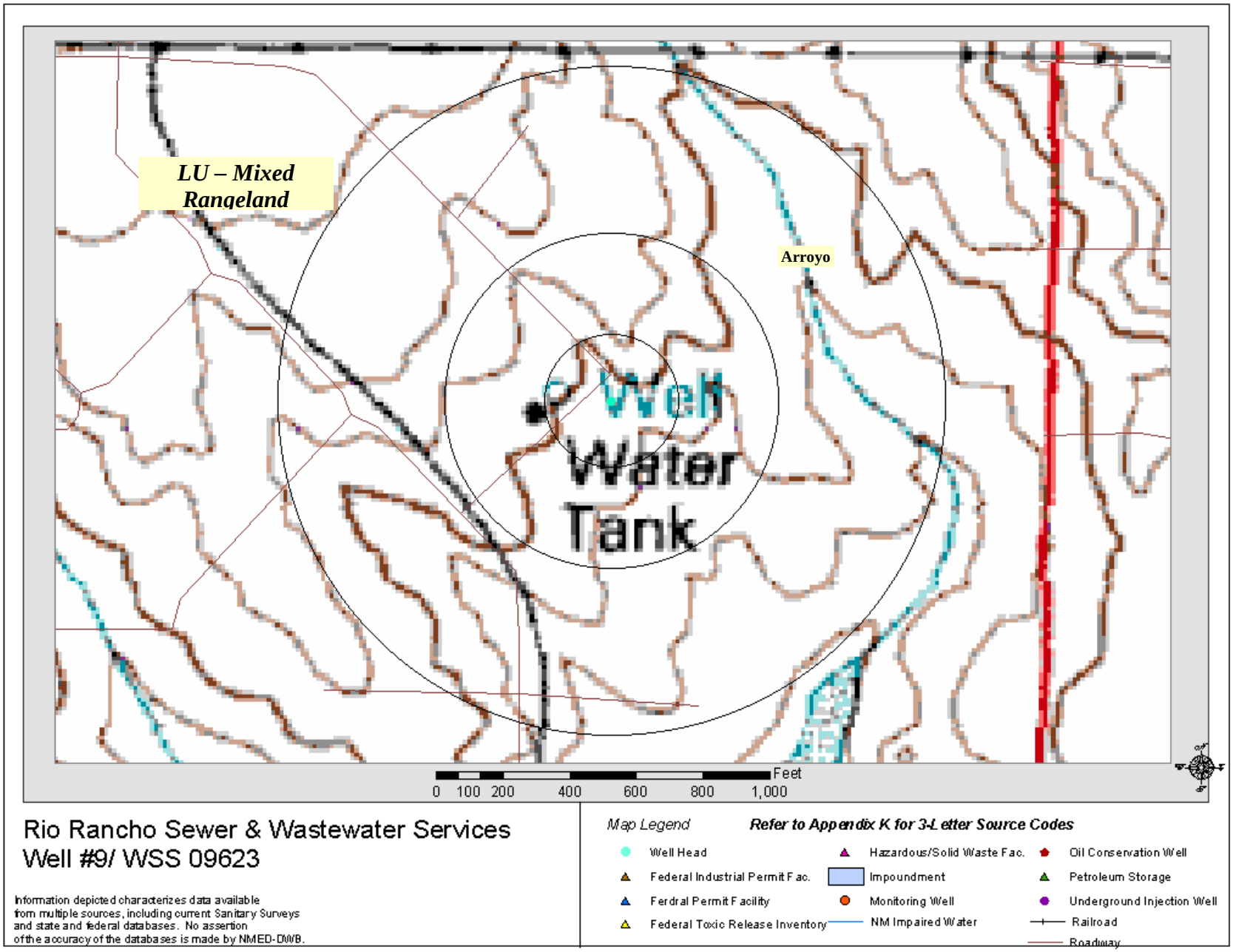

LU – Industrial
LU – Residential
RSF
IUR
CST
CSS
MSC
IRG
CFA
MMH
MMP
CYY
CCY
Rio R
E
0 100 200 400 600 800 1,000
Feet
Rio Rancho Sewer & Wastewater Services
Well #3 / WSS 09623
Information depicted characterizes data available from multiple sources, including current Sanitary Surveys and state and federal databases. No assertion of the accuracy of the databases is made by NMED-DWB.
Map Legend
Refer to Appendix K for 3-Letter Source Codes
Well Head
Federal Industrial Permit Fac.
Ferdral Permit Facility
Federal Toxic Release Inventory
Hazardous/Solid Waste Fac.
Impoundment
Monitoring Well
NM Impaired Water
Oil Conservation Well
Petroleum Storage
Underground Injection Well
Railroad
Roadway

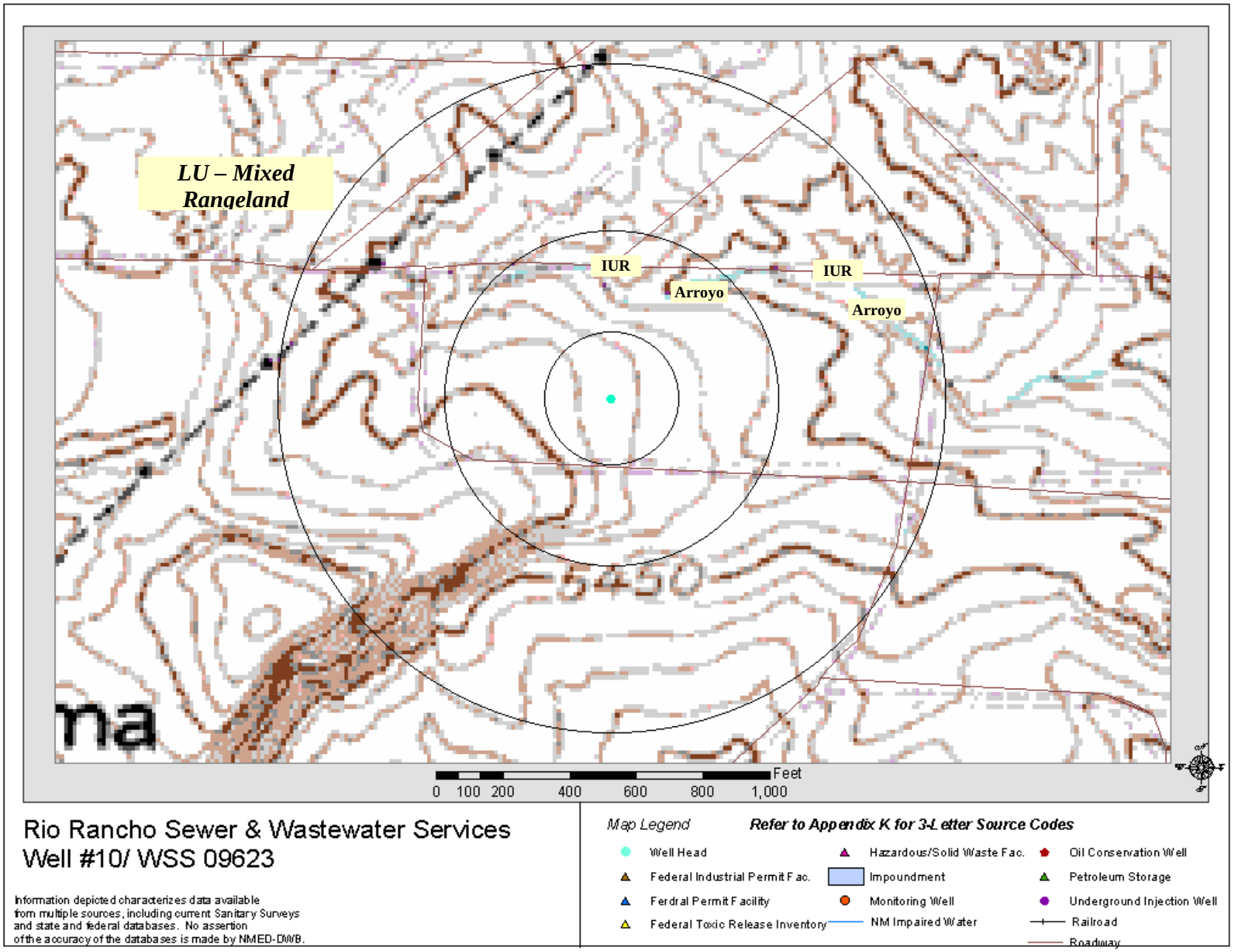

LU – Mixed Rangeland
CGC
CGC
CGC
LU – Residential
LU – Urban Built up Land
Golf
0 100 200 400 600 800 1,000
Feet
Rio Rancho Sewer & Wastewater Services
Well #4 / WSS 09623
Information depicted characterizes data available from multiple sources, including current Sanitary Surveys and state and federal databases. No assertion of the accuracy of the databases is made by NMED-DWB.
Map Legend
Refer to Appendix K for 3-Letter Source Codes
Well Head
Federal Industrial Permit Fac.
Ferdral Permit Facility
Federal Toxic Release Inventory
Hazardous/Solid Waste Fac.
Impoundment
Monitoring Well
NM Impaired Water
Oil Conservation Well
Petroleum Storage
Underground Injection Well
Railroad
Roadway

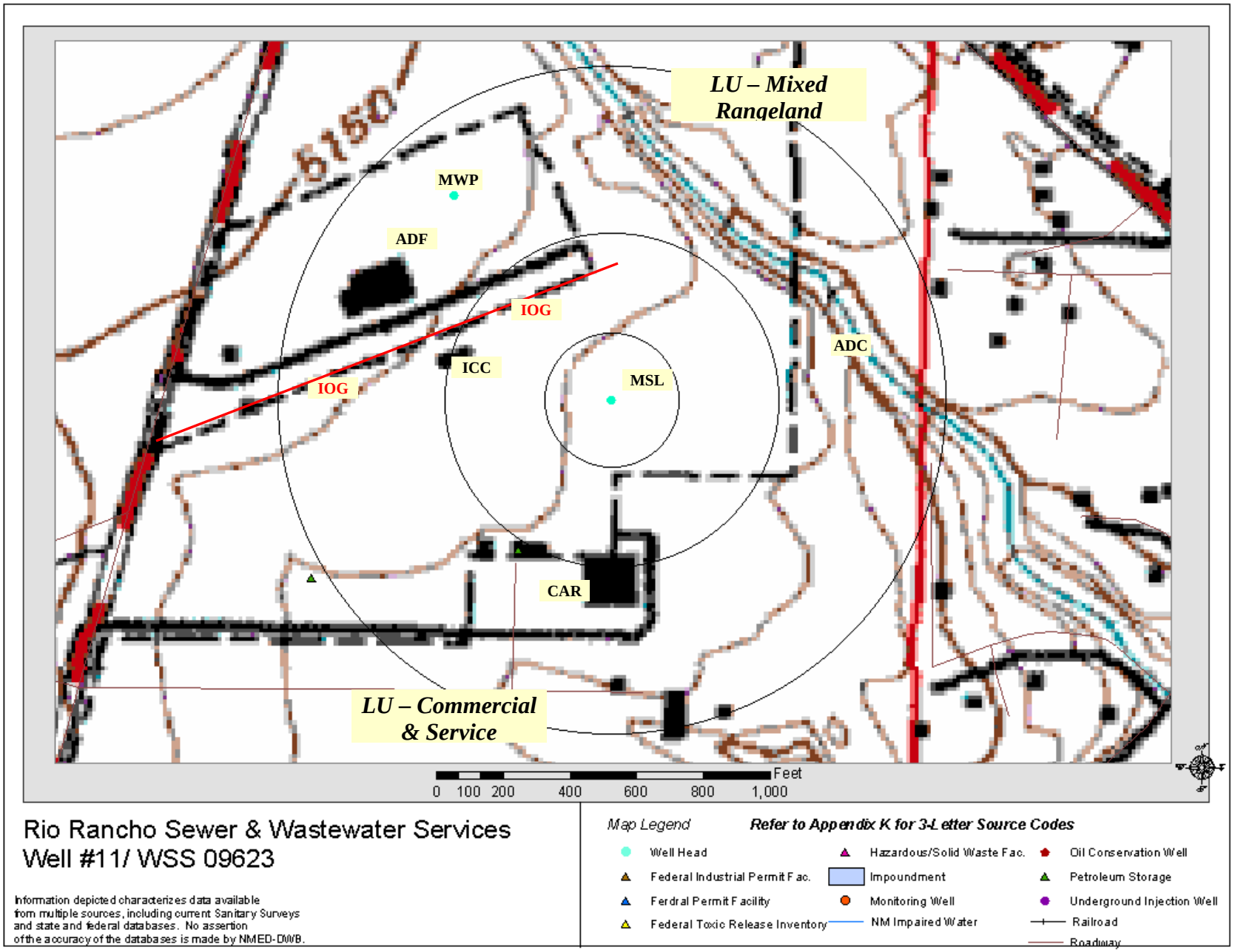

LU – Mixed Rangeland
MWP
LU – Residential
Feet
0 100 200 400 600 800 1,000
Rio Rancho Sewer & Wastewater Services
Well #6A/ WSS 09623
Information depicted characterizes data available from multiple sources, including current Sanitary Surveys and state and federal databases. No assertion of the accuracy of the databases is made by NMED-DWB.
Map Legend
Refer to Appendix K for 3-Letter Source Codes
Well Head
Federal Industrial Permit Fac.
Ferdral Permit Facility
Federal Toxic Release Inventory
Hazardous/Solid Waste Fac.
Impoundment
Monitoring Well
NM Impaired Water
Oil Conservation Well
Petroleum Storage
Underground Injection Well
Railroad
Roadway

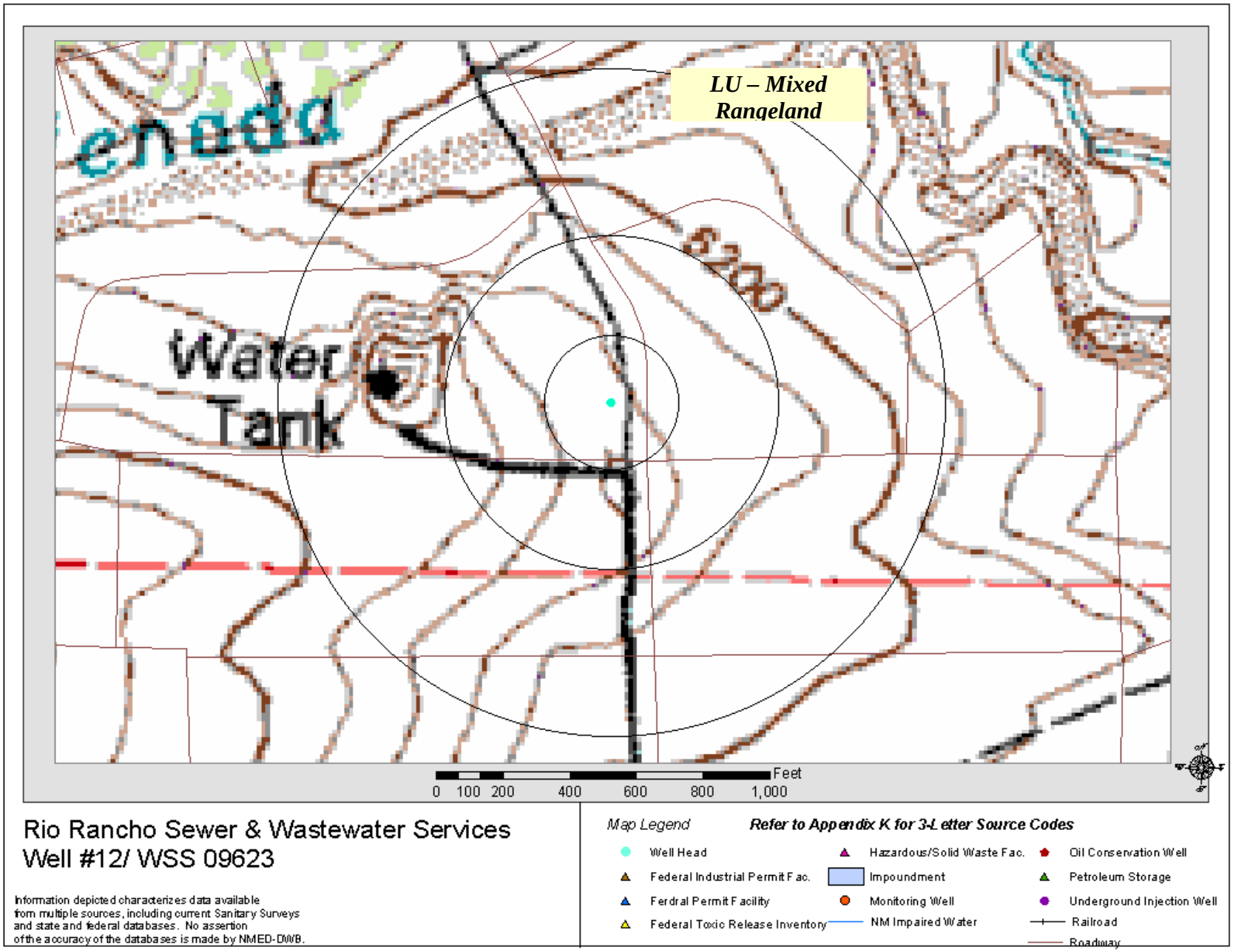

LU – Mixed Rangeland
IUR
IUR
Feet
0 100 200 400 600 800 1,000
Rio Rancho Sewer & Wastewater Services
Well #7/ WSS 09623
Information depicted characterizes data available from multiple sources, including current Sanitary Surveys and state and federal databases. No assertion of the accuracy of the databases is made by NMED-DWB.
Map Legend
Refer to Appendix K for 3-Letter Source Codes
Well Head
Federal Industrial Permit Fac.
Ferdral Permit Facility
Federal Toxic Release Inventory
Hazardous/Solid Waste Fac.
Impoundment
Monitoring Well
NM Impaired Water
Oil Conservation Well
Petroleum Storage
Underground Injection Well
Railroad
Roadway

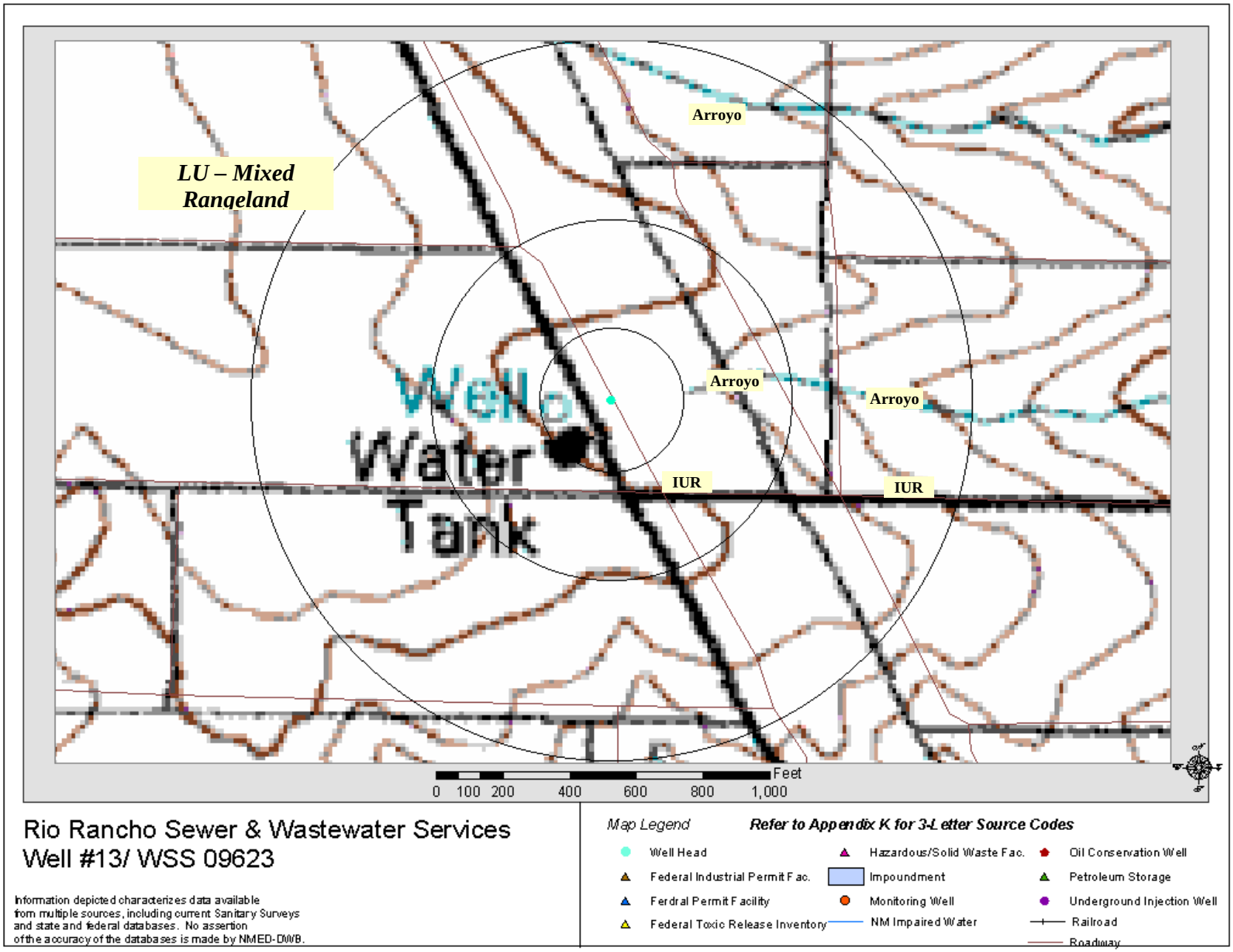

LU – Mixed Rangeland
IUR
IUR
0 100 200 400 600 800 1,000
Feet
Rio Rancho Sewer & Wastewater Services
Well #8/ WSS 09623
Information depicted characterizes data available from multiple sources, including current Sanitary Surveys and state and federal databases. No assertion of the accuracy of the databases is made by NMED-DWB.
Map Legend
Refer to Appendix K for 3-Letter Source Codes
Well Head
Federal Industrial Permit Fac.
Ferdral Permit Facility
Federal Toxic Release Inventory
Hazardous/Solid Waste Fac.
Impoundment
Monitoring Well
NM Impaired Water
Oil Conservation Well
Petroleum Storage
Underground Injection Well
Railroad
Roadway

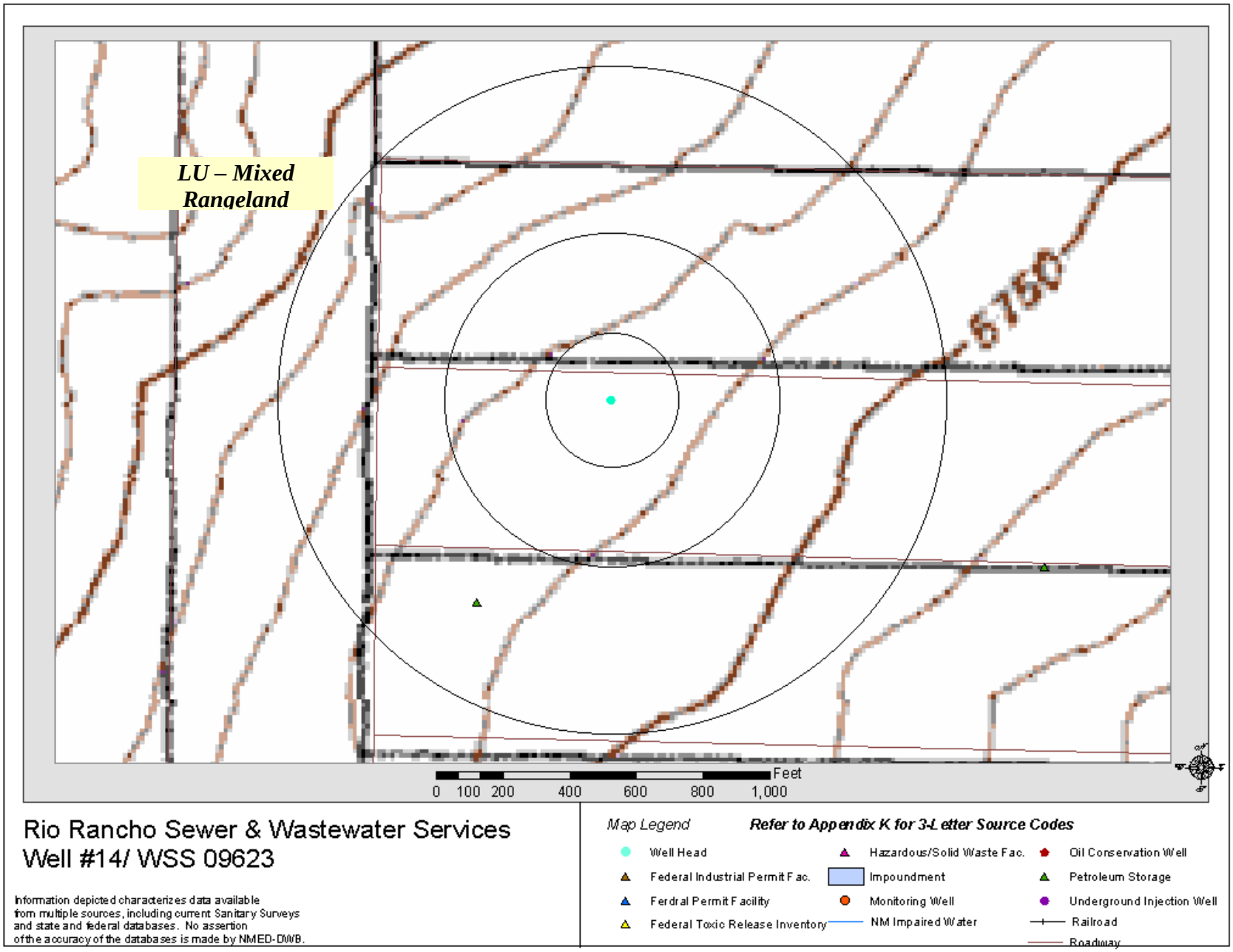

LU – Mixed Rangeland
Arroyo
Well
Water Tank
Feet
0 100 200 400 600 800 1,000
Rio Rancho Sewer & Wastewater Services
Well #9/ WSS 09623
Information depicted characterizes data available from multiple sources, including current Sanitary Surveys and state and federal databases. No assertion of the accuracy of the databases is made by NMED-DWB.
Map Legend
Refer to Appendix K for 3-Letter Source Codes
Well Head
Federal Industrial Permit Fac.
Ferdral Permit Facility
Federal Toxic Release Inventory
Hazardous/Solid Waste Fac.
Impoundment
Monitoring Well
NM Impaired Water
Oil Conservation Well
Petroleum Storage
Underground Injection Well
Railroad
Roadway

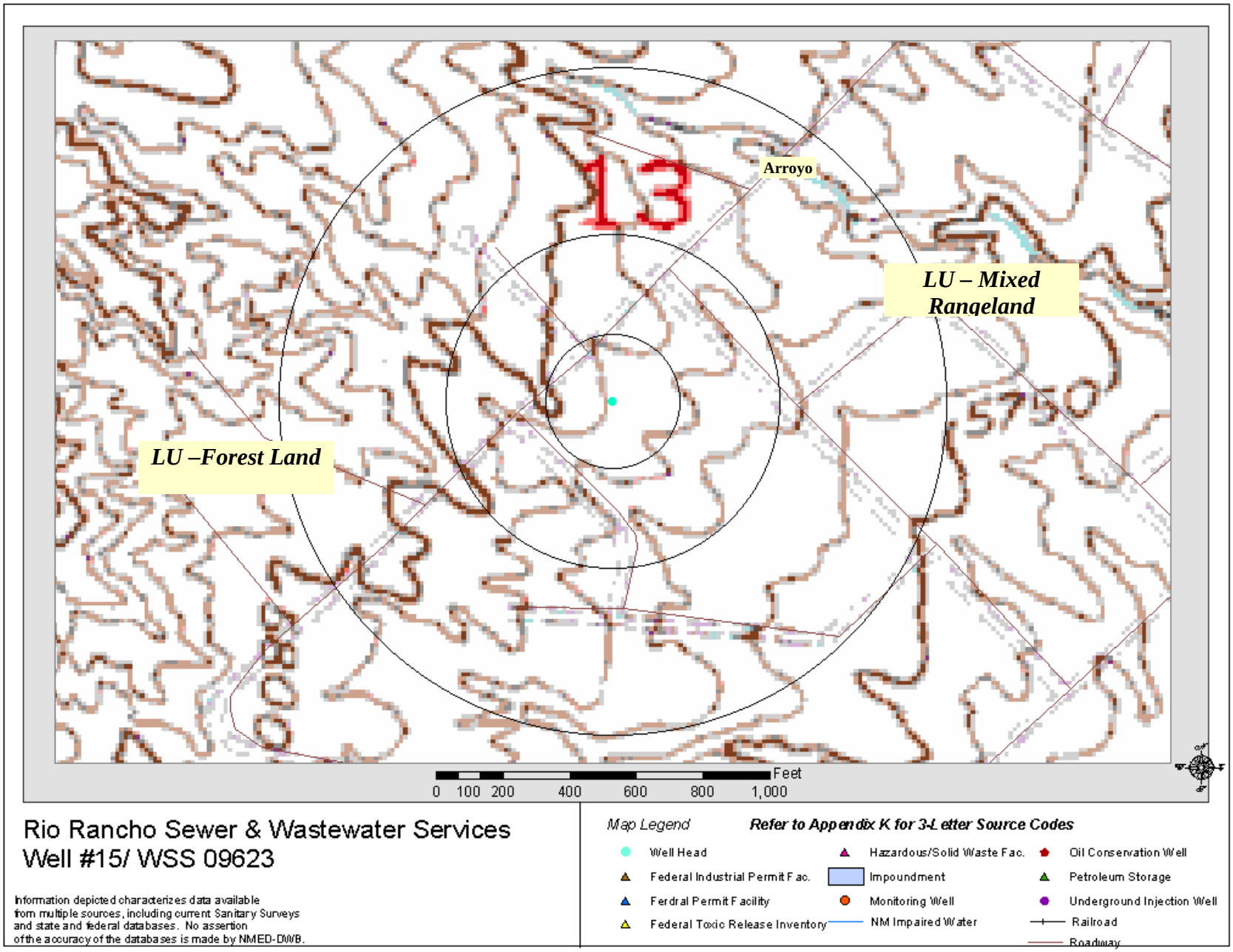

LU – Mixed Rangeland
IUR
Arroyo
IUR
Arroyo
5450
na
0 100 200 400 600 800 1,000
Feet
Rio Rancho Sewer & Wastewater Services
Well #10/ WSS 09623
Information depicted characterizes data available from multiple sources, including current Sanitary Surveys and state and federal databases. No assertion of the accuracy of the databases is made by NMED-DWB.
Map Legend
Refer to Appendix K for 3-Letter Source Codes
Well Head
Federal Industrial Permit Fac.
Ferdral Permit Facility
Federal Toxic Release Inventory
Hazardous/Solid Waste Fac.
Impoundment
Monitoring Well
NM Impaired Water
Oil Conservation Well
Petroleum Storage
Underground Injection Well
Railroad
Roadway

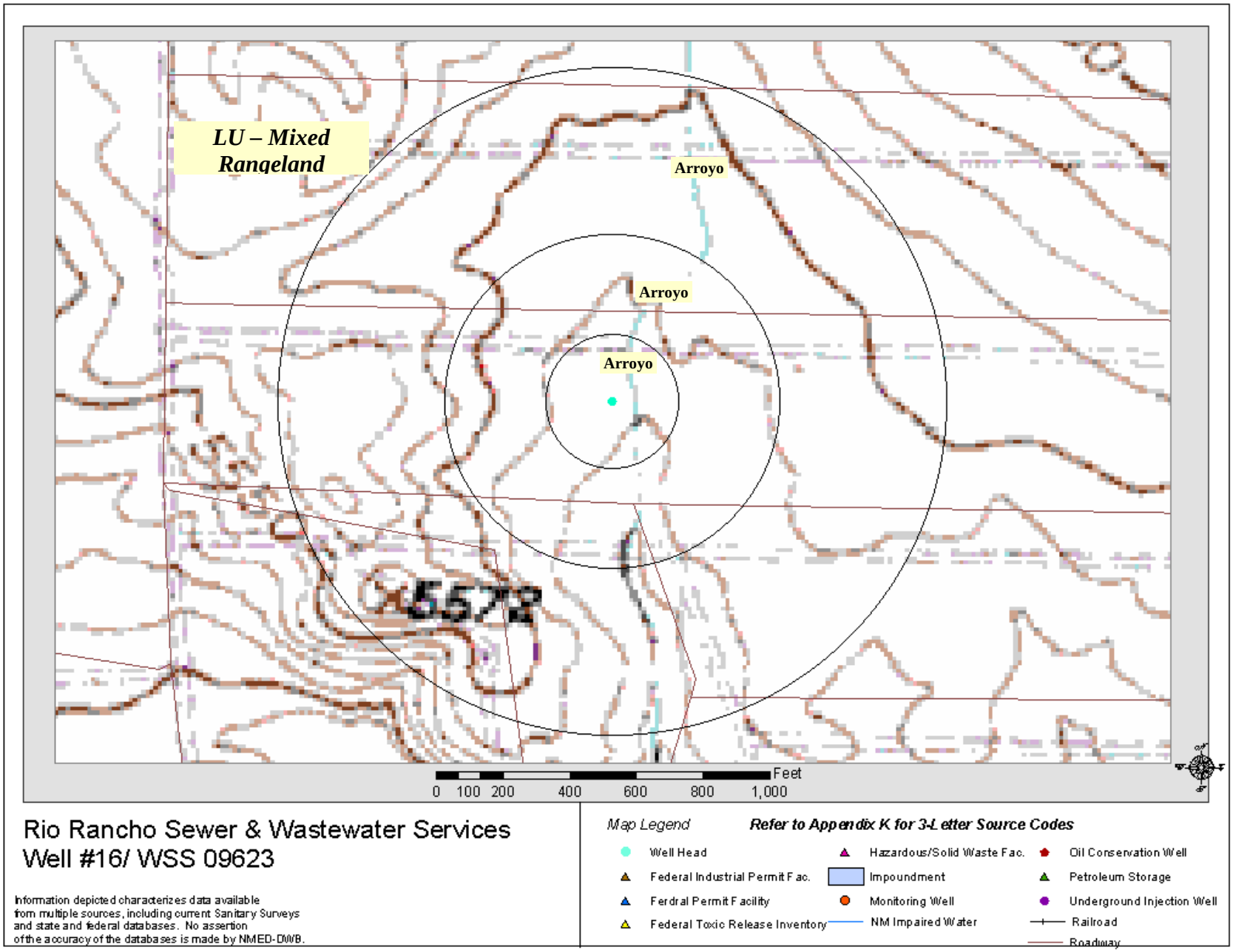

LU – Mixed Rangeland
MWP
ADF
IOG
IOG
ICC
MSL
ADC
CAR
LU – Commercial & Service
Feet
0 100 200 400 600 800 1,000
Rio Rancho Sewer & Wastewater Services
Well #11/ WSS 09623
Information depicted characterizes data available from multiple sources, including current Sanitary Surveys and state and federal databases. No assertion of the accuracy of the databases is made by NMED-DWB.
Map Legend
Refer to Appendix K for 3-Letter Source Codes
Well Head
Federal Industrial Permit Fac.
Ferdral Permit Facility
Federal Toxic Release Inventory
Hazardous/Solid Waste Fac.
Impoundment
Monitoring Well
NM Impaired Water
Oil Conservation Well
Petroleum Storage
Underground Injection Well
Railroad
Roadway

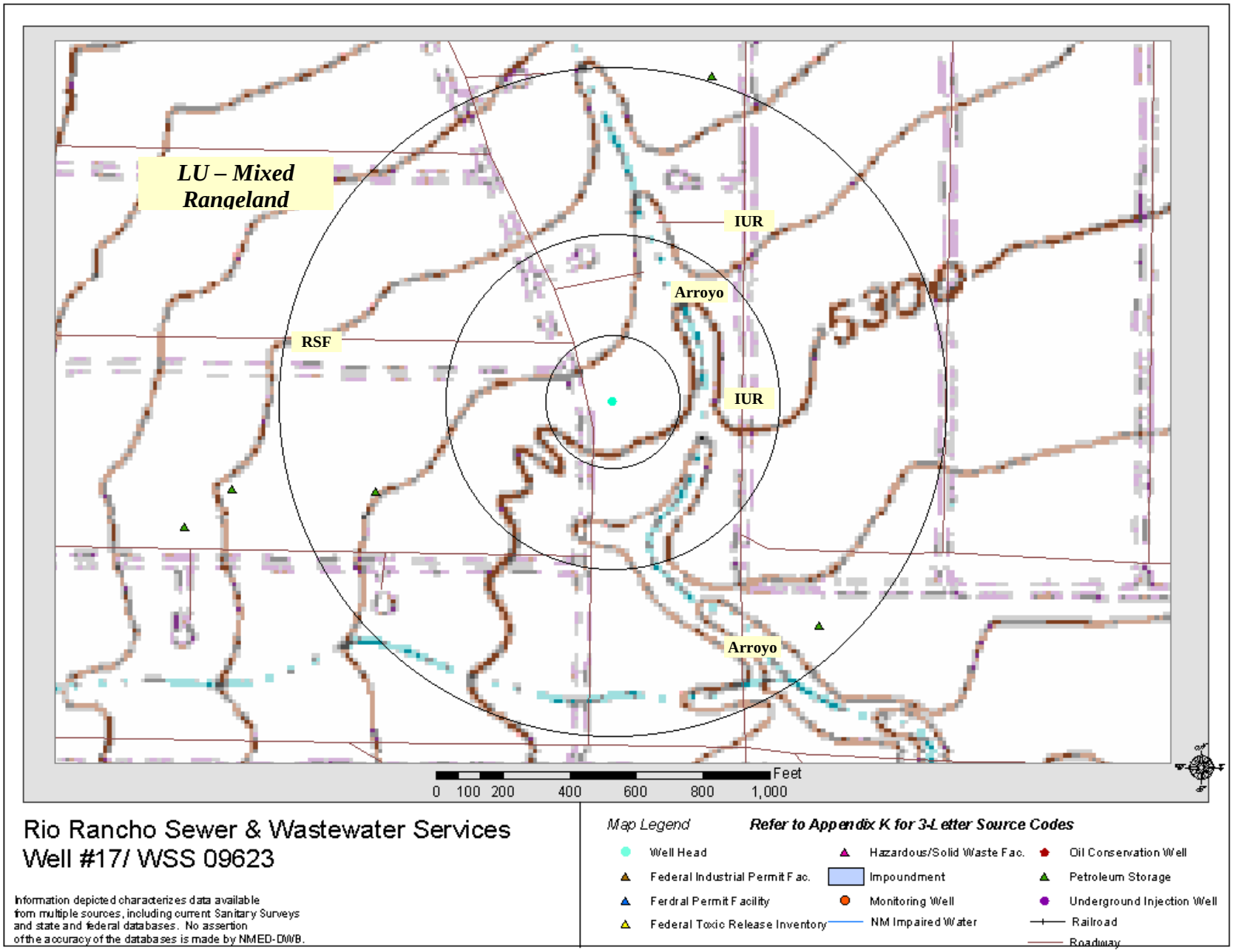

LU – Mixed Rangeland
Water Tank
6200
Feet
0 100 200 400 600 800 1,000
Rio Rancho Sewer & Wastewater Services
Well #12/ WSS 09623
Information depicted characterizes data available from multiple sources, including current Sanitary Surveys and state and federal databases. No assertion of the accuracy of the databases is made by NMED-DWB.
Map Legend
Refer to Appendix K for 3-Letter Source Codes
Well Head
Federal Industrial Permit Fac.
Ferdral Permit Facility
Federal Toxic Release Inventory
Hazardous/Solid Waste Fac.
Impoundment
Monitoring Well
NM Impaired Water
Oil Conservation Well
Petroleum Storage
Underground Injection Well
Railroad
Roadway

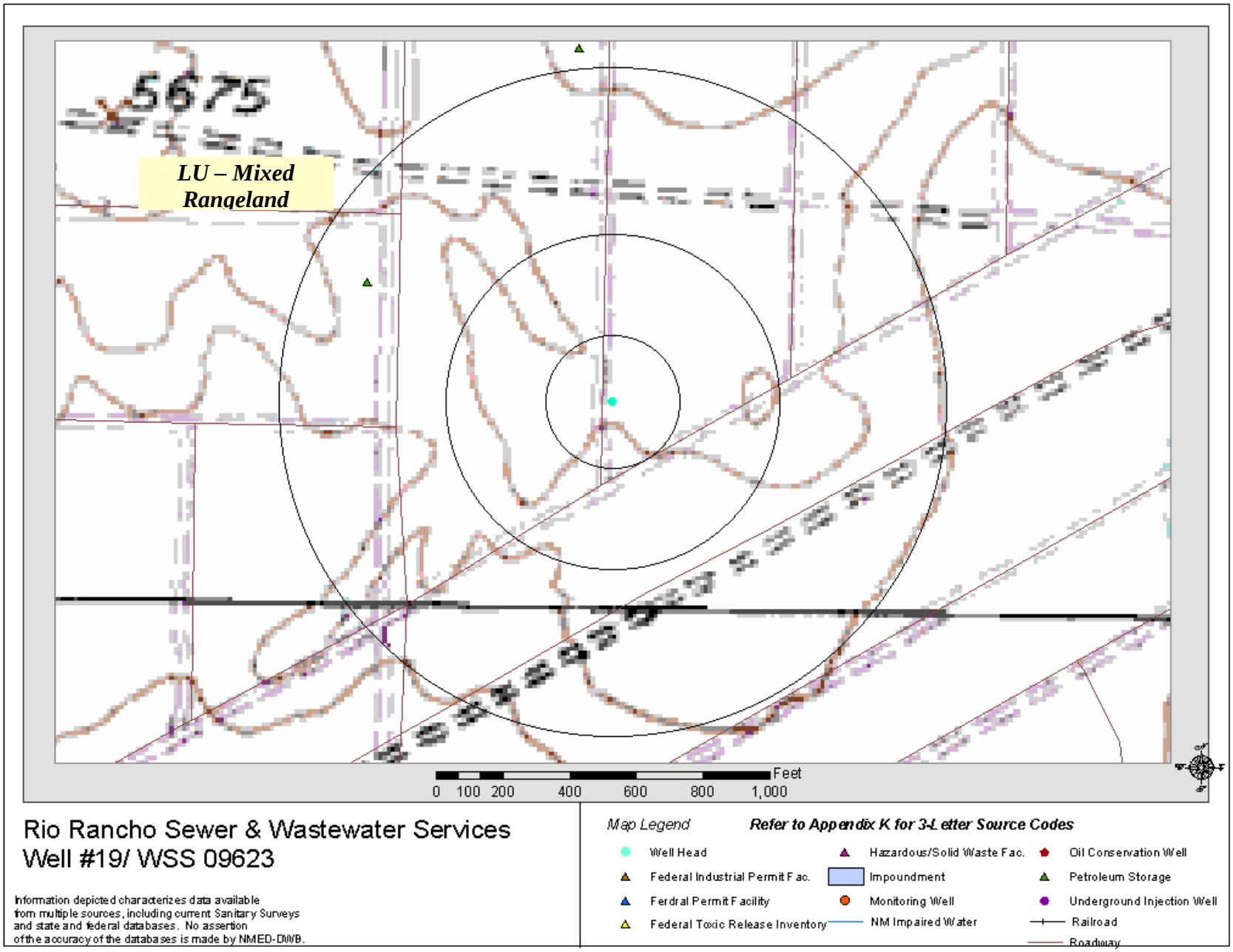

LU – Mixed Rangeland
Arroyo
Arroyo
Arroyo
Well
Water
Tank
IUR
IUR
Feet
0 100 200 400 600 800 1,000
Rio Rancho Sewer & Wastewater Services
Well #13/ WSS 09623
Information depicted characterizes data available from multiple sources, including current Sanitary Surveys and state and federal databases. No assertion of the accuracy of the databases is made by NMED-DWB.
Map Legend
Refer to Appendix K for 3-Letter Source Codes
Well Head
Federal Industrial Permit Fac.
Ferdral Permit Facility
Federal Toxic Release Inventory
Hazardous/Solid Waste Fac.
Impoundment
Monitoring Well
NM Impaired Water
Oil Conservation Well
Petroleum Storage
Underground Injection Well
Railroad
Roadway

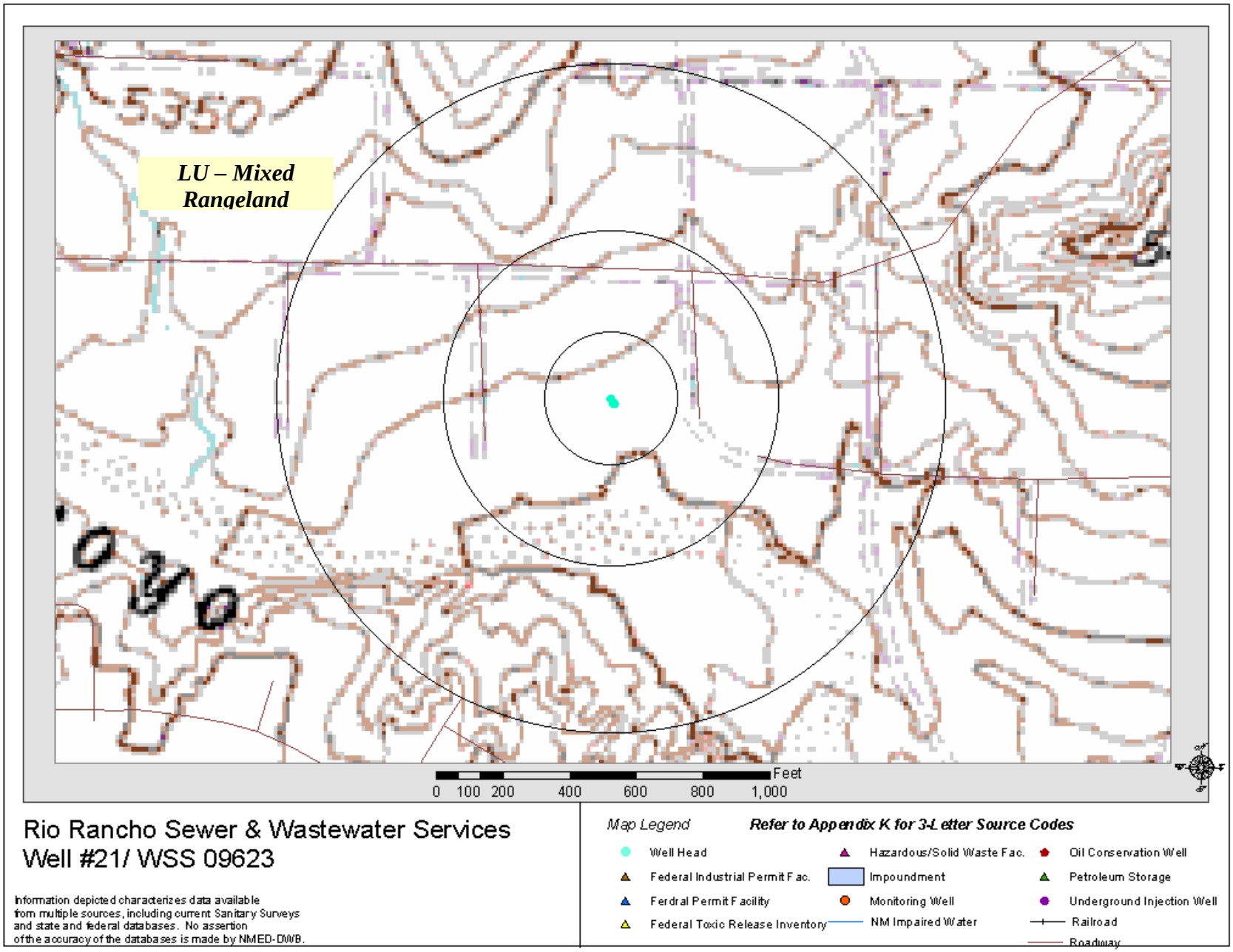

LU – Mixed Rangeland
67160
0 100 200 400 600 800 1,000
Feet
Rio Rancho Sewer & Wastewater Services
Well #14/ WSS 09623
Information depicted characterizes data available from multiple sources, including current Sanitary Surveys and state and federal databases. No assertion of the accuracy of the databases is made by NMED-DWB.
Map Legend
Refer to Appendix K for 3-Letter Source Codes
Well Head
Federal Industrial Permit Fac.
Ferdral Permit Facility
Federal Toxic Release Inventory
Hazardous/Solid Waste Fac.
Impoundment
Monitoring Well
NM Impaired Water
Oil Conservation Well
Petroleum Storage
Underground Injection Well
Railroad
Roadway


13
Arroyo
LU – Mixed Rangeland
LU –Forest Land
5750
6000
0 100 200 400 600 800 1,000
Feet
Rio Rancho Sewer & Wastewater Services
Well #15/ WSS 09623
Information depicted characterizes data available from multiple sources, including current Sanitary Surveys and state and federal databases. No assertion of the accuracy of the databases is made by NMED-DWB.
Map Legend
Refer to Appendix K for 3-Letter Source Codes
Well Head
Federal Industrial Permit Fac.
Ferdral Permit Facility
Federal Toxic Release Inventory
Hazardous/Solid Waste Fac.
Impoundment
Monitoring Well
NM Impaired Water
Oil Conservation Well
Petroleum Storage
Underground Injection Well
Railroad
Roadway


LU – Mixed Rangeland
Arroyo
Arroyo
Arroyo
6578
0 100 200 400 600 800 1,000
Feet
Rio Rancho Sewer & Wastewater Services
Well #16/ WSS 09623
Information depicted characterizes data available from multiple sources, including current Sanitary Surveys and state and federal databases. No assertion of the accuracy of the databases is made by NMED-DWB.
Map Legend
Refer to Appendix K for 3-Letter Source Codes
Well Head
Federal Industrial Permit Fac.
Ferdral Permit Facility
Federal Toxic Release Inventory
Hazardous/Solid Waste Fac.
Impoundment
Monitoring Well
NM Impaired Water
Oil Conservation Well
Petroleum Storage
Underground Injection Well
Railroad
Roadway


LU – Mixed Rangeland
IUR
Arroyo
RSF
5300
IUR
Arroyo
Feet
0 100 200 400 600 800 1,000
Rio Rancho Sewer & Wastewater Services
Well #17/ WSS 09623
Information depicted characterizes data available from multiple sources, including current Sanitary Surveys and state and federal databases. No assertion of the accuracy of the databases is made by NMED-DWB.
Map Legend
Refer to Appendix K for 3-Letter Source Codes
Well Head
Federal Industrial Permit Fac.
Ferdral Permit Facility
Federal Toxic Release Inventory
Hazardous/Solid Waste Fac.
Impoundment
Monitoring Well
NM Impaired Water
Oil Conservation Well
Petroleum Storage
Underground Injection Well
Railroad
Roadway


5675
LU – Mixed Rangeland
0 100 200 400 600 800 1,000
Feet
Rio Rancho Sewer & Wastewater Services
Well #19/ WSS 09623
Information depicted characterizes data available from multiple sources, including current Sanitary Surveys and state and federal databases. No assertion of the accuracy of the databases is made by NMED-DWB.
Map Legend
Refer to Appendix K for 3-Letter Source Codes
Well Head
Federal Industrial Permit Fac.
Ferdral Permit Facility
Federal Toxic Release Inventory
Hazardous/Solid Waste Fac.
Impoundment
Monitoring Well
NM Impaired Water
Oil Conservation Well
Petroleum Storage
Underground Injection Well
Railroad
Roadway


5350
LU – Mixed Rangeland
Feet
0 100 200 400 600 800 1,000
Rio Rancho Sewer & Wastewater Services
Well #21/ WSS 09623
Information depicted characterizes data available from multiple sources, including current Sanitary Surveys and state and federal databases. No assertion of the accuracy of the databases is made by NMED-DWB.
Map Legend
Refer to Appendix K for 3-Letter Source Codes
Well Head
Federal Industrial Permit Fac.
Ferdral Permit Facility
Federal Toxic Release Inventory
Hazardous/Solid Waste Fac.
Impoundment
Monitoring Well
NM Impaired Water
Oil Conservation Well
Petroleum Storage
Underground Injection Well
Railroad
Roadway

8) Show and/or describe any potential changes to the source water protection area that might be considered. For instance, one might extend a boundary determined in the initial delineation in order to incorporate a particular parcel of land or existing or planned zoning area.

STEP 3

9) List the actual and potential sources of contamination identified during the inventory, identify the distances and/or zones of influence where they are located, and provide the date(s) the inventory was conducted (see example, Appendix B). ***NMED-DWB has inserted the Inventory of Actual and Potential Sources of Contamination for your water utility. You may use this inventory to satisfy this required element, or you may wish to customize the inventory.***

Well #1

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Appendix K	CHG	A	1+	High
Appendix K	IOG	A	1+	High
Appendix K	RSF	A	1+	High
Appendix K	MSD	B	0-2	Low
Appendix K	IOG	B	0-2	Low
Appendix K	RSF	B	10+	High
Appendix K	IOG	C	0-4	Low
Appendix K	MWP	C	0-4	Low
Appendix K	RSF	C	15+	High
Map Legend	Federal Industrial Permit Facility	C	0-4	Low

Well #2

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Appendix K	MSD	B	0-2	Low
Appendix K	IOG	B	0-2	Low
Appendix K	RSF	B	10+	High
Appendix K	CHG	C	0-4	Low
Appendix K	IOG	C	0-4	Low
Appendix K	MWP	C	0-4	Low
Appendix K	RSF	C	15+	High
Map Legend	Federal Industrial Permit Facility	C	0-4	Low

Well #3

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Appendix K	MMP	A	1+	High
Appendix K	CFA	B	0-2	Low
Appendix K	CST	B	0-2	Low
Appendix K	CYY	B	0-2	Low
Appendix K	IRG	B	0-2	Low
Appendix K	IUR	B	0-2	Low
Appendix K	MHM	B	0-2	Low
Appendix K	RSF	B	0-2	Low

Appendix K	CST	C	0-4	Low
Appendix K	CSS	C	0-4	Low
Appendix K	CYY	C	0-4	Low
Appendix K	IUR	C	0-4	Low
Appendix K	MSC	C	0-4	Low
Appendix K	RSF	C	15+	High

Well #4

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Base Map	CGC	A	1+	High
Base Map	CGC	B	0-2	Low
Base Map	CGC	C	0-4	Low

Well #6A

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Appendix K	MWP	A	1+	High
Appendix K	UNKNOWN	B		
Appendix K	RSF	C	15+	High ?

Well #7

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Base Map	IUR	B	0-2	Low
Base Map	IUR	C	0-4	Low

Well #8

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Base Map	IUR	B	0-2	Low
Base Map	IUR	C	0-4	Low

Well #9

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Base Map	Arroyo	C	0-4	Low

Well #10

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Base Map	IUR	B	0-2	Low
Base Map	Arroyo	B	0-2	Low
Base Map	IUR	C	0-4	Low

Base Map	Arroyo	C	0-4	Low

Well #11

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Appendix K	MSL	A	1+	High
Appendix K	CFA	B	3-4	Moderately Low
Appendix K	ICC	B	0-2	Low
Appendix K	IOG	B	0-2	Low
Appendix K	CAR	C	0-4	Low
Base Map	ADC	C	0-4	Low
Base Map	ADF	C	0-4	Low
Base Map	MWP	C	0-4	Low
Map Legend	Petroleum storage	C	0-4	Low

Well #12

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Appendix K	-	-	-	-

Well #13

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Base Map	IUR	B	0-2	Low
Base Map	Arroyo	B	0-2	Low
Base Map	IUR	C	0-4	Low
Base Map	Arroyo	C	0-4	Low

Well #14

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Map Legend	Petroleum Storage	C	0-4	Low

Well #15

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Base Map	Arroyo	C	0-4	Low

Well #16

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Base Map	Arroyo	A	1+	Low
Base Map	Arroyo	B	0-2	Low
Base Map	Arroyo	C	0-4	Low

Well #17

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Appendix K	IUR	B	0-2	Low
Appendix K	IUR	C	0-4	Low
Appendix K	RSF	C	0-4	Low
Base Map	Arroyo	B	0-2	Low
Base Map	Arroyo	C	0-4	Low
Map Legend	Petroleum Storage	C	0-4	Low

Well #19

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Map Legend	Petroleum Storage	C	0-4	Low

Well #21

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Appendix K	-	-	-	-

STEP 4

10) NMED-DWB has inserted a susceptibility analysis of your water utility, according to the U.S. EPA approved susceptibility guidelines under SWAPP, 2000.

Table 8	**SOURCE SUSCEPTIBILITY RANKING**				
SOURCE NAME	**Sensitivity Rank**	**Vulnerability Rank**	**Susceptibility Rank**	**Operational Exceptions**	**Final Rank**
WELL # 1	Moderately Low	High	Moderately High	LU – Mixed Rangeland LU – Residential	High
WELL # 2	Low	High	Moderate	LU – Mixed Rangeland LU – Residential	Moderately High
WELL # 3	Low	High	Moderate	LU – Industrial LU – Mixed Rangeland LU – Residential	Moderately High
WELL # 4	Low	High	Moderate	LU – Urban or Built up Land LU – Mixed Rangeland LU – Residential	Moderately High
WELL # 6A	Low	High	Moderate	LU – Mixed Rangeland LU – Residential	Moderately High
WELL # 7	Low	Low	Low	LU – Mixed Rangeland	Moderately Low
WELL # 8	Low	Low	Low	LU – Mixed Rangeland	Moderately Low
WELL # 9	Low	Low	Low	LU – Mixed Rangeland	Moderately Low
WELL # 10	Low	Low	Low	LU – Mixed Rangeland	Moderately Low
WELL # 11	Moderately Low	High	Moderately High	LU – Mixed Rangeland LU – Commercial & Service >= 3 PSOC in a Zone	High

Table 8	SOURCE SUSCEPTIBILITY RANKING				
SOURCE NAME	**Sensitivity Rank**	**Vulnerability Rank**	**Susceptibility Rank**	**Operational Exceptions**	**Final Rank**
WELL # 12	Moderately Low	Low	Moderately Low	LU – Mixed Rangeland	Moderate
WELL # 13	Low	Low	Low	LU –Forest Land	Low
WELL # 14	Low	Low	Low	LU – Mixed Rangeland	Moderately Low
WELL # 15	Low	Low	Low	LU – Mixed Rangeland LU – Forest Land	Moderately Low
WELL # 16	Low	Low	Low	LU – Mixed Rangeland	Moderately Low
WELL # 17	Low	Low	Low	LU – Mixed Rangeland >= 3 PSOC in a Zone	Moderately Low
WELL # 19	Low	Low	Low	LU – Mixed Rangeland	Moderately Low
WELL # 21	Low	Low	Low	LU – Mixed Rangeland	Moderately Low

STEP 5

11) List the existing and proposed land use of the delineated source area(s) such as recreation, agriculture, forestry, commercial, and residential. If applicable, this should include current and proposed zoning.

12) Provide a management strategy (measures/tools) and schedule for ***each*** actual and/or potential contaminate (noted in the *Inventory of Actual and Potential Sources of Contamination). Although there may be a time-delay in the implementing specific management strategies, priority should be given to water sources identified as having the greatest s*usceptibility to contamination. **Your water utility is not required to develop a susceptibility analysis, and, NMED-DWB has completed and inserted an analysis for purposes of prioritizing protection planning, refer to Step 4, # 10).**
In addition, state if, when, and how the management strategies will be updated (see example, Appendix D).

STEP 6

13) Develop a *contingency protocol and schedule* that addresses potential future events that may adversely impact your water supply system such as water outages, accidental leaks and/or spills, water conservation, and land acquisition for new sources of water supply. You should include when and how the plan will be updated (see example, Appendix E).

Map Code	Land Use	Description	Contaminants of Concern*
AGRICULTURAL LAND USE			
AAP	Animal Processing or Rendering Plants	Commercial Operations/Waste Storage/Disposal Facility	Nitrates, Pathogens, Organic/Inorganic Chemicals
ACS	Farm/Ranch Agrochemical Storage Facilities or Sites	Farm/Ranch Storage Site	Pesticides, Herbicides, Fertilizers
ADC	Drainage Canals, Ditches or Acequias-Unlined, Wells (Private, Stock wells, and Irrigation)	Runoff and Infiltration	Pesticides, Herbicides, Fertilizers, Nitrate, Pathogens
ADF	Livestock Production-Dairies	Livestock Wastes, Runoff and Infiltration	Nitrate, Phosphate, Chloride, Pathogens, Pharmaceuticals
AFI	Farming-Irrigated Croplands	Runoff and Infiltration	Nitrate, Ammonia, Chloride, Fertilizers, Pesticides, Herbicides
AFL	Confined Animal Feeding Operations	Runoff and Infiltration of Livestock Wastes	Nitrate, Phosphate, Chloride, Pathogens, Pharmaceuticals
AFM	Farm Machinery Storage or Maintenance Areas	Farm Machinery Maintenance Areas	Automotive Wastes, Welding Wastes, Fuels, Oils, Lubricants
AFN	Farming-Non-irrigated Croplands	Runoff and Infiltration Operations	Nitrate, Ammonia, Chloride, Fertilizers, Pesticides, Herbicides
AHC	Horticultural/Gardens/Nurseries/Greenhouses	Operations/Storage	Pesticides, Herbicides, Fertilizers
AHF	Hay/Feed and Veterinary Product Storage Sites	Farm/Ranch Storage Site	Fungicides, Pesticides, Nitrates, Pharmaceuticals
AMA	Manure or Livestock Waste-Land Application Areas	Land Application of Manure	Nitrate, Ammonia, Phosphate, Chloride, Pathogens, Pharmaceuticals
AMS	Manure or Livestock Waste-Storage Facilities or Sites	Lined and Unlined Manure Storage Facilities	Nitrate, Ammonia, Phosphate, Chloride, Pathogens, Pharmaceuticals
AOA	Livestock Production-Other Animal	Livestock Wastes	Nitrate, Ammonia, Phosphate, Chloride, Pathogens, Pharmaceuticals
APF	Livestock Production -Poultry	Poultry Sewage Wastes	Nitrate, Ammonia, Phosphate, Chloride, Pathogens, Pharmaceuticals
APP	Processing Plants or Mills- Hay, Grain, or Produce	Operations, Waste Storage and Disposal	Organic/Inorganic Chemicals, Lubricants, Machinery Wastes
ARL	Animal Rangeland	Rangeland and Pasturage	Nitrate, Ammonia, Phosphate, Chloride, Pesticides, Pathogens
ASC	Bulk Agrochemical Storage-Petroleum/Chemicals	Storage-500 gallons or more	Petroleum Products, Inorganic/Organic Chemicals
ASF	Bulk Agrochemical Storage-Fertilizers	Feed Mill, Agricultural Co-op	Fertilizers
ASG	Bulk Agricultural Product Storage-Grain or Produce	Grain Elevator, Warehouse or Storage Site	Fungicides, Oils, Lubricants, Machinery Wastes

Map Code	Land Use	Description	Contaminants of Concern*
ASH	Livestock Production -Sheep	Livestock Sewage Wastes	Nitrate, Ammonia, Phosphate, Chloride, Pathogens, Pharmaceuticals
ASP	Bulk Agrochemical Storage-Pesticides	Feed Mill, Agricultural Co-op	Pesticides
ASW	Livestock Production -Swine	Livestock Sewage Wastes	Nitrate, Ammonia, Phosphate, Chloride, Pathogens, Pharmaceuticals
COMMERCIAL LAND USE			
CAI	Airports (Active/Inactive)	Operations/Maintenance/Construction	Aircraft Fuels, Deicers, Batteries, Diesel Fuel, Chlorinated Solvents, Automobile Wastes, Heating Oil, Building Wastes, Sewage, Septage, Pathogens, Pesticides, Fertilizers
CAR	Automotive Repair Shops	Operations/Maintenance/Storage	Solvents, Metals, Automotive Waste, Oils, Gasoline
CAW	Abandoned/Improperly Closed Wells	Storage/Disposal	Organic/Inorganic Chemicals, Brines, Waste Oil, Treated Sewage Effluent, Storm Water Runoff, Process Waste Water, Metals, Pathogens, Nitrate
CBS	Automotive Body Shops	Operations/Maintenance	Paints, Solvents
CBY	Boat Yards/Marinas	Operations/Maintenance	Gasoline, Diesel Fuels, Septage, Wood Treatment Chemicals, Paints, Varnishes, Automotive Wastes, Solvents, Building Wastes
CCG	Camp Grounds - Unsewered	Untreated Domestic Wastewater	Septage, Gasoline, Pesticides, Organic/Inorganic Chemicals
CCE	Cemeteries	Operations/Maintenance	Leachate, Arsenic, Pesticides, Fertilizers
CCW	Car Washes	Unsewered, Without Total Recycling System	Soaps, Detergents, Waxes, Organic/Inorganic Chemicals
CCY	Construction/Demolition Yard/Staging Areas	Storage/Maintenance	Gasoline, Diesel Fuels, Wood Treatment Chemicals, Paints, Varnishes, Automotive Wastes, Solvents, Building Wastes, Explosives, Oil
CDC	Dry Cleaning Shops	Operations/Maintenance	Chlorinated Solvents, Organic/Inorganic Chemicals
CFA	Fuel Storage Tanks-Above Ground	Non-Service Station Tanks	Gasoline, Diesel Fuel, Organic/Inorganic Chemicals
CFB	Fuel Storage Tanks-Below Ground	Non-Service Station Tanks	Gasoline, Diesel Fuel, Organic/Inorganic Chemicals
CFC	Funeral Homes/Crematories	Operations	Biohazard Waste, Organic/Inorganic Chemicals, Septage
CFR	Furniture Repair/Refinishing	Operations	Paints, Solvents, Organic Chemicals
CGC	Golf Courses	Operations/Maintenance	Fertilizers, Pesticides, Gasoline, Automotive Wastes, Batteries, Septage
CHG	Historic Gasoline Service Stations	Above/Below Ground Storage Tanks/Operations	Gasoline, Oils, Solvents, Automotive Wastes, Septage

Map Code	Land Use	Description	Contaminants of Concern*
CHM	Home Manufacturing	Operations/Maintenance/Storage	Paints, Solvents, Organic/Inorganic Chemicals
CHN	Hospitals/Nursing Homes - Unsewered	Wastewater Discharge to Septic Tank/Leach Field	Biohazard Waste, Organic/Inorganic Chemicals, Septage, Radiological Waste
CHW	Hardware/Lumber/Parts Stores	Operations/Storage	Pesticides, Fertilizers, Organic/Inorganic Chemicals
CLD	Laundromats - Unsewered	Wastewater Discharge	Detergents, Soaps, Septage
CPP	Photo Processing Laboratories	Operations/Storage	Organic/Inorganic Chemicals
CPR	Printing Shops	Operations/Storage	Solvents, Inks, Dyes, Organic/Inorganic Chemicals
CPS	Paint Stores	Storage	Paint, Solvents
CRL	Research Laboratories	Operations/Maintenance/Storage	Biohazard Waste, Radiological Materials and Waste, Metals, Organic/Inorganic Chemicals
CRY	Railroad Yards and Tracks	Operations/Maintenance/Storage	Diesel Fuel, Pesticides, Organic/Inorganic Chemicals
CSS	Gasoline Service Stations	Above/Below Ground Storage Tanks/Operations	Gasoline, Oils, Solvents, Automotive Wastes, Septage
CST	Commercial Septic Tanks/Leachfields/Leachpits/Cesspools	Storage/Disposal	Septage, Septic Effluent, Pathogens, Nitrate, Ammonia, Chloride
CVS	Veterinary Facilities	Operations/Maintenance	Biohazard Waste, Organic/Inorganic Chemicals, Septage, Radiological Waste
INDUSTRIAL LAND USE			
IAS	Asphalt Plants	Production/Storage	Petroleum Derivatives
ICC	Cement/Concrete Plants	Operations/Maintenance/Storage	Organic/Inorganic Chemicals, Oils, Natural Gas, Propane,
ICE	Communications Equipment Manufacturers	Production/Maintenance/Storage	Solvents, Organic/Inorganic Chemicals, Oils, Waste Oils, Metals
ICL	Chemical Landfills	Storage/Disposal	Leachate of Organic/Inorganic Chemicals, Acids, Bases, Metals, Solvents, Gasoline, Diesel Fuel, Pesticides, PCB’s
ICP	Chemical Production Plants	Production/Maintenance/Storage	Organic/Inorganic Chemicals, Solvents, Oils, Metals
IEE	Electronic/Electrical Equipment Manufacturers	Production/Maintenance/Storage	Solvents, Organic/Inorganic Chemicals, Oils, Waste Oils, Metals, Acids, Bases
IFM	Furniture and Fixture Manufacturers	Production/Maintenance/Storage	Paints, Solvents, Organic/Inorganic Chemicals

Map Code	Land Use	Description	Contaminants of Concern*
IFW	Foundry/Smelting Plants	Production/Maintenance/Storage	Organic/Inorganic Chemicals, Metals, Solvents, Acids, Bases, Oils
IGO	Gas/Oil Wells-Active/Abandoned/Test, Wells Geothermal and Industrial	Production	Oil, Natural Gas, Organic/Inorganic Chemicals, Acids, Bases, Drilling Wastes
IHD	Historic Dumps/Landfills	Storage/Disposal	Leachate of Organic/Inorganic Chemicals, Acids, Bases, Metals, Solvents, Gasoline, Diesel Fuel, Pesticides, PCB's, Automotive Wastes
IHM	Historic Mining Operations	Production Waste/Storage	Metals, Inorganic Chemicals, Acids, Bases, Radiological Materials
IMI	Primary Metal Industries	Steel/Metal Works, Rolling/Wire Mills	Metals, Inorganic Chemicals, Acids, Bases
IMO	Mining Operations (Surface And Subsurface)	Production Waste/Storage	Metals, Inorganic Chemicals, Acids, Bases, Radiological Materials
IMP	Metal Plating/Processing Facilities	Operations/Maintenance/Storage	Organic/Inorganic Chemicals, Acids, Bases, Metals
IMW	Machine/Metal Working Shops	Operations/Maintenance/Storage	Cutting Oils, Metals, Solvents, Organic/Inorganic Chemicals, Detergents
IOG	Oil/Gas Pipelines	Transport	Oils, Gasoline, Volatile Organic Chemicals, Natural Gas, Propane
IPL	Plastics Manufacturing/Molder	Operations/Maintenance/Storage	Solvents, Oils, Organic/Inorganic Chemicals, Acids, Bases
IPM	Paper Mills	Operations/Maintenance/Storage	Acids, Metals, Organic/Inorganic Chemicals
IPP	Petroleum Production/Refining/ Bulk Plants	Operations/Maintenance/Storage	Oils, Gasoline, Diesel Fuels, Organic Chemicals, Oil Drilling/Refining Wastes
IPU	Public Utilities	Power Generating Stations	PCB's, Solvents, Diesel Fuel, Propane, Natural Gas, Oil, Acids, Bases, Organic/Inorganic Chemicals, Metals
IRG	RCRA Waste Generators - Other	Storage/Disposal	Organic/Inorganic Chemicals, Solvents, Metals, PCB's, Acids, Bases, Radiological Materials
IRW	Radioactive Waste Disposal Sites	Storage/Disposal	High and Low Level Radiological Wastes
ISD	Sumps/Dry Wells	Storage/Disposal	Storm Water Runoff, Organic/Inorganic Chemicals, Solvents, Process Wastewater, Pesticides, Oils
ISF	Superfund Sites	Storage/Disposal	Organic/Inorganic Chemicals, Solvents, Metals, PCB's, Acids, Bases, Radiological Materials
ISM	Primary Wood Industries	Saw Mills, Planers, Wood Treatment	Organic/Inorganic Chemicals, Metals, Solvents
IST	Stone, Tile, Glass Manufacturing	Operations/Maintenance/Storage	Solvents, Oils, Metals, Organic/Inorganic Chemicals
ITS	Treatment/Storage/Disposal Ponds/Lagoons	Treatment/Storage	Organic/Inorganic Chemicals, Metals, Acids, Bases, Sewage

Map Code	Land Use	Description	Contaminants of Concern*
ITT	Transport/Distribution, Warehouses, Truck Terminals	Operations/Maintenance/Storage	Gasoline, Diesel Fuels, Automotive Wastes, Metals, Organic/Inorganic Chemicals, Acids, Bases
IUD	Unregulated Dumps/Excavated Sites, Snow Dumps	Storage/Collection/Disposal	Organic/Inorganic Chemicals, Automotive Wastes, Oil, Gasoline, Runoff from Adjacent Sites
IUI	Underground Injection (UIC) Wells	Storage/Disposal	Organic/Inorganic Chemicals, Brines, Waste Oil, Treated Sewage Effluent, Storm Water Runoff, Process Wastewater, Metals, Pathogens, Nitrate
IUR	Utility/Transportation Right of Ways, major transportation corridor	Power Lines, Gas/Oil Pipelines	Pesticides, Gasoline, Diesel Fuels, Automotive Wastes, Organic/Inorganic Chemicals, PCB's, Sewage, Metals, Storm water Runoff, Pathogens
MUNICIPAL/RESIDENTIAL LAND USE			
MHM	Highway/Road Maintenance Yards	Operations/Maintenance/Storage	Gasoline, Diesel Fuels, Solvents, Road Salt, Asphalt, Pesticides, Automotive Wastes,
MHR	Highway Rest Areas	Operations/Maintenance/Storage/Disposal	Automotive Wastes, Septage, Gasoline, Diesel Fuels, Pesticides
MIN	Incinerators - Commercial or Municipal	Operations/Disposal	Metals, Organic/Inorganic Chemicals
MLF	Municipal Waste Landfills	Storage/Disposal	Leachate, Organic/Inorganic Chemicals, Pesticides, Metals, Oils
MMF	Military Facilities	Operations/Maintenance/Storage/Disposal	Gasoline, Aircraft Fuels, Diesel Fuels, Automotive Wastes, Metals, Organic/Inorganic Chemicals, Explosives, Radiological Materials, Pesticides, Sewage/Septage, Oils, Solvents, Fertilizers, Batteries, Deicers
MMP	Motor Pools	Operations/Maintenance/Storage/Disposal	Gasoline, Diesel Fuel, Oils, Waste Oils, Automotive Waste, Batteries, Metals
MPS	Sewage Pump Stations	Operations/Storage	Sewage, Pathogens, Nitrate, Metals, Organic/Inorganic Chemicals
MPW	Polluted Surface Water Sources	Naturally Occurring/Anthropogenic	Sewage, Pathogens, Nitrate, Metals, Acids, Bases, Organic/Inorganic Chemicals
MRF	Recycling Facilities	Operations/Storage/Disposal	Metals, Organic/Inorganic Chemicals, Pesticides, Automotive Wastes, Oils
MSC	Schools – Unsewered	Wastewater Discharge to Septic Tank/Leach Field	Septage, Septic Effluent, Pathogens, Nitrate, Ammonia, Chloride
MSD	Storm Drainage Collection Areas or Outlets-Unlined	Storage/Disposal	Runoff, Pesticides, Fertilizer, Pathogens, Nitrate, Phosphate, Oil
MSL	Sewer Lines	Transport	Sewage, Pathogens, Nitrate, Metals, Organic/Inorganic Chemicals
MSP	Wastewater Seepage/Retention Ponds (Unlined/Lined)	Storage/Disposal	Sewage Effluent, Nitrate, Ammonia, Pathogens, Organic/Inorganic Chemicals, Pesticides
MSS	Sewage Effluent/Sludge Land Application Areas	Storage/Disposal	Sewage/Sewage Sludge, Nitrate, Pathogens, Organic/Inorganic Chemicals, Metals
MST	Sewage Treatment Plants	Operations/Maintenance/Storage/Disposal	Sewage, Sewage Sludge, Metals, Pathogens, Organic/Inorganic Chemicals

Map Code	Land Use	Description	Contaminants of Concern*
MSW	Solid Waste Transfer Stations	Storage/Disposal	Metals, Organic/Inorganic Chemicals, Pesticides, Automotive Wastes, Oils
MWP	Water Treatment Plants and Water Supply Wells	Operations/Maintenance/Storage/Disposal	Organic/Inorganic Chemicals, Chlorine
RSF	Single Family Residences - Unsewered	Wastewater Discharge to Septic Tank/Leach Field or Cesspool	Septage, Pathogens, Nitrate, Ammonia, Chloride, Heavy Metals, Household Pesticides, Herbicides, Cleaning Agents and Solvents, Fuels
* Contaminants of Concern include substances that are commonly, but not always, associated with the Contaminant Source listed in column 2			

Name of Contaminant	MCL *	Potential Contaminant Source (by Contaminant Code)***	Health Effects
VOLATILE ORGANIC CHEMICALS			
Benzene	0.005	AAP, APP, CAI, CAR, CBS, CBY, CCY, CDC, CHW, CHM, CHN, CSY, CPP, CPR, CPS, CRL, CRY, CUS, CVS, ICC, ICE, ICL, ICP, IEE, IFW, IFM, IHD, ILS, IMI, IMW, IMP, IPL, IPM, IPP, IPU, IRG, ISD, ISF, ISM, IST, ITS, ITT, IUD, IUI, IUR, MMF, MMP, MSW	Anemia; decrease in blood platelets; nervous system disorders; immune system depression; increased risk of cancer
Carbon Tetrachloride	0.005	AAP, APP, CAI, CDC, CHM, CHN, CHW, CPP, CPR, CRL, CUS, CVS, ICE, ICL, ICP, IEE, IHD, ILS, IMI, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISD, ISF, ISM, IST, ITS, ITT+, IUD, MLF, MMF, MMP, MSC, MSW	Liver problems; kidney, lung damage; increased risk of cancer
Ortho-Dichlorobenzene	0.6	CAR, CBS, CBY, CCY, CDC, CFR, CHM, CHW, CPP, CPR, CPS, CRL, CRY, CUS, ICE, ICP, ICL, IEE, IFM, IHD, ILS, IMI, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISD, ISF, ISM, IST, ITS, ITT, IUD, MHM, MMF, MMP, MSC	Liver, kidney, nervous system or circulatory problems
Para-Dichlorobenzene	0.075	ACS, AFI, AFN, AHC, AHF, ASC, ASP, CAR, CDC, CPP, CHW, CPP, CPR, CPS, CRL, CRY, CUS, ICL, ICP, ILS, IMP, IMW, IPL, IPP, IPU, IRG, ISF, ITS, ITT, MMF, MMP, MSC	Eye, respiratory, gastrointestinal tract irritation; anemia; skin lesions; liver, kidney, spleen damage; blood changes
1, 2-Dichloroethane	0.005	ACS, AFI, AFN, AHC, AHF, ASC, ASG, ASP, CFR, CHN, CPP, CPR, CRL, CUS, CVS, ICL, ICP, IEE, IFM, ILS, ITT, IMW, IPL, IPP, IRG, ISD, ISF, IUD, MMF, MSC	Nervous system disorders; lung, kidney, liver, circulatory, gastrointestinal effects; increased risk of cancer
1,1-Dichloroethene	0.007	CPP, CPR, CRL, CUS, ICP, ICL, IHD, ILS, IMW, IPL, IPM, IPU, IRG, ISD, ISF, ISM, ITS, ITT, IUD, MSC	Liver, kidney damage; increased risk of cancer; fetal toxicity
Cis-1, 2-Dichloroethene	0.07	AAP, CAI, CAR, CBS, CCY, CFR, CHG, CHM, CPP, CPR, CPS, CRL, CRY, CSS, CSY, ICP, ICL, IEE, IFM, IHD, ILS, IMI, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISD, ISF, ISM, ITS, ITT, IUD, IUI, MMF, MMP, MSP, MST	Nervous system disorders; liver, circulatory system damage
Trans-1, 2-Dichloroethene	0.1	AAP, CAI, CAR, CBS, CCY, CFR, CHG, CHM, CPP, CPR, CPS, CRL, CRY, CSS, CSY, IEE, IFM, ICP, ICL, IHD, ILS, IMI, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISD, ISF, ISM, ITS, ITT, IUD, IUI, MMF, MMP, MSP, MST	Nervous system disorders; liver, circulatory system damage
Dichloromethane	0.005	AAP, APP, ACS, AFI, AFN, AHC, AHF, ASC, ASG, ASP, CAI, CAR, CBS, CBY, CCE, CCY, CFC, CFR, CHN, CHW, CHM, CPP, CPR, CPS, CRY, CRL, CSS, CUS, CVS, ICC, ICE, ICP, ICL, IEE, IFM, IHD, ILS, IMI, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISD, ISF, ISM, IST, ITS, ITT, IUD, MHM, MMF, MMP, MSC, MSP, MSW	Nervous system, liver, blood damage; increased risk of cancer

Name of Contaminant	MCL *	Potential Contaminant Source (by Contaminant Code)***	Health Effects
1,2-Dichloropropane	0.1	ACS, AFI, AFN, AHC, AHF, ASC, ASG, ASP, CAW, CPP, CPR, CRL, CUS, ICL, ICP, IHD, ILS, IPM, IPP, IRG, 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, CFR, CHM, CRL, CUS, ICC, ICP, ICL, IEE, IFM, IHD, ILS, IMI, IMP, IMW, IPL, IPM, IPP, IRG, ISD, ISF, ISM, ITS, ITT, IUD, IUI, MSC, MSP	Eye, liver, kidney, central nervous system damage; respiratory irritation
Chlorobenzene	0.005	CAR, CBS, CDC, CHW, CHM, CPP, CPR, CRL, CUS, ICP, ICL, IEE, IHD, ILS, IMI, IMP, IMW, IPL, IPP, IPU, IRG, ISD, ISF, ITS, ITT, IUD, IUI, MMF, MSC, MSP	Liver, kidney, central nervous system damage
Styrene	1	CHM, CPP, CPR, CRL, CUS, ICC, ICP, ICL, IEE, IHD, ILS, IMI, IMP, IMW, IPL, IPM, IPP, IRG, ISD, ISF, ISM, ITS, ITT, IUD, IUI, MSP	Liver, kidney, circulatory problems; nerve damage; increased risk of cancer
Tetrachloroethene	0.005	AAP, APP, CAI, CAR, CBS, CCY, CDC, CHM, CHN, CHW, CPP, CPR, CRL, CRY, CSS, CSY, CUS, CVS, ICC, ICL, ICP, IEE, IHD, ILS, IMI, IMO, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISD, ISF, ISM, ITS, ITT, IUD, IUI, MMF, MMP, MSC, MSP, MWP	Liver, kidney, circulatory problems; nerve damage; increased risk of cancer
Toluene	1	AAP, APP, CFR, CHW, CHM, CHN, CPP, CPR, CRL, CUS, CVS, ICC, ICP, ICL, IEE, IFM, IHD, ILS, IMI, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISD, ISF, ISM, ITS, ITT, IUD, MMF, MSC, MSP, MWP	Nervous system, liver, kidney damage
1,2,4-Trichlorobenzene	0.07	CRL, CUS, ICL, ICP, IHD, ILS, IPM, IPP, IRG, ISD, ISF, ISM, ITS, IUD	Liver, kidney, adrenal gland changes
1,1,1-Trichloroethane	0.2	AAP, APP, CAR, CAI, CBS, CBY, CCY, CDC, CFR, CHM, CHN, CHW, CPP, CPR, CRL, CUS, CVS, ICP, ICL, IEE, IFM, IHD, IHM, ILS, IMI, IMO, IMP, IMW, IPM, IPP, IRG, ISD, ISF, ISM, ITS, ITT, IUD, MHM, MMF, MMP, MSC, MSP, MWP	Liver, nervous system, circulatory problems
1,1,2-Trichloroethane	0.005	AAP, CDC, CPP, CPR, CRL, CUS, ICP, ICL, IEE, IFW, IHD, ILS, IMI, IMP, IMW, IPL, IPP, IRG, ISD, ISF, ITS, IUD, MSP	Liver, kidney, gastrointestinal tract, immune system problems; lung damage; increased risk of cancer
Trichloroethene	0.005	AAP, AFM, APP, CAI, CAR, CBS, CBY, CFR, CHG, CHM, CHW, CPP, CPR, CRL, CRY, CSY, CUS, ICE, ICL, ICP, IEE, IFM, IHD, ILS, IMI, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISD, ISF, ISM, ITS, ITT, IUD, IUI, MHM, MMF, MMP, MSC, MSP	Liver damage; increased risk of cancer

Name of Contaminant	MCL *	Potential Contaminant Source (by Contaminant Code)***	Health Effects
Vinyl Chloride	0.002	CRL, ICP, ICL, IEE, IHD, IMI, IMP, IMW, IPL, IPP, IRG, ISF, IST, ITT, IUD,	Liver, nervous system damage; increased risk of cancer
Xylenes (Total)	10	AAP, APP, ASC, CAI, CAR, CBS, CBY, CCY, CFR, CHM, CHN, CHW, CPP, CPR, CPS, CRL, CUS, CVS, IAS, ICC, ICL, ICP, IEE, IFM, IHD, ILS, IMI, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISD, ISF, ISM, IST, ITT, IUD, MHM, MMF, MSC, MSP	Central nervous system, liver, kidney damage
SYNTHETIC ORGANIC CHEMICALS: PESTICIDES			
Alachlor	0.002	ACS, ADC, AFI, AFN, AHC, ARL, ASC, ASP, CCE, CCG, CGC, CHW, CRL, CRY, CUS, ICL, ICP, IHD, ILS, IPP, IRG, ISD, ISF, ITS, ITT, IUD, IUI, IUR, MHM, MHR, MMF, MPR, MSC, 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, CAW, CGC, CHW, CRL, CUS, ICL, ICP, IHD, ILS, IPP, IRG, ISD, ISF, ITS, ITT, IUD, MPR, MPW, MSC, MSP	Gastrointestinal, central nervous system, eye problems
Aldicarb Sulfone	0.003	ACS, ADC, AFI, AFN, AHC, ASC, ASP, CAW, CGC, CHW, CRL, CUS, ICL, ICP, IHD, ILS, IPP, IRG, ISD, ISF, ITS, ITT, IUD, MPR, MPW, MSC, MSP	Gastrointestinal, central nervous system, eye problems
Aldicarb Sulfoxide	0.003	ACS, ADC, AFI, AFN, AHC, ASC, ASP, CAW, CGC, CHW, CRL, CUS, ICL, ICP, IHD, ILS, IPP, IRG, ISD, ISF, ITS, ITT, IUD, MPR, MPW, MSC, MSP	Gastrointestinal, central nervous system, eye problems
Atrazine	0.003	ACS, ADC, AFI, AFN, AHC, ARL, ASC, ASP, CAI, CAW, CCG, CCE, CFC, CGC, CHW, CRL, CRY, CUS, ICL, ICP, IHD, ILS, IPP, IPU, IRG, ISD, ISF, ITS, ITT, IUD, IUI, IUR, MHD, MHM, MLF, MMF, MPR, MPW, MSC, MSD, MSP, RMS	Cardiovascular system, kidney, adrenal gland damage; increased risk of cancer
Carbofuran	0.04	ACS, ADC, AFI, AFN, AHC, ASC, ASP, CAI, CAW, CCE, CCG, CGC, CHW, CPL, CRL, CST, CUS, ICL, ICP, IHD, ILS, IPP, IPU, IRG, ISD, ISF, ITS, ITT, IUD, IUI, IUR, MHR, MLF, MMF, MPR, MSC, MSD, MSP, RMS	Central nervous system, reproductive system damage
Chlordane	0.002	ACS, ADC, AFI, AFN, AHC, ASC, ASP, CAI, CAW, CBY, CCY, CRL, CST, CUS, ICP, ICL, IHD, ILS, IPP, IPU, IRG, ISD, ISF, ITS, ITT, IUD, IUR, MHM, MLF, MMF, MPR, MRF, MSC, MSD, MSP, RMS	Central nervous system, blood disorders; liver, kidney, heart, lung, spleen, adrenal gland damage; increased risk of cancer

Name of Contaminant	MCL *	Potential Contaminant Source (by Contaminant Code)***	Health Effects
2, 4-Dichlorophenoxyacetic acid (2,4-D)	0.07	ACS, ADC, AFI, AFN, AHC, ARL, ASC, ASP, CAI, CAW, CCE, CCG, CCY, CGC, CHW, CRL, CRY, CST, CUS, ICL, ICP, IHD, ILS, IPP, IPU, IRG, ISD, ISF, ITS, ITT, IUD, IUR, MHM, MHR, MLF, MMF, MPR, MPW, MSC, MSD, MSP	Nervous system, kidney, liver damage
Dalapon	0.2	ACS, ADC, AFI, AFN, AHC, ARL, ASC, ASP, CAI, CAW, CCE, CCG, CCY, CGC, CHW, CRL, CRY, CSY, CUS, ICL, ICP, IHD, ILS, IPP, IPU, IRG, ISD, ISF, ITS, ITT, IUD, IUI, IUR, MHD, MHM, MHR, MLF, MMF, MPR, MPW, MSC, MSD, MSP, RMS	Kidney changes
Dibromochloropropane	0.0002	ACS, ADC, AFI, AFN, AHC, ASC, ASP, CAI, CAW, CCE, CGC, CHW, CRL, CUS, ICL, ICP, IHD, ILS, IPP, IPU, IRG, ISD, ISF, ITS, ITT, IUD, IUR, MHM, MMF, MSC, MSD, MSP	Kidney, liver, reproductive system damage; increased risk of cancer
Dinoseb	0.007	ACS, ADC, AFI, AFN, AHC, ARL, ASC, ASP, CHW, CRL, ICL, ICP, IHD, IRG, ISD, ISF, ITT, IUD	Reproductive system problems
Diquat	0.02	ACS, ADC, AFI, AFN, AHC, AHF, ARL, ASC, ASG, ASP, CAW, CGC, CRL, CUS, ICL, ICP, IHD, ILS, IPP, IPU, 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, CAW, CBY, CCE, CCG, CCY, CGC, CHW, CPL, CRL, CRY, CST, CUS, ICL, ICP, IHD, ILS, IPP, IPU, IRG, ISD, ISF, ITS, ITT, IUD, IUR, MHM, MHR, MLF, MMF, MPR, MPW, MSC, MSD, MSP	Stomach, intestinal problems
Endrin	0.002	ACS, ADC, AFI, AFN, AHC, AHF, ARL, ASC, ASG, ASP, CAW, CRL, CRV, CRY, CST, CUS, ICL, ICP, IHD, ILS, IPP, IPU, IRG, ISD, ISF, ITS, ITT, IUD, IUR, MHM, MMF	Central nervous system problems; liver damage
Ethylene Dibromide (EDB)	0.00005	ACS, ADC, AHC, APP, ASC, ASG, ASP, CAI, CAW, CFR, CHW, CPP, CPR, CPS, CRL, CUS, ICL, ICP, IFM, IHD, ILS, IPL, IPP, IRG, 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, CAW, CCE, CCG, CCY, CGC, CHW, CPL, CRL, CRY, CUS, ICL, ICP, IHD, ILS, IPP, IPU, IRG, ISD, ISF, ITS, IUD, IUI, IUR, MHM, MHR, MLF, MMF, MPR, MPW, MSC, MSD, MSP, RMS	Respiratory problems; kidney, reproductive system damage
Heptachlor	0.0004	CAI, CCY, CGC, CPL, CRL, CRV, CRY, ICE, ICL, ICP, IHD, IPP, IPU, ISF, ITT, IUD, IUR, MHM, MMF, MSC	Central nervous system, liver damage; increased risk of cancer

Name of Contaminant	MCL *	Potential Contaminant Source (by Contaminant Code)***	Health Effects
Heptachlor Epoxide	0.0002	CAI, CCY, CGC, CPL, CRL, CRV, CRY, ICE, ICL, ICP, IHD, IPP, IPU, ISF, ITT, IUD, IUR, MHM, MMF, MSC	Central nervous system, liver damage; increased risk of cancer
Hexachlorobenzene	0.001	ACS, ADC, ASC, ASG, ASP, CPP, CPR, CRL, CUS, ICL, ICP, IHD, ILS, IMW, IPL, IPP, IRG, ISF, ITS, ITT, IUD, MMF	Skin lesions; nerve, liver, kidney damage; reproductive system problems; endocrine gland tumors; increased risk of cancer
Hexachlorocylopentadiene	0.05	CRL, CUS, ICL, ICP, IHD, ILS, IPL, IPP, IRG, ISF, ITS, ITT, IUD	Gastrointestinal problems; liver, kidney, heart damage
Lindane	0.0002	ACS, ADC, ADF, AFI, AFL, AFN, AHC, ARL, ASC, ASP, CCY, CHW, CPP, CPR, CRL, CVS, ICL, ICP, IHD, IPM, IPP, IRG, 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, CBY, CCG, CGC, CHW, CRL, CUS, ICL, ICP, IHD, ILS, IPP, IPU, IRG, ISD, ISF, ITS, ITT, IUD, IUR, MHD, MHR, MMF, MPR, MSC, MSD	Central nervous system, gastrointestinal tract problems; liver, kidney, heart damage
Oxamyl (Vydate)	0.2	ACS, ADC, AFI, AFN, AHC, ASC, ASP, CAW, CCE, CGC, CHW, CRL, ICL, ICP, IHD, IPP, IPU, IRG, 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, CBY, CCY, CFR, CHW, CRL, CRY, ICL, ICP, IFM, IHD, IPM, IPP, IPU, IRG, 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, CAW, CCE, CCG, CCY, CGC, CHW, CPL, CRL, CRY, ICL, ICP, IHD, IPP, IPU, IRG, ISD, ISF, ITS, ITT, IUD, IUI, IUR, MHD, MHM, MHR, MLF, MMF, MPR, MSC, MSD, MSP, RMS	Central nervous system, liver damage
Simazine	0.004	ACS, ADC, AFI, AFN, AHC, ARL, ASC, ASP, CAI, CAW, CBY, CCG, CCE, CCY, CGC, CHW, CPL, CRL, CRY, CSY, ICL, ICP, IHD, IPP, IPU, IRG, ISD, ISF, ITS, ITT, IUD, IUI, IUR, MHD, MHM, MHR, MLF, MMF, MPR, MPW, MSC, MSD, MSP	Reproductive system, blood, kidney, liver, thyroid damage; gene mutation; increased risk of cancer
2,3,7,8-TCDD (Dioxin)	3x10-8	CAI, CRL, ICL, ICP, IEE, IHD, IPP, IPU, ISF, IUD, IUR, MIN, MMF, MSW	Reproductive system problems; birth defects; increased risk of cancer

Name of Contaminant	MCL *	Potential Contaminant Source (by Contaminant Code)***	Health Effects
Toxaphene	0.003	ACS, ADC, AFI, AFL, AFN, APF, ARL, ASC, ASP, CRL, ICL, ICP, IHD, IPP, 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, CBY, CCE, CGC, CRL, CRY, ICL, ICP, IHD, IPP, IPU, ISF, ITT, IUD, IUR, MHM, MLF, MMF	Liver, kidney damage; central nervous system problems
Benzo (a) pyrene	0.0002	AFM, CAI, CAR, CBS, CCY, CFC, CRL, CRY, IAS, ICC, ICL, ICP, IFW, IHD, IMI, IMP, IPL, IPP, IPU, IRG, ISF, IST, ITT, MFS, 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, CAR, CBY, CCY, CHW, CPS, CRL, CST, ICL, ICP, IHD, IMI, IMP, IMW, IPL, IPP, IPU, IRG, ISF, ITS, ITT, IUD, MIN, MLF, MMF, MMP, MSL, MSP, MSS, MST	Liver, reproductive system damage; increased risk of cancer
Di (2-ethylhexyl) phthalate	0.006	AAP, APP, CHM, CHW, CPP, CPR, CRL, CSY, ICE, ICL, ICP, IEE, IHD, IMP, IMW, IPL, IPP, IRG, 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, CCY, CHM, CRL, CRY, CST, CSY, ICL, ICP, IEE, IHD, IMI, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISF, ISM, ITS, IUD, IUR, 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			
Antimony	0.006	CRL, CSY, ICL, ICP, IEE, IFW, IHD, IMI, IMP, IPL, IPP, IRG, ISF, IST, IUD, MIN, MLF, MSW	Blood changes; increased risk of cancer
Arsenic	0.05	AAP, ACS, ADC, AFI, AFN, AHC, APP, ASC, ASP, CAI, CAR, CBS, CCE, CCY, CFC, CGC, CHM, CHN, CPP, CPR, CRL, CRV, CSY, CVS, ICL, ICP, IEE, IHD, IMI, IMP, IMW, IPM, IPP, IRG, ISF, ISM, IUD, IPU, MLF, MMF, MSC, MSW	Skin damage; circulatory problems; increased risk of cancer
Asbestos	7 MLF (million fibers/Liter)	CAI, CAR, CBS, CBY, CCY, CHM, CHN, CHW, CRL, CRV, CRY, CSY, ICC, ICL, ICP, IHD, IHM, IMI, IMO, IMW, IPU, IRG, ISF, IST, ITT, IUD, MHD, MHM, MIN, MLF, MMF, MMP, MSC, MSW, MWP	Lung disease, increased risk of cancer

Name of Contaminant	MCL *	Potential Contaminant Source (by Contaminant Code)***	Health Effects
Barium	2	CAI, CAR, CAW, CBS, CCY, CFR, CHM, CHN, CHW, CPP, CPR, CRL, CRV, CRY, CSY, CVS, ICC, ICL, ICP, IEE, IFW, IFM, IGO, IHD, IHM, IMI, IPL, IPM, IPP, IPU, IRG, ISF, ISM, IST, ITT, IUD, IUI, IUR, MHM, MIN, MLF, MMF, MMP, MSC, MSW	Gastrointestinal problems; high blood pressure
Beryllium	0.004	CRL, CSY, ICL, ICP, IEE, IFW, IHD, IHM, IMI, IMO, IMP, IMW, IPP, IPU, IRG, IRW, ISF, IST, IUD, MIN, MLF, MMF, MSW	Lung, bone damage; increased risk of cancer
Cadmium	0.005	AAP, APP, CAI, CAR, CBS, CBY, CCY, CHG, CHM, CHW, CPP, CPR, CPS, CRL, CRY, CSS, CSY, ICC, ICE, ICL, ICP, IEE, IFW, IHD, IHM, IMI, IMO, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISF, ISM, IST, ITT, IUD, IUR, MHM, MIN, MLF, MMF, MMP, MSC, MSP, MSS, MST, MSW, MWP	Gastrointestinal problems; kidney, liver, bone, blood damage
Chromium	0.1	CPP, CPR, CRL, CSY, ICC, ICL, ICP, IEE, IFW, IHD, IHM, IMI, IMO, IMP, IMW, IPP, IPU, IRG, ISF, IST, ITS, ITT, IUD, MIN, MLF, MMF, MPW, MSC, MSP, MSS, MST	Skin problems; liver, kidney, circulatory, nerve damage.
Copper	1.3 TT** Action Level	AAP, ACS, ADC, AHC, APF, APP, ASC, ASP, CAR, CBS, CCY, CHM, CHN, CHW, CPP, CPR, CRL, CRY, CST, CSY, CVS, ICL, ICP, IEE, IFM, IFW, IHD, IHM, IMI, IMO, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISF, ISM, IST, ITS, ITT, IUD, MIN, MLF, MMF, MSP, MSS, MST, MSW	Gastrointestinal problems; liver, kidney damage; anemia
Cyanide	0.2	ACS, ADC, AFI, AFN, AHC, ASC, ASP, CCY, CHN, CHW, CPP, CPR, CPS, CRL, CST, CUS, CVS, ICL, ICP, IEE, IFW, IHD, ILS, IMI, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISD, ISF, ISM, IST, ITS, ITT, IUD, MHM, MLF, MMF, MPW, MSC, MSS, MST	Thyroid problems; nerve damage
Fluoride	4	ACS, ADC, ASC, ASF, CCY, ICC, ICL, ICP, IFW, IHM, IMI, IMO, IMP, IST, IUD, MWP	Tooth mottling; bone disease
Lead	0.015 TT**	CAI, CAR, CBS, CBY, CCY, CFR, CHG, CHM, CHN, CHW, CPP, CPR, CPS, CRL, CRY, CSY, ICC, ICL, ICP, IEE, IFM, IFW, IHD, IHM, IMI, IMO, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISF, ISM, IST, ITS, ITT, IUD, IUR, MHD, MHM, MIN, MLF, MMF, MMP, MRF, MSC, MSP, MSS, MST, MSW, MWP, RMS	Blood, neurological development problems; kidney disease; stroke; increased risk of cancer
Mercury	0.002	AAP, ACS, ADC, AFI, AFN, AHC, APP, ASC, ASP, CAI, CAR, CBS, CBY, CCY, CFR, CHM, CHN, CHW, CPP, CPR, CRL, CRV, CRY, CST, CSY, CUS, CVS, ICE, ICL, ICP, IEE, IFM, IFW, IHD, IHM, ILS, IMI, IMO, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISF, ISM, IST, ITS, ITT, IUD, IUR, MHM, MIN, MLF, MMF, MPW, MRF, MSC, MSP, MSS, MST, MSW	Kidney damage
Nickel	0.1	CAI, CAR, CBS, CBY, CCY, CPP, CPR, CRL, CST, CSY, CUS, ICE, ICL, ICP, IEE, IFW, IHD, IHM, ILS, IMI, IMO, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISF, IST, ITS, ITT, IUD, MHM, MIN, MLF, MMF, MMP, MPW, MRF, MSC, MSP, MSS, MST, MSW	Gastrointestinal irritation; nerve, liver, kidney, reproductive system damage

Name of Contaminant	MCL *	Potential Contaminant Source (by Contaminant Code)***	Health Effects
Nitrate	10	AAP, ACS, ADC, ADF, AFI, AFL, AFN, AHC, AMA, AMS, AOA, APF, APP, ARL, ASC, ASF, ASH, ASW, CAI, CAW, CBB, CBY, CCE, CCG, CCW, CCY, CFC, CGC, CHG, CHN, CPL, CPP, CPR, CRL, CST, CVS, ICL, ICP, IHD, IHM, IMI, IMO, IMP, IMW, IPL, IPM, IPP, IPU, ISD, ISF, ISM, ITS, ITT, IUD, IUR, MHD, MHM, MLF, MMF, MPR, MPS, MPW, MSC, MSD, MSL, MSP, MSS, MST, MSW, MWP, RMS	Methemoglobinemia; spleen damage
Nitrite	1	AAP, ACS, ADC, ADF, AFI, AFL, AFN, AHC, AMA, AMS, AOA, APF, APP, ARL, ASC, ASF, ASH, ASW, CAI, CAW, CBB, CBY, CCG, CCE, CCW, CCY, CFC, CGC, CHG, CHN, CPL, CPP, CPR, CRL, CST, CVS, ICL, ICP, IHD, IHM, IMI, IMO, IMP, IMW, IPL, IPM, IPP, IPU, ISD, ISF, ISM, ITS, ITT, IUD, IUR, MHD, MHM, MLF, MMF, MPR, MPS, MPW, MSC, MSD, MSL, MSP, MSS, MST, MSW, MWP, RMS	Methemoglobinemia; spleen damage
Selenium	0.05	ADC, AFI, AFN, ARL, CPP, CPR, CRL, ICC, ICL, ICP, IEE, IFW, IHD, IHM, IMI, IMO, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISF, IST, IUD, MHM, MIN, MLF, MMF, MPW, MSC, MSS, MST, MSW	Peripheral nervous system, kidney, liver, circulatory system damage
Thallium	0.002	CHN, CPP, CRL, ICC, ICE, ICL, ICP, IEE, IFW, IHD, IHM, IMI, IMO, IMP, IPL, IPP, IPU, IRG, ISF, IUD, IUR, MIN, MLF, MMF, MSS, MST, MSW	Blood chemistry changes; nerve, liver, kidney, intestinal, reproductive system damage
RADIONUCLIDES			
Beta Particles and Photon Emitters	4 Millirems per year	CAW, CHN, CRL, IGO, IHM, IMO, IRG, IRW, ISF, MMF, MWP	Increased risk of cancer
Gross Alpha Particle Activity	15 Picocuries per Liter	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	CAW, CHN, CRL, IGO, IHM, IMO, IRG, IRW, ISF, MMF, MWP	Increased risk of cancer
MICROBIOLOGICAL (Pathogenic organisms)			
Crytosporidium parvum		AAP, ADC, ADF, AFL, AMA, AMS, AOA, APF, APP, ARL, ASH, ASW, CAW, CBY, CCG, CFC, CHN, CPL, CRV, CSS, CST, CVS, ISD, ITS, IUI, IUR, MHD, MHR, MMF, MPR, MPS, MPW, MSC, MSD, MSL, MSP, MSS, MST, MWP, RMS	Cryptosporidiosis (a gastroenteric disease)
Giardia lambia	TT**	AAP, ADC, ADF, AFL, AMA, AMS, AOA, APF, APP, ARL, ASH, ASW, CAW, CBY, CCG, CFC, CHN, CPL, CRV, CSS, CST, CVS, ISD, ITS, IUI, IUR, MHD, MHR, MMF, MPR, MPS, MPW, MSC, MSD, MSL, MSP, MSS, MST, MWP, RMS	Giardiasis (a gastroenteric disease)

Name of Contaminant	MCL *	Potential Contaminant Source (by Contaminant Code)***	Health Effects
Legionella sp.	TT**	ADC, CBY, ITS, MPW, MSD, MSP, MWP	Legionnaire's Disease; pneumonia
Total Coliforms (Including	5 Percent (See NOTE 1)	AAP, ADC, ADF, AFL, AMA, AMS, AOA, APF, APP, ARL, ASH, ASW, CAW, CBY, CCG, CFC, CHN, CPL, CRV, CSS, CST, CVS, ISD, ITS, IUI, IUR, MHD, MHR, MMF, MPR, MPS, MPW, MSC, MSD, MSL, MSP, MSS, MST, MWP, RMS	Used as an indicator that other potentially harmful bacteria may be present (see NOTE 2)
Fecal Coliform & E. coli)			
Turbidity	TT**	ADC, CBY, CCG, CCW, CCY, CGC, CPL, CRV, CRY, ICC, IHD, IHM, IMO, IPM, IUD, IUR, MHD, MHM, MHR, MIN, MLF, MMF, MPR, MPW, MRF, MSC, MSD, MSL, MSP, MSS, MST, MSW, RMS	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, AFL, AMA, AMS, AOA, APF, APP, ARL, ASH, ASW, CAW, CBY, CCG, CFC, CHN, CPL, CRV, CSS, CST, CVS, ISD, ITS, IUI, IUR, MHD, MHR, MMF, MPR, MPS, MPW, MSC, MSD, MSL, MSP, MSS, MST, MWP, RMS	Gastroenteric disease

Conservative Values were used to complete the DRASTIC Index under the Sensitivity Analysis when adequate and/or complete information was not available (one or more of the conservative values may have been used):

1. Where DRASTIC Index = D_R x D_W + R_R x R_W + A_R x A_W + S_R x S_W + T_R x T_W + I_R x I_W + C_R x C_W

- D (depth to ground water) – Use 10 (10 x 5[weight] = 50)
- R (recharge) - If the well is near a stream bed or is receiving mountain front recharge, use 9 (9 x 4[weight] = 36 as the "Most conservative". Otherwise use 6(6 x 4[weight] = 24
- A (aquifer media) – Use 10 (10 x 3[weight] = 30)
- S (soil media) – Use 10 (10 x 2[weight] = 20)
- T (Topography/slope) – Use 10 (10 x 1[weight] = 10)
- I (Impacts of the Vadose Zone) – If the well is in a limestone area, use 10 (10 x 5[weight] = 50). If the well is not in a limestone area, use 8 (8 x 5[weight] = 40.
- C (Hydraulic Conductivity) – Use 10 (10 x 4[weight] = 40

The equation:
DRASTIC (conservative) = (10 x 5) + (9 x 4) + (10 x 3) + (10 x 2) + (10 x 1) + (10 x 5) + (10 x 4) = 236
(If the lower values for R and I are used the result will be 214. Both of these results fall in the "High" range).

The Pesticide Index equation was used when calculating a DRASTIC Index for a well located in an area where crops and/or orchards were the predominant land use or when pesticide use was known.

2. Where DRASTIC Pesticide Index = D_R x D_W + R_R x R_W + A_R x A_W + S_R x S_W + T_R x T_W + I_R x I_W + C_R x C_W

- D (depth to ground water) – Use 10 (10 x 5[weight] = 50)
- R (recharge) - If the well is near a stream bed or is receiving mountain front recharge, use 9 (9 x 4[weight] = 36 as the "Most conservative". Otherwise use 6(6 x 4[weight] = 24
- A (aquifer media) – Use 10 (10 x 3[weight] = 30)
- S (soil media) – Use 10 (10 x 5[weight] = 50)
- T (Topography/slope) – Use 10 (10 x 3[weight] = 30)
- I (Impacts of the Vadose Zone) – If the well is in a limestone area, use 10 (10 x 4[weight] = 40). If the well is not in a limestone area, use 8 (8 x 4[weight] = 32
- C (Hydraulic Conductivity) – Use 10 (10 x 4[weight] = 40

The equation:
(10 x 5) + (9 x 4) + (10 x 3) + (10 x 5) + (10 x 3) + (10 x 4) + (10 x 4) = 276
(If the lower values for R and I are used the result will be 260. Both of these results fall in the "High" range).

If a screened interval is needed the conservative value used was <100 feet.

ROADS AND RELATED FEATURES

Roads on Provisional edition maps are not classified as primary, secondary, or light duty. They are all symbolized as light duty roads.

- Primary highway
- Secondary highway
- Light duty road
- Unimproved road
- Trail
- Dual highway
- Dual highway with median strip
- Road under construction
- Underpass; overpass
- Bridge
- Drawbridge
- Tunnel

VEGETATION

- Woods
- Scrub
- Orchard
- Vineyard
- Mangrove

CONTOURS

Topographic

- Intermediate
- Index
- Supplementary
- Depression
- Cut; fill

Bathymetric

- Intermediate
- Index
- Primary
- Index Primary
- Supplementary

BUILDINGS AND RELATED FEATURES

- Building
- School; church
- Built-up Area
- Racetrack
- Airport
- Landing strip
- Well (other than water); windmill
- Tanks
- Covered reservoir
- Gaging station
- Landmark object (feature as labeled)
- Campground; picnic area
- Cemetery: small; large

RAILROADS AND RELATED FEATURES

- Standard gauge single track; station
- Standard gauge multiple track
- Abandoned
- Under construction
- Narrow gauge single track
- Narrow gauge multiple track
- Railroad in street
- Juxtaposition
- Roundhouse and turntable

LAND SURVEY SYSTEMS

U.S. Public Land Survey System

- Township or range line
- Location doubtful
- Section line
- Location doubtful
- Found section corner; found closing corner
- Witness corner; meander corner

Other land surveys

- Township or range line
- Section line
- Land grant or mining claim; monument
- Fence line

RIVERS, LAKES, AND CANALS

- Intermittent stream
- Intermittent river
- Disappearing stream
- Perennial stream
- Perennial river
- Small falls; small rapids
- Large falls; large rapids
- Masonry dam
- Dam with lock
- Dam carrying road
- Perennial lake; Intermittent lake or pond
- Dry lake
- Narrow wash
- Wide wash
- Canal, flume, or aqueduct with lock
- Elevated aqueduct, flume, or conduit
- Aqueduct tunnel
- Well or spring; spring or seep

MINES AND CAVES

- Quarry or open pit mine
- Gravel, sand, clay, or borrow pit
- Mine tunnel or cave entrance
- Prospect; mine shaft
- Mine dump
- Tailings

DARIES

- ional
- e or territorial
- nty or equivalent
- l township or equivalent
- rporated city or equivalent
- k, reservation, or monument
- Small park

Appendix B

Consumer Confidence Reports

City of Rio Rancho
Utilities Division
3200 Civic Center Circle NE
Rio Rancho, NM 87144

PRESORTED STD
U.S. POSTAGE
PAID
ALBUQUERQUE, NM
Permit No. 1104

IMPORTANT INFO

Utilities Administration	896-8715
Utilities Billing	891-5020
Report Leaks	891-5020
Water/Wastewater Emergency (After Hours)	975-1581
Line Spots, NM One Call	811
Water Conservation	896-8715
Engineering	891-5016
Environmental Programs	896-8737
Water Waste Hotline	896-8299

www.ci.rio-rancho.nm.us

********* ECRWSS *********

Postal Customer
Rio Rancho, New Mexico

Este informe contiene información importante acerca de su agua potable. Haga que alguien lo traduzca para usted, o hable con alguien que lo entienda.

RioRancho City of Vision

Utilities Division · City of Rio Rancho

City of Rio Rancho Water Conservation Office
Conserve Today. Preserve Tomorrow.

City of Rio Rancho Environmental Programs

2013 CONSUMER CONFIDENCE REPORT

CITY OF RIO RANCHO

QUALITY DRINKING WATER BEGINS HERE!

■ To ensure tap water is safe to drink, the Environmental Protection Agency (EPA) prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) regulates bottled water, which must provide the same protection of public health.

Rio Rancho's drinking water comes entirely from the Santa Fe Group Aquifer. An aquifer is an underground layer of water-bearing permeable rock or unconsolidated materials (gravel, sand, or silt) from which groundwater can be extracted using a water well. This underground water source is not limitless, so conservation of this natural resource is a must. The aquifer in this area lies within volcanic rocks and these rocks contain naturally occurring arsenic. As water infiltrates through the rock type, it dissolves some of the arsenic from the rocks.

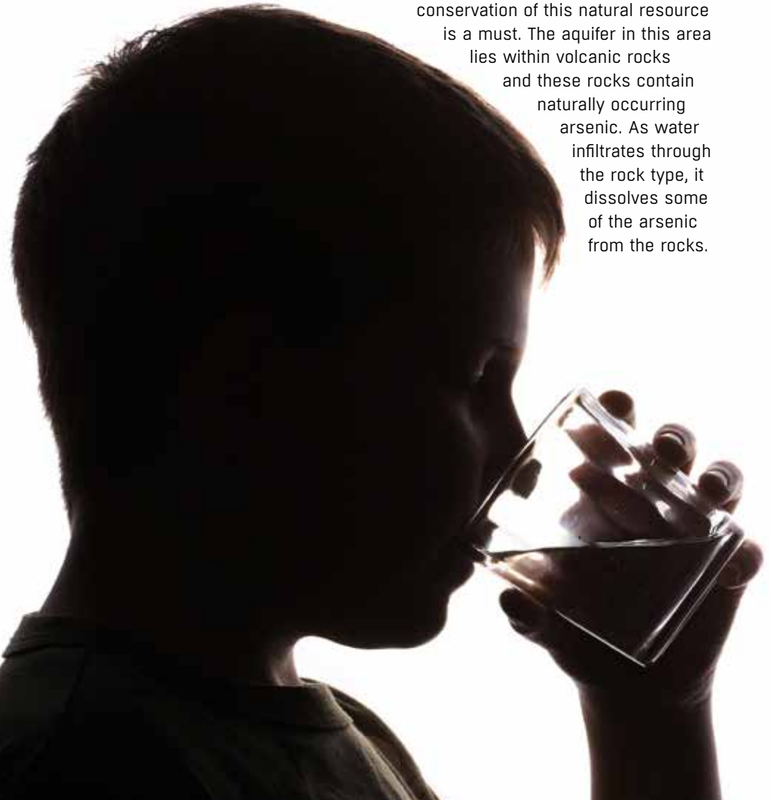


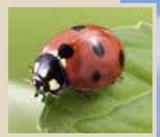
Table of Contents

Note: All text preceded by a ■ contains information required by the U.S. Environmental Protection Agency (EPA).

And the winner is...

Hanna Harper from Rio Rancho High School was the winner of the 6th annual Every Drop Counts Award. This award is given each year to the student(s) who has the best science fair project on water quality or water quantity. Ms. Harper's award of $100 was for her project entitled "#WaterProbs."

Ms. Harper's project was to further support that invertebrates are highly sensitive to pollutants. Invertebrates are animals that have no backbone or spinal column, such as insects, worms, jellyfish, starfish, and snails. This year, in addition to nitrates, she tested to see if ammonia, phosphates, or pH affected invertebrates. Ammonia and pH both seemed to yield no affect, but the phosphates and nitrates both had a high Pearson's correlation number (which conveys that they have negative consequences on invertebrates). Ms. Harper performed conductivity and total dissolved solids tests to solidify and confirm her results. She sampled the invertebrates using a bio survey. The closer the pollutants came to 5 parts per million (ppm) concentration in the water the more potent they appeared to be. In this Phase II experiment, the nitrate correlation number went from -0.7 to -0.9, which illustrates that invertebrate populations are not only affected by pollutants, but these pollutants will eventually increase to a point where they cannot survive. "If there was more water in the river to dilute the chemicals, this could potentially solve the issue." stated Ms. Harper.



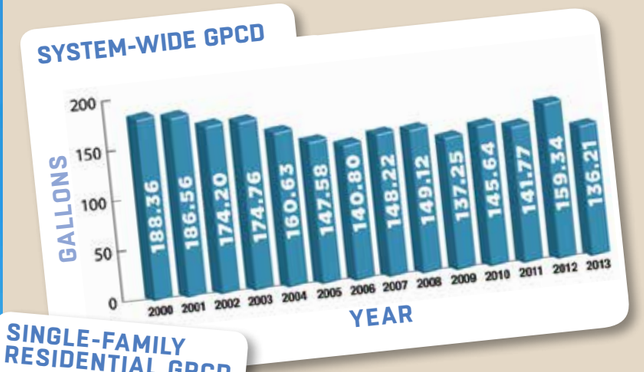
If you have a student who needs assistance with science expo projects, call **(505) 896-8715 for help.**

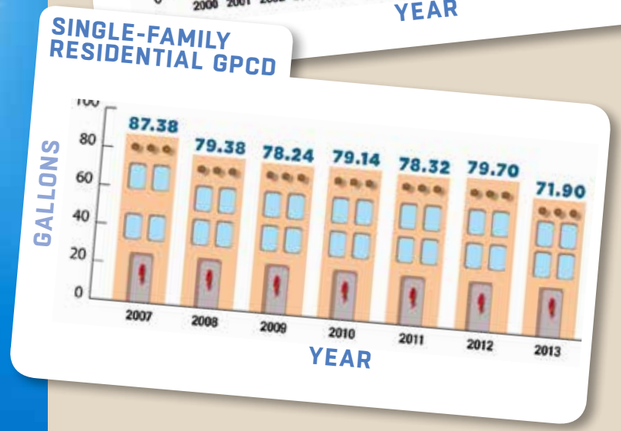
GET INVOLVED IN CITY WATER MATTERS

The Utilities Commission is a group appointed by the mayor and city council; one person per city council district plus an at-large position. The Utilities Commission guides the city's Utilities Division with input and policy decision-making that impacts the entire city. The Utilities Commission meets on the third Tuesday of every month at 6:00 p.m. at City Hall, 3200 Civic Center Circle NE. These are open meetings, so come and voice any of your water or wastewater concerns. For more information on the Utilities Commission please call **(505) 896-8715** or go to **www.ci.rio-rancho.nm.us**.

Way to Go, Rio Rancho!

The numbers are in for 2013 water usage in Rio Rancho. Citizens and businesses in the city did a tremendous job conserving water. Our water usage for the full water system is 136 gallons per capita per day. This is a 38 percent reduction in water use since 2000. Single-family residential water use has also dropped from 79.7 gallons per capita per day in 2012 to 71.9 gallons in 2013.





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AL: Action Level – The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

MCL: Maximum Contaminant Level – The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

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.

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.

MRDLG: Maximum Residual Disinfectant 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.

N/A: Not applicable.

ND: Not detected.

pCi/L: Picocuries per liter – A measure of radioactivity.

ppb: Parts per billion or micrograms per liter – Approximately equal to 3 seconds out of a century.

ppm: Parts per million or milligrams per liter – Approximately equal to 32 seconds out of a year.

Range of detection: Highest & lowest levels of substance found in treated drinking water.

FOR YOUR INFORMATION

■ 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.

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA) SAFE DRINKING WATER HOTLINE:

(800) 426-4791

RIO RANCHO WATER PRODUCTION MANAGER:

(505) 896-8813

Substance	MCL	MCLG	Our Water	Range of Detection	Sample Year	Violation	Typical Source of Contamination
Arsenic (ppb)	10	0	6	N/A	2012	No	Erosion of natural deposits

Substance	Action Level (AL)	MCLG	Our Water	Number of Sites Exceeding AL	Sample Year	Violation	Typical Source of Contamination
Copper (ppm)	1.3	1.3	0.32 (90th percentile)	0	2011	No	Corrosion of household plumbing systems
Lead (ppb)	15	0	3.8 (90th percentile)	2	2011	No	Corrosion of household plumbing systems

ARSENIC

■ While your drinking water meets EPA's standard for arsenic, it does contain low levels of arsenic. EPA's standard balances the current understanding of arsenic's possible health effects against the cost of removing arsenic from drinking water. EPA continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

LEAD/COPPER

Lead and copper can come from the plumbing system in homes and businesses. The city is required to test for lead and copper every three years from homes of a certain age range. Neither lead nor copper exceeded their respective action levels because the 90th percentile values were below the action levels.

Substance	MCL	MCLG	Our Water	Range of Detection	Sample Year	Violation	Typical Source of Contamination
Chromium (ppb)	100	100	8	N/A	2012	No	Erosion of natural deposits
Fluoride (ppm)	4	4	0.82	N/A	2012	No	Erosion of natural deposits
Mercury [Inorganic] ppb	2	2	0.7	N/A	2012	No	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills; runoff from cropland
Nitrate as Nitrogen (ppm)	10	10	3.83	ND-3.83	2013	No	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits

■ 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. The Rio Rancho Utilities Division 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.

FOR MORE INFORMATION

■ 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 **www.epa.gov/safewater/lead**.

Curbside Recycling

REDUCE, REUSE, RECYCLE. Just as these three words are used in the water conservation world, they are also important for sustainable living in everyday life. As the City of Vision continues to grow, we are "thinking green." Recycling plays an increasingly important role in our healthy and sustainable growth plan and lessens the amount of waste that goes to the landfill. Together our residents and businesses are helping to recycle and process waste with an environmentally-friendly action plan.

HOW CAN YOU RECYCLE?

All residential customers are issued a large, green, 96-gallon recycling cart by Waste Management. Customers do not pay any additional cost for this recycling service, and the carts are picked up weekly. Almost 91% of Rio Rancho's citizens participate in the curbside recycling program with a goal of 100% participation.

The list of items that can be recycled is quite large and includes:

- **Cans (aluminum and tin)**
- **Cardboard**
- **Catalogs and magazines**
- **Junk mail**
- **Newspaper**
- **Paper bags**
- **Paperboard**
- **Phone books**
- **Plastics #1 - #7 (no plastic bags)**
- **Stationary and copy paper (no shredded paper)**

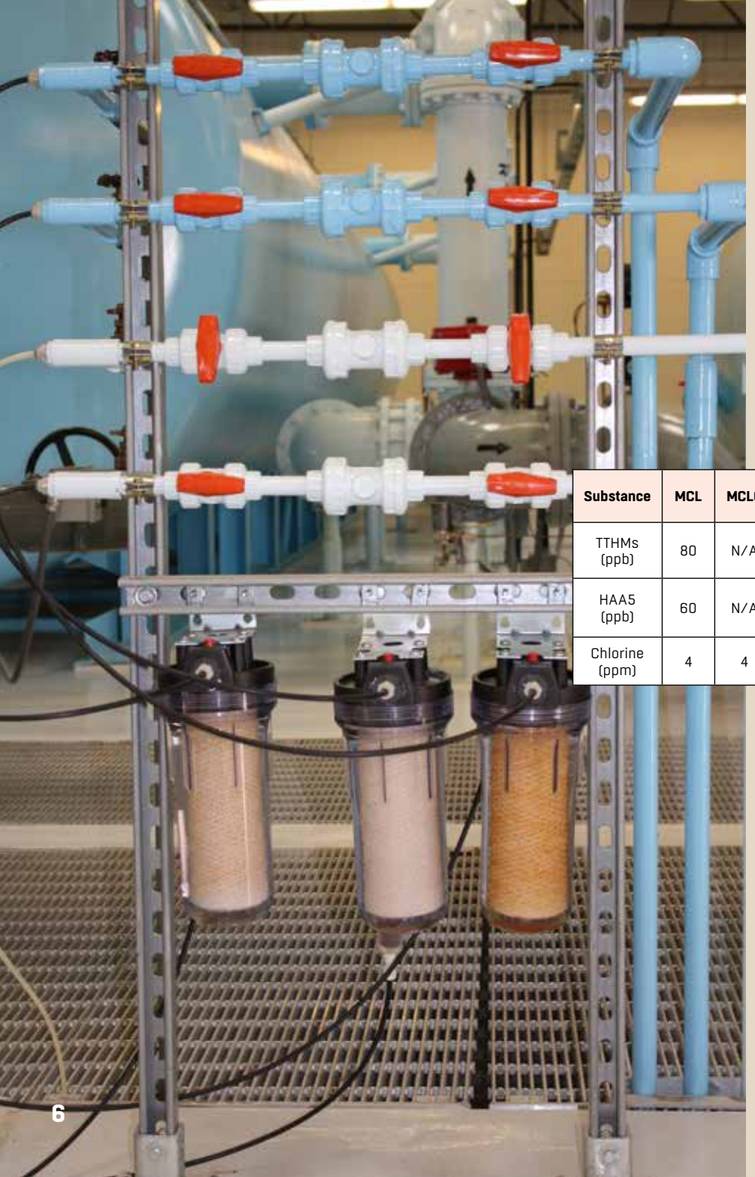
RECYCLING CENTER IS OPEN FOR BUSINESS!

In a partnership between the City of Rio Rancho and Sandoval County, the Recycling Center is open to residents only and is located at 2700 Iris Road NE (corner of Iris and Idalia Roads). It is open on Saturdays from 8:00 AM to 1:00 PM.

For more information call **(505) 891-5015**.

Materials that are accepted are:

- Usable clothing and shoes
- Eye glasses
- Mixed paper (including soft back books)
- Tires (limit 4 passenger tires per vehicle/Saturday)
- Electronics, including TVs (limit 4 TVs per vehicle/Saturday)
- Appliances, including Freon units
- Aluminum
- Plastics #1-7
- Scrap metal
- Cardboard
- Hearing Aids



PEOPLE WITH SENSITIVITIES

■ Some people may be more vulnerable to contaminants in drinking water than the general population. Please seek advice from your health care provider if you are:

- Immuno-compromised
- Undergoing chemotherapy
- A transplant recipient
- Living with HIV/AIDS or other immune system disorders
- Elderly or have a newborn that may be at risk from infection

Substance	MCL	MCLG	Our Water	Range of Detection	Sample Year	Violation	Typical Source of Contamination
TTHMs (ppb)	80	N/A	45	1.5-45	2013	No	By-product of drinking water disinfection
HAA5 (ppb)	60	N/A	2.7	0.58-2.7	2013	No	By-product of drinking water disinfection
Chlorine (ppm)	4	4	0.6	0.5-0.7	2013	No	Water additive to control microbes

SUSCEPTIBILITY ANALYSIS

■ The Susceptibility Analysis of the Rio Rancho water utility reveals that the utility is well maintained and operated, and the sources of drinking water are generally protected from potential sources of contamination. The susceptibility rank of the entire water system is MODERATELY LOW, a good rating. Call New Mexico Environment Department at **(877) 654-8720** for questions.

MICROBIAL CONTAMINANTS

■ **CONTAMINANTS:** Viruses and bacteria which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

Substance	MCL	MCLG	Highest Monthly Percentage In Our Water	Sample Year	Violation	Typical Source of Contamination
Total Coliform Bacteria	5% of monthly samples are positive	0	0	2013	No	Naturally present in the environment

CONTAMINANTS THAT MAY BE PRESENT IN SOURCE DRINKING WATER INCLUDE:

■ **INORGANIC CONTAMINANTS:** 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.

■ **ORGANIC CHEMICAL CONTAMINANTS:** Synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems.

■ **PESTICIDES AND HERBICIDES:** May come from a variety of sources such as agriculture, storm water runoff, and residential uses.

■ **RADIOACTIVE CONTAMINANTS:** Can be naturally-occurring or be the result of oil and gas production and mining activities.

Substance	MCL	MCLG	Our Water	Range of Detection	Sample Year	Violation	Typical Source of Contamination
2-Butanone (MEK) (ppb)	N/A	N/A	2.8	ND-2.8	2011	No	Discharge from solvents used for coatings, resins, and adhesives
Tetrahydrofuran (ppb)	N/A	N/A	0.8	ND-0.8	2011	No	Discharge from manufacturing of protective coatings, adhesives, magnetic strips, and printing inks

Substance	MCL	MCLG	Our Water	Range of Detection	Sample Year	Violation	Typical Source of Contamination
Alpha emitters (pCi/L)	15	0	6.9	0.1-6.9	2011	No	Erosion of natural deposits
Beta/photon emitters (pCi/L)	50	0	10.3	2.5-10.3	2011	No	Decay of natural and man-made deposits
Radium combined 226/228 (pCi/L)	5	0	0.46	0.04-0.46	2011	No	Erosion of natural deposits
Uranium (ppb)	30	0	7	1-7	2011	No	Erosion of natural deposits

CRYPTOSPORIDIUM

■ The EPA Center for Disease Control guidelines on appropriate ways to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline at **(800) 426-4791**.

FOR YOUR INFORMATION

The City of Rio Rancho does not have any regulated organic chemical contaminants or pesticides and herbicides detected in our water. We are required by the U.S. EPA to test and monitor for non-regulated organic contaminants and two substances are detected in our water.

Update of the Aquifer Injection Project

How Clean Is Clean?

Built in 2005, the Cabezon Water Reclamation Facility has the capacity to treat 1.2 million gallons of water per day (MGD). This wastewater is generated primarily from residential and commercial sources. The water reclamation facility uses membrane-bioreactor (MBR) technology for cleaning the wastewater to create a superior, clean water that is nearly free of suspended solids. As one of the final steps in treatment, the MBR system pulls the water through a microfiltration membrane with an absolute pore size of 0.1 micron. For reference, the diameter of human hair varies from 17 to 180 microns. These MBR pores filter out cloudiness (turbidity), particles, and microorganisms. The Cabezon Water Reclamation Facility produces reclaimed water that meets the Class 1A category requirements as described by the New Mexico Environment Department (NMED). Per the state's regulations, Class 1A reclaimed water may be used for any purpose except direct consumption, food handling and processing, and spray irrigation of food crops.

The clean water from this plant will be used for the city's Aquifer Injection Project. This clean water will be pumped to the injection site near Northern Boulevard, and there it will undergo additional Advanced Water Treatment. This advanced treatment includes an Advanced Oxidation Process and Adsorbent Media Process.

Advanced Oxidation Process and Adsorbent Media Process

Advanced oxidant combines a chemical oxidant with ultra-violet (UV) radiation or other oxidants, like hydrogen peroxide or ozone, to achieve contaminant removal through chemical oxidation. Ozone is effective for pathogen inactivation, destruction of organic compounds, and aesthetic water quality improvement.

Adsorbent media, such as granular activated carbon, removes constituents from water when they are attached to the porous surface through chemical bonds or physical attraction. This process is commonly used to remove synthetic organic compounds, disinfection by-products, and taste-and odor-causing compounds.

So you received a "leak letter"

Home Water Use Audits

One of the nice features of the new water meters being installed is the "leak" function. If during the month there is at least one 24-hour period of time that water is flowing through the meter, the city receives a "flag" when the meter is read. When this happens, the city's Utility Services Division sends a "leak letter" to the water customer as a preemptive measure to let them know of a potential leak. If you get one of these letters:

1. Don't panic. Look at the date of the letter and think back to anytime that you may have left the water running on purpose over a 24-hour period of time for the following reasons:
   a. Letting water drip from a faucet during a cold snap
   b. Filling a pool overnight
   c. Leaving a hose on or the irrigation on overnight
2. If you are able, read your meter and check the flow indicator to see if water is flowing through it when all water is shut off in the house.
3. If the meter shows that water is flowing through it when it should not be then check these items:
   a. TOILETS are the number one cause of leaks found during water use audits. You can use a dye tablet, food coloring, Kool-Aid or other powdered, colored drink beverage to check if your toilet is leaking. Put the dye in the tank, wait about 5 to 10 minutes and then check the bowl. If there is color in the bowl, then your toilet is leaking, usually through the flapper, or the water level is too high and the toilet is siphoning the water into the bowl.
   b. FAUCETS are much easier to check for leaks– because you can see them. A leaking faucet can easily waste three gallons of water a day...a total of 1,095 gallons of water a year.

FINDING AND FIXING LEAKS

For information on how to read meters, how to replace flappers and other toilet repairs, repairing leaking faucets and more, visit the **Finding & Fixing Leaks** page of the city website:
http://ci.Rio-rancho.nm.us/index.Aspx?Nid=1883

Please contact the Water Conservation Office at **(505) 896-8715** with any questions or to request a brochure.

Consumer Confidence Report

City Of
Rio Rancho
2014

RioRancho
City of Vision

City of Rio Rancho
Water Conservation Office
Conserve Today. Preserve Tomorrow.

QUALITY DRINKING WATER BEGINS HERE!

Table of Contents

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Billy Jaquez, laboratory manager (front left) and Robert Apodaca, laboratory technician, conduct wastewater sampling analyses and tests. Both men work for Water and Wastewater Services in the Utilities Division.

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MRL: Minimum Reporting Levels – the smallest measured concentration of a substance that can be reliably measured by using a given analytical method

N/A: Not applicable.

ND: Not detected.

pCi/L: Picocuries per liter – A measure of radioactivity.

ppb: Parts per billion or micrograms per liter – Approximately equal to 3 seconds out of a century.

ppm: Parts per million or milligrams per liter – Approximately equal to 32 seconds out of a year.

Range of detection: Highest & lowest levels of substance found in treated drinking 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.

ARSENIC

While your drinking water meets EPA's standard for arsenic, it does contain low levels of arsenic. EPA's standard balances the current understanding of arsenic's possible health effects against the cost of removing arsenic from drinking water. EPA continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

Substance	MCL	MCLG	Our Water	Range of Detection	Sample Year	Violation	Typical Source of Contamination
Arsenic (ppb)	10	0	12*	3-12	2014	No	Erosion of natural deposits

**An arsenic sample that was collected by the City of Rio Rancho in February 2014 indicated an exceedance of the MCL for arsenic of 10 ppb. A confirmation sample was taken at that location which indicated that arsenic was below the MCL. The City of Rio Rancho is not in violation since compliance is based on the running annual average for arsenic. The City of Rio Rancho is required to increase monitoring frequency for this contaminant to quarterly sampling starting the first quarter of 2015 and will continue for four quarters.*

LEAD/COPPER

Lead and copper can come from the plumbing system in homes and businesses. The city is required to test for lead and copper every three years from homes of a certain age range.

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. The Rio Rancho Utilities Division 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.

Substance	Action Level (AL)	MCLG	Our Water	Number of Sites Exceeding AL	Sample Year	Violation	Typical Source of Contamination
Copper (ppm)	1.3	1.3	0.46 (90th percentile)	0	2014	No	Corrosion of household plumbing systems
Lead (ppb)	15	0	2 (90th percentile)	0	2014	No	Corrosion of household plumbing systems

Substance	MCL	MCLG	Our Water	Range of Detection	Sample Year	Violation	Typical Source of Contamination
Chromium (ppb)	100	100	11	0.001-11	2014	No	Erosion of natural deposits
Fluoride (ppm)	4	4	1.07	0.38-1.07	2014	No	Erosion of natural deposits
Nitrate as Nitrogen (ppm)	10	10	3.33	0.12-3.33	2014	No	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits

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 **(800) 426-4791** or at **www.epa.gov/safewater/lead.**

MICROBIAL CONTAMINANTS

CONTAMINANTS: Viruses and bacteria which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

Substance	MCL	MCLG	Highest Monthly Percentage In Our Water	Sample Year	Violation	Typical Source of Contamination
Total Coliform Bacteria	5[†]	0	0.004%* **From the 1107 samples taken in 2014, 4 samples were positive. All repeat samples were negative for Total Coliform.*	2014	No	Naturally present in the environment

[†]*5% of monthly samples are positive.*

CONTAMINANTS THAT MAY BE PRESENT IN SOURCE DRINKING WATER INCLUDE:

INORGANIC CONTAMINANTS: 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.

ORGANIC CHEMICAL CONTAMINANTS: Synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems.

PESTICIDES AND HERBICIDES: May come from a variety of sources such as agriculture, storm water runoff, and residential uses.

RADIOACTIVE CONTAMINANTS: Can be naturally-occurring or be the result of oil and gas production and mining activities.

Substance	MCL	MCLG	Our Water	Range of Detection	Sample Year	Violation	Typical Source of Contamination
2-Butanone (MEK) (ppb)	N/A	N/A	2.8	ND-2.8	2011	No	Discharge from solvents used for coatings, resins, and adhesives
Tetrahydrofuran (ppb)	N/A	N/A	0.8	ND-0.8	2011	No	Discharge from manufacturing of protective coatings, adhesives, magnetic strips, and printing inks
Xylenes (ppm)	10	10	0.00069	ND-0.00069	2014	No	Discharge from petroleum or chemical factories
Ethylbenzene (ppb)	700	700	0.13	ND-0.13	2014	No	Discharge from petroleum refineries

Substance	MCL	MCLG	Our Water	Range of Detection	Sample Year	Violation	Typical Source of Contamination
Alpha emitters (pCi/L)	15	0	8.4	0.3-8.4	2014	No	Erosion of natural deposits
Beta/photon emitters (pCi/L)	50	0	8.7	2.5-8.7	2014	No	Decay of natural and man-made deposits
Radium combined 226/228 (pCi/L)	5	0	0.2	ND-0.2	2014	No	Erosion of natural deposits
Uranium (ppb)	30	0	7	ND-7	2014	No	Erosion of natural deposits

Substance	MCL	MCLG	Our Water	Range of Detection	Sample Year	Violation	Typical Source of Contamination
TTHMs (ppb)	80	N/A	19.5	ND-24	2014	No	By-product of drinking water disinfection
HAA5 (ppb)	60	N/A	2.65	0.87-3.2	2014	No	By-product of drinking water disinfection
Chlorine (ppm)	MRDL 4	MRDLG 4	1	0.5-1	2014	No	Water additive to control microbes

CRYPTOSPORIDIUM

The EPA Center for Disease Control guidelines on appropriate ways to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline at **(800) 426-4791.**

PEOPLE WITH SENSITIVITIES

Some people may be more vulnerable to contaminants in drinking water than the general population. Please seek advice from your health care provider if you are:

- Immuno-compromised
- Undergoing chemotherapy
- A transplant recipient
- Living with HIV/AIDS or other immune system disorders
- Elderly or have a newborn that may be at risk from infection

Update

Aquifer Injection and Purified Water Project Moving Forward

The City is continuing with the Aquifer Injection and Replenishment Project by applying for two state grants. One application is for a new three million gallon (3 MG) ground storage reservoir to be located in the aquifer injection site near Northern Boulevard and Moccasin Avenue. The site can gravity feed the entire recycled water system including turf irrigation and aquifer replenishment applications.

The City designed and developed a direct injection facility consisting of one deep injection well (16-inch casing to 1,700 feet), an extensive groundwater monitoring network, and the advanced water treatment (AWT) building and associated process tanks. The facility is capable of replenishing the underlying aquifer at a rate of one million gallons per day.

The second grant application requests funding to complete equipping the AWT facility with a) an advanced oxidation process (AOP) using ozone/hydrogen peroxide for maximum water purification; b) installing granular activated carbon within the onsite vessels; c) installing degasser and final disinfection process; d) retrofitting the injection well for routine backwash operations; and, e) completing associated site improvements for operation of the facility.

1b

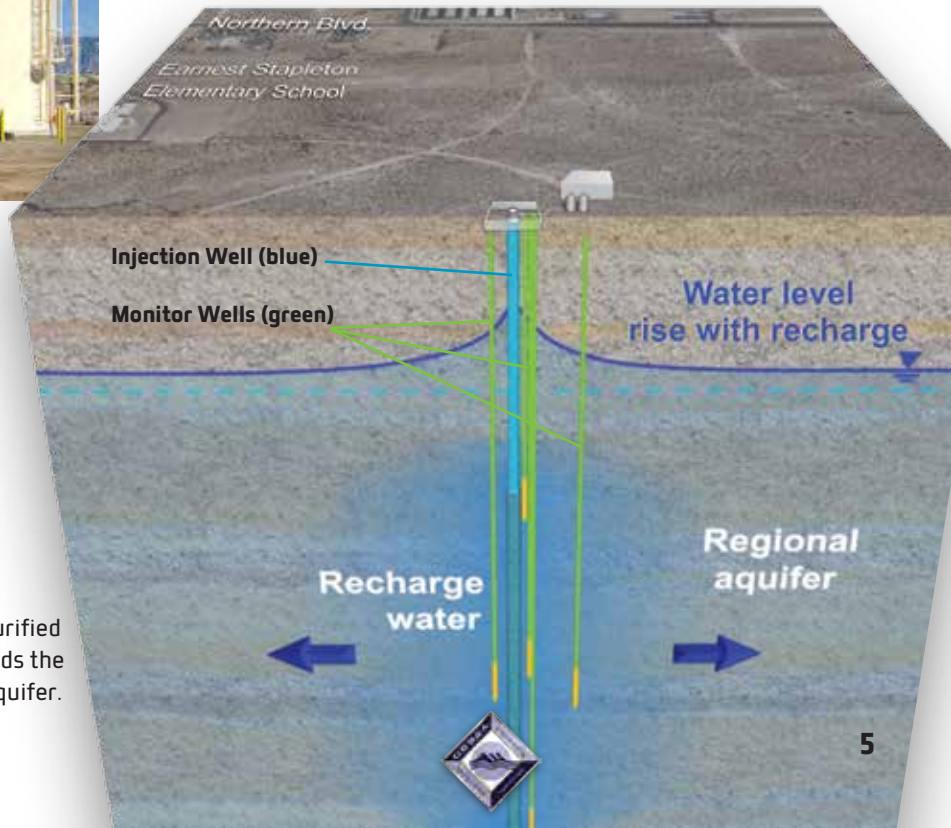
1 Concrete tank and pump station just south of Cabezon subdivision. The tank was designed to hold 3 million gallons of cleaned water. Just above, left (1b) is the pump station – the workhorse of the reuse distribution system. Water is pumped to the injection site and the non-potable water system to irrigate golf courses and parks. Any water not used for those purposes is sent to the Rio Grande.

2 Some of the treated water stored in the concrete tank will be will be sent to the city's aquifer injection site off Northern Boulevard, where it will be treated again before being injected into the aquifer.

3 Granular activated carbon (GAC) tanks installed in the water treatment facility will clean and purify the water before the injection process.

4 Raw water comes into one tank and gets sent to the GAC tanks for polishing. Finished purified water is then held in the second tank prior to injection.

5 Recharge purified water extends the life of the aquifer.



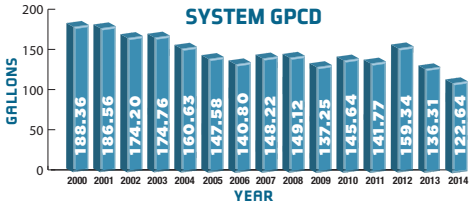
UNREGULATED CONTAMINANTS: Unregulated contaminants are those for which the EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist the EPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulations are warranted. A maximum contaminant level (MCL) for these substances has not been established by either state or federal regulations, nor has mandatory health effects language.

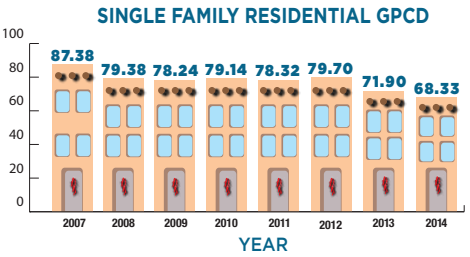
Substance	MRL	Average Amount Detected	Range		Sample Year
			Low	High	
Chromium-6 (hexavalent chromium) (ppb)	0.03	4.57	ND	10.63	2014
Chromium (total chromium) (ppb)	0.2	5.76	0.4	14.1	2014
Molybdenum (ppb)	1	5.25	ND	13.3	2014
Strontium (ppb)	0.3	675	114	1703	2014
Vanadium (ppb)	0.2	17.82	7.2	41	2014
Chlorate (ppb)	20	25	ND	110	2014

2014 Water Use Hits 14-year Low

Fourteen years ago, Rio Ranchoans used almost sixty-six gallons per person per day more than they do now. That's 24,090 gallons more a year per person!

Water use dropped from 136.31 in 2013 to 122.64 in 2014, surpassing our City goal of reaching 135 GPCD by 2017. Keep up the good work!





Evaporative Cooling:

Use It Wisely for Optimal Water Use and Comfort

Evaporative cooling isn't a new concept. In fact, it's the oldest known method of cooling hot, summer air to make living spaces more comfortable. Ancient Egyptians hung wet material so the wind could blow through it to create a cooling effect. If you've ever been chilled when getting out of a swimming pool, you've experienced the effect of evaporative cooling.

How Much Water Do "Swamp Coolers" Use?

Water requirements for an evaporative cooler will vary with the size of the house, its orientation toward the sun, window area, type of landscaping, proximity to hard surfaces and other structures, lifestyle of the occupants, local climate, how many hours the cooler runs, and water quality. In an average weather year a 1,500 square-foot home in Santa Fe might use 2,980 gallons of evaporative cooling water (based on the evaporative cooler running 696 hours). The same sized home in Rio Rancho would use 7,261 gallons (1,130 cooling hours), while a similar house in Las Cruces would use 12,457 gallons (1,718 cooling hours).

In an unusually warm year, these water requirements would be significantly higher. Virtually all models of evaporative coolers now available recirculate the water that drips from the pads, resulting in an efficient use of water.

Spring Startup:
Evaporative Cooler Maintenance Made Simple

Spring maintenance is essential to make sure your evaporative cooler will do its job during the hot summer months. Most coolers can be maintained by do-it-yourselfers with common household tools.

1. **Remove external weatherproof covers, disconnect the water line and turn off the water supply.**

2. **Remove the cooler pad holders. Remove and discard the old cooler pads. Scrub the panels to remove any debris. Scrub out the water trough at the top of each panel, making sure that each hole in the trough is free of debris.**

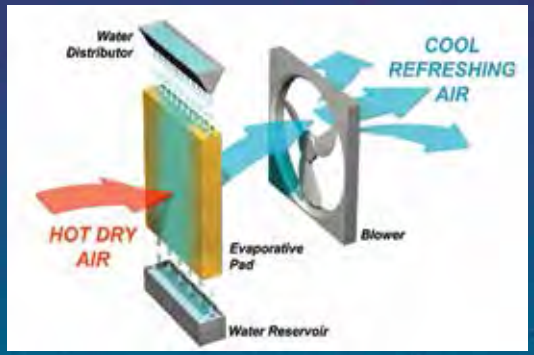
3. **Clean out debris in the water tray (at the bottom of the cooler). Check the water tray for rusted areas and cracks that may leak and coat the tray with submarine paint.**

4. **Install new cooler pads per manufacturer's directions. The cooling efficiency of your evaporative cooler is dependent upon the pads. Old pads get coated with mineral deposits and won't absorb as much water.**

5. **Connect the water line and turn on the water supply. Water should begin to fill the water pan.**

6. **When there is sufficient water in the pan, turn on the water pump and make sure the water flows freely through the tubing and onto the water trough at the top of each panel. Water should evenly saturate each pad.**

7. **Check the water level and adjust the float arm, if necessary.**



Excerpt taken from "A Waterwise Guide to Evaporative Coolers" from the New Mexico Office of the State Engineer, Water Use and Conservation Bureau.

Utilities Operators Receive Prestigious Awards

Two staff members representing Utilities Operations were honored with prestigious awards. Corey Terrell was awarded the **"Water Production Facility Operator of the Year"** and Louie Aguilar was presented with the **"Water Distribution Operator of the Year."** Winners of these awards, presented by New Mexico Water and Wastewater Association, were selected from the entire state's water and wastewater operators.

The New Mexico Water and Wastewater Association endeavors to assist in protecting the public health and the environment and preserving the investment of public funds in New Mexico by promoting proper design, construction, operation, performance evaluation, and management of water and wastewater utilities.

Left to right: Cory Terrell and Louie Aguilar, award recipients, with their supervisor Ted Chlastawa.

Following the Money

Your Rate Dollars at Work

Fixing Leaks, Line by Line

The Service Line Replacement Program was established to replace existing polyethylene water service lines (from the street to the water meter) with new copper water service lines, which have proven to wear better and last longer. The project will also replace Non-Automatic Reading Water Meters and Non-Standard Meter Boxes.

In the late 1970s and early 1980s, the price of copper was very high and copper pipes were expensive. Utilities across America were using "poly" pipes because it was reported that "poly" was better than and much less expensive than copper.

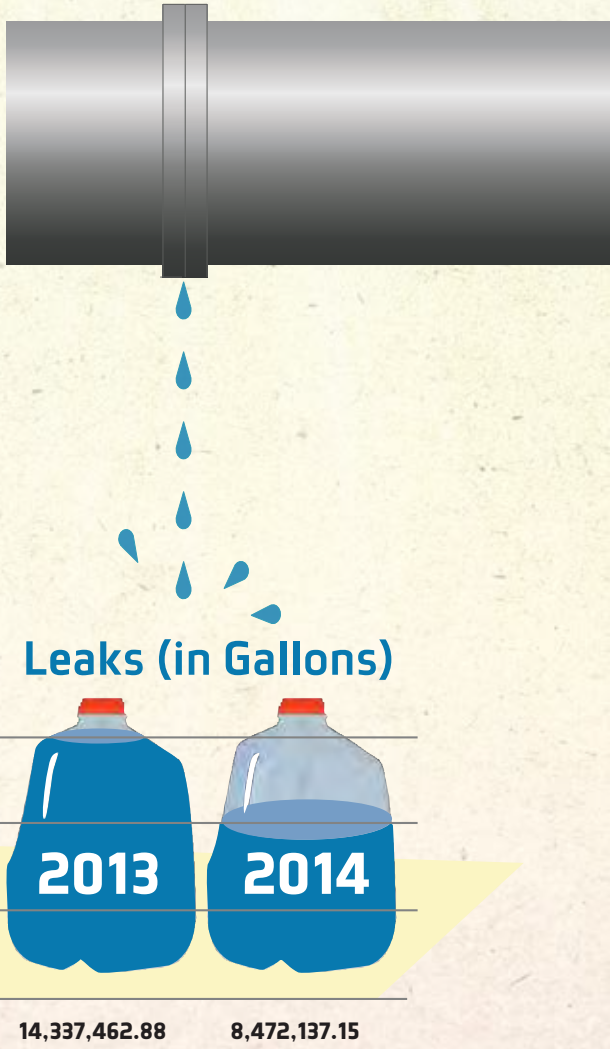
The chart to the right depicts the difference in water leaks from 2013 to 2014, primarily due to the start of the replacement program. The estimated water lost that is attributed to leaks includes main breaks in addition to service line leaks. The service line replacement programs began in 2014 with 1,086 polyethylene lines replaced with copper lines. A third phase is ongoing in 2015 with an estimated 1,150 service lines scheduled to be replaced.

The City has planned and earmarked $1 million per year to replace the polyethylene water service lines. "Polyethylene was used for a period of time for the service lines in the City," said Larry Webb, City Utilities Operations Manager. "It is not if it will break, but when." Repairing the polyethylene service lines is the primary reason for the "patchwork" roads throughout the City.

The cost of replacing all the known polyethylene pipes is estimated to be $30 million, which includes the asphalt and street repairs.

Idaho Creek Road Water Main Replaced

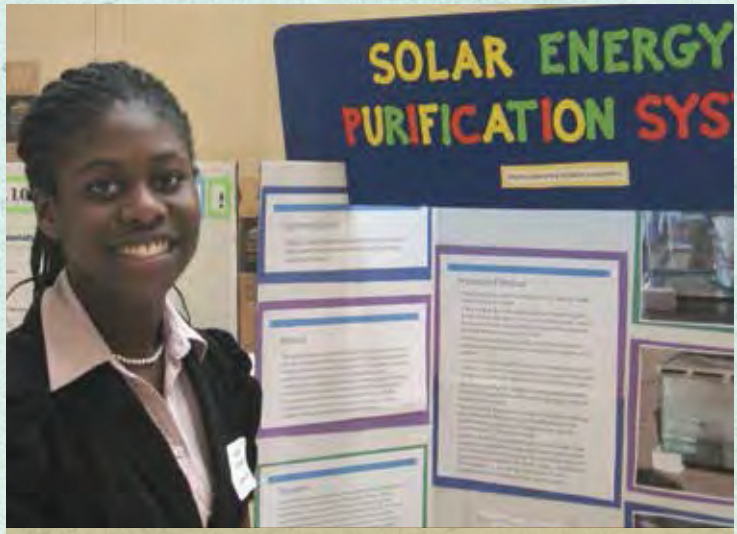
The City has completed a project to replace the original 8" water main in Idaho Creek Road. The original pipe material "blew" 25 times over the past 5 years, causing an estimated loss of 22.5 million gallons of water. The polyethylene service lines to the homes were also replaced at the same time with copper pipes. This project cost $237,873.18 and was paid for by water and wastewater rate payers. The City will continue with upgrade and replacement projects such as this one to be good stewards and protect our groundwater resource, the source of our drinking water supply.



Above: The Service Line Replacement Program contributed to the reduction of the amount of water lost to line leaks from 14,337,462.88 gallons in 2013 to 8,472,137.15 in 2014, when the program began. Phase III is on-going with an estimated 1,150 service lines scheduled to be replaced by the end of 2015. Left: crews replace the original 8" water main line and service lines on Idaho Creek Road.

Matuke Fomukong Wins 2015 "Every Drop Counts" Award for Solar Energy Purification System project

This year's winner for the Science Fair and Expo's Every Drop Counts award is Matuke Fomukong from Rio Rancho High School. In her project *Solar Energy Purification System*, Ms. Fomukong writes, "While potable water is taken for granted in developed nations, communities in underdeveloped countries can hardly afford clean drinking water. The lack of potable water in underdeveloped countries results in outbreaks of waterborne diseases like diarrhea. Diarrhea causes over 2 million deaths in underdeveloped countries worldwide, especially with children. To reduce deaths due to a lack of potable water, the need for cost effective and efficient ways to purify brackish water is of critical importance for use in third world countries." Using sunlight as a cheap and free energy source, Ms. Fomukong successfully purified brackish water by a process of evaporation and condensation. Her results showed that a consistent amount of clean water could be produced over periods of time, proving that this method is predictable and reliable. To produce large volumes of water to satisfy the needs of a community, large scale designs of the system would need to be used.



Matuke Fomukong, winner of the 2015 "Every Drop Counts" award.

The City of Rio Rancho Department of Public Works has updated their webpages to better assist the public. The webpages have a few new features: common links on the bottom of every page, a forms section with all of the forms that the department uses, a Frequently Asked Questions section, map application gallery, xeriscaping guide, and more. Go to the city website **(http://www.ci.rio-rancho.nm.us)** and go to the bottom left hand corner and click on Public Works to visit the new pages.

Youth and Student Outreach

Kayla Alarcon is a 12th grade student at Rio Rancho High School. Assisted by Marian Wrage, City Environmental Programs Manager and Eddie De Lara, City Wastewater Manager with CH2M Hill, Ms. Alarcon sampled water at Harvey Jones Channel (WWTP #2 outfall) in Corrales for her science fair project. The purpose of her project, which was selected for the regional competition in March, was to measure the health of the Rio Grande ecosystem in Rio Rancho. This was assessed by examining the chemistry and macro-invertebrate population characteristics of the river.

Top: Kayla Alarcon collects samples for her science fair project. Bottom left and right: Testing Dissolved Oxygen and pH levels helps measure the health of the Rio Grande ecosystem in Rio Rancho.

City of Rio Rancho
Utilities Division
3200 Civic Center Circle NE
Rio Rancho, NM 87144

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IMPORTANT INFO

All phone numbers have a (505) area code.

Utilities Administration	896-8715
Utilities Billing	891-5020
Report Leaks	891-5020
Water/Wastewater Emergency (After Hours)	975-1581
Line Spots, NM One Call	811
Water Conservation	896-8715
Engineering	891-5016
Environmental Programs	896-8737
Water Waste Hotline	896-8299

www.ci.rio-rancho.nm.us

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA) SAFE DRINKING WATER HOTLINE:

(800) 426-4791

RIO RANCHO WATER PRODUCTION:

(505) 891-5221

********* ECRWSS *********

Postal Customer

Rio Rancho, New Mexico

Este informe contiene información importante acerca de su agua potable. Haga que alguien lo traduzca para usted, o hable con alguien que lo entienda.

RioRancho City of Vision

Utilities Division · City of Rio Rancho

City of Rio Rancho Water Conservation Office
Conserve Today. Preserve Tomorrow.

City of Rio Rancho Environmental Programs

2015 CITY OF RIO RANCHO CONSUMER CONFIDENCE REPORT

Rio Rancho
City of Vision

City of Rio Rancho
Water Conservation Office

FROM THE MAYOR

THE CITY OF RIO RANCHO takes great pride in the quality of the drinking water provided to its citizens and businesses.

The City's Utilities Department regularly tests our drinking water to ensure that the quality is higher than the U.S. Environmental Protection Agency's requirements. In 2015 we conducted more than 7,000 tests for a variety of analyses.

This report gives the citizens of Rio Rancho valuable information about the quality of our drinking water, ideas for water conservation and efficiency, and a look into the future of our capital improvements.

Please take time to read this report, brought to you by your Utilities Department. I encourage your participation, input and feedback, and vision for a healthy water future as Rio Rancho continues to grow.

Mayor Gregg Hull

To ensure that tap water is safe to drink, the Environmental Protection Agency (EPA) prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) regulates bottled water, which must provide the same protection of public health.

WE ARE PLEASED TO PRESENT this year's Annual Water Quality Report (Consumer Confidence Report) as required by the Safe Drinking Water Act (SDWA). This report is designed to provide details about where your water comes from, what it contains, and how it compares to standards set by regulatory agencies. This report is a snapshot of last year's water quality.

We are committed to providing you with information because informed customers are our best allies.

RIO RANCHO'S DRINKING WATER COMES ENTIRELY FROM THE SANTA FE GROUP AQUIFER. An aquifer is an underground layer of water-bearing permeable rock or unconsolidated materials (gravel, sand, or silt) from which groundwater can be extracted using a water well. This underground water source is not limitless, so conservation of this natural resource is a must. The aquifer in our area lies within volcanic rocks that naturally contain arsenic. As water flows through the rock it dissolves some of the arsenic from the rocks.

THE FOLLOWING DEFINITIONS ARE USED IN THIS WATER QUALITY REPORT:

AL: Action Level – The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

MCL: Maximum Contaminant Level – The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

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.

MNR – Monitored but not regulated.

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.

MRDLG: Maximum Residual Disinfectant 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.

MRL: Minimum Reporting Levels – The smallest measured concentration of a substance that can be reliably measured by using a given analytical method.

N/A: Not applicable.

ND: Not detected.

pCi/L: Picocuries per liter – A measure of radioactivity.

ppb: Parts per billion or micrograms per liter – Approximately equal to 3 seconds out of a century.

ppm: Parts per million or milligrams per liter – Approximately equal to 32 seconds out of a year.

Range of detection: Highest & lowest levels of substance found in treated drinking 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.

TABLE OF CONTENTS

DO I NEED TO TAKE SPECIAL PRECAUTIONS?

Some people may be more vulnerable to contaminants in drinking water than the general population.

Please seek advice from your health care provider if you are:

- **Immuno-compromised**
- **Undergoing chemotherapy**
- **A transplant recipient**
- **Living with HIV/AIDS or other immune system disorders**
- **Elderly or have a newborn that may be at risk from infection.**

CONTAMINANTS THAT MAY BE PRESENT IN SOURCE DRINKING WATER INCLUDE:

INORGANIC CONTAMINANTS: Salts and metals which can occur naturally or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

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CRYPTOSPORIDIUM: The EPA Center for Disease Control guidelines on appropriate ways to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline at **(800) 426-4791.**

ARSENIC

Substance	MCL	MCLG	Our Water	Range of Detection	Sample Year	Violation	Typical Source of Contamination
Arsenic (ppb)	10	0	7	7-7	2015	No	Erosion of natural deposits

While your drinking water meets EPA's standard for arsenic, it does contain low levels of arsenic. EPA's standard balances the current understanding of arsenic's possible health effects against the cost of removing arsenic from drinking water. EPA continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

LEAD/COPPER

Lead and copper can come from the plumbing system in homes and businesses. The City is required to test for lead and copper every three years from homes of a certain age range.

Substance	Action Level (AL)	MCLG	Our Water	Number of Sites Exceeding AL	Sample Year	Violation	Typical Source of Contamination
Copper (ppm)	1.3	1.3	0.46 (90th percentile)	0	2014	No	Corrosion of household plumbing systems
Lead (ppb)	15	0	2 (90th percentile)	0	2014	No	Corrosion of household plumbing systems

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. The Rio Rancho Utilities Department 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.

Substance	MCL	MCLG	Our Water	Range of Detection	Sample Year	Violation	Typical Source of Contamination
Chromium (ppb)	100	100	11	0.001-11	2014	No	Erosion of natural deposits
Fluoride (ppm)	4	4	1.07	0.38-1.07	2014	No	Erosion of natural deposits
Nitrate as Nitrogen (ppm)	10	10	3.74	0.14-3.74	2015	No	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits

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 (800) 426-4791 or at www.epa.gov/safewater/lead

Utilities Department laboratory manager Billy Jaquez conducts sampling, analyses and tests.

Substance	MCL	MCLG	Highest Monthly Percentage in Our Water	Sample Year	Violation	Typical Source of Contamination
Total Coliform Bacteria	5†	0	0	2015	No	Naturally present in the environment

†5% of monthly samples are positive

Substance	MCL	MCLG	Our Water	Range of Detection	Sample Year	Violation	Typical Source of Contamination
Alpha emitters (pCi/L)	15	0	8.4	0.3-8.4	2014	No	Erosion of natural deposits
Radium combined 226/228 (pCi/L)	5	0	0.2	ND-0.2	2014	No	Decay of natural and man-made deposits
Beta/ photon emitters (pCi/L)	50	0	8.7	2.5-8.7	2014	No	Erosion of natural deposits
Uranium (ppb)	30	0	7	ND-7	2014	No	Erosion of natural deposits

Substance	MCL	MCLG	Our Water	Range of Detection	Sample Year	Violation	Typical Source of Contamination
TTHMs (ppb)	80	N/A	15	0.39-17	2015	No	By-product of drinking water disinfection
HAA5 (ppb)	60	N/A	2.55	0.28-3.3	2015	No	By-product of drinking water disinfection
Chlorine (ppm)	4	4	0.7	0.4-0.7	2015	No	Water additive used to control microbes

Substance	MCL	MCLG	Our Water	Range of Detection	Sample Year	Violation	Typical Source of Contamination
Xylenes (ppm)	10	10	0.00069	ND-0.00069	2014	No	Discharge from petroleum or chemical factories
Ethylbenzene (ppb)	700	700	0.13	ND-0.13	2014	No	Discharge from petroleum refineries
2-Butanone (MEK) (ppb)	N/A	N/A	2.8	N/A	2011	No	Discharge from solvents used for coatings, resins and adhesives
Tetrahydrofuran (ppb)	N/A	N/A	0.8	N/A	2011	No	Discharge from manufacturing of protective coatings, adhesives, magnetic strips, printing inks

Substance	MRL	Average Amount Detected	Sample Year
Chromium-6 (hexavalent chromium) (ppb)	0.03	1.02	2015
Chromium (total chromium) (ppb)	0.2	1.6	2015
Molybdenum (ppb)	1	3.8	2015
Strontium (ppb)	0.3	622.4	2015
Vanadium (ppb)	0.2	7.8	2015

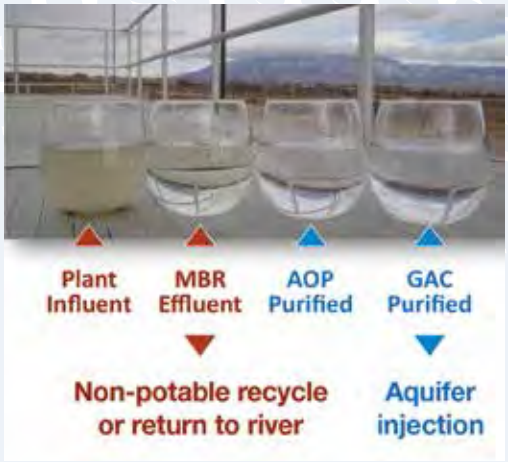
UNREGULATED CONTAMINANTS: Unregulated contaminants are those for which the EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist the EPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulations are warranted. A maximum contaminant level (MCL) for these substances has not been established by either state or federal regulations, nor has mandatory health effects language.

WATER RESOURCES MANAGEMENT

Aquifer Injection Project Update

In 2001 the City of Rio Rancho's City Council signed a resolution of support to keep the water pumped from the aquifer in Rio Rancho for its use, including the wastewater generated from the use of that water by residents and businesses in our city. The intent of the resolution was to use and manage all of the water resources in a sustainable and resilient way.

As part of our ongoing water resources management, the City of Rio Rancho began an Aquifer Injection Project to clean the wastewater and place it back into the aquifer. That project is now in its final stage, with the advanced equipment needed to treat and purify water being installed. The City anticipates beginning to inject purified water into the aquifer in winter 2016/2017 at a rate of 800,000 to 1 million gallons per day. This water will recharge the aquifer to maintain it as a drinking water source now and for future generations.



"A Park Above" receives recycled water to irrigate the landscape in and around the park.

In 2015 the water resources management program also began delivering recycled water for irrigatation of city parks and medians, such as A Park Above in the Cabezon subdivision.

One of the plants that treats wastewater, located on Sara near NM 528, is more than 45 years old. It is dilapidated and in need of replacement. The operators work very hard to make maintain the plant and make what repairs they can to ensure the cleaned water is of sufficient quality to comply with U.S. Environmental Protection Agency regulations. Currently, most of the water cleaned at this plant makes it to the Rio Grande for use downstream. Some is sold as recycled water for irrigation. The final water produced from this plant cannot be used for aquifer injection because it is not clean enough for that use.

Contrast the corroded and exposed aeration basin at the more than 45-year-old wastewater treatment plant on Sara Road (top) with the clean enclosed one at the Cabezon purification plant (bottom).

In contrast, the newest water purification plant, located in the Cabezon subdivision, uses newer technologies to clean the water. This membrane bioreactor (MBR) plant cleans the particles and bacteria out of the water by using membranes with holes one micron in size. One micron is one-millionth of a meter. As a comparison, a human hair is about 50 to 100 microns wide.

Plans are in the works to build a new water purification plant at the current location on Sara and NM 528. The City will install the much cleaner MBR technology at the new

The MBR membrane uses holes 1 micron in diameter to filter and purify water.

If the black circle above represents the diameter of a human hair, the small white dot in the center is the approximate diameter of one of the 1-micron holes used in a membrane bioreactor (MBR) plant to purify water enough to inject it back into the aquifer for future use.

Top and right: Photos of the new water purification plant at Cabezon show a clean, enclosed facility with a foot-print substantially smaller than that of the older plant on Sara Rd. At more than 45 years old, parts of the facility are either completely out of commission (lower right) or operating at 50% of original capacity (lower left).

plant so that this purified water is kept within Rio Rancho instead of depositing it into the river.

It is crucial that we continue to create a better and more sustainable "water picture" by recycling our wastewater not only for irrigation, but also for injection into the aquifer we depend on.

LET'S TALK TURF!

Are you planning to install a lawn for kids or pets? Or just to relax? Different grasses have different traffic tolerance, mowing frequency, and water requirements.

In Rio Rancho, warm-season grasses are the best to use to conserve our precious water resources. The traffic tolerance differs for each variety—pets and children need a grass that tolerates foot (and paw) traffic. Some varieties are more "meadow-like" while others are more "lawn-like." Warm-season grasses, such as Buffalo, African Dogtooth, and Blue Grama, generally need between 15 and 30 inches of water per year. Kentucky Bluegrass, one of the cool season turf grasses, is associated with the lush lawns of our childhood. It belongs in states like Kentucky because of the high water demand that it needs to grow. Kentucky Bluegrass needs 48 to 60 inches of water per year. Remember, Rio Rancho's high-desert environment only gets about 8 inches of precipitation annually. Other common cool-season grasses include fescues that take 30 to 40 inches of water. Planting cool-season grasses is a violation of Rio Rancho's landscape ordinance because of their high water use. For more information about Rio Rancho's landscape ordinances visit the City's website at **www.rrnm.gov**

Every Drop Counts

EACH YEAR Rio Rancho students participate in the middle school and high school science fairs or expos. The City of Rio Rancho's Environmental Programs Section supports the scientific endeavors of the students and funds the "Every Drop Counts" award, which recognizes the best display of water conservation, water efficiency, or water quality. "Water education for children makes for a smarter water future for Rio Rancho," said Marian Wrage, manager of the City's Environmental Programs Section.

Winners of the "Every Drop Counts" award for the 2015-2016 school year are Camaren Ly and Kinsey Warnock, both from Rio Rancho High School, with their project titled "Pollution Problems Pertaining to Pharmaceuticals and Personal Care Products."

Camaren Ly (left) and Kinsey Warnock from Rio Rancho High School with their project on Pharmaceuticals and Personal Care Products.

If you are a student, or know a student who needs mentoring for science expos; please contact us for assistance and guidance at (505) 896-8737.

Adios to a Familiar Face

Longtime Water Utility staff member Ruben Archuleta, the familiar face of water audits, leak detection, and water waste—and the local "Water Wizard," has retired. He will be missed by staff and citizens alike. Ruben could be seen driving the water conservation van throughout the City on his way to help locate a hidden leak –or hot on the trail of a water waste violation. Please join us in wishing Ruben the best of luck in his retirement.

SPOTLIGHT ON: PAT GALLEGOS

Water Operations Supervisor

Gulf War veteran Pat Gallegos joined the Water Utility in 2001. He obtained the highest drinking water certification in 2004, in the shortest time possible, a testament to his ability and focus.This focus has enabled him to master the water system for a city of more than 90,000 in a short period of time. The system includes: 18 deep water wells, 18 storage tanks, 8 booster stations, and over 50 active pressure-reducing valves. Among his responsibilities as Water Operations Supervisor are production, compliance sampling, disinfection, and maintenance of the systems which ensure the continuous flow of safe drinking water to the citizens of Rio Rancho.

> *"A continuous flow of safe drinking water is the first line of defense in a crisis."*

As Supervisor, Pat directs a team in the operation of the wells and arsenic-removal facilities and works in conjunction with maintenance personnel to provide seamless operation of all water facilities.

Trained in CPR and first aid as well as being a part of the FEMA Homeland Emergency Response Team for the City of Rio Rancho, Pat was the 2011 recipient of the Ralph M. Leidholdt Plant Operator Award, given in recognition of an outstanding water treatment plant operator for exceptional performance, dedication, and teamwork.

ARKANSAS TOURS NEW MEXICO

SIX CHEMICAL ENGINEERING students from the University of Arkansas drove almost 1,000 miles to tour several of the City's water facilities, including the Cabezon Water Purification Facility, the Aquifer Injection Site, and the Arsenic Treatment Facility at Well 10's Water Complex.

The students were participating in a grant challenge hosted by NM State University to design a direct potable reuse system for a community in New Mexico.

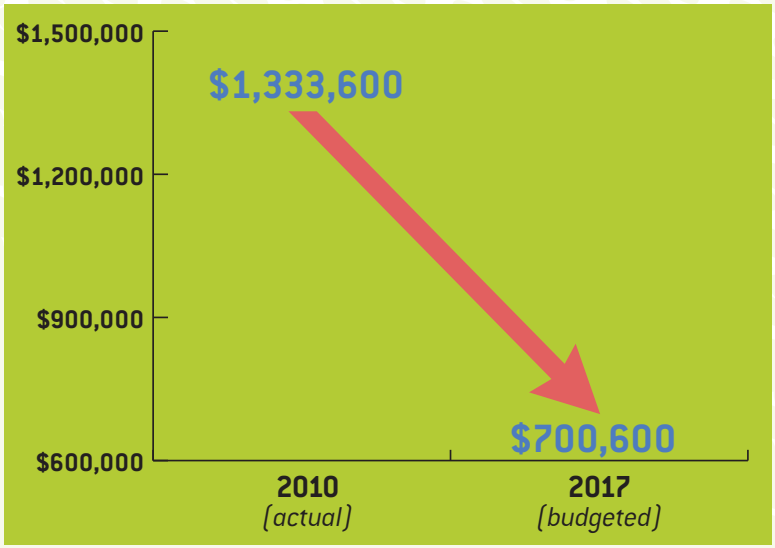
One of the students' professors suggested they visit the Rio Rancho facilities because he believed it was one of the best examples of potable reuse in New Mexico.

Clockwise from top right: Environmental Programs Manager Marian Wrage offers an overview of the Cabezon treatment facility before tour begins; student takes notes as Operator Robert Crites explains the reuse process; Water Operations Supervisor Pat Gallegos shows students the Arsenic Treatment Facility at Well 10; the students pose for a final photo before leaving.

ARSENIC TREATMENT

THEN ... AND NOW

ARSENIC OCCURS NATURALLY from the volcanic rocks through which the aquifer, the source of Rio Rancho's drinking water, flows. In fiscal year 2010, the City began removing arsenic from the drinking water. During that year, the City spent $1,333,600 to purchase chemicals used to remove arsenic. Since then, the Utilities Department has monitored and controlled the system by tightening the parameters for the removal process. This stewardship and oversight has resulted in a reduction of cost for the chemicals necessary for arsenic removal. $700,000 is budgeted for fiscal year 2017, which begins on 7/1/16 and ends on 6/30/17.



ANOTHER YEAR OF EFFICIENT WATER USE!

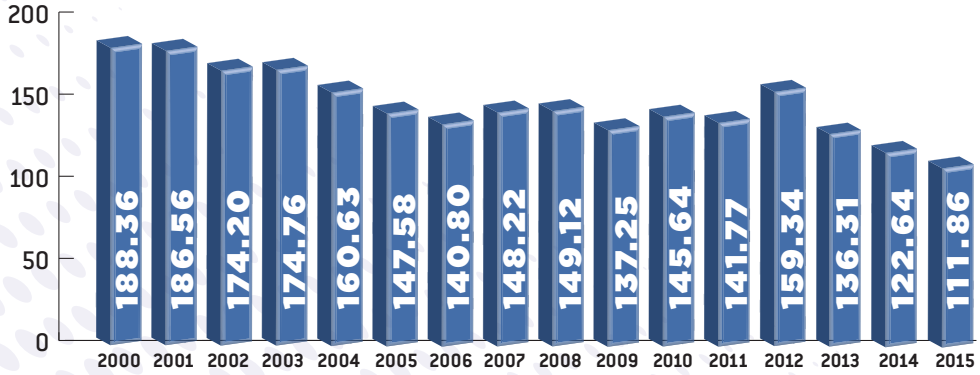
KUDOS TO RIO RANCHO citizens and businesses for continuing to use water efficiently! In 2015, the system-wide water use dropped again to a new low of 111.86 gallons per person per day. This is an astonishing 76 gallons per person per day drop since 2000. Some of the water savings is a direct result of switching to newer, high-efficiency toilets and clothes washers, but most of the savings is from customers' awareness of the finite availability of water and the willingness to efficiently use this precious resource both inside and outside their homes and businesses.

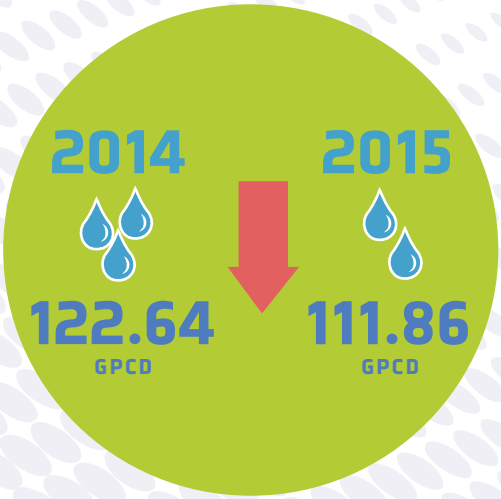
Common ways to conserve water are:

- Take shorter showers
- Turn off water while brushing teeth and shaving
- Use a water-efficient shower head (free at City Hall)
- Replace toilets manufactured prior to 1994 for a $100 rebate*
- Exchange your old clothes washer for a high-efficiency clothes washer for a $100 rebate*

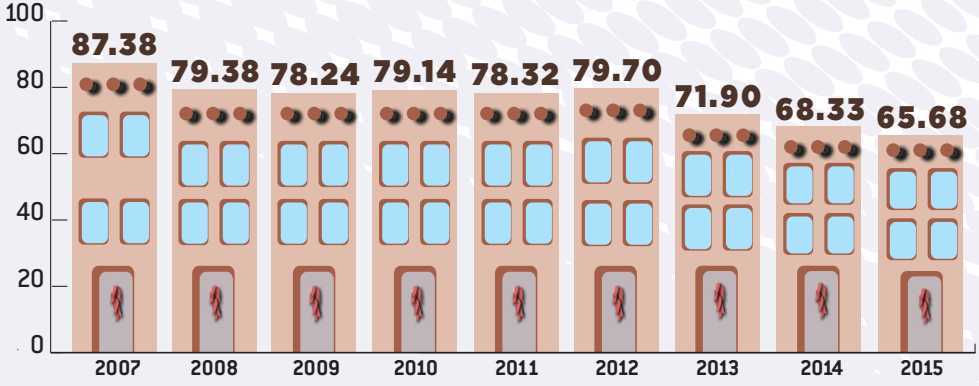
** Restrictions apply. Visit **www.riorebate.org** or call **505-896-8715** for an application or to have questions answered.*

2015 SYSTEM GPCD





2015 RESIDENTIAL GPCD



GET INVOLVED IN CITY WATER MATTERS

The Utilities Commission is a group of seven individuals appointed by the mayor and city council; one person per council district plus an at-large position. The Commission reviews and gives recommendations to the mayor and city council. The group meets the third Tuesday of every month at 6:00 p.m. at City Hall, 3200 Civic Center Circle NE. These are open meetings, so come and learn.

For more information about the Utilities Commission please call **(505) 896-8715** or visit **www.rrnm.gov.**

IMPORTANT INFO

All phone numbers have a (505) area code.

Utilities Administration: **896-8715**

Utilities Billing: **891-5020**

Report Leaks: **891-5020**

Water/Wastewater Emergency (After Hours): **975-1581**

Line Spots, NM811: **811**

Water Conservation: **896-8715**

Engineering: **891-5016**

Environmental Programs: **896-8737**

Water Waste Hotline: **896-8299**

www.rrnm.gov

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA) SAFE DRINKING WATER HOTLINE:

(800) 426-4791

RIO RANCHO WATER PRODUCTION:

(505) 896-8813

BELOW: Utility Commissioners are selected by a committee based upon their qualifications, knowledge, and experience related to the operation of water and wastewater facilities and the effect of such on the community. Left to right, (seated) Lee Robinson, Stephan vanHorn, Rebecca Torres, and (left to right, standing) Bruce Redd, Moses Winston and Robert Bajek.

SUSCEPTIBILITY ANALYSIS

The Susceptibility Analysis of the Rio Rancho Water Utility reveals that the utility is well maintained and operated, and the sources of drinking water are generally protected from potential sources of contamination. The susceptibility rank of the entire water system is MODERATELY LOW, a good rating. Call New Mexico Environment Department at (877) 654-8720 for questions.

City of Rio Rancho
Utilities Department
3200 Civic Center Circle NE
Rio Rancho, NM 87144

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Rio Rancho, New Mexico

Este informe contiene información importante acerca de su agua potable. Haga que alguien lo traduzca para usted, o hable con alguien que lo entienda.

RioRancho
City of Vision

Utilities Department
City of Rio Rancho

City of Rio Rancho
Water Conservation Office
Conserve Today. Preserve Tomorrow.

City of Rio Rancho
Environmental
Programs

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of 13,900 linear feet of 16 inch transmission line from the intersection of Northern Boulevard and 2nd Street to the intersection of Northern Boulevard and 21st Street.

Sampling Violation

On 11/18/2016, the City became aware that our utility system failed to collect monitoring samples required by the Stage 2 Disinfectants/ Disinfection Byproducts Rule. The City is required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not the drinking water meets health standards. Total Trihalomethanes and Haloacetic Acids samples should have been collected in April 2015 but they were collected in May. Because these samples were not collected in April 2015, the City cannot be sure whether the contaminants were present in your drinking water, and the City is unable to tell you whether your health was at risk during that time. Quarterly sampling resumed on July 2015. If you have any questions, please contact Mick Jakymiw, Water Production Manager, at 505.896.8813.

Reporting Violation

The Consumer Confidence Report containing the 2015 drinking water quality testing results was mailed to all residences and businesses in the City. It was discovered that one of the results in that annual report was incorrect. The result for Total Trihalomethanes (TTHMs) was reported at 15 parts per billion (ppb) when it should have been reported as 18.3 ppb. The Safe Drinking Water Maximum Contaminant Level for TTHMs is 80 ppb; there is no sampling or exceedance violation. TTHMs are created when organics come into contact with chlorine, the disinfectant used to ensure the drinking water is free of bacteria.

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Violations

The City is required to ensure that your drinking water is regularly monitored for specific contaminants. Results of regular monitoring indicate whether or not our drinking water meets specific health standards. From January 3, 2013 to July 10, 2017, the City's contractor did not properly monitor and/or complete all required testing for total coliform and chlorine residuals at certain areas within the distribution system. Therefore the City cannot guarantee the drinking water met required standards during that time. The violation was discovered through an internal audit and was immediately self-reported to the New Mexico Environment Department.

Coliforms are bacteria which exist naturally in the environment and may indicate whether other, potentially harmful, bacteria are present in the water. Monitoring for chlorine residuals in the distribution system is one way of insuring that the water has been chlorinated and will likely be free of potentially harmful bacteria and safe to drink. Although total coliform bacteria and chlorine residuals were not properly and consistently monitored at certain distribution areas during this period, chlorine residuals were monitored daily at every entry point into the distribution system from each and every city source. At no point during the time period in question was water delivered into the distribution system with a chlorine residual of less than 0.2 mg/L which is within the required regulatory standards of 0.2 mg/L to 4.0 mg/L.

What should you do?

There is nothing you need to do at this time as the problem has been corrected.

What does this mean?

Public water systems (such as the City of Rio Rancho) are required to collect total coliform samples according to a written plan that has been approved by the State. These sampling plans identify sampling sites and a sample collection schedule that are representative of water throughout the distribution system. Total coliforms are a group of related bacteria that are (with few exceptions) not harmful to humans and are used to determine if potential pathogens are present in the distribution system. EPA considers total coliforms a useful indicator of other pathogens and a proper means to determine the adequacy of water treatment and the integrity of the distribution system. Although the City of Rio Rancho does not believe that this situation posed a direct risk to public health, we also acknowledge that because the sample results between January 3, 2013 and July 10, 2017 cannot be verified, the risk to the public during that period cannot be adequately quantified.

What is being done?

As of July 10, 2017, additional steps have been implemented to ensure timely and accurate monitoring and reporting so that the City complies with Federal and State drinking water regulations. Since July 10, 2017, total coliform bacteria and chlorine residual monitoring has been conducted routinely each month according to New Mexico drinking water regulations. Specifically, 90 samples were collected each month from throughout the distribution system. These samples have been tested for total coliform bacteria and chlorine residual concentrations. All samples have tested negative for total coliform bacteria and chlorine residuals have been consistently maintained well within the required limits of 0.2 mg/L to 4.0 mg/L.

Additionally, we failed to complete required sampling for Total Trihalomethanes (TTHM) and Haloacetic acids (HAA5) on time and therefore were in violation of monitoring and reporting requirements. These quarterly samples are required to be collected in January, April, July and October each year. Because we did not take the required samples in January 2018, we did not know whether the contaminants were present in your drinking water, and we are unable to tell you whether your health was at risk during that time. In response to the missed sampling event, in April 2018 we returned to compliance and the sample results showed that we are meeting the required drinking water standards.

Appendix C

NMED List of Potential Sources of Contamination

APPENDIX C: POTENTIAL SOURCES OF CONTAMINATION

Map Code	Land Use	Description	Contaminants of Concern*
AGRICULTURAL LAND USE			
AAP	Animal Processing or Rendering Plants	Commercial Operations/Waste Storage/Disposal Facility	Nitrates, Pathogens, Organic/Inorganic Chemicals
ACS	Farm/Ranch Agrochemical Storage Facilities or Sites	Farm/Ranch Storage Site	Pesticides, Herbicides, Fertilizers
ADC	Drainage Canals, Ditches or Acequias-Unlined, Wells (Private, Stock wells, and Irrigation)	Runoff and Infiltration	Pesticides, Herbicides, Fertilizers, Nitrate, Pathogens
ADF	Livestock Production-Dairies	Livestock Wastes, Runoff and Infiltration	Nitrate, Phosphate, Chloride, Pathogens, Pharmaceuticals
AFI	Farming-Irrigated Croplands	Runoff and Infiltration	Nitrate, Ammonia, Chloride, Fertilizers, Pesticides, Herbicides
AFL	Confined Animal Feeding Operations	Runoff and Infiltration of Livestock Wastes	Nitrate, Phosphate, Chloride, Pathogens, Pharmaceuticals
AFM	Farm Machinery Storage or Maintenance Areas	Farm Machinery Maintenance Areas	Automotive Wastes, Welding Wastes, Fuels, Oils, Lubricants
AFN	Farming-Non-irrigated Croplands	Runoff and Infiltration Operations	Nitrate, Ammonia, Chloride, Fertilizers, Pesticides, Herbicides
AHC	Horticultural/Gardens/Nurseries/Greenhouses	Operations/Storage	Pesticides, Herbicides, Fertilizers
AHF	Hay/Feed and Veterinary Product Storage Sites	Farm/Ranch Storage Site	Fungicides, Pesticides, Nitrates, Pharmaceuticals
AMA	Manure or Livestock Waste-Land Application Areas	Land Application of Manure	Nitrate, Ammonia, Phosphate, Chloride, Pathogens, Pharmaceuticals
AMS	Manure or Livestock Waste-Storage Facilities or Sites	Lined and Unlined Manure Storage Facilities	Nitrate, Ammonia, Phosphate, Chloride, Pathogens, Pharmaceuticals
AOA	Livestock Production-Other Animal	Livestock Wastes	Nitrate, Ammonia, Phosphate, Chloride, Pathogens, Pharmaceuticals
APF	Livestock Production -Poultry	Poultry Sewage Wastes	Nitrate, Ammonia, Phosphate, Chloride, Pathogens, Pharmaceuticals
APP	Processing Plants or Mills- Hay, Grain, or Produce	Operations, Waste Storage and Disposal	Organic/Inorganic Chemicals, Lubricants, Machinery Wastes
ARL	Animal Rangeland	Rangeland and Pasturage	Nitrate, Ammonia, Phosphate, Chloride, Pesticides, Pathogens
ASC	Bulk Agrochemical Storage-Petroleum/Chemicals	Storage-500 gallons or more	Petroleum Products, Inorganic/Organic Chemicals
ASF	Bulk Agrochemical Storage-Fertilizers	Feed Mill, Agricultural Co-op	Fertilizers
ASG	Bulk Agricultural Product Storage-Grain or Produce	Grain Elevator, Warehouse or Storage Site	Fungicides, Oils, Lubricants, Machinery Wastes
ASH	Livestock Production -Sheep	Livestock Sewage Wastes	Nitrate, Ammonia, Phosphate, Chloride, Pathogens, Pharmaceuticals

APPENDIX C: POTENTIAL SOURCES OF CONTAMINATION

Map Code	Land Use	Description	Contaminants of Concern*
ASP	Bulk Agrochemical Storage-Pesticides	Feed Mill, Agricultural Co-op	Pesticides
ASW	Livestock Production -Swine	Livestock Sewage Wastes	Nitrate, Ammonia, Phosphate, Chloride, Pathogens, Pharmaceuticals
COMMERCIAL LAND USE			
CAI	Airports (Active/Inactive)	Operations/Maintenance/Construction	Aircraft Fuels, Deicers, Batteries, Diesel Fuel, Chlorinated Solvents, Automobile Wastes, Heating Oil, Building Wastes, Sewage, Septage, Pathogens, Pesticides, Fertilizers
CAR	Automotive Repair Shops	Operations/Maintenance/Storage	Solvents, Metals, Automotive Waste, Oils, Gasoline
CAW	Abandoned/Improperly Closed Wells	Storage/Disposal	Organic/Inorganic Chemicals, Brines, Waste Oil, Treated Sewage Effluent, Storm Water Runoff, Process Waste Water, Metals, Pathogens, Nitrate
CBS	Automotive Body Shops	Operations/Maintenance	Paints, Solvents
CBY	Boat Yards/Marinas	Operations/Maintenance	Gasoline, Diesel Fuels, Septage, Wood Treatment Chemicals, Paints, Varnishes, Automotive Wastes, Solvents, Building Wastes
CCG	Camp Grounds - Unsewered	Untreated Domestic Wastewater	Septage, Gasoline, Pesticides, Organic/Inorganic Chemicals
CCE	Cemeteries	Operations/Maintenance	Leachate, Arsenic, Pesticides, Fertilizers
CCW	Car Washes	Unsewered, Without Total Recycling System	Soaps, Detergents, Waxes, Organic/Inorganic Chemicals
CCY	Construction/Demolition Yard/Staging Areas	Storage/Maintenance	Gasoline, Diesel Fuels, Wood Treatment Chemicals, Paints, Varnishes, Automotive Wastes, Solvents, Building Wastes, Explosives, Oil
CDC	Dry Cleaning Shops	Operations/Maintenance	Chlorinated Solvents, Organic/Inorganic Chemicals
CFA	Fuel Storage Tanks-Above Ground	Non-Service Station Tanks	Gasoline, Diesel Fuel, Organic/Inorganic Chemicals
CFB	Fuel Storage Tanks-Below Ground	Non-Service Station Tanks	Gasoline, Diesel Fuel, Organic/Inorganic Chemicals
CFC	Funeral Homes/Crematories	Operations	Biohazard Waste, Organic/Inorganic Chemicals, Septage
CFR	Furniture Repair/Refinishing	Operations	Paints, Solvents, Organic Chemicals
CGC	Golf Courses	Operations/Maintenance	Fertilizers, Pesticides, Gasoline, Automotive Wastes, Batteries, Septage
CHG	Historic Gasoline Service Stations	Above/Below Ground Storage Tanks/Operations	Gasoline, Oils, Solvents, Automotive Wastes, Septage
CHM	Home Manufacturing	Operations/Maintenance/Storage	Paints, Solvents, Organic/Inorganic Chemicals

APPENDIX C: POTENTIAL SOURCES OF CONTAMINATION

Map Code	Land Use	Description	Contaminants of Concern*
CHN	Hospitals/Nursing Homes - Unsewered	Wastewater Discharge to Septic Tank/Leach Field	Biohazard Waste, Organic/Inorganic Chemicals, Septage, Radiological Waste
CHW	Hardware/Lumber/Parts Stores	Operations/Storage	Pesticides, Fertilizers, Organic/Inorganic Chemicals
CLD	Laundromats - Unsewered	Wastewater Discharge	Detergents, Soaps, Septage
CPP	Photo Processing Laboratories	Operations/Storage	Organic/Inorganic Chemicals
CPR	Printing Shops	Operations/Storage	Solvents, Inks, Dyes, Organic/Inorganic Chemicals
CPS	Paint Stores	Storage	Paint, Solvents
CRL	Research Laboratories	Operations/Maintenance/Storage	Biohazard Waste, Radiological Materials and Waste, Metals, Organic/Inorganic Chemicals
CRY	Railroad Yards and Tracks	Operations/Maintenance/Storage	Diesel Fuel, Pesticides, Organic/Inorganic Chemicals
CSS	Gasoline Service Stations	Above/Below Ground Storage Tanks/Operations	Gasoline, Oils, Solvents, Automotive Wastes, Septage
CST	Commercial Septic Tanks/Leachfields/Leachpits/Cesspools	Storage/Disposal	Septage, Septic Effluent, Pathogens, Nitrate, Ammonia, Chloride
CVS	Veterinary Facilities	Operations/Maintenance	Biohazard Waste, Organic/Inorganic Chemicals, Septage, Radiological Waste
INDUSTRIAL LAND USE			
IAS	Asphalt Plants	Production/Storage	Petroleum Derivatives
ICC	Cement/Concrete Plants	Operations/Maintenance/Storage	Organic/Inorganic Chemicals, Oils, Natural Gas, Propane,
ICE	Communications Equipment Manufacturers	Production/Maintenance/Storage	Solvents, Organic/Inorganic Chemicals, Oils, Waste Oils, Metals
ICL	Chemical Landfills	Storage/Disposal	Leachate of Organic/Inorganic Chemicals, Acids, Bases, Metals, Solvents, Gasoline, Diesel Fuel, Pesticides, PCB's
ICP	Chemical Production Plants	Production/Maintenance/Storage	Organic/Inorganic Chemicals, Solvents, Oils, Metals
IEE	Electronic/Electrical Equipment Manufacturers	Production/Maintenance/Storage	Solvents, Organic/Inorganic Chemicals, Oils, Waste Oils, Metals, Acids, Bases
IFM	Furniture and Fixture Manufacturers	Production/Maintenance/Storage	Paints, Solvents, Organic/Inorganic Chemicals
IFW	Foundry/Smelting Plants	Production/Maintenance/Storage	Organic/Inorganic Chemicals, Metals, Solvents, Acids, Bases, Oils

APPENDIX C: POTENTIAL SOURCES OF CONTAMINATION

Map Code	Land Use	Description	Contaminants of Concern*
IGO	Gas/Oil Wells-Active/Abandoned/Test, Wells Geothermal and Industrial	Production	Oil, Natural Gas, Organic/Inorganic Chemicals, Acids, Bases, Drilling Wastes
IHD	Historic Dumps/Landfills	Storage/Disposal	Leachate of Organic/Inorganic Chemicals, Acids, Bases, Metals, Solvents, Gasoline, Diesel Fuel, Pesticides, PCB's, Automotive Wastes
IHM	Historic Mining Operations	Production Waste/Storage	Metals, Inorganic Chemicals, Acids, Bases, Radiological Materials
IMI	Primary Metal Industries	Steel/Metal Works, Rolling/Wire Mills	Metals, Inorganic Chemicals, Acids, Bases
IMO	Mining Operations (Surface And Subsurface)	Production Waste/Storage	Metals, Inorganic Chemicals, Acids, Bases, Radiological Materials
IMP	Metal Plating/Processing Facilities	Operations/Maintenance/Storage	Organic/Inorganic Chemicals, Acids, Bases, Metals
IMW	Machine/Metal Working Shops	Operations/Maintenance/Storage	Cutting Oils, Metals, Solvents, Organic/Inorganic Chemicals, Detergents
IOG	Oil/Gas Pipelines	Transport	Oils, Gasoline, Volatile Organic Chemicals, Natural Gas, Propane
IPL	Plastics Manufacturing/Molder	Operations/Maintenance/Storage	Solvents, Oils, Organic/Inorganic Chemicals, Acids, Bases
IPM	Paper Mills	Operations/Maintenance/Storage	Acids, Metals, Organic/Inorganic Chemicals
IPP	Petroleum Production/Refining/ Bulk Plants	Operations/Maintenance/Storage	Oils, Gasoline, Diesel Fuels, Organic Chemicals, Oil Drilling/Refining Wastes
IPU	Public Utilities	Power Generating Stations	PCB's, Solvents, Diesel Fuel, Propane, Natural Gas, Oil, Acids, Bases, Organic/Inorganic Chemicals, Metals
IRG	RCRA Waste Generators - Other	Storage/Disposal	Organic/Inorganic Chemicals, Solvents, Metals, PCB's, Acids, Bases, Radiological Materials
IRW	Radioactive Waste Disposal Sites	Storage/Disposal	High and Low Level Radiological Wastes
ISD	Sumps/Dry Wells	Storage/Disposal	Storm Water Runoff, Organic/Inorganic Chemicals, Solvents, Process Wastewater, Pesticides, Oils
ISF	Superfund Sites	Storage/Disposal	Organic/Inorganic Chemicals, Solvents, Metals, PCB's, Acids, Bases, Radiological Materials
ISM	Primary Wood Industries	Saw Mills, Planers, Wood Treatment	Organic/Inorganic Chemicals, Metals, Solvents
IST	Stone, Tile, Glass Manufacturing	Operations/Maintenance/Storage	Solvents, Oils, Metals, Organic/Inorganic Chemicals
ITS	Treatment/Storage/Disposal Ponds/Lagoons	Treatment/Storage	Organic/Inorganic Chemicals, Metals, Acids, Bases, Sewage
ITT	Transport/Distribution, Warehouses, Truck Terminals	Operations/Maintenance/Storage	Gasoline, Diesel Fuels, Automotive Wastes, Metals, Organic/Inorganic Chemicals, Acids, Bases
IUD	Unregulated Dumps/Excavated Sites, Snow Dumps	Storage/Collection/Disposal	Organic/Inorganic Chemicals, Automotive Wastes, Oil, Gasoline, Runoff from Adjacent Sites

APPENDIX C: POTENTIAL SOURCES OF CONTAMINATION

Map Code	Land Use	Description	Contaminants of Concern*
IUI	Underground Injection (UIC) Wells	Storage/Disposal	Organic/Inorganic Chemicals, Brines, Waste Oil, Treated Sewage Effluent, Storm Water Runoff, Process Wastewater, Metals, Pathogens, Nitrate
IUR	Utility/Transportation Right of Ways, major transportation corridor	Power Lines, Gas/Oil Pipelines	Pesticides, Gasoline, Diesel Fuels, Automotive Wastes, Organic/Inorganic Chemicals, PCB's, Sewage, Metals, Storm water Runoff, Pathogens
MUNICIPAL/RESIDENTIAL LAND USE			
MHM	Highway/Road Maintenance Yards	Operations/Maintenance/Storage	Gasoline, Diesel Fuels, Solvents, Road Salt, Asphalt, Pesticides, Automotive Wastes,
MHR	Highway Rest Areas	Operations/Maintenance/Storage/Disposal	Automotive Wastes, Septage, Gasoline, Diesel Fuels, Pesticides
MIN	Incinerators - Commercial or Municipal	Operations/Disposal	Metals, Organic/Inorganic Chemicals
MLF	Municipal Waste Landfills	Storage/Disposal	Leachate, Organic/Inorganic Chemicals, Pesticides, Metals, Oils
MMF	Military Facilities	Operations/Maintenance/Storage/Disposal	Gasoline, Aircraft Fuels, Diesel Fuels, Automotive Wastes, Metals, Organic/Inorganic Chemicals, Explosives, Radiological Materials, Pesticides, Sewage/Septage, Oils, Solvents, Fertilizers, Batteries, Deicers
MMP	Motor Pools	Operations/Maintenance/Storage/Disposal	Gasoline, Diesel Fuel, Oils, Waste Oils, Automotive Waste, Batteries, Metals
MPS	Sewage Pump Stations	Operations/Storage	Sewage, Pathogens, Nitrate, Metals, Organic/Inorganic Chemicals
MPW	Polluted Surface Water Sources	Naturally Occurring/Anthropogenic	Sewage, Pathogens, Nitrate, Metals, Acids, Bases, Organic/Inorganic Chemicals
MRF	Recycling Facilities	Operations/Storage/Disposal	Metals, Organic/Inorganic Chemicals, Pesticides, Automotive Wastes, Oils
MSC	Schools – Unsewered	Wastewater Discharge to Septic Tank/Leach Field	Septage, Septic Effluent, Pathogens, Nitrate, Ammonia, Chloride
MSD	Storm Drainage Collection Areas or Outlets-Unlined	Storage/Disposal	Runoff, Pesticides, Fertilizer, Pathogens, Nitrate, Phosphate, Oil
MSL	Sewer Lines	Transport	Sewage, Pathogens, Nitrate, Metals, Organic/Inorganic Chemicals
MSP	Wastewater Seepage/Retention Ponds (Unlined/Lined)	Storage/Disposal	Sewage Effluent, Nitrate, Ammonia, Pathogens, Organic/Inorganic Chemicals, Pesticides
MSS	Sewage Effluent/Sludge Land Application Areas	Storage/Disposal	Sewage/Sewage Sludge, Nitrate, Pathogens, Organic/Inorganic Chemicals, Metals
MST	Sewage Treatment Plants	Operations/Maintenance/Storage/Disposal	Sewage, Sewage Sludge, Metals, Pathogens, Organic/Inorganic Chemicals
MSW	Solid Waste Transfer Stations	Storage/Disposal	Metals, Organic/Inorganic Chemicals, Pesticides, Automotive Wastes, Oils
MWP	Water Treatment Plants and Water Supply Wells	Operations/Maintenance/Storage/Disposal	Organic/Inorganic Chemicals, Chlorine

APPENDIX C: POTENTIAL SOURCES OF CONTAMINATION

Map Code	Land Use	Description	Contaminants of Concern*
RSF	Single Family Residences - Unsewered	Wastewater Discharge to Septic Tank/Leach Field or Cesspool	Septage, Pathogens, Nitrate, Ammonia, Chloride, Heavy Metals, Household Pesticides, Herbicides, Cleaning Agents and Solvents, Fuels
* Contaminants of Concern include substances that are commonly, but not always, associated with the Contaminant Source listed in column 2			

Appendix D

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.:	NM3509623	Federal Type:	C
Water System Name:	RIO RANCHO WATER & WW SERVICES	Federal Source:	GW
Principal County Served:	SANDOVAL	System Status:	A
Principal City Served:	RIO RANCHO	Activity Date:	06-01-1977

Expanded Sample Schedules / FANLs / Plans

Routine TCR Sample Schedules

Begin/End Date	Seasonal Period	Requirements
09-01-2011 - Continuous	1/1 - 12/31	90 RT/MN
07-01-2008 - 08-31-2011	1/1 - 12/31	80 RT/MN
01-01-1991 - 06-30-2008	1/1 - 12/31	60 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
09623000	10-01-2012 Continuous	1/1 1/31	10-01-2012	4 RT/QT	DBP2 - DBP STAGE 2
09623000	01-01-2011 Continuous	6/1 9/30	01-01-2011	30 RT/3Y	PBCU - LEAD AND COPPER
09623021	01-01-2002 Continuous		01-01-2002	1 RT/3Y	HM - HEAVY METALS

09623021	01-01-2008 Continuous		01-01-2008	1 RT/6Y	NRAD - NEW RAD RULE
09623021	01-01-2014 Continuous		01-01-2014	2 RT/3Y	RSOC - REGULATED SOCS
09623021	01-01-2002 Continuous		01-01-2002	1 RT/3Y	VOC1 - VOLATILE ORGANICS
09623024	01-01-2008 Continuous		01-01-2008	1 RT/3Y	HM - HEAVY METALS
09623024	01-01-2008 Continuous		01-01-2008	1 RT/9Y	NRAD - NEW RAD RULE
09623024	01-01-2014 Continuous		01-01-2014	2 RT/3Y	RSOC - REGULATED SOCS
09623024	01-01-2008 Continuous		01-01-2008	1 RT/3Y	VOC1 - VOLATILE ORGANICS
09623025	01-01-2011 Continuous		01-01-2011	1 RT/3Y	HM - HEAVY METALS
09623025	01-01-2008 Continuous		01-01-2008	1 RT/6Y	NRAD - NEW RAD RULE
09623025	01-01-2014 Continuous		01-01-2014	2 RT/3Y	RSOC - REGULATED SOCS
09623025	01-01-2011 Continuous		01-01-2011	1 RT/3Y	VOC1 - VOLATILE ORGANICS
09623027	01-01-2014 Continuous		01-01-2014	1 RT/3Y	HM - HEAVY METALS
09623027	01-01-2014 Continuous		01-01-2014	1 RT/3Y	NRAD - NEW RAD RULE
09623027	01-01-2014 Continuous		01-01-2014	1 RT/3Y	RSOC - REGULATED SOCS
09623027	01-01-2014 Continuous		01-01-2014	1 RT/3Y	VOC1 - VOLATILE ORGANICS
09623028	01-01-2011 Continuous		01-01-2011	1 RT/3Y	HM - HEAVY METALS
09623028	01-01-2008 Continuous		01-01-2008	1 RT/6Y	NRAD - NEW RAD RULE
09623028	01-01-2014 Continuous		01-01-2014	2 RT/3Y	RSOC - REGULATED SOCS
09623028	01-01-2011 Continuous		01-01-2011	1 RT/3Y	VOC1 - VOLATILE ORGANICS
09623030	01-01-2002 Continuous		01-01-2002	1 RT/3Y	HM - HEAVY METALS
09623030	01-01-2008 Continuous		01-01-2008	1 RT/6Y	NRAD - NEW RAD RULE
09623030	01-01-2014 Continuous		01-01-2014	2 RT/3Y	RSOC - REGULATED SOCS

09623030	01-01-2002 Continuous		01-01-2002	1 RT/3Y	VOC1 - VOLATILE ORGANICS
09623031	01-01-2011 Continuous		01-01-2011	1 RT/3Y	HM - HEAVY METALS
09623031	01-01-2008 Continuous		01-01-2008	1 RT/6Y	NRAD - NEW RAD RULE
09623031	01-01-2014 Continuous		01-01-2014	2 RT/3Y	RSOC - REGULATED SOCS
09623031	01-01-2002 Continuous		01-01-2002	1 RT/3Y	VOC1 - VOLATILE ORGANICS
09623032	01-01-2017 Continuous		01-01-2017	1 RT/3Y	HM - HEAVY METALS
09623032	01-01-2002 12-31-2016		01-01-2002	1 RT/3Y	HM - HEAVY METALS
09623032	01-01-2008 Continuous		01-01-2008	1 RT/6Y	NRAD - NEW RAD RULE
09623032	01-01-2014 Continuous		01-01-2014	2 RT/3Y	RSOC - REGULATED SOCS
09623032	01-01-2002 Continuous		01-01-2002	1 RT/3Y	VOC1 - VOLATILE ORGANICS
09623035	01-01-2002 Continuous		01-01-2002	1 RT/3Y	HM - HEAVY METALS
09623035	01-01-2008 Continuous		01-01-2008	1 RT/6Y	NRAD - NEW RAD RULE
09623035	01-01-2014 Continuous		01-01-2014	2 RT/3Y	RSOC - REGULATED SOCS
09623035	01-01-2002 Continuous		01-01-2002	1 RT/3Y	VOC1 - VOLATILE ORGANICS
09623041	01-01-2005 Continuous		01-01-2005	1 RT/3Y	HM - HEAVY METALS
09623041	01-01-2011 Continuous		01-01-2011	1 RT/6Y	NRAD - NEW RAD RULE
09623041	01-01-2014 Continuous		01-01-2014	2 RT/3Y	RSOC - REGULATED SOCS
09623041	01-01-2014 Continuous		01-01-2014	1 RT/3Y	VOC1 - VOLATILE ORGANICS

Individual Non-TCR Sample Schedules					
Facility	Begin End Date	Seas	Init MP Begin Dt	Req.	Analyte
09623021	01-01-2002 Continuous		01-01-2002	1 RT/3Y	1024-CYANIDE

09623021	01-01-2002 Continuous		01-01-2002	1 RT/3Y	1025-FLUORIDE
09623021	01-01-2002 Continuous		01-01-2002	1 RT/YR	1038-NITRATE-NITRITE
09623024	01-01-2008 Continuous		01-01-2008	1 RT/3Y	1024-CYANIDE
09623024	01-01-2008 Continuous		01-01-2008	1 RT/3Y	1025-FLUORIDE
09623024	01-01-2008 Continuous		01-01-2008	1 RT/YR	1038-NITRATE-NITRITE
09623025	01-01-2002 Continuous		01-01-2002	1 RT/3Y	1024-CYANIDE
09623025	01-01-2002 Continuous		01-01-2002	1 RT/3Y	1025-FLUORIDE
09623025	01-01-2002 Continuous		01-01-2002	1 RT/YR	1038-NITRATE-NITRITE
09623027	01-01-2014 Continuous		01-01-2014	1 RT/3Y	1024-CYANIDE
09623027	01-01-2014 Continuous		01-01-2014	1 RT/3Y	1025-FLUORIDE
09623027	01-01-2014 Continuous		01-01-2014	1 RT/YR	1038-NITRATE-NITRITE
09623028	01-01-2011 Continuous		01-01-2011	1 RT/3Y	1024-CYANIDE
09623028	01-01-2011 Continuous		01-01-2011	1 RT/3Y	1025-FLUORIDE
09623028	01-01-2011 Continuous		01-01-2011	1 RT/YR	1038-NITRATE-NITRITE
09623030	01-01-2002 Continuous		01-01-2002	1 RT/3Y	1024-CYANIDE
09623030	01-01-2002 Continuous		01-01-2002	1 RT/3Y	1025-FLUORIDE
09623030	01-01-2002 Continuous		01-01-2002	1 RT/YR	1038-NITRATE-NITRITE
09623031	01-01-2002 Continuous		01-01-2002	1 RT/3Y	1024-CYANIDE
09623031	01-01-2002 Continuous		01-01-2002	1 RT/3Y	1025-FLUORIDE
09623031	01-01-2002 Continuous		01-01-2002	1 RT/YR	1038-NITRATE-NITRITE
09623032	01-01-2002 Continuous		01-01-2002	1 RT/3Y	1024-CYANIDE
09623032	01-01-2002 Continuous		01-01-2002	1 RT/3Y	1025-FLUORIDE

09623032	01-01-2002 Continuous		01-01-2002	1 RT/YR	1038-NITRATE-NITRITE
09623035	01-01-2002 Continuous		01-01-2002	1 RT/3Y	1024-CYANIDE
09623035	01-01-2002 Continuous		01-01-2002	1 RT/3Y	1025-FLUORIDE
09623035	01-01-2002 Continuous		01-01-2002	1 RT/YR	1038-NITRATE-NITRITE
09623041	01-01-2005 Continuous		01-01-2005	1 RT/3Y	1024-CYANIDE
09623041	01-01-2005 Continuous		01-01-2005	1 RT/3Y	1025-FLUORIDE
09623041	01-01-2007 Continuous		01-01-2007	1 RT/YR	1038-NITRATE-NITRITE

Facility Analyte Levels(FANLS)

Site	Analyte	Level Type	Value	Units	Days/Month	Samples/Day	Begin Date	End Date	MDBP Type
09623000	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.

Appendix E

Public Involvement

City of Rio Rancho Source Water Protection Plan Public meeting

Name	Organization	Phone	e-mail
Paula Schuh	DBS&A	Information intentionally left out.	
Liz Hill	DBS&A		
Marian Wrage	CORR		
Lynn Costlow	(Retired)		
Janice Bilbao	Resident		
PAT SOCCI	Resident		
Marlene Feuer	City Council		
TODD HATHORNE	TAX PAYER		
NORA ROMERO	Resident		
Elaine Cimino	RESIDENT		
Lonnie CLAYTON	Resident		
Steve Gallegos	CoRR Utilities		

December 14, 2016

Marian Wrange

Environmental Programs Manager

Utilities Department

City of Rio Rancho, NM

Dear Marian Wrange-

It was a pleasure to see you and the staff from Daniel B. Stephens & Assoc. at the *Source Water Protection Program* meeting earlier this month.

I'm grateful to see that our City of Vision is being proactive in protecting our aquifers!

However, as a longtime resident of Rio Rancho I am asking that the City includes under the *Potential Sources of Contamination* the dangers to our water supply from oil and gas development and fracking that is just now being fully understood.

The oil industry will say that fracking has been around a long time and is no problem, notwithstanding the now voluminous information to the contrary.

If fracking is no problem, why is it then not covered in the EPA's 2005 Clean Water Act, or why the State of Texas banned it's cities and towns from banning fracking altogether? Oil exploration is needed, however I am against drilling anywhere near our most precious resource.

I am neither a hydrologist nor an environmental lawyer, I'm just an individual concerned about keeping our drinking water and aquifers clean for our grandchildren.

My interest in fracking began with the SandRidge debacle last year and their interest in oil and gas drilling so close to our water wells, the contents of the fracking fluids, and the disposal of the wastewater.

Wastewater that is so toxic that it cannot be reused, taking millions of gallons of once clean water out of the system forever. Unfortunately the re-injected wastewater could permeate into aquifers somewhere else here in New Mexico.

Please consider too the havoc and costs caused if such wastewater is accidently introduced into the City's sewage system. No one knows if such wastewater and fracking fluids can harm City or homeowner's underground piping apparatus because no one knows what goes into these fluids.

Most importantly, this lack of transparency is hampering medical treatment when accidents or water contamination do occur.

On pages 36 and 46, the NMED's *Source Area Delineations* on an arbitrarily chosen maximum radius of one mile from a water well has no apparent basis in modern technological or scientific fact, and could cause misinformation and disaster as fracking fluid components are of a proprietary nature.

For your review, the following are informational links of the dangers caused by fracking:

- A background on fracking problems including water consumption and aquifer contamination:

http://www.foodandwaterwatch.org/sites/default/files/urgent_case_for_ban_on_fracking.pdf

https://www.abqjournal.com/643431/oil-drilling-boom-brings-trouble-to-farm-ranch-lands.html

http://phys.org/news/2015-09-fracking.html

http://ourlongmont.org/what-you-should-know/

- The EPA Science Advisory Board revised its earlier claim that fracking causes no harm and fracking fluids can migrate UPWARD into fresh water aquifers.

https://yosemite.epa.gov/sab/sabproduct.nsf/LookupWebReportsLastMonthBOARD/BB6910FEC10C01A18525800C00647104/$File/EPA-SAB-16-005+Unsigned.pdf

http://pubs.acs.org/doi/abs/10.1021/acs.est.5b04970

https://www.scientificamerican.com/article/fracking-can-contaminate-drinking-water/

http://www.wsj.com/articles/fracking-can-impact-drinking-water-epa-report-finds-1481652649

http://www.spe.org/hsenow/article/epa-science-advisers-buck-agency-on-hydraulic-fracturing-safety

- Drought water issues in the arid Southwest is widespread:

https://www.ceres.org/press/press-releases/new-study-hydraulic-fracturing-faces-growing-competition-for-water-supplies-in-water-stressed-regions

http://news.nationalgeographic.com/news/2014/08/140819-groundwater-california-drought-aquifers-hidden-crisis/

http://www.sourcewatch.org/index.php/New_Mexico_and_fracking

http://www.hcn.org/issues/44.13/the-bakken-oil-play-spurs-a-booming-business-in-water

- Fracking's water pollution is not just isolated to the U.S.:

http://www.bbc.com/news/uk-england-york-north-yorkshire-38054630

http://www.truth-out.org/news/item/33910-fracking-expands-in-latin-america-threatening-to-contaminate-world-s-third-largest-aquifer

https://www.commonspace.scot/articles/3074/more-scottish-locations-targeted-by-fracking-firms-despite-moratorium

http://www.huffingtonpost.ca/2016/05/31/newfoundland-fracking-report_n_10228198.html

https://www.positive.news/2016/environment/22928/europes-shift-toward-banning-fracking/

- Human health effects:

http://endocrinedisruption.org/chemicals-in-natural-gas-operations/introduction

http://environmenttexas.org/sites/environment/files/reports/TX_dangerous_scrn.pdf

http://www.ecowatch.com/jury-awards-two-dimock-couples-4-2-million-after-finding-cabot-oil-gas-1882188335.html

http://www.rosenbauminjuryfirm.com/practice-areas/fracking-accidents-damages/water-contamination-and-property-damage-from-fracking/

Perhaps the only positive thing coming out of these unfortunate fracking fiascos is that they occurred someplace else instead of Rio Rancho. We cannot ignore the problems fracking causes in other locations because the documented evidence grows on a daily basis.

One only has to read the local news headlines to reach the conclusion that water seems to be the only continual conversation Rio Rancho seems to have with itself.

Conversations with companies such as Intel and Club Rio Rancho whose desire for less of it is directly tied to the economy, to housing and business developers that say our bills are way too high to attract new investment, and to the current homeowners who pay more for it through underground pipe replacement.

By ignoring fracking, you would be allowing a water giveaway of unforeseen proportions and further burdening the rate paying taxpayer as water rates will increase as the aquifers decrease. Plus the City's intake of any oil revenue will be offset by the drilling of more water wells caused by fracking's expanded use of water.

In my humble opinion, it's not only an economic responsibility to oppose fracking, but a self-survival obligation as well for future generations.

If the purpose of the *Source Water Protection Program* is to protect drinking water sources before they become contaminated and thereby protecting the drinking water system and customer health; then the fracking issue must be added to this program.

Thank you for reviewing this paper.

Regards,

Tom Ruhl

2884 W. Island Loop

Rio Rancho, NM 87124

505 892-8660

taruhl@gmail.com

12/30/16 1:42 PM

Comments for City of Rio Rancho:
Source Water Protection Program

Elaine Cimino
Resident of Rio Rancho, Sandoval County, NM

Policy Recommendations

Source Water Protection Programs should be significantly expanded, including efforts to prevent and/or reduce point source (PS) and Non point Source (NPS) water contamination and to conserve land with buffer zones around public water supplies. Financial Support for conservation projects that include monitoring and education programs is crucial for the future of clean and safe drinking water .

This program is guided by the Clean Water Act the NMED Drinking Water Program gave the City a grant to draft and implement this program. http://www.ci.rio-rancho.nm.us/index.aspx?NID=3886 for live edit and download additional information. And oversees the program. These comments were sent directly to staff for inclusion on the City of Rio Ranchos Application for Source water Protection.

Dilemma of City Wells in the County

- The draft currently shows 4 wells in the County with no way for the City to have protection of those wells from County planning and development.
    - Suggestion: to Work on a Joint Powers Agreement or Extraterritorial Zone in which the planning an zoning in both City and County Work together to Protection Drinking water sources and clean air.

- Identify future well sites on maps with potential zones on maps on where they have identified those sites for future development currently the Rio Rancho has reserved and is under contract with developers for future water development of 30,000+ homes in the area. The City only has about 2000-3000 AFY of supplemental water that has not been reserved by contract. This is relatively a low amount when faced with Climate change, drought and over-consumption.
    - Suggestion: To have maps and positions indicated in the application for the potential zones for Drinking Water considering future development to ensure that future planning and zoning decisions work to protect those sites and the aquifer.

Suggested monitoring program implications

- Monitoring program for the municipal water delivery system will be needed in the future because of fossil fuel waste and environmental impacts to water and air. Monitoring is needed on municipal wells for mitigation of contaminated drinking water on future wells and groundwater supply.

- **Aquifer Recharge and Injection must be included in the Source Water Protection Program application including data on operational flows rates drawdown and tests on plume pressures with effects on temperature**

demonstrated.

- **Mapping of The State of the Sub-Basin Aquifer in the area of the Black and Callabacitas Arroyos must be submitted to the MRGCD for State Water planning. We are told by State and MRGD that the City of Rioi Rancho must supply this information to the State water planning and the MRGDistrict to be included on further planning efforts in the state.**

- **Hydrogeological flow rates on each well during pumping of Wells and the operation of the aquifer Recharge and Injection program. Data must be included in any water source assessment.**

- **Crucial to aquifer health discovery is the Mapping of NPS and PS Subsidence including draw down. This calculation should show and correlate the health of the aquifer as a baseline, especially in case of future contamination from proposed fracked and drilled oil production and gas wells.**

- Maps reflecting these rate and known point source contaminants and distance from point source in the various zones. (Each Well is zone out to 1 mile currently have not identified point source pollution outside those zones that have potential impacts into the Zone radius) inclusion of historical contaminated sites data needs to apply across jurisdictions between the City, County, State and Federal agencies to give a full picture of the potential impacts and updated every couple of years.

- **Expansion of Buffer Zones**
    - Expansion of buffer Zones to extend to known point source pollution and NPS pollution.

- **Point source within 1 mile outside the zones**
    - Identify point source and NPS pollution point up to 1 miles outside the zone to where the last known NPR or PS was identified.

LIST of Contaminants in Water Quality Reports from the City. Inclusion of Known contaminates that have direct and indirect environmental and Health Effects at are not regulated.

The benefit of this program is that it starts a conversation on City financing of the drinking water program that needs to monitor for point source (PS) and non point source (NPS) contaminates and that identifies the problem or potential problems within the drinking water system and groundwater supply.

The program is implemented to give a snap shot of the baseline on the health of the aquifer and the city's drinking water supply at this point in time solely based on groundwater pumping. It must ensure and show the by-products, VOCs and naturally occurring contaminants and the appropriate actions to mitigate undesirable water conditions.

The Cons, the Clean Water Act is exempt from fossil fuel extraction, the important point is that "when" we go to court in the future over water contamination, a judge will look at what attempts the communities made in preserving and protecting their water supply. 'When" is used here because when the fossil fuel industry is allowed to drill, process and transport these resources, there will be spills, accidents, explosions and water contamination, the question is not "if" but 'When".

This program is a way to comply with a formal administrative due process of a future complaint albeit from extractive mineral industries or the arsenic, trihalomethanes (From Disinfection by products) Causes stomach, bladder, colon, birth defects, low birthrates and miscarriages. (NHDES 2006) **Cancers high Bromine or the high Hexavalent Chromium now in the drinking water that at these levels are known to cause Stomach cancer.**

Some contaminates are not regulated by law even though studies have shown that there are more than 600 unwanted chemicals created by the interaction of water treatment disinfectants and pollutants in source water (Barlow 2004, Richardson 1998, 1999a, 1999b, 2003) most have not been studied because of lack of funding. However, the EPA and the State of NM regulates only five other Contaminants in a Family of Chemicals know as Halocetic acids Monocholoroacetic acid, dichloroacetic acid, trichloroacetic acid monbronomacetic acid (EPA2012b) the current legal limit for these 5 chemicals is 60 part per billion (PPB). While there are few studies these chemicals show evidence that links them to intrauterine growth retardation and low birth weight (Porter 2005 Levallois 2012) Oregon's Department of Health has warned that long term exposure to haloacetic acids at or above 60 parts per billion may cause injury to the brain, nerves, liver, kidneys, eyes, skin irritations and reproductive systems. And intestinal tract disease and low sperm counts in adult rats are shown to exist at concentrations as low as 10 parts PPB.

List of Contaminants including unregulated and toxic chemicals and VOCs found in Drinking Water should be included in the Final Draft along with a plan of action to curtail or eliminate these from delivery to residents and businesses in the County and City.

Suggestions for inclusion:

1.) A section in the Program to looks at the drawdown and subsidence issues in the well zones areas in the city and in the county,

2.) Geohydrological information on directions flow rates on each well

3.) Maps reflecting these rates and known point source contaminants and distance from point source in the various zones. (Each Well is zone out to 1 to 2 mile currently have not identified point source pollution outside those zones that have potential impacts into the Zone radius)

4.) Expansion of Buffer Zones to extend to known PS and NPS pollution.

5.) The draft currently shows 4 wells in the County with no way to have protection of those wells from County planning and development the suggestion is for JPA and or establishment of EZA.

6) Inclusion of known contaminates that have direct and indirect environmental and Health Effects at are not regulated.

7.) Identify future well sites on maps with potential zones on maps on where they have identified those sites for future development currently the Rio Rancho has reserved and is under contract with developers for future water development of 30,000+ homes in the area. They only have about 2000-3000 AFY supplemental water that has not been reserved by contract.

8.) Identify point source and NPS pollution point up to 2 miles outside the zone on municipal wells for mitigation of contaminated drinking water on future contaminate sources. See the above **Suggested monitoring program implications**

9.) Monitoring program for the municipal water delivery system will be needed in the future because of fossil fuel waste and environmental impacts to water and air.

10.) The concern is that the high levels of unregulated toxic chemicals and the by-product disinfectants interactions need to be analyzed by an independent source to ensure safety. ***List of Contaminants including unregulated and toxic chemicals and VOCs found in Drinking Water should be included in the Final Draft along with a plan of action to curtail or eliminate these from delivery to residents and businesses in the County and City.***

The commenting period did not include enough time for procurement of documents or for tests to be performed for the proposal on source water protection application. As follows this list references and supports the suggested changes be made to the current source water protection application.

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Rio Rancho Water & Wastewater Services

Chromium-6 testing from 2013-2015

Chromium-6 Testing Summary

California's Public Health Goal for chromium-6 is 0.02 parts per billion (ppb)

Samples:	21
Detects:	20
Average :	4.4 ppb
Range:	0.0-10.6 ppb

Chromium-6 Tests

Sample Date	Sample Facility	Sample Point	Result
2014-02-11	Well #19 Treatment Unit	Well #19 EPTDS	10.6 ppb
2014-02-11	Well #6A Treatment Unit	Well #6A EPTDS	6.8 ppb
2014-02-11	Well #17 Treatment Unit	Well #17 EPTDS	1.4 ppb
2014-02-11	Distribution System	Max. Res. Time in Dist. System	3.4 ppb
2014-02-11	Well #10A Treatment Unit	Well #10A EPTDS	7.7 ppb
2014-02-12	Well #12 Treatment Unit	Well #12 EPTDS	2.2 ppb
2014-02-12	Well #16 Treatment Unit	Well #16 EPTDS	6.3 ppb
2014-02-12	Well #8 Treatment Unit	Well #8 EPTDS	1.9 ppb
2014-02-12	Well #9 Treatment Unit	Well #9 EPTDS	6.7 ppb
2014-02-12	Well #22 Treatment Unit	Well #22 EPTDS	0.0 ppb
2014-08-19	Well #12 Treatment Unit	Well #12 EPTDS	2.2 ppb
2014-08-19	Well #9 Treatment Unit	Well #9 EPTDS	6.6 ppb
2014-08-19	Distribution System	Max. Res. Time in Dist. System	1.6 ppb
2014-08-19	Well #6A Treatment Unit	Well #6A EPTDS	5.0 ppb
2014-08-19	Well #17 Treatment Unit	Well #17 EPTDS	1.3 ppb
2014-08-19	Well #10A Treatment Unit	Well #10A EPTDS	8.1 ppb
2014-08-19	Well #16 Treatment Unit	Well #16 EPTDS	6.1 ppb
2014-08-19	Well #19 Treatment Unit	Well #19 EPTDS	10.3 ppb
2014-08-19	Well #22 Treatment Unit	Well #22 EPTDS	2.7 ppb

2014-08-20	Well #2 Treatment Unit	Well #2 EPTDS	0.37 ppb
2015-02-19	Well #2 Treatment Unit	Well #2 EPTDS	1.0 ppb

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SOURCE WATER PROTECTION PLAN MEETING SIGN-IN SHEET

January 18, 2017

Name	Title	Company	Phone	E-Mail
Scott Bulgrin	Pueblo of Sandia Water Quality Manager	Pueblo of Sandia	Information intentionally left out.	
Jonathan Valerio	CH2M OPERATIONS Supervisor	CH2M		
Carrie Weitz	Facilities Engineer Intel	Intel		
Tom Rehl	Citizen	Entity		
Jeff Kindley	Staff Facilities Eng	Intel		
Elaine Cimino	Citizen	Entity		
Dave Catterson	Env. Srcs. ~~Director~~	SSCAFCA		
Rick Shean	Water Quality ~~Hydrologist~~	ABCWUA		
Fred Marquez	Sandoval County			
Xavier Peters	CORR DSD ⟷	NPDES Project Manager		

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SOURCE WATER PROTECTION PLAN MEETING SIGN-IN SHEET

January 18, 2017

Name	Title	Company	Phone	E-Mail
* Steve Glass	Chair	Ciudad SWCD WPAB	Information intentionally left out.	
Bobby MANFRE	T-D Manager	CH2M		
Andy Edmondson	Public Works Director	Town of Bernalillo		
Samuel Toby Jones	Well Operator	"		
Monyn Misbach	Comm. Serv. Coord	CURC		
CHARLES FERNANDEZ	Parks	—		

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