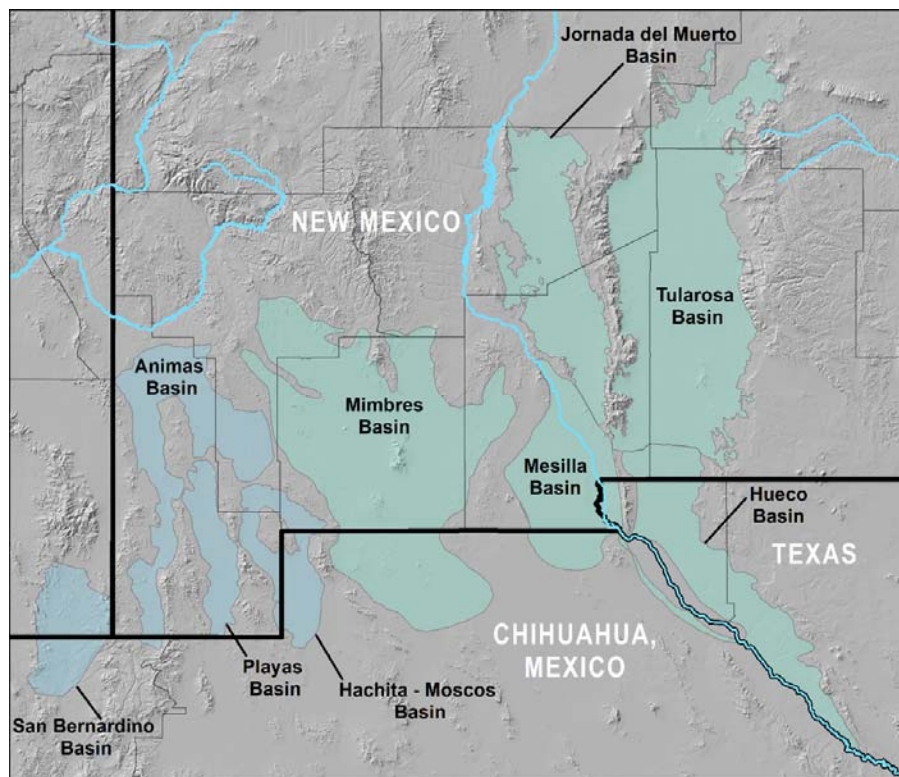


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Household Water Quality in Rural Southern New Mexico A Three-Year Study

WRRRI Miscellaneous Report No. 33

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Submitted by
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Disclaimer

The purpose of the Water Resources Research Institute (WRRRI) technical reports is to provide a timely outlet for research results obtained on projects supported in whole or in part by the institute. Through these reports the WRRRI promotes the free exchange of information and ideas and hopes to stimulate thoughtful discussions and actions that may lead to resolution of water problems. The WRRRI, through peer review of draft reports, attempts to substantiate the accuracy of information contained within its reports, but the views expressed are those of the authors and do not necessarily reflect those of the WRRRI or its reviewers. Contents of this publication do not necessarily reflect the views and policies of the Department of the Interior, nor does the mention of trade names or commercial products constitute their endorsement by the United States government.

Executive Summary

The objective of this three-year study was to test the levels of health-related contaminants in private, domestic wells in New Mexico's U.S.-Mexico border region. Conducted during the final years of an extended drought, the study highlighted research that found concentrations of contaminants in groundwater may rise during periods of drought. As a deliverable, the project provided healthcare professionals with maps estimating the concentrations of several known contaminants found in each of four border aquifers, based on tested well samples.

Approach

The study (1) collected and analyzed laboratory results from more than 521 private, domestic wells, (2) measured changes in aquifer elevation, and (3) mapped contaminant levels by regional aquifers. Follow up measures were conducted with well owners whose household water supplies exceeded federal and state standards for healthy drinking water.

Findings

Lab analyses of water samples from regional aquifers recorded concentrations of arsenic, uranium, fluoride, and nitrates and included testing for the presence or absence of total coliform and *E. coli*. In areas with historical mining activity, the lab analyzed well samples for concentrations of cyanide. In total, 108 samples or 20.7% of total samples exceeded the standard for one or more contaminants. Sixteen (16) samples exceeded the health standards for two or more contaminants. No sample exceeded the standard for cyanide.

A series of depth-to-water measurements in wells located within the Mimbres groundwater basin identified a three-year drop in aquifer elevation of more than 60 feet. The drop exceeded historical changes in the aquifer and pointed to drawdown of the aquifer during a period of drought.

Laboratory data were used to develop maps that estimate the geographic scope of contaminant levels in each of four southern-border aquifers. These maps can be found in the Maps section of this report or online at http://smiley.nmsu.edu/NMDOH_2017/ under the "Map Gallery" tab. Elevated concentrations of arsenic and/or fluoride were identified within each of the four aquifer systems.

Conclusion

Under conditions of drought, groundwater sampling may become a more relevant exercise for monitoring private, domestic water supplies. Maps showing the potential for elevated concentrations of harmful contaminants in groundwater may aid healthcare workers in identifying individuals at risk of exposure to unhealthy drinking water.

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In 2014 the New Mexico Department of Health (NMDOH) partnered with the Water Resources Research Institute (WRRRI) at New Mexico State University to test the quality of groundwater in the state’s U.S.-Mexico border aquifers. The aquifers are the primary source of domestic water for residents of Doña Ana, Grant, Hidalgo and Luna counties. These transboundary aquifers also supply several Mexican communities, including Palomas, Chihuahua. Results from the first two years of the study identified elevated concentrations of harmful contaminants in 16.6% of wells sampled. Some 14.0% were measured at levels that exceed the federal and state health standards. This, the third and final year of the study, was conducted in Hidalgo County, a largely rural county where an estimated 29.9% of residents obtain their household water from private wells.¹

This report provides summary results for the three-year effort. It combines data from the first and second years’ projects conducted in Doña Ana, Grant and Luna counties with data from the third-year, conducted in Hidalgo County. The report provides a database of water quality measures from 521 private, domestic wells and constitutes one of the largest collections of water quality information for New Mexico’s border region (found at http://smiley.nmsu.edu/NMDOH_2017/). In addition to the water quality database, project partners assembled color-coded maps estimating concentrations of health-related contaminants within each aquifer. The data and maps may be of special interest to regional healthcare providers.

The objective of this three-year effort is to test the levels of known contaminants in private, domestic wells in the state’s U.S.-Mexico border region. As a deliverable, the project provides healthcare professionals with “hot spot” maps estimating the levels of contaminants in border region aquifers.

¹ Estimated Use of Water in the United States County-Level Data for 2010, U.S. Geological Survey. Accessed Sept. 1, 2017 at <http://water.usgs.gov/watuse/data/2010/>

Background

In 2016 the border region of southern New Mexico was well into its sixth consecutive year of drought. In that year, the U.S. National Weather Service reported precipitation below the long-term, 12-month average and listed the New Mexico border region as suffering from “abnormally dry” conditions.² In 2017, the long-running drought lifted with precipitation at mid-year exceeding the annual average. However, during the height of the drought years, aquifers elevations in some areas of southern New Mexico fell more than 60 feet. Many researchers cite rising concentrations of contaminants in groundwater during periods of drought (i.e., Delpla *et al.*, 2008; van Vliet *et al.*, 2009). Under such circumstances, groundwater quality can degrade.

The 271,239³ residents of New Mexico’s Doña Ana, Grant, Hidalgo and Luna counties rely almost solely on groundwater for their domestic and agricultural supplies. Of those, an estimated 17,360⁴ obtain their household water from private wells. Private wells are unregulated in most U.S. states, including New Mexico. As such, no requirements are in place for routine testing or assessment of water quality.⁵

Due to a combination of extended drought and the high percentage of individuals in New Mexico’s border counties served by private wells, WRRRI and NMDOH agreed to conduct a well testing project to determine if resident well owners were at risk from elevated concentrations of harmful contaminants in their drinking water.

Scope of Work

As with the first and second years’ efforts, the third-year project tested for the presence of harmful waterborne contaminants. These included arsenic, fluoride, nitrates, uranium, total coliform and *E. coli*. In addition, water samples were tested for pH to understand if the regional aquifers were meeting EPA’s secondary drinking water standard for alkalinity. Electrical conductivity was measured and used as an indicator

² U.S. Drought Monitor, National Weather Service. Accessed Aug. 5, 2016 at <http://droughtmonitor.unl.edu/>

³ County Population Estimates (July 1, 2016), U.S. Census Bureau.

⁴ Estimated Use of Water in the United States County-Level Data for 2010, U.S. Geological Survey. Accessed Sept. 1, 2017 at <http://water.usgs.gov/watuse/data/2010/>

⁵ EPA regulates public water systems; it does not have the authority to regulate private drinking water wells. Approximately 15% of Americans rely on their own private drinking water supplies, and these supplies are not subject to EPA standards, although some state and local governments do set rules to protect users of these wells. Unlike public drinking water systems serving larger urban areas, they do not have experts regularly checking the water’s source and its quality before it reaches the tap. These households must take their own precautions to ensure the protection and maintenance of their drinking water supplies. Accessed July 2, 2016 at www.epa.gov/

for salinity.⁶ In Hidalgo County, due to a history of mining activities, additional testing was conducted for cyanide.

Task 1 – Aquifer Sampling

Project staff developed a plan to promote a volunteer sampling program targeted to rural residents who obtain their domestic water supplies from their own wells. As with the first two years' efforts, residents of incorporated communities, such as Lordsburg, were excluded from the program due to their access to public water supplies, which are regulated and routinely tested.

To get the word out to the mostly rural, private well owners, WRII partnered with the state's Cooperative Extension Service, which maintains a database of 4-H and FFA members who represent private property owners. News releases were prepared and distributed by the public relations office at New Mexico State University (NMSU). Notices on County Extension Facebook pages promoted the program online. Spanish-language news releases were prepared by WRII staff and sent to Spanish radio stations popular in the region.



Examples of project media coverage from the Las Cruces Sun-News and the Hidalgo County Herald

⁶ EPA has established National Secondary Drinking Water standard of 6.5 – 8.5 for pH in drinking water. EPA does not enforce these "secondary maximum contaminant levels" (SMCLs). They are established only as guidelines to assist public water systems in managing their drinking water for aesthetic considerations, such as taste, color, and odor. These contaminants are not considered to present a risk to human health at the SMCL.

EPA has no federal standard for electro-conductivity in drinking water. However, drinking water is often tested for electrical conductivity as a benchmark for total dissolved solids. Measurements that exceed 1,000 microSiemens per centimeter ($\mu\text{S}/\text{cm}$) are often associated with high salinity.

Sampling Approach

At different times during the course of the three-year effort, well owners in Doña Ana, Grant, Hidalgo and Luna counties were invited to visit their Extension Offices in Las Cruces, Silver City, Lordsburg and Deming, respectively, to obtain free kits for well water testing. The kits included sampling bottles, labels, rubber gloves and written instructions in English and Spanish detailing how to collect well water for laboratory analysis. Property owners collected their samples on Tuesday mornings (Doña Ana and Hidalgo) or Thursday mornings (Grant and Luna) and delivered them to their respective Extension offices on the same day. This gave Extension staff enough time to pack the samples in ice and ship them overnight to the state-authorized drinking water lab in Albuquerque. The quick turnaround from sample collection to delivery at the lab ensured the samples would arrive within a 24-hour window, improving reliability of the lab results.



Grant County residents receive free well water testing kits from the Cooperative Extension Office in Silver City.

Property owners were guaranteed anonymity for participation in the program. As such, Extension staff asked well owners to identify themselves by street address or to label their collection bottles with the latitude and longitude of their wellheads using a mobile phone app or computer program. Later in the project, WRRRI employees verified each address and wellhead location to guarantee accuracy prior to mapping the aquifers.

Task 2 – Follow up

Laboratory results were returned to property owners usually within three to four weeks. The results were provided either in hardcopy at the Extension Office or communicated via email or telephone, depending on well owner preference. To help property owners understand their lab reports, a flyer was developed in English and Spanish that explained how to read the lab report. In some cases, WRRRI or Extension staff met in person with a property owner to discuss a lab result or assist the well owner in understanding a probable source of contamination. Staff also instructed well owners in methods to reduce or eliminate a specific contaminant. WRRRI and NMDOH worked together to develop brochures in English and Spanish explaining the health

impacts of certain contaminants. These brochures remain available on the project website at http://smiley.nmsu.edu/NMDOH_2017/.

Task 3 – Workshops

Workshops were conducted May 25, 2016, in Grant County; June 15, 2017, in Luna County and June 23, 2017, in Hidalgo County for well owners who participated in the program. The workshops provided summary results from the sampling effort and offered a forum for the study's participants to ask questions about their well water. For the project staff, the workshops provided an opportunity to evaluate the overall effort and to determine the extent of follow up required for installing or updating household water treatment, where recommended.

Workshop Evaluations

In Grant County 30 workshop participants completed a written evaluation at the end of the program. Some 86% of the participants completing an evaluation said they were “very satisfied” with the project. A perfect 100% of evaluators said the well sampling instructions were clear and easy to follow. More than 92% said the “How to Read Your Lab Results” instruction sheet was helpful in interpreting the laboratory data.

Six of the 30 Grant County evaluators reported that their lab results exceeded the health standards for one or more contaminants. Of the six, two reported installing or treating their household water with an installed device or treatment system. The remaining four reported exceedances of total coliform only and were provided with literature detailing how to remove coliform from a domestic well.

At close of the Silver City workshop, several residents requested information on how to construct a homemade water filter. WRRRI staff provided a brochure and performed a demonstration, showing how to assemble a filter to fit their needs. Variations of the device are currently in use in Palomas, Chihuahua, where the homemade filters were found to reduce high concentrations of fluoride and arsenic from local well water supplies.

The Luna County workshop was conducted with staff from the County Extension Office in Deming. For this meeting, WRRRI provided PowerPoint slides, which were edited for the Extension staff to use later in the year, after the fall harvest.

In Hidalgo County the workshop found 100% of the 12 participants “very satisfied” with the project. Four participants with unhealthy water supplies said they had initiated treatment or had installed water filter systems. Property owners with contaminated well water reported speaking with WRRRI or Extension staff and confirmed that they were instructed in methods to mitigate their water problem. Nevertheless, several well owners with contaminated water had taken no action at the time of the workshop.

Task 4 – Data Analysis & Water Quality Maps

This report contains the chief deliverables for the full, three-year effort. The report includes a database of laboratory results from 521 individual well samples and “hot spot” maps (i.e., water quality maps interpolated from dozens of well water samples) estimating a range of health-related contaminant concentrations in each of four groundwater basins. Estimates of contaminant concentrations were calculated using the magnitude of values from the laboratory analyses and the distances between wellheads (See Maps B through Q). Each “hot spot” map displays a color-coded legend representing several ranges of contaminant levels.

Findings

The third-year effort was initiated the second week of January 2017. Samples were collected each week through mid-June. Some 86 well samples were tested for arsenic, fluoride, nitrates, uranium, total coliform, *E. coli*, pH and electro-conductivity. Five samples collected on property with historic mine sites were tested for cyanide. Data from the third-year effort were combined with data from 435 samples collected during the first and second years. In total, 521 individual, private wells were sampled during the course of the three-year program. Each sample was analyzed for contaminants and the location of each wellhead was mapped by its groundwater basin. The 521 samples represent an estimated 9.0% of all private domestic wells in New Mexico’s four-county border region and exceed by more than 70 the number of wells targeted by the project team.

Of the total samples, some 443 qualified for testing of the full range of six contaminants, pH and electro-conductivity. Some 56 samples were analyzed only for arsenic, fluoride, uranium, and the presence of total coliform and *E. coli*. This was due to an error by the testing lab, which shipped collection bottles with an incorrect preservative, curtailing analysis for nitrates. Another 24 samples could not be tested for total coliform or *E. coli* because of shipping delays or when water samples exceeded the maximum temperature for lab analysis. A small number of samples were tested only for the presence of total coliform and *E. coli* at the request of the well owners.

Exceedances

Of the 521 samples tested, 108 or 20.7% exceeded the drinking water standard for one or more of the contaminants of arsenic, fluoride, nitrates, uranium or *E. coli*. When data are recalculated accounting for lab error and temperature exceedances, the percentage of well samples exceeding the drinking water standards rises to 21.1%. Sixteen (16) of the 521 samples were found to exceed the standards for two or more contaminants. Twenty-three (23) samples failed to meet EPA’s secondary standard for pH, demonstrating high alkalinity. Electro-conductivity, a benchmark for salinity, but which carries no state or federal health standard, was measured at 1000 or greater in 99 of samples tested. Of the five samples tested for cyanide, none exceeded the standard.

Exceedances by Basin

ANIMAS BASIN

The Animas Basin supplies domestic water to the majority of residents in Hidalgo County. Well samples identified high concentrations of arsenic and fluoride as well as isolated pockets of nitrate contamination.

MESILLA BASIN

The Mesilla Basin supplies domestic water to the city of Las Cruces, the largest population center in the New Mexico’s border region. Groundwater south of Las Cruces showed particularly high concentrations of arsenic. Well samples also identified isolated exceedances of uranium and fluoride.

MIMBRES BASIN

The Mimbres Basin demonstrates diversity in water quality with the healthiest supplies found at the center of the aquifer near Deming. Portions of the aquifer identified a high potential for elevated levels of arsenic, uranium and fluoride. High concentrations of nitrates, found in pockets of the aquifer, were linked to septic failures or livestock operations.

PLAYAS BASIN

The Playas Basin, smallest of the five border aquifers, demonstrates no exceedances in concentrations of contaminants, as tested in this study. With only a small, year-round resident population, the aquifer is considered low risk for its impacts to human health. The single Playas sample showed no detectable contamination from cyanide.

Data

Table A summarizes exceedances of the drinking water standard, based on laboratory analysis of the 521 well water samples. Laboratory results for each groundwater basin can be found in Tables B through F in the Appendix of this report.

**TABLE A
EXCEEDANCES OF DRINKING WATER STANDARD BY AQUIFER**

AQUIFER	SAMPLES	PRIMARY STANDARD							SECONDARY STANDARD		NO STANDARD	
		Arsenic	Uranium	Fluoride	Nitrates	Total Coliform*	E. coli	% Samples	pH	% Samples	Electro-Conduct	% Samples
Animas	84	11	3	23	7	20	3	56.0	12	14.3	12	14.3
Gila	86	5	3	8	1	29	1	18.6	8	9.3	4	4.7
Mesilla	116	6	1	1	0	15	0	6.9	0	0	58	50.0
Mimbres	234	6	9	7	9	56	4	15.0	3	1.3	25	10.7
Playas	1	0	0	0	0	0	0	0	0	0	0	0
TOTALS	521	28	16	39	17	120	8	20.7	23	4.4	99	19.0

* Total Coliform was excluded from data analysis due to high sensitivity to false positives.

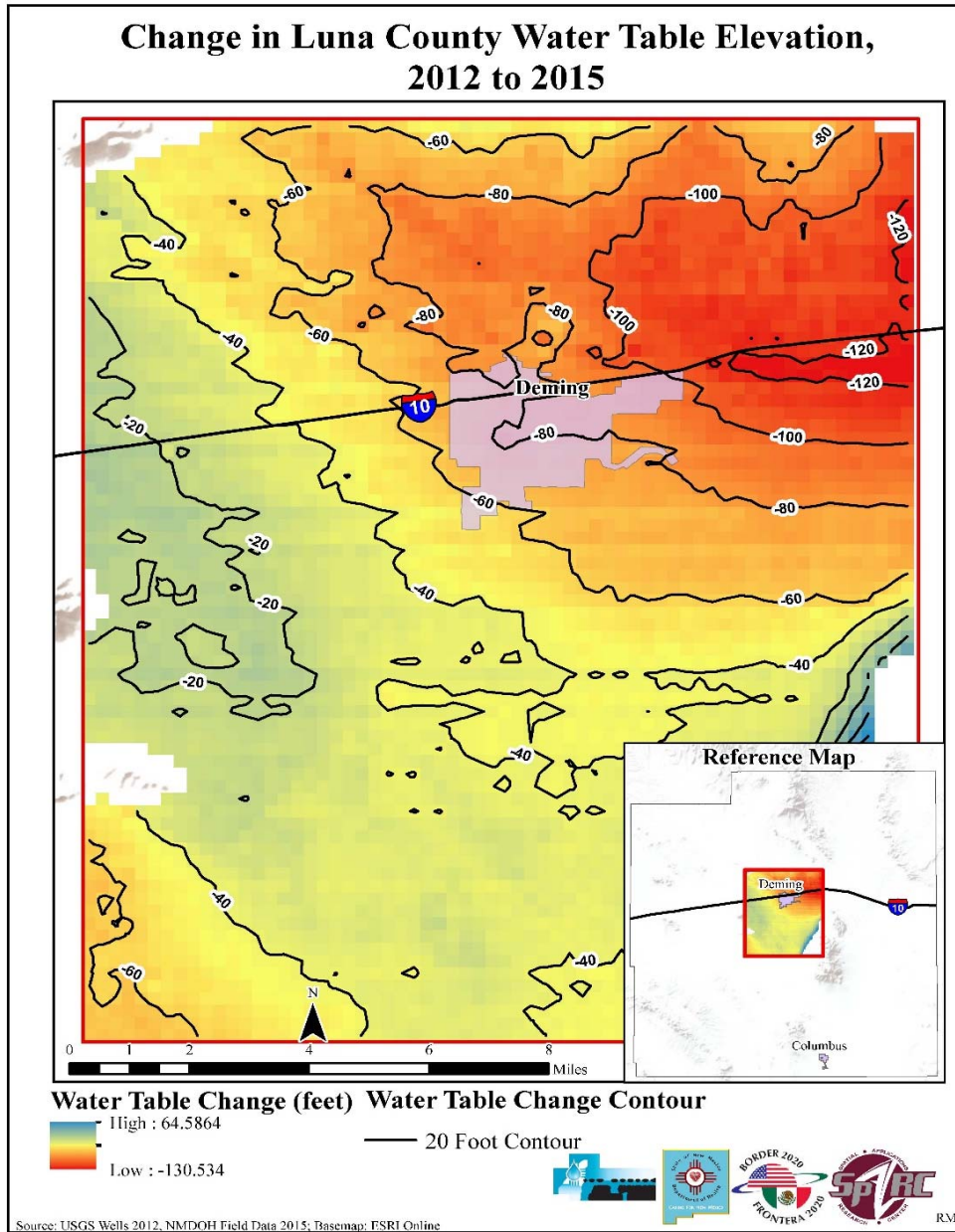
Source: Hall Environmental Analysis Laboratory, Albuquerque

Maps

This section contains maps that visualize water quality data from well samples collected by rural property owners in the Animas, Gila, Mesilla and Mimbres groundwater basins. No maps are included for the Playas aquifer due to limited sampling and low population counts in that basin. Map A shows changes in depth-to-water measurements from drought years 2012-2015. Of significance, the map identifies a three-year decline of more than 60 feet in groundwater elevation at the southern and eastern portions of the basin. The map also identifies a large increase in aquifer elevation at the northeastern end of the basin. However, this rise in elevation is based on a one-time depth reading and is deemed an anomaly of the data.

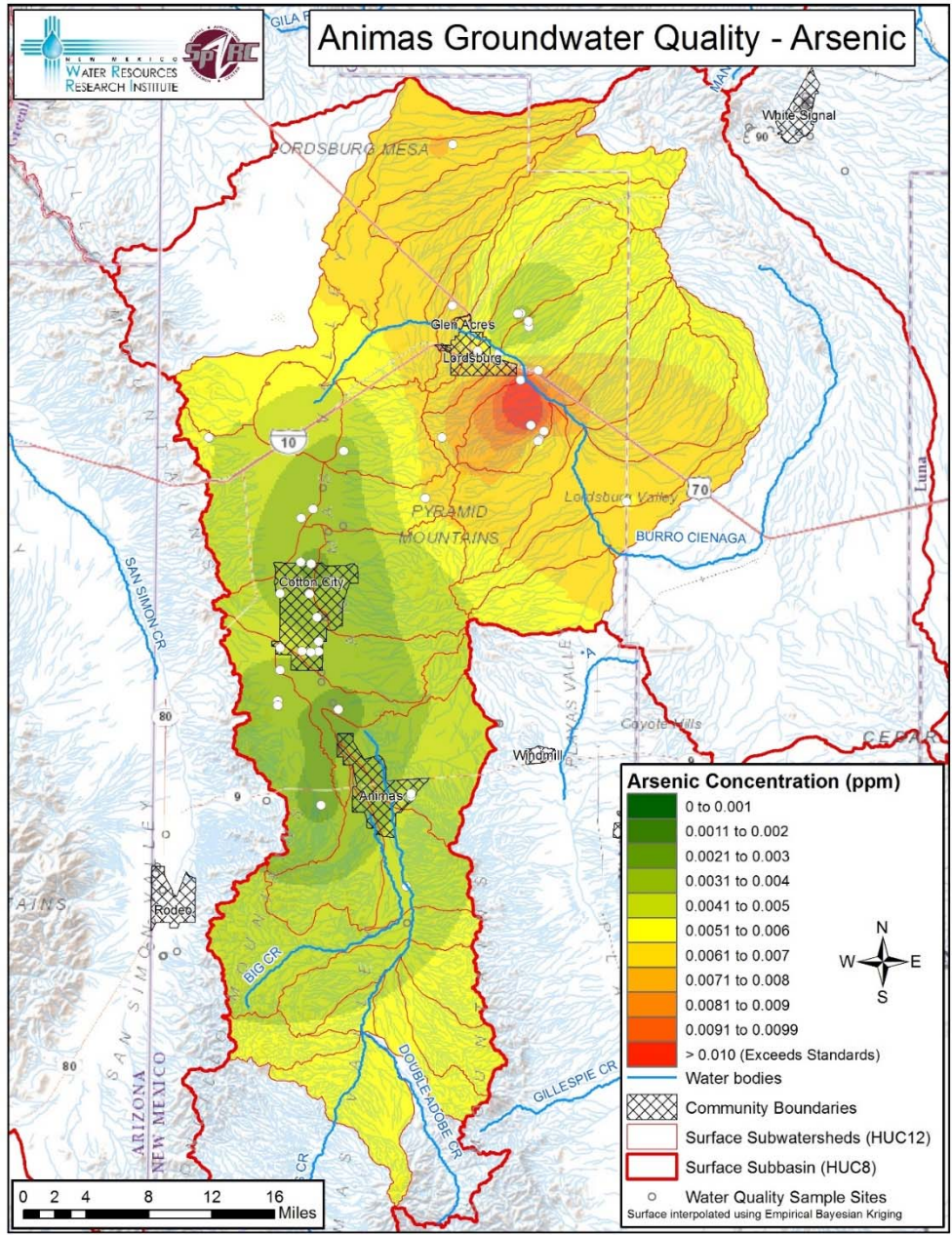
The remaining maps (Maps B through Q) highlight the potential for concentrations of arsenic, uranium, fluoride and nitrates in each of the four largest regional aquifers. On each map, locations with the highest potential for contaminant concentrations that exceed the health standards are marked in red. The maps are scalable and easily printed. Online versions can be found at http://smiley.nmsu.edu/NMDOH_2017/ under the heading “Map Gallery”.

Map A – Change in Aquifer Elevation



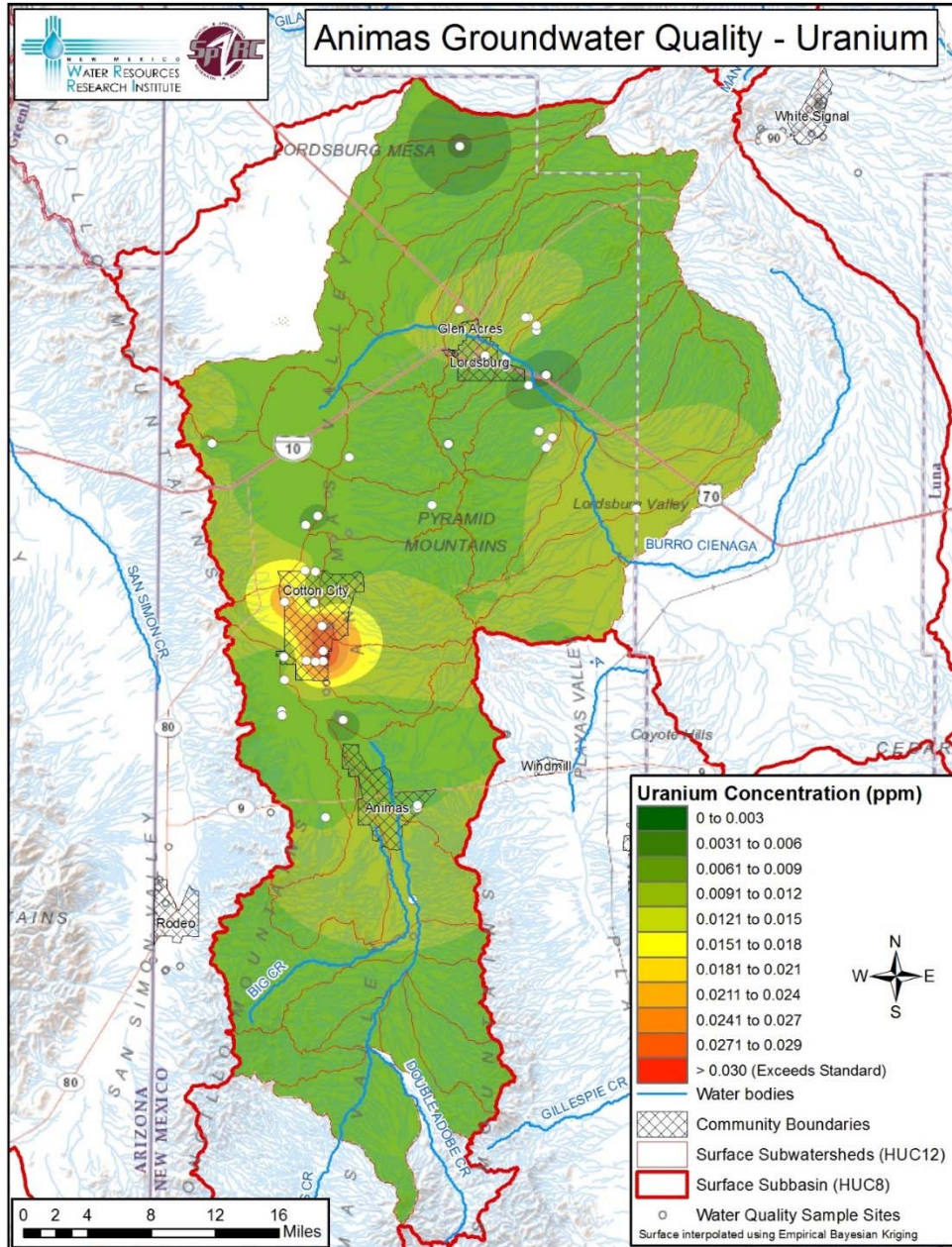
http://smiley.nmsu.edu/NMDOH_2017

Map B – Animas Basin: Arsenic



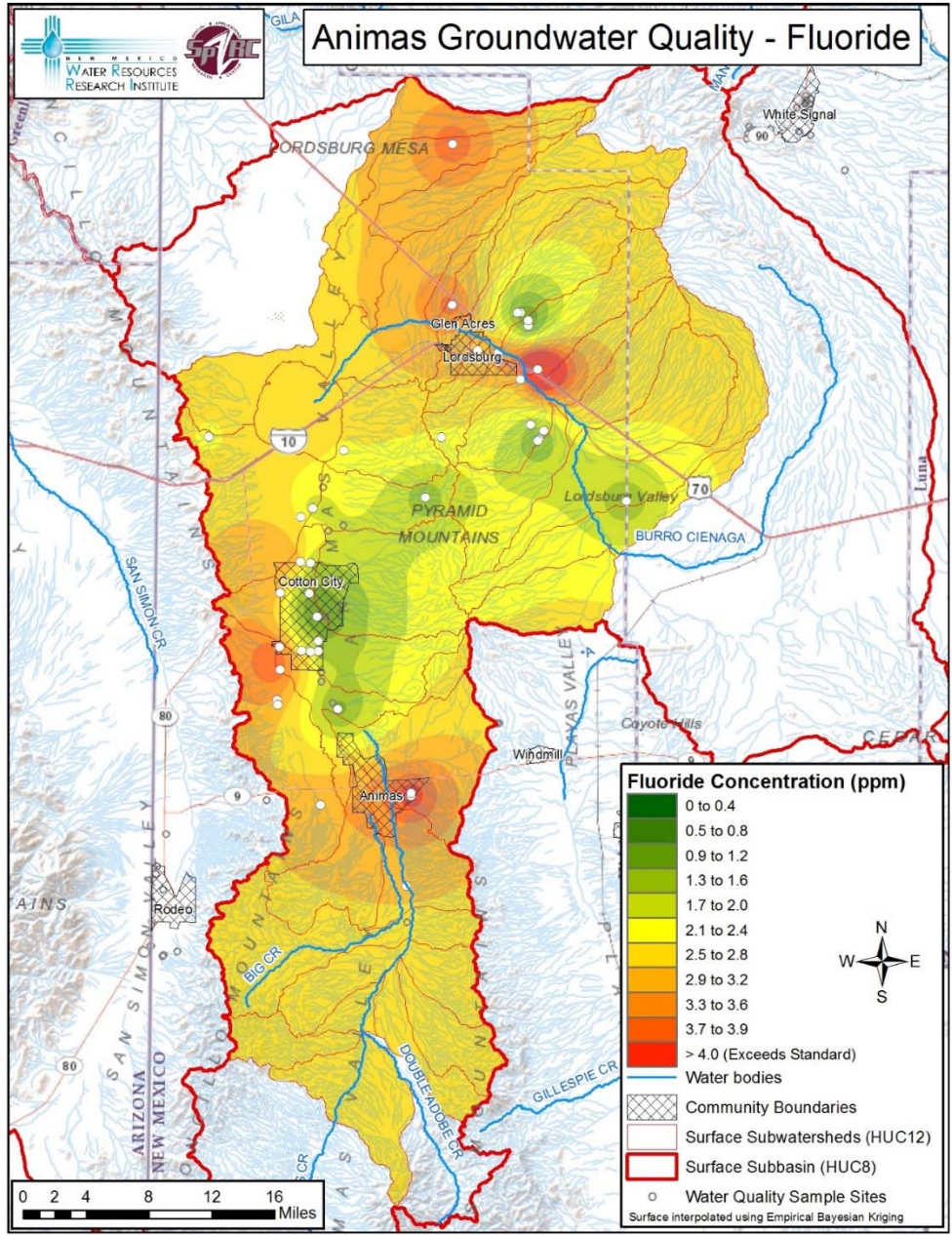
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Map C – Animas Basin: Uranium



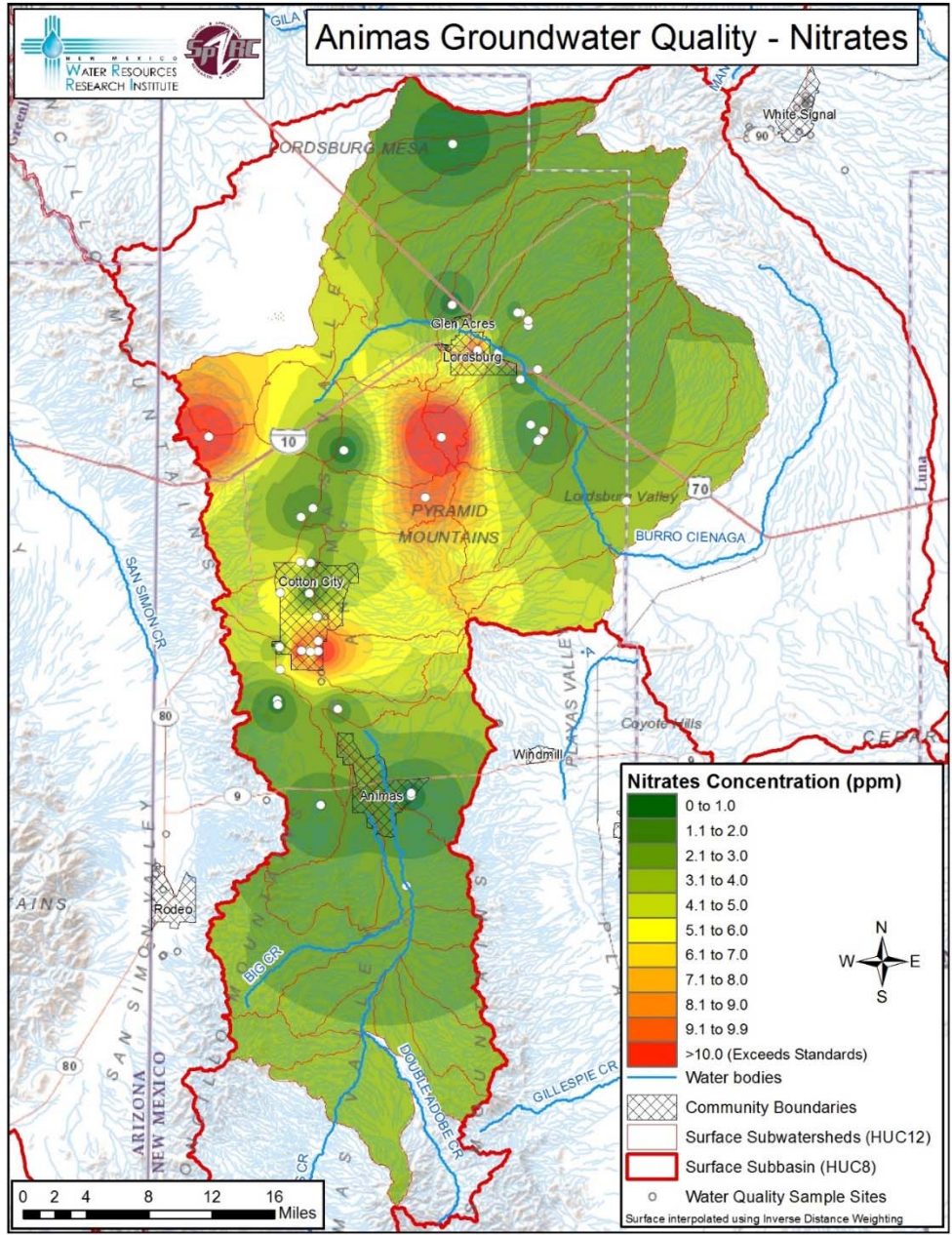
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Map D – Animas Basin: Fluoride



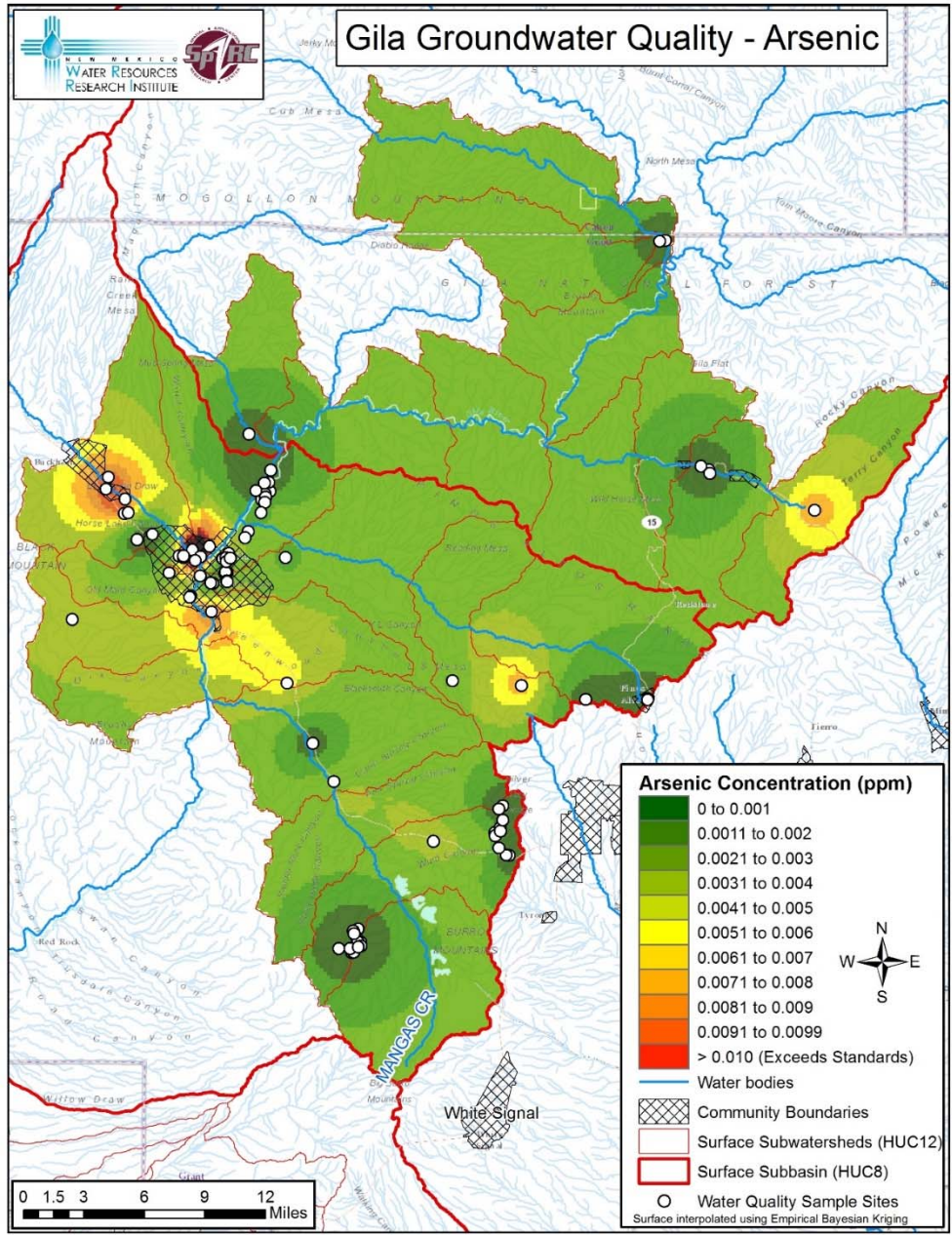
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Map E – Animas Basin: Nitrate



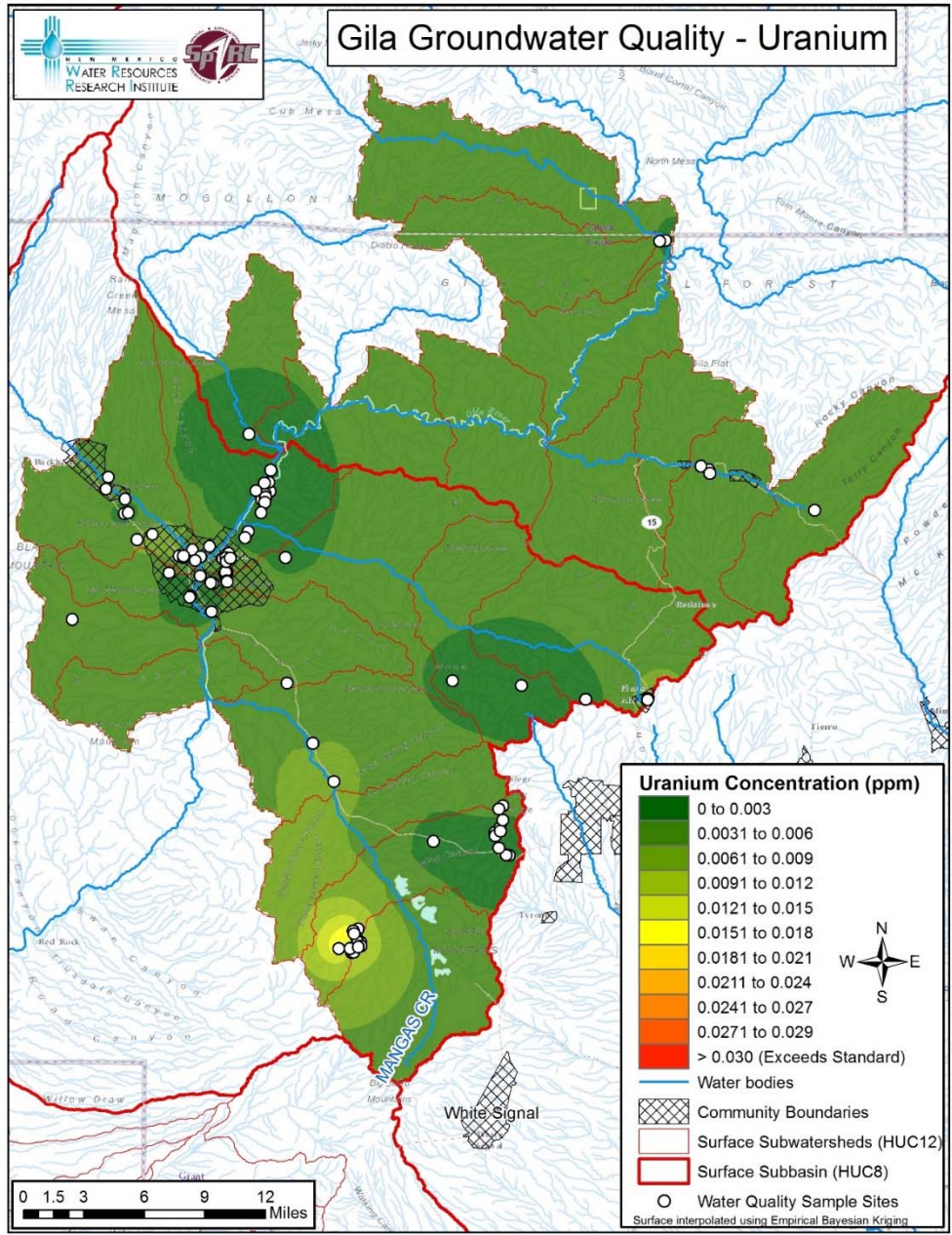
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Map F – Gila Bain: Arsenic



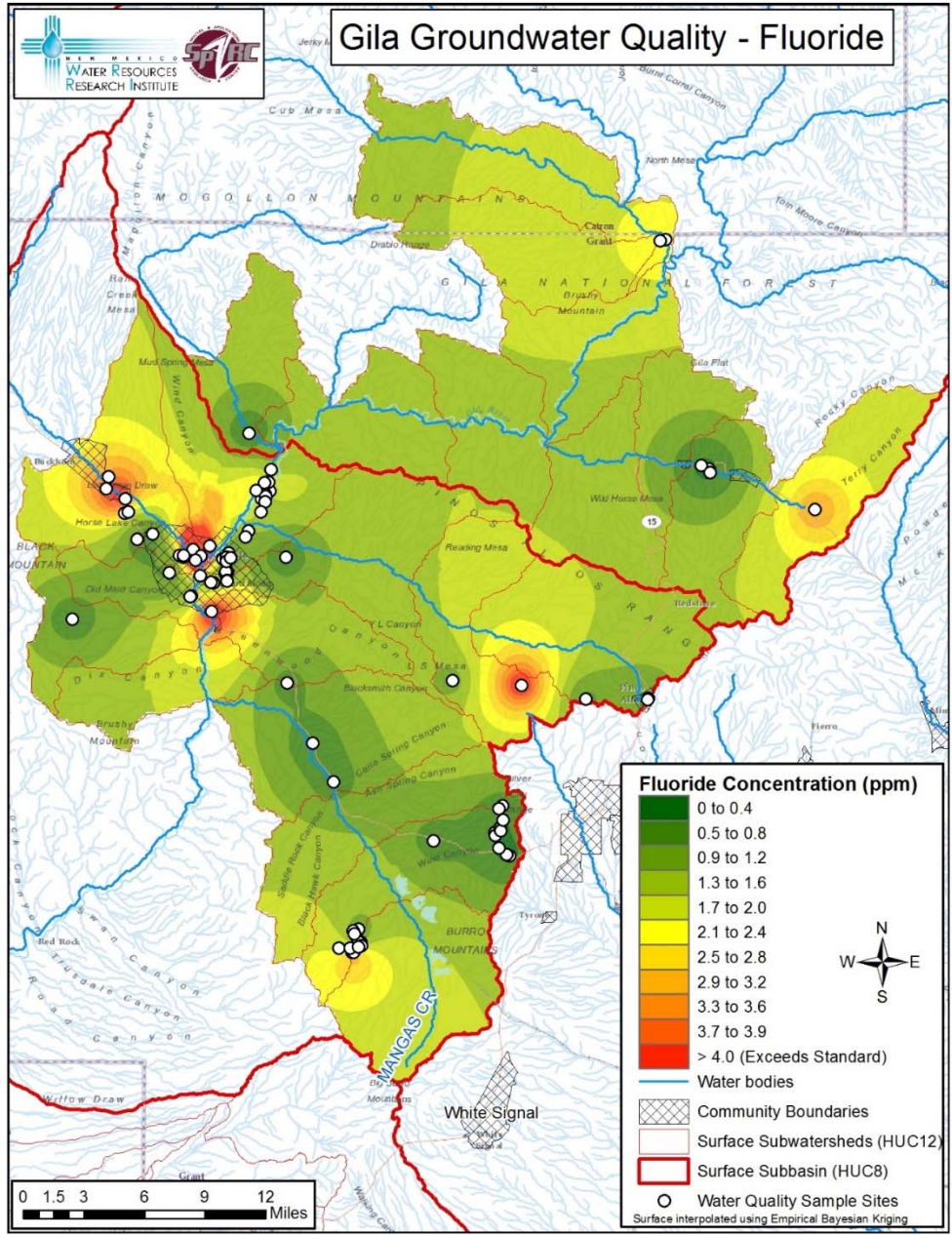
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Map G – Gila Bain: Uranium



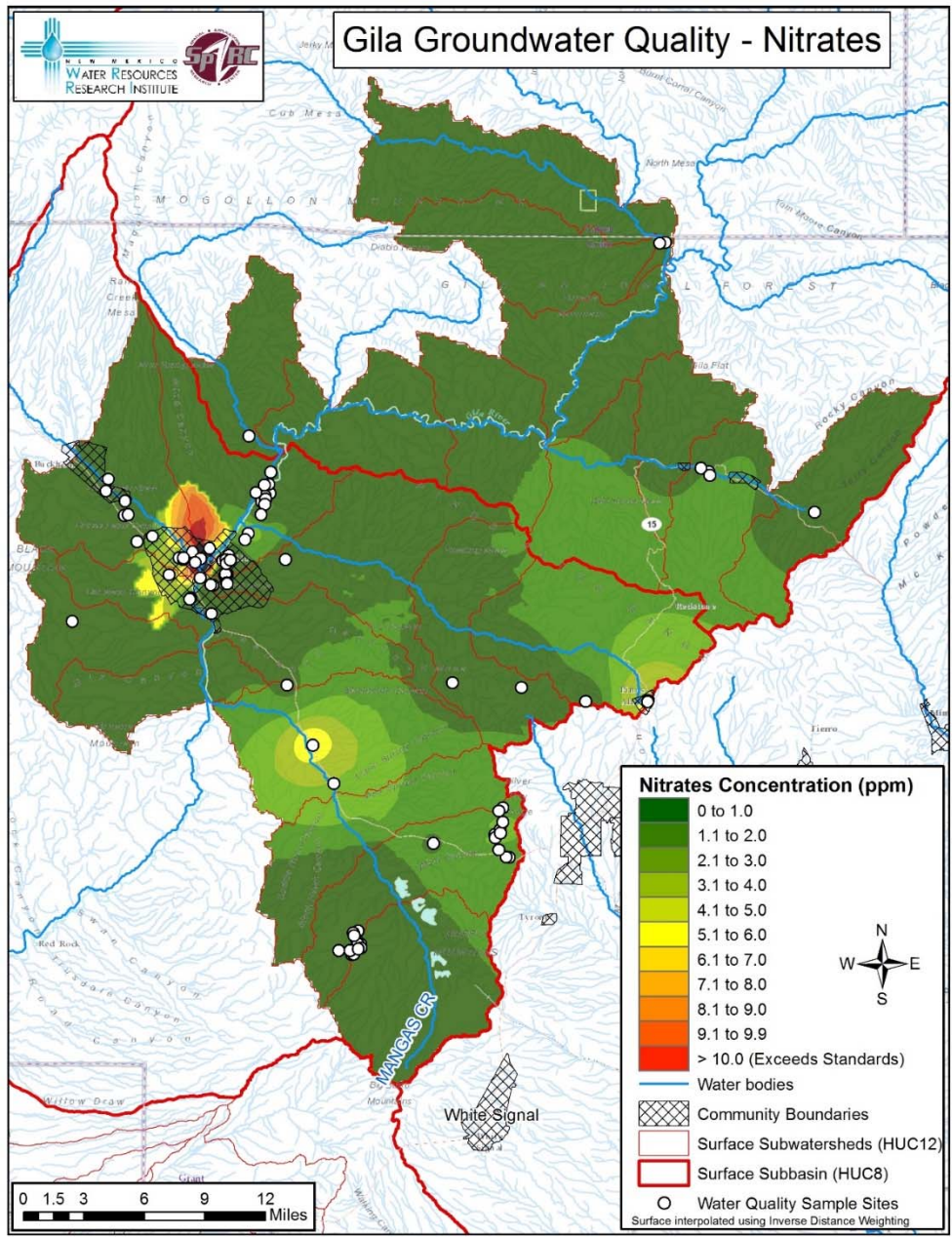
http://smiley.nmsu.edu/NMDOH_2017

Map H – Gila Basin: Fluoride



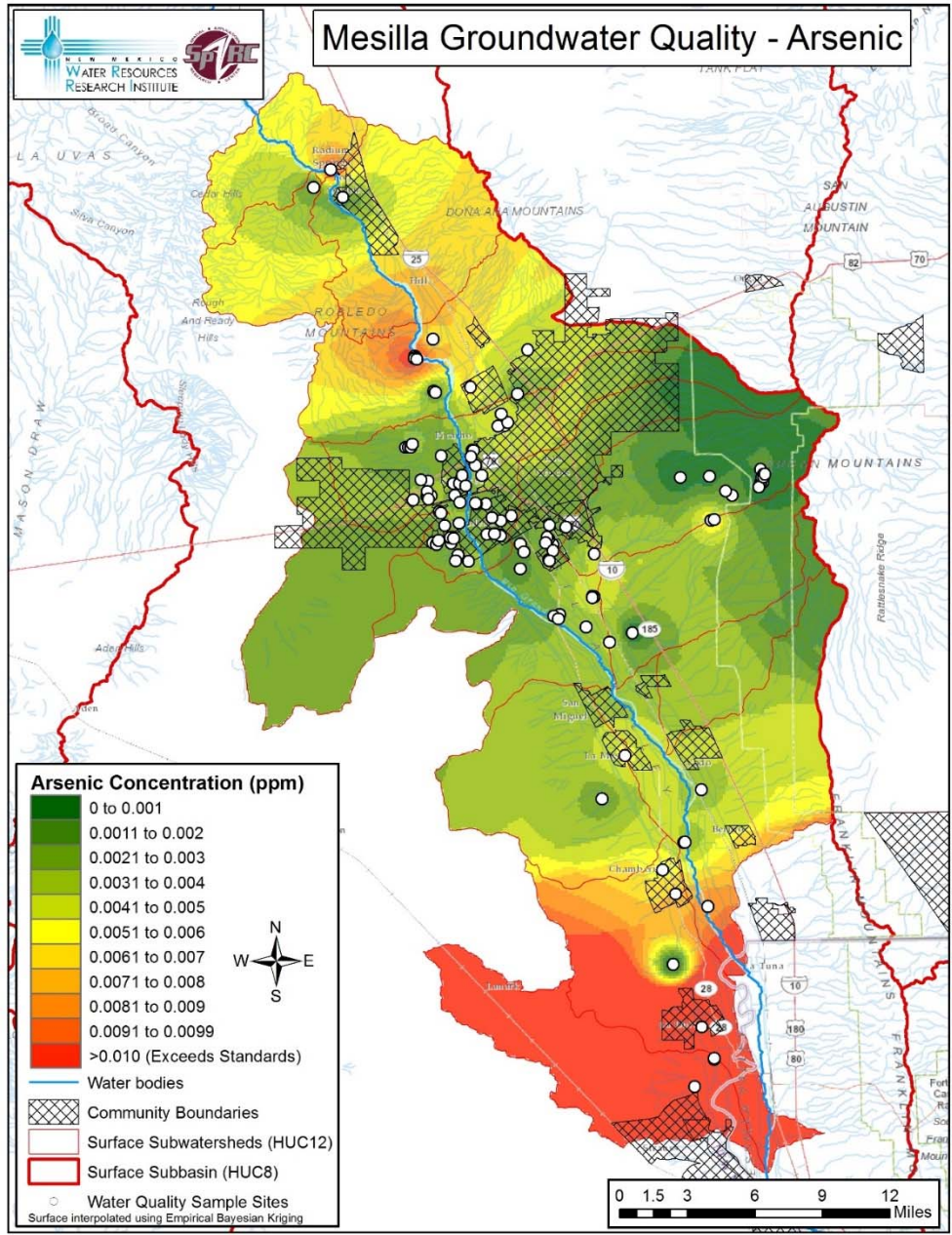
http://smiley.nmsu.edu/NMDOH_2017

Map I – Gila Bain: Nitrate



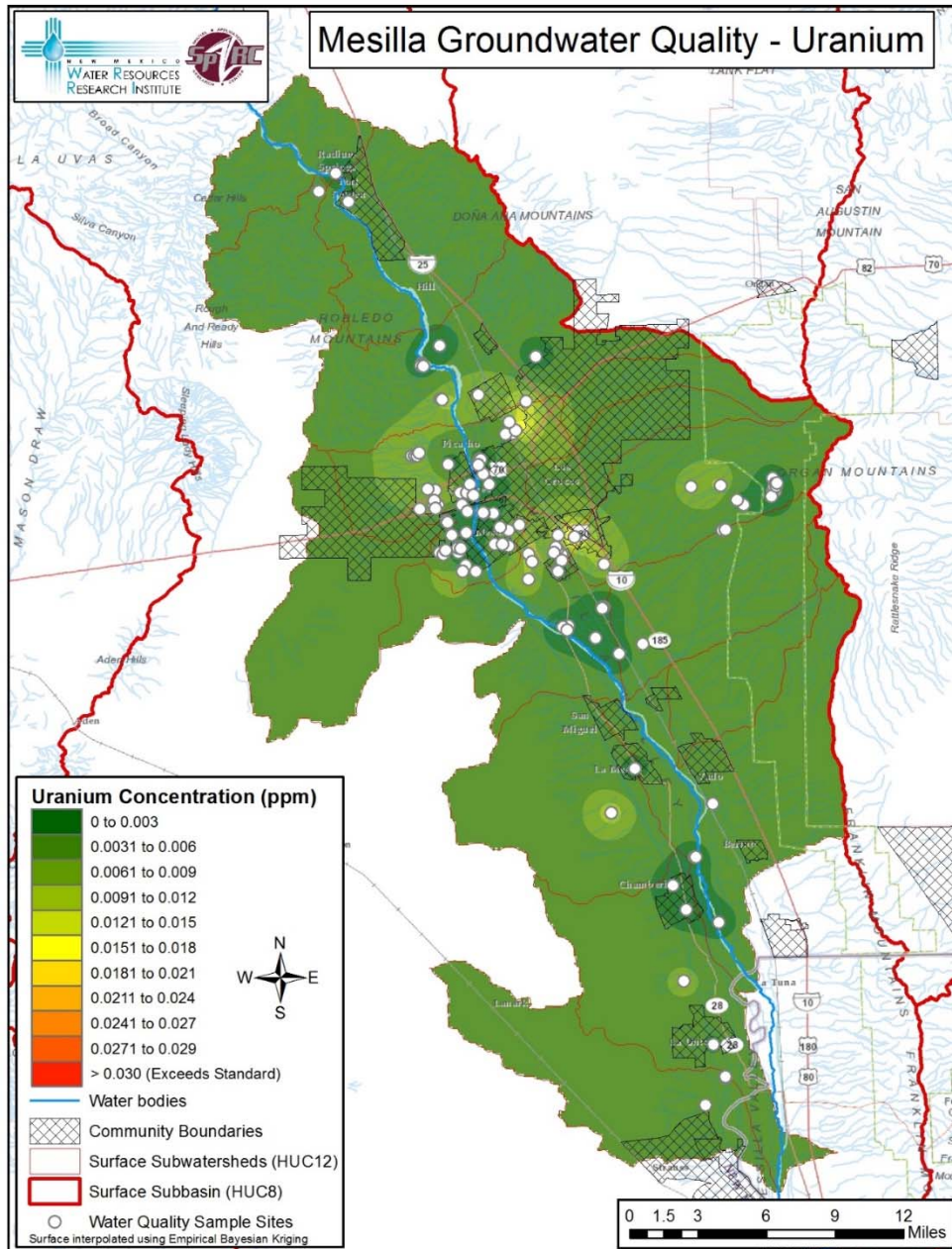
http://smiley.nmsu.edu/NMDOH_2017

Map J – Mesilla Basin: Arsenic



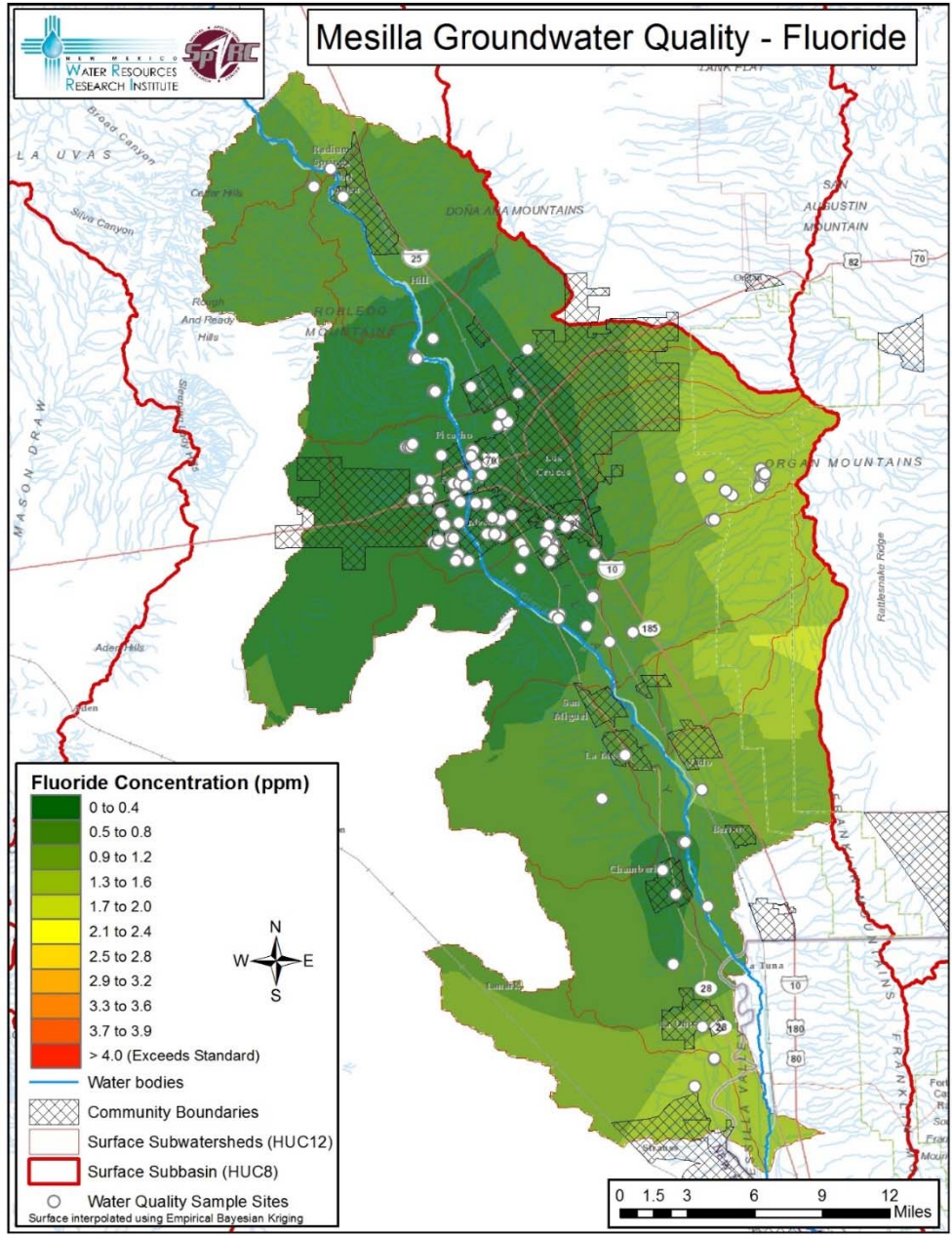
http://smiley.nmsu.edu/NMDOH_2017

Map K – Mesilla Basin: Uranium



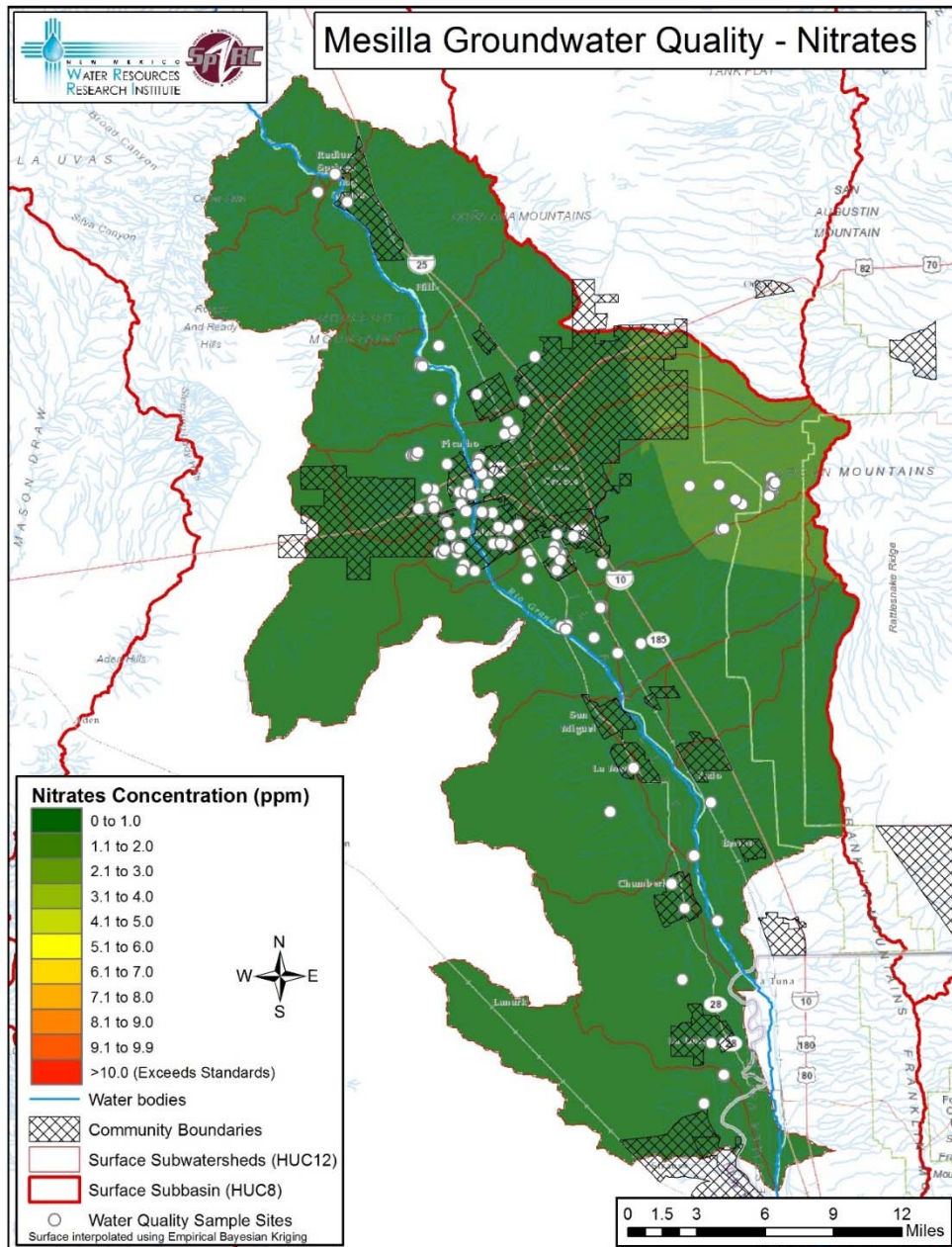
http://smiley.nmsu.edu/NMDOH_2017

Map L – Mesilla Basin: Fluoride



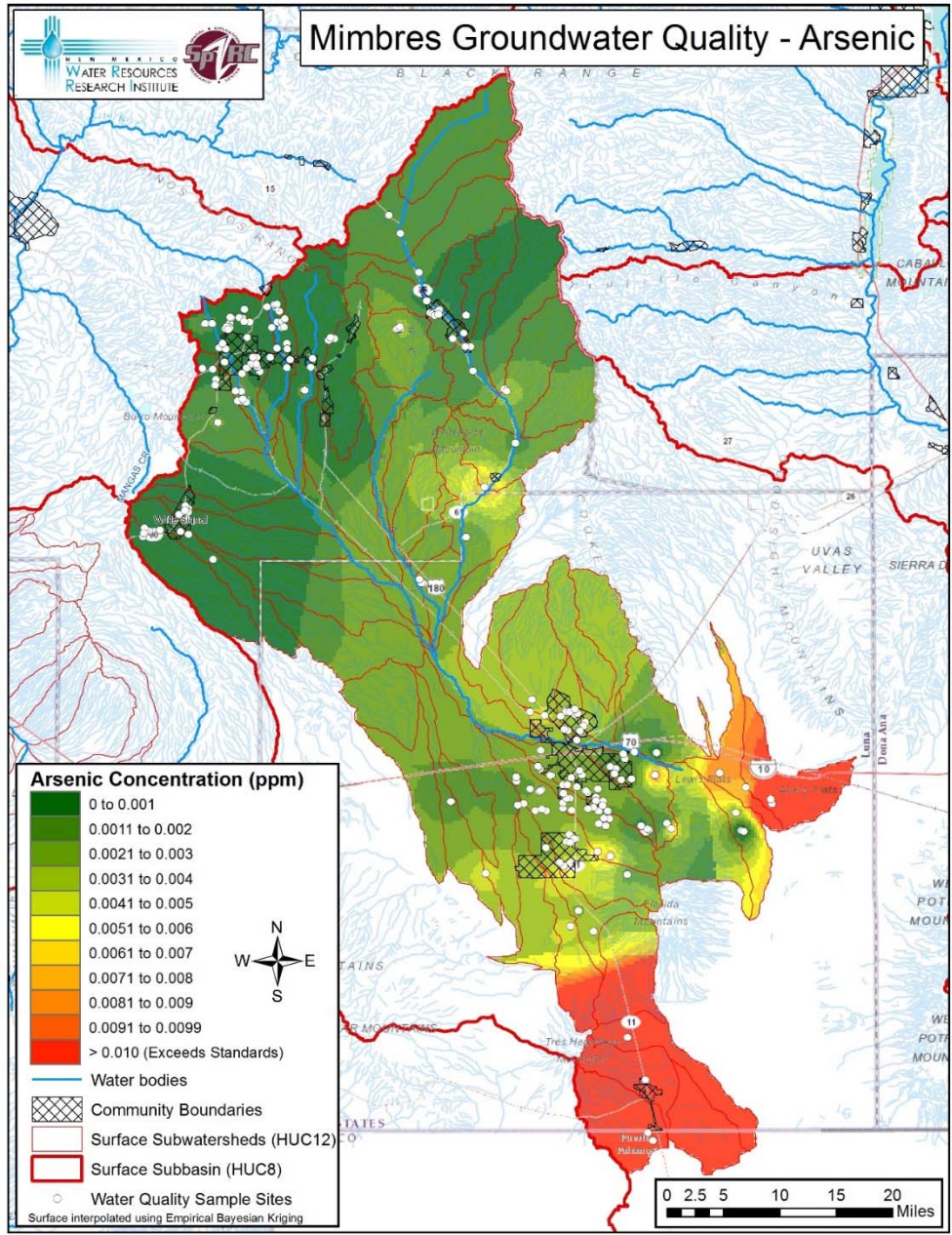
http://smiley.nmsu.edu/NMDOH_2017

Map M – Mesilla Basin: Nitrate



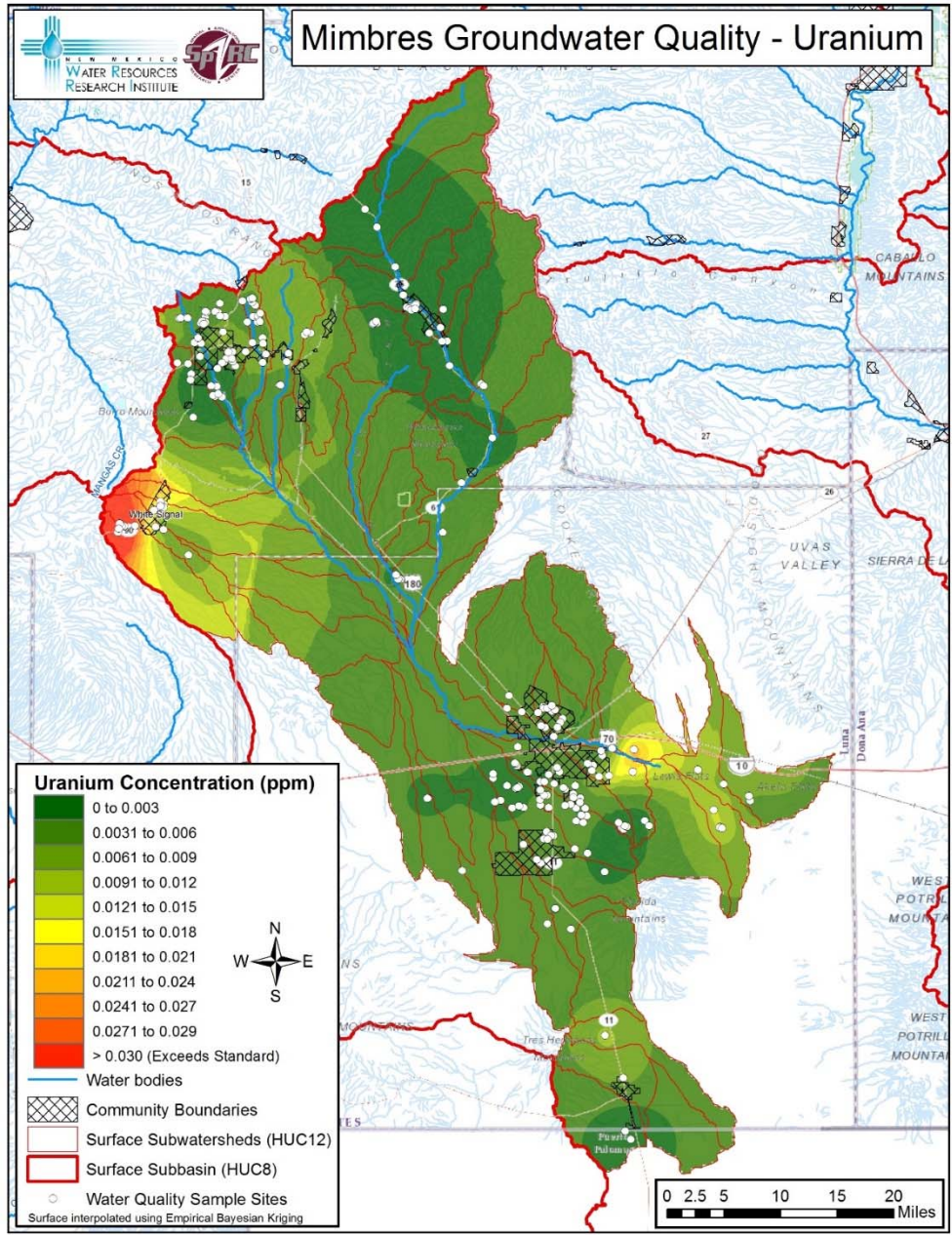
http://smiley.nmsu.edu/NMDOH_2017

Map N – Mimbres Basin: Arsenic



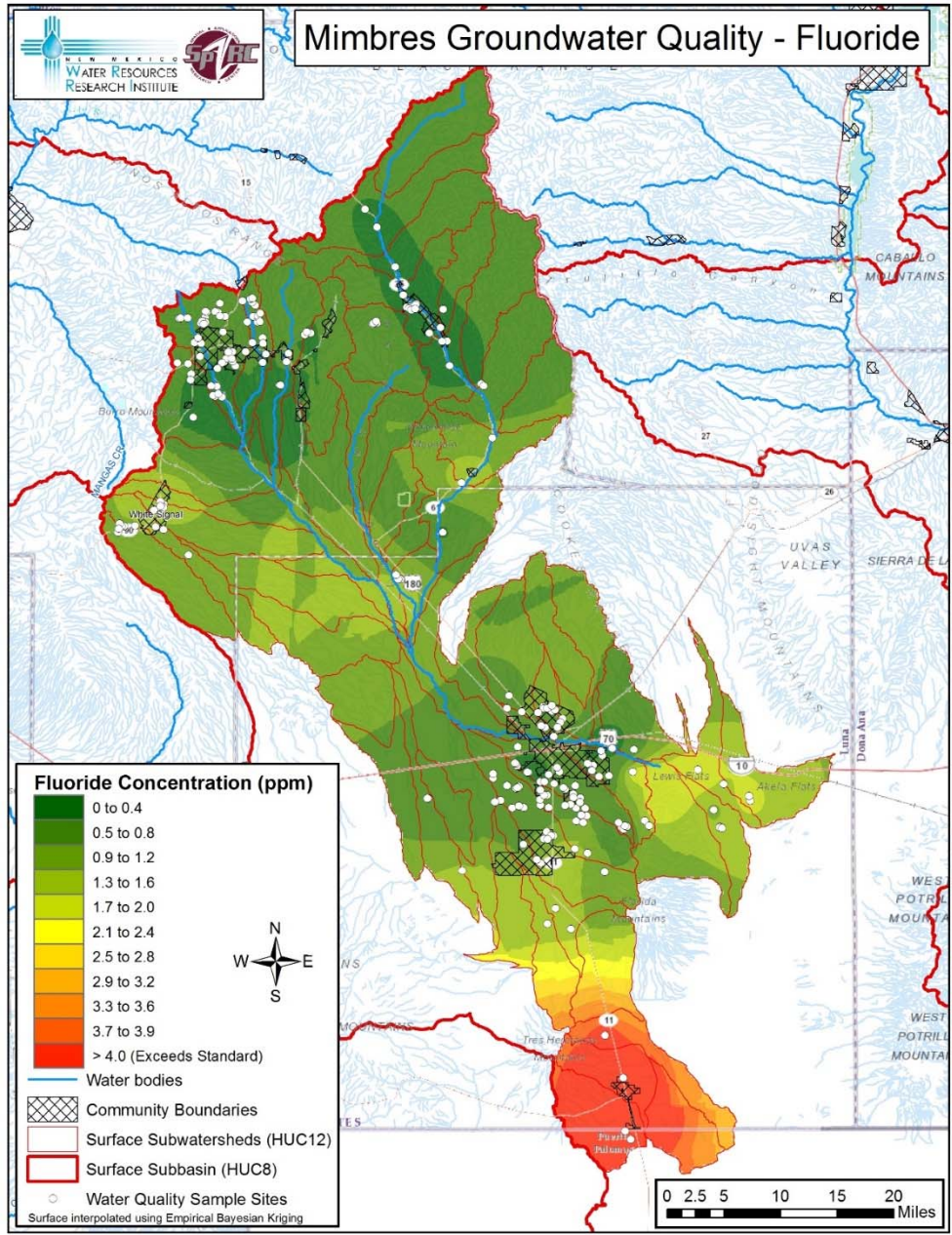
http://smiley.nmsu.edu/NMDOH_2017

Map O – Mimbres Basin: Uranium



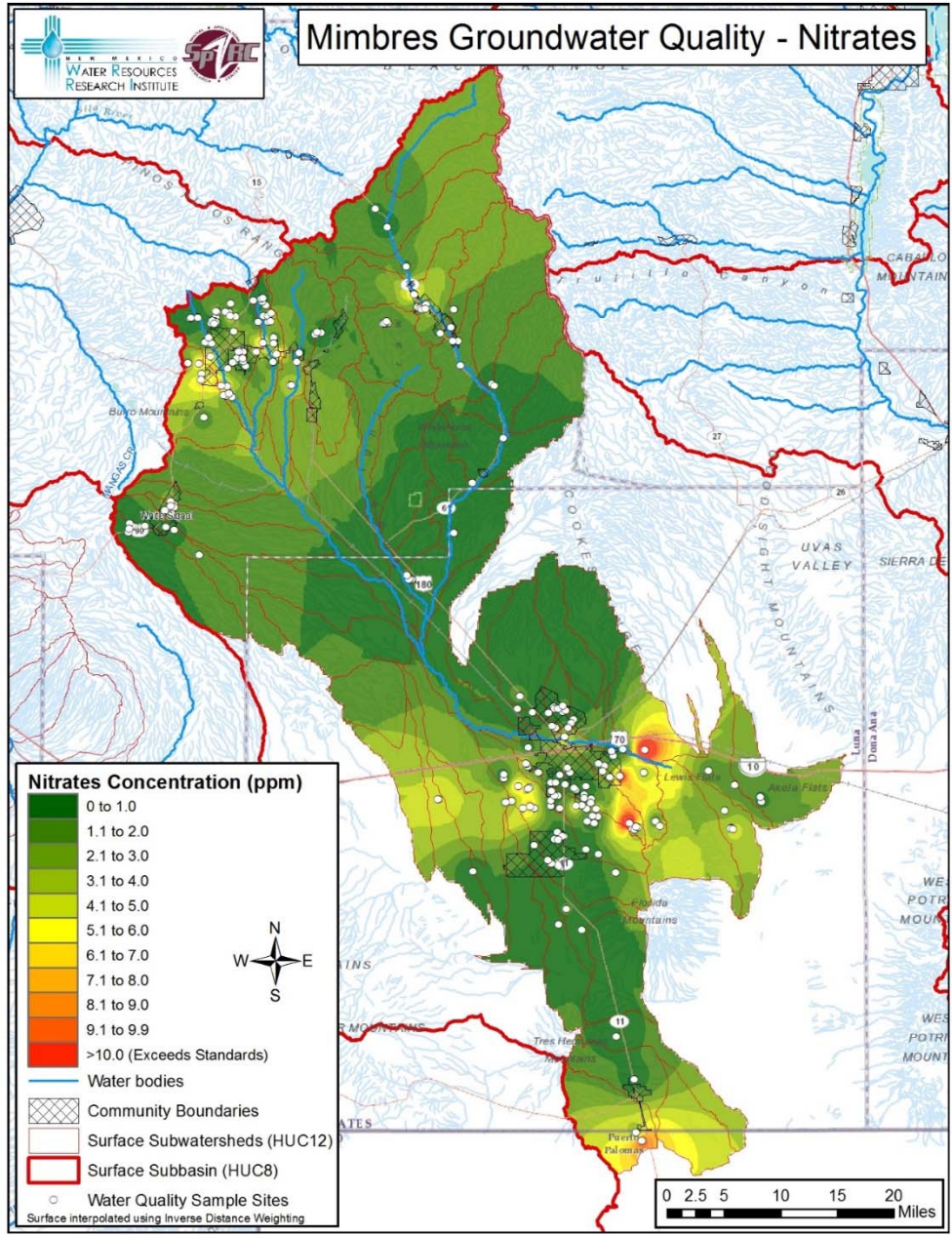
<http://smiley.nmsu.edu/NMDOH> 2017

Map P – Mimbres Basin: Fluoride



http://smiley.nmsu.edu/NMDOH_2017

Map Q – Mimbres Basin: Nitrate



http://smiley.nmsu.edu/NMDOH_2017

Discussion

Property Owner-Supplied Data

Most participants identified the location of their wellheads using measurements for latitude and longitude obtained from a mobile phone app. To verify the accuracy of this information, WRRRI staff confirmed the location of each well. In some cases, staff members telephoned the property owner to verify the information. If a well's location could not be confirmed, the data from that well was eliminated from the mapping profile. This process assured the overall positional accuracy of data provided by property owners and improved the level of confidence in developing the "hot spot" maps.

Workshop Evaluations

Currently, the southern half of the state is without an authorized drinking water lab, forcing well owners to drive their samples the 200-plus miles to Albuquerque for testing. As such, it was not unusual during the study to hear well owners express gratitude for access to laboratory testing.

Playas Data

The number of well samples from the Playas Basin proved insufficient to protect the privacy of well owners. Consequently, no contaminant map was created for the Playas aquifer.

Conclusion

Due to the combination of extended drought and the high percentage of individuals in the state border region served by unregulated, private wells, WRRRI and NMDOH conducted a well water sampling study to determine if well owners were unknowingly consuming high concentrations of harmful contaminants in their drinking water. Some 521 individual well samples were collected over a three-year period and shipped for analysis to the state-authorized drinking water laboratory in Albuquerque. Samples were tested for known contaminants of arsenic, uranium, fluoride, nitrates, total coliform and *E. coli*. Of the samples tested, 108 or 20.7% were measured at concentrations that exceeded one or more of the standards for healthy drinking water. Sixteen (16) samples exceeded the standards for two or more contaminants, some as high as four times the maximum concentration level.

The project sampled well water from five regional aquifers: the Animas, Gila, Mesilla, Mimbres and Playas. Laboratory data were used to create maps that estimate a range of contaminant levels within each aquifer. The Animas Basin, a source of drinking water for a majority of households in Hidalgo County, measured frequent exceedances of the federal and state fluoride standard and showed pockets of nitrate contamination. The Gila River Basin, smallest of the regional groundwater basins, demonstrated

exceedances for arsenic and fluoride. The Mesilla Basin measured particularly high concentrations of arsenic in portions of the aquifer south of Las Cruces. The Mimbres Basin, which stretches across Luna and Grant counties, showed wide diversity in water quality with healthy drinking water found at the center of the aquifer and elevated concentrations of arsenic and fluoride along the aquifer's edges. Of note, the potential for poor water quality rose significantly at the southern end of the Mimbres, a trend confirmed with data from well samples taken from the Mexican community of Palomas.

A series of depth-to-water measurements in wells in the Mimbres Basin conducted by project staff identified a three-year drop in aquifer elevation of more than 60 feet. The drop exceeded historical changes in the aquifer and pointed to drawdown of the aquifer during a period of drought.

Under conditions of drought, groundwater sampling may become a more relevant exercise for monitoring private, domestic water supplies. Maps showing the potential for elevated concentrations of harmful contaminants in groundwater may aid healthcare workers in identifying individuals at risk of exposure to unhealthy drinking water.

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Census 2010, U.S. Census Bureau.

Appendix

TABLE B
ANIMAS AQUIFER - CONTAMINANT CONCENTRATION BY SAMPLE

NO.	COLLECTION DATE	COUNTY	EXCEEDANCES (ppm)				PRESENCE		pH	Electro-Conduct
			Arsenic ≥ 0.010	Uranium ≥ 0.030	Fluoride ≥ 4.0	Nitrates ≥ 10.0	Total Coliform*	<i>E. coli</i>		
1	1/17/2017	Hidalgo	0.0049	0.0046	2.2	3.6	Absent	Absent	7.54	770
2	1/17/2017	Hidalgo	0.020	0.0094	1.4	1.6	Absent	Absent	8.29	520
3	1/17/2017	Hidalgo	0.0036	0.011	1.2	1.5	Absent	Absent	8.45	300
4	1/17/2017	Hidalgo	0.0064	0.011	1.3	1.3	Absent	Absent	8.15	540
5	1/17/2017	Hidalgo	0.0080	0.013	1.3	1.3	Present	Absent	8.27	530
6	1/17/2017	Hidalgo	0.0036	0.0071	0.83	1.7	Absent	Absent	8.05	720
7	1/17/2017	Hidalgo	0.0044	0.011	4.9	0.81	Absent	Absent	8.02	480
8	1/17/2017	Hidalgo	0	0.0067	5.1	0	Absent	Absent	7.97	530
9	1/17/2017	Hidalgo	0.0035	0.011	0.85	2.3	Absent	Absent	8.30	320
10	1/24/2017	Hidalgo	0	0.0053	2.2	19	Absent	Absent	7.77	1500
11	1/24/2017	Hidalgo	0.0026	0.0075	0.89	0.88	Absent	Absent	8.18	420
12	1/24/2017	Hidalgo	0.030	0.00071	2.7	1.6	Absent	Absent	9.24	350
13	1/24/2017	Hidalgo	0.0065	0.0011	10	0	Absent	Absent	9.20	590
14	1/24/2017	Hidalgo	0.0031	0.0057	3.3	0.65	Absent	Absent	8.19	470
15	1/24/2017	Hidalgo	0.0021	0.0037	0.68	1.3	Present	Absent	8.16	360
16	1/24/2017	Hidalgo	0.0029	0.0065	3.1	0.69	Absent	Absent	8.23	480
17	1/24/2017	Hidalgo	0.0082	0	4.7	0.43	Absent	Absent	8.89	500
18	1/24/2017	Hidalgo	0.0023	0.0084	3.5	0.96	Absent	Absent	8.09	550
19	1/24/2017	Hidalgo	0	0.018	4.1	6.3	Absent	Absent	7.90	1500
20	1/24/2017	Hidalgo	0.0027	0.013	4.7	0	Absent	Absent	8.48	940
21	1/24/2017	Hidalgo	0.0038	0.0049	2.5	1.2	Present	Absent	8.24	520
22	1/24/2017	Hidalgo	0.0028	0.0065	1.3	6.1	Present	Present	8.12	560
23	1/31/2017	Hidalgo	0.012	0.018	2.7	2.0	Absent	Absent	8.18	480
24	1/31/2017	Hidalgo	0.017	0.013	0.66	2.1	Absent	Absent	8.30	390
25	1/31/2017	Hidalgo	0.0029	0.032	0.91	17	Absent	Absent	7.70	1000
26	1/31/2017	Hidalgo	0.0027	0.0023	2.1	0.74	Present	Absent	7.55	480
27	1/31/2017	Hidalgo	0.027	0	4.9	0	Absent	Absent	8.79	700
28	1/31/2017	Hidalgo	0.027	0	3.9	0	Absent	Absent	9.02	730
29	1/31/2017	Hidalgo	0.0026	0.0052	1.3	0.93	Present	Absent	7.91	380
30	2/7/2017	Hidalgo	0.019	0.0019	2.2	1.4	Absent	Absent	8.87	590
31	2/7/2017	Hidalgo	0.0074	0.00074	4.9	0.36	Absent	Absent	8.96	490
32	2/14/2017	Hidalgo	0.017	0.00090	2.7	0.55	Present	Absent	8.40	860
33	2/14/2017	Hidalgo	0.0033	0.0060	2.2	0.22	Absent	Absent	7.96	1700
34	2/14/2017	Hidalgo	0.0071	0.0063	0.93	9.9	Absent	Absent	7.89	650
35	2/14/2017	Hidalgo	0.0038	0.020	3.3	6.0	Present	Absent	7.73	1600
36	2/21/2017	Hidalgo	0.011	0.027	2.7	3.5	n/d	n/d	7.70	1000
37	2/21/2017	Hidalgo	0.0034	0	6.4	0	n/d	n/d	8.70	550
38	3/7/2017	Hidalgo	0.0062	0.019	4.5	0.63	Absent	Absent	7.83	990
39	3/7/2017	Hidalgo	0.0024	0.0070	0.99	1.3	Absent	Absent	8.00	540
40	3/7/2017	Hidalgo	0.0048	0.0059	4.6	2.0	Absent	Absent	8.00	580
41	3/7/2017	Hidalgo	0.0021	0.00051	1.5	1.2	Absent	Absent	7.72	250
42	3/14/2017	Hidalgo	0.0049	0.0084	2.0	12	Absent	Absent	8.52	1000
43	3/14/2017	Hidalgo	0.0039	0.0095	4.3	1.3	Absent	Absent	8.90	660
44	3/14/2017	Hidalgo	0.0050	0.0090	2.4	9.3	Absent	Absent	7.92	1500
45	3/21/2017	Hidalgo	0.0037	0.0097	0.92	2.4	Present	Absent	8.43	340

NO.	COLLECTION DATE	COUNTY	EXCEEDANCES (ppm)				PRESENCE		pH	Electro-Conduct
			Arsenic ≥ 0.010	Uranium ≥ 0.030	Fluoride ≥ 4.0	Nitrates ≥ 10.0	Total Coliform*	E. coli		
46	3/21/2017	Hidalgo	0.0020	0.00055	0.72	0.76	Absent	Absent	7.87	270
47	3/28/2017	Hidalgo	0.0034	0.0089	4.5	0	n/d	n/d	7.82	600
48	3/28/2017	Hidalgo	0.0013	0	0.46	1.5	n/d	n/d	7.30	180
49	3/28/2017	Hidalgo	0.0015	0	0.54	1.1	n/d	n/d	7.27	180
50	4/4/2017	Hidalgo	0.0022	0.0042	1.2	0.96	Absent	Absent	8.10	380
51	4/11/2017	Hidalgo	0	0.019	1.4	13	Present	Absent	7.90	1000
52	4/18/2017	Hidalgo	0.0061	0.0045	2.2	0.61	Absent	Absent	7.61	630
53	4/18/2017	Hidalgo	0.016	0.0035	2.6	0	Absent	Absent	7.66	590
54	5/2/2017	Hidalgo	0.0053	0.011	0.87	0.61	Present	Absent	7.85	840
55	5/2/2017	Hidalgo	0.0036	0.0083	0.56	1.4	Absent	Absent	8.70	290
56	5/2/2017	Hidalgo	0	0.028	0.37	19	Absent	Absent	7.77	1100
57	5/9/2017	Hidalgo	0	0.21	4.3	7.0	Present	Absent	8.60	3900
58	5/9/2017	Hidalgo	0	0.0030	0.37	10	Absent	Absent	7.95	460
59	5/9/2017	Hidalgo	0	0.028	0.60	0.36	Absent	Absent	7.43	750
60	5/9/2017	Hidalgo	0.0027	0.0043	0.40	4.9	Absent	Absent	7.85	600
61	5/9/2017	Hidalgo	0.0034	0.0035	5.3	0.31	Absent	Absent	7.88	490
62	5/9/2017	Hidalgo	0.0041	0.00076	2.4	0.92	Absent	Absent	8.11	250
63	5/9/2017	Hidalgo	0.0020	0	0.16	1.5	Absent	Absent	7.81	220
64	5/9/2017	Hidalgo	0.0057	0.0065	5.5	0.43	Present	Absent	8.09	380
65	5/16/2017	Hidalgo	0.0027	0.0088	0.97	7.7	Present	Absent	8.22	630
66	5/16/2017	Hidalgo	0.0017	0.00084	0.24	1.2	Present	Present	7.74	280
67	5/16/2017	Hidalgo	0.0047	0.00060	1.6	0.88	Absent	Absent	8.04	280
68	5/16/2017	Hidalgo	0.0010	0.0022	0.39	0.15	Absent	Absent	7.62	550
69	5/23/2017	Hidalgo	0.017	0.014	8.2	0.22	Absent	Absent	7.94	1600
70	5/23/2017	Hidalgo	0.0020	0	0.81	0.90	Absent	Absent	7.88	220
71	5/23/2017	Hidalgo	0.0021	0	0.79	0.93	Absent	Absent	7.97	210
72	5/23/2017	Hidalgo	0.0051	0.0010	4.5	0.84	Absent	Absent	8.36	290
73	5/23/2017	Hidalgo	0	0.030	2.3	1.5	Present	Absent	7.76	960
74	5/23/2017	Hidalgo	0.0087	0.017	5.0	13	Absent	Absent	7.79	950
75	5/23/2017	Hidalgo	0.0026	0.0045	0.75	1.1	Absent	Absent	8.10	340
76	5/23/2017	Hidalgo	0.0041	0.0072	4.5	0.98	Present	Absent	8.02	410
77	5/23/2017	Hidalgo	0.0090	0.0063	5.8	0.85	Present	Absent	8.19	490
78	5/30/2017	Hidalgo	0.0036	0.0063	1.6	0.83	Absent	Absent	8.04	370
79	5/30/2017	Hidalgo	0.0027	0.0086	6.1	0.16	Absent	Absent	8.14	600
80	5/30/2017	Hidalgo	0.0025	0.0022	3.3	0.54	Absent	Absent	7.73	400
81	5/30/2017	Hidalgo	0.0026	0.0056	0.97	0.80	Absent	Absent	8.20	350
82	6/13/2017	Hidalgo	0.0088	0.015	6.7	0.69	Absent	Absent	7.62	940
83	6/13/2017	Hidalgo	0.0013	0.00090	0.14	2.7	Present	Present	8.06	270
84	6/13/2017	Hidalgo	0.0020	0	0.28	4.1	Present	Absent	8.01	350

*Total Coliform was excluded from data analysis due to high sensitivity to false positives.

n/d = no data available

Source: Hall Environmental Analysis Laboratory, Albuquerque

TABLE C
GILA AQUIFER - CONTAMINANT CONCENTRATION BY SAMPLE

NO.	COLLECTION DATE	COUNTY	EXCEEDANCES (ppm)				PRESENCE		pH	Electro-Conduct
			Arsenic ≥ 0.010	Uranium ≥ 0.030	Fluoride ≥ 4.0	Nitrates ≥ 10.0	Total Coliform*	E. coli		
1	12/9/2015	Grant	0.01	0.0026	7.8	0.28	Present	Absent	8.14	600
2	12/16/2015	Grant	0	0.021	1.1	0	Absent	Absent	7.94	1100

NO.	COLLECTION DATE	COUNTY	EXCEEDANCES (ppm)				PRESENCE		pH	Electro-Conduct
			Arsenic ≥ 0.010	Uranium ≥ 0.030	Fluoride ≥ 4.0	Nitrates ≥ 10.0	Total Coliform*	E. coli		
3	12/16/2015	Grant	0	0.0048	0.39	4.8	Absent	Absent	7.71	600
4	12/16/2015	Grant	0.0046	0.0051	0.51	0.82	Absent	Absent	7.82	410
5	12/16/2015	Grant	0	0.033	1.6	0.31	Present	Absent	7.71	720
6	12/23/2015	Grant	0.0017	0.0062	2.7	0	n/d	n/d	8.13	880
7	12/23/2015	Grant	0.001	0	1.5	0.75	n/d	n/d	7.86	360
8	12/23/2015	Grant	0.001	0	1.9	0	n/d	n/d	7.79	250
9	12/30/2015	Grant	0	0	1.8	0	n/d	n/d	7.37	250
10	1/13/2016	Grant	0.0037	0.019	1.3	0.34	Present	Absent	7.69	580
11	1/13/2016	Grant	0	0.0071	0.6	0.56	Absent	Absent	7.46	850
12	1/13/2016	Grant	0	0.0072	0.92	0.72	Absent	Absent	7.66	740
13	1/13/2016	Grant	0	0.0014	0.22	1.2	Present	Absent	8.09	380
14	1/13/2016	Grant	0	0.00068	0.29	1.1	Present	Absent	7.96	380
15	1/13/2016	Grant	0.0022	0.0016	0.6	0.64	Present	Absent	8.1	410
16	1/13/2016	Grant	0.002	0.0045	1.5	0.51	Present	Absent	7.96	370
17	1/13/2016	Grant	0.0012	0.0018	0.34	0.25	Present	Absent	7.66	480
18	1/13/2016	Grant	0	0.0017	2.3	1.5	Absent	Absent	7.29	500
19	1/13/2016	Grant	0	0	0.3	0.85	Present	Absent	6.99	280
20	1/13/2016	Grant	0	0	2.1	0	Absent	Absent	7.07	350
21	1/20/2016	Grant	0.0025	0.0035	0.35	0.12	Present	Absent	7.82	370
22	1/20/2016	Grant	0.009	0.0042	4	0	Absent	Absent	8	540
23	1/20/2016	Grant	0	0.006	2.8	0	Absent	Absent	7.91	610
24	1/20/2016	Grant	0	0	2.1	0.18	Absent	Absent	7.26	320
25	1/20/2016	Grant	0.0024	0.00055	1.4	1.6	Absent	Absent	8.03	350
26	1/20/2016	Grant	0.0015	0.0016	0.32	2.1	Present	Present	8.06	440
27	1/20/2016	Grant	0.011	0.0012	3.5	0	Absent	Absent	9.92	800
28	1/20/2016	Grant	0	0.011	0.74	0	Absent	Absent	7.65	1400
29	1/20/2016	Grant	0.0017	0.003	0.79	1.8	Present	Absent	7.88	460
30	1/20/2016	Grant	0.0025	0.0012	0.48	0.83	Absent	Absent	8.12	360
31	1/27/2016	Grant	0.0015	0.00099	0.31	3.2	Absent	Absent	7.9	440
32	1/27/2016	Grant	0.002	0.0038	0.78	0.98	Present	Absent	8.1	360
33	1/27/2016	Grant	0	0.012	0.66	0.21	Present	Absent	7.66	880
34	1/27/2016	Grant	0	0.0017	0.36	3.7	Absent	Absent	7.97	480
35	1/27/2016	Grant	0	0.04	0.94	0.13	Present	Absent	7.69	970
36	1/27/2016	Grant	0.0075	0.0005	1.4	0	Absent	Absent	9.96	770
37	1/27/2016	Grant	0	0.012	0.49	0.54	Present	Absent	8.8	230
38	1/27/2016	Grant	0.0015	0.0014	0.85	0	Absent	Absent	8.06	940
39	1/27/2016	Grant	0.0018	0.0026	1.2	5.3	Absent	Absent	7.75	480
40	1/27/2016	Grant	0.025	0.0013	20	0	Absent	Absent	8.77	2400
41	2/3/2016	Grant	0	0.0073	1.8	3.4	Present	Absent	7.5	980
42	2/3/2016	Grant	0.013	0.02	8.3	78	Present	Absent	8.01	1700
43	2/3/2016	Grant	0	0.0082	2.8	0	Absent	Absent	7.85	620
44	2/3/2016	Grant	0	0.0017	1.1	0.49	Absent	Absent	7.91	340
45	2/10/2016	Grant	0.0012	0.0039	0.82	0.87	Absent	Absent	8.04	390
46	2/10/2016	Grant	0.0058	0.0034	4.5	0	Absent	Absent	7.9	650
47	2/10/2016	Grant	0.0078	0	6.7	0	Absent	Absent	8.78	350
48	2/10/2016	Grant	0.0083	0.003	3.9	0.42	Present	Absent	8.88	840
49	2/10/2016	Grant	0.0021	0.0016	0.85	0.38	Absent	Absent	8.04	320
50	2/10/2016	Grant	0.024	0.0059	16	5.2	Present	Absent	8.83	750
51	2/10/2016	Grant	0.0025	0.0027	2	0.23	Absent	Absent	7.58	350
52	2/17/2016	Grant	0	0.0041	0.55	0.77	Absent	Absent	7.5	650
53	2/17/2016	Grant	0.0076	0.0024	2.4	0.42	Absent	Absent	7.87	340

NO.	COLLECTION DATE	COUNTY	EXCEEDANCES (ppm)				PRESENCE		pH	Electro-Conduct
			Arsenic ≥ 0.010	Uranium ≥ 0.030	Fluoride ≥ 4.0	Nitrates ≥ 10.0	Total Coliform*	E. coli		
54	2/17/2016	Grant	0.0024	0.01	0.45	3	Absent	Absent	7.93	420
55	2/17/2016	Grant	0.002	0.00075	1.2	1.9	Absent	Absent	7.96	340
56	2/24/2016	Grant	0.0029	0.0027	0.57	0.26	Absent	Absent	8.14	330
57	2/24/2016	Grant	0.0014	0.0018	0.56	0.7	Present	Absent	8.04	420
58	2/24/2016	Grant	0	0.0013	1.3	0.65	Absent	Absent	7.94	440
59	2/24/2016	Grant	0.0018	0	0.34	1	Absent	Absent	8.08	360
60	2/24/2016	Grant	0.0024	0.0013	0.66	0.65	Present	Absent	7.97	290
61	2/24/2016	Grant	0.003	0.026	1.4	0.38	Present	Absent	8.08	600
62	2/24/2016	Grant	0	0.012	1.6	0	Absent	Absent	8.24	650
63	2/24/2016	Grant	0	0.002	0.34	3	Present	Absent	8.21	560
64	2/24/2016	Grant	0	0.011	0.52	0.78	Absent	Absent	7.96	760
65	3/2/2016	Grant	0	0.0047	1.1	0.36	Absent	Absent	7.86	340
66	3/2/2016	Grant	0.0017	0.0035	1.7	0.23	Present	Absent	7.91	350
67	3/2/2016	Grant	0.005	0.0066	4.4	0.38	Absent	Absent	7.73	340
68	3/2/2016	Grant	0	0.0098	1.9	0	Present	Absent	7.84	820
69	3/2/2016	Grant	0	0.033	1.9	0	Absent	Absent	7.94	590
70	3/2/2016	Grant	0	0.0011	0.59	0.16	Absent	Absent	7.9	380
71	3/2/2016	Grant	0.0011	0.0013	1.4	0.22	Absent	Absent	7.18	300
72	3/2/2016	Grant	0.0016	0.0018	1.7	0.44	Absent	Absent	7.47	350
73	3/2/2016	Grant	0.0019	0.0042	1.2	0.73	Absent	Absent	7.91	360
74	3/9/2016	Grant	0.002	0.001	0.65	1.8	Absent	Absent	8.07	320
75	3/9/2016	Grant	0.0013	0.00059	1.3	0.52	Absent	Absent	7.83	390
76	3/9/2016	Grant	0.0014	0.0041	1.2	0.37	Absent	Absent	8.04	360
77	3/16/2016	Grant	0	0.011	0.51	0.43	Present	Absent	9.15	310
78	3/16/2016	Grant	0.0024	0.0031	0.95	0.42	n/d	n/d	8.13	350
79	3/16/2016	Grant	0	0	1.6	0.29	Absent	Absent	7.55	200
80	3/16/2016	Grant	0	0.011	2.2	1.1	Absent	Absent	7.94	790
81	3/16/2016	Grant	0	0.0017	0.21	0	Absent	Absent	7.74	370
82	3/16/2016	Grant	0	0.0097	0.26	0.44	Absent	Absent	8.02	470
83	3/16/2016	Grant	0	0.008	0.23	2.5	Absent	Absent	7.79	460
84	3/16/2016	Grant	0.0086	0.0018	3.2	1.3	Present	Absent	7.95	690
85	3/16/2016	Grant	0.0038	0.0028	1.9	0	Absent	Absent	7.96	710
86	3/16/2016	Grant	0	0.011	0.6	7.8	Present	Absent	7.24	980

*Total Coliform was excluded from data analysis due to high sensitivity to false positives.

n/d = no data available

Source: Hall Environmental Analysis Laboratory, Albuquerque

TABLE D
MESILLA AQUIFER - CONTAMINANT CONCENTRATION BY SAMPLE

NO.	COLLECTION DATE	COUNTY	EXCEEDANCES (ppm)				PRESENCE		pH	Electro-Conduct
			Arsenic ≥ 0.010	Uranium ≥ 0.030	Fluoride ≥ 4.0	Nitrates ≥ 10.0	Total Coliform*	E. coli		
1	2/2/2016	Dona Ana	0.0068	0.0036	0.26	0	Absent	Absent	8.11	1200
2	2/2/2016	Dona Ana	0.002	0.029	0.33	0	Absent	Absent	7.99	900
3	2/9/2016	Dona Ana	0.0028	0.006	0.71	0	Present	Absent	7.6	1100
4	2/9/2016	Dona Ana	0.00378	0.0019	0.16	0	Absent	Absent	8	1400
5	2/9/2016	Dona Ana	0.0044	0	0.6	0	Absent	Absent	7.76	1000
6	2/9/2016	Dona Ana	0.0022	0.0029	0.26	0	Absent	Absent	7.92	700
7	2/9/2016	Dona Ana	0	0	0.44	0	Absent	Absent	7.7	1200
8	2/9/2016	Dona Ana	0.0022	0	0.25	0	Absent	Absent	8.02	440

NO.	COLLECTION DATE	COUNTY	EXCEEDANCES (ppm)				PRESENCE		pH	Electro-Conduct
			Arsenic ≥ 0.010	Uranium ≥ 0.030	Fluoride ≥ 4.0	Nitrates ≥ 10.0	Total Coliform*	<i>E. coli</i>		
9	2/9/2016	Dona Ana	0.0021	0.0036	0.21	0	Present	Absent	7.93	870
10	2/9/2016	Dona Ana	0.0052	0	0.46	0	Absent	Absent	7.86	1000
11	2/9/2016	Dona Ana	0.0029	0	0.28	0	Absent	Absent	8.12	450
12	2/9/2016	Dona Ana	0.0017	0.0044	0.25	0	Absent	Absent	7.91	910
13	2/9/2016	Dona Ana	0.0025	0.021	0.49	0.3	Absent	Absent	7.6	1000
14	2/9/2016	Dona Ana	0.0061	0	0.31	0	Absent	Absent	7.83	1100
15	2/9/2016	Dona Ana	0.0019	0.0032	0.1	0	Present	Absent	7.8	1300
16	2/9/2016	Dona Ana	0.0059	0	0.25	0	Absent	Absent	7.8	1100
17	2/9/2016	Dona Ana	0.0028	0.0011	0.15	0	Absent	Absent	7.87	900
18	2/9/2016	Dona Ana	0.005	0.0041	0.24	0	Absent	Absent	7.77	1100
19	2/9/2016	Dona Ana	0.0089	0.0005	0.35	0	Absent	Absent	7.87	940
20	2/9/2016	Dona Ana	0.0023	0.0021	1.1	1.2	Absent	Absent	8.22	190
21	2/9/2016	Dona Ana	0.006	0.0031	1.3	1.8	Absent	Absent	7.99	290
22	2/9/2016	Dona Ana	0	0	1.2	1.3	Present	Absent	7.11	150
23	2/9/2016	Dona Ana	0.0021	0.0043	0.29	0	Absent	Absent	7.91	530
24	2/9/2016	Dona Ana	0.0023	0.0012	0.34	0	Absent	Absent	7.92	520
25	2/9/2016	Dona Ana	0.003	0.0094	0.26	1.9	Absent	Absent	7.6	2500
26	2/9/2016	Dona Ana	0	0.0064	1.2	1.9	Absent	Absent	7.92	420
27	2/9/2016	Dona Ana	0.0028	0.0053	0.17	0	Absent	Absent	7.68	1100
28	2/9/2016	Dona Ana	0.0014	0.011	0	0	Present	Absent	7.73	1900
29	2/9/2016	Dona Ana	0.0097	0.00073	0.6	0	Absent	Absent	7.69	1300
30	2/9/2016	Dona Ana	0.0018	0.014	0.15	0	Absent	Absent	7.55	2200
31	2/9/2016	Dona Ana	0.004	0.0015	0.29	0	Present	Absent	7.9	910
32	2/9/2016	Dona Ana	0.0019	0.0032	0.23	0	Absent	Absent	7.71	980
33	2/9/2016	Dona Ana	0.003	0.012	0.18	0	Absent	Absent	7.96	1000
34	2/9/2016	Dona Ana	0.007	0	0.27	0	Present	Absent	7.72	930
35	2/9/2016	Dona Ana	0.0058	0.0036	1.5	1.9	Absent	Absent	7.92	290
36	2/9/2016	Dona Ana	0.0017	0.00094	1.9	2.8	Absent	Absent	6.98	250
37	2/9/2016	Dona Ana	0.0069	0.0039	0.15	0	Absent	Absent	7.6	1400
38	2/9/2016	Dona Ana	0.0033	0.0011	0.2	0	Absent	Absent	7.66	1000
39	2/16/2016	Dona Ana	0.0027	0.0066	0.31	0	Absent	Absent	7.96	880
40	2/16/2016	Dona Ana	0.036	0.0027	1.4	0	Present	Absent	8.09	1400
41	2/16/2016	Dona Ana	0.0022	0.01	0.31	0	Absent	Absent	7.85	1200
42	2/16/2016	Dona Ana	0.0046	0.00059	0.23	0	Absent	Absent	7.87	1100
43	2/16/2016	Dona Ana	0.018	0.00096	0.62	0	Absent	Absent	7.75	1300
44	2/16/2016	Dona Ana	0.0032	0.0077	0.15	0	Absent	Absent	7.73	2000
45	2/16/2016	Dona Ana	0.0023	0.016	0.54	0	Absent	Absent	8.05	620
46	2/16/2016	Dona Ana	0	0	1.3	1.4	Absent	Absent	7.72	190
47	2/16/2016	Dona Ana	0.0047	0.0099	2	0	Present	Absent	7.92	1900
48	2/16/2016	Dona Ana	0.0015	0.0018	0.27	0	Absent	Absent	7.74	1200
49	2/16/2016	Dona Ana	0.0044	0	0.41	0	Absent	Absent	7.74	1300
50	2/16/2016	Dona Ana	0.0018	0.002	0.29	0	Absent	Absent	7.96	1200
51	2/16/2016	Dona Ana	0.0025	0.0012	0.33	0	Absent	Absent	8.02	750
52	2/16/2016	Dona Ana	0.0024	0.00094	0.3	0	Absent	Absent	7.94	820
53	2/16/2016	Dona Ana	0.044	0.0033	1.9	0	Absent	Absent	8.35	990
54	2/16/2016	Dona Ana	0.046	0.0037	2	0	Absent	Absent	8.36	1100
55	2/16/2016	Dona Ana	0.0021	0.019	0.18	0	Absent	Absent	7.76	1900
56	2/16/2016	Dona Ana	0.0018	0.006	0.32	0	Absent	Absent	7.81	1500
57	2/16/2016	Dona Ana	0.0016	0.0058	0.27	0	Absent	Absent	8.01	1000
58	2/16/2016	Dona Ana	0.0016	0.0045	0.28	0	Absent	Absent	7.98	930
59	2/16/2016	Dona Ana	0.0011	0.00084	1.4	1.6	Absent	Absent	7.28	180

NO.	COLLECTION DATE	COUNTY	EXCEEDANCES (ppm)				PRESENCE		pH	Electro-Conduct
			Arsenic ≥ 0.010	Uranium ≥ 0.030	Fluoride ≥ 4.0	Nitrates ≥ 10.0	Total Coliform*	<i>E. coli</i>		
60	2/16/2016	Dona Ana	0.01	0	5.3	0	Absent	Absent	7.79	6300
61	2/16/2016	Dona Ana	0.0031	0.0015	0.36	0	Absent	Absent	8.09	530
62	2/16/2016	Dona Ana	0.0071	0	0.47	0	Absent	Absent	8.02	540
63	2/16/2016	Dona Ana	0.0034	0.045	0.42	0	Absent	Absent	7.96	760
64	2/16/2016	Dona Ana	0.0052	0.0048	0.2	0	Absent	Absent	7.66	2400
65	2/16/2016	Dona Ana	0.003	0.0031	0.27	0	Absent	Absent	8	820
66	2/16/2016	Dona Ana	0.0031	0.007	0.25	0	Absent	Absent	7.9	1200
67	2/16/2016	Dona Ana	0.002	0.018	0.42	3	Present	Absent	7.58	1700
68	2/16/2016	Dona Ana	0.0014	0.0031	0.22	0	Absent	Absent	7.86	1000
69	2/23/2016	Dona Ana	0.0021	0.00085	0.26	0	Absent	Absent	8.01	790
70	2/23/2016	Dona Ana	0.0023	0.01	0	0	Absent	Absent	7.77	1900
71	2/23/2016	Dona Ana	0.0035	0.005	0.24	0	Absent	Absent	7.93	1200
72	2/23/2016	Dona Ana	0	0.012	1.5	2.4	Absent	Absent	7.76	490
73	2/23/2016	Dona Ana	0.0038	0.0037	2.6	0	Absent	Absent	8.34	1200
74	2/23/2016	Dona Ana	0	0	1	2	Absent	Absent	6.92	200
75	2/23/2016	Dona Ana	0.0033	0	0.26	0	Absent	Absent	8.02	460
76	2/23/2016	Dona Ana	0.0034	0	0.27	0	Present	Absent	7.44	520
77	2/23/2016	Dona Ana	0.0012	0.0093	0.17	0	Present	Absent	7.7	1500
78	2/23/2016	Dona Ana	0.0031	0.0043	0.47	0	Absent	Absent	7.9	870
79	2/23/2016	Dona Ana	0.0067	0.0097	0.33	0	Absent	Absent	7.64	1800
80	2/23/2016	Dona Ana	0.0018	0	0.21	0	Absent	Absent	8.09	470
81	3/1/2016	Dona Ana	0.0017	0	0.23	0	Absent	Absent	8.08	440
82	3/1/2016	Dona Ana	0.0021	0.0025	0.22	0	Absent	Absent	7.82	950
83	3/1/2016	Dona Ana	0.0056	0	0.33	0	Absent	Absent	7.94	910
84	3/1/2016	Dona Ana	0	0	1.2	1.8	Absent	Absent	7.13	170
85	3/1/2016	Dona Ana	0.0014	0.0011	0.22	0	Absent	Absent	7.87	930
86	3/1/2016	Dona Ana	0.0044	0	0.52	0.22	Absent	Absent	7.82	1300
87	3/1/2016	Dona Ana	0.0034	0.0044	0.33	0	Absent	Absent	7.89	1900
88	3/1/2016	Dona Ana	0.0013	0.0094	0.22	0	Absent	Absent	7.95	1300
89	3/1/2016	Dona Ana	0.0046	0	0.28	0.19	Absent	Absent	7.84	1300
90	3/1/2016	Dona Ana	0.0052	0	0.47	0	Absent	Absent	7.9	540
91	3/1/2016	Dona Ana	0.001	0.0017	2.2	1.7	Absent	Absent	7.54	250
92	3/8/2016	Dona Ana	0.0074	0	0.29	0	Absent	Absent	7.91	1300
93	3/8/2016	Dona Ana	0	0.0014	0.18	0.92	Present	Absent	7.65	830
94	3/8/2016	Dona Ana	0	0.0059	1.5	0	Present	Absent	7.84	550
95	3/8/2016	Dona Ana	0.0016	0.005	0.24	2.1	Absent	Absent	7.56	1400
96	3/8/2016	Dona Ana	0.0045	0.0017	0.25	0	Absent	Absent	7.82	930
97	3/8/2016	Dona Ana	0.0032	0.0016	0.37	0	Absent	Absent	8	510
98	3/8/2016	Dona Ana	0.0039	0.0056	0.15	0	Absent	Absent	7.65	1200
99	3/8/2016	Dona Ana	0.0014	0.0036	0.25	0	Absent	Absent	7.84	1100
100	3/8/2016	Dona Ana	0.0021	0.0013	1.1	1.3	Absent	Absent	7.87	200
101	3/8/2016	Dona Ana	0.0017	0.0046	0.33	0	Absent	Absent	7.83	870
102	3/8/2016	Dona Ana	0.0013	0.0086	0.16	0	Absent	Absent	7.85	1200
103	3/8/2016	Dona Ana	0	0.0072	0.22	1	Absent	Absent	7.89	1300
104	3/15/2016	Dona Ana	0.0019	0.011	0.12	0	Absent	Absent	7.64	1300
105	3/15/2016	Dona Ana	0.0046	0.013	0.35	0	Absent	Absent	7.58	2000
106	3/15/2016	Dona Ana	0.0021	0.012	0.13	0		n/d	7.83	1700
107	3/15/2016	Dona Ana	0.0016	0.0039	0.31	0	Absent	Absent	7.83	910
108	3/15/2016	Dona Ana	0.0052	0.00088	0.26	0	Absent	Absent	7.95	450
109	3/15/2016	Dona Ana	0.0035	0.0016	0.32	0	Absent	Absent	8.05	460
110	3/22/2016	Dona Ana	0.0025	0.0047	0.22	0	Absent	Absent	8.12	990

NO.	COLLECTION DATE	COUNTY	EXCEEDANCES (ppm)				PRESENCE		pH	Electro-Conduct
			Arsenic ≥ 0.010	Uranium ≥ 0.030	Fluoride ≥ 4.0	Nitrates ≥ 10.0	Total Coliform*	<i>E. coli</i>		
111	3/22/2016	Dona Ana	0.032	0.0014	1.2	0	Absent	Absent	8.35	1000
112	3/22/2016	Dona Ana	0.0015	0.0011	1.9	1.8	Present	Absent	7.49	190
113	3/22/2016	Dona Ana	0.007	0	0.34	0	Absent	Absent	7.94	1400
114	3/22/2016	Dona Ana	0.0031	0	0.27	0	Absent	Absent	8.17	870
115	3/22/2016	Dona Ana	0.0031	0	0.21	0	Absent	Absent	8.09	940
116	3/22/2016	Dona Ana	0.0024	0.0022	0.21	0	Absent	Absent	8.26	1300

*Total Coliform was excluded from data analysis due to high sensitivity to false positives.

n/d = no data available

Source: Hall Environmental Analysis Laboratory, Albuquerque

TABLE E
MIMBRES AQUIFER - CONTAMINANT CONCENTRATION BY SAMPLE

NO.	COLLECTION DATE	COUNTY	EXCEEDANCES (ppm)				PRESENCE		pH	Electro-Conduct
			Arsenic ≥ 0.010	Uranium ≥ 0.030	Fluoride ≥ 4.0	Nitrates ≥ 10.0	Total Coliform*	<i>E. coli</i>		
1	3/11/2015	Luna	0.0031	0.0028	0.86	3	Present	Absent	n/d	n/d
2	3/11/2015	Luna	0.0036	0.003	0.44	0.31	Absent	Absent	n/d	n/d
3	3/11/2015	Luna	0.0031	0.003	0.95	0.26	Absent	Absent	n/d	n/d
4	3/11/2015	Luna	0.003	0.0034	0.93	0.27	Present	Absent	n/d	n/d
5	3/11/2015	Luna	0	0	0.41	5.5	Absent	Absent	n/d	n/d
6	3/11/2015	Luna	0.0027	0.0025	0.63	0.88	Absent	Absent	n/d	n/d
7	3/11/2015	Luna	0.0031	0.0036	0.75	0.57	Absent	Absent	n/d	n/d
8	3/11/2015	Luna	0.003	0.003	0.84	0.27	Absent	Absent	n/d	n/d
9	3/11/2015	Luna	0.0022	0.0024	0.42	3	Absent	Absent	n/d	n/d
10	3/18/2015	Luna	0.0016	0.0016	1.1	0.43	Absent	Absent	n/d	n/d
11	3/18/2015	Luna	0.0029	0.0031	0.82	0.52	Absent	Absent	n/d	n/d
12	3/18/2015	Luna	0	0.014	1.2	3.4	Absent	Absent	n/d	n/d
13	3/18/2015	Luna	0	0.014	1.3	3.4	Absent	Absent	n/d	n/d
14	3/18/2015	Luna	0	0.015	1.1	5.7	Absent	Absent	n/d	n/d
15	3/18/2015	Luna	0.0033	0.0031	0.85	0.31	Absent	Absent	n/d	n/d
16	3/25/2015	Luna	0	0.0026	0.46	26	Absent	Absent	n/d	n/d
17	3/25/2015	Luna	0.0069	0.0021	2.3	0.85	Absent	Absent	n/d	n/d
18	4/1/2015	Luna	0.0017	0.0024	0.49	8.9	Present	Absent	n/d	n/d
19	4/8/2015	Luna	0.0024	0.0051	1	0.53	Present	Absent	n/d	n/d
20	4/8/2015	Luna	0.0018	0.0082	0.5	4.1	Absent	Absent	n/d	n/d
21	4/15/2015	Luna	0.044	0.0095	5.3	0.44	Absent	Absent	n/d	n/d
22	4/15/2015	Luna	0	0.038	0.51	16	Present	Absent	n/d	n/d
23	4/15/2015	Luna	0.04	0.013	5.3	0.48	Present	Absent	n/d	n/d
24	4/15/2015	Luna	0.0022	0.0022	0.43	2.5	Absent	Absent	n/d	n/d
25	4/15/2015	Luna	0.003	0.0031	0.47	1.8	Absent	Absent	n/d	n/d
26	4/15/2015	Luna	0.0024	0.0023	0	11	Absent	Absent	n/d	n/d
27	4/15/2015	Luna	0.0019	0.004	0.46	0.95	Absent	Absent	n/d	n/d
28	4/15/2015	Luna	0.0028	0.0027	0.38	1.5	Absent	Absent	n/d	n/d
29	4/15/2015	Luna	0.0041	0.0036	0.46	0.65	Absent	Absent	n/d	n/d
30	4/15/2015	Luna	0.002	0.003	0.46	8.4	Absent	Absent	n/d	n/d
31	4/15/2015	Luna	0.0072	0.0056	1.5	4.4	Absent	Absent	n/d	n/d
32	4/22/2015	Luna	0.058	0.0015	2.4	0.7	Absent	Absent	n/d	n/d
33	4/22/2015	Luna	0.0037	0.0027	0.85	0.35	Absent	Absent	n/d	n/d
34	4/22/2015	Luna	0.0025	0.0037	.7	0.51	Absent	Absent	n/d	n/d
35	4/22/2015	Luna	0.0036	0.0036	1.2	0.54	Absent	Absent	n/d	n/d

NO.	COLLECTION DATE	COUNTY	EXCEEDANCES (ppm)				PRESENCE		pH	Electro-Conduct
			Arsenic ≥ 0.010	Uranium ≥ 0.030	Fluoride ≥ 4.0	Nitrates ≥ 10.0	Total Coliform*	<i>E. coli</i>		
36	4/22/2015	Luna	0.0031	0.0034	0.5	0.68	Absent	Absent	n/d	n/d
37	4/22/2015	Luna	0.0068	0.0056	1.3	1.2	Absent	Absent	n/d	n/d
38	4/22/2015	Luna	0.0033	0.0035	0.57	0.73	Absent	Absent	n/d	n/d
39	4/22/2015	Luna	0.0031	0.016	0.67	1.9	Absent	Absent	n/d	n/d
40	4/22/2015	Luna	0.0024	0.0035	0	0	Absent	Absent	n/d	n/d
41	4/22/2015	Luna	0.0028	0.001	0.57	0	Present	Absent	n/d	n/d
42	4/22/2015	Luna	0	0.0081	0.53	0	Absent	Absent	n/d	n/d
43	4/22/2015	Luna	0.002	0	0	0	Absent	Absent	n/d	n/d
44	4/22/2015	Luna	0.0029	0.005	0.79	0	Absent	Absent	n/d	n/d
45	4/22/2015	Luna	0.0066	0.0058	1.2	0	Absent	Absent	n/d	n/d
46	4/22/2015	Luna	0.002	0.0027	0.53	0	Absent	Absent	n/d	n/d
47	4/22/2015	Luna	0.003	0.0041	0.81	0	Present	Present	n/d	n/d
48	4/22/2015	Luna	0.0021	0.0028	0	0	Absent	Absent	n/d	n/d
49	4/22/2015	Luna	0.0038	0.003	0.82	0	Absent	Absent	n/d	n/d
50	4/22/2015	Luna	0.0044	0.0066	2.1	0	Absent	Absent	n/d	n/d
51	4/22/2015	Luna	0.0026	0.0029	0.5	0	Present	Absent	n/d	n/d
52	4/22/2015	Luna	0.0036	0.0033	0.92	0	Absent	Absent	n/d	n/d
53	4/22/2015	Luna	0.0032	0.0046	0.8	0	Absent	Absent	n/d	n/d
54	4/22/2015	Luna	0.002	0.0082	0	0	Absent	Absent	n/d	n/d
55	4/22/2015	Luna	0.0017	0	0	0	Present	Absent	n/d	n/d
56	4/22/2015	Luna	0.0018	0.0096	0	0	Present	Absent	n/d	n/d
57	4/22/2015	Luna	0.0027	0.0096	0.55	0	Present	Absent	n/d	n/d
58	4/22/2015	Luna	0.0017	0	0	0	Present	Absent	n/d	n/d
59	4/22/2015	Luna	0.0019	0.0075	0	0	Absent	Absent	n/d	n/d
60	4/22/2015	Luna	0.0027	0.0037	0.5	0	Absent	Absent	n/d	n/d
61	4/22/2015	Luna	0.0021	0.0048	0.64	0	Absent	Absent	n/d	n/d
62	4/22/2015	Luna	0.0019	0.0023	0.53	0	Absent	Absent	n/d	n/d
63	4/22/2015	Luna	0.002	0.0023	0.52	0	Absent	Absent	n/d	n/d
64	4/22/2015	Luna	0.0027	0.0026	1	1.1	Absent	Absent	n/d	n/d
65	4/22/2015	Luna	0.0019	0.0069	0.49	6.6	Absent	Absent	n/d	n/d
66	4/29/2015	Luna	0.0051	0.0037	1.2	0	Absent	Absent	n/d	n/d
67	4/29/2015	Luna	0.0017	0.0081	0.57	4.2	Absent	Absent	n/d	n/d
68	4/29/2015	Luna	0.0027	0.0027	0.42	1.2	Absent	Absent	n/d	n/d
69	5/6/2015	Luna	0.0017	0.0026	0.91	0.54	Absent	Absent	n/d	n/d
70	5/6/2015	Luna	0.0018	0.00063	0.46	3.9	Absent	Absent	n/d	n/d
71	5/6/2015	Luna	0.009	0.025	5	3.3	Absent	Absent	n/d	n/d
72	5/13/2015	Luna	0.0025	0.0045	0	0	Present	Absent	n/d	n/d
73	5/20/2015	Luna	0.0029	0.0061	1.1	0.6	Absent	Absent	n/d	n/d
74	5/20/2015	Luna	0.003	0.005	1.1	0.67	Absent	Absent	n/d	n/d
75	5/20/2015	Luna	0.0018	0.0021	0.48	2.6	Present	Absent	n/d	n/d
76	5/20/2015	Luna	0.0028	0.0034	0.47	0.73	Absent	Absent	n/d	n/d
77	5/20/2015	Luna	0.0027	0.0051	0.86	0.59	Absent	Absent	n/d	n/d
78	5/20/2015	Luna	0.0086	0.0091	2.8	1.5	Present	Absent	n/d	n/d
79	5/20/2015	Luna	0.004	0.0029	0.78	0.39	Absent	Absent	n/d	n/d
80	5/20/2015	Luna	0.0018	0.004	0.55	0.77	Absent	Absent	n/d	n/d
81	5/20/2015	Luna	0.003	0.0031	0.51	2.2	Absent	Absent	n/d	n/d
82	5/20/2015	Luna	0.0025	0.0043	0.56	2.4	Absent	Absent	n/d	n/d
83	5/20/2015	Luna	0.0015	0.021	0.43	14	Absent	Absent	n/d	n/d
84	5/20/2015	Luna	0	0.0029	0.55	8.4	Absent	Absent	n/d	n/d
85	5/20/2015	Luna	0.0021	0.0032	0.5	8.9	Absent	Absent	n/d	n/d
86	5/20/2015	Luna	0.0017	0.0022	0.52	3.9	Absent	Absent	n/d	n/d

NO.	COLLECTION DATE	COUNTY	EXCEEDANCES (ppm)				PRESENCE		pH	Electro-Conduct
			Arsenic ≥ 0.010	Uranium ≥ 0.030	Fluoride ≥ 4.0	Nitrates ≥ 10.0	Total Coliform*	<i>E. coli</i>		
87	5/20/2015	Luna	0.003	0.0029	0.72	1	Absent	Absent	n/d	n/d
88	5/20/2015	Luna	0.041	0.025	1.6	0.87	Absent	Absent	n/d	n/d
89	5/20/2015	Luna	0.0029	0.004	0	0	Present	Present	n/d	n/d
90	5/20/2015	Luna	0.0027	0.0037	0.51	1.2	Absent	Absent	n/d	n/d
91	5/20/2015	Luna	0.0033	0.0039	0.86	0.52	Absent	Absent	n/d	n/d
92	5/27/2015	Luna	0.0031	0.0031	0.56	1.4	Absent	Absent	n/d	n/d
93	5/27/2015	Luna	0.0023	0.0038	1.7	0.39	Absent	Absent	n/d	n/d
94	5/27/2015	Luna	0.0034	0.002	4.1	0.55	Absent	Absent	n/d	n/d
95	5/27/2015	Luna	0.0025	0.0034	0.46	2.6	Absent	Absent	n/d	n/d
96	5/27/2015	Luna	0.0026	0	2.5	0.44	Absent	Absent	n/d	n/d
97	5/27/2015	Luna	0.0048	0.0086	1.7	0.57	Absent	Absent	n/d	n/d
98	5/27/2015	Luna	0.0019	0.0039	0.63	0.74	Absent	Absent	n/d	n/d
99	5/27/2015	Luna	0.0036	0.0035	0.57	1.1	Present	Absent	n/d	n/d
100	5/27/2015	Luna	0.0019	0.0024	0.5	2.6	Absent	Absent	n/d	n/d
101	5/27/2015	Luna	0.0017	0.0023	0.5	1.5	Absent	Absent	n/d	n/d
102	5/27/2015	Luna	0.0027	0.0029	2.7	0.44	Absent	Absent	n/d	n/d
103	5/27/2015	Luna	0.0043	0.003	1.1	0.67	Absent	Absent	n/d	n/d
104	5/27/2015	Luna	0.0018	0.0026	0.41	12	Absent	Absent	n/d	n/d
105	5/27/2015	Luna	0.0029	0.0038	0.86	0.53	Present	Absent	n/d	n/d
106	5/27/2015	Luna	0.0029	0.0045	0.76	0.52	Absent	Absent	n/d	n/d
107	12/9/2015	Grant	0	0.005	0.89	2	Present	Absent	7.77	450
108	12/9/2015	Grant	0.0011	0.0024	0.22	3	Absent	Absent	7.84	510
109	12/9/2015	Grant	0	0.037	1.4	0.11	Absent	Absent	7.8	540
110	12/9/2015	Grant	0	0.011	0.87	0.29	Absent	Absent	7.72	1400
111	12/9/2015	Grant	0.0032	0.0041	0.38	0.43	Absent	Absent	8.17	250
112	12/9/2015	Grant	0	0.0068	0.36	0.11	Present	Absent	7.67	1100
113	No record	Grant	0.0015	0.0011	0.25	0.52	n/d	n/d	7.98	290
114	No record	Grant	0	0.0085	1.3	2.9	n/d	n/d	7.89	470
115	No record	Grant	0.002	0.0026	2.5	0	Absent	Absent	8.96	250
116	No record	Grant	0	0.025	2.3	2.3	Absent	Absent	8.11	470
117	No record	Grant	0	0.012	1.9	2.4	Absent	Absent	7.91	400
118	No record	Grant	0	0	0.25	1.9	n/d	n/d	7.77	450
119	1/6/2016	Grant	0	0.01	0.41	1.2	Present	Absent	7.96	930
120	1/6/2016	Grant	0	0.0095	0.32	0.12	Present	Absent	8.03	1000
121	1/13/2016	Grant	0.0023	0.0018	0.19	4.7	Absent	Absent	7.74	1100
122	1/13/2016	Grant	0	0.0051	0.24	0.17	Absent	Absent	7.84	1100
123	1/13/2016	Grant	0.0017	0.0011	1.1	0	Present	Absent	7.95	760
124	1/13/2016	Grant	0	0.034	1.1	0	Absent	Absent	7.36	950
125	1/13/2016	Grant	0	0.0077	1.7	1.7	Absent	Absent	7.81	400
126	1/13/2016	Grant	0	0.0072	0.91	0.13	Absent	Absent	7.22	470
127	1/13/2016	Grant	0	0.042	2.7	4	Present	Absent	7.65	550
128	1/13/2016	Grant	0.0011	0.0075	0.39	0	Absent	Absent	8.06	390
129	1/13/2016	Grant	0	0.00055	0.21	1.8	Absent	Absent	7.6	990
130	1/13/2016	Grant	0	0.012	1.3	2	Present	Absent	7.61	480
131	1/13/2016	Grant	0	0.0026	0.37	0	Present	Present	7.46	1200
132	1/20/2016	Grant	0.0013	0.0025	0.28	3.7	Absent	Absent	8.09	570
133	1/20/2016	Grant	0	0.00082	1.5	0.34	Absent	Absent	8.23	460
134	1/20/2016	Grant	0	0.00089	0.15	5.2	Present	Absent	7.82	510
135	1/20/2016	Grant	0	0.00077	0.14	8.3	Present	Absent	7.96	460
136	1/20/2016	Grant	0	0.00063	3.1	0	Absent	Absent	7.72	850
137	1/20/2016	Grant	0.0018	0	0.4	12	Present	Absent	7.8	580

NO.	COLLECTION DATE	COUNTY	EXCEEDANCES (ppm)				PRESENCE		pH	Electro-Conduct
			Arsenic ≥ 0.010	Uranium ≥ 0.030	Fluoride ≥ 4.0	Nitrates ≥ 10.0	Total Coliform*	E. coli		
138	1/15/2016	Grant	0.0022	0.0032	0.45	0.7	Absent	Absent	7.98	360
139	1/20/2016	Grant	0	0.0091	1.3	0	Absent	Absent	7.69	1400
140	1/27/2016	Grant	0	0.014	0.39	7.4	Absent	Absent	7.88	970
141	1/27/2016	Grant	0	0.0043	0.4	0.75	Present	Absent	8.06	370
142	1/27/2016	Grant	0	0.012	0.47	0.21	Absent	Absent	7.95	760
143	1/27/2016	Grant	0	0.0024	0.37	0	Absent	Absent	7.82	580
144	1/27/2016	Grant	0	0.0085	0.633	5	Present	Absent	7.5	1000
145	1/27/2016	Grant	0.0027	0.00076	0.32	11	Absent	Absent	8.19	550
146	1/27/2016	Grant	0	0.011	0.48	1.2	Present	Absent	7.68	610
147	1/27/2016	Grant	0	0.0029	0.45	0	Absent	Absent	7.79	570
148	1/27/2016	Grant	0	0.0047	0.17	0.84	Absent	Absent	7.74	1200
149	1/27/2016	Grant	0.0013	0	0.17	0.63	Absent	Absent	7.86	290
150	1/27/2016	Grant	0	0.0074	0.37	0.24	Absent	Absent	7.5	700
151	1/27/2016	Grant	0	0.0014	0.61	0.12	Absent	Absent	7.62	810
152	2/3/2016	Grant	0	0.046	1	0	Absent	Absent	7.64	630
153	2/3/2016	Grant	0	0.12	2	1.2	Absent	Absent	7.84	490
154	2/3/2016	Grant	0	0.023	0.35	2.8	Absent	Absent	7.55	1100
155	2/3/2016	Grant	0	0.0051	0.48	0.63	Present	Absent	7.96	650
156	2/3/2016	Grant	0	0.007	0.39	4.8	Absent	Absent	7.45	1000
157	2/3/2016	Grant	0	0.003	0.14	0	Absent	Absent	7.47	970
158	2/3/2016	Grant	0	0.001	0.95	0	Absent	Absent	7.8	860
159	2/3/2016	Grant	0	0.0049	0.34	0.58	Present	Absent	7.64	1100
160	2/3/2016	Grant	0.0016	0.0031	0.76	0.28	Absent	Absent	7.26	770
161	2/10/2016	Luna	0	0.0011	3.9	0	Absent	Absent	8.41	850
162	2/10/2016	Grant	0.0068	0.0028	3.3	0.16	Absent	Absent	9.28	460
163	2/10/2016	Grant	0	0.0029	0.99	0	Absent	Absent	7.69	720
164	2/10/2016	Grant	0	0.0035	0.31	0	Present	Absent	7.36	850
165	2/10/2016	Grant	0	0.0034	0.61	1.8	Absent	Absent	7.78	730
166	2/10/2016	Grant	0	0.0013	0.32	1.5	Absent	Absent	7.63	320
167	2/10/2016	Grant	0	0.00071	0.25	2	Absent	Absent	7.81	310
168	2/10/2016	Grant	0.0013	0.00083	0.26	4.6	Absent	Absent	7.61	730
169	2/10/2016	Grant	0.0022	0	0.32	1.9	Absent	Absent	7.86	420
170	2/17/2016	Luna	0.008	0.0036	2.4	0.28	Absent	Absent	8.39	380
171	2/17/2016	Grant	0	0.014	0.65	3.7	Absent	Absent	7.42	1100
172	2/17/2016	Grant	0	0.011	0.31	10	Present	Present	7.63	1000
173	2/17/2016	Grant	0.0011	0.015	0.75	0.51	Absent	Absent	7.95	510
174	2/17/2016	Grant	0	0.005	0.34	0	Absent	Absent	7.68	1300
175	2/17/2016	Grant	0.0019	0.00077	0.31	0.94	Absent	Absent	7.71	310
176	2/17/2016	Grant	0	0.0072	0.75	2.7	Absent	Absent	8	610
177	2/17/2016	Grant	0.0014	0.0099	1.2	0	Absent	Absent	8.53	450
178	2/17/2016	Grant	0.0016	0	0.28	0.66	Present	Absent	7.94	300
179	2/17/2016	Grant	0.0011	0.0013	0.21	1.6	Present	Absent	7.36	360
180	2/17/2016	Grant	0.0014	0.0033	0.26	1.2	Absent	Absent	7.39	690
181	2/17/2016	Grant	0	0.0077	0.6	9.6	n/d	n/d	7.97	800
182	2/24/2016	Luna	0.0028	0.0026	0.46	0.77	Present	Absent	8.21	330
183	2/24/2016	Grant	0.0036	0.0031	0.38	0.56	Absent	Absent	8.13	280
184	2/24/2016	Grant	0.0012	0.00052	0.31	0.48	Present	Absent	8.08	240
185	2/24/2016	Grant	0	0.0037	0.42	6.4	Present	Absent	7.81	1000
186	2/24/2016	Grant	0	0.0063	0.38	6	Present	Absent	7.6	980
187	2/24/2016	Grant	0	0.0067	0.26	0.89	Present	Absent	7.71	1400
188	2/24/2016	Grant	0	0.0068	0.64	0.13	Absent	Absent	8.11	1300

NO.	COLLECTION DATE	COUNTY	EXCEEDANCES (ppm)				PRESENCE		pH	Electro-Conduct
			Arsenic ≥ 0.010	Uranium ≥ 0.030	Fluoride ≥ 4.0	Nitrates ≥ 10.0	Total Coliform*	E. coli		
189	2/24/2016	Grant	0	0.0023	1.1	1.6	Absent	Absent	8.12	430
190	3/2/2016	Grant	0	0.038	0.84	0.11	Present	Absent	7.78	460
191	3/2/2016	Luna	0.0021	0.0022	0.47	4.2	Present	Absent	7.89	370
192	3/2/2016	Grant	0	0.014	0.52	1.7	Absent	Absent	7.5	850
193	3/2/2016	Grant	0	0.0056	0.34	0.92	Absent	Absent	7.39	850
194	3/2/2016	Grant	0	0.0062	0.41	1.7	Absent	Absent	7.22	720
195	3/2/2016	Grant	0.003	0.029	4.6		n/d	n/d	8.02	1700
196	3/2/2016	Grant	0	0.0094	0.25	0	Absent	Absent	7.59	500
197	3/2/2016	Grant	0.0015	0.0027	0.36	7.8	Absent	Absent	7.52	640
198	3/2/2016	Grant	0.0019	0.0022	0.16	2.9	Absent	Absent	7.62	960
199	3/9/2016	Luna	0.002	0.0019	0.34	4.9	Absent	Absent	8.02	530
200	3/9/2016	Luna	0.0032	0.0035	0.55	1.1	Absent	Absent	8.18	380
201	3/9/2016	Grant	0.0015	0.00092	0.12	1.1	Absent	Absent	7.91	300
202	3/9/2016	Grant	0	0.0068	0.39	0.35	Absent	Absent	7.96	1200
203	3/9/2016	Grant	0	0.019	0.19	4.6	Absent	Absent	7.88	790
204	3/9/2016	Grant	0.0013	0.00096	0.37	0.18	Absent	Absent	7.77	1000
205	3/9/2016	Grant	0	0.0058	1.2	0.7	Absent	Absent	8.07	460
206	3/9/2016	Grant	0.0018	0.0008	0.32	1.4	Absent	Absent	8.1	390
207	3/9/2016	Grant	0.0045	0.002	1.2	1.2	Absent	Absent	8.32	440
208	3/9/2016	Grant	0.0014	0.0042	0.22	1.2	Present	Absent	7.94	350
209	3/9/2016	Grant	0	0.0023	0.6	2	Absent	Absent	7.9	580
210	3/9/2016	Grant	0.0011	0.0011	0.32	1.1	Absent	Absent	7.83	440
211	3/9/2016	Grant	0	0.0011	1.3	0	n/d	n/d	8.16	650
212	3/9/2016	Grant	0	0.0064	0.35	0.58	Present	Absent	7.41	1100
213	3/9/2016	Grant	0	0.0097	2.1	0	Absent	Absent	7.34	620
214	3/9/2016	Grant	0	0.0036	0.4	0	Present	Absent	7.45	460
215	3/16/2016	Grant	0	0.0021	0.6	0.54	Present	Absent	7.78	770
216	3/16/2016	Grant	0	0.0049	0.54	7.6	Absent	Absent	7.7	1200
217	3/16/2016	Grant	0.0014	0.002	0.85	8.3	Present	Absent	7.73	980
218	3/16/2016	Grant	0	0.0018	0.32	0	Absent	Absent	7.77	800
219	3/16/2016	Grant	0.0011	0.0011	0.53	0.23	Absent	Absent	8.04	730
220	3/16/2016	Grant	0	0.044	0.62	0.34	Absent	Absent	7.92	610
221	3/16/2016	Grant	0	0.0011	0.37	0.66	Present	Absent	8.03	310
222	3/16/2016	Grant	0.0014	0.00059	0.21	0.67	Absent	Absent	7.92	350
223	3/16/2016	Grant	0.0015	0.0041	0.32	1.3	Present	Absent	7.71	670
224	3/16/2016	Grant	0.0013	0	0.26	0.79	Present	Absent	7.99	340
225	3/16/2016	Grant	0.0019	0	0.16	0.95	Absent	Absent	7.97	430
226	3/16/2016	Grant	0.0011	0.0007	0.2	6.2	Absent	Absent	7.86	450
227	3/16/2016	Grant	0.0014	0.0011	0.17	7.4	Present	Absent	7.89	520
228	3/16/2016	Grant	0.0017	0.0017	0.95	0.27	Present	Absent	7.72	450
229	3/16/2016	Grant	0.0039	0.002	1	1.3	Absent	Absent	8.07	420
230	3/16/2016	Grant	0.0041	0.0021	1.5	0.84	n/d	n/d	8.15	480
231	3/16/2016	Grant	0	0.038	2.8	0	n/d	n/d	7.93	490
232	9/18/2014	Ascensión	0.017	n/d	5.95	2.54	n/d	n/d	7.49	1541
233	9/18/2014	Ascensión	0.042	n/d	4.63	10.38	n/d	n/d	7.61	1179
234	5/16/2017	Grant	0	0.028	0.82	0	Absent	Absent	7.20	770

*Total Coliform was excluded from data analysis due to high sensitivity to false positives.

n/d = no data available

Source: Hall Environmental Analysis Laboratory, Albuquerque

TABLE F
PLAYAS AQUIFER - CONTAMINANT CONCENTRATION BY SAMPLE

NO.	COLLECTION DATE	COUNTY	EXCEEDANCES (ppm)				PRESENCE		pH	Electro-Conduct
			Arsenic ≥ 0.010	Uranium ≥ 0.030	Fluoride ≥ 4.0	Nitrates ≥ 10.0	Total Coliform*	<i>E. coli</i>		
1	6/6/2017	Hidalgo	0.0019	0.0085	2.3	0.66	Absent	Absent	7.91	650

**Total Coliform was excluded from data analysis due to high sensitivity to false positives.*

n/d = no data available

Source: Hall Environmental Analysis Laboratory, Albuquerque