

EXECUTIVE SUMMARY

Groundwater is a critical resource issue for all Bernalillo County residents, as all residents currently solely rely on groundwater for their drinking water. This is particularly true for those outside the Albuquerque Bernalillo County Water Utility Authority (ABCWUA) service area. Although the ABCWUA serves approximately 88 percent of the County populace as a whole (GPPAP, 1995), within the unincorporated portions of the County, the ABCWUA serves only 40 percent of the populace. Three large utilities serve an additional fifteen (15) percent of the unincorporated populace: New Mexico Utilities, Sandia Peak Utilities, and Entramosa Water and Wastewater Association (Entramosa). An additional eight (8) percent of the populace is served by 41 smaller utilities or community systems. With the exception of the ABCWUA, the other systems and domestic well users are dependent entirely on groundwater supplies.

The remaining 37 percent are dependent on domestic wells. The percentage of individual well users differs between the East Mountains, the Far Northeast Heights, the North Valley and Paradise Hills, the South Valley, and the West Mesa. Approximately eighteen (18) percent of the North Valley and Paradise Hills residents are dependent on domestic wells. In the South Valley and Far Northeast Heights, the percentage increases to 36 percent. In the East Mountains, 42 percent of the residents in the northern portion of the area are dependent on domestic wells, while in the southern portions, a staggering 79 percent rely on individual well systems. On the West Mesa, 76 percent of the populace is dependent on individual well systems. A very small percent of the population depends on hauled water (Weston, 2006).

The distribution of wells throughout the County is reflected in Figures EX.1 and EX.2. Figure EX.1 show the general locations of public supply wells along with wells routinely monitored by the USGS and Bernalillo County. Figure EX.2 provides the locations of inventoried private wells with known locations as positioned by Bernalillo County staff along with approximate plotted well permit locations.

Public Supply and Regional Monitoring Wells in Bernalillo County

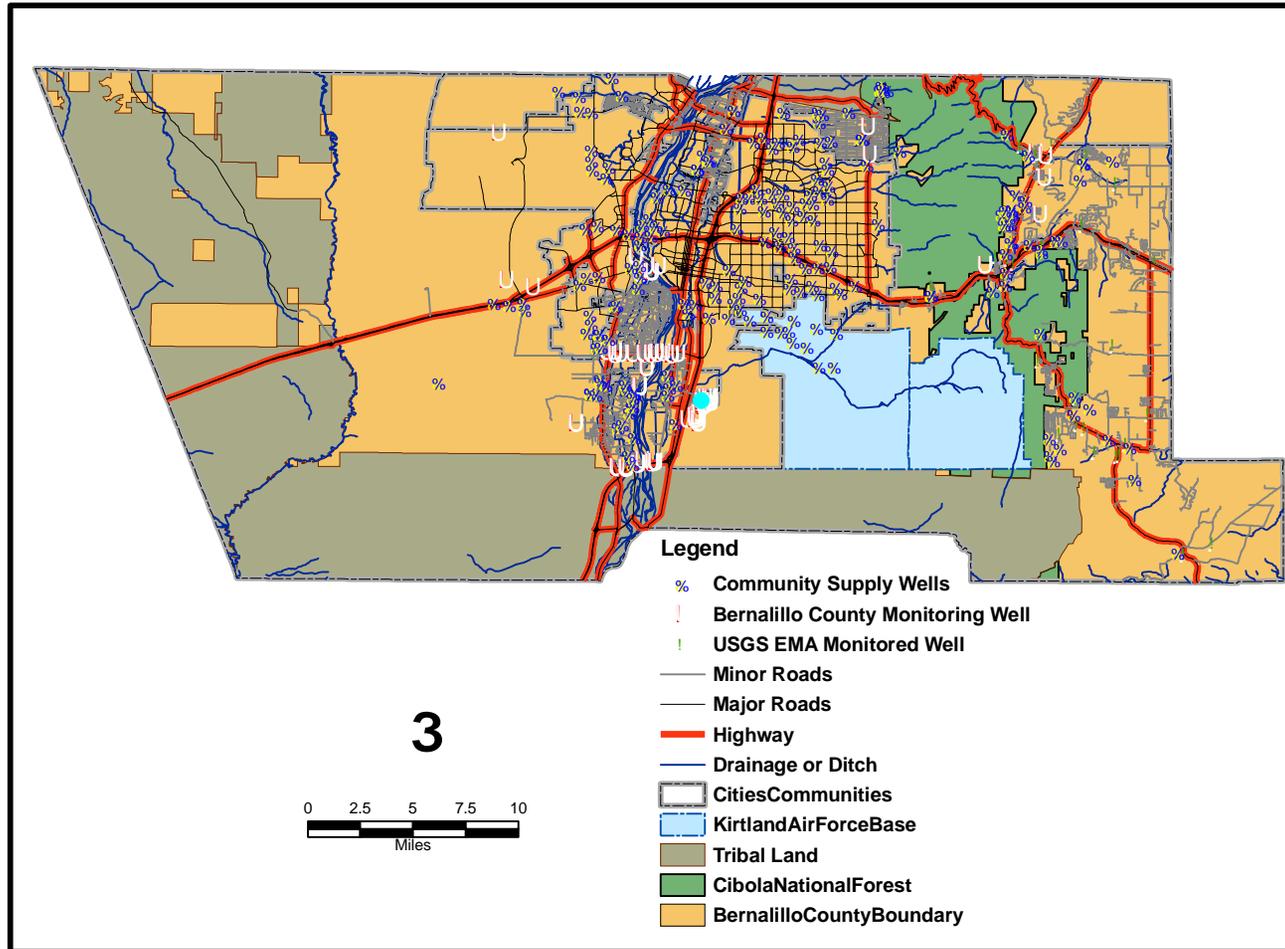


Figure EX.1 Public Supply and Regional Monitoring Wells in Bernalillo County

Inventoried and Permitted Wells in Bernalillo County

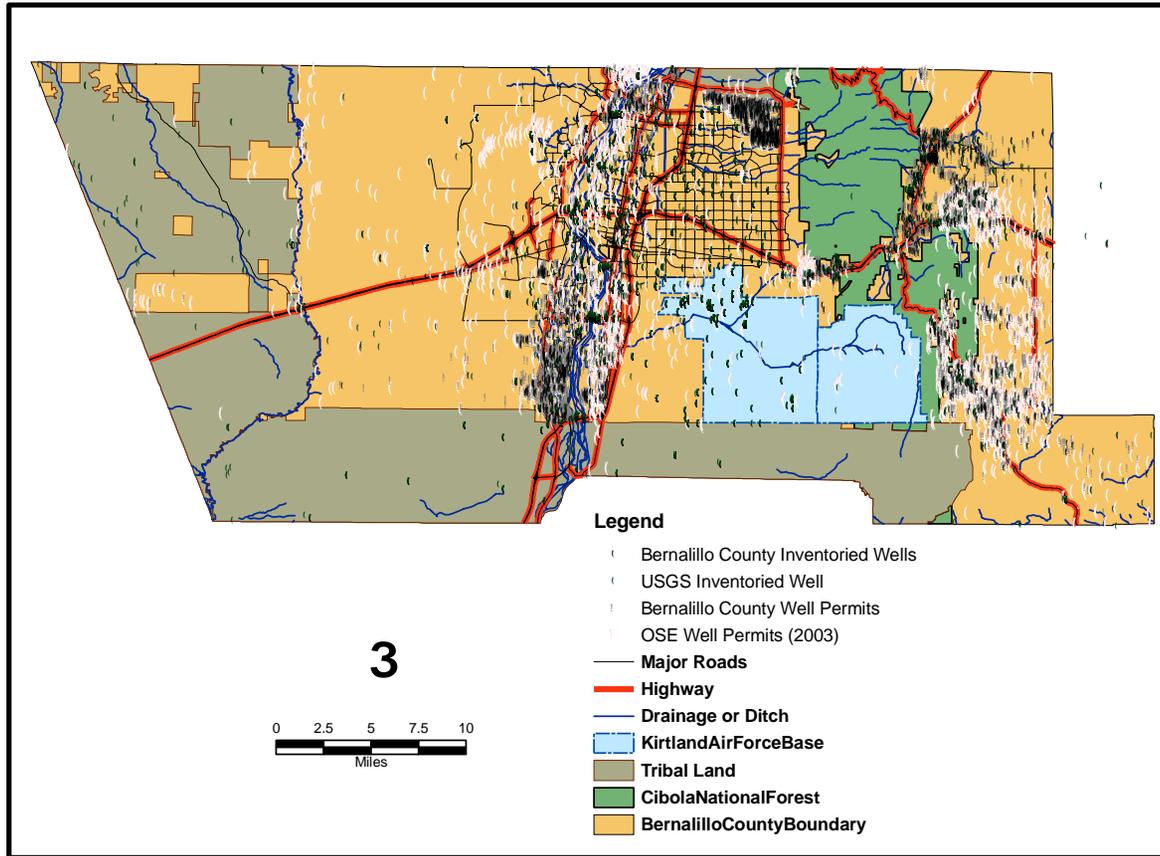


Figure EX.2 Inventoried and Permitted Wells in Bernalillo County

In recognition that groundwater is the sole drinking water source of almost all Bernalillo County residents, that a safe and abundant water supply is critical to economic development, and that there are on-going threats to groundwater quality from a variety of sources, the Bernalillo County Board of Commissioners approved the Groundwater Protection Policy and Action Plan (GPPAP) in November 1993. The GPPAP provides goals and policies, addresses protection measures, and outlines an implementation action plan. The County implements the plan through the Joint Administrative Directive (JAD). The JAD identifies and assigns responsibilities to the City and/or County for various groundwater-related programs.

Bernalillo County Public Works (BCPW) has the assigned responsibility of regional monitoring well installation, sampling, and water level monitoring in the unincorporated portions of Bernalillo County and coordinates with the USGS on studies conducted throughout Bernalillo County. This report describes the on-going regional water resource data collection and interpretation effort conducted by the BCPW Water Resources Program.

The County conducts annual regional monitoring and sampling programs both independently and through joint programs or cooperative agreements with the City of Albuquerque (CABQ) and the United States Geological Survey (USGS). The CABQ and the USGS perform routine water level and water quality monitoring of ABCWUA wells within the incorporated areas. The USGS also provides focused hydrogeologic studies throughout Bernalillo County. The County also receives assistance via access agreements with the Middle Rio Grande Conservancy District (MRGCD) and the Albuquerque Metropolitan Area Flood Control Authority (AMAFCA).

From 1997 through 2002, Bernalillo County, in cooperation with the USGS and CABQ, installed seventeen regional groundwater monitoring wells, piezometer nests, well series, or site-specific monitoring wells at eleven locations. Annual sampling of these wells by Bernalillo County has continued since their installation, with many of the wells equipped with continuous water level monitoring devices maintained by the USGS. The sites of primary interest for this report include:

- Four sites in the East Mountain Area north of I-40,
- Two sites in the Far Northeast Heights,
- Two sites in the South Valley,
- Three sites total on the West Mesas, including one site each on the Northwest Mesa, West Mesa, and Southwest Mesa

The Water Resources Program also conducts other monitoring for more narrowly focused studies in cooperation with the Bernalillo County Parks and Recreation, Open Space Programs, and Bernalillo County Environmental Health. The Water Resources Program performs annual monitoring at former County-owned landfills, provides drinking water compliance sampling for County-owned community supply systems (i.e., senior meal sites, community centers, and the juvenile detention center) and as requested, assists Facilities with monitoring of wells and drinking water supplies at other County facilities.

To date, the results of the regional monitoring well program, a recently completed South Valley agricultural water-quality impact study (McGregor 2006), and other targeted monitoring programs can be summarized as follows:

1. Water levels in individual wells and in dedicated monitoring wells in the East Mountain Area, the Far Northeast Heights, and the West Mesa indicate a progressive decline in water levels. This is due to both drought conditions and increased pumping.
2. Monitoring wells in the East Mountains and in the Far Northeast Heights evidence elevated levels of nitrate concentration, though the concentrations are still well below USEPA drinking water standards and contamination appears localized. The likely source of nitrates are nearby on-site wastewater treatment systems.
3. Monitoring well locations targeted on septic tank density alone do not necessarily identify areas of maximum septic tank contamination. Typically, the radius of contamination from a septic tanks system is on the order of one thousand feet or less. Subdivision-wide sampling

of wells is a better technique to identify locations of affected wells and maximum area of contamination. The use of monitoring wells can best be used to monitor the potential lateral spread of nitrate contamination.

4. Elevated arsenic concentrations exist in groundwater from the Santa Fe Group aquifer beneath the Northwest Mesa, West Mesa, and Southwest Mesa. Limited quantities of groundwater are available in these areas. Due to arsenic concerns, the water will likely require treatment prior to distribution through a community supply system.

5. Poor water quality exists in the shallow aquifers in the South Valley due to elevated concentrations of iron and manganese, suggestive of an anoxic environment and most likely caused by septic tank effluent infiltration. This is not necessarily evidenced with elevated nitrate concentrations.

6. Analysis of samples from well series along Rio Bravo Boulevard and Malpais Road indicate that groundwater supplies in those areas and in nearby canals, ditches, and drains do not currently contain detectable concentrations of volatile compounds, semivolatile compounds, herbicides, or pesticides. There is no evidence that elevated inorganic salts stemming from agricultural chemicals are present. This indicates minimal groundwater impact, if any, from production-scale, crop-related agricultural activities in the South Valley.

7. With the exception of phthalate compounds and other suspected laboratory contaminants, samples from the regional monitoring wells do not contain health-significant concentrations of semivolatile compounds, volatile compounds, herbicides, or pesticides. Phthalates are common plasticizers. At low concentration, their presence is not indicative of contamination and they are likely present due to laboratory cross-contamination. However, in 2002, the USGS reported trace concentrations of organic compounds indicative of wastewater contamination in monitoring wells in the East Mountains.

8. There are no indications of contaminants in samples taken from monitoring wells located at the 9-Mile Hill Landfill, the South Broadway Landfill, or near the Southwest Landfill. If

groundwater contamination exists at these sites, it is likely of limited, rather than regional, extent and at concentrations below detection limits using routinely available methodologies.

These findings and a review of the scope of the existing monitoring program lead to the following recommendations:

1. Given the lack of detected water quality concerns, over the next five to ten years, the groundwater portions of the Water Resources program should be progressively redirected to better quantify water availability in the projected growth areas of the County. This can be accomplished by establishing on-going water level monitoring programs, detailed investigation of water-balance and water-use factors; and water-quality monitoring associated with defining recharge conditions. This may include increased precipitation measurements at multiple sites throughout the County, spring flow and spring quality monitoring, expanded well monitoring, and sponsorship of a series of related geologic characterization and computer modeling studies, primarily for the East Mountain and West Mesa.
2. In order to refocus the groundwater-sampling program and to better quantify availability in projected growth areas, Bernalillo County should expand the monitoring well network to include locations central to the South Valley, additional locations in North Albuquerque Acres and Sandia Heights, and multiple additional locations in the East Mountain areas, particularly south of I-40. Support for maintenance of existing USGS monitoring points in the West Mesa would also be appropriate.
3. Existing County facilities in North Albuquerque Acres and the East Mountain Area with wells on the premises should have the wells equipped with automated continuous water level recording devices. This will provide for long-term water level monitoring in areas relying on individual well systems to support continued residential development.
4. Over the next five years, the sampling portions of the program should be shifted to identifying and monitoring groundwater supplies or wellhead areas that are vulnerable to

recognizable contaminant sources or that support quantification of water availability. The first task is to identify “at-risk” areas based on NMED records and existing Source Water Assessment Protection Plans and to identify existing wells that would in help in quantifying recharge conditions.

5. Because of the general lack of organic contaminants detected in samples from the existing monitoring wells, the Water Resources program can safely reduce the sampling frequency of costly organic compound sampling at existing locations unless a potential, nearby source of the contaminants can be identified. The full-suite sampling frequency for volatiles, semi-volatile, and pesticide compounds could be reduced to once every three years or greater, unless a recognized nearby or potential source of these compounds is present. Alternately, surrogate or “indicator” parameters can be analyzed for annual sampling.

6. Sampling for inorganic compounds, particularly septic-tank related contaminants and constituents should be continued on an annual basis. Specialized analysis to identify indicators of wastewater may be justified on a periodic basis to track the effectiveness of new wastewater ordinances and requirements or to confirm elevated concentrations of inorganic wastewater parameters. The timing and location of this work should be coordinated with Bernalillo County Office of Environmental Health in parallel with implementation of the revised Wastewater Ordinance.