



**Annual Review Report – 2016**  
**Groundwater Corrective Action**  
**Church Rock Site, Church Rock, New Mexico**

**United Nuclear Corporation**  
**Gallup, New Mexico**

**February 2017**





1315 West College Avenue – Suite 100 – State College, PA 16801  
814.231.2170 – www.chesterengineers.com – Fax-814.231.2174

**BY FEDERAL EXPRESS**

40-8907

February 10, 2017

Ms. Andrea L. Kock, Deputy Director  
Division of Decommissioning, Uranium Recovery, and Waste Programs  
Office of Nuclear Materials Safety and Safeguards  
U.S. Nuclear Regulatory Commission  
11545 Rockville Pike  
# 2 White Flint, Mail Stop T8 F5  
Rockville, MD 20852-2738

Ms. Janet Brooks  
Remedial Project Manager  
USEPA Region 6 Superfund  
1445 Ross Avenue  
Suite 1200, Mail Code 6SF  
Dallas, TX 75202-2733

Re: 2016 Groundwater Corrective Action Annual Review Report  
Materials License No. SUA-1475  
United Nuclear Corporation's Church Rock Tailings Site, Gallup, New Mexico

Dear Ms. Kock and Ms. Brooks:

On behalf of United Nuclear Corporation (UNC), Chester Engineers has prepared this annual performance review of the groundwater corrective action at UNC's Church Rock Mill and Tailings Site near Gallup, New Mexico, pursuant to License Condition 30C. This report is for the 2016 operating year and represents the period from January 2016 through October 2016.

This report focuses on both active remediation and the groundwater performance of the natural geochemical systems without active remediation. As indicated in the U.S. Environmental Protection Agency's (EPA's) *First Five-Year Review Report* (EPA, 1998) and by the approvals to decommission or temporarily shut off the former pumping systems, the agencies recognized that those corrective action pumping systems had reached the limit of their effectiveness. EPA (1988b) recommended that Technical Impracticability (TI) Waivers, Alternate Concentration Limits (ACLs), and Monitored Natural Attenuation (MNA) be used to complete the corrective action program. Those Record of Decision (ROD) recommendations continue to be timely.

NM 5501



Site groundwater standards used for data comparisons in this annual report were revised during 2015 in conjunction with the establishment of statistically-based background threshold values (BTVs). The U.S. Nuclear Regulatory Commission (NRC) issued a License amendment (NRC, 2015) to update the site groundwater protection standards (GWPSs), and EPA approved the use of the revised cleanup levels (EPA, 2015) for remedy alternative evaluation in the ongoing Site-Wide Supplemental Feasibility Study (SWSFS). These agency actions lessen one of the technical impediments (GE, 2009) to eventual Site closure which stated that “long-term monitoring data and basic geochemical considerations reveal some cleanup objectives to be unattainable.” For most parameters, the establishment of background threshold values through statistical analysis will incorporate and account for the natural geochemical evolution of pre- or post-mining, pre-tailings (i.e., background) groundwater quality and distinguish it from the chemical characteristics of post-mining, post-tailings groundwater (i.e., water that is subject to the corrective action program).

In the Southwest Alluvium and Zone 1, the natural systems have functioned as effectively as when active remediation took place. Acidic seepage is being neutralized, resulting in attenuation of metals and radionuclides. During 2016, there were no exceedances of NRC GWPSs at any POC wells or other seepage-impacted monitoring wells anywhere in the Southwest Alluvium. With the exception of several recent uranium exceedances observed at Well GW 3, the groundwater quality at all POC wells has met the revised License standards since January 2011. Historically, exceedances of the revised NRC standards are otherwise infrequent and most occurred more than a decade ago.

The uranium concentrations in well GW 3 can be explained on the basis that the well is not providing representative samples. Well GW 3 no longer produces enough water according to the low-flow sampling standard operating procedure (SOP) and has effectively reached the 2-foot minimum specified in the SOP. Empirical data show that the elevated uranium concentrations in the mine discharge (i.e., the historical background concentrations) have been broadly and significantly attenuated in the alluvium in that most of the seepage-impacted wells have shown overall stable trends since the pumping system shutdown. The interaction of the uranium in the Southwest Alluvium sediments with varying geochemical (e.g., bicarbonate) or hydrologic factors (e.g., reductions in saturated thickness or isolation from the groundwater flow system) may result in variable concentration trends accompanied by localized exceedances of the Site uranium standard (e.g., at Well GW 3). The uranium standard in the Southwest Alluvium should be waived because the principal source of uranium for both background and seepage-impacted waters was the permitted mine discharge water rather than tailings seepage. It also is not possible to ensure that a standard will be achieved consistently throughout the seepage-impacted area as the geochemistry fluctuates and water levels decline over time. Moreover, the standard will only be attained upon extraction of all water in the alluvium, which is not practicable.

Consequently, UNC submitted a License amendment request (GE, 2015) in October 2015 and an amendment in December 2016 (GE, 2016) that seek to terminate the Southwest Alluvium corrective action program. The proposed License amendment recommends continuing the monitoring and compliance requirements put forth in Conditions 30.A & 30.B for the POC wells only. Taken together with the 2016 amendment, it is further proposed that Wells GW 2 and GW 3 be omitted as POC wells because they can no longer be sampled due to safety concerns associated with their proximity to the unstable southern and northern edges of the Pipeline Arroyo canyon, respectively.

Outside the UNC property boundary in Zone 1, the post-pumping groundwater quality continues to improve overall. During 2016, there were no exceedances of any NRC GWPSs outside Section 2 (i.e., at monitoring locations outside the property boundary in Section 1). The concentrations of non-hazardous constituents sulfate and TDS outside Section 2 reflect geochemical equilibrium of the groundwater with gypsum; there were no exceedances of the revised EPA cleanup levels for these constituents outside Section 2 during 2016. Chloride, a non-hazardous constituent that is not regulated by NRC, has exhibited a small gradual increase at Well EPA 7 over the past few years; during 2016, only one sample slightly exceeded the EPA standard. The conditions for metals attenuation in Section 1 were re-established in 2016. Nickel concentrations, which in a few 2015 samples from Wells EPA 5 and EPA 7 exceeded the NRC License standard (0.07 mg/L), were equal to or below the standard in all samples outside Section 2 in 2016. Similarly, there were no 2016 exceedances of the cobalt EPA standard outside Section 2.

For Zone 3, the following constituents exceeded NRC License standards at one or more POC wells during the 2016 quarterly monitoring: beryllium, nickel, gross alpha, TTHMs, thorium-230, uranium, vanadium. NRC License standards for beryllium, nickel, uranium, thorium-230, and gross alpha were also exceeded in seepage-impacted water at non-POC monitoring locations. EPA cleanup standards were exceeded at Zone 3 monitoring locations for beryllium, TDS, sulfate, aluminum, cobalt, and manganese during 2016. These are either constituents that are not regulated by NRC, or for which the EPA cleanup standard is lower than the NRC License standard (i.e., beryllium).

Extraction well pumping continued in the northern part of Zone 3 during 2016. This extraction of seepage-impacted groundwater started with the hydrofracture program in 2005 and was supplemented, starting in 2009, with extraction from the NW-series wells located near the northernmost area of seepage impact. The purpose of the upgradient wells (e.g., the hydrofracture or RW-series wells) is primarily to dewater and recover contaminant mass, while the purpose of the downgradient wells (e.g., the NW-series) is to form a hydraulic barrier. The Zone 3 pumping system has been declining in performance and has approached the limit of its effectiveness due to declining saturated thicknesses, as predicted. Additionally, UNC has



previously demonstrated that a significant fraction of the replacement to storage is coming from the area of background quality groundwater and the efficiency of seepage-impacted water removal has declined with time and is expected to continue to degrade. Extraction was initiated at Well NW 5 during March 2016, replacing Well NW 4, for which pumping was suspended in October 2015 due to insufficient yield. During 2016, UNC will evaluate the decommissioning of those extraction wells having yields less than the 1 gpm decommissioning criterion. The evaluation will consider the differing objectives of the two sets of extraction wells.

As recommended in previous Annual Reports, monitoring wells that do not meet performance criteria associated with low-flow groundwater sampling methods (which limits the ability to collect representative samples) should be removed from the monitoring program and decommissioned. These wells include, but may not be limited to Wells GW 3 and 632 (both are POCs in the Southwest Alluvium), Well 515 A (non-POC in Zone 1), and Well 517 (POC in Zone 3). Additionally, Wells 504 B and 446 should be removed from the Zone 3 monitoring program because water levels have declined below the screened or open interval. Well 504 B is dry and the Well 446 water level is below the bottom of the screened interval and is therefore unreliable. UNC will submit a License amendment request to NRC that will specify recommended modifications to the performance monitoring program.

UNC proposed monitoring well locations north of the Section 36 boundary on the Navajo Reservation in 2014. The installation of these wells is recommended to support the adoptions of waivers, alternate standards or other administrative controls to close the corrective action program. UNC is proceeding with a plan to permit and install these monitoring wells.

Please contact Mr. Roy Blickwedel (General Electric Company) at (610) 992-7935 if you have any questions or need additional information.

Sincerely,



Robert B. Warren, Jr.  
Project Manager  
(814) 231-2170 x 15  
[rwarren@chesterengineers.com](mailto:rwarren@chesterengineers.com)  
15-6209-SC-153

Enclosures:

Ms. Andrea Kock and Ms. Janet Brooks  
February 10, 2017

Andrea Kock, U.S. Nuclear Regulatory Commission (2 printed report copies, 2 CDs)  
Janet Brooks, U.S. EPA Region 6 (1 electronic report copy on flash drive, 1 printed copy of  
tables and figures only)

cc:

James Smith, U.S. Nuclear Regulatory Commission (2 printed report copies, 2 CDs)  
U.S. Nuclear Regulatory Commission Document Control (1 printed report copy)  
New Mexico Environment Department (3 CD)  
Freida White, Navajo Nation Environmental Protection Agency (1 printed report copy, 1 CD)  
Roy Blickwedel, General Electric Corporation (1 printed report copy, 1 CD)  
United Nuclear Corporation, c/o Rick Spitz, AMEC Foster Wheeler  
(1 printed report copy, 1 CD)



Questions concerning this submittal may be directed to:

Roy Blickwedel  
General Electric Company  
Phone: (610) 992-7935  
Email: [Roy.Blickwedel@ge.com](mailto:Roy.Blickwedel@ge.com)  
640 Freedom Business Center  
King of Prussia, PA 19406

**Document components contained on OSM#1**

001 Chester Transmittal Letter 2-10-17.pdf, 151 KB  
002 2016 Ann Rpt Text-Tables.pdf, 841 KB  
003 2016 Ann Rpt Figures 1-3A.pdf, 38,305 KB  
004 2016 Ann Rpt Figures 3B-34.pdf, 46,333 KB  
005 2016 Ann Rpt Figures 35-42B.pdf, 40,615 KB  
006 2016 Ann Rpt Figures 43-47.pdf, 41,834 KB  
007 2016 Ann Rpt Figures 48-57.pdf, 30,037 KB  
008 2016 Ann Rpt Appendix A.pdf, 31,334 KB  
009 2016 Ann Rpt Appendix B.pdf, 33,437 KB  
010 2016 Ann Rpt Appendix C.pdf, 18,759 KB



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**Groundwater Corrective Action**  
**Church Rock Site, New Mexico**

February 2017

United Nuclear Corporation  
Church Rock Tailings Site  
Church Rock, New Mexico








United Nuclear Corporation

Gallup, New Mexico

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Groundwater Corrective Action  
Church Rock Site, Church Rock,  
New Mexico**

February 2017





United Nuclear Corporation  
Gallup, New Mexico

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**Groundwater Corrective Action**  
**Church Rock Site, Church Rock, New Mexico**

February 2017

Prepared by: Robert B. Warren, Jr.

Approved by: James A. Ewart, Ph.D.

Project No.: 15-6209-SC-153





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- B     ZONE 3 MONITORING DATA (TABLE B.1) WITH INTRODUCTORY TEXT; FIGURE B-1 (ZONE 3 2016 MONITORING WELL LOCATIONS); FIGURE B-2 (ZONE 3 PROPOSED WELL LOCATIONS); AND 2016 LABORATORY GROUNDWATER ANALYTICAL REPORTS**
- C     ZONE 1 MONITORING DATA (TABLE C.1) WITH INTRODUCTORY TEXT; FIGURE C-1 (ZONE 1 2016 MONITORING WELL LOCATIONS); AND 2016 LABORATORY GROUNDWATER ANALYTICAL REPORTS**

# List of Acronyms and Abbreviations

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ACL	alternate concentration limit
ALARA	as low as reasonably achievable
ARARs	applicable or relevant and appropriate requirements
BTV	background threshold value
COPCs	constituents of potential concern
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
EPC	exposure point concentration
FS	feasibility study
ft/yr	feet per year
gpm	gallons per minute
GWPSs	NRC Source Materials License groundwater protection standards
HHRA	human health risk assessment
IC	institutional control
MCL	federal primary maximum contaminant level
mg/L	milligrams per liter
MDC	minimum detectable concentration
MNA	monitored natural attenuation
NA	natural attenuation
NMED	New Mexico Environment Department
NNEPA	Navajo Nation Environmental Protection Agency
NRC	U.S. Nuclear Regulatory Commission
pCi/L	picocuries per liter
POC	point of compliance
POE	point of exposure
ROD	Record of Decision
SFS	supplemental feasibility study
SWSFS	site-wide supplemental feasibility study
SMCL	federal secondary maximum contaminant level
TDS	total dissolved solids
TTHMs	total trihalomethanes
TI	technical impracticability
UCL95	upper confidence limit of the mean at the 95% confidence level
UPL95	upper prediction limit at the 95% confidence level
µg/L	micrograms per liter

# Section 1

## *Introduction*

On behalf of United Nuclear Corporation (UNC), Chester Engineers has prepared this annual performance review of the groundwater corrective action at UNC's Church Rock Mill and Tailings Site near Gallup, New Mexico, pursuant to NRC Source Materials License 1475, Condition 30C. UNC has submitted an annual corrective action report at the end of each operating year since 1989. This report includes groundwater quality analyses and groundwater elevations for the first through fourth quarters of 2016.

This report focuses on both active remediation and the groundwater performance of the natural systems without active remediation. As indicated in the U.S. Environmental Protection Agency's (EPA's) First Five-Year Review Report (EPA, 1998), EPA recognized that the corrective action pumping systems were at, or reaching the limit of, their effectiveness and recommended that Technical Impracticability (TI) Waivers, Alternate Concentration Limits (ACLs), and Monitored Natural Attenuation (MNA) be used to complete the corrective action program (EPA, 1988b). Subsequent presentations and reports prepared to document the geochemical processes in the Southwest Alluvium (Earth Tech, 2000d and 2002b; Chester Engineers, 2009a) and the Zone 1 hydrostratigraphic unit (Earth Tech, 2000c; Chester Engineers, 2009a) showed that the natural geochemical mechanisms in these areas are at least as effective as the active remediation systems in controlling the migration of constituents of concern. This annual report describes how these natural processes are performing in these areas, and updates active remediation efforts and investigations in Zone 3, comprising the pumping of extraction wells along the northern front of seepage impact.

### **1.1 Site Location**

The Church Rock Site ("Site") is located approximately 17 miles northeast of Church Rock, McKinley County, New Mexico (see Figure 1). Figure 2 is a Site map that shows the location of the decommissioned and temporarily idled extraction wells, the performance monitoring wells, the evaporation ponds, and the reclaimed tailings areas. Figure 2 also shows the Remedial Action Target Area for each hydrostratigraphic unit, where the impacts of tailings seepage were originally identified and corrective action was implemented (EPA, 1988a). Additional background information on Site facilities and activities is available in the previous annual reviews (Canonie Environmental Services Corp. [Canonie], 1989b, 1990, 1991, 1992, 1993 and 1995; Smith Technology Corporation, 1995 and 1996; Rust Environment and Infrastructure, 1997; Earth Tech, 1998, 1999, 2000e, 2002a and 2002c; USFilter, 2004; N.A. Water Systems, 2004, 2005, 2007a, and 2008a; and Chester Engineers, 2009a, 2010a, 2011a, 2012b, 2013, 2014a, 2015a, and 2016).

### **1.2 Chronology of Site Events**

Table 1A provides a chronological summary of important Site events from June 1977 when UNC milling operations began, to December 2016.

### 1.3 Corrective Action Systems

The corrective action systems for tailings seepage remediation were installed and began operating during the summer and fall of 1989. These systems have been decommissioned or, in the case of the Southwest Alluvium, shut off pending further evaluation, and performance monitoring is ongoing. The Zone 1 system was decommissioned in July 1999 in accordance with the letter from the NRC dated July 30, 1999 (NRC, 1999a).

#### 1.3.1 Southwest Alluvium

##### Southwest Alluvium Corrective Action System During 2016 Reporting Year

The Southwest Alluvium corrective action pumping system remained idle in 2016. Attenuation via natural geochemical processes has been shown to be at least as effective as pumping.

The Southwest Alluvium system was temporarily shut off in January 2001 to facilitate implementation of the natural attenuation (NA) test. The NA test was discussed and approved during the November 14 and 15, 2000, meeting in Santa Fe, New Mexico, and documented in the November 15, 2000, letter from the EPA. As requested by the EPA (2004a; and during meetings in Santa Fe on February 26, 2004, and at Church Rock on May 5, 2005), UNC continues to acquire groundwater quality data from wells in the Southwest Alluvium to monitor the effectiveness of natural attenuation and compare its performance to that of previous remedial efforts. This annual report presents a continuing assessment of the effectiveness of natural attenuation in the Southwest Alluvium. Performance monitoring is ongoing and is summarized in Section 1.4.1. Sampling results are summarized in Section 1.4.3 and discussed in detail in Section 2.3.

##### Changes to Southwest Alluvium Corrective Action System During 2016 Reporting Year

There were no changes to the Southwest Alluvium Corrective Action Systems in 2016. A discussion of historical changes to the systems is provided in Section 2.1.

#### 1.3.2 Zone 3

##### Zone 3 Corrective Action System During 2016 Reporting Year

Starting in 2005, extraction well pumping in Zone 3 has been carried out under a revised pumping regime. UNC continually revises and improves upon the Zone 3 remedial system. The Zone 3 Corrective Action system during 2016 comprised extraction from wells RW 11, RW 16, RW 17, RW A, NW 2, and NW 5 (discussed in Section 3 of this report). Performance monitoring is ongoing and is summarized in Section 1.4.1. Sampling results are summarized in Section 1.4.3 and discussed in detail in Section 3.3.

##### Changes to Zone 3 Corrective Action System During 2016 Reporting Year

Pumping was initiated at Well NW 5 on March 16, 2016 as a replacement for Well NW 4, where pumping was discontinued in October 2015. The current pumping rates at Wells NW 2 and NW



5 are each approximately 0.4 gpm. A discussion of changes that occurred in prior years is provided in Section 3.1.

The following conclusions from previous Zone 3 corrective action systems and investigations inform our understanding of Zone 3 hydrogeology and its interactions with corrective actions systems.

- The corrective action system began operation in 1989. The Zone 3 system was shut down in June 2000 for maintenance and repairs. Prior to the Zone 3 system being brought back on-line, the agencies agreed that the existing system should be decommissioned (NRC, December 29, 2000 License amendment). This decision included a provision for UNC to submit a modified corrective action plan, an application for ACLs, or an alternative to the specific requirements of 10 CFR Part 40, Appendix A, if the License standards are not achievable. During 2006, UNC completed an extended pilot investigation (hydrofracture study) that indicated that the new pumping configuration had achieved nearly complete capture of the northward-advancing seepage-impacted water, while causing a notable improvement in the water quality within the northern tracking wells.
- Subsequent analyses indicated that the improvement of water quality in northern tracking wells was temporary and that there was a need for additional extraction wells to enhance groundwater capture. Extraction Well RW A and the five NW-series wells were installed to intercept and recover seepage-impacted water from Zone 3 in the northern part of Section 36 from 2007 to 2009.
- Pumping in the northernmost part of Zone 3 has created a mixing zone of background and seepage-impacted water. Groundwater quality along the northern tracking wells has been oscillating between degrading and improving trends over the last 14 years; therefore, the mapped position of the seepage-impacted water is inexact.
- An alkalinity injection pilot study between April 2011 and June 2012 used injection well IW A to enhance containment and to geochemically stabilize the seepage-influenced water (UNC's Remedial Design Report, Chester Engineers, 2010a). While alkalinity injection has been discontinued because both UNC and NRC believe it may lead to mobilization of uranium, pumping in Zone 3 continues, albeit characterized by very small, and diminishing, well yields.
- The revised Zone 3 pumping system has been declining in performance as anticipated by Appendix A of the ROD (EPA, 1988b), which states that "operational results may also demonstrate significant declines in pumping rates with time due to insufficient natural recharge of aquifers" and that "In the event that saturated thicknesses cease to support pumping, remedial activity would be discontinued or adjusted to appropriate levels." Declining pumping system performance has also been acknowledged in EPA Five-Year Review reports (e.g., EPA, 1998; EPA, 2008; EPA, 2013). Most of the Zone 3 extraction wells have reduced yields that are below 0.5 gpm. Extraction wells having yields below

the 1 gpm decommissioning criterion will be evaluated for decommissioning in the 2017 operating year.

### *1.3.3 Zone 1*

#### *Zone 1 Corrective Action System During 2016 Reporting Year*

The Zone 1 system was decommissioned in July 1999 in accordance with the letter from the NRC dated July 30, 1999 (NRC, 1999a). Performance monitoring is ongoing and is summarized in Section 1.4.1. The performance monitoring results are summarized in Section 1.4.3 and discussed in detail in Section 4.3.

#### *Changes to Zone 1 Corrective Action System During 2016 Reporting Year*

There were no changes to the Zone 1 Corrective Action Systems in 2016.

## **1.4 Summary of Performance Monitoring and Supplemental Sampling**

### *1.4.1 Performance Monitoring*

The groundwater performance monitoring plan and has been approved by the NRC and EPA and is described by the Corrective Action Plan (UNC, 1989a), Remedial Design Report (Canonie, 1989a) and Remedial Action Plan (UNC, 1989b). The program has been modified over time, as described in the annual reports (Canonie, 1989b, 1990, 1991, 1992, 1993 and 1995; Smith Technology, 1995 and 1996; Rust, 1997; Earth Tech, 1998, 1999, 2000e, 2002a, and 2002c; USFilter, 2004; N.A. Water Systems, 2004, 2005, 2007a, 2008a; Chester Engineers, 2009a, 2010a, 2011a, 2012b, 2013, 2014a, and 2015a), to adjust the monitoring requirements as the corrective action has progressed.

In accordance with the EPA's request in 1999, UNC developed a revised monitoring program that began with the second quarter 2000 sampling event. The revised program is documented in the letters dated January 13, 2000 (Earth Tech, 2000a), and April 26, 2000 (Earth Tech, 2000b). Details of the revised monitoring program for each hydrostratigraphic unit are provided in the performance-monitoring portion of the following sections and in the appendices.

UNC submitted a License amendment request (GE, 2015) and a subsequent amendment (GE, 2016b) that requested modifications to the monitoring program (see Section 1.5.1). As reported in the 2015 and 2014 Annual Reports, UNC has determined that a few monitoring wells included in the performance monitoring program do not meet low-flow sampling performance requirements, which limits the ability to collect representative samples at these locations. Monitoring wells that do not meet operating criteria will be evaluated as candidates for decommissioning during the 2017 operating year.

The field pH, groundwater elevations, and laboratory analytical data collected from the third quarter of 1989 through the fourth quarter of 2016 are tabulated in Appendices A (Southwest Alluvium), B (Zone 3), and C (Zone 1). These data are compared to the revised NRC License standards (updated in 2015) and the revised cleanup levels approved by EPA for use in

preparation of Part III of the SWSFS (EPA, 2015). The group of constituents that has NRC License standards is a subset of the group with EPA standards. A few of the EPA cleanup standards differ from the NRC License Standards (e.g., beryllium has a 0.050 mg/l NRC standard and a 0.004 mg/l EPA standard in Zone 3) but most are the same. Results that exceed either of the standards are highlighted (several of the EPA and NRC standards are identical).

Quarterly laboratory summary analytical data sheets for the 2016 operating year are included at the end of each appendix. UNC directly submits the following semi-annual reports to NRC (as a License requirement), which are copied to the other agencies: (1) groundwater, effluent and environmental monitoring report (including the full laboratory analytical reports and field parameter data), and (2) groundwater quality assurance report (including quarterly field data sheets as filled by hand).

#### *1.4.2 Supplemental Sampling*

Supplemental sampling has been conducted as a result of various agency requests as consistent with previous years. These are discussed in Sections 2.3, 3.3, and 4.3. During 2016, EPA requested that UNC to provide supplemental quarterly monitoring and reporting related to potential seepage impacts beyond the northern Zone 3 extraction wells (i.e., NW-series wells NW 2 and NW 5) that are operated as a hydraulic barrier to seepage-impacted water flow. Beginning with the October 2016, MW 7 and NW 3 will be sampled quarterly for the full analytical parameter list.

#### *1.4.3 Summary of 2016 Performance Monitoring Results*

##### *Southwest Alluvium*

During 2016, there were no exceedances of any NRC License standards at any POC wells or other seepage-impacted monitoring wells anywhere in the Southwest Alluvium. Additionally, no hazardous constituents exceeded revised EPA cleanup standards outside the UNC property boundary in seepage-impacted water. Exceedances of the EPA standards for manganese and chloride were reported in seepage-impacted water within Section 2. Exceedances of EPA standards for sulfate and manganese and one exceedance of the NRC License standard for nickel were also reported at background Well SBL 1.

With the exception of exceedances of NRC License standard for uranium in recent samples from Well GW 3 (not sampled in 2016, discussed more below), the groundwater quality at all POC wells has met the revised License standards since January 2011. Exceedances of the revised NRC standards are otherwise infrequent and most occurred more than a decade ago.

##### *Zone 3*

Groundwater levels in Zone 3 continued to decline in 2016, indicating that the zone of anthropogenic saturation continues to diminish as the groundwater drains down the dip of the bedrock layers. Pumping of extraction wells since 2005 has locally accelerated the rate of water level decline in northern Zone 3 (e.g., in the vicinity of Well NBL 1, which has been effectively

dry since February 2013). As in previous years, the declining water levels and reduced saturated thicknesses prevented sample collection at several Zone 3 monitoring wells during 2016.

Water quality data in northern Zone 3 have continued to vary in time and space and seepage impacts have increased at some monitoring locations (e.g., Wells NW 2, NW 5, and MW 7) during 2016. Although the fully-impacted water just to the south has not “broken through” to the north, the depiction of northern edge of the seepage-impact front for October 2016 has been adjusted to encompass Well NW 5 and adjoin Wells NW 2 and MW 6. NW 1 is no longer shown to be within the seepage-impacted area based on its water chemistry. It is anticipated based on current concentrations that seepage-impacted groundwater water will eventually reach NW 2, and will be retarded by pumping from wells both wells NW 2 and NW 5 (until the well yields decline). UNC continues to evaluate the chemistry and water levels in the northern Zone 3 wells and may modify pumping rates to optimize the extraction system operations or cease operations.

The Zone 3 NRC POC wells (517, 613, 708, and 711) are within the fully impacted acidic “core” of the seepage-impacted water. The following constituents exceeded NRC License standards at one or more POC wells during the 2016 quarterly monitoring: total trihalomethanes (TTHMs), beryllium, nickel, uranium, vanadium, thorium-230, and gross alpha. NRC License standards for beryllium, nickel, uranium, thorium-230, and gross alpha were also exceeded in seepage-impacted water at non-POC Wells 717 and EPA 14 during 2016, and the NRC License standard for gross alpha was exceeded in one quarterly sample from partially seepage-impacted well MW 7.

EPA cleanup standards were exceeded for beryllium, total dissolved solids (TDS), sulfate, aluminum, cobalt, and manganese during 2016 (i.e., for those constituents that are not regulated by NRC or for which the EPA cleanup standard is lower than the NRC License standard [e.g., beryllium]). Exceedances are further described by parameter in Section 3.3.4.

### Zone 1

The Zone 1 NRC POC wells include Wells 604 and 614 within Section 2 and Wells EPA 4, EPA 5, and EPA 7 in Section 1. During 2016, there were only two constituents that exceeded NRC License standards at the POC wells during the 2016 quarterly monitoring: nickel at Well 604 (four quarters) and TTHMs at Well 614 (in July only). NRC License standards for TTHMs and nickel were also exceeded at non-POC Well 515 A. There were no exceedances of any NRC License standards outside Section 2 (i.e., at monitoring locations outside the property boundary in Section 1).

EPA cleanup standards, for constituents that are not regulated by NRC or for which the EPA cleanup standard is different from the NRC License standard (e.g., beryllium, nickel), were exceeded at the following locations (the number of quarterly exceedances are shown in parentheses):

- Well 515 A – TDS (4), sulfate (4), chloride (4), and manganese (4).

- Well 604 – beryllium (1), cobalt (4), nickel (1).
- Well 614 – chloride (4), nitrate (2), cobalt (4)|.
- Well EPA 7 – chloride (1).

The chloride result from Well EPA 7, which slightly exceeded the EPA cleanup standard (250 mg/L), was the only EPA standard exceedance outside Section 2. Chloride is not an NRC-regulated constituent and is a non-hazardous, secondary contaminant.

## **1.5 Status of Regulatory Requests**

### **1.5.1 Ongoing from Previous Years**

UNC has submitted a pending License amendment request (GE, 2015) and subsequent amendment to the License amendment request (GE, 2016b) to bring the license into conformance with recent advances that have been made with respect to the corrective action programs in the targeted areas. For example, UNC proposed to delete a License requirement to install and sample additional wells in Zone 3 and the Southwest Alluvium because the work has been completed. Well NBL 1 was constructed in Zone 3 in 2001 and Well SBL 1 was completed in the Southwest Alluvium in 2004. UNC also recommended that these wells be added to the quarterly sampling program.

For the Southwest Alluvium, in addition to the changes related to Well SBL 1, the License amendment request recommended that the corrective action program for the Southwest Alluvium contained in the current license should be formally discontinued and that monitoring and compliance requirements put forth in Conditions 30.A & 30.B be continued for the POC wells only. It was further proposed that Well GW 3 be omitted as a POC well and that the monitoring program in the Southwest Alluvium be reduced to include the remaining POC wells. The later amendment recommended that POC Well GW 2 also be omitted from the monitoring program and that the monitoring program in the Southwest Alluvium be reduced to include the remaining five POC wells. This is discussed in detail in Section 2.1. For Zone 1, the License amendment request recommended the removal of Well EPA 2 and POC Wells EPA 4, EPA 5, and EPA 7, all of which are located in Section 1. Data from the past sixteen years of post-shutdown monitoring indicates a gradual improvement in water from the Zone 1 Point-of-Compliance (POC) wells (GE, 2015). There were no exceedances of any NRC License standards outside Section 2 (i.e., at monitoring locations outside the property boundary in Section 1) during 2016.

As reported in the 2015 Annual Report, UNC has determined that a few monitoring wells included in the performance monitoring program do not currently meet low-flow sampling performance requirements, which limits the ability to collect representative samples at these locations. Monitoring wells that do not meet operating criteria will be evaluated as candidates for decommissioning during the 2017 operating year.

Work continued in 2016 on the Site-Wide Supplemental Feasibility Study (SWSFS) that EPA directed UNC to provide in 2006 (EPA, 2006). The SWSFS is being conducted as a three-stage



process in keeping with the three structural components of EPA's FS process: Stage 1 - develop remedial action objectives (SWSFS Part I); Stage 2 - development and screening of alternatives (SWSFS Part II); and Stage 3 - detailed analysis of alternatives (SWSFS Part III) (EPA, 1988c). Each stage is completed and approved before commencing with the next stage because each stage of evaluation builds upon the results and findings of its predecessor. EPA (2009) approved the SWSFS Part I (N.A. Water Systems, 2007b; 2008d; 2008e; 2008f). In July 2009, UNC submitted to EPA the revised Part II of the SWSFS (Chester Engineers, 2009b), which addresses the development and screening of remedial alternatives. Based upon a series of comments and responses (EPA, 2010; and Chester Engineers, 2010c), UNC submitted the Revised Site-Wide Supplemental Feasibility Study Parts I and II in April 2011 (Chester Engineers, 2011b). In October 2011, EPA considered Parts I and II to be complete and provided UNC with Notice to Proceed with development of the SWSFS Part III (EPA, 2011) subject to additional EPA comments (EPA, 2011; 2012).

Work on the third stage of the SWSFS (i.e., SWSFS Part III) was reinitiated in 2015 subsequent to the revision of Site groundwater standards. Those revisions came about through (1) the 2015 NRC License Amendment (NRC, 2015), which updated the site NRC License standards (i.e., groundwater protection standards or GWPSs) on the basis of a background threshold value (BTV) statistical analysis process, and (2) EPA approval to use the UNC proposed cleanup levels identified through an analogous BTV statistical analysis process (EPA, 2015; Chester Engineers, 2015b). UNC consulted with the agencies (e.g., see Chester Engineers, 2012a) regarding the most appropriate statistical methods to determine representative background water concentrations for the future long-term compliance monitoring program (where BTVs are appropriate for "not-to-exceed" monitoring results) and for the SWSFS. These concentrations differ from the mean-based background values utilized in the risk assessment context. UPL95s (upper prediction limit at the 95 percent confidence level) were selected as an appropriate statistical measure of BTVs for comparison with compliance samples. UNC utilized an extensive, current, and robust data set of groundwater quality analytical results from July 1989 through October 2007, inclusive, to develop UPL95s (or alternate UPLs, as appropriate) for each COPC in each hydrostratigraphic unit. Unlike the UCL95s (upper confidence limit of the mean at the 95% confidence level) developed for risk assessment purposes (N.A. Water Systems, 2008f), UPL95s are numerically developed by incorporating a specific, future compliance-monitoring program, involving a specific number of future sampling events and compliance-monitoring wells.

NRC issued License amendment No. 52 (NRC, 2015) with the revised groundwater protection standards on April 9, 2015. UNC has identified a few typographical errors in the standards and has proposed corrections in the pending License amendment request (GE, 2015). The revised groundwater protection standards (including the proposed corrections) have been used for data comparisons in this annual report.

A few of the EPA cleanup standards differ from the NRC License Standards due to a slightly different comparison process and regulatory basis, including arsenic, beryllium, nickel, and

selenium. The standard for uranium in the initial EPA submittal was 0.3 mg/L, which is the same as the current NRC License standard. EPA and NMED concluded that they do not support the current standard for uranium in the Southwest Alluvium (0.3 mg/l) but, instead, support the BTV calculated for uranium based on the UPL95 statistical methodology (0.205 mg/l). UNC recommended instead that the EPA uranium standard be waived, because the source of uranium in both background and seepage-impacted water in the Southwest Alluvium was not tailings seepage, but mine water, permitted to contain uranium concentrations up to 2 mg/l, discharged to Pipeline Arroyo for 17 years. The proposed uranium standard is further discussed in Section 2.3.5. However, in this report (as in the 2015 Annual Report and SWSFS Part III) a standard of 0.3 mg/L has been used for comparisons.

These agency actions to revise the background standards lessen one of the technical impediments (GE, 2009) to eventual Site closure which stated that “long-term monitoring data and basic geochemical considerations reveal some cleanup objectives to be unattainable.” For most parameters, the establishment of background threshold values through statistical analysis will incorporate and account for the natural geochemical evolution of pre- or post-mining, pre-tailings (i.e., background) groundwater quality and distinguish it from the chemical characteristics of post-mining, post-tailings groundwater (i.e., water that is subject to the corrective action program).

#### *1.5.2 Changes During Reporting Year*

The preparation of the SWSFS Part III is underway and it is anticipated to be formally submitted during the first half of 2017. In accordance with discussions between UNC and EPA, SWSFS Part III will be a stand-alone document that incorporates changes that have occurred since 2011 and updates the discussion of contaminants of potential concern (COPCs) and remedy alternatives contained in the earlier Parts.

UNC proposed sentinel monitoring well locations north of the Section 36 boundary on the Navajo Reservation, as requested by the Navajo Nation EPA (NNEPA, 2013). The installation of these wells is recommended to support the adoptions of waivers, alternate standards or other administrative controls to close the corrective action program. UNC has initiated a process to permit, drill, construct, and operate these monitoring wells.

## Section 2

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### *Southwest Alluvium*

#### **2.1 *Corrective Action Summary***

The Southwest Alluvium corrective action pumping system remained idle in 2016. Attenuation via natural geochemical processes has been shown to be at least as effective as pumping. There were no exceedances of revised NRC License standards or EPA cleanup standards by a hazardous constituent in seepage-impacted water outside the UNC property boundary in 2016.

The Southwest Alluvium system was temporarily shut off in January 2001 to facilitate implementation of the natural attenuation (NA) test. The NA test was discussed and approved during the November 14 and 15, 2000, meeting in Santa Fe, New Mexico, and documented in the November 15, 2000, letter from the EPA. As requested by the EPA (2004a; and during meetings in Santa Fe on February 26, 2004, and at Church Rock on May 5, 2005), UNC continues to acquire groundwater quality data from wells in the Southwest Alluvium to monitor the effectiveness of natural attenuation and compare its performance to that of previous remedial efforts. In October 2015, UNC submitted a License amendment request (GE, 2015) that seeks to terminate the Southwest Alluvium corrective action program because the groundwater quality at all POC wells have remained at or within the standards set in the license for at least the past nine quarters (through July 2015), with the exception of uranium concentrations in well GW 3 (which does not provide representative samples, see Section 2.3.5). This annual report presents a continuing assessment of the effectiveness of natural attenuation in the Southwest Alluvium.

#### **2.2 *Mass of Chemical Constituents Removed***

The mass of chemical constituents removed during active groundwater recovery operations was calculated for the 12-year period from November 1989 through January 2001. These calculations were presented in the previous annual reviews, and the final summary was presented in the 2001 Annual Review (Earth Tech, 2002a).

#### **2.3 *Performance Monitoring Evaluation***

##### **2.3.1 *Water Level Evaluation***

The current water level monitoring component of the Southwest Alluvium performance monitoring program is summarized in Table 1B and comprises quarterly monitoring of water levels in 16 wells (see Figure 2 and Figure A-1 [Appendix A]). Well SBL 1, a downgradient background (i.e., not seepage-impacted) well installed in 2004 at the request of EPA (November 2000) is not a formal requirement of the performance monitoring program, but it is also monitored for water level. POC Wells GW 2 and GW 3 can no longer be safely monitored (as of October 2015), because of their proximity to the unstable edges of the Pipeline Arroyo canyon (see photographs in Appendix A, Figure A-2). UNC has submitted a License amendment request (GE, 2015) and a subsequent amendment (GE, 2016b) to NRC that would add Well SBL 1 to the performance monitoring program and remove POC Wells GW 2 and GW 3.

Groundwater is present in the Southwest Alluvium as a result of the infiltration of water historically discharged into the Pipeline Arroyo after having been pumped from the Quivira and NECR mines to facilitate their construction and operation. This water percolated into the alluvium and created temporary saturation in the vicinity of the tailings impoundments, which has diminished gradually over time. The detailed history of infiltration of mine-dewatering groundwater, into the alluvium and the subcrop of Zone 3 and Zone 1, has been incorporated into the Site groundwater flow model (Chester Engineers, 2012c, 2014b). This temporary saturation caused by discharged mine-dewatering groundwater is the recognized Southwest Alluvium background water (EPA, 1988a; 1988b; 1998; 2008). The level of saturation has been declining since groundwater pumping in connection with historical mine operations ceased in 1986. As a result, the flanks of the alluvial valley and the northern property boundary alluvium have completely de-saturated and, by 2000, a 31 percent saturation loss had been observed further to the south (Earth Tech, 2000d). The saturated thickness calculated for each performance monitoring program well during the October 2016 monitoring event is provided in Table 3 (all table units are in feet unless otherwise specified). During 2016, all well measurements have shown overall decreasing groundwater elevations (with small fluctuations), indicating that the groundwater flux continues to decline with the shrinking of the zone of saturation.

The Southwest Alluvium potentiometric surface map for the October 2016 monitoring event is shown in Figure 3A. This figure shows a local, eastward turn to the saturated alluvium, beneath the northwestern part of the South Cell, reflecting the presence of a relatively high area (bulge) in the bedrock surface between Wells 509 D and EPA 23. This bulge encompasses the area including the “Nickpoint” along Pipeline Arroyo. The Nickpoint (Figure 3A) has been referred to in earlier reports. It is a local rim-like bedrock high along the arroyo, below which the streamway becomes incised and continues downgradient as Pipeline Canyon.

Figure 3B shows a contour map of saturated thickness in the Southwest Alluvium based on the October 2016 monitoring event results. This map was developed by integrating the potentiometric surface with a structure contour map of the base of the alluvium (and thus does not involve directly contouring the posted values of saturated thickness). The distribution of the groundwater suggests the likelihood that the northern portion of the groundwater system, upgradient of the Nickpoint and including Well 509 D, may have become “detached” or ponded (i.e., lost hydraulic continuity) from the groundwater to the south. Such detachment may occur along the local high in the top of bedrock that causes the saturated alluvium to jog to the east in the area of the Nickpoint (Figure 3B). The underlying data density is not sufficient to allow certainty on this issue. However, it is likely that this will eventually happen both to the north of the Nickpoint and in a large depression, along the top of bedrock, that is west of the South Cell and below the Nickpoint.

Figure 4 shows water levels over time in Southwest Alluvium wells, illustrating the overall long-term trend of decreasing levels as water continues to drain from the alluvium. Note that in 2007, the water level in EPA 23 (below the Nickpoint) became higher than the level in 509 D (above the Nickpoint). The slope (rate) of decline above the Nickpoint (509 D) in Figure 4 is greater

than the rate of decline below the Nickpoint (EPA 23) prior to January 2007, but later slowed relative to EPA 23, such that the water level elevations are similar and rates of decline are virtually identical. Similarly, since 2015, the water level in Well SBL 1 has been higher than the level in Well 624. The water level in SBL 1 has a lower rate of decline than Wells 624 and 627 over time, possibly because of well construction or hydrogeologic differences.

Water levels in the vicinity of the pumping wells increased temporarily after they were turned off in January 2001 for the start of the NA test (see Figure 5). Water levels in the former pumping wells have since stabilized at elevations similar to those measured in nearby monitoring wells. These stable to declining water levels indicate that the hydraulic system has fully recovered from the effects of pumping (recovery was complete during approximately April to June 2002). A summary of operational data for the Southwest Alluvium extraction wells is provided in Table 4.

Southwest Alluvium groundwater flows to the southwest, along the Pipeline Arroyo. Based on calculations of the volume of background groundwater drainage through the valley in comparison to historic pumping rates, the drainage had exceeded the total pumping volume throughout the corrective action period by 30 percent or more (Earth Tech, 2000d). Groundwater pumping did not fully contain seepage-impacted water; however, it is important to realize that hydraulic containment is not a necessary feature of the corrective action program in the Southwest Alluvium because of the strong geochemical attenuation that occurs naturally.

### *2.3.2 Water Quality Evaluation and Current Extent of Seepage-Impacted Water*

The current water quality monitoring component of the Southwest Alluvium performance monitoring program is summarized in Table 1B and comprises quarterly monitoring of water quality in 14 wells. Well SBL 1, a downgradient background (i.e., not seepage-impacted) well is not a formal requirement of the performance monitoring program, but it is also monitored for water quality. As described in Section 2.3.1, POC Wells GW 2 and GW 3 can no longer be safely monitored (as of October 2015), because of their proximity to the unstable edges of the Pipeline Arroyo canyon. UNC has submitted a License amendment request (GE, 2015) and a subsequent amendment (GE, 2016b) that would add Well SBL 1 to the performance monitoring program and remove POC Wells GW 2 and GW 3 from the monitoring program. It further recommends continuing the current monitoring and compliance requirements put forth in Conditions 30.A & 30.B for the POC wells only.

As indicated in previous annual reports, UNC has determined that monitoring Wells GW 3 and 632 (both are POCs in the Southwest Alluvium) do not meet performance criteria associated with low flow groundwater sampling methods, which limits the ability to collect representative samples. The alluvium also has very limited saturated thickness at Well GW 3, which may contribute to elevated constituent concentrations (i.e., consistent with the hypothesis developed by NRC [1996], that dissolved salt concentrations increase as saturation levels decline and the aquifer system dries out). Monitoring wells that do not meet operating criteria will be recommended for decommissioning during the 2017 operating year.



A summary of constituents detected in the Southwest Alluvium in the October 2016 monitoring event is provided in Table 2. Historic groundwater quality and groundwater elevation data through October 2016 are provided in Appendix A (Table A.1). The site groundwater standards used for data comparisons in this annual report were revised through the development of updated BTVs by statistical analysis. NRC issued a License amendment to update site GWPSs (NRC, 2015) and EPA approved use of the UNC proposed cleanup levels (EPA, 2015) for remedy alternative evaluation in the ongoing SWSFS.

Table A.1 in Appendix A provides historical constituent concentration data through October 2016 and Table 2 summarizes the constituents detected in the Southwest Alluvium during October 2016. Both of these tables also include the Southwest Alluvium NRC GWPSs and the Southwest Alluvium EPA cleanup levels to facilitate direct comparison with the groundwater data.

No hazardous constituents exceed revised NRC License standards or EPA cleanup standards outside the UNC property boundary in seepage-impacted water sampled during 2016. With the exception of exceedances of NRC License standard for uranium in recent samples from Well GW 3 (discussed more below) the groundwater quality at all POC wells has met the revised License standards since January 2011. Exceedances of the revised NRC standards are otherwise historically infrequent and most occurred more than a decade ago.

The area currently containing seepage-impacted groundwater in the Southwest Alluvium is shown on Figure 6. As explained more fully below, common ion geochemistry in the delineated area has been changed by the neutralization of tailings seepage migrating through the alluvium. The area of seepage impact extends southwest along the western margins of the North, Central, and South Cells, and continues approximately 1,400 ft across the southeastern corner of adjacent Section 3 and approximately 370 ft into the north-central portion of adjacent Section 10. The total length of the area is approximately 6,600 ft.

Historically, only two constituents (sulfate and TDS) exceeded their historical EPA standards in the Southwest Alluvium seepage-impacted groundwater outside the UNC property boundary in Sections 3 and 10. Sulfate and TDS also exceeded the historical EPA standards in the background water (Wells 627, EPA 28, and SBL 1). The majority of TDS is composed of sulfate; therefore, TDS concentrations mimic sulfate concentrations (Earth Tech, 2000d). When compared to the revised EPA standards, there are no exceedances of TDS in any Southwest Alluvium wells, and sulfate exceedances occurred only in background Well SBL 1 (Figure 7).

Historical sulfate concentrations through October 2016 are shown graphically in Figure 7. This figure shows that the long-term concentrations in most wells have remained approximately steady with the following exceptions: (1) the concentrations in Wells 801 and 509 D decreased in January 2000 and October 1999, respectively, and have since remained at these relatively lower levels (Well 801 reached a minimum in 2012, followed an increasing trend through 2015, decreased slightly in 2016, and remains considerably lower than its historic concentrations); and (2) the concentrations in Well GW 2 (no longer sampled beginning in October 2015) have shown

an overall increasing trend since the shutoff of pumping, although the increase appears to have moderated starting in July 2010 and is well below the revised EPA standard. The light-gray data points in the upper right part of this chart represent the sulfate measurements from Well SBL 1 (post-mining/pre-tailings; i.e., background water quality). In October 2016, as in all previous quarters, this well had the highest sulfate concentration of any well in the Southwest Alluvium (including all historic measurements of seepage-impacted wells), including the nearest, hydraulically upgradient Well 624 which is impacted by seepage. As shown on Figure 7, the only exceedances of the revised EPA cleanup level for sulfate were found in Well SBL 1.

Where they occur, locally increasing trends in concentrations of common dissolved ions are unrelated to tailings seepage; they derive from the reaction of the anthropogenic recharge water with natural alluvium materials. Heterogeneous distribution of the soluble alluvium minerals is the most significant factor affecting the intra-well and inter-well variations in the concentrations of common dissolved ions. Increasing levels of common dissolved ions may mean that either (1) the diminishing saturation is being accompanied by increasing dissolved ion concentrations (consistent with the hypothesis developed by NRC, 1996), and/or (2) more of the alluvium minerals are being dissolved (also discussed by NRC, 1996). As shown by UNC's MINTEQ studies, the alluvium groundwater is generally at saturation (or in equilibrium) with respect to calcite, gypsum, and other soluble mineral salts.

Figure 8 is a bicarbonate isoconcentration map of the Southwest Alluvium during October 2016. As explained in earlier annual reports and in the first natural attenuation evaluation (Earth Tech, 2002b), bicarbonate concentration is the main attribute by which the presence and extent of seepage-impacts can be evaluated. The seepage-impacted area has near-neutral pH values as a result of the high capacity of the alluvium to neutralize the acidic tailings seepage. The neutralization capacity has also prevented the migration of metals from the former tailings impoundments. The neutralization capacity is strongly tied to relatively large amounts of calcite ( $\text{CaCO}_3$ ) in the alluvium that is available for buffering: Canonie (1987, Table 4.4) reported measured alluvium  $\text{CaCO}_3$  fractions of 2.58 percent in a sample collected during drilling of Well EPA 23; 0.77 to 0.28 percent near the Pipeline Arroyo Nickpoint; and 0.02 to 12.6 percent elsewhere.

The bicarbonate isoconcentration contours shown in Figure 8 illustrate the zone of seepage impact with fine resolution. Prior to the 2004 Annual Report, the seepage impact zone was based on assumptions of seepage migration rates and delineated by a line encompassing estimated bicarbonate concentrations exceeding 1,000 mg/L. It has since been recognized that there is a core of more significant impact (bicarbonate concentrations exceeding 2,000 mg/L) surrounded by progressively less seepage-impacted groundwater (approximated by the 1,000 mg/L contour).

The groundwater quality characteristics of the non-seepage-impacted (background) samples from Well SBL 1 differ in several important aspects from seepage-impacted water (refer to Figure 9 and Appendix A). Well SBL 1 is located downgradient of the seepage-impacted water within background water (non-seepage-impacted water of post-mining/pre-tailings origin). Well 624 is

the closest seepage-impacted well (500 ft) upgradient from Well SBL 1 (Figure 3A). Although the following observations compare these two wells in particular, they apply equally well to most, if not all, of the seepage-impacted wells:

- Well SBL 1 contains a magnesium-sulfate ( $\text{Mg-SO}_4$ ) type water while Well 624 contains a calcium-sulfate ( $\text{Ca-SO}_4$ ) type. The presence of much higher magnesium concentrations in SBL 1 suggests the dissolution of magnesium salts in the alluvium (for example, epsomite or magnesite) during the earlier flushes of mine discharge water down Pipeline Arroyo.
- The alkalinity (bicarbonate or  $\text{HCO}_3$ ) of Well SBL 1 water is much less than the seepage-impacted water in Well 624 samples. High bicarbonate concentrations are indicative of the neutralization of acid tailings liquids by dissolution of carbonate minerals. Chloride concentrations in Well SBL 1 are also lower than those indicative of seepage-impacted groundwater (see Appendix A and the discussion below in Section 2.3.4).
- Geochemical speciation calculations using EPA's MINTEQ numeric modeling code confirm that several aluminum-hydroxide ( $\text{Al-OH}$ ) salts are oversaturated in Well SBL 1 water while they are not in Well 624 water. This suggests that the water farther downgradient than the seepage-impacted water may show signs of the dissolution of soluble salts associated with earlier flushes of the alluvium.
- Well SBL 1 water and seepage-impacted water are alike in that both appear to be in approximate equilibrium with an assemblage of  $\text{Ca-SO}_4$  (as anhydrite or gypsum), magnesium-carbonate ( $\text{Mg-CO}_3$ , as magnesite or dolomite), and calcium-carbonate ( $\text{CaCO}_3$ , as calcite). MINTEQ simulations show that when acidic water (i.e., tailings liquid) is exposed to these mineral phases, there is a geochemical shift toward higher bicarbonate concentrations and lower sulfate concentrations (e.g., Well 624) than would occur in the absence of the acid (e.g., Well SBL 1). The result is a tendency to increase bicarbonate, decrease sulfate, and maintain constant calcium concentrations as the seepage-impact front migrates.

An interesting consequence of the migration of the seepage front should be that the ratio of sulfate to bicarbonate is at a minimum where the tailings seepage front meets and reacts with non-seepage-impacted areas in the alluvium. Sulfate concentrations are greater within the core of the seepage-impacted areas because sulfate concentrations in the tailings liquids were up to two orders-of-magnitude greater than the amount that remains in the seepage-impacted water. A significant amount of gypsum had to precipitate in proximity to the concentrated tailings liquids to cause the reduction of sulfate concentrations to levels that are in equilibrium with gypsum. Out in front of the seepage-impacted water, the dissolution of the alluvium gypsum (or anhydrite) produced sulfate in the background water at levels above the historical standard (2,125 mg/L). The revised EPA cleanup level of 5,815 mg/L is exceeded only at Well SBL 1; all seepage impacted wells have sulfate concentrations below this level.

These same conceptual geochemical models, for both the earlier evolution of the background water chemistry and the later, progressive evolution of seepage-impacted water chemistry, can be constructively applied to consideration of the groundwater chemistry data shown in Figure 9. Figure 9 shows the primary components of TDS in the Southwest Alluvium in the October 2016 monitoring event. The chart arrangement of the wells runs approximately from those located upgradient, on the left of the chart, to those downgradient on the right. Three background wells (627, EPA 28, and SBL 1) show relatively elevated sulfate combined with high ratios of sulfate to bicarbonate. Former background well EPA 25 shows a relatively lower ratio of these two parameters in conjunction with relatively elevated calcium. The long-term geochemistry in the vicinity of Well EPA 25 (Appendix A) suggests that fully seepage-impacted waters have been nearby, consistent with its hydraulically side-gradient location with respect to the bicarbonate isoconcentration map in Figure 8. Figure 9 shows the highest contribution of sulfate to the TDS is in Well SBL 1 (this well historically has had higher sulfate concentrations than any other Southwest Alluvium well), a well which also shows the lowest contribution from bicarbonate ( $\text{HCO}_3$ ) and very low contributions from chloride (“Chl” on the figure) and calcium (Ca). These observations and analysis confirm that the current extent of seepage-impacted water has not reached Well SBL 1.

Neither the seepage-impacted water nor the background water that has not been impacted by seepage meets New Mexico water quality standards for TDS, but all samples are well below the EPA cleanup level of 10,376 mg/L (Table 2, Figure 10). The composition of TDS differs, with non-seepage-impacted water having higher magnesium and sulfate concentrations and seepage-impacted water having higher calcium and bicarbonate concentrations (Figure 9). In some respects, particularly regarding sulfate concentrations, the seepage-impacted water may be viewed as an improvement compared to the non-seepage-impacted (background) water. Groundwater quality within the Southwest Alluvium is further discussed in Section 2.3.5.

Long-term offsite seepage impacts to the groundwater have been historically limited to exceedances of the sulfate and TDS standards, both of which are non-hazardous constituents and not regulated by NRC. These exceedances are largely eliminated when the data are compared to the revised EPA cleanup levels. Unlike Zones 1 and 3 impacted waters, the pH of the Southwest Alluvium seepage-impacted water is nearly neutral. Consequently, there have been very few exceedances of the revised metals or radionuclides standards within the seepage-impacted water; recent exceptions include the following:

- Exceedance of the NRC License standard for uranium in 12 of the last 13 samples from Well GW 3 (not sampled in 2016).
- Exceedances of the EPA cleanup standard for manganese (a non-hazardous constituent not regulated by NRC) at locations within the property boundary (Table 2).

These exceedances are discussed more in Section 2.3.5.

Background water sampled at downgradient Well SBL 1 in October 2016 had exceedances of nickel (at 0.09 mg/L, higher than the revised NRC License Standard of 0.078 mg/L but less than

the EPA cleanup level of 0.2 mg/L) and manganese (at 3.97 mg/L, higher than the EPA cleanup level). Well SBL-1 also has had occasional historical exceedances of cobalt. These metals exceedances are unrelated to seepage impact to the groundwater, because seepage-impacted water has not yet migrated to this location. Therefore, they should be viewed as a background condition, i.e., of post-mining/pre-tailings origin and age. The NRC's statistical evaluation of background water quality led to their recommendation that manganese, sulfate, and TDS should not be regulated Site constituents and they should not be used as bases for corrective action (NRC, 1996).

Two other constituents are present at concentrations that historically have exceeded standards primarily within the property boundary:

- **Chloroform** – In August 2006, the NRC modified the Site License to change the former chloroform standard of 1 µg/L to a TTHMs standard of 80 µg/L (NRC, 2006), which is equivalent to the EPA standard. Starting with the October 2006 sampling event, the laboratory has analyzed for TTHMs – all four component compounds (of which chloroform is one) are measured, and almost all Site groundwater samples (including the Southwest Alluvium) show that the TTHMs concentration equals the chloroform concentration (i.e., chloroform is the only TTHM compound present). In occasional discussion of “chloroform concentrations” in this report, the reader should bear in mind that the NRC/EPA standard (and laboratory analysis) of relevance is now for TTHMs and not solely for chloroform as was previously the case. Table 2 shows that during the October 2016 monitoring event, Southwest Alluvium TTHMs were detected at levels far below the NRC/EPA standard of 80 µg/L in the following wells: 632, 801, 802, 808, and GW 1. There were no chloroform exceedances at any Southwest Alluvium location during 2016 (Appendix A).
- **Chloride** – Chloride is a non-hazardous constituent that is not regulated by NRC. In 2016, chloride concentrations exceeded the EPA cleanup standard (250 mg/L) only at Well 509 D, which is located near the Central Cell within Section 2. Chloride at this well has exhibited an overall stable trend since 1996 with fluctuations ranging from 278 to 462 mg/L (see Figure 12). During 2015, there was a slight exceedance of the EPA chloride standard outside Section 2 in Well GW 1; 2016 chloride concentrations were similar, but below the EPA standard. Chloride concentrations are discussed more in Section 2.3.5.

### 2.3.3 Rate of Seepage Migration

Earth Tech (2002b) analyzed concentration trends of chloride and bicarbonate to infer the rate of constituent migration. Seepage impacts were observed to have migrated beyond the Site property boundary by 1982, based primarily on the exceedances of historical standards in the seepage-impacted water for sulfate and TDS. However, bicarbonate and chloride have been determined to be the more effective indicators of seepage impact for reasons described in Section 2.3.2.

Groundwater velocity calculations have been made to update the estimate of the rate of downgradient seepage-impact transport. These estimates are Darcy seepage velocities equal to the product of the hydraulic conductivity and the hydraulic gradient, divided by the effective porosity. The resultant groundwater velocities are upper-bound estimates of constituent transport velocities because no retardation or attenuation factors are applied.

Table 5 shows Southwest Alluvium groundwater velocities determined based on groundwater elevation measurements made at Wells 805, 624, 627 and SBL 1 during the fourth 2016 groundwater monitoring event (i.e., October, 2016). Upper and lower estimates of seepage velocity are based on a range of effective porosities adopted from Canonie (1989b) and Earth Tech (2002b). The average calculated velocities are effectively based on a median porosity estimate of 0.31. Application of the mean hydraulic conductivity value of  $3.69 \times 10^{-3}$  cm/sec formerly used by Earth Tech (2002b) results in the prediction that seepage impact should already have arrived at Well SBL 1, which is not the case. The new hydraulic conductivity value, used first in the 2012 Annual Report (Chester Engineers, 2013) is  $2.5 \times 10^{-3}$  cm/sec (replacing the former value of  $2 \times 10^{-3}$  cm/sec), which was determined to be an appropriate value based on groundwater flow model calibration for the Southwest Alluvium (Chester Engineers, 2012c, 2014b). The new value is 25 percent larger than the former value and this should generally be expected to result in higher calculated velocities than before.

The average groundwater velocity from Well 624 to Well SBL 1 was not calculated. The average calculated velocity for this well pair for October 2014 was 8 ft/yr, for October 2013 was 19 ft/yr, and for October 2012 was 11 ft/yr. With the exception of the increased velocity in 2013, the velocity has consistently decreased in the prior four years, which resulted from declining water levels and horizontal hydraulic gradients between this well pair. The water level in SBL 1 has a lower rate of decline than Well 624 over time, possibly because of well construction or hydrogeologic differences. In 2015, the horizontal hydraulic gradient between these wells became negligible and likely reversed, resulting in a gradient flowing from SBL 1 toward Well 624. The measured gradient of -0.0019 is more than an order of magnitude less than the gradient measured between the other well pairs.

Table 5 indicates the calculated average velocity for well pair 805 and 624 is consistent with the 2014 and 2015 calculations (57 ft/yr in October 2014, 2015, and 2016) and shows a slight decrease in the average velocity for well pair 805 and 627 (69 ft/yr in October 2016 and 70 ft/yr in October 2015).

The downgradient limit (“nose”) of the 1,000 mg/L bicarbonate isoconcentration contour shown in Figure 8 is consistent with the comparable figure in the 2015 and 2014 Annual Reports (i.e., approximately the same location). The onset of persistent attainment of the “full impact threshold” values for bicarbonate (1,000 mg/L) and chloride (150 mg/L) in Well 624 occurred in October 1996 (20 years prior to October 2016). The 2014 report used the 2014 average groundwater flow rate from Wells 624 to SBL 1 of 8 ft/yr, and the inferred location of the plume “nose” near SBL 1 in Figure 8 (with a separation distance of 58 ft), to estimate five years for the seepage-impact front to reach SBL 1. This estimate assumed a constant seepage velocity of 8



ft/yr (the calculated rate for 2014); however, based on 2015 and 2016 data the actual time for seepage impacts to arrive at SBL 1 will likely be much longer because saturation levels and gradients have declined more rapidly upgradient than downgradient. Overall, the timing of the arrival of seepage impacts at SBL 1, or expectation that seepage impacts will arrive at all, is not subject to precise prediction.

Figure 8 shows the downgradient “nose” of the 1,000 mg/L bicarbonate isoconcentration line passing to the east of Well SBL 1. This depiction is based on the inference that the seepage-impacted water will locally take this southerly course to parallel the southerly turn in the edge of the cuesta nearby to the east.

#### *2.3.4 Continuing Assessment of Southwest Alluvium Natural Attenuation and Earlier Technical Impracticability Waiver Request*

UNC conducted a scheduled natural attenuation test from February 2001 to July 2002 to determine whether shutting off the Southwest Alluvium extraction wells would adversely affect water quality. The Southwest Alluvium extraction wells were shut off in January 2001 for the duration of the test. The NA report was submitted to the EPA, NMED, and NRC on November 4, 2002 (Earth Tech, 2002b). The NA report concluded that turning off the extraction wells does not have an adverse effect on water quality and that the natural system is as effective as, or more effective than, pumping for controlling the migration of the constituents of concern. EPA has not reached the same conclusion based upon the Second Five-Year Review Report (EPA, 2003), subsequent Five-Year Review Reports (EPA, 2008, 2013) and further comments on the NA report (EPA, 2004a); therefore, additional monitoring is being performed.

The Technical Impracticability (TI) evaluation in the NA report concluded that natural conditions maintain sulfate and TDS concentrations at non-seepage-impacted background concentrations, which were nonetheless greater than previous EPA cleanup standards; however, the revised EPA cleanup standards (issued in 2015) better account for background geochemistry and the conclusion has been re-evaluated. When compared to the revised EPA cleanup levels, all TDS and sulfate concentrations, with the exception of sulfate in background Well SBL 1 are below the standards. Additional discussion of the TI evaluation is included in previous annual reports.

#### *2.3.5 Reassessment of the Performance of the Natural System*

The NA report (Earth Tech, 2002b) used nonparametric trend analysis to determine whether increases in contaminant concentrations occurred during the test and whether the changes were significant. Increases in upward trends were identified for bicarbonate, chloride, and TDS, although bicarbonate was evaluated as an indicator parameter only, not as a constituent of concern. These increases were attributed to the elimination of the partial capture provided by the extraction wells. No change in trend was observed for the sulfate concentrations because these are naturally equilibrated with gypsum. However, subsequent to the submittal of this report in 2002, Wells GW 2 and GW 1 had shown increasing sulfate trends; such increasing major ion concentrations reflect the influence of declining water levels and/or increased dissolution of the

alluvium materials (NRC, 1996). The NA report (Earth Tech, 2002b) also concluded that there was no change in trend for manganese, chloroform, or uranium. It was concluded from these analyses that, although seepage-impacted water continues to migrate as shown by upward trends in bicarbonate, the migration of metals and radionuclides is arrested by attenuation processes (i.e., adsorption and precipitation). Continued groundwater quality monitoring through October 2016 supports this conclusion for the vast majority of analytes in virtually all monitoring wells (with the possible exception of uranium in Well GW 3).

Table 6 shows the predicted performance of natural attenuation in the Southwest Alluvium. In summary, sulfate and TDS concentrations in seepage-impacted water are expected to meet the revised EPA cleanup standards that take into account the gypsum equilibrium in background groundwater. Entries in Table 6 include evaluation of background water quality in Well SBL 1, as well as our understanding of the geochemical systems associated with both background water and seepage-impacted water. Manganese is expected to meet the revised (lower) EPA standard in seepage-impacted water outside Section 2, but exceeds the EPA standard in both seepage-impacted wells within Section 2 and background Well SBL 1 (outside Section 2, in Section 10). Metals and radionuclides in seepage-impacted water are expected to meet their respective standards through attenuation by neutralization and adsorption. Chloride concentrations (which are not regulated by NRC) in seepage-impacted water outside Section 2 typically meet the standard, but are expected to continue to exceed the EPA cleanup standard, particularly at upgradient Well 509 D, within Section 2. The individual indicator parameters and constituents of concern are discussed below.

### *Calcium and Bicarbonate*

Calcium and bicarbonate are non-hazardous constituents and indicator parameters that are not regulated by NRC or EPA. Figure 13 illustrates the long-term stability of calcium and bicarbonate concentrations at Wells 627 and EPA 28, which are examples of background wells that have not been impacted by tailings seepage. Calcium concentrations in these two wells have been essentially the same through time. Figure 13 shows that during the onset of seepage impact in Well 624 (indicated by the increasing bicarbonate), the calcium concentration increased by approximately 100 mg/L and then re-equilibrated at a concentration of 650 to 700 mg/L. Under changed groundwater quality flux, calcium concentrations remain fixed in the presence of calcite and gypsum by the Phase Rule; the long-term consistency of calcium concentrations in the Southwest Alluvium attests to the established equilibrium between the groundwater and these minerals. In general, calcium concentrations do not vary appreciably anywhere in the groundwater flow system (see Figures 9 and 14).

Figure 15 shows the bicarbonate concentrations over the same period. Bicarbonate is a non-hazardous constituent that serves as the primary indicator of seepage impact in the Southwest Alluvium. Wells EPA 25 and 509 D previously showed post-shutoff uptrends in bicarbonate. Bicarbonate concentrations in 509 D have stabilized since 2011. The other wells have, at different times, achieved post-shutoff stability. These observations indicate that neutralization and geochemical attenuation have been occurring naturally, and that alluvial mineral salts

dissolve into the alluvium groundwater. We conclude that most of the system has largely attained a new steady-state with respect to bicarbonate following the termination of alluvial groundwater extraction.

### *Sulfate and TDS*

Sulfate and TDS are non-hazardous constituents that are not regulated by NRC. They do not have federal drinking water MCLs; they do have SMCLs. As shown on Figure 9 (and consistent with Zone 1 and Zone 3), most of the TDS comprises sulfate. The revised EPA cleanup standards (5,815 mg/L for sulfate and 10,376 mg/L for TDS), which account for background geochemistry, eliminate most of the Site's historical sulfate and TDS exceedances.

Figure 16 shows sulfate concentrations from 1999 through October 2016 and Figure 17 presents TDS concentrations over the same period. Sulfate concentrations exceed the revised EPA cleanup standards in the Southwest Alluvium only in non-seepage-impacted Well SBL 1. TDS concentrations do not exceed the revised EPA cleanup standard in any well in the Southwest Alluvium. Concentrations of sulfate and TDS are typically lower within seepage-impacted waters than within non-seepage-impacted Well SBL 1, and they are not expected to rise above the values measured in SBL 1.

### *Chloride*

The EPA cleanup standard (250 mg/L) for chloride derives from the New Mexico Water Quality Act, which is also the federal SMCL (this constituent does not have a federal primary MCL). Figure 12 presents chloride concentrations from 1999 through October 2016. Well 509 D is the only location where chloride concentrations have persistently exceeded the standard. Occasional minor exceedances have occurred in the past at Wells 632, 801, 802 and GW 1.

Figure 12 shows that during the 18 months after the pumping shutoff, there were small Site-wide increases in chloride, after which concentrations returned to their pre-shutoff levels. The small increases may have been (at least partially) an artifact of the more frequent, monthly water quality measurements that were made for the 18 months following shutoff (after which the frequency returned to quarterly monitoring). Pumping had no effect on chloride concentrations with the apparent exception of Well GW 1, where post-shutoff increases stabilized in January 2004 at concentrations that occasionally show very small exceedances.

### *Manganese*

Manganese is a non-hazardous constituent in water that is not regulated by NRC. It does not have a federal drinking water MCL; it does have an SMCL. The revised EPA cleanup level (2.1 mg/L) is lower than the historical EPA standard (2.6 mg/L) which was cited as background water quality in the ROD (EPA, 1988b).

Figure 11 presents manganese concentrations from 1999 through October 2016. Manganese is the only metal that consistently exceeds its revised EPA cleanup standard in seepage-impacted areas; however, there are no exceedances in seepage-impacted water outside Section 2.

Exceedances occurred at five seepage-impacted wells: 801, 803, 632, EPA 23, and 509 D during 2016. Concentrations at Well 801 showed an increasing trend since a recent low in January 2012 (3.62 mg/L) to a peak in July 2014 (7.00 mg/L), but remain lower than concentrations observed prior to shutdown. Concentrations at Well 803 exhibited a slight increasing trend in 2015 to a peak in October 2015 (3.45 mg/L) but stabilized in 2016. The concentration trends have been relatively flat at Wells EPA 23, 632, and 509 D since 2000. Well 509 D is an upgradient well that was not hydraulically influenced by the former downgradient extraction well pumping, and the changes of manganese concentrations are probably unrelated to previous pumping (the changes are slight and concentrations appear to be stable between ~ 2 to 4 mg/L). Manganese concentrations in Well 632 follow a very gradual increasing trend that started in December 2001, but have stabilized as of January 2011. Well 803 had manganese exceedances in samples from all four events in 2016. Manganese also exceeds the standard in background Well SBL 1. Two monitoring wells located in the center of the seepage impacted area (Wells 802 and 808) continued to show low manganese concentrations during October 2016 that were below the standard.

Manganese is a common accessory element, and its concentrations in water are tied to Eh-pH conditions rather than any association with the tailings seepage. It is expected that manganese concentrations will continue to be below the standard in most of the seepage-impacted wells outside Section 2 due to natural redox conditions and/or saturation with respect to rhodochrosite if bicarbonate concentrations are high enough; however, exceedances are expected to continue at Well EPA 23 and Well 509 D (both of these are POC wells located significant distances upgradient of the Section 2 property boundary), and Well 801. Based on long-term trends, slight exceedances may continue at Well 632 and at Well 803. In addition, manganese is expected to exceed the standard in background Well SBL 1.

### *Uranium*

The statistical analysis included in the NA report (Earth Tech, 2000c) determined that there was not a significant increase in trend for uranium; however, the graphs of uranium concentration in several wells indicated a possible increase prior to, and during, the NA test. For this reason, UNC has continued to reassess the uranium trends as part of the Site annual reporting. GE (2006) has evaluated the regulatory significance of the occurrence and distribution of dissolved uranium in the Southwest Alluvium. That report was prepared to assist EPA in deliberations about applying the current MCL for uranium (0.03 mg/L) as a formal cleanup criterion in the Southwest Alluvium. Figures 18 through 34 (discussed below) show that most of both the seepage-impacted and background wells have long-term uranium concentrations exceeding 0.03 mg/L. The NRC standard for uranium is 0.3 mg/L; based upon the Site history and distribution of uranium in background and seepage-impacted water. This has been considered the most supportable uranium standard for this Site (GE, 2006); there was no proposed change in the 2012 License amendment request for revised groundwater protection standards based on updated background concentrations (BTVs) (UNC, 2012), and no change to the standard in the License amendment (NRC, 2015).

EPA and NMED provided comments on an NRC draft EA related to UNC's 2012 License amendment request. EPA and NMED concluded that they do not support the current License standard for uranium in the Southwest Alluvium (0.3 mg/l) but, instead, support the BTV calculated for uranium based on the UPL95 statistical methodology (0.205 mg/l). The UPL95-based BTV is inappropriate for the following reasons:

- The source of uranium in both background and seepage-impacted water in the Southwest Alluvium is not tailings seepage, but mine water, permitted in the case of the NECR mine to contain uranium concentrations up to 2 mg/l, discharged to Pipeline Arroyo from both the NECR and Quivira mines for 17 years. Mine dewatering operations discharged approximately 3,000 gallons per minute (gpm) of groundwater pumped from the mine permit areas within the Morrison Formation to Pipeline Arroyo from 1969 to 1986. A portion of the groundwater discharged to Pipeline Arroyo infiltrated into the Southwest Alluvium and uranium adsorbed or precipitated within the alluvial sediments and has naturally attenuated to concentrations far below the discharge permit limit of 2 mg/L.
- Uranium concentrations in the Southwest Alluvium attenuate via adsorption and/or precipitation such that background uranium concentrations decrease with increasing distances downstream and away from the arroyo centerline. This geochemical evolution of background (post-mining/pre-tailings) water causes the background concentration for uranium to be spatially and temporally dependent. Put another way, the statistical analysis of uranium background does not distinguish the spatial and temporal variance, and instead, calculates a biased value across all sample locations and times because most background samples were from downgradient locations where background uranium concentrations are biased low.
- The concentration of dissolved uranium in seepage-impacted water is often a function of the bicarbonate concentration, and uranium concentrations have been empirically found to lie within the same concentration range as the background (post-mining/pre-tailings) water. For example, the maximum Southwest Alluvium background uranium concentration used in the calculation of site background statistics (N.A. Water Systems, 2008b) was 0.367 mg/l, which exceeds the current NRC license standard. The net result is that uranium concentrations in seepage-impacted water may attain levels that are equivalent to the background water quality, but not typically greater.
- Historically, there have been only occasional exceedances of the NRC License standard (0.3 mg/L) in the current Southwest Alluvium performance monitoring wells, most of which occurred at Well GW 3, and several of which occurred in Well 509 D (see Appendix A).
- A comprehensive review of historic uranium concentrations demonstrates that most of the seepage-impacted wells have shown overall stable to decreasing trends since the Southwest Alluvium extraction system was shut off in January 2001. The EPA (2013) acknowledged that "With the exception of POC Wells GW-3 and 509D, and the very slight increasing trend in non-POC Well EPA 25; uranium concentrations trends over the

duration of monitoring have either stabilized or shown decreasing levels since the pumps were turned off.” As of 2015, uranium concentrations in samples from GW 3 continued to increase (discussion in following bullet), but uranium concentrations at wells 509D and EPA 25 appear to have stabilized.

- There is only one monitoring location outside Section 2 (GW 3, just over the Section 2 boundary) where uranium concentrations have exceeded the NRC License standard (0.3 mg/l) and the BTV (0.205 mg/l) since the extraction wells were shut down. Uranium concentrations at this location are not representative of general conditions in the Southwest Alluvium because the water level is very low (beneath the 2-foot minimum specified in the sampling procedure) such that the well no longer provides representative samples. Groundwater under these conditions can become isolated from the flow system and reach a local geochemical equilibrium. This is further supported by the fact that there are no Southwest Alluvium monitoring wells between GW 3 and the tailings impoundment that have uranium concentrations exceeding the NRC License Standard or having increasing trends. The BTV does not fully take into account differences due to well construction and effects of decreasing saturated thickness. For example, as the saturated thickness declines (as in well GW 3), the well may become isolated or hydraulically disconnected from the Southwest Alluvial flow system; groundwater under these conditions is not representative of typical groundwater quality because it has greater opportunity to geochemically evolve and reach local equilibrium with the formation.
- The background water exhibits the same overall range in uranium concentrations as in the seepage-impacted water, but the timing and location of a particular uranium concentration depends more upon its particular flow path than on its origin as either post-mining/pre-tailings water (i.e. background) or tailings seepage.

Consequently, UNC has recommended that the uranium standard in the Southwest Alluvium be waived (Chester Engineers, 2015b) and there is no reference to the EPA cleanup level indicated on Table 2 or the historical data table in Appendix A.

The concentration of dissolved uranium in seepage-impacted water is often a function of the bicarbonate concentration, and uranium concentrations have been empirically found to lie within the same concentration range as the background (post-mining/pre-tailings) water. Graphs of uranium concentrations in all fourteen wells comprising the Southwest Alluvium water-quality performance monitoring program, through October 2016, are included as multi-well plots in Figures 18 and 19. Figure 18 shows only the seven POC wells; Figure 19 shows other selected wells, including background wells.

Historically, there have been occasional exceedances of the NRC uranium standard of 0.3 mg/L in the current Southwest Alluvium performance monitoring wells, most of which occurred at Well GW 3, and several of which occurred in Well 509 D (see Appendix A).

Graphs of uranium concentrations are shown separately for each well in Figures 20 through 34:

- **Well 509 D** (Figure 20): The uranium concentration in Well 509 D, which is located upgradient of the South Cell and the other Southwest Alluvium wells, increased for one full year prior to the NA test starting in October 1999 (pumps were shut off in January 2001). Relatively large fluctuations have been characteristic since shutoff and during earlier periods. The concentration trend had been overall stable (i.e., approximately horizontal on the chart), at the higher end of the historic range, from July 2000 through October 2008, when an increasing trend started. However, since 2014 the concentration trend may have stabilized and reversed. Well 509 D is located outside the zone of influence of the former pumping wells; it is not a good indicator of whether there is a benefit to pumping. Furthermore, based on the saturated thickness map (Figure 3B), Well 509D appears to have limited connection to the Southwest Alluvium flow system; this relative isolation may be a reason for differing geochemical responses than those observed downgradient.
- **Well 801** (Figure 21): The uranium concentration in Well 801 increased to its maximum just prior to shutdown and decreased through most of the NA test. The concentrations decreased and stabilized, approaching the long-term average concentration that had been extant during pumping. The 800-series wells are also closest to the tailings impoundment, and as such, would be expected to reveal any anomalous uranium concentrations that originate from the tailings impoundment seepage. No anomalies are present which suggests that the tailings seepage is not the source of uranium in the Southwest Alluvium.
- **Well 802** (Figure 22): Well 802 was a pumping well that was shut down on January 8, 2001. Subsequent concentrations increased through September 2001, were stable through October 2003, and have been decreasing since October 2003 to present.
- **Well 803** (Figure 23): The uranium concentration in Well 803 spiked in the year 2000, more than one year before the NA test. Only one of the samples collected since shutdown showed a higher uranium concentration than the two relatively high concentrations that were measured during 2000, before the shutdown. Post-shutoff concentrations increased through July 2002 to a similar value measured pre-shutoff during May and July 2000. Since July 2002, the trend has been decreasing and concentrations are consistent with the historic range. This is an example showing that although heterogeneous uranium-bearing waters may pass through the system, they will tend to approach a stable, average concentration whether or not the pumps are running.
- **Well GW 1** (Figure 24): The uranium concentrations in Well GW 1 began to increase in 1999, well before the NA test, and therefore cannot be attributed to the cessation of pumping. Post-shutoff concentrations continued to increase at an accelerated rate through July 2002 and then decreased through January 2004, at which time they stabilized. Figure 24 shows that uranium and bicarbonate concentrations have had over time a history of covariance at GW-1.

- **Well GW 2** (Figure 25): Post-shutoff uranium concentrations were stable through October 2002; then they increased to October 2005, after which they have defined an overall decreasing trend. Uranium concentrations after the shutdown of pumping have been within the historic range of those before the shutdown. Furthermore, uranium concentrations between shutdown and October 2002 were similar to concentrations prior to the cessation of pumping, indicating that subsequent fluctuations were unrelated to the shutdown. Well GW 2 has not been sampled since July 2015, and can no longer be safely sampled due to its proximity to the unstable edge of Pipeline Arroyo canyon.
- **Well GW 3** (Figure 26): Since shutoff, the concentrations have increased from 0.059 mg/L in February 2001 to 0.423 mg/L in July 2015, defining a linear rate of increase of +0.025 mg/L per year over this period of 14.7 years. GW 3 is the only Southwest Alluvium well to show a persistent increase in uranium since shutoff. However, this does not necessarily indicate a causal relationship between the increasing trend and shutoff. For example, nearby Wells GW 1 and GW 2 have exhibited different concentration changes over the same time-frame. It is not clear what physical or chemical mechanism stemming from the shutoff could account for changes so heterogeneous in degree and timing over a relatively small downgradient area. Uranium concentrations in many Southwest Alluvium wells have shown that variously gradual to steep uptrends and downtrends are typical, whether they occur during pumping or in the absence of pumping. In previous annual reports it was observed that starting in approximately January 2008, there has been little to no covariance between the bicarbonate and uranium concentrations, an interpretation likely affected by periodic fluctuations in the bicarbonate concentrations. However, with the inclusion of the 2013 through 2015 data, Figure 26 demonstrates uranium and bicarbonate covariance since July 2009 in that both have followed increasing trends: uranium increased from 0.125 mg/L (July 2009) to 0.423 mg/L (July 2015) and bicarbonate increased from 1,410 mg/L (July 2009) to 1,670 mg/L (July 2015). Hydrologic conditions may also influence uranium concentrations at GW 3. This well has a very short water column (last measured in July 2015 at 2.07 ft, or 4 percent saturated thickness) at the edge of the saturated zone in the Southwest Alluvium and we project that the piezometric surface will be below the base of the alluvium in 2018 (i.e., approximately two years). By comparison, in October 2003 the water column here was 7.52 ft tall (representing 13% saturated thickness). The declining saturated thickness observed in the vicinity of Well GW 3 may contribute to the recent elevated uranium concentrations (i.e., consistent with the hypothesis developed by NRC (1996)). Furthermore, Well GW 3 does not produce sufficient volume for sampling using low-flow sampling protocols such that it must be sampled on the next day to acquire the necessary sample volume. As the saturated thickness has declined, the well is interpreted to have become isolated or hydraulically disconnected from the Southwest Alluvial flow system; samples collected under these conditions are not representative because the groundwater has greater opportunity to geochemically evolve and reach local equilibrium



with the formation. Well GW 3 has not been sampled since July 2015, and can no longer be safely sampled due to its proximity to the unstable edge of Pipeline Arroyo canyon.

- **Well 624** (Figure 27): Post-shutoff concentrations have been stable at the lower end of the historic range. This chart also shows the bicarbonate time series at this well. Unlike the periods of covariance between uranium and bicarbonate shown in Wells GW 1 (through April 2002) and EPA 25, Well 624 conspicuously lacks covariance. This observation is discussed later in this section.
- **Well 632** (Figure 28): Post-shutoff concentrations have been stable at the lower end of the historic range (excluding a drop to nondetect in April 2004).
- **Well 627** (Figure 29): Post-shutoff concentrations have been stable at the lower end of the historic range.
- **Well 808** (Figure 30): This well was installed in conjunction with the planned shutoff of the extraction well system; it has no pre-shutoff history. The post-shutoff uranium concentration showed a large upward spike through September 2001; since then the trend was strongly downward through October 2002, subsequent to which the concentrations have stabilized and show a decreasing trend.
- **Well EPA 23** (Figure 31): Post-shutoff concentrations have been stable at the lower end of the historic low range.
- **Well EPA 25** (Figure 32): Uranium concentrations were stable from July 1999 to January 2007, after which covariant increases of uranium and bicarbonate concentrations are observed. This chart also shows that the covariance of uranium and bicarbonate concentrations occurred over most of the history of monitoring. The onset of seepage impact at this well occurred during October 1995. An upward step in bicarbonate concentrations started in April 2006, while an apparent upward step in uranium concentrations started slightly later in January 2007. These geochemical changes occurred many years after the shutoff of the pumps. EPA 25 uranium concentrations appear to have stabilized over approximately the past two years (October 2016, 0.109 mg/L) at levels substantially lower than the NRC standard. Periods of covariance of uranium and bicarbonate concentrations have occurred at most (but not all) wells in the Southwest Alluvium. This important relationship can be explained by the basic geochemical principles presented in GE (2006). EPA 25 is along the northwest flank of the bicarbonate impact area (see Figure 8).
- **Well EPA 28** (Figure 33): Concentrations have been quite stable since July 1989.
- **Well SBL 1** (Figure 34): Concentrations at this newest, downgradient background well have varied from 0.0066 mg/L to 0.0332 mg/L.

This comprehensive review of historic uranium concentrations demonstrates that most of the seepage-impacted wells have shown overall stable to decreasing trends since shutoff. Exceedances of the Site License standard for uranium have been limited to one in Well 509 D

during October 2010 and the twelve in Well GW 3 (all since October 2012). All the other wells have shown post-shutoff concentrations within their pre-shutdown historic ranges, and many of the wells show that both gradual and sudden variations are common. The GW 3 uranium exceedances appear to be isolated spatially and analytical results since July 2009 indicate the covariance of uranium with bicarbonate concentrations. The short water column at this location may also affect observed uranium concentrations. Uranium concentrations in many Southwest Alluvium wells have shown that variously gradual to steep uptrends and downtrends are typical, whether they occur during pumping or in the absence of pumping. UNC concludes that pumping would not result in a general Southwest-Alluvium-wide improvement in groundwater quality with respect to uranium or any other constituent.

EPA (2008) has stated (p. 53, Issue # 4):

“If the source of the uranium is the alluvial sediment, the increase in bicarbonate levels, as believed to be controlled by the shutoff, would be expected to influence the distribution and concentration of uranium. The bicarbonate levels are believed to determine whether or not the non-tailings-sourced uranium is dissolved, precipitated, or adsorbed. Thus, if the bicarbonate continues to migrate, then any uranium which could be sourced from the alluvium is expected to mimic the bicarbonate and migrate accordingly. In light of this, there remain questions regarding the effectiveness of the extraction wells to improve ground-water quality with respect to uranium.”

EPA (2008) indicated that this and related statements in their third Five-Year Review report derived from their review of the 2007 Annual Review Report (N.A. Water Systems, 2008a) and GE (2006). UNC concurs that degrees of covariance between bicarbonate and uranium groundwater concentrations have been demonstrated in many Southwest Alluvium wells, and that the alkalinity of seepage-impacted water can be a strong determinant of how much uranium will be partitioned between the aqueous and (a typically surface-bound) solid phase (GE, 2006). UNC also believes that the weight of empirical evidence demonstrates that re-starting groundwater extraction will not improve groundwater quality in the Southwest Alluvium.

Uranium concentrations attenuate via adsorption and/or precipitation such that background uranium concentrations decrease with increasing distances downstream and away from the arroyo centerline; this likely heterogeneity of the uranium distribution (of non-tailings origin) within the Southwest Alluvium sediments may inherently limit one's ability to predict the degree (or even presence) of such covariance. For example, the increase in bicarbonate to a plateau at Well 624 (Figure 27) starting in May 2000 is attributed to the migration of the bicarbonate “front” associated with tailings seepage-impact. However, this well shows no covariance between the bicarbonate and uranium concentrations. At least two interpretations are possible: (1) at this well location there is little to no adsorbed or precipitated uranium (i.e., solid phase) within the alluvial sediments; and (2) aqueous uranium that originated from upgradient tailings seepage impact has been strongly attenuated during transport and has not reached this location.

Excluding the sharp and singular increase in Well 509 D during October 2010 and recent results in Well GW 3, the Southwest Alluvium wells have not shown exceedances of the Site License uranium standard (0.3 mg/L). *The time-concentration plots indicate that natural attenuation, by neutralization and adsorption, is at least equally as effective as a pumping remedy.* This conclusion is bolstered by earlier discussion indicating that in comparison to background water quality, the passage of the seepage-impact front presages an improvement in sulfate and TDS concentrations. However, the data also demonstrate that the interaction of the uranium in the Southwest Alluvium sediments with varying geochemical (e.g., bicarbonate) or hydrologic factors (e.g., reductions in saturated thickness, isolation from the groundwater flow system, or geochemical interaction with the underlying bedrock) may result in variable concentration trends accompanied by localized exceedances of the current Site uranium standard (0.3 mg/l). The uranium standard in the Southwest Alluvium should be waived because the principal source of uranium for both background and seepage-impacted waters was the permitted mine discharge water rather than tailings seepage. It also is not possible to ensure that a standard will be achieved consistently throughout the seepage-impacted area as the geochemistry fluctuates and water levels decline over time. Moreover, the standard will only be attained upon extraction of all water in the alluvium, which is not practicable.

#### *Pb-210*

There was one detection of Pb-210 in Southwest Alluvium wells in 2016 (Well 627 at 1.3 pCi/L in October 2016); however, it was below the revised NRC/EPA standard of 5.9 pCi/L. This detection is not distinguishable from background concentrations.

## Section 3

### *Zone 3*

#### 3.1 Corrective Action Summary

##### *3.1.1 Northeast Pump-Back and Stage I and II Remedial Action Systems*

The historical corrective action in Zone 3 consisted of pumping the three sets of extraction wells shown on Figure 35: (1) Northeast Pump-Back System (green triangles), (2) Stage I Remedial Action System (empty black squares), and (3) Stage II Remedial Action System (filled blue squares). The Northeast Pump-Back wells started operation in 1983; the Stage I and II wells were added later as part of the Remedial Action Plan (UNC, 1989b) implemented in 1989. While operating, the corrective action system in Zone 3 performed as designed to enhance dewatering of the seepage-impacted area and remove constituent mass.

The numbers of operating extraction wells were reduced as Zone 3 dewatering caused sustainable pumping rates to drop below 1 gpm. The number and pumped volumes of the former extraction wells, during the period of Zone 3 corrective action from 1989 through 2000, have been summarized in Earth Tech (2002c, Figure 3-2). Pumping from the last three extraction wells ceased in 2000. The NRC amended the License (with approval from NMED and EPA) to shut off the three remaining wells (716, 717, and 718) in December 2000. This decision included a provision for UNC to submit a modified corrective action plan, an application for ACLs, or an alternative to the specific requirements of 10 CFR Part 40, Appendix A, if the License standards are not achievable. With respect to the source materials license, the corrective action program in Zone 3 has undergone significant evaluation and evolution since the pumping was temporarily ceased over a decade ago. Notably, UNC conducted pilot programs involving hydraulic fracturing to improve well yields, and an alkalinity stabilization program to neutralize the acidic uranium mill tailings seepage. These efforts have been documented in several reports and correspondence, and are also summarized in the Annual Reports that are required under Condition 30.C (including the current report).

##### *3.1.2 2004 Supplemental Feasibility Study*

At the request of the EPA (2004b), UNC conducted a Supplemental Feasibility Study (SFS) to evaluate all appropriate remedial options for Zone 3. Prior to reporting the SFS (MWH, 2004), UNC submitted (2004) a Technical Memorandum including a chronology of events that led to UNC's initiative to aggressively develop remedy modifications or enhancements that might improve the performance of the remedy in Zone 3. The SFS report presented (1) groundwater modeling of the Zone 3 sandstone unit and the locally overlying alluvium, (2) pilot-hole hydrofracturing study results, (3) a remedial alternatives analysis, and (4) conclusions and recommendations for enhancing or optimizing remedies for Zone 3.

Two studies were conducted based on recommendations of the SFS. These were an in-situ alkalinity stabilization pilot study and the pilot and Phase I hydrofracture program. These studies are described below.

### 3.1.3 *In-Situ Alkalinity Stabilization Pilot Study*

UNC conducted an in-situ alkalinity stabilization pilot study to evaluate the potential to enhance the ongoing Zone 3 remediation through the use of alkalinity injection wells combined with carefully controlled extraction pumping at the Site. The proposed approach for the pilot study was presented in the In-Situ Alkalinity Stabilization Pilot Study (BBL, 2006), which was approved by EPA.

The pilot study was initially designed to test the injection of alkalinity-rich groundwater from a non-seepage-impacted part of the Southwest Alluvium into the Zone 3 aquifer. The injected water (so-called “fixiviant”) would flow through the Zone 3 formation to recovery wells where the fixiviant could be pumped to the surface for treatment and disposal. However, NMED expressed concerns that the groundwater from the Southwest Alluvium did not meet applicable groundwater standards for sulfate, TDS, and manganese. The pilot study approach was revised to include injection of water withdrawn from the Westwater Canyon Formation via the Mill Well (amended with sodium bicarbonate to add alkalinity) into Zone 3, as described in the approved In-Situ Alkalinity Stabilization Pilot Study dated June 2006.

The pilot study was conducted from October 24, 2006, to February 15, 2007. The observed injection and extraction rates were unexpectedly low. As a result, the estimated travel time between the injection and extraction wells became prohibitively low and the pilot test was terminated. Data obtained as part of the pilot study indicated that the mineral feldspar in the Zone 3 arkosic sandstone had been altered by the acidic tailings liquids, generating kaolinitic clay that significantly clogged pore spaces and reduced hydraulic conductivity. The pilot study indicated that it would take 10 times longer to accomplish remedy goals than had been hypothesized. Using what had been envisioned as an approximate 5 year remedy enhancement could actually take 50 years or more. Based on these results, it was concluded that the use of alkalinity rich solutions to remediate the Zone 3 seepage-impacted groundwater in-situ was infeasible (ARCADIS BBL, 2007).

### 3.1.4 *Phase I Hydrofracture Program and Continuing Zone 3 Extraction Well Pumping*

Extraction of seepage-impacted groundwater from a new array of wells (identified as RW-series wells) in the northern part of Zone 3 in Section 36 was tested in April 2005 as part of the Phase I (i.e., post-pilot) hydrofracture program (MACTEC, 2006). Continuous pumping of these wells began in May 2005. The new pumping array initially had three beneficial effects:

- Capture of most if not all of the northward-advancing seepage-impacted water (i.e., partial hydrodynamic control);
- Marked groundwater quality improvement and recession of the seepage-impact front to the south; and
- Dewatering and mass removal.

However, the groundwater quality improvement was temporary due to declining pumping rates. Well PB 2 was converted to an extraction well in November 2005 to complement the RW-series

pumping wells in the northern area of the seepage-impacted water (pumping of PB 2 was terminated in July 2013, because its maximum sustainable pumping rate had declined to less than 0.01 gpm). Pumping from recovery well RW A was started during September 2007 at a location recommended by MACTEC (2006) to augment hydraulic containment (see their Figure 3.11). The locations of the Phase I pumping wells (RW 11, RW 12, RW 13, RW 15, RW 16, RW 17, RW A and PB 2) are shown on Figure 36 and Figure B-1 in Appendix B. Due to fouling and/or insufficient yield, Wells PB 2, RW 12, RW 13, and RW 15 are no longer being pumped. Based on UNC's hydrogeologic analysis and recommended pumping system design (N.A. Water Systems, 2008c), five new extraction wells (NW 1 through NW 5) were installed during September 2008 to intercept and recover seepage-impacted water. These well locations are shown on Figure 35 and Figure B-1 (Appendix B). All five wells were tested for a short period beginning in February 2009 to determine that they were pumping properly; pumping ceased at NW 4 and NW 5 in March 2009 and continued at Wells NW 1, NW 2, and NW 3. During November 2009, NW 3 was shut down to minimize the potential of drawing seepage-impacted groundwater to the northwest and pumping was initiated at NW 4. Yields have since declined and pumping was suspended at NW 1 in May 2012 and at NW 4 on October 21, 2015. Pumping was initiated at NW 5 on March 16, 2016 as a replacement for NW 4. The current pumping rates at NW 2 and NW 5 are each approximately 0.4 gpm.

The Zone 3 Corrective Action system during 2016 comprised extraction from wells RW 11, RW 16, RW 17, RW A, NW 2, and NW 5. Approximately 17,865,126 gallons of groundwater have been pumped from this new Zone 3 extraction well network from January 2005 through the end of November 2016, and piped to the evaporation pond.

### *3.1.5 Evaluation of the Effects and Limitations of Zone 3 Extraction Well Pumping*

Twenty-seven years of remedial pumping have resulted in significant dewatering of Zone 3. One effect of this is that once the saturated thickness falls to approximately 25 ft or less, well efficiency declines and pumping rates fall to less than 1.0 gpm (Earth Tech, 2001). Appendix A of the ROD (EPA, 1988b) anticipated that these "significant declines in pumping rates with time due to insufficient natural recharge of aquifers" will occur and that "In the event that saturated thicknesses cease to support pumping, remedial activity would be discontinued or adjusted to appropriate levels."

Table 7 presents the reductions in saturated thickness for Zone 3 monitoring wells between the third quarter of 1989 and the fourth quarter of 2016. In previous versions of this table, values of saturated thickness greater than 25 ft were shaded. Beginning in 2012, none of the monitored Zone 3 wells met this criterion. For the 2013 Annual Report, adjustments were made to the saturated thickness calculations for Wells EPA 14, NBL 1, PB 2, PB 3, and PB 4 after review of well information. The corrections yielded a net decrease in the saturated thickness at Well EPA 14 (1.73 ft), a decrease at PB 4 (by 10 ft) and increases in the estimated Zone 3 thickness at NBL 1 (by 4 ft), PB 2 (by 2.4 feet) and PB 3 (by approximately 2 ft).

The saturated thickness measured in Zone 3 wells has declined by 78 percent on average since the third quarter of 1989. Figure 35 shows that between 1989 and the fourth quarter of 2016, a very large portion of the Zone 3 Remedial Action Target Area has been desaturated (effectively dewatered). The eastern limit of Zone 3 saturation has shifted to the west-northwest over this time period (from the location of the wavy blue line, showing the saturation limit in 1989, to the dashed brown line showing the approximate October 2016 “zero” saturation limit). The effects of both the former and the present-day, reconfigured remediation pumping in partially, locally dewatering Zone 3 are presented in Figure 37. The figure identifies the start of recovery pumping from the well array installed during the hydrofracture study in April 2005. Zone 3 water levels are demonstrated to be declining with time at all wells, except Well 446, which shows a slightly increasing trend with small fluctuations since July 2010. However, Well 446 water level measurements are unreliable; the water level is below the bottom of the screened interval (there is a 10-foot section of blank well casing below the well screen) and it is difficult to measure due to the presence of a floating natural oil lens. Therefore, the Well 446 water level value used for the potentiometric surface map and saturated thickness map has been estimated based on the surrounding wells and an extrapolation of the decreasing water level trend before the water level dropped below the screened interval. Monitoring wells that do not meet monitoring objectives will be considered as candidates for decommissioning during the 2017 operating year.

Seepage-induced alteration of feldspathic minerals has reduced the bedrock permeability in Zone 3, which restricts the migration of tailings seepage (see Section 3.1.3). The main reason that the groundwater flows toward the north is that the Zone 3 bedrock unit dips toward the north. The hydraulic head that drives the flow comprises two components: the elevation head plus the pressure head. The long history of extraction pumping in Zone 3 has reduced the pressure head component of the total hydraulic head. However, it is not possible to reduce the slope-related elevation head – that is a driving force component that cannot be changed (N.A. Water Systems, 2008b). Continued pumping has been helping in the short-term as Figure 37 shows; however, the saturated thicknesses in this hydrostratigraphic unit are quite shallow and eventually there will be no further possible reduction in the pressure head. The effort to counteract the overall hydraulic head is gradually approaching practical limits as the well yields decrease. At some time in the future, seepage-induced permeability reductions will retard further northward migration of seepage-impacted water. The exact timing and location of the development of this critical balance cannot be predicted – but such a condition should inevitably occur.

Another way to look at the inherent difficulty of extraction pumping in the northern part of the seepage-impacted water is to note that along a 1200-ft long, west-northwest trending line of cross section located between Wells NBL 1 and PB 3, the total groundwater flux (without any pumping) was calculated to be 512 ft<sup>3</sup>/day (2.7 gpm) during January 2005 (N.A. Water Systems, 2008c), which is equivalent to the discharge from a home garden hose turned on low. This flux estimate has decreased as a result of the ongoing reduction of saturated thickness. This relatively small flux has allowed the currently pumping NW-series wells to apparently intercept and contain the entire width of the northward advance of the impacted water.

The revised Zone 3 pumping system has been declining in performance and active remedial operations in Zone 3 are reaching the limits of their effectiveness as anticipated by Appendix A of the ROD (EPA, 1988b) and acknowledged in EPA Five-Year Review reports (e.g., EPA, 1998; EPA, 2008; EPA, 2013). Most of the Zone 3 wells have reduced yields that are below 0.5 gpm; pumping at wells NW 1, NW 4, and PB 2 has been suspended in recent years due to low yield and insufficient water pressure. The following physical factors controlled these declining yields:

- Encrustation along the wellbore of iron oxyhydroxides, carbonates, and/or gypsum;
- Precipitation of amorphous aluminosilicates (e.g., EPA 14);
- Alteration of feldspar to clays within the bedrock matrix; and
- Reduced saturated thicknesses.

Pumping was initiated at NW 5 on March 16, 2016, as a replacement for NW 4 (shut down in October 2015) at a pumping rate of approximately 0.5 gpm. This pumping is intended to slow the potential migration of seepage-impacted water north of the Section 36 boundary. However, the operation of NW 5 has resulted in a slight northwestward shift in the mapped areal extent of seepage-impacted water relative to the extent depicted in 2015 (as described later in Section 3.3.2 and as shown on Figure 35). The combined time-averaged extraction rate of the six currently pumping wells in northern Zone 3 in the 2016 monitoring period (December 2015 through November 2016) was approximately 1.54 gpm, which constitutes approximately 57 percent of the 2.7 gpm total flux calculated in January 2005. The efficiency of seepage-impacted water removal has declined with time and is expected to continue to degrade. Seepage removal efficiency will be considered in the SWSFS as the means to evaluate the effectiveness of any proposed remedy alternatives utilizing pumping wells.

Groundwater quality in northern Zone 3 has oscillated between degrading and improving trends over the last 14 years (see Section 3.3.2 and Chester Engineers, 2015a). The variations in water quality indicate that there have been local and variable degrees of mixing of seepage-impacted water with background water drawn in from the west and north. Consistent with UNC's original recommendations (N.A. Water Systems, 2008c) and a later update (Chester Engineers, 2009c), UNC has adjusted the pumping regime among the NW-series wells as needed to attempt to: (1) limit the withdrawal of background water; (2) limit the tendency for seepage-impacted water to be drawn westward or northward; and (3) improve the capture of seepage-impacted water. As always, the goal is to strike the best balance between containing the seepage-impacted water while minimizing its transport to the more thickly saturated, but non-seepage-impacted parts of Zone 3.

UNC continues to evaluate the chemistry, water levels, and well yields in Zone 3, which may result in recommendations for further modifications to the extraction system operations (e.g., initiation of pumping from additional or different locations). Extraction wells having yields below the 1 gpm decommissioning criterion will be evaluated for decommissioning during the



2017 operating year. Extraction system operational data may also be considered with respect to remedy alternative evaluations performed in the SWSFS.

### *3.1.6 Injection Well Feasibility Testing and Pilot Study*

Injection well feasibility testing, and its historical context, has been discussed in previous Annual Reports (e.g., Chester Engineers, 2010a; 2011a; and 2012b). The first injection testing was in background well NBL 2 (Chester Engineers, 2009d). The second injection testing was in the pilot injection well, IW A (Chester Engineers, 2010b).

On April 14, 2011 injection of water amended with sodium bicarbonate (2 grams per liter) started at Zone 3 Well IW A (Chester Engineers, 2011c). The objectives of the injection were to (1) amend the injected water with alkalinity (sodium bicarbonate) to locally buffer and geochemically stabilize the seepage-impacted water, (2) redirect the seepage-impacted water into the capture zones of the northernmost extraction wells, (3) extend the life of the extraction wells by arresting the drawdown, and (4) provide a hydraulic barrier to the northerly advance of seepage-impacted groundwater. The injection capacity at IW A declined over time. In late June 2012 the capacity had declined to ~ 0.2 gpm (288 gpd) and it became very difficult to meet the target injection water level. On June 29, 2012, the injection at IW A was terminated after a total of 426,363 gallons of water had been injected.

An observed increase in uranium concentration at monitoring Well MW 6, from 0.082 mg/L in July 2011 to 0.321 mg/L in July 2012 (see Appendix B, Table B.1), provided an additional important reason to terminate the injection of alkalinity. As discussed by GE (2012a), the two possible explanations for the increase in uranium concentration included: (1) The remedial system is drawing-in background water (post-mining/pre-tailings) which contains higher uranium concentrations than either the MCL or seepage-impacted water (N.A. Water Systems, 2008e, 2008f); and (2) the uranium increase could also have been due to the influence of the sodium bicarbonate ( $\text{NaHCO}_3$ ) amended water that was injected at Well IW A. Some combination of both reasons likely explains the changes in the uranium concentration data, and because the relative contribution of each cause is unknown, it was prudent to permanently discontinue the injection of alkalinity-amended water. NRC concurred with the decision (Roy Blickwedel, GE, personal communication with Yolande Norman, NRC, October 2012).

### *3.2 Mass of Chemical Constituents Removed*

The mass of chemical constituents removed by extraction well pumping was calculated for the 12-year period from July 1989 through June 2000. These calculations were presented in the previous annual reviews, and the final summary is presented in the 2000 Annual Review (Earth Tech, 2000e).

As previously discussed, the recent phase of extraction well pumping that originated with the hydrofracture program has continued to present. The RW-series extraction wells and the NW-series extraction wells are shown on Figure 36 and Figure B-1 in Appendix B. Table 8 shows the estimated mass removal by this pumping from December 2015 through November 2016 (the

similar Table 8 in the 2015 Annual Report showed data through November 2015). The recovered masses were estimated by multiplying the volume of groundwater pumped by the estimated concentration of each constituent in the pumped water. The constituent concentrations were estimated from concentrations measured in groundwater samples taken from the extraction wells and nearby monitoring wells during October 2016 (with exceptions noted in Table footnotes). Pumping volumes have decreased over time. Table 8 shows the estimated total volume of water extracted from wells was 746,778 gallons during the period from December 2015 through November 2016, which is approximately 16 percent less than that pumped during the December 2014 through November 2015, and 32 percent less than the volume extracted from December 2012 to November 2013.

### **3.3 Performance Monitoring Evaluation**

#### **3.3.1 Water Level Evaluation**

The water level monitoring component of the current Zone 3 performance monitoring program is summarized in Table 9 and comprises quarterly monitoring of water levels in 23 wells. The saturated thickness has decreased at three of the water level monitoring locations (Wells 504 B, 446, and NBL 1) such that they no longer provide adequate data. Starting in January 2011, water levels in 504 B became too low to allow sampling and the well went dry in 2012. Water level measurements in Well 446 are unreliable because the water level is below the bottom of the screened interval and it is difficult to measure due to the presence of a floating natural oil lens (see Section 3.1.5). NBL 1 is within an area of active recovery well pumping; should pumping be terminated it could again become relevant. Monitoring wells that do not meet monitoring objectives will be considered as candidates for decommissioning during the 2017 operating year.

Water level data from 1989 through October 2016 are presented in Appendix B. Water levels from October 2016 are shown on the potentiometric surface map in Figure 36. These potentiometric contour lines indicate groundwater flows toward the north and northeast, approximately parallel with the eastern limit of Zone 3 saturation. This potentiometric field is similar to those depicted in recent annual reports.

Figure 36 shows the locations of wells pumped during October 2016 and monitoring wells. Measured groundwater elevations were used to develop this potentiometric map, which shows a 5-ft contour interval. The pumping of Wells RW A, RW 11, and RW 16 is interpreted to cause southwestward deflections of the contour lines. The water levels in the vicinity of Wells NW 2 and NW 5 are consistent with the convergence of groundwater flow lines toward these extraction wells. As observed in 2013 through 2015, water levels at certain northern Zone 3 wells have decreased significantly in response to pumping.

Groundwater discharge into Pipeline Arroyo, associated with historical mining operations, ceased in 1986. Since then, Zone 3 groundwater flow directions became more generally north-northeasterly as recharge from, and groundwater mounding within, the alluvium to the southwest and west has steadily decreased (Chester Engineers, 2012c, 2014b). The earlier east-to-northeast

flow direction caused the distribution of groundwater impacts that was the original basis for delineation of the Zone 3 Remedial Action Target Area, as shown on Figure 35. Effects on the potentiometric surface from alluvium recharge (mine-dewatering groundwater discharge) have largely dissipated, and rates of water level change in Zone 3 are mostly very slow (excluding the influence of recent pumping). Since the cessation of groundwater discharge into Pipeline Arroyo, water levels have been declining. Pumping of extraction wells prior to January 2001 temporarily accelerated the local rates of water level decline until the saturated thickness was reduced to less than ~ 25 ft, after which the decline in levels slowed to natural rates of drainage. In October 2016, the collective average saturated thickness for all measured Zone 3 wells (Table 7) has reduced to approximately 10 ft.

Contours of saturated thickness during the October 2016 monitoring event (Figure 38) show the combined effects of former pumping, current pumping, the former injection program, and natural drainage on Zone 3. The values posted on Figure 38 are calculated saturated thickness values for wells that have a measured water level during the October 2016 monitoring event. These posted values were not used to create the map contours; the contours were developed by subtracting one interpolated surface (the elevation of the base of Zone 3) from another (the potentiometric surface for the October 2016 monitoring event). The Zone 3 base surface is interpolated from historical well log data in the investigation area and the potentiometric surface is shown in Figure 36. There are a few small areas in the center of the seepage impacted area that are mapped as having zero saturation. These areas occur where the estimated potentiometric surface is equal to, or lower than, the mapped elevation of the Zone 3 base (many of these locations coincide with historical 400-series monitoring wells) and may reflect an undulating bedrock surface. In previous years, small areas of zero saturation in the center of the seepage impacted area were disregarded, but as water levels and saturated thickness decline, the areas become larger, and having no data to the contrary, are deemed valid. The eastern extent of saturation has contracted to the west, so that the current boundary of saturation is approximately where the 25-ft saturated thickness contour was located in 1989 (for comparison, see Earth Tech, 2002c, Figure 3-1). Also, the wells located to the west, closer to the former recharge area, have lost substantial saturation. For example, Well EPA 14 had 76 ft of saturation in 1989 and 18.89 ft in October 2016 (a 75 percent reduction in the saturated thickness; see Table 7). Table 10 shows the saturated thickness in each Zone 3 well during October 2016. From 2002 through 2016, most wells have shown overall decreasing groundwater elevations (usually with small fluctuations), indicating that the Zone 3 potentiometric field that drives groundwater flow and constituent migration continues to become lower as the groundwater further drains away. Pumping has removed more than 17 million gallons from 2005 through 2016.

The southwest part of Figure 35 shows the approximate contact area between the alluvium and the top of Zone 3. Former versions of this figure have shown an inferred area of saturation along this contact area (e.g., see Figure 35 in the 2008 Annual Report). N.A. Water Systems' (2008c) analysis of the groundwater flow through Zone 3 indicated little or no contribution from other sources (e.g., alluvium) than the ongoing self-drainage. There was very little flow crossing the southern, east-west directed cross section line near Well 613 (N.A. Water Systems, 2008c;

Figure 7), which is 1,642 ft long: the flux here in January 2005 was estimated to be 723 gallons per day (0.5 gpm). Chester Engineers (2011d) summarized the lack of empirical evidence for discernible recharge into Zone 3. However, accounting for episodic recharge via streambed infiltration was found to benefit the calibration of the numerical flow model in the accuracy of its simulation of Zone 3 piezometric heads. Without such an accounting the model simulated a decline of the Zone 3 piezometric surface that exceeded that measured over the past 12 years (Chester Engineers, 2012c, 2014b). The basis for this interpretation of Zone 3 recharge remains theoretical rather than empirical.

### 3.3.2 *Water Quality Evaluation and Current Extent of Seepage-Impacted Water*

#### *Water Quality Evaluation*

The temporary saturation caused by the infiltration of groundwater discharged into Pipeline Arroyo, during mining activities, is considered the background water for Zone 3 (EPA, 1988a; 1988b; 1998). This background water was later impacted by acidic seepage from tailings in the North Cell. These seepage fluids contained elevated concentrations of metals, radionuclides, and major ions including sulfate and chloride. Source control (neutralizing and later dewatering of the North Cell), neutralization of the seepage by natural attenuation, and mixing with the background water have reduced constituent concentrations.

Seepage-impacted water, some of which exceeds NRC License standards and/or EPA cleanup standards, is contained within the property boundary in Section 36. The portion of the Zone 3 seepage-impacted water that extends off the property into Section 1 (Figures 6 and 35) was eliminated as a point-of-exposure (POE) because of limited saturation. The decision to eliminate this area as a Zone 3 POE is documented in a letter from the NRC (1999b).

The current water quality monitoring component of the Zone 3 performance monitoring program is summarized in Table 9 and comprises quarterly sampling in 11 wells. The current monitoring program went into effect in the second quarter of 2000 and adjustments were subsequently made the request of the NRC. Well 504 B can no longer be sampled either; in January 2011 water levels in 504 B became too low to allow sampling, and the well went dry in 2012. Well NBL 1 (which is included among the 11 wells on Table 9) was installed in 2001 to both bound the downgradient extent of the seepage-impacted water and function as a tracking well. UNC has submitted a License amendment request (GE, 2015), along with a subsequent amendment (GE, 2016b), to NRC that would formally add Well NBL 1 to the performance monitoring program. However, NBL 1 is within an area of active recovery well pumping; due to decreased water levels and sediment accumulated in the well, it has not been available to be sampled since January 2013. Should pumping be terminated in northern Zone 3, it could again become relevant as a monitoring point.

UNC has determined that Zone 3 POC Well 517 does not meet performance criteria associated with low flow groundwater sampling methods, which limits the ability to collect representative samples. Drawdown measured at Well 517 during implementation of the low-flow sampling protocol exceeds the two foot maximum drawdown specified in the SOP (Chester Engineers,

2015a). The protocol is intended to avoid increased flow velocities into the wellbore, which might increase sample turbidity and enhance local mobilization of constituents. This is contrary to the objective of low-flow sampling to measure naturally mobile constituent concentrations present in the formation outside the well. Well 719 also has a very low volume available for sampling and is considered to have “borderline” suitability for low-flow sampling methods (Chester Engineers, 2015a). Monitoring wells that do not meet operating criteria will be considered as candidates for decommissioning during the 2017 operating year.

Supplemental Zone 3 monitoring locations include the following:

- Northern tracking wells – The northern tracking wells have served to track the advance of the northernmost seepage-impact boundary and have historically comprised Wells 504B, NBL 1, the PB-series wells, recovery Well RW A, and Well NBL 2 (Figure 35). During 2016, the only northern tracking wells with sufficient saturated thickness for sample collection were Well NBL 2 and recovery Well RW A.
- Extraction Wells NW 1 through NW 5 – Extraction Wells NW 1 through NW 5 were installed during September 2008 to intercept and recover seepage-impacted water (see well locations on Figure 35 and Figure B-1 [Appendix B]) and are used to track the advance of seepage-impacted water in northern Zone 3. Wells NW 2 and NW 5 were pumped during 2016. The historical pumping of these wells is described in Section 3.1.4. The current pumping rates at NW 2 and NW 5 are each approximately 0.4 gpm.
- Wells MW 6 and MW 7 – Wells MW 6 and MW 7 were installed north of the seepage-impacted area in 2010 in association with the alkalinity injection pilot study (Figure 35).

The water quality monitoring component of the Zone 3 performance monitoring program includes quarterly monitoring of the laboratory chemical parameter list for water quality monitoring locations on Table 9 with the previously noted exceptions (i.e., Wells 504 B and NBL 1). A summary of laboratory analytical detections for the Zone 3 monitoring locations in the October 2016 monitoring event is provided in Table 14. Historical groundwater quality and groundwater elevation data through October 2016 are provided in Appendix B (Table B.1). The site groundwater standards used for data comparisons in this annual report were revised through the development of updated BTVs by statistical analysis. NRC issued a License amendment to update site GWPSs (NRC, 2015) and EPA approved use of the UNC proposed cleanup levels (EPA, 2015) for remedy alternative evaluation in the ongoing SWSFS.

The following summarizes the Zone 3 supplemental water quality monitoring:

- Although not a formal part of the performance monitoring program, to improve the understanding of the groundwater quality along the northern front of the seepage-impacted water in Zone 3, the following additional wells were sampled during October 2016 for the full laboratory chemical parameter list: MW 7, NW 3, RW A, RW 11, and NBL 2 (see Appendix B). Samples are collected annually from Wells RW A, RW 11, and NBL 2 for the full parameter list. NW 3 had not previously been sampled for the full

parameter list. MW 7 has been sampled for the full parameter list quarterly since July 2012 (with exceptions due to technical issues) and MW 6 was sampled for the full parameter list quarterly from July 2012 to April 2014 (there has since been insufficient available volume). MW 7 and NW 3 will continue to be sampled for the full parameter list quarterly per a 2016 request from EPA for UNC to provide quarterly reporting related to potential seepage impacts north of the northern Zone 3 extraction wells. Well PB 2 was sampled at least annually during October since 2008 for the full laboratory parameter list, but has not been sampled since July 2013 when pumping was discontinued. Wells PB 3 and PB 4 were sampled annually in October during recent years for the full laboratory chemical parameter list, but have not been sampled beginning in October 2014 due to inadequate sample volume. Beginning in October 2015, the monthly field parameter measurements have no longer be made at PB 3 and PB 4. Well NBL 1 was previously sampled quarterly but was last sampled in January 2013 due to decreased water levels and sediment accumulated in the well.

- Although not a formal requirement of the performance monitoring program, monthly measurements of select field parameters (pH, conductivity, chloride, and alkalinity [of which bicarbonate is the principal component]) continued during 2016 in the northern tracking wells (now limited to Wells RW A and NBL 2). Table 11 presents the historical monthly field parameter measurements for the northern tracking wells. Quarterly laboratory analytical results for these wells are provided in Appendix B.
- Monthly field parameter measurements were made at the five NW-series wells and MW 7 (Table 12). These measurements have been made in the NW-series wells since June 2009, and starting in August 2011 in Wells MW 6 and MW 7. The monthly field parameter measurements have not been made for MW 6 since September 2015 due to decreased water levels.
- As a check of the monthly field parameters, quarterly samples were taken from several northern Zone 3 wells (RW A, NBL 2, NW 1, NW 2, NW 3, NW 4, NW 5, and MW 7) for laboratory analysis of bicarbonate, pH, TDS (in lieu of specific conductivity), and chloride (see Appendix B). Based on these comparisons, the field parameters were determined to provide a good indication of the migration of the seepage-impacted water.

The Zone 3 NRC POC wells (517, 613, 708, and 711) are within the acidic “core” of the seepage-impacted water (Figure 35, within pH values of 4.0 and 5.0 [pH 3.0 contours have been omitted for figure clarity]). The following constituents exceeded NRC License standards at the POC wells during the 2016 quarterly monitoring (the numbers of exceedances are shown in parentheses):

- Well 517 – nickel (4), uranium (1), thorium-230 (2), gross alpha (4).
- Well 613 – TTHMs (3), beryllium (4), nickel (4), vanadium (4), uranium (1), thorium-230 (4), gross alpha (4).

- Well 708 – beryllium (4), nickel (3), gross alpha (2).
- Well 711 – beryllium (4), nickel (4).

NRC License standards were also exceeded at the following monitoring locations during 2016:

- Well 717 – beryllium, nickel, uranium, thorium-230, gross alpha.
- Well EPA 14 – beryllium, nickel, uranium, thorium-230, gross alpha.
- Well MW 7–gross alpha (April only).

EPA cleanup standards were exceeded at Zone 3 monitoring locations for beryllium, TDS, sulfate, aluminum, cobalt, and manganese during 2016. These are constituents that are not regulated by NRC, or for which the EPA cleanup standard is lower than the NRC License standard (beryllium). The analytical results are further discussed relative to the seepage impact extent in this section and relative to natural attenuation performance in Section 3.3.4. It is important to recognize that elevated analyte concentrations (including reported exceedances of historical NRC or EPA standards) in some Site wells represent background water quality. Background water quality is discussed further in the natural attenuation system performance evaluation (see Section 3.3.4).

#### *Current Extent of Seepage-Impacted Water*

The following criteria have been used to distinguish background versus seepage-impacted groundwater quality in Zone 3:

- pH < 5 and bicarbonate < 100 and > 500 mg/L are useful (but not always definitive) indicators of seepage impact (see the Technical Memorandum [GE, 2000]). N.A. Water Systems (2008e, Figure 1) presented box-and-whiskers plots of bicarbonate and pH for the background wells. Seepage-impacted water with a pH < 5.0 has not yet migrated far enough to reach equilibrium, or to react sufficiently, with carbonate minerals in the Zone 3 strata (Canonie, 1987, Table 4-5 indicates a measured CaCO<sub>3</sub> content of 0.02 percent in the Zone 3 bedrock). A pH > 5.0 indicates either no seepage impact, or acid neutralization to varying degrees (usually a function of residence time and migration distance).
- In non-seepage-impacted areas, background water has approximately reached equilibrium with the carbonate minerals resulting in bicarbonate concentrations ranging from approximately 100 to 500 mg/L.
- Time-series of these two indicator parameters are very helpful (sometimes essential). See N.A. Water Systems (2008e, Appendix A) for time-series of pH and bicarbonate for the background wells.
- Time trends in the concentrations of major ions; in particular, decreasing ratios of Ca/Mg are associated with degrading groundwater quality (see Appendix B; e.g., Well EPA 14).

- Zone 3 time trends in the concentrations of many metals and radionuclides will usually increase as the water quality degrades from background to seepage-impacted (see Appendix B; e.g., Well EPA 15).

Seepage-impact extent is primarily based on evaluation of pH and bicarbonate concentrations over time in (1) seepage-impacted wells (e.g., Wells 613, 518, and 517), (2) background and former background wells (e.g., Wells EPA 1 and 411), and (3) northern monitoring and extraction wells (i.e., the northern tracking wells, NW-series wells, and Well MW 7). Table 11 presents the historical monthly field parameter measurements for the northern tracking wells (from south to north: Wells 504 B, RW A, PB 2, PB 4, PB 3, NBL 2, and NBL 1). Table 12 presents the monthly field parameter measurements for the newer NW-series and MW-series wells. Quarterly laboratory analytical results for these wells are provided in Appendix B. Bicarbonate time-series for all the Zone 3 monitoring wells are shown in Figure 39, while Figure 40 shows a subset of the wells. Historical groundwater quality data (see Appendix B) from fully seepage-impacted wells indicate that it takes from one to three years, from the onset of geochemical changes associated with the arrival of seepage-impacted groundwater, for full seepage-impact to develop (unless the constituent transport is effected by pumping). Groundwater quality along the northern tracking wells has oscillated between degrading and improving trends over the last 14 years (e.g., see NBL 1 and PB-series wells in Table 11); fully seepage-impacted water has exhibited very low pH values (e.g., Well NBL 1; 2.56 in the most recent monthly field measurement in February 2013) and bicarbonate concentrations of 0 mg/L. Individual well water-quality trends of improvement and degradation became collectively asynchronous starting in May 2007. These water quality changes are interpreted as being caused by the revised pumping program that began in 2005. Additional details have been provided in previous Annual Reports (e.g., Chester Engineers, 2016). Collectively, variability in bicarbonate concentrations and field pH in the northern tracking wells indicates that the groundwater quality is highly heterogeneous on the local scale of the related well array and that the seepage-impact front is proximal to the wells.

The monthly field parameter measurements made in the two remaining northern tracking wells (Wells RW A and NBL 2) are shown on Table 11. RW A is becoming increasingly seepage impacted; the bicarbonate concentration dropped below 100 mg/L in September 2016. The RW A field pH has declined over the past three to four years, but has been stable around pH 6 during the past two years. NBL 2 continues to monitor background water quality; bicarbonate has decreased from a high of 414 mg/L in 2011, but has stabilized in the 300 to 350 mg/L range.

Monthly field parameter measurements made in the NW-series of wells and Well MW 7 (Table 12) provide the northernmost information on water quality. NW 1 and NW 4 are the easternmost of the NW-series wells and NW 3 and NW 5 are the westernmost. Seepage-impacted water is typically more prevalent towards the eastern limit of saturation; to the west the prevalence of background water increases as does the formation's saturated thickness. The following summarizes the interpretation of monthly field parameter data for the NW-series wells and Well MW 7:



- Well NW 1 (not pumped since May 2012) was the most seepage-impacted until it began improving after September 2011 and is now considered to represent mostly background water.
- Well NW 4 (a very low-rate seepage-impacted extraction well where pumping was suspended in October 2015) showed somewhat lesser impact than NW 1 until seepage impact increased beginning in September 2011. The NW 4 field bicarbonate concentration increased in November 2013 (200 mg/L) and has since decreased (71 mg/L in October 2016). However, it has continued to show a relatively high pH (range 6.59 to 6.91 in 2016).
- Well NW 2 (an extraction well) had shown little seepage impact through 2013. However, seepage impacts increased in 2014 through 2016 (reflecting a slight shift in seepage impacted water to the west or north as a result of the pumping). The 2016 NW 2 results indicate the continuation of a very slow decreasing trend in bicarbonate (159 mg/L field measurement in October 2016), and a pH range (6.14 to 6.41) similar to the prior year. NW 2 bicarbonate concentrations have decreased overall since monitoring began in 2009.
- Wells NW 3 (not pumped since 2009) and NW 5 (pumping initiated during March 2016) have been historically interpreted as predominantly background water. They also have had greater saturated thicknesses than other NW-series wells. During 2016, NW 3 field measurements showed some variability in field pH (7.14 – 7.51) and bicarbonate concentrations (all but one measurement above 400 mg/l). These results for NW 3 are consistent with the interpretation of predominantly background water. In contrast, NW 5 field measurements have indicated decreasing bicarbonate concentrations and decreasing pH, trends that accelerated after pumping was initiated in March 2014. NW 5 field bicarbonate measurements have followed an overall decreasing trend (from a high of 627 mg/L in March 2011 to 101 mg/L in October 2016). These trends are interpreted to be the result of an increasing fraction of seepage-impacted water that has been augmented by pumping.
- The Well MW 7 bicarbonate concentration has also followed an overall decreasing trend since December 2013 (from 416 mg/L to 229 mg/L) and is considered partially impacted. In 2016, the MW 7 field pH fluctuated between 6.39 and 7.99.

Figure 35 shows the northern edge of the seepage-impact front during October 2016 to be slightly north of the location depicted in recent annual reports where it encompasses Well NW 5 and adjoins Wells NW 2 and MW 6. NW 1 is no longer shown to be within the seepage-impacted area. Previous determinations of the seepage front extent over the past several years (e.g., Chester Engineers, 2016) have focused on “full seepage impact” - defined as bicarbonate concentrations at or below 50 mg/L. NBL 1 was identified as the “end point well” of full seepage impact, which was appropriate given the very low field pH and bicarbonate concentrations of 0 mg/L. However, reductions in saturated thickness in the northern Zone 3 area have caused fewer wells to be available for sampling, which increased the reliance on

historical samples (see Tables 11 and 12) that may not reflect current conditions. Additionally, field measurements have not been made at NBL 1 after February 2013, due to a sharp decrease in the well water level and an accumulation of sediment at the bottom of the well. The updated position of the downgradient seepage extent accounts for the impacted water quality at pumping Well NW 5 and the increased seepage impacts at pumping Well NW 2 in 2016. The seepage front line also adjoins Well MW 6 (last sampled for field parameters in September 2015) as it has in previous years.

In summary, water quality data in northern Zone 3 have continued to vary significantly in time and space. The data indicate that seepage impacts may have increased at some monitoring locations (e.g., Wells NW 2, NW 5, and MW 7) during 2016. Although the highly impacted water historically observed at NBL 1 just to the south has not “broken through” to the north, the changes justify a slight shift in the mapped position of the downgradient extent of seepage impacts. It is anticipated based on current concentrations that seepage-impacted water will continue to be retarded by pumping from wells NW 2 and NW 5 (until the well yields decline).

Until the cessation of groundwater discharges to Pipeline Arroyo in 1986, seepage impacts in Zone 3 migrated to the east and northeast, due to groundwater mounding in the alluvium recharge area to the west. As the hydraulic head in the alluvium recharge area has decreased and then very likely ceased, migration has been toward the north (in relatively southern locations) and northeast (in more northerly locations), subparallel to the eastern edge of saturation and the bedrock dip direction.

As predicted in the EPA’s First Five-Year Review Report (EPA, 1998) and discussed in the Technical Memorandum (GE, 2000), continued pumping of the downgradient Stage II extraction wells caused the seepage-impacted waters to migrate to the northwest and north toward the pumping locations.

The acidic core area of seepage-impacted water is similar to that depicted in 2015, with slight contour adjustments reflecting pH variability. Two individual small sets of pH 4.0 and pH 5.0 contours encircle Well PB 4 (last field pH 2.95 in September 2015, [Table 11]) and NBL 1 (last field pH 2.56 in February 2013 [Table 11]). The depicted northern seepage-impacted core areas encompass a smaller area than that shown in 2014 Annual Report, because the Well PB 3 pH increased significantly from 2014 (3.96) to 2015 (6.97, last field pH value from September [Table 11]); no more recent data has been collected because monitoring has been suspended due to inadequate sample volume. Well PB 2 (a former extraction well at which pumping was suspended in July 2013), located a short distance to the south of PB 4, is outside the pH 5 line based on the last field pH measurement in August 2013 (6.08, Table 11). This relatively large pH variation over short distances is inferred to be another effect of the pumping. That effect is interpreted to be the capacity of pumped wells to locally draw background quality groundwater into areas of seepage impact.

Well EPA 14 is fully impacted by tailings seepage (see Appendix B and Table 14). The EPA’s Second Five-Year Review Report (EPA, 2003, Figure 6-7) presented Stiff diagrams for Well

EPA 14 in annual “snapshots” of water quality from October 1998 through October 2002 (these were also presented in GE, 2012b). The Stiff diagrams show that before October 2000, the calcium-to-magnesium (Ca/Mg) ratio was greater than one and the earlier bicarbonate concentrations were consistent with background water quality but then they became elevated (see Figure 39); from October 2000 to October 2002, the Ca/Mg ratio was less than one and bicarbonate became depleted. Modest exceedances of the aluminum and cobalt ROD standards in Well EPA 14 began in 2000, when the bicarbonate concentration decreased suddenly and sharply. Figure 40 shows that the bicarbonate at this location fell sharply to nondetect (zero) in July 2001, then increased to 188 mg/L in October 2004, and then fell to nondetect again in October 2006. When the bicarbonate “comes off the floor” for either a short or extended period of time, this is interpreted as due to occasional mixing with background water (which is presently located nearby to the west; see Figure 35 in this report and also Figures 6-9 through 6-11 in EPA, 2003, which are also presented in GE, 2012b). Between October 2006 and October 2014, bicarbonate concentrations at EPA 14 remained at or very near nondetect levels. During 2015, bicarbonate concentrations (and pH values) increased (pH maximum 6.70 units, bicarbonate maximum 91 mg/L) during the January to July period (indicating some proportion of mixing with background water), but decreased again in October to values indicative of greater seepage impact (pH 4.47, bicarbonate <5 mg/L). Bicarbonate values have remained below the detection limit in all samples collected in 2016. The pH has increased slightly from the October 2015 value but has remained below 4.67 units.

The EPA (2003, Figure 6-8) also presented Stiff diagrams for ten Zone 3 wells based on October 2002 sampling (this figure was also presented in GE, 2012b). The following discussion refers to the Stiff diagrams shown in EPA’s (2003) Figure 6-8, while also providing updates on specific changes in water quality through October 2016.

The first chemical measurements in Well NBL 1 were made in August 2001 (Appendix B), when the calcium-sulfate type of water was representative of background water quality. Subsequently, early stage seepage impact was shown by the gradual reduction of the Ca/Mg ratio from 2001 through October 2005 (Appendix B) and the beginning of decreasing bicarbonate concentrations during approximately April 2004 (Appendix B, based on laboratory determinations of bicarbonate) and June 2004 (Table 11, based on field kit determinations of bicarbonate). Appendix B shows that starting in January 2010, NBL 1 has shown decreases in Ca/Mg ratio (0.80 in last analysis in January 2013) and significant increases in cobalt (1.43 mg/L in January 2013), nickel (1.7 mg/L in January 2013), aluminum (76.7 mg/L in January 2013), and other analytes. Considered with the 2012 and January 2013 nondetects for bicarbonate and pH values frequently less than 4, these data indicate that the water quality there is fully seepage-impacted (although approximately 100 ft to the northeast at MW 6 [last sampled for full laboratory analysis in July 2014], the water quality in the most recent samples is notably better). It is also notable that the groundwater chemistry degradation in NBL 1 in recent years coincides with, and may be associated with, declining saturated thickness (i.e., consistent with the hypothesis developed by NRC, 1996). These closely spaced, large variations in groundwater quality are attributed to the effects of extraction well pumping in their vicinity, which causes variations in

the proportion of seepage-impacted versus non-seepage-impacted water that reaches the wells. *Monitoring of the northernmost part of Zone 3 in Section 36 indicates that this area is a complex zone of mixing of background and seepage-impacted water, rather than a singular advancing plume edge with a “sharp line” boundary.*

Invariably, some wells (or certain time spans at some wells) are difficult to classify because their groundwater chemistry tends to be gradational. For example, the geochemistry associated with Well 420 has long been considered to be “borderline” between background and seepage-impacted water quality which is consistent with its location between the area of formerly perennial alluvial recharge and that of tailings seepage. Samples from this well, located along the western edge of the seepage-impacted area in Figure 35, indicate a calcium-sulfate type of background water. Combined radium in this well has fluctuated above and below the historical NRC/EPA standard from 1989 through July 2007, after which it has persistently been above the historical standard (but lower than the current, revised NRC/EPA standard) – this may reflect the flux of geochemically heterogeneous background water or seepage-impacted water (e.g., N.A. Water Systems, 2005). Bicarbonate concentrations suggest mixing of seepage-impacted water with background water but have remained in the background range. Over the one-year period from April 2006 to April 2007, bicarbonate dropped from 781 mg/L to 237 mg/L, but subsequently increased and has been since following a fluctuating, slowly decreasing trend (Figure 40). The bicarbonate concentration in April 2015 fell below 400 mg/L for the first time since April 2007 and remained there through October 2016 (376 mg/L). From October 2007 to January 2016, uranium concentrations equaled or exceeded 0.27 mg/L for the first time in this well’s monitoring history (which started in 1989; see Appendix B) and, from January 2010 to October 2015, uranium exceeded the historical NRC License standard of 0.3 mg/L (although pH at this location does not indicate impact). The current NRC License standard and EPA cleanup level for uranium is 0.395 mg/L, as determined through a BTV statistical analysis process (EPA, 2015; Chester Engineers, 2015b). Uranium concentrations exceeded 0.395 mg/L in all but three samples between July 2010 and January 2014, but subsequently have been below the standard through October 2016 (2016 range 0.244 to 0.288 mg/L). Recent sample results have showed some variability with respect to historical results. For example sulfate concentrations have followed an increasing trend since April 2012 to a maximum of 2,550 mg/L in October 2015. Sulfate concentrations have decreased somewhat in 2016, to 2,380 mg/L in October 2016 (Figure 41), but are well below the revised EPA cleanup level (5,693 mg/L). Magnesium, TDS, and aluminum concentrations appeared to be following increasing trends, but have stabilized or decreased in 2016. Similarly, molybdenum concentrations also increased for several years but decreased in 2016. Molybdenum remains within the range of historical results and has been detected at elevated concentrations in background water. These observations continue to be interpreted as indicating that the groundwater quality is “borderline” between background and seepage-impacted, that the seepage-impacted region is nearby, and that the groundwater quality may be degrading very gradually.

Well 717, near the western edge of the seepage-impacted area in Figure 35, provides a third example of a calcium-sulfate type of water that was interpreted as predominantly background

(largely non-seepage-impacted) in 2002, but has subsequently become increasingly impacted. Starting during 2006, concentrations of several metals, and gross alpha activity have increased. Constituents that exceeded revised NRC standards and/or EPA cleanup levels during 2016 included aluminum, beryllium, cobalt, manganese, nickel, thorium-230, and gross alpha. Combined radium has also exceeded its revised standard as recently as January 2015. Bicarbonate concentrations attained a maximum of 740 mg/L in July 2002, and subsequently decreased to nondetect in January 2009, which has continued to the present (Appendix B). This sharp decline is similar to that observed in Well EPA 14 (see Figure 40) and is interpreted to represent exhaustion of the local buffering capacity. The comparative water quality of 717 and EPA 14 are discussed further in Section 3.3.4.

The other seven wells depicted with Stiff diagrams (EPA, 2003, Figure 6-8) represent seepage-impacted magnesium-sulfate types of waters. For example, in October 2016 (see Appendix B) upgradient Well 613 (in the southwestern part of the seepage-impacted area shown in Figure 35) showed a very high sulfate concentration (8,890 mg/L), Ca/Mg ratio less than one, nondetect bicarbonate, a very low field pH 3.01, and exceedances of revised NRC License standards or cleanup levels for many parameters.

The October 2016 annual samples from extraction Wells RW A and RW 11 indicate that these wells may be increasingly seepage-impacted (Table B-1). Both wells show slowly decreasing trends in bicarbonate concentrations (RW A dropped below 100 mg/L in 2016), increasing TDS and sulfate concentrations, Ca/Mg ratios below one, and fluctuating pH indicating that neutralization capacity is available but is being depleted and/or there continues to be mixing with background water. Well RW A data from October 2014 showed increases in metals and radionuclides, including aluminum, beryllium, lead, combined radium, thorium-230, Pb-210; all of these concentrations decreased in October 2015 and remained at lower concentrations during 2016. However, the RW A cobalt concentration in the October 2016 sample exceeded the EPA cleanup standard. Well RW 11 has shown recent increases in several metals and radionuclides (including magnesium, cobalt, manganese, nickel, combined radium, Pb-210 and gross alpha) most of which have stabilized or decreased during 2016.

With respect to the currently operating Zone 3 pumping containment remedy, observed changes in saturated thickness, water quality, and seepage impact extent in northern Zone 3 and reductions in pumping capabilities over time indicate that the northern Zone 3 remedy may be reaching its practicable limits. EPA anticipated this in the ROD (EPA, 1988b) in stating that in event that saturated thicknesses cease to support pumping, remedial activity would be discontinued or adjusted to appropriate levels. EPA (1988b) also stated that it may be technically impracticable to achieve all cleanup levels in a reasonable time period, such that waivers to meeting certain constituent-specific ARARs may be required. Additionally, in the most recent Five-Year Review, EPA (2013) has acknowledged the technical difficulties of achieving site groundwater cleanup levels using engineering controls and that institutional controls (ICs) may need to play a larger role in protecting human health. Currently proposed monitoring well locations are shown on Figure B-2 in Appendix B, and are intended to support

the adoptions of waivers, alternate standards or other administrative controls to close the corrective action program.

### 3.3.3 Rate of Seepage Migration

Table 13 summarizes the key factors, locations, and criteria underpinning the past calculations of northward seepage travel times for Zone 3. During the period from 2003 to 2008, the northern seepage front was inferred to have advanced from Well PB 2 to Well PB 4, receded as a consequence of pumping of RW 11, RW 12, RW 13, and PB 2 (see N.A. Water Systems, 2007a), and then advanced to PB 4 again. The repeated advance, covering the same ground locations, reflects the pumping-related hydraulic “tug of war” occurring in the vicinity of the northern tracking wells. With the advent of pumping from the northern, NW-series extraction wells in February 2009, the older northern tracking wells became subject to influences from both upgradient and downgradient extraction wells. The purpose of the upgradient wells (i.e., the RW-series wells RW A, RW 11, RW 16, and RW 17) is primarily to dewater and recover contaminant mass, while the purpose of the downgradient wells (i.e., the NW-series, of which only NW 2 and NW 5 are operating as of November 30, 2016) is to form a hydraulic barrier. In so doing, these wells have also drawn the seepage front into their capture zones. The original purpose of calculating seepage-impact migration velocities for Table 13 equivalents, as a basis of predicting the progression of the impact reaction front, has been rendered moot by the designed actions of these extraction wells. Therefore, Table 13 has been included for reference but has not been updated for this report.

As described in Section 3.3.2, Figure 35 shows the position of the northern edge of the seepage-impact front during October 2016 slightly north of the location depicted in 2015. The northern limit of seepage impact has been adjusted to encompass the impacted water quality at pumping Well NW 5, and adjoin the partially seepage-impacted pumping Well NW 2, both which have shown increasing seepage impacts in 2016. The seepage front line also adjoins Well MW 6 (last sampled for field parameters in September 2015) as it has in previous years. Bicarbonate and pH measurements at Wells MW 6 and MW 7 show that there likely has been some mixing with seepage-impacted water. However, the pH at both wells has been above 6 units. These data are interpreted to indicate that the highly impacted water just to the south has not “broken through” to the north. Bicarbonate concentrations in MW 6 were below 200 mg/L for most of the period from early 2013 to mid-2015 and appeared to have a slightly increasing trend when last sampled (224 mg/L in September 2015), but earlier full analytical data (July 2012 to April 2014) indicates Ca/Mg ratios below one. The MW 7 bicarbonate concentration has also followed an overall decreasing trend since December 2013 (from 416 mg/L to 229 mg/L); the Ca/Mg ratio has declined over time as well, but in the most recent quarterly analysis (October 2016) it remained slightly above one (1.06). It is anticipated based on current concentrations that seepage-impacted groundwater will continue to be retarded by pumping from wells NW 2 and NW 5 (until the well yields decline).

### 3.3.4 Natural Attenuation System Performance Evaluation

The Zone 3 natural attenuation system comprises the hydro-geochemical interactions between the bedrock matrix, the anthropogenic background waters (derived from former groundwater discharge associated with historical mining operations that ceased in 1986), and the tailings fluids. The natural system is attenuating the seepage impacts by the processes of neutralization, precipitation, adsorption, and mixing with the background waters.

Natural geochemical processes slow the migration of constituents associated with the acidic seepage in Zone 3 (as in the Southwest Alluvium and Zone 1). These processes neutralize the acidic seepage, which causes the precipitation and adsorption of metals and radionuclides. Evidence of this neutralization process includes: (1) an overall increase in pH and corresponding decrease in concentrations of metals and radionuclides with increasing distance from the source area; and (2) gradual increase in bicarbonate for a few years followed by dramatic decreases. Shutoff of the remaining Stage II wells in 2000 enhanced the effectiveness of the natural attenuation processes in many parts of the seepage-impacted area.

The impact of natural attenuation of seepage impacts by geochemical processes is discussed for individual constituents in Zone 3 below (also see Table 14).

#### *Sulfate and TDS*

Sulfate and TDS are non-hazardous constituents and not regulated by NRC. Figure 41 is a graph of sulfate concentrations from 1989 through October 2016. Concentrations are relatively high closest to the tailings impoundment and Well 613 is the only monitoring location where sulfate concentrations (8,890 mg/L in October 2016) and TDS concentrations (11,200 mg/L in October 2016) exceed the revised EPA cleanup standards. As in the Southwest Alluvium, sulfate concentrations are controlled by geochemical equilibrium with gypsum (or anhydrite) and calcite. Although very high sulfate concentrations were present in the tailings fluids, such sulfate concentrations attenuate rapidly downgradient due to precipitation of gypsum. Earth Tech (2002c, Figure 3-13) demonstrated that sulfate concentrations decreased by about 85 percent between the North Cell and the seepage-impacted water at Well 613 via precipitation of gypsum (the saturation index of virtually all water samples with respect to gypsum hovers around unity). Moreover, there is a complete overlap between the range of sulfate concentrations in seepage-impacted and background water (except for Well 613). The marked stability of sulfate in almost all wells, throughout the duration of remedial pumping and in the absence of such pumping, demonstrates that sulfate concentrations are determined exclusively by the geochemical equilibria between natural minerals and waters rather than remedial operations.

Figure 41 shows that an earlier stability of sulfate concentrations at Well EPA 14 ended after October 2012. Since then, sulfate concentrations have fluctuated between 1,670 mg/L and 4,520 mg/L (the maximum occurred in October 2015). Similar variability was previously exhibited at this well from October 2003 to April 2004. This fluctuation may indicate mixing of background and seepage impacted waters. Sulfate concentrations at EPA 14 were below 3,000 mg/L until 2000, and then generally increased corresponding to bicarbonate concentration changes that indicated seepage impact progression.

*Metals*

UNC has presented information demonstrating that certain metals exceeding historical standards (e.g., arsenic and molybdenum) were primarily found in background water (e.g., Chester Engineers, 2015a). The revised background standards have lessened one of technical impediments (GE, 2009) to eventual Site closure which stated that “long-term monitoring data and basic geochemical considerations reveal some cleanup objectives to be unattainable.” For most parameters, the establishment of BTVs through statistical analysis will incorporate and account for the geochemical influence on groundwater quality and facilitate the identification and assessment of contaminants of concern.

Figures 42A and 42B are time-series graphs of concentrations of selected metals in Zone 3 monitoring wells. The following metals have had historical exceedances of revised NRC License standards and/or EPA cleanup standards: aluminum, beryllium, cobalt, manganese, molybdenum, and nickel (the metals uranium and vanadium are discussed later with the radionuclides). There were no exceedances of the revised standards for arsenic, cadmium, or molybdenum during 2016, but charts for these analytes are included because they were included in previous years. POC Well 613 is located near the center of the seepage-impacted area, closest to the source area, where field pH has ranged from 2.76 to 3.24 since this well was first monitored in 2000. This well shows the highest metals concentrations during October 2016 monitoring event for cobalt, cadmium, beryllium, nickel, manganese, vanadium, uranium and aluminum.

Figure 43 is a map showing the extent of aluminum concentrations exceeding 5 mg/L (the EPA cleanup standard) based in the October 2016 monitoring event. This map distribution pattern has been approximately constant over time, regardless of an active remedy or not. The map illustrates that the distribution of aluminum exceedances was largely restricted to the southwestern part of the seepage-impacted area. The 5 mg/L contour was moved slightly east of the location shown for October 2015 due to an increase in the aluminum concentration at Well 711 (10 mg/L, which is the maximum reported for this location). An isolated outlying area of elevated aluminum concentrations is depicted to the north encompassing Wells PB 4 and PB 3 (both of which were last sampled for the full laboratory chemical list in October 2013), and NBL 1 (last sampled in January 2013). A second outlying area previously depicted to be encompassing extraction Well RW A (7.8 mg/L) on the October 2014 map (Chester Engineers, 2015a) was removed in 2015 because the concentration decreased (0.1 mg/L); the October 2016 RW A result (0.2 mg/L) was similar to 2015.

All of the wells sampled in the October 2016 monitoring event within the highly seepage-impacted area (i.e., acidic core area, Wells 517, 613, 708, 711, and 717) showed exceedances of the revised NRC license standards and/or EPA cleanup standards for manganese, cobalt, beryllium, and nickel. The NRC License standard for beryllium (0.050 mg/l) is higher than the EPA cleanup standard (0.004 mg/l); beryllium exceedances at some monitoring locations exceeded only the EPA standards, others exceeded both standards (Table 14). Well EPA 14 (which was in the core area in 2015, but had a higher pH (5.07) in 2016) had exceedances of the



EPA cleanup standards for aluminum, cobalt, and beryllium in October 2016. Wells within the seepage impacted area, but outside the acidic core area (Wells 420, 719, EPA 13, RW 11, and RW A and the sampled wells outside the seepage-impacted area (NW 3 and NBL 2) had no exceedances of the updated standards for these constituents (with the exception of cobalt in Well RW A in October 2016). Well MW 7, which is mapped outside to the north of the seepage impacted area, was reported to exceed historical metals standards in 2014 (manganese and nickel). However, the 2016 MW 7 metals concentrations do not exceed the updated NRC and EPA standards (Appendix B, Table B.1).

The depletion of neutralization capacity has stabilized the concentrations of metals at higher levels in some wells. For example, concentrations of beryllium, cadmium, cobalt, nickel, manganese, and aluminum stabilized at elevated levels in Well 717 between October 2008 and July 2009. This commenced as bicarbonate concentrations approached nondetect levels in October 2008 (and remained nondetect after January 2009). The same process occurred earlier in Well EPA 14, which is 330 ft upgradient of Well 717. The concentrations of most metals increased in Well EPA 14 after May 2000, when bicarbonate concentrations declined precipitously (Figure 39). The concentrations of these metals stabilized after July 2006, when the neutralization capacity was exhausted (as evidenced by the typical absence of detectable bicarbonate). However, from January to July 2015, metals concentrations decreased in response to increased bicarbonate concentrations (and pH values), indicating some proportion of mixing with background water, and subsequently increased in October when the bicarbonate concentration decreased again. During 2016, metals concentrations in Well EPA 14 decreased again (coincidentally with slightly increasing pH) although bicarbonate concentrations remained below detectable levels.

#### *Uranium, Vanadium, and Radionuclides*

Figure 44A presents graphs of the concentrations of uranium, vanadium, combined radium, and thorium-230 from 1989 through 2016. Combined radium activities have been previously demonstrated to exceed the historical NRC/EPA standard (5 pCi/L) in Zone 3 background water (e.g., in NBL 1 samples; Chester Engineers, 2015a). In 2016, there were no exceedances of the revised combined radium NRC/EPA standard (35.2 pCi/L).

Historically, uranium, vanadium, and thorium-230 have typically been present above the standards in Well 613, which has an acidic pH (3.01 in October, 2016) and is closest well to the source in Section 2. Downgradient within the acidic core of the plume toward the northeast, natural attenuation reduces the concentrations of these three constituents (e.g., in Well 708 [field pH of 3.73 in October 2016]). These constituents are attenuated by neutralization, adsorption, or possibly precipitation. Accordingly, much lower concentrations are reported where the pH is more neutral.

In the October 2016 monitoring event, exceedances of revised NRC/EPA standards were reported for uranium and vanadium in Well 613 and for thorium-230 in Wells 613, 517 and 717 (Table 14). Additional exceedances were reported for uranium in the January through July 2016

samples from Well 613 and the July sample from Well 517. Additional exceedances for thorium-230 were reported in the July 2016 samples from Well 517 and the January, April, and July samples from Well 717 (Appendix B). Vanadium attenuates rapidly, such that it was not detected at any other locations in Zone 3.

The source of uranium in both background and seepage-impacted water in Zone 3 was not tailings seepage, but mine water, permitted to contain uranium concentrations up to 2 mg/L, discharged to Pipeline Arroyo for 17 years. Uranium has been historically detected at relatively elevated concentrations in both background and highly seepage-impacted wells. Over the longer term, uranium at Well 613 shows a decreasing trend that has been below 1 mg/L since January 2014. Downgradient from this well and outside Section 2, uranium in seepage-impacted water typically attenuates such that the range of uranium concentrations in Zone 3 background water is higher than the range in seepage-impacted water (N.A. Water Systems, 2008e, 2008f).

Figure 44B shows uranium isoconcentration maps from October 2002 and October 2016. In previous versions of this figure (e.g., in the 2014 Annual Report [Chester Engineers, 2015a]), the contour pattern along the northwest part of the plume (approximately from Wells 717 and NBL 1; including Well 420) was interpreted to show the effect of background water being drawn in, from west to east, to seepage-impacted water, under the action of former and current pumping. Among the historical evidence that uranium concentrations in background can exceed those in moderately seepage-impacted water was that NBL 1 had a higher uranium concentration in October 2002 (0.251 mg/L) under background conditions (seepage impact reached this well in January 2004) than most subsequent samples under seepage-impacted conditions. Elevated uranium concentrations have also been reported in more highly seepage-impacted samples from northern Zone 3 wells (e.g., the most uranium recent analyses from NBL 1 [January 2013, 0.458 mg/L], and PB 4 [October 2013, 0.535 mg/L]).

As was the case in the October 2015 contour map (Chester Engineers, 2016), the 2016 pattern of uranium concentration contours in the central and northern seepage-impacted area continues to illustrate incursion of background water from due to pumping (e.g., at Well 420) but there are some differences from the 2015 contour map. Uranium concentrations have recently shown increasing trends (or spikes) at some locations that have become more seepage-impacted or fluctuated over time (e.g., 517, 717, and EPA 14) but have remained below the revised standard, with the exception of the July 2016 sample collected at Well 517 (0.401 mg/L). Additionally, uranium concentrations have recently decreased at certain wells (e.g., Well MW 7). The observed variability in uranium concentrations is attributed to pumping-induced mixing of background and seepage-impacted groundwater and geochemical mobilization of uranium in the formation by the highly seepage-impacted water (e.g., below pH 3).

The historical Zone 3 gross alpha data indicate that this parameter tends to fluctuate by approximately one order of magnitude in most of the seepage-impacted wells (Well 613 typically had smaller fluctuations, but has shown an increase since 2015). The updated gross alpha NRC/EPA of 39.7 pCi/L was exceeded in seepage-impacted Wells 613 and 717 during all four

2016 monitoring events (Table 14 and Appendix B). Additional exceedances were reported during 2016 for these wells and other seepage impacted wells (708, 517, EPA 14, and MW 7).

#### *Total Trihalomethanes (TTHMs)*

Prior to the fourth quarter 2006, the TTHMs concentration shown in Appendix B equals the chloroform concentration (i.e., chloroform is the only TTHM compound analyzed). Starting with the October 2006 sampling event, the TTHMs concentration represents the sum of the four component compounds (of which chloroform is one). Almost all Site groundwater samples show that the TTHMs concentration equals the chloroform concentration (i.e., chloroform is the only TTHM compound present). There were no TTHM concentrations detected above the NRC/EPA of 80 µg/L during October 2016 (Table 14). However, TTHMs were detected above the standard at one location (Well 613, 92.8-121 µg/L) during the first three 2016 quarterly monitoring events (except October, see Figure 45). The concentrations in Well 613 have exceeded the TTHMs NRC/EPA standard in most samples since October 2002, consistent with this well's proximity to the tailings source (see Figure 35). Well 613 concentrations have shown long-term fluctuations but increased by a factor of four from July to October 2002. Since then the concentrations have shown relatively large fluctuations that are superimposed on an overall decreasing trend and since 2012,

TTHMs were also detected during 2016 at concentrations below the NRC/EPA standard in samples from Wells 517, 613, EPA 13 and Well 717. Low concentrations of TTHMs have been detected in almost all Well 517 samples since 1991. TTHMs had been regularly detected at Well EPA 14 from October 2006 to April 2013, but have not been detected in subsequent samples. Chloroform was first detected in Well 717 in July 2008, and beginning in October 2010, has been detected at very low concentrations for 25 consecutive quarters through 2016 (except for the primary samples (of sample-duplicate pairs) collected in October 2015 and January 2016, see Appendix B). These results support the inference that fully seepage-impacted water has migrated downgradient to 717. Wells 106 D and 518 also consistently showed chloroform detections until they ceased being sampled in 1991 and 2000, respectively (Appendix B). Other Zone 3 wells have shown, with very few exceptions, historic nondetects for chloroform and, since the fourth quarter of 2006, for TTHMs. This indicates that chloroform is attenuated by degradation, dispersion, and dilution, to levels that are generally nondetect but are otherwise always far below the NRC/EPA standard (which is equivalent to the primary drinking water standard).

#### *Pb-210*

Table 14 shows that there were seven detections of Pb-210 during the October 2016 monitoring event. All of the October results were below the revised NRC/EPA standard (5.7 pCi/L). Two detections were in the samples from Well 717 (3.2 and 3.0 pCi/L in the primary sample and field duplicate, respectively) and the others were in Wells 420 (1.5 pCi/L), 517 (1.7 pCi/L), 708 (1.2 pCi/L), EPA 14 (1.2 pCi/L) and NW 2 (1.6 pCi/L). The 2016 detections are not inherently indicative of impact from the tailings seepage; most fall within the lower half of the range of 1 to

11 pCi/L defined by the minimum and maximum values associated with background water (N.A. Water Systems, 2008e, Table 5). However, the highest 2016 detected activities were from Wells 517 and 717 which are highly seepage-impacted (Appendix B).

### ***3.4 Efficiency of Seepage-Impacted Groundwater Removal by Pumping***

The Zone 3 pumping efficiency is declining with time. As Zone 3 pumping continues, more background water flows eastward to replace (and possibly mix with) the seepage-impacted water volume removed by pumping, resulting in a lower pumping efficiency. This process of inducing progressively more background water will lead to increased concentrations of uranium, and other parameters (e.g., molybdenum has been detected at significantly higher concentrations in background compared to seepage-impacted water).

All Zone 3 pumping well capacities decline over time. One important cause is loss of saturated thickness. UNC believes that overall conditions are such that active remedial operations in Zone 3 are reaching the limits of their effectiveness. As a result, continued operation will be met with diminishing returns, and/or will adversely affect groundwater quality in some ways as was seen more than a decade ago with the former pumping system. It will not be possible to pump out all of the seepage-impacted water. Seepage removal efficiency will be considered in the SWSFS as the means to evaluate the effectiveness of any proposed remedy alternatives utilizing pumping wells. During 2017, UNC will evaluate the decommissioning of extraction wells having yields below the 1 gpm decommissioning criterion. The evaluation will consider the differing objectives of the two sets of extraction wells (i.e., the upgradient RW-series wells and the downgradient NW-series wells).

## Section 4

### *Zone 1*

#### **4.1 *Corrective Action Summary***

Zone 1 corrective action consisted of source remediation (neutralization and later dewatering of Borrow Pit No. 2) and pumping of a series of extraction wells from 1984 through 1999 (Earth Tech, 2002c). Well productivity in this hydrostratigraphic unit had always been very low. Earth Tech (2002c, Figure 4-1) summarized the pumping program for Zone 1, including the well systems pumped, the number of wells operating for each system, and the combined annual pumping rates. A maximum combined pumping rate of 14 gpm was achieved by the 17 East and North Cross-Dike Pump-Back wells. The productivity declined steadily over time, and by July 1999, when the system was decommissioned, the three remaining wells were yielding a combined annual average of 0.65 gpm. The three remaining Zone 1 recovery wells (615, 616 and 617) were decommissioned at the end of July 1999 in accordance with a letter from NRC dated July 30, 1999 (Earth Tech, 2002a), with the concurrence of EPA.

UNC has submitted a pending License amendment request (GE, 2015) and subsequent amendment to the License amendment request (GE, 2016b) to reconcile the license with recent corrective action programs advances and to recommend modifications to the performance monitoring program. For Zone 1, the License amendment request recommends the removal of Well EPA 2 and POC Wells EPA 4, EPA 5, and EPA 7, all of which are located outside Section 2 in Section 1. Data from the past sixteen years of post-shutdown monitoring indicates a gradual improvement in water from the Zone 1 POC wells (GE, 2015). There are few instances where the standards have not been achieved and there were no exceedances of any NRC License standards outside Section 2 (i.e., at monitoring locations outside the property boundary in Section 1) during 2016.

#### **4.2 *Mass of Chemical Constituents Removed***

The mass of chemical constituents removed was calculated for the 10-year period from July 1989 through July 1999. These calculations were presented in the previous annual reviews, and the final summary was presented in the 1999 Annual Review (Earth Tech, 1999).

#### **4.3 *Performance Monitoring Evaluation***

##### **4.3.1 *Water Level Evaluation***

The current water level monitoring component of the performance monitoring program comprises quarterly monitoring of water levels in 15 wells (Table 15) and has been in effect since the second quarter of 2000. Historical water level data for Zone 1 wells through October 2016 are presented in Appendix C. Water levels for the fourth quarter of 2016 are shown on the potentiometric surface map in Figure 46. Water levels through time are shown on Figure 47. Saturated thicknesses calculated from the October 2016 measurements in Zone 1 are presented in Table 16. This table shows that the Zone 1 hydrostratigraphic unit remains completely saturated

in most of the down-dip wells: 505 A, 502 A, and 412 (in Section 36); and 142 and 143 (along the northern boundary of Section 36) (see Figure 46). During 2016, most of the wells continued to show overall decreasing potentiometric elevations (usually with small fluctuations; for example the October 2016 Zone 1 water level elevations were slightly higher than the July 2016 water level elevations), indicating that in upgradient areas the Zone 1 potentiometric field continues to lower as groundwater drains down-dip into partially saturated parts of this bedrock stratigraphic unit. This also appears to be the case in the northern part of Section 36, where Zone 1 is fully saturated. Figure 47 shows that 2016 water levels in Wells 142, 143, 412, 501 A, 502 A are decreasing and the water level in Well 504 A has been approximately stable, with minor fluctuations since 2006.

Changes of potentiometric elevations in up-dip and down-dip wells indicate the broad pattern of the shift in the potentiometric field caused by groundwater drainage to the northeast in Zone 1. Long-term decreasing water levels up-dip to the south-southwest, at locations under less than fully saturated conditions, are a response to the continued flow of groundwater down-dip into partially saturated parts of the system. Figure 47 indicates that the potentiometric levels in Wells 142, 143, and 412 reached a maximum and have recently begun to slowly decline.

Earlier groundwater flow in Zone 1 was approximately eastward, reflecting groundwater mounding and recharge from the borrow pits and the alluvium to the west. Since the dewatering of Borrow Pit No. 2 and termination of mine-dewatering groundwater discharge into Pipeline Arroyo, the former mounding has dissipated. Consequently, water levels in up-dip areas of Zone 1 (e.g., Wells 604, 614 and 515 A) have dropped significantly, though the rate of decline has reduced with the dissipation of recharge-induced mounding (see Figure 47). The rate of groundwater drainage is also limited by the unit's relatively low transmissivity, and the very low transmissivity of the underlying aquiclude.

UNC has submitted to NRC an ACL application for Zone 1 that presented a historic quantitative analysis of groundwater flow rates and directions (N.A. Water Systems, 2008g). In January 1983 the flow-direction azimuth (63°) had a strong easterly component. During later time periods the flow azimuth gradually rotated to the north, resulting in an azimuth of 24° during October 2007. This indicates that as the formerly higher groundwater mound has gradually continued to dissipate over the years, the northerly dip of the Zone 1 sandstone has exerted greater control on the flow direction. Darcy seepage velocities have gradually fallen through time. During January 1983, the groundwater velocity was 93 ft/yr, and by October 2007 the velocity had fallen to 40 ft/yr (a reduction of 57 percent).

#### *4.3.2 Water Quality Evaluation and Current Extent of Seepage-Impacted Water*

The temporary saturation created by the infiltration of former mine-dewatering groundwater discharges is considered the background water for Zone 1 (EPA, 1988b; 1998). This anthropogenic groundwater was later seepage-impacted by acidic seepage from Borrow Pit No. 2 in the Central Cell (compare Figure 2 and Figure 48). These seepage fluids contained elevated concentrations of metals, radionuclides, and major ions, including sulfate and chloride.

Source remediation (neutralization and subsequent dewatering of the borrow pit, and capping of the Central Cell), continued neutralization of the seepage by natural geochemical processes, and mixing with the background water have reduced concentrations of most constituents below the NRC and EPA clean-up standards (both historical and revised standards). However, as discussed below, exceedances of some constituents may still occur in Zone 1. Table C.1 in Appendix C provides historic constituent concentration data through October 2016 and Table 17 summarizes the constituents detected in Zone 1 during October 2016. Both of these tables also include the revised Zone 1 NRC License standards and revised EPA cleanup levels to facilitate direct comparison with the groundwater data.

The Zone 1 NRC POC wells include Wells 604 and 614 within Section 2 and Wells EPA 4, EPA 5, and EPA 7 in Section 1. Wells EPA 4 and EPA 5 lie outside the mapped seepage impacted area. There were no exceedances of NRC License standards outside Section 2 and there were only two constituents that exceeded NRC License standards at the POC wells during the 2016 quarterly monitoring: nickel at Well 604 (four quarters) and TTHMs at Well 614 (July only; EPA TTHM standard equivalent to the NRC License standard). NRC License standards for TTHMs and nickel were also exceeded at non-POC Well 515 A during 2016:

EPA cleanup standards, for constituents that are not regulated by NRC (or for which the EPA cleanup standard is different from the NRC License standard [e.g., beryllium, nickel]) were exceeded at the following locations (the number of quarterly exceedances are shown in parentheses):

- Well 515 A – TDS (4), sulfate (4), chloride (4), and manganese (4).
- Well 604 – beryllium (1), cobalt (4), nickel (1).
- Well 614 – chloride (4), nitrate (2), cobalt (4).
- Well EPA 7 – chloride (1).

The only exceedance outside Section 2 was the chloride result at Well EPA 7. These results are further described in Section 4.3.3.

Nickel and cobalt concentrations, which exceeded revised NRC License standards and EPA cleanup standards (respectively) in a few 2015 samples outside Section 2, did not exceed standards in 2016. Nickel concentrations at Well EPA 5 have decreased since January 2014 (Table C.1, Appendix C). All 2016 sample concentrations were below the revised NRC standard (0.07 mg/L, which is lower than the EPA standard [0.2 mg/l]) and the July and October 2016 sample results were non-detected (i.e., < 0.05 mg/L). The range of nickel concentrations in 2016 samples from EPA 7 was from non-detected (< 0.05 mg/L, January 2016) to equal to the NRC standard (0.07 mg/L, April 2016).

The Well EPA 5 cobalt concentrations, like nickel, decreased during 2016 (0.05 mg/L in January to 0.02 mg/L in October [Table C.1]), and there were no exceedances of the EPA cleanup standard (0.05 mg/L, identical to the ROD standard). The average 2016 cobalt concentrations

for EPA 7 increased slightly over 2015, but individual results (0.04 mg/L in January and 0.05 mg/L in April through October) remained equal to or below the EPA cleanup standard.

It is important to realize that the historically reported exceedances of NRC License standards and EPA cleanup standards in some wells represent background water quality. For example, since 1989, background well EPA 4 (in Section 1) has (1) persistently shown exceedances of the historical EPA sulfate standard; (2) generally shown exceedances of the manganese ROD standard; and (3) shown concentrations of combined radium that have fluctuated above and below the ROD standard (5 pCi/L, which NRC revised in 2006 to 9.4 pCi/L [NRC, 2006] and has subsequently been revised to 12.1 pCi/L [both NRC and EPA]). Almost all of these results are below the revised NRC and EPA standards. Background water quality is discussed further in Section 4.3.3 (Natural Attenuation System Performance Evaluation).

Water quality has continued to improve since shutoff of the pumping wells, indicating that the degree of seepage impact is diminishing. Zone 1 seepage impacts have been delineated (Figure 48) by chloride concentrations greater than 50 mg/L (Earth Tech, 2000a). Well EPA 5 has shown a long-term, gradual reduction in chloride concentrations from a maximum of 289 mg/L in April 1992 to 38 mg/L in October 2016 and has stabilized with minor fluctuations (since April 2008, 33 of 34 values are less than 50 mg/L – refer to Appendix C). Well EPA 7 chloride concentrations have gradually increased over the past few years but appear to have stabilized; measurements exceeded the standard (250 mg/L) briefly during July 2013 (317 mg/L) and slightly exceeded the standard in three 2015 monitoring events (range 253 to 277 mg/L) and one 2016 monitoring event (259 mg/L). Chloride is a non-hazardous constituent and a secondary contaminant. The EPA cleanup standard for chloride derives from the New Mexico Water Quality Act; 250 mg/L is also the federal SMCL (this constituent does not have a federal primary MCL).

The zone of seepage impact has migrated predominantly toward the northeast and the north-northeast. Farther eastward, components of migration are limited by the proximity of the eastern edge of saturation. The acidic “core” of the seepage-impacted zone is approximated by the area where pH is inferred to be less than 4.0 (orange area in Figure 48). Figure 49 shows historic field pH values for Zone 1 wells through October 2016. Well 604 has persistently shown the lowest pH; as discussed below, it also is the most highly seepage-impacted well. However, this well shows a long-term increasing trend in pH values (Figure 49). Figure 49 shows that, starting in approximately 1990, acid neutralization and buffering resulted in substantial pH increases in Wells 515 A, 516 A, and EPA 7. However, during the last several years the water quality has been declining in 515 A in some ways. Field pH has declined from 7.21 in January 2011 to 6.14 in October 2016 and appears to have stabilized; sulfate increased from 5,060 mg/L in January 2011 to 6,590 mg/L in October 2016; and bicarbonate sharply increased from 231 mg/L in July 2010 to 916 mg/L in April 2013, then decreased slightly to 835 mg/L in October 2016. The increase in bicarbonate accompanied by the decrease in pH indicates that relatively acidic seepage-impacted water has moved through this location and the water is being buffered by reaction with calcium carbonate.



UNC has demonstrated (e.g., Chester Engineers, 2012c, 2014b) that pre-mining (natural) groundwater in Zone 1 is encountered along the northern boundary of Section 36 in Wells 142 and 143; that this natural groundwater is overlain up-dip by post-mining/pre-tailings (background) water; and that the interface between these two types of groundwater is not migrating to the north. The natural and background waters would provide effective barriers to any potential Zone 1 COC transport to the north of Section 36.

Sulfate, TDS, and manganese are non-hazardous constituents that have historically been reported to exceed Site ROD standards. The concentrations of sulfate and TDS reflect geochemical equilibrium of the groundwater with gypsum. There were no exceedances of the revised standards for any of these constituents at any POC well or at any well outside Section 2 during 2016. These data affirm the NRC staff's position (NRC, 1996) that sulfate, manganese, and TDS should not be used as a basis to implement corrective action.

Within Section 2, the revised standards for TDS, sulfate, and manganese were exceeded at Well 515 A (Table 17). During October 2016, chloride concentrations at Wells 515 A and 614 also exceeded the EPA standard, as has frequently occurred at these locations since the start of monitoring during 1989. Other constituents for which standard exceedances were reported in Section 2 in October 2016 include: beryllium (Well 604), cobalt (Well 604), nickel (Wells 515 A and 604), TTHMs (Wells 515 A and 614) and nitrate (Well 614) (Appendix C, Table C.1). UNC has determined that Well 515 A does not meet performance criteria associated with low flow groundwater sampling methods, which limits the ability to collect representative samples. The beryllium concentration at Well 604 (0.005 mg/l) slightly exceeded the EPA standard (0.004 mg/l), but did not exceed the NRC License standard (0.050 mg/L). Beryllium has been frequently detected at low concentration in Well 604 samples since the laboratory reporting limit was reduced (from 0.010 mg/L to 0.001 mg/L) in July 2012, but this was the first exceedance at this location since 2002 (see Appendix C).

The extent of seepage impacts, as delineated by a chloride concentration greater than 50 mg/L, has diminished gradually over time (e.g., compare 2008 Annual Report Figures 48 and 49, which show that the area of seepage impact contracted from 2007 to 2008). However, the October 2012 sampling of Wells 617 and 619 (the first "spot" sampling here in many years) showed that both wells exceeded 50 mg/L; this required that the seepage impact boundary in the 2012 Annual Report (Chester Engineers, 2013) be extended to the north by approximately 250 ft in order to include Well 619 (Figure 48). The 2012 boundary position has been maintained in the current report.

Many other aspects of water quality have continued to improve since shutoff of the pumping wells, confirming that the degree of seepage impact is diminishing in both time and space. Natural attenuation processes include acid neutralization by:

- Reaction with the Zone 1 bedrock (which has a calcite [calcium carbonate] component of 0.03 percent [Canonie, 1987; Table 4.5]);
- Mixing with the neutral background water;

- Precipitation of metals and radionuclides; and
- Adsorption of metals (excluding manganese) and radionuclides.

These processes attenuate pH, metals, and other seepage constituents. The relatively low transmissivity of Zone 1 slows migration and increases residence time for the attenuation processes.

#### 4.3.3 Natural Attenuation System Performance Evaluation

The Zone 1 natural attenuation system comprises the hydro-geochemical interactions between the bedrock matrix, the anthropogenic background waters (derived from former mine-dewatering groundwater discharges), and the tailings fluids. The natural system is successfully attenuating the seepage impacts by the processes of neutralization, precipitation, adsorption, and a degree of passive mixing with the background waters. Previous annual reports have indicated some constituents will remain at above-standard concentrations because of the inherent geochemical characteristics of the Zone 1 background water; however, the revised Site standards better account for background geochemistry.

Table 18 shows the predicted geochemical performance of the Zone 1 natural attenuation system (revised from Earth Tech, 2002c). In summary, sulfate and TDS concentrations outside Section 2 are expected to meet the revised EPA cleanup standards that take into account the gypsum equilibrium in background groundwater; however it is noted that sulfate and TDS concentrations in Well 515 A at the Section 2 boundary are slightly increasing. Similarly, manganese is expected to meet the revised EPA cleanup standard; Well 515 A is the only location that currently exceeds the standard. The remaining metals and radionuclides are expected to meet the standards through attenuation by neutralization and adsorption. Chloride may meet the EPA cleanup standard outside Section 2 in the future, but Well EPA 7 in Section 1 has exhibited a gradually increasing concentration trend and slightly exceeded the standard during 2016. Outside of Section 2, TTHMs have always met the revised NRC/EPA standard and, based on trends, we fully expect that condition to continue. The individual constituents of concern are discussed below.

#### *Sulfate and TDS*

Sulfate and TDS are non-hazardous constituents and not regulated by NRC. Sulfate concentrations exceed the revised EPA cleanup standard in seepage-impacted water at one well (515 A) in Zone 1. Figure 50 shows historic sulfate concentrations through October 2016; Figure 51 shows the extent of sulfate exceedances during October 2016. The time-series indicate that the operation of extraction wells prior to July 1999 did not have a discernable influence on sulfate and TDS; sulfate concentrations in Zone 1 are controlled by the system's equilibrium with gypsum and they are broadly stable, with few exceptions. Based on this stability, sulfate and TDS concentrations in wells outside Section 2 are expected to meet the revised EPA cleanup standards, which take into account the gypsum equilibrium in background groundwater. There is

some uncertainty because sulfate and TDS concentrations in Well 515 A at the Section 2 boundary are increasing slightly.

### *Manganese*

Manganese is a non-hazardous constituent in water that is not regulated by NRC. Manganese concentrations exceed the revised EPA cleanup standard in seepage-impacted water (Well 515 A) in Zone 1 within the Section 2 boundary. Concentrations have generally decreased over time as the acidic seepage has been neutralized, but the magnitude of the decrease is largely controlled by the bicarbonate concentrations (Earth Tech, 2000a). Historic manganese concentrations through October 2016 are shown on Figure 52 and tabulated in Appendix C. The extent of manganese that exceeded the revised EPA cleanup standard during October 2016 is shown on Figure 53 (note that previous versions of this map reflected a small area of exceedance around Well 619, which is based on the October 2012 manganese result (4.91 mg/L), but this result is below the revised EPA cleanup standard). Figure 52 shows that the long-term decreasing trend for manganese in Well EPA 7, which started in January 1998, for the first time fell below the historical ROD standard in 2006; in 2008 concentrations began to slowly increase and small exceedances occurred. However, manganese has remained below the revised EPA cleanup standard since January 2003 and the concentration has since decreased and stabilized near 1.3 mg/L. Well 604 manganese concentrations may have stabilized after following a decreasing trend that started in January 2004. Well 515 A concentrations had shown a sharp decline from 13.1 mg/L in July 2009 (Figure 52) and appear to have stabilized, with some fluctuations, since October 2012. In October 2016 the concentration in 515 A was 7.55 mg/L. The overall decline is very likely related to the substantial increase in bicarbonate concentrations at this location since July 2010.

Bicarbonate concentrations in seepage-impacted wells are related to the waters' degree of neutralization of acidic seepage. Figure 54 shows historic bicarbonate concentrations through October 2016. As discussed above regarding Zone 3, marked declines of bicarbonate concentration are indicative of (sometimes temporary) exceedance of the local buffering capacity of the natural geochemical system (i.e., the flux of acidity (temporarily) exceeds the rate of buffering). The plunge of bicarbonate concentration in Well EPA 5 from January 2000 to May 2000 is such an example (the EPA 5 bicarbonate concentrations continued to decrease through 2014, but appear to have stabilized). A second example of historic bicarbonate trends is provided by Well EPA 7 (Figure 54), where formerly very low bicarbonate concentrations have increased step-wise beginning in July 1990, with additional upward steps in January 1994, again in October 1998, and again in May 2000. The rising concentrations indicated that the natural attenuation neutralization capacity has not been depleted. The previous historically highest bicarbonate concentration in EPA 7 was measured in April 2010 (680 mg/L); subsequent concentrations were lower, but since January 2012 concentrations defined a fluctuating, but slightly upward trend until stabilizing just above 650 mg/L in 2016, suggesting that while there is tailings-impacted water reaching this location the buffering capacity has not been overcome by the amount of acidity reaching this location.

The seepage-impacted wells that have had bicarbonate concentrations greater than 1,000 mg/L (Wells 614, 516 A, and EPA 5) either have never had manganese exceedances or have had a decrease in manganese concentration to below the historical ROD standard (i.e., 2.6 mg/L). In contrast, seepage-impacted wells with lower bicarbonate concentrations, such as Wells 515 A, 604, and EPA 7, have historically had elevated manganese concentrations. However, even among these wells the effect of bicarbonate on manganese concentrations is well illustrated by EPA 7. Since July 2001, increasing bicarbonate concentrations in Well EPA 7 (in Section 1) have exceeded 500 mg/L (Figure 54), and the manganese concentration steadily declined through October 2008 (Figure 52) – since then the manganese concentrations have mostly been below the ROD standard and the bicarbonate fluctuated within an overall stable increasing trend. This geochemical behavior has previously been analyzed by Earth Tech (2000c). Another example of this correlation is Well 515 A where the recent increase of bicarbonate concentrations (Figure 54) correlates with decreasing manganese concentrations (Figure 52, Appendix C).

In contrast to seepage-impacted wells, higher manganese concentrations at Well EPA 4 represent background water quality. Similarly, Well EPA 8, located beyond the tailings-impacted zone in background water to the east of EPA 4, also showed higher manganese concentrations through the termination of groundwater quality monitoring in January 2000. Most of the other constituents at EPA 8 had been fluctuating to steady since 1989 (Appendix C).

In summary, the limited neutralization capacity in background water results in elevated manganese concentrations that exceeded the historical ROD standard. The revised EPA standard is based on a statistical analysis of background manganese concentrations and appropriately accounts for these geochemical conditions. The only location where manganese concentrations currently exceed the revised EPA cleanup standard is Well 515 A, where concentrations have declined significantly over time but appear to have stabilized (with fluctuations); exceedance of the EPA manganese standard within the property boundary will continue at those locations where there is insufficient neutralization capacity to reduce the manganese concentrations. UNC agrees with NRC (1996) that manganese is not a useful indicator of seepage impacts or remediation success and it should be removed as a parameter of concern for all the reasons that have been discussed.

### *Chloride*

Chloride concentrations in Well EPA 7 in Section 1 have exhibited a gradual increase over the past few years, the concentrations slightly exceeded the standard (250 mg/L) in one out of four quarters in 2016 (July, 259 mg/L, see Appendix C). This is a reduction relative to 2015, when there were three exceedances. Chloride is a non-hazardous constituent and a secondary contaminant that is not regulated by NRC. Chloride concentrations at Wells 515 A and 614 also exceeded the EPA standard, as has frequently occurred at these locations since the start of monitoring during 1989. The EPA cleanup level for chloride derives from the New Mexico Water Quality Act; 250 mg/L is also the federal SMCL (this constituent does not have a federal primary MCL or an NRC License standard). Based on observed historical chloride concentration

fluctuations in Zone 1 monitoring wells, it is possible that chloride will again meet the EPA cleanup level outside Section 2 in the future.

#### *Cobalt and Nickel*

No metallic hazardous constituent exceeded their current NRC License standard outside the UNC property boundary in Zone 1 during 2016. Figure 55 shows historical nickel exceedances at both EPA 5 and EPA 7. Historical nickel concentrations had decreased at both wells such that there were no detections from April 2005 to January 2014 at EPA 7, and from July 2007 to October 2011 at EPA 5. Subsequent to those periods, nickel concentrations at both wells have periodically exceeded the current License standard (six times at EPA 5 and once at EPA 7). Neither well has had a nickel exceedance of the NRC License standard since April 2015. Within Section 2 during 2016, nickel concentrations exceeded standards at Well 515A (NRC License standard) and at Well 604 (both NRC License standard and EPA cleanup level).

Cobalt is not regulated by NRC. Cobalt concentrations exceeded the EPA standard (0.05 mg/L) at Well EPA 5 in July 2015 (0.06 mg/L) and the five previous quarters (range 0.07 to 0.1 mg/L), but concentrations were equal to or below the EPA standard for all samples collected outside Section 2 in 2016. Figure 55 shows that historical cobalt concentrations decreased at Wells EPA 5 and EPA 7 and were below the standard between October 2007 and January 2013. Following a pattern similar to nickel concentrations, cobalt concentrations in both wells increased briefly and have subsequently decreased. The extent of cobalt and nickel exceeding the EPA and NRC standards, respectively, during October 2016 is shown in Figure 56. The area is slightly larger than that shown for October 2015, because the October 2016 EPA 7 cobalt concentration increased slightly (0.050 mg/L vs. 0.040 mg/L). Other metals are attenuated within the property boundary. Within Section 2 during 2016, cobalt concentrations exceeded the revised EPA cleanup level at Well 604.

Cobalt and nickel typically do not adsorb sufficiently to reduce their concentrations below their standards until the pH is approximately 6.5 or more (Earth Tech, 2002c). For example, cobalt and nickel concentrations in Well EPA 7 historically have fluctuated around their respective standards as the pH has increased to above 6.0. Neutralization of tailings seepage in Well EPA 7 (pH rose steadily from the approximately 4 to 7 throughout the 1990s) has been the geochemical impetus for reductions in concentrations to levels below the standards for cobalt in April 2002, and nickel in January 2003. Empirically (Appendix C) it appears that a pH of approximately 6.0 may promote adsorption sufficient for reduction of concentrations to below the standards for both parameters at most monitoring locations. However, fluctuating nickel and cobalt concentrations observed at Wells EPA 5 and EPA 7 from 2013 through 2016 are within the range of historical concentrations and do not appear to consistently correspond directly with the relatively small changes in pH during this period (Appendix C). It is possible that these fluctuations are related to local changes in redox conditions or the formation of inorganic dissolved complexes.

With the exception of the previously described variability at Wells EPA 5 and EPA 7, the cobalt and nickel time series (Figure 55) empirically demonstrate that natural attenuation occurs in two senses: over time at a given location, and spatially downgradient of the eastern part of the Central Cell. This evidence of continuing metals attenuation in upgradient areas suggests that conditions for attenuation will ultimately be re-established at downgradient locations in Section 1.

#### *Combined Radium-226 and Radium-228 and Gross Alpha*

Similar to the metals, combined radium is attenuated by neutralization, precipitation, and adsorption. Historic combined radium activities through October 2016 are presented in Figure 57. There were no exceedances of the NRC/EPA standard for combined radium (12.1 pCi/L) at any Zone 1 monitoring location during October 2016 (Table 17) or the other 2016 monitoring events (Appendix C). The highest activities of combined radium are within the property boundary (i.e., Well 515 A and POC Well 604) where the pH is slightly more acidic (Table 17).

Table 17 shows that there were no exceedances of the revised NRC gross alpha activity standard in the October 2016 samples. Exceedances of the gross alpha standard in Zone 1 wells have occurred historically, but not recently.

#### *Total Trihalomethanes (TTHMs)*

During October 2016, the only TTHM concentration exceeding the NRC/EPA standard (80 µg/L) was detected at Well 515 A (329 µg/L), which is within the property boundary. This was the highest concentration detected at this location during 2016 and was higher than the concentration in October 2015 (214 µg/L). The range of TTHM concentrations at Well 515 A in 2016 (23.5 to 329 µg/L) was within the range of concentrations detected since January 2012. The July 2016 TTHM concentration at POC Well 614 (97.2 µg/L) also exceeded the NRC/EPA standard, but the other 2016 quarterly samples had concentrations below the standard. Similar variability has been observed at this well since 2008 (see Appendix C). Only very low TTHM concentrations were detected at wells located in Section 1 during 2016 (maximum 1.56 µg/l in Well EPA 7). UNC has submitted an ACL application for TTHMs in POC Well 614 and nickel in POC Well 604 (discussed below).

#### *Pb-210*

Table 17 shows that there were no detections of Pb-210 during October 2016; nor were there any detections during the entire year (refer to Appendix C, Table C.1). This is similar to previous years; there were no Pb-210 detections in 2015, 2014, or 2013 and only one detection in 2012 (1.1 pCi/L at Well 604).

#### **4.4 Alternate Concentration Limits Application**

During December 2008, UNC submitted to NRC an ACL application (N.A. Water Systems, 2008g) for TTHMs in POC Well 614 and nickel in POC Well 604. Both of these wells are located along the eastern property boundary in Section 2 (see Figure 48). This document

followed NRC's guidance for organizational content and included sections addressing hazard assessment, exposure assessment, and corrective action assessment (including an As Low As Reasonably Achievable (ALARA) demonstration).

During 2011, NRC stated that this ACL application is unacceptable because the proposed POEs (Wells EPA 5 and EPA 7) are not located on UNC property. This proposal was made because there is no space for more wells to the east of the Central Cell in Section 2, such that there would be spatially separate POC wells (604 and 614) and POE wells. UNC is presently considering alternate approaches to address TTHMs and nickel in these two POC wells. Nonetheless, it is important to understand the key issues related to UNC's ACL application from 2008, which are summarized next.

The NRC License standard for nickel is 0.07 mg/L (revised from 0.05 mg/L during 2015). The New Mexico Water Quality Control Commission (NMWQCC) standard for nickel is 0.2 mg/L and is the basis of the revised EPA cleanup standard identified in 2015 (Chester Engineers, 2015b). The NRC License standard for TTHMs is 0.08 mg/L; this is the same value as the federal MCL (and current EPA standard). The NMWQCC standard for TTHMs is 0.1 mg/L.

In developing the proposed ACLs, UNC conducted concentration trend analyses from the final shutoff of Zone 1 pumping wells in July 1999 through July 2008. In addition, historic groundwater quality has been reviewed for all monitoring wells in Zone 1. Based on these observations, UNC proposed the ACL of 0.4 mg/L for nickel at POC Well 604, and the ACL of 0.3 mg/L for TTHMs at POC Well 614.

Since the termination of pumping, most constituent concentrations have progressively reduced through natural geochemical processes (as discussed in detail for all constituents in this 2016 Annual Review Report). Fluctuations of nickel and cobalt concentrations at Zone 1 Wells EPA 5 and EPA 7 during the past few years are within the range of historical concentrations and may be related to local geochemical fluctuations. The analysis presented in the ACL application indicated that the spatial extent of Zone 1 seepage impact is stable to diminishing, and that natural attenuation by neutralization (buffering) and adsorption is occurring for the metals (including nickel), and that attenuation by degradation, dilution, and dispersion is occurring for chloroform. Evidence of continuing metals attenuation in upgradient areas suggests that conditions for attenuation will ultimately be re-established at downgradient locations in Section 1.

The 27-year history of continuous groundwater quality monitoring in Zone 1 (and Site-wide) provides a sound empirical basis for evaluating contaminant transport and attenuation. The key conclusions of the ACL application are summarized (in *italics*) below:

- *There was no nickel or chloroform at concentrations above standards in any Section 1 well. This statement has since remained valid for chloroform.* (However, subsequent to this application Well EPA 5 has had nickel detections of 0.06 to 0.10 mg/L (exceeding the previous standard) in the 14 samples from October 2012 to January 2016 [inclusive] and five exceedances of the revised NRC License standard (but not the revised EPA

standard), which are the only exceedances at this location since October 2006. Additionally, there have been seven nickel detections [six total in 2015 and 2016] and one slight exceedance of the revised NRC License standard at Well EPA 7 [in April 2015], but not the revised EPA standard. Recent fluctuations of nickel concentrations at Wells EPA 5 and EPA 7 are within the range of historical concentrations.)

- *The long monitoring history provides more than sufficient time to detect exceedances and to evaluate trends.*
- *Source area concentrations within Section 2 show decreasing long-term trends.*
- *Constituent concentrations progressively decrease downgradient.*
- *Hydraulic gradients and groundwater flow rates are diminishing over time.*
- *Groundwater quality is expected to continue its improvement at the proposed point-of-exposure (Wells EPA 5 and EPA 7) from levels which are very largely below Site standards. (However, note the statement about EPA 5 in the top bullet of this list).*
- *There are no Zone 1 exceedances of the License GWPS in Section 36 (UNC property) or Section 1 (Indian Trust Land property), nor are there exceedances of any hazardous constituents within seepage-impacted water outside of Section 2. (However, note the statement about EPA 5 in the top bullet of this list).*
- *A large part of Zone 1 in Section 1 is dry, and this hydrostratigraphic unit is physically and chemically non-viable for sourcing domestic or stock water supply wells. Treatment of either the seepage-impacted or background water, to potable quality, would be extremely expensive and is not feasible.*
- *The proposed Zone 1 remedy of No Further Action plus ACLs will be protective of human health and the environment.*
- *UNC has demonstrated ALARA conditions in Zone 1.*



## Section 5

### *Conclusions and Recommendations*

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This annual review evaluated the performance of the natural systems in all three Site hydrostratigraphic units and the active remediation in Zone 3. As was the case for 2015, Site groundwater standards used for data comparisons in this annual report were revised in conjunction with the establishment of statistically based BTVs. NRC issued a License amendment to update site GWPSs (NRC, 2015) and EPA approved the use of the revised cleanup levels (EPA, 2015) for remedy alternative evaluation in the ongoing SWSFS. These agency actions lessen one of the technical impediments (GE, 2009) to eventual Site closure which stated that “long-term monitoring data and basic geochemical considerations reveal some cleanup objectives to be unattainable.” For most parameters, the establishment of background threshold values through statistical analysis will incorporate and account for the geochemical influence on groundwater quality and facilitate the identification and assessment of contaminants of concern.

In the Southwest Alluvium and Zone 1, the natural systems have functioned as effectively as when active remediation took place. Acidic seepage is being neutralized, resulting in attenuation of metals and radionuclides. During 2016, extraction well pumping continued in part of Zone 3. This extraction of seepage-impacted groundwater started with the hydrofracture program in 2005 and was supplemented, starting in 2009, with extraction from certain NW-series wells located near the northernmost area of seepage impact. The purpose of the upgradient wells (e.g., the hydrofracture or RW-series wells) is primarily to dewater and recover contaminant mass, while the purpose of the downgradient wells (e.g., the NW-series Wells NW 2 and NW 5) is to form a hydraulic barrier. The Zone 3 pumping system has been declining in performance and has approached the limit of its effectiveness due to declining saturated thicknesses, as predicted. Pumping at Well NW 5 was initiated in March 2016 to replace Well NW 4 in northern Zone 3, which was suspended on October 21, 2015, due to insufficient yield. The conclusions and recommendations of this report are provided below.

#### **5.1 Conclusions**

Below are some of the key conclusions of this report:

- The following four monitoring wells do not meet performance criteria associated with low flow groundwater sampling methods, which limits the ability to collect representative samples at these locations: Wells GW 3 and 632 (both are POCs in the Southwest Alluvium), Well 515 A (non-POC in Zone 1) and Well 517 (POC in Zone 3). Well 719 also has a very low volume available for sampling and is considered to have “borderline” suitability for low-flow sampling methods. Additionally, Wells GW 2 and GW 3 can no longer be sampled safely, because of their proximity to the unstable edges of the Pipeline Arroyo canyon. UNC has submitted a License amendment request (GE, 2015) and a subsequent amendment (GE, 2016b) that remove POC Wells GW 2 and GW 3 from the

monitoring program. Wells 632, 517, 515 A, and 719 should also be removed from the monitoring program.

- Uranium concentrations in the Southwest Alluvium are not related to the migration of uranium in tailings fluids. The range of uranium concentrations in the background water has been empirically shown to be the same as the range within seepage-impacted water (GE, 2006). Uranium and bicarbonate concentrations are usually covariant in the Southwest Alluvium groundwater, i.e., when the concentration of the bicarbonate parameter changes, uranium changes with it provided that there is uranium available for dissolution or desorption in the sediments. This observation has held for most Southwest Alluvium wells for both the 12 years of active pumping and the 15.7 years of post-pumping monitoring, and is expected based on principles of aqueous chemistry.
- Concentrations of uranium in the Southwest Alluvium are an indicator that natural attenuation is at least as effective a remedy as pumping. With the exception of POC Well GW 3, which was last sampled in 2015, uranium concentrations and concentration time trends have either stabilized or shown decreasing trends since the pumps were turned off. The increasing trend of concentrations at GW 3 does not necessarily relate to the shutoff. Since July 2009, the increasing uranium concentration trend is the result of covariance with bicarbonate concentrations. Additionally, the very low saturated thickness in GW 3 (2.07 ft in July 2015 and projected to be dry in approximately two years) may contribute to elevated dissolved constituent concentrations (i.e., consistent with the hypothesis developed by NRC (1996) that dissolved salt concentrations will increase as the aquifer system dries out). As the saturated thickness declines, the well may become isolated or hydraulically disconnected from the Southwest Alluvial flow system; groundwater under these conditions is not representative of typical groundwater quality because it has greater opportunity to geochemically evolve and reach local equilibrium with the formation. Uranium concentrations at non-POC Well EPA 25 and upgradient Well 509 D, which had previously shown increasing trends, have stabilized. Well EPA 25 uranium concentrations (October 2016, 0.123 mg/L) remain substantially lower than the NRC License standard; the previous slightly increasing trend is the result of covariance of uranium and bicarbonate concentrations that has been exhibited over the entire history of its monitoring. Well 509 D is located outside the zone of influence of the former pumping wells; therefore, it is not a good indicator of whether there is a benefit to pumping.
- The source of uranium in the Southwest Alluvium was not the tailings seepage but mine waters with uranium concentrations up to 2 mg/L that were historically discharged under permit into the Pipeline Arroyo and infiltrated into the Southwest Alluvium. Empirical data show that the elevated uranium concentrations in the mine discharge (i.e., the historical background concentrations) have been broadly and significantly attenuated in the alluvium in that most of the seepage-impacted wells have shown overall stable trends since the pumping system shutdown. The interaction of the uranium in the Southwest Alluvium sediments with varying geochemical (e.g., bicarbonate) or hydrologic factors

(e.g., reductions in saturated thickness or isolation from the groundwater flow system) may result in variable concentration trends accompanied by localized exceedances of the Site uranium standard (e.g., at Wells GW 3 and 509 D). The UPL95-based BTV calculation method is inappropriate for uranium in the Southwest Alluvium; the uranium standard in the Southwest Alluvium should be waived because the principal source of uranium for both background and seepage-impacted waters was not tailings seepage, but mine discharge water permitted for uranium concentrations up to 2 mg/L. The observed spatial and temporal variability in Southwest Alluvium water uranium concentrations is related to factors that are unaccounted for in the UPL95-based BTV analysis. Those factors include the likely heterogeneity of the uranium distribution in the sediments; uranium concentrations in the Southwest Alluvium attenuate via adsorption and/or precipitation such that background uranium concentrations decrease with increasing distances downstream and away from the arroyo centerline. Additional factors include local geochemistry (e.g., bicarbonate), and hydrologic factors (e.g., saturated thickness). It also is not possible to ensure that a standard will be achieved consistently throughout the seepage-impacted area as the geochemistry fluctuates and water levels decline over time. Moreover, the standard will only be attained upon extraction of all water in the alluvium, which is not practicable.

- Mapping of bicarbonate isoconcentration contours is an important method of delineating seepage-impacted water in the Southwest Alluvium.
- Groundwater levels in the Southwest Alluvium continued to decline (with periodic fluctuations observed) in 2016, indicating that the artificially recharged zone of saturation continues to become naturally dewatered as the groundwater drains down the arroyo. Since 2015, the water level elevation in SBL 1 has been higher than the water level elevation in Well 624. The water level in SBL 1 has a lower rate of decline than Wells 624 and 627, possibly because of well construction or hydrogeologic differences.
- During 2016, both onsite and offsite seepage-impacted water quality in the Southwest Alluvium met the revised NRC GWPSs (Appendix A). With the exception of the recent Well GW 3 uranium exceedances, the groundwater quality at all POC wells has met the revised License standards since January 2011. Historically, exceedances of the revised NRC standards are otherwise infrequent and most occurred more than a decade ago.
- Hydraulic containment is not a necessary feature of the corrective action program in the Southwest Alluvium because of the geochemical attenuation that occurs naturally. The natural system is as effective as, or more effective than, pumping for controlling the migration of the constituents of concern. During 2016, no constituent concentrations exceeded the revised NRC or EPA standards in offsite seepage-impacted water. Recent exceedances include multiple uranium detections at GW 3 and one 2015 detection of the non-hazardous constituent chloride at well GW 1 (258 mg/L, exceeding the EPA cleanup standard of 250 mg/L). The recent GW 3 uranium exceedances appear to be an isolated

and localized effect of desaturation and non-representative samples (because of insufficient flow to meet the low-flow sampling SOP).

- The non-hazardous constituent manganese exceeds its revised EPA standard in the Southwest Alluvium in seepage-impacted wells within Section 2 and in background Well SBL 1 within Section 10.
- During 2016, there was one exceedance of the revised NRC standard for nickel and the EPA standard for the non-hazardous constituent sulfate in the Southwest Alluvium in background Well SBL 1 (outside Section 2, in Section 10).
- Locally increasing trends in concentrations of common dissolved ions are unrelated to tailings seepage; they derive from the reaction of the anthropogenic recharge water with natural alluvium materials. Heterogeneous distributions of the soluble alluvium minerals is the most significant factor affecting the intra-well and inter-well variations in the concentrations of common dissolved ions (e.g., sulfate and TDS).
- Evaluation and prediction of constituent concentrations in the Southwest Alluvium is predicated on understanding the geochemical evolution of both the background water quality and later changes associated with passage of the seepage-impact front. Hazardous constituents derived from seepage impact are effectively attenuated to acceptable concentrations within the Site boundary.
- Both the Southwest Alluvium and Zone 1 natural systems are at least as effective as the former active remediation systems in attenuating the seepage-impacted water. Acidic seepage is being neutralized, resulting in attenuation of metals and radionuclides. Natural geochemical conditions related to gypsum equilibrium and bicarbonate availability will control sulfate and manganese concentrations in both hydrostratigraphic units, regardless of whether or not the extraction wells are operated.
- Groundwater elevations in Zone 1 continued to decline overall (with small fluctuations) in 2016, causing the saturated thickness that accommodates groundwater flow and constituent migration to diminish in the up-dip parts of this bedrock stratigraphic unit.
- There were no exceedances of NRC License standards in 2016 in Zone 1 outside Section 2 in 2016. The Well EPA 7 nickel concentration equaled the NRC License standard in April 2016. There were no exceedances of the EPA cleanup level for nickel (0.2 mg/L) or cobalt (0.05 mg/L) outside Section 2 during 2016. Cobalt concentrations equaled the EPA cleanup standard at Well EPA 5 in January 2016, and at Well EPA 7 in April, July, and October 2016. These fluctuating concentrations are within the range of historical concentrations and may be related to local changes in redox conditions. Evidence of continuing metals attenuation in upgradient areas suggests that conditions for attenuation will ultimately be re-established at downgradient locations in Section 1.
- Outside the UNC property boundary in Zone 1, the post-pumping groundwater quality continues to improve overall (Tables 17 and 18). The concentrations of non-hazardous constituents sulfate and TDS in Wells EPA 5 and EPA 7 reflect geochemical equilibrium

of the groundwater with gypsum; there were no exceedances of the EPA cleanup levels for these constituents outside Section 2 during 2016. Well EPA 7 has exhibited a small gradual increase in the concentrations of the non-hazardous constituent chloride over the past few years; measurements exceeded the EPA standard (250 mg/L) briefly during July 2013 (317 mg/L) and slightly exceeded the standard in three 2015 monitoring events (range 253 to 277 mg/L) and in the July 2016 monitoring event (259 mg/L).

- Groundwater levels in Zone 3 continued to decline in 2016, indicating that the anthropogenic zone of saturation continues to diminish as the groundwater drains down the dip of the bedrock layers. Pumping of extraction wells since 2005 has locally accelerated the rate of water level decline in northern Zone 3. The declining water levels prevented sample collection at four northern Zone 3 monitoring wells (NBL 1, PB 3, PB 4, and MW 6) during 2016.
- The Zone 3 NRC POC wells (517, 613, 708, and 711) are within the acidic “core” of the seepage-impacted water. The following constituents exceeded NRC License standards at the POC wells during the 2016 quarterly monitoring:
  - Well 517 – nickel, uranium, thorium-230, gross alpha.
  - Well 613 – TTHMs, beryllium, nickel, vanadium, uranium, thorium-230, gross alpha.
  - Well 708 – beryllium, nickel, gross alpha.
  - Well 711 – beryllium, nickel.
- NRC License standards for beryllium, nickel, uranium, thorium-230, and gross alpha were also exceeded in seepage-impacted water at non-POC monitoring locations during 2016.
- EPA cleanup standards were exceeded for beryllium, TDS, sulfate, aluminum, cobalt, and manganese during 2016. These are constituents that are not regulated by NRC, or for which the EPA cleanup standard is lower than the NRC License standard (e.g., beryllium).
- The source of uranium in both background and seepage-impacted water in Zone 3 was not tailings seepage, but mine water, permitted to contain uranium concentrations up to 2 mg/L, discharged to Pipeline Arroyo for 17 years. Uranium has been historically detected at relatively elevated concentrations in both background and seepage impacted wells in Zone 3. The 2016 pattern of uranium concentration contours in the central and northern seepage-impacted area continues to illustrate incursion of background water due to pumping but there are some differences from 2015. Uranium concentrations have recently shown increasing trends (or spikes) at some locations that have become more seepage-impacted or fluctuated over time (e.g., 517, 717, and EPA 14) but have remained below the revised standard, with the exception of the July 2016 sample collected at Well 517 (0.401 mg/L). Uranium concentrations also have recently exhibited a decreasing

trend at Well MW 7. The observed variability in uranium concentrations is attributed to pumping-induced mixing of background and seepage-impacted groundwater and geochemical mobilization of uranium in the formation by the highly seepage-impacted water (e.g., below pH 3).

- Groundwater quality along the northern tracking wells in Zone 3 has been oscillating between degrading and improving trends over the last 14 years. The variations in water quality indicate that there have been local and variable degrees of mixing of seepage-impacted water with background water drawn in from the west. This is interpreted to have been a consequence of the extraction wells upgradient and, since February 2009, downgradient of the northern tracking wells.
- Pumping in the northernmost part of Zone 3 has created a mixing zone of background and seepage-impacted water; therefore, the mapped position of the seepage-impacted water is inexact. Based on bicarbonate and pH data, the northern edge of the seepage-impact front for October 2016 has been adjusted to encompass Well NW 5 and adjoin Wells NW 2 and MW 6. NW 1 is no longer shown to be within the seepage-impacted area based on its water chemistry. It is anticipated that seepage-impacted groundwater water will be retarded by pumping from wells both wells NW 2 and NW 5 (until the well yields declines). UNC continues to evaluate the chemistry and water levels in the northern Zone 3 wells, which may result in further modifications to the pumping rates to optimize the extraction system operations or to cease operations.
- All Zone 3 pumping well capacities decline over time. As anticipated by Appendix A of the ROD (EPA, 1988b), one important cause is the loss of saturated thickness. The Zone 3 pumping system has been declining in performance and has approached the limit of its effectiveness due to declining saturated thicknesses, as predicted. It will not be possible to pump out all of the seepage-impacted water in Zone 3. Additionally, UNC has demonstrated that the efficiency of seepage-impacted water removal has declined with time and is expected to continue to degrade. Extraction wells having yields less than the 1 gpm decommissioning criterion will be evaluated for decommissioning in the 2017 operating year. The evaluation will consider the differing objectives of the two sets of extraction wells (i.e., the upgradient RW-series wells and the downgradient NW-series wells).
- UNC believes that overall conditions are such that active remedial operations in Zone 3 are reaching the limits of their effectiveness. As a result, continued operation will be met with diminishing returns, and/or will adversely affect groundwater quality in some ways as was seen a decade ago with the former pumping system. For example, the migration of background water toward the Zone 3 extraction wells will lead to increased concentrations of uranium, and other parameters (e.g., molybdenum).
- There are no exceedances of NRC License standards for hazardous constituents in Zone 3 outside the UNC property within seepage-impacted groundwater.

## 5.2 Recommendations

Monitoring wells that do not meet performance criteria associated with low flow groundwater sampling methods, which limits the ability to collect representative samples, should be decommissioned. These wells include, but may not be limited to Well 632 (POC in the Southwest Alluvium), Well 515 A (non-POC in Zone 1), and Well 517 (POC in Zone 3). Well 504 B should be removed from the monitoring program because the well is dry and Well 446 should be removed from the water level monitoring program in Zone 3 because the water level is below the bottom of the screened interval and is therefore unreliable. UNC will submit a License amendment request to NRC that will specify recommended modifications to the performance monitoring program, including recommended replacement wells, where applicable and available. Additionally, UNC has submitted a License amendment request (GE, 2015) and a subsequent amendment (GE, 2016b) that remove POC Wells GW 2 and GW 3 from the monitoring program. These wells can no longer be sampled due to safety concerns associated with their proximity to the unstable edges of the Pipeline Arroyo canyon and should be removed from the sampling program.

### 5.2.1 Recommendations for Closure of Southwest Alluvium Remedial Action

The predicted performance of the Southwest Alluvium natural attenuation system is summarized on Table 6. The continuing assessment of natural attenuation in this annual report is the basis for the following recommendations for the Southwest Alluvium corrective action system:

1. Decommission the pumping wells and implement a No Further Action remedial alternative. Attenuation via natural geochemical processes has been shown to be at least as effective as pumping.
2. The corrective action monitoring program for the Southwest Alluvium under the NRC Source Materials License should be discontinued (except for selected POC wells). With the exception of the recent Well GW 3 uranium exceedances (which can be explained on the basis that the well is not providing representative samples), the groundwater quality at all POC wells has met the revised License standards since January 2011. UNC submitted a License amendment request to NRC in October 2015 requesting this change.
3. The uranium standard in the Southwest Alluvium should be waived, because the principal source of uranium for both the background and seep-impacted water was the permitted mine discharge water rather than the tailings seepage. Recent exceedances at Wells GW 3 and 509 D demonstrate that it is not possible to ensure that a standard will be achieved consistently throughout the seepage-impacted area the interaction of the uranium in the Southwest Alluvium sediments with varying geochemical (e.g., bicarbonate) or hydrologic factors (e.g., reductions in saturated thickness, or isolation from the groundwater flow system). The standard will only be attained upon extraction of all water in the alluvium, which is not practicable.

4. Sulfate, TDS, and manganese should be waived as constituents of concern or removed from the Southwest Alluvium monitoring program based on NRC's (1996) background water quality analysis report and multiple reports by UNC (many of which are summarized in the SWSFS Part I, N.A. Water Systems, 2007b; and Chester Engineers, 2009b). A Technical Impracticability waiver was previously recommended for sulfate and TDS, but would not be necessary under the revised EPA cleanup standards. In the Southwest Alluvium, there are no sulfate or TDS concentrations in seepage impacted water, or manganese concentrations in seepage-impacted water outside of Section 2 that exceed the revised Site standards.

#### 5.2.2 Recommendations for Zone 3 Remedial Action

The continuing assessment of remedial extraction pumping, seepage impact extent, and natural attenuation in this annual report is the basis for the following recommendations for the Zone 3 corrective action system:

1. Consider terminating extraction pumping, particularly from the upgradient hydrofracture well series (i.e., RW-series), which is likely drawing in background water from the west. Some constituents have higher concentrations in background water, compared to seepage-impacted water. The evaluation will consider the differing objectives of the two sets of extraction wells: (1) the upgradient hydrofracture (RW-series) wells are primarily to dewater and recover contaminant mass, and (2) the downgradient wells (NW-series) is to form a hydraulic barrier.
  - Zone 3 extraction wells having yields less than the 1 gpm decommissioning criterion will be evaluated for decommissioning during the 2017 operating year. UNC will submit License amendment requests as needed in 2017 to decommission recovery and monitoring wells that do not meet operating criteria.
  - Declining yields from the current extraction-well array indicate that hydraulic control is temporary. This has always been the case for pumping in Zone 3. Zone 3 saturated thicknesses are quite low (especially considering well losses), and any future pumping to reduce the pressure head will obtain only limited short-term results. Because the bedrock slope drives groundwater flow to the north, there is an irreducible elevation head that cannot be decreased by pumping. Counteracting this force is the reduction of effective porosity by the seepage-induced chemical alteration of feldspar to clay. This reduces the bedrock permeability, which retards the migration of the seepage. Eventually, a balance will develop between the irreducible elevation head and the trapping of the seepage-impacted groundwater due to the diminished bedrock permeability, retarding further migration of seepage-impacted water. Although the timing and location of such a balance cannot be predicted, such a development is likely. UNC recommends that consideration be given to other regulatory tools to manage



the inherent physical limitations to the Zone 3 bedrock-groundwater system (e.g., ACLs, TI Waivers, MNA, and ICs).

2. Sulfate and TDS should be removed from the Zone 3 monitoring program. Monitoring data that indicate no sulfate or TDS concentrations that exceed revised Site standards in seepage impacted water outside Section 2.
3. The currently proposed well locations north of the Section 36 boundary are recommended to support the adoptions of waivers, alternate standards or other administrative controls to close the corrective action program. UNC has initiated a process to locate, permit, drill, construct, and operate these wells.

#### 5.2.3 Recommendations for Closure of Zone 1 Remedial Action

The Zone 1 seepage-impacted area has attained ALARA goals. The predicted performance of the Zone 1 natural attenuation system is summarized on Table 18. Implement the following recommendation toward closure of the Zone 1 corrective action system:

1. As first put forth by the NRC (1996), and further developed in several geochemistry (Earth Tech, 2000c) and annual reports (Earth Tech, 2000e; N.A. Water Systems, 2004, 2005, 2007a), there is no method to achieve the historical EPA standards for sulfate and TDS, which are exceeded in background groundwater. Sulfate, TDS, and manganese concentrations meet the revised EPA cleanup standards in wells outside Section 2 (but continue to exceed standards within Section 2 at Well 515 A). A minor exceedance of the EPA standard for chloride was detected in Section 1 during 2016. Zone 1 has already been dewatered to the extent that is feasible. Metals concentrations are demonstrated to attenuate in two senses: over time at a given location, and spatially downgradient. It is not appropriate to tie remediation progress to sulfate or TDS concentrations which reflect geochemical equilibrium of the groundwater with gypsum or chloride concentrations that only slightly exceeds a standard equivalent to, or are based on an SMCL. Chloride is a non-hazardous constituent and a secondary contaminant that should not be considered to be an ARAR. Remedial alternatives to be presented in Part III of the SWSFS should be closely coordinated with any necessary TI Waiver(s), ACL applications, and ICs.
2. UNC has submitted a pending License amendment request (GE, 2015) and subsequent amendment to the License amendment request (GE, 2016b) that recommends, for Zone 1, the removal of Well EPA 2 and POC Wells EPA 4, EPA 5, and EPA 7 from the monitoring program. Data from the past sixteen years of post-shutdown monitoring indicates a gradual improvement in water from the Zone 1 POC wells (GE, 2015) and there were no exceedances of any NRC License standards outside Section 2 (i.e., at monitoring locations outside the property boundary in Section 1) during 2016.

## Section 6

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# Tables

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**TABLE 1A**  
Chronology of Events  
June 1977 to December 2016  
UNC Church Rock Mill Tailings Site, Church Rock, New Mexico

Event	Date
The UNC milling operations began.	June 1977
Dam on south tailings disposal cell is breached, releasing an estimated 93 million gallons of uranium mill tailings and pond water to Pipeline Canyon and the Rio Puerco. EPA Region 6 and New Mexico Environmental Improvement Division (NMEID) respond to release.	July 1979
New Mexico Environment Improvement Division orders UNC to implement discharge plan to control contaminated tailing seepage.	October 1979
UNC announces mill closing due to depressed uranium market.	May 1982
Site placed on the National Priorities List (NPL) of Superfund Sites due to off-site migration of radionuclides and chemical constituents in ground-water.	1983
EPA conducts Remedial Investigation (RI) field activities to determine the nature and extent of ground-water contamination in the three water-bearing formations at the Site.	March 1984-August 1987
In 1984, UNC blocked EPA access to the Church Rock facility, and EPA brought an action to compel site access. UNC counterclaimed seeking declaratory and injunctive relief. The U.S. District Court granted an EPA motion to dismiss the UNC counterclaims, and UNC provided access to the Site to EPA. <i>United States v. United Nuclear Corporation</i> , 610 F Supp. 527, 528 (D.N.M., 1985).	April 18, 1985
NMEID returns Uranium Mill Tailings Radiation Control Act (UMTRCA) federal regulatory program to the U.S. Nuclear Regulatory Commission (NRC).	June 1986
EPA and NRC sign MOU coordinating EPA's CERCLA ground-water remedial action with NRC's reclamation and closure activities under the Source Materials License.	August 26, 1988
EPA releases RI and Feasibility Study (FS) report along with proposed plan of action field sheet.	August 1988
EPA issues ROD for extraction of contaminated water and evaporation of the extracted water as the remedy for ground-water contamination outside of the Tailings Disposal Site.	September 30, 1988
NRC approves a UNC submitted closure plan for the reclamation of the mill site.	September 1988
UNC submits Remedial Design Report.	April 1989
Remedial action implemented in Zone 1 – Borrow Pit No. 2 dewatered.	April 1989
EPA issues Unilateral Administrative Order (UAO) Docket No. CERCLA 6-11-89 to UNC requiring UNC to implement the Site CERCLA ground-water operable unit remedy determined by the ROD.	June 29, 1989
Remedial action implemented in Zone 3 – 12 new extraction wells begin pumping.	August 1989
Remedial action implemented in Southwest Alluvium – 3 new extraction wells begin pumping.	October 1989
Ground Water Corrective Action Annual Review 1989 documents remedial action construction completion.	December 1989
United States had brought action against UNC in 1991 for response cost recovery under CERCLA; and in late 1992, the U.S. District Court issued an opinion and order granting a U.S. motion for partial summary judgment on the issue of costs and denying a UNC cross motion for summary judgment. <i>United States v. United Nuclear Corporation</i> , 814 F Supp. 1552 (D.N.M., 1992).	December 28, 1992
NRC issues a background-water quality study that recommends higher concentrations of background constituents than presented in the ROD.	1996
First Five-Year Review completed.	September 24, 1998
NRC, EPA, and NMED approve the decommissioning of 10 Zone 3 wells, 3 Zone 1 wells, and 1 Southwest Alluvium well because they meet the decommissioning criteria of producing less than 1 gallon per minute (gpm).	July 30, 1999

**TABLE 1A**  
Chronology of Events  
June 1977 to December 2016  
UNC Church Rock Mill Tailings Site, Church Rock, New Mexico

NRC approves eliminating the Section 1 portion of Zone 3 as a point of exposure.	September 16, 1999
UNC submits request to terminate all Zone 3 pumping and for Technical Impracticability waiver to EPA, NRC and NMED.	May 2000
All but three Zone 3 wells decommissioned in accord with criterion.	June 2000
EPA approves UNC's request to shut down remaining three Zone 3 wells to slow seepage migration rate.	November 2000
License Amendment No. 31 allows UNC to temporarily suspend the corrective action pumping in Zone 3.	December 29, 2000
License Amendment No. 32 approves the conversion of the Zone 3 Phase II extraction wells to monitoring wells.	March 8, 2001
UNC submits Draft Tribal Resolution and Environmental Right-of-Way to the Navajo Nation to form basis for ICs.	March 2001
EPA gives UNC approval to temporarily shut down Southwest Alluvium extraction wells and an 18-month Natural Attenuation Test is conducted.	February 2001 through July 2002
UNC submits Final Report and Technical Impracticability Evaluation – Southwest Alluvium Natural Attenuation Test to EPA, NRC and NMED.	November 2002
UNC submits proposal to conduct hydraulic fracturing pilot test.	May 21, 2003
UNC conducts the hydraulic fracturing pilot test in Zone 3.	June 2003
Second Five-Year Review completed.	September 18, 2003
Meeting between EPA, Bureau of Indian Affairs (BIA), and the Department of the Interior (DOI) to discuss access issues in connection with the Site ground-water monitoring program on Navajo Allotment lands.	December 5, 2003
UNC submits Final Report – Hydraulic Fracturing Pilot Test Results and Preliminary Full-Scale Design, United Nuclear Church Rock Facility.	December 2003
EPA comments on the Final Report – Hydraulic Fracturing Pilot Test Results and Preliminary Full-Scale Design and directs UNC to perform supplemental feasibility study (SFS) for Zone 3.	March 10, 2004 and March 19, 2004
EPA approves Final Report - Hydraulic Fracturing Pilot Test Results and Preliminary Full-Scale Design.	May 21, 2004
UNC conducts the Phase 1 full-scale hydraulic fracturing test in Zone 3.	September 2004
UNC installs well SBL-01 in Section 10, Southwest Alluvium.	October 2004
UNC submits the draft SFS for Zone 3 for review.	October 27, 2004
EPA disapproves draft SFS for Zone 3 and directs UNC to perform a Site-wide SFS (SWSFS) consistent with the NCP.	June 24, 2005
Meeting between EPA, UNC, NRC, NMED, and Navajo Nation EPA (NNEPA) to discuss the SWSFS. UNC generally expresses its opposition to the feasibility study process.	August 17, 2005
Meeting between EPA, NNEPA, BIA and NMED in Window Rock, AZ, to discuss feasibility of ICs restricting the use of contaminated ground water.	January 18, 2006
Meeting between EPA and NNEPA in Dallas, TX, to continue discussions on ICs.	March 16, 2006
EPA approves in-situ alkalinity stabilization pilot study for Zone 3.	May 12, 2006
EPA directs UNC to perform the SWSFS in writing, stating that the feasibility study is appropriate and necessary.	June 23, 2006

**TABLE 1A**  
Chronology of Events  
June 1977 to December 2016  
UNC Church Rock Mill Tailings Site, Church Rock, New Mexico

Meeting between EPA, NNEPA, BIA, and NMED in Albuquerque, NM to continue discussions on ICs.	August 21, 2006
UNC submits the draft List of Preliminary Assembled Remedial Alternatives for the SWSFS.	September 2006
UNC begins the in-situ alkalinity stabilization pilot study in Zone 3. The study is completed in February 2007.	October 2006
UNC submits the draft SWSFS, Part 1, Church Rock Remediation Standards Update.	February 2007
UNC submits In-Situ Alkalinity Stabilization Pilot Study Report.	June 2007
EPA disapproves SWSFS, Part 1, Church Rock Remediation Standards Update and requires revision to address written comments.	January 2008
Meeting between EPA, State, NRC, NNEPA and UNC to discuss status of remedial activities. UNC notifies regulatory agencies that pumping of hydraulic fracture wells in Zone 3 was unsuccessful in stopping migration of seepage impacted ground-water. UNC proposes to submit a plan for additional extraction wells for Zone 3.	March 12, 2008
UNC submits summary of hydrogeologic analysis evaluation of groundwater flow and recommended plan for additional extraction wells for interception and recovery of seepage-impacted ground-water in Zone 3.	April 2008
UNC submits white paper on statistics to address some of EPA comments on the SWSFS, Part 1.	May 2008
EPA notifies NRC of approval of UNC's recommendation for additional extraction wells.	June 2008
UNC installs five new extraction wells (the NW-series) in northern Zone 3.	September 2008
EPA issues third Five-Year Review report for the UNC groundwater operable unit.	September 2008
UNC submits calculation of background statistics with comparison values.	October 2008
UNC submits calculation of estimated UCL95 statistics and exposure point concentrations in impacted groundwater.	December 2008
UNC submits to NRC an alternate concentration limits application for Zone 1.	December 2008
Pumping of the NW-series of extraction wells in northern Zone 3 begins. Later in the year the pumping scheme was reorganized to include three of the five wells.	February 2009 and November 2009
EPA issues comment letter on Site-Wide Supplemental Feasibility Part I (Church Rock Remediation Standards Update) and approves Part I (approval later effectively rescinded by EPA comments letters).	February 2009
UNC submits revised Site-Wide Supplemental Feasibility Study Part II.	July 2009
UNC submits hydrogeologic analysis of recent Zone 3 injection testing (new background well NBL-2) in northern Zone 3 and proposal to enhance remediation using one or more injection wells amended with sodium bicarbonate.	December 2009
UNC proposes the location for a pilot injection well in Zone 3.	April 2010
UNC submits a remedial design report on a conceptual approach to enhanced remediation in Zone 3 involving new injection wells combined with existing extraction wells.	May 2010
UNC submits a hydrogeologic analysis of injection testing of Zone 3 well IW-A during July 2010.	August 2010
EPA issues comments letter on revised Site-Wide Supplemental Feasibility Study Part II (UNC document from July 2009).	September 2010
UNC submits an updated baseline human health risk assessment.	March 2011
UNC submits revised Site-Wide Supplemental Feasibility Study Parts I and II.	April 2011
UNC starts injection at well IW-A of site Mill well water amended with alkalinity (sodium bicarbonate).	April 14, 2011

**TABLE 1A**  
Chronology of Events  
June 1977 to December 2016  
UNC Church Rock Mill Tailings Site, Church Rock, New Mexico

EPA issues comment letter on the draft updated human health risk assessment (March 2011).	July 2011
UNC submits a technical memorandum summarizing two previously submitted reports on Zone 3 tailings seepage sourcing and groundwater recharge, with an information update.	August 2011
EPA issues comment letter on the Site-Wide Supplemental Feasibility Study Part II (July 2009) (in fact, this comment letter addressed Parts I, II, and III).	October 2011
UNC submits provisional responses to EPA comment letter (July 2011) on the draft baseline human health risk assessment (March 2011).	October 2011
UNC submits hydrogeologic assessment of injection at Zone 3 well IW-A through September 2011.	November 2011
UNC submits a document requesting discussion and clarification about the EPA comment letter (October 14, 2011) addressing revised Site-Wide Supplemental Feasibility Study Parts I and II (April 2011).	November 2011
By email, UNC provides all agency stakeholders with revisions to the draft updated human health risk assessment (March 2011).	February 2012
EPA risk assessment specialist provides UNC with comments (by email) on the revised draft updated human health risk assessment (February 2012). Followup phone discussion between EPA risk specialist and UNC on April 27, 2012	March 2012 and April 27, 2012
GE submits to NRC a license amendment request for revised groundwater protection standards based on updated background concentrations (statistically calculated background threshold values). The three site hydrostratigraphic units are addressed individually.	April 2012
UNC presents the numeric groundwater hydraulic modeling (with focus on Zone 3) to all agency stakeholders at the annual technical meeting in Albuquerque.	May 14, 2012
UNC makes an operational adjustment of pumping in the northernmost part of Zone 3.	June 2012
UNC submits to EPA: Overview of Draft Attached Tables, Summary Comparisons of Upper Prediction Limits for Parameter Concentrations in Background Groundwater to Site Cleanup Standards and Potential ARARs for All Three Hydrostratigraphic Units at the Church Rock Mill Tailings Site.	June 2012
UNC has their laboratory reduce the reporting limits for beryllium and lead.	July 2012
UNC submits to EPA the Updated Baseline Human Health Risk Assessment – Final, Church Rock Site, Church Rock, New Mexico, United Nuclear Corporation, Gallup, New Mexico.	August 2012
EPA approves the final version of the Updated Baseline Human Health Risk Assessment (August 13, 2012).	September 2012
UNC notifies the agencies that injection of sodium bicarbonate-amended water, in Zone 3 well IW-A, was terminated on June 29, 2012.	October 2012
UNC submits the Groundwater Flow Model of the Church Rock Site and Local Area.	October 2012
UNC submits to NRC Supplemental Information Pertaining to License Amendment Request (April 2012) for Revised Groundwater Protection Standards.	November 2012
UNC sends the agencies an email with discussion of turbidity results from July 2012 and October 2012.	December 2012
EPA issues Record of Decision (ROD) for the Site Surface Soil Operable Unit Alternative 2 preference for disposal of NECR mine waste at UNC Mill Site tailings evaporation ponds under NRC license SUA-1475.	March 2013
EPA Office of Research and Development (ORD) issues technical memorandum on the background ground water conditions in the SWA and Zones 1 and 3 of UNC Site and the proposed cleanup and compliance monitoring levels for COPCs using the statistically-based 95 percent upper prediction limits (UPL95s) (also known as “Overview of Draft Attached Tables, Summary Comparisons of Upper Prediction Limits for Parameter Concentrations in Background Groundwater to Site Cleanup Standards and Potential ARARs for All Three Hydrostratigraphic Units at the Church Rock Mill Tailings Site.”)	March 2013

**TABLE 1A**  
Chronology of Events  
June 1977 to December 2016  
UNC Church Rock Mill Tailings Site, Church Rock, New Mexico

DOE issues comments to NRC regarding the April 2012 UNC License Amendment Request for Revised Groundwater Protection Standards Based on Updated Background Concentrations.	April 2013
NRC issues response to DOE comments on the April 2012 UNC License Amendment Request for Revised Groundwater Protection Standards Based on Updated Background Concentrations.	June 2013
NRC issues Request for Additional Information (RAI) pertaining to License Amendment Request (April 2012) for Revised Groundwater Protection Standards.	June 2013
EPA issues fourth Five-Year Review report for the UNC groundwater operable unit.	September 2013
NNEPA formally requests that UNC locate, permit, drill, construct and operate sentinel wells on north of the UNC Church Rock Mill Site Section 36 boundary.	October 2013
UNC submits to NRC a response to the RAI pertaining to License Amendment Request (April 2012) for Revised Groundwater Protection Standards.	January 2014
UNC submits to NRC a revised groundwater flow model report.	June 2014
NRC issued a draft Environmental Assessment (EA) pertaining to the License Amendment Request (April 2012) for Revised Groundwater Protection Standards for review by other governmental agencies.	August 2014
UNC submits proposed sentinel well locations north of the UNC Church Rock Mill Site Section 36 boundary.	September 2014
EPA and NMED issue comments to NRC regarding August 2014 EA pertaining to the License Amendment Request (April 2012) for Revised Groundwater Protection.	October 2014
UNC submits proposed potential cleanup levels to EPA: updated Overview of Draft Attached Tables, Summary Comparisons of Upper Prediction Limits for Parameter Concentrations in Background Groundwater to Site Cleanup Standards and Potential ARARs for All Three Hydrostratigraphic Units at the Church Rock Mill Tailings Site (March 29, 2015).	March 2015
NRC issues License Amendment No. 52 on April 9, 2015 which approves the April 2012 license amendment request related to revised groundwater protection standards (based on updated statistically calculated background threshold values). The three site hydrostratigraphic units are addressed individually.	April 2015
EPA indicates that UNC may proceed with the SWSFS using the March 2015 proposed potential cleanup levels.	September 2015
GE submits to NRC a license amendment request (October 22, 2015) to update the license for progress and changes that have taken place with respect to corrective action program and the on-going re-design and environmental review of the tailings disposal impoundment to incorporate mine spoil. Some editorial and typographical corrections are also proposed (including corrections to License standards). This license amendment request was intended to withdraw and replace a previous request dated January 22, 2015.	October 2015
UNC submits to EPA a letter describing how the proposed monitoring well network on the Navajo Reservation will be used to collect the hydrogeochemical information needed to establish areas where future administrative controls would be applied, in support of a future remedy.	April 2016
EPA and the Navajo Nation approve the proposed monitoring well locations on the Navajo Reservation and agree that UNC that should proceed with the plan to permit and install monitoring wells north of the Section 36 boundary on the Navajo Reservation (email from Janet Brooks to Roy Blickwedel, July 27, 2016).	July 2016
EPA requests quarterly reporting of northern Zone 3 monitoring well sampling, starting with October 2016 monitoring event.	August 2016
GE/UNC requests (December 8, 2016) to amend previous license amendment request that was submitted on October 22, 2015. The amendment is to remove well GW 2 as a POC well for the Southwest Alluvium. All other aspects of the October 22, 2015 request remain the same.	December 2016



**TABLE 1B**  
Southwest Alluvium Performance Monitoring Program, 2016 Operating Year  
United Nuclear Corporation, Church Rock Site  
Church Rock, New Mexico

Well	Use <sup>1</sup>	Water Level	Water Quality	NRC POC	Purpose
509 D	Monitor	X	X	Y	Seepage extent
624	Monitor	X	X		Downgradient background, seepage extent
627	Monitor	X	X		Downgradient background, seepage extent
632	Monitor	X	X	Y	Seepage extent
801 <sup>2</sup>	Pumping (idled)	X	X		Seepage and saturation extent
802	Pumping (idled)	X	X		Seepage and saturation extent
803	Pumping (idled)	X	X		Seepage and saturation extent
805	Monitor	X			Water level only
807	Monitor	X			Water level only
808 <sup>3</sup>	Pumping (idled)	X	X		Seepage extent
EPA 23	Monitor	X	X	Y	Problematic completion
EPA 25	Monitor	X	X		Downgradient background, seepage extent
EPA 28	Monitor	X	X	Y	Seepage extent
GW 1	Monitor	X	X	Y	Seepage extent
GW 2 <sup>4</sup>	Monitor	X	X	Y	Seepage extent
GW 3 <sup>4</sup>	Monitor	X	X	Y	Downgradient background, seepage extent
Total		16	14		

Eliminated From Monitoring				Reason for Elimination
GW 4	X	X		Dry
EPA 22A			Y	Dry
29A				Dry
639				Dry
642				Dry
644				Dry
645				Dry
804				Not needed, use 632
806				Not needed, use 805
EPA 27				Dry

**Notes:**

- 1 Pumping wells turned off in January 2001 after final baseline samples were collected. Well 801 is the exception, see Note 2.
- 2 Well 801 was turned off at the end of July 1999 because it met decommissioning criteria. Sample collection ceased after the first quarter 2000. Well 801 water quality is included in the test program, therefore sampling recommenced January 2001 and has continued through 2016.
- 3 Well 808 was not included in the Performance Monitoring Program prior to the NA Test, therefore no data are available prior to January 2001.
- 4 Wells GW 2 and GW 3 are very close to the Pipeline Arroyo canyon and can no longer be accessed due to safety concerns.

**TABLE 2**  
Detected Constituents in Southwest Alluvium, October 2016  
United Nuclear Corporation, Church Rock Site  
Church Rock, New Mexico

Chemical Name	License NRC Standard	EPA Cleanup Level	Unit	0509 D	0624	0627	0632	0801	0802	0803	0808	EPA 23	EPA 25	EPA 28	EPA 28 FD	GW 1	SBL-01
		<b>Section #</b>		<b>2</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>10</b>
ALUMINUM		5	mg/l														0.7
AMMONIA (AS N)			mg/l					6.3 D		0.4	0.57	0.3					
BICARBONATE (HCO3)			mg/l	2380	1610	608	2120	1580	1780	1640	2000	1300	1400	403	416	1790	440
CALCIUM			mg/l	820	664	539	546	485	641	612	635	660	773	490	489	681	490
CHLORIDE		250	mg/l	345 D	216 D	34 D	184 D	210 D	234 D	156 D	184 D	114 D	136 D	101 D	99 D	247 D	78 D
CHLOROFORM	80	80	ug/l				0.84	1.2	3.9		1.2					1.7	
COBALT		0.05	mg/l	0.01													0.03
GROSS ALPHA	15	15	pci/l	9.5	2.3	1.4	5.5	5.9	4.7	7.1	3.8			3.3	2.1	3	4.6
LEAD	0.07	0.07	mg/l							0.001	0.001						0.001
LEAD-210	5.9	5.9	pci/l			1.3											
MAGNESIUM			mg/l	356	423	235	787	734	761	685	697	393	245	466	461	570	1240
MANGANESE		2.1	mg/l	3.07	0.04	0.05	0.92	3.54	1.15	3.1	1.9	5.84	0.87	0.47	0.44	0.13	3.97
NICKEL	0.078	0.2	mg/l														0.09
NITRATE (NO3)		536.6	mg/l	6.7 D	75 D	84 D	49 DH	53 D	76 DH	32 D	22 D		70 D	8.1 D	8.0 D	89 D	38 D
PH (FIELD)			su	6.59	6.72	7.08	6.58	6.7	6.63	6.68	6.59	6.79	6.87	7.01	7.05	6.78	6.87
PH (LAB)			su	6.61 H	6.60 H	6.93 H	6.54 H	6.69 H	6.57 H	6.61 H	6.53 H	6.67 H	6.84 H	6.91 H	6.91 H	6.69 H	6.77 H
POTASSIUM			mg/l	12	6	5	10	12	5	11	9	11	8	11	11	8	14
RADIUM-226			pci/l	0.33	0.29	0.26	0.65	0.54	0.38	0.23	0.37	0.55		0.37	0.52	0.26	0.41
RADIUM-228			pci/l	4.2			7.3					5.5		2.5	1.3	7.6	1.8
RADIUM 226 & 228	8.2	8.2	pci/l	4.53	0.29	0.26	7.95	0.54	0.38	0.23	0.37	6.05		2.87	1.82	7.86	2.21
SODIUM			mg/l	409	303	385	389	341	337	263	355	153	217	252	247	412	293
SULFATE (SO4)		5815	mg/l	2250 D	2290 D	2380 D	3130 D	3560 D	3470 D	3340 D	3340 D	2460 D	1940 D	3290 D	3190 D	2860 D	6150 D
THORIUM-230	4.5	4.5	pci/l		0.4									0.09			
TOTAL DISSOLVED SOLIDS (LAB)		10376	mg/l	5730 H	5260 H	4180	6780 H	6970 H	6990 H	6230 H	6650 H	4640 H	4420	5010 H	4970 H	6210 H	9070
TOTAL TRIHALOMETHANES	80	80	ug/l				0.84	1.2	3.9		1.2					1.7	
URANIUM	0.3		mg/l	0.213	0.0323	0.0181	0.0597	0.0315	0.118	0.0653	0.0729	0.0284	0.109	0.0171	0.0177	0.0832	0.0097

Blank cells indicate that the analyte was not detected

Shaded values exceed the listed action level

D indicates that the sample was diluted for analysis

H indicates that the analysis was performed beyond the analytical method holding time

FD indicates a field duplicate sample

**TABLE 3**  
 Southwest Alluvium Saturated Thickness, October 2016  
 United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

<b>Well</b>	<b>Water Level Measurement Date</b>	<b>SW Alluvium Unsaturated Thickness</b>	<b>SW Alluvium Saturated Thickness</b>	<b>SW Alluvium Percentage Saturated</b>
0509 D	10/3/2016	81.50	28.50	26%
0624	10/3/2016	53.86	21.14	28%
0627	10/4/2016	60.75	10.25	14%
0632	10/3/2016	46.90	20.10	30%
0801	10/3/2016	52.49	8.01	13%
0802	10/3/2016	50.24	31.26	38%
0803	10/3/2016	65.37	52.63	45%
0805	10/13/2016	52.88	67.12	56%
0807	10/13/2016	58.72	41.28	41%
0808	10/3/2016	51.82	80.18	61%
EPA 23	10/3/2016	56.61	63.39	53%
EPA 25	10/4/2016	54.40	15.60	22%
EPA 28	10/3/2016	63.61	14.39	18%
GW 1	10/3/2016	63.56	13.44	17%
GW 2	NM	-	-	-
GW 3	NM	-	-	-
SBL-01	10/4/2016	49.29	15.71	24%



**TABLE 4**  
Summary of Operational Data  
Southwest Alluvium Extraction Wells 1989 to 2001  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Well No.	Annual Average Pumping Rate (gallons per minute)												
	1990 <sup>(1)</sup>	1991 <sup>(2)</sup>	1992 <sup>(3)</sup>	1993 <sup>(4)</sup>	1994 <sup>(5)</sup>	1995 <sup>(6)</sup>	1996 <sup>(7)</sup>	1997 <sup>(8)</sup>	1998 <sup>(9)</sup>	1999 <sup>(10)</sup>	2000 <sup>(11)</sup>	2001 <sup>(12)</sup>	1990-2001
801 <sup>(13)</sup>	1.2	0.5	0.4	0.2	0.2	0.1	0.1	0.1	0.08	0.08	0.00	0.00	0.25
802	11.1	12.5	11.9	9.0	9.8	9.7	9.1	10.1	11.02	9.62	9.31	5.80	9.91
803	2.0	2.6	2.5	3.0	3.2	3.5	3.1	2.9	3.84	3.56	3.83	3.68	3.14
808 <sup>(14)</sup>		10.0	15.5	19.9	15.6	12.3	12.2	7.2	4.34	3.50	2.50	3.35	9.67
Total Pumping Rate	14.3	25.6	30.3	32.1	28.8	25.6	24.5	20.3	19.29	16.76	15.64	11.94	22.98
Volume Pumped (millions of gallons) <sup>(15)</sup>	7.4	12.4	17.2	18.1	15.7	12.9	12.2	9.2	9.0	7.5	7.7	1.7	131.0

Notes:

1. Average pumping rate calculated for the period between October 13, 1989, and October 12, 1990.
2. Average pumping rate calculated for the period between October 13, 1990, and October 11, 1991, except Well 808, which calculated for the period between June 26, 1991 (i.e., well startup) and October 11, 1991.
3. Average pumping rate calculated for the period between October 12, 1991, and October 8, 1992.
4. Average pumping rate calculated for the period between October 9, 1992, and October 8, 1993.
5. Average pumping rate calculated for the period between October 9, 1993, and October 14, 1994.
6. Average pumping rate calculated for the period between October 15, 1994, and September 29, 1995.
7. Average pumping rate calculated for the period between September 30, 1995, and September 27, 1996.
8. Average pumping rate calculated for the period between September 28, 1996, and September 26, 1997.
9. Average pumping rate calculated for the period between September 27, 1997, and September 25, 1998.
10. Average pumping rate calculated for the period between October 02, 1998, and September 27, 1999.
11. Average pumping rate calculated for the period between September 28, 1999, and September 29, 2000.
12. Average pumping rate calculated for the period between September 30, 2000, and January 12, 2001.
13. Well 801 decommissioned at the end of July 1999.
14. Well 808 began operation on June 26, 1991.
15. Data obtained from system flowmeter.

Source: Earth Tech, December 2002, Figure 2.1

**TABLE 5**

Southwest Alluvium Groundwater Velocities, October 2016  
United Nuclear Corporation, Church Rock Site  
Church Rock, New Mexico

**Well Pair 805 and 624**

Groundwater Elevations: 6857.17 (Well 805) and 6844.30 (Well 624) ft amsl  
Separation Distance: 1902 ft  
Average Linear Horizontal Hydraulic Gradient: 0.0068  
*Velocity 1 = 65 ft/yr*  
*Velocity 2 = 50 ft/yr*  
*Average Velocity = 57 ft/yr*

**Well Pair 805 and 627**

Groundwater Elevations: 6857.17 (Well 805) and 6831.06 (Well 627) ft amsl  
Separation Distance: 3203 ft  
Average Linear Horizontal Hydraulic Gradient: 0.0082  
*Velocity 1 = 78 ft/yr*  
*Velocity 2 = 60 ft/yr*  
*Average Velocity = 69 ft/yr*

**Well Pair 624 and SBL 1**

Groundwater Elevations: 6844.30 (Well 624) and 6845.24 (Well SBL 1) ft amsl  
Separation Distance: 500 ft  
Average Linear Horizontal Hydraulic Gradient: -0.0019  
*Velocity 1 = Not calculated*  
*Velocity 2 = Not calculated*  
*Average Velocity = Not calculated*

Darcy seepage velocity calculation input values:

Mean hydraulic conductivity used =  $2.5 \times 10^{-3}$  cm/s (based on groundwater flow model calibration for the Southwest Alluvium (Chester Engineers, 2012g)).

Range of effective porosities = 27% (velocity 1) to 35% (velocity 2) (Canonie, 1989b; Earth Tech, 2002c).



**TABLE 6**  
Predicted Performance of Southwest Alluvium Natural Attenuation, 2016  
United Nuclear Corporation, Church Rock Site  
Church Rock, New Mexico

Constituent	Will Standards Be Met?			Remarks
	Section 2	Section 3	Section 10	
Manganese	No	Yes	No	Not regulated by NRC. Current EPA standard lower than previous standard. Section 2 includes onsite seepage impact; Section 3 includes offsite seepage impact with Mn attenuated and known background water with Mn below EPA standard; Section 10 includes advancing front of seepage impact with Mn below EPA standard but Mn above EPA standard in background Well SBL 1 (see Table 2 and Table A.1 in Appendix A).
Sulfate	Yes	Yes	No	Not regulated by NRC. Current EPA standard higher than previous standard. Seepage impact area sulfate concentrations lower than EPA standard; Section 10 background waters characterized by exceedances unrelated to seepage impact; highest sulfate concentrations occur in background Well SBL 1 in Section 10 (see Figures 9 and 16).
Chloride	No	Yes?	Yes	Not regulated by NRC. Section 2 includes onsite seepage impact with EPA standard exceedances at one location in 2016. Section 3 includes offsite seepage impact with one recent slight exceedance (2015). Section 10 includes advancing front of seepage impact with no exceedances at background Well SBL 1.
TDS	Yes	Yes	Yes	Not regulated by NRC. Current EPA standard higher than previous standard. Governed by sulfate concentration; highest TDS concentrations occur in background Well SBL 1 and, historically, in impacted Well GW 2* (see Figure 17).
Metals	Yes	Yes	No	Attenuation by neutralization and adsorption. Section 2 includes onsite seepage impact with no exceedances; Section 3 includes offsite seepage impact and known background water with no exceedances; Section 10 includes advancing front of seepage impact with no exceedances, but small exceedances of NRC License standard for nickel in background Well SBL 1 continued during 2015 (see Table 2).
Radionuclides	Yes	Yes?	Yes	Attenuation by neutralization and adsorption; uranium exceedances in GW 3* (Section 3, July 2012 and January 2013-July 2015) is associated with the smallest saturated thickness (July 2015 = 2.07 ft (4%)) in the Southwest Alluvium, and has been projected to have 0% saturated thickness in ~ 2 years. No other recent exceedances of revised NRC/EPA radionuclide standards.
TTHMs	Yes	Yes	Yes	Attenuated by degradation, dilution, dispersion. No exceedances of NRC/EPA standard.

Notes:

NRC License GWPSs and EPA cleanup standards have been revised based on background statistical analysis (i.e., UPL95s).

\* Wells GW 2 and GW 3 not sampled beginning October 2015; they are near the edge of the Pipeline Arroyo canyon and can no longer be safely accessed. GW 3 also no longer meets the low flow sampling specifications and cannot be sampled reliably.

**TABLE 7**  
Change in Zone 3 Saturated Thickness from 1989 to 2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Well Number <sup>1</sup>	Saturated Thickness		Change (feet)	Change
	3rd Quarter 1989	4th Quarter 2016		
402	--	8.93	--	--
420	56.3	0.14	-56.1	-99.75%
424	--	11.81	--	--
446	--	9.75	--	--
504 B	40.1	dry	--	-100.00%
517	42.7	7.86	-34.8	-81.58%
613 <sup>3</sup>	67.2	18.56	-48.6	-72.38%
EPA 09	8.1	3.10	-5.0	-61.67%
EPA 13	24.8	5.95	-18.9	-76.04%
EPA 14	76.3	18.89	-57.4	-75.24%
701	46.1	15.87	-30.2	-65.57%
702	24.1	7.67	-16.4	-68.17%
703	32.6	18.07	-14.5	-44.57%
705	--	--	--	--
706	--	13.78	--	--
707	58.8	8.71	-50.1	-85.19%
708	49.8	10.04	-39.8	-79.84%
709	56.1	9.74	-46.4	-82.65%
710	45.5	9.09	-36.4	-80.02%
711	43.7	16.28	-27.4	-62.75%
712	39.1	4.24	-34.9	-89.14%
713	34.2	7.55	-26.7	-77.93%
714 <sup>4</sup>	50.1	13.01	-37.1	-74.04%
715 <sup>4</sup>	47.6	6.80	-40.8	-85.71%
716 <sup>4</sup>	58.3	12.81	-45.5	-78.04%
717 <sup>4</sup>	57.6	15.81	-41.8	-72.54%
718 <sup>4</sup>	51.1	11.66	-39.4	-77.18%
719 <sup>4</sup>	39.9	4.58	-35.3	-88.51%
720 <sup>4</sup>	33.1	0.00	-33.1	-100.00%
NBL-01 <sup>5</sup>	--	dry	--	--
501 B <sup>6</sup>	20.2	--	--	--
411 <sup>6</sup>	62.5	--	--	--
502 B <sup>6</sup>	48.5	--	--	--
518 <sup>6</sup>	37.2	--	--	--
EPA 01 <sup>6</sup>	14.7	--	--	--
EPA 03 <sup>6</sup>	8.3	--	--	--
EPA 11 <sup>6</sup>	30.8	--	--	--
EPA 12 <sup>6</sup>	10.7	--	--	--
EPA 15 <sup>6</sup>	60.8	--	--	--
EPA 17 <sup>6</sup>	1.4	--	--	--
EPA 18 <sup>6</sup>	2.5	--	--	--
Average	39.5	10.03	-35.5	-78%

**Notes:**

- <sup>1</sup> Wells 9 D and 106 D were not included because they appear to be completed above the bottom of Zone 3. Measurements of saturated thickness in these wells may be less than actual conditions. Well 126 was not included because it was completed above the bottom of Zone 3. Measurements of saturated thickness in this well are less than actual conditions. Wells 600, 610 and 672 were not included because they were used solely as pumping wells, therefore no water level data are available. Well 608 was not included because no water level data were available in 1989 and the last water level measurement was in February 2000.
  - <sup>2</sup> Water level for Well 518 last measured in January 2000.
  - <sup>3</sup> Water level for Well 613 measured in 1983 before pumping started. Water level data for 1989 are not available because the well was pumping.
  - <sup>4</sup> Water levels for the Stage II wells were measured June 1991 when wells were installed. Not included in 1989 average saturated thickness calculation.
  - <sup>5</sup> Well NBL-01 installed in July 2001 and first water level measured in August 2001.
  - <sup>6</sup> Wells are not currently monitored. See Table 9 for additional information regarding the status of each well.
- Shading indicates saturated thickness greater than 25 feet.  
"--" indicates that there is no data available.

**TABLE 8**  
**Estimated Mass Removal by Extraction Well Pumping in Zone 3, December 2015 Through November 2016**  
**United Nuclear Corporation, Church Rock Site**  
**Church Rock, New Mexico**

Well	Water Pumped (gallons)	SO4 (kg)	NO3 as N (kg)	Chloroform (g)	Al (kg)	As (g)	Be (g)	Co (g)	Pb (g)	Mn (kg)	Mo (g)	Ni (g)	U (g)	Total Radium (mci)	Pb-210 (mci)	Gross Alpha (mci)
RW-11	145,238	1,864	0	0.1	0.1	1	1	198	1	3	165	192	43	15	0.27	11
RW-16	78,682	1,564	6.0	0.7	65	0.1	40	271	9	5	15	274	91.1	6	0.95	46
RW-17	80,745	1,323	0.02	0.1	0	0.2	0	70	0	2	15	92	1	6	0.15	2
PB-2	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0.00	0
RW-A	55,921	768	0	0	0.0	0.1	0	99	0	1	11	93	3	6	0.11	6
NW-1	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0.00	0
NW-2	227,196	3,431	0.21	0.2	7.7	0.4	17	697	55	7	43	972	92	14	0.43	7
NW-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NW-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NW-5	158,996	2,401	0	0	5	0	12	487	39	5	30	680	64	10	0	5
<b>Total</b>	<b>746,778</b>	<b>11,351</b>	<b>6</b>	<b>1.14</b>	<b>78</b>	<b>2.2</b>	<b>70</b>	<b>1,823</b>	<b>104</b>	<b>24</b>	<b>279</b>	<b>2,303</b>	<b>294</b>	<b>56</b>	<b>2.22</b>	<b>77</b>

**Notes:**

Pumping data reported for 12/1/15 through 11/30/2016

Wells are located on Figure 36 of the 2016 Annual Review Report.

Wells RW-12, RW-13, and RW-15 were not pumped, because of negligible capacity.

Wells PB 2, NW 1, NW 3, and NW 4 were not pumped.

Units for radionuclides (mci) are not mass units proper; mci are milli-Curies, or thousandths of Curies.

In developing this table, masses were estimated from analyses of October 2016 samples from RW-11 and RW-A. Masses for RW-16 and RW-17 were estimated from concentrations in samples from nearby wells 717 and 719. Masses in the NW-series wells were estimated from concentrations in the 2013 sample from PB-03

Nonradiological nondetects were assigned values of one-half the reporting limit.

Radiological results were assigned as reported (even if negative).



**TABLE 9**  
 Zone 3 Performance Monitoring Program, 2016 Operating Year  
 United Nuclear Corporation, Church Rock Site  
 Church Rock, New Mexico

Well	Water Level	Water Quality	NRC POC	Purpose
<b>Continue Monitoring</b>				
420	X	X		Postmining-pretailings background, track plume.
711	X	X	Y	Track saturation and plume, replace 502 B based on results of low flow purge testing performed in January 2000.
504 B	X	X		Track saturation and plume, extensive data set.
517	X	X	Y	Track plume, extensive data set.
EPA 9	X			Extent of saturation, water quality not necessary.
EPA 13	X	X		Extent of saturation. Water quality added 2nd quarter 2001.
EPA 14	X	X		Postmining-pretailings background, track plume.
702	X			Water level only, track saturation.
710	X			Water level only.
712	X			Water level only.
713	X			Water level only.
714	X			Water level only.
613	X	X	Y	Extensive data set, track saturation and source.
701	X			Water level only (decommissioned pumper).
706	X			Water level only (decommissioned pumper).
707	X			Water level only (decommissioned pumper).
708	X	X	Y	Added to program 2nd quarter 2001.
717	X	X		Water level. Water quality added 2nd quarter 2001.
719	X	X		Water level. Water quality added 2nd quarter 2001.
<b>Additional Wells, Not Included In Original Performance Monitoring Program</b>				
402	X			Long-term water level for migration path.
424	X			Long-term water level for migration path.
446	X			Long-term water level for migration path.
NBL-01	X	X		Well drilled and installed June 2001. Water level and water quality to track downgradient extent of seepage.
Total	23	11		

<b>Eliminated From Monitoring</b>			<b>Reason For Elimination</b>
9 D			Dry
106 D			Dry
411			Oil, cannot get water level or sample.
501 B		Y	Dry
EPA 1			Dry
EPA 3		Y	Dry
EPA 11			Unuseable since 1990 - water level below pump, pump cemented in well.
EPA 12			Dry
EPA 15			Dry
EPA 17			Dry
EPA 18			Dry
126			Dry
502 B			Failed low-flow test, use 711
518		Y	Failed low-flow test, use 517
608			Not needed (formerly water level only)
703			Not needed (formerly water level only)
715			Not needed (formerly water level only)
709			Not needed (decommissioned pumper)
716			Not needed (pumper)
718			Not needed (pumper)
720			Not needed (decommissioned pumper)

**Notes:**

NRC POC = Nuclear Regulatory Commission Point of Compliance well

Source: Earth Tech, December 2002, Table 3.2

**TABLE 10**

Zone 3 Saturated Thickness, October 2016  
 United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Well	Water Level Measurement Date	Zone 3 Unsaturated Thickness	Zone 3 Saturated Thickness	Zone 3 Percentage Saturated
0402	10/13/2016	54.07	8.93	14%
0420	10/10/2016	50.86	0.14	0%
0424	10/13/2016	61.19	11.81	16%
0446	10/13/2016	55.25	9.75	15%
0504 B			<1.73 <sup>1</sup>	--
0517	10/10/2016	54.14	7.86	13%
0613	10/10/2016	49.44	18.56	27%
0701	10/13/2016	48.13	15.87	25%
0702	10/13/2016	73.33	7.67	9%
0703	10/13/2016	73.93	18.07	20%
0706	10/13/2016	64.22	13.78	18%
0707	10/13/2016	79.29	8.71	10%
0708	10/10/2016	74.96	10.04	12%
0709	10/13/2016	67.26	9.74	13%
0710	10/13/2016	71.91	9.09	11%
0711	10/10/2016	68.72	16.28	19%
0712	10/13/2016	81.76	4.24	5%
0713	10/13/2016	65.45	7.55	10%
0714	10/13/2016	24.99	13.01	34%
0715	10/13/2016	28.20	6.80	19%
0716	10/13/2016	51.19	12.81	20%
0717	10/10/2016	55.19	15.81	22%
0718	10/13/2016	35.34	11.66	25%
0719	10/10/2016	40.42	4.58	10%
EPA 09	10/5/2016	46.90	3.10	6%
EPA 13	10/10/2016	58.05	5.95	9%
EPA 14	10/10/2016	54.11	18.89	26%
MW-2	10/13/2016	50.52	9.91	16%
MW-3	10/13/2016	53.93	6.99	11%
MW-4			<2 <sup>1</sup>	--
MW-5	1/0/1900		<2 <sup>1</sup>	--
MW-6	10/12/2016	47.05	0.66	1%
MW-7	10/11/2016	43.88	10.59	19%
NBL-01				-- <sup>2</sup>
NBL-02	10/11/2016	61.19	16.38	21%
NW-1	10/11/2016	41.24	3.05	7%
NW-2	10/11/2016	43.66	7.46	15%
NW-3	10/11/2016	43.73	14.08	24%
NW-4	10/11/2016	44.12	6.24	12%
NW-5	10/11/2016	43.42	14.59	25%
PB-02	10/12/2016	46.49	3.51	7%
PB-03	10/12/2016	43.43	5.57	11%
PB-04	10/12/2016	36.22	0.78	2%
RW-11	10/11/2016	53.96	7.88	13%
RW-15				-- <sup>4</sup>
RW-16	10/13/2016	57.61	5.49	9%
RW-17	10/13/2016	66.82	6.41	9%
RW-A	10/11/2016	58.41	9.46	14%
Z3 M-01	10/13/2016	42.48	0.70	2%
Z3 M-02	10/13/2016	43.87	2.42	5%
IW-A	10/13/2016	45.64	2.07	4%

<sup>1</sup> Dry well

<sup>2</sup> Obstructed well (i.e., water level dropped below sediment at well base)

<sup>4</sup> Not Measured

<sup>3</sup> The Well 446 water level is suspect and likely to be significantly lower

**TABLE 11**  
**Zone 3 Field Parameter Measurements of Tracking Wells Through October 2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

	Bicarbonate (mg/L)							Conductivity (umhos/cm)							pH (s.u.)							Chloride (mg/L)						
Date	504 B	PB-2	PB-4	PB-3	NBL-1	NBL-2	RW-A	504 B	PB-2	PB-4	PB-3	NBL-1	NBL-2	RW-A	504 B	PB-2	PB-4	PB-3	NBL-1	NBL-2	RW-A	504 B	PB-2	PB-4	PB-3	NBL-1	NBL-2	RW-A
Oct-02	0	58	194	224	330	NA	NA	5,010	4,040	3,730	3,670	3,160	NA	NA	5.06	7.09	7.10	7.10	7.18	NA	NA	NA	25.3	23.8	113.0	NA	NA	NA
Nov-02	0	41	188	299	285	NA	NA	4,930	3,080	2,860	2,510	3,120	NA	NA	5.30	5.95	6.47	6.60	6.51	NA	NA	14.0	26.5	24.3	23.8	21.0	NA	NA
Dec-02	22.9	57	178	283	NA	NA	NA	5,040	4,120	3,950	3,330	NA	NA	NA	5.40	5.75	6.40	6.68	NA	NA	NA	22.9	26.2	23.2	25.7	NA	NA	NA
Jan-03	0	34	148	239	311	NA	NA	5,180	3,930	3,716	3,460	3,300	NA	NA	5.54	4.97	6.92	6.41	6.43	NA	NA	NA	NA	22.9	22.8	NA	NA	NA
Feb-03	0	58	193	324	328	NA	NA	3,620	2,910	2,660	2,570	2,300	NA	NA	3.52	5.57	6.96	6.92	6.53	NA	NA	26.7	30.1	30.4	28.5	21.5	NA	NA
Mar-03	NA	60	188	311	326	NA	NA	4,000	3,090	2,890	2,680	2,500	NA	NA	3.49	5.59	6.71	6.95	6.73	NA	NA	26.4	30.1	29.7	29.7	22.1	NA	NA
Apr-03	NA	34	172	310	321	NA	NA	4,210	4,460	4,220	3,820	2,650	NA	NA	5.14	5.46	5.94	6.26	6.87	NA	NA	26.6	30.5	30.0	30.1	21.6	NA	NA
May-03	0	34	167	293	322	NA	NA	5,510	4,460	4,210	3,820	3,390	NA	NA	5.01	5.36	5.99	6.31	6.37	NA	NA	28.0	31.0	30.2	31.9	32.7	NA	NA
Jun-03	0	21	129	267	316	NA	NA	5,470	4,480	4,060	3,820	3,380	NA	NA	4.28	5.15	6.17	6.20	6.36	NA	NA	27.7	30.8	29.6	30.6	28.0	NA	NA
Jul-03	NA	32	126	257	311	NA	NA	5,480	4,560	4,330	3,920	3,500	NA	NA	5.35	5.28	5.85	6.32	6.29	NA	NA	26.5	30.6	29.7	31.1	25.8	NA	NA
Aug-03	NA	5	100	234	307	NA	NA	5,210	4,280	3,960	3,630	3,230	NA	NA	5.14	5.18	5.76	6.18	6.28	NA	NA	27.0	30.4	29.7	31.1	23.1	NA	NA
Sep-03	NA	7	91	218	295	NA	NA	5,260	4,400	4,160	3,770	3,340	NA	NA	4.68	5.23	5.79	6.28	6.39	NA	NA	28.0	30.5	29.3	31.5	26.7	NA	NA
Oct-03	NA	0	65	211	295	NA	NA	5,360	4,450	4,210	3,860	3,410	NA	NA	5.48	5.18	5.81	6.34	6.41	NA	NA	27.7	21.0	30.0	32.7	26.8	NA	NA
Nov-03	NA	0	73	197	285	NA	NA	5,290	4,510	4,210	3,880	3,490	NA	NA	5.09	5.25	5.81	6.24	6.42	NA	NA	27.3	30.6	30.2	32.1	24.8	NA	NA
Dec-03	NA	NA	41	166	265	NA	NA	5,370	4,540	4,290	3,910	3,510	NA	NA	4.41	5.14	5.77	6.76	6.48	NA	NA	27.7	30.2	29.8	31.5	25.2	NA	NA
Jan-04	NA	NA	73	194	327	NA	NA	5,340	4,610	4,310	4,030	3,550	NA	NA	5.39	5.16	5.82	7.51	6.50	NA	NA	32.5	30.5	29.5	32.6	26.8	NA	NA
Feb-04	NA	NA	50	190	323	NA	NA	5,410	4,630	4,260	3,970	3,590	NA	NA	3.40	3.81	5.99	6.25	6.40	NA	NA	28.0	30.1	30.3	32.7	26.6	NA	NA
Mar-04	NA	15	48	179	316	NA	NA	5,560	4,730	4,500	4,130	3,780	NA	NA	3.89	4.75	5.70	6.31	6.29	NA	NA	27.5	30.1	30.2	33.3	25.9	NA	NA
Apr-04	NA	15	48	174	315	NA	NA	5,370	4,560	4,380	4,010	3,630	NA	NA	5.36	5.08	5.52	6.03	6.34	NA	NA	28.1	32.1	32.3	36.2	31.1	NA	NA
May-04	NA	0	27	166	312	NA	NA	6,190	4,390	4,160	3,870	3,510	NA	NA	3.26	5.02	5.34	5.88	6.23	NA	NA	28.4	33.2	32.8	38.1	31.9	NA	NA
Jun-04	NA	0	22	152	294	NA	NA	5,510	4,530	4,400	4,040	3,750	NA	NA	4.48	4.92	5.46	6.05	6.40	NA	NA	28.2	32.6	32.9	37.7	34.1	NA	NA
Jul-04	NA	0	20	140	274	NA	NA	5,450	4,510	4,420	4,000	3,740	NA	NA	5.48	5.04	5.58	6.05	6.45	NA	NA	27.8	31.9	32.8	36.9	34.1	NA	NA
Aug-04	NA	0	17	124	272	NA	NA	5,500	4,450	4,380	4,040	3,710	NA	NA	3.77	4.26	5.45	5.98	6.39	NA	NA	28.3	31.0	32.3	36.2	33.7	NA	NA
Sep-04	0	0	20	117	251	NA	NA	5,480	4,500	4,430	4,030	3,790	NA	NA	4.04	4.46	5.48	6.05	6.45	NA	NA	28.5	30.9	32.5	36.0	34.0	NA	NA
Oct-04	0	0	18	102	245	NA	NA	5,520	4,540	4,560	4,110	3,940	NA	NA	5.56	5.15	5.62	6.08	6.47	NA	NA	27.8	31.5	32.0	30.2	33.2	NA	NA
Nov-04	0	0	17	98	245	NA	NA	5,370	4,400	4,340	3,950	3,840	NA	NA	4.46	4.23	5.47	5.99	6.37	NA	NA	28.8	31.4	32.3	35.6	32.0	NA	NA
Dec-04	0	0	13	87	207	NA	NA	5,290	4,340	4,290	3,920	3,790	NA	NA	4.46	4.28	5.44	5.95	6.36	NA	NA	28.3	31.2	31.0	34.0	30.0	NA	NA
Jan-05	11	0	32	79	198	NA	NA	5,700	4,610	4,520	4,110	4,080	NA	NA	5.31	3.92	5.46	6.03	6.29	NA	NA	29.1	31.3	31.3	33.8	34.2	NA	NA
Feb-05	0	0	7	68	196	NA	NA	5,680	4,720	4,550	4,130	3,980	NA	NA	3.92	3.24	5.31	5.98	6.37	NA	NA	28.0	31.5	31.3	33.4	30.0	NA	NA
Mar-05	0	0	0	60	169	NA	NA	5,540	4,510	4,350	3,990	3,960	NA	NA	3.84	3.72	5.32	5.93	6.27	NA	NA	24.5	31.3	32.0	33.7	35.2	NA	NA
Apr-05	8	0	29	70	154	NA	NA	5,350	4,300	4,340	3,980	3,890	NA	NA	4.46	4.25	5.56	5.88	6.31	NA	NA	27.8	32.4	32.2	34.0	35.1	NA	NA
May-05	0	0	0	67	150	NA	NA	5,300	4,290	4,170	3,840	3,810	NA	NA	4.33	3.78	4.53	5.85	6.30	NA	NA	28.5	32.6	30.6	33.4	34.6	NA	NA
Jun-05	0	0	0	65	138	NA	NA	5,400	4,330	4,280	3,980	3,910	NA	NA	4.06	3.93	4.63	5.77	6.15	NA	NA	28.1	32.1	31.0				

**TABLE 11**  
**Zone 3 Field Parameter Measurements of Tracking Wells Through October 2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

	Bicarbonate (mg/L)							Conductivity (umhos/cm)							pH (s.u.)							Chloride (mg/L)						
Date	504 B	PB-2	PB-4	PB-3	NBL-1	NBL-2	RW-A	504 B	PB-2	PB-4	PB-3	NBL-1	NBL-2	RW-A	504 B	PB-2	PB-4	PB-3	NBL-1	NBL-2	RW-A	504 B	PB-2	PB-4	PB-3	NBL-1	NBL-2	RW-A
Sep-07	0	184	307	304	135	NA	NA	4,940	3,610	3,570	3,660	3,720	NA	NA	3.58	6.09	6.60	6.46	6.77	NA	NA	29.0	35.0	54.0	53.0	57.0	NA	NA
Oct-07	20	161	329	307	185	NA	NA	4,630	3,300	3,170	3,200	3,350	NA	NA	3.29	6.39	6.51	6.64	6.20	NA	NA	29.0	36.0	55.0	52.0	50.0	NA	NA
Nov-07	0	159	295	258	109	NA	NA	4,400	3,530	3,170	3,160	3,350	NA	NA	3.69	5.88	6.94	6.52	6.20	NA	NA	29	36	53	50	53	NA	NA
Dec-07	0	148	316	290	55	NA	NA	5,440	3,990	3,890	3,980	4,110	NA	NA	3.49	6.04	6.80	6.65	6.05	NA	NA	29	34	51	51	53	NA	NA
Jan-08	NA	NA	289	294	107	302	350	NA	NA	4,190	4,220	4,470	3,720	3,870	NA	NA	6.41	6.37	5.88	6.69	6.27	NA	NA	54	54	50	37	43
Feb-08	NA	NA	189	299	13	313	NA	NA	NA	3,900	4,050	4,280	3,710	NA	NA	NA	6.80	7.00	5.34	6.64	NA	NA	NA	57	49	53	36	NA
Mar-08	NA	143	139	323	0	312	602	NA	4,220	3,900	4,060	4,370	3,630	3,870	NA	6.20	6.45	6.82	5.16	6.92	6.30	NA	32	57	50	57	35	50
Apr-08	NA	116	156	362	96	306	NA	NA	3,800	3,590	3,680	3,840	3,260	NA	NA	5.86	6.18	6.58	5.83	6.51	NA	NA	32	58	50	49	36	NA
May-08	NA	NA	169	337	29	312	406	NA	NA	3,900	4,040	3,950	3,690	3,980	NA	NA	6.21	6.50	5.97	6.29	6.47	NA	NA	58	53	51	36	37
Jun-08	NA	0	293	287	133	302	453	NA	4,570	3,890	3,990	3,940	3,640	3,880	NA	3.84	6.40	6.53	6.12	6.26	6.15	NA	35	54	54	48	35	37
Jul-08	NA	0	268	302	162	313	228	NA	4,140	3,740	3,770	3,850	3,450	3,730	NA	5.94	6.39	7.28	6.33	6.54	6.38	NA	36	49	53	50	33	41
Aug-08	NA	99	201	289	208	316	349	NA	4,230	3,800	3,840	3,790	3,620	3,810	NA	5.83	6.42	6.88	6.46	6.50	6.35	NA	35	52	51	48	34	40
Sep-08	NA	106	211	290	244	310	327	NA	4,170	3,650	3,720	3,340	3,510	3,740	NA	5.86	6.89	7.18	7.09	6.39	6.32	NA	37	42	48	46	35	38
Oct-08	NA	98	84	301	294	321	337	NA	4,080	4,000	3,770	3,820	3,560	3,760	NA	5.74	5.85	6.69	6.31	6.54	6.37	NA	30	50	55	48	38	38
Nov-08	NA	80	50	127	246	335	338	NA	4,120	3,570	3,900	3,730	3,560	3,750	NA	5.55	5.87	6.16	6.41	6.43	6.24	NA	32	53	57	46	34	35
Dec-08	NA	85	39	79	268	351	346	NA	3,990	3,500	4,040	3,660	3,530	3,700	NA	6.05	5.68	5.76	6.86	6.48	6.26	NA	34	52	57	44	36	38
Jan-09	NA	63	10	15	295	351	344	4950	4,190	3,690	4,100	3,860	3,580	3,800	5.5	5.41	4.02	5.41	6.24	6.55	6.25	NA	30	50	57	43	40	39
Apr-09	NA	55	0	174	271	338	385	5110	4,010	4,960	3,900	3,560	3,600	3,710	5.59	5.31	2.88	6.21	6.80	6.43	6.36	NA	29	42	53	40	38	38
Feb-09	NA	74	0	16	268	344	361	NA	4,200	4,220	3,910	3,420	3,580	3,730	NA	5.64	3.03	5.00	6.55	6.43	6.35	NA	29	51	58	43	39	40
Mar-09	NA	89	12	0	306	343	351	NA	4,170	3,430	3,850	3,750	3,580	3,750	NA	5.74	4.56	4.87	7.29	6.44	6.30	NA	31	39	58	40	38	37
May-09	NA	83	0	205	258	337	332	NA	4,250	4,980	3,800	3,600	3,530	3,820	NA	5.80	2.51	6.35	6.99	6.41	6.31	NA	28	51	50	44	36	36
Jun-09	NA	83	0	287	235	334	318	NA	4,010	4,410	3,520	3,400	3,410	3,660	NA	5.60	2.52	7.32	6.98	6.43	6.30	NA	29	51	48	44	39	37
Jul-09	NA	77	0	244	227	328	308	4670	4,030	4,540	3,680	3,370	3,470	3,660	3.56	5.70	2.50	6.45	7.16	7.91	6.30	NA	29	>40	48	50	40	38
Aug-09	NA	50	0	226	85	312	293	NA	4,440	5,200	3,760	3,640	3,490	3,860	NA	5.33	2.51	6.62	6.64	6.58	6.21	NA	29	40	48	51	41	37
Sep-09	NA	65	NA	51	59	306	277	NA	4,370	NA	3,570	3,720	3,390	3,910	NA	5.40	NA	9.18	6.60	6.44	6.30	NA	29	NA	49	59	43	37
Oct-09	NA	94	NA	111	178	335	280	4860	3,980	NA	3,530	3,960	3,360	3,470	5.5	5.60	NA	6.26	5.65	6.41	5.80	NA	28	NA	42	48	41	36
Nov-09	NA	96	0	87	198	252	294	NA	4,260	2,230	3,500	3,970	3,260	3,760	NA	5.80	3.83	7.04	6.10	6.65	6.40	NA	28	7	42	46	127	37
Dec-09	NA	76	0	47	44	280	283	NA	4,350	4,640	3,490	3,950	3,350	3,720	NA	6.10	2.90	7.14	6.93	7.15	6.38	NA	29	41	40	48	97	37
Jan-10	NA	87	0	38	80	302	299	5020	4,460	4,300	3,600	4,150	3,460	3,850	4.56	5.50	2.76	5.45	6.31	6.39	6.06	NA	29	35	40	46	79	37
Feb-10	NA	89	0	22	55	306	272	NA	4,400	4,610	3,440	3,990	3,450	3,810	NA	5.90	3.00	6.26	6.39	6.50	6.27	NA	29	30	36	47	74	37
Mar-10	NA	94	0	28	69	321	282	NA	4,340	4,690	3,440	4,130	3,520	3,800	NA	5.80	2.93	6.62	5.38	6.48	6.42	NA	29	31	37	43	56	37
Apr-10	NA	71	0	234	0	330	265	NA	4,680	4,410	3,490	4,000	3,500	4,080	NA	5.42	2.95	6.38	5.40	6.67	6.10	NA	29	33	34	43	50	38
May-10	NA	72	0	194	0	340	268	NA	4,730	5,030	3,800	4,220	3,860	4,050	NA	5.76	2.67	7.48	3.25	6.14	6.34	NA						

**TABLE 11**  
**Zone 3 Field Parameter Measurements of Tracking Wells Through October 2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Date	Bicarbonate (mg/L)							Conductivity (umhos/cm)							pH (s.u.)							Chloride (mg/L)						
	504 B	PB-2	PB-4	PB-3	NBL-1	NBL-2	RW-A	504 B	PB-2	PB-4	PB-3	NBL-1	NBL-2	RW-A	504 B	PB-2	PB-4	PB-3	NBL-1	NBL-2	RW-A	504 B	PB-2	PB-4	PB-3	NBL-1	NBL-2	RW-A
Aug-12	NA	86	0	207	0	363	221	NA	4530	5580	3640	5550	3540	3890	NA	5.85	2.58	6.56	2.55	6.63	6.32	NA	30	31	27	31	47	35
Sep-12	NA	66	0	184	0	385	222	NA	4460	5660	3600	5150	3490	3870	NA	5.83	2.52	6.58	2.48	6.62	6.46	NA	30	32	27	31	49	36
Oct-12	NA	63	0	219	0	386	224	NA	4500	6080	3630	5110	3230	3930	NA	5.90	2.55	6.38	2.73	6.75	6.46	NA	30	33	27	31	49	35
Nov-12	NA	87	0	189	0	399	220	NA	4470	6320	3710	5600	3460	3910	NA	6.00	2.64	6.95	2.65	6.75	6.41	NA	30	32	28	30	49	37
Dec-12	NA	82	0	190	0	391	212	NA	4450	6390	3630	5500	3480	3900	NA	5.89	2.50	7.10	2.59	6.75	6.36	NA	29	31	27	31	50	35
Jan-13	NA	73	0	182	0	386	215	NA	4720	7120	4240	5850	3850	4130	NA	5.84	2.48	6.47	2.65	6.84	6.44	NA	30	31	27	32	50	35
Feb-13	NA	80	0	96	0	397	226	NA	4780	6400	3850	5730	3630	4160	NA	5.85	2.43	6.88	2.56	6.64	6.36	NA	29	32	27	33	49	36
Mar-13	NA	76	0	45	NA	379	212	NA	3580	6200	3950	NA	3580	4180	NA	5.70	2.53	6.14	NA	6.69	6.40	NA	29	32	27	NA	50	36
Apr-13	NA	62	0	0	NA	379	210	NA	4540	5950	4440	NA	3540	4010	NA	5.84	2.53	3.72	NA	6.62	6.38	NA	30	32	27	NA	50	36
May-13	NA	54	0	0	NA	384	183	NA	4510	6220	4140	NA	3410	4000	NA	5.72	2.64	3.42	NA	6.82	6.29	NA	30	33	28	NA	51	36
Jun-13	NA	54	0	0	NA	379	185	NA	4580	6040	4310	NA	3420	4120	NA	5.48	2.49	3.00	NA	6.54	6.12	NA	30	33	28	NA	50	34
Jul-13	NA	58	0	0	NA	376	184	NA	4430	5870	4380	NA	3470	4020	NA	5.71	2.54	2.97	NA	6.65	6.29	NA	31	33	27	NA	50	33
Aug-13	NA	35	0	0	NA	365	184	NA	4290	5630	4260	NA	3340	3980	NA	6.08	2.46	2.88	NA	7.03	6.42	NA	31	34	28	NA	50	34
Sep-13	NA	NA	0	0	NA	379	191	NA	NA	5780	4800	NA	3540	3930	NA	NA	2.47	2.65	NA	6.59	6.58	NA	NA	34	32	NA	50	34
Oct-13	NA	NA	0	0	NA	391	199	NA	NA	5540	5230	NA	3620	3950	NA	NA	2.85	2.82	NA	7.26	6.53	NA	NA	34	32	NA	50	34
Nov-13	NA	NA	0	0	NA	385	191	NA	NA	5240	4910	NA	3340	4090	NA	NA	3.07	2.80	NA	6.89	6.35	NA	NA	34	28	NA	49	33
Dec-13	NA	NA	0	0	NA	384	183	NA	NA	5080	4710	NA	3330	4070	NA	NA	2.80	2.77	NA	7.38	6.29	NA	NA	34	28	NA	49	34
Jan-14	NA	NA	0	0	NA	383	198	NA	NA	5450	5100	NA	3430	3870	NA	NA	2.80	2.83	NA	6.73	6.36	NA	NA	32	28	NA	49	34
Feb-14	NA	NA	0	0	NA	367	166	NA	NA	5260	5330	NA	3410	4070	NA	NA	2.76	2.70	NA	6.92	6.40	NA	NA	32	29	NA	54	34
Mar-14	NA	NA	0	0	NA	384	182	NA	NA	5060	5000	NA	3410	3950	NA	NA	2.89	2.69	NA	6.98	6.24	NA	NA	32	29	NA	47	33
Apr-14	NA	NA	0	0	NA	376	179	NA	NA	4680	4960	NA	3200	3990	NA	NA	2.98	2.83	NA	6.75	6.10	NA	NA	32	31	NA	47	33
May-14	NA	NA	0	0	NA	371	114	NA	NA	4620	4740	NA	3240	4040	NA	NA	2.89	2.81	NA	6.68	6.30	NA	NA	32	35	NA	45	32
Jun-14	NA	NA	0	11	NA	369	170	NA	NA	4600	3930	NA	3170	3910	NA	NA	2.98	5.79	NA	6.67	6.40	NA	NA	32	30	NA	44	33
Jul-14	NA	NA	0	0	NA	364	157	NA	NA	4670	4430	NA	3400	4210	NA	NA	2.95	3.61	NA	6.73	6.14	NA	NA	34	28	NA	45	34
Aug-14	NA	NA	0	0	NA	366	168	NA	NA	5000	4550	NA	3390	4240	NA	NA	2.94	3.32	NA	6.64	6.18	NA	NA	32	27	NA	45	34
Sep-14	NA	NA	0	0	NA	356	166	NA	NA	4940	4340	NA	3350	4120	NA	NA	2.97	3.55	NA	6.60	6.19	NA	NA	33	27	NA	45	32
Oct-14	NA	NA	0	0	NA	357	162	NA	NA	4870	4040	NA	3300	3650	NA	NA	2.98	3.96	NA	6.62	6.09	NA	NA	33	27	NA	42	33
Nov-14	NA	NA	0	11	NA	335	153	NA	NA	4670	3760	NA	3360	4230	NA	NA	2.97	4.66	NA	6.73	6.40	NA	NA	34	25	NA	43	32
Dec-14	NA	NA	0	9	NA	336	123	NA	NA	4850	3520	NA	3440	4110	NA	NA	3.01	5.00	NA	6.56	6.26	NA	NA	34	24	NA	40	31
Jan-15	NA	NA	0	12	NA	326	151	NA	NA	4960	3900	NA	3420	4160	NA	NA	2.87	5.75	NA	6.67	6.36	NA	NA	31	26	NA	40	31
Feb-15	NA	NA	0	11	NA	329	141	NA	NA	4670	3110	NA	3280	4170	NA	NA	2.88	6.14	NA	6.26	6.32	NA	NA	33	22	NA	40	34
Mar-15	NA	NA	0	25	NA	323	149	NA	NA	4440	3690	NA	3240	4070	NA	NA	2.98	6.69	NA	6.74	6.09	NA	NA	33	26	NA	40	32
Apr-15	NA	NA	0	33	NA	322	140	NA	NA	4830	4080	NA	3750	4460	NA	NA	2.97	6.18	NA	6.48	6.08	NA	NA	32	25	NA	40	32
May-15	NA	NA	0	67	NA	336	137	NA	NA	4820	3970	NA	3320	4420	NA	NA	3.01	6.85	NA	6.51	6.08	NA	NA	33	26	NA	39	31
Jun-15	NA	NA	0	54	NA	348	136	NA	NA	4890	4180	NA	3320	4470	NA	NA	3.01	6.30	NA	6.43	6.19	NA	NA	30	26	NA	39	32
Jul-15	NA	NA	0	69	NA	349	145	NA	NA	4810	3920	NA	3140	4330	NA	NA	2.91	6.95	NA	6.69	6.03	NA	NA	33	28	NA	38	32
Aug-15	NA	NA	0	57	NA	334	129	NA	NA	4740	4040	NA	3250	4460	NA	NA	3.14	6.86	NA	6.74	6.12	NA	NA	31	29	NA	37	31
Sep-15	NA	NA	0	45	NA	244	112	NA	NA	4770	3910	NA	3170	4450	NA	NA	2.95	6.97	NA	6.62	6.08	NA	NA	30	30	NA	36	31
Oct-15	NA	NA	NA	NA	NA	358	124	NA	NA	NA	NA	NA	3270	4380	NA	NA	NA	NA	NA	6.39	6.40	NA	NA	NA	NA	NA	36	31
Nov-15	NA	NA	NA	NA	NA	351	119	NA	NA	NA	NA	NA	3200	4510	NA	NA	NA	NA	NA	6.74	6.02	NA	NA	NA	NA	NA	36	31
Dec-15	NA	NA	NA	NA	NA	323	106	NA	NA	NA	NA	NA	3170	4490	NA	NA	NA	NA	NA	6.87	6.27	NA	NA	NA	NA	NA	38	31
Jan-16	NA	NA	NA	NA	NA	326	115	NA	NA	NA	NA	NA	3320	4470	NA	NA	NA	NA	NA	6.61	6.29	NA	NA	NA	NA	NA	38	31
Feb-16	NA	NA	NA	NA	NA	316	105	NA	NA	NA	NA	NA	3400	4590	NA	NA	NA	NA	NA	6.81	6.01	NA	NA	NA	NA	NA	38	31
Mar-16	NA	NA	NA	NA	NA	342	106	NA	NA	NA	NA	NA	3390	4740	NA	NA	NA	NA	NA	6.96	6.15	NA	NA	NA	NA	NA	38	31
Apr-16	NA	NA	NA	NA	NA	345	110	NA	NA	NA	NA	NA	3180	4670	NA	NA	NA	NA	NA	6.88	6.06	NA	NA	NA	NA	NA	38	31
May-16	NA	NA	NA	NA	NA	349	107	NA	NA	NA	NA	NA	3180	4770	NA	NA	NA	NA	NA	6.68	6.10	NA	NA	NA	NA	NA	38	31
Jun-16	NA	NA	NA	NA	NA	322	101	NA	NA	NA	NA	NA	3310	4840	NA	NA	NA	NA	NA	7.34	6.05	NA	NA	NA	NA	NA	36	29
Jul-16	NA	NA	NA	NA	NA	319	101	NA	NA	NA	NA	NA	3350	4820	NA	NA	NA	NA	NA	6.90	6.10	NA	NA	NA	NA	NA	37	28
Aug-16	NA	NA	NA	NA	NA	322	101	NA	NA	NA	NA	NA	3270	4600	NA	NA	NA	NA	NA	6.99	6.05	NA	NA	NA	NA	NA	35	29
Sep-16	NA	NA	NA	NA	NA	324	99	NA	NA	NA	NA	NA	3340	4690	NA	NA	NA	NA	NA	6.94	6.00	NA	NA	NA	NA	NA	38	29
Oct-16	NA	NA	NA	NA	NA	317	77	NA	NA	NA	NA	NA	3230	4590	NA	NA	NA	NA	NA	6.57	6.05	NA	NA	NA	NA	NA	39	29

**Notes:**

Parameter monitoring of wells NBL-2 and RW-A started in January 2008.

NA indicates that data are not available because a sample was not or could not be collected

NBL-1 "insufficient water volume" for sampling starting in March 2013 due to obstruction (mud).

**TABLE 12**  
 Zone 3 Field Parameter Measurements of NW and MW-Series Wells Through October 2016  
 United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

	Bicarbonate (mg/L)							Conductivity (umhos/cm)							pH (s.u.)							Chloride (mg/L)						
Date	NW-1	NW-2	NW-3	NW-4	NW-5	MW-6	MW-7	NW-1	NW-2	NW-3	NW-4	NW-5	MW-6	MW-7	NW-1	NW-2	NW-3	NW-4	NW-5	MW-6	MW-7	NW-1	NW-2	NW-3	NW-4	NW-5	MW-6	MW-7
Jun-09	137	351	484	196	502	NA	NA	4,170	3,640	3,350	4,270	3,450	NA	NA	5.93	6.27	6.52	6.15	6.52	NA	NA	26	39	40	31	45	NA	NA
Jul-09	127	333	483	212	577	NA	NA	4,270	3,660	3,380	4,400	3,440	NA	NA	6.25	6.15	6.40	6.64	6.30	NA	NA	27	39	37	32	45	NA	NA
Aug-09	106	319	458	220	563	NA	NA	4,460	3,820	3,530	4,460	3,670	NA	NA	5.91	6.16	6.40	6.30	6.51	NA	NA	26	37	36	33	46	NA	NA
Sep-09	112	328	457	232	511	NA	NA	4,420	3,850	3,570	4,530	3,650	NA	NA	6.00	6.35	6.51	6.55	6.88	NA	NA	26	37	37	32	46	NA	NA
Oct-09	146	341	490	243	597	NA	NA	4,060	3,480	3,250	4,080	3,340	NA	NA	7.01	6.73	6.91	6.59	7.15	NA	NA	25	36	36	29	48	NA	NA
Nov-09	117	380	475	154	604	NA	NA	4,330	3,670	3,390	4,270	3,560	NA	NA	6.50	6.34	6.70	5.96	6.70	NA	NA	27	39	38	30	52	NA	NA
Dec-09	124	402	502	167	612	NA	NA	4,320	3,560	3,520	4,260	3,600	NA	NA	6.11	6.38	6.52	6.13	6.89	NA	NA	26	41	39	30	52	NA	NA
Jan-10	123	432	524	167	591	NA	NA	4,310	3,820	3,680	4,230	3,680	NA	NA	6.68	6.26	6.33	6.10	6.35	NA	NA	26	43	41	29	53	NA	NA
Feb-10	119	428	554	173	590	NA	NA	4,280	3,620	3,630	4,150	3,400	NA	NA	6.57	6.47	6.55	6.28	6.76	NA	NA	26	45	45	29	53	NA	NA
Mar-10	127	415	546	192	595	NA	NA	4,260	3,540	3,650	4,080	3,640	NA	NA	6.90	6.52	6.88	6.36	6.97	NA	NA	26	43	46	29	54	NA	NA
Apr-10	123	404	569	173	589	NA	NA	4,560	3,930	3,950	4,260	3,960	NA	NA	5.72	5.96	6.22	5.76	6.32	NA	NA	26	42	47	30	50	NA	NA
May-10	128	400	573	174	597	NA	NA	4,520	3,890	4,210	4,440	3,830	NA	NA	6.16	6.33	6.61	6.09	6.88	NA	NA	26	42	49	29	54	NA	NA
Jun-10	126	395	606	168	584	NA	NA	4,210	3,540	3,720	4,020	3,540	NA	NA	6.11	6.36	6.63	6.09	6.86	NA	NA	26	43	50	30	53	NA	NA
Jul-10	160	389	561	168	590	NA	NA	4,200	3,630	3,690	4,030	3,590	NA	NA	6.12	6.46	6.69	6.17	6.71	NA	NA	26	43	49	30	53	NA	NA
Aug-10	121	402	563	172	501	NA	NA	4,190	3,530	3,680	3,990	3,490	NA	NA	6.13	6.50	6.63	6.11	6.19	NA	NA	26	42	49	30	47	NA	NA
Sep-10	129	401	533	177	597	NA	NA	4,160	3,500	3,680	3,970	3,560	NA	NA	6.10	6.42	6.60	6.05	6.52	NA	NA	25	40	47	28	53	NA	NA
Oct-10	134	399	508	163	585	NA	NA	4,190	3,540	3,690	4,040	3,630	NA	NA	6.17	6.50	6.49	6.12	6.84	NA	NA	25	41	44	28	53	NA	NA
Nov-10	132	390	488	155	567	NA	NA	4,220	3,600	3,680	4,080	3,650	NA	NA	5.94	6.31	6.56	5.92	6.62	NA	NA	24	41	44	28	52	NA	NA
Dec-10	138	390	490	175	563	NA	NA	4,340	3,650	3,860	4,120	3,760	NA	NA	6.30	6.43	6.68	6.05	6.85	NA	NA	24	40	45	27	51	NA	NA
Jan-11	141	395	511	169	610	NA	NA	4,350	3,750	3,860	4,210	3,690	NA	NA	6.49	6.65	6.83	6.20	7.10	NA	NA	25	39	46	27	51	NA	NA
Feb-11	151	391	490	171	622	NA	NA	4,180	3,630	3,750	4,090	3,640	NA	NA	6.37	6.52	6.69	6.19	6.94	NA	NA	25	40	45	28	51	NA	NA
Mar-11	150	409	489	171	627	NA	NA	4,200	3,620	3,770	4,070	3,670	NA	NA	6.70	6.57	6.77	6.26	6.90	NA	NA	25	41	47	28	52	NA	NA
Apr-11	155	395	489	168	557	NA	NA	4,280	3,700	3,820	4,190	3,620	NA	NA	6.36	6.52	6.85	6.20	6.91	NA	NA	25	43	48	30	51	NA	NA
May-11	133	377	465	173	549	NA	NA	4,330	3,730	3,800	4,200	3,650	NA	NA	6.18	6.50	6.81	6.27	6.83	NA	NA	26	43	49	30	50	NA	NA
Jun-11	135	399	468	158	545	NA	NA	4,280	3,700	3,790	4,170	3,640	NA	NA	6.17	6.35	6.75	6.01	6.91	NA	NA	26	43	48	29	49	NA	NA
Jul-11	140	398	445	162	544	NA	NA	4,160	3,670	3,780	4,120	3,600	NA	NA	6.64	6.84	6.50	6.81	6.89	NA	NA	26	42	50	29	50	NA	NA
Aug-11	141	393	435	162	582	234	496	4,130	3,590	3,530	4,050	3,520	4100	3850	6.58	6.56	6.80	6.21	7.05	6.91	6.73	26	42	48	29	50	34	50
Sep-11	145	367	437	139	583	215	486	4,120	3,630	3,630	3,950	3,480	3880	3580	6.59	6.65	6.94	6.14	7.10	6.22	6.58	28	43	46	30	50	31	49
Oct-11	266	368	399	163	591	189	490	3,880	3,630	3,620	4,090	3,540	3910	3510	6.60	6.53	6.98	6.30	7.00	6.71	6.77	35	42	46	28	52	31	50
Nov-11	157	379	417	170	583	240	506	4,260	3,750	3,800	4,330	3,620	3930	3680	6.49	6.65	6.95	6.49	7.00	6.45	6.98	25	43	46	29	52	34	49
Dec-11	155	362	423	163	569	234	468	4,410	3,840	3,830	4,320	3,720	3910	3710	6.74	6.79	6.75	6.41	7.18	6.62	6.83	26	42	44	29	53	34	51
Jan-12	123	347	401	151	491	224	451	4,300	3,760	3,760	4,380	3,370	4040	3850	6.61	6.55	6.77	6.28	6.94	6.59	6.75	26	42	42	29	48	38	50
Feb-12	212	368	406	158	490	227	432	4,280	3,790	3,760	4,350	3,400	3880	3730	6.75	6.52	6.67	6.12	6.97	6.54	6.68	25	42	43	29	45	37	46
Mar-12	161	344	385	157	492	238	410	4,210	3,780	3,750	4,380	3,700	3880	3690	7.01	6.51	6.75	6.23	6.99	6.47	6.70	24	40	42	28	47	39	46
Apr-12	132	327	385	149	484	215	351	4,240	3,810	3,730	4,370	3,720	3810	3660														



**TABLE 12**  
 Zone 3 Field Parameter Measurements of NW and MW-Series Wells Through October 2016  
 United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

	Bicarbonate (mg/L)							Conductivity (umhos/cm)							pH (s.u.)							Chloride (mg/L)						
Date	NW-1	NW-2	NW-3	NW-4	NW-5	MW-6	MW-7	NW-1	NW-2	NW-3	NW-4	NW-5	MW-6	MW-7	NW-1	NW-2	NW-3	NW-4	NW-5	MW-6	MW-7	NW-1	NW-2	NW-3	NW-4	NW-5	MW-6	MW-7
Aug-13	297	288	356	100	345	170	385	3,860	3,950	3,610	3,910	4,110	4190	3660	7.10	6.46	6.47	7.04	6.60	7.54	6.61	19	36	36	27	38	32	41
Sep-13	320	280	349	NA	319	174	396	3,820	3,880	3,490	NA	4,030	4300	3680	7.60	6.60	6.44	NA	6.76	7	6.77	21	36	35	NA	37	31	41
Oct-13	345	279	345	108	324	197	407	3,870	3,890	3,470	3,980	4,040	4040	3410	7.58	6.86	6.79	6.83	6.98	6.46	6.61	20	36	35	29	38	31	42
Nov-13	360	273	351	200	335	177	401	3,800	4,030	3,510	3,920	4,060	4000	3440	7.03	6.51	6.76	6.61	6.85	7.56	7.11	20	35	35	29	36	30	42
Dec-13	405	260	361	167	313	181	416	3,810	4,040	3,640	3,690	4,080	3890	3460	6.96	6.49	6.67	6.61	6.77	7.47	7.06	20	35	35	26	35	30	42
Jan-14	352	226	389	88	NA	184	410	3,580	3,970	3,650	3,670	NA	4260	3540	6.89	6.48	6.79	7.00	NA	6.83	6.81	18	35	35	26	NA	29	43
Feb-14	360	227	363	121	315	NA	396	3,860	4,010	3,400	3,720	4,070	NA	3480	7.39	6.53	6.82	6.85	6.82	NA	7.02	18	35	35	26	36	NA	42
Mar-14	384	229	416	129	339	167	404	3,830	3,990	3,650	3,610	4,120	3280	3470	7.18	5.98	6.84	6.61	6.94	6.68	7.06	18	35	34	25	37	30	42
Apr-14	423	227	438	NA	368	191	404	3,760	3,950	3,650	NA	4,130	3980	3080	6.80	5.75	6.85	NA	7.01	6.48	6.75	18	35	34	NA	37	30	42
May-14	398	223	435	123	354	162	392	3,730	3,970	3,620	3,720	4,090	3930	3360	7.09	6.54	6.81	6.75	6.98	7.62	7.02	19	35	35	25	36	29	42
Jun-14	428	209	437	106	358	NA	379	3,710	3,960	3,640	3,720	4,110	NA	3280	6.99	6.50	6.83	7.01	6.85	NA	6.82	19	35	35	25	35	NA	42
Jul-14	416	210	441	105	350	171	341	3,850	4,170	3,810	3,990	4,270	3610	3520	7.15	6.33	6.66	6.84	6.76	7.46	6.57	19	35	34	25	35	35	40
Aug-14	446	227	444	107	341	183	362	3,910	4,230	3,830	4,010	4,280	4210	3560	7.61	6.32	6.73	6.66	6.94	7.65	6.88	19	35	35	25	35	29	40
Sep-14	455	227	505	100	309	190	373	3,740	4,100	3,840	3,900	4,190	4010	3500	7.05	6.31	7.03	6.53	6.85	7.71	7.09	20	35	34	24	35	28	40
Oct-14	460	189	414	108	304	192	362	3,780	4,220	3,850	4,060	4,300	4330	3580	6.77	6.40	6.75	6.72	6.74	7.08	6.73	18	35	34	24	34	29	40
Nov-14	476	209	469	148	304	154	340	3,750	4,170	3,890	4,030	4,290	3210	3680	6.98	6.49	6.84	7.02	6.88	6.65	7.5	18	35	35	25	34	25	40
Dec-14	458	219	464	125	273	144	358	3,660	4,040	3,800	3,930	4,170	4030	3710	7.12	6.49	6.88	6.83	6.96	7.63	7.24	18	35	34	25	33	31	41
Jan-15	455	219	440	140	279	186	378	3,650	4,110	3,810	3,900	4,290	4300	3680	7.09	6.48	6.92	7.01	6.69	6.97	6.86	18	35	35	25	33	31	41
Feb-15	494	210	466	141	246	172	361	3,710	4,120	3,870	3,950	4,060	4160	3580	7.30	6.35	6.96	6.69	6.75	7.35	7.38	17	35	35	24	33	30	41
Mar-15	499	194	471	141	253	181	357	3,540	4,050	3,740	3,850	4,020	4180	3490	7.32	6.28	7.06	6.61	6.73	7.02	7.48	17	32	34	24	32	29	41
Apr-15	477	194	461	156	260	192	352	3,890	4,380	4,110	4,250	4,570	4330	3750	6.94	6.27	6.80	6.42	6.44	6.86	6.48	17	32	36	23	34	29	39
May-15	542	NA	473	135	257	193	343	3,800	NA	3,860	4,100	4,420	4410	3671	6.95	NA	6.88	6.77	6.60	7.52	7.16	17	NA	33	23	32	30	40
Jun-15	498	197	476	158	223	196	305	3,770	4,370	4,030	4,180	4,430	4460	3940	7.08	6.43	7.03	6.93	6.68	6.33	6.84	17	33	35	23	34	31	40
Jul-15	490	197	480	142	231	208	315	3,800	4,360	4,090	4,120	4,490	4200	3620	7.19	6.19	6.74	6.57	6.41	7.18	6.9	17	33	35	23	34	31	38
Aug-15	474	185	456	133	212	191	280	3,770	4,380	4,100	4,120	4,480	4350	3620	7.22	6.19	6.93	6.81	6.65	7.68	7.83	17	33	35	23	34	30	38
Sep-15	484	181	488	118	235	224	NA	3,690	4,330	4,030	4,040	4,410	4210	NA	7.20	6.30	7.05	7.02	6.80	7.87	NA	16	32	35	23	33	30	NA
Oct-15	NA	182	477	116	241	NA	NA	NA	4,270	4,010	4,190	4,400	NA	NA	NA	6.34	7.06	6.93	6.71	NA	NA	NA	32	35	22	33	NA	NA
Nov-15	492	199	488	111	204	NA	263	3700	4,410	4,040	4,070	4,440	NA	3830	8	6.54	7.05	6.83	6.95	NA	7.88	17	33	36	22	33	NA	38
Dec-15	491	173	518	103	243	NA	276	3680	4,330	4,090	4,040	4,500	NA	3800	6.67	6.50	6.94	6.91	6.68	NA	7.07	20	33	35	22	33	NA	38
Jan-16	464	155	526	92	246	NA	272	3650	4,410	4,430	4,120	4,580	NA	3360	6.53	6.41	7.22	6.59	6.43	NA	6.52	16	34	38	22	34	NA	37
Feb-16	474	153	496	83	247	NA	255	3650	4,490	4,280	4,010	4,450	NA	3940	6.85	6.12	7.19	6.61	6.41	NA	7.84	20	34	37	21	34	NA	37
Mar-16	477	167	506	87	135	NA	251	3770	4,500	4,390	4,080	4,720	NA	4040	7.03	6.26	7.51	6.86	6.27	NA	7.35	19	33	36	21	32	NA	38
Apr-16	488	161	512	85	133	NA	258	3770	4,400	4,370	4,070	4,730	NA	3940	7.46	6.14	7.40	6.67	6.10	NA	6.76	17	33	36	21	32	NA	38
May-16	482	NA	494	85	139	NA	261	3740	NA	4,390	4,100	4,720	NA	3940	7.48	NA	7.50	6.62	6.26	NA	6.46	17	NA	36	21	32	NA	38
Jun-16	429	138	497	87	99	NA	242	3720	4,570	4,470	4,120	4,880	NA	3890	7.57	6.27	7.47	6.73	6.09	NA	7.84	16	29	34	20	30	NA	35
Jul-16	459	160	437	79	98	NA	239	3730	4,550	4,400	4,060	4,800	NA	3860	7.5	6.26	7.40	6.63	6.10	NA	6.5	15	29	35	20	30	NA	34
Aug-16	430	163	239	82	106	NA	223	3440	4,300	4,010	3,840	4,530	NA	3840	7.56	6.19	7.14	6.67	6.04	NA	7.92	14	29	33	21	30	NA	34
Sep-16	442	165	427	79	113	NA	227	3520	4,370	4,170	3,920	4,590	NA	3820	7.54	6.24	7.26	6.78	6.05	NA	7.99	16	29	32	21	30	NA	34
Oct-16	449	159	434	71	101	NA	229	3700	4,500	4,300	4,040	4,720	NA	3850	7.36	6.20	7.24	6.80	6.08	NA	6.39	15	30	32	20	30	NA	34

NA indicates that data are not available because a sample was not or could not be collected

**TABLE 13**  
Historical Zone 3 Seepage Migration Evaluation  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

End Point Well	Starting Point	Distance Between Both Points (ft)	Time for Onset		Travel Time (ft/yr)	Basis for Determining Onset Date for Seepage Impacts At Selected Points
			Seepage Impacts at Starting Point (date)	Seepage Impacts at End Point (date)		
420	North Cell	2,100	1980	Oct-02	95	Bicarbonate concentration greater than 500 mg/L
504 B	North Cell	2,450	1980	Jul-92	204	Bicarbonate concentration less than 100 mg/L
EPA 14	North Cell	1,520	1980	Apr-96	95	Bicarbonate concentration greater than 500 mg/L
PB 2	North Cell	3,080	1980	Oct-02	140	Bicarbonate concentrations first declining to 50 mg/L at Well PB 2
PB 2	504 B	630	Jul-92	Oct-02	61	Bicarbonate concentrations first declining to 50 mg/L at each well
PB 4	PB 2	52	Apr-03	Feb-04	60	Bicarbonate concentrations first persistently at or below 50 mg/L at each well
PB 4	PB 2	52	Jan-08	Nov-08	58	Bicarbonate concentrations again declined to below 50 mg/L at each well
PB 3	PB 4	53	Oct-12	Mar-13	128	Bicarbonate concentrations declined to below 50 mg/L at Well PB 3
			Geometric Mean		96	

End Point Well	Starting Point Well	Distance Between Both Points (ft)	Time for Onset		Net Migration Distance (ft)	Basis for Determining Onset Date for Seepage Impacts At Selected Points
			Seepage Impacts at Starting Point (date)	Seepage Impacts at End Point (date)		
NBL 1	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	<p>Since Dec-05, water quality in the northern tracking wells (including NBL 1) has varied significantly (for example, see the field bicarbonate measurements in Table 11 and the lab bicarbonate measurements shown in Figure 40). This reflects the influence of pumping systems (which have changed over time) and variable mixing of impacted water with background water drawn in from the west. Full seepage impact has occurred at PB 4 since Nov-08 (bicarbonate &lt; 50 mg/L) or Jan-09 (pH &lt; 5.0). To the north of this well, NBL 1 has historically shown strongly degraded water quality in terms of both bicarbonate and pH (Table 11) as well as other constituents (see laboratory analytical data for Jan-13 [subsequent sampling was suspended due to water level decline] in Appendix B; e.g., elevated aluminum, cobalt, and nickel). Based on these data, the leading edge of the impacted water is shown as passing through NBL 1 in Figure 35. Between impacted wells PB 4 and NBL 1, the water quality at PB 3 significantly improved during 2010 and 2011 and was stable until Oct-12 when seepage impact began (Table 11 and Appendix B), indicating the high degree of geochemical variability, sometimes at very close spacing, in the northern part of Zone 3. Note that full seepage impact occurred at PB 3 since Mar-13 (bicarbonate &lt; 50 mg/L) or Apr-13 (pH &lt; 5.0). Water quality improved significantly at PB 3 since Nov-2014, but the most recent monitoring suggests partial impact (pH &gt; 5.0 [6.97]), but bicarbonate approximately equal to 50 mg/L).</p>



**TABLE 14**  
Detected Constituents in Zone 3, October 2016  
United Nuclear Corporation, Church Rock Site  
Church Rock, New Mexico

Chemical Name	License NRC Standard	EPA Cleanup Level	Unit	0420	0517	0613	0708	0711	0717	0717 FD	0719	EPA 13	EPA 14	MW-7	NBL-02	NW-1	NW-2	NW-3	NW-4	NW-5	RW-11	RW-A
<b>Section #</b>				<b>36</b>	<b>36</b>	<b>2</b>	<b>36</b>	<b>36</b>	<b>36</b>	<b>36</b>	<b>36</b>	<b>36</b>	<b>36</b>	<b>36</b>	<b>36</b>	<b>36</b>	<b>36</b>	<b>36</b>	<b>36</b>	<b>36</b>	<b>36</b>	<b>36</b>
ALUMINUM		5	mg/l	0.4	18.1	540 D	45.9	10	219	222	0.3		20.8		0.1	-	-	0.1	-	-	0.1	0.2
AMMONIA (AS N)			mg/l	0.41	8.2 D	166 D	0.8 D	2.2 D	40 D	39 D	0.56	0.06	23 D		0.06	-	-	0.51	-	-	3.1 D	0.8 D
ARSENIC	0.757	0.757	mg/l	0.001			0.001	0.002				0.001		0.001		-	-	0.005	-	-	0.002	
BERYLLIUM	0.05	0.004	mg/l		0.018	0.175	0.075	0.023	0.133	0.134			0.027			-	-		-	-	0.002	
BICARBONATE (HCO3)			mg/l	376							19	58		234	332	469	122	402	74	101	130	72
CADMIUM	0.09	0.09	mg/l		0.007	0.041			0.012	0.011						-	-		-	-		
CALCIUM			mg/l	689	441	429	433	458	466	465	478	438	495	589	591	-	-	601	-	-	522	522
CHLORIDE		250	mg/l	46	37 D	129 D	29 D	28 D	62 D	63 D	32 D	44 D	57 D	34 D	41	16	32 D	35 D	21 D	31 D	32 D	29 D
CHLOROFORM	80	80	ug/l		3.4	73			2.4	2.6		0.7				-	-		-	-		
COBALT		0.391	mg/l	0.01	0.88	2.09	0.52	0.71	0.91	0.93	0.23	0.11	0.43	0.13	0.02	-	-	0.03	-	-	0.36	0.47
GROSS ALPHA	39.7	39.7	pci/l	8.2	41.7	89.5	37.5	16.6	156	165	7.1	11.4	18.9	18.7	9	-	-	18.5	-	-	19.2	26
LEAD	0.08	0.08	mg/l	0.001	0.02	0.006	0.024	0.004	0.031	0.022			0.015			-	-		-	-	0.002	
LEAD-210	5.7	5.7	pci/l	1.5	1.7		1.2		3.2	3			1.2			-	-	1.6	-	-		
MAGNESIUM			mg/l	177	565	719	603	500	497	496	734	981	342	334	181	-	-	351	-	-	459	496
MANGANESE		9.1	mg/l	2.35	13.2	50.3	14.3	9.64	16.9	17	5.53	6.9	8.9	4.15	2.14	-	-	3.26	-	-	5.71	6.3
MOLYBDENUM		66.1	mg/l	0.4								0.2		0.3		-	-	0.5	-	-	0.3	
NICKEL	0.569	0.569	mg/l		0.87	1.89	0.59	0.85	0.92	0.92	0.3	0.27	0.41	0.15		-	-		-	-	0.35	0.44
NITRATE (NO3)		190	mg/l			2.3 D			20 D	20 D		0.1		0.5		-	-		-	-		0.4
PH (FIELD)			su	6.58	2.83	3.01	3.73	4.15	3.04	3.05	5.76	5.98	5.22	6.39	6.57	7.36	6.20	7.24	6.80	6.08	6.20	6.05
PH (LAB)			su	7.00 H	2.98 H	2.98 H	2.95 H	2.93 H	2.98 H	2.98 H	5.91 H	6.22 H	4.76 H	6.86 H	6.66 H	7.26 H	6.17 H	6.76 H	6.75 H	6.09 H	6.12 H	5.96 H
POTASSIUM			mg/l	8	13	1	13	13	3	3	13	14	11	9	7	-	-	9	-	-	11	9
RADIUM-226			pci/l	4.4	6	12	8.8	6.1	15	11	4.4	5.2	4.8	9.3	4.6	-	-	15	-	-	8.7	12
RADIUM-228			pci/l	6	8.1	2.9	3.1	11	6.6	3.7	15	7.7	11	12	15	-	-	8.7	-	-	18	16
RADIUM 226 & 228	35.2	35.2	pci/l	10.4	14.1	14.9	11.9	17.1	21.6	14.7	19.4	12.9	15.8	21.3	19.6	-	-	23.7	-	-	26.7	28
SELENIUM	0.01	0.05	mg/l	0.001												-	-		-	-		
SODIUM			mg/l	149	147	232 D	120	116	170	169	146	177	156	144	143	-	-	163	-	-	129	135
SULFATE (SO4)		5693	mg/l	2380 D	4420 D	8890 D	4700 D	3690 D	5250 D	5320 D	4330 D	5380 D	3230 D	2870 D	2210 D	-	-	2920 D	-	-	3390 D	3630 D
THORIUM-230	17	17	pci/l	0.3	17.1	666	0.4		23.7	21.5	0.5	0.2	0.2			-	-		-	-		
TOTAL DISSOLVED SOLIDS (LAB)		8592	mg/l	3820 H	5870 H	11200	6220 H	5000 H	7120 H	7040 H	6080 H	7220 H	4440 H	4310	3420	3650	4960	4480	4380	5340	4970	5240
TOTAL TRIHALOMETHANES	80	80	ug/l		3.4	73			2.4	2.6		0.7				-	-		-	-		
URANIUM	0.395	0.395	mg/l	0.244	0.374	0.754	0.126	0.125	0.306	0.308	0.0032	0.0102	0.106	0.0465	0.129	-	-	0.346	-	-	0.0774	0.0139
VANADIUM	0.1	0.1	mg/l			1.5										-	-		-	-		

Blank cells indicate that the analyte was not detected

Dash (-) indicates that the analysis was not performed

Shaded values exceed the listed action level

D - Reporting limit increased due to sample matrix

H - Analysis performed past recommended holding time

FD indicates a field duplicate sample



**TABLE 15**  
 Zone 1 Performance Monitoring Program, 2016 Operating  
 Year United Nuclear Corporation, Church Rock Site  
 Church Rock, New Mexico

Well <sup>1</sup>	Water Level <sup>2</sup>	Water Quality <sup>2</sup>	NRC POC	Purpose
<b>Continue Monitoring</b>				
515 A	X	X		Track transition area
604	X	X	Y	Track center of seepage
614	X	X	Y	Track transition area
EPA 2	X	X		Postmining-pretailings background water quality
EPA 4	X	X	Y	Postmining-pretailings background water quality
EPA 5	X	X	Y	Track transition area
EPA 7	X	X	Y	Track transition area, edge of saturation
EPA 8	X			Track edge of saturation
142	X	X		Premining background
143	X			Water level only, use 142
<b>Additional Wells, Not Included In Original Performance Monitoring Program</b>				
505 A	X			Long-term water level for migration path
502 A	X			Long-term water level for migration path
501 A	X			Long-term water level for migration path
504 A	X			Long-term water level for migration path
412	X			Long-term water level for migration path
Total	15	8		

<b>Eliminated From Monitoring</b>			<b>Reason For Elimination</b>	
141				No longer useable, plugged during arroyo flooding
516 A			Y	Failed low-flow testing
619				Anomalous water quality and water level
615				Decommissioned pumper, not needed - use 515 A
616				Decommissioned pumper, not needed - use 604
617				Decommissioned pumper, not needed

Notes:

1. No wells within the tailings reclamation cap were included.
2. Water level and water quality monitored on a quarterly basis.

**TABLE 16**  
 Zone 1 Saturated Thickness, October 2016  
 United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

<b>Well</b>	<b>Water Level Measurement Date</b>	<b>Zone 1 Unsaturated Thickness</b>	<b>Zone 1 Saturated Thickness</b>	<b>Zone 1 Percentage Saturated</b>
0142	10/5/2016	0.00	55.00	100%
0143	10/13/2016	0.00	52.00	100%
0412	10/13/2016	0.00	76.00	100%
0501 A	10/13/2016	11.00	54.00	83%
0502 A	10/13/2016	0.00	59.00	100%
0504 A	10/13/2016	7.65	60.35	89%
0505 A	10/13/2016	0.00	46.00	100%
0515 A	10/4/2016	30.12	10.88	27%
0604	10/4/2016	27.70	17.30	38%
0614	10/4/2016	24.76	20.24	45%
EPA 02	10/5/2016	22.45	27.55	55%
EPA 04	10/5/2016	20.25	34.75	63%
EPA 05	10/4/2016	31.48	17.52	36%
EPA 07	10/4/2016	32.08	50.92	61%
EPA 08	10/5/2016	29.10	36.90	56%

**TABLE 17**  
Detected Constituents in Zone 1, October 2016  
United Nuclear Corporation, Church Rock Site  
Church Rock, New Mexico

Chemical Name	License NRC Standard	EPA Cleanup Level	Unit	0142	0515 A	0604	0614	EPA 02	EPA 02 FD	EPA 04	EPA 05	EPA 07
<b>Section #</b>				<b>36</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
ALUMINUM		5	mg/l		0.3	0.6						0.2
AMMONIA (AS N)			mg/l		23 D		60 D	0.13	0.31	0.27	2.0 D	
BERYLLIUM	0.05	0.004	mg/l		0.002	0.005						
BICARBONATE (HCO3)			mg/l	310	835	30	879	285	303	138	64	659
CALCIUM			mg/l	69	458	461	552	407	399	490	473	507
CHLORIDE		250	mg/l	17	381 D	87 D	291 D	21 H	22	37 D	38 D	245 D
CHLOROFORM	80	80	ug/l		329	13	32					1.1
COBALT		0.05	mg/l		0.02	0.09					0.02	0.05
GROSS ALPHA	15	15	pci/l	1.5	6.4	4.5	3.5	5	4.3	2.7	2.9	3.1
LEAD	0.05	0.05	mg/l		0.002		0.003					
MAGNESIUM			mg/l	36	1370	836	703	193	186	392	494	906
MANGANESE		5.4	mg/l	0.03	7.55	3.85	0.94	1.68	1.73	2.5	0.24	1.33
NICKEL	0.07	0.2	mg/l		0.1	0.2						0.06
NITRATE (NO3)		190	mg/l	0.5	40 D	63 D	200 D	0.2		0.3	7.1 D	135 D
PH (FIELD)			su	7.96	6.14	5.50	6.49	6.93	6.94	6.84	6.56	6.26
PH (LAB)			su	7.49 H	6.13 H	5.57 H	6.61 H	7.13 H	6.78 H	7.16 H	6.58 H	6.37 H
POTASSIUM			mg/l	4	17	11	14	7	7	8	7	9
RADIUM-226			pci/l	0.79	2.2	1.4	0.8	1.5	1.8	1.2	1.3	0.62
RADIUM-228			pci/l		2.6	4.2	3.8	6	4.4	3.1	2.7	2
RADIUM 226 & 228	12.1	12.1	pci/l	0.79	4.8	5.6	4.6	7.5	6.2	4.3	4	2.62
SODIUM			mg/l	321	599 D	310 D	463 D	207	201	179	104	388 D
SULFATE (SO4)		5539	mg/l	768 D	6590 D	4800 D	3760 D	1910 D	1830 D	3130 D	3330 D	4420 D
TOTAL DISSOLVED SOLIDS (LAB)		8020	mg/l	1340	10200	7120	7070	3050	3020	4450	4690	7710
TOTAL TRIHALOMETHANES	80	80	ug/l		329	13	32					1.1
URANIUM	0.238	0.238	mg/l		0.0079	0.0006 B	0.0374	0.0018	0.0017		0.0007	0.0014

Blank cells indicate that the analyte was not detected

Shaded values exceed the listed action level

D - Reporting limit increased due to sample matrix

H - Analysis performed past recommended holding time

FD indicates a field duplicate sample



**TABLE 18**

Predicted Performance of the Zone 1 Natural Attenuation System  
 United Nuclear Corporation, Church Rock Site  
 Church Rock, New Mexico

Constituent	Will Standards* Be Met?		Remarks
	Section 1	Section 36	
Manganese	Yes?	Yes	Not regulated by NRC. Current EPA standard higher than previous standard. Dependent on bicarbonate availability. No 2016 exceedances outside Section 2. Well 515A (within Section 2 boundary) still exceeds EPA standard.
Sulfate	Yes?	Yes	Not regulated by NRC. Current EPA standard higher than previous standard. Limited by calcium availability. No 2016 EPA standard exceedances outside Section 2, but Well 515A (within Section 2 boundary) concentration slightly increasing.
Chloride	Maybe	Yes	Not regulated by NRC. Small gradual increasing chloride concentration trend and one small 2016 exceedance of EPA standard at Well EPA 7 in Section 1. Exceedances typical at Wells 515A and 614 within Section 2 boundary.
TDS	Yes?	Yes	Not regulated by NRC. Current EPA standard higher than previous standard. Governed by sulfate concentration. No 2016 exceedances outside Section 2, but Well 515A (within Section 2 boundary) concentration has shown increasing trend
Metals	Yes?	Yes	Attenuated by neutralization and adsorption. No 2016 exceedances of EPA/NRC nickel standards or EPA cobalt standards at wells within Section 1. Exceedances of reported at Section 2 Wells 515A (one exceedance of EPA nickel standard, multiple exceedances of NRC nickel standard) and 604 (nickel [one exceedance of EPA nickel standard, multiple exceedances of NRC nickel standard], cobalt [EPA standard], and beryllium [exceedance of EPA standard but not NRC standard]).
Radionuclides	Yes	Yes	Attenuated by neutralization and adsorption. No 2016 exceedances.
TTHMs	Yes?	Yes	Attenuated by degradation, dilution, dispersion. No exceedances outside Section 2. Exceedances of NRC/EPA standard occur at Wells 515A (three 2016 exceedances) and 614 (one 2016 exceedance) within Section 2 boundary.

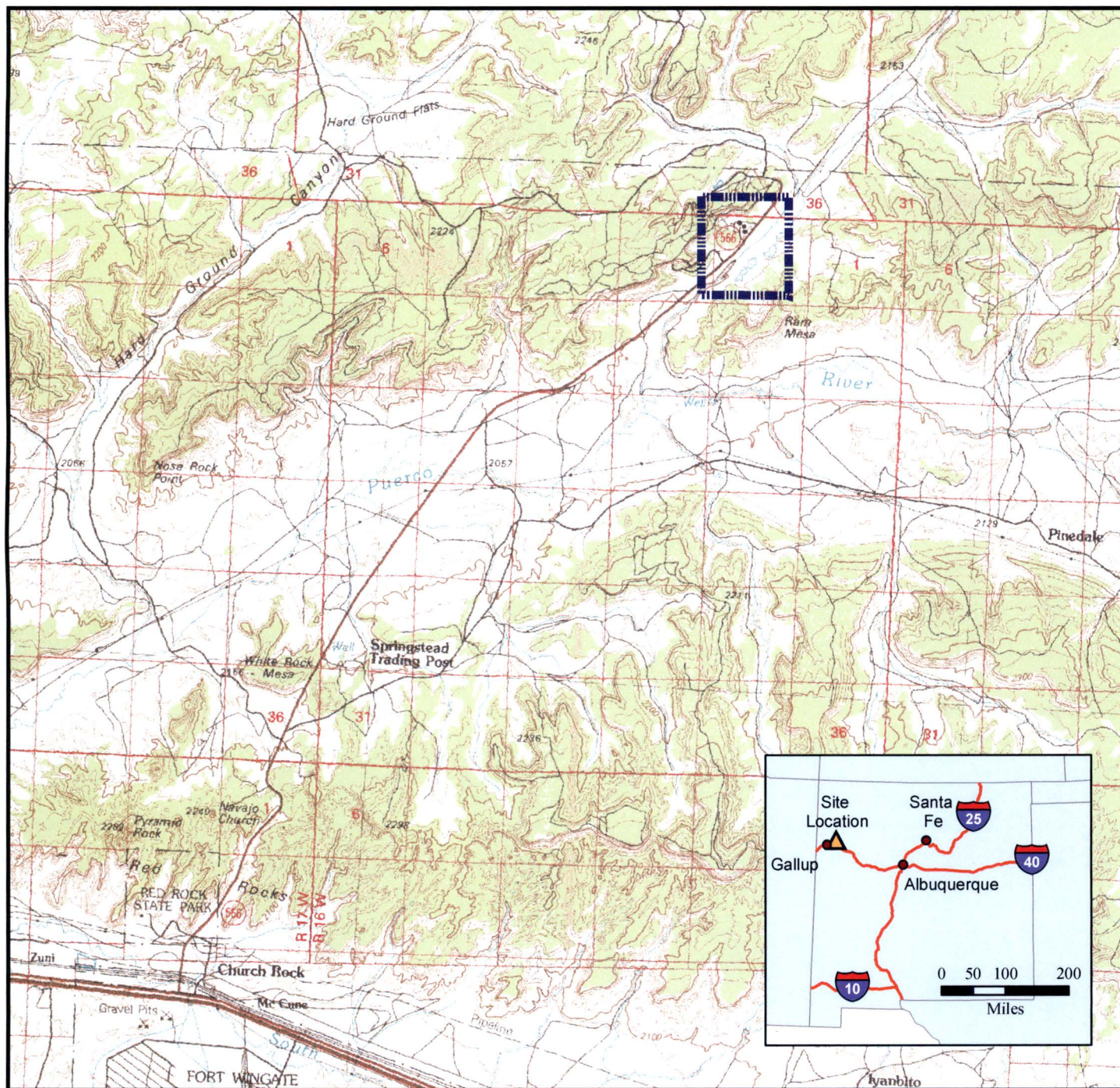
Notes:

\* based on NRC and EPA standards updated 2015

# Figures

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#### LEGEND

Approximate Site Location

#### NEW MEXICO INSET LEGEND

- Major City
- Church Rock Site Location
- Interstate Highway
- State Boundary

#### Notes:

1. Topographic basemap taken from the United States Geologic Survey 30x60 minute, 1:100,000 scale, Gallup, New Mexico Topographic Map, 1981.
2. Data for New Mexico Inset map taken from ESRI Data & Maps 2002 CD-ROM set.



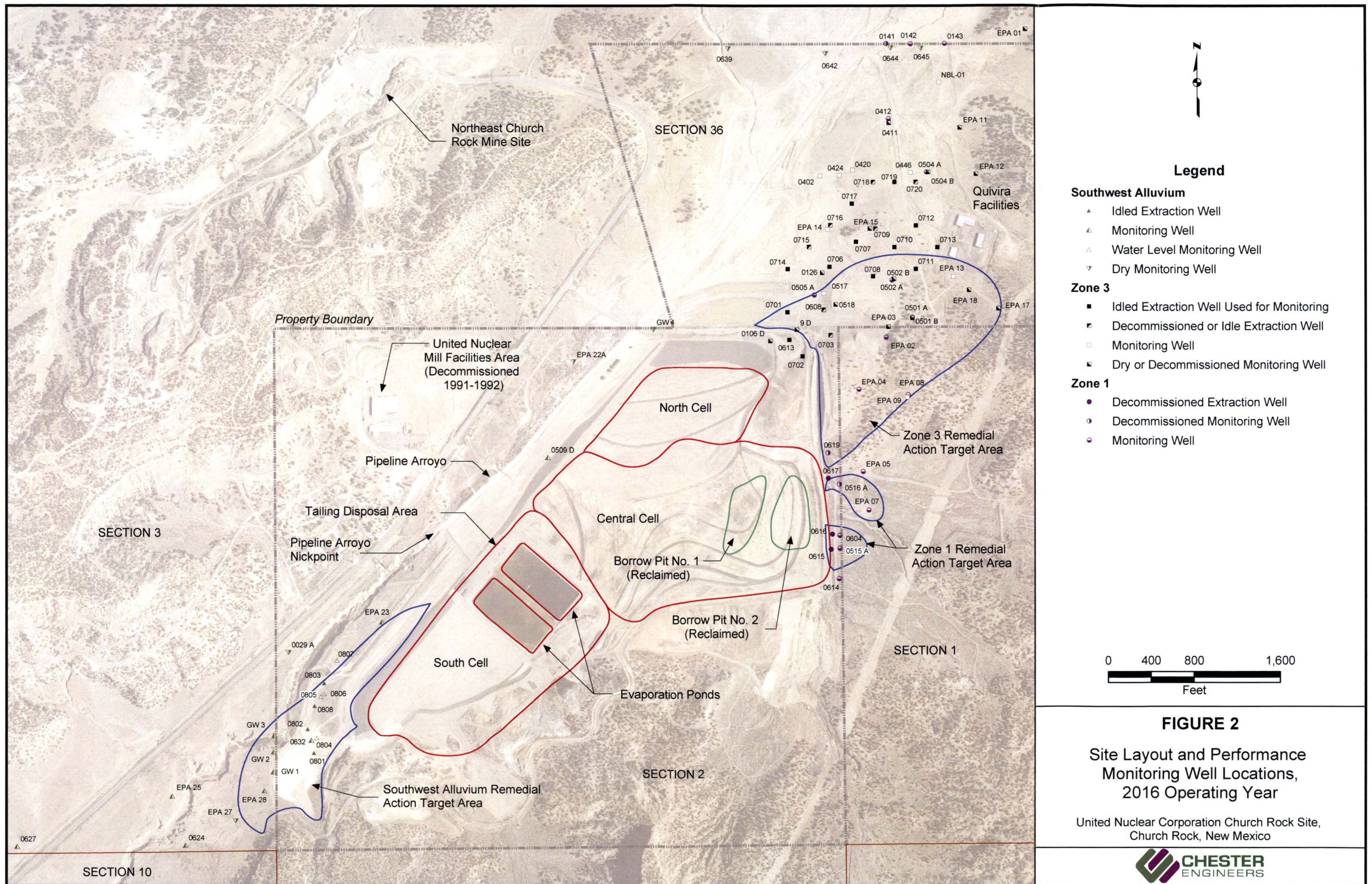
#### FIGURE 1

#### Site Location Map

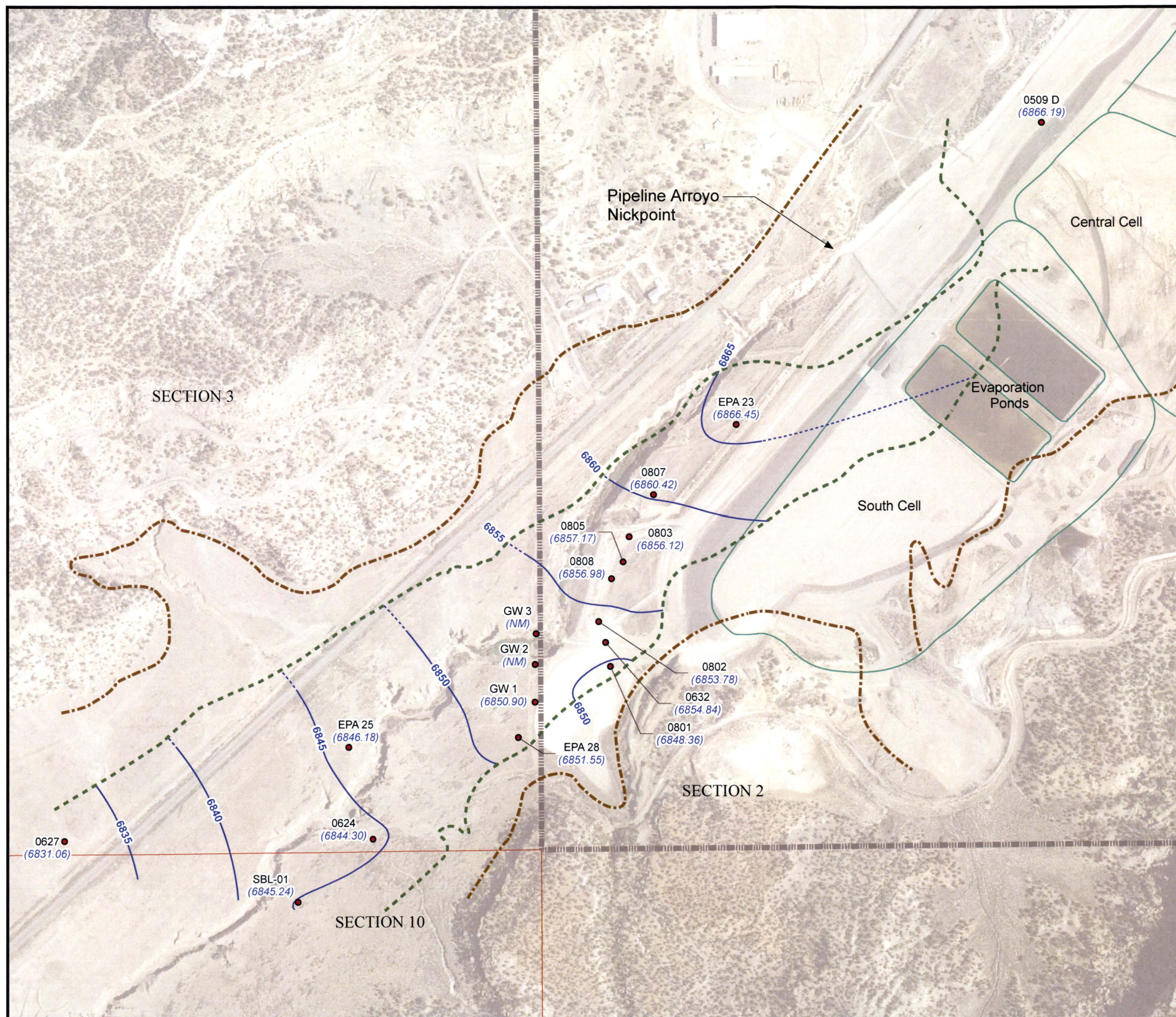
United Nuclear Corporation Church Rock Site, Church Rock, New Mexico









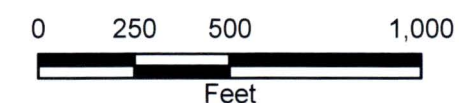


### Legend

- Southwest Alluvium Monitoring Well
- Groundwater Elevation Contour
- - - Inferred Groundwater Elevation Contour
- - - Approximate Extent of Alluvium
- - - Approximate Extent of Saturated Alluvium
- ▬ Property Boundary
- Section Boundary
- Cell Boundary

### Notes:

1. Groundwater elevation values are displayed in feet above mean sea level.
2. Well names are displayed with black text.
3. Groundwater elevations are shown with blue text and enclosed in parentheses.
4. Aerial photo taken on August 1, 1996.
5. NM – Not Measured



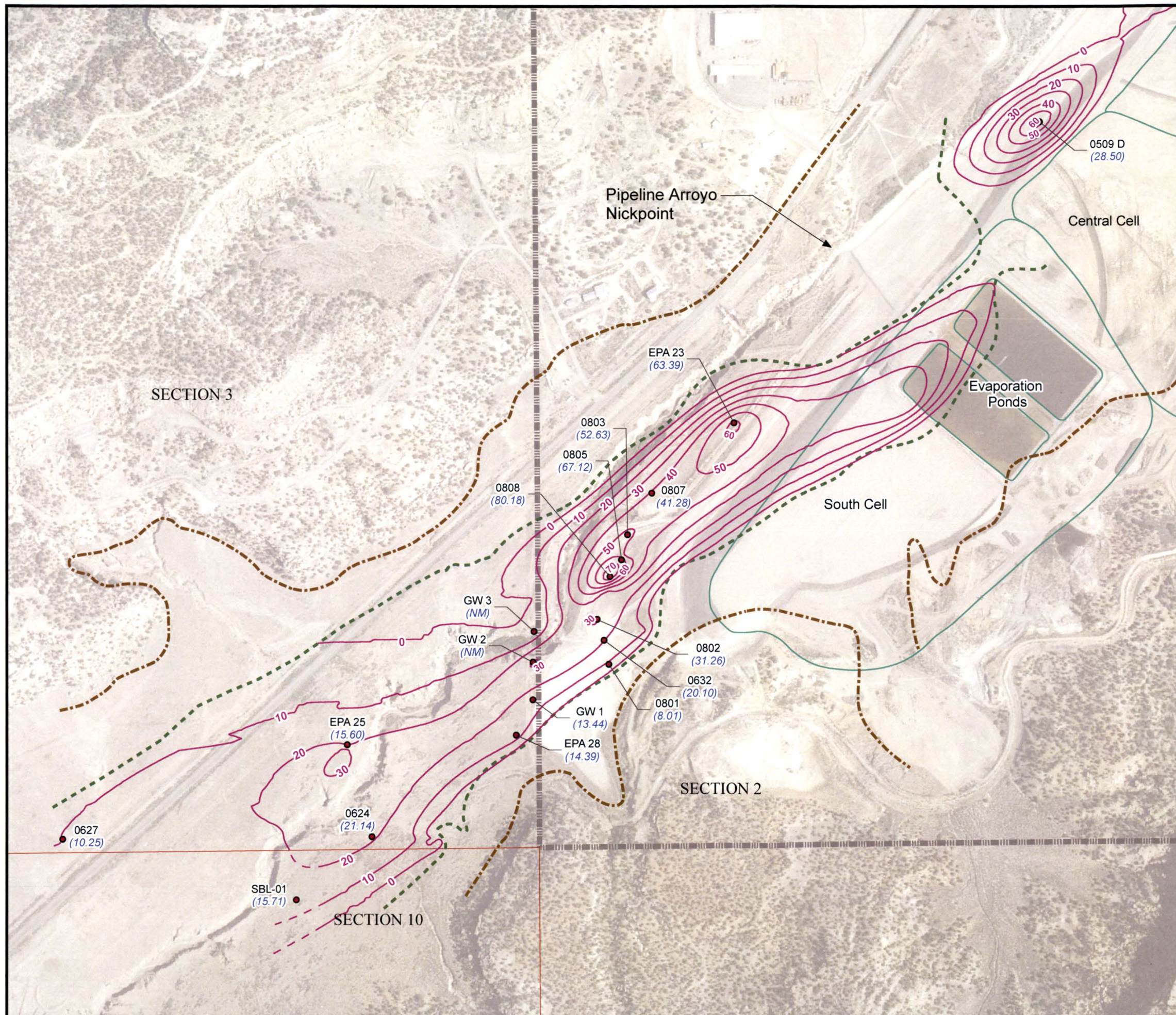
### FIGURE 3A

#### Southwest Alluvium Potentiometric Surface Map, October 2016

United Nuclear Corporation Church Rock Site,  
Church Rock, New Mexico





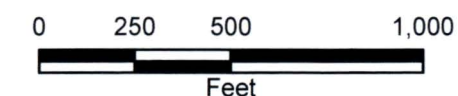


### Legend

- Southwest Alluvium Monitoring Well
- Approximate Extent of Alluvium
- - - Approximate Extent of Saturated Alluvium
- ||||| Property Boundary
- Section Boundary
- Cell Boundary
- Saturated Thickness Contours (feet)
- - - Inferred Saturated Thickness Contours (feet)

### Notes:

1. Well names are displayed with black text.
2. Saturated thicknesses (feet) are shown with blue text and enclosed in parentheses.
3. Aerial photo taken on August 1, 1996.
4. The posted value of saturated thickness at well 0509 D derives from reference to the screen bottom. The alluvium extends as much as 38 feet below this depth in the vicinity of this well.
5. Saturated thickness at SBL-01 estimated due to incomplete well construction information.
6. NM – Not Measured



### FIGURE 3B

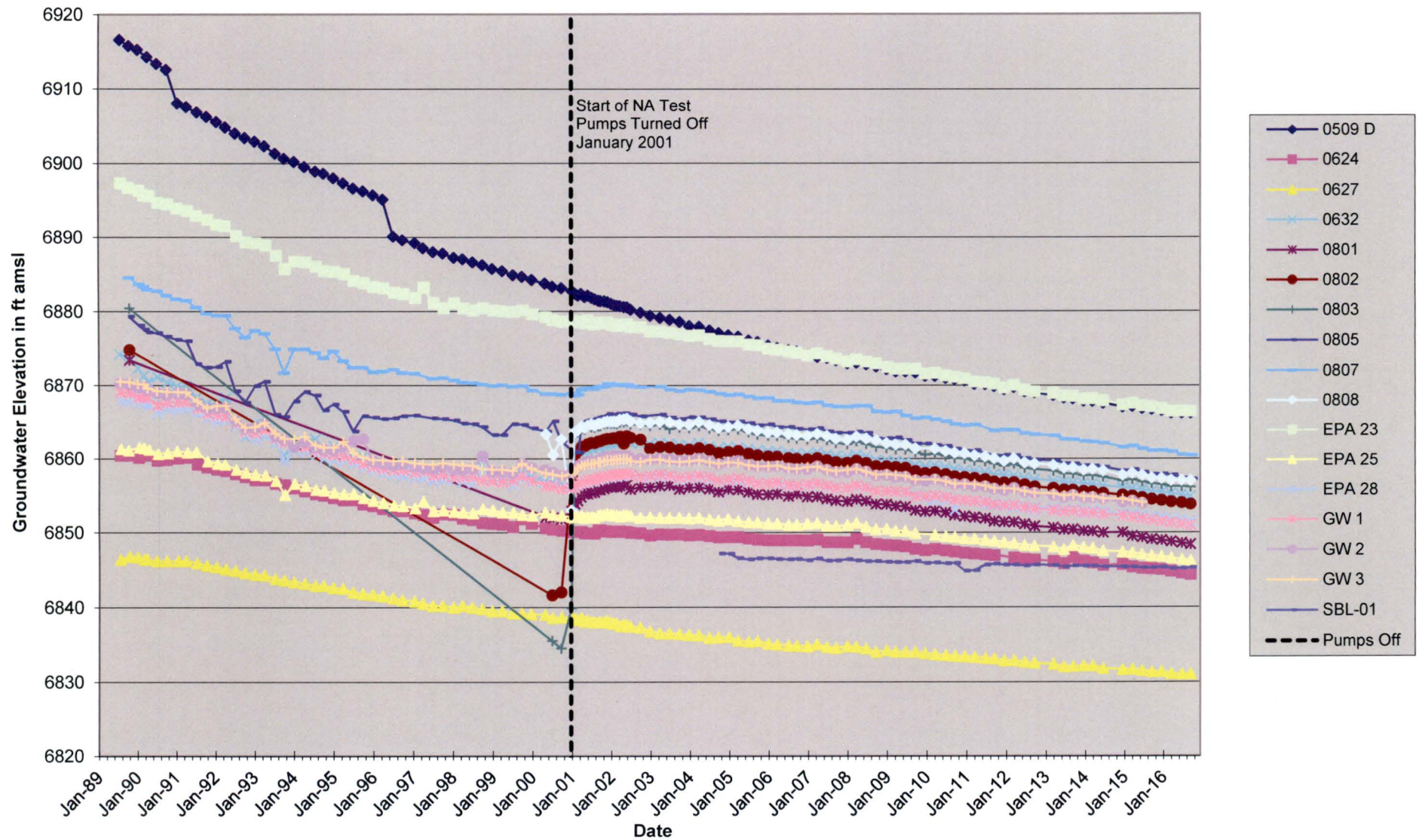
#### Southwest Alluvium Saturated Thickness Map, October 2016

United Nuclear Corporation Church Rock Site,  
Church Rock, New Mexico

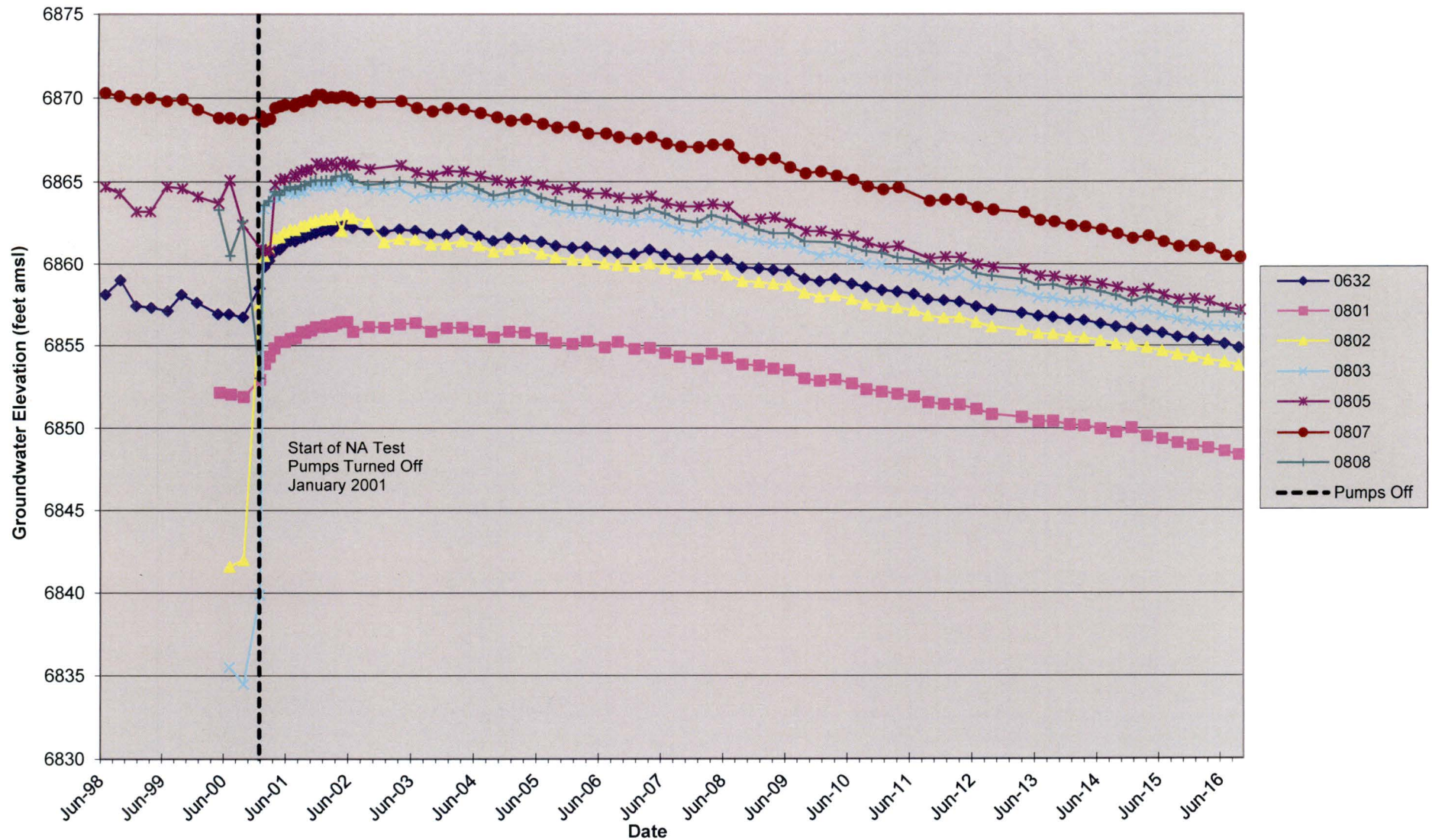




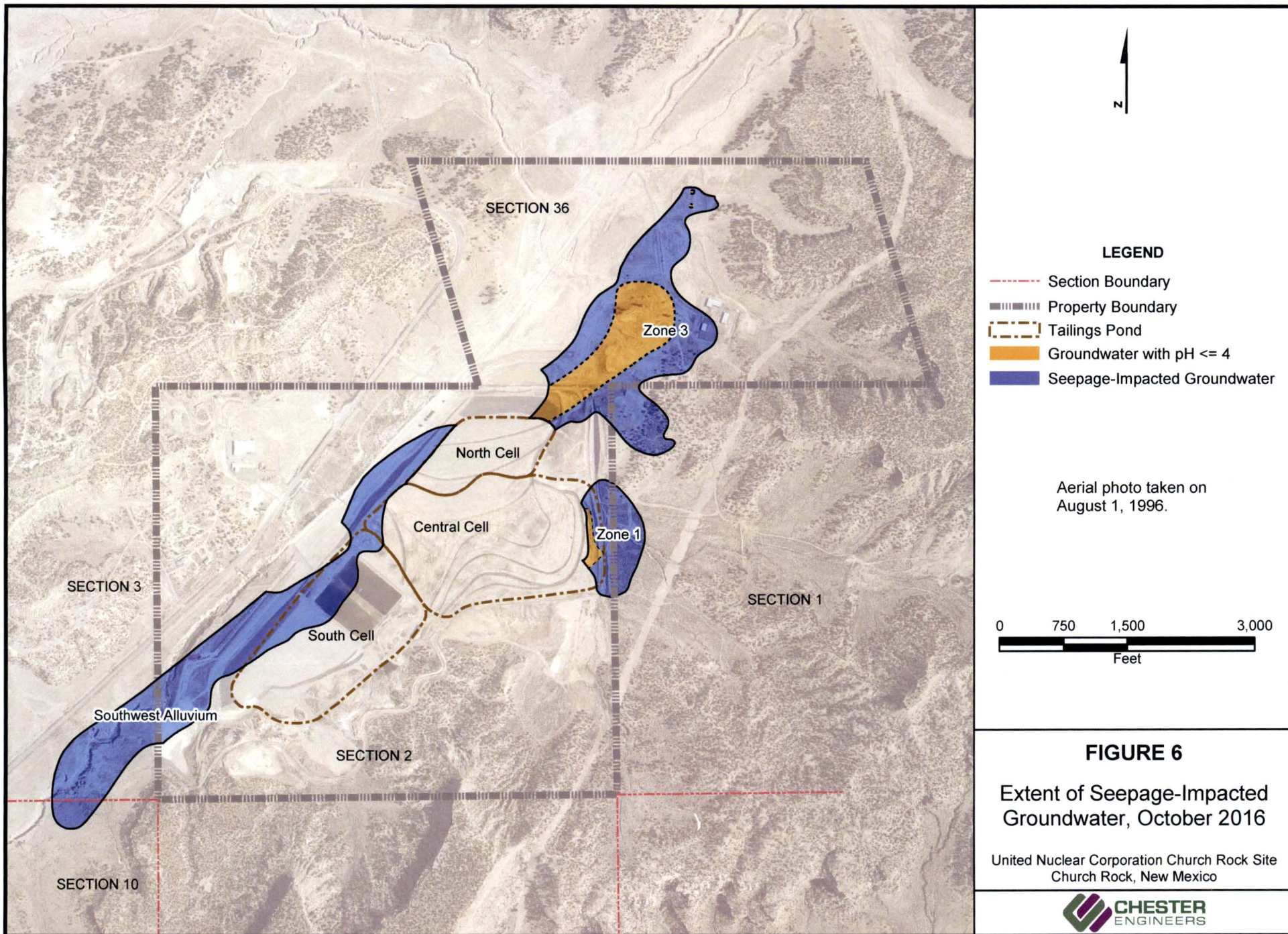
**FIGURE 4**  
 Southwest Alluvium Water Levels Over Time  
 United Nuclear Corporation Church Rock Site, Church Rock New Mexico



**FIGURE 5**  
 Southwest Alluvium Pumping Well Water Levels Over Time  
 United Nuclear Corporation Church Rock Site, Church Rock New Mexico

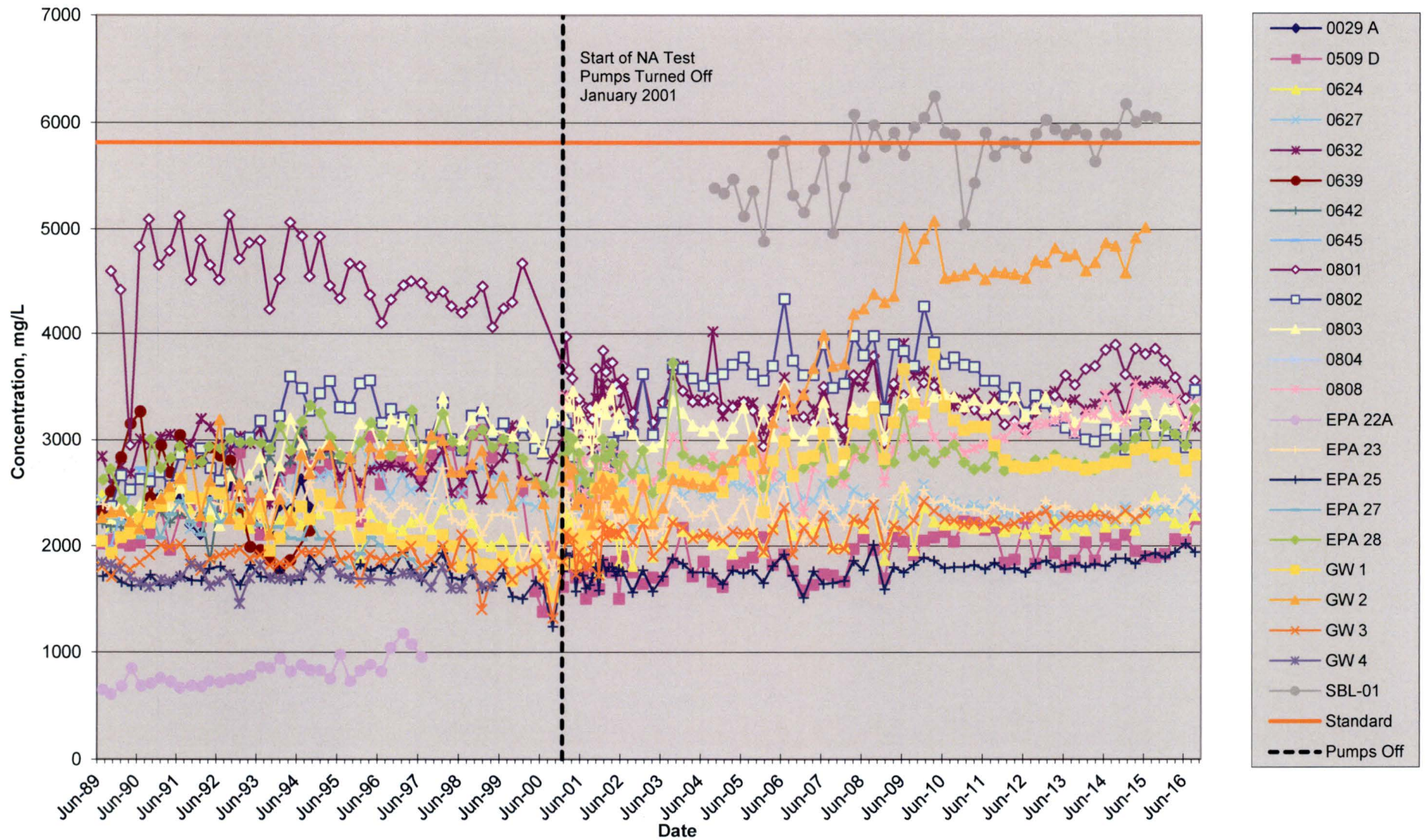




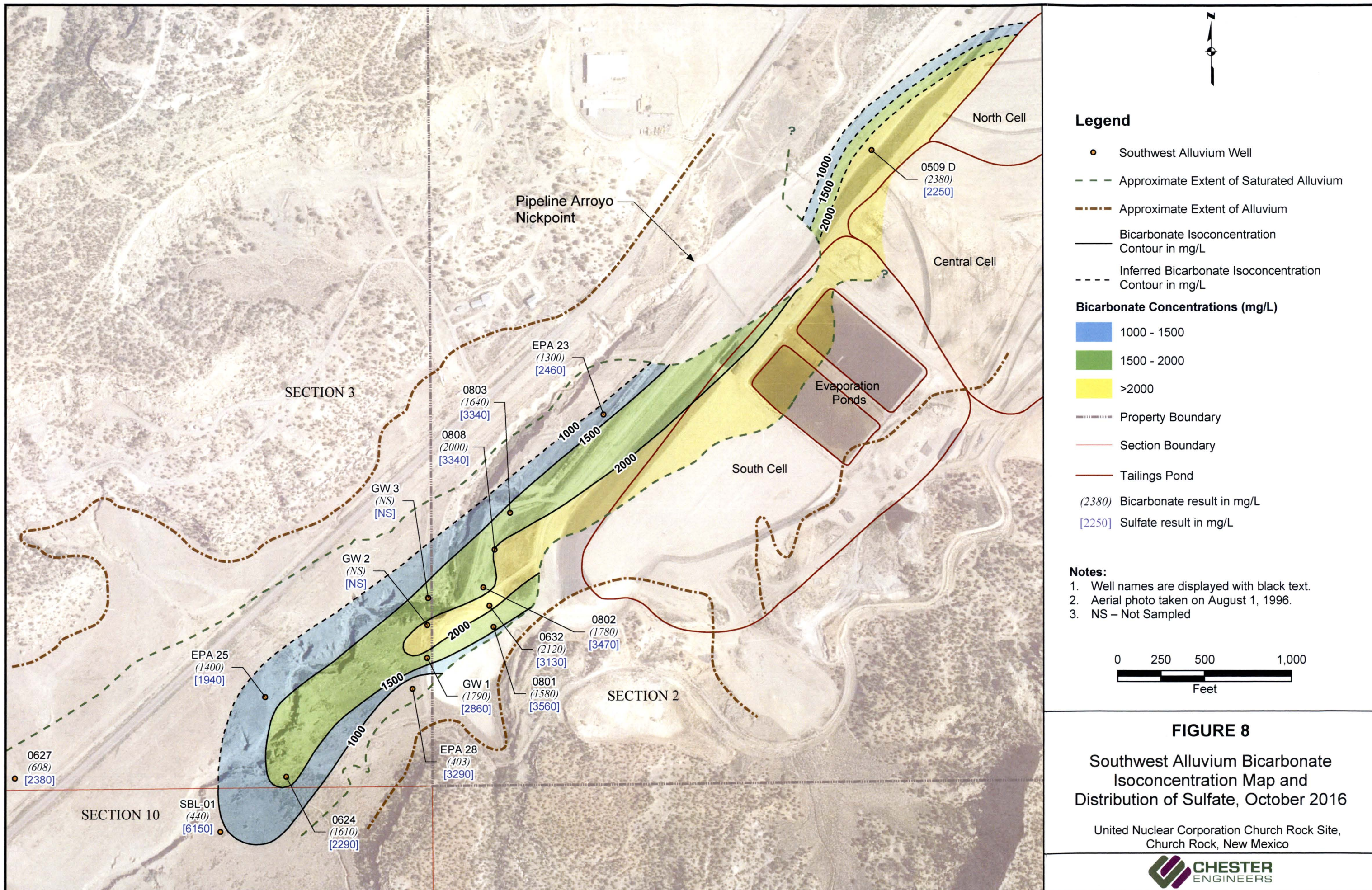




**FIGURE 7**  
 Southwest Alluvium Sulfate Concentrations Over Time  
 United Nuclear Corporation Church Rock Site, Church Rock, New Mexico

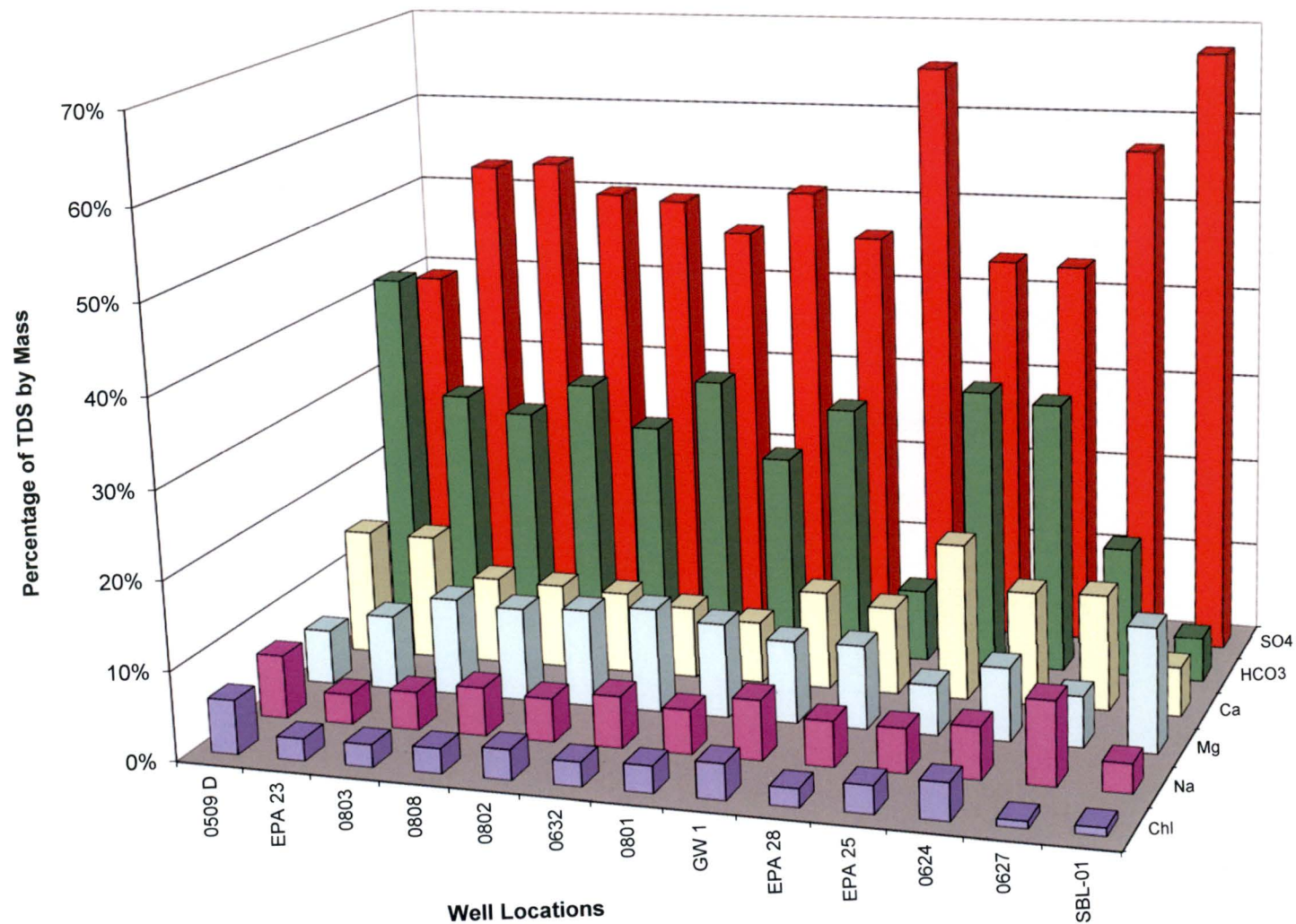






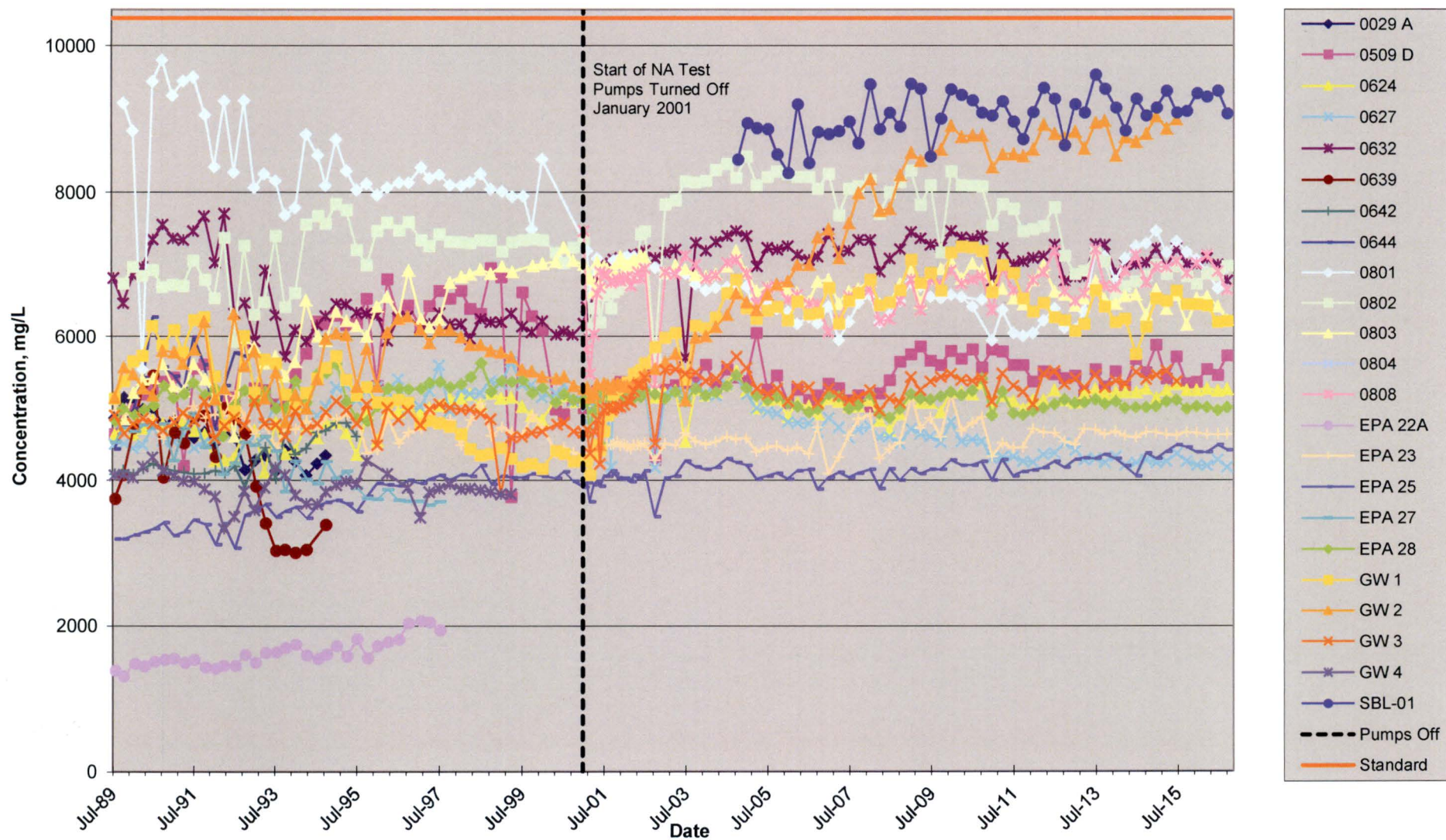


**FIGURE 9**  
 Primary Components of Total Dissolved Solids in the Southwest Alluvium, October 2016  
 United Nuclear Corporation Church Rock Site, Church Rock, New Mexico



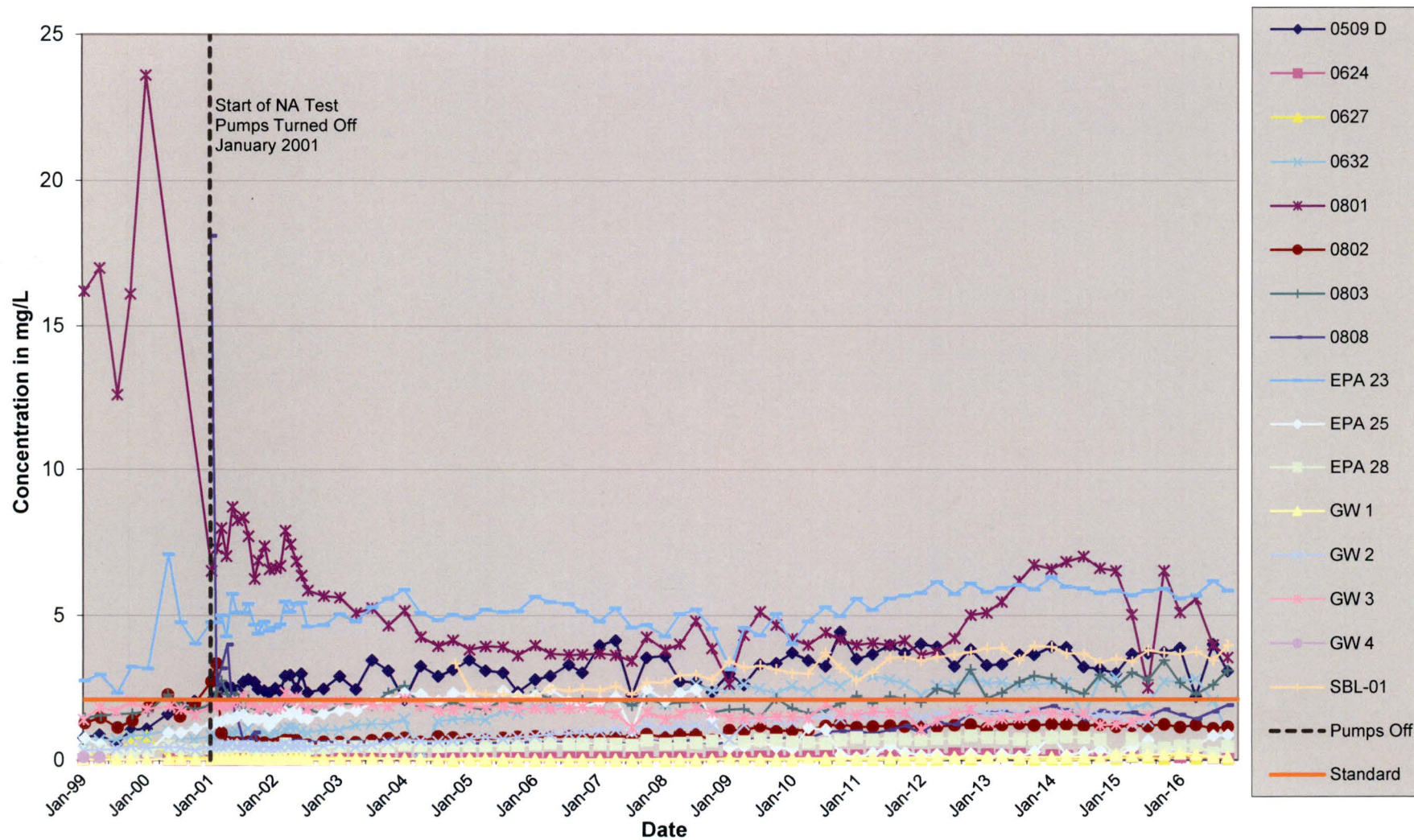


**FIGURE 10**  
 Southwest Alluvium Total Dissolved Solids Concentrations Over Time  
 United Nuclear Corporation Church Rock Site, Church Rock, New Mexico



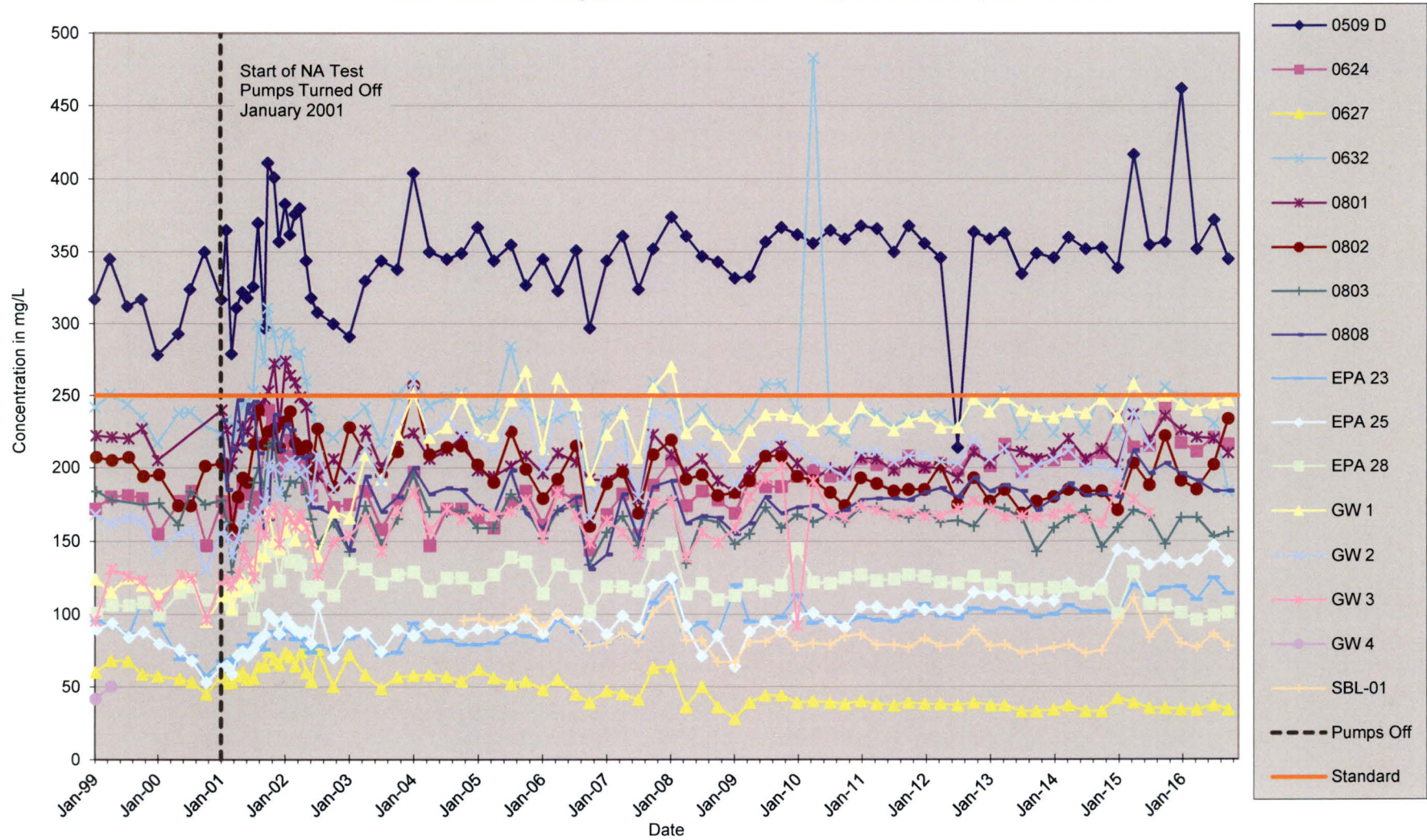


**FIGURE 11**  
 Southwest Alluvium Manganese Concentrations From 1999 Through October 2016  
 United Nuclear Corporation Church Rock Site, Church Rock, New Mexico



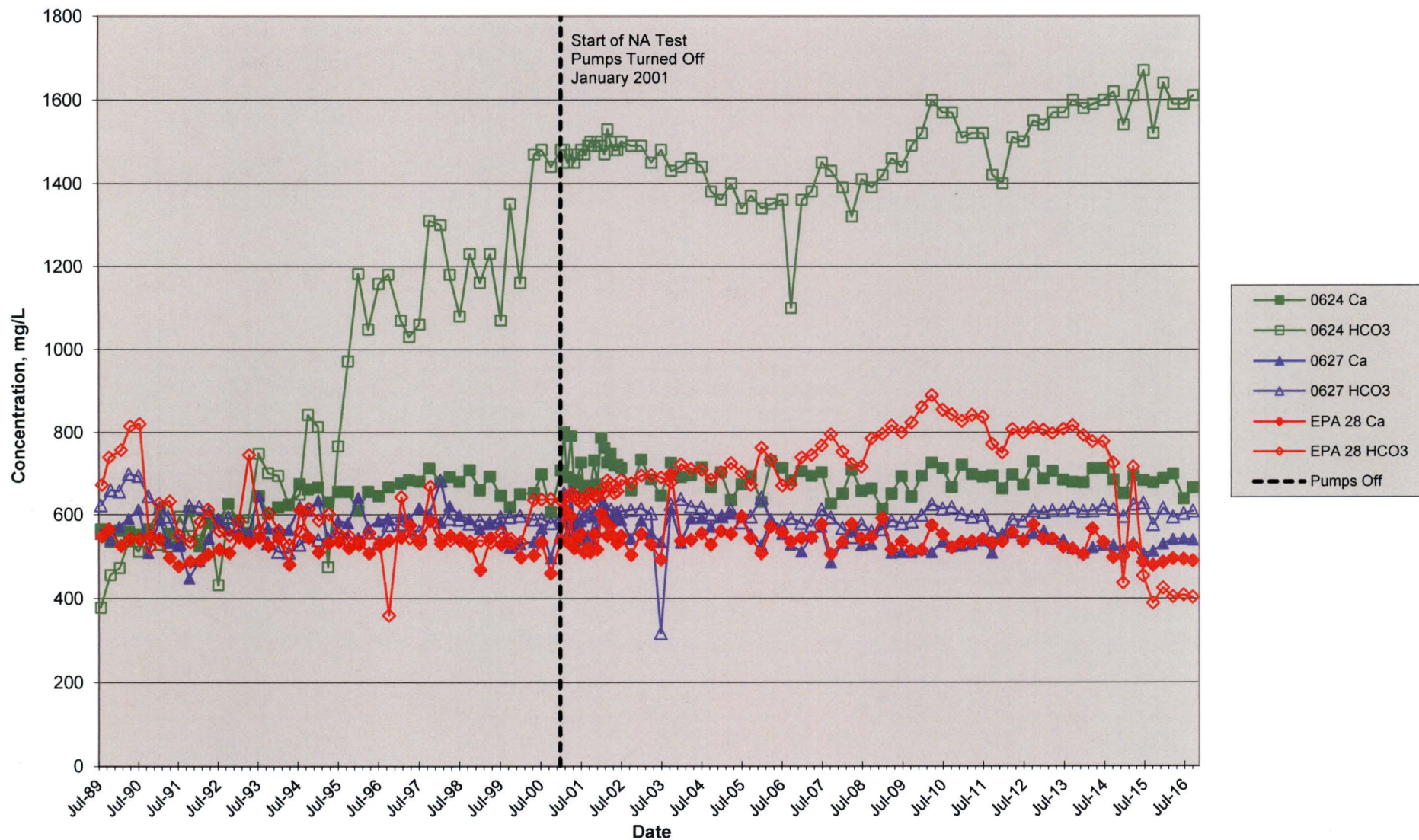


**FIGURE 12**  
**Southwest Alluvium Chloride Concentrations From 1999 Through October 2016**  
**United Nuclear Corporation Church Rock Site, Church Rock, New Mexico**



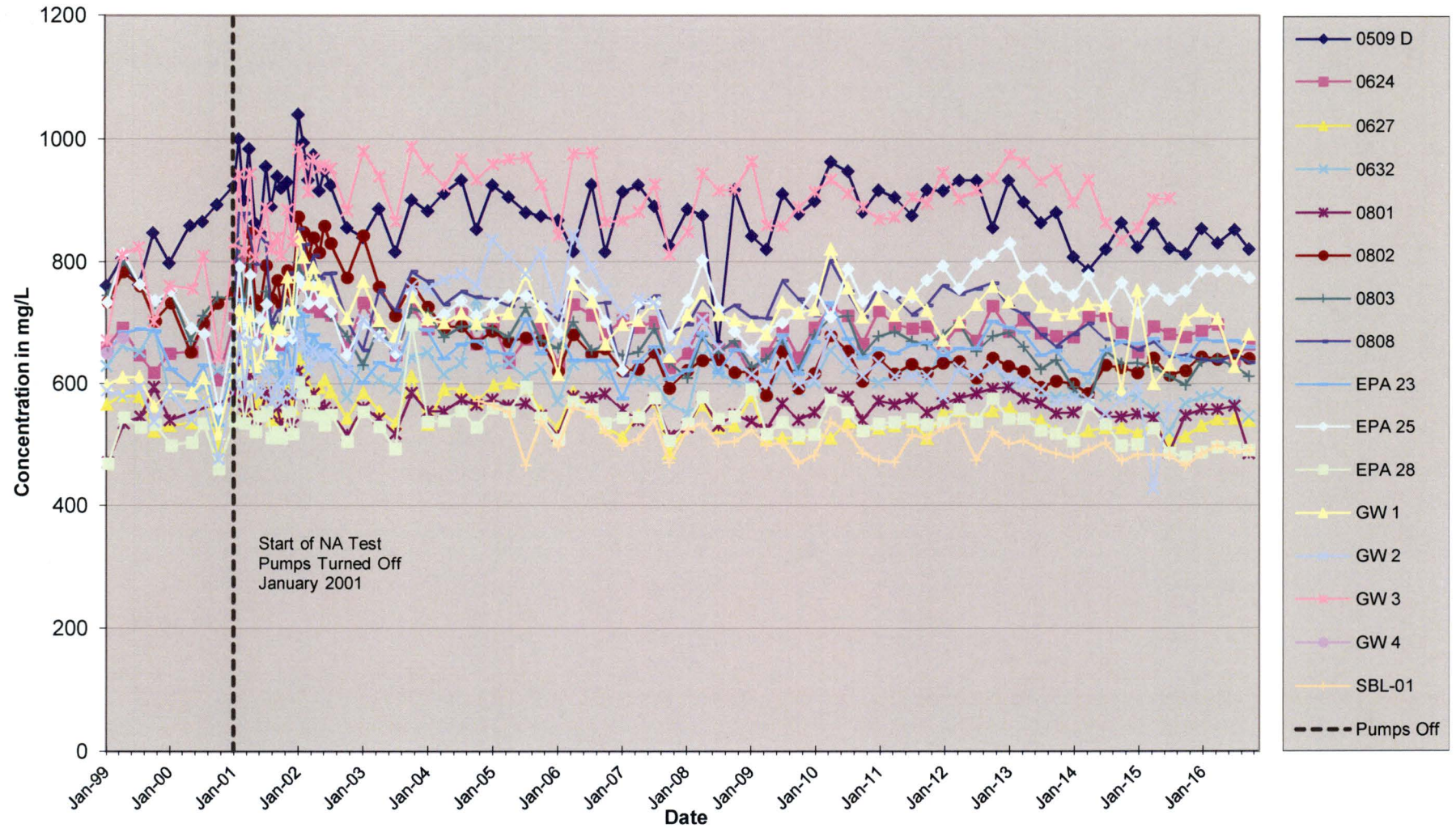


**FIGURE 13**  
 Calcium and Bicarbonate Concentrations in Selected Background and Seepage-Impacted Wells  
 United Nuclear Corporation Church Rock Site, Church Rock, New Mexico



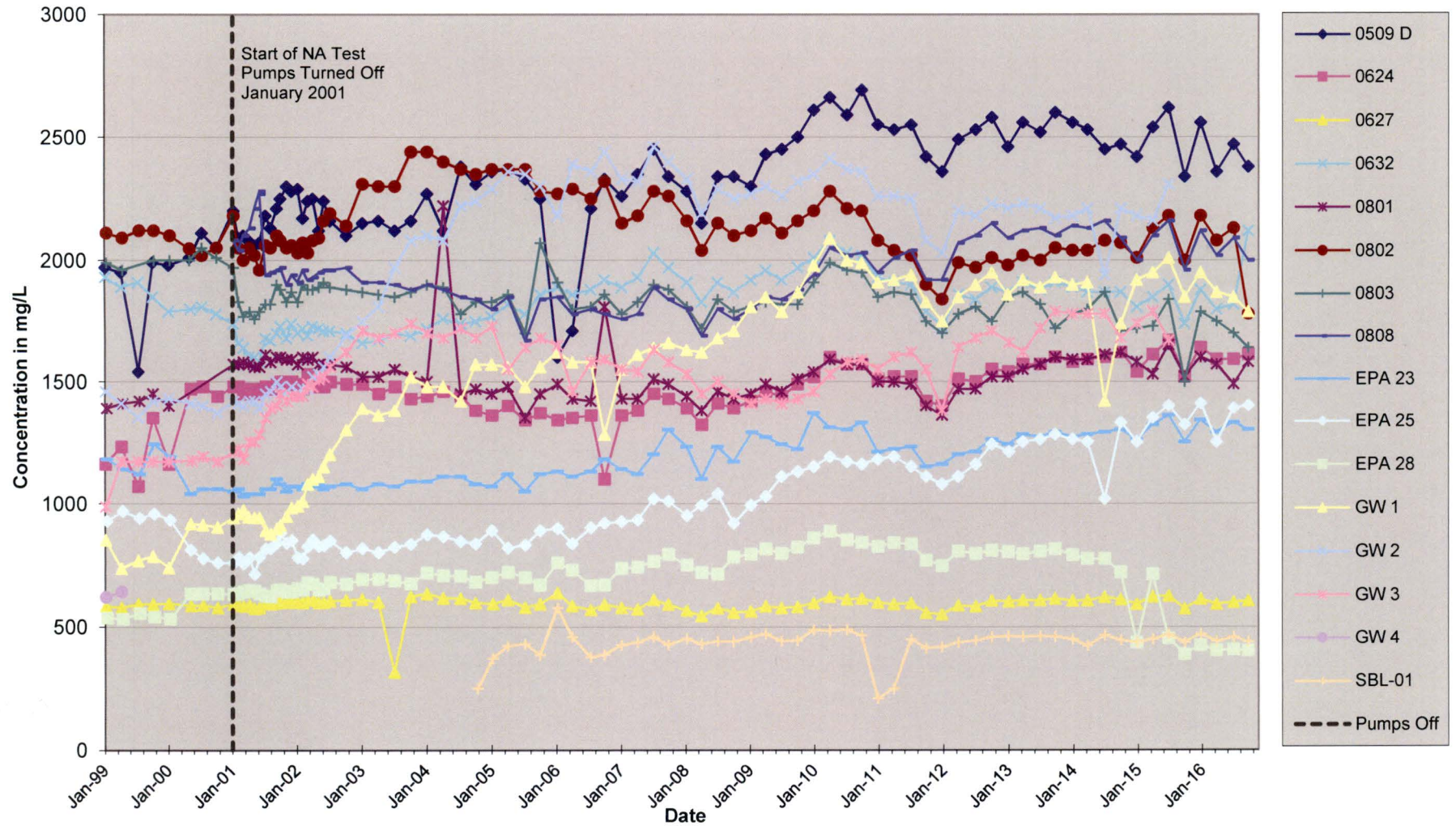


**FIGURE 14**  
 Southwest Alluvium Calcium Concentrations From 1999 Through October 2016  
 United Nuclear Corporation Church Rock Site, Church Rock, New Mexico



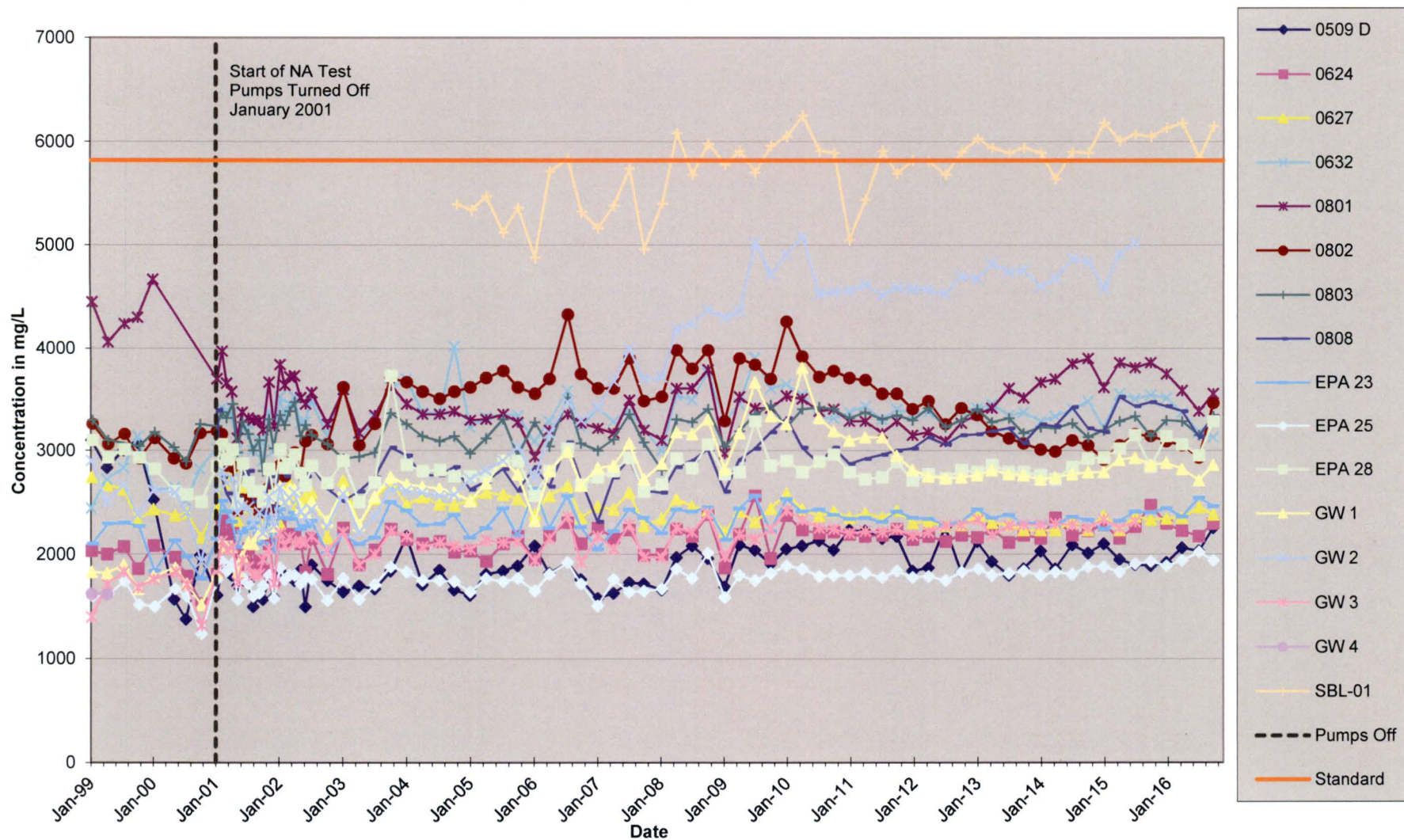


**FIGURE 15**  
 Southwest Alluvium Bicarbonate Concentrations From 1999 Through October 2016  
 United Nuclear Corporation Church Rock Site, Church Rock, New Mexico



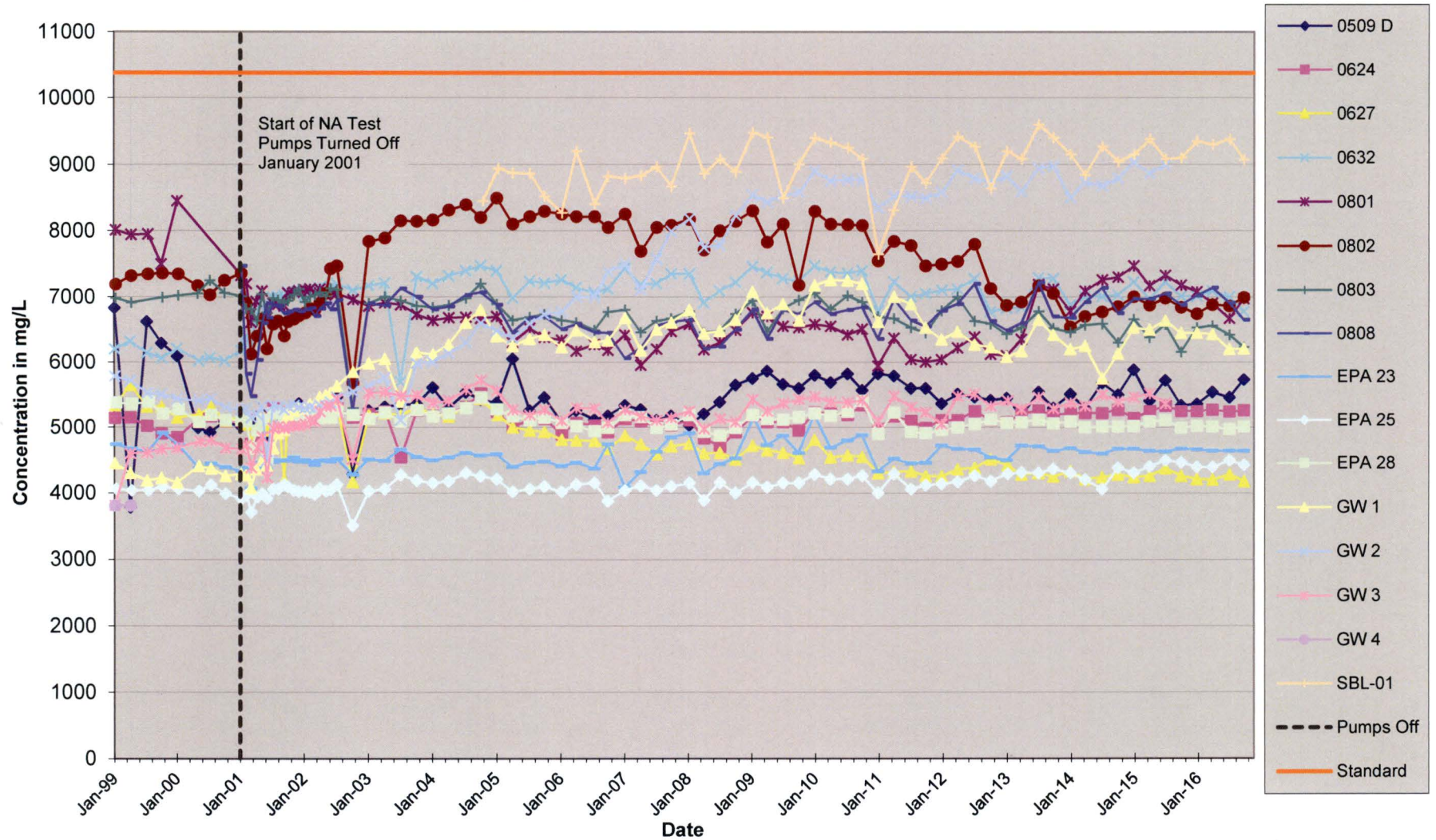


**FIGURE 16**  
 Southwest Alluvium Sulfate Concentrations From 1999 Through October 2016  
 United Nuclear Corporation Church Rock Site, Church Rock, New Mexico



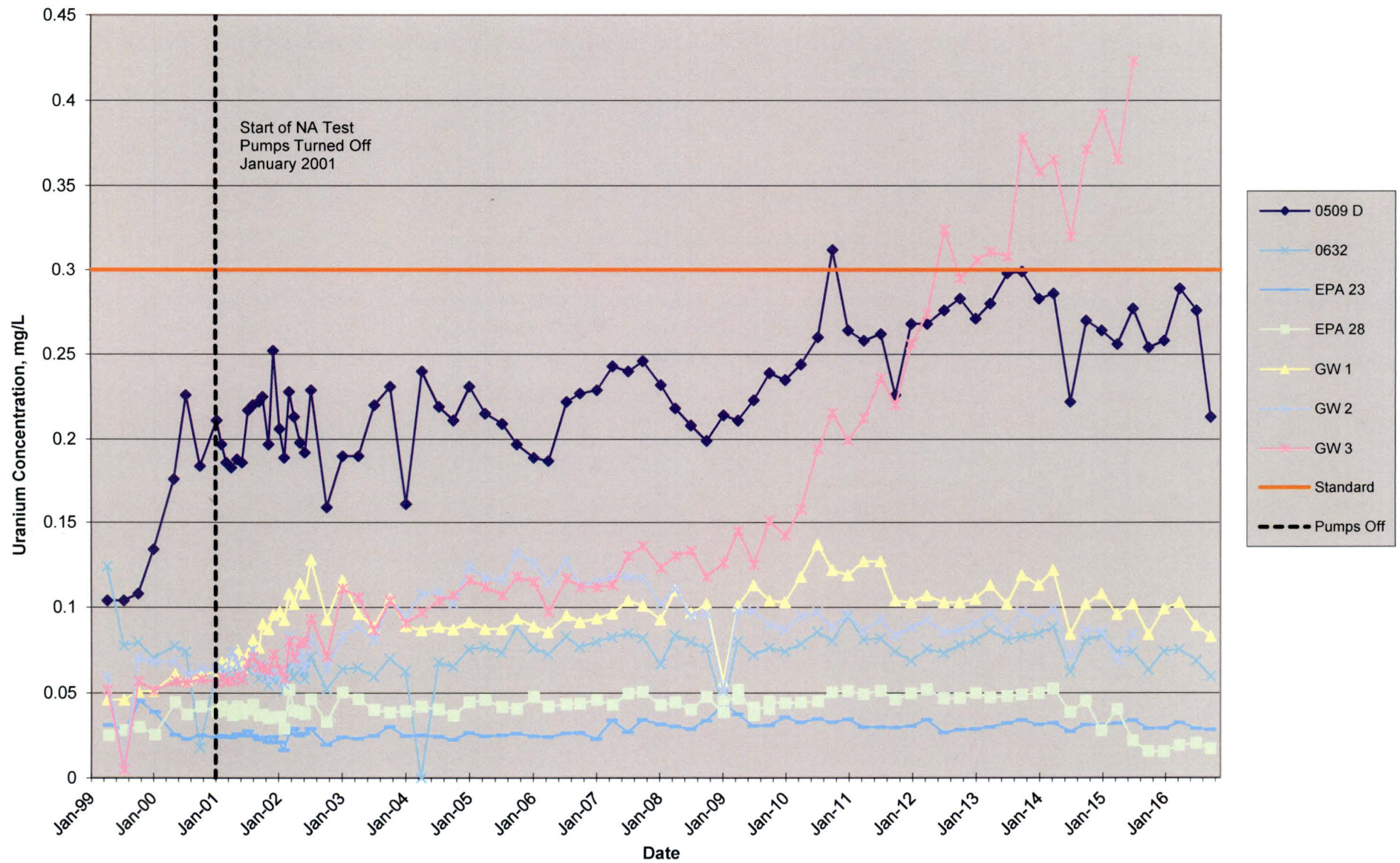


**FIGURE 17**  
 Southwest Alluvium Total Dissolved Solids Concentrations From 1999 Through October 2016  
 United Nuclear Corporation Church Rock Site, Church Rock, New Mexico



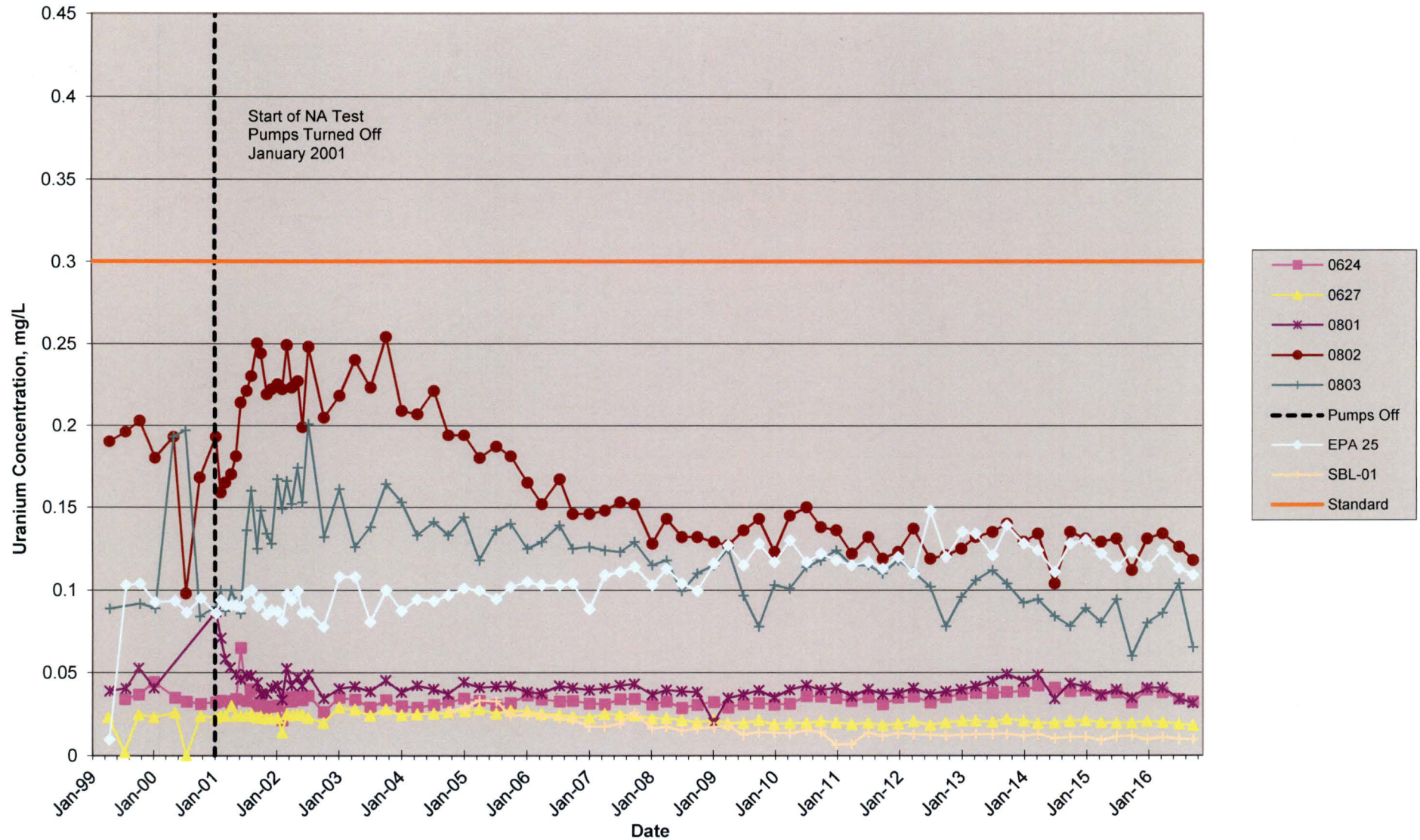


**FIGURE 18**  
 Uranium Concentrations in Selected Southwest Alluvium Wells  
 United Nuclear Corporation Church Rock Site, Church Rock, New Mexico

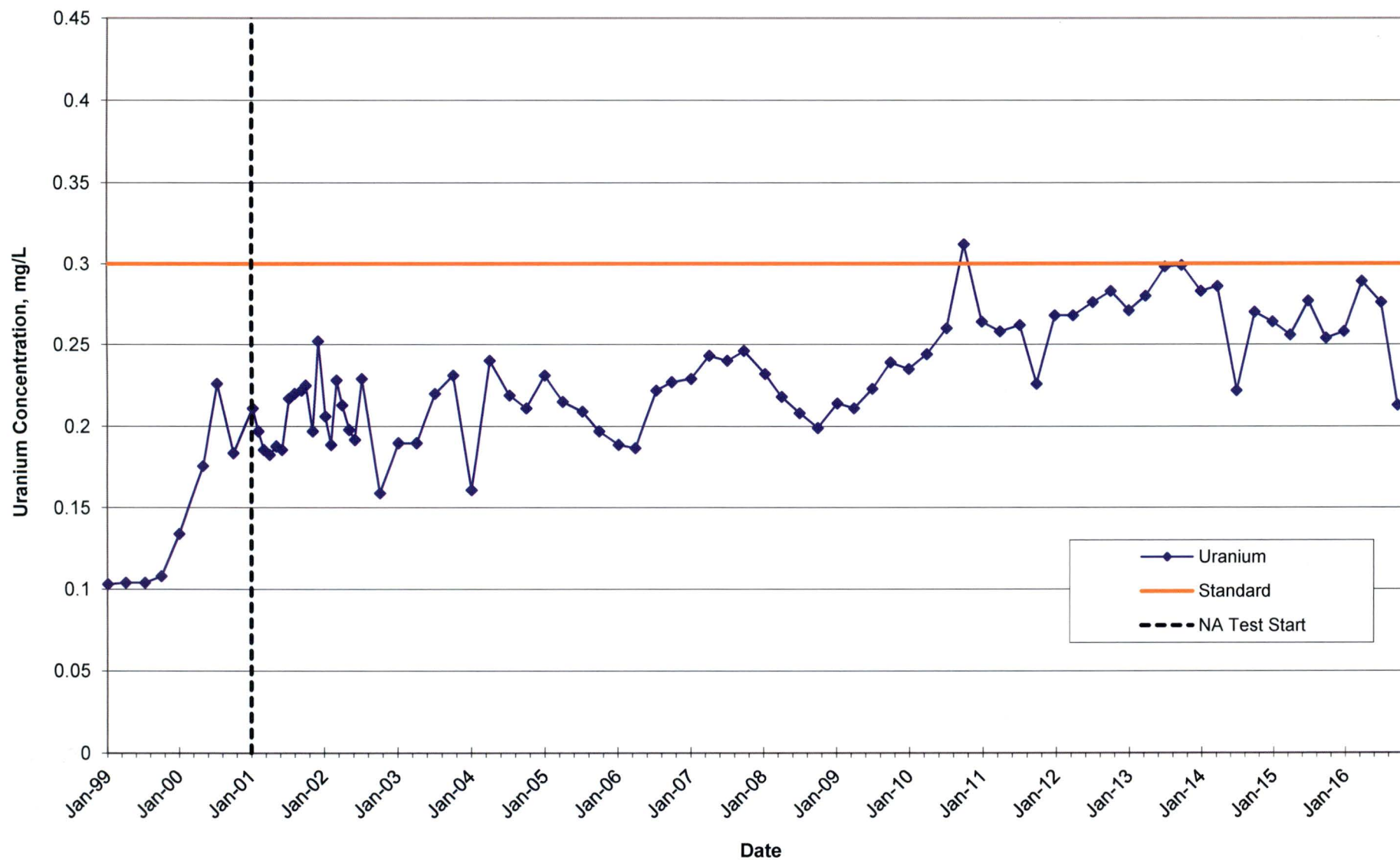




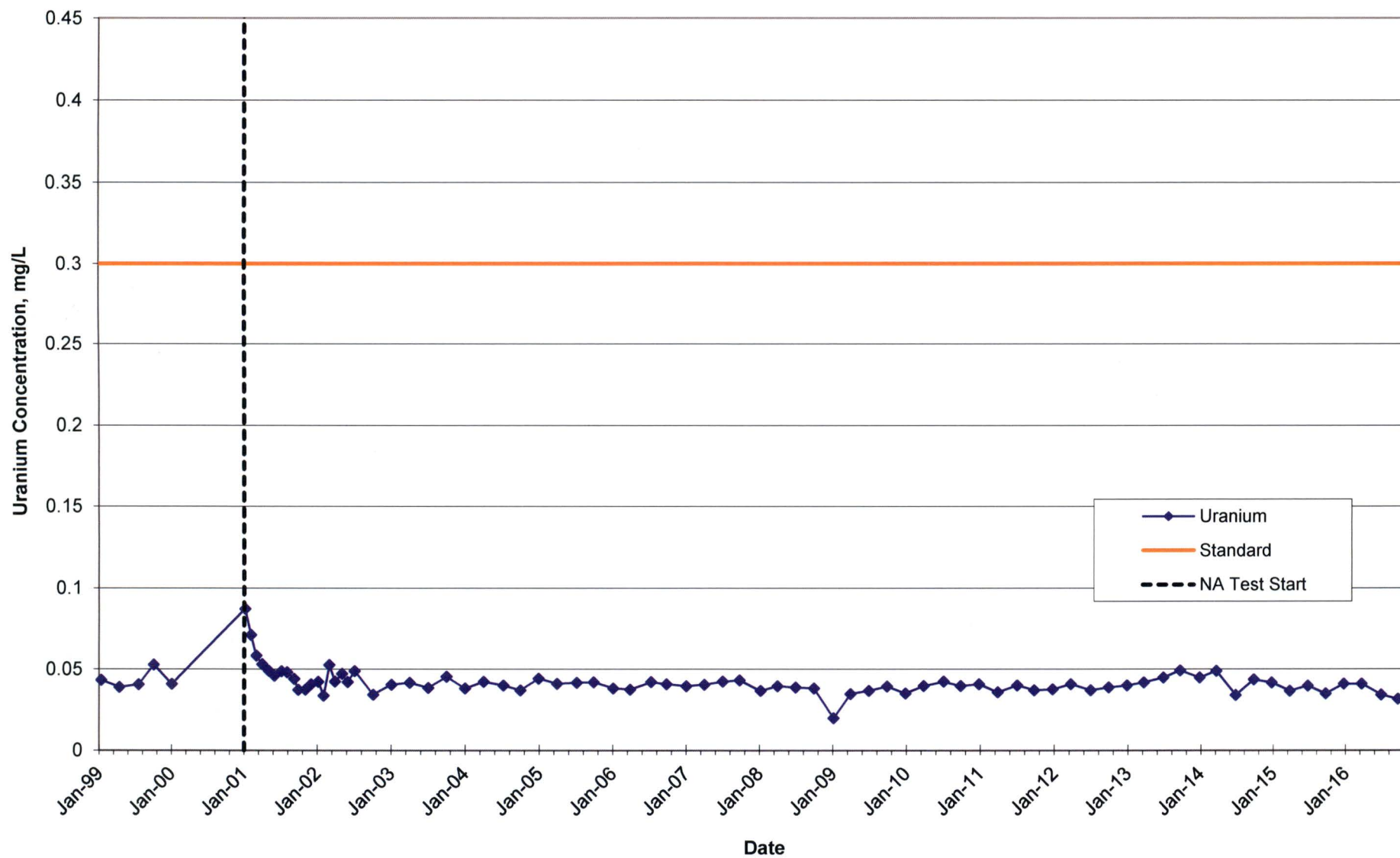
**FIGURE 19**  
 Uranium Concentrations in Selected Southwest Alluvium Wells  
 United Nuclear Corporation Church Rock Site, Church Rock, New Mexico



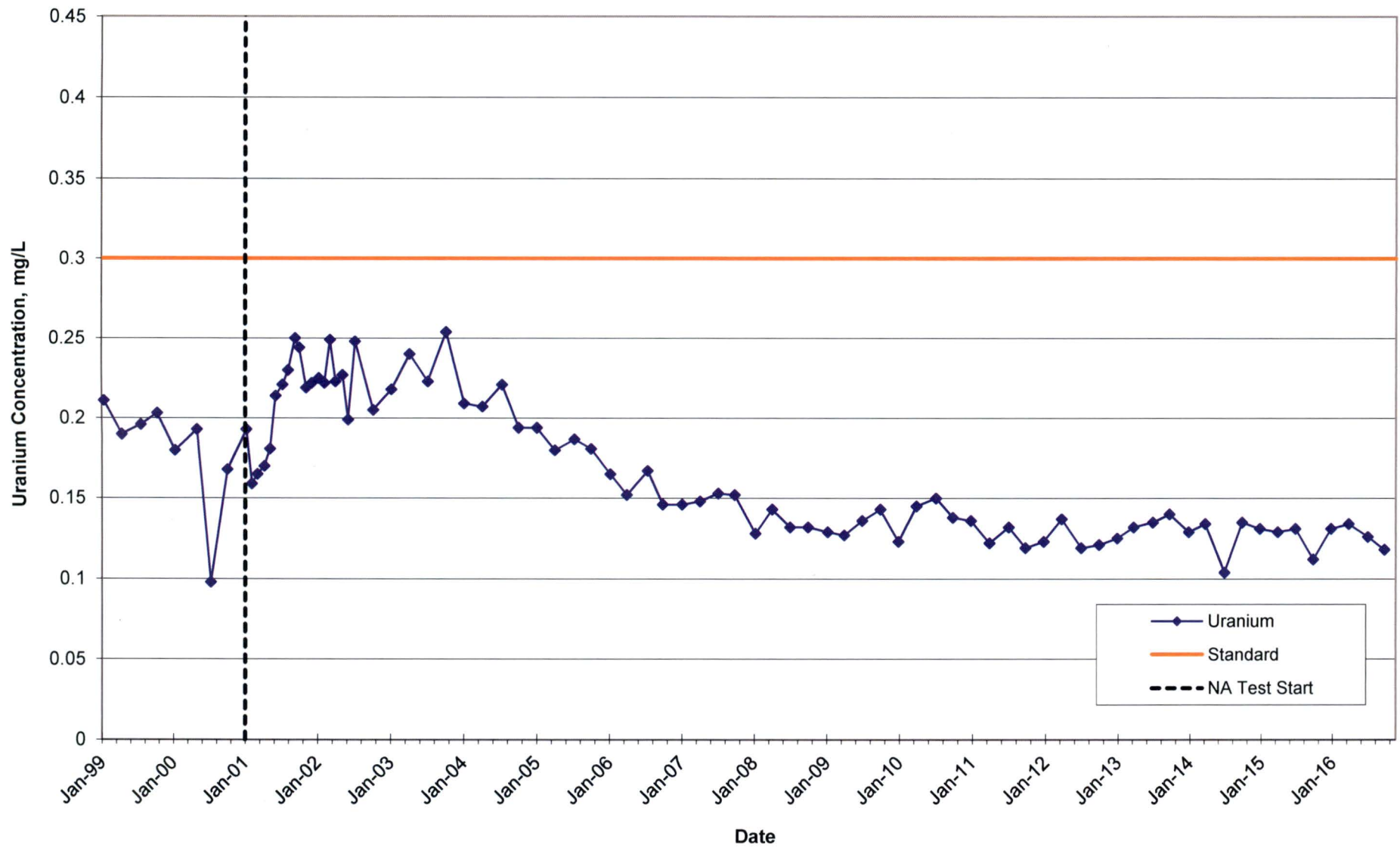
**FIGURE 20**  
Uranium Concentrations in Well 509 D  
United Nuclear Corporation Church Rock Site, Church Rock, New Mexico



**FIGURE 21**  
Uranium Concentrations in Well 801  
United Nuclear Corporation Church Rock Site, Church Rock, New Mexico

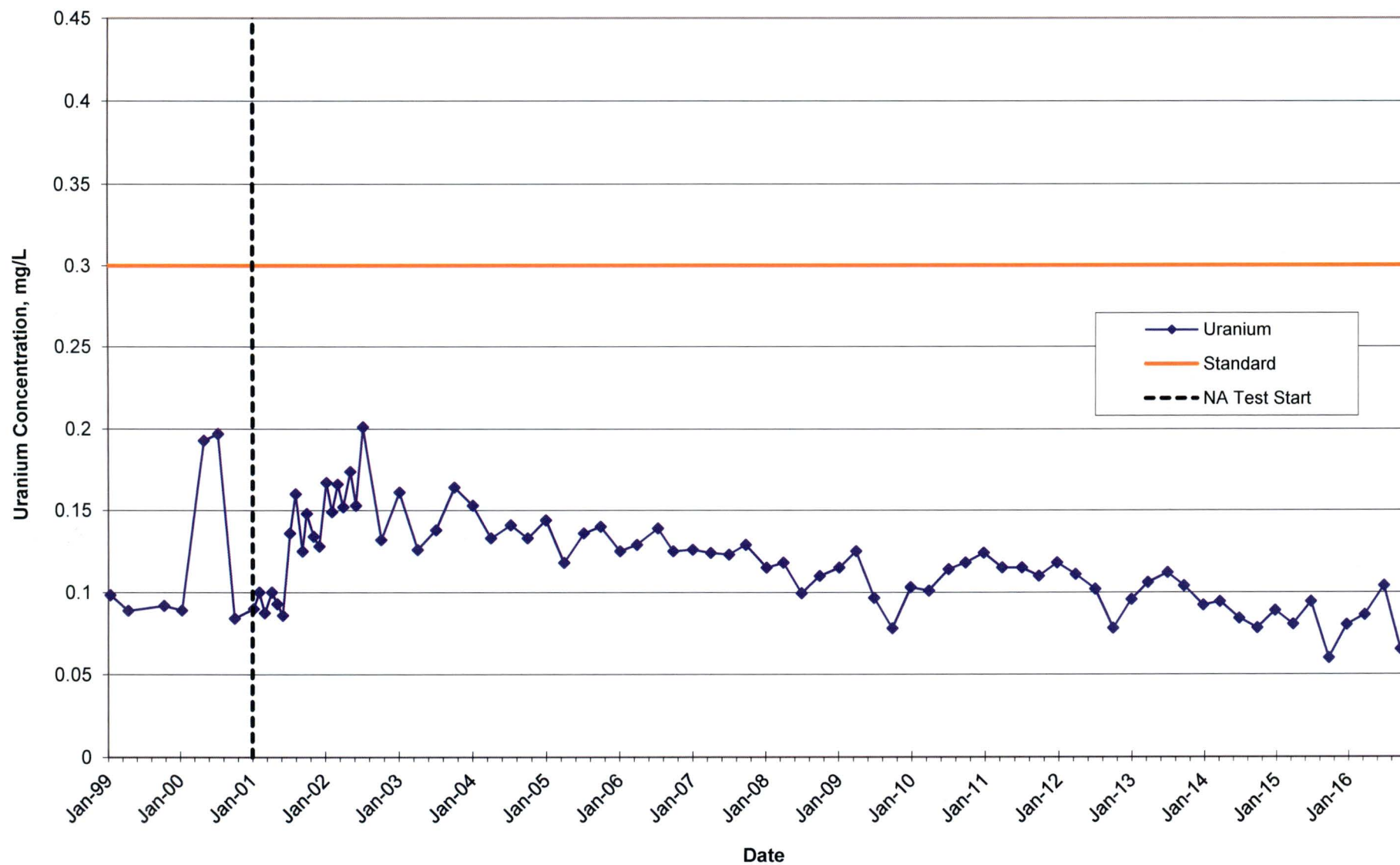


**FIGURE 22**  
Uranium Concentrations in Well 802  
United Nuclear Corporation Church Rock Site, Church Rock, New Mexico

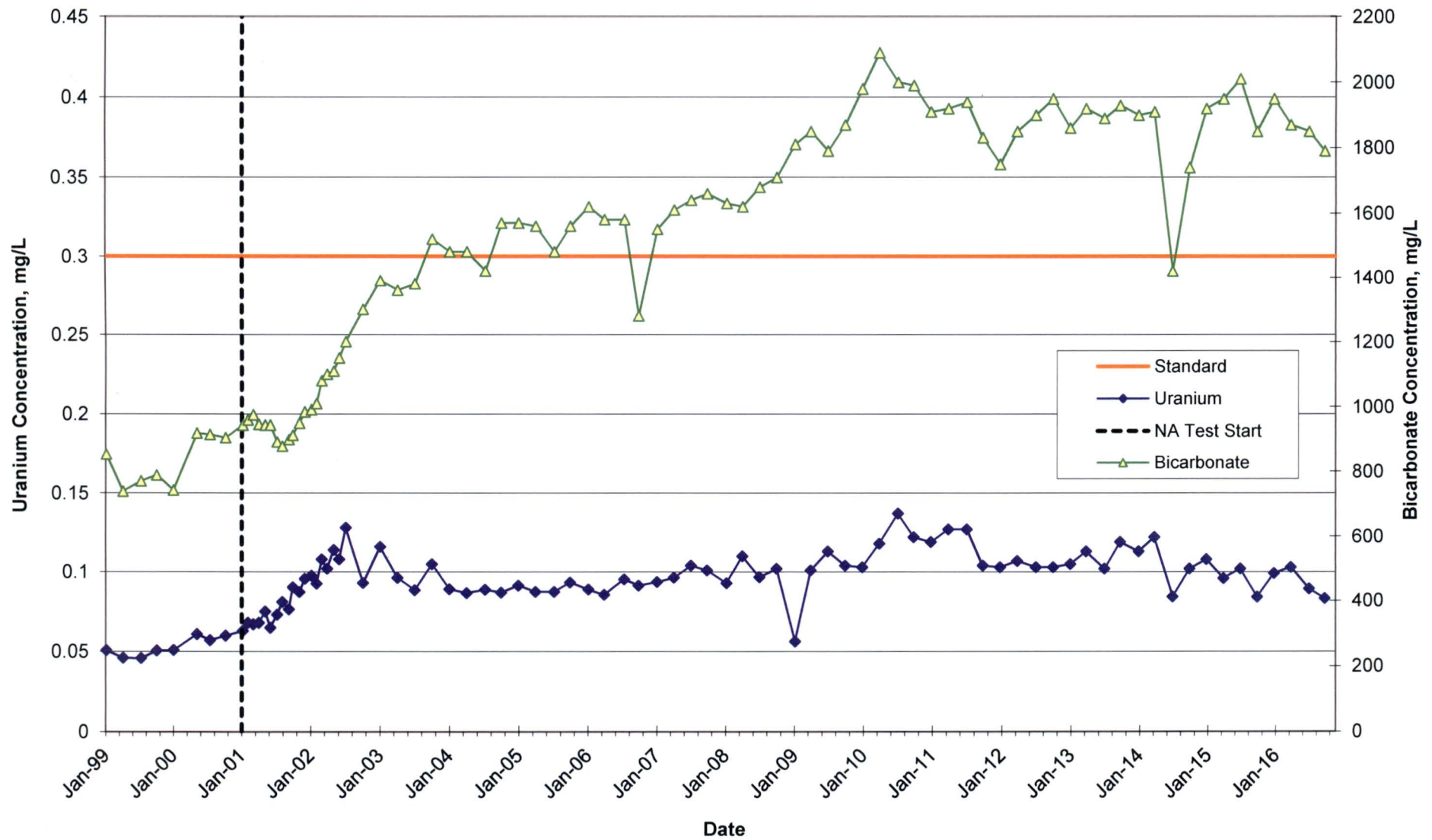




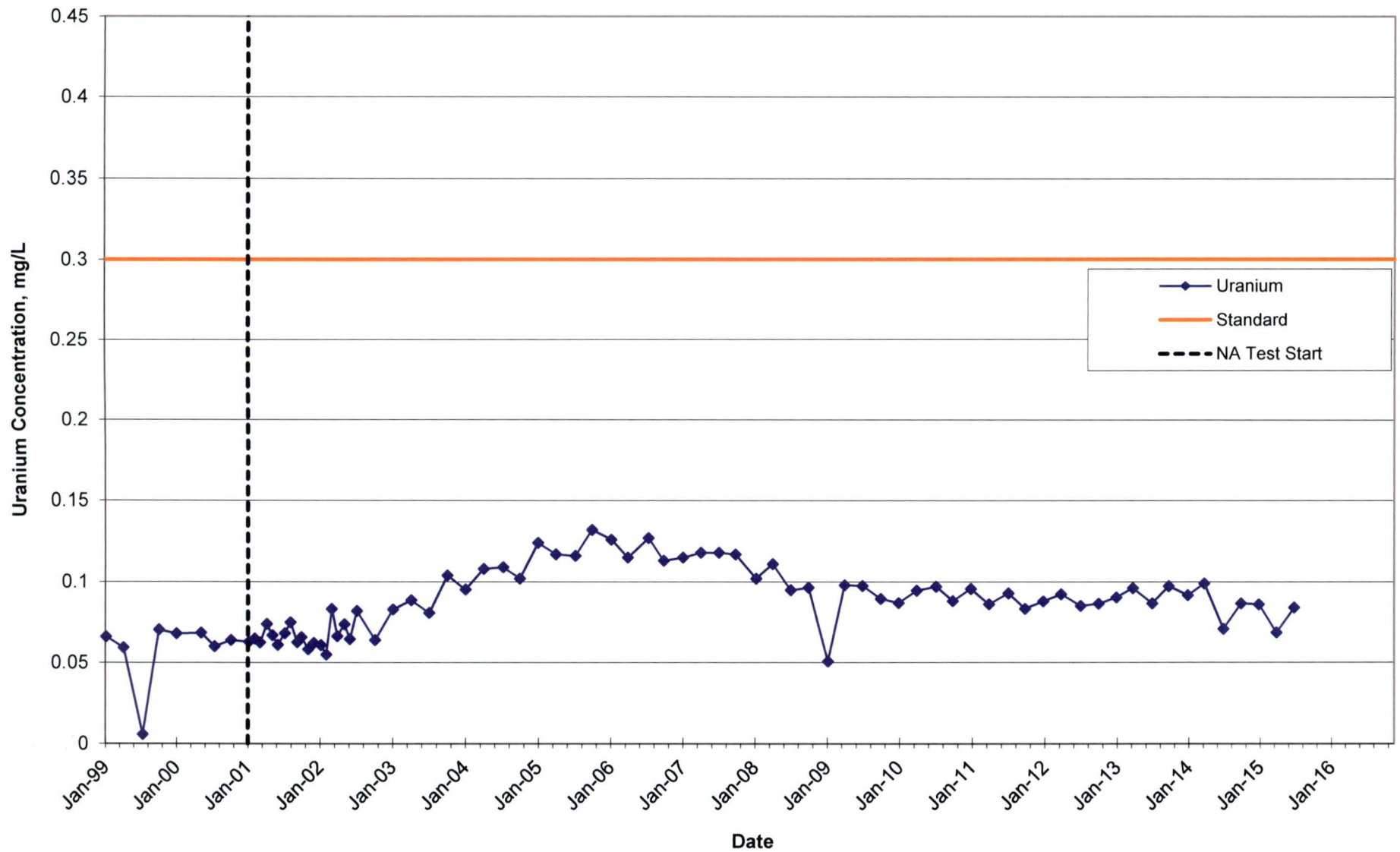
**FIGURE 23**  
Uranium Concentrations in Well 803  
United Nuclear Corporation Church Rock Site, Church Rock, New Mexico



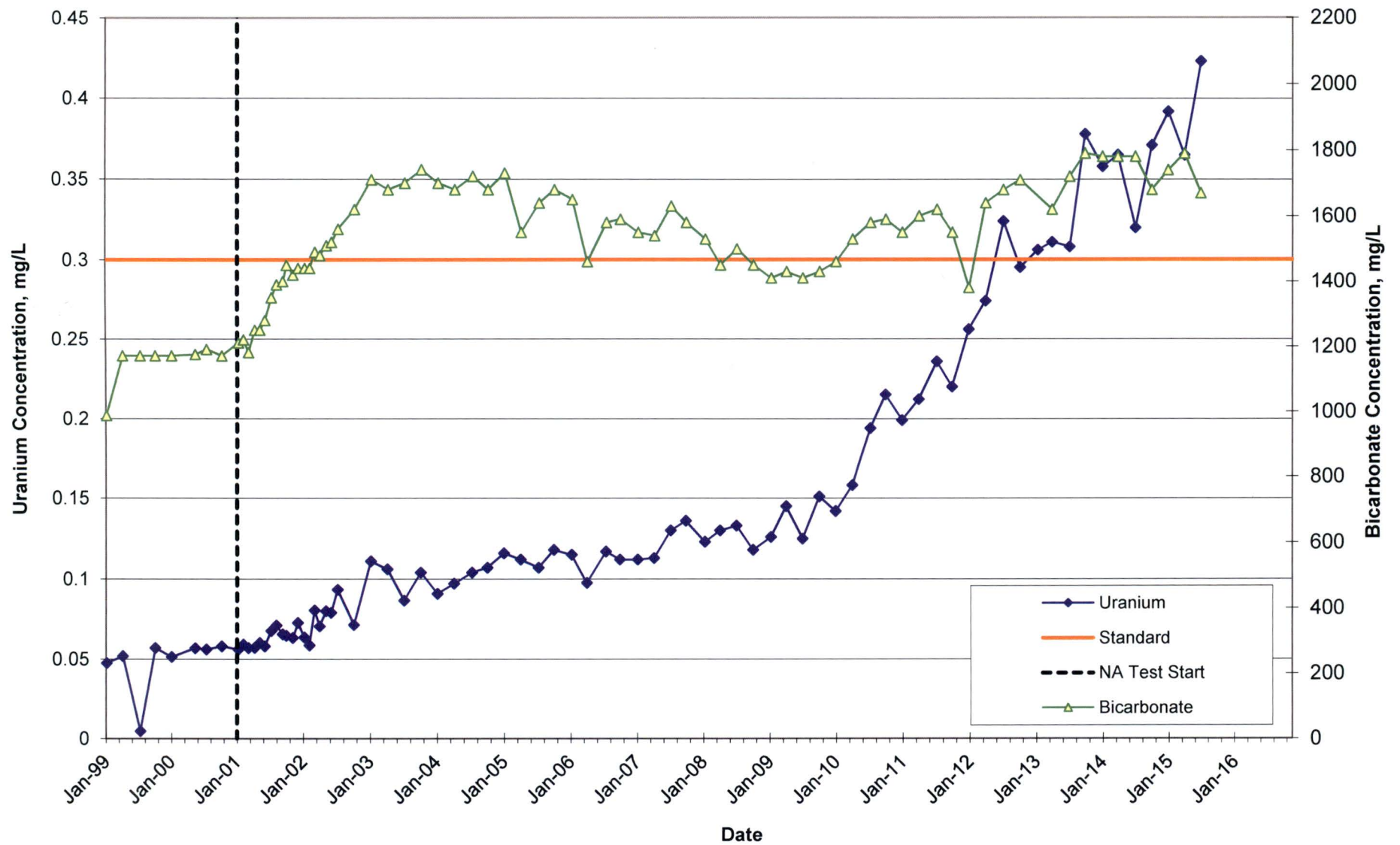
**FIGURE 24**  
 Uranium and Bicarbonate Concentrations in Well GW 1  
 United Nuclear Corporation Church Rock Site, Church Rock, New Mexico



**FIGURE 25**  
Uranium Concentrations in Well GW 2  
United Nuclear Corporation Church Rock Site, Church Rock, New Mexico

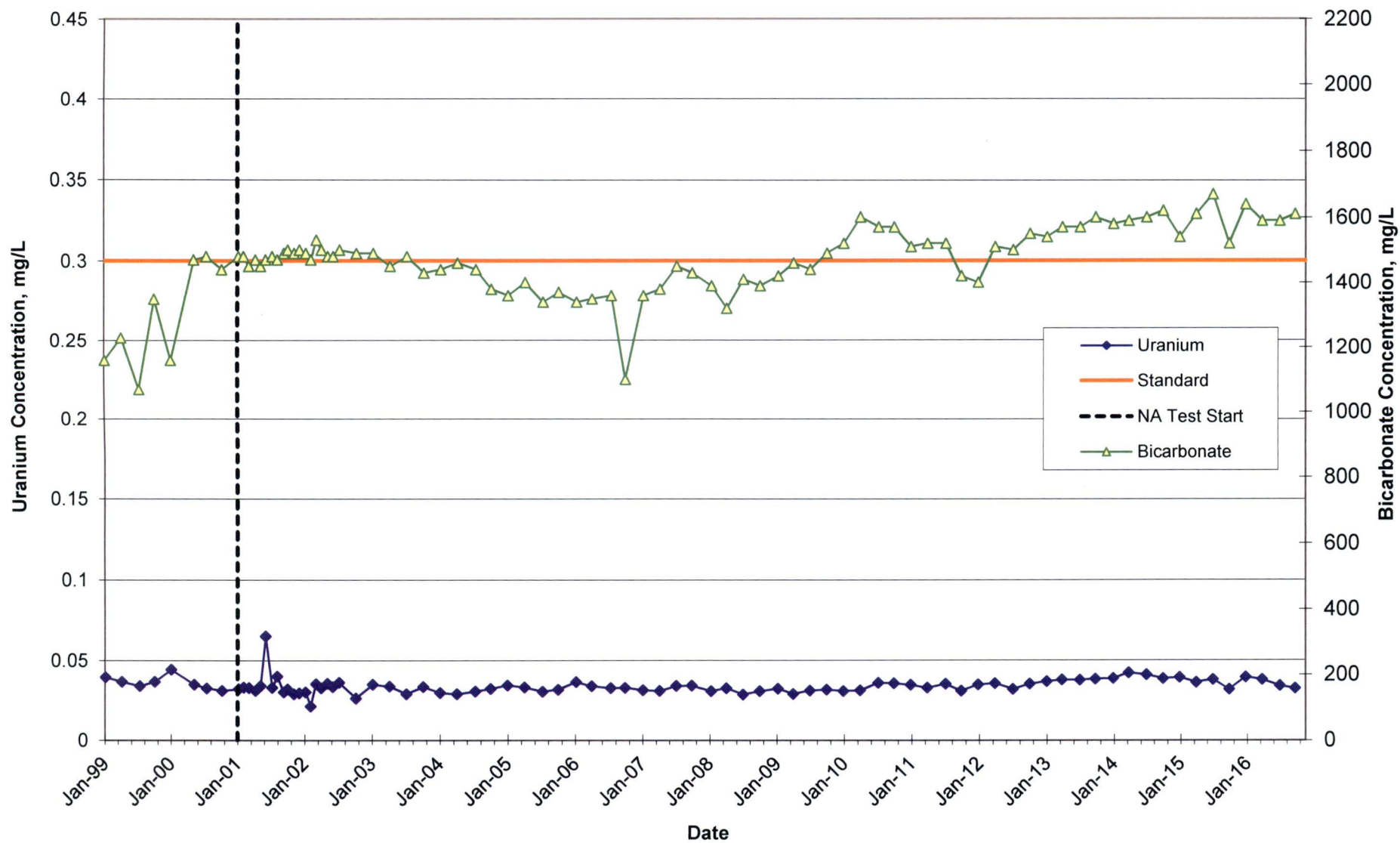


**FIGURE 26**  
 Uranium and Bicarbonate Concentrations in Well GW 3  
 United Nuclear Corporation Church Rock Site, Church Rock, New Mexico

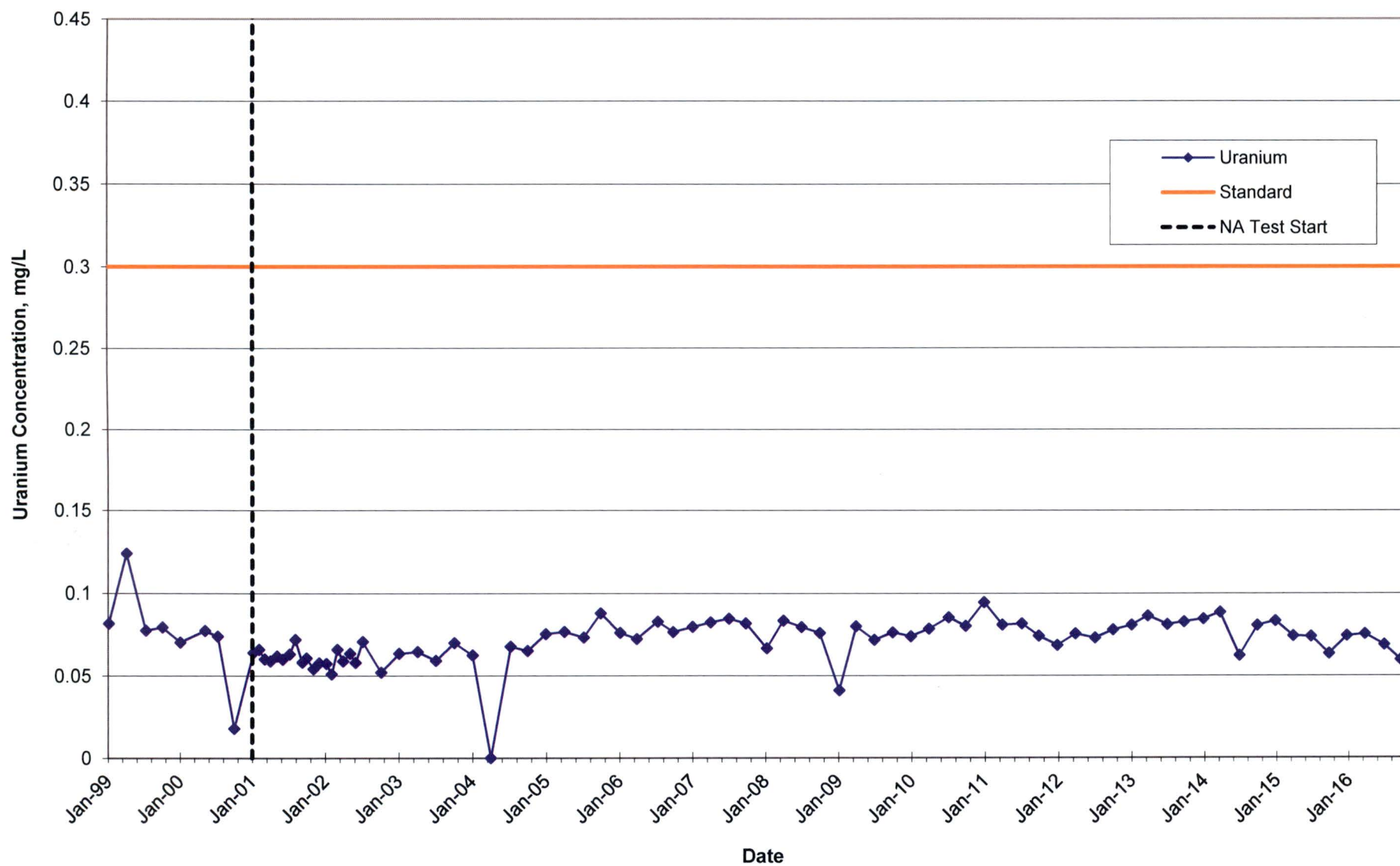




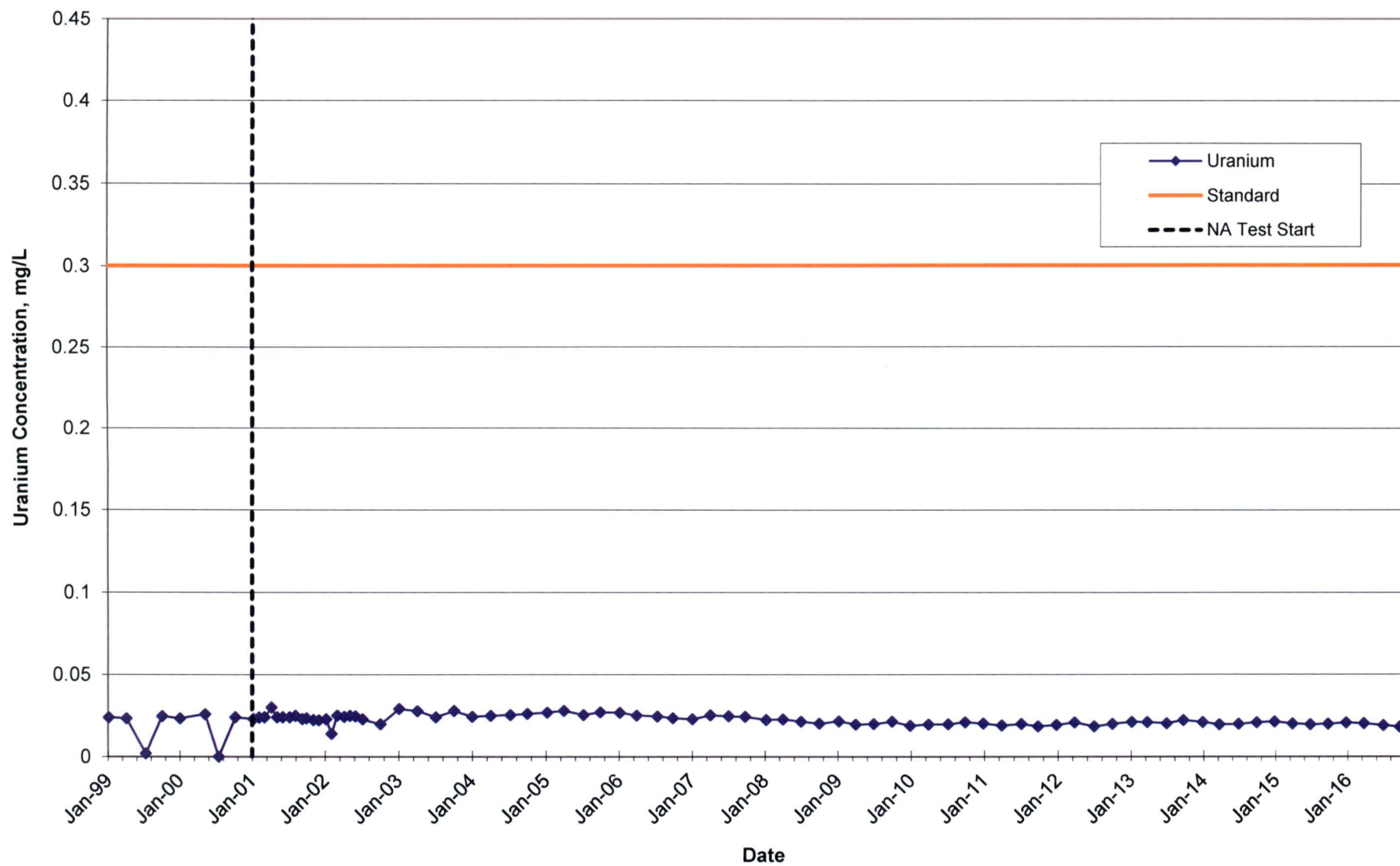
**FIGURE 27**  
 Uranium and Bicarbonate Concentrations in Well 624  
 United Nuclear Corporation Church Rock Site, Church Rock, New Mexico



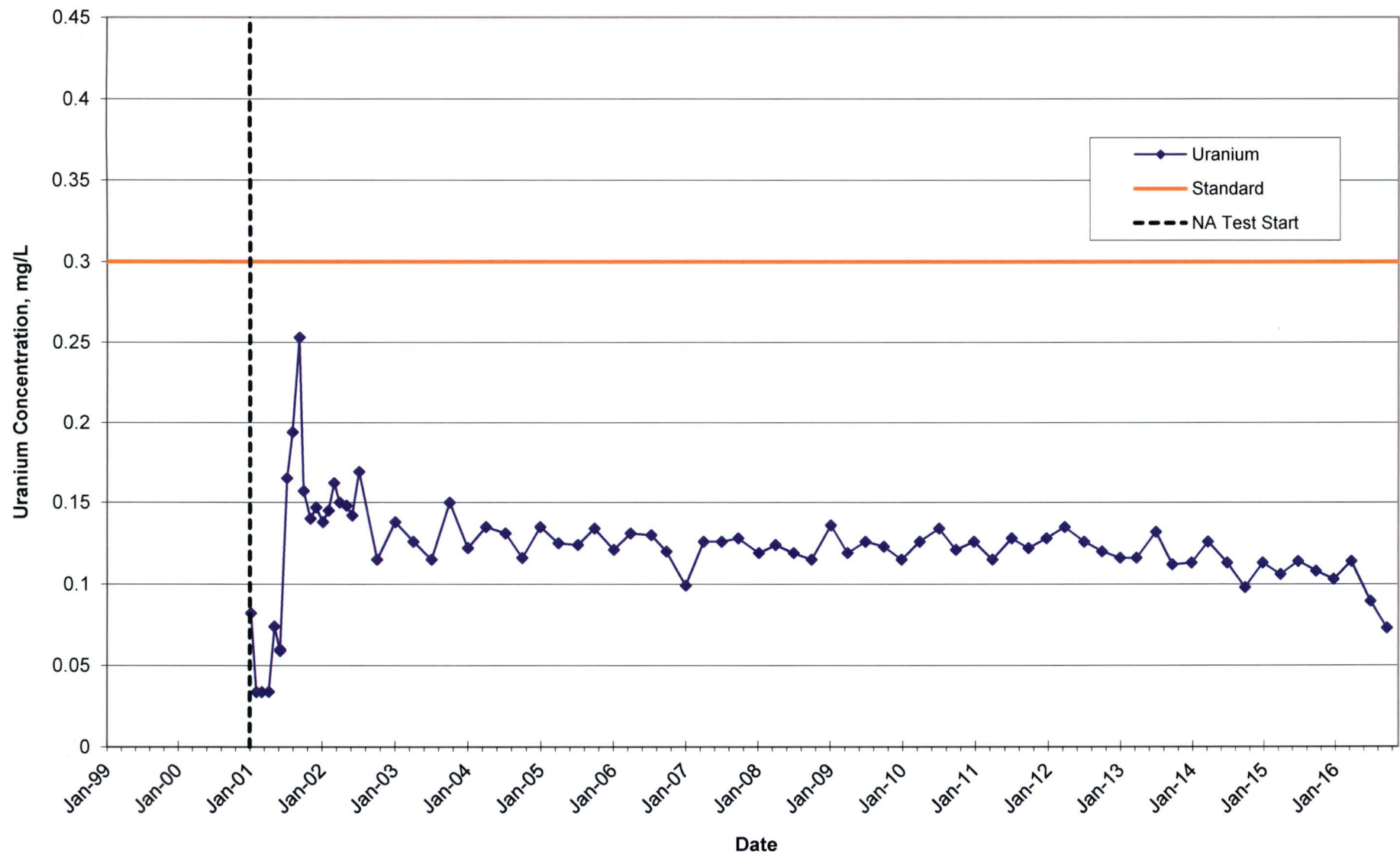
**FIGURE 28**  
Uranium Concentrations in Well 632  
United Nuclear Corporation Church Rock Site, Church Rock, New Mexico



**FIGURE 29**  
Uranium Concentrations in Well 627  
United Nuclear Corporation Church Rock Site, Church Rock, New Mexico

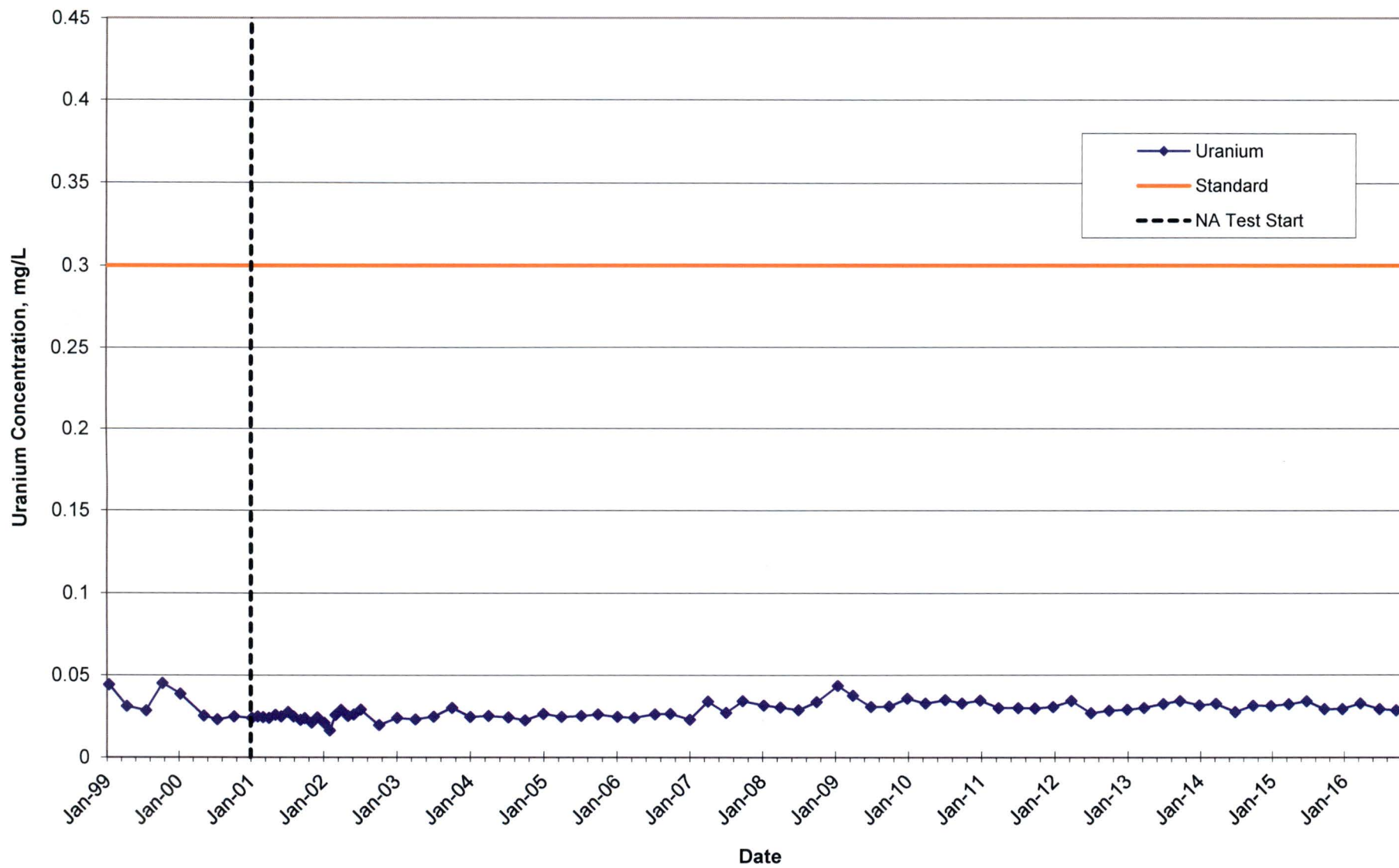


**FIGURE 30**  
Uranium Concentrations in Well 808  
United Nuclear Corporation Church Rock Site, Church Rock, New Mexico

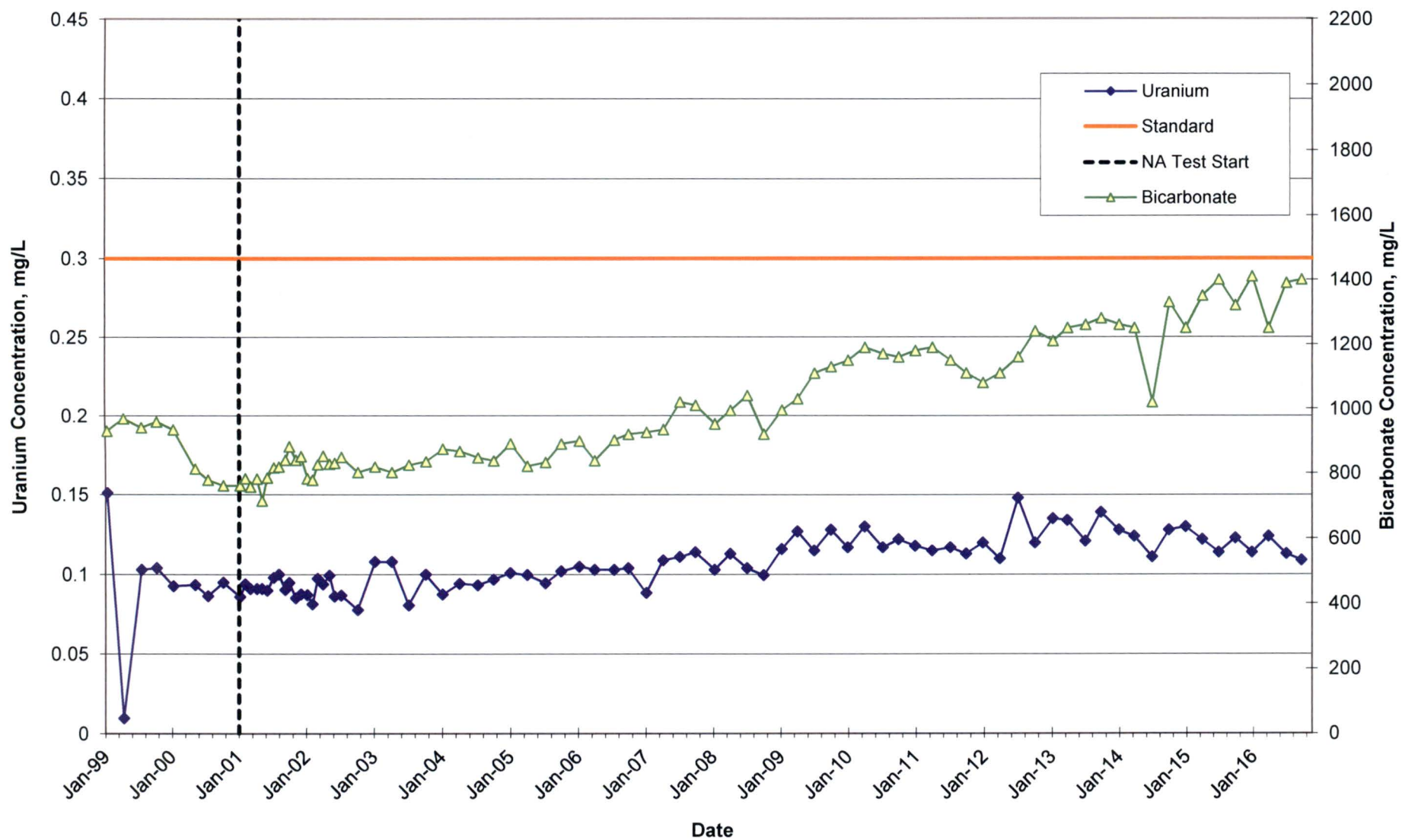




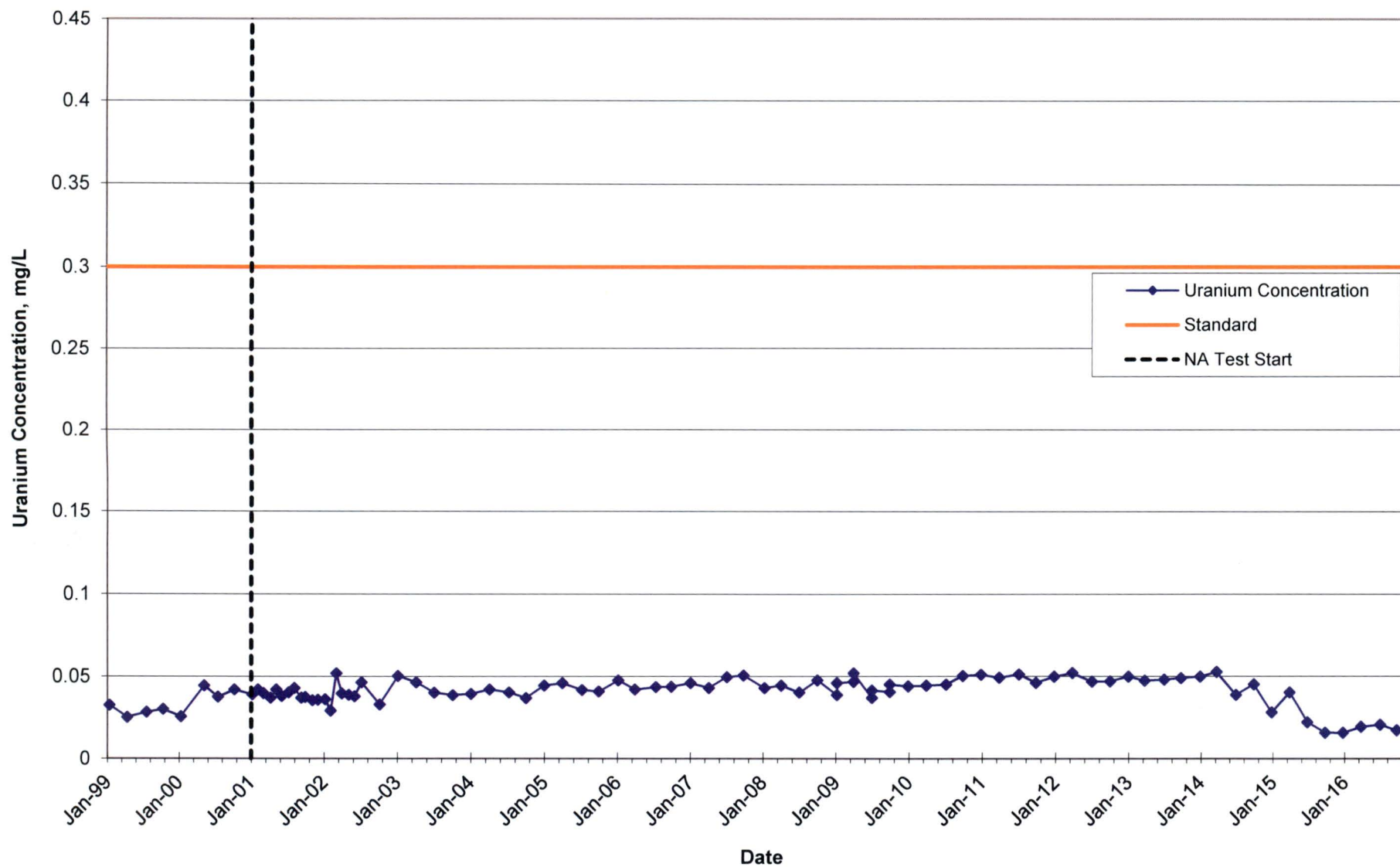
**FIGURE 31**  
Uranium Concentrations in Well EPA 23  
United Nuclear Corporation Church Rock Site, Church Rock, New Mexico



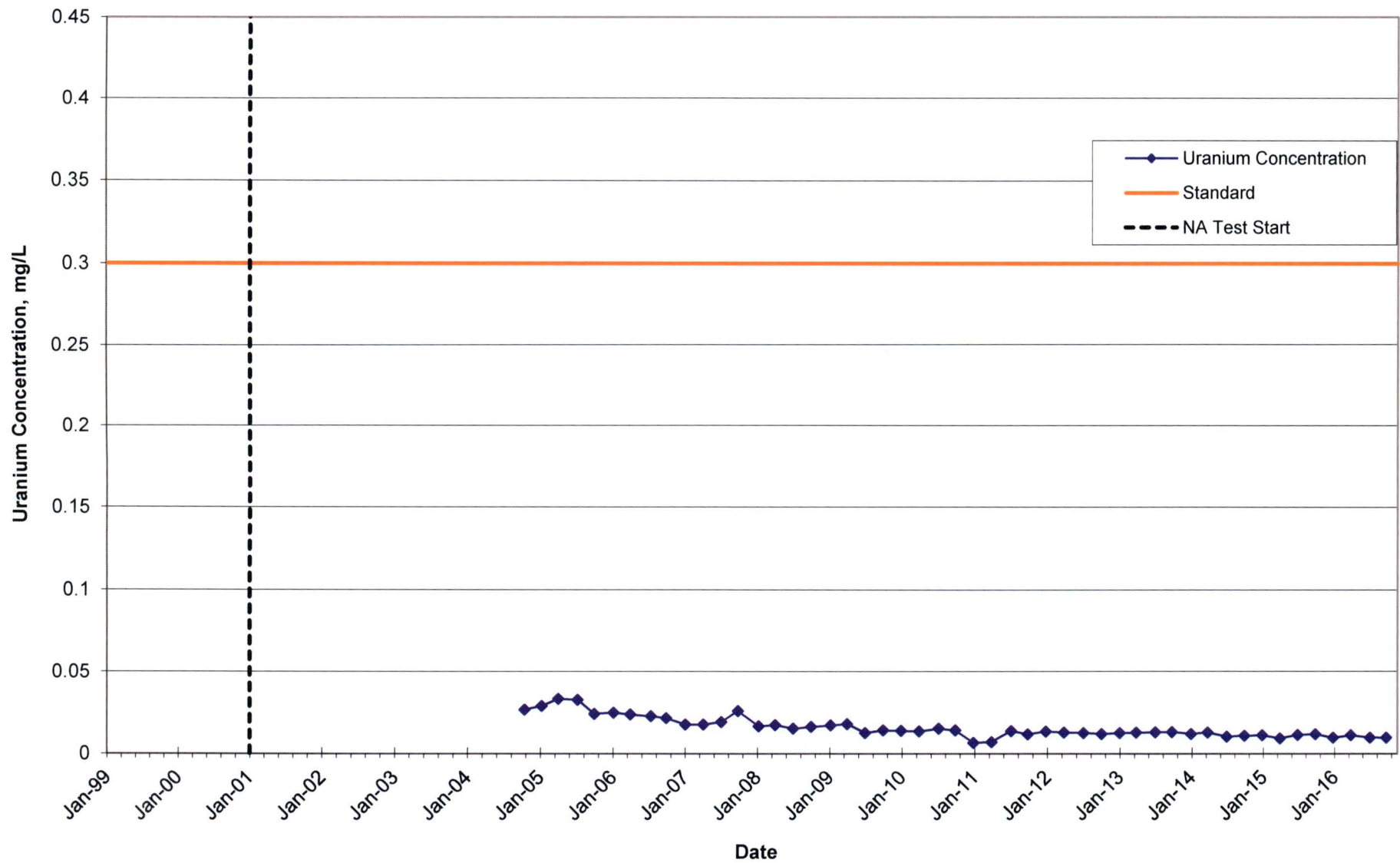
**FIGURE 32**  
 Uranium and Bicarbonate Concentrations in Well EPA 25  
 United Nuclear Corporation Church Rock Site, Church Rock, New Mexico



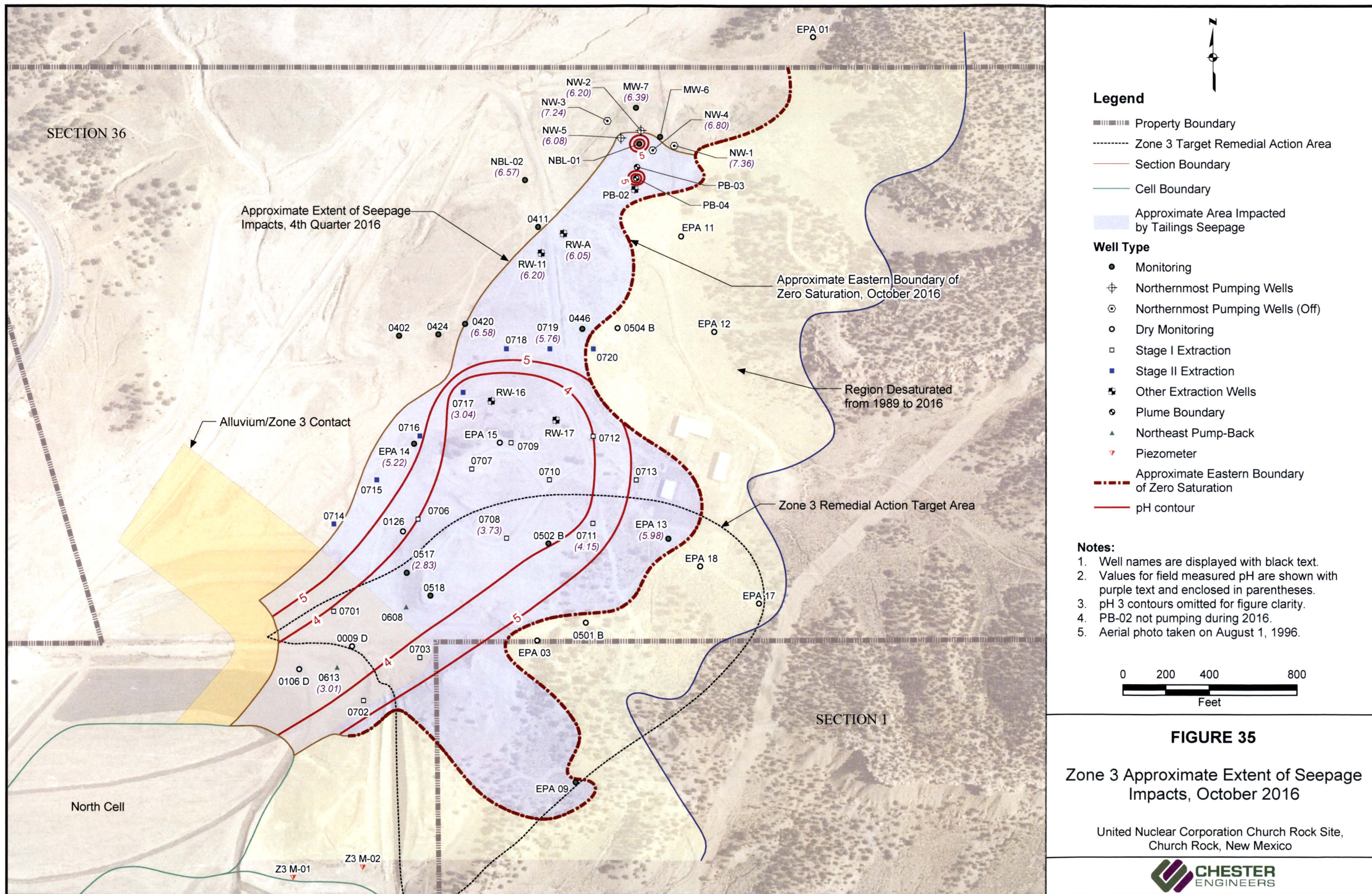
**FIGURE 33**  
Uranium Concentrations in Well EPA 28  
United Nuclear Corporation Church Rock Site, Church Rock, New Mexico



**FIGURE 34**  
Uranium Concentrations in Well SBL-01  
United Nuclear Corporation Church Rock Site, Church Rock, New Mexico







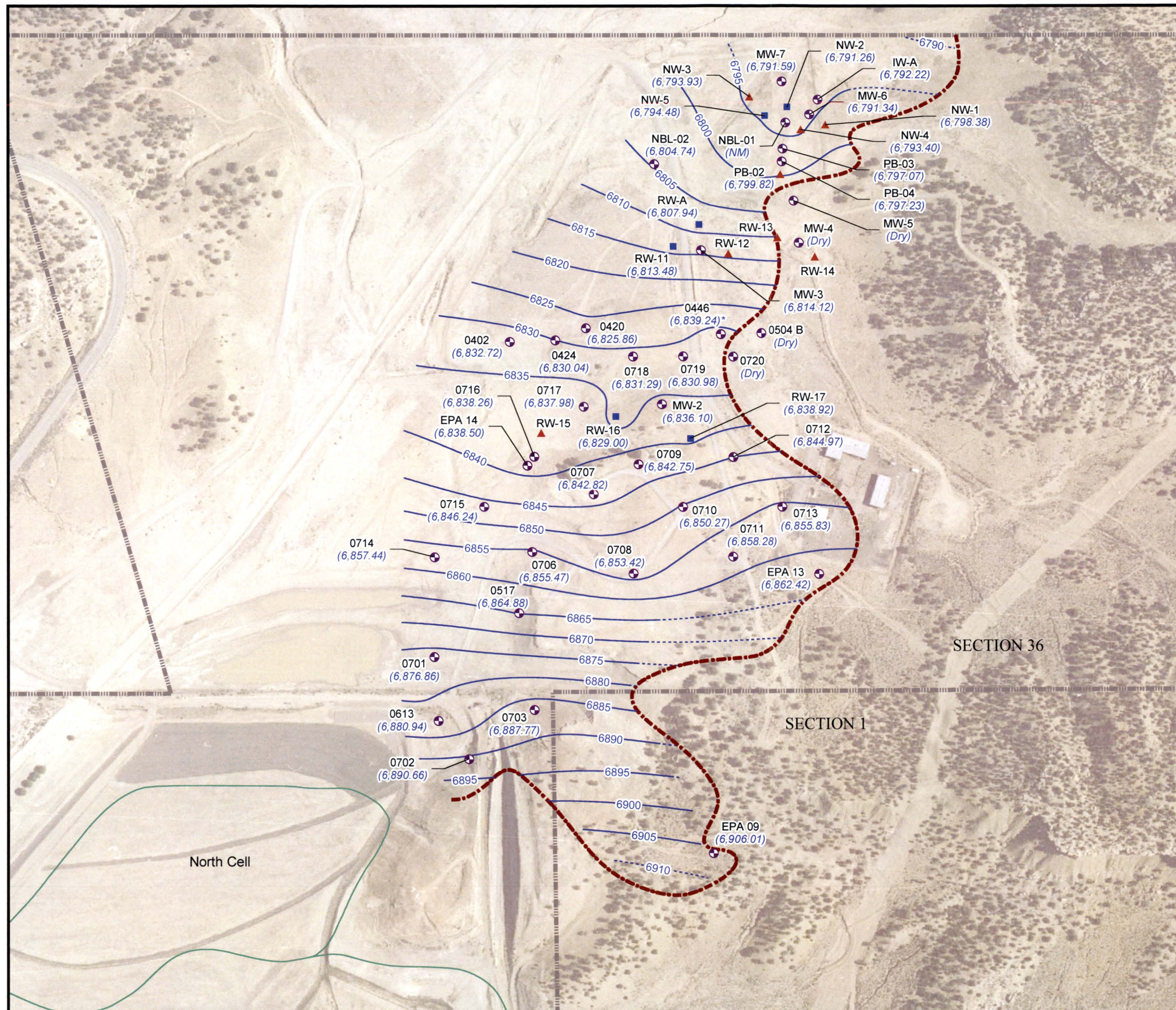
**FIGURE 35**

Zone 3 Approximate Extent of Seepage Impacts, October 2016

United Nuclear Corporation Church Rock Site,  
Church Rock, New Mexico

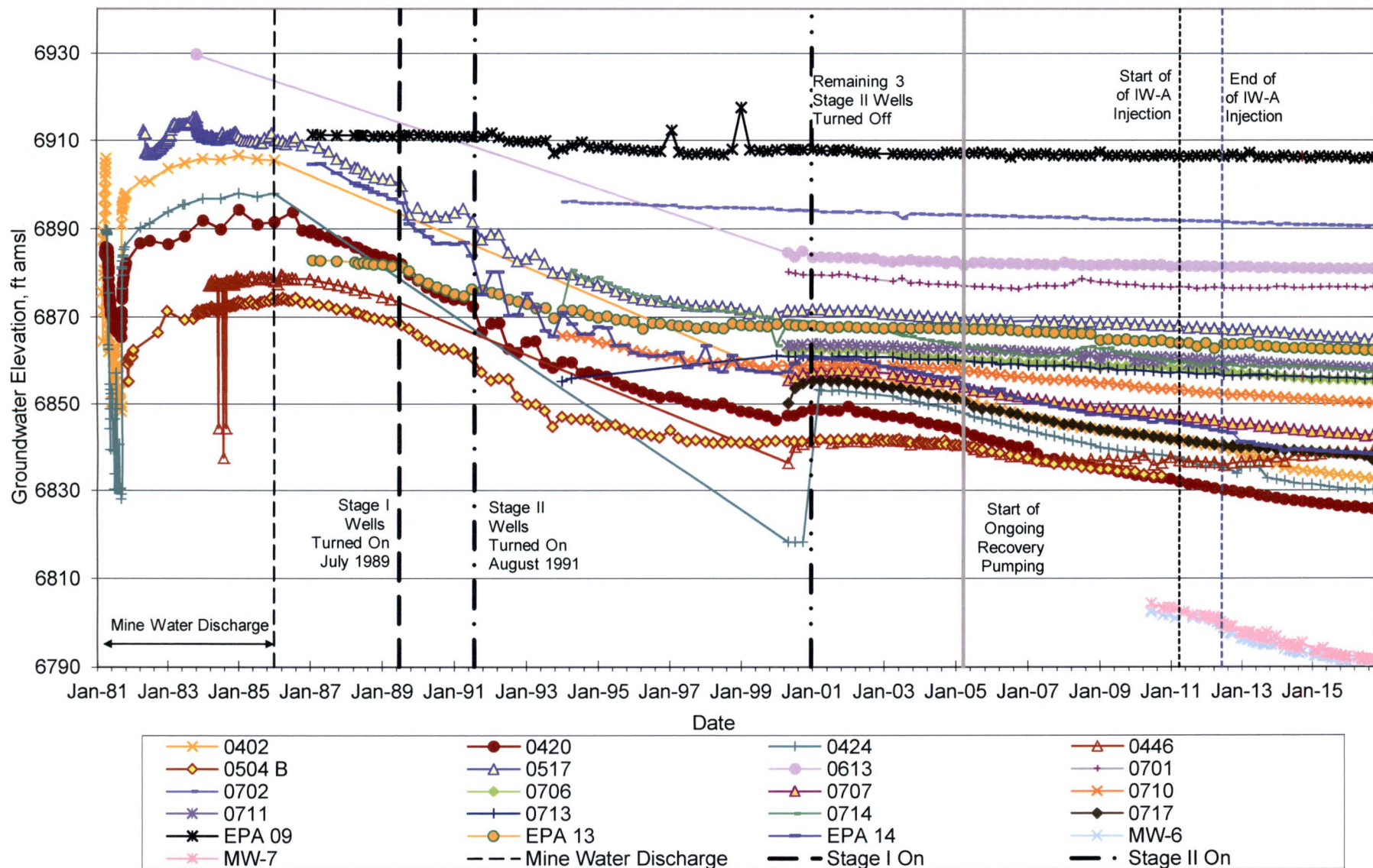






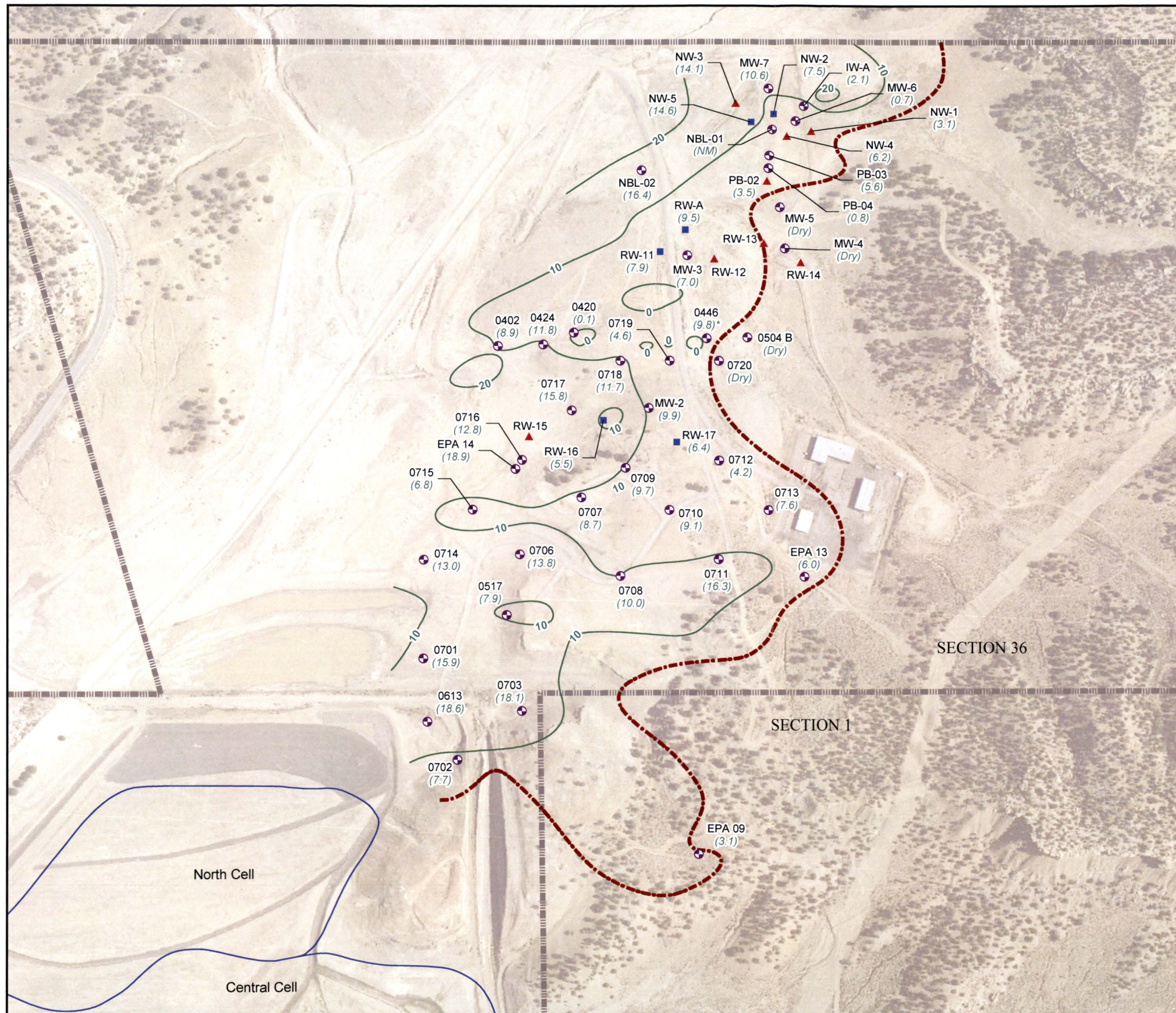


**FIGURE 37**  
**Effects of Past and Current Pumping to Dewater Zone 3**  
**United Nuclear Corporation Church Rock Site, Church Rock, New Mexico**



\*EPA 14 measuring point elevation adjustment applied as of Jan-13



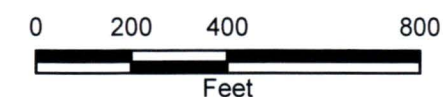


## Legend

- Monitoring Well
- ▲ Non-Pumping Well
- Pumping Well
- Saturated Thickness Contour
- - - Inferred Saturated Thickness Contour
- - - - - Approximate Eastern Boundary of Zero Saturation
- Cell Boundary
- ▬ Property Boundary
- (6.0) Measured Saturated Thickness

## Notes:

1. Saturated thickness values shown in feet.
2. Well names are displayed with black text.
3. Aerial photo taken on August 1, 1996.
4. NM – Not Measured
5. \* The measured Well 0446 groundwater elevation and corresponding saturated thickness value are suspect and not deemed to be representative of actual conditions. The estimated actual saturated thickness at this location is approximately two feet.



**FIGURE 38**

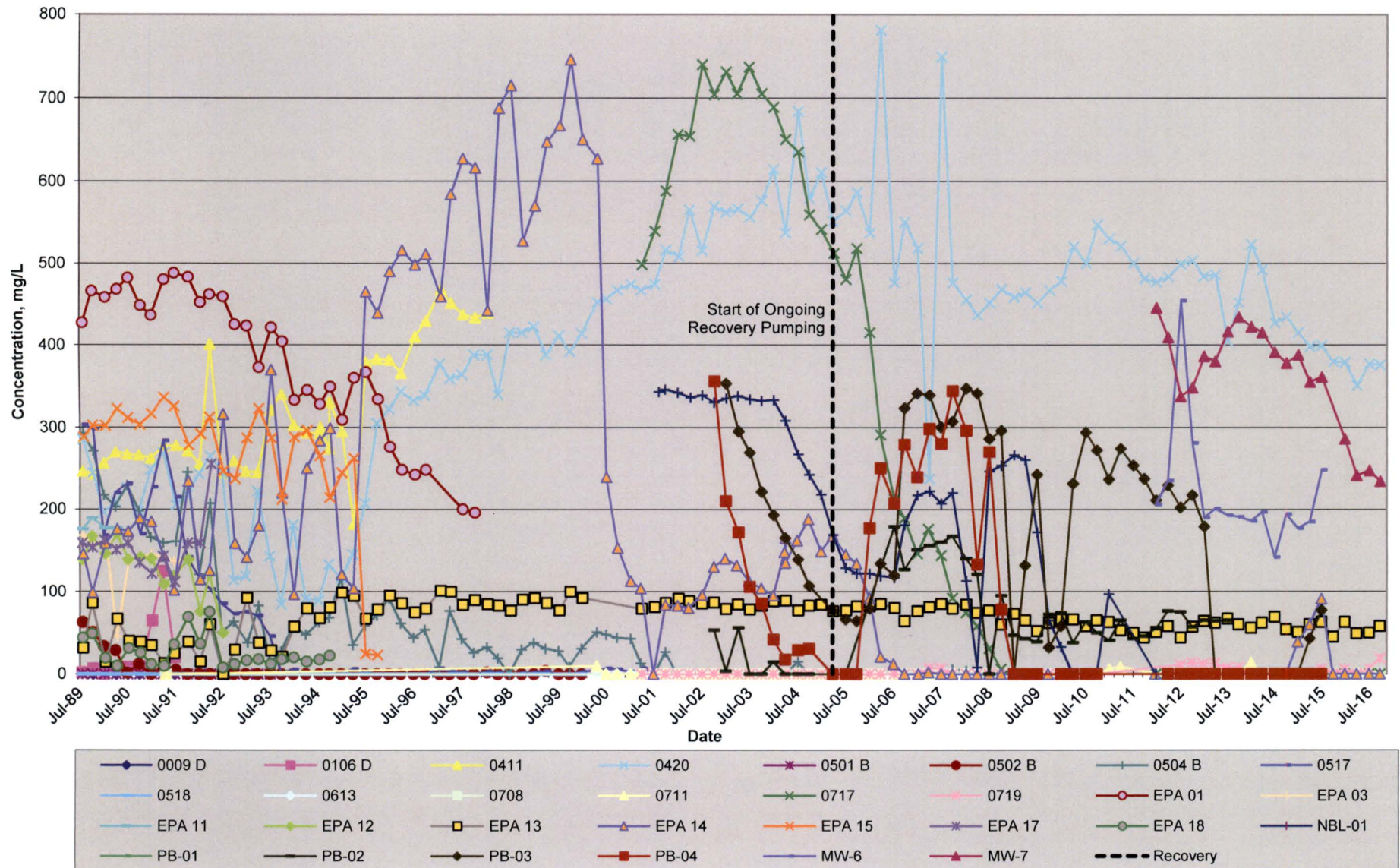
Zone 3 Saturated Thickness Map,  
October 2016

United Nuclear Corporation Church Rock Site,  
Church Rock, New Mexico



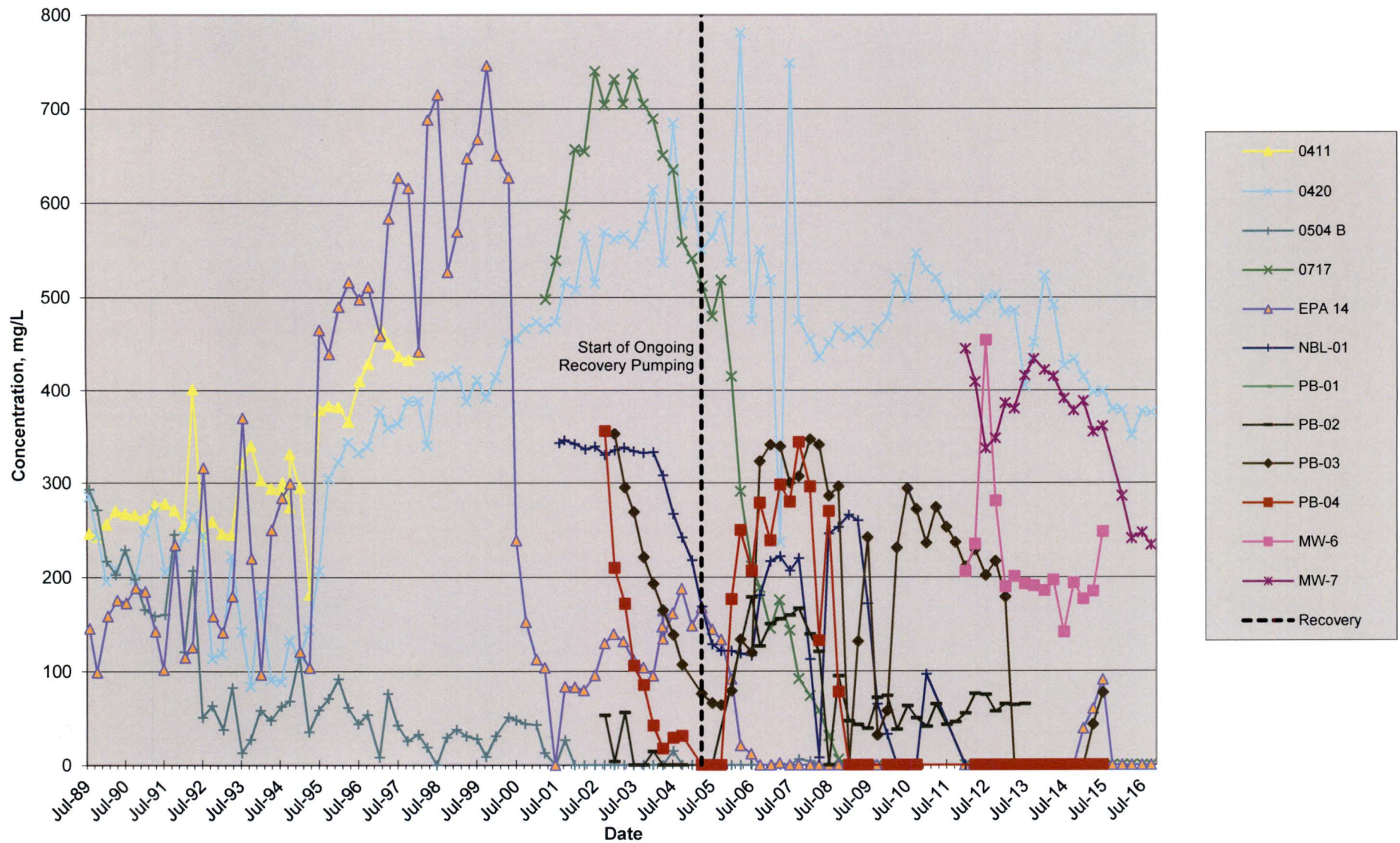


**FIGURE 39**  
 Zone 3 Bicarbonate Concentrations Over Time  
 United Nuclear Corporation Church Rock Site, Church Rock, New Mexico



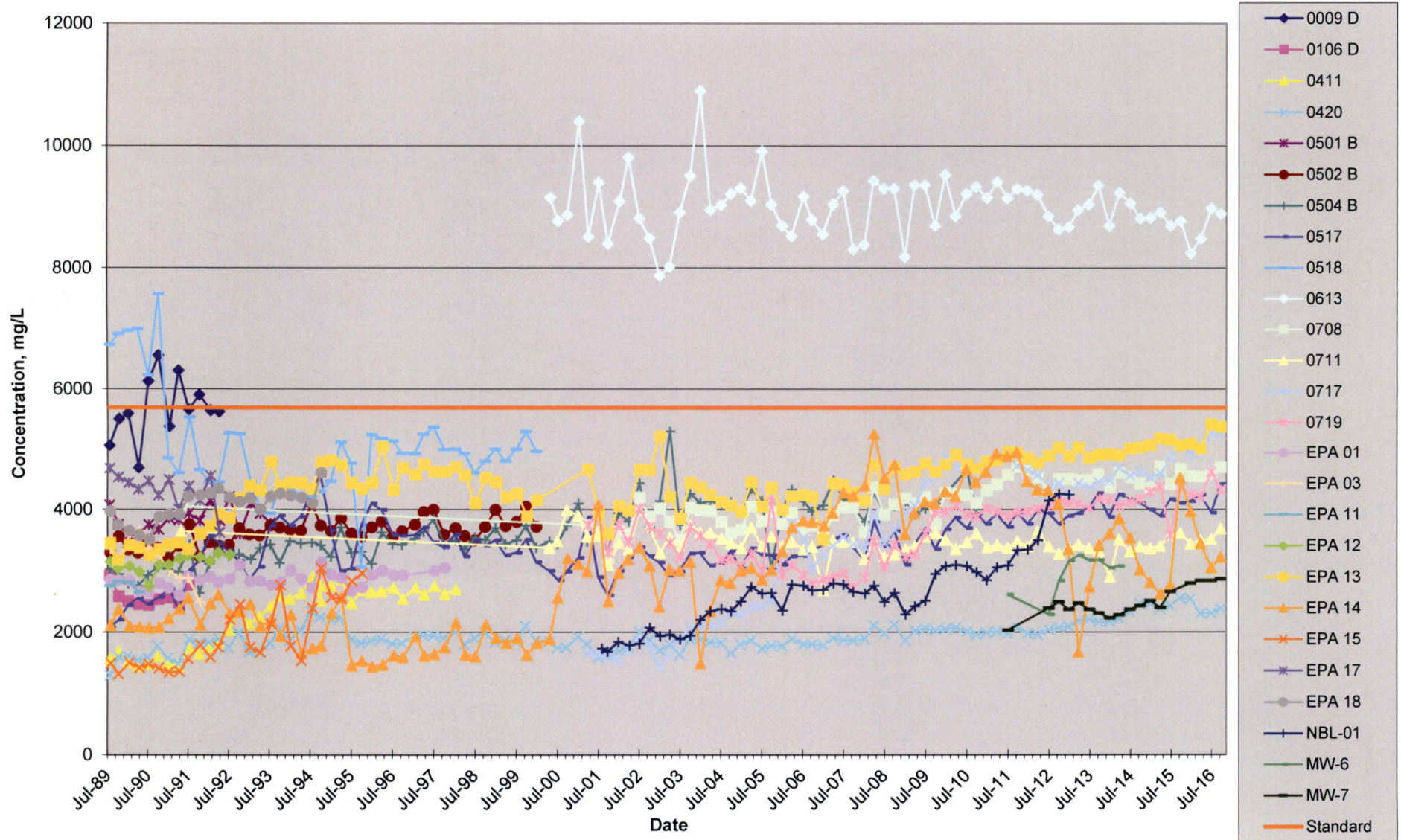


**FIGURE 40**  
 Zone 3 Impact Perimeter Bicarbonate Concentrations Over Time  
 United Nuclear Corporation Church Rock Site, Church Rock, New Mexico



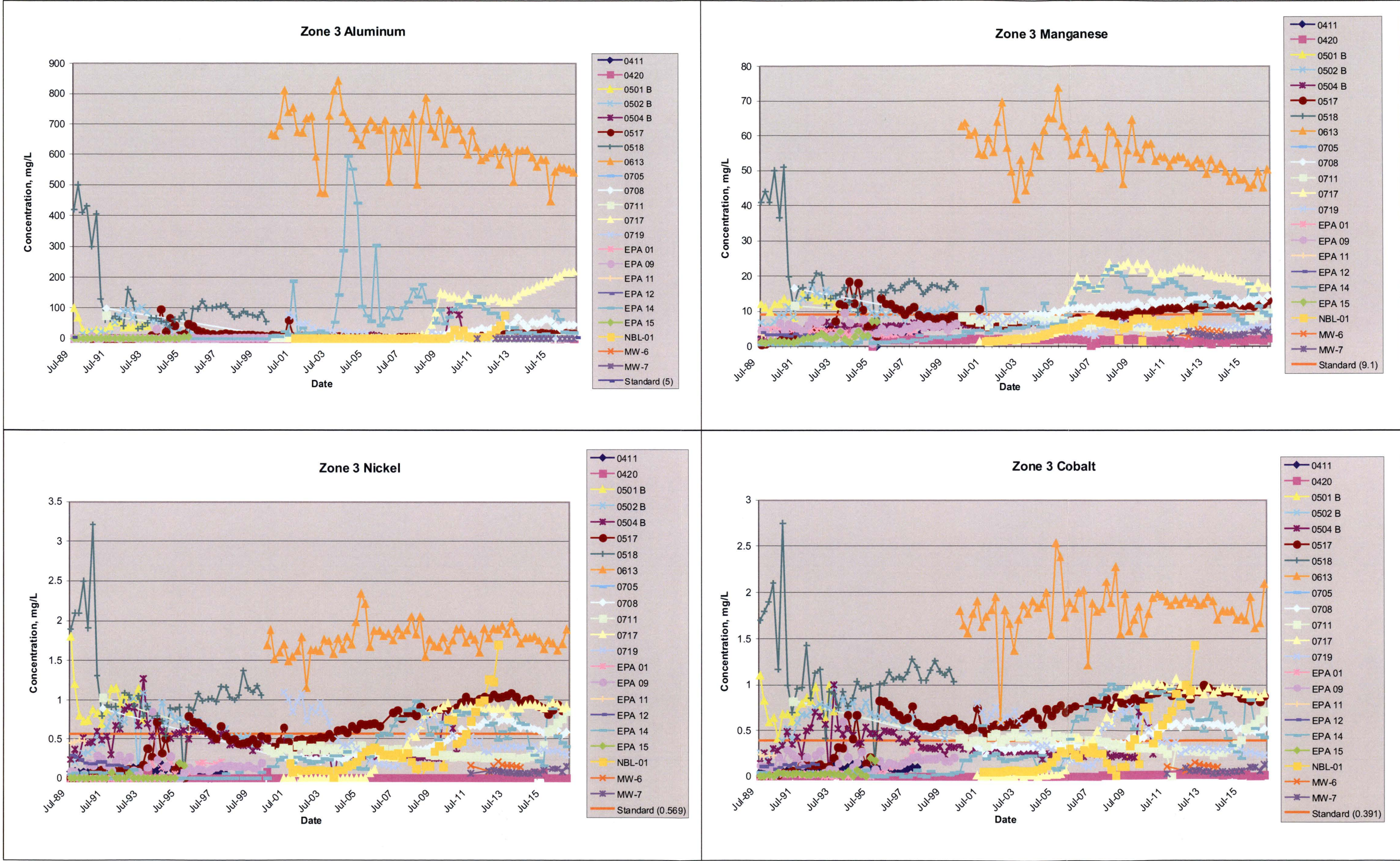


**FIGURE 41**  
 Zone 3 Sulfate Concentrations Over Time  
 United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico



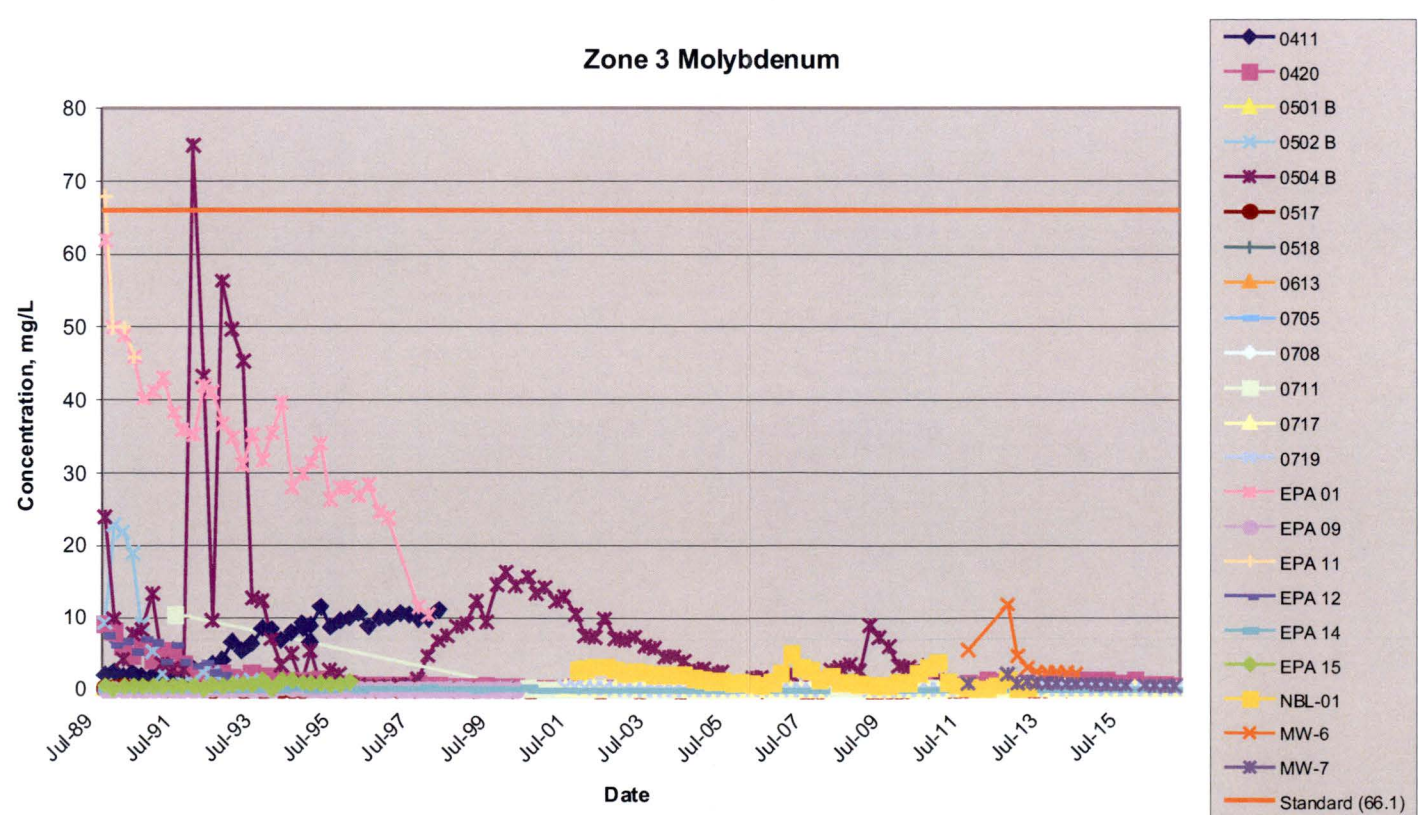
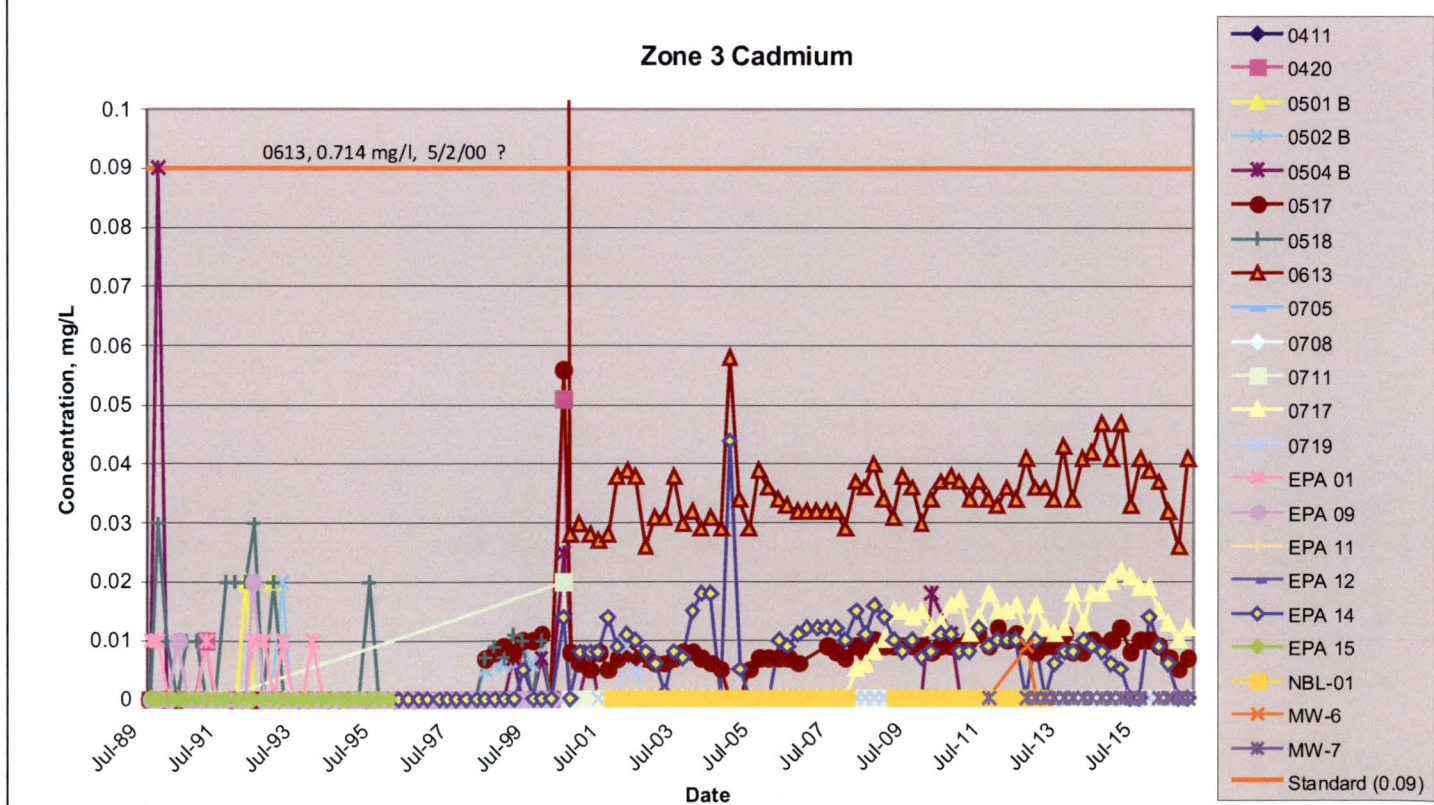
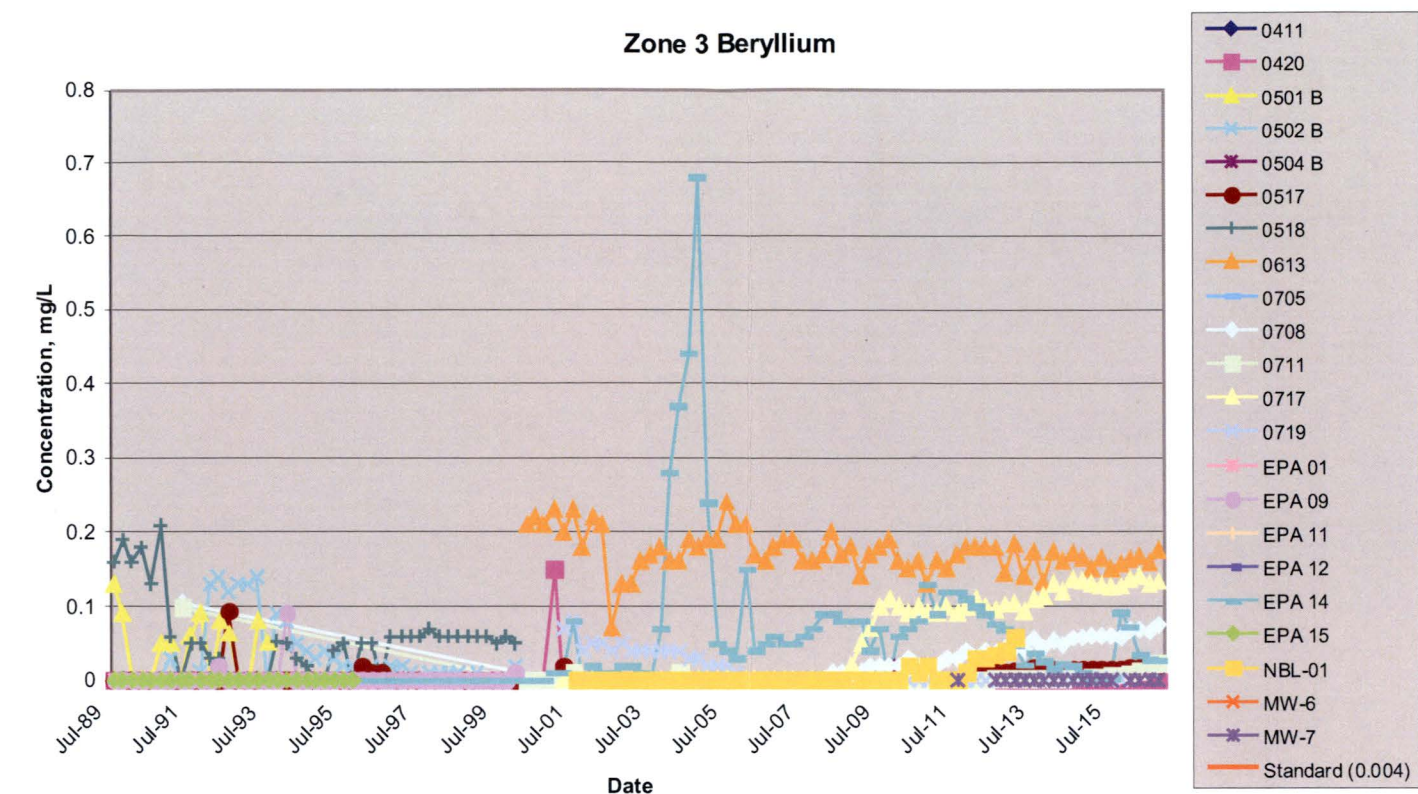
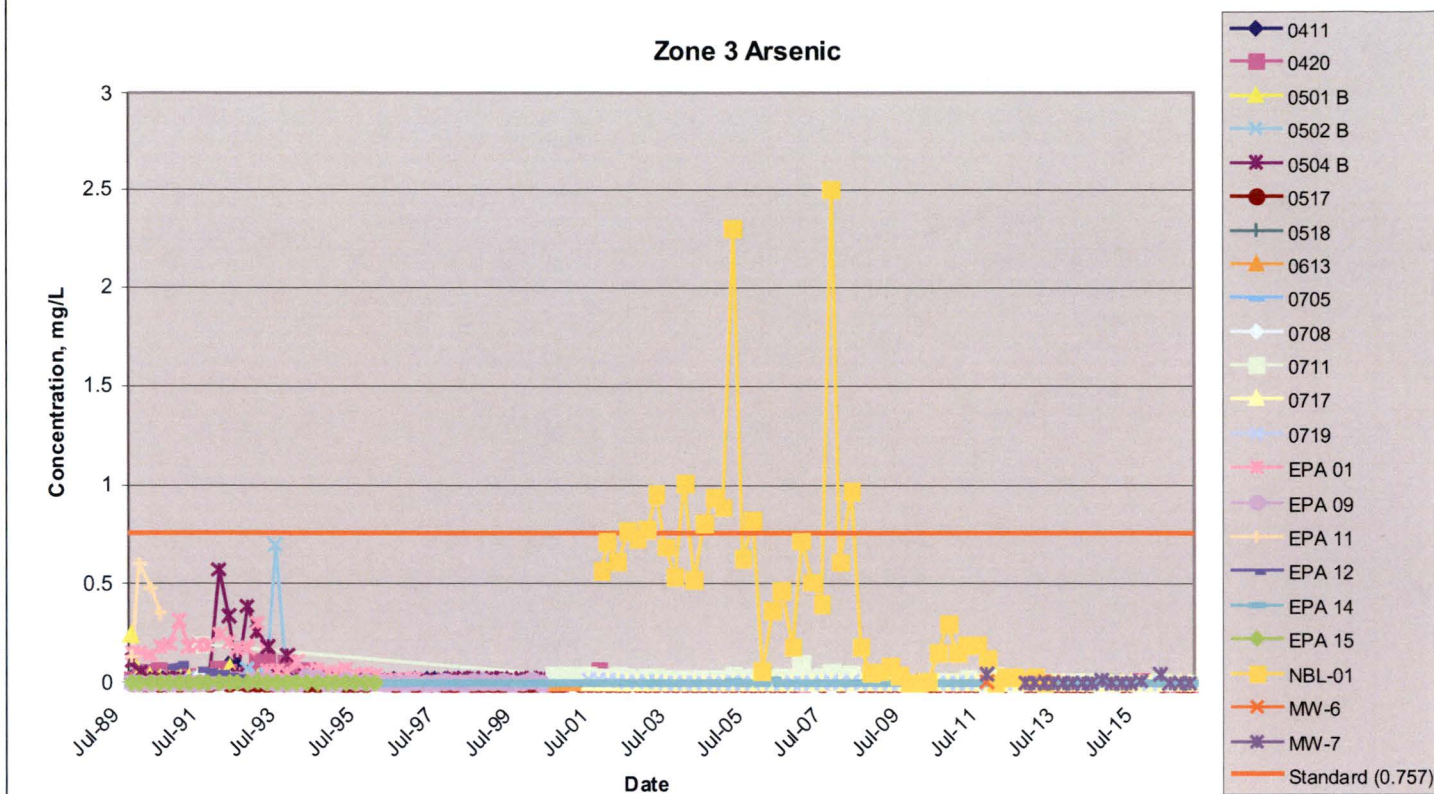


**FIGURE 42A**  
Zone 3 Metals Concentrations over Time  
United Nuclear Corporation Church Rock Site, Church Rock, New Mexico

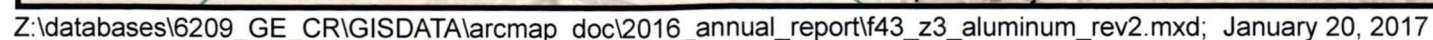




**FIGURE 42B**  
Zone 3 Metals Concentrations over Time  
United Nuclear Corporation Church Rock Site, Church Rock, New Mexico







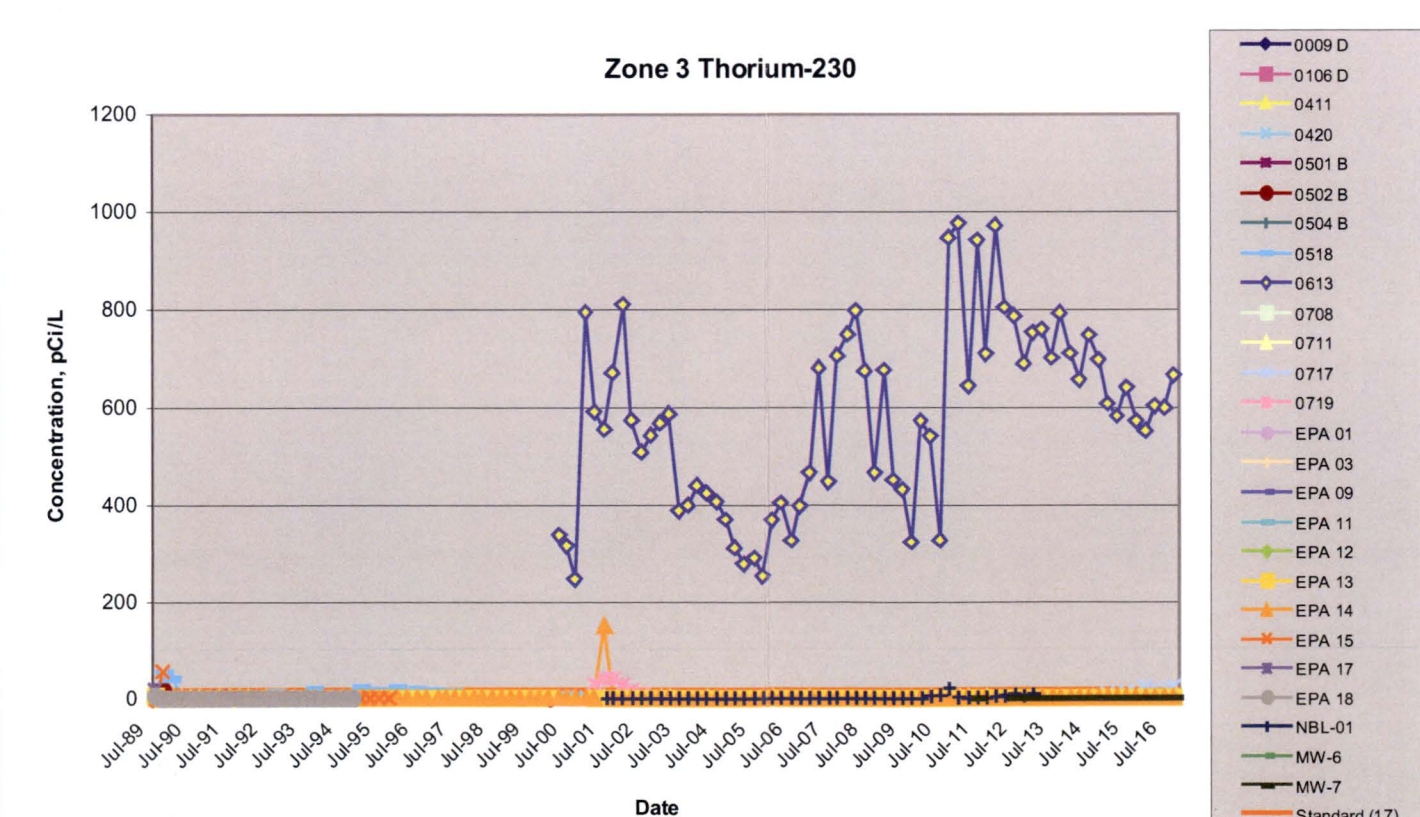
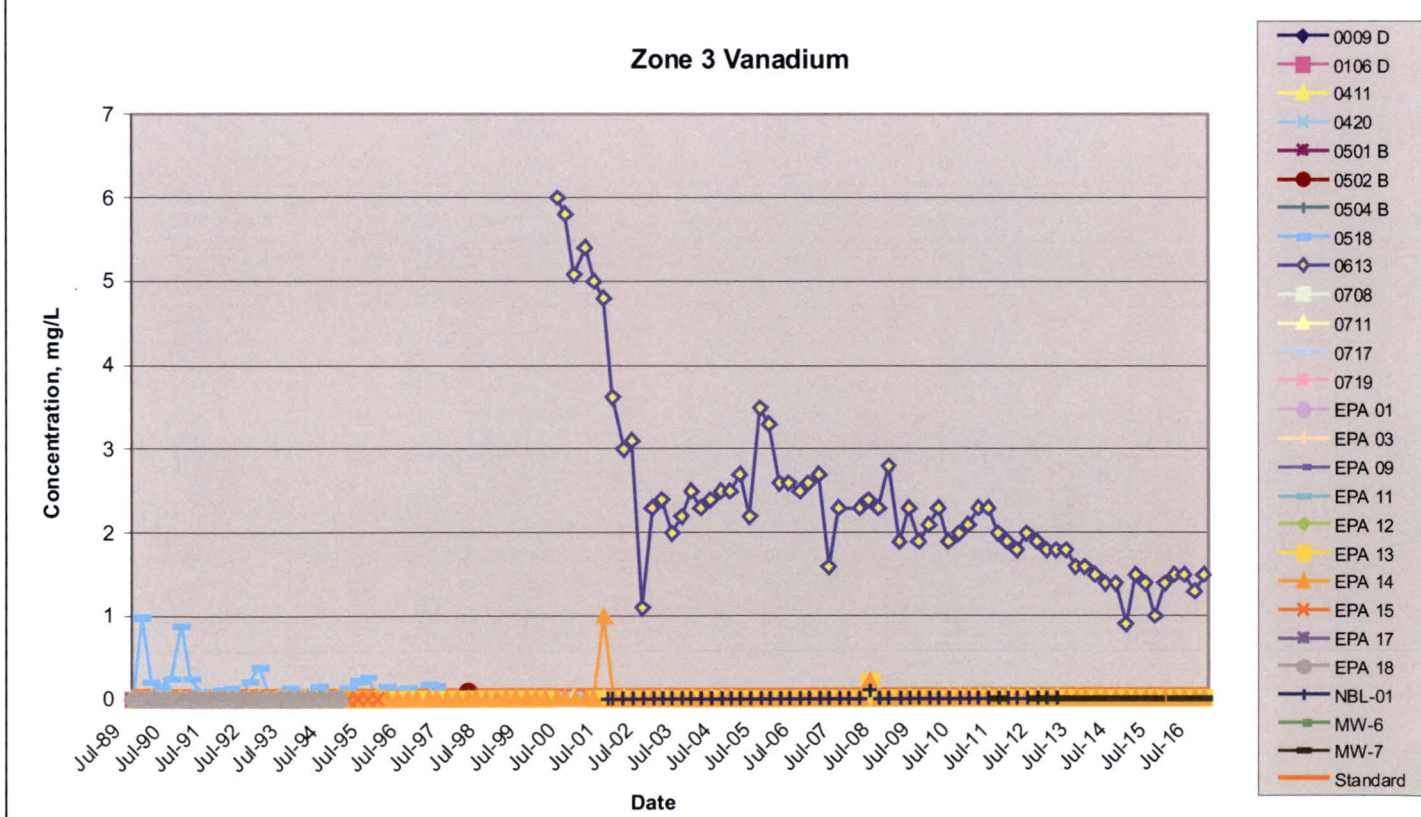
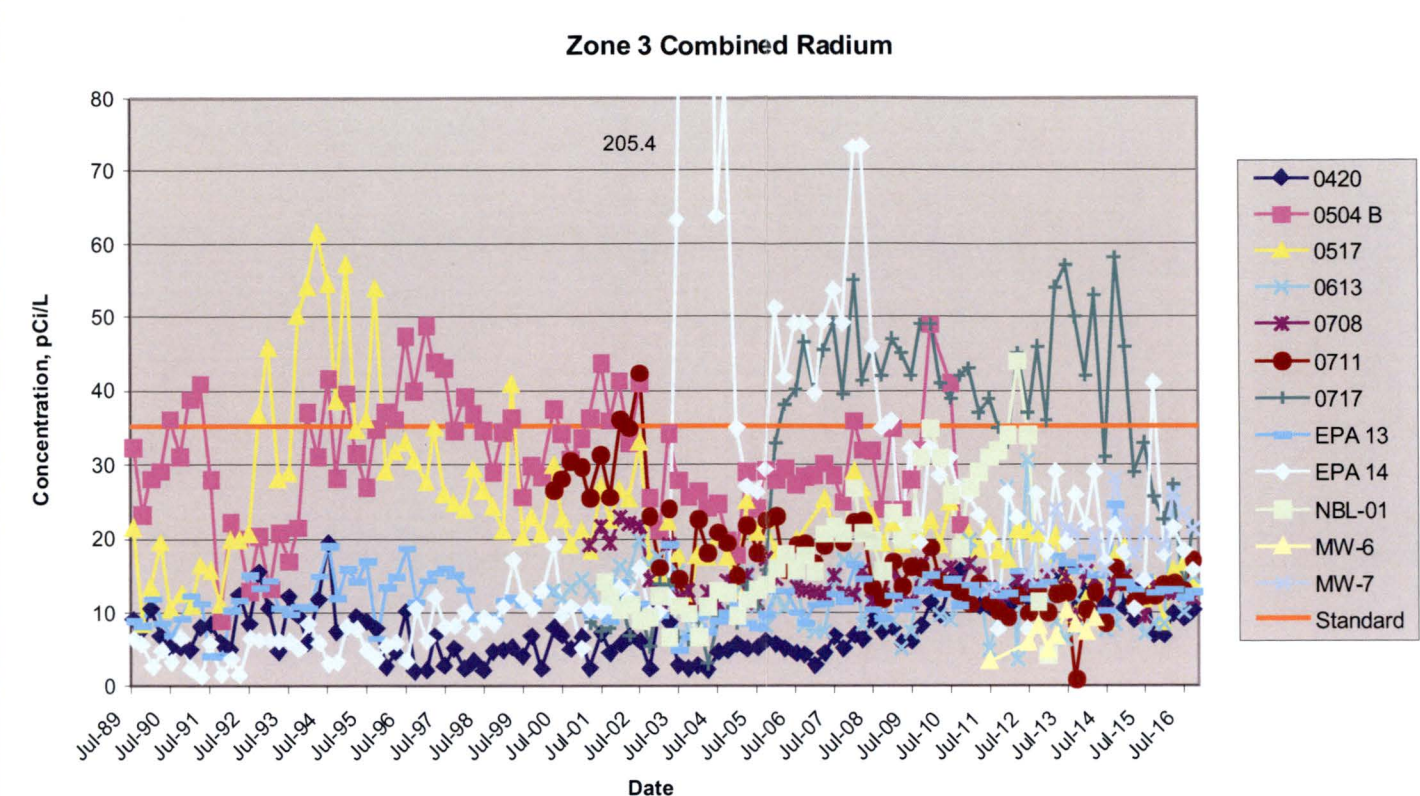
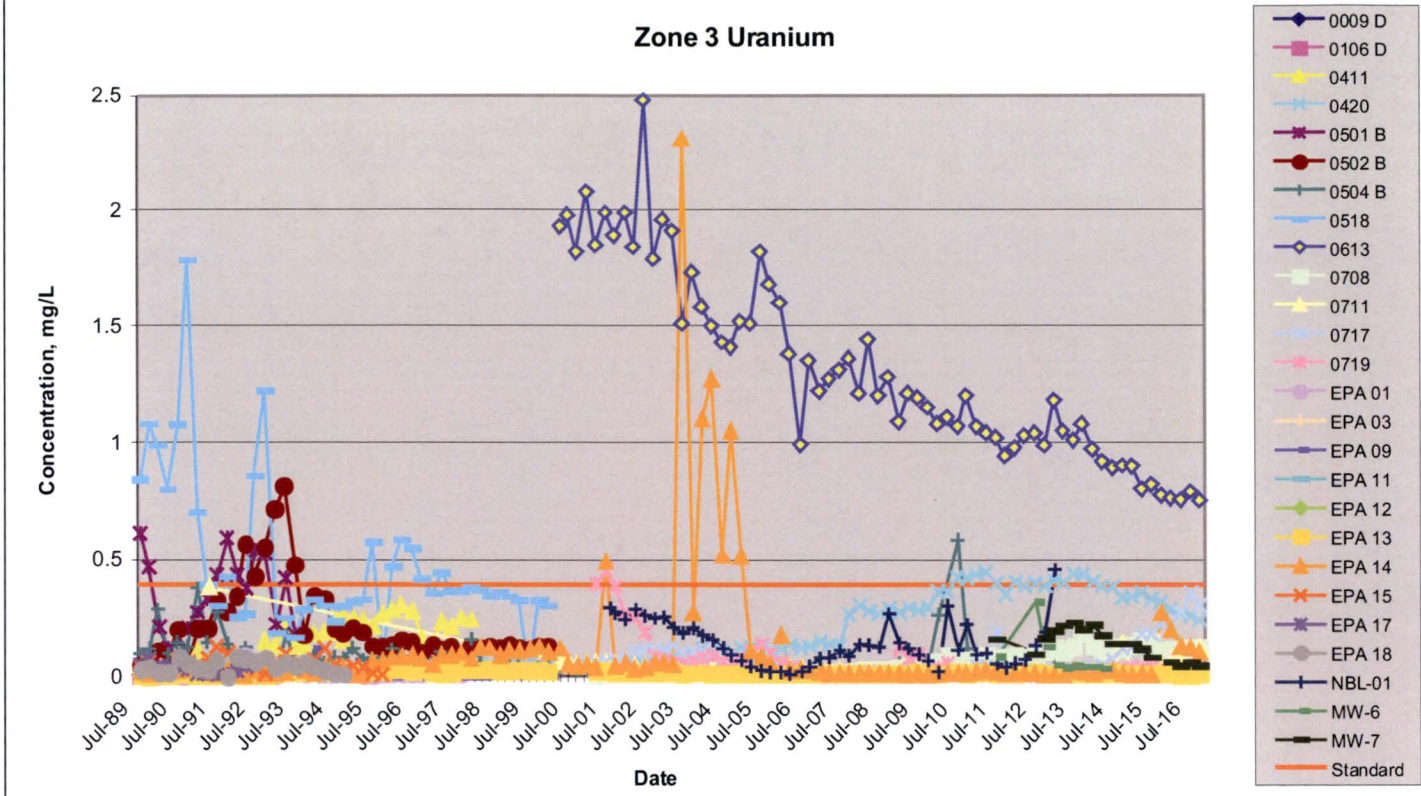
Zone 3 Approximate Extent of Aluminum  
Exceeding 5.0 mg/L, October 2016

United Nuclear Corporation Church Rock Site,  
Church Rock, New Mexico





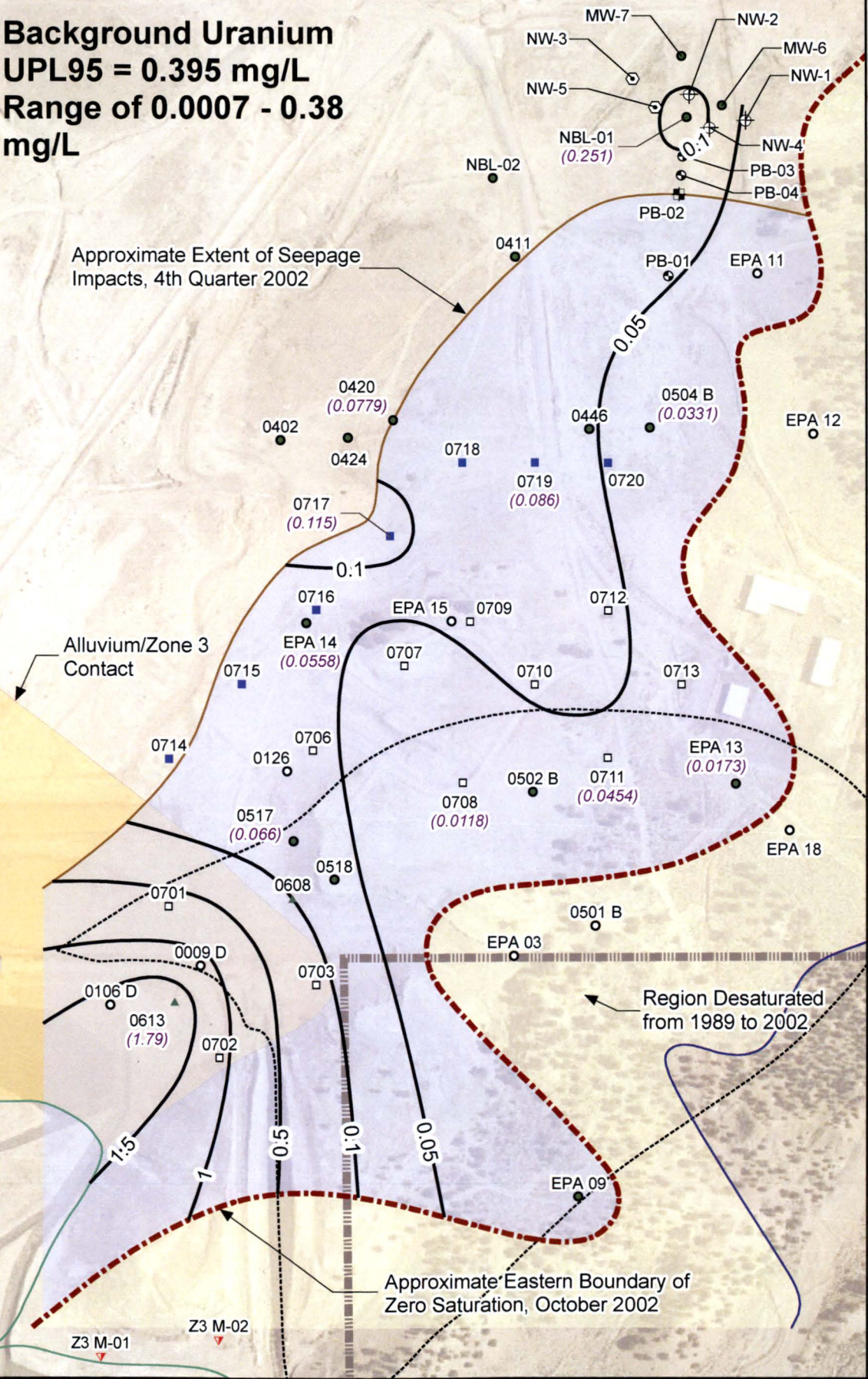
**FIGURE 44A**  
Zone 3 Uranium, Vanadium, and Radionuclides Concentrations over Time  
United Nuclear Corporation Church Rock Site, Church Rock, New Mexico



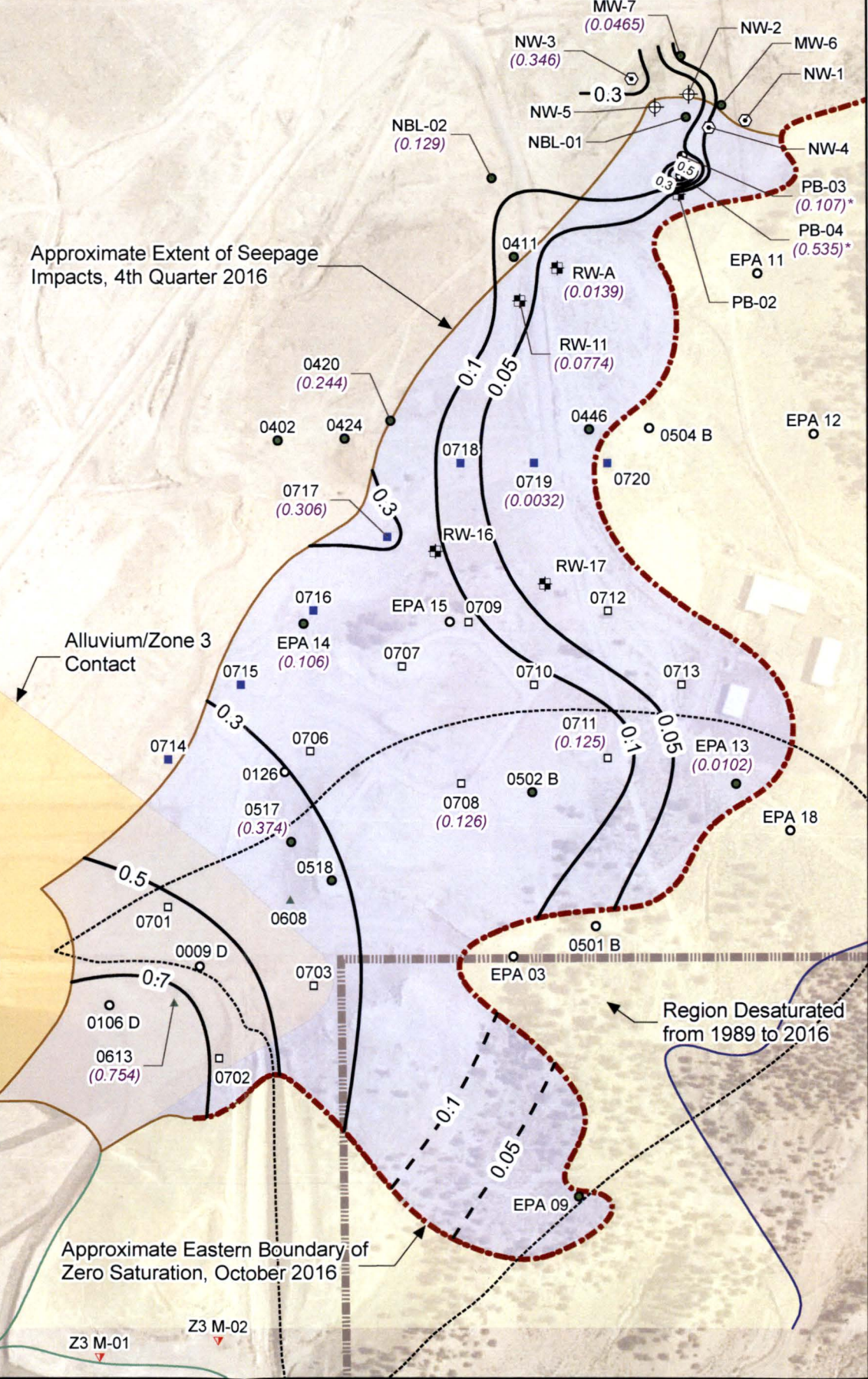


October 2002

Background Uranium  
UPL95 = 0.395 mg/L  
Range of 0.0007 - 0.38  
mg/L



October 2016



Legend

- Property Boundary
- Zone 3 Target Remedial Action Area
- Section Boundary
- Cell Boundary
- Approximate Area Impacted by Tailings Seepage
- Monitoring
- Northernmost Pumping Wells
- Northernmost Pumping Wells (Off)
- Dry Monitoring
- Stage I Extraction
- Stage II Extraction
- Other Extraction Wells
- Plume Boundary
- Northeast Pump-Back
- Piezometer
- Approximate Eastern Boundary of Zero Saturation
- Uranium Isoconcentration Contour in mg/L (dashed where inferred)

- Notes:
- Well names are displayed with black text.
  - Uranium values are shown in purple text and enclosed in parentheses.
  - PB-02 not pumping during 2016.
  - Aerial photo taken on August 1, 1996.
  - \* Uranium concentrations shown for PB-03 and PB-04 are from October 2013.

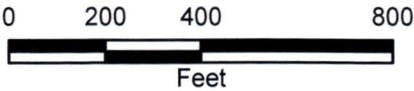


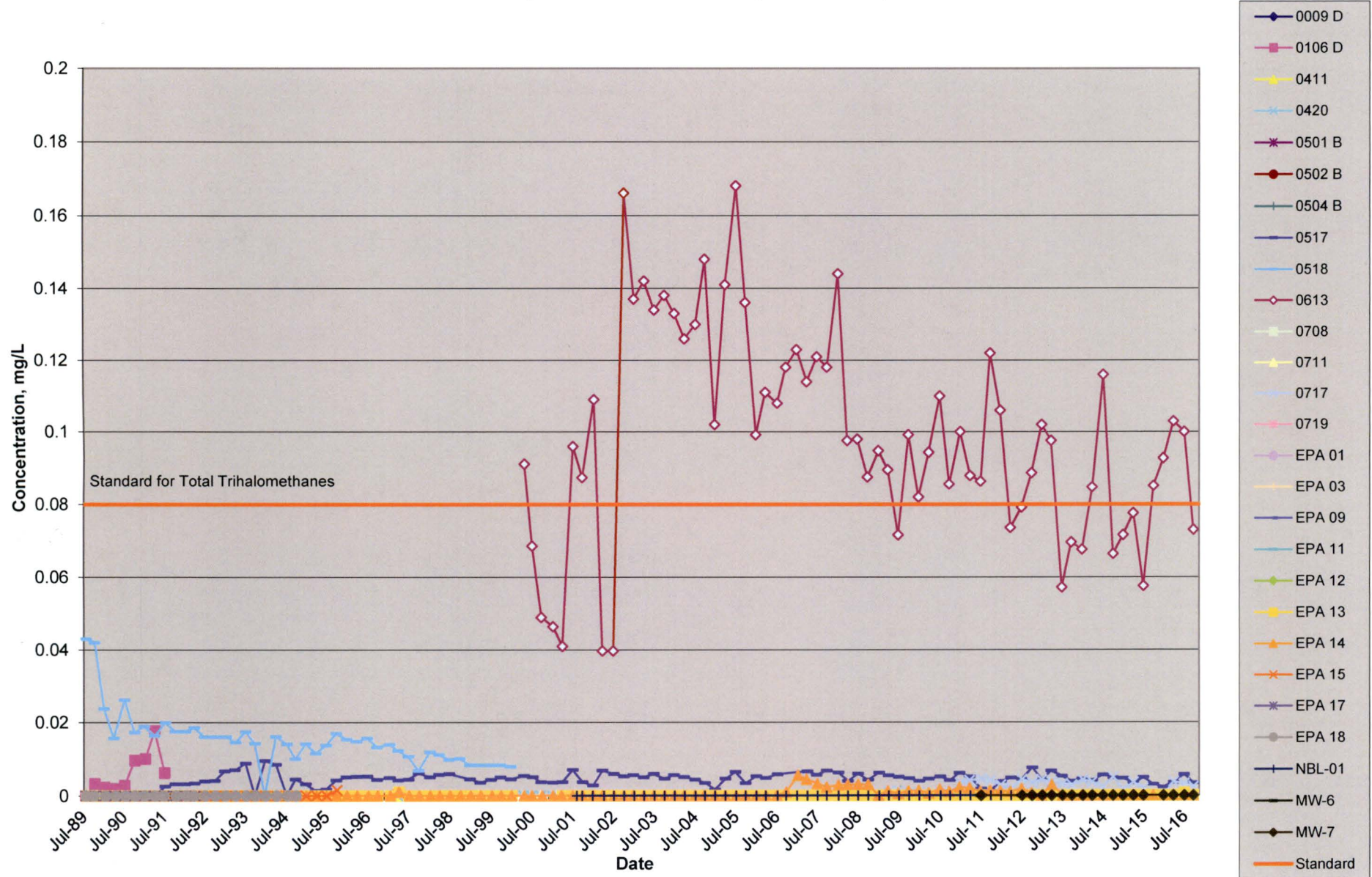
FIGURE 44B  
Zone 3 Uranium  
Isoconcentration Maps,  
2002 and 2016 (in mg/L)

United Nuclear Corporation Church Rock Site,  
Church Rock, New Mexico

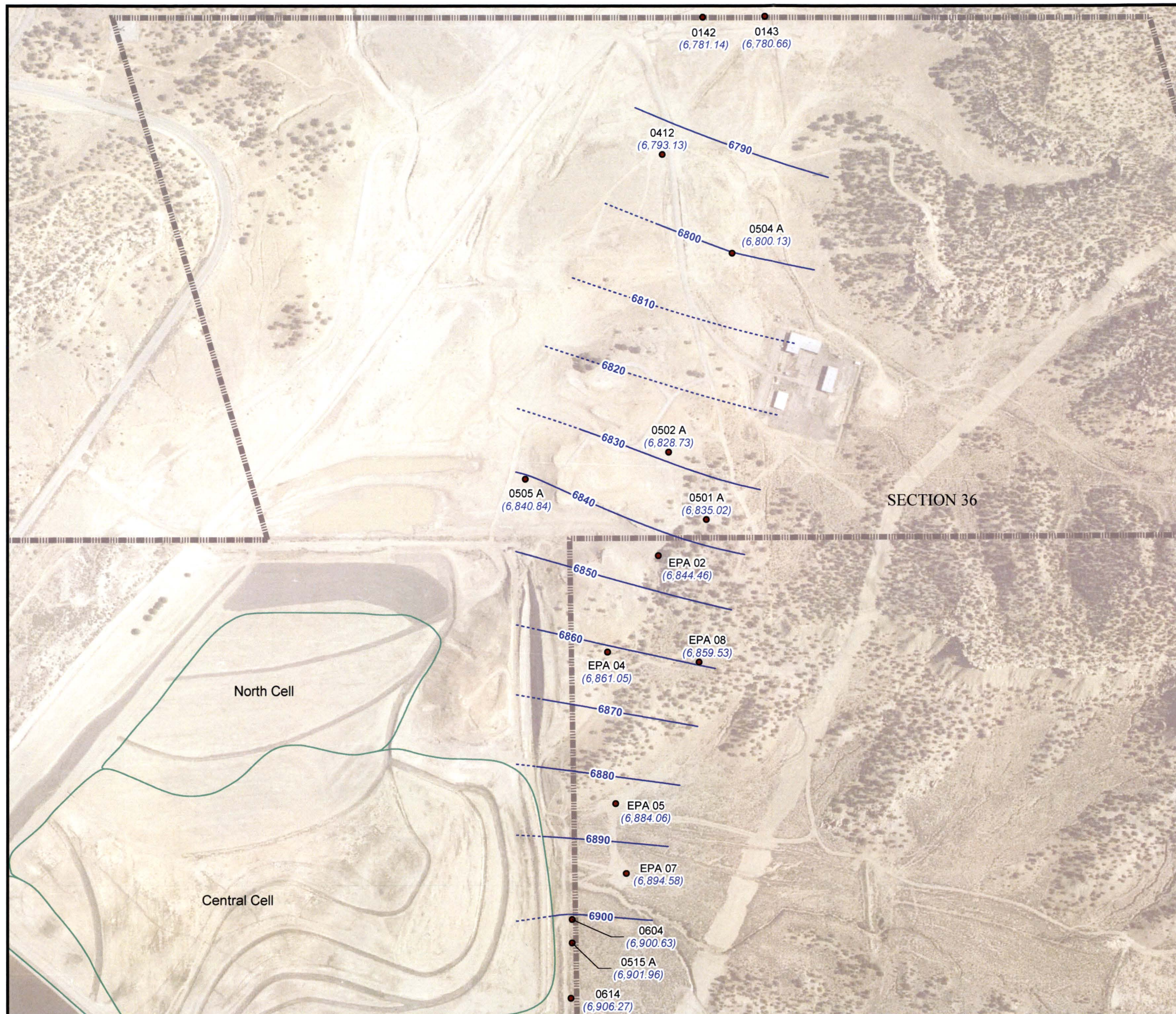




**FIGURE 45**  
 Zone 3 Chloroform Concentrations Over Time  
 United Nuclear Corporation Church Rock Site, Church Rock, New Mexico





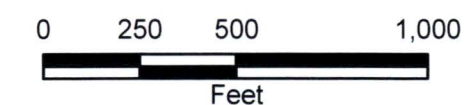


### Legend

- Zone 1 Monitoring Well
- Groundwater Elevation Contour
- - - Inferred Groundwater Elevation Contour
- Cell Boundary
- - - Property Boundary

### Notes:

1. Groundwater elevation values are displayed in feet above mean sea level.
2. Well names are displayed with black text.
3. Groundwater elevations are shown with blue text and enclosed in parentheses.
4. Aerial photo taken on August 1, 1996.



### FIGURE 46

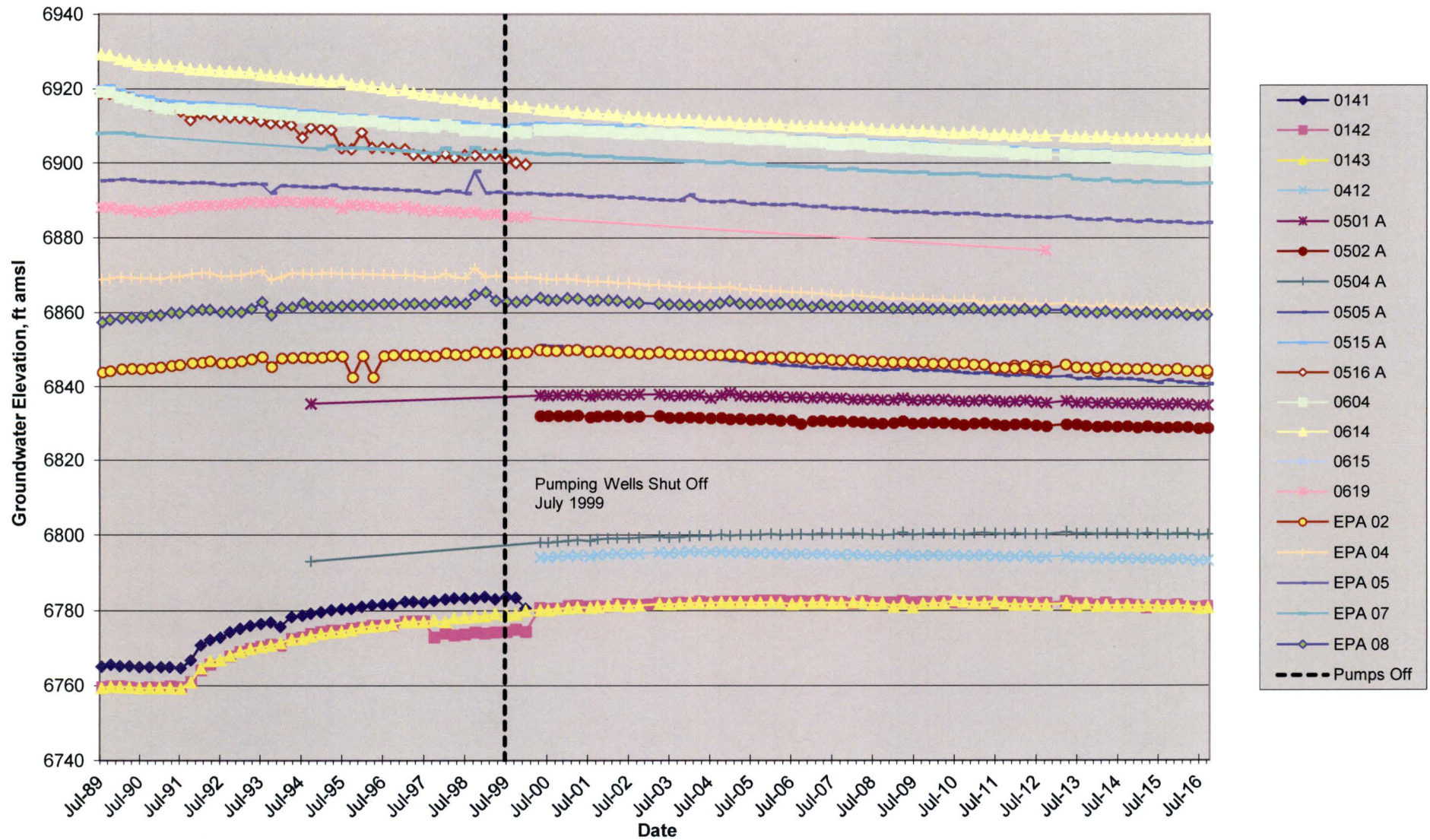
### Zone 1 Potentiometric Surface Map, October 2016

United Nuclear Corporation Church Rock Site,  
Church Rock, New Mexico

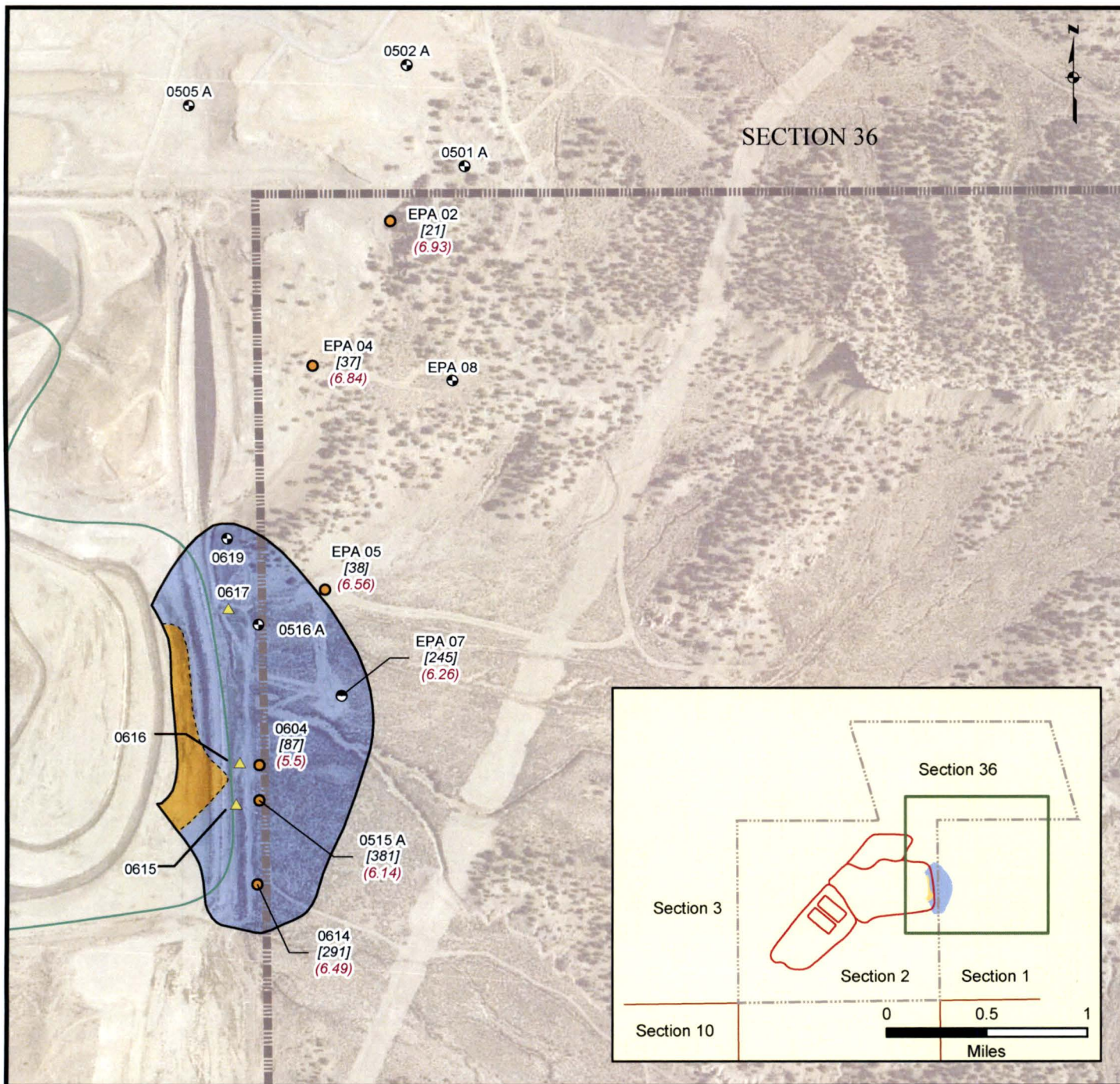




**FIGURE 47**  
**Zone 1 Water Levels Over Time**  
 United Nuclear Corporation Church Rock Site, Church Rock, New Mexico







## Legend

### Well Type

- Water Quality and Water Level Monitoring
- Water Level Monitoring
- Decomissioned East Pump Back
- Revised East Pump Back (Inactive)

Cell Boundary

Property Boundary

Approximate Extent of Zone 1 Seepage Impact

Approximate Extent of Zone 1 pH Less Than 4.0

[38] Chloride result in mg/L

(6.56) Field-measured pH in SU

### Notes:

- Seepage impacts delineated by chloride detections greater than 50 mg/L.
- Aerial photo taken on August 1, 1996.

0 250 500 1,000  
Feet

## FIGURE 48

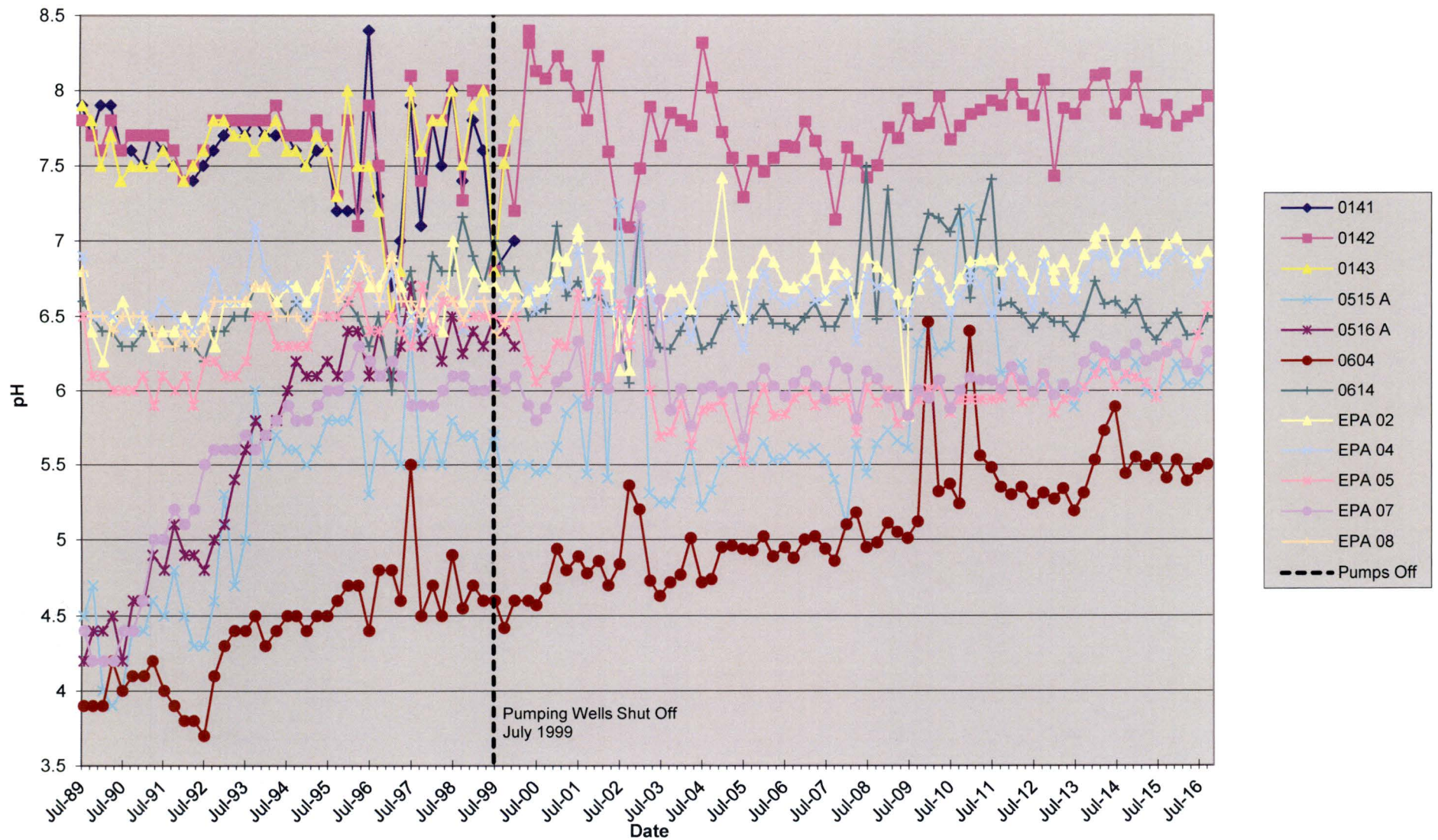
Zone 1 Extent of Seepage Impacts,  
October 2016

United Nuclear Corporation Church Rock Site,  
Church Rock, New Mexico



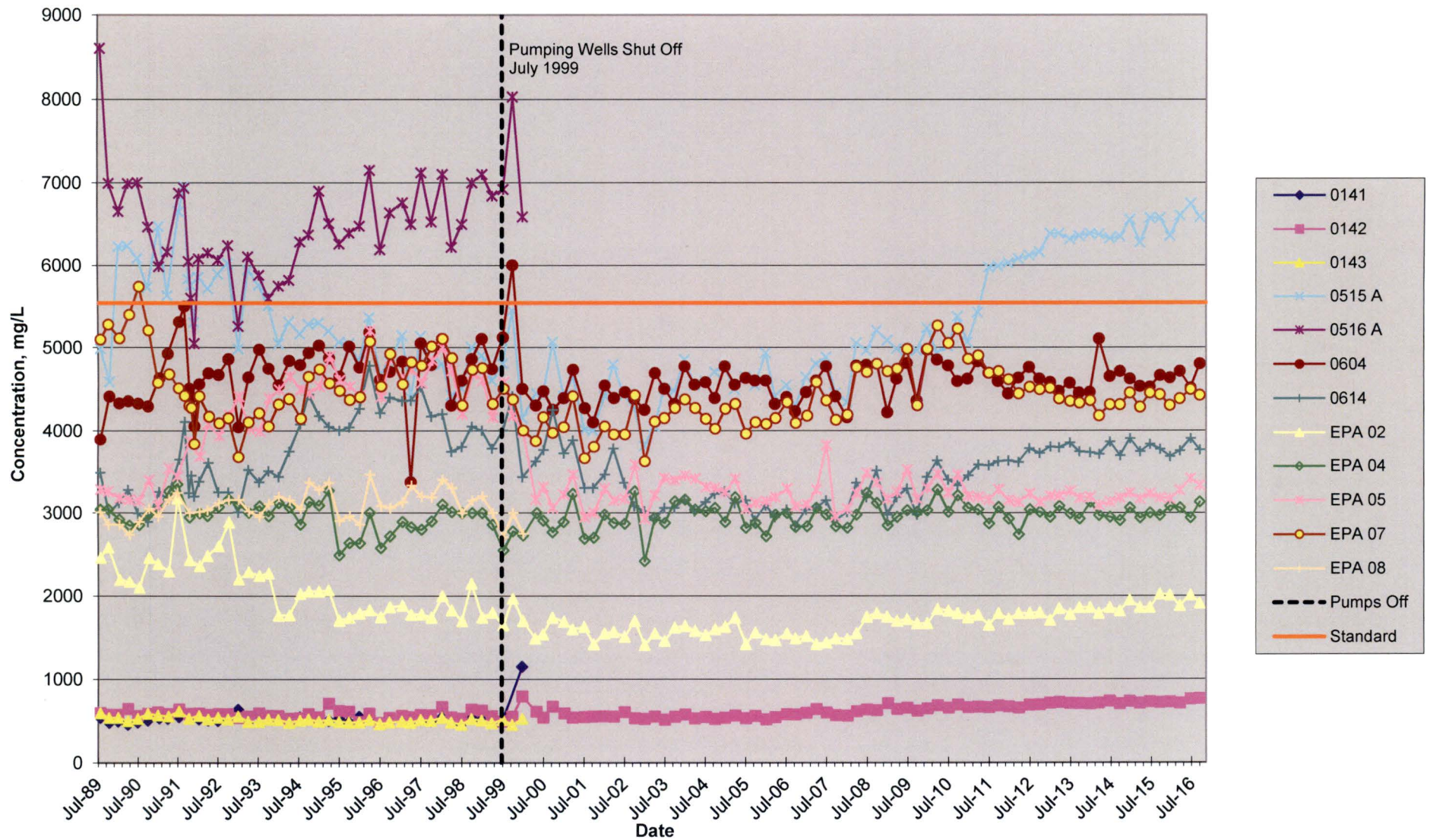


**FIGURE 49**  
 Zone 1 pH Over Time  
 United Nuclear Corporation Church Rock Site, Church Rock, New Mexico

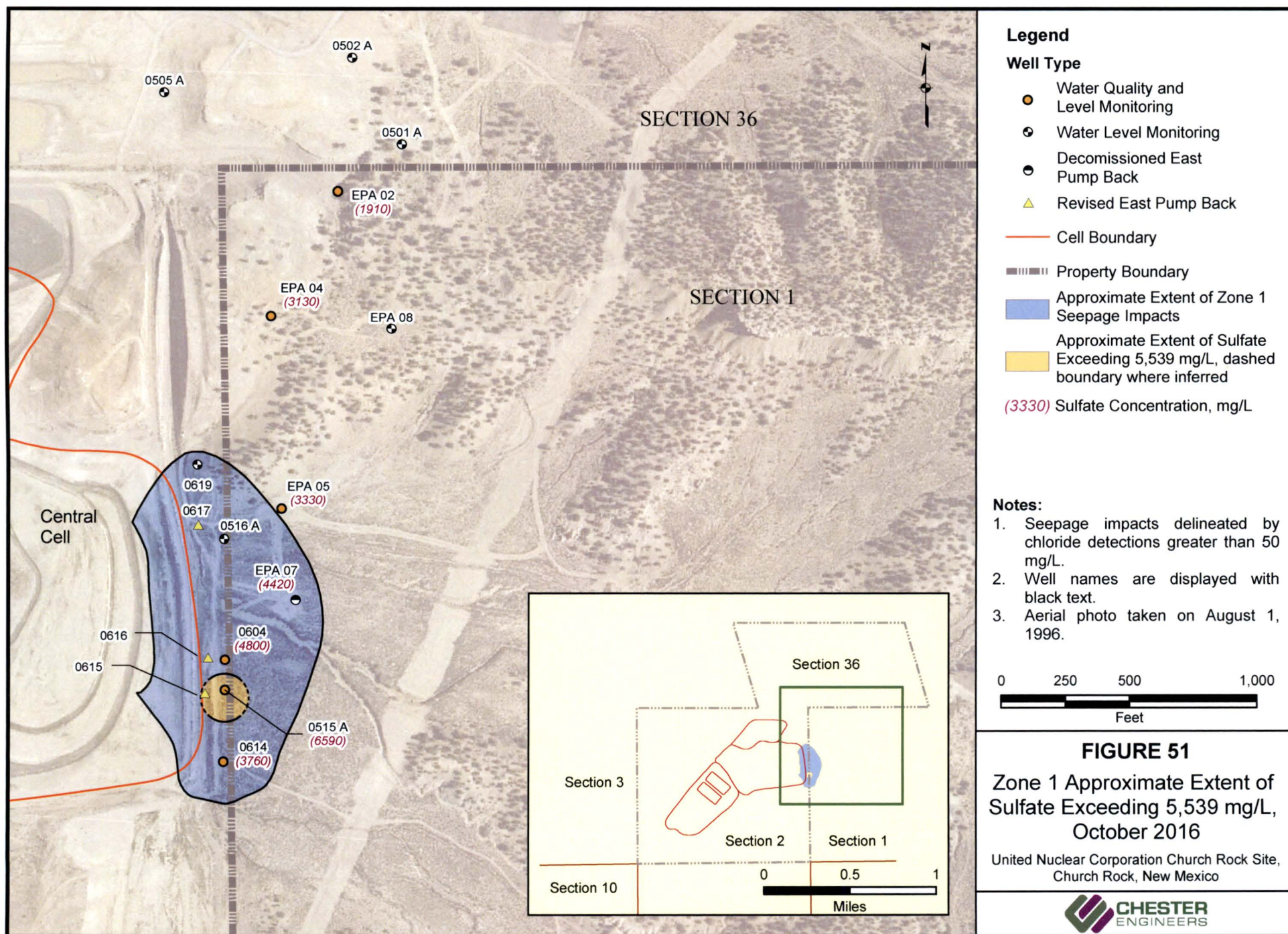




**FIGURE 50**  
 Zone 1 Sulfate Concentrations Over Time  
 United Nuclear Corporation Church Rock Site, Church Rock, New Mexico

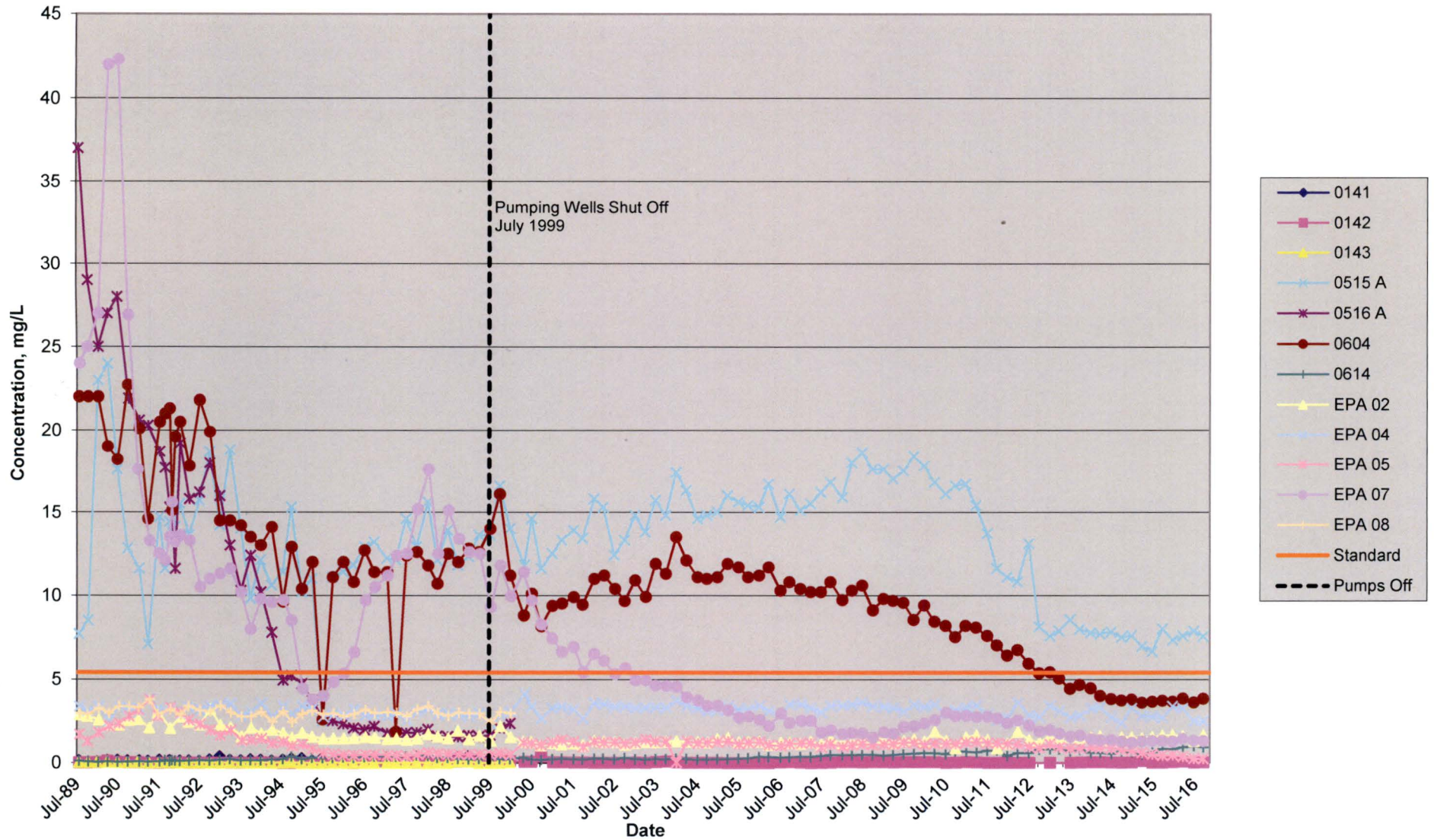




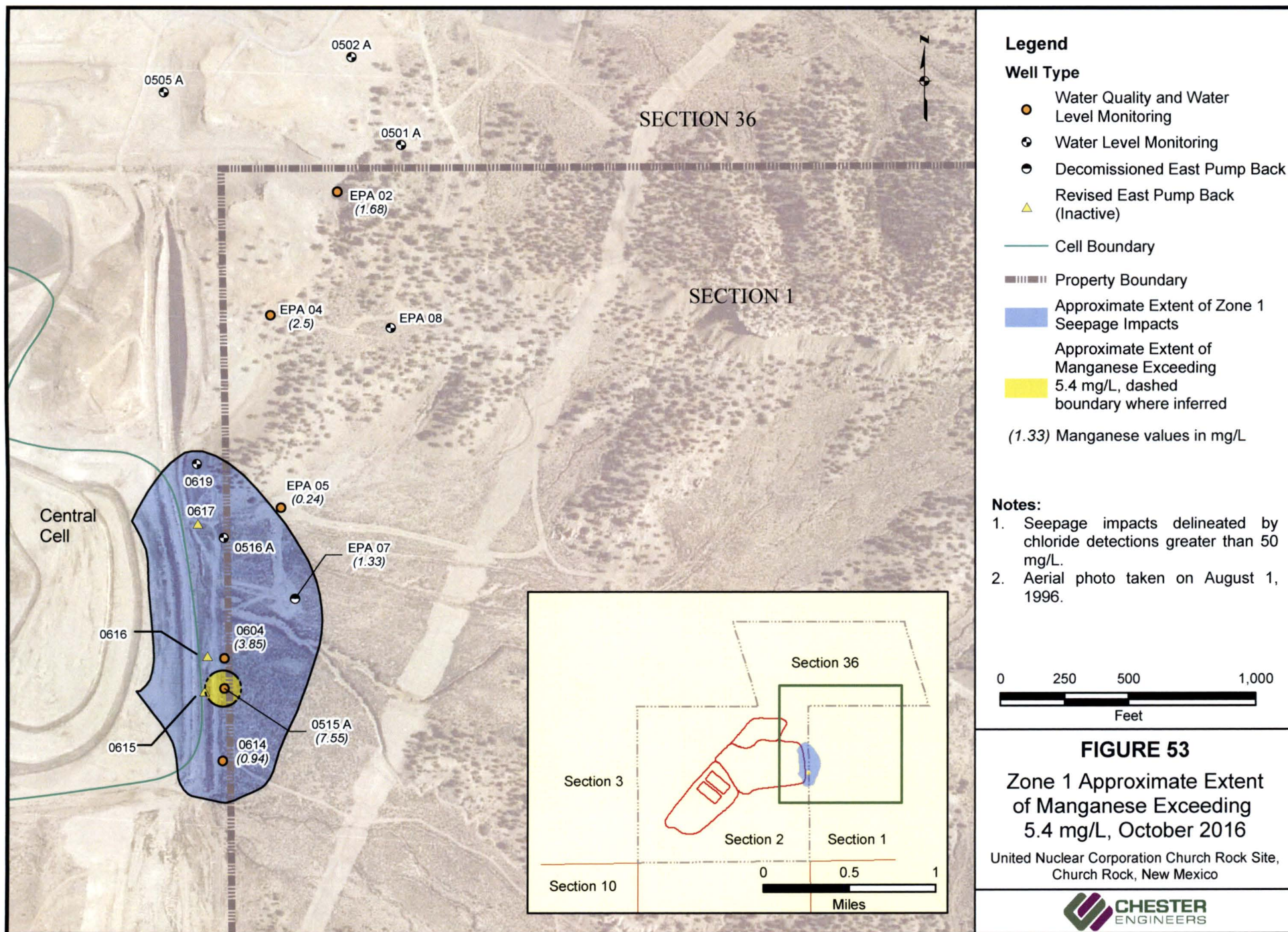




**FIGURE 52**  
 Zone 1 Manganese Concentrations Over Time  
 United Nuclear Corporation Church Rock Site, Church Rock, New Mexico

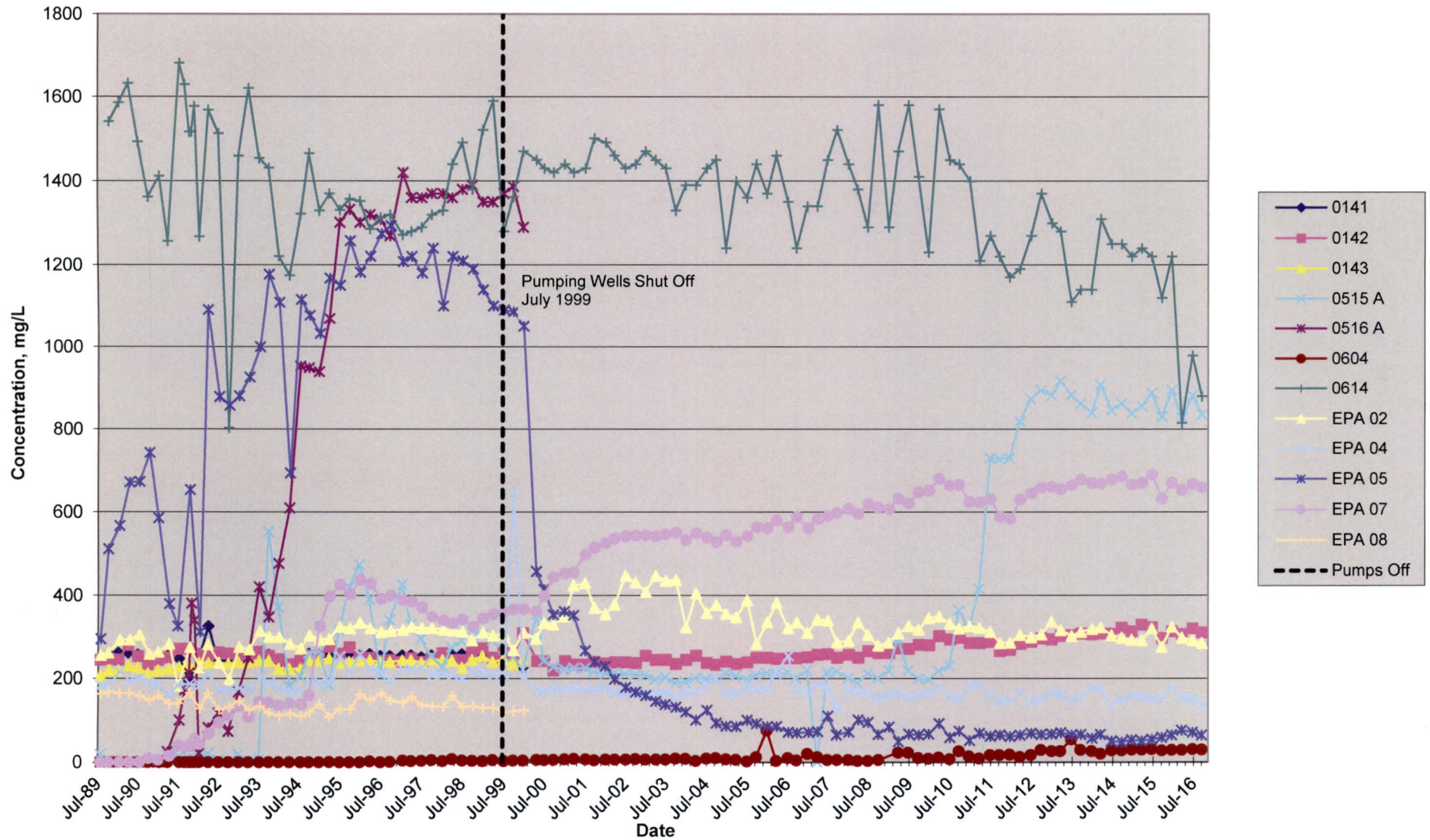






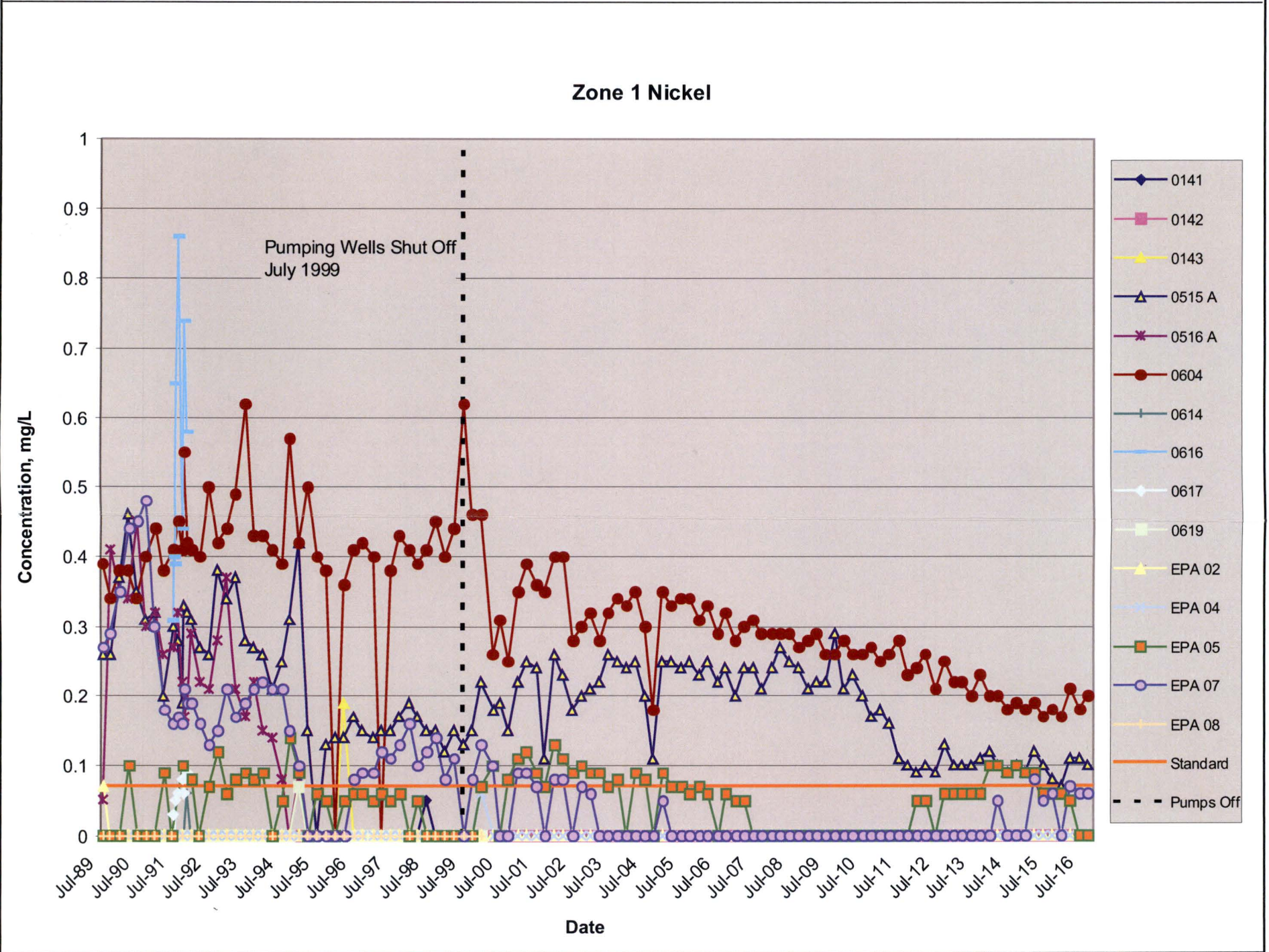
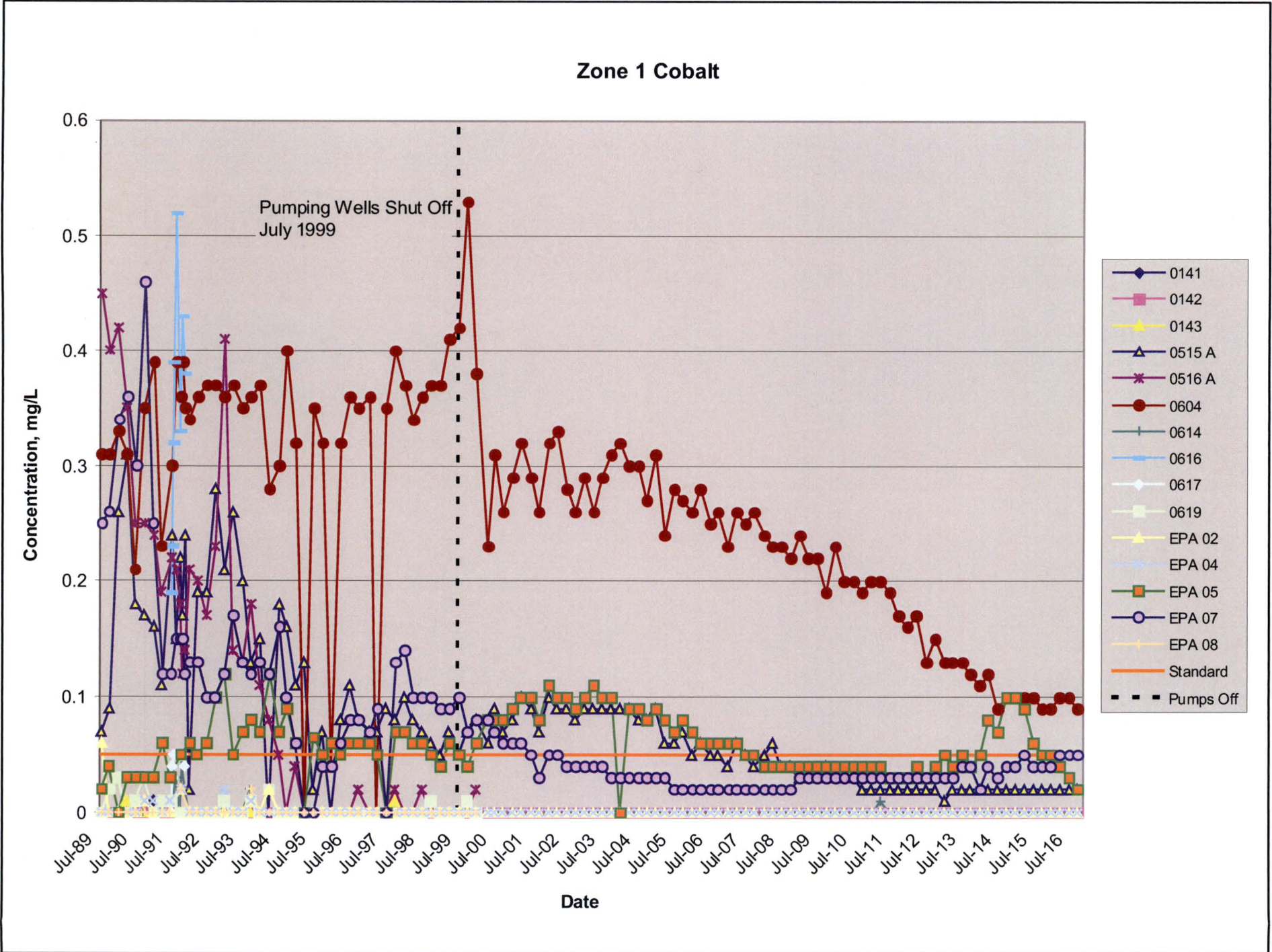


**FIGURE 54**  
 Zone 1 Bicarbonate Concentrations Over Time  
 United Nuclear Corporation Church Rock Site, Church Rock, New Mexico

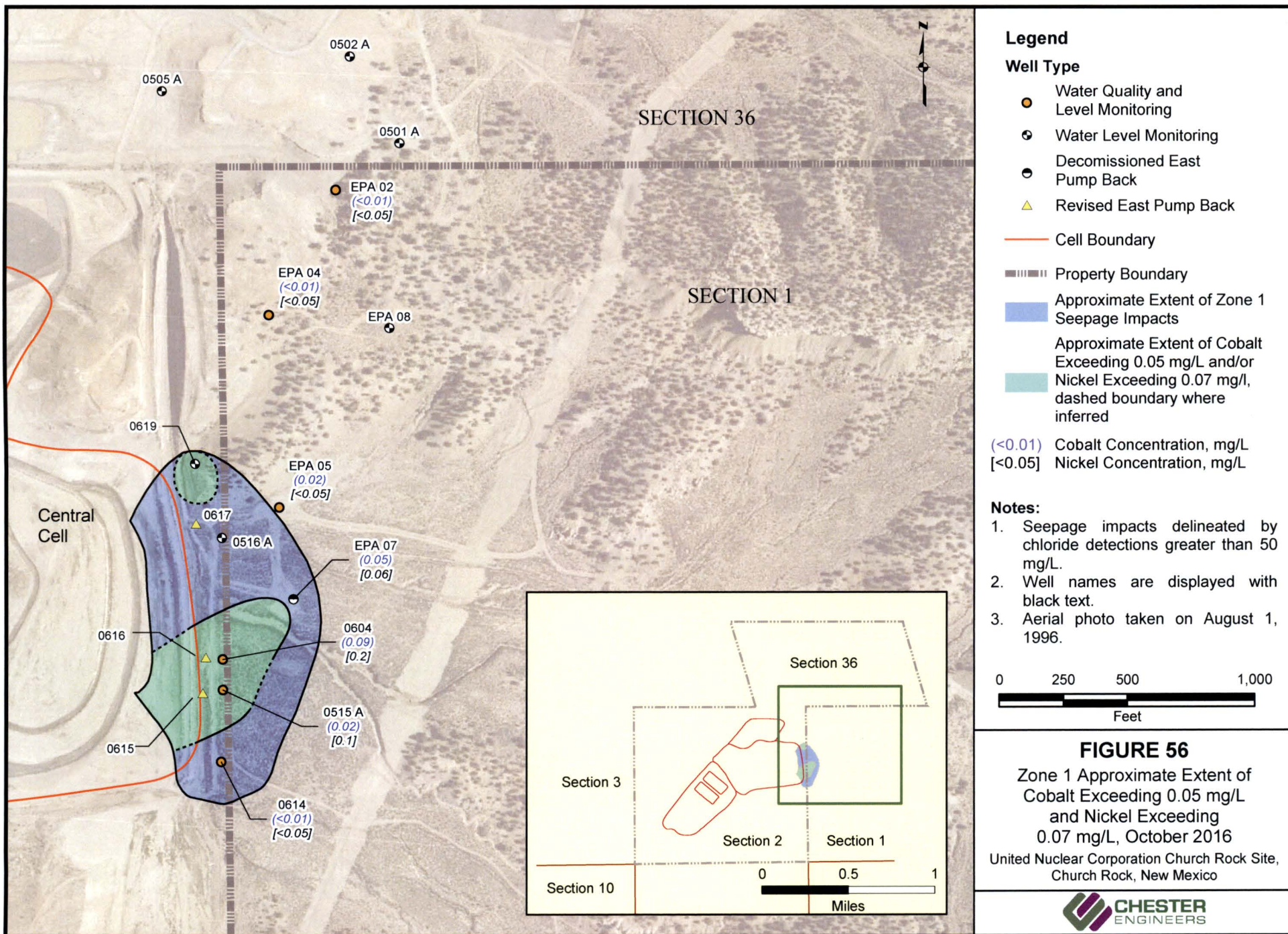




**FIGURE 55**  
Zone 1 Cobalt and Nickel Concentrations over Time  
United Nuclear Corporation Church Rock Site, Church Rock, New Mexico

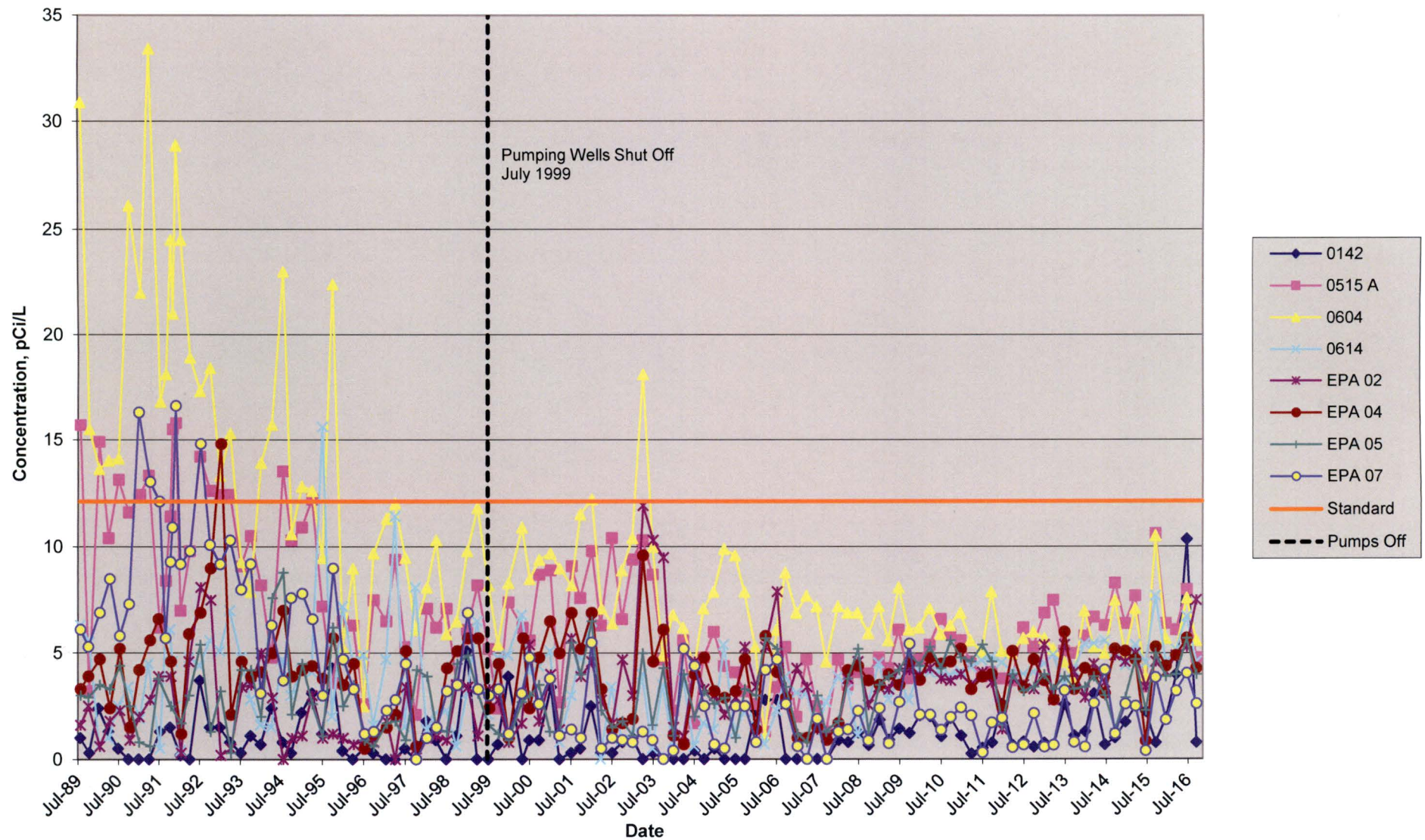








**FIGURE 57**  
 Zone 1 Combined Radium-226 and Radium-228 Over Time  
 United Nuclear Corporation Church Rock Site, Church Rock, New Mexico





# Appendix A

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## *Southwest Alluvium Monitoring Data*

The Southwest Alluvium Remedial Action System was installed in August 1989 and began operating in October 1989. The initial system consisted of three extraction wells (Wells 801, 802, and 803) and four water level observation wells (Wells 804, 805, 806, and 807). An additional extraction well, Well 808, was installed and began operating in June 1991, as required by the Nuclear Regulatory Commission and the U.S. Environmental Protection Agency (EPA). Extraction Wells 801, 802, and 803 are monitored for water quality, and Observation Wells 804, 805, 806, and 807 were monitored for water level elevations on a quarterly basis. Well 801 was decommissioned at the end of July 1999 because it pumped at a rate of less than 0.5 gallon per minute for the previous eight years.

Water level elevations and water quality data were also collected on a quarterly basis from 18 monitoring wells located up-, down-, and cross-gradient from the tailings area. The 18 monitoring wells include Wells GW 1, GW 2, GW 3, GW 4, EPA 22A, EPA 23, EPA 25, EPA 27, EPA 28, 509 D, 632, 29 A, 624, 627, 639, 642, 644, and 645. All of these wells, except for Wells EPA 27 and 29 A, are completed in the alluvium. Well EPA 27 is completed partially in the alluvium and partially in the Mancos formation and Well 29 A is completed in the underlying Zone 1 formation. Consequently, water quality data collected from these two wells may not be representative of alluvial groundwater conditions.

Beginning with the second quarter of 2000, a revised monitoring program was implemented. Changes to the wells included in the monitoring program for the Southwest Alluvium are shown in Table 1B of this 2016 Annual Review Report. See the enclosed Figure A-1 for the current layout of the wells.

Beginning in January 2001, a natural attenuation test was implemented, as requested during the November 14, 2000, meeting in Sante Fe, New Mexico, and as documented in the EPA's email letter from Greg Lyssy, dated November 15, 2000 (Lyssy, 2000). For this test, Extraction Wells 802, 803, and 808 were turned off and added to the revised monitoring program wells. During the 18-month test period, the wells were sampled and water level elevations were measured on a monthly basis. The results of the first 18 months of the natural attenuation test were provided in a report submitted in November 2002 (Earth Tech, 2002c). The natural attenuation test has continued through October 2016 with a quarterly frequency of water quality and water level monitoring.

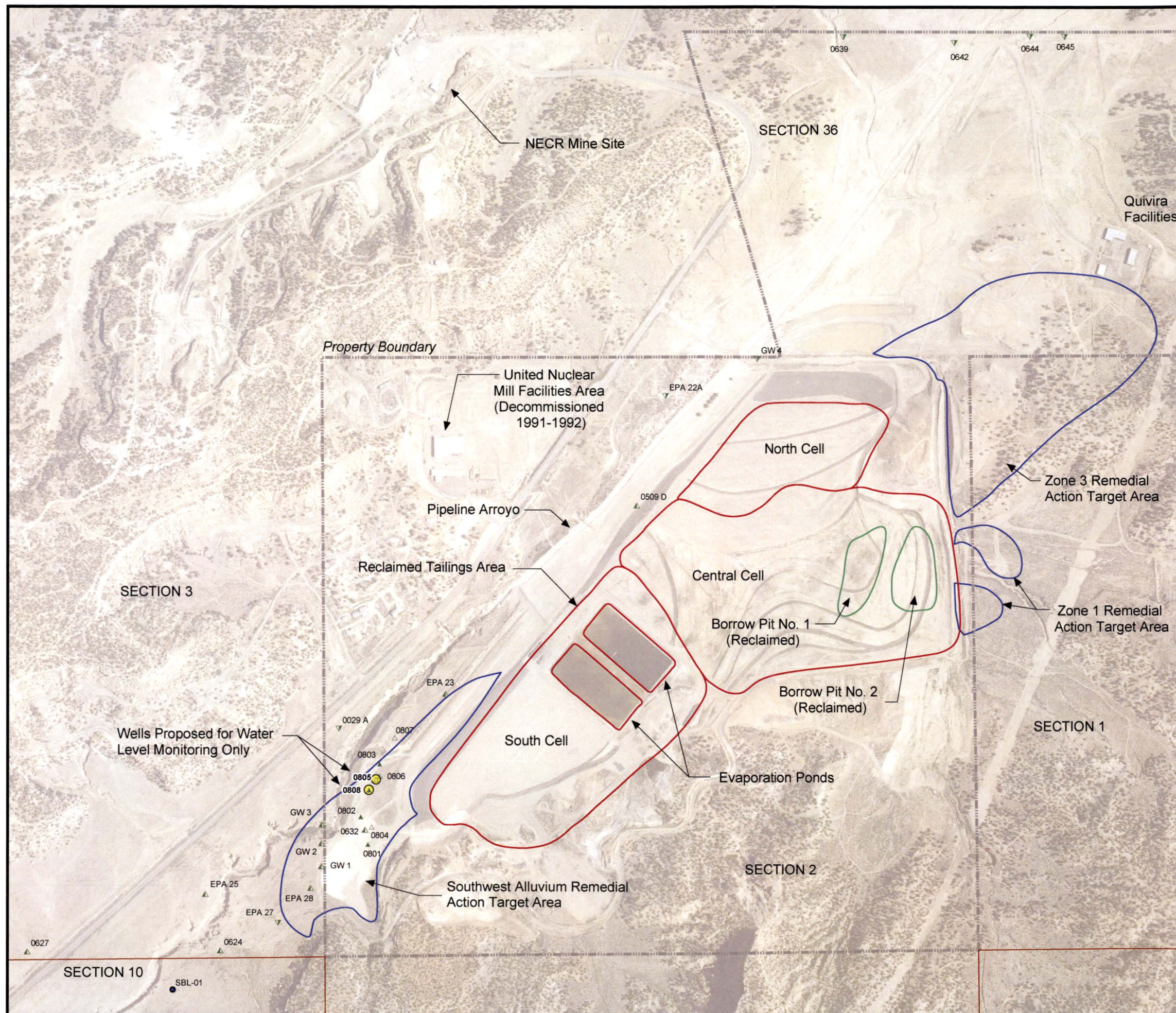
During July 2004, a new downgradient well was installed within the Southwest Alluvium: SBL 1. The first sampling and water-level measurement of this well occurred in October 2004; quarterly results through October 2016 are included in this appendix. This well is not part of the formal performance monitoring program during 2016.

Wells GW 2 and GW 3 were not sampled beginning in October 2015 and can no longer be safely sampled due to their proximity to the unstable edges of Pipeline Arroyo canyon.

Table A.1 presents the quarterly water level and water quality data for the observation and monitoring wells from the second quarter of 1989 through the fourth quarter of 2016. The laboratory analytical data for 2016 are presented at the end of this appendix.

**Figures A-1 and A-2**



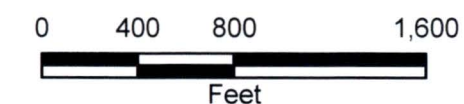


### Legend

#### Southwest Alluvium

- ▲ Idled Extraction Well
- ▲ Groundwater Quality and Water Level Monitoring Well
- △ Water Level Monitoring Well
- ▽ Dry Monitoring Well
- Monitoring Well Installed in 2004
- Well Proposed for Water Level Monitoring Only
- Property Boundary
- Section Boundary
- Tailings Pond
- Remedial Action Target Area

Aerial photo taken on August 1, 1996.



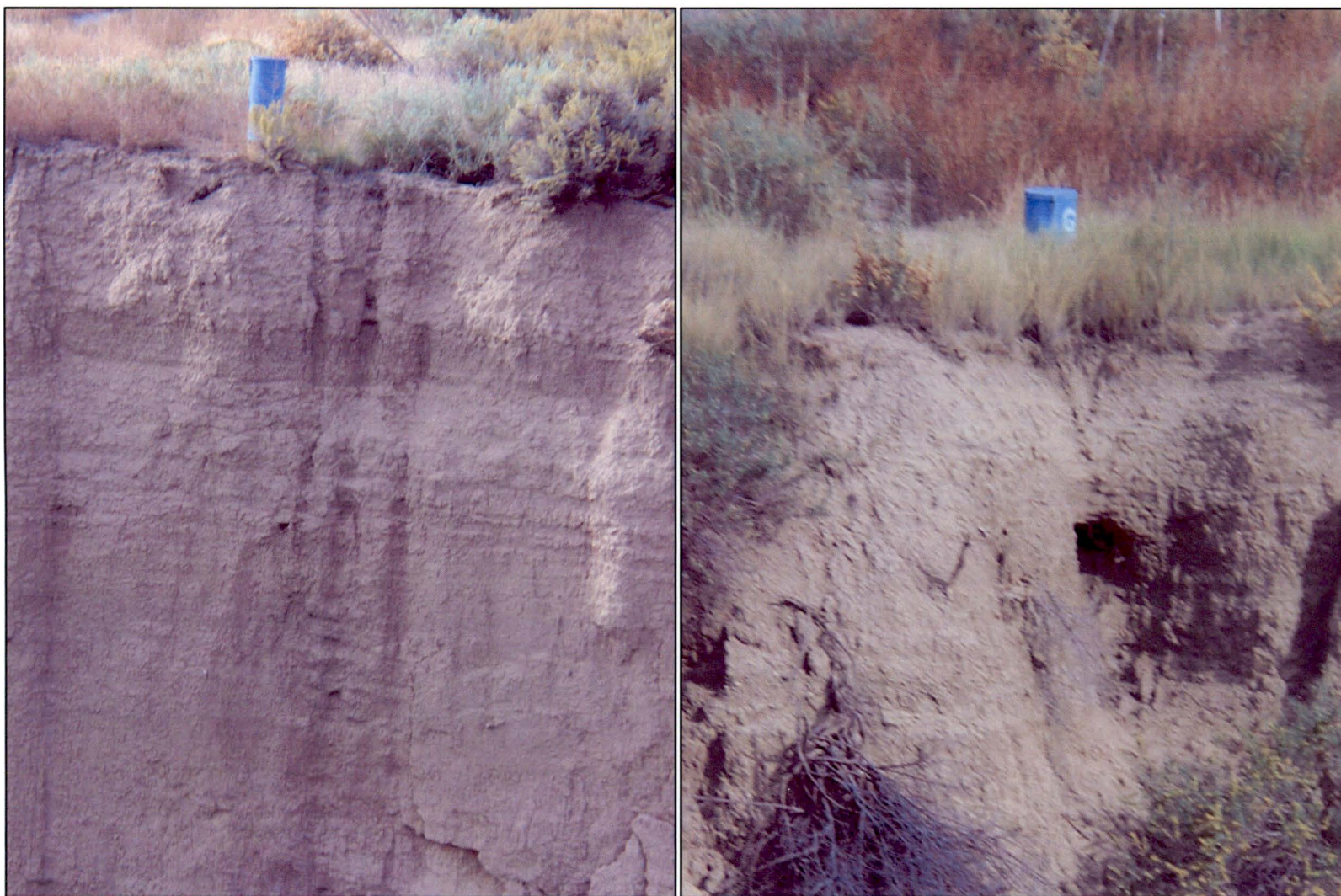
### FIGURE A-1

#### Southwest Alluvium Proposed Revised Monitoring Well Locations

United Nuclear Corporation Church Rock Site,  
Church Rock, New Mexico







**Figure A-2** - Photographs show the positions of wells GW 2 (left) and GW 3 (right) relative to the unstable southern and northern edges of the Pipeline Arroyo canyon, respectively. The wells can no longer be sampled safely.

**Notes For Table A.1****Southwest Alluvium Data Summary, 1989 – 2016****General Notes:**

1. NRC standard as listed in License Condition 30, Part B (revised 2015 [NRC, 2015] and with proposed corrections of typographical errors [GE, 2015]), based on updated BTVs for the site [UNC, 2012; GE, 2012b).
2. EPA standard is revised cleanup level based on updated BTV evaluation for the site (Chester Engineers, 2015b) and approved for use to complete Part III of the SWSFS (EPA, 2015).
3. NA - Not applicable.
4. Data qualifiers
  - a. D - sample reporting limit was increased due to sample matrix.
  - b. E - analyte concentration exceeded instrument calibration range (estimated result)
  - c. H - analysis was performed past the recommended method holding time.
  - d. U - Not detected at minimum detectable concentration
5. Values that exceed the NRC and/or EPA standards are shaded.
6. Gross alpha value excludes contribution from radon and uranium.
7. Reporting limit for bicarbonate changed from 0.0 mg/L to 0.1 mg/L in fourth quarter 1997.
8. Reporting limit for cadmium changed from 0.01 mg/L to 0.005 mg/L after fourth quarter 1997. The analytical method changed from EPA 200.7 (ICP) to 200.8 (ICP-MS).
9. NO<sub>3</sub> (nitrate) is reported by the laboratory as nitrate + nitrite as N.
10. During August 2007, the NRC issued License Amendment 37 (NRC, 2006b) revising the former 1 ug/L chloroform groundwater protection standard to 80 ug/L for total trihalomethanes (TTHMs) in the Southwest Alluvium, Zone 1 and Zone 3; and also revising the current combined radium-226 and -228 groundwater protection standard of 5 pCi/L to 5.2 pCi/L in the Southwest Alluvium and 9.4 pCi/L in Zone 1. The combined radium standards have been subsequently revised (see Note 1).
11. Energy Laboratory's reporting of radiological analyses changed during 2008 (N.A. Water Systems, 2008d). This affected the reporting of Church Rock sample analyses beginning in April 2008 (2nd quarter). The changes were made to make the reporting methods consistent with Section 7.5 of The United States Nuclear Regulatory Commission's Regulatory Guide 4.14.



The changes are summarized as follows:

- A minimum detectable concentration (MDC) is determined and reported for each analysis.
- Sample results are reported regardless of whether they are lower than the MDC for the analysis. This may result in the reporting of negative concentrations.
- Sample results lower than the MDC are qualified with a “U”.

These noted changes affected the reporting of all radiological parameters analyzed in Church Rock samples, except for thorium-230. Energy Labs did not have an approved methodology for determining MDC values for thorium-230. In the absence of MDC values, the historical reporting limit was used instead. Therefore, U-qualified results for thorium-230 indicate concentrations below a reporting limit rather than an MDC. Otherwise, the reporting of thorium-230 results was treated similarly to other radiological parameters. This means that measured concentrations were reported with a U qualification if the values were below the reporting limit.

The rationale for reporting values below MDC or reporting limit, even if negative, is that errors associated with the reported values are expected, over time, to average to zero. This means that averages or sums (e.g. for total radium) of concentrations will tend to be more accurate if below limit (MDC or reporting) results are retained in the calculations.

12. At the request of EPA, UNC had the laboratory reduce the reporting limits for beryllium and lead. The new reporting limits are lower than the action levels. Beryllium’s former reporting limit of 10 ug/L has been reduced to 1 ug/L (using lab method E200.7), and lead’s former reporting limit of 50 ug/L has been reduced to 1 ug/L (using lab method E200.8). These changes were implemented during the July 2012 sampling event.

*Specific Notes:*

- Well 801 is monitored for water level only beginning in 2nd quarter 2000.
- Well 803 was not sampled in 3rd quarter 1999.
- Well EPA 22A contained insufficient water for sampling beginning 4th quarter 1997.
- Well EPA 27 contained insufficient water for sampling beginning 4th quarter 1997.
- Well GW 4 contained insufficient water for sampling, 1st and 3rd quarters 1996, and 3rd Quarter 1999.
- Well 29 A contained insufficient water for sampling, 1st quarter 1995.
- Well 639 contained insufficient water for sampling, 1st quarter 1995.
- Well 642 contained insufficient water for sampling, 4th quarter 1995.
- Well 644 contained insufficient water for sampling, 1st quarter 1993.
- Well 645 contained insufficient water for sampling, 1st quarter 1991.

- The following changes to the revised monitoring program were implemented for the Natural Attenuation test beginning January 2001:
  - Well 801 is monitored for water level and water quality.
  - Pumping wells 802, 803, and 808 were temporarily shut off and are monitored for water level and water quality.
  - At the request of EPA, UNC made turbidity measurements during the July and October 2012 sampling events.
  - Wells GW 2 and GW 3 were not sampled beginning in October 2015 and can no longer be safely sampled due to their proximity to the unstable edges of Pipeline Arroyo canyon.

**Table A.1**



**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO <sub>3</sub>	SO <sub>4</sub>	Cl	NH <sub>4</sub> as N	NO <sub>3</sub> as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
0624	N	7/19/1989	6860.40	7.30	7.64	4637	565	412	226	4.1	378	2479	108	0.06	116	< 1	< 0.1	< 0.001
0624	N	10/16/1989	6860.40	7.10	7.50	4760	535	399	211	5	456	2182	110	0.1	108	< 1	< 0.1	< 0.001
0624	N	1/10/1990	6860.10	7.20	7.32	4642	562	363	208	3.61	473	2370	110	0.05	118	< 1	< 0.1	< 0.001
0624	N	4/5/1990	6860.40	7.10	7.58	4722	559	390	206	3.8	537	2311	115	0.12	130	< 1	< 0.1	< 0.001
0624	N	7/3/1990	6859.70	7.10	7.48	4839	553	371	195	3.9	512	2306	113	< 0.05	127	< 1	0.1	< 0.001
0624	N	10/3/1990	6859.80	7.00	7.75	4783	565	384	215	4	561	2311	117	< 0.05	82	< 1	< 0.1	0.001
0624	N	1/15/1991	6860.00	7.10	7.55	4686	612	405	212	5.6	528	2468	120	< 0.05	117	< 1	< 0.1	< 0.001
0624	N	4/2/1991	6860.10	7.20	7.68	4832	555	362	203	3.2	524	2428	130	< 0.05	132	< 1	0.13	< 0.001
0624	N	7/17/1991	6859.20	7.10	7.75	4689	540	335	195	2.9	595	2602	132	0.05	159	< 1	0.1	< 0.001
0624	N	10/15/1991	6858.80	6.90	7.54	4640	609	373	186	2.5	549	2327	118	< 0.05	93.9	< 1	0.1	0.001
0624	N	1/15/1992	6858.50	6.90	7.57	4267	525	348	197	2.8	539	2296	113	< 0.05	82	< 1	< 0.1	< 0.001
0624	N	4/8/1992	6858.30	6.90	7.73	4279	581	371	208	3.5	597	2276	118	< 0.05	83.2	< 1	< 0.1	< 0.001
0624	N	7/8/1992	6857.90	6.80	7.43	4323	581	360	254	4.3	432	2259	125	0.08	106	< 1	< 0.1	< 0.001
0624	N	10/6/1992	6857.50	7.00	7.56	4704	626	364	218	2.1	593	2304	112	< 0.05	120	< 1	< 0.1	< 0.001
0624	N	1/7/1993	6857.10	7.00	7.71	4698	587	348	211	3.9	586	2245	122	< 0.05	105	< 1	< 0.1	< 0.001
0624	N	4/7/1993	6857.10	7.00	7.50	4111	553	307	230	15.9	581	2172	129	< 0.05	107	< 1	< 0.1	< 0.001
0624	N	7/14/1993	6856.60	7.00	7.11	4803	645	361	211	2.4	748	2307	138	< 0.05	106	< 1	< 0.1	< 0.001
0624	N	10/7/1993	6856.40	7.10	7.62	4371	602	326	188	1.4	700	2107	128	< 0.05	117	< 1	< 0.1	< 0.001
0624	N	1/6/1994	6856.00	7.20	7.41	4425	618	345	200	2.2	694	2241	129	< 0.05	89.4	< 1	< 0.1	< 0.001
0624	N	4/12/1994	6855.60	7.10	7.45	4779	623	344	197	1.7	625	2324	118	0.3	124	< 1	< 0.1	< 0.001
0624	N	7/21/1994	6855.20	7.10	7.54	4592	674	356	203	2	649	2203	118	< 0.05	115	< 1	< 0.1	0.001
0624	N	10/5/1994	6855.00	6.80	7.64	4815	661	391	212	3.8	843	2160	137	< 0.05	97.3	< 1	< 0.1	< 0.001
0624	N	1/4/1995	6854.70	6.90	7.63	4803	665	375	202	3.5	814	2303	137	0.27	92.8	< 1	< 0.1	< 0.001
0624	N	4/5/1995	6854.40	7.00	7.44	4661	630	342	195	3	475	2383	155	0.27	101	< 1	< 0.1	< 0.001
0624	N	7/6/1995	6854.40	7.10	7.63	4358	655	405	207	3.9	766	2201	157	0.1	93.5	< 1	< 0.1	< 0.001
0624	N	10/3/1995	6853.80	7.00	7.83	4950	655	415	197	3.8	972	2247	154	0.18	94.3	< 1	< 0.1	0.002
0624	N	1/3/1996	6853.60	7.00	7.43	4553	610	392	203	4.8	1182	1879	123	< 0.05	97	< 1	< 0.1	< 0.001
0624	N	4/2/1996	6853.20	6.80	7.92	4942	655	430	204	4.7	1048	2310	150	< 0.05	100	< 1	< 0.1	< 0.001
0624	N	7/7/1996	6852.90	6.60	7.45	4946	645	405	206	4.6	1158	2190	145	0.07	84.4	< 1	< 0.1	< 0.001
0624	N	10/1/1996	6852.90	6.80	7.25	5050	666	430	204	4.6	1180	2179	161	< 0.05	93	< 1	< 0.1	0.001
0624	N	1/22/1997	6852.60	6.70	7.69	4920	675	440	202	4.8	1070	2146	161	< 0.05	84.6	< 1	< 0.1	< 0.001
0624	N	4/8/1997	6852.40	6.90	7.89	5000	683	427	195	3.8	1030	2227	169	0.06	103	< 1	< 0.1	< 0.001
0624	N	7/8/1997	6852.00	7.10	7.54	5040	680	444	186	4.6	1060	2260	181	< 0.05	92.6	< 1	< 0.1	< 0.001
0624	N	10/7/1997	6852.50	6.50	7.66	5140	712	459	179	3.51	1310	2160	166	< 0.05	86.3	< 1	< 0.1	< 0.001
0624	N	1/16/1998	6852.40	7.00	7.78	5140	679	436	208	5.6	1300	2350	194	0.16	101	< 1	< 0.1	< 0.001

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
0624	N	7/19/1989	< 0.05	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	0.003	< 0.1	0.0217	0.6	< 1	0.6	6.9	< 1	6
0624	N	10/16/1989	< 0.05	< 0.01	< 0.01	< 0.05	0.01	< 0.1	< 0.05	0.003	< 0.1	0.021	1.6	< 1	1.6	0.5	< 1	1.8
0624	N	1/10/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.01	< 0.1	< 0.05	0.002	< 0.1	0.022	0.2	1.2	1.4	< 0.2	< 1	0.8
0624	N	4/5/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.03	< 0.1	< 0.05	0.003	< 0.1	0.02	0.4	< 1	0.4	< 0.2	1.1	0.9
0624	N	7/3/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	0.001	< 0.1	0.0242	0.7	< 1	0.7	< 0.2	< 1	< 1
0624	N	10/3/1990	< 0.05	< 0.01	0.02	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.022	< 0.2	1.8	1.8	< 0.2	< 1	< 1
0624	N	1/15/1991	< 0.01	< 0.01	0.01	< 0.05	0.01	< 0.1	< 0.05	0.001	< 0.1	0.0268	0.4	< 1	0.4	< 0.2	< 1	< 1
0624	N	4/2/1991	< 0.01	< 0.01	0.02	< 0.05	< 0.01	< 0.1	< 0.05	0.001	< 0.1	0.038	0.4	1.5	1.9	< 0.2	< 1	< 1
0624	N	7/17/1991	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	0.002	< 0.1	0.034	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	N	10/15/1991	< 0.01	< 0.01	0.01	< 0.05	0.01	< 0.1	< 0.05	0.002	< 0.1	0.034	0.4	1.8	2.2	< 0.2	< 1	< 1
0624	N	1/15/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.01	< 0.1	< 0.05	0.002	< 0.1	0.029	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	N	4/8/1992	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	0.002	< 0.1	0.034	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	N	7/8/1992	< 0.01	< 0.01	< 0.01	0.07	< 0.01	< 0.1	< 0.05	0.002	< 0.1	0.03	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	N	10/6/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	0.006	< 0.1	0.048	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	N	1/7/1993	< 0.01	< 0.01	0.02	< 0.05	0.02	< 0.1	< 0.05	0.008	< 0.1	0.043	< 0.2	4.2	4.2	< 0.2	< 1	< 1
0624	N	4/7/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	0.002	< 0.1	0.033	4.6	< 1	4.6	< 0.2	1.4	4.8
0624	N	7/14/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	0.003	< 0.1	0.019	< 0.2	< 1	0	< 0.2	2.8	< 1
0624	N	10/7/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	0.003	< 0.1	0.023	0.6	< 1	0.6	< 0.2	4.8	< 1
0624	N	1/6/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.027	1.3	5.1	6.4	< 0.2	< 1	9.9
0624	N	4/12/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.01	< 0.1	< 0.05	0.001	< 0.1	0.043	7.5	2.4	9.9	< 0.2	< 1	11.3
0624	N	7/21/1994	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.029	< 0.2	1.1	1.1	< 0.2	< 1	1.8
0624	N	10/5/1994	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.035	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	N	1/4/1995	< 0.01	< 0.01	< 0.01	0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.033	0.6	1.3	1.9	< 0.2	< 1	2.7
0624	N	4/5/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.037	3.9	1.6	5.5	< 0.2	2.1	6.5
0624	N	7/6/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.01	< 0.1	< 0.05	0.002	< 0.1	0.0405	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	N	10/3/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.01	< 0.1	< 0.05	0.013	< 0.1	0.0331	0.3	< 1	0.3	< 0.2	< 1	< 1
0624	N	1/3/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.01	< 0.1	< 0.05	0.007	< 0.1	0.032	0.6	1.3	1.9	0.6	< 1	< 1
0624	N	4/2/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.033	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	N	7/7/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.043	0.3	< 1	0.3	< 0.2	< 1	< 1
0624	N	10/1/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	0.003	< 0.1	0.032	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	N	1/22/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.027	0.6	< 1	0.6	< 0.2	< 1	< 1
0624	N	4/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	0.014	< 0.1	0.036	0.8	< 1	0.8	< 0.2	< 1	< 1
0624	N	7/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.034	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	N	10/7/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.12	< 0.1	< 0.05	< 0.001	< 0.1	0.03	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	N	1/16/1998	< 0.01	< 0.01	< 0.01	< 0.05	0.11	< 0.1	< 0.05	< 0.001	< 0.1	0.0379	< 0.2	< 1	0	< 0.2	< 1	< 1

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
0624	N	4/7/1998	6851.90	6.90	7.60	5190	691	442	197	4.4	1180	2400	153	< 0.05	98.7	< 1	< 0.1	< 0.001
0624	N	7/7/1998	6851.70	7.20	7.79	5050	679	435	206	4.4	1080	2400	174	< 0.05	92.2	< 1	< 0.1	< 0.001
0624	N	10/6/1998	6851.30	7.01	7.88	5210	708	464	216	6.2	1230	2220	175	< 0.05	101	< 1	< 0.1	< 0.001
0624	N	1/5/1999	6851.20	6.80	7.85	5140	659	423	188	5.3	1160	2030	172	0.18	94.2	< 1	< 0.1	< 0.001
0624	N	4/6/1999	6851.10	6.80	7.89	5150	692	451	188	5.4	1230	2000	180	0.08	94.5	< 1	< 0.1	< 0.001
0624	N	7/13/1999	6850.77	6.70	7.85	5020	646	452	191	10.8	1070	2070	181	0.18	88.7	< 1	< 0.1	< 0.001
0624	N	10/5/1999	6851.80	6.78	7.59	4900	618	411	199	6.1	1350	1860	179	0.09	88.3	< 1	< 0.1	< 0.001
0624	N	1/4/2000	6851.20	6.80	7.76	4840	649	429	170	6.9	1160	2080	155	< 0.05	49.2	< 1	< 0.1	< 0.001
0624	N	5/9/2000	6850.60	6.50	7.67	5130	652	438	207	6.3	1470	1970	177	< 0.05	93.6	< 1	< 0.1	< 0.001
0624	N	7/17/2000	6850.40	6.55	7.62	5170	697	456	194	6.46	1480	1790	184	< 0.05	85.1	< 1	< 0.1	< 0.001
0624	N	10/9/2000	6850.25	6.70	7.59	5090	606	412	185	7.6	1440	1530	147	0.1	98.5	< 1	< 0.1	< 0.001
0624	N	1/8/2001	6850.10	6.65	7.40	5100	707	464	173	6.9	1480	1810	177	< 0.05	104	< 1	< 0.1	< 0.001
0624	N	2/5/2001	6850.10	6.72	7.31	5110	801	510	171	7.6	1480	2320	170	0.21	93.9	< 1	< 0.1	< 0.001
0624	N	3/5/2001	6850.10	7.03	7.47	4740	690	457	148	8.1	1450	2190	154	< 0.05	101	< 1	< 0.1	< 0.001
0624	N	4/10/2001	6850.10	7.24	7.33	4910	791	497	238	7.3	1470	2250	176	< 0.05	103	< 1	< 0.1	< 0.001
0624	N	5/8/2001	6849.90	6.62	7.54	5150	677	444	181	6.7	1450	1880	187	0.08	99.3	< 1	< 0.1	< 0.001
0624	N	6/5/2001	6849.90	6.62	7.02	5050	683	454	182	6.5	1470	2000	182	0.11	101	< 1	< 0.1	< 0.001
0624	N	7/10/2001	6849.90	6.62	7.40	5290	726	488	198	6.1	1480	2050	172	< 0.05	101	< 1	< 0.1	< 0.001
0624	N	8/7/2001	6849.87	6.59	7.40	5230	660	450	200	6	1470	1900	180	0.05	88	< 1	0.13	< 0.001
0624	N	9/11/2001	6850.30	6.52	7.30	5200	670	450	191	6.8	1490	1930	217	0.05	118	< 1	0.11	< 0.001
0624	N	10/2/2001	6850.30	6.65	7.80	5210	660	450	192	7	1500	1850	240	< 0.05	100	< 1	< 0.1	< 0.001
0624	N	11/6/2001	6850.15	6.60	7.20	5210	731	475	196	7.4	1490	2100	232	0.05	104	< 1	< 0.1	< 0.001
0624	N	12/4/2001	6850.20	6.62	7.30	5250	673	433	172	6.4	1500	1750	197	< 0.05	101	< 1	< 0.1	< 0.001
0624	N	1/8/2002	6850.10	6.95	7.30	5190	787	481	201	7	1490	2270	208	< 0.05	91.5	< 1	< 0.1	< 0.001
0624	N	2/5/2002	6850.10	6.78	7.30	5190	762	461	193	7.8	1470	2120	219	0.06	90.5	< 1	< 0.1	< 0.001
0624	Dup	2/5/2002	no data	6.78	7.20	5210	762	460	214	6.8	1470	2140	205	0.06	88.3	< 1	< 0.1	< 0.001
0624	N	3/5/2002	6850.10	6.61	7.20	5170	726	463	228	6.8	1530	2190	207	0.06	95.1	< 1	< 0.1	< 0.001
0624	Dup	3/5/2002	no data	6.57	7.50	5130	714	456	223	6.6	1530	2170	193	0.06	97.2	< 1	< 0.1	< 0.001
0624	N	4/2/2002	6850.16	6.54	7.45	5270	748	464	225	8.3	1500	2180	203	0.06	95.5	< 1	< 0.1	< 0.001
0624	Dup	4/2/2002	no data	6.53	7.48	5210	741	459	220	8	1500	2130	206	0.05	95.7	< 1	< 0.1	< 0.001
0624	N	5/7/2002	6850.08	6.59	7.61	5220	719	448	226	7.4	1480	2100	186	0.13	104	< 1	< 0.1	< 0.001
0624	N	6/4/2002	6850.10	6.52	7.66	5220	720	450	201	6.4	1480	1830	181	< 0.05	96.3	< 1	< 0.1	< 0.001
0624	Dup	6/4/2002	no data	6.51	7.68	5210	711	444	208	6	1480	1850	174	0.08	92.1	< 1	< 0.1	< 0.001
0624	N	7/9/2002	6849.95	6.67	7.42	5300	713	463	223	7.3	1500	2150	200	0.05	92.4	< 1	< 0.1	< 0.001
0624	Dup	7/9/2002	no data	6.59	7.41	5320	709	460	225	7.8	1500	2110	201	0.05	91.4	< 1	< 0.1	< 0.001



**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
0624	N	4/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.039	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	N	7/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.0409	0.7	< 1	0.7	< 0.2	< 1	< 1
0624	N	10/6/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	0.001	< 0.1	0.0409	0.7	< 1	0.7	< 0.2	< 1	< 1
0624	N	1/5/1999	< 0.01	0.006	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.0395	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	N	4/6/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.0366	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	N	7/13/1999	< 0.01	< 0.005	0.02	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.0339	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	N	10/5/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.0366	0.5	< 1	0.5	< 0.2	< 1	< 1
0624	N	1/4/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	0.001	< 0.1	0.0443	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	N	5/9/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.0348	< 0.2	2	2	< 0.2	6.4	< 1
0624	N	7/17/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.0325	< 0.2	1.5	1.5	< 0.2	< 1	< 1
0624	N	10/9/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.031	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	N	1/8/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.032	0.4	< 1	0.4	< 0.2	< 1	< 1
0624	N	2/5/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.033	0.3	< 1	0.3	< 0.2	< 1	< 1
0624	N	3/5/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.0327	< 0.2	4	4	< 0.2	< 1	< 1
0624	N	4/10/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.031	0.3	< 1	0.3	< 0.2	< 1	< 1
0624	N	5/8/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.034	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	N	6/5/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	0.009	< 0.1	0.065	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	N	7/10/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.0329	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	N	8/7/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.04	0.4	2.3	2.7	< 0.2	< 1	< 1
0624	N	9/11/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.03	< 0.2	2.9	2.9	< 0.2	< 1	< 1
0624	N	10/2/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.0319	0.2	< 1	0.2	< 0.2	< 1	< 1
0624	N	11/6/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.0288	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	N	12/4/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.0295	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	N	1/8/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.0301	0.4	< 1	0.4	< 0.2	< 1	< 1
0624	N	2/5/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.0212	0.4	2	2.4	< 0.2	< 1	< 1
0624	Dup	2/5/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.0218	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	N	3/5/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.0351	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	Dup	3/5/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.037	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	N	4/2/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0326	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	Dup	4/2/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.0338	0.4	< 1	0.4	< 0.2	< 1	1.5
0624	N	5/7/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.0355	0.5	< 1	0.5	< 0.2	< 1	< 1
0624	N	6/4/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.0333	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	Dup	6/4/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.0314	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	N	7/9/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.036	0.3	< 1	0.3	< 0.2	< 1	< 1
0624	Dup	7/9/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.0363	0.4	< 1	0.4	< 0.2	< 1	< 1

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
0624	N	10/8/2002	6849.90	6.67	7.25	5150	659	425	208	6.2	1490	1810	173	0.08	97.1	< 1	< 0.1	< 0.001
0624	Dup	10/8/2002	no data	6.47	7.40	5160	663	427	207	6.1	1480	1800	167	0.06	96.6	< 1	< 0.1	< 0.001
0624	N	1/7/2003	6849.61	6.74	7.21	5210	733	480	242	7.4	1490	2250	175	0.19	92	< 1	< 0.1	< 0.001
0624	Dup	1/7/2003	no data	no data	7.24	5190	726	476	120	7.8	1500	2220	118	0.15	90	< 1	< 0.1	< 0.001
0624	N	4/8/2003	6849.72	6.49	6.85	5250	685	422	230	8.3	1450	1900	184	0.11	102	< 1	< 0.1	< 0.001
0624	N	7/8/2003	6849.70	6.36	7.41	4540	646	413	198	8.5	1480	2040	158	0.07	100	< 1	< 0.1	< 0.001
0624	Dup	7/8/2003	no data	no data	7.38	5290	657	418	208	7.8	1470	2080	160	0.5	93	< 1	< 0.1	< 0.001
0624	N	10/7/2003	6849.72	6.40	7.76	5260	725	469	239	6.4	1430	2240	178	0.2	90	< 1	< 0.1	< 0.001
0624	Dup	10/7/2003	no data	no data	7.80	5290	723	467	240	6.6	1460	2210	178	0.17	92	< 1	< 0.1	< 0.001
0624	N	1/6/2004	6849.60	6.57	7.71	5180	690	445	212	7	1440	2140	197	0.11	87.9 D	< 1.0	0.2	< 0.001
0624	Dup	1/6/2004	no data	no data	7.69	5170	698	452	214	6.4	1440	2190	172	0.08	100 D	< 1.0	0.2	< 0.001
0624	N	4/6/2004	6849.67	6.76	6.87	5220	695	448	190	6.4	1460	2100 D	147	0.13	92.2 D	< 1	< 0.1	< 0.001
0624	Dup	4/6/2004	no data	no data	6.81	5240	693	448	212	7.1	1460	2120 D	173	0.14	92.8 D	< 1	< 0.1	< 0.001
0624	N	7/13/2004	6849.52	6.41	6.87	5320	715	442	249	6.8	1440	2120 D	172	0.13	93.1 D	< 1.0	7.7	< 0.001
0624	Dup	7/13/2004	no data	no data	6.86	5310	714	441	245	7.2	1440	2130 D	175	0.14	92.0 D	< 1.0	1.8	< 0.001
0624	N	10/5/2004	6849.34	6.46	7.07	5520	666 D	422 D	237	6.4	1380	2020 D	172	< 0.05	85.9 D	< 1.0	< 0.1	< 0.001
0624	Dup	10/5/2004	no data	no data	7.05	5380	664 D	420 D	227	6.1	1390	2030 D	163	< 0.05	83.2 D	< 1.0	< 0.1	< 0.001
0624	N	1/4/2005	6849.37	6.87	6.99	5240	702 D	435 D	240	6.3	1360	2030 D	166	0.05	86 D	< 1.0	< 0.1	< 0.001
0624	Dup	1/4/2005	no data	no data	7.06	5240	692 D	430 D	234	6.3	1420	2000 D	162	0.05	86 D	< 1.0	< 0.1	< 0.001
0624	N	4/5/2005	6849.37	6.65	7.30	5000	635	394	238	5.6	1400	1930	159	< 0.05	73	< 1.0	< 0.1	< 0.001
0624	Dup	4/5/2005	no data	no data	7.29	4970	599	382	237	4.5	1400	2060	169	< 0.05	70	< 1.0	< 0.1	< 0.001
0624	N	7/12/2005	6849.17	6.55	7.29	5120	673 D	434 D	246	5.9	1340	2100 D	176	0.09	70 D	< 1.0	< 0.1	< 0.001
0624	Dup	7/12/2005	no data	no data	7.32	5010	694 D	424 D	244	5.9	1340	2100 D	177	< 0.05	81 D	< 1.0	< 0.1	< 0.001
0624	N	10/4/2005	6849.02	6.56	7.21	5130	693 D	436 D	241	6.2	1370	2170 D	184	< 0.05	75 D	< 1.0	< 0.1	< 0.001
0624	Dup	10/4/2005	no data	no data	7.18	5070	696 D	434 D	242	6.3	1370	2160 D	188	< 0.05	75 D	< 1.0	< 0.1	< 0.001
0624	N	1/10/2006	6848.93	6.71	7.64	4890	631	392	236	5.1	1340	1950 D	161	< 0.05	82 D	< 1.0	< 0.1	< 0.001
0624	Dup	1/10/2006	no data	no data	7.33	5020	660	409	247	5.2	1420	2050 D	164	< 0.05	85 D	< 1.0	< 0.1	< 0.001
0624	N	4/4/2006	6848.92	6.47	7.21	5070	730 D	463 D	230	6.4	1350	2180 D	184	< 0.05	86 D	< 1.0	0.2	< 0.001
0624	Dup	4/4/2006	no data	no data	7.20	5080	711 D	452 D	233	6.5	1340	2140 D	186	< 0.05	86 D	< 1.0	< 0.1	< 0.001
0624	N	7/18/2006	6848.92	6.48	6.89	5030	713 D	443 D	260	6.9	1360	2300 D	178	0.05	82 D	< 1.0	< 0.1	< 0.001
0624	Dup	7/18/2006	no data	no data	6.91	5010	698 D	434 D	258	6.3	1350	2270 D	173	< 0.05	79 D	< 1.0	< 0.1	< 0.001
0624	N	10/3/2006	6848.93	6.48	6.72	4920	682 D	419 D	231	6.2	1100	2100 D	144	0.08	76 D	< 0.5	< 0.1	< 0.001
0624	Dup	10/3/2006	no data	no data	6.74	4970	672 D	411 D	224	6.2	1070	2070 D	134	0.08	77 D	< 0.5	< 0.1	< 0.001
0624	N	1/9/2007	6848.88	6.62	6.82	5130	704 D	437 D	226	6.9	1360	2250 D	168	< 0.05	74 D	< 0.5	< 0.1	< 0.001
0624	Dup	1/9/2007	6848.97	6.61	6.85	5130	680 D	421 D	228	6.7	1360	2130 D	169	0.05	77 D	< 0.5	< 0.1	< 0.001

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
0624	N	10/8/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.0262	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	Dup	10/8/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.0265	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	N	1/7/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0348	< 0.2	< 1	0	< 0.2	< 1	< 1.0
0624	Dup	1/7/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0409	< 0.2	< 1	0	< 0.2	< 1	< 1.6
0624	N	4/8/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0336	0.5	< 1	0.5	< 0.2	< 1	< 1.0
0624	N	7/8/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.0289	< 0.2	< 1	0	< 0.2	< 1	< 1.0
0624	Dup	7/8/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.0277	< 0.2	< 1	0	< 0.2	< 1	< 1.0
0624	N	10/7/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.0333	< 0.2	< 1	0	< 0.2	< 1	< 1.0
0624	Dup	10/7/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.0334	< 0.2	< 1	0	< 0.2	< 1	< 1.0
0624	N	1/6/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.06	< 0.1	< 0.05	< 0.001	< 0.1	0.0296 D	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
0624	Dup	1/6/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.0284 D	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
0624	N	4/6/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.045	< 0.1	< 0.05	< 0.001	< 0.1	0.0288 D	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	Dup	4/6/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.0314 D	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	N	7/13/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.0305 D	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
0624	Dup	7/13/2004	< 0.01	< 0.005	0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.0303 D	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
0624	N	10/5/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.06	< 0.1	< 0.05	< 0.001	< 0.1	0.0321 D	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
0624	Dup	10/5/2004	< 0.01	0.005	< 0.01	< 0.05	0.06	< 0.1	< 0.05	< 0.001	< 0.1	0.0338 D	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
0624	N	1/4/2005	< 0.01	< 0.005	< 0.01	< 0.05	0.06	< 0.1	< 0.05	< 0.001	< 0.1	0.0343	0.4	< 1.0	0.4	< 0.2	< 1.0	2.2
0624	Dup	1/4/2005	< 0.01	< 0.005	< 0.01	< 0.05	0.06	< 0.1	< 0.05	< 0.001	< 0.1	0.0324	0.3	< 1.0	0.3	< 0.2	< 1.0	< 1.0
0624	N	4/5/2005	< 0.01	< 0.005	< 0.01	< 0.05	0.06	< 0.1	< 0.05	< 0.001	< 0.1	0.033	0.7	< 1.0	0.7	< 0.2	< 1.0	< 1.0
0624	Dup	4/5/2005	< 0.01	< 0.005	< 0.01	< 0.05	0.06	< 0.1	< 0.05	< 0.001	< 0.1	0.0325	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
0624	N	7/12/2005	< 0.01	< 0.005	< 0.01	< 0.05	0.07	< 0.1	< 0.05	< 0.001	< 0.1	0.0304	0.3	< 1.0	0.3	< 0.2	< 1.0	< 1.0
0624	Dup	7/12/2005	< 0.01	< 0.005	< 0.01	< 0.05	0.07	< 0.1	< 0.05	< 0.001	< 0.1	0.0307	0.3	< 1.0	0.3	< 0.2	< 1.0	< 1.0
0624	N	10/4/2005	< 0.01	< 0.005	< 0.01	< 0.05	0.08	< 0.1	< 0.05	< 0.001	< 0.1	0.0316	< 0.2	2.9	2.9	< 0.2	< 1.0	< 1.0
0624	Dup	10/4/2005	< 0.01	< 0.005	< 0.01	< 0.05	0.08	< 0.1	< 0.05	< 0.001	< 0.1	0.0318	< 0.2	1.7	1.7	< 0.2	< 1.0	1.4
0624	N	1/10/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.07	< 0.1	< 0.05	< 0.001	< 0.1	0.0363	0.4	1.9	2.3	< 0.2	< 1.0	< 1.0
0624	Dup	1/10/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.07	< 0.1	< 0.05	< 0.001	< 0.1	0.0379	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
0624	N	4/4/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.08	< 0.1	< 0.05	< 0.001	< 0.1	0.0338 D	< 0.2	1.6	1.6	< 0.2	< 1.0	< 1.0
0624	Dup	4/4/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.08	< 0.1	< 0.05	< 0.001	< 0.1	0.0286 D	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
0624	N	7/18/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.09	< 0.1	< 0.05	< 0.001	< 0.1	0.0326	0.3	2.8	3.1	< 0.2	< 1.0	< 1.0
0624	Dup	7/18/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.09	< 0.1	< 0.05	< 0.001	< 0.1	0.0324	0.6	2.9	3.5	< 0.2	< 1.0	< 1.0
0624	N	10/3/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.09	< 0.1	< 0.05	< 0.001	< 0.1	0.0328	0.4	< 1	0.4	< 0.2	< 1	< 1
0624	Dup	10/3/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.09	< 0.1	< 0.05	< 0.001	< 0.1	0.032	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	N	1/9/2007	< 0.01	< 0.005	< 0.01	< 0.05	0.09	< 0.1	< 0.05	< 0.001	< 0.1	0.0313	< 0.2	< 1	0	< 0.2	< 1	< 1
0624	Dup	1/9/2007	< 0.01	< 0.005	< 0.01	< 0.05	0.09	< 0.1	< 0.05	< 0.001	< 0.1	0.0314	0.4	< 1	0.4	< 0.2	< 1	< 1



**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
0624	N	4/10/2007	6849.02	6.65	6.75	5090	693 D	427 D	226	8.1	1380	2150 D	182	<0.05	82 D	<0.5	<0.1	<0.001
0624	Dup	4/10/2007	6848.99	6.74	6.88	5070	689 D	425 D	222	7.7	1400	2140 D	169	<0.05	83 D	<0.5	<0.1	<0.001
0624	N	7/10/2007	6848.67	6.50	6.87	5020	702 D	433 D	245	6.2	1450	2230 D	154	0.08	77 D	<0.5	<0.1	0.009
0624	Dup	7/10/2007	6848.67	6.47	6.84	4930	688 D	435 D	243	6.1	1450	2250 D	162	0.08	77 D	<0.5	<0.1	0.009
0624	N	10/2/2007	6848.67	6.50	6.91	5030	626 D	385 D	246 D	6.9	1430	1990 D	188 D	<0.05	74 D	<0.5	<0.1	<0.001
0624	N	1/15/2008	6848.62	6.53	6.69	5110	650 D	396 D	246 D	7.1	1390	2000 D	205 D	< 0.05	68 D	< 0.5	< 0.1	< 0.001
0624	N	4/8/2008	6849.12	6.47	6.90	4830	708 D	442 D	280 D	8.2 D	1320	2240 D	174	< 0.05	108 D	< 0.50	< 0.1	< 0.001
0624	N	7/8/2008	6848.67	6.33	6.82	4700	657	396	233 D	5	1410	2170 D	184	< 0.05	74.9 D	< 0.5	< 0.1	< 0.003
0624	N	10/7/2008	6848.42	6.46	6.88	4920	662	403	248 D	6	1390	2380 D	178	< 0.1	94.9 D	< 0.5	< 0.1	< 0.001
0624	N	1/13/2009	6848.27	6.50	6.90	5180	614	383	257	6	1420	1870 D	169	<0.05	111 D	<0.5	<0.1	<0.001
0624	N	4/7/2009	6848.22	6.48	6.64	5080	650 D	413 D	271 D	6	1460	2190 D	191	<0.05	77.4 D	<0.50	<0.1	<0.001
0624	N	7/7/2009	6848.07	6.38	6.72	5080	692 D	405	253 D	6	1440	2560 D	187	<0.05	71 D	<0.50	<0.1	<0.001
0624	N	10/5/2009	6847.77	6.44	7.17	4950	643 D	396	245 D	6	1490	1960 D	187	<0.05	75 D	<0.50	<0.1	<0.001
0624	N	1/5/2010	6847.57	6.55	7.11	5230 D	693 D	404	255 D	6	1520	2370 D	194	<0.05	76 D	<0.50	<0.1	<0.001
0624	N	4/6/2010	6847.72	6.58	6.72	5220 D	725 D	433	287 D	6	1600	2230 D	198	<0.05	77 D	<0.50	<0.1	<0.001
0624	N	7/13/2010	6847.52	6.42	7.08	5190 D	712 D	417	273 D	6	1570	2200 D	194 D	<0.05	70 D	<0.50	<0.1	0.002
0624	N	10/5/2010	6847.37	6.53	7.60	5340 D	666	395	271	6	1570	2210 D	195 D	0.07	74 D	<0.50	<0.1	<0.001
0624	N	1/4/2011	6847.22	6.48	7.01	4970 D	720	427	273	6	1510	2190 D	206 D	<0.05	64 D	<0.50	<0.1	<0.001
0624	N	4/4/2011	6847.10	6.62	6.81	5170 D	697	412	292	6	1520	2170 D	202 D	<0.05	69 D	<0.50	<0.1	<0.001
0624	N	7/12/2011	6846.97	6.72	7.15	5100 D	691	419	282	6	1520	2180 D	200 D	<0.1	78 D	<0.50	<0.1	<0.001
0624	N	10/4/2011	6846.89	6.68	7.49	4990 D	694	408	279	6	1420	2240 D	208 D	<0.1	74 D	<0.50	<0.1	<0.001
0624	N	1/3/2012	NA	6.68	6.75 H	5110 D	662	400	269	7	1400	2140 D	200 D	<0.05	75 D	2.47	<0.1	<0.001
0624	N	4/3/2012	6846.57	6.74	6.59 H	5110 D	696	400	267	6	1510	2170 D	203 D	<0.05	76 D	<0.50	<0.1	<0.01
0624	N	7/10/2012	6846.37	6.50	6.72 H	5250	671	419	261	5	1500	2120 D	198 D	0.14	78 D	<0.50	<0.1	<0.001
0624	N	10/9/2012	6846.27	6.70	6.66 H	5110	728	418	285 D	6	1550	2180 D	212 D	<0.05	72 D	<0.50	<0.1	<0.001
0624	N	1/9/2013	6846.15	6.62	6.61 H	5080	686	426	298 D	6	1540	2160 D	201 D	<0.05	77 D	<0.50	<0.1	<0.001
0624	N	4/2/2013	6846.06	6.58	6.66 H	5210	705	427	295	6	1570	2240 D	216 D	<0.05	77 D	<0.50	<0.1	<0.001
0624	N	7/9/2013	6845.78	6.49	6.76 H	5260	683	419	282	6	1570	2110 D	197 D	<0.05	71 D	<0.50	2.6	<0.001
0624	N	10/1/2013	6846.60	6.57	6.61 H	5190	678	417	287	6	1600	2180 D	204 D	<0.05	71 D	<0.50	0.1	<0.001
0624	N	1/7/2014	6846.10	6.82	6.59	5220	677	412	286	6	1580	2150	205	<0.05	76	<0.50	0.3	<0.001
0624	N	4/1/2014	6845.89	6.72	6.70 H	5220	711	444	304 D	6	1590	2350 D	209 D	<0.05	68 D	<0.50	<0.1	<0.001
0624	N	7/8/2014	6845.54	6.63	6.61 H	5220	712	444	312 D	6	1600	2180 D	204 D	<0.05	72 D	<0.50	<0.1	<0.001
0624	N	10/7/2014	6845.81	6.70	6.63 H	5270	684	417	289	6	1620	2220 D	210 D	<0.05	68 D	<0.50	<0.1	<0.001
0624	N	1/6/2015	6845.65	6.74	6.56 H	5140	651	411	286	6	1540	2280 D	235 D	<0.05	73 D	<0.50	<0.1	<0.001
0624	N	4/7/2015	6845.33	6.58	6.65 H	5250	694	418	298	6	1610	2150 D	214 D	<0.05	73 D	<0.5	<0.1	<0.001

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Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
0624	N	4/10/2007	<0.01	<0.005	<0.01	<0.05	0.09	<0.1	<0.05	<0.001	<0.1	0.0308	<0.2	<1	0	<0.2	<1	<1
0624	Dup	4/10/2007	<0.01	<0.005	<0.01	<0.05	0.09	<0.1	<0.05	<0.001	<0.1	0.0336	<0.2	<1	0	<0.2	<1	<1
0624	N	7/10/2007	<0.01	<0.005	<0.01	<0.05	0.08	<0.1	<0.05	<0.001	<0.1	0.0339	<0.2	<1	0	<0.2	<1	<1
0624	Dup	7/10/2007	<0.01	<0.005	<0.01	<0.05	0.06	<0.1	<0.05	<0.001	<0.1	0.033	<0.2	<1	0	<0.2	<1	<1
0624	N	10/2/2007	<0.01	<0.005	<0.01	<0.05	0.1	<0.1	<0.05	<0.001	<0.1	0.0341	<0.2	<1	0	<0.2	<1	<1
0624	N	1/15/2008	<0.01	<0.005	<0.01	<0.05	0.09	<0.1	<0.05	<0.001	<0.1	0.0307	<0.2	<1	0	<0.2	<1	<1
0624	N	4/8/2008	<0.01	<0.005	<0.01	<0.05	0.1	<0.1	<0.05	<0.001	<0.1	0.0325	0.2	-0.04 U	0.16	0.5	0 U	0.9 U
0624	N	7/8/2008	<0.01	<0.005	<0.01	<0.05	0.04	<0.1	<0.05	<0.001	<0.1	0.0286	0.36	0.23 U	0.59	-0.1 U	1.1 U	0.4 U
0624	N	10/7/2008	<0.01	<0.005	<0.01	<0.05	0.11	<0.1	<0.05	<0.001	<0.1	0.0306	-0.06 U	-0.2 U	-0.26	0 U	0.3 U	0.9
0624	N	1/13/2009	<0.01	<0.005	<0.01	<0.05	0.12	<0.1	<0.05	<0.001	<0.1	0.0322	0.05 U	-0.1 U	-0.05	-0.1 U	-1 U	1.7
0624	N	4/7/2009	<0.01	<0.005	<0.01	<0.05	0.1	<0.1	<0.05	<0.001	<0.1	0.0289	-0.05 U	0.75 U	0.75	0.06 U	-1 U	0.2 U
0624	N	7/7/2009	<0.01	<0.005	<0.01	<0.05	0.13	<0.1	<0.05	<0.001	<0.1	0.031	0.32	0.75 U	1.07	0.1 U	-0.9 U	1.4
0624	N	10/5/2009	<0.01	<0.005	<0.01	<0.05	0.15	<0.1	<0.05	<0.001	<0.1	0.0315	0.56	0.79 U	1.35	0.08 U	2.4 U	-0.09 U
0624	N	1/5/2010	<0.01	<0.005	<0.01	<0.05	0.12	<0.1	<0.05	<0.001	<0.1	0.0307	0.08 U	1.5	1.58	0.1 U	-1 U	0.03 U
0624	N	4/6/2010	<0.01	<0.005	<0.01	<0.05	0.13	<0.1	<0.05	<0.001	<0.1	0.0311	0.23	0.09 U	0.32	0.02 U	2.3 U	0.6
0624	N	7/13/2010	<0.01	<0.005	<0.01	<0.05	0.16	<0.1	<0.05	<0.001	<0.1	0.0358	0.2	0.47 U	0.67	0.05 U	-1 U	0.3 U
0624	N	10/5/2010	<0.01	<0.005	<0.01	<0.05	0.17	<0.1	<0.05	<0.001	<0.1	0.0355	-0.04 U	1.4	1.36	0.03 U	1.7	0.2 U
0624	N	1/4/2011	<0.01	<0.005	<0.01	<0.05	0.16	<0.1	<0.05	<0.001	<0.1	0.0345	0.06 U	0.71 U	0.77	0.02 U	0.6 U	1.1
0624	N	4/4/2011	<0.01	<0.005	<0.01	<0.05	0.19	<0.1	<0.05	<0.001	<0.1	0.0327	0.05 U	0.95 U	1	0.02 U	-0.3 U	-0.04 U
0624	N	7/12/2011	<0.01	<0.005	<0.01	<0.05	0.25	<0.1	<0.05	<0.001	<0.1	0.0351	0.05 U	0.95 U	1	0.02 U	-0.04 U	1
0624	N	10/4/2011	<0.01	<0.005	<0.01	<0.05	0.19	<0.1	<0.05	<0.001	<0.1	0.0308	0.12 U	0.71 U	0.83	0.008 U	0.04 U	0.4 U
0624	N	1/3/2012	<0.01	<0.005	<0.01	<0.05	0.17	<0.1	<0.05	<0.001	<0.1	0.0347	0.46	0.88 U	2.22	0.01 U	0.07 U	0.5
0624	N	4/3/2012	<0.01	<0.005	<0.01	<0.05	0.19	<0.1	<0.05	<0.001	<0.1	0.0355	0.39	1.4	3.19	0.01 U	-0.4 U	0.003 U
0624	N	7/10/2012	<0.001	<0.005	<0.01	<0.001	0.23	<0.1	<0.05	<0.001	<0.1	0.0319	0.42	-0.4 U	0.42	0.2 U	0.04 U	0.2 U
0624	N	10/9/2012	<0.001	<0.005	<0.01	<0.001	0.22	<0.1	<0.05	<0.001	<0.1	0.0351	0.24	-0.3 U	0.24	0.05 U	0.7 U	0.9
0624	N	1/9/2013	<0.001	<0.005	<0.01	<0.001	0.21	<0.1	<0.05	<0.001	<0.1	0.0367	0.35	0.38 U	0.35	0.03 U	0.9 U	0.6 U
0624	N	4/2/2013	<0.001	<0.005	<0.01	<0.001	0.18	<0.1	<0.05	<0.001	<0.1	0.0377	0.17	0.71 U	0.17	0.04 U	-0.2 U	0.6
0624	N	7/9/2013	<0.001	<0.005	<0.01	0.002	0.22	<0.1	<0.05	<0.001	<0.1	0.0376	0.2	0.18 U	0.2	0.05 U	1.8	0.1 U
0624	N	10/1/2013	<0.001	<0.005	<0.01	<0.001	0.17	<0.1	<0.05	<0.001	<0.1	0.0382	0.42	0.80 U	0.42	0.07 U	0.4 U	0.1 U
0624	N	1/7/2014	<0.001	<0.005	<0.01	<0.001	0.17	<0.1	<0.05	<0.001	<0.1	0.0386	0.19	0.95 U	0.19	0.005 U	0.5 U	0.4 U
0624	N	4/1/2014	<0.001	<0.005	<0.01	<0.001	0.15	<0.1	<0.05	<0.001	<0.1	0.0421	0.25	0.89 U	0.25	0.009 U	1.3	0.1 U
0624	N	7/8/2014	<0.001	<0.005	<0.01	<0.001	0.16	<0.1	<0.05	<0.001	<0.1	0.0408	0.35	2.3	2.65	-0.001 U	0.04 U	0.6 U
0624	N	10/7/2014	<0.001	<0.005	<0.01	<0.001	0.13	<0.1	<0.05	<0.001	<0.1	0.0385	0.31	1.2 U	0.31	0.008 U	-0.1 U	0.2 U
0624	N	1/6/2015	<0.001	<0.005	<0.01	<0.001	0.12	<0.1	<0.05	<0.001	<0.1	0.0392	0.32	0.64 U	0.32	0.03 U	0.3 U	1.3 U
0624	N	4/7/2015	<0.001	<0.005	<0.01	<0.001	0.13	<0.1	<0.05	<0.001	<0.1	0.0361	0.47	0.99 U	0.47	0 U	-0.5 U	1 U

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
<b>NRC Standard</b>			<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>80</b>	<b>NA</b>	<b>0.05</b>
<b>EPA Standard</b>			<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>10376</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>5815</b>	<b>250</b>	<b>NA</b>	<b>536.6</b>	<b>80</b>	<b>5</b>	<b>0.01</b>
0624	N	7/7/2015	6845.14	6.39	6.59 H	5330	682	401	285	8	1670	2260 D	215 D	0.07	71 D	<0.50	<0.1	<0.001
0624	N	10/5/2015	6845.06	6.74	6.61 H	5250	677	411	294	6	1520	2470 D	244 D	<0.05	67 D	<0.50	<0.1	<0.001
0624	N	1/4/2016	6844.96	6.73	6.61 H	5250	687	416	292	6	1640	2290 D	217 D	<0.05	73 D	<0.50	<0.1	<0.001
0624	N	4/4/2016	6844.75	6.50	6.77 H	5270	698	420	310	6	1590	2220 D	211 D	<0.05	72 D	<0.50	<0.1	<0.001
0624	N	7/11/2016	6844.49	6.56	6.60 H	5240 D	638	416	296	6	1590	2170 D	221 D	<0.05	77 D	<0.50	<0.1	<0.001
0624	N	10/3/2016	6844.30	6.72	6.60 H	5260 H	664	423	303	6	1610	2290 D	216 D	<0.05	75 D	<0.50	<0.1	<0.001
0627	N	7/20/1989	6846.40	7.10	6.95	4509	554	304	382	3.1	622	2429	36.7	0.06	103	< 1	< 0.1	< 0.001
0627	N	10/16/1989	6846.80	6.90	7.36	4512	539	290	359	3.8	659	2151	36.6	0.12	112	< 1	< 0.1	< 0.001
0627	N	1/4/1990	6846.70	6.80	7.24	4446	571	275	351	7.8	656	2277	39.7	0.07	113	< 1	< 0.1	< 0.001
0627	N	4/3/1990	6846.40	6.80	7.32	4492	590	290	352	3.2	698	2168	40.1	0.09	90	< 1	< 0.1	< 0.001
0627	N	7/2/1990	6846.20	6.70	7.34	4750	613	322	325	4.5	693	2265	41.5	< 0.05	109	< 1	< 0.1	< 0.001
0627	N	10/2/1990	6846.20	6.80	7.60	4551	509	270	342	2.8	644	2404	41.6	< 0.05	78	< 1	< 0.1	< 0.001
0627	N	1/15/1991	6846.20	6.80	7.77	4537	587	309	393	5.9	617	2480	49	< 0.05	118	< 1	0.1	< 0.001
0627	N	4/2/1991	6846.20	6.80	7.70	4623	533	263	331	2.7	595	2407	45.9	< 0.05	94.8	< 1	< 0.1	< 0.001
0627	N	7/16/1991	6845.90	6.80	7.44	4454	525	249	335	2.8	532	2537	45.4	0.36	97.2	< 1	< 0.1	< 0.001
0627	N	10/14/1991	6845.60	6.70	7.37	4539	448	221	342	2.7	622	2161	55.7	< 0.05	104	< 1	< 0.1	0.001
0627	N	1/14/1992	6845.40	6.60	7.12	4614	490	246	342	2.8	619	2317	54.7	< 0.05	101	< 1	< 0.1	< 0.001
0627	N	4/9/1992	6845.10	6.60	7.91	4671	543	283	424	3.2	605	2346	52.3	< 0.05	68.4	< 1	< 0.1	< 0.001
0627	N	7/7/1992	6844.90	6.50	8.00	4811	585	280	468	4.2	588	2403	59.2	0.13	108	< 1	< 0.1	< 0.001
0627	N	10/7/1992	6844.60	6.80	7.45	4696	563	257	484	5	593	2402	56.3	< 0.05	125	< 1	< 0.1	< 0.001
0627	N	1/7/1993	6844.40	6.80	7.88	4615	556	264	408	2.8	576	2324	57.4	< 0.05	116	< 1	< 0.1	< 0.001
0627	N	4/7/1993	6844.30	6.80	7.59	4751	546	228	448	2.3	553	2341	61	< 0.05	100	< 1	< 0.1	< 0.001
0627	N	7/14/1993	6843.80	6.90	7.21	5045	645	255	512	2.6	570	2476	72.5	< 0.05	99.3	< 1	< 0.1	< 0.001
0627	N	10/7/1993	6843.60	6.90	7.57	5187	568	239	453	2.3	532	2548	62.4	0.05	133	< 1	< 0.1	< 0.001
0627	N	1/6/1994	6843.40	6.90	7.51	4941	563	246	474	2.6	512	2693	63.1	< 0.05	61	< 1	< 0.1	< 0.001
0627	N	4/13/1994	6843.20	7.00	7.15	4787	564	242	486	2.6	510	2428	58.5	0.12	107	< 1	< 0.1	< 0.001
0627	N	7/21/1994	6842.90	6.90	7.53	4899	620	259	455	2.9	529	2908	54.6	< 0.05	108	< 1	< 0.1	0.001
0627	N	10/5/1994	6842.90	6.90	7.86	5024	610	282	535	3.6	549	2719	62.6	< 0.05	137	< 1	< 0.1	< 0.001
0627	N	1/5/1995	6842.60	6.90	7.49	5292	634	280	530	4.2	540	2650	58.9	0.15	105	< 1	< 0.1	< 0.001
0627	N	4/5/1995	6842.50	6.90	7.22	5324	540	275	505	3.9	542	2682	66	0.24	125	< 1	< 0.1	< 0.001
0627	N	7/6/1995	6842.00	6.90	7.91	5112	585	315	490	3.6	560	2555	61	< 0.05	90.5	< 1	< 0.1	< 0.001
0627	N	10/3/1995	6841.80	6.90	7.65	5241	580	280	535	3.9	544	2760	58	0.48	126	< 1	< 0.1	0.001
0627	N	1/3/1996	6841.70	7.10	7.52	5293	640	300	531	3.6	542	2995	60	< 0.05	131	< 1	< 0.1	< 0.001
0627	N	4/2/1996	6841.50	7.10	8.06	5230	570	287	530	3.6	558	2740	65.1	< 0.05	129	< 1	< 0.1	< 0.001
0627	N	7/7/1996	6841.20	6.80	7.56	5403	585	280	570	4.1	534	2725	64	0.13	113	< 1	< 0.1	< 0.001



**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
0624	N	7/7/2015	<0.001	<0.005	<0.01	<0.001	0.13	<0.1	<0.05	<0.001	<0.1	0.0379	0.26	0.76 U	0.26	0.02 U	-0.3 U	0.8 U
0624	N	10/5/2015	<0.001	<0.005	<0.01	<0.001	0.13	<0.1	<0.05	<0.001	<0.1	0.0317	0.34	0.31 U	0.34	0.01 U	0.5 U	2.7
0624	N	1/4/2016	<0.001	<0.005	<0.01	<0.001	0.11	<0.1	<0.05	<0.001	<0.1	0.0394	0.48	0.94 U	0.48	0.05 U	0.03 U	1.7
0624	N	4/4/2016	<0.001	<0.005	<0.01	<0.001	0.1	<0.1	<0.05	<0.001	<0.1	0.0378	0.37	1.8	2.17	0.05 U	0.04 U	0.08 U
0624	N	7/11/2016	<0.001	<0.005	<0.01	<0.001	0.08	<0.1	<0.05	<0.001	<0.1	0.0339	0.26	2.2	2.46	0.02 U	-0.4 U	0.6 U
0624	N	10/3/2016	<0.001	<0.005	<0.01	<0.001	0.04	<0.1	<0.05	<0.001	<0.1	0.0323	0.29	0.41 U	0.29	0.4	0.3 U	2.3
0627	N	7/20/1989	< 0.05	< 0.01	0.02	< 0.05	0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.0143	0.9	< 1	0.9	2.5	2.2	2.7
0627	N	10/16/1989	< 0.05	< 0.01	< 0.01	< 0.05	0.03	< 0.1	< 0.05	0.002	< 0.1	0.0181	0.6	< 1	0.6	3.3	1.1	3.8
0627	N	1/4/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.014	2	< 1	2	< 0.2	2.4	3.4
0627	N	4/3/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.06	< 0.1	< 0.05	0.001	< 0.1	0.015	0.4	< 1	0.4	< 0.2	< 1	1.1
0627	N	7/2/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.0175	0.3	< 1	0.3	< 0.2	1.9	< 1
0627	N	10/2/1990	< 0.05	< 0.01	0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.014	0.2	< 1	0.2	< 0.2	< 1	< 1
0627	N	1/15/1991	< 0.01	< 0.01	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.0176	< 0.2	< 1	0	< 0.2	< 1	< 1
0627	N	4/2/1991	< 0.01	< 0.01	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.049	1	3.8	4.8	< 0.2	< 1	1
0627	N	7/16/1991	< 0.01	< 0.01	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.014	< 0.2	2.8	2.8	< 0.2	< 1	< 1
0627	N	10/14/1991	< 0.01	< 0.01	0.01	< 0.05	0.05	< 0.1	< 0.05	0.002	< 0.1	0.02	< 0.2	1.5	1.5	< 0.2	< 1	< 1
0627	N	1/14/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.07	< 0.1	< 0.05	0.002	< 0.1	0.017	0.9	1.2	2.1	< 0.2	< 1	< 1
0627	N	4/9/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.03	< 0.1	< 0.05	0.003	< 0.1	0.019	< 0.2	2.9	2.9	< 0.2	1.2	< 1
0627	N	7/7/1992	< 0.1	< 0.01	< 0.01	< 0.05	0.05	< 0.1	< 0.05	0.001	< 0.1	0.02	0.7	< 1	0.7	< 0.2	< 1	< 1
0627	N	10/7/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.06	< 0.1	< 0.05	0.003	< 0.1	0.025	0.7	2.1	2.8	< 0.2	1.7	< 1
0627	N	1/7/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.06	< 0.1	< 0.05	0.014	< 0.1	0.018	0.5	1.5	2	< 0.2	< 1	< 1
0627	N	4/7/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.08	< 0.1	< 0.05	0.004	< 0.1	0.033	< 0.2	< 1	0	< 0.2	1.2	< 1
0627	N	7/14/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.08	< 0.1	< 0.05	0.018	< 0.1	0.016	0.6	2.3	2.9	< 0.2	< 1	< 1
0627	N	10/7/1993	< 0.01	< 0.01	0.02	< 0.05	0.08	< 0.1	< 0.05	0.009	< 0.1	0.012	0.6	< 1	0.6	< 0.2	< 1	< 1
0627	N	1/6/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.08	< 0.1	< 0.05	0.003	< 0.1	0.015	0.9	< 1	0.9	< 0.2	< 1	< 1
0627	N	4/13/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.09	< 0.1	< 0.05	0.002	< 0.1	0.015	0.8	< 1	0.8	< 0.2	3.2	< 1
0627	N	7/21/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.09	< 0.1	< 0.05	0.003	< 0.1	0.017	0.8	2.4	3.2	< 0.2	< 1	4.6
0627	N	10/5/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.08	< 0.1	< 0.05	0.001	< 0.1	0.016	0.4	< 1	0.4	< 0.2	< 1	< 1
0627	N	1/5/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.09	< 0.1	< 0.05	< 0.001	< 0.1	0.016	0.3	< 1	0.3	< 0.2	< 1	< 1
0627	N	4/5/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.07	< 0.1	< 0.05	< 0.001	< 0.1	0.016	1.2	< 1	1.2	< 0.2	1.4	1.4
0627	N	7/6/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.07	< 0.1	< 0.05	0.003	< 0.1	0.0205	0.8	< 1	0.8	0.3	< 1	1.4
0627	N	10/3/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.09	< 0.1	< 0.05	0.019	< 0.1	0.0168	< 0.2	< 1	0	< 0.2	1.7	2
0627	N	1/3/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.07	< 0.1	< 0.05	0.001	< 0.1	0.018	0.7	< 1	0.7	1.2	2.4	1.2
0627	N	4/2/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.07	< 0.1	< 0.05	< 0.001	< 0.1	0.019	0.5	< 1	0.5	< 0.2	< 1	< 1
0627	N	7/7/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.13	< 0.1	< 0.05	< 0.001	< 0.1	0.024	0.3	< 1	0.3	< 0.2	< 1	< 1

**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
0627	N	10/1/1996	6841.00	6.80	7.23	4980	592	277	470	3.5	575	2468	54	< 0.05	119	< 1	< 0.1	< 0.001
0627	N	1/22/1997	6840.80	6.80	7.85	5020	595	290	503	3.7	577	2673	63.3	< 0.05	121	< 1	< 0.1	< 0.001
0627	N	4/8/1997	6840.50	6.90	7.59	5240	590	286	578	4.1	564	2524	56.6	< 0.05	153	< 1	< 0.1	< 0.001
0627	N	7/8/1997	6840.20	7.40	7.75	5600	616	303	543	4.3	560	2570	64.1	< 0.05	190	< 1	< 0.1	< 0.001
0627	N	10/7/1997	6840.20	6.60	7.69	4960	601	276	439	3.5	599	2440	66	< 0.05	122	< 1	< 0.1	< 0.001
0627	N	1/16/1998	6840.00	7.30	7.91	5260	582	289	545	4.6	682	2850	70.6	1.28	107	< 1	< 0.1	< 0.001
0627	N	4/7/1998	6840.20	6.90	7.74	5200	621	294	508	3.9	590	2400	54.6	< 0.05	141	< 1	< 0.1	< 0.001
0627	N	7/7/1998	6840.00	7.20	7.80	5210	598	288	529	4.3	588	2500	59.6	0.05	133	< 1	< 0.1	< 0.001
0627	N	10/6/1998	6839.80	6.97	7.85	5380	589	288	530	4.8	579	2670	61.5	0.06	109	< 1	< 0.1	< 0.001
0627	N	1/6/1999	6839.50	7.70	8.02	5340	566	284	509	4.8	586	2740	60	0.17	142	< 1	< 0.1	< 0.001
0627	N	4/6/1999	6839.50	7.10	7.84	5650	580	309	504	4.7	580	2660	68	0.27	131	< 1	< 0.1	< 0.001
0627	N	7/13/1999	6839.22	7.00	8.21	5320	579	308	498	10.6	594	2620	67.7	0.17	126	< 1	< 0.1	< 0.001
0627	N	10/5/1999	6839.20	7.09	7.70	5320	521	274	512	5.1	594	2320	58.5	0.38	127	< 1	< 0.1	< 0.001
0627	N	1/4/2000	6839.10	7.00	8.10	5150	530	283	425	7.3	597	2430	57.2	0.14	144	< 1	< 0.1	< 0.001
0627	N	5/10/2000	6839.00	7.00	7.65	5200	535	278	501	4.1	588	2370	55.3	< 0.05	144	< 1	< 0.1	< 0.001
0627	N	7/18/2000	6838.60	6.96	7.91	5320	567	292	502	4.32	590	2390	53.3	< 0.05	149	< 1	< 0.1	< 0.001
0627	N	10/10/2000	6838.65	7.03	7.78	5100	496	261	512	5.4	580	2160	44.8	< 0.05	150	< 1	< 0.1	< 0.001
0627	N	1/9/2001	6838.55	7.23	8.03	5170	583	303	454	5	595	2460	57.9	< 0.05	160	< 1	< 0.1	< 0.001
0627	N	2/6/2001	6838.50	7.53	7.48	5040	654	321	558	6.1	592	2780	52.5	< 0.05	158	< 1	< 0.1	< 0.001
0627	N	3/6/2001	6838.30	7.31	7.69	4770	553	286	552	6.5	586	2680	53	< 0.05	156	< 1	< 0.1	0.001
0627	N	4/10/2001	6838.60	7.52	7.47	5020	656	319	446	5.3	590	2840	57.3	< 0.05	149	< 1	< 0.1	< 0.001
0627	N	5/8/2001	6838.10	7.08	7.68	5190	557	289	530	4.9	577	2320	60.2	0.09	154	< 1	< 0.1	< 0.001
0627	N	6/5/2001	6838.30	7.14	7.67	4950	576	304	521	3.8	580	2660	55.1	0.09	142	< 1	< 0.1	< 0.001
0627	N	7/10/2001	6838.05	7.48	7.45	5270	585	313	585	4.4	600	2450	55.9	0.06	149	< 1	< 0.1	< 0.001
0627	N	8/8/2001	6838.00	7.09	7.60	5220	540	290	460	4.1	596	2300	64	0.11	140	< 1	< 0.1	< 0.001
0627	N	9/11/2001	6838.00	6.99	7.80	4190	550	290	540	4.9	600	2380	64.4	0.08	158	< 1	< 0.1	< 0.001
0627	N	10/2/2001	6838.05	7.08	7.70	5230	540	290	540	5.6	609	2300	74	< 0.05	152	< 1	< 0.1	< 0.001
0627	N	11/6/2001	6838.00	7.13	7.90	5310	595	305	451	5.8	602	2600	69	0.06	142	< 1	< 0.1	< 0.001
0627	N	12/4/2001	6838.25	7.30	7.80	5190	559	277	498	4.7	610	2290	65.2	0.07	148	< 1	< 0.1	< 0.001
0627	N	1/8/2002	6837.90	7.27	7.70	5150	641	314	407	6.5	603	2290	73.6	< 0.05	134	< 1	< 0.1	< 0.001
0627	N	2/5/2002	6837.80	7.34	7.70	5190	625	298	436	6.1	601	2560	70.8	< 0.05	133	< 1	< 0.1	< 0.001
0627	N	3/5/2002	6837.80	7.17	7.80	5160	595	300	495	5.1	611	2670	64.3	0.07	133	< 1	< 0.1	< 0.001
0627	N	4/9/2002	6837.50	7.08	7.64	5250	559	286	486	6.5	612	2440	74.1	0.09	142	< 1	< 0.1	< 0.001
0627	N	5/7/2002	6837.73	7.09	7.84	5180	594	294	512	5.9	601	2500	59.7	0.08	137	< 1	< 0.1	< 0.001
0627	N	6/4/2002	6837.61	7.17	7.71	5190	607	300	479	4.6	602	2550	53.8	0.12	122	< 1	< 0.1	< 0.001

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
0627	N	10/1/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.09	< 0.1	< 0.05	0.002	< 0.1	0.024	0.5	< 1	0.5	< 0.2	< 1	< 1
0627	N	1/22/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.11	< 0.1	< 0.05	< 0.001	< 0.1	0.018	1	< 1	1	< 0.2	< 1	< 1
0627	N	4/8/1997	< 0.01	< 0.01	0.01	< 0.05	0.1	< 0.1	< 0.05	0.195	< 0.1	0.02	0.9	< 1	0.9	< 0.2	< 1	< 1
0627	N	7/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.1	< 0.1	< 0.05	< 0.001	< 0.1	0.02	0.4	< 1	0.4	< 0.2	< 1	< 1
0627	N	10/7/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.12	< 0.1	< 0.05	< 0.001	< 0.1	0.023	0.8	< 1	0.8	< 0.2	< 1	< 1
0627	N	1/16/1998	< 0.01	< 0.01	0.02	< 0.05	1.47	< 0.1	< 0.05	< 0.001	< 0.1	0.0222	0.9	< 1	0.9	< 0.2	< 1	< 1
0627	N	4/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.12	< 0.1	< 0.05	< 0.001	< 0.1	0.0221	0.7	< 1	0.7	< 0.2	< 1	< 1
0627	N	7/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.1	< 0.1	< 0.05	< 0.001	< 0.1	0.0233	1.6	2.6	4.2	< 0.2	< 1	< 1
0627	N	10/6/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.14	< 0.1	< 0.05	< 0.001	< 0.1	0.0345	1.2	< 1	1.2	< 0.2	< 1	< 1
0627	N	1/6/1999	< 0.01	0.006	< 0.01	< 0.05	0.22	< 0.1	< 0.05	< 0.001	< 0.1	0.0239	< 0.2	< 1	0	< 0.2	< 1	< 1
0627	N	4/6/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.18	< 0.1	< 0.05	0.002	< 0.1	0.0233	1	2.5	3.5	< 0.2	< 1	< 1
0627	N	7/13/1999	< 0.01	< 0.005	0.02	< 0.05	0.08	< 0.1	< 0.05	< 0.001	< 0.1	0.002	0.8	< 1	0.8	< 0.2	3	2.9
0627	N	10/5/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.73	< 0.1	< 0.05	0.002	< 0.1	0.0247	1.3	< 1	1.3	< 0.2	< 1	< 1
0627	N	1/4/2000	< 0.01	< 0.005	0.06	< 0.05	0.86	< 0.1	< 0.05	0.003	< 0.1	0.0233	4.1	2	6.1	< 0.2	< 1	5.5
0627	N	5/10/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.1	< 0.1	< 0.05	< 0.001	< 0.1	0.0259	0.4	6.3	6.7	< 0.2	5.7	< 1
0627	N	7/18/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.11	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.6	2.5	3.1	< 0.2	< 1	< 1
0627	N	10/10/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.08	< 0.1	< 0.05	< 0.001	< 0.1	0.024	0.5	< 1	0.5	< 0.2	< 1	< 1
0627	N	1/9/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.11	< 0.1	< 0.05	0.001	< 0.1	0.023	0.4	2.5	2.9	< 0.2	< 1	< 1
0627	N	2/6/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.11	< 0.1	< 0.05	0.002	< 0.1	0.0239	0.5	1.5	2	< 0.2	< 1	< 1
0627	N	3/6/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.12	< 0.1	< 0.05	0.001	< 0.1	0.024	0.4	< 1	0.4	< 0.2	< 1	< 1
0627	N	4/10/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.14	< 0.1	< 0.05	0.001	< 0.1	0.03	0.4	< 1	0.4	< 0.2	< 1	< 1
0627	N	5/8/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.13	< 0.1	< 0.05	0.001	< 0.1	0.024	< 0.2	< 1	0	< 0.2	< 1	< 1
0627	N	6/5/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.12	< 0.1	< 0.05	0.003	< 0.1	0.024	< 0.2	< 1	0	< 0.2	< 1	< 1
0627	N	7/10/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.12	< 0.1	< 0.05	0.001	< 0.1	0.024	< 0.2	< 1	0	< 0.2	< 1	< 1
0627	N	8/8/2001	< 0.01	0.006	< 0.01	< 0.05	0.1	< 0.1	< 0.05	< 0.001	< 0.1	0.025	< 0.2	< 1	0	< 0.2	< 1	< 1
0627	N	9/11/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.12	< 0.1	< 0.05	0.001	< 0.1	0.023	0.6	< 1	0.6	< 0.2	< 1	< 1
0627	N	10/2/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.1	< 0.1	< 0.05	0.001	< 0.1	0.0235	0.7	< 1	0.7	< 0.2	< 1	< 1
0627	N	11/6/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.11	< 0.1	< 0.05	0.002	< 0.1	0.0224	0.6	< 1	0.6	< 0.2	< 1	< 1
0627	N	12/4/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.08	< 0.1	< 0.05	< 0.001	< 0.1	0.0223	0.8	< 1	0.8	< 0.2	< 1	< 1
0627	N	1/8/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.11	< 0.1	< 0.05	< 0.001	< 0.1	0.0228	0.8	< 1	0.8	< 0.2	< 1	< 1
0627	N	2/5/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.11	< 0.1	< 0.05	< 0.001	< 0.1	0.014	0.5	< 1	0.5	< 0.2	< 1	< 1
0627	N	3/5/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.12	< 0.1	< 0.05	< 0.001	< 0.1	0.0251	0.4	< 1	0.4	< 0.2	< 1	< 1
0627	N	4/9/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.11	< 0.1	< 0.05	< 0.001	< 0.1	0.0244	< 0.2	< 1	0	< 0.2	< 1	< 1
0627	N	5/7/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.13	< 0.1	< 0.05	0.001	< 0.1	0.0249	< 0.2	< 1	0	< 0.2	< 1	< 1
0627	N	6/4/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.13	< 0.1	< 0.05	< 0.001	< 0.1	0.0246	0.7	< 1	0.7	< 0.2	< 1	< 1



**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
0627	N	7/9/2002	6837.42	7.13	7.90	5350	587	306	495	5.5	608	2590	76	< 0.05	133	< 1	< 0.1	< 0.001
0627	N	10/7/2002	6837.30	7.10	7.65	4170	543	280	455	4.7	611	2160	50.1	0.06	139	< 1	< 0.1	< 0.001
0627	N	1/7/2003	6836.79	7.49	7.78	5190	586	315	556	4.6	614	2710	71.9	0.17	128	< 1	< 0.1	< 0.001
0627	N	4/8/2003	6836.52	6.98	7.50	5220	555	277	496	7.9	603	2280	58.1	0.11	147	< 1	< 0.1	< 0.001
0627	N	7/8/2003	6836.50	6.82	7.70	5190	534	282	455	6	317	2530	48.7	0.09	142	< 1	< 0.1	< 0.001
0627	N	10/7/2003	6836.43	6.90	7.74	5310	613	321	531	5	625	2700	56.7	0.13	134	< 1	< 0.1	< 0.001
0627	N	1/6/2004	6836.28	7.04	7.68	5200	533	285	489	5.2	637	2470	57.8	0.06	142 D	< 1.0	0.1	< 0.001
0627	N	4/6/2004	6836.24	7.38	7.30	5170	591	304	491	5.3	619	2550 D	58.1	0.17	144 D	< 1	< 0.1	< 0.001
0627	N	7/13/2004	6835.89	6.81	7.23	5320	592	298	497	6.1	618	2480 D	57	0.15	135 D	< 1.0	< 0.1	< 0.001
0627	N	10/5/2004	6835.97	6.92	7.50	5440	571 D	294 D	530 E	4.5	600	2470 D	54	< 0.05	125 D	< 1.0	< 0.1	< 0.001
0627	N	1/12/2005	6836.02	7.08	7.24	5190	598 D	304 D	518 D	5.9	596	2520 D	62	0.08	112 D	< 1.0	< 0.1	< 0.001
0627	N	4/5/2005	6835.55	7.19	7.70	5000	602	318	518	5.1	612	2590	56	< 0.05	110	< 1.0	< 0.1	< 0.001
0627	N	7/12/2005	6835.37	7.01	7.76	4950	594 D	299 D	494	4.4	581	2570 D	52	< 0.05	108 D	< 1.0	< 0.1	< 0.001
0627	N	10/4/2005	6835.48	7.00	7.60	4930	554 D	284 D	495	5.2	595	2530 D	54	< 0.05	108 D	< 1.0	< 0.1	< 0.001
0627	N	1/10/2006	6835.12	7.06	7.79	4810	527	270	507	4.3	640	2380 D	48	< 0.05	112 D	< 1.0	< 0.1	< 0.001
0627	N	4/4/2006	6835.02	6.98	7.30	4800	587 D	303 D	486	5.9	587	2560 D	55	< 0.05	117 D	< 1.0	< 0.1	< 0.001
0627	N	7/18/2006	6834.87	6.92	6.91	4790	554 D	279 D	538	6.4	571	2660 D	45	< 0.05	109 D	< 1.0	< 0.1	< 0.001
0627	N	10/3/2006	6834.82	6.92	6.92	4670	528 D	261 D	460	5.7	592	2350 D	39	0.08	108 D	< 0.5	< 0.1	< 0.001
0627	N	1/9/2007	6834.77	7.09	6.96	4870	512 D	263 D	443	5.6	580	2460 D	47	< 0.05	103 D	< 0.5	< 0.1	< 0.001
0627	N	4/10/2007	6835.02	7.18	7.18	4740	548 D	272 D	446	7.4	573	2430 D	45	0.06	115 D	< 0.5	< 0.1	< 0.001
0627	N	7/10/2007	6834.67	6.97	6.81	4590	571 D	278 D	489	5.8	612	2590 D	41	0.05	117 D	< 0.5	< 0.1	0.01
0627	N	10/2/2007	6834.55	6.87	7.26	4710	486 D	244 D	469 D	6.2	593	2270 D	63 D	0.18	107 D	< 0.5	< 0.1	< 0.001
0627	N	1/15/2008	6834.77	7.05	7.03	4750	532 D	256 D	513 D	6.7	568	2340 D	64 D	< 0.05	109 D	< 0.5	< 0.1	< 0.001
0627	N	4/8/2008	6834.72	6.94	7.32	4600	565 D	282 D	528 D	6.4 D	546	2530 D	36	< 0.1	159 D	< 0.50	< 0.1	< 0.001
0627	N	7/8/2008	6834.47	6.68	7.23	4610	527	250	458 D	5	578	2460 D	50	< 0.05	178 D	< 0.5	< 0.1	< 0.003
0627	N	10/7/2008	6833.99	6.98	7.09	4510	530	253	477 D	5	560	2420 DH	36	< 0.1	167 D	< 0.5	< 0.1	< 0.001
0627	N	1/13/2009	6834.22	6.90	7.10	4720	580	274	518	6	565	2210 D	28	< 0.05	172 D	< 0.5	< 0.1	< 0.001
0627	N	4/7/2009	6834.02	6.82	6.99	4650	509 D	244 D	472 D	6	586	2410 D	39	< 0.05	107 D	< 0.50	< 0.1	< 0.001
0627	N	7/7/2009	6834.02	6.76	7.23	4610	510	239	473	5	579	2310 D	44	< 0.05	105 D	< 0.50	< 0.1	< 0.001
0627	N	10/6/2009	6834.02	6.93	7.67	4530	510	240	483	5	583	2440 D	44	< 0.05	111 D	< 0.50	< 0.1	< 0.001
0627	N	1/5/2010	6833.82	6.90	7.48	4810 D	517 D	234	466 D	6	599	2580 D	39	< 0.05	102 D	< 0.50	< 0.1	< 0.001
0627	N	4/6/2010	6833.67	6.91	7.12	4540 D	510 D	220	451 D	6	625	2430 D	40	< 0.05	102 D	< 0.50	< 0.1	< 0.001
0627	N	7/13/2010	6833.57	6.72	7.29	4570 D	536	242	487	6	614	2370 D	39 D	< 0.05	96 D	< 0.50	0.1	< 0.001
0627	N	10/5/2010	6833.47	6.94	7.59	4550 D	524	230	478	6	618	2410 D	38 D	0.06	97 D	< 0.50	< 0.1	< 0.001
0627	N	1/4/2011	6833.42	6.85	7.47	4300 D	526	238	456	6	601	2350 D	40 D	< 0.05	85 D	< 0.50	< 0.1	< 0.001

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
0627	N	7/9/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.11	< 0.1	< 0.05	< 0.001	< 0.1	0.0228	0.3	< 1	0.3	< 0.2	< 1	< 1
0627	N	10/7/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.09	< 0.1	< 0.05	< 0.001	< 0.1	0.0198	< 0.2	< 1	0	< 0.2	< 1	< 1
0627	N	1/7/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.1	< 0.1	< 0.05	< 0.001	< 0.1	0.0291	< 0.2	< 1	0	< 0.2	< 1	< 1.0
0627	N	4/8/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.08	< 0.1	< 0.05	< 0.001	< 0.1	0.0278	< 0.2	< 1	0	< 0.2	< 1	< 1.0
0627	N	7/8/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.09	< 0.1	< 0.05	< 0.001	< 0.1	0.0241	< 0.2	< 1	0	< 0.2	< 1	< 1.0
0627	N	10/7/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.06	< 0.1	< 0.05	< 0.001	< 0.1	0.0279	< 0.2	< 1	0	< 0.2	< 1	< 1.0
0627	N	1/6/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	0.003	< 0.1	0.0244 D	< 0.2	6.6	6.6	< 0.2	< 1.0	< 1.0
0627	N	4/6/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	0.02	< 0.1	0.025 D	< 0.2	< 1	0	< 0.2	< 1	< 1
0627	N	7/13/2004	< 0.01	< 0.005	0.01	< 0.05	0.01	< 0.1	< 0.05	0.001	< 0.1	0.0254 D	0.5	< 1.0	0.5	< 0.2	< 1.0	< 1.0
0627	N	10/5/2004	< 0.01	< 0.005	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	0.009	< 0.1	0.0261 D	0.3	2	2.3	< 0.2	< 1.0	< 1.0
0627	N	1/12/2005	< 0.01	< 0.005	< 0.01	< 0.05	0.01	< 0.1	< 0.05	0.001	< 0.1	0.0269	0.5	< 1.0	0.5	< 0.2	< 1.0	< 1.0
0627	N	4/5/2005	< 0.01	< 0.005	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.028	1	< 1.0	1	< 0.2	< 1.0	< 1.0
0627	N	7/12/2005	< 0.01	< 0.005	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.0254	0.4	< 1.0	0.4	< 0.2	< 1.0	< 1.0
0627	N	10/4/2005	< 0.01	< 0.005	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.0271	0.3	1.4	1.7	< 0.2	< 1.0	< 1.0
0627	N	1/10/2006	< 0.01	< 0.005	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	0.01	< 0.1	0.0268	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
0627	N	4/4/2006	< 0.01	0.006	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	0.005	< 0.1	0.0251 D	< 0.2	2.7	2.7	< 0.2	< 1.0	< 1.0
0627	N	7/18/2006	< 0.01	< 0.005	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.0245	0.4	2.2	2.6	< 0.2	< 1.0	2
0627	N	10/3/2006	< 0.01	< 0.005	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.0235	0.7	< 1	0.7	< 0.2	< 1	< 1
0627	N	1/9/2007	< 0.01	< 0.005	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.0228	< 0.2	< 1	0	< 0.2	< 1	< 1
0627	N	4/10/2007	< 0.01	< 0.005	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.0252	< 0.2	< 1	0	< 0.2	< 1	< 1
0627	N	7/10/2007	< 0.01	< 0.005	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.0246	< 0.2	< 1	0	< 0.2	< 1	< 1
0627	N	10/2/2007	< 0.01	< 0.005	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.0243	< 0.2	< 1	0	< 0.2	< 1	< 1
0627	N	1/15/2008	< 0.01	< 0.005	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.0224	< 0.2	< 1	0	< 0.2	< 1	< 1
0627	N	4/8/2008	< 0.01	< 0.005	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.0227	0.003 U	-0.7 U	-0.697	0.2	0 U	1 U
0627	N	7/8/2008	< 0.01	< 0.005	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.0214	0.35	1.2 U	1.55	0.3	-0.2 U	0.6 U
0627	N	10/7/2008	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0201	0.05 U	0.06 U	0.11	-0.1 U	0 U	1
0627	N	1/13/2009	< 0.01	< 0.005	< 0.01	< 0.05	0.09	< 0.1	< 0.05	< 0.001	< 0.1	0.0215	0.07 U	0.61 U	0.68	-0.2 U	-1 U	1.4
0627	N	4/7/2009	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	0.001	< 0.1	0.0196	0.16 U	0.52 U	0.68	0.02 U	0.6 U	0.4 U
0627	N	7/7/2009	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.0198	0.06 U	0.89 U	0.95	0.01 U	-1 U	0.8
0627	N	10/6/2009	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.0213	0.36	0.81 U	1.17	0.02 U	-1 U	0.6 U
0627	N	1/5/2010	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.0188	-0.02 U	0.10 U	0.08	0.05 U	-2 U	0.7 U
0627	N	4/6/2010	< 0.01	< 0.005	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.0196	0.33	0.19 U	0.52	0.01 U	2.6 U	0.2 U
0627	N	7/13/2010	< 0.01	< 0.005	< 0.01	< 0.05	0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.0197	0.23	0.15 U	0.38	0.04 U	0.7 U	-0.1 U
0627	N	10/5/2010	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.0209	-0.05 U	0.70 U	0.65	0.06 U	1.6 U	0.3 U
0627	N	1/4/2011	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.0201	0.14 U	0.60 U	0.74	0.09 U	0.4 U	0.08 U

TABLE A.1

Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
0627	N	4/5/2011	6833.32	6.86	7.12	4320 D	530	231	503	6	594	2390 D	38 D	<0.05	94 D	<0.50	<0.1	<0.001
0627	N	7/12/2011	6833.17	6.98	7.67	4330 D	538	239	490	6	599	2350 D	37 D	<0.1	101 D	<0.50	<0.1	<0.001
0627	N	10/4/2011	6833.11	6.99	7.70	4260 D	509	227	460	6	559	2420 D	39 D	<0.1	96 D	<0.50	<0.1	<0.001
0627	N	1/3/2012	6832.82	7.12	7.07 H	4250 D	552	238	445	7	552	2300 D	38 D	<0.05	94 D	<0.50	<0.1	<0.001
0627	N	4/3/2012	6832.87	7.01	6.91 H	4360 D	556	213	400	6	589	2310 D	38 D	<0.05	91 D	<0.50	<0.1	<0.01
0627	N	7/10/2012	6832.62	6.86	7.00 H	4380	542	242	460 D	6	585	2270 D	37 D	<0.05	96 D	<0.50	<0.1	<0.001
0627	N	10/9/2012	6832.52	7.03	6.97 H	4510	555	231	443 D	7	609	2280 D	39 D	<0.05	89 D	<0.50	<0.1	<0.001
0627	N	1/14/2013	6832.56	6.89	6.97 H	4420	561	241	468 D	6	605	2370 D	37 D	<0.05	76 D	<0.50	<0.1	<0.001
0627	N	4/2/2013	6832.37	6.99	7.01 H	4280	542	236	438	6	610	2300 D	37 D	<0.05	90 D	<0.50	<0.1	<0.001
0627	N	7/9/2013	6832.02	6.80	7.01 H	4300	540	231	425	5	610	2280 D	33 D	<0.05	85 D	<0.50	<0.1	<0.001
0627	N	10/1/2013	6832.09	6.86	6.95 H	4250	520	228	412	5	617	2230 D	33 D	<0.05	87 D	<0.50	<0.1	<0.001
0627	N	1/7/2014	6832.13	7.09	6.95	4330	509	224	400	5	608	2230	34	<0.05	86	<0.50	<0.1	<0.001
0627	N	4/1/2014	6832.14	7.08	6.91 H	4210	522	231	438 D	6	609	2230 D	37 D	<0.05	83 D	<0.50	<0.1	<0.001
0627	N	7/8/2014	6831.78	7.06	6.87 H	4240	527	237	438 D	6	623	2310 D	33 D	<0.05	80 D	<0.50	<0.1	<0.001
0627	N	10/7/2014	6831.77	6.99	6.93 H	4280	527	228	392	5	613	2230 D	33 D	<0.05	75 D	<0.50	<0.1	<0.001
0627	N	1/6/2015	6831.64	7.01	6.86 H	4240	517	222	382	5	595	2370 D	42 D	<0.05	83 D	<0.50	<0.1	<0.001
0627	N	4/7/2015	6831.68	6.94	6.92 H	4260	532	228	395	5	625	2230 D	39 D	<0.05	82 D	<0.5	<0.1	<0.001
0627	N	7/7/2015	6831.50	6.81	6.89 H	4370	507	227	371	5.2	628	2360 D	35 D	<0.05	74 D	<0.50	<0.1	<0.001
0627	N	10/6/2015	6831.33	7.01	6.87 H	4260	513	223	380	5	576	2330 D	35 D	<0.05	76 D	<0.50	<0.1	<0.001
0627	N	1/5/2016	6831.36	7.06	6.89 H	4210	530	233	390	5	615	2340 D	34 D	<0.05	83 D	<0.50	<0.1	<0.001
0627	N	4/5/2016	6831.08	6.90	7.09 H	4200	541	235	387	5	594	2350 D	34 D	<0.05	82 D	<0.50	0.1	<0.001
0627	N	7/12/2016	6831.02	6.98	6.90 H	4280	542	231	383	5	602	2450 D	37 D	<0.05	86 D	<0.50	<0.1	<0.001
0627	N	10/4/2016	6831.06	7.08	6.93 H	4180	539	235	385	5	608	2380 D	34 D	<0.05	84 D	<0.50	<0.1	<0.001
0632	N	7/19/1989	6874.20	6.50	6.77	6819	788	667	330	9.2	2123	2840	242	0.5	107	< 1	< 0.1	< 0.001
0632	N	10/16/1989	6874.00	6.80	7.10	6466	781	671	408	10.7	2257	2578	246	0.47	95	< 1	< 0.1	< 0.001
0632	N	1/10/1990	6872.30	6.40	6.54	6860	783	712	407	8.35	2111	2747	251	0.43	83	< 1	< 0.1	< 0.001
0632	N	4/10/1990	6870.40	6.30	7.16	6977	778	688	380	7.4	2208	2677	258	0.44	107	< 1	< 0.1	< 0.001
0632	N	7/10/1990	6871.10	6.30	6.86	7355	819	674	412	7.9	2296	3007	248	0.37	124	< 1	< 0.1	< 0.001
0632	N	10/9/1990	6870.40	6.20	7.27	7558	839	707	433	9	2239	2945	258	0.52	106	< 1	< 0.1	< 0.001
0632	N	1/10/1991	6869.90	6.30	7.18	7367	900	760	429	8.9	2184	3027	267	0.4	113	< 1	< 0.1	0.002
0632	N	4/11/1991	6869.90	6.20	7.36	7346	857	663	451	9.4	2285	3053	274	0.37	146	< 1	< 0.1	0.002
0632	N	7/9/1991	6868.30	6.30	6.68	7472	833	636	390	6.9	2336	2964	273	0.61	117	< 1	0.14	< 0.001
0632	N	10/17/1991	6867.50	6.10	7.08	7677	886	630	426	8.4	2510	2959	267	0.72	87.6	< 1	< 0.1	0.001
0632	N	1/21/1992	6867.60	6.20	6.95	7030	747	758	424	7.2	2211	3200	261	0.6	76.1	< 1	< 0.1	< 0.001
0632	N	4/14/1992	6868.30	6.10	7.56	7706	677	557	460	9.1	2184	3126	263	0.55	75.7	< 1	< 0.1	0.002



**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
0627	N	4/5/2011	<0.01	<0.005	<0.01	<0.05	0.03	<0.1	<0.05	<0.001	<0.1	0.0189	0.009 U	0.34 U	0.349	0.005 U	0.2 U	0.09 U
0627	N	7/12/2011	<0.01	<0.005	<0.01	<0.05	0.02	<0.1	<0.05	<0.001	<0.1	0.0198	0.16	0.28 U	0.44	0.04 U	0.7 U	0.4 U
0627	N	10/4/2011	<0.01	<0.005	<0.01	<0.05	0.02	<0.1	<0.05	<0.001	<0.1	0.0184	0.15	0.06 U	0.21	0.03 U	0.9 U	-0.009 U
0627	N	1/3/2012	<0.01	<0.005	<0.01	<0.05	0.02	<0.1	<0.05	<0.001	<0.1	0.0192	0.57	-0.1 U	0.57	0.05 U	1.2 U	0.5
0627	N	4/3/2012	<0.01	<0.005	<0.01	<0.05	0.02	<0.1	<0.05	<0.001	<0.1	0.0208	0.06 U	0.39 U	0.84	0.005 U	0.2 U	0.2 U
0627	N	7/10/2012	<0.001	<0.005	<0.01	0.001	0.07	<0.1	<0.05	<0.001	<0.1	0.0183	0.17	0.19 U	0.55	0.02 U	1 U	0.07 U
0627	N	10/9/2012	<0.001	<0.005	<0.01	<0.001	0.03	<0.1	<0.05	<0.001	<0.1	0.0199	0.24	0.23 U	0.24	0.2	0.7 U	0.3 U
0627	N	1/14/2013	<0.001	<0.005	<0.01	<0.001	0.09	<0.1	<0.05	0.001	<0.1	0.0211	0.28	0.52 U	0.28	0.09 U	0.6 U	0.1 U
0627	N	4/2/2013	<0.001	<0.005	<0.01	<0.001	0.17	<0.1	<0.05	<0.001	<0.1	0.0209	0.10 U	0.45 U	0	0.05 U	0.3 U	0.8
0627	N	7/9/2013	<0.001	<0.005	<0.01	<0.001	0.03	<0.1	<0.05	<0.001	<0.1	0.0202	0.06 U	-0.4 U	0	0.02 U	-0.06 U	0.3 U
0627	N	10/1/2013	<0.001	<0.005	<0.01	<0.001	0.02	<0.1	<0.05	<0.001	<0.1	0.0221	0.26	0.43 U	0.26	0.07 U	0.4 U	-0.1 U
0627	N	1/7/2014	<0.001	<0.005	<0.01	<0.001	0.03	<0.1	<0.05	<0.001	<0.1	0.0209	0.33	-0.2 U	0.33	0.04 U	0.4 U	0.3 U
0627	N	4/1/2014	<0.001	<0.005	<0.01	<0.001	0.03	<0.1	<0.05	<0.001	<0.1	0.0195	0.43	-0.2 U	0.43	0.04 U	0.8 U	0.5
0627	N	7/8/2014	<0.001	<0.005	<0.01	<0.001	0.03	<0.1	<0.05	<0.001	<0.1	0.0198	0.2	0.09 U	0.2	0.01 U	0.01 U	-0.1 U
0627	N	10/7/2014	<0.001	<0.005	<0.01	<0.001	0.08	<0.1	<0.05	<0.001	<0.1	0.0208	0.21	1.2 U	0.21	-0.01 U	0.6 U	0.3 U
0627	N	1/6/2015	<0.001	<0.005	<0.01	<0.001	0.04	<0.1	<0.05	<0.001	<0.1	0.0212	0.21	0.77 U	0.21	0.06 U	-0.07 U	1.6
0627	N	4/7/2015	<0.001	<0.005	<0.01	<0.001	0.15	<0.1	<0.05	<0.001	<0.1	0.02	0.44	0.86 U	0.44	-0.009 U	0.8 U	1.5
0627	N	7/7/2015	<0.001	<0.005	<0.01	<0.001	0.09	<0.1	<0.05	<0.001	<0.1	0.0196	0.32	1.0 U	0.32	0.3	0.3 U	0.0009 U
0627	N	10/6/2015	<0.001	<0.005	<0.01	<0.001	0.04	<0.1	<0.05	<0.001	<0.1	0.0198	0.15	0.82 U	0.15	0.07 U	0.7 U	1.0 U
0627	N	1/5/2016	<0.001	<0.005	<0.01	<0.001	0.26	<0.1	<0.05	<0.001	<0.1	0.0206	0.18	0.32 U	0.18	-0.006 U	0.2 U	0.6 U
0627	N	4/5/2016	<0.001	<0.005	<0.01	<0.001	0.05	<0.1	<0.05	<0.001	<0.1	0.0201	0.24	0.59 U	0.24	0.06 U	0.1 U	1.7
0627	N	7/12/2016	<0.001	<0.005	<0.01	<0.001	0.18	<0.1	<0.05	<0.001	<0.1	0.019	0.2	3.6	3.8	0.06 U	0.3 U	0.9 U
0627	N	10/4/2016	<0.001	<0.005	<0.01	<0.001	0.05	<0.1	<0.05	<0.001	<0.1	0.0181	0.26	0.73 U	0.26	-0.004 U	1.3	1.4
0632	N	7/19/1989	< 0.05	< 0.01	< 0.01	< 0.05	0.15	< 0.1	< 0.05	0.004	< 0.1	0.111	1.7	1.7	3.4	1.1	< 1	4.1
0632	N	10/16/1989	< 0.05	< 0.01	< 0.01	< 0.05	0.12	< 0.1	< 0.05	0.003	< 0.1	0.111	1.5	1.4	2.9	< 0.2	< 1	< 1
0632	N	1/10/1990	< 0.05	< 0.01	0.04	< 0.05	0.15	< 0.1	0.07	0.003	< 0.1	0.084	1	1.6	2.6	< 0.2	< 1	1.2
0632	N	4/10/1990	< 0.05	< 0.01	0.03	< 0.05	0.24	< 0.1	< 0.05	0.003	< 0.1	0.084	1	1.6	2.6	< 0.2	< 1	1.2
0632	N	7/10/1990	< 0.05	< 0.01	0.01	< 0.05	0.27	< 0.1	< 0.05	0.004	< 0.1	0.0785	1	1.8	2.8	< 0.2	< 1	1
0632	N	10/9/1990	< 0.05	< 0.01	0.02	< 0.05	0.22	< 0.1	< 0.05	0.003	< 0.1	0.1312	0.5	2.3	2.8	< 0.2	< 1	< 1
0632	N	1/10/1991	< 0.01	< 0.01	0.02	< 0.05	0.25	< 0.1	0.05	0.005	< 0.1	0.0795	2.2	< 1	2.2	< 0.2	< 1	2.7
0632	N	4/11/1991	< 0.01	< 0.01	0.02	< 0.05	0.29	< 0.1	< 0.05	0.005	< 0.1	0.0931	1.1	< 1	1.1	< 0.2	< 1	1
0632	N	7/9/1991	< 0.01	< 0.01	< 0.01	< 0.05	0.25	< 0.1	< 0.05	0.003	< 0.1	0.0818	0.7	1.8	2.5	< 0.2	< 1	< 1
0632	N	10/17/1991	< 0.01	< 0.01	< 0.01	< 0.05	0.43	< 0.1	< 0.05	0.018	< 0.1	0.169	0.8	< 1	0.8	< 0.2	1.6	< 1
0632	N	1/21/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.25	< 0.1	< 0.05	0.004	< 0.1	0.072	1.2	2.6	3.8	< 0.2	< 1	1
0632	N	4/14/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.28	< 0.1	< 0.05	0.008	< 0.1	0.08	0.9	3.7	4.6	< 0.2	1.6	< 1

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
0632	N	7/14/1992	6864.50	6.00	8.05	6323	815	547	451	11.3	1568	2948	265	0.36	119	< 1	< 0.1	0.001
0632	N	10/13/1992	6863.00	6.40	7.02	6472	719	594	417	7.4	2495	2903	269	0.18	89.5	< 1	< 0.1	< 0.001
0632	N	1/12/1993	6864.80	6.40	7.02	5933	750	571	438	11.2	1220	3037	265	0.24	92.7	< 1	< 0.1	< 0.001
0632	N	4/14/1993	6865.60	6.40	7.11	6925	696	633	433	6.7	2113	2962	269	0.31	95.3	< 1	< 0.1	< 0.001
0632	N	7/15/1993	6862.20	6.40	6.72	6303	701	607	426	9.1	2098	3107	264	0.19	62.1	< 1	< 0.1	< 0.001
0632	N	10/7/1993	6860.40	6.50	7.10	5715	676	555	384	6.6	2240	2392	255	0.13	56.6	< 1	< 0.1	< 0.001
0632	N	1/6/1994	6862.40	6.50	7.51	6091	690	549	409	6.9	1984	2705	252	0.17	36.5	1	< 0.1	< 0.001
0632	N	4/14/1994	6862.50	6.40	6.74	5930	683	579	426	7.8	2063	2807	251	0.33	25.9	< 1	< 0.1	< 0.001
0632	N	7/21/1994	6862.70	6.40	7.19	6160	745	632	383	7.5	2123	3080	246	0.23	30.3	< 1	< 0.1	0.002
0632	N	10/5/1994	6861.10	6.30	7.47	6288	692	619	431	8.1	2200	2689	255	0.23	20.9	< 1	< 0.1	< 0.001
0632	N	1/10/1995	6861.70	6.40	7.45	6458	708	655	348	8.2	2184	2857	250	0.41	21.9	< 1	< 0.1	< 0.001
0632	N	4/5/1995	6860.90	6.50	6.93	6453	685	650	420	10.8	2119	2905	250	2.51	23.9	< 1	< 0.1	< 0.001
0632	N	7/6/1995	6860.30	6.40	7.52	6335	696	646	393	8.5	2281	2647	285	0.43	24.1	< 1	< 0.1	< 0.001
0632	N	10/3/1995	6860.30	6.30	7.52	6319	695	585	374	8.2	2247	2745	250	0.44	16.8	< 1	< 0.1	0.003
0632	N	1/4/1996	6859.10	6.50	7.59	6294	760	625	378	7.9	2239	2595	250	0.22	16.4	< 1	< 0.1	< 0.001
0632	N	4/2/1996	6859.30	6.60	7.82	5940	650	585	384	8.1	1807	2715	278	0.26	17.4	< 1	< 0.1	< 0.001
0632	N	7/7/1996	6858.80	6.40	7.40	6258	671	589	397	8.8	2035	2749	233	0.29	10.9	1.68	< 0.1	0.014
0632	N	10/1/1996	6859.30	6.50	6.92	6280	676	602	396	8.5	2050	2758	255	0.2	11.5	1	< 0.1	0.001
0632	N	1/22/1997	6858.60	6.50	7.49	6120	670	590	379	8.7	2130	2740	285	0.2	10	1.1	< 0.1	< 0.001
0632	N	4/8/1997	6858.30	6.50	7.75	6180	679	591	369	8.6	2010	2694	287	0.2	9.8	1.05	< 0.1	< 0.001
0632	N	7/8/1997	6858.80	6.80	7.64	6330	707	613	362	8.5	2020	2560	264	0.18	8.15	1.14	< 0.1	< 0.001
0632	N	10/7/1997	6858.40	6.40	7.63	6170	679	592	369	8.4	2020	2740	290	0.12	6.37	1.48	< 0.1	< 0.001
0632	N	1/16/1998	6858.10	6.60	7.68	6170	660	573	383	9.3	2020	2900	288	0.27	7.24	1.9	< 0.1	< 0.001
0632	N	4/7/1998	6857.90	6.50	7.39	5970	681	594	385	8.4	2030	2500	234	0.1	7.95	1.9	< 0.1	< 0.001
0632	N	7/7/1998	6858.10	6.70	7.81	6250	658	594	392	8.5	1880	2600	264	0.26	5	2.3	< 0.1	< 0.001
0632	N	10/6/1998	6859.00	6.58	7.71	6200	664	598	401	9.1	1820	2730	279	0.22	7.89	2.4	< 0.1	< 0.001
0632	N	1/5/1999	6857.40	6.70	7.82	6200	629	559	331	8.6	1930	2440	242	0.21	5.94	1.6	< 0.1	< 0.001
0632	N	4/6/1999	6857.30	6.60	7.90	6320	662	594	354	8.1	1890	2720	251	0.21	6.37	1.5	< 0.1	< 0.001
0632	N	7/13/1999	6857.09	6.30	7.78	6140	651	602	336	14.3	1910	2830	244	0.21	5.72	1.8	< 0.1	< 0.001
0632	N	10/5/1999	6858.10	6.60	7.75	6060	691	667	375	8.3	1850	3140	235	0.16	6.03	2.1	< 0.1	< 0.001
0632	N	1/4/2000	6857.60	6.60	7.93	6210	581	555	283	10.8	1790	2610	217	0.24	4.44	2	< 0.1	< 0.001
0632	N	5/8/2000	6856.90	6.30	7.60	6020	579	560	366	8.3	1800	2640	238	0.05	2.44	2.8	< 0.1	< 0.001
0632	N	7/12/2000	6856.90	6.25	6.98	6070	595	580	366	8.09	1810	2510	239	0.08	2.92	2	< 0.1	< 0.001
0632	N	10/3/2000	6856.70	6.28	7.18	6020	622	610	240	9.7	1780	2820	230	0.07	3.17	2.5	< 0.1	< 0.001
0632	N	1/8/2001	6858.50	6.38	7.38	6180	624	612	347	8.7	1740	3020	223	0.17	2.69	3.5	< 0.1	< 0.001

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
0632	N	7/14/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.16	< 0.1	< 0.05	0.003	< 0.1	0.095	2.2	1.1	3.3	< 0.2	4.2	2.5
0632	N	10/13/1992	< 0.01	< 0.01	0.02	< 0.05	0.16	< 0.1	< 0.05	0.003	< 0.1	0.147	1.3	6.4	7.7	< 0.2	< 1	1.5
0632	N	1/12/1993	< 0.01	< 0.01	< 0.01	< 0.05	1.85	< 0.1	< 0.05	0.004	< 0.1	0.068	1.1	4.5	5.6	< 0.2	< 1	1.5
0632	N	4/14/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.32	< 0.1	< 0.05	0.002	< 0.1	0.113	6.4	2	8.4	1.3	1.2	8.1
0632	N	7/15/1993	< 0.01	< 0.01	0.01	< 0.05	0.18	< 0.1	< 0.05	0.005	< 0.1	0.082	1.2	< 1	1.2	< 0.2	< 1	1.5
0632	N	10/7/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.27	< 0.1	< 0.05	0.003	< 0.1	0.093	1.8	1.1	2.9	< 0.2	1.2	1.8
0632	N	1/6/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.34	< 0.1	< 0.05	< 0.001	< 0.1	0.082	1.6	3.4	5	< 0.2	< 1	7.7
0632	N	4/14/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.37	< 0.1	< 0.05	0.001	< 0.1	0.088	1.7	2.4	4.1	< 0.2	2.4	5.5
0632	N	7/21/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.39	< 0.1	< 0.05	0.002	< 0.1	0.09	0.9	5.1	6	< 0.2	< 1	8.7
0632	N	10/5/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.42	< 0.1	< 0.05	< 0.001	< 0.1	0.08	1	< 1	1	< 0.2	3.6	1.2
0632	N	1/10/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.43	< 0.1	< 0.05	< 0.001	< 0.1	0.086	2	< 1	2	< 0.2	1.7	3.7
0632	N	4/5/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.52	< 0.1	< 0.05	0.002	< 0.1	0.077	1.2	3.1	4.3	< 0.2	1.1	6
0632	N	7/6/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.5	< 0.1	< 0.05	0.002	< 0.1	0.0954	1.6	< 1	1.6	0.4	< 1	4.2
0632	N	10/3/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.11	< 0.1	< 0.05	< 0.001	< 0.1	0.0899	1.1	< 1	1.1	< 0.2	3.3	2.6
0632	N	1/4/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.74	< 0.1	< 0.05	< 0.001	< 0.1	0.092	1	1.1	2.1	0.3	1.2	1.8
0632	N	4/2/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.55	< 0.1	< 0.05	< 0.001	< 0.1	0.09	1.7	< 1	1.7	< 0.2	< 1	5.8
0632	N	7/7/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.61	< 0.1	< 0.05	0.012	< 0.1	0.092	0.8	< 1	0.8	< 0.2	< 1	< 1
0632	N	10/1/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.57	< 0.1	< 0.05	0.002	< 0.1	0.078	0.8	< 1	0.8	< 0.2	< 1	3.4
0632	N	1/22/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.63	< 0.1	< 0.05	< 0.001	< 0.1	0.077	1.4	< 1	1.4	< 0.2	< 1	< 1
0632	N	4/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.63	< 0.1	< 0.05	< 0.001	< 0.1	0.088	1	3.2	4.2	< 0.2	< 1	< 1
0632	N	7/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.57	< 0.1	< 0.05	< 0.001	< 0.1	0.077	0.8	5	5.8	< 0.2	< 1	< 1
0632	N	10/7/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.82	< 0.1	< 0.05	< 0.001	< 0.1	0.075	0.7	< 1	0.7	< 0.2	< 1	< 1
0632	N	1/16/1998	< 0.01	< 0.01	< 0.01	< 0.05	0.75	< 0.1	< 0.05	< 0.001	< 0.1	0.089	0.9	< 1	0.9	< 0.2	< 1	2
0632	N	4/7/1998	< 0.1	< 0.005	< 0.01	< 0.05	0.71	< 0.1	< 0.05	0.005	< 0.1	0.086	1.6	< 1	1.6	< 0.2	< 1	< 1
0632	N	7/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.72	< 0.1	< 0.05	< 0.001	< 0.1	0.0859	1.7	3.4	5.1	< 0.2	< 1	< 1
0632	N	10/6/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.74	< 0.1	< 0.05	< 0.001	< 0.1	0.144	1.3	< 1	1.3	< 0.2	< 1	< 1
0632	N	1/5/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.66	< 0.1	< 0.05	< 0.001	< 0.1	0.0817	< 0.2	< 1	0	< 0.2	< 1	< 1
0632	N	4/6/1999	< 0.01	0.008	< 0.01	< 0.05	0.7	< 0.1	< 0.05	< 0.001	< 0.1	0.124	1.7	< 1	1.7	< 0.2	< 1	< 1
0632	N	7/13/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.72	< 0.1	< 0.05	< 0.001	< 0.1	0.0775	0.5	< 1	0.5	< 0.2	2.9	3.5
0632	N	10/5/1999	< 0.01	0.006	< 0.01	< 0.05	0.85	< 0.1	< 0.05	0.001	< 0.1	0.0795	2.1	< 1	2.1	< 0.2	< 1	1.6
0632	N	1/4/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.87	< 0.1	0.05	0.001	< 0.1	0.0704	1.3	< 1	1.3	< 0.2	< 1	2.1
0632	N	5/8/2000	< 0.01	< 0.005	< 0.01	< 0.05	1.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0774	0.5	< 1	0.5	< 0.2	< 1	< 1
0632	N	7/12/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.79	< 0.1	< 0.05	< 0.001	< 0.1	0.0739	0.9	2.1	3	< 0.2	< 1	< 1
0632	N	10/3/2000	< 0.01	< 0.005	< 0.01	0.06	0.73	< 0.1	< 0.05	0.001	< 0.1	0.018	0.8	< 1	0.8	< 0.2	< 1	< 1
0632	N	1/8/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.85	< 0.1	< 0.05	0.001	< 0.1	0.064	0.7	1.9	2.6	< 0.2	< 1	< 1



**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
0632	N	2/5/2001	6859.80	6.55	7.04	6410	729	701	428	10.3	1660	3420	233	0.35	5.9	2.8	< 0.1	< 0.001
0632	N	3/6/2001	6860.20	6.51	7.31	6100	630	653	450	10.3	1640	3400	199	0.34	12.7	3.2	< 0.1	< 0.001
0632	N	4/3/2001	6860.70	6.45	7.17	6800	710	713	359	8.1	1600	3370	228	0.33	21.6	3.49	< 0.1	< 0.001
0632	N	5/7/2001	6860.90	6.30	7.41	6860	625	650	410	8.7	1600	3000	244	0.36	26.5	1.9	< 0.1	< 0.001
0632	N	6/4/2001	6861.20	6.36	7.22	6620	622	663	316	8.9	1580	3180	246	0.38	32.7	3.1	< 0.1	< 0.001
0632	N	7/9/2001	6861.43	6.84	7.08	6990	682	742	348	8.5	1680	3260	253	0.33	35.9	3.1	< 0.1	< 0.001
0632	N	8/6/2001	6861.39	6.27	7.20	7000	620	680	340	9	1670	3000	300	0.31	34.2	2.7	< 0.1	< 0.001
0632	N	9/10/2001	6861.60	6.25	7.00	7020	630	700	355	9.4	1700	3100	273	0.32	45.3	2.46	< 0.1	< 0.001
0632	N	10/1/2001	6861.65	6.35	7.40	7080	610	690	336	10.1	1730	2900	311	0.28	40.2	1.95	< 0.1	< 0.001
0632	N	11/5/2001	6861.80	6.34	7.50	7060	669	732	360	10	1680	3390	293	0.3	43.2	2.4	< 0.1	< 0.001
0632	N	12/3/2001	6861.90	6.37	6.80	7100	613	671	309	8.7	1740	3000	272	0.33	46	1.8	< 0.1	< 0.001
0632	N	1/8/2002	6862.00	6.45	7.00	7020	719	748	289	10.5	1700	3530	294	0.33	40.2	2.4	< 0.1	< 0.001
0632	N	2/4/2002	6862.10	6.37	7.00	7070	690	717	332	10.1	1720	3330	292	0.37	41.1	2.36	< 0.1	< 0.001
0632	N	3/4/2002	6862.05	6.36	7.10	7080	649	721	376	9.4	1690	3460	278	0.32	44	2.5	< 0.1	< 0.001
0632	N	4/2/2002	6862.31	6.32	7.04	7140	674	733	378	11.8	1730	3530	280	0.34	42.5	2.7	< 0.1	< 0.001
0632	N	5/6/2002	6862.32	6.22	7.16	7130	649	715	388	10.7	1720	3270	260	0.34	43.7	2.4	< 0.1	< 0.001
0632	N	6/3/2002	6862.41	6.24	7.30	7150	645	717	349	8.9	1710	3290	240	0.34	45.1	2.8	< 0.1	< 0.001
0632	N	7/8/2002	6862.21	6.47	7.75	7200	645	761	292	11.4	1710	3490	229	0.36	43.3	2.4	< 0.1	< 0.001
0632	N	10/8/2002	6862.08	6.61	7.29	7100	578	685	356	8.7	1700	3150	221	0.3	45.7	2.6	< 0.1	< 0.001
0632	N	1/6/2003	6861.98	6.61	7.52	7170	637	798	424	9.7	1660	3620	232	0.44	45.2	2.2	< 0.1	< 0.001
0632	N	4/7/2003	6862.11	6.29	7.15	7210	607	744	388	12.6	1670	3070	242	0.4	48	2.4	< 0.1	< 0.001
0632	N	7/7/2003	6862.04	6.19	6.74	5700	593	726	340	12.2	1700	3330	217	0.42	49.2	0.2	< 0.1	< 0.001
0632	N	10/7/2003	6861.84	6.18	7.70	7310	644	812	394	9.4	1690	3610	250	0.44	49.5	2.4	< 0.1	< 0.001
0632	N	1/5/2004	6861.76	6.36	7.36	7200	652	824	353	10	1720	3700	263	0.44	54.2 D	2.6	0.2	< 0.001
0632	N	4/5/2004	6862.09	6.54	6.63	7320	616	788	364	10.4	1760	3380 D	243	0.67	56.9 D	2.5	< 0.1	< 0.001
0632	N	7/12/2004	6861.69	6.16	6.77	7400	635	777	420	11.1	1740	3370 D	249	0.49	54.2 D	2	< 0.1	< 0.001
0632	N	10/4/2004	6861.41	6.19	6.89	7470	738 D	945 D	395	9.3	1750	4020 D	252	0.33	59.5 D	2.6	< 0.1	< 0.001
0632	N	1/3/2005	6861.60	6.49	6.81	7400	626 D	795 D	387	9.4	1770	3230 D	233	0.45	60.1 D	2.5	< 0.1	< 0.001
0632	N	4/5/2005	6861.45	6.46	7.01	6980	634	811	392	9	1820	3330	237	0.5	60.5	2.7	< 0.1	< 0.001
0632	N	7/11/2005	6861.37	6.36	7.25	7240	610	811 D	389	9.6	1780	3360 D	284	0.53	63.6 D	3.6	< 0.1	< 0.001
0632	N	10/4/2005	6861.11	6.39	7.03	7210	626 D	792 D	399	9.2	1860	3350 D	244	0.49	58 D	2.9	< 0.1	< 0.001
0632	N	1/9/2006	6860.99	6.47	7.11	7260	572	772 D	385	8.8	1890	3090 D	232	0.64	66.1 D	2.8	< 0.1	< 0.001
0632	N	4/3/2006	6861.04	6.27	7.04	7140	632 D	808 D	391	9.6	1860	3290 D	234	0.64	68.1 D	2.7	< 0.1	< 0.001
0632	N	7/17/2006	6860.79	6.26	6.63	7070	644 D	829 D	418	10.5	1880	3590 D	241	0.58	67.5 D	2.9	< 0.1	< 0.001
0632	N	10/2/2006	6860.67	6.37	6.66	7120	616 D	784 D	357	10.3	1920	3230 D	188	0.73	64.9 D	2.89	0.2	< 0.001

**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
0632	N	2/5/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.85	< 0.1	< 0.05	< 0.001	< 0.1	0.066	1.2	2.4	3.6	< 0.2	< 1	< 1
0632	N	3/6/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.92	< 0.1	< 0.05	< 0.001	< 0.1	0.0601	1	< 1	1	< 0.2	< 1	< 1
0632	N	4/3/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.87	< 0.1	< 0.05	< 0.001	< 0.1	0.059	1.1	< 1	1.1	< 0.2	< 1	1.7
0632	N	5/7/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.95	< 0.1	< 0.05	< 0.001	< 0.1	0.062	< 0.2	< 1	0	< 0.2	< 1	< 1
0632	N	6/4/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.98	< 0.1	< 0.05	0.004	< 0.1	0.06	1.4	3.1	4.5	< 0.2	< 1	< 1
0632	N	7/9/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.97	< 0.1	< 0.05	< 0.001	< 0.1	0.0632	1.1	< 1	1.1	< 0.2	< 1	< 1
0632	N	8/6/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.1	< 0.1	< 0.05	< 0.001	< 0.1	0.072	0.7	2.2	2.9	< 0.2	< 1	< 1
0632	N	9/10/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.91	< 0.1	< 0.05	< 0.001	< 0.1	0.0582	1	2.7	3.7	< 0.2	< 1	< 1
0632	N	10/1/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.85	< 0.1	< 0.05	< 0.001	< 0.1	0.0608	1.1	< 1	1.1	< 0.2	< 1	< 1
0632	N	11/5/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.97	< 0.1	< 0.05	< 0.001	< 0.1	0.0542	1	< 1	1	< 0.2	< 1	< 1
0632	N	12/3/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.87	< 0.1	< 0.05	< 0.001	< 0.1	0.0577	0.9	3.4	4.3	< 0.2	< 1	< 1
0632	N	1/8/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.95	< 0.1	< 0.05	< 0.001	< 0.1	0.0575	1.2	1.2	2.4	< 0.2	< 1	3.2
0632	N	2/4/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.92	< 0.1	< 0.05	< 0.001	< 0.1	0.051	1.3	1.8	3.1	< 0.2	< 1	< 1
0632	N	3/4/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.08	< 0.1	< 0.05	< 0.001	< 0.1	0.066	0.6	< 1	0.6	< 0.2	< 1	1.8
0632	N	4/2/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.13	< 0.1	< 0.05	< 0.001	< 0.1	0.059	1.3	2.9	4.2	< 0.2	< 1	< 1
0632	N	5/6/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.12	< 0.1	< 0.05	< 0.001	< 0.1	0.0636	0.8	2.2	3	< 0.2	< 1	2.1
0632	N	6/3/2002	< 0.01	< 0.005	< 0.01	< 0.05	1	< 0.1	< 0.05	< 0.001	< 0.1	0.058	0.6	< 1	0.6	< 0.2	< 1	< 1
0632	N	7/8/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.96	< 0.1	< 0.05	< 0.001	< 0.1	0.0708	1	< 1	1	< 0.2	< 1	< 1
0632	N	10/8/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.07	< 0.1	< 0.05	< 0.001	< 0.1	0.0521	2.1	< 1	2.1	< 0.2	< 1	< 1
0632	N	1/6/2003	< 0.01	< 0.005	< 0.01	< 0.05	1.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0636	1	< 1	1	< 0.2	< 1	1.8
0632	N	4/7/2003	< 0.01	< 0.005	< 0.01	< 0.05	1.22	< 0.1	< 0.05	< 0.001	< 0.1	0.0646	0.8	< 1	0.8	< 0.2	< 1	< 1.0
0632	N	7/7/2003	< 0.01	< 0.005	< 0.01	< 0.05	1.27	< 0.1	< 0.05	< 0.001	< 0.1	0.0593	0.8	< 1	0.8	< 0.2	< 1	2
0632	N	10/7/2003	< 0.01	< 0.005	< 0.01	< 0.05	1.24	< 0.1	< 0.05	< 0.001	< 0.1	0.07	0.5	< 1	0.5	< 0.2	< 1	1.6
0632	N	1/5/2004	< 0.01	< 0.005	< 0.01	< 0.05	1.44	< 0.1	< 0.05	< 0.001	< 0.1	0.0625 D	1.1	< 1.0	1.1	< 0.2	< 1.0	1.5
0632	N	4/5/2004	< 0.01	< 0.005	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	0.001	< 0.1	< 0.0008 D	0.5	< 1	0.5	< 0.2	< 1	< 1
0632	N	7/12/2004	< 0.01	< 0.005	< 0.01	< 0.05	1.35	< 0.1	< 0.05	< 0.001	< 0.1	0.0678 D	1.2	6.4	7.6	< 0.2	< 1.0	1.5
0632	N	10/4/2004	< 0.01	< 0.005	< 0.01	< 0.05	1.42	< 0.1	< 0.05	< 0.001	< 0.1	0.0652 D	2.3	3.5	5.8	< 0.2	< 1.0	1.1
0632	N	1/3/2005	< 0.01	< 0.005	< 0.01	< 0.05	1.45	< 0.1	< 0.05	< 0.001	< 0.1	0.0755	1.4	1.5	2.9	< 0.2	< 1.0	3.2
0632	N	4/5/2005	< 0.01	< 0.005	< 0.01	< 0.05	1.4	< 0.1	< 0.05	< 0.001	< 0.1	0.0768	1.2	< 1.0	1.2	< 0.2	< 1.0	< 1.0
0632	N	7/11/2005	< 0.01	< 0.005	< 0.01	< 0.05	1.72	< 0.1	< 0.05	< 0.001	< 0.1	0.0734	1.3	< 1.0	1.3	< 0.2	< 1.0	1.3
0632	N	10/4/2005	< 0.01	< 0.005	< 0.01	< 0.05	1.62	< 0.1	< 0.05	< 0.001	< 0.1	0.0880 D	0.6	3.3	3.9	< 0.2	< 1.0	2.4
0632	N	1/9/2006	< 0.01	< 0.005	< 0.01	< 0.05	1.98	< 0.1	< 0.05	< 0.001	< 0.1	0.0762	0.9	< 1.0	0.9	< 0.2	< 1.0	1
0632	N	4/3/2006	< 0.01	< 0.005	< 0.01	< 0.05	1.84	< 0.1	< 0.05	< 0.001	< 0.1	0.0725 D	1.1	< 1.0	1.1	< 0.2	< 1.0	1
0632	N	7/17/2006	< 0.01	< 0.005	< 0.01	< 0.05	1.98	< 0.1	< 0.05	< 0.001	< 0.1	0.083	0.9	4.3	5.2	< 0.2	< 1.0	< 1.0
0632	N	10/2/2006	< 0.01	< 0.005	< 0.01	< 0.05	2	< 0.1	< 0.05	< 0.001	< 0.1	0.0767 D	1	1.6	2.6	< 0.2	< 1	< 1

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
0632	N	1/8/2007	6860.61	6.38	6.66	7430	629 D	813 D	368	11.2	1890	3420 D	236	0.75	69.5 D	3.02	<0.1	<0.001
0632	N	4/9/2007	6860.87	6.47	6.64	7190	608 D	782 D	346	12.2	1930	3290 D	240	0.64	75 D	2.59	<0.1	<0.001
0632	N	7/9/2007	6860.59	6.29	6.64	7200	605 D	820 D	410 D	10.9 D	2030	3400 D	140	0.62	78 D	3.56	<0.1	0.01
0632	N	10/2/2007	6860.32	6.29	6.62	7350	568 D	774 D	388 D	10.9	1970	3210 D	259 D	0.61	70 D	3.57	<0.1	<0.001
0632	N	1/15/2008	6860.29	6.39	6.58	7350 H	551 D	738 D	366 D	10.3	1910	3000 D	248 D	0.7	68 D	3.6	< 0.1	< 0.001
0632	N	4/7/2008	6860.49	6.32	6.75	6910	647 D	870 D	436 D	12.6 D	1830	3550 D	231	0.6 D	113 D	3.3	< 0.1	< 0.001
0632	N	7/7/2008	6860.29	6.16	6.74 H	7090 H	618	802	377 D	9	1910	3500 D	241	0.56	122 D	4.56	< 0.1	< 0.003
0632	N	10/6/2008	6859.79	6.21	6.81	7220	605	826	384 D	9	1870	3760 D	227	0.7	96.3 D	3.03	< 0.1	< 0.001
0632	N	1/12/2009	6859.74	6.23	6.62	7460	598	906	429	10	1920	3290 D	226	0.28	114 D	3.52	<0.1	<0.001
0632	N	4/6/2009	6859.64	6.29	6.43	7370	580 D	820 D	423 D	9	1960	3460 D	237	0.38	77.3 D	3.96	<0.1	<0.001
0632	N	7/6/2009	6859.59	6.25	6.59	7280 H	628 D	817	393 D	10	1920	3910 D	258	0.74	68 D	2.86	<0.1	<0.001
0632	N	10/6/2009	6859.09	6.24	7.37	7240	589 D	776	390 D	9	1970	3610 D	258	0.64	80 D	3.06	0.1	<0.001
0632	N	1/4/2010	6858.94	6.35	6.84	7470 D	603 D	786	392 D	10	2010	3650 D	240	0.68	76 D	2.77	<0.1	<0.001
0632	N	4/5/2010	6859.09	6.34	6.58	7380 DH	655 D	887	443 D	10	2080	3550 D	483	0.75	78 D	2.96	<0.1	<0.001
0632	N	7/12/2010	6858.79	6.37	6.99	7360 D	626 D	820	410 D	10	2030	3330 D	226 D	0.72	70 D	3.6	<0.1	<0.001
0632	N	10/4/2010	6858.59	6.41	7.42	7400 D	610 D	801	412 D	10	2020	3320 D	218 D	0.66	75 D	2.86	0.2	<0.001
0632	N	1/4/2011	6858.39	6.38	6.63	6780 D	602 D	818	395 D	9	1930	3380 D	238 D	0.71	64 D	2.76	0.2	<0.001
0632	N	4/5/2011	6858.31	6.42	6.63	7230 D	613	802	432 D	10	1910	3440 D	238 D	0.59 D	68 D	3.23	<0.1	<0.001
0632	N	7/11/2011	6858.16	6.48	7.31	7000 D	630	837	431 D	10	1900	3310 D	228 D	0.7 D	74 D	3.28	<0.1	<0.001
0632	N	10/3/2011	6857.83	6.50	7.39	7050 D	604	793	406 D	10	1790	3410 D	235 D	0.6 D	70 D	3.16	<0.1	<0.001
0632	N	1/3/2012	6857.77	6.59	6.67 H	7100 D	660	805	407	11	1730	3370 D	236 D	0.44	73 D	3.41	<0.1	<0.001
0632	N	4/2/2012	6857.69	6.65	6.54 H	7120 D	622	750	378	10	1860	3380 D	237 D	0.6	71 D	3.52	<0.1	<0.01
0632	N	7/9/2012	6857.39	6.39	6.61 H	7280	603	862	420 D	10	1840	3270 D	227 D	0.52	72 D	2.73	<0.1	<0.001
0632	N	10/8/2012	6857.19	6.51	6.56 H	6770	632	790	402 D	11	1890	3400 D	247 D	0.56	66 D	2.98	<0.1	<0.001
0632	N	1/8/2013	6857.08	6.47	6.55 H	6830	600	833	433 D	10	1870	3420 D	241 D	0.33	67 D	2.74	<0.1	<0.001
0632	N	4/1/2013	6857.00	6.49	6.58 H	6840	603	829	413	10	1910	3460 D	253 D	0.39	65 D	3.68	<0.1	<0.001
0632	N	7/8/2013	6856.81	6.33	6.64 H	7290	584	812	391	9	1880	3350 D	223 D	0.29	64 D	2.82	<0.1	<0.001
0632	N	9/30/2013	6856.74	6.40	6.53 H	7280 H	578	805	393	10	1910	3380 D	239 D	0.32	63 D	2.82	<0.1	<0.001
0632	N	1/6/2014	6856.59	6.70	6.55	6880	585	786	393	10	1890	3290	224	0.3	62	3.08	<0.1	<0.001
0632	N	3/31/2014	6856.54	6.59	6.50 H	7000	605	807	410 D	10	1870	3340 D	241 D	0.29	63 D	3.93	0.8	<0.001
0632	N	7/7/2014	6856.33	6.83	6.57 H	7010	580	758	395 D	10	1870	3410 D	226 D	0.18	58 D	4	0.2	<0.001
0632	N	10/6/2014	6856.14	6.52	6.57 H	7030	584	803	398	10	1870	3490 D	254 D	0.34	59 D	3.54	<0.1	<0.001
0632	N	1/5/2015	6856.05	6.65	6.64 H	7230	579	788	393	10	1810	3230 D	222 D	0.29	58 D	3.51	0.1	<0.001
0632	N	4/6/2015	6855.91	6.49	6.54 H	6970	557	783	388	10	1850	3560 D	260 D	0.13	57 D	4.08	<0.1	<0.001
0632	N	7/6/2015	6855.76	6.38	6.54 H	7230	521	768	390	11	1900	3510 D	241 D	0.24	54 D	3.48	<0.1	<0.001



**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
0632	N	1/8/2007	<0.01	<0.005	<0.01	<0.05	1.98	<0.1	<0.05	<0.001	<0.1	0.0798	0.8	<1	0.8	<0.2	<1	1
0632	N	4/9/2007	<0.01	<0.005	<0.01	<0.05	2.13	<0.1	<0.05	<0.001	<0.1	0.0825	0.6	<1	0.6	<0.2	<1	1.4
0632	N	7/9/2007	<0.01	<0.005	<0.01	<0.05	1.99	<0.1	<0.05	<0.001	<0.1	0.0847	0.6	<1	0.6	<0.2	<1	1.4
0632	N	10/2/2007	<0.01	<0.005	<0.01	<0.05	2.35	<0.1	<0.05	<0.001	<0.1	0.0819	0.7	<1	0.7	1.6	<1	2.4
0632	N	1/15/2008	<0.01	<0.005	<0.01	<0.05	1.94	<0.1	<0.05	<0.001	<0.1	0.0667 D	0.9	<1	0.9	<0.2	<1	2
0632	N	4/7/2008	<0.01	<0.005	<0.01	<0.05	2.29	<0.1	<0.05	<0.001	<0.1	0.0836	0.8	2.5	3.3	0.6	0 U	1.7
0632	N	7/7/2008	<0.01	<0.005	<0.01	<0.05	2.63	<0.1	<0.05	<0.001	<0.1	0.0797	0.74	2.6	3.34	0.4	0.5 U	1.5
0632	N	10/6/2008	<0.01	<0.005	<0.01	<0.05	2.39	<0.1	<0.05	<0.001	<0.1	0.076	0.57	1.2 U	1.77	-0.9 U	-2 U	0.9
0632	N	1/12/2009	<0.01	<0.005	<0.01	<0.05	2.52	<0.1	<0.05	0.001	<0.1	0.0411	0.67	3.2	3.87	-0.3 U	-3 U	1.8
0632	N	4/6/2009	<0.01	<0.005	<0.01	<0.05	2.63	<0.1	<0.05	0.002	<0.1	0.0801	0.73	1.7	2.43	-0.2 U	-0.5 U	1.4
0632	N	7/6/2009	<0.01	<0.005	<0.01	<0.05	2.48	<0.1	<0.05	<0.001	<0.1	0.0718	0.85	2.5	3.35	0.05 U	0.2 U	1.6
0632	N	10/6/2009	<0.01	<0.005	<0.01	<0.05	2.32	<0.1	<0.05	<0.001	<0.1	0.0764	0.99	2.6	3.59	-0.02 U	-2 U	0.5 U
0632	N	1/4/2010	<0.01	<0.005	<0.01	<0.05	2.57	<0.1	<0.05	0.002	<0.1	0.074	0.84	2.5	3.34	-0.02 U	-0.9 U	1.4
0632	N	4/5/2010	<0.01	<0.005	<0.01	<0.05	2.37	<0.1	<0.05	0.001	<0.1	0.0786	0.85	2.3	3.15	0.005 U	4.7	0.8
0632	N	7/12/2010	<0.01	<0.005	<0.01	<0.05	2.76	<0.1	<0.05	<0.001	<0.1	0.0855	0.59	1.2	1.79	0.07 U	0.3 U	0.7 U
0632	N	10/4/2010	<0.01	<0.005	<0.01	<0.05	2.58	<0.1	<0.05	0.002	<0.1	0.0803	0.54	2	2.54	0.05 U	2.6	1.3
0632	N	1/4/2011	<0.01	<0.005	<0.01	<0.05	2.95	<0.1	<0.05	0.001	<0.1	0.0947	0.75	2.3	3.05	0.009 U	1.6 U	1.9
0632	N	4/5/2011	<0.01	<0.005	<0.01	<0.05	2.9	<0.1	<0.05	<0.001	<0.1	0.081	0.65	2.3	2.95	0.07 U	0.3 U	0.9
0632	N	7/11/2011	<0.01	<0.005	<0.01	<0.05	2.79	<0.1	<0.05	0.002	<0.1	0.0817	0.49	2.2	2.69	0.07 U	0.7 U	1.1
0632	N	10/3/2011	<0.01	<0.005	<0.01	<0.05	2.64	<0.1	<0.05	<0.001	<0.1	0.0742	0.6	2	2.6	0.02 U	0.8 U	0.8
0632	N	1/3/2012	<0.01	<0.005	<0.01	<0.05	2.26	<0.1	<0.05	<0.001	<0.1	0.0686	1.3	1.5	4.3	0.03 U	0.7 U	1.2
0632	N	4/2/2012	<0.01	<0.005	<0.01	<0.05	2.59	<0.1	<0.05	<0.001	<0.1	0.0756	0.56	0.72 U	2	0.05 U	0.3 U	0.9
0632	N	7/9/2012	<0.001	<0.005	<0.01	<0.001	2.58	<0.1	<0.05	0.001	<0.1	0.0731	1.2	1.0 U	3.2	0.07 U	0.1 U	1.1
0632	N	10/8/2012	<0.001	<0.005	<0.01	<0.001	2.85	<0.1	<0.05	<0.001	<0.1	0.078	0.84	2.2	3.04	0.03 U	0.8 U	1.1
0632	N	1/8/2013	<0.001	<0.005	<0.01	<0.001	2.68	<0.1	<0.05	<0.001	<0.1	0.0808	1	1.0 U	1	-0.01 U	0.4 U	1.4
0632	N	4/1/2013	<0.001	<0.005	<0.01	<0.001	2.69	<0.1	<0.05	<0.001	<0.1	0.0864	0.51	1.2 U	0.51	0.04 U	0.3 U	1.7
0632	N	7/8/2013	<0.001	<0.005	<0.01	<0.001	2.57	<0.1	<0.05	<0.001	<0.1	0.0812	0.64	0.91 U	0.64	0.02 U	0.4 U	1.3
0632	N	9/30/2013	<0.001	<0.005	<0.01	<0.001	2.63	<0.1	<0.05	<0.001	<0.1	0.0828	0.76	1.6	2.36	0.03 U	0.1 U	0.6
0632	N	1/6/2014	<0.001	<0.005	<0.01	<0.001	2.66	<0.1	<0.05	<0.001	<0.1	0.0846	0.91	3.1	4.01	0.03	0.8	1.4
0632	N	3/31/2014	<0.001	<0.005	<0.01	0.002	2.69	<0.1	<0.05	<0.001	<0.1	0.0886	0.76	1.2	1.96	0.04 U	0.9 U	1.4
0632	N	7/7/2014	<0.001	<0.005	<0.01	<0.001	1.52	<0.1	<0.05	<0.001	<0.1	0.0622	0.74	5.1	5.84	0.1 U	0.9 U	0.5
0632	N	10/6/2014	<0.001	<0.005	<0.01	<0.001	2.82	<0.1	<0.05	<0.001	<0.1	0.0807	1	1.3 U	1	0.02 U	1.2 U	1.1
0632	N	1/5/2015	<0.001	<0.005	<0.01	<0.001	2.86	<0.1	<0.05	<0.001	<0.1	0.0834	0.92	3.1	4.02	0.0 U	1.4	2.7
0632	N	4/6/2015	<0.001	<0.005	<0.01	<0.001	1.77	<0.1	<0.05	<0.001	<0.1	0.0742	0.99	1.8	2.79	0.02 U	0.4 U	4.3
0632	N	7/6/2015	<0.001	<0.005	<0.01	<0.001	1.99	<0.1	<0.05	<0.001	<0.1	0.074	0.71	2.2	2.91	0.2 U	0.9 U	1.2 U

TABLE A.1

Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
0632	N	10/5/2015	6855.51	6.53	6.56 H	7010	568	771	378	9	1740	3550 D	256 D	0.24	50 D	3	0.2	<0.001
0632	N	1/4/2016	6855.44	6.59	6.49 H	7010	578	787	380	9	1880	3520 D	249 D	0.12	52 D	1.68	<0.1	<0.001
0632	N	4/4/2016	6855.26	6.41	6.60 H	7090	585	786	406	9	1800	3380 D	239 D	0.1	50 D	1.29	<0.1	<0.001
0632	N	7/11/2016	6855.09	6.49	6.55 H	7000 D	570	801	396 D	10	1820	3180 DH	231 DH	<0.05	54 D	1.15	<0.1	<0.001
0632	N	10/3/2016	6854.84	6.58	6.54 H	6780 H	546	787	389	10	2120	3130 D	184 D	<0.05	49 DH	0.84	<0.1	<0.001
0639	N	7/23/1989	6940.70	6.90	7.16	3752	366	390	168	4.2	390	2319	33.9	0.09	3.6	<1	<0.1	<0.001
0639	N	10/8/1989	6940.30	6.60	7.40	4076	410	375	177	6.6	448	2508	34.2	0.06	4	<1	<0.1	<0.001
0639	N	1/11/1990	6939.60	6.70	7.13	4734	444	478	186	5.55	497	2830	37.5	0.11	3.4	<1	<0.1	<0.001
0639	N	4/10/1990	6939.00	6.70	7.48	5351	467	590	193	5.6	565	3153	40.1	0.11	3.3	<1	<0.1	<0.001
0639	N	7/10/1990	6938.60	6.70	7.08	5461	419	583	194	5.1	583	3265	39	<0.05	3	<1	<0.1	<0.001
0639	N	10/9/1990	6938.40	6.70	7.59	4043	305	464	176	6.5	516	2452	27.1	<0.05	2.05	<1	<0.1	<0.001
0639	N	1/17/1991	6938.00	6.20	7.25	4672	382	508	178	6.3	508	2944	32	<0.05	2	<1	0.12	<0.001
0639	N	4/10/1991	6937.80	6.50	7.51	4523	347	531	173	7.8	551	2690	29.2	<0.05	4.8	<1	<0.1	<0.001
0639	N	7/10/1991	6937.40	6.50	7.26	4877	309	449	150	5.6	555	3046	27.6	<0.05	3.3	<1	<0.1	<0.001
0639	N	10/17/1991	6937.00	6.40	7.37	4899	412	531	158	7.1	626	2803	40.8	<0.05	4.4	<1	<0.1	<0.001
0639	N	1/21/1992	6936.80	6.40	7.20	4330	409	510	153	5.3	620	2792	29.4	<0.05	2.93	<1	<0.1	<0.001
0639	N	4/13/1992	6936.70	6.30	7.54	5005	363	499	165	6.1	618	2922	33.5	<0.05	3.31	<1	<0.1	<0.001
0639	N	7/14/1992	6936.50	6.30	7.36	4857	393	507	175	6.6	616	2845	28	<0.05	3.74	<1	<0.1	<0.001
0639	N	10/13/1992	6936.40	6.40	7.55	4661	335	437	154	6.6	619	2801	27	0.13	2.1	<1	<0.1	<0.001
0639	N	1/21/1993	6936.10	6.50	7.09	3924	340	416	131	5.8	570	2359	23.3	0.15	2	<1	<0.1	<0.001
0639	N	4/14/1993	6936.00	6.60	7.85	3417	301	343	123	3.7	561	1988	18.6	0.07	2	<1	<0.1	<0.001
0639	N	7/15/1993	6935.70	6.60	6.91	3046	300	300	123	6.9	576	1959	19.2	0.19	1.63	<1	<0.1	<0.001
0639	N	10/6/1993	6934.60	6.60	6.76	3060	264	321	115	3.6	539	1862	16.8	<0.05	2.3	<1	<0.1	<0.001
0639	N	1/5/1994	6935.60	6.50	7.38	3018	323	325	104	3.3	559	1781	17	0.22	1.38	<1	<0.1	<0.001
0639	N	4/13/1994	6935.30	6.70	7.10	3058	303	304	104	2.8	458	1862	15.8	0.18	1.31	<1	<0.1	<0.001
0639	N	10/5/1994	6935.50	6.60	7.99	3396	368	348	119	2.6	373	2142	16.3	0.15	1.61	<1	<0.1	<0.001
0642	N	7/23/1989	6928.10	6.90	7.36	4083	675	233	179	2.7	405	2209	37.1	0.13	80	<1	<0.1	<0.001
0642	N	10/8/1989	6927.50	6.80	7.40	4140	634	227	177	3.6	414	2182	37.9	0.08	93	<1	<0.1	<0.001
0642	N	1/11/1990	6926.50	6.80	7.20	4080	628	229	174	2.61	421	2176	26.5	0.06	85	<1	<0.1	<0.001
0642	N	4/10/1990	6925.70	6.80	7.50	4161	634	250	171	2.4	430	2129	35.7	0.12	75	<1	<0.1	<0.001
0642	N	7/10/1990	6924.80	6.90	7.30	4232	714	263	171	1.9	426	2209	34	<0.05	83.4	<1	<0.1	<0.001
0642	N	10/9/1990	6924.10	6.70	7.62	4168	582	242	174	3.2	415	2319	34.4	<0.05	66.9	<1	<0.1	<0.001
0642	N	1/17/1991	6923.50	6.70	7.58	4131	676	268	181	2.4	414	2323	35.1	<0.05	61.5	<1	<0.1	<0.001
0642	N	4/10/1991	6922.80	6.80	7.84	4110	623	273	162	4.4	432	2216	34.1	<0.05	87	<1	<0.1	<0.001
0642	N	7/10/1991	6922.20	6.70	7.49	4089	625	257	155	2.8	423	2309	33.1	<0.05	68.1	<1	<0.1	<0.001

**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
0632	N	10/5/2015	<0.001	<0.005	<0.01	0.001	2.72	<0.1	<0.05	<0.001	<0.1	0.0634	1.1	1.7	2.8	0.03 U	0.8 U	5.8
0632	N	1/4/2016	<0.001	<0.005	<0.01	<0.001	2.72	<0.1	<0.05	<0.001	<0.1	0.0744	0.9	1.3	2.2	-0.01 U	-0.05 U	0.6 U
0632	N	4/4/2016	<0.001	<0.005	<0.01	<0.001	2.81	<0.1	<0.05	<0.001	<0.1	0.0754	0.84	3.3	4.14	0.03 U	0.4 U	4
0632	N	7/11/2016	<0.001	<0.005	<0.01	<0.001	2.07	<0.1	<0.05	<0.001	<0.1	0.0688	0.69	2.3	2.99	-0.007 U	0.4 U	1.4 U
0632	N	10/3/2016	<0.001	<0.005	<0.01	<0.001	0.92	<0.1	<0.05	<0.001	<0.1	0.0597	0.65	7.3	7.95	0.04 U	-0.3 U	5.5
0639	N	7/23/1989	<0.05	<0.01	0.01	<0.05	1.8	<0.1	<0.05	0.001	<0.1	0.174	0.3	<1	0.3	<0.2	<1	2.5
0639	N	10/8/1989	<0.05	<0.01	<0.01	<0.05	0.27	<0.1	<0.05	0.001	<0.1	0.291	1.8	<1	1.8	14.3	<1	17.8
0639	N	1/11/1990	<0.05	<0.01	0.04	<0.05	0.41	<0.1	<0.05	<0.001	<0.1	0.276	<0.2	<1	0	3.4	10.3	4
0639	N	4/10/1990	<0.05	<0.01	<0.01	<0.05	0.56	<0.1	<0.05	0.002	<0.1	0.096	1.3	1.2	2.5	<0.2	<1	1.7
0639	N	7/10/1990	<0.05	<0.01	<0.01	<0.05	0.89	<0.1	<0.05	0.001	<0.1	0.2416	<0.2	<1	0	<0.2	<1	<1
0639	N	10/9/1990	<0.05	<0.01	0.02	<0.05	0.99	<0.1	<0.05	<0.001	<0.1	0.2623	<0.2	1.3	1.3	<0.2	1.9	<1
0639	N	1/17/1991	<0.01	<0.01	<0.01	<0.05	1.34	<0.1	<0.05	0.002	<0.1	0.1984	1.4	<1	1.4	<0.2	<1	1.9
0639	N	4/10/1991	<0.01	<0.01	<0.01	<0.05	1.14	<0.1	<0.05	0.002	<0.1	0.196	<0.2	<1	0	<0.2	<1	<1
0639	N	7/10/1991	<0.01	<0.01	0.01	<0.05	1.47	<0.1	<0.05	0.035	<0.1	0.2739	1	<1	1	<0.2	<1	1
0639	N	10/17/1991	<0.01	<0.01	<0.01	<0.05	1.48	<0.1	<0.05	0.002	<0.1	0.272	0.2	<1	0.2	<0.2	<1	<1
0639	N	1/21/1992	<0.01	<0.01	<0.01	<0.05	1.27	<0.1	<0.05	0.002	<0.1	0.17	0.7	1.8	2.5	<0.2	2.2	<1
0639	N	4/13/1992	<0.01	<0.01	<0.01	<0.05	1.59	<0.1	<0.05	0.006	<0.1	0.367	2.1	2.8	4.9	<0.2	3.3	2.2
0639	N	7/14/1992	<0.01	<0.01	<0.01	<0.05	1.41	<0.1	<0.05	0.002	<0.1	0.245	0.3	1.6	1.9	<0.2	1.9	<1
0639	N	10/13/1992	<0.01	<0.01	<0.01	<0.05	1.51	<0.1	<0.05	0.003	<0.1	0.223	0.8	3.5	4.3	<0.2	<1	<1
0639	N	1/21/1993	<0.01	<0.01	<0.01	<0.05	0.07	<0.1	<0.05	0.002	<0.1	0.094	<0.2	4.1	4.1	<0.2	3.9	<1
0639	N	4/14/1993	<0.01	<0.01	<0.01	<0.05	1.67	<0.1	<0.05	0.003	<0.1	0.08	6	6	12	<0.2	<1	6.4
0639	N	7/15/1993	<0.01	<0.01	<0.01	<0.05	1.44	<0.1	<0.05	0.009	<0.1	0.109	0.2	<1	0.2	<0.2	<1	<1
0639	N	10/6/1993	<0.01	<0.01	<0.01	<0.05	1.15	<0.1	<0.05	0.003	<0.1	0.071	3	1.9	4.9	<0.2	2	5.8
0639	N	1/5/1994	<0.01	<0.01	<0.01	<0.05	1.71	<0.1	<0.05	<0.001	<0.1	0.107	3.8	<1	3.8	<0.2	3.2	4.8
0639	N	4/13/1994	<0.01	<0.01	<0.01	<0.05	1.18	<0.1	<0.05	0.002	<0.1	0.11	0.3	<1	0.3	<0.2	7.2	<1
0639	N	10/5/1994	<0.01	<0.01	<0.01	<0.05	0.8	<0.1	<0.05	<0.001	<0.1	0.07	<0.2	7	7	<0.2	<1	10.8
0642	N	7/23/1989	<0.05	<0.01	<0.01	<0.05	0.01	<0.1	<0.05	0.002	<0.1	0.0356	0.7	<1	0.7	5.4	<1	4.3
0642	N	10/8/1989	<0.05	<0.01	<0.01	<0.05	<0.01	<0.1	<0.05	0.002	<0.1	0.083	2.8	1.2	4	3.6	<1	6.4
0642	N	1/11/1990	<0.05	<0.01	<0.01	<0.05	<0.01	<0.1	<0.05	0.001	<0.1	0.001	<0.2	<1	0	0.2	<1	1
0642	N	4/10/1990	<0.05	<0.01	0.01	<0.05	0.1	<0.1	<0.05	0.002	<0.1	0.036	4.7	<1	4.7	4.3	<1	0.4
0642	N	7/10/1990	<0.05	<0.01	0.02	<0.05	<0.01	<0.1	<0.05	0.002	<0.1	0.055	<0.02	<1	0	<0.2	<1	<1
0642	N	10/9/1990	<0.05	<0.01	0.02	<0.05	0.02	<0.1	<0.05	<0.001	<0.1	0.0446	<0.2	<1	0	<0.2	<1	<1
0642	N	1/17/1991	<0.01	<0.01	<0.01	<0.05	<0.01	<0.1	<0.05	<0.001	<0.1	0.0357	<0.2	<1	0	<0.2	<1	<1
0642	N	4/10/1991	<0.01	<0.01	0.01	<0.05	<0.01	<0.1	<0.05	0.001	<0.1	0.0363	<0.2	<1	0	<0.2	3	<1
0642	N	7/10/1991	<0.01	<0.01	0.02	<0.05	<0.01	<0.1	<0.05	0.004	<0.1	0.0557	0.8	<1	0.8	<0.2	3.2	<1



**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
0642	N	10/17/1991	6921.80	6.70	7.52	4093	639	233	167	3.6	442	2229	34.5	< 0.05	55.4	< 1	< 0.1	< 0.001
0642	N	1/21/1992	6920.60	6.80	7.35	4133	684	223	158	2.4	425	2307	75	< 0.05	38.1	< 1	< 0.1	< 0.001
0642	N	4/13/1992	6920.00	6.70	7.43	4096	562	238	185	3.1	399	1851	31.5	< 0.05	29	< 1	< 0.1	< 0.001
0642	N	7/14/1992	6919.30	6.40	7.72	4196	668	266	183	3.2	405	2518	28.4	< 0.05	46	< 1	< 0.1	0.001
0642	N	10/13/1992	6918.50	6.80	7.59	3909	617	260	169	3	422	2721	29	< 0.05	45.9	< 1	< 0.1	0.001
0642	N	1/21/1993	6917.60	6.90	7.52	4295	642	268	157	3.5	422	2575	31.6	< 0.05	32.8	< 1	< 0.1	0.001
0642	N	4/14/1993	6917.00	7.00	7.95	4460	640	283	166	2.2	453	2621	30.4	< 0.05	35.1	< 1	< 0.1	< 0.001
0642	N	7/15/1993	6916.20	7.00	7.02	4023	598	266	182	5.1	478	2657	33	0.08	2.2	< 1	< 0.1	< 0.001
0642	N	10/6/1993	6912.90	7.10	7.10	4659	598	325	192	2.2	432	2849	28.6	< 0.05	29.5	< 1	< 0.1	< 0.001
0642	N	1/5/1994	6915.00	7.10	7.68	4362	580	326	150	2.8	450	2709	29.5	< 0.05	22.3	< 1	< 0.1	< 0.001
0642	N	4/13/1994	6914.40	7.10	7.33	4446	610	334	149	2.8	442	2782	30	0.18	21.2	< 1	< 0.1	< 0.001
0642	N	7/21/1994	6913.70	7.10	7.37	4667	789	374	164	4.1	471	3117	27.3	0.08	21.3	< 1	< 0.1	0.001
0642	N	10/5/1994	6913.30	7.00	7.70	4699	649	377	178	4.5	490	2863	29.8	0.11	20.6	< 1	< 0.1	< 0.001
0642	N	1/5/1995	6912.60	7.00	7.57	4800	630	379	163	5.2	505	2823	30.7	0.17	18.2	< 1	< 0.1	< 0.001
0642	N	4/5/1995	6912.60	7.00	7.44	4804	583	390	156	3.9	519	2869	30	0.2	17	< 1	< 0.1	< 0.001
0642	N	7/6/1995	6911.60	7.00	7.99	4613	605	377	167	5.3	527	2781	29	< 0.05	20.7	< 1	< 0.1	< 0.001
0642	N	10/4/1995	6911.80	7.00	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
0644	N	7/23/1989	6936.30	7.30	7.52	4441	769	206	187	5.2	498	1812	72.9	0.07	178	< 1	< 0.1	< 0.001
0644	N	10/8/1989	6935.70	6.80	7.50	4778	860	227	203	5.8	676	1776	89.3	0.1	300	< 1	< 0.1	< 0.001
0644	N	1/11/1990	6935.00	6.70	7.16	4994	860	254	220	4.15	653	1789	99	0.07	384	< 1	< 0.1	< 0.001
0644	N	4/10/1990	6934.30	6.80	7.52	5426	854	260	222	4.2	623	1669	100	0.11	396	< 1	< 0.1	< 0.001
0644	N	7/10/1990	6933.80	6.80	7.24	6272	855	274	236	3.7	633	1706	94.8	< 0.05	615	< 1	< 0.1	< 0.001
0644	N	10/9/1990	6933.00	6.70	7.68	5576	809	280	232	5.1	586	1689	97.4	< 0.05	377	< 1	< 0.1	< 0.001
0644	N	1/17/1991	6932.50	6.60	7.28	5447	922	294	242	5.6	526	1731	97	< 0.05	512	< 1	0.14	< 0.001
0644	N	4/10/1991	6932.10	6.60	7.80	5265	855	293	244	6.2	616	1661	99.5	0.05	435	< 1	< 0.1	< 0.001
0644	N	7/10/1991	6931.70	6.70	7.55	5991	845	272	218	4.2	586	1852	96.2	0.06	534	< 1	< 0.1	< 0.001
0644	N	10/17/1991	6931.00	6.60	7.50	5606	929	291	251	7	617	1839	111	< 0.05	401	< 1	0.14	< 0.001
0644	N	1/21/1992	6930.50	6.70	7.40	4715	794	280	225	4.1	591	1896	98	< 0.05	234	< 1	< 0.1	< 0.001
0644	N	4/13/1992	6930.00	6.60	7.40	5318	786	271	268	5.5	539	1851	103	0.08	244	< 1	< 0.1	< 0.001
0644	N	7/14/1992	6929.00	6.30	7.38	5770	824	270	285	6.6	464	1884	92.1	< 0.05	338	< 1	< 0.1	< 0.001
0644	N	10/13/1992	6929.00	6.70	7.34	5731	771	263	241	5.4	488	2121	97.5	0.07	250	< 1	< 0.1	< 0.001
0645	N	10/8/1989	6941.30	7.10	7.40	7992	957	440	518	6.9	378	1982	159	0.13	798	< 1	< 0.1	< 0.001
0645	N	1/11/1990	6940.80	6.70	7.18	8426	929	539	574	4.48	354	2299	168	0.14	926	< 1	< 0.1	< 0.001
0645	N	4/10/1990	6940.60	6.90	7.54	9179	917	600	560	4.2	369	2489	169	0.13	840	< 1	< 0.1	< 0.001
0645	N	7/10/1990	6940.00	7.00	7.28	10530	829	680	637	4.2	365	2728	157	< 0.05	1225	< 1	< 0.1	< 0.001

**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
0642	N	10/17/1991	< 0.01	< 0.01	< 0.01	< 0.05	< 0.03	< 0.1	< 0.05	0.002	< 0.1	0.04	0.3	< 1	0.3	< 0.2	< 1	< 1
0642	N	1/21/1992	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	0.002	< 0.1	0.029	0.5	< 1	0.5	< 0.2	< 1	< 1
0642	N	4/13/1992	< 0.01	< 0.01	0.02	< 0.05	0.04	< 0.1	< 0.05	0.002	< 0.1	0.108	0.5	< 1	0.5	< 0.2	< 1	< 1
0642	N	7/14/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.05	< 0.1	< 0.05	0.003	< 0.1	0.05	0.4	1.1	1.5	< 0.2	< 1	< 1
0642	N	10/13/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.03	< 0.1	< 0.05	0.001	< 0.1	0.055	0.3	3	3.3	< 0.2	< 1	< 1
0642	N	1/21/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.05	< 0.1	< 0.05	0.003	< 0.1	0.046	0.4	< 1	0.4	< 0.2	2.7	1.3
0642	N	4/14/1993	< 0.001	< 0.01	< 0.01	< 0.05	0.16	< 0.1	< 0.05	0.001	< 0.1	0.06	0.7	< 1	0.7	< 0.2	< 1	< 1
0642	N	7/15/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.1	< 0.1	< 0.05	0.003	< 0.1	0.051	0.5	< 1	0.5	< 0.2	< 1	< 1
0642	N	10/6/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.036	0.5	1.3	1.8	< 0.2	< 1	< 1
0642	N	1/5/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.046	0.4	< 1	0.4	< 0.2	3.1	< 1
0642	N	4/13/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.07	< 0.1	< 0.05	0.003	< 0.1	0.043	0.9	< 1	0.9	< 0.2	2.7	< 1
0642	N	7/21/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.12	< 0.1	< 0.05	0.006	< 0.1	0.038	0.8	4.6	5.4	< 0.2	3.5	5.3
0642	N	10/5/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.08	< 0.1	< 0.05	< 0.001	< 0.1	0.039	0.7	1.7	2.4	< 0.2	3.9	3.4
0642	N	1/5/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.08	< 0.1	< 0.05	< 0.001	< 0.1	0.038	1.3	< 1	1.3	< 0.2	< 1	1.5
0642	N	4/5/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.09	< 0.1	< 0.05	0.002	< 0.1	0.042	3.4	2.9	6.3	< 0.2	2.8	7.9
0642	N	7/6/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.14	< 0.1	< 0.05	0.003	< 0.1	0.0549	0.6	< 1	0.6	< 0.2	1.2	4.8
0642	N	10/4/1995	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
0644	N	7/23/1989	< 0.05	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	0.013	< 0.1	0.0652	0.5	< 1	0.5	< 0.2	1.2	1.7
0644	N	10/8/1989	< 0.05	< 0.01	< 0.01	< 0.05	0.07	< 0.1	< 0.05	0.018	< 0.1	0.093	0.4	< 1	0.4	0.7	< 1	< 1
0644	N	1/11/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.03	< 0.1	< 0.05	0.011	< 0.1	0.071	0.3	< 1	0.3	1.2	< 1	4.2
0644	N	4/10/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.04	< 0.1	< 0.05	0.007	< 0.1	0.069	0.7	1.4	2.1	< 0.2	< 1	1.2
0644	N	7/10/1990	< 0.05	< 0.01	0.01	< 0.05	0.04	< 0.1	< 0.05	0.007	< 0.1	0.11	0.6	< 1	0.6	< 0.2	< 1	< 1
0644	N	10/9/1990	< 0.05	< 0.01	0.02	< 0.05	0.04	< 0.1	< 0.05	0.004	< 0.1	0.0656	< 0.2	< 1	0	< 0.2	< 1	< 1
0644	N	1/17/1991	< 0.01	< 0.01	0.01	< 0.05	0.07	< 0.1	< 0.05	0.002	< 0.1	0.0627	< 0.2	6.6	6.6	< 0.2	1.3	< 1
0644	N	4/10/1991	< 0.01	< 0.01	0.02	< 0.05	0.07	< 0.1	< 0.05	0.005	< 0.1	0.0608	0.4	1.9	2.3	< 0.2	3.8	< 1
0644	N	7/10/1991	< 0.01	< 0.01	0.02	< 0.05	0.05	< 0.1	< 0.05	0.007	< 0.1	0.1133	0.6	< 1	0.6	< 0.2	< 1	< 1
0644	N	10/17/1991	< 0.01	< 0.01	< 0.01	< 0.05	0.07	< 0.1	< 0.05	0.008	< 0.1	0.078	0.6	< 1	0.6	< 0.2	4.9	< 1
0644	N	1/21/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.08	< 0.1	< 0.05	0.004	< 0.1	0.042	1.8	3	4.8	< 0.2	< 1	2
0644	N	4/13/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.12	< 0.1	< 0.05	0.008	< 0.1	0.043	1.6	< 1	1.6	< 0.2	< 1	1.8
0644	N	7/14/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.15	< 0.1	< 0.05	0.005	< 0.1	0.08	0.8	3.1	3.9	< 0.2	< 1	< 1
0644	N	10/13/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.15	< 0.1	< 0.05	0.012	< 0.1	0.109	2.2	< 1	2.2	< 0.2	< 1	2.3
0645	N	10/8/1989	< 0.05	0.052	< 0.01	< 0.05	1.2	< 0.1	< 0.05	0.04	< 0.1	0.068	< 0.2	< 1	0	< 0.2	< 1	< 1
0645	N	1/11/1990	< 0.05	0.074	< 0.01	< 0.05	1.3	< 0.1	< 0.05	0.022	< 0.1	0.038	0.2	< 1	0.2	< 0.2	< 1	1.1
0645	N	4/10/1990	< 0.05	< 0.01	0.01	< 0.05	0.9	< 0.1	< 0.05	0.022	< 0.1	0.041	0.4	1.1	1.5	< 0.2	< 1	1
0645	N	7/10/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.72	< 0.1	< 0.05	0.018	< 0.1	0.052	< 0.2	< 1	0	1.1	< 1	1

**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
0645	N	10/10/1990	6940.00	6.90	7.41	9343	742	604	644	4.6	351	2674	150	0.09	800	< 1	< 0.1	< 0.001
0645	N	1/17/1991	6939.80	6.90	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
0645	N	4/10/1991	6939.60	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
0801	N	10/17/1989	6873.40	6.50	6.69	9214	626	1102	472	23	1940	4591	246	33.6	26	1.8	< 0.1	< 0.001
0801	N	1/11/1990	no data	6.50	6.74	8830	628	997	470	14.9	2111	4416	262	25.1	62	< 1	< 0.1	< 0.001
0801	N	4/5/1990	no data	6.80	7.16	5543	774	852	500	9.1	2103	2946	228	9.3	115	< 1	< 0.1	< 0.001
0801	N	7/9/1990	no data	6.50	6.82	9507	626	1095	436	15.5	2020	4826	254	40	39.6	1.92	0.19	< 0.001
0801	N	10/3/1990	no data	6.30	7.09	9800	565	1187	493	15.3	1875	5090	269	34.6	21.1	1.6	< 0.1	< 0.001
0801	N	1/3/1991	no data	6.10	6.84	9316	628	1232	482	23.6	1930	4650	239	32.4	31.4	2.72	0.59	< 0.001
0801	N	4/11/1991	no data	6.10	7.09	9510	601	1092	415	16.6	1991	4788	274	30	27.5	3.4	0.19	< 0.001
0801	N	7/11/1991	no data	6.30	7.08	9566	620	1142	410	12.8	1872	5121	240	40	26.5	3.5	0.12	< 0.001
0801	N	10/23/1991	no data	6.30	7.08	9049	566	1127	432	13.1	1870	4508	271	27.7	10.1	3.3	0.63	< 0.001
0801	N	1/16/1992	no data	6.20	7.28	8346	502	961	441	13	1825	4891	247	41.5	13.6	3.6	< 0.1	< 0.001
0801	N	4/13/1992	no data	6.20	7.11	9240	518	635	444	15.1	1869	4650	255	31.7	12.8	4.2	0.18	< 0.001
0801	N	7/8/1992	no data	6.10	7.38	8276	635	634	539	16	1915	4512	246	28.1	38.1	3	0.23	< 0.001
0801	N	10/8/1992	no data	6.40	7.72	9244	517	1003	478	17.4	1832	5132	229	39.5	14.7	3.8	0.3	< 0.001
0801	N	1/7/1993	no data	6.30	7.28	8060	555	1030	469	14.1	1575	4709	249	42.8	9.9	4.6	< 0.1	< 0.001
0801	N	4/7/1993	no data	6.40	7.19	8253	476	955	472	12.1	1603	4867	247	43.9	10.2	4	< 0.1	< 0.001
0801	N	7/14/1993	no data	6.40	6.93	8158	555	1011	432	13	1709	4887	247	34	14.7	4.5	< 0.1	< 0.001
0801	N	10/7/1993	no data	6.30	7.08	7688	525	931	393	12.6	1641	4231	229	32	19	3.5	< 0.1	< 0.001
0801	N	1/6/1994	no data	6.40	6.82	7788	522	909	438	12.6	1540	4519	230	32.3	28.6	4.3	0.7	< 0.001
0801	N	4/12/1994	no data	6.40	6.80	8786	515	905	415	12.8	1454	5061	233	42.7	9.9	2.7	0.36	< 0.001
0801	N	7/27/1994	no data	6.40	7.24	8502	599	902	382	13.3	1530	4930	222	35.6	25.2	4.2	< 0.1	< 0.001
0801	N	10/5/1994	no data	6.20	7.29	8093	564	998	440	13.1	1619	4544	236	29.9	10.7	3.25	0.44	< 0.001
0801	N	1/4/1995	no data	6.20	6.97	8714	635	945	425	14.7	1599	4925	226	45	9.57	3.58	0.51	< 0.001
0801	N	4/6/1995	no data	6.20	6.70	8297	560	910	402	13.1	1652	4455	258	31.8	10.2	2.28	< 0.1	< 0.001
0801	N	7/6/1995	no data	6.30	7.64	8028	535	883	405	13.7	1627	4335	230	30.4	8.82	4.11	< 0.1	< 0.001
0801	N	10/4/1995	no data	6.30	7.29	8115	535	890	406	12.1	1619	4668	212	24.4	11	2.91	< 0.1	< 0.001
0801	N	1/3/1996	no data	6.50	7.18	7962	629	952	414	12.3	1620	4640	242	16.8	9.91	2.81	< 0.1	< 0.001
0801	N	4/2/1996	no data	6.50	7.31	8061	550	1000	408	13	1623	4370	224	21.5	9.08	3.36	< 0.1	< 0.001
0801	N	7/17/1996	no data	6.30	6.79	8133	527	864	411	15.1	1532	4100	241	20.6	8.22	4.32	< 0.1	< 0.001
0801	N	10/8/1996	no data	6.30	6.97	8130	554	915	404	13.9	1520	4325	233	19.9	4.46	3.6	< 0.1	< 0.001
0801	N	1/28/1997	no data	6.50	7.73	8340	555	906	361	13.8	1678	4460	324	22.2	3.75	3.49	< 0.1	< 0.001
0801	N	4/8/1997	no data	6.40	7.57	8190	562	944	399	14.5	1520	4500	232	21.2	6.33	3.5	< 0.1	< 0.001
0801	N	7/8/1997	no data	6.60	7.43	8240	575	956	420	15	1520	4480	243	21.2	6.43	3.42	< 0.1	< 0.001



**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
0645	N	10/10/1990	< 0.05	0.068	0.01	< 0.05	0.54	< 0.1	< 0.05	0.016	< 0.1	< 0.034	< 0.2	1.6	1.6	< 0.2	< 1	< 1
0645	N	1/17/1991	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
0645	N	4/10/1991	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
0801	N	10/17/1989	< 0.05	< 0.01	0.48	< 0.05	31	< 0.01	0.31	< 0.001	< 0.1	0.0636	1.1	< 1	1.1	1.6	2.4	3.1
0801	N	1/11/1990	< 0.05	< 0.01	0.13	< 0.05	19	< 0.1	0.14	< 0.001	< 0.1	0.057	0.7	< 1	0.7	2.3	< 1	4
0801	N	4/5/1990	< 0.05	< 0.01	0.02	< 0.05	5.8	< 0.1	0.15	0.001	< 0.1	0.099	0.6	< 1	0.6	< 0.2	< 1	1
0801	N	7/9/1990	< 0.05	< 0.01	0.08	< 0.05	31.6	< 0.1	0.17	0.001	< 0.1	0.071	< 0.2	< 1	0	< 0.2	< 1	< 1
0801	N	10/3/1990	< 0.05	< 0.01	0.18	< 0.05	39.6	< 0.1	0.13	< 0.001	< 0.1	0.037	1	< 1	1	< 0.2	< 1	< 1
0801	N	1/3/1991	< 0.01	0.01	0.2	< 0.05	32.4	< 0.1	0.17	< 0.001	< 0.1	0.0654	1.8	< 1	1.8	< 0.2	< 1	2
0801	N	4/11/1991	< 0.01	< 0.01	0.13	< 0.05	30.1	< 0.1	0.13	< 0.001	< 0.1	0.047	1.1	< 1	1.1	< 0.2	< 1	1
0801	N	7/11/1991	< 0.01	< 0.01	0.08	< 0.05	32	< 0.1	< 0.05	0.001	< 0.1	0.1228	1.6	2.3	3.9	< 0.2	2.4	2
0801	N	10/23/1991	< 0.01	< 0.01	0.09	no data	34	< 0.1	0.1	< 0.001	< 0.1	0.186	0.5	4.8	5.3	< 0.2	< 1	< 1
0801	N	1/16/1992	< 0.01	< 0.01	0.11	< 0.05	32.5	< 0.1	0.12	0.005	< 0.1	0.031	0.3	3.7	4	< 0.2	1.5	< 1
0801	N	4/13/1992	< 0.01	< 0.01	0.09	< 0.05	31.3	< 0.1	0.1	0.005	< 0.1	0.034	0.5	1	1.5	< 0.2	< 1	< 1
0801	N	7/8/1992	< 0.01	< 0.01	0.03	< 0.05	24.3	< 0.1	< 0.05	0.001	< 0.1	0.04	0.9	< 1	0.9	< 0.2	< 1	< 1
0801	N	10/8/1992	< 0.01	< 0.01	0.06	< 0.05	37	< 0.1	0.07	< 0.001	< 0.1	0.022	1.7	< 1	1.7	< 0.2	< 1	1.9
0801	N	1/7/1993	< 0.01	< 0.01	0.12	< 0.05	45.3	< 0.1	< 0.05	0.006	< 0.1	0.03	0.7	< 1	0.7	< 0.2	< 1	< 1
0801	N	4/7/1993	< 0.001	< 0.01	0.11	< 0.05	45.1	< 0.1	0.16	< 0.001	< 0.1	0.069	0.4	< 1	0.4	< 0.2	1.8	< 1
0801	N	7/14/1993	< 0.01	< 0.01	0.08	< 0.05	30	< 0.1	0.1	< 0.001	< 0.1	0.028	0.7	3.8	4.5	< 0.2	< 1	< 1
0801	N	10/7/1993	< 0.01	< 0.01	0.09	< 0.05	31.9	< 0.1	< 0.05	< 0.001	< 0.1	0.035	1.5	3.3	4.8	< 0.2	< 1	2
0801	N	1/6/1994	< 0.01	< 0.01	0.09	< 0.05	33.4	< 0.1	0.09	< 0.001	< 0.1	0.047	1.3	1	2.3	< 0.2	< 1	3.9
0801	N	4/12/1994	< 0.01	< 0.01	0.12	< 0.05	34.3	< 0.1	0.15	< 0.001	< 0.1	0.039	0.9	< 1	0.9	< 0.2	3.2	< 1
0801	N	7/27/1994	< 0.01	< 0.01	0.1	< 0.05	20.5	< 0.1	0.09	0.001	< 0.1	0.036	1.1	5.2	6.3	< 0.2	1.9	5.5
0801	N	10/5/1994	< 0.01	< 0.01	< 0.01	< 0.05	20.4	< 0.1	0.07	< 0.001	< 0.1	0.036	0.8	1.7	2.5	< 0.2	1	3.5
0801	N	1/4/1995	< 0.01	< 0.01	0.06	< 0.05	31.5	< 0.1	0.09	< 0.001	< 0.1	0.034	1.2	< 1	1.2	< 0.2	< 1	2.9
0801	N	4/6/1995	< 0.01	< 0.01	< 0.01	< 0.05	23.4	< 0.1	< 0.05	< 0.001	< 0.1	0.039	1.6	2.4	4	< 0.2	1.9	5.4
0801	N	7/6/1995	< 0.01	< 0.01	0.03	< 0.05	23	< 0.1	< 0.05	0.001	< 0.1	0.0435	1.5	1.5	3	0.3	< 1	4.8
0801	N	10/4/1995	< 0.01	< 0.01	< 0.01	< 0.05	18.1	< 0.1	< 0.05	< 0.001	< 0.1	0.038	1.3	< 1	1.3	0.6	< 1	1.1
0801	N	1/3/1996	< 0.01	< 0.01	< 0.01	< 0.05	18.6	< 0.1	< 0.05	< 0.001	< 0.1	0.042	1.3	< 1	1.3	< 0.2	3.1	2
0801	N	4/2/1996	< 0.01	< 0.01	< 0.01	< 0.05	17	< 0.1	< 0.05	< 0.001	< 0.1	0.063	0.3	< 1	0.3	< 0.2	2.9	3
0801	N	7/17/1996	< 0.01	< 0.01	0.01	< 0.05	19.5	< 0.1	< 0.05	< 0.001	< 0.1	0.051	0.9	< 1	0.9	1.1	< 1	1.2
0801	N	10/8/1996	< 0.01	< 0.01	< 0.01	< 0.05	17.1	< 0.1	< 0.05	< 0.001	< 0.1	0.046	1.3	< 1	1.3	< 0.2	< 1	< 1
0801	N	1/28/1997	< 0.01	< 0.01	0.02	< 0.05	19.4	< 0.1	0.06	< 0.001	< 0.1	0.028	2.4	< 1	2.4	< 0.2	6.3	1.2
0801	N	4/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	20.2	< 0.1	< 0.05	< 0.001	< 0.1	0.04	0.9	< 1	0.9	< 0.2	< 1	< 1
0801	N	7/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	17	< 0.1	< 0.05	< 0.001	< 0.1	0.039	1.2	3.3	4.5	< 0.2	< 1	< 1

**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Water	Field	Lab	Lab	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4	NO3	TTHMs	Al	As	
			Elevation	pH	pH	TDS													
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05	
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01	
0801	N	10/8/1997	no data	6.20	7.51	8100	568	924	379	13.8	1520	4350	273	21.1	5.06	4.06	< 0.1	< 0.001	
0801	N	1/20/1998	no data	6.20	7.72	8090	553	898	397	14.9	1500	4400	269	21	7.07	4.1	< 0.1	< 0.001	
0801	N	4/7/1998	no data	6.50	7.42	8140	553	915	375	13.3	1480	4260	214	20.4	7.42	3.9	< 0.1	< 0.001	
0801	N	7/7/1998	no data	6.60	7.42	8250	563	969	407	14.1	1450	4200	233	22.5	4.86	3.9	< 0.1	< 0.001	
0801	N	10/6/1998	no data	6.40	7.58	8040	546	924	401	14.7	1440	4300	250	23.2	6.56	1.3	< 0.1	< 0.001	
0801	N	1/12/1999	no data	6.50	7.49	8010	470	858	347	14.3	1390	4450	222	20.3	6.05	3.3	< 0.1	< 0.001	
0801	N	4/13/1999	no data	6.40	7.65	7940	534	902	357	13	1410	4060	221	19.8	6.37	3.9	< 0.1	< 0.001	
0801	N	7/20/1999	no data	6.50	7.63	7950	545	932	414	15.5	1420	4240	220	19.7	5.51	3.5	< 0.1	< 0.001	
0801	N	10/5/1999	no data	6.37	7.53	7500	594	936	352	14.7	1450	4300	227	16.2	25.1	2.3	< 0.1	< 0.001	
0801	N	1/4/2000	no data	6.50	7.94	8450	539	1010	307	16.1	1400	4670	205	20.2	11.9	2.6	< 0.1	< 0.001	
0801	N	1/8/2001	6852.90	6.67	7.70	7330	578	820	359	16.6	1570	3700	240	9.07	48.9	2.2	< 0.1	0.002	
0801	N	2/6/2001	6853.85	6.90	7.42	7200	642	882	397	15.8	1570	3970	226	9.46	29.9	1.6	< 0.1	< 0.001	
0801	N	3/5/2001	6854.30	6.92	7.19	6610	550	785	273	15.1	1580	3660	203	8.34	21.9	2.3	< 0.1	< 0.001	
0801	N	4/3/2001	6854.80	6.59	7.37	6930	615	825	320	12.8	1570	3580	214	7.88	17.5	3.11	< 0.1	< 0.001	
0801	N	5/7/2001	6855.20	6.47	7.53	7090	541	723	282	12.6	1560	3120	229	7.71	13.3	1.9	< 0.1	< 0.001	
0801	N	6/4/2001	6855.20	6.47	7.33	6680	549	745	294	12.7	1560	3380	225	8.12	8.45	3.3	< 0.1	< 0.001	
0801	N	7/9/2001	6855.38	7.02	7.11	6900	585	800	312	12.7	1610	3320	237	7.07	6.25	3.4	< 0.1	< 0.001	
0801	N	8/6/2001	6855.43	6.76	7.40	6890	550	760	310	13	1580	3300	240	7.5	4.4	3	< 0.1	< 0.001	
0801	N	9/10/2001	6855.80	6.38	7.00	6860	560	770	319	13.6	1600	3300	248	6.75	< 0.1	2.85	< 0.1	< 0.001	
0801	N	10/1/2001	6855.75	6.45	7.50	7060	530	750	330	14.1	1600	3200	253	7.2	2.9	2.4	< 0.1	< 0.001	
0801	N	11/5/2001	6855.90	6.46	7.00	7070	583	805	318	14.3	1590	3670	272	7	3.3	2.82	< 0.1	< 0.001	
0801	N	12/4/2001	6856.10	6.56	7.00	7090	531	734	293	12.3	1590	3240	229	7.4	3	2.03	< 0.1	< 0.001	
0801	N	1/8/2002	6856.10	6.58	7.20	7100	620	817	261	13.9	1570	3840	274	6.8	2.34	2.9	< 0.1	< 0.001	
0801	N	2/4/2002	6856.20	6.45	7.10	7120	603	790	290	13.6	1600	3640	264	6.8	2.08	3.1	< 0.1	< 0.001	
0801	N	3/4/2002	6856.15	6.41	7.20	7070	563	780	354	13.8	1590	3720	259	3.6	2.41	2.7	< 0.1	< 0.001	
0801	N	4/1/2002	6856.32	6.36	7.33	7120	583	782	351	15.2	1600	3730	249	7.07	2.35	3.6	< 0.1	< 0.001	
0801	N	5/6/2002	6856.41	6.35	7.38	7030	564	762	341	14.4	1570	3520	242	6.4	2.34	3	< 0.1	< 0.001	
0801	N	6/3/2002	6856.43	6.33	7.43	7070	561	754	328	12.2	1570	3460	208	6.5	2.13	3.7	< 0.1	< 0.001	
0801	N	7/8/2002	6855.81	6.62	7.69	7050	552	778	257	13.8	1570	3570	194	6.3	2.04	3	< 0.1	< 0.001	
0801	N	10/8/2002	6856.12	6.51	7.58	6960	515	699	328	12.7	1560	3260	206	6.4	1.99	3.2	< 0.1	< 0.001	
0801	N	1/6/2003	6856.07	6.89	7.41	6860	561	785	380	14.1	1520	3600	193	6	1.5	3.1	< 0.1	< 0.001	
0801	N	4/7/2003	6856.27	6.37	7.31	6910	542	731	358	17.4	1520	3170	226	5.6	2.8	3.1	< 0.1	< 0.001	
0801	N	7/7/2003	6856.35	6.20	7.18	6880	517	694	316	15.4	1550	3350	200	5.3	1.2	3.7	< 0.1	< 0.001	
0801	N	10/6/2003	6855.82	6.21	7.54	6730	585	764	364	12.7	1520	3640	219	5.2	1.2	2.9	< 0.1	< 0.001	
0801	N	1/5/2004	6856.04	6.45	7.48	6640	554	721	320	12.3	1500	3460	224	5.2 D	1.09	3	0.2	< 0.001	

**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
0801	N	10/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	21.8	< 0.1	< 0.05	< 0.001	< 0.1	0.039	1	< 1	1	< 0.2	< 1	< 1
0801	N	1/20/1998	< 0.01	< 0.005	< 0.01	< 0.05	19.7	< 0.1	< 0.05	< 0.001	< 0.1	0.043	1.3	< 1	1.3	< 0.2	< 1	< 1
0801	N	4/7/1998	0.01	< 0.005	< 0.01	< 0.05	16.5	< 0.1	0.75	< 0.001	< 0.1	0.0439	1.2	< 1	1.2	< 0.2	< 1	< 1
0801	N	7/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	20.8	< 0.1	< 0.05	< 0.001	< 0.1	0.0411	1.6	1.7	3.3	< 0.2	< 1	< 1
0801	N	10/6/1998	< 0.01	0.005	< 0.01	< 0.05	17.3	< 0.1	< 0.05	< 0.001	< 0.1	0.0262	1.2	< 1	1.2	< 0.2	< 1	1.3
0801	N	1/12/1999	< 0.01	< 0.005	< 0.01	< 0.05	16.2	< 0.1	< 0.05	< 0.001	< 0.1	0.0433	0.8	< 1	0.8	< 0.2	< 1	< 1
0801	N	4/13/1999	< 0.01	0.006	< 0.01	< 0.05	17	< 0.1	< 0.05	< 0.001	< 0.1	0.0389	< 0.2	2.5	2.5	< 0.2	< 1	< 1
0801	N	7/20/1999	< 0.01	< 0.006	0.02	< 0.05	12.6	< 0.1	< 0.05	< 0.001	< 0.1	0.0405	0.9	3.7	4.6	< 0.2	< 1	1
0801	N	10/5/1999	< 0.01	0.006	< 0.01	< 0.05	16.1	< 0.1	< 0.05	< 0.001	< 0.1	0.0527	1.1	< 1	1.1	< 0.2	< 1	1.4
0801	N	1/4/2000	< 0.01	< 0.005	0.01	< 0.05	23.6	< 0.1	< 0.05	0.001	< 0.1	0.0408	0.7	< 1	0.7	< 0.2	< 1	1.3
0801	N	1/8/2001	< 0.01	< 0.005	< 0.01	< 0.05	6.52	< 0.1	< 0.05	0.001	< 0.1	0.087	< 0.2	< 1	0	< 0.2	< 1	< 1
0801	N	2/6/2001	< 0.01	< 0.005	< 0.01	< 0.05	7.28	< 0.1	< 0.05	< 0.001	< 0.1	0.071	0.5	< 1	0.5	< 0.2	< 1	< 1
0801	N	3/5/2001	< 0.01	< 0.005	< 0.01	< 0.05	7.98	< 0.1	< 0.05	< 0.001	< 0.1	0.0582	< 0.2	< 1	0	< 0.2	< 1	< 1
0801	N	4/3/2001	< 0.01	< 0.005	< 0.01	< 0.05	7.02	< 0.1	< 0.05	< 0.001	< 0.1	0.053	0.4	< 1	0.4	< 0.2	< 1	< 1
0801	N	5/7/2001	< 0.01	< 0.005	< 0.01	< 0.05	8.7	< 0.1	< 0.05	< 0.001	< 0.1	0.049	0.4	< 1	0.4	< 0.2	< 1	< 1
0801	N	6/4/2001	< 0.01	< 0.005	< 0.01	< 0.05	8.24	< 0.1	< 0.05	< 0.001	< 0.1	0.046	< 0.2	< 1	0	< 0.2	< 1	< 1
0801	N	7/9/2001	< 0.01	< 0.005	< 0.01	< 0.05	8.34	< 0.1	< 0.05	< 0.001	< 0.1	0.0486	0.8	< 1	0.8	< 0.2	< 1	< 1
0801	N	8/6/2001	< 0.01	< 0.005	< 0.01	< 0.05	7.7	< 0.1	< 0.05	< 0.001	< 0.1	0.048	0.4	< 1	0.4	< 0.2	< 1	< 1
0801	N	9/10/2001	< 0.01	< 0.005	< 0.01	< 0.05	6.24	< 0.1	< 0.05	< 0.001	< 0.1	0.044	0.3	< 1	0.3	< 0.2	< 1	< 1
0801	N	10/1/2001	< 0.01	< 0.005	< 0.01	< 0.05	6.87	< 0.1	< 0.05	< 0.001	< 0.1	0.0373	0.7	< 1	0.7	< 0.2	< 1	< 1
0801	N	11/5/2001	< 0.01	< 0.005	< 0.01	< 0.05	7.36	< 0.1	< 0.05	< 0.001	< 0.1	0.0374	0.4	< 1	0.4	< 0.2	< 1	< 1
0801	N	12/4/2001	< 0.01	< 0.005	< 0.01	< 0.05	6.57	< 0.1	< 0.05	< 0.001	< 0.1	0.0407	< 0.2	< 1	0	< 0.2	< 1	< 1
0801	N	1/8/2002	< 0.01	< 0.005	< 0.01	< 0.05	6.61	< 0.1	< 0.05	< 0.001	< 0.1	0.0422	0.3	< 1	0.3	< 0.2	< 1	< 1
0801	N	2/4/2002	< 0.01	< 0.005	< 0.01	< 0.05	6.69	< 0.1	< 0.05	< 0.001	< 0.1	0.0336	0.7	< 1	0.7	< 0.2	< 1	< 1
0801	N	3/4/2002	< 0.01	< 0.005	< 0.01	< 0.05	7.89	< 0.1	< 0.05	< 0.001	< 0.1	0.0525	< 0.2	< 1	0	< 0.2	< 1	< 1
0801	N	4/1/2002	< 0.01	< 0.005	< 0.01	< 0.05	7.42	< 0.1	< 0.05	< 0.001	< 0.1	0.0423	< 0.2	< 1	0	< 0.2	< 1	< 1
0801	N	5/6/2002	< 0.01	< 0.005	< 0.01	< 0.05	6.84	< 0.1	< 0.05	< 0.001	< 0.1	0.0472	< 0.2	< 1	0	< 0.2	< 1	< 1
0801	N	6/3/2002	< 0.01	< 0.005	< 0.01	< 0.05	6.36	< 0.1	< 0.05	< 0.001	< 0.1	0.042	< 0.2	< 1	0	< 0.2	< 1	< 1
0801	N	7/8/2002	< 0.01	< 0.005	< 0.01	< 0.05	5.85	< 0.1	< 0.05	< 0.001	< 0.1	0.0488	0.3	< 1	0.3	< 0.2	< 1	< 1
0801	N	10/8/2002	< 0.01	< 0.005	< 0.01	< 0.05	5.66	< 0.1	< 0.05	< 0.001	< 0.1	0.0343	< 0.2	< 1	0	< 0.2	< 1	< 1
0801	N	1/6/2003	< 0.01	< 0.005	< 0.01	< 0.05	5.61	< 0.1	< 0.05	< 0.001	< 0.1	0.0404	< 0.2	< 1	0	< 0.2	< 1	1.4
0801	N	4/7/2003	< 0.01	< 0.005	< 0.01	< 0.05	5.08	< 0.1	< 0.05	< 0.001	< 0.1	0.0416	0.6	< 1	0.6	< 0.2	< 1	< 1.0
0801	N	7/7/2003	< 0.01	< 0.005	< 0.01	< 0.05	5.25	< 0.1	< 0.05	< 0.001	< 0.1	0.0385	0.4	< 1	0.4	< 0.2	< 1	< 1.0
0801	N	10/6/2003	< 0.01	< 0.005	< 0.01	< 0.05	4.65	< 0.1	< 0.05	< 0.001	< 0.1	0.0453	0.6	< 1	0.6	< 0.2	< 1	< 1.0
0801	N	1/5/2004	< 0.01	< 0.005	< 0.01	< 0.05	5.16	< 0.1	< 0.05	< 0.001	< 0.1	0.0381 D	0.4	< 1.0	0.4	< 0.2	< 1.0	< 1.0



**TABLE A.1**  
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Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
0801	N	4/5/2004	6856.07	6.80	6.75	6680	554	719	356	13	2220	3360 D	206	4.5 D	0.75	3.1	< 0.1	< 0.001
0801	N	7/12/2004	6855.86	6.17	6.87	6690	574	714	374	13.8	1450	3360 D	212	3.3 D	0.69	2.3	< 0.1	< 0.001
0801	N	10/4/2004	6855.47	6.27	6.97	6670	565 D	727 D	379	12.6	1470	3390 D	221	4.0 D	0.7	3.1	< 0.1	< 0.001
0801	N	1/3/2005	6855.82	6.54	6.93	6700	574 D	729 D	353	12.3	1450	3300 D	198	3.9 D	0.6	2.6	< 0.1	< 0.001
0801	N	4/4/2005	6855.77	6.45	7.07	6300	564	697	344	11.4	1480	3310	194	3.5	0.3	2.9	< 0.1	< 0.001
0801	N	7/11/2005	6855.42	6.37	7.28	6520	567 D	723 D	359	12.3	1350	3360 D	201	3.7 D	0.2	3.5	< 0.1	< 0.001
0801	N	10/3/2005	6855.15	6.49	7.05	6380	547 D	676 D	355	12.2	1450	3280 D	208	2.9 D	0.2	2.9	< 0.1	< 0.001
0801	N	1/9/2006	6855.08	6.58	7.57	6340	514	618 D	331	11.1	1490	2940 D	196	3.6 D	0.2	2.6	< 0.1	< 0.001
0801	N	4/3/2006	6855.22	6.36	7.05	6170	579 D	693 D	333	12.5	1430	3200 D	210	4.85	0.1	2.2	< 0.1	< 0.001
0801	N	7/17/2006	6854.87	6.31	6.68	6270	577 D	687 D	352	12.5	1420	3360 D	204	2.86	0.3	2.8	< 0.1	< 0.001
0801	N	10/2/2006	6855.19	6.43	6.96	6180	583 D	692 D	343	12.4	1810	3270 D	192	3.15	1	2.17	< 0.1	< 0.001
0801	N	1/8/2007	6854.77	6.49	6.81	6420	557 D	681 D	307	12.8	1430	3220 D	191	2.7 D	1.4	2.33	< 0.1	< 0.001
0801	N	4/9/2007	6854.82	6.52	6.70	5950	539 D	663 D	304	14	1430	3170 D	199	3.1	1	2.06	< 0.1	< 0.001
0801	N	7/9/2007	6854.52	6.33	6.75	6200	573 D	726 D	352	13.3	1510	3500 D	179	2.77	0.8	2.84	< 0.1	0.01
0801	N	10/1/2007	6854.29	6.46	6.65	6470	514 D	661 D	338 D	13.5	1490	3200 D	223 D	3.37	0.8	2.96	< 0.1	< 0.001
0801	N	1/14/2008	6854.17	6.49	6.65	6580	528 D	669 D	334 D	13	1440	3100 D	209 D	3.55	0.9	2.68	< 0.1	< 0.001
0801	N	4/7/2008	6854.47	6.40	6.75	6190	578 D	763 D	375 D	14.4 D	1380	3610 D	197	3.3 D	0.9	2.78	< 0.1	< 0.001
0801	N	7/7/2008	6854.22	6.18	6.67 H	6300 H	530	693	314 D	11	1460	3610 D	206	3	1.1	3.49	< 0.1	< 0.003
0801	N	10/6/2008	6853.82	6.30	6.75	6490	549	729	336 D	12	1430	3790 D	191	3.7	1.1	2.84	< 0.1	< 0.001
0801	N	1/12/2009	6853.77	6.39	6.70	6760	537	730	351	11	1450	2970 D	183	1.19	1.5	2.82	< 0.1	< 0.001
0801	N	4/6/2009	6853.57	6.36	6.51	6700	524 D	714 D	359 D	12	1490	3530 D	198	2.25	1.8	3.45	< 0.1	< 0.001
0801	N	7/6/2009	6853.47	6.27	6.63	6550 H	567 D	738	343 D	13	1460	3420 D	208	3.91	1.8	2.49	< 0.1	< 0.001
0801	N	10/5/2009	6852.97	6.47	7.10	6530	540 D	701	329 D	12	1510	3420 D	215	4.0 D	2.2	2.21	< 0.1	< 0.001
0801	N	1/4/2010	6852.82	6.54	6.84	6580 D	552 D	682	338 D	12	1540	3540 D	203	2.98	2.2	2.51	< 0.1	< 0.001
0801	N	4/5/2010	6852.92	6.42	6.75	6550 DH	585 D	709	368 D	12	1590	3510 D	191	3.64	2.8	2.17	< 0.1	< 0.001
0801	N	7/12/2010	6852.67	6.43	7.05	6420 D	578 D	690	344 D	12	1570	3390 D	200 D	3.85	2.9 D	2.56	< 0.1	< 0.001
0801	N	10/4/2010	6852.32	6.45	7.48	6510 D	540	638	344	12	1570	3410 D	197 D	3.54	5.0 D	2.65	< 0.1	< 0.001
0801	N	1/3/2011	6852.17	6.41	7.45	5940 D	572 D	676	348 D	12	1500	3290 D	207 D	1.93	5.3 D	2.14	< 0.1	< 0.001
0801	N	4/5/2011	6852.04	6.51	6.69	6370 D	566	645	371 D	13	1500	3290 D	206 D	3.36 D	7.9 D	2.76	< 0.1	< 0.001
0801	N	7/11/2011	6851.87	6.43	7.23	6040 D	576	660	364	12	1490	3170 D	198 D	3.4 D	9.7 D	2.22	< 0.1	< 0.001
0801	N	10/3/2011	6851.52	6.51	7.19	6000 D	552	644	354	12	1400	3290 D	204 D	2.8 D	11.2 D	2.39	< 0.1	< 0.001
0801	N	1/2/2012	6851.41	6.59	6.80 H	6040 D	567	610	331	13	1360	3150 D	200 D	3.2 D	11.9 D	2.68	< 0.1	< 0.001
0801	N	4/2/2012	6851.39	6.72	6.57 H	6220 D	576	622	332	13	1470	3180 D	200 D	3.2 D	14.5 D	2.76	< 0.1	< 0.01
0801	N	7/9/2012	6851.12	6.52	6.58 H	6390	584	708	362 D	13	1470	3090 D	193 D	3.3	18 D	1.89	< 0.1	< 0.001
0801	N	10/8/2012	6850.82	6.57	6.62 H	6120	592	652	352 D	14	1520	3270 D	211 D	3.8 D	20 D	1.81	< 0.1	< 0.001

**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
0801	N	4/5/2004	< 0.01	< 0.005	< 0.01	< 0.05	4.26	< 0.1	< 0.05	< 0.001	< 0.1	0.0422 D	1.3	< 1	1.3	< 0.2	< 1	< 1
0801	N	7/12/2004	< 0.01	< 0.005	< 0.01	< 0.05	3.94	< 0.1	< 0.05	< 0.001	< 0.1	0.0400 D	0.4	< 1.0	0.4	< 0.2	< 1.0	< 1.0
0801	N	10/4/2004	< 0.01	< 0.005	< 0.01	< 0.05	4.15	< 0.1	< 0.05	< 0.001	< 0.1	0.0370 D	1.1	< 1.0	1.1	< 0.2	< 1.0	< 1.0
0801	N	1/3/2005	< 0.01	< 0.005	< 0.01	< 0.05	3.82	< 0.1	< 0.05	< 0.001	< 0.1	0.0442	0.8	< 1.0	0.8	< 0.2	< 1.0	1.8
0801	N	4/4/2005	< 0.01	< 0.005	< 0.01	< 0.05	3.93	< 0.1	< 0.05	< 0.001	< 0.1	0.041	0.7	< 1.0	0.7	< 0.2	< 1.0	< 1.0
0801	N	7/11/2005	< 0.01	< 0.005	< 0.01	< 0.05	3.92	< 0.1	< 0.05	< 0.001	< 0.1	0.0416	0.4	< 1.0	0.4	< 0.2	< 1.0	< 1.0
0801	N	10/3/2005	< 0.01	< 0.005	< 0.01	< 0.05	3.62	< 0.1	< 0.05	< 0.001	< 0.1	0.0419	< 0.2	2.4	2.4	< 0.2	< 1.0	1
0801	N	1/9/2006	< 0.01	< 0.005	< 0.01	< 0.05	3.97	< 0.1	< 0.05	< 0.001	< 0.1	0.0382	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
0801	N	4/3/2006	< 0.01	< 0.005	< 0.01	< 0.05	3.68	< 0.1	< 0.05	< 0.001	< 0.1	0.0374 D	0.4	1.5	1.9	< 0.2	< 1.0	< 1.0
0801	N	7/17/2006	< 0.01	< 0.005	< 0.01	< 0.05	3.64	< 0.1	< 0.05	< 0.001	< 0.1	0.042	0.6	< 1.0	0.6	< 0.2	< 1.0	1.1
0801	N	10/2/2006	< 0.01	< 0.005	< 0.01	< 0.05	3.65	< 0.1	< 0.05	< 0.001	< 0.1	0.0407	0.5	2.5	3	< 0.2	< 1	< 1
0801	N	1/8/2007	< 0.01	< 0.005	< 0.01	< 0.05	3.69	< 0.1	< 0.05	< 0.001	< 0.1	0.0395	0.5	1.6	2.1	< 0.2	< 1	< 1
0801	N	4/9/2007	< 0.01	< 0.005	< 0.01	< 0.05	3.63	< 0.1	< 0.05	< 0.001	< 0.1	0.0404	< 0.2	< 1	0	< 0.2	< 1	1.2
0801	N	7/9/2007	< 0.01	< 0.005	< 0.01	< 0.05	3.43	< 0.1	< 0.05	< 0.001	< 0.1	0.0423	< 0.2	< 1	0	< 0.2	< 1	< 1
0801	N	10/1/2007	< 0.01	< 0.005	< 0.01	< 0.05	4.25	< 0.1	< 0.05	< 0.001	< 0.1	0.0431	0.5	< 1	0.5	1.5	< 1	1.3
0801	N	1/14/2008	< 0.01	< 0.005	< 0.01	< 0.05	3.81	< 0.1	< 0.05	< 0.001	< 0.1	0.0366	< 0.2	< 1	0	< 0.2	< 1	< 1
0801	N	4/7/2008	< 0.01	< 0.005	< 0.01	< 0.05	4.01	< 0.1	< 0.05	< 0.001	< 0.1	0.0395	0.5	1.2	1.7	0.2	-4.5 U	1.5
0801	N	7/7/2008	< 0.01	< 0.005	< 0.01	< 0.05	4.81	< 0.1	< 0.05	< 0.001	< 0.1	0.0387	0.34	2.5	2.84	0.3	-0.3 U	1.2
0801	N	10/6/2008	< 0.01	< 0.005	< 0.01	< 0.05	3.86	< 0.1	< 0.05	< 0.001	< 0.1	0.0382	0.52	0.14 U	0.66	0.4	-2 U	1.6
0801	N	1/12/2009	< 0.01	< 0.005	< 0.01	< 0.05	2.64	< 0.1	< 0.05	< 0.001	< 0.1	0.0198	0.07 U	0.68 U	0.75	0.4 U	-2 U	1.4
0801	N	4/6/2009	< 0.01	< 0.005	< 0.01	< 0.05	4.32	< 0.1	< 0.05	< 0.001	< 0.1	0.0347	0.43	0.60 U	1.03	0.07 U	-0.1 U	0.8
0801	N	7/6/2009	< 0.01	< 0.005	< 0.01	< 0.05	5.12	< 0.1	< 0.05	< 0.001	< 0.1	0.0367	0.99	1.9	2.89	0.2 U	-0.5 U	1.5
0801	N	10/5/2009	< 0.01	< 0.005	< 0.01	< 0.05	4.67	< 0.1	< 0.05	< 0.001	< 0.1	0.0393	0.91	1.2 U	2.11	0.002 U	1.4 U	0.6 U
0801	N	1/4/2010	< 0.01	< 0.005	< 0.01	< 0.05	4.2	< 0.1	< 0.05	< 0.001	< 0.1	0.035	0.44	1.1 U	1.54	-0.03 U	0.3 U	1
0801	N	4/5/2010	< 0.01	< 0.005	< 0.01	< 0.05	3.98	< 0.1	< 0.05	< 0.001	< 0.1	0.0396	0.41	0.80 U	1.21	0.08 U	1.9 U	0.7
0801	N	7/12/2010	< 0.01	< 0.005	< 0.01	< 0.05	4.41	< 0.1	< 0.05	< 0.001	< 0.1	0.0423	0.67	0.78 U	1.45	0.01 U	0.7 U	0.5 U
0801	N	10/4/2010	< 0.01	< 0.005	< 0.01	< 0.05	4.17	< 0.1	< 0.05	< 0.001	< 0.1	0.0396	0.38	0.59 U	0.97	0.02 U	1.9	0.4 U
0801	N	1/3/2011	< 0.01	< 0.005	< 0.01	< 0.05	3.98	< 0.1	< 0.05	< 0.001	< 0.1	0.0407	0.25	0.73 U	0.98	0.01 U	0.6 U	0.8 U
0801	N	4/5/2011	< 0.01	< 0.005	< 0.01	< 0.05	4.05	< 0.1	< 0.05	< 0.001	< 0.1	0.0357	0.29	0.96 U	1.25	0.02 U	-0.2 U	0.4
0801	N	7/11/2011	< 0.01	< 0.005	< 0.01	< 0.05	3.98	< 0.1	< 0.05	< 0.001	< 0.1	0.04	0.37	1.2	1.57	0.02 U	-0.8 U	1
0801	N	10/3/2011	< 0.01	< 0.005	< 0.01	< 0.05	4.13	< 0.1	< 0.05	< 0.001	< 0.1	0.037	0.47	0.66 U	1.13	0.01 U	0.4 U	0.8
0801	N	1/2/2012	< 0.01	< 0.005	< 0.01	< 0.05	3.62	< 0.1	< 0.05	< 0.001	< 0.1	0.0375	0.59	0.44 U	1.47	0.02 U	0.9 U	0.7
0801	N	4/2/2012	< 0.01	< 0.005	< 0.01	< 0.05	3.76	< 0.1	< 0.05	< 0.001	< 0.1	0.0407	0.4	0.65 U	1.7	-0.04 U	-0.1 U	0.1 U
0801	N	7/9/2012	< 0.001	< 0.005	< 0.01	< 0.001	4.21	< 0.1	< 0.05	< 0.001	< 0.1	0.037	0.55	0.59 U	1.73	-0.01 U	0.5 U	0.5
0801	N	10/8/2012	< 0.001	< 0.005	< 0.01	< 0.001	5.01	< 0.1	< 0.05	< 0.001	< 0.1	0.0387	0.42	2.5	2.92	0.02 U	0.5 U	0.7

**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
0801	N	1/7/2013	6850.81	6.51	6.63 H	6100	594	732	387 D	13	1520	3360 D	203 D	3.23	24 D	1.88	<0.1	<0.001
0801	N	4/1/2013	6850.64	6.55	6.69 H	6350	576	767	378	14	1550	3420 D	213 D	4.15	27 D	2.02	<0.1	<0.001
0801	N	7/8/2013	6850.39	6.41	6.70 H	7190	568	793	366	12	1570	3610 D	211 D	3.98	37 D	1.86	<0.1	<0.001
0801	N	9/30/2013	6850.40	6.51	6.63 H	7120 H	551	802	368	12	1600	3520 D	206 D	4.4	40 D	1.64	<0.1	<0.001
0801	N	1/6/2014	6850.20	6.73	6.65	6780	552	798	370	13	1590	3670	210	3.97	38	2.12	<0.1	<0.001
0801	N	3/31/2014	6850.14	6.70	6.57 H	7090	568	817	385 D	13	1590	3700 D	220 D	4.13	41 D	1.92	<0.1	<0.001
0801	N	7/7/2014	6849.95	6.60	6.64 H	7260	544	817	371 D	13	1610	3850 D	206 D	4.52	42 D	2.28	<0.1	<0.001
0801	N	10/6/2014	6849.74	6.65	6.60 H	7300	545	853	371	12	1620	3900 D	213 D	5.7 D	47 D	2.17	<0.1	<0.001
0801	N	1/5/2015	6850.00	6.76	6.69 H	7470	550	851	381	13	1580	3620 D	202 D	3.77	52 D	1.95	<0.1	<0.001
0801	N	4/6/2015	6849.51	6.30	6.75 H	7170	543	822	364	12	1530	3860 D	237 D	2.55	48 D	1.85	<0.1	<0.001
0801	N	7/6/2015	6849.34	6.51	6.59 H	7330	485	784	362	13	1650	3810 D	219 D	4.33	47 D	1.73	<0.1	<0.001
0801	N	10/5/2015	6849.10	6.61	6.61 H	7180	547	808	361	12	1520	3860 D	236 D	4.5 D	48 D	1.57	<0.1	<0.001
0801	N	1/4/2016	6848.95	6.74	6.69 H	7080	557	808	358	12	1600	3750 D	226 D	4.5 D	50 D	1	<0.1	<0.001
0801	N	4/4/2016	6848.77	6.58	6.72 H	6900	557	782	368	13	1570	3590 D	221 D	4.2 D	49 D	1.58	<0.1	<0.001
0801	N	7/11/2016	6848.58	6.60	6.74 H	6670 D	563	767	366	12	1490	3390 D	220 D	2.9 D	54 D	1.53	<0.1	<0.001
0801	N	10/3/2016	6848.36	6.70	6.69 H	6970 H	485	734	341	12	1580	3560 D	210 D	6.3 D	53 D	1.2	<0.1	<0.001
0802	N	10/17/1989	6874.80	6.50	6.89	6744	944	519	374	6.7	2288	2371	221	0.22	113	< 1	< 0.1	< 0.001
0802	N	1/11/1990	no data	6.50	6.98	6978	849	530	350	5.08	2547	2663	229	0.17	124	1.9	< 0.1	< 0.001
0802	N	4/5/1990	no data	6.50	6.80	6854	877	570	380	5.2	2416	2528	230	0.12	128	< 1	< 0.1	< 0.001
0802	N	7/9/1990	no data	6.60	7.02	6937	866	605	378	5.6	2347	2625	213	< 0.05	133	< 1	< 0.1	< 0.001
0802	N	10/3/1990	no data	6.60	7.18	6698	944	586	383	5.6	1940	2606	224	< 0.05	89.7	< 1	< 0.1	0.001
0802	N	1/3/1991	no data	6.50	7.22	6727	898	649	397	8.6	2318	2691	230	0.08	152	< 1	< 0.1	< 0.001
0802	N	4/11/1991	no data	6.30	7.65	6711	893	615	382	6.1	2171	2561	240	< 0.05	165	< 1	< 0.1	< 0.001
0802	N	7/11/1991	no data	6.40	7.21	7065	829	624	335	4.6	1940	2857	218	< 0.08	127	< 1	< 0.1	< 0.001
0802	N	10/23/1991	no data	6.40	7.41	6795	800	543	362	4.6	2250	2775	237	0.36	99	< 1	< 0.1	< 0.001
0802	N	1/16/1992	no data	6.30	7.10	6541	765	657	363	4.4	1662	2916	235	0.57	117	< 1	< 0.1	< 0.001
0802	N	4/13/1992	no data	6.20	6.84	7383	852	592	393	5.5	2404	2730	234	0.09	81.3	< 1	< 0.1	< 0.001
0802	N	7/8/1992	no data	6.20	7.32	5929	841	608	445	6.2	1777	2615	235	0.16	100	< 1	< 0.1	< 0.001
0802	N	10/8/1992	no data	6.80	7.21	7274	809	648	456	8.2	2245	3057	228	< 0.05	136	< 1	< 0.1	< 0.001
0802	N	1/7/1993	no data	6.80	7.46	6306	782	660	397	6	2150	2980	236	0.14	105	< 1	< 0.1	< 0.001
0802	N	4/7/1993	no data	6.50	7.15	6486	732	644	421	4.1	2223	3023	237	0.5	93.9	< 1	< 0.1	< 0.001
0802	N	7/14/1993	no data	6.40	7.00	7413	861	720	393	4.6	2208	3183	241	0.32	78.3	< 1	< 0.1	< 0.001
0802	N	10/7/1993	no data	6.40	6.98	6416	659	700	354	4.2	1972	2935	218	0.39	110	< 1	< 0.1	< 0.001
0802	N	1/6/1994	no data	6.40	6.75	6614	749	641	389	4	2125	3228	224	1	80.3	< 1	< 0.1	< 0.001
0802	N	4/12/1994	no data	6.30	6.99	7568	731	706	367	4.7	2047	3596	184	1.24	96.2	< 1	< 0.1	< 0.001



**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
0801	N	1/7/2013	<0.001	<0.005	<0.01	<0.001	5.09	<0.1	<0.05	<0.001	<0.1	0.0399	0.62	1.0 U	0.62	0.03 U	0.6 U	0.4 U
0801	N	4/1/2013	<0.001	<0.005	<0.01	<0.001	5.46	<0.1	<0.05	<0.001	<0.1	0.0418	0.25	0.11 U	0.25	0.005 U	-0.3 U	0.6
0801	N	7/8/2013	<0.001	<0.005	<0.01	<0.001	6.16	<0.1	<0.05	<0.001	<0.1	0.0447	0.36	0.69 U	0.36	0.04 U	0.2 U	1.1
0801	N	9/30/2013	<0.001	<0.005	<0.01	<0.001	6.72	<0.1	<0.05	<0.001	<0.1	0.0491	0.6	0.18 U	0.6	0.06 U	-0.02 U	0.4 U
0801	N	1/6/2014	<0.001	<0.005	<0.01	<0.001	6.58	<0.1	<0.05	<0.001	<0.1	0.0447	0.51	1.2 U	0.51	0.03	0.6 U	0.8
0801	N	3/31/2014	<0.001	<0.005	<0.01	<0.001	6.82	<0.1	<0.05	<0.001	<0.1	0.0488	0.47	1.0 U	0.47	0.07 U	-0.9 U	0.6 U
0801	N	7/7/2014	<0.001	<0.005	<0.01	<0.001	7	<0.1	<0.05	<0.001	<0.1	0.034	0.38	1.0 U	0.38	0.02 U	0.5 U	0.3 U
0801	N	10/6/2014	<0.001	<0.005	<0.01	<0.001	6.6	<0.1	<0.05	<0.001	<0.1	0.0435	0.6	0.99 U	0.6	-0.03 U	0.6 U	0.5 U
0801	N	1/5/2015	<0.001	<0.005	<0.01	<0.001	6.52	<0.1	<0.05	<0.001	<0.1	0.0416	0.59	1.1 U	0.59	-0.01 U	1.7	1.4 U
0801	N	4/6/2015	<0.001	<0.005	<0.01	<0.001	5.02	<0.1	<0.05	<0.001	<0.1	0.0365	0.76	0.41 U	0.76	0.007 U	0.3 U	3.4
0801	N	7/6/2015	<0.001	<0.005	<0.01	<0.001	2.5	<0.1	<0.05	<0.001	<0.1	0.0397	0.3	0.75 U	0.3	0.06 U	0.1 U	1.5 U
0801	N	10/5/2015	<0.001	<0.005	<0.01	<0.001	6.52	<0.1	<0.05	<0.001	<0.1	0.0348	0.32	0.11 U	0.32	0.01 U	0.01 U	2.3
0801	N	1/4/2016	<0.001	<0.005	<0.01	0.003	5.09	<0.1	<0.05	<0.001	<0.1	0.0408	0.22	0.46 U	0.22	0.05 U	-0.1 U	1.3
0801	N	4/4/2016	<0.001	<0.005	<0.01	<0.001	5.55	<0.1	<0.05	<0.001	<0.1	0.0408	0.39	2	2.39	0.1	0.3 U	1 U
0801	N	7/11/2016	<0.001	<0.005	<0.01	<0.001	3.97	<0.1	<0.05	<0.001	<0.1	0.0341	0.41	2.5	2.91	0.005 U	0.6 U	0.6 U
0801	N	10/3/2016	<0.001	<0.005	<0.01	<0.001	3.54	<0.1	<0.05	<0.001	<0.1	0.0315	0.54	-4 U	0.54	0.006 U	0.1 U	5.9
0802	N	10/17/1989	< 0.05	< 0.01	0.01	< 0.05	0.2	< 0.01	< 0.05	< 0.001	< 0.1	0.154	0.6	< 1	0.6	< 0.2	< 1	1.5
0802	N	1/11/1990	< 0.05	< 0.01	0.04	< 0.05	0.21	< 0.1	< 0.05	< 0.001	< 0.1	0.164	0.3	< 1	0.3	1.3	< 1	1.8
0802	N	4/5/1990	< 0.05	< 0.01	0.02	< 0.05	0.21	< 0.1	< 0.05	< 0.001	< 0.1	0.128	0.7	< 1	0.7	< 0.2	1.2	1.1
0802	N	7/9/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.23	< 0.1	< 0.05	0.001	< 0.1	0.123	< 0.2	< 1	0	< 0.2	< 1	< 1
0802	N	10/3/1990	< 0.05	< 0.01	0.02	< 0.05	0.2	< 0.1	< 0.05	< 0.001	< 0.1	0.1812	0.4	1	1.4	< 0.2	1.4	< 1
0802	N	1/3/1991	< 0.01	0.01	0.01	< 0.05	0.23	< 0.1	0.05	0.001	< 0.1	0.0218	0.7	1.3	2	< 0.2	< 1	< 1
0802	N	4/11/1991	< 0.01	0.03	0.01	< 0.05	0.18	< 0.1	< 0.05	< 0.001	< 0.1	0.1568	< 0.2	< 1	0	< 0.2	2.1	< 1
0802	N	7/11/1991	< 0.01	< 0.01	0.01	< 0.05	0.24	< 0.1	< 0.05	0.001	< 0.1	0.1983	< 0.2	< 1	0	< 0.2	2.1	< 1
0802	N	10/23/1991	< 0.01	< 0.01	0.02	no data	0.28	< 0.1	< 0.05	< 0.001	< 0.1	0.22	< 0.2	2.1	2.1	< 0.2	< 1	< 1
0802	N	1/16/1992	< 0.01	< 0.01	0.02	< 0.05	0.35	< 0.1	< 0.05	< 0.001	< 0.1	0.144	0.5	< 1	0.5	< 0.2	< 1	< 1
0802	N	4/13/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.44	< 0.1	< 0.05	0.004	< 0.1	0.045	0.2	< 1	0.2	< 0.2	2.7	< 1
0802	N	7/8/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.4	< 0.1	< 0.05	0.001	< 0.1	0.14	1.2	4.4	5.6	< 0.2	< 1	1.5
0802	N	10/8/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.4	< 0.1	< 0.05	0.002	< 0.1	0.124	0.8	< 1	0.8	< 0.2	< 1	< 1
0802	N	1/7/1993	< 0.01	< 0.01	0.01	< 0.05	0.44	< 0.1	< 0.05	0.006	< 0.1	0.127	< 0.2	< 1	0	< 0.2	< 1	< 1
0802	N	4/7/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.57	< 0.1	< 0.05	0.001	< 0.1	0.249	< 0.2	< 1	0	< 0.2	< 1	< 1
0802	N	7/14/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.53	< 0.1	< 0.05	0.003	< 0.1	0.154	0.5	< 1	0.5	< 0.2	< 1	< 1
0802	N	10/7/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.52	< 0.1	< 0.05	0.004	< 0.1	0.143	0.7	4.1	4.8	< 0.2	1.6	< 1
0802	N	1/6/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.55	< 0.1	< 0.05	< 0.001	< 0.1	0.148	0.5	1.6	2.1	< 0.2	< 1	3.9
0802	N	4/12/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.72	< 0.1	< 0.05	0.001	< 0.1	0.176	< 0.2	< 1	0	< 0.2	< 1	< 1

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Cl	NH4 as N	NO3 as N	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
0802	N	7/27/1994	no data	6.40	7.35	7680	866	715	355	5.3	2237	3484	217	1.03	106	< 1	< 0.1	< 0.001
0802	N	10/5/1994	no data	6.30	7.45	7578	790	826	389	5.8	2288	3277	225	1.47	97.3	< 1	< 0.1	< 0.001
0802	N	1/4/1995	no data	6.60	7.29	7845	853	756	376	6.5	2323	3436	240	1.66	86.1	< 1	< 0.1	< 0.001
0802	N	4/6/1995	no data	6.50	6.75	7761	786	714	380	5.2	2269	3551	268	1.82	93	< 1	< 0.1	< 0.001
0802	N	7/6/1995	no data	6.40	7.43	7216	750	735	375	5.8	2257	3310	236	1.83	84.6	< 1	< 0.1	< 0.001
0802	N	10/4/1995	no data	6.50	7.56	7003	738	754	369	5.3	2208	3301	190	2.23	88.4	< 1	< 0.1	< 0.001
0802	N	1/3/1996	no data	6.40	7.92	7477	817	805	361	5.5	2166	3530	222	1.84	85.8	< 1	< 0.1	< 0.001
0802	N	4/2/1996	no data	6.40	7.37	7595	796	845	380	11.4	2250	3560	227	1.88	88.4	< 1	< 0.1	< 0.001
0802	N	7/17/1996	no data	6.30	6.96	7488	701	723	366	6	2196	3164	236	1.6	91.2	1.21	< 0.1	< 0.001
0802	N	10/8/1996	no data	6.70	7.25	7600	756	778	357	6.4	2200	3291	220	1.7	76.5	< 1	< 0.1	< 0.001
0802	N	1/28/1997	no data	6.50	7.84	7350	745	720	301	6	2142	3215	317	1.23	79.1	< 1	< 0.1	< 0.001
0802	N	4/8/1997	no data	6.40	7.44	7270	756	740	336	6.6	2090	3190	240	1.53	80.1	< 1	< 0.1	< 0.001
0802	N	7/8/1997	no data	6.70	7.38	7430	786	759	335	6.7	2140	2930	236	1.37	82	< 1	< 0.1	< 0.001
0802	N	10/8/1997	no data	6.50	7.45	7330	789	750	336	6.35	2160	3050	252	1.38	82.8	< 1	< 0.1	< 0.001
0802	N	1/20/1998	no data	6.20	7.72	7320	766	721	356	7.6	2120	3350	242	1.49	83.3	< 1	< 0.1	< 0.001
0802	N	4/7/1998	no data	6.60	7.30	7310	776	723	340	6.7	2120	3010	212	1.2	90.8	1.2	< 0.1	< 0.001
0802	N	7/7/1998	no data	6.80	7.42	7350	758	726	348	6.6	2180	2900	224	1.26	86.6	1	< 0.1	< 0.001
0802	N	10/6/1998	no data	6.43	7.64	7340	796	757	361	7.2	2110	3230	210	1.13	85.4	1.5	< 0.1	< 0.001
0802	N	1/12/1999	no data	6.60	7.55	7190	734	686	298	7.4	2110	3260	207	1.28	88.1	< 1	< 0.1	< 0.001
0802	N	4/13/1999	no data	6.40	7.65	7320	783	732	323	6.8	2090	3060	205	1.23	86.2	1.5	< 0.1	< 0.001
0802	N	7/20/1999	no data	6.50	7.58	7350	760	743	370	9.8	2120	3160	207	1.18	76.2	1.4	< 0.1	< 0.001
0802	N	10/12/1999	no data	6.62	7.66	7360	703	695	311	6.4	2120	2920	194	1.09	76.9	1.4	< 0.1	< 0.001
0802	N	1/11/2000	no data	6.50	7.73	7350	732	734	298	9.5	2100	3120	195	1.06	119	1.6	0.12	< 0.001
0802	N	5/2/2000	no data	6.70	7.55	7170	651	643	290	9.1	2047	2920	174	1.24	81.2	1.5	0.1	< 0.001
0802	N	7/12/2000	6841.60	6.55	7.33	7030	699	700	297	12.1	2020	2870	174	0.91	42	< 1	< 0.1	< 0.001
0802	N	10/4/2000	6842.00	6.37	7.01	7250	732	758	327	9	2050	3170	201	1.06	79.7	2	< 0.1	0.001
0802	N	1/8/2001	6857.50	6.43	7.69	7360	751	758	300	8.2	2180	3190	203	1.2	89.3	2.2	< 0.1	< 0.001
0802	N	2/5/2001	6860.50	6.49	7.10	6910	739	834	348	8.2	2050	3160	200	1.02	93.8	2.6	< 0.1	< 0.001
0802	N	3/5/2001	6861.00	6.64	7.17	6120	737	661	370	8	2000	2850	158	0.12	103	1.5	< 0.1	< 0.001
0802	N	4/9/2001	6861.60	6.86	7.24	6400	847	671	263	6.6	2050	2840	180	0.06	111	< 1	< 0.1	< 0.001
0802	N	5/7/2001	6861.65	6.42	7.23	6660	737	608	257	6	2020	2420	193	0.08	102	< 1	< 0.1	< 0.001
0802	N	6/4/2001	6861.95	6.46	7.16	6200	729	591	231	6.3	1960	2520	190	0.1	101	1.3	< 0.1	0.001
0802	N	7/9/2001	6862.10	7.07	7.06	6580	794	651	274	5.4	2060	2520	216	0.07	114	1	< 0.1	< 0.001
0802	N	8/6/2001	6862.08	6.43	7.20	6630	740	620	260	8	2050	2500	240	< 0.05	97.5	< 1	< 0.1	< 0.001
0802	N	9/10/2001	6862.30	6.37	6.90	6400	770	600	284	5.6	2100	2400	216	< 0.05	100	< 1	< 0.1	< 0.001

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
0802	N	7/27/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.57	< 0.1	< 0.05	0.003	< 0.1	0.165	0.8	< 1	0.8	< 0.2	< 1	< 1
0802	N	10/5/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.57	< 0.1	< 0.05	< 0.001	< 0.1	0.153	0.8	< 1	0.8	< 0.2	< 1	< 1
0802	N	1/4/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.78	< 0.1	< 0.05	< 0.001	< 0.1	0.142	0.4	2.2	2.6	< 0.2	< 1	3.9
0802	N	4/6/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.76	< 0.1	< 0.05	< 0.001	< 0.1	0.159	< 0.2	< 1	0	< 0.2	2.6	< 1
0802	N	7/6/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.69	< 0.1	< 0.05	0.002	< 0.1	0.1883	0.3	< 1	0.3	< 0.2	< 1	1.5
0802	N	10/4/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.73	< 0.1	< 0.05	0.024	< 0.1	0.157	0.3	< 1	0.3	< 0.2	< 1	1.4
0802	N	1/3/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.09	< 0.1	< 0.05	0.022	< 0.1	0.168	0.4	< 1	0.4	< 0.2	3.6	< 1
0802	N	4/2/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.8	< 0.1	< 0.05	< 0.001	< 0.1	0.167	< 0.2	< 1	0	< 0.2	< 1	1.2
0802	N	7/17/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.81	< 0.1	< 0.05	< 0.001	< 0.1	0.086	< 0.2	< 1	0	< 0.2	< 1	< 1
0802	N	10/8/1996	< 0.01	< 0.01	< 0.01	< 0.05	1.06	< 0.1	< 0.05	< 0.001	< 0.1	0.171	0.5	< 1	0.5	< 0.2	< 1	< 1
0802	N	1/28/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.93	< 0.1	< 0.05	< 0.001	< 0.1	0.171	< 0.2	< 1	0	< 0.2	< 1	< 1
0802	N	4/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.98	< 0.1	< 0.05	0.021	< 0.1	0.181	1.4	< 1	1.4	< 0.2	< 1	1.9
0802	N	7/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.97	< 0.1	< 0.05	< 0.001	< 0.1	0.018	0.6	< 1	0.6	< 0.2	< 1	< 1
0802	N	10/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	1.26	< 0.1	< 0.05	< 0.001	< 0.1	0.176	< 0.2	< 1	0	< 0.2	< 1	< 1
0802	N	1/20/1998	< 0.01	< 0.005	< 0.01	< 0.05	1.25	< 0.1	< 0.05	< 0.001	< 0.1	0.198	< 0.2	< 1	0	< 0.2	< 1	< 1
0802	N	4/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	1.18	< 0.1	< 0.05	< 0.001	< 0.1	0.186	< 0.2	< 1	0	< 0.2	< 1	< 1
0802	N	7/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	1.19	< 0.1	< 0.05	< 0.001	< 0.1	0.208	0.6	< 1	0.6	< 0.2	< 1	< 1
0802	N	10/6/1998	< 0.01	< 0.005	< 0.01	< 0.05	1.2	< 0.1	< 0.05	0.001	< 0.1	0.207	< 0.2	< 1	0	< 0.2	< 1	< 1
0802	N	1/12/1999	< 0.01	< 0.005	< 0.01	< 0.05	1.29	< 0.1	< 0.05	< 0.001	< 0.1	0.211	< 0.2	< 1	0	< 0.2	< 1	< 1
0802	N	4/13/1999	< 0.01	< 0.005	< 0.01	< 0.05	1.48	< 0.1	< 0.05	< 0.001	< 0.1	0.19	< 0.2	< 1	0	< 0.2	< 1	< 1
0802	N	7/20/1999	< 0.01	< 0.005	< 0.01	< 0.05	1.13	< 0.1	< 0.05	< 0.001	< 0.1	0.196	0.5	< 1	0.5	< 0.2	< 1	1
0802	N	10/12/1999	< 0.01	< 0.005	< 0.01	< 0.05	1.37	< 0.1	< 0.05	< 0.001	< 0.1	0.203	< 0.2	< 1	0	< 0.2	< 1	< 1
0802	N	1/11/2000	< 0.01	< 0.005	< 0.01	< 0.05	1.83	< 0.1	0.05	0.001	< 0.1	0.18	< 0.2	< 1	0	< 0.2	< 1	< 1
0802	N	5/2/2000	< 0.01	< 0.005	< 0.01	< 0.05	2.27	< 0.1	< 0.05	0.001	< 0.1	0.193	< 0.2	2.1	2.1	< 0.2	< 1	< 1
0802	N	7/12/2000	< 0.01	< 0.005	< 0.01	< 0.05	1.52	< 0.1	< 0.05	< 0.001	< 0.1	0.098	< 0.2	< 1	0	< 0.2	< 1	< 1
0802	N	10/4/2000	< 0.01	< 0.005	< 0.01	< 0.05	1.97	< 0.1	< 0.05	< 0.001	< 0.1	0.168	< 0.2	< 1	0	< 0.2	< 1	< 1
0802	N	1/8/2001	< 0.01	< 0.005	0.01	< 0.05	2.73	< 0.1	< 0.05	0.004	< 0.1	0.193	< 0.2	3.6	3.6	< 0.2	< 1	< 1
0802	N	2/5/2001	< 0.01	< 0.005	0.01	< 0.05	3.34	< 0.1	< 0.05	0.001	< 0.1	0.159	0.4	< 1	0.4	< 0.2	< 1	< 1
0802	N	3/5/2001	< 0.01	< 0.005	0.01	< 0.05	0.96	< 0.1	< 0.05	0.001	< 0.1	0.165	< 0.2	2.9	2.9	< 0.2	< 1	< 1
0802	N	4/9/2001	< 0.01	< 0.005	0.01	< 0.05	0.64	< 0.1	< 0.05	< 0.001	< 0.1	0.17	< 0.2	< 1	0	< 0.2	< 1	< 1
0802	N	5/7/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.6	< 0.1	< 0.05	0.001	< 0.1	0.181	< 0.2	< 1	0	< 0.2	< 1	< 1
0802	N	6/4/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.62	< 0.1	< 0.05	0.011	< 0.1	0.214	< 0.2	< 1	0	< 0.2	< 1	< 1
0802	N	7/9/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.6	< 0.1	< 0.05	0.001	< 0.1	0.221	< 0.2	< 1	0	< 0.2	< 1	< 1
0802	N	8/6/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.65	< 0.1	< 0.05	< 0.001	< 0.1	0.23	< 0.2	< 1	0	< 0.2	< 1	< 1
0802	N	9/10/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.68	< 0.1	< 0.05	< 0.001	< 0.1	0.25	0.3	2.7	3	< 0.2	< 1	< 1



TABLE A.1

Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO <sub>3</sub> mg/l	SO <sub>4</sub> mg/l	Chl mg/l	NH <sub>4</sub> as N mg/l	NO <sub>3</sub> as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
0802	N	10/1/2001	6862.35	6.44	7.40	6620	730	590	290	6.4	2080	2400	225	0.06	97.5	< 1	< 0.1	< 0.001
0802	N	11/5/2001	6862.55	6.44	7.50	6660	786	618	304	6.3	2050	2640	227	< 0.05	114	< 1	< 0.1	< 0.001
0802	N	12/3/2001	6862.65	6.56	7.50	6710	750	587	256	5.9	2060	2450	214	0.09	121	< 1	< 0.1	< 0.001
0802	N	1/7/2002	6862.70	6.56	7.10	6750	874	646	226	8.2	2030	2850	232	0.05	98	1.2	< 0.1	< 0.001
0802	N	2/4/2002	6862.80	6.50	7.20	6820	849	626	284	7	2070	2750	239	0.13	100	1.1	< 0.1	< 0.001
0802	N	3/4/2002	6862.75	6.48	7.10	6800	806	633	323	6	2030	2880	217	0.08	108	1.3	< 0.1	< 0.001
0802	N	4/1/2002	6862.98	6.38	7.08	6900	840	648	326	7.7	2080	2980	212	0.06	98.1	1.6	< 0.1	< 0.001
0802	N	5/6/2002	6862.02	6.36	7.24	7050	815	643	302	7.8	2090	2790	215	0.05	107	1.9	< 0.1	< 0.001
0802	N	6/3/2002	6863.05	6.34	7.94	7430	859	705	299	6.6	2160	3090	196	0.08	103	3	< 0.1	< 0.001
0802	N	7/8/2002	6862.81	6.41	7.84	7470	830	720	265	7.7	2190	3150	227	0.2	99.1	2.6	< 0.1	< 0.001
0802	N	10/7/2002	6862.55	6.33	7.99	5680	774	710	317	6.2	2140	3060	187	0.08	95.2	3.5	< 0.1	< 0.001
0802	N	1/6/2003	6861.34	6.64	7.52	7840	843	873	393	12.5	2310	3620	228	0.16	88	4.1	< 0.1	< 0.001
0802	N	4/7/2003	6861.54	6.43	7.34	7890	759	810	335	9.2	2300	3050	210	0.14	103	5	< 0.1	< 0.001
0802	N	7/7/2003	6861.49	6.27	7.90	8150	712	792	327	9.4	2300	3260	195	0.11	97	6.6	< 0.1	< 0.001
0802	N	10/6/2003	6861.20	6.30	7.45	8140	765	927	376	7.1	2440	3710	211	0.24	88	6.2	< 0.1	< 0.001
0802	N	1/5/2004	6861.21	6.45	7.92	8160	726	925	326	8.7	2440	3670	257	0.12	95.1 D	7.2	0.2	< 0.001
0802	N	4/5/2004	6861.39	6.65	6.78	8310	693	931	368	7.8	2400	3580 D	209	0.09	96.2 D	7.4	< 0.1	< 0.001
0802	N	7/12/2004	6861.15	6.28	6.90	8390	695	910	403	8.2	2370	3510 D	214	0.13	93.2 D	6.6	< 0.1	< 0.001
0802	N	10/4/2004	6860.76	6.33	7.04	8200	666 D	955 D	397	6.8	2350	3580 D	215	< 0.05	83 D	8.4	< 0.1	< 0.001
0802	N	1/3/2005	6860.89	6.57	6.93	8490	687 D	998 D	374	7.4	2370	3620 D	202	0.12	100 D	7.9	< 0.1	< 0.001
0802	N	4/4/2005	6861.00	6.52	7.11	8100	669	957	365	6.1	2370	3710	190	< 0.05	83	9.6	< 0.1	< 0.001
0802	N	7/11/2005	6860.64	6.43	7.25	8210	676 D	1010 D	363	6.6	2370	3780 D	225	0.09	93 D	12.3	< 0.1	< 0.001
0802	N	10/3/2005	6860.41	6.44	7.17	8290	672 D	1050 D	366	6.8	2280	3620 D	199	0.09	90 D	10.6	< 0.1	< 0.001
0802	N	1/9/2006	6860.26	6.56	7.29	8250	620 D	954 D	310	7.1	2270	3560 D	179	< 0.05	102 D	10.9	< 0.1	< 0.001
0802	N	4/3/2006	6860.24	6.40	7.06	8210	681 D	1030 D	320	6.8	2290	3700 D	192	0.16	99 D	9.8	< 0.1	< 0.001
0802	N	7/17/2006	6860.04	6.35	6.95	8210	648 D	1080 D	388	7.8	2250	4330 D	215	0.06	100 D	11.6	< 0.1	< 0.001
0802	N	10/2/2006	6859.94	6.44	6.72	8050	657 D	988 D	354	7.4	2320	3750 D	160	0.13	108 D	9.6	0.2	< 0.001
0802	N	1/8/2007	6859.87	6.55	6.72	8250	621 D	936 D	327	8.1	2150	3610 D	189	1.68	102 D	11.2	< 0.1	< 0.001
0802	N	4/9/2007	6860.04	6.58	6.75	7690	624 D	946 D	326	9.2	2180	3610 D	197	< 0.05	103 D	15.5	< 0.1	< 0.001
0802	N	7/9/2007	6859.74	6.39	6.79	8050	651 D	1010 D	375	7	2280	3900 D	169	0.06	106 D	11.9	< 0.1	0.008
0802	N	10/1/2007	6859.48	6.49	6.57	8080	593 D	923 D	348 D	7	2260	3490 D	209 D	< 0.05	101 D	13.5	< 0.1	< 0.001
0802	N	1/14/2008	6859.39	6.47	6.60	8170	622 D	961 D	344 D	7.6	2160	3530 D	219 D	< 0.05	97 D	14	< 0.1	< 0.001
0802	N	4/7/2008	6859.69	6.41	6.77	7710	638 D	1010 D	386 D	8.1 D	2040	3980 D	192	< 0.1	158 D	13.7	< 0.1	< 0.001
0802	N	7/7/2008	6859.34	6.25	6.72 H	8000 H	640	986	336 D	6	2150	3800 D	195	< 0.05	105 D	15.2	< 0.1	< 0.003
0802	N	10/6/2008	6858.94	6.32	6.76	8140	619	950	342 D	6	2100	3980 D	181	0.2	148 D	13.8	< 0.1	< 0.001

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
0802	N	10/1/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.57	< 0.1	< 0.05	< 0.001	< 0.1	0.244	0.6	1.2	1.8	< 0.2	< 1	< 1
0802	N	11/5/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.62	< 0.1	< 0.05	< 0.001	< 0.1	0.219	0.3	< 1	0.3	< 0.2	< 1	< 1
0802	N	12/3/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.55	< 0.1	< 0.05	< 0.001	< 0.1	0.222	< 0.2	1.6	1.6	< 0.2	< 1	< 1
0802	N	1/7/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.58	< 0.1	< 0.05	< 0.001	< 0.1	0.225	0.4	< 1	0.4	< 0.2	< 1	< 1
0802	N	2/4/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.63	< 0.1	< 0.05	< 0.001	< 0.1	0.222	< 0.2	< 1	0	< 0.2	< 1	< 1
0802	N	3/4/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.71	< 0.1	< 0.05	< 0.001	< 0.1	0.249	< 0.2	1.7	1.7	< 0.2	< 1	< 1
0802	N	4/1/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.7	< 0.1	< 0.05	< 0.001	< 0.1	0.223	< 0.2	< 1	0	< 0.2	< 1	< 1
0802	N	5/6/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.7	< 0.1	< 0.05	< 0.001	< 0.1	0.227	< 0.2	< 1	0	< 0.2	< 1	< 1
0802	N	6/3/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.53	< 0.1	< 0.05	< 0.001	< 0.1	0.199	< 0.2	< 1	0	< 0.2	< 1	< 1
0802	N	7/8/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.55	< 0.1	< 0.05	< 0.001	< 0.1	0.248	0.5	< 1	0.5	< 0.2	< 1	< 1
0802	N	10/7/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.65	< 0.1	< 0.05	< 0.001	< 0.1	0.205	< 0.2	< 1	0	< 0.2	< 1	< 1
0802	N	1/6/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.64	< 0.1	< 0.05	< 0.001	< 0.1	0.218	< 0.2	< 1	0	< 0.2	< 1	< 1.0
0802	N	4/7/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.63	< 0.1	< 0.05	< 0.001	< 0.1	0.24	0.4	< 1	0.4	< 0.2	< 1	< 1.0
0802	N	7/7/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.7	< 0.1	< 0.05	< 0.001	< 0.1	0.223	< 0.2	< 1	0	< 0.2	< 1	< 1.0
0802	N	10/6/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.77	< 0.1	< 0.05	< 0.001	< 0.1	0.254	0.4	< 1	0.4	< 0.2	< 1	< 1.0
0802	N	1/5/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.79	< 0.1	< 0.05	< 0.001	< 0.1	0.209 D	< 0.2	2.4	2.4	< 0.2	< 1.0	< 1.0
0802	N	4/5/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.65	< 0.1	< 0.05	0.002	< 0.1	0.207 D	< 0.2	< 1	0	< 0.2	< 1	< 1
0802	N	7/12/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.83	< 0.1	< 0.05	< 0.001	< 0.1	0.221 D	< 0.2	2.2	2.2	< 0.2	< 1.0	< 1.0
0802	N	10/4/2004	< 0.01	0.006	< 0.01	< 0.05	0.8	< 0.1	< 0.05	0.001	< 0.1	0.194 D	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
0802	N	1/3/2005	< 0.01	0.012	< 0.01	< 0.05	0.74	< 0.1	< 0.05	< 0.001	< 0.1	0.194 D	0.8	< 1.0	0.8	< 0.2	< 1.0	2.6
0802	N	4/4/2005	< 0.01	< 0.005	< 0.01	< 0.05	0.72	< 0.1	< 0.05	< 0.001	< 0.1	0.18	0.7	< 1.0	0.7	< 0.2	< 1.0	< 1.0
0802	N	7/11/2005	< 0.01	< 0.005	< 0.01	< 0.05	0.79	< 0.1	< 0.05	< 0.001	< 0.1	0.187 D	0.4	< 1.0	0.4	< 0.2	< 1.0	< 1.0
0802	N	10/3/2005	< 0.01	< 0.005	< 0.01	< 0.05	0.82	< 0.1	< 0.05	< 0.001	< 0.1	0.181 D	< 0.2	< 1.0	0	< 0.2	< 1.0	1.2
0802	N	1/9/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.84	< 0.1	< 0.05	< 0.001	< 0.1	0.165	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
0802	N	4/3/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.8	< 0.1	< 0.05	0.002	< 0.1	0.152 D	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
0802	N	7/17/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.84	< 0.1	< 0.05	< 0.001	< 0.1	0.167	0.3	< 1.0	0.3	< 0.2	< 1.0	< 1.0
0802	N	10/2/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.82	< 0.1	< 0.05	< 0.001	< 0.1	0.146 D	0.4	< 1	0.4	< 0.2	< 1	< 1
0802	N	1/8/2007	< 0.01	< 0.005	< 0.01	< 0.05	0.81	< 0.1	< 0.05	< 0.001	< 0.1	0.146	0.3	< 1	0.3	< 0.2	< 1	< 1
0802	N	4/9/2007	< 0.01	< 0.005	< 0.01	< 0.05	0.87	< 0.1	< 0.05	< 0.001	< 0.1	0.148 D	< 0.2	< 1	0	< 0.2	< 1	< 1
0802	N	7/9/2007	< 0.01	< 0.005	< 0.01	< 0.05	0.79	< 0.1	< 0.05	< 0.001	< 0.1	0.153	< 0.2	< 1	0	< 0.2	< 1	< 1
0802	N	10/1/2007	< 0.01	< 0.005	< 0.01	< 0.05	0.91	< 0.1	< 0.05	< 0.001	< 0.1	0.152	< 0.2	< 1	0	< 0.2	< 1	1.1
0802	N	1/14/2008	< 0.01	< 0.005	< 0.01	< 0.05	0.8	< 0.1	< 0.05	< 0.001	< 0.1	0.128 D	< 0.2	< 1	0	< 0.2	< 1	< 1
0802	N	4/7/2008	< 0.01	< 0.005	< 0.01	< 0.05	0.9	< 0.1	< 0.05	< 0.001	< 0.1	0.143	0.1 U	0.3 U	0.4	-1.8 U	0 U	1 U
0802	N	7/7/2008	< 0.01	< 0.005	< 0.01	< 0.05	0.9	< 0.1	< 0.05	< 0.001	< 0.1	0.132	-0.02 U	1.2	1.18	1	6.6 U	1.7
0802	N	10/6/2008	< 0.01	< 0.005	< 0.01	< 0.05	0.71	< 0.1	< 0.05	< 0.001	< 0.1	0.132	0.16 U	0.44 U	0.6	0 U	-0.5 U	1.9

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
0802	N	1/12/2009	6858.89	6.29	6.66	8300	619	974	365	6	2120	3290 D	183	<0.05	151 D	16.7	<0.1	<0.001
0802	N	4/6/2009	6858.79	6.40	6.53	7830	581 D	951 D	371 D	6	2170	3900 D	191	<0.05	104 D	16.5	<0.1	<0.001
0802	N	7/6/2009	6858.69	6.30	6.60	8100 H	654 D	975	359 D	6	2110	3840 D	208	<0.05	98 D	15.5	<0.1	<0.001
0802	N	10/5/2009	6858.24	6.51	7.13	7180	593 D	941	345 D	6	2160	3700 D	208	0.07	105 D	17.2	<0.1	<0.001
0802	N	1/4/2010	6857.99	6.46	6.75	8290 D	617 D	939	352 D	6	2200	4260 D	194	<0.05	110 D	15.7	<0.1	<0.001
0802	N	4/5/2010	6858.09	6.45	6.59	8100 DH	679	1070	426 D	7	2280	3920 D	191	<0.05	106 D	16.8	<0.1	<0.001
0802	N	7/12/2010	6857.84	6.37	6.88	8090 D	654 D	978	366 D	6	2210	3720 D	183 D	<0.05	103 D	17.8	<0.1	<0.001
0802	N	10/4/2010	6857.54	6.46	7.31	8080	604	926	366	6	2200	3780 D	174 D	<0.05	97 D	18	<0.1	<0.001
0802	N	1/3/2011	6857.44	6.39	7.03	7550 D	643 D	956	360 D	6	2080	3710 D	193 D	<0.05	92 D	15.9	<0.1	<0.001
0802	N	4/5/2011	6857.32	6.53	6.69	7840 D	616	911	385 D	6	2040	3690 D	189 D	0.39 DH	108 D	19	<0.1	<0.001
0802	N	7/11/2011	6857.14	6.38	6.97	7780 D	632	926	378 D	6	2020	3560 D	184 D	<0.1	113 D	15.9	<0.1	<0.001
0802	N	10/3/2011	6856.82	6.49	7.52	7470 D	618	892	362 D	6	1900	3560 D	185 D	<0.1	107 D	17.2	0.2	0.002
0802	N	1/2/2012	6856.69	6.58	6.75 H	7500 D	634	907	366	7	1840	3410 D	185 D	<0.05	114 D	18.2	<0.1	<0.001
0802	N	4/2/2012	6856.74	6.69	6.56 H	7540 D	636	858	339	6	1990	3490 D	202 D	<0.05	116 D	16.8	<0.1	<0.01
0802	N	7/9/2012	6856.43	6.49	6.59 H	7800	609	930	347	5	1970	3260 D	175 D	0.27	113 D	13.4	<0.1	<0.001
0802	N	10/8/2012	6856.14	6.55	6.58 H	7130	642	849	350 D	6	2010	3420 D	193 D	<0.05	110 D	12.6	<0.1	<0.001
0802	N	1/7/2013	6856.12	6.42	6.57 H	6870	629	889	365 D	6	1980	3350 D	177 D	<0.05	112 D	12.6	<0.1	<0.001
0802	N	4/1/2013	6855.95	6.56	6.61 H	6920	620	865	349	6	2020	3190 D	185 D	<0.05	115 D	13.8	<0.1	<0.001
0802	N	7/8/2013	6855.72	6.47	6.68 H	7170	594	808	322	5	2000	3120 D	169 D	<0.05	105 D	11.1	<0.1	<0.001
0802	N	9/30/2013	6855.69	6.47	6.58 H	7050 H	604	807	329	5	2050	3070 D	177 D	<0.05	110 D	10.6	<0.1	<0.001
0802	N	1/6/2014	6855.53	6.70	6.58	6540	600	769	322	5	2040	3010	180	<0.05	101	10.4	<0.1	<0.001
0802	N	3/31/2014	6855.47	6.67	6.52 H	6700	584	752	338 D	5	2040	2990 D	185 D	<0.05	102 D	10.2	<0.1	<0.001
0802	N	7/7/2014	6855.29	6.58	6.63 H	6770	630	755	320 D	5	2080	3100 D	184 D	<0.05	96 D	11.6	<0.1	<0.001
0802	N	10/6/2014	6855.09	6.59	6.58 H	6850	626	777	334	5	2070	3050 D	184 D	<0.05	110 D	7.96	<0.1	<0.001
0802	N	1/5/2015	6855.00	6.73	6.69 H	7000	618	767	332	5	2010	2910 D	171 D	0.1	96 D	8.88	<0.1	<0.001
0802	N	4/6/2015	6854.87	6.56	6.6 H	6870	642	758	324	5	2130	3050 D	203 D	<0.05	84 D	9.96	<0.1	<0.001
0802	N	7/6/2015	6854.67	6.41	6.53 H	6980	614	764	335	6	2180	3160 D	188 D	<0.05	102 D	7.84	<0.1	<0.001
0802	N	10/5/2015	6854.45	6.58	6.57 H	6840	621	738	316	5	2000	3140 D	222 D	<0.05	81 D	7.48	<0.1	<0.001
0802	N	1/4/2016	6854.31	6.67	6.53 H	6740	644	751	327	5	2180	3090 D	191 D	<0.05	83 D	6.4	<0.1	<0.001
0802	N	4/4/2016	6854.12	6.49	6.68 H	6880	640	747	340	5	2080	3050 D	185 D	<0.05	82 D	5.68	<0.1	<0.001
0802	N	7/11/2016	6853.99	6.53	6.56 H	6860 D	647	759	330	5	2130	2930 DH	202 D	<0.05	86 D	5.2	<0.1	<0.001
0802	N	10/3/2016	6853.78	6.63	6.57 H	6990 H	641	761	337	5	1780	3470 D	234 D	<0.05	76 DH	3.9	<0.1	<0.001
0803	N	10/17/1989	6880.40	6.70	6.91	4852	722	337	208	12.2	1379	2258	108	1.75	34	< 1	< 0.1	< 0.001
0803	N	1/11/1990	no data	6.60	7.16	5212	769	371	241	9.75	1647	2387	133	1.29	36	< 1	< 0.1	< 0.001
0803	N	4/5/1990	no data	6.70	7.02	5394	822	410	245	9.4	1696	2321	138	1.35	42	< 1	< 0.1	< 0.001



**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha	
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l	pci/l
			NRC Standard		0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9
EPA Standard		0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	NA	8.2	4.5	5.9	15	
0802	N	1/12/2009	<0.01	<0.005	<0.01	<0.05	1.05	<0.1	<0.05	<0.001	<0.1	0.129	0.14 U	1.2 U	1.34	-0.1 U	-2 U	1.3	
0802	N	4/6/2009	<0.01	<0.005	<0.01	<0.05	1.04	<0.1	<0.05	0.001	<0.1	0.127	0.34	0.71 U	1.05	0.5 U	-1 U	0.2 U	
0802	N	7/6/2009	<0.01	<0.005	<0.01	<0.05	1.19	<0.1	<0.05	<0.001	<0.1	0.136	0.31	0.74 U	1.05	0.07 U	-2 U	1.1	
0802	N	10/5/2009	<0.01	<0.005	<0.01	<0.05	1.01	<0.1	<0.05	<0.001	<0.1	0.143	0.67	0.78 U	1.45	0.0004 U	0.2 U	0.6 U	
0802	N	1/4/2010	<0.01	<0.005	<0.01	<0.05	1.05	<0.1	<0.05	<0.001	<0.1	0.123	0.11 U	1.3 U	1.41	0.09 U	0.1 U	0.5 U	
0802	N	4/5/2010	<0.01	<0.005	<0.01	<0.05	1.05	<0.1	<0.05	<0.001	<0.1	0.145	0.16	1.3	1.46	0.04 U	3.6	0.1 U	
0802	N	7/12/2010	<0.01	<0.005	<0.01	<0.05	1.19	<0.1	<0.05	<0.001	<0.1	0.15	0.51	0.32 U	0.83	0.07 U	0.2 U	0.3 U	
0802	N	10/4/2010	<0.01	<0.005	<0.01	<0.05	1.27	<0.1	<0.05	<0.001	<0.1	0.138	0.18	0.89 U	1.07	0.06 U	0.8 U	0.2 U	
0802	N	1/3/2011	<0.01	<0.005	<0.01	<0.05	1.15	<0.1	<0.05	<0.001	<0.1	0.136	0.07 U	1.5	1.57	-0.02 U	0.7 U	0.6 U	
0802	N	4/5/2011	<0.01	<0.005	<0.01	<0.05	1.18	<0.1	<0.05	<0.001	<0.1	0.122	0.03 U	0.79 U	0.82	0.07 U	0.4 U	0.2 U	
0802	N	7/11/2011	<0.01	<0.005	<0.01	<0.05	1.2	<0.1	<0.05	<0.001	<0.1	0.132	0.06 U	1.6	1.66	0.07 U	-0.04 U	0.9 U	
0802	N	10/3/2011	<0.01	<0.005	<0.01	<0.05	1.18	<0.1	<0.05	<0.001	<0.1	0.119	0.14 U	0.50 U	0.64	-0.007 U	-0.2 U	0.4 U	
0802	N	1/2/2012	<0.01	<0.005	<0.01	<0.05	1.2	<0.1	<0.05	<0.001	<0.1	0.123	0.33	0.48 U	1.29	-0.004 U	0.0 U	0.6	
0802	N	4/2/2012	<0.01	<0.005	<0.01	<0.05	1.17	<0.1	<0.05	<0.001	<0.1	0.137	0.15	0.43 U	1.01	0.03 U	-0.4 U	-0.2 U	
0802	N	7/9/2012	<0.001	<0.005	<0.01	0.002	1.22	<0.1	<0.05	<0.001	<0.1	0.119	0.35	-0.02 U	0.35	0.0007 U	-0.06 U	0.3	
0802	N	10/8/2012	<0.001	<0.005	<0.01	0.001	1.24	<0.1	<0.05	<0.001	<0.1	0.121	0.19	1.2 U	0.19	-0.02 U	0.008 U	0.8	
0802	N	1/7/2013	<0.001	<0.005	<0.01	0.001	1.11	<0.1	<0.05	<0.001	<0.1	0.125	0.48	1.2	1.68	0.02 U	0.2 U	0.4 U	
0802	N	4/1/2013	<0.001	<0.005	<0.01	0.001	1.23	<0.1	<0.05	<0.001	<0.1	0.132	0.17	0.61 U	0.17	0.07 U	0.2 U	0.8	
0802	N	7/8/2013	<0.001	<0.005	<0.01	<0.001	1.27	<0.1	<0.05	<0.001	<0.1	0.135	0.09 U	0.88 U	0	0.01 U	0.1 U	0.6	
0802	N	9/30/2013	<0.001	<0.005	<0.01	<0.001	1.21	<0.1	<0.05	<0.001	<0.1	0.14	0.28	0.25 U	0.28	0.03 U	0.3 U	0.2 U	
0802	N	1/6/2014	<0.001	<0.005	<0.01	<0.001	1.25	<0.1	<0.05	<0.001	<0.1	0.129	0.47	1.1 U	0.47	-0.02 U	0.3 U	0.4 U	
0802	N	3/31/2014	<0.001	<0.005	<0.01	0.001	1.24	<0.1	<0.05	<0.001	<0.1	0.134	0.38	2	2.38	-0.02 U	-0.6 U	1.2	
0802	N	7/7/2014	<0.001	<0.005	<0.01	<0.001	1.19	<0.1	<0.05	<0.001	<0.1	0.104	0.11 U	0.72 U	0	0.01 U	0.4 U	-0.05 U	
0802	N	10/6/2014	<0.001	<0.005	<0.01	<0.001	1.23	<0.1	<0.05	<0.001	<0.1	0.135	0.31	0.33 U	0.31	0.04 U	0.3 U	0.1 U	
0802	N	1/5/2015	<0.001	<0.005	<0.01	<0.001	1.16	<0.1	<0.05	<0.001	<0.1	0.131	0.4	1.2	1.6	0.05 U	0.01 U	0.4 U	
0802	N	4/6/2015	<0.001	<0.005	<0.01	0.001	1.19	<0.1	<0.05	<0.001	<0.1	0.129	0.46	0.69 U	0.46	0.04 U	-0.3 U	3.5	
0802	N	7/6/2015	<0.001	<0.005	<0.01	<0.001	1.18	<0.1	<0.05	<0.001	<0.1	0.131	0.27	1.6	1.87	0.04 U	0.3 U	1.6	
0802	N	10/5/2015	<0.001	<0.005	<0.01	<0.001	1.24	<0.1	<0.05	<0.001	<0.1	0.112	0.49	1.3	1.79	-0.02 U	-0.1 U	2.6	
0802	N	1/4/2016	<0.001	<0.005	<0.01	<0.001	1.14	<0.1	<0.05	<0.001	<0.1	0.131	0.45	-0.2 U	0.45	0.02 U	0.1 U	1.7	
0802	N	4/4/2016	<0.001	<0.005	<0.01	0.001	1.22	<0.1	<0.05	<0.001	<0.1	0.134	0.3	2.3	2.6	0.008 U	0.09 U	1.2 U	
0802	N	7/11/2016	<0.001	<0.005	<0.01	<0.001	1.1	<0.1	<0.05	<0.001	<0.1	0.126	0.23	3.5	3.73	0.04 U	0.3 U	0.3 U	
0802	N	10/3/2016	<0.001	<0.005	<0.01	<0.001	1.15	<0.1	<0.05	<0.001	<0.1	0.118	0.38	0.35 U	0.38	-0.005 U	0.8 U	4.7	
0803	N	10/17/1989	< 0.05	< 0.01	< 0.01	< 0.05	1.8	< 0.01	< 0.05	< 0.001	< 0.1	0.206	< 0.2	< 1	0	< 0.2	< 1	1	
0803	N	1/11/1990	< 0.05	< 0.01	< 0.01	< 0.05	1.5	< 0.1	< 0.05	< 0.001	< 0.1	0.116	< 0.2	1.9	1.9	1.3	< 1	1.6	
0803	N	4/5/1990	< 0.05	< 0.01	< 0.01	< 0.05	1	< 0.1	< 0.05	< 0.001	< 0.1	0.09	0.5	< 1	0.5	< 0.2	< 1	0.9	

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
<b>NRC Standard</b>			<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>80</b>	<b>NA</b>	<b>0.05</b>
<b>EPA Standard</b>			<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>10376</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>5815</b>	<b>250</b>	<b>NA</b>	<b>536.6</b>	<b>80</b>	<b>5</b>	<b>0.01</b>
0803	N	7/9/1990	no data	6.60	7.18	5416	891	417	233	9.8	1625	2382	127	0.92	42.2	< 1	< 0.1	< 0.001
0803	N	10/3/1990	no data	6.50	7.29	5618	861	336	245	12	1659	2299	151	0.36	40	< 1	< 0.1	< 0.001
0803	N	1/3/1991	no data	6.60	7.25	5305	779	384	256	31.8	1598	2439	144	1.41	57.5	< 1	< 0.1	< 0.001
0803	N	4/11/1991	no data	6.50	7.65	5244	820	416	263	11.3	1702	2376	158	0.85	63	< 1	< 0.1	< 0.001
0803	N	7/11/1991	no data	6.50	7.27	5616	745	349	219	9.1	1690	2547	195	0.89	71.3	< 1	< 0.1	< 0.001
0803	N	10/23/1991	no data	6.60	7.39	5402	786	448	263	9.5	1273	2446	174	1.25	35.3	< 1	< 0.1	< 0.001
0803	N	1/16/1992	no data	6.50	7.19	5155	706	398	255	9.8	1375	2451	160	1.66	51.8	< 1	< 0.1	< 0.001
0803	N	4/13/1992	no data	6.30	7.01	5265	685	360	242	10.3	1571	2346	180	1.87	19.1	< 1	< 0.1	< 0.001
0803	N	7/8/1992	no data	6.20	7.46	4617	804	384	272	11.5	1611	2192	137	1.9	25.4	< 1	< 0.1	< 0.001
0803	N	10/8/1992	no data	6.50	7.79	5982	827	464	347	14	1952	2661	185	0.75	15.7	< 1	< 0.1	< 0.001
0803	N	1/7/1993	no data	6.30	7.32	5851	851	430	305	12.1	1879	2522	185	1.08	38.8	< 1	< 0.1	< 0.001
0803	N	4/7/1993	no data	6.40	7.14	5631	773	481	324	8.7	1806	2666	176	0.9	45.3	< 1	< 0.1	< 0.001
0803	N	7/14/1993	no data	6.60	7.24	5726	895	452	303	9.8	1878	2833	178	1.09	21.7	< 1	< 0.1	< 0.001
0803	N	10/7/1993	no data	6.50	7.20	5445	821	451	262	10.2	2000	2482	174	1.12	33.4	< 1	< 0.1	< 0.001
0803	N	1/6/1994	no data	6.70	7.12	5648	776	460	307	9.2	1656	2754	170	0.92	31.6	< 1	< 0.1	< 0.001
0803	N	4/12/1994	no data	6.50	7.10	6510	770	519	292	9.9	1743	3205	175	1.03	28	< 1	< 0.1	< 0.001
0803	N	7/27/1994	no data	6.50	7.41	6003	909	456	303	11.3	1890	2956	172	0.74	24	< 1	< 0.1	< 0.001
0803	N	10/5/1994	no data	6.30	7.49	5943	846	503	302	10.6	1845	2713	163	1.28	31.3	< 1	< 0.1	< 0.001
0803	N	1/4/1995	no data	6.40	7.16	6350	928	539	300	12.1	1948	2885	184	1.12	34.3	< 1	< 0.1	< 0.001
0803	N	4/6/1995	no data	6.40	6.73	6220	810	498	281	10.1	1935	3018	196	1.03	22.7	< 1	< 0.1	< 0.001
0803	N	7/6/1995	no data	6.50	7.41	6150	840	535	305	11.2	1848	2870	198	0.88	30.7	< 1	< 0.1	< 0.001
0803	N	10/4/1995	no data	6.80	7.36	6000	786	556	284	9.9	2017	2840	180	1.09	33.6	< 1	< 0.1	< 0.001
0803	N	1/3/1996	no data	6.50	7.16	6427	893	609	307	10.3	1929	3160	174	0.62	30.6	< 1	< 0.1	< 0.001
0803	N	4/2/1996	no data	6.60	7.43	6557	831	639	310	10.8	2014	3160	198	0.66	32.5	< 1	< 0.1	< 0.001
0803	N	7/17/1996	no data	6.30	6.70	6277	735	490	287	11.2	1967	2869	184	0.98	29	< 1	< 0.1	< 0.001
0803	N	10/8/1996	no data	6.40	7.03	6930	809	675	310	11.5	2022	3202	173	0.52	33.2	< 1	< 0.1	< 0.001
0803	N	1/28/1997	no data	6.50	7.87	6250	795	550	251	10.9	1847	3178	229	0.99	25.6	< 1	< 0.1	< 0.001
0803	N	4/8/1997	no data	6.40	7.52	6130	804	559	258	11.2	1800	2914	181	1.21	25.4	< 1	< 0.1	< 0.001
0803	N	7/8/1997	no data	6.60	7.39	6240	830	575	335	6.7	1790	2930	236	1.15	24.9	< 1	< 0.1	< 0.001
0803	N	10/8/1997	no data	6.30	7.60	6760	821	649	298	11.7	1990	2970	168	0.58	33.9	< 1	< 0.1	< 0.001
0803	N	1/20/1998	no data	6.30	7.75	6840	798	648	309	13	2000	3400	218	0.76	38.7	< 1	< 0.1	< 0.001
0803	N	4/7/1998	no data	6.50	7.40	6870	802	657	296	11.5	1990	3010	181	0.56	35.8	< 1	< 0.1	< 0.001
0803	N	7/7/1998	no data	6.40	7.40	6940	785	667	310	11.9	2020	3000	198	0.64	51.8	< 1	< 0.1	< 0.001
0803	N	10/6/1998	no data	6.44	7.56	6880	818	695	302	12.5	1980	3200	193	0.6	39.4	< 1	< 0.1	< 0.001
0803	N	1/12/1999	no data	6.60	7.63	6980	745	642	272	11.9	1990	3300	184	0.71	39.1	< 1	< 0.1	< 0.001

**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
0803	N	7/9/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.98	< 0.1	< 0.05	< 0.001	< 0.1	0.135	< 0.2	< 1	0	< 0.2	< 1	< 1
0803	N	10/3/1990	< 0.05	< 0.01	0.01	< 0.05	0.9	< 0.1	< 0.05	< 0.001	< 0.1	0.1711	< 0.2	< 1	0	< 0.2	< 1	< 1
0803	N	1/3/1991	< 0.01	0.01	0.01	< 0.05	1	< 0.1	< 0.05	< 0.001	< 0.1	0.1292	0.9	< 1	0.9	< 0.2	< 1	< 1
0803	N	4/11/1991	< 0.01	< 0.01	0.02	< 0.05	0.82	< 0.1	< 0.05	< 0.001	< 0.1	0.0853	0.6	< 1	0.6	< 0.2	< 1	< 1
0803	N	7/11/1991	< 0.01	< 0.01	< 0.01	< 0.05	0.58	< 0.1	< 0.05	0.007	< 0.1	0.1322	0.3	< 1	0.3	< 0.2	< 1	< 1
0803	N	10/23/1991	< 0.01	< 0.01	0.02	no data	0.57	< 0.1	< 0.05	< 0.001	< 0.1	0.135	< 0.2	2.4	2.4	< 0.2	< 1	< 1
0803	N	1/16/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.47	< 0.1	< 0.05	0.003	< 0.1	0.056	0.3	< 1	0.3	< 0.2	< 1	< 1
0803	N	4/13/1992	< 0.01	< 0.01	< 0.01	< 0.05	1.43	< 0.1	< 0.05	0.002	< 0.1	0.138	< 0.2	< 1	0	< 0.2	< 1	< 1
0803	N	7/8/1992	< 0.01	< 0.01	< 0.01	< 0.05	1.3	< 0.1	< 0.05	< 0.001	< 0.1	0.04	0.3	< 1	0.3	< 0.2	< 1	< 1
0803	N	10/8/1992	< 0.01	< 0.01	0.01	< 0.05	0.61	< 0.1	< 0.05	< 0.001	< 0.1	0.068	0.8	< 1	0.8	< 0.2	< 1	< 1
0803	N	1/7/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.64	< 0.1	< 0.05	0.003	< 0.1	0.085	< 0.2	< 1	0	< 0.2	1.2	< 1
0803	N	4/7/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.98	< 0.1	< 0.05	< 0.001	< 0.1	0.17	0.3	< 1	0.3	< 0.2	< 1	< 1
0803	N	7/14/1993	< 0.01	< 0.01	< 0.01	< 0.05	1.03	< 0.1	< 0.05	< 0.001	< 0.1	0.062	< 0.2	1.4	1.4	< 0.2	< 1	< 1
0803	N	10/7/1993	< 0.01	< 0.01	< 0.01	< 0.05	1.12	< 0.1	< 0.05	< 0.001	< 0.1	0.069	0.3	7.9	8.2	< 0.2	< 1	< 1
0803	N	1/6/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.92	< 0.1	< 0.05	< 0.001	< 0.1	0.07	0.5	< 1	0.5	< 0.2	< 1	< 1
0803	N	4/12/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.72	< 0.1	< 0.05	< 0.001	< 0.1	0.1	0.6	< 1	0.6	< 0.2	3.2	< 1
0803	N	7/27/1994	< 0.01	< 0.01	< 0.01	< 0.05	1.17	< 0.1	< 0.05	0.004	< 0.1	0.108	0.9	5.4	6.3	< 0.2	< 1	1.4
0803	N	10/5/1994	< 0.01	< 0.01	< 0.01	< 0.05	1.34	< 0.1	< 0.05	< 0.001	< 0.1	0.068	< 0.2	< 1	0	< 0.2	2.2	< 1
0803	N	1/4/1995	< 0.01	< 0.01	< 0.01	< 0.05	1.08	< 0.1	< 0.05	< 0.001	< 0.1	0.071	0.8	< 1	0.8	< 0.2	< 1	< 1
0803	N	4/6/1995	< 0.01	< 0.01	< 0.01	< 0.05	1.1	< 0.1	< 0.05	< 0.001	< 0.1	0.074	< 0.2	< 1	0	< 0.2	1.1	< 1
0803	N	7/6/1995	< 0.01	< 0.01	< 0.01	< 0.05	1.16	< 0.1	< 0.05	0.001	< 0.1	0.086	< 0.2	< 1	0	< 0.2	< 1	1.3
0803	N	10/4/1995	< 0.01	< 0.01	< 0.01	< 0.05	1.07	< 0.1	< 0.05	0.002	< 0.1	0.079	< 0.2	< 1	0	< 0.2	< 1	< 1
0803	N	1/3/1996	< 0.01	< 0.01	< 0.01	< 0.05	1.17	< 0.1	< 0.05	0.002	< 0.1	0.083	0.2	1	1.2	0.3	1.5	1
0803	N	4/2/1996	< 0.01	< 0.01	< 0.01	< 0.05	1.14	< 0.1	< 0.05	< 0.001	< 0.1	0.082	< 0.2	< 1	0	< 0.2	< 1	< 1
0803	N	7/17/1996	< 0.01	< 0.01	< 0.01	< 0.05	1.52	< 0.1	< 0.05	< 0.001	< 0.1	0.068	0.4	< 1	0.4	< 0.2	< 1	< 1
0803	N	10/8/1996	< 0.01	< 0.01	< 0.01	< 0.05	1.14	< 0.1	< 0.05	< 0.001	< 0.1	0.079	< 0.2	< 1	0	< 0.2	< 1	< 1
0803	N	1/28/1997	< 0.01	< 0.01	< 0.01	< 0.05	1.53	< 0.1	< 0.05	< 0.001	< 0.1	0.056	< 0.2	< 1	0	< 0.2	< 1	< 1
0803	N	4/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	1.7	< 0.1	< 0.05	0.002	< 0.1	0.069	< 0.2	< 1	0	< 0.2	< 1	< 1
0803	N	7/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.97	< 0.1	< 0.05	< 0.001	< 0.1	0.067	0.9	< 1	0.9	< 0.2	< 1	< 1
0803	N	10/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	1.38	< 0.1	< 0.05	< 0.001	< 0.1	0.081	< 0.2	< 1	0	< 0.2	< 1	< 1
0803	N	1/20/1998	< 0.01	< 0.005	< 0.01	< 0.05	1.59	< 0.1	< 0.05	< 0.001	< 0.1	0.094	< 0.2	< 1	0	< 0.2	< 1	< 1
0803	N	4/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	1.43	< 0.1	< 0.05	0.001	< 0.1	0.0901	< 0.2	< 1	0	< 0.2	< 1	< 1
0803	N	7/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	1.52	< 0.1	< 0.05	< 0.001	< 0.1	0.0974	< 0.2	< 1	0	< 0.2	< 1	< 1
0803	N	10/6/1998	< 0.01	< 0.005	< 0.01	< 0.05	1.42	< 0.1	< 0.05	< 0.001	< 0.1	0.0976	< 0.2	< 1	0	< 0.2	< 1	< 1
0803	N	1/12/1999	< 0.01	< 0.005	< 0.01	< 0.05	1.47	< 0.1	< 0.05	< 0.001	< 0.1	0.0984	< 0.2	< 1	0	< 0.2	< 1	< 1



TABLE A.1

Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO <sub>3</sub>	SO <sub>4</sub>	Cl	NH <sub>4</sub> as N	NO <sub>3</sub> as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
0803	N	4/13/1999	no data	6.50	7.65	6910	801	692	280	11.5	1960	3100	178	0.77	40.9	< 1	< 0.1	< 0.001
0803	N	10/12/1999	no data	6.58	7.78	6990	731	671	260	11.5	2000	3040	175	0.78	37.5	< 1	< 0.1	< 0.001
0803	N	1/11/2000	no data	6.60	7.66	7020	750	693	262	14.4	2000	3180	176	0.8	35.7	< 1	0.12	< 0.001
0803	N	5/2/2000	no data	6.70	7.58	7050	670	637	256	13.5	2000	3030	161	0.86	42.8	< 1	0.1	< 0.001
0803	N	7/12/2000	6835.50	6.71	7.40	7250	712	737	328	6.76	2050	2890	184	1.24	77.5	1.7	< 0.1	< 0.001
0803	N	10/4/2000	6834.50	6.65	7.31	7060	742	750	296	14.1	2010	3260	175	0.85	45.6	< 1	< 0.1	< 0.001
0803	N	1/8/2001	6839.90	6.50	7.78	7010	739	730	277	12.5	1970	3240	178	1.06	46.3	< 1	< 0.1	< 0.001
0803	N	2/5/2001	6863.35	6.38	7.11	6820	826	784	268	13	1830	3380	163	0.67	40.7	< 1	< 0.1	< 0.001
0803	N	3/5/2001	6863.60	6.67	7.14	6810	726	716	320	12.4	1770	3320	129	0.73	39.1	< 1	< 0.1	< 0.001
0803	N	4/9/2001	6864.10	6.40	7.01	6630	798	768	222	12.1	1790	3460	149	0.81	43.9	< 1	< 0.1	< 0.001
0803	N	5/7/2001	6863.95	6.43	7.30	7040	696	713	217	11.5	1760	2980	159	0.74	46.9	< 1	< 0.1	< 0.001
0803	N	6/4/2001	6864.40	6.45	7.17	6750	700	723	202	11.6	1790	3280	164	0.84	47.8	< 1	< 0.1	< 0.001
0803	N	7/9/2001	6864.30	6.95	6.96	6980	751	793	217	11.5	1820	3160	190	0.49	66	< 1	< 0.1	< 0.001
0803	N	8/6/2001	6864.25	6.38	7.20	6950	690	730	220	12	1820	3000	200	0.4	57.6	< 1	< 0.1	< 0.001
0803	N	9/10/2001	6864.40	6.49	7.30	6910	700	750	241	11.6	1900	3100	186	0.39	57.4	< 1	< 0.1	< 0.001
0803	N	10/1/2001	6864.45	6.40	7.20	6940	670	710	231	12	1880	2800	215	0.45	56.4	< 1	< 0.1	< 0.001
0803	N	11/5/2001	6864.75	6.40	7.40	7030	730	765	236	12.7	1830	3310	218	0.54	64	< 1	< 0.1	< 0.001
0803	N	12/3/2001	6864.75	6.41	7.40	7120	688	726	221	11.9	1870	3020	191	0.65	62	< 1	< 0.1	< 0.001
0803	N	1/7/2002	6864.75	6.46	7.00	6920	799	744	170	11.8	1830	3350	181	0.56	53.5	< 1	< 0.1	< 0.001
0803	N	2/4/2002	6864.80	6.46	7.30	7000	775	738	246	11.9	1900	3250	191	0.7	51.1	< 1	< 0.1	< 0.001
0803	N	3/4/2002	6864.70	6.42	7.20	7030	734	745	271	11.9	1880	3390	190	0.64	55.3	< 1	< 0.1	< 0.001
0803	N	4/1/2002	6864.92	6.34	7.85	7070	770	761	274	13.7	1880	3480	197	0.73	51.2	1	< 0.1	< 0.001
0803	N	5/6/2002	6864.95	6.37	7.13	7010	734	718	259	12.5	1890	3140	182	0.72	55.4	< 1	< 0.1	< 0.001
0803	N	6/3/2002	6865.10	6.32	7.44	7130	749	743	240	11	1910	3250	165	0.86	52.7	1.2	< 0.1	< 0.001
0803	N	7/8/2002	6864.68	6.38	7.60	7110	711	725	214	10.9	1890	3150	148	0.78	51.3	< 1	< 0.1	< 0.001
0803	N	10/8/2002	6864.60	6.33	7.44	5300	678	690	244	11.3	1880	3060	163	1.04	55.2	1.1	< 0.1	< 0.001
0803	N	1/6/2003	6864.48	6.47	7.27	6900	630	668	261	13.3	1870	2920	143	0.87	54	< 1	< 0.1	< 0.001
0803	N	4/7/2003	6864.63	6.37	7.13	7000	693	732	269	15.3	1860	2940	174	0.74	51	1.2	< 0.1	< 0.001
0803	N	7/7/2003	6864.01	6.22	7.37	6940	653	670	246	12.2	1850	2980	148	0.93	52	1.4	< 0.1	< 0.001
0803	N	10/6/2003	6864.22	6.27	7.96	6860	724	776	287	11.5	1870	3370	165	1.05	49	1.2	< 0.1	< 0.001
0803	N	1/5/2004	6864.16	6.46	7.25	6840	716	757	250	11.6	1900	3260	196	0.92	52.6 D	1.8	0.2	< 0.001
0803	N	4/5/2004	6864.43	6.58	6.80	6870	677	734	270	12.2	1890	3140 D	170	1.06	52.3 D	2	< 0.1	< 0.001
0803	N	7/12/2004	6864.08	6.20	6.77	6980	694	717	295	12.4	1780	3090 D	170	1.03	51.2 D	1.5	< 0.1	< 0.001
0803	N	10/4/2004	6863.76	6.30	7.01	7200	695 D	741 D	307	11.1	1830	3140 D	171	0.95	44 D	2	< 0.1	< 0.001
0803	N	1/3/2005	6863.88	6.51	6.93	6890	691 D	735 D	272	11.3	1830	2970 D	159	1.01	49 D	1.9	< 0.1	< 0.001

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
0803	N	4/13/1999	< 0.01	< 0.005	< 0.01	< 0.05	1.55	< 0.1	< 0.05	< 0.001	< 0.1	0.0889	< 0.2	< 1	0	< 0.2	< 1	< 1
0803	N	10/12/1999	< 0.01	< 0.005	< 0.01	< 0.05	1.62	< 0.1	< 0.05	< 0.001	< 0.1	0.0919	< 0.2	< 1	0	< 0.2	< 1	< 1
0803	N	1/11/2000	< 0.01	< 0.005	< 0.01	< 0.05	1.69	< 0.1	0.05	0.001	< 0.1	0.0891	0.6	< 1	0.6	< 0.2	< 1	< 1
0803	N	5/2/2000	< 0.01	< 0.005	< 0.01	< 0.05	2.27	< 0.1	< 0.05	< 0.001	< 0.1	0.193	0.6	2.5	3.1	< 0.2	< 1	< 1
0803	N	7/12/2000	< 0.01	< 0.005	< 0.01	< 0.05	1.95	< 0.1	< 0.05	< 0.001	< 0.1	0.197	0.4	< 1	0.4	< 0.2	< 1	< 1
0803	N	10/4/2000	< 0.01	< 0.005	0.02	< 0.05	1.76	< 0.1	< 0.05	< 0.001	< 0.1	0.0841	0.5	1.3	1.8	< 0.2	< 1	< 1
0803	N	1/8/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.91	< 0.1	< 0.05	0.001	< 0.1	0.09	< 0.2	2.8	2.8	< 0.2	< 1	< 1
0803	N	2/5/2001	< 0.01	< 0.005	< 0.01	< 0.05	2.37	< 0.1	< 0.05	0.001	< 0.1	0.1	0.6	< 1	0.6	< 0.2	no data	< 1
0803	N	3/5/2001	< 0.01	< 0.005	< 0.01	< 0.05	2.75	< 0.1	0.05	0.001	< 0.1	0.0874	< 0.2	2.2	2.2	< 0.2	< 1	< 1
0803	N	4/9/2001	< 0.01	< 0.005	< 0.01	< 0.05	2.29	< 0.1	< 0.05	< 0.001	< 0.1	0.1	< 0.2	< 1	0	< 0.2	< 1	< 1
0803	N	5/7/2001	< 0.01	< 0.005	< 0.01	< 0.05	2.13	< 0.1	< 0.05	< 0.001	< 0.1	0.093	< 0.2	< 1	0	< 0.2	< 1	< 1
0803	N	6/4/2001	< 0.01	< 0.005	< 0.01	< 0.05	2.34	< 0.1	< 0.05	0.004	< 0.1	0.086	0.4	< 1	0.4	< 0.2	< 1	< 1
0803	N	7/9/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.69	< 0.1	< 0.05	< 0.001	< 0.1	0.136	< 0.2	< 1	0	< 0.2	< 1	< 1
0803	N	8/6/2001	< 0.01	< 0.005	< 0.01	< 0.05	2.1	< 0.1	< 0.05	< 0.001	< 0.1	0.16	< 0.2	< 1	0	< 0.2	< 1	< 1
0803	N	9/10/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.8	< 0.1	< 0.05	< 0.001	< 0.1	0.125	0.3	< 1	0.3	< 0.2	< 1	< 1
0803	N	10/1/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.6	< 0.1	< 0.05	< 0.001	< 0.1	0.148	0.8	< 1	0.8	< 0.2	< 1	< 1
0803	N	11/5/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.61	< 0.1	< 0.05	< 0.001	< 0.1	0.134	< 0.2	< 1	0	< 0.2	< 1	< 1
0803	N	12/3/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.4	< 0.1	< 0.05	< 0.001	< 0.1	0.128	< 0.2	< 1	0	< 0.2	< 1	< 1
0803	N	1/7/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.57	< 0.1	< 0.05	< 0.001	< 0.1	0.167	1	< 1	1	< 0.2	< 1	< 1
0803	N	2/4/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.63	< 0.1	< 0.05	< 0.001	< 0.1	0.149	< 0.2	< 1	0	< 0.2	< 1	< 1
0803	N	3/4/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.97	< 0.1	< 0.05	< 0.001	< 0.1	0.166	< 0.2	2.5	2.5	< 0.2	< 1	< 1
0803	N	4/1/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.77	< 0.1	< 0.05	< 0.001	< 0.1	0.152	< 0.2	2.2	2.2	< 0.2	< 1	< 1
0803	N	5/6/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.87	< 0.1	< 0.05	< 0.001	< 0.1	0.174	< 0.2	< 1	0	< 0.2	< 1	< 1
0803	N	6/3/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.8	< 0.1	< 0.05	< 0.001	< 0.1	0.153	< 0.2	< 1	0	< 0.2	< 1	< 1
0803	N	7/8/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.77	< 0.1	< 0.05	< 0.001	< 0.1	0.201	0.4	< 1	0.4	< 0.2	< 1	< 1
0803	N	10/8/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.6	< 0.1	< 0.05	< 0.001	< 0.1	0.132	< 0.2	< 1	0	< 0.2	< 1	< 1
0803	N	1/6/2003	< 0.01	< 0.005	< 0.01	< 0.05	1.94	< 0.1	< 0.05	< 0.001	< 0.1	0.161	< 0.2	< 1	0	< 0.2	< 1	< 1.0
0803	N	4/7/2003	< 0.01	< 0.005	< 0.01	< 0.05	1.98	< 0.1	< 0.05	< 0.001	< 0.1	0.126	0.5	< 1	0.5	< 0.2	< 1	< 1.0
0803	N	7/7/2003	< 0.01	< 0.005	< 0.01	< 0.05	1.91	< 0.1	< 0.05	< 0.001	< 0.1	0.138	0.3	< 1	0.3	< 0.2	< 1	< 1.0
0803	N	10/6/2003	< 0.01	< 0.005	< 0.01	< 0.05	2.34	< 0.1	< 0.05	< 0.001	< 0.1	0.164	< 0.2	< 1	0	< 0.2	< 1	< 1.0
0803	N	1/5/2004	< 0.01	< 0.005	< 0.01	< 0.05	2.58	< 0.1	< 0.05	< 0.001	< 0.1	0.153 D	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
0803	N	4/5/2004	< 0.01	< 0.005	< 0.01	< 0.05	1.89	< 0.1	< 0.05	< 0.001	< 0.1	0.133 D	< 0.2	< 1	0	< 0.2	< 1	< 1
0803	N	7/12/2004	< 0.01	< 0.005	0.02	< 0.05	1.83	< 0.1	< 0.05	< 0.001	< 0.1	0.141 D	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
0803	N	10/4/2004	< 0.01	< 0.005	< 0.01	< 0.05	1.99	< 0.1	< 0.05	< 0.001	< 0.1	0.133 D	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
0803	N	1/3/2005	< 0.01	< 0.005	< 0.01	< 0.05	1.84	< 0.1	< 0.05	< 0.001	< 0.1	0.144	0.4	1.8	2.2	< 0.2	< 1.0	1.9

**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
0803	N	4/4/2005	6863.99	6.48	7.21	6640	677	726	276	11.3	1860	3120	159	1.24	31	2.8	< 0.1	< 0.001
0803	N	7/11/2005	6863.59	6.42	7.27	6690	725 D	774 D	274	11.9	1700	3310 D	182	1.19	53.9 D	2.9	< 0.1	< 0.001
0803	N	10/3/2005	6863.27	6.45	7.08	6730	672 D	768 D	271	11.6	2070	2950 D	172	1.19	49.2 D	2.6	< 0.1	< 0.001
0803	N	1/9/2006	6863.10	6.56	7.61	6640	658 D	742 D	260	11.4	1910	3280 D	152	1.02	49.0 D	2.6	< 0.1	< 0.001
0803	N	4/3/2006	6863.08	6.39	7.02	6610	702 D	757 D	243	11.6	1800	3040 D	171	1.64	52 D	2.4	< 0.1	< 0.001
0803	N	7/17/2006	6862.83	6.32	6.83	6490	655 D	776 D	298	12.6	1810	3520 D	174	1.33	50.3 D	2.8	< 0.1	< 0.001
0803	N	10/2/2006	6862.68	6.37	6.66	6770	662 D	710 D	261	11.6	1860	3070 D	134	1.41	51.8 D	2.51	< 0.1	< 0.001
0803	N	1/8/2007	6862.58	6.43	6.96	6800	646 D	689 D	248	11.8	1780	3000 D	156	1.66	52 D	3.09	< 0.1	< 0.001
0803	N	4/9/2007	6862.78	6.53	6.67	6460	652 D	720 D	257	13.3	1830	3110 D	167	1.47	52 D	3.15	< 0.1	< 0.001
0803	N	7/9/2007	6862.48	6.33	6.82	6630	691 D	773 D	303	13.1	1900	3360 D	147	1.35	51 D	3.02	< 0.1	0.01
0803	N	10/1/2007	6862.11	6.44	6.62	6670	635 D	700 D	276 D	12.9	1880	3080 D	169 D	1.64	47.7 D	3.9	< 0.1	< 0.001
0803	N	1/14/2008	6861.93	6.47	6.61	6780	609 D	664 D	260 D	12.6	1810	2810 D	178 D	1.61	47 D	4.24	< 0.1	< 0.001
0803	N	4/7/2008	6862.33	6.38	6.73	6460	678 D	777 D	310 D	15.2 D	1720	3310 D	135	2.0 D	68.1	3.89	< 0.1	< 0.001
0803	N	7/7/2008	6861.98	6.22	6.74 H	6480 H	650	711	254 D	12	1840	3280 D	165	1.76	49.4 D	4.52	< 0.1	< 0.003
0803	N	10/6/2008	6861.58	6.33	6.81	6740	671	721	276 D	12	1790	3410 D	163	1.9	48.6	5.88	< 0.1	< 0.001
0803	N	1/12/2009	6861.43	6.37	6.66	6940	627	698	265	11	1810	3040 D	148	1	70.6 D	5.56	< 0.1	< 0.001
0803	N	4/6/2009	6861.23	6.39	6.52	6470	641 D	714 D	297 D	12	1830	3190 D	155	1.33	52.2 D	5.64	< 0.1	< 0.001
0803	N	7/6/2009	6861.23	6.28	6.69	6820 H	671 D	731	296 D	14	1820	3360 D	173	2.13	47.8 D	4.52	< 0.1	< 0.001
0803	N	10/5/2009	6860.88	6.43	7.09	6950	622 D	751	275 D	13	1820	3450 D	159	3.09	43 D	11.3	< 0.1	< 0.001
0803	N	1/4/2010	6860.48	6.46	7.09	7060 D	681 D	726	296	13	1910	3230 D	168	2.16	48 D	6.68	< 0.1	< 0.001
0803	N	4/5/2010	6860.68	6.38	6.55	6810 DH	708 D	776	308 D	14	1990	3410 D	163	2.73	47.1 D	6.6	< 0.1	< 0.001
0803	N	7/12/2010	6860.33	6.34	6.97	7020 D	712 D	768	299 D	14	1960	3430 D	168 D	2.86	46 D	8.04	< 0.1	< 0.001
0803	N	10/4/2010	6860.03	6.41	7.02	6920 D	648	710	294	14	1950	3410 D	163 D	2.86	45 D	7.52	< 0.1	< 0.001
0803	N	1/3/2011	6859.98	6.34	6.62	6700 D	678 D	758	291 D	14	1850	3320 D	173 D	2.89	40 D	7.64	< 0.1	< 0.001
0803	N	4/4/2011	6859.67	6.54	6.71	6670 D	686	744	310 D	14	1870	3380 D	173 D	2.66 D	47 D	7.24	< 0.1	0.002
0803	N	7/11/2011	6859.58	6.48	7.53	6530 D	670	756	313	14	1860	3310 D	168 D	3.0 D	47 D	8.08	< 0.1	< 0.001
0803	N	10/3/2011	6859.28	6.51	6.79	6450 D	664	755	301	14	1750	3350 D	166 D	2.5 D	44 D	9.64	< 0.1	0.003
0803	N	1/2/2012	6858.95	6.54	6.70 H	6790 D	680	742	300	15	1700	3300 D	171 D	3.1 D	48 D	9.92	< 0.1	< 0.001
0803	N	4/2/2012	6859.28	6.67	6.52 H	7000 D	701	750	288	14	1780	3420 D	163 D	1.57	41 D	15.6	< 0.1	< 0.01
0803	N	7/9/2012	6858.70	6.40	6.61 H	6630	653	796	297	13	1810	3230 D	164 D	2.78	50 D	8.92	< 0.1	< 0.001
0803	N	10/8/2012	6858.53	6.53	6.54 H	6590	678	723	283 D	14	1750	3300 D	160 D	1.8 D	38 D	8	< 0.1	< 0.001
0803	N	1/7/2013	6858.57	6.46	6.57 H	6430	685	803	316 D	15	1850	3410 D	174 D	2.42	21 D	11	< 0.1	< 0.001
0803	N	4/1/2013	6858.32	6.50	6.57 H	6530	661	790	309	15	1870	3280 D	172 D	2.86	44 D	14.8	< 0.1	< 0.001
0803	N	7/8/2013	6857.94	6.42	6.66 H	6780	624	736	276	12	1820	3320 D	166 D	1.84	38 D	9.04	< 0.1	< 0.001
0803	N	9/30/2013	6857.92	6.51	6.60 H	6520 H	639	707	271	12	1720	3170 D	143 D	1.15	36 D	8.96	< 0.1	< 0.001



**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
0803	N	4/4/2005	< 0.01	< 0.005	< 0.01	< 0.05	1.76	< 0.1	< 0.05	< 0.001	< 0.1	0.118	1	< 1.0	1	< 0.2	< 1.0	< 1.0
0803	N	7/11/2005	< 0.01	< 0.005	< 0.01	< 0.05	2.08	< 0.1	< 0.05	< 0.001	< 0.1	0.136	0.3	< 1.0	0.3	< 0.2	< 1.0	< 1.0
0803	N	10/3/2005	< 0.01	< 0.005	< 0.01	< 0.05	1.96	< 0.1	< 0.05	< 0.001	< 0.1	0.14	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
0803	N	1/9/2006	< 0.01	< 0.005	< 0.01	< 0.05	2.36	< 0.1	< 0.05	< 0.001	< 0.1	0.125	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
0803	N	4/3/2006	< 0.01	< 0.005	< 0.01	< 0.05	2.12	< 0.1	< 0.05	< 0.001	< 0.1	0.129 D	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
0803	N	7/17/2006	< 0.01	< 0.005	< 0.01	< 0.05	2.05	< 0.1	< 0.05	< 0.001	< 0.1	0.139	0.5	2	2.5	< 0.2	< 1.0	1
0803	N	10/2/2006	< 0.01	< 0.005	< 0.01	< 0.05	2.08	< 0.1	< 0.05	< 0.001	< 0.1	0.125	< 0.2	< 1	0	< 0.2	< 1	< 1
0803	N	1/8/2007	< 0.01	< 0.005	< 0.01	< 0.05	1.94	< 0.1	< 0.05	< 0.001	< 0.1	0.126	< 0.2	< 1	0	< 0.2	< 1	< 1
0803	N	4/9/2007	< 0.01	< 0.005	< 0.01	< 0.05	2.16	< 0.1	< 0.05	< 0.001	< 0.1	0.124	< 0.2	< 1	0	< 0.2	< 1	1.1
0803	N	7/9/2007	< 0.01	< 0.005	< 0.01	< 0.05	1.9	< 0.1	< 0.05	< 0.001	< 0.1	0.123	< 0.2	< 1	0	< 0.2	< 1	< 1
0803	N	10/1/2007	< 0.01	< 0.005	< 0.01	< 0.05	2.13	< 0.1	< 0.05	< 0.001	< 0.1	0.129	< 0.2	< 1	0	< 0.2	< 1	1.3
0803	N	1/14/2008	< 0.01	< 0.005	< 0.01	< 0.05	1.95	< 0.1	< 0.05	< 0.001	< 0.1	0.115	< 0.2	< 1	0	< 0.2	< 1	1
0803	N	4/7/2008	< 0.01	< 0.005	< 0.01	< 0.05	2.01	< 0.1	< 0.05	< 0.001	< 0.1	0.118	-0.001 U	0.5 U	0.499	-0.05 U	0 U	1.1
0803	N	7/7/2008	< 0.01	< 0.005	< 0.01	< 0.05	2.02	< 0.1	< 0.05	< 0.001	< 0.1	0.0994	-0.04 U	2.3	2.26	0 U	1.2 U	0.9
0803	N	10/6/2008	< 0.01	< 0.005	< 0.01	< 0.05	1.66	< 0.1	< 0.05	< 0.001	< 0.1	0.11	-0.04 U	-0.04 U	-0.08	0.3	-6 U	1
0803	N	1/12/2009	< 0.01	< 0.005	< 0.01	< 0.05	1.76	< 0.1	< 0.05	< 0.001	< 0.1	0.115	0.17 U	1.6	1.77	0.1 U	0 U	1.7
0803	N	4/6/2009	< 0.01	< 0.005	< 0.01	< 0.05	1.78	< 0.1	< 0.05	< 0.001	< 0.1	0.125	0.22	0.55 U	0.77	0.01 U	-0.7 U	0.7
0803	N	7/6/2009	< 0.01	< 0.005	< 0.01	< 0.05	1.48	< 0.1	< 0.05	< 0.001	< 0.1	0.0966	0.51	1.2 U	1.71	0.1 U	-0.4 U	1.1
0803	N	10/5/2009	< 0.01	< 0.005	< 0.01	< 0.05	2.15	< 0.1	< 0.05	< 0.001	< 0.1	0.078	0.47	1.3 U	1.77	0.04 U	-0.8 U	0.9
0803	N	1/4/2010	< 0.01	< 0.005	< 0.01	< 0.05	1.8	< 0.1	< 0.05	< 0.001	< 0.1	0.103	0.19	1.0 U	1.19	0.02 U	0.2 U	0.5 U
0803	N	4/5/2010	< 0.01	< 0.005	< 0.01	< 0.05	1.63	< 0.1	< 0.05	< 0.001	< 0.1	0.101	0.22	0.92 U	1.14	-0.04 U	2.1 U	0.2 U
0803	N	7/12/2010	< 0.01	< 0.005	< 0.01	< 0.05	1.72	< 0.1	< 0.05	< 0.001	< 0.1	0.114	0.38	-0.1 U	0.28	0.1 U	-0.6 U	0.2 U
0803	N	10/4/2010	< 0.01	< 0.005	< 0.01	< 0.05	1.97	< 0.1	< 0.05	< 0.001	< 0.1	0.118	0.18	0.71 U	0.89	0.08 U	0.7 U	0.03 U
0803	N	1/3/2011	< 0.01	< 0.005	< 0.01	< 0.05	2.23	< 0.1	< 0.05	< 0.001	< 0.1	0.124	0.04 U	1.1	1.14	0.4	0.4 U	0.6 U
0803	N	4/4/2011	< 0.01	< 0.005	< 0.01	< 0.05	1.98	< 0.1	< 0.05	< 0.001	< 0.1	0.115	0.03 U	0.33 U	0.36	-0.003 U	-0.4 U	0.6
0803	N	7/11/2011	< 0.01	< 0.005	< 0.01	< 0.05	2.22	< 0.1	< 0.05	< 0.001	< 0.1	0.115	0.05 U	0.68 U	0.73	-0.01 U	-0.3 U	1.8
0803	N	10/3/2011	< 0.01	< 0.005	< 0.01	< 0.05	2.12	< 0.1	< 0.05	< 0.001	< 0.1	0.11	0.08 U	1.1	1.18	0.0006 U	0.5 U	0.08 U
0803	N	1/2/2012	< 0.01	< 0.005	< 0.01	< 0.05	2.01	< 0.1	< 0.05	< 0.001	< 0.1	0.118	0.51	0.56 U	1.63	0.003 U	0.5 U	0.5
0803	N	4/2/2012	< 0.01	< 0.005	< 0.01	< 0.05	2.48	< 0.1	< 0.05	< 0.001	< 0.1	0.111	0.27	0.93	2.13	-0.008 U	0.5 U	0.1 U
0803	N	7/9/2012	< 0.001	< 0.005	< 0.01	0.002	2.31	< 0.1	< 0.05	< 0.001	< 0.1	0.102	0.37	0.38 U	1.13	-0.01 U	0.5 U	0.3 U
0803	N	10/8/2012	< 0.001	< 0.005	< 0.01	0.002	3.14	< 0.1	< 0.05	< 0.001	< 0.1	0.0781	0.14 U	1.3	1.3	0.009 U	0.04 U	0.7
0803	N	1/7/2013	< 0.001	< 0.005	< 0.01	0.001	2.15	< 0.1	< 0.05	< 0.001	< 0.1	0.0957	0.39	1.3	1.69	0.04 U	-0.1 U	0.5 U
0803	N	4/1/2013	< 0.001	< 0.005	< 0.01	0.002	2.34	< 0.1	< 0.05	< 0.001	< 0.1	0.106	0.22	0.64 U	0.22	0.05 U	-0.2 U	0.3 U
0803	N	7/8/2013	< 0.001	< 0.005	< 0.01	0.002	2.71	< 0.1	< 0.05	< 0.001	< 0.1	0.112	0.09 U	0.98	0.98	0.06 U	-0.04 U	0.3 U
0803	N	9/30/2013	< 0.001	< 0.005	< 0.01	0.001	2.92	< 0.1	< 0.05	< 0.001	< 0.1	0.104	0.23	0.55 U	0.23	0.07 U	0.2 U	-0.2 U

TABLE A.1

Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO <sub>3</sub> mg/l	SO <sub>4</sub> mg/l	Cl mg/l	NH <sub>4</sub> as N mg/l	NO <sub>3</sub> as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
0803	N	1/6/2014	6857.67	6.65	6.54	6460	594	708	270	12	1780	3230	159	1.79	38	1.23	<0.1	<0.001
0803	N	3/31/2014	6857.70	6.67	6.50 H	6570	565	668	261 D	12	1800	3220 D	166 D	2.43	38 D	<0.50	<0.1	<0.001
0803	N	7/7/2014	6857.50	6.65	6.64 H	6590	654	697	284 D	14	1870	3270 D	171 D	2.45	42 D	<0.50	<0.1	<0.001
0803	N	10/6/2014	6857.24	6.59	6.56 H	6300	633	714	273	12	1710	3130 D	146 D	1.35	34 D	<0.50	<0.1	<0.001
0803	N	1/5/2015	6856.96	6.72	6.67 H	6660	634	713	287	13	1720	3200 D	159 D	1.3	42 D	<0.50	<0.1	<0.001
0803	N	4/6/2015	6857.16	6.52	6.62 H	6380	627	712	275	12	1730	3290 D	171 D	1.49	79 D	<0.5	<0.1	<0.001
0803	N	7/6/2015	6856.84	6.42	6.57 H	6580	612	713	283	13	1840	3340 D	167 D	2.04	36 D	<0.50	<0.1	<0.001
0803	N	10/5/2015	6856.61	6.67	6.60 H	6160 H	598	629	236	11	1500	3140 D	148 D	0.43	27 D	<0.50	<0.1	<0.001
0803	N	1/4/2016	6856.46	6.67	6.51 H	6530	636	709	275	13	1790	3300 D	166 D	1.0 D	16 D	<0.50	<0.1	<0.001
0803	N	4/4/2016	6856.19	6.48	6.64 H	6560	641	713	294	12	1750	3290 D	166 D	0.94	36 D	<0.50	<0.1	<0.001
0803	N	7/11/2016	6856.18	6.54	6.60 H	6420 D	628	701	267	12	1700	3150 DH	153 DH	0.76	34 D	<0.50	<0.1	<0.001
0803	N	10/3/2016	6856.12	6.68	6.61 H	6230 H	612	685	263	11	1640	3340 D	156 D	0.4	32 D	<0.50	<0.1	<0.001
0808	N	1/8/2001	6853.00	6.34	7.14	7470	720	721	382	14.5	2080	3400	233	16	26	1.4	6.02	0.001
0808	N	2/5/2001	6863.60	6.46	7.04	5820	879	489	295	13.2	2040	2740	185	4.99	< 0.1	< 1	0.11	< 0.001
0808	N	3/5/2001	6863.85	6.65	7.43	5480	879	482	377	12.1	2100	2580	213	5.01	< 0.1	< 1	< 0.1	< 0.001
0808	N	4/9/2001	6864.40	6.65	7.04	6030	841	468	312	11.6	2130	2480	247	6.39	< 0.1	< 1	0.11	< 0.001
0808	N	5/7/2001	6864.20	6.44	7.40	6600	797	577	359	8.6	2210	2540	216	1.66	60.2	< 1	< 0.1	< 0.001
0808	N	6/5/2001	no data	6.54	6.95	6680	843	582	361	9.2	2280	2790	238	2.11	32.4	1.8	0.2	< 0.001
0808	Filt	6/5/2001	6864.50	6.46	6.90	6900	841	580	361	9.4	2270	2780	244	2.13	34.6	< 1	< 0.1	< 0.001
0808	N	7/9/2001	6864.70	7.05	7.17	6870	830	710	320	6.3	1940	2800	246	0.16	119	3.3	< 0.1	< 0.001
0808	N	8/6/2001	6864.55	6.40	7.20	6860	700	620	290	7.5	1950	2500	210	0.09	116	2.9	< 0.1	< 0.001
0808	N	9/10/2001	6864.75	6.40	7.20	6750	720	610	300	6.1	1960	2500	150	0.41	140	2.9	0.1	< 0.001
0808	N	10/1/2001	6864.80	6.47	7.40	6780	720	630	214	6.5	1970	2400	165	0.08	122	2.4	< 0.1	< 0.001
0808	N	11/5/2001	6865.00	6.48	7.50	6800	782	656	280	7.6	1900	2750	237	0.06	142	3.1	< 0.1	< 0.001
0808	N	12/3/2001	6865.10	6.53	7.50	6780	726	605	244	6.7	1940	2460	212	0.11	147	2.4	< 0.1	< 0.001
0808	N	1/7/2002	6865.05	6.53	7.20	6810	854	670	232	8.7	1910	2870	230	0.05	117	3.4	< 0.1	< 0.001
0808	N	2/4/2002	6865.10	6.52	7.30	6830	829	649	265	7.7	1960	2750	226	0.08	118	3.3	< 0.1	< 0.001
0808	N	3/4/2002	6865.05	6.49	7.30	6710	788	652	308	6.4	1920	2890	207	0.08	122	3.6	< 0.1	< 0.001
0808	N	4/1/2002	6865.31	6.36	7.84	6820	810	663	310	7.4	1930	2930	207	0.07	117	4.1	< 0.1	< 0.001
0808	N	5/6/2002	6865.34	6.39	7.15	6900	773	644	287	7.6	1950	2690	208	0.16	125	4	< 0.1	< 0.001
0808	N	6/3/2002	6865.45	6.35	7.36	6810	781	655	270	5.9	1960	2750	173	0.09	120	4.8	< 0.1	< 0.001
0808	N	7/8/2002	6865.08	6.46	7.63	6950	782	682	230	7.3	1960	2850	173	0.15	115	4.2	< 0.1	< 0.001
0808	N	10/7/2002	6864.81	6.38	7.19	5260	705	620	290	5.2	1970	2630	168	< 0.05	113	5	< 0.1	< 0.001
0808	N	1/6/2003	6864.89	6.64	7.32	6900	655	609	283	9.7	1910	2510	144	0.12	131	5	< 0.1	< 0.001
0808	N	4/7/2003	6865.02	6.43	6.71	6870	753	657	308	7.9	1910	2600	194	0.13	125	5.1	< 0.1	< 0.001

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha	
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l		pci/l
			NRC Standard		0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2		4.5
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15	
0803	N	1/6/2014	<0.001	<0.005	<0.01	0.002	2.82	<0.1	<0.05	<0.001	<0.1	0.0922	0.37	1.8	2.17	0.06 U	-0.03 U	0.8	
0803	N	3/31/2014	<0.001	<0.005	<0.01	0.001	2.5	<0.1	<0.05	<0.001	<0.1	0.0944	0.4	1.4	1.8	0.03 U	-0.7 U	1.2	
0803	N	7/7/2014	<0.001	<0.005	<0.01	<0.001	2.3	<0.1	<0.05	<0.001	<0.1	0.0842	0.27	0.83 U	0.27	0.03 U	0.5 U	0.4 U	
0803	N	10/6/2014	<0.001	<0.005	<0.01	0.001	2.95	<0.1	<0.05	<0.001	<0.1	0.0783	0.2	0.87 U	0.2	0.002 U	0.08 U	0.3 U	
0803	N	1/5/2015	<0.001	<0.005	<0.01	0.001	2.54	<0.1	<0.05	<0.001	<0.1	0.089	0.62	1.0 U	0.62	0.006 U	0.5 U	2	
0803	N	4/6/2015	<0.001	<0.005	<0.01	<0.001	3.04	<0.1	<0.05	<0.001	<0.1	0.0805	0.41	0.97 U	0.41	-0.009 U	-0.1 U	1.8	
0803	N	7/6/2015	<0.001	<0.005	<0.01	0.001	2.77	<0.1	<0.05	<0.001	<0.1	0.0943	0.19	1.6	1.79	0.04 U	0.1 U	1.2 U	
0803	N	10/5/2015	<0.001	<0.005	<0.01	0.001	3.45	<0.1	<0.05	<0.001	<0.1	0.06	0.23	1.4	1.63	0.005 U	0.2 U	1.6	
0803	N	1/4/2016	<0.001	<0.005	<0.01	<0.001	2.67	<0.1	<0.05	<0.001	<0.1	0.0802	0.27	0.55 U	0.27	0.02 U	0.6 U	1.3	
0803	N	4/4/2016	<0.001	<0.005	<0.01	<0.001	2.27	<0.1	<0.05	<0.001	<0.1	0.0862	0.16 U	2.1	2.1	-0.02 U	0.5 U	3.9	
0803	N	7/11/2016	<0.001	<0.005	<0.01	<0.001	2.6	<0.1	<0.05	<0.001	<0.1	0.104	0.28	2.3	2.58	-0.001 U	0.1 U	1.1 U	
0803	N	10/3/2016	<0.001	<0.005	<0.01	0.001	3.1	<0.1	<0.05	<0.001	<0.1	0.0653	0.23	0.27 U	0.23	0.0008 U	-0.2 U	7.1	
0808	N	1/8/2001	< 0.01	< 0.005	0.13	< 0.05	18.1	< 0.1	0.09	0.001	< 0.1	0.082	< 0.2	< 1	0	< 0.2	< 1	< 1	
0808	N	2/5/2001	< 0.01	< 0.005	0.02	< 0.05	2.61	< 0.1	< 0.05	< 0.001	< 0.1	0.0338	0.4	2.1	2.5	< 0.2	< 1	< 1	
0808	N	3/5/2001	< 0.01	< 0.005	0.02	< 0.05	3.18	< 0.1	< 0.05	< 0.001	< 0.1	0.0338	< 0.2	< 1	0	< 0.2	< 1	< 1	
0808	N	4/9/2001	< 0.01	< 0.005	0.03	< 0.05	4	< 0.1	< 0.05	< 0.001	< 0.1	0.034	0.4	< 1	0.4	< 0.2	< 1	< 1	
0808	N	5/7/2001	< 0.01	< 0.005	0.01	< 0.05	1.91	< 0.1	< 0.05	< 0.001	< 0.1	0.074	< 0.2	< 1	0	< 0.2	< 1	< 1	
0808	N	6/5/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.47	< 0.1	< 0.05	< 0.001	< 0.1	0.059	< 0.2	< 1	0	< 0.2	< 1	< 1	
0808	Filt	6/5/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.49	< 0.1	< 0.05	< 0.001	< 0.1	0.06	0.4	< 1	0.4	< 0.2	< 1	< 1	
0808	N	7/9/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.69	< 0.1	< 0.05	0.001	< 0.1	0.165	< 0.2	< 1	0	< 0.2	< 1	< 1	
0808	N	8/6/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.71	< 0.1	< 0.05	< 0.001	< 0.1	0.194	< 0.2	< 1	0	< 0.2	< 1	< 1	
0808	N	9/10/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.97	< 0.1	< 0.05	< 0.001	< 0.1	0.253	0.9	2.8	3.7	< 0.2	< 1	< 1	
0808	N	10/1/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.55	< 0.1	< 0.05	< 0.001	< 0.1	0.157	0.3	< 1	0.3	< 0.2	< 1	< 1	
0808	N	11/5/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.61	< 0.1	< 0.05	< 0.001	< 0.1	0.14	< 0.2	< 1	0	< 0.2	< 1	< 1	
0808	N	12/3/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.56	< 0.1	< 0.05	< 0.001	< 0.1	0.147	< 0.2	< 1	0	< 0.2	< 1	< 1	
0808	N	1/7/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.59	< 0.1	< 0.05	< 0.001	< 0.1	0.138	< 0.2	< 1	0	< 0.2	< 1	< 1	
0808	N	2/4/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.64	< 0.1	< 0.05	< 0.001	< 0.1	0.145	< 0.2	< 1	0	< 0.2	< 1	< 1	
0808	N	3/4/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.69	< 0.1	< 0.05	< 0.001	< 0.1	0.162	< 0.2	< 1	0	< 0.2	< 1	< 1	
0808	N	4/1/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.7	< 0.1	< 0.05	< 0.001	< 0.1	0.15	< 0.2	< 1	0	< 0.2	< 1	< 1	
0808	N	5/6/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.71	< 0.1	< 0.05	< 0.001	< 0.1	0.148	< 0.2	< 1	0	< 0.2	< 1	< 1	
0808	N	6/3/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.65	< 0.1	< 0.05	< 0.001	< 0.1	0.142	< 0.2	< 1	0	< 0.2	< 1	< 1	
0808	N	7/8/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.64	< 0.1	< 0.05	< 0.001	< 0.1	0.169	0.3	< 1	0.3	< 0.2	< 1	< 1	
0808	N	10/7/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.65	< 0.1	< 0.05	< 0.001	< 0.1	0.115	< 0.2	< 1	0	< 0.2	< 1	< 1	
0808	N	1/6/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.65	< 0.1	< 0.05	< 0.001	< 0.1	0.138	< 0.2	< 1	0	< 0.2	< 1	< 1.0	
0808	N	4/7/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.68	< 0.1	< 0.05	< 0.001	< 0.1	0.126	< 0.2	< 1	0	< 0.2	< 1	< 1.0	



**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
0808	N	7/7/2003	6864.94	6.24	7.61	7130	720	640	267	7.9	1900	2740	170	0.3	122	6.8	< 0.1	< 0.001
0808	N	10/6/2003	6864.67	6.25	7.52	7000	784	719	326	5.2	1880	3030	180	0.16	127	6.3	< 0.1	< 0.001
0808	N	1/5/2004	6864.60	6.51	7.40	6810	768	705	269	6.2	1900	2950	200	0.1	123 D	6.5	0.2	< 0.001
0808	N	4/5/2004	6864.98	6.69	6.83	6850	730	669	304	5.8	1880	2760 D	182	0.2	135 D	6.7	< 0.1	< 0.001
0808	N	7/12/2004	6864.56	6.23	6.85	7030	751	663	323	6.4	1850	2760 D	186	0.12	128 D	5.3	< 0.1	< 0.001
0808	N	10/4/2004	6864.17	6.30	7.05	7070	742 D	681 D	334	4.6	1840	2840 D	185	0.13	118 D	7.2	< 0.1	< 0.001
0808	N	1/3/2005	6864.32	6.58	6.92	6880	739 D	663 D	301	5.6	1800	2620 D	174	0.08	110 D	6.6	< 0.1	< 0.001
0808	N	4/4/2005	6864.50	6.53	7.23	6460	728	641	304	4.5	1850	2700	168	< 0.05	94	6.8	< 0.1	< 0.001
0808	N	7/11/2005	6864.03	6.44	7.19	6680	750 D	676 D	286	5.2	1670	2820 D	198	0.09	125 D	8.7	< 0.1	< 0.001
0808	N	10/3/2005	6863.82	6.45	7.09	6700	730 D	695 D	306	4.8	1840	2610 D	169	0.13	120 D	7.3	< 0.1	< 0.001
0808	N	1/9/2006	6863.57	6.63	7.55	6510	705 D	649 D	276	5.3	1850	2840 D	159	0.84	128 D	6.7	< 0.1	< 0.001
0808	N	4/3/2006	6863.57	6.39	7.03	6580	767 D	676 D	264	4.9	1780	2650 D	171	0.14	128 D	5.8	< 0.1	< 0.001
0808	N	7/17/2006	6863.32	6.33	6.97	6460	732 D	693 D	324	5.9	1800	3080 D	180	< 0.05	126 D	6.8	0.3	< 0.001
0808	N	10/2/2006	6863.22	6.40	6.55	6450	733 D	639 D	271	5.4	1780	2710 D	131	0.11	129 D	6.08	< 0.1	< 0.001
0808	N	1/8/2007	6863.07	6.57	6.77	6060	614 D	539 D	258	5.2	1760	2310 D	141	0.12	124 D	6.24	< 0.1	< 0.001
0808	N	4/9/2007	6863.37	6.59	6.72	6220	725 D	645 D	274	6.6	1780	2740 D	182	0.05	138 D	7.08	< 0.1	< 0.001
0808	N	7/9/2007	6863.07	6.41	6.70	6560	744 D	674 D	313	5	1890	2920 D	152	< 0.05	123 D	6.8	< 0.1	0.01
0808	N	10/1/2007	6862.70	6.49	6.69	6620	681 D	609 D	300 D	5.3	1840	2610 D	187 D	< 0.05	122 D	6.88	< 0.1	< 0.001
0808	N	1/14/2008	6862.53	6.53	6.56	6650	698 D	620 D	292 D	5.6	1800	2590 D	191 D	< 0.05	116 D	7	< 0.1	< 0.001
0808	N	4/7/2008	6862.97	6.43	6.79	6210	739 D	679 D	330 D	7.0 D	1690	2840 D	162	< 0.05	134 D	6.6	< 0.1	< 0.001
0808	N	7/7/2008	6862.72	6.26	6.77 H	6240 H	712	633	279 D	4	1800	2900 D	167	< 0.05	124 D	7.6	< 0.1	< 0.003
0808	N	10/6/2008	6862.47	6.33	6.70	6500	729	644	296 D	4	1760	3010 D	166	< 0.1	159 D	9.44	< 0.1	< 0.001
0808	N	1/12/2009	6862.07	6.36	6.72	6800	709	652	303	4	1800	2600 D	155	< 0.05	123 D	7.68	0.2	< 0.001
0808	N	4/6/2009	6861.87	6.42	6.49	6360	708 D	659 D	326 D	4	1850	2910 D	162	0.06	117 D	6.4	< 0.1	< 0.001
0808	N	7/6/2009	6861.87	6.31	6.63	6800 H	769 D	673	313 D	5	1840	3020 D	180	< 0.05	114 D	6.16	< 0.1	< 0.001
0808	N	10/6/2009	6861.37	6.34	7.09	6740	739 D	639	322	4	1880	3180 D	169	0.16	126 D	7	< 0.1	< 0.001
0808	N	1/4/2010	no data	no data	6.84	6920 D	713 D	643	302	4	1940	3320 D	173	< 0.05	129 D	5.24	< 0.1	< 0.001
0808	N	4/5/2010	6861.32	6.44	6.58	6740 DH	802	759	362 D	5	2050	3030 D	174	0.21	111 D	5.56	< 0.1	< 0.001
0808	N	7/12/2010	6861.02	6.34	6.80	6800 D	751 D	680	321 D	5	2020	2870 D	167 D	0.24	101 D	5.8	< 0.1	< 0.001
0808	N	10/4/2010	6860.77	6.43	7.46	6840 D	710	638	320	5	2030	3030 D	171 D	0.32	101 D	4.92	< 0.1	< 0.001
0808	N	1/3/2011	6860.67	6.37	7.30	6360 D	759 D	693	315 D	5	1950	2870 D	178 D	< 0.05	90 D	4.8	0.2	< 0.001
0808	N	4/5/2011	6860.39	6.53	6.73	6960 D	742	674	342 D	5	2010	2920 D	179 D	0.18	96 D	4.44	< 0.1	< 0.001
0808	N	7/11/2011	6860.27	6.31	7.26	6640 D	714	682	341	5	2040	2960 D	179 D	0.4 D	95 D	4.52	< 0.1	< 0.001
0808	N	10/3/2011	6860.00	6.46	6.77	6550 D	729	680	338	6	1920	3000 D	178 D	0.6 D	83 D	4.16	< 0.1	0.003
0808	N	1/2/2012	6859.64	6.52	6.67 H	6790 D	761	718	336	6	1920	3020 D	183 D	0.14	88 D	4.28	< 0.1	< 0.001

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
0808	N	7/7/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.6	< 0.1	< 0.05	< 0.001	< 0.1	0.115	< 0.2	< 1	0	< 0.2	< 1	< 1.0
0808	N	10/6/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.74	< 0.1	< 0.05	< 0.001	< 0.1	0.15	< 0.2	< 1	0	< 0.2	< 1	< 1.0
0808	N	1/5/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.7	< 0.1	< 0.05	< 0.001	< 0.1	0.122 D	< 0.2	2.5	2.5	< 0.2	< 1.0	< 1.0
0808	N	4/5/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.62	< 0.1	< 0.05	0.002	< 0.1	0.135 D	< 0.2	< 1	0	< 0.2	< 1	< 1
0808	N	7/12/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.58	< 0.1	< 0.05	0.001	< 0.1	0.131 D	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
0808	N	10/4/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.62	< 0.1	< 0.05	0.001	< 0.1	0.116 D	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
0808	N	1/3/2005	< 0.01	< 0.005	< 0.01	< 0.05	0.58	< 0.1	< 0.05	< 0.001	< 0.1	0.135	0.3	< 1.0	0.3	< 0.2	< 1.0	< 1.0
0808	N	4/4/2005	< 0.01	< 0.005	< 0.01	< 0.05	0.62	< 0.1	< 0.05	< 0.001	< 0.1	0.125	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
0808	N	7/11/2005	< 0.01	< 0.005	< 0.01	< 0.05	0.62	< 0.1	< 0.05	< 0.001	< 0.1	0.124	0.3	< 1.0	0.3	< 0.2	< 1.0	< 1.0
0808	N	10/3/2005	< 0.01	< 0.005	< 0.01	< 0.05	0.61	< 0.1	< 0.05	< 0.001	< 0.1	0.134	< 0.2	1.7	1.7	< 0.2	< 1.0	< 1.0
0808	N	1/9/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.67	< 0.1	< 0.05	0.002	< 0.1	0.121	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
0808	N	4/3/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.63	< 0.1	< 0.05	0.002	< 0.1	0.131 D	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
0808	N	7/17/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.66	< 0.1	< 0.05	< 0.001	< 0.1	0.13	0.3	2.1	2.4	< 0.2	< 1.0	< 1.0
0808	N	10/2/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.63	< 0.1	< 0.05	< 0.001	< 0.1	0.12	< 0.2	< 1	0	< 0.2	< 1	< 1
0808	N	1/8/2007	< 0.01	< 0.005	< 0.01	< 0.05	0.54	< 0.1	< 0.05	< 0.001	< 0.1	0.0992	< 0.2	< 1	0	< 0.2	< 1	< 1
0808	N	4/9/2007	< 0.01	< 0.005	< 0.01	< 0.05	0.65	< 0.1	< 0.05	< 0.001	< 0.1	0.126	< 0.2	< 1	0	< 0.2	< 1	< 1
0808	N	7/9/2007	< 0.01	< 0.005	< 0.01	< 0.05	0.55	< 0.1	< 0.05	< 0.001	< 0.1	0.126	< 0.2	< 1	0	< 0.2	< 1	< 1
0808	N	10/1/2007	< 0.01	< 0.005	< 0.01	< 0.05	0.69	< 0.1	< 0.05	< 0.001	< 0.1	0.128	< 0.2	< 1	0	< 0.2	< 1	< 1
0808	N	1/14/2008	< 0.01	< 0.005	< 0.01	< 0.05	0.66	< 0.1	< 0.05	< 0.001	< 0.1	0.119	< 0.2	< 1	0	< 0.2	< 1	< 1
0808	N	4/7/2008	< 0.01	< 0.005	< 0.01	< 0.05	0.66	< 0.1	< 0.05	< 0.001	< 0.1	0.124	-0.2 U	0.4 U	0.2	0.5	0 U	1.2
0808	N	7/7/2008	< 0.01	< 0.005	< 0.01	< 0.05	0.72	< 0.1	< 0.05	< 0.001	< 0.1	0.119	-0.08 U	1.9	1.82	0.4	2 U	1
0808	N	10/6/2008	< 0.01	< 0.005	< 0.01	< 0.05	0.53	< 0.1	< 0.05	< 0.001	< 0.1	0.115	-0.2 U	0.34 U	0.14	0.1 U	-2 U	1
0808	N	1/12/2009	< 0.01	< 0.005	< 0.01	< 0.05	0.67	< 0.1	< 0.05	< 0.001	< 0.1	0.136	0.17 U	0.89 U	1.06	0.1 U	-2 U	1.1
0808	N	4/6/2009	< 0.01	< 0.005	< 0.01	< 0.05	0.74	< 0.1	< 0.05	< 0.001	< 0.1	0.119	0.15	0.42 U	0.57	-0.008 U	-0.9 U	0.5 U
0808	N	7/6/2009	< 0.01	< 0.005	< 0.01	< 0.05	0.78	< 0.1	< 0.05	< 0.001	< 0.1	0.126	0.6	2.2	2.8	-0.2 U	0.2 U	3
0808	N	10/6/2009	< 0.01	< 0.005	< 0.01	< 0.05	0.77	< 0.1	< 0.05	< 0.001	< 0.1	0.123	0.61	-0.3 U	0.31	-0.008 U	-0.6 U	0.1 U
0808	N	1/4/2010	< 0.01	< 0.005	< 0.01	< 0.05	0.79	< 0.1	< 0.05	< 0.001	< 0.1	0.115	0.17	1.3 U	1.47	0.02 U	-1 U	0.3 U
0808	N	4/5/2010	< 0.01	< 0.005	< 0.01	< 0.05	0.78	< 0.1	< 0.05	< 0.001	< 0.1	0.126	0.21	1.5	1.71	0.04 U	1.2 U	0.2 U
0808	N	7/12/2010	< 0.01	< 0.005	< 0.01	< 0.05	0.99	< 0.1	< 0.05	< 0.001	< 0.1	0.134	0.3	0.39 U	0.69	0.06 U	-0.6 U	0.2 U
0808	N	10/4/2010	< 0.01	< 0.005	< 0.01	< 0.05	1.02	< 0.1	< 0.05	< 0.001	< 0.1	0.121	0.07 U	0.05 U	0.12	0.1 U	-0.02 U	-0.1 U
0808	N	1/3/2011	< 0.01	< 0.005	< 0.01	< 0.05	1.02	< 0.1	< 0.05	< 0.001	< 0.1	0.126	0.008 U	0.80 U	0.808	0.08 U	0.2 U	0.6 U
0808	N	4/5/2011	< 0.01	< 0.005	< 0.01	< 0.05	0.93	< 0.1	< 0.05	< 0.001	< 0.1	0.115	-0.06 U	0.69 U	0.63	0.005 U	-0.1 U	0.4
0808	N	7/11/2011	< 0.01	< 0.005	< 0.01	< 0.05	1.06	< 0.1	< 0.05	< 0.001	< 0.1	0.128	-0.08 U	0.48 U	0.4	-0.004 U	0.2 U	0.1 U
0808	N	10/3/2011	< 0.01	< 0.005	< 0.01	< 0.05	1.2	< 0.1	< 0.05	< 0.001	< 0.1	0.122	0.15	0.71 U	0.86	0.02 U	-0.5 U	0.04 U
0808	N	1/2/2012	< 0.01	< 0.005	< 0.01	< 0.05	0.97	< 0.1	< 0.05	< 0.001	< 0.1	0.128	0.21	0.49 U	1.19	0.03 U	0.1 U	0.1 U

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
0808	N	4/2/2012	6859.97	6.63	6.55 H	6890 D	747	686	324	7	2070	3130 D	186 D	0.81	70 D	3.92	<0.1	<0.01
0808	N	7/9/2012	6859.42	6.46	6.61 H	7200	756	784	353 D	6	2100	3060 D	180 D	0.35	70 D	2.57	<0.1	<0.001
0808	N	10/8/2012	6859.27	6.50	6.56 H	6630	765	713	349 D	7	2150	3150 D	193 D	1.24	57 D	2.04	<0.1	<0.001
0808	N	1/7/2013	6859.32	6.43	6.57 H	6490	727	728	370 D	8	2090	3160 D	184 D	0.94	48 D	1.9	<0.1	<0.001
0808	N	4/1/2013	6859.07	6.49	6.71 H	6600	715	738	357	8	2120	3190 D	188 D	1.35	43 D	2.28	<0.1	<0.001
0808	N	7/8/2013	6858.70	6.41	6.64 H	7220	681	721	326	6	2130	3220 D	184 D	0.73	50 D	2.08	<0.1	<0.001
0808	N	9/30/2013	6858.74	6.47	6.60 H	6700 H	661	678	348	9	2100	3070 D	171 D	2.47	26 D	1.11	<0.1	<0.001
0808	N	1/6/2014	6858.46	6.65	6.54	6680	682	750	346	7	2140	3260	179	0.94	42	1.4	<0.1	<0.001
0808	N	3/31/2014	6858.53	6.61	6.48 H	6920	699	787	350 D	7	2130	3240 D	189 D	0.83	46 D	2.35	<0.1	<0.001
0808	N	7/7/2014	6858.31	6.53	6.60 H	7140	673	761	328 D	6	2160	3430 D	181 D	0.11	56 D	2.9	<0.1	<0.001
0808	N	10/6/2014	6858.08	6.55	6.60 H	6750	669	725	356	8	2090	3220 D	182 D	1.73	31 D	1.85	<0.1	<0.001
0808	N	1/5/2015	6857.72	6.68	6.65 H	6970	656	731	350	8	2000	3180 D	180 D	0.85	39 D	1.78	<0.1	<0.001
0808	N	4/6/2015	6857.99	6.49	6.56 H	6970	669	790	346 D	7	2100	3530 D	212 D	0.78	45 D	2.61	<0.1	<0.001
0808	N	7/6/2015	6857.71	6.39	6.54 H	7050	645	784	342	8	2160	3440 D	196 D	0.78	47 D	2.78	<0.1	<0.001
0808	N	10/5/2015	6857.34	6.52	6.56 H	6880 H	647	748	334	7	1960	3480 D	203 D	1.29	35 D	3.02	1.1	<0.001
0808	N	1/4/2016	6857.29	6.59	6.48 H	7020	640	790	338	7	2120	3440 D	196 D	0.7 D	36 D	2.51	<0.1	<0.001
0808	N	4/4/2016	6857.01	6.52	6.66 H	7140	636	817	355	6	2020	3390 D	191 D	0.12	49 D	2.51	<0.1	<0.001
0808	N	7/11/2016	6857.03	6.48	6.58 H	6910 D	646	775	350	8	2090	3130 D	184 DH	0.56	37 D	1.79	<0.1	<0.001
0808	N	10/3/2016	6856.98	6.59	6.53 H	6650 H	635	697	355	9	2000	3340 D	184 D	0.57	22 D	1.2	<0.1	<0.001
0029 A	N	7/20/1989	6879.40	7.20	7.04	4870	570	250	538	1.2	102	2362	38.3	0.15	183	< 1	< 0.1	< 0.001
0029 A	N	10/16/1989	6879.10	7.10	7.60	5144	518	240	662	1.3	546	2176	30.4	0.24	189	< 1	< 0.1	< 0.001
0029 A	N	1/4/1990	6878.60	6.90	7.28	5080	554	233	607	0.9	528	2333	42.5	0.09	190	< 1	< 0.1	< 0.001
0029 A	N	4/3/1990	no data	7.00	7.50	4981	567	240	573	0.9	582	2244	41.9	0.09	147	< 1	< 0.1	< 0.001
0029 A	N	7/2/1990	no data	7.00	7.48	5000	632	266	463	3.7	596	2268	38	< 0.05	172	< 1	< 0.1	< 0.001
0029 A	N	10/2/1990	6877.40	7.10	7.73	4778	520	231	472	0.8	558	2367	39.1	< 0.05	118	< 1	< 0.1	< 0.001
0029 A	N	1/15/1991	6877.00	7.10	7.65	4825	580	242	516	3.5	494	2474	42.8	< 0.05	166	< 1	< 0.1	< 0.001
0029 A	N	4/2/1991	6876.80	6.90	7.49	4775	592	239	351	0.5	538	2368	39.6	< 0.05	160	< 1	< 0.1	< 0.001
0029 A	N	7/16/1991	6876.20	6.90	7.50	4595	579	221	347	1.1	598	2487	37.2	< 0.05	147	< 1	< 0.1	< 0.001
0029 A	N	10/14/1991	6875.40	6.80	7.34	4672	490	204	365	1.1	571	2197	45.2	< 0.05	111	< 1	< 0.1	0.001
0029 A	N	1/14/1992	6875.00	6.80	7.38	4512	560	239	329	0.7	607	2110	36.4	< 0.05	125	< 1	< 0.1	< 0.001
0029 A	N	4/9/1992	6874.80	6.80	7.26	4656	574	235	432	1.6	531	2421	39	6.08	70.2	< 1	< 0.1	< 0.001
0029 A	N	7/14/1992	6873.50	6.50	7.58	4599	644	242	419	1.4	518	2358	37.7	5	129	< 1	< 0.1	< 0.001
0029 A	N	10/13/1992	6872.30	6.90	7.55	4147	584	267	417	1.7	588	2568	36.5	0.16	105	< 1	0.1	< 0.001
0029 A	N	1/12/1993	6872.10	7.00	7.60	4274	591	219	415	3.2	558	2520	36.7	< 0.05	91.8	< 1	< 0.1	< 0.001
0029 A	N	4/14/1993	6872.20	7.00	7.62	4349	569	212	373	3.1	568	2349	39.8	0.95	96.6	< 1	< 0.1	< 0.001



**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
0808	N	4/2/2012	<0.01	<0.005	<0.01	<0.05	1.3	<0.1	<0.05	<0.001	<0.1	0.135	0.01 U	0.45 U	0.91	-0.005 U	0.008 U	0.07 U
0808	N	7/9/2012	<0.001	<0.005	<0.01	0.002	1.25	<0.1	<0.05	<0.001	<0.1	0.126	0.4	-0.08 U	0.4	0.06 U	0.3 U	0.4
0808	N	10/8/2012	<0.001	<0.005	<0.01	0.002	1.62	<0.1	<0.05	<0.001	<0.1	0.12	0.07 U	0.53 U	0	0.04 U	0.3 U	0.4 U
0808	N	1/7/2013	<0.001	<0.005	<0.01	0.002	1.65	<0.1	<0.05	<0.001	<0.1	0.116	0.47	0.69 U	0.47	0.03 U	-0.07 U	0.005 U
0808	N	4/1/2013	<0.001	<0.005	<0.01	0.002	1.68	<0.1	<0.05	<0.001	<0.1	0.116	0.03 U	0.49 U	0	0.02 U	0.1 U	0.5 U
0808	N	7/8/2013	<0.001	<0.005	<0.01	0.004	1.59	<0.1	<0.05	<0.001	<0.1	0.132	0.10 U	1.4	1.4	-0.004 U	0.03 U	0.3 U
0808	N	9/30/2013	<0.001	<0.005	<0.01	0.002	1.74	<0.1	<0.05	<0.001	<0.1	0.112	0.39	0.46 U	0.39	0.02 U	0.2 U	0.002 U
0808	N	1/6/2014	<0.001	<0.005	<0.01	0.002	1.88	<0.1	<0.05	<0.001	<0.1	0.113	0.36	0.23 U	0.59	-0.01 U	0.3 U	0.6 U
0808	N	3/31/2014	<0.001	<0.005	<0.01	0.002	1.74	<0.1	<0.05	<0.001	<0.1	0.126	0.22	1.8	2.02	-0.02 U	-0.6 U	0.2 U
0808	N	7/7/2014	<0.001	<0.005	<0.01	0.002	1.42	<0.1	<0.05	<0.001	<0.1	0.113	0.06 U	0.32 U	0	-0.005 U	0.2 U	0.1 U
0808	N	10/6/2014	<0.001	<0.005	<0.01	0.002	1.71	<0.1	<0.05	<0.001	<0.1	0.098	0.33	1.1 U	0.33	-0.004 U	0.2 U	0.4 U
0808	N	1/5/2015	<0.001	<0.005	<0.01	0.001	1.64	<0.1	<0.05	<0.001	<0.1	0.113	0.52	0.80 U	0.52	-0.008 U	0.9 U	0.4 U
0808	N	4/6/2015	<0.001	<0.005	<0.01	0.002	1.65	<0.1	<0.05	<0.001	<0.1	0.106	0.44	0.77 U	0.44	0.06 U	0.2 U	1.5 U
0808	N	7/6/2015	<0.001	<0.005	<0.01	0.002	1.52	<0.1	<0.05	<0.001	<0.1	0.114	0.25	0.79 U	0.25	0.01 U	0.6 U	-0.1 U
0808	N	10/5/2015	<0.001	<0.005	<0.01	0.002	1.76	<0.1	<0.05	<0.001	<0.1	0.108	0.09 U	1.3	1.3	0.03 U	0.5 U	1.5
0808	N	1/4/2016	<0.001	<0.005	<0.01	0.001	1.57	<0.1	<0.05	<0.001	<0.1	0.103	0.19	0.36 U	0.19	-0.008 U	-0.5 U	0.9 U
0808	N	4/4/2016	<0.001	<0.005	<0.01	0.001	1.43	<0.1	<0.05	<0.001	<0.1	0.114	0.25	1.6	1.85	0.03 U	-0.4 U	-0.3 U
0808	N	7/11/2016	<0.001	<0.005	<0.01	0.002	1.68	<0.1	<0.05	<0.001	<0.1	0.0894	0.28	2.6	2.88	-0.003 U	-0.2 U	0.8 U
0808	N	10/3/2016	<0.001	<0.005	<0.01	0.001	1.9	<0.1	<0.05	<0.001	<0.1	0.0729	0.37	1.4 U	0.37	-0.009 U	-0.2 U	3.8
0029 A	N	7/20/1989	< 0.05	< 0.01	0.02	< 0.05	0.08	< 0.1	< 0.05	0.002	< 0.1	0.0556	0.4	< 1	0.4	5.9	< 1	0.6
0029 A	N	10/16/1989	< 0.05	< 0.01	< 0.01	< 0.05	< 0.05	< 0.1	< 0.05	0.003	< 0.1	0.0396	0.3	< 1	0.3	1.1	< 1	1.5
0029 A	N	1/4/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.039	< 0.2	< 1	0	< 0.2	1.9	< 1
0029 A	N	4/3/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.09	< 0.1	< 0.05	0.002	< 0.1	0.036	0.3	< 1	0.3	< 0.2	1.9	0.9
0029 A	N	7/2/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.11	< 0.1	< 0.05	< 0.001	< 0.1	0.0302	0.3	1.4	1.7	0.6	< 1	1
0029 A	N	10/2/1990	< 0.05	< 0.01	0.02	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.031	< 0.2	2.5	2.5	< 0.2	< 1	< 1
0029 A	N	1/15/1991	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.0416	< 0.2	< 1	0	< 0.2	< 1	< 1
0029 A	N	4/2/1991	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	0.002	< 0.1	0.0459	< 0.2	1.2	1.2	< 0.2	< 1	< 1
0029 A	N	7/16/1991	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.01	< 0.1	0.037	< 0.2	< 1	0	< 0.2	< 1	< 1
0029 A	N	10/14/1991	< 0.01	0.02	0.02	< 0.05	0.02	< 0.1	< 0.05	0.001	< 0.1	0.05	< 0.2	< 1	0	< 0.2	< 1	< 1
0029 A	N	1/14/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.01	< 0.1	0.05	0.001	< 0.1	0.032	< 0.2	< 1	0	< 0.2	1.8	< 1
0029 A	N	4/9/1992	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	0.021	< 0.1	0.039	2.1	4.7	6.8	< 0.2	1.5	2.4
0029 A	N	7/14/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	0.002	< 0.1	0.04	9.4	1.5	10.9	< 0.2	< 1	9.5
0029 A	N	10/13/1992	< 0.01	0.01	0.01	< 0.05	0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.027	3.1	< 1	3.1	< 0.2	< 1	< 1
0029 A	N	1/12/1993	< 0.01	0.03	0.03	< 0.05	< 0.01	< 0.1	< 0.05	0.011	< 0.1	0.034	< 0.2	< 1	0	< 0.2	< 1	< 1
0029 A	N	4/14/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.053	0.4	< 1	0.4	< 0.2	< 1	< 1

TABLE A.1

Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO <sub>3</sub> mg/l	SO <sub>4</sub> mg/l	Cl mg/l	NH <sub>4</sub> as N mg/l	NO <sub>3</sub> as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
0029 A	N	7/15/1993	6865.90	7.10	6.93	4135	591	201	342	8.6	589	2195	37.1	< 0.05	81.6	< 1	< 0.1	< 0.001
0029 A	N	10/7/1993	6868.30	7.10	7.70	4425	586	212	345	< 0.1	549	2120	35.9	< 0.05	120	< 1	< 0.1	< 0.001
0029 A	N	1/6/1994	6870.30	7.10	7.57	4264	567	206	370	0.3	544	2376	35.8	< 0.05	51.8	< 1	< 0.1	< 0.001
0029 A	N	4/14/1994	6870.20	7.20	7.26	4070	557	207	344	0.5	576	2339	36	0.21	72.8	< 1	< 0.1	< 0.001
0029 A	N	7/21/1994	6869.50	7.00	7.56	4233	678	229	324	< 0.1	630	2625	33	< 0.05	70.5	< 1	< 0.1	< 0.001
0029 A	N	10/5/1994	6869.10	6.90	7.81	4347	641	221	344	0.8	593	2365	36.2	0.11	86	< 1	< 0.1	< 0.001
0509 D	N	7/19/1989	6916.60	6.40	7.07	4652	819	290	198	10	1525	2017	176	0.06	50	< 1	< 0.1	< 0.001
0509 D	N	10/12/1989	6915.80	6.40	6.98	4860	854	332	201	13.5	1703	2053	197	0.13	58	< 1	0.12	0.001
0509 D	N	1/4/1990	6915.30	6.10	6.54	4986	833	403	214	10.7	1745	2024	202	0.1	43	< 1	< 0.1	< 0.001
0509 D	N	4/3/1990	6914.30	6.20	6.70	5192	794	411	210	11.2	1877	1996	220	0.1	39	< 1	< 0.1	< 0.001
0509 D	N	7/3/1990	6913.40	6.30	6.74	5278	909	348	203	12	1898	2026	209	< 0.05	53.4	< 1	< 0.1	< 0.001
0509 D	N	10/3/1990	6912.60	6.20	7.24	5373	847	358	252	12.2	1819	2118	221	< 0.05	38	< 1	< 0.1	< 0.001
0509 D	N	1/15/1991	6908.00	6.30	7.15	5428	851	379	273	15.1	1463	2355	226	0.05	56.4	< 1	< 0.1	< 0.001
0509 D	N	4/9/1991	6907.50	6.60	7.25	4208	923	292	192	9.2	1218	1958	178	0.05	37	< 1	< 0.1	< 0.001
0509 D	N	7/17/1991	6906.80	6.30	7.35	5554	905	365	225	11	1826	2303	237	0.07	56.8	< 1	< 0.1	< 0.001
0509 D	N	10/15/1991	6906.20	6.20	6.97	5616	917	432	253	12.3	1813	2407	239	< 0.05	22.5	< 1	< 0.1	0.001
0509 D	N	1/15/1992	6905.50	6.10	7.16	4832	782	378	228	10.2	1206	2226	215	< 0.05	42.3	< 1	0.26	< 0.001
0509 D	N	4/8/1992	6904.80	6.10	7.41	5122	822	437	258	11.6	1763	2392	227	< 0.05	33.3	< 1	< 0.1	< 0.001
0509 D	N	7/7/1992	6904.00	6.00	7.80	5151	791	413	319	16.1	1253	2379	182	0.15	55.6	< 1	0.12	< 0.001
0509 D	N	10/6/1992	6903.40	6.20	8.15	5913	913	451	293	12.1	1946	2358	230	< 0.05	62.5	< 1	0.1	< 0.001
0509 D	N	1/6/1993	6902.90	6.30	7.26	5281	453	995	156	8	2013	2878	262	0.81	84	< 1	< 0.1	< 0.001
0509 D	N	4/7/1993	6902.30	6.30	7.00	5254	786	389	319	10.5	1797	2393	251	0.06	51.6	< 1	< 0.1	< 0.001
0509 D	N	7/14/1993	6901.30	6.30	7.04	5055	810	402	283	11.4	1961	2101	257	< 0.05	47.4	< 1	< 0.1	< 0.001
0509 D	N	10/6/1993	6900.60	6.50	7.00	5090	830	424	271	11.3	1787	2476	231	< 0.05	56.9	< 1	< 0.1	< 0.001
0509 D	N	1/6/1994	6900.20	6.50	6.83	5480	814	438	293	10.6	1726	2583	240	0.16	39.6	< 1	< 0.1	< 0.001
0509 D	N	4/12/1994	6899.50	6.50	6.75	5766	780	452	277	11.3	1660	2729	256	0.51	59.3	< 1	< 0.1	< 0.001
0509 D	N	7/21/1994	6898.90	6.40	7.34	6216	918	487	295	11.7	1817	3043	246	0.39	54.1	< 1	< 0.1	< 0.001
0509 D	N	10/5/1994	6898.60	6.20	7.59	6177	901	522	319	12.8	1800	2749	259	0.93	54.8	< 1	< 0.1	< 0.001
0509 D	N	1/5/1995	6898.00	6.40	7.12	6296	880	542	298	14	1898	2693	271	1.05	49.7	< 1	< 0.1	< 0.001
0509 D	N	4/5/1995	6897.30	6.50	6.92	6165	814	494	276	12	1856	2766	302	1.63	63	< 1	< 0.1	< 0.001
0509 D	N	7/6/1995	6896.60	6.40	7.60	6186	835	510	300	13.5	1841	2602	299	1.54	46.5	< 1	< 0.1	< 0.001
0509 D	N	10/3/1995	6896.20	6.30	7.41	6534	820	545	296	13.6	1928	2825	292	2.22	50.5	< 1	< 0.1	0.003
0509 D	N	1/3/1996	6895.70	6.50	6.96	5314	760	490	287	13.3	1903	2229	227	2.22	50.4	< 1	< 0.1	< 0.001
0509 D	N	4/2/1996	6895.10	6.50	7.67	6804	800	610	324	15	1979	3030	342	3.86	53.6	< 1	< 0.1	< 0.001
0509 D	N	7/7/1996	6890.10	6.20	7.04	6283	805	495	300	14.7	1769	2580	255	2.45	44.5	< 1	< 0.1	< 0.001

**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
0029 A	N	7/15/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.158	0.3	< 1	0.3	< 0.2	< 1	< 1
0029 A	N	10/7/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.04	0.8	2.9	3.7	< 0.2	< 1	< 1
0029 A	N	1/6/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.035	0.6	< 1	0.6	< 0.2	1.4	< 1
0029 A	N	4/14/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.043	1	1.5	2.5	< 0.2	< 1	3.4
0029 A	N	7/21/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.03	< 0.1	< 0.05	0.002	< 0.1	0.043	< 0.2	< 1	0	< 0.2	< 1	< 1
0029 A	N	10/5/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.04	< 0.2	3.9	3.9	< 0.2	1.9	6.2
0509 D	N	7/19/1989	< 0.05	< 0.01	< 0.01	< 0.05	0.29	< 0.1	< 0.05	< 0.001	< 0.1	0.111	0.6	1.5	2.1	6.9	2.8	6.8
0509 D	N	10/12/1989	< 0.05	< 0.01	< 0.01	< 0.05	0.39	< 0.1	< 0.05	0.001	< 0.1	0.105	0.8	< 1	0.8	< 0.2	2.3	1.2
0509 D	N	1/4/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.38	< 0.1	< 0.05	< 0.001	< 0.1	0.107	0.9	< 1	0.9	< 0.2	3.4	2.5
0509 D	N	4/3/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.43	< 0.1	< 0.05	< 0.001	< 0.1	0.106	0.7	< 1	0.7	< 0.2	< 1	1.4
0509 D	N	7/3/1990	< 0.05	< 0.01	0.02	< 0.05	0.48	< 0.1	< 0.05	< 0.001	< 0.1	0.126	0.4	< 1	0.4	< 0.2	< 1	< 1
0509 D	N	10/3/1990	< 0.05	< 0.01	0.02	< 0.05	0.55	< 0.1	< 0.05	0.002	< 0.1	0.074	< 0.2	< 1	0	< 0.2	1.9	< 1
0509 D	N	1/15/1991	< 0.01	0.01	< 0.01	< 0.05	0.44	< 0.1	< 0.05	< 0.001	< 0.1	0.1202	0.8	< 1	0.8	1	< 1	< 1
0509 D	N	4/9/1991	< 0.01	0.02	< 0.01	< 0.05	0.91	< 0.1	< 0.05	0.001	< 0.1	0.1274	0.5	< 1	0.5	< 0.2	2.9	< 1
0509 D	N	7/17/1991	< 0.01	< 0.01	< 0.01	< 0.05	0.46	< 0.1	< 0.05	< 0.001	< 0.1	0.136	0.4	< 1	0.4	< 0.2	< 1	< 1
0509 D	N	10/15/1991	< 0.01	< 0.01	0.01	< 0.05	0.5	< 0.1	< 0.05	0.001	< 0.1	0.132	0.5	7.6	8.1	< 0.2	< 1	< 1
0509 D	N	1/15/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.7	< 0.1	< 0.05	0.002	< 0.1	0.22	< 0.2	< 1	0	< 0.2	< 1	< 1
0509 D	N	4/8/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.61	< 0.1	< 0.05	0.004	< 0.1	0.124	< 0.2	1.1	1.1	< 0.2	1.9	< 1
0509 D	N	7/7/1992	< 0.01	< 0.01	< 0.01	0.07	0.72	< 0.1	< 0.05	0.002	< 0.1	0.12	1	< 1	1	< 0.2	< 1	1.2
0509 D	N	10/6/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.66	< 0.1	< 0.05	0.005	< 0.1	0.119	0.7	2.2	2.9	< 0.2	2.3	< 1
0509 D	N	1/6/1993	< 0.01	< 0.01	< 0.01	< 0.05	1.86	< 0.1	< 0.05	0.005	< 0.1	0.003	1.5	4.9	6.4	< 0.2	< 1	1.7
0509 D	N	4/7/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.68	< 0.1	< 0.05	< 0.001	< 0.1	0.142	0.3	1.9	2.2	< 0.2	2.9	< 1
0509 D	N	7/14/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.74	< 0.1	< 0.05	< 0.001	< 0.1	0.082	0.5	2	2.5	< 0.2	< 1	< 1
0509 D	N	10/6/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.75	< 0.1	< 0.05	< 0.001	< 0.1	0.043	0.9	< 1	0.9	< 0.2	< 1	< 1
0509 D	N	1/6/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.81	< 0.1	< 0.05	< 0.001	< 0.1	0.081	0.4	< 1	0.4	< 0.2	1.1	< 1
0509 D	N	4/12/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.81	< 0.1	< 0.05	< 0.001	< 0.1	0.082	< 0.2	< 1	0	< 0.2	< 1	< 1
0509 D	N	7/21/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.88	< 0.1	< 0.05	0.004	< 0.1	0.075	0.4	4.7	5.1	< 0.2	y	5.5
0509 D	N	10/5/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.88	< 0.1	< 0.05	< 0.001	< 0.1	0.084	0.5	1.8	2.3	< 0.2	2.7	3.4
0509 D	N	1/5/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.85	< 0.1	< 0.05	< 0.001	< 0.1	0.084	0.6	1.6	2.2	< 0.2	< 1	3.2
0509 D	N	4/5/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.44	< 0.1	< 0.05	< 0.001	< 0.1	0.084	0.2	1.6	1.8	< 0.2	< 1	2.8
0509 D	N	7/6/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.91	< 0.1	< 0.05	0.001	< 0.1	0.0816	< 0.2	< 1	0	0.4	< 1	< 1
0509 D	N	10/3/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.82	< 0.1	< 0.05	0.002	< 0.1	0.084	0.8	< 1	0.8	< 0.2	< 1	1.7
0509 D	N	1/3/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.79	< 0.1	< 0.05	0.002	< 0.1	0.09	0.4	< 1	0.4	< 0.2	1.5	2
0509 D	N	4/2/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.86	< 0.1	< 0.05	< 0.001	< 0.1	0.101	< 0.2	< 1	0	< 0.2	< 1	< 1
0509 D	N	7/7/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.97	< 0.1	< 0.05	< 0.001	< 0.1	0.143	0.5	< 1	0.5	< 0.2	< 1	< 1



**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
0509 D	N	10/1/1996	6889.60	6.40	6.80	6440	818	578	308	15.2	1900	2795	297	3.97	86.1	< 1	< 0.1	< 0.001
0509 D	N	1/22/1997	6889.20	6.30	7.21	6140	820	545	277	14.4	1900	2789	337	3.56	43.2	< 1	< 0.1	< 0.001
0509 D	N	4/8/1997	6888.50	6.50	7.64	6430	825	581	328	15.7	1910	2869	345	5.09	48.4	< 1	< 0.1	< 0.001
0509 D	N	7/8/1997	6888.00	6.80	7.61	6640	827	599	293	16.1	1900	2650	337	6.19	44.8	< 1	< 0.1	< 0.001
0509 D	N	10/7/1997	6887.80	6.20	7.42	6530	807	584	302	16.2	1920	2850	350	6.7	44.5	< 1	< 0.1	< 0.001
0509 D	N	1/16/1998	6887.20	6.60	7.75	6640	768	602	319	17.3	1930	3000	343	9.43	47.3	< 1	< 0.1	< 0.001
0509 D	N	4/7/1998	6887.00	6.40	7.24	6390	805	610	310	16.2	1910	2950	274	8.49	46	< 1	< 0.1	< 0.001
0509 D	N	7/7/1998	6886.60	6.70	7.64	6320	800	548	305	16.1	1890	2500	322	7.32	42.3	< 1	< 0.1	< 0.001
0509 D	N	10/6/1998	6886.20	6.60	7.78	6960	815	689	353	19.9	1910	3050	312	13.8	44.4	< 1	< 0.1	< 0.001
0509 D	N	1/5/1999	6885.70	6.60	7.76	6830	761	609	289	17.1	1970	3100	317	12.9	41.1	< 1	< 0.1	< 0.001
0509 D	N	4/6/1999	6885.40	6.50	7.60	3780	805	630	289	17.6	1950	2830	345	13.1	9.53	< 1	< 0.1	< 0.001
0509 D	N	7/13/1999	6884.84	6.50	7.72	6620	762	644	314	25.1	1540	3000	312	17.6	36.6	< 1	< 0.1	< 0.001
0509 D	N	10/5/1999	6884.60	6.56	7.40	6290	847	664	307	18.6	1990	3070	317	0.05	35.4	< 1	< 0.1	< 0.001
0509 D	N	1/4/2000	6884.20	6.70	7.59	6090	798	529	232	17.5	1980	2520	278	11.7	36.6	< 1	< 0.1	< 0.001
0509 D	N	5/3/2000	6883.70	6.30	7.12	4990	859	337	241	13.2	2010	1570	293	0.6	32.7	1.9	0.2	< 0.001
0509 D	N	7/12/2000	6883.30	6.31	7.18	4920	866	306	228	10.3	2110	1380	324	0.24	31.3	< 1	< 0.1	< 0.001
0509 D	N	10/3/2000	6883.10	6.21	7.14	5090	893	372	240	13.5	2050	1990	350	1.9	31.2	< 1	< 0.1	< 0.001
0509 D	N	1/8/2001	6882.70	6.46	7.47	5010	924	331	220	11.1	2200	1610	317	0.94	30.6	< 1	< 0.1	< 0.001
0509 D	N	2/5/2001	6882.35	6.50	7.03	5090	1000	384	265	13.5	2090	1860	365	1.75	29.5	< 1	0.2	0.001
0509 D	N	3/5/2001	6882.10	6.65	7.41	5110	901	347	310	13.9	2100	1850	279	0.91	28.4	< 1	< 0.1	< 0.001
0509 D	N	4/3/2001	6882.30	6.42	6.76	5120	984	366	211	11.8	2080	1800	311	0.82	31.8	< 1	< 0.1	< 0.001
0509 D	N	5/7/2001	6881.90	6.46	7.01	5240	864	338	221	12.5	2060	1700	322	1.56	27.3	< 1	< 0.1	< 0.001
0509 D	N	6/4/2001	6882.10	6.46	6.97	4860	848	336	232	12.7	2070	1760	318	1.92	30.2	< 1	< 0.1	< 0.001
0509 D	N	7/9/2001	6881.80	6.36	6.84	5210	956	369	293	12.6	2180	1730	326	0.8	29.2	< 1	< 0.1	< 0.001
0509 D	N	8/6/2001	6881.60	6.36	7.30	5210	890	340	230	13	2130	1500	370	0.61	26.6	< 1	< 0.1	< 0.001
0509 D	N	9/10/2001	6881.40	6.38	7.20	5130	940	340	246	11.4	2210	1600	297	0.42	26	< 1	< 0.1	< 0.001
0509 D	N	10/1/2001	6881.35	6.43	7.20	5190	920	320	234	12.1	2250	1570	411	0.37	25	< 1	< 0.1	< 0.001
0509 D	N	11/5/2001	6881.30	6.47	7.40	5300	930	348	258	13.6	2300	1770	401	1.37	26.4	< 1	< 0.1	< 0.001
0509 D	N	12/3/2001	6881.20	6.44	7.30	5370	875	338	237	12.3	2280	1590	357	2.14	29	< 1	< 0.1	< 0.001
0509 D	N	1/7/2002	6881.00	6.41	6.80	5220	1040	354	229	11.8	2290	1840	383	1.1	23	< 1	< 0.1	< 0.001
0509 D	N	2/4/2002	6880.80	6.48	7.10	5290	994	358	274	13.1	2170	1760	362	1.11	23.9	< 1	< 0.1	< 0.001
0509 D	N	3/4/2002	6880.70	6.45	6.90	5220	934	342	262	12.6	2240	1790	376	0.9	24.4	< 1	< 0.1	< 0.001
0509 D	N	4/1/2002	6880.68	6.36	7.69	5260	974	337	262	13.3	2250	1750	380	0.4	23.5	< 1	< 0.1	< 0.001
0509 D	N	5/6/2002	6880.55	6.38	7.74	5390	916	361	279	14.5	2120	1850	344	2.76	27.3	< 1	< 0.1	< 0.001
0509 D	N	6/3/2002	6880.50	6.36	7.87	5200	949	331	244	11.1	2240	1500	318	0.32	24.5	< 1	< 0.1	< 0.001

**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
0509 D	N	10/1/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.9	< 0.1	< 0.05	0.007	< 0.1	0.088	0.6	< 1	0.6	< 0.2	< 1	< 1
0509 D	N	1/22/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.85	< 0.1	< 0.05	< 0.001	< 0.1	0.087	< 0.2	< 1	0	< 0.2	< 1	< 1
0509 D	N	4/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.97	< 0.1	< 0.05	0.028	< 0.1	0.099	0.5	< 1	0.5	< 0.2	< 1	< 1
0509 D	N	7/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.84	< 0.1	< 0.05	< 0.001	< 0.1	0.094	1.6	< 1	1.6	< 0.2	< 1	< 1
0509 D	N	10/7/1997	< 0.01	< 0.01	< 0.01	< 0.05	1.21	< 0.1	< 0.05	< 0.001	< 0.1	0.089	< 0.2	< 1	0	< 0.2	< 1	1
0509 D	N	1/16/1998	< 0.01	< 0.01	< 0.01	< 0.05	1.2	< 0.1	< 0.05	< 0.001	< 0.1	0.102	0.7	< 1	0.7	< 0.2	< 1	2.5
0509 D	N	4/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.8	< 0.1	< 0.05	< 0.001	< 0.1	0.101	0.6	< 1	0.6	< 0.2	< 1	< 1
0509 D	N	7/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.98	< 0.1	< 0.05	< 0.001	< 0.1	0.115	0.6	< 1	0.6	< 0.2	< 1	< 1
0509 D	N	10/6/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.83	< 0.1	< 0.05	< 0.001	< 0.1	0.105	0.6	< 1	0.6	< 0.2	< 1	< 1
0509 D	N	1/5/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.78	< 0.1	< 0.05	< 0.001	< 0.1	0.103	1	< 1	1	< 0.2	< 1	< 1
0509 D	N	4/6/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.89	< 0.1	< 0.05	< 0.001	< 0.1	0.104	1.1	< 1	1.1	< 0.2	< 1	< 1
0509 D	N	7/13/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.56	< 0.1	< 0.05	0.003	< 0.1	0.104	1.9	< 1	1.9	< 0.2	< 1	9.3
0509 D	N	10/5/1999	< 0.01	0.008	< 0.01	< 0.05	1.05	< 0.1	< 0.05	< 0.001	< 0.1	0.108	0.5	< 1	0.5	< 0.2	< 1	< 1
0509 D	N	1/4/2000	< 0.01	< 0.005	< 0.01	< 0.05	1.09	< 0.1	0.05	0.001	< 0.1	0.134	0.5	< 1	0.5	< 0.2	< 1	< 1
0509 D	N	5/3/2000	< 0.01	0.005	< 0.01	< 0.05	1.6	< 0.1	< 0.05	< 0.001	< 0.1	0.176	< 0.2	2.6	2.6	< 0.2	< 1	< 1
0509 D	N	7/12/2000	< 0.01	< 0.005	< 0.01	< 0.05	1.89	< 0.1	< 0.05	< 0.001	< 0.1	0.226	0.6	2.8	3.4	< 0.2	< 1	< 1
0509 D	N	10/3/2000	< 0.01	< 0.005	< 0.01	0.07	2.05	< 0.1	< 0.05	< 0.001	< 0.1	0.184	0.7	< 1	0.7	< 0.2	< 1	< 1
0509 D	N	1/8/2001	< 0.01	< 0.005	< 0.01	< 0.05	2.08	< 0.1	< 0.05	< 0.001	< 0.1	0.211	0.5	< 1	0.5	< 0.2	< 1	< 1
0509 D	N	2/5/2001	< 0.01	< 0.005	< 0.01	< 0.05	2.2	< 0.1	< 0.05	< 0.001	< 0.1	0.197	0.6	< 1	0.6	< 0.2	< 1	< 1
0509 D	N	3/5/2001	< 0.01	< 0.005	< 0.01	< 0.05	2.51	< 0.1	< 0.05	0.001	< 0.1	0.186	< 0.2	2.3	2.3	< 0.2	< 1	< 1
0509 D	N	4/3/2001	< 0.01	< 0.005	< 0.01	< 0.05	2.53	< 0.1	< 0.05	< 0.001	< 0.1	0.183	0.5	< 1	0.5	< 0.2	< 1	< 1
0509 D	N	5/7/2001	< 0.01	< 0.005	< 0.01	< 0.05	2.5	< 0.1	< 0.05	< 0.001	< 0.1	0.188	0.4	< 1	0.4	< 0.2	< 1	< 1
0509 D	N	6/4/2001	< 0.01	< 0.005	< 0.01	< 0.05	2.42	< 0.1	< 0.05	< 0.001	< 0.1	0.186	0.9	< 1	0.9	< 0.2	< 1	< 1
0509 D	N	7/9/2001	< 0.01	< 0.005	< 0.01	< 0.05	2.71	< 0.1	< 0.05	< 0.001	< 0.1	0.217	< 0.2	< 1	0	< 0.2	< 1	< 1
0509 D	N	8/6/2001	< 0.01	< 0.005	< 0.01	< 0.05	2.8	< 0.1	< 0.05	< 0.001	< 0.1	0.22	0.7	< 1	0.7	< 0.2	< 1	< 1
0509 D	N	9/10/2001	< 0.01	< 0.005	< 0.01	< 0.05	2.7	< 0.1	< 0.05	< 0.001	< 0.1	0.222	0.5	< 1	0.5	< 0.2	< 1	< 1
0509 D	N	10/1/2001	< 0.01	< 0.005	< 0.01	< 0.05	2.46	< 0.1	< 0.05	< 0.001	< 0.1	0.225	0.5	< 1	0.5	< 0.2	< 1	< 1
0509 D	N	11/5/2001	< 0.01	< 0.005	< 0.01	< 0.05	2.41	< 0.1	< 0.05	< 0.001	< 0.1	0.197	< 0.2	3.9	3.9	< 0.2	< 1	< 1
0509 D	N	12/3/2001	< 0.01	< 0.005	< 0.01	< 0.05	2.33	< 0.1	< 0.05	0.001	< 0.1	0.252	< 0.2	< 1	0	< 0.2	< 1	< 1
0509 D	N	1/7/2002	< 0.01	< 0.005	< 0.01	< 0.05	2.49	< 0.1	< 0.05	< 0.001	< 0.1	0.206	1.2	< 1	1.2	< 0.2	< 1	< 1
0509 D	N	2/4/2002	< 0.01	< 0.005	< 0.01	< 0.05	2.41	< 0.1	< 0.05	< 0.001	< 0.1	0.189	0.4	< 1	0.4	< 0.2	< 1	< 1
0509 D	N	3/4/2002	< 0.01	< 0.005	< 0.01	< 0.05	2.91	< 0.1	< 0.05	< 0.001	< 0.1	0.228	< 0.2	< 1	0	< 0.2	< 1	< 1
0509 D	N	4/1/2002	< 0.01	0.007	< 0.01	< 0.05	2.95	< 0.1	0.05	< 0.001	< 0.1	0.213	< 0.2	< 1	0	< 0.2	< 1	< 1
0509 D	N	5/6/2002	< 0.01	< 0.005	< 0.01	< 0.05	2.48	< 0.1	< 0.05	< 0.001	< 0.1	0.198	< 0.2	< 1	0	< 0.2	< 1	< 1
0509 D	N	6/3/2002	< 0.01	< 0.005	< 0.01	< 0.05	2.99	< 0.1	0.05	< 0.001	< 0.1	0.192	< 0.2	2.7	2.7	< 0.2	< 1	< 1

**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
0509 D	N	7/8/2002	6880.17	6.57	7.83	5470	925	381	306	13.4	2160	1900	308	4.08	25	< 1	< 0.1	< 0.001
0509 D	N	10/7/2002	6879.78	6.12	7.82	4290	856	333	254	11.9	2100	1750	300	1.17	26.4	< 1	< 0.1	< 0.001
0509 D	N	1/6/2003	6879.36	6.53	6.84	5260	840	309	240	12.4	2150	1640	291	1.1	23.7	< 1	< 0.1	< 0.001
0509 D	N	4/7/2003	6879.09	6.33	6.77	5320	887	344	275	18.6	2160	1700	330	2.1	23.3	< 1	< 0.1	< 0.001
0509 D	N	7/7/2003	6878.81	6.20	7.28	5350	816	316	280	22.8	2120	1670	344	1.46	23.3	< 1	< 0.1	< 0.001
0509 D	N	10/6/2003	6878.52	6.24	7.97	5360	901	362	297	13.6	2160	1840	338	2.21	21.4	< 1	< 0.1	< 0.001
0509 D	N	1/5/2004	6877.96	6.38	7.86	5610	883	435	267	15.7	2270	2170	404	8.37	22.5 D	< 1.0	0.2	< 0.001
0509 D	N	4/5/2004	6877.89	6.62	6.67	5300	912	344	291	12.3	2120	1710 D	350	1	20 D	< 1	< 0.1	< 0.001
0509 D	N	7/12/2004	6877.38	6.22	6.67	5540	934	366	327	13.6	2380	1850 D	345	2.48	18.9 D	< 1.0	< 0.1	< 0.001
0509 D	N	10/4/2004	6877.03	6.31	6.96	5430	853 D	322 D	308	11.7	2310	1660	349	0.59	17.1 D	< 1.0	< 0.1	< 0.001
0509 D	N	1/3/2005	6876.74	6.51	6.89	5380	925 D	335 D	311	12.9	2360	1610 D	367	0.76	17.5 D	< 1.0	< 0.1	< 0.001
0509 D	N	4/4/2005	6876.54	6.48	6.87	6050	906	360	329	12.3	2370	1810	344	0.47	14.7	< 1.0	< 0.1	< 0.001
0509 D	N	7/11/2005	6876.04	6.38	7.10	5260	881 D	360 D	332	12.6	2330	1840 D	355	0.53	15.1 D	< 1.0	< 0.1	< 0.001
0509 D	N	10/3/2005	6875.84	6.38	7.01	5460	875 D	430 D	323	13.7	2250	1890 D	327	3.93	14.9 D	< 1.0	< 0.1	< 0.001
0509 D	N	1/9/2006	6875.35	6.51	7.42	5080	868 D	380 D	290	11.6 D	1600	2080 D	345	1.57	14.7 D	< 1.0	< 0.1	< 0.001
0509 D	N	4/3/2006	6875.04	6.37	7.06	5260	817	356	296	12.6	1710	1820 D	323	1.28	13.8 D	< 1.0	< 0.1	< 0.001
0509 D	N	7/17/2006	6874.74	6.28	6.78	5120	926 D	365 D	330	13.2	2210	1920 D	351	0.28	13.1 D	< 1.0	< 0.1	< 0.001
0509 D	N	10/2/2006	6874.54	6.35	6.69	5180	816 D	350 D	312 D	14.1	2330	1760 D	297	2.15	13.7 D	< 0.5	< 0.1	< 0.001
0509 D	N	1/8/2007	6874.05	6.44	6.40	5340	914 D	355 D	294	12.4	2260	1580	344	0.23	13.2 D	< 0.5	< 0.1	< 0.001
0509 D	N	4/9/2007	6873.82	6.46	6.62	5280	925 D	342 D	326	12.8	2350	1630	361	0.08	12.8 D	< 0.5	< 0.1	< 0.001
0509 D	N	7/9/2007	6873.69	6.33	6.69	5110	891 D	364 D	356	12.2	2450	1730	324	< 0.05	12.4	< 0.5	< 0.1	0.008
0509 D	N	10/1/2007	6873.39	6.41	6.75	5180	826 D	334 D	334 D	13.1	2340	1720 D	352 D	0.62	12.4	< 0.5	< 0.1	< 0.001
0509 D	N	1/14/2008	6872.94	6.48	6.35	5030	886 D	337 D	334 D	13	2280	1660 D	374 D	0.12	13.3 D	< 0.5	< 0.1	< 0.001
0509 D	N	4/7/2008	6873.04	6.37	6.70	5210	876 D	409 D	370 D	15.0 D	2150	1970 D	361	1.2 D	21.1	< 0.50	< 0.1	< 0.001
0509 D	N	7/7/2008	6872.84	6.19	7 H	5390 H	664	729	270 D	12	2340	2080 D	347	4.7	14.6	< 0.5	< 0.1	< 0.003
0509 D	N	10/6/2008	6872.54	6.30	6.60	5650	918	365	346 D	12	2340	1960 D	343	5.4	14.4	< 0.5	< 0.1	< 0.001
0509 D	N	1/12/2009	6872.19	6.32	6.69	5750	842	373	368	13	2300	1690 D	332	0.98	18.3	< 0.5	< 0.1	< 0.001
0509 D	N	4/6/2009	6871.84	6.35	6.54	5860	820 D	389 D	380 D	13	2430	2090 D	333	2.3	13.5	< 0.50	< 0.1	< 0.001
0509 D	N	7/6/2009	6871.84	6.24	6.67	5660	911 D	386	388 D	14	2450	2040 D	357	1.82	11	< 0.50	0.2	< 0.001
0509 D	N	10/5/2009	6871.74	6.44	7.16	5600	878 D	418	379 D	13	2500	1910 D	367	4.3	11	< 0.50	< 0.1	< 0.001
0509 D	N	1/4/2010	6871.24	6.54	6.71	5800 D	899 D	374	379 D	12	2610	2050 D	362	0.75	11.2	< 0.50	< 0.1	< 0.001
0509 D	N	4/5/2010	6871.24	6.41	6.51	5690 DH	963 D	416	431 D	13	2660	2080 D	356	1.76	10.1 D	< 0.50	0.1	< 0.001
0509 D	N	7/12/2010	6870.94	6.31	6.71	5820 D	948 D	418	399 D	13	2590	2130 D	365 D	4.05	9.8 D	< 0.50	< 0.1	< 0.001
0509 D	N	10/4/2010	6870.79	6.41	7.37	5570 D	882	424	418	14	2690	2040 D	359 D	4.8 D	9.2 D	< 0.50	< 0.1	0.001
0509 D	N	1/3/2011	6870.59	6.39	6.74	5820 D	917 D	460	429 D	14	2550	2230 D	368 D	5.5 D	8.1 D	< 0.50	< 0.1	< 0.001



**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
0509 D	N	7/8/2002	< 0.01	< 0.005	< 0.01	< 0.05	2.34	0.3	< 0.05	< 0.001	< 0.1	0.229	0.3	< 1	0.3	< 0.2	< 1	< 1
0509 D	N	10/7/2002	< 0.01	< 0.005	< 0.01	< 0.05	2.47	< 0.1	< 0.05	< 0.001	< 0.1	0.159	< 0.2	< 1	0	< 0.2	< 1	< 1
0509 D	N	1/6/2003	< 0.01	< 0.005	< 0.01	< 0.05	2.9	< 0.1	< 0.05	< 0.001	< 0.1	0.19	< 0.2	< 1	0	< 0.2	< 1	1.5
0509 D	N	4/7/2003	< 0.01	< 0.005	< 0.01	< 0.05	2.45	< 0.1	< 0.05	< 0.001	< 0.1	0.19	< 0.2	< 1	0	< 0.2	< 1	< 1.0
0509 D	N	7/7/2003	< 0.01	< 0.005	0.02	< 0.05	3.46	< 0.1	< 0.05	< 0.001	< 0.1	0.22	< 0.2	< 1	0	< 0.2	< 1	< 1.0
0509 D	N	10/6/2003	< 0.01	< 0.005	< 0.01	< 0.05	3.1	< 0.1	< 0.05	< 0.001	< 0.1	0.231	< 0.2	< 1	0	< 0.2	< 1	< 1.0
0509 D	N	1/5/2004	< 0.01	< 0.005	< 0.01	< 0.05	2.1	< 0.1	< 0.05	< 0.001	< 0.1	0.161 D	0.5	< 1.0	0.5	< 0.2	< 1.0	< 1.0
0509 D	N	4/5/2004	< 0.01	< 0.005	< 0.01	< 0.05	3.26	< 0.1	< 0.05	0.001	< 0.1	0.24 D	< 0.2	< 1	0	< 0.2	< 1	< 1
0509 D	N	7/12/2004	< 0.01	< 0.005	0.01	< 0.05	2.9	< 0.1	< 0.05	< 0.001	< 0.1	0.219 D	0.5	< 1.0	0.5	< 0.2	< 1.0	< 1.0
0509 D	N	10/4/2004	< 0.01	< 0.005	< 0.01	< 0.05	3.13	< 0.1	< 0.05	< 0.001	< 0.1	0.211 D	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
0509 D	N	1/3/2005	< 0.01	< 0.005	< 0.01	< 0.05	3.47	< 0.1	< 0.05	< 0.001	< 0.1	0.231	0.4	< 1.0	0.4	< 0.2	< 1.0	1.7
0509 D	N	4/4/2005	< 0.01	< 0.005	< 0.01	< 0.05	3.1	< 0.1	< 0.05	< 0.001	< 0.1	0.215	0.9	< 1.0	0.9	< 0.2	< 1.0	< 1.0
0509 D	N	7/11/2005	< 0.01	< 0.005	< 0.01	< 0.05	3.03	< 0.1	< 0.05	< 0.001	< 0.1	0.209	0.4	< 1.0	0.4	< 0.2	< 1.0	< 1.0
0509 D	N	10/3/2005	< 0.01	< 0.005	< 0.01	< 0.05	2.36	< 0.1	< 0.05	< 0.001	< 0.1	0.197	< 0.2	1.7	1.7	< 0.2	< 1.0	< 1.0
0509 D	N	1/9/2006	< 0.01	< 0.005	< 0.01	< 0.05	2.79	< 0.1	< 0.05	< 0.001	< 0.1	0.189	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
0509 D	N	4/3/2006	< 0.01	< 0.005	< 0.01	< 0.05	2.91	< 0.1	< 0.05	< 0.001	< 0.1	0.187 D	0.6	< 1.0	0.6	< 0.2	< 1.0	< 1.0
0509 D	N	7/17/2006	< 0.01	< 0.005	< 0.01	< 0.05	3.3	< 0.1	< 0.05	< 0.001	< 0.1	0.222	0.6	2.2	2.8	< 0.2	< 1.0	< 1.0
0509 D	N	10/2/2006	< 0.01	< 0.005	< 0.01	< 0.05	3.03	< 0.1	< 0.05	< 0.001	< 0.1	0.227	< 0.2	< 1	0	< 0.2	< 1	< 1
0509 D	N	1/8/2007	< 0.01	< 0.005	< 0.01	< 0.05	3.97	< 0.1	< 0.05	< 0.001	< 0.1	0.229	0.3	< 1	0.3	< 0.2	< 1	< 1
0509 D	N	4/9/2007	< 0.01	< 0.005	< 0.01	< 0.05	4.14	< 0.1	< 0.05	< 0.001	< 0.1	0.243	< 0.2	< 1	0	< 0.2	< 1	1
0509 D	N	7/9/2007	< 0.01	< 0.005	< 0.01	< 0.05	2.25	< 0.1	< 0.05	< 0.001	< 0.1	0.24	< 0.2	< 1	0	< 0.2	< 1	1
0509 D	N	10/1/2007	< 0.01	< 0.005	< 0.01	< 0.05	3.55	< 0.1	< 0.05	< 0.001	< 0.1	0.246	< 0.2	< 1	0	< 0.2	< 1	1.5
0509 D	N	1/14/2008	< 0.01	< 0.005	< 0.01	< 0.05	3.6	< 0.1	< 0.05	< 0.001	< 0.1	0.232	< 0.2	< 1	0	< 0.2	< 1	1.6
0509 D	N	4/7/2008	< 0.01	< 0.005	< 0.01	< 0.05	2.72	< 0.1	< 0.05	< 0.001	< 0.1	0.218	0.3	0.5 U	0.8	-0.07 U	0 U	1.6
0509 D	N	7/7/2008	< 0.01	< 0.005	< 0.01	< 0.05	2.7	< 0.1	< 0.05	< 0.001	< 0.1	0.208	-0.08 U	1.6	1.52	0.5	2.7 U	1.3
0509 D	N	10/6/2008	< 0.01	< 0.005	< 0.01	< 0.05	2.36	< 0.1	< 0.05	< 0.001	< 0.1	0.199	0.14 U	0.31 U	0.45	0.2	-2 U	1.7
0509 D	N	1/12/2009	< 0.01	< 0.005	< 0.01	< 0.05	2.99	< 0.1	< 0.05	< 0.001	< 0.1	0.214	0.24	2.4	2.64	0.1 U	1.5 U	1.6
0509 D	N	4/6/2009	< 0.01	< 0.005	< 0.01	< 0.05	2.61	< 0.1	< 0.05	0.001	< 0.1	0.211	0.35	1.4	1.75	0.09 U	-5 U	1
0509 D	N	7/6/2009	< 0.01	< 0.005	< 0.01	< 0.05	3.3	< 0.1	< 0.05	< 0.001	< 0.1	0.223	0.75	1.5	2.25	0.03 U	0.4 U	2.7
0509 D	N	10/5/2009	< 0.01	< 0.005	< 0.01	< 0.05	3.35	< 0.1	< 0.05	< 0.001	< 0.1	0.239	0.69	0.89 U	1.58	0.05 U	4.0 U	1
0509 D	N	1/4/2010	< 0.01	< 0.005	< 0.01	< 0.05	3.71	< 0.1	< 0.05	< 0.001	< 0.1	0.235	0.37	1.8	2.17	-0.01 U	-6 U	0.7 U
0509 D	N	4/5/2010	< 0.01	< 0.005	< 0.01	< 0.05	3.45	< 0.1	< 0.05	< 0.001	< 0.1	0.244	0.4	0.96 U	1.36	0.06 U	1.7 U	0.8
0509 D	N	7/12/2010	< 0.01	< 0.005	< 0.01	< 0.05	3.25	< 0.1	< 0.05	< 0.001	< 0.1	0.26	0.39	0.51 U	0.9	0.001 U	-0.1 U	0.4 U
0509 D	N	10/4/2010	< 0.01	< 0.005	0.01	< 0.05	4.44	< 0.1	< 0.05	< 0.001	< 0.1	0.312	0.23	0.54 U	0.77	0.02 U	1 U	0.5 U
0509 D	N	1/3/2011	< 0.01	< 0.005	0.01	< 0.05	3.5	< 0.1	< 0.05	< 0.001	< 0.1	0.264	0.11 U	0.51 U	0.62	0.06 U	0.1 U	1.5

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
0509 D	N	4/4/2011	6870.14	6.55	6.68	5790 D	905	426	442 D	14	2530	2220 D	366 D	2.95 D	9.6 D	<0.50	<0.1	<0.001
0509 D	N	7/11/2011	6870.09	6.35	6.97	5600 D	876	440	443	13	2550	2150 D	350 D	4.9 D	9.0 D	<0.50	<0.1	0.005
0509 D	N	10/3/2011	6869.85	6.47	7.65	5600 D	918	434	430	13	2420	2170 D	368 D	2.3 D	8.9 D	<0.50	<0.1	0.006
0509 D	N	1/2/2012	6869.44	6.53	6.81 H	5370 D	916	395	402	13	2360	1840 D	356 D	0.99	8.9 D	<0.50	<0.1	<0.001
0509 D	N	4/2/2012	6869.71	6.61	6.53 H	5510 D	933	389	399	14	2490	1870 D	346 D	1.1 D	8.8 D	<0.50	<0.1	<0.01
0509 D	N	7/9/2012	6869.12	6.32	6.58 H	5470 H	933	432	432 D	14	2530	2260 DH	214 DH	1.21	8.3 D	<0.50	<0.1	<0.001
0509 D	N	10/8/2012	6868.99	6.46	6.55 H	5420	856	407	403	13	2580	1830 D	364 D	1.53	7.6 D	<0.50	<0.1	<0.001
0509 D	N	1/7/2013	6868.89	6.47	6.57 H	5450	933	424	448 D	16	2460	2120 D	359 D	0.88	7.7 D	<0.50	<0.1	<0.001
0509 D	N	4/1/2013	6868.61	6.46	6.58 H	5180	898	412	432	14	2560	1930 D	363 D	1.37	7.4 D	<0.50	<0.1	<0.001
0509 D	N	7/8/2013	6868.27	6.42	6.57 H	5540	864	404	404	13	2520	1800 D	335 D	1.27	6.4 D	<0.50	<0.1	<0.001
0509 D	N	9/30/2013	6868.17	6.49	6.54 H	5300 H	881	412	422	14	2600	1860 D	349 D	1.36	6.5 D	<0.50	<0.1	<0.001
0509 D	N	1/6/2014	6867.84	6.64	6.49	5510	808	442	409	14	2560	2030	346	3.58	4.9	<0.50	<0.1	<0.001
0509 D	N	3/31/2014	6867.81	6.60	6.48 H	5300	786	382	370 D	12	2530	1860 D	360 D	<0.05	8.7 D	<0.50	<0.1	<0.001
0509 D	N	7/7/2014	6867.56	6.46	6.62 H	5680	820	356	408 D	13	2450	2090 D	352 D	0.12	8.4 D	<0.50	<0.1	<0.001
0509 D	N	10/6/2014	6867.38	6.52	6.64 H	5500	864	345	399	12	2470	2010 D	353 D	0.34	10.9 D	<0.50	<0.1	<0.001
0509 D	N	1/5/2015	6867.03	6.63	6.62 H	5880	824	374	410	13	2420	2100 D	339 D	0.07	9.2 D	<0.50	<0.1	<0.001
0509 D	N	4/6/2015	6867.13	6.42	6.57 H	5410	862	343	399	12	2540	1950 D	417 D	<0.05	7.1 D	<0.5	<0.1	<0.001
0509 D	N	7/6/2015	6866.82	6.35	6.59 H	5720	822	341	391	12	2620	1900 D	355 D	2.99	4.3	<0.50	<0.1	0.001
0509 D	N	10/5/2015	6866.69	6.51	6.57 H	5340 H	813	332	378	11	2340	1890 D	357 D	<0.05	5.9 D	<0.50	<0.1	<0.001
0509 D	N	1/4/2016	6866.55	6.57	6.50 H	5360	854	353	393	12	2560	1920 D	462 D	<0.05	7.1 D	<0.50	<0.1	<0.001
0509 D	N	4/4/2016	6866.18	6.41	6.61 H	5540	830	372	421	12	2360	2060 D	352 D	0.09	6.9 D	<0.50	<0.1	<0.001
0509 D	N	7/11/2016	6866.19	6.45	6.57 H	5460 D	852	352	403	12	2470	2030 D	372 D	<0.05	6.5 D	<0.50	<0.1	<0.001
0509 D	N	10/3/2016	6866.19	6.59	6.61 H	5730 H	820	356	409	12	2380	2250 D	345 D	<0.05	6.7 D	<0.50	<0.1	<0.001
EPA 22A	N	7/25/1989	6914.50	7.10	6.95	1384	311	59	84	3.1	542	646	10.7	0.06	0.2	< 1	< 0.1	< 0.001
EPA 22A	N	10/8/1989	6913.70	6.90	7.56	1310	269	55.4	88.2	4.3	521	605	11.4	0.06	0.26	< 1	< 0.1	< 0.001
EPA 22A	N	1/17/1990	6912.90	6.80	6.96	1478	311	57.4	86.7	3.4	556	677	11.7	0.07	0.25	< 1	< 0.1	< 0.001
EPA 22A	N	4/19/1990	6911.90	6.90	7.31	1448	310	63.1	82.9	3.2	576	845	11.5	0.06	0.21	< 1	< 0.1	< 0.001
EPA 22A	N	7/17/1990	6910.80	6.90	7.28	1505	317	59.5	80.4	3.6	583	681	11.6	< 0.05	0.12	< 1	< 0.1	< 0.001
EPA 22A	N	10/16/1990	6910.00	6.80	7.79	1536	301	59.9	81.2	3.4	547	704	10.9	< 0.05	0.2	< 1	< 0.1	< 0.001
EPA 22A	N	1/10/1991	6909.50	6.90	7.98	1551	324	69.2	84.7	7.1	533	754	16.7	< 0.05	0.21	< 1	< 0.1	< 0.001
EPA 22A	N	4/16/1991	6908.80	6.80	7.66	1494	299	60.9	80	3.7	521	720	10.2	< 0.05	0.21	< 1	< 0.1	< 0.001
EPA 22A	N	7/9/1991	6908.30	6.80	7.42	1532	291	54.1	75	3.1	540	663	11.5	0.17	0.09	< 1	< 0.1	< 0.001
EPA 22A	N	10/22/1991	6907.70	6.80	7.24	1430	282	55.3	84.1	3	549	685	16.2	0.16	< 0.01	< 1	< 0.1	< 0.001
EPA 22A	N	1/23/1992	6906.90	6.80	7.76	1416	308	52.3	82.2	3.3	540	676	11.4	< 0.05	< 0.01	< 1	< 0.1	< 0.001
EPA 22A	N	4/2/1992	6906.30	6.80	7.70	1453	294	61.2	95.8	3.4	556	727	11	< 0.05	< 0.1	< 1	< 0.1	< 0.001

**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
0509 D	N	4/4/2011	<0.01	<0.005	0.01	<0.05	3.66	<0.1	<0.05	<0.001	<0.1	0.258	-0.03 U	0.76 U	0.73	0.05 U	-0.4 U	0.9
0509 D	N	7/11/2011	<0.01	<0.005	0.01	<0.05	3.98	<0.1	<0.05	<0.001	<0.1	0.262	0.12 U	0.73 U	0.85	0.05 U	-0.3 U	0.9 U
0509 D	N	10/3/2011	<0.01	<0.005	<0.01	<0.05	3.7	<0.1	<0.05	<0.001	<0.1	0.226	0.3	1.1	1.4	0.04 U	0.2 U	0.2 U
0509 D	N	1/2/2012	<0.01	<0.005	<0.01	<0.05	4.02	<0.1	<0.05	<0.001	<0.1	0.268	0.77	1.0 U	2.77	0.04 U	-0.3 U	0.8
0509 D	N	4/2/2012	<0.01	<0.005	<0.01	<0.05	3.92	<0.1	<0.05	<0.001	<0.1	0.268	0.37	0.55 U	1.47	-0.05 U	0.2 U	0.3 U
0509 D	N	7/9/2012	<0.001	<0.005	<0.01	<0.001	3.25	<0.1	<0.05	<0.001	<0.1	0.276	0.44	0.54 U	1.52	0.06 U	0.4 U	0.5
0509 D	N	10/8/2012	<0.001	<0.005	0.01	<0.001	3.83	<0.1	<0.05	<0.001	<0.1	0.283	0.3	1.9	2.2	0.02 U	0.7 U	0.5
0509 D	N	1/7/2013	<0.001	<0.005	<0.01	<0.001	3.28	<0.1	<0.05	<0.001	<0.1	0.271	0.44	1.4	1.84	-0.01 U	0.2 U	0.9
0509 D	N	4/1/2013	<0.001	<0.005	<0.01	<0.001	3.32	<0.1	<0.05	<0.001	<0.1	0.28	0.24	1.6	1.84	0.02 U	-0.3 U	1.1
0509 D	N	7/8/2013	<0.001	<0.005	0.01	<0.001	3.64	<0.1	<0.05	<0.001	<0.1	0.298	0.2	1.1	1.3	-0.003 U	0.4 U	0.9
0509 D	N	9/30/2013	<0.001	<0.005	0.01	<0.001	3.64	<0.1	<0.05	<0.001	<0.1	0.299	0.47	1	1.47	-0.02 U	0.3 U	0.5
0509 D	N	1/6/2014	<0.001	<0.005	<0.01	<0.001	3.92	<0.1	<0.05	<0.001	<0.1	0.283	0.63	0.25 U	0.63	0.05 U	0.1 U	0.9
0509 D	N	3/31/2014	<0.001	<0.005	<0.01	<0.001	3.9	<0.1	<0.05	<0.001	<0.1	0.286	0.34	1.8	2.14	0.02 U	-1 U	0.5 U
0509 D	N	7/7/2014	<0.001	<0.005	<0.01	<0.001	3.22	<0.1	<0.05	<0.001	<0.1	0.222	0.51	1.3	1.81	0.02 U	0.4 U	0.3 U
0509 D	N	10/6/2014	<0.001	<0.005	<0.01	<0.001	3.16	<0.1	<0.05	<0.001	<0.1	0.27	0.5	3.5	4	0.04 U	-0.6 U	0.3 U
0509 D	N	1/5/2015	<0.001	<0.005	<0.01	<0.001	2.99	<0.1	<0.05	<0.001	<0.1	0.264	0.41	1.2	1.61	0.07 U	-0.01 U	2.1
0509 D	N	4/6/2015	<0.001	<0.005	0.01	<0.001	3.67	<0.1	<0.05	<0.001	<0.1	0.256	0.63	0.92 U	0.63	-0.006 U	-0.2 U	2.7
0509 D	N	7/6/2015	<0.001	<0.005	0.01	<0.001	3.7	<0.1	<0.05	<0.001	<0.1	0.277	0.5	2.1	2.6	0.08 U	-0.3 U	1.1 U
0509 D	N	10/5/2015	<0.001	<0.005	0.01	<0.001	3.72	<0.1	<0.05	<0.001	<0.1	0.254	0.29	1.5	1.79	0.02 U	0.1 U	5.9
0509 D	N	1/4/2016	<0.001	<0.005	0.01	<0.001	3.87	<0.1	<0.05	<0.001	<0.1	0.258	0.46	1.5	1.96	0.1 U	0.4 U	1.9
0509 D	N	4/4/2016	<0.001	<0.005	<0.01	<0.001	2.19	<0.1	<0.05	<0.001	<0.1	0.289	0.53	2.5	3.03	0.2	1.1 U	1.4 U
0509 D	N	7/11/2016	<0.001	<0.005	0.01	<0.001	4	<0.1	<0.05	<0.001	<0.1	0.276	0.44	2	2.44	0.02 U	-0.04 U	1.5
0509 D	N	10/3/2016	<0.001	<0.005	0.01	<0.001	3.07	<0.1	<0.05	<0.001	<0.1	0.213	0.33	4.2	4.53	0.03 U	0.1 U	9.5
EPA 22A	N	7/25/1989	< 0.05	< 0.01	< 0.01	< 0.05	0.08	< 0.1	< 0.05	< 0.001	< 0.1	0.0276	0.5	< 1	0.5	1.3	< 1	< 1
EPA 22A	N	10/8/1989	< 0.05	< 0.01	< 0.01	< 0.05	0.08	< 0.1	< 0.05	< 0.001	< 0.1	0.029	0.9	< 1	0.9	5.9	4.1	7.8
EPA 22A	N	1/17/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.09	< 0.1	< 0.05	0.001	< 0.1	0.028	0.2	1.9	2.1	3.1	< 1	3.5
EPA 22A	N	4/19/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.09	< 0.1	< 0.05	0.001	< 0.1	0.027	0.5	< 1	0.5	< 0.2	< 1	< 1
EPA 22A	N	7/17/1990	< 0.05	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.0359	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 22A	N	10/16/1990	< 0.05	< 0.01	0.03	< 0.05	0.11	< 0.1	< 0.05	< 0.001	< 0.1	0.0254	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 22A	N	1/10/1991	< 0.01	< 0.01	0.01	< 0.05	0.1	< 0.1	< 0.05	< 0.001	< 0.1	0.0241	0.7	< 1	0.7	< 0.2	1.7	1.1
EPA 22A	N	4/16/1991	< 0.01	< 0.01	< 0.01	< 0.05	0.12	< 0.1	< 0.05	< 0.001	< 0.1	0.021	< 0.2	1.7	1.7	< 0.2	< 1	< 1
EPA 22A	N	7/9/1991	< 0.01	< 0.01	0.01	< 0.05	0.1	< 0.1	< 0.05	< 0.001	< 0.1	0.0338	0.6	< 1	0.6	< 0.2	< 1	< 1
EPA 22A	N	10/22/1991	< 0.01	< 0.01	< 0.01	< 0.05	0.1	< 0.1	< 0.05	< 0.001	< 0.1	0.013	0.3	< 1	0.3	< 0.2	< 1	< 1
EPA 22A	N	1/23/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.11	< 0.1	< 0.05	0.001	< 0.1	0.036	2	2.3	4.3	< 0.2	3.4	2
EPA 22A	N	4/2/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.11	< 0.1	< 0.05	< 0.001	< 0.1	0.01	0.3	1.5	1.8	< 0.2	< 1	< 1



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Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
EPA 22A	N	7/16/1992	6905.20	6.90	7.43	1456	268	58.6	74.3	3.6	538	714	12.2	< 0.05	0.7	< 1	< 0.1	0.001
EPA 22A	N	10/15/1992	6904.50	6.90	7.51	1603	306	59.6	83.9	2.9	548	744	11.4	< 0.05	< 0.1	< 1	< 0.1	< 0.001
EPA 22A	N	1/13/1993	6903.90	7.00	7.47	1497	314	60	81	3.3	545	746	15.9	< 0.05	< 0.1	< 1	< 0.1	< 0.001
EPA 22A	N	4/15/1993	6903.20	7.00	7.52	1631	341	54.4	88.4	1.9	548	777	12.5	< 0.05	0.6	< 1	< 0.1	< 0.001
EPA 22A	N	7/21/1993	6902.30	7.00	7.83	1635	333	62	98	4.3	558	859	11.8	< 0.05	0.33	< 1	< 0.1	< 0.001
EPA 22A	N	10/12/1993	6899.70	7.00	7.40	1699	352	63.3	92.5	2.1	551	847	11.2	< 0.05	0.33	< 1	< 0.1	< 0.001
EPA 22A	N	1/11/1994	6900.90	7.00	7.92	1748	343	68.9	72.9	1.7	492	938	11.4	0.12	0.91	< 1	< 0.1	< 0.001
EPA 22A	N	4/19/1994	6900.40	6.70	7.77	1595	315	61.7	82.8	2.8	483	815	11.8	< 0.05	0.68	< 1	< 0.1	< 0.001
EPA 22A	N	7/27/1994	6899.80	6.80	7.68	1548	392	58.8	85.1	2	510	877	9.8	< 0.05	0.46	< 1	< 0.1	< 0.001
EPA 22A	N	10/11/1994	6899.10	6.90	7.71	1611	341	58.9	95.3	2.5	538	829	11	< 0.05	0.99	< 1	< 0.1	< 0.001
EPA 22A	N	1/11/1995	6898.50	6.90	8.00	1726	352	63	87	3	534	828	12.3	0.12	0.92	< 1	< 0.1	< 0.001
EPA 22A	N	4/11/1995	6898.10	6.90	7.62	1585	325	66	88	2.5	547	751	10.5	0.06	1.09	< 1	< 0.1	< 0.001
EPA 22A	N	7/11/1995	6897.50	7.00	7.84	1820	394	85	87	2.6	503	974	14.3	1.97	1.92	< 1	< 0.1	< 0.001
EPA 22A	N	10/10/1995	6896.90	7.20	8.22	1553	313	63	95	2.6	549	724	12	< 0.05	1.12	< 1	< 0.1	0.003
EPA 22A	N	1/9/1996	6896.30	7.30	7.49	1724	329	68	94	2.7	549	824	11.5	< 0.05	1.73	< 1	< 0.1	< 0.001
EPA 22A	N	4/10/1996	6895.70	7.20	7.93	1782	350	74.5	83.5	2.5	550	881	12.4	0.06	1.85	< 1	< 0.1	< 0.001
EPA 22A	N	7/17/1996	6895.30	7.00	7.52	1815	326	72.4	93.6	2.7	548	816	12.1	0.05	1.29	< 1	< 0.1	< 0.001
EPA 22A	N	10/8/1996	6894.50	6.90	7.48	2040	401	92	93	3	543	1041	16.7	0.07	1.44	< 1	< 0.1	0.002
EPA 22A	N	1/28/1997	6893.70	7.00	7.97	2070	488	104	83	2.83	538	1178	20.4	0.06	4.07	< 1	< 0.1	< 0.001
EPA 22A	N	4/14/1997	6893.10	6.80	7.95	2050	409	94	91.6	2.9	537	1074	16.2	0.06	4.27	< 1	< 0.1	< 0.001
EPA 22A	N	7/15/1997	6892.60	6.90	8.15	1940	351	80.8	91.1	2.7	521	955	17.2	0.05	3.79	< 1	< 0.1	0.001
EPA 23	N	7/28/1989	6897.30	6.60	6.37	4967	742	422	185	10.7	1037	2390	96.4	0.68	97	< 1	< 0.1	< 0.001
EPA 23	N	10/8/1989	6896.70	6.30	7.10	4930	682	397	173	14.1	1086	2339	91	0.53	91	< 1	< 0.1	< 0.001
EPA 23	N	1/17/1990	6896.30	6.40	6.66	4882	669	391	174	10.9	1074	2278	90.9	0.53	89	< 1	< 0.1	< 0.001
EPA 23	N	4/18/1990	6895.60	6.50	6.88	4988	610	363	165	9.9	1104	2241	89.9	0.64	80	< 1	< 0.1	0.002
EPA 23	N	7/13/1990	6894.70	6.60	6.86	4780	678	413	173	11.2	1106	2243	89.7	0.31	82.9	< 1	< 0.1	< 0.001
EPA 23	N	10/11/1990	6894.50	6.50	7.03	4580	657	403	173	10.8	1076	2374	99	0.5	80.1	< 1	< 0.1	< 0.001
EPA 23	N	1/9/1991	6893.90	6.50	7.10	4876	688	418	177	27	1070	2406	97.5	0.51	95	< 1	< 0.1	< 0.001
EPA 23	N	4/16/1991	6893.60	6.40	7.90	4876	604	387	165	11.1	1059	2408	90	0.43	115	< 1	< 0.1	< 0.001
EPA 23	N	7/9/1991	6892.90	6.30	6.81	5029	616	393	163	9	1122	2347	93.7	0.56	81.8	< 1	0.17	< 0.001
EPA 23	N	10/23/1991	6892.40	6.30	7.17	4870	626	393	173	10.2	1059	2257	101	0.8	67.5	< 1	0.14	< 0.001
EPA 23	N	1/16/1992	6891.70	6.40	7.42	4916	619	382	168	9.8	979	2376	100	1	94.3	< 1	< 0.1	< 0.001
EPA 23	N	4/2/1992	6891.50	6.30	7.27	4901	669	360	211	12	1096	2408	89.3	0.73	94.3	< 1	< 0.1	< 0.001
EPA 23	N	7/16/1992	6890.20	6.50	7.08	5173	682	349	201	11.4	1093	2390	93.4	0.4	74.4	< 1	< 0.1	< 0.001
EPA 23	N	10/15/1992	6889.30	6.60	7.11	4866	655	339	170	11.5	1091	2373	88.2	0.7	48.4	< 1	< 0.1	< 0.001

**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
EPA 22A	N	7/16/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.11	< 0.1	< 0.05	0.001	< 0.1	0.028	0.5	1.4	1.9	< 0.2	< 1	< 1
EPA 22A	N	10/15/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.11	< 0.1	< 0.05	< 0.001	< 0.1	0.009	0.9	2.8	3.7	< 0.2	2.2	< 1
EPA 22A	N	1/13/1993	< 0.1	< 0.01	< 0.01	< 0.05	0.11	< 0.1	< 0.05	< 0.001	< 0.1	0.041	< 0.2	2.6	2.6	< 0.2	< 1	< 1
EPA 22A	N	4/15/1993	< 0.01	< 0.01	0.02	< 0.05	0.12	< 0.1	< 0.05	< 0.001	< 0.1	0.039	1	< 1	1	< 0.2	< 1	1.5
EPA 22A	N	7/21/1993	< 0.01	< 0.01	0.01	< 0.05	0.11	< 0.1	< 0.05	< 0.001	< 0.1	0.039	0.6	< 1	0.6	< 0.2	1.6	< 1
EPA 22A	N	10/12/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.12	< 0.1	< 0.05	< 0.001	< 0.1	0.045	0.6	< 1	0.6	< 0.2	2	< 1
EPA 22A	N	1/11/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.13	< 0.1	< 0.05	< 0.001	< 0.1	0.045	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 22A	N	4/19/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.12	< 0.1	< 0.05	< 0.001	< 0.1	0.034	0.5	1.4	1.9	< 0.2	1.1	2.8
EPA 22A	N	7/27/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.1	< 0.1	< 0.05	< 0.001	< 0.1	0.035	4.4	6.1	10.5	< 0.2	< 1	13.7
EPA 22A	N	10/11/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.11	< 0.1	< 0.05	< 0.001	< 0.1	0.036	0.8	< 1	0.8	< 0.2	5.4	< 1
EPA 22A	N	1/11/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.13	< 0.1	< 0.05	< 0.001	< 0.1	0.051	0.8	2.3	3.1	< 0.2	< 1	4.4
EPA 22A	N	4/11/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.1	< 0.1	< 0.05	< 0.001	< 0.1	0.031	0.3	1.6	1.9	< 0.2	< 1	2.7
EPA 22A	N	7/11/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.15	< 0.1	< 0.05	< 0.001	< 0.1	0.042	0.4	< 1	0.4	< 0.2	< 1	1.5
EPA 22A	N	10/10/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.11	< 0.1	< 0.05	< 0.001	< 0.1	0.036	1.3	3.8	5.1	< 0.2	< 1	2.3
EPA 22A	N	1/9/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.1	< 0.1	< 0.05	< 0.001	< 0.1	0.038	0.4	< 1	0.4	0.8	< 1	< 1
EPA 22A	N	4/10/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.09	< 0.1	< 0.05	< 0.001	< 0.1	0.048	0.5	2	2.5	< 0.2	< 1	1.4
EPA 22A	N	7/17/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.15	< 0.1	< 0.05	< 0.001	< 0.1	0.048	0.7	< 1	0.7	< 0.2	< 1	< 1
EPA 22A	N	10/8/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.17	< 0.1	< 0.05	< 0.001	< 0.1	0.051	2.1	< 1	2.1	< 0.2	< 1	2.2
EPA 22A	N	1/28/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.15	< 0.1	< 0.05	< 0.001	< 0.1	0.032	1.1	< 1	1.1	< 0.2	< 1	1.2
EPA 22A	N	4/14/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.18	< 0.1	< 0.05	< 0.001	< 0.1	0.043	1.5	< 1	1.5	< 0.2	< 1	3.7
EPA 22A	N	7/15/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.27	< 0.1	< 0.05	0.003	< 0.1	0.032	0.8	< 1	0.8	< 0.2	< 1	< 1
EPA 23	N	7/28/1989	< 0.05	< 0.01	0.01	< 0.05	1.8	< 0.1	< 0.05	0.001	< 0.1	0.0443	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	10/8/1989	< 0.05	< 0.01	< 0.01	< 0.05	1.9	< 0.1	< 0.05	0.001	< 0.1	0.04	0.2	< 1	0.2	9.8	< 1	10.2
EPA 23	N	1/17/1990	< 0.05	< 0.01	< 0.01	< 0.05	1.9	< 0.1	< 0.05	< 0.001	< 0.1	0.035	0.7	1.5	2.2	1.3	1.5	1.5
EPA 23	N	4/18/1990	< 0.05	< 0.01	< 0.01	< 0.05	1.6	< 0.1	< 0.05	< 0.016	< 0.1	0.031	0.4	< 1	0.4	< 0.2	< 1	< 1
EPA 23	N	7/13/1990	< 0.05	< 0.01	0.01	< 0.05	2.11	< 0.1	< 0.05	< 0.001	< 0.1	0.0388	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	10/11/1990	< 0.05	< 0.01	< 0.01	< 0.05	2.07	< 0.1	< 0.05	< 0.001	< 0.1	0.0378	0.9	< 1	0.9	< 0.2	< 1	< 1
EPA 23	N	1/9/1991	< 0.01	< 0.01	< 0.01	< 0.05	2.01	< 0.1	< 0.05	0.001	< 0.1	0.0491	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	4/16/1991	< 0.01	< 0.01	< 0.01	< 0.05	2.08	< 0.1	< 0.05	< 0.001	< 0.1	0.023	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	7/9/1991	< 0.01	< 0.01	< 0.01	< 0.05	1.95	< 0.1	< 0.05	< 0.001	< 0.1	0.0436	0.4	< 1	0.4	< 0.2	< 1	< 1
EPA 23	N	10/23/1991	< 0.01	< 0.01	< 0.01	no data	2.18	< 0.1	< 0.05	< 0.001	< 0.1	0.051	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	1/16/1992	< 0.01	< 0.01	< 0.01	< 0.05	2.28	< 0.1	< 0.05	< 0.001	< 0.1	0.032	0.3	< 1	0.3	< 0.2	< 1	< 1
EPA 23	N	4/2/1992	< 0.01	< 0.01	< 0.01	< 0.05	2.27	< 0.1	< 0.05	0.013	< 0.1	0.031	< 0.2	3.6	3.6	< 0.2	< 1	< 1
EPA 23	N	7/16/1992	< 0.01	< 0.01	< 0.01	< 0.05	2.23	< 0.1	< 0.05	0.001	< 0.1	0.032	1.2	3.1	4.3	< 0.2	< 1	1.3
EPA 23	N	10/15/1992	< 0.01	< 0.01	< 0.01	< 0.05	2.69	< 0.1	< 0.05	< 0.001	< 0.1	0.038	1.6	1.4	3	< 0.2	1.1	1.8

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
EPA 23	N	1/14/1993	6889.20	6.60	7.30	4647	622	358	155	11.1	1054	2404	78.6	1.2	39.5	< 1	< 0.1	< 0.001
EPA 23	N	4/15/1993	6888.90	6.70	7.08	4777	669	349	176	8.8	1094	2361	93.1	0.75	56.6	< 1	< 0.1	< 0.001
EPA 23	N	7/21/1993	6887.50	6.70	7.48	4450	671	347	180	11	1137	2207	87.8	0.93	53	< 1	< 0.1	< 0.001
EPA 23	N	10/11/1993	6885.70	6.70	7.06	4749	753	372	155	9	1059	2225	79.6	0.91	52.4	< 1	< 0.1	< 0.001
EPA 23	N	1/10/1994	6886.70	6.60	7.42	4712	681	346	179	8.4	1007	2547	85.2	0.9	41.5	< 1	< 0.1	< 0.001
EPA 23	N	4/19/1994	6886.60	6.40	7.63	4823	632	342	160	10.1	997	2460	84.9	1.07	49.5	< 1	< 0.1	< 0.001
EPA 23	N	7/27/1994	6886.00	6.50	7.40	4720	748	344	144	9.7	1061	2369	88.4	0.8	52.1	< 1	< 0.1	< 0.001
EPA 23	N	10/10/1994	6885.40	6.70	7.45	4891	701	404	174	10	1175	2599	92.2	1.2	54.4	< 1	< 0.1	< 0.001
EPA 23	N	1/11/1995	6885.30	6.60	7.21	4852	690	352	156	10.4	1142	2333	96.7	1.41	56.3	< 1	< 0.1	< 0.001
EPA 23	N	4/11/1995	6885.00	6.50	7.21	4914	710	388	162	9.7	1152	2414	108	1.64	53.4	< 1	< 0.1	< 0.001
EPA 23	N	7/10/1995	6884.10	6.60	7.50	4865	695	401	176	10.3	1227	2303	113	2.28	61.4	< 1	< 0.1	< 0.001
EPA 23	N	10/9/1995	6883.80	6.50	7.66	4379	675	380	155	9.4	1122	2194	83.3	1.31	32.7	< 1	< 0.1	< 0.001
EPA 23	N	1/8/1996	6883.30	6.40	7.35	4421	690	390	162	10.1	1114	2267	86	1.39	42.5	< 1	< 0.1	< 0.001
EPA 23	N	4/9/1996	6883.10	6.70	7.67	4880	725	411	150	9.7	1172	2440	95.3	1.51	45	< 1	< 0.1	0.002
EPA 23	N	7/17/1996	6882.50	6.50	7.07	4518	620	350	135	10	1048	2368	68	1.09	8.94	< 1	< 0.1	< 0.001
EPA 23	N	10/8/1996	6882.30	6.50	7.18	4670	658	378	150	10.1	1094	2269	81.1	1.04	25.8	< 1	< 0.1	< 0.001
EPA 23	N	1/27/1997	6881.80	6.60	7.83	4720	650	370	152	10.3	1138	2403	99	1.19	32.9	< 1	< 0.1	0.003
EPA 23	N	4/14/1997	6883.20	6.50	7.71	4980	733	431	164	10.4	1210	2351	116	1.88	34.5	< 1	< 0.1	< 0.001
EPA 23	N	7/14/1997	6881.10	6.50	7.56	4810	699	400	145	10	1130	2190	99	1.39	33.4	< 1	< 0.1	< 0.001
EPA 23	N	10/14/1997	6880.40	6.50	7.71	4840	728	427	175	10.4	1180	2450	113	1.7	40	< 1	< 0.1	< 0.001
EPA 23	N	1/19/1998	6881.10	6.60	7.64	4490	647	369	134	10.5	1050	2730	71.4	1.41	1.93	< 1	< 0.1	< 0.001
EPA 23	N	4/13/1998	6880.40	6.70	7.37	4840	711	416	167	10.7	1180	2250	90.8	2.05	49.3	< 1	< 0.1	< 0.001
EPA 23	N	7/13/1998	6880.10	6.70	7.73	5060	710	424	170	10.7	1190	2200	98.9	2.32	46	< 1	< 0.1	< 0.001
EPA 23	N	10/13/1998	6880.40	6.63	7.95	4620	668	390	151	10.5	1110	2300	78.2	3.05	59.2	< 1	< 0.1	< 0.001
EPA 23	N	1/12/1999	6880.10	6.70	7.72	4740	653	374	142	9.7	1180	2100	95.6	2.45	61.6	< 1	< 0.1	< 0.001
EPA 23	N	4/13/1999	6880.00	6.60	7.68	4670	684	375	145	9.6	1140	2290	92.2	2.09	29.2	< 1	< 0.1	< 0.001
EPA 23	N	7/20/1999	6879.91	6.70	7.67	4640	690	402	134	12	1120	2300	86	2.65	56.5	< 1	< 0.1	< 0.001
EPA 23	N	10/12/1999	6880.10	6.62	7.69	4910	687	424	152	10.2	1240	2270	111	3.61	63.4	< 1	< 0.1	< 0.001
EPA 23	N	1/11/2000	6879.60	6.60	7.73	4730	624	379	144	11.2	1190	1840	92.6	3.11	60.5	< 1	< 0.1	< 0.001
EPA 23	N	5/9/2000	6879.20	6.60	7.81	4380	598	364	125	9.8	1040	2130	68.7	0.96	1.41	< 1	< 0.1	< 0.001
EPA 23	Dup	5/9/2000	no data	6.50	7.81	4430	600	365	125	9.6	1050	2150	70	0.99	1.38	< 1	< 0.1	< 0.001
EPA 23	N	7/17/2000	6878.80	6.55	7.66	4450	630	376	117	9.68	1060	1980	71.1	1.02	1.51	< 1	< 0.1	< 0.001
EPA 23	Dup	7/17/2000	no data	6.56	7.55	4450	630	377	120	9.64	1050	2030	68.9	1.03	1.54	< 1	< 0.1	< 0.001
EPA 23	N	10/9/2000	6878.60	6.54	7.45	4390	531	325	112	10.6	1060	1770	57.4	0.96	1.03	< 1	< 0.1	< 0.001
EPA 23	Dup	10/9/2000	no data	6.55	7.55	4380	528	325	111	10.4	1050	1740	56.1	0.92	1.01	< 1	< 0.1	< 0.001



**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
EPA 23	N	1/14/1993	< 0.01	< 0.01	< 0.01	< 0.05	2.68	< 0.1	< 0.05	< 0.001	< 0.1	0.035	< 0.2	1.8	1.8	< 0.2	< 1	< 1
EPA 23	N	4/15/1993	< 0.01	< 0.01	< 0.01	< 0.05	2.61	< 0.1	< 0.05	< 0.001	< 0.1	0.028	0.3	< 1	0.3	< 0.2	< 1	< 1
EPA 23	N	7/21/1993	< 0.01	0.02	0.02	< 0.05	2.89	< 0.1	< 0.05	< 0.001	< 0.1	0.036	0.2	< 1	0.2	< 0.2	< 1	< 1
EPA 23	N	10/11/1993	< 0.01	< 0.01	< 0.01	< 0.05	2.74	< 0.1	< 0.05	0.001	< 0.1	0.028	< 0.2	1.4	1.4	< 0.2	< 1	< 1
EPA 23	N	1/10/1994	< 0.01	< 0.01	< 0.01	< 0.05	2.95	< 0.1	< 0.05	< 0.001	< 0.1	0.035	< 0.2	3.7	3.7	< 0.2	< 1	6.7
EPA 23	N	4/19/1994	< 0.01	< 0.01	< 0.01	< 0.05	2.63	< 0.1	< 0.05	< 0.001	< 0.1	0.039	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	7/27/1994	< 0.01	< 0.01	< 0.01	< 0.05	2.75	< 0.1	< 0.05	0.001	< 0.1	0.032	1.5	2.5	4	< 0.2	< 1	5.4
EPA 23	N	10/10/1994	< 0.01	< 0.01	< 0.01	< 0.05	2.82	< 0.1	< 0.05	< 0.001	< 0.1	0.036	0.3	< 1	0.3	< 0.2	1.9	< 1
EPA 23	N	1/11/1995	< 0.01	< 0.01	< 0.01	< 0.05	2.75	< 0.1	< 0.05	< 0.001	< 0.1	0.046	0.3	2.8	3.1	< 0.2	1.9	4.5
EPA 23	N	4/11/1995	< 0.01	< 0.01	< 0.01	< 0.05	3	< 0.1	< 0.05	< 0.001	< 0.1	0.034	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	7/10/1995	< 0.01	< 0.01	< 0.01	< 0.05	3.03	< 0.1	< 0.05	0.002	< 0.1	0.038	0.3	< 1	0.3	< 0.2	< 1	3.3
EPA 23	N	10/9/1995	< 0.01	< 0.01	< 0.01	< 0.05	3.52	< 0.1	< 0.05	0.004	< 0.1	0.033	0.6	3	3.6	< 0.2	< 1	< 1
EPA 23	N	1/8/1996	< 0.01	< 0.01	< 0.01	< 0.05	3.4	< 0.1	< 0.05	0.003	< 0.1	0.037	0.2	< 1	0.2	< 0.2	1.9	< 1
EPA 23	N	4/9/1996	< 0.01	< 0.01	< 0.01	< 0.05	3.29	< 0.1	< 0.05	< 0.001	< 0.1	0.04	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	7/17/1996	< 0.01	< 0.01	< 0.01	< 0.05	4.2	< 0.1	< 0.05	< 0.001	< 0.1	0.025	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	10/8/1996	< 0.01	< 0.01	< 0.01	< 0.05	3.65	< 0.1	< 0.05	< 0.001	< 0.1	0.031	0.3	< 1	0.3	< 0.2	< 1	< 1
EPA 23	N	1/27/1997	< 0.01	< 0.01	< 0.01	< 0.05	3.41	< 0.1	< 0.05	0.005	< 0.1	0.026	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	4/14/1997	< 0.01	< 0.01	< 0.01	< 0.05	3.39	< 0.1	< 0.05	0.005	< 0.1	0.035	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	7/14/1997	< 0.01	< 0.01	< 0.01	< 0.05	3.45	< 0.1	< 0.05	0.001	< 0.1	0.033	0.5	< 1	0.5	< 0.2	< 1	< 1
EPA 23	N	10/14/1997	< 0.01	< 0.01	< 0.01	< 0.05	3.69	< 0.1	< 0.05	0.003	< 0.1	0.039	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	1/19/1998	< 0.01	< 0.005	< 0.01	< 0.05	4.63	< 0.1	< 0.05	< 0.001	< 0.1	0.024	0.8	< 1	0.8	< 0.2	< 1	< 1
EPA 23	N	4/13/1998	< 0.01	< 0.005	< 0.01	< 0.05	3.53	< 0.1	< 0.05	< 0.001	< 0.1	0.0405	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	7/13/1998	< 0.01	< 0.005	< 0.01	< 0.05	3.69	< 0.1	< 0.05	< 0.001	< 0.1	0.0448	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	10/13/1998	< 0.01	< 0.005	< 0.01	< 0.05	2.83	< 0.1	< 0.05	< 0.001	< 0.1	0.0288	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	1/12/1999	< 0.01	0.005	< 0.01	< 0.05	2.75	< 0.1	< 0.05	< 0.001	< 0.1	0.0443	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	4/13/1999	< 0.01	0.005	< 0.01	< 0.05	2.96	< 0.1	< 0.05	< 0.001	< 0.1	0.0313	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	7/20/1999	< 0.01	< 0.005	< 0.01	< 0.05	2.33	< 0.1	< 0.05	< 0.001	< 0.1	0.0286	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	10/12/1999	< 0.01	< 0.005	< 0.01	< 0.05	3.23	< 0.1	< 0.05	< 0.001	< 0.1	0.0452	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	1/11/2000	< 0.01	< 0.005	< 0.01	< 0.05	3.17	< 0.1	< 0.05	0.001	< 0.1	0.0388	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	5/9/2000	< 0.01	< 0.005	0.01	< 0.05	7.09	< 0.1	< 0.05	< 0.001	< 0.1	0.0254	< 0.2	2.1	2.1	< 0.2	5.4	< 1
EPA 23	Dup	5/9/2000	< 0.01	< 0.005	0.01	< 0.05	6.96	< 0.1	< 0.05	< 0.001	< 0.1	0.0255	< 0.2	1.6	1.6	< 0.2	5	< 1
EPA 23	N	7/17/2000	< 0.01	< 0.005	< 0.01	< 0.05	4.76	< 0.1	< 0.05	< 0.001	< 0.1	0.0231	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	Dup	7/17/2000	< 0.01	< 0.005	< 0.01	8.91	< 0.05	4.61	< 0.1	< 0.05	< 0.001	< 0.1	0.0246	< 0.2	0.0246	< 1	< 0.2	< 1
EPA 23	N	10/9/2000	< 0.01	< 0.005	< 0.01	< 0.05	4.03	< 0.1	< 0.05	< 0.001	< 0.1	0.025	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	Dup	10/9/2000	< 0.01	< 0.005	< 0.01	0.05	4	< 0.1	< 0.05	< 0.001	< 0.1	0.025	< 0.2	< 1	0	< 0.2	< 1	< 1

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
EPA 23	N	1/9/2001	6878.70	6.75	7.68	4340	648	391	114	9.2	1050	2150	67.7	0.97	1.14	< 1	< 0.1	< 0.001
EPA 23	Dup	1/9/2001	no data	6.76	7.63	4370	650	392	119	9.3	1060	2380	69.7	1.05	1.14	< 1	< 0.1	< 0.001
EPA 23	N	2/6/2001	6878.60	6.80	7.56	4380	737	429	118	10.6	1060	2510	68.5	1.08	1.25	< 1	< 0.1	< 0.001
EPA 23	Dup	2/6/2001	no data	6.68	7.56	4380	729	424	111	10.5	1060	2500	67.1	1.08	1.3	< 1	< 0.1	< 0.001
EPA 23	N	3/6/2001	6878.50	6.93	7.61	4070	636	389	150	10.2	1030	2410	65.6	1.09	1.25	< 1	< 0.1	< 0.001
EPA 23	Dup	3/6/2001	no data	7.08	7.78	4110	637	389	150	10.1	1030	2420	64.7	1.12	1.2	< 1	< 0.1	< 0.001
EPA 23	N	4/4/2001	6878.50	6.87	7.49	4400	702	410	118	9.3	1040	2310	71	1.16	1.41	< 1	< 0.1	0.001
EPA 23	Dup	4/4/2001	no data	6.87	7.51	4410	711	414	114	9.2	1040	2350	73.9	1.2	1.42	< 1	< 0.1	< 0.001
EPA 23	N	5/7/2001	6878.40	6.97	7.14	4460	622	371	113	10	1040	2070	78.6	1.28	1.25	< 1	< 0.1	< 0.001
EPA 23	Dup	5/7/2001	no data	6.88	7.21	4450	620	371	109	10	1030	2060	79.4	1.21	1.27	< 1	< 0.1	< 0.001
EPA 23	N	6/4/2001	6878.80	6.67	7.22	4360	618	371	107	9.5	1040	2210	75.4	1.29	1.67	< 1	< 0.1	< 0.001
EPA 23	Dup	6/4/2001	no data	6.67	7.24	4020	617	372	102	9.8	1020	2240	76.2	1.33	1.6	< 1	< 0.1	< 0.001
EPA 23	N	7/9/2001	6878.40	6.60	7.12	4470	684	418	116	9.7	1060	2250	86	1.07	1.36	< 1	< 0.1	< 0.001
EPA 23	Dup	7/9/2001	no data	6.59	7.05	4480	682	418	113	9.6	1070	2240	90	1.12	1.51	< 1	< 0.1	< 0.001
EPA 23	N	8/6/2001	6878.25	6.58	7.20	4500	640	390	110	10	1060	2300	86	1.1	1.28	< 1	< 0.1	< 0.001
EPA 23	Dup	8/6/2001	no data	6.59	7.20	4480	630	390	110	10	1060	2100	91	1.1	1.29	< 1	< 0.1	< 0.001
EPA 23	N	9/10/2001	6878.49	6.56	7.50	4490	650	390	122	9.9	1100	2200	75.6	1.02	1.2	< 1	< 0.1	< 0.001
EPA 23	Dup	9/10/2001	no data	6.56	7.50	4460	650	390	118	10	1100	2200	76.2	1.03	1.2	< 1	< 0.1	< 0.001
EPA 23	N	10/1/2001	6878.40	6.68	7.30	4500	600	370	115	10.4	1080	2100	87.9	1.15	1	< 1	< 0.1	< 0.001
EPA 23	Dup	10/1/2001	no data	6.67	7.40	4510	610	370	113	10.6	1090	2200	97.7	1.06	1	< 1	< 0.1	< 0.001
EPA 23	N	11/5/2001	6878.50	6.74	7.60	4540	670	401	123	10.8	1050	2360	87	0.95	1.2	< 1	< 0.1	< 0.001
EPA 23	Dup	11/5/2001	no data	6.71	7.60	4540	664	397	117	10.8	1050	2320	95	0.94	1.1	< 1	< 0.1	< 0.001
EPA 23	N	12/3/2001	6878.50	6.68	7.60	4480	615	365	107	9.7	1070	2020	83.6	1.06	3.6	< 1	< 0.1	< 0.001
EPA 23	N	1/7/2002	6878.20	6.70	7.10	4500	715	403	101	10.7	1070	2430	94.4	1.01	1.02	< 1	< 0.1	< 0.001
EPA 23	N	2/4/2002	6878.15	6.80	7.30	4470	711	396	124	10.6	1060	2350	88.2	1.18	0.95	< 1	< 0.1	< 0.001
EPA 23	N	3/4/2002	6878.05	6.73	7.20	4430	650	383	132	10.3	1080	2340	82.7	1.07	1.16	< 1	< 0.1	< 0.001
EPA 23	N	4/1/2002	6878.20	6.57	7.83	4490	681	389	127	11.2	1070	2400	83	1.09	1.14	< 1	< 0.1	< 0.001
EPA 23	N	5/6/2002	6878.16	6.62	7.17	4500	661	380	127	11	1080	2240	77.7	1.11	1.09	< 1	< 0.1	< 0.001
EPA 23	N	6/3/2002	6878.22	6.61	7.37	4480	664	382	117	9.4	1060	2270	73.5	1.12	1.05	< 1	< 0.1	< 0.001
EPA 23	N	7/8/2002	6877.87	6.62	7.55	4520	656	395	119	10.2	1070	2320	78.2	1.34	0.91	< 1	< 0.1	< 0.001
EPA 23	N	10/8/2002	6877.85	5.92	7.59	4280	628	372	118	9.5	1080	2010	75.6	1.47	0.98	< 1	< 0.1	< 0.001
EPA 23	N	1/6/2003	6877.27	6.80	7.23	4510	602	369	116	10.3	1060	2180	83.4	1.5	0.9	< 1	< 0.1	< 0.001
EPA 23	N	4/7/2003	6877.26	6.65	7.31	4490	635	365	122	13.4	1080	2100	86.2	1.2	1.3	< 1	< 0.1	< 0.001
EPA 23	N	7/7/2003	6877.11	6.42	7.61	4660	623	360	119	11	1070	2160	71.9	1.37	0.9	< 1	< 0.1	< 0.001
EPA 23	N	10/6/2003	6876.91	6.46	7.41	4550	693	416	137	10.3	1090	2500	73.6	1.57	0.6	< 1	< 0.1	< 0.001

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l	pci/l
<b>NRC Standard</b>			<b>0.05</b>	<b>0.025</b>	<b>NA</b>	<b>0.07</b>	<b>NA</b>	<b>NA</b>	<b>0.078</b>	<b>0.07</b>	<b>0.1</b>	<b>0.3</b>	<b>NA</b>	<b>NA</b>	<b>8.2</b>	<b>4.5</b>	<b>5.9</b>	<b>15</b>
<b>EPA Standard</b>			<b>0.004</b>	<b>0.025</b>	<b>0.05</b>	<b>0.07</b>	<b>2.1</b>	<b>1</b>	<b>0.2</b>	<b>0.07</b>	<b>0.1</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>8.2</b>	<b>4.5</b>	<b>5.9</b>	<b>15</b>
EPA 23	N	1/9/2001	< 0.01	< 0.005	0.01	< 0.05	4.77	< 0.1	< 0.05	0.001	< 0.1	0.024	< 0.2	2.3	2.3	< 0.2	< 1	< 1
EPA 23	Dup	1/9/2001	< 0.01	< 0.005	0.01	< 0.05	4.65	< 0.1	< 0.05	< 0.001	< 0.1	0.024	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	2/6/2001	< 0.01	< 0.005	0.01	< 0.05	4.77	< 0.1	< 0.05	< 0.001	< 0.1	0.025	0.3	2.2	2.5	< 0.2	< 1	< 1
EPA 23	Dup	2/6/2001	< 0.01	< 0.005	0.01	< 0.05	4.85	< 0.1	< 0.05	< 0.001	< 0.1	0.025	0.3	2.3	2.6	< 0.2	< 1	< 1
EPA 23	N	3/6/2001	< 0.01	< 0.005	0.01	< 0.05	5	< 0.1	< 0.05	< 0.001	< 0.1	0.0245	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	Dup	3/6/2001	< 0.01	< 0.005	< 0.01	< 0.05	5.03	< 0.1	0.07	< 0.001	< 0.1	0.0252	0.4	< 1	0.4	< 0.2	< 1	< 1
EPA 23	N	4/4/2001	< 0.01	< 0.005	< 0.01	< 0.05	4.29	< 0.1	< 0.05	< 0.001	< 0.1	0.024	0.3	< 1	0.3	< 0.2	< 1	< 1
EPA 23	Dup	4/4/2001	< 0.01	< 0.005	< 0.01	< 0.05	4.19	< 0.1	< 0.05	< 0.001	< 0.1	0.023	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	5/7/2001	< 0.01	< 0.005	< 0.01	< 0.05	5.74	< 0.1	< 0.05	< 0.001	< 0.1	0.026	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	Dup	5/7/2001	< 0.01	< 0.005	0.01	< 0.05	5.75	< 0.1	< 0.05	< 0.001	< 0.1	0.025	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	6/4/2001	< 0.01	< 0.005	0.01	< 0.05	5.11	< 0.1	< 0.05	< 0.001	< 0.1	0.025	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	Dup	6/4/2001	< 0.01	< 0.005	0.01	< 0.05	5.15	< 0.1	< 0.05	< 0.001	< 0.1	0.024	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	7/9/2001	< 0.01	< 0.005	< 0.01	< 0.05	5.1	< 0.1	< 0.05	< 0.001	< 0.1	0.0276	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	Dup	7/9/2001	< 0.01	< 0.005	< 0.01	< 0.05	5.19	< 0.1	< 0.05	< 0.001	< 0.1	0.0263	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	8/6/2001	< 0.01	< 0.005	< 0.01	< 0.05	5.4	< 0.1	< 0.05	< 0.001	< 0.1	0.025	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	Dup	8/6/2001	< 0.01	< 0.005	< 0.01	< 0.05	5.5	< 0.1	< 0.05	< 0.001	< 0.1	0.027	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	9/10/2001	< 0.01	< 0.005	< 0.01	< 0.05	4.68	< 0.1	< 0.05	< 0.001	< 0.1	0.0229	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	Dup	9/10/2001	< 0.01	< 0.005	< 0.01	< 0.05	4.96	< 0.1	< 0.05	< 0.001	< 0.1	0.0245	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	10/1/2001	< 0.01	< 0.005	< 0.01	< 0.05	4.38	< 0.1	< 0.05	< 0.001	< 0.1	0.0239	0.5	< 1	0.5	< 0.2	< 1	< 1
EPA 23	Dup	10/1/2001	< 0.01	< 0.005	< 0.01	< 0.05	4.39	< 0.1	< 0.05	< 0.001	< 0.1	0.0235	0.2	< 1	0.2	< 0.2	< 1	< 1
EPA 23	N	11/5/2001	< 0.01	< 0.005	< 0.01	< 0.05	4.79	< 0.1	< 0.05	< 0.001	< 0.1	0.0212	0.6	3.8	4.4	< 0.2	< 1	< 1
EPA 23	Dup	11/5/2001	< 0.01	< 0.005	< 0.01	< 0.05	4.74	< 0.1	< 0.05	< 0.001	< 0.1	0.0223	0.5	1.7	2.2	< 0.2	< 1	< 1
EPA 23	N	12/3/2001	< 0.01	< 0.005	< 0.01	< 0.05	4.48	< 0.1	< 0.05	0.003	< 0.1	0.0243	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	1/7/2002	< 0.01	< 0.005	< 0.01	< 0.05	4.59	< 0.1	< 0.05	< 0.001	< 0.1	0.0211	0.5	< 1	0.5	< 0.2	< 1	< 1
EPA 23	N	2/4/2002	< 0.01	< 0.005	< 0.01	< 0.05	4.69	< 0.1	< 0.05	< 0.001	< 0.1	0.0164	0.4	< 1	0.4	< 0.2	< 1	< 1
EPA 23	N	3/4/2002	< 0.01	< 0.005	< 0.01	< 0.05	5.48	< 0.1	< 0.05	< 0.001	< 0.1	0.0259	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	4/1/2002	< 0.01	< 0.005	< 0.01	< 0.05	5.12	< 0.1	< 0.05	< 0.001	< 0.1	0.029	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	5/6/2002	< 0.01	< 0.005	0.01	< 0.05	5.41	< 0.1	< 0.05	< 0.001	< 0.1	0.0252	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	6/3/2002	< 0.01	< 0.005	< 0.01	< 0.05	5.43	< 0.1	< 0.05	< 0.001	< 0.1	0.0262	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	7/8/2002	< 0.01	< 0.005	< 0.01	< 0.05	4.62	0.1	< 0.05	< 0.001	< 0.1	0.0291	0.6	< 1	0.6	< 0.2	< 1	< 1
EPA 23	N	10/8/2002	< 0.01	< 0.005	< 0.01	< 0.05	4.67	< 0.1	< 0.05	< 0.001	< 0.1	0.0197	0.8	< 1	0.8	< 0.2	< 1	< 1
EPA 23	N	1/6/2003	< 0.01	< 0.005	< 0.01	< 0.05	5.04	< 0.1	< 0.05	< 0.001	< 0.1	0.024	< 0.2	< 1	0	< 0.2	< 1	< 1.0
EPA 23	N	4/7/2003	< 0.01	< 0.005	< 0.01	< 0.05	4.8	< 0.1	< 0.05	< 0.001	< 0.1	0.0232	< 0.2	< 1	0	< 0.2	< 1	< 1.0
EPA 23	N	7/7/2003	< 0.01	< 0.005	0.02	< 0.05	5.28	< 0.1	< 0.05	< 0.001	< 0.1	0.0248	< 0.2	< 1	0	< 0.2	< 1	< 1.0
EPA 23	N	10/6/2003	< 0.01	< 0.005	< 0.01	< 0.05	5.58	< 0.1	< 0.05	< 0.001	< 0.1	0.0302	< 0.2	< 1	0	< 0.2	< 1	< 1.0



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Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
EPA 23	N	1/5/2004	6876.67	6.67	7.38	4500	688	412	120	10.2	1090	2420	93.9	1.25	0.62	< 1.0	0.3	< 0.001
EPA 23	N	4/5/2004	6876.75	7.00	6.87	4540	641	387	131	10.6	1110	2280 D	81.3	1.52	0.69	< 1	< 0.1	< 0.001
EPA 23	N	7/12/2004	6876.27	6.41	6.97	4610	665	388	142	10.7	1110	2290 D	82	1.29	0.55	< 1.0	< 0.1	< 0.001
EPA 23	N	10/4/2004	6876.01	6.12	7.16	4570	670 D	398 D	140	9.9	1080	2380 D	79	1.06	0.4	< 1.0	< 0.1	< 0.001
EPA 23	N	1/3/2005	6875.97	6.72	7.12	4590	652 D	381 D	134	10.4	1070	2160 D	79	1.34	1.2	< 1.0	< 0.1	< 0.001
EPA 23	N	4/4/2005	6875.94	6.69	7.36	4400	649	380	134	9.8	1120	2250	80	1.09	0.6	< 1.0	< 0.1	< 0.001
EPA 23	N	7/11/2005	6875.53	6.60	7.35	4460	707 D	413 D	135	10.2	1050	2440 D	87	1.14	0.2	< 1.0	< 0.1	< 0.001
EPA 23	N	10/3/2005	6875.41	6.58	7.21	4480	650 D	408 D	130	10.2	1120	2170 D	85	1.11	0.4	< 1.0	< 0.1	< 0.001
EPA 23	N	1/9/2006	6874.95	6.77	7.66	4410	686 D	420 D	131	10.4	1130	2630 D	82	1.33	1.8	< 1.0	< 0.1	< 0.001
EPA 23	N	4/3/2006	6874.81	6.61	7.10	4460	639 D	415 D	119	9.9	1110	2250 D	96 D	1.33	0.5	< 1.0	< 0.1	< 0.001
EPA 23	N	7/17/2006	6874.56	6.50	6.77	4370	639 D	411 D	146	11	1130	2560 D	88	1.21	1.4	< 1.0	< 0.1	< 0.001
EPA 23	N	10/2/2006	6874.41	6.53	6.89	4740	638 D	397 D	141	11	1180	2260 D	79	3.54	10.8 D	< 0.5	< 0.1	< 0.001
EPA 23	N	1/8/2007	6874.03	6.67	6.91	4090	576 D	355 D	121	9.6	1140	2050 D	80	2.38	6	< 0.5	< 0.1	< 0.001
EPA 23	N	4/9/2007	6874.31	6.68	6.88	4320	636 D	380 D	125	10.6	1120	2220 D	86	1.2	1.5	< 0.5	< 0.1	< 0.001
EPA 23	N	7/9/2007	6873.91	6.54	6.94	4630	661 D	417 D	146	10.7	1200	2430 D	84	1.99	7.7	< 0.5	< 0.1	0.01
EPA 23	N	10/1/2007	6873.59	6.56	6.76	4850	608 D	424 D	162 D	12.5	1300	2350 D	108 D	5.8 D	22.7	< 0.5	< 0.1	< 0.001
EPA 23	N	1/14/2008	6873.21	6.77	6.62	4910	622 D	404 D	154 D	12.3	1230	2200 D	123 D	5.67	21.2 D	< 0.5	< 0.1	0.001
EPA 23	N	4/7/2008	6873.51	6.56	6.84	4300	683 D	429 D	162 D	11.2 D	1100	2430 D	89	0.29	4.1	< 0.50	< 0.1	< 0.001
EPA 23	N	7/7/2008	6873.21	6.38	6.79 H	4440 H	619	390	137 D	10	1230	2410 D	94	1.88	13.1	< 0.5	< 0.1	< 0.003
EPA 23	N	10/6/2008	6872.96	6.49	6.97	4530	656	391	147 D	10	1170	2450 D	85	2.8	22.3	< 0.5	< 0.1	< 0.001
EPA 23	N	1/20/2009	6872.46	6.52	7.03	5160	649	449	198	12	1290	2140 D	120	3.09	76.2 D	< 0.5	< 0.1	< 0.001
EPA 23	N	4/6/2009	6872.21	6.58	6.64	4730	621 D	424 D	170 D	11	1270	2440 D	95	2.17	14.8	< 0.50	< 0.1	< 0.001
EPA 23	N	7/6/2009	6872.21	6.39	6.76	4870	680 D	430	167 D	12	1240	2560 D	95	4.65	27.8 D	< 0.50	< 0.1	< 0.001
EPA 23	N	10/5/2009	6872.21	6.58	7.22	4610	616	384	138	10	1220	2220 D	98	2.04	7.4	< 0.50	< 0.1	< 0.001
EPA 23	N	1/4/2010	6871.56	6.60	6.84	5200 D	669 D	432	180	12	1370	2530 D	113	6.1 D	40 D	< 0.50	< 0.1	< 0.001
EPA 23	N	4/5/2010	6871.66	6.65	6.72	4690 DH	733	457	183	12	1310	2410 D	94	1.88	8.6 D	< 0.50	< 0.1	< 0.001
EPA 23	N	7/12/2010	6871.31	6.46	6.96	4800 D	674	402	150	11	1300	2430 D	97 D	2.5 D	10.8 D	< 0.50	< 0.1	< 0.001
EPA 23	N	10/4/2010	6871.11	6.82	7.63	4880 D	642	386	157	11	1330	2380 D	93 D	3.48	16 D	< 0.50	< 0.1	< 0.001
EPA 23	N	1/3/2011	6870.91	6.56	6.85	4330 D	658	381	142	11	1210	2340 D	98 D	1.13	0.9	< 0.50	< 0.1	< 0.001
EPA 23	N	4/4/2011	6870.46	6.76	7.01	4520 D	650	372	146	11	1220	2350 D	96 D	0.71 D	0.3	< 0.50	< 0.1	< 0.001
EPA 23	N	7/11/2011	6870.36	6.44	7.53	4450 D	664	382	150	11	1230	2310 D	95 D	0.76	0.7 D	< 0.50	< 0.1	< 0.001
EPA 23	N	10/3/2011	6870.16	6.64	7.81	4460 D	668	376	146	11	1150	2410 D	99 D	0.7 D	0.5	< 0.50	< 0.1	< 0.001
EPA 23	N	1/2/2012	6869.65	6.69	6.86 H	4720 D	646	384	152	12	1160	2350 D	107 D	2.1 D	13 D	< 0.50	< 0.1	< 0.001
EPA 23	N	4/2/2012	6870.02	6.86	6.66 H	4670 D	658	371	141	11	1200	2340 D	99 D	0.63	0.2	< 0.50	< 0.1	< 0.01
EPA 23	N	7/9/2012	6869.36	6.54	6.82 H	4660	658	361	129	9	1210	2280 D	97 D	0.53	0.8	< 0.50	< 0.1	< 0.001

**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
EPA 23	N	1/5/2004	< 0.01	< 0.005	< 0.01	< 0.05	5.88	< 0.1	< 0.05	< 0.001	< 0.1	0.0247 D	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
EPA 23	N	4/5/2004	< 0.01	< 0.005	< 0.01	< 0.05	5.09	< 0.1	< 0.05	< 0.001	< 0.1	0.0252 D	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	7/12/2004	< 0.01	< 0.005	< 0.01	< 0.05	4.84	< 0.1	< 0.05	< 0.001	< 0.1	0.0244 D	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
EPA 23	N	10/4/2004	< 0.01	< 0.005	< 0.01	< 0.05	5.03	< 0.1	< 0.05	< 0.001	< 0.1	0.0226 D	0.4	1.3	1.7	< 0.2	< 1.0	< 1.0
EPA 23	N	1/3/2005	< 0.01	< 0.005	< 0.01	< 0.05	4.9	< 0.1	< 0.05	< 0.001	< 0.1	0.0265	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
EPA 23	N	4/4/2005	< 0.01	< 0.005	< 0.01	< 0.05	5.2	< 0.1	< 0.05	< 0.001	< 0.1	0.0246	< 0.2	3.5	3.5	< 0.2	< 1.0	< 1.0
EPA 23	N	7/11/2005	< 0.01	< 0.005	< 0.01	< 0.05	5.12	< 0.1	< 0.05	< 0.001	< 0.1	0.0252	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
EPA 23	N	10/3/2005	< 0.01	< 0.005	< 0.01	< 0.05	5.15	< 0.1	< 0.05	< 0.001	< 0.1	0.0261	< 0.2	1.2	1.2	< 0.2	< 1.0	< 1.0
EPA 23	N	1/9/2006	< 0.01	< 0.005	< 0.01	< 0.05	5.64	< 0.1	< 0.05	< 0.001	< 0.1	0.0246	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
EPA 23	N	4/3/2006	< 0.01	< 0.005	< 0.01	< 0.05	5.46	< 0.1	< 0.05	< 0.001	< 0.1	0.0241 D	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
EPA 23	N	7/17/2006	< 0.01	< 0.005	< 0.01	< 0.05	5.4	< 0.1	< 0.05	< 0.001	< 0.1	0.0262	0.4	< 1.0	0.4	< 0.2	< 1.0	< 1.0
EPA 23	N	10/2/2006	< 0.01	< 0.005	< 0.01	< 0.05	5.14	< 0.1	< 0.05	< 0.001	< 0.1	0.0265	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	1/8/2007	< 0.01	< 0.005	< 0.01	< 0.05	4.8	< 0.1	< 0.05	< 0.001	< 0.1	0.0229	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	4/9/2007	< 0.01	< 0.005	< 0.01	< 0.05	5.25	< 0.1	< 0.05	< 0.001	< 0.1	0.0339	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	7/9/2007	< 0.01	< 0.005	< 0.01	< 0.05	4.59	< 0.1	< 0.05	< 0.001	< 0.1	0.027	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	10/1/2007	< 0.01	< 0.005	< 0.01	< 0.05	4.67	< 0.1	< 0.05	< 0.001	< 0.1	0.0342	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	1/14/2008	< 0.01	< 0.005	< 0.01	< 0.05	4.29	< 0.1	< 0.05	0.001	< 0.1	0.0316	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 23	N	4/7/2008	< 0.01	< 0.005	< 0.01	< 0.05	5.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0303	0.1 U	0.3 U	0.4	0.4	0 U	1
EPA 23	N	7/7/2008	< 0.01	< 0.005	< 0.01	< 0.05	5.2	< 0.1	< 0.05	< 0.001	< 0.1	0.0287	0.09 U	0.94 U	1.03	0 U	2.4 U	0.9
EPA 23	N	10/6/2008	< 0.01	< 0.005	< 0.01	< 0.05	4.54	< 0.1	< 0.05	< 0.001	< 0.1	0.0336	0.02 U	-0.004 U	0.016	0.4	-0.1 U	1.3
EPA 23	N	1/20/2009	< 0.01	< 0.005	< 0.01	< 0.05	3.15	< 0.1	< 0.05	0.001	< 0.1	0.0435	0.17 U	1.6	1.77	-0.5 U	-0.4 U	1.2
EPA 23	N	4/6/2009	< 0.01	< 0.005	< 0.01	< 0.05	4.58	< 0.1	< 0.05	0.002	< 0.1	0.0375	0.36	-0.3 U	0.06	-0.02 U	-1 U	0.3 U
EPA 23	N	7/6/2009	< 0.01	< 0.005	< 0.01	< 0.05	4.31	< 0.1	< 0.05	< 0.001	< 0.1	0.0306	0.47	0.76 U	1.23	0.2 U	-0.2 U	0.6
EPA 23	N	10/5/2009	< 0.01	< 0.005	< 0.01	< 0.05	5.05	< 0.1	< 0.05	< 0.001	< 0.1	0.0309	0.42	1.2 U	1.62	0.04 U	0.7 U	0.5 U
EPA 23	N	1/4/2010	< 0.01	< 0.005	< 0.01	< 0.05	4.02	< 0.1	< 0.05	0.002	< 0.1	0.0357	0.26	1.1 U	1.36	0.03 U	-2 U	0.1 U
EPA 23	N	4/5/2010	< 0.01	< 0.005	< 0.01	< 0.05	4.8	< 0.1	< 0.05	0.004	< 0.1	0.0327	0.18	1.1 U	1.28	-0.02 U	0.7 U	0.5 U
EPA 23	N	7/12/2010	< 0.01	< 0.005	< 0.01	< 0.05	5.28	< 0.1	< 0.05	< 0.001	< 0.1	0.0348	0.38	0.71 U	1.09	0.03 U	-0.6 U	-0.01 U
EPA 23	N	10/4/2010	< 0.01	< 0.005	< 0.01	< 0.05	4.98	< 0.1	< 0.05	0.001	< 0.1	0.0328	0.21	1.1 U	1.31	0.06 U	0.5 U	-0.07 U
EPA 23	N	1/3/2011	< 0.01	< 0.005	0.01	< 0.05	5.57	< 0.1	< 0.05	< 0.001	< 0.1	0.0345	0.03 U	0.60 U	0.63	0.5	1.3 U	0.4 U
EPA 23	N	4/4/2011	< 0.01	< 0.005	< 0.01	< 0.05	5.19	< 0.1	< 0.05	< 0.001	< 0.1	0.0299	0.22	0.16 U	0.38	0.08 U	-0.8 U	0.6
EPA 23	N	7/11/2011	< 0.01	< 0.005	< 0.01	< 0.05	5.58	< 0.1	< 0.05	< 0.001	< 0.1	0.0299	0.18	0.73 U	0.91	-0.01 U	-0.6 U	0.5 U
EPA 23	N	10/3/2011	< 0.01	< 0.005	< 0.01	< 0.05	5.68	< 0.1	< 0.05	< 0.001	< 0.1	0.0296	0.15	0.50 U	0.65	0.03 U	0.1 U	0.2 U
EPA 23	N	1/2/2012	< 0.01	< 0.005	< 0.01	< 0.05	5.78	< 0.1	< 0.05	< 0.001	< 0.1	0.0305	0.48	-0.05 U	0.48	0.01 U	0.2 U	0.5
EPA 23	N	4/2/2012	< 0.01	< 0.005	0.01	< 0.05	6.15	< 0.1	< 0.05	< 0.001	< 0.1	0.0342	0.24	0.22 U	0.68	-0.004 U	0.1 U	-0.1 U
EPA 23	N	7/9/2012	< 0.001	< 0.005	< 0.01	< 0.001	5.74	< 0.1	< 0.05	< 0.001	< 0.1	0.0267	0.33	0.13 U	0.59	0.005 U	0.5 U	0.06 U

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
EPA 23	N	10/8/2012	6869.16	6.68	6.70 H	4540	703	378	145 D	11	1260	2310 D	104 D	0.66	<0.1	<0.50	<0.1	<0.001
EPA 23	N	1/7/2013	6869.21	6.62	6.69 H	4500	693	398	154 D	11	1240	2430 D	102 D	0.47	1.1	<0.50	<0.1	<0.001
EPA 23	N	4/1/2013	6868.91	6.73	6.82 H	4720	685	398	155	11	1280	2350 D	104 D	0.54	<0.1	<0.50	<0.1	<0.001
EPA 23	N	7/8/2013	6868.55	6.61	6.77 H	4710	647	379	143	10	1270	2380 D	102 D	0.47	0.5	<0.50	<0.1	<0.001
EPA 23	N	9/30/2013	6868.49	6.67	6.73 H	4640 H	654	387	147	11	1290	2300 D	98 D	0.58	<0.1	<0.50	<0.1	<0.001
EPA 23	N	1/6/2014	6868.12	6.89	6.70	4680	621	370	142	10	1270	2300	100	0.51	<0.1	<0.50	<0.1	<0.001
EPA 23	N	3/31/2014	6868.16	6.84	6.66 H	4620	616	358	137	10	1280	2280 D	106 D	0.67	<0.1	<0.50	<0.1	<0.001
EPA 23	N	7/7/2014	no data	no data	6.79 H	4600	655	368	142 D	11	1290	2360 D	102 D	0.6	<0.1	<0.50	<0.1	<0.001
EPA 23	N	10/6/2014	6867.68	6.75	6.75 H	4670	669	390	152	11	1300	2330 D	102 D	0.9	<0.1	<0.50	<0.1	<0.001
EPA 23	N	1/5/2015	6867.33	6.95	6.79 H	4670	666	386	154	11	1260	2240 D	100 D	0.87	<0.1	<0.50	<0.1	<0.001
EPA 23	N	4/6/2015	6867.54	6.69	6.72 H	4640	674	391	153	11	1320	2320 D	120	0.73	<0.1	<0.5	<0.1	<0.001
EPA 23	N	7/6/2015	6867.18	6.63	6.69 H	4630	650	383	149	12	1360	2410 D	113 D	0.69	<0.1	<0.50	<0.1	<0.001
EPA 23	N	10/5/2015	6867.05	6.78	6.72 H	4670 H	639	374	144	11	1250	2400 D	118 D	0.65	<0.1	<0.50	<0.1	<0.001
EPA 23	N	1/4/2016	6866.79	6.82	6.73 H	4660	673	390	150	11	1340	2440 D	119 D	0.5 D	<0.1	<0.50	<0.1	<0.001
EPA 23	N	4/4/2016	6866.44	6.72	6.79 H	4640	670	386	157	11	1290	2360 D	110 D	0.35	<0.1	<0.50	<0.1	<0.001
EPA 23	N	7/11/2016	6866.49	6.65	6.69 H	4640 D	671	390	151	11	1330	2540 D	125 D	0.4	<0.1	<0.50	<0.1	<0.001
EPA 23	N	10/3/2016	6866.45	6.79	6.67 H	4640 H	660	393	153	11	1300	2460 D	114 D	0.3	<0.1	<0.50	<0.1	<0.001
EPA 25	N	7/28/1989	6861.30	7.00	6.66	3200	659	148	109	7.3	549	1711	29	0.05	37	< 1	< 0.1	< 0.001
EPA 25	N	10/8/1989	6861.10	6.70	7.54	3200	650	150	107	10	619	1745	31.7	0.05	36	< 1	< 0.1	< 0.001
EPA 25	N	1/17/1990	6861.50	6.60	6.70	3252	625	147	106	7.8	615	1656	31.7	0.05	30	< 1	< 0.1	< 0.001
EPA 25	N	4/18/1990	6861.20	6.70	6.88	3299	640	148	103	7.3	647	1619	34.1	0.05	35	< 1	< 0.1	< 0.001
EPA 25	N	7/13/1990	6860.60	6.70	7.18	3343	642	164	101	8.6	677	1628	34.1	< 0.05	34.4	< 1	< 0.1	< 0.001
EPA 25	N	10/10/1990	6860.70	6.80	7.32	3422	711	155	105	8.1	653	1724	38	< 0.05	35.9	< 1	< 0.1	< 0.001
EPA 25	N	1/9/1991	6861.00	6.80	7.20	3248	655	152	111	12	667	1624	39.4	< 0.05	43.5	< 1	< 0.1	< 0.001
EPA 25	N	4/16/1991	6860.80	6.60	7.90	3300	633	150	107	7.6	650	1640	40.2	< 0.05	54.5	< 1	< 0.1	< 0.001
EPA 25	N	7/9/1991	6860.90	6.40	7.14	3461	607	153	95	6.7	677	1718	39.2	0.15	55	< 1	< 0.1	< 0.001
EPA 25	N	10/24/1991	6859.60	6.50	7.47	3399	639	432	105	7.3	722	1672	62.5	0.31	38	< 1	< 0.1	< 0.001
EPA 25	N	1/24/1992	6859.30	6.50	7.51	3123	619	153	102	7	691	1669	45.7	0.14	23.5	< 1	< 0.1	< 0.001
EPA 25	N	4/3/1992	6859.20	6.40	7.51	3414	564	138	129	8.9	752	1781	45.4	0.22	43.9	< 1	< 0.1	< 0.001
EPA 25	N	7/16/1992	6858.50	6.50	7.48	3076	623	161	156	10.1	740	1804	49.3	0.18	44.9	< 1	< 0.1	0.007
EPA 25	N	10/15/1992	6858.10	6.70	7.03	3529	673	147	120	8.8	769	1725	51.6	< 0.05	38.9	< 1	< 0.1	< 0.001
EPA 25	N	1/12/1993	6857.80	6.70	7.36	3591	725	162	112	9.5	766	1631	52.6	< 0.05	50.7	< 1	< 0.1	< 0.001
EPA 25	N	4/15/1993	6857.70	6.70	7.65	3674	793	151	123	6.4	1049	1818	59.4	0.06	41.1	< 1	< 0.1	< 0.001
EPA 25	N	7/20/1993	6857.00	6.70	7.52	3503	696	151	127	7.1	817	1709	62.7	0.07	38.7	< 1	< 0.1	< 0.001
EPA 25	N	10/11/1993	6855.10	6.80	7.26	3584	707	152	95	6.5	805	1699	59.3	0.05	40.8	< 1	< 0.1	< 0.001



**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
EPA 23	N	10/8/2012	<0.001	<0.005	<0.01	<0.001	6.09	<0.1	<0.05	<0.001	<0.1	0.0283	0.18	0.10 U	0.18	0.08 U	0.5 U	0.3 U
EPA 23	N	1/7/2013	<0.001	<0.005	<0.01	<0.001	5.8	<0.1	<0.05	<0.001	<0.1	0.0288	0.2	1.8	2	0.02 U	0.5 U	0.4 U
EPA 23	N	4/1/2013	<0.001	<0.005	<0.01	<0.001	5.93	<0.1	<0.05	<0.001	<0.1	0.0299	0.17	0.54 U	0.17	0.02 U	-0.1 U	0.5
EPA 23	N	7/8/2013	<0.001	<0.005	<0.01	<0.001	6.04	<0.1	<0.05	<0.001	<0.1	0.0323	0.18	0.93 U	0.18	0.01 U	0.8 U	0.4 U
EPA 23	N	9/30/2013	<0.001	<0.005	<0.01	<0.001	5.89	<0.1	<0.05	<0.001	<0.1	0.0341	0.25	0.23 U	0.25	0.02 U	-0.09 U	0.002 U
EPA 23	N	1/6/2014	<0.001	<0.005	<0.01	<0.001	6.3	<0.1	<0.05	<0.001	<0.1	0.0314	0.41	1.4 U	0.41	0.03	0.1 U	0.04
EPA 23	N	3/31/2014	<0.001	<0.005	<0.01	<0.001	5.98	<0.1	<0.05	<0.001	<0.1	0.0324	0.25	1.4	1.65	0.0007 U	-0.3 U	0.08 U
EPA 23	N	7/7/2014	<0.001	<0.005	<0.01	<0.001	5.92	<0.1	<0.05	<0.001	<0.1	0.0274	0.39	0.65 U	0.39	0.03 U	0.6 U	-0.03 U
EPA 23	N	10/6/2014	<0.001	<0.005	<0.01	<0.001	5.77	<0.1	<0.05	<0.001	<0.1	0.0313	0.4	2.7	3.1	0.01 U	0.009 U	0.4 U
EPA 23	N	1/5/2015	<0.001	<0.005	<0.01	<0.001	5.84	<0.1	<0.05	0.002	<0.1	0.0311	0.27	1.8	2.07	0.04 U	0.2 U	-0.3 U
EPA 23	N	4/6/2015	<0.001	<0.005	<0.01	<0.001	5.69	<0.1	<0.05	<0.001	<0.1	0.0321	0.46	0.49 U	0.46	0.01 U	0.4 U	1.1 U
EPA 23	N	7/6/2015	<0.001	<0.005	<0.01	<0.001	5.84	<0.1	<0.05	<0.001	<0.1	0.034	0.39	0.29 U	0.39	0.04 U	-0.2 U	0.7 U
EPA 23	N	10/5/2015	<0.001	<0.005	<0.01	<0.001	5.9	<0.1	<0.05	<0.001	<0.1	0.0291	0.36	1.5	1.86	0.05 U	0.3 U	1.4
EPA 23	N	1/4/2016	<0.001	<0.005	<0.01	<0.001	5.57	<0.1	<0.05	<0.001	<0.1	0.0292	0.53	1.1 U	0.53	0.01 U	-0.5 U	1.3
EPA 23	N	4/4/2016	<0.001	<0.005	<0.01	<0.001	5.67	<0.1	<0.05	<0.001	<0.1	0.0326	0.41	2.1	2.51	0.03 U	0.2 U	1.8
EPA 23	N	7/11/2016	<0.001	<0.005	0.01	<0.001	6.16	<0.1	<0.05	<0.001	<0.1	0.0291	0.56	2.2	2.76	-0.01 U	0.4 U	1.6
EPA 23	N	10/3/2016	<0.001	<0.005	<0.01	<0.001	5.84	<0.1	<0.05	<0.001	<0.1	0.0284	0.55	5.5	6.05	0.04 U	0.7 U	0.5 U
EPA 25	N	7/28/1989	< 0.05	< 0.01	< 0.01	< 0.05	0.22	< 0.1	< 0.05	0.001	< 0.1	0.0184	0.6	< 1	0.6	< 0.2	1	1.8
EPA 25	N	10/8/1989	< 0.05	< 0.01	< 0.01	< 0.05	0.22	< 0.1	< 0.05	0.001	< 0.1	0.022	1	< 1	1	< 0.2	1.2	1.1
EPA 25	N	1/17/1990	< 0.05	< 0.01	0.02	< 0.05	0.21	< 0.1	< 0.05	< 0.001	< 0.1	0.019	0.2	2	2.2	0.7	< 1	1
EPA 25	N	4/18/1990	< 0.05	< 0.01	0.02	< 0.05	0.3	< 0.1	< 0.05	0.001	< 0.1	0.019	0.5	< 1	0.5	< 0.2	< 1	1.4
EPA 25	N	7/13/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.18	< 0.1	< 0.05	< 0.001	< 0.1	0.0194	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	10/10/1990	< 0.05	< 0.01	0.01	< 0.05	0.2	< 0.1	< 0.05	< 0.001	< 0.1	0.0206	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	1/9/1991	< 0.01	< 0.01	0.01	< 0.05	0.23	< 0.1	< 0.05	< 0.001	< 0.1	0.0277	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	4/16/1991	< 0.01	< 0.01	< 0.01	< 0.05	0.25	< 0.1	< 0.05	< 0.001	< 0.1	0.017	< 0.2	< 1	0	< 0.2	1.5	< 1
EPA 25	N	7/9/1991	< 0.01	< 0.01	< 0.01	< 0.05	0.22	< 0.1	< 0.05	< 0.001	< 0.1	0.0231	< 0.2	1	1	< 0.2	1.7	< 1
EPA 25	N	10/24/1991	< 0.01	< 0.01	0.01	no data	0.24	< 0.1	< 0.05	< 0.001	< 0.1	0.049	< 0.2	3.5	3.5	< 0.2	< 1	< 1
EPA 25	N	1/24/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.24	< 0.1	< 0.05	0.001	< 0.1	0.027	0.7	< 1	0.7	< 0.2	< 1	< 1
EPA 25	N	4/3/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.22	< 0.1	< 0.05	< 0.001	< 0.1	0.039	< 0.2	5.4	5.4	< 0.2	< 1	< 1
EPA 25	N	7/16/1992	< 0.01	< 0.01	0.02	< 0.05	0.35	< 0.1	< 0.05	0.003	< 0.1	0.041	< 0.2	< 1	0	< 0.2	7	< 1
EPA 25	N	10/15/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.23	< 0.1	< 0.05	< 0.001	< 0.1	0.022	1.7	1.1	2.8	< 0.2	5.7	1.9
EPA 25	N	1/12/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.22	< 0.1	< 0.05	0.01	< 0.1	0.018	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	4/15/1993	< 0.01	< 0.01	0.02	< 0.05	0.23	< 0.1	< 0.05	< 0.001	< 0.1	0.025	0.2	< 1	0.2	< 0.2	1.9	< 1
EPA 25	N	7/20/1993	< 0.01	< 0.01	0.03	< 0.05	0.24	< 0.1	< 0.05	< 0.001	< 0.1	0.025	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	10/11/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.21	< 0.1	< 0.05	< 0.001	< 0.1	0.023	< 0.2	< 1	0	< 0.2	3.5	< 1

**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
EPA 25	N	1/10/1994	6856.60	6.80	7.59	3639	662	163	99	6.3	790	1771	67.8	0.12	38.6	< 1	< 0.1	< 0.001
EPA 25	N	4/20/1994	6856.30	6.80	7.07	3486	647	151	112	6.5	791	1672	67	0.18	47.1	< 1	< 0.1	0.002
EPA 25	N	7/26/1994	6855.80	6.70	7.60	3663	783	181	115	7.4	822	1681	70.4	< 0.05	54.7	< 1	< 0.1	< 0.001
EPA 25	N	10/10/1994	6855.70	6.70	7.60	3704	764	187	129	7.8	907	1909	73.9	0.13	47.1	< 1	< 0.1	< 0.001
EPA 25	N	1/10/1995	6855.40	6.80	7.50	3734	840	137	120	8.4	889	1779	78.7	0.13	47.1	< 1	< 0.1	< 0.001
EPA 25	N	4/11/1995	6855.20	6.10	7.35	3686	806	200	136	13.7	915	1849	91	0.34	50.1	< 1	< 0.1	< 0.001
EPA 25	N	7/10/1995	6855.20	6.90	7.53	3576	715	198	133	7.6	697	1716	88	0.26	58.9	< 1	< 0.1	< 0.001
EPA 25	N	10/9/1995	6854.70	6.90	7.80	3789	745	202	148	7.2	791	1696	80	0.14	62.9	< 1	< 0.1	< 0.001
EPA 25	N	1/8/1996	6854.30	6.80	7.36	3963	745	212	139	6.9	841	1826	71	< 0.05	86.4	< 1	< 0.1	< 0.001
EPA 25	N	4/9/1996	6854.00	6.90	7.76	3942	790	206	135	7.2	937	1766	87.4	0.11	62.6	< 1	< 0.1	< 0.001
EPA 25	N	7/17/1996	6853.70	6.70	7.10	3928	710	182	145	7.9	964	1816	95	0.07	67.2	< 1	< 0.1	< 0.001
EPA 25	N	10/8/1996	6853.60	6.70	7.09	4000	767	199	144	7.9	981	1742	89	0.08	59.6	< 1	< 0.1	< 0.001
EPA 25	N	1/27/1997	6853.30	6.70	7.99	3960	760	200	135	8.1	952	1939	117	0.06	60.8	< 1	< 0.1	< 0.001
EPA 25	N	4/14/1997	6854.20	6.50	7.96	4020	851	215	142	8.3	981	1777	100	< 0.05	78.9	< 1	< 0.1	< 0.001
EPA 25	N	7/14/1997	6852.90	6.70	7.70	4070	803	205	135	7.7	986	1670	101	0.06	71.5	< 1	< 0.1	< 0.001
EPA 25	N	10/14/1997	6853.00	6.60	7.71	4010	835	213	140	7.9	933	1800	115	0.08	77.7	< 1	< 0.1	< 0.001
EPA 25	N	1/20/1998	6852.80	6.50	7.83	4080	739	206	155	7.9	952	1930	96.4	0.19	75.3	< 1	< 0.1	< 0.001
EPA 25	N	4/13/1998	6852.70	6.90	7.33	4060	799	210	156	8.3	1020	1700	87.3	< 0.05	76.9	< 1	< 0.1	< 0.001
EPA 25	N	7/13/1998	6852.60	6.90	7.64	4210	804	213	155	8.5	1040	1680	92.6	< 0.05	78.4	< 1	< 0.1	< 0.001
EPA 25	N	10/13/1998	6853.20	6.77	8.14	3950	771	214	158	8.6	886	1730	89.3	0.13	69.7	< 1	< 0.1	< 0.001
EPA 25	N	1/12/1999	6853.00	6.80	7.86	4060	733	197	137	8	930	1600	89.5	0.08	78.5	< 1	< 0.1	< 0.001
EPA 25	N	4/13/1999	6852.70	6.80	7.97	4040	813	196	146	7.8	969	1620	93.6	0.05	75	< 1	< 0.1	< 0.001
EPA 25	N	7/20/1999	6852.68	6.80	7.85	4040	762	226	140	9	941	1740	84	0.07	72.4	< 1	< 0.1	< 0.001
EPA 25	N	10/12/1999	6852.40	6.83	7.75	4090	736	201	139	8	959	1520	87.7	0.06	85.7	< 1	< 0.1	< 0.001
EPA 25	N	1/11/2000	6852.30	6.80	7.97	4060	752	206	139	9.2	934	1500	79.6	< 0.05	90.8	< 1	< 0.1	< 0.001
EPA 25	N	5/9/2000	6852.70	6.80	7.77	4030	691	214	160	8.2	813	1670	75.3	< 0.05	105	< 1	< 0.1	< 0.001
EPA 25	N	7/18/2000	6852.40	6.88	7.70	4120	682	219	157	7.54	778	1600	67.7	< 0.05	112	< 1	< 0.1	< 0.001
EPA 25	N	10/10/2000	6852.25	6.89	7.75	3990	557	184	132	7.6	761	1240	53	0.05	121	< 1	< 0.1	0.001
EPA 25	N	1/9/2001	6852.10	7.12	7.89	3910	699	234	155	7	761	1760	63.4	< 0.05	106	< 1	< 0.1	< 0.001
EPA 25	N	2/6/2001	6852.10	7.33	7.34	3970	792	251	135	8.3	783	1930	64.3	0.06	106	< 1	< 0.1	< 0.001
EPA 25	N	3/6/2001	6852.15	7.27	7.87	3710	676	224	186	8.2	757	1840	58.7	< 0.05	105	< 1	< 0.1	< 0.001
EPA 25	N	4/10/2001	6852.25	7.41	7.34	3940	778	241	143	7.9	782	1910	71.7	0.08	101	< 1	< 0.1	< 0.001
EPA 25	N	5/8/2001	6852.00	7.02	7.67	3990	668	222	148	7.6	715	1570	74.2	0.13	108	< 1	< 0.1	< 0.001
EPA 25	N	6/5/2001	6852.10	7.03	7.57	3920	705	236	132	7.3	785	1780	71.2	0.12	94.7	< 1	< 0.1	< 0.001
EPA 25	N	7/10/2001	6852.10	7.29	7.39	4060	730	244	159	7.3	817	1720	75.8	0.1	103	< 1	< 0.1	< 0.001

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
EPA 25	N	1/10/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.29	< 0.1	< 0.05	< 0.001	< 0.1	0.062	< 0.2	2.8	2.8	< 0.2	5.2	5.2
EPA 25	N	4/20/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.21	< 0.1	< 0.05	< 0.001	< 0.1	0.04	1.7	< 1	1.7	< 0.2	< 1	1.9
EPA 25	N	7/26/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.26	< 0.1	< 0.05	< 0.001	< 0.1	0.052	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	10/10/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.25	< 0.1	< 0.05	< 0.001	< 0.1	0.046	0.3	< 1	0.3	< 0.2	< 1	< 1
EPA 25	N	1/10/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.29	< 0.1	< 0.05	< 0.001	< 0.1	0.051	< 0.2	< 1	0	< 0.2	4.3	< 1
EPA 25	N	4/11/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.46	< 0.1	< 0.05	< 0.001	< 0.1	0.052	2.1	< 1	2.1	< 0.2	< 1	2
EPA 25	N	7/10/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.37	< 0.1	< 0.05	0.001	< 0.1	0.059	1.5	< 1	1.5	< 0.2	< 1	6.6
EPA 25	N	10/9/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.51	< 0.1	< 0.05	0.001	< 0.1	0.069	3.5	< 1	3.5	1.4	< 1	3.2
EPA 25	N	1/8/1996	< 0.01	< 0.01	< 0.01	< 0.05	1.25	< 0.1	< 0.05	< 0.001	< 0.1	0.009	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	4/9/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.46	< 0.1	< 0.05	< 0.001	< 0.1	0.066	0.4	< 1	0.4	< 0.2	< 1	< 1
EPA 25	N	7/17/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.39	< 0.1	< 0.05	< 0.001	< 0.1	0.189	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	10/8/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.41	< 0.1	< 0.05	< 0.001	< 0.1	0.078	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	1/27/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.51	< 0.1	< 0.05	< 0.001	< 0.1	0.063	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	4/14/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.29	< 0.1	< 0.05	0.006	< 0.1	0.095	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	7/14/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.32	< 0.1	< 0.05	0.001	< 0.1	0.082	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	10/14/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.44	< 0.1	< 0.05	0.001	< 0.1	0.093	1.1	< 1	1.1	< 0.2	< 1	< 1
EPA 25	N	1/20/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.36	< 0.1	< 0.05	< 0.001	< 0.1	0.094	0.7	< 1	0.7	< 0.2	< 1	< 1
EPA 25	N	4/13/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.35	< 0.1	< 0.05	< 0.001	< 0.1	0.0999	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	7/13/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.31	< 0.1	< 0.05	< 0.001	< 0.1	0.104	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	10/13/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.61	< 0.1	< 0.05	< 0.001	< 0.1	0.0987	0.4	< 1	0.4	< 0.2	< 1	< 1
EPA 25	N	1/12/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.76	< 0.1	< 0.05	< 0.001	< 0.1	0.151	0.8	< 1	0.8	< 0.2	< 1	< 1
EPA 25	N	4/13/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.55	< 0.1	< 0.05	< 0.001	< 0.1	0.0096	< 0.2	1.6	1.6	< 0.2	< 1	< 1
EPA 25	N	7/20/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.3	< 0.1	< 0.05	< 0.001	< 0.1	0.103	1.5	1.4	2.9	< 0.2	< 1	2.2
EPA 25	N	10/12/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.33	< 0.1	< 0.05	< 0.001	< 0.1	0.104	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	1/11/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.3	< 0.1	< 0.05	0.001	< 0.1	0.0928	0.5	< 1	0.5	0.7	< 1	< 1
EPA 25	N	5/9/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.96	< 0.1	< 0.05	< 0.001	< 0.1	0.0935	< 0.2	2.9	2.9	< 0.2	< 1	< 1
EPA 25	N	7/18/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.96	< 0.1	< 0.05	< 0.001	< 0.1	0.0865	< 0.2	2	2	< 0.2	< 1	< 1
EPA 25	N	10/10/2000	< 0.01	< 0.005	< 0.01	< 0.05	1.11	< 0.1	< 0.05	< 0.001	< 0.1	0.095	< 0.2	1.3	1.3	< 0.2	< 1	< 1
EPA 25	N	1/9/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.25	< 0.1	< 0.05	0.002	< 0.1	0.086	< 0.2	2.7	2.7	< 0.2	< 1	< 1
EPA 25	N	2/6/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.33	< 0.1	< 0.05	0.002	< 0.1	0.094	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	3/6/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.35	< 0.1	< 0.05	0.001	< 0.1	0.0911	< 0.2	2.4	2.4	< 0.2	< 1	< 1
EPA 25	N	4/10/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.45	< 0.1	< 0.05	0.001	< 0.1	0.091	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	5/8/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.42	< 0.1	< 0.05	0.001	< 0.1	0.091	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	6/5/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.53	< 0.1	< 0.05	0.001	< 0.1	0.09	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	7/10/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.58	< 0.1	< 0.05	0.001	< 0.1	0.0981	< 0.2	< 1	0	< 0.2	< 1	< 1



**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Cl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l
<b>NRC Standard</b>			<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>80</b>	<b>NA</b>	<b>0.05</b>
<b>EPA Standard</b>			<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>10376</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>5815</b>	<b>250</b>	<b>NA</b>	<b>536.6</b>	<b>80</b>	<b>5</b>	<b>0.01</b>
EPA 25	N	8/7/2001	6852.02	7.26	7.50	4060	650	220	150	7.6	819	1600	82	0.13	94	< 1	< 0.1	< 0.001
EPA 25	N	9/11/2001	6852.30	6.81	7.80	4130	680	220	154	7.8	841	1630	85.9	0.08	111	< 1	< 0.1	< 0.001
EPA 25	N	10/2/2001	6852.40	6.96	7.60	4090	670	220	142	7.9	883	1700	100	0.11	97	< 1	< 0.1	< 0.001
EPA 25	N	11/6/2001	6852.40	6.95	7.70	4040	719	232	149	8.5	841	1800	96	0.06	92	< 1	< 0.1	< 0.001
EPA 25	N	12/4/2001	6852.55	7.09	7.70	4020	675	215	138	7.4	852	1580	86.6	0.07	93	< 1	< 0.1	< 0.001
EPA 25	N	1/8/2002	6852.40	7.09	7.70	4030	774	239	136	9	783	1870	97.5	0.06	91.5	< 1	< 0.1	< 0.001
EPA 25	N	2/5/2002	6852.30	7.08	7.60	4010	761	228	149	8.7	778	1760	92.4	0.07	92.4	< 1	< 0.1	< 0.001
EPA 25	N	3/5/2002	6852.30	6.98	7.70	3980	731	230	158	8.2	827	1800	89.3	0.07	91.6	< 1	< 0.1	< 0.001
EPA 25	N	4/2/2002	6852.20	6.89	7.84	4070	760	226	161	9	854	1800	87.3	0.08	91.8	< 1	< 0.1	< 0.001
EPA 25	N	5/7/2002	6852.40	6.95	7.68	4030	733	222	158	9.1	828	1720	88.3	0.07	91.5	< 1	< 0.1	< 0.001
EPA 25	N	6/4/2002	6852.35	6.90	7.70	4050	745	230	149	7.6	831	1780	79.9	0.07	85.6	< 1	< 0.1	< 0.001
EPA 25	N	7/9/2002	6852.25	6.90	7.84	4130	719	230	165	6.6	850	1760	106	0.2	92.5	< 1	< 0.1	< 0.001
EPA 25	N	10/7/2002	6852.00	7.08	7.67	3510	647	212	160	6.9	802	1560	70	0.16	82.1	< 1	< 0.1	< 0.001
EPA 25	N	1/7/2003	6852.06	7.20	7.67	4030	699	230	168	7.5	819	1770	87.6	0.27	88	< 1	< 0.1	< 0.001
EPA 25	N	4/8/2003	6851.96	6.89	7.52	4060	679	207	169	10.2	802	1570	86.9	0.25	105	< 1	< 0.1	< 0.001
EPA 25	N	7/8/2003	6851.96	6.71	7.72	4270	650	209	157	8.8	825	1710	74.3	0.23	99	< 1	< 0.1	< 0.001
EPA 25	N	10/7/2003	6852.00	6.77	7.66	4190	748	245	177	8.4	836	1880	89.5	0.27	93	< 1	< 0.1	< 0.001
EPA 25	N	1/6/2004	6851.91	6.92	7.70	4150	704	232	171	7.9	875	1830	85.2	0.27	99.4 D	< 1.0	0.2	< 0.001
EPA 25	N	4/6/2004	6852.00	7.20	7.14	4180	714	230	169	8.1	868	1750 D	93.1	0.33	99.6 D	< 1	< 0.1	< 0.001
EPA 25	N	7/13/2004	6851.77	6.73	7.07	4300	736	234	174	8.9	848	1750 D	90	0.25	96.5 D	< 1.0	< 0.1	< 0.001
EPA 25	N	10/5/2004	6851.62	6.87	7.39	4250	712 D	230 D	186	7.6	838	1740 D	87	0.06	89.3 D	< 1.0	< 0.1	< 0.001
EPA 25	N	1/4/2005	6851.81	7.07	7.34	4210	730 D	227 D	166	8.2	892	1640 D	90	0.18	97 D	< 1.0	< 0.1	< 0.001
EPA 25	N	4/5/2005	6851.54	6.96	7.40	4020	744	244	176	7.6	821	1770	91	0.1	87	< 1.0	< 0.1	< 0.001
EPA 25	N	7/12/2005	6851.38	6.86	7.33	4060	744 D	236 D	169	6.9	833	1740 D	91	0.13	91 D	< 1.0	< 0.1	< 0.001
EPA 25	N	10/4/2005	6851.35	6.86	7.46	4100	727 D	231 D	170	7.9	891	1770 D	99	0.09	84 D	< 1.0	< 0.1	< 0.001
EPA 25	N	1/10/2006	6851.18	7.00	7.56	4020	684	221	171	6.3	900	1650 D	87	0.08	96 D	< 1.0	< 0.1	< 0.001
EPA 25	N	4/4/2006	6851.18	6.85	7.32	4130	783 D	256 D	168	8.3	838	1810 D	100	0.16	103 D	< 1.0	< 0.1	< 0.001
EPA 25	N	7/18/2006	6851.03	6.84	6.96	4150	748 D	241 D	179	8.3	903	1920 D	95	0.14	89 D	< 1.0	< 0.1	< 0.001
EPA 25	N	10/3/2006	6851.03	6.80	7.31	3880	702 D	224 D	184 D	7.8	921	1720 D	99	0.18	82 D	< 0.5	< 0.1	< 0.001
EPA 25	N	1/9/2007	6851.14	7.00	6.95	4040	622 D	203 D	142	6.7	927	1510	86	0.07	87 D	< 0.5	< 0.1	< 0.001
EPA 25	N	4/10/2007	6851.25	6.92	7.16	4110	733 D	234 D	154	8.6	935	1760 D	99	< 0.05	99 D	< 0.5	< 0.1	< 0.001
EPA 25	N	7/10/2007	6850.88	6.89	6.80	4040	732 D	245 D	166	7.5	1020	1640	91	0.06	84 D	< 0.5	< 0.1	0.01
EPA 25	N	10/2/2007	6850.86	6.82	7.19	4100	679 D	215 D	168 D	8.8	1010	1650 D	120 D	0.08	90 D	< 0.5	< 0.1	< 0.001
EPA 25	N	1/15/2008	6850.98	6.91	7.08	4150	736 D	227 D	172 D	9	952	1670 D	125 D	< 0.05	87 D	< 0.5	< 0.1	< 0.001
EPA 25	N	4/8/2008	6851.28	6.78	7.16	3890	803 D	256 D	195 D	8.2 D	994	1860 D	92	< 0.1	134 D	< 0.50	< 0.1	< 0.001

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
EPA 25	N	8/7/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.4	< 0.1	< 0.05	< 0.001	< 0.1	0.1	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	9/11/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.5	< 0.1	< 0.05	< 0.001	< 0.1	0.0904	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	10/2/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.42	< 0.1	< 0.05	< 0.001	< 0.1	0.0949	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	11/6/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.46	< 0.1	< 0.05	< 0.001	< 0.1	0.0852	0.3	< 1	0.3	< 0.2	< 1	< 1
EPA 25	N	12/4/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.21	< 0.1	< 0.05	< 0.001	< 0.1	0.0877	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	1/8/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.45	< 0.1	< 0.05	< 0.001	< 0.1	0.0872	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	2/5/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.61	< 0.1	< 0.05	< 0.001	< 0.1	0.0814	0.4	2.4	2.8	< 0.2	< 1	< 1
EPA 25	N	3/5/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.69	< 0.1	< 0.05	< 0.001	< 0.1	0.0975	< 0.2	1.9	1.9	< 0.2	< 1	< 1
EPA 25	N	4/2/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.6	< 0.1	< 0.05	< 0.001	< 0.1	0.0939	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	5/7/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.77	< 0.1	< 0.05	< 0.001	< 0.1	0.0994	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	6/4/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.49	< 0.1	< 0.05	< 0.001	< 0.1	0.0864	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	7/9/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.45	< 0.1	< 0.05	< 0.001	< 0.1	0.087	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	10/7/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.62	< 0.1	< 0.05	< 0.001	< 0.1	0.0778	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	1/7/2003	< 0.01	< 0.005	< 0.01	< 0.05	1.74	< 0.1	< 0.05	< 0.001	< 0.1	0.108	< 0.2	< 1	0	< 0.2	< 1	< 1.0
EPA 25	N	4/8/2003	< 0.01	< 0.005	< 0.01	< 0.05	1.72	< 0.1	< 0.05	< 0.001	< 0.1	0.108	< 0.2	< 1	0	< 0.2	< 1	< 1.0
EPA 25	N	7/8/2003	< 0.01	< 0.005	< 0.01	< 0.05	2	< 0.1	< 0.05	< 0.001	< 0.1	0.0807	< 0.2	< 1	0	< 0.2	< 1	< 1.0
EPA 25	N	10/7/2003	< 0.01	< 0.005	< 0.01	< 0.05	2.06	< 0.1	< 0.05	< 0.001	< 0.1	0.1	< 0.2	< 1	0	< 0.2	< 1	< 1.0
EPA 25	N	1/6/2004	< 0.01	< 0.005	< 0.01	< 0.05	2.32	< 0.1	< 0.05	< 0.001	< 0.1	0.0875 D	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
EPA 25	N	4/6/2004	< 0.01	< 0.005	< 0.01	< 0.05	2.29	< 0.1	< 0.05	0.002	< 0.1	0.0943 D	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	7/13/2004	< 0.01	< 0.005	< 0.01	< 0.05	2.06	< 0.1	< 0.05	< 0.001	< 0.1	0.0934 D	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
EPA 25	N	10/5/2004	< 0.01	< 0.005	< 0.01	< 0.05	2.32	< 0.1	< 0.05	0.001	< 0.1	0.0969 D	< 0.2	1.3	1.3	< 0.2	< 1.0	< 1.0
EPA 25	N	1/4/2005	< 0.01	< 0.005	< 0.01	< 0.05	2.29	< 0.1	< 0.05	< 0.001	< 0.1	0.101	< 0.2	1.6	1.6	< 0.2	< 1.0	< 1.0
EPA 25	N	4/5/2005	< 0.01	< 0.005	< 0.01	< 0.05	2	< 0.1	< 0.05	< 0.001	< 0.1	0.0997	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
EPA 25	N	7/12/2005	< 0.01	< 0.005	< 0.01	< 0.05	2.39	< 0.1	< 0.05	< 0.001	< 0.1	0.0946	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
EPA 25	N	10/4/2005	< 0.01	< 0.005	< 0.01	< 0.05	2.23	< 0.1	< 0.05	< 0.001	< 0.1	0.102	< 0.2	2	2	< 0.2	< 1.0	1.4
EPA 25	N	1/10/2006	< 0.01	< 0.005	< 0.01	< 0.05	2.24	< 0.1	< 0.05	< 0.001	< 0.1	0.105	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
EPA 25	N	4/4/2006	< 0.01	< 0.005	< 0.01	< 0.05	2.46	< 0.1	< 0.05	< 0.001	< 0.1	0.103 D	< 0.2	2.4	2.4	< 0.2	< 1.0	< 1.0
EPA 25	N	7/18/2006	< 0.01	< 0.005	< 0.01	< 0.05	2.05	< 0.1	< 0.05	< 0.001	< 0.1	0.103	< 0.2	2.3	2.3	< 0.2	< 1.0	< 1.0
EPA 25	N	10/3/2006	< 0.01	< 0.005	< 0.01	< 0.05	1.85	< 0.1	< 0.05	< 0.001	< 0.1	0.104	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	1/9/2007	< 0.01	< 0.005	< 0.01	< 0.05	2.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0884	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	4/10/2007	< 0.01	< 0.005	< 0.01	< 0.05	2.18	< 0.1	< 0.05	< 0.001	< 0.1	0.109	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	7/10/2007	< 0.01	< 0.005	< 0.01	< 0.05	1.03	< 0.1	< 0.05	< 0.001	< 0.1	0.111	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	10/2/2007	< 0.01	< 0.005	< 0.01	< 0.05	2.48	< 0.1	< 0.05	< 0.001	< 0.1	0.114	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 25	N	1/15/2008	< 0.01	< 0.005	< 0.01	< 0.05	2.06	< 0.1	< 0.05	< 0.001	< 0.1	0.103	< 0.2	< 1	0	< 0.2	< 1	1.2
EPA 25	N	4/8/2008	< 0.01	< 0.005	< 0.01	< 0.05	2.32	< 0.1	< 0.05	< 0.001	< 0.1	0.113	0.1 U	-0.5 U	-0.4	0.4	-13.5 U	0.9 U

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
EPA 25	N	7/8/2008	6850.78	6.54	7.39	4160	723	214	157 D	7	1040	1770 D	71	< 0.05	88.7 D	< 0.5	< 0.1	< 0.003
EPA 25	N	10/7/2008	6850.40	6.82	7.11	4000	686	231	168 D	7	921	2010 D	85	0.2	106 D	< 0.5	< 0.1	< 0.001
EPA 25	N	1/13/2009	6850.48	6.76	6.90	4160	654	220	167	6	995	1590 D	64	<0.05	102 D	<0.5	<0.1	<0.001
EPA 25	N	4/7/2009	6850.23	6.72	6.92	4090	688 D	231 D	178 D	6	1030	1800 D	88	<0.05	72.0 D	<0.50	<0.1	<0.001
EPA 25	N	7/7/2009	6850.18	6.64	7.08	4150	700	224	166	7	1110	1750 D	95	<0.05	72 D	<0.50	<0.1	<0.001
EPA 25	N	10/6/2009	6849.88	6.70	7.53	4150	717	230	173	7	1130	1820 D	88	<0.05	77 D	<0.50	<0.1	<0.001
EPA 25	N	1/5/2010	no data	no data	7.19	4280 D	756 D	228	194	7	1150	1890 D	99	<0.05	85 D	<0.50	<0.1	<0.001
EPA 25	N	4/6/2010	6849.68	6.80	7.00	4210 D	709 D	217	174 D	7	1190	1860 D	101	<0.05	78 D	<0.50	<0.1	0.001
EPA 25	N	7/13/2010	6849.48	6.61	7.20	4210 D	788	235	186	8	1170	1790 D	95 D	<0.05	74 D	<0.50	0.1	<0.001
EPA 25	N	10/5/2010	6849.38	6.82	7.43	4260 D	736	224	180	7	1160	1800 D	91 D	0.05	75 D	<0.50	<0.1	0.001
EPA 25	N	1/4/2011	6849.18	6.72	7.39	4000 D	759	237	179	7	1180	1800 D	105 D	<0.05	66 D	<0.50	<0.1	<0.001
EPA 25	N	4/5/2011	6839.68	6.82	7.02	4290 D	748	224	196	7	1190	1820 D	105 D	<0.05	93 D	<0.50	<0.1	<0.001
EPA 25	N	7/12/2011	6848.96	6.83	7.37	4060 D	742	231	188	7	1150	1780 D	101 D	<0.1	82 D	<0.50	0.2	<0.001
EPA 25	N	10/4/2011	6848.87	6.93	7.46	4120 D	770	228	190	8	1110	1840 D	106 D	<0.1	80 D	<0.50	<0.1	0.002
EPA 25	N	1/3/2012	6848.67	7.02	7.00 H	4140 D	793	239	192	9	1080	1780 D	103 D	<0.05	78 D	<0.50	<0.1	<0.001
EPA 25	N	4/3/2012	6848.53	6.96	6.90 H	4170 D	756	217	177	7	1110	1790 D	103 D	<0.05	75 D	<0.50	0.2	<0.01
EPA 25	N	7/10/2012	6848.28	6.73	6.93 H	4260	797	245	196 D	8	1160	1750 D	103 D	0.08	79 D	<0.50	<0.1	<0.001
EPA 25	N	10/9/2012	6848.18	6.86	6.90 H	4180	810	226	191 D	8	1240	1830 D	115 D	<0.05	72 D	<0.50	<0.1	<0.001
EPA 25	N	1/14/2013	6848.17	6.83	6.88 H	4290	830	242	207 D	8	1210	1860 D	114 D	<0.05	90 D	<0.50	<0.1	<0.001
EPA 25	N	4/2/2013	6848.03	6.90	6.92 H	4310	777	234	196	8	1250	1800 D	113 D	<0.05	74 D	<0.50	<0.1	<0.001
EPA 25	N	7/9/2013	6847.70	6.67	6.95 H	4300	787	238	204	8	1260	1820 D	109 D	<0.05	70 D	<0.50	<0.1	<0.001
EPA 25	N	10/1/2013	6848.24	6.76	6.91 H	4360	757	232	199	7	1280	1840 D	109 D	<0.05	88 D	<0.50	<0.1	<0.001
EPA 25	N	1/7/2014	6847.97	7.03	6.86	4300	745	227	192	7	1260	1800	109	<0.05	81	<0.50	<0.1	<0.001
EPA 25	N	4/1/2014	6847.84	6.91	7.05 H	4200	778	232	205 D	8	1250	1830 D	121 D	<0.05	68 D	<0.50	<0.1	<0.001
EPA 25	N	7/8/2014	6847.49	6.92	6.89 H	4060	727	251	213 D	8	1020	1810 D	115 D	<0.05	69 D	<0.50	<0.1	<0.001
EPA 25	N	10/7/2014	6847.55	6.86	6.84 H	4380	766	234	200	8	1330	1880 D	120 D	<0.05	68 D	<0.50	<0.1	<0.001
EPA 25	N	1/6/2015	6847.38	6.90	6.77 H	4300	716	227	200	8	1250	1880 D	144 D	<0.05	67 D	<0.50	<0.1	<0.001
EPA 25	N	4/7/2015	6847.22	6.79	6.85 H	4400	753	234	208	8	1350	1830 D	142 D	<0.05	65 D	<0.5	<0.1	<0.001
EPA 25	N	7/7/2015	6847.05	6.62	6.77 H	4490	738	239	202	8.1	1400	1910 D	134 D	0.07	65 D	<0.50	<0.1	<0.001
EPA 25	N	10/6/2015	6846.80	6.87	6.83 H	4460	752	230	202	8	1320	1930 D	138 D	<0.05	62 D	<0.50	<0.1	<0.001
EPA 25	N	1/5/2016	6846.76	6.86	6.80 H	4390	785	243	211	8	1410	1890 D	135 D	<0.05	67 D	<0.50	0.1	<0.001
EPA 25	N	4/5/2016	6846.53	6.74	6.92 H	4390	785	238	210	8	1250	1940 D	137 D	<0.05	66 D	<0.50	0.1	<0.001
EPA 25	N	7/12/2016	6846.32	6.76	6.80 H	4490	785	240	206	8	1390	2020 D	147 D	<0.05	71 D	<0.50	<0.1	<0.001
EPA 25	N	10/4/2016	6846.18	6.87	6.84 H	4420	773	245	217	8	1400	1940 D	136 D	<0.05	70 D	<0.50	<0.1	<0.001
EPA 27	N	7/29/1989	6864.90	8.00	7.26	4537	554	221	371	23.5	171	2253	76.8	0.12	216	< 1	< 0.1	< 0.001



**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
EPA 25	N	7/8/2008	< 0.01	< 0.005	< 0.01	< 0.05	2.45	< 0.1	< 0.05	< 0.001	< 0.1	0.104	0.21	1.5	1.71	0 U	2.5 U	0.3 U
EPA 25	N	10/7/2008	< 0.01	< 0.005	< 0.01	< 0.05	1.4	< 0.1	< 0.05	< 0.001	< 0.1	0.0996	-0.09 U	0.25 U	0.16	-0.1 U	-2 U	1.4
EPA 25	N	1/13/2009	<0.01	<0.005	<0.01	<0.05	0.44	<0.1	<0.05	<0.001	<0.1	0.116	0.08 U	-0.05 U	0.08	-0.2 U	-2 U	1.1
EPA 25	N	4/7/2009	<0.01	<0.005	<0.01	<0.05	0.5	<0.1	<0.05	<0.001	<0.1	0.127	-0.01 U	0.76 U	0.76	0.1 U	-3 U	0.2 U
EPA 25	N	7/7/2009	<0.01	<0.005	<0.01	<0.05	0.66	<0.1	<0.05	<0.001	<0.1	0.115	-0.1 U	-0.08 U	-0.1	0.1 U	-1 U	0.5
EPA 25	N	10/6/2009	<0.01	<0.005	<0.01	<0.05	0.46	<0.1	<0.05	<0.001	<0.1	0.128	0.13	0.21 U	0.34	0.04 U	-1 U	0.1 U
EPA 25	N	1/5/2010	<0.01	<0.005	<0.01	<0.05	0.4	<0.1	<0.05	<0.001	<0.1	0.117	0.01 U	0.03 U	0.04	0.04 U	-0.3 U	0.5 U
EPA 25	N	4/6/2010	<0.01	<0.005	<0.01	<0.05	1.13	<0.1	<0.05	<0.001	<0.1	0.13	0.16	0.51 U	0.67	0.02 U	2.7 U	0.1 U
EPA 25	N	7/13/2010	<0.01	<0.005	<0.01	<0.05	1.07	<0.1	<0.05	<0.001	<0.1	0.117	-0.1 U	0.19 U	0.09	0.09 U	0.3 U	0.09 U
EPA 25	N	10/5/2010	<0.01	<0.005	<0.01	<0.05	0.2	<0.1	<0.05	<0.001	<0.1	0.122	-0.08 U	0.88 U	0.8	-0.007 U	1.0 U	0.2 U
EPA 25	N	1/4/2011	<0.01	<0.005	<0.01	<0.05	0.1	<0.1	<0.05	<0.001	<0.1	0.118	0.01 U	0.53 U	0.54	0.06 U	-0.06 U	0.2 U
EPA 25	N	4/5/2011	<0.01	<0.005	<0.01	<0.05	0.26	<0.1	<0.05	<0.001	<0.1	0.115	-0.08 U	1.1	1.02	0.006 U	-0.2 U	-0.04 U
EPA 25	N	7/12/2011	<0.01	<0.005	<0.01	<0.05	0.5	<0.1	<0.05	<0.001	<0.1	0.117	0.04 U	0.71 U	0.75	0.01 U	0.1 U	0.01 U
EPA 25	N	10/4/2011	<0.01	<0.005	<0.01	<0.05	0.27	<0.1	<0.05	<0.001	<0.1	0.113	-0.09 U	-0.3 U	-0.39	-0.007 U	0.6 U	-0.009 U
EPA 25	N	1/3/2012	<0.01	<0.005	<0.01	<0.05	0.18	<0.1	<0.05	<0.001	<0.1	0.12	0.31	-0.5 U	0.31	0.08 U	0.05 U	0.07 U
EPA 25	N	4/3/2012	<0.01	<0.005	<0.01	<0.05	0.21	<0.1	<0.05	<0.001	<0.1	0.11	-0.05 U	0.63 U	1.26	0.008 U	0.2 U	-0.05 U
EPA 25	N	7/10/2012	<0.001	<0.005	<0.01	<0.001	0.06	<0.1	<0.05	<0.001	<0.1	0.148	-0.03 U	0.31 U	0.62	0.02 U	0.2 U	0.2 U
EPA 25	N	10/9/2012	<0.001	<0.005	<0.01	<0.001	0.23	<0.1	<0.05	<0.001	<0.1	0.12	-0.05 U	0.21 U	0	-0.01 U	0.4 U	-0.02 U
EPA 25	N	1/14/2013	<0.001	<0.005	<0.01	<0.001	0.1	<0.1	<0.05	<0.001	<0.1	0.135	-0.06 U	0.95 U	0	0.03 U	0.4 U	0.08 U
EPA 25	N	4/2/2013	<0.001	<0.005	<0.01	<0.001	0.22	<0.1	<0.05	<0.001	<0.1	0.134	-0.02 U	0.30 U	0	0.03 U	-0.8 U	0.6
EPA 25	N	7/9/2013	<0.001	<0.005	<0.01	<0.001	0.14	<0.1	<0.05	<0.001	<0.1	0.121	0.06 U	-0.2 U	0	0.02 U	-0.2 U	0.1 U
EPA 25	N	10/1/2013	<0.001	<0.005	<0.01	<0.001	0.3	<0.1	<0.05	<0.001	<0.1	0.139	0.16	1.6	1.76	0.03 U	0.05 U	0.05 U
EPA 25	N	1/7/2014	<0.001	<0.005	<0.01	<0.001	0.86	<0.1	<0.05	<0.001	<0.1	0.128	0.12	-1 U	0.12	-0.008 U	-0.1 U	-0.04 U
EPA 25	N	4/1/2014	<0.001	<0.005	<0.01	<0.001	0.17	<0.1	<0.05	<0.001	<0.1	0.124	0.17	0.42 U	0.17	0.03 U	-0.06 U	-0.2 U
EPA 25	N	7/8/2014	<0.001	<0.005	<0.01	<0.001	0.27	<0.1	<0.05	<0.001	<0.1	0.111	0.10 U	0.94 U	0	0.04 U	0.06 U	0.05 U
EPA 25	N	10/7/2014	<0.001	<0.005	<0.01	<0.001	0.35	<0.1	<0.05	<0.001	<0.1	0.128	0.09 U	1.1 U	0	0.04 U	-0.2 U	0.09 U
EPA 25	N	1/6/2015	<0.001	<0.005	<0.01	<0.001	0.16	<0.1	<0.05	<0.001	<0.1	0.13	0.11 U	0.0 U	ND	0.003 U	-0.3 U	0.3 U
EPA 25	N	4/7/2015	<0.001	<0.005	<0.01	<0.001	0.42	<0.1	<0.05	<0.001	<0.1	0.122	0.24	-0.006 U	0.24	0.3	-0.3 U	-0.4 U
EPA 25	N	7/7/2015	<0.001	<0.005	<0.01	<0.001	0.68	<0.1	<0.05	<0.001	<0.1	0.114	0.10 U	-0.2 U	ND	0.06 U	-0.4 U	-0.4 U
EPA 25	N	10/6/2015	<0.001	<0.005	<0.01	<0.001	0.26	<0.1	<0.05	<0.001	<0.1	0.123	-0.03 U	0.25 U	ND	0.1 U	0.2 U	0.5 U
EPA 25	N	1/5/2016	<0.001	<0.005	<0.01	<0.001	0.51	<0.1	<0.05	<0.001	<0.1	0.114	0.09 U	0.07 U	0	0.06 U	-0.2 U	-0.4 U
EPA 25	N	4/5/2016	<0.001	<0.005	<0.01	<0.001	0.5	<0.1	<0.05	<0.001	<0.1	0.124	0.16	0.89 U	0.16	0.02 U	-0.4 U	0.2 U
EPA 25	N	7/12/2016	<0.001	<0.005	<0.01	<0.001	0.85	<0.1	<0.05	<0.001	<0.1	0.113	0.09 U	1.8	1.8	0.1 U	-0.1 U	0.2 U
EPA 25	N	10/4/2016	<0.001	<0.005	<0.01	<0.001	0.87	<0.1	<0.05	<0.001	<0.1	0.109	0.11 U	0.46 U	0	0.04 U	-0.07 U	0.8 U
EPA 27	N	7/29/1989	< 0.05	< 0.01	< 0.01	< 0.05	< 0.01	0.03	< 0.05	0.004	< 0.1	0.0138	0.4	1.9	2.3	3.2	< 1	< 1

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
EPA 27	N	10/4/1989	6864.80	8.10	7.80	4734	550	242	329	22.4	196	2266	74.5	0.09	150	< 1	< 0.1	< 0.001
EPA 27	N	1/23/1990	6865.00	8.00	7.40	4680	538	268	340	17	223	2217	78.8	0.11	180	< 1	< 0.1	< 0.001
EPA 27	N	4/18/1990	6864.70	7.90	7.55	4775	530	260	340	13.4	283	2160	79.6	0.08	182	< 1	< 0.1	< 0.001
EPA 27	N	7/13/1990	6864.10	8.90	7.74	4731	562	239	348	20.4	167	2073	79.7	< 0.05	202	< 1	< 0.1	< 0.001
EPA 27	N	10/16/1990	6864.20	8.20	7.78	4786	558	238	372	16.8	183	2324	89.4	0.05	196	< 1	< 0.1	< 0.001
EPA 27	N	1/10/1991	6864.30	7.70	7.60	4274	574	288	381	17.1	143	2074	83.8	0.13	171	< 1	< 0.1	< 0.001
EPA 27	N	4/16/1991	6864.30	7.60	8.12	4727	547	228	350	16.3	179	2296	85.3	< 0.05	256	< 1	< 0.1	< 0.001
EPA 27	N	7/9/1991	6863.80	7.50	7.68	4925	528	253	326	14.9	121	2420	81.3	< 0.05	200	< 1	< 0.1	< 0.001
EPA 27	N	10/23/1991	6863.30	7.70	7.70	4461	452	146	359	19.4	122	2229	98	0.31	141	< 1	< 0.1	< 0.001
EPA 27	N	1/23/1992	6863.00	7.80	7.47	4570	519	196	335	13	129	2103	92.1	< 0.05	125	< 1	< 0.1	< 0.001
EPA 27	N	4/3/1992	6862.90	7.30	7.87	4087	581	248	416	18.7	208	2443	82.5	< 0.05	194	< 1	< 0.1	< 0.001
EPA 27	N	7/16/1992	6862.10	8.20	7.76	4239	454	225	441	17	73.4	2224	99	< 0.05	150	< 1	< 0.1	< 0.001
EPA 27	N	10/15/1992	6861.60	7.90	7.76	4534	566	213	374	17.3	75.4	2302	99.1	< 0.05	147	< 1	< 0.1	< 0.001
EPA 27	N	1/12/1993	6861.00	7.90	7.85	4496	571	217	395	16.1	116	2386	98.9	< 0.05	195	< 1	< 0.1	< 0.001
EPA 27	N	4/15/1993	6861.00	7.90	7.86	4612	472	237	389	10.2	96.3	2260	111	0.07	150	< 1	< 0.1	0.001
EPA 27	N	7/21/1993	6860.40	8.50	7.87	4408	519	198	387	15.5	81.6	2195	104	< 0.05	141	< 1	< 0.1	0.001
EPA 27	N	10/12/1993	6858.70	8.10	6.79	3844	551	183	314	14.1	74.7	2175	101	0.05	92.5	< 1	< 0.1	< 0.001
EPA 27	N	1/11/1994	6859.70	8.10	7.75	4266	501	183	320	13	103	2181	97.8	< 0.05	122	< 1	< 0.1	< 0.001
EPA 27	N	4/19/1994	6859.30	6.50	8.12	4020	509	172	373	15.3	80.6	2073	107	0.2	143	< 1	< 0.1	< 0.001
EPA 27	N	7/27/1994	6859.00	8.00	7.77	3954	568	143	307	16.7	58.6	2060	108	< 0.05	148	< 1	< 0.1	< 0.001
EPA 27	N	10/11/1994	6858.60	8.00	7.83	4264	565	223	377	12.1	67.8	2245	108	0.09	141	< 1	< 0.1	< 0.001
EPA 27	N	1/11/1995	6858.20	8.30	7.54	4030	552	151	337	16.3	74.8	2066	113	0.16	190	< 1	< 0.1	0.002
EPA 27	N	4/11/1995	6858.10	7.50	8.02	4125	541	169	354	15.6	63.1	2054	118	0.21	149	< 1	< 0.1	< 0.001
EPA 27	N	7/11/1995	6857.80	7.90	7.90	3897	550	134	332	15.6	64.6	1872	118	0.05	129	< 1	< 0.1	< 0.001
EPA 27	N	10/10/1995	6857.40	7.90	8.18	3760	535	128	360	18.2	54.2	1796	108	0.05	121	< 1	< 0.1	< 0.001
EPA 27	N	1/9/1996	6857.10	7.90	7.90	3743	530	126	328	16.1	62.2	1929	116	< 0.05	132	< 1	< 0.1	< 0.001
EPA 27	N	4/10/1996	6856.80	8.40	7.97	3875	552	133	324	14.1	57.6	2080	126	0.07	123	< 1	< 0.1	0.002
EPA 27	N	7/17/1996	6856.50	7.80	7.82	3730	560	118	348	16.4	45.5	2009	124	< 0.05	143	< 1	< 0.1	< 0.001
EPA 27	N	10/8/1996	6856.20	7.70	8.04	3720	524	127	343	16.5	40.4	1865	112	0.13	121	< 1	< 0.1	< 0.001
EPA 27	N	1/28/1997	6855.90	7.70	7.64	3720	530	135	336	15.4	39.8	1910	156	0.18	113	< 1	< 0.1	< 0.001
EPA 27	N	4/15/1997	6855.90	7.10	7.65	3660	564	111	332	16.8	31.1	1876	120	0.06	139	< 1	< 0.1	< 0.001
EPA 27	N	7/15/1997	6855.60	7.50	7.58	3710	547	127	317	16.3	31	1790	123	0.08	116	< 1	< 0.1	< 0.001
EPA 28	N	7/29/1989	6867.90	6.90	6.60	4825	548	458	222	10.5	671	2622	110	0.05	74	< 1	< 0.1	< 0.001
EPA 28	N	10/4/1989	6867.70	6.50	7.20	4989	565	475	216	14.1	738	2720	107	< 0.05	113	< 1	< 0.1	< 0.001
EPA 28	N	1/23/1990	6867.70	6.60	6.80	4904	525	468	227	10.4	756	2434	116	0.09	75	< 1	< 0.1	< 0.001

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
EPA 27	N	10/4/1989	< 0.05	< 0.01	< 0.01	< 0.05	< 0.01	0.03	< 0.05	0.006	< 0.1	0.032	0.6	1.8	2.4	< 0.2	< 1	1.1
EPA 27	N	1/23/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.01	< 0.1	< 0.05	0.005	< 0.1	0.046	< 0.2	1.5	1.5	1.4	< 1	1.7
EPA 27	N	4/18/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.01	< 0.1	< 0.05	0.005	< 0.1	0.027	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 27	N	7/13/1990	< 0.05	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	0.002	< 0.1	0.0213	< 0.2	< 1	0	0.8	1	< 1
EPA 27	N	10/16/1990	< 0.05	< 0.01	0.04	< 0.05	< 0.01	< 0.1	< 0.05	0.003	< 0.1	0.0282	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 27	N	1/10/1991	< 0.01	< 0.01	0.02	< 0.05	0.01	< 0.1	< 0.05	0.006	< 0.1	0.0286	0.8	< 1	0.8	< 0.2	< 1	1.2
EPA 27	N	4/16/1991	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	0.004	< 0.1	0.024	< 0.2	< 1	0	< 0.2	1.3	< 1
EPA 27	N	7/9/1991	< 0.01	< 0.01	< 0.01	< 0.05	0.01	< 0.1	< 0.05	0.005	< 0.1	0.0347	0.4	< 1	0.4	< 0.2	< 1	< 1
EPA 27	N	10/23/1991	< 0.01	< 0.01	0.01	no data	0.01	< 0.1	< 0.05	0.006	< 0.1	0.032	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 27	N	1/23/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	0.001	< 0.1	0.039	0.5	1	1.5	< 0.2	1.6	< 1
EPA 27	N	4/3/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	0.096	< 0.1	0.014	< 0.2	< 1	0	< 0.2	2.4	< 1
EPA 27	N	7/16/1992	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	0.006	< 0.1	0.024	0.6	2.5	3.1	< 0.2	< 1	< 1
EPA 27	N	10/15/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.01	< 0.1	< 0.05	0.007	< 0.1	0.029	0.9	5.1	6	< 0.2	2.2	< 1
EPA 27	N	1/12/1993	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	0.031	< 0.1	0.011	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 27	N	4/15/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	0.011	< 0.1	0.023	< 0.2	< 1	0	< 0.2	1.9	< 1
EPA 27	N	7/21/1993	< 0.01	< 0.01	0.01	< 0.05	0.02	< 0.1	< 0.05	0.015	< 0.1	0.018	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 27	N	10/12/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.01	< 0.1	< 0.05	0.011	< 0.1	0.019	0.5	< 1	0.5	< 0.2	1.9	< 1
EPA 27	N	1/11/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.01	< 0.1	< 0.05	0.01	< 0.1	0.023	< 0.2	1.7	1.7	< 0.2	< 1	3.5
EPA 27	N	4/19/1994	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	0.009	< 0.1	0.019	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 27	N	7/27/1994	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	0.007	< 0.1	0.014	0.9	3.8	4.7	< 0.2	1.9	6.8
EPA 27	N	10/11/1994	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	0.008	< 0.1	0.021	0.3	< 1	0.3	< 0.2	1	< 1
EPA 27	N	1/11/1995	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	0.011	< 0.1	0.017	< 0.2	2.6	2.6	< 0.2	3	4.3
EPA 27	N	4/11/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.01	< 0.1	< 0.05	0.011	< 0.1	0.014	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 27	N	7/11/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.01	< 0.1	< 0.05	0.012	< 0.1	0.011	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 27	N	10/10/1995	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	0.035	< 0.1	0.0094	0.2	1.5	1.7	< 0.2	< 1	< 1
EPA 27	N	1/9/1996	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	0.038	< 0.1	0.011	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 27	N	4/10/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.01	< 0.1	< 0.05	0.009	< 0.1	0.013	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 27	N	7/17/1996	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.01	2.1	< 1	2.1	< 0.2	< 1	< 1
EPA 27	N	10/8/1996	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	0.009	< 0.1	0.012	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 27	N	1/28/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.08	< 0.1	< 0.05	0.015	< 0.1	0.006	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 27	N	4/15/1997	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	0.042	< 0.1	0.003	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 27	N	7/15/1997	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	0.019	< 0.1	0.006	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 28	N	7/29/1989	< 0.05	< 0.01	< 0.01	< 0.05	0.2	< 0.1	< 0.05	0.002	< 0.1	0.0313	0.9	1.8	2.7	6.9	2.6	< 1
EPA 28	N	10/4/1989	< 0.05	< 0.01	< 0.01	< 0.05	0.19	< 0.1	< 0.05	0.002	< 0.1	0.041	2.7	< 1	2.7	4.6	< 1	8.4
EPA 28	N	1/23/1990	< 0.05	< 0.01	0.01	< 0.05	0.18	< 0.1	< 0.05	0.002	< 0.1	0.045	0.4	3	3.4	1.8	1.3	3.2



**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
EPA 28	N	4/18/1990	6867.30	6.80	7.12	4977	542	428	207	9.9	815	2330	117	0.12	69	< 1	< 0.1	< 0.001
EPA 28	N	7/13/1990	6866.20	6.70	7.21	5037	541	440	212	10	821	2210	126	< 0.05	74.2	< 1	< 0.1	< 0.001
EPA 28	N	10/16/1990	6866.70	6.50	7.21	5306	548	231	387	17.7	522	3005	111	< 0.05	62.5	< 1	< 0.1	< 0.001
EPA 28	N	1/10/1991	6866.70	6.60	7.17	5138	542	487	232	13.8	627	2732	115	< 0.05	68	< 1	< 0.1	< 0.001
EPA 28	N	4/16/1991	6866.70	6.50	7.76	5194	497	470	222	11.8	632	2824	123	< 0.05	88	< 1	< 0.1	< 0.001
EPA 28	N	7/9/1991	6866.20	6.40	7.07	5350	477	463	208	10.1	551	2940	107	< 0.05	68	< 1	< 0.1	< 0.001
EPA 28	N	10/23/1991	6865.40	6.40	7.50	5170	488	499	225	11.4	534	2792	114	0.28	52.3	< 1	< 0.1	< 0.001
EPA 28	N	1/23/1992	6865.10	6.40	7.37	5268	490	448	213	10.2	583	2786	111	0.14	40.6	< 1	< 0.1	< 0.001
EPA 28	N	4/3/1992	6865.30	6.50	7.46	4613	505	448	263	12.6	612	2934	110	0.22	72.1	< 1	< 0.1	< 0.001
EPA 28	N	7/16/1992	6864.40	6.60	7.20	5042	517	489	246	13.6	561	2916	110	0.1	35.4	< 1	< 0.1	< 0.001
EPA 28	N	10/15/1992	6863.20	6.70	7.21	5249	509	486	236	10.9	550	3015	106	< 0.05	55.5	< 1	< 0.1	< 0.001
EPA 28	N	1/12/1993	6862.60	6.60	7.16	5095	546	482	244	13.9	584	2973	110	< 0.05	77.9	< 1	< 0.1	< 0.001
EPA 28	N	4/15/1993	6863.00	6.70	7.49	5230	534	483	251	10	744	2981	122	0.08	63	< 1	< 0.1	< 0.001
EPA 28	N	7/21/1993	6862.20	6.70	7.49	4999	546	474	249	12.5	561	2968	98.9	< 0.05	49.5	< 1	< 0.1	< 0.001
EPA 28	N	10/12/1993	6859.60	7.00	7.18	5002	525	450	223	10.6	603	2913	109	< 0.05	48.6	< 1	< 0.1	< 0.001
EPA 28	N	1/11/1994	6861.10	7.00	7.73	5378	544	473	236	10.6	562	3132	101	< 0.05	52.8	< 1	< 0.1	< 0.001
EPA 28	N	4/19/1994	6860.90	6.70	7.71	5077	481	452	232	12.6	527	2901	108	0.06	56.2	< 1	< 0.1	< 0.001
EPA 28	N	7/27/1994	6860.50	6.70	7.45	5476	611	527	197	12.7	559	3177	102	< 0.05	59.2	< 1	< 0.1	< 0.001
EPA 28	N	10/11/1994	6860.00	6.70	7.69	5491	545	574	241	13	614	3325	97.5	0.06	38.6	< 1	< 0.1	< 0.001
EPA 28	N	1/11/1995	6859.70	6.70	7.65	5614	510	576	202	12.9	586	3257	96.7	0.13	48.2	< 1	< 0.1	< 0.001
EPA 28	N	4/11/1995	6859.70	6.70	7.39	5089	532	496	217	11.8	601	3028	124	0.15	28.6	< 1	< 0.1	< 0.001
EPA 28	N	7/11/1995	6859.30	6.90	7.85	4851	535	505	219	11.5	554	2850	115	< 0.05	51.7	< 1	< 0.1	< 0.001
EPA 28	N	10/10/1995	6858.80	6.90	7.94	4825	520	495	229	12	549	2802	101	< 0.05	47.2	< 1	< 0.1	< 0.001
EPA 28	N	1/9/1996	6858.40	7.00	7.29	5029	535	520	207	11.6	528	2979	112	< 0.05	55.3	< 1	< 0.1	< 0.001
EPA 28	N	4/10/1996	6858.00	7.10	7.73	5273	508	500	209	10.8	556	3165	124	0.07	48.5	< 1	< 0.1	0.002
EPA 28	N	7/17/1996	6857.80	7.00	7.08	5267	525	550	227	12.1	531	3045	112	< 0.05	125	< 1	< 0.1	< 0.001
EPA 28	N	10/8/1996	6857.60	7.00	7.23	5260	538	498	223	11.8	360	2849	108	0.07	47.3	< 1	< 0.1	< 0.001
EPA 28	N	1/28/1997	6857.40	7.00	7.73	5270	545	500	194	11.2	642	2935	157	0.06	47.2	< 1	< 0.1	< 0.001
EPA 28	N	4/15/1997	6857.30	7.00	7.61	5350	574	555	213	12.1	544	3280	116	< 0.05	52.6	< 1	< 0.1	< 0.001
EPA 28	N	7/15/1997	6857.00	6.80	7.83	5360	539	506	206	11.7	531	2810	119	0.05	44.6	< 1	< 0.1	< 0.001
EPA 28	N	10/15/1997	6857.10	6.70	7.83	5290	585	543	217	11.5	667	3010	145	0.05	49.5	< 1	< 0.1	< 0.001
EPA 28	N	1/20/1998	6857.20	6.70	8.07	5330	531	514	224	12.8	540	3250	121	0.16	51.4	< 1	< 0.1	< 0.001
EPA 28	N	4/14/1998	6856.90	7.00	7.41	5430	549	556	221	12.6	539	2990	95.4	< 0.05	44.5	< 1	< 0.1	< 0.001
EPA 28	N	7/14/1998	6856.70	7.00	7.88	5630	538	543	228	12.8	544	2900	101	< 0.05	41.7	< 1	< 0.1	< 0.001
EPA 28	N	10/13/1998	6858.40	6.82	7.94	5230	526	525	227	12.4	535	3050	104	0.11	39.5	< 1	< 0.1	< 0.001

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
EPA 28	N	4/18/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.17	< 0.1	< 0.05	0.001	< 0.1	0.26	0.8	< 1	0.8	< 0.2	< 1	1.3
EPA 28	N	7/13/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.17	< 0.1	< 0.05	< 0.001	< 0.1	0.0378	< 0.2	1.2	1.2	< 0.2	< 1	< 1
EPA 28	N	10/16/1990	< 0.05	< 0.01	0.01	< 0.05	0.23	< 0.1	< 0.05	< 0.001	< 0.1	0.0206	0.8	< 1	0.8	< 0.2	< 1	< 1
EPA 28	N	1/10/1991	< 0.01	0.01	0.02	< 0.05	0.21	< 0.1	< 0.05	0.002	< 0.1	0.0268	2.4	< 1	2.4	< 0.2	6.3	3.1
EPA 28	N	4/16/1991	< 0.01	0.01	< 0.01	< 0.05	0.18	< 0.1	< 0.05	< 0.001	< 0.1	0.027	0.9	3.1	4	< 0.2	< 1	< 1
EPA 28	N	7/9/1991	< 0.01	< 0.01	< 0.01	< 0.05	0.2	< 0.1	< 0.05	< 0.001	< 0.1	0.0302	1.4	1.1	2.5	< 0.2	< 1	2
EPA 28	N	10/23/1991	< 0.01	< 0.01	0.01	no data	0.21	< 0.1	< 0.05	< 0.001	< 0.1	0.05	0.7	< 1	0.7	< 0.2	< 1	< 1
EPA 28	N	1/23/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.23	< 0.1	< 0.05	0.001	< 0.1	0.024	0.8	3.5	4.3	< 0.2	2.7	< 1
EPA 28	N	4/3/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.23	< 0.1	< 0.05	0.008	< 0.1	0.019	0.2	1.4	1.6	< 0.2	< 1	< 1
EPA 28	N	7/16/1992	< 0.01	< 0.01	0.02	< 0.05	0.23	< 0.1	< 0.05	0.001	< 0.1	0.023	1.7	< 1	1.7	< 0.2	< 1	1.9
EPA 28	N	10/15/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.21	< 0.1	< 0.05	< 0.001	< 0.1	0.029	0.9	< 1	0.9	< 0.2	2.6	< 1
EPA 28	N	1/12/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.24	< 0.1	< 0.05	0.016	< 0.1	0.026	0.4	3.3	3.7	< 0.2	< 1	< 1
EPA 28	N	4/15/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.24	< 0.1	< 0.05	< 0.001	< 0.1	0.028	0.6	< 1	0.6	< 0.2	< 1	< 1
EPA 28	N	7/21/1993	< 0.01	< 0.01	0.01	< 0.05	0.25	< 0.1	< 0.05	< 0.001	< 0.1	0.029	0.5	< 1	0.5	< 0.2	< 1	< 1
EPA 28	N	10/12/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.24	< 0.1	< 0.05	0.001	< 0.1	0.038	1	< 1	1	< 0.2	2.8	< 1
EPA 28	N	1/11/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.27	< 0.1	< 0.05	< 0.001	< 0.1	0.027	0.3	4.3	4.6	< 0.2	< 1	7.7
EPA 28	N	4/19/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.32	< 0.1	< 0.05	< 0.001	< 0.1	0.026	7	< 1	7	< 0.2	2	7.2
EPA 28	N	7/27/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.25	< 0.1	< 0.05	0.002	< 0.1	0.019	0.05	< 1	0.05	< 0.2	< 1	< 1
EPA 28	N	10/11/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.26	< 0.1	< 0.05	< 0.001	< 0.1	0.024	3.7	< 1	3.7	< 0.2	< 1	3.9
EPA 28	N	1/11/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.3	< 0.1	< 0.05	< 0.001	< 0.1	0.026	1.3	3.6	4.9	< 0.2	2.6	6.9
EPA 28	N	4/11/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.27	< 0.1	< 0.05	< 0.001	< 0.1	0.025	0.4	< 1	0.4	< 0.2	< 1	< 1
EPA 28	N	7/11/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.25	< 0.1	< 0.05	0.002	< 0.1	0.026	1.3	< 1	1.3	< 0.2	1.6	6.9
EPA 28	N	10/10/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.23	< 0.1	< 0.05	0.002	< 0.1	0.027	0.8	1.2	2	0.5	< 1	1.5
EPA 28	N	1/9/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.29	< 0.1	< 0.05	0.005	< 0.1	0.027	0.6	< 1	0.6	< 0.2	< 1	< 1
EPA 28	N	4/10/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.27	< 0.1	< 0.05	< 0.001	< 0.1	0.033	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 28	N	7/17/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.22	< 0.1	< 0.05	< 0.001	< 0.1	0.032	1.8	< 1	1.8	< 0.2	< 1	< 1
EPA 28	N	10/8/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.27	< 0.1	< 0.05	< 0.001	< 0.1	0.038	1	< 1	1	< 0.2	< 1	< 1
EPA 28	N	1/28/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.27	< 0.1	< 0.05	< 0.001	< 0.1	0.023	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 28	N	4/15/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.24	< 0.1	< 0.05	0.005	< 0.1	0.022	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 28	N	7/15/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.19	< 0.1	< 0.05	0.001	< 0.1	0.025	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 28	N	10/15/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.23	< 0.1	< 0.05	0.002	< 0.1	0.035	< 0.2	4.9	4.9	< 0.2	5.5	< 1
EPA 28	N	1/20/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.23	< 0.1	< 0.05	< 0.001	< 0.1	0.028	0.7	< 1	0.7	< 0.2	< 1	< 1
EPA 28	N	4/14/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.31	< 0.1	< 0.05	< 0.001	< 0.1	0.0261	1.6	< 1	1.6	< 0.2	< 1	2.9
EPA 28	N	7/14/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.31	< 0.1	< 0.05	< 0.001	< 0.1	0.0431	0.7	< 1	0.7	< 0.2	< 1	< 1
EPA 28	N	10/13/1998	< 0.01	0.005	< 0.01	< 0.05	0.18	< 0.1	< 0.05	0.001	< 0.1	0.0315	< 0.2	< 1	0	< 0.2	< 1	< 1

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
EPA 28	N	1/12/1999	6917.90	6.90	8.02	5380	468	504	204	12.8	538	3100	101	0.08	43.7	< 1	< 0.1	< 0.001
EPA 28	N	4/13/1999	6857.70	6.80	8.05	5360	544	550	214	11.9	533	2930	106	0.08	45.1	< 1	< 0.1	< 0.001
EPA 28	N	7/20/1999	6856.36	6.90	7.94	5390	528	556	235	15	557	3010	106	0.05	40	< 1	< 0.1	< 0.001
EPA 28	N	10/12/1999	6857.30	6.90	7.98	5210	532	518	190	11.3	542	2930	108	< 0.05	40.4	< 1	< 0.1	< 0.001
EPA 28	N	1/11/2000	6856.80	6.80	8.07	5280	498	514	192	12.8	534	2820	99.6	0.05	39.1	< 1	< 0.1	< 0.001
EPA 28	N	5/9/2000	6856.60	6.60	7.77	5080	503	477	201	11.3	635	2600	115	< 0.05	49.5	< 1	< 0.1	< 0.001
EPA 28	N	7/17/2000	6856.40	6.66	7.70	5190	534	499	195	11.4	636	2570	119	< 0.05	46.1	< 1	< 0.1	< 0.001
EPA 28	N	10/9/2000	6856.15	6.90	7.70	5110	460	446	210	13.4	637	2500	110	0.16	52.3	< 1	< 0.1	< 0.001
EPA 28	N	1/8/2001	6856.15	6.88	7.66	5110	538	512	179	11.4	633	2850	116	< 0.05	51	< 1	< 0.1	< 0.001
EPA 28	N	2/5/2001	6856.40	7.01	7.56	5090	615	567	178	12.2	636	3060	107	< 0.05	47.6	< 1	0.6	< 0.001
EPA 28	N	3/5/2001	6856.35	7.56	7.53	4670	535	515	155	12.3	644	2910	103	< 0.05	49.4	< 1	< 0.1	< 0.001
EPA 28	N	4/10/2001	6856.70	7.13	7.42	4950	596	546	188	12.1	650	3010	117	< 0.05	50.1	< 1	< 0.1	< 0.001
EPA 28	N	5/8/2001	6856.70	6.81	7.62	5120	520	489	190	11.5	647	2480	118	0.09	53.6	< 1	< 0.1	< 0.001
EPA 28	N	6/5/2001	6856.75	6.84	7.35	4510	546	532	191	10.3	635	2870	113	0.07	42.3	< 1	< 0.1	< 0.001
EPA 28	N	7/10/2001	6856.90	6.94	7.33	5220	554	542	208	11.6	628	2690	97	0.05	48.3	< 1	< 0.1	< 0.001
EPA 28	N	8/7/2001	6856.90	6.72	7.70	5220	510	500	190	12	625	2600	120	0.05	42	< 1	< 0.1	< 0.001
EPA 28	N	9/11/2001	6857.05	6.74	7.50	5100	520	500	186	12.1	649	2600	143	0.05	55	< 1	< 0.1	< 0.001
EPA 28	N	10/1/2001	6857.25	6.86	7.40	5210	510	500	184	12.2	652	2500	148	0.05	48.8	< 1	< 0.1	< 0.001
EPA 28	N	11/6/2001	6857.25	6.75	7.60	5190	554	525	193	12.8	644	2820	143	0.05	50	< 1	< 0.1	< 0.001
EPA 28	N	12/4/2001	6857.40	6.91	7.50	5190	517	488	170	11	645	2560	123	0.05	48	< 1	< 0.1	< 0.001
EPA 28	N	1/8/2002	6857.40	6.96	7.50	5170	603	538	182	12.3	658	3010	150	< 0.05	44.8	< 1	< 0.1	< 0.001
EPA 28	N	2/5/2002	6857.60	7.01	7.50	5230	586	515	193	12.2	652	2830	136	0.1	43.1	< 1	< 0.1	< 0.001
EPA 28	N	3/5/2002	6857.50	6.81	7.60	5160	549	508	208	12.4	682	2870	137	0.05	45.9	< 1	< 0.1	< 0.001
EPA 28	N	4/2/2002	6857.70	6.74	7.65	5140	572	520	206	13.6	675	2960	134	0.06	42.1	< 1	< 0.1	< 0.001
EPA 28	N	5/7/2002	6857.65	6.80	7.58	5200	546	507	210	13.1	652	2780	119	< 0.05	43.9	< 1	< 0.1	< 0.001
EPA 28	N	6/4/2002	6857.79	6.74	7.83	5150	531	485	192	11.4	656	2660	116	0.07	44.9	< 1	< 0.1	< 0.001
EPA 28	N	7/9/2002	6857.60	6.80	7.58	5250	549	524	202	13.1	683	2850	120	< 0.05	43.4	< 1	< 0.1	< 0.001
EPA 28	N	10/8/2002	6857.33	6.77	7.60	5190	504	480	192	11.2	675	2680	113	0.05	45.3	< 1	< 0.1	< 0.001
EPA 28	N	1/7/2003	6857.39	7.62	7.46	5130	554	536	218	9.9	694	2900	135	0.12	41.8	< 1	< 0.1	< 0.001
EPA 28	N	4/8/2003	6857.49	6.68	7.02	5230	529	480	205	15.5	695	2500	131	0.08	46	< 1	< 0.1	< 0.001
EPA 28	N	7/7/2003	6857.48	6.54	7.53	5090	493	471	193	13.5	689	2690	121	0.1	42	< 1	< 0.1	< 0.001
EPA 28	N	10/7/2003	6857.10	6.54	7.87	5270	698	544	222	12.6	677	3730	127	0.27	38.8	< 1	< 0.1	< 0.001
EPA 28	N	1/6/2004	6857.22	6.78	7.52	5170	537	510	196	11.7	721	2860	129	0.1	42.8 D	< 1.0	0.2	< 0.001
EPA 28	N	4/6/2004	6857.39	7.40	7.05	5220	539	512	175	11.4	710	2800 D	116	0.21	41.5 D	< 1	< 0.1	< 0.001
EPA 28	N	7/13/2004	6857.16	6.57	7.01	5300	555	508	218	12.9	708	2810 D	125	0.18	38.4 D	< 1.0	< 0.1	< 0.001

**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
EPA 28	N	1/12/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.3	< 0.1	< 0.05	< 0.001	< 0.1	0.0324	0.6	< 1	0.6	< 0.2	< 1	< 1
EPA 28	N	4/13/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.32	< 0.1	< 0.05	< 0.001	< 0.1	0.0251	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 28	N	7/20/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.26	< 0.1	< 0.05	0.001	< 0.1	0.0282	0.6	< 1	0.6	< 0.2	< 1	1.6
EPA 28	N	10/12/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.17	< 0.1	< 0.05	< 0.001	< 0.1	0.03	0.7	< 1	0.7	< 0.2	< 1	< 1
EPA 28	N	1/11/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.31	< 0.1	< 0.05	0.001	< 0.1	0.0256	1.8	3.4	5.2	< 0.2	< 1	3
EPA 28	N	5/9/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.5	< 0.1	< 0.05	< 0.001	< 0.1	0.0445	0.5	2	2.5	< 0.2	14.2	< 1
EPA 28	N	7/17/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.39	< 0.1	< 0.05	< 0.001	< 0.1	0.0375	< 0.2	1.8	1.8	< 0.2	< 1	< 1
EPA 28	N	10/9/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.37	< 0.1	< 0.05	< 0.001	< 0.1	0.042	< 0.2	1.3	1.3	< 0.2	< 1	< 1
EPA 28	N	1/8/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.42	< 0.1	< 0.05	< 0.001	< 0.1	0.039	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 28	N	2/5/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.42	< 0.1	< 0.05	< 0.001	< 0.1	0.042	0.5	< 1	0.5	< 0.2	< 1	< 1
EPA 28	N	3/5/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.45	< 0.1	< 0.05	< 0.001	< 0.1	0.0398	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 28	N	4/10/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.43	< 0.1	< 0.05	< 0.001	< 0.1	0.037	0.5	2	2.5	< 0.2	< 1	< 1
EPA 28	N	5/8/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.47	< 0.1	< 0.05	< 0.001	< 0.1	0.042	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 28	N	6/5/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.47	< 0.1	< 0.05	0.001	< 0.1	0.038	0.4	< 1	0.4	< 0.2	< 1	< 1
EPA 28	N	7/10/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.48	< 0.1	< 0.05	< 0.001	< 0.1	0.0403	0.7	< 1	0.7	< 0.2	< 1	< 1
EPA 28	N	8/7/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.48	< 0.1	< 0.05	< 0.001	< 0.1	0.043	0.4	2.4	2.8	< 0.2	< 1	< 1
EPA 28	N	9/11/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.42	< 0.1	< 0.05	< 0.001	< 0.1	0.037	0.3	< 1	0.3	< 0.2	< 1	< 1
EPA 28	N	10/1/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.4	< 0.1	< 0.05	< 0.001	< 0.1	0.0374	0.7	< 1	0.7	< 0.2	< 1	< 1
EPA 28	N	11/6/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.44	< 0.1	< 0.05	< 0.001	< 0.1	0.0354	0.6	< 1	0.6	< 0.2	< 1	< 1
EPA 28	N	12/4/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.42	< 0.1	< 0.05	< 0.001	< 0.1	0.0358	0.2	< 1	0.2	< 0.2	< 1	< 1
EPA 28	N	1/8/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.43	< 0.1	< 0.05	< 0.001	< 0.1	0.036	0.6	< 1	0.6	< 0.2	< 1	< 1
EPA 28	N	2/5/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.44	< 0.1	< 0.05	< 0.001	< 0.1	0.0291	0.7	< 1	0.7	< 0.2	< 1	< 1
EPA 28	N	3/5/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.59	< 0.1	< 0.05	< 0.001	< 0.1	0.0519	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 28	N	4/2/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.46	< 0.1	< 0.05	< 0.001	< 0.1	0.0397	0.7	2.2	2.9	< 0.2	< 1	< 1
EPA 28	N	5/7/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.47	< 0.1	< 0.05	< 0.001	< 0.1	0.0388	0.9	< 1	0.9	< 0.2	< 1	< 1
EPA 28	N	6/4/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.5	< 0.1	< 0.05	< 0.001	< 0.1	0.0378	< 0.2	2.5	2.5	< 0.2	< 1	< 1
EPA 28	N	7/9/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.41	< 0.1	< 0.05	< 0.001	< 0.1	0.0464	0.8	< 1	0.8	< 0.2	< 1	< 1
EPA 28	N	10/8/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.44	< 0.1	< 0.05	< 0.001	< 0.1	0.0329	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 28	N	1/7/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.5	< 0.1	< 0.05	< 0.001	< 0.1	0.0503	0.8	3.7	4.5	< 0.2	< 1	< 1.0
EPA 28	N	4/8/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.48	< 0.1	< 0.05	< 0.001	< 0.1	0.0464	< 0.2	5.3	5.3	< 0.2	< 1	< 1.0
EPA 28	N	7/7/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.49	< 0.1	< 0.05	< 0.001	< 0.1	0.0401	< 0.2	< 1	0	< 0.2	< 1	< 1.0
EPA 28	N	10/7/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.47	< 0.1	< 0.05	< 0.001	< 0.1	0.0386	0.3	< 1	0.3	< 0.2	< 1	< 1.0
EPA 28	N	1/6/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.55	< 0.1	< 0.05	< 0.001	< 0.1	0.0394 D	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
EPA 28	N	4/6/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.51	< 0.1	< 0.05	< 0.001	< 0.1	0.0421 D	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 28	N	7/13/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.48	< 0.1	< 0.05	< 0.001	< 0.1	0.0403 D	0.5	< 1.0	0.5	< 0.2	< 1.0	< 1.0



TABLE A.1

Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO <sub>3</sub> mg/l	SO <sub>4</sub> mg/l	Cl mg/l	NH <sub>4</sub> as N mg/l	NO <sub>3</sub> as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
EPA 28	N	10/5/2004	6856.79	6.63	7.22	5460	528 D	498 D	224	12.2	684	2750 D	125	< 0.05	36.8 D	< 1.0	< 0.1	< 0.001
EPA 28	N	1/4/2005	6856.96	6.92	7.22	5280	560 D	521 D	213	11.7	702	2750 D	118	0.07	39.1 D	< 1.0	< 0.1	< 0.001
EPA 28	N	4/5/2005	6856.94	6.84	7.55	5170	554	516	214	11.9	724	2750	127	< 0.05	38.4	< 1.0	< 0.1	< 0.001
EPA 28	N	7/12/2005	6856.75	6.74	7.51	5110	595 D	534 D	207	11.8	702	2900 D	139	< 0.05	37.1 D	< 1.0	< 0.1	< 0.001
EPA 28	N	10/4/2005	6856.53	6.75	7.30	5150	544 D	513 D	215	12.2	671	2900 D	136	< 0.05	28 D	< 1.0	< 0.1	< 0.001
EPA 28	N	1/10/2006	6856.66	6.85	7.61	5070	508	464	209	9.9	762	2560 D	114	0.07	38.3 D	< 1.0	< 0.1	< 0.001
EPA 28	N	4/4/2006	6856.51	6.67	7.25	5020	571 D	533 D	210	12.4	732	2800 D	134	< 0.05	40 D	< 1.0	< 0.1	< 0.001
EPA 28	N	7/18/2006	6856.21	6.69	7.20	4940	558 D	522 D	226	12.6	669	3020 D	126	< 0.05	36.1 D	< 1.0	< 0.1	< 0.001
EPA 28	N	10/3/2006	6856.13	6.69	7.02	4990	535 D	484 D	199	11.8	672	2670 D	102	0.09	35.9 D	< 0.5	< 0.1	< 0.001
EPA 28	N	1/9/2007	6856.31	6.84	7.08	5190	544 D	497 D	208	12.3	738	2740 D	119	0.07	35.2 D	< 0.5	< 0.1	< 0.001
EPA 28	N	4/10/2007	6856.44	6.78	7.02	5160	545 D	504 D	197	13.2	744	2800 D	119	0.06	37.2 D	< 0.5	< 0.1	< 0.001
EPA 28	N	7/10/2007	6856.11	6.69	7.08	4990	577 D	521 D	216	12	767	2930 D	116	< 0.05	39 D	< 0.5	< 0.1	0.008
EPA 28	N	10/2/2007	6855.91	6.67	6.88	5040	506 D	465 D	211 D	13.3	795	2600 D	141 D	< 0.05	36 D	< 0.5	< 0.1	< 0.001
EPA 28	Dup	10/2/2007	6855.75	6.70	7.06	5000	493 D	460 D	221 D	12.8	719	2650 D	139 D	< 0.05	29 D	< 0.5	< 0.1	< 0.001
EPA 28	N	1/15/2008	6856.01	6.74	6.93	5190	534 D	485 D	215 D	13.6	752	2670 D	148 D	< 0.05	34.6 D	< 0.5	< 0.1	< 0.001
EPA 28	Dup	1/15/2008	6855.76	6.79	6.61	5140	517 D	470 D	219 D	12.9	688	2680 D	145 D	< 0.05	28.1 D	< 0.5	< 0.1	< 0.001
EPA 28	N	4/8/2008	6856.16	6.65	7.08	4930	578 D	546 D	244 D	13.0 D	722	2920 D	114	< 0.1 D	48.5 D	< 0.5	< 0.1	< 0.001
EPA 28	Dup	4/8/2008	6855.96	6.65	7.00	4890	566 D	535 D	248 D	12.2 D	632	3000 D	114	< 0.1 D	43.2 D	< 0.5	< 0.1	< 0.001
EPA 28	N	7/8/2008	6855.91	6.53	7.30	4870	542	492	203 D	11	715	2830 D	121	< 0.05	32.9 D	< 0.5	< 0.1	< 0.003
EPA 28	Dup	7/8/2008	6855.66	6.53	6.94	4790	534	478	214 D	11	653	2920 D	122	< 0.05	28.9	< 0.5	< 0.1	< 0.003
EPA 28	N	10/7/2008	6855.56	6.81	7.05	4990	546	478	204 D	11	785	3060 D	110	0.2	51.8	< 0.5	0.2	< 0.001
EPA 28	Dup	10/7/2008	6855.31	6.75	7.07	4970	541	478	207 D	11	764	3060 D	110	< 0.1 D	45.2	< 0.5	< 0.1	< 0.001
EPA 28	N	1/13/2009	6855.46	6.73	6.89	5190	591	528	237	13	796	2770 D	113	< 0.05	47.8 D	< 0.5	< 0.1	< 0.001
EPA 28	Dup	1/13/2009	no data	no data	6.84	5140	563	496	241	12	664	2730 D	113	< 0.05	35.5	< 0.5	< 0.1	< 0.001
EPA 28	N	4/7/2009	6855.41	6.68	6.84	5130	517 D	465 D	229 D	11	817	2790 D	120	< 0.05	34.7 D	< 0.50	< 0.1	< 0.001
EPA 28	Dup	4/7/2009	no data	no data	6.92	5160	527 D	486 D	236 D	11	737	2760 D	124	< 0.05	32.0 D	< 0.50	< 0.1	< 0.001
EPA 28	N	7/7/2009	6855.31	6.65	6.97	5120	536 D	480	210 D	12	799	3290 D	116	< 0.05	29 D	< 0.50	< 0.1	< 0.001
EPA 28	Dup	7/7/2009	no data	no data	7.11	5050	518	453	215	11	670	2840 D	119	< 0.05	25 D	< 0.50	< 0.1	< 0.001
EPA 28	N	10/5/2009	6855.01	6.65	7.40	5160	515 D	476	209 D	11	824	2850 D	120	< 0.05	34 D	< 0.50	< 0.1	< 0.001
EPA 28	Dup	10/5/2009	no data	no data	7.80	5060	514	469	218	11	707	2990 D	124	< 0.05	30.1 D	< 0.50	< 0.1	< 0.001
EPA 28	N	1/5/2010	6854.81	6.72	7.12	5220 D	516 D	474	220 D	10	861	2900 DH	145	< 0.05	35 D	< 0.50	< 0.1	< 0.001
EPA 28	Dup	1/5/2010	6854.51	6.70	7.06	5160 D	549 D	464	236	11	742	3070 D	124	< 0.05	31 D	< 0.50	< 0.1	< 0.001
EPA 28	N	4/6/2010	6854.71	6.82	6.92	5180 D	574 D	520	242 D	12	889	2790 D	122	< 0.05	31.8 D	< 0.50	< 0.1	< 0.001
EPA 28	Dup	4/6/2010	6854.26	6.82	7.06	5150 D	540 D	487	233 D	12	770	2980 D	121	< 0.05	28.6 D	< 0.50	< 0.1	< 0.001
EPA 28	N	7/13/2010	6854.71	6.63	7.18	5240 D	553	498	232	12	854	2890 D	121 D	< 0.05	31 D	< 0.50	< 0.1	< 0.001

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
EPA 28	N	10/5/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.51	< 0.1	< 0.05	< 0.001	< 0.1	0.0368 D	0.3	< 1.0	0.3	< 0.2	< 1.0	1.2
EPA 28	N	1/4/2005	< 0.01	< 0.005	< 0.01	< 0.05	0.5	< 0.1	< 0.05	< 0.001	< 0.1	0.0445	0.6	< 1.0	0.6	< 0.2	< 1.0	2.1
EPA 28	N	4/5/2005	< 0.01	< 0.005	< 0.01	< 0.05	0.5	< 0.1	< 0.05	< 0.001	< 0.1	0.0459	0.7	< 1.0	0.7	< 0.2	< 1.0	< 1.0
EPA 28	N	7/12/2005	< 0.01	< 0.005	< 0.01	< 0.05	0.55	< 0.1	< 0.05	< 0.001	< 0.1	0.0418	0.6	< 1.0	0.6	< 0.2	< 1.0	1.2
EPA 28	N	10/4/2005	< 0.01	< 0.005	< 0.01	< 0.05	0.52	< 0.1	< 0.05	< 0.001	< 0.1	0.0408	0.4	1.4	1.8	< 0.2	< 1.0	1.4
EPA 28	N	1/10/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.57	< 0.1	< 0.05	< 0.001	< 0.1	0.0476	< 0.2	1.5	1.5	< 0.2	< 1.0	< 1.0
EPA 28	N	4/4/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.61	< 0.1	< 0.05	< 0.001	< 0.1	0.0420 D	0.6	2.4	3	< 0.2	< 1.0	< 1.0
EPA 28	N	7/18/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.58	< 0.1	< 0.05	< 0.001	< 0.1	0.0435	0.8	3	3.8	< 0.2	< 1.0	1.3
EPA 28	N	10/3/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.59	< 0.1	< 0.05	< 0.001	< 0.1	0.0437	0.6	< 1	0.6	< 0.2	< 1	< 1
EPA 28	N	1/9/2007	< 0.01	< 0.005	< 0.01	< 0.05	0.59	< 0.1	< 0.05	< 0.001	< 0.1	0.0459	0.6	< 1	0.6	< 0.2	< 1	< 1
EPA 28	N	4/10/2007	< 0.01	< 0.005	< 0.01	< 0.05	0.58	< 0.1	< 0.05	< 0.001	< 0.1	0.043	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 28	N	7/10/2007	< 0.01	< 0.005	< 0.01	< 0.05	0.54	< 0.1	< 0.05	< 0.001	< 0.1	0.0496	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 28	N	10/2/2007	< 0.01	< 0.005	< 0.01	< 0.05	0.7	< 0.1	< 0.05	< 0.001	< 0.1	0.0506	< 0.2	< 1	0	< 0.2	< 1	1.2
EPA 28	Dup	10/2/2007	< 0.01	< 0.005	< 0.01	< 0.05	0.55	< 0.1	< 0.05	< 0.001	< 0.1	0.0399	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 28	N	1/15/2008	< 0.01	< 0.005	< 0.01	< 0.05	0.58	< 0.1	< 0.05	< 0.001	< 0.1	0.0429	0.6	< 1	0.6	< 0.2	< 1	< 1
EPA 28	Dup	1/15/2008	< 0.01	< 0.005	< 0.01	< 0.05	0.5	< 0.1	< 0.05	< 0.001	< 0.1	0.0364	< 0.2	< 1	0	< 0.2	< 1	1.2
EPA 28	N	4/8/2008	< 0.01	< 0.005	< 0.01	< 0.05	0.6	< 0.1	< 0.05	< 0.001	< 0.1	0.0445	0.1 U	0.7 U	0.8	-0.1 U	-4.5 U	1.5
EPA 28	Dup	4/8/2008	< 0.01	< 0.005	< 0.01	< 0.05	0.52	< 0.1	< 0.05	< 0.001	< 0.1	0.0398	0.2	0.5 U	0.7	-0.1 U	0 U	1.3
EPA 28	N	7/8/2008	< 0.01	< 0.005	< 0.01	< 0.05	0.62	< 0.1	< 0.05	< 0.001	< 0.1	0.0402	0.58	1.2 U	1.78	0.4	0.1 U	0.4 U
EPA 28	Dup	7/8/2008	< 0.01	< 0.005	< 0.01	< 0.05	0.52	< 0.1	< 0.05	< 0.001	< 0.1	0.0351	0.68	1.3	1.98	0 U	1.3 U	0.3 U
EPA 28	N	10/7/2008	< 0.01	< 0.005	< 0.01	< 0.05	0.68	< 0.1	< 0.05	< 0.001	< 0.1	0.0476	0.2	1 U	1.2	-0.5 U	-0.6 U	0.6 U
EPA 28	Dup	10/7/2008	< 0.01	< 0.005	< 0.01	< 0.05	0.63	< 0.1	< 0.05	< 0.001	< 0.1	0.0433	0.17 U	0.89 U	1.06	0.6	0.7 U	1.5
EPA 28	N	1/13/2009	< 0.01	< 0.005	< 0.01	< 0.05	0.69	< 0.1	< 0.05	< 0.001	< 0.1	0.0459	0.28	0.68 U	0.96	-0.1 U	-2 U	1.4
EPA 28	Dup	1/13/2009	< 0.01	< 0.005	< 0.01	< 0.05	0.59	< 0.1	< 0.05	< 0.001	< 0.1	0.0387	0.25	0.72 U	0.97	0.1 U	-0.6 U	1.6
EPA 28	N	4/7/2009	< 0.01	< 0.005	< 0.01	< 0.05	0.66	< 0.1	< 0.05	0.001	< 0.1	0.0519	0.27	1	1.27	-0.03 U	-2 U	0.9
EPA 28	Dup	4/7/2009	< 0.01	< 0.005	< 0.01	< 0.05	0.58	< 0.1	< 0.05	< 0.001	< 0.1	0.0467	0.41	0.45 U	0.86	0.2 U	-0.8 U	0.8
EPA 28	N	7/7/2009	< 0.01	< 0.005	< 0.01	< 0.05	0.72	< 0.1	< 0.05	< 0.001	< 0.1	0.0415	0.64	1.5	2.14	0.02 U	-0.6 U	1.3
EPA 28	Dup	7/7/2009	< 0.01	< 0.005	< 0.01	< 0.05	0.6	< 0.1	< 0.05	< 0.001	< 0.1	0.037	0.61	1.4	2.01	0.3 U	0.2 U	1.1
EPA 28	N	10/5/2009	< 0.01	< 0.005	< 0.01	< 0.05	0.71	< 0.1	< 0.05	< 0.001	< 0.1	0.045	0.73	1.4 U	2.13	-0.03 U	1.1 U	0.5 U
EPA 28	Dup	10/5/2009	< 0.01	< 0.005	< 0.01	< 0.05	0.58	< 0.1	< 0.05	< 0.001	< 0.1	0.0406	0.68	0.71 U	1.39	0.09 U	1.9 U	0.4 U
EPA 28	N	1/5/2010	< 0.01	< 0.005	< 0.01	< 0.05	0.65	< 0.1	< 0.05	< 0.001	< 0.1	0.044	0.16 U	1.9	2.06	0.04 U	-1 U	0.8
EPA 28	Dup	1/5/2010	< 0.01	< 0.005	< 0.01	< 0.05	0.56	< 0.1	< 0.05	< 0.001	< 0.1	0.0392	0.15 U	1.5	1.65	-0.05 U	-0.2 U	0.9
EPA 28	N	4/6/2010	< 0.01	< 0.005	< 0.01	< 0.05	0.63	< 0.1	< 0.05	< 0.001	< 0.1	0.0444	0.55	1.2	1.75	0.03 U	2.3 U	0.6
EPA 28	Dup	4/6/2010	< 0.01	< 0.005	< 0.01	< 0.05	0.57	< 0.1	< 0.05	< 0.001	< 0.1	0.0416	0.53	1.6	2.13	-0.02 U	2.1 U	0.3 U
EPA 28	N	7/13/2010	< 0.01	< 0.005	< 0.01	< 0.05	0.59	< 0.1	< 0.05	0.002	< 0.1	0.0451	0.26	0.65 U	0.91	0.004 U	0.6 U	0.3 U

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
EPA 28	Dup	7/13/2010	6854.21	6.63	7.28	5100 D	549	488	236	11	732	2910 D	119 D	<0.05	27 D	<0.50	<0.1	<0.001
EPA 28	N	10/5/2010	6854.46	6.76	7.68	5410 D	522	470	227	12	843	2960 D	125 D	0.07	30 D	<0.50	<0.1	<0.001
EPA 28	Dup	10/5/2010	6852.96	6.78	7.65	5180 D	530	462	231	11	728	2960 D	116 D	0.05	27 D	<0.50	<0.1	<0.001
EPA 28	N	1/4/2011	6854.26	6.76	7.50	4900 D	534	474	222	11	827	2790 D	127 D	<0.05	29 D	<0.50	<0.1	<0.001
EPA 28	Dup	4/4/2011	6854.16	6.82	7.12	5230 D	536	470	237	12	842	2720 D	123 D	<0.05	33 D	<0.50	<0.1	0.002
EPA 28	N	7/12/2011	6854.17	6.89	7.23	4930 D	541	478	234	12	837	2740 D	124 D	<0.1	32 D	<0.50	<0.1	<0.001
EPA 28	Dup	7/12/2011	6853.71	6.86	7.41	5000 D	535	463	238	11	733	2710 D	118 D	<0.1	29 D	<0.50	<0.1	<0.001
EPA 28	N	10/4/2011	6853.91	6.82	7.59	4910 D	532	466	227	11	771	2890 D	127 D	<0.1	28 D	<0.50	<0.1	<0.001
EPA 28	Dup	10/4/2011	6853.55	6.88	7.40	4860 D	536	458	232	11	646	2960 D	124 D	<0.1	26 D	<0.50	<0.1	<0.001
EPA 28	N	1/3/2012	6853.80	6.88	6.95 H	4960 D	536	439	209	11	749	2710 D	126 D	<0.05	34 D	<0.50	<0.1	<0.001
EPA 28	D	1/3/2012	6853.44	6.91	7.00 H	4770 D	590	477	234	13	676	2750 D	122 D	<0.05	30 D	<0.50	<0.1	<0.001
EPA 28	N	4/3/2012	6853.66	6.95	6.79 H	5000 D	558	451	215	12	808	2770 D	122 D	<0.05	29 D	<0.50	<0.1	<0.01
EPA 28	D	4/3/2012	6853.26	6.96	6.82 H	5010 D	548	442	218	12	727	2790 D	119 D	<0.05	15 D	<0.50	<0.1	<0.01
EPA 28	N	7/10/2012	6853.56	6.71	6.91 H	5050	537	498	227	11	798	2730 D	121 D	0.13	30 D	<0.50	<0.1	<0.001
EPA 28	D	7/10/2012	6853.16	6.73	6.88 H	5020	532	487	238	11	678	2780 D	117 D	0.09	27 D	<0.50	<0.1	<0.001
EPA 28	N	10/9/2012	6853.36	6.79	6.86 H	5120	576	482	231 D	12	811	2810 D	126 D	<0.05	26 D	<0.50	<0.1	<0.001
EPA 28	Dup	10/9/2012	6852.91	6.80	6.86 H	4980	556	460	242 D	12	674	2900 D	122 D	<0.05	23 D	<0.50	<0.1	<0.001
EPA 28	N	1/9/2013	6853.14	6.94	6.88 H	5070	542	512	244 D	12	806	2790 D	120 D	<0.05	27 D	<0.50	<0.1	<0.001
EPA 28	Dup	1/9/2013	no data	no data	6.81 H	5070	529	503	247 D	11	668	2860 D	114 D	<0.05	24 D	<0.50	<0.1	<0.001
EPA 28	N	4/2/2013	6853.29	6.83	6.88 H	5080	542	498	238	12	797	2860 D	125 D	<0.05	27 D	<0.50	<0.1	<0.001
EPA 28	Dup	4/2/2013	no data	no data	6.91 H	5030	539	485	243	12	688	2850 D	117 D	<0.05	24 D	<0.50	<0.1	<0.001
EPA 28	N	7/9/2013	6853.02	6.70	6.92 H	5120	523	476	230	11	808	2790 D	117 D	<0.05	25 D	<0.50	<0.1	<0.001
EPA 28	Dup	7/9/2013	no data	no data	6.94 H	5090	535	471	240	11	641	2860 D	109 D	<0.05	21 D	<0.50	<0.1	<0.001
EPA 28	N	10/1/2013	6853.09	6.78	6.82 H	5060	518	479	228	11	817	2790 D	117 D	<0.05	26 D	<0.50	<0.1	<0.001
EPA 28	Dup	10/1/2013	no data	6.78	6.84 H	4870	514	466	231	11	707	2810 D	110 D	<0.05	23 D	<0.50	<0.1	<0.001
EPA 28	N	1/7/2014	6852.97	7.06	6.81	5090	505	460	225	11	793	2760	118	<0.05	24	<0.50	<0.1	<0.001
EPA 28	Dup	1/7/2014	no data	no data	6.81	5030	506	457	234	11	641	2870	128	<0.05	20	<0.50	<0.1	<0.001
EPA 28	N	3/31/2014	6852.94	6.97	6.78 H	5000	566	515	247	12	777	2720 D	119 D	<0.05	29 D	<0.50	<0.1	<0.001
EPA 28	Dup	3/31/2014	no data	6.98	6.81 H	5020	520	494	241 D	11	665	2840 D	117 D	<0.05	22 D	<0.50	<0.1	<0.001
EPA 28	N	7/7/2014	6852.85	6.87	6.86 H	5010	534	462	221 D	12	777	2840 D	114 D	<0.05	26 D	<0.50	<0.1	<0.001
EPA 28	Dup	7/7/2014	no data	no data	6.85 H	4960	504	440	237 D	11	612	2900 D	107 D	<0.05	19 D	<0.50	<0.1	<0.001
EPA 28	N	10/6/2014	6852.63	6.93	6.84 H	5010	498	461	231	11	724	2920 D	117 D	<0.05	23 D	<0.50	<0.1	<0.001
EPA 28	Dup	10/6/2014	no data	6.91	6.80 H	5090	514	482	238	11	619	2940 D	109 D	0.05	19 D	<0.50	<0.1	<0.001
EPA 28	N	1/5/2015	6852.49	7.12	6.87 H	5020	500	462	255	11	437	2930 D	100 D	<0.05	12 D	<0.50	<0.1	<0.001
EPA 28	DUP	1/5/2015	no data	7.09	6.88 H	5030	500	456	247	11	455	2910 D	102 D	<0.05	14 D	<0.50	<0.1	<0.001

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
EPA 28	Dup	7/13/2010	<0.01	<0.005	<0.01	<0.05	0.53	<0.1	<0.05	0.004	<0.1	0.0407	0.24	0.87 U	1.11	0.02 U	1.1 U	0.7 U
EPA 28	N	10/5/2010	<0.01	<0.005	<0.01	<0.05	0.71	<0.1	<0.05	<0.001	<0.1	0.0503	0.18	1.5	1.68	0.02 U	2.6	0.8
EPA 28	Dup	10/5/2010	<0.01	<0.005	<0.01	<0.05	0.64	<0.1	<0.05	<0.001	<0.1	0.0453	0.23	1.3	1.53	0.03 U	2.2	0.5 U
EPA 28	N	1/4/2011	<0.01	<0.005	<0.01	<0.05	0.8	<0.1	<0.05	<0.001	<0.1	0.051	0.27	1.4	1.67	0.008 U	0.08 U	1.1
EPA 28	Dup	4/4/2011	<0.01	<0.005	<0.01	<0.05	0.72	<0.1	<0.05	<0.001	<0.1	0.0492	0.17	1.2	1.37	0.05 U	0.4 U	1
EPA 28	N	7/12/2011	<0.01	<0.005	<0.01	<0.05	0.76	<0.1	<0.05	<0.001	<0.1	0.0512	0.10 U	0.45 U	0.55	0.05 U	-0.4 U	0.7 U
EPA 28	Dup	7/12/2011	<0.01	<0.005	<0.01	<0.05	0.63	<0.1	<0.05	<0.001	<0.1	0.0445	0.07 U	-0.05 U	0.02	0.01 U	-0.4 U	1.2
EPA 28	N	10/4/2011	<0.01	<0.005	<0.01	<0.05	0.74	<0.1	<0.05	<0.001	<0.1	0.0461	0.4	0.89 U	1.29	0.02 U	0.9 U	0.1 U
EPA 28	Dup	10/4/2011	<0.01	<0.005	<0.01	<0.05	0.63	<0.1	<0.05	<0.001	<0.1	0.0384	0.32	0.97 U	1.29	0.01 U	0.6 U	0.4 U
EPA 28	N	1/3/2012	<0.01	<0.005	<0.01	<0.05	0.72	<0.1	<0.05	<0.001	<0.1	0.0498	0.48	0.74 U	1.96	-0.008 U	0.6 U	0.5
EPA 28	D	1/3/2012	<0.01	<0.005	<0.01	<0.05	0.61	<0.1	<0.05	<0.001	<0.1	0.045	0.6	0.27 U	1.14	0.02 U	0.6 U	0.6
EPA 28	N	4/3/2012	<0.01	<0.005	<0.01	<0.05	0.76	<0.1	<0.05	<0.001	<0.1	0.052	0.12 U	0.29 U	0.7	0.005 U	0.2 U	0.4 U
EPA 28	D	4/3/2012	<0.01	<0.005	<0.01	<0.05	0.7	<0.1	<0.05	<0.001	<0.1	0.0459	0.41	0.84 U	2.09	0.009 U	0.8 U	0.3 U
EPA 28	N	7/10/2012	<0.001	<0.005	<0.01	<0.001	0.77	<0.1	<0.05	<0.001	<0.1	0.0468	0.51	0.78 U	2.07	0.03 U	0.3 U	0.5
EPA 28	D	7/10/2012	<0.001	<0.005	<0.01	<0.001	0.66	<0.1	<0.05	0.002	<0.1	0.0396	0.55	1.4	3.35	0.008 U	0.9 U	0.5
EPA 28	N	10/9/2012	<0.001	<0.005	<0.01	<0.001	0.86	<0.1	<0.05	<0.001	<0.1	0.047	0.32	-0.1 U	0.32	0.008 U	0.2 U	0.5 U
EPA 28	Dup	10/9/2012	<0.001	<0.005	<0.01	<0.001	0.72	<0.1	<0.05	<0.001	<0.1	0.0384	0.27	1.5 U	0.27	0.04 U	1	0.5 U
EPA 28	N	1/9/2013	<0.001	<0.005	<0.01	<0.001	0.8	<0.1	<0.05	<0.001	<0.1	0.0499	0.87	1.4	2.27	0.03 U	0.8 U	0.8
EPA 28	Dup	1/9/2013	<0.001	<0.005	<0.01	<0.001	0.66	<0.1	<0.05	<0.001	<0.1	0.0397	0.82	1.1 U	0.82	0.07 U	0.5 U	0.7
EPA 28	N	4/2/2013	<0.001	<0.005	<0.01	<0.001	0.78	<0.1	<0.05	<0.001	<0.1	0.0474	0.33	1.4 U	0.33	0.0 U	0.3 U	0.8
EPA 28	Dup	4/2/2013	<0.001	<0.005	<0.01	<0.001	0.66	<0.1	<0.05	<0.001	<0.1	0.0388	0.29	0.64 U	0.29	0.02 U	0.3 U	0.8
EPA 28	N	7/9/2013	<0.001	<0.005	<0.01	<0.001	0.74	<0.1	<0.05	<0.001	<0.1	0.0481	0.27	0.80 U	0.27	0.001 U	-0.1 U	0.6
EPA 28	Dup	7/9/2013	<0.001	<0.005	<0.01	0.001	0.6	<0.1	<0.05	<0.001	<0.1	0.0357	0.37	0.51 U	0.37	0.03 U	0.6 U	1
EPA 28	N	10/1/2013	<0.001	<0.005	<0.01	<0.001	0.74	<0.1	<0.05	<0.001	<0.1	0.049	0.49	1.9	2.39	0.1 U	0.09 U	0.2 U
EPA 28	Dup	10/1/2013	<0.001	<0.005	<0.01	<0.001	0.67	<0.1	<0.05	<0.001	<0.1	0.0446	0.57	1.4	1.97	0.04 U	0.08 U	0.7
EPA 28	N	1/7/2014	<0.001	<0.005	<0.01	<0.001	0.79	<0.1	<0.05	<0.001	<0.1	0.0499	0.59	2.6	3.19	-0.009 U	0.2 U	0.8
EPA 28	Dup	1/7/2014	<0.001	<0.005	<0.01	<0.001	0.65	<0.1	<0.05	<0.001	<0.1	0.0374	0.66	1.8	2.46	0.02 U	0.5 U	0.7 U
EPA 28	N	3/31/2014	<0.001	<0.005	<0.01	<0.001	0.82	<0.1	<0.05	<0.001	<0.1	0.0526	0.59	0.29 U	0.59	0.04 U	0.05 U	0.8
EPA 28	Dup	3/31/2014	<0.001	<0.005	<0.01	<0.001	0.68	<0.1	<0.05	<0.001	<0.1	0.045	0.65	0.61 U	0.65	0.07 U	-1 U	0.7
EPA 28	N	7/7/2014	<0.001	<0.005	<0.01	<0.001	0.79	<0.1	<0.05	<0.001	<0.1	0.0388	0.48	0.93 U	0.48	0.04 U	1.1 U	0.3 U
EPA 28	Dup	7/7/2014	<0.001	<0.005	<0.01	<0.001	0.62	<0.1	<0.05	<0.001	<0.1	0.0285	0.64	0.21 U	0.64	0.007 U	0.6 U	0.2 U
EPA 28	N	10/6/2014	<0.001	<0.005	<0.01	<0.001	0.72	<0.1	<0.05	<0.001	<0.1	0.0452	0.64	1.2 U	0.64	0.01 U	0.5 U	1
EPA 28	Dup	10/6/2014	<0.001	<0.005	<0.01	<0.001	0.64	<0.1	<0.05	<0.001	<0.1	0.0355	0.55	1.5 U	0.55	-0.03 U	0.3 U	0.8
EPA 28	N	1/5/2015	<0.001	<0.005	<0.01	<0.001	0.15	<0.1	<0.05	<0.001	<0.1	0.0279	0.66	0.65 U	0.66	-0.004 U	0.8 U	1.7 U
EPA 28	DUP	1/5/2015	<0.001	<0.005	<0.01	<0.001	0.54	<0.1	<0.05	<0.001	<0.1	0.0256	0.52	0.76 U	0.52	0.04 U	0.7 U	3.1



**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
EPA 28	N	4/6/2015	6852.50	6.82	6.78 H	5090	526	480	227	11	715	3020 D	129 D	<0.05	12.7 D	<0.5	<0.1	<0.001
EPA 28	DUP	4/6/2015	no data	6.83	6.81 H	5070	514	477	238	11	588	3090 D	123 D	<0.05	17 D	<0.5	<0.1	<0.001
EPA 28	N	7/6/2015	6852.32	6.75	6.76 H	5110	486	439	230	11	454	3150 D	107 D	0.15	13 D	<0.50	<0.1	<0.001
EPA 28	DUP	7/6/2015	no data	6.74	6.78 H	5070	502	444	237	11	461	3140 D	107 D	<0.05	10.6 D	<0.50	<0.1	<0.001
EPA 28	N	10/5/2015	6852.13	6.93	6.83 H	4990	479	455	238	11	389	2840 D	106 DH	<0.05	8 D	<0.50	<0.1	0.001
EPA 28	DUP	10/5/2015	no data	6.90	6.84 H	5000	488	461	243	11	416	3090 D	106 D	<0.05	9 D	<0.50	<0.1	<0.001
EPA 28	N	1/4/2016	6852.03	6.95	6.82 H	5020	487	461	239	10	425	3140 D	101 D	<0.05	8.7 D	<0.50	0.1	<0.001
EPA 28	DUP	1/4/2016	no data	6.97	6.84 H	4970	497	464	244	11	424	3150 D	101 D	<0.05	8.8 D	<0.50	<0.1	<0.001
EPA 28	N	4/4/2016	6851.76	6.81	6.97 H	5010	495	464	252	11	404	3060 D	96 D	<0.05	8.1 D	<0.50	<0.1	<0.001
EPA 28	DUP	4/4/2016	no data	6.78	6.95 H	5000	494	464	255	11	400	3080 D	97 D	<0.05	8.3 D	<0.50	<0.1	<0.001
EPA 28	N	7/11/2016	6851.72	6.84	6.90 H	4970 D	494	460	252	11	408	2950 D	99 D	<0.05	8.8 D	<0.50	<0.1	<0.001
EPA 28	Dup	7/11/2016	no data	6.84	6.85 H	4980 D	493	464	251	11	413	3010 D	102 D	<0.05	8.7 D	<0.50	<0.1	<0.001
EPA 28	N	10/3/2016	6851.55	7.01	6.91 H	5010 H	490	466	252	11	403	3290 D	101 D	<0.05	8.1 D	<0.50	<0.1	<0.001
EPA 28	DUP	10/3/2016	no data	7.05	6.91 H	4970 H	489	461	247	11	416	3190 D	99 D	<0.05	8.0 D	<0.50	<0.1	<0.001
GW 1	N	7/19/1989	6869.00	6.90	7.32	5134	910	412	328	2.7	1415	2042	220	0.08	120	< 1	< 0.1	< 0.001
GW 1	N	10/16/1989	6868.90	7.00	7.02	5376	856	431	331	3.8	2030	1931	236	0.13	110	< 1	< 0.1	< 0.001
GW 1	N	1/10/1990	6868.30	6.40	6.54	5658	774	408	349	2.81	1903	2079	239	0.25	111	< 1	< 0.1	0.001
GW 1	N	4/5/1990	6868.20	6.30	6.98	5732	818	430	350	2.8	2001	2118	243	0.13	119	< 1	< 0.1	< 0.001
GW 1	N	7/3/1990	6867.20	6.40	6.92	6154	953	501	343	4.5	2098	2252	241	< 0.05	109	< 1	< 0.1	< 0.001
GW 1	N	10/3/1990	6867.60	6.30	7.26	5879	780	425	350	4	1785	2214	238	< 0.05	68.3	< 1	< 0.1	0.003
GW 1	N	1/16/1991	6867.60	6.40	7.12	6092	909	483	380	3.3	1573	2373	247	< 0.05	97.5	< 1	0.18	< 0.001
GW 1	N	4/2/1991	6867.70	6.30	7.10	5780	817	459	344	3.5	1478	2476	237	0.05	108	< 1	0.19	< 0.001
GW 1	N	7/17/1991	6866.80	6.50	7.21	6236	821	478	326	4.8	1893	2626	236	< 0.05	90.9	< 1	< 0.1	< 0.001
GW 1	N	10/15/1991	6866.10	6.30	6.90	6275	900	519	349	3.8	2020	2460	247	< 0.05	57.6	< 1	0.36	< 0.001
GW 1	N	1/15/1992	6865.90	6.30	7.05	5446	695	457	360	3.9	1617	2445	239	< 0.05	78.2	< 1	< 0.1	< 0.001
GW 1	N	4/8/1992	6865.70	6.20	7.43	4775	769	481	364	4.4	1813	2538	217	0.08	75.8	< 1	< 0.1	< 0.001
GW 1	N	7/8/1992	6864.80	6.00	7.37	4964	801	403	454	5.6	1610	2493	231	0.13	115	< 1	< 0.1	< 0.001
GW 1	N	10/6/1992	6863.70	6.30	6.90	6008	800	504	389	3.2	1809	2370	220	< 0.05	110	< 1	0.1	< 0.001
GW 1	N	1/7/1993	6863.40	6.40	7.73	5223	676	421	348	5.3	1807	2206	234	0.06	117	< 1	< 0.1	< 0.001
GW 1	N	4/7/1993	6863.90	6.40	7.22	5681	681	401	372	5.6	1579	2269	199	< 0.05	119	< 1	< 0.1	< 0.001
GW 1	N	7/14/1993	6862.70	6.40	7.23	5630	807	438	337	4.3	1610	2370	211	0.05	118	< 1	< 0.1	< 0.001
GW 1	N	10/7/1993	6862.20	6.70	7.29	5196	719	433	310	3	1792	1952	228	< 0.05	124	< 1	< 0.1	< 0.001
GW 1	N	1/6/1994	6861.80	6.80	7.38	5051	704	394	335	2.9	1635	2075	218	0.11	101	< 1	< 0.1	< 0.001
GW 1	N	4/12/1994	6861.60	6.70	7.15	5216	685	409	316	3.9	1485	2256	175	0.3	115	< 1	< 0.1	< 0.001
GW 1	N	7/21/1994	6861.10	6.70	6.97	5415	828	417	283	5.3	1519	2371	185	0.13	118	< 1	< 0.1	< 0.001

**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
EPA 28	N	4/6/2015	<0.001	<0.005	<0.01	<0.001	0.74	<0.1	<0.05	<0.001	<0.1	0.0403	0.71	1.4	2.11	0.04 U	0.5 U	3.4
EPA 28	DUP	4/6/2015	<0.001	<0.005	<0.01	<0.001	0.63	<0.1	<0.05	<0.001	<0.1	0.0308	0.78	0.95 U	0.78	-0.01 U	-0.08 U	3.9
EPA 28	N	7/6/2015	<0.001	<0.005	<0.01	<0.001	0.41	<0.1	<0.05	<0.001	<0.1	0.022	0.54	2.3	2.84	0.07 U	0.4 U	1 U
EPA 28	DUP	7/6/2015	<0.001	<0.005	<0.01	<0.001	0.55	<0.1	<0.05	<0.001	<0.1	0.0215	0.45	2	2.45	0.2 U	0.8 U	2.1
EPA 28	N	10/5/2015	<0.001	<0.005	<0.01	<0.001	0.43	<0.1	<0.05	<0.001	<0.1	0.0157	0.59	0.60 U	0.59	0.005 U	0.7 U	4
EPA 28	DUP	10/5/2015	<0.001	<0.005	<0.01	<0.001	0.51	<0.1	<0.05	<0.001	<0.1	0.0168	0.66	1.9	2.56	0.01 U	0.4 U	5.5
EPA 28	N	1/4/2016	<0.001	<0.005	<0.01	<0.001	0.49	<0.1	<0.05	<0.001	<0.1	0.0156	0.61	2	2.61	0.01 U	-0.5 U	2
EPA 28	DUP	1/4/2016	<0.001	<0.005	<0.01	<0.001	0.5	<0.1	<0.05	<0.001	<0.1	0.0149	0.66	2.6	3.26	0.02 U	0.4 U	2.4
EPA 28	N	4/4/2016	<0.001	<0.005	<0.01	<0.001	0.5	<0.1	<0.05	<0.001	<0.1	0.0192	0.57	2.7	3.27	0.04 U	0.3 U	2.7
EPA 28	DUP	4/4/2016	<0.001	<0.005	<0.01	<0.001	0.5	<0.1	<0.05	<0.001	<0.1	0.0193	0.71	0.79 U	0.71	0.04 U	-0.3 U	3.3
EPA 28	N	7/11/2016	<0.001	<0.005	<0.01	<0.001	0.25	<0.1	<0.05	<0.001	<0.1	0.0205	0.35	3.4	3.75	0.2	0.8 U	1.2 U
EPA 28	Dup	7/11/2016	<0.001	<0.005	<0.01	<0.001	0.46	<0.1	<0.05	<0.001	<0.1	0.0178	0.33	1.7	2.03	0.05 U	0.6 U	1.1 U
EPA 28	N	10/3/2016	<0.001	<0.005	<0.01	<0.001	0.47	<0.1	<0.05	<0.001	<0.1	0.0171	0.37	2.5	2.87	0.09	-0.3 U	3.3
EPA 28	DUP	10/3/2016	<0.001	<0.005	<0.01	<0.001	0.44	<0.1	<0.05	<0.001	<0.1	0.0177	0.52	1.3	1.82	0.1 U	0.1 U	2.1
GW 1	N	7/19/1989	< 0.05	< 0.01	< 0.05	< 0.05	0.05	< 0.1	< 0.05	0.002	< 0.1	0.0954	0.6	< 1	0.6	< 0.2	1.7	5.9
GW 1	N	10/16/1989	< 0.05	< 0.01	< 0.01	< 0.05	0.08	< 0.1	< 0.05	0.001	< 0.1	0.0979	0.4	< 1	0.4	4	1.5	3.7
GW 1	N	1/10/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.09	< 0.1	< 0.05	0.002	< 0.1	0.09	1	1.1	2.1	< 0.2	1.3	1.2
GW 1	N	4/5/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.1	< 0.1	< 0.05	0.002	< 0.1	0.087	0.5	< 1	0.5	< 0.2	1.2	0.8
GW 1	N	7/3/1990	< 0.05	< 0.01	0.01	< 0.05	0.1	< 0.1	< 0.05	0.001	< 0.1	0.116	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	10/3/1990	< 0.05	0.01	0.03	< 0.05	0.12	< 0.1	< 0.05	0.001	< 0.1	0.08	0.7	< 1	0.7	< 0.2	< 1	< 1
GW 1	N	1/16/1991	< 0.01	< 0.01	0.02	< 0.05	0.12	< 0.1	< 0.05	0.001	< 0.1	0.111	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	4/2/1991	< 0.01	0.01	0.02	< 0.05	0.13	< 0.1	< 0.05	0.001	< 0.1	0.13	0.4	< 1	0.4	< 0.2	< 1	< 1
GW 1	N	7/17/1991	< 0.01	< 0.01	< 0.01	< 0.05	0.15	< 0.1	< 0.05	0.002	< 0.1	0.104	0.2	< 1	0.2	< 0.2	2.3	< 1
GW 1	N	10/15/1991	< 0.01	< 0.01	0.01	< 0.05	0.12	< 0.1	< 0.05	< 0.001	< 0.1	0.15	0.3	4.6	4.9	< 0.2	< 1	< 1
GW 1	N	1/15/1992	< 0.01	< 0.01	0.01	< 0.05	0.13	< 0.1	< 0.05	< 0.001	< 0.1	0.105	0.3	< 1	0.3	< 0.2	< 1	< 1
GW 1	N	4/8/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.12	< 0.1	< 0.05	< 0.001	< 0.1	0.094	< 0.2	1.1	1.1	< 0.2	< 1	< 1
GW 1	N	7/8/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.11	< 0.1	< 0.05	0.001	< 0.1	0.07	0.2	1.8	2	< 0.2	2.2	< 1
GW 1	N	10/6/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.13	< 0.1	< 0.05	0.007	< 0.1	0.049	0.8	< 1	0.8	< 0.2	1.2	< 1
GW 1	N	1/7/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.11	< 0.1	< 0.05	0.007	< 0.1	0.097	0.3	2.6	2.9	< 0.2	< 1	< 1
GW 1	N	4/7/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.14	< 0.1	< 0.05	0.002	< 0.1	0.1	3.5	< 1	3.5	< 0.2	2.2	3.9
GW 1	N	7/14/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.14	< 0.1	< 0.05	0.004	< 0.1	0.099	< 0.2	1.7	1.7	< 0.2	3.3	< 1
GW 1	N	10/7/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.13	< 0.1	< 0.05	0.005	< 0.1	0.075	0.7	3.7	4.4	< 0.2	< 1	< 1
GW 1	N	1/6/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.11	< 0.1	< 0.05	< 0.001	< 0.1	0.069	3.3	3.5	6.8	< 0.2	< 1	9.5
GW 1	N	4/12/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.1	< 0.1	< 0.05	0.001	< 0.1	0.089	0.4	1.5	1.9	< 0.2	1.9	2.8
GW 1	N	7/21/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.12	< 0.1	< 0.05	0.001	< 0.1	0.082	1.2	< 1	1.2	< 0.2	1.1	1.4

TABLE A.1

Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO <sub>3</sub> mg/l	SO <sub>4</sub> mg/l	Cl mg/l	NH <sub>4</sub> as N mg/l	NO <sub>3</sub> as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
GW 1	N	10/5/1994	6860.70	6.50	7.45	5567	745	446	323	5.1	13.55	2250	177	0.23	111	< 1	< 0.1	< 0.001
GW 1	N	1/4/1995	6860.50	6.50	7.39	5732	788	441	295	4.7	1364	2483	166	0.72	104	< 1	< 0.1	< 0.001
GW 1	N	4/5/1995	6860.30	6.60	7.03	5397	698	420	282	3.9	1443	2400	186	0.36	110	< 1	< 0.1	< 0.001
GW 1	N	7/6/1995	6859.90	6.50	7.65	5180	665	428	285	3.9	1183	2255	170	0.1	99.4	< 1	< 0.1	< 0.001
GW 1	N	10/3/1995	6859.30	6.60	7.53	5292	640	419	270	3.2	1218	2265	137	0.29	105	< 1	< 0.1	0.003
GW 1	N	1/3/1996	6858.90	6.60	6.80	5086	605	405	274	3.5	1211	2079	135	0.07	115	< 1	< 0.1	0.002
GW 1	N	4/2/1996	6858.60	6.60	7.55	5078	594	388	274	3.7	1160	2162	140	0.09	116	< 1	< 0.1	< 0.001
GW 1	N	7/7/1996	6858.40	6.30	7.08	5119	605	395	290	3.6	1169	2155	160	0.21	109	1.04	< 0.1	0.002
GW 1	N	10/1/1996	6858.40	6.50	6.99	5080	624	422	264	3.9	1170	2063	158	0.1	116	< 1	< 0.1	0.001
GW 1	N	1/22/1997	6858.10	6.40	7.36	4790	625	415	266	4.16	1130	2003	148	0.1	107	< 1	< 0.1	< 0.001
GW 1	N	4/8/1997	6858.30	6.60	7.90	4830	636	403	241	4.2	1080	2047	173	0.24	117	< 1	< 0.1	< 0.001
GW 1	N	7/8/1997	6857.70	6.90	7.68	4800	634	379	229	4.4	1040	2050	173	0.3	116	< 1	< 0.1	< 0.001
GW 1	N	10/7/1997	6857.80	6.30	7.35	4750	619	364	245	4.7	1070	1980	145	0.38	114	< 1	< 0.1	< 0.001
GW 1	N	1/15/1998	6857.50	6.80	7.90	4650	616	349	251	5.6	1020	2100	157	0.71	112	< 1	< 0.1	< 0.001
GW 1	N	4/7/1998	6857.50	6.60	7.48	4440	597	331	220	4.2	872	2000	121	0.13	97.9	< 1	< 0.1	0.002
GW 1	N	7/7/1998	6857.50	6.80	7.70	4350	587	317	224	4.8	815	1800	132	0.37	122	< 1	< 0.1	< 0.001
GW 1	N	10/6/1998	6857.00	6.72	7.88	4370	632	331	228	5.7	801	2020	125	0.06	95.9	< 1	< 0.1	< 0.001
GW 1	N	1/5/1999	6856.90	6.70	7.75	4450	597	304	197	5.4	853	1830	124	0.29	91.5	< 1	< 0.1	< 0.001
GW 1	N	4/6/1999	6856.80	6.70	7.65	4300	610	264	209	5.1	738	1820	115	0.43	91.8	< 1	< 0.1	< 0.001
GW 1	N	7/13/1999	6857.06	6.70	7.80	4190	611	304	183	9.7	770	1900	125	0.47	82.4	< 1	< 0.1	< 0.001
GW 1	N	10/5/1999	6857.60	6.75	7.53	4230	562	270	205	5.1	788	1670	120	0.1	91	< 1	< 0.1	< 0.001
GW 1	N	1/4/2000	6857.00	6.70	7.72	4160	589	278	176	6	742	1790	114	0.28	94.2	< 1	< 0.1	< 0.001
GW 1	N	5/9/2000	6856.30	6.60	7.69	4410	585	309	226	5.1	919	1870	122	0.84	87	< 1	< 0.1	< 0.001
GW 1	N	7/17/2000	6856.20	6.63	7.58	4370	609	312	210	4.88	915	1720	125	0.77	77.5	< 1	< 0.1	< 0.001
GW 1	N	10/9/2000	6855.85	6.88	7.53	4260	517	274	200	5.8	905	1520	95.1	0.88	75.7	< 1	< 0.1	< 0.001
GW 1	N	1/8/2001	6856.00	6.73	7.75	4290	628	316	196	5.2	944	1830	112	0.76	79.9	< 1	< 0.1	< 0.001
GW 1	N	2/5/2001	6856.20	6.91	7.44	4270	721	352	184	6.1	960	2110	114	0.77	73.7	< 1	< 0.1	< 0.001
GW 1	N	3/5/2001	6856.50	7.15	7.40	4080	635	323	166	6.1	975	2070	104	0.79	74.2	< 1	< 0.1	< 0.001
GW 1	N	4/4/2001	6856.70	7.00	7.50	4360	713	347	201	4.1	946	2070	116	0.79	84.7	< 1	< 0.1	< 0.001
GW 1	N	5/8/2001	6856.80	6.72	7.51	4500	628	314	201	4.7	944	1830	124	0.79	78.2	< 1	< 0.1	< 0.001
GW 1	N	6/4/2001	6857.05	6.67	6.98	4420	635	322	187	4.7	944	1980	119	0.83	76.4	< 1	< 0.1	< 0.001
GW 1	N	7/10/2001	6857.10	7.12	7.47	4680	694	353	197	4.1	892	2110	134	0.8	86.7	< 1	< 0.1	< 0.001
GW 1	N	8/7/2001	6857.12	6.61	7.50	4910	650	340	210	4.5	878	2100	140	0.69	84	< 1	< 0.1	< 0.001
GW 1	N	9/11/2001	6857.25	6.64	7.40	4960	690	350	214	4.6	899	2200	140	0.68	101	< 1	< 0.1	< 0.001
GW 1	N	10/1/2001	6857.40	6.73	7.80	5190	690	350	206	5.3	913	2200	170	0.63	91.5	< 1	< 0.1	< 0.001

**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
GW 1	N	10/5/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.09	< 0.1	< 0.05	0.001	< 0.1	0.082	0.2	< 1	0.2	< 0.2	3.1	< 1
GW 1	N	1/4/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.11	< 0.1	< 0.05	< 0.001	< 0.1	0.069	1	2.3	3.3	< 0.2	< 1	4.6
GW 1	N	4/5/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.09	< 0.1	< 0.05	< 0.001	< 0.1	0.074	2.2	1.7	3.9	< 0.2	< 1	4.9
GW 1	N	7/6/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.01	< 0.1	< 0.05	0.002	< 0.1	0.0623	0.4	< 1	0.4	< 0.2	< 1	< 1
GW 1	N	10/3/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	0.019	< 0.1	0.0559	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	1/3/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.07	< 0.1	< 0.05	0.027	< 0.1	0.058	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	4/2/1996	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.05	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	7/7/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.07	< 0.1	< 0.05	0.006	< 0.1	0.06	0.3	< 1	0.3	< 0.2	< 1	< 1
GW 1	N	10/1/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.07	< 0.1	< 0.05	0.002	< 0.1	0.051	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	1/22/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.043	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	4/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.06	< 0.1	< 0.05	0.015	< 0.1	0.049	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	7/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.048	0.4	< 1	0.4	< 0.2	< 1	< 1
GW 1	N	10/7/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.054	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	1/15/1998	< 0.01	< 0.01	< 0.01	< 0.05	0.07	< 0.1	< 0.05	< 0.001	< 0.1	0.0539	1	< 1	1	< 0.2	< 1	< 1
GW 1	N	4/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.046	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	7/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.0464	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	10/6/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.05	< 0.2	< 1	0	< 0.2	1.2	1.2
GW 1	N	1/5/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.0509	1.2	< 1	1.2	< 0.2	< 1	< 1
GW 1	N	4/6/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.0461	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	7/13/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	0.001	< 0.1	0.046	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	10/5/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.0507	0.4	< 1	0.4	< 0.2	< 1	< 1
GW 1	N	1/4/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	0.001	< 0.1	0.051	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	5/9/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.061	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	7/17/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0572	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	10/9/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.06	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	1/8/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	0.001	< 0.1	0.063	< 0.2	5.1	5.1	< 0.2	< 1	< 1
GW 1	N	2/5/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.068	0.3	< 1	0.3	< 0.2	< 1	< 1
GW 1	N	3/5/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.0671	< 0.2	3.9	3.9	< 0.2	< 1	< 1
GW 1	N	4/4/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.068	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	5/8/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.075	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	6/4/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	0.009	< 0.1	0.065	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	7/10/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.0731	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	8/7/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.081	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	9/11/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0764	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	10/1/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0903	0.2	< 1	0.2	< 0.2	< 1	< 1



**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
GW 1	N	11/5/2001	6857.50	6.68	7.20	5260	775	386	219	5.1	950	2540	150	0.59	95	< 1	< 0.1	< 0.001
GW 1	N	12/4/2001	6857.65	6.83	7.30	5300	722	361	197	4.4	984	2270	145	0.64	96	< 1	< 0.1	< 0.001
GW 1	Dup	12/4/2001	no data	6.87	7.40	5260	716	351	219	3.9	946	2250	137	0.46	96	< 1	< 0.1	< 0.001
GW 1	N	1/8/2002	6857.70	6.89	7.20	5310	841	408	173	6.9	991	2650	157	0.59	82	< 1	< 0.1	< 0.001
GW 1	Dup	1/8/2002	no data	6.90	7.30	5260	844	401	176	6.8	978	2660	159	0.51	81.5	< 1	< 0.1	< 0.001
GW 1	N	2/4/2002	6857.75	6.87	7.40	5360	808	398	206	6.2	1010	2530	167	0.59	80.5	< 1	< 0.1	< 0.001
GW 1	N	3/4/2002	6857.75	6.70	7.30	5360	764	408	260	4.4	1080	2630	151	0.6	92.2	< 1	< 0.1	< 0.001
GW 1	N	4/1/2002	6857.90	6.65	7.38	5470	791	419	240	6.2	1100	2620	162	0.58	83.2	< 1	< 0.1	< 0.001
GW 1	N	5/6/2002	6857.95	6.63	7.56	5490	763	418	245	5.8	1110	2450	160	0.56	91	< 1	< 0.1	< 0.001
GW 1	Dup	5/6/2002	no data	6.70	7.67	5470	770	409	248	5.6	1100	2440	158	0.46	93.2	< 1	< 0.1	< 0.001
GW 1	N	6/3/2002	6857.97	6.58	7.61	5530	755	423	230	4.3	1150	2400	150	0.57	96	< 1	< 0.1	< 0.001
GW 1	N	7/8/2002	6857.75	6.65	7.80	5630	753	454	190	6.6	1200	2500	140	0.54	99.9	< 1	< 0.1	< 0.001
GW 1	N	10/8/2002	6857.52	6.75	7.72	5850	708	460	241	4	1300	2320	170	0.42	113	< 1	< 0.1	< 0.001
GW 1	N	1/6/2003	6857.61	7.38	7.61	5980	768	544	302	6.7	1390	2620	166	0.94	119	< 1	< 0.1	< 0.001
GW 1	N	4/7/2003	6857.81	6.57	7.27	6050	704	504	288	5.9	1360	2280	209	0.41	124	< 1	< 0.1	< 0.001
GW 1	Dup	4/7/2003	no data	no data	7.24	6000	696	495	291	5.7	1380	2250	206	0.4	134	< 1	< 0.1	< 0.001
GW 1	N	7/7/2003	6857.66	6.37	7.28	5400	678	514	261	7	1380	2550	192	0.39	129	< 1	< 0.1	< 0.001
GW 1	N	10/6/2003	6857.34	6.39	7.74	6150	743	583	319	4.7	1520	2740	223	0.59	102	< 1	< 0.1	< 0.001
GW 1	N	1/6/2004	6857.47	6.64	7.65	6120	707	566	293	5.8	1480	2670	252	0.36	106 D	< 1.0	0.2	< 0.001
GW 1	N	4/5/2004	6857.63	6.94	6.98	6270	700	570	302	5.9	1480	2650 D	221	0.43	117 D	< 1	< 0.1	< 0.001
GW 1	N	7/12/2004	6857.41	6.39	6.97	6610	715	563	354	6.4	1420	2630 D	228	0.41	124 D	< 1.0	< 0.1	< 0.001
GW 1	N	10/4/2004	6857.00	6.45	7.13	6800	699 D	572 D	354	5.8	1570	2590 D	249	0.23	93 D	< 1.0	< 0.1	< 0.001
GW 1	N	1/3/2005	6857.13	6.70	7.09	6400	711 D	575 D	350	5.8	1570	2510 D	224	0.28	89 D	< 1.0	< 0.1	< 0.001
GW 1	N	4/4/2005	6857.29	6.64	7.25	6250	716	579	350	5.4	1560	2680	222	0.22	88	< 1.0	0.2	< 0.001
GW 1	N	7/11/2005	6856.92	6.56	7.40	6360	780 D	648 D	344	5.7	1480	2900 D	247	0.43	92 D	< 1.0	< 0.1	< 0.001
GW 1	N	10/4/2005	6856.60	6.63	7.24	6420	711 D	595 D	352	6.3	1560	2770 D	267	0.23	85 D	< 1.0	< 0.1	< 0.001
GW 1	N	1/9/2006	6856.61	6.78	7.56	6230	615	564 D	339	5.1	1620	2320 D	213	0.42	77 D	< 1.0	< 0.1	< 0.001
GW 1	N	4/3/2006	6856.71	6.53	7.30	6490	764 D	646 D	335	6.9	1580	2800 D	262	0.34	106 D	< 1.0	0.1	< 0.001
GW 1	N	7/18/2006	6856.36	6.57	7.05	6310	736 D	625 D	386	7.6	1580	2990 D	244	0.28	111 D	< 1.0	< 0.1	< 0.001
GW 1	N	10/3/2006	6856.26	6.60	6.91	6330	665 D	581 D	353 D	7.2	1280	2660 D	192	0.4	96 D	0.61	< 0.1	< 0.001
GW 1	N	1/9/2007	6856.44	6.91	6.85	6680	698 D	604 D	333	8.1	1550	2830 D	223	0.38	99 D	0.64	< 0.1	< 0.001
GW 1	N	4/9/2007	6856.61	6.74	6.95	6180	704 D	604 D	339	8.5	1610	2850 D	238	0.38	111 D	< 0.5	< 0.1	< 0.001
GW 1	N	7/9/2007	6856.26	6.59	6.98	6500	733 D	655 D	383	7.2	1640	3070 D	207	0.38	108 D	0.8	< 0.1	0.01
GW 1	N	10/2/2007	6855.99	6.67	6.70	6610	645 D	593 D	377 D	7.7	1660	2720 D	255 D	0.36	96 D	0.84	< 0.1	< 0.001
GW 1	N	1/14/2008	6855.96	6.69	6.68	6800	714 D	645 D	393 D	8.1	1630	2870 D	270 D	0.46	93 D	0.9	0.1	< 0.001

**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
GW 1	N	11/5/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0872	0.4	< 1	0.4	< 0.2	< 1	< 1
GW 1	N	12/4/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0957	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	Dup	12/4/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.095	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	1/8/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0976	0.3	< 1	0.3	< 0.2	< 1	< 1
GW 1	Dup	1/8/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.102	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	2/4/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0926	< 0.2	1.8	1.8	< 0.2	< 1	< 1
GW 1	N	3/4/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.108	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	4/1/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.102	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	5/6/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	0.05	< 0.001	< 0.1	0.114	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	Dup	5/6/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	0.05	< 0.001	< 0.1	0.102	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	6/3/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.108	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	7/8/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.128	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	10/8/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.093	0.6	< 1	0.6	< 0.2	< 1	< 1
GW 1	N	1/6/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.116	< 0.2	< 1	0	< 0.2	< 1	< 1.0
GW 1	N	4/7/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.0963	< 0.2	< 1	0	< 0.2	< 1	< 1.0
GW 1	Dup	4/7/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.11	0.4	< 1	0.4	< 0.2	< 1	< 1
GW 1	N	7/7/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.0885	< 0.2	< 1	0	< 0.2	< 1	< 1.0
GW 1	N	10/6/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.105	< 0.2	< 1	0	< 0.2	< 1	< 1.0
GW 1	N	1/6/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.06	< 0.1	< 0.05	< 0.001	< 0.1	0.0891 D	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
GW 1	N	4/5/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	0.001	< 0.1	0.0867 D	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	7/12/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.0888 D	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
GW 1	N	10/4/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.0870 D	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
GW 1	N	1/3/2005	< 0.01	< 0.005	< 0.01	< 0.05	0.06	< 0.1	< 0.05	< 0.001	< 0.1	0.0914	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
GW 1	N	4/4/2005	< 0.01	< 0.005	< 0.01	< 0.05	0.07	< 0.1	< 0.05	< 0.001	< 0.1	0.0874	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
GW 1	N	7/11/2005	< 0.01	< 0.005	< 0.01	< 0.05	0.06	< 0.1	< 0.05	< 0.001	< 0.1	0.0874	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
GW 1	N	10/4/2005	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.0934	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
GW 1	N	1/9/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0889	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
GW 1	N	4/3/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0855 D	< 0.2	1.2	1.2	< 0.2	< 1.0	< 1.0
GW 1	N	7/18/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0954	0.2	3	3.2	< 0.2	< 1.0	< 1.0
GW 1	N	10/3/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0914	< 0.2	1.3	1.3	< 0.2	< 1	< 1
GW 1	N	1/9/2007	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0936	0.3	< 1	0.3	< 0.2	< 1	< 1
GW 1	N	4/9/2007	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0964	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	7/9/2007	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.104	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 1	N	10/2/2007	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.101	< 0.2	< 1	0	1	< 1	< 1
GW 1	N	1/14/2008	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.0929 D	< 0.2	< 1	0	< 0.2	< 1	< 1

**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As	
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l
			NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01	
GW 1	N	4/7/2008	6856.31	6.61	7.01	6440	749 D	692 D	423 D	9.8 D	1620	3180 D	224	0.5 D	160 D	1.48	< 0.1	< 0.001	
GW 1	N	7/7/2008	6856.01	6.42	6.87 H	6480 H	714	636	374 D	7	1680	3160 D	234	0.41	152 D	1.56	< 0.1	< 0.003	
GW 1	N	10/6/2008	6855.56	6.42	6.92	6650	705	633	378 D	7	1710	3310 D	223	0.5	102 D	1.51	< 0.1	< 0.001	
GW 1	N	1/12/2009	6855.51	6.43	6.80	7080	696	658	401	7	1810	2820 D	208	0.26	130 D	1.65	0.2	<0.001	
GW 1	N	4/6/2009	6855.46	6.53	6.67	6750	682 D	659 D	413 D	6	1850	3170 D	226	0.32	103 D	1.59	<0.1	<0.001	
GW 1	N	7/6/2009	6855.41	6.45	6.76	6890 H	734 D	668	387 D	6	1790	3670 D	237	0.48	97 D	1.7	<0.1	<0.001	
GW 1	N	10/6/2009	6854.86	6.43	6.98	6640	717 D	645	385 D	7	1870	3340 D	237	0.62	97 D	2.08	<0.1	<0.001	
GW 1	N	1/4/2010	6854.81	6.62	6.86	7180 D	722 D	662	391 D	7	1980	3260 D	235	0.48	91 D	1.86	<0.1	<0.001	
GW 1	N	4/5/2010	6854.91	6.52	6.75	7260 DH	821 D	763	440 D	8	2090	3810 D	226	0.78	94 D	1.86	0.2	<0.001	
GW 1	N	7/12/2010	6854.71	6.43	7.13	7250 D	757 D	709	406 D	7	2000	3320 D	234 D	0.89	89 D	1.99	<0.1	<0.001	
GW 1	N	10/4/2010	6854.41	6.57	6.85	7200 D	710 D	662	410 D	7	1990	3190 D	228 D	0.91	90 D	2.37	<0.1	<0.001	
GW 1	N	1/3/2011	6854.31	6.57	6.97	6620 D	739 D	699	404 D	7	1910	3100 D	242 D	0.83	77 D	1.78	0.1	<0.001	
GW 1	N	4/4/2011	6854.19	6.65	6.90	7000 D	713	677	428 D	7	1920	3130 D	233 D	0.78 D	94 D	2.08	<0.1	0.001	
GW 1	N	7/11/2011	6854.07	6.65	7.15	6890 D	749	710	438 D	7	1940	3130 D	226 D	0.8 D	95 D	2.16	<0.1	<0.001	
GW 1	N	10/3/2011	6853.76	6.59	7.51	6530 D	721	631	419 D	6	1830	2950 D	232 D	0.7 D	89 D	2.38	<0.1	0.003	
GW 1	N	1/2/2012	6853.63	6.75	6.83 H	6350 D	672	581	388	8	1750	2810 D	236 D	0.58	90 D	6.52	<0.1	<0.001	
GW 1	N	4/2/2012	6853.65	6.81	6.66 H	6470 D	702	580	386	7	1850	2750 D	228 D	0.51	91 D	1.84	<0.1	<0.01	
GW 1	N	7/9/2012	6853.37	6.59	6.74 H	6270	730	620	433 D	7	1900	2730 D	228 D	0.41	92 D	1.96	<0.1	<0.001	
GW 1	N	10/8/2012	6853.16	6.61	6.65 H	6230	760	546	408 D	7	1950	2740 D	248 D	0.17	86 D	1.9	<0.1	<0.001	
GW 1	N	1/7/2013	6853.07	6.68	6.64 H	6080	735	612	446 D	7	1860	2760 D	239 D	<0.05	92 D	2.22	<0.1	<0.001	
GW 1	N	4/1/2013	6852.96	6.65	6.71 H	6170	758	583	431	7	1920	2810 D	249 D	<0.05	94 D	2.32	0.2	<0.001	
GW 1	N	7/8/2013	6852.77	6.52	6.78 H	6650	727	574	408	7	1890	2770 D	240 D	<0.05	88 D	2.2	<0.1	<0.001	
GW 1	N	9/30/2013	6852.87	6.57	6.70 H	6420 H	714	569	404	7	1930	2760 D	236 D	<0.05	90 D	1.82	<0.1	<0.001	
GW 1	N	1/6/2014	6852.67	6.82	6.70	6200	716	563	404	8	1900	2720	235	<0.05	92	1.18	<0.1	<0.001	
GW 1	N	3/31/2014	6852.60	6.79	6.66 H	6250	730	572	411 D	7	1910	2740 D	239 D	<0.05	91 D	2	<0.1	<0.001	
GW 1	N	7/7/2014	6852.42	6.67	6.87 H	5750	728	545	420 D	8	1420	2770 D	238 D	<0.05	87 D	1.18	<0.1	<0.001	
GW 1	N	10/6/2014	6852.24	6.74	6.74 H	6130	590	560	397	7	1740	2790 D	248 D	<0.05	87 D	2.2	<0.1	<0.001	
GW 1	N	1/5/2015	6852.24	6.81	6.73 H	6530	753	623	446	9	1920	2790 D	235 D	<0.05	88 D	3.14	<0.1	<0.001	
GW 1	N	4/6/2015	6852.04	6.62	6.67 H	6500	600	594	407	8	1950	2910 D	258 D	<0.05	86 D	2.98	<0.1	<0.001	
GW 1	N	7/6/2015	6851.85	6.52	6.64 H	6640	630	582	403	8	2010	2930 D	244 D	0.66	87 D	2.66	<0.1	<0.001	
GW 1	N	10/5/2015	6851.63	6.67	6.65 H	6450	705	573	395	8	1850	2860 D	250 D	<0.05	82 D	3.36	<0.1	<0.001	
GW 1	N	1/4/2016	6851.45	6.78	6.64 H	6450	720	588	400	8	1950	2880 D	244 D	<0.05	84 D	2.67	<0.1	<0.001	
GW 1	N	4/4/2016	6851.29	6.60	6.82 H	6430	707	587	413	8	1870	2820 D	240 D	<0.05	85 D	2.25	<0.1	<0.001	
GW 1	N	7/11/2016	6851.13	6.62	6.70 H	6200 D	628	577	400	8	1850	2710 D	245 D	<0.05	92 D	2.7	<0.1	<0.001	
GW 1	N	10/3/2016	6850.90	6.78	6.69 H	6210 H	681	570	412	8	1790	2860 D	247 D	<0.05	89 D	1.7	<0.1	<0.001	

**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
GW 1	N	4/7/2008	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.11	0.1 U	-0.1 U	0	0.2	-4.5 U	1.1
GW 1	N	7/7/2008	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0967	-0.02 U	1.1 U	1.08	-0.1 U	2.7 U	0.9
GW 1	N	10/6/2008	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.102	0.07 U	0.14 U	0.21	-0.1 U	-1 U	1.5
GW 1	N	1/12/2009	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.0564	0.04 U	1.1 U	1.14	-0.3 U	-4 U	1.2
GW 1	N	4/6/2009	< 0.01	< 0.005	< 0.01	< 0.05	0.06	< 0.1	< 0.05	< 0.001	< 0.1	0.101	0.14	1	1.14	-0.03 U	-1 U	0.3 U
GW 1	N	7/6/2009	< 0.01	< 0.005	< 0.01	< 0.05	0.06	< 0.1	< 0.05	< 0.001	< 0.1	0.113	0.29	1.3	1.59	0.1 U	-2 U	2.8
GW 1	N	10/6/2009	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.104	0.4	0.58 U	0.98	-0.05 U	-1 U	0.2 U
GW 1	N	1/4/2010	< 0.01	< 0.005	< 0.01	< 0.05	0.07	< 0.1	< 0.05	< 0.001	< 0.1	0.103	0.17 U	1.1 U	1.27	0.005 U	-0.4 U	0.5 U
GW 1	N	4/5/2010	< 0.01	< 0.005	< 0.01	< 0.05	0.07	< 0.1	< 0.05	< 0.001	< 0.1	0.118	0.2	0.36 U	0.56	0.05 U	4.1	0.4 U
GW 1	N	7/12/2010	< 0.01	< 0.005	< 0.01	< 0.05	0.08	< 0.1	< 0.05	< 0.001	< 0.1	0.137	0.26	0.69 U	0.95	-0.02 U	0.3 U	0.05 U
GW 1	N	10/4/2010	< 0.01	< 0.005	< 0.01	< 0.05	0.08	< 0.1	< 0.05	< 0.001	< 0.1	0.122	-0.08 U	1.1	1.02	-0.007 U	2	-0.05 U
GW 1	N	1/3/2011	< 0.01	< 0.005	< 0.01	< 0.05	0.08	< 0.1	< 0.05	< 0.001	< 0.1	0.119	0.09 U	0.42 U	0.51	-0.008 U	0.9 U	0.3 U
GW 1	N	4/4/2011	< 0.01	< 0.005	< 0.01	< 0.05	0.09	< 0.1	< 0.05	< 0.001	< 0.1	0.127	-0.05 U	0.13 U	0.08	0.06 U	0.5 U	0.7
GW 1	N	7/11/2011	< 0.01	< 0.005	< 0.01	< 0.05	0.1	< 0.1	< 0.05	< 0.001	< 0.1	0.127	0.15 U	0.91 U	1.06	-0.006 U	-0.6 U	0.3 U
GW 1	N	10/3/2011	< 0.01	< 0.005	< 0.01	< 0.05	0.1	< 0.1	< 0.05	< 0.001	< 0.1	0.104	0.05 U	0.93	0.98	-0.009 U	0.4 U	0.8
GW 1	N	1/2/2012	< 0.01	< 0.005	< 0.01	< 0.05	0.11	< 0.1	< 0.05	< 0.001	< 0.1	0.103	0.36	0.86 U	2.08	-0.008 U	0.6 U	0.3 U
GW 1	N	4/2/2012	< 0.01	< 0.005	< 0.01	< 0.05	0.11	< 0.1	< 0.05	< 0.001	< 0.1	0.107	0.04 U	0.77 U	1.58	0.03 U	0.009 U	0.1 U
GW 1	N	7/9/2012	< 0.001	< 0.005	< 0.01	< 0.001	0.12	< 0.1	< 0.05	< 0.001	< 0.1	0.103	0.23	0.16 U	0.55	-0.003 U	1 U	0.3 U
GW 1	N	10/8/2012	< 0.001	< 0.005	< 0.01	< 0.001	0.13	< 0.1	< 0.05	< 0.001	< 0.1	0.103	0.26	1.3	1.56	0.01 U	0.6 U	0.5 U
GW 1	N	1/7/2013	< 0.001	< 0.005	< 0.01	< 0.001	0.12	< 0.1	< 0.05	< 0.001	< 0.1	0.105	0.3	0.63 U	0.3	-0.003 U	-0.07 U	0.8
GW 1	N	4/1/2013	< 0.001	< 0.005	< 0.01	< 0.001	0.13	< 0.1	< 0.05	< 0.001	< 0.1	0.113	0.13	0.05 U	0.13	0.02 U	0.1 U	0.1 U
GW 1	N	7/8/2013	< 0.001	< 0.005	< 0.01	< 0.001	0.11	< 0.1	< 0.05	< 0.001	< 0.1	0.102	0.02 U	0.39 U	0	0.004 U	-0.09 U	0.4 U
GW 1	N	9/30/2013	< 0.001	< 0.005	< 0.01	< 0.001	0.12	< 0.1	< 0.05	< 0.001	< 0.1	0.119	0.16	0.43 U	0.16	0.08 U	-0.03 U	0.03 U
GW 1	N	1/6/2014	< 0.001	< 0.005	< 0.01	< 0.001	0.11	< 0.1	< 0.05	< 0.001	< 0.1	0.113	0.23	0.99 U	0.23	-0.01 U	0.6 U	0.1 U
GW 1	N	3/31/2014	< 0.001	< 0.005	< 0.01	< 0.001	0.12	< 0.1	< 0.05	< 0.001	< 0.1	0.122	0.14 U	0.88 U	0	0.0007 U	-0.8 U	0.1 U
GW 1	N	7/7/2014	< 0.001	< 0.005	< 0.01	< 0.001	0.12	< 0.1	< 0.05	< 0.001	< 0.1	0.0844	0.16	0.35 U	0.16	0.009 U	0.4 U	0.2 U
GW 1	N	10/6/2014	< 0.001	< 0.005	< 0.01	< 0.001	0.07	< 0.1	< 0.05	< 0.001	< 0.1	0.102	0.31	0.96 U	0.31	0.003 U	0.2 U	0.6
GW 1	N	1/5/2015	< 0.001	< 0.005	< 0.01	< 0.001	0.21	< 0.1	< 0.05	< 0.001	< 0.1	0.108	0.47	1.5	1.97	0.03 U	0.2 U	1.2 U
GW 1	N	4/6/2015	< 0.001	< 0.005	< 0.01	< 0.001	0.18	< 0.1	< 0.05	< 0.001	< 0.1	0.096	0.48	0.78 U	0.48	0.03 U	-0.2 U	3
GW 1	N	7/6/2015	< 0.001	< 0.005	< 0.01	< 0.001	0.18	< 0.1	< 0.05	< 0.001	< 0.1	0.102	0.15	0.96 U	0.15	0.07 U	0.3 U	0.1 U
GW 1	N	10/5/2015	< 0.001	< 0.005	< 0.01	< 0.001	0.21	< 0.1	< 0.05	< 0.001	< 0.1	0.0842	0.34	0.88 U	0.34	0.02 U	0.7 U	2.6
GW 1	N	1/4/2016	< 0.001	< 0.005	< 0.01	< 0.001	0.23	< 0.1	< 0.05	< 0.001	< 0.1	0.0992	0.12 U	-0.2 U	0	0.04 U	-0.4 U	0.9 U
GW 1	N	4/4/2016	< 0.001	< 0.005	< 0.01	< 0.001	0.21	< 0.1	< 0.05	< 0.001	< 0.1	0.103	0.23	1.6	1.83	0.04 U	-0.3 U	1.0 U
GW 1	N	7/11/2016	< 0.001	< 0.005	< 0.01	< 0.001	0.1	< 0.1	< 0.05	< 0.001	< 0.1	0.0894	0.18	2.7	2.88	-0.007 U	0.4 U	0.8 U
GW 1	N	10/3/2016	< 0.001	< 0.005	< 0.01	< 0.001	0.13	< 0.1	< 0.05	< 0.001	< 0.1	0.0832	0.26	7.6	7.86	0.06 U	0.7 U	3



**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
<b>NRC Standard</b>			<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>80</b>	<b>NA</b>	<b>0.05</b>
<b>EPA Standard</b>			<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>10376</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>5815</b>	<b>250</b>	<b>NA</b>	<b>536.6</b>	<b>80</b>	<b>5</b>	<b>0.01</b>
GW 2	N	7/19/1989	6870.30	7.00	7.23	5143	910	412	253	8.3	1293	2267	173	0.06	123	< 1	< 0.1	< 0.001
GW 2	N	10/16/1989	6870.10	7.00	7.05	5564	789	479	266	11.7	1818	2314	181	0.1	76	< 1	< 0.1	< 0.001
GW 2	N	1/10/1990	6869.70	6.70	7.02	5470	752	421	264	8.75	1451	2329	184	0.08	84	< 1	< 0.1	< 0.001
GW 2	N	4/5/1990	6869.40	6.50	7.06	5277	862	391	256	8.1	1730	2226	183	0.11	113	< 1	< 0.1	< 0.001
GW 2	N	7/3/1990	6868.90	6.30	6.91	5179	801	667	286	9.9	2001	2161	195	< 0.05	52.2	< 1	< 0.1	< 0.001
GW 2	N	10/3/1990	6868.70	6.50	7.25	5801	888	522	289	9.4	1602	2395	193	< 0.05	61.9	< 1	< 0.1	0.001
GW 2	N	1/16/1991	6868.90	6.60	7.11	5775	926	458	297	8.3	1552	2444	202	0.05	88.2	< 1	< 0.1	< 0.001
GW 2	N	4/2/1991	6868.80	6.50	6.90	5621	812	432	280	8.1	1465	2560	206	< 0.05	102	< 1	< 0.1	< 0.001
GW 2	N	7/17/1991	6867.50	6.50	7.30	5820	790	430	258	8.5	1769	2638	199	0.05	131	< 1	< 0.1	< 0.001
GW 2	N	10/15/1991	6866.80	6.20	6.89	6209	737	579	287	9	2011	2868	197	< 0.05	28.8	< 1	0.27	< 0.001
GW 2	N	1/15/1992	6866.90	6.20	7.11	5127	765	428	259	7.9	1278	2285	187	< 0.05	51.6	< 1	< 0.1	< 0.001
GW 2	N	4/8/1992	6867.00	6.20	7.53	5275	725	531	286	10.3	1687	2613	177	< 0.05	22.9	< 1	< 0.1	< 0.001
GW 2	N	7/8/1992	6865.20	6.10	7.24	6313	802	581	402	12.8	1931	3194	171	0.07	54	< 1	< 0.1	< 0.001
GW 2	N	10/6/1992	6864.10	6.40	7.26	5590	901	422	316	8.8	1563	2256	166	< 0.05	100	< 1	< 0.1	< 0.001
GW 2	N	1/7/1993	6864.20	6.40	7.62	5795	730	521	296	10.1	1763	2584	177	< 0.05	64	< 1	< 0.1	< 0.001
GW 2	N	4/7/1993	6864.70	6.50	7.24	5140	670	430	314	6.9	1529	2250	173	< 0.05	79.8	< 1	< 0.1	0.001
GW 2	N	7/14/1993	6863.00	6.70	7.18	5500	776	437	308	7.7	1612	2501	178	0.05	79.8	< 1	< 0.1	0.001
GW 2	N	10/7/1993	6862.60	6.80	7.44	4812	693	371	268	6.9	1386	2107	159	0.05	111	< 1	< 0.1	< 0.001
GW 2	N	1/6/1994	6861.60	6.80	7.14	5185	673	461	277	7.4	1556	2444	170	0.16	68.1	< 1	< 0.1	< 0.001
GW 2	N	4/12/1994	6862.30	6.70	7.03	5006	748	355	250	7	1536	2238	165	0.24	80.5	< 1	< 0.1	< 0.001
GW 2	N	7/21/1994	6861.60	6.70	7.35	5402	774	470	247	8.6	1614	2859	170	0.06	52	< 1	< 0.1	0.001
GW 2	N	10/5/1994	6861.20	6.40	7.51	5969	727	590	288	10	1707	2683	177	< 0.05	29.9	< 1	< 0.1	< 0.001
GW 2	N	1/4/1995	6861.20	6.40	7.16	6044	748	561	270	10.9	1703	2866	174	0.27	25.3	< 1	< 0.1	< 0.001
GW 2	N	4/5/1995	6861.70	6.50	6.91	6020	660	635	285	10.4	1745	2955	170	0.19	23.1	< 1	< 0.1	< 0.001
GW 2	N	7/6/1995	6862.40	6.50	7.49	5305	760	475	265	8.6	1409	2404	194	0.27	48.1	< 1	< 0.1	< 0.001
GW 2	N	10/3/1995	6862.60	6.30	7.45	5826	655	600	268	9.5	1791	2841	178	0.2	17.7	< 1	< 0.1	0.002
GW 2	N	1/3/1996	6859.60	6.40	6.91	5302	595	575	280	9.7	1802	2409	133	< 0.05	16.7	< 1	< 0.1	< 0.001
GW 2	N	4/2/1996	6859.40	6.50	7.64	6059	622	550	282	10	1732	2936	167	< 0.05	24.1	< 1	< 0.1	< 0.001
GW 2	N	7/7/1996	6859.10	6.30	7.19	6246	600	595	286	10.4	1643	2870	155	0.1	20.5	< 1	< 0.1	0.003
GW 2	N	10/1/1996	6859.30	6.40	6.99	6280	628	673	289	10.3	1670	2955	166	< 0.05	12.9	< 1	< 0.1	< 0.001
GW 2	N	1/22/1997	6858.90	6.30	7.43	6100	600	620	275	10.2	1690	2945	177	< 0.05	10.2	< 1	< 0.1	0.001
GW 2	N	4/8/1997	6858.70	6.60	7.77	5910	667	572	259	9.7	1630	2851	193	< 0.05	19.8	< 1	< 0.1	< 0.001
GW 2	N	7/8/1997	6858.60	6.80	7.33	6090	666	631	255	9.9	1640	2720	182	< 0.05	10.7	< 1	< 0.1	< 0.001
GW 2	N	10/7/1997	6858.90	6.20	7.21	6090	618	610	266	9.7	1630	3050	170	< 0.05	10.7	< 1	< 0.1	< 0.001
GW 2	N	1/16/1998	6858.50	6.50	7.52	5990	653	582	271	9.9	1640	3000	188	0.13	16	< 1	< 0.1	< 0.001

**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
GW 2	N	7/19/1989	< 0.05	< 0.01	< 0.01	< 0.05	0.22	< 0.1	< 0.05	0.001	< 0.1	0.254	1.5	2.8	4.3	1.1	< 1	6
GW 2	N	10/16/1989	< 0.05	< 0.01	< 0.01	< 0.05	0.31	< 0.1	< 0.05	0.001	< 0.1	0.196	1	2.8	3.8	11	1.5	15
GW 2	N	1/10/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.19	< 0.1	< 0.05	< 0.001	< 0.1	0.183	< 0.2	< 0.1	0	1	< 1	2.3
GW 2	N	4/5/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.41	< 0.1	< 0.05	0.001	< 0.1	0.205	0.5	< 0.1	0.5	< 0.2	1.3	0.8
GW 2	N	7/3/1990	< 0.05	< 0.01	0.01	< 0.05	0.48	< 0.1	< 0.05	< 0.001	< 0.1	0.146	0.4	< 0.1	0.4	< 0.2	< 1	< 1
GW 2	N	10/3/1990	< 0.05	< 0.01	0.02	< 0.05	0.55	< 0.1	< 0.05	< 0.001	< 0.1	0.2215	< 0.2	< 0.1	0	< 0.2	< 1	< 1
GW 2	N	1/16/1991	< 0.01	0.01	< 0.01	< 0.05	0.39	< 0.1	< 0.05	0.002	< 0.1	0.2404	< 0.2	< 0.1	0	< 0.2	< 1	< 1
GW 2	N	4/2/1991	< 0.01	0.02	0.01	< 0.05	0.51	< 0.1	< 0.05	0.001	< 0.1	0.137	< 0.2	1.7	1.7	< 0.2	< 1	< 1
GW 2	N	7/17/1991	< 0.01	0.03	< 0.01	< 0.05	0.5	< 0.1	< 0.05	0.001	< 0.1	0.152	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 2	N	10/15/1991	< 0.01	< 0.01	< 0.01	< 0.05	0.55	< 0.1	< 0.05	< 0.001	< 0.1	0.197	< 0.2	3.1	3.1	< 0.2	< 1	< 1
GW 2	N	1/15/1992	< 0.01	< 0.01	0.03	< 0.05	0.48	< 0.1	< 0.05	< 0.001	< 0.1	0.153	< 0.2	1.3	1.3	< 0.2	2.2	< 1
GW 2	N	4/8/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.46	< 0.1	< 0.05	0.006	< 0.1	0.165	< 0.2	< 1	0	< 0.2	2.4	< 1
GW 2	N	7/8/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.4	< 0.1	< 0.05	0.001	< 0.1	0.13	0.2	< 1	0.2	< 0.2	< 1	< 1
GW 2	N	10/6/1992	< 0.01	< 0.01	< 0.01	0.06	0.15	< 0.1	< 0.05	0.002	< 0.1	0.242	0.5	1.6	2.1	< 0.2	< 1	< 1
GW 2	N	1/7/1993	< 0.01	< 0.01	0.02	< 0.05	0.25	< 0.1	< 0.05	0.005	< 0.1	0.181	0.8	7.9	8.7	< 0.2	< 1	< 1
GW 2	N	4/7/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.12	< 0.1	< 0.05	0.001	< 0.1	0.2	0.4	4.4	4.8	< 0.2	< 1	< 1
GW 2	N	7/14/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.22	< 0.1	< 0.05	0.001	< 0.1	0.084	< 0.2	3.1	3.1	< 0.2	< 1	< 1
GW 2	N	10/7/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.06	< 0.1	< 0.05	0.001	< 0.1	0.118	0.6	2.2	2.8	< 0.2	< 1	< 1
GW 2	N	1/6/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.11	< 0.1	< 0.05	< 0.001	< 0.1	0.116	0.3	4.8	5.1	< 0.2	1.8	8.5
GW 2	N	4/12/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.29	< 0.1	< 0.05	< 0.001	< 0.1	0.201	1.2	< 1	1.2	< 0.2	3.2	1.4
GW 2	N	7/21/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.13	< 0.1	< 0.05	0.002	< 0.1	0.117	< 0.2	8.1	8.1	< 0.2	< 1	12.5
GW 2	N	10/5/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.32	< 0.1	< 0.05	< 0.001	< 0.1	0.094	0.4	< 1	0.4	< 0.2	1.4	< 1
GW 2	N	1/4/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.35	< 0.1	< 0.05	< 0.001	< 0.1	0.087	1.8	2.5	4.3	< 0.2	< 1	5.7
GW 2	N	4/5/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.42	< 0.1	< 0.05	< 0.001	< 0.1	0.071	0.4	1.1	1.5	< 0.2	4.4	2.2
GW 2	N	7/6/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.14	< 0.1	< 0.05	0.002	< 0.1	0.1959	1.7	< 1	1.7	< 0.2	< 1	2.8
GW 2	N	10/3/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.39	< 0.1	< 0.05	< 0.001	< 0.1	0.0751	< 0.2	< 1	0	< 0.2	1.8	< 1
GW 2	N	1/3/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.39	< 0.1	< 0.05	< 0.001	< 0.1	0.071	< 0.2	< 1	0	< 0.2	2.4	< 1
GW 2	N	4/2/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.44	< 0.1	< 0.05	< 0.001	< 0.1	0.118	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 2	N	7/7/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.49	< 0.1	< 0.05	0.001	< 0.1	0.099	0.2	< 1	0.2	< 0.2	< 1	< 1
GW 2	N	10/1/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.43	< 0.1	< 0.05	0.002	< 0.1	0.07	< 0.2	< 1	0	1	< 1	< 1
GW 2	N	1/22/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.35	< 0.1	< 0.05	< 0.001	< 0.1	0.054	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 2	N	4/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.41	< 0.1	< 0.05	< 0.001	< 0.1	0.131	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 2	N	7/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.29	< 0.1	< 0.05	< 0.001	< 0.1	0.061	0.6	< 1	0.6	< 0.2	< 1	< 1
GW 2	N	10/7/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.38	< 0.1	< 0.05	< 0.001	< 0.1	0.062	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 2	N	1/16/1998	< 0.01	< 0.01	< 0.01	< 0.05	0.38	< 0.1	< 0.05	< 0.001	< 0.1	0.0953	< 0.2	< 1	0	< 0.2	< 1	< 1

**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
GW 2	N	4/7/1998	6858.40	6.40	7.80	5880	638	596	248	9.9	1500	2700	174	< 0.05	8.96	< 1	< 0.1	< 0.001
GW 2	N	7/7/1998	6858.60	6.10	7.80	5880	638	596	248	9.9	1500	2700	174	< 0.05	8.96	< 1	< 0.1	< 0.001
GW 2	N	10/6/1998	6860.30	6.48	7.59	5800	651	602	253	10.7	1500	2770	165	0.16	8.73	< 1	< 0.1	< 0.001
GW 2	N	1/5/1999	6858.20	6.70	7.88	5780	588	552	217	9.8	1460	2900	168	0.07	7.04	< 1	< 0.1	< 0.001
GW 2	N	4/6/1999	6858.20	6.40	7.57	5710	580	582	221	9.6	1410	2500	162	0.07	6.12	< 1	< 0.1	< 0.001
GW 2	N	7/13/1999	6857.98	6.60	7.90	5530	594	562	223	14.5	1350	2660	166	0.06	5.95	< 1	< 0.1	< 0.001
GW 2	N	10/5/1999	6859.30	6.52	7.39	5510	537	512	229	10.1	1420	2380	164	0.24	5.5	< 1	< 0.1	< 0.001
GW 2	N	1/4/2000	6858.70	6.60	7.76	5440	587	549	185	11	1430	2610	143	< 0.05	4.05	< 1	< 0.1	< 0.001
GW 2	N	5/8/2000	6858.40	6.40	7.64	5410	540	528	234	9.5	1410	2590	155	< 0.05	2.74	< 1	< 0.1	< 0.001
GW 2	N	7/17/2000	6858.10	6.37	7.65	5440	571	536	213	9.61	1400	2400	158	< 0.05	2.95	< 1	< 0.1	< 0.001
GW 2	N	10/9/2000	6857.65	6.35	7.54	5310	476	449	194	10.5	1370	1930	130	0.05	4.09	< 1	< 0.1	0.001
GW 2	N	1/8/2001	6858.10	6.51	7.23	5270	599	537	211	9.7	1420	2620	159	0.09	4.04	< 1	< 0.1	< 0.001
GW 2	N	2/6/2001	6858.65	6.79	7.37	5290	679	578	230	10.4	1410	2800	153	0.05	3.84	< 1	< 0.1	< 0.001
GW 2	N	3/6/2001	6858.80	6.86	7.54	5150	586	528	275	10.6	1400	2680	140	< 0.05	3.36	< 1	< 0.1	< 0.001
GW 2	N	4/9/2001	6859.30	6.92	7.26	5200	668	568	220	10.1	1420	2730	152	< 0.05	3.68	< 1	< 0.1	< 0.001
GW 2	N	5/7/2001	6859.20	6.46	7.57	5330	590	514	217	9.7	1420	2390	168	0.11	3.49	< 1	0.15	< 0.001
GW 2	N	6/4/2001	6859.55	6.47	7.33	4490	583	520	184	9.5	1390	2460	164	0.09	3.8	< 1	< 0.1	< 0.001
GW 2	N	7/9/2001	6859.61	7.09	7.12	5340	624	561	210	9.3	1450	2450	166	< 0.05	4.4	< 1	< 0.1	< 0.001
GW 2	N	8/7/2001	6859.45	6.43	7.20	5320	570	520	220	9.8	1460	2300	170	< 0.05	4.4	< 1	< 0.1	< 0.001
GW 2	N	9/10/2001	6859.70	6.38	7.10	5270	600	530	209	10.1	1500	2400	177	< 0.05	6.3	< 1	< 0.1	< 0.001
GW 2	N	10/1/2001	6859.80	6.48	7.60	5330	570	510	222	10.7	1480	2200	202	0.07	6	< 1	< 0.1	< 0.001
GW 2	N	11/5/2001	6860.10	6.50	7.10	5340	619	532	212	10.8	1460	2550	200	0.05	7.6	< 1	< 0.1	< 0.001
GW 2	N	12/3/2001	6860.20	6.47	7.10	5320	582	494	195	9.5	1480	2270	182	0.06	8.6	< 1	< 0.1	< 0.001
GW 2	N	1/8/2002	6860.10	6.54	7.00	5300	683	543	186	11	1460	2640	199	< 0.05	9	< 1	< 0.1	< 0.001
GW 2	N	2/4/2002	6860.35	6.57	7.20	5310	662	519	201	10.9	1470	2490	205	0.09	11.4	< 1	< 0.1	< 0.001
GW 2	N	3/4/2002	6860.10	6.49	7.30	5290	622	512	230	10.7	1470	2540	203	0.06	15.9	< 1	< 0.1	< 0.001
GW 2	N	4/1/2002	6860.28	6.38	7.15	5350	656	520	229	11.6	1520	2590	196	0.05	17	< 1	< 0.1	< 0.001
GW 2	N	5/6/2002	6860.32	6.38	7.36	5340	643	509	239	11.6	1530	2410	199	0.06	20.4	< 1	< 0.1	< 0.001
GW 2	N	6/3/2002	6860.33	6.36	7.38	5390	645	508	216	9.8	1560	2360	178	< 0.05	22	< 1	< 0.1	< 0.001
GW 2	N	7/8/2002	6859.98	6.25	7.67	5470	648	530	178	11.3	1600	2430	208	0.16	22.5	< 1	< 0.1	< 0.001
GW 2	N	10/8/2002	6859.90	6.40	7.52	5550	619	494	228	9.7	1690	2260	185	0.1	30.1	< 1	< 0.1	< 0.001
GW 2	N	1/6/2003	6859.88	6.65	7.52	5640	705	571	276	8.6	1750	2580	196	0.18	27.5	< 1	< 0.1	< 0.001
GW 2	N	4/7/2003	6859.98	6.35	7.12	5760	678	518	267	14.3	1810	2210	214	0.12	26.7	< 1	< 0.1	< 0.001
GW 2	N	7/7/2003	6859.91	6.12	7.14	5110	658	505	246	12.4	1970	2360	189	0.11	26.3	< 1	< 0.1	< 0.001
GW 2	N	10/6/2003	6859.68	6.19	8.00	5980	760	586	305	24.8	2080	2630	233	0.2	24.8	< 1	< 0.1	< 0.001

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
GW 2	N	4/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.3	< 0.1	< 0.05	< 0.001	< 0.1	0.0656	0.7	< 1	0.7	< 0.2	< 1	< 1
GW 2	N	7/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.3	< 0.1	< 0.05	< 0.001	< 0.1	0.0656	0.7	< 1	0.7	< 0.2	< 1	< 1
GW 2	N	10/6/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.33	< 0.1	< 0.05	< 0.001	< 0.1	0.0732	0.6	< 1	0.6	< 0.2	< 1	< 1
GW 2	N	1/5/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.35	< 0.1	< 0.05	< 0.001	< 0.1	0.0662	2.3	< 1	2.3	< 0.2	< 1	< 1
GW 2	N	4/6/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.34	< 0.1	< 0.05	< 0.001	< 0.1	0.0594	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 2	N	7/13/1999	< 0.01	< 0.005	0.01	< 0.05	0.4	< 0.1	< 0.05	< 0.001	< 0.1	0.0057	< 0.2	< 1	0	< 0.2	< 1	2.3
GW 2	N	10/5/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.49	< 0.1	< 0.05	< 0.001	< 0.1	0.0705	0.3	< 1	0.3	< 0.2	< 1	< 1
GW 2	N	1/4/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.44	< 0.1	< 0.05	0.001	< 0.1	0.0681	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 2	N	5/8/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.46	< 0.1	< 0.05	< 0.001	< 0.1	0.0685	< 0.2	< 1	0	< 0.2	5.9	< 1
GW 2	N	7/17/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.44	< 0.1	< 0.05	< 0.001	< 0.1	0.0602	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 2	N	10/9/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.34	< 0.1	< 0.05	0.001	< 0.1	0.064	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 2	N	1/8/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.49	< 0.1	< 0.05	< 0.001	< 0.1	0.063	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 2	N	2/6/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.5	< 0.1	< 0.05	< 0.001	< 0.1	0.065	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 2	N	3/6/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.5	< 0.1	< 0.05	< 0.001	< 0.1	0.0626	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 2	N	4/9/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.54	< 0.1	< 0.05	< 0.001	< 0.1	0.074	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 2	N	5/7/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.59	< 0.1	< 0.05	< 0.001	< 0.1	0.067	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 2	N	6/4/2001	< 0.01	< 0.005	0.01	< 0.05	0.51	< 0.1	< 0.05	0.004	< 0.1	0.061	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 2	N	7/9/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.53	< 0.1	< 0.05	< 0.001	< 0.1	0.0683	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 2	N	8/7/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.5	< 0.1	< 0.05	< 0.001	< 0.1	0.075	< 0.2	2.2	2.2	< 0.2	< 1	< 1
GW 2	N	9/10/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.48	< 0.1	< 0.05	< 0.001	< 0.1	0.0627	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 2	N	10/1/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.45	< 0.1	< 0.05	< 0.001	< 0.1	0.0659	0.3	< 1	0.3	< 0.2	< 1	< 1
GW 2	N	11/5/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.5	< 0.1	< 0.05	< 0.001	< 0.1	0.0584	0.4	< 1	0.4	< 0.2	< 1	< 1
GW 2	N	12/3/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.45	< 0.1	< 0.05	< 0.001	< 0.1	0.0622	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 2	N	1/8/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.47	< 0.1	< 0.05	< 0.001	< 0.1	0.0609	0.4	1.2	1.6	< 0.2	< 1	< 1
GW 2	N	2/4/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.48	< 0.1	< 0.05	< 0.001	< 0.1	0.0551	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 2	N	3/4/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.58	< 0.1	< 0.05	< 0.001	< 0.1	0.0833	0.4	< 1	0.4	< 0.2	< 1	< 1
GW 2	N	4/1/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.52	< 0.1	< 0.05	< 0.001	< 0.1	0.0664	0.4	< 1	0.4	< 0.2	< 1	< 1
GW 2	N	5/6/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.52	< 0.1	< 0.05	< 0.001	< 0.1	0.0738	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 2	N	6/3/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.52	< 0.1	< 0.05	< 0.001	< 0.1	0.0646	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 2	N	7/8/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.48	< 0.1	< 0.05	< 0.001	< 0.1	0.0821	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 2	N	10/8/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.51	< 0.1	< 0.05	< 0.001	< 0.1	0.064	2	< 1	2	< 0.2	< 1	< 1
GW 2	N	1/6/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.56	< 0.1	< 0.05	< 0.001	< 0.1	0.0829	< 0.2	4.2	4.2	< 0.2	< 1	< 1.0
GW 2	N	4/7/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.47	< 0.1	< 0.05	< 0.001	< 0.1	0.0886	0.7	< 1	0.7	< 0.2	< 1	< 1.0
GW 2	N	7/7/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.55	< 0.1	< 0.05	< 0.001	< 0.1	0.0808	< 0.2	< 1	0	< 0.2	< 1	< 1.0
GW 2	N	10/6/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.63	< 0.1	< 0.05	< 0.001	< 0.1	0.104	< 0.2	< 1	0	< 0.2	< 1	< 1.0



**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
GW 2	N	1/5/2004	6859.72	6.40	7.49	6000	756	579	280	11.6	2100	2610	260	0.09	22.8 D	< 1.0	0.2	< 0.001
GW 2	N	4/5/2004	6859.94	6.68	6.72	6130	771	588	318	11.6	2080	2590 D	225	0.21	19.4 D	< 1	< 0.1	< 0.001
GW 2	N	7/12/2004	6859.61	6.12	6.51	6300	781	568	341	13.2	2220	2560 D	235	0.15	15.5 D	< 1.0	< 0.1	< 0.001
GW 2	N	10/4/2004	6859.21	6.21	6.95	6600	761 D	569 D	346	11.5	2240	2570 D	224	< 0.05	12.8 D	< 1.0	< 0.1	< 0.001
GW 2	N	1/3/2005	6859.48	6.48	6.85	6480	836 D	618 D	356	12	2290	2720 D	220	0.08	13.3 D	< 1.0	< 0.1	< 0.001
GW 2	N	4/4/2005	6859.64	6.38	6.99	6370	809	598	360	11	2360	2810	211	< 0.05	8.7	< 1.0	1.3	< 0.001
GW 2	N	7/11/2005	6859.10	6.30	7.10	6590	780 D	612 D	376	11.8	2350	2900 D	232	0.13	6.2 D	< 1.0	< 0.1	< 0.001
GW 2	N	10/3/2005	6858.90	6.35	7.02	6730	815 D	638 D	376	12.3	2300	3040 D	242	0.08	7.6 D	< 1.0	< 0.1	< 0.001
GW 2	N	1/9/2006	6858.86	6.53	7.60	6770	720	654 D	350	10.3	2180	2730 D	199	0.19	8.2 D	< 1.0	< 0.1	< 0.001
GW 2	N	4/3/2006	6858.93	6.24	7.03	7000	844 D	734 D	341	12.4	2390	3170 D	245	0.22	7.2 D	< 1.0	< 0.1	< 0.001
GW 2	N	7/17/2006	6858.63	6.28	6.58	7000	792 D	752 D	395	13.7	2360	3480 D	230	0.06	7.0 D	< 1.0	< 0.1	< 0.001
GW 2	N	10/2/2006	6858.55	6.37	6.69	7380	754 D	756 D	335	12.5	2440	3300 D	166	0.16	6.3 D	< 0.5	0.1	< 0.001
GW 2	N	1/8/2007	6858.54	6.56	6.64	7500	715 D	785 D	334	13.6	2330	3430 D	204	0.1	7.4 D	< 0.5	< 0.1	< 0.001
GW 2	N	4/9/2007	6858.90	6.42	6.67	7100	739 D	869 D	336	15.6	2320	3680 D	217	< 0.05	7.9 D	< 0.5	< 0.1	< 0.001
GW 2	N	7/9/2007	6858.43	6.28	6.65	7580	734 D	922 D	395	13.3	2460	3990 D	180	0.07	8.5	< 0.5	< 0.1	0.009
GW 2	N	10/1/2007	6858.13	6.42	6.54	7990	654 D	868 D	382 D	14.2	2400	3700 D	238 D	< 0.05	4.8	0.64	< 0.1	< 0.001
GW 2	N	1/14/2008	6858.13	6.42	6.59	8180	667 D	921 D	386 D	14.3	2330	3720 D	236 D	< 0.05	10	0.74	< 0.1	< 0.001
GW 2	N	4/7/2008	6858.53	6.28	6.61	7750	705 D	1030 D	419 D	15.8 D	2190	4190 D	209	< 0.05	12.6	1.08	< 0.1	< 0.001
GW 2	N	7/7/2008	6858.18	6.08	6.57 H	7780 H	659	962	368 D	12	2290	4240 D	216	< 0.05	11.6	1.53	< 0.1	< 0.003
GW 2	N	10/6/2008	6857.68	6.22	6.64	8230	635	987	362 D	12	2250	4380 D	209	< 0.1	13.6	1.33	< 0.1	< 0.001
GW 2	N	1/12/2009	6857.73	6.19	6.54	8540	615	1000	395	13	2270	4300 D	188	< 0.05	15.3	2.08	< 0.1	< 0.001
GW 2	N	4/6/2009	6857.48	6.25	6.39	8430	603 D	1020 D	396 D	12	2300	4360 D	205	< 0.05	17.9	2.72	< 0.1	< 0.001
GW 2	N	7/6/2009	6857.48	6.13	6.56	8530 H	634 D	1050	382 D	13	2260	5020 D	215	< 0.05	13.6	2.56	< 0.1	< 0.001
GW 2	N	10/6/2009	6856.98	6.19	6.66	8580	599 D	1060	374 D	13	2320	4720 D	222	< 0.05	13.9	3.57	< 0.1	< 0.001
GW 2	N	1/4/2010	6856.93	6.35	6.68	8900 D	608 D	1100	383 D	13	2350	4910 D	215	< 0.05	14.6	3.37	< 0.1	< 0.001
GW 2	N	4/5/2010	6857.13	6.22	6.49	8750 DH	685 D	1200	430 D	15	2410	5080 D	205	< 0.05	16.6 D	3.54	< 0.1	< 0.001
GW 2	N	7/12/2010	6856.83	6.17	7.05	8770 D	639 D	1130	397 D	13	2370	4530 D	200 D	0.05	14.8 D	4.36	< 0.1	< 0.001
GW 2	N	10/4/2010	6856.48	6.27	7.15	8770 D	613 D	1080	402 D	14	2360	4550 D	193 D	0.07	16 D	5.68	< 0.1	< 0.001
GW 2	N	1/3/2011	6856.48	6.24	6.55	8340 D	635 D	1170	396 D	15	2260	4560 D	211 D	0.11	14 D	4.8	< 0.1	< 0.001
GW 2	N	4/4/2011	6856.18	6.40	6.57	8520 D	612	1120	418 D	15	2260	4620 D	211 D	0.15	16 D	5.36	< 0.1	< 0.001
GW 2	N	7/11/2011	6856.19	6.34	7.11	8520 D	613	1140	411 D	15	2250	4520 D	204 D	0.3 D	17 D	5.4	< 0.1	< 0.001
GW 2	N	10/3/2011	6855.85	6.33	7.27	8490 D	613	1130	397 D	15	2080	4590 D	208 D	0.4 D	16 D	6.08	< 0.1	0.007
GW 2	N	1/2/2012	6855.63	6.42	6.56 H	8580 D	578	1080	376	16	2030	4580 D	208 D	0.5 D	14.7 D	6.48	< 0.1	< 0.001
GW 2	N	4/2/2012	6855.94	6.48	6.39 H	8910 D	626	1110	379	16	2200	4570 D	204 D	0.73	16.7 D	6.92	< 0.1	< 0.01
GW 2	N	7/9/2012	6855.43	6.33	6.48 H	8790	616	1220	401 D	16	2180	4530 D	203 D	1.22	15.4 D	5.68	< 0.1	< 0.001

**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
GW 2	N	1/5/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.73	< 0.1	< 0.05	< 0.001	< 0.1	0.0952 D	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
GW 2	N	4/5/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.68	< 0.1	< 0.05	< 0.001	< 0.1	0.108 D	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 2	N	7/12/2004	< 0.01	< 0.005	0.02	< 0.05	0.66	< 0.1	< 0.05	< 0.001	< 0.1	0.109 D	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
GW 2	N	10/4/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.69	< 0.1	< 0.05	< 0.001	< 0.1	0.102 D	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
GW 2	N	1/3/2005	< 0.01	< 0.005	< 0.01	< 0.05	0.75	< 0.1	< 0.05	< 0.001	< 0.1	0.124	0.4	< 1.0	0.4	< 0.2	< 1.0	< 1.0
GW 2	N	4/4/2005	< 0.01	0.011	0.01	< 0.05	0.82	< 0.1	< 0.05	< 0.001	< 0.1	0.117	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
GW 2	N	7/11/2005	< 0.01	< 0.005	< 0.01	< 0.05	0.75	< 0.1	< 0.05	< 0.001	< 0.1	0.116	0.4	< 1.0	0.4	< 0.2	< 1.0	< 1.0
GW 2	N	10/3/2005	< 0.01	< 0.005	< 0.01	< 0.05	0.81	< 0.1	< 0.05	< 0.001	< 0.1	0.132	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
GW 2	N	1/9/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.85	< 0.1	< 0.05	< 0.001	< 0.1	0.126	< 0.2	1.4	1.4	< 0.2	< 1.0	< 1.0
GW 2	N	4/3/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.91	< 0.1	< 0.05	< 0.001	< 0.1	0.115 D	0.4	2.7	3.1	< 0.2	< 1.0	< 1.0
GW 2	N	7/17/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.94	< 0.1	< 0.05	< 0.001	< 0.1	0.127	0.2	3.8	4	< 0.2	< 1.0	< 1.0
GW 2	N	10/2/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.96	< 0.1	< 0.05	< 0.001	< 0.1	0.113 D	0.4	1.7	2.1	< 0.2	< 1	< 1
GW 2	N	1/8/2007	< 0.01	< 0.005	< 0.01	< 0.05	1.01	< 0.1	< 0.05	< 0.001	< 0.1	0.115	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 2	N	4/9/2007	< 0.01	< 0.005	< 0.01	< 0.05	1.06	< 0.1	< 0.05	< 0.001	< 0.1	0.118	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 2	N	7/9/2007	< 0.01	< 0.005	< 0.01	< 0.05	0.98	< 0.1	< 0.05	< 0.001	< 0.1	0.118	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 2	N	10/1/2007	< 0.01	< 0.005	< 0.01	< 0.05	1.27	< 0.1	< 0.05	< 0.001	< 0.1	0.117	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 2	N	1/14/2008	< 0.01	< 0.005	< 0.01	< 0.05	1.11	< 0.1	< 0.05	< 0.001	< 0.1	0.102 D	< 0.2	< 1	0	< 0.2	< 1	1.1
GW 2	N	4/7/2008	< 0.01	< 0.005	< 0.01	< 0.05	1.22	< 0.1	< 0.05	< 0.001	< 0.1	0.111	0.2 U	0.5 U	0.7	-0.2 U	-9 U	1
GW 2	N	7/7/2008	< 0.01	< 0.005	< 0.01	< 0.05	1.22	< 0.1	< 0.05	< 0.001	0.1	0.0949	-0.02 U	1.9	1.88	-0.4 U	0.5 U	0.6 U
GW 2	N	10/6/2008	< 0.01	< 0.005	< 0.01	< 0.05	1.21	< 0.1	< 0.05	< 0.001	< 0.1	0.0964	-0.08 U	0.34 U	0.26	0.1 U	-0.8 U	1.2
GW 2	N	1/12/2009	< 0.01	< 0.005	< 0.01	< 0.05	0.74	< 0.1	< 0.05	< 0.001	< 0.1	0.0508	0.13 U	1.7	1.83	-0.3 U	-1 U	1.5
GW 2	N	4/6/2009	< 0.01	< 0.005	< 0.01	< 0.05	1.24	< 0.1	< 0.05	0.001	< 0.1	0.0980 D	0.21	1.7	1.91	0.02 U	-1 U	0.6 U
GW 2	N	7/6/2009	< 0.01	< 0.005	0.01	< 0.05	1.42	< 0.1	< 0.05	< 0.001	< 0.1	0.0975	0.34	1.2	1.54	-0.01 U	-0.8 U	0.6
GW 2	N	10/6/2009	< 0.01	< 0.005	0.01	< 0.05	1.35	< 0.1	< 0.05	< 0.001	< 0.1	0.0896 D	0.29	1.3 U	1.59	-0.02 U	-2 U	0.5 U
GW 2	N	1/4/2010	< 0.01	< 0.005	< 0.01	< 0.05	1.31	< 0.1	< 0.05	< 0.001	< 0.1	0.087	0.17	1.6	1.77	0.02 U	-0.6 U	0.3 U
GW 2	N	4/5/2010	< 0.01	< 0.005	0.01	< 0.05	1.48	< 0.1	< 0.05	< 0.001	< 0.1	0.0946	0.19	1.2	1.39	0.07 U	1.7 U	0.5 U
GW 2	N	7/12/2010	< 0.01	< 0.005	0.01	< 0.05	1.56	< 0.1	< 0.05	< 0.001	< 0.1	0.0971	0.25	0.47 U	0.72	0.02 U	-0.2 U	0.2 U
GW 2	N	10/4/2010	< 0.01	< 0.005	0.01	< 0.05	1.44	< 0.1	< 0.05	< 0.001	< 0.1	0.0882	0.13 U	1.3	1.43	0.4	1.9	0.2 U
GW 2	N	1/3/2011	< 0.01	< 0.005	0.01	< 0.05	1.54	< 0.1	< 0.05	< 0.001	< 0.1	0.0957	0.03 U	0.46 U	0.49	-0.03 U	0.7 U	2.1
GW 2	N	4/4/2011	< 0.01	< 0.005	0.02	< 0.05	1.54	< 0.1	< 0.05	< 0.001	< 0.1	0.0862 D	0.04 U	0.24 U	0.28	0.07 U	-0.3 U	0.8
GW 2	N	7/11/2011	< 0.01	< 0.005	0.01	< 0.05	1.66	< 0.1	< 0.05	< 0.001	< 0.1	0.093	-0.002 U	1.6	1.598	0.004 U	-1 U	0.8 U
GW 2	N	10/3/2011	< 0.01	< 0.005	< 0.01	< 0.05	1.56	< 0.1	< 0.05	< 0.001	< 0.1	0.0834	0.09 U	0.99	1.08	-0.008 U	-0.2 U	0.3 U
GW 2	N	1/2/2012	< 0.01	< 0.005	0.01	< 0.05	1.45	< 0.1	< 0.05	< 0.001	< 0.1	0.088	0.45	0.49 U	1.43	0.1 U	0.2 U	0.03 U
GW 2	N	4/2/2012	< 0.01	< 0.005	0.01	< 0.05	1.59	< 0.1	< 0.05	< 0.001	< 0.1	0.0924	0.25	1	2.25	0.03 U	0.1 U	0.4 U
GW 2	N	7/9/2012	< 0.001	< 0.005	0.01	< 0.001	1.64	< 0.1	< 0.05	< 0.001	< 0.1	0.0852	0.28	0.11 U	0.5	0.009 U	0.6 U	0.1 U

**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
GW 2	N	10/8/2012	6855.28	6.39	6.43 H	8730	628	1130	382 D	17	2230	4700 D	219 D	1.4 D	15 D	5.68	<0.1	<0.001
GW 2	N	1/7/2013	6855.33	6.37	6.39 H	8820	612	1220	416 D	18	2210	4680 D	206 D	1.35	15 D	6.2	<0.1	<0.001
GW 2	N	4/1/2013	6855.01	6.38	6.45 H	8590	604	1200	402 D	18	2230	4820 D	213 D	1.93	15 D	6.64	<0.1	<0.001
GW 2	N	7/8/2013	6854.73	6.21	6.59 H	8940	591	1190	388 D	17	2210	4740 D	194 D	2.73	16 D	5.44	<0.1	<0.001
GW 2	N	9/30/2013	6854.98	6.28	6.44 H	8970 H	570	1170	383 D	17	2170	4760 D	201 D	2.82	16 D	5.16	<0.1	<0.001
GW 2	N	1/6/2014	6854.67	6.57	6.39	8500	575	1170	387	18	2180	4600	206	3.06	14	3.36	<0.1	<0.001
GW 2	N	3/31/2014	6854.70	6.47	6.43 H	8740	574	1150	385 D	18	2210	4680 D	212 D	3.91	14 D	8.56	<0.1	<0.001
GW 2	N	7/7/2014	6854.49	6.64	6.56 H	8680	551	1120	378 D	20	1940	4870 D	200 D	4.66	14 D	3.43	<0.1	<0.001
GW 2	N	10/6/2014	6854.30	6.42	6.43 H	8790	574	1200	389 D	19	2210	4840 D	201 D	5.5 D	15 D	6.04	<0.1	<0.001
GW 2	N	1/5/2015	6854.06	6.53	6.53 H	9030	595	1230	419 D	22	2180	4580 D	197 D	3.76	16 D	6.16	<0.1	0.001
GW 2	N	4/6/2015	6854.20	6.36	6.45 H	8860	428	1160	374 D	19	2160	4920 D	239 D	4.57	16.8 D	6.64	0.1	<0.001
GW 2	N	7/6/2015	6853.92	6.26	6.36 H	8990	562	1150	379	19	2310	5020 D	215 D	3.8 D	17.0 D	7.2	<0.1	<0.001
GW 3	N	7/20/1989	6870.50	6.80	6.59	4898	891	273	219	5.3	1354	1798	154	0.11	137	< 1	< 0.1	< 0.001
GW 3	N	10/16/1989	6870.40	6.80	7.51	4658	802	256	210	7	1214	1704	150	0.11	141	< 1	< 0.1	< 0.001
GW 3	N	1/4/1990	6870.20	6.40	6.74	4784	890	259	217	5.1	1452	1847	177	0.13	146	< 1	< 0.1	< 0.001
GW 3	N	4/3/1990	6869.60	6.80	7.18	4859	888	280	218	5.1	1362	1775	170	0.11	111	< 1	< 0.1	< 0.001
GW 3	N	7/2/1990	6869.20	6.40	7.00	4794	954	276	195	6.9	1418	1841	164	< 0.05	147	< 1	< 0.1	< 0.001
GW 3	N	10/2/1990	6869.10	6.60	7.18	4699	770	245	211	5.1	1222	1911	169	< 0.05	102	< 1	< 0.1	< 0.001
GW 3	N	1/16/1991	6869.10	6.50	7.12	4805	928	290	229	8.8	1057	2004	189	< 0.05	148	< 1	< 0.1	< 0.001
GW 3	N	4/2/1991	6869.00	6.50	7.15	4935	897	272	221	4.7	1043	1990	185	< 0.05	162	< 1	< 0.1	< 0.001
GW 3	N	7/16/1991	6867.80	6.60	7.09	4829	828	255	212	5.4	1526	2011	103	0.17	37.5	< 1	< 0.1	< 0.001
GW 3	N	10/14/1991	6866.90	6.40	6.84	5094	739	226	227	4.7	1330	1856	197	< 0.05	87.2	< 1	< 0.1	< 0.001
GW 3	N	1/14/1992	6867.20	6.40	7.01	4589	794	262	212	5.8	1345	1762	172	< 0.05	90.1	< 1	0.16	< 0.001
GW 3	N	4/9/1992	6867.20	6.50	7.32	4757	836	267	261	7.4	1114	1874	179	0.14	86.8	< 1	< 0.1	< 0.001
GW 3	N	7/7/1992	6865.40	6.30	7.42	4877	785	295	274	7.6	964	1907	111	0.08	112	< 1	< 0.1	< 0.001
GW 3	N	10/7/1992	6864.20	6.50	7.32	4766	849	273	288	9.3	1537	1932	182	< 0.05	120	< 1	< 0.1	< 0.001
GW 3	N	1/7/1993	6864.30	6.40	7.48	5105	903	260	244	6	1610	1968	188	< 0.05	134	< 1	< 0.1	< 0.001
GW 3	N	4/7/1993	6864.90	6.40	7.07	4791	851	248	277	4.7	1419	1879	183	< 0.05	112	< 1	< 0.1	< 0.001
GW 3	N	7/14/1993	6863.40	6.40	7.09	4780	989	270	293	5.7	1745	1913	201	< 0.05	94.7	< 1	< 0.1	< 0.001
GW 3	N	10/7/1993	6862.70	6.60	7.22	4614	889	252	238	6.1	1540	1813	71.8	0.05	119	< 1	< 0.1	< 0.001
GW 3	N	1/6/1994	6862.70	6.50	7.04	4960	889	251	261	5.6	1573	1836	177	0.11	107	< 1	< 0.1	< 0.001
GW 3	N	4/13/1994	6863.00	6.60	6.86	4709	866	244	234	5.7	1525	1825	167	0.39	113	< 1	< 0.1	< 0.001
GW 3	N	7/21/1994	6861.80	6.50	7.16	4790	953	256	250	6.2	1512	1943	160	0.13	105	< 1	< 0.1	< 0.001
GW 3	N	10/5/1994	6861.50	6.30	7.59	4949	942	250	271	6.7	1481	1938	165	0.25	117	< 1	< 0.1	< 0.001
GW 3	N	1/5/1995	6861.50	6.40	7.34	5101	990	263	256	7.4	1532	1938	152	0.32	95.4	< 1	< 0.1	< 0.001

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
GW 2	N	10/8/2012	<0.001	<0.005	0.01	<0.001	1.7	<0.1	<0.05	<0.001	<0.1	0.0865	0.26	0.87 U	0.26	0.02 U	0.5 U	0.5
GW 2	N	1/7/2013	<0.001	<0.005	0.01	<0.001	1.63	<0.1	<0.05	<0.001	<0.1	0.0905	0.18 U	0.91 U	0	0.01 U	0.3 U	0.5 U
GW 2	N	4/1/2013	<0.001	<0.005	0.01	<0.001	1.65	<0.1	<0.05	<0.001	<0.1	0.0962	0.10 U	0.64 U	0	0.01 U	-0.4 U	0.4 U
GW 2	N	7/8/2013	<0.001	<0.005	0.01	<0.001	1.58	<0.1	<0.05	<0.001	<0.1	0.0867	0.21	0.38 U	0.21	0.06 U	-0.08 U	0.5 U
GW 2	N	9/30/2013	<0.001	<0.005	0.01	0.002	1.59	<0.1	<0.05	<0.001	<0.1	0.0974	0.33	0.77 U	0.33	0.03 U	-0.1 U	0.1 U
GW 2	N	1/6/2014	<0.001	<0.005	0.01	<0.001	1.6	<0.1	<0.05	<0.001	<0.1	0.0918	0.39	1.1 U	0.39	0.01 U	0.2 U	0.3 U
GW 2	N	3/31/2014	<0.001	<0.005	<0.01	<0.001	1.63	<0.1	<0.05	<0.001	<0.1	0.099	0.25	1.8	2.05	-0.004 U	-1 U	0.2 U
GW 2	N	7/7/2014	<0.001	<0.005	<0.01	<0.001	1.57	<0.1	<0.05	<0.001	<0.1	0.071	0.22	1.1 U	0.22	0.05 U	-0.009 U	0.2 U
GW 2	N	10/6/2014	<0.001	<0.005	<0.01	<0.001	1.54	<0.1	<0.05	<0.001	<0.1	0.0867	0.28	0.77 U	0.28	-0.05 U	0.9 U	0.4 U
GW 2	N	1/5/2015	<0.001	<0.005	0.01	<0.001	1.5	<0.1	<0.05	<0.001	<0.1	0.0861	0.4	1.1 U	0.4	-0.008 U	0.9 U	1.0 U
GW 2	N	4/6/2015	<0.001	<0.005	<0.01	<0.001	1.26	<0.1	<0.05	<0.001	<0.1	0.0687	0.45	0.3 U	0.45	-0.01 U	-0.3 U	3
GW 2	N	7/6/2015	<0.001	<0.005	<0.01	<0.001	1.34	<0.1	<0.05	<0.001	<0.1	0.0841	0.19	2.9	3.09	0.007 U	-0.01 U	1.3 U
GW 3	N	7/20/1989	< 0.05	< 0.01	< 0.01	< 0.05	1.6	< 0.1	< 0.05	0.002	< 0.1	0.127	0.8	< 1	0.8	3.3	2.7	4.1
GW 3	N	10/16/1989	< 0.05	< 0.01	< 0.01	< 0.05	1.5	< 0.1	< 0.05	0.005	< 0.1	0.132	0.5	< 1	0.5	3.3	< 1	4.1
GW 3	N	1/4/1990	< 0.05	< 0.01	< 0.01	< 0.05	1.5	< 0.1	< 0.05	0.002	< 0.1	0.132	0.9	< 1	0.9	< 0.2	< 1	1.2
GW 3	N	4/3/1990	< 0.05	< 0.01	< 0.01	< 0.05	1.2	< 0.1	< 0.05	0.001	< 0.1	0.103	1	< 1	1	< 0.2	< 1	1.5
GW 3	N	7/2/1990	< 0.05	< 0.01	0.01	< 0.05	1.29	< 0.1	< 0.05	< 0.001	< 0.1	0.136	0.2	1.2	1.4	< 0.2	< 1	< 1
GW 3	N	10/2/1990	< 0.05	0.01	0.01	< 0.05	1.5	< 0.1	< 0.05	< 0.001	< 0.1	0.094	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 3	N	1/16/1991	< 0.01	< 0.01	< 0.01	< 0.05	1.45	< 0.1	< 0.05	< 0.001	< 0.1	0.1387	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 3	N	4/2/1991	< 0.01	< 0.01	< 0.01	< 0.05	1.43	< 0.1	< 0.05	0.002	< 0.1	0.07	0.3	< 1	0.3	< 0.2	5.6	< 1
GW 3	N	7/16/1991	< 0.01	< 0.01	0.01	< 0.05	1.4	< 0.1	< 0.05	< 0.001	< 0.1	0.128	0.3	< 1	0.3	< 0.2	12.8	< 1
GW 3	N	10/14/1991	< 0.01	< 0.01	0.02	< 0.05	1.11	< 0.1	< 0.05	0.001	< 0.1	0.14	0.2	< 1	0.2	< 0.2	< 1	< 1
GW 3	N	1/14/1992	< 0.01	< 0.01	0.02	< 0.05	1.61	< 0.1	0.11	0.001	< 0.1	0.08	< 0.2	< 1	0	< 0.2	13.6	< 1
GW 3	N	4/9/1992	< 0.01	< 0.01	< 0.01	< 0.05	1.21	< 0.1	< 0.05	0.024	< 0.1	0.155	0.8	3.4	4.2	< 0.2	< 1	< 1
GW 3	N	7/7/1992	< 0.01	< 0.01	< 0.01	< 0.05	1.25	< 0.1	< 0.05	0.002	< 0.1	0.12	< 0.2	2.7	2.7	< 0.2	< 1	< 1
GW 3	N	10/7/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.92	< 0.1	< 0.05	0.002	< 0.1	0.331	0.8	< 1	0.8	< 0.2	< 1	3.3
GW 3	N	1/7/1993	< 0.01	< 0.01	< 0.01	< 0.05	1.71	< 0.1	< 0.05	0.005	< 0.1	0.602	0.4	3.3	3.7	< 0.2	< 1	< 1
GW 3	N	4/7/1993	< 0.01	< 0.01	< 0.01	< 0.05	1.64	< 0.1	< 0.05	0.001	< 0.1	0.219	0.6	< 1	0.6	< 0.2	2.2	< 1
GW 3	N	7/14/1993	< 0.01	< 0.01	< 0.01	< 0.05	1.81	< 0.1	< 0.05	0.001	< 0.1	0.135	1.6	3	4.6	< 0.2	< 1	1.8
GW 3	N	10/7/1993	< 0.01	< 0.01	< 0.01	< 0.05	1.79	< 0.1	< 0.05	0.002	< 0.1	0.08	0.6	< 1	0.6	< 0.2	< 1	< 1
GW 3	N	1/6/1994	< 0.01	< 0.01	< 0.01	< 0.05	1.92	< 0.1	< 0.05	< 0.001	< 0.1	0.099	0.8	< 1	0.8	< 0.2	< 1	< 1
GW 3	N	4/13/1994	< 0.01	< 0.01	< 0.01	< 0.05	1.89	< 0.1	< 0.05	< 0.001	< 0.1	0.096	1.7	< 1	1.7	< 0.2	5.9	1.9
GW 3	N	7/21/1994	< 0.01	< 0.01	< 0.01	< 0.05	2.26	< 0.1	< 0.05	< 0.001	< 0.1	0.082	0.4	< 1	0.4	< 0.2	< 1	< 1
GW 3	N	10/5/1994	< 0.01	< 0.01	< 0.01	< 0.05	1.87	< 0.1	< 0.05	< 0.001	< 0.1	0.083	< 0.2	1.1	1.1	< 0.2	1.7	1.5
GW 3	N	1/5/1995	< 0.01	< 0.01	< 0.01	< 0.05	1.97	< 0.1	< 0.05	< 0.001	< 0.1	0.078	0.9	2.5	3.4	< 0.2	< 1	4.8



TABLE A.1

Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
GW 3	N	4/5/1995	6862.30	6.50	7.07	4978	920	240	224	5.2	1519	2090	210	0.41	104	< 1	< 0.1	< 0.001
GW 3	N	7/6/1995	6860.80	6.40	7.50	4792	914	281	252	6.3	1519	1858	171	0.27	96.4	< 1	< 0.1	< 0.001
GW 3	N	10/3/1995	6860.20	6.50	7.41	5055	905	267	232	5.8	1512	1905	174	0.41	99.1	< 1	< 0.1	0.003
GW 3	N	1/3/1996	6859.80	6.50	6.96	4495	805	240	235	6.1	1521	1650	138	< 0.05	106	< 1	< 0.1	0.002
GW 3	N	4/2/1996	6859.80	6.40	7.64	5010	875	275	260	7	1510	1915	155	< 0.05	111	< 1	< 0.1	< 0.001
GW 3	N	7/7/1996	6859.70	6.30	7.13	4844	865	260	245	7.4	1434	1860	150	0.14	102	< 1	< 0.1	0.01
GW 3	N	10/1/1996	6859.70	6.40	6.99	4970	909	277	239	6.7	1480	1884	141	0.05	115	< 1	< 0.1	< 0.001
GW 3	N	1/22/1997	6859.40	6.40	7.51	4770	885	275	228	7.3	1480	1937	166	0.11	114	< 1	< 0.1	< 0.001
GW 3	N	4/8/1997	6859.30	6.50	7.59	4990	892	277	227	6.6	1430	1994	171	0.06	117	< 1	< 0.1	< 0.001
GW 3	N	7/8/1997	6859.20	6.80	7.53	5060	933	282	223	7.4	1390	1810	158	0.11	121	< 1	< 0.1	< 0.001
GW 3	N	10/7/1997	6859.40	6.20	7.44	5010	879	267	231	6.9	1370	1870	155	< 0.05	114	< 1	< 0.1	< 0.001
GW 3	N	1/16/1998	6859.20	6.70	7.72	4980	858	265	246	8.1	1330	2000	154	0.28	128	< 1	< 0.1	< 0.001
GW 3	N	4/7/1998	6859.10	6.60	7.51	4980	895	273	234	6.7	1300	1800	128	0.06	130	< 1	< 0.1	< 0.001
GW 3	N	7/7/1998	6859.00	6.80	7.74	4930	883	276	244	7.8	1200	2100	139	0.1	117	< 1	< 0.1	< 0.001
GW 3	N	10/6/1998	6858.60	6.66	7.75	4850	871	268	236	7	1220	1980	134	0.11	220	< 1	< 0.1	< 0.001
GW 3	N	1/5/1999	6858.50	6.80	7.85	3810	671	193	163	8.9	987	1400	95.2	0.21	85.9	< 1	< 0.1	< 0.001
GW 3	N	4/6/1999	6858.50	6.70	7.64	4600	811	218	202	8.4	1170	1710	131	0.11	103	< 1	< 0.1	< 0.001
GW 3	N	7/13/1999	6858.34	6.70	7.90	4610	824	259	205	12.3	1170	1830	126	0.09	119	< 1	< 0.1	< 0.001
GW 3	N	10/5/1999	6859.30	6.68	7.34	4660	702	219	217	7.5	1170	1680	123	14.8	99	< 1	< 0.1	< 0.001
GW 3	N	1/4/2000	6858.60	6.60	7.83	4680	760	239	169	9.2	1170	1760	106	< 0.05	113	2	< 0.1	< 0.001
GW 3	N	5/15/2000	6858.00	6.60	7.71	4780	755	241	211	8	1174	1830	127	0.15	119	< 1	< 0.1	0.001
GW 3	N	7/17/2000	6857.80	6.48	7.51	4800	809	258	207	9.14	1190	1710	125	< 0.05	117	< 1	< 0.1	< 0.001
GW 3	N	10/10/2000	6857.60	6.56	7.60	4680	644	210	179	9	1170	1320	96.4	0.1	118	< 1	< 0.1	< 0.001
GW 3	N	1/9/2001	6858.00	6.82	7.62	4660	830	265	207	8.5	1210	1850	125	< 0.05	115	< 1	< 0.1	< 0.001
GW 3	N	2/6/2001	6858.30	6.99	7.12	4720	943	290	183	9.7	1220	2120	123	< 0.05	110	< 1	< 0.1	< 0.001
GW 3	N	3/6/2001	6858.70	7.00	7.63	4380	817	263	164	9.3	1180	2040	120	0.16	112	< 1	< 0.1	< 0.001
GW 3	N	4/10/2001	6859.05	7.26	7.20	4680	945	287	207	9.1	1250	2070	128	0.14	108	< 1	< 0.1	< 0.001
GW 3	N	5/8/2001	6859.10	6.72	7.49	4850	808	256	195	8.9	1250	1730	146	0.15	107	< 1	< 0.1	< 0.001
GW 3	N	6/5/2001	6859.30	6.76	7.25	4230	847	274	194	8.6	1280	1940	136	0.2	97.5	< 1	0.1	< 0.001
GW 3	N	7/10/2001	6859.30	6.87	7.10	4980	888	288	244	9	1350	1880	125	0.11	98	< 1	< 0.1	< 0.001
GW 3	N	8/7/2001	6859.32	6.59	7.20	5010	820	270	210	9.4	1390	1800	160	0.11	90.5	< 1	< 0.1	< 0.001
GW 3	N	9/11/2001	6859.50	6.65	7.50	4980	840	270	233	8.9	1400	1810	154	0.1	104	< 1	0.13	< 0.001
GW 3	N	10/1/2001	6859.55	6.83	7.40	5010	810	260	224	8.5	1450	1950	169	0.15	92	< 1	< 0.1	< 0.001
GW 3	N	11/6/2001	6859.65	6.79	7.60	5020	886	280	229	9.6	1420	2050	173	0.08	88	< 1	0.1	< 0.001
GW 3	N	12/4/2001	6859.80	6.95	7.40	5020	833	260	201	8.2	1440	1720	148	0.11	91	< 1	< 0.1	< 0.001

**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
GW 3	N	4/5/1995	< 0.01	< 0.01	< 0.01	< 0.05	1.91	< 0.1	< 0.05	< 0.001	< 0.1	0.08	0.5	< 1	0.5	< 0.2	< 1	< 1
GW 3	N	7/6/1995	< 0.01	< 0.01	< 0.01	< 0.05	1.92	< 0.1	< 0.05	0.002	< 0.1	0.0882	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 3	N	10/3/1995	< 0.01	< 0.01	< 0.01	< 0.05	1.93	< 0.1	< 0.05	0.012	< 0.1	0.0868	0.3	< 1	0.3	< 0.2	< 1	< 1
GW 3	N	1/3/1996	< 0.01	< 0.01	< 0.01	< 0.05	1.74	< 0.1	< 0.05	0.014	< 0.1	0.081	0.4	< 1	0.4	0.4	< 1	< 1
GW 3	N	4/2/1996	< 0.01	< 0.01	< 0.01	< 0.05	1.82	< 0.1	< 0.05	< 0.001	< 0.1	0.087	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 3	N	7/7/1996	< 0.01	< 0.01	< 0.01	< 0.05	1.99	< 0.1	< 0.05	< 0.001	< 0.1	0.1	0.3	< 1	0.3	1.2	< 1	< 1
GW 3	N	10/1/1996	< 0.01	< 0.01	< 0.01	< 0.05	1.92	< 0.1	< 0.05	0.001	< 0.1	0.072	< 0.2	< 1	0	0.4	< 1	< 1
GW 3	N	1/22/1997	< 0.01	< 0.01	< 0.01	< 0.05	1.92	< 0.1	< 0.05	< 0.001	< 0.1	0.072	0.6	< 1	0.6	< 0.2	< 1	< 1
GW 3	N	4/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	1.93	< 0.1	< 0.05	0.02	< 0.1	0.086	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 3	N	7/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	1.7	< 0.1	< 0.05	< 0.001	< 0.1	0.061	0.4	< 1	0.4	< 0.2	< 1	< 1
GW 3	N	10/7/1997	< 0.01	< 0.01	< 0.01	< 0.05	2.19	< 0.1	< 0.05	< 0.001	< 0.1	0.065	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 3	N	1/16/1998	< 0.01	< 0.01	< 0.01	< 0.05	2	< 0.1	< 0.05	< 0.001	< 0.1	0.0721	1.3	< 1	1.3	< 0.2	< 1	3.8
GW 3	N	4/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	1.79	< 0.1	< 0.05	< 0.001	< 0.1	0.0632	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 3	N	7/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	1.69	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.5	< 1	0.5	< 0.2	< 1	< 1
GW 3	N	10/6/1998	< 0.01	< 0.005	< 0.01	< 0.05	1.76	< 0.1	< 0.05	< 0.001	< 0.1	0.0607	0.7	< 1	0.7	< 0.2	< 1	< 1
GW 3	N	1/5/1999	< 0.01	0.007	< 0.01	< 0.05	1.41	< 0.1	< 0.05	< 0.001	< 0.1	0.0475	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 3	N	4/6/1999	< 0.01	< 0.005	< 0.01	< 0.05	1.82	< 0.1	< 0.05	< 0.001	< 0.1	0.0518	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 3	N	7/13/1999	< 0.01	< 0.005	< 0.01	< 0.05	1.69	< 0.1	< 0.05	< 0.001	< 0.1	0.0047	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 3	N	10/5/1999	< 0.01	< 0.005	< 0.01	< 0.05	2.03	< 0.1	< 0.05	< 0.001	< 0.1	0.0569	0.6	< 1	0.6	< 0.2	< 1	< 1
GW 3	N	1/4/2000	< 0.01	< 0.005	< 0.01	< 0.05	1.78	< 0.1	< 0.05	0.001	< 0.1	0.0513	0.5	< 1	0.5	< 0.2	< 1	< 1
GW 3	N	5/15/2000	< 0.01	< 0.005	< 0.01	< 0.05	1.87	< 0.1	< 0.05	0.001	< 0.1	0.0568	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 3	N	7/17/2000	< 0.01	< 0.005	0.01	< 0.05	1.78	< 0.1	< 0.05	< 0.001	< 0.1	0.056	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 3	N	10/10/2000	< 0.01	< 0.005	< 0.01	< 0.05	1.57	< 0.1	< 0.05	< 0.001	< 0.1	0.058	< 0.2	1.1	1.1	< 0.2	< 1	< 1
GW 3	N	1/9/2001	< 0.01	< 0.005	0.01	< 0.05	1.9	< 0.1	< 0.05	0.001	< 0.1	0.056	< 0.2	3.6	3.6	< 0.2	< 1	< 1
GW 3	N	2/6/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.91	< 0.1	< 0.05	0.002	< 0.1	0.059	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 3	N	3/6/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.87	< 0.1	< 0.05	0.001	< 0.1	0.0569	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 3	N	4/10/2001	< 0.01	< 0.005	0.01	< 0.05	1.91	< 0.1	< 0.05	0.001	< 0.1	0.057	< 0.2	2.4	2.4	< 0.2	< 1	1.3
GW 3	N	5/8/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.96	< 0.1	< 0.05	0.001	< 0.1	0.06	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 3	N	6/5/2001	< 0.01	< 0.005	0.01	< 0.05	2.06	< 0.1	< 0.05	0.005	< 0.1	0.058	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 3	N	7/10/2001	< 0.01	< 0.005	0.01	< 0.05	2.22	< 0.1	< 0.05	0.001	< 0.1	0.0676	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 3	N	8/7/2001	< 0.01	< 0.005	< 0.01	< 0.05	2	< 0.1	< 0.05	< 0.001	< 0.1	0.071	0.4	< 1	0.4	< 0.2	< 1	< 1
GW 3	N	9/11/2001	< 0.01	< 0.005	0.01	< 0.05	1.99	< 0.1	< 0.05	0.001	< 0.1	0.0655	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 3	N	10/1/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.78	< 0.1	< 0.05	0.001	< 0.1	0.0646	0.3	< 1	0.3	< 0.2	< 1	< 1
GW 3	N	11/6/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.91	< 0.1	< 0.05	< 0.001	< 0.1	0.0632	0.4	< 1	0.4	< 0.2	< 1	< 1
GW 3	N	12/4/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.93	< 0.1	< 0.05	< 0.001	< 0.1	0.0726	< 0.2	< 1	0	< 0.2	< 1	< 1

TABLE A.1

Southwest Alluvium Data Summary, 1989-2016  
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Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO <sub>3</sub> mg/l	SO <sub>4</sub> mg/l	Cl mg/l	NH <sub>4</sub> as N mg/l	NO <sub>3</sub> as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
GW 3	N	1/8/2002	6859.80	6.90	7.20	5050	983	293	192	10.2	1440	2200	171	0.09	86.5	< 1	< 0.1	< 0.001
GW 3	N	2/5/2002	6859.80	6.91	7.20	5110	960	281	219	9.5	1440	2080	165	0.11	82.3	< 1	< 0.1	< 0.001
GW 3	N	3/5/2002	6859.85	6.77	7.40	5090	914	283	246	8.9	1490	2160	160	0.09	84.3	< 1	< 0.1	< 0.001
GW 3	N	4/2/2002	6859.90	6.76	7.59	5240	968	291	236	10.5	1480	2110	168	0.1	83.6	< 1	< 0.1	< 0.001
GW 3	N	5/7/2002	6859.92	6.51	7.44	5320	953	288	250	10.2	1510	2120	159	0.08	82.4	< 1	< 0.1	< 0.001
GW 3	N	6/4/2002	6859.95	6.68	7.67	5330	958	293	236	8	1520	2110	148	0.1	83.4	< 1	< 0.1	< 0.001
GW 3	N	7/9/2002	6859.65	6.71	7.38	5430	953	302	157	8.8	1560	2170	127	0.24	93.2	< 1	< 0.1	< 0.001
GW 3	N	10/7/2002	6859.50	6.64	7.35	4510	884	276	223	8	1620	2030	150	0.22	83.8	< 1	< 0.1	< 0.001
GW 3	N	1/7/2003	6859.82	6.67	7.39	5530	981	312	274	9.6	1710	2210	154	0.24	86	< 1	< 0.1	< 0.001
GW 3	N	4/8/2003	6859.84	6.60	7.30	5540	940	282	256	10.9	1680	1900	165	0.23	98	< 1	< 0.1	< 0.001
GW 3	N	7/8/2003	6859.59	6.45	7.46	5480	866	276	234	9.9	1700	2000	143	0.21	94	< 1	< 0.1	< 0.001
GW 3	N	10/7/2003	6859.53	6.46	7.30	5490	988	327	280	8.6	1740	2220	171	0.19	89	< 1	< 0.1	< 0.001
GW 3	N	1/6/2004	6859.61	6.63	7.27	5380	951	317	242	8.5	1700	2170	183	0.38	89.4 D	< 1.0	0.2	< 0.001
GW 3	N	4/6/2004	6859.76	6.81	6.82	5410	924	309	239	8.6	1680	2070 D	157	0.29	86.7 D	< 1	< 0.1	< 0.001
GW 3	N	7/13/2004	6859.49	6.44	6.80	5580	968	316	278	9.8	1720	2110 D	172	0.24	82.6 D	< 1.0	< 0.1	< 0.001
GW 3	N	10/5/2004	6859.28	6.50	7.07	5720	935 D	315 D	272	8	1680	2080 D	165	0.06	80.0 D	< 1.0	< 0.1	< 0.001
GW 3	N	1/4/2005	6859.49	6.68	7.05	5560	960 D	316 D	281	8.9	1730	2050 D	171	0.17	86 D	< 1.0	0.4	< 0.001
GW 3	N	4/5/2005	6859.37	6.68	7.10	5270	968	328	283	8.2	1550	2130	168	0.09	71	< 1.0	< 0.1	< 0.001
GW 3	N	7/12/2005	6859.09	6.51	7.10	5190	970 D	319 D	268	7.8	1640	2110 D	170	0.09	77 D	< 1.0	< 0.1	< 0.001
GW 3	N	10/4/2005	6858.90	6.52	7.26	5270	926 D	314 D	275	8.6	1680	2120 D	178	0.11	78 D	< 1.0	< 0.1	< 0.001
GW 3	N	1/10/2006	6858.96	6.65	7.62	5100	843	285	272	6.4	1650	1940 D	152	< 0.05	90 D	< 1.0	< 0.1	< 0.001
GW 3	N	4/4/2006	6859.04	6.55	7.14	5300	977 D	337 D	258	9	1460	2150 D	183	0.24	94 D	< 1.0	< 0.1	< 0.001
GW 3	N	7/18/2006	6858.64	6.33	6.88	5290	978 D	328 D	293	10.2	1580	2360 D	167	0.07	91 D	< 1.0	< 0.1	< 0.001
GW 3	N	10/3/2006	6858.59	6.44	6.78	5070	865 D	289 D	253	9	1590	1920 D	149	0.16	100 D	< 0.5	0.1	< 0.001
GW 3	N	1/9/2007	6858.82	6.58	6.82	5270	867 D	291 D	248	8.7	1550	2170 D	164	0.27	90 D	< 0.5	< 0.1	< 0.001
GW 3	N	4/10/2007	6858.87	6.68	6.85	5170	882 D	292 D	254	10.2	1540	2050 D	156	0.05	97 D	< 0.5	< 0.1	< 0.001
GW 3	N	7/10/2007	6858.44	6.48	6.67	5110	927 D	313 D	280	8.9	1630	2280 D	141	0.09	101 D	< 0.5	< 0.1	0.01
GW 3	N	10/2/2007	6858.27	6.50	6.67	5150	812 D	267 D	280 D	10	1580	1970 D	176 D	< 0.05	94 D	< 0.5	< 0.1	< 0.001
GW 3	N	1/15/2008	6858.44	6.62	6.73	5250	849 D	275 D	282 D	9.9	1530	1970 D	177 D	< 0.05	88 D	< 0.5	< 0.1	< 0.001
GW 3	N	4/8/2008	6858.59	6.56	6.75	4970	945 D	311 D	318 D	10.6 D	1450	2250 D	139	< 0.1	143 D	< 0.50	< 0.1	< 0.001
GW 3	N	7/8/2008	6858.19	6.28	6.69	5130	917	279	282 D	9	1500	2210 D	156	< 0.05	95.3 D	< 0.5	0.2	< 0.003
GW 3	N	10/7/2008	6857.79	6.59	6.91	5080	918	288	296 D	8	1450	2390 D	149	< 0.1	138 D	< 0.5	0.8	< 0.001
GW 3	N	1/13/2009	6857.89	6.55	6.62	5430	964	304	324	9	1410	1980 D	159	< 0.05	165 D	< 0.5	0.4	< 0.001
GW 3	N	4/7/2009	6857.74	6.53	6.56	5250	860 D	282 D	298 D	8	1430	2190 D	180	< 0.05	115 D	< 0.50	1.4	< 0.001
GW 3	N	7/7/2009	6857.59	6.48	6.86	5370	858	276	282	8	1410	2140 D	193	0.05	114 D	< 0.50	0.5	< 0.001

**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
GW 3	N	1/8/2002	< 0.01	< 0.005	0.01	< 0.05	1.79	< 0.1	< 0.05	< 0.001	< 0.1	0.0635	0.3	1.5	1.8	< 0.2	< 1	< 1
GW 3	N	2/5/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.89	< 0.1	< 0.05	< 0.001	< 0.1	0.0586	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 3	N	3/5/2002	< 0.01	< 0.005	< 0.01	< 0.05	2.34	< 0.1	< 0.05	< 0.001	< 0.1	0.0805	0.5	< 1	0.5	< 0.2	< 1	< 1
GW 3	N	4/2/2002	< 0.01	< 0.005	< 0.01	< 0.05	2.08	< 0.1	< 0.05	< 0.001	0.1	0.0704	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 3	N	5/7/2002	< 0.01	< 0.005	0.01	< 0.05	2.18	< 0.1	< 0.05	< 0.001	< 0.1	0.08	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 3	N	6/4/2002	< 0.01	< 0.005	0.01	< 0.05	1.97	< 0.1	< 0.05	< 0.001	< 0.1	0.0789	0.4	< 1	0.4	< 0.2	< 1	< 1
GW 3	N	7/9/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.79	< 0.1	< 0.05	< 0.001	< 0.1	0.0934	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 3	N	10/7/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.95	< 0.1	< 0.05	< 0.001	< 0.1	0.0713	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 3	N	1/7/2003	< 0.01	< 0.005	< 0.01	< 0.05	2.05	< 0.1	< 0.05	< 0.001	< 0.1	0.111	< 0.2	< 1	0	< 0.2	< 1	< 1.0
GW 3	N	4/8/2003	< 0.01	< 0.005	< 0.01	< 0.05	2.01	< 0.1	< 0.05	< 0.001	< 0.1	0.106	0.4	4	4.4	< 0.2	< 1	< 1.0
GW 3	N	7/8/2003	< 0.01	< 0.005	0.02	< 0.05	1.93	< 0.1	< 0.05	< 0.001	< 0.1	0.0866	< 0.2	< 1	0	< 0.2	< 1	< 1.0
GW 3	N	10/7/2003	< 0.01	< 0.005	< 0.01	< 0.05	1.87	< 0.1	< 0.05	< 0.001	< 0.1	0.104	< 0.2	< 1	0	< 0.2	< 1	< 1.0
GW 3	N	1/6/2004	< 0.01	< 0.005	< 0.01	< 0.05	2.13	< 0.1	< 0.05	< 0.001	< 0.1	0.0908 D	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
GW 3	N	4/6/2004	< 0.01	< 0.005	< 0.01	< 0.05	1.91	< 0.1	< 0.05	0.001	< 0.1	0.097 D	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 3	N	7/13/2004	< 0.01	< 0.005	0.01	< 0.05	1.74	< 0.1	< 0.05	< 0.001	< 0.1	0.104 D	0.3	< 1.0	0.3	< 0.2	< 1.0	< 1.0
GW 3	N	10/5/2004	< 0.01	< 0.005	< 0.01	< 0.05	1.76	< 0.1	< 0.05	< 0.001	< 0.1	0.107 D	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
GW 3	N	1/4/2005	< 0.01	< 0.005	< 0.01	< 0.05	1.88	< 0.1	< 0.05	< 0.001	< 0.1	0.116	0.2	< 1.0	0.2	< 0.2	< 1.0	2.6
GW 3	N	4/5/2005	< 0.01	< 0.005	< 0.01	< 0.05	1.84	< 0.1	< 0.05	< 0.001	< 0.1	0.112	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
GW 3	N	7/12/2005	< 0.01	< 0.005	< 0.01	< 0.05	1.88	< 0.1	< 0.05	< 0.001	< 0.1	0.107	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
GW 3	N	10/4/2005	< 0.01	< 0.005	0.01	< 0.05	1.78	< 0.1	< 0.05	< 0.001	< 0.1	0.118	< 0.2	1.4	1.4	< 0.2	< 1.0	< 1.0
GW 3	N	1/10/2006	< 0.01	< 0.005	< 0.01	< 0.05	1.81	< 0.1	< 0.05	< 0.001	< 0.1	0.115	< 0.2	1.1	1.1	< 0.2	< 1.0	< 1.0
GW 3	N	4/4/2006	< 0.01	< 0.005	0.01	< 0.05	1.79	< 0.1	< 0.05	< 0.001	< 0.1	0.0975 D	< 0.2	2.3	2.3	< 0.2	< 1.0	< 1.0
GW 3	N	7/18/2006	< 0.01	< 0.005	0.01	< 0.05	1.81	< 0.1	< 0.05	< 0.001	< 0.1	0.117	0.4	1.8	2.2	< 0.2	< 1.0	< 1.0
GW 3	N	10/3/2006	< 0.01	< 0.005	< 0.01	< 0.05	1.85	< 0.1	< 0.05	< 0.001	< 0.1	0.112	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 3	N	1/9/2007	< 0.01	< 0.005	< 0.01	< 0.05	1.76	< 0.1	< 0.05	< 0.001	< 0.1	0.112	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 3	N	4/10/2007	< 0.01	< 0.005	< 0.01	< 0.05	1.62	< 0.1	< 0.05	< 0.001	< 0.1	0.113	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 3	N	7/10/2007	< 0.01	< 0.005	< 0.01	< 0.05	1.13	< 0.1	< 0.05	< 0.001	< 0.1	0.13	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 3	N	10/2/2007	< 0.01	< 0.005	< 0.01	< 0.05	1.68	< 0.1	< 0.05	< 0.001	< 0.1	0.136	< 0.2	< 1	0	< 0.2	< 1	1.2
GW 3	N	1/15/2008	< 0.01	< 0.005	< 0.01	< 0.05	1.42	< 0.1	< 0.05	< 0.001	< 0.1	0.123	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 3	N	4/8/2008	< 0.01	< 0.005	< 0.01	< 0.05	1.61	< 0.1	< 0.05	< 0.001	< 0.1	0.13	0.1 U	-0.1 U	0	-0.3 U	0 U	2.1
GW 3	N	7/8/2008	< 0.01	< 0.005	< 0.01	< 0.05	1.82	< 0.1	< 0.05	< 0.001	< 0.1	0.133	0.22	0.83 U	1.05	0.1 U	1.3 U	1.1
GW 3	N	10/7/2008	< 0.01	< 0.005	< 0.01	< 0.05	1.66	< 0.1	< 0.05	< 0.001	< 0.1	0.118	0.05 U	1.2 U	1.25	0 U	2.6 U	1.7
GW 3	N	1/13/2009	< 0.01	< 0.005	< 0.01	< 0.05	1.46	< 0.1	< 0.05	< 0.001	< 0.1	0.126	0.02 U	-0.2 U	-0.18	0.7 U	-1 U	1.9
GW 3	N	4/7/2009	< 0.01	< 0.005	< 0.01	< 0.05	1.46	< 0.1	< 0.05	0.001	< 0.1	0.145	0.04 U	0.67 U	0.71	0.2 U	0.7 U	0.7
GW 3	N	7/7/2009	< 0.01	< 0.005	< 0.01	< 0.05	1.47	< 0.1	< 0.05	< 0.001	< 0.1	0.125	0.35	0.45 U	0.8	-0.02 U	0.0 U	2.3



**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
GW 3	N	10/6/2009	6857.14	6.38	7.37	5430	889 D	281	283 D	8	1430	2240 D	201	<0.05	124 D	<0.50	1.5	<0.001
GW 3	N	1/5/2010	no data	no data	6.94	5470 D	914 D	276	316	8	1460	2420 D	92	<0.05	130 D	<0.50	<0.1	<0.001
GW 3	N	4/6/2010	6857.14	6.64	6.63	5390 D	935 D	283	306 D	9	1530	2330 D	191	<0.05	111 D	<0.50	<0.1	<0.001
GW 3	N	7/13/2010	6856.89	6.40	6.88	5380 D	912	280	330	9	1580	2250 D	169 D	<0.05	100 D	<0.50	<0.1	<0.001
GW 3	N	10/5/2010	6856.54	6.59	7.18	5420 D	890	272	336	9	1590	2240 D	166 D	0.09	100 D	<0.50	0.8	<0.001
GW 3	N	1/4/2011	6856.54	6.55	7.69	5090 D	870	273	324	9	1550	2200 D	174 D	0.05	86 D	<0.50	0.1	<0.001
GW 3	N	4/5/2011	6856.49	6.59	6.71	5480 D	873	270	352	9	1600	2220 D	171 D	<0.05	72 D	<0.50	1.1	<0.001
GW 3	N	7/12/2011	6856.29	6.61	6.84	5310 D	906	280	353	9	1620	2210 D	168 D	<0.1	97 D	<0.50	0.2	<0.001
GW 3	N	10/4/2011	6855.94	6.71	7.54	5230 D	896	276	344	9	1550	2240 D	170 D	<0.1	91 D	<0.50	0.4	0.013
GW 3	N	1/3/2012	6855.93	6.84	6.82 H	5050 D	946	292	342	10	1380	2180 D	167 D	<0.05	89 D	<0.50	0.2	<0.001
GW 3	N	4/3/2012	6855.84	6.65	6.61 H	5480 D	903	270	315	9	1640	2210 D	167 D	<0.05	88 D	<0.50	<0.1	<0.01
GW 3	N	7/10/2012	6855.54	6.96	6.61 H	5510	917	296	332	8	1680	2270 D	172 D	0.09	205 D	<0.50	0.1	<0.001
GW 3	N	10/9/2012	6855.29	6.58	6.64 H	5330	937	284	328 D	9	1710	2280 D	177 D	<0.05	87 D	<0.50	0.2	<0.001
GW 3	N	1/14/2013	6855.32	6.79	6.61 H	5410	975	310	344 D	9	1660	2330 D	172 D	0.11	82 D	<0.50	<0.1	<0.001
GW 3	N	4/2/2013	6855.22	6.62	6.69 H	5280	962	303	328	9	1620	2180 D	166 D	<0.05	86 D	<0.50	2.3	<0.001
GW 3	N	7/9/2013	6854.94	6.44	6.72 H	5460	931	312	337	9	1720	2270 D	167 D	<0.05	84 D	<0.50	2	<0.001
GW 3	N	10/1/2013	6855.09	6.53	6.61 H	5290	950	305	323	9	1790	2280 D	166 D	<0.05	81 DH	<0.50	0.7	<0.001
GW 3	N	1/7/2014	6854.86	6.84	6.63	5380	897	299	313	8	1780	2280	168	<0.05	83	<0.50	<0.1	<0.001
GW 3	N	4/1/2014	6854.83	6.71	6.73 H	5330	935	310	334 D	9	1780	2290 D	172 D	0.07	77 D	<0.50	0.2	<0.001
GW 3	N	7/8/2014	6854.55	6.63	6.64 H	5500	864	335	334 D	9	1780	2280 D	165 D	<0.05	80 D	<0.50	1.1	<0.001
GW 3	N	10/7/2014	6854.46	6.76	6.63 H	5400	835	301	297	8	1680	2250 D	162 D	<0.05	84 D	<0.50	<0.1	<0.001
GW 3	N	1/6/2015	6854.48	6.89	6.64 H	5460	856	304	290	8	1740	2330 D	187 D	<0.05	84 D	<0.50	<0.1	<0.001
GW 3	N	4/7/2015	6854.27	6.65	6.87 H	5520	903	308	296	9	1790	2250 D	178 D	<0.05	85 D	<0.5	<0.1	<0.001
GW 3	N	7/7/2015	6854.04	6.61	6.86 H	5370	904	301	276	11	1670	2310 D	169 D	<0.05	93 D	<0.50	1.1	<0.001
GW 4	N	7/18/1989	6915.60	6.90	7.19	4068	714	216	212	14.4	756	1842	47	0.27	148	< 1	< 0.1	< 0.001
GW 4	N	10/12/1989	6915.00	7.20	7.48	4078	680	202	202	18	793	1822	50.2	0.21	134	< 1	0.12	< 0.001
GW 4	N	1/4/1990	6914.60	7.20	7.28	4036	728	222	198	14.1	775	1780	51.7	0.11	134	< 1	< 0.1	< 0.001
GW 4	N	4/3/1990	6913.60	7.10	7.40	4193	740	212	194	14	789	1707	52.4	0.09	120	< 1	< 0.1	< 0.001
GW 4	N	7/2/1990	6912.70	6.80	7.30	4326	830	214	167	13.8	866	1651	54.7	< 0.05	176	< 1	< 0.1	< 0.001
GW 4	N	10/3/1990	6912.40	6.90	7.31	4135	699	198	198	14.4	732	1610	56.2	< 0.05	116	< 1	< 0.1	0.001
GW 4	N	1/15/1991	6912.40	7.00	7.29	4064	759	213	189	13.3	731	1678	54.6	< 0.05	176	< 1	0.24	< 0.001
GW 4	N	4/2/1991	6912.70	7.10	7.59	3990	641	183	180	12.4	550	1660	46.3	< 0.05	162	< 1	< 0.1	< 0.001
GW 4	N	7/17/1991	6914.40	7.10	7.55	3981	578	190	164	12.9	527	1703	41.2	0.08	132	< 1	< 0.1	0.001
GW 4	N	10/15/1991	6913.80	7.00	7.26	3880	698	214	165	13.4	732	1826	43.8	< 0.05	67.6	< 1	< 0.1	0.001
GW 4	N	1/15/1992	6913.10	7.00	7.03	3779	619	189	163	11.8	623	1803	38.7	< 0.05	77.4	< 1	< 0.1	< 0.001

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
GW 3	N	10/6/2009	<0.01	<0.005	<0.01	<0.05	1.52	<0.1	<0.05	<0.001	<0.1	0.151	0.25	0.26 U	0.51	0.04 U	1.6 U	0.7 U
GW 3	N	1/5/2010	<0.01	<0.005	<0.01	<0.05	1.51	<0.1	<0.05	<0.001	<0.1	0.142	-0.2 U	0.39 U	0.19	-0.009 U	0.2 U	0.7
GW 3	N	4/6/2010	<0.01	<0.005	<0.01	<0.05	1.47	<0.1	<0.05	<0.001	<0.1	0.158	0.25	0.94 U	1.19	0.02 U	3.2	1.1
GW 3	N	7/13/2010	<0.01	<0.005	0.01	<0.05	1.96	<0.1	<0.05	<0.001	<0.1	0.194	-0.05 U	-0.06 U	-0.11	0.01 U	-0.2 U	0.4 U
GW 3	N	10/5/2010	<0.01	<0.005	0.01	<0.05	1.64	<0.1	<0.05	<0.001	<0.1	0.215	0.06 U	2.2	2.26	-0.02 U	2.7	0.4 U
GW 3	N	1/4/2011	<0.01	<0.005	0.01	<0.05	1.58	<0.1	<0.05	<0.001	<0.1	0.199	0.10 U	2.7	2.8	0.06 U	0.3 U	0.02 U
GW 3	N	4/5/2011	<0.01	<0.005	0.01	<0.05	1.7	<0.1	<0.05	<0.001	<0.1	0.212	-0.05 U	1.1	1.05	0.08 U	0.1 U	0.3 U
GW 3	N	7/12/2011	<0.01	<0.005	0.01	<0.05	1.64	<0.1	<0.05	<0.001	<0.1	0.236	-0.06 U	0.43 U	0.37	0.009 U	0.1 U	0.8 U
GW 3	N	10/4/2011	<0.01	<0.005	<0.01	<0.05	1.65	<0.1	<0.05	0.003	<0.1	0.22	0.05 U	0.69 U	0.74	0.02 U	-0.3 U	0.4 U
GW 3	N	1/3/2012	<0.01	<0.005	<0.01	<0.05	1.06	<0.1	<0.05	0.002	<0.1	0.256	0.37	0.54 U	1.45	-0.004 U	0.09 U	0.4 U
GW 3	N	4/3/2012	<0.01	<0.005	<0.01	<0.05	1.38	<0.1	<0.05	<0.001	<0.1	0.274	0.10 U	0.18 U	0.46	0.08 U	0.5 U	0.07 U
GW 3	N	7/10/2012	<0.001	<0.005	<0.01	<0.001	1.62	<0.1	<0.05	<0.001	<0.1	0.324	0.22	0.46 U	1.14	0.02 U	0.8 U	0.1 U
GW 3	N	10/9/2012	<0.001	<0.005	0.01	<0.001	1.75	<0.1	<0.05	<0.001	<0.1	0.295	0.08 U	0.85 U	0	0.09 U	-0.4 U	0.05 U
GW 3	N	1/14/2013	<0.001	<0.005	<0.01	<0.001	1.33	<0.1	<0.05	<0.001	<0.1	0.306	0.09 U	0.39 U	0	0.0 U	0.5 U	0.08 U
GW 3	N	4/2/2013	<0.001	<0.005	<0.01	0.003	1.45	<0.1	<0.05	<0.001	<0.1	0.311	0.14	-0.2 U	0.14	0.09 U	0.9 U	1
GW 3	N	7/9/2013	<0.001	<0.005	0.01	0.002	1.48	<0.1	<0.05	<0.001	<0.1	0.308	0.12 U	0.72 U	0	0.1 U	0.8 U	0.6 U
GW 3	N	10/1/2013	<0.001	<0.005	<0.01	0.001	1.7	<0.1	<0.05	<0.001	<0.1	0.378	0.22	1.6	1.82	0.009 U	0.1 U	0.08 U
GW 3	N	1/7/2014	<0.001	<0.005	<0.01	<0.001	1.61	<0.1	<0.05	<0.001	<0.1	0.358	0.33	1.1 U	0.33	-0.005 U	0.2 U	0.4 U
GW 3	N	4/1/2014	<0.001	<0.005	<0.01	<0.001	1.56	<0.1	<0.05	<0.001	<0.1	0.365	0.22	0.82 U	0.22	0.02 U	0.9 U	0.1 U
GW 3	N	7/8/2014	<0.001	<0.005	<0.01	<0.001	1.61	<0.1	<0.05	<0.001	<0.1	0.32	0.24	0.14 U	0.24	0.01 U	-0.3 U	0.2 U
GW 3	N	10/7/2014	<0.001	<0.005	<0.01	<0.001	1.22	<0.1	<0.05	<0.001	<0.1	0.371	0.18 U	1.6	1.6	0.03 U	0.009 U	-0.03 U
GW 3	N	1/6/2015	<0.001	<0.005	<0.01	<0.001	1.25	<0.1	<0.05	<0.001	<0.1	0.392	0.11 U	0.43 U	ND	0.01 U	-0.3 U	1.1 U
GW 3	N	4/7/2015	<0.001	<0.005	<0.01	<0.001	1.32	<0.1	<0.05	<0.001	<0.1	0.365	0.31	0.35 U	0.31	0.3	-0.6 U	0.5 U
GW 3	N	7/7/2015	<0.001	<0.005	<0.01	0.002	1.55	<0.1	<0.05	0.001	<0.1	0.423	0.12	0.21 U	0.12	0.05 U	1.2	0.6 U
GW 4	N	7/18/1989	< 0.05	< 0.01	< 0.01	< 0.05	0.14	< 0.1	< 0.05	0.006	< 0.1	0.0901	1.6	< 1	1.6	8.3	< 1	5.5
GW 4	N	10/12/1989	< 0.05	< 0.01	< 0.01	< 0.05	0.04	< 0.1	< 0.05	0.008	< 0.1	0.077	1.2	< 1	1.2	< 0.2	1.1	2
GW 4	N	1/4/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.05	< 0.1	< 0.05	0.005	< 0.1	0.077	2.9	< 1	2.9	< 0.2	< 1	3.1
GW 4	N	4/3/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.03	< 0.1	< 0.05	0.006	< 0.1	0.077	1	< 1	1	0.4	< 1	1.7
GW 4	N	7/2/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	0.004	< 0.1	0.0756	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 4	N	10/3/1990	< 0.05	< 0.01	0.02	< 0.05	0.11	< 0.1	< 0.05	< 0.001	< 0.1	0.059	< 0.2	2.7	2.7	< 0.2	< 1	< 1
GW 4	N	1/15/1991	< 0.01	< 0.01	0.01	< 0.05	0.04	< 0.1	< 0.05	0.004	< 0.1	0.0647	0.8	< 1	0.8	< 0.2	< 1	1.2
GW 4	N	4/2/1991	< 0.01	< 0.01	< 0.01	< 0.05	0.08	< 0.1	< 0.05	0.005	< 0.1	0.048	< 0.2	< 1	0	< 0.2	2.2	< 1
GW 4	N	7/17/1991	< 0.01	< 0.01	< 0.01	< 0.05	0.14	< 0.1	< 0.05	0.008	< 0.1	0.044	0.2	< 1	0.2	< 0.2	< 1	< 1
GW 4	N	10/15/1991	< 0.01	< 0.01	< 0.01	< 0.05	0.14	< 0.1	< 0.05	0.008	< 0.1	0.044	1.2	< 1	1.2	< 0.2	< 1	< 1
GW 4	N	1/15/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.1	< 0.1	< 0.05	0.006	< 0.1	0.124	< 0.2	1.9	1.9	< 0.2	< 1	< 1

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
GW 4	N	4/7/1992	6912.20	7.00	7.19	3334	579	177	185	14.1	602	1621	38.7	0.06	78.2	< 1	< 0.1	0.004
GW 4	N	7/8/1992	6911.50	7.00	7.59	3505	661	190	233	14.7	636	1663	40.7	0.2	108	< 1	< 0.1	0.001
GW 4	N	10/6/1992	6910.90	7.10	7.35	3857	762	204	187	13.2	585	1727	42	< 0.05	162	< 1	0.1	0.002
GW 4	N	1/6/1993	6910.40	7.10	7.72	3595	667	175	180	12.6	714	1454	49.1	0.13	138	< 1	< 0.1	< 0.001
GW 4	N	4/6/1993	6910.30	7.20	7.63	3898	665	177	192	10.6	736	1694	51.2	< 0.05	137	< 1	< 0.1	0.001
GW 4	N	7/13/1993	6910.50	7.10	7.13	4181	727	195	168	12.6	755	1820	47	0.1	125	< 1	< 0.1	< 0.001
GW 4	N	10/6/1993	6910.60	7.30	7.45	4081	694	177	170	11.3	780	1700	42.1	< 0.05	124	< 1	< 0.1	< 0.001
GW 4	N	1/6/1994	6911.60	7.20	7.71	3798	656	169	171	10.7	798	1689	40.2	0.17	82.4	< 1	< 0.1	< 0.001
GW 4	N	4/13/1994	6911.70	7.10	7.20	3682	658	170	157	11.1	752	1688	39.1	0.3	109	< 1	< 0.1	< 0.001
GW 4	N	7/20/1994	6910.80	7.10	7.09	3676	727	195	157	12	733	1729	40.1	0.18	110	< 1	< 0.1	< 0.001
GW 4	N	10/4/1994	6910.70	7.10	7.78	3849	721	198	181	12	712	1796	45.6	0.13	119	< 1	< 0.1	< 0.001
GW 4	N	1/5/1995	6910.30	7.10	7.42	3937	746	192	168	13	738	1697	45.6	0.22	122	< 1	< 0.1	< 0.001
GW 4	N	4/4/1995	6910.40	7.20	7.47	3989	790	216	182	12.8	805	1844	49	0.44	141	< 1	< 0.1	< 0.001
GW 4	N	7/6/1995	6909.40	7.20	7.63	3957	740	207	183	15.2	610	1740	58	0.85	141	< 1	< 0.1	< 0.001
GW 4	N	10/3/1995	6909.20	7.10	7.82	4277	715	213	172	12.6	630	1692	51	3.01	165	< 1	< 0.1	0.004
GW 4	N	1/2/1996	6909.20	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
GW 4	N	4/2/1996	6909.20	7.10	7.83	4092	718	193	166	12.4	706	1688	46.6	0.37	146	< 1	< 0.1	< 0.001
GW 4	N	7/9/1996	6908.60	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
GW 4	N	10/1/1996	6908.50	6.90	7.66	3900	743	194	165	12.1	806	1671	44	0.28	126	< 1	0.19	0.001
GW 4	N	1/22/1997	6908.60	6.60	7.70	3490	740	195	146	11.1	773	1739	48	0.1	116	< 1	< 0.1	< 0.001
GW 4	N	4/8/1997	6908.50	7.20	7.75	3840	744	196	149	11.3	680	1734	46	0.07	119	< 1	< 0.1	< 0.001
GW 4	N	7/8/1997	6908.80	7.30	7.77	3890	730	192	144	11	667	1710	46.2	0.12	111	< 1	< 0.1	< 0.001
GW 4	N	10/7/1997	6909.60	6.70	7.70	3950	736	183	153	11.3	798	1610	44	0.06	106	< 1	< 0.1	< 0.001
GW 4	N	1/16/1998	6910.50	7.20	7.94	3880	712	188	162	12.1	817	1800	44.2	0.22	105	< 1	< 0.1	< 0.001
GW 4	N	4/7/1998	6910.50	7.00	7.69	3890	715	192	153	11.3	777	1600	35	< 0.05	95.6	< 1	< 0.1	< 0.001
GW 4	N	7/7/1998	6910.30	7.20	7.80	3870	700	190	163	11.8	797	1600	38.7	0.12	86.9	< 1	< 0.1	< 0.001
GW 4	N	10/6/1998	6910.20	7.18	7.92	3840	714	198	165	13	670	1780	42.4	0.28	105	< 1	< 0.1	< 0.001
GW 4	N	1/5/1999	6910.00	7.30	7.78	3810	650	182	151	11.3	622	1620	41.4	0.13	75.7	< 1	< 0.1	< 0.001
GW 4	N	4/6/1999	6910.40	7.20	7.99	3810	675	179	146	11.5	644	1620	50.1	0.26	100	< 1	< 0.1	< 0.001
GW 4	N	7/13/1999	6909.25	7.20	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
SBL-01	N	10/18/2004	6847.15	6.91	7.27	8450	572 D	1070 D	368	15.3	251	5390 D	96	0.43	94 D	< 1.0	0.4	< 0.001
SBL-01	N	1/12/2005	6847.11	6.86	6.99	8940	564 D	984 D	399	12.4	373	5340 D	97	0.22	39.0 D	< 1.0	0.2	< 0.001
SBL-01	N	4/5/2005	6846.53	6.95	7.51	8870	553	1010	390	12.3	424	5470	93	0.06	35.8	< 1.0	< 0.1	< 0.001
SBL-01	N	7/12/2005	6846.35	6.84	7.53	8860	466 D	896 D	384	12.4	432	5120	97	0.29	35.7 D	< 1.0	< 0.1	< 0.001
SBL-01	N	10/4/2005	6846.49	6.65	7.25	8520	537 D	981 D	357	12.6	387	5360 D	103	0.17	41.4 D	< 1.0	0.1	< 0.001

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**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
GW 4	N	4/7/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.06	< 0.1	< 0.05	0.019	< 0.1	0.07	< 0.2	7.1	7.1	< 0.2	6.3	< 1
GW 4	N	7/8/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.05	< 0.1	< 0.05	0.004	< 0.1	0.047	< 0.2	2.6	2.6	< 0.2	< 1	< 1
GW 4	N	10/6/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.05	0.1	< 0.05	0.016	< 0.1	0.086	0.3	< 1	0.3	< 0.2	< 1	< 1
GW 4	N	1/6/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.06	< 0.1	< 0.05	0.015	< 0.1	0.111	2.3	< 1	2.3	< 0.2	< 1	5.1
GW 4	N	4/6/1993	< 0.005	< 0.01	0.01	< 0.05	0.05	< 0.1	< 0.05	0.01	< 0.1	0.081	0.3	< 1	0.3	< 0.2	2.8	< 1
GW 4	N	7/13/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.04	< 0.1	< 0.05	0.016	< 0.1	0.064	0.2	< 1	0.2	< 0.2	3.2	< 1
GW 4	N	10/6/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.05	< 0.1	< 0.05	0.007	< 0.1	0.073	< 0.2	1.3	1.3	< 0.2	1.2	1.9
GW 4	N	1/6/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.08	< 0.1	< 0.05	0.007	< 0.1	0.052	3.3	3.3	6.6	< 0.2	1.6	10.6
GW 4	N	4/13/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.04	< 0.1	< 0.05	0.004	< 0.1	0.067	0.9	< 1	0.9	< 0.2	6.8	< 1
GW 4	N	7/20/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	0.007	< 0.1	0.067	0.5	14.8	15.3	< 0.2	< 1	22.9
GW 4	N	10/4/1994	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	0.004	< 0.1	0.087	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 4	N	1/5/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.07	< 0.1	< 0.05	0.002	< 0.1	0.062	1.1	< 1	1.1	< 0.2	< 1	1.3
GW 4	N	4/4/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.04	< 0.1	< 0.05	0.005	< 0.1	0.072	0.6	< 1	0.6	< 0.2	< 1	< 1
GW 4	N	7/6/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.09	< 0.1	< 0.05	0.012	< 0.1	0.0374	0.9	< 1	0.9	0.4	< 1	< 1
GW 4	N	10/3/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.09	< 0.1	< 0.05	0.019	< 0.1	0.0711	0.3	< 1	0.3	< 0.2	< 1	1.3
GW 4	N	1/2/1996	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
GW 4	N	4/2/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.065	0.3	< 1	0.3	< 0.2	< 1	< 1
GW 4	N	7/9/1996	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
GW 4	N	10/1/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.08	< 0.1	< 0.05	0.007	< 0.1	0.063	0.8	< 1	0.8	0.8	< 1	< 1
GW 4	N	1/22/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.07	< 0.1	< 0.05	0.003	< 0.1	0.06	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 4	N	4/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.1	< 0.1	< 0.05	0.274	< 0.1	0.066	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 4	N	7/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.12	< 0.1	< 0.05	< 0.001	< 0.1	0.063	2.6	< 1	2.6	< 0.2	< 1	2.9
GW 4	N	10/7/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.16	< 0.1	< 0.05	0.004	< 0.1	0.066	0.5	< 1	0.5	< 0.2	< 1	< 1
GW 4	N	1/16/1998	< 0.01	< 0.01	< 0.01	< 0.05	0.04	< 0.1	< 0.05	0.005	< 0.1	0.0714	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 4	N	4/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.1	< 0.1	< 0.05	0.037	< 0.1	0.0729	0.5	< 1	0.5	< 0.2	< 1	< 1
GW 4	N	7/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.09	< 0.1	< 0.05	0.024	< 0.1	0.0734	0.5	< 1	0.5	< 0.2	< 1	< 1
GW 4	N	10/6/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.21	< 0.1	< 0.05	0.005	< 0.1	0.0782	< 0.2	< 1	0	< 0.2	< 1	< 1
GW 4	N	1/5/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.11	< 0.1	< 0.05	0.009	< 0.1	0.0744	1.2	< 1	1.2	< 0.2	< 1	< 1
GW 4	N	4/6/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.1	< 0.1	< 0.05	0.007	< 0.1	0.0715	0.8	< 1	0.8	< 0.2	< 1	< 1
GW 4	N	7/13/1999	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	< 1	no data
SBL-01	N	10/18/2004	< 0.01	< 0.005	0.06	< 0.05	3.35	< 0.1	0.17	< 0.001	< 0.1	0.0267 D	0.4	2.8	3.2	< 0.2	< 1.0	< 1.0
SBL-01	N	1/12/2005	< 0.01	< 0.005	0.02	< 0.05	2.38	< 0.1	0.08	< 0.001	< 0.1	0.0289 D	1.1	2.4	3.5	< 0.2	< 1.0	< 1.0
SBL-01	N	4/5/2005	< 0.01	< 0.005	0.01	< 0.05	2.28	< 0.1	0.07	< 0.001	< 0.1	0.0332	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
SBL-01	N	7/12/2005	< 0.01	< 0.005	0.01	< 0.05	2.3	< 0.1	0.06	< 0.001	< 0.1	0.0327	0.7	< 1.0	0.7	< 0.2	< 1.0	< 1.0
SBL-01	N	10/4/2005	< 0.01	< 0.005	0.03	< 0.05	2.25	< 0.1	0.08	< 0.001	< 0.1	0.0241 D	< 0.2	3.5	3.5	< 0.2	< 1.0	< 1.0



**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
SBL-01	N	1/10/2006	6846.50	6.79	7.21	8270	497	871 D	344	10.6	580	4880 D	91	0.36	45.7 D	< 1.0	0.2	< 0.001
SBL-01	N	4/4/2006	6846.41	6.73	7.41	9200	560 D	1150 D	329	13.6	461	5710 D	101	0.36	41 D	< 1.0	< 0.1	< 0.001
SBL-01	N	7/18/2006	6846.36	6.61	7.13	8400	552 D	1080 D	345	13	378	5830 D	90	0.09	43 D	< 1.0	0.2	< 0.001
SBL-01	N	10/3/2006	6846.41	6.62	7.18	8820	520 D	1020 D	314	13	388	5320 D	78	0.27	45 D	< 0.5	0.3	< 0.001
SBL-01	N	1/9/2007	6846.24	6.79	7.00	8790	498 D	1010 D	288	12.8	427	5160 D	80	0.19	53 D	< 0.5	0.2	< 0.001
SBL-01	N	4/10/2007	6846.46	6.94	6.98	8830	508 D	1040 D	293	15.5	439	5380 D	87	0.08	50 D	< 0.5	0.1	< 0.001
SBL-01	N	7/10/2007	6846.16	6.67	6.93	8960	542 D	1090 D	326	13.3	461	5740 D	81	0.17	50 D	< 0.5	< 0.1	0.008
SBL-01	N	10/2/2007	6846.21	6.54	6.92	8670 H	470 D	988 D	296 D	14	429	4960 D	102 D	0.32	49 D	< 0.5	0.2	< 0.001
SBL-01	N	1/15/2008	6846.36	6.89	6.97	9470	524 D	1190 D	321 D	16.6	454	5400 D	112 D	< 0.05	40 D	< 0.5	< 0.1	< 0.001
SBL-01	N	4/8/2008	6846.21	6.56	7.09	8860	534 D	1200 D	341 D	15.8 D	432	6080 D	82	< 0.1	68.5	< 0.50	0.2	< 0.001
SBL-01	N	7/8/2008	6846.11	6.42	6.97	9080	502	1080	284 D	12	443	5680 D	82	< 0.05	47 D	< 0.5	0.2	< 0.003
SBL-01	N	10/7/2008	6846.10	6.67	7.11	8890	504	1120	294 D	13	442	5980 D	67	0.2	53.6	< 0.5	< 0.1	< 0.001
SBL-01	N	1/13/2009	6846.01	6.77	6.90	9480	523	1210	360	14	460	5780 D	67	< 0.05	61.8 D	< 0.5	< 0.1	< 0.001
SBL-01	N	4/7/2009	6845.96	6.64	6.82	9410	498 D	1190 D	325 D	13	473	5910 D	81	< 0.05	41.8 D	< 0.50	0.2	< 0.001
SBL-01	N	7/7/2009	6845.96	6.61	6.91	8490	502 D	1040	288 D	13	444	5700 D	81	< 0.05	48 D	< 0.50	0.6	< 0.001
SBL-01	N	10/5/2009	6846.11	6.63	7.45	9000	469 D	1120	285 D	13	446	5960 D	88	< 0.05	43 D	< 0.50	0.1	< 0.001
SBL-01	N	1/5/2010	6845.86	6.70	7.33	9400 D	482 D	1140	312 D	13	489	6050 DH	78	0.09	46 D	< 0.50	0.1	< 0.001
SBL-01	N	4/6/2010	6845.91	6.63	6.98	9330 D	536 D	1250	321 D	14	486	6250 D	80	0.29	42 D	< 0.50	0.1	< 0.001
SBL-01	N	7/13/2010	6845.81	6.50	7.06	9250 D	521 D	1170	311 D	13	490	5910 D	79 D	0.26	40 D	< 0.50	< 0.1	< 0.001
SBL-01	N	10/5/2010	6845.86	6.50	7.53	9080 D	486 D	1110	300 D	14	467	5890 D	85 D	0.15	42 D	< 0.50	0.1	< 0.001
SBL-01	N	1/4/2011	no data	no data	7.33	9040 D	511 D	1160	303 D	14	446	5960 D	82 D	0.23	40 D	< 0.50	0.2	< 0.001
SBL-01	Dup	1/4/2011	6845.81	6.27	7.35	7650 D	473 D	971	282 D	13	210	5050 D	86 D	0.24	56 D	< 0.50	1.7	< 0.001
SBL-01	N	4/4/2011	no data	6.57	6.99	9240 D	501	1180	314 D	15	438	6050 D	77 D	0.18	45 D	< 0.50	0.1	< 0.001
SBL-01	Dup	4/4/2011	6845.66	6.42	6.76	8310 D	471	1010	293 D	14	249	5440 D	79 D	0.07	63 D	< 0.50	1.6	< 0.001
SBL-01	N	7/12/2011	6845.61	6.38	7.67	8960 D	515	1170	308 D	14	451	5910 D	79 D	< 0.1	47 D	< 0.50	0.6	< 0.001
SBL-01	N	10/4/2011	6845.74	6.62	7.49	8720 D	510	1140	301 D	14	415	5690 D	77 D	0.2 D	41 D	< 0.50	0.1	< 0.001
SBL-01	N	1/3/2012	6845.61	6.52	6.97 H	9090 D	526	1170	300	15	419	5820 D	83 D	< 0.1	41 D	< 0.50	0.3	< 0.001
SBL-01	N	4/3/2012	6845.61	6.71	6.76 H	9420 D	534	1130	287	15	438	5810 D	78 D	< 0.05	42 D	< 0.50	< 0.1	< 0.01
SBL-01	N	7/10/2012	6845.49	6.41	6.91 H	9270	474	1170	261	11	446	5680 D	79 D	0.44	44 D	< 0.50	0.2	< 0.001
SBL-01	N	10/9/2012	6845.61	6.72	6.83 H	8640	520	1150	297 D	15	460	5900 D	89 D	0.2 D	39 D	< 0.50	0.2	< 0.001
SBL-01	N	1/9/2013	6845.53	6.65	6.80 H	9200	501	1250	309 D	14	464	6030 D	78 D	0.08	40 D	< 0.50	0.1	< 0.001
SBL-01	N	4/2/2013	6845.57	6.61	6.87 H	9080	506	1240	303 D	14	462	5940 D	79 D	< 0.05	40 D	< 0.50	0.4	< 0.001
SBL-01	N	7/9/2013	6845.34	6.56	6.85 H	9600	492	1190	290 D	13	464	5890 D	73 D	0.06	39 D	< 0.50	0.2	< 0.001
SBL-01	N	10/1/2013	6845.48	6.61	6.75 H	9410	485	1200	290 D	13	462	5940 D	75 D	< 0.05	43 D	< 0.50	0.1	< 0.001
SBL-01	N	1/7/2014	6845.46	6.84	6.76	9150	478	1180	287	14	451	5890	77	0.35	40	< 0.50	0.1	< 0.001

**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
SBL-01	N	1/10/2006	< 0.01	< 0.005	0.03	< 0.05	2.16	< 0.1	0.08	0.003	< 0.1	0.0249	0.8	2.6	3.4	< 0.2	< 1.0	1.3
SBL-01	N	4/4/2006	< 0.01	< 0.005	0.01	< 0.05	2.52	< 0.1	0.05	< 0.001	< 0.1	0.0238 D	< 0.2	1.1	1.1	< 0.2	< 1.0	< 1.0
SBL-01	N	7/18/2006	< 0.01	< 0.005	0.02	< 0.05	2.4	< 0.1	0.08	< 0.001	< 0.1	0.0227	0.6	4.7	5.3	< 0.2	< 1.0	< 1.0
SBL-01	N	10/3/2006	< 0.01	< 0.005	0.02	< 0.05	2.47	< 0.1	0.08	< 0.001	< 0.1	0.0216 D	0.4	1.5	1.9	< 0.2	< 1	< 1
SBL-01	N	1/9/2007	< 0.01	< 0.005	0.03	< 0.05	2.42	< 0.1	0.07	< 0.001	< 0.1	0.0176	0.4	< 1	0.4	< 0.2	< 1	< 1
SBL-01	N	4/10/2007	< 0.01	< 0.005	0.02	< 0.05	2.57	< 0.1	0.07	< 0.001	< 0.1	0.0176	< 0.2	2.2	2.2	< 0.2	< 1	< 1
SBL-01	N	7/10/2007	< 0.01	< 0.005	0.03	< 0.05	2.28	< 0.1	0.1	< 0.001	< 0.1	0.0192	< 0.2	< 1	0	< 0.2	< 1	< 1
SBL-01	N	10/2/2007	< 0.01	< 0.005	0.03	< 0.05	2.7	< 0.1	0.08	< 0.001	< 0.1	0.0259	< 0.2	< 1	0	2	< 1	1.1
SBL-01	N	1/15/2008	< 0.01	< 0.005	0.01	< 0.05	2.69	< 0.1	0.06	< 0.001	< 0.1	0.0166 D	< 0.2	< 1	0	< 0.2	< 1	1.7
SBL-01	N	4/8/2008	< 0.01	< 0.005	0.02	< 0.05	2.93	< 0.1	0.08	< 0.001	< 0.1	0.0174	0.3	0.9 U	1.2	-0.4 U	-4.5 U	1.6
SBL-01	N	7/8/2008	< 0.01	< 0.005	0.03	< 0.05	2.96	< 0.1	0.09	< 0.001	< 0.1	0.0152	0.56	2.1	2.66	0.6	0.7 U	0.9
SBL-01	N	10/7/2008	< 0.01	< 0.005	0.02	< 0.05	2.79	< 0.1	0.06	< 0.001	< 0.1	0.0163	0.29	2.2	2.49	0.6	-0.8 U	1.5
SBL-01	N	1/13/2009	< 0.01	< 0.005	0.02	< 0.05	3.42	< 0.1	0.06	< 0.001	< 0.1	0.0172	0.28	1.3 U	1.58	0.1 U	-1 U	1.6
SBL-01	N	4/7/2009	< 0.01	< 0.005	0.02	< 0.05	3.21	< 0.1	0.06	0.001	< 0.1	0.018	0.38	1.5	1.88	0.4 U	-0.8 U	0.6 U
SBL-01	N	7/7/2009	< 0.01	< 0.005	0.04	< 0.05	3.27	< 0.1	0.11	< 0.001	< 0.1	0.0126	0.72	2	2.72	-0.5 U	-1 U	1.4
SBL-01	N	10/5/2009	< 0.01	< 0.005	0.02	< 0.05	3.15	< 0.1	0.07	< 0.001	< 0.1	0.0142	1.1	1.8	2.9	0.003 U	1.0 U	0.4 U
SBL-01	N	1/5/2010	< 0.01	< 0.005	0.02	< 0.05	3.02	< 0.1	0.07	< 0.001	< 0.1	0.0139	0.4	2.1	2.5	0.08 U	-0.5 U	0.8
SBL-01	N	4/6/2010	< 0.01	< 0.005	0.02	< 0.05	3	< 0.1	0.07	< 0.001	< 0.1	0.0136	0.71	1.9	2.61	0.08 U	1.8 U	0.3 U
SBL-01	N	7/13/2010	< 0.01	< 0.005	0.03	< 0.05	3.72	< 0.1	0.08	0.001	< 0.1	0.0152	0.15 U	1.7	1.85	0.07 U	0.3 U	0.4 U
SBL-01	N	10/5/2010	< 0.01	< 0.005	0.02	< 0.05	3.2	< 0.1	0.07	< 0.001	< 0.1	0.0142	0.3	2.6	2.9	0.03 U	1.8	0.4 U
SBL-01	N	1/4/2011	< 0.01	< 0.005	0.02	< 0.05	3.44	< 0.1	0.07	< 0.001	< 0.1	0.0138	0.42	2.8	3.22	-0.002 U	0.2 U	0.8 U
SBL-01	Dup	1/4/2011	< 0.01	< 0.005	0.06	< 0.05	2.76	< 0.1	0.19	< 0.001	< 0.1	0.0066	0.4	3.3	3.7	0.008 U	1.1 U	2.4
SBL-01	N	4/4/2011	< 0.01	< 0.005	0.02	< 0.05	3.34	< 0.1	0.08	< 0.001	< 0.1	0.0128	0.15 U	2.1	2.25	-0.03 U	-0.09 U	1.2
SBL-01	Dup	4/4/2011	< 0.01	< 0.005	0.06	< 0.05	3.05	< 0.1	0.18	< 0.001	< 0.1	0.0071	0.45	3	3.45	-0.02 U	0.7 U	1
SBL-01	N	7/12/2011	< 0.01	< 0.005	0.03	< 0.05	3.55	< 0.1	0.08	0.003	< 0.1	0.0138	0.16 U	3.1	3.26	0.009 U	0.2 U	2
SBL-01	N	10/4/2011	< 0.01	< 0.005	0.02	< 0.05	3.57	< 0.1	0.09	< 0.001	< 0.1	0.0119	0.28	2.1	2.38	0.0007 U	0.6 U	0.5
SBL-01	N	1/3/2012	< 0.01	< 0.005	0.02	< 0.05	3.44	< 0.1	0.08	< 0.001	< 0.1	0.0135	0.46	1.2 U	2.86	0.03 U	-0.09 U	0.6
SBL-01	N	4/3/2012	< 0.01	< 0.005	0.02	< 0.05	3.57	< 0.1	0.07	< 0.001	< 0.1	0.0129	0.39	0.45 U	1.29	0.0006 U	0.0 U	0.4 U
SBL-01	N	7/10/2012	< 0.001	< 0.005	0.02	< 0.001	3.64	< 0.1	0.07	< 0.001	< 0.1	0.0126	0.58	1.6	3.78	0.06 U	0.1 U	0.7
SBL-01	N	10/9/2012	< 0.001	< 0.005	0.02	< 0.001	3.74	< 0.1	0.08	< 0.001	< 0.1	0.012	0.39	2.1 U	0.39	0.01 U	-0.4 U	1.2
SBL-01	N	1/9/2013	< 0.001	< 0.005	0.03	< 0.001	3.88	< 0.1	0.08	< 0.001	< 0.1	0.0125	0.5	1.3 U	0.5	0.06 U	0.2 U	0.8
SBL-01	N	4/2/2013	< 0.001	< 0.005	0.02	< 0.001	3.89	< 0.1	0.08	< 0.001	< 0.1	0.0128	0.38	2.4	2.78	-0.01 U	-0.3 U	1.1
SBL-01	N	7/9/2013	< 0.001	< 0.005	0.02	< 0.001	3.48	< 0.1	0.07	< 0.001	< 0.1	0.013	0.33	1.2 U	0.33	0.02 U	0.2 U	0.5 U
SBL-01	N	10/1/2013	< 0.001	< 0.005	0.03	< 0.001	3.96	< 0.1	0.08	< 0.001	< 0.1	0.0132	0.7	2.9	3.6	-0.01 U	0.6 U	0.4 U
SBL-01	N	1/7/2014	< 0.001	< 0.005	0.03	< 0.001	3.92	< 0.1	0.08	< 0.001	< 0.1	0.012	0.64	3.6	4.24	-0.02 U	0.09 U	1

**TABLE A.1**  
**Southwest Alluvium Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	10376	NA	NA	NA	NA	NA	5815	250	NA	536.6	80	5	0.01
SBL-01	N	4/1/2014	6845.47	6.80	6.77 H	8840	490	1220	291 D	13	424	5640 D	79 D	<0.05	43 D	<0.50	0.5	<0.001
SBL-01	N	7/8/2014	6845.34	6.67	6.83 H	9270	502	1280	309 D	15	467	5900 D	73 D	<0.05	36 D	<0.50	0.3 D	<0.001
SBL-01	N	10/7/2014	6845.32	6.71	6.75 H	9040	473	1130	271	13	447	5890 D	75 D	<0.05	36 D	<0.50	0.6 D	<0.001
SBL-01	N	1/6/2015	6845.33	6.73	6.71 H	9150	483	1170	278	13	437	6180 D	94 D	<0.05	38 D	<0.50	0.3	<0.001
SBL-01	N	4/7/2015	6845.32	6.68	6.85 H	9380	483	1190	285 D	14	452	6010 D	111 D	<0.05	39 D	<0.5	0.3 D	0.001
SBL-01	N	7/7/2015	6845.22	6.52	6.80 H	9080	481	1150	283	16	469	6070 D	84 D	<0.05	35 D	<0.50	0.5	<0.001
SBL-01	N	10/6/2015	6845.22	6.71	6.71 H	9100	465	1160	278 D	14	438	6050 D	96 D	0.06	33 D	<0.50	0.2	<0.001
SBL-01	N	1/5/2016	6845.3	6.74	6.73 H	9350	484	1250	285	14	473	6130 D	80 D	<0.05	38 D	<0.50	0.6	<0.001
SBL-01	N	4/5/2016	6845.11	6.69	6.84 H	9300	498	1250	282 D	13	442	6180 D	77 D	<0.05	35 D	<0.50	0.3	<0.001
SBL-01	N	7/12/2016	6845.14	6.69	6.76 H	9380	486	1230	287	13	460	5840 DH	86 D	<0.05	38 D	<0.50	0.2	0.001
SBL-01	N	10/4/2016	6845.24	6.87	6.77 H	9070	490	1240	293	14	440	6150 D	78 D	<0.05	38 D	<0.50	0.7	<0.001

**TABLE A.1**  
Southwest Alluvium Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.025	NA	0.07	NA	NA	0.078	0.07	0.1	0.3	NA	NA	8.2	4.5	5.9	15
EPA Standard			0.004	0.025	0.05	0.07	2.1	1	0.2	0.07	0.1	NA	NA	NA	8.2	4.5	5.9	15
SBL-01	N	4/1/2014	<0.001	<0.005	0.03	<0.001	3.69	<0.1	0.08	<0.001	<0.1	0.0129	0.64	2.7	3.34	-0.004 U	0.09 U	0.7
SBL-01	N	7/8/2014	<0.001	<0.005	0.02	<0.001	3.68	<0.1	0.08	<0.001	<0.1	0.0104	0.41	0.97 U	0.41	0.04 U	0.1 U	0.4 U
SBL-01	N	10/7/2014	<0.001	<0.005	0.03	<0.001	3.38	<0.1	0.09	<0.001	<0.1	0.011	0.44	3.7	4.14	0.05 U	0.4 U	0.8
SBL-01	N	1/6/2015	<0.001	<0.005	0.03 D	<0.001	3.52	<0.1	0.1	<0.001	<0.1	0.0112	0.34	1.5	1.84	0.02 U	0.3 U	2.2
SBL-01	N	4/7/2015	<0.001	<0.005	0.03	<0.001	3.41	<0.1	0.12	<0.001	<0.1	0.0093	0.71	2	2.71	0.2 U	-0.3 U	3.1
SBL-01	N	7/7/2015	<0.001	<0.005	0.03	<0.001	3.8	<0.1	0.09	<0.001	<0.1	0.0114	0.52	2.2	2.72	2.8	1 U	2
SBL-01	N	10/6/2015	<0.001	<0.005	0.03	<0.001	3.71	<0.1	0.08	<0.001	<0.1	0.0119	0.28	2.2	2.48	0.3 U	0.08 U	3.2
SBL-01	N	1/5/2016	<0.001	<0.005	0.02	<0.001	3.66	<0.1	0.07	<0.001	<0.1	0.0097	0.38	1.5	0.2 U	0.1 U	2.2	0
SBL-01	N	4/5/2016	<0.001	<0.005	0.02	<0.001	3.76	<0.1	0.07	<0.001	<0.1	0.0112	0.5	1.9	2.4	0.03 U	0.3 U	1.4
SBL-01	N	7/12/2016	<0.001	<0.005	0.03	<0.001	3.44	<0.1	0.07	<0.001	<0.1	0.0098	0.43	1.9 U	0.43	0.03 U	-0.04 U	0.8 U
SBL-01	N	10/4/2016	<0.001	<0.005	0.03	0.001	3.97	<0.1	0.09	<0.001	<0.1	0.0097	0.41	1.8	2.21	-0.01 U	0.3 U	4.6



**Laboratory Analytical Data  
2016**

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Alluvium Monitor Wells					
Well ID:		509-D	509-D	509-D	509-D
Collection Date:		10/3/2016	7/11/2016	4/4/2016	1/4/2016
Receive Date:		10/4/2016	7/14/2016	4/7/2016	1/7/2016
Report Date:		10/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100246-001	C16070451-001	C16040219-001	C16010153-001
Bicarbonate as HCO <sub>3</sub>	mg/L	2380	2470	2360	2560
Calcium	mg/L	820	852	830	854
Chloride	mg/L	345	372	352	462
Magnesium	mg/L	356	352	372	353
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	0.09	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	6.7	6.5	6.9	7.1
Potassium	mg/L	12	12	12	12
Sodium	mg/L	409	403	421	393
Sulfate	mg/L	2250	2030	2060	1920
pH	s.u.	6.61	6.57	6.61	6.50
Solids, Total Dissolved TDS @ 180 C	mg/L	5730	5460	5540	5360
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.01	0.01	ND(0.01)	0.01
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	3.07	4.00	2.19	3.87
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.213	0.276	0.289	0.258
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	9.5	1.5	1.4	1.9
Gross Alpha minus Rn & U Precision (±)	pCi/L	2.6	0.9	1.1	1.1
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.5	1.6	1.2
Lead 210	pCi/L	0.1	-0.04	1.1	0.4
Lead 210 precision (±)	pCi/L	0.7	0.9	0.9	0.9
Lead 210 MDC	pCi/L	1.2	1.4	1.4	1.4
Radium 226	pCi/L	0.33	0.44	0.53	0.46
Radium 226 precision (±)	pCi/L	0.15	0.15	0.20	0.17
Radium 226 MDC	pCi/L	0.18	0.12	0.21	0.17
Radium 228	pCi/L	4.2	2.0	2.5	1.5
Radium 228 precision (±)	pCi/L	1.2	0.82	0.89	0.92
Radium 228 MDC	pCi/L	1.2	1.2	1.1	1.0
Thorium 230	pCi/L	0.03	0.02	0.2	0.1
Thorium 230 precision (±)	pCi/L	0.06	0.06	0.1	0.1
Thorium 230 MDC	pCi/L	0.1	0.1	0.1	0.2
A/C Balance	%	-4.50	-2.41	-0.73	-3.43
Anions	meq/L	96.6	93.8	91.9	95.4
Cations	meq/L	88.3	89.3	90.6	89.1
Solids, Total Dissolved - Calculated	mg/L	5400	5300	5300	5300
TDS Ratio	unitless	1.05	1.03	1.05	1.01
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Alluvium Monitor Wells					
Well ID:		EPA-23	EPA-23	EPA-23	EPA-23
Collection Date:		10/3/2016	7/11/2016	4/4/2016	1/4/2016
Receive Date:		10/4/2016	7/14/2016	4/7/2016	1/7/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100246-002	C16070451-002	C16040219-002	C16010153-002
Bicarbonate as HCO <sub>3</sub>	mg/L	1300	1330	1290	1340
Calcium	mg/L	660	671	670	673
Chloride	mg/L	114	125	110	119
Magnesium	mg/L	393	390	386	390
Nitrogen, Ammonia as N	mg/L	0.30	0.40	0.35	0.5
Nitrogen, Nitrate+Nitrite as N	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Potassium	mg/L	11	11	11	11
Sodium	mg/L	153	151	157	150
Sulfate	mg/L	2460	2540	2360	2440
pH	s.u.	6.67	6.69	6.79	6.73
Solids, Total Dissolved TDS @ 180 C	mg/L	4640	4640	4640	4660
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	0.01	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	5.84	6.16	5.67	5.57
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0284	0.0291	0.0326	0.0292
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	0.6	1.6	1.8	1.3
Gross Alpha minus Rn & U Precision (±)	pCi/L	2.1	1.1	1.1	0.9
Gross Alpha minus Rn & U MDC	pCi/L	3.5	1.5	1.6	1.2
Lead 210	pCi/L	0.7	0.4	0.2	-0.5
Lead 210 precision (±)	pCi/L	0.8	0.9	0.8	0.8
Lead 210 MDC	pCi/L	1.2	1.4	1.4	1.4
Radium 226	pCi/L	0.55	0.56	0.41	0.53
Radium 226 precision (±)	pCi/L	0.17	0.20	0.18	0.18
Radium 226 MDC	pCi/L	0.18	0.17	0.20	0.18
Radium 228	pCi/L	5.5	2.2	2.1	1.1
Radium 228 precision (±)	pCi/L	1.6	0.78	0.84	0.85
Radium 228 MDC	pCi/L	1.2	1.0	1.0	1.3
Thorium 230	pCi/L	0.04	-0.01	0.03	0.01
Thorium 230 precision (±)	pCi/L	0.09	0.06	0.07	0.08
Thorium 230 MDC	pCi/L	0.2	0.1	0.1	0.2
A/C Balance	%	-2.32	-3.85	-0.72	-2.44
Anions	meq/L	75.7	78.3	73.4	76.2
Cations	meq/L	72.3	72.5	72.3	72.6
Solids, Total Dissolved - Calculated	mg/L	4400	4600	4300	4500
TDS Ratio	unitless	1.04	1.02	1.07	1.04
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Alluvium Monitor Wells					
Well ID:		803	803	803	803
Collection Date:		10/3/2016	7/11/2016	4/4/2016	1/4/2016
Receive Date:		10/4/2016	7/14/2016	4/7/2016	1/7/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100246-003	C16070451-003	C16040219-003	C16010153-003
Bicarbonate as HCO <sub>3</sub>	mg/L	1640	1700	1750	1790
Calcium	mg/L	612	628	641	636
Chloride	mg/L	156	153	166	166
Magnesium	mg/L	685	701	713	709
Nitrogen, Ammonia as N	mg/L	0.40	0.76	0.94	1.0
Nitrogen, Nitrate+Nitrite as N	mg/L	32	34	36	16
Potassium	mg/L	11	12	12	13
Sodium	mg/L	263	267	294	275
Sulfate	mg/L	3340	3150	3290	3300
pH	s.u.	6.61	6.60	6.64	6.51
Solids, Total Dissolved TDS @ 180 C	mg/L	6230	6420	6560	6530
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	0.001	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	3.10	2.60	2.27	2.67
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0653	0.104	0.0862	0.0802
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	7.1	1.1	3.9	1.3
Gross Alpha minus Rn & U Precision (±)	pCi/L	2.1	1.2	1.6	0.9
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.5	1.6	1.2
Lead 210	pCi/L	-0.2	0.1	0.5	0.6
Lead 210 precision (±)	pCi/L	0.7	0.7	0.8	0.9
Lead 210 MDC	pCi/L	1.2	1.2	1.4	1.4
Radium 226	pCi/L	0.23	0.28	0.16	0.27
Radium 226 precision (±)	pCi/L	0.14	0.15	0.15	0.15
Radium 226 MDC	pCi/L	0.19	0.14	0.21	0.19
Radium 228	pCi/L	0.27	2.3	2.1	0.55
Radium 228 precision (±)	pCi/L	0.93	0.93	0.78	0.83
Radium 228 MDC	pCi/L	1.5	1.4	1.1	1.3
Thorium 230	pCi/L	0.0008	-0.001	-0.02	0.02
Thorium 230 precision (±)	pCi/L	0.07	0.09	0.06	0.08
Thorium 230 MDC	pCi/L	0.2	0.2	0.2	0.2
A/C Balance	%	-2.17	0.44	-0.29	-1.25
Anions	meq/L	103	100	104	105
Cations	meq/L	98.7	101	104	102
Solids, Total Dissolved - Calculated	mg/L	6000	5900	6200	6100
TDS Ratio	unitless	1.03	1.09	1.06	1.06
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

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UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Alluvium Monitor Wells					
Well ID:		808	808	808	808
Collection Date:		10/3/2016	7/11/2016	4/4/2016	1/4/2016
Receive Date:		10/4/2016	7/14/2016	4/7/2016	1/7/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100246-004	C16070451-004	C16040219-004	C16010153-004
Bicarbonate as HCO <sub>3</sub>	mg/L	2000	2090	2020	2120
Calcium	mg/L	635	646	636	640
Chloride	mg/L	184	184	191	196
Magnesium	mg/L	697	775	817	790
Nitrogen, Ammonia as N	mg/L	0.57	0.56	0.12	0.7
Nitrogen, Nitrate+Nitrite as N	mg/L	22	37	49	36
Potassium	mg/L	9	8	6	7
Sodium	mg/L	355	350	355	338
Sulfate	mg/L	3340	3130	3390	3440
pH	s.u.	6.53	6.58	6.66	6.48
Solids, Total Dissolved TDS @ 180 C	mg/L	6650	6910	7140	7020
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	0.001	0.002	0.001	0.001
Manganese	mg/L	1.90	1.68	1.43	1.57
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0729	0.0894	0.114	0.103
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	3.8	0.8	-0.3	0.9
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.3	1.0	0.9	0.8
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.5	1.6	1.2
Lead 210	pCi/L	-0.2	-0.2	-0.4	-0.5
Lead 210 precision (±)	pCi/L	0.7	0.8	0.8	0.8
Lead 210 MDC	pCi/L	1.2	1.4	1.4	1.4
Radium 226	pCi/L	0.37	0.28	0.25	0.19
Radium 226 precision (±)	pCi/L	0.14	0.14	0.16	0.14
Radium 226 MDC	pCi/L	0.20	0.12	0.20	0.19
Radium 228	pCi/L	1.4	2.6	1.6	0.36
Radium 228 precision (±)	pCi/L	1.0	0.97	0.76	0.82
Radium 228 MDC	pCi/L	1.6	1.3	1.1	1.3
Thorium 230	pCi/L	-0.009	-0.003	0.03	-0.008
Thorium 230 precision (±)	pCi/L	0.08	0.06	0.06	0.07
Thorium 230 MDC	pCi/L	0.2	0.1	0.1	0.2
A/C Balance	%	-2.09	2.28	0.98	-1.33
Anions	meq/L	109	107	112	115
Cations	meq/L	105	112	115	112
Solids, Total Dissolved - Calculated	mg/L	6300	6300	6600	6700
TDS Ratio	unitless	1.05	1.10	1.08	1.05
Trihalomethanes, Total	ug/L	1.2	1.79	2.51	2.51

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Alluvium Monitor Wells					
Well ID:		802	802	802	802
Collection Date:		10/3/2016	7/11/2016	4/4/2016	1/4/2016
Receive Date:		10/4/2016	7/14/2016	4/7/2016	1/7/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100246-005	C16070451-005	C16040219-005	C16010153-005
Bicarbonate as HCO <sub>3</sub>	mg/L	1780	2130	2080	2180
Calcium	mg/L	641	647	640	644
Chloride	mg/L	234	202	185	191
Magnesium	mg/L	761	759	747	751
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	76	86	82	83
Potassium	mg/L	5	5	5	5
Sodium	mg/L	337	330	340	327
Sulfate	mg/L	3470	2930	3050	3090
pH	s.u.	6.57	6.56	6.68	6.53
Solids, Total Dissolved TDS @ 180 C	mg/L	6990	6860	6880	6740
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	0.001	ND(0.001)
Manganese	mg/L	1.15	1.10	1.22	1.14
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.118	0.126	0.134	0.131
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	4.7	0.3	1.2	1.7
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.6	0.9	1.2	1.0
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.5	1.6	1.2
Lead 210	pCi/L	0.8	0.3	0.09	0.1
Lead 210 precision (±)	pCi/L	0.8	0.8	0.8	0.9
Lead 210 MDC	pCi/L	1.2	1.3	1.4	1.4
Radium 226	pCi/L	0.38	0.23	0.30	0.45
Radium 226 precision (±)	pCi/L	0.15	0.13	0.16	0.17
Radium 226 MDC	pCi/L	0.18	0.13	0.19	0.17
Radium 228	pCi/L	0.35	3.5	2.3	-0.2
Radium 228 precision (±)	pCi/L	0.88	1.2	0.88	0.72
Radium 228 MDC	pCi/L	1.5	1.3	1.0	1.2
Thorium 230	pCi/L	-0.005	0.04	0.008	0.02
Thorium 230 precision (±)	pCi/L	0.08	0.07	0.05	0.07
Thorium 230 MDC	pCi/L	0.2	0.1	0.1	0.2
A/C Balance	%	-0.94	-4.07	-0.17	-1.32
Anions	meq/L	111	118	109	111
Cations	meq/L	109	109	108	108
Solids, Total Dissolved - Calculated	mg/L	6600	6800	6400	6500
TDS Ratio	unitless	1.07	1.00	1.08	1.04
Trihalomethanes, Total	ug/L	3.9	5.20	5.68	6.40

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.



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UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Alluvium Monitor Wells					
Well ID:		632	632	632	632
Collection Date:		10/3/2016	7/11/2016	4/4/2016	1/4/2016
Receive Date:		10/4/2016	7/14/2016	4/7/2016	1/7/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100246-006	C16070451-006	C16040219-006	C16010153-006
Bicarbonate as HCO <sub>3</sub>	mg/L	2120	1820	1800	1880
Calcium	mg/L	546	570	585	578
Chloride	mg/L	184	231	239	249
Magnesium	mg/L	787	801	786	787
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	0.10	0.12
Nitrogen, Nitrate+Nitrite as N	mg/L	49	54	50	52
Potassium	mg/L	10	10	9	9
Sodium	mg/L	389	396	406	380
Sulfate	mg/L	3130	3180	3380	3520
pH	s.u.	6.54	6.55	6.60	6.49
Solids, Total Dissolved TDS @ 180 C	mg/L	6780	7000	7090	7010
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	0.92	2.07	2.81	2.72
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0597	0.0688	0.0754	0.0744
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	5.5	1.4	4.0	0.6
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.7	1.3	1.6	0.9
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.5	1.5	1.2
Lead 210	pCi/L	-0.3	0.4	0.4	-0.05
Lead 210 precision (±)	pCi/L	0.7	0.6	0.8	0.9
Lead 210 MDC	pCi/L	1.2	1.1	1.4	1.4
Radium 226	pCi/L	0.65	0.69	0.84	0.90
Radium 226 precision (±)	pCi/L	0.19	0.19	0.23	0.22
Radium 226 MDC	pCi/L	0.19	0.13	0.21	0.18
Radium 228	pCi/L	7.3	2.3	3.3	1.3
Radium 228 precision (±)	pCi/L	1.8	1.1	1.1	0.77
Radium 228 MDC	pCi/L	1.6	1.3	1.1	1.3
Thorium 230	pCi/L	0.04	-0.007	0.03	-0.01
Thorium 230 precision (±)	pCi/L	0.08	0.08	0.09	0.06
Thorium 230 MDC	pCi/L	0.2	0.2	0.2	0.2
A/C Balance	%	-0.63	-0.59	0.67	-1.97
Anions	meq/L	111	98.1	110	115
Cations	meq/L	109	96.9	112	110
Solids, Total Dissolved - Calculated	mg/L	6400	5400	6500	6700
TDS Ratio	unitless	1.05	1.22	1.08	1.05
Trihalomethanes, Total	ug/L	0.84	1.15	1.29	1.68

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Alluvium Monitor Wells					
Well ID:		801	801	801	801
Collection Date:		10/3/2016	7/11/2016	4/4/2016	1/4/2016
Receive Date:		10/4/2016	7/14/2016	4/7/2016	1/7/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100246-007	C16070451-007	C16040219-007	C16010153-007
Bicarbonate as HCO <sub>3</sub>	mg/L	1580	1490	1570	1600
Calcium	mg/L	485	563	557	557
Chloride	mg/L	210	220	221	226
Magnesium	mg/L	734	767	782	808
Nitrogen, Ammonia as N	mg/L	6.3	2.9	4.2	4.5
Nitrogen, Nitrate+Nitrite as N	mg/L	53	54	49	50
Potassium	mg/L	12	12	13	12
Sodium	mg/L	341	366	368	358
Sulfate	mg/L	3560	3390	3590	3750
pH	s.u.	6.69	6.74	6.72	6.69
Solids, Total Dissolved TDS @ 180 C	mg/L	6970	6670	6900	7080
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	0.003
Manganese	mg/L	3.54	3.97	5.55	5.09
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0315	0.0341	0.0408	0.0408
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	5.9	0.6	1	1.3
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.8	0.9	1.0	1
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.5	1.5	1.2
Lead 210	pCi/L	0.1	0.6	0.3	-0.1
Lead 210 precision (±)	pCi/L	0.7	0.7	0.8	0.9
Lead 210 MDC	pCi/L	1.2	1.1	1.4	1.4
Radium 226	pCi/L	0.54	0.41	0.39	0.22
Radium 226 precision (±)	pCi/L	0.19	0.15	0.18	0.14
Radium 226 MDC	pCi/L	0.20	0.12	0.21	0.19
Radium 228	pCi/L	-4	2.5	2.0	0.46
Radium 228 precision (±)	pCi/L	2.8	1.0	0.90	0.83
Radium 228 MDC	pCi/L	1.3	1.3	1.1	1.3
Thorium 230	pCi/L	0.006	0.005	0.1	0.05
Thorium 230 precision (±)	pCi/L	0.05	0.06	0.1	0.09
Thorium 230 MDC	pCi/L	0.1	0.1	0.1	0.2
A/C Balance	%	-4.40	1.14	-0.83	-1.74
Anions	meq/L	109	105	110	114
Cations	meq/L	100	108	108	110
Solids, Total Dissolved - Calculated	mg/L	6400	6300	6600	6800
TDS Ratio	unitless	1.09	1.05	1.05	1.05
Trihalomethanes, Total	ug/L	1.2	1.53	1.58	1.00

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.



UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Alluvium Monitor Wells					
Well ID:		GW-1	GW-1	GW-1	GW-1
Collection Date:		10/3/2016	7/11/2016	4/4/2016	1/4/2016
Receive Date:		10/4/2016	7/14/2016	4/7/2016	1/7/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100246-008	C16070451-008	C16040219-008	C16010153-008
Bicarbonate as HCO <sub>3</sub>	mg/L	1790	1850	1870	1950
Calcium	mg/L	681	628	707	720
Chloride	mg/L	247	245	240	244
Magnesium	mg/L	570	577	587	588
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	89	92	85	84
Potassium	mg/L	8	8	8	8
Sodium	mg/L	412	400	413	400
Sulfate	mg/L	2860	2710	2820	2880
pH	s.u.	6.69	6.70	6.82	6.64
Solids, Total Dissolved TDS @ 180 C	mg/L	6210	6200	6430	6450
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	0.13	0.10	0.21	0.23
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0832	0.0894	0.103	0.0992
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	3.0	0.8	1.0	0.9
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.2	1.1	0.9	0.9
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.5	1.5	1.2
Lead 210	pCi/L	0.7	0.4	-0.3	-0.4
Lead 210 precision (±)	pCi/L	0.8	0.7	0.8	0.8
Lead 210 MDC	pCi/L	1.2	1.1	1.4	1.4
Radium 226	pCi/L	0.26	0.18	0.23	0.12
Radium 226 precision (±)	pCi/L	0.14	0.11	0.15	0.12
Radium 226 MDC	pCi/L	0.18	0.12	0.19	0.17
Radium 228	pCi/L	7.6	2.7	1.6	-0.2
Radium 228 precision (±)	pCi/L	2.9	1.0	0.78	0.69
Radium 228 MDC	pCi/L	1.5	1.2	1.0	1.2
Thorium 230	pCi/L	0.06	-0.007	0.04	0.04
Thorium 230 precision (±)	pCi/L	0.08	0.06	0.09	0.09
Thorium 230 MDC	pCi/L	0.1	0.2	0.2	0.2
A/C Balance	%	-1.55	-2.44	-0.25	-1.49
Anions	meq/L	102	100	102	105
Cations	meq/L	99.0	95.4	102	102
Solids, Total Dissolved - Calculated	mg/L	6100	5900	6100	6200
TDS Ratio	unitless	1.02	1.05	1.05	1.04
Trihalomethanes, Total	ug/L	1.7	2.70	2.25	2.67

**\*\*Note: The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.**

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Alluvium Monitor Wells					
Well ID:		EPA-28	EPA-28	EPA-28	EPA-28
Collection Date:		10/3/2016	7/11/2016	4/4/2016	1/4/2016
Receive Date:		10/4/2016	7/14/2016	4/7/2016	1/7/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100246-009	C16070451-009	C16040219-009	C16010153-009
Bicarbonate as HCO <sub>3</sub>	mg/L	403	408	404	425
Calcium	mg/L	490	494	495	487
Chloride	mg/L	101	99	96	101
Magnesium	mg/L	466	460	464	461
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	8.1	8.8	8.1	8.7
Potassium	mg/L	11	11	11	10
Sodium	mg/L	252	252	252	238
Sulfate	mg/L	3290	2950	3060	3140
pH	s.u.	6.91	6.90	6.97	6.82
Solids, Total Dissolved TDS @ 180 C	mg/L	5010	4970	5010	5020
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	0.1
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	0.47	0.25	0.50	0.49
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0171	0.0205	0.0192	0.0156
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	3.3	1.2	2.7	2.0
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.3	1.2	1.5	1
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.5	1.5	1.2
Lead 210	pCi/L	-0.3	0.8	0.3	-0.5
Lead 210 precision (±)	pCi/L	0.7	0.9	0.8	0.8
Lead 210 MDC	pCi/L	1.2	1.4	1.4	1.4
Radium 226	pCi/L	0.37	0.35	0.57	0.61
Radium 226 precision (±)	pCi/L	0.15	0.15	0.20	0.18
Radium 226 MDC	pCi/L	0.18	0.12	0.20	0.17
Radium 228	pCi/L	2.5	3.4	2.7	2.0
Radium 228 precision (±)	pCi/L	2.5	1.3	1.1	0.94
Radium 228 MDC	pCi/L	1.3	1.3	1.1	1.2
Thorium 230	pCi/L	0.09	0.2	0.04	0.01
Thorium 230 precision (±)	pCi/L	0.07	0.1	0.08	0.06
Thorium 230 MDC	pCi/L	0.08	0.1	0.1	0.2
A/C Balance	%	-2.89	1.49	0.36	-2.00
Anions	meq/L	78.4	71.6	73.6	75.9
Cations	meq/L	74.0	73.7	74.1	72.9
Solids, Total Dissolved - Calculated	mg/L	4800	4500	4600	4700
TDS Ratio	unitless	1.03	1.10	1.08	1.07
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Alluvium Monitor Wells					
Well ID:		EPA-28 Duplicate	EPA-28 Duplicate	EPA-28 Duplicate	EPA-28 Duplicate
Collection Date:		10/3/2016	7/11/2016	4/4/2016	1/4/2016
Receive Date:		10/4/2016	7/14/2016	4/7/2016	1/7/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100246-010	C16070451-010	C16040219-010	C16010153-010
Bicarbonate as HCO <sub>3</sub>	mg/L	416	413	400	424
Calcium	mg/L	489	493	494	497
Chloride	mg/L	99	102	97	101
Magnesium	mg/L	461	464	464	464
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	8.0	8.7	8.3	8.8
Potassium	mg/L	11	11	11	11
Sodium	mg/L	247	251	255	244
Sulfate	mg/L	3190	3010	3080	3150
pH	s.u.	6.91	6.85	6.95	6.84
Solids, Total Dissolved TDS @ 180 C	mg/L	4970	4980	5000	4970
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	0.44	0.46	0.50	0.50
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0177	0.0178	0.0193	0.0149
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	2.1	1.1	3.3	2.4
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.0	1.4	1.5	1.1
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.5	1.5	1.2
Lead 210	pCi/L	0.1	0.6	-0.3	0.4
Lead 210 precision (±)	pCi/L	0.7	0.8	0.8	0.9
Lead 210 MDC	pCi/L	1.2	1.4	1.4	1.4
Radium 226	pCi/L	0.52	0.33	0.71	0.66
Radium 226 precision (±)	pCi/L	0.18	0.14	0.21	0.20
Radium 226 MDC	pCi/L	0.18	0.12	0.20	0.19
Radium 228	pCi/L	1.3	1.7	0.79	2.6
Radium 228 precision (±)	pCi/L	2.6	1.0	0.78	0.87
Radium 228 MDC	pCi/L	1.4	1.4	1.2	1.1
Thorium 230	pCi/L	0.1	0.05	0.04	0.02
Thorium 230 precision (±)	pCi/L	0.1	0.08	0.09	0.06
Thorium 230 MDC	pCi/L	0.2	0.1	0.2	0.2
A/C Balance	%	-2.09	0.65	0.16	-1.38
Anions	meq/L	76.5	73.0	74.0	75.9
Cations	meq/L	73.4	74.0	74.2	73.9
Solids, Total Dissolved - Calculated	mg/L	4800	4600	4600	4700
TDS Ratio	unitless	1.05	1.08	1.08	1.05
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**\*\*Note: The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.**

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Alluvium Monitor Wells					
Well ID:		624	624	624	624
Collection Date:		10/3/2016	7/11/2016	4/4/2016	1/4/2016
Receive Date:		10/4/2016	7/14/2016	4/7/2016	1/7/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100246-011	C16070451-011	C16040219-011	C16010153-011
Bicarbonate as HCO <sub>3</sub>	mg/L	1610	1590	1590	1640
Calcium	mg/L	664	638	698	687
Chloride	mg/L	216	221	211	217
Magnesium	mg/L	423	416	420	416
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	75	77	72	73
Potassium	mg/L	6	6	6	6
Sodium	mg/L	303	296	310	292
Sulfate	mg/L	2290	2170	2220	2290
pH	s.u.	6.60	6.60	6.77	6.61
Solids, Total Dissolved TDS @ 180 C	mg/L	5260	5240	5270	5250
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	0.04	0.08	0.10	0.11
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0323	0.0339	0.0378	0.0394
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	2.3	0.6	0.08	1.7
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.0	1	0.9	1
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.5	1.5	1.2
Lead 210	pCi/L	0.3	-0.4	0.04	0.03
Lead 210 precision (±)	pCi/L	0.8	0.8	0.8	0.9
Lead 210 MDC	pCi/L	1.2	1.4	1.4	1.4
Radium 226	pCi/L	0.29	0.26	0.37	0.48
Radium 226 precision (±)	pCi/L	0.15	0.13	0.18	0.17
Radium 226 MDC	pCi/L	0.18	0.12	0.20	0.17
Radium 228	pCi/L	0.41	2.2	1.8	0.94
Radium 228 precision (±)	pCi/L	2.9	1.0	0.79	0.77
Radium 228 MDC	pCi/L	1.5	1.5	1.1	1.2
Thorium 230	pCi/L	0.4	0.02	0.05	0.05
Thorium 230 precision (±)	pCi/L	0.2	0.08	0.08	0.09
Thorium 230 MDC	pCi/L	0.2	0.2	0.1	0.2
A/C Balance	%	-2.52	-2.32	-0.21	-2.74
Anions	meq/L	85.5	82.9	83.4	85.9
Cations	meq/L	81.3	79.1	83.0	81.3
Solids, Total Dissolved - Calculated	mg/L	5000	4900	5000	5100
TDS Ratio	unitless	1.04	1.07	1.06	1.04
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.



UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Alluvium Monitor Wells					
Well ID:		SBL-1	SBL-1	SBL-1	SBL-1
Collection Date:		10/4/2016	7/12/2016	4/5/2016	1/5/2016
Receive Date:		10/7/2016	7/15/2016	4/8/2016	1/8/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100241-001	C16070513-001	C16040305-001	C16010177-012
Bicarbonate as HCO <sub>3</sub>	mg/L	440	460	442	473
Calcium	mg/L	490	486	498	484
Chloride	mg/L	78	86	77	80
Magnesium	mg/L	1240	1230	1250	1250
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	38	38	35	38
Potassium	mg/L	14	13	13	14
Sodium	mg/L	293	287	282	285
Sulfate	mg/L	6150	5840	6180	6130
pH	s.u.	6.77	6.76	6.84	6.73
Solids, Total Dissolved TDS @ 180 C	mg/L	9070	9380	9300	9350
Aluminum	mg/L	0.7	0.2	0.3	0.6
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.03	0.03	0.02	0.02
Lead	mg/L	0.001	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	3.97	3.44	3.76	3.66
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.09	0.07	0.07	0.07
Uranium	mg/L	0.0097	0.0098	0.0112	0.0097
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	0.001	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	4.6	0.8	1.4	2.2
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.7	1.1	1.1	1.2
Gross Alpha minus Rn & U MDC	pCi/L	1.2	1.7	1.3	1.3
Lead 210	pCi/L	0.3	-0.04	0.3	0.1
Lead 210 precision (±)	pCi/L	0.8	0.8	0.8	0.6
Lead 210 MDC	pCi/L	1.2	1.3	1.3	1.0
Radium 226	pCi/L	0.41	0.43	0.50	0.38
Radium 226 precision (±)	pCi/L	0.16	0.18	0.20	0.16
Radium 226 MDC	pCi/L	0.19	0.22	0.23	0.17
Radium 228	pCi/L	1.8	1.9	1.9	1.5
Radium 228 precision (±)	pCi/L	0.89	1.1	0.66	0.86
Radium 228 MDC	pCi/L	1.3	2.2	1.3	1.3
Thorium 230	pCi/L	-0.01	0.03	0.03	0.2
Thorium 230 precision (±)	pCi/L	0.05	0.1	0.2	0.2
Thorium 230 MDC	pCi/L	0.1	0.2	0.5	0.3
A/C Balance	%	-0.12	-2.80	-0.12	-0.02
Anions	meq/L	140	146	141	140
Cations	meq/L	140	138	140	140
Solids, Total Dissolved - Calculated	mg/L	8700	8900	8700	8700
TDS Ratio	unitless	1.05	1.05	1.07	1.08
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Alluvium Monitor Wells					
Well ID:		EPA-25	EPA-25	EPA-25	EPA-25
Collection Date:		10/4/2016	7/12/2016	4/5/2016	1/5/2016
Receive Date:		10/7/2016	7/15/2016	4/8/2016	1/8/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100241-002	C16070513-002	C16040305-002	C16010177-013
Bicarbonate as HCO <sub>3</sub>	mg/L	1400	1390	1250	1410
Calcium	mg/L	773	785	785	785
Chloride	mg/L	136	147	137	135
Magnesium	mg/L	245	240	238	243
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	70	71	66	67
Potassium	mg/L	8	8	8	8
Sodium	mg/L	217	206	210	211
Sulfate	mg/L	1940	2020	1940	1890
pH	s.u.	6.84	6.80	6.92	6.80
Solids, Total Dissolved TDS @ 180 C	mg/L	4420	4490	4390	4390
Aluminum	mg/L	ND(0.1)	ND(0.1)	0.1	0.1
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	0.87	0.85	0.50	0.51
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.109	0.113	0.124	0.114
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	0.8	0.2	0.2	-0.4
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.0	1.1	0.8	0.7
Gross Alpha minus Rn & U MDC	pCi/L	1.2	1.7	1.3	1.3
Lead 210	pCi/L	-0.07	-0.1	-0.4	-0.2
Lead 210 precision (±)	pCi/L	0.7	0.8	0.8	0.6
Lead 210 MDC	pCi/L	1.2	1.4	1.3	1.0
Radium 226	pCi/L	0.11	0.09	0.16	0.09
Radium 226 precision (±)	pCi/L	0.11	0.11	0.12	0.10
Radium 226 MDC	pCi/L	0.17	0.15	0.16	0.15
Radium 228	pCi/L	0.46	1.8	0.89	0.07
Radium 228 precision (±)	pCi/L	0.71	0.99	0.60	0.65
Radium 228 MDC	pCi/L	1.2	1.4	0.92	1.1
Thorium 230	pCi/L	0.04	0.1	0.02	0.06
Thorium 230 precision (±)	pCi/L	0.09	0.1	0.07	0.1
Thorium 230 MDC	pCi/L	0.2	0.1	0.1	0.2
A/C Balance	%	-2.59	-4.24	-1.04	-1.73
Anions	meq/L	72.0	74.2	69.6	70.9
Cations	meq/L	68.4	68.1	68.1	68.5
Solids, Total Dissolved - Calculated	mg/L	4300	4400	4200	4300
TDS Ratio	unitless	1.02	1.01	1.03	1.03
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Alluvium Monitor Wells					
Well ID:		627	627	627	627
Collection Date:		10/4/2016	7/12/2016	4/5/2016	1/5/2016
Receive Date:		10/7/2016	7/15/2016	4/8/2016	1/8/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100241-003	C16070513-003	C16040305-003	C16010177-014
Bicarbonate as HCO <sub>3</sub>	mg/L	608	602	594	615
Calcium	mg/L	539	542	541	530
Chloride	mg/L	34	37	34	34
Magnesium	mg/L	235	231	235	233
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	84	86	82	83
Potassium	mg/L	5	5	5	5
Sodium	mg/L	385	383	387	390
Sulfate	mg/L	2380	2450	2350	2340
pH	s.u.	6.93	6.90	7.09	6.89
Solids, Total Dissolved TDS @ 180 C	mg/L	4180	4280	4200	4210
Aluminum	mg/L	ND(0.1)	ND(0.1)	0.1	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	0.05	0.18	0.05	0.26
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0181	0.0190	0.0201	0.0206
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	1.4	0.9	1.7	0.6
Gross Alpha minus Rn & U Precision (±)	pCi/L	1	1.1	1.0	0.9
Gross Alpha minus Rn & U MDC	pCi/L	1.2	1.7	1.3	1.3
Lead 210	pCi/L	1.3	0.3	0.1	0.2
Lead 210 precision (±)	pCi/L	0.9	0.8	0.8	0.6
Lead 210 MDC	pCi/L	1.2	1.4	1.3	1.0
Radium 226	pCi/L	0.26	0.20	0.24	0.18
Radium 226 precision (±)	pCi/L	0.15	0.12	0.12	0.11
Radium 226 MDC	pCi/L	0.19	0.15	0.16	0.14
Radium 228	pCi/L	0.73	3.6	0.59	0.32
Radium 228 precision (±)	pCi/L	0.78	1.3	0.58	0.64
Radium 228 MDC	pCi/L	1.3	1.5	0.91	1.1
Thorium 230	pCi/L	-0.004	0.06	0.06	-0.006
Thorium 230 precision (±)	pCi/L	0.04	0.09	0.07	0.1
Thorium 230 MDC	pCi/L	0.1	0.1	0.1	0.2
A/C Balance	%	-2.50	-4.02	-1.65	-2.11
Anions	meq/L	66.3	68.1	65.4	65.4
Cations	meq/L	63.1	62.8	63.3	62.7
Solids, Total Dissolved - Calculated	mg/L	4300	4400	4200	4200
TDS Ratio	unitless	0.98	0.98	1.00	1.00
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.

## Appendix B

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### *Zone 3 Monitoring Data*

Earlier remedial action in Zone 3 has consisted of the operation of the Northeast Pump-Back Wells (Wells 600, 608, 610, 613, and 672), and installation and operation of twelve Stage I Extraction Wells (Wells 701-703 and 705-713) in mid-1989 and seven Stage II Extraction Wells (Wells 714-720) in mid-1991. Remedial action has been monitored since the third quarter of 1989 by measurement of groundwater levels and groundwater sampling and analyses at nineteen Zone 3 monitoring wells (Wells 106 D, 9D, 517, 518, 504 B, 502 B, 501 B, 420, 411, EPA 18, EPA 17, EPA 15, EPA 14, EPA 13, EPA 12, EPA 11, EPA 9, EPA 3, and EPA 1). Well 126 was added to the monitoring program in the third quarter of 1990 to measure water levels in accordance with the requirements of the Nuclear Regulatory Commission (NRC) and the U.S. Environmental Protection Agency (EPA).

At the end of the 1993 operating year, the extraction and performance monitoring systems for Zone 3 were modified with the approval of the NRC and EPA. Modifications included discontinuing pumping at ten low-producing extraction wells (Wells 600, 608, 610, 672, 702, 703, 705, 710, 712, and 713) and at two extraction wells that were intercepting background water (Wells 714 and 715). Water levels were measured at seven of these former extraction wells (Wells 608, 702, 703, 710, 712, 714, and 715) during 2000 to augment the existing monitoring system.

In July 1999, ten additional low-producing extraction wells (Wells 613, 701, 706, 707, 708, 709, 711, 713, 719, and 720) were decommissioned with approval of the NRC and EPA. Several of these wells were converted to use as water level and water quality monitoring wells (Wells 613 and 711) or as water level monitoring wells (713, 701, 706, 707 and 719).

Beginning with the second quarter of 2000, the revised monitoring program was implemented. This included using a revised set of monitoring wells and low-flow sampling procedures. Some changes to the well set used in the revised program were implemented in the second quarter of 2001, including installation a new well designated NBL 1. The wells included in the monitoring program for Zone 3 are listed in Table 9 of this 2010 Annual Review Report. See enclosed Figure B-1 for the current layout of the wells. During June 2002, the following wells were installed to track the northward migration of the Zone 3 seepage-impact front: PB 1, PB 2, PB 3, and PB 4. Well PB-1 no longer exists. These wells are not part of the formal performance monitoring program. During July 2004, two new piezometers were installed in the updip, southeastern part of the Zone 3 hydrostratigraphic unit: Z3 M-1 and Z3 M-2. These piezometers were dry during the first two quarterly measurement events. Subsequent monitoring has shown water-level variations to approximately 1 ft in Z3-M2 and 0.4 ft in Z3-M1. These piezometers are not part of the formal performance monitoring program.

During 2004, new extraction wells were installed and hydrofractured in order to enhance the permeability of the Zone 3 sandstones. Since then, some of these extraction wells have been shut off due to very low yields, fouling, or becoming dry. Starting in April 2005 and continuing to present in 2010, the extraction wells pumped groundwater from Zone 3 that is piped to the



evaporation pond. These extraction wells are shown in Figure B-1 of this appendix (RW-series wells); older well PB 2 was also utilized for extraction pumping, but as of July 2013 pumping has been discontinued due to performance degradation. Figure B-1 also shows the locations of two new wells installed during 2007: extraction well RW A (September 2007) and tracking monitoring well NBL 2 (August 2007; not part of the formal monitoring program).

During September 2008 five new extraction wells were installed within Section 36 to the north of Well NBL 1. These wells (designated NW 1 through NW 5) underwent test pumping during February 2009, and from February to November 2009 NW 1, NW 2, and NW 3 were pumped. In November 2009 this pumping regime was re-optimized to comprise pumping at NW 1, NW 2, and NW 4. Due to critical loss of saturated thickness and yield, NW 1 was shut off during May 2012 and, to help compensate, the pumping rate at NW 2 was increased from 0.5 to 1 gpm in June 2012. NW 4 performance degraded significantly during 2013 to 2015 and pumping was suspended in October 2015. Pumping was initiated at NW 5 on March 16, 2016 as a replacement for NW 4.

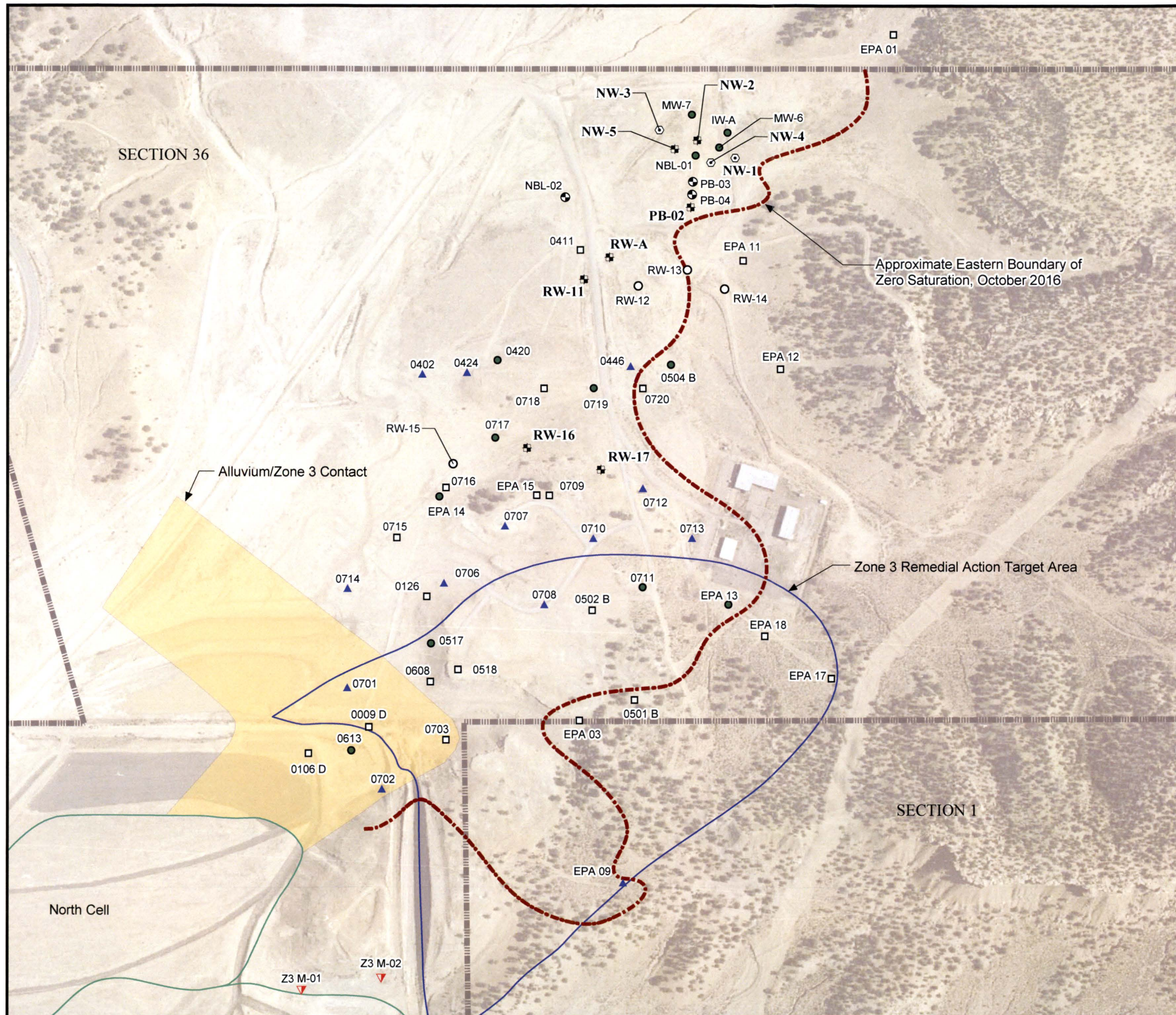
During May and June 2010, three new wells were installed in the northern area of Zone 3. The injection well, IW A, was installed as part of a remedial enhancement program proposed in the Remedial Design Report (Chester Engineers, 2010c). The pilot study program started in April 2011 and involves injection of water amended with alkalinity. Two new nearby monitoring wells, MW-6 and MW-7, were installed to provide additional locations for monitoring water level changes associated with the injection and monitoring the groundwater quality. The injection capacity at IW A declined over time. In late June 2012 the capacity had declined to ~ 0.2 gpm and it became very difficult to meet the target level for the well water level. On June 29, 2012, the injection at IW A was terminated for this reason. Through this date, a total of 426,363 gallons of water had been injected.

Table B.1 presents the quarterly water level and water quality data for the monitoring wells from start-up of the Stage I wells in the third quarter of 1989 through the fourth quarter of 2016. Water levels for wells that are monitored only for water level were presented for the period from 1994 through 2002 in Earth Tech (2002d, Table B.2). Groundwater level updates for four of these wells (402, 424, 446, and NBL 1) were provided in Table B.1 of the 2004 Annual Review Report (N.A. Water Systems, 2004b), and the water levels for October 2016 are provided in Figure 36 of this 2016 Annual Review Report. Monthly field measurements and quarterly sample collection at Well NBL 1 were suspended as of March 2013 subsequent to determining that the water level dropped below the top of sediment accumulated at the base of the well. During 2015 it was determined that the Well 446 water level is below the bottom of the screened interval (there is a 10-foot section of blank well casing below the well screen) so is unreliable. The Zone 3 groundwater extraction system, and the likelihood that recharge from the alluvium has ceased, have resulted in dewatering a large portion of the Zone 3 Remedial Action Target Area and, consequently, many of the monitoring wells have gone dry since 1989. Water levels have declined such that there was insufficient water volume to collect samples for full laboratory analysis from Well MW 6 (quarterly samples beginning in July 2014), Well PB 2 (beginning in

October 2013), and Wells PB 3 and PB 4 (annual samples beginning in October 2014). For these wells, water level and water quality data are presented for the period of time prior to dewatering. The laboratory analytical data for 2016 are presented at the end of this appendix.

**Figures B-1 and B-2**





### Legend

- Groundwater Quality and Water Level Monitoring Well
- ▲ Water Level Monitoring Well
- Zone 3 Monitoring Well Removed From Monitoring Program
- ⊙ Boundary Well
- ▼ Piezometer Installed in 2004
- ✦ Extraction Well
- ⊙ Extraction Well (Off)
- Former Extraction Well
- ▬ Property Boundary
- ▬ Zone 3 Target Remedial Action Area
- ▬ Section Boundary
- ▬ Cell Boundary
- Approximate Eastern Boundary of Zero Saturation

### Notes:

1. Aerial photo taken on August 1, 1996.
2. Extraction wells NW-1 through NW-5 installed September 2008; pumping started in three of the wells during February 2009.
3. PB-02 not pumping during 2016.



**FIGURE B-1**

Zone 3 2016 Monitoring Well Locations

United Nuclear Corporation Church Rock Site,  
Church Rock, New Mexico





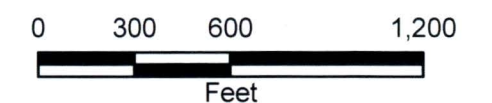


### Legend

- Groundwater Quality and Water Level Monitoring Well
- ▲ Water Level Monitoring Well
- Zone 3 Monitoring Well Removed From Monitoring Program
- ⊙ Boundary Well
- ▼ Piezometer Installed in 2004
- ⊕ Extraction Well
- ⊙ Extraction Well (Off)
- Former Extraction Well
- Proposed Monitoring Well
- Proposed Monitoring Well Pair
- ▬ Property Boundary
- Zone 3 Target Remedial Action Area
- Section Boundary
- Cell Boundary
- Approximate Eastern Boundary of Zero Saturation
- Seepage Plume *Approximate Area Impacted by Tailings Seepage*

### Notes:

1. Aerial photo taken on August 1, 1996.



### FIGURE B-2

### Zone 3 Proposed Monitoring Well Locations

United Nuclear Corporation Church Rock Site,  
Church Rock, New Mexico





**Notes for Table B.1****Zone 3 Data Summary, 1989 - 2016***General Notes:*

1. NRC standard as listed in License Condition 30, Part B (revised 2015 [NRC, 2015] and with proposed corrections of typographical errors [GE, 2015]), based on updated BTVs for the site [UNC, 2012; GE, 2012b).
2. EPA standard is revised cleanup level based on updated BTV evaluation for the site (Chester Engineers, 2015b) and approved for use to complete Part III of the SWSFS (EPA, 2015).
3. Standard for nitrate reflects revised standards recommended in the NRC's 1996 evaluation of background water quality and documented in the January 6, 1998, letter from NMED to EPA.
4. NA - Not applicable.
5. Data qualifiers
  - a. D - sample reporting limit was increased due to sample matrix.
  - b. E - analyte concentration exceeded instrument calibration range (estimated result)
  - c. H - analysis was performed past the recommended method holding time.
  - d. U - Not detected at minimum detectable concentration
6. Values that exceed the NRC and/or EPA standards are shaded.
7. Gross alpha value excludes contribution from radon and uranium.
8. Reporting limit for bicarbonate changed from 0.0 mg/L to 0.1 mg/L in fourth quarter 1997.
9. Reporting limit for cadmium changed from 0.01 mg/L to 0.005 mg/L after fourth quarter 1997. The analytical method changed from EPA 200.7 (ICP) to 200.8 (ICP-MS).
10. Well NBL-01 was installed in June 2001 in accordance with the agencies during the November 14-15, 2000 meeting. The well is monitored for water level and water quality beginning August 2001.
11. NO<sub>3</sub> (nitrate) is reported by the laboratory as nitrate + nitrite as N.
12. During August 2006, the NRC issued License Amendment 37 (NRC, 2006b) revising the former 1 ug/L chloroform groundwater protection standard to 80 ug/L for total trihalomethanes (TTHMs) in the Southwest Alluvium, Zone 1 and Zone 3; and also revising the current combined radium-226 and -228 groundwater protection standard of 5 pCi/L to 5.2 pCi/L in the Southwest Alluvium and 9.4 pCi/L in Zone 1. The combined radium standards have been subsequently revised (see Note 1).

13. Energy Laboratory's reporting of radiological analyses changed during 2008 (N.A. Water Systems, 2008d). This affected the reporting of Church Rock sample analyses beginning in April 2008 (2nd quarter). The changes were made to make the reporting methods consistent with Section 7.5 of The United States Nuclear Regulatory Commission's Regulatory Guide 4.14.

The changes are summarized as follows:

- A minimum detectable concentration (MDC) is determined and reported for each analysis.
- Sample results are reported regardless of whether they are lower than the MDC for the analysis. This may result in the reporting of negative concentrations.
- Sample results lower than the MDC are qualified with a "U".

These noted changes affected the reporting of all radiological parameters analyzed in Church Rock samples, except for thorium-230. Energy Labs did not have an approved methodology for determining MDC values for thorium-230. In the absence of MDC values, the historical reporting limit was used instead. Therefore, U-qualified results for thorium-230 indicate concentrations below a reporting limit rather than an MDC. Otherwise, the reporting of thorium-230 results was treated similarly to other radiological parameters. This means that measured concentrations were reported with a U qualification if the values were below the reporting limit.

The rationale for reporting values below MDC or reporting limit, even if negative, is that errors associated with the reported values are expected, over time, to average to zero. This means that averages or sums (e.g. for total radium) of concentrations will tend to be more accurate if below limit (MDC or reporting) results are retained in the calculations.

14. At the request of EPA, UNC had the laboratory reduce the reporting limits for beryllium and lead. The new reporting limits are lower than the action levels. Beryllium's former reporting limit of 10 ug/L has been reduced to 1 ug/L (using lab method E200.7), and lead's former reporting limit of 50 ug/L has been reduced to 1 ug/L (using lab method E200.8). These changes were implemented during the July 2012 sampling event.

15.

*Specific Notes:*

- Well 502 B was eliminated from the monitoring program as of 2nd quarter 2000 in accordance with the Revised Monitoring Program.
- Well 711 was added to the monitoring program to replace Well 502 B.
- Well 708 is monitored for water level and water quality beginning 2nd quarter 2001.
- Well 518 was eliminated from the monitoring program as of 2nd quarter 2000 in accordance with the Revised Monitoring Program.

- Well EPA 9 is monitored for water level only beginning in 2nd quarter 2000.
- Well EPA 13 was monitored for water level only from 2nd quarter 2000 through 1st quarter 2001.
- Well EPA 13 is monitored for water level and water quality beginning in 2nd quarter 2001.
- Wells 402, 424, 446, 613, 701, 706, 707, 717, and 719 were added as water level monitoring wells as of 2nd quarter 2000.
- Wells 717 and 719 are monitored for water quality and water level beginning 2nd quarter 2001.
- Well 9 D contained insufficient water for sampling, 4th quarter 1992.
- Well 106 D contained insufficient water for sampling, 3rd quarter 1991.
- Well 501 B contained insufficient water for sampling, 4th quarter 1993.
- Well EPA 3 contained insufficient water for sampling, 1st quarter 1992.
- The water level in EPA-11 fell below the pump inlet after 2nd quarter 1990. The pump is cemented in place and cannot be lowered.
- Well EPA 12 contained insufficient water for sampling, 4th quarter 1992.
- Well EPA 15 contained insufficient water for sampling, 1st quarter 1996.
- Well EPA 17 contained insufficient water for sampling, 3rd quarter 1992.
- Well EPA 18 contained insufficient water for sampling, 1st quarter 1995.
- Well EPA 1 contained insufficient water for sampling, 1st quarter 1997.
- Well 411 contained insufficient water for sampling, 2nd quarter 1998.
- Well 504 B contained insufficient water for sampling, 1st quarter 2011.
- At the request of EPA, UNC started quarterly sampling of MW 6 and MW 7 during the July 2012 sampling event.
- At the request of EPA, UNC made turbidity measurements during the July and October 2012 sampling events.
- Well NBL 1 contained insufficient water for sampling beginning March 2013.
- Well PB 2 contained insufficient water for sampling beginning October 2013.
- Well MW 6 contained insufficient water for sampling beginning July 2014.
- Wells PB 3 and PB 4 contained insufficient water for sampling beginning October 2014.
- Well MW 7 could not be sampled during October 2015 due to pump failure.



- NW 3 will be sampled for the full parameter list quarterly starting October 2016 (for an undetermined amount of time) per a 2016 request from EPA for UNC to provide quarterly reporting related to potential seepage impacts north of the northern Zone 3 extraction wells.

**Table B.1**

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
<b>NRC Standard</b>			<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>80</b>	<b>NA</b>	<b>0.757</b>
<b>EPA Standard</b>			<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>8592</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>5693</b>	<b>250</b>	<b>NA</b>	<b>190</b>	<b>80</b>	<b>5</b>	<b>0.757</b>
0411	N	7/23/1989	6866.20	7.30	6.45	2458	454	125	107	6.4	246	1563	17.9	0.41	0.04	< 1	< 0.1	0.02
0411	N	10/11/1989	6864.90	6.30	6.90	2628	470	128	110	9.5	243	1688	20	0.55	0.09	< 1	< 0.1	0.031
0411	N	1/3/1990	6863.70	6.00	6.50	2534	440	116	112	6.8	256	1509	19.8	0.39	0.08	< 1	< 0.1	0.018
0411	N	4/3/1990	6862.30	6.00	6.60	2545	431	117	109	6.6	270	1444	19.7	0.33	0.08	< 1	< 0.1	0.018
0411	N	7/2/1990	6861.20	5.80	6.60	2602	475	114	102	6	267	1483	19	0.2	0.08	< 1	< 0.1	0.009
0411	N	10/2/1990	6860.30	6.20	6.85	2527	406	110	109	6.5	266	1607	20.1	0.11	0.05	< 1	< 0.1	0.018
0411	N	1/3/1991	6859.50	6.20	6.49	2746	468	126	117	15.7	262	1492	19.4	0.45	0.23	< 1	< 0.1	0.029
0411	N	4/10/1991	6859.20	6.00	7.23	2600	467	118	111	7.8	277	1453	22.3	0.19	0.05	< 1	< 0.1	0.029
0411	N	7/16/1991	6858.20	6.10	6.63	2705	419	110	113	6.3	278	1742	22.3	0.38	0.02	< 1	< 0.1	0.035
0411	N	10/14/1991	6855.30	6.00	7.28	2851	414	98.6	123	5.8	271	1640	28.6	0.3	0.02	< 1	0.23	0.062
0411	N	1/14/1992	6854.70	5.80	7.78	2939	467	128	119	6.5	255	1765	23.1	0.8	< 0.01	< 1	< 0.1	0.088
0411	N	4/7/1992	6854.90	5.90	7.82	3064	475	144	140	8.4	401	1847	26.1	0.37	< 0.1	< 1	< 0.1	0.087
0411	N	7/7/1992	6853.30	5.60	8.09	3340	473	170	144	9.6	244	2034	28.7	0.49	0.1	< 1	< 0.1	0.044
0411	N	10/6/1992	6850.90	6.00	8.15	3860	634	239	139	9.2	259	2352	27.4	0.44	6.05	< 1	0.2	0.022
0411	N	1/6/1993	6851.20	6.00	6.79	3091	530	208	127	10.6	246	2137	30.4	1.13	4.1	< 1	< 0.1	0.022
0411	N	4/6/1993	6851.30	6.70	6.65	3306	510	200	140	8	245	2257	35.1	0.84	1.8	< 1	< 0.1	0.011
0411	N	7/16/1993	6846.90	6.60	6.25	3412	586	242	166	12.2	321	2420	39.6	0.68	4.4	< 1	0.14	0.017
0411	N	10/6/1993	6848.00	7.10	6.81	4026	614	285	149	9.3	340	2591	41.3	0.33	14.3	< 1	< 0.1	0.013
0411	N	1/5/1994	6841.60	6.80	6.69	4298	557	276	149	9.3	303	2540	45.8	0.55	12.5	< 1	< 0.1	0.011
0411	N	4/14/1994	6847.40	7.10	6.51	4006	620	274	146	9.8	294	2634	42.1	1.06	8.8	< 1	< 0.1	0.01
0411	N	7/21/1994	6846.40	6.80	6.79	4253	645	287	141	9.6	293	2883	38.1	0.43	10.8	< 1	< 0.1	0.008
0411	N	7/29/1994	no data	6.50	7.30	4280	688	307	147	9.6	300	2906	43.5	0.54	17.3	< 1	0.12	0.009
0411	N	10/5/1994	6846.20	6.80	7.36	4053	636	286	141	9.9	274	2509	36.9	0.99	5.17	< 1	< 0.1	0.009
0411	N	10/6/1994	no data	6.30	7.56	4404	653	300	167	9.8	331	2760	47.2	0.73	24.7	< 1	< 0.1	0.008
0411	N	1/10/1995	6845.40	6.60	7.65	4276	675	213	139	11	295	2754	40.5	0.71	5.55	< 1	< 0.1	0.009
0411	N	4/11/1995	6842.90	6.60	6.35	4320	645	283	152	9.5	182	2862	50	0.64	5.86	< 1	< 0.1	0.004
0411	N	7/11/1995	6844.40	6.90	7.67	4038	605	315	147	9.4	379	2471	49.4	1.4	26.4	< 1	< 0.1	0.012
0411	N	10/3/1995	6842.90	6.80	8.06	4526	645	322	162	9.1	383	2684	47	0.46	27.3	< 1	< 0.1	0.014
0411	N	1/4/1996	6845.40	7.10	6.69	4445	630	310	173	9.5	382	2655	45.3	0.06	29.2	< 1	< 0.1	0.006
0411	N	4/2/1996	6844.50	7.00	7.67	4338	604	300	146	9.8	366	2666	40	0.2	8.92	< 1	< 0.1	0.014
0411	N	7/17/1996	6844.10	7.00	6.80	4459	580	290	168	10.1	410	2730	52.1	0.25	28.1	< 1	< 0.1	0.007
0411	N	10/8/1996	6844.20	6.90	7.61	4370	611	318	151	10.1	429	2542	45.6	0.3	45.4	< 1	< 0.1	0.012
0411	N	1/28/1997	6844.30	6.80	7.83	4350	610	315	144	10.1	468	2726	56	0.63	13.2	< 1	< 0.1	0.013
0411	N	4/15/1997	6844.20	7.10	7.77	4470	671	358	159	10.7	451	2610	51	0.22	29.1	< 1	< 0.1	0.013
0411	N	7/15/1997	6844.10	6.90	7.83	4510	659	342	159	9.6	437	2750	54.8	0.2	33.9	< 1	< 0.1	0.014

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
0411	N	7/23/1989	< 0.05	< 0.01	0.05	< 0.05	2.7	2	0.08	0.001	< 0.1	0.0543	6.7	6.3	13	10.2	< 1	14.6
0411	N	10/11/1989	< 0.05	< 0.01	0.06	< 0.05	3	2.5	0.09	< 0.001	< 0.1	0.081	5.4	< 1	5.4	< 0.2	< 1	6
0411	N	1/3/1990	< 0.05	< 0.01	0.03	< 0.05	2.3	1.8	0.07	< 0.001	< 0.1	0.055	6	3.1	9.1	< 0.2	< 1	8.2
0411	N	4/3/1990	< 0.05	< 0.01	0.05	< 0.05	2.5	2.4	0.08	< 0.001	< 0.1	0.05	4.7	2.4	7.1	< 0.2	< 1	5.3
0411	N	7/2/1990	< 0.05	< 0.01	0.04	< 0.05	2.44	1.77	0.07	< 0.001	< 0.1	0.0592	5.1	5.2	10.3	0.4	< 1	5
0411	N	10/2/1990	< 0.05	< 0.01	0.06	< 0.05	2.42	1.93	0.06	< 0.001	< 0.1	0.049	6.3	< 1	6.3	< 0.2	1.8	7.5
0411	N	1/3/1991	< 0.01	< 0.01	0.06	< 0.05	2.72	1.95	0.11	< 0.001	< 0.1	0.1131	6.9	3.7	10.6	< 0.2	< 1	7
0411	N	4/10/1991	< 0.01	< 0.01	0.05	< 0.05	2.01	1.34	0.06	< 0.001	< 0.1	0.0549	5.8	7.2	13	< 0.2	2.6	6
0411	N	7/16/1991	< 0.01	< 0.01	0.04	< 0.05	2.37	1.89	< 0.05	< 0.001	< 0.1	0.04	4.6	3.6	8.2	< 0.2	2	5
0411	N	10/14/1991	< 0.01	< 0.01	0.06	< 0.05	2.92	2.96	0.09	< 0.001	< 0.1	0.059	5.5	< 1	5.5	< 0.2	< 1	6
0411	N	1/14/1992	< 0.01	< 0.01	0.06	< 0.05	2.96	2.73	0.09	0.002	< 0.1	0.039	5.4	4.7	10.1	< 0.2	3.5	5
0411	N	4/7/1992	< 0.01	< 0.01	0.06	< 0.05	3.95	3.5	0.05	< 0.001	< 0.1	0.065	4.9	4.3	9.2	< 0.2	2.8	4.9
0411	N	7/7/1992	< 0.01	< 0.01	0.08	< 0.05	3.62	4.11	0.08	0.003	< 0.1	0.02	5.9	3.6	9.5	< 0.2	< 1	6.5
0411	N	10/6/1992	< 0.01	< 0.01	0.09	< 0.05	4.41	6.6	0.11	0.003	< 0.1	0.154	5.2	8.4	13.6	< 0.2	< 1	5.3
0411	N	1/6/1993	< 0.01	< 0.01	0.09	< 0.05	4.65	5.38	0.14	0.004	< 0.1	0.129	6.8	5.8	12.6	< 0.2	2.3	6.9
0411	N	4/6/1993	< 0.01	< 0.01	0.1	< 0.05	5.5	6.41	0.13	< 0.001	< 0.1	0.205	6.7	9.6	16.3	< 0.2	< 1	6.9
0411	N	7/16/1993	< 0.01	< 0.01	0.12	< 0.05	4.48	8.5	0.14	< 0.001	< 0.1	0.127	4.8	3.5	8.3	< 0.2	1.2	5.2
0411	N	10/6/1993	< 0.01	< 0.01	0.1	< 0.05	4	8.38	0.13	< 0.001	< 0.1	0.145	3.8	6.3	10.1	< 0.2	2.2	4
0411	N	1/5/1994	< 0.01	< 0.01	0.08	< 0.05	4.07	6.9	0.08	< 0.001	< 0.1	0.182	6.6	2.8	9.4	< 0.2	2.7	11.8
0411	N	4/14/1994	< 0.01	< 0.01	0.1	< 0.05	4.07	7.96	0.1	< 0.001	< 0.1	0.187	7.4	7.8	15.2	< 0.2	3.7	19.3
0411	N	7/21/1994	< 0.01	< 0.01	0.13	< 0.05	4.68	9.23	0.17	< 0.001	< 0.1	0.186	6.7	10.9	17.6	< 0.2	4.4	23.2
0411	N	7/29/1994	< 0.01	< 0.01	0.08	< 0.05	3.87	8.49	0.13	0.001	< 0.1	0.234	9.4	4.7	14.1	< 0.2	1.2	16.6
0411	N	10/5/1994	< 0.01	< 0.01	0.08	< 0.05	4.42	6.59	0.13	0.004	< 0.1	0.156	6.7	13.1	19.8	< 0.2	< 1	26.5
0411	N	10/6/1994	< 0.01	< 0.01	0.09	< 0.05	3.64	8.87	0.11	0.006	< 0.1	0.258	4.8	22.3	27.1	< 0.2	< 1	38.4
0411	N	1/10/1995	< 0.01	< 0.01	0.13	< 0.05	3.68	11.5	0.12	< 0.001	< 0.1	0.246	9.7	5.6	15.3	< 0.2	2.8	18.3
0411	N	4/11/1995	< 0.01	< 0.01	0.08	< 0.05	4.38	8.74	0.08	< 0.001	< 0.1	0.238	6.4	6.6	13	< 0.2	< 1	16.3
0411	N	7/11/1995	< 0.01	< 0.01	0.086	< 0.05	3.48	9.6	0.08	< 0.001	< 0.1	0.215	5.1	2.5	7.6	< 0.2	< 1	10.7
0411	N	10/3/1995	< 0.01	< 0.01	0.09	< 0.05	< 0.01	9.91	< 0.05	0.002	< 0.1	0.2669	8.4	< 1	8.4	< 0.2	1.5	14.7
0411	N	1/4/1996	< 0.01	< 0.01	0.09	< 0.05	3.18	10.6	0.07	< 0.001	< 0.1	0.287	5	4.6	9.6	< 0.2	2.6	5.7
0411	N	4/2/1996	< 0.01	< 0.01	0.08	< 0.05	3.8	8.8	0.07	< 0.001	< 0.1	0.306	4.5	3.1	7.6	< 0.2	< 1	4.8
0411	N	7/17/1996	< 0.01	< 0.01	0.09	< 0.05	3.39	10	0.06	< 0.001	< 0.1	0.281	5	4.7	9.7	< 0.2	< 1	8.2
0411	N	10/8/1996	< 0.01	< 0.01	0.07	< 0.05	3.38	9.97	0.06	< 0.001	< 0.1	0.164	3.5	7.8	11.3	< 0.2	< 1	2.4
0411	N	1/28/1997	< 0.01	< 0.01	0.06	< 0.05	3.11	10.7	< 0.05	0.002	< 0.1	0.145	3.6	< 1	3.6	0.5	< 1	4.5
0411	N	4/15/1997	< 0.01	< 0.01	0.06	< 0.05	3.04	10.5	< 0.05	< 0.001	< 0.1	0.235	4.7	2.5	7.2	< 0.2	< 1	5.8
0411	N	7/15/1997	< 0.01	< 0.01	0.08	< 0.05	2.7	9.8	0.05	0.002	< 0.1	0.212	4.5	2.2	6.7	< 0.2	< 1	3.9



**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
0411	N	10/15/1997	6844.00	6.80	7.93	4490	685	350	154	10.2	433	2620	62.3	0.32	30.3	< 1	< 0.1	0.01
0411	N	1/20/1998	6844.00	6.70	7.95	4390	634	323	178	10.4	439	2700	57.5	0.46	31.2	< 1	< 0.1	0.007
0420	N	7/23/1989	6882.00	6.30	6.52	2239	438	110	99	5.8	285	1293	16.5	0.56	60	< 1	< 0.1	0.012
0420	N	10/11/1989	6879.70	6.40	6.84	2328	402	112	96.8	8.5	244	1594	18.7	0.77	4.8	< 1	0.16	0.029
0420	N	1/3/1990	6878.30	5.90	6.20	2680	431	141	99.5	7.1	196	1602	19.1	1.43	2.1	< 1	< 0.1	0.055
0420	N	4/3/1990	6876.80	5.90	6.40	2725	439	149	97	7.1	209	1532	18.4	1.29	0.15	< 1	< 0.1	0.058
0420	N	7/2/1990	6875.70	6.00	6.56	2708	464	140	91.7	6.2	226	1577	18.7	0.77	0.87	< 1	< 0.1	0.024
0420	N	10/2/1990	6874.60	6.10	6.57	2777	412	151	91.5	7.1	198	1771	18.8	0.66	< 0.01	< 1	< 0.1	0.034
0420	N	1/3/1991	6874.00	6.20	7.30	2729	478	135	105	27	248	1574	18	0.82	6.8	< 1	< 0.1	0.024
0420	N	4/10/1991	6874.00	6.00	6.99	2635	483	143	102	7.9	269	1480	19.1	0.54	5.7	< 1	< 0.1	0.027
0420	N	7/16/1991	6872.40	5.90	6.43	2840	492	114	87.3	6.9	205	1888	17.5	1.1	0.11	< 1	< 0.1	0.04
0420	N	10/14/1991	6866.70	5.90	7.01	2982	593	133	94.1	6.1	217	1819	21.6	1.2	0.07	< 1	< 0.1	0.066
0420	N	1/14/1992	6868.50	5.90	8.17	2806	426	148	93.1	6.4	243	1831	17.8	1.3	2	< 1	< 0.1	0.053
0420	N	4/7/1992	6868.70	5.80	7.89	2962	453	164	99.2	8.3	265	1890	16.2	1.4	< 0.1	< 1	< 0.1	0.032
0420	N	7/7/1992	6862.80	5.70	7.71	3097	494	202	98.9	8.6	244	1750	18.3	1.78	0.2	< 1	0.13	0.036
0420	N	10/6/1992	6861.90	6.00	6.83	3098	537	180	100	7.8	114	1991	23.2	1.2	< 0.1	< 1	0.3	0.111
0420	N	1/6/1993	6864.30	5.90	6.58	2512	455	152	86	6.7	119	1675	19.3	1.29	< 0.1	< 1	< 0.1	0.104
0420	N	4/6/1993	6864.60	6.10	6.83	2505	413	118	111	5.4	222	1658	24.4	0.42	1.9	< 1	< 0.1	0.044
0420	N	7/13/1993	6859.60	6.00	6.26	2704	435	169	100	7.2	143	1818	21.1	0.83	0.7	< 1	< 0.1	0.1
0420	N	10/6/1993	6858.40	6.00	5.81	2947	497	165	95.4	6.6	84.5	2062	20.6	0.87	0.8	< 1	0.1	0.064
0420	N	1/5/1994	6859.80	6.20	6.45	2915	475	145	97.7	6.3	181	1855	21.1	0.66	2.58	< 1	0.11	0.061
0420	N	4/13/1994	6859.70	6.20	6.22	2930	504	167	92.6	6.5	91.2	2024	22.6	1.66	0.76	< 1	< 0.1	0.02
0420	N	7/20/1994	6857.10	6.10	6.28	3540	602	192	102	7.2	89.3	2338	22.6	1.28	< 0.1	< 1	0.1	0.012
0420	N	10/4/1994	6857.40	6.00	7.18	3297	593	186	111	7.6	133	2245	25.3	1.19	2.26	< 1	< 0.1	0.006
0420	N	1/4/1995	6856.90	6.00	6.70	3434	593	188	105	7.6	116	2204	25.3	1.48	1.13	< 1	< 0.1	< 0.001
0420	N	4/4/1995	6856.50	6.10	6.36	3395	579	179	107	7.1	145	2237	31	1.09	2.09	< 1	< 0.1	0.007
0420	N	7/7/1995	6855.10	6.20	7.57	3074	530	135	108	6.5	207	1882	25.7	0.46	6.35	< 1	< 0.1	0.002
0420	N	10/3/1995	6854.30	6.40	7.61	3117	544	142	118	6.5	305	1821	28	0.24	7.17	< 1	< 0.1	0.005
0420	N	1/3/1996	6853.70	6.70	7.14	3084	545	162	115	6.1	322	1856	26.4	< 0.05	8.66	< 1	< 0.1	0.001
0420	N	4/2/1996	6852.90	6.90	7.85	3165	588	140	122	6.2	344	1890	30.2	0.1	18.4	< 1	< 0.1	0.003
0420	N	7/7/1996	6852.20	6.70	7.40	3225	586	134	127	6.6	332	1816	30.2	0.24	16.7	< 1	< 0.1	< 0.001
0420	N	10/1/1996	6851.60	6.50	6.97	3250	614	146	131	6.6	339	1821	30.4	< 0.05	22.8	< 1	< 0.1	< 0.001
0420	N	1/21/1997	6851.80	5.90	7.83	3120	620	150	123	6.3	377	1926	36.2	0.07	24.3	< 1	< 0.1	< 0.001
0420	N	4/8/1997	6851.50	6.80	7.96	3250	659	159	126	6.3	359	1944	34.6	0.06	23.8	< 1	< 0.1	< 0.001
0420	N	7/8/1997	6850.60	7.30	7.92	3360	614	165	136	6.5	364	1940	36	0.06	25.6	< 1	< 0.1	< 0.001

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l	pci/l
<b>NRC Standard</b>			<b>0.05</b>	<b>0.09</b>	<b>NA</b>	<b>0.08</b>	<b>NA</b>	<b>NA</b>	<b>0.569</b>	<b>0.01</b>	<b>0.1</b>	<b>0.395</b>	<b>NA</b>	<b>NA</b>	<b>35.2</b>	<b>17</b>	<b>5.7</b>	<b>39.7</b>
<b>EPA Standard</b>			<b>0.004</b>	<b>0.09</b>	<b>0.391</b>	<b>0.08</b>	<b>9.1</b>	<b>66.1</b>	<b>0.569</b>	<b>0.05</b>	<b>0.1</b>	<b>0.395</b>	<b>NA</b>	<b>NA</b>	<b>35.2</b>	<b>17</b>	<b>5.7</b>	<b>39.7</b>
0411	N	10/15/1997	< 0.01	< 0.01	0.1	0.05	2.96	9.85	0.06	0.002	< 0.1	0.25	2.9	6.4	9.3	< 0.2	< 1	4.2
0411	N	1/20/1998	< 0.01	< 0.005	0.1	< 0.05	3.33	11.1	0.05	< 0.001	< 0.1	0.244	4.4	3.5	7.9	< 0.2	< 1	3.1
0420	N	7/23/1989	< 0.05	< 0.01	< 0.01	< 0.05	1.4	9.1	< 0.05	0.001	< 0.1	0.0293	4.1	5	9.1	< 0.2	1.6	6.8
0420	N	10/11/1989	< 0.05	< 0.01	< 0.01	< 0.05	1.6	8.1	< 0.05	0.002	< 0.1	0.022	2.9	4.9	7.8	< 0.2	1.9	3.5
0420	N	1/3/1990	< 0.05	< 0.01	< 0.01	< 0.05	2.2	6	< 0.05	< 0.001	< 0.1	0.007	6.6	4	10.6	< 0.2	3.3	6.8
0420	N	4/3/1990	< 0.05	< 0.01	< 0.01	< 0.05	3	4.8	< 0.05	< 0.001	< 0.1	0.004	3.1	3.7	6.8	< 0.2	1.9	3.6
0420	N	7/2/1990	< 0.05	< 0.01	0.02	< 0.05	2.57	6	< 0.05	< 0.001	< 0.1	0.0087	2.8	2.5	5.3	< 0.2	1.5	3
0420	N	10/2/1990	< 0.05	< 0.01	< 0.01	< 0.05	3.39	4.2	< 0.05	< 0.001	< 0.1	0.003	5.3	< 1	5.3	< 0.2	< 1	5
0420	N	1/3/1991	< 0.01	0.01	< 0.01	< 0.05	2.16	4.9	< 0.05	< 0.001	< 0.1	0.0162	2.7	2.3	5	< 0.2	< 1	3
0420	N	4/10/1991	< 0.01	< 0.01	0.01	< 0.05	2.51	5.34	< 0.05	< 0.001	< 0.1	0.0127	3.4	4.7	8.1	< 0.2	1.1	3
0420	N	7/16/1991	< 0.01	< 0.01	< 0.01	< 0.05	3.25	3.54	< 0.05	< 0.001	< 0.1	0.003	4.8	3.6	8.4	< 0.2	2.2	5
0420	N	10/14/1991	< 0.01	< 0.01	< 0.01	< 0.05	4.05	2.42	< 0.05	< 0.001	< 0.1	0.072	6	< 1	6	< 0.2	< 1	6
0420	N	1/14/1992	< 0.01	< 0.01	< 0.01	< 0.05	3.42	2.45	< 0.05	< 0.001	< 0.1	0.007	2.2	2.8	5	0.8	1.3	2
0420	N	4/7/1992	< 0.01	< 0.01	< 0.01	< 0.05	4.98	1.76	< 0.05	< 0.001	< 0.1	0.026	2.7	9.7	12.4	< 0.2	< 1	2.7
0420	N	7/7/1992	< 0.01	< 0.01	< 0.01	< 0.05	4.25	2.35	< 0.05	0.001	< 0.1	0.02	3.7	4.8	8.5	< 0.2	< 1	3.9
0420	N	10/6/1992	< 0.01	< 0.01	< 0.01	< 0.05	4.25	1.6	< 0.05	0.002	< 0.1	< 0.0003	4.1	11.4	15.5	< 0.2	< 1	4.7
0420	N	1/6/1993	< 0.01	< 0.01	< 0.01	< 0.05	4.17	1.38	< 0.05	0.004	< 0.1	0.027	10.7	< 1	10.7	< 0.2	< 1	10.9
0420	N	4/6/1993	< 0.01	< 0.01	< 0.01	< 0.05	2.52	2.3	< 0.05	0.001	< 0.1	0.024	2.6	2.2	4.8	< 0.2	< 1	2.9
0420	N	7/13/1993	< 0.01	< 0.01	0.02	< 0.05	4.03	1.81	< 0.05	< 0.001	< 0.1	0.003	3.8	8.4	12.2	< 0.2	3	5.7
0420	N	10/6/1993	< 0.01	< 0.01	0.02	< 0.05	3.94	1.88	0.07	< 0.001	< 0.1	0.005	5.9	3.8	9.7	< 0.2	1.2	6
0420	N	1/5/1994	< 0.01	< 0.01	< 0.01	< 0.05	3.06	1.44	< 0.05	< 0.001	< 0.1	0.008	4.1	1.9	6	< 0.2	1.4	7.9
0420	N	4/13/1994	< 0.01	< 0.01	< 0.01	< 0.05	4.07	1.17	< 0.05	< 0.001	< 0.1	0.002	5	6.8	11.8	< 0.2	< 1	15.4
0420	N	7/20/1994	< 0.01	< 0.01	0.01	< 0.05	5	1.03	< 0.05	< 0.001	< 0.1	0.006	10.7	8.7	19.4	< 0.2	< 1	23.9
0420	N	10/4/1994	< 0.01	< 0.01	< 0.01	< 0.05	5.56	1.2	< 0.05	< 0.001	< 0.1	0.011	6	1.4	7.4	< 0.2	< 1	8.3
0420	N	1/4/1995	< 0.01	< 0.01	< 0.01	< 0.05	3.42	1.43	< 0.05	< 0.001	< 0.1	0.004	5.4	2.7	8.1	< 0.2	< 1	9.6
0420	N	4/4/1995	< 0.01	< 0.01	0.02	< 0.05	3.45	1.21	< 0.05	< 0.001	< 0.1	0.008	4.7	4.8	9.5	< 0.2	< 1	12.1
0420	N	7/7/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.14	< 0.1	< 0.05	< 0.001	< 0.1	0.0205	3.4	5.5	8.9	< 0.2	< 1	7.5
0420	N	10/3/1995	< 0.01	< 0.01	< 0.01	< 0.05	2.08	0.76	< 0.05	< 0.001	< 0.1	0.0363	3.8	4.1	7.9	0.6	< 1	5.7
0420	N	1/3/1996	< 0.01	< 0.01	< 0.01	< 0.05	1.88	0.64	< 0.05	< 0.001	< 0.1	0.0392	2.7	< 1	2.7	0.8	1.6	3.7
0420	N	4/2/1996	< 0.01	< 0.01	< 0.01	< 0.05	1.9	0.54	< 0.05	< 0.001	< 0.1	0.1	2.2	2.5	4.7	< 0.2	< 1	3.2
0420	N	7/7/1996	< 0.01	< 0.01	< 0.01	< 0.05	1.98	0.59	< 0.05	< 0.001	< 0.1	0.051	2.9	7.3	10.2	< 0.2	3.1	2.1
0420	N	10/1/1996	< 0.01	< 0.01	< 0.01	< 0.05	1.9	0.61	< 0.05	0.003	< 0.1	0.044	2.1	< 1	2.1	< 0.2	< 1	2.1
0420	N	1/21/1997	< 0.01	< 0.01	< 0.01	< 0.05	2.1	0.59	< 0.05	< 0.001	< 0.1	0.043	2.2	< 1	2.2	< 0.2	< 1	1.6
0420	N	4/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	2.03	0.52	< 0.05	0.007	< 0.1	0.05	3.9	3	6.9	< 0.2	< 1	6
0420	N	7/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	1.97	0.73	< 0.05	< 0.001	< 0.1	0.053	2.8	< 1	2.8	< 0.2	< 1	2.5

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
0420	N	10/7/1997	6850.00	6.60	7.78	3450	683	149	131	6.2	388	1900	38.8	0.06	31.5	< 1	< 0.1	< 0.001
0420	N	1/16/1998	6850.00	7.00	7.83	3500	664	141	142	6.6	388	2000	39.2	0.32	43.5	< 1	< 0.1	< 0.001
0420	N	4/7/1998	6849.60	6.50	7.45	3510	659	149	135	6	340	1800	34.9	0.08	36.5	< 1	< 0.1	< 0.001
0420	N	7/7/1998	6850.20	6.90	7.58	3420	660	149	144	6.1	415	1900	35.5	0.16	34.7	< 1	< 0.1	< 0.001
0420	N	10/6/1998	6849.10	6.78	7.88	3530	657	123	148	6.9	415	2000	36.3	1.77	37.3	< 1	< 0.1	< 0.001
0420	N	1/5/1999	6848.40	6.80	7.82	3600	672	123	136	5.5	422	1830	34.1	< 0.05	32.2	< 1	< 0.1	< 0.001
0420	N	4/6/1999	6848.10	6.50	7.96	3640	672	144	137	6.4	388	1870	39.5	0.11	28.5	< 1	< 0.1	< 0.001
0420	N	7/13/1999	6847.68	6.40	8.07	3560	708	111	123	7	411	1840	34.6	0.09	39.8	< 1	< 0.1	< 0.001
0420	N	10/5/1999	6847.20	6.72	7.63	3630	731	130	146	6.1	392	2100	38.9	0.07	47.7	< 1	< 0.1	< 0.001
0420	N	1/4/2000	6846.20	6.60	7.97	3550	676	157	126	7	414	1870	34.6	< 0.05	50.7	< 1	< 0.1	< 0.001
0420	N	5/1/2000	6847.30	6.70	7.69	3500	616	139	127	6.5	452	1840	33.5	0.19	31.3	< 1	0.2	0.008
0420	N	7/10/2000	6847.30	7.35	7.47	3500	664	151	141	5.86	456	1740	35	< 0.05	33.2	< 1	< 0.1	< 0.001
0420	N	10/2/2000	6848.20	7.03	7.24	3350	661	147	138	6.97	467	1750	38.6	0.07	18.7	< 1	< 0.1	0.007
0420	N	1/15/2001	6848.75	6.61	7.23	3200	617	123	119	6.9	474	1920	42	< 0.05	12.7	< 1	< 0.1	0.023
0420	N	4/2/2001	6848.70	6.59	7.39	3290	695	139	126	5.7	467	1800	39.7	0.1	12.5	< 1	< 0.1	0.006
0420	N	7/16/2001	6848.50	6.20	7.55	3330	592	126	162	11.4	474	1580	54.1	0.18	13.6	< 1	< 0.1	0.06
0420	N	10/8/2001	6848.50	6.45	7.20	3360	600	130	115	6.3	516	1680	53.1	0.09	14	< 1	< 0.1	0.008
0420	N	1/17/2002	6849.45	6.20	7.20	3360	661	140	113	8	508	1700	62	0.07	13.3	< 1	0.13	0.003
0420	N	4/8/2002	6848.22	6.53	7.20	3410	644	140	130	6.9	565	1750	56.8	0.12	13.3	< 1	< 0.1	0.003
0420	N	7/15/2002	6848.10	6.36	7.51	3480	642	161	118	6.1	515	2015	39.1	0.19	14.6	< 1	< 0.1	0.001
0420	N	10/14/2002	6847.60	5.88	7.65	3080	680	151	123	6	569	1870	52.4	0.26	11.4	< 1	< 0.1	0.002
0420	N	1/13/2003	6847.13	7.22	7.22	3410	671	146	124	6.3	562	1700	44.8	0.27	14.4	< 1	< 0.1	0.003
0420	N	4/15/2003	6847.25	6.44	7.41	3440	657	152	144	8.6	566	1790	63.6	0.28	13.7	< 1	< 0.1	0.002
0420	N	7/14/2003	6846.66	6.35	7.64	3490	653	140	133	7.1	556	1630	57.7	0.3	13.4	< 1	< 0.1	0.002
0420	N	10/13/2003	6846.74	6.38	7.39	3440	712	158	138	6.8	576	1880	62.9	0.23	13	< 1	0.4	0.002
0420	N	1/12/2004	6845.82	6.64	7.42	3460	740	164	141	7.4	614	1880	64.4	0.27	13.9 D	< 1.0	< 0.1	0.005
0420	N	4/12/2004	6845.52	6.33	6.92	3480	662	147	129	8	537	1840	73.7	0.26	11.4 D	< 1	< 0.1	0.002
0420	N	7/19/2004	6845.11	6.51	6.74	3420	746 D	156 D	154	6.8	684	1820 D	67	0.24	12.6 D	< 1.0	< 0.1	0.002
0420	N	10/11/2004	6844.85	6.62	7.09	3520	646 D	144 D	146	7.2	579	1650 D	69	0.17	13.6 D	< 1.0	< 0.1	0.003
0420	N	1/10/2005	6844.33	6.48	7.02	3550	732 D	156 D	143	7	610	1800 D	84	0.12	14.8 D	< 1.0	< 0.1	0.003
0420	N	4/11/2005	6843.48	6.65	7.06	3410	724	157	160	7	551	1860	72	0.09	15.4	< 1.0	< 0.1	0.002
0420	N	7/18/2005	6842.76	6.18	7.15	3600	707 D	137	153 D	4.2 D	564	1730	71	0.19	16.4 D	< 1.0	< 0.1	0.002
0420	N	10/10/2005	6842.13	6.65	7.22	3510	713 D	147	154	6.9	586	1780 D	73	0.2	15.1 D	< 1.0	< 0.1	0.006
0420	N	1/16/2006	6841.56	6.63	7.36	3480	689 D	127	142	7	537	1770 D	68	0.12	13.2 D	< 1.0	< 0.1	0.003
0420	N	4/10/2006	6841.11	6.54	7.25	3330	773 D	164 D	141	7.1	781	1890 D	84	0.12	13.8 D	< 1.0	< 0.1	0.003

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
0420	N	10/7/1997	< 0.01	< 0.01	< 0.01	< 0.05	2.3	0.54	< 0.05	< 0.001	< 0.1	0.049	3.3	1.9	5.2	< 0.2	< 1	1.9
0420	N	1/16/1998	< 0.01	< 0.01	< 0.01	< 0.05	2.6	0.56	< 0.05	< 0.001	< 0.1	0.0515	2.4	< 1	2.4	< 0.2	< 1	3.6
0420	N	4/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	1.94	0.4	< 0.05	< 0.001	< 0.1	0.0495	3.5	< 1	3.5	< 0.2	< 1	4
0420	N	7/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	1.98	0.4	< 0.05	0.001	< 0.1	0.0567	2.2	< 1	2.2	< 0.2	< 1	3.7
0420	N	10/6/1998	< 0.01	< 0.005	< 0.01	< 0.05	1.89	0.42	< 0.05	< 0.001	< 0.1	0.0674	4.8	< 1	4.8	< 0.2	< 1	3.2
0420	N	1/5/1999	< 0.01	0.007	< 0.01	< 0.05	1.97	0.37	< 0.05	< 0.001	< 0.1	0.054	3.5	1.5	5	< 0.2	4.7	4.7
0420	N	4/6/1999	< 0.01	< 0.005	< 0.01	< 0.05	2.01	0.56	< 0.05	< 0.001	< 0.1	0.0556	3.2	2.1	5.3	0.8	< 1	4.7
0420	N	7/13/1999	< 0.01	< 0.005	< 0.01	< 0.05	1.98	0.37	< 0.05	< 0.001	< 0.1	0.0578	2.2	2	4.2	< 0.2	< 1	2.7
0420	N	10/5/1999	< 0.01	< 0.005	< 0.01	< 0.05	2.23	0.34	< 0.05	< 0.001	< 0.1	0.054	2.4	4.4	6.8	< 0.2	< 1	1.9
0420	N	1/4/2000	< 0.01	< 0.005	< 0.01	< 0.05	2.01	0.36	< 0.05	0.001	< 0.1	0.0511	2.4	< 1	2.4	< 0.2	< 1	3.1
0420	N	5/1/2000	< 0.01	0.051	< 0.01	< 0.05	2.14	0.2	0.08	< 0.001	< 0.1	0.05	3.2	4.8	8	1	6.8	3.3
0420	N	7/10/2000	< 0.01	< 0.005	< 0.01	< 0.05	2.03	0.21	< 0.05	< 0.001	< 0.1	0.0436	2.8	4.2	7	< 0.2	< 1	2.8
0420	N	10/2/2000	< 0.01	< 0.005	< 0.01	< 0.05	2.25	0.15	< 0.05	< 0.001	< 0.1	0.0392	2.9	2.2	5.1	< 0.2	< 1	3.6
0420	N	1/15/2001	0.15	< 0.005	< 0.01	< 0.05	2.08	0.24	< 0.05	0.001	< 0.1	0.043	2.7	4	6.7	< 0.2	< 1	3.2
0420	N	4/2/2001	< 0.01	< 0.005	< 0.01	< 0.05	2.28	0.2	< 0.05	0.001	< 0.1	0.05	2.5	< 1	2.5	< 0.2	< 1	3
0420	N	7/16/2001	< 0.01	< 0.005	< 0.01	< 0.05	2.07	0.4	< 0.05	0.002	< 0.1	0.054	3.6	3.7	7.3	< 0.2	< 1	4.6
0420	N	10/8/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.69	0.11	< 0.05	< 0.001	< 0.1	0.0546	2.5	2.1	4.6	< 0.2	< 1	3.4
0420	N	1/17/2002	< 0.01	< 0.005	0.01	< 0.05	2.04	0.16	0.06	< 0.001	< 0.1	0.0534	2.9	2.8	5.7	< 0.2	< 1	2.1
0420	N	4/8/2002	< 0.01	< 0.005	< 0.01	< 0.05	2.22	0.2	< 0.05	< 0.001	< 0.1	0.0671	3.5	3.3	6.8	< 0.2	< 1	4.5
0420	N	7/15/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.87	0.2	< 0.05	< 0.001	< 0.1	0.0728	3.1	3	6.1	< 0.2	< 1	2.7
0420	N	10/14/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.85	0.1	< 0.05	< 0.001	< 0.1	0.0779	2.4	< 1	2.4	< 0.2	< 1	2.4
0420	N	1/13/2003	< 0.01	< 0.005	< 0.01	< 0.05	1.97	0.2	< 0.05	< 0.001	< 0.1	0.0903	3.1	7.8	10.9	< 0.2	< 1	3.5
0420	N	4/15/2003	< 0.01	< 0.005	< 0.01	< 0.05	2.26	0.2	< 0.05	< 0.001	< 0.1	0.0882	3.4	5.3	8.7	< 0.2	< 1	4
0420	N	7/14/2003	< 0.01	< 0.005	< 0.01	< 0.05	1.9	0.2	< 0.05	< 0.001	< 0.1	0.0839	2.9	< 1	2.9	< 0.2	< 1	2.9
0420	N	10/13/2003	< 0.01	< 0.005	< 0.01	< 0.05	2	0.2	< 0.05	< 0.001	< 0.1	0.105	2.5	< 1	2.5	< 0.2	< 1	4.5
0420	N	1/12/2004	< 0.01	< 0.005	< 0.01	< 0.05	2.08	0.2	< 0.05	< 0.001	< 0.1	0.122 D	2.9	< 1.0	2.9	< 0.2	< 1.0	3.6
0420	N	4/12/2004	< 0.01	< 0.005	< 0.01	< 0.05	2.03	0.2	< 0.05	< 0.001	< 0.1	0.105 D	2.3	< 1	2.3	< 0.2	< 1	3.1
0420	N	7/19/2004	< 0.01	< 0.005	< 0.01	< 0.05	1.96	0.2	< 0.05	< 0.001	< 0.1	0.109 D	2.8	1.9	4.7	< 0.2	< 1.0	4.6
0420	N	10/11/2004	< 0.01	< 0.005	< 0.01	< 0.05	1.95	0.1	< 0.05	< 0.001	< 0.1	0.101	2.4	2.5	4.9	< 0.2	< 1.0	3
0420	N	1/10/2005	< 0.01	< 0.005	< 0.01	< 0.05	1.96	< 0.1	< 0.05	< 0.001	< 0.1	0.127	2.2	3.6	5.8	< 0.2	< 1.0	3.9
0420	N	4/11/2005	< 0.01	< 0.005	< 0.01	< 0.05	2.15	0.1	< 0.05	< 0.001	< 0.1	0.122	3.2	1.9	5.1	< 0.2	< 1.0	2.1
0420	N	7/18/2005	< 0.01	< 0.005	< 0.01	< 0.05	2.16	0.1	< 0.05	< 0.001	< 0.1	0.126	2.3	3	5.3	< 0.2	< 1.0	3
0420	N	10/10/2005	< 0.01	< 0.005	< 0.01	< 0.05	2.37	0.1	< 0.05	< 0.001	< 0.1	0.113	3.8	2.4	6.2	< 0.2	< 1.0	5.2
0420	N	1/16/2006	< 0.01	< 0.005	< 0.01	< 0.05	2.19	0.1	< 0.05	< 0.001	< 0.1	0.121	2.6	3.2	5.8	< 0.2	< 1.0	4.2
0420	N	4/10/2006	< 0.01	< 0.005	< 0.01	< 0.05	2.11	0.1	< 0.05	< 0.001	< 0.1	0.136	1.8	3.4	5.2	< 0.2	< 1.0	2.6



**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water	Field	Lab	Lab	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4	NO3	TTHMs	Al	As	
			Elevation	pH	pH	TDS										as N	as N	(Chloroform)	
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757	
0420	N	7/24/2006	6840.48	6.42	6.87	3340	673	150 D	157	7.1	476	1800 D	67	0.14	14.5 D	< 1.0	< 0.1	0.005	
0420	N	10/9/2006	6840.03	6.60	6.90	3350	676	155 D	150	6.9	550	1800 D	63	0.15	14.8 D	< 0.5	< 0.1	< 0.001	
0420	N	1/16/2007	6840.28	6.94	6.69	3400	687 D	153 D	145	6.8	518	1780 D	70	0.06	15.6 D	<0.5	<0.1	0.006	
0420	N	4/17/2007	6838.60	6.98	7.06	3540	601 D	161 D	140	6.8	237	1900 D	75	<0.05	14.6 D	<0.5	<0.1	0.003	
0420	N	7/17/2007	6837.18	6.53	7.59	3160	596 D	156 D	150	6.7	749	1870 D	66	0.13	20 D	<0.5	<0.1	0.03	
0420	N	10/9/2007	6837.33	7.11	7.13	3340	649 D	137 D	125	6.1	476	1860 D	43	<0.05	2.8	<0.5	<0.1	0.005	
0420	N	1/22/2008	6836.90	6.69	7.12	3320	654 D	131	137	7.3	455	1890 D	50	0.08	0.5	< 0.5	< 0.1	0.037	
0420	N	4/15/2008	6836.58	6.69	7.1	3240	694	138	139 D	6.5	436	2110 D	39	0.05	< 0.1	< 0.50	0.1	0.006	
0420	N	7/15/2008	6836.03	6.64	6.91	3350	619	128	129 D	6	451	1980 D	39	< 0.05	< 0.1	< 0.5	< 0.1	0.004	
0420	N	10/14/2008	6835.49	6.49	6.78	3390	630	130	132 D	6	468	2120 D	37	< 0.4	< 0.1	< 0.5	1.3	0.008	
0420	N	1/20/2009	6835.03	6.59	7.1	3450	664	143	145	7	458	1860 D	39	<0.05	<0.1	<0.5	0.8	0.005	
0420	N	4/14/2009	6834.98	6.46	6.68	3330	603	131	138	6	464	2020 D	41	0.05	<0.1	<0.50	0.3 D	0.007	
0420	N	7/14/2009	6834.38	6.45	7.25	3390	640	133	136	7	451	2060 D	43	<0.05	<0.1	<0.50	0.2	<0.001	
0420	N	10/13/2009	6834.08	6.48	7.69	3390 H	654	137	136	7	467	2030 D	46	0.1	<0.1	<0.50	<0.1	<0.001	
0420	N	1/12/2010	6833.53	6.48	6.8	3270	669	133	141	7	478	2050 D	41	<0.05	<0.10	<0.50	0.2	<0.001	
0420	N	4/13/2010	6833.38	6.69	6.86	3420	672	136	142	6	520	2070 D	46	0.16	<0.1	<0.50	0.3	0.004	
0420	N	7/20/2010	6833.03	6.47	7	3410 H	642	134	137	6	500	2010 D	45 D	0.14	<0.1	<0.50	0.2	0.003	
0420	N	10/12/2010	6832.88	6.54	7.42	3540	668	133	150	7	547	1960 D	47 D	0.14	<0.1	<0.50	<0.1	0.001	
0420	N	1/11/2011	6832.65	6.68	7.62	3370	651	135	138	6	530	1990 D	52 D	0.05	<0.1	<0.50	<0.1	0.005	
0420	N	4/12/2011	6832.08	6.63	7.2	3330	701	140	153	7	521	2010 D	51 D	0.11	<0.1	<0.50	0.3	0.008	
0420	N	7/19/2011	6831.48	6.65	7.77	3340	664	137	151	7	500	1980 D	53 D	<0.2	<0.5	<0.50	0.3	0.003	
0420	N	10/11/2011	6831.38	6.58	7.55	3410	670	140	151	7	481	2070 D	54 D	<0.2	<0.5	<0.50	0.2	<0.001	
0420	N	1/10/2012	6830.93	6.71	6.51 H	3430	700	128	135	6	477	1980 D	50 D	0.09	<0.1	<0.50	0.1	0.01	
0420	N	4/10/2012	6830.43	6.73	6.93 H	3510	643	137	141	6	483	1960 D	50 D	0.08	<0.1	<0.50	0.6	<0.01	
0420	N	7/17/2012	6830.13	6.53	6.86 H	3530	695	146	170	8	499	2040 D	52 D	0.06	<0.1	<0.50	0.4	0.002	
0420	N	10/16/2012	6829.88	6.72	7.14 H	3550	718	144	156	7	503	2070 D	52 D	0.1	<0.1	<0.50	0.2	<0.001	
0420	N	1/8/2013	6,829.53	6.72	7.22 H	3580	712	149	157	7	484	2090 D	51 D	0.07	<0.1	<0.50	0.3	<0.001	
0420	N	4/9/2013	6,829.61	6.69	7.09 H	3650	750	155	171	8	486	2180 D	53 D	0.05	<0.1	<0.50	0.2	<0.001	
0420	N	7/15/2013	6,828.92	6.98	7.57 H	3730	732	155	158	7	405	2210 D	55 D	0.05	<0.1	<0.50	0.4	0.002	
0420	N	10/7/2013	6,828.64	7.09	7.50 H	3650	730	159	162	8	452	2160 D	54 D	<0.05	<0.1	<0.50	0.4	<0.001	
0420	N	1/13/2014	6,828.20	6.88	6.74	3840	723	155	151	7	523	2170	52	<0.05	<0.1	<0.50	1.2	0.002	
0420	N	4/7/2014	6,827.90	6.80	6.81 H	3790	729	164	159 D	7	492	2220 D	53	<0.05	<0.1	<0.50	0.3	0.002	
0420	N	7/14/2014	6,827.65	6.68	7.07 H	3680	765	169	157 D	7	427	2330 D	52	<0.05	<0.1	<0.50	1.3	0.002	
0420	N	10/13/2014	6,827.44	6.77	6.97 H	4000	736	162	157	7	434	2460 D	55 D	<0.05	<0.1	<0.50	1.4	<0.001	
0420	N	1/12/2015	6827.24	6.94	6.99 H	4000	745	169	155	7	415	2470 D	51 D	<0.05	0.1	<0.50	1.9	0.002	

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
0420	N	7/24/2006	< 0.01	< 0.005	< 0.01	< 0.05	2.09	0.2	< 0.05	< 0.001	< 0.1	0.125	2.4	2.1	4.5	< 0.2	< 1.0	3.8
0420	N	10/9/2006	< 0.01	< 0.005	< 0.01	< 0.05	1.92	0.1	< 0.05	< 0.001	< 0.1	0.131	2.6	1.8	4.4	< 0.2	< 1	1.7
0420	N	1/16/2007	<0.01	<0.005	<0.01	<0.05	1.93	0.2	<0.05	<0.001	<0.1	0.15	2.9	<1	2.9	<0.2	<1	3.2
0420	N	4/17/2007	<0.01	<0.005	<0.01	<0.05	0.27	0.1	<0.05	<0.001	<0.1	0.138	2.2	2.4	4.6	<0.2	<1	2.3
0420	N	7/17/2007	<0.01	<0.005	<0.01	<0.05	1.01	0.2	<0.05	<0.001	<0.1	0.133	2.3	4.5	6.8	<0.2	<1	2.3
0420	N	10/9/2007	<0.01	<0.005	<0.01	<0.05	2.05	0.1	<0.05	<0.001	<0.1	0.269	1.7	3.5	5.2	<0.2	<1	3.1
0420	N	1/22/2008	< 0.01	< 0.005	0.01	< 0.05	1.83	0.3	< 0.05	< 0.001	< 0.1	0.303	4.2	2.8	7	< 0.2	3.7	4.4
0420	N	4/15/2008	< 0.01	< 0.005	0.01	< 0.05	1.84	0.4	< 0.05	< 0.001	< 0.1	0.282	2	4.4	6.4	0.1 U	<4.9 U	4
0420	N	7/15/2008	< 0.01	< 0.005	0.01	< 0.05	1.84	0.3	< 0.05	< 0.001	< 0.1	0.27	4.5	4.6	9.1	<0.2 U	4.8 U	3.8
0420	N	10/14/2008	< 0.01	< 0.005	0.02	< 0.05	2.16	0.9	< 0.05	0.001	< 0.1	0.294	4	3.4	7.4	0.1 U	1.3 U	5.6
0420	N	1/20/2009	<0.01	<0.005	0.02	<0.05	2.08	0.5	<0.05	0.002	<0.1	0.276	3.1	4.9	8	0.1 U	0.3 U	3.9
0420	N	4/14/2009	<0.01	<0.005	0.02	<0.05	2.00 D	0.5	<0.05	<0.001	<0.1	0.296	2.1	3.8	5.9	0.001 U	0.0 U	5.7
0420	N	7/14/2009	<0.01	<0.005	0.02	<0.05	2.16	0.4	<0.05	<0.001	<0.1	0.284	2.4	3.7	6.1	0.05 U	<0.2 U	4.4
0420	N	10/13/2009	<0.01	<0.005	0.02	<0.05	2	0.3	<0.05	<0.001	<0.1	0.298	3.3	5	8.3	0.05 U	1.3 U	4.1
0420	N	1/12/2010	<0.01	<0.005	0.02	<0.05	1.8	0.4	<0.05	<0.001	<0.1	0.362	2.5	8.9	11.4	<0.02 U	0.4 U	3.5
0420	N	4/13/2010	<0.01	<0.005	0.02	<0.05	1.71	0.5	<0.05	<0.001	<0.1	0.362	3.5	6.1	9.6	<0.01 U	0.5 U	3.2
0420	N	7/20/2010	<0.01	<0.005	0.02	<0.05	1.71	0.6	<0.05	<0.001	<0.1	0.424	4.3	10	14.3	0.04 U	<1 U	4.2
0420	N	10/12/2010	<0.01	<0.005	0.02	<0.05	1.5	0.6	<0.05	<0.001	<0.1	0.425	3.8	12	15.8	0.02 U	0.1 U	4.4
0420	N	1/11/2011	<0.01	<0.005	0.02	<0.05	1.87	0.7	<0.05	<0.001	<0.1	0.439	4.7	6.4	11.1	0.05 U	1.6	5
0420	N	4/12/2011	<0.01	<0.005	0.02	<0.05	1.72	0.7	<0.05	<0.001	<0.1	0.448	4.6	6.3	10.9	0.03 U	1.7	5.3
0420	N	7/19/2011	<0.01	<0.005	0.02	<0.05	1.71	0.8	<0.05	<0.001	<0.1	0.4	4.8	5.9	10.7	0.05 U	<0.4 U	4.5
0420	N	10/11/2011	<0.01	<0.005	0.01	<0.05	1.5	0.7	<0.05	<0.001	<0.1	0.354	4.9	6.8	11.7	0.1 U	0.2 U	5.9
0420	N	1/10/2012	<0.01	<0.005	0.02	<0.05	1.5	1.2	<0.05	0.002	<0.1	0.406	4.7	6.2	17.1	0.04 U	0.8 U	5.3
0420	N	4/10/2012	<0.01	<0.005	0.02	<0.05	1.21	1	<0.05	<0.001	<0.1	0.39	5.3	8.4	22.1	0.01 U	0.9 U	4.7
0420	N	7/17/2012	<0.001	<0.005	0.02	0.001	0.88	0.8	<0.05	0.002	<0.1	0.4 D	4.7	7.1	18.9	0.08 U	1.2	6.6
0420	N	10/16/2012	<0.001	<0.005	0.02	<0.001	1.43	0.9	<0.05	<0.001	<0.1	0.388	4.4	8.1	12.5	0.09 U	0.3 U	5.2
0420	N	1/8/2013	<0.001	<0.005	0.02	<0.001	1.55	0.8	<0.05	<0.001	<0.1	0.41	4.8	5.3	10.1	0.08 U	1.2 U	4
0420	N	4/9/2013	<0.001	<0.005	0.02	<0.001	1.68	0.7	<0.05	<0.001	<0.1	0.403	6.5	7.7	14.2	0.08	0.7 U	6.8
0420	N	7/15/2013	<0.001	<0.005	0.02	<0.001	1.07	0.8	<0.05	<0.001	<0.1	0.441	4	12	16	-0.01 U	0.2 U	4.8
0420	N	10/7/2013	<0.001	<0.005	0.02	<0.001	0.83	0.8	<0.05	<0.001	<0.1	0.438	5.6	6.2	11.8	0.05	0.4 U	5.7
0420	N	1/13/2014	<0.001	<0.005	0.02	0.002	2.12	1.1	<0.05	0.002	<0.1	0.407	4.5	8.3	12.8	0.3	2.8	10.1
0420	N	4/7/2014	<0.001	<0.005	0.02	0.001	1.27	0.7	<0.05	<0.001	<0.1	0.387	4.5	5.4	9.9	0.07 U	1.3	4.7
0420	N	7/14/2014	<0.001	<0.005	0.01	0.004	1.18	1.3	<0.05	0.002	<0.1	0.386	5.2	5.9	11.1	0.5	0.5 U	6
0420	N	10/13/2014	<0.001	<0.005	0.02	0.005	1.86	1.3	<0.05	0.003	<0.1	0.337	6.3	10	16.3	0.3	0.8 U	6
0420	N	1/12/2015	<0.001	<0.005	0.03	0.005	2.11	1.2	0.07	0.002	<0.1	0.344	5.3	5.4	10.7	0.2	1.7	11

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
0420	N	4/13/2015	6826.93	6.61	7.22 H	3990	687	167	154	7	398	2380 D	54	<0.05	<0.1	<0.50	1.5	0.002
0420	N	7/13/2015	6826.94	6.60	7.04 H	3950	714	171	163 D	7	399	2430 D	50 D	<0.05	<0.1	<0.50	0.6	0.005
0420	N	10/12/2015	6826.48	6.63	6.98 H	4060	731	177	156	7	380	2550 D	55	<0.05	<0.1	<0.50	1.7	<0.001
0420	N	1/11/2016	6826.27	6.79	6.77 H	3990	736	173	154	8	379	2540 D	57	<0.05	0.1	<0.50	0.7	<0.001
0420	N	4/11/2016	6826.26	6.61	6.87 H	3960	710	177	156	7	351	2300 D	47	<0.05	0.1	<0.50	1.4	<0.001
0420	N	7/18/2016	6825.95	6.50	7.07 H	3870 DH	705	173	150	7	377	2310 D	47	0.08	<0.1	<0.50	1.4	0.001
0420	N	10/10/2016	6825.86	6.58	7.00 H	3820 H	689	177	149	8	376	2380 D	46	0.41	<0.1	<0.50	0.4	<0.001
0517	N	7/23/1989	6899.70	6.00	6.51	3617	543	291	111	4.5	303	2079	20.9	0.53	39	1.1	< 0.1	< 0.001
0517	N	10/11/1989	6893.20	6.10	6.50	3738	507	290	117	6.8	298	2199	21.8	0.31	43	< 1	< 0.1	< 0.001
0517	N	1/3/1990	6894.80	5.40	5.90	4096	523	318	138	8.1	168	2434	27.9	0.74	45	< 1	0.11	< 0.001
0517	N	4/3/1990	6892.60	5.60	6.24	4306	515	360	140	8.1	220	2556	28.3	0.9	44	< 1	0.11	< 0.001
0517	N	7/2/1990	6892.90	5.60	6.20	4318	526	387	127	7	231	2456	26.1	0.26	47.8	< 1	0.1	< 0.001
0517	N	10/16/1990	6892.60	5.50	6.30	4083	440	532	131	7.2	170	2574	22.8	0.36	27.1	< 1	< 0.1	< 0.001
0517	N	1/16/1991	6893.60	5.70	6.42	4235	554	385	157	8.1	227	2706	27.5	0.25	49.3	< 1	< 0.1	< 0.001
0517	N	4/10/1991	6894.50	5.70	6.80	4204	541	376	136	6.2	284	2370	31.4	0.27	61	< 1	< 0.1	< 0.001
0517	N	7/16/1991	6891.60	5.60	6.42	4550	546	353	136	6.8	215	3014	50.3	0.25	67	2.6	< 0.1	< 0.001
0517	N	10/14/1991	6887.60	5.50	6.39	5348	452	393	175	6.2	142	3173	77.6	0.39	30.3	3.2	0.12	0.001
0517	N	1/14/1992	6888.80	5.30	6.04	5847	490	544	185	7.2	117	3571	76.9	1.76	36.1	3.2	0.13	< 0.001
0517	N	4/7/1992	6888.80	5.30	7.19	5539	518	495	199	8.1	103	3457	61.7	2.32	26.7	3.4	< 0.1	0.002
0517	N	7/7/1992	6884.70	5.20	6.91	5413	528	480	195	9.68	85.4	3334	66.3	3.78	40.5	4	0.15	< 0.001
0517	N	10/6/1992	6882.60	5.20	6.73	5109	530	451	186	7	73.2	3169	62.9	3.29	41.8	4.1	0.1	< 0.001
0517	N	1/6/1993	6883.20	5.30	6.88	4169	459	374	148	6.9	75.6	2856	75.8	1.13	48.1	6.7	0.1	< 0.001
0517	N	4/6/1993	6884.20	5.30	6.08	4493	458	438	183	6.1	71	3066	74.1	3.76	34.5	7	< 0.1	< 0.001
0517	N	7/13/1993	6882.10	5.40	5.64	5166	557	498	195	9.4	46.1	3734	77.5	11.9	38.5	8.8	0.86	< 0.001
0517	N	10/6/1993	6880.10	4.80	4.49	5918	589	508	185	10.3	1.8	3901	79.6	26.9	39.3	< 1	11.2	< 0.001
0517	N	1/5/1994	6880.00	4.90	4.60	5674	518	461	195	11	5.7	3740	88.4	6.52	33.8	9.5	11.1	< 0.001
0517	N	4/13/1994	6879.70	4.30	4.29	5770	515	479	204	12	< 1	3883	108	7.25	27.8	8.5	96	< 0.001
0517	N	7/20/1994	6878.60	5.10	4.36	6115	604	516	177	11.7	< 1	4308	85.9	34.2	32.9	< 1	22.9	< 0.001
0517	N	10/4/1994	6878.00	4.80	4.33	6218	554	551	204	12.5	< 1	4563	82.5	22.4	42.5	4.5	67.1	< 0.001
0517	N	1/4/1995	6877.20	4.70	4.46	5507	517	465	178	11	< 1	3665	66.2	40.4	40.3	3.2	42.4	< 0.001
0517	N	4/4/1995	6876.80	5.20	4.72	4608	514	338	143	6.5	6.5	2999	54	17.8	44.9	1.4	10.5	< 0.001
0517	N	7/6/1995	6875.90	4.70	4.57	4312	500	365	142	6.7	1.8	3040	48	36.1	16.4	1.76	14.4	< 0.001
0517	N	10/3/1995	6875.10	4.60	4.39	5058	465	469	185	11	< 1	3745	12.7	41.4	7.29	4.25	47	0.004
0517	N	1/3/1996	6874.40	4.50	4.10	5807	510	530	174	10.1	< 1	4100	61.2	28.6	1.51	5.05	40	0.001
0517	N	4/2/1996	6874.00	4.60	4.44	5804	481	550	170	10.5	< 1	3995	61.9	27.8	1.38	5.21	27.3	< 0.001

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
0420	N	4/13/2015	<0.001	<0.005	0.02	0.003	1.68	0.9	0.05	0.001	<0.1	0.359	4.6	4.4	9	0.08 U	1.5	16
0420	N	7/13/2015	<0.001	<0.005	0.01	0.002	1.51	0.8	0.06	0.001	<0.1	0.334	5.4	8.5	13.9	0.3	1.0 U	13.1
0420	N	10/12/2015	<0.001	<0.005	0.02	0.004	2.07	1.2	<0.05	0.003	<0.1	0.32	3.1	3.9	7	0.1 U	1.3 U	5.9
0420	N	1/11/2016	<0.001	<0.005	<0.01	0.002	1.92	0.6	<0.05	<0.001	<0.1	0.288	3.5	3.4	6.9	0.1 U	1.3	29.1
0420	N	4/11/2016	<0.001	<0.005	<0.01	0.004	1.98	0.7	<0.05	<0.001	<0.1	0.268	5.5	4.4	9.9	2.6 U	1.3 U	29.9
0420	N	7/18/2016	<0.001	<0.005	<0.01	0.003	1.7	0.6	<0.05	0.001	<0.1	0.26	4.1	5.1	9.2	0.1 U	1.9	7.4
0420	N	10/10/2016	<0.001	<0.005	0.01	0.001	2.35	0.4	<0.05	<0.001	<0.1	0.244	4.4	6	10.4	0.3	1.5	8.2
0517	N	7/23/1989	<0.05	<0.01	<0.01	<0.05	0.58	0.14	<0.05	0.001	<0.1	0.252	11.9	9.5	21.4	<0.2	2.1	44.1
0517	N	10/11/1989	<0.05	<0.01	0.01	0.06	0.64	0.18	<0.05	0.013	<0.1	0.196	4.3	4.2	8.5	<0.2	2.8	4.7
0517	N	1/3/1990	<0.05	<0.01	0.01	<0.05	1.3	0.32	<0.05	0.001	<0.1	0.088	8.9	4.5	13.4	<0.2	4.5	10.5
0517	N	4/3/1990	<0.05	<0.01	0.03	<0.05	2	0.16	<0.05	<0.001	<0.1	0.09	9.3	10.2	19.5	<0.2	1	10.8
0517	N	7/2/1990	<0.05	<0.01	0.01	<0.05	1.81	0.2	<0.05	0.001	<0.1	0.136	8.3	2.2	10.5	<0.2	1.2	10
0517	N	10/16/1990	<0.05	<0.01	0.04	<0.05	2.89	0.1	0.09	<0.001	<0.1	0.046	11.1	1.4	12.5	<0.2	<1	10
0517	N	1/16/1991	<0.01	<0.01	0.04	<0.05	2.37	<0.1	0.05	0.001	<0.1	0.0814	10	1	11	<0.2	<1	11.3
0517	N	4/10/1991	<0.01	<0.01	0.06	<0.05	2.93	0.17	0.11	0.001	<0.1	0.1666	8.1	8.3	16.4	<0.2	<1	8
0517	N	7/16/1991	<0.01	<0.01	0.04	<0.05	2.63	0.06	0.01	<0.001	<0.1	0.149	8	7.6	15.6	<0.2	<1	9
0517	N	10/14/1991	<0.01	<0.01	0.12	<0.05	4.46	0.1	0.06	<0.001	<0.1	0.03	5.1	6.1	11.2	<0.2	<1	5
0517	N	1/14/1992	<0.01	<0.01	0.13	<0.05	5.29	0.11	0.09	0.026	<0.1	0.012	13.6	6.3	19.9	<0.2	1.3	14
0517	N	4/7/1992	<0.01	<0.01	0.12	<0.05	5.69	<0.1	0.1	0.02	<0.1	0.03	6.3	13.5	19.8	<0.2	1.3	6.6
0517	N	7/7/1992	0.094	<0.01	0.12	<0.05	4.27	<0.1	0.07	0.001	<0.1	0.006	6.7	13.9	20.6	<0.2	<1	6.9
0517	N	10/6/1992	<0.005	<0.01	0.13	<0.05	3.92	<0.1	0.12	0.005	<0.1	0.007	8.8	27.9	36.7	<0.2	<1	8.9
0517	N	1/6/1993	<0.01	<0.01	0.1	<0.05	3.38	<0.1	0.11	0.003	<0.1	0.011	10.1	35.8	45.9	<0.2	<1	10.6
0517	N	4/6/1993	<0.005	<0.01	0.11	<0.05	4.66	<0.1	0.11	0.002	<0.1	0.007	6.7	21.3	28	<0.2	<1	6.9
0517	N	7/13/1993	<0.005	<0.01	0.2	<0.05	7.27	<0.1	0.17	0.001	<0.1	0.003	8.5	20.3	28.8	<0.2	3.6	10.9
0517	N	10/6/1993	<0.005	<0.01	0.32	<0.05	12.2	<0.1	0.38	<0.001	<0.1	0.003	19.4	30.7	50.1	<0.2	<1	20.5
0517	N	1/5/1994	<0.01	<0.01	0.31	<0.05	11.6	<0.1	0.27	<0.001	<0.1	0.017	24.5	29.6	54.1	<0.2	1.1	69.8
0517	N	4/13/1994	<0.01	<0.01	0.67	<0.05	18.5	<0.1	0.72	<0.001	<0.1	0.068	20.9	40.6	61.5	<0.2	4.5	81.9
0517	N	7/20/1994	<0.01	<0.01	0.41	<0.05	12.3	<0.1	0.32	<0.001	<0.1	0.03	24	30.5	54.5	<0.2	<1	69.9
0517	N	10/4/1994	<0.01	<0.01	0.67	<0.05	18.1	0.11	0.51	<0.001	<0.1	0.061	20	18.6	38.6	<0.2	<1	48
0517	N	1/4/1995	<0.01	<0.01	0.28	<0.05	10.5	<0.1	0.27	<0.001	<0.1	0.05	33	24.1	57.1	<0.2	<1	69.3
0517	N	4/4/1995	<0.01	<0.01	0.14	<0.05	5.65	<0.01	0.11	<0.001	<0.1	0.043	16.8	17.9	34.7	<0.2	<1	43.8
0517	N	7/6/1995	<0.01	<0.01	0.21	<0.05	6.21	<0.01	0.17	<0.001	<0.1	0.0684	18.4	17.8	36.2	1	3.8	69.1
0517	N	10/3/1995	<0.01	<0.01	0.16	<0.05	3	<0.1	<0.05	0.007	<0.1	0.1421	31.1	22.8	53.9	1.9	<1	94.8
0517	N	1/3/1996	0.02	<0.01	0.83	<0.05	13.7	<0.1	0.79	0.002	<0.1	0.125	21.1	7.9	29	1.9	1.8	44.6
0517	N	4/2/1996	0.01	<0.01	0.82	<0.05	12.2	<0.1	0.72	<0.001	<0.1	0.149	14.4	17.4	31.8	1.4	21.4	34.6



**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
0517	N	7/7/1996	6873.80	4.50	4.33	5635	460	485	175	10.6	< 1	3590	67	24.9	1.44	5.26	21.2	< 0.001
0517	N	10/1/1996	6873.60	4.80	4.30	5520	477	518	182	10.5	< 1	3578	66	22.5	1.35	4.39	16.6	< 0.001
0517	N	1/21/1997	no data	4.50	4.73	5210	485	515	175	10.2	6.3	3585	68	21.1	1.47	4.87	15.8	0.001
0517	N	1/22/1997	6873.50	4.50	4.73	5210	485	515	175	10.2	6.3	3585	68	21.1	1.47	4.87	15.8	0.001
0517	N	4/8/1997	6873.30	5.10	4.69	5260	485	526	169	9.9	4	3710	69.5	18.8	1.11	4.22	11.2	< 0.001
0517	N	7/8/1997	6872.70	5.10	4.59	5350	487	517	179	10.4	2.4	3470	71.6	20.1	2.58	4.46	14.4	< 0.001
0517	N	10/7/1997	6872.60	4.50	4.35	5310	504	503	165	9.9	< 0.1	3390	74	21.4	4.08	6.08	18.2	< 0.001
0517	N	1/15/1998	6872.40	4.50	4.63	5240	507	506	172	10.1	3.3	3600	64.7	20	4.63	5.1	14.4	< 0.001
0517	N	4/7/1998	6872.50	4.50	4.57	5250	478	486	164	9.2	2	3240	58.8	17.7	4.23	5.7	12.7	< 0.001
0517	N	7/7/1998	6872.40	4.80	4.45	5170	480	486	173	9.7	< 0.1	3500	61.8	18.7	4.83	5.9	13.5	< 0.001
0517	N	10/6/1998	6872.20	4.56	4.56	5170	506	505	171	10.2	1.4	3420	59.9	40.9	5.59	no data	12.2	< 0.001
0517	N	1/5/1999	6871.80	4.60	4.60	5220	433	477	158	9	2	3500	57.8	17	4.12	4.5	12.3	< 0.001
0517	N	4/6/1999	6870.90	4.50	4.72	5110	472	478	156	9.4	4	3260	62.5	15.3	4.45	3.6	12.3	< 0.001
0517	N	7/13/1999	6871.32	4.60	4.09	5010	392	493	149	10	< 0.1	3300	52.6	14.4	4.19	4.4	9.96	< 0.001
0517	N	10/5/1999	6869.10	4.50	4.40	4970	515	520	164	8.9	< 0.1	3510	54.7	13.7	4.42	5	11.2	< 0.001
0517	N	1/4/2000	6870.80	4.50	4.67	4830	476	476	146	9.7	3	3150	50.2	12.5	5.16	4.5	8.59	< 0.001
0517	N	5/1/2000	6871.60	4.50	4.67	4750	436	415	146	9.5	5	3000	54.6	13	3.77	5.4	11.6	< 0.001
0517	N	7/18/2000	6871.30	4.55	4.70	4800	461	435	149	8.56	7	2850	50.6	12.5	3.95	5.1	10.2	< 0.001
0517	N	10/2/2000	6871.55	4.54	4.78	4720	467	451	154	9.69	6	2990	48.6	11.5	3.05	3.7	9.8	0.001
0517	N	1/15/2001	6871.75	4.80	4.60	4640	447	396	145	9	3	3220	53.2	12	3.62	3.6	9	< 0.001
0517	N	4/9/2001	6871.75	4.90	4.75	5180	527	481	143	8.6	7	3870	60.5	40.4	4.15	3.7	60.2	< 0.001
0517	N	7/10/2001	6871.45	4.36	4.65	4670	462	430	145	8.5	3	2900	45	9.95	2.61	7	8.9	< 0.001
0517	N	10/8/2001	6871.45	4.50	4.60	4690	430	390	132	8.3	3.1	2600	55.1	10	2.9	3.7	7.9	< 0.001
0517	N	1/9/2002	6871.35	5.65	4.60	4620	478	416	120	10	1.2	3000	69	9.8	2.6	2.8	10.1	< 0.001
0517	N	4/3/2002	6871.40	4.46	4.48	4660	517	436	146	10	1	3230	56.4	10.1	2.89	6.8	11	< 0.001
0517	N	7/15/2002	6871.45	4.93	4.42	4710	544	466	136	8.4	< 0.1	3390	42.6	10.5	2.49	5.9	10.4	< 0.001
0517	N	10/14/2002	6871.20	4.19	4.12	4260	512	447	142	8.8	< 0.1	3250	46.6	10.8	1.09	5.3	8.9	< 0.001
0517	N	1/7/2003	6870.77	4.04	4.04	4690	504	457	107	6	< 0.1	3140	34.4	10.3	2.5	5.6	10.7	< 0.001
0517	N	4/8/2003	6870.68	4.12	3.70	4720	468	395	149	11.2	< 0.1	2926	49.4	10.1	2.7	5	10.2	< 0.001
0517	N	7/8/2003	6870.55	4.06	3.87	4730	476	411	147	9.8	< 0.1	2990	46.2	10.4	1.9	5.9	8.3	< 0.001
0517	N	10/13/2003	6870.44	4.22	3.89	4780	505	454	141	9.2	< 0.1	3290	48.8	10.3	1.5	4.6	8.8	< 0.001
0517	N	1/6/2004	6870.25	4.21	3.80	4820	521	456	166	20.3	< 1.0	3300	48.9	11.0 D	1.65	5.6	7.9	< 0.001
0517	N	4/6/2004	6870.23	4.26	4.15	4850	492	435	149	9.1	< 1	3090 D	47.2	10.8 D	0.72	5.1	7.3	< 0.001
0517	N	7/13/2004	6869.94	4.17	3.87	4720	483	423	158	9.4	< 1	3130 D	48	9.9 D	0.46	4.4	6.3	< 0.001
0517	N	10/11/2004	6870.03	4.47	4.09	4890	512 D	469 D	151	10	< 1	3330 D	48	10.6 D	0.41	3.5	5.8	< 0.001

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
0517	N	7/7/1996	0.01	< 0.01	0.78	< 0.05	12.1	< 0.1	0.71	< 0.001	< 0.1	0.113	10	23.1	33.1	1.3	5.4	25.5
0517	N	10/1/1996	< 0.01	< 0.01	0.71	< 0.05	10.9	< 0.1	0.66	0.002	< 0.1	0.087	9.7	20.9	30.6	1.5	< 1	29.5
0517	N	1/21/1997	< 0.01	< 0.01	0.67	< 0.05	10.5	< 0.1	0.6	< 0.001	< 0.1	0.076	10.3	17.3	27.6	< 0.2	< 1	12
0517	N	1/22/1997	< 0.01	< 0.01	0.67	< 0.05	10.5	< 0.1	0.6	< 0.001	< 0.1	0.076	10.3	17.3	27.6	< 0.2	< 1	12
0517	N	4/8/1997	< 0.01	< 0.01	0.62	< 0.05	9.18	< 0.1	0.56	< 0.001	< 0.1	0.077	17.5	17.5	35	< 0.2	< 1	58.5
0517	N	7/8/1997	< 0.01	< 0.01	0.64	< 0.05	10.5	< 0.1	0.51	< 0.001	< 0.1	0.082	8.5	17.4	25.9	< 0.2	< 1	13.3
0517	N	10/7/1997	< 0.01	< 0.01	0.77	< 0.05	11.3	< 0.1	0.66	< 0.001	< 0.1	0.111	9	15.7	24.7	0.9	< 1	10.5
0517	N	1/15/1998	< 0.01	< 0.01	0.59	< 0.05	9	< 0.1	0.54	< 0.001	< 0.1	0.0932	9.6	14.3	23.9	< 0.2	< 1	44.3
0517	N	4/7/1998	< 0.01	0.007	0.55	< 0.05	8.15	< 0.1	0.49	< 0.001	< 0.1	0.0901	16.3	13.1	29.4	< 0.2	6.1	19.7
0517	N	7/7/1998	< 0.01	0.008	0.55	< 0.05	8.64	< 0.1	0.5	< 0.001	< 0.1	0.0885	11	15.4	26.4	< 0.2	< 1	23.4
0517	N	10/6/1998	< 0.01	0.009	0.54	< 0.05	7.78	< 0.1	0.44	< 0.001	< 0.1	0.0936	11	13.4	24.4	< 0.2	9.9	4.4
0517	N	1/5/1999	< 0.01	0.008	0.55	< 0.05	8.11	< 0.1	0.45	< 0.001	< 0.1	0.0924	10.1	10.9	21	< 0.2	28.7	28.7
0517	N	4/6/1999	< 0.01	0.01	0.59	< 0.05	8.2	< 0.1	0.46	< 0.001	< 0.1	0.0851	20.6	20.3	40.9	< 0.2	< 1	61.8
0517	N	7/13/1999	< 0.01	0.01	0.62	< 0.05	8	< 0.1	0.5	< 0.001	< 0.1	0.0758	9.9	10.2	20.1	< 0.2	< 1	18.8
0517	N	10/5/1999	< 0.01	0.011	0.61	< 0.05	8.82	< 0.1	0.44	0.002	< 0.1	0.0731	9.8	13.2	23	< 0.2	< 1	10
0517	N	1/4/2000	< 0.01	< 0.005	0.63	< 0.05	8.36	< 0.1	0.54	< 0.001	< 0.1	0.0657	8.6	12.1	20.7	< 0.2	< 1	7.2
0517	N	5/1/2000	< 0.01	0.056	0.57	< 0.05	7.71	< 0.1	0.51	< 0.001	< 0.1	0.0695	19	11	30	3.2	4.2	20.8
0517	N	7/18/2000	< 0.01	0.008	0.55	< 0.05	7.14	< 0.1	0.37	< 0.001	< 0.1	0.0661	9.6	13.1	22.7	1.7	< 1	26.7
0517	N	10/2/2000	< 0.01	0.006	0.51	< 0.05	6.73	< 0.1	0.4	< 0.001	< 0.1	0.0606	9.8	9.4	19.2	< 0.2	< 1	26.4
0517	N	1/15/2001	< 0.01	0.005	0.54	< 0.05	6.43	< 0.1	0.47	< 0.001	< 0.1	0.0605	12.2	8.9	21.1	< 0.2	< 1	14.5
0517	N	4/9/2001	0.02	0.008	0.75	< 0.05	10.7	< 0.1	0.65	< 0.001	0.4	0.218	7.8	10.6	18.4	46.5	< 1	24.2
0517	N	7/10/2001	< 0.01	0.005	0.52	< 0.05	5.84	< 0.1	0.46	< 0.001	< 0.1	0.064	15.7	11.4	27.1	< 0.2	< 1	9.1
0517	N	10/8/2001	< 0.01	0.007	0.47	< 0.05	5.26	< 0.1	0.37	< 0.001	< 0.1	0.0614	8.4	14	22.4	< 0.2	< 1	12.1
0517	N	1/9/2002	< 0.01	0.008	0.55	< 0.05	6.08	< 0.1	0.49	< 0.001	< 0.1	0.0568	11.2	15.5	26.7	< 0.2	< 1	15.1
0517	N	4/3/2002	< 0.01	0.007	0.57	< 0.05	6.5	< 0.1	0.5	< 0.001	< 0.1	0.0652	13.1	12.2	25.3	< 0.2	< 1	29.6
0517	N	7/15/2002	< 0.01	0.007	0.55	< 0.05	5.88	< 0.1	0.48	< 0.001	< 0.1	0.0647	11.2	21.8	33	< 0.2	< 1	12.5
0517	N	10/14/2002	< 0.01	0.006	0.56	< 0.05	6.1	< 0.1	0.5	< 0.001	< 0.1	0.066	7.6	9.5	17.1	0.5	< 1	17.6
0517	N	1/7/2003	< 0.01	0.006	0.61	< 0.05	6.58	< 0.1	0.5	< 0.001	< 0.1	0.0752	8.6	6.6	15.2	1.2	< 1	20.5
0517	N	4/8/2003	< 0.01	0.007	0.54	< 0.05	6.33	< 0.1	0.53	< 0.001	< 0.1	0.079	10.1	12.1	22.2	0.6	< 1	34.1
0517	N	7/8/2003	< 0.01	0.008	0.6	< 0.05	6.65	< 0.1	0.52	< 0.001	< 0.1	0.0544	7.3	10.6	17.9	1.1	< 1	9.2
0517	N	10/13/2003	< 0.01	0.008	0.64	< 0.05	6.55	< 0.1	0.56	< 0.001	< 0.1	0.0677	6	5.3	11.3	0.4	< 1	24
0517	N	1/6/2004	< 0.01	0.007	0.68	< 0.05	6.95	< 0.1	0.52	< 0.001	< 0.1	0.0622 D	8.2	9.6	17.8	0.5	< 1.0	12.4
0517	N	4/6/2004	< 0.01	0.006	0.71	< 0.05	7.18	< 0.1	0.61	< 0.001	< 0.1	0.0576 D	6.5	11.1	17.6	0.2	< 1	19.7
0517	N	7/13/2004	< 0.01	0.005	0.64	< 0.05	6.62	< 0.1	0.62	< 0.001	< 0.1	0.0526 D	10.2	10.1	20.3	0.3	< 1.0	9.3
0517	N	10/11/2004	< 0.01	< 0.005	0.57	< 0.05	6.98	< 0.1	0.58	< 0.001	< 0.1	0.0504	6.5	11.1	17.6	0.3	< 1.0	15.4

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
0517	N	1/10/2005	6869.86	4.01	3.92	4940	485 D	426 D	146	9.4	< 1	3040 D	45	10.3 D	0.4	1.7	5.3	< 0.001
0517	N	4/12/2005	6869.62	4.39	4.07	4590	514	444	156	9.8	< 1	3370	47	9.6	0.3	4.6	5.6	< 0.001
0517	N	7/12/2005	6869.32	4.46	3.93	4910	505 D	443 D	142	9.2	< 1	3270 D	42	9.7 D	0.1	6.4	4.1	< 0.001
0517	N	10/10/2005	6869.52	4.45	3.86	4880	502 D	467 D	146	10	< 1	3260 D	46	8.6 D	0.4	3.4	4.8	< 0.001
0517	N	1/16/2006	6869.38	4.42	4.12	4790	454 D	431 D	142	9.9	< 1	3100 D	45	11.3 D	0.3	5.3	4.4	< 0.001
0517	N	4/10/2006	6869.43	4.03	4.08	4910	482 D	446 D	152	10	< 1	3240 D	43	10.4 D	0.2	4.8	4.8	< 0.001
0517	N	7/24/2006	6869.04	4.08	3.58	4740	492 D	446 D	141	< 0.5	< 1	3250 D	43	10.2 D	0.1	5.8	4.1	< 0.001
0517	N	4/18/2007	6869.18	3.95	3.71	5100	478 D	472 D	136	10.7	< 1	3520 D	44	9.7 D	< 0.1	6.56	5.6	< 0.001
0517	N	7/10/2007	6869.02	3.88	3.18	4910	508 D	477 D	154	11.3	< 1	3590 D	44	10.4 D	< 0.1	5.64	4.7	0.02
0517	N	10/8/2007	6868.92	4.05	3.93	5130	478 D	463 D	147	11.8	< 1	3390 D	47	10.9 D	0.2	6.76	4.7	< 0.001
0517	N	1/21/2008	6869.25	3.8	3.9 H	5080	454 D	431 D	155	12.9	< 1	3190 D	45 D	11.8 D	0.2	6.24	5.1	0.003
0517	N	4/15/2008	6868.97	3.69	3.31	4880	488	473	145 D	11.1	< 1	3810 D	40	10.0 D	< 0.1	3.98	5.1	< 0.001
0517	N	7/15/2008	6868.62	4.00	3.77	5110	440	425	136 D	11	< 1	3410 D	36	10 D	< 0.1	5.92	5.8	< 0.003
0517	N	10/13/2008	6869.02	3.70	3.31	5040 H	483	460	148 D	11	< 1	3650 D	41	10	< 0.1	4.28	6.5	< 0.001
0517	N	1/19/2009	6868.49	3.68	3.23	5350 H	441	447	156	12	< 1	3100 D	38	4.92	< 0.1	6.2	5.7	< 0.001
0517	N	4/13/2009	6868.84	3.7	3.13	5190	435 D	434 D	144 D	10	< 1	3450 D	34	8.2 D	0.1	5.44	6.1	< 0.001
0517	N	7/13/2009	6868.49	3.65	3.23 H	5320 H	465	450	145	12	< 1	3690 D	45	5.6 D	< 0.1	5.08	5	< 0.001
0517	N	10/12/2009	6868.69	3.7	3.59	5320	442	437	142	12	< 1	3360 D	35	10.7 D	0.1	4.72	6.1	< 0.001
0517	N	1/11/2010	6868.29	3.59	3.74	5380 D	465 D	460	144 D	13	< 5	3680 D	35	9.8 D	0.16	3.96	5.9	< 0.001
0517	N	4/6/2010	6868.44	2.78	3.42	5400 D	448 D	437	145 D	12	< 5	3870 D	37	11.9 D	0.2	4.56	6.3	< 0.001
0517	N	7/19/2010	6868.09	3.7	3.1	5260 D	442	458	139	11	< 5	3700 D	40 D	11.7 D	0.1	5.16	6.4	< 0.001
0517	N	10/11/2010	6868.24	3.72	2.97	5270 D	462	458	155	12	< 5	3930 D	35 D	11.5 D	< 0.1	4.16	6.8	< 0.001
0517	N	1/5/2011	6868.043	2.8	3.57	5270 D	442	452	148	12	< 5	3770 D	44 D	13.0 D	< 0.1	6.08	7	< 0.001
0517	N	4/6/2011	6868.083	2.9	3.39	5580 D	456	464	151	13	< 5	3930 D	43 D	10.7 D	< 0.1	5.16	8.2	< 0.001
0517	N	7/18/2011	6867.593	2.96	3.21	5240 D	454	458	151	12	< 5	3720 D	42 D	10.5 D	< 0.5	1.8	9.7	< 0.001
0517	N	10/10/2011	6867.763	3.58	3.14	5120 D	450	459	151	12	< 5	3960 D	43 D	10.5 D	< 0.2	1.3	9.3	< 0.001
0517	N	1/9/2012	6867.49	3.67	3.07 H	5350 D	475	463	146	13	< 5	3770 D	42 D	10.9 D	< 0.5	3.84	10.8	< 0.001
0517	N	4/9/2012	6867.39	3.7	3.25 H	5580 D	435	479	147	12	< 5	3980 D	49 D	10.8 D	< 0.5	4.8	10.9	< 0.01
0517	N	7/16/2012	6867.29	3.5	3.17 H	5560	495	527	151	12	< 5	3940 D	45 D	10.7 D	< 0.1	4.44	11.7	< 0.001
0517	N	10/15/2012	6867.14	3.56	3.09 H	5470	456	480	151 D	12	< 5	3770 D	43 D	10.4 D	< 1	7.52	12.9	< 0.001
0517	N	1/8/2013	6,867.30	3.37	2.88 H	5570	485	522	158 D	14	< 5	3900 D	41 D	11.2 D	< 0.2	4.32	14.5	< 0.001
0517	N	4/2/2013	6,867.20	3.41	3.03 H	5510	449	494	146	13	< 5	3940 D	42 D	9 D	< 0.1	6.68	14.8	< 0.001
0517	N	7/8/2013	6,866.71	3.3	3.20 H	5680	451	511	148	12	< 5	4030 D	41 D	10.3 D	0.4	5.28	18.9	< 0.001
0517	N	10/1/2013	6,866.72	3.26	2.87 H	5380	464	511	154	12	< 5	4270 D	42 D	10.0 D	< 0.1	3.94	16.8	< 0.001
0517	N	1/7/2014	6,866.50	3.01	2.94	5620	449	500	145	11	< 5	3880	40	9.2	< 0.1	4.48	17.7	< 0.001

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
0517	N	1/10/2005	< 0.01	< 0.005	0.74	< 0.05	6.7	< 0.1	0.66	< 0.001	< 0.1	0.0554	4	9.2	13.2	0.3	< 1.0	22.2
0517	N	4/12/2005	< 0.01	0.005	0.67	< 0.05	7.38	< 0.1	0.63	< 0.001	< 0.1	0.051	13.7	11.4	25.1	< 0.2	< 1.0	9.8
0517	N	7/12/2005	< 0.01	0.007	0.74	< 0.05	7.39	< 0.1	0.69	< 0.001	< 0.1	0.0407	11.6	9.3	20.9	0.2	< 1.0	42.6
0517	N	10/10/2005	< 0.01	0.007	0.78	< 0.05	7.49	< 0.1	0.68	< 0.001	< 0.1	0.0447	10.3	12.2	22.5	< 0.2	< 1.0	16.7
0517	N	1/16/2006	< 0.01	0.007	0.7	< 0.05	7.26	< 0.1	0.69	< 0.001	< 0.1	0.0528	7.8	10.5	18.3	< 0.2	< 1.0	10.4
0517	N	4/10/2006	< 0.01	0.007	0.74	< 0.05	7.75	< 0.1	0.7	< 0.001	< 0.1	0.0466	5.9	11.8	17.7	< 0.2	< 1.0	8.5
0517	N	7/24/2006	< 0.01	0.006	0.77	< 0.05	8.14	< 0.1	0.66	< 0.001	< 0.1	0.0441	6.7	13.1	19.8	< 0.2	< 1.0	9.2
0517	N	4/18/2007	< 0.01	0.009	0.77	< 0.05	8.03	< 0.1	0.84	< 0.001	< 0.1	0.0514	7.3	18	25.3	< 0.2	< 1	11.1
0517	N	7/10/2007	< 0.01	0.008	0.83	< 0.05	8.08	< 0.1	0.87	< 0.001	< 0.1	0.048 D	7.4	14.2	21.6	< 0.2	< 1	11.6
0517	N	10/8/2007	< 0.01	0.007	0.8	< 0.05	8.98	< 0.1	0.76	< 0.001	< 0.1	0.0518	5.6	14.1	19.7	< 0.2	1.8	11.2
0517	N	1/21/2008	< 0.01	0.009	0.79	< 0.05	8.8	< 0.1	0.84	0.001	< 0.1	0.0561	11.8	17.4	29.2	< 0.2	< 0.9	13
0517	N	4/15/2008	< 0.01	0.008	0.85	< 0.05	9.04	< 0.1	0.84	< 0.001	0.2	0.0525	6.6	20.3	26.9	1.3	0 U	11.3
0517	N	7/15/2008	< 0.01	0.01	0.75	< 0.05	8.79	< 0.1	0.8	< 0.001	< 0.1	0.0477	7	16	23	0.4	5.7 U	10.2
0517	N	10/13/2008	< 0.01	0.009	0.87	< 0.05	9.63	< 0.1	0.91	< 0.001	< 0.1	0.0564	5.4	14	19.4	1.1	1.8 U	12.3
0517	N	1/19/2009	< 0.01	0.009	0.81	< 0.05	9.06	< 0.1	0.84	0.002	< 0.1	0.0485	8	14	22	0.6	1.4 U	15.1
0517	N	4/13/2009	< 0.01	0.009	0.8	< 0.05	9.09	< 0.1	0.83	< 0.001	< 0.1	0.0558	5.1	14	19.1	0.8	0.4 U	18
0517	N	7/13/2009	< 0.01	0.009	0.81	< 0.05	9.27	< 0.1	0.87	< 0.001	< 0.1	0.0538	7.2	13	20.2	0.4 U	1.2 U	16.4
0517	N	10/12/2009	< 0.01	0.009	0.86	< 0.05	9.91	< 0.1	0.88	< 0.001	< 0.1	0.0585	6.8	13	19.8	1.1	3.2 U	18.6
0517	N	1/11/2010	< 0.01	0.008	0.83	< 0.05	9.53	< 0.1	0.9	< 0.001	< 0.1	0.0539	6.4	16	22.4	0.9	2.1 U	15.1
0517	N	4/6/2010	< 0.01	0.009	0.82	< 0.05	9.25	< 0.1	0.86	0.004	< 0.1	0.0597	8.2	11	19.2	1.5	< 2 U	13.4
0517	N	7/19/2010	< 0.01	0.009	0.89	< 0.05	10.3	< 0.1	0.88	< 0.001	< 0.1	0.0616	10	15	25	1.1	0.6 U	14.7
0517	N	10/11/2010	< 0.01	0.009	0.91	< 0.05	10.3	< 0.1	0.9	< 0.001	< 0.1	0.0636	7.6	11	18.6	1.3	0.8 U	15.9
0517	N	1/5/2011	< 0.01	0.01	0.92	< 0.05	10.4	< 0.1	0.97	0.004	< 0.1	0.0722	7.7	13	20.7	1.5	1.5	22.3
0517	N	4/6/2011	< 0.01	0.011	0.99	< 0.05	11.1	< 0.1	1.04	< 0.001	< 0.1	0.082	4.6	14	18.6	1.7	1.3 U	9.1
0517	N	7/18/2011	< 0.01	0.009	0.94	< 0.05	11.1	< 0.1	0.98	< 0.001	< 0.1	0.0932	9.5	12	21.5	1.9	< 0.2 U	12.6
0517	N	10/10/2011	< 0.01	0.012	0.89	< 0.05	10.9	< 0.1	0.98	< 0.001	< 0.1	0.0841	6.3	12	18.3	2.4	1.3 U	13.8
0517	N	1/9/2012	0.01	0.01	0.92	< 0.05	11.2	< 0.1	1.01	< 0.001	< 0.1	0.117	5.1	12	29.1	3	2.3	13.7
0517	N	4/9/2012	0.01	0.011	0.98	< 0.05	11.9	< 0.1	1.04	< 0.001	< 0.1	0.107	7.3	14	35.3	4	1.7	12.4
0517	N	7/16/2012	0.01	0.009	0.9	0.014	11.6	< 0.1	1.02	< 0.001	< 0.1	0.117	10	11	32	9	1.2	41.5
0517	N	10/15/2012	0.011	0.008	0.85	0.014	10.7	< 0.1	1.07	< 0.001	< 0.1	0.124	6.6	14	20.6	7.3	1.9	7
0517	N	1/8/2013	0.013	0.009	0.93	0.014	11.8	< 0.1	1.03	< 0.001	< 0.1	0.159	7.7	7.2	14.9	6	1.7	7.2
0517	N	4/2/2013	0.012	0.009	0.93	0.018	11.9	< 0.1	1.04	< 0.001	< 0.1	0.158	6.4	14	20.4	10	0.9 U	10.2
0517	N	7/8/2013	0.016	0.011	1	0.018	12.2	< 0.1	1.06	< 0.001	< 0.1	0.195	4.8	10	14.8	12.1	1.7	28.7
0517	N	10/1/2013	0.012	0.008	0.97	0.023	12.5	< 0.1	1.09	< 0.001	< 0.1	0.207	5.8	3.9	9.7	12.8	1.8	20.9
0517	N	1/7/2014	0.014	0.008	0.93	0.027	12	< 0.1	1.04	< 0.001	< 0.1	0.204	4.8	6.9	11.7	13.5	1.7	29.2



**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l	
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
0517	N	4/7/2014	6,866.45	2.82	3.00 H	5630	452	504	152 D	12	<5	4250 D	45 D	9.6 D	<0.1	4.08	15.8	<0.001
0517	N	7/14/2014	6,866.08	2.90	3.21 H	5570	438	490	144 D	12	<5	4170 D	40 D	9.6 D	<0.1	5.6	16.9	<0.001
0517	N	10/13/2014	6,866.09	2.80	2.91 H	5760	449	523	145	12	<5	4110 D	42 D	9.2 D	<0.1	4.8	17.9	<0.001
0517	N	1/12/2015	6865.94	2.80	2.99 H	5840	446	521	147	12	<5	4000 D	38 D	9.0 D	<0.1	4.68	18.9	<0.001
0517	N	4/13/2015	6865.603	2.92	2.80 H	5780 H	450	532	147	12	<5	3900 D	38 D	8.3 D	<0.1	3.41	18	<0.001
0517	N	7/13/2015	6865.60	2.92	2.97 H	5740	447	519	134	17	<5	4170 D	38 D	9.8 D	<0.1	4.88	16.7	<0.001
0517	N	10/12/2015	6865.47	2.76	3.09 H	5900	449	539	143	12	<5	4110 D	40 D	8.8 D	<0.1	3	18.1	<0.001
0517	N	1/11/2016	6865.46	2.90	2.92 H	5870	439	516	143	14	<5	4140 D	39 D	8.8 D	<0.1	2.27	17.4	<0.001
0517	N	4/11/2016	6865.32	2.84	2.88 H	5830	472	580	160	13	<5	4250 D	37 D	8.9 D	<0.1	3.54	18.8	0.001
0517	N	7/18/2016	6864.94	2.80	3.11 H	5930 DH	444	551	141	12	<5	3950 D	37 D	8.6 D	<0.1	5.7	18.6	<0.001
0517	N	10/10/2016	6864.88	2.83	2.98 H	5870 H	441	565	147	13	<5	4420 D	37 D	8.2 D	<0.1	3.4	18.1	<0.001
0518	N	7/23/1989	6897.20	3.30	3.44	9675	443	764	236	35.8	0	6727	64.6	123	22	43	420	0.001
0518	N	10/11/1989	6892.90	3.20	3.32	10260	417	770	223	46.8	0	6908	133	77.2	29	42	500	< 0.001
0518	N	1/3/1990	6890.20	3.00	3.00	10370	440	748	228	30	< 1	6962	108	40.4	18.7	23.7	410	0.001
0518	N	4/3/1990	6888.20	2.90	3.26	10524	431	850	223	29.2	< 1	6989	84	52	28	15.6	430	0.001
0518	N	7/10/1990	6886.80	3.30	2.95	9505	415	768	198	22.3	< 1	6226	67	34.4	16	26.1	299	< 0.001
0518	N	10/9/1990	6885.60	3.10	3.30	11417	439	900	248	27.5	< 1	7573	87.9	45.2	20.6	17.2	406	0.002
0518	N	1/4/1991	6885.10	3.40	3.62	7402	476	168	158	33.5	< 1	4846	85.7	12.6	0.58	18.9	128	< 0.001
0518	N	4/10/1991	6887.30	3.80	4.11	7370	471	686	119	14.2	< 1	4597	38.3	8.8	< 0.01	16.3	62.1	< 0.001
0518	N	7/16/1991	6885.60	3.70	3.64	7248	467	685	136	12.8	< 1	5539	23.8	7.6	< 0.01	19.9	64.9	< 0.001
0518	N	10/14/1991	6883.90	3.60	3.30	7257	363	493	145	11.1	< 1	4652	41.8	7.2	< 0.01	17.5	73.2	< 0.001
0518	N	1/14/1992	6884.10	3.60	3.79	7008	385	645	128	12.9	< 1	4442	66.8	9.3	< 0.01	17.5	63.1	< 0.001
0518	N	4/7/1992	6885.10	3.70	3.44	7028	419	581	150	15.5	< 1	4452	32.7	6.87	< 0.1	18.5	41.2	0.003
0518	N	7/7/1992	6881.60	3.40	3.07	8076	428	574	244	25.5	< 1	5279	47.8	17	< 0.1	16	161	< 0.001
0518	N	10/13/1992	6879.70	3.50	2.99	8062	447	613	168	17.8	< 1	5260	48.2	17.3	< 0.1	16	123	< 0.001
0518	N	1/21/1993	6882.50	3.70	2.97	5822	447	613	168	14.7	< 1	4456	51.6	4.6	< 0.1	16	32.5	0.001
0518	N	4/14/1993	6883.50	4.20	3.00	5276	448	530	100	14	< 1	3993	53.7	15	< 0.1	14.5	39.1	0.001
0518	N	7/15/1993	6879.80	3.60	3.06	5485	433	569	146	14	< 1	3940	34.1	6.4	< 0.1	17.4	51	< 0.001
0518	N	10/6/1993	6876.00	3.70	3.03	5631	438	651	131	12.5	< 1	4358	38.2	8.3	< 0.1	14.2	68	0.003
0518	N	1/5/1994	6880.40	3.60	2.79	6074	499	619	138	11.3	< 1	4350	36.3	7.93	0.13	< 1	65.6	< 0.001
0518	N	4/13/1994	6881.30	3.80	3.08	5991	510	618	122	13.1	< 1	4246	32	10.8	< 0.1	16.1	56.7	0.001
0518	N	7/21/1994	6881.30	4.00	3.17	5944	481	609	126	13.7	< 1	4218	24.6	7.69	< 0.1	14	53.4	< 0.001
0518	N	10/5/1994	6881.40	4.00	3.84	5869	463	652	138	14.5	< 1	4296	31.3	10.7	< 0.1	10	37.9	0.001
0518	N	1/5/1995	6880.90	3.90	3.84	5872	476	623	128	15	< 1	4462	33.6	14.4	< 0.1	14.1	62.2	< 0.001
0518	N	4/5/1995	6880.90	3.90	3.30	7021	628	718	140	14.2	< 1	5113	29.6	12.8	< 0.1	11.5	64	0.001

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
0517	N	4/7/2014	0.012	0.01	0.93	0.022	11.8	<0.1	0.96	<0.001	<0.1	0.21	9	5.7	14.7	12.9	1.4	5.6
0517	N	7/14/2014	0.014	0.009	0.92	0.022	12.1	<0.1	1	<0.001	<0.1	0.213	5.4	3.5	8.9	17.1	0.8 U	11.7
0517	N	10/13/2014	0.015	0.01	0.94	0.016	12.4	<0.1	1.01	<0.001	<0.1	0.264	9	8.7	17.7	11.2	1.7	13.3
0517	N	1/12/2015	0.015	0.012	0.93	0.023	12.5	<0.1	0.96	<0.001	<0.1	0.272	11	7.8	18.8	18.9	0.9 U	67.6
0517	N	4/13/2015	0.014	0.008	0.91	0.024	11.9	<0.1	0.92	<0.001	<0.1	0.267	5.7	6.2	11.9	12.9	1.6	82.2
0517	N	7/13/2015	0.015	0.01	0.86	0.017	11.7	<0.1	0.89	<0.001	<0.1	0.3	4.8	6.9	11.7	20.5	11.8	75.9
0517	N	10/12/2015	0.015	0.01	0.85	0.022	11.9	<0.1	0.82	<0.001	<0.1	0.287	5.9	7.9	13.8	8.7	2.6	20.2
0517	N	1/11/2016	0.016	0.009	0.83	0.045	11.5	<0.1	0.87	<0.001	<0.1	0.308	4.3	4.4	8.7	16	2.5	89.2
0517	N	4/11/2016	0.017	0.007	0.87 D	0.021	12.8	<0.1	0.94	<0.001	<0.1	0.361	7.9	7.8	15.7	11.6	1.9	92.4
0517	N	7/18/2016	0.016	0.005	0.82	0.052	12	<0.1	0.86	<0.001	<0.1	0.401	5.6	11	16.6	20.7	2.4	56.1
0517	N	10/10/2016	0.018	0.007	0.88	0.02	13.2	<0.1	0.87	<0.001	<0.1	0.374	6	8.1	14.1	17.1	1.7	41.7
0518	N	7/23/1989	0.16	< 0.01	1.7	0.11	41	< 0.1	1.9	0.001	< 0.1	0.842	24.3	16.7	41	17.9	4.1	120
0518	N	10/11/1989	0.19	0.03	1.8	0.19	44	< 0.01	2.1	0.006	1	1.08	11.5	11.2	22.7	55.8	5	70.1
0518	N	1/3/1990	0.16	0.01	1.9	< 0.05	41	< 0.01	2.1	< 0.001	0.22	0.988	10.3	4.3	14.6	42	5.1	54
0518	N	4/3/1990	0.18	< 0.01	2.1	< 0.05	50	< 0.01	2.5	< 0.001	0.16	0.801	12	< 1	12	10.2	2.2	15
0518	N	7/10/1990	0.13	0.01	1.17	< 0.05	36.5	< 0.1	1.91	0.001	0.26	1.077	7.1	1.3	8.4	6.8	< 1	15
0518	N	10/9/1990	0.21	0.01	2.75	< 0.05	51	< 0.1	3.21	< 0.001	0.9	1.786	17.8	5.1	22.9	4	< 1	22
0518	N	1/4/1991	0.06	< 0.01	1	< 0.05	19.8	< 0.1	1.31	0.001	0.26	0.7028	6.8	5.9	12.7	6.2	< 1	15.5
0518	N	4/10/1991	< 0.01	< 0.01	0.7	< 0.05	11.13	< 0.1	0.8	< 0.001	0.11	0.392	10.2	7.9	18.1	1.6	1.5	12.1
0518	N	7/16/1991	0.05	0.02	0.96	< 0.05	16.4	< 0.1	0.94	< 0.001	< 0.1	0.304	3.9	5.9	9.8	< 0.2	4.6	4
0518	N	10/14/1991	0.05	0.02	0.97	< 0.05	16.8	< 0.1	0.91	< 0.001	0.12	0.43	4.5	< 1	4.5	< 0.2	< 1	5
0518	N	1/14/1992	0.03	0.02	1.43	< 0.05	14	< 0.1	0.92	< 0.001	0.14	0.258	12.1	5.9	18	< 0.2	1.9	12
0518	N	4/7/1992	0.03	0.03	0.86	< 0.05	18.1	< 0.1	0.66	< 0.001	< 0.1	0.268	5.8	16.7	22.5	< 0.2	< 1	5.9
0518	N	7/7/1992	< 0.01	< 0.01	1.13	< 0.05	20.8	< 0.1	1.09	0.001	0.22	0.86	5.1	2.1	7.2	< 0.2	< 1	5.6
0518	N	10/13/1992	< 0.01	0.02	1.17	< 0.05	20.3	< 0.1	1.06	< 0.001	0.4	1.22	6.4	6.7	13.1	16.1	< 1	6.9
0518	N	1/21/1993	< 0.01	< 0.01	0.42	< 0.05	11.8	< 0.1	0.93	< 0.001	< 0.1	0.189	6.3	4.9	11.2	2.2	3.7	8.5
0518	N	4/14/1993	< 0.01	< 0.01	0.93	< 0.05	13.7	< 0.1	1.05	< 0.001	< 0.1	0.252	8.9	20.5	29.4	< 2	1.9	9.7
0518	N	7/15/1993	< 0.01	< 0.01	0.9	< 0.05	14.4	< 0.1	0.8	< 0.001	0.15	0.17	4.5	2	6.5	< 2	< 1	4.7
0518	N	10/6/1993	0.053	< 0.01	0.75	< 0.05	14.9	< 0.1	0.92	< 0.001	< 0.1	0.289	5.4	2.6	8	21.2	1.2	30.5
0518	N	1/5/1994	0.05	< 0.01	0.93	< 0.05	16.8	< 0.1	0.8	< 0.001	0.1	0.331	5.5	< 1	5.5	12.1	3.1	18.6
0518	N	4/13/1994	0.03	< 0.01	0.77	< 0.05	12.6	< 0.1	0.8	< 0.001	0.16	0.306	5.3	9.5	14.8	< 0.2	2	19.7
0518	N	7/21/1994	0.02	< 0.01	0.86	< 0.05	14.5	< 0.1	0.73	< 0.001	< 0.1	0.237	9.1	16.9	26	< 0.2	7.6	34.6
0518	N	10/5/1994	< 0.01	< 0.01	1.04	< 0.05	9.65	< 0.1	0.54	0.004	< 0.1	0.302	8.7	17.6	26.3	< 0.2	< 1	35.2
0518	N	1/5/1995	< 0.01	< 0.01	0.96	< 0.05	15	< 0.1	0.9	< 0.001	0.15	0.321	10.9	7.9	18.8	25.2	< 1	47.9
0518	N	4/5/1995	0.04	0.02	0.97	< 0.05	15.4	< 0.1	0.88	< 0.001	0.23	0.332	8.8	14.4	23.2	8.6	2.4	38.9

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
0518	N	7/6/1995	6880.30	4.40	3.10	6818	622	595	133	12.6	< 1	4765	34.2	16.5	< 0.1	13.7	85	0.002
0518	N	10/4/1995	6880.20	3.60	3.08	4162	618	314	173	6.2	< 1	3064	28.7	5.22	< 0.1	16.9	< 0.1	0.002
0518	N	1/4/1996	6880.10	3.20	3.11	7039	670	660	145	10.5	< 1	5245	33.4	9	< 0.1	15.3	98.5	0.001
0518	N	4/2/1996	6880.20	3.40	3.50	7408	661	700	141	11.6	< 1	5180	37.3	9.2	0.13	14.7	97	< 0.001
0518	N	7/7/1996	6879.50	3.50	3.24	5648	453	691	155	12.5	< 1	5139	42.8	13	1.2	15.6	122	< 0.001
0518	N	10/1/1996	6879.20	3.80	3.31	7580	448	688	144	12.9	< 1	4928	35.8	8.95	0.25	13.2	100	< 0.001
0518	N	1/21/1997	6879.70	4.00	3.26	7340	440	680	147	13.8	< 1	4920	34.3	9.21	2.28	13.9	100	0.002
0518	N	4/8/1997	6878.80	3.30	3.55	7480	469	720	138	13.3	< 1	5250	38.7	8.4	1.75	12.2	104	< 0.001
0518	N	7/8/1997	6878.40	3.70	3.56	7630	488	742	148	14.6	< 1	5370	41	8.29	2.46	10.6	106	< 0.001
0518	N	10/8/1997	6878.40	3.00	3.43	7460	460	698	141	13.9	< 0.1	4990	39.4	9.32	2.87	6.8	110	< 0.001
0518	N	1/16/1998	6878.30	3.70	3.73	7650	453	683	145	15.1	< 0.1	5000	39.4	9.54	1.89	11.8	87.3	< 0.001
0518	N	4/7/1998	6878.30	3.70	3.48	7600	454	702	184	13.8	< 0.1	4920	35.9	8.37	2.84	11.1	70.4	< 0.001
0518	N	7/7/1998	6877.90	3.70	3.64	7020	446	692	137	14.4	< 0.1	4600	33.7	8.31	1.44	9.8	75.8	< 0.001
0518	N	10/6/1998	6877.80	3.35	3.66	7050	466	723	144	15.9	< 0.1	4800	35.8	4.48	1.89	10	90.4	0.001
0518	N	1/6/1999	6877.76	3.30	3.54	7640	482	724	150	14.2	< 0.1	5000	38.7	8.24	2.26	8.3	80.4	< 0.001
0518	N	4/6/1999	6877.86	3.30	3.75	7380	436	699	125	14.4	< 0.1	4800	43.5	7.28	1.37	8.3	76.6	< 0.001
0518	N	7/13/1999	6877.28	3.50	3.62	7690	464	737	129	16.1	< 0.1	5000	31.7	7.17	0.62	8.3	69.5	< 0.001
0518	N	10/5/1999	6877.26	3.48	3.61	7660	478	772	139	14.7	< 0.1	5300	35.4	8.36	0.98	8.3	86.5	< 0.001
0518	N	1/4/2000	6877.36	3.30	3.58	7540	445	729	128	15.5	< 0.1	4960	37.1	7.7	1.5	7.9	55.1	< 0.001
0613	N	5/2/2000	6884.60	3.02	3.11	13900	415	646	323	2	< 0.1	9150	177	474	22.8	91.2	666	< 0.001
0613	N	7/11/2000	6883.70	2.96	3.16	13700	426	656	328	< 0.1	< 0.1	8770	166	445	16.8	68.6	662	< 0.001
0613	N	10/2/2000	6885.00	3.03	3.08	13800	451	709	350	1.5	< 0.1	8870	175	400	18	49	694	0.001
0613	N	1/15/2001	6883.50	3.10	3.08	13800	425	622	334	1	< 0.1	10400	183	423	17.2	46.4	810	< 0.001
0613	N	4/9/2001	6883.65	2.96	3.16	13100	411	623	313	0.6	< 0.1	8510	174	425	18	41	738	< 0.001
0613	N	7/10/2001	6883.50	2.98	3.12	13900	459	726	322	< 0.1	< 0.1	9400	147	370	16.5	96	753	< 0.001
0613	N	10/2/2001	6883.50	3.24	3.00	13600	430	640	300	< 1	< 0.1	8400	160	392	17.3	87.5	673	< 0.001
0613	N	1/14/2002	6883.45	3.12	3.00	13800	470	701	342	< 1	< 0.1	9090	172	394	16	109	670	< 0.001
0613	N	4/2/2002	6883.40	2.92	3.02	13800	461	678	311	1.6	< 0.1	9810	189	389	15.4	39.7	718	< 0.001
0613	N	7/9/2002	6883.23	2.95	3.07	13300	437	672	316	< 1	< 0.1	8810	167	359	15.5	39.7	725	< 0.001
0613	N	10/8/2002	6883.30	2.85	3.04	11800	398	625	284	< 1	< 0.1	8490	165	357	14.2	166	592	< 0.001
0613	N	1/7/2003	6882.69	2.96	3.02	13100	377	611	264	< 1	< 0.1	7870	158	341	12.6	137	475	< 0.001
0613	N	4/8/2003	6882.54	2.87	3.05	13200	398	649	290	< 1	< 0.1	8020	148	341	13.8	142	473	< 0.001
0613	N	7/8/2003	6882.75	2.78	2.98	12100	438	684	292	< 1	< 0.1	8910	172	327	13	134	726	< 0.001
0613	N	10/8/2003	6882.97	3.11	3.04	13200	429	705	297	< 1	< 0.1	9510	175	321	12.5	138	810	< 0.001
0613	N	1/6/2004	6882.61	2.77	3.01	13100	529	817	329	4.3	< 1.0	10900	195	323 D	12.3 D	133 D	842	< 0.001

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
0518	N	7/6/1995	0.05	< 0.01	0.99	< 0.05	15.9	< 0.1	0.91	< 0.001	0.28	0.5747	9.8	6.7	16.5	17.7	1.9	38.6
0518	N	10/4/1995	< 0.01	< 0.01	0.14	< 0.05	0.26	< 0.1	< 0.05	0.003	< 0.1	0.053	1.5	< 1	1.5	< 0.2	< 1	4.3
0518	N	1/4/1996	0.05	< 0.01	1.01	< 0.05	15.5	< 0.1	0.91	< 0.001	0.16	0.472	8.6	5.1	13.7	25	4.2	17.9
0518	N	4/2/1996	0.05	< 0.01	1.02	< 0.05	15.4	< 0.1	0.87	< 0.001	0.13	0.587	9.4	6.4	15.8	16.2	< 1	28.3
0518	N	7/7/1996	< 0.01	< 0.01	1.14	< 0.05	17.3	< 0.1	1.08	< 0.001	0.14	0.548	7.2	7	14.2	23.2	6.2	49.2
0518	N	10/1/1996	0.06	< 0.01	1.06	< 0.05	15.9	< 0.1	0.99	< 0.001	< 0.1	0.42	6	< 1	6	18.6	< 1	31.3
0518	N	1/21/1997	0.06	< 0.01	1.09	< 0.05	16.2	< 0.1	1.01	< 0.001	0.19	0.356	6.8	< 1	6.8	18.6	< 1	11.7
0518	N	4/8/1997	0.06	< 0.01	1.06	< 0.05	17.5	< 0.1	1.02	< 0.001	0.16	0.445	6	< 1	6	< 0.2	5.6	23.9
0518	N	7/8/1997	0.06	< 0.01	1.14	< 0.05	18.5	< 0.1	0.98	< 0.001	< 0.1	0.368	8.7	< 1	8.7	16.7	< 1	18.5
0518	N	10/8/1997	0.07	< 0.01	1.28	< 0.05	18.7	< 0.1	1.17	< 0.001	< 0.1	0.367	6.6	< 1	6.6	13.1	< 1	11.9
0518	N	1/16/1998	0.06	< 0.01	1.19	< 0.05	17.3	< 0.1	1.16	< 0.001	< 0.1	0.3836	6.8	< 1	6.8	9	< 1	9.6
0518	N	4/7/1998	0.06	0.007	1.05	< 0.05	15	< 0.1	1.04	< 0.001	< 0.1	0.372	5	< 1	5	12.3	< 1	12
0518	N	7/7/1998	0.06	0.009	1.05	< 0.05	16.2	< 0.1	1	< 0.001	< 0.1	0.347	5.6	< 1	5.6	9.2	7	17
0518	N	10/6/1998	0.06	0.007	1.16	< 0.05	17.5	< 0.1	1.06	< 0.001	< 0.1	0.363	7.9	< 1	7.9	8	< 1	16.6
0518	N	1/6/1999	0.06	0.011	1.26	< 0.05	17.2	< 0.1	1.37	< 0.001	< 0.1	0.345	7.5	< 1	7.5	9.4	9.5	9.5
0518	N	4/6/1999	0.06	0.01	1.15	< 0.05	16.6	< 0.1	1.15	< 0.001	< 0.1	0.328	6.4	1.7	8.1	4.1	< 1	15.3
0518	N	7/13/1999	0.05	< 0.005	1.11	< 0.05	16.2	< 0.1	1.1	< 0.001	< 0.1	0.0198	3.5	< 1	3.5	7.8	< 1	14
0518	N	10/5/1999	0.06	0.01	1.17	< 0.05	18.4	< 0.1	1.18	< 0.001	< 0.1	0.327	6.1	4.6	10.7	7.1	< 1	13.6
0518	N	1/4/2000	0.05	< 0.005	1.04	< 0.05	17.1	< 0.1	1.06	0.001	< 0.1	0.306	9.1	< 1	9.1	8.5	< 1	12.3
0613	N	5/2/2000	0.21	0.714	1.8	< 0.05	62.6	< 0.1	1.69	< 0.001	6	1.93	10	3	13	339	< 1	19.7
0613	N	7/11/2000	0.22	0.028	1.64	0.23	63.6	< 0.1	1.88	< 0.001	5.8	1.98	11.9	< 1	11.9	317	< 1	46.6
0613	N	10/2/2000	0.21	0.03	1.56	0.28	60.1	< 0.1	1.52	< 0.001	5.08	1.82	13.5	< 1	13.5	249	< 1	67.9
0613	N	1/15/2001	0.23	0.028	1.77	< 0.05	61	< 0.1	1.6	< 0.001	5.4	2.08	14.6	< 1	14.6	794	< 1	44.1
0613	N	4/9/2001	0.2	0.027	1.9	< 0.05	54.8	< 0.1	1.7	< 0.001	5	1.85	11.5	1.5	13	592	< 1	40
0613	N	7/10/2001	0.23	0.028	1.63	< 0.05	54.3	< 0.1	1.49	< 0.001	4.8	1.99	10.5	< 1	10.5	556	< 1	30.3
0613	N	10/2/2001	0.18	0.038	1.74	< 0.05	59.2	< 0.1	1.54	< 0.001	3.62	1.89	13	< 1	13	672	< 1	38
0613	N	1/14/2002	0.22	0.039	1.81	< 0.05	55.3	< 0.1	1.62	< 0.001	3	1.99	13.2	3.2	16.4	810	< 1	20.2
0613	N	4/2/2002	0.21	0.038	1.95	< 0.05	63.9	< 0.1	1.79	< 0.001	3.1	1.84	15.1	< 1	15.1	575	< 1	38.5
0613	N	7/9/2002	0.07	0.026	0.62	< 0.05	69.4	< 0.1	1.15	< 0.001	1.1	2.48	19.9	< 1	19.9	509	< 1	40.3
0613	N	10/8/2002	0.13	0.031	1.81	< 0.05	56.5	< 0.1	1.63	< 0.001	2.3	1.79	16.6	< 1	16.6	543	< 1	52.1
0613	N	1/7/2003	0.13	0.031	1.66	< 0.05	49.6	< 0.1	1.63	< 0.001	2.4	1.96	17.6	< 1	17.6	568	< 1	69.9
0613	N	4/8/2003	0.16	0.038	1.37	< 0.05	41.9	< 0.1	1.62	< 0.001	2	1.91	12	< 1	12	588	< 1	52.4
0613	N	7/8/2003	0.17	0.03	1.71	< 0.05	53	< 0.1	1.76	< 0.001	2.2	1.51	15.4	< 1	15.4	389	< 1	29.5
0613	N	10/8/2003	0.18	0.032	1.86	< 0.05	44.3	< 0.1	1.74	< 0.001	2.5	1.73	6.9	< 1	6.9	400	< 1	34.3
0613	N	1/6/2004	0.16	0.029	1.77	< 0.05	49.4	< 0.1	1.58	< 0.001	2.3	1.58 D	9.4	< 1.0	9.4	440	< 1.0	28.2



**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
0613	N	4/6/2004	6882.66	2.94	2.99	13200	446	716	300	< 1	< 1	8950 D	166	297 D	12 D	126 D	738 D	< 0.001
0613	N	7/13/2004	6882.67	2.79	2.84	12900	438	700	304	< 0.5	< 1	9030 D	161	279 D	11.7 D	130 D	708 D	< 0.001
0613	N	10/5/2004	6882.21	2.78	2.98	12600	435 D	703 D	295	< 0.5	< 1	9210 D	159	284 D	11.6 D	148 D	687 D	< 0.001
0613	N	1/4/2005	6882.66	2.86	2.93	13400	462 D	749 D	294	< 0.5	< 1	9310 D	162	265 D	9.7 D	102 D	650 D	< 0.001
0613	N	4/5/2005	6881.78	2.97	2.97	13000	452	748	293	< 0.5	< 1	9100	164	289	8.2	141	630	< 0.001
0613	N	7/12/2005	6882.27	3.02	3.00	13100	509 D	795 D	202	4.3	< 1	9910 D	247	265 D	11.3 D	168 D	683 D	< 0.001
0613	N	10/5/2005	6882.39	3.02	3.15	13400	431 D	744 D	284	< 0.5	< 1	9040 D	156	253 D	10.7 D	136 D	712 D	< 0.001
0613	N	1/10/2006	6882.16	3.01	3.25	13300	397 D	687 D	270 D	< 0.5	< 1	8690 D	149	286 D	10.6 D	99.2 D	690	< 0.001
0613	N	4/3/2006	6882.14	2.80	3.44	13000	426 D	728 D	262	0.6	< 1	8520 D	150	273 D	10.3 D	111 D	679	< 0.001
0613	N	7/19/2006	6882.19	2.94	3.06	12600	388 D	717 D	290 D	1.9 D	< 1	9170 D	173	242 D	10.4 D	108 D	710	< 0.001
0613	N	10/3/2006	6882.14	2.87	3.06	12900	435 D	726 D	269	0.6	< 1	8790 D	138	268 D	9.5 D	118 D	511	< 0.001
0613	N	1/9/2007	6882.04	3.00	3.02	13100	410 D	698 D	267 D	0.5	< 1	8550 D	136	239 D	9 D	123	679	< 0.001
0613	N	4/10/2007	6882.04	3.02	3.12	12900	444	756	278	2	< 1	9040 D	147	250 D	9.5 D	114	611	< 0.001
0613	N	7/10/2007	6882.04	2.90	3.06	13100	455 D	745 D	294	< 0.5	< 1	9260 D	146	253 D	9.2	121 D	688	0.02
0613	N	10/8/2007	6881.72	2.93	2.95	12700	376 D	651 D	266 D	0.8	< 1	8300 D	146 D	247 D	10.6	127	641	0.001
0613	N	1/15/2008	6882.40	3.03	3.4	12200	387 D	658 D	274 D	1.3	< 1	8380 D	196 D	269 D	9.1 D	144	733 D	< 0.001
0613	N	4/8/2008	6881.94	2.84	2.99	12500	458 D	791 D	305 D	2 D	< 1	9430 D	183	251 D	9.6	97.6	500	0.002
0613	N	7/8/2008	6881.79	2.80	3.05	12000	414	700	261 D	< 1	< 1	9300 D	188	264 D	7.1	98	711 D	< 0.003
0613	N	10/7/2008	6881.74	2.78	3.07	12500	411	680	250 D	< 1	< 1	9300 DH	119	242 D	7.6	87.6	787	0.001
0613	N	1/12/2009	6881.79	2.86	3.09	13000	402	680	270	< 1	< 1	8180 D	102	353 D	8.1	94.8	682 D	< 0.001
0613	N	4/7/2009	6881.84	2.85	3.07	12600	407 D	674 D	271 D	< 1	< 1	9360 D	81	228 D	4	89.6	660 D	< 0.001
0613	N	7/7/2009	6881.99	2.76	2.87	12500	425 D	696	259 D	< 1	< 1	9360 D	193	243 D	7.4	71.6	745 D	< 0.001
0613	N	10/7/2009	6881.74	3	3.06	12400	433 D	691	262 D	< 1	< 1	8690 D	212	241 D	7.5	99.2	635 D	< 0.001
0613	N	1/5/2010	6881.79	2.94	3.1	13200 D	416 D	671	272	< 1	< 5	9530 D	136	185 D	7.1	82	715 D	< 0.001
0613	N	4/6/2010	6881.89	2.87	3.02	12500 D	432 D	722	266 D	< 1	< 5	8850 D	142	222 D	6.9 D	94.4	681	< 0.001
0613	N	7/13/2010	6881.79	2.84	3.14	12600 D	439 D	721	268 D	< 1	< 5	9210 D	131 D	230 D	6.3 D	110	684	< 0.001
0613	N	10/5/2010	6881.84	2.93	3.06	12300 D	433 D	706	270 D	< 1	< 5	9330 D	128 D	219 D	5.3 D	85.6	646	< 0.001
0613	N	1/11/2011	6881.44	2.9	3.09	11900 D	425 D	706	247 D	< 1	< 5	9150 D	144 D	210 D	3.7 D	100	600 D	< 0.001
0613	N	4/11/2011	6881.59	2.93	3.09	12300 D	424	689	269 D	< 1	< 5	9410 D	139 D	196 D	5.2 D	88	678 D	< 0.001
0613	N	7/12/2011	6881.59	2.99	3.12	11700 D	423	706	273 D	< 1	< 5	9140 D	140 D	179 D	2.2 D	86.4	624	< 0.001
0613	N	10/4/2011	6881.58	3.05	3.14	11600 D	420	682	256 D	< 1	< 5	9300 D	135 D	208 D	5.2 D	122	582	< 0.001
0613	N	1/3/2012	6881.49	2.96	3.03 H	12100 D	467	714	262	2	< 5	9270 D	137 D	199 D	4.5 D	106	590	< 0.001
0613	N	4/3/2012	6881.39	2.87	2.99 H	12200 D	430	639	207	< 1	< 5	9200 D	136 D	166 D	5.3 D	73.6	604	< 0.001
0613	N	7/10/2012	6881.39	2.87	2.98 H	12200	422	697	249 D	< 1	< 5	8850 D	144 D	202 D	5.2 D	79.2	616	< 0.001
0613	N	10/9/2012	6881.34	2.88	2.97 H	11900	442	693	248 D	1	< 5	8630 D	142 D	206 D	3.4 D	88.8	566 D	< 0.001

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
0613	N	4/6/2004	0.16	0.031	1.9	< 0.05	56.8	< 0.1	1.77	0.005	2.4	1.5 D	10.9	< 1	10.9	425	< 1	36.8
0613	N	7/13/2004	0.19	0.029	1.83	< 0.05	54.1	< 0.1	1.64	< 0.001	2.5	1.43 D	12.7	< 1.0	12.7	408	< 1.0	22.6
0613	N	10/5/2004	0.18	0.058 D	1.87	< 0.05	61.4	< 0.1	1.8	< 0.001	2.5	1.41 D	9.7	< 1.0	9.7	371	< 1.0	47.4
0613	N	1/4/2005	0.19	0.034	2	< 0.05	65.2	< 0.1	1.70 D	0.001	2.7	1.52 D	12.9	< 1.0	12.9	312	< 1.0	75.7
0613	N	4/5/2005	0.19	0.029	1.54	< 0.05	64.8	< 0.1	1.98	< 0.001	2.2	1.51	14.1	1.4	15.5	280	< 1.0	42.3
0613	N	7/12/2005	0.24	0.039	2.53	< 0.05	73.8	< 0.1	2.34	< 0.001	3.5	1.82 D	10.9	< 1.0	10.9	292	< 1.0	68.5
0613	N	10/5/2005	0.21	0.036	2.38	< 0.05	62.9	< 0.1	2.21	< 0.001	3.3	1.68 D	8.2	< 1.0	8.2	254	< 1.0	48.5
0613	N	1/10/2006	0.21	0.034	1.73	< 0.05	59.8	< 0.1	1.67	0.005	2.6	1.6	12.4	< 1.0	12.4	370	< 1.0	39.5
0613	N	4/3/2006	0.17	0.033	1.89	< 0.05	54.5	< 0.1	1.87	0.006	2.6	1.38 D	10.7	< 1.0	10.7	405	< 1.0	28.8
0613	N	7/19/2006	0.16	0.032	1.82	0.07	54.8	< 0.1	1.87	< 0.001	2.5	0.992 D	14	< 1.0	14	327	< 1.0	52.2
0613	N	10/3/2006	0.18	0.032	2	< 0.05	58.1	< 0.1	1.81	< 0.001	2.6	1.35 D	8.3	< 1	8.3	398	< 1	36.6
0613	N	1/9/2007	0.19	0.032	2.02	< 0.05	61.7	< 0.1	1.84	< 0.001	2.7	1.22 D	7.4	< 1	7.4	467	< 1	19.1
0613	N	4/10/2007	0.19	0.032	1.21	< 0.05	54.9	< 0.1	1.75	< 0.001	1.6	1.27 D	7.5	< 1	7.5	681	< 1	46
0613	N	7/10/2007	0.16	0.032	1.88	< 0.05	53.6	< 0.1	1.9	< 0.001	2.3	1.31	14.6	< 1	14.6	448	< 1	18.3
0613	N	10/8/2007	0.16	0.029	1.79	< 0.05	50.6	< 0.1	1.82	< 0.001	2.3	1.36	17.2	< 1	17.2	706	1.6	40
0613	N	1/15/2008	0.17	0.037	1.82	< 0.05	51.7	< 0.1	1.88	< 0.001	2.3	1.21 D	15.3	1.8	17.1	750	6	52.5
0613	N	4/8/2008	0.2	0.036	2.11	< 0.05	62.6	< 0.1	2.05	< 0.001	2.4	1.44	7.9	0.5 U	8.4	798	0 U	53.6
0613	N	7/8/2008	0.17	0.04	1.89	< 0.05	61	< 0.1	1.83	< 0.001	2.3	1.2	13	0.98 U	13.98	674	6 U	78.7
0613	N	10/7/2008	0.18	0.034	2.27	< 0.05	57.9	< 0.1	2.05	< 0.001	2.8	1.28 D	8.2	0.54 U	8.74	467	0.5 U	53.1
0613	N	1/12/2009	0.14	0.031	1.55	< 0.05	46.2	< 0.1	1.54	< 0.001	1.9	1.09 D	8.3	0.73 U	9.03	677	0.4 U	30.1
0613	N	4/7/2009	0.17	0.038	1.98	< 0.05	55.9 D	< 0.1	1.76	< 0.001	2.3	1.21 D	4.4	0.78 U	5.18	452	< 1 U	52.9
0613	N	7/7/2009	0.18	0.036	1.58	< 0.05	64.6 D	< 0.1	1.68	< 0.001	1.9	1.19	7.3	0.16 U	7.46	432	4.2	43.7
0613	N	10/7/2009	0.19 D	0.03	1.71	< 0.05	55.3 D	< 0.1	1.67	0.001	2.1	1.15	14	1.2 U	15.2	324	< 0.2 U	35.6
0613	N	1/5/2010	0.16	0.034	1.85	< 0.05	53.4	< 0.1	1.79	0.002	2.3	1.08 D	12	2.6	14.6	573	0.3 U	46.2
0613	N	4/6/2010	0.15	0.037	1.56	< 0.05	57.4	< 0.1	1.63	0.006	1.9	1.11	9	0.67 U	9.67	542	< 0.3 U	61.6
0613	N	7/13/2010	0.16	0.038	1.77	< 0.05	57.6	< 0.1	1.75	< 0.001	2	1.07 D	7.8	1.2 U	9	328	0.7 U	71.7
0613	N	10/5/2010	0.13	0.037	1.94	< 0.05	52.8	< 0.1	1.89	0.001	2.1	1.2	12	0.43 U	12.43	946	2.1	120
0613	N	1/11/2011	0.16	0.034	1.98	< 0.05	54.1	< 0.1	1.9	< 0.001	2.3	1.07 D	18	1.8	19.8	976	0.7 U	56.8
0613	N	4/11/2011	0.15	0.037	1.96	< 0.05	53.7	< 0.1	1.73	< 0.001	2.3	1.04 D	13	1.2 U	14.2	645	2.9	22.9
0613	N	7/12/2011	0.17	0.034	1.9	< 0.05	51.4	< 0.1	1.82	0.003	2	1.02 D	5	0.39 U	5.39	942	0.7 U	77
0613	N	10/4/2011	0.18	0.033	1.86	< 0.05	53.1	< 0.1	1.76	< 0.001	1.9	0.942	8.9	1.2 U	10.1	710	1.9	33.1
0613	N	1/3/2012	0.18	0.036	1.92	< 0.05	53.9	< 0.1	1.6	< 0.001	1.8	0.979	27	0.62 U	28.24	971	0.7 U	28.4
0613	N	4/3/2012	0.18	0.034	1.87	< 0.05	53.8	< 0.1	1.9	< 0.001	2	1.03	3.6	2.3 U	8.2	805	0.5 U	29
0613	N	7/10/2012	0.178	0.041	1.94	0.006	52.2	< 0.1	1.78	< 0.001	1.9	1.04	8.6	22	52.6	788	0.6 U	13.5
0613	N	10/9/2012	0.144	0.036	1.89	0.007	51.1	< 0.1	1.9	< 0.001	1.8	0.989	13	2.0 U	13	690	2.4	14.5

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
0613	N	1/8/2013	6,881.40	2.87	2.89 H	11800	421	721	256 D	<1	<5	8670 D	128 D	207 D	4 D	102	623	<0.001
0613	N	4/2/2013	6,881.44	2.86	2.96 H	11900	430	712	248 D	<1	<5	8950 D	127 D	197 D	4 D	97.6	604	<0.001
0613	N	7/8/2013	6,881.23	2.83	2.99 H	12000	429	707	247 D	1	<5	9040 D	128 D	243 D	3.8 D	57.2	510	<0.001
0613	N	9/30/2013	6,881.32	2.76	2.97 H	11800	435	717	256 D	1	<5	9350 D	134 D	179 D	3.6 D	69.6 H	612	<0.001
0613	N	1/7/2014	6,881.26	3.05	2.98	11400	432	712	243	1	<5	8690	132	171	3.4	67.6	613	<0.001
0613	N	4/7/2014	6,881.08	3.01	2.98 H	11800	428	708	244 D	1	<5	9230 D	168 D	175 D	3.0 D	84.8	615	<0.001
0613	N	7/15/2014	no data	no data	3.00 H	11300	422	693	243 D	<1	<5	9060 D	132 D	180 D	2.9 D	116	590	<0.001
0613	N	10/13/2014	6,881.06	3.00	2.99 H	11800	430	704	242	<1	<5	8810 D	137 D	176 D	2.8 D	66.4	560	0.002
0613	N	1/12/2015	6881.10	3.01	3.00 H	11800	430	707	238	<1	<5	8820 D	138 D	163 D	3.3 D	71.6	583 D	<0.001
0613	N	4/13/2015	6880.99	3.07	2.97 H	11400 H	418	705	237	1	<5	8910 D	134 D	164 D	1.2 D	77.6	581	<0.005
0613	N	7/14/2015	6881.14	3.06	2.97 H	11200	408	720	183	7	<5	8690 D	132 D	199 D	1.3 D	57.6	447	<0.001
0613	N	10/13/2015	6881.00	2.91	3.00 H	11500	424	706	233	<1	<5	8770 D	137 D	155 D	2.6 D	85.2	544	<0.001
0613	N	1/11/2016	6880.94	3.13	3.01 H	11100	409	618	226	3	<5	8240 D	139 D	165 D	2.4 D	92.8	557	<0.001
0613	N	4/11/2016	6881.02	3.06	3.01 H	11400 H	450	755	259 D	1	<5	8480 D	125 D	159 D	2.3 D	121	555 D	<0.001
0613	N	7/18/2016	6880.94	3.06	3.02 H	11400 D H	430	719	234	<1	<5	8980 D	128 D	154 D	2.4 D	100	550	<0.001
0613	N	10/10/2016	6880.94	3.01	2.98 H	11200	429	719	232 D	1	<5	8890 D	129 D	166 D	2.3 D	73	540 D	<0.001
0708	N	4/29/1991	no data	4.00	4.16	6374	438	349	126	13.3	< 1	4055	54.6	17.5	26	< 1	98.7	0.034
0708	N	4/2/2001	6864.20	2.82	3.20	5520	515	578	101	10.7	< 0.1	3750	31.3	1.81	< 0.1	< 1	0.61	0.004
0708	N	7/16/2001	6863.90	2.73	3.36	5740	433	519	122	14.8	< 0.1	3630	38.4	1.58	< 0.1	< 1	0.8	0.002
0708	N	10/8/2001	6864.25	2.67	3.70	5700	420	500	91.1	10.8	< 0.1	3200	33.2	1.4	< 0.1	< 1	0.82	0.006
0708	N	1/14/2002	6864.40	2.83	3.80	5670	520	582	119	12.6	< 0.1	3650	28.6	1.11	< 0.1	< 1	1	0.002
0708	N	4/8/2002	6864.30	2.82	3.29	5670	453	528	108	11.8	< 0.1	3600	33.4	1.22	< 0.1	< 1	1	0.001
0708	N	7/16/2002	6864.10	2.68	3.14	5760	540	610	99.5	10.2	< 0.1	4200	16.1	2.04	< 0.1	< 1	0.8	0.001
0708	N	10/14/2002	6863.93	2.68	3.23	4840	485	571	116	12.1	< 0.1	3880	25.1	2.14	< 0.1	< 1	0.9	0.002
0708	N	1/13/2003	6863.61	2.77	2.98	5740	529	632	98	9.6	< 0.1	4020	14.9	2.03	< 0.1	< 1	1	0.003
0708	N	4/15/2003	6863.88	3.31	2.92	5860	460	574	113	13.5	< 0.1	3800	30	2.17	< 0.1	< 1	1	< 0.001
0708	N	7/14/2003	6863.48	3.78	2.99	5910	448	529	111	12.3	< 0.1	3500	22	1.65	< 0.1	< 1	1.1	0.002
0708	N	10/15/2003	6851.39	5.27	3.60	5570	486	597	116	12.2	< 0.1	4030	28.8	2.18	< 0.1	< 1	1.3	0.002
0708	N	10/20/2003	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	< 1	no data	no data
0708	N	1/13/2004	6863.13	3.85	3.01	5880	504	618	109	13.2	< 1.0	3990	27.1	2.16	< 0.10	< 1.0	1.4	0.001
0708	N	4/12/2004	6863.37	3.75	2.90	5820	452	552	113	12.4	< 1	3980	33	2.14	< 0.1	< 1	1.5	< 0.001
0708	N	7/19/2004	6863.06	3.99	2.87	5780	494 D	576 D	120	12.2	< 1	3800 D	29	1.81	< 0.10	< 1.0	1.7	< 0.001
0708	N	10/12/2004	6863.04	4.11	3.70	5660	442 D	562 D	115	12.5	< 1	3620 D	30	1.7	< 0.10	< 1.0	1.8	< 0.001
0708	N	1/10/2005	6863.00	3.61	3.71	5750	463 D	563 D	112	11.9	< 1	3670 D	27	1.64	< 0.1	< 1.0	1.8	0.002
0708	N	4/12/2005	6862.73	3.98	3.73	5630	484	588	124	12.5	< 1	4050	29	1.96	< 0.1	< 1.0	2.7	< 0.001

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
0613	N	1/8/2013	0.184	0.036	1.93	0.011	53.2	<0.1	1.89	0.002	1.8	1.18	12	0.55 U	12	755	1.9	13.3
0613	N	4/2/2013	0.14	0.034	1.86	0.006	52.2	<0.1	1.94	<0.001	1.8	1.05	8.8	0.75 U	8.8	760	0.5 U	27.9
0613	N	7/8/2013	0.173	0.043	1.88	0.006	49	<0.1	1.84	<0.001	1.6	1.01	5.9	0.41 U	5.9	702	1.9	45.5
0613	N	9/30/2013	0.132	0.034	1.95	0.005	53.2	<0.1	1.98	<0.001	1.6	1.08	11	1.1	12.1	793	1 U	40.2
0613	N	1/7/2014	0.174	0.041	1.9	0.007	50.5	<0.1	1.86	<0.001	1.5	0.971	6.4	1.5	7.9	711	2	54.1
0613	N	4/7/2014	0.16	0.042	1.71	0.007	52	<0.1	1.72	<0.001	1.4	0.919	9.5	1.0 U	9.5	658	0.9 U	14.9
0613	N	7/15/2014	0.171 D	0.047 D	1.80 D	0.004	49.7	<0.1	1.78	<0.001	1.4	0.893	7.6	0.39 U	7.6	749	1.0 U	23.2
0613	N	10/13/2014	0.165	0.041	1.79	0.026	47	<0.1	1.78	<0.001	0.9	0.902	8.5	0.75 U	8.5	698	1.5	25.5
0613	N	1/12/2015	0.15	0.047	1.8	0.007	49.7	<0.1	1.8	<0.001	1.5	0.9	12	3.6	15.6	608	1.3	98
0613	N	4/13/2015	0.165	0.033	1.71	0.009	47.4	<0.1	1.75	<0.001	1.4	0.801	11	0.92 U	11	583	1.5	127
0613	N	7/14/2015	0.151	0.041	1.74	0.013	47.6	<0.1	1.64	<0.001	1	0.822	7.1	1.3 U	7.1	641	0.5 U	104
0613	N	10/13/2015	0.157	0.039	1.70 D	0.004	45.1	<0.1	1.75	<0.001	1.4	0.776	8.5	-0.1 U	8.5	573	1.3 U	41.3
0613	N	1/11/2016	0.163	0.037	1.95	0.004	45.9	<0.1	1.72	<0.001	1.5	0.764	6.8	1.7	8.5	553	0.2 U	120
0613	N	4/11/2016	0.167 D	0.032	1.61 D	0.005	49.7	<0.1	1.63	<0.001	1.5	0.756	25	1.4	26.4	604	1.3 U	102
0613	N	7/18/2016	0.158	0.026 D	1.67 D	0.007	45.2	<0.1	1.71	<0.001	1.3	0.792	10	1.4 U	10	600	0 U	104
0613	N	10/10/2016	0.175	0.041	2.09	0.006	50.3	<0.1	1.89	<0.001	1.5	0.754	12	2.9	14.9	666	0.7 U	89.5
0708	N	4/29/1991	0.105	< 0.01	0.83	< 0.05	16.6	0.2	0.89	< 0.001	< 0.1	197.1	17.5	15	32.5	< 0.2	2.9	16
0708	N	4/2/2001	< 0.01	< 0.005	0.33	< 0.05	6.87	< 0.1	0.26	< 0.001	< 0.1	0.007	7.4	11.7	19.1	< 0.2	< 1	9
0708	N	7/16/2001	< 0.01	< 0.005	0.29	< 0.05	7.23	< 0.1	0.24	< 0.001	< 0.1	0.009	8.1	13.6	21.7	< 0.2	< 1	12.5
0708	N	10/8/2001	< 0.01	< 0.005	0.23	< 0.05	5.67	< 0.1	0.18	< 0.001	< 0.1	0.0105	7.4	12	19.4	< 0.2	< 1	11.3
0708	N	1/14/2002	< 0.01	< 0.005	0.32	< 0.05	7.78	< 0.1	0.25	< 0.001	< 0.1	0.0111	8.5	14.5	23	< 0.2	< 1	7.4
0708	N	4/8/2002	< 0.01	< 0.005	0.34	< 0.05	8.16	< 0.1	0.27	< 0.001	< 0.1	0.0104	9.1	13	22.1	< 0.2	< 1	8.8
0708	N	7/16/2002	< 0.01	< 0.005	0.32	< 0.05	8.33	< 0.1	0.24	< 0.001	< 0.1	0.0117	6.5	15.2	21.7	< 0.2	< 1	8.3
0708	N	10/14/2002	< 0.01	< 0.005	0.29	< 0.05	7.57	< 0.1	0.24	< 0.001	< 0.1	0.0118	8.8	5.7	14.5	< 0.2	< 1	9.8
0708	N	1/13/2003	< 0.01	< 0.005	0.31	< 0.05	8.21	< 0.1	0.24	< 0.001	< 0.1	0.012	7.1	4.3	11.4	< 0.2	< 1	10.1
0708	N	4/15/2003	< 0.01	< 0.005	0.29	< 0.05	8.34	< 0.1	0.22	< 0.001	< 0.1	0.0158	9	10.3	19.3	< 0.2	< 1	13.4
0708	N	7/14/2003	< 0.01	< 0.005	0.32	< 0.05	8.58	< 0.1	0.26	< 0.001	< 0.1	0.0108	7.6	4.4	12	< 0.2	< 1	5.9
0708	N	10/15/2003	< 0.01	< 0.005	0.31	< 0.05	8.47	< 0.1	0.25	< 0.001	< 0.1	0.0145	6.1	6.9	13	< 0.2	< 1	12.7
0708	N	10/20/2003	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
0708	N	1/13/2004	< 0.01	< 0.005	0.32	< 0.05	9.26	< 0.1	0.25	< 0.001	< 0.1	0.0151 D	4.5	5.7	10.2	< 0.2	< 1.0	14.7
0708	N	4/12/2004	< 0.01	< 0.005	0.32	< 0.05	9.22	< 0.1	0.26	< 0.001	< 0.1	0.0162 D	6.2	6.5	12.7	< 0.2	< 1	9.3
0708	N	7/19/2004	< 0.01	< 0.005	0.33	< 0.05	9.07	< 0.1	0.23	< 0.001	< 0.1	0.0164 D	6.8	4.4	11.2	< 0.2	< 1.0	11.6
0708	N	10/12/2004	< 0.01	< 0.005	0.27	< 0.05	9.12	< 0.1	0.26	< 0.001	< 0.1	0.016	7.1	7.2	14.3	< 0.2	< 1.0	9.5
0708	N	1/10/2005	< 0.01	< 0.005	0.37	< 0.05	8.87	< 0.1	0.31	< 0.001	< 0.1	0.0178	4.8	5.8	10.6	< 0.2	< 1.0	13.4
0708	N	4/12/2005	< 0.01	< 0.005	0.34	< 0.05	10.1	< 0.1	0.29	< 0.001	< 0.1	0.0217	8.7	6.3	15	< 0.2	< 1.0	10.1



**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
0708	N	7/19/2005	6862.34	3.63	3.55	5950	464 D	563 D	119	12	< 1	3810 D	27	1.86	< 0.1	< 1.0	2.6	0.001
0708	N	10/11/2005	6862.36	3.94	3.62	5900	458 D	591 D	116	12.6	< 1	3960 D	31	1.84	< 0.1	< 1.0	2.6	0.001
0708	N	1/17/2006	6861.91	3.96	4.06	5850	439 D	573 D	110	12.4	< 1	3770 D	26	2.01	0.5	< 1.0	2.7	< 0.001
0708	N	4/11/2006	6861.90	3.74	3.76	5830	472 D	608 D	115	12.2	< 1	3950 D	29	1.69	< 0.1	< 1.0	3.4	0.002
0708	N	7/25/2006	6861.66	3.83	3.69	5670	439 D	553 D	110	11.6	< 1	3680 D	26	1.82	< 0.1	< 1.0	2.9	< 0.001
0708	N	10/10/2006	6861.45	3.83	3.63	5920	448 D	576 D	108	11.4	< 1	3740 D	24	1.97	< 0.1	< 0.5	2.9	0.002
0708	N	1/17/2007	6861.30	3.82	3.76	5960	420 D	543 D	101	11.1	< 1	3570 D	24	1 D	< 0.1	< 1 D	2.6	0.001
0708	N	4/16/2007	6861.13	3.89	3.80	5900	442 D	589 D	103	9.8	< 1	3910 D	27	1.1	< 0.1	< 0.5	2.8	< 0.001
0708	N	7/17/2007	6860.73	3.77	3.04	5770	454 D	605 D	111	11.8	< 1	4040 D	26	1.74	< 0.1	< 0.5	3.3	0.02
0708	N	10/8/2007	6860.48	3.78	3.49	5910	461 D	604 D	115	12.7	< 1	4040 D	28	1.41	< 0.1	< 0.5	4.1	0.002
0708	N	1/21/2008	6860.60	3.81	3.05 H	5680	422 D	553 D	111	13.3	< 1	3630 D	37 D	1.19	0.1	< 0.5	4.2	0.003
0708	N	4/15/2008	6860.28	3.72	2.95	5610	461	594	108 D	12.4	< 1	4370 D	25	0.89	< 0.1	< 0.50	6.4	< 0.001
0708	N	7/14/2008	6861.55	4.58	3.62	5990	413	519	100 D	10	< 1	3920 D	24	0.78	< 0.1	< 0.5	7.5	< 0.003
0708	N	10/13/2008	6861.50	4.28	3.58	6020	460	574	109 D	8	< 1	4090 D	24	1.4 D	< 0.1	< 0.5	6.4	< 0.001
0708	N	1/19/2009	6859.18	3.57	3	6130 H	450	594	119	13	< 1	4190 D	21	0.46	< 0.1	< 0.5	11.3	< 0.001
0708	N	4/13/2009	6859.33	3.55	2.99	6010	425 D	547 D	115 D	12	< 1	4100 D	25	0.97	< 0.1	< 0.50	12.6	< 0.001
0708	N	7/13/2009	6858.98	2.53	3.03	6170 H	436	562	110	13	< 1	4210 D	30	0.86	< 0.1	< 0.50	12.3 D	< 0.001
0708	N	10/12/2009	6859.08	3.58	3.74	4880	420 D	563	112 D	13	< 1	3770 D	25	1.6	0.2	< 0.50	11.6	< 0.001
0708	N	1/11/2010	6858.48	3.41	3.57	5990 D	472 D	559	114	14	< 5	4280 D	26	1.74	0.13	< 0.50	21.3	< 0.001
0708	N	4/12/2010	6858.53	3.77	3.26	6060 D	464	534	119	7	< 5	4260 D	31	2.68	0.1	< 0.50	29.3	0.003
0708	N	7/19/2010	6858.18	3.58	3.09	6110 D	434	580	119	13	< 5	4240 D	27 D	3.14	0.1	< 0.50	19	< 0.001
0708	N	10/11/2010	6858.38	3.57	2.95	6090 D	434	566	124	14	< 5	4110 D	22 D	2.86	< 0.1	< 0.50	24.4	< 0.001
0708	N	1/10/2011	6857.80	3.54	3.14	6010 D	437	556	115	14	< 5	4320 D	30 D	1.15	< 0.1	< 0.50	20.9	< 0.001
0708	N	4/11/2011	6857.63	3.38	3.01	5970 DH	444	532	121	15	< 5	4410 D	29 D	2.02	< 0.1	< 0.50	24.2	< 0.001
0708	N	7/18/2011	6857.43	3.6	3.11	5800 D	432	552	122	14	< 5	4570 D	28 D	1.3 D	< 0.5	< 0.50	27	< 0.001
0708	N	10/10/2011	6857.42	3.54	3.14	5910 D	427	578	124	14	< 5	4700 D	30 D	1.0 D	< 0.5	< 0.50	35	< 0.001
0708	N	1/9/2012	6857.08	3.61	2.98 H	6380 D	455	543	120	15	< 5	4640 D	30 D	1.4 D	< 0.5	< 0.50	26.4	< 0.001
0708	N	4/9/2012	6856.83	3.52	3.03 H	6420 D	419	579	117	13	< 5	4530 D	51 D	1.6	< 0.5	< 0.50	34.6	< 0.01
0708	N	7/16/2012	6856.63	3.56	2.89 H	6250	446	602	130	15	< 5	4320 D	30 D	1.44	< 0.1	< 0.50	34.4	< 0.001
0708	N	10/15/2012	6856.43	3.54	2.91 H	6270	460	604	130 D	15	< 5	4500 D	30 D	1.3 D	< 1	< 0.50	36.7	< 0.001
0708	N	1/15/2013	6,856.34	3.35	2.96 H	6200	469	608	128 D	15	< 5	4500 D	30 D	1.33	< 0.1	< 0.50	46.6	< 0.001
0708	N	4/8/2013	6,856.55	3.62	3.02 H	6590	444	602	129	15	< 5	4480 D	31 D	1.47	< 0.1	< 0.50	37.3	< 0.001
0708	N	7/9/2013	6,855.75	3.22	2.96 H	6520	434	547	123	15	< 5	4480 D	28 D	1.83	0.3	< 0.50	51.3	< 0.001
0708	N	10/1/2013	6,855.77	3.53	2.84 H	5850	436	604	125	14	< 5	4580 D	31 D	1.41	< 0.1	< 0.50	69.8	< 0.001
0708	N	1/13/2014	6,855.38	3.46	2.85	6260	453	558	124	14	< 5	4370	32	1.47	< 0.1	< 0.50	50.3	< 0.001

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
0708	N	7/19/2005	< 0.01	< 0.005	0.34	< 0.05	9.63	< 0.1	0.31	< 0.001	< 0.1	0.024	6.2	5.2	11.4	< 0.2	< 1.0	8.8
0708	N	10/11/2005	< 0.01	< 0.005	0.35	< 0.05	10.3	< 0.1	0.33	< 0.001	< 0.1	0.0214	8.6	8.7	17.3	< 0.2	< 1.0	9.4
0708	N	1/17/2006	< 0.01	< 0.005	0.33	< 0.05	10.8	< 0.1	0.33	< 0.001	< 0.1	0.0267	7.9	6.7	14.6	< 0.2	< 1.0	11.6
0708	N	4/11/2006	< 0.01	< 0.005	0.35	< 0.05	10.7	< 0.1	0.31	< 0.001	< 0.1	0.0281	5.9	10.8	16.7	< 0.2	< 1.0	7.6
0708	N	7/25/2006	< 0.01	< 0.005	0.35	< 0.05	11.1	< 0.1	0.29	< 0.001	< 0.1	0.0221	7.1	6.4	13.5	< 0.2	< 1.0	7.7
0708	N	10/10/2006	< 0.01	< 0.005	0.35	< 0.05	11.2	< 0.1	0.33	< 0.001	< 0.1	0.0201	7.9	5.1	13	< 0.2	< 1	7.9
0708	N	1/17/2007	<0.01	<0.005	0.29	<0.05	10.8	<0.1	0.29	<0.001	<0.1	0.0194	7.7	5.1	12.8	<0.2	<1	12
0708	N	4/16/2007	<0.01	<0.005	0.36	<0.05	11.1	<0.1	0.32	<0.001	<0.1	0.0196	6.6	5.9	12.5	<0.2	<1	8.8
0708	N	7/17/2007	<0.01	<0.005	0.37	<0.05	10.1	<0.1	0.35	<0.001	<0.1	0.0217	8	7	15	<0.2	<1	8.6
0708	N	10/8/2007	<0.01	<0.005	0.37	<0.05	11.4	<0.1	0.34	<0.001	<0.1	0.0226	5.6	6.9	12.5	<0.2	<1	10.4
0708	N	1/21/2008	< 0.01	< 0.005	0.37	< 0.05	11.4	< 0.1	0.37	0.002	< 0.1	0.0246	7.9	4.5	12.4	< 0.2	5	11.6
0708	N	4/15/2008	0.01	< 0.005	0.34 D	< 0.05	11.1	< 0.1	0.33	< 0.001	0.2	0.0321	6.5	9.2	15.7	0 U	<18 U	10.8
0708	N	7/14/2008	0.01	< 0.005	0.36	< 0.05	11.8	< 0.1	0.36	< 0.001	< 0.1	0.0311	6.4	5.2	11.6	0.1 U	8 U	9.4
0708	N	10/13/2008	0.01	< 0.005	0.37	< 0.05	11.7	< 0.1	0.36	< 0.001	< 0.1	0.032	7.9	4.4	12.3	<0.1 U	0.5 U	14.8
0708	N	1/19/2009	0.01	<0.005	0.37	<0.05	11.6	<0.1	0.37	<0.001	<0.1	0.0392	9.5	6.1	15.6	0.2	0.6 U	14.5
0708	N	4/13/2009	0.02	<0.005	0.36	<0.05	11.4	<0.1	0.39	<0.001	<0.1	0.0465	6.4	5.9	12.3	0.05 U	0.0 U	16
0708	N	7/13/2009	0.02	<0.005	0.42	<0.05	12.1 D	<0.1	0.42	0.001	<0.1	0.0426	10	1.4	11.4	<0.08 U	0.7 U	16.5
0708	N	10/12/2009	0.02	<0.005	0.44	<0.05	12.5	<0.1	0.45	<0.001	<0.1	0.0423	9.1	7.4	16.5	0.04 U	1.9 U	18.3
0708	N	1/11/2010	0.02	<0.005	0.41	<0.05	11.5	<0.1	0.45	<0.001	<0.1	0.0646	6.7	7.7	14.4	<0.01 U	1.6 U	15.1
0708	N	4/12/2010	0.03	<0.005	0.43	<0.05	11.4	<0.1	0.49	0.007	<0.1	0.0921	9.7	5.3	15	0.1 U	2.0 U	19.1
0708	N	7/19/2010	0.02	<0.005	0.51	<0.05	13	<0.1	0.54	<0.001	<0.1	0.0558	11	5.1	16.1	0.03 U	2.5 U	14.5
0708	N	10/11/2010	0.02	<0.005	0.47	<0.05	12	<0.1	0.52	<0.001	<0.1	0.0706	8.8	4.2	13	0.3 U	<0.05 U	15.5
0708	N	1/10/2011	0.02	<0.005	0.54	<0.05	12.9	<0.1	0.63	0.002	<0.1	0.0708	11	5.7	16.7	<0.5 U	1.2 U	17.7
0708	N	4/11/2011	0.03	<0.005	0.52	<0.05	12.8	<0.1	0.59	0.002	<0.1	0.0901	10	5.2	15.2	<1 U	3.1	9.7
0708	N	7/18/2011	0.03	<0.005	0.56	<0.05	12.9	<0.1	0.67	<0.001	<0.1	0.0798	9.2	4.2	13.4	0.8 U	0.02 U	10.8
0708	N	10/10/2011	0.04	<0.005	0.55	<0.05	13	<0.1	0.67	<0.001	<0.1	0.0863	7.9	4	11.9	0.6 U	<0.1 U	12.4
0708	N	1/9/2012	0.03	<0.005	0.59	<0.05	13.2	<0.1	0.66	<0.001	<0.1	0.089	6.8	5.6	18	0.5 U	1.6	13
0708	N	4/9/2012	0.04	<0.005	0.54	<0.05	12	<0.1	0.72	<0.001	<0.1	0.0864	9.8	4.7	19.2	1.2	1.5	13.7
0708	N	7/16/2012	0.037	<0.005	0.6	0.004	13	<0.1	0.69	<0.001	<0.1	0.0958	8.8	4.9	18.6	0.2 U	1.2	29.8
0708	N	10/15/2012	0.043	<0.005	0.6	0.004	13.8	<0.1	0.82	<0.001	<0.1	0.108	7.6	6	13.6	0.3 U	1.2	11.2
0708	N	1/15/2013	0.046	<0.005	0.58	0.003	13.4	<0.1	0.72	<0.001	<0.1	0.122	10	4.8	14.8	0.7 U	0.8 U	9.4
0708	N	4/8/2013	0.042	<0.005	0.58	0.004	13.7	<0.1	0.75	<0.001	<0.1	0.112	9.2	3.7	12.9	-0.02 U	0.6 U	15.3
0708	N	7/9/2013	0.055	<0.005	0.62	0.003	13.9	<0.1	0.74	<0.001	<0.1	0.131	9.4	5.4	14.8	0.3 U	0.7 U	21.8
0708	N	10/1/2013	0.044	<0.005	0.58	<0.001	12.6	<0.1	0.74	<0.001	<0.1	0.186	6.2	3.5	9.7	1.0 U	0.7 U	14.5
0708	N	1/13/2014	0.053	<0.005	0.56	0.002	13.2	<0.1	0.69	<0.001	<0.1	0.132	11	4.4	15.4	0.2 U	1.2	14.3

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO <sub>3</sub> mg/l	SO <sub>4</sub> mg/l	Cl mg/l	NH <sub>4</sub> as N mg/l	NO <sub>3</sub> as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
0708	N	4/7/2014	6,855.26	3.52	3.01 H	6310	446	579	127 D	14	<5	4610 D	32 D	1.29	0.6 D	<0.50	35.3	<0.001
0708	N	7/15/2014	6,854.94	3.52	3.15 H	6350	421	564	122 D	7	<5	4530 D	29 D	1.41	0.1	<0.50	54.6	<0.001
0708	N	10/13/2014	6,854.89	3.51	2.93 H	6240	432	538	116	1	<5	4430 D	31 D	1.48	<0.1	<0.50	49.5	0.002
0708	N	1/12/2015	6854.68	3.44	2.95 H	6310	439	581	120	4	<5	4370 D	29 D	1.26	<0.1	<0.50	52.7	<0.001
0708	N	4/13/2015	6854.55	2.84	3.05 H	6470	425	546	117	2	<5	4710 D	30	1.44	<0.1	<0.50	64.1	<0.001
0708	N	7/14/2015	6854.31	2.95	2.95 H	6190	422	561	96	10	<5	4420 D	31 D	1.47	<0.1	<0.50	57.6	<0.001
0708	N	10/13/2015	6853.92	3.70	3.50 H	6660	432	615	123	13	<5	4670 D	31 D	0.99	<0.1	<0.50	40.9	<0.001
0708	N	1/12/2016	6853.78	3.76	3.72 H	6580	491	598	122	20	<5	4550 D	34 D	0.9 D	<0.1	<0.50	33.6	<0.001
0708	N	4/12/2016	6853.85	3.78	3.76 H	6720	443	617	122	14	<5	4540 D	29 D	0.87	<0.1	<0.50	45.7	<0.001
0708	N	7/18/2016	6853.51	3.70	3.60 H	6540 DH	430	594	120	13	<5	4590 D	29 D	0.9 D	<0.1	<0.50	45.5	0.001
0708	N	10/10/2016	6853.42	3.73	2.95 H	6220 H	433	603	120	13	<5	4700 D	29 D	0.8 D	<0.1	<0.50	45.9	<0.001
0711	N	4/29/1991	no data	4.20	4.30	5747	393	377	114	9.3	< 1	3647	49.3	8	< 0.01	no data	75.6	0.196
0711	N	5/1/2000	6863.55	4.80	5.61	5410	489	522	100	11.1	10	3380	14.2	0.57	< 0.1	< 1	1.4	0.039
0711	Dup	5/1/2000	no data	4.84	5.66	5480	458	494	96.7	10.7	9	3220	15.4	0.56	< 0.1	< 1	1.5	0.039
0711	N	7/10/2000	6863.50	3.06	3.98	5400	518	542	101	10.9	< 0.1	3490	20	0.58	< 0.1	< 1	1.51	0.032
0711	Dup	7/10/2000	no data	4.88	5.31	5440	513	537	101	10.9	9	3510	19.8	0.59	< 0.1	< 1	1.47	0.032
0711	N	10/2/2000	6863.65	2.88	4.13	5310	503	556	100	12.6	< 0.1	3990	17.9	0.45	< 0.1	< 1	1.33	0.041
0711	Dup	10/2/2000	no data	4.81	5.36	5310	503	555	104	12.9	11	3970	15.7	0.39	< 0.1	< 1	1.33	0.042
0711	N	1/15/2001	6863.85	2.86	3.57	5260	496	495	93.7	11.1	< 0.1	3900	23.7	0.59	< 0.1	< 1	1.4	0.036
0711	Dup	1/15/2001	no data	4.82	5.31	5270	501	501	93	11.2	10	3860	23.3	0.6	< 0.1	< 1	1.4	0.038
0711	N	4/2/2001	6863.85	2.92	3.10	5310	560	572	94.9	10.4	< 0.1	3560	19.1	0.99	< 0.1	< 1	1.4	0.035
0711	Dup	4/2/2001	no data	4.46	3.77	5370	557	569	92.7	10.3	< 0.1	3640	20.1	0.83	0.11	< 1	1.4	0.034
0711	N	7/11/2001	6863.50	2.86	3.65	5410	541	576	106	11.1	< 0.1	3580	30.4	0.8	< 0.1	< 1	1.5	0.03
0711	Dup	7/11/2001	no data	4.53	5.33	5450	539	573	104	11	8	3520	30.2	0.83	< 0.1	< 1	1.3	0.032
0711	N	10/8/2001	6863.65	2.88	3.40	5440	450	480	80.8	10.2	1	3100	27	0.7	< 0.1	< 1	1.08	0.033
0711	Dup	10/8/2001	no data	4.48	5.00	5410	450	480	84.4	10.5	7.9	3100	26.7	0.71	< 0.1	< 1	1.09	0.031
0711	N	1/15/2002	6863.75	2.89	3.70	5380	547	551	95.2	12.1	< 0.1	3460	21	0.54	< 0.1	< 1	1.4	0.037
0711	Dup	1/15/2002	no data	4.36	5.20	5360	552	555	92.9	12	8.54	3460	20.2	0.55	< 0.1	< 1	1.3	0.041
0711	N	4/8/2002	6863.55	2.85	3.23	5340	482	500	97.2	11.2	< 0.1	3360	21.9	0.61	1	< 1	1.3	0.028
0711	Dup	4/8/2002	no data	4.73	5.22	5360	482	499	95.4	11.2	4.9	3340	21	0.65	1.46	< 1	1.3	0.03
0711	N	7/16/2002	6863.46	2.87	3.10	5400	569	580	89.6	10.3	< 0.1	3990	11.3	1.26	< 0.1	< 1	1.4	0.023
0711	Dup	7/16/2002	no data	4.35	4.78	5450	570	580	89.4	9.7	7.3	3990	10.1	1.37	< 0.1	< 1	1.2	0.029
0711	N	10/14/2002	6863.49	2.86	3.01	4720	516	543	104	11	< 0.1	3730	16.4	1.24	< 0.1	< 1	1	0.027
0711	Dup	10/14/2002	no data	4.47	5.32	5130	579	606	114	12.3	7.9	4170	23.8	1.39	< 0.1	< 1	1.1	0.031
0711	N	1/13/2003	6863.10	2.96	3.00	5300	509	558	72.7	8.4	< 0.1	3300	7.9	1.4	< 0.1	< 1	1.1	0.027

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
0708	N	4/7/2014	0.048	<0.005	0.58	0.007	14	<0.1	0.65	<0.001	<0.1	0.106	9.1	5.4	14.5	0.2 U	1.9	10.7
0708	N	7/15/2014	0.057	<0.005	0.54	0.004	13.2	<0.1	0.66	<0.001	<0.1	0.132	6.9	3.1	10	0.4 U	1.8	10.3
0708	N	10/13/2014	0.058	<0.005	0.55	0.003	13.2	<0.1	0.65	<0.001	<0.1	0.118	8.3	5.5	13.8	0.7 U	1.3	11.7
0708	N	1/12/2015	0.06	<0.005	0.56	0.004	13.6	<0.1	0.63	<0.001	<0.1	0.135	10	4.8	14.8	0.4 U	0.5 U	35.1
0708	N	4/13/2015	0.06	<0.005	0.5	0.002	12.4	<0.1	0.61	<0.001	<0.1	0.155	6.8	4.5	11.3	0.4 U	1 U	44.9
0708	N	7/14/2015	0.061	<0.005	0.52	0.002	12.7	<0.1	0.58	<0.001	<0.1	0.153	6.6	2.9	9.5	0.7 U	0.2 U	34.9
0708	N	10/13/2015	0.058	<0.005	0.49	0.007	13.5	<0.1	0.58	<0.001	<0.1	0.11	8.8	4.7	13.5	0.6	2.1	22
0708	N	1/12/2016	0.068	<0.005	0.5	0.012	12.9	0.1	0.59	<0.001	<0.1	0.117	9.5	3.3	12.8	0.6 U	1.6	53.7
0708	N	4/12/2016	0.068	<0.005	0.49 D	0.009	14	<0.1	0.61	<0.001	<0.1	0.118	11	1.5	12.5	1.4	0.8 U	60.2
0708	N	7/18/2016	0.065	<0.005	0.47	0.009	12.9	<0.1	0.55	<0.001	<0.1	0.122	7.8	4.5	12.3	0.4	0.6 U	36.3
0708	N	10/10/2016	0.075	<0.005	0.52	0.024	14.3	<0.1	0.59	<0.001	<0.1	0.126	8.8	3.1	11.9	0.2 U	1.2	37.5
0711	N	4/29/1991	0.098	< 0.01	0.82	< 0.05	11.7	10.49	1.03	< 0.001	< 0.1	0.3815	21	20.8	41.8	< 0.2	< 1	20
0711	N	5/1/2000	< 0.01	0.02	0.41	< 0.05	8.42	0.15	0.38	< 0.001	< 0.1	0.0645	13.7	12.9	26.6	< 0.2	< 1	15.9
0711	Dup	5/1/2000	< 0.01	0.016	0.42	< 0.05	8.43	0.16	0.4	< 0.001	< 0.1	0.0655	12.6	14.8	27.4	< 0.2	< 1	14.4
0711	N	7/10/2000	< 0.01	< 0.005	0.42	< 0.05	8.39	0.11	0.35	< 0.001	< 0.1	0.0613	9.6	18.6	28.2	< 0.2	< 1	14.2
0711	Dup	7/10/2000	< 0.01	< 0.005	0.43	< 0.05	8.29	0.11	0.35	< 0.001	< 0.1	0.0595	9.8	16.3	26.1	< 0.2	< 1	14.5
0711	N	10/2/2000	< 0.01	< 0.005	0.34	< 0.05	7.44	< 0.1	0.32	< 0.001	< 0.1	0.053	9.6	20.9	30.5	< 0.2	< 1	19.3
0711	Dup	10/2/2000	< 0.01	< 0.005	0.36	< 0.05	7.93	< 0.1	0.34	< 0.001	< 0.1	0.05	9	19.7	28.7	< 0.2	< 1	22.9
0711	N	1/15/2001	< 0.01	< 0.005	0.39	< 0.05	8	< 0.1	0.34	< 0.001	< 0.1	0.0568	10.3	19.4	29.7	< 0.2	< 1	13.2
0711	Dup	1/15/2001	0.01	< 0.005	0.4	< 0.05	7.65	0.1	0.38	< 0.001	< 0.1	0.049	10.4	19.9	30.3	< 0.2	< 1	11.8
0711	N	4/2/2001	< 0.01	< 0.005	0.4	< 0.05	6.98	< 0.1	0.39	< 0.001	< 0.1	0.056	8.7	16.9	25.6	< 0.2	< 1	12.4
0711	Dup	4/2/2001	< 0.01	< 0.005	0.41	< 0.05	7.12	0.1	0.43	< 0.001	< 0.1	0.054	8.1	12.6	20.7	< 0.2	< 1	10.9
0711	N	7/11/2001	0.01	< 0.005	0.39	< 0.05	7.57	< 0.1	0.37	< 0.001	< 0.1	0.057	12.2	19.1	31.3	< 0.2	< 1	12.7
0711	Dup	7/11/2001	< 0.01	< 0.005	0.36	< 0.05	6.75	< 0.1	0.34	< 0.001	< 0.1	0.051	13.6	19.1	32.7	< 0.2	< 1	11.9
0711	N	10/8/2001	< 0.01	< 0.005	0.33	< 0.05	5.91	< 0.1	0.29	< 0.001	< 0.1	0.0534	8.7	17	25.7	< 0.2	< 1	12.1
0711	Dup	10/8/2001	< 0.01	< 0.005	0.34	< 0.05	6.15	< 0.1	0.32	< 0.001	< 0.1	0.0483	8.7	17	25.7	< 0.2	< 1	11.1
0711	N	1/15/2002	< 0.01	< 0.005	0.44	< 0.05	8.13	0.14	0.42	< 0.001	< 0.1	0.051	10	26.1	36.1	< 0.2	< 1	10.6
0711	Dup	1/15/2002	< 0.01	< 0.005	0.44	< 0.05	8.03	0.2	0.41	< 0.001	< 0.1	0.0469	9.1	23.8	32.9	< 0.2	< 1	12.1
0711	N	4/8/2002	< 0.01	< 0.005	0.47	< 0.05	8.23	0.1	0.43	< 0.001	< 0.1	0.0463	11.4	23.6	35	< 0.2	< 1	14.1
0711	Dup	4/8/2002	< 0.01	< 0.005	0.46	< 0.05	8.31	0.1	0.43	< 0.001	< 0.1	0.0442	12.1	23.3	35.4	< 0.2	< 1	13.9
0711	N	7/16/2002	< 0.01	< 0.005	0.38	< 0.05	6.94	< 0.1	0.35	< 0.001	< 0.1	0.0462	9.9	32.5	42.4	< 0.2	< 1	12.6
0711	Dup	7/16/2002	< 0.01	< 0.005	0.36	< 0.05	6.64	0.1	0.32	< 0.001	< 0.1	0.0421	10	26.2	36.2	< 0.2	< 1	10.8
0711	N	10/14/2002	< 0.01	< 0.005	0.41	< 0.05	7.73	< 0.1	0.39	< 0.001	< 0.1	0.0454	8.9	14.2	23.1	< 0.2	< 1	14.4
0711	Dup	10/14/2002	< 0.01	< 0.005	0.43	< 0.05	8.46	0.1	0.41	< 0.001	< 0.1	0.0494	7.8	13.1	20.9	< 0.2	< 1	10.6
0711	N	1/13/2003	< 0.01	< 0.005	0.44	< 0.05	7.5	0.1	0.36	< 0.001	< 0.1	0.045	8.8	7.4	16.2	< 0.2	< 1	10.4



**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
0711	Dup	1/13/2003	no data	no data	4.98	5390	495	541	90.6	9.8	4.9	3410	10.6	1.32	< 0.1	< 1	1	0.029
0711	N	4/15/2003	6863.46	4.43	2.85	5430	482	532	110	13.8	< 0.1	3540	17.5	1.4	0.2	< 1	1	0.025
0711	Dup	4/15/2003	no data	no data	4.86	5460	494	544	105	13.1	3	3620	20.4	1.44	< 0.1	< 1	1.1	0.026
0711	N	7/14/2003	6863.13	4.44	3.00	5450	496	515	99.2	12	< 0.1	3380	20.6	1.08	0.2	< 1	0.9	0.019
0711	Dup	7/14/2003	no data	no data	4.30	5490	493	509	98.6	11.8	3	3370	18	1.1	< 0.1	< 1	0.9	0.023
0711	N	10/14/2003	6863.08	4.73	3.07	5370	519	556	100	11	< 0.1	3750	23.1	1.43	< 0.1	< 1	1	0.019
0711	Dup	10/14/2003	no data	no data	4.38	5430	524	561	99	11	4	3810	19.7	1.46	< 0.1	< 1	1	0.032
0711	N	1/13/2004	6862.83	4.55	2.91	5390	521	557	92.6	12.9	< 1.0	3630	18.9	1.4	< 0.10	< 1.0	0.9	0.023
0711	Dup	1/13/2004	no data	no data	4.85	5380	525	561	94.3	12.6	3.4	3630	20.4	1.42	< 0.10	< 1.0	0.9	0.022
0711	N	4/13/2004	6862.97	4.46	2.94	5440	481	511	97	11.5	< 1	3620	21.2	1.29	< 0.1	< 1	0.9	0.021
0711	Dup	4/13/2004	no data	no data	4.69	5470	480	509	90.5	11.4	3	3700	21	1.35	< 0.1	< 1	0.8	0.033
0711	N	7/20/2004	6862.93	4.66	2.78	5290	525 D	529 D	105	10.8	< 1	3530 D	18	1.1	< 0.10	< 1.0	1	0.021
0711	Dup	7/20/2004	no data	no data	4.48	5480	530 D	532 D	105	10.8	< 1	3580 D	18	1.18	< 0.10	< 1.0	0.9	0.032
0711	N	10/12/2004	6862.94	4.71	3.64	5370	491 D	533 D	93.7	10.9	< 1	3450 D	19	0.93	< 0.10	< 1.0	0.9	0.021
0711	Dup	10/12/2004	no data	no data	4.88	5430	491 D	530 D	101	11.8	6	3460 D	20	0.98	< 0.10	< 1.0	0.9	0.023
0711	N	1/11/2005	6863.14	4.36	3.57	5380	499 D	513 D	98.1	10.7	< 1	3380 D	19	0.84	< 0.1	< 1.0	0.9	0.04
0711	Dup	1/11/2005	no data	no data	4.99	5410	505 D	518 D	98.3	10.7	5	3430 D	19	0.98	< 0.1	< 1.0	0.9	0.03
0711	N	4/12/2005	6862.81	4.70	3.73	5190	517	532	108	11.1	< 1	3710	19	1.08	< 0.1	< 1.0	0.9	0.02
0711	Dup	4/12/2005	no data	no data	4.87	5160	528	532	107	11.1	6	3690	19	1.11	< 0.1	< 1.0	0.9	0.02
0711	N	7/19/2005	6862.60	4.32	3.57	5380	490 D	498 D	100	10.9	< 1	3410 D	20	0.95	< 0.1	< 1.0	0.7	0.03
0711	Dup	7/19/2005	no data	no data	4.82	5360	500 D	505 D	104	10.5	4	3450 D	18	1	< 0.1	< 1.0	0.7	0.04
0711	N	10/11/2005	6862.66	4.51	3.62	5240	492 D	526 D	99.8	10.8	< 1	3560 D	21	0.82	< 0.1	< 1.0	0.8	0.04
0711	Dup	10/11/2005	no data	no data	5.10	5270	496 D	530 D	100	10.9	3	3610 D	21	0.93	< 0.1	< 1.0	0.8	0.03
0711	N	1/17/2006	6862.43	4.72	4.68	5140	480 D	515 D	92.5	10.6	< 1	3410 D	17	0.97	0.2	< 1.0	0.7	0.02
0711	Dup	1/17/2006	no data	no data	5.45	5180	478 D	513 D	97.3	10.9	6	3420 D	18	0.98	0.2	< 1.0	0.6	0.02
0711	N	4/11/2006	6862.40	4.41	4.04	5130	497 D	528 D	99.6	10.6	< 1	3480 D	20	0.83	< 0.1	< 1.0	0.7	0.03
0711	Dup	4/11/2006	no data	no data	5.24	5150	512 D	540 D	98.9	10.6	8	3530 D	17	0.85	< 0.1	< 1.0	0.6	0.02
0711	N	7/25/2006	6862.34	4.36	3.08	4790	478 D	491 D	100	10.6	< 1	3350 D	18	1.1	< 0.1	< 1.0	0.6	0.02
0711	Dup	7/25/2006	no data	no data	4.65	4970	484 D	495 D	99.6	10.7	5	3380 D	18	1.11	< 0.1	< 1.0	0.5	0.02
0711	N	10/11/2006	6862.28	4.55	4.41	4930	501 D	524 D	99.6	10.5	< 1	3400 D	16	1.09	< 0.1	< 0.5	0.6	0.1
0711	Dup	10/11/2006	no data	no data	4.97	4960	504 D	529 D	101	10.8	< 1	3410 D	15	1.05	< 0.1	< 0.5	0.6	0.1
0711	N	1/17/2007	6862.15	4.06	3.81	5130	383 D	402 D	74.9	8.1	< 1	2680 D	13	0.39	< 0.1	< 0.5	0.4	0.02
0711	Dup	1/17/2007	6861.54	4.80	5.39	5160 H	413 D	431 D	81.3	8.9	3	2880 D	14	0.53	< 0.1	< 0.5	0.4	0.04
0711	N	4/16/2007	6862.14	4.60	3.91	5070	484 D	519 D	89.6	10.3	< 1	3500 D	18	0.41	< 0.1	< 0.5	0.5	0.03
0711	Dup	4/16/2007	6861.60	4.88	5.10	5110	480 D	512 D	88.6	10.2	4	3490 D	17	0.43	< 0.1	< 0.5	0.5	0.03

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l	pci/l
<b>NRC Standard</b>			<b>0.05</b>	<b>0.09</b>	<b>NA</b>	<b>0.08</b>	<b>NA</b>	<b>NA</b>	<b>0.569</b>	<b>0.01</b>	<b>0.1</b>	<b>0.395</b>	<b>NA</b>	<b>NA</b>	<b>35.2</b>	<b>17</b>	<b>5.7</b>	<b>39.7</b>
<b>EPA Standard</b>			<b>0.004</b>	<b>0.09</b>	<b>0.391</b>	<b>0.08</b>	<b>9.1</b>	<b>66.1</b>	<b>0.569</b>	<b>0.05</b>	<b>0.1</b>	<b>0.395</b>	<b>NA</b>	<b>NA</b>	<b>35.2</b>	<b>17</b>	<b>5.7</b>	<b>39.7</b>
0711	Dup	1/13/2003	< 0.01	< 0.005	0.44	< 0.05	7.58	0.1	0.35	< 0.001	< 0.1	0.0434	10.1	5.6	15.7	< 0.2	< 1	13
0711	N	4/15/2003	< 0.01	< 0.005	0.48	< 0.05	8.56	0.1	0.42	< 0.001	< 0.1	0.042	11.2	12.9	24.1	< 0.2	< 1	18
0711	Dup	4/15/2003	< 0.01	< 0.005	0.42	< 0.05	7.98	0.1	0.37	< 0.001	< 0.1	0.0433	9.7	15.8	25.5	< 0.2	< 1	20.9
0711	N	7/14/2003	< 0.01	< 0.005	0.43	< 0.05	7.85	< 0.1	0.35	< 0.001	< 0.1	0.0349	9.2	5.4	14.6	< 0.2	< 1	6.5
0711	Dup	7/14/2003	< 0.01	< 0.005	0.43	< 0.05	7.72	< 0.1	0.36	< 0.001	< 0.1	0.0335	8.8	11.6	20.4	< 0.2	< 1	7.4
0711	N	10/14/2003	< 0.01	< 0.005	0.44	< 0.05	7.58	< 0.1	0.38	< 0.001	< 0.1	0.0433	6.8	3.6	10.4	< 0.2	< 1	17.4
0711	Dup	10/14/2003	< 0.01	< 0.005	0.44	< 0.05	7.72	< 0.1	0.4	< 0.001	< 0.1	0.0411	6.1	3.7	9.8	< 0.2	< 1	14.6
0711	N	1/13/2004	< 0.01	< 0.005	0.43	< 0.05	7.87	0.1	0.35	< 0.001	< 0.1	0.0394 D	8.2	14.5	22.7	< 0.2	< 1.0	16.7
0711	Dup	1/13/2004	< 0.01	< 0.005	0.43	< 0.05	7.85	0.1	0.38	< 0.001	< 0.1	0.0361 D	9	14.4	23.4	< 0.2	< 1.0	16.6
0711	N	4/13/2004	0.01	< 0.005	0.43	< 0.05	7.62	0.1	0.38	< 0.001	< 0.1	0.0377 D	6.9	11.3	18.2	< 0.2	< 1	9.8
0711	Dup	4/13/2004	0.03	< 0.005	0.43	< 0.05	7.74	0.1	0.38	< 0.001	< 0.1	0.0344 D	6.7	18	24.7	< 0.2	< 1	9.3
0711	N	7/20/2004	< 0.01	< 0.005	0.44	< 0.05	7.48	< 0.1	0.35	< 0.001	< 0.1	0.0368 D	6.5	14.4	20.9	< 0.2	< 1.0	14.7
0711	Dup	7/20/2004	< 0.01	< 0.005	0.43	< 0.05	7.45	< 0.1	0.34	< 0.001	< 0.1	0.0356 D	6.6	12.3	18.9	< 0.2	< 1.0	16.6
0711	N	10/12/2004	< 0.01	< 0.005	0.37	< 0.05	6.79	< 0.1	0.34	< 0.001	< 0.1	0.0339	7.3	12.2	19.5	< 0.2	< 1.0	12.7
0711	Dup	10/12/2004	< 0.01	< 0.005	0.37	< 0.05	7.35	< 0.1	0.35	< 0.001	< 0.1	0.0332	7.9	12.6	20.5	< 0.2	< 1.0	13.9
0711	N	1/11/2005	< 0.01	< 0.005	0.48	< 0.05	6.95	< 0.1	0.42	< 0.001	< 0.1	0.0379	5.1	10	15.1	< 0.2	< 1.0	12.3
0711	Dup	1/11/2005	< 0.01	< 0.005	0.42	< 0.05	6.94	< 0.1	0.39	< 0.001	< 0.1	0.0338	3.9	12.7	16.6	< 0.2	< 1.0	14.6
0711	N	4/12/2005	< 0.01	< 0.005	0.4	< 0.05	7.59	< 0.1	0.37	< 0.001	< 0.1	0.0336	10.7	11.2	21.9	< 0.2	< 1.0	10.8
0711	Dup	4/12/2005	< 0.01	< 0.005	0.41	< 0.05	7.51	< 0.1	0.38	< 0.001	< 0.1	0.032	10.6	12.1	22.7	< 0.2	< 1.0	8.9
0711	N	7/19/2005	< 0.01	< 0.005	0.45	< 0.05	7.36	< 0.1	0.42 D	< 0.001	< 0.1	0.0346	6.2	12	18.2	< 0.2	< 1.0	10.8
0711	Dup	7/19/2005	< 0.01	< 0.005	0.42	< 0.05	7.03	< 0.1	0.4	< 0.001	< 0.1	0.0319	6.7	12.2	18.9	< 0.2	< 1.0	11.3
0711	N	10/11/2005	< 0.01	< 0.005	0.44	< 0.05	7.3	< 0.1	0.36	< 0.001	< 0.1	0.0302	7.3	15.3	22.6	< 0.2	< 1.0	12.4
0711	Dup	10/11/2005	< 0.01	< 0.005	0.44	< 0.05	7.25	< 0.1	0.39	< 0.001	< 0.1	0.0291	9.6	17	26.6	< 0.2	< 1.0	9.3
0711	N	1/17/2006	< 0.01	< 0.005	0.41	< 0.05	6.78	< 0.1	0.34	< 0.001	< 0.1	0.0278	7.6	15.5	23.1	< 0.2	< 1.0	10.2
0711	Dup	1/17/2006	< 0.01	< 0.005	0.4	< 0.05	6.93	< 0.1	0.39	< 0.001	< 0.1	0.0323	7.2	14.4	21.6	< 0.2	< 1.0	8.4
0711	N	4/11/2006	< 0.01	< 0.005	0.43	< 0.05	7.16	0.1	0.36	< 0.001	< 0.1	0.031	5.9	9.9	15.8	< 0.2	< 1.0	5.5
0711	Dup	4/11/2006	< 0.01	< 0.005	0.42	< 0.05	6.98	0.1	0.37	< 0.001	< 0.1	0.0281	5.4	15.2	20.6	< 0.2	< 1.0	7.4
0711	N	7/25/2006	< 0.01	< 0.005	0.43	< 0.05	7.48	< 0.1	0.35	< 0.001	< 0.1	0.0306	5.4	13.9	19.3	< 0.2	< 1.0	7.3
0711	Dup	7/25/2006	< 0.01	< 0.005	0.41	< 0.05	7.24	0.1	0.35	< 0.001	< 0.1	0.0272	5.2	12	17.2	< 0.2	< 1.0	10.2
0711	N	10/11/2006	< 0.01	< 0.005	0.4	< 0.05	7.12	0.4	0.37	< 0.001	< 0.1	0.0295	6.3	13.2	19.5	< 0.2	< 1	6
0711	Dup	10/11/2006	< 0.01	< 0.005	0.41	< 0.05	7.18	0.4	0.39	< 0.001	< 0.1	0.0279	5.9	12.3	18.2	< 0.2	< 1	6.8
0711	N	1/17/2007	< 0.01	< 0.005	0.29	< 0.05	5.3	< 0.1	0.27	< 0.001	< 0.1	0.0237	6.8	9.9	16.7	< 0.2	< 1	8.5
0711	Dup	1/17/2007	< 0.01	< 0.005	0.31	< 0.05	5.61	0.2	0.3	< 0.001	< 0.1	0.0215	6.8	9.2	16	< 0.2	< 1	9.3
0711	N	4/16/2007	< 0.01	< 0.005	0.4	< 0.05	6.96	0.1	0.36	< 0.001	< 0.1	0.0327	5.6	13.5	19.1	< 0.2	< 1	7.3
0711	Dup	4/16/2007	< 0.01	< 0.005	0.39	< 0.05	6.8	0.1	0.35	< 0.001	< 0.1	0.0248	4.8	15.5	20.3	< 0.2	< 1	6.8

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
0711	N	7/16/2007	6861.85	4.26	3.10	4810	490 D	515 D	94.2	10.1	<1	3480 D	16	0.75	<0.1	<0.5	0.5	0.05
0711	Dup	7/16/2007	6861.35	4.60	4.33	4980	485 D	516 D	96.1	10.2	<1	3510 D	16	0.71	<0.1	<0.5	0.5	0.04
0711	N	10/8/2007	6861.68	4.46	3.80	5090	489 D	512 D	100	11.2	<1	3470 D	18	0.48	<0.1	<0.5	0.4	0.03
0711	Dup	10/8/2007	6861.05	4.68	4.91	5140	486 D	505 D	98.3	11.1	6	3430 D	18	0.52	<0.1	<0.5	0.4	0.03
0711	N	1/21/2008	6862.05	4.46	3.54 H	4850	460 D	475 D	98.6	12.1	< 1	3190 D	23 D	0.51	< 0.1	< 0.5	0.4	0.045
0711	Dup	1/21/2008	6861.45	4.74	4.73 H	5030	464 D	474 D	91.1	11.9	4	3220 D	22	0.52	0.1	< 0.5	0.4	0.038
0711	N	4/14/2008	6861.50	4.46	3.91	4770	479	492	98 D	10.7	< 1	3470 D	15	0.36	< 0.1	< 0.50	0.5	0.01
0711	Dup	4/14/2008	6860.70	4.69	4.68	4740	482	496	98 D	10.7	5	3510 D	15	0.36	< 0.1	< 0.50	0.5	0.01
0711	N	7/14/2008	6861.55	4.58	4.15	4870	464	463	91 D	10	< 1	3230 D	13	0.32	< 0.1	< 0.5	0.4	0.005
0711	Dup	7/14/2008	6860.70	4.77	5.07	4960	456	457	92 D	10	2	3390 D	13	0.32	< 0.1	< 0.5	0.4	0.006
0711	N	10/13/2008	6861.50	4.28	3.78	5040	430	442	86 D	9	< 1	3270 DH	15	0.7 D	< 0.1	< 0.5	0.3	0.006
0711	Dup	10/13/2008	6860.65	4.65	4.54 H	5050	478	476	91 D	10	< 1	3690 D	16	0.7 D	< 0.1	< 0.5	0.3	0.008
0711	N	1/19/2009	6861.15	4.45	3.34	5050 H	493	499	101	11	<1	3350 D	14	0.31	<0.1	<0.5	0.3	0.008
0711	Dup	1/19/2009	no data	4.73	5.15	5070 H	506	517	102	11	6	3320 D	12	0.21	<0.1	<0.5	0.3	0.008
0711	N	4/13/2009	6861.30	4.53	3.2	5020	445 D	455 D	96 D	9	<1	3410 D	16	0.27	<0.1	<0.50	0.3	0.008
0711	Dup	4/13/2009	no data	4.76	4.82	4960	484	481	104	11	11	3440 D	13	0.3	<0.1	<0.50	0.3	0.013
0711	N	7/13/2009	6861.20	4.34	3.21	4940 H	478	458	92	10	<1	3560 D	31	0.32	<0.1	<0.50	0.3	<0.001
0711	Dup	7/13/2009	no data	4.58	4.82	4990 H	482 D	453	93 D	11	1	3440 D	17	0.32	<0.1	<0.50	0.2	<0.001
0711	N	10/12/2009	6861.30	4.47	4.07	4960	480 D	472	100 D	11	<1	3620 D	19	0.47	<0.1	<0.50	0.3	<0.001
0711	Dup	10/12/2009	no data	4.25	5.26	4890 H	489 D	475	94 D	11	3	3550 D	16 H	0.41	<0.1	<0.50	0.4	0.002
0711	N	1/11/2010	6860.85	4.43	4.27	4760 D	491 D	469	95	11	<5	3510 D	21	0.55	0.13	<0.50	0.2	0.001 H
0711	Dup	1/11/2010	6859.80	4.64	4.89	4880 D	501 D	484	101	11	5	3550 D	16	0.41	0.11	<0.50	0.2	0.002 H
0711	N	4/12/2010	6861.00	4.7	3.65	4960 D	479	472	99	10	<5	3360 D	17	0.67	0.1	<0.50	0.2	0.004
0711	Dup	4/12/2010	6860.05	4.88	4.9	5000 D	488	484	102	10	<5	3460 D	16	0.57	0.1	<0.50	0.2	0.007
0711	N	7/19/2010	6860.75	4.45	3.41	4880 D	462	464	96	10	<5	3470 D	16 D	0.77	0.1	<0.50	0.2	0.006
0711	Dup	7/19/2010	6859.70	4.7	4.6	5030 D	475	474	97	10	<5	3420 D	16 D	0.72	<0.1	<0.50	0.2	0.004
0711	N	10/11/2010	6860.90	3.05	3.23	4850 D	472	447	102	10	<5	3610 D	13 D	0.79	<0.1	<0.50	0.2	0.004
0711	Dup	10/11/2010	6860.05	3.05	4.19	4500 D	476	441	99	10	<5	3640 D	13 D	0.74	<0.1	<0.50	0.2	0.009
0711	N	1/17/2011	6860.75	5.09	4.87	4760 D	468	452	100	11	6	3390 D	17 D	0.36	<0.1	<0.50	0.3	0.024 D
0711	N	4/12/2011	6860.60	4.83	5.12	4960 D	475	448	101	11	9	3420 D	17 D	0.38	<0.1	<0.50	0.2	0.005
0711	N	7/18/2011	6860.40	4.71	4.55	4770 D	457	428	98	10	<5	3380 D	16 D	0.4 D	<0.5	<0.50	0.3	<0.01
0711	Dup	7/18/2011	6859.20	4.87	5.02	4790 D	473	450	103	11	<5	3340 D	16 D	0.4 D	<0.5	<0.50	0.2	<0.01
0711	N	10/11/2011	6860.57	4.81	4.26	4840 D	480	449	101	11	<5	3490 D	17 D	0.4 D	<0.5	<0.50	0.5	0.037
0711	Dup	10/11/2011	6859.30	4.84	5.27	4940 D	471	450	98	11	7	3420 D	16 D	0.4 D	<0.5	<0.50	0.2	0.015
0711	N	1/9/2012	6860.29	4.83	3.27 H	4730 D	485	422	95	10	<5	3400 D	17 D	0.34	<0.1	<0.50	0.2	0.004

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
0711	N	7/16/2007	<0.01	<0.005	0.39	<0.05	6	0.1	0.37	<0.001	<0.1	0.0268	5.1	16.4	21.5	<0.2	<1	6.8
0711	Dup	7/16/2007	<0.01	<0.005	0.38	<0.05	6.07	0.1	0.35	<0.001	<0.1	0.0248	5.3	13.2	18.5	<0.2	<1	6.1
0711	N	10/8/2007	<0.01	<0.005	0.4	<0.05	7.09	0.1	0.34	<0.001	<0.1	0.024	3.9	15.6	19.5	<0.2	<1	7.7
0711	Dup	10/8/2007	<0.01	<0.005	0.4	<0.05	7.06	0.1	0.34	<0.001	<0.1	0.023	3.5	15.1	18.6	<0.2	<1	7.6
0711	N	1/21/2008	<0.01	<0.005	0.38	<0.05	6.34	0.2	0.35	<0.001	<0.1	0.0241	7	15.3	22.3	<0.2	<1	9.1
0711	Dup	1/21/2008	<0.01	<0.005	0.37	<0.05	6.24	0.1	0.34	<0.001	<0.1	0.0224	7.4	14.6	22	<0.2	<1	8.2
0711	N	4/14/2008	<0.01	<0.005	0.38 D	<0.05	6.59	0.2	0.35	<0.001	<0.1	0.0248	4	18.4	22.4	0.4	0 U	8.4
0711	Dup	4/14/2008	<0.01	<0.005	0.37	<0.05	6.76	0.2	0.35	<0.001	<0.1	0.0227	4	17.4	21.4	0.4	0 U	8.1
0711	N	7/14/2008	<0.01	<0.005	0.34	<0.05	6.12	0.2	0.33	<0.001	<0.1	0.0206	3.7	9.8	13.5	0.2	2.3 U	6.4
0711	Dup	7/14/2008	<0.01	<0.005	0.34	<0.05	6.27	0.2	0.4	<0.001	<0.1	0.0196	3.8	11	14.8	<0.5 U	6 U	6.4
0711	N	10/13/2008	<0.01	<0.005	0.36	<0.05	6.18	0.1	0.32	<0.001	<0.1	0.0214	4.4	7.5	11.9	0.1 U	2.1 U	10.3
0711	Dup	10/13/2008	<0.01	<0.005	0.36	<0.05	6.15	0.2	0.32	<0.001	<0.1	0.0195	4.6	9.2	13.8	<0.1 U	0.2 U	10.4
0711	N	1/19/2009	<0.01	<0.005	0.32	<0.05	5.81	0.1	0.32	<0.001	<0.1	0.0175	4	13	17	<0.1 U	0.8 U	7
0711	Dup	1/19/2009	<0.01	<0.005	0.33	<0.05	5.89	0.2	0.32	<0.001	<0.1	0.017	4.7	13	17.7	0 U	1.1 U	8.7
0711	N	4/13/2009	<0.01	<0.005	0.33	<0.05	5.78	0.1	0.3	<0.001	<0.1	0.0161	3.6	10	13.6	0.9	<1 U	8.7
0711	Dup	4/13/2009	<0.01	<0.005	0.33	<0.05	5.82	0.2	0.31	<0.001	<0.1	0.0159	3.7	12	15.7	0.6	<1 U	10.3
0711	N	7/13/2009	<0.01	<0.005	0.32	<0.05	5.92 D	0.1	0.29	0.004	<0.1	0.0169	4.3	12	16.3	0.08 U	1.4 U	9.3
0711	Dup	7/13/2009	<0.01	<0.005	0.32	<0.05	5.56	0.1	0.28	<0.001	<0.1	0.015	3.9	12	15.9	<0.08 U	<0.2 U	7.2
0711	N	10/12/2009	<0.01	<0.005	0.32	<0.05	5.77	0.2	0.3	<0.001	<0.1	0.0167	4	12	16	0.04 U	1.5 U	7
0711	Dup	10/12/2009	<0.01	<0.005	0.32	<0.05	5.7	0.2	0.29	<0.001	<0.1	0.0161	4.8	11	15.8	0.05 U	1.9 U	8.2
0711	N	1/11/2010	<0.01	<0.005	0.32	<0.05	5.42	0.1	0.29	<0.001	<0.1	0.0154	3.9	15	18.9	<0.03 U	1.6 U	5.8
0711	Dup	1/11/2010	<0.01	<0.005	0.31	<0.05	5.36	0.1	0.29	<0.001	<0.1	0.0149	3.7	13	16.7	0.02 U	1.3 U	5.2
0711	N	4/12/2010	<0.01	<0.005	0.32	<0.05	5.66	<0.1	0.3	<0.001	<0.1	0.0161	4.5	9.8	14.3	0.06 U	1.3 U	6.4
0711	Dup	4/12/2010	<0.01	<0.005	0.3	<0.05	5.5	<0.1	0.28	<0.001	<0.1	0.0159	4.5	9.8	14.3	0.3	1.3 U	5.6
0711	N	7/19/2010	<0.01	<0.005	0.32	<0.05	5.54	0.2	0.27	<0.001	<0.1	0.0167	5.4	8.2	13.6	<0.005 U	0.4 U	5.4
0711	Dup	7/19/2010	<0.01	<0.005	0.32	<0.05	5.5	<0.1	0.26	<0.001	<0.1	0.0154	5.7	7.4	13.1	<0.07 U	1.8 U	5.5
0711	N	10/11/2010	<0.01	<0.005	0.31	<0.05	5.41	<0.1	0.28	<0.001	<0.1	0.0189	4.7	8.3	13	0.1 U	<0.5 U	4.6
0711	Dup	10/11/2010	<0.01	<0.005	0.31	<0.05	5.33	0.2	0.27	<0.001	<0.1	0.0131	5.9	8.6	14.5	0.05 U	<0.6 U	5.4
0711	N	1/17/2011	<0.01	<0.005	0.35	<0.05	5.52	0.5	0.28	0.003	<0.1	0.0201	3.5	7.7	11.2	<0.004 U	1.7	5.7
0711	N	4/12/2011	<0.01	<0.005	0.3	<0.05	5.46	0.1	0.27	<0.001	<0.1	0.0155	4.6	9.5	14.1	0.1 U	2.1	5.9
0711	N	7/18/2011	<0.01	<0.005	0.25	<0.05	4.16	0.1	0.27	<0.001	<0.1	0.013	4.5	6.9	11.4	0.03 U	<0.7 U	4.9
0711	Dup	7/18/2011	<0.01	<0.005	0.24	<0.05	4	<0.1	0.27	<0.001	<0.1	0.0123	4.3	7.9	12.2	0.1 U	<0.7 U	4
0711	N	10/11/2011	<0.01	<0.005	<0.01	<0.05	4.71	0.1	0.27	<0.001	<0.1	0.0163	4	6.3	10.3	0.04 U	<0.1 U	4.9
0711	Dup	10/11/2011	<0.01	<0.005	0.28	<0.05	5.02	0.1	0.26	<0.001	<0.1	0.0157	3.7	6.5	10.2	0.1 U	0.1 U	4.4
0711	N	1/9/2012	<0.01	<0.005	0.33	<0.05	5.36	<0.1	0.29	<0.001	<0.1	0.0185	3.1	6.4	15.9	0.07 U	0.7 U	5



**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
0711	Dup	1/9/2012	6859.40	5.06	4.07 H	4810 D	454	428	94	10	<5	3360 D	17 D	0.34	<0.1	<0.50	0.2	0.006
0711	N	4/9/2012	6860.09	4.75	3.25 H	4860 D	450	449	97	10	<5	3650 D	18 D	0.39	<0.2	<0.50	0.2	<0.01
0711	Dup	4/9/2012	6859.00	4.91	4.77 H	4940 D	449	451	94	10	<5	3370 D	17 D	0.39	<0.1	<0.50	0.2	<0.01
0711	N	7/17/2012	6860.00	4.72	3.30 H	5020	482	460	117	12	<5	3400 D	18 D	0.38	<0.1	<0.50	0.2	0.002
0711	Dup	7/17/2012	6858.90	4.83	4.73 H	4850	486	461	113	12	<5	3420 D	18 D	0.4	<0.1	<0.50	0.2	0.004
0711	N	10/15/2012	6860.05	5.07	3.78 H	4520	500	462	103 D	11	<5	3280 D	16 D	0.42	<0.2	<0.50	0.3	0.004
0711	N	1/14/2013	6,860.12	4.66	3.87 H	4850 H	504	462	103 D	11	<5	3370 D	16 D	0.43	<0.1	<0.50	0.4	0.005
0711	N	4/8/2013	6,860.32	4.63	3.41 H	4680	479	458	103	11	<5	3430 D	16 D	0.5	<0.1	<0.50	0.3	0.004
0711	N	7/15/2013	6,859.64	4.79	3.46 H	4840	475	457	103	10	<5	3370 D	17 D	0.39	<0.1	<0.50	0.3	0.003
0711	N	10/8/2013	6,859.63	4.93	3.84 H	4800	465	453	101	10	<5	3330 D	17 D	0.4	<0.1	<0.50	0.3	0.002
0711	N	1/15/2014	6,859.38	5.57	5.33	4420	476	450	104	10	14	2900	17	0.43	<0.1	<0.50	0.4	0.005
0711	N	4/7/2014	6,859.26	4.87	3.79 H	4690	473	455	103 D	11	<5	3510 D	19 D	0.45	<0.1	<0.50	0.3	0.007
0711	N	7/15/2014	6,859.09	4.70	3.11 H	4580	455	429	102 D	11	<5	3320 D	18 D	0.46	<0.1	<0.50	0.3	<0.001
0711	N	10/13/2014	6,859.13	4.71	3.07 H	4790	457	446	101	10	<5	3400 D	20 D	0.62	<0.1	<0.50	0.3	<0.001
0711	N	1/12/2015	6859.03	4.78	3.13 H	4780	455	457	104	10	<5	3370 D	19 D	0.77	<0.1	<0.50	0.5	0.002
0711	N	4/13/2015	6858.91	4.66	3.21 H	4950	454	460	107	11	<5	3410 D	22	1.14	<0.1	<0.50	0.9	0.002
0711	N	7/14/2015	6858.84	4.62	3.32 H	5020	467	458	96	20	<5	3590 D	23 D	1.36	<0.1	<0.50	1.4	<0.001
0711	N	10/12/2015	6858.72	4.56	3.59 H	5220	451	478	111	12	<5	3620 D	26 D	1.8	<0.1	<0.50	2.5	<0.001
0711	N	1/11/2016	6858.59	4.62	3.34 H	5080	462	437	103	16	<5	3440 D	27 D	2.0 D	<0.1	<0.50	1.9	0.004
0711	N	4/11/2016	6858.57	4.38	3.35 H	5220	458	496	117	13	<5	3500 D	24 D	2.3 D	<0.1	<0.50	4.9	0.002
0711	N	7/18/2016	6858.32	4.23	3.30 H	5150 DH	456	494	117	13	<5	3520 D	27 D	2.13	<0.1	<0.50	7.3	0.002
0711	N	10/10/2016	6858.28	4.15	2.93 H	5000 H	458	500	116	13	<5	3690 D	28 D	2.2 D	<0.1	<0.50	10	0.002
0717	N	4/9/2001	6855.40	5.65	7.30	3300	631	137	118	6.4	498	1650	54.2	0.11	12.3	< 1	< 0.1	0.002
0717	N	7/16/2001	6855.30	6.32	7.35	3350	591	127	124	6.7	539	1630	61.7	0.13	12.4	< 1	< 0.1	0.001
0717	N	10/8/2001	6855.30	7.01	7.20	3300	600	130	105	6.1	588	1600	66.7	0.05	10.6	< 1	< 0.1	< 0.001
0717	N	1/9/2002	6855.20	7.76	7.10	3230	669	128	107	8	656	1530	75	0.07	10.2	< 1	< 0.1	< 0.001
0717	N	4/9/2002	6854.75	7.34	7.39	3320	660	124	129	6.6	654	1700	64.4	0.1	12.2	< 1	< 0.1	< 0.001
0717	N	7/15/2002	6854.73	6.67	7.52	3420	791	147	125	5.9	740	1886	48.4	0.22	16.2	< 1	< 0.1	< 0.001
0717	N	10/14/2002	6854.47	6.65	7.61	3130	720	144	125	6.3	704	1780	68.3	0.21	15.6	< 1	< 0.1	< 0.001
0717	N	1/13/2003	6854.02	7.46	7.05	3530	621	130	104	6.2	731	1440	47.2	0.24	21.5	< 1	< 0.1	0.002
0717	N	4/8/2003	6853.75	6.44	7.19	3620	697	147	143	9.9	705	1615	71.2	0.27	22.9	< 1	< 0.1	< 0.001
0717	N	7/8/2003	6853.63	6.28	7.47	3790	735	175	128	7.7	737	1880	60.9	0.29	23	< 1	< 0.1	< 0.001
0717	N	10/13/2003	6853.24	6.37	7.43	3840	765	206	135	7.2	705	2080	75.3	0.37	25.1	< 1	0.3	< 0.001
0717	N	1/12/2004	6852.78	6.52	7.43	3960	725	211	136	7.7	689	2100	72.3	0.47	27.7 D	< 1.0	< 0.1	< 0.001
0717	N	4/12/2004	6852.40	6.31	6.75	4000	695	218	135	9.3	650	2100	77.1	0.83	23.8 D	< 1	< 0.1	< 0.001

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
0711	Dup	1/9/2012	<0.01	<0.005	0.36	<0.05	5.66	<0.1	0.29	<0.001	<0.1	0.016	3.1	6	15.1	0.1 U	0.1 U	4.3
0711	N	4/9/2012	<0.01	<0.005	0.29	<0.05	5.36	<0.1	0.26	<0.001	<0.1	0.0203	4.6	7.7	20	0.1 U	0.3 U	4.6
0711	Dup	4/9/2012	<0.01	<0.005	0.28	<0.05	5.17	0.1	0.26	<0.001	<0.1	0.0188	4	7.9	19.8	0.05 U	0.7 U	5.3
0711	N	7/17/2012	0.002	<0.005	0.28	0.004	5.12	<0.1	0.26	<0.001	<0.1	0.0177	4.2	5.8	15.8	0.06 U	0.4 U	5.5
0711	Dup	7/17/2012	0.002	<0.005	0.27	<0.001	5.02	0.1	0.26	<0.001	<0.1	0.0162	3.5	6.7	16.9	0.07 U	1.6	5.4
0711	N	10/15/2012	0.002	<0.005	0.29	0.003	5.02	0.2	0.27	<0.001	<0.1	0.0169	3.4	9.6	13	0.09 U	1.1	4.3
0711	N	1/14/2013	0.003	<0.005	0.28	0.004	5.01	0.3	0.27	<0.001	<0.1	0.0183	4.4	5.7	10.1	0.07 U	0.8 U	3.5
0711	N	4/8/2013	0.002	<0.005	0.27	0.005	5.12	0.2	0.27	<0.001	<0.1	0.021	4.8	7.8	12.6	0.2 U	0.9 U	6.3
0711	N	7/15/2013	0.002	<0.005	0.29	0.002	5.05	0.1	0.27	<0.001	<0.1	0.0181	3.3	9.4	12.7	0.0 U	0.03 U	5.2
0711	N	10/8/2013	0.003	<0.005	0.27	0.006	4.67	<0.1	0.27	<0.001	<0.1	0.0176	0.98	0.94 U	0.98	0.2	0.3 U	4
0711	N	1/15/2014	0.002	<0.005	0.23	0.003	4.29	0.3	0.22	<0.001	<0.1	0.0159	4.1	6.4	10.5	0.2	0.9 U	6
0711	N	4/7/2014	0.002	<0.005	0.27	0.007	4.77	<0.1	0.25	<0.001	<0.1	0.0199	5.4	7.4	12.8	0.3	0.7 U	4.1
0711	N	7/15/2014	0.003	<0.005	0.26	0.01	4.82	<0.1	0.26	<0.001	<0.1	0.0192	3.3	5.4	8.7	0.04 U	0.1 U	4.2
0711	N	10/13/2014	0.003	<0.005	0.29	0.02	4.98	<0.1	0.28	<0.001	<0.1	0.14	5	11	16	0.02 U	0.09 U	6.4
0711	N	1/12/2015	0.004	<0.005	0.31	0.012	5.26	<0.1	0.31	<0.001	<0.1	0.0213	5.2	8.9	14.1	0.09 U	0.3 U	14.3
0711	N	4/13/2015	0.005	<0.005	0.35	0.012	5.58	<0.1	0.33	<0.001	<0.1	0.0307	5.2	6.4	11.6	0.02 U	0.9 U	22.5
0711	N	7/14/2015	0.006	<0.005	0.4	0.008	6.28	<0.1	0.43	<0.001	<0.1	0.0393	4.6	7.6	12.2	0.4 U	0.1 U	22
0711	N	10/12/2015	0.007	<0.005	0.52	<0.001	7.81	<0.1	0.6	<0.001	<0.1	0.0494	4.3	7.9	12.2	0.2 U	1 U	9.2
0711	N	1/11/2016	0.009	<0.005	0.54	0.002	7.72	<0.1	0.63	<0.001	<0.1	0.0504	5	8.8	13.8	0.3	0.2 U	30.4
0711	N	4/11/2016	0.013	<0.005	0.58 D	0.003	8.83	<0.1	0.71	<0.001	<0.1	0.084	6.1	8	14.1	0.01 U	0.7 U	36.2
0711	N	7/18/2016	0.017	<0.005	0.63	0.006	8.84	<0.1	0.76	<0.001	<0.1	0.12	4.8	8.2	13	0.04 U	0.2 U	19.4
0711	N	10/10/2016	0.023	<0.005	0.71	0.004	9.64	<0.1	0.85	<0.001	<0.1	0.125	6.1	11	17.1	0.1 U	0.2 U	16.6
0717	N	4/9/2001	< 0.01	< 0.005	0.01	< 0.05	1.4	0.12	< 0.05	< 0.001	< 0.1	0.057	4.2	4.5	8.7	< 0.2	< 1	4
0717	N	7/16/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.36	0.1	< 0.05	< 0.001	< 0.1	0.065	3.7	3.7	7.4	< 0.2	< 1	2.5
0717	N	10/8/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.08	0.08	< 0.05	< 0.001	< 0.1	0.0643	3.5	4.5	8	< 0.2	< 1	4.8
0717	N	1/9/2002	< 0.01	< 0.005	0.01	< 0.05	1.4	0.2	0.06	< 0.001	< 0.1	0.0841	4.9	7.6	12.5	< 0.2	< 1	3.5
0717	N	4/9/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.61	0.2	< 0.05	< 0.001	< 0.1	0.112	3.1	3.8	6.9	< 0.2	< 1	3.4
0717	N	7/15/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.6	0.2	< 0.05	< 0.001	< 0.1	0.118	3.1	7.3	10.4	< 0.2	< 1	3.2
0717	N	10/14/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.77	0.2	< 0.05	< 0.001	< 0.1	0.115	2.2	3.2	5.4	< 0.2	< 1	4.8
0717	N	1/13/2003	< 0.01	< 0.005	< 0.01	< 0.05	1.96	0.2	< 0.05	< 0.001	< 0.1	0.12	5.4	8.6	14	< 0.2	< 1	4.9
0717	N	4/8/2003	< 0.01	< 0.005	< 0.01	< 0.05	1.85	0.2	< 0.05	< 0.001	< 0.1	0.133	2.8	11	13.8	< 0.2	< 1	8.1
0717	N	7/8/2003	< 0.01	< 0.005	0.02	< 0.05	2.5	0.2	< 0.05	< 0.001	< 0.1	0.0994	3.3	3.4	6.7	< 0.2	< 1	3
0717	N	10/13/2003	< 0.01	< 0.005	< 0.01	< 0.05	2.54	0.2	< 0.05	< 0.001	< 0.1	0.107	2.3	4.1	6.4	< 0.2	< 1	5.4
0717	N	1/12/2004	< 0.01	< 0.005	0.01	< 0.05	3.05	0.2	< 0.05	< 0.001	< 0.1	0.106 D	4.4	5	9.4	< 0.2	< 1.0	5.4
0717	N	4/12/2004	< 0.01	< 0.005	0.01	< 0.05	2.97	0.2	< 0.05	< 0.001	< 0.1	0.0855 D	3.1	< 1	3.1	< 0.2	< 1	5.9

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
0717	N	7/19/2004	6852.07	6.43	6.54	4130	747 D	242 D	151	8.9	635	2150 D	66	1.31	26.2 D	< 1.0	< 0.1	< 0.001
0717	N	10/11/2004	6851.80	6.57	6.99	4180	729 D	270 D	148	9.6	559	2330 D	69	1.81	26.8 D	< 1.0	< 0.1	< 0.001
0717	N	1/10/2005	6851.37	6.51	6.94	4280	719 D	272 D	147	9.9	541	2280 D	69	2.88	25.8 D	< 1.0	< 0.1	< 0.001
0717	N	4/18/2005	6850.62	6.38	7.09	4210	649	253	151	11.5	512	2410	128	4.69	27.1	< 1.0	< 0.1	< 0.001
0717	N	7/18/2005	6849.32	6.00	6.97	4450	685 D	288 D	158	11	480	2420 D	61	6.1 D	27.2 D	< 1.0	< 0.1	< 0.001
0717	N	10/10/2005	6848.82	6.49	7.00	4500	712 D	319 D	152	11.9	518	2520 D	72	6.6 D	26.4 D	< 1.0	< 0.1	< 0.001
0717	N	1/16/2006	6848.64	6.31	7.07	5430	726 D	412 D	159	18.8	415	3290 D	76	41.3 D	27.4 D	< 1.0	0.5	< 0.001
0717	N	4/10/2006	6848.37	6.17	6.69	5520	809 D	472 D	162	20.8	291	3770 D	103	53.0 D	25.2 D	< 1.0	1.6	< 0.001
0717	N	7/24/2006	6847.93	5.83	6.44	5260	704 D	450 D	181	21.9	212	3540 D	80	56.4 D	25.4 D	< 1.0	1.3	< 0.001
0717	N	10/9/2006	6847.59	6.05	6.27	5230	622	325	172	20.2	189	3040	74	60.7 D	26.2 D	< 0.5	0.2	0.001
0717	N	1/16/2007	6846.80	6.07	6.65	5410	646 D	402 D	163	19.1	146	3270 D	79	47.2 D	29.1 D	< 0.5	0.9	< 0.001
0717	N	4/10/2007	6846.65	6.04	6.16	5110	665 D	427 D	169	20.4	176	3410 D	80	56 D	29.1 D	< 0.5	1.3	< 0.001
0717	N	7/16/2007	6846.22	5.82	6.11	4980	663 D	449 D	170	19.6	144	3550 D	74	58.4 D	35 D	< 0.5	1.9	0.005
0717	N	10/9/2007	6845.78	5.73	6.10	5420	633 D	448 D	162	19.6	92	3440 D	79	63.6 D	31.1 D	< 0.5	3.2	0.001
0717	N	1/22/2008	6845.20	5.64	5.9	5050	596 D	436 D	161	22.9	74	3390 D	94	68.5 D	37.2 D	< 0.5	3.9	0.002
0717	N	4/15/2008	6845.22	5.59	5.8	5560	597	473	186 D	21.5	58	3950 D	72	71.0 D	44.8	< 0.50	7.6	< 0.001
0717	N	7/15/2008	6860.70	4.77	5.58	5460	521	438	162 D	19	31	3450 D	56	70.5 D	37.7 D	0.51	13.6	< 0.003
0717	N	10/14/2008	6860.65	4.65	5.03	5660	505	462	169 D	19	6	3670 D	65	71 D	37.6 D	< 0.5	16.5	< 0.001
0717	N	1/19/2009	6843.92	4.41	4.44	5960 H	539	553	201	21	<1	3970 D	56	57.4 D	53.1 D	< 0.5	46	< 0.001
0717	N	4/14/2009	6843.82	4.28	4.29	6060	453 D	502 D	181 D	16	<1	4060 D	70	56 D	35.1 D	1.17	86.2	< 0.001
0717	N	7/14/2009	6843.47	3.65	4.23	6480	454	532	179	14	<1	4440 D	68	76.7 D	27.6	1.24	149 D	< 0.001
0717	N	10/13/2009	6843.17	4.14	4.3	6570 H	475 D	548	181 D	14	<1	4520 D	74	77 D	26.2	0.55	145	< 0.001
0717	N	1/12/2010	6842.87	3.96	4.28	6370 D	488 D	562	184 D	15	<5	4880 D	67	34 D	30 D	0.77	136	< 0.001
0717	N	4/12/2010	6842.82	4.2	4.14	6490 D	472	569	181	13	<5	4690 D	67	64 D	24.1 D	< 0.50	138	< 0.001
0717	N	7/20/2010	6842.32	3.95	4.13	6560 D	458	542	169	12	<5	4730 D	67 D	62 D	26 D	< 0.50	127	< 0.001
0717	N	10/12/2010	6842.17	4.23	4.33	6220 D	473	522	178	13	<5	4440 D	62 D	66 D	24 D	0.68	120	< 0.001
0717	N	1/11/2011	6841.77	4.28	4.29	6250 D	450	520	166	12	<5	4690 D	69 D	64 D	20 D	3.38	143	< 0.001
0717	N	4/6/2011	6841.65	4.36	4.4	6570 D	471	520	180	12	<5	4860 D	63 D	62 D	22 D	4.08	129	0.001
0717	N	7/19/2011	6841.37	3.97	4.21	6140 D	470	532	182	13	<5	4900 D	66 D	56 D	27 D	4.52	126	< 0.001
0717	N	10/11/2011	6841.16	4.14	4.39	6200 D	460	516	184	13	<5	4720 D	71 D	61 D	32 D	4.16	125	0.004
0717	N	1/10/2012	6840.92	4.31	4.14 H	6310 D	456	499	174	13	<5	4650 D	68 D	65 D	30 D	2.88	124	< 0.001
0717	N	4/10/2012	6840.62	4.25	4.12 H	6240 D	438	500	170	12	<5	4570 D	66 D	62 D	31 D	2.01	130	< 0.01
0717	N	7/17/2012	6840.37	4.11	4.16 H	6190	474	517	189	14	<5	4390 D	69 D	61 D	30 D	4.4	134	< 0.001
0717	N	10/16/2012	6840.24	4.22	4.07 H	6120	486	508	186 D	14	<5	4430 D	67 D	59 D	30 D	3.48	122	< 0.001
0717	Dup	10/16/2012	6840.07	4.21	4.06 H	6090	504	510	181 D	14	<5	4410 D	67 D	58 D	30 D	6.4	120	< 0.001

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
0717	N	7/19/2004	< 0.01	< 0.005	< 0.01	< 0.05	3.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0802 D	4.3	5.1	9.4	< 0.2	< 1.0	6.4
0717	N	10/11/2004	< 0.01	< 0.005	0.01	< 0.05	3.14	< 0.1	< 0.05	< 0.001	< 0.1	0.0692	4	6.2	10.2	< 0.2	< 1.0	7.9
0717	N	1/10/2005	< 0.01	< 0.005	0.01	< 0.05	3.34	< 0.1	< 0.05	< 0.001	< 0.1	0.0708	4.5	4.2	8.7	< 0.2	< 1.0	5.5
0717	N	4/18/2005	< 0.01	< 0.005	0.02	< 0.05	3.91	0.1	< 0.05	< 0.001	< 0.1	0.0576	6.1	7.6	13.7	< 0.2	< 1.0	5.9
0717	N	7/18/2005	< 0.01	< 0.005	0.02	< 0.05	4.28	< 0.1	< 0.05	< 0.001	< 0.1	0.0554	5.5	5.4	10.9	< 0.2	< 1.0	7.8
0717	N	10/10/2005	< 0.01	< 0.005	0.03	< 0.05	4.5	< 0.1	< 0.05	< 0.001	< 0.1	0.0536	7.2	8.5	15.7	< 0.2	< 1.0	9.2
0717	N	1/16/2006	< 0.01	< 0.005	0.07	< 0.05	13.2	< 0.1	0.06	< 0.001	< 0.1	0.0325	15.1	17.8	32.9	< 0.2	< 1.0	16.1
0717	N	4/10/2006	< 0.01	< 0.005	0.19	< 0.05	15.8	< 0.1	0.11	0.002	< 0.1	0.019	16.7	21.4	38.1	< 0.2	< 1.0	14.6
0717	N	7/24/2006	< 0.01	< 0.005	0.42	< 0.05	19.8	< 0.1	0.26	< 0.001	< 0.1	0.012	17.7	22.4	40.1	< 0.2	< 1.0	20.7
0717	N	10/9/2006	< 0.01	< 0.005	0.42	< 0.05	18.3	< 0.1	0.29	< 0.001	< 0.1	0.0102	20.5	26.1	46.6	< 0.2	< 1	19
0717	N	1/16/2007	< 0.01	< 0.005	0.3	< 0.05	19.1	< 0.1	0.27	< 0.001	< 0.1	0.0105	18.3	21.7	40	< 0.2	< 1	23.3
0717	N	4/10/2007	< 0.01	< 0.005	0.36	< 0.05	16.8	< 0.1	0.26	< 0.001	< 0.1	0.0063	19.6	25.9	45.5	< 0.2	< 1	30.6
0717	N	7/16/2007	< 0.01	< 0.005	0.4	< 0.05	16.3	< 0.1	0.27	< 0.001	< 0.1	0.0033	20.4	28.7	49.1	< 0.2	< 1	19.3
0717	N	10/9/2007	< 0.01	< 0.005	0.5	< 0.05	17.2	< 0.1	0.34	< 0.001	< 0.1	0.0036	14.3	25.2	39.5	< 0.2	< 1	20.9
0717	N	1/22/2008	< 0.01	0.005	0.55	< 0.05	20.7	< 0.1	0.43	< 0.001	< 0.1	0.0017	25.3	29.7	55	< 0.2	5.3	26.4
0717	N	4/15/2008	< 0.01	0.006	0.65 D	< 0.05	23.7	< 0.1	0.55	< 0.001	< 0.1	0.0011	18.6	22.8	41.4	0.6	< 3.3 U	22.1
0717	N	7/15/2008	< 0.01	0.008	0.59	< 0.05	21.8	< 0.1	0.53	< 0.001	< 0.1	0.0012	20	26	46	0.1 U	7 U	24.3
0717	N	10/14/2008	0.02	0.01	0.77	< 0.05	22.9	< 0.1	0.67	< 0.001	< 0.1	0.0028	21	21	42	0.3	3 U	34.9
0717	N	1/19/2009	0.05	0.015	0.9	< 0.05	23.1	< 0.1	0.81	< 0.001	< 0.1	0.0187	23	24	47	0.3	3 U	32.3
0717	N	4/14/2009	0.07	0.015	0.93	< 0.05	23.9	< 0.1	0.84	< 0.001	< 0.1	0.0331	21	24	45	< 0.2 U	2.0 U	34.5
0717	N	7/14/2009	0.1	0.014	0.95	< 0.05	21.8	< 0.1	0.82	< 0.001	< 0.1	0.0377	17	25	42	0.1 U	4.5	34.7
0717	N	10/13/2009	0.11	0.015	0.99	< 0.05	23.5	< 0.1	0.88	< 0.001	< 0.1	0.0483	20	29	49	0.01 U	< 0.1 U	35.6
0717	N	1/12/2010	0.1	0.012	0.99	< 0.05	22.2	< 0.1	0.92	< 0.001	< 0.1	0.0293	15	34	49	< 0.03 U	1.7 U	28
0717	N	4/12/2010	0.09	0.013	1.02	< 0.05	23.4	< 0.1	0.96	< 0.001	< 0.1	0.0294	16	25	41	0.1 U	2.3 U	34.3
0717	N	7/20/2010	0.1	0.016	1.01	< 0.05	21	< 0.1	0.86	< 0.001	< 0.1	0.0108	18	21	39	0.6 U	3.6 U	23.3
0717	N	10/12/2010	0.09	0.017	0.94	< 0.05	19.2	< 0.1	0.83	< 0.001	< 0.1	0.0168	18	24	42	0.7 U	4.6	27.9
0717	N	1/11/2011	0.09	0.011	1.02	< 0.05	20.8	< 0.1	0.91	< 0.001	< 0.1	0.0482	20	23	43	0.5 U	2.9	23.5
0717	N	4/6/2011	0.1	0.014	1	< 0.05	20.6	< 0.1	0.87	< 0.001	< 0.1	0.0423	12	25	37	0.8 U	2.9	21.1
0717	N	7/19/2011	0.09	0.018	0.98	< 0.05	20.2	< 0.1	0.92	< 0.001	< 0.1	0.188	15	24	39	1.5 U	1.2 U	19.4
0717	N	10/11/2011	0.1	0.015	0.96	< 0.05	21.2	< 0.1	0.89	< 0.001	< 0.1	0.0261	13	22	35	1.4	2.3	18.8
0717	N	1/10/2012	0.11	0.015	1.07	< 0.05	22.3	< 0.1	0.91	0.002	< 0.1	0.0348	12	21	54	0.1 U	2.7	22.1
0717	N	4/10/2012	0.1	0.016	1	< 0.05	22.4	< 0.1	0.86	< 0.001	< 0.1	0.0247	15	30	75	0.2 U	3.4	21.5
0717	N	7/17/2012	0.095	0.011	0.95	0.011	21.8	< 0.1	0.9	0.002	< 0.1	0.0229	15	22	59	0.3 U	3.4	35.7
0717	N	10/16/2012	0.102	0.016	0.89	0.01	22.1	< 0.1	0.88	< 0.001	< 0.1	0.0194	12	34	46	0.6 U	2.4	13.2
0717	Dup	10/16/2012	0.104	0.016	0.9	0.01	21.2	< 0.1	0.9	< 0.001	< 0.1	0.0192	12	35	47	0.04 U	2.7	14.5



**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
0717	N	1/8/2013	6,840.11	4.1	4.14 H	6190	480	508	192 D	14	<5	4260 D	64 D	56 D	31 D	4.28	118	<0.001
0717	Dup	1/8/2013	no data	no data	4.13 H	6220	482	511	182 D	14	<5	4270 D	65 D	56 D	31 D	4.2	120	<0.001
0717	N	4/9/2013	6,840.09	4.14	4.20 H	6060	481	520	192	13	<5	4430 D	65 D	58 D	29 D	3.68	118	<0.001
0717	Dup	4/9/2013	no data	no data	4.17 H	6100	489	528	194	12	<5	4440 D	64 D	57 D	29 D	4.32	121	<0.001
0717	N	7/16/2013	6,839.77	4.04	4.03 H	6330	470	502	175	13	<5	4370 D	66 D	56 D	28 D	3.2	129	<0.001
0717	Dup	7/16/2013	no data	no data	3.98 H	6270	474	508	179	13	<5	4460 D	65 D	54 D	28 D	5.04	133	<0.001
0717	N	10/7/2013	6,839.74	4.12	4.00 H	6150	464	501	177	13	<5	4450 D	66 D	53 D	28 D	2.85	140	<0.001
0717	Dup	10/7/2013	no data	4.12	3.99 H	6230	474	508	180	13	<5	4460 D	65 D	51 D	28 D	3.94	137	<0.001
0717	N	1/14/2014	6,839.42	4.15	3.95	6230	473	486	171	12	<5	4480	64	50	30	4.24	151	<0.001
0717	Dup	1/14/2014	no data	no data	3.92	6440	472	485	170	12	<5	4500	64	51	31	5	149	<0.001
0717	N	4/7/2014	6,839.33	4.06	3.92 H	6250	466	500	178 D	11	<5	4680 D	69 D	47 D	27 D	3.65	157	<0.001
0717	Dup	4/7/2014	no data	4.06	3.90 H	6230	458	506	178 D	11	<5	4730 D	69 D	46 D	26 D	3.96	158	<0.001
0717	N	7/14/2014	6,839.24	3.93	3.83 H	6210	454	502	174 D	10	<5	4560 D	64 D	54 D	30 D	2.34	160	<0.001
0717	Dup	7/14/2014	no data	3.92	3.77 H	6290	446	508	175 D	10	<5	4720 D	65 D	52 D	28 D	4.44	163	<0.001
0717	N	10/14/2014	6,839.11	3.75	3.70 H	6470	458	492	165	8	<5	4630 D	68 D	52 D	26 D	5	171	<0.001
0717	Dup	10/14/2014	no data	3.74	3.67 H	6520	460	495	158	8	<5	4680 D	69 D	52 D	28 D	5.2	166	<0.001
0717	N	1/13/2015	6839.04	3.58	3.55 H	6470	463	498	170	9	<5	4530 D	64 D	68 D	27 D	1.59	175	<0.001
0717	DUP	1/13/2015	no data	3.58	3.50 H	6610	469	504	172	8	<5	4560 D	65 D	57 D	24 D	3.4	180	<0.001
0717	N	4/14/2015	6838.81	3.45	3.36 H	6680	453	487	168	7	<5	4590 D	66 D	48 D	20 D	3.54	184	<0.001
0717	DUP	4/14/2015	no data	3.46	3.33 H	6720	462	498	173	7	<5	4680 D	67 D	50 D	20 D	4.04	186	<0.001
0717	N	7/13/2015	6838.73	3.42	3.25 H	6650	443	471	170	6	<5	4850 D	65 D	51 D	21 D	1.94	186	<0.001
0717	DUP	7/13/2015	no data	3.35	3.29 H	6660	443	488	159	7	<5	4990 D	66 D	51 D	18 D	5.08	188	<0.001
0717	N	10/12/2015	6838.62	3.22	3.18 H	6920	456	498	170	5	<5	5100 D	72 D	44 D	20 D	<0.50	198	<0.001
0717	DUP	10/12/2015	no data	3.20	3.27 H	6980	465	500	168	5	<5	4970 D	67 D	44 D	19 D	2.9	199	<0.001
0717	N	1/11/2016	6838.42	3.31	3.17 H	6810	462	436	150	8	<5	4910 D	69 D	47 D	19 D	<0.50	203	<0.001
0717	DUP	1/11/2016	no data	3.37	3.20 H	6810	478	433	150	9	<5	5000 D	72 D	47 D	20 D	3.18	209	<0.001
0717	N	4/12/2016	6838.19	3.18	3.07 H	7130	470	503	172	4	<5	4920 D	61 D	43 D	20 D	3.72	216	<0.001
0717	DUP	4/12/2016	no data	3.19	3.11 H	7170	471	504	172	4	<5	5020 D	62 D	41 D	20 D	4.44	212	0.001
0717	N	7/19/2016	6838.07	3.07	3.05 H	7350 D	469	496	171	3	<5	5260 D	64 D	42 D	20 D	3.2	216	<0.001
0717	Dup	7/19/2016	no data	3.07	3.05 H	7220 D	471	497	170	3	<5	5690 D	62 D	42 D	20 D	3.3	213	<0.001
0717	N	10/11/2016	6837.98	3.04	2.98 H	7120 H	466	497	170	3	<5	5250 D	62 D	40 D	20 D	2.4	219	<0.001
0717	DUP	10/11/2016	no data	3.05	2.98 H	7040 H	465	496	169	3	<5	5320 D	63 D	39 D	20 D	2.6	222	<0.001
0719	N	4/9/2001	6845.30	2.94	3.01	5850	482	461	134	4.3	< 0.1	3750	32.2	5.14	0.11	< 1	78.8	0.016
0719	N	7/11/2001	6845.30	2.70	2.94	6180	527	518	144	3.5	< 0.1	4000	43.8	3.86	< 0.1	< 1	73.2	0.015
0719	N	10/8/2001	6846.70	2.75	2.90	5960	450	440	108	3.8	< 0.1	3300	51.6	2.8	< 0.1	< 1	49.9	0.013

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
0717	N	1/8/2013	0.104	0.012	0.95	0.012	21.2	<0.1	0.89	<0.001	<0.1	0.0313	16	20	36	0.08 U	2.7	12.1
0717	Dup	1/8/2013	0.105	0.011	0.94	0.011	20.9	<0.1	0.89	<0.001	<0.1	0.0316	16	21	37	1.3	2.2	12.3
0717	N	4/9/2013	0.093	0.011	0.94	0.011	21.4	<0.1	0.88	<0.001	<0.1	0.0229	20	34	54	0.2 U	2.5	26.5
0717	Dup	4/9/2013	0.093	0.012	0.95	0.01	22.1	<0.1	0.9	<0.001	<0.1	0.022	18	37	55	0.4	2.5	26.7
0717	N	7/16/2013	0.11	0.012	0.9	0.011	20.1	<0.1	0.82	<0.001	<0.1	0.0267	13	44	57	0.6 U	2.4	13.9
0717	Dup	7/16/2013	0.112	0.008	0.91	0.01	20	<0.1	0.86	<0.001	<0.1	0.0292	13	43	56	0.6 U	2.3	13.9
0717	N	10/7/2013	0.114	0.018	0.97	0.01	20.3	<0.1	0.9	<0.001	<0.1	0.031	21	29	50	0.5	1.7	13.2
0717	Dup	10/7/2013	0.109	0.018	0.96	0.011	20.4	<0.1	0.9	<0.001	<0.1	0.0304	21	29	50	0.3 U	2.5	15.6
0717	N	1/14/2014	0.129	0.013	0.91	0.013	19.8	<0.1	0.9	<0.001	<0.1	0.0398	15	27	42	0.4	2.4	28.2
0717	Dup	1/14/2014	0.129	0.01	0.91	0.011	19.6	<0.1	0.9	<0.001	<0.1	0.0417	15	28	43	0.6	2	27.9
0717	N	4/7/2014	0.12	0.018	0.94	0.015	19.3	<0.1	0.89	<0.001	<0.1	0.0484	19	34	53	0.4 U	2.6	13.4
0717	Dup	4/7/2014	0.12	0.018	0.94	0.012	18.9	<0.1	0.89	<0.001	<0.1	0.0521	22	39	61	0.5	2.1	13.7
0717	N	7/14/2014	0.136	0.018	0.98	0.016	19.9	<0.1	0.94	<0.001	<0.1	0.0734	12	19	31	0.9 U	2.3	19.7
0717	Dup	7/14/2014	0.131	0.017	0.97	0.013	19.6	<0.1	0.93	<0.001	<0.1	0.0899	12	18	30	0.7	2.2	19.1
0717	N	10/14/2014	0.134	0.02	0.96	0.019	19.3	<0.1	0.94	<0.001	<0.1	0.12	15	43	58	5.6	3.7	26.4
0717	Dup	10/14/2014	0.13	0.016	0.96	0.017	18.5	<0.1	0.92	<0.001	<0.1	0.117	14	41	55	5	3.1	29.2
0717	N	1/13/2015	0.131	0.022	0.96	0.03	19.2	<0.1	0.94	<0.001	<0.1	0.127	29	17	46	7.3	2.7	159
0717	DUP	1/13/2015	0.13	0.022	0.97	0.019	19.4	<0.1	0.92	<0.001	<0.1	0.153	30	19	49	7.3	2.3	148
0717	N	4/14/2015	0.128	0.021	0.92	0.03	18.5	<0.1	0.92	<0.001	<0.1	0.185	16	13	29	6.4	4.5	312
0717	DUP	4/14/2015	0.129	0.021	0.91	0.023	18.8	<0.1	0.92	<0.001	<0.1	0.18	16	13	29	10.1	4.5	304
0717	N	7/13/2015	0.126	0.019	0.94	0.037	18.4	<0.1	0.89	<0.001	<0.1	0.184	16	17	33	9.4	4.8	276
0717	DUP	7/13/2015	0.117	0.019	0.92	0.025	17.8	<0.1	0.88	<0.001	<0.1	0.201	14	15	29	8	4.7	298
0717	N	10/12/2015	0.127	0.019	0.9	0.027	17.6	<0.1	0.92	<0.001	<0.1	0.226	16	9.6	25.6	9.5	4.8	84.6
0717	DUP	10/12/2015	0.127	0.018	0.89	0.025	17.4	<0.1	0.91	<0.001	<0.1	0.235	14	9.1	23.1	10.7	4.9	84.6
0717	N	1/11/2016	0.137	0.015	0.89	0.052	16.4	<0.1	0.97	<0.001	<0.1	0.229	17	5.7	22.7	22.9	4	459
0717	DUP	1/11/2016	0.141	0.015	0.88	0.03	16.3	<0.1	0.94	<0.001	<0.1	0.244	16	6.1	22.1	14.9	4.4	454
0717	N	4/12/2016	0.141	0.013	0.90	0.042	18.1	<0.1	0.94	<0.001	<0.1	0.277	22	5.3	27.3	16.9	4.9	513
0717	DUP	4/12/2016	0.138	0.014	0.90	0.026	18.1	<0.1	0.94	<0.001	<0.1	0.248	21	5.9	26.9	19	5	530
0717	N	7/19/2016	0.129	0.01	0.87	0.031	16.7	<0.1	0.89	<0.001	<0.1	0.355	9.2	3.4	12.6	17.2	1.8	164
0717	Dup	7/19/2016	0.128	0.011	0.87	0.023	16.6	<0.1	0.9	<0.001	<0.1	0.292	8.8	7.9	16.7	27.6	2.1	150
0717	N	10/11/2016	0.133	0.012	0.91	0.031	16.9	<0.1	0.92	<0.001	<0.1	0.306	15	6.6	21.6	23.7	3.2	156
0717	DUP	10/11/2016	0.134	0.011	0.93	0.022	17	<0.1	0.92	<0.001	<0.1	0.308	11	3.7	14.7	21.5	3	165
0719	N	4/9/2001	0.07	< 0.005	0.8	< 0.05	8.7	0.34	1.1	< 0.001	< 0.1	0.397	22.1	5.9	28	30.5	< 1	55.3
0719	N	7/11/2001	0.08	< 0.005	0.71	< 0.05	8.43	0.46	1.01	< 0.001	< 0.1	0.454	24	2.4	26.4	40.9	< 1	46.6
0719	N	10/8/2001	0.04	< 0.005	0.6	< 0.05	6.85	0.25	0.85	< 0.001	< 0.1	0.387	14	1.1	15.1	40.6	< 1	42.9

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
0719	N	1/7/2002	6846.50	3.00	2.80	5680	496	463	115	6	< 0.1	3760	57	2.9	< 0.1	< 1	47.4	0.01
0719	N	4/8/2002	6845.79	2.90	2.99	5520	470	440	129	5.7	< 0.1	3470	39.9	3.42	< 0.1	< 1	51	0.005
0719	N	7/15/2002	6845.38	2.78	3.00	5420	563	517	123	7.6	< 0.1	4020	33.9	3.59	< 0.1	< 1	35.4	0.005
0719	N	10/14/2002	6845.95	2.85	3.06	4630	514	491	134	10.5	< 0.1	3720	33.4	3.76	< 0.1	< 1	25	0.005
0719	N	1/13/2003	6845.26	2.96	3.05	5340	531	509	120	11	< 0.1	3610	25.2	3.4	< 0.1	< 1	26.9	0.004
0719	N	4/15/2003	6845.54	3.26	2.88	5350	477	477	149	15.7	< 0.1	3460	38.8	3.6	< 0.1	< 1	25.8	0.002
0719	N	7/14/2003	6844.64	3.09	2.97	5330	490	456	141	13.5	< 0.1	3240	36.3	3.1	< 0.1	< 1	21.4	< 0.001
0719	N	10/13/2003	6844.38	3.09	3.03	5340	526	506	143	12.7	< 0.1	3720	35.2	3.56	< 0.1	< 1	20.7	< 0.001
0719	N	1/12/2004	6844.00	3.17	2.87	5240	537	505	129	12.8	< 1.0	3580	38.8	3.65	< 0.10	< 1.0	2.3	< 0.001
0719	N	4/12/2004	6843.88	3.05	3.08	5060	482	438	126	11.4	< 1	3440	40.8	3.31	< 0.1	< 1	23.6	< 0.001
0719	N	7/19/2004	6843.59	3.37	3.02	5070	537 D	432 D	144	10.5	< 1	3180 D	36	2.8 D	< 0.10	< 1.0	17.7	< 0.001
0719	N	10/11/2004	6843.62	3.42	3.09	4920	496 D	440 D	136	9.8	< 1	3200 D	34	2.54	< 0.10	< 1.0	16.5	< 0.001
0719	N	1/10/2005	no data	3.32	3.38	4850	513 D	428 D	135	9.9	< 1	3090 D	36	1.9	< 0.1	< 1.0	15.3	< 0.001
0719	N	4/11/2005	6842.19	3.51	3.37	4580	531	423	136	9.8	< 1	3280	33	1.5	< 0.1	< 1.0	19.3	< 0.001
0719	N	7/18/2005	6841.57	3.31	3.46	4640	534 D	397 D	130	9.8	< 1	3000 D	31	1.2	< 0.1	< 1.0	17.3	< 0.001
0719	N	10/10/2005	6840.91	3.73	3.82	4540	494 D	709 D	157	12.5	< 1	4160 D	30	1.25	< 0.1	< 1.0	0.2	0.02
0719	N	1/16/2006	6840.44	3.99	4.17	4330	510 D	393 D	116	9.8	< 1	2940 D	29	1.84	< 0.1	< 1.0	6.5	< 0.001
0719	N	4/10/2006	6839.92	4.05	3.93	4310	573 D	412 D	116	10.3	< 1	3090 D	35	1.13	0.2	< 1.0	5.5	< 0.001
0719	N	7/24/2006	6839.44	4.04	4.13	4050	527 D	381 D	128	10.2	< 1	2930 D	28	1.08	< 0.1	< 1.0	2.6	< 0.001
0719	N	10/9/2006	6839.21	4.08	4.22	4090	519 D	379 D	119	9.9	< 1	2790 D	26	1.05	< 0.1	< 0.5	2.3	< 0.001
0719	N	1/15/2007	6838.61	4.95	5.25 H	4080 H	507 D	369 D	113	9.4	< 1	2850 D	28	0.73	< 0.1	< 0.5	1.2	< 0.001
0719	N	4/17/2007	6838.11	6.53	5.08	4220	504 D	381 D	110	9.4	7	2900 D	28	0.81	< 0.1	< 0.5	< 0.1	< 0.001
0719	N	7/17/2007	6837.96	4.47	5.03	4130	519 D	394 D	123	9.7	7	2960 D	27	1.17	< 0.1	< 0.5	0.8	0.003
0719	N	10/9/2007	6837.50	4.17	4.40	4250	496 D	371 D	117	9.8	< 1	2730 D	29	0.62	0.1	< 0.5	0.9	0.001
0719	N	1/22/2008	6837.80	3.89	3.83	4390	476 D	407 D	135	13	< 1	2890 D	34	0.89	< 0.1	< 0.5	1.6	0.003
0719	N	4/15/2008	6837.56	3.84	3.59	4420	510	426	138 D	12	< 1	3490 D	27	0.5	< 0.1	< 0.50	1.7	< 0.001
0719	N	7/15/2008	6837.36	3.94	3.86	4650	559	468	146 D	12	< 1	3060 D	29	0.34	< 0.1	< 0.5	2.2	< 0.003
0719	N	10/13/2008	6837.08	3.87	3.8	4880	513	428	134 D	12	< 1	3430 D	26	1.1 D	< 0.1	< 0.5	1.4	< 0.001
0719	N	1/19/2009	6836.28	3.67	3.46	4850 H	493	419	142	13	< 1	3230 D	31	0.14	0.2	< 0.5	22	< 0.001
0719	N	4/14/2009	6836.18	3.77	3.62	4860	459 D	432 D	145 D	23	< 1	3270 D	30	0.43	0.1	< 0.50	12.4	< 0.001
0719	N	7/14/2009	6835.58	3.64	3.57	5090	483	454	134	12	< 1	3620 D	33	0.44	< 0.1	< 0.50	14.2	< 0.001
0719	N	10/13/2009	6835.23	3.94	3.66	5560 H	531 D	548	142 D	13	< 1	3960 D	31	0.97	< 0.1	< 0.50	2.4	< 0.001
0719	N	1/12/2010	6834.58	3.77	3.93	5230 D	515 D	574	146 D	14	< 5	3970 D	26	0.8	< 0.10	< 0.50	5.7	< 0.001
0719	N	4/13/2010	6834.48	4.51	4	5590 D	477	582	137	12	< 5	4060 D	32	1.07	< 0.1	< 0.50	8.8	< 0.001
0719	N	7/20/2010	6834.03	4.59	3.65	5770 DH	488	638	138	13	< 5	3920 D	29 D	1.19	< 0.1	< 0.50	3.6	< 0.001

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
0719	N	1/7/2002	0.05	0.009	0.68	< 0.05	8.21	0.2	0.98	< 0.001	< 0.1	0.27	15.5	1.9	17.4	28	< 1	29
0719	N	4/8/2002	0.05	0.005	0.76	< 0.05	8.64	0.2	1.08	< 0.001	< 0.1	0.258	12.2	< 1	12.2	17.1	< 1	19.6
0719	N	7/15/2002	0.04	< 0.005	0.59	< 0.05	6.7	< 0.1	0.73	< 0.001	< 0.1	0.191	6.8	4.6	11.4	9	< 1	14.9
0719	N	10/14/2002	0.05	< 0.005	0.65	< 0.05	7.89	< 0.1	0.9	< 0.001	< 0.1	0.086	5.4	2	7.4	< 0.2	< 1	11.5
0719	N	1/13/2003	0.04	< 0.005	0.66	< 0.05	7.67	< 0.1	0.84	< 0.001	< 0.1	0.0691	7.6	< 1	7.6	1.2	< 1	10
0719	N	4/15/2003	0.04	< 0.005	0.72	< 0.05	8.54	< 0.1	0.96	< 0.001	< 0.1	0.0604	8.3	9.7	18	0.7	< 1	23.3
0719	N	7/14/2003	0.04	< 0.005	0.61	< 0.05	7.48	< 0.1	0.83	< 0.001	< 0.1	0.0552	6.5	< 1	6.5	0.4	< 1	6.4
0719	N	10/13/2003	0.04	< 0.005	0.55	< 0.05	7.13	< 0.1	0.72	< 0.001	< 0.1	0.0665	5.1	7.7	12.8	0.8	< 1	16.4
0719	N	1/12/2004	0.04	< 0.005	0.48	< 0.05	7.4	< 0.1	0.06	< 0.001	< 0.1	0.0784 D	6.2	6.1	12.3	< 0.2	< 1.0	16.8
0719	N	4/12/2004	0.04	< 0.005	0.37	< 0.05	6.49	< 0.1	0.5	< 0.001	< 0.1	0.0878 D	4.2	7.9	12.1	< 0.2	< 1	8.1
0719	N	7/19/2004	0.03	< 0.005	0.33	< 0.05	6.11	< 0.1	0.42	< 0.001	< 0.1	0.0642 D	4.7	6.9	11.6	< 0.2	< 1.0	15.5
0719	N	10/11/2004	0.03	< 0.005	0.34	< 0.05	5.95	< 0.1	0.42	< 0.001	< 0.1	0.0578	4.7	9.1	13.8	0.7	< 1.0	9.9
0719	N	1/10/2005	0.02	< 0.005	0.35	< 0.05	6.28	< 0.1	0.46	< 0.001	< 0.1	0.0755	3.2	5.1	8.3	< 0.2	< 1.0	9
0719	N	4/11/2005	0.02	< 0.005	0.3	< 0.05	5.79	< 0.1	0.37	< 0.001	< 0.1	0.112	6.9	7.7	14.6	< 0.2	< 1.0	6.1
0719	N	7/18/2005	0.02	< 0.005	0.23	< 0.05	4.96	< 0.1	0.33	< 0.001	< 0.1	0.136	3.4	4.4	7.8	< 0.2	< 1.0	5.8
0719	N	10/10/2005	0.01	< 0.005	0.26	< 0.05	7.12	1.3	0.3	< 0.001	< 0.1	0.0994	4.3	5.4	9.7	< 0.2	< 1.0	6.4
0719	N	1/16/2006	< 0.01	< 0.005	0.17	< 0.05	4.06	< 0.1	0.22	< 0.001	< 0.1	0.0597	2.6	6.2	8.8	< 0.2	< 1.0	3
0719	N	4/10/2006	< 0.01	< 0.005	0.18	< 0.05	4.23	< 0.1	0.2	< 0.001	< 0.1	0.0392	2.6	5.9	8.5	< 0.2	< 1.0	2.4
0719	N	7/24/2006	< 0.01	< 0.005	0.16	< 0.05	4.06	< 0.1	0.18	< 0.001	< 0.1	0.022	2.5	5.1	7.6	< 0.2	< 1.0	2.4
0719	N	10/9/2006	< 0.01	< 0.005	0.16	< 0.05	4.08	< 0.1	0.18	< 0.001	< 0.1	0.0162	3.1	4.2	7.3	< 0.2	< 1	2.5
0719	N	1/15/2007	< 0.01	< 0.005	0.12	< 0.05	3.7	< 0.1	0.16	< 0.001	< 0.1	0.0074	2	4.8	6.8	< 0.2	< 1	3.5
0719	N	4/17/2007	< 0.01	< 0.005	0.11	< 0.05	3.42	< 0.1	0.14	< 0.001	< 0.1	0.0013	2.8	9.7	12.5	< 0.2	< 1	3.2
0719	N	7/17/2007	< 0.01	< 0.005	0.13	< 0.05	3.33	< 0.1	0.16	< 0.001	< 0.1	0.0092	2.7	9.3	12	< 0.2	< 1	4.3
0719	N	10/9/2007	< 0.01	< 0.005	0.19	< 0.05	4.49	< 0.1	0.22	< 0.001	< 0.1	0.0103	2	8.7	10.7	< 0.2	< 1	4.2
0719	N	1/22/2008	< 0.01	< 0.005	0.53	< 0.05	5.32	< 0.1	0.56	< 0.001	< 0.1	0.0221	4.8	12.6	17.4	< 0.2	8.1	5.3
0719	N	4/15/2008	< 0.01	< 0.005	0.56 D	< 0.05	5.74	< 0.1	0.6	< 0.001	< 0.1	0.0184	2.5	11.7	14.2	0.4	< 0.7 U	5.1
0719	N	7/15/2008	< 0.01	< 0.005	0.55	< 0.05	5.67	< 0.1	0.6	< 0.001	< 0.1	0.0176	4.1	12	16.1	0.2 U	2.4 U	5.4
0719	N	10/13/2008	< 0.01	< 0.005	0.68	< 0.05	6.19	< 0.1	0.69	< 0.001	< 0.1	0.0153	3.7	8.4	12.1	0.2	1.4 U	7.7
0719	N	1/19/2009	< 0.01	< 0.005	0.72	< 0.05	6.68	< 0.1	0.86	< 0.001	< 0.1	0.127	4.2	14	18.2	0.1 U	< 0.7 U	7.7
0719	N	4/14/2009	< 0.01	< 0.005	0.7	< 0.05	6.43	< 0.1	0.75	< 0.001	< 0.1	0.077	2.7	11	13.7	0.1 U	< 2 U	7.6
0719	N	7/14/2009	< 0.01	< 0.005	0.77	< 0.05	7.08	< 0.1	0.8	< 0.001	< 0.1	0.0966	3.3	12	15.3	< 0.04 U	1.0 U	6.9
0719	N	10/13/2009	< 0.01	< 0.005	0.61	< 0.05	6.26	< 0.1	0.67	< 0.001	< 0.1	0.0227	3.2	9.2	12.4	0.04 U	< 1 U	4
0719	N	1/12/2010	< 0.01	< 0.005	0.61	< 0.05	6.48	< 0.1	0.68	< 0.001	< 0.1	0.0365	3.1	14	17.1	0.2 U	< 0.2 U	5.1
0719	N	4/13/2010	< 0.01	< 0.005	0.69	< 0.05	7.06	< 0.1	0.8	< 0.001	< 0.1	0.0584	4.1	8.4	12.5	0.05 U	0.5 U	5.2
0719	N	7/20/2010	< 0.01	< 0.005	0.53	< 0.05	6.28	< 0.1	0.55	< 0.001	< 0.1	0.0204	6	5.1	11.1	0.1 U	0.5 U	5.9



**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
0719	N	10/12/2010	6833.88	4.62	3.71	5470 D	496	614	149	13	<5	3890 D	28 D	1.17	<0.1	<0.50	1.5	<0.001
0719	N	1/11/2011	6833.684	4.97	3.99	5530 D	489	616	136	13	<5	4020 D	32 D	0.86	<0.1	<0.50	0.6	<0.001
0719	N	4/12/2011	6833.334	3.78	3.74	5780 D	493	631	147	14	<5	3970 D	30 D	0.85	<0.1	<0.50	0.2	<0.001
0719	N	7/19/2011	6832.984	3.89	3.92	5520 D	480	598	145	14	<5	3900 D	30 D	0.9 D	<0.5	<0.50	0.4	<0.001
0719	N	10/11/2011	6832.974	4.53	4.14	5530 D	474	610	145	14	<5	3960 D	31 D	1.2 D	<0.5	<0.50	0.3	<0.001
0719	N	1/10/2012	6832.63	3.94	3.90 H	5490 D	497	588	135	13	<5	3970 D	30 D	0.76	<0.1	<0.50	0.3	<0.001
0719	N	4/10/2012	6832.43	5.16	3.97 H	5990 D	481	664	138	13	<5	4010 D	31 D	0.81	<0.1	<0.50	0.3	<0.01
0719	N	7/17/2012	6832.18	5.59	5.29 H	6120	524	686	163	16	11	4070 D	32 D	0.78	<0.1	<0.50	0.2	<0.001
0719	N	10/16/2012	6832.18	5.76	5.18 H	5900	536	674	149 D	14	14	4180 D	30 D	0.7	<0.1	<0.50	0.1	<0.001
0719	N	1/8/2013	6,832.03	5.65	5.44 H	5710	530	692	151 D	15	12	4120 D	29 D	0.72	0.1	<0.50	<0.1	<0.001
0719	N	4/9/2013	6,832.31	5.1	5.70 H	5670	528	715	162	14	13	4100 D	28 D	0.54	0.2	<0.50	0.7	<0.001
0719	N	7/16/2013	6,831.76	5.05	5.79 H	5940	510	693	149	14	7	4030 D	29 D	0.21	0.4	<0.50	0.3	<0.001
0719	N	10/14/2013	6,831.67	5.36	5.32 H	5790	510	691	149	14	8	4180 D	29 D	0.13	0.5 D	<0.50	2	<0.001
0719	N	1/13/2014	6,831.56	5.28	5.46	5870	497	670	143	13	<5	4170	29	<0.05	0.6	<0.50	0.8	<0.001
0719	N	4/7/2014	6,831.44	5.10	5.38 H	5750	494	681	149 D	13	<5	4060 D	32 D	<0.05	0.4	<0.50	1.3	<0.001
0719	N	7/14/2014	6,831.48	5.00	5.06 H	5830	477	690	149 D	14	<5	4120 D	29 D	<0.05	0.4	<0.50	2	<0.001
0719	N	10/13/2014	6,831.39	5.24	5.08 H	6060	479	687	144	13	<5	4170 D	31 D	<0.05	0.4	<0.50	3.2	<0.001
0719	N	1/12/2015	6831.44	5.35	5.08 H	5810	470	684	144	12	<5	4290 D	31 D	<0.05	0.4	<0.50	3.2	0.001
0719	N	4/13/2015	6831.20	5.05	4.64 H	6000	447	674	142	13	<5	4370 D	32	0.37	<0.1	<0.50	2.7	<0.001
0719	N	7/13/2015	6831.37	5.08	5.21 H	5140	456	658	146	12	6	3580 D	37 D	0.1	0.3	<0.50	2.9	0.003
0719	N	10/12/2015	6831.15	5.07	5.04 H	6180	478	724	150	13	<5	4350 D	33 D	0.31	0.2	<0.50	1.6	<0.001
0719	N	1/12/2016	6830.91	5.55	5.58 H	6050	482	727	151	17	6	4250 D	34 D	0.47	<0.1	<0.50	0.2	<0.001
0719	N	4/12/2016	6831.05	5.59	5.37 H	6150	483	737	149	13	<5	4220 D	30 D	0.29	0.2	<0.50	0.8	<0.001
0719	N	7/19/2016	6830.92	5.68	5.72 H	6170 D	474	723	145	13	6	4620 D	32 D	0.52	<0.1	<0.50	0.1	<0.001
0719	N	10/11/2016	6830.98	5.76	5.91 H	6080 H	478	734	146	13	19	4330 D	32 D	0.56	<0.1	<0.50	0.3	<0.001
0009 D	N	7/18/1989	6910.50	4.60	4.56	7365	465	963	158	10.7	1	5061	100	0.79	2.5	< 1	43	< 0.001
0009 D	N	10/12/1989	6908.00	4.40	4.10	8276	439	1013	159	13.4	0	5508	108	0.87	2.4	< 1	90	< 0.001
0009 D	N	1/4/1990	6902.30	4.40	4.04	8330	431	940	160	10	< 1	5597	94.4	0.6	0.55	< 1	96	< 0.001
0009 D	N	4/10/1990	6910.00	4.40	4.41	7222	447	856	160	9.1	< 1	4688	99.1	1.08	6.3	< 1	46	< 0.001
0009 D	N	7/10/1990	6904.10	4.40	4.14	8932	473	1012	153	9.5	< 1	6126	101	0.37	0.26	< 1	155	< 0.001
0009 D	N	10/9/1990	6903.70	4.30	4.21	9372	435	1094	172	9.7	< 1	6551	124	0.24	0.1	< 1	153	< 0.001
0009 D	N	1/15/1991	6902.30	4.50	4.37	7769	469	887	159	11.6	< 1	5383	113	0.65	0.12	< 1	50.4	< 0.001
0009 D	N	4/9/1991	6903.70	4.20	4.18	9518	485	1106	163	10.7	< 1	6305	80.2	1.04	0.39	< 1	115	< 0.001
0009 D	N	7/9/1991	6899.40	4.30	4.40	8444	412	883	141	8.9	< 1	5661	44.1	1.18	0.05	< 1	76.6	< 0.001
0009 D	N	10/14/1991	6899.30	4.10	4.35	8946	363	717	160	8.3	< 1	5904	191	2.3	< 0.01	< 1	128	< 0.001

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha		
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l	pci/l		
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7		
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7		
0719	N	10/12/2010	<0.01	<0.005	0.42	<0.05	5.6	<0.1	0.47	<0.001	<0.1	0.0114	5.9	8.3	14.2	0.1 U	<1 U	5.4		
0719	N	1/11/2011	<0.01	<0.005	0.4	<0.05	5.75	<0.1	0.46	<0.001	<0.1	0.0061	5.4	10	15.4	<0.02 U	0.7 U	5.9		
0719	N	4/12/2011	<0.01	<0.005	0.38	<0.05	5.92	<0.1	0.41	<0.001	<0.1	0.004	5.4	13	18.4	<0.03 U	1.3 U	6.1		
0719	N	7/19/2011	<0.01	<0.005	0.4	<0.05	5.5	<0.1	0.53	<0.001	<0.1	0.0059	5.2	14	19.2	0.06 U	<0.6 U	6		
0719	N	10/11/2011	<0.01	<0.005	0.36	<0.05	5.56	<0.1	0.45	<0.001	<0.1	0.0058	4.9	12	16.9	0.04 U	<0.3 U	3.9		
0719	N	1/10/2012	<0.01	<0.005	0.38	<0.05	5.68	<0.1	0.46	0.001	<0.1	0.0067	3.3	11	25.3	0.07 U	0.01 U	5		
0719	N	4/10/2012	<0.01	<0.005	0.25	<0.05	5.16	0.3	0.34	<0.001	<0.1	0.0048	4.3	9.7	23.7	0.9	0.9 U	4.1		
0719	N	7/17/2012	<0.001	<0.005	0.28	0.002	5.63	0.2	0.33	0.001	<0.1	0.0034	3.9	7.7	19.3	0.3	0.3 U	5.7		
0719	N	10/16/2012	<0.001	<0.005	0.31	<0.001	6.04	0.1	0.39	<0.001	<0.1	0.0029	3.4	15	18.4	0.3	0.7 U	4.5		
0719	N	1/8/2013	<0.001	<0.005	0.3	<0.001	5.84	<0.1	0.37	<0.001	<0.1	0.0023	5	7.8	12.8	0.2 U	0.02 U	4.3		
0719	N	4/9/2013	<0.001	<0.005	0.32	<0.001	5.93	0.2	0.4	<0.001	<0.1	0.0055	5.6	15	20.6	0.2	-0.3 U	5.9		
0719	N	7/16/2013	<0.001	<0.005	0.29	<0.001	5.68	<0.1	0.38	<0.001	<0.1	0.0029	5	17	22	0.3	0.2 U	5.1		
0719	N	10/14/2013	0.002	<0.005	0.31	0.002	5.96	<0.1	0.41	<0.001	<0.1	0.0206	5.9	13	18.9	0.09	0.4 U	8.7		
0719	N	1/13/2014	<0.001	<0.005	0.28	<0.001	5.62	<0.1	0.4	<0.001	<0.1	0.0093	4.6	12	16.6	0.1 U	0.4	7.4		
0719	N	4/7/2014	0.001	<0.005	0.3	<0.001	5.37	<0.1	0.39	<0.001	<0.1	0.0171	7.1	16	23.1	0.08 U	0.5 U	5.6		
0719	N	7/14/2014	0.002	<0.005	0.3	<0.001	5.78	<0.1	0.4	<0.001	<0.1	0.0255	5.2	8.7	13.9	0.3	0.4 U	6.7		
0719	N	10/13/2014	0.002	<0.005	0.29	<0.001	5.6	<0.1	0.37	<0.001	<0.1	0.0327	7.1	21	28.1	0.4	0.3 U	7.9		
0719	N	1/12/2015	0.002	<0.005	0.31	<0.001	5.83	<0.1	0.42	<0.001	<0.1	0.0382	6	13	19	0.2	0.1 U	15.3		
0719	N	4/13/2015	0.002	<0.005	0.26	0.001	5.27	<0.1	0.35	<0.001	<0.1	0.0356	5	12	17	0.7 U	0.04 U	24.5		
0719	N	7/13/2015	0.002	<0.005	0.29	0.001	5.61	<0.1	0.37	<0.001	<0.1	0.0371	4.5	15	19.5	0.3	0.0 U	19.6		
0719	N	10/12/2015	0.001	<0.005	0.25	<0.001	5.46	<0.1	0.34	<0.001	<0.1	0.0256	3.9	10	13.9	0.3	1.3 U	6.3		
0719	N	1/12/2016	<0.001	<0.005	0.27	<0.001	5.5	<0.1	0.35	<0.001	<0.1	0.0117	4.4	7.6	12	0.07 U	-0.3 U	23.8		
0719	N	4/12/2016	<0.001	<0.005	0.25 D	<0.001	5.91	<0.1	0.35	<0.001	<0.1	0.0183	5.3	4.3	9.6	0.6	0.3 U	27.3		
0719	N	7/19/2016	<0.001	<0.005	0.24	<0.001	5.47	<0.1	0.32	<0.001	<0.1	0.005	3.6	9.8	13.4	0.8	0.2 U	6.6		
0719	N	10/11/2016	<0.001	<0.005	0.23	<0.001	5.53	<0.1	0.3	<0.001	<0.1	0.0032	4.4	15	19.4	0.5	0.5 U	7.1		
0009 D	N	7/18/1989	< 0.05	< 0.01	0.65	0.08	14	< 0.1	0.86	< 0.001	< 0.1	0.0077	4.4	2.9	7.3	1.1	4.5	17.6		
0009 D	N	10/12/1989	< 0.05	< 0.01	0.94	0.37	17	< 0.01	1.2	< 0.001	< 0.1	0.018	2.4	1.8	4.2	< 0.02	1.5	3.5		
0009 D	N	1/4/1990	< 0.05	0.01	1	0.14	18	< 0.1	1.4	< 0.001	< 0.1	0.012	4.7	< 1	4.7	< 0.2	6.7	1.9		
0009 D	N	4/10/1990	< 0.05	0.01	0.75	0.12	15	< 0.1	0.97	< 0.001	< 0.1	0.0395	2.7	2.2	4.9	< 0.2	1.5	3		
0009 D	N	7/10/1990	< 0.05	< 0.01	0.83	0.13	19.3	< 0.1	1.56	< 0.001	< 0.1	0.017	5.1	5.2	10.3	< 0.2	< 1	5		
0009 D	N	10/9/1990	< 0.05	0.02	1.52	0.13	23	< 0.1	2.13	< 0.001	< 0.1	0.0157	8	3.8	11.8	< 0.2	1.6	4		
0009 D	N	1/15/1991	0.02	0.01	0.71	0.09	12.8	< 0.1	0.88	< 0.001	< 0.1	0.0065	4.9	2.5	7.4	< 0.2	2.7	6.2		
0009 D	N	4/9/1991	< 0.05	0.02	0.83	0.13	13.1	< 0.1	1.16	< 0.001	< 0.1	0.0098	7	6.1	13.1	1.2	< 1	6		
0009 D	N	7/9/1991	0.02	0.01	0.79	< 0.05	17	< 0.1	1.09	< 0.001	< 0.1	0.0062	2.9	2.5	5.4	< 0.2	< 1	3		
0009 D	N	10/14/1991	< 0.01	0.01	1.3	< 0.05	22.1	< 0.1	1.83	< 0.001	< 0.1	0.047	6.6	< 1	6.6	< 0.2	< 1	7		

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
0009 D	N	1/21/1992	6898.60	4.30	4.31	8112	444	1028	153	10.2	< 1	5648	108	1.11	1.24	< 1	55.1	0.001
0009 D	N	4/7/1992	6897.80	4.30	4.09	8533	426	767	185	11.5	< 1	5628	124	1.31	< 0.1	< 1	150	< 0.001
0106 D	N	7/18/1989	6909.10	4.20	4.66	4068	476	425	113	17.3	2	2928	45.7	1.12	67	< 1	8	< 0.001
0106 D	N	10/11/1989	6906.80	4.70	4.76	4182	465	332	113	21.2	6.8	2582	46.3	0.97	52	3.3	6.5	< 0.001
0106 D	N	1/4/1990	6905.90	4.30	4.37	4150	466	339	110	16.4	< 1	2502	47.5	0.86	56	2.3	7.4	< 0.001
0106 D	N	4/10/1990	6904.20	4.30	4.93	4180	483	350	110	17	6.8	2452	48.2	1.54	58	1.9	7.8	< 0.001
0106 D	N	7/10/1990	6903.20	4.60	4.76	4259	455	332	99.4	15.1	8.5	2439	44.2	0.14	64.3	2.8	6.5	< 0.001
0106 D	N	10/9/1990	6902.30	4.50	4.99	4256	437	342	113	14.6	9.8	2536	50	0.13	52	9.6	4.3	< 0.001
0106 D	N	1/15/1991	6902.40	4.80	6.35	4121	545	383	112	13.3	65	2563	56	0.12	57.5	10	0.77	< 0.001
0106 D	N	4/9/1991	6903.00	5.20	6.69	4014	591	380	117	11.6	125	2481	55.3	0.1	67	17.7	0.29	< 0.001
0106 D	N	7/9/1991	6901.90	4.90	5.89	4247	575	360	99	13.7	20	2770	156	0.49	44.3	6.22	0.9	< 0.001
0501 B	N	7/20/1989	6889.00	3.10	3.13	5722	443	492	106	17.5	0	4074	24.2	1.36	0.21	< 1	100	0.244
0501 B	N	10/8/1989	6887.90	3.20	3.29	5594	454	540	110	20.2	0	3758	36.2	1.06	0.2	< 1	70	0.046
0501 B	N	1/10/1990	6885.30	3.70	2.98	5622	449	529	115	14.9	< 1	3570	26.6	1.01	0.42	< 1	29	0.03
0501 B	N	4/10/1990	6884.60	4.40	2.86	5716	447	576	110	14.3	< 1	3592	30	1.02	0.23	< 1	22	0.026
0501 B	N	7/10/1990	6883.30	4.50	3.01	5738	511	578	111	15.5	< 1	3756	25.6	0.48	0.26	< 1	22.9	0.014
0501 B	N	10/9/1990	6882.30	4.20	4.25	5845	403	511	120	16.7	< 1	3678	57.3	0.39	0.05	< 1	25.8	0.029
0501 B	N	1/11/1991	6881.40	3.80	3.45	5791	484	592	105	16	< 1	3862	28.2	0.84	< 0.01	< 1	24.7	0.02
0501 B	N	4/10/1991	6880.70	3.60	3.62	5924	483	591	89.1	18.2	< 1	3834	27.1	0.99	< 0.01	< 1	25.62	0.03
0501 B	N	7/9/1991	6879.90	3.70	3.43	6105	412	512	94.7	15.4	< 1	3937	28.7	1.27	< 0.01	< 1	40.84	0.016
0501 B	N	10/17/1991	6879.40	3.60	3.81	6099	476	483	117	17.9	< 1	3822	37.9	1.3	< 0.01	< 1	52	0.022
0501 B	N	1/21/1992	6878.80	3.40	4.02	6099	420	555	101	15.7	< 1	4151	24.5	< 0.05	< 0.01	< 1	53.2	0.073
0501 B	N	4/14/1992	6878.40	3.30	3.62	6113	417	472	100	17.8	< 1	3824	28	1.17	< 0.1	< 1	37.1	0.021
0501 B	N	7/14/1992	6877.90	3.20	2.99	6203	362	539	129	21.4	< 1	4209	28.6	0.52	< 0.1	< 1	35.6	0.013
0501 B	N	10/13/1992	6877.50	3.60	3.33	5832	455	563	113	19.4	< 1	3601	27.9	0.97	< 0.1	< 1	36.1	0.025
0501 B	N	1/21/1993	6877.10	3.50	3.11	6118	408	544	101	16.5	< 1	4100	21.4	0.98	< 0.1	< 1	39.2	0.021
0501 B	N	4/14/1993	6876.90	3.40	3.01	5140	439	532	108	13.7	< 1	3936	29.7	0.99	< 0.1	< 1	42	0.04
0501 B	N	7/15/1993	6876.20	3.50	3.02	4976	492	544	105	15.8	< 1	3778	28	0.85	< 0.1	< 1	40.4	0.018
0502 B	N	7/23/1989	6892.40	5.30	5.64	5131	559	501	186	13.7	63	3298	51	2.94	30	< 1	2.2	0.001
0502 B	N	10/11/1989	6888.10	5.10	5.66	5192	513	483	184	18.7	50.8	3563	55.3	1.26	38	< 1	2.2	0.009
0502 B	N	1/3/1990	6885.70	4.90	5.38	5364	501	495	184	16.1	33.9	3347	52	2.8	39	< 1	16	0.009
0502 B	N	4/3/1990	6883.90	4.70	5.28	5400	491	500	180	15.5	28.7	3296	55.8	2.17	39	< 1	8.5	0.012
0502 B	N	7/2/1990	6882.70	4.40	4.53	5536	575	542	162	15.9	1.4	3487	54.5	2.38	31.6	< 1	22.7	0.027
0502 B	N	10/2/1990	6881.40	4.70	5.22	5143	435	453	159	15.4	12.2	3377	51.4	0.8	10.5	< 1	2.4	0.014
0502 B	N	1/4/1991	6880.60	4.80	4.50	5193	457	469	165	23.7	< 1	3214	53	3.54	12.4	< 1	22.4	0.024

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha		
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l	pci/l		
<b>NRC Standard</b>			<b>0.05</b>	<b>0.09</b>	<b>NA</b>	<b>0.08</b>	<b>NA</b>	<b>NA</b>	<b>0.569</b>	<b>0.01</b>	<b>0.1</b>	<b>0.395</b>	<b>NA</b>	<b>NA</b>	<b>35.2</b>	<b>17</b>	<b>5.7</b>	<b>39.7</b>		
<b>EPA Standard</b>			<b>0.004</b>	<b>0.09</b>	<b>0.391</b>	<b>0.08</b>	<b>9.1</b>	<b>66.1</b>	<b>0.569</b>	<b>0.05</b>	<b>0.1</b>	<b>0.395</b>	<b>NA</b>	<b>NA</b>	<b>35.2</b>	<b>17</b>	<b>5.7</b>	<b>39.7</b>		
0009 D	N	1/21/1992	0.01	0.02	0.74	0.26	17.1	< 0.1	1.07	0.02	< 0.1	0.009	8.5	< 2	8.5	< 0.2	< 1	9.3		
0009 D	N	4/7/1992	0.04	< 0.01	1.35	0.27	22	< 0.1	1.78	< 0.001	< 0.1	0.022	15.5	8.6	24.1	< 0.2	< 1	15.8		
0106 D	N	7/18/1989	< 0.05	< 0.01	0.15	< 0.05	12	< 0.1	0.26	< 0.001	< 0.1	0.0029	7.3	6.6	13.9	4.5	2.2	22.5		
0106 D	N	10/11/1989	< 0.05	0.005	0.16	0.06	12	0.06	0.25	0.031	< 0.1	0.045	3.2	7.4	10.6	< 0.2	4.7	3.5		
0106 D	N	1/4/1990	< 0.05	< 0.01	0.14	< 0.05	12	< 0.1	0.27	< 0.001	< 0.1	0.002	5.9	11.8	17.7	< 0.2	2.8	6.7		
0106 D	N	4/10/1990	< 0.05	< 0.01	0.12	< 0.05	12	< 0.1	0.29	0.001	< 0.1	0.032	5.3	6	11.3	< 0.2	< 1	6		
0106 D	N	7/10/1990	< 0.05	< 0.01	0.12	< 0.05	12.4	< 0.1	0.25	< 0.001	< 0.1	0.0107	2.8	4.5	7.3	< 0.2	1.9	3		
0106 D	N	10/9/1990	< 0.05	< 0.01	0.11	< 0.05	11.6	< 0.1	0.24	< 0.001	< 0.1	0.0041	2.3	4.6	6.9	< 0.2	< 1	2		
0106 D	N	1/15/1991	< 0.01	< 0.01	0.07	< 0.05	7.7	0.18	0.1	< 0.001	< 0.1	0.0074	0.8	< 1	0.8	< 0.2	< 1	1.1		
0106 D	N	4/9/1991	< 0.05	< 0.01	0.04	< 0.05	4.2	0.21	< 0.05	< 0.001	< 0.1	0.0069	4	5.4	9.4	< 0.2	< 1	5		
0106 D	N	7/9/1991	< 0.01	< 0.01	0.07	< 0.05	7.9	0.2	0.1	0.04	< 0.1	0.0085	3.2	3.5	6.7	< 0.2	< 1	3		
0501 B	N	7/20/1989	0.13	< 0.01	1.1	0.08	12	0.11	1.8	< 0.001	< 0.1	0.61	22.1	11	33.1	5.4	< 1	96.3		
0501 B	N	10/8/1989	0.09	< 0.01	0.83	0.07	11	0.03	1.2	< 0.001	< 0.1	0.469	16.5	5.9	22.4	15	< 1	34.7		
0501 B	N	1/10/1990	< 0.05	< 0.01	0.59	< 0.05	9.8	< 0.1	0.8	< 0.001	< 0.1	0.212	9.2	7.2	16.4	< 0.2	< 1	11.2		
0501 B	N	4/10/1990	< 0.05	< 0.01	0.64	< 0.05	12	< 0.1	0.73	< 0.001	< 0.1	0.125	10.4	6.8	17.2	< 0.2	< 1	10.4		
0501 B	N	7/10/1990	< 0.05	< 0.01	0.41	< 0.05	12.21	< 0.1	0.74	< 0.001	< 0.1	0.161	9.7	6.9	16.6	< 0.2	< 1	10		
0501 B	N	10/9/1990	0.05	< 0.01	0.68	< 0.05	13.5	< 0.1	0.88	< 0.001	< 0.1	0.2099	12.2	10.6	22.8	< 0.2	1.4	14		
0501 B	N	1/11/1991	0.05	< 0.01	0.68	< 0.05	12.4	< 0.1	0.83	< 0.001	< 0.1	0.2768	12.5	13.4	25.9	< 0.2	1.5	13.4		
0501 B	N	4/10/1991	< 0.01	< 0.01	0.6	< 0.05	8.12	< 0.1	0.69	< 0.001	< 0.1	0.3332	14.4	8.1	22.5	2.6	5.9	17.7		
0501 B	N	7/9/1991	0.06	< 0.01	0.7	< 0.05	12.21	< 0.1	0.86	< 0.001	< 0.1	0.4356	8.3	9.9	18.2	< 0.2	< 1	9		
0501 B	N	10/17/1991	0.09	< 0.01	0.8	< 0.05	15.24	< 0.1	1.14	< 0.001	< 0.1	0.5918	10.1	5.4	15.5	< 0.2	2.4	10		
0501 B	N	1/21/1992	< 0.01	0.02	0.86	0.05	13.9	< 0.1	1.15	0.002	< 0.1	0.434	18.4	12.6	31	< 0.2	1.3	19		
0501 B	N	4/14/1992	0.08	< 0.01	0.82	< 0.05	13.9	< 0.1	0.95	< 0.001	< 0.1	0.379	9	13.1	22.1	< 0.2	1.6	9.2		
0501 B	N	7/14/1992	0.063	< 0.01	0.98	< 0.05	13.1	< 0.1	1.07	< 0.001	< 0.1	0.539	10.1	5.5	15.6	< 0.2	< 1	10.2		
0501 B	N	10/13/1992	< 0.01	0.02	0.77	< 0.05	13.6	< 0.1	0.85	< 0.001	< 0.1	0.529	15.8	12.1	27.9	< 0.2	3.3	15.9		
0501 B	N	1/21/1993	< 0.01	< 0.01	0.63	< 0.05	12.5	< 0.1	1.01	< 0.001	< 0.1	0.225	9	4.9	13.9	< 0.2	2.6	9		
0501 B	N	4/14/1993	0.08	< 0.01	0.99	< 0.05	13.6	< 0.1	1.14	< 0.001	< 0.1	0.421	6.5	11.8	18.3	< 0.2	1.7	7.8		
0501 B	N	7/15/1993	0.051	< 0.01	0.71	< 0.05	11.6	< 0.1	0.75	< 0.001	< 0.1	0.18	6.9	5.1	12	< 0.2	< 1	7.5		
0502 B	N	7/23/1989	< 0.05	< 0.01	0.26	< 0.05	6.9	9.3	0.24	0.003	< 0.1	0.0543	9.3	7.9	17.2	< 0.2	2.3	30.5		
0502 B	N	10/11/1989	< 0.05	< 0.01	0.19	< 0.05	5.7	23	0.21	0.01	< 0.1	0.064	3.9	5.9	9.8	18.1	4.1	23		
0502 B	N	1/3/1990	< 0.05	< 0.01	0.21	< 0.05	5.8	22	0.27	0.003	< 0.1	0.113	8.7	4.9	13.6	< 0.2	6.7	9.3		
0502 B	N	4/3/1990	< 0.05	< 0.01	0.27	< 0.05	7	19	0.32	0.004	< 0.1	0.064	8.8	7	15.8	< 0.2	2.8	9.4		
0502 B	N	7/2/1990	< 0.05	< 0.01	0.28	< 0.05	8.9	9.1	0.33	0.003	< 0.1	0.204	14.6	12.8	27.4	< 0.2	7.9	15		
0502 B	N	10/2/1990	< 0.05	< 0.01	0.39	< 0.05	9	5.2	0.38	0.002	< 0.1	0.054	15	1	16	< 0.2	< 1	15		
0502 B	N	1/4/1991	0.03	< 0.01	0.52	< 0.05	11.1	2.1	0.55	0.002	< 0.1	0.208	17.2	12.8	30	< 0.2	< 1	18		



**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
0502 B	N	4/9/1991	6880.00	4.40	4.57	5227	527	508	158	20	5	3410	36.3	4	14	< 1	15.7	0.003
0502 B	N	7/16/1991	6879.20	4.30	4.72	5129	520	526	138	25.8	5	3760	54.4	5.63	12.6	< 1	1	0.009
0502 B	N	10/14/1991	6878.10	4.10	3.88	5164	384	349	139	20.7	< 1	3233	61.3	6.8	10.2	< 1	54.2	0.004
0502 B	N	1/14/1992	6876.70	3.70	4.03	4850	420	382	110	15.3	< 1	3470	114	6.3	2.4	< 1	74.7	0.023
0502 B	N	4/7/1992	6875.70	3.70	3.44	5134	439	388	111	16.6	< 1	3407	41.7	12.2	< 0.1	< 1	89.5	0.04
0502 B	N	7/7/1992	6874.50	3.60	3.67	5229	513	461	97.3	16.4	< 1	3424	20.4	9.1	< 0.1	< 1	92.2	0.068
0502 B	N	10/6/1992	6873.10	3.80	3.18	5350	488	440	101	16.8	< 1	3695	24.4	6.3	0.24	< 1	68.7	0.036
0502 B	N	1/6/1993	6870.10	3.70	3.41	4292	421	394	92	20.3	< 1	3594	16.8	6.7	< 0.1	< 1	96.9	0.036
0502 B	N	4/6/1993	6870.20	3.70	3.24	4837	409	367	111	19	< 1	3579	43	7.2	< 0.1	< 1	101	0.696
0502 B	N	7/13/1993	6869.30	4.10	4.11	4892	464	456	119	19.9	< 1	3741	51.1	6.97	< 0.1	< 1	87	0.018
0502 B	N	10/6/1993	6865.40	4.20	3.94	4832	450	432	121	16.1	< 1	3706	35.9	6.69	0.1	< 1	57.8	0.004
0502 B	N	1/5/1994	6867.20	4.10	2.89	5012	475	435	128	14.6	< 1	3674	45	6.63	18.2	< 1	57.1	0.007
0502 B	N	4/13/1994	6867.20	4.20	3.45	5054	486	432	127	14.3	< 1	3656	37.4	10.2	< 0.1	< 1	54.5	0.005
0502 B	N	7/21/1994	6867.20	4.30	3.59	5603	552	501	116	14.2	< 1	4100	29	6.23	< 0.1	< 1	44.2	0.003
0502 B	N	10/5/1994	6867.20	4.30	4.23	5017	470	489	129	14	< 1	3739	29.4	5.86	< 0.1	< 1	26.7	0.004
0502 B	N	1/5/1995	6866.50	4.10	4.27	5078	457	488	125	14.4	< 1	3652	33.3	7.9	< 0.1	< 1	32.3	< 0.001
0502 B	N	4/5/1995	6866.40	4.20	3.89	5106	484	494	122	13.6	< 1	3860	24.2	6.4	< 0.1	< 1	27.2	0.003
0502 B	N	7/6/1995	6866.10	4.40	4.18	5090	455	478	118	13.1	< 1	3615	31	6.46	< 0.1	< 1	16.9	0.005
0502 B	N	10/4/1995	6866.10	4.50	4.42	4852	445	470	123	12.8	< 1	3555	29	5.39	0.3	< 1	13.3	0.001
0502 B	N	1/4/1996	6866.10	4.20	3.82	5022	470	485	122	13.3	< 1	3710	29.3	3.16	< 0.1	< 1	16.1	0.002
0502 B	N	4/2/1996	6865.70	4.80	4.47	5428	478	525	119	13.5	< 1	3810	31.2	3.62	< 0.1	< 1	12.1	0.001
0502 B	N	7/7/1996	6865.40	4.50	3.40	5317	460	475	120	14.2	< 1	3550	34	3.83	0.11	< 1	16.9	0.002
0502 B	N	10/1/1996	6865.50	4.70	3.72	5570	480	517	123	13.9	< 1	3648	29.3	3.58	< 0.1	< 1	13.6	0.001
0502 B	N	1/21/1997	6865.70	4.80	4.01	5570	485	525	116	14	< 1	3755	32.1	4.54	< 0.1	< 1	18.3	0.002
0502 B	N	4/8/1997	6864.80	4.70	4.39	5610	506	550	145	13.4	< 1	3960	31.2	3.03	< 0.1	1	9.48	< 0.001
0502 B	N	7/8/1997	6864.40	5.70	4.20	5710	516	557	125	14.8	< 1	4000	32.9	3.94	< 0.1	< 1	15.1	< 0.001
0502 B	N	10/8/1997	6865.00	4.30	3.75	5700	492	523	110	13.1	< 0.1	3590	34	4.01	< 0.1	< 1	7.71	0.008
0502 B	N	1/16/1998	6864.20	4.80	4.62	5720	479	522	118	14.3	2.1	3700	33.5	5.14	< 0.1	< 1	11.8	0.003
0502 B	N	4/7/1998	6864.30	4.30	3.99	5730	485	536	113	13	0.1	3570	28.6	3.27	< 0.1	< 1	8.5	< 0.001
0502 B	N	7/7/1998	6864.90	4.60	4.11	5570	480	536	115	13.6	< 0.1	3500	29.7	3.85	< 0.1	< 1	8.32	< 0.001
0502 B	N	10/6/1998	6865.10	4.46	4.54	5840	500	559	120	14.7	< 0.1	3720	28.3	0.9	< 0.1	< 1	6.74	0.005
0502 B	N	1/6/1999	6863.90	4.20	4.53	5870	483	568	124	12.7	< 0.1	4000	29.6	3.72	< 0.1	< 1	8.16	< 0.001
0502 B	N	4/6/1999	6864.00	4.50	4.79	5880	472	545	108	13.2	4	3730	34.7	3.54	< 0.1	< 1	6.86	< 0.001
0502 B	N	7/13/1999	6863.30	4.70	3.90	5820	487	580	100	14.2	< 0.1	3800	24.9	3.25	< 0.1	< 1	6.14	< 0.001
0502 B	N	10/5/1999	6863.70	4.25	3.78	5830	503	612	114	13.6	< 0.1	4050	31.2	3.87	< 0.1	< 1	8.31	< 0.001

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
0502 B	N	4/9/1991	< 0.05	< 0.01	0.4	< 0.05	8.51	0.68	0.44	0.001	< 0.1	0.2058	14.8	11.4	26.2	< 0.2	< 1	12
0502 B	N	7/16/1991	< 0.01	< 0.01	0.59	< 0.05	12.56	0.85	0.66	< 0.001	< 0.1	0.323	12.7	10.8	23.5	< 0.2	2.9	13
0502 B	N	10/14/1991	0.012	< 0.01	0.68	< 0.05	13.6	1.01	0.78	0.001	< 0.1	0.28	17.5	12.3	29.8	< 0.2	< 1	18
0502 B	N	1/14/1992	0.13	< 0.01	0.67	< 0.05	14.6	2.41	0.84	0.004	< 0.1	0.344	3	1.5	4.5	< 0.2	< 1	3
0502 B	N	4/7/1992	0.14	< 0.01	0.71	< 0.05	17.7	2.3	0.74	< 0.001	< 0.1	0.567	12.9	17.8	30.7	< 0.2	2	12.7
0502 B	N	7/7/1992	0.12	< 0.01	0.75	< 0.05	15.1	1.17	0.72	0.001	< 0.1	0.43	7.8	16.4	24.2	< 0.2	< 1	8.4
0502 B	N	10/6/1992	0.13	< 0.01	0.79	< 0.05	14.3	1	0.89	0.004	< 0.1	0.552	10	16.5	26.5	< 0.2	< 1	10.4
0502 B	N	1/6/1993	0.13	0.02	0.77	< 0.05	16	0.6	1.02	< 0.001	< 0.1	0.715	19.7	19	38.7	< 0.2	< 1	19.9
0502 B	N	4/6/1993	0.14	< 0.01	0.75	< 0.05	15.23	1.15	0.05	0.003	< 0.1	0.812	10.2	24.6	34.8	< 0.2	3.3	11.5
0502 B	N	7/13/1993	< 0.005	< 0.01	0.97	< 0.05	14.2	0.74	1.09	< 0.001	< 0.1	0.478	7.3	9.7	17	< 0.2	< 1	8.5
0502 B	N	10/6/1993	0.09	< 0.01	0.74	< 0.05	12.4	0.51	0.93	< 0.001	< 0.1	0.177	8.8	13	21.8	< 0.2	2	9
0502 B	N	1/5/1994	0.08	< 0.01	0.85	< 0.05	12.6	0.41	0.78	< 0.001	< 0.1	0.347	9.7	6.5	16.2	< 0.2	1.1	20.4
0502 B	N	4/13/1994	0.05	< 0.01	0.7	< 0.05	10.5	0.41	0.79	< 0.001	< 0.1	0.332	6.9	7.5	14.4	< 0.2	3.8	18.3
0502 B	N	7/21/1994	0.04	< 0.01	0.82	< 0.05	12	0.35	0.97	< 0.001	< 0.1	0.205	9.3	9.9	19.2	< 0.2	4.4	24.3
0502 B	N	10/5/1994	0.03	< 0.01	0.64	< 0.05	9.48	0.28	0.7	< 0.001	< 0.1	0.188	7	6.3	13.3	< 0.2	1.2	16.6
0502 B	N	1/5/1995	0.04	< 0.01	0.72	< 0.05	10.5	0.2	0.85	< 0.001	< 0.1	0.211	12.6	4.3	16.9	< 0.2	< 1	19.2
0502 B	N	4/5/1995	0.03	< 0.01	0.81	< 0.05	11.1	0.19	0.74	< 0.001	< 0.1	0.191	8.8	8.2	17	< 0.2	2	21.3
0502 B	N	7/6/1995	0.02	< 0.01	0.69	< 0.05	9.65	0.19	0.77	< 0.001	< 0.1	0.1321	8.4	6.1	14.5	< 0.2	2	24
0502 B	N	10/4/1995	0.02	< 0.01	0.66	< 0.05	9.2	0.15	0.73	< 0.001	< 0.1	0.129	9.1	14.5	23.6	< 0.2	< 1	16.6
0502 B	N	1/4/1996	0.02	< 0.01	0.66	< 0.05	10.3	0.12	0.72	< 0.001	< 0.1	0.134	7.6	14.1	21.7	< 0.2	2.7	11.6
0502 B	N	4/2/1996	0.02	< 0.01	0.63	< 0.05	9.08	0.11	0.66	< 0.001	< 0.1	0.154	6	13.6	19.6	2.1	< 1	11.2
0502 B	N	7/7/1996	< 0.01	< 0.01	0.68	< 0.05	10.3	0.13	0.74	< 0.001	< 0.1	0.148	5.9	24.7	30.6	0.6	5.3	16.2
0502 B	N	10/1/1996	0.02	< 0.01	0.62	< 0.05	9.6	< 0.1	0.68	0.002	< 0.1	0.105	5.8	23.1	28.9	1.1	< 1	16.3
0502 B	N	1/21/1997	0.02	< 0.01	0.63	< 0.05	10.7	< 0.1	0.67	< 0.001	< 0.1	0.138	6.9	22.5	29.4	< 0.2	< 1	8.2
0502 B	N	4/8/1997	0.01	< 0.01	0.54	< 0.05	5.3	0.67	0.48	< 0.001	< 0.1	0.12	10.5	25.3	35.8	< 0.2	< 1	26.1
0502 B	N	7/8/1997	< 0.01	< 0.01	0.59	< 0.05	10.1	< 0.1	0.56	< 0.001	< 0.1	0.132	7	19.1	26.1	< 0.2	4.6	12.7
0502 B	N	10/8/1997	0.01	< 0.01	0.66	< 0.05	11.4	0.11	0.63	< 0.001	< 0.1	0.089	7.7	18.3	26	< 0.2	< 1	10.7
0502 B	N	1/16/1998	0.01	< 0.01	0.58	< 0.05	10.7	0.11	0.64	< 0.001	0.1	0.13	7	21.7	28.7	< 0.2	< 1	21.2
0502 B	N	4/7/1998	0.01	0.005	0.5	< 0.05	9.35	< 0.1	0.52	< 0.001	< 0.1	0.126	10.3	25.9	36.2	< 0.2	< 1	11.9
0502 B	N	7/7/1998	0.01	0.006	0.5	< 0.05	10.2	0.14	0.53	< 0.001	< 0.1	0.131	8.9	28	36.9	< 0.2	< 1	18
0502 B	N	10/6/1998	< 0.01	0.006	0.5	< 0.05	9.7	0.11	0.54	< 0.001	< 0.1	0.121	8.3	22.3	30.6	< 0.2	15.4	15.4
0502 B	N	1/6/1999	0.01	0.006	0.47	< 0.05	9.65	< 0.1	0.52	< 0.001	< 0.1	0.135	7.8	19	26.8	< 0.2	18.1	18.1
0502 B	N	4/6/1999	< 0.01	0.009	0.55	< 0.05	10.5	< 0.1	0.54	< 0.001	< 0.1	0.125	8.7	20.9	29.6	1.4	27.1	27.1
0502 B	N	7/13/1999	< 0.01	0.006	0.42	< 0.05	10.6	< 0.1	0.42	< 0.001	< 0.1	0.12	7.4	18.3	25.7	< 0.2	< 1	14.4
0502 B	N	10/5/1999	< 0.01	0.008	0.57	< 0.05	12	0.14	0.49	< 0.001	< 0.1	0.132	9.9	26.1	36	< 0.2	< 1	13.1

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
0502 B	N	1/4/2000	6863.90	4.30	4.29	5750	469	572	105	14	< 0.1	3720	28.9	3.29	< 0.1	< 1	7.15	< 0.001
0504 B	N	7/23/1989	6868.10	6.20	6.50	4631	515	440	172	10.5	293	3027	37.9	0.49	0.05	< 1	0.25	0.113
0504 B	N	10/11/1989	6867.30	5.90	6.68	4674	491	384	150	13.8	271	2947	39	0.58	0.23	< 1	0.2	0.054
0504 B	N	1/3/1990	6865.90	5.70	6.36	4458	497	373	146	11	217	2793	35.9	0.7	0.05	< 1	0.22	0.025
0504 B	N	4/3/1990	6864.60	6.00	6.30	4622	503	407	144	10.8	203	2751	36.9	0.79	0.08	< 1	< 0.1	0.017
0504 B	N	7/2/1990	6863.50	5.60	6.32	4598	554	424	143	10.6	229	2931	33.2	0.36	0.06	< 1	< 0.1	0.023
0504 B	N	10/2/1990	6862.70	5.80	6.71	4631	469	456	146	10.5	198	3067	33.7	0.39	0.02	< 1	< 0.1	0.021
0504 B	N	1/3/1991	6862.70	5.70	6.25	4687	534	446	140	31.6	166	3022	32.5	0.86	0.08	< 1	< 0.1	0.002
0504 B	N	4/9/1991	6861.70	5.60	6.51	4678	531	437	134	13.5	159	2979	30.9	0.74	0.07	< 1	< 0.1	0.001
0504 B	N	7/16/1991	6860.70	5.60	6.30	4769	535	392	132	10.8	161	3427	33.1	0.91	0.1	< 1	< 0.1	< 0.001
0504 B	N	10/14/1991	6857.30	5.80	6.62	4495	456	269	131	8.3	245	2640	39.2	0.44	0.03	< 1	< 0.1	0.573
0504 B	N	1/14/1992	6855.40	5.40	6.06	5014	502	378	161	10.8	121	3119	40.3	3.1	< 0.01	< 1	< 0.1	0.34
0504 B	N	4/7/1992	6855.90	5.40	6.21	5112	500	473	162	13.1	207	3372	31.4	0.92	< 0.1	< 1	< 0.1	0.035
0504 B	N	7/7/1992	6855.80	5.10	7.63	5218	578	463	194	14.1	50.9	3249	41	0.63	< 0.1	< 1	< 0.1	0.388
0504 B	N	10/6/1992	6851.70	5.40	5.85	5061	593	430	185	13.9	63.4	3278	37.3	0.84	< 0.1	< 1	1.1	0.257
0504 B	N	1/21/1993	6849.90	5.40	5.90	4440	525	378	159	14.3	38.1	3194	43.2	0.93	< 0.1	< 1	1.3	0.181
0504 B	N	4/14/1993	6849.90	5.60	6.50	4825	519	494	171	10.4	82.8	3373	37.6	0.76	< 0.1	< 1	0.1	0.042
0504 B	N	7/15/1993	6848.40	5.60	4.91	4659	540	464	160	14.8	13.2	3430	41.2	0.93	< 0.1	< 1	1.17	0.139
0504 B	N	10/6/1993	6844.70	5.70	5.67	4372	543	385	155	11	27.6	3129	33.5	0.6	0.2	< 1	0.17	0.014
0504 B	N	1/5/1994	6847.00	5.70	6.01	5244	578	450	145	10.6	58.5	3491	38.7	0.8	< 0.1	< 1	< 0.1	0.041
0504 B	N	4/13/1994	6846.50	5.80	6.01	5083	580	433	138	10.6	47.9	3448	37.9	1.82	< 0.1	< 1	< 0.1	0.019
0504 B	N	7/21/1994	6846.30	5.90	6.25	4998	600	452	135	11.1	62.8	3467	32.3	0.91	< 0.1	< 1	0.15	0.012
0504 B	N	10/5/1994	6846.30	5.80	6.56	5208	604	489	176	12.5	68.3	3421	35.5	1.4	< 0.1	< 1	< 0.1	0.01
0504 B	N	1/5/1995	6844.80	5.80	6.41	4827	570	406	152	12.2	117	3232	35.8	1.38	< 0.1	< 1	< 0.1	0.009
0504 B	N	4/5/1995	6845.00	5.80	7.46	5199	527	487	145	11.3	35.4	3710	37.1	1.49	< 0.1	< 1	< 0.1	0.011
0504 B	N	7/6/1995	6845.10	6.30	6.51	4787	515	470	145	11.7	58.7	3298	33.5	1.64	< 0.1	< 1	< 0.1	0.01
0504 B	N	10/4/1995	6844.10	6.00	6.70	4530	490	450	151	11.6	71.1	3315	33	1.36	0.23	< 1	< 0.1	0.008
0504 B	N	1/4/1996	6843.30	6.20	6.44	4519	530	455	156	11.3	92	3116	32	0.66	1.68	< 1	< 0.1	0.005
0504 B	N	4/2/1996	6843.10	7.00	6.82	5270	530	515	59.4	13.1	61.5	3630	37.5	0.74	< 0.1	< 1	< 0.1	0.01
0504 B	N	7/7/1996	6842.70	6.00	6.22	5316	515	475	153	13.4	44	3440	39.2	0.67	< 0.1	< 1	< 0.1	0.01
0504 B	N	10/1/1996	6842.20	6.30	6.00	5260	539	509	154	12.7	53.7	3427	34.6	0.62	< 0.1	< 1	< 0.1	0.005
0504 B	N	1/21/1997	6843.90	6.10	5.61	5220	515	525	149	14.1	8.5	3530	34.2	0.72	< 0.1	< 1	0.16	0.017
0504 B	N	4/8/1997	6842.10	6.10	6.92	5180	537	534	145	12.5	76.3	3640	37.5	0.61	< 0.1	1	< 0.1	< 0.001
0504 B	N	7/8/1997	6841.30	7.10	6.53	5390	564	565	153	13.8	42.6	3850	37.7	0.67	< 0.1	< 1	0.17	0.017
0504 B	N	10/8/1997	6841.70	5.70	6.40	5350	531	519	141	12.3	26	3430	37.5	0.78	0.15	< 1	0.16	0.02

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
0502 B	N	1/4/2000	0.02	< 0.005	0.5	< 0.05	11.4	< 0.1	0.53	< 0.001	< 0.1	0.131	11.1	12.9	24	< 0.2	< 1	9.8
0504 B	N	7/23/1989	< 0.05	< 0.01	0.14	< 0.05	2.5	24	0.24	0.001	< 0.1	0.1	19.6	12.8	32.4	< 0.2	< 1	66.1
0504 B	N	10/11/1989	< 0.05	0.09	0.26	< 0.05	3.1	9.9	0.37	< 0.001	< 0.1	0.122	14	9.3	23.3	11.1	2.7	27.5
0504 B	N	1/3/1990	< 0.05	< 0.01	0.16	< 0.05	2.3	4.2	0.25	0.001	< 0.1	0.286	15.8	12.4	28.2	1.6	5.7	18.1
0504 B	N	4/3/1990	< 0.05	< 0.01	0.3	< 0.05	4.1	7.8	0.52	0.001	< 0.1	0.101	10.6	18.6	29.2	< 0.2	1.6	12.5
0504 B	N	7/2/1990	< 0.05	< 0.01	0.28	< 0.05	3.8	8.32	0.45	0.001	< 0.1	0.1468	17.7	18.5	36.2	< 0.2	3.3	20
0504 B	N	10/2/1990	< 0.05	< 0.01	0.34	< 0.05	3.6	13.3	0.46	< 0.001	< 0.1	0.13	19.2	12	31.2	< 0.2	< 1	20
0504 B	N	1/3/1991	< 0.01	< 0.01	0.49	< 0.05	4.85	3.6	0.6	0.001	< 0.1	0.3797	23.7	15.2	38.9	< 0.2	< 1	25
0504 B	N	4/9/1991	< 0.05	< 0.01	0.35	< 0.05	4.39	2.83	0.49	< 0.001	< 0.1	0.147	21.9	19	40.9	< 0.2	< 1	25
0504 B	N	7/16/1991	< 0.01	< 0.01	0.43	< 0.05	4.47	2.7	0.54	< 0.001	< 0.1	0.279	16	12	28	< 0.2	3.2	16
0504 B	N	10/14/1991	< 0.01	< 0.01	0.22	< 0.05	2.96	75	0.3	< 0.001	< 0.1	0.14	6.6	2.4	9	< 0.2	< 1	7
0504 B	N	1/14/1992	< 0.01	< 0.01	0.5	< 0.05	5.08	43.4	0.67	< 0.001	< 0.1	0.029	17	5.2	22.2	< 0.2	< 1	16
0504 B	N	4/7/1992	< 0.01	< 0.01	0.53	< 0.05	7.1	9.6	0.63	0.002	< 0.1	0.124	7.9	12.2	20.1	< 0.2	< 1	7.6
0504 B	N	7/7/1992	< 0.01	< 0.01	0.7	< 0.05	6.66	56.4	0.88	0.001	< 0.1	0.02	8.2	4.8	13	< 0.2	< 1	8.5
0504 B	N	10/6/1992	< 0.01	< 0.01	0.66	< 0.05	6.88	49.8	0.91	0.002	< 0.1	0.042	12.6	7.8	20.4	< 0.2	< 1	12.5
0504 B	N	1/21/1993	< 0.01	< 0.01	0.57	< 0.05	7.05	45.4	0.9	< 0.001	< 0.1	0.033	9.5	3.8	13.3	< 0.2	4.7	10
0504 B	N	4/14/1993	< 0.01	< 0.01	< 0.01	< 0.05	5.94	12.7	0.67	< 0.001	< 0.1	0.176	9.1	11.7	20.8	< 0.2	< 1	10.5
0504 B	N	7/15/1993	< 0.01	< 0.01	1	< 0.05	6.68	12.4	1.27	0.002	< 0.1	0.064	9	8	17	< 0.2	< 1	9.9
0504 B	N	10/6/1993	< 0.01	< 0.01	0.52	< 0.05	4.94	7	0.7	< 0.001	< 0.1	0.051	13.6	7.9	21.5	< 0.2	< 1	15
0504 B	N	1/5/1994	< 0.01	< 0.01	0.46	< 0.05	6	3.4	0.54	< 0.001	< 0.1	0.085	21.1	16	37.1	< 0.2	< 1	46.1
0504 B	N	4/13/1994	< 0.01	< 0.01	0.52	< 0.05	6.09	4.97	0.73	< 0.001	< 0.1	0.059	15.5	15.6	31.1	< 0.2	2.6	29
0504 B	N	7/21/1994	< 0.01	< 0.01	0.45	< 0.05	5.8	1.03	0.6	< 0.001	< 0.1	0.084	18.2	23.4	41.6	< 0.2	2.5	53.4
0504 B	N	10/5/1994	< 0.01	< 0.01	0.36	< 0.05	5.14	5.36	0.54	< 0.001	< 0.1	0.081	14.4	13.9	28.3	< 0.2	2	35.4
0504 B	N	1/5/1995	< 0.01	< 0.01	0.37	< 0.05	4.62	0.85	0.51	< 0.001	< 0.1	0.123	21.3	18.4	39.7	< 0.2	< 1	49
0504 B	N	4/5/1995	< 0.01	< 0.01	0.54	< 0.05	6.2	2.67	0.56	< 0.001	< 0.1	0.073	16.8	14.8	31.6	< 0.2	< 1	39.2
0504 B	N	7/6/1995	< 0.01	< 0.01	0.47	< 0.05	5.63	2.11	0.58	< 0.001	< 0.1	0.0792	13.7	13.3	27	< 0.2	1.3	51.9
0504 B	N	10/4/1995	< 0.01	< 0.01	0.47	< 0.05	5.5	0.77	0.61	< 0.001	< 0.1	0.078	15.6	19.2	34.8	< 0.2	< 1	25.5
0504 B	N	1/4/1996	< 0.01	< 0.01	0.43	< 0.05	4.79	0.52	0.5	< 0.001	< 0.1	0.119	14	23.1	37.1	< 0.2	3.4	27.4
0504 B	N	4/2/1996	< 0.01	< 0.01	0.5	< 0.05	5.73	0.41	0.61	< 0.001	< 0.1	0.088	15.3	20.9	36.2	< 0.2	< 1	23.3
0504 B	N	7/7/1996	< 0.01	< 0.01	0.49	< 0.05	6.04	0.47	0.63	< 0.001	< 0.1	0.081	16.9	30.6	47.5	0.7	2.3	20.4
0504 B	N	10/1/1996	< 0.01	< 0.01	0.48	< 0.05	5.68	0.36	0.6	0.002	< 0.1	0.072	14.9	25.2	40.1	0.8	< 1	25.2
0504 B	N	1/21/1997	< 0.01	< 0.01	0.41	< 0.05	6	0.64	0.57	< 0.001	< 0.1	0.057	16.7	32.2	48.9	< 0.2	< 1	14.1
0504 B	N	4/8/1997	< 0.01	< 0.01	0.37	< 0.05	5.3	0.67	0.48	< 0.001	< 0.1	0.106	19.9	24	43.9	< 0.2	< 1	43.7
0504 B	N	7/8/1997	< 0.01	< 0.01	0.38	< 0.05	5.81	1.38	0.49	< 0.001	< 0.1	0.068	17.2	26	43.2	< 0.2	< 1	17
0504 B	N	10/8/1997	< 0.01	< 0.01	0.45	< 0.05	6.71	4.69	0.56	< 0.001	< 0.1	0.087	16.3	18.4	34.7	< 0.2	< 1	16.3



**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
0504 B	N	1/16/1998	6841.20	5.80	6.60	5360	517	520	152	13.4	32.7	3500	36.4	1.12	0.1	< 1	1.15	0.025
0504 B	N	4/7/1998	6841.00	5.70	5.91	5420	518	529	146	12.3	19.2	3350	32.4	0.76	< 0.1	< 1	0.22	0.024
0504 B	N	7/7/1998	6841.00	6.00	4.34	5140	503	519	153	12.7	< 0.1	3550	33	0.96	< 0.1	< 1	0.23	0.013
0504 B	N	10/6/1998	6841.20	5.70	6.33	5340	543	555	158	13.8	29.7	3500	32.7	3.99	0.29	< 1	0.24	0.019
0504 B	N	1/6/1999	6841.00	5.60	6.36	5340	463	524	141	12.3	38	3700	33	0.7	0.19	< 1	0.33	0.025
0504 B	N	4/6/1999	6841.20	5.50	6.53	5370	508	542	140	12.4	31	3440	38.6	0.8	< 0.1	< 1	0.37	0.015
0504 B	N	7/13/1999	6840.81	6.50	6.51	5350	522	558	132	13.3	28	3500	32	0.75	0.38	< 1	0.17	0.02
0504 B	N	10/5/1999	6841.40	5.73	5.53	5260	540	583	152	12.5	9	3740	34	0.96	0.26	< 1	< 0.1	0.022
0504 B	N	1/4/2000	6841.50	6.00	7.11	5220	497	543	135	12.7	31	3380	30.2	0.64	0.5	< 1	< 0.1	0.021
0504 B	N	5/1/2000	6841.40	5.60	6.69	5500	474	526	134	12.3	51	3480	34	0.75	< 0.1	< 1	0.3	0.033
0504 B	N	7/10/2000	6841.30	5.45	6.20	5510	506	570	150	12.3	48	3440	28.4	0.68	< 0.1	< 1	0.21	0.025
0504 B	N	10/2/2000	6841.40	6.52	6.28	5650	510	620	147	13.8	44	3740	33	0.53	< 0.1	< 1	0.2	0.033
0504 B	N	1/15/2001	6841.80	5.02	5.92	5590	480	564	135	12.5	43	4100	34.6	0.71	< 0.1	< 1	0.2	0.028
0504 B	N	4/2/2001	6841.80	7.50	6.02	5590	479	595	153	12.1	13	3480	29.3	0.88	< 0.1	< 1	0.3	0.026
0504 B	N	7/16/2001	6841.70	3.50	3.70	5810	458	590	134	24.3	< 0.1	3570	44	0.84	< 0.1	< 1	0.3	0.036
0504 B	N	10/8/2001	6841.85	3.55	5.80	5920	450	590	132	12.3	26.8	3300	35.9	0.77	< 0.1	< 1	0.16	0.026
0504 B	N	1/7/2002	6841.60	5.46	3.50	5840	499	628	128	13	< 0.1	3940	42	0.63	< 0.1	< 1	0.2	0.023
0504 B	N	4/8/2002	6841.90	3.30	3.36	5980	477	616	142	12.6	< 0.1	3810	33.5	0.7	< 0.1	< 1	0.2	0.018
0504 B	N	7/15/2002	6841.80	4.55	3.42	6060	561	713	143	12.3	< 0.1	4430	25.6	1.23	< 0.1	< 1	< 0.1	0.02
0504 B	N	10/14/2002	6841.70	3.43	3.80	4980	460	605	144	11.5	< 0.1	3710	26.8	1.16	< 0.1	< 1	0.2	0.019
0504 B	N	1/13/2003	6841.31	5.54	4.47	5980	531	710	137	11.8	< 0.1	4140	15.6	1.27	< 0.1	< 1	0.2	0.025
0504 B	N	4/14/2003	6841.59	5.14	3.27	6140	626	873	158	15.2	< 0.1	5300	30.2	1.3	< 0.1	< 1	< 0.1	0.012
0504 B	N	7/14/2003	6841.31	5.35	3.34	6230	474	633	158	12.4	< 0.1	3750	28.3	1.1	< 0.1	< 1	0.2	0.017
0504 B	N	10/13/2003	6841.16	5.48	3.36	6100	512	699	152	12.6	< 0.1	4260	30.4	1.05	< 0.1	< 1	0.3	0.023
0504 B	N	1/12/2004	6840.94	5.39	3.25	6120	514	699	134	13.4	< 1.0	4110	31.2	1.37	< 0.10	< 1.0	0.2	0.017
0504 B	N	4/12/2004	6840.84	5.36	3.50	6120	485	652	148	13.4	< 1	4140	31.8	1.26	< 0.1	< 1	0.1	0.022
0504 B	N	7/19/2004	6840.83	5.48	5.21	6140	523 D	672 D	164	12.5	15	4070 D	28	1.04	< 0.10	< 1.0	0.4	0.017
0504 B	N	10/11/2004	6840.74	5.56	3.31	6210	485 D	685 D	163	12.5	< 1	4120 D	29	0.91	< 0.10	< 1.0	0.2	0.015
0504 B	N	1/10/2005	6840.60	5.31	3.37	6240	488 D	660 D	150	12.1	< 1	3970 D	29	0.91	< 0.1	< 1.0	0.2	0.02
0504 B	N	4/11/2005	6840.33	5.55	4.27	5990	512	693	166	12.4	< 1	4340	30	1.07	< 0.1	< 1.0	0.3	0.02
0504 B	N	7/18/2005	6840.19	5.10	3.30	6300	512 D	684 D	162	12.2	< 1	4150 D	29	0.96	< 0.1	< 1.0	0.3	0.02
0504 B	N	10/10/2005	6839.55	5.45	5.07	4250	525 D	415 D	126	10	< 1	3040 D	29	0.93	< 0.1	< 1.0	13.7	< 0.001
0504 B	N	1/16/2006	6838.98	5.22	3.96	6310	448 D	654 D	148	11.8	< 1	3990 D	28	1.29	< 0.1	< 1.0	10.2	0.02
0504 B	N	4/10/2006	6838.71	5.21	3.63	5980	517 D	707 D	144	12.3	< 1	4330 D	34	0.97	0.3	< 1.0	2.4	0.02
0504 B	N	7/24/2006	6838.23	5.06	3.99	5870	487 D	668 D	160	12.3	< 1	4140 D	29	1.16	< 0.1	< 1.0	0.4	0.008

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
0504 B	N	1/16/1998	< 0.01	< 0.01	0.41	< 0.05	6.37	6.75	0.57	< 0.001	< 0.1	0.1607	15.6	23.6	39.2	< 0.2	< 1	42
0504 B	N	4/7/1998	< 0.01	< 0.005	0.32	< 0.05	5.4	7.43	0.43	< 0.001	< 0.1	0.0594	18.5	18.4	36.9	< 0.2	< 1	18.7
0504 B	N	7/7/1998	< 0.01	< 0.005	0.31	< 0.05	5.78	8.79	0.44	< 0.001	< 0.1	0.0359	13.7	20.9	34.6	< 0.2	< 1	20
0504 B	N	10/6/1998	< 0.01	< 0.005	0.31	< 0.05	5.48	9.2	0.446	< 0.001	< 0.1	0.0378	15.9	13.2	29.1	< 0.2	< 1	15.8
0504 B	N	1/6/1999	< 0.01	0.007	0.3	< 0.05	5.6	12.4	0.42	< 0.001	< 0.1	0.0435	15.9	18.5	34.4	< 0.2	< 1	32
0504 B	N	4/6/1999	< 0.01	< 0.005	0.33	< 0.05	5.8	9.48	0.43	< 0.001	< 0.1	0.0531	18.8	17.5	36.3	< 0.2	< 1	50
0504 B	N	7/13/1999	< 0.01	< 0.005	0.24	< 0.05	5.7	14.6	0.35	< 0.001	< 0.1	0.0288	11.1	14.6	25.7	< 0.2	< 1	17.3
0504 B	N	10/5/1999	< 0.01	0.007	0.33	< 0.05	6.27	16.3	0.4	0.001	< 0.1	0.0392	13.5	16.4	29.9	< 0.2	< 1	12.6
0504 B	N	1/4/2000	< 0.01	< 0.005	0.32	< 0.05	6.02	14.5	0.48	< 0.001	< 0.1	0.0454	12.8	15.7	28.5	< 0.2	< 1	12.3
0504 B	N	5/1/2000	< 0.01	0.025	0.34	< 0.05	6.67	15.7	0.51	< 0.001	< 0.1	0.0388	21.3	16.3	37.6	< 0.2	< 1	22.6
0504 B	N	7/10/2000	< 0.01	< 0.005	0.3	< 0.05	6.18	13.4	0.41	< 0.001	< 0.1	0.0498	13.4	20.8	34.2	< 0.2	< 1	21
0504 B	N	10/2/2000	< 0.01	< 0.005	0.35	< 0.05	6.23	14.3	0.36	< 0.001	< 0.1	0.0226	15	15.8	30.8	< 0.2	< 1	25
0504 B	N	1/15/2001	< 0.01	0.008	0.29	< 0.05	5.99	12.3	0.44	< 0.001	< 0.1	0.031	15.7	17.9	33.6	< 0.2	< 1	18.7
0504 B	N	4/2/2001	< 0.01	< 0.005	0.31	< 0.05	6.2	12.9	0.48	< 0.001	< 0.1	0.027	15.5	20.8	36.3	< 0.2	< 1	15.5
0504 B	N	7/16/2001	< 0.01	< 0.005	0.28	< 0.05	6.2	10.5	0.43	< 0.001	< 0.1	0.028	18.6	25.2	43.8	< 0.2	< 1	16.9
0504 B	N	10/8/2001	< 0.01	< 0.005	0.22	< 0.05	5.3	7.49	0.29	< 0.001	< 0.1	0.0257	16	20	36	< 0.2	< 1	23
0504 B	N	1/7/2002	< 0.01	< 0.005	0.26	< 0.05	6.37	7.3	0.41	< 0.001	< 0.1	0.0242	18.2	23.2	41.4	< 0.2	< 1	16.7
0504 B	N	4/8/2002	< 0.01	< 0.005	0.31	< 0.05	7.84	9.9	0.43	< 0.001	< 0.1	0.0278	13.5	19.5	33	< 0.2	< 1	20.4
0504 B	N	7/15/2002	< 0.01	< 0.005	0.26	< 0.05	6.37	7.1	0.28	< 0.001	< 0.1	0.0296	16.3	24.7	41	< 0.2	< 1	17.3
0504 B	N	10/14/2002	< 0.01	< 0.005	0.27	< 0.05	6.96	6.8	0.36	< 0.001	< 0.1	0.0331	12.4	13.1	25.5	< 0.2	< 1	18.7
0504 B	N	1/13/2003	< 0.01	< 0.005	0.27	< 0.05	6.57	7.4	0.32	< 0.001	< 0.1	0.0288	17.3	4	21.3	< 0.2	< 1	21.6
0504 B	N	4/14/2003	< 0.01	< 0.005	0.29	< 0.05	7.52	6.1	0.35	< 0.001	< 0.1	0.0243	16.9	17.4	34.3	< 0.2	< 1	31.2
0504 B	N	7/14/2003	< 0.01	< 0.005	0.27	< 0.05	7.03	5.8	0.34	< 0.001	< 0.1	0.0254	14.9	13	27.9	< 0.2	< 1	11.4
0504 B	N	10/13/2003	< 0.01	< 0.005	0.25	< 0.05	6.27	4.5	0.32	< 0.001	< 0.1	0.0251	11.8	13.9	25.7	< 0.2	< 1	27.8
0504 B	N	1/12/2004	< 0.01	< 0.005	0.26	< 0.05	7.08	4.7	< 0.05	< 0.001	< 0.1	0.0241 D	12.4	14.1	26.5	< 0.2	< 1.0	29.7
0504 B	N	4/12/2004	< 0.01	< 0.005	0.25	< 0.05	7.14	4	0.3	< 0.001	< 0.1	0.02 D	10.1	14.1	24.2	< 0.2	< 1	16.2
0504 B	N	7/19/2004	< 0.01	< 0.005	0.25	< 0.05	6.82	2.8	0.27	< 0.001	< 0.1	0.0208 D	11.7	13	24.7	< 0.2	< 1.0	28.1
0504 B	N	10/11/2004	< 0.01	< 0.005	0.19	< 0.05	6.88	3	0.28	< 0.001	< 0.1	0.0236	11.4	8.5	19.9	< 0.2	< 1.0	20
0504 B	N	1/10/2005	< 0.01	< 0.005	0.26	< 0.05	6.41	2.3	0.29	< 0.001	< 0.1	0.0254	7.8	10	17.8	< 0.2	< 1.0	20.8
0504 B	N	4/11/2005	< 0.01	< 0.005	0.24	< 0.05	7.1	2.5	0.28	< 0.001	< 0.1	0.0254	14.4	14.6	29	< 0.2	< 1.0	15.6
0504 B	N	7/18/2005	< 0.01	< 0.005	0.24	< 0.05	6.85	0.7	0.3	< 0.001	< 0.1	0.0206	10.7	13.4	24.1	2.4	< 1.0	19.1
0504 B	N	10/10/2005	< 0.01	< 0.005	0.27	< 0.05	5.02	< 0.1	0.28	< 0.001	< 0.1	0.019	14.8	14.5	29.3	< 0.2	< 1.0	16.8
0504 B	N	1/16/2006	< 0.01	< 0.005	0.27	< 0.05	7.52	1.6	0.33	< 0.001	< 0.1	0.0439	11.3	16.7	28	< 0.2	< 1.0	14.8
0504 B	N	4/10/2006	< 0.01	< 0.005	0.27	< 0.05	7.45	1.7	0.27	< 0.001	< 0.1	0.0254	12.5	17	29.5	< 0.2	< 1.0	11.2
0504 B	N	7/24/2006	< 0.01	< 0.005	0.24	< 0.05	7.14	0.5	0.25	< 0.001	< 0.1	0.0211	11.3	16.2	27.5	< 0.2	< 1.0	11.7

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
0504 B	N	10/9/2006	6837.89	5.11	5.14	5790	483 D	662 D	148	12.2	< 1	3970 D	25	1.13	< 0.1	< 0.5	0.1	0.02
0504 B	N	1/15/2007	6837.51	5.23	5.38 H	6140 H	474 D	649 D	149	12.5	<1	4070 D	29	0.54	<0.1	<0.5	0.8	0.02
0504 B	N	4/17/2007	6836.83	5.25	4.47	6020	499 D	700 D	149	12.6	<1	4480 D	32	0.56	<0.1	<0.5	2.1	0.01
0504 B	N	7/17/2007	6836.81	5.10	3.35	5690	484 D	674 D	154	12.1	<1	4180 D	28	0.83	<0.1	<0.5	0.9	0.05
0504 B	N	10/9/2007	6836.13	3.29	4.81	6000	480 D	657 D	151	12.4	6	4050 D	29	0.73	<0.1	<0.5	0.1	0.02
0504 B	N	1/22/2008	6835.95	5.35	3.66	5590	458 D	607 D	142	12.7	4	3800 D	35 D	0.53	< 0.1	< 0.5	2.4	0.035
0504 B	N	4/15/2008	6835.96	5.24	3.51	5630	486	652	151 D	12.1	< 1	4300 D	26	0.43	< 0.1	< 0.50	4.8	0.01
0504 B	N	7/15/2008	6835.41	5.26	3.9	5950	437	607	140 D	12	< 1	3940 D	26	0.36	< 0.1	< 0.5	2.9	0.003
0504 B	N	10/13/2008	6835.11	3.47	3.66	5750	439	601	142 D	12	< 1	4060 D	23	0.9 D	< 0.1	< 0.5	0.6	0.005
0504 B	N	1/20/2009	6834.86	5.5	3.44	5750	466	618	167	13	<1	4140 D	21	0.49	<0.1	<0.5	5.2	0.028
0504 B	N	4/14/2009	6834.86	5.59	3.6	5580	449 D	581 D	152 D	11	<1	3930 D	26	0.42	<0.1	<0.50	4.8 D	0.02
0504 B	N	7/14/2009	6834.51	3.56	3.69	5980	474	597	147	12	<1	4020 D	27	0.55	<0.1	<0.50	4.6	<0.001
0504 B	N	10/13/2009	6834.36	5.5	3.68	5690 H	494 D	589	142 D	12	<1	4100 D	31	0.61	<0.1	<0.50	2.7	<0.001
0504 B	N	1/12/2010	6834.41	4.56	3.69	6620 D	495 D	682	153 D	13	<5	4270 D	23	1.36	<0.10	<0.50	92.9	0.002 H
0504 B	N	7/20/2010	6833.21	3.13	3.34	6550 D	464	700	174	12	<5	4650 D	26 D	1.82	0.1	<0.50	79.1	0.008
0504 B	N	10/12/2010	6833.41	3.88	4.94	5570 D	491	604	173	12	<5	3930 D	25 D	0.8	<0.1	<0.50	12.6	0.003
EPA 01	N	7/25/1989	6804.30	6.50	6.40	4590	648	380	161	10.2	427	2852	29.3	0.83	0.01	< 1	0.39	0.149
EPA 01	N	10/4/1989	6804.50	6.60	6.73	4522	620	352	158	13.4	466	2844	25.9	0.32	0.01	< 1	0.45	0.156
EPA 01	N	1/16/1990	6804.20	6.40	6.56	4632	576	352	161	10.6	458	2842	29.5	0.46	0.02	< 1	0.2	0.142
EPA 01	N	4/17/1990	6803.80	6.30	6.76	4714	593	244	156	10.2	468	2662	30.4	0.63	0.07	< 1	0.41	0.183
EPA 01	N	7/12/1990	6803.10	6.40	6.78	4725	583	360	151	10.8	482	2652	29.7	0.26	0.1	< 1	< 0.1	0.195
EPA 01	N	10/16/1990	6802.90	6.30	7.19	4706	633	388	172	12.8	448	2800	32	0.36	0.11	< 1	< 0.1	0.318
EPA 01	N	1/8/1991	6802.30	6.40	6.70	4730	628	384	159	29	436	2719	66	0.51	0.05	< 1	< 0.1	0.181
EPA 01	N	4/16/1991	6802.20	6.30	7.74	4746	608	368	161	11.2	480	2596	34.1	0.46	0.29	< 1	< 0.1	0.193
EPA 01	N	7/3/1991	6801.80	6.40	6.99	4494	560	333	141	9	488	2905	31.8	0.21	< 0.01	< 1	< 0.1	0.19
EPA 01	N	10/22/1991	6801.40	6.40	7.14	4713	584	344	156	10.2	483	2853	38.1	0.32	< 0.01	< 1	< 0.1	0.242
EPA 01	N	1/22/1992	6801.00	6.30	7.31	4824	584	344	148	9.7	452	2905	36.2	< 0.05	< 0.01	< 1	< 0.1	0.21
EPA 01	N	4/2/1992	6800.50	6.10	7.35	4238	566	365	188	12.3	462	2813	34.5	0.46	< 0.01	< 1	< 0.1	0.175
EPA 01	N	7/15/1992	6799.10	6.20	7.01	4765	582	375	173	11.5	459	2868	36.1	0.42	< 0.1	< 1	< 0.1	0.176
EPA 01	N	10/14/1992	6798.60	6.30	6.93	4708	567	342	155	11.5	425	3104	35.5	0.53	< 0.1	< 1	0.12	0.303
EPA 01	N	1/13/1993	6798.10	6.30	6.96	4557	574	320	171	12.5	423	2834	36	0.48	< 0.1	< 1	< 0.1	0.059
EPA 01	N	4/15/1993	6797.90	6.30	8.00	4149	532	376	165	9.2	373	2836	31.2	0.17	0.6	< 1	< 0.1	0.06
EPA 01	N	7/20/1993	6797.50	6.40	7.10	4178	601	326	145	10.7	421	2769	33	0.24	< 0.1	< 1	< 0.1	0.047
EPA 01	N	10/12/1993	6796.30	6.80	6.92	4118	578	326	155	9.2	404	2815	30.2	0.08	< 0.1	< 1	< 0.1	0.107
EPA 01	N	1/11/1994	6796.90	6.70	7.66	4656	566	339	132	9.1	333	3005	28.4	< 0.05	0.6	< 1	< 0.1	0.05

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
0504 B	N	10/9/2006	< 0.01	< 0.005	0.25	< 0.05	7.28	1.5	0.28	< 0.001	< 0.1	0.0234	11.4	17.1	28.5	< 0.2	< 1	9.9
0504 B	N	1/15/2007	< 0.01	< 0.005	0.22	< 0.05	6.67	2	0.25	< 0.001	< 0.1	0.0254	12.2	16.4	28.6	< 0.2	< 1	16.4
0504 B	N	4/17/2007	< 0.01	< 0.005	0.26	< 0.05	7.42	0.2	0.29	< 0.001	< 0.1	0.0254 D	10.6	19.6	30.2	< 0.2	< 1	10.9
0504 B	N	7/17/2007	< 0.01	< 0.005	0.25	< 0.05	6.41	2.3	0.28	< 0.001	< 0.1	0.0248	11.5	17.1	28.6	< 0.2	< 1	13.5
0504 B	N	10/9/2007	< 0.01	< 0.005	0.24	< 0.05	7.52	1	0.26	< 0.001	< 0.1	0.0195	8.2	16.9	25.1	< 0.2	< 1	10.7
0504 B	N	1/22/2008	< 0.01	< 0.005	0.25	< 0.05	6.88	2.8	0.29	< 0.001	< 0.1	0.0307	16.4	19.6	36	< 0.2	< 1	16
0504 B	N	4/15/2008	< 0.01	< 0.005	0.25	< 0.05	6.67	3.1	0.27	< 0.001	< 0.1	0.0373	9	23.1	32.1	< 0.1 U	0 U	14.6
0504 B	N	7/15/2008	< 0.01	< 0.005	0.22	< 0.05	6.62	3.5	0.26	< 0.001	< 0.1	0.0318	12	20	32	0 U	4.5 U	13.2
0504 B	N	10/13/2008	< 0.01	< 0.005	0.23	< 0.05	6.44	2.6	0.26	< 0.001	< 0.1	0.0274	11	13	24	0.4	1.4 U	19.5
0504 B	N	1/20/2009	< 0.01	< 0.005	0.24	< 0.05	6.83	9	0.27	< 0.001	< 0.1	0.0572	14	21	35	< 0.1 U	0.6 U	18.6
0504 B	N	4/14/2009	< 0.01	< 0.005	0.22	< 0.05	6.46 D	7.3 D	0.26	< 0.001	< 0.1	0.0498	8.9	15	23.9	0.2 U	< 0.6 U	17.1
0504 B	N	7/14/2009	< 0.01	< 0.005	0.22	< 0.05	6.44	6	0.25	0.001	< 0.1	0.0505	11	17	28	0.06 U	1.9 U	19.2
0504 B	N	10/13/2009	< 0.01	< 0.005	0.21	< 0.05	6.06	3.3	0.25	< 0.001	< 0.1	0.0498	14	18	32	0.1	4.2	15.4
0504 B	N	1/12/2010	0.02	0.018	0.71	< 0.05	11.1	3.2	0.88	< 0.001	< 0.1	0.266	30	19	49	0.2	3.4 U	46
0504 B	N	7/20/2010	0.02	0.011	0.54	< 0.05	9.74	3.4	0.64	< 0.001	< 0.1	0.584	26	15	41	3.6	4.8	33.8
0504 B	N	10/12/2010	< 0.01	< 0.005	0.25	< 0.05	6.34	1.2	0.32	< 0.001	< 0.1	0.12	8	14	22	0.6	1.4 U	13.4
EPA 01	N	7/25/1989	< 0.05	0.01	< 0.01	< 0.05	4.7	62	< 0.05	< 0.001	< 0.1	0.0034	0.3	1.1	1.4	1.8	< 1	3
EPA 01	N	10/4/1989	< 0.05	0.01	< 0.01	< 0.05	4.9	50	< 0.05	< 0.001	< 0.1	0.005	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 01	N	1/16/1990	< 0.05	< 0.01	< 0.01	< 0.05	5	49	< 0.05	< 0.001	< 0.1	0.004	< 0.2	< 1	0	< 0.2	1.6	1.8
EPA 01	N	4/17/1990	< 0.05	< 0.01	< 0.01	< 0.05	5	46	< 0.05	< 0.001	< 0.1	0.003	1.2	< 1	1.2	< 0.2	< 1	1.3
EPA 01	N	7/12/1990	< 0.05	< 0.01	0.05	< 0.05	5.45	40.3	< 0.05	< 0.001	< 0.1	0.0068	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 01	N	10/16/1990	< 0.05	< 0.01	0.02	< 0.05	4.86	41.2	< 0.05	< 0.001	< 0.1	0.0062	< 0.2	< 1	0	< 0.2	2	< 1
EPA 01	N	1/8/1991	< 0.01	0.01	0.03	< 0.05	5.18	43.1	< 0.05	< 0.001	< 0.1	0.0054	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 01	N	4/16/1991	< 0.01	< 0.01	0.02	< 0.05	4.88	38.4	< 0.05	< 0.001	< 0.1	0.005	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 01	N	7/3/1991	< 0.01	< 0.01	0.03	< 0.05	4.37	35.9	< 0.05	< 0.001	< 0.1	0.0118	0.4	< 1	0.4	< 0.2	< 1	< 1
EPA 01	N	10/22/1991	< 0.01	< 0.01	0.01	< 0.05	4	35.3	< 0.05	< 0.001	< 0.1	0.0041	< 0.2	< 1	0	< 0.2	3.2	< 1
EPA 01	N	1/22/1992	< 0.01	< 0.01	0.03	< 0.05	4.43	42.1	< 0.05	< 0.001	< 0.1	0.007	1	< 1	1	< 0.2	< 1	1
EPA 01	N	4/2/1992	< 0.01	0.01	0.03	< 0.05	4.76	41.3	< 0.05	< 0.001	< 0.1	0.092	< 0.2	< 1	0	< 0.2	1.3	< 1
EPA 01	N	7/15/1992	< 0.01	0.01	0.03	< 0.05	4.68	36.9	< 0.05	< 0.001	< 0.1	0.007	0.6	< 1	0.6	< 0.2	< 1	< 1
EPA 01	N	10/14/1992	< 0.01	< 0.01	0.02	< 0.05	4.45	35	< 0.05	< 0.001	< 0.1	0.011	0.5	< 1	0.5	< 0.2	< 1	< 1
EPA 01	N	1/13/1993	< 0.01	0.01	< 0.01	< 0.05	4.07	31.2	< 0.05	< 0.001	< 0.1	0.004	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 01	N	4/15/1993	< 0.01	< 0.01	< 0.01	< 0.05	4.31	35.3	0.06	< 0.001	< 0.1	0.016	< 0.2	3.1	3.1	< 0.2	< 1	< 1
EPA 01	N	7/20/1993	< 0.01	< 0.01	< 0.01	< 0.05	4.31	31.9	< 0.05	< 0.001	< 0.1	0.021	< 0.2	2	2	< 0.2	4.7	< 1
EPA 01	N	10/12/1993	< 0.01	0.01	0.02	< 0.05	3.47	35.5	< 0.05	< 0.001	< 0.1	0.009	0.8	< 1	0.8	< 0.2	< 1	< 1
EPA 01	N	1/11/1994	< 0.01	< 0.01	0.02	< 0.05	3.84	39.7	0.19	< 0.001	< 0.1	0.017	< 0.2	5.4	5.4	< 0.2	1.8	9.1



**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO <sub>3</sub> mg/l	SO <sub>4</sub> mg/l	Chl mg/l	NH <sub>4</sub> as N mg/l	NO <sub>3</sub> as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
EPA 01	N	4/20/1994	6796.50	6.60	6.67	4260	560	342	132	8.7	345	2874	27.6	0.62	0.16	< 1	< 0.1	0.071
EPA 01	N	7/26/1994	6797.40	6.70	7.51	4000	570	348	129	8.8	328	2726	27.6	0.12	0.14	< 1	< 0.1	0.055
EPA 01	N	10/11/1994	6795.90	6.70	7.84	4596	622	383	157	10.3	349	3145	26.6	0.36	0.58	< 1	< 0.1	0.05
EPA 01	N	1/10/1995	6795.60	6.60	7.60	4626	705	261	144	12	309	2941	28.9	0.46	0.44	< 1	< 0.1	0.069
EPA 01	N	4/11/1995	6795.90	6.80	6.98	4431	616	318	131	9.6	360	2885	31.9	0.57	0.12	< 1	< 0.1	0.036
EPA 01	N	7/11/1995	6795.30	7.00	7.93	4039	595	356	132	9.6	367	2673	28.7	0.36	0.52	< 1	< 0.1	0.043
EPA 01	N	10/10/1995	6795.20	6.90	7.81	4065	600	355	144	10.1	334	2730	24.5	0.31	0.24	< 1	< 0.1	0.037
EPA 01	N	1/10/1996	6794.90	7.10	7.34	4572	595	360	129	9.1	276	2935	33	0.06	0.31	< 1	< 0.1	0.016
EPA 01	N	4/10/1996	6794.80	7.50	7.88	4540	615	370	128	10.2	248	3000	26.1	0.07	0.22	< 1	< 0.1	0.017
EPA 01	N	7/17/1996	6794.70	7.00	7.29	4458	560	330	135	10.4	242	2925	25.2	0.05	< 0.1	< 1	< 0.1	0.015
EPA 01	N	10/8/1996	6794.50	7.00	7.43	4440	635	377	134	10.2	248	2926	24.1	0.11	< 0.1	< 1	< 0.1	0.019
EPA 01	N	7/15/1997	6801.00	6.10	7.67	4630	628	375	134	10.4	200	3000	25.2	0.08	0.14	< 1	< 0.1	0.009
EPA 01	N	10/15/1997	6794.80	no data	7.87	4600	638	394	137	10.2	196	3050	31.4	0.54	0.24	< 1	< 0.1	0.01
EPA 03	N	7/26/1989	6895.60	6.80	5.83	4839	587	465	118	10.5	168	3358	25.1	0.31	0.02	< 1	< 0.1	0.003
EPA 03	N	10/5/1989	6894.90	6.30	6.52	4742	507	438	115	13.9	159	3131	24.6	0.27	0.09	< 1	< 0.1	0.017
EPA 03	N	1/23/1990	6892.80	6.80	6.29	5594	616	494	148	12.9	159	3620	26.3	0.51	0.1	< 1	< 0.1	0.003
EPA 03	N	4/18/1990	6891.70	6.40	7.00	5639	560	523	130	11.1	45.5	3653	28.9	0.57	0.04	< 1	< 0.1	0.024
EPA 03	N	7/17/1990	6890.50	6.70	6.10	5385	600	536	120	11.9	139	3368	23.6	0.28	0.04	< 1	< 0.1	0.016
EPA 03	N	10/16/1990	6889.50	6.50	6.60	4846	517	468	127	13	142	3253	29.7	0.26	0.02	< 1	< 0.1	0.001
EPA 03	N	1/8/1991	6888.80	6.60	6.25	4646	532	481	119	22	145	3002	27.3	0.23	0.07	< 1	0.2	0.006
EPA 03	N	4/17/1991	6888.30	6.60	6.99	4392	513	349	120	14.1	142	2888	25.6	0.21	0.02	< 1	0.25	0.008
EPA 03	N	7/3/1991	6887.70	6.60	6.42	3939	467	353	112	11	137	2885	31.2	0.35	0.03	< 1	0.2	0.008
EPA 03	N	10/22/1991	6887.00	6.60	6.51	3752	493	264	116	13.4	139	2485	24.2	0.18	0.02	< 1	0.22	0.001
EPA 09	N	7/26/1989	6911.00	6.10	5.54	5122	543	558	122	11.9	122	3598	28.1	0.43	0.07	< 1	0.22	< 0.001
EPA 09	N	10/5/1989	6911.20	4.80	6.06	5382	507	580	118	15	92.5	3566	28.3	0.62	0.07	< 1	1	< 0.001
EPA 09	N	1/16/1990	6911.20	5.70	6.15	4982	458	498	125	12	214	3210	23.8	0.38	0.15	< 1	< 0.1	< 0.001
EPA 09	N	4/17/1990	6911.10	5.50	6.00	5133	479	492	130	11.5	274	3261	28	0.46	0.18	< 1	0.25	0.001
EPA 09	N	7/17/1990	6910.80	4.90	4.30	5971	494	619	115	11.7	< 1	4248	26.8	0.45	0.03	< 1	8	< 0.009
EPA 09	N	10/16/1990	6910.90	4.70	4.29	5548	494	554	117	12.5	50	3753	33.7	0.41	0.02	< 1	1.1	0.001
EPA 09	N	1/8/1991	6910.70	5.30	6.19	5309	548	569	131	16	105	3561	31.1	0.49	< 0.01	< 1	0.61	< 0.001
EPA 09	N	4/17/1991	6910.90	5.30	6.25	5360	458	543	124	13.2	68	3576	27.3	0.43	0.03	< 1	4.9	< 0.001
EPA 09	N	7/3/1991	6910.70	4.80	6.27	4927	453	516	107	10.2	121	3446	37.7	0.5	0.2	< 1	1.52	0.002
EPA 09	N	10/22/1991	6910.80	5.00	5.97	5269	475	501	119	11.1	122	3555	33.2	0.42	< 0.01	< 1	1.58	0.001
EPA 09	N	1/22/1992	6911.60	5.20	5.29	6127	484	567	110	11.1	14.7	4132	27.7	0.93	0.49	< 1	1.01	0.013
EPA 09	N	4/2/1992	6910.60	5.40	6.61	5681	576	609	133	15.1	60.9	4137	34.4	0.73	< 0.1	< 1	2.5	0.014

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA 01	N	4/20/1994	< 0.01	< 0.01	< 0.01	< 0.05	3.02	28.1	< 0.05	< 0.001	< 0.1	0.008	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 01	N	7/26/1994	< 0.01	< 0.01	0.05	< 0.05	4.13	30	0.14	< 0.001	< 0.1	0.008	0.8	2.6	3.4	< 0.2	1.4	4.9
EPA 01	N	10/11/1994	< 0.01	< 0.01	0.05	< 0.05	3.47	31.5	0.12	< 0.001	< 0.1	0.01	< 0.2	< 1	0	< 0.2	3.5	< 1
EPA 01	N	1/10/1995	< 0.01	< 0.01	0.05	< 0.05	3.6	34.1	0.2	< 0.001	< 0.1	0.009	0.3	1.3	1.6	< 0.2	1.1	2.4
EPA 01	N	4/11/1995	< 0.01	< 0.01	0.03	< 0.05	3.58	26.4	0.05	< 0.001	< 0.1	0.005	0.2	< 1	0.2	< 0.2	< 1	< 1
EPA 01	N	7/11/1995	< 0.01	< 0.01	< 0.01	< 0.05	3.59	28.1	< 0.05	< 0.001	< 0.1	0.006	< 0.2	< 1	0	< 0.2	11	1.1
EPA 01	N	10/10/1995	< 0.01	< 0.01	0.04	< 0.05	3.6	28.1	0.07	< 0.001	< 0.1	0.012	< 0.2	< 1	0	< 0.2	2.7	1.3
EPA 01	N	1/10/1996	< 0.01	< 0.01	0.04	< 0.05	3.48	26.9	0.08	< 0.001	< 0.1	0.0098	0.6	< 1	0.6	< 0.2	< 1	< 1
EPA 01	N	4/10/1996	< 0.01	< 0.01	0.05	< 0.05	3.21	28.5	0.09	< 0.001	< 0.1	0.012	0.3	1.7	2	< 0.2	< 1	< 1
EPA 01	N	7/17/1996	< 0.01	< 0.01	0.1	< 0.05	3.54	24.6	0.18	< 0.001	< 0.1	0.0087	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 01	N	10/8/1996	< 0.01	< 0.01	0.11	< 0.05	3.34	23.8	0.2	< 0.001	< 0.1	0.0078	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 01	N	7/15/1997	< 0.01	< 0.01	0.18	< 0.05	4.04	11.5	0.18	< 0.001	< 0.1	0.008	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 01	N	10/15/1997	< 0.01	< 0.01	0.28	< 0.05	4.73	10.4	0.21	< 0.001	< 0.1	0.01	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 03	N	7/26/1989	< 0.05	< 0.01	0.03	0.07	5.6	< 0.1	< 0.05	< 0.001	< 0.1	0.0103	1.5	< 1	1.5	2.3	< 1	4.3
EPA 03	N	10/5/1989	< 0.05	< 0.01	0.02	< 0.05	4.8	0.05	< 0.05	< 0.001	< 0.1	0.016	1.5	< 1	1.5	< 0.2	< 1	< 1
EPA 03	N	1/23/1990	< 0.05	< 0.01	0.11	< 0.05	6.1	0.29	0.05	< 0.001	< 0.1	0.049	1.5	< 1	1.5	4.7	< 1	6.1
EPA 03	N	4/18/1990	< 0.05	< 0.01	0.07	< 0.05	7.2	< 0.1	< 0.05	< 0.001	< 0.1	0.026	1	< 1	1	< 0.2	1.9	1.6
EPA 03	N	7/17/1990	< 0.05	< 0.01	0.04	< 0.05	6.78	< 0.1	< 0.05	< 0.001	< 0.1	0.033	< 0.2	< 1	0	3.2	< 1	3
EPA 03	N	10/16/1990	< 0.05	< 0.01	0.03	< 0.05	5.9	0.1	< 0.05	< 0.001	< 0.1	0.0192	0.8	< 1	0.8	< 0.2	< 1	< 1
EPA 03	N	1/8/1991	< 0.01	< 0.01	0.05	< 0.05	6.07	0.16	0.05	< 0.001	< 0.1	0.024	1.1	< 1	1.1	< 0.2	< 1	1
EPA 03	N	4/17/1991	< 0.01	< 0.01	0.03	< 0.05	4.24	0.17	< 0.05	< 0.001	< 0.1	0.025	0.6	< 1	0.6	< 0.2	< 1	3
EPA 03	N	7/3/1991	< 0.01	< 0.01	0.03	< 0.05	3.96	0.25	< 0.05	< 0.001	< 0.1	0.0226	0.8	< 1	0.8	< 0.2	< 1	< 1
EPA 03	N	10/22/1991	< 0.01	< 0.01	0.02	< 0.05	2.87	0.24	< 0.05	< 0.001	< 0.1	0.0145	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 09	N	7/26/1989	< 0.05	< 0.01	0.12	< 0.05	4.5	< 0.1	0.09	< 0.001	< 0.1	0.002	5	1.7	6.7	6.5	2.1	4.1
EPA 09	N	10/5/1989	< 0.05	< 0.01	0.11	< 0.05	4	< 0.01	0.08	< 0.001	< 0.1	0.003	6	< 1	6	2.2	< 1	9.1
EPA 09	N	1/16/1990	< 0.05	< 0.01	0.08	< 0.05	2.8	< 0.01	< 0.05	< 0.001	< 0.1	0.003	2.1	1	3.1	< 0.2	< 1	2.5
EPA 09	N	4/17/1990	< 0.05	0.01	0.09	< 0.05	3.7	< 0.1	0.05	< 0.001	< 0.1	0.002	4.2	< 1	4.2	< 0.2	< 1	4.6
EPA 09	N	7/17/1990	< 0.05	< 0.01	0.21	< 0.05	6.79	< 0.1	0.19	< 0.001	< 0.1	0.0078	12.3	8.1	20.4	< 0.2	< 1	10
EPA 09	N	10/16/1990	< 0.05	< 0.01	0.14	< 0.05	4.74	< 0.1	0.16	< 0.001	< 0.1	0.0021	8.9	4.7	13.6	< 0.2	< 1	9
EPA 09	N	1/8/1991	< 0.01	< 0.01	0.29	< 0.05	6.35	< 0.1	0.29	< 0.001	< 0.1	0.0562	3.7	1.5	5.2	< 0.2	< 1	4
EPA 09	N	4/17/1991	< 0.01	< 0.01	0.24	< 0.05	5.77	< 0.1	0.25	< 0.001	< 0.1	0.022	13.5	5.8	19.3	< 0.2	< 1	14
EPA 09	N	7/3/1991	< 0.01	< 0.01	0.19	< 0.05	5.09	< 0.1	0.17	< 0.001	< 0.1	0.0137	6.6	5	11.6	< 0.2	< 1	7
EPA 09	N	10/22/1991	< 0.01	< 0.01	0.12	< 0.05	4.48	< 0.1	0.1	< 0.001	< 0.1	0.0062	4.1	< 1	4.1	< 0.2	2.7	4
EPA 09	N	1/22/1992	< 0.01	< 0.01	0.21	< 0.05	6.16	< 0.1	0.22	< 0.001	< 0.1	0.007	5.2	4	9.2	< 0.2	< 1	5
EPA 09	N	4/2/1992	0.02	0.02	0.02	< 0.05	7.86	0.1	0.29	< 0.001	< 0.1	0.002	8.1	4.1	12.2	< 0.2	< 1	0.4

TABLE B.1

Zone 3 Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO <sub>3</sub> mg/l	SO <sub>4</sub> mg/l	Chl mg/l	NH <sub>4</sub> as N mg/l	NO <sub>3</sub> as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
EPA 09	N	7/15/1992	6909.70	5.80	3.88	6008	496	573	122	12.4	< 1	3956	66.8	0.28	0.1	< 1	1.25	0.01
EPA 09	N	10/14/1992	6909.70	5.30	3.90	6070	479	537	109	12	< 1	3996	51	0.45	< 0.1	< 1	2.36	0.018
EPA 09	N	1/13/1993	6909.50	5.60	7.06	5015	493	475	116	12.1	105	3403	24.4	0.67	< 0.1	< 1	< 0.1	0.003
EPA 09	N	4/15/1993	6909.60	5.30	6.44	4596	425	494	126	9.9	62.3	3487	27.9	0.45	0.2	< 1	0.18	< 0.001
EPA 09	N	7/20/1993	6909.80	5.60	5.94	4554	493	464	117	10.9	54.8	3250	30	0.25	< 0.1	< 1	< 0.1	< 0.001
EPA 09	N	10/12/1993	6907.00	5.90	5.89	4633	497	490	115	10.8	86.4	3399	27.3	0.42	< 0.1	< 1	1.22	< 0.001
EPA 09	N	1/12/1994	6908.00	4.40	2.87	5738	535	556	101	11.8	< 1	4110	55.2	0.58	0.13	< 1	31.1	0.029
EPA 09	N	4/20/1994	6908.70	5.40	3.62	5771	550	556	108	10	< 1	4149	30	1.82	< 0.1	< 1	3.3	0.021
EPA 09	N	7/26/1994	6909.50	5.20	6.16	4732	540	479	115	10.3	31.3	3472	28	0.46	< 0.1	< 1	0.81	< 0.001
EPA 09	N	10/11/1994	6908.40	5.00	3.63	5664	508	603	119	11.3	< 1	4045	28.7	1.08	< 0.1	< 1	1.1	< 0.001
EPA 09	N	1/10/1995	6908.20	5.30	4.92	6144	560	650	117	13.3	10.3	4239	28.9	1.78	< 0.1	< 1	5.54	0.012
EPA 09	N	4/11/1995	6908.60	6.20	6.04	5264	550	526	120	11.5	119	3500	15.7	1.15	< 0.1	< 1	0.18	0.002
EPA 09	N	7/11/1995	6907.90	5.90	6.06	5046	498	540	120	11.5	34.1	3485	29.8	1.04	< 0.1	< 1	< 0.1	0.003
EPA 09	N	10/10/1995	6908.00	5.70	6.95	5003	510	530	120	11.6	70.8	3475	27	0.88	< 0.1	< 1	0.15	0.001
EPA 09	N	1/9/1996	6907.60	5.60	5.94	5085	485	550	109	11.3	52.8	3790	28.4	0.24	< 0.1	< 1	1.87	< 0.001
EPA 09	N	4/10/1996	6907.60	5.90	6.20	5494	525	575	107	11.7	27.5	3905	28.2	0.35	< 0.1	< 1	0.34	0.001
EPA 09	N	7/17/1996	6907.40	5.90	5.58	5615	505	555	117	12.1	23.4	3816	32	0.31	< 0.1	< 1	0.56	< 0.001
EPA 09	N	10/8/1996	6907.40	5.70	4.44	5590	542	609	116	12.1	< 1	3943	29	0.33	< 0.1	< 1	0.5	0.001
EPA 09	N	1/28/1997	6912.30	5.80	6.07	5510	500	545	109	11.7	29.3	3695	30.8	0.35	< 0.1	< 1	0.5	< 0.001
EPA 09	N	4/15/1997	6907.20	5.40	5.72	5740	532	616	112	12.1	21.2	4040	31.3	0.38	< 0.1	1	0.81	< 0.001
EPA 09	N	7/15/1997	6906.80	5.20	5.27	5780	515	606	109	12	7.4	3560	32.5	0.39	< 0.1	< 1	1.47	0.003
EPA 09	N	10/15/1997	6906.70	5.60	4.49	5860	507	632	110	11.7	< 0.1	3990	37.7	0.54	< 0.1	< 1	2.44	0.002
EPA 09	N	1/20/1998	6907.10	4.80	5.64	5570	504	595	119	13.1	9.27	4200	34.4	0.82	< 0.1	< 1	1.61	< 0.001
EPA 09	N	4/14/1998	6906.80	4.90	4.22	5840	510	610	107	11.3	< 0.1	3720	30.7	0.5	< 0.1	< 1	1.8	0.003
EPA 09	N	7/14/1998	6906.60	4.60	4.45	5820	488	611	115	12.3	< 0.1	3700	30.1	0.52	< 0.1	< 1	2.66	0.004
EPA 09	N	10/13/1998	6907.90	3.83	4.56	5820	484	622	116	12.6	1.2	4000	29.1	1.08	0.23	< 1	2.84	0.002
EPA 09	N	1/12/1999	6917.50	4.30	4.58	5870	423	601	107	11.8	< 0.1	4000	28.9	0.55	< 0.1	< 1	2.9	0.005
EPA 09	N	4/13/1999	6907.80	4.10	4.45	5860	472	624	105	11.8	< 0.1	3750	38.9	0.66	< 0.1	< 1	3.42	< 0.001
EPA 09	N	7/20/1999	6907.51	3.80	4.18	5930	492	634	104	13.1	< 0.1	3860	32.9	0.48	< 0.1	< 1	2.8	0.002
EPA 09	N	10/12/1999	6907.40	4.90	4.47	5860	459	591	108	11.6	< 0.1	3680	32.6	0.57	< 0.1	< 1	3.44	0.014
EPA 09	N	1/11/2000	6907.80	4.20	4.25	5790	460	610	103	12.2	< 0.1	3690	31.7	0.62	< 0.1	< 1	4.12	< 0.001
EPA 11	N	7/25/1989	6854.60	5.90	5.90	4245	587	337	151	10.1	176	2757	29.9	0.56	0.02	no data	0.42	0.137
EPA 11	N	10/4/1989	6854.20	5.80	6.30	4392	565	349	142	12.6	189	2826	28.3	0.48	0.01	no data	0.49	0.604
EPA 11	N	1/16/1990	6853.00	5.60	5.88	4406	515	335	150	10.4	177	2813	30.3	0.55	0.07	no data	0.22	0.481
EPA 11	N	4/17/1990	6852.00	6.00	6.38	4505	538	344	148	10.3	177	2649	31.8	0.6	0.07	no data	0.34	0.357

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA 09	N	7/15/1992	< 0.01	< 0.01	0.23	< 0.05	6.61	< 0.1	0.22	< 0.001	< 0.1	0.006	5.4	9	14.4	< 0.2	1.3	5.9
EPA 09	N	10/14/1992	< 0.01	< 0.01	0.28	< 0.05	7.63	< 0.1	0.27	< 0.001	< 0.1	0.002	9.6	8.9	18.5	< 0.2	< 1	9.9
EPA 09	N	1/13/1993	< 0.01	< 0.01	0.04	< 0.05	2.66	0.14	0.1	< 0.001	< 0.1	0.005	3.8	6.9	10.7	< 0.2	< 1	4.1
EPA 09	N	4/15/1993	< 0.01	< 0.01	0.08	< 0.05	3.16	< 0.1	0.08	< 0.001	< 0.1	0.002	3.1	2.3	5.4	< 0.2	< 1	3.4
EPA 09	N	7/20/1993	< 0.01	< 0.01	0.07	< 0.05	3.08	0.11	< 0.05	< 0.001	< 0.1	0.006	3.3	5	8.3	< 0.2	< 1	3.5
EPA 09	N	10/12/1993	< 0.01	< 0.01	0.14	< 0.05	4.41	< 0.1	0.14	< 0.001	< 0.1	0.005	8.8	7.8	16.6	< 0.2	1.2	10
EPA 09	N	1/12/1994	0.09	< 0.01	0.6	< 0.05	9.64	0.42	0.85	< 0.001	< 0.1	0.122	15.7	11	26.7	< 0.2	< 1	33.2
EPA 09	N	4/20/1994	< 0.01	< 0.01	0.21	< 0.05	6.9	0.19	0.24	< 0.001	< 0.1	0.003	13.6	8.4	22	< 0.2	< 1	26.4
EPA 09	N	7/26/1994	< 0.01	< 0.01	0.1	< 0.05	4.29	0.11	< 0.05	< 0.001	< 0.1	0.001	5.4	5	10.4	< 0.2	< 1	13.1
EPA 09	N	10/11/1994	< 0.01	< 0.01	0.15	< 0.05	4.49	< 0.1	0.15	< 0.001	< 0.1	0.002	8.4	1.4	9.8	< 0.2	5	10.7
EPA 09	N	1/10/1995	< 0.01	< 0.01	0.27	< 0.05	7.76	< 0.1	0.28	< 0.001	< 0.1	0.003	18.9	6.1	25	< 0.2	1.2	28.2
EPA 09	N	4/11/1995	< 0.01	< 0.01	0.07	< 0.05	3.59	< 0.1	< 0.05	< 0.001	< 0.1	0.001	3.7	3.2	6.9	< 0.2	< 1	8.5
EPA 09	N	7/11/1995	< 0.01	< 0.01	0.022	< 0.05	0.85	< 0.1	< 0.05	< 0.001	< 0.1	0.0006	5.1	3	8.1	0.4	< 1	16.7
EPA 09	N	10/10/1995	< 0.01	< 0.01	0.08	< 0.05	3.88	< 0.1	0.07	< 0.001	< 0.1	0.0015	5	< 1	5	< 0.2	< 1	11.4
EPA 09	N	1/9/1996	< 0.01	< 0.01	0.17	< 0.05	5.15	< 0.1	0.14	< 0.001	< 0.1	0.0024	9	4.9	13.9	< 0.2	< 1	8.7
EPA 09	N	4/10/1996	< 0.01	< 0.01	0.11	< 0.05	4.2	< 0.1	0.09	< 0.001	< 0.1	0.0008	6.6	2.3	8.9	< 0.2	< 1	10.2
EPA 09	N	7/17/1996	< 0.01	< 0.01	0.15	< 0.05	4.94	< 0.1	0.12	< 0.001	< 0.1	0.0007	8	3.8	11.8	< 0.2	< 1	7.3
EPA 09	N	10/8/1996	< 0.01	< 0.01	0.13	< 0.05	4.61	< 0.1	0.11	< 0.001	< 0.1	< 0.0003	6.6	9	15.6	< 0.2	< 1	9.2
EPA 09	N	1/28/1997	< 0.01	< 0.01	0.12	< 0.05	4.25	< 0.1	0.09	0.002	< 0.1	< 0.0003	8.8	8.1	16.9	2.7	< 1	10.7
EPA 09	N	4/15/1997	< 0.01	< 0.01	0.15	< 0.05	5.03	< 0.1	0.12	< 0.001	< 0.1	< 0.0003	10.6	6.6	17.2	< 0.2	< 1	14.3
EPA 09	N	7/15/1997	< 0.01	< 0.01	0.17	< 0.05	5.22	< 0.1	0.14	< 0.001	< 0.1	< 0.0003	12	6.3	18.3	< 0.2	< 1	13
EPA 09	N	10/15/1997	< 0.01	< 0.01	0.21	< 0.05	6.12	< 0.1	0.16	0.001	< 0.1	0.001	10.8	14.6	25.4	< 0.2	5.5	14.1
EPA 09	N	1/20/1998	< 0.01	< 0.005	0.22	< 0.05	6.33	< 0.1	0.15	< 0.001	< 0.1	0.0008	12.6	9.5	22.1	< 0.2	< 1	12.3
EPA 09	N	4/14/1998	< 0.01	< 0.005	0.18	< 0.05	5.5	< 0.1	0.16	< 0.001	< 0.1	0.0008	12.5	7.2	19.7	< 0.2	< 1	15.9
EPA 09	N	7/14/1998	< 0.01	< 0.005	0.19	< 0.05	6.28	< 0.1	0.15	< 0.001	< 0.1	0.0012	12.5	6.3	18.8	< 0.2	< 1	15.1
EPA 09	N	10/13/1998	< 0.01	< 0.005	0.19	< 0.05	5.67	< 0.1	0.15	< 0.001	< 0.1	0.0008	11.8	8	19.8	< 0.2	< 1	18.9
EPA 09	N	1/12/1999	< 0.01	< 0.005	0.19	< 0.05	5.82	< 0.1	0.14	< 0.001	< 0.1	0.0017	10.9	6.6	17.5	< 0.2	10.6	10.6
EPA 09	N	4/13/1999	< 0.01	< 0.005	0.22	< 0.05	6.28	< 0.1	0.16	< 0.001	< 0.1	0.0015	11.9	12.2	24.1	< 0.2	< 1	17.4
EPA 09	N	7/20/1999	< 0.01	< 0.005	0.17	< 0.05	4.9	< 0.1	0.13	< 0.001	< 0.1	0.0013	12.7	8.4	21.1	< 0.2	< 1	13.5
EPA 09	N	10/12/1999	< 0.01	< 0.005	0.17	< 0.05	5.84	< 0.1	0.12	< 0.001	< 0.1	< 0.0003	12.7	10.4	23.1	< 0.2	< 1	17.4
EPA 09	N	1/11/2000	0.01	< 0.005	0.21	< 0.05	6.52	< 0.1	0.2	< 0.001	< 0.1	0.0013	12.6	8.5	21.1	< 0.2	< 1	16.2
EPA 11	N	7/25/1989	< 0.05	< 0.01	0.24	< 0.05	3.3	68	0.45	< 0.001	< 0.01	0.010	5.4	2.2	7.6	5.8	< 1	5.3
EPA 11	N	10/4/1989	< 0.05	< 0.01	0.22	< 0.05	3.2	50	0.46	< 0.001	< 0.1	0.014	5.3	2.8	8.1	0.5	< 1	6.1
EPA 11	N	1/16/1990	< 0.05	< 0.01	0.23	< 0.05	3.3	50	0.49	< 0.001	< 0.1	0.008	5.6	3.6	9.2	0.7	< 1	7.1
EPA 11	N	4/17/1990	< 0.05	< 0.01	0.23	< 0.05	3.1	46	0.48	< 0.001	< 0.1	0.010	6.8	1	7.8	< 0.2	< 1	6.8



**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l
<b>NRC Standard</b>			<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>80</b>	<b>NA</b>	<b>0.757</b>
<b>EPA Standard</b>			<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>8592</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>5693</b>	<b>250</b>	<b>NA</b>	<b>190</b>	<b>80</b>	<b>5</b>	<b>0.757</b>
EPA 12	N	7/25/1989	6865.90	6.10	5.96	4722	582	430	151	9.7	139	3151	30.2	0.38	0.02	< 1	< 0.1	0.001
EPA 12	N	10/4/1989	6865.80	5.90	6.40	4742	534	414	132	10.9	167	3039	26.4	0.37	0.03	< 1	0.11	0.001
EPA 12	N	1/16/1990	6864.80	5.90	6.01	4712	505	392	148	9.82	146	3074	27.1	0.4	0.7	< 1	< 0.1	0.002
EPA 12	N	4/17/1990	6863.90	5.90	6.47	4757	521	402	143	9.2	170	2989	27	0.41	0.15	< 1	< 0.1	0.002
EPA 12	N	7/12/1990	6862.80	6.00	6.26	4839	532	437	143	10	139	2754	27.9	0.27	0.12	< 1	< 0.1	0.084
EPA 12	N	10/16/1990	6862.20	6.00	6.65	4816	491	409	146	10.7	142	3102	29	0.32	0.07	< 1	< 0.1	0.095
EPA 12	N	1/8/1991	6861.40	6.00	6.29	4828	536	429	144	24	140	3100	27.3	0.48	0.07	< 1	0.1	0.004
EPA 12	N	4/16/1991	6861.00	5.90	6.86	4863	527	429	137	8.5	109	3204	27.6	0.31	0.1	< 1	0.14	0.066
EPA 12	N	7/3/1991	6860.40	5.80	6.32	4623	486	409	133	8	119	3257	25.1	0.41	0.03	< 1	0.34	0.055
EPA 12	N	10/22/1991	6859.70	5.80	6.28	4884	507	423	140	8.5	139	3226	29.5	0.16	< 0.01	< 1	0.2	0.054
EPA 12	N	1/22/1992	6858.40	5.90	6.24	5060	531	423	130	8.2	75.4	3162	24.8	1.72	< 0.01	< 1	< 0.1	0.036
EPA 12	N	4/2/1992	6857.50	5.60	7.04	4820	523	457	167	11.1	122	3297	23.4	1.5	< 0.1	< 1	< 0.1	0.026
EPA 12	N	7/15/1992	6856.00	5.80	7.22	5073	495	438	149	9.3	50	3264	23.8	0.23	< 0.1	< 1	< 0.1	0.013
EPA 13	N	7/25/1989	6881.30	5.50	5.56	5054	576	479	136	11.8	31.7	3454	29.7	0.84	14.1	< 1	0.21	0.007
EPA 13	N	10/4/1989	6880.40	5.50	6.40	4736	550	407	129	15.1	86.1	3180	27.6	0.51	26	< 1	0.42	0.012
EPA 13	N	1/16/1990	6878.50	5.10	5.30	5042	482	477	128	12.3	14.4	3420	26.4	0.96	4.6	< 1	0.19	0.021
EPA 13	N	4/17/1990	6877.70	5.00	5.60	5256	496	485	122	11.8	66.6	3377	27.4	1.03	4.1	< 1	< 0.1	0.024
EPA 13	N	7/17/1990	6876.80	5.30	5.60	5140	590	527	117	11.3	40	3253	25	0.51	10.8	< 1	0.24	0.033
EPA 13	N	10/16/1990	6876.10	5.70	5.98	5067	513	422	129	12.6	39	3355	31.1	0.57	6.8	< 1	0.1	0.016
EPA 13	N	1/8/1991	6875.20	5.40	5.73	5153	531	515	121	23	35	3432	29.4	0.95	9.6	< 1	0.74	0.066
EPA 13	N	4/16/1991	6874.80	5.30	5.53	5255	485	457	124	12.8	13	3460	49.5	1.05	5.6	< 1	< 0.1	0.031
EPA 13	N	7/3/1991	6876.30	5.20	5.66	5240	472	473	109	10.4	25	3357	23.6	1.2	0.45	< 1	1.14	0.044
EPA 13	N	10/22/1991	6876.10	5.20	5.75	5409	488	466	114	11.3	39	3611	28.5	0.78	< 0.01	< 1	0.22	0.1
EPA 13	N	1/22/1992	6875.52	5.40	5.48	5640	502	496	115	10.6	15.1	3733	24.1	0.46	< 0.01	< 1	< 0.1	0.077
EPA 13	N	4/7/1992	6875.22	5.40	6.79	5228	629	539	149	14.1	59.9	3924	26.7	0.92	< 0.1	< 1	0.2	0.134
EPA 13	N	7/15/1992	6874.00	5.60	4.25	5888	541	556	131	11.5	< 1	3862	21.6	0.49	< 0.1	< 1	< 0.1	0.084
EPA 13	N	10/14/1992	6873.50	5.80	5.25	6201	534	572	131	11.7	29.3	4186	32.7	0.58	< 0.1	< 1	0.58	0.175
EPA 13	N	1/14/1993	6873.00	5.70	5.02	6412	636	738	128	12.4	92.3	4391	30.1	0.11	< 0.1	< 1	0.42	0.23
EPA 13	N	4/15/1993	6872.00	5.80	5.81	5848	469	731	155	10	38	4315	27.6	0.64	< 0.1	< 1	< 0.1	0.186
EPA 13	N	7/20/1993	6872.10	5.90	5.89	6564	535	817	137	10.9	28.5	4790	28.9	0.61	< 0.1	< 1	< 0.1	0.265
EPA 13	N	10/12/1993	6869.80	6.20	5.38	6064	518	715	135	10.3	21	4387	30.4	0.56	< 0.1	< 1	< 0.1	0.154
EPA 13	N	1/11/1994	6871.60	6.10	6.15	6208	510	696	145	9.8	57.2	4444	30	0.57	< 0.1	< 1	< 0.1	0.225
EPA 13	N	4/20/1994	6871.60	6.00	6.00	6116	514	686	132	9.1	79.2	4436	30.7	1.33	< 0.1	< 1	< 0.1	0.262
EPA 13	N	7/26/1994	6871.60	5.90	6.51	6088	528	782	154	10.9	67.6	4343	33.3	0.17	< 0.1	< 1	0.66	0.199
EPA 13	N	10/11/1994	6870.40	5.90	6.46	6762	506	806	162	11	80.5	4784	34.7	0.97	< 0.1	< 1	< 0.1	0.192

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l	pci/l
<b>NRC Standard</b>			<b>0.05</b>	<b>0.09</b>	<b>NA</b>	<b>0.08</b>	<b>NA</b>	<b>NA</b>	<b>0.569</b>	<b>0.01</b>	<b>0.1</b>	<b>0.395</b>	<b>NA</b>	<b>NA</b>	<b>35.2</b>	<b>17</b>	<b>5.7</b>	<b>39.7</b>
<b>EPA Standard</b>			<b>0.004</b>	<b>0.09</b>	<b>0.391</b>	<b>0.08</b>	<b>9.1</b>	<b>66.1</b>	<b>0.569</b>	<b>0.05</b>	<b>0.1</b>	<b>0.395</b>	<b>NA</b>	<b>NA</b>	<b>35.2</b>	<b>17</b>	<b>5.7</b>	<b>39.7</b>
EPA 12	N	7/25/1989	< 0.05	< 0.01	0.11	< 0.05	4.1	7.6	0.3	< 0.001	< 0.1	0.0017	5.7	2.6	8.3	3.4	< 1	7.1
EPA 12	N	10/4/1989	< 0.05	< 0.01	0.11	< 0.05	3.5	6.3	0.27	< 0.001	< 0.1	0.004	5.9	3.1	9	2.2	2	13
EPA 12	N	1/16/1990	< 0.05	< 0.01	0.13	< 0.05	3.5	6.7	0.24	< 0.001	< 0.1	0.004	5	3.6	8.6	< 0.2	< 1	5.5
EPA 12	N	4/17/1990	< 0.05	< 0.01	0.08	< 0.05	3.5	5.3	0.2	< 0.001	< 0.1	0.003	6.3	5.8	12.1	< 0.2	< 1	6.5
EPA 12	N	7/12/1990	< 0.05	< 0.01	0.1	< 0.05	3.5	7.01	0.19	< 0.001	< 0.1	0.0029	6.8	6.5	13.3	< 0.2	2.4	< 1
EPA 12	N	10/16/1990	< 0.05	< 0.01	0.13	< 0.05	3.35	6.54	0.19	< 0.001	< 0.1	0.0007	5.2	9.2	14.4	< 0.2	< 1	5
EPA 12	N	1/8/1991	< 0.01	< 0.01	0.12	< 0.05	3.06	3.87	0.21	0.001	< 0.1	0.0036	4.2	1	5.2	< 0.2	< 1	4
EPA 12	N	4/16/1991	< 0.01	< 0.01	0.14	< 0.05	3.68	6.26	0.21	< 0.001	< 0.1	0.001	8.3	8.4	16.7	< 0.2	2	8
EPA 12	N	7/3/1991	< 0.01	< 0.01	0.1	< 0.05	2.97	3.82	0.17	< 0.001	< 0.1	0.001	4.9	3.8	8.7	< 0.2	< 1	5
EPA 12	N	10/22/1991	< 0.01	< 0.01	0.11	< 0.05	3.32	3.32	0.17	< 0.001	< 0.1	< 0.0003	4.8	< 1	4.8	< 0.2	< 1	5
EPA 12	N	1/22/1992	< 0.01	< 0.01	0.12	< 0.05	3.02	3.7	0.17	< 0.001	< 0.1	0.007	7.7	6.8	14.5	< 0.2	< 1	8
EPA 12	N	4/2/1992	< 0.01	< 0.01	0.14	< 0.05	3.31	2.4	0.16	< 0.001	< 0.1	< 0.0003	6.3	8	14.3	< 0.2	1.1	6.5
EPA 12	N	7/15/1992	< 0.01	< 0.01	0.13	< 0.05	3.1	1.9	0.14	< 0.001	< 0.1	0.007	6.3	13	19.3	< 0.2	< 1	6.5
EPA 13	N	7/25/1989	< 0.05	< 0.01	0.47	< 0.05	6.2	1.5	0.59	< 0.001	< 0.1	0.006	5.9	3	8.9	6.4	2.7	5.3
EPA 13	N	10/4/1989	< 0.05	< 0.01	0.23	< 0.05	3.4	1.5	0.37	< 0.001	< 0.1	< 0.028	4.7	3.6	8.3	0.8	< 1	5.9
EPA 13	N	1/16/1990	< 0.05	< 0.01	0.42	0.06	6.4	0.51	0.6	0.001	< 0.1	0.009	4.6	7.3	11.9	< 0.2	< 1	5.1
EPA 13	N	4/17/1990	< 0.05	< 0.01	0.36	< 0.05	5.8	0.57	0.46	< 0.001	< 0.1	0.007	6.2	2.4	8.6	< 0.02	< 1	6.9
EPA 13	N	7/17/1990	< 0.05	< 0.01	0.25	< 0.05	5.5	0.69	0.33	< 0.001	< 0.1	0.0078	2.2	4.8	7	< 0.2	< 1	5
EPA 13	N	10/16/1990	< 0.05	< 0.01	0.22	< 0.05	5.21	0.8	0.34	< 0.001	< 0.1	0.0117	5.1	4.2	9.3	< 0.2	1.4	5
EPA 13	N	1/8/1991	< 0.01	< 0.01	0.21	< 0.05	6.62	0.81	0.39	< 0.001	< 0.1	0.0054	4.4	8	12.4	< 0.2	< 1	4
EPA 13	N	4/16/1991	< 0.01	< 0.01	0.33	< 0.05	7.16	0.89	0.36	< 0.001	< 0.1	0.004	3.3	8	11.3	< 0.2	< 1	3
EPA 13	N	7/3/1991	< 0.01	< 0.01	0.32	< 0.05	7.2	0.59	0.37	< 0.001	< 0.1	0.0029	3	1.2	4.2	< 0.2	< 1	3
EPA 13	N	10/22/1991	< 0.01	< 0.01	0.27	< 0.05	7.04	0.58	0.38	0.001	< 0.1	0.0156	4.2	< 1	4.2	< 0.2	2.3	4
EPA 13	N	1/22/1992	< 0.01	< 0.01	0.23	< 0.05	6.59	0.64	0.26	< 0.001	< 0.1	0.004	6.9	3.5	10.4	< 0.2	< 1	7
EPA 13	N	4/7/1992	< 0.01	0.02	0.21	< 0.05	6.56	0.8	0.3	< 0.001	< 0.1	0.004	4.2	7.5	11.7	< 0.2	1.3	4.3
EPA 13	N	7/15/1992	< 0.01	< 0.01	0.23	< 0.05	6.33	0.83	0.22	0.001	< 0.1	0.009	5.9	9.3	15.2	< 0.2	< 1	6.1
EPA 13	N	10/14/1992	< 0.01	< 0.01	0.21	< 0.05	6.43	0.9	0.2	< 0.001	< 0.1	0.002	4.7	8.7	13.4	< 0.2	1.2	4.9
EPA 13	N	1/14/1993	< 0.01	< 0.01	0.15	< 0.05	6.24	0.78	0.24	< 0.001	< 0.1	0.013	5.8	8.6	14.4	< 0.2	< 1	6.5
EPA 13	N	4/15/1993	< 0.01	< 0.01	0.14	< 0.05	5.81	0.59	0.2	< 0.001	< 0.1	0.017	3	7.7	10.7	< 0.2	< 1	3.5
EPA 13	N	7/20/1993	< 0.01	< 0.01	0.14	< 0.05	5.65	0.73	0.18	< 0.001	< 0.1	0.017	4.5	5.4	9.9	< 0.2	< 1	5.1
EPA 13	N	10/12/1993	< 0.01	< 0.01	0.11	< 0.05	5.51	0.6	0.14	< 0.001	< 0.1	0.024	5.4	5.5	10.9	< 0.2	< 1	6
EPA 13	N	1/11/1994	< 0.01	< 0.01	0.07	< 0.05	5.51	0.67	0.19	< 0.001	< 0.1	0.027	4.5	6.2	10.7	< 0.2	< 1	14.8
EPA 13	N	4/20/1994	< 0.01	< 0.01	0.09	< 0.05	4.69	0.48	0.14	< 0.001	< 0.1	0.023	5.1	9.9	15	< 0.2	< 1	20.1
EPA 13	N	7/26/1994	< 0.01	< 0.01	0.1	< 0.05	5.9	0.66	0.13	< 0.001	< 0.1	0.019	5.3	13.8	19.1	< 0.2	1.7	26.2
EPA 13	N	10/11/1994	< 0.01	< 0.01	0.11	< 0.05	5.26	0.57	0.13	< 0.001	< 0.1	0.022	5.6	6.5	12.1	< 0.2	< 1	19.5

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
EPA 13	N	1/10/1995	6869.90	6.00	6.57	6748	545	815	142	12	98.6	4810	34	1.28	< 0.1	< 1	< 0.1	0.253
EPA 13	N	4/11/1995	6870.20	6.20	6.13	6718	522	714	154	11	94.5	4729	40	1.36	< 0.1	< 1	< 0.1	0.23
EPA 13	N	7/11/1995	6869.40	6.90	6.61	6107	500	814	141	10.5	67.1	4435	37.7	1.14	< 0.1	< 1	< 0.1	0.255
EPA 13	N	10/10/1995	6869.30	6.20	6.85	6119	485	730	154	11.2	78.1	4340	33.6	1.12	< 0.1	< 1	< 0.1	0.225
EPA 13	N	1/9/1996	6868.90	6.30	6.47	6144	465	730	141	10.4	95	4440	33.6	0.45	< 0.1	< 1	< 0.1	0.227
EPA 13	N	4/10/1996	6867.30	6.80	7.09	6642	544	877	148	11.1	85.8	5040	35.9	0.53	< 0.1	< 1	< 0.1	0.295
EPA 13	N	7/17/1996	6868.70	6.20	6.23	6694	468	761	149	11.7	74.5	4320	39	0.45	< 0.1	< 1	< 0.1	0.269
EPA 13	N	10/8/1996	6868.50	6.30	6.32	6670	519	830	151	11.5	79.1	4689	36	0.5	< 0.1	< 1	< 0.1	0.301
EPA 13	N	1/28/1997	6868.20	6.50	6.95	6570	512	800	132	10.9	101	4570	50.1	0.48	< 0.1	< 1	< 0.1	0.43
EPA 13	N	4/15/1997	6868.00	6.30	6.79	6750	510	828	145	11.6	100	4740	39.2	0.51	< 0.1	1	< 0.1	0.331
EPA 13	N	7/15/1997	6868.00	6.20	7.02	6740	499	795	145	11.6	83.7	4620	38.7	0.48	< 0.1	< 1	< 0.1	0.464
EPA 13	N	10/15/1997	6867.50	6.40	7.21	6670	497	830	144	11.1	89.5	4620	49.6	0.6	< 0.1	< 1	< 0.1	0.595
EPA 13	N	1/20/1998	6867.80	6.00	7.07	6610	486	780	152	12.3	84.7	4700	43.4	0.84	< 0.1	< 1	< 0.1	0.444
EPA 13	N	4/14/1998	6867.60	6.30	7.12	6630	494	795	138	10.6	83	4560	38	0.55	< 0.1	< 1	< 0.1	0.563
EPA 13	N	7/14/1998	6867.40	6.00	6.89	6700	473	777	149	11.8	76.8	4100	35.6	0.59	0.11	< 1	< 0.1	0.45
EPA 13	N	10/13/1998	6868.50	5.93	7.72	6440	472	795	151	12	90.2	4520	36.1	0.65	< 0.1	< 1	< 0.1	0.613
EPA 13	N	1/12/1999	6868.20	6.20	6.99	6510	410	769	137	11.7	92	4450	36.8	0.6	< 0.1	< 1	< 0.1	0.514
EPA 13	N	4/13/1999	6868.10	6.10	6.93	6520	456	776	136	11.1	86	4200	46	0.69	< 0.1	< 1	< 0.1	0.717
EPA 13	N	7/20/1999	6868.02	6.20	6.94	6510	476	791	134	12.8	77	4260	42	0.53	< 0.1	< 1	< 0.1	< 0.001
EPA 13	N	10/12/1999	6867.90	6.10	7.16	6520	430	726	133	11.4	100	3890	40.7	0.53	< 0.1	< 1	< 0.1	0.443
EPA 13	N	1/11/2000	6868.40	6.10	7.17	6340	455	787	138	12	92	4160	37.5	0.6	< 0.1	< 1	< 0.1	0.347
EPA 13	N	4/9/2001	6867.90	7.19	6.43	6110	522	835	138	11.6	79	4660	36.5	0.62	< 0.1	< 1	0.1	0.601
EPA 13	N	7/16/2001	6867.60	5.73	6.77	6450	421	733	139	13.3	81	3950	49.9	0.67	< 0.1	< 1	< 0.1	0.386
EPA 13	N	10/8/2001	6867.80	5.96	6.60	6390	410	710	116	11	86	3600	48.5	0.53	< 0.1	< 1	< 0.1	0.32
EPA 13	N	1/15/2002	6867.90	5.42	6.50	6250	502	804	129	12.7	91.5	4060	43.7	0.49	< 0.1	< 1	< 0.1	0.383
EPA 13	N	4/8/2002	6867.67	5.75	6.47	6300	442	728	132	11.5	88.4	3980	43.9	0.54	< 0.1	< 1	< 0.1	0.322
EPA 13	N	7/15/2002	6867.63	5.23	6.59	6450	519	840	126	10.9	85.4	4660	30.3	0.86	< 0.1	< 1	< 0.1	0.313
EPA 13	N	10/14/2002	6867.52	5.52	6.70	5770	502	832	142	12.3	86.6	4650	42.3	0.8	< 0.1	< 1	< 0.1	0.29
EPA 13	N	1/13/2003	6867.41	6.72	6.66	6190	626	973	121	10.5	78.7	5220	26.7	0.86	< 0.1	< 1	< 0.1	0.345
EPA 13	N	4/15/2003	6867.62	5.87	6.62	6360	449	784	142	14.2	84.2	4210	39.9	1.03	< 0.1	< 1	< 0.1	0.31
EPA 13	N	7/14/2003	6867.52	5.79	6.70	6430	443	725	136	12.4	78.1	3850	38.8	0.85	< 0.1	< 1	< 0.1	0.454
EPA 13	N	10/14/2003	6867.48	5.90	6.87	6270	480	808	140	11.6	83	4440	40.2	0.78	< 0.1	< 1	< 0.1	0.3
EPA 13	N	1/14/2004	6867.57	5.95	6.68	6280	493	819	132	12.6	88.1	4360	38.8	0.92	< 0.10	< 1.0	< 0.1	0.347 D
EPA 13	N	4/13/2004	6867.54	5.85	6.04	6260	452	746	137	12.6	89	4240	44.2	0.94	< 0.1	< 1	< 0.1	0.289 D
EPA 13	N	7/19/2004	6867.45	5.98	6.10	5330 H	487 D	763 D	143	11.7	77	4130 D	40	0.79	< 0.10	< 1.0	< 0.1	0.220 D

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA 13	N	1/10/1995	< 0.01	< 0.01	0.14	< 0.05	5.88	0.82	0.17	< 0.001	< 0.1	0.024	7.7	8.3	16	< 0.2	< 1	20.3
EPA 13	N	4/11/1995	< 0.01	< 0.01	0.06	< 0.05	5.82	0.47	0.1	< 0.001	< 0.1	0.022	4.8	9.5	14.3	< 0.2	< 1	19.1
EPA 13	N	7/11/1995	< 0.01	< 0.01	0.016	< 0.05	1.26	< 0.1	< 0.05	< 0.001	< 0.1	0.024	4.7	12.3	17	0.4	2.8	15.9
EPA 13	N	10/10/1995	< 0.01	< 0.01	0.05	< 0.05	5.91	0.38	0.12	< 0.001	< 0.1	0.026	4.9	1.7	6.6	< 0.2	1.1	11.8
EPA 13	N	1/9/1996	< 0.01	< 0.01	< 0.01	< 0.05	1.19	< 0.1	< 0.05	< 0.001	< 0.1	0.028	5.3	8.2	13.5	< 0.2	< 1	5.4
EPA 13	N	4/10/1996	< 0.01	< 0.01	0.06	< 0.05	5.65	0.35	0.11	< 0.001	< 0.1	0.029	4.3	10.6	14.9	< 0.2	< 1	7.6
EPA 13	N	7/17/1996	< 0.01	< 0.01	0.06	< 0.05	5.94	0.41	0.12	< 0.001	< 0.1	0.022	3.3	15.4	18.7	0.7	< 1	6
EPA 13	N	10/8/1996	< 0.01	< 0.01	0.06	< 0.05	5.71	0.34	0.12	< 0.001	< 0.1	0.027	3.6	7.9	11.5	< 0.2	< 1	4.4
EPA 13	N	1/28/1997	< 0.01	< 0.01	0.06	< 0.05	5.96	0.4	0.12	0.003	< 0.1	0.019	4.4	10	14.4	1.5	< 1	4.7
EPA 13	N	4/15/1997	< 0.01	< 0.01	0.05	< 0.05	5.87	0.34	0.12	< 0.001	< 0.1	0.013	4.5	11	15.5	< 0.2	< 1	7.8
EPA 13	N	7/15/1997	< 0.01	< 0.01	0.05	< 0.05	5.46	0.35	0.1	< 0.001	< 0.1	0.019	4.1	12	16.1	< 0.2	< 1	4.5
EPA 13	N	10/15/1997	< 0.01	< 0.01	0.07	< 0.05	6.21	0.45	0.12	< 0.001	< 0.1	0.03	3.5	11.6	15.1	< 0.2	< 1	5.4
EPA 13	N	1/20/1998	< 0.01	< 0.005	0.08	< 0.05	6.84	0.39	0.13	< 0.001	< 0.1	0.027	5	8.2	13.2	< 0.2	< 1	6.1
EPA 13	N	4/14/1998	< 0.01	< 0.005	0.05	< 0.05	5.6	0.34	0.11	< 0.001	< 0.1	0.0285	4.4	4.8	9.2	< 0.2	< 1	6.3
EPA 13	N	7/14/1998	< 0.01	< 0.005	0.05	< 0.05	6.04	0.29	0.1	< 0.001	< 0.1	0.0311	4.4	5.3	9.7	< 0.2	< 1	3.9
EPA 13	N	10/13/1998	< 0.01	< 0.005	0.05	< 0.05	5.64	0.32	0.12	< 0.001	< 0.1	0.0244	4.2	4.7	8.9	< 0.2	< 1	6.6
EPA 13	N	1/12/1999	< 0.01	0.006	0.05	< 0.05	5.6	0.26	0.08	< 0.001	< 0.1	0.0267	5.3	6.4	11.7	< 0.2	< 1	4.3
EPA 13	N	4/13/1999	< 0.01	< 0.005	0.06	< 0.05	5.96	0.33	0.1	< 0.001	< 0.1	0.0284	5.3	6.8	12.1	< 0.2	< 1	8.4
EPA 13	N	7/20/1999	< 0.01	< 0.005	0.06	< 0.05	4.6	0.26	0.1	< 0.001	< 0.1	0.0242	4.3	6.8	11.1	< 0.2	< 1	8.6
EPA 13	N	10/12/1999	< 0.01	< 0.005	0.04	< 0.05	5.63	0.3	< 0.05	< 0.001	< 0.1	0.0237	4.5	6.9	11.4	< 0.2	< 1	5.1
EPA 13	N	1/11/2000	< 0.01	< 0.005	0.06	< 0.05	5.89	0.32	0.16	< 0.001	< 0.1	0.0207	4.7	8.5	13.2	1.7	< 1	6.3
EPA 13	N	4/9/2001	< 0.01	< 0.005	0.06	< 0.05	6.33	0.3	0.15	< 0.001	< 0.1	0.023	4.6	5.1	9.7	< 0.2	< 1	6.9
EPA 13	N	7/16/2001	< 0.01	< 0.005	0.08	< 0.05	8.41	0.4	0.21	< 0.001	< 0.1	0.025	4.5	5.6	10.1	< 0.2	< 1	5.9
EPA 13	N	10/8/2001	< 0.01	< 0.005	0.04	< 0.05	4.72	0.19	0.08	< 0.001	< 0.1	0.0159	4.3	4.7	9	< 0.2	< 1	5.8
EPA 13	N	1/15/2002	< 0.01	< 0.005	0.06	< 0.05	6.42	0.3	0.16	< 0.001	< 0.1	0.0163	4.1	10.1	14.2	< 0.2	< 1	5.5
EPA 13	N	4/8/2002	< 0.01	< 0.005	0.07	< 0.05	7.14	0.4	0.17	< 0.001	< 0.1	0.018	3.9	8.7	12.6	< 0.2	< 1	6
EPA 13	N	7/15/2002	< 0.01	< 0.005	0.06	< 0.05	5.72	0.3	0.12	< 0.001	< 0.1	0.0179	4.7	6.6	11.3	< 0.2	< 1	4.9
EPA 13	N	10/14/2002	< 0.01	< 0.005	0.06	< 0.05	6.56	0.3	0.15	< 0.001	< 0.1	0.0173	4.2	4.8	9	< 0.2	< 1	5.7
EPA 13	N	1/13/2003	< 0.01	< 0.005	0.06	< 0.05	6.07	0.3	0.14	< 0.001	< 0.1	0.0167	5.8	3.9	9.7	2.2	< 1	5.8
EPA 13	N	4/15/2003	< 0.01	< 0.005	0.05	< 0.05	6.6	0.3	0.13	< 0.001	< 0.1	0.0161	5.7	13.6	19.3	0.5	< 1	8.2
EPA 13	N	7/14/2003	< 0.01	< 0.005	0.06	< 0.05	6.26	0.3	0.12	< 0.001	< 0.1	0.0127	5	< 1	5	< 0.2	< 1	4.3
EPA 13	N	10/14/2003	< 0.01	< 0.005	0.06	< 0.05	6.06	0.3	0.14	< 0.001	< 0.1	0.0157	4.5	2.3	6.8	< 0.2	< 1	7.8
EPA 13	N	1/14/2004	< 0.01	< 0.005	0.06	< 0.05	6.42	0.2	0.12	< 0.001	< 0.1	0.0157 D	4.5	5.1	9.6	< 0.2	< 1.0	8
EPA 13	N	4/13/2004	< 0.01	< 0.005	0.05	< 0.05	6.38	0.2	0.14	< 0.001	< 0.1	0.0143 D	4.2	3.3	7.5	< 0.2	< 1	6.2
EPA 13	N	7/19/2004	< 0.01	< 0.005	0.05	< 0.05	6.12	0.1	0.13	< 0.001	< 0.1	0.0134 D	5	3.9	8.9	< 0.2	< 1.0	7



**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
EPA 13	N	10/12/2004	6867.36	6.04	6.43	6410	452 D	768 D	139	11.9	83	4070 D	42	0.66	< 0.10	< 1.0	< 0.1	0.274 D
EPA 13	N	1/11/2005	6867.57	5.97	6.37	6350	464 D	744 D	132	11.3	84	3970 D	39	0.69	< 0.1	< 1.0	< 0.1	0.68 D
EPA 13	N	4/12/2005	6867.29	6.07	6.37	6050	492	786	149	11.8	76	4450	42	0.7	< 0.1	< 1.0	< 0.1	0.24
EPA 13	N	7/19/2005	6867.32	5.77	6.29	6500	463 D	733 D	146	11.4	77	4050 D	40	0.78	< 0.1	< 1.0	< 0.1	0.21 D
EPA 13	N	10/11/2005	6867.25	6.06	6.56	6270	475 D	788 D	140	11.9	82	4360 D	42	0.79	< 0.1	< 1.0	< 0.1	0.03
EPA 13	N	1/16/2006	6867.28	6.43	7.08	6190	446 D	747 D	130	11.6	82	4000 D	39	0.75	< 0.1	< 1.0	< 0.1	0.22 D
EPA 13	N	4/11/2006	6867.08	6.01	6.61	6270	470 D	773 D	141	11.7	85	4220 D	40	0.61	< 0.1	< 1.0	< 0.1	0.27 D
EPA 13	N	7/25/2006	6867.12	5.90	6.31	6320	481 D	772 D	138	11.6	80	4240 D	38	0.74	< 0.1	< 1.0	< 0.1	0.30 D
EPA 13	N	10/10/2006	6866.95	6.01	6.42	5910	483 D	784 D	132	11.8	64	4210 D	36	0.7	< 0.1	< 0.5	< 0.1	0.42 D
EPA 13	N	1/16/2007	6866.72	6.18	6.86	6280	395 D	651 D	118	10.2	76	3510 D	34	0.34	< 0.1	< 0.5	< 0.1	0.53 D
EPA 13	N	4/17/2007	6866.70	6.00	6.37	6370	469 D	798 D	126	11.7	81	4430 D	41	0.41	< 0.1	< 0.5	< 0.1	0.84 D
EPA 13	N	7/17/2007	6866.62	5.87	6.18	6280	481 D	802 D	138	11.6	85	4400 D	49	0.52	< 0.1	< 0.5	< 0.1	0.64 D
EPA 13	N	10/9/2007	6866.42	6.12	6.58	6440	476 D	781 D	136	12.3	79	4280 D	41	0.43	< 0.1	< 0.5	< 0.1	0.27 D
EPA 13	N	1/22/2008	6866.50	6.11	6.09	6220	458 D	774 D	139	13.8	84	4140 D	49	0.38	< 0.1	< 0.5	< 0.1	0.24 D
EPA 13	N	4/14/2008	6866.37	5.77	6.3	6090	506	843	138 D	11.9	74	4740 D	37	0.28	< 0.1	< 0.50	< 0.1	0.03
EPA 13	N	7/14/2008	6866.37	5.98	6.46	6250	458	748	134 D	12	77	4340 D	40	0.24	< 0.1	< 0.5	< 0.1	0.05
EPA 13	N	10/13/2008	6866.23	5.92	6.2 H	6540	484	794	134 D	12	60	4690 D	48	< 0.4	< 0.1	< 0.5	< 0.1	0.058
EPA 13	N	1/20/2009	6864.81	5.92	6.62	6560	472	800	157	13	73	4580 D	35	0.16	< 0.1	< 0.5	< 0.1	0.049
EPA 13	N	4/14/2009	6865.01	5.94	6.13	6490	455 D	778 D	145 D	11	65	4620 D	39	0.31	< 0.1	< 0.50	< 0.1	0.045
EPA 13	N	7/14/2009	6864.76	5.85	6.5	7010	478	784	135	13	52	4760 D	41	0.25	< 0.1	< 0.50	0.2	0.02
EPA 13	N	10/13/2009	6864.96	5.83	6.75	6550 H	495 D	788	141 D	13	62	4620 D	49	0.34	< 0.1	< 0.50	< 0.1	0.003
EPA 13	N	1/12/2010	6864.51	5.84	6.01	6360 D	516 D	843	151 D	13	66	4740 D	40	0.29	< 0.10	< 0.50	< 0.1	0.002 H
EPA 13	N	4/13/2010	6864.66	6.02	6.17	6740 D	496	844	151	13	66	4910 D	43	0.41	< 0.1	< 0.50	< 0.1	0.036
EPA 13	N	7/20/2010	6864.46	5.82	6.46	6930 D	490	849	145	12	58	4740 D	39 D	0.66	< 0.1	< 0.50	< 0.1	0.045
EPA 13	N	10/11/2010	6864.76	5.89	7.19	6540 D	483	812	160	13	65	4680 D	36 D	0.64	< 0.1	< 0.50	< 0.1	0.023 D
EPA 13	N	1/11/2011	6864.23	5.99	7.33	6630 D	482	826	147	13	63	4790 D	43 D	0.22	< 0.1	< 0.50	< 0.1	0.05 D
EPA 13	N	4/11/2011	6864.16	5.92	6.43	6920 D	501	841	164	14	53	4820 D	42 D	0.28	< 0.1	< 0.50	< 0.1	0.016
EPA 13	N	7/19/2011	6864.16	5.94	7.38	6710 D	476	807	161	13	50	4950 D	42 D	0.3 D	< 0.5	< 0.50	< 0.1	< 0.01
EPA 13	N	10/10/2011	6863.30	5.9	7.08	6700 D	486	839	162	14	44	4940 D	43 D	0.3 D	< 0.5	< 0.50	< 0.1	0.029
EPA 13	N	1/10/2012	6864.11	6.12	6.12 H	6780 D	500	790	151	13	51	4850 D	41 D	0.26	0.2	< 0.50	< 0.1	0.019
EPA 13	N	4/9/2012	6862.94	5.95	6.12 H	7110 D	466	862	153	13	58	4770 D	42 D	0.26	< 0.1	< 0.50	< 0.1	< 0.01
EPA 13	N	7/16/2012	6863.91	5.86	6.35 H	7110	511	911	164	13	44	4890 D	45 D	0.25	< 0.1	< 0.50	< 0.1	0.007
EPA 13	N	10/15/2012	6863.86	6.05	6.35 H	7160	532	896	171 D	14	57	5030 D	43 D	0.26	0.1	< 0.50	< 0.1	0.015
EPA 13	N	1/14/2013	6,863.93	5.89	6.17 H	6920	539	938	170 D	15	64	4880 D	46 D	0.26	< 0.1	< 0.50	< 0.1	0.007
EPA 13	N	4/8/2013	6,864.16	5.97	6.08 H	6890	525	968	187	15	62	5030 D	41 D	0.25	< 0.1	< 0.50	< 0.1	0.023

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA 13	N	10/12/2004	< 0.01	< 0.005	0.05	< 0.05	6.13	0.2	0.13	< 0.001	< 0.1	0.0119	4.6	5.4	10	< 0.2	< 1.0	7.1
EPA 13	N	1/11/2005	< 0.01	< 0.005	0.05	< 0.05	5.78	0.1	0.14	< 0.001	< 0.1	0.0135	4	7	11	< 0.2	< 1.0	7.3
EPA 13	N	4/12/2005	< 0.01	< 0.005	0.05	< 0.05	6.5	0.2	0.14	< 0.001	< 0.1	0.0135	5.7	2.9	8.6	< 0.2	< 1.0	5.3
EPA 13	N	7/19/2005	< 0.01	< 0.005	0.05	< 0.05	6.09	0.1	0.15	< 0.001	< 0.1	0.0135	4.5	3.6	8.1	< 0.2	< 1.0	6.6
EPA 13	N	10/11/2005	< 0.01	< 0.005	0.06	< 0.05	6.44	0.1	0.14	< 0.001	< 0.1	0.0129	6	3.8	9.8	< 0.2	< 1.0	7.7
EPA 13	N	1/16/2006	< 0.01	< 0.005	0.06	< 0.05	6.33	0.2	0.14	< 0.001	< 0.1	0.013	5.6	7.4	13	< 0.2	< 1.0	3.6
EPA 13	N	4/11/2006	< 0.01	< 0.005	0.06	< 0.05	6.3	0.2	0.14	< 0.001	< 0.1	0.0142	4.6	8.4	13	< 0.2	< 1.0	5.3
EPA 13	N	7/25/2006	< 0.01	< 0.005	0.06	< 0.05	7.03	0.2	0.14	< 0.001	< 0.1	0.0137	4.5	5.6	10.1	< 0.2	< 1.0	5.3
EPA 13	N	10/10/2006	< 0.01	< 0.005	0.06	< 0.05	6.59	0.2	0.15	< 0.001	< 0.1	0.0132	4.9	3.8	8.7	< 0.2	< 1	5.7
EPA 13	N	1/16/2007	< 0.01	< 0.005	0.05	< 0.05	5.32	0.2	0.11	< 0.001	< 0.1	0.0141	5.3	5.8	11.1	< 0.2	< 1	7.2
EPA 13	N	4/17/2007	< 0.01	< 0.005	0.06	< 0.05	6.6	0.2	0.14	< 0.001	< 0.1	0.0154	4.2	7.1	11.3	< 0.2	< 1	5.9
EPA 13	N	7/17/2007	< 0.01	< 0.005	0.06	< 0.05	5.95	0.2	0.15	< 0.001	< 0.1	0.0141	4.5	8.1	12.6	< 0.2	< 1	5.5
EPA 13	N	10/9/2007	< 0.01	< 0.005	0.07	< 0.05	8.13	0.2	0.16	< 0.001	< 0.1	0.0139	3.4	8.2	11.6	< 0.2	< 1	5.3
EPA 13	N	1/22/2008	< 0.01	< 0.005	0.06	< 0.05	6.14	0.2	0.15	< 0.001	< 0.1	0.014	6.9	9.7	16.6	< 0.2	4.3	6.8
EPA 13	N	4/14/2008	< 0.01	< 0.005	0.06	< 0.05	6.68	0.2	0.14	< 0.001	0.2	0.0133	4.2	10.4	14.6	0.2	< 18 U	5.7
EPA 13	N	7/14/2008	< 0.01	< 0.005	0.06	< 0.05	6.73	0.2	0.15	< 0.001	< 0.1	0.014	4.1	6.4	10.5	0.4	5 U	5.3
EPA 13	N	10/13/2008	< 0.01	< 0.005	0.06	< 0.05	6.65	0.2	0.15	< 0.001	< 0.1	0.0137	4	5.2	9.2	0.3	1.5 U	9
EPA 13	N	1/20/2009	< 0.01	< 0.005	0.05	< 0.05	6.2	0.2	0.15	< 0.001	< 0.1	0.0114	4.3	8.1	12.4	0.3	< 1 U	5.1
EPA 13	N	4/14/2009	< 0.01	< 0.005	0.06	< 0.05	6.52	0.2	0.16	< 0.001	< 0.1	0.0116	3.9	6.7	10.6	< 0.07 U	< 1 U	8
EPA 13	N	7/14/2009	< 0.01	< 0.005	0.06	< 0.05	6.88	0.3	0.16	< 0.001	< 0.1	0.0183	4.1	7.3	11.4	< 0.06 U	3.3	8
EPA 13	N	10/13/2009	< 0.01	< 0.005	0.07	< 0.05	6.98	0.2	0.17	< 0.001	< 0.1	0.0145	4.9	8.2	13.1	< 0.006 U	0.3 U	7.4
EPA 13	N	1/12/2010	< 0.01	< 0.005	0.06	< 0.05	6.22	0.2	0.16	< 0.001	< 0.1	0.0123	4.2	11	15.2	< 0.0002 U	2.1 U	6.1
EPA 13	N	4/13/2010	< 0.01	< 0.005	0.07	< 0.05	7.05	0.2	0.2	< 0.001	< 0.1	0.0151	5.2	7.3	12.5	0.09 U	< 0.03 U	7.3
EPA 13	N	7/20/2010	< 0.01	< 0.005	0.07	< 0.05	7	0.3	0.17	< 0.001	< 0.1	0.0219	6.6	7.9	14.5	< 0.03 U	1.7 U	5.8
EPA 13	N	10/11/2010	< 0.01	< 0.005	0.07	< 0.05	6.78	0.2	0.18	< 0.001	< 0.1	0.014	6.2	4.8	11	0.03 U	< 0.04 U	6.8
EPA 13	N	1/11/2011	< 0.01	< 0.005	0.08	< 0.05	7	0.2	0.19	< 0.001	< 0.1	0.0198	6	7.8	13.8	0.05 U	1.3 U	5
EPA 13	N	4/11/2011	< 0.01	< 0.005	0.08	< 0.05	6.97	0.2	0.19	< 0.001	< 0.1	0.0155	5.1	7.8	12.9	< 0.02 U	1.6	7.2
EPA 13	N	7/19/2011	< 0.01	< 0.005	0.07	< 0.05	5.9	0.2	0.22	< 0.001	< 0.1	0.0111	5.9	7.8	13.7	0.03 U	< 0.6 U	4.8
EPA 13	N	10/10/2011	< 0.01	< 0.005	0.07	< 0.05	7	0.1	0.2	< 0.001	< 0.1	0.01	5.3	7.1	12.4	0.05 U	0.4 U	5.1
EPA 13	N	1/10/2012	< 0.01	< 0.005	0.09	< 0.05	7.18	0.2	0.22	< 0.001	< 0.1	0.0118	5.1	7.6	20.3	0.02 U	0.5 U	6.6
EPA 13	N	4/9/2012	< 0.01	< 0.005	0.08	< 0.05	7.46	0.2	0.21	< 0.001	< 0.1	0.0174	6.9	8.7	24.3	0.05 U	1.9	6.7
EPA 13	N	7/16/2012	0.001	< 0.005	0.07	< 0.001	6.89	0.2	0.21	< 0.001	< 0.1	0.0172	5.6	6.3	18.2	0.002 U	1.1 U	8.3
EPA 13	N	10/15/2012	0.002	< 0.005	0.09	< 0.001	7.68	0.2	0.23	0.001	< 0.1	0.0115	4.1	9.7	13.8	0.1 U	-0.2 U	5.2
EPA 13	N	1/14/2013	0.002	< 0.005	0.09	< 0.001	7.37	0.2	0.23	< 0.001	< 0.1	0.012	5.9	8.3	14.2	0.2 U	0.5 U	5.5
EPA 13	N	4/8/2013	0.002	< 0.005	0.09	< 0.001	7.38	0.2	0.24	< 0.001	< 0.1	0.0126	6.7	11	17.7	0.2	-0.6 U	9.6

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
EPA 13	N	7/15/2013	6,863.47	5.84	6.16 H	7150	500	921	169	14	67	4850 D	41 D	0.22	<0.1	<0.50	<0.1	<0.01
EPA 13	N	10/8/2013	6,863.43	6.08	6.30 H	6760	497	936	172	14	60	4910 D	41 D	0.2	<0.1	<0.50	<0.1	0.012
EPA 13	N	1/13/2014	6,863.19	6.12	6.21	7020	508	926	170	14	56	4920	45	0.19	<0.1	<0.50	<0.1	0.001
EPA 13	N	4/7/2014	6,863.06	6.12	6.11 H	6970	502	936	174 D	15	62	4900 D	45 D	<0.05	<0.1	<0.50	<0.1	0.005
EPA 13	N	7/14/2014	6,862.98	5.97	6.30 H	6890	473	914	172 D	14	69	5010 D	43 D	0.14	<0.1	<0.50	<0.1	0.006
EPA 13	N	10/13/2014	6,862.98	5.99	6.28 H	7540	458	920	168	14	54	5030 D	45 D	<0.05	0.1	<0.50	<0.1	<0.001
EPA 13	N	1/12/2015	6862.94	6.13	6.25 H	7220	454	925	168	14	51	5070 D	47 D	<0.05	0.1	<0.50	<0.1	<0.001
EPA 13	N	4/13/2015	6862.77	5.92	6.26 H	7330	454	941	173	14	60	5180 D	46 D	<0.05	<0.1	<0.50	0.2	0.029
EPA 13	N	7/14/2015	6862.77	6.02	6.06 H	7290	512	918	152	25	63	5160 D	45 D	<0.05	<0.1	<0.50	<0.1	0.002
EPA 13	N	10/13/2015	6862.73	5.81	6.46 H	7430	470	967	171	13	45	5070 D	46 D	0.18	<0.1	<0.50	<0.1	<0.001
EPA 13	N	1/11/2016	6862.63	6.12	6.08 H	7080	471	862	163	14	63	5090 D	48 D	<0.05	<0.1	<0.50	0.2	0.014 D
EPA 13	N	4/11/2016	6862.68	5.97	6.30 H	7530	508	1010	175	14	49	5010 D	42 D	0.09	<0.1	<0.50	0.1	0.001
EPA 13	N	7/18/2016	6862.47	5.90	6.19 H	7450 DH	454	976	178	14	50	5420 D	43 D	0.06	<0.1	0.7	<0.1	0.006 D
EPA 13	N	10/10/2016	6862.42	5.98	6.22 H	7220 H	438	981	177	14	58	5380 D	44 D	<0.05	0.1	<0.50	<0.1	0.001
EPA 14	N	7/28/1989	6895.90	6.00	5.82	3189	471	245	149	4.5	146	2111	26.8	0.08	16.9	< 1	0.79	< 0.001
EPA 14	N	10/8/1989	6891.10	5.40	6.00	3672	407	281	163	6.1	99.3	2370	31.9	0.09	18.8	< 1	1.1	< 0.001
EPA 14	N	1/17/1990	6889.50	5.60	6.11	3446	424	275	155	4.6	159	2099	29.4	0.08	16.8	< 1	0.67	< 0.001
EPA 14	N	4/18/1990	6888.20	5.70	6.15	3529	430	240	140	3.4	176	2088	28.7	0.15	19	< 1	0.52	< 0.001
EPA 14	N	7/12/1990	6886.60	5.80	6.12	3559	486	281	146	5.2	173	2067	30.1	< 0.05	21.2	< 1	0.68	< 0.001
EPA 14	N	10/10/1990	6886.80	5.70	6.43	3541	380	251	153	5.9	189	2079	33.3	0.07	20.8	< 1	0.5	< 0.001
EPA 14	N	1/8/1991	6886.50	5.70	6.35	3499	462	266	152	22	185	2222	31.8	< 0.05	24.6	< 1	0.54	< 0.001
EPA 14	N	4/16/1991	6886.90	5.60	6.80	3738	436	321	177	4.3	143	2380	34.8	0.07	27.5	< 1	0.86	< 0.001
EPA 14	N	7/3/1991	6883.90	5.30	6.25	3774	421	313	158	4	102	2558	35.7	0.08	28.9	< 1	1.06	< 0.001
EPA 14	N	10/22/1991	6875.10	5.70	6.35	3296	424	229	148	4.1	234	2117	37.6	0.09	9.2	< 1	0.31	< 0.001
EPA 14	N	1/23/1992	6880.20	5.50	6.16	4045	414	296	163	4.5	115	2463	39.1	< 0.05	14	< 1	1	< 0.001
EPA 14	N	4/2/1992	6880.20	5.40	7.09	4058	464	338	213	6	126	2607	33.6	0.18	27.4	< 1	1	< 0.001
EPA 14	N	7/16/1992	6870.30	6.20	6.28	3186	393	333	183	6.3	316	2306	30.5	0.07	23.3	< 1	0.45	< 0.001
EPA 14	N	10/15/1992	6870.60	6.10	6.38	3753	491	276	179	6	159	2332	32.8	< 0.05	24.2	< 1	0.73	< 0.001
EPA 14	N	1/14/1993	6875.30	5.90	6.47	3728	485	256	156	4.4	142	2456	35.5	0.12	26.5	< 1	0.59	0.002
EPA 14	N	4/15/1993	6872.20	5.90	6.54	3401	420	217	164	3.4	180	2096	32.2	0.17	27.1	< 1	0.4	< 0.001
EPA 14	N	7/20/1993	6866.90	6.50	7.46	3350	444	285	122	3.4	370	2197	28.9	0.14	14.9	< 1	< 0.1	< 0.001
EPA 14	N	10/11/1993	6865.60	6.50	6.49	3272	503	185	137	3.5	220	1936	29.6	0.05	25.7	< 1	0.4	< 0.001
EPA 14	N	1/11/1994	6871.00	5.70	6.49	3409	446	270	158	3.5	96.8	2285	37.9	< 0.05	31.9	< 1	0.88	< 0.001
EPA 14	N	4/19/1994	6868.40	6.20	6.54	2743	450	141	144	5	250	1654	27.3	0.18	16.9	< 1	0.36	< 0.001
EPA 14	N	7/26/1994	6866.10	6.30	7.04	2710	505	151	115	3.6	284	1732	25.6	0.2	9.94	< 1	0.31	< 0.001

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA 13	N	7/15/2013	0.004	<0.005	0.09	<0.001	7.64	0.2	0.21	<0.001	<0.1	0.0152	4.8	12	16.8	0.2 U	0.7 U	4.5
EPA 13	N	10/8/2013	0.002	<0.005	0.09	<0.001	6.83	0.2	0.23	<0.001	<0.1	0.0102	8	7.7	15.7	0.06 U	0.3 U	5.3
EPA 13	N	1/13/2014	<0.001	<0.005	0.07	<0.001	6.67	0.2	0.22	<0.001	<0.1	0.0098	9.4	8.1	17.5	0.2 U	0.8 U	7.5
EPA 13	N	4/7/2014	0.002	<0.005	0.09	<0.001	6.49	0.2	0.25	<0.001	<0.1	0.0117	5.7	9.5	15.2	0.3	0.8 U	5.1
EPA 13	N	7/14/2014	0.002	<0.005	0.1	<0.001	6.9	0.2	0.25	<0.001	<0.1	0.0167	4.4	5.9	10.3	0.4	0.1 U	5.9
EPA 13	N	10/13/2014	<0.001	<0.005	0.09	<0.001	6.63	0.2	0.25	<0.001	<0.1	0.0091	6.6	18	24.6	0.1 U	1.2 U	8
EPA 13	N	1/12/2015	<0.001	<0.005	0.11	<0.001	6.88	0.2	0.29	<0.001	<0.1	0.0084	6.4	7.7	14.1	0.2 U	0.4 U	17.7
EPA 13	N	4/13/2015	0.002	<0.005	0.11	<0.001	6.62	0.2	0.26	<0.001	<0.1	0.01	5.4	7.8	13.2	0.1 U	0.5 U	27.4
EPA 13	N	7/14/2015	0.002	<0.005	0.11	<0.001	6.76	0.2	0.26	<0.001	<0.1	0.0113	5.7	9.1	14.8	0.2 U	0.2 U	22.1
EPA 13	N	10/13/2015	0.003	<0.005	0.1	<0.001	6.61	0.2	0.28	<0.001	<0.1	0.0129	6	6.8	12.8	0.4	1.4	9.4
EPA 13	N	1/11/2016	<0.001	<0.005	0.1	<0.001	6.14	0.2	0.29	<0.001	<0.1	0.0082	5.9	7.2	13.1	0.6	0.1 U	27
EPA 13	N	4/11/2016	<0.001	<0.005	0.09 D	<0.001	6.65	0.2	0.24	<0.001	<0.1	0.0075	5.8	7.4	13.2	0.2 U	0.8 U	28.8
EPA 13	N	7/18/2016	<0.001	<0.005	0.07 D	<0.001	6.3	0.2	0.23	<0.001	<0.1	0.0074	4.8	7.2	12	0.4	0.4 U	14.7
EPA 13	N	10/10/2016	<0.001	<0.005	0.11	<0.001	6.9	0.2	0.27	<0.001	<0.1	0.0102	5.2	7.7	12.9	0.2	0.6 U	11.4
EPA 14	N	7/28/1989	< 0.05	< 0.01	0.04	< 0.05	0.63	< 0.1	0.05	< 0.001	< 0.1	0.0166	3	3.4	6.4	< 0.2	< 1	3.2
EPA 14	N	10/8/1989	< 0.05	< 0.01	0.04	< 0.05	0.7	0.02	0.07	< 0.001	< 0.1	0.014	2.5	3.2	5.7	< 0.2	7.1	2.8
EPA 14	N	1/17/1990	< 0.05	< 0.01	0.01	< 0.05	0.89	< 0.1	< 0.05	< 0.001	< 0.1	0.019	2.7	< 1	2.7	2.9	2.2	5.1
EPA 14	N	4/18/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.56	< 0.1	0.07	< 0.001	< 0.1	0.022	1.9	3	4.9	< 0.2	< 1	2.4
EPA 14	N	7/12/1990	< 0.05	< 0.01	0.02	< 0.05	0.61	0.13	< 0.05	< 0.001	< 0.1	0.0223	1.4	1.9	3.3	< 0.2	4.6	2
EPA 14	N	10/10/1990	< 0.05	< 0.01	0.05	< 0.05	0.71	< 0.1	0.08	< 0.001	< 0.1	0.0323	2.8	3.7	6.5	< 0.2	< 1	4
EPA 14	N	1/8/1991	< 0.01	< 0.01	0.03	< 0.05	0.71	< 0.1	0.08	0.001	< 0.1	0.0312	2.4	< 1	2.4	< 0.2	< 1	2
EPA 14	N	4/16/1991	< 0.01	< 0.01	0.04	< 0.05	0.7	< 0.1	0.06	< 0.001	< 0.1	0.018	1.3	< 1	1.3	< 0.2	< 1	1
EPA 14	N	7/3/1991	< 0.01	< 0.01	0.05	< 0.05	0.75	< 0.1	0.07	< 0.001	< 0.1	0.0108	2.3	3.5	5.8	< 0.2	< 1	2
EPA 14	N	10/22/1991	< 0.01	< 0.01	0.03	< 0.05	0.73	< 0.1	< 0.05	< 0.001	< 0.1	0.0332	1.6	< 1	1.6	< 0.2	1.3	2
EPA 14	N	1/23/1992	< 0.01	< 0.01	0.03	< 0.05	0.81	< 0.1	< 0.05	0.001	< 0.1	0.01	2.5	1.2	3.7	< 0.2	3.3	3
EPA 14	N	4/2/1992	< 0.01	< 0.01	0.04	< 0.05	0.91	< 0.1	0.06	0.015	< 0.1	0.007	1.6	< 1	1.6	< 0.2	< 1	1.9
EPA 14	N	7/16/1992	< 0.01	< 0.01	0.02	< 0.05	0.71	< 0.1	< 0.05	0.001	< 0.1	0.028	3.6	2.9	6.5	< 0.2	< 1	3.8
EPA 14	N	10/15/1992	< 0.01	< 0.01	0.03	< 0.05	0.87	< 0.1	0.07	< 0.001	< 0.1	0.009	2.8	3.5	6.3	< 0.2	1.7	2.6
EPA 14	N	1/14/1993	< 0.01	< 0.01	0.04	< 0.05	0.42	< 0.1	0.11	< 0.001	< 0.1	0.009	3.3	3	6.3	< 0.2	< 1	3.6
EPA 14	N	4/15/1993	< 0.001	< 0.01	0.03	< 0.05	0.82	< 0.1	< 0.05	< 0.001	< 0.1	0.017	1.6	4.6	6.2	< 0.2	< 1	2.1
EPA 14	N	7/20/1993	< 0.01	< 0.01	0.01	< 0.05	0.55	0.22	< 0.05	< 0.001	< 0.1	0.054	2.6	3.5	6.1	< 0.2	< 1	2.9
EPA 14	N	10/11/1993	< 0.01	< 0.01	0.02	< 0.05	0.74	< 0.1	< 0.05	0.001	< 0.1	0.023	2.9	2.2	5.1	< 0.2	< 1	6.2
EPA 14	N	1/11/1994	< 0.01	< 0.01	0.03	< 0.05	1.18	< 0.1	< 0.05	< 0.001	< 0.1	0.014	2.7	5.8	8.5	< 0.2	< 1	12.4
EPA 14	N	4/19/1994	< 0.01	< 0.01	0.06	< 0.05	0.92	0.16	< 0.05	< 0.001	< 0.1	0.037	2.9	3	5.9	< 0.2	< 1	7.6
EPA 14	N	7/26/1994	< 0.01	< 0.01	0.02	< 0.05	1.1	0.21	< 0.05	0.011	< 0.1	0.036	3.1	< 1	3.1	< 0.2	< 1	7.3



TABLE B.1

Zone 3 Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO <sub>3</sub> mg/l	SO <sub>4</sub> mg/l	Cl mg/l	NH <sub>4</sub> as N mg/l	NO <sub>3</sub> as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
EPA 14	N	10/11/1994	6866.10	6.30	7.05	3074	500	148	146	4.6	299	1776	26.9	0.25	23.5	< 1	0.53	< 0.001
EPA 14	N	1/10/1995	6867.80	6.00	6.60	3516	545	211	154	6.6	121	2309	35.8	0.48	33	< 1	1.25	< 0.001
EPA 14	N	4/10/1995	6867.60	6.10	6.01	4051	511	284	160	5.63	104	2570	43.7	0.57	40	< 1	1.68	< 0.001
EPA 14	N	7/10/1995	6863.40	6.20	7.62	2659	500	108	124	4.6	465	1456	26.2	0.21	18.6	< 1	< 0.1	< 0.001
EPA 14	N	10/9/1995	6863.60	6.60	7.44	2864	510	135	118	4.9	439	1530	25.7	0.16	22.4	< 1	0.18	0.001
EPA 14	N	1/8/1996	6861.80	6.50	7.27	2773	525	103	120	4.7	490	1440	26	< 0.05	24.6	< 1	< 0.1	< 0.001
EPA 14	N	4/9/1996	6861.20	6.80	7.75	2825	551	109	121	5.1	516	1468	30	0.12	23.9	< 1	< 0.1	< 0.001
EPA 14	N	7/17/1996	6861.00	6.50	6.91	2907	532	116	132	5.6	498	1616	35	0.13	23.8	< 1	< 0.1	< 0.001
EPA 14	N	10/8/1996	6861.10	6.50	7.24	2900	610	143	137	5.9	511	1589	33	0.11	23.9	< 1	< 0.1	< 0.001
EPA 14	N	1/28/1997	6861.60	6.50	7.71	3200	580	170	120	5.51	459	1927	48	0.05	26.7	< 1	< 0.1	< 0.001
EPA 14	N	4/14/1997	6861.90	6.50	7.45	3000	641	134	124	5.6	584	1612	42.3	0.06	22.9	1	< 0.1	< 0.001
EPA 14	N	7/14/1997	6858.50	6.50	7.35	3160	632	148	116	5.7	627	1640	48.9	0.08	25.7	< 1	< 0.1	0.001
EPA 14	N	10/14/1997	6859.10	6.60	7.75	3280	677	165	127	6.1	616	1750	60.5	0.13	26.2	< 1	< 0.1	< 0.001
EPA 14	N	1/19/1998	6863.50	6.30	7.66	3720	600	234	147	7.7	442	2150	52.8	0.4	33.2	< 1	< 0.1	< 0.001
EPA 14	N	4/13/1998	6858.00	6.70	7.36	3310	682	157	121	6	688	1630	53.3	0.11	26.4	< 1	< 0.1	< 0.001
EPA 14	N	7/13/1998	6857.40	6.70	7.62	3560	664	164	132	7	715	1600	56.9	0.11	25.2	< 1	< 0.1	< 0.001
EPA 14	N	10/13/1998	6861.20	6.66	8.17	3810	626	247	149	7.9	527	2120	54.8	0.34	29.8	< 1	< 0.1	< 0.001
EPA 14	N	1/12/1999	6858.10	6.70	7.72	3690	622	212	124	6.7	570	1900	56.2	0.44	28.1	< 1	< 0.1	< 0.001
EPA 14	N	4/13/1999	6857.80	6.60	7.93	3690	656	191	130	7.7	647	1820	70.2	1.08	33.9	< 1	< 0.1	0.002
EPA 14	N	7/20/1999	6857.41	6.20	7.94	3730	683	217	124	9.6	667	1900	70	2.07	31.3	< 1	< 0.1	0.004
EPA 14	N	10/12/1999	6857.40	6.54	7.68	3700	669	191	122	7.9	746	1630	71.2	2.01	32.3	< 1	< 0.1	< 0.001
EPA 14	N	1/11/2000	6857.10	6.50	7.73	3790	599	211	121	8.6	650	1820	60.9	1.85	32.4	< 1	0.17	< 0.001
EPA 14	N	5/2/2000	6857.40	6.40	7.56	3800	590	200	126	8.6	627	1880	60.5	1.83	34.4	< 1	8.3	< 0.001
EPA 14	N	7/12/2000	6859.30	6.94	7.11	4410	563	368	161	8.65	239	2560	53.1	0.56	23	< 1	11.6	0.002
EPA 14	N	10/9/2000	6861.00	7.09	7.26	4440	543	423	163	9.5	153	3210	44.2	0.35	19.3	< 1	8.13	< 0.001
EPA 14	N	1/15/2001	6860.50	6.08	6.55	4550	507	379	155	9.3	113	3110	55.2	0.23	19.9	< 1	23.7	< 0.001
EPA 14	N	4/2/2001	6860.70	5.90	6.89	4570	570	439	153	8.3	104	2990	52.6	0.43	18.1	< 1	13	< 0.001
EPA 14	N	7/10/2001	6860.40	5.79	4.10	6810	491	476	201	7.1	< 0.1	4080	78.7	91.3	15.7	< 1	188	< 0.001
EPA 14	N	10/8/2001	6860.35	6.60	6.60	4780	480	390	145	9.1	83.6	2500	62	0.4	14	< 1	16.6	< 0.001
EPA 14	N	1/9/2002	6860.20	7.36	6.70	4680	532	414	139	11	83	2970	74	0.6	13.6	< 1	36.2	< 0.001
EPA 14	N	4/3/2002	6860.40	5.97	7.46	4800	566	434	171	10.5	79.9	3190	61.6	0.7	13.3	< 1	18.6	< 0.001
EPA 14	N	7/16/2002	6859.80	5.92	7.04	4830	606	466	160	9.4	95.8	3390	50.6	1.96	14	< 1	19.2	< 0.001
EPA 14	N	10/14/2002	6859.40	6.82	7.30	4160	560	425	165	9.6	130	3080	52.2	2.85	13.9	< 1	21.6	< 0.001
EPA 14	N	1/7/2003	6858.66	6.91	6.88	4730	452	347	147	8.8	140	2410	41.9	3.25	14.9	< 1	26	< 0.001
EPA 14	N	4/8/2003	6858.37	5.90	6.79	4800	516	397	184	12.4	132	3020	55.1	2.65	14.1	< 1	19.4	< 0.001

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA 14	N	10/11/1994	< 0.01	< 0.01	0.05	< 0.05	1.26	0.11	< 0.05	< 0.001	< 0.1	0.033	2.3	1	3.3	< 0.2	1.7	3.9
EPA 14	N	1/10/1995	< 0.01	< 0.01	0.06	< 0.05	2.34	< 0.1	< 0.05	< 0.001	< 0.1	0.008	4.1	4	8.1	< 0.2	1.1	10.3
EPA 14	N	4/10/1995	< 0.01	< 0.01	0.07	< 0.05	2.59	< 0.1	< 0.05	< 0.001	< 0.1	0.005	2.6	5.2	7.8	< 0.2	< 1	10.4
EPA 14	N	7/10/1995	< 0.01	< 0.01	0.01	< 0.05	1.05	0.19	< 0.05	< 0.001	< 0.1	0.064	2.3	2.6	4.9	< 0.2	< 1	7.9
EPA 14	N	10/9/1995	< 0.01	< 0.01	< 0.01	< 0.05	1.33	0.16	< 0.05	0.003	< 0.1	0.064	3.7	< 1	3.7	< 0.2	< 1	8.4
EPA 14	N	1/8/1996	< 0.01	< 0.01	0.01	< 0.05	1.15	< 0.1	< 0.05	< 0.001	< 0.1	0.081	3.2	2.3	5.5	< 0.2	1.8	2.6
EPA 14	N	4/9/1996	< 0.01	< 0.01	< 0.01	< 0.05	1.26	0.18	< 0.05	< 0.001	< 0.1	0.083	3.4	2.5	5.9	< 0.2	< 1	3.9
EPA 14	N	7/17/1996	< 0.01	< 0.01	0.02	< 0.05	1.44	0.18	< 0.05	< 0.001	< 0.1	0.09	3.4	< 1	3.4	< 0.2	< 1	3.5
EPA 14	N	10/8/1996	< 0.01	< 0.01	0.02	< 0.05	1.52	0.18	< 0.05	< 0.001	< 0.1	0.075	2.5	8	10.5	< 0.2	< 1	1.9
EPA 14	N	1/28/1997	< 0.01	< 0.01	0.03	< 0.05	1.87	0.13	< 0.05	0.003	< 0.1	0.054	2.8	3.4	6.2	< 0.2	< 1	4.2
EPA 14	N	4/14/1997	< 0.01	< 0.01	< 0.01	< 0.05	1.49	0.18	< 0.05	< 0.001	< 0.1	0.09	6.7	5.4	12.1	< 0.2	< 1	3.6
EPA 14	N	7/14/1997	< 0.01	< 0.01	< 0.01	< 0.05	1.54	0.15	< 0.05	< 0.001	< 0.1	0.088	3.1	5	8.1	< 0.2	< 1	3
EPA 14	N	10/14/1997	< 0.01	< 0.01	0.02	< 0.05	2.05	0.2	< 0.05	< 0.001	< 0.1	0.101	2.4	5.8	8.2	< 0.2	< 1	3.5
EPA 14	N	1/19/1998	< 0.01	< 0.005	0.07	< 0.05	3.21	0.13	0.06	< 0.001	< 0.1	0.075	5.1	5	10.1	< 0.2	< 1	3.9
EPA 14	N	4/13/1998	< 0.01	< 0.005	0.01	< 0.05	1.92	0.18	< 0.05	< 0.001	< 0.1	0.121	3.8	3.4	7.2	< 0.2	< 1	6
EPA 14	N	7/13/1998	< 0.01	< 0.005	< 0.01	< 0.05	2.2	0.16	< 0.05	< 0.001	< 0.1	0.12	3.9	5.4	9.3	< 0.2	< 1	2.9
EPA 14	N	10/13/1998	< 0.01	< 0.005	0.06	< 0.05	2.86	0.12	0.08	< 0.001	< 0.1	0.0906	3.8	4.7	8.5	< 0.2	< 1	4.4
EPA 14	N	1/12/1999	< 0.01	< 0.005	0.02	< 0.05	2.58	0.11	< 0.05	< 0.001	< 0.1	0.111	5.2	5.6	10.8	< 0.2	3.6	3.6
EPA 14	N	4/13/1999	< 0.01	0.005	0.03	< 0.05	2.83	0.15	< 0.05	< 0.001	< 0.1	0.11	7.8	9.4	17.2	< 0.2	< 1	10.8
EPA 14	N	7/20/1999	< 0.01	< 0.005	0.03	< 0.05	2.24	0.14	< 0.05	< 0.001	< 0.1	0.114	5.1	6.8	11.9	< 0.2	< 1	6.7
EPA 14	N	10/12/1999	< 0.01	< 0.005	0.02	< 0.05	2.86	0.15	< 0.05	< 0.001	< 0.1	0.127	3.5	7.1	10.6	< 0.2	< 1	5.2
EPA 14	N	1/11/2000	< 0.01	< 0.005	0.04	< 0.05	2.96	0.18	0.08	0.001	< 0.1	0.104	5.1	7.8	12.9	< 0.2	< 1	7.6
EPA 14	N	5/2/2000	< 0.01	0.014	0.05	< 0.05	3.24	0.2	< 0.05	< 0.001	< 0.1	0.12	8	11.1	19.1	2	< 1	6.5
EPA 14	N	7/12/2000	< 0.01	< 0.005	0.18	< 0.05	4.36	< 0.1	0.15	< 0.001	< 0.1	0.053	3.8	5.9	9.7	< 0.2	< 1	5.4
EPA 14	N	10/9/2000	< 0.01	0.008	0.18	< 0.05	3.96	< 0.1	0.15	< 0.001	< 0.1	0.0435	3.9	6.9	10.8	< 0.2	< 1	10.3
EPA 14	N	1/15/2001	0.01	0.008	0.23	< 0.05	4.65	< 0.1	0.24	< 0.001	< 0.1	0.049	5.2	< 1	5.2	< 0.2	< 1	4.5
EPA 14	N	4/2/2001	0.01	0.008	0.26	< 0.05	4.68	< 0.1	0.27	< 0.001	< 0.1	0.037	4.2	6.4	10.6	< 0.2	< 1	5.1
EPA 14	N	7/10/2001	0.08	0.014	0.56	< 0.05	16.5	< 0.1	0.54	0.001	1	0.491	5	5.3	10.3	150	< 1	13.3
EPA 14	N	10/8/2001	< 0.01	0.009	0.2	< 0.05	3.99	< 0.1	0.2	< 0.001	< 0.1	0.0432	3.9	7	10.9	< 0.2	< 1	6.6
EPA 14	N	1/9/2002	0.02	0.011	0.23	< 0.05	4.84	< 0.1	0.27	< 0.001	< 0.1	0.0598	5	8.4	13.4	< 0.2	< 1	5.6
EPA 14	N	4/3/2002	0.01	0.01	0.25	< 0.05	5.4	< 0.1	0.25	< 0.001	< 0.1	0.0334	4.6	7.3	11.9	< 0.2	< 1	8.1
EPA 14	N	7/16/2002	0.01	0.008	0.2	< 0.05	4.54	< 0.1	0.22	< 0.001	< 0.1	0.0387	4.3	11.7	16	< 0.2	< 1	7.1
EPA 14	N	10/14/2002	0.02	0.006	0.17	< 0.05	4.78	< 0.1	0.19	< 0.001	< 0.1	0.0558	4.8	5	9.8	< 0.2	< 1	7.2
EPA 14	N	1/7/2003	0.02	0.001	0.19	< 0.05	5.4	< 0.1	0.21	< 0.001	< 0.1	0.0599	4.6	5.5	10.1	< 0.2	< 1	9.2
EPA 14	N	4/8/2003	0.01	0.008	0.19	< 0.05	5.26	< 0.1	0.21	< 0.001	< 0.1	0.049	4.6	7.5	12.1	< 0.2	< 1	10.1

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
EPA 14	N	7/8/2003	6858.13	5.90	6.82	4840	575	401	172	10.8	113	3000	54.5	4.5	14.1	< 1	< 0.1	< 0.001
EPA 14	N	10/13/2003	6857.56	5.94	7.07	4740	556	434	174	10.1	104	3150	52.9	3.17	15.7	< 1	54.4	< 0.001
EPA 14	N	1/12/2004	6857.21	6.24	6.98	4760	756	437	175	10.2	95.3	1490	62.3	3.58	16.4 D	< 1.0	143	0.006
EPA 14	N	4/6/2004	6856.84	6.12	6.09	12200	675	402	159	10.6	148	2340 D	61.1	5.2 D	17.6 D	< 1	287	< 0.001
EPA 14	R	4/13/2004	no data	no data	6.14	4500	660	399	172	10.9	135	2090 D	61.3	3	18.1 D	no data	245	0.046
EPA 14	F	4/13/2004	no data	no data	6.66	4780	556	395	128	8.1	165	2910 D	45	3.15	16.9 D	no data	0.2	< 0.001
EPA 14	N	7/13/2004	6856.29	6.00	5.70	4500	637	369	177	10.7	162	2850 D	64	6.67	21.3 D	< 1.0	595 D	< 0.001
EPA 14	N	10/5/2004	6856.01	5.92	6.16	5170	743 D	437 D	181	15.9	188	2800 D	71	40 D	19.0 D	< 1.0	552	< 0.001
EPA 14	N	1/10/2005	6856.11	6.19	6.41	4750	599 D	390 D	172	10.4	149	3010 D	59	10.7	18.0 D	< 1.0	442	0.01
EPA 14	N	4/11/2005	6854.48	no data	6.21	4570	617	398	176	10.5	168	3050	62	7.9	19.4	< 1.0	105	0.003
EPA 14	N	7/18/2005	6853.66	5.94	6.33	4390	604 D	377 D	173	10.2	145	2860 D	57	6.2 D	23.5 D	< 1.0	75.8	0.005
EPA 14	N	10/10/2005	6853.01	6.33	6.40	4820	594 D	427 D	171	11.1	134	3020 D	60	10.5 D	21.1 D	< 1.0	57.9	0.004
EPA 14	N	1/16/2006	6852.62	5.95	6.19	4900	568 D	453 D	189	12.3	92	3320 D	64	35 D	17.2 D	< 1.0	304	0.02
EPA 14	N	4/10/2006	6853.48	4.90	4.99	5390	573 D	455 D	171	13.2	21	3710 D	82	50.6 D	16.8 D	< 1.0	44.3	< 0.001
EPA 14	N	7/18/2006	6851.96	4.50	4.71	5320	506 D	478 D	182 D	13.8 D	12	3820 D	74	64.4 D	20.5 D	< 1.0	69.1	< 0.001
EPA 14	N	10/10/2006	6851.39	4.48	4.56	5670	496	500 D	177	15.2	< 1	3800 D	70	73 D	25.6 D	0.93	102	0.002
EPA 14	N	1/23/2007	6850.61	4.61	4.48	5790	501 D	501 D	180	14.5	< 1	3740 D	72	62.5 D	21.2 D	5.52	64.2	< 0.001
EPA 14	N	4/10/2007	6850.35	4.53	4.38	5960	500 D	516 D	176	14.3	2	3950 D	76	67 D	27 D	4.44	66.3	< 0.001
EPA 14	N	7/16/2007	6849.86	4.31	4.34	5860	523 D	562 D	173	12.3	< 1	4280 D	70	70.2 D	32 D	3.3	102	0.002
EPA 14	N	10/9/2007	6849.38	4.31	4.36	6420	483 D	558 D	174	11.3	< 1	4220 D	79	74.9 D	24 D	2.29	121	< 0.001
EPA 14	N	1/22/2008	6848.85	4.3	4.4	6680	440 D	563 D	179	12.8	< 1	4400 D	98	94.6 D	24.6	2.87	163	< 0.001
EPA 14	N	4/15/2008	6848.61	4.2	4.07	6650	482	615	187 D	12.6	< 1	5260 D	77	91.2 D	27.9	3	137	< 0.001
EPA 14	N	7/15/2008	6848.11	4.27	4.25	6740	457	566	174 D	13	< 1	4520 D	58	78.9 D	19.3	3.07	177	< 0.003
EPA 14	N	10/14/2008	6847.51	4.20	4.27	6690	478	553	182 D	14	< 1	4740 D	76	75.9 D	17.8	3	119	< 0.001
EPA 14	N	1/13/2009	6847.61	4.28	4.28	6620	441	522	188	10	< 1	3600 D	56	78 D	20.6	< 0.5	124	< 0.001
EPA 14	N	4/7/2009	6847.36	4.38	4.34	5480	474 D	478 D	180 D	11	< 1	3950 D	46	44.4 D	7.9	1.19	52.2	< 0.001
EPA 14	N	7/7/2009	6847.16	4.07	4.22	6190	482	503	172	11	< 1	4130 D	67	50 D	15.5 D	0.5	94.2	< 0.001
EPA 14	N	10/6/2009	6846.61	4.42	4.36	5610	533 D	469	170 D	12	< 1	4110 D	71	41.4 D	6.2	1.24	50.5 D	< 0.001
EPA 14	N	1/5/2010	6846.66	4.3	4.4	6180 D	477 D	506	186	12	< 5	4300 D	60	42.9 D	15.8 D	1.36	70.7	< 0.001
EPA 14	N	4/6/2010	6846.31	4.36	4.18	5960 D	527 D	564	199 D	13	< 5	4220 D	62	48.8 D	17.0 D	0.66	96.8	< 0.001
EPA 14	N	7/13/2010	6845.71	4.17	4.35	6410 D	486 D	569	176 D	11	< 5	4660 D	60 D	46 D	20 D	1.7	113	< 0.001
EPA 14	N	10/5/2010	6846.11	4.26	4.33	6610 D	474	556	176	12	< 5	4450 D	58 D	44 D	22 D	1.01	105	0.001
EPA 14	N	1/5/2011	6845.61	4.56	4.33	6240 D	479	568	174	12	< 5	4620 D	65 D	50 D	21 D	2.24	105	< 0.001
EPA 14	N	4/6/2011	6845.41	4.37	4.38	6560 D	477	576	187	12	< 5	4930 D	66 D	50 D	30 D	2.05	124	< 0.001
EPA 14	N	7/12/2011	6845.03	4.26	4.2	6610 D	496	592	188	11	< 5	4880 D	68 D	47 D	28 D	1.02	138	< 0.001

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA 14	N	7/8/2003	< 0.01	0.007	0.2	< 0.05	5.43	< 0.1	0.25	< 0.001	< 0.1	2.31	55.5	7.7	63.2	< 0.2	< 1	90.2
EPA 14	N	10/13/2003	0.07	0.015	0.22	< 0.05	5.72	< 0.1	0.24	< 0.001	< 0.1	0.275	144	8.2	152.2	< 0.2	< 1	99.5
EPA 14	N	1/12/2004	0.28	0.018	0.23	0.1	6.53	< 0.1	0.29	0.003	< 0.1	1.10 D	118	49.5	167.5	< 0.2	32	254
EPA 14	N	4/6/2004	0.37	0.018	0.23	0.18	6.92	< 0.1	0.29	0.001	< 0.1	1.27 D	141	64.4	205.4	< 0.2	90	78.4
EPA 14	R	4/13/2004	0.42	0.01	0.19	0.23	6.03	< 0.1	0.31	0.02	< 0.1	0.893 D	82.6	13.4	96	< 0.2	40	160
EPA 14	F	4/13/2004	< 0.01	0.005	0.14	< 0.05	5.8	< 0.1	0.17	< 0.001	< 0.1	0.0289 D	17.1	9.7	26.8	< 0.2	< 1	34.5
EPA 14	N	7/13/2004	0.44	< 0.005	0.1	0.11	5.74	< 0.1	0.13	0.001	< 0.1	0.517 D	39.9	23.8	63.7	< 0.2	< 1.0	46.9
EPA 14	N	10/5/2004	0.68	0.044 D	0.24	0.29	12.4	< 0.1	0.34	< 0.001	< 0.1	1.05 D	51.1	30.4	81.5	< 0.2	86	120
EPA 14	N	1/10/2005	0.24	0.005	0.14	0.08	5.97	< 0.1	0.19	0.002	< 0.1	0.514 D	21.4	13.5	34.9	< 0.2	22	72.7
EPA 14	N	4/11/2005	0.05	< 0.005	0.1	< 0.05	6.42	< 0.1	0.13	< 0.001	< 0.1	0.111	16.6	10.5	27.1	< 0.2	< 1.0	19.7
EPA 14	N	7/18/2005	0.04	< 0.005	0.08	< 0.05	6.41	< 0.1	0.12	< 0.001	< 0.1	0.0841 D	14.3	12.1	26.4	< 0.2	< 1.0	26.6
EPA 14	N	10/10/2005	0.03	< 0.005	0.1	< 0.05	7.25	< 0.1	0.12	< 0.001	< 0.1	0.0538	16.2	13.2	29.4	< 0.2	< 1.0	25.1
EPA 14	N	1/16/2006	0.15	0.01	0.21	< 0.05	9.02	0.1	0.28	0.003	< 0.1	0.174 D	36	15.2	51.2	< 0.2	19	66.1
EPA 14	N	4/10/2006	0.04	0.009	0.41	< 0.05	12.5	< 0.1	0.41	< 0.001	< 0.1	0.0272	20.9	20.9	41.8	< 0.2	< 1.0	24.2
EPA 14	N	7/18/2006	0.05	0.011	0.61	< 0.05	16.6	< 0.1	0.55	< 0.001	< 0.1	0.0298	27.6	21.5	49.1	< 0.2	< 1.0	33.6
EPA 14	N	10/10/2006	0.06	0.012	0.66	< 0.05	18.2	< 0.1	0.58	< 0.001	< 0.1	0.0251	20	29.1	49.1	< 0.2	< 1	25.5
EPA 14	N	1/23/2007	0.05	0.012	0.63	< 0.05	17.7	< 0.1	0.56	< 0.001	< 0.1	0.0161	16.5	23.2	39.7	< 0.2	< 1	18.2
EPA 14	N	4/10/2007	0.05	0.012	0.76	< 0.05	16.9	< 0.1	0.67	< 0.001	< 0.1	0.0113	16.7	32.7	49.4	< 0.2	< 1	35.2
EPA 14	N	7/16/2007	0.06	0.012	0.72	< 0.05	15.8	< 0.1	0.76	< 0.001	< 0.1	0.0103	16.8	36.8	53.6	< 0.2	< 1	22.4
EPA 14	N	10/9/2007	0.07	0.01	0.78	< 0.05	17.3	< 0.1	0.76	< 0.001	< 0.1	0.0108	13.8	35.4	49.2	< 0.2	< 1	26.9
EPA 14	N	1/22/2008	0.09	0.015	0.9	< 0.05	20.4	< 0.1	0.87	< 0.001	< 0.1	0.014	20.9	52.3	73.2	< 0.2	4.8	27.7
EPA 14	N	4/15/2008	0.09	0.011	0.95 D	< 0.05	22	< 0.1	0.89	< 0.001	0.2	0.0141	17.2	56.1	73.3	0.3	< 2.2 U	25.9
EPA 14	N	7/15/2008	0.08	0.016	1.01	< 0.05	23.1	< 0.1	0.99	< 0.001	< 0.1	0.0133	14	32	46	0.3	5.5 U	23
EPA 14	N	10/14/2008	0.08	0.014	0.96	< 0.05	21.2	< 0.1	0.87	< 0.001	< 0.1	0.0138	13	22	35	0.3	4.5 U	32.2
EPA 14	N	1/13/2009	0.08	0.01	0.98	< 0.05	20.1	< 0.1	0.83	< 0.001	< 0.1	0.0137	12	24	36	0.6 U	0 U	23.6
EPA 14	N	4/7/2009	0.04	0.008	0.63	< 0.05	16.9	< 0.1	0.56	< 0.001	< 0.1	0.0089 D	6.7	13	19.7	0.5 U	< 1 U	14.2
EPA 14	N	7/7/2009	0.07	0.01	0.66	< 0.05	15.6	< 0.1	0.65	< 0.001	< 0.1	0.0116	9.2	23	32.2	0.4 U	4.2	19.9
EPA 14	N	10/6/2009	< 0.08	0.007	0.53	< 0.05	15.7 D	< 0.1	0.5	< 0.001	< 0.1	0.0068	6.5	13	19.5	< 0.1 U	< 0.3 U	17.3
EPA 14	N	1/5/2010	0.06	0.008	0.77	< 0.05	15.6	< 0.1	0.72	< 0.001	< 0.1	0.0115	9.3	23	32.3	0.08 U	0.8 U	14.2
EPA 14	N	4/6/2010	0.07	0.011	0.77	< 0.05	15.5	< 0.1	0.69	< 0.001	< 0.1	0.0155	9.5	19	28.5	0.04 U	< 1 U	14.9
EPA 14	N	7/13/2010	0.08	0.011	0.84	< 0.05	15	< 0.1	0.76	< 0.001	< 0.1	0.0134	11	20	31	0.2 U	2.6	15.8
EPA 14	N	10/5/2010	0.13	0.008	0.94	< 0.05	17.1	< 0.1	0.86	< 0.001	< 0.1	0.0156	6.8	20	26.8	0.2 U	3.3	37.6
EPA 14	N	1/5/2011	0.09	0.008	0.92	< 0.05	17.2	< 0.1	0.81	< 0.001	< 0.1	0.0186	10	16	26	0.2 U	2	22.1
EPA 14	N	4/6/2011	0.12	0.012	0.94	< 0.05	18	< 0.1	0.84	< 0.001	< 0.1	0.0233	6.2	17	23.2	0.2 U	2.4	11.2
EPA 14	N	7/12/2011	0.12	0.009	0.9	< 0.05	19.2	< 0.1	0.83	< 0.001	< 0.1	0.0181	6.1	14	20.1	0.5 U	2.2	32.4



TABLE B.1

Zone 3 Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO <sub>3</sub> mg/l	SO <sub>4</sub> mg/l	Cl mg/l	NH <sub>4</sub> as N mg/l	NO <sub>3</sub> as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
EPA 14	N	10/4/2011	6844.71	4.36	4.4	6180 D	477	568	176	11	<5	4950 D	67 D	42.3 D	25 D	1.3	116	<0.001
EPA 14	N	1/3/2012	6844.41	4.44	4.20 H	6240 D	514	566	177	13	<5	4470 D	60 D	36.0 D	21 D	1.22	97.3	<0.001
EPA 14	N	4/3/2012	6843.93	4.34	4.26 H	5930 D	483	481	169	12	<5	4330 D	57 D	30 D	18 D	1.02	84.4	<0.001
EPA 14	N	7/10/2012	6843.56	4.21	4.31 H	5960	482	535	174	12	<5	4320 D	63 D	29 D	23 D	1.81	83.8	<0.001
EPA 14	N	10/9/2012	6843.26	4.29	4.24 H	6080	470	480	170	12	<5	4090 D	61 D	24 D	12 D	0.66	70.8	<0.001
EPA 14	N	1/8/2013	6,841.26	4.46	4.43 H	4720	535	490	184 D	16	<5	3360 D	53 D	37.6 D	12.0 D	<0.50	39.1	<0.001
EPA 14	N	4/9/2013	6,841.10	4.7	4.78 H	2260	221	196	78	7	<5	1670 D	28 D	37.3 D	3.0 D	2.92	19.7	<0.001
EPA 14	N	7/16/2013	6,840.60	4.68	4.54 H	4740	482	392	168	10	no data	2740 D	46 D	17 D	16 D	<1.0	37.5	<0.001
EPA 14	N	10/7/2013	6,840.40	5.13	4.78 H	4900	508	485	185	18	<5	3420 D	57 D	44 D	<0.1	<0.50	22.8	<0.001
EPA 14	N	1/14/2014	6,839.99	4.97	4.72	5380	506	442	175	15	<5	3610	63	35	<0.1	<0.50	15.2	<0.001
EPA 14	N	4/7/2014	6,839.28	5.04	4.76 H	5070	482	438	181 D	16	<5	3850 D	68 D	32 D	<0.1	<0.50	18.4	<0.001
EPA 14	N	7/14/2014	6,839.59	4.99	4.39 H	4810	515	394	163 D	13	<5	3540 D	62 D	39 D	<0.1	<0.50	21.9	<0.001
EPA 14	N	10/13/2014	6,839.51	5.37	4.94 H	4370	496	346	159	12	<5	3020 D	58 D	25 D	0.1	<0.50	12.9	<0.001
EPA 14	N	1/12/2015	6839.36	6.70	5.44 H	4040	497	303	152	11	39	2810 D	53 D	16 D	<0.1	<0.50	6.3	<0.001
EPA 14	N	4/14/2015	6839.15	6.45	5.80 H	3990	496	285	149	11	60	2620 D	53	15 D	<0.1	<0.50	17	<0.001
EPA 14	N	7/13/2015	6839.13	5.59	5.73 H	4100	496	261	145	13	91	2770 D	44	15 D	<0.1	<0.50	12	<0.001
EPA 14	N	10/12/2015	6838.95	4.47	4.01 H	6550	476	567	190	16	<5	4520 D	80 D	51 D	<0.1	<0.50	92.2	<0.001
EPA 14	N	1/11/2016	6838.77	4.89	4.41 H	5590	485	434	164	16	<5	3970 D	78 D	38 D	<0.1	<0.50	63.6	<0.001
EPA 14	N	4/11/2016	6838.79	4.96	4.57 H	4830	514	419	184	13	<5	3450 D	61 D	32 D	<0.1	<0.50	23	<0.001
EPA 14	N	7/18/2016	6838.54	5.13	4.61 H	4560 D	489	368	162	13	<5	3050 D	56 D	27 D	<0.1	<0.50	20.7	<0.001
EPA 14	N	10/10/2016	6838.50	5.22	4.76 H	4440 H	495	342	156	11	<5	3230 D	57 D	23 D	<0.1	<0.50	20.8	<0.001
EPA 15	N	7/29/1989	6890.20	6.50	6.35	2567	432	145	119	4.8	288	1487	18.4	0.09	13.2	< 1	< 0.1	< 0.001
EPA 15	N	10/8/1989	6883.50	6.00	6.58	2244	380	120	110	7	302	1319	15	0.1	7.4	< 1	< 0.1	< 0.001
EPA 15	N	1/16/1990	6881.50	5.90	6.48	2524	369	139	116	5.75	302	1499	18.3	0.19	5.9	< 1	< 0.1	< 0.001
EPA 15	N	4/18/1990	6880.30	6.10	6.56	2532	381	140	117	5.6	322	1419	17.6	0.21	7.8	< 1	< 0.1	0.001
EPA 15	N	7/10/1990	6879.10	6.20	6.60	2586	392	146	113	5.1	311	1475	18.6	0.07	8.92	< 1	< 0.1	< 0.001
EPA 15	N	10/10/1990	6879.80	6.40	6.75	2548	374	143	118	6	303	1412	18.5	0.11	9.55	< 1	< 0.1	< 0.001
EPA 15	N	1/10/1991	6878.80	6.30	7.05	2359	397	142	113	7.1	316	1347	19.1	0.07	10.4	< 1	< 0.1	< 0.001
EPA 15	N	4/16/1991	6879.20	6.20	7.08	2429	382	135	130	6.1	336	1360	18.8	0.1	16.1	< 1	< 0.1	< 0.001
EPA 15	N	7/3/1991	6876.00	6.40	6.86	2548	384	149	114	5.2	325	1565	21.9	0.11	15.6	< 1	< 0.1	< 0.001
EPA 15	N	10/23/1991	6871.10	6.20	7.03	2873	401	176	134	6	278	1789	31.6	0.44	24.8	< 1	< 0.1	< 0.001
EPA 15	N	1/23/1992	6873.50	6.10	6.93	2603	368	175	122	6.3	292	1588	21.2	0.19	11.1	< 1	< 0.1	< 0.001
EPA 15	N	4/2/1992	6873.80	6.10	7.60	2809	413	209	166	8.4	312	1753	23.7	0.31	15	< 1	< 0.1	< 0.001
EPA 15	N	7/16/1992	6866.90	6.10	6.84	3214	462	262	156	7.8	246	2206	32.5	0.37	12.7	< 1	< 0.1	0.002
EPA 15	N	10/15/1992	6866.20	6.00	6.61	4002	525	263	167	10	237	2451	32.6	0.27	17.3	< 1	< 0.1	0.003

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA 14	N	10/4/2011	0.11	0.01	0.96	<0.05	18.4	<0.1	0.84	<0.001	<0.1	0.0156	6.4	1.4	7.8	0.5 U	2.2	7.8
EPA 14	N	1/3/2012	0.1	0.01	0.92	<0.05	17.3	<0.1	0.83	<0.001	<0.1	0.0145	8.2	18	44.2	<0.05 U	1.4	7.5
EPA 14	N	4/3/2012	0.09	0.01	0.85	<0.05	16.7	<0.1	0.82	<0.001	<0.1	0.0124	6.8	16	38.8	0.07 U	1.6	13.5
EPA 14	N	7/10/2012	0.076	<0.005	0.74	0.007	14.9	<0.1	0.68	<0.001	<0.1	0.0099	6.1	1.7	9.5	0.1 U	1.6	6.4
EPA 14	N	10/9/2012	0.069	0.01	0.75	0.006	15.1	<0.1	0.71	<0.001	<0.1	0.0078	8.1	18	26.1	0.03 U	1.5	4.8
EPA 14	N	1/8/2013	0.048	<0.005	0.53	0.01	12.7	<0.1	0.49	<0.001	<0.1	0.0057	8.4	9.8	18.2	0.3 U	2.1	6.5
EPA 14	N	4/9/2013	0.021	0.006	0.62	0.009	12	<0.1	0.6	<0.001	<0.1	0.0068	13	16	29	0.3 U	0.7 U	19.5
EPA 14	N	7/16/2013	0.037	0.008	0.5	0.017	10	<0.1	0.51	<0.001	<0.1	0.025	5.6	14	19.6	0.2 U	1.6	7.2
EPA 14	N	10/7/2013	0.026	0.008	0.63	0.012	11.7	<0.1	0.63	<0.001	<0.1	0.0191	12	14	26	0.2 U	0.4 U	8.7
EPA 14	N	1/14/2014	0.015	0.01	0.81	0.013	15.5	<0.1	0.82	<0.001	<0.1	0.0157	10	12	22	0.5 U	1.9	13.6
EPA 14	N	4/7/2014	0.022	0.009	0.76	0.009	14.3	<0.1	0.71	<0.001	<0.1	0.0226	13	16	29	0.2 U	1.7	9.5
EPA 14	N	7/14/2014	0.02	0.008	0.7	0.009	13.9	<0.1	0.69	<0.001	<0.1	0.0237	7.4	9.5	16.9	0.2 U	1.3	9.8
EPA 14	N	10/13/2014	0.01	0.006	0.42	0.007	10.1	<0.1	0.39	<0.001	<0.1	0.0128	8.8	13	21.8	0.7 U	1 U	10.3
EPA 14	N	1/12/2015	0.002	0.005	0.34	0.006	8.92	<0.1	0.3	<0.001	<0.1	0.0044	7.2	11	18.2	0.6	0.8 U	22.4
EPA 14	N	4/14/2015	0.006	<0.005	0.27	0.005	7.67	<0.1	0.22	<0.001	<0.1	0.012	4.9	5.6	10.5	-0.2 U	0.4 U	34.1
EPA 14	N	7/13/2015	0.003	<0.005	0.2	0.004	6.62	<0.1	0.16	<0.001	<0.1	0.0073	5.2	9.2	14.4	0.1 U	1.4	25.4
EPA 14	N	10/12/2015	0.092	0.014	0.96	0.026	17.9	<0.1	1.04	<0.001	<0.1	0.273	11	30	41	0.6	5.6	24.6
EPA 14	N	1/11/2016	0.072	0.009	0.84	0.03	14.9	<0.1	0.89	<0.001	<0.1	0.199	6	12	18	0.4 U	1.2	45.7
EPA 14	N	4/11/2016	0.034	0.006	0.53	0.023	11.6	<0.1	0.54	<0.001	<0.1	0.129	8.5	13	21.5	-0.2 U	1.9	52.8
EPA 14	N	7/18/2016	0.028	<0.005	0.46	0.014	9.71	<0.1	0.46	<0.001	<0.1	0.123	5.4	13	18.4	-0.09 U	1.2 U	16.6
EPA 14	N	10/10/2016	0.027	<0.005	0.43	0.015	8.9	<0.1	0.41	<0.001	<0.1	0.106	4.8	11	15.8	0.2	1.2	18.9
EPA 15	N	7/29/1989	< 0.05	< 0.01	< 0.01	< 0.05	1.3	0.5	< 0.05	0.001	< 0.1	0.0408	2.8	4.6	7.4	< 0.2	1.3	2.2
EPA 15	N	10/8/1989	< 0.05	< 0.01	< 0.01	< 0.05	1	< 0.43	< 0.05	< 0.001	< 0.1	0.066	6.6	< 1	6.6	57	1.1	69
EPA 15	N	1/16/1990	< 0.05	< 0.01	0.01	< 0.05	1.6	0.37	< 0.05	< 0.001	< 0.1	0.037	1.7	3.2	4.9	0.2	< 1	1.7
EPA 15	N	4/18/1990	< 0.05	< 0.01	< 0.01	0.08	1.5	0.42	< 0.05	< 0.001	< 0.1	0.039	2.1	4.3	6.4	< 0.2	< 1	2.9
EPA 15	N	7/10/1990	< 0.05	< 0.01	0.04	< 0.05	1.39	0.34	< 0.05	< 0.001	< 0.1	0.074	2.3	2.1	4.4	< 0.2	< 1	2.8
EPA 15	N	10/10/1990	< 0.05	< 0.01	0.03	< 0.05	1.45	0.3	< 0.05	< 0.001	< 0.1	0.0618	2.1	1.1	3.2	< 0.2	< 1	2
EPA 15	N	1/10/1991	< 0.01	< 0.01	0.02	< 0.05	1.19	0.33	< 0.05	0.001	< 0.1	0.0554	1.8	1.7	3.5	< 0.2	< 1	2.1
EPA 15	N	4/16/1991	< 0.01	< 0.01	0.02	< 0.05	1.15	0.43	< 0.05	< 0.001	< 0.1	0.078	2.9	< 1	2.9	< 0.2	< 1	3
EPA 15	N	7/3/1991	< 0.01	< 0.01	0.03	< 0.05	1.55	0.42	< 0.05	0.001	< 0.1	0.128	2.1	3.9	6	< 0.2	< 1	2
EPA 15	N	10/23/1991	< 0.01	< 0.01	0.02	< 0.05	2.06	0.34	0.07	< 0.001	< 0.1	0.1015	2.1	6.3	8.4	< 0.2	< 1	< 1
EPA 15	N	1/23/1992	< 0.01	< 0.01	0.01	< 0.05	2.39	< 0.56	< 0.05	0.001	< 0.1	0.065	1.6	1.8	3.4	< 0.2	1.4	2
EPA 15	N	4/2/1992	< 0.01	< 0.01	0.01	< 0.05	2.24	0.58	< 0.05	0.001	< 0.1	0.066	2	4.1	6.1	< 0.2	< 1	2.1
EPA 15	N	7/16/1992	< 0.01	< 0.01	0.02	< 0.05	2.98	0.35	< 0.05	< 0.001	< 0.1	0.034	4.6	8.8	13.4	< 0.2	< 1	4.9
EPA 15	N	10/15/1992	< 0.01	< 0.01	0.02	< 0.05	3.68	0.59	0.06	< 0.001	< 0.1	0.014	4.9	3.9	8.8	< 0.2	< 1	5.2

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
EPA 15	N	1/13/1993	6869.00	6.20	6.75	2950	459	181	124	8.2	287	1748	26.8	0.19	11	< 1	< 0.1	< 0.001
EPA 15	N	4/15/1993	6869.40	6.30	6.94	2816	471	150	132	5	322	1666	23.6	0.15	13.3	< 1	< 0.1	0.001
EPA 15	N	7/20/1993	6864.60	6.30	6.93	3326	542	240	142	8.2	287	2133	30.8	0.06	27.5	< 1	< 0.1	0.001
EPA 15	N	10/12/1993	6860.70	6.40	6.34	4110	578	306	158	9	212	2766	41.3	1.27	17	< 1	< 0.1	< 0.001
EPA 15	N	1/11/1994	6864.20	6.50	7.00	3001	499	187	128	5.7	288	1774	28.5	< 0.05	12.8	< 1	< 0.1	< 0.001
EPA 15	N	4/19/1994	6863.90	6.40	6.63	2537	411	137	125	5.8	296	1537	22.6	0.19	9.5	< 1	< 0.1	0.002
EPA 15	N	7/26/1994	6862.20	6.20	7.43	4123	627	284	139	7.1	265	2390	31	0.46	33.2	< 1	< 0.1	< 0.001
EPA 15	N	10/11/1994	6861.60	6.10	6.94	4502	640	342	163	9.6	214	3049	39	3.12	31.5	< 1	0.3	< 0.001
EPA 15	N	1/10/1995	6861.70	6.10	7.09	4144	665	204	133	8.5	244	2567	36.5	1	37.2	< 1	< 0.1	< 0.001
EPA 15	N	4/11/1995	6861.90	6.40	6.51	4187	674	302	136	7.6	262	2542	19.9	1.09	44.4	< 1	< 0.1	< 0.001
EPA 15	N	7/11/1995	6860.30	5.60	5.87	4169	585	359	144	9.9	24.5	2833	44.5	0.78	29.5	< 1	5.65	< 0.001
EPA 15	N	10/10/1995	6859.70	5.50	5.82	4153	585	370	162	10.6	23.2	2961	40	5.86	24.3	1.56	5.67	0.001
EPA 15	N	1/8/1996	6858.50	5.30	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
EPA 17	N	7/20/1989	6886.60	6.40	6.11	6709	501	785	167	13.3	159	4674	35.6	1.22	0.13	< 1	0.18	0.224
EPA 17	N	10/8/1989	6887.00	6.40	6.50	6714	491	829	160	12	154	4526	35.3	0.59	0.06	< 1	< 0.1	0.253
EPA 17	N	1/10/1990	6886.30	6.30	6.48	6822	491	844	158	13.1	162	4440	34.3	0.57	0.14	< 1	0.16	0.133
EPA 17	N	4/10/1990	6886.20	6.30	6.30	6855	495	830	153	12.4	151	4333	33.9	0.67	0.21	< 1	< 0.1	0.14
EPA 17	N	7/10/1990	6886.00	6.10	6.50	6930	493	807	154	13.8	159	4467	33.6	0.29	0.53	< 1	0.14	0.019
EPA 17	N	10/9/1990	6885.90	6.30	6.77	6854	465	812	162	13.4	135	4232	32.2	0.22	0.07	< 1	< 0.1	0.054
EPA 17	N	1/11/1991	6885.60	6.20	6.30	6678	511	795	160	14.6	122	4489	36.9	0.57	0.14	< 1	< 0.1	0.022
EPA 17	N	4/10/1991	6885.40	6.30	6.90	6751	545	758	156	12.3	143	4007	34.8	0.45	0.11	< 1	0.36	0.007
EPA 17	N	7/9/1991	6885.10	6.30	6.46	6742	563	712	139	10.9	112	4385	33.5	0.68	< 0.01	< 1	0.26	0.002
EPA 17	N	10/17/1991	6885.00	6.20	6.86	6749	514	676	155	14.1	159	4151	33.5	0.33	0.08	< 1	0.13	0.003
EPA 17	N	1/21/1992	6884.70	6.30	6.66	6718	473	769	145	11.5	159	4556	37.5	0.33	< 0.1	< 1	< 0.1	0.005
EPA 17	N	4/14/1992	6884.50	6.40	7.72	5908	441	528	157	12.5	255	3632	34.3	0.5	< 0.1	< 1	< 0.1	0.022
EPA 18	N	7/25/1989	6884.40	5.70	5.46	5818	543	608	132	11.6	44	3974	27.1	0.46	0.08	< 1	< 0.1	0.008
EPA 18	N	10/4/1989	6884.10	5.30	5.97	5742	513	604	113	12.6	49	3746	27.5	0.43	0.01	< 1	< 0.1	0.006
EPA 18	N	1/16/1990	6883.30	5.20	5.46	5514	468	549	123	11.1	19.5	3654	25.4	0.5	0.06	< 1	< 0.1	0.004
EPA 18	N	4/17/1990	6882.70	5.20	5.26	5585	464	520	122	10.5	10.2	3582	27	0.49	0.16	< 1	< 0.1	0.002
EPA 18	N	7/17/1990	6881.90	5.40	5.68	5902	543	608	124	31.8	31.5	3513	26.4	0.27	0.07	< 1	0.2	0.012
EPA 18	N	10/16/1990	6881.30	5.40	5.93	5925	508	588	139	11	26	3880	32.2	0.39	0.04	< 1	0.1	0.015
EPA 18	N	1/8/1991	6880.60	5.10	5.25	5905	518	647	129	18	12	3917	28.3	0.53	< 0.01	< 1	0.61	0.001
EPA 18	N	4/16/1991	6880.30	5.00	5.50	5946	551	712	144	10.6	10	3916	34.1	0.48	< 0.01	< 1	< 0.1	0.001
EPA 18	N	7/3/1991	6879.90	5.30	5.97	6159	577	698	129	9.4	36	4215	15.8	0.64	0.01	< 1	0.66	0.024
EPA 18	N	10/22/1991	6879.60	5.40	5.81	6202	484	722	139	10.6	69	4235	38.3	0.61	0.02	< 1	0.34	0.019

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA 15	N	1/13/1993	< 0.01	< 0.01	0.02	< 0.05	2.56	0.72	< 0.05	< 0.001	< 0.1	0.064	2	4.5	6.5	< 0.2	< 1	2.7
EPA 15	N	4/15/1993	< 0.01	< 0.01	0.03	< 0.05	1.97	0.62	< 0.05	< 0.001	< 0.1	0.099	1.8	4.3	6.1	< 0.2	< 1	2
EPA 15	N	7/20/1993	< 0.01	< 0.01	0.02	< 0.05	2.62	1.13	< 0.05	0.002	< 0.1	0.061	3	4.9	7.9	< 0.2	< 1	3.6
EPA 15	N	10/12/1993	< 0.01	< 0.01	0.02	< 0.05	4.18	< 0.1	< 0.05	0.001	< 0.1	0.03	6.4	5.5	11.9	< 0.2	1.4	8
EPA 15	N	1/11/1994	< 0.01	< 0.01	< 0.01	< 0.05	2.21	1.21	< 0.05	< 0.001	< 0.1	0.074	3.3	5.2	8.5	< 0.2	< 1	12.1
EPA 15	N	4/19/1994	< 0.01	< 0.01	0.05	< 0.05	1.16	1.2	< 0.05	0.001	< 0.1	0.121	3.1	5	8.1	< 0.2	< 1	10.8
EPA 15	N	7/26/1994	< 0.01	< 0.01	< 0.01	< 0.05	2.82	0.93	< 0.05	0.009	< 0.1	0.05	4.6	8.2	12.8	< 0.2	1.8	17.1
EPA 15	N	10/11/1994	< 0.01	< 0.01	0.07	< 0.05	4.42	0.75	< 0.05	< 0.001	< 0.1	0.029	7.7	4.5	12.2	< 0.2	3.8	14.7
EPA 15	N	1/10/1995	< 0.01	< 0.01	0.02	< 0.05	3.08	0.81	< 0.05	< 0.001	< 0.1	0.045	6	3.8	9.8	< 0.2	< 1	11.9
EPA 15	N	4/11/1995	< 0.01	< 0.01	< 0.01	< 0.05	3.08	0.67	< 0.05	< 0.001	< 0.1	0.038	4.3	5.6	9.9	< 0.2	< 1	12.7
EPA 15	N	7/11/1995	< 0.01	< 0.01	0.2	< 0.05	7.18	0.65	0.19	< 0.001	< 0.1	0.012	11.6	22.2	33.8	< 0.2	< 1	29.5
EPA 15	N	10/10/1995	< 0.01	< 0.01	0.17	< 0.05	7.13	1.05	0.16	0.01	< 0.1	0.0087	12.6	8.1	20.7	< 0.2	< 1	19.8
EPA 15	N	1/8/1996	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
EPA 17	N	7/20/1989	< 0.05	< 0.01	0.08	< 0.05	6.9	1.2	0.24	< 0.001	< 0.1	0.053	3.4	3.4	6.8	18.4	1.2	14.4
EPA 17	N	10/8/1989	< 0.05	< 0.01	0.07	< 0.05	6.7	0.83	0.21	< 0.001	< 0.1	0.076	1.1	2.7	3.8	< 0.2	< 1	3
EPA 17	N	1/10/1990	< 0.05	< 0.01	0.12	< 0.05	5.9	0.46	0.24	< 0.001	< 0.1	0.046	1.9	3.1	5	< 0.2	< 1	2.3
EPA 17	N	4/10/1990	< 0.05	0.02	0.13	no data	6.7	0.32	0.17	< 0.001	< 0.1	0.048	2.4	3.5	5.9	< 0.2	< 1	3.4
EPA 17	N	7/10/1990	< 0.05	< 0.01	0.07	< 0.05	6.77	0.22	0.25	< 0.001	< 0.1	0.045	2.5	3.7	6.2	< 0.2	< 1	2.9
EPA 17	N	10/9/1990	< 0.05	< 0.01	0.09	< 0.05	6.63	0.2	0.23	< 0.001	< 0.1	0.0332	2.2	7.6	9.8	< 0.2	< 1	2
EPA 17	N	1/11/1991	< 0.01	< 0.01	0.12	< 0.05	7.5	< 0.1	0.29	< 0.001	< 0.1	0.0134	3.4	3.9	7.3	< 0.2	< 1	3.8
EPA 17	N	4/10/1991	< 0.01	< 0.01	0.12	< 0.05	6.6	0.12	0.29	< 0.001	< 0.1	0.0147	3.2	< 1	3.2	< 0.2	< 1	3
EPA 17	N	7/9/1991	< 0.01	< 0.01	0.08	< 0.05	6.15	< 0.1	0.17	< 0.001	< 0.1	0.0151	1.8	< 5.3	1.8	< 0.2	< 1	2
EPA 17	N	10/17/1991	< 0.01	< 0.01	0.09	< 0.05	5.98	< 0.1	0.22	< 0.001	< 0.1	0.0132	2	< 1	2	< 0.2	< 1	2
EPA 17	N	1/21/1992	< 0.01	< 0.01	0.08	< 0.05	5.42	0.1	0.17	0.001	< 0.1	0.023	1.3	< 1	1.3	< 0.2	1.2	1
EPA 17	N	4/14/1992	< 0.01	< 0.01	0.05	< 0.05	5.08	0.37	0.15	0.002	< 0.1	0.041	1.2	8.3	9.5	< 0.2	< 1	1.2
EPA 18	N	7/25/1989	< 0.05	< 0.01	0.19	< 0.05	6.7	0.05	0.23	< 0.001	< 0.1	0.031	7.3	5.3	12.6	6.1	< 1	8
EPA 18	N	10/4/1989	< 0.05	< 0.01	0.21	< 0.05	7	< 0.01	0.27	< 0.001	< 0.1	0.037	5.6	6.9	12.5	0.3	2.1	6.2
EPA 18	N	1/16/1990	< 0.05	< 0.01	0.2	< 0.05	7.5	< 0.1	0.3	< 0.001	< 0.1	0.019	4.5	7.7	12.2	0.7	< 1	5.3
EPA 18	N	4/17/1990	< 0.05	< 0.01	0.2	< 0.05	6.3	< 0.1	0.27	< 0.001	< 0.1	0.019	7.1	5.4	12.5	< 0.2	1.2	7.6
EPA 18	N	7/17/1990	< 0.05	< 0.01	0.17	< 0.05	6.09	0.12	0.28	< 0.001	< 0.1	0.0824	4.2	3.4	7.6	< 0.2	< 1	4
EPA 18	N	10/16/1990	< 0.05	< 0.01	0.19	< 0.05	6.49	< 0.1	0.27	< 0.001	< 0.1	0.0577	6.3	12.1	18.4	< 0.2	1.4	6
EPA 18	N	1/8/1991	< 0.01	< 0.01	0.21	< 0.05	6.89	< 0.1	0.27	< 0.001	< 0.1	0.0357	6.4	7.6	14	< 0.2	< 1	6
EPA 18	N	4/16/1991	< 0.01	< 0.01	0.17	< 0.05	6.13	< 0.1	0.22	< 0.001	< 0.1	0.031	5.5	9.6	15.1	< 0.2	2.5	6
EPA 18	N	7/3/1991	< 0.01	< 0.01	0.14	< 0.05	6.62	0.1	0.2	< 0.001	< 0.1	0.07	4.2	8.2	12.4	< 0.2	< 1	4
EPA 18	N	10/22/1991	< 0.01	< 0.01	0.13	< 0.05	7.44	< 0.1	0.21	< 0.001	< 0.1	0.0005	4.6	< 1	4.6	< 0.2	< 1	5



TABLE B.1

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Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
EPA 18	N	1/22/1992	6879.00	5.60	6.00	6396	484	657	135	10.4	36.8	4267	29.4	0.61	< 0.01	< 1	0.27	0.014
EPA 18	N	4/2/1992	6878.80	5.50	7.16	5799	508	660	167	13.1	75.1	4351	38.3	0.67	< 0.01	< 1	< 0.1	0.014
EPA 18	N	7/15/1992	6877.70	5.50	6.09	6375	492	686	131	11.5	8	4196	29.7	0.25	0.1	< 1	< 0.1	0.003
EPA 18	N	10/14/1992	6877.20	5.30	5.38	6100	480	624	132	11.3	12.2	4126	30.5	0.32	< 0.1	< 1	0.18	0.002
EPA 18	N	1/14/1993	6877.90	5.20	5.74	5947	455	609	137	9.9	16.8	4187	30.9	0.69	< 0.1	< 1	< 0.1	< 0.001
EPA 18	N	4/15/1993	6877.80	5.30	5.79	6132	414	694	152	9.8	18.1	3999	31.2	0.51	0.2	< 1	< 0.1	0.001
EPA 18	N	7/20/1993	6876.50	5.30	5.75	5982	489	705	147	10.4	12.3	4215	31.9	0.32	< 0.1	< 1	< 0.1	< 0.001
EPA 18	N	10/12/1993	6873.80	5.80	5.44	5825	473	690	135	10.5	18	4264	28.9	0.39	< 0.1	< 1	< 0.1	< 0.001
EPA 18	N	1/11/1994	6875.60	5.70	6.22	6038	453	707	134	10.2	20.3	4228	29.5	0.46	< 0.1	< 1	< 0.1	< 0.001
EPA 18	N	4/20/1994	6874.90	5.50	6.00	5622	458	683	125	9.8	15.3	4196	33	1.09	< 0.1	< 1	< 0.1	< 0.001
EPA 18	N	7/26/1994	6875.90	5.70	6.69	5618	525	682	149	11.3	17.7	4106	30.7	0.46	< 0.1	< 1	< 0.1	< 0.001
EPA 18	N	10/11/1994	6874.50	5.80	6.55	6374	456	764	157	11.4	22.4	4604	33.7	0.75	< 0.1	< 1	< 0.1	< 0.001
MW-6	N	7/19/2011	6801.44	6.67	7.29	3970 D	458	328	184	10	225	2610 D	35 D	0.35	<0.5	<0.50	0.1	0.005
MW-6	N	10/11/2011	6801.57	6.71	7.49	4130 D	no data	no data	no data	no data	191	no data	32 D	no data	no data	no data	no data	no data
MW-6	N	1/10/2012	6801.19	6.59	7.04 H	3920	no data	no data	no data	no data	206	no data	37 D	no data	no data	no data	no data	no data
MW-6	N	4/10/2012	6800.64	6.41	6.45 H	3970	no data	no data	no data	no data	235	no data	38 D	no data	no data	no data	no data	no data
MW-6	N	7/17/2012	6798.79	6.81	6.77 H	3880	378	274	338	11	454	2290 D	122 D	0.72	<0.1	<0.50	<0.1	<0.001
MW-6	N	10/17/2012	6797.49	6.88	6.61 H	4680	508	383	213 D	10	281	2840 D	38 D	0.42	<0.1	<0.50	<0.1	<0.001
MW-6	N	1/16/2013	6,796.54	6.53	6.43 H	4510	542	446	173 D	11	190	3170 D	35 D	0.35	<0.1	<0.50	0.4	0.005
MW-6	N	4/9/2013	6,796.23	6.4	6.45 H	4660	555	458	182	10	201	3260 D	31 D	0.37	0.3	<0.50	0.5	0.003
MW-6	N	7/16/2013	6,795.38	6.31	7.40 H	4790	532	435	162	10	193	3180 D	31 D	0.44	<0.1	<0.50	0.2	<0.001
MW-6	N	10/8/2013	6,795.57	6.46	6.79 H	4760	536	440	165	11	191	3180 D	31 D	0.42	<0.1	<0.50	<0.1	<0.001
MW-6	N	1/15/2014	6,795.06	6.83	6.61	4740	546	420	159	10	186	3050	30	0.39	<0.1	<0.50	<0.1	0.001
MW-6	N	4/8/2014	6,794.11	6.48	6.99 H	4670	513	392	151	10	197	3080 D	30 D	0.4	<0.1	<0.50	0.1	<0.001
MW-6	N	7/15/2014	6,793.51	7.46	7.41 H	3810	no data	no data	no data	no data	142	no data	27	no data	no data	no data	no data	no data
MW-6	N	10/14/2014	6,793.39	7.08	7.41 H	5110	no data	no data	no data	no data	194	no data	31 D	no data	no data	no data	no data	no data
MW-6	N	1/13/2015	6792.75	6.97	7.48 H	4770	no data	no data	no data	no data	177	no data	29 D	no data	no data	no data	no data	no data
MW-6	N	4/14/2015	6792.37	6.86	7.17 H	4690	no data	no data	no data	no data	185	no data	31	no data	no data	no data	no data	no data
MW-6	N	7/15/2015	6792.24	7.18	7.04 H	4660	no data	no data	no data	no data	248	no data	30 D	no data	no data	no data	no data	no data
MW-7	N	7/19/2011	6802.12	7.46	7.68	3660	640	167	155	6	542	2030 D	52 D	0.45	<0.5	<0.50	<0.1	0.044
MW-7	N	10/11/2011	6802.03	6.77	7.44	3650	no data	no data	no data	no data	459	no data	53 D	no data	no data	no data	no data	no data
MW-7	N	1/10/2012	6801.66	6.75	7.17 H	3670	no data	no data	no data	no data	445	no data	49 D	no data	no data	no data	no data	no data
MW-7	N	4/10/2012	6801.32	6.62	6.71 H	3800	no data	no data	no data	no data	409	no data	43 D	no data	no data	no data	no data	no data
MW-7	N	7/17/2012	6799.72	6.41	6.64 H	3990	650	195	139	9.1	337	2390 D	42 D	2.11	0.5	<0.50	<0.1	0.002
MW-7	N	10/16/2012	6799.12	6.61	6.73 H	3900	673	229	150	9	348	2490 D	41 D	1.1 D	0.7 D	<0.50	<0.1	<0.001

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA 18	N	1/22/1992	< 0.01	< 0.01	0.1	< 0.05	6.15	< 0.1	0.17	< 0.001	< 0.1	0.086	7.9	6.8	14.7	< 0.2	< 1	8
EPA 18	N	4/2/1992	< 0.01	< 0.01	0.13	< 0.05	7.16	0.1	0.26	< 0.001	< 0.1	0.078	4.9	10.3	15.2	< 0.2	< 1	4.7
EPA 18	N	7/15/1992	< 0.01	< 0.01	0.12	< 0.05	6.45	< 0.1	0.19	< 0.001	< 0.1	0.064	4.3	9.8	14.1	< 0.2	1	5
EPA 18	N	10/14/1992	< 0.01	< 0.01	0.15	< 0.05	5.97	< 0.1	0.24	< 0.001	< 0.1	0.081	5.5	10.2	15.7	< 0.2	1.8	5.8
EPA 18	N	1/14/1993	< 0.01	< 0.01	0.16	< 0.05	7.66	< 0.1	0.32	< 0.001	< 0.1	0.038	6.6	11.5	18.1	< 0.2	< 1	6.8
EPA 18	N	4/15/1993	< 0.01	< 0.01	0.16	< 0.05	6.91	< 0.1	0.26	< 0.001	< 0.1	0.058	4.1	9	13.1	< 0.2	< 1	4.5
EPA 18	N	7/20/1993	< 0.01	< 0.01	0.18	< 0.05	6.51	< 0.1	0.31	< 0.001	< 0.1	0.045	6.4	12.6	19	< 0.2	< 1	7.9
EPA 18	N	10/12/1993	< 0.01	< 0.01	0.14	< 0.05	6.57	< 0.1	0.24	< 0.001	< 0.1	0.058	7	7.8	14.8	< 0.2	1.8	7
EPA 18	N	1/11/1994	< 0.01	< 0.01	0.12	< 0.05	6.7	< 0.1	0.28	< 0.001	< 0.1	0.041	6.2	12.3	18.5	< 0.2	< 1	25.6
EPA 18	N	4/20/1994	< 0.01	< 0.01	0.12	< 0.05	5.69	< 0.1	0.27	< 0.001	< 0.1	0.023	5.1	6.8	11.9	< 0.2	< 1	15.5
EPA 18	N	7/26/1994	< 0.01	< 0.01	0.15	< 0.05	6.64	< 0.1	0.23	< 0.001	< 0.1	0.012	6	13.5	19.5	< 0.2	< 1	26.4
EPA 18	N	10/11/1994	< 0.01	< 0.01	0.08	< 0.05	5.3	< 0.1	0.16	< 0.001	< 0.1	0.008	5.9	4.4	10.3	< 0.2	3.4	12.7
MW-6	N	7/19/2011	<0.01	<0.005	0.11	<0.05	3.49	5.5	0.16	<0.001	<0.1	0.0882	1.4	2	3.4	0.01 U	<0.5 U	1.6
MW-6	N	10/11/2011	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
MW-6	N	1/10/2012	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
MW-6	N	4/10/2012	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
MW-6	N	7/17/2012	<0.001	0.009	0.06	<0.001	2.86	11.8	0.08	<0.001	<0.1	0.321	2.5	3.4	9.3	0.005 U	0.3 U	2.4
MW-6	N	10/17/2012	<0.001	<0.005	0.11	<0.001	3.83	4.6	0.15	<0.001	<0.1	0.129	2.6	5.7	8.3	0.07 U	-0.04 U	3.5
MW-6	N	1/16/2013	<0.001	<0.005	0.15	0.001	4.66	2.9	0.21	<0.001	<0.1	0.0522	2.3	2.6	4.9	0.06 U	0.5 U	2.1
MW-6	N	4/9/2013	<0.001	<0.005	0.13	<0.001	4.82	2.3	0.17	<0.001	<0.1	0.0411	2.6	4.2	6.8	0.08	-0.6 U	2.7
MW-6	N	7/16/2013	<0.001	<0.005	0.12	<0.001	4.57	2.3	0.16	<0.001	<0.1	0.0485	2.9	7.5	10.4	0.1 U	-0.1 U	4.5
MW-6	N	10/8/2013	<0.001	<0.005	0.12	<0.001	4.4	2.4	0.16	<0.001	<0.1	0.0431	3.6	4.8	8.4	0.09	0.06 U	4
MW-6	N	1/15/2014	<0.001	<0.005	0.1	<0.001	4.27	2.2	0.15	<0.001	<0.1	0.0442	2.8	4.7	7.5	0.08 U	0.04 U	3.3
MW-6	N	4/8/2014	<0.001	<0.005	0.1	<0.001	4.07	2.1	0.14	<0.001	<0.1	0.0367	3.5	5.7	9.2	0.004 U	-0.6 U	4.5
MW-6	N	7/15/2014	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
MW-6	N	10/14/2014	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
MW-6	N	1/13/2015	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
MW-6	N	4/14/2015	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
MW-6	N	7/15/2015	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
MW-7	N	7/19/2011	<0.01	<0.005	0.03	<0.05	2.51	0.8	0.06	<0.001	<0.1	0.162	7	6.1	13.1	0.03 U	<0.5 U	5.2
MW-7	N	10/11/2011	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
MW-7	N	1/10/2012	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
MW-7	N	4/10/2012	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
MW-7	N	7/17/2012	<0.001	<0.005	0.09	<0.001	4.32	2	0.09	0.002	<0.1	0.0976	7.8	7.1	22	<0.007 U	0.7 U	7.9
MW-7	N	10/16/2012	<0.001	<0.005	0.06	<0.001	3.77	0.8	0.1	<0.001	<0.1	0.165	7.5	14	21.5	0.005 U	0.5 U	7.7

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
MW-7	N	1/14/2013	6,797.94	6.59	6.64 H	3880	671	229	150	9	386	2370 D	42 D	0.51	0.4	<0.50	<0.1	<0.001
MW-7	N	4/9/2013	6,797.85	6.59	6.71 H	3680	657	230	159	8	380	2470 D	42 D	0.42	1.2	<0.50	<0.1	<0.001
MW-7	N	7/16/2013	6,796.72	6.72	6.69 H	3990	646	213	148	9	416	2370 D	43 D	0.42	0.1	<0.50	<0.1	<0.01
MW-7	N	10/8/2013	6,797.88	6.61	7.03 H	3870	636	209	151	9	434	2310 D	42 D	0.42	<0.1	<0.50	<0.1	<0.001
MW-7	N	1/14/2014	6,796.90	6.81	7.12	3850	664	211	153	8	422	2230	43	0.45	<0.1	<0.50	<0.1	<0.001
MW-7	N	4/8/2014	6,795.10	6.75	6.91 H	3780	626	208	147	8	415	2280 D	45	<0.05	0.4	<0.50	<0.1	<0.001
MW-7	N	7/15/2014	6,794.66	6.57	6.61 H	3700	591	217	148	8	391	2370 D	41	0.4	<0.1	<0.50	<0.1	0.016
MW-7	N	10/14/2014	6,795.48	6.73	6.91 H	3840	614	216	136	7	378	2430 D	43 D	<0.05	0.4	<0.50	<0.1	<0.001
MW-7	N	1/13/2015	6793.79	6.86	6.78 H	3900	638	223	147	8	388	2510 D	44 D	<0.05	0.4	<0.50	<0.1	<0.001
MW-7	N	4/14/2015	6794.29	6.48	7.60 H	3950	635	229	147	8	355	2400 D	42	<0.05	0.4	<0.50	<0.1	<0.001
MW-7	N	7/14/2015	6793.05	6.90	6.56 H	4190	616	263	136	11	361	2660 D	39 D	0.18	0.1	<0.50	<0.1	0.01
MW-7	N	1/12/2016	6792.30	6.52	6.47 H	4200	633	292	144	11	286	2800 D	41	0.36	<0.1	<0.50	<0.1	0.042
MW-7	N	4/12/2016	6792.14	6.76	7.07 H	4390	629	319	148	9	241	2840 D	34 D	0.13	0.3	<0.50	0.1	0.001
MW-7	N	7/19/2016	6791.69	6.50	6.92 H	4340 D	609	318	145	9	247	2840 D	37 D	<0.05	0.3	<0.50	<0.1	0.001
MW-7	N	10/11/2016	6791.59	6.39	6.86 H	4310	589	334	144	9	234	2870 D	34 D	<0.05	0.5	<0.50	<0.1	<0.001
NBL-01	N	8/15/2001	6820.10	6.61	6.90	3220	550	162	116	6.83	343	1730	36.8	0.41	< 0.1	< 1	< 0.1	0.57
NBL-01	N	10/3/2001	6819.89	6.70	7.50	3160	550	150	100	7	346	1680	40	0.29	< 0.1	< 1	< 0.1	0.714
NBL-01	N	1/7/2002	6819.70	7.25	7.00	3110	564	158	115	7	342	1840	36	0.26	< 0.1	< 1	< 0.1	0.613
NBL-01	N	4/17/2002	6819.90	6.25	7.66	3220	542	167	113	6.8	336	1780	37.9	0.29	< 0.1	< 1	< 0.1	0.768
NBL-01	N	7/15/2002	6819.65	6.65	7.68	3310	516	185	123	7.1	339	1810	26	0.43	< 0.1	< 1	< 0.1	0.728
NBL-01	N	10/15/2002	6819.54	7.18	7.48	3120	631	176	121	6.3	330	2070	31.4	0.45	< 0.1	< 1	< 0.1	0.776
NBL-01	N	1/15/2003	6819.49	6.43	7.29	3290	620	178	101	5.1	335	1930	20.1	0.47	< 0.1	< 1	< 0.1	0.955
NBL-01	N	4/14/2003	6819.35	6.87	7.14	3360	566	168	125	7.6	338	1960	35	0.48	< 0.1	< 1	< 0.1	0.688
NBL-01	N	7/14/2003	6819.01	6.29	7.40	3460	598	170	119	7.5	334	1880	32.2	0.45	< 0.1	< 1	< 0.1	0.538
NBL-01	N	10/13/2003	6818.89	6.37	7.21	3480	567	170	128	6.7	332	1940	27.7	0.42	< 0.1	< 1	0.3	1.01
NBL-01	N	1/13/2004	6818.51	6.50	7.30	3610	665	201	118	8.6	333	2200	38.8	0.47	< 0.10	< 1.0	< 0.1	0.523 D
NBL-01	N	4/12/2004	6818.46	6.34	6.70	3690	658	203	122	8	308	2340	36.5	0.51	< 0.1	< 1	< 0.1	0.807 D
NBL-01	N	7/19/2004	6818.09	6.45	6.37	3900	702 D	224 D	141	7	267	2380 D	35	0.47	< 0.10	< 1.0	< 0.1	0.940 D
NBL-01	N	10/11/2004	6817.97	6.47	6.85	4000	616 D	234 D	141	7.1	242	2340 D	36	0.38	< 0.10	< 1.0	< 0.1	0.889 D
NBL-01	N	1/10/2005	6817.55	6.27	6.75	4110	650 D	262 D	128	7.2	218	2500 D	36	0.37	< 0.1	< 1.0	< 0.1	2.3 D
NBL-01	N	4/12/2005	6816.96	6.31	6.55	3980	652	294	141	7.4	169	2740	36	0.82	< 0.1	< 1.0	< 0.1	0.63
NBL-01	N	7/18/2005	6816.06	5.88	6.70	4170	628 D	301 D	138	7.1	129	2630 D	35	0.54	< 0.1	< 1.0	< 0.1	0.82 D
NBL-01	N	10/10/2005	6814.93	6.26	6.69	4090	613 D	319 D	133	7.3	122	2640 D	34	0.52	< 0.1	< 1.0	< 0.1	0.06
NBL-01	N	1/16/2006	6813.81	6.47	7.52	3970	533 D	271 D	121	7.6	122	2350 D	34	0.76	< 0.1	< 1.0	< 0.1	0.37 D
NBL-01	N	4/10/2006	6813.01	6.10	6.38	4050	639 D	316 D	122	8.8	119	2780 D	43	0.78	3.9	< 1.0	< 0.1	0.47 D

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
MW-7	N	1/14/2013	<0.001	<0.005	0.06	0.001	3.74	1.1	0.09	0.002	<0.1	0.198	7.8	7.9	15.7	0.03 U	-0.02 U	7.7
MW-7	N	4/9/2013	<0.001	<0.005	0.07	<0.001	3.49	0.9	0.08	<0.001	<0.1	0.221	10	14	24	0.07 U	0.3 U	8.8
MW-7	N	7/16/2013	<0.001	<0.005	0.05	<0.001	3.11	0.8	0.07	<0.001	<0.1	0.233	7.3	14	21.3	0.06 U	0.06 U	8.3
MW-7	N	10/8/2013	<0.001	<0.005	0.05	<0.001	3.02	0.8	0.07	<0.001	<0.1	0.205	11	10	21	0.1	0.1 U	11
MW-7	N	1/14/2014	<0.001	<0.005	0.03	<0.001	2.74	0.7	0.06	<0.001	<0.1	0.223	7.3	8.9	16.2	0.06 U	-0.07 U	8.5
MW-7	N	4/8/2014	<0.001	<0.005	0.04	<0.001	2.84	0.7	0.06	<0.001	<0.1	0.179	8.4	12	20.4	0.02 U	0.3 U	7.9
MW-7	N	7/15/2014	<0.001	<0.005	0.05	<0.001	3.17	0.7	0.06	<0.001	<0.1	0.143	7.2	8.7	15.9	0.08	0.5 U	9.1
MW-7	N	10/14/2014	<0.001	<0.005	0.04	0.003	2.98	0.6	0.06	<0.001	<0.1	0.143	8.2	20	28.2	0.06 U	0.4 U	8.7
MW-7	N	1/13/2015	<0.001	<0.005	0.05	<0.001	3.29	0.6	0.08	<0.001	<0.1	0.14	10	12	22	0.1	-0.3 U	20.4
MW-7	N	4/14/2015	<0.001	<0.005	0.05	<0.001	3.17	0.5	0.06	<0.001	<0.1	0.12	8.2	9.7	17.9	0.005 U	0.4 U	27.5
MW-7	N	7/14/2015	<0.001	<0.005	0.06	0.001	3.59	0.5	0.1	<0.001	<0.1	0.0834	8.9	12	20.9	0.04 U	0.3 U	29.6
MW-7	N	1/12/2016	<0.001	<0.005	0.1	<0.001	4.16	0.5	0.12	<0.001	<0.1	0.0637	8	11	19	0.03 U	0.07 U	37
MW-7	N	4/12/2016	<0.001	<0.005	0.10 D	<0.001	4.67	0.4	0.12	<0.001	<0.1	0.0479	8.9	17	25.9	0.05 U	0.9 U	42.5
MW-7	N	7/19/2016	<0.001	<0.005	0.06	<0.001	3.19	0.4	0.08	<0.001	<0.1	0.0592	8.4	15	23.4	-0.008 U	0.2 U	11.3
MW-7	N	10/11/2016	<0.001	<0.005	0.13	<0.001	4.15	0.3	0.15	<0.001	<0.1	0.0465	9.3	12	21.3	0.03 U	0.3 U	18.7
NBL-01	N	8/15/2001	< 0.01	< 0.005	0.05	< 0.05	1.47	2.62	0.19	< 0.001	< 0.1	0.294	7.3	7	14.3	< 0.2	< 1	8.1
NBL-01	N	10/3/2001	< 0.01	< 0.005	0.05	< 0.05	1.59	2.86	0.08	< 0.001	< 0.1	0.276	7	5.2	12.2	< 0.2	< 1	6.3
NBL-01	N	1/7/2002	< 0.01	< 0.005	0.05	< 0.05	1.59	3.2	0.11	< 0.001	< 0.1	0.245	6	4.5	10.5	< 0.2	< 1	5.8
NBL-01	N	4/17/2002	< 0.01	< 0.005	0.05	< 0.05	1.68	3.2	0.09	< 0.001	< 0.1	0.287	5.8	5.3	11.1	0.5	< 1	7.8
NBL-01	N	7/15/2002	< 0.01	< 0.005	0.05	< 0.05	1.78	2.8	0.09	< 0.001	< 0.1	0.261	4.5	4.5	9	< 0.2	< 1	5.4
NBL-01	N	10/15/2002	< 0.01	< 0.005	0.06	< 0.05	2.01	2.2	0.1	< 0.001	< 0.1	0.251	6.4	3.1	9.5	< 0.2	< 1	5.6
NBL-01	N	1/15/2003	< 0.01	< 0.005	0.07	< 0.05	2.04	2.5	0.1	< 0.001	< 0.1	0.256	6.9	5.4	12.3	< 0.2	< 1	7.9
NBL-01	N	4/14/2003	< 0.01	< 0.005	0.07	< 0.05	2.21	2.4	0.1	< 0.001	< 0.1	0.21	6.7	< 1	6.7	< 0.2	< 1	9.4
NBL-01	N	7/14/2003	< 0.01	< 0.005	0.06	< 0.05	2.11	2.1	0.09	< 0.001	< 0.1	0.186	7	4	11	< 0.2	< 1	5
NBL-01	N	10/13/2003	< 0.01	< 0.005	0.06	< 0.05	2.13	2.1	0.09	< 0.001	< 0.1	0.209	6.9	3.1	10	< 0.2	< 1	6.5
NBL-01	N	1/13/2004	< 0.01	< 0.005	0.06	< 0.05	2.32	2	< 0.05	< 0.001	< 0.1	0.178 D	6.8	< 1.0	6.8	< 0.2	< 1.0	7.5
NBL-01	N	4/12/2004	< 0.01	< 0.005	0.06	< 0.05	2.39	2	0.1	< 0.001	< 0.1	0.157 D	6.4	4.5	10.9	< 0.2	< 1	7.8
NBL-01	N	7/19/2004	< 0.01	< 0.005	0.08	< 0.05	2.92	1.6	0.1	< 0.001	< 0.1	0.122	7.2	5.9	13.1	< 0.2	< 1.0	7.6
NBL-01	N	10/11/2004	< 0.01	< 0.005	0.09	< 0.05	3.41	1.4	0.15	< 0.001	< 0.1	0.0906	8	4.8	12.8	< 0.2	< 1.0	9.4
NBL-01	N	1/10/2005	< 0.01	< 0.005	0.12	< 0.05	3.73	1.2	0.17	< 0.001	< 0.1	0.0696	6.3	3.3	9.6	< 0.2	< 1.0	5.7
NBL-01	N	4/12/2005	< 0.01	< 0.005	0.16	< 0.05	4.82	1.2	0.21	< 0.001	< 0.1	0.0423	8.3	3.5	11.8	< 0.2	< 1.0	8.1
NBL-01	N	7/18/2005	< 0.01	< 0.005	0.22	< 0.05	5.06	0.9	0.28	< 0.001	< 0.1	0.0275	8.6	4.6	13.2	< 0.2	< 1.0	9.2
NBL-01	N	10/10/2005	< 0.01	< 0.005	0.28	< 0.05	5.37	1	0.34	< 0.001	< 0.1	0.0202	9.2	4.7	13.9	< 0.2	< 1.0	10.5
NBL-01	N	1/16/2006	< 0.01	< 0.005	0.26	< 0.05	4.91	0.8	0.36	< 0.001	< 0.1	0.0187	8	8.1	16.1	< 0.2	< 1.0	9.3
NBL-01	N	4/10/2006	< 0.01	< 0.005	0.3	< 0.05	5.5	0.6	0.39	< 0.001	< 0.1	0.0101	9.3	8.6	17.9	< 0.2	< 1.0	13



**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
NBL-01	N	7/24/2006	6812.34	6.06	6.40	3980	622 D	309 D	139	9.5	117	2760 D	44	1.35	< 0.1	< 1.0	< 0.1	0.18 D
NBL-01	N	10/9/2006	6811.92	6.21	6.56	4050	629 D	316 D	138	11.4	181	2680 D	43	3.04	0.1	< 0.5	< 0.1	0.72 D
NBL-01	N	1/16/2007	6811.24	6.36	6.90	4390	615 D	304 D	139	13.3	217	2690 D	53	5.3 D	0.2	< 0.5	0.1	0.51 D
NBL-01	N	4/17/2007	6810.72	6.18	6.60	4250	619 D	313 D	133	14.1	222	2800 D	56	9.3 D	0.3	< 0.5	< 0.1	0.4 D
NBL-01	N	7/17/2007	6810.19	6.40	6.93	4140	632 D	289 D	148	15.4	207	2780 D	54	8.8 D	0.6	< 0.5	0.3	2.5 D
NBL-01	N	10/9/2007	6809.65	6.20	6.53	4290	623 D	280 D	142	13.6	220	2660 D	50	7.1 D	< 0.1	< 0.5	0.6	0.61 D
NBL-01	N	1/22/2008	6809.00	5.88	5.92	4070	568 D	252 D	121	15.7	113	2630 D	57 D	8.43	0.4	< 0.5	2.8	0.969 D
NBL-01	N	4/15/2008	6808.74	5.83	4.85	4030	617	270	141 D	13.6	8	2760 D	48	3.88	< 0.1	< 0.50	2.5	0.18
NBL-01	N	7/15/2008	6808.14	6.33	6.66	4040	543	245	135 D	12	246	2490 D	50	4.25	< 0.1	< 0.5	0.1	0.052
NBL-01	N	10/14/2008	6806.89	6.31	6.49	4010	569	255	138 D	13	253	2640 D	51	4.5 D	< 0.1	< 0.5	0.7	0.056
NBL-01	N	1/20/2009	6809.46	6.24	7.38	4060	591	263	150	12	266	2290 D	35	1.99	< 0.1	< 0.5	0.2	0.081
NBL-01	N	4/14/2009	6809.46	6.8	6.95	3910	553 D	246 D	138 D	11	260	2420 D	78	5.93	< 0.1	< 0.50	< 0.8	0.037
NBL-01	N	7/14/2009	6808.18	7.16	7.49	4220	613	253	140	13	172	2510 D	54	4.43	< 0.1	< 0.50	1.5 D	< 0.001
NBL-01	N	10/13/2009	6807.65	5.65	6.26	4330 H	618	274	142	13	65	2950 D	49	6.7 D	< 0.1	< 0.50	0.5	< 0.001
NBL-01	N	1/12/2010	6807.41	6.31	6.27	4320 D	644 D	272	142 D	15	33	3080 D	44	12.6 D	0.13	< 0.50	7	0.003 H
NBL-01	N	4/13/2010	6807.11	5.4	4.86	4590 D	574	254	144	13	< 5	3100 D	44	7.1 D	0.2	< 0.50	28.5	0.151
NBL-01	N	7/20/2010	6806.72	4.46	3.18	4470 D	579	274	133	11	< 5	3080 D	37 D	4.9 D	< 0.1	< 0.50	12.1	0.296
NBL-01	N	10/12/2010	6806.47	2.97	3.14	4250 D	572	254	143	11	< 5	2980 D	34 D	5.1 D	< 0.1	< 0.50	27.8	0.149 D
NBL-01	N	1/11/2011	no data	no data	4.81	3790	568	258	127	11	< 5	2730 D	36 D	4.8 D	< 0.1	3.44	13	0.10 D
NBL-01	Dup	1/11/2011	6806.11	5.81	7.04	4170 D	576	262	128	10	97	2850 D	37 D	3.8	< 0.1	< 0.50	7.1	0.19 D
NBL-01	N	4/11/2011	6805.76	5.71	6.07	4790 D	604	283	143	12	69	3000 DH	34 D	3.84	< 0.1	< 0.50	2.3	0.211 D
NBL-01	Dup	4/12/2011	6805.91	5.68	3.82	4220 D	594	278	141	12	< 5	3060 D	34 D	4.03	< 0.1	< 0.50	4.4	0.194 D
NBL-01	N	7/19/2011	6805.43	5.47	3.33	4180 D	585	297	136	11	< 5	3090 D	32 D	3.6 D	< 0.5	< 0.50	4.6	0.122 D
NBL-01	N	10/11/2011	6805.16	2.88	3.03	4170 D	585	316	138	11	< 5	3340 D	32 D	3.1 D	< 0.5	< 0.50	5.9	< 0.001
NBL-01	N	1/10/2012	6804.81	2.91	2.93 H	4320 D	586	319	130	11	< 5	3350 D	33 D	2.8 D	< 0.5	< 0.50	5.9	0.028
NBL-01	N	4/10/2012	6804.35	2.81	2.80 H	5020 D	504	365	130	12	< 5	3500 D	30 D	2.16	< 0.5	< 0.50	13.3	0.03 D
NBL-01	N	7/17/2012	6803.72	3.04	2.76 H	5660	526	376	142	14	< 5	4150 D	31 D	1.3 D	< 1	< 0.50	30.1	0.014
NBL-01	N	10/16/2012	6803.16	2.73	2.73 H	5530	531	368	138 D	13	< 5	4260 D	30 D	0.7 D	< 1	< 0.50	43.4	0.032
NBL-01	N	1/14/2013	6,802.49	2.65	2.61 H	5940	492	372	139 D	10	< 5	4250 D	29 D	0.54	< 0.1	< 0.50	76.7	< 0.001
NBL-02	N	1/22/2008	6820.46	6.69	6.84	3410	649 D	156	133	8.1	321	2100 D	42	0.07	14.5	< 0.5	< 0.1	< 0.001
NBL-02	N	4/15/2008	6820.31	6.51	6.72	3380	no data	no data	no data	no data	306	no data	35	no data	no data	no data	no data	no data
NBL-02	N	7/15/2008	6819.56	6.33	6.62	3470	no data	no data	no data	no data	323	no data	35	no data	no data	no data	no data	no data
NBL-02	N	10/14/2008	6819.03	6.54	6.74	3500	647	180	154 D	7	320	2320 D	39	< 0.1	19.9	< 0.5	< 0.1	< 0.001
NBL-02	N	1/20/2009	6818.51	6.55	6.97	3660	no data	no data	no data	no data	331	no data	21	no data	no data	no data	no data	no data
NBL-02	N	4/14/2009	6818.31	6.43	6.51	3630	no data	no data	no data	no data	336	no data	35	no data	no data	no data	no data	no data

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
NBL-01	N	7/24/2006	< 0.01	< 0.005	0.24	< 0.05	5.98	1	0.35	< 0.001	< 0.1	0.0214	8.6	7.3	15.9	< 0.2	< 1.0	9.6
NBL-01	N	10/9/2006	< 0.01	< 0.005	0.21	< 0.05	6.64	2.3	0.3	< 0.001	< 0.1	0.0427	9.7	8.1	17.8	< 0.2	< 1	7.5
NBL-01	N	1/16/2007	<0.01	<0.005	0.29	<0.05	7.63	5	0.3	<0.001	<0.1	0.0784	10.8	4.8	15.6	<0.2	<1	12.2
NBL-01	N	4/17/2007	<0.01	<0.005	0.26	<0.05	8.09	3.1	0.29	<0.001	<0.1	0.0836	10.3	10.4	20.7	<0.2	<1	10.1
NBL-01	N	7/17/2007	<0.01	<0.005	0.32	<0.05	7.49	2.6	0.32	<0.001	<0.1	0.111	11.3	10.4	21.7	<0.2	<1	14.2
NBL-01	N	10/9/2007	<0.01	<0.005	0.25	<0.05	6.97	1.4	0.26	<0.001	<0.1	0.0886	10.4	10.4	20.8	<0.2	<1	12.4
NBL-01	N	1/22/2008	< 0.01	< 0.005	0.25	< 0.05	7.14	1.9	0.32	0.01	< 0.1	0.138	16.1	10.8	26.9	< 0.2	< 1	16.5
NBL-01	N	4/15/2008	< 0.01	< 0.005	0.15	< 0.05	6.45	1	0.21	< 0.001	0.1	0.134	7.9	12.9	20.8	0.1 U	<5 U	10
NBL-01	N	7/15/2008	< 0.01	< 0.005	0.08	< 0.05	6.37	1	0.12	< 0.001	< 0.1	0.126	8.8	11	19.8	0.1 U	1.8 U	10.4
NBL-01	N	10/14/2008	< 0.01	< 0.005	0.01	< 0.05	2	0.8	< 0.05	< 0.001	< 0.1	0.27	8.3	7.3	15.6	0.2	0.6 U	12.1
NBL-01	N	1/20/2009	<0.01	<0.005	0.11	<0.05	5.25	0.7	0.15	<0.001	<0.1	0.144	9.5	14	23.5	0.5	0.4 U	8.8
NBL-01	N	4/14/2009	<0.01	<0.005	0.11	<0.05	5.83	0.6	0.15	<0.001	<0.1	0.12	8.9	11	19.9	0.03 U	0.1 U	13.4
NBL-01	N	7/14/2009	<0.01	<0.005	0.34	<0.05	7.58	0.5	0.34	<0.001	<0.1	0.0944	10	12	22	0.9	1.8 U	14.5
NBL-01	N	10/13/2009	<0.01	<0.005	0.41	<0.05	7.92	1	0.41	<0.001	<0.1	0.0708	15	16	31	0.2 U	0.8 U	25.1
NBL-01	N	1/12/2010	<0.01	<0.005	0.14	<0.05	1.59	1	0.14	0.002	<0.1	0.0213	14	21	35	0.5	1.7 U	17
NBL-01	N	4/13/2010	0.02	<0.005	0.76	<0.05	7.95	2.2	0.75	<0.001	<0.1	0.303	16	15	31	3.7	6.6	25.5
NBL-01	N	7/20/2010	0.01	<0.005	0.76	<0.05	7.32	3.1	0.74	<0.001	<0.1	0.116	16	10	26	5.7	4.8	22.7
NBL-01	N	10/12/2010	0.02	<0.005	0.37	<0.05	5.88	3.8	0.44	<0.001	<0.1	0.225	8.8	10	18.8	20.4	13.3	51.6
NBL-01	N	1/11/2011	<0.01	<0.005	0.39	<0.05	6.18	1.7	0.41	<0.001	<0.1	0.168	13	13	26	1.9	1.7	14
NBL-01	Dup	1/11/2011	<0.01	<0.005	0.46	<0.05	6.51	1	0.47	<0.001	<0.1	0.0952	14	13	27	1.3	1 U	40.6
NBL-01	N	4/11/2011	<0.01	<0.005	0.52	<0.05	6.63	0.5	0.54	<0.001	<0.1	0.0465	13	16	29	1.5 U	2	14.2
NBL-01	Dup	4/12/2011	<0.01	<0.005	0.57	<0.05	6.36	0.5	0.56	<0.001	<0.1	0.101	14	15	29	0.2 U	2.4	15.9
NBL-01	N	7/19/2011	<0.01	<0.005	0.64	<0.05	6.31	0.2	0.73	<0.001	<0.1	0.0568	16	15	31	0.3 U	<0.3 U	16.5
NBL-01	N	10/11/2011	0.01	<0.005	0.72	0.05	6.96	<0.1	0.85	<0.001	<0.1	0.0379	15	17	32	0.5	1.7	14
NBL-01	N	1/10/2012	0.03	<0.005	0.91	<0.05	7.47	<0.1	0.97	<0.001	<0.1	0.0568	17	17	51	3	1.6	20.8
NBL-01	N	4/10/2012	0.03	<0.005	0.79	0.11	6.28	0.5	1	<0.001	<0.1	0.0717	23	21	65	4.6	9.8	22.7
NBL-01	N	7/17/2012	0.034	<0.005	1	0.092	8.08	1.3	1.26	0.002	<0.1	0.134	18	16	50	7	6.5	34.5
NBL-01	N	10/16/2012	0.039	<0.005	0.94	0.074	6.61	<0.1	1.23	<0.001	<0.1	0.189	6	5.5	11.5	4.9	3.4	5.1
NBL-01	N	1/14/2013	0.058	<0.005	1.43	0.046	8.73	0.1	1.7	<0.001	<0.1	0.458	4.3	0.53 U	4.3	8.5	2	3.2
NBL-02	N	1/22/2008	<0.01	<0.005	0.02	<0.05	1.02	0.4	<0.05	<0.001	<0.1	0.361	7.6	26.1	33.7	<0.2	<1	11.7
NBL-02	N	4/15/2008	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NBL-02	N	7/15/2008	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NBL-02	N	10/14/2008	< 0.01	< 0.005	0.04	< 0.05	1.29	0.3	0.06	< 0.001	< 0.1	0.296	7.4	9.1	16.5	< 0.4 U	< 2 U	9.6
NBL-02	N	1/20/2009	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NBL-02	N	4/14/2009	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
NBL-02	N	7/14/2009	6817.66	7.91	8.07	3480 H	no data	no data	no data	no data	325	no data	38	no data	no data	no data	no data	no data
NBL-02	N	10/13/2009	6817.26	6.41	7.19	3550 H	620	183	144	7	345	2100 D	49	<0.05	19.4	<0.50	<0.1	<0.001
NBL-02	N	1/12/2010	6817.21	6.39	6.72	2990	no data	no data	no data	no data	325	no data	72	no data	no data	no data	no data	no data
NBL-02	N	4/13/2010	6816.96	6.67	6.73	3600	no data	no data	no data	no data	385	no data	43	no data	no data	no data	no data	no data
NBL-02	N	7/20/2010	6816.36	6.45	6.84	3580	no data	no data	no data	no data	405	no data	46 D	no data	no data	no data	no data	no data
NBL-02	N	10/12/2010	6816.06	6.59	7.31	3640	610	184	155	7	411	2140 D	46 D	<0.05	17 D	<0.50	<0.1	<0.001
NBL-02	N	1/11/2011	no data	6.49	7.4	3450	no data	no data	no data	no data	407	no data	50 D	no data	no data	no data	no data	no data
NBL-02	N	4/12/2011	6815.21	6.68	7	3520	no data	no data	no data	no data	419	no data	51 D	no data	no data	no data	no data	no data
NBL-02	N	7/19/2011	6814.61	6.51	7.69	3500	no data	no data	no data	no data	407	no data	51 D	no data	no data	no data	no data	no data
NBL-02	N	10/10/2011	6814.36	6.8	7.56	3470	609	181	154	8	386	2160 D	53 D	<0.2	12 D	<0.50	<0.1	0.004
NBL-02	N	1/10/2012	6813.91	6.76	7.44 H	3580	no data	no data	no data	no data	391	no data	52 D	no data	no data	no data	no data	no data
NBL-02	N	4/10/2012	6813.31	6.67	6.71 H	3610	no data	no data	no data	no data	381	no data	49 D	no data	no data	no data	no data	no data
NBL-02	N	7/17/2012	6812.86	6.54	6.90 H	3610	no data	no data	no data	no data	389	no data	50 D	no data	no data	no data	no data	no data
NBL-02	N	10/16/2012	6812.46	6.75	6.71 H	3580	654	190	157	8	399	2170 D	51 D	<0.05	9 D	<0.50	<0.1	<0.001
NBL-02	N	1/16/2013	6,811.69	6.84	6.60 H	3560	no data	no data	no data	no data	400	no data	51 D	no data	no data	no data	no data	no data
NBL-02	N	4/9/2013	6,811.94	6.62	6.60 H	3580	no data	no data	no data	no data	388	no data	53 D	no data	no data	no data	no data	no data
NBL-02	N	7/16/2013	6,811.06	6.65	7.03 H	3730	no data	no data	no data	no data	409	no data	51 D	no data	no data	no data	no data	no data
NBL-02	N	10/8/2013	6,810.78	7.26	6.90 H	3640	618	192	156	8	405	2130 D	52 D	<0.05	6.9 D	<0.50	<0.1	<0.001
NBL-02	N	1/14/2014	6,810.02	6.73	6.51	3540	no data	no data	no data	no data	398	no data	51	no data	no data	no data	no data	no data
NBL-02	N	4/8/2014	6,809.81	6.75	6.62 H	3560	no data	no data	no data	no data	396	no data	50	no data	no data	no data	no data	no data
NBL-02	N	7/15/2014	6,809.30	6.73	6.66 H	3470	no data	no data	no data	no data	381	no data	48	no data	no data	no data	no data	no data
NBL-02	N	10/14/2014	6,808.76	6.62	6.53 H	3520	592	169	136	7	368	2210 D	44 D	<0.05	0.3	<0.50	<0.1	<0.001
NBL-02	N	1/13/2015	6808.53	6.67	6.60 H	3530	no data	no data	no data	no data	345	no data	40	no data	no data	no data	no data	no data
NBL-02	N	4/14/2015	6807.90	no data	6.49 H	3490	no data	no data	no data	no data	337	no data	41	no data	no data	no data	no data	no data
NBL-02	N	7/14/2015	6807.53	6.69	7.26 H	3410	no data	no data	no data	no data	388	no data	37	no data	no data	no data	no data	no data
NBL-02	N	10/13/2015	6806.95	6.39	6.63 H	3460	600	165	139	7	358	2180 D	40	0.1	0.5	<0.50	<0.1	<0.001
NBL-02	N	1/12/2016	6806.28	6.61	6.53 H	3430	no data	no data	no data	no data	375	no data	43	no data	no data	no data	no data	no data
NBL-02	N	4/12/2016	6806.04	6.88	6.85 H	3460	no data	no data	no data	no data	350	no data	36	no data	no data	no data	no data	no data
NBL-02	N	7/19/2016	6805.23	6.90	6.86 H	3450 D	no data	no data	no data	no data	363	no data	39	no data	no data	no data	no data	no data
NBL-02	N	10/11/2016	6804.74	6.57	6.66 H	3420	591	181	143	7	332	2210 D	41	0.06	<0.1	<0.50	0.1	<0.001
NW-1	N	7/14/2009	6800.55	6.25	6.79	4840 H	no data	no data	no data	no data	115	no data	23	no data	no data	no data	no data	no data
NW-1	N	10/13/2009	6798.30	7.01	6.76 H	4780 H	no data	no data	no data	no data	136	no data	25	no data	no data	no data	no data	no data
NW-1	N	1/13/2010	6798.86	6.68	6.93	4510 D	no data	no data	no data	no data	122	no data	24	no data	no data	no data	no data	no data
NW-1	N	4/14/2010	6800.85	5.72	6.18	4480 D	no data	no data	no data	no data	132	no data	24	no data	no data	no data	no data	no data
NW-1	N	7/21/2010	6798.11	6.12	6.36	4410 D	no data	no data	no data	no data	140	no data	24 D	no data	no data	no data	no data	no data

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
NBL-02	N	7/14/2009	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NBL-02	N	10/13/2009	<0.01	<0.005	0.04	<0.05	1.38	0.3	0.05	<0.001	<0.1	0.206	6.4	11	17.4	<0.02 U	0.5 U	7.2
NBL-02	N	1/12/2010	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NBL-02	N	4/13/2010	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NBL-02	N	7/20/2010	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NBL-02	N	10/12/2010	<0.01	<0.005	0.04	<0.05	1.34	0.2	<0.05	<0.001	<0.1	0.18	4.8	7.7	12.5	0.03 U	<0.8 U	7.2
NBL-02	N	1/11/2011	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NBL-02	N	4/12/2011	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NBL-02	N	7/19/2011	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NBL-02	N	10/10/2011	<0.01	<0.005	0.04	<0.05	1.5	0.1	<0.05	<0.001	<0.1	0.167	5.6	8.2	13.8	0.09 U	<0.6 U	5.5
NBL-02	N	1/10/2012	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NBL-02	N	4/10/2012	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NBL-02	N	7/17/2012	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NBL-02	N	10/16/2012	<0.001	<0.005	0.03	<0.001	1.66	0.2	<0.05	<0.001	<0.1	0.195	6.2	12	18.2	0.0008 U	0.3 U	5.7
NBL-02	N	1/16/2013	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NBL-02	N	4/9/2013	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NBL-02	N	7/16/2013	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NBL-02	N	10/8/2013	<0.001	<0.005	0.03	<0.001	1.72	0.1	<0.05	<0.001	<0.1	0.17	8.1	8	16.1	0.1	-0.008 U	5.8
NBL-02	N	1/14/2014	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NBL-02	N	4/8/2014	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NBL-02	N	7/15/2014	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NBL-02	N	10/14/2014	<0.001	<0.005	0.03	0.003	2.11	<0.1	<0.05	<0.001	<0.1	0.111	4.9	15	19.9	0.07 U	-0.05 U	5.1
NBL-02	N	1/13/2015	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NBL-02	N	4/14/2015	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NBL-02	N	7/14/2015	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NBL-02	N	10/13/2015	<0.001	<0.005	0.02	<0.001	2.11	<0.1	<0.05	<0.001	<0.1	0.0809	5.3	7.8	13.1	0.07 U	1.3 U	8.1
NBL-02	N	1/12/2016	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NBL-02	N	4/12/2016	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NBL-02	N	7/19/2016	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NBL-02	N	10/11/2016	<0.001	<0.005	0.02	<0.001	2.14	<0.1	<0.05	<0.001	<0.1	0.129	4.6	15	19.6	0.2 U	0.5 U	9
NW-1	N	7/14/2009	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-1	N	10/13/2009	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-1	N	1/13/2010	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-1	N	4/14/2010	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-1	N	7/21/2010	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data



**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
NW-1	N	10/13/2010	6797.11	6.17	7.42	4350 D	no data	no data	no data	no data	143	no data	23 D	no data	no data	no data	no data	no data
NW-1	N	1/12/2011	6797.36	6.49	7.26	4460 D	no data	no data	no data	no data	141	no data	26 D	no data	no data	no data	no data	no data
NW-1	N	4/13/2011	6796.46	6.36	6.6	4600 D	no data	no data	no data	no data	153	no data	26 D	no data	no data	no data	no data	no data
NW-1	N	7/20/2011	6798.11	6.64	6.67	4630 D	no data	no data	no data	no data	128	no data	25 D	no data	no data	no data	no data	no data
NW-1	N	10/11/2011	6801.36	6.6	6.99	4090	no data	no data	no data	no data	246	no data	36 D	no data	no data	no data	no data	no data
NW-1	N	1/11/2012	6796.71	6.61	7.29 H	4600 D	no data	no data	no data	no data	124	no data	24 D	no data	no data	no data	no data	no data
NW-1	N	4/10/2012	6796.51	6.54	6.73 H	4680 D	no data	no data	no data	no data	125	no data	25 D	no data	no data	no data	no data	no data
NW-1	N	7/17/2012	6800.11	6.61	6.77 H	4560	no data	no data	no data	no data	175	no data	27 D	no data	no data	no data	no data	no data
NW-1	N	10/16/2012	6799.11	7.07	7.20 H	4190	no data	no data	no data	no data	242	no data	26 D	no data	no data	no data	no data	no data
NW-1	N	1/15/2013	6,809.35	7.03	6.80 H	4200	no data	no data	no data	no data	244	no data	21 D	no data	no data	no data	no data	no data
NW-1	N	4/9/2013	6,798.70	7.6	6.77 H	4240	no data	no data	no data	no data	281	no data	19 D	no data	no data	no data	no data	no data
NW-1	N	7/16/2013	6,798.72	7.46	6.86 H	4300	no data	no data	no data	no data	297	no data	45 D	no data	no data	no data	no data	no data
NW-1	N	10/15/2013	6,798.82	7.58	6.87 H	4240	no data	no data	no data	no data	345	no data	18 D	no data	no data	no data	no data	no data
NW-1	N	1/14/2014	6,798.93	6.89	6.87	4210	no data	no data	no data	no data	369	no data	20	no data	no data	no data	no data	no data
NW-1	N	4/9/2014	6,798.49	6.80	6.90 H	4080	no data	no data	no data	no data	415	no data	20 D	no data	no data	no data	no data	no data
NW-1	N	7/15/2014	6,798.73	7.15	6.99 H	3950	no data	no data	no data	no data	441	no data	21	no data	no data	no data	no data	no data
NW-1	N	10/14/2014	6,798.51	6.77	7.06 H	3910	no data	no data	no data	no data	495	no data	18 D	no data	no data	no data	no data	no data
NW-1	N	1/13/2015	6798.51	7.09	6.98 H	3830	no data	no data	no data	no data	493	no data	18 D	no data	no data	no data	no data	no data
NW-1	N	4/14/2015	6798.51	6.94	6.84 H	3940	no data	no data	no data	no data	477	no data	20	no data	no data	no data	no data	no data
NW-1	N	7/15/2015	6798.50	7.19	7.08 H	3830	no data	no data	no data	no data	520	no data	17	no data	no data	no data	no data	no data
NW-1	N	1/13/2016	6798.56	6.53	7.09 H	3640	no data	no data	no data	no data	472	no data	22	no data	no data	no data	no data	no data
NW-1	N	4/13/2016	6798.48	7.46	7.04 H	3870	no data	no data	no data	no data	486	no data	16	no data	no data	no data	no data	no data
NW-1	N	7/19/2016	6798.48	7.50	7.13 H	3740 D	no data	no data	no data	no data	482	no data	16	no data	no data	no data	no data	no data
NW-1	N	10/11/2016	6798.38	7.36	7.26 H	3650	no data	no data	no data	no data	469	no data	16	no data	no data	no data	no data	no data
NW-2	N	7/14/2009	6805.39	6.15	6.8	4760 H	no data	no data	no data	no data	329	no data	39	no data	no data	no data	no data	no data
NW-2	N	10/13/2009	6804.01	6.73	7.09 H	3890 H	no data	no data	no data	no data	355	no data	41	no data	no data	no data	no data	no data
NW-2	N	1/13/2010	6804.66	6.26	6.56	3620	no data	no data	no data	no data	439	no data	47	no data	no data	no data	no data	no data
NW-2	N	4/14/2010	6804.21	5.96	6.52	3600	no data	no data	no data	no data	450	no data	42	no data	no data	no data	no data	no data
NW-2	N	7/21/2010	6803.55	6.46	6.61	3720	no data	no data	no data	no data	416	no data	44 D	no data	no data	no data	no data	no data
NW-2	N	10/13/2010	6801.85	6.5	7.56	3690	no data	no data	no data	no data	449	no data	42 D	no data	no data	no data	no data	no data
NW-2	N	1/12/2011	6802.60	6.65	7.63	3580	no data	no data	no data	no data	386	no data	46 D	no data	no data	no data	no data	no data
NW-2	N	4/13/2011	6800.67	6.52	6.59	3770	no data	no data	no data	no data	388	no data	43 D	no data	no data	no data	no data	no data
NW-2	N	7/20/2011	6800.90	6.84	7.53	3660	no data	no data	no data	no data	378	no data	42 D	no data	no data	no data	no data	no data
NW-2	N	10/11/2011	6801.20	6.53	7.54	3690	no data	no data	no data	no data	337	no data	43 D	no data	no data	no data	no data	no data
NW-2	N	1/11/2012	6801.30	6.55	7.31 H	3900	no data	no data	no data	no data	323	no data	40 D	no data	no data	no data	no data	no data

TABLE B.1

### Zone 3 Data Summary, 1989-2016

United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

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**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
NW-2	N	4/10/2012	6801.15	6.36	6.52 H	4000	no data	no data	no data	no data	331	no data	40 D	no data	no data	no data	no data	no data
NW-2	N	7/17/2012	6797.71	6.5	6.50 H	4040	no data	no data	no data	no data	220	no data	39 D	no data	no data	no data	no data	no data
NW-2	N	10/16/2012	6797.45	6.35	6.25 H	4100	no data	no data	no data	no data	243	no data	41 D	no data	no data	no data	no data	no data
NW-2	N	1/15/2013	6,796.07	6.67	6.34 H	4080	no data	no data	no data	no data	297	no data	38 D	no data	no data	no data	no data	no data
NW-2	N	4/9/2013	6,795.57	6.52	6.44 H	4160	no data	no data	no data	no data	276	no data	36 D	no data	no data	no data	no data	no data
NW-2	N	7/16/2013	6,794.60	no data	6.57 H	4260	no data	no data	no data	no data	292	no data	36 D	no data	no data	no data	no data	no data
NW-2	N	10/15/2013	6,797.98	6.86	6.50 H	4330	no data	no data	no data	no data	281	no data	35 D	no data	no data	no data	no data	no data
NW-2	N	1/14/2014	6,796.56	6.48	6.34	4570	no data	no data	no data	no data	239	no data	36	no data	no data	no data	no data	no data
NW-2	N	4/9/2014	6,793.51	5.75	6.37 H	4520	no data	no data	no data	no data	210	no data	36 D	no data	no data	no data	no data	no data
NW-2	N	7/15/2014	6,793.86	6.33	6.41 H	4490	no data	no data	no data	no data	228	no data	36 D	no data	no data	no data	no data	no data
NW-2	N	10/14/2014	6,795.70	6.40	6.28 H	4670	no data	no data	no data	no data	203	no data	35 D	no data	no data	no data	no data	no data
NW-2	N	1/13/2015	6792.30	6.48	6.39 H	4750	no data	no data	no data	no data	221	no data	33 D	no data	no data	no data	no data	no data
NW-2	N	4/14/2015	6792.33	6.27	6.21 H	4840	no data	no data	no data	no data	173	no data	33	no data	no data	no data	no data	no data
NW-2	N	7/15/2015	6791.68	6.19	6.41 H	4810	no data	no data	no data	no data	199	no data	32 D	no data	no data	no data	no data	no data
NW-2	N	10/14/2015	6791.18	6.34	6.18 H	4920	no data	no data	no data	no data	164	no data	34 D	no data	no data	no data	no data	no data
NW-2	N	1/13/2016	6791.47	6.41	6.24 H	4950	no data	no data	no data	no data	124	no data	34 D	no data	no data	no data	no data	no data
NW-2	N	4/13/2016	6791.39	6.14	6.20 H	5020	no data	no data	no data	no data	137	no data	28 D	no data	no data	no data	no data	no data
NW-2	N	7/19/2016	6791.28	6.26	6.21 H	5070 D	no data	no data	no data	no data	144	no data	31 D	no data	no data	no data	no data	no data
NW-2	N	10/11/2016	6791.26	6.20	6.17 H	4960	no data	no data	no data	no data	122	no data	32 D	no data	no data	no data	no data	no data
NW-3	N	7/14/2009	6807.82	6.4	6.86	3590 H	no data	no data	no data	no data	486	no data	39	no data	no data	no data	no data	no data
NW-3	N	10/13/2009	6807.24	6.91	7.28 H	3470 H	no data	no data	no data	no data	501	no data	44	no data	no data	no data	no data	no data
NW-3	N	1/12/2010	6807.02	6.33	6.73	3530	no data	no data	no data	no data	552	no data	46	no data	no data	no data	no data	no data
NW-3	N	4/14/2010	6806.57	6.22	6.75	3730	no data	no data	no data	no data	646	no data	51	no data	no data	no data	no data	no data
NW-3	N	7/21/2010	6806.19	6.69	6.8	3810	no data	no data	no data	no data	630	no data	53 D	no data	no data	no data	no data	no data
NW-3	N	10/13/2010	6805.75	6.49	7.42	3830	no data	no data	no data	no data	577	no data	52 D	no data	no data	no data	no data	no data
NW-3	N	1/12/2011	6804.94	6.83	7.6	3790	no data	no data	no data	no data	534	no data	53 D	no data	no data	no data	no data	no data
NW-3	N	4/13/2011	6805.14	6.85	6.94	3850	no data	no data	no data	no data	490	no data	50 D	no data	no data	no data	no data	no data
NW-3	N	7/20/2011	6804.79	6.5	7.28	3760	no data	no data	no data	no data	426	no data	50 D	no data	no data	no data	no data	no data
NW-3	N	10/11/2011	6804.19	6.98	7.31	3750	no data	no data	no data	no data	375	no data	47 D	no data	no data	no data	no data	no data
NW-3	N	1/11/2012	6804.14	6.77	7.60 H	3860	no data	no data	no data	no data	379	no data	42 D	no data	no data	no data	no data	no data
NW-3	N	4/10/2012	6803.53	6.54	6.82 H	3880	no data	no data	no data	no data	390	no data	40 D	no data	no data	no data	no data	no data
NW-3	N	7/17/2012	6802.84	6.66	6.79 H	3760	no data	no data	no data	no data	361	no data	41 D	no data	no data	no data	no data	no data
NW-3	N	10/16/2012	6802.44	6.78	6.74 H	3960	no data	no data	no data	no data	402	no data	41 D	no data	no data	no data	no data	no data
NW-3	N	1/15/2013	6,801.55	6.93	6.68 H	3760	no data	no data	no data	no data	395	no data	38 D	no data	no data	no data	no data	no data
NW-3	N	4/9/2013	6,801.31	6.81	6.75 H	3760	no data	no data	no data	no data	433	no data	40 D	no data	no data	no data	no data	no data

United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

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**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
NW-3	N	7/16/2013	6,800.35	6.53	6.67 H	3640	no data	no data	no data	no data	365	no data	36 D	no data	no data	no data	no data	no data
NW-3	N	10/15/2013	6,800.36	6.79	6.65 H	3710	no data	no data	no data	no data	363	no data	35 D	no data	no data	no data	no data	no data
NW-3	N	1/14/2014	6,799.57	6.79	6.66	3970	no data	no data	no data	no data	413	no data	37	no data	no data	no data	no data	no data
NW-3	N	4/9/2014	6,798.93	6.85	6.77 H	4040	no data	no data	no data	no data	464	no data	38	no data	no data	no data	no data	no data
NW-3	N	7/15/2014	6,798.40	6.66	6.83 H	3920	no data	no data	no data	no data	468	no data	39	no data	no data	no data	no data	no data
NW-3	N	10/14/2014	6,797.92	6.75	6.78 H	4070	no data	no data	no data	no data	441	no data	38 D	no data	no data	no data	no data	no data
NW-3	N	1/13/2015	6797.31	6.92	6.79 H	4150	no data	no data	no data	no data	441	no data	37 D	no data	no data	no data	no data	no data
NW-3	N	4/14/2015	6796.82	6.80	6.61 H	4300	no data	no data	no data	no data	417	no data	38	no data	no data	no data	no data	no data
NW-3	N	7/15/2015	6796.24	6.74	6.85 H	4280	no data	no data	no data	no data	486	no data	38	no data	no data	no data	no data	no data
NW-3	N	10/14/2015	6795.73	7.06	6.78 H	4250	no data	no data	no data	no data	456	no data	41 D	no data	no data	no data	no data	no data
NW-3	N	1/13/2016	6795.29	7.22	6.92 H	4540	no data	no data	no data	no data	499	no data	43 D	no data	no data	no data	no data	no data
NW-3	N	4/13/2016	6794.82	7.40	6.78 H	4710	no data	no data	no data	no data	412	no data	34 D	no data	no data	no data	no data	no data
NW-3	N	7/19/2016	6794.37	7.40	6.82 H	4620 D	no data	no data	no data	no data	420	no data	35 D	no data	no data	no data	no data	no data
NW-3	N	10/11/2016	6793.93	7.24	6.76 H	4480	601	351	163	9	402	2920 D	35 D	0.51	<0.1	<0.50	0.1	0.005
NW-4	N	7/14/2009	6805.53	6.64	6.87	3910 H	no data	no data	no data	no data	202	no data	30	no data	no data	no data	no data	no data
NW-4	N	10/13/2009	6804.55	6.59	6.89 H	4680 H	no data	no data	no data	no data	226	no data	32	no data	no data	no data	no data	no data
NW-4	N	1/13/2010	6796.18	6.1	6.25	4440 D	no data	no data	no data	no data	174	no data	28	no data	no data	no data	no data	no data
NW-4	N	4/14/2010	6803.28	5.76	6.19	4320 D	no data	no data	no data	no data	185	no data	28	no data	no data	no data	no data	no data
NW-4	N	7/21/2010	6799.41	6.17	6.34	4440 D	no data	no data	no data	no data	183	no data	28 D	no data	no data	no data	no data	no data
NW-4	N	10/13/2010	6800.01	6.12	6.29	4240 D	no data	no data	no data	no data	175	no data	27 D	no data	no data	no data	no data	no data
NW-4	N	1/12/2011	6789.76	6.2	6.38	4280 D	no data	no data	no data	no data	163	no data	29 D	no data	no data	no data	no data	no data
NW-4	N	4/13/2011	6791.85	6.2	6.32	4510 D	no data	no data	no data	no data	152	no data	31 D	no data	no data	no data	no data	no data
NW-4	N	7/20/2011	6798.66	6.81	7.17	4420 D	no data	no data	no data	no data	148	no data	29 D	no data	no data	no data	no data	no data
NW-4	N	10/11/2011	6801.01	6.3	7.17	4470 D	no data	no data	no data	no data	150	no data	29 D	no data	no data	no data	no data	no data
NW-4	N	1/11/2012	6801.16	6.28	6.73 H	4730 D	no data	no data	no data	no data	137	no data	28 D	no data	no data	no data	no data	no data
NW-4	N	4/10/2012	6800.91	5.9	6.27 H	4860 D	no data	no data	no data	no data	146	no data	28 D	no data	no data	no data	no data	no data
NW-4	N	7/17/2012	6798.06	6.03	6.17 H	4900	no data	no data	no data	no data	101	no data	29 D	no data	no data	no data	no data	no data
NW-4	N	10/16/2012	6794.76	6.2	6.12 H	4830	no data	no data	no data	no data	112	no data	30 D	no data	no data	no data	no data	no data
NW-4	N	1/15/2013	6,796.19	6.5	6.05 H	4710	no data	no data	no data	no data	100	no data	29 D	no data	no data	no data	no data	no data
NW-4	N	4/9/2013	6,789.59	6.09	6.14 H	4550	no data	no data	no data	no data	89	no data	25 D	no data	no data	no data	no data	no data
NW-4	N	7/16/2013	6,795.34	6.96	6.99 H	4600	no data	no data	no data	no data	70	no data	26 D	no data	no data	no data	no data	no data
NW-4	N	10/15/2013	6,797.03	6.83	6.69 H	4430	no data	no data	no data	no data	109	no data	31 D	no data	no data	no data	no data	no data
NW-4	N	1/14/2014	6,792.03	7.00	6.7	4210	no data	no data	no data	no data	90	no data	26	no data	no data	no data	no data	no data
NW-4	N	7/15/2014	6,789.89	6.84	6.97 H	4280	no data	no data	no data	no data	104	no data	25 D	no data	no data	no data	no data	no data
NW-4	N	10/14/2014	6,790.19	6.72	6.96 H	4530	no data	no data	no data	no data	96	no data	25 D	no data	no data	no data	no data	no data

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
NW-3	N	7/16/2013	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-3	N	10/15/2013	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-3	N	1/14/2014	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-3	N	4/9/2014	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-3	N	7/15/2014	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-3	N	10/14/2014	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-3	N	1/13/2015	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-3	N	4/14/2015	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-3	N	7/15/2015	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-3	N	10/14/2015	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-3	N	1/13/2016	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-3	N	4/13/2016	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-3	N	7/19/2016	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-3	N	10/11/2016	<0.001	<0.005	0.03	<0.001	3.26	0.5	<0.05	<0.001	<0.1	0.346	15	8.7	23.7	0.01 U	1.6	18.5
NW-4	N	7/14/2009	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-4	N	10/13/2009	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-4	N	1/13/2010	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-4	N	4/14/2010	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-4	N	7/21/2010	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-4	N	10/13/2010	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-4	N	1/12/2011	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-4	N	4/13/2011	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-4	N	7/20/2011	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-4	N	10/11/2011	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-4	N	1/11/2012	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-4	N	4/10/2012	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-4	N	7/17/2012	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-4	N	10/16/2012	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-4	N	1/15/2013	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-4	N	4/9/2013	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-4	N	7/16/2013	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-4	N	10/15/2013	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-4	N	1/14/2014	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-4	N	7/15/2014	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-4	N	10/14/2014	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
NW-4	N	1/13/2015	6789.84	7.01	6.96 H	4490	no data	no data	no data	no data	150	no data	23 D	no data	no data	no data	no data	no data
NW-4	N	4/14/2015	6789.89	6.42	6.92 H	4680	no data	no data	no data	no data	150	no data	23	no data	no data	no data	no data	no data
NW-4	N	7/15/2015	6791.13	6.57	6.87 H	4500	no data	no data	no data	no data	154	no data	21 D	no data	no data	no data	no data	no data
NW-4	N	10/14/2015	6789.93	6.93	6.87 H	4540	no data	no data	no data	no data	110	no data	22 D	no data	no data	no data	no data	no data
NW-4	N	1/13/2016	6790.09	6.59	6.56 H	4620	no data	no data	no data	no data	85	no data	21 D	no data	no data	no data	no data	no data
NW-4	N	4/13/2016	6793.06	6.67	6.71 H	4540	no data	no data	no data	no data	84	no data	19 D	no data	no data	no data	no data	no data
NW-4	N	7/19/2016	6793.51	6.63	6.55 H	4480 D	no data	no data	no data	no data	78	no data	20 D	no data	no data	no data	no data	no data
NW-4	N	10/11/2016	6793.40	6.80	6.75 H	4380	no data	no data	no data	no data	74	no data	21 D	no data	no data	no data	no data	no data
NW-5	N	7/14/2009	6808.35	6.3	6.76	3590 H	no data	no data	no data	no data	590	no data	53	no data	no data	no data	no data	no data
NW-5	N	10/13/2009	6807.70	7.15	7.45 H	3630 H	no data	no data	no data	no data	612	no data	58	no data	no data	no data	no data	no data
NW-5	N	1/12/2010	6807.30	6.35	6.8	3600	no data	no data	no data	no data	639	no data	55	no data	no data	no data	no data	no data
NW-5	N	4/14/2010	6807.15	6.32	6.78	3530	no data	no data	no data	no data	659	no data	54	no data	no data	no data	no data	no data
NW-5	N	7/21/2010	6806.36	6.71	6.86	3670	no data	no data	no data	no data	665	no data	57 D	no data	no data	no data	no data	no data
NW-5	N	10/13/2010	6806.18	6.84	7.42	3710	no data	no data	no data	no data	667	no data	57 D	no data	no data	no data	no data	no data
NW-5	N	1/12/2011	6805.96	7.1	7.52	3480	no data	no data	no data	no data	631	no data	59 D	no data	no data	no data	no data	no data
NW-5	N	4/13/2011	6805.26	6.91	6.97	3610	no data	no data	no data	no data	529	no data	51 D	no data	no data	no data	no data	no data
NW-5	N	7/20/2011	6805.31	6.89	7.79	3580	no data	no data	no data	no data	580	no data	56 D	no data	no data	no data	no data	no data
NW-5	N	10/11/2011	6804.66	7	7.53	3660	no data	no data	no data	no data	545	no data	59 D	no data	no data	no data	no data	no data
NW-5	N	1/11/2012	6804.66	6.94	7.61 H	3380	no data	no data	no data	no data	475	no data	47 D	no data	no data	no data	no data	no data
NW-5	N	4/10/2012	6804.05	6.95	7.08 H	3830	no data	no data	no data	no data	511	no data	49 D	no data	no data	no data	no data	no data
NW-5	N	7/17/2012	6803.31	6.91	7.02 H	4050	no data	no data	no data	no data	422	no data	45 D	no data	no data	no data	no data	no data
NW-5	N	10/16/2012	6802.81	7.02	6.98 H	4060	no data	no data	no data	no data	415	no data	43 D	no data	no data	no data	no data	no data
NW-5	N	1/15/2013	6,801.94	6.91	6.80 H	3710	no data	no data	no data	no data	374	no data	38 D	no data	no data	no data	no data	no data
NW-5	N	4/9/2013	6,801.82	6.77	6.81 H	4300	no data	no data	no data	no data	393	no data	41 D	no data	no data	no data	no data	no data
NW-5	N	7/16/2013	6,800.87	no data	6.83 H	4540	no data	no data	no data	no data	340	no data	38 D	no data	no data	no data	no data	no data
NW-5	N	10/15/2013	6,800.93	6.98	6.73 H	4540	no data	no data	no data	no data	348	no data	27 D	no data	no data	no data	no data	no data
NW-5	N	4/9/2014	6,799.50	7.01	6.91 H	4730	no data	no data	no data	no data	372	no data	38 D	no data	no data	no data	no data	no data
NW-5	N	7/15/2014	6,799.08	6.76	6.89 H	4620	no data	no data	no data	no data	373	no data	39 D	no data	no data	no data	no data	no data
NW-5	N	10/14/2014	6,798.62	6.74	6.81 H	4840	no data	no data	no data	no data	316	no data	34 D	no data	no data	no data	no data	no data
NW-5	N	1/13/2015	6797.87	6.69	6.66 H	5000	no data	no data	no data	no data	273	no data	35 DH	no data	no data	no data	no data	no data
NW-5	N	4/14/2015	6797.33	6.44	6.49 H	5090	no data	no data	no data	no data	243	no data	35	no data	no data	no data	no data	no data
NW-5	N	7/15/2015	6796.73	6.41	6.59 H	5090	no data	no data	no data	no data	243	no data	33 D	no data	no data	no data	no data	no data
NW-5	N	10/14/2015	6796.19	6.71	6.58 H	5070	no data	no data	no data	no data	252	no data	34 D	no data	no data	no data	no data	no data
NW-5	N	1/13/2016	6795.74	6.43	6.63 H	5090	no data	no data	no data	no data	244	no data	35 D	no data	no data	no data	no data	no data
NW-5	N	4/13/2016	6794.21	6.10	6.04 H	5490	no data	no data	no data	no data	91	no data	28 D	no data	no data	no data	no data	no data

TABLE B.1

### Zone 3 Data Summary, 1989-2016

United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

[illegible]



**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
NW-5	N	7/19/2016	6794.38	6.10	5.96 H	5430 D	no data	no data	no data	no data	69	no data	30 D	no data	no data	no data	no data	no data
NW-5	N	10/11/2016	6794.48	6.08	6.09 H	5340	no data	no data	no data	no data	101	no data	31 D	no data	no data	no data	no data	no data
PB-01	N	10/18/2002	no data	5.18	no data	no data	no data	no data	no data	no data	29.2	no data	31.7	no data	no data	no data	no data	no data
PB-02	N	1/22/2008	6811.31	6.05	6.57	4130	518 D	318 D	122	11.3	140	2570 D	40 D	4.8 D	< 0.1	< 0.5	0.9	0.05
PB-02	N	4/15/2008	6809.26	5.86	6.22	4090	no data	no data	no data	no data	121	no data	29	no data	no data	no data	no data	no data
PB-02	N	7/15/2008	6809.46	5.94	4.41	4450	no data	no data	no data	no data	< 1	no data	26	no data	no data	no data	no data	no data
PB-02	N	10/14/2008	6808.53	5.74	6.18	4290	549	358	133 D	10	95	3140 D	26	2.4	< 0.1	< 0.5	0.4	0.003
PB-02	N	1/20/2009	6810.60	5.41	5.65	3950	no data	no data	no data	no data	47	no data	32	no data	no data	no data	no data	no data
PB-02	N	4/14/2009	6809.65	5.31	5.47	4470	no data	no data	no data	no data	43	no data	29	no data	no data	no data	no data	no data
PB-02	N	7/14/2009	6809.60	5.68	5.74	4580 H	no data	no data	no data	no data	39	no data	26	no data	no data	no data	no data	no data
PB-02	N	10/13/2009	6808.70	5.55	6.33	4760 H	575 D	408	131 D	11	72	3330 D	28 H	1	<0.1	<0.50	1.9	<0.001
PB-02	N	1/12/2010	6804.25	5.5	5.95	4670 D	no data	no data	no data	no data	74	no data	26	no data	no data	no data	no data	no data
PB-02	N	4/13/2010	6807.35	5.42	5.7	4930 D	540	422	144	11	38	3470 DH	23	0.82	<0.1	<0.50	6.2	0.008
PB-02	N	7/21/2010	6803.66	5.78	5.85	4980 D	no data	no data	no data	no data	63	no data	28 D	no data	no data	no data	no data	no data
PB-02	N	10/12/2010	6805.91	5.29	6.75	4940 D	562	461	151	11	50	3620 D	27 D	1.01	<0.1	<0.50	4.6	0.001
PB-02	N	1/17/2011	no data	5.59	5.7	5030 D	no data	no data	no data	no data	41	no data	28 D	no data	no data	no data	no data	no data
PB-02	N	4/13/2011	6805.85	5.87	5.82	5280 D	no data	no data	no data	no data	65	no data	29 D	no data	no data	no data	no data	no data
PB-02	N	7/20/2011	6806.25	5.48	5.79	5200 D	no data	no data	no data	no data	43	no data	29 D	no data	no data	no data	no data	no data
PB-02	N	10/11/2011	6805.60	5.73	6.73	5200 D	551	485	151	12	46	3830 D	30 D	1.0 D	<0.5	<0.50	7.1	0.005
PB-02	N	1/11/2012	6805.40	5.74	5.95 H	5280 D	no data	no data	no data	no data	55	no data	30 D	no data	no data	no data	no data	no data
PB-02	N	4/10/2012	6805.33	5.8	5.93 H	5320 D	no data	no data	no data	no data	76	no data	29 D	no data	no data	no data	no data	no data
PB-02	N	7/17/2012	6804.90	5.85	5.91 H	5260	no data	no data	no data	no data	75	no data	32 D	no data	no data	no data	no data	no data
PB-02	N	10/16/2012	6804.95	5.9	5.76 H	5140	555	508	150 D	13	57	3470 D	29 D	0.67	<0.2	<0.50	0.4	<0.001
PB-02	N	1/15/2013	6,804.07	5.84	5.75 H	4970	no data	no data	no data	no data	65	no data	29 D	no data	no data	no data	no data	no data
PB-02	N	4/9/2013	6,804.10	5.84	5.79 H	5200	no data	no data	no data	no data	64	no data	30 D	no data	no data	no data	no data	no data
PB-02	N	7/16/2013	6,803.73	5.71	5.77 H	5120	no data	no data	no data	no data	65	no data	27 D	no data	no data	no data	no data	no data
PB-03	N	1/22/2008	6812.51	6.37	7.1	3860	613 D	250 D	106	13.4	347	2370 D	64 D	9.8 D	0.7	< 0.5	0.2	0.155
PB-03	N	4/15/2008	6812.36	6.58	7.3	3860	no data	no data	no data	no data	341	no data	56	no data	no data	no data	no data	no data
PB-03	N	7/15/2008	6811.71	7.28	7.41	3960	no data	no data	no data	no data	286	no data	46	no data	no data	no data	no data	no data
PB-03	N	10/30/2008	6810.91	5.98	6.95	4000	654	238 D	145 D	13	203	2820 D	53	8.1	< 0.1	< 0.5	2.3	0.02
PB-03	N	1/20/2009	6810.53	5.41	3.6	4250	no data	no data	no data	no data	<1	no data	46	no data	no data	no data	no data	no data
PB-03	N	4/14/2009	6809.88	6.21	6.79	3940	no data	no data	no data	no data	132	no data	51	no data	no data	no data	no data	no data
PB-03	N	7/14/2009	6809.03	6.45	7.5	3850 H	no data	no data	no data	no data	242	no data	46	no data	no data	no data	no data	no data
PB-03	N	10/13/2009	6808.36	6.26	6.65	3910 H	588	236	133	10	32	2460 D	39 H	5.79	<0.1	<0.50	1.9	<0.001
PB-03	N	1/12/2010	6808.08	5.45	6.66	3650	no data	no data	no data	no data	58	no data	37	no data	no data	no data	no data	no data

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
NW-5	N	7/19/2016	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NW-5	N	10/11/2016	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-01	N	10/18/2002	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-02	N	1/22/2008	< 0.01	< 0.005	0.26	< 0.05	5.59	0.5	0.32	< 0.001	< 0.1	0.102	15.6	12.1	27.7	< 0.2	< 1	17.5
PB-02	N	4/15/2008	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-02	N	7/15/2008	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-02	N	10/14/2008	< 0.01	< 0.005	0.3	< 0.05	5.17	0.2	0.36	< 0.001	< 0.1	0.048	12	11	23	0.3	0.3 U	16.5
PB-02	N	1/20/2009	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-02	N	4/14/2009	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-02	N	7/14/2009	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-02	N	10/13/2009	<0.01	<0.005	0.38	<0.05	5.49	0.5	0.49	<0.001	<0.1	0.068	14	15	29	1.5	1.6 U	19.4
PB-02	N	1/12/2010	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-02	N	4/13/2010	<0.01	<0.005	0.4	<0.05	5.69	1.3	0.49	<0.001	<0.1	0.165	13	14	27	3.7	1.3 U	16.3
PB-02	N	7/21/2010	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-02	N	10/12/2010	<0.01	<0.005	0.49	<0.05	6.1	0.6	0.56	<0.001	<0.1	0.0811	13	18	31	1.6	0.1 U	17
PB-02	N	1/17/2011	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-02	N	4/13/2011	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-02	N	7/20/2011	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-02	N	10/11/2011	<0.01	<0.005	0.52	<0.05	6.3	0.5	0.66	<0.001	<0.1	0.0632	15	15	30	1.8	0.7 U	15.6
PB-02	N	1/11/2012	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-02	N	4/10/2012	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-02	N	7/17/2012	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-02	N	10/16/2012	<0.001	<0.005	0.49	<0.001	6.21	0.1	0.62	<0.001	<0.1	0.0212	12	20	32	0.3	0.6 U	14.2
PB-02	N	1/15/2013	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-02	N	4/9/2013	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-02	N	7/16/2013	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-03	N	1/22/2008	< 0.01	< 0.005	0.14	< 0.05	7.67	0.5	0.17	0.001	< 0.1	0.138	13.7	15.3	29	< 0.2	< 1	13.1
PB-03	N	4/15/2008	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-03	N	7/15/2008	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-03	N	10/30/2008	< 0.01	< 0.005	0.54	< 0.05	7.42	0.4	0.42	< 0.001	< 0.1	0.193	16	12	28	0.4	<3 U	20.5
PB-03	N	1/20/2009	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-03	N	4/14/2009	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-03	N	7/14/2009	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-03	N	10/13/2009	<0.01	<0.005	0.24	<0.05	5.75	0.2	0.26	<0.001	<0.1	0.113	14	13	27	2.4	0.2 U	14
PB-03	N	1/12/2010	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
PB-03	N	4/13/2010	6807.78	6.38	6.78	3690	536	237	130	10	231	2520 D	39	1.82	<0.1	<0.50	0.4	0.003
PB-03	N	7/20/2010	6807.35	7.13	6.76	3660	no data	no data	no data	no data	294	no data	31 D	no data	no data	no data	no data	no data
PB-03	N	10/12/2010	6806.90	7.12	7.68	3540	546	239	134	10	272	2300 D	29 D	1.6	0.1	<0.50	0.3	<0.001
PB-03	N	1/12/2011	no data	7.7	7.53	3500	no data	no data	no data	no data	236	no data	31 D	no data	no data	no data	no data	no data
PB-03	N	4/13/2011	6806.38	6.96	7.07	3600	no data	no data	no data	no data	274	no data	29 D	no data	no data	no data	no data	no data
PB-03	N	7/19/2011	6806.03	7.28	7.83	3530	no data	no data	no data	no data	253	no data	28 D	no data	no data	no data	no data	no data
PB-03	N	10/11/2011	6805.77	7.35	7.6	3490	508	232	127	10	237	2330 D	28 D	0.9 D	<0.5	<0.50	0.1	0.003
PB-03	N	1/10/2012	6805.43	6.57	7.61 H	3640	no data	no data	no data	no data	211	no data	28 D	no data	no data	no data	no data	no data
PB-03	N	4/10/2012	6804.98	6.38	6.64 H	3760	no data	no data	no data	no data	229	no data	27 D	no data	no data	no data	no data	no data
PB-03	N	7/17/2012	6804.43	6.41	7.11 H	3930	no data	no data	no data	no data	202	no data	28 D	no data	no data	no data	no data	no data
PB-03	N	10/16/2012	6803.95	6.38	6.89 H	4020	596	288	135	11	217	2600 D	27 D	0.9 D	<0.1	<0.50	0.2	<0.001
PB-03	N	1/16/2013	6,803.28	6.47	7.29 H	3940	no data	no data	no data	no data	179	no data	26 D	no data	no data	no data	no data	no data
PB-03	N	4/9/2013	6,803.13	3.72	3.53 H	4460	no data	no data	no data	no data	<5	no data	27 D	no data	no data	no data	no data	no data
PB-03	N	7/16/2013	6,802.53	2.97	2.98 H	4850	no data	no data	no data	no data	<5	no data	26 D	no data	no data	no data	no data	no data
PB-03	N	10/8/2013	6,802.25	2.82	2.76 H	5370	510	498	152	14	<5	3990 D	27 D	1.2 D	<0.5	<0.50	8.9	<0.001
PB-03	N	1/14/2014	6,801.49	2.83	2.78	4890	no data	no data	no data	no data	<5	no data	26	no data	no data	no data	no data	no data
PB-03	N	4/8/2014	6,801.04	2.83	2.62 H	5200	no data	no data	no data	no data	<5	no data	27 D	no data	no data	no data	no data	no data
PB-03	N	7/15/2014	6,800.52	3.61	4.00 H	4730	no data	no data	no data	no data	<5	no data	28 D	no data	no data	no data	no data	no data
PB-03	N	10/14/2014	6,800.02	3.96	3.92 H	4560	no data	no data	no data	no data	<5	no data	27 D	no data	no data	no data	no data	no data
PB-03	N	1/13/2015	6799.57	5.75	5.55 H	4320	no data	no data	no data	no data	<5	no data	25 D	no data	no data	no data	no data	no data
PB-03	N	4/14/2015	6798.86	6.18	6.70 H	4410	no data	no data	no data	no data	43	no data	28	no data	no data	no data	no data	no data
PB-03	N	7/15/2015	6798.55	6.95	6.63 H	4340	no data	no data	no data	no data	77	no data	30 D	no data	no data	no data	no data	no data
PB-04	N	1/22/2008	6812.50	6.41	6.63	3710	no data	no data	no data	no data	296	no data	58	no data	no data	no data	no data	no data
PB-04	N	4/15/2008	6812.39	6.18	6.54	3550	no data	no data	no data	no data	133	no data	54	no data	no data	no data	no data	no data
PB-04	N	7/15/2008	6811.89	6.39	7.08	3900	no data	no data	no data	no data	270	no data	43	no data	no data	no data	no data	no data
PB-04	N	1/20/2009	6810.73	4.02	3.84	3570	no data	no data	no data	no data	<1	no data	49	no data	no data	no data	no data	no data
PB-04	N	4/14/2009	6810.28	2.88	2.89	4680	no data	no data	no data	no data	<1	no data	30	no data	no data	no data	no data	no data
PB-04	N	7/14/2009	6809.98	2.5	2.78	4640 H	no data	no data	no data	no data	<5	no data	38	no data	no data	no data	no data	no data
PB-04	N	1/12/2010	6808.38	2.76	3.08	4250 D	no data	no data	no data	no data	<5	no data	27	no data	no data	no data	no data	no data
PB-04	N	4/13/2010	6808.28	2.95	3	4650 D	522	310	131	9	<5	3510 D	30	2.14	<0.1	<0.50	16.9	0.022
PB-04	N	7/20/2010	6807.84	2.62	2.89	5020 D	no data	no data	no data	no data	<5	no data	26 D	no data	no data	no data	no data	no data
PB-04	N	10/12/2010	6803.64	2.89	2.94	4280 D	no data	no data	no data	no data	<5	no data	25 D	no data	no data	no data	no data	no data
PB-04	N	4/13/2011	6806.56	2.8	2.83	5740 D	no data	no data	no data	no data	<5	no data	29 D	no data	no data	no data	no data	no data
PB-04	N	7/19/2011	6806.18	2.7	2.81	5270 D	no data	no data	no data	no data	<5	no data	28 D	no data	no data	no data	no data	no data
PB-04	N	10/11/2011	6806.04	2.56	2.79	6630 D	507	375	141	12	<5	5440 D	31 D	0.6 D	<0.5	<0.50	29.2	0.007

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
PB-03	N	4/13/2010	<0.01	<0.005	0.14	<0.05	4.21	0.5	0.17	<0.001	<0.1	0.276	8.3	12	20.3	0.3	0.9 U	7.9
PB-03	N	7/20/2010	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-03	N	10/12/2010	<0.01	<0.005	0.1	<0.05	3.68	0.6	0.12	<0.001	<0.1	0.338	5.9	5.8	11.7	0.07 U	0.7 U	6.8
PB-03	N	1/12/2011	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-03	N	4/13/2011	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-03	N	7/19/2011	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-03	N	10/11/2011	<0.01	<0.005	0.09	<0.05	4.07	0.4	0.13	<0.001	<0.1	0.192	7	4.6	11.6	0.2 U	0.06 U	7.1
PB-03	N	1/10/2012	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-03	N	4/10/2012	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-03	N	7/17/2012	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-03	N	10/16/2012	<0.001	<0.005	0.12	<0.001	4.19	0.4	0.17	<0.001	<0.1	0.136	7.1	9.5	16.6	0.02 U	0.6 U	7.6
PB-03	N	1/16/2013	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-03	N	4/9/2013	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-03	N	7/16/2013	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-03	N	10/8/2013	0.02	<0.005	0.81	0.064	8.65	<0.1	1.13	<0.001	<0.1	0.107	9.9	6.2	16.1	0.3	0.4 U	8.5
PB-03	N	1/14/2014	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-03	N	4/8/2014	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-03	N	7/15/2014	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-03	N	10/14/2014	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-03	N	1/13/2015	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-03	N	4/14/2015	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-03	N	7/15/2015	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-04	N	1/22/2008	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-04	N	4/15/2008	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-04	N	7/15/2008	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-04	N	1/20/2009	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-04	N	4/14/2009	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-04	N	7/14/2009	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-04	N	1/12/2010	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-04	N	4/13/2010	<0.01	<0.005	0.47	<0.05	5.1	0.7	0.6	0.002	<0.1	0.209	13	7.1	20.1	24	2.4 U	33.4
PB-04	N	7/20/2010	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-04	N	10/12/2010	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-04	N	4/13/2011	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-04	N	7/19/2011	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-04	N	10/11/2011	<0.01	<0.005	0.65	0.63	6.06	0.5	0.91	0.002	<0.1	0.239	13	9.5	22.5	25.7	12.7	31.3



**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
PB-04	N	4/10/2012	6805.18	2.65	2.64 H	6020 D	no data	no data	no data	no data	<5	no data	30 D	no data	no data	no data	no data	no data
PB-04	N	7/17/2012	6804.63	2.68	2.60 H	6570	no data	no data	no data	no data	<5	no data	29 D	no data	no data	no data	no data	no data
PB-04	N	10/16/2012	6804.35	2.55	2.50 H	8300	504	457	140 D	3	<5	6400 D	30 D	0.27	<2	<0.50	132	0.011
PB-04	N	1/16/2013	6,803.41	2.48	2.47 H	7830	no data	no data	no data	no data	<5	no data	32 D	no data	no data	no data	no data	no data
PB-04	N	4/10/2013	6,803.19	2.53	2.56 H	7450	no data	no data	no data	no data	<5	no data	32 D	no data	no data	no data	no data	no data
PB-04	N	7/16/2013	6,802.90	2.54	2.62 H	7300	no data	no data	no data	no data	<5	no data	28 D	no data	no data	no data	no data	no data
PB-04	N	10/9/2013	6,802.79	2.85	2.70 H	6950	453	470	112	<1	<5	5010 D	30 D	0.57	<0.5	<0.50	131	0.004
PB-04	N	1/14/2014	6,802.13	2.80	2.75	6150	no data	no data	no data	no data	<5	no data	29	no data	no data	no data	no data	no data
PB-04	N	4/8/2014	6,801.71	2.98	2.85 H	5580	no data	no data	no data	no data	<5	no data	31 D	no data	no data	no data	no data	no data
PB-04	N	7/15/2014	6,801.36	2.95	2.83 H	5660	no data	no data	no data	no data	<5	no data	32 D	no data	no data	no data	no data	no data
PB-04	N	10/14/2014	6,800.84	2.98	no data	5440	no data	no data	no data	no data	<5	no data	32 D	no data	no data	no data	no data	no data
PB-04	N	1/13/2015	6800.44	2.87	2.97 H	4700	no data	no data	no data	no data	<5	no data	26 D	no data	no data	no data	no data	no data
PB-04	N	4/14/2015	6799.83	2.97	2.63 H	5010	no data	no data	no data	no data	<5	no data	31	no data	no data	no data	no data	no data
PB-04	N	7/14/2015	6799.30	2.91	2.86 H	4970	no data	no data	no data	no data	<5	no data	33 D	no data	no data	no data	no data	no data
RW-11	N	1/23/2008	6811.70	6.23	6.57	3640	545 D	219	107	10.5	268	2220 D	45 D	5.8 D	0.1	<0.5	<0.1	<0.001
RW-11	N	10/14/2008	6823.59	5.74	6.43	3780	541	241	132 D	10	247	2520 D	41	5.1 D	<0.1	<0.5	0.1	0.004
RW-11	N	10/13/2009	6818.18	5.9	7.45	3800 H	547	259	130	10	238	2530 D	32	2.99	<0.1	<0.50	<0.1	<0.001
RW-11	N	10/12/2010	6815.23	5.97	6.56	3970	561	278	144	10	242	2630 D	35 D	2.45	<0.1	<0.50	0.3	0.001
RW-11	N	10/11/2011	6822.68	6.41	7.34	4130 D	556	308	144	11	209	2800 D	38 D	1.8 D	<0.5	<0.50	<0.1	0.006
RW-11	N	10/16/2012	6817.53	6.25	6.22 H	4540	594	373	145 D	11	220	2880 D	38 D	1.9 D	<0.1	<0.50	<0.1	<0.001
RW-11	N	10/15/2013	6,817.22	6.39	6.22 H	4700	556	390	139	11	192	3170 D	37 D	2.02	<0.1	<0.50	<0.1	<0.001
RW-11	N	10/14/2014	6,812.94	6.39	6.42 H	4860	542	419	133	11	156	3240 D	37 D	2.74	<0.1	<0.50	0.2	0.004
RW-11	N	10/14/2015	6813.82	6.28	6.11 H	5020	531	429	134	12	150	3320 D	36 D	3.1 D	<0.1	<0.50	<0.1	<0.001
RW-11	N	10/11/2016	6813.48	6.20	6.12 H	4970	522	459	129	11	130	3390 D	32 D	3.1 D	<0.1	<0.50	0.1	0.002
RW-A	N	1/23/2008	6802.73	6.27	6.81	3590	599 D	192	117	9.6	378	2080 D	47 D	3.88	0.2	<0.5	<0.1	0.001
RW-A	N	7/15/2008	6814.28	6.38	6.6	3660	no data	no data	no data	no data	360	no data	39	no data	no data	no data	no data	no data
RW-A	N	10/14/2008	6814.63	6.37	6.61	3740	608	223	136 D	9	327	2560 D	41	3	<0.1	<0.5	<0.1	<0.001
RW-A	N	1/20/2009	6818.13	6.25	7.12	3530	no data	no data	no data	no data	329	no data	23	no data	no data	no data	no data	no data
RW-A	N	4/14/2009	6817.83	6.36	6.62	3820	no data	no data	no data	no data	339	no data	38	no data	no data	no data	no data	no data
RW-A	N	7/14/2009	6816.68	6.3	6.74	3880 H	no data	no data	no data	no data	303	no data	37	no data	no data	no data	no data	no data
RW-A	N	10/13/2009	6804.13	5.8	6.99	3950 H	607	254	135	10	281	2640 D	46	3.06	0.2	<0.50	<0.1	<0.001
RW-A	N	1/12/2010	6809.18	6.06	6.58	3830	no data	no data	no data	no data	319	no data	38	no data	no data	no data	no data	no data
RW-A	N	4/14/2010	6811.13	6.1	6.44	3940	no data	no data	no data	no data	302	no data	38	no data	no data	no data	no data	no data
RW-A	N	7/21/2010	6799.48	6.34	6.61	4020	no data	no data	no data	no data	278	no data	36 D	no data	no data	no data	no data	no data
RW-A	N	10/12/2010	6808.53	5.99	7.48	3940	586	270	145	10	276	2640 D	35 D	4.74	<0.1	<0.50	<0.1	<0.001

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
PB-04	N	4/10/2012	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-04	N	7/17/2012	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-04	N	10/16/2012	0.033	<0.005	1.33	0.022	9.8	0.4	2	<0.001	<0.1	0.453	6.8	-0.002 U	6.8	34.5	0.8 U	3.3
PB-04	N	1/16/2013	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-04	N	4/10/2013	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-04	N	7/16/2013	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-04	N	10/9/2013	0.048	<0.005	1.25	0.066	11	0.1	1.85	<0.001	<0.1	0.535	8.8	0.65 U	8.8	25.9	0.2 U	1.2
PB-04	N	1/14/2014	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-04	N	4/8/2014	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-04	N	7/15/2014	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-04	N	10/14/2014	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-04	N	1/13/2015	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-04	N	4/14/2015	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
PB-04	N	7/14/2015	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
RW-11	N	1/23/2008	<0.01	<0.005	0.15	<0.05	4.83	0.2	0.18	<0.001	<0.1	0.131	12.4	16.6	29	<0.2	<1	14.2
RW-11	N	10/14/2008	<0.01	<0.005	0.15	<0.05	4.93	0.3	0.17	<0.001	<0.1	0.13	18	20	38	0.1 U	<0.2 U	12.8
RW-11	N	10/13/2009	<0.01	<0.005	0.16	<0.05	4.27	0.2	0.18	<0.001	<0.1	0.134	9.3	13	22.3	<0.004 U	0.4 U	10
RW-11	N	10/12/2010	<0.01	<0.005	0.18	<0.05	3.93	0.8	0.2	<0.001	<0.1	0.246	10	17	27	0.4 U	0.3 U	12.4
RW-11	N	10/11/2011	<0.01	<0.005	0.21	<0.05	4.68	0.1	0.24	<0.001	<0.1	0.134	9.6	13	22.6	0.03 U	0.5 U	10.1
RW-11	N	10/16/2012	<0.001	<0.005	0.25	<0.001	5.12	0.2	0.29	<0.001	<0.1	0.14	9.7	20	29.7	0.2 U	0.5 U	9.8
RW-11	N	10/15/2013	<0.001	<0.005	0.3	0.059	5.99	0.2	0.34	<0.001	<0.1	0.139	10	13	23	0.5	0.3 U	14.2
RW-11	N	10/14/2014	0.002	<0.005	0.32	0.032	6.01	0.5	0.34	<0.001	<0.1	0.142	10	33	no data	0.4 U	2.4	14.7
RW-11	N	10/14/2015	0.001	<0.005	0.32	0.002	5.94	0.2	0.34	<0.001	<0.1	0.0808	12	23	35	0.7	2.6	23.2
RW-11	N	10/11/2016	0.002	<0.005	0.36	0.002	5.71	0.3	0.35	<0.001	<0.1	0.0774	8.7	18	26.7	-0.04 U	0.9 U	19.2
RW-A	N	1/23/2008	<0.01	<0.005	0.09	<0.05	3.95	0.2	0.12	<0.001	<0.1	0.162	14.7	21.8	36.5	<0.2	<1	15
RW-A	N	7/15/2008	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
RW-A	N	10/14/2008	<0.01	<0.005	0.12	<0.05	4.24	0.2	0.16	<0.001	<0.1	0.133	11	14	25	0 U	1.1 U	17.7
RW-A	N	1/20/2009	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
RW-A	N	4/14/2009	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
RW-A	N	7/14/2009	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
RW-A	N	10/13/2009	<0.01	<0.005	0.16	<0.05	4.7	0.2	0.18	<0.001	<0.1	0.111	14	18	32	0.1 U	<1 U	13.1
RW-A	N	1/12/2010	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
RW-A	N	4/14/2010	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
RW-A	N	7/21/2010	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
RW-A	N	10/12/2010	<0.01	<0.005	0.19	<0.05	4.82	0.2	0.21	<0.001	<0.1	0.106	12	16	28	0.07 U	1.0 U	14.5

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.757
EPA Standard			NA	NA	NA	8592	NA	NA	NA	NA	NA	5693	250	NA	190	80	5	0.757
RW-A	N	1/11/2011	no data	6.29	7.36	3990	no data	no data	no data	no data	260	no data	38 D	no data	no data	no data	no data	no data
RW-A	N	4/13/2011	6818.03	6.35	6.36	4080	no data	no data	no data	no data	248	no data	36 D	no data	no data	no data	no data	no data
RW-A	N	7/20/2011	6810.83	7.12	7.6	4080	no data	no data	no data	no data	238	no data	37 D	no data	no data	no data	no data	no data
RW-A	N	10/11/2011	6809.74	6.4	7.58	4100	560	301	142	10	220	2830 D	39 D	2.8 D	<0.5	<0.50	<0.1	<0.001
RW-A	N	1/11/2012	6803.08	6.39	6.94 H	4200	no data	no data	no data	no data	221	no data	36 D	no data	no data	no data	no data	no data
RW-A	N	4/10/2012	6811.66	6.28	6.42 H	4320 D	no data	no data	no data	no data	229	no data	36 D	no data	no data	no data	no data	no data
RW-A	N	7/17/2012	6811.03	6.36	6.45 H	4300	no data	no data	no data	no data	227	no data	39 D	no data	no data	no data	no data	no data
RW-A	N	10/16/2012	6810.63	6.46	6.43 H	4460	595	346	149	11	227	2780 D	36 D	2.5 D	<0.1	<0.50	<0.1	<0.001
RW-A	N	1/15/2013	6,810.25	6.44	6.29 H	4210	no data	no data	no data	no data	215	no data	36 D	no data	no data	no data	no data	no data
RW-A	N	4/9/2013	6,809.54	6.38	6.34 H	4340	no data	no data	no data	no data	217	no data	33 D	no data	no data	no data	no data	no data
RW-A	N	7/16/2013	6,809.27	6.29	6.40 H	4620	no data	no data	no data	no data	191	no data	33 D	no data	no data	no data	no data	no data
RW-A	N	10/15/2013	6,812.16	6.53	6.41 H	4450	563	347	139	10	202	2910 D	40 D	2.44	<0.1	<0.50	1.8	0.001
RW-A	N	1/14/2014	6,811.44	6.36	6.28	4370	no data	no data	no data	no data	205	no data	33	no data	no data	no data	no data	no data
RW-A	N	4/9/2014	6,809.28	6.10	6.30 H	4620	no data	no data	no data	no data	171	no data	34 D	no data	no data	no data	no data	no data
RW-A	N	7/15/2014	6,809.42	6.14	6.28 H	4560	no data	no data	no data	no data	165	no data	32 D	no data	no data	no data	no data	no data
RW-A	N	10/14/2014	6,810.20	6.09	6.24 H	4010	550	272	126	9	165	2660 D	36 D	2.79	<0.1	<0.50	7.8	<0.001
RW-A	N	1/13/2015	6808.08	6.36	6.32 H	4740	no data	no data	no data	no data	169	no data	31 D	no data	no data	no data	no data	no data
RW-A	N	4/14/2015	6807.81	6.08	6.22 H	4950	no data	no data	no data	no data	145	no data	32	no data	no data	no data	no data	no data
RW-A	N	7/15/2015	6807.88	6.03	6.25 H	4880	no data	no data	no data	no data	151	no data	31 D	no data	no data	no data	no data	no data
RW-A	N	10/14/2015	6806.56	6.40	6.25 H	5170	551	469	143	10	106	3470 D	32 D	1.6 D	<0.1	<0.50	0.1	<0.001
RW-A	N	1/13/2016	6,807.06	6.29	6.26 H	5110	no data	no data	no data	no data	131	no data	33 D	no data	no data	no data	no data	no data
RW-A	N	4/13/2016	6,806.32	6.06	6.20 H	5420	no data	no data	no data	no data	98	no data	28 D	no data	no data	no data	no data	no data
RW-A	N	7/19/2016	6,806.71	6.10	6.12 H	5540 D	no data	no data	no data	no data	92	no data	31 D	no data	no data	no data	no data	no data
RW-A	N	10/11/2016	6,807.94	6.05	5.96 H	5240	522	496	135	9	72	3630 D	29 D	0.8 D	0.4	<0.50	0.2	<0.001

**TABLE B.1**  
**Zone 3 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.09	NA	0.08	NA	NA	0.569	0.01	0.1	0.395	NA	NA	35.2	17	5.7	39.7
EPA Standard			0.004	0.09	0.391	0.08	9.1	66.1	0.569	0.05	0.1	0.395	NA	NA	35.2	17	5.7	39.7
RW-A	N	1/11/2011	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
RW-A	N	4/13/2011	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
RW-A	N	7/20/2011	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
RW-A	N	10/11/2011	<0.01	<0.005	0.25	<0.05	5.1	0.2	0.27	<0.001	<0.1	0.105	13	15	28	0.008 U	0.4 U	13.6
RW-A	N	1/11/2012	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
RW-A	N	4/10/2012	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
RW-A	N	7/17/2012	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
RW-A	N	10/16/2012	<0.001	<0.005	0.27	<0.001	4.91	0.1	0.31	<0.001	<0.1	0.0936	12	21	33	0.01 U	0.6 U	10.7
RW-A	N	1/15/2013	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
RW-A	N	4/9/2013	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
RW-A	N	7/16/2013	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
RW-A	N	10/15/2013	0.004	<0.005	0.28	0.001	5.51	0.6	0.31	<0.001	<0.1	0.178	13	15	28	0.08	-0.2 U	23.6
RW-A	N	1/14/2014	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
RW-A	N	4/9/2014	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
RW-A	N	7/15/2014	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
RW-A	N	10/14/2014	0.007	<0.005	0.27	0.011	4.82	0.3	0.32	<0.001	<0.1	0.138	15	32	47	5.2	2.3	20.8
RW-A	N	1/13/2015	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
RW-A	N	4/14/2015	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
RW-A	N	7/15/2015	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
RW-A	N	10/14/2015	<0.001	<0.005	0.34	<0.001	5.78	<0.1	0.35	<0.001	<0.1	0.0288	13	17	30	0.1 U	0.7 U	23
RW-A	N	1/13/2016	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
RW-A	N	4/13/2016	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
RW-A	N	7/19/2016	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
RW-A	N	10/11/2016	<0.001	<0.005	0.47	<0.001	6.3	<0.1	0.44	<0.001	<0.1	0.0139	12	16	28	-0.004 U	0.5 U	26



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UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 3 Monitor Wells					
Well ID:		613	613	613	613
Collection Date:		10/10/2016	7/18/2016	4/11/2016	1/11/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016	1/15/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/16/2016
Analyte	RUnits	C16100488-001	C16070706-001	C16040481-001	C16010374-001
Bicarbonate as HCO <sub>3</sub>	mg/L	ND(5)	ND(5)	ND(5)	ND(5)
Calcium	mg/L	429	430	450	409
Chloride	mg/L	129	128	125	139
Magnesium	mg/L	719	719	755	618
Nitrogen, Ammonia as N	mg/L	166	154	159	165
Nitrogen, Nitrate+Nitrite as N	mg/L	2.3	2.4	2.3	2.4
Potassium	mg/L	1	ND(1)	1	3
Sodium	mg/L	232	234	259	226
Sulfate	mg/L	8890	8980	8480	8240
pH	s.u.	2.98	3.02	3.01	3.01
Solids, Total Dissolved TDS @ 180 C	mg/L	11200	11400	11400	11100
Aluminum	mg/L	540	550	555	557
Beryllium	mg/L	0.175	0.158	0.167	0.163
Cadmium	mg/L	0.041	0.026	0.032	0.037
Cobalt	mg/L	2.09	1.67	1.61	1.95
Lead	mg/L	0.006	0.007	0.005	0.004
Manganese	mg/L	50.3	45.2	49.7	45.9
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	1.89	1.71	1.63	1.72
Uranium	mg/L	0.754	0.792	0.756	0.764
Vanadium	mg/L	1.5	1.3	1.5	1.5
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	89.5	104	102	120
Gross Alpha minus Rn & U Precision (±)	pCi/L	17.5	20.5	19.9	23.4
Gross Alpha minus Rn & U MDC	pCi/L	1.3	1.7	1.1	1.2
Lead 210	pCi/L	0.7	0	1.3	0.2
Lead 210 precision (±)	pCi/L	0.6	0.8	1	0.7
Lead 210 MDC	pCi/L	1	1.3	1.4	1.2
Radium 226	pCi/L	12	10	25	6.8
Radium 226 precision (±)	pCi/L	2.4	2.0	4.9	1.4
Radium 226 MDC	pCi/L	0.24	0.23	0.36	0.17
Radium 228	pCi/L	2.9	1.4	1.4	1.7
Radium 228 precision (±)	pCi/L	0.86	1.0	0.91	0.57
Radium 228 MDC	pCi/L	1.4	1.9	1.4	0.96
Thorium 230	pCi/L	666	600	604	553
Thorium 230 precision (±)	pCi/L	126	114	115	105
Thorium 230 MDC	pCi/L	9.8	15.0	5.0	13.7
A/C Balance	%	-3.80	-4.11	-2.04	-3.20
Anions	meq/L	190	191	181	176
Cations	meq/L	176	176	174	165
Solids, Total Dissolved - Calculated	mg/L	11000	11000	10000	9800
TDS Ratio	unitless	1.06	1.07	1.12	1.13
Trihalomethanes, Total	ug/L	73	100	121	92.8

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.



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UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 3 Monitor Wells					
Well ID:		517	517	517	517
Collection Date:		10/10/2016	7/18/2016	4/11/2016	1/11/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016	1/15/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/16/2016
Analyte	RUUnits	C16100488-002	C16070706-002	C16040481-002	C16010374-002
Bicarbonate as HCO <sub>3</sub>	mg/L	ND(5)	ND(5)	ND(5)	ND(5)
Calcium	mg/L	441	444	472	439
Chloride	mg/L	37	37	37	39
Magnesium	mg/L	565	551	580	516
Nitrogen, Ammonia as N	mg/L	8.2	8.6	8.9	8.8
Nitrogen, Nitrate+Nitrite as N	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Potassium	mg/L	13	12	13	14
Sodium	mg/L	147	141	160	143
Sulfate	mg/L	4420	3950	4250	4140
pH	s.u.	2.98	3.11	2.88	2.92
Solids, Total Dissolved TDS @ 180 C	mg/L	5870	5930	5830	5870
Aluminum	mg/L	18.1	18.6	18.8	17.4
Beryllium	mg/L	0.018	0.016	0.017	0.016
Cadmium	mg/L	0.007	0.005	0.007	0.009
Cobalt	mg/L	0.88	0.82	0.87	0.83
Lead	mg/L	0.020	0.052	0.021	0.045
Manganese	mg/L	13.2	12.0	12.8	11.5
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.87	0.86	0.94	0.87
Uranium	mg/L	0.374	0.401	0.361	0.308
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	0.001	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	41.7	56.1	92.4	89.2
Gross Alpha minus Rn & U Precision (±)	pCi/L	8.5	11.4	18.2	17.6
Gross Alpha minus Rn & U MDC	pCi/L	1.3	1.7	1.1	1.2
Lead 210	pCi/L	1.7	2.4	1.9	2.5
Lead 210 precision (±)	pCi/L	0.8	1.1	1.1	0.9
Lead 210 MDC	pCi/L	1.0	1.4	1.4	1.2
Radium 226	pCi/L	6.0	5.6	7.9	4.3
Radium 226 precision (±)	pCi/L	1.2	1.1	1.7	0.88
Radium 226 MDC	pCi/L	0.20	0.18	0.36	0.13
Radium 228	pCi/L	8.1	11	7.8	4.4
Radium 228 precision (±)	pCi/L	1.7	2.5	1.9	0.99
Radium 228 MDC	pCi/L	1.2	1.4	1.4	0.76
Thorium 230	pCi/L	17.1	20.7	11.6	16.0
Thorium 230 precision (±)	pCi/L	3.3	3.9	2.2	3.0
Thorium 230 MDC	pCi/L	2.5	0.3	0.5	0.3
A/C Balance	%	-3.64	1.44	-0.36	-2.78
Anions	meq/L	93.6	83.6	89.7	87.6
Cations	meq/L	87.0	86.0	89.1	82.9
Solids, Total Dissolved - Calculated	mg/L	5700	5200	5600	5300
TDS Ratio	unitless	1.04	1.15	1.05	
Trihalomethanes, Total	ug/L	3.4	5.7	3.54	2.27

**\*\*Note: The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.**

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 3 Monitor Wells					
Well ID:		708	708	708	708
Collection Date:		10/10/2016	7/18/2016	4/12/2016	1/12/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016	1/15/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/16/2016
Analyte	RUnits	C16100488-003	C16070706-003	C16040481-011	C16010374-011
Bicarbonate as HCO <sub>3</sub>	mg/L	ND(5)	ND(5)	ND(5)	ND(5)
Calcium	mg/L	433	430	443	491
Chloride	mg/L	29	29	29	34
Magnesium	mg/L	603	594	617	598
Nitrogen, Ammonia as N	mg/L	0.8	0.9	0.87	0.9
Nitrogen, Nitrate+Nitrite as N	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Potassium	mg/L	13	13	14	20
Sodium	mg/L	120	120	122	122
Sulfate	mg/L	4700	4590	4540	4550
pH	s.u.	2.95	3.60	3.76	3.72
Solids, Total Dissolved TDS @ 180 C	mg/L	6220	6540	6720	6580
Aluminum	mg/L	45.9	45.5	45.7	33.6
Beryllium	mg/L	0.075	0.065	0.068	0.068
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.52	0.47	0.49	0.50
Lead	mg/L	0.024	0.009	0.009	0.012
Manganese	mg/L	14.3	12.9	14.0	12.9
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	0.1
Nickel	mg/L	0.59	0.55	0.61	0.59
Uranium	mg/L	0.126	0.122	0.118	0.117
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	0.001	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	37.5	36.3	60.2	53.7
Gross Alpha minus Rn & U Precision (±)	pCi/L	7.7	7.7	12.1	10.9
Gross Alpha minus Rn & U MDC	pCi/L	1.3	1.7	1.1	1.1
Lead 210	pCi/L	1.2	0.6	0.8	1.6
Lead 210 precision (±)	pCi/L	0.7	0.8	0.8	0.8
Lead 210 MDC	pCi/L	1.0	1.4	1.3	1.2
Radium 226	pCi/L	8.8	7.8	11	9.5
Radium 226 precision (±)	pCi/L	1.8	1.5	2.2	1.9
Radium 226 MDC	pCi/L	0.23	0.18	0.15	0.14
Radium 228	pCi/L	3.1	4.5	1.5	3.3
Radium 228 precision (±)	pCi/L	0.90	1.3	0.73	0.92
Radium 228 MDC	pCi/L	1.4	1.8	1.1	0.97
Thorium 230	pCi/L	0.2	0.4	1.4	0.6
Thorium 230 precision (±)	pCi/L	0.1	0.3	0.3	0.6
Thorium 230 MDC	pCi/L	0.2	0.4	0.9	0.9
A/C Balance	%	-3.02	-1.55	-1.22	0.29
Anions	meq/L	99.4	97.2	96.3	96.4
Cations	meq/L	93.6	94.3	93.9	97.0
Solids, Total Dissolved - Calculated	mg/L	6000	5800	5800	5900
TDS Ratio	unitless	1.04	1.12	1.15	1.12
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

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UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 3 Monitor Wells					
Well ID:		711	711	711	711
Collection Date:		10/10/2016	7/18/2016	4/11/2016	1/11/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016	1/15/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/16/2016
Analyte	RUnits	C16100488-004	C16070706-004	C16040481-005	C16010374-007
Bicarbonate as HCO <sub>3</sub>	mg/L	ND(5)	ND(5)	ND(5)	ND(5)
Calcium	mg/L	458	456	458	462
Chloride	mg/L	28	27	24	27
Magnesium	mg/L	500	494	496	437
Nitrogen, Ammonia as N	mg/L	2.2	2.13	2.3	2.0
Nitrogen, Nitrate+Nitrite as N	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Potassium	mg/L	13	13	13	16
Sodium	mg/L	116	117	117	103
Sulfate	mg/L	3690	3520	3500	3440
pH	s.u.	2.93	3.30	3.35	3.34
Solids, Total Dissolved TDS @ 180 C	mg/L	5000	5150	5220	5080
Aluminum	mg/L	10.0	7.3	4.9	1.9
Beryllium	mg/L	0.023	0.017	0.013	0.009
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.71	0.63	0.58	0.54
Lead	mg/L	0.004	0.006	0.003	0.002
Manganese	mg/L	9.64	8.84	8.83	7.72
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.85	0.76	0.71	0.63
Uranium	mg/L	0.125	0.120	0.0840	0.0504
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	0.002	0.002	0.002	0.004
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	16.6	19.4	36.2	30.4
Gross Alpha minus Rn & U Precision (±)	pCi/L	3.8	4.5	7.6	6.5
Gross Alpha minus Rn & U MDC	pCi/L	1.3	1.7	1.1	1.1
Lead 210	pCi/L	0.2	0.2	0.7	0.2
Lead 210 precision (±)	pCi/L	0.6	0.8	0.9	0.7
Lead 210 MDC	pCi/L	1	1.3	1.4	1.2
Radium 226	pCi/L	6.1	4.8	6.1	5.0
Radium 226 precision (±)	pCi/L	1.2	0.98	1.2	1.0
Radium 226 MDC	pCi/L	0.22	0.18	0.14	0.13
Radium 228	pCi/L	11	8.2	8.0	8.8
Radium 228 precision (±)	pCi/L	2.2	1.9	1.7	1.8
Radium 228 MDC	pCi/L	1.3	1.8	1.1	0.73
Thorium 230	pCi/L	0.1	0.04	0.01	0.3
Thorium 230 precision (±)	pCi/L	0.08	0.2	0.3	0.2
Thorium 230 MDC	pCi/L	0.1	0.4	0.7	0.2
A/C Balance	%	-3.01	0.53	0.86	-1.55
Anions	meq/L	79.8	74.3	73.8	72.6
Cations	meq/L	75.1	75.1	75.0	70.3
Solids, Total Dissolved - Calculated	mg/L	4800	4700	4600	4500
TDS Ratio	unitless	1.03	1.11	1.13	1.13
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

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UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 3 Monitor Wells					
Well ID:		EPA-13	EPA-13	EPA-13	EPA-13
Collection Date:		10/10/2016	7/18/2016	4/11/2016	1/11/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016	1/15/2016
Report Date:		12/2/2016	9/27/2016	6/9/2016	2/16/2016
Analyte	RUnits	C16100488-005	C16070706-005	C16040481-004	C16010374-006
Bicarbonate as HCO <sub>3</sub>	mg/L	58	50	49	63
Calcium	mg/L	438	454	508	471
Chloride	mg/L	44	43	42	48
Magnesium	mg/L	981	976	1010	862
Nitrogen, Ammonia as N	mg/L	ND(0.05)	0.06	0.09	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	0.1	ND(0.1)	ND(0.1)	ND(0.1)
Potassium	mg/L	14	14	14	14
Sodium	mg/L	177	178	175	163
Sulfate	mg/L	5380	5420	5010	5090
pH	s.u.	6.22	6.19	6.30	6.08
Solids, Total Dissolved TDS @ 180 C	mg/L	7220	7450	7530	7080
Aluminum	mg/L	ND(0.1)	ND(0.1)	0.1	0.2
Beryllium	mg/L	ND(0.001)	ND(0.001)	0.001	0.001
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.11	0.07	0.09	0.10
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	6.90	6.30	6.65	6.14
Molybdenum	mg/L	0.2	0.2	0.2	0.2
Nickel	mg/L	0.27	0.23	0.24	0.29
Uranium	mg/L	0.0102	0.0074	0.0075	0.0082
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	0.001	0.006	0.001	0.014
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	11.4	14.7	28.8	27.0
Gross Alpha minus Rn & U Precision (±)	pCi/L	2.8	3.6	6.2	5.9
Gross Alpha minus Rn & U MDC	pCi/L	1.3	1.7	1.1	1.2
Lead 210	pCi/L	0.6	0.4	0.8	0.1
Lead 210 precision (±)	pCi/L	0.6	0.8	0.9	0.7
Lead 210 MDC	pCi/L	1	1.4	1.4	1.2
Radium 226	pCi/L	5.2	4.8	5.8	5.9
Radium 226 precision (±)	pCi/L	1.1	0.98	1.2	1.2
Radium 226 MDC	pCi/L	0.25	0.20	0.18	0.15
Radium 228	pCi/L	7.7	7.2	7.4	7.2
Radium 228 precision (±)	pCi/L	1.6	1.8	1.5	1.5
Radium 228 MDC	pCi/L	1.5	1.9	0.96	0.85
Thorium 230	pCi/L	0.2	0.4	0.2	0.6
Thorium 230 precision (±)	pCi/L	0.1	0.3	0.3	0.4
Thorium 230 MDC	pCi/L	0.2	0.4	0.6	0.4
A/C Balance	%	-1.88	-1.75	4.56	-3.09
Anions	meq/L	115	115	106	108
Cations	meq/L	111	111	117	102
Solids, Total Dissolved - Calculated	mg/L	7100	7100	6800	6700
TDS Ratio	unitless	1.02	1.04	1.10	1.06
Trihalomethanes, Total	ug/L	ND(0.50)	0.70	ND(0.50)	ND(0.50)

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UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 3 Monitor Wells					
Well ID:		420	420	420	420
Collection Date:		10/10/2016	7/18/2016	4/11/2016	1/11/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016	1/15/2016
Report Date:		12/2/2016	9/27/2016	6/9/2016	2/16/2016
Analyte	RUUnits	C16100488-006	C16070706-006	C16040481-006	C16010374-008
Bicarbonate as HCO <sub>3</sub>	mg/L	376	377	351	379
Calcium	mg/L	689	705	710	736
Chloride	mg/L	46	47	47	57
Magnesium	mg/L	177	173	177	173
Nitrogen, Ammonia as N	mg/L	0.41	0.08	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	ND(0.1)	ND(0.1)	0.1	0.1
Potassium	mg/L	8	7	7	8
Sodium	mg/L	149	150	156	154
Sulfate	mg/L	2380	2310	2300	2540
pH	s.u.	7.00	7.07	6.87	6.77
Solids, Total Dissolved TDS @ 180 C	mg/L	3820	3870	3960	3990
Aluminum	mg/L	0.4	1.4	1.4	0.7
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.01	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	0.001	0.003	0.004	0.002
Manganese	mg/L	2.35	1.70	1.98	1.92
Molybdenum	mg/L	0.4	0.6	0.7	0.6
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.244	0.260	0.268	0.288
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	0.001	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	0.001	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	8.2	7.4	29.9	29.1
Gross Alpha minus Rn & U Precision (±)	pCi/L	2.6	2.3	6.4	6.3
Gross Alpha minus Rn & U MDC	pCi/L	2.0	1.7	1.1	1.1
Lead 210	pCi/L	1.5	1.9	1.3	1.3
Lead 210 precision (±)	pCi/L	0.8	1.0	1	0.8
Lead 210 MDC	pCi/L	1.0	1.4	1.4	1.2
Radium 226	pCi/L	4.4	4.1	5.5	3.5
Radium 226 precision (±)	pCi/L	0.92	0.84	1.3	0.73
Radium 226 MDC	pCi/L	0.18	0.18	0.59	0.13
Radium 228	pCi/L	6.0	5.1	4.4	3.4
Radium 228 precision (±)	pCi/L	1.4	1.4	1.2	0.90
Radium 228 MDC	pCi/L	1.1	1.7	1.0	0.75
Thorium 230	pCi/L	0.3	0.1	2.6	0.1
Thorium 230 precision (±)	pCi/L	0.2	0.1	0.5	0.1
Thorium 230 MDC	pCi/L	0.2	0.2	5.4	0.2
A/C Balance	%	-1.20	0.48	1.70	-2.51
Anions	meq/L	57.0	55.6	55.1	60.8
Cations	meq/L	55.6	56.2	57.0	57.8
Solids, Total Dissolved - Calculated	mg/L	3600	3600	3600	3900
TDS Ratio	unitless	1.05	1.08	1.10	1.03
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

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UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 3 Monitor Wells					
Well ID:		EPA-14	EPA-14	EPA-14	EPA-14
Collection Date:		10/10/2016	7/18/2016	4/11/2016	1/11/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016	1/15/2016
Report Date:		12/2/2016	9/27/2016	6/9/2016	2/16/2016
Analyte	RUnits	C16100488-007	C16070706-007	C16040481-003	C16010374-003
Bicarbonate as HCO <sub>3</sub>	mg/L	ND(5)	ND(5)	ND(5)	ND(5)
Calcium	mg/L	495	489	514	485
Chloride	mg/L	57	56	61	78
Magnesium	mg/L	342	368	419	434
Nitrogen, Ammonia as N	mg/L	23	27	32	38
Nitrogen, Nitrate+Nitrite as N	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Potassium	mg/L	11	13	13	16
Sodium	mg/L	156	162	184	164
Sulfate	mg/L	3230	3050	3450	3970
pH	s.u.	4.76	4.61	4.57	4.41
Solids, Total Dissolved TDS @ 180 C	mg/L	4440	4560	4830	5590
Aluminum	mg/L	20.8	20.7	23.0	63.6
Beryllium	mg/L	0.027	0.028	0.034	0.072
Cadmium	mg/L	ND(0.005)	ND(0.005)	0.006	0.009
Cobalt	mg/L	0.43	0.46	0.53	0.84
Lead	mg/L	0.015	0.014	0.023	0.030
Manganese	mg/L	8.90	9.71	11.6	14.9
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.41	0.46	0.54	0.89
Uranium	mg/L	0.106	0.123	0.129	0.199
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	18.9	16.6	52.8	45.7
Gross Alpha minus Rn & U Precision (±)	pCi/L	4.2	3.8	10.7	9.4
Gross Alpha minus Rn & U MDC	pCi/L	1.3	1.4	1.1	1.2
Lead 210	pCi/L	1.2	1.2	1.9	1.2
Lead 210 precision (±)	pCi/L	0.7	0.9	1.1	0.8
Lead 210 MDC	pCi/L	1.0	1.3	1.4	1.2
Radium 226	pCi/L	4.8	5.4	8.5	6.0
Radium 226 precision (±)	pCi/L	0.99	1.1	1.7	1.2
Radium 226 MDC	pCi/L	0.17	0.20	0.13	0.13
Radium 228	pCi/L	11	13	13	12
Radium 228 precision (±)	pCi/L	2.2	2.9	2.4	2.3
Radium 228 MDC	pCi/L	1.0	1.9	0.96	0.75
Thorium 230	pCi/L	0.2	-0.09	-0.2	0.4
Thorium 230 precision (±)	pCi/L	0.1	0.3	0.7	0.5
Thorium 230 MDC	pCi/L	0.2	0.7	1.6	0.8
A/C Balance	%	-3.58	-1.07	0.19	
Anions	meq/L	69.4	65.4	73.8	85.4
Cations	meq/L	64.6	64.0	74.1	77.5
Solids, Total Dissolved - Calculated	mg/L	4300	4200	4700	5200
TDS Ratio	unitless	1.03	1.10	1.04	1.08
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

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UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 3 Monitor Wells					
Well ID:		719	719	719	719
Collection Date:		10/11/2016	7/19/2016	4/12/2016	1/12/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016	1/15/2016
Report Date:		12/2/2016	9/27/2016	6/9/2016	2/16/2016
Analyte	RUnits	C16100488-008	C16070706-008	C16040481-009	C16010374-009
Bicarbonate as HCO <sub>3</sub>	mg/L	19	6	ND(5)	6
Calcium	mg/L	478	474	483	482
Chloride	mg/L	32	32	30	34
Magnesium	mg/L	734	723	737	727
Nitrogen, Ammonia as N	mg/L	0.56	0.52	0.28	0.47
Nitrogen, Nitrate+Nitrite as N	mg/L	ND(0.1)	ND(0.1)	0.2	ND(0.1)
Potassium	mg/L	13	13	13	17
Sodium	mg/L	146	145	149	151
Sulfate	mg/L	4330	4620	4220	4250
pH	s.u.	5.91	5.72	5.37	5.58
Solids, Total Dissolved TDS @ 180 C	mg/L	6080	6170	6150	6050
Aluminum	mg/L	0.3	0.1	0.8	0.2
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.23	0.24	0.25	0.27
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	5.53	5.47	5.91	5.50
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.30	0.32	0.35	0.35
Uranium	mg/L	0.0032	0.0050	0.0183	0.0117
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	7.1	6.6	27.3	23.8
Gross Alpha minus Rn & U Precision (±)	pCi/L	2.4	1.9	5.9	5.3
Gross Alpha minus Rn & U MDC	pCi/L	1.9	1.4	1.1	1.1
Lead 210	pCi/L	0.5	0.2	0.3	-0.3
Lead 210 precision (±)	pCi/L	0.6	0.8	0.8	0.7
Lead 210 MDC	pCi/L	1	1.3	1.3	1.2
Radium 226	pCi/L	4.4	3.6	5.3	4.4
Radium 226 precision (±)	pCi/L	0.94	0.76	1.1	0.91
Radium 226 MDC	pCi/L	0.25	0.19	0.15	0.14
Radium 228	pCi/L	15	9.8	4.3	7.6
Radium 228 precision (±)	pCi/L	3.0	2.2	1.2	1.5
Radium 228 MDC	pCi/L	1.5	1.8	0.95	0.79
Thorium 230	pCi/L	0.5	0.8	0.6	0.07
Thorium 230 precision (±)	pCi/L	0.3	0.4	0.3	0.09
Thorium 230 MDC	pCi/L	0.2	0.3	0.3	0.2
A/C Balance	%	-0.23	-3.99	1.55	0.79
Anions	meq/L	91.4	97.3	88.8	89.5
Cations	meq/L	91.0	89.8	91.6	90.9
Solids, Total Dissolved - Calculated	mg/L	5800	6000	5600	5700
TDS Ratio	unitless	1.06	1.02	1.09	1.07
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

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**UNC Mining and Milling ChurchRock Operations**  
**GroundWater Monitoring Summary: Zone 3 Monitor Wells**

Well ID:		717	717	717	717
Collection Date:		10/11/2016	7/19/2016	4/12/2016	1/11/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016	1/15/2016
Report Date:		12/2/2016	9/27/2016	6/9/2016	2/16/2016
Analyte	RUUnits	C16100488-009	C16070706-009	C16040481-007	C16010374-004
Bicarbonate as HCO <sub>3</sub>	mg/L	ND(5)	ND(5)	ND(5)	ND(5)
Calcium	mg/L	466	469	470	462
Chloride	mg/L	62	64	61	69
Magnesium	mg/L	497	496	503	436
Nitrogen, Ammonia as N	mg/L	40	42	43	47
Nitrogen, Nitrate+Nitrite as N	mg/L	20	20	20	19
Potassium	mg/L	3	3	4	8
Sodium	mg/L	170	171	172	150
Sulfate	mg/L	5250	5260	4920	4910
pH	s.u.	2.98	3.05	3.07	3.17
Solids, Total Dissolved TDS @ 180 C	mg/L	7120	7350	7130	6810
Aluminum	mg/L	219	216	216	203
Beryllium	mg/L	0.133	0.129	0.141	0.137
Cadmium	mg/L	0.012	0.010	0.013	0.015
Cobalt	mg/L	0.91	0.87	0.90	0.89
Lead	mg/L	0.031	0.031	0.042	0.052
Manganese	mg/L	16.9	16.7	18.1	16.4
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.92	0.89	0.94	0.97
Uranium	mg/L	0.306	0.355	0.277	0.229
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	156	164	513	459
Gross Alpha minus Rn & U Precision (±)	pCi/L	30.1	31.5	97.4	87.4
Gross Alpha minus Rn & U MDC	pCi/L	1.3	1.4	1.1	1.2
Lead 210	pCi/L	3.2	1.8	4.9	4.0
Lead 210 precision (±)	pCi/L	1.2	1.0	1.8	1.2
Lead 210 MDC	pCi/L	1.1	1.3	1.4	1.6
Radium 226	pCi/L	15	9.2	22	17
Radium 226 precision (±)	pCi/L	3.0	1.8	4.3	3.3
Radium 226 MDC	pCi/L	0.27	0.21	0.19	0.15
Radium 228	pCi/L	6.6	3.4	5.3	5.7
Radium 228 precision (±)	pCi/L	1.5	1.3	1.3	1.2
Radium 228 MDC	pCi/L	1.6	2.0	1.0	0.87
Thorium 230	pCi/L	23.7	17.2	16.9	22.9
Thorium 230 precision (±)	pCi/L	4.5	3.3	3.2	4.4
Thorium 230 MDC	pCi/L	2.8	1.1	1.9	5.8
A/C Balance	%	-1.87	-1.94	-0.31	-3.34
Anions	meq/L	113	113	106	106
Cations	meq/L	109	109	105	99.0
Solids, Total Dissolved - Calculated	mg/L	6700	6700	6400	6200
TDS Ratio	unitless	1.07	1.10	1.12	1.09
Trihalomethanes, Total	ug/L	2.4	3.2	3.72	ND(0.50)

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UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 3 Monitor Wells					
Well ID:		717 Duplicate	717 Duplicate	717 Duplicate	717 Duplicate
Collection Date:		10/11/2016	7/19/2016	4/12/2016	1/11/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016	1/15/2016
Report Date:		12/2/2016	9/27/2016	6/9/2016	2/16/2016
Analyte	RUnits	C16100488-010	C16070706-010	C16040481-008	C16010374-005
Bicarbonate as HCO <sub>3</sub>	mg/L	ND(5)	ND(5)	ND(5)	ND(5)
Calcium	mg/L	465	471	471	478
Chloride	mg/L	63	62	62	72
Magnesium	mg/L	496	497	504	433
Nitrogen, Ammonia as N	mg/L	39	42	41	47
Nitrogen, Nitrate+Nitrite as N	mg/L	20	20	20	20
Potassium	mg/L	3	3	4	9
Sodium	mg/L	169	170	172	150
Sulfate	mg/L	5320	5690	5020	5000
pH	s.u.	2.98	3.05	3.11	3.20
Solids, Total Dissolved TDS @ 180 C	mg/L	7040	7220	7170	6810
Aluminum	mg/L	222	213	212	209
Beryllium	mg/L	0.134	0.128	0.138	0.141
Cadmium	mg/L	0.011	0.011	0.014	0.015
Cobalt	mg/L	0.93	0.87	0.90	0.88
Lead	mg/L	0.022	0.023	0.026	0.030
Manganese	mg/L	17.0	16.6	18.1	16.3
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.92	0.90	0.94	0.94
Uranium	mg/L	0.308	0.292	0.248	0.244
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	0.001	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	165	150	530	454
Gross Alpha minus Rn & U Precision (±)	pCi/L	31.7	29.0	101	86.4
Gross Alpha minus Rn & U MDC	pCi/L	1.3	1.3	1.1	1.2
Lead 210	pCi/L	3.0	2.1	5.0	4.4
Lead 210 precision (±)	pCi/L	1.1	1.1	1.8	1.1
Lead 210 MDC	pCi/L	1.1	1.4	1.4	1.2
Radium 226	pCi/L	11	8.8	21	16
Radium 226 precision (±)	pCi/L	2.2	1.7	3.9	3.0
Radium 226 MDC	pCi/L	0.25	0.21	0.21	0.15
Radium 228	pCi/L	3.7	7.9	5.9	6.1
Radium 228 precision (±)	pCi/L	1.0	2.0	1.3	1.3
Radium 228 MDC	pCi/L	1.5	2.0	0.99	0.87
Thorium 230	pCi/L	21.5	27.6	19.0	14.9
Thorium 230 precision (±)	pCi/L	4.1	5.2	3.6	2.9
Thorium 230 MDC	pCi/L	2.5	1.4	3.3	5.4
A/C Balance	%	-4.16	-0.90	-1.26	-3.78
Anions	meq/L	114	108	108	108
Cations	meq/L	105	106	105	100
Solids, Total Dissolved - Calculated	mg/L	6800	6400	6400	6400
TDS Ratio	unitless	1.04	1.14	1.11	1.07
Trihalomethanes, Total	ug/L	2.6	3.3	4.44	3.18

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UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 3 Monitor Wells					
Well ID:		NBL-2	NBL-2	NBL-2	NBL-2
Collection Date:		10/11/2016	7/19/2016	4/12/2016	1/12/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016	1/15/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100488-011	C16070724-001	C16040479-007	C16010383-001
Bicarbonate as HCO <sub>3</sub>	mg/L	332	363	350	375
Calcium	mg/L	591			
Chloride	mg/L	41	39	36	43
Magnesium	mg/L	181			
Nitrogen, Ammonia as N	mg/L	0.06			
Nitrogen, Nitrate+Nitrite as N	mg/L	ND(0.1)			
Potassium	mg/L	7			
Sodium	mg/L	143			
Sulfate	mg/L	2210			
pH	s.u.	6.66	6.86	6.85	6.53
Solids, Total Dissolved TDS @ 180 C	mg/L	3420	3450	3460	3430
Aluminum	mg/L	0.1			
Beryllium	mg/L	ND(0.001)			
Cadmium	mg/L	ND(0.005)			
Cobalt	mg/L	0.02			
Lead	mg/L	ND(0.001)			
Manganese	mg/L	2.14			
Molybdenum	mg/L	ND(0.1)			
Nickel	mg/L	ND(0.05)			
Uranium	mg/L	0.129			
Vanadium	mg/L	ND(0.1)			
Arsenic-III	mg/L	ND(0.001)			
Selenium-IV	mg/L	ND(0.001)			
Gross Alpha minus Rn & U	pCi/L	9.0			
Gross Alpha minus Rn & U Precision (±)	pCi/L	2.4			
Gross Alpha minus Rn & U MDC	pCi/L	1.3			
Lead 210	pCi/L	0.5			
Lead 210 precision (±)	pCi/L	0.6			
Lead 210 MDC	pCi/L	1			
Radium 226	pCi/L	4.6			
Radium 226 precision (±)	pCi/L	0.94			
Radium 226 MDC	pCi/L	0.17			
Radium 228	pCi/L	15			
Radium 228 precision (±)	pCi/L	2.9			
Radium 228 MDC	pCi/L	0.98			
Thorium 230	pCi/L	0.2			
Thorium 230 precision (±)	pCi/L	0.2			
Thorium 230 MDC	pCi/L	0.2			
A/C Balance	%	-1.72			
Anions	meq/L	52.6			
Cations	meq/L	50.8			
Solids, Total Dissolved - Calculated	mg/L	3400			
TDS Ratio	unitless	1.02			
Trihalomethanes, Total	ug/L	ND(0.50)			

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UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 3 Monitor Wells					
Well ID:		MW-7	MW-7	MW-7	MW-7
Collection Date:		10/11/2016	7/19/2016	4/12/2016	1/12/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016	1/15/2016
Report Date:		12/2/2016	9/27/2016	6/9/2016	2/16/2016
Analyte	RUnits	C16100488-012	C16070706-011	C16040481-010	C16010374-010
Bicarbonate as HCO <sub>3</sub>	mg/L	234	247	241	286
Calcium	mg/L	589	609	629	633
Chloride	mg/L	34	37	34	41
Magnesium	mg/L	334	318	319	292
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	0.13	0.36
Nitrogen, Nitrate+Nitrite as N	mg/L	0.5	0.3	0.3	ND(0.1)
Potassium	mg/L	9	9	9	11
Sodium	mg/L	144	145	148	144
Sulfate	mg/L	2870	2840	2840	2800
pH	s.u.	6.86	6.92	7.07	6.47
Solids, Total Dissolved TDS @ 180 C	mg/L	4310	4340	4390	4200
Aluminum	mg/L	ND(0.1)	ND(0.1)	0.1	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.13	0.06	0.10	0.10
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	4.15	3.19	4.67	4.16
Molybdenum	mg/L	0.3	0.4	0.4	0.5
Nickel	mg/L	0.15	0.08	0.12	0.12
Uranium	mg/L	0.0465	0.0592	0.0479	0.0637
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	0.001	0.001	0.042
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	18.7	11.3	42.5	37.0
Gross Alpha minus Rn & U Precision (±)	pCi/L	4.2	2.8	8.8	7.8
Gross Alpha minus Rn & U MDC	pCi/L	1.3	1.4	1.1	1.1
Lead 210	pCi/L	0.3	0.2	0.9	0.07
Lead 210 precision (±)	pCi/L	0.6	0.8	0.8	0.7
Lead 210 MDC	pCi/L	1	1.3	1.3	1.2
Radium 226	pCi/L	9.3	8.4	8.9	8.0
Radium 226 precision (±)	pCi/L	1.8	1.6	1.7	1.6
Radium 226 MDC	pCi/L	0.17	0.18	0.13	0.13
Radium 228	pCi/L	12	15	17	11
Radium 228 precision (±)	pCi/L	2.5	3.2	3.6	2.1
Radium 228 MDC	pCi/L	1.2	1.8	1.8	0.72
Thorium 230	pCi/L	0.03	-0.008	0.05	0.03
Thorium 230 precision (±)	pCi/L	0.08	0.08	0.09	0.06
Thorium 230 MDC	pCi/L	0.1	0.2	0.2	0.1
A/C Balance	%	-0.93	-0.86	0.20	
Anions	meq/L	64.6	64.2	64.1	64.2
Cations	meq/L	63.4	63.1	64.3	62.2
Solids, Total Dissolved - Calculated	mg/L	4100	4100	4100	
TDS Ratio	unitless	1.05	1.06	1.07	
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

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UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 3 Monitor Wells					
Well ID:		NW-3	NW-3	NW-3	NW-3
Collection Date:		10/11/2016	7/19/2016	4/13/2016	1/13/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016	1/15/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100488-013	C16070724-004	C16040479-003	C16010383-004
Bicarbonate as HCO <sub>3</sub>	mg/L	402	420	412	499
Calcium	mg/L	601			
Chloride	mg/L	35	35	34	43
Magnesium	mg/L	351			
Nitrogen, Ammonia as N	mg/L	0.51			
Nitrogen, Nitrate+Nitrite as N	mg/L	ND(0.1)			
Potassium	mg/L	9			
Sodium	mg/L	163			
Sulfate	mg/L	2920			
pH	s.u.	6.76	6.82	6.78	6.92
Solids, Total Dissolved TDS @ 180 C	mg/L	4480	4620	4710	4540
Aluminum	mg/L	0.1			
Beryllium	mg/L	ND(0.001)			
Cadmium	mg/L	ND(0.005)			
Cobalt	mg/L	0.03			
Lead	mg/L	ND(0.001)			
Manganese	mg/L	3.26			
Molybdenum	mg/L	0.5			
Nickel	mg/L	ND(0.05)			
Uranium	mg/L	0.346			
Vanadium	mg/L	ND(0.1)			
Arsenic-III	mg/L	0.005			
Selenium-IV	mg/L	ND(0.001)			
Gross Alpha minus Rn & U	pCi/L	18.5			
Gross Alpha minus Rn & U Precision (±)	pCi/L	4.1			
Gross Alpha minus Rn & U MDC	pCi/L	1.3			
Lead 210	pCi/L	1.6			
Lead 210 precision (±)	pCi/L	0.8			
Lead 210 MDC	pCi/L	1.0			
Radium 226	pCi/L	15			
Radium 226 precision (±)	pCi/L	2.9			
Radium 226 MDC	pCi/L	0.17			
Radium 228	pCi/L	8.7			
Radium 228 precision (±)	pCi/L	1.8			
Radium 228 MDC	pCi/L	1.2			
Thorium 230	pCi/L	0.01			
Thorium 230 precision (±)	pCi/L	0.05			
Thorium 230 MDC	pCi/L	0.1			
A/C Balance	%	-1.66			
Anions	meq/L	68.4			
Cations	meq/L	66.2			
Solids, Total Dissolved - Calculated	mg/L	4300			
TDS Ratio	unitless	1.04			
Trihalomethanes, Total	ug/L	ND(0.50)			

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UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 3 Monitor Wells					
Well ID:		RW-A	RW-A	RW-A	RW-A
Collection Date:		10/11/2016	7/19/2016	4/13/2016	1/13/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016	1/15/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100488-014	C16070724-007	C16040479-006	C16010383-007
Bicarbonate as HCO <sub>3</sub>	mg/L	72	92	98	131
Calcium	mg/L	522			
Chloride	mg/L	29	31	28	33
Magnesium	mg/L	496			
Nitrogen, Ammonia as N	mg/L	0.8			
Nitrogen, Nitrate+Nitrite as N	mg/L	0.4			
Potassium	mg/L	9			
Sodium	mg/L	135			
Sulfate	mg/L	3630			
pH	s.u.	5.96	6.12	6.20	6.26
Solids, Total Dissolved TDS @ 180 C	mg/L	5240	5540	5420	5110
Aluminum	mg/L	0.2			
Beryllium	mg/L	ND(0.001)			
Cadmium	mg/L	ND(0.005)			
Cobalt	mg/L	0.47			
Lead	mg/L	ND(0.001)			
Manganese	mg/L	6.30			
Molybdenum	mg/L	ND(0.1)			
Nickel	mg/L	0.44			
Uranium	mg/L	0.0139			
Vanadium	mg/L	ND(0.1)			
Arsenic-III	mg/L	ND(0.001)			
Selenium-IV	mg/L	ND(0.001)			
Gross Alpha minus Rn & U	pCi/L	26.0			
Gross Alpha minus Rn & U Precision (±)	pCi/L	5.6			
Gross Alpha minus Rn & U MDC	pCi/L	1.3			
Lead 210	pCi/L	0.5			
Lead 210 precision (±)	pCi/L	0.6			
Lead 210 MDC	pCi/L	1			
Radium 226	pCi/L	12			
Radium 226 precision (±)	pCi/L	2.4			
Radium 226 MDC	pCi/L	0.19			
Radium 228	pCi/L	16			
Radium 228 precision (±)	pCi/L	3.0			
Radium 228 MDC	pCi/L	1.3			
Thorium 230	pCi/L	-0.004			
Thorium 230 precision (±)	pCi/L	0.07			
Thorium 230 MDC	pCi/L	0.1			
A/C Balance	%	-3.09			
Anions	meq/L	77.6			
Cations	meq/L	73.0			
Solids, Total Dissolved - Calculated	mg/L	4900			
TDS Ratio	unitless	1.07			
Trihalomethanes, Total	ug/L	ND(0.50)			

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 3 Monitor Wells					
Well ID:		RW-11	RW-11	RW-11	RW-11
Collection Date:		10/11/2016	10/14/2015	10/14/2014	10/15/2013
Receive Date:		10/14/2016	10/16/2015	10/17/2014	10/18/2013
Report Date:		12/2/2016	11/13/2015	11/24/2014	11/25/2013
Analyte	RUnits	C16100488-015	C15100581-013	C14100818-004	C13100698-003
Bicarbonate as HCO <sub>3</sub>	mg/L	130	150	156	192
Calcium	mg/L	522	531	542	556
Chloride	mg/L	32	36	37	37
Magnesium	mg/L	459	429	419	390
Nitrogen, Ammonia as N	mg/L	3.1	3.1	2.74	2.02
Nitrogen, Nitrate+Nitrite as N	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Potassium	mg/L	11	12	11	11
Sodium	mg/L	129	134	133	139
Sulfate	mg/L	3390	3320	3240	3170
pH	s.u.	6.12	6.11	6.42	6.22
Solids, Total Dissolved TDS @ 180 C	mg/L	4970	5020	4860	4700
Aluminum	mg/L	0.1	ND(0.1)	0.2	ND(0.1)
Beryllium	mg/L	0.002	0.001	0.002	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.36	0.32	0.32	0.30
Lead	mg/L	0.002	0.002	0.032	0.059
Manganese	mg/L	5.71	5.94	6.01	5.99
Molybdenum	mg/L	0.3	0.2	0.5	0.2
Nickel	mg/L	0.35	0.34	0.34	0.34
Uranium	mg/L	0.0774	0.0808	0.142	0.139
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	0.002	ND(0.001)	0.004	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	19.2	23.2	14.7	14.2
Gross Alpha minus Rn & U Precision (±)	pCi/L	4.3	4.8	1.1	1.5
Gross Alpha minus Rn & U MDC	pCi/L	1.3	0.7	0.4	0.7
Lead 210	pCi/L	0.9	2.6	2.4	0.3
Lead 210 precision (±)	pCi/L	0.6	1	0.9	0.5
Lead 210 MDC	pCi/L	1	1.4	1.3	0.9
Radium 226	pCi/L	8.7	12	10	10
Radium 226 precision (±)	pCi/L	1.7	2.3	0.51	0.64
Radium 226 MDC	pCi/L	0.18	0.15	0.09	0.16
Radium 228	pCi/L	18	23	33	13
Radium 228 precision (±)	pCi/L	3.4	4.3	2.3	1.3
Radium 228 MDC	pCi/L	1.3	1.3	1.8	1.3
Thorium 230	pCi/L	-0.04	0.7	0.4	0.5
Thorium 230 precision (±)	pCi/L	0.07	0.4	0.3	0.2
Thorium 230 MDC	pCi/L	0.2	0.4	0.4	0.2
A/C Balance	%	-2.79			
Anions	meq/L	73.7	72.5	71.0	70.2
Cations	meq/L	69.7	68.1	67.6	66.3
Solids, Total Dissolved - Calculated	mg/L	4600			
TDS Ratio	unitless	1.07			
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

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UNC Mining and Milling ChurchRock Operations				
GroundWater Monitoring Summary: Zone 3 Monitor Wells				
Well ID:		NW-1	NW-1	NW-1
Collection Date:		10/11/2016	7/19/2016	4/13/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016
Report Date:		2/7/2017	9/26/2016	6/10/2016
Analyte	Units	C16100496-001	C16070724-002	C16040479-001
Bicarbonate as HCO <sub>3</sub>	mg/L	469	482	486
Chloride	mg/L	16	16	16
pH	s.u.	7.26	7.13	7.04
Solids, Total Dissolved TDS @ 180 C	mg/L	3650	3740	3870

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UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 3 Monitor Wells					
Well ID:		NW-4	NW-4	NW-4	NW-4
Collection Date:		10/11/2016	7/19/2016	4/13/2016	1/13/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016	1/15/2016
Report Date:		2/7/2017	9/26/2016	6/9/2016	2/12/2016
Analyte	Units	C16100496-002	C16070724-003	C16040479-002	C16010383-003
Bicarbonate as HCO3	mg/L	74	78	84	85
Chloride	mg/L	21	20	19	21
pH	s.u.	6.75	6.55	6.71	6.56
Solids, Total Dissolved TDS @ 180 C	mg/L	4380	4480	4540	4620

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UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 3 Monitor Wells					
Well ID:		NW-2	NW-2	NW-2	NW-2
Collection Date:		10/11/2016	7/19/2016	4/13/2016	1/13/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016	1/15/2016
Report Date:		2/7/2017	9/26/2016	6/9/2016	2/12/2016
Analyte	Units	C16100498-003	C16070724-006	C16040479-005	C16010383-006
Bicarbonate as HCO <sub>3</sub>	mg/L	122	144	137	124
Chloride	mg/L	32	31	28	34
pH	s.u.	6.17	6.21	6.20	6.24
Solids, Total Dissolved TDS @ 180 C	mg/L	4960	5070	5020	4950

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UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 3 Monitor Wells					
Well ID:		NW-5	NW-5	NW-5	NW-5
Collection Date:		10/11/2016	7/19/2016	4/13/2016	1/13/2016
Receive Date:		10/14/2016	7/22/2016	4/15/2016	1/15/2016
Report Date:		2/7/2017	9/26/2016	6/9/2016	2/12/2016
Analyte	Units	C16100496-004	C16070724-005	C16040479-004	C16010383-005
Bicarbonate as HCO <sub>3</sub>	mg/L	101	69	91	244
Chloride	mg/L	31	30	28	35
pH	s.u.	6.09	5.96	6.04	6.63
Solids, Total Dissolved TDS @ 180 C	mg/L	5340	5430	5490	5090

NOTE: The data presented on this form is intended for summary only. Laboratory approved data is contained within the database reports.



## Appendix C

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### *Zone 1 Monitoring Data*

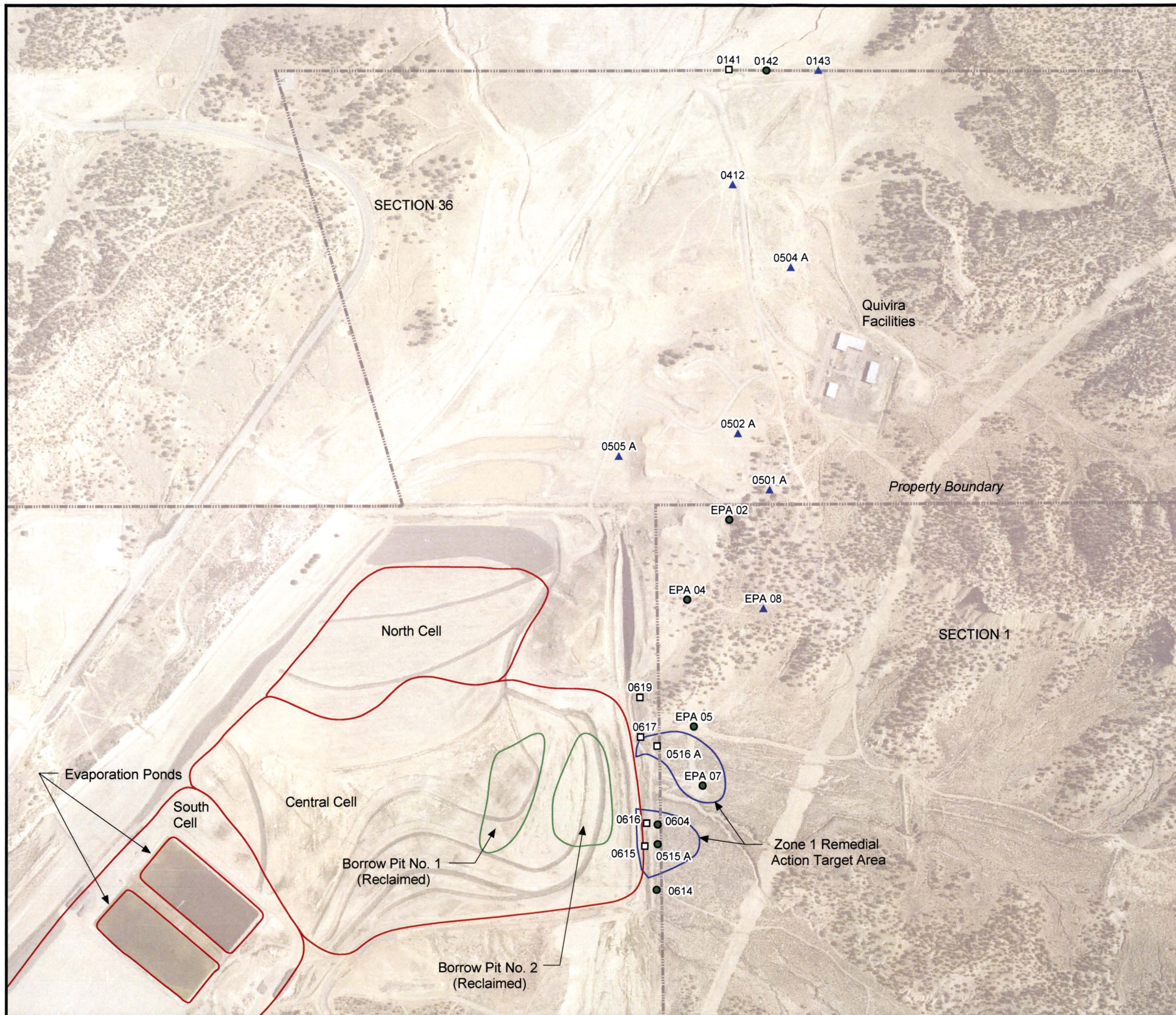
Remedial action in Zone 1 consisted of dewatering Borrow Pit No. 2, which was the source of tailings seepage into Zone 1, plus continued operation of the East and North Cross-Dike Pump-Back Wells. Dewatering of Borrow Pit No. 2 was completed in April 1989. The pump-back wells were operated until September 1990, when they were replaced by the Revised East System, consisting of Wells 615, 616, 617, and EPA 7. The Revised East System operated from 1990 through July 1999, when it was decommissioned with approval from NRC and EPA.

Remedial action has been monitored by measurement of groundwater levels and groundwater sampling and analyses at thirteen Zone 1 monitoring wells (Wells 515A, 516A, 604, 614, 619, EPA 2, EPA 4, EPA 5, EPA 7, EPA 8, 141, 142, and 143). This program was modified beginning in the second quarter of 2000 when the revised monitoring program was implemented. The wells included in the monitoring program for Zone 1 are listed in Table 15 of this 2016 Annual Review Report. See enclosed Figure C-1 for the current layout of the wells.

Table C.1 presents the quarterly water level and water quality data for the monitoring wells from the second quarter 1989, when the borrow pit was dewatered, through the fourth quarter 2016. Monitoring Well EPA 7 was used as an extraction well from September 1990 until October 1994; consequently, water level data for this well are available only for the time prior to its conversion to an extraction well, during times when the pump was shut off for maintenance, and after October 1994. The 2016 laboratory analytical data for the Zone 1 are presented at the end of this appendix.

**Figure C-1**

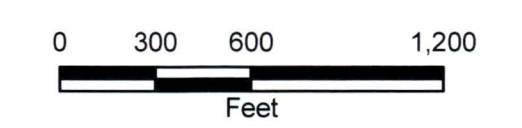




**Legend**

- Groundwater Quality and Water Level Monitoring Well
- ▲ Water Level Monitoring Well
- Zone 1 Monitoring Well Removed From Monitoring Program
- Section Boundary
- Tailings Pond
- - - Property Boundary
- Remedial Action Targe Area

Aerial photo taken on August 1, 1996.



**FIGURE C-1**

Zone 1 2016 Monitoring Well Locations

United Nuclear Corporation Church Rock Site,  
Church Rock, New Mexico

**CHESTER**  
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**Notes for Table C.1****Zone 1 Data Summary, 1989 - 2016****General Notes:**

1. NRC standard as listed in License Condition 30, Part B (revised 2015 [NRC, 2015] and with proposed corrections of typographical errors [GE, 2015]), based on updated BTVs for the site [UNC, 2012; GE, 2012b).
2. EPA standard is revised cleanup level based on updated BTV evaluation for the site (Chester Engineers, 2015b) and approved for use to complete Part III of the SWSFS (EPA, 2015).
3. Standard for nitrate changed to reflect revised standards recommended in the NRC's 1996 evaluation of background water quality and documented in the January 6, 1998, letter from NMED to EPA.
4. NA - Not applicable.
5. Data qualifiers
  - D - sample reporting limit was increased due to sample matrix.
  - E - analyte concentration exceeded instrument calibration range (estimated result)
  - H - analysis was performed past the recommended method holding time.
  - U - Not detected at minimum detectable concentration
6. Values that exceed the NRC and/or EPA standards are shaded.
7. Gross alpha value excludes contribution from radon and uranium.
8. No data" indicates that the analysis or measurement was not performed.
9. Reporting limit for bicarbonate changed from 0.0 mg/L to 0.1 mg/L in fourth quarter 1997.
10. Reporting limit for cadmium changed from 0.01 mg/L to 0.005 mg/L after fourth quarter 1997. The analytical method changed from EPA 200.7 (ICP) to 200.8 (ICP-MS).
11. NO<sub>3</sub> (nitrate) is reported by the laboratory as nitrate + nitrite as N.
12. During August 2006, the NRC issued License Amendment 37 (NRC, 2006b) revising the former 1 ug/L chloroform groundwater protection standard to 80 ug/L for total trihalomethanes (TTHMs) in the Southwest Alluvium, Zone 1 and Zone 3; and also revising the current combined radium-226 and -228 groundwater protection standard of 5 pCi/L to 5.2 pCi/L in the Southwest Alluvium and 9.4 pCi/L in Zone 1. The combined radium standards have been subsequently revised (see Note 1).



13. Energy Laboratory's reporting of radiological analyses changed during 2008 (N.A. Water Systems, 2008d). This affected the reporting of Church Rock sample analyses beginning in April 2008 (2nd quarter). The changes were made to make the reporting methods consistent with Section 7.5 of The United States Nuclear Regulatory Commission's Regulatory Guide 4.14.

The changes are summarized as follows:

- A minimum detectable concentration (MDC) is determined and reported for each analysis.
- Sample results are reported regardless of whether they are lower than the MDC for the analysis. This may result in the reporting of negative concentrations.
- Sample results lower than the MDC are qualified with a "U".

These noted changes affected the reporting of all radiological parameters analyzed in Church Rock samples, except for thorium-230. Energy Labs did not have an approved methodology for determining MDC values for thorium-230. In the absence of MDC values, the historical reporting limit was used instead. Therefore, U-qualified results for thorium-230 indicate concentrations below a reporting limit rather than an MDC. Otherwise, the reporting of thorium-230 results was treated similarly to other radiological parameters. This means that measured concentrations were reported with a U qualification if the values were below the reporting limit.

The rationale for reporting values below MDC or reporting limit, even if negative, is that errors associated with the reported values are expected, over time, to average to zero. This means that averages or sums (e.g. for total radium) of concentrations will tend to be more accurate if below limit (MDC or reporting) results are retained in the calculations.

14. At the request of EPA, UNC had the laboratory reduce the reporting limits for beryllium and lead. The new reporting limits are lower than the action levels. Beryllium's former reporting limit of 10 ug/L has been reduced to 1 ug/L (using lab method E200.7), and lead's former reporting limit of 50 ug/L has been reduced to 1 ug/L (using lab method E200.8). These changes were implemented during the July 2012 sampling event.

*Specific Notes:*

- Well TWQ-143 is monitored for water level only beginning in 2nd quarter 2000 in accordance with the Revised Monitoring Program.
- Well EPA 8 is monitored for water level only beginning in 2nd quarter 2000 in accordance with the Revised Monitoring Program.
- Well 516 A was eliminated from the monitoring program as of 2nd quarter 2000 in accordance with the Revised Monitoring Program.

- Well 619 was eliminated from the monitoring program as of 2nd quarter 2000 in accordance with the Revised Monitoring Program.
- Well TWQ-141 was not sampled in 4th quarter 1999.
- Well TWQ-141 was eliminated from the monitoring program as of 2nd quarter 2000 in accordance with the Revised Monitoring Program.
- Wells 412, 501 A, 502 A, 504 A, and 505 A added to the monitoring program in 2nd quarter 2000 as water level monitoring wells.
- At the request of EPA, for the first time since January 2000 Well 619 was sampled in October 2012 (analyzed for the full laboratory analyte list; both filtered and unfiltered samples were collected. During that same sampling event, Well 617 was sampled for the first time (this is a decommissioned pumping well).
- At the request of EPA, UNC made turbidity measurements during the July and October 2012 sampling events.

**Table C.1**

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01
0141	N	7/22/1989	6,765.10	7.90	7.90	2458	21	8	316	3.74	244	540	17.1	0.42	0.06	< 1	< 0.1	0.003
0141	N	10/12/1989	6,765.50	7.70	8.00	938	19.1	8.4	306	4.6	257	482	21	0.37	0.1	< 1	< 0.1	0.003
0141	N	1/3/1990	6,765.20	7.90	7.60	994	23.9	11	306	3.4	262	497	24.8	0.72	0.42	< 1	< 0.1	0.002
0141	N	4/3/1990	6,765.20	7.90	7.80	1024	24	9.8	304	3.6	262	458	32.9	0.76	0.44	< 1	< 0.1	0.003
0141	N	7/2/1990	6,764.90	7.60	7.72	1036	25.2	11	321	3.9	257	487	37.2	0.1	0.26	< 1	< 0.1	0.007
0141	N	10/2/1990	6,764.90	7.60	7.65	1023	21.5	10.1	305	3.7	243	509	42	0.21	0.29	< 1	< 0.1	0.006
0141	N	1/16/1991	6,764.90	7.50	7.89	1051	25.6	11.9	337	5.8	248	534	65.7	0.3	0.35	< 1	< 0.1	0.002
0141	N	4/3/1991	6,764.90	7.70	8.10	1070	23.3	10.6	311	3.1	254	530	41	0.32	0.18	< 1	< 0.1	0.003
0141	N	7/16/1991	6,764.60	7.60	7.54	1059	23.1	10.1	305	3.4	248	550	43.5	0.4	0.17	< 1	< 0.1	0.003
0141	N	10/14/1991	6,766.70	7.50	7.99	1133	22.7	11.3	325	3.2	195	539	105	0.61	0.26	< 1	< 0.1	< 0.001
0141	N	1/14/1992	6,770.80	7.40	7.62	1042	25.7	13.1	321	3.5	249	525	88.2	1.87	< 0.01	< 1	< 0.1	< 0.001
0141	N	4/7/1992	6,772.10	7.40	7.46	1123	25.8	13.9	379	3.8	326	511	116	0.46	< 0.1	< 1	< 0.1	0.002
0141	N	7/7/1992	6,772.80	7.50	7.80	1175	26.3	13.6	414	4.69	239	506	118	0.68	< 0.1	< 1	< 0.1	0.002
0141	N	10/6/1992	6,774.20	7.60	7.61	1141	31.7	13.6	360	3.4	246	525	108	0.23	< 0.1	< 1	< 0.1	0.002
0141	N	1/5/1993	6,775.10	7.70	7.93	1370	34.1	14.3	420	4.6	248	638	68.9	0.13	< 0.1	< 1	< 0.1	0.001
0141	N	4/6/1993	6,775.90	7.80	8.18	1100	23.4	10	371	2.5	244	495	91.3	0.4	< 0.1	< 1	< 0.1	0.002
0141	N	7/13/1993	6,776.50	7.70	7.12	1071	23.8	11.1	343	2.9	257	575	79.1	< 0.05	< 0.1	< 1	< 0.1	< 0.001
0141	N	10/6/1993	6,776.80	7.80	7.31	1105	27.2	12	304	2.7	257	541	64	0.47	0.16	< 1	< 0.1	< 0.001
0141	N	1/5/1994	6,775.70	7.70	7.78	1101	28.7	12.8	313	2.9	237	550	71	0.39	0.73	< 1	< 0.1	< 0.001
0141	N	4/13/1994	6,778.30	7.70	7.76	1017	35.1	11.7	301	2.4	234	499	49.4	0.18	< 0.1	< 1	< 0.1	< 0.001
0141	N	7/20/1994	6,778.70	7.70	7.34	1010	33.3	10.7	312	2.9	240	548	42.8	0.34	0.13	< 1	< 0.1	< 0.001
0141	N	10/4/1994	6,779.20	7.60	8.02	1076	25.9	11.5	342	3.4	260	537	43.2	0.15	< 0.1	< 1	< 0.1	< 0.001
0141	N	1/4/1995	6,779.60	7.50	7.93	995	26	11	321	3.3	257	493	39.8	0.42	< 0.1	< 1	< 0.1	< 0.001
0141	N	4/6/1995	no data	7.60	8.15	1038	25	12.6	291	3.1	254	507	28.2	0.62	5.19	< 1	< 0.1	< 0.001
0141	N	7/6/1995	6,780.30	7.60	8.21	1073	28.5	13.8	306	3.2	256	528	30.4	0.24	< 0.1	< 1	< 0.1	< 0.001
0141	N	10/3/1995	6,780.50	7.20	8.30	1038	22.8	10	297	3	261	485	25.9	0.46	< 0.1	< 1	< 0.1	0.004
0141	N	1/3/1996	6,781.00	7.20	8.24	1097	26.6	12.1	319	3.2	255	554	15.4	0.08	0.32	< 1	< 0.1	0.002
0141	N	4/2/1996	6,781.30	7.20	8.36	1008	25.5	11.4	283	3.3	259	526	29.1	0.39	0.16	< 1	< 0.1	< 0.001
0141	N	7/7/1996	6,781.50	8.40	7.75	1034	26.2	11.1	288	3	254	481	23.2	0.36	< 0.1	< 1	< 0.1	< 0.001
0141	N	10/1/1996	6,781.60	7.30	8.07	1010	25.1	11.7	300	3.1	254	498	25.4	0.31	< 0.1	< 1	< 0.1	< 0.001
0141	N	1/21/1997	6,782.30	6.70	7.93	903	23.9	10.6	303	3.17	256	500	22.5	0.3	< 0.1	< 1	< 0.1	0.002
0141	N	4/8/1997	6,782.30	7.00	8.25	962	21.5	9.6	293	3.1	256	479	22.4	0.26	0.14	< 1	< 0.1	< 0.001
0141	N	7/8/1997	6,782.20	7.90	8.33	977	25.2	11.3	304	3.2	251	516	24.4	1.33	0.13	< 1	< 0.1	< 0.001
0141	N	10/7/1997	6,782.50	7.10	8.13	997	26.2	12	277	2.94	256	504	22.8	0.2	0.19	< 1	< 0.1	< 0.001
0141	N	1/15/1998	6,782.90	7.80	8.29	1000	27	12.1	292	3.3	259	541	26.3	0.17	0.25	< 1	< 0.1	< 0.001
0141	N	4/7/1998	6,783.20	7.50	8.22	999	21.8	9.9	285	2.9	259	490	20.3	0.19	< 0.1	< 1	< 0.1	< 0.001



**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA Standard			0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
0141	N	7/22/1989	< 0.05	< 0.01	< 0.01	< 0.05	0.14	< 0.1	< 0.05	< 0.001	< 0.1	0.0069	< 0.2	2.9	2.9	0.6	< 1	2
0141	N	10/12/1989	< 0.05	< 0.01	< 0.01	< 0.05	0.05	0.02	< 0.05	0.001	< 0.1	0.019	6.5	< 1	6.5	< 0.2	1.2	7.1
0141	N	1/3/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.07	0.02	< 0.05	< 0.001	< 0.1	0.014	0.6	< 1	0.6	< 0.2	2	1.7
0141	N	4/3/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.16	< 0.1	< 0.05	0.001	< 0.1	0.008	0.6	< 1	0.6	1.6	< 1	2.5
0141	N	7/2/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.18	< 0.1	< 0.05	0.001	< 0.1	0.0078	0.5	< 1	0.5	< 0.2	< 1	< 1
0141	N	10/2/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.15	< 0.1	< 0.05	0.001	< 0.1	0.007	0.5	< 1	0.5	< 0.2	< 1	< 1
0141	N	1/16/1991	< 0.01	< 0.01	0.01	< 0.05	0.14	< 0.1	< 0.05	< 0.001	< 0.1	0.0065	0.2	< 1	0.2	< 0.2	< 1	< 1
0141	N	4/3/1991	< 0.01	< 0.01	< 0.01	< 0.05	0.12	< 0.1	< 0.05	< 0.001	< 0.1	0.005	0.4	< 1	0.4	< 0.2	< 1	< 1
0141	N	7/16/1991	< 0.01	< 0.01	< 0.01	< 0.05	0.19	< 0.1	< 0.05	< 0.001	< 0.1	0.002	< 0.2	< 1	0	< 0.2	2	< 1
0141	N	10/14/1991	< 0.01	< 0.01	< 0.01	< 0.05	0.16	< 0.1	< 0.05	0.001	< 0.1	0.022	0.8	< 1	0.8	< 0.2	< 1	< 1
0141	N	1/14/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.13	< 0.1	< 0.05	0.002	< 0.1	0.005	8.4	3.7	12.1	< 0.2	< 1	9
0141	N	4/7/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.15	< 0.1	< 0.05	< 0.001	< 0.1	0.002	< 0.2	< 1	0	< 0.2	< 1	< 1
0141	N	7/7/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.12	< 0.1	< 0.05	0.001	< 0.1	0.005	2.3	1.5	3.8	< 0.2	< 1	2.5
0141	N	10/6/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.2	< 0.1	< 0.05	0.001	< 0.1	0.01	< 0.2	< 1	0	< 0.2	< 1	< 1
0141	N	1/5/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.41	< 0.1	< 0.05	0.007	< 0.1	0.011	0.4	< 1	0.4	< 0.2	< 1	< 1
0141	N	4/6/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.19	< 0.1	< 0.05	< 0.001	< 0.1	0.001	0.3	< 1	0.3	< 0.2	< 1	< 1
0141	N	7/13/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.16	< 0.1	< 0.05	< 0.001	< 0.1	0.005	< 0.2	2.5	2.5	< 0.2	1	< 1
0141	N	10/6/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.22	< 0.1	< 0.05	< 0.001	< 0.1	0.006	0.6	< 1	0.6	< 0.2	< 1	< 1
0141	N	1/5/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.19	< 0.1	< 0.05	< 0.001	< 0.1	0.005	0.4	< 1	0.4	< 0.2	6.2	< 1
0141	N	4/13/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.15	< 0.1	< 0.05	< 0.001	< 0.1	0.008	0.5	< 1	0.5	< 0.2	1.7	< 1
0141	N	7/20/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.2	< 0.1	< 0.05	0.001	< 0.1	0.004	1.5	< 1	1.5	< 0.2	< 1	1.7
0141	N	10/4/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.26	< 0.1	< 0.05	< 0.001	< 0.1	0.003	0.5	< 1	0.5	< 0.2	< 1	< 1
0141	N	1/4/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.29	< 0.1	< 0.05	< 0.001	< 0.1	0.016	0.7	< 1	0.7	< 0.2	< 1	< 1
0141	N	4/6/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.15	< 0.1	< 0.05	< 0.001	< 0.1	0.004	0.4	< 1	0.4	< 0.2	< 1	< 1
0141	N	7/6/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.3	< 0.1	< 0.05	0.001	< 0.1	0.0033	1	< 1	1	< 0.2	< 1	< 1
0141	N	10/3/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.14	< 0.1	< 0.05	< 0.001	< 0.1	0.0034	< 0.2	< 1	0	< 0.2	< 1	< 1
0141	N	1/3/1996	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.0006	0.3	1.4	1.7	0.6	< 1	1.1
0141	N	4/2/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.1	< 0.1	< 0.05	< 0.001	< 0.1	0.0016	< 0.2	< 1	0	< 0.2	< 1	< 1
0141	N	7/7/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.13	< 0.1	< 0.05	< 0.001	< 0.1	0.0039	< 0.2	< 1	0	< 0.2	< 1	< 1
0141	N	10/1/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.12	< 0.1	< 0.05	0.007	< 0.1	< 0.0003	< 0.2	< 1	0	< 0.2	< 1	< 1
0141	N	1/21/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.1	< 0.1	< 0.05	< 0.001	< 0.1	0.002	< 0.2	< 1	0	< 0.2	< 1	< 1
0141	N	4/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.08	< 0.1	< 0.05	< 0.001	< 0.1	0.0006	< 0.2	< 1	0	< 0.2	< 1	< 1
0141	N	7/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.12	< 0.1	< 0.05	< 0.001	< 0.1	0.002	< 0.2	< 1	0	< 0.2	28	< 1
0141	N	10/7/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.13	< 0.1	< 0.05	< 0.001	< 0.1	0.005	< 0.2	< 1	0	< 0.2	< 1	< 1
0141	N	1/15/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.07	< 0.1	< 0.05	< 0.001	< 0.1	0.0031	< 0.2	< 1	0	< 0.2	< 1	2.8
0141	N	4/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.1	< 0.1	< 0.05	< 0.001	< 0.1	0.0029	< 0.2	< 1	0	< 0.2	< 1	< 1

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01
0141	N	7/7/1998	6,783.20	8.00	8.28	976	23	10.6	302	3.2	259	469	20.9	0.39	< 0.1	< 1	< 0.1	< 0.001
0141	N	10/6/1998	6,783.20	7.40	8.17	1030	28	12.4	296	3.7	261	545	22.9	3.48	0.34	< 1	< 0.1	0.009
0141	N	1/5/1999	6,783.60	7.80	8.06	1070	30.5	13.1	273	3.7	253	514	25.2	0.07	< 0.1	< 1	< 0.1	0.007
0141	N	4/6/1999	6,782.90	7.60	8.13	1070	31.9	16.3	299	3.4	249	516	25.2	0.23	0.21	< 1	< 0.1	0.002
0141	N	7/13/1999	6,783.54	6.80	8.28	968	29.7	14.2	285	7.5	258	507	30.2	0.37	< 0.1	< 1	< 0.1	0.004
0141	N	1/4/2000	6,780.50	7.00	8.38	2280	19.7	6.4	665	7	228	1150	176	< 0.05	0.28	< 1	< 0.1	< 0.001
0142	N	10/12/1989	6,759.80	7.70	7.87	1096	27.9	13.4	333	5.1	247	580	19.2	0.2	0.38	< 1	< 0.1	0.001
0142	N	1/3/1990	6,759.80	7.60	7.72	1130	30.6	13.9	332	3.9	245	579	20.6	0.34	0.4	< 1	0.1	0.002
0142	N	4/3/1990	6,759.60	7.80	7.92	1265	47.4	23.1	318	4.4	281	648	18.5	0.71	0.34	< 1	< 0.1	0.001
0142	N	7/2/1990	6,759.40	7.60	8.00	1106	32.2	13.6	317	4	253	564	18.1	0.17	0.31	< 1	0.1	0.001
0142	N	10/2/1990	6,759.60	7.70	7.85	1116	22.8	11	310	3.4	234	590	18.8	0.09	0.33	< 1	0.1	0.001
0142	N	1/3/1991	6,759.50	7.70	7.10	1113	29	14.3	318	11.9	244	607	18	0.36	0.33	< 1	< 0.1	0.001
0142	N	4/9/1991	6,759.80	7.70	8.22	1015	31.1	13.7	308	3.9	250	588	17.4	0.21	0.25	< 1	< 0.1	< 0.001
0142	N	7/16/1991	6,759.60	7.70	7.88	1085	35.2	16.8	286	3.7	271	643	17.2	0.34	0.21	< 1	< 0.1	< 0.001
0142	N	10/14/1991	6,761.00	7.60	8.07	1110	31.6	14.8	297	3.4	271	590	15.3	0.3	0.14	< 1	< 0.1	< 0.001
0142	N	1/14/1992	6,764.10	7.40	7.85	1071	27.6	13.8	296	3.3	259	595	16.4	0.95	0.37	< 1	< 0.1	< 0.001
0142	N	4/7/1992	6,765.70	7.50	8.19	1023	28.8	15.6	335	4.5	256	579	17	0.25	< 0.1	< 1	< 0.1	0.001
0142	N	7/7/1992	no data	7.60	8.17	1101	35.5	19	355	4.84	263	588	16	0.99	< 0.1	< 1	< 0.1	0.001
0142	N	10/6/1992	6,767.90	7.80	8.06	1100	37	17.8	332	3.2	260	588	16.8	0.08	< 0.1	< 1	< 0.1	0.001
0142	N	1/5/1993	6,769.00	7.80	8.14	1019	27.1	11.9	279	3.9	256	542	17.4	0.31	< 0.1	< 1	< 0.1	0.002
0142	N	4/6/1993	6,770.00	7.80	8.08	1084	31.8	14.8	326	2.6	254	560	16.1	0.31	< 0.1	< 1	< 0.1	< 0.001
0142	N	7/13/1993	6,770.50	7.80	7.09	1066	33.5	15.4	293	2.9	264	597	17.2	< 0.05	< 0.1	< 1	< 0.1	< 0.001
0142	N	10/6/1993	6,771.00	7.80	7.60	1074	32.3	13.9	295	2.6	255	566	15.9	0.13	0.17	< 1	< 0.1	< 0.001
0142	N	1/5/1994	6,770.70	7.80	8.03	1056	33.7	15.4	307	2.8	246	563	16.4	0.31	0.1	< 1	< 0.1	< 0.001
0142	N	4/13/1994	6,772.60	7.90	7.84	989	31	13.5	287	2.5	234	531	16.5	0.06	0.1	< 1	< 0.1	< 0.001
0142	N	7/20/1994	6,773.00	7.70	8.05	1088	34.2	14.1	286	2.8	242	538	15.8	0.08	0.45	7.09	< 0.1	< 0.001
0142	N	10/4/1994	6,773.80	7.70	8.15	1032	31.2	14	322	3.4	256	589	16.9	0.07	0.32	< 1	< 0.1	< 0.001
0142	N	1/4/1995	6,774.30	7.70	8.01	1036	29	12.2	325	3.3	251	550	17.4	0.14	0.2	< 1	< 0.1	< 0.001
0142	N	4/6/1995	6,774.70	7.80	8.11	1327	59	31	319	4.2	277	714	13.4	0.34	0.38	< 1	< 0.1	< 0.001
0142	N	7/6/1995	6,774.80	7.70	8.32	1230	43	20.2	318	3.6	260	625	16.5	0.08	0.1	< 1	< 0.1	< 0.001
0142	N	10/3/1995	6,775.30	7.30	8.30	1222	45.5	21.9	309	3.7	275	617	15.3	0.12	0.2	< 1	< 0.1	0.003
0142	N	1/3/1996	6,775.50	7.80	8.05	1018	23.2	11.9	302	3	253	492	25.3	0.2	0.19	< 1	< 0.1	0.001
0142	N	4/2/1996	6,776.10	7.10	8.42	1074	28.3	12.7	298	3.2	250	593	17.7	0.19	0.25	< 1	< 0.1	< 0.001
0142	N	7/7/1996	6,776.10	7.90	7.72	1075	26.1	11.4	300	3.1	243	481	23.2	0.26	0.44	< 1	< 0.1	< 0.001
0142	N	10/1/1996	6,776.20	7.50	8.12	1060	25.2	11.3	318	3.2	245	540	21.3	0.19	0.2	< 1	< 0.1	< 0.001
0142	N	1/21/1997	6,777.10	6.50	7.86	1020	32.8	15.3	322	3.5	240	567	15.9	0.17	0.15	< 1	< 0.1	0.002

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA Standard			0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
0141	N	7/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.09	< 0.1	0.05	< 0.001	< 0.1	0.0027	< 0.2	< 1	0	< 0.2	< 1	< 1
0141	N	10/6/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.37	< 0.1	< 0.05	< 0.001	< 0.1	0.334	1.5	< 1	1.5	< 0.2	< 1	< 1
0141	N	1/5/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.43	0.14	< 0.05	< 0.001	< 0.1	0.014	1.5	< 1	1.5	< 0.2	< 1	< 1
0141	N	4/6/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.24	< 0.1	< 0.05	0.001	< 0.1	0.0059	1	< 1	1	< 0.2	< 1	< 1
0141	N	7/13/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.27	< 0.1	< 0.05	0.001	< 0.1	0.0541	1.1	< 1	1.1	< 0.2	< 1	< 1
0141	N	1/4/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.11	< 0.1	< 0.05	0.001	< 0.1	0.0183	< 0.2	< 1	0	< 0.2	< 1	< 1
0142	N	10/12/1989	< 0.05	< 0.01	< 0.01	< 0.05	0.02	0.03	< 0.05	< 0.001	< 0.1	0.005	0.3	< 1	0.3	< 0.2	3.1	1.1
0142	N	1/3/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.03	0.02	< 0.05	0.001	< 0.1	0.006	1.3	1.1	2.4	< 0.2	2.9	1.9
0142	N	4/3/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.12	< 0.1	< 0.05	0.003	< 0.1	0.008	1.3	< 1	1.3	< 0.2	< 1	2.1
0142	N	7/2/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0019	0.5	< 1	0.5	< 0.2	< 1	< 1
0142	N	10/2/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.003	< 0.2	< 1	0	< 0.2	< 1	< 1
0142	N	1/3/1991	< 0.01	0.02	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.0032	< 0.2	< 1	0	< 0.2	< 1	< 1
0142	N	4/9/1991	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	0.001	< 0.1	0.0029	< 0.2	< 1	0	< 0.2	< 1	< 1
0142	N	7/16/1991	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.003	1.3	< 1	1.3	< 0.2	1.6	< 1
0142	N	10/14/1991	< 0.01	< 0.01	< 0.01	< 0.05	0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.015	1.5	< 1	1.5	< 0.2	< 1	< 1
0142	N	1/14/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	0.001	< 0.1	0.002	0.2	< 1	0.2	< 0.2	< 1	< 1
0142	N	4/7/1992	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.001	< 0.2	< 1	0	< 0.2	< 1	< 1
0142	N	7/7/1992	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	0.002	< 0.1	0.003	0.6	3.1	3.7	< 0.2	< 1	< 1
0142	N	10/6/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.01	< 0.1	< 0.05	0.001	< 0.1	< 0.0003	0.4	1.1	1.5	< 0.2	1.4	< 1
0142	N	1/5/1993	< 0.01	< 0.01	0.01	< 0.05	0.01	< 0.1	< 0.05	0.007	< 0.1	0.01	1.5	< 1	1.5	< 0.2	< 1	1.6
0142	N	4/6/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.002	0.8	< 1	0.8	< 0.2	2.6	< 1
0142	N	7/13/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.3	< 1	0.3	< 0.2	< 1	< 1
0142	N	10/6/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	1.1	< 1	1.1	< 0.2	2.9	< 1
0142	N	1/5/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.006	0.7	< 1	0.7	< 0.2	< 1	1.4
0142	N	4/13/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.5	1.9	2.4	< 0.2	1.6	3.5
0142	N	7/20/1994	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.001	0.8	< 1	0.8	< 0.2	1.2	< 1
0142	N	10/4/1994	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.001	0.3	< 1	0.3	< 0.2	< 1	< 1
0142	N	1/4/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.001	0.4	1.8	2.2	< 0.2	< 1	3.3
0142	N	4/6/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.001	0.6	2.5	3.1	< 0.2	< 1	4.5
0142	N	7/6/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	0.001	< 0.1	< 0.0003	1.2	< 1	1.2	0.4	< 1	< 1
0142	N	10/3/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.01	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.9	3.4	4.3	< 0.2	< 1	< 1
0142	N	1/3/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.14	< 0.1	< 0.05	< 0.001	< 0.1	0.0034	0.4	< 1	0.4	0.6	< 1	< 1
0142	N	4/2/1996	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.0004	< 0.2	< 1	0	< 0.2	< 1	< 1
0142	N	7/7/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.0007	0.5	< 1	0.5	< 0.2	< 1	< 1
0142	N	10/1/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.01	< 0.1	< 0.05	0.003	< 0.1	< 0.0003	0.3	< 1	0.3	< 0.2	< 1	< 1
0142	N	1/21/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	< 0.2	< 1	0	< 0.2	< 1	< 1

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01
0142	N	4/8/1997	6,777.20	6.60	8.28	1040	26.8	12	312	3.3	249	551	16.6	0.15	0.29	< 1	< 0.1	< 0.001
0142	N	7/8/1997	6,777.20	8.10	8.32	1030	27	12	322	3.4	240	575	18.6	0.25	0.12	< 1	< 0.1	< 0.001
0142	N	10/7/1997	6,773.00	7.40	8.19	1070	27.6	12.1	299	3.06	248	572	16.1	0.21	< 0.1	< 1	< 0.1	< 0.001
0142	N	1/15/1998	6,774.00	7.80	8.32	1170	39.6	17.9	330	3.8	261	673	20.9	0.35	0.2	< 1	< 0.1	< 0.001
0142	N	4/7/1998	6,773.40	7.80	8.26	1100	26	11.6	314	3.2	245	546	18	0.13	0.14	< 1	< 0.1	< 0.001
0142	N	7/7/1998	6,773.70	8.10	8.27	1070	25.8	11.7	325	3.4	245	533	17	0.18	0.22	< 1	< 0.1	0.001
0142	N	10/6/1998	6,774.20	7.27	8.29	1170	36	17.9	325	4	267	640	18.1	2.04	0.31	< 1	< 0.1	0.002
0142	N	1/5/1999	6,774.00	8.00	8.21	1210	37.7	17.9	309	3.6	273	628	18.2	0.12	0.24	< 1	< 0.1	0.002
0142	N	4/6/1999	6,774.20	8.00	8.15	1120	33	15.8	313	3.5	250	562	22.7	0.21	0.25	< 1	< 0.1	< 0.001
0142	N	7/13/1999	6,774.40	6.80	8.27	1030	32.4	15.8	299	6.7	262	498	24.5	0.26	0.16	< 1	< 0.1	0.001
0142	N	10/5/1999	6,775.00	7.60	8.11	1130	29.6	14.6	308	3.7	251	557	21.4	0.26	0.13	< 1	< 0.1	< 0.001
0142	N	1/4/2000	6,774.40	7.20	8.36	1500	82.2	41.7	319	7.8	309	797	26.6	1.51	0.11	< 1	< 0.1	< 0.001
0142	N	5/10/2000	6,780.70	8.40	8.27	1080	27.2	12.6	306	3.25	242	613	19.1	0.24	< 0.1	< 1	1.18	< 0.001
0142	Dup	5/10/2000	no data	8.32	8.26	1110	26.5	12.2	307	3.1	239	611	18.5	0.25	< 0.1	< 1	0.7	< 0.001
0142	N	7/10/2000	6,780.50	8.13	7.99	1060	25.8	11.8	318	3.1	242	543	19.9	0.28	< 0.1	< 1	0.75	< 0.001
0142	Dup	7/10/2000	no data	8.13	8.06	1060	24.3	11.2	314	3.01	240	537	19.3	0.29	< 0.1	< 1	0.39	< 0.001
0142	N	10/2/2000	6,780.60	8.08	7.84	1310	52.7	46.8	314	4.9	220	676	17.7	0.3	< 0.1	< 1	0.18	0.003
0142	N	1/16/2001	6,781.20	8.23	7.97	1060	20.7	9	309	3.6	242	594	21.6	0.27	< 0.1	< 1	0.2	0.001
0142	N	4/2/2001	6,781.30	8.10	8.01	1050	19.4	8.8	314	2.6	234	544	18.8	0.37	< 0.1	< 1	0.1	0.002
0142	N	7/16/2001	6,781.05	7.96	8.01	1080	19.9	9	297	3.7	233	550	24.7	0.27	< 0.1	< 1	0.1	0.001
0142	N	10/3/2001	6,781.20	7.80	8.10	1060	18.2	8.5	272	3.5	240	555	24.7	0.19	< 0.1	< 1	< 0.1	< 0.001
0142	N	1/7/2002	6,781.15	8.23	7.90	1060	19.8	8.7	294	3.4	236	560	21.3	0.2	< 0.1	< 1	< 0.1	< 0.001
0142	N	4/8/2002	6,781.69	7.59	7.59	1070	19.4	8.5	307	2.9	239	556	21.5	0.26	< 0.1	< 1	< 0.1	< 0.001
0142	N	7/15/2002	6,781.60	7.11	8.06	1060	18.6	8.5	313	4.5	239	607	18.6	0.15	< 0.1	< 1	< 0.1	< 0.001
0142	N	10/14/2002	6,781.53	7.09	8.00	998	20.4	8.7	308	3.1	237	536	17.7	0.11	< 0.1	< 1	< 0.1	0.004
0142	N	1/13/2003	6,781.66	7.48	7.93	1060	24.1	8.6	313	3.3	255	526	21.3	< 0.05	< 0.1	< 1	1.1	0.003
0142	N	4/14/2003	6,781.98	7.89	7.76	1080	22.5	8.7	315	5.6	245	555	18.4	< 0.05	0.2	< 1	< 0.1	< 0.001
0142	N	7/15/2003	6,781.85	7.63	7.99	1100	23.1	8.7	315	4.3	245	517	20.8	0.17	0.2	< 1	0.4	< 0.001
0142	N	10/13/2003	6,782.14	7.85	8.04	1070	24.5	10	319	3.1	235	553	21.6	< 0.05	< 0.1	< 1	0.4	< 0.001
0142	N	1/13/2004	6,782.00	7.80	7.97	1070	24.8	10.8	329	5.1	245	579	18	< 0.05	< 0.10	< 1.0	< 0.1	0.002
0142	N	4/12/2004	6,782.40	7.76	7.28	1030	23.5	9.5	308	4.2	255	532	20.6	< 0.05	< 0.1	< 1	< 0.1	< 0.001
0142	N	7/19/2004	6,782.17	8.32	7.75	1070	22.4	9.4	330	2.9	237	549	19	0.19	< 0.10	< 1.0	< 0.1	< 0.001
0142	N	10/11/2004	6,782.35	8.02	7.99	1090	21	9.5	308	3.8	233	527	19	0.09	< 0.10	< 1.0	< 0.1	< 0.001
0142	N	1/10/2005	6,782.41	7.72	7.89	1070	22.4	9.7	326	3	241	540	19	< 0.05	< 0.1	< 1.0	< 0.1	< 0.001
0142	N	4/12/2005	6,782.45	7.55	7.82	1070	23.6	10.1	335	3.2	235	568	16	< 0.05	< 0.1	< 1.0	< 0.1	< 0.001
0142	N	7/18/2005	6,782.40	7.29	7.93	1060	22.5	9.9	326	2.8	239	535	15	< 0.05	< 0.1	< 1.0	< 0.1	< 0.001

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA Standard			0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
0142	N	4/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.01	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	< 0.2	< 1	0	< 0.2	< 1	< 1
0142	N	7/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.01	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.5	< 1	0.5	< 0.2	< 1	< 1
0142	N	10/7/1997	< 0.01	< 0.01	< 0.01	0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.001	< 0.2	< 1	0	< 0.2	< 1	< 1
0142	N	1/15/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.0006	1.8	< 1	1.8	< 0.2	< 1	< 1
0142	N	4/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.0008	0.9	< 1	0.9	< 0.2	< 1	< 1
0142	N	7/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.0006	< 0.2	< 1	0	< 0.2	< 1	< 1
0142	N	10/6/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.08	< 0.1	< 0.05	< 0.001	< 0.1	0.0051	1.1	< 1	1.1	< 0.2	< 1	< 1
0142	N	1/5/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.21	0.14	< 0.05	< 0.001	< 0.1	0.004	2.1	3	5.1	< 0.2	< 1	< 1
0142	N	4/6/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.0012	< 0.2	< 1	0	< 0.2	< 1	< 1
0142	N	7/13/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.01	< 0.1	< 0.05	0.001	< 0.1	0.0009	< 0.2	< 1	0	< 0.2	< 1	< 1
0142	N	10/5/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.0008	0.7	< 1	0.7	< 0.2	< 1	< 1
0142	N	1/4/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.1	0.14	< 0.05	< 0.001	< 0.1	0.0077	2.4	1.5	3.9	< 0.2	< 1	2.5
0142	N	5/10/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.07	< 0.1	< 0.05	< 0.001	< 0.1	0.0013	< 0.2	< 1	0	< 0.2	< 1	< 1
0142	Dup	5/10/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.06	< 0.1	< 0.05	< 0.001	< 0.1	0.0012	0.7	< 1	0.7	< 0.2	< 1	< 1
0142	N	7/10/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.07	< 0.1	< 0.05	< 0.001	< 0.1	0.0011	0.9	< 1	0.9	< 0.2	< 1	1.4
0142	Dup	7/10/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.06	< 0.1	< 0.05	< 0.001	< 0.1	0.0024	0.7	< 1	0.7	< 0.2	< 1	1.4
0142	N	10/2/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.39	0.76	< 0.05	< 0.001	< 0.1	0.0019	0.9	< 1	0.9	< 0.2	< 1	< 1
0142	N	1/16/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0004	0.4	3	3.4	< 0.2	< 1	< 1
0142	N	4/2/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	< 0.2	< 1	0	< 0.2	< 1	< 1
0142	N	7/16/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.3	< 1	0.3	< 0.2	< 1	< 1
0142	N	10/3/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.5	< 1	0.5	< 0.2	< 1	< 1
0142	N	1/7/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.6	1.9	2.5	< 0.2	< 1	< 1
0142	N	4/8/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.3	< 1	0.3	< 0.2	< 1	< 1
0142	N	7/15/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.3	< 1	0.3	< 0.2	< 1	< 1
0142	N	10/14/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.0003	0.8	< 1	0.8	< 0.2	< 1	< 1
0142	N	1/13/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.0004	1	< 1	1	< 0.2	< 1	1.9
0142	N	4/14/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.0003	< 0.2	< 1	0	< 0.2	< 1	1.1
0142	N	7/15/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.3	< 1	0.3	< 0.2	< 1	< 1.0
0142	N	10/13/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.09	< 0.1	< 0.05	< 0.001	< 0.1	0.0061	< 0.2	< 1	0	< 0.2	< 1	< 1.0
0142	N	1/13/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0005 D	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
0142	N	4/12/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.0004	< 0.2	< 1	0	< 0.2	< 1	< 1
0142	N	7/19/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.4	< 1.0	0.4	< 0.2	< 1.0	< 1.0
0142	N	10/11/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
0142	N	1/10/2005	< 0.01	< 0.005	< 0.01	< 0.05	0.01	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.5	< 1.0	0.5	< 0.2	< 1.0	< 1.0
0142	N	4/12/2005	< 0.01	< 0.005	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
0142	N	7/18/2005	< 0.01	< 0.005	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0



**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Cl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
		EPA Standard	NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01
0142	N	10/10/2005	6,782.69	7.53	7.94	1050	22.8	10.3	322	3.2	250	562	19	< 0.05	< 0.1	< 1.0	< 0.1	< 0.001
0142	N	1/16/2006	6,782.66	7.46	8.29	1040	22	9.9	312	3.1	250	521	17	< 0.05	1.4	< 1.0	< 0.1	< 0.00
0142	N	4/10/2006	6,782.62	7.55	7.68	1030	24.3	11.2	310	3	247	546	18	< 0.05	< 0.1	< 1.0	< 0.1	< 0.001
0142	N	7/24/2006	6,782.43	7.63	7.45	998	27.4	12.6	343	3.5	249	583	19	0.08	< 0.1	< 1.0	< 0.1	0.001
0142	N	10/9/2006	6,782.55	7.62	7.79	986	29.1	13.9	322	3.5	249	578	18	0.2	< 0.1	< 0.5	< 0.1	0.001
0142	N	1/15/2007	6,782.42	7.79	7.92	1070	31	15.4	315	3.9	251	599	19	0.14	0.1	<0.5	<0.1	<0.001
0142	N	4/16/2007	6,782.60	7.66	7.79	1070	32.4	17	325	4.1	257	644	21	0.23	<0.1	<0.5	<0.1	<0.001
0142	N	7/17/2007	6,782.30	7.51	7.42	1070	33.7	16.9	322	3.5	259	603	17	0.17	0.2	<0.5	<0.1	0.002
0142	N	10/9/2007	6,782.23	7.14	7.53	1090	33.9	17	305	3.5	250	570	16	0.15	0.3	<0.5	<0.1	0.001
0142	N	1/22/2008	6,781.90	7.62	7.56	1080	34.9	16.7	320	3.9	257	563 D	23 D	0.14	0.3	< 0.5	< 0.1	< 0.001
0142	N	4/16/2008	6,782.55	7.53	7.5	1060	38.9	19	346 D	3.5	250	617 D	15	0.18	0.1	< 0.5	< 0.1	0.002
0142	N	7/15/2008	6,782.15	7.42	7.76	1100	40	20	341 D	4	266	638 D	16	0.23	< 0.1	< 0.5	< 0.1	< 0.003
0142	N	10/14/2008	6,782.20	7.50	7.78	1130	40	20	338 D	3	261	629 D	15	0.3	< 0.1	< 0.5	< 0.1	0.001
0142	N	1/20/2009	6,782.10	7.75	7.33	1200	42	23	328	4	261	714 D	12	0.18	<0.1	<0.5	0.1	<0.001
0142	N	4/14/2009	6,782.50	7.68	7.26	1180	41	21	302	3	272	642 D	16	0.29	0.2	<0.50	<0.1	<0.001
0142	N	7/14/2009	6,782.20	7.88	7.48	1160 H	44	22	336	4	271	657 D	15	0.36	<0.1	<0.50	<0.1	<0.001
0142	N	10/13/2009	6,782.30	7.76	7.81	1180 H	43	22	335	4	281	624 D	19	0.28	<0.1	<0.50	<0.1	<0.001
0142	N	1/12/2010	6,782.10	7.78	7.82	1180	44	22	319	4	280	650 D	15	0.33	<0.10	<0.50	0.2	<0.001
0142	N	4/13/2010	6,782.40	7.96	7.6	1220	46	23	334	4	302	686 D	22	0.44	<0.1	<0.50	0.4	<0.001
0142	N	7/20/2010	6,782.15	7.67	7.2	1210 H	47	25	317	4	294	659 D	16	0.38	<0.1	<0.50	<0.1	<0.001
0142	N	10/12/2010	6,782.20	7.76	7.74	1260	48	24	344	4	298	695 D	15	0.32	0.1	<0.50	0.3	<0.001
0142	N	1/12/2011	6,782.10	7.84	7.86	1160	49	25	326	4	285	664 D	17	0.46	<0.1	<0.50	<0.1	<0.001
0142	N	4/12/2011	6,782.30	7.87	7.68	1230	51	26	353	4	285	669 D	17	0.46	<0.1	<0.50	<0.1	<0.001
0142	N	7/19/2011	6,782.05	7.93	7.98	1220	51	25	337	4	288	665 D	17	0.5 D	<0.1	<0.50	0.1	<0.001
0142	N	10/11/2011	6,782.10	7.9	8.01	1220	51	26	332	4	266	684 D	17	0.4 D	<0.1	<0.50	0.1	<0.001
0142	N	1/10/2012	6,782.10	8.04	7.14 H	1240	57	26	308	4	269	672 D	17	0.39	<0.1	<0.50	<0.1	<0.001
0142	N	4/10/2012	6,782.05	7.91	7.34 H	1260	52	26	312	4	283	658 D	16	0.45	<0.1	<0.50	0.1	<0.01
0142	N	7/17/2012	6,781.90	7.83	7.78 H	1330	61	29	336	4	288	693 D	18	<0.05	<0.1	<0.50	<0.1	<0.001
0142	N	10/16/2012	6,782.00	8.07	7.36 H	1290	61	31	362	4	296	697 D	18	0.4	<0.1	<0.50	<0.1	<0.001
0142	N	1/15/2013	6,781.84	7.43	7.34 H	1280	63	34	361	4	294	717 D	17	0.45	<0.1	<0.50	<0.1	<0.001
0142	N	4/9/2013	6,782.34	7.88	7.40 H	1320	62	33	324	4	302	726 D	16	0.45	<0.1	<0.50	<0.1	<0.001
0142	N	7/15/2013	6,781.86	7.84	7.49 H	1330	61	32	314	4	304	712 D	19	0.41	<0.1	<0.50	<0.1	<0.001
0142	N	10/8/2013	6,781.82	7.97	7.41 H	1330	63	32	334	4	308	711 D	17	0.67 H	<0.1	<0.50	0.2	<0.001
0142	N	1/14/2014	6,781.47	8.10	7.97	1360	66	33	331	4	306	707	17	0.36	0.1	<0.50	0.2	<0.001
0142	N	4/2/2014	6,781.96	8.11	7.43 H	1350	67	35	363	4	308	717 D	18	<0.05	0.7	<0.50	0.2	<0.001
0142	N	7/9/2014	6,781.46	7.84	7.42 H	1330	59	34	370	4	307	741 D	17	<0.05	0.5	<0.50	0.2	<0.001

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA Standard			0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
0142	N	10/10/2005	< 0.01	< 0.005	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	< 0.2	< 1.0	0	< 0.2	< 1.0	< 1.0
0142	N	1/16/2006	< 0.01	< 0.005	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.0004	< 0.2	2.3	2.3	< 0.2	< 1.0	< 1.0
0142	N	4/10/2006	< 0.01	< 0.005	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	< 0.2	2.8	2.8	< 0.2	< 1.0	< 1.0
0142	N	7/24/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	< 0.2	2.8	2.8	< 0.2	< 1.0	< 1.0
0142	N	10/9/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	0.002	< 0.1	< 0.0003	< 0.2	< 1	0	< 0.2	< 1	< 1
0142	N	1/15/2007	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	< 0.2	< 1	0	< 0.2	< 1	< 1
0142	N	4/16/2007	< 0.01	< 0.005	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	< 0.2	< 1	0	< 0.2	< 1	< 1
0142	N	7/17/2007	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	< 0.2	< 1	0	< 0.2	< 1	< 1
0142	N	10/9/2007	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	< 0.2	< 1	0	< 0.2	< 1	< 1
0142	N	1/22/2008	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.0005	0.9	< 1	0.9	< 0.2	6.1	3.6
0142	N	4/16/2008	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	0.0004	0.1 U	0.7 U	0.8	0.3	-0.8 U	1.5
0142	N	7/15/2008	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0006	0.54	0.71 U	1.25	0 U	0.3 U	0.7 U
0142	N	10/14/2008	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.08 U	0.57 U	0.65	0.3	-0.1 U	1.5
0142	N	1/20/2009	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.45	1.4	1.85	-0.2 U	0.2 U	0.6 U
0142	N	4/14/2009	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.67	0.24 U	0.91	-0.02 U	-2 U	0.7
0142	N	7/14/2009	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.73	0.70 U	1.43	0.05 U	0.4 U	1.7
0142	N	10/13/2009	< 0.01	< 0.005	< 0.01	< 0.05	0.06	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.28	0.95 U	1.23	0.2 U	1.0 U	0.9
0142	N	1/12/2010	< 0.01	< 0.005	< 0.01	< 0.05	0.06	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.36	1.7	2.06	0.06 U	1.1 U	1.1
0142	N	4/13/2010	< 0.01	< 0.005	< 0.01	< 0.05	0.06	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.51	1.5	2.01	0.02 U	-0.5 U	0.7
0142	N	7/20/2010	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.48	0.59 U	1.07	0.06 U	-0.4 U	2
0142	N	10/12/2010	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.83	1.1 U	1.93	0.04 U	0.9 U	0.6 U
0142	N	1/12/2011	< 0.01	< 0.005	< 0.01	< 0.05	0.05	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	1.1	0.78 U	1.88	0.002 U	0.3 U	1.7
0142	N	4/12/2011	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	0.001	< 0.1	< 0.0003	0.25	0.71 U	0.96	-0.02 U	0.3 U	1.2
0142	N	7/19/2011	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.53	1.1 U	1.63	0.04 U	-0.7 U	1.1
0142	N	10/11/2011	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.78	1.1 U	1.88	-0.007 U	0.7 U	1 U
0142	N	1/10/2012	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.8	1.8	4.4	0.06 U	0.2 U	0.3 U
0142	N	4/10/2012	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.66	0.07 U	0.8	0.04 U	0.1 U	0.7
0142	N	7/17/2012	< 0.001	< 0.005	< 0.01	< 0.001	0.02	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.82	0.72 U	2.26	0.01 U	0.4 U	0.8
0142	N	10/16/2012	< 0.001	< 0.005	< 0.01	< 0.001	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.57	1.1 U	0.57	0.04 U	0.4 U	1.1
0142	N	1/15/2013	< 0.001	< 0.005	< 0.01	< 0.001	0.02	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.76	0.92 U	0.76	0.03 U	0.07 U	-0.002 U
0142	N	4/9/2013	< 0.001	< 0.005	< 0.01	< 0.001	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.68	0.83 U	0.68	0.1	-0.3 U	0.6 U
0142	N	7/15/2013	< 0.001	< 0.005	< 0.01	< 0.001	0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.0004	0.68	1.9	2.58	0.06 U	-0.02 U	1
0142	N	10/8/2013	< 0.001	< 0.005	< 0.01	< 0.001	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.0005	1.1	1.2 U	1.1	0.05 U	-0.3 U	0.9
0142	N	1/14/2014	< 0.001	< 0.005	< 0.01	< 0.001	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0004	1.3	0.48 U	1.3	0.07 U	0.2 U	0.5
0142	N	4/2/2014	< 0.001	< 0.005	< 0.01	< 0.001	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0003	0.68	2.4	3.08	0.02 U	0.4 U	1.3
0142	N	7/9/2014	< 0.001	< 0.005	< 0.01	< 0.001	0.03	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.68	0.1 U	0.68	0.03 U	-0.07 U	0.8

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Cl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As	
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l
			NRC Standard		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
		EPA Standard	NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01	
0142	N	10/8/2014	6,781.62	7.97	7.40 H	1340	65	33	319	4	322	707 D	16	<0.05	0.5	<0.50	<0.1	<0.001	
0142	N	1/7/2015	6781.35	8.09	7.33 H	1340	66	34	320	4	313	736 D	20	<0.05	0.5	<0.50	<0.1	<0.001	
0142	N	4/8/2015	6780.66	7.80	7.51 H	1360	68	34	318	4	329	714 D	17	<0.05	0.4	<0.5	0.4	<0.001	
0142	N	7/8/2015	6781.37	7.78	7.36 H	1350	76	35.3	335	4.4	323	732 D	17	<0.05	0.4	<0.50	<0.1	<0.001	
0142	N	10/7/2015	6781.19	7.90	7.33 H	1350	65	33	322	4	297	721 D	18	0.15	0.3	<0.50	<0.1	<0.001	
0142	N	1/6/2016	6781.52	7.76	7.42 H	1330	67	35	334	4	313	729 D	17	0.13	0.4	<0.50	0.2	<0.001	
0142	N	4/6/2016	6780.91	7.82	7.47 H	1330	69	36	338	4	306	713 D	17	<0.05	0.5	<0.50	0.2	<0.001	
0142	N	7/13/2016	6780.90	7.86	7.35 H	1360	69	35	328	4	320	762 D	18	<0.05	0.5	<0.50	<0.1	<0.001	
0142	N	10/5/2016	6781.14	7.96	7.49 H	1340	69	36	321	4	310	768 D	17	<0.05	0.5	<0.50	<0.1	<0.001	
0143	N	7/22/1989	6,759.40	7.90	7.86	1000	34	17	297	3.74	207	596	16.7	0.44	0.39	< 1	< 0.1	0.002	
0143	N	10/11/1989	6,759.70	7.80	7.98	1022	31.3	16.6	285	4.8	220	541	16.8	0.37	0.29	< 1	< 0.1	0.001	
0143	N	1/3/1990	6,759.60	7.50	7.65	1002	32.5	16.1	291	3.6	220	542	17.3	0.48	0.22	< 1	< 0.1	0.001	
0143	N	4/3/1990	6,759.50	7.70	7.80	1042	33.8	17	280	3.7	232	503	19.7	0.57	0.37	< 1	< 0.1	0.002	
0143	N	7/2/1990	6,759.30	7.40	7.90	1033	34.5	16.6	292	3.9	226	528	17.2	0.12	1.05	< 1	< 0.1	0.002	
0143	N	10/2/1990	6,759.30	7.50	7.77	1051	31.5	19.9	281	4	212	591	17.4	0.1	2.08	< 1	< 0.1	0.002	
0143	N	1/3/1991	6,759.40	7.50	7.15	1023	31.2	18.7	286	5.2	220	571	15.2	0.36	0.64	< 1	< 0.1	0.001	
0143	N	4/9/1991	6,759.40	7.50	8.26	944	29.4	16.2	270	3.7	223	558	16.7	0.3	0.25	< 1	< 0.1	0.001	
0143	N	7/16/1991	6,759.20	7.60	7.73	975	29.1	15.1	264	3.4	228	620	16.6	0.28	0.25	< 1	< 0.1	0.001	
0143	N	10/14/1991	6,760.90	7.50	7.90	1007	25.1	13.1	279	3.1	230	533	23.4	0.11	0.06	< 1	< 0.1	0.001	
0143	N	1/14/1992	6,764.70	7.40	7.54	1005	28.9	15.8	267	3.2	237	565	17.2	0.78	0.18	< 1	< 0.1	< 0.001	
0143	N	4/7/1992	6,766.60	7.50	7.18	964	26.6	16	321	3.7	237	523	16.9	0.31	< 0.1	< 1	< 0.1	0.003	
0143	N	7/7/1992	6,766.90	7.60	7.56	1019	27.5	15.7	334	3.89	238	543	16.2	0.53	< 0.1	< 1	< 0.1	0.001	
0143	N	10/6/1992	6,768.00	7.80	7.86	999	31.2	15.9	284	1.7	236	524	15.5	0.23	< 0.1	< 1	< 0.1	0.001	
0143	N	1/5/1993	6,769.00	7.80	8.14	1098	29.8	14.7	281	2.5	239	558	9.5	0.34	< 0.1	< 1	< 0.1	0.004	
0143	N	4/6/1993	6,769.80	7.70	8.07	965	25.5	12.8	299	2.2	239	495	16.1	0.28	< 0.1	< 1	< 0.1	< 0.001	
0143	N	7/13/1993	6,770.30	7.70	7.07	932	29.2	14.2	278	2.7	243	494	16.5	< 0.05	< 0.1	< 1	< 0.1	< 0.001	
0143	N	10/6/1993	6,770.70	7.60	7.62	978	28.2	14.2	271	2.3	243	525	15.6	0.2	0.18	< 1	< 0.1	< 0.001	
0143	N	1/5/1994	6,771.40	7.70	7.73	953	28.3	14.3	274	2.5	224	517	18.6	0.32	0.1	< 1	< 0.1	< 0.001	
0143	N	4/13/1994	6,772.30	7.80	7.81	940	29.4	14.5	261	2.3	223	484	15.8	0.12	< 0.1	< 1	< 0.1	< 0.001	
0143	N	7/20/1994	6,772.60	7.60	8.07	950	38.9	15.4	256	2.5	223	509	14.5	0.23	0.19	< 1	< 0.1	< 0.001	
0143	N	10/4/1994	6,773.20	7.60	8.09	927	33.3	16.4	285	3.1	245	525	16.2	0.23	0.16	< 1	< 0.1	< 0.001	
0143	N	1/4/1995	6,773.80	7.50	8.05	959	33	15.4	283	3.2	243	498	15.2	0.23	< 0.1	< 1	< 0.1	< 0.001	
0143	N	4/6/1995	6,774.20	7.70	7.93	990	32	17	267	3.1	249	519	11.6	0.27	0.24	< 1	< 0.1	< 0.001	
0143	N	7/6/1995	6,774.40	7.60	8.32	995	30.9	15.6	269	3.1	238	495	15.5	0.14	< 0.1	< 1	< 0.1	< 0.001	
0143	N	10/3/1995	6,774.90	7.30	8.35	994	30.8	15.8	266	3.1	241	486	14.2	0.22	0.11	< 1	< 0.1	0.004	
0143	N	1/3/1996	6,775.50	8.00	8.05	971	29.1	15.3	272	3	244	489	13.9	0.2	0.13	< 1	< 0.1	0.001	

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	
NRC Standard			0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA Standard			0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
0142	N	10/8/2014	<0.001	<0.005	<0.01	<0.001	0.02	<0.1	<0.05	<0.001	<0.1	0.0006	1	0.79 U	1	0.04 U	0.2 U	1.2
0142	N	1/7/2015	<0.001	<0.005	<0.01	<0.001	0.03	<0.1	<0.05	<0.001	<0.1	<0.0003	0.65	1.1	1.75	0.1 U	0.5 U	0.5 U
0142	N	4/8/2015	<0.001	<0.005	<0.01	0.002	0.12	<0.1	<0.05	<0.001	<0.1	<0.0003	0.79	1.7	2.49	0.04 U	0.07 U	5
0142	N	7/8/2015	<0.001	<0.005	<0.01	<0.001	0.01	<0.1	<0.05	<0.001	<0.1	0.0003	0.65	1.6	2.25	0.07 U	0.6 U	2.3
0142	N	10/7/2015	<0.001	<0.005	<0.01	<0.001	0.01	<0.1	<0.05	<0.001	<0.1	0.0003	0.78	0.55 U	0.78	0.08 U	0.5 U	2
0142	N	1/6/2016	<0.001	<0.005	<0.01	<0.001	0.04	<0.1	<0.05	<0.001	<0.1	0.0004	0.45	1.5	1.95	0.04 U	-0.04 U	1.5
0142	N	4/6/2016	<0.001	<0.005	<0.01	<0.001	0.07	<0.1	<0.05	<0.001	<0.1	0.0005	1	3	4	0.1	0.7 U	3.8
0142	N	7/13/2016	<0.001	<0.005	<0.01	<0.001	0.01	<0.1	<0.05	<0.001	<0.1	0.0003	0.83	9.5	10.33	0.05 U	-0.3 U	2.5
0142	N	10/5/2016	<0.001	<0.005	<0.01	<0.001	0.03	<0.1	<0.05	<0.001	<0.1	<0.0003	0.79	0.95 U	0.79	0.08 U	0.1 U	1.5
0143	N	7/22/1989	< 0.05	< 0.01	< 0.01	< 0.05	0.04	< 0.1	< 0.05	0.001	< 0.1	0.0034	0.7	< 1	0.7	3	< 1	1.4
0143	N	10/11/1989	< 0.05	< 0.01	< 0.01	< 0.05	0.04	0.11	< 0.05	0.001	< 0.1	0.006	1.2	1.5	2.7	0.9	< 1	3.2
0143	N	1/3/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.04	0.01	< 0.05	0.001	< 0.1	0.006	1.4	< 1	1.4	< 0.2	2.1	4
0143	N	4/3/1990	< 0.05	< 0.01	0.01	< 0.05	0.06	< 0.1	< 0.05	< 0.001	< 0.1	0.0681	0.8	< 1	0.8	< 0.2	< 1	1.3
0143	N	7/2/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0068	0.6	< 1	0.6	< 0.2	< 1	< 1
0143	N	10/2/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.006	0.3	< 1	0.3	< 0.2	< 1	< 1
0143	N	1/3/1991	< 0.01	0.01	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0057	0.9	< 1	0.9	< 0.2	< 1	< 1
0143	N	4/9/1991	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.002	< 0.2	1.7	1.7	< 0.2	< 1	< 1
0143	N	7/16/1991	< 0.01	< 0.01	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	< 0.2	< 1	0	< 0.2	< 1	< 1
0143	N	10/14/1991	< 0.01	< 0.01	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.003	< 0.2	< 1	0	< 0.2	< 1	< 1
0143	N	1/14/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.01	0.1	< 0.05	< 0.001	< 0.1	0.007	0.2	< 1	0.2	< 0.2	< 1	< 1
0143	N	4/7/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.02	0.1	< 0.05	< 0.001	< 0.1	0.006	< 0.2	1.8	1.8	< 0.2	< 1	< 1
0143	N	7/7/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	0.001	< 0.1	0.008	< 0.2	< 1	0	< 0.2	< 1	< 1
0143	N	10/6/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	0.001	< 0.1	0.017	0.3	3.7	4	< 0.2	< 1	< 1
0143	N	1/5/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	0.007	< 0.1	0.006	0.4	< 1	0.4	< 0.2	< 1	< 1
0143	N	4/6/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.004	0.4	1.6	2	< 0.2	2.2	< 1
0143	N	7/13/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.003	0.8	1.2	2	< 0.2	< 1	< 1
0143	N	10/6/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.001	0.7	< 1	0.7	< 0.2	< 1	< 1
0143	N	1/5/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.001	0.3	< 1	0.3	< 0.2	1.4	< 1
0143	N	4/13/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.8	2.5	3.3	< 0.2	< 1	4.7
0143	N	7/20/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.002	1	< 1	1	< 0.2	< 1	1.2
0143	N	10/4/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.002	0.7	< 1	0.7	< 0.2	< 1	< 1
0143	N	1/4/1995	< 0.01	< 0.01	< 0.01	< 0.05	< 0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.002	0.8	< 1	0.8	< 0.2	< 1	< 1
0143	N	4/6/1995	< 0.01	< 0.01	< 0.01	< 0.05	< 0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.002	0.2	< 1	0.2	< 0.2	1.5	< 1
0143	N	7/6/1995	< 0.01	< 0.01	< 0.01	< 0.05	< 0.03	< 0.1	< 0.05	0.001	< 0.1	< 0.0003	0.5	< 1	0.5	< 0.2	< 1	< 1
0143	N	10/3/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.0018	0.3	1.3	1.6	< 0.2	< 1	< 1
0143	N	1/3/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.0014	1	2.5	3.5	0.4	1	2.1

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01
0143	N	4/2/1996	6,775.80	7.50	8.41	958	32.5	16.7	257	3.3	244	519	16.9	0.33	0.14	< 1	< 0.1	< 0.001
0143	N	7/7/1996	6,776.00	7.50	7.77	964	30.2	15.3	260	3.1	240	468	14.3	0.37	0.21	< 1	< 0.1	< 0.001
0143	N	10/1/1996	6,776.30	7.20	8.13	975	30.7	15.9	275	3.2	240	488	17.8	0.36	0.1	< 1	< 0.1	< 0.001
0143	N	1/21/1997	6,777.00	6.50	7.89	994	32.4	16.5	283	3.3	244	498	14.4	0.32	< 0.1	< 1	< 0.1	< 0.001
0143	N	4/8/1997	6,777.00	6.80	8.24	938	30	15.3	265	3.1	244	484	14.4	0.24	0.15	< 1	< 0.1	< 0.001
0143	N	7/8/1997	6,777.00	8.00	8.32	943	32.7	16.6	278	3.3	238	517	16.9	0.27	0.11	< 1	< 0.1	< 0.001
0143	N	10/7/1997	6,777.30	7.60	8.15	975	32.7	16.8	266	3.2	246	505	12.6	0.21	0.11	< 1	< 0.1	< 0.001
0143	N	1/15/1998	6,776.90	7.80	8.30	974	36.3	18	272	3.5	245	542	17.8	0.16	0.27	< 1	< 0.1	< 0.001
0143	N	4/7/1998	6,778.00	7.80	8.21	980	30	15.6	263	3.1	243	486	14.8	0.14	0.15	< 1	< 0.1	0.001
0143	N	7/7/1998	6,778.10	8.00	8.23	953	32.3	16.9	276	3.4	226	460	14.5	0.29	0.11	< 1	< 0.1	0.001
0143	N	10/6/1998	6,778.40	7.51	8.41	986	30.7	15.7	276	3.7	245	526	16	1	0.35	< 1	< 0.1	0.006
0143	N	1/5/1999	6,778.50	7.90	8.20	979	30.6	14.5	268	3.8	254	509	16.1	0.13	0.13	< 1	< 0.1	0.004
0143	N	4/6/1999	6,779.10	8.00	8.09	975	31.4	16.5	267	3.3	240	477	18.5	0.28	0.15	< 1	< 0.1	< 0.001
0143	N	7/13/1999	6,778.79	6.80	8.24	857	33.3	18	284	4	247	517	13.9	0.33	< 0.1	< 1	< 0.1	< 0.001
0143	N	10/5/1999	6,779.00	7.52	8.08	953	28.1	15.6	257	3	235	457	16.4	0.32	< 0.1	< 1	< 0.1	< 0.001
0143	N	1/4/2000	6,779.90	7.80	8.41	998	36.1	19.4	272	5.4	242	528	22.8	0.33	0.24	< 1	< 0.1	0.001
0604	N	7/23/1989	6,919.20	3.90	4.04	6697	454	707	251	11.6	0	3891	21.4	6.39	31	< 1	60	< 0.001
0604	N	10/12/1989	6,919.10	3.90	4.11	6728	428	644	235	14.6	0	4407	33.7	6.05	39	< 1	66	< 0.001
0604	N	1/10/1990	6,917.80	3.90	4.06	6602	444	691	291	13.7	< 1	4325	23.1	6.7	33	< 1	58	< 0.001
0604	N	4/5/1990	6,917.20	4.20	4.20	6806	455	670	240	11.6	< 1	4352	33.4	6.8	43	< 1	59	< 0.001
0604	N	7/3/1990	6,916.40	4.00	4.24	6824	461	662	240	9.6	< 1	4321	26.8	5.38	50.9	< 1	60	< 0.001
0604	N	10/3/1990	6,915.80	4.10	4.11	6616	453	628	264	13.3	< 1	4290	31.1	3.27	44	< 1	77.2	< 0.001
0604	N	1/15/1991	6,914.90	4.10	4.21	6802	475	710	265	15.2	< 1	4627	31.6	5.48	52	< 1	61.8	< 0.001
0604	N	4/2/1991	6,914.60	4.20	4.51	6380	432	659	215	11.1	< 1	4923	33	4.6	56.5	< 1	45.3	< 0.001
0604	N	7/17/1991	6,914.80	4.00	4.46	6949	408	624	218	11.1	< 1	5307	28.4	5.34	51.4	< 1	70.95	< 0.001
0604	N	9/4/1991	no data	no data	3.98	7438	444	715	251	11.4	< 1	5494	31	7.1	31.3	< 1	70.4	< 0.001
0604	N	10/15/1991	6,914.30	3.90	4.26	6909	432	570	275	12.5	< 1	4502	34.7	7.86	47.3	< 1	58.6	< 0.001
0604	N	11/4/1991	no data	no data	4.09	7177	460	593	231	11.3	< 1	4396	50	5.4	13.3	< 1	0.13	< 0.001
0604	N	12/2/1991	no data	no data	4.30	7047	439	564	256	12.6	< 1	4052	52.8	4.12	30.5	< 1	62.5	< 0.001
0604	N	1/15/1992	6,914.50	3.80	4.11	6837	414	702	222	10	< 1	4554	31.6	3.7	35.4	< 1	57.1	< 0.001
0604	N	4/8/1992	6,914.40	3.80	4.24	7106	454	654	252	12.2	< 1	4691	40.8	3.75	41.4	< 1	52.4	0.003
0604	N	7/8/1992	6,914.40	3.70	4.22	6654	495	610	285	12.3	< 1	4669	33.3	3.94	49.2	< 1	73.2	0.001
0604	N	10/7/1992	6,914.20	4.10	4.04	7185	447	702	273	15.1	< 1	4860	35.5	3.8	15.7	< 1	66.2	< 0.001
0604	N	1/6/1993	6,914.10	4.30	4.45	5855	411	642	236	12	< 1	4042	56.3	2.09	88.6	1.2	45.1	0.002
0604	N	4/6/1993	6,914.00	4.40	4.36	7409	414	687	284	10.2	< 1	4639	62	1.83	89.1	< 1	45.5	< 0.001
0604	N	7/13/1993	6,913.50	4.40	4.30	7711	449	816	265	11.9	< 1	4973	62.7	1.45	84.4	1	39.1	< 0.001



**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA Standard			0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
0143	N	4/2/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	0.19	< 0.001	< 0.1	< 0.0003	0.5	< 1	0.5	< 0.2	< 1	< 1
0143	N	7/7/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.002	< 0.2	< 1	0	< 0.2	< 1	3.8
0143	N	10/1/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	0.003	< 0.1	< 0.0003	0.5	< 1	0.5	< 0.2	< 1	< 1
0143	N	1/21/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.001	0.6	< 1	0.6	< 0.2	< 1	< 1
0143	N	4/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	< 0.2	< 1	0	< 0.2	< 1	< 1
0143	N	7/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.0009	< 0.2	< 1	0	< 0.2	< 1	< 1
0143	N	10/7/1997	< 0.01	< 0.01	0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	< 0.2	< 1	0	< 0.2	< 1	< 1
0143	N	1/15/1998	< 0.01	< 0.005	< 0.01	< 0.05	< 0.01	< 0.1	< 0.05	< 0.001	< 0.1	0.0013	< 0.2	< 1	0	< 0.2	< 1	< 1
0143	N	4/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.0015	< 0.2	< 1	0	< 0.2	< 1	< 1
0143	N	7/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.0009	< 0.2	< 1	0	< 0.2	< 1	< 1
0143	N	10/6/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.1	< 0.1	< 0.05	< 0.001	< 0.1	0.0081	0.6	< 1	0.6	< 0.2	< 1	< 1
0143	N	1/5/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.09	< 0.1	< 0.05	< 0.001	< 0.1	0.0148	< 0.2	< 1	0	< 0.2	< 1	< 1
0143	N	4/6/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.0014	< 0.2	1.7	1.7	< 0.2	< 1	< 1
0143	N	7/13/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.02	< 0.1	< 0.05	< 0.001	< 0.1	0.0011	< 0.2	< 1	0	< 0.2	< 1	< 1
0143	N	10/5/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.03	< 0.1	< 0.05	< 0.001	< 0.1	0.001	0.3	< 1	0.3	< 0.2	< 1	< 1
0143	N	1/4/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.06	< 0.1	< 0.05	0.001	< 0.1	0.0047	2	< 1	2	< 0.2	< 1	3.1
0604	N	7/23/1989	< 0.05	< 0.01	0.31	< 0.05	22	< 0.1	0.39	< 0.001	< 0.1	0.004	14.1	16.8	30.9	3.5	1.7	60.2
0604	N	10/12/1989	< 0.05	0.01	0.31	< 0.05	22	< 0.1	0.34	0.006	< 0.1	0.006	4.5	11	15.5	33.9	< 1	41.7
0604	N	1/10/1990	< 0.05	< 0.01	0.33	< 0.05	22	< 0.1	0.38	< 0.001	< 0.1	0.005	5.1	8.5	13.6	1.7	2.8	6.5
0604	N	4/5/1990	< 0.05	< 0.01	0.31	< 0.05	19	< 0.1	0.38	< 0.001	< 0.1	0.0006	5	9	14	< 0.2	2.6	6
0604	N	7/3/1990	< 0.05	< 0.01	0.21	< 0.05	18.2	< 0.1	0.34	< 0.001	< 0.1	0.0029	7.6	6.5	14.1	0.4	< 1	8
0604	N	10/3/1990	< 0.05	< 0.01	0.35	< 0.05	22.7	< 0.1	0.4	< 0.001	< 0.1	0.003	5.8	20.3	26.1	< 0.2	< 1	6
0604	N	1/15/1991	0.02	< 0.01	0.39	< 0.05	20.1	< 0.1	0.44	< 0.001	< 0.1	0.007	8.2	13.8	22	< 0.2	2.3	9.1
0604	N	4/2/1991	0.016	< 0.01	0.23	< 0.05	14.6	< 0.1	0.38	< 0.001	< 0.1	0.005	9.1	24.3	33.4	< 0.2	1.3	15
0604	N	7/17/1991	0.03	< 0.01	0.3	< 0.05	20.5	< 0.1	0.41	< 0.001	< 0.1	0.006	4.3	12.5	16.8	< 0.2	2.1	4
0604	N	9/4/1991	< 0.01	< 0.01	0.39	< 0.05	21	< 0.1	0.45	0.001	< 0.1	0.005	3.8	14.3	18.1	< 0.2	< 1	4
0604	N	10/15/1991	0.03	< 0.01	0.36	< 0.05	21.3	< 0.1	0.41	< 0.001	< 0.1	0.06	3.9	20.6	24.5	< 0.2	< 1	4
0604	N	11/4/1991	0.02	< 0.01	0.39	< 0.05	15.1	< 0.1	0.55	< 0.001	< 0.1	0.0059	4.1	16.9	21	< 0.2	< 1	4
0604	N	12/2/1991	< 0.01	< 0.01	0.35	< 0.05	19.6	< 0.1	0.42	< 0.001	< 0.1	0.004	6.2	22.7	28.9	< 0.2	< 1	6
0604	N	1/15/1992	0.02	< 0.01	0.34	< 0.05	20.5	< 0.1	0.41	0.013	< 0.1	0.0601	3.9	20.6	24.5	< 0.2	< 1	4
0604	N	4/8/1992	0.02	< 0.01	0.36	< 0.05	17.8	< 0.1	0.4	< 0.001	< 0.1	0.003	3.6	15.3	18.9	< 0.2	1.2	3.8
0604	N	7/8/1992	0.029	< 0.01	0.37	< 0.05	21.8	< 0.1	0.5	< 0.001	< 0.1	0.005	5.6	11.7	17.3	< 0.2	3.4	3.8
0604	N	10/7/1992	< 0.01	< 0.01	0.37	< 0.05	19.9	< 0.1	0.42	< 0.001	< 0.1	0.004	6.8	11.6	18.4	< 0.2	1.9	6.9
0604	N	1/6/1993	0.01	< 0.01	0.36	< 0.05	14.5	< 0.1	0.44	0.006	< 0.1	0.009	5.7	7.6	13.3	< 0.2	< 1	6.1
0604	N	4/6/1993	0.022	< 0.01	0.37	< 0.05	14.5	< 0.1	0.49	0.002	< 0.1	0.006	3.3	12	15.3	< 0.2	1.7	3.8
0604	N	7/13/1993	< 0.01	< 0.01	0.35	< 0.05	14.2	< 0.1	0.62	0.002	< 0.1	< 0.0003	2.4	6.9	9.3	< 0.2	3.1	3.2

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
		EPA Standard	NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01
0604	N	10/6/1993	6,913.30	4.50	4.24	6891	475	785	250	10.8	< 1	4744	47.6	1.07	91.8	< 1	30	< 0.001
0604	N	1/6/1994	6,913.10	4.30	4.32	7520	450	691	243	10.3	< 1	4543	52.6	1.19	97.6	1.8	47.8	< 0.001
0604	N	4/12/1994	6,912.80	4.40	4.39	7215	423	729	254	10.2	< 1	4838	51.6	2.7	90.7	< 1	39.4	< 0.001
0604	N	7/20/1994	6,912.30	4.50	4.33	7069	491	856	232	11.2	< 1	4790	60.6	1.02	89.2	< 1	27.2	< 0.001
0604	N	10/4/1994	6,912.40	4.50	4.38	7504	493	837	280	11.6	< 1	4935	60	1.61	92.5	< 1	41.8	< 0.001
0604	N	1/4/1995	6,912.10	4.40	4.50	7621	490	835	256	12.5	< 1	5023	62.6	1.67	86.9	< 1	26.1	< 0.001
0604	N	4/5/1995	6,911.90	4.50	4.50	7614	475	850	260	12	0.5	4870	53	1.97	92.5	< 1	30.5	< 0.001
0604	N	7/6/1995	6,911.40	4.50	4.42	6741	455	760	260	11.5	< 1	4650	60.2	1.83	87.7	< 1	32	< 0.001
0604	N	10/3/1995	6,911.50	4.60	4.49	7616	496	877	279	11.5	< 1	5010	58	1.19	87.6	< 1	25.1	0.002
0604	N	1/3/1996	6,911.20	4.70	4.43	7223	440	827	277	11.8	< 1	4760	54.5	0.2	96.1	< 1	26.2	< 0.001
0604	N	4/2/1996	6,911.30	4.70	4.58	7638	497	920	260	12	2.5	5180	64.2	0.15	100	< 1	22	< 0.001
0604	N	7/7/1996	6,910.60	4.40	4.48	7742	452	816	262	12.4	< 1	4610	64.3	0.24	83.2	< 1	26.3	< 0.001
0604	N	10/1/1996	6,910.30	4.80	4.52	7690	464	850	265	12.3	0.9	4708	57.9	0.36	88.7	< 1	24.9	< 0.001
0604	N	1/22/1997	6,910.20	4.80	4.61	7560	441	897	262	12.4	3.9	4830	57	0.21	74.9	< 1	21.1	0.002
0604	N	4/8/1997	6,909.90	4.60	4.56	7650	539	458	170	8	3	3370	45	0.19	87.9	< 1	< 0.1	< 0.001
0604	N	7/8/1997	6,910.00	5.50	4.60	7740	496	904	275	12.9	3.4	5050	69.2	0.21	83.8	< 1	21.4	< 0.001
0604	N	10/7/1997	6,909.60	4.50	4.63	7590	489	868	261	12.4	5.1	4790	62.1	0.38	77.3	< 1	21.9	< 0.001
0604	N	1/15/1998	6,910.40	4.70	4.61	7530	474	847	271	13	2.9	5100	75.1	0.79	89.8	< 1	18.1	< 0.001
0604	N	4/7/1998	6,909.70	4.50	4.73	7570	489	773	255	11.8	7.4	4300	60.9	0.35	87.4	< 1	16.9	< 0.001
0604	N	7/7/1998	6,908.90	4.90	4.64	7600	471	860	274	12.5	4.1	4600	61.5	0.46	80.7	< 1	20.8	< 0.001
0604	N	10/6/1998	6,908.90	4.55	4.63	7760	463	874	287	13.7	3.7	4860	61.6	0.78	89.3	< 1	18.7	< 0.001
0604	N	1/5/1999	6,908.90	4.70	4.60	7830	420	851	257	12.7	3	5100	64.9	0.45	70.7	< 1	20.2	< 0.001
0604	N	4/6/1999	6,908.40	4.60	4.69	7980	446	893	259	12.2	5	4740	62.7	0.83	92.4	< 1	20.4	< 0.001
0604	N	7/13/1999	6,907.80	4.60	4.61	8030	479	964	292	16.3	3	5120	55.3	0.57	73.2	< 1	15.7	< 0.001
0604	N	10/5/1999	6,908.60	4.42	4.64	8150	523	1120	280	12.5	4	6000	50.9	0.53	58.6	< 1	27	< 0.001
0604	N	1/4/2000	6,908.20	4.60	4.64	8180	397	883	231	12.8	4	4500	41.9	0.24	67.9	< 1	20	< 0.001
0604	N	5/3/2000	6,909.00	4.60	4.75	7500	416	808	264	14.2	6	4300	56.5	0.13	84.6	1.4	6.5	< 0.001
0604	N	7/11/2000	6,908.80	4.57	4.67	7380	460	837	258	11.9	5	4470	53.7	0.33	90.2	2.4	14.5	< 0.001
0604	N	10/3/2000	6,908.90	4.68	4.69	7220	455	830	247	13	6	4250	48.3	0.23	84.9	4.2	10.5	< 0.001
0604	N	1/10/2001	6,909.00	4.94	4.74	7280	450	790	222	11.6	7	4390	61.7	0.23	75.9	2.5	14	< 0.001
0604	N	4/3/2001	6,908.90	4.80	4.77	7260	533	916	229	11.3	8	4730	57.9	0.28	75.8	4.1	12.8	< 0.001
0604	N	7/17/2001	6,908.45	4.89	4.73	7470	424	782	246	12.5	7	4270	66.9	0.47	73.1	2.8	14.1	< 0.001
0604	N	10/2/2001	6,908.50	4.78	4.70	7420	440	820	217	12.8	4.9	4100	77.8	0.27	70	3	12.5	< 0.001
0604	N	1/14/2002	6,908.40	4.86	4.80	7390	516	882	235	13.6	6.7	4540	67.5	0.13	66	3	15.3	< 0.001
0604	N	4/9/2002	6,908.10	4.70	4.73	7500	446	790	261	12.2	6.7	4390	58.1	0.23	70.1	< 1	13.2	< 0.001
0604	N	7/16/2002	6,908.02	4.84	4.78	7500	439	805	271	13.5	6.7	4460	65	0.66	71.7	< 1	11.4	< 0.001

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA Standard			0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
0604	N	10/6/1993	0.017	< 0.01	0.36	< 0.05	13.5	< 0.1	0.43	< 0.001	< 0.1	0.0059	5.6	2.3	7.9	< 0.2	< 1	9
0604	N	1/6/1994	0.02	< 0.01	0.37	< 0.05	13	< 0.1	0.43	< 0.001	< 0.1	0.003	5.7	8.2	13.9	< 0.2	2.3	18.9
0604	N	4/12/1994	0.02	< 0.01	0.28	< 0.05	14.1	< 0.1	0.41	< 0.001	< 0.1	0.004	7.7	8	15.7	< 0.2	2.3	24.9
0604	N	7/20/1994	< 0.01	< 0.01	0.3	< 0.05	9.63	< 0.1	0.39	< 0.001	< 0.1	0.003	10	13	23	< 0.2	< 1	29.7
0604	N	10/4/1994	< 0.01	< 0.01	0.4	< 0.05	12.9	< 0.1	0.57	< 0.001	< 0.1	0.006	5.2	5.4	10.6	< 0.2	3.8	13.5
0604	N	1/4/1995	0.01	< 0.01	0.32	< 0.05	10.4	< 0.1	0.42	< 0.001	< 0.1	0.004	5.1	7.7	12.8	< 0.2	< 1	16.8
0604	N	4/5/1995	< 0.01	< 0.01	< 0.01	< 0.05	12	< 0.1	0.5	< 0.001	< 0.1	0.004	5	7.6	12.6	< 0.2	4	16.6
0604	N	7/6/1995	0.02	< 0.01	0.35	< 0.05	2.61	< 0.1	0.4	< 0.001	< 0.1	0.0035	3.8	5.7	9.5	< 0.2	< 1	15.3
0604	N	10/3/1995	< 0.01	< 0.01	0.32	< 0.05	11.1	< 0.1	0.38	0.031	< 0.1	0.0046	5.3	17.1	22.4	< 0.2	< 1	15.5
0604	N	1/3/1996	< 0.01	< 0.01	0.04	< 0.05	12	< 0.1	< 0.05	0.031	< 0.1	0.0034	3.1	2.2	5.3	< 0.2	2.8	9
0604	N	4/2/1996	< 0.01	< 0.01	0.32	< 0.05	10.8	< 0.1	0.36	< 0.001	< 0.1	< 0.0003	2.1	6.9	9	< 0.2	< 1	5.3
0604	N	7/7/1996	< 0.01	< 0.01	0.36	< 0.05	12.7	< 0.1	0.41	< 0.001	< 0.1	0.0034	2.5	< 1	2.5	< 0.2	< 1	3.1
0604	N	10/1/1996	< 0.01	< 0.01	0.35	< 0.05	11.4	< 0.1	0.42	0.002	< 0.1	0.0011	2.3	7.4	9.7	< 0.2	< 1	3.3
0604	N	1/22/1997	0.01	< 0.01	0.36	< 0.05	11.4	< 0.1	0.4	< 0.001	< 0.1	0.004	2.5	8.8	11.3	< 0.2	< 1	4.7
0604	N	4/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	1.87	< 0.1	< 0.05	0.038	< 0.1	0.003	5.2	6.8	12	< 0.2	< 1	19.8
0604	N	7/8/1997	0.01	< 0.01	0.35	< 0.05	12.4	< 0.1	0.38	< 0.001	< 0.1	0.003	2.3	7.2	9.5	< 0.2	< 1	4
0604	N	10/7/1997	0.01	< 0.01	0.4	< 0.05	12.6	< 0.1	0.43	< 0.001	< 0.1	0.004	2.3	3.8	6.1	< 0.2	< 1	4.6
0604	N	1/15/1998	0.01	0.006	0.37	< 0.05	11.8	< 0.1	0.41	< 0.001	< 0.1	0.0032	2.1	6	8.1	< 0.2	< 1	3.1
0604	N	4/7/1998	0.01	0.007	0.34	< 0.05	10.7	< 0.1	0.39	< 0.001	< 0.1	0.0031	3.3	7	10.3	< 0.2	< 1	4.6
0604	N	7/7/1998	0.01	0.006	0.36	< 0.05	12.5	< 0.1	0.41	< 0.001	< 0.1	0.0031	1.6	4.3	5.9	< 0.2	< 1	3.7
0604	N	10/6/1998	0.01	0.006	0.37	< 0.05	12	< 0.1	0.45	< 0.001	< 0.1	0.0078	2.4	4.1	6.5	< 0.2	3.4	3.4
0604	N	1/5/1999	0.01	0.011	0.37	< 0.05	12.8	< 0.1	0.4	< 0.001	< 0.1	0.0033	2.4	7.4	9.8	< 0.2	4.3	4.3
0604	N	4/6/1999	0.01	0.015	0.41	< 0.05	12.6	< 0.1	0.44	< 0.001	< 0.1	0.0034	4	7.8	11.8	< 0.2	3.2	3.2
0604	N	7/13/1999	0.01	0.009	0.42	< 0.05	14	< 0.1	0.62	< 0.001	< 0.1	0.0071	3	5.2	8.2	< 0.2	3.7	3.7
0604	N	10/5/1999	< 0.01	0.015	0.53	< 0.05	16.1	< 0.1	0.46	< 0.001	< 0.1	0.0033	2.5	2.9	5.4	< 0.2	< 1	4.3
0604	N	1/4/2000	0.01	0.01	0.38	< 0.05	11.2	< 0.1	0.46	< 0.001	< 0.1	0.0032	2.3	6	8.3	< 0.2	< 1	4.7
0604	N	5/3/2000	< 0.01	0.022	0.23	< 0.05	8.81	< 0.1	0.26	< 0.001	< 0.1	0.0027	4.3	6.6	10.9	< 0.2	< 1	4.8
0604	N	7/11/2000	0.01	0.011	0.31	< 0.05	10.1	< 0.1	0.31	< 0.001	< 0.1	0.0022	2.5	6	8.5	< 0.2	< 1	4.2
0604	N	10/3/2000	< 0.01	0.005	0.26	< 0.05	8.17	0.23	0.25	< 0.001	< 0.1	0.002	1.9	7.5	9.4	< 0.2	< 1	4.3
0604	N	1/10/2001	< 0.01	< 0.005	0.29	< 0.05	9.38	< 0.1	0.35	< 0.001	< 0.1	0.0019	2.1	7.6	9.7	< 0.2	< 1	3.2
0604	N	4/3/2001	< 0.01	< 0.005	0.32	< 0.05	9.52	< 0.1	0.39	< 0.001	< 0.1	0.0018	1.9	7.1	9	< 0.2	< 1	3.9
0604	N	7/17/2001	< 0.01	< 0.005	0.29	< 0.05	9.9	< 0.1	0.36	< 0.001	< 0.1	0.002	2.2	6	8.2	< 0.2	< 1	4.1
0604	N	10/2/2001	< 0.01	< 0.005	0.26	< 0.05	9.45	< 0.1	0.35	< 0.001	< 0.1	0.0014	3.9	7.6	11.5	< 0.2	< 1	4.3
0604	N	1/14/2002	0.01	0.006	0.32	< 0.05	11	< 0.1	0.4	< 0.001	< 0.1	0.0016	2.9	9.3	12.2	< 0.2	< 1	4.5
0604	N	4/9/2002	< 0.01	0.007	0.33	< 0.05	11.2	< 0.1	0.4	< 0.001	< 0.1	0.0016	2.6	4.5	7.1	< 0.2	< 1	3.3
0604	N	7/16/2002	< 0.01	< 0.005	0.28	< 0.05	10.4	< 0.1	0.28	< 0.001	< 0.1	< 0.0003	2.9	3.5	6.4	< 0.2	< 1	5.3

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Chl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01
0604	N	10/9/2002	6,907.87	5.36	4.79	5790	431	775	258	11.4	7.3	4380	56.5	0.64	68.6	3.2	14.6	< 0.001
0604	N	1/8/2003	6,908.03	5.20	4.76	7440	423	783	230	10.7	6.7	4250	48.4	0.88	61	3.8	12.9	< 0.001
0604	N	4/14/2003	6,908.00	4.73	4.64	7360	454	860	293	15.3	6.7	4690	55.8	0.78	71	< 1	11.8	< 0.001
0604	N	7/9/2003	6,907.72	4.63	4.75	7470	440	794	261	13.3	6.7	4500	57.7	1.08	66	2.4	11.7	< 0.001
0604	N	10/8/2003	6,907.76	4.72	4.79	7450	427	714	268	10.6	8.5	4320	50.5	0.74	68	2.8	13.7	< 0.001
0604	N	1/7/2004	6,907.70	4.77	4.81	7290	495	873	283	12.8	7.9	4770	62.6	0.75	69.8 D	2.3	14.1	< 0.001
0604	N	4/7/2004	6,907.50	5.01	4.91	7340	469	830	287	12.2	3.2	4550 D	59.8	0.98	72.6 D	3.4	13.2	< 0.001
0604	N	7/14/2004	6,907.05	4.72	4.56	7320	455	796	282	12.6	9	4580 D	61.8	0.54	65.9 D	2.2	12.2	< 0.001
0604	N	10/6/2004	6,907.05	4.74	4.77	7350	440 D	802 D	292	12.2	10	4390 D	59	0.45	65.8 D	2.7	11.3	< 0.001
0604	N	1/5/2005	6,907.04	4.95	4.66	7480	475 D	856 D	284	12.3	7	4770 D	58	0.62	66 D	7	11.1	< 0.001
0604	N	4/6/2005	6,906.60	4.96	4.65	7050	454	803	296	12	6	4550	58	0.49	54	3.8	11.2	< 0.001
0604	N	7/13/2005	6,906.40	4.94	4.76	7220	472 D	824 D	278	11.3	2	4630 D	57	0.49	60 D	3	11.1	< 0.001
0604	N	10/5/2005	6,906.50	4.93	4.85	7260	450 D	854 D	286	12.4	12	4600 D	58	0.46	60 D	2.8	9.5	< 0.001
0604	N	1/11/2006	6,906.34	5.02	5.07	7160	430 D	813 D	283	12.2	76	4600 D	58	1.01	75 D	3.2	9.3	< 0.001
0604	N	4/5/2006	6,906.40	4.89	5.33	7150	452 D	827 D	264	12.3	3	4320 D	61	2.4	74 D	3	10	< 0.001
0604	N	7/19/2006	6,905.70	4.95	4.91	7170	469 D	810 D	292	12.6	10	4400 D	60	0.41	69 D	2.5	8	< 0.001
0604	N	10/4/2006	6,905.67	4.88	5.06	7170	437 D	792 D	277	12.1	4	4230 D	57	0.54	74 D	3.03	8.1	< 0.001
0604	N	1/10/2007	6,905.69	5.00	4.99	7270	417 D	779 D	256	11.6	20	4460 D	58	0.32	68 D	5.24	5.8	< 0.001
0604	N	4/11/2007	6,905.64	5.02	5.00	7240	447 D	833 D	271	13.4	12	4600 D	62	0.1	76 D	5.92	6.3	< 0.001
0604	N	7/11/2007	6,905.10	4.94	4.89	6900	470 D	853 D	280	12.1	5	4770 D	61	0.31	78 D	4.08	4.6	< 0.001
0604	N	10/3/2007	6,905.13	4.86	5.11	7160	418 D	794 D	287 D	13.7	5	4410 D	82 D	0.24	75 D	7.68	5.7	< 0.001
0604	N	1/16/2008	6,905.15	5.1	5.35	6880	435 D	801 D	286 D	16.3	5	4160 D	84 D	0.13	76 D	6.44	5.1	< 0.001
0604	N	4/9/2008	6,905.15	5.18	5.02	6880	480 D	903 D	332 D	13.6 D	3	4780 D	57	< 0.05	113 D	6.64	5.4	0.002
0604	N	7/9/2008	6,904.60	4.95	5.24	6880	466 D	850 D	308 D	12.5	3	4790 D	62	< 0.05	118 D	7.64	3.3	< 0.003
0604	N	10/13/2008	6,904.48	4.98	5.19	7060 H	487	880	310 D	13	5	4800 D	53	0.2	95.8 D	5.36	3.6	< 0.001
0604	N	1/14/2009	6,904.30	5.11	5.34	7330	440	823	311	12	< 1	4220 D	49	< 0.05	104 D	9.44	3.8	< 0.001
0604	N	4/8/2009	6,904.40	5.05	5.19	6980	426 D	788 D	296 D	12	23	4620 D	62	< 0.05	74.9 D	7.76	4.2	< 0.001
0604	N	7/8/2009	6,904.00	5.01	5.19	7160	473 D	798	294 D	12	23 B	4810 D	53	0.19	68 D	5.4	3.3	< 0.001
0604	N	10/6/2009	6,904.05	5.12	5.79	7090	436 D	808	286 D	12	10	4360 D	60	0.14	72 D	6.8	2.8	< 0.001
0604	N	1/6/2010	6,903.80	6.46	5.6	7370 D	440 D	806	305	12	8	4970 D	55	0.24	67 D	6.44	2.8	< 0.001
0604	N	4/7/2010	6,903.60	5.32	5.34	7120 D	462 D	820	322 D	13	11	4850 D	59	0.16	70 D	3.2	2.9	< 0.001
0604	N	7/14/2010	6,903.45	5.37	5.43	7270 D	463 D	836	306 D	12	7	4780 D	56 D	0.29	63 D	1.78	2.3	< 0.001
0604	N	10/6/2010	6,903.35	5.24	5.67	6520 D	452	799	307	12	26	4590 D	55 D	0.35	67 D	9	2.4	< 0.001
0604	N	1/5/2011	6,903.25	6.4	5.53	6880 D	444 D	794	292 D	12	14	4620 D	59 D	0.37	65 D	5.48	1.9	< 0.001
0604	N	4/5/2011	6,903.32	5.56	5.5	7190 D	456	809	314 D	13	9	4830 D	56 D	0.11	72 D	4.56	1.7	< 0.001
0604	N	7/13/2011	6,903.08	5.48	5.39	6990 D	456	825	324	12	17	4690 D	55 D	< 0.1	69 D	1.98	2.3	< 0.001

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA Standard			0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
0604	N	10/9/2002	< 0.01	< 0.005	0.26	< 0.05	9.67	< 0.1	0.3	< 0.001	< 0.1	0.0018	3.3	5.6	8.9	< 0.2	< 1	9.6
0604	N	1/8/2003	< 0.01	0.006	0.29	< 0.05	10.9	< 0.1	0.32	< 0.001	< 0.1	0.0019	3.6	6.8	10.4	< 0.2	< 1	4.7
0604	N	4/14/2003	< 0.01	< 0.005	0.26	< 0.05	9.91	< 0.1	0.28	< 0.001	< 0.1	0.0019	2.8	15.3	18.1	< 0.2	< 1	8.4
0604	N	7/9/2003	< 0.01	0.006	0.29	< 0.05	11.9	< 0.1	0.32	< 0.001	< 0.1	0.0008	1.8	8.2	10	< 0.2	< 1	4
0604	N	10/8/2003	< 0.01	< 0.005	0.31	< 0.05	11.3	< 0.1	0.34	< 0.001	< 0.1	0.0023	1.4	3.5	4.9	< 0.2	< 1	5.8
0604	N	1/7/2004	< 0.01	< 0.005	0.32	< 0.05	13.5	< 0.1	0.33	< 0.001	< 0.1	0.0018 D	1.9	4.9	6.8	< 0.2	< 1.0	5.8
0604	N	4/7/2004	< 0.01	0.005	0.3	< 0.05	12.1	< 0.1	0.35	0.007	< 0.1	0.0018 D	1.5	4.7	6.2	< 0.2	< 1	5.8
0604	N	7/14/2004	< 0.01	0.007	0.3	< 0.05	11.1	< 0.1	0.3	< 0.001	< 0.1	0.0017 D	2.4	1.9	4.3	< 0.2	< 1.0	3.3
0604	N	10/6/2004	< 0.01	< 0.005	0.27	< 0.05	11	< 0.1	0.18	< 0.001	< 0.1	0.0017 D	2	5.1	7.1	< 0.2	< 1.0	3.4
0604	N	1/5/2005	< 0.01	< 0.005	0.31	< 0.05	11.1	< 0.1	0.35	< 0.001	< 0.1	0.0017	4	3.9	7.9	< 0.2	< 1.0	13.4
0604	N	4/6/2005	< 0.01	< 0.005	0.24	< 0.05	11.9	< 0.1	0.33	< 0.001	< 0.1	0.0018	4.3	5.6	9.9	< 0.2	< 1.0	1.7
0604	N	7/13/2005	< 0.01	< 0.005	0.28	< 0.05	11.7	< 0.1	0.34	< 0.001	< 0.1	0.0015	4	5.6	9.6	< 0.2	< 1.0	3.3
0604	N	10/5/2005	< 0.01	< 0.005	0.27	< 0.05	11.1	< 0.1	0.34	< 0.001	< 0.1	0.0015	2.2	5.7	7.9	< 0.2	< 1.0	4
0604	N	1/11/2006	< 0.01	< 0.005	0.26	< 0.05	11.2	< 0.1	0.31	0.004	< 0.1	0.0013	1.8	3.5	5.3	< 0.2	< 1.0	4.6
0604	N	4/5/2006	< 0.01	< 0.005	0.28	< 0.05	11.7	< 0.1	0.33	0.004	< 0.1	0.0014 D	1.1	< 1.0	1.1	< 0.2	< 1.0	2.9
0604	N	7/19/2006	< 0.01	< 0.005	0.25	< 0.05	10.3	< 0.1	0.29	< 0.001	< 0.1	0.0013	1.4	4.7	6.1	< 0.2	< 1.0	1.7
0604	N	10/4/2006	< 0.01	< 0.005	0.26	< 0.05	10.8	< 0.1	0.32	< 0.001	< 0.1	0.0019	1.5	7.3	8.8	< 0.2	< 1	2.2
0604	N	1/10/2007	< 0.01	< 0.005	0.23	< 0.05	10.4	< 0.1	0.28	< 0.001	< 0.1	0.0011	2.7	4.2	6.9	< 0.2	< 1	1.9
0604	N	4/11/2007	< 0.01	< 0.005	0.26	< 0.05	10.2	< 0.1	0.3	< 0.001	< 0.1	0.001	1.7	6	7.7	< 0.2	< 1	4.2
0604	N	7/11/2007	< 0.01	< 0.005	0.25	< 0.05	10.2	< 0.1	0.31	< 0.001	< 0.1	0.001	2.8	4.4	7.2	< 0.2	< 1	1.8
0604	N	10/3/2007	< 0.01	< 0.005	0.26	< 0.05	10.8	< 0.1	0.29	< 0.001	< 0.1	0.0008	1.7	2.9	4.6	< 0.2	< 1	6.1
0604	N	1/16/2008	< 0.01	< 0.005	0.24	< 0.05	9.73	< 0.1	0.29	< 0.001	< 0.1	0.0009	2.9	4.3	7.2	< 0.2	< 1	2.9
0604	N	4/9/2008	< 0.01	< 0.005	0.23	< 0.05	10.3	< 0.1	0.29	< 0.001	< 0.1	0.0009	1.5	5.4	6.9	1.1	-1.3 U	12
0604	N	7/9/2008	< 0.01	< 0.005	0.23	< 0.05	10.6	< 0.1	0.29	< 0.001	< 0.1	0.0008	1.2	5.7	6.9	-0.1 U	1.8 U	1.9
0604	N	10/13/2008	< 0.01	< 0.005	0.22	< 0.05	9.12	< 0.1	0.27	< 0.001	< 0.1	0.0014	0.93	5	5.93	1	-3 U	3.7
0604	N	1/14/2009	< 0.01	< 0.005	0.24	< 0.05	9.8	< 0.1	0.28	< 0.001	< 0.1	0.0007	1.4	5.8	7.2	-0.2 U	-1 U	2.1
0604	N	4/8/2009	< 0.01	< 0.005	0.22	< 0.05	9.68	< 0.1	0.29	< 0.001	< 0.1	0.0006 D	1.2	4.4	5.6	-0.4 U	-1 U	2.6
0604	N	7/8/2009	< 0.01	< 0.005	0.22	< 0.05	9.56 D	< 0.1	0.26	< 0.001	< 0.1	0.0007	1.9	6.2	8.1	0.2 U	2.2 U	3.6
0604	N	10/6/2009	< 0.01	< 0.005	0.19	< 0.05	8.55	< 0.1	0.26	< 0.001	< 0.1	0.0009	1.3	4.8	6.1	0.08 U	-1 U	2.6
0604	N	1/6/2010	< 0.01	< 0.005	0.23	< 0.05	9.4	< 0.1	0.28	< 0.001	< 0.1	0.0006	1.1	5.1	6.2	0.1 U	0.7 U	2.4
0604	N	4/7/2010	< 0.01	< 0.005	0.2	< 0.05	8.44	< 0.1	0.26	0.002	< 0.1	0.0006	2.1	5	7.1	-0.02 U	-1 U	2.2
0604	N	7/14/2010	< 0.01	< 0.005	0.2	< 0.05	8.2	< 0.1	0.26	< 0.001	< 0.1	0.0004	1.8	4.1	5.9	0.04 U	1.5 U	2.4
0604	N	10/6/2010	< 0.01	< 0.005	0.19	< 0.05	7.52	< 0.1	0.27	< 0.001	< 0.1	0.0007	1.3	5	6.3	0.05 U	1.0 U	2.3
0604	N	1/5/2011	< 0.01	< 0.005	0.2	< 0.05	8.2	< 0.1	0.25	< 0.001	< 0.1	0.0005	1.4	5.5	6.9	-0.03 U	-0.3 U	2.1
0604	N	4/5/2011	< 0.01	< 0.005	0.2	< 0.05	8.09	< 0.1	0.26	< 0.001	< 0.1	0.0005 B	1.1	4.5	5.6	0.09 U	-0.03 U	1.7
0604	N	7/13/2011	< 0.01	< 0.005	0.19	< 0.05	7.6	< 0.1	0.28	< 0.001	< 0.1	0.0007	0.96	4.1	5.06	0.07 U	0.007 U	1.7



**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01
0604	N	10/5/2011	6,903.10	5.35	5.62	6980 D	440	786	306	12	17	4590 D	57 D	<0.1	70 D	5.24	1.2	0.003
0604	N	1/4/2012	6,902.50	5.3	5.48 H	7100 D	506	842	321	14	18	4440 D	56 D	<0.05	69 D	2.69	2	<0.001
0604	N	4/4/2012	6,902.77	5.35	5.46 H	7140 D	410	733	290	13	12	4630 D	56 D	<0.05	71 D	1.08	1.8	<0.001
0604	N	7/11/2012	6,902.30	5.24	5.48 H	7450	444	817	292	11	17	4760 D	62 D	<0.05	71 D	5.96	0.9	<0.001
0604	N	10/10/2012	6,902.35	5.31	5.40 H	6880	473	794	302 D	13	29	4620 D	62 D	<0.05	68 D	6.6	1.6	<0.001
0604	N	1/15/2013	no data	5.27	5.44 H	6860	468	862	324 D	13	26	4580 D	59 D	0.05	67 D	5.84	1.3	<0.001
0604	N	4/3/2013	6,902.18	5.34	5.49 H	6810	457	840	308	12	26	4470 D	63 D	<0.05	70 D	6.8	1	<0.001
0604	N	7/10/2013	6,901.89	5.19	5.55 H	7150	447	832	297	11	55	4570 D	60 D	<0.05	72 D	5.88	0.9	<0.001
0604	N	10/2/2013	6,901.92	5.31	5.54 H	6850	472	836	322 D	12	29	4450 D	63 D	<0.05	68 D	6.76	1.3	<0.001
0604	N	1/8/2014	6,901.86	5.53	5.6	6910	447	796	298	11	26	4460	64	<0.05	63	6.68	0.3	<0.001
0604	N	4/1/2014	6,901.95	5.73	5.75 H	7240	463	807	317 D	12	20	5100 D	74 D	<0.05	75 D	7.92	1.1	<0.001
0604	N	7/8/2014	6,901.45	5.89	5.45 H	7000	458	866	332 D	12	28	4650 D	59 D	<0.05	64 D	10.8	0.9	<0.001
0604	N	10/7/2014	6,901.43	5.44	5.54 H	7060	435	798	287	10	28	4710 D	68 D	<0.05	56 D	6.64	0.9	<0.001
0604	N	1/6/2015	6901.22	5.55	5.45 H	7000	449	826	300	11	30	4620 D	72 D	0.11	61 D	9.24	0.9	<0.001
0604	N	4/7/2015	6901.31	5.49	5.53 H	7230	452	820	305	11	30	4530 D	75 D	<0.05	64 D	8.24	0.3	<0.001
0604	N	7/7/2015	6901.08	5.54	5.44 H	7220	420	760	271	13	31	4520 D	74 D	<0.05	60 D	15.8	1	<0.001
0604	N	10/6/2015	6900.90	5.41	5.46 H	7210	435	809	301	11	28	4660 D	80 D	<0.05	60 D	8.08	0.9	<0.001
0604	N	1/5/2016	6900.99	5.53	5.50 H	7070	447	850	307	12	29	4630 D	82 D	<0.05	64 D	12.8	1.1	<0.001
0604	N	4/5/2016	6900.61	5.39	5.57 H	7050	453	810	300	11	29	4710 D	83 D	<0.05	60 D	7.84	1	<0.001
0604	N	7/12/2016	6900.54	5.47	5.49 H	7290	444	822	307	12	31	4510 DH	94 D	<0.05	65 D	11.8	0.5	<0.001
0604	N	10/4/2016	6900.63	5.50	5.57 H	7120	461	836	310 D	11	30	4800 D	87 D	<0.05	63 D	13	0.6	<0.001
0614	N	7/23/1989	6,929.30	6.60	6.84	6868	697	672	491	9.8	1501	3485	381	51	99	82	< 0.1	< 0.001
0614	N	10/12/1989	6,929.00	6.50	6.98	6734	624	612	479	11.6	1540	3002	377	38.6	126	59	0.18	< 0.001
0614	N	1/10/1990	6,928.00	6.40	6.80	6892	609	640	491	10.6	1586	3121	359	69	108	100	< 0.1	< 0.001
0614	N	4/5/1990	6,927.50	6.40	7.06	6877	622	680	492	11.2	1632	3277	350	94	107	164	< 0.1	< 0.001
0614	N	7/3/1990	6,926.60	6.30	6.86	6754	640	619	429	10.9	1492	2996	341	111	151	152	0.13	< 0.001
0614	N	10/3/1990	6,926.30	6.30	7.23	6567	585	577	507	14.1	1362	2894	334	76.6	106	176	0.1	0.005
0614	N	1/15/1991	6,926.40	6.40	6.96	6633	647	623	478	9.6	1412	3253	322	68	125	170	0.2	< 0.001
0614	N	4/2/1991	6,926.20	6.40	7.18	6539	619	495	420	10.1	1257	3165	322	78.3	131	254	0.11	< 0.001
0614	N	7/17/1991	6,925.90	6.40	7.49	6970	573	551	443	9.7	1680	3645	327	69.4	169	380	< 0.1	< 0.001
0614	N	9/4/1991	no data	no data	6.94	7610	624	634	446	10.3	1629	4105	303	116	83.2	486	0.22	< 0.001
0614	N	10/15/1991	6,925.30	6.30	7.15	7145	664	526	418	10	1515	3239	313	53.8	119	361	< 0.1	0.001
0614	N	11/4/1991	no data	no data	6.97	7026	614	490	436	10.5	1516	3449	308	87.3	97.6	464	0.32	< 0.001
0614	N	12/2/1991	no data	no data	7.38	7264	610	559	425	10.7	1577	3197	287	79.5	133	400	0.42	< 0.001
0614	N	1/15/1992	6,925.20	6.30	7.34	7026	584	645	449	10.1	1268	3376	287	94.9	123	525	< 0.1	< 0.001
0614	N	4/8/1992	6,925.10	6.30	7.48	7207	691	601	486	10.8	1568	3603	279	101	70.2	471	< 0.1	0.003

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
		NRC Standard	0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
		EPA Standard	0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
0604	N	10/5/2011	<0.01	<0.005	0.17	<0.05	7.03	<0.1	0.23	<0.001	<0.1	0.0004	1.6	6.3	7.9	0.07 U	-0.8 U	1.6
0604	N	1/4/2012	<0.01	<0.005	0.16	<0.05	6.41	<0.1	0.24	<0.001	<0.1	0.0005	1.5	3.6	8.7	0.02 U	1.1	1.6
0604	N	4/4/2012	<0.01	<0.005	0.17	<0.05	6.75	<0.1	0.26	<0.001	<0.1	<0.0003	1.5	3.5	8.5	<0.004 U	0.5 U	2.8
0604	N	7/11/2012	0.001	<0.005	0.13	<0.001	5.94	<0.1	0.21	<0.001	<0.1	0.0004	1.3	4.4	10.1	0.06 U	0.8 U	1.3
0604	N	10/10/2012	0.002	<0.005	0.15	<0.001	5.36	<0.1	0.25	0.003	<0.1	0.0004	1.4	4.6	6	0.05 U	0.4 U	1.3
0604	N	1/15/2013	0.002	<0.005	0.13	<0.001	5.42	<0.1	0.22	<0.001	<0.1	0.0003	1.4	4.3	5.7	0.005 U	0.1 U	1.3
0604	N	4/3/2013	0.001	<0.005	0.13	<0.001	5.06	<0.1	0.22	<0.001	<0.1	0.0004	1.3	3.9	5.2	0.03 U	-0.3 U	1.4
0604	N	7/10/2013	0.001	<0.005	0.13	<0.001	4.44	<0.1	0.2	<0.001	<0.1	0.0003	0.89	3.7	4.59	0.05 U	0.2 U	2.5
0604	N	10/2/2013	0.001	<0.005	0.12	<0.001	4.68	<0.1	0.23	<0.001	<0.1	0.0004	0.87	2.9	3.77	-0.02 U	0.3 U	2.1
0604	N	1/8/2014	<0.001	<0.005	0.11	<0.001	4.47	<0.1	0.2	<0.001	<0.1	0.0003	1.3	5.7	7	0.02 U	0.3 U	5.5
0604	N	4/1/2014	0.002	<0.005	0.12	<0.001	4.02	<0.1	0.2	<0.001	<0.1	0.0004	1.3	4	5.3	0.02 U	0.6 U	4.1
0604	N	7/8/2014	0.001	<0.005	0.09 D	<0.001	3.83	<0.1	0.18	<0.001	<0.1	0.0005	1.1	3.9	5	0.009 U	0.3 U	1.7
0604	N	10/7/2014	0.001	<0.005	0.1	0.001	3.74	<0.1	0.19	<0.001	<0.1	0.0004	2.1	5.4	7.5	0.02 U	0.3 U	1.6
0604	N	1/6/2015	0.002	<0.005	0.1	<0.001	3.81	<0.1	0.18	<0.001	<0.1	0.0003	1.3	3.7	5	0.05 U	0.1 U	3.2
0604	N	4/7/2015	<0.001	<0.005	0.1	<0.001	3.61	<0.1	0.19	<0.001	<0.1	<0.0003	1.7	5.4	7.1	0.04 U	-0.6 U	10.4
0604	N	7/7/2015	0.001	<0.005	0.1	<0.001	3.68	<0.1	0.17	<0.001	<0.1	<0.0003	1.2	2.7	3.9	-0.006 U	0.4 U	3.5
0604	N	10/6/2015	0.001	<0.005	0.09 D	<0.001	3.73	<0.1	0.18	<0.001	<0.1	<0.0003	1.9	8.6	10.5	0.05 U	0.2 U	6.1
0604	N	1/5/2016	0.001	<0.005	0.09	<0.001	3.68	<0.1	0.17	<0.001	<0.1	<0.0003	1.3	4.4	5.7	0.1 U	-0.04 U	7.8
0604	N	4/5/2016	0.001	<0.005	0.1	<0.001	3.86	<0.1	0.21	<0.001	<0.1	0.0006	1.7	3.4	5.1	0.06 U	0.0 U	4
0604	N	7/12/2016	<0.001	<0.005	0.1	0.001	3.63	<0.1	0.18	<0.001	<0.1	<0.0003	1.1	6.5	7.6	0.09 U	0.2 U	3.9
0604	N	10/4/2016	0.005	<0.005	0.09	<0.001	3.85	<0.1	0.2	<0.001	<0.1	0.0006 B	1.4	4.2	5.6	0.03 U	0.4 U	4.5
0614	N	7/23/1989	< 0.05	< 0.01	< 0.01	< 0.05	0.13	< 0.1	< 0.05	0.003	< 0.1	0.0624	2.9	3.4	6.3	0.6	< 1	8.9
0614	N	10/12/1989	< 0.05	< 0.01	< 0.01	< 0.05	0.08	< 0.01	< 0.05	0.02	< 0.1	0.064	0.6	4.9	5.5	< 0.2	2.1	1.5
0614	N	1/10/1990	< 0.05	0.01	< 0.01	< 0.05	0.06	< 0.1	< 0.05	0.002	< 0.1	0.064	0.6	< 1	0.6	< 0.2	< 1	0.9
0614	N	4/5/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.09	< 0.1	< 0.05	0.003	< 0.1	0.045	1	< 1	1	< 0.2	< 1	1.7
0614	N	7/3/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.07	< 0.1	< 0.05	0.002	< 0.1	0.0611	0.9	1.6	2.5	< 0.2	< 1	< 1
0614	N	10/3/1990	< 0.05	< 0.01	< 0.01	< 0.05	0.08	< 0.1	< 0.05	< 0.001	< 0.1	0.036	0.4	3	3.4	< 0.2	< 1	< 1
0614	N	1/15/1991	< 0.01	< 0.01	< 0.01	< 0.05	0.09	< 0.1	< 0.05	0.001	< 0.1	0.0425	1.9	< 1	1.9	< 0.2	1.3	2.3
0614	N	4/2/1991	< 0.01	< 0.01	< 0.02	< 0.05	0.08	< 0.1	< 0.05	< 0.002	< 0.1	0.0589	2.7	1.8	4.5	2.2	1.3	3
0614	N	7/17/1991	< 0.01	< 0.01	< 0.01	< 0.05	0.1	< 0.1	< 0.05	0.002	< 0.1	0.064	0.5	< 1	0.5	< 0.2	< 1	< 1
0614	N	9/4/1991	< 0.01	< 0.01	0.03	< 0.05	0.17	< 0.1	< 0.05	0.002	< 0.1	0.0631	0.5	5.4	5.9	< 0.2	< 1	< 1
0614	N	10/15/1991	< 0.01	< 0.01	< 0.01	< 0.05	0.11	< 0.1	< 0.05	0.003	< 0.1	0.076	0.6	5.5	6.1	< 0.2	< 1	< 1
0614	N	11/4/1991	< 0.01	< 0.01	0.04	< 0.05	0.18	< 0.1	< 0.1	0.002	< 0.1	0.0472	0.9	3.7	4.6	< 0.2	< 1	< 1
0614	N	12/2/1991	< 0.01	< 0.01	0.02	< 0.05	0.15	< 0.1	0.06	0.002	< 0.1	0.05	1.2	1.3	2.5	< 0.2	< 1	1
0614	N	1/15/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.12	< 0.1	< 0.05	0.059	< 0.1	0.039	0.4	< 1	0.4	< 0.2	< 1	< 1
0614	N	4/8/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.14	< 0.1	< 0.05	0.004	< 0.1	0.051	0.8	4	4.8	< 0.2	< 1	< 1

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01
0614	N	7/8/1992	6,924.80	6.20	7.51	6583	697	496	640	11.3	1512	3249	274	79.8	116	303	< 0.1	0.001
0614	N	10/7/1992	6,924.70	6.40	8.08	6914	661	577	566	12.9	803	3248	273	48.6	15.8	426	0.1	< 0.001
0614	N	1/6/1993	6,924.50	6.40	7.04	6464	626	563	487	10.8	1459	3008	270	86.1	117	527	< 0.1	< 0.001
0614	N	4/6/1993	6,924.40	6.50	7.26	7340	616	607	521	10.1	1620	3518	288	97.4	47.5	400	< 0.1	< 0.001
0614	N	7/13/1993	6,923.90	6.50	7.11	7485	651	607	506	10.7	1454	3370	262	103	146	553	< 0.1	< 0.001
0614	N	10/6/1993	6,923.60	6.70	6.95	7439	642	660	476	10.8	1431	3505	244	105	166	667	< 0.1	< 0.001
0614	N	1/6/1994	6,923.40	6.70	7.14	7380	594	565	485	10	1221	3435	242	91.4	192	617	< 0.1	< 0.001
0614	N	4/12/1994	6,923.10	6.60	6.96	7496	576	650	446	11.5	1174	3743	242	142	170	866	< 0.1	< 0.001
0614	N	7/20/1994	6,922.70	6.50	7.28	7490	641	748	425	13.5	1322	4076	231	140	140	799	< 0.1	< 0.001
0614	N	10/4/1994	6,922.60	6.60	7.54	7700	642	750	519	14.4	1465	4430	246	170	149	829	< 0.1	< 0.001
0614	N	1/4/1995	6,922.30	6.50	7.38	7528	606	636	446	15.2	1330	4176	237	213	155	520	< 0.1	< 0.001
0614	N	4/4/1995	6,922.00	6.50	6.90	7731	604	654	451	15	1370	4048	277	183	171	756	< 0.1	< 0.001
0614	N	7/6/1995	6,922.40	6.50	7.93	7816	565	685	440	15.4	1331	4000	241	227	154	585	< 0.1	< 0.001
0614	N	10/3/1995	6,921.30	6.50	7.71	7857	560	690	445	16	1357	4040	205	222	179	638	< 0.1	0.003
0614	N	1/3/1996	6,921.10	6.60	7.20	7886	543	750	470	17.7	1352	4260	204	234	179	583	< 0.1	0.002
0614	N	4/2/1996	6,920.60	6.50	7.92	7896	605	852	442	17.2	1286	4780	221	262	182	624	< 0.1	0.003
0614	N	7/7/1996	6,920.30	6.30	6.99	8045	537	750	432	18.5	1313	4210	238	243	181	587	< 0.1	< 0.001
0614	N	10/1/1996	6,919.70	6.50	6.89	8120	574	805	436	18.4	1320	4394	223	288	189	598	0.6	< 0.001
0614	N	1/21/1997	6,919.80	6.00	7.01	7850	555	800	437	18.8	1272	4355	201	290	188	635	< 0.1	< 0.001
0614	N	4/8/1997	6,919.00	6.60	7.79	7970	531	760	428	18.7	1280	4360	218	271	226	482	< 0.1	< 0.001
0614	N	7/8/1997	6,918.60	6.80	7.81	8100	594	841	449	18.6	1290	4520	233	264	223	444	< 0.1	< 0.001
0614	N	10/7/1997	6,918.30	6.40	7.62	7930	602	816	420	16.9	1320	4170	252	253	200	461	< 0.1	< 0.001
0614	N	1/15/1998	6,917.80	6.90	8.01	7980	558	775	446	17	1330	4200	267	225	214	289	< 0.1	< 0.001
0614	N	4/7/1998	6,917.70	6.80	7.72	7930	516	739	447	14	1440	3740	218	170	162	377	< 0.1	< 0.001
0614	N	7/7/1998	6,917.10	6.80	7.96	7990	579	823	466	14	1490	3800	261	171	202	392	< 0.1	< 0.001
0614	N	10/6/1998	6,916.90	7.16	7.87	7730	563	822	496	12.2	1380	4050	261	100	115	176	< 0.1	< 0.001
0614	N	1/5/1999	6,916.20	6.90	7.86	7900	551	786	434	9.9	1520	4000	262	81.2	85.5	255	< 0.1	< 0.001
0614	N	4/6/1999	6,916.20	6.70	7.90	7910	552	844	436	10.2	1590	3780	261	71.5	81.3	258	< 0.1	< 0.001
0614	N	7/13/1999	6,915.51	7.00	7.73	7680	605	891	439	12.7	1280	4000	239	58.1	90.7	188	< 0.1	< 0.001
0614	N	10/5/1999	6,915.30	6.80	7.84	7710	632	961	430	10.8	1362	4410	248	58	83	278	< 0.1	< 0.001
0614	N	1/4/2000	6,915.10	6.80	8.07	7650	510	770	358	11.5	1470	3430	217	65.1	97.4	226	< 0.1	< 0.001
0614	N	5/2/2000	6,914.60	6.50	7.56	7600	514	784	405	15.7	1450	3620	236	87	114	383	< 0.1	< 0.001
0614	N	7/11/2000	6,914.40	6.53	7.53	7600	560	830	426	13.8	1430	3760	229	93.1	109	215	< 0.1	< 0.001
0614	N	10/3/2000	6,914.15	6.55	7.04	7420	548	849	421	17.9	1420	4250	241	98.4	104	174	< 0.1	0.001
0614	N	1/10/2001	6,914.00	7.10	7.38	7380	531	762	349	14.7	1440	3720	268	107	93.3	199	< 0.1	< 0.001
0614	N	4/2/2001	6,913.70	6.64	7.28	7350	615	855	354	14.3	1420	3880	248	118	101	258	< 0.1	< 0.001

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA Standard			0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
0614	N	7/8/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.17	< 0.1	< 0.05	0.003	< 0.1	0.05	1	3.4	4.4	< 0.2	< 1	1.1
0614	N	10/7/1992	< 0.01	< 0.01	< 0.01	< 0.05	0.15	< 0.1	< 0.05	0.005	< 0.1	0.078	1.5	4.1	5.6	< 0.2	1.9	1.8
0614	N	1/6/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.19	< 0.1	< 0.05	0.012	< 0.1	0.082	3.7	1.4	5.1	< 0.2	< 1	3.9
0614	N	4/6/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.24	< 0.1	< 0.05	0.003	< 0.1	0.072	1.9	5.1	7	< 0.2	< 1	2.1
0614	N	7/13/1993	< 0.01	< 0.01	< 0.01	< 0.05	0.16	< 0.1	< 0.05	0.008	< 0.1	0.066	1.6	3.2	4.8	< 0.2	2.3	1.9
0614	N	10/6/1993	< 0.01	< 0.01	0.02	< 0.05	0.17	< 0.1	< 0.05	0.002	< 0.1	0.037	2.8	< 1	2.8	< 0.2	1.8	2.9
0614	N	1/6/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.17	< 0.1	< 0.05	< 0.001	< 0.1	0.048	1.6	< 1	1.6	< 0.2	< 1	2.6
0614	N	4/12/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.21	< 0.1	< 0.05	0.004	< 0.1	0.052	1.5	< 1	1.5	< 0.2	5.2	1.7
0614	N	7/20/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.24	< 0.1	< 0.05	0.001	< 0.1	0.054	2.8	1.9	4.7	< 0.2	< 1	3.8
0614	N	10/4/1994	< 0.01	< 0.01	< 0.01	< 0.05	0.41	< 0.1	< 0.05	< 0.001	< 0.1	0.059	1.2	1.8	3	< 0.2	< 1	4.1
0614	N	1/4/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.23	< 0.1	< 0.05	< 0.001	< 0.1	0.04	1.8	2.4	4.2	< 0.2	< 1	5.6
0614	N	4/4/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.33	< 0.1	< 0.05	0.001	< 0.1	0.044	1.2	2.9	4.1	< 0.2	< 1	5.7
0614	N	7/6/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.3	< 0.1	< 0.05	0.003	< 0.1	0.052	7.2	8.4	15.6	0.5	< 1	22.8
0614	N	10/3/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.31	< 0.1	< 0.05	< 0.001	< 0.1	0.045	0.9	1.1	2	< 0.2	1.7	6.2
0614	N	1/3/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.35	< 0.1	< 0.05	< 0.001	< 0.1	0.047	6	1.2	7.2	0.7	1.5	12
0614	N	4/2/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.32	< 0.1	< 0.05	< 0.001	< 0.1	0.05	1.2	3.4	4.6	< 0.2	< 1	3.5
0614	N	7/7/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.37	< 0.1	< 0.05	< 0.001	< 0.1	0.053	4.9	< 1	4.9	< 0.2	< 1	5.3
0614	N	10/1/1996	< 0.01	< 0.01	< 0.01	< 0.05	0.41	< 0.1	< 0.05	0.002	< 0.1	0.044	1.6	< 1	1.6	< 0.2	< 1	2.1
0614	N	1/21/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.41	< 0.1	< 0.05	< 0.001	< 0.1	0.038	1.1	3.6	4.7	< 0.2	< 1	< 1
0614	N	4/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.39	< 0.1	< 0.05	0.074	< 0.1	0.049	8.2	3.2	11.4	< 0.2	< 1	20.4
0614	N	7/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.42	< 0.1	< 0.05	< 0.001	< 0.1	0.043	1.5	< 1	1.5	< 0.2	< 1	< 1
0614	N	10/7/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.47	< 0.1	< 0.05	< 0.001	< 0.1	0.051	4.3	3.8	8.1	< 0.2	< 1	7.8
0614	N	1/15/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.44	< 0.1	< 0.05	< 0.001	< 0.1	0.059	1.4	< 1	1.4	< 0.2	< 1	< 1
0614	N	4/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.32	< 0.1	< 0.05	< 0.001	< 0.1	0.06	2.2	< 1	2.2	< 0.2	< 1	< 1
0614	N	7/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.34	< 0.1	< 0.05	< 0.001	< 0.1	0.0631	2.3	< 1	2.3	< 0.2	< 1	2.3
0614	N	10/6/1998	< 0.01	< 0.005	< 0.01	< 0.05	0.26	< 0.1	< 0.05	< 0.001	< 0.1	0.0732	0.6	< 1	0.6	< 0.2	< 1	< 1
0614	N	1/5/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.23	< 0.1	< 0.05	< 0.001	< 0.1	0.0682	0.9	2.2	3.1	< 0.2	< 1	< 1
0614	N	4/6/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.26	< 0.1	< 0.05	0.001	< 0.1	0.0641	2.9	3.6	6.5	< 0.2	3.3	3.3
0614	N	7/13/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.23	< 0.1	< 0.05	0.001	< 0.1	0.0672	0.9	1.2	2.1	< 0.2	< 1	< 1
0614	N	10/5/1999	< 0.01	< 0.005	< 0.01	< 0.05	0.25	< 0.1	< 0.05	< 0.001	< 0.1	0.001	4.8	< 1	4.8	< 0.2	< 1	6.8
0614	N	1/4/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.24	< 0.1	< 0.05	0.001	< 0.1	0.0579	3.8	1.1	4.9	< 0.2	< 1	4.3
0614	N	5/2/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.34	< 0.1	< 0.05	< 0.001	< 0.1	0.0678	1.1	5.7	6.8	< 0.2	< 1	7
0614	N	7/11/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.22	< 0.1	< 0.05	< 0.001	< 0.1	0.0542	0.6	3.5	4.1	< 0.2	< 1	< 1
0614	N	10/3/2000	< 0.01	< 0.005	< 0.01	< 0.05	0.2	< 0.1	< 0.05	< 0.001	< 0.1	0.053	0.7	3.7	4.4	< 0.2	< 1	< 1
0614	N	1/10/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.24	< 0.1	< 0.05	0.001	< 0.1	0.051	1.2	3.9	5.1	< 0.2	< 1	< 1
0614	N	4/2/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.27	< 0.1	< 0.05	0.001	< 0.1	0.056	0.8	< 1	0.8	< 0.2	< 1	< 1

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01
0614	N	7/16/2001	6,913.35	6.73	7.02	7330	507	722	415	17.3	1430	3300	320	116	96.9	260	< 0.1	< 0.001
0614	N	10/2/2001	6,913.20	6.61	7.50	7270	520	720	330	16.2	1500	3300	357	118	93.5	183	< 0.1	< 0.001
0614	N	1/14/2002	6,913.00	6.64	7.30	7110	602	751	356	16.7	1490	3460	332	123	86.7	230	< 0.1	< 0.001
0614	N	4/2/2002	6,912.90	6.56	7.60	7120	603	730	427	16.8	1460	3780	312	119	82.7	222	< 0.1	< 0.001
0614	N	7/10/2002	6,912.40	6.45	7.31	6980	577	599	413	14	1430	3360	286	100	82	222	< 0.1	< 0.001
0614	N	10/9/2002	6,912.30	6.05	7.66	5220	520	621	400	12.4	1440	3080	286	87	79.2	228	< 0.1	< 0.001
0614	N	1/8/2003	6,912.06	7.23	7.60	6680	519	598	465	12.1	1470	3020	247	81	74	222	< 0.1	< 0.001
0614	N	4/9/2003	6,911.76	6.44	7.13	6840	559	640	434	16.5	1450	2918	334	76	72	248	< 0.1	< 0.001
0614	N	7/9/2003	6,911.61	6.29	7.38	6430	559	609	467	12	1430	3060	314	58	73	285	< 0.1	< 0.001
0614	N	10/8/2003	6,911.63	6.28	7.32	6670	579	576	460	9.8	1330	3060	312	50	71	192	< 0.1	< 0.001
0614	N	1/7/2004	6,911.41	6.40	6.97	6500	620	655	458	10.8	1390	3160	369	53 D	71.7 D	142 D	0.3	< 0.001
0614	N	4/7/2004	6,911.37	6.55	6.72	6590	597	635	450	10.6	1390	3020 D	347	47 D	72.8 D	140 D	< 0.1	< 0.001
0614	N	7/14/2004	6,911.01	6.28	6.49	6960	591	630	456	10.3	1430	3130 D	346	40 D	70.4 D	128 D	< 0.1	< 0.001
0614	N	10/6/2004	6,911.04	6.32	7.03	6850	600 D	665 D	481	9.9	1450	3230 D	343	45 D	76.5 D	165 D	< 0.1	< 0.001
0614	N	1/5/2005	6,911.01	6.48	6.87	6860	609 D	667 D	494 D	10	1240	3260 D	356	42 D	69 D	27.9 D	< 0.1	< 0.001
0614	N	4/6/2005	6,910.60	6.57	7.23	6500	592	637	478	9.8	1400	3120	346	37	63	157	< 0.1	< 0.001
0614	N	7/13/2005	6,910.51	6.47	7.28	6570	615 D	647 D	437	9.2	1360	3150 D	360	44 D	56 D	178 D	< 0.1	< 0.001
0614	N	10/5/2005	6,910.58	6.48	7.05	6550	584 D	659 D	460	10.5	1440	2910 D	324	50 D	61 D	202 D	< 0.1	0.001
0614	N	1/11/2006	6,910.48	6.58	7.30	6460	550 D	604 D	401	9.8	1370	3090 D	315	58 D	74 D	84.0 D	< 0.1	< 0.001
0614	N	4/4/2006	6,910.28	6.45	7.36	6450	602 D	639 D	417	10.2	1460	2950 D	376 D	139 D	77 D	108 D	< 0.1	< 0.001
0614	N	7/19/2006	6,910.01	6.45	6.83	6240	618	610 D	467	10.3	1350	3040 D	350	46 D	69 D	62.8 D	< 0.1	< 0.001
0614	N	10/4/2006	6,909.93	6.41	6.86	6360	577 D	592 D	439	10.5	1240	2850 D	332	55 D	73 D	125 D	0.1	< 0.001
0614	N	1/10/2007	6,909.94	6.49	6.89	6510	559 D	589 D	432	11.2	1340	3040 D	366	50 D	71 D	114	0.1	< 0.001
0614	N	4/11/2007	6,909.94	6.59	6.19	6480	580 D	615 D	424	11.1	1340	3060 D	348	57 D	80 D	113	< 0.1	< 0.001
0614	N	7/11/2007	6,909.56	6.43	6.98	6280	605 D	626 D	436	10.6	1450	3150 D	310	52 D	82 D	83.2	< 0.1	0.005
0614	N	10/3/2007	6,909.49	6.43	6.87	6490	540 D	582 D	455 D	11.9	1520	2910 D	378 D	72.3 D	78 D	182	< 0.1	< 0.001
0614	N	1/16/2008	6,909.66	6.61	6.54	6220	584 D	622 D	492 D	12.2	1440	3010 D	354 D	67 D	87 D	137	< 0.1	< 0.001
0614	N	4/9/2008	6,909.61	6.65	7.18	6430	619 D	678 D	517 D	12.0 D	1380	3360 D	309	68.6 D	147 D	210	< 0.1	< 0.001
0614	N	7/9/2008	6,909.11	7.49	7.07	6150	608 D	643 D	513 D	11.3	1290	3190 D	355	72.6 D	121 D	63.6	< 0.1	< 0.003
0614	N	10/8/2008	6,908.91	6.48	6.76	6500	577	612	468 D	10	1580	3510 D	320	72.1 D	111 D	146	< 0.1	< 0.001
0614	N	1/14/2009	6,908.81	7.34	7.09	6870	529	599	493	10 D	1290	2980 D	296	122 D	124 D	42	0.2	< 0.001
0614	N	4/8/2009	6,908.91	6.55	6.8	6570	550 D	616 D	485 D	11	1470	3190 D	325	70.2 D	98.7 D	52	< 0.1	< 0.001
0614	N	7/8/2009	6,908.61	6.41	6.72	6800	615 D	655	490 D	12	1580	3290 D	335	85 D	94 D	141	0.3	< 0.001
0614	N	10/7/2009	6,908.71	6.94	7.6	6650	576 D	652	477 D	12	1410	2980 D	343	76 D	101 D	92	< 0.1	< 0.001
0614	N	1/6/2010	6,908.46	7.18	7.5	7060 D	597 D	664	482 D	12	1230	3430 D	318	61.4 D	110 D	39	< 0.1	< 0.001
0614	N	4/7/2010	6,908.21	7.15	7.12	7080 D	605 D	735	502 D	14	1570	3630 D	306	87 D	116 D	184	< 0.1	< 0.001



**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA Standard			0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
0614	N	7/16/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.24	< 0.1	< 0.05	0.001	< 0.1	0.052	0.6	2.4	3	< 0.2	< 1	< 1
0614	N	10/2/2001	< 0.01	< 0.005	< 0.01	< 0.05	0.22	< 0.1	< 0.05	0.001	< 0.1	0.0478	0.9	3.9	4.8	< 0.2	< 1	< 1
0614	N	1/14/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.28	< 0.1	< 0.05	0.003	< 0.1	0.0501	1.1	5.4	6.5	< 0.2	< 1	< 1
0614	N	4/2/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.28	< 0.1	< 0.05	< 0.001	< 0.1	0.0467	< 0.2	< 1	0	< 0.2	< 1	1.5
0614	N	7/10/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.23	< 0.1	< 0.05	< 0.001	< 0.1	0.0508	1.1	2.3	3.4	< 0.2	< 1	2.2
0614	N	10/9/2002	< 0.01	< 0.005	< 0.01	< 0.05	0.32	< 0.1	< 0.05	< 0.001	< 0.1	0.0439	0.9	< 1	0.9	< 0.2	< 1	1.3
0614	N	1/8/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.25	< 0.1	< 0.05	< 0.001	< 0.1	0.0573	1.2	< 1	1.2	< 0.2	< 1	2.1
0614	N	4/9/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.22	< 0.1	< 0.05	< 0.001	< 0.1	0.0536	< 0.2	4	4	< 0.2	< 1	1.6
0614	N	7/9/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.25	< 0.1	< 0.05	< 0.001	< 0.1	0.0403	0.5	< 1	0.5	< 0.2	< 1	< 1.0
0614	N	10/8/2003	< 0.01	< 0.005	< 0.01	< 0.05	0.24	< 0.1	< 0.05	< 0.001	< 0.1	0.0468	0.6	2.9	3.5	< 0.2	< 1	2
0614	N	1/7/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.28	< 0.1	< 0.05	< 0.001	< 0.1	0.0509 D	0.8	< 1.0	0.8	< 0.2	< 1.0	1.9
0614	N	4/7/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.26	< 0.1	< 0.05	0.01	< 0.1	0.0506 D	0.7	3.1	3.8	< 0.2	< 1	2.1
0614	N	7/14/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.2	< 0.1	< 0.05	< 0.001	< 0.1	0.0506 D	0.6	< 1.0	0.6	< 0.2	< 1.0	< 1.0
0614	N	10/6/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.23	< 0.1	< 0.05	0.001	< 0.1	0.0516 D	< 0.2	1.7	1.7	< 0.2	< 1.0	< 1.0
0614	N	1/5/2005	< 0.01	< 0.005	< 0.01	< 0.05	0.24	< 0.1	< 0.05	0.004	< 0.1	0.0532	1.4	< 1.0	1.4	< 0.2	< 1.0	4.4
0614	N	4/6/2005	< 0.01	< 0.005	< 0.01	< 0.05	0.25	< 0.1	< 0.05	< 0.001	< 0.1	0.05	1.1	4.3	5.4	< 0.2	< 1.0	< 1.0
0614	N	7/13/2005	< 0.01	< 0.005	< 0.01	< 0.05	0.27	< 0.1	< 0.05	< 0.001	< 0.1	0.0489	1.3	< 1.0	1.3	< 0.2	< 1.0	1.3
0614	N	10/5/2005	< 0.01	< 0.005	< 0.01	< 0.05	0.3	< 0.1	< 0.05	< 0.001	< 0.1	0.0498 D	0.6	1.6	2.2	< 0.2	< 1.0	< 1.0
0614	N	1/11/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.38	< 0.1	< 0.05	0.009	< 0.1	0.0512	0.7	1.2	1.9	< 0.2	< 1.0	1.3
0614	N	4/4/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.37	< 0.1	< 0.05	0.01	< 0.1	0.0488 D	0.7	< 1.0	0.7	< 0.2	< 1.0	1
0614	N	7/19/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.34	< 0.1	< 0.05	< 0.001	< 0.1	0.0507	0.5	1.8	2.3	< 0.2	< 1.0	< 1.0
0614	N	10/4/2006	< 0.01	< 0.005	< 0.01	< 0.05	0.36	< 0.1	< 0.05	< 0.001	< 0.1	0.0462 D	0.5	3.4	3.9	< 0.2	< 1	< 1
0614	N	1/10/2007	< 0.01	< 0.005	< 0.01	< 0.05	0.39	< 0.1	< 0.05	< 0.001	< 0.1	0.0452	1.2	1.9	3.1	< 0.2	< 1	< 1
0614	N	4/11/2007	< 0.01	< 0.005	< 0.01	< 0.05	0.38	< 0.1	< 0.05	< 0.001	< 0.1	0.0461	0.7	2.4	3.1	< 0.2	< 1	1.5
0614	N	7/11/2007	< 0.01	< 0.005	< 0.01	< 0.05	0.43	< 0.1	< 0.05	< 0.001	< 0.1	0.0492	1.3	< 1	1.3	< 0.2	< 1	< 1
0614	N	10/3/2007	< 0.01	< 0.005	< 0.01	< 0.05	0.49	< 0.1	< 0.05	< 0.001	< 0.1	0.0508	0.7	2	2.7	< 0.2	< 1	2.1
0614	N	1/16/2008	< 0.01	< 0.005	< 0.01	< 0.05	0.48	< 0.1	< 0.05	0.002	< 0.1	0.054	1.6	2.3	3.9	< 0.2	< 1	3.8
0614	N	4/9/2008	< 0.01	< 0.005	< 0.01	< 0.05	0.48	< 0.1	< 0.05	< 0.001	< 0.1	0.0512	1.1	2.2	3.3	-0.5 U	0 U	5.6
0614	N	7/9/2008	< 0.01	< 0.005	< 0.01	< 0.05	0.5	< 0.1	< 0.05	< 0.001	< 0.1	0.0539	0.41	0.72 U	1.13	-0.3 U	5.3 U	0.6 U
0614	N	10/8/2008	< 0.01	< 0.005	< 0.01	< 0.05	0.5	< 0.1	< 0.05	< 0.001	< 0.1	0.052	0.25	2.3	2.55	0.3	-2 U	2.4
0614	N	1/14/2009	< 0.01	< 0.005	< 0.01	< 0.05	0.46	< 0.1	< 0.05	0.001	< 0.1	0.0624	0.54	4	4.54	0 U	-1 U	3.3
0614	N	4/8/2009	< 0.01	< 0.005	< 0.01	< 0.05	0.49	< 0.1	< 0.05	0.001	< 0.1	0.0520 D	0.21	2.6	2.81	-0.1 U	-1 U	1
0614	N	7/8/2009	< 0.01	< 0.005	< 0.01	< 0.05	0.54	< 0.1	< 0.05	0.001	< 0.1	0.0524	0.57	3.2	3.77	0.4 U	3	1.7
0614	N	10/7/2009	< 0.01	< 0.005	< 0.01	< 0.05	0.57	< 0.1	< 0.05	< 0.001	< 0.1	0.0512	0.37	2.4	2.77	0.0009 U	-1 U	1.3
0614	N	1/6/2010	< 0.01	< 0.005	< 0.01	< 0.05	0.61	< 0.1	< 0.05	0.002	< 0.1	0.0512	0.5	3.7	4.2	0.03 U	0.9 U	1.1
0614	N	4/7/2010	< 0.01	< 0.005	< 0.01	< 0.05	0.6	< 0.1	< 0.05	0.001	< 0.1	0.0481	0.68	3.4	4.08	-0.07 U	0.01 U	0.7

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l
		NRC Standard	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
		EPA Standard	NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01
0614	N	7/14/2010	6,908.06	7.06	6.75	7100 D	583 D	699	492 D	13	1450	3400 D	288 D	93 D	112 D	167	<0.1	<0.001
0614	N	10/6/2010	6,908.06	7.21	7.22	6910 D	567 D	673	487 D	13	1440	3330 D	279 D	95 D	113 D	38	<0.1	<0.001
0614	N	1/10/2011	6,908.30	6.62	7.26	6830 D	564 D	694	474 D	14	1400	3450 D	295 D	102 D	97 D	154	<0.1	<0.001
0614	N	4/11/2011	6,907.96	7.14	6.99	7030 D	584	702	489	14	1210	3580 D	287 D	50 D	<0.1	44	0.9	0.003
0614	N	7/13/2011	6,907.51	7.41	7.25	7060 D	577	720	510 D	15	1270	3570 D	283 D	110 D	130 D	32.7	0.6	<0.001
0614	N	10/5/2011	6,907.85	6.57	7.02	7040 D	556	700	488 D	15	1220	3620 D	278 D	131 D	129 D	49.2	<0.1	0.002
0614	N	1/4/2012	6,907.31	6.59	6.87 H	6980 D	550	671	449	14	1170	3630 D	264 D	137 D	137 D	135	<0.1	<0.001
0614	N	4/4/2012	6,907.66	6.52	6.70 H	7500 D	492	641	448	17	1190	3610 D	261 D	138 D	144 D	48.4	<0.1	<0.001
0614	N	7/11/2012	6,907.26	6.42	6.70 H	7010	527	728	463	15	1270	3780 D	274 D	158 D	113 D	132	0.1	<0.001
0614	N	10/10/2012	6,907.36	6.52	6.58 H	7170	562	703	464 D	17	1370	3720 D	269 D	161 D	139 D	238	<0.1	<0.001
0614	N	1/15/2013	no data	6.46	6.51 H	7030	558	761	501 D	17	1300	3800 D	256 D	172 D	135 D	57.6	0.2	<0.001
0614	N	4/3/2013	6,907.29	6.46	6.67 H	6980	551	727	484 D	16	1280	3790 D	267 D	202 D	145 D	217	0.1	<0.001
0614	N	7/10/2013	6,906.98	6.36	6.84 H	7290	538	745	470 D	15	1110	3850 D	no data	164 D	145 D	118	<0.1	<0.001
0614	N	10/2/2013	6,907.08	6.5	6.90 H	6960	546	734	474 D	16	1140	3740 D	265 D	167 D	131 D	89.2	<0.1	<0.001
0614	N	1/8/2014	6,907.00	6.73	6.74	6930	521	693	444	15	1140	3730	258	154	134	66.4	<0.1	<0.001
0614	N	4/1/2014	6,907.13	6.58	6.56 H	7140	569	729	506 D	16	1310	3710 D	274 D	145 D	164 D	149 E	<0.1	0.002
0614	N	7/8/2014	6,906.67	6.60	6.57 H	7180	527	734	495 D	16	1250	3860 D	268 D	143 D	138 D	124	<0.1	<0.001
0614	N	10/7/2014	6,906.67	6.52	6.63 H	7200	536	706	436	14	1250	3690 D	263 D	100 D	169 D	80	<0.1	<0.001
0614	N	1/6/2015	6906.46	6.61	6.61 H	7080	544	720	462	15	1220	3900 D	316 D	102 D	182 D	109	0.6	<0.001
0614	N	4/7/2015	6906.69	6.42	6.57 H	7220	547	707	466 D	15	1240	3740 D	286 D	96 D	186 D	103	<0.1	<0.001
0614	N	7/7/2015	6906.43	6.34	6.55 H	7320	504	646	436	16	1220	3830 D	285 D	149 D	136 D	72.8	0.2	<0.001
0614	N	10/6/2015	6906.35	6.45	6.59 H	7290	522	686	459	15	1120	3770 D	287 D	122 D	135 D	83.6	0.2	<0.001
0614	N	1/5/2016	6906.46	6.52	6.41 H	7130	543	726	472	15	1220	3680 D	279 D	125 D	156 D	41.2	0.3	0.001
0614	N	4/5/2016	6906.14	6.37	6.66 H	7210	545	693	456	14	815 H	3750 D	285 D	103 D	168 D	12.4	0.5	<0.001
0614	N	7/12/2016	6906.10	6.38	6.50 H	7350	549	711	476	15	979	3900 D	305 D	70 DH	200 DH	97.2	0.1	<0.001
0614	N	10/4/2016	6906.27	6.49	6.61 H	7070	552	703	463 D	14	879	3760 D	291 D	60 D	200 D	32	<0.1	<0.001
0616	N	7/18/1991	no data	5.6	6.21	8302	419	861	244	11	85	5119	102	0.64	189	no data	1.03	<0.001
0616	N	7/25/1991	no data	5.5	5.94	7953	432	893	246	10.9	39.5	4954	103	0.74	115	no data	1.24	<0.001
0616	N	8/1/1991	no data	5.4	6.07	9118	445	951	239	15.2	52.4	5536	102	1.17	687	no data	1.62	<0.001
0616	N	8/8/1991	no data	5.2	5.77	9622	415	1048	249	10.9	64	6270	88.9	1.6	104	no data	1.62	<0.001
0616	N	9/4/1991	no data	no data	5.91	9640	433	916	284	12.3	66	6800	106	1.2	71	no data	1.69	<0.001
0616	N	10/17/1991	no data	5.4	6.27	7795	470	765	293	11.8	78.1	4563	118	1	107	no data	1.28	<0.001
0616	N	11/4/1991	no data	no data	5.56	7656	450	808	267	11.1	43.7	5036	129	1	95	no data	2.2	<0.001
0616	N	12/2/1991	no data	no data	5.71	8412	462	797	274	11.7	81.2	4626	113	2.15	107	no data	2.51	<0.001
0617	N	7/18/1991	no data	6.4	7.11	10198	485	1199	390	14.7	1279	5708	246	64.3	120	no data	0.6	<0.001
0617	N	7/25/1991	no data	6.5	7.04	9544	493	1096	415	14.5	659	5499	265	68	140	no data	0.44	<0.001

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA Standard			0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
0614	N	7/14/2010	<0.01	<0.005	<0.01	<0.05	0.54	<0.1	<0.05	0.001	<0.1	0.0492	0.99	3.1	4.09	0.05 U	-1 U	0.9
0614	N	10/6/2010	<0.01	<0.005	<0.01	<0.05	0.72	<0.1	<0.05	<0.001	<0.1	0.0516	0.47	3.5	3.97	0.01 U	2.3	0.9
0614	N	1/10/2011	<0.01	<0.005	<0.01	<0.05	0.69	<0.1	<0.05	<0.001	<0.1	0.0502	0.73	3.4	4.13	0.2 U	1.3 U	0.8
0614	N	4/11/2011	<0.01	<0.005	0.01	<0.05	0.65	<0.1	<0.05	0.001	<0.1	0.0494	0.44	3.9	4.34	-0.003 U	1.2 U	1
0614	N	7/13/2011	<0.01	<0.005	<0.01	<0.05	0.75	<0.1	<0.05	0.001	<0.1	0.0493	0.46	4.2	4.66	0.06 U	0.2 U	1.5
0614	N	10/5/2011	<0.01	<0.005	<0.01	<0.05	0.77	<0.1	<0.05	0.001	<0.1	0.0455	0.83	4	4.83	0.06 U	-0.8 U	0.8
0614	N	1/4/2012	<0.01	<0.005	<0.01	<0.05	0.43	<0.1	<0.05	<0.001	<0.1	0.0469	0.46	4.1	8.66	-0.004 U	0.5 U	0.7
0614	N	4/4/2012	<0.01	<0.005	<0.01	<0.05	0.61	<0.1	<0.05	<0.001	<0.1	0.0463	0.85	3.3	7.45	0.04 U	-0.1 U	1.3
0614	N	7/11/2012	<0.001	<0.005	<0.01	0.002	0.61	<0.1	<0.05	<0.001	<0.1	0.0421	0.61	3.4	7.41	0.06 U	0.9 U	0.9
0614	N	10/10/2012	<0.001	<0.005	<0.01	0.003	0.82	<0.1	<0.05	<0.001	<0.1	0.0459	1.1	3	4.1	0.04 U	0.3 U	0.6
0614	N	1/15/2013	<0.001	<0.005	<0.01	0.003	0.84	<0.1	<0.05	<0.001	<0.1	0.0525	1	3.5	4.5	0.05 U	-0.02 U	0.5
0614	N	4/3/2013	<0.001	<0.005	<0.01	0.003	0.85	<0.1	<0.05	<0.001	<0.1	0.05	0.82	4.1	4.92	0.04 U	0.2 U	0.5
0614	N	7/10/2013	<0.001	<0.005	<0.01	0.002	0.72	<0.1	<0.05	<0.001	<0.1	0.0455	0.4	3.1	3.5	0.07 U	-0.2 U	2.2
0614	N	10/2/2013	<0.001	<0.005	<0.01	0.003	0.81	<0.1	<0.05	<0.001	<0.1	0.0481	0.87	3.3	4.17	0.1 U	0.04 U	1.9
0614	N	1/8/2014	<0.001	<0.005	<0.01	0.002	0.62	<0.1	<0.05	<0.001	<0.1	0.0505	0.84	4.6	5.44	0.01 U	0.3 U	2.9
0614	N	4/1/2014	<0.001	<0.005	<0.01	0.002	0.62	<0.1	<0.05	<0.001	<0.1	0.0507	0.67	4.8	5.47	0.03 U	0.3 U	2.4
0614	N	7/8/2014	<0.001	<0.005	<0.01	0.002	0.56	<0.1	<0.05	<0.001	<0.1	0.0412	0.59	5	5.59	0.02 U	0.5 U	2
0614	N	10/7/2014	<0.001	<0.005	<0.01	0.004	0.71	<0.1	<0.05	<0.001	<0.1	0.0464	0.94	4.1	5.04	0.04 U	0.4 U	0.8
0614	N	1/6/2015	<0.001	<0.005	<0.01	0.005	0.64	<0.1	<0.05	<0.001	<0.1	0.046	0.92	3.5	4.42	0.02 U	0.03 U	2.2
0614	N	4/7/2015	<0.001	<0.005	<0.01	0.002	0.52	<0.1	<0.05	<0.001	<0.1	0.0405	1.4	4	5.4	-0.007 U	0.3 U	9.2
0614	N	7/7/2015	<0.001	<0.005	<0.01	0.004	0.66	<0.1	<0.05	<0.001	<0.1	0.0413	0.84	3.7	4.54	0.03 U	0.6 U	3
0614	N	10/6/2015	<0.001	<0.005	<0.01	0.004	0.85	<0.1	<0.05	<0.001	<0.1	0.0452	1.6	6.1	7.7	0.2	0.3 U	6.7
0614	N	1/5/2016	<0.001	<0.005	<0.01	0.004	0.83	<0.1	<0.05	<0.001	<0.1	0.0397	0.89	3.7	4.59	0.09 U	0.03 U	5.7
0614	N	4/5/2016	<0.001	<0.005	<0.01	0.006	0.95	<0.1	<0.05	0.002	<0.1	0.0417	0.96	4.2	5.16	0.01 U	0.2 U	4.4
0614	N	7/12/2016	<0.001	<0.005	<0.01	0.006	1.02	<0.1	<0.05	<0.001	<0.1	0.0389	0.73	6	6.73	0.1 U	0.3 U	2.3
0614	N	10/4/2016	<0.001	<0.005	<0.01	0.003	0.94	<0.1	<0.05	<0.001	<0.1	0.0374	0.8	3.8	4.6	0.04 U	0.8 U	3.5
0616	N	7/18/1991	0.01	<0.01	0.19	<0.05	16.8	<0.1	0.31	<0.001	<0.1	<0.0003	1.3	3.1	4.4	<0.2	<1	2
0616	N	7/25/1991	<0.01	<0.01	0.23	<0.05	16.1	<0.1	0.4	0.002	<0.1	<0.0003	0.8	5.8	6.6	<0.2	1.4	<1
0616	N	8/1/1991	<0.01	<0.01	0.32	<0.05	13.23	<0.1	0.39	0.039	<0.1	0.001	1.6	4.7	6.3	<0.2	5.9	2
0616	N	8/8/1991	<0.01	<0.01	0.39	<0.05	16.5	<0.1	0.65	0.027	<0.1	0.001	3.1	3.8	6.9	<0.2	6	3
0616	N	9/4/1991	<0.01	<0.01	0.52	<0.05	19.2	<0.01	0.86	<0.001	<0.1	0.001	1.4	4.8	6.2	<0.2	<1	1
0616	N	10/17/1991	<0.01	<0.01	0.33	<0.05	15.1	<0.1	0.44	0.001	<0.1	0.0005	1.2	5.9	7.1	<0.2	<1	1
0616	N	11/4/1991	<0.01	<0.01	0.43	<0.05	18.6	<0.1	0.74	<0.001	<0.1	<0.0003	2.1	6.6	8.7	<0.2	<1	1
0616	N	12/2/1991	<0.01	<0.01	0.38	<0.05	14.4	<0.1	0.58	<0.001	<0.1	0.0009	4.7	7.1	11.8	<0.2	<1	5
0617	N	7/18/1991	<0.01	<0.01	<0.01	<0.05	2.5	<0.1	0.03	0.002	<0.1	0.119	1.4	<1	0.4	<0.2	<1	1
0617	N	7/25/1991	<0.01	<0.01	0.04	<0.05	2.8	<0.1	<0.05	0.005	<0.1	0.0869	0.8	2.7	3.5	<0.2	<1	<1

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01
0617	N	8/1/1991	no data	6	7.14	10173	482	1074	353	18.1	1086	5320	21.8	64.6	99.2	no data	0.45	<0.001
0617	N	8/8/1991	no data	6.2	6.77	10136	462	1412	368	15.1	1356	6510	239	64.1	45.5	no data	0.29	<0.001
0617	N	9/4/1991	no data	no data	6.78	9888	494	2010	408	15.6	1295	6380	253	93	78	no data	0.61	<0.001
0617	N	10/17/1991	no data	6.4	7.13	9636	535	784	391	17	1281	5120	251	74.5	113	no data	0.49	<0.001
0617	N	11/4/1991	no data	no data	6.75	9514	500	875	276	15.1	1271	5257	952	63	127	no data	0.29	<0.001
0617	N	12/2/1991	no data	no data	7.07	9787	527	898	388	15.7	1204	4379	241	74.8	146	no data	0.22	0.002
0617	N	10/10/2012	6878.83	6.82	6.75 H	11600	505	1560	504 D	26	1540	7340 D	263 D	264 D	98 D	2.23	1.9	<0.001
0617	N	10/10/2012	6,878.83	6.82	6.75 H	11600	505	1560	504 D	26	1540	7340 D	263 D	264 D	98 D	2.23	1.9	<0.001
0619	N	7/23/1989	6,888.10	6.60	6.50	5513	593	596	184	8.43	176	3852	35	0.61	0.34	< 1	< 0.1	< 0.001
0619	N	10/12/1989	6,888.20	6.70	7.28	5086	486	491	158	11.1	229	3251	36.6	0.44	1.56	< 1	< 0.1	< 0.001
0619	N	1/10/1990	6,887.60	6.50	7.08	5278	505	539	168	8.75	206	3360	40.5	0.74	1.01	< 1	< 0.1	< 0.001
0619	N	4/6/1990	6,887.60	6.80	6.92	4840	527	512	150	8.8	251	2966	38.5	0.69	0.22	< 1	< 0.1	< 0.001
0619	N	7/3/1990	6,887.00	6.50	7.32	5020	527	478	151	7.8	234	3160	34.2	0.27	0.09	< 1	< 0.1	< 0.001
0619	N	10/3/1990	6,886.90	6.70	7.21	4526	487	392	147	10.1	254	2738	36.6	0.13	< 0.01	< 1	< 0.1	< 0.001
0619	N	1/15/1991	6,887.20	6.50	6.59	5538	572	611	185	12.1	176	3616	41.4	0.54	0.18	< 1	< 0.1	< 0.001
0619	N	4/2/1991	6,887.60	6.40	6.50	5610	479	459	172	8	184	3589	43.1	0.63	1	< 1	0.12	< 0.001
0619	N	7/17/1991	6,888.10	6.40	7.15	5446	452	471	168	7.9	195	3882	43.7	0.68	0.17	< 1	< 0.1	< 0.001
0619	N	10/15/1991	6,888.50	6.40	7.02	5399	540	508	189	7.6	165	3520	44.8	0.63	0.17	< 1	0.27	0.001
0619	N	1/15/1992	6,888.60	6.40	7.34	5182	455	544	177	7.8	231	3398	53.5	1.2	0.87	< 1	< 0.1	< 0.001
0619	N	4/8/1992	6,888.60	6.40	6.52	5323	537	466	204	9.4	180	3504	41.8	0.82	< 0.1	< 1	< 0.1	0.002
0619	N	7/8/1992	6,888.70	6.30	7.64	5017	500	548	302	12.9	175	3863	41.7	1.04	3.7	< 1	0.14	< 0.001
0619	N	10/7/1992	6,889.00	6.50	7.26	5257	538	499	222	10.2	168	3427	39.5	0.59	5.2	< 1	< 0.1	0.002
0619	N	1/6/1993	6,889.30	6.50	7.06	5176	563	507	315	12.6	166	3487	252	0.13	51.8	< 1	< 0.1	0.003
0619	N	4/6/1993	6,889.70	6.60	7.14	5314	487	439	213	7	272	3359	46.6	0.68	0.6	< 1	< 0.1	< 0.001
0619	N	7/13/1993	6,889.60	6.60	6.66	5057	531	471	200	8.1	190	3310	46.2	0.66	0.29	< 1	< 0.1	< 0.001
0619	N	10/7/1993	6,889.50	6.50	6.57	4615	512	460	188	7.4	165	3207	43.5	0.5	< 0.1	< 1	0.32	0.002
0619	N	1/6/1994	6,889.80	6.60	7.01	5111	505	416	179	7	171	3192	50.5	2.23	< 0.1	< 1	< 0.1	< 0.001
0619	N	4/12/1994	6,889.70	6.60	7.03	4764	502	432	177	7	173	3035	45.8	1.64	39.8	< 1	0.21	< 0.001
0619	N	7/20/1994	6,889.50	6.60	6.66	5111	565	427	158	7.5	177	3424	45.5	0.6	< 0.1	< 1	< 0.1	< 0.001
0619	N	10/4/1994	6,889.70	6.70	7.56	5045	573	453	187	8.1	200	3658	46	0.62	< 0.1	< 1	< 0.1	< 0.001
0619	N	1/4/1995	6,889.50	6.50	7.21	5078	580	432	172	8.8	203	3349	44.8	1.19	< 0.1	< 1	< 0.1	< 0.001
0619	N	4/5/1995	6,889.40	6.70	6.94	5148	540	500	174	7.67	212	3405	47	1.3	0.13	< 1	< 0.1	< 0.001
0619	N	7/6/1995	6,888.00	6.70	7.66	4288	515	410	153	7.2	216	2963	40	0.74	< 0.1	< 1	< 0.1	< 0.001
0619	N	10/3/1995	6,888.90	6.30	7.78	4677	530	457	175	7.5	192	3255	41	0.74	0.17	< 1	< 0.1	0.002
0619	N	1/3/1996	6,888.80	6.70	7.31	4731	505	445	182	7.8	179	3260	39.5	0.62	0.12	< 1	< 0.1	< 0.001
0619	N	4/2/1996	6,888.60	6.80	7.90	5039	545	473	164	7.9	204	3395	47	0.52	0.11	< 1	< 0.1	< 0.001

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA Standard			0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
0617	N	8/1/1991	<0.01	<0.01	0.03	<0.05	2.21	<0.1	<0.05	0.057	<0.1	0.0721	2	2.1	4.1	<0.2	<1	2
0617	N	8/8/1991	<0.01	<0.01	0.05	<0.05	2.51	<0.1	0.05	0.048	<0.1	0.1302	1.6	<1	0.6	<0.2	<1	2
0617	N	9/4/1991	<0.01	<0.01	0.05	<0.05	2.19	<0.01	0.06	0.001	<0.1	0.0931	0.5	2.8	3.3	<0.2	3.9	<1
0617	N	10/17/1991	<0.01	<0.01	0.05	<0.05	2.51	<0.1	0.08	0.003	<0.1	0.1315	1.2	2.7	3.9	<0.2	<1	1
0617	N	11/4/1991	<0.01	<0.01	0.05	<0.05	1.98	<0.1	0.06	0.001	<0.1	0.06	1.9	5.4	7.3	<0.2	<1	2
0617	N	12/2/1991	<0.01	<0.01	0.04	<0.05	2.52	<0.1	0.09	0.001	<0.1	0.06	8.8	3.5	12.3	<0.2	<1	9
0617	N	10/10/2012	<0.001	<0.005	0.01	0.004	2.1	<0.1	0.07	0.005	<0.1	0.0811	2.1	6.9	9	<0.02 U	0.6 U	1.9
0617	N	10/10/2012	<0.001	<0.005	0.01	0.004	2.1	<0.1	0.07	0.005	<0.1	0.0811	2.1	6.9	9	-0.02 U	0.6 U	1.9
0619	N	7/23/1989	<0.05	<0.01	<0.01	<0.05	2	<0.1	<0.05	<0.001	<0.1	0.0034	2.5	3.7	6.2	4.9	<1	9.1
0619	N	10/12/1989	<0.05	<0.01	0.02	<0.05	1.3	<0.1	<0.05	<0.001	<0.1	0.011	1.3	2	3.3	<0.2	<1	1.7
0619	N	1/10/1990	<0.05	<0.01	0.03	<0.05	1.4	<0.1	<0.05	<0.001	<0.1	0.009	1.1	2	3.1	<0.2	<1	1.5
0619	N	4/6/1990	<0.05	<0.01	<0.01	<0.05	1	<0.1	<0.05	0.001	<0.1	0.009	1.7	2	3.7	<0.2	<1	2.5
0619	N	7/3/1990	<0.05	<0.01	0.01	<0.05	1.23	<0.1	<0.05	<0.001	<0.1	0.0068	1.7	<1	1.7	0.5	<1	2
0619	N	10/3/1990	<0.05	<0.01	0.03	<0.05	0.89	<0.1	<0.05	<0.001	<0.1	0.008	0.9	3.1	4	<0.2	<1	<1
0619	N	1/15/1991	<0.01	0.01	<0.01	<0.05	2.5	<0.1	<0.05	<0.001	<0.1	0.005	3	4.3	7.3	<0.2	2.5	3.1
0619	N	4/2/1991	<0.01	<0.01	0.01	<0.05	2.01	<0.1	<0.05	<0.001	<0.1	0.005	2.3	2.7	5	<0.2	<1	2
0619	N	7/17/1991	<0.01	<0.01	0.01	<0.05	<0.01	<0.1	<0.05	<0.001	<0.1	0.004	1.1	1	2.1	0.2	1.6	1
0619	N	10/15/1991	<0.01	<0.01	<0.01	<0.05	2.22	<0.1	<0.05	<0.001	<0.1	0.009	0.6	4.6	5.2	<0.2	<1	<1
0619	N	1/15/1992	<0.01	<0.01	<0.01	<0.05	1.82	<0.1	<0.05	0.003	<0.1	0.007	1.2	1.2	2.4	<0.2	<1	1
0619	N	4/8/1992	<0.01	<0.01	<0.01	<0.05	1.92	<0.1	<0.05	<0.001	<0.1	0.006	0.7	1.8	2.5	<0.2	<1	<1
0619	N	7/8/1992	<0.01	<0.01	<0.01	<0.05	1.91	<0.1	<0.05	0.001	<0.1	0.003	1	5.2	6.2	<0.2	1.1	1.5
0619	N	10/7/1992	<0.01	<0.01	<0.01	<0.05	2.04	<0.1	<0.05	<0.001	<0.1	<0.0003	1.7	3.2	4.9	<0.02	<1	1.9
0619	N	1/6/1993	<0.01	<0.01	0.01	<0.05	0.66	<0.1	<0.05	0.003	<0.1	0.975	0.5	1.6	2.1	<0.2	<1	<1
0619	N	4/6/1993	<0.01	<0.01	<0.01	<0.05	1.9	<0.1	<0.05	<0.001	<0.1	0.007	0.8	7.1	7.9	<0.2	1.9	<1
0619	N	7/13/1993	<0.01	<0.01	<0.01	<0.05	1.8	<0.1	<0.05	<0.001	<0.1	0.006	1.4	3.5	4.9	<0.2	2.7	1.8
0619	N	10/7/1993	<0.01	<0.01	0.01	<0.05	1.75	<0.1	<0.05	0.002	<0.1	0.005	1.3	9	10.3	<0.2	<1	1.4
0619	N	1/6/1994	<0.01	<0.01	<0.01	<0.05	1.8	<0.1	<0.05	<0.001	<0.1	0.004	2.1	2.9	5	<0.2	1.4	7.4
0619	N	4/12/1994	<0.01	<0.01	0.02	<0.05	1.75	<0.1	<0.05	<0.001	<0.1	0.005	2	7.9	9.9	<0.2	5.8	14
0619	N	7/20/1994	<0.01	<0.01	<0.01	<0.05	1.57	<0.1	<0.05	<0.001	<0.1	0.01	1.5	1.3	2.8	<0.2	<1	3.6
0619	N	10/4/1994	<0.01	<0.01	<0.01	<0.05	1.85	<0.1	<0.05	<0.001	<0.1	0.012	1.3	1.9	3.2	<0.2	2.5	4.3
0619	N	1/4/1995	<0.01	<0.01	<0.01	<0.05	1.45	<0.1	0.07	<0.001	<0.1	0.01	1.3	3.9	5.2	<0.2	<1	7.3
0619	N	4/5/1995	<0.01	<0.01	<0.01	<0.05	1.78	<0.1	<0.05	<0.001	<0.1	0.008	1.6	2.8	4.4	<0.2	3.7	5.9
0619	N	7/6/1995	<0.01	<0.01	<0.01	<0.05	1.65	<0.1	<0.05	<0.001	<0.1	0.0065	1.1	3.1	4.2	0.6	<1	2.7
0619	N	10/3/1995	<0.01	<0.01	<0.01	<0.05	1.79	<0.1	<0.05	<0.001	<0.1	0.0101	1.3	<1	1.3	<0.2	<1	3.1
0619	N	1/3/1996	<0.01	<0.01	<0.01	<0.05	1.78	<0.1	<0.05	<0.001	<0.1	0.0067	1.5	<1	1.5	1	<1	2.5
0619	N	4/2/1996	<0.01	<0.01	<0.01	<0.05	1.71	<0.1	<0.05	<0.001	<0.1	0.018	1.7	4.8	6.5	<0.2	4.1	3.5



**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01
0619	N	7/7/1996	6,888.30	6.40	7.15	5207	515	450	180	8.6	179	3195	50	0.69	< 0.1	< 1	< 0.1	< 0.001
0619	N	10/1/1996	6,888.10	6.40	6.95	5140	547	478	182	8.1	190	3232	47.1	0.46	< 0.1	< 1	0.1	< 0.001
0619	N	1/22/1997	6,888.50	6.20	7.53	5060	540	490	177	8.09	182	3350	44	0.42	< 0.1	< 1	< 0.1	< 0.001
0619	N	4/8/1997	6,887.80	6.50	7.82	5110	539	458	170	8	193	3370	45	0.2	0.17	< 1	< 0.1	< 0.001
0619	N	7/8/1997	6,887.40	7.10	7.73	5130	586	514	182	8.3	190	3510	49.2	0.5	0.21	< 1	< 0.1	< 0.001
0619	N	10/7/1997	6,887.30	6.20	7.78	5080	569	483	178	8.15	217	3190	47.1	0.46	< 0.1	< 1	< 0.1	< 0.001
0619	N	1/15/1998	6,887.20	6.90	8.09	5310	521	484	187	8.8	190	3300	55	0.67	0.13	< 1	< 0.1	< 0.001
0619	N	4/7/1998	6,887.10	6.60	7.42	5280	504	469	176	7.9	188	3120	41.1	0.42	0.26	< 1	< 0.1	< 0.001
0619	N	7/7/1998	6,886.70	6.90	7.61	5210	505	478	181	8.4	195	3200	40.7	0.63	< 0.1	< 1	< 0.1	< 0.001
0619	N	10/6/1998	6,887.00	6.83	7.88	5390	535	532	197	9.4	191	3480	44.8	0.42	0.42	< 1	< 0.1	< 0.001
0619	N	1/5/1999	6,886.20	6.80	7.72	5350	523	497	175	8.5	186	3500	44.3	0.33	0.17	< 1	< 0.1	< 0.001
0619	N	4/6/1999	6,886.40	6.70	7.79	5430	528	534	167	8.1	181	3440	54.4	0.57	0.21	< 1	< 0.1	< 0.001
0619	N	7/13/1999	6,885.69	6.60	7.96	5400	551	565	195	11.4	194	3460	50.3	0.49	0.29	< 1	< 0.1	< 0.001
0619	N	10/5/1999	6,885.60	6.86	7.86	5220	581	606	169	8.4	188	3790	48.3	0.51	0.28	< 1	< 0.1	< 0.001
0619	N	1/4/2000	6,885.60	6.70	7.67	5330	467	497	151	8.9	188	3000	44.4	< 0.05	0.18	< 1	< 0.1	< 0.001
0619	N	10/16/2012	6,876.66	6.86	7.08 H	6050	562	658	275 D	14	506	3750 D	118 D	0.87	<0.1	<0.50	0.5	<0.001
0619 Filtered	N	10/16/2012	6,876.66	6.94	7.08 H	6200	553	652	275 D	14	518	3720 D	119 D	0.9 D	<0.1	<0.50	<0.1	<0.001
0515 A	N	7/23/1989	6,920.50	4.50	4.63	7411	482	871	340	12.6	18	4982	52.5	0.39	86	14	12	< 0.001
0515 A	N	10/12/1989	6,920.80	4.70	4.60	7650	439	861	328	15.8	4.1	4583	77.8	0.39	84	12	15	< 0.001
0515 A	N	1/10/1990	6,919.60	4.00	3.94	9350	449	1017	335	13.7	< 1	6227	36.8	3.79	52	8.4	110	< 0.001
0515 A	N	4/5/1990	6,918.80	3.90	3.98	9405	451	1073	331	13.3	< 1	6237	30.8	3.25	55	11.8	150	< 0.001
0515 A	N	7/3/1990	6,918.10	4.00	4.18	9187	435	941	320	12.7	< 1	6084	59.4	0.67	54.2	22.4	110	< 0.001
0515 A	N	10/3/1990	6,917.80	4.40	4.32	9021	440	992	390	15.7	< 1	5728	82.6	0.17	51.6	25.4	75.6	< 0.001
0515 A	N	1/15/1991	6,916.90	4.40	4.31	9290	523	1146	407	16.7	< 1	6476	68.5	0.65	58.5	42	48.4	< 0.001
0515 A	N	4/3/1991	6,916.60	4.60	4.88	9254	459	1159	387	12.9	16	5627	83	0.31	41.4	75.3	60.7	< 0.001
0515 A	N	7/17/1991	6,916.50	4.50	4.60	8966	486	940	342	13.2	12	6653	83.5	0.79	38.6	38.4	45.8	< 0.001
0515 A	N	9/4/1991	no data	no data	4.62	9792	429	768	385	13.6	5	6955	52.2	0.66	18.1	36.4	9.6	< 0.001
0515 A	N	10/15/1991	6,916.20	4.80	4.92	9118	410	749	453	15	9.5	5832	108	< 0.05	19.9	102	3.3	< 0.001
0515 A	N	11/4/1991	no data	no data	4.33	9001	426	759	377	12.9	< 1	5750	103	0.53	65.7	28	23.19	< 0.001
0515 A	N	12/2/1991	no data	no data	4.59	9153	425	831	376	13.4	7.2	5298	102	0.9	36	55.9	35.4	< 0.001
0515 A	N	1/15/1992	6,916.10	4.50	4.61	9035	409	814	396	12.6	16.8	5854	90.3	0.18	26.5	19	26.6	< 0.001
0515 A	N	4/8/1992	6,916.20	4.30	5.30	9087	430	723	416	14.5	19.8	5710	130	1.23	19.2	24	16.2	0.003
0515 A	N	7/8/1992	6,915.80	4.30	4.78	8447	438	687	511	17.7	5.3	5892	109	1.78	31	63	21	0.001
0515 A	N	10/7/1992	6,915.70	4.60	4.10	8989	450	953	470	19.4	< 1	6028	78.2	0.43	15.1	48.2	48.8	< 0.001
0515 A	N	1/6/1993	6,915.60	5.30	4.98	7144	415	776	384	13	19.3	4980	145	0.71	21.8	102	10.2	< 0.001
0515 A	N	4/6/1993	6,915.60	4.70	4.55	8962	389	863	471	12.5	2.5	5942	150	0.35	27.1	89	35.6	< 0.001

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA Standard			0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
0619	N	7/7/1996	< 0.01	< 0.01	< 0.01	< 0.05	1.9	< 0.1	< 0.05	< 0.001	< 0.1	0.008	1.7	< 1	1.7	< 0.2	< 1	1.1
0619	N	10/1/1996	< 0.01	< 0.01	< 0.01	< 0.05	1.86	< 0.1	< 0.05	0.001	< 0.1	0.0036	1.5	< 1	1.5	< 0.2	< 1	2
0619	N	1/22/1997	< 0.01	< 0.01	< 0.01	< 0.05	1.84	< 0.1	< 0.05	< 0.001	< 0.1	0.008	1.3	< 1	1.3	< 0.2	< 1	< 1
0619	N	4/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	1.87	< 0.1	< 0.05	0.004	< 0.1	0.0056	2	4.2	6.2	< 0.2	< 1	4.7
0619	N	7/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	1.94	< 0.1	< 0.05	< 0.001	< 0.1	0.005	1.6	4.2	5.8	< 0.2	< 1	< 1
0619	N	10/7/1997	< 0.01	< 0.01	< 0.01	< 0.05	2.05	< 0.1	< 0.05	< 0.001	< 0.1	0.007	2	< 1	2	< 0.2	< 1	< 1
0619	N	1/15/1998	< 0.01	< 0.005	< 0.01	< 0.05	2.26	< 0.1	< 0.05	< 0.001	< 0.1	0.0099	4.3	3.6	7.9	< 0.2	< 1	7.5
0619	N	4/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	1.94	< 0.1	< 0.05	< 0.001	< 0.1	0.0062	3.6	4.7	8.3	< 0.2	< 1	2.3
0619	N	7/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	1.97	< 0.1	< 0.05	< 0.001	< 0.1	0.0051	1.2	3.6	4.8	< 0.2	< 1	< 1
0619	N	10/6/1998	< 0.01	< 0.005	0.01	< 0.05	2.04	< 0.1	< 0.05	< 0.001	< 0.1	0.016	1.4	3.2	4.6	< 0.2	< 1	< 1
0619	N	1/5/1999	< 0.01	< 0.005	< 0.01	< 0.05	2.17	< 0.1	< 0.05	< 0.001	< 0.1	0.0072	1.3	4.1	5.4	< 0.2	2.4	2.4
0619	N	4/6/1999	< 0.01	0.005	< 0.01	< 0.05	2.19	< 0.1	< 0.05	< 0.001	< 0.1	0.0053	2.5	4.8	7.3	< 0.2	2	2
0619	N	7/13/1999	< 0.01	< 0.005	< 0.01	< 0.05	2.34	< 0.1	< 0.05	< 0.001	< 0.1	0.0072	1.4	3	4.4	< 0.2	< 1	< 1
0619	N	10/5/1999	< 0.01	< 0.005	0.01	< 0.05	2.77	< 0.1	< 0.05	< 0.001	< 0.1	0.0066	1.7	3	4.7	< 0.2	< 1	3.9
0619	N	1/4/2000	< 0.01	< 0.005	< 0.01	< 0.05	2.43	< 0.1	< 0.05	< 0.001	< 0.1	0.0067	1.4	1.8	3.2	< 0.2	< 1	1.5
0619	N	10/16/2012	<0.001	<0.005	0.1	0.003	4.91	<0.1	0.27	<0.001	<0.1	0.0469	1.9	8.9	10.8	0.005 U	0.8 U	2.6
0619 Filtered	N	10/16/2012	<0.001	<0.005	0.11	<0.001	4.94	<0.1	0.27	<0.001	<0.1	0.0474	1.8	9.4	11.2	0.08 U	0.5 U	2.4
0515 A	N	7/23/1989	< 0.05	< 0.01	0.07	< 0.05	7.7	< 0.1	0.26	< 0.001	< 0.1	0.0029	6.3	9.4	15.7	< 0.2	3	23.1
0515 A	N	10/12/1989	< 0.05	< 0.01	0.09	< 0.05	8.5	< 0.01	0.26	0.019	< 0.1	0.004	3.2	< 1	3.2	< 0.2	1.6	3.9
0515 A	N	1/10/1990	< 0.05	< 0.01	0.26	< 0.05	23	< 0.1	0.37	< 0.001	< 0.1	0.01	5.2	9.7	14.9	1.7	3.5	9.7
0515 A	N	4/5/1990	< 0.05	< 0.01	0.31	< 0.05	24	< 0.1	0.46	< 0.001	< 0.1	0.008	4.9	5.5	10.4	1.8	2.2	7.3
0515 A	N	7/3/1990	< 0.05	< 0.01	0.18	< 0.05	17.6	< 0.1	0.35	< 0.001	< 0.1	0.0107	6.9	6.2	13.1	< 0.2	< 1	7
0515 A	N	10/3/1990	< 0.05	< 0.01	0.17	< 0.05	12.8	< 0.1	0.31	< 0.001	< 0.1	0.005	3.3	8.3	11.6	< 0.2	< 1	4
0515 A	N	1/15/1991	0.01	0.01	0.16	< 0.05	11.6	< 0.1	0.32	< 0.001	< 0.1	0.007	5.3	7.1	12.4	< 0.2	< 1	5.7
0515 A	N	4/3/1991	< 0.01	< 0.01	0.11	< 0.05	7.1	< 0.1	0.2	< 0.001	< 0.1	0.003	6.1	7.2	13.3	< 0.2	2	6
0515 A	N	7/17/1991	0.02	< 0.01	0.24	< 0.05	14.7	< 0.1	0.3	< 0.001	< 0.1	0.011	2.7	3.5	6.2	< 0.2	< 1	3
0515 A	N	9/4/1991	< 0.01	< 0.01	0.15	< 0.05	11.6	< 0.1	0.28	< 0.001	< 0.1	0.008	2.1	6.3	8.4	< 0.2	< 1	2
0515 A	N	10/15/1991	< 0.01	< 0.01	0.22	< 0.05	14.4	< 0.1	0.19	< 0.001	< 0.1	0.02	2.4	9	11.4	< 0.2	< 1	3
0515 A	N	11/4/1991	0.02	< 0.01	0.17	< 0.05	15.2	< 0.1	0.33	< 0.001	< 0.1	0.0138	3.5	12	15.5	< 0.2	6.9	4
0515 A	N	12/2/1991	< 0.01	< 0.01	0.24	< 0.05	14.1	< 0.1	0.32	< 0.001	< 0.1	0.01	5.4	10.4	15.8	< 0.2	< 1	5
0515 A	N	1/15/1992	0.02	< 0.01	0.02	< 0.05	15.5	< 0.1	0.31	0.01	< 0.1	0.012	2.6	4.4	7	< 0.2	4.2	3
0515 A	N	4/8/1992	0.01	< 0.01	0.19	< 0.05	13.6	< 0.1	0.27	0.01	< 0.1	0.013	3.4	6.4	9.8	< 0.2	< 1	3.6
0515 A	N	7/8/1992	< 0.01	< 0.01	0.19	< 0.05	15.7	< 0.1	0.26	0.001	< 0.1	0.02	3.4	10.8	14.2	< 0.2	1.6	3.7
0515 A	N	10/7/1992	< 0.01	< 0.01	0.28	< 0.05	18.7	< 0.1	0.38	< 0.001	< 0.1	0.02	5.6	7	12.6	< 0.2	< 1	5.9
0515 A	N	1/6/1993	0.01	< 0.01	0.21	< 0.05	14.2	< 0.1	0.34	0.004	< 0.1	0.015	5.7	6.7	12.4	< 0.2	< 1	5.9
0515 A	N	4/6/1993	0.013	< 0.01	0.26	< 0.05	18.8	< 0.1	0.37	0.001	< 0.1	0.015	2.9	9.5	12.4	< 0.2	4.4	3.6

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01
0515 A	N	7/13/1993	6,915.00	5.00	4.60	8790	449	1088	458	14	7.1	5755	195	1.14	29.3	133	5.73	< 0.001
0515 A	N	10/6/1993	6,914.80	6.00	6.22	8235	454	1038	479	12.6	554	5500	225	0.94	38	255	1.87	< 0.00
0515 A	N	1/6/1994	6,914.70	5.50	6.13	8633	436	862	478	11.3	373	5042	227	2.18	45.7	315	2.92	< 0.001
0515 A	N	4/12/1994	6,914.40	5.70	5.98	8306	433	868	440	11.3	183	5305	223	2.17	51.9	277	1.51	< 0.001
0515 A	N	7/20/1994	6,913.90	5.60	6.91	8197	483	902	419	12.5	206	5157	195	0.97	45.6	271	1.42	< 0.001
0515 A	N	10/4/1994	6,914.00	5.60	6.62	8173	496	924	493	12.6	260	5276	236	1.64	51.8	241	2.45	< 0.001
0515 A	N	1/4/1995	6,913.70	5.50	6.69	8234	485	945	443	14.1	266	5293	212	1.42	49	213	1.7	< 0.001
0515 A	N	4/4/1995	6,913.40	5.60	5.91	7657	488	802	488	14.1	185	5196	240	2	58.5	182	2.04	< 0.001
0515 A	N	7/6/1995	6,912.90	5.80	7.09	8297	475	926	449	13.1	315	5060	236	3.99	49.7	181	0.25	< 0.001
0515 A	N	10/3/1995	6,912.90	5.80	7.16	8311	490	928	477	13	421	5042	253	6.81	53.3	0.264	0.65	0.002
0515 A	N	1/3/1996	6,912.70	5.80	6.43	8017	450	876	468	13.5	475	4830	252	5.6	56.9	236	< 0.1	< 0.001
0515 A	N	4/2/1996	6,912.40	6.00	7.53	8300	506	997	457	14	392	5360	279	6.57	61	0.247	0.6	< 0.001
0515 A	N	7/7/1996	6,912.20	5.30	5.94	8117	447	853	426	13.6	210	4670	250	1.76	54.7	0.211	1.42	< 0.001
0515 A	N	10/1/1996	6,912.00	5.70	6.58	8270	441	910	457	14.5	342	4834	268	6.97	53.5	238	0.85	< 0.001
0515 A	N	1/21/1997	6,911.90	5.60	6.77	8110	449	979	455	15	428	5140	253	8.03	46.8	239	0.97	< 0.001
0515 A	N	4/8/1997	6,911.70	5.50	7.37	8220	456	865	449	15	331	4388	294	6.41	58.5	230	0.75	< 0.001
0515 A	N	7/8/1997	6,911.20	6.40	6.75	8260	502	950	466	15.1	296	5130	300	5.39	57.9	238	1.27	< 0.001
0515 A	N	10/7/1997	6,911.20	5.50	6.71	8200	490	906	450	14.6	254	4790	255	6.04	56.4	242	0.98	< 0.001
0515 A	N	1/15/1998	6,911.00	5.70	6.80	8040	455	860	439	14.7	228	4800	287	10.4	64.8	262	2	< 0.001
0515 A	N	4/7/1998	6,911.00	5.50	7.14	8190	429	821	444	14.1	276	4420	257	6.47	58.9	236	0.78	< 0.001
0515 A	N	7/7/1998	6,910.90	5.80	7.61	8170	481	912	456	14.5	291	4500	291	6.9	63.9	270	0.87	< 0.001
0515 A	N	10/6/1998	6,910.50	5.69	7.32	8170	465	910	468	15.5	317	5000	286	3.89	70.5	no data	0.51	< 0.001
0515 A	N	1/5/1999	6,910.00	5.70	7.18	8200	412	867	410	14.2	306	4900	287	6.47	57.4	210	0.69	< 0.001
0515 A	N	4/6/1999	6,910.10	5.50	6.59	8130	444	889	404	13.7	292	4600	286	6.52	57.8	190	0.86	< 0.001
0515 A	N	7/13/1999	6,909.88	5.70	7.42	7930	486	938	440	18	272	4800	254	4.52	62.6	172	0.4	< 0.001
0515 A	N	10/5/1999	6,910.00	5.36	7.27	7950	526	1040	423	14.6	253	5440	272	6.64	55.6	183	1.02	< 0.001
0515 A	N	1/4/2000	6,910.40	5.50	7.14	7720	414	810	338	13.7	222	4150	221	3.59	65.1	171	1.22	< 0.001
0515 A	N	5/10/2000	6,910.60	5.50	7.01	8080	437	871	437	13.6	356	4440	261	9.79	62.8	198	2.44	< 0.001
0515 A	N	7/11/2000	6,910.30	5.45	6.50	7740	458	866	428	13.4	242	4460	239	4.19	86.5	154	2.11	< 0.001
0515 A	N	10/3/2000	6,910.40	5.47	6.70	7550	456	906	432	16.2	228	5060	236	2.56	70.1	181	2.08	< 0.001
0515 A	N	1/10/2001	6,910.40	5.62	6.61	7610	440	816	364	12.9	222	4410	258	2.76	66.4	141	2.7	< 0.001
0515 A	N	4/3/2001	6,910.30	5.85	6.54	7580	512	929	373	12.3	225	4640	247	2.85	68.5	148	2.9	< 0.001
0515 A	N	7/17/2001	6,909.90	5.94	5.96	7770	420	810	421	14.1	225	4010	260	2.62	70.9	160	2.89	< 0.001
0515 A	N	10/2/2001	6,910.00	5.44	6.60	7780	430	820	351	14	217	4000	327	2	66.5	165	2.29	< 0.001
0515 A	N	1/14/2002	6,909.85	6.56	6.30	7680	501	887	349	14.6	212	4410	305	2.07	60.5	149	3	0.002
0515 A	N	4/2/2002	6,910.00	5.41	6.57	7670	492	855	412	15.2	214	4790	279	1.75	61.9	162	2.9	< 0.001

**TABLE C.1**  
 Zone 1 Data Summary, 1989-2016  
 United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA Standard			0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
0515 A	N	7/13/1993	< 0.01	< 0.01	0.2	< 0.05	14	< 0.1	0.28	< 0.001	< 0.1	0.012	2.6	6.5	9.1	< 0.2	2.9	3.4
0515 A	N	10/6/1993	< 0.01	< 0.01	0.13	< 0.05	9.81	< 0.1	0.27	< 0.001	< 0.1	0.004	3.5	7	10.5	< 0.2	2.6	3.9
0515 A	N	1/6/1994	< 0.01	< 0.01	0.15	< 0.05	12.1	< 0.1	0.26	< 0.001	< 0.1	0.004	5.4	2.8	8.2	< 0.2	< 1	10.6
0515 A	N	4/12/1994	< 0.01	< 0.01	< 0.01	< 0.05	10.6	< 0.1	0.21	0.001	< 0.1	0.03	4.8	< 1	4.8	< 0.2	3.9	5
0515 A	N	7/20/1994	< 0.01	< 0.01	0.18	< 0.05	11.4	< 0.1	0.25	0.001	< 0.1	0.002	4.2	9.3	13.5	< 0.2	< 1	24.2
0515 A	N	10/4/1994	< 0.01	< 0.01	0.16	< 0.05	15.3	< 0.1	0.31	< 0.001	< 0.1	0.003	6.6	3.7	10.3	< 0.2	1	12.3
0515 A	N	1/4/1995	< 0.01	< 0.01	0.11	< 0.05	10.2	< 0.1	0.42	< 0.001	< 0.1	0.004	6.2	4.7	10.9	< 0.2	< 1	13.4
0515 A	N	4/4/1995	< 0.01	< 0.01	0.13	< 0.05	11	< 0.1	0.15	< 0.001	< 0.1	0.002	4.7	7.5	12.2	< 0.2	2.9	16.1
0515 A	N	7/6/1995	< 0.01	< 0.01	0.02	< 0.05	2.52	< 0.1	< 0.05	0.002	< 0.1	0.0044	3	4.2	7.2	0.3	< 1	16.1
0515 A	N	10/3/1995	< 0.01	< 0.01	0.07	< 0.05	11.1	< 0.1	0.13	< 0.001	< 0.1	0.0057	3.6	< 1	3.6	< 0.2	< 1	13.6
0515 A	N	1/3/1996	< 0.01	< 0.01	< 0.01	< 0.05	11.4	< 0.1	0.14	< 0.001	< 0.1	0.0038	3.4	3.1	6.5	0.8	< 1	7.4
0515 A	N	4/2/1996	< 0.01	< 0.01	0.08	< 0.05	11.8	< 0.1	0.14	< 0.001	< 0.1	< 0.0003	2.4	3.9	6.3	< 0.2	< 1	5.4
0515 A	N	7/7/1996	< 0.01	< 0.01	0.11	< 0.05	12.9	< 0.1	0.17	< 0.001	< 0.1	0.0023	2.6	< 1	2.6	< 0.2	< 1	3.4
0515 A	N	10/1/1996	< 0.01	< 0.01	0.08	< 0.05	13.2	< 0.1	0.15	0.002	< 0.1	0.0028	2.1	5.4	7.5	< 0.2	< 1	3.8
0515 A	N	1/21/1997	< 0.01	< 0.01	0.07	< 0.05	12.2	< 0.1	0.14	< 0.001	< 0.1	0.004	2.9	3.6	6.5	< 0.2	< 1	2.5
0515 A	N	4/8/1997	< 0.01	< 0.01	0.07	< 0.05	12.1	< 0.1	0.15	0.069	< 0.1	0.0019	4.9	4.5	9.4	< 0.2	< 1	13
0515 A	N	7/8/1997	< 0.01	< 0.01	0.09	< 0.05	14.6	< 0.1	0.15	< 0.001	< 0.1	0.003	1.6	3.7	5.3	< 0.2	< 1	2.2
0515 A	N	10/7/1997	< 0.01	< 0.01	0.08	< 0.05	12.9	< 0.1	0.17	< 0.001	< 0.1	0.003	2.1	< 1	2.1	< 0.2	< 1	3.2
0515 A	N	1/15/1998	< 0.01	< 0.005	0.1	< 0.05	15.6	< 0.1	0.19	< 0.001	< 0.1	0.0025	2.3	4.8	7.1	< 0.2	< 1	2.4
0515 A	N	4/7/1998	< 0.01	< 0.005	0.08	< 0.05	12.1	< 0.1	0.17	< 0.001	< 0.1	0.0034	2.5	3.7	6.2	< 0.2	< 1	4.1
0515 A	N	7/7/1998	< 0.01	< 0.005	0.07	< 0.05	13.9	< 0.1	0.15	< 0.001	< 0.1	0.0031	2.9	4.2	7.1	< 0.2	< 1	3.8
0515 A	N	10/6/1998	< 0.01	< 0.005	0.06	< 0.05	11.8	< 0.1	0.15	< 0.001	< 0.1	0.0049	2.3	1.2	3.5	< 0.2	2.8	210
0515 A	N	1/5/1999	< 0.01	0.011	0.05	< 0.05	12.3	< 0.1	0.12	< 0.001	< 0.1	0.0035	2.2	3.9	6.1	< 0.2	2.5	2.5
0515 A	N	4/6/1999	< 0.01	0.006	0.07	< 0.05	13.6	< 0.1	0.15	< 0.001	< 0.1	0.0029	3.4	4.8	8.2	< 0.2	3.1	3.1
0515 A	N	7/13/1999	< 0.01	0.006	0.05	< 0.05	13.6	< 0.1	0.13	< 0.001	< 0.1	0.0036	2.3	2.9	5.2	< 0.2	2	2
0515 A	N	10/5/1999	< 0.01	0.008	0.07	< 0.05	16.6	< 0.1	0.15	< 0.001	< 0.1	0.0023	2.4	< 1	2.4	< 0.2	< 1	4.7
0515 A	N	1/4/2000	< 0.01	0.006	0.08	< 0.05	14	< 0.1	0.22	< 0.001	< 0.1	0.0025	3.2	4.2	7.4	< 0.2	< 1	3.7
0515 A	N	5/10/2000	< 0.01	< 0.005	0.06	< 0.05	11.8	< 0.1	0.18	< 0.001	< 0.1	0.0036	4.1	2.1	6.2	< 0.2	< 1	12
0515 A	N	7/11/2000	< 0.01	< 0.005	0.09	< 0.05	14.6	< 0.1	0.19	< 0.001	< 0.1	0.0021	2	3.6	5.6	< 0.2	< 1	4.6
0515 A	N	10/3/2000	< 0.01	< 0.005	0.07	< 0.05	11.6	< 0.1	0.15	< 0.001	< 0.1	0.0019	2.8	5.9	8.7	< 0.2	< 1	5.1
0515 A	N	1/10/2001	< 0.01	< 0.005	0.08	< 0.05	12.5	< 0.1	0.22	< 0.001	< 0.1	0.0017	2.6	6.3	8.9	< 0.2	< 1	3.4
0515 A	N	4/3/2001	< 0.01	< 0.005	0.1	< 0.05	13.3	< 0.1	0.25	< 0.001	< 0.1	0.0011	2.7	< 1	2.7	< 0.2	< 1	3.1
0515 A	N	7/17/2001	< 0.01	< 0.005	0.09	< 0.05	13.9	< 0.1	0.24	< 0.001	< 0.1	0.001	3.1	6	9.1	< 0.2	< 1	4.1
0515 A	N	10/2/2001	< 0.01	< 0.005	0.07	< 0.05	13.4	< 0.1	0.11	< 0.001	< 0.1	0.0009	3.1	4.5	7.6	< 0.2	< 1	6.3
0515 A	N	1/14/2002	< 0.01	< 0.005	0.1	< 0.05	15.8	< 0.1	0.26	< 0.001	< 0.1	0.0011	3.2	6.6	9.8	< 0.2	< 1	3.5
0515 A	N	4/2/2002	< 0.01	< 0.005	0.09	< 0.05	15.3	< 0.1	0.23	< 0.001	< 0.1	0.0009	3.4	2.9	6.3	< 0.2	< 1	6

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Cl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01
0515 A	N	7/10/2002	6,909.30	7.25	6.33	7750	470	850	401	13.4	211	4420	250	2.39	61.5	162	2.4	< 0.001
0515 A	N	10/9/2002	6,910.87	6.54	6.61	6900	428	778	386	12.5	210	4270	228	2.95	63	203	3.1	< 0.001
0515 A	N	1/8/2003	6,909.16	7.08	6.74	7640	385	720	392	13.1	209	3810	223	3.16	57	162	2.4	< 0.001
0515 A	N	4/9/2003	6,908.81	5.31	6.37	7680	443	816	402	18.9	198	4050	270	2.81	58	166	2.4	< 0.001
0515 A	N	7/9/2003	6,908.68	5.25	6.41	6250	450	814	450	14.5	203	4500	246	3.11	61	237	2.6	< 0.001
0515 A	N	10/8/2003	6,908.80	5.24	6.20	7800	453	843	427	12.4	190	4470	232	2.98	59	148	2.6	< 0.001
0515 A	N	1/7/2004	6,909.85	5.38	7.38	7680	512	916	445	14.3	193	4850	275	3.24	60.2 D	124 D	3	< 0.001
0515 A	N	4/7/2004	6,908.45	5.62	5.65	7720	476	847	431	13.6	202	4540 D	253	3.6	60.9 D	167 D	2.8	< 0.001
0515 A	N	7/14/2004	6,908.21	5.22	5.91	8010	470	815	426	14.3	200	4590 D	262	2.88	57.4 D	147 D	2.1	< 0.001
0515 A	N	10/6/2004	6,908.21	5.33	5.92	8000	473 D	857 D	440	13.9	199	4700 D	253	2.94	58 D	110 D	2	< 0.001
0515 A	N	1/5/2005	6,908.03	5.52	5.83	7910	486 D	871 D	432	14	213	4770 D	256	3.22	57 D	41.6 D	2.2	< 0.001
0515 A	N	4/6/2005	6,907.60	5.59	6.17	7530	483	849	436	13.8	207	4490	255	3.45	45	102	1.7	< 0.001
0515 A	N	7/13/2005	6,907.49	5.55	6.33	7690	500 D	845 D	425 D	12.7	199	4640 D	235	3.63	65.3 D	228 D	1.2	< 0.001
0515 A	N	10/5/2005	6,907.48	5.53	6.10	7710	455 D	875 D	427	14.3	209	4540 D	242	4.15	52 D	161 D	1.3	< 0.001
0515 A	N	1/11/2006	6,907.55	5.65	6.42	7560	477 D	872 D	403	13.5	214	4930 D	237	4.94	63 D	142 D	0.9	< 0.001
0515 A	N	4/5/2006	6,907.45	5.53	6.34	7620	489 D	861 D	397	14.1	211	4410 D	253	8.01	63 D	114 D	1.1	< 0.001
0515 A	N	7/19/2006	6,906.83	5.54	5.97	7460	494 D	825 D	436	14.1	215	4540 D	253	4.61	62 D	173 D	0.7	< 0.001
0515 A	N	10/4/2006	6,907.00	5.61	5.86	7710	461 D	813 D	423	14.4	202	4280 D	238	5.84	61 D	176 D	0.9	< 0.001
0515 A	N	1/10/2007	6,906.88	5.57	5.86	7850	448 D	807 D	388	14	220	4640 D	245	5.2 D	58 D	105	0.4	< 0.001
0515 A	N	4/11/2007	6,906.77	5.61	6.12	7770	475 D	874 D	424	16	<1	4800 D	246	5.87	63 D	134	0.8	< 0.001
0515 A	N	7/11/2007	6,906.38	5.54	6.02	7590	492 D	876 D	419	14.6	216	4880 D	240	8 D	68 D	157	0.2	0.003
0515 A	N	10/3/2007	6,906.33	5.40	5.96	7880	436 D	823 D	445 D	15.9	217	4440 D	255 D	6.2 D	61 D	168	0.5	< 0.001
0515 A	N	1/16/2008	6,906.43	5.1	6.37	7470	454 D	819 D	444 D	16.1	202	4340 D	266 D	6.8 D	64 D	227	0.7	< 0.001
0515 A	N	4/9/2008	6,906.43	5.64	6.37	7450	493 D	926 D	485 D	15.8 D	190	5050 D	235	7.7 D	78.6	22.6	1.1	< 0.001
0515 A	N	7/9/2008	6,905.93	5.44	6.1	7460	493 D	897 D	484 D	15.3	212	4960 D	266	4.99	91.8 D	107	0.4	< 0.003
0515 A	N	10/8/2008	6,905.73	5.64	5.75	7770	460	832	430 D	14	202	5200 D	242	9.9	73.8	128	0.6	< 0.001
0515 A	N	1/14/2009	6,905.73	5.73	6.19	8190	420	825	478	13 D	219	5080 D	248	12.6 D	86 D	76.8	0.9	< 0.001
0515 A	N	4/8/2009	6,905.68	5.66	6.31	7750	438 D	845 D	462 D	15	297	4980 D	275	12.2 D	59.2 D	64.4	0.7	< 0.001
0515 A	N	7/8/2009	6,905.33	5.61	6	7760	480 D	840	451 D	15	219	4960 D	258	13.6 D	58 D	72.4	1.2	< 0.001
0515 A	N	10/7/2009	6,905.43	6.32	6.9	7800	471 D	831	434 D	15	200	4960 D	258	10.0 D	64 D	46.4	0.6	< 0.001
0515 A	N	1/6/2010	6,905.13	6.44	7.4	8110 D	475 D	865	471 D	16	198	5230 D	256	14.4 D	89 D	30.4	0.3	< 0.001
0515 A	N	4/7/2010	6,904.88	6.26	6.82	7790 D	467 D	822	465 D	16	218	4930 D	240	15.7 D	62 D	168	0.9	< 0.001
0515 A	N	7/14/2010	6,904.43	6.3	6.15	8160 D	463 D	997	525 D	17	231	5010 D	255 D	34 D	50 D	156	0.9	< 0.001
0515 A	N	10/6/2010	6,904.58	7.13	6.35	7880 D	463 D	975	540 D	18	365	5370 D	286 D	41.5 D	52 D	158	0.6	< 0.001
0515 A	N	1/5/2011	6,904.43	7.21	7.06	7880 D	467 D	936	506 D	17	321	5060 D	288 D	29 D	53 D	204	0.3	< 0.001
0515 A	N	4/5/2011	6,904.48	6.83	6.59	8690 D	454	1070	588 D	20	417	5420 D	319 D	36 D	49 D	116	0.1	< 0.001



**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA Standard			0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
0515 A	N	7/10/2002	< 0.01	< 0.005	0.09	< 0.05	12.4	< 0.1	0.18	< 0.001	< 0.1	0.0013	3.6	6.8	10.4	< 0.2	< 1	8
0515 A	N	10/9/2002	< 0.01	< 0.005	0.08	< 0.05	13.3	< 0.1	0.2	< 0.001	< 0.1	0.002	3.5	3.1	6.6	< 0.2	< 1	9.3
0515 A	N	1/8/2003	< 0.01	< 0.005	0.09	< 0.05	14.8	< 0.1	0.21	< 0.001	< 0.1	0.0012	4	5.4	9.4	< 0.2	< 1	5
0515 A	N	4/9/2003	< 0.01	< 0.005	0.09	< 0.05	13.8	< 0.1	0.22	< 0.001	< 0.1	0.0011	3.3	7	10.3	< 0.2	< 1	3.5
0515 A	N	7/9/2003	< 0.01	< 0.005	0.09	< 0.05	15.7	< 0.1	0.26	< 0.001	< 0.1	0.0008	2.4	6.3	8.7	< 0.2	< 1	3.9
0515 A	N	10/8/2003	< 0.01	< 0.005	0.09	< 0.05	14.8	< 0.1	0.25	< 0.001	< 0.1	0.0014	2.2	2.5	4.7	< 0.2	< 1	5.3
0515 A	N	1/7/2004	< 0.01	< 0.005	0.09	< 0.05	17.4	< 0.1	0.24	< 0.001	< 0.1	0.0012 D	2.3	< 1.0	2.3	< 0.2	< 1.0	7.5
0515 A	N	4/7/2004	< 0.01	< 0.005	0.09	< 0.05	16.3	< 0.1	0.25	0.007	< 0.1	0.0011 D	1.4	4.2	5.6	< 0.2	< 1	7.3
0515 A	N	7/14/2004	< 0.01	< 0.005	0.08	< 0.05	14.6	< 0.1	0.2	< 0.001	< 0.1	0.0011 D	1.7	< 1.0	1.7	< 0.2	< 1.0	4.6
0515 A	N	10/6/2004	< 0.01	< 0.005	0.08	< 0.05	14.8	< 0.1	0.11	< 0.001	< 0.1	0.0009 D	2.3	2.5	4.8	< 0.2	< 1.0	3.5
0515 A	N	1/5/2005	< 0.01	0.006	0.09	< 0.05	15	< 0.1	0.25	0.002	< 0.1	0.001	4.2	1.8	6	< 0.2	< 1.0	10.9
0515 A	N	4/6/2005	< 0.01	< 0.005	0.06	< 0.05	16	< 0.1	0.25	< 0.001	< 0.1	0.001	3.3	1.1	4.4	< 0.2	< 1.0	1.9
0515 A	N	7/13/2005	< 0.01	< 0.005	0.06	< 0.05	15.6	< 0.1	0.24	< 0.001	< 0.1	0.0008	2.6	1.5	4.1	< 0.2	< 1.0	2.8
0515 A	N	10/5/2005	< 0.01	< 0.005	0.07	< 0.05	15.4	< 0.1	0.25	< 0.001	< 0.1	0.0009 D	1.9	1.3	3.2	< 0.2	< 1.0	3.1
0515 A	N	1/11/2006	< 0.01	< 0.005	0.05	< 0.05	15.3	< 0.1	0.23	0.008	< 0.1	0.0009	1.5	1.1	2.6	< 0.2	< 1.0	2.8
0515 A	N	4/5/2006	< 0.01	< 0.005	0.06	< 0.05	16.7	< 0.1	0.25	0.008	< 0.1	0.0008 D	1.3	< 1.0	1.3	< 0.2	< 1.0	2.6
0515 A	N	7/19/2006	< 0.01	< 0.005	0.05	< 0.05	14.7	< 0.1	0.22	< 0.001	< 0.1	0.0007	1.6	1.8	3.4	< 0.2	< 1.0	1.7
0515 A	N	10/4/2006	< 0.01	< 0.005	0.05	< 0.05	16.1	< 0.1	0.24	< 0.001	< 0.1	0.0021 D	1.3	4	5.3	< 0.2	< 1	1.2
0515 A	N	1/10/2007	< 0.01	< 0.005	0.04	< 0.05	15.1	< 0.1	0.2	< 0.001	< 0.1	0.0006	2	< 1	2	< 0.2	< 1	1.4
0515 A	N	4/11/2007	< 0.01	< 0.005	0.06	< 0.05	15.5	< 0.1	0.24	< 0.001	< 0.1	0.0009	1.3	3.4	4.7	< 0.2	< 1	2.3
0515 A	N	7/11/2007	< 0.01	< 0.005	0.05	< 0.05	16.2	< 0.1	0.24	< 0.001	< 0.1	0.0007	2.5	< 1	2.5	< 0.2	< 1	1.7
0515 A	N	10/3/2007	< 0.01	< 0.005	0.04	< 0.05	16.8	< 0.1	0.21	< 0.001	< 0.1	0.0006	1.3	< 1	1.3	< 0.2	< 1	4.5
0515 A	N	1/16/2008	< 0.01	< 0.005	0.05	< 0.05	15.9	< 0.1	0.24	< 0.001	< 0.1	0.0007	2	2.7	4.7	< 0.2	< 1	6.6
0515 A	N	4/9/2008	< 0.01	< 0.005	0.06	< 0.05	18	< 0.1	0.27	< 0.001	< 0.1	0.0009	0.5	3	3.5	1.4	0 U	8.1
0515 A	N	7/9/2008	< 0.01	< 0.005	0.04	< 0.05	18.6	< 0.1	0.25	< 0.001	< 0.1	0.0011	1	3.1	4.1	-0.1 U	8.5 U	2.2
0515 A	N	10/8/2008	< 0.01	< 0.005	0.04	< 0.05	17.6	< 0.1	0.24	< 0.001	< 0.1	0.0011	0.64	3.4	4.04	0.3	1 U	3
0515 A	N	1/14/2009	< 0.01	< 0.005	0.03	< 0.05	17.6	< 0.1	0.21	< 0.001	< 0.1	0.0009 D	1.3	3.5	4.8	-0.3 U	-3 U	2.4
0515 A	N	4/8/2009	< 0.01	< 0.005	0.03	< 0.05	17	< 0.1	0.22	< 0.001	< 0.1	0.0008 D	1.1	3.2	4.3	0.2 U	-3 U	2.5
0515 A	N	7/8/2009	< 0.01	< 0.005	0.03	< 0.05	17.5	< 0.1	0.22	< 0.001	< 0.1	0.0009	1.9	4.2	6.1	0.04 U	1.9 U	2.9
0515 A	N	10/7/2009	< 0.01	< 0.005	0.04	< 0.05	18.4	< 0.1	0.29	< 0.001	< 0.1	0.0008	0.91	2.9	3.81	0.1 U	-2 U	2.6
0515 A	N	1/6/2010	< 0.01	< 0.005	0.03	< 0.05	17.8	< 0.1	0.21	< 0.001	< 0.1	0.0009	1.2	3.5	4.7	0.04 U	0.0 U	2.5
0515 A	N	4/7/2010	< 0.01	< 0.005	0.03	< 0.05	16.8	< 0.1	0.23	< 0.001	< 0.1	0.001	2.5	2.9	5.4	0.04 U	-2 U	2.6
0515 A	N	7/14/2010	< 0.01	< 0.005	0.03	< 0.05	16.1	< 0.1	0.2	< 0.001	< 0.1	0.0011	2.8	3.8	6.6	0.07 U	3.1	2.9
0515 A	N	10/6/2010	< 0.01	< 0.005	0.02	< 0.05	16.6	< 0.1	0.17	< 0.001	< 0.1	0.0027	2.5	3.4	5.9	0.02 U	0.8 U	1.6
0515 A	N	1/5/2011	< 0.01	< 0.005	0.02	< 0.05	16.7	< 0.1	0.18	< 0.001	< 0.1	0.0026	2.2	3.4	5.6	0.02 U	0.3 U	2.7
0515 A	N	4/5/2011	< 0.01	< 0.005	0.02	< 0.05	15.4	< 0.1	0.16	< 0.001	< 0.1	0.0047 B	1.3	3.3	4.6	0.06 U	-0.9 U	2

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Cl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l
		NRC Standard	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
		EPA Standard	NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01
0515 A	N	7/13/2011	6,904.23	6.79	7.54	9520 D	480	1220	636 D	20	729	5970 D	363 D	35 D	44 D	84.4	0.8	<0.001
0515 A	N	10/5/2011	6,904.26	6.12	7.37	9740 D	455	1180	595 D	20	727	5990 D	360 D	40 D	44 D	83.6	0.1	<0.001
0515 A	N	1/4/2012	6,904.08	6.13	6.51 H	9920 D	533	1290	642	24	729	6030 D	361 D	44 D	42 D	146	1.4	<0.001
0515 A	N	4/4/2012	6,903.96	6.18	6.13 H	10400 D	419	1120	557	21	818	6080 D	363 D	36.0 D	46 D	124	2.3	<0.001
0515 A	N	7/11/2012	6,903.68	5.97	6.20 H	10300	445	1210	575 D	19	872	6120 D	379 D	41 D	45 D	366	4.7	<0.001
0515 A	N	10/10/2012	6,903.53	6.04	6.06 H	9870	458	1260	604 D	20	893	6160 D	383 D	28 D	39 D	416	1.4	<0.001
0515 A	N	1/15/2013	no data	5.98	6.02 H	9970	460	1360	636 D	20	881	6390 D	378 D	32 D	40 D	420	0.7	<0.001
0515 A	N	4/3/2013	6,903.40	6.04	6.14 H	10400	452	1290	603 D	18	916	6390 D	392 D	32 D	41 D	456	1.2	<0.001
0515 A	N	7/10/2013	6,903.06	5.89	6.18 H	10500	447	1330	594 D	18	882	6320 D	452 D	30 D	43 D	484	1.3	<0.001
0515 A	N	10/2/2013	6,903.14	6.01	6.53 H	10400	457	1340	609 D	19	861	6360 D	383 D	27.9 D	39 D	116	0.3	<0.001
0515 A	N	1/8/2014	6,903.10	6.17	6.22	10100	445	1280	588	18	839	6390	384	29	42	51.6	0.3	<0.001
0515 A	N	4/1/2014	6,903.21	6.13	6.15 H	10400	454	1310	638 D	19	907	6380 D	395 D	23.6 D	42 D	251 E	0.5	<0.001
0515 A	N	7/8/2014	6,902.67	6.21	6.18 H	10200	446	1310	623 D	19	846	6330 D	371 D	23 D	41 D	248	0.7 D	<0.001
0515 A	N	10/7/2014	6,902.66	6.08	6.07 H	10500	445	1310	566 D	15	861	6350 D	375 D	25.3 D	39 D	247	<0.1	<0.001
0515 A	N	1/6/2015	6902.43	6.19	6.07 H	10400	461	1360	598	17	838	6560 D	431 D	25.6 D	40 D	303	0.5	<0.001
0515 A	N	4/7/2015	6902.59	5.99	6.23 H	10700	453	1320	594 D	17	855	6280 D	383 D	24 D	38 D	186	0.5	0.001
0515 A	N	7/7/2015	6902.34	5.98	6.22 H	10600	414	1240	578	19	887	6580 D	393 D	28 D	36 D	218	0.2	<0.001
0515 A	N	10/6/2015	6902.17	6.07	6.05 H	10600	434	1310	578	17	830	6580 D	395 D	22 D	35 D	214	0.3	<0.001
0515 A	N	1/5/2016	6902.32	6.18	6.09 H	10500	458	1390	605	17	893	6360 D	383 DH	23 D	40 D	155	0.3	<0.001
0515 A	N	4/5/2016	6901.93	6.04	6.41 H	10500	449	1330	582	17	827	6610 D	390 D	23 D	37 D	23.5	0.3	0.001
0515 A	N	7/12/2016	6901.83	6.05	6.16 H	11000	435	1340	588	17	880	6750 D	406 D	24 D	40 D	236	0.4	<0.001
0515 A	N	10/4/2016	6901.96	6.14	6.13 H	10200	458	1370	599 D	17	835	6590 D	381 D	23 D	40 D	329	0.3	<0.001
0516 A	N	7/23/1989	6,918.70	4.20	4.08	12629	454	1519	399	9.29	0	8605	207	30.5	146	< 1	240	< 0.001
0516 A	N	10/12/1989	6,918.50	4.40	4.22	11560	449	1343	358	13.6	0	6992	264	39.8	188	< 1	150	< 0.001
0516 A	N	1/10/1990	6,917.80	4.40	4.31	10892	463	1281	409	11.7	< 1	6654	230	25	181	< 1	110	< 0.001
0516 A	N	4/6/1990	6,917.40	4.50	4.27	11343	463	1300	379	12.1	< 1	6989	216	57.3	186	< 1	130	< 0.001
0516 A	N	7/3/1990	6,916.40	4.20	4.28	11462	472	1212	359	10.2	< 1	7003	216	95.5	208	< 1	144	< 0.001
0516 A	N	10/9/1990	6,915.60	4.60	4.51	10430	429	1243	416	13.3	0.1	6467	203	78	208	< 1	80.3	< 0.001
0516 A	N	1/15/1991	6,915.10	4.60	4.50	10179	482	1207	436	19.4	< 1	5983	261	80.8	240	< 1	42.6	< 0.001
0516 A	N	4/2/1991	6,914.40	4.90	4.99	10493	464	1250	387	13.4	25	6165	267	97.9	240	< 1	20.5	< 0.001
0516 A	N	7/17/1991	6,913.80	4.80	5.75	9771	430	1097	390	12.8	100	6873	326	74	281	< 1	12.3	< 0.001
0516 A	N	9/4/1991	no data	no data	5.58	10598	444	1299	394	13.2	173	6936	215	144	59	< 1	8.6	< 0.001
0516 A	N	10/15/1991	6,911.40	5.10	6.39	9878	450	1068	451	16.5	213	6047	275	99	234	< 1	4.18	< 0.001
0516 A	N	11/4/1991	no data	no data	5.88	10139	490	875	392	13.6	381	5597	299	113	135	1.7	5.84	< 0.001
0516 A	N	12/2/1991	no data	no data	6.35	9819	471	879	375	13.8	340	5046	259	132	147	1.3	3.2	< 0.001
0516 A	N	1/15/1992	6,913.20	4.90	4.70	9588	403	1186	364	11.9	21.6	6079	241	201	93.5	1.2	22.2	< 0.001

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha	
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l	pci/l
			NRC Standard		0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7
EPA Standard		0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15		
0515 A	N	7/13/2011	<0.01	<0.005	0.02	<0.05	13.7	<0.1	0.11	<0.001	<0.1	0.0081	1.4	2.5	3.9	0.1 U	0.5 U	1.8	
0515 A	N	10/5/2011	<0.01	<0.005	0.02	<0.05	11.6	<0.1	0.1	<0.001	<0.1	0.0074	1.9	2.2	4.1	0.01 U	-0.4 U	1.6	
0515 A	N	1/4/2012	<0.01	<0.005	0.02	<0.05	11.1	<0.1	0.09	<0.001	<0.1	0.0094	1.3	2.5	6.3	0.0 U	0.09 U	1.8	
0515 A	N	4/4/2012	<0.01	<0.005	0.02	<0.05	10.8	<0.1	0.1	0.002	<0.1	0.0104	1.2	2.5	6.2	0.03 U	0.8 U	2.3	
0515 A	N	7/11/2012	0.001	<0.005	0.02	0.004	13.1	<0.1	0.09	0.003	<0.1	0.0131	2.1	4.1	10.3	0.1 U	0.7 U	1.6	
0515 A	N	10/10/2012	<0.001	<0.005	0.02	0.002	8.12	<0.1	0.13	0.001	<0.1	0.0125	2	3.3	5.3	0.04 U	0.2 U	1.6	
0515 A	N	1/15/2013	<0.001	<0.005	0.01	0.003	7.58	<0.1	0.1	0.002	<0.1	0.0105	2.6	4.3	6.9	-0.004 U	0.3 U	1.7	
0515 A	N	4/3/2013	<0.001	<0.005	0.02	0.003	7.88	<0.1	0.1	0.001	<0.1	0.0114	2.3	5.2	7.5	0.02 U	-0.2 U	2.1	
0515 A	N	7/10/2013	<0.001	<0.005	0.02	0.003	8.54	<0.1	0.1	0.002	<0.1	0.0101	1.4	3.7	5.1	0.07 U	0.4 U	4.3	
0515 A	N	10/2/2013	<0.001	<0.005	0.02	0.002	7.98	<0.1	0.11	0.001	<0.1	0.0108	2	3	5	0.04 U	0.3 U	4.1	
0515 A	N	1/8/2014	<0.001	<0.005	0.02	0.002	7.76	<0.1	0.12	0.001	<0.1	0.0093	2.2	3.6	5.8	0.1 U	0.6 U	4.8	
0515 A	N	4/1/2014	<0.001	<0.005	0.02	0.002	7.7	<0.1	0.1	0.003	<0.1	0.0112	2	4.7	6.7	0.02 U	0.8 U	4.9	
0515 A	N	7/8/2014	<0.001	<0.005	0.02	0.001	7.82	<0.1	0.09	0.002	<0.1	0.0081	1.7	4.6	6.3	0.04 U	0.7 U	3.2	
0515 A	N	10/7/2014	<0.001	<0.005	0.02	0.001	7.5	<0.1	0.1	0.002	<0.1	0.0114	3.7	4.6	8.3	0.02 U	0.4 U	2.1	
0515 A	N	1/6/2015	<0.001	<0.005	0.02	0.001	7.6	<0.1	0.09	0.001	<0.1	0.0094	2.6	3.8	6.4	0.05 U	0.8 U	3.8	
0515 A	N	4/7/2015	<0.001	<0.005	0.02	0.002	6.96	<0.1	0.12	0.002	<0.1	0.0082	3.2	4.5	7.7	0.1 U	-0.4 U	12.2	
0515 A	N	7/7/2015	<0.001	<0.005	0.02	<0.001	6.67	<0.1	0.1	0.003	<0.1	0.0081	1.6	1.8	3.4	0.03 U	0.1 U	5.3	
0515 A	N	10/6/2015	<0.001	<0.005	0.02	<0.001	8.01	<0.1	0.08	0.003	<0.1	0.009	3	7.6	10.6	0.07 U	0.04 U	18	
0515 A	N	1/5/2016	<0.001	<0.005	0.02	<0.001	7.34	<0.1	0.07	0.002	<0.1	0.0104	1.8	4.6	6.4	0.2 U	-0.1 U	9.2	
0515 A	N	4/5/2016	<0.001	<0.005	0.02	0.002	7.58	<0.1	0.11	0.003	<0.1	0.0097	1.9	4.2	6.1	-0.01 U	0.0 U	8.2	
0515 A	N	7/12/2016	<0.001	<0.005	0.02	0.002	7.86	<0.1	0.11	0.002	<0.1	0.0085	2.1	5.9	8	0.1 U	-0.2 U	6.4	
0515 A	N	10/4/2016	0.002	<0.005	0.02	0.002	7.55	<0.1	0.1	<0.001	<0.1	0.0079	2.2	2.6	4.8	0.08 U	0.3 U	6.4	
0516 A	N	7/23/1989	< 0.05	< 0.01	0.45	< 0.05	37	< 0.1	0.051	< 0.001	< 0.1	0.0023	13.6	8.3	21.9	< 0.2	2.9	53.8	
0516 A	N	10/12/1989	< 0.05	< 0.01	0.4	0.12	29	< 0.01	0.41	0.01	< 0.1	0.005	2.9	18.5	21.4	< 0.2	1.8	2.5	
0516 A	N	1/10/1990	< 0.05	< 0.01	0.42	< 0.05	25	< 0.1	0.35	< 0.001	< 0.1	0.003	2.9	4.8	7.7	< 0.2	< 1	3.5	
0516 A	N	4/6/1990	< 0.05	< 0.01	0.35	< 0.05	27	< 0.1	0.34	< 0.001	< 0.1	0.004	3.7	2.9	6.6	< 0.2	< 1	4	
0516 A	N	7/3/1990	< 0.05	< 0.01	0.25	< 0.05	28	< 0.1	0.45	0.001	< 0.1	0.0029	3.4	2.9	6.3	< 0.2	< 1	3	
0516 A	N	10/9/1990	< 0.05	< 0.01	0.25	< 0.05	21.9	< 0.1	0.3	< 0.001	< 0.1	0.0035	3.3	4.6	7.9	< 0.2	< 1	4	
0516 A	N	1/15/1991	0.01	< 0.01	0.24	< 0.05	20.6	< 0.1	0.32	< 0.001	< 0.1	0.0028	6.5	6.4	12.9	< 0.2	< 1	6.7	
0516 A	N	4/2/1991	< 0.01	< 0.01	0.19	< 0.05	20.3	< 0.1	0.26	< 0.001	< 0.1	0.0003	6	6.8	12.8	< 0.2	3.3	6	
0516 A	N	7/17/1991	< 0.01	< 0.01	0.22	< 0.05	18.7	< 0.1	0.27	0.002	< 0.1	0.001	2.3	3.1	5.4	< 0.2	< 1	2	
0516 A	N	9/4/1991	< 0.01	< 0.01	0.21	< 0.05	17.7	< 0.1	0.32	0.001	< 0.1	0.0021	1.5	4.7	6.2	< 0.2	1.2	2	
0516 A	N	10/15/1991	< 0.01	< 0.01	0.18	< 0.05	15.3	< 0.1	0.22	0.002	< 0.1	0.004	1.3	9.5	10.8	< 0.2	< 1	1	
0516 A	N	11/4/1991	< 0.01	< 0.01	0.12	< 0.05	15.3	< 0.1	0.17	0.002	< 0.1	0.0157	2	8.3	10.3	< 0.2	2.3	2	
0516 A	N	12/2/1991	< 0.01	< 0.01	0.14	< 0.05	11.6	< 0.1	0.19	< 0.001	< 0.1	0.0009	4	7.8	11.8	< 0.2	< 1	4	
0516 A	N	1/15/1992	0.01	< 0.01	0.21	< 0.05	19.2	< 0.1	0.29	0.063	< 0.1	0.063	2.4	8.9	11.3	< 0.2	< 1	2	

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Cl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01
0516 A	N	4/8/1992	6,912.90	4.90	5.51	10129	444	669	395	15.1	83	6152	369	117	97.1	1.6	11.4	0.002
0516 A	N	7/8/1992	6,912.40	4.80	6.21	9577	495	916	413	25.2	117	6065	234	129	119	1.4	6.56	< 0.001
0516 A	N	10/7/1992	6,912.20	5.00	5.19	9800	492	1090	433	17.2	73.2	6244	229	80.1	15.9	1.3	29.3	0.001
0516 A	N	1/6/1993	6,912.10	5.10	5.70	8137	502	889	398	15.5	168	5252	245	93.7	144	2.1	7.8	< 0.001
0516 A	N	4/6/1993	6,911.80	5.40	6.26	9954	423	1037	456	13.7	250	6106	252	112	141	1.8	2.9	< 0.001
0516 A	N	7/13/1993	6,911.20	5.60	6.48	9291	485	1102	401	14.4	421	5879	241	92.9	142	2.3	2	< 0.001
0516 A	N	10/7/1993	6,910.50	5.80	6.16	9168	481	1109	417	13.3	348	5596	255	101	169	1.6	2.4	< 0.001
0516 A	N	1/6/1994	6,910.70	5.70	6.26	10048	478	1044	445	12.7	477	5747	237	112	150	2.5	2.87	< 0.001
0516 A	N	4/12/1994	6,910.20	5.80	6.52	9862	472	1121	413	14.6	610	5815	249	138	155	0.87	0.97	< 0.001
0516 A	N	7/20/1994	6,906.80	6.00	6.96	10276	526	1293	389	17.6	953	6286	246	149	157	2.04	0.46	< 0.001
0516 A	N	10/4/1994	6,909.50	6.20	7.37	10221	533	1221	488	17.2	949	6371	249	164	138	1.6	< 0.1	< 0.001
0516 A	N	1/4/1995	6,909.10	6.10	7.01	10761	495	1245	458	19	939	6901	255	198	130	1.8	0.24	< 0.001
0516 A	N	4/5/1995	6,908.80	6.10	6.36	10757	505	1275	478	20.7	1069	6510	255	180	133	1.3	0.12	< 0.001
0516 A	N	7/6/1995	6,903.90	6.20	7.21	10428	491	1290	476	18.7	1302	6259	258	164	129	1.9	< 0.1	< 0.001
0516 A	N	10/3/1995	6,903.70	6.10	7.44	10761	527	1298	450	19.4	1332	6394	238	178	126	1.72	< 0.1	0.001
0516 A	N	1/3/1996	6,908.20	6.40	7.03	11314	469	1340	485	18.5	1302	6480	237	137	142	1.76	< 0.1	0.001
0516 A	N	4/2/1996	6,904.10	6.40	7.29	11345	527	1530	491	19	1320	7150	259	152	146	2.09	< 0.1	0.002
0516 A	N	7/7/1996	6,904.20	6.10	7.15	11529	465	1480	485	19.6	1309	6190	240	150	134	2.56	< 0.1	< 0.001
0516 A	N	10/1/1996	6,903.80	6.40	6.93	11500	494	1600	485	18.9	1270	6640	247	149	128	2.13	< 0.1	< 0.001
0516 A	N	1/22/1997	6,903.70	6.10	7.36	11200	510	1560	481	20.5	1420	6760	241	155	110	2.46	< 0.1	< 0.001
0516 A	N	4/8/1997	6,902.20	6.30	7.57	11500	457	1320	484	19.7	1360	6500	258	136	126	2.06	< 0.1	< 0.001
0516 A	N	7/8/1997	6,902.10	6.70	7.61	11700	528	1580	507	19.7	1360	7120	271	135	124	2.26	< 0.1	< 0.001
0516 A	N	10/7/1997	6,901.40	6.30	7.45	11600	516	1480	480	18.4	1370	6530	258	132	106	2.5	< 0.1	< 0.001
0516 A	N	1/15/1998	6,902.50	6.40	7.59	11600	474	1450	493	20.2	1370	7100	293	129	137	2.9	< 0.1	< 0.001
0516 A	N	4/7/1998	6,901.40	6.20	7.39	11800	450	1310	469	18.2	1360	6220	230	141	116	3	< 0.1	< 0.001
0516 A	N	7/7/1998	6,902.10	6.50	7.36	11800	491	1450	492	18.5	1380	6500	257	145	117	3	< 0.1	< 0.001
0516 A	N	10/6/1998	6,902.10	6.25	7.66	11800	478	1460	514	20.7	1390	7000	256	140	132	2.9	< 0.1	< 0.001
0516 A	N	1/5/1999	6,902.20	6.40	7.57	11900	421	1400	446	19.2	1350	7100	259	152	103	2.2	< 0.1	< 0.001
0516 A	N	4/6/1999	6,902.40	6.30	7.28	11900	456	1480	461	17.7	1350	6840	246	137	118	1.8	< 0.1	< 0.001
0516 A	N	7/13/1999	6,901.04	6.50	7.78	11900	485	1540	518	24.9	1370	6920	254	137	106	2.6	< 0.1	< 0.001
0516 A	N	10/5/1999	6,900.00	6.40	7.71	11900	553	1770	458	18.5	1387	8030	261	143	111	2.7	< 0.1	< 0.001
0516 A	N	1/4/2000	6,899.60	6.30	7.64	11700	459	1520	408	18.1	1290	6590	228	137	113	2.7	< 0.1	< 0.001
EPA 02	N	7/26/1989	6,843.90	6.80	6.80	3959	526	275	267	8.9	256	2463	32.1	0.89	0.01	< 1	0.37	< 0.001
EPA 02	N	10/5/1989	6,844.30	6.40	7.00	4088	528	264	268	11.7	262	2589	29.7	0.89	0.08	< 1	< 0.1	< 0.001
EPA 02	N	1/17/1990	6,844.80	6.20	6.62	3622	446	216	265	8.2	293	2197	29.3	0.77	0.12	< 1	< 0.1	0.001
EPA 02	N	4/18/1990	6,845.00	6.50	6.80	3704	440	220	250	7.8	293	2173	30.3	0.88	0.03	< 1	< 0.1	< 0.001

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA Standard			0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
0516 A	N	4/8/1992	< 0.01	< 0.01	0.2	< 0.05	15.8	< 0.1	0.22	0.001	< 0.1	0.001	1.8	9.8	11.6	< 0.2	< 1	2
0516 A	N	7/8/1992	< 0.01	< 0.01	0.17	< 0.05	16.2	< 0.1	0.21	< 0.001	< 0.1	0.002	2.1	7.2	9.3	< 0.2	2.6	2.5
0516 A	N	10/7/1992	< 0.01	< 0.01	0.23	< 0.05	18	< 0.1	0.28	0.003	< 0.1	< 0.0003	4.1	5.9	10	< 0.2	3	4.6
0516 A	N	1/6/1993	0.01	< 0.01	0.41	< 0.05	16	< 0.1	0.37	0.009	< 0.1	0.005	3.5	3.6	7.1	< 0.2	< 1	3.9
0516 A	N	4/6/1993	< 0.01	< 0.01	0.14	< 0.05	13	< 0.1	0.21	0.001	< 0.1	0.004	1.8	1.4	3.2	< 0.2	2.6	2
0516 A	N	7/13/1993	< 0.01	< 0.01	0.13	< 0.05	10.3	< 0.1	0.17	0.005	< 0.1	0.003	1.5	4.2	5.7	< 0.2	3	2
0516 A	N	10/7/1993	< 0.01	< 0.01	0.18	< 0.05	12.4	< 0.1	0.22	0.002	< 0.1	0.007	3.7	4	7.7	< 0.2	< 1	4
0516 A	N	1/6/1994	< 0.01	< 0.01	0.11	< 0.05	10.2	< 0.1	0.15	< 0.001	< 0.1	0.001	3.6	1.5	5.1	< 0.2	< 1	6.8
0516 A	N	4/12/1994	< 0.01	< 0.01	0.08	< 0.05	7.8	< 0.1	0.14	0.001	< 0.1	0.003	2.9	5.5	8.4	< 0.2	1.5	11.3
0516 A	N	7/20/1994	< 0.01	< 0.01	0.05	< 0.05	4.95	< 0.1	0.08	< 0.001	< 0.1	0.011	3.8	3.1	6.9	< 0.2	< 1	8.6
0516 A	N	10/4/1994	< 0.01	< 0.01	< 0.01	< 0.05	5.22	< 0.1	< 0.05	0.001	< 0.1	0.013	4.3	< 1	4.3	< 0.2	3.4	4.5
0516 A	N	1/4/1995	< 0.01	< 0.01	0.04	< 0.05	4.74	< 0.1	0.08	< 0.001	< 0.1	0.01	1.4	2.9	4.3	< 0.2	2	5.9
0516 A	N	4/5/1995	< 0.01	< 0.01	< 0.01	< 0.05	3.74	< 0.1	< 0.05	0.001	< 0.1	0.016	1.4	2.2	3.6	< 0.2	3.1	4.9
0516 A	N	7/6/1995	< 0.01	< 0.01	< 0.01	< 0.05	2.7	< 0.1	< 0.05	0.003	< 0.1	0.0183	0.9	< 1	0.9	0.2	< 1	2
0516 A	N	10/3/1995	< 0.01	< 0.01	< 0.01	< 0.05	2.54	< 0.1	< 0.05	0.001	< 0.1	0.0256	1.3	< 1	1.3	< 0.2	< 1	2.5
0516 A	N	1/3/1996	< 0.01	< 0.01	< 0.01	< 0.05	2.34	< 0.1	< 0.05	< 0.001	< 0.1	0.014	1.1	1.4	2.5	< 0.2	1.7	2.7
0516 A	N	4/2/1996	< 0.01	< 0.01	< 0.01	< 0.05	2.1	< 0.1	< 0.05	< 0.001	< 0.1	0.014	0.8	< 1	0.8	< 0.2	< 1	1.4
0516 A	N	7/7/1996	< 0.01	< 0.01	< 0.01	< 0.05	2	< 0.1	< 0.05	< 0.001	< 0.1	0.018	0.7	< 1	0.7	< 0.2	< 1	< 1
0516 A	N	10/1/1996	< 0.01	< 0.01	0.02	< 0.05	2.2	< 0.1	< 0.05	0.002	< 0.1	0.013	0.9	< 1	0.9	< 0.2	< 1	< 1
0516 A	N	1/22/1997	< 0.01	< 0.01	< 0.01	< 0.05	1.79	< 0.1	< 0.05	< 0.001	< 0.1	0.016	1.2	3.2	4.4	< 0.2	< 1	< 1
0516 A	N	4/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	1.77	< 0.1	< 0.05	0.078	< 0.1	0.016	1	4.2	5.2	< 0.2	< 1	< 1
0516 A	N	7/8/1997	< 0.01	< 0.01	< 0.01	< 0.05	1.8	< 0.1	< 0.05	< 0.001	< 0.1	0.015	0.8	< 1	0.8	< 0.2	< 1	< 1
0516 A	N	10/7/1997	< 0.01	< 0.01	0.02	< 0.05	1.83	< 0.1	< 0.05	< 0.001	< 0.1	0.015	1.2	< 1	1.2	< 0.2	< 1	< 1
0516 A	N	1/15/1998	< 0.01	< 0.005	< 0.01	< 0.05	2.03	< 0.1	< 0.05	< 0.001	< 0.1	0.023	1.1	< 1	1.1	< 0.2	< 1	< 1
0516 A	N	4/7/1998	< 0.01	< 0.005	< 0.01	< 0.05	1.61	< 0.1	< 0.05	< 0.001	< 0.1	0.019	1.2	< 1	1.2	< 0.2	< 1	< 1
0516 A	N	7/7/1998	< 0.01	< 0.005	0.02	< 0.05	1.59	< 0.1	< 0.05	< 0.001	< 0.1	0.0181	1.1	< 1	1.1	< 0.2	< 1	2.2
0516 A	N	10/6/1998	< 0.01	< 0.005	< 0.01	< 0.05	1.57	< 0.1	< 0.05	< 0.001	< 0.1	0.0211	1.1	1.6	2.7	< 0.2	< 1	< 1
0516 A	N	1/5/1999	< 0.01	< 0.005	< 0.01	< 0.05	1.66	< 0.1	< 0.05	< 0.001	< 0.1	0.0189	0.8	1.9	2.7	< 0.2	< 1	< 1
0516 A	N	4/6/1999	< 0.01	< 0.005	< 0.01	< 0.05	1.59	< 0.1	< 0.05	0.001	< 0.1	0.0197	0.7	3.4	4.1	< 0.2	< 1	< 1
0516 A	N	7/13/1999	< 0.01	< 0.005	< 0.01	< 0.05	1.67	< 0.1	< 0.05	< 0.001	< 0.1	0.0199	0.7	< 1	0.7	< 0.2	< 1	< 1
0516 A	N	10/5/1999	< 0.01	< 0.005	< 0.01	< 0.05	2.11	< 0.1	< 0.05	< 0.001	< 0.1	0.0218	0.7	< 1	0.7	< 0.2	< 1	1.4
0516 A	N	1/4/2000	< 0.01	< 0.005	0.02	< 0.05	2.37	< 0.1	< 0.05	0.001	< 0.1	0.0178	1.2	< 1	1.2	< 0.2	< 1	1.2
EPA 02	N	7/26/1989	< 0.05	< 0.01	0.06	< 0.05	2.9	< 0.1	0.07	< 0.001	< 0.1	0.0178	1.6	< 1	1.6	1.4	< 1	< 1
EPA 02	N	10/5/1989	< 0.05	< 0.01	< 0.01	< 0.05	2.8	< 0.01	< 0.05	< 0.001	< 0.1	0.004	0.6	1.9	2.5	< 0.2	3.4	1.1
EPA 02	N	1/17/1990	< 0.05	< 0.01	< 0.01	< 0.05	2.6	< 0.1	< 0.05	< 0.001	< 0.1	0.003	0.6	< 1	0.6	0.4	< 1	1.1
EPA 02	N	4/18/1990	< 0.05	< 0.01	< 0.01	< 0.05	2.3	< 0.1	< 0.05	0.001	< 0.1	0.002	1.8	< 1	1.8	< 0.2	< 1	2.3



**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
		EPA Standard	NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01
EPA 02	N	7/17/1990	6,844.90	6.60	6.70	3623	479	208	253	8.5	305	2104	28.8	0.51	0.05	< 1	< 0.1	< 0.001
EPA 02	N	10/16/1990	6,845.10	6.40	7.17	3965	445	230	259	7.5	259	2462	36.2	0.79	0.01	< 1	< 0.1	< 0.001
EPA 02	N	1/8/1991	6,845.30	6.50	6.85	3834	451	236	263	11	264	2388	35.6	0.76	0.01	< 1	< 0.1	< 0.001
EPA 02	N	4/17/1991	6,845.80	6.30	7.37	3708	452	238	268	7.6	284	2300	24.6	0.67	< 0.01	< 1	< 0.1	< 0.001
EPA 02	N	7/3/1991	6,846.00	6.40	6.83	4500	523	285	230	7.8	183	3175	38.1	1.07	< 0.01	< 1	0.3	< 0.001
EPA 02	N	10/22/1991	6,846.50	6.40	6.59	3843	475	244	242	7.7	275	2435	34.4	0.96	0.04	< 1	< 0.1	< 0.001
EPA 02	N	1/23/1992	6,846.70	6.50	7.02	3478	455	235	229	7.4	226	2364	32.6	0.88	< 0.01	< 1	< 0.1	< 0.001
EPA 02	N	4/2/1992	6,847.10	6.40	7.86	3799	483	243	279	8.4	282	2486	29.5	0.92	< 0.01	< 1	< 0.1	< 0.001
EPA 02	N	7/16/1992	6,846.50	6.50	6.71	3885	412	224	290	9	237	2606	33.4	0.58	0.2	< 1	0.13	< 0.001
EPA 02	N	10/15/1992	6,846.70	6.30	7.02	4554	580	300	286	10.6	198	2890	36.1	0.92	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	1/14/1993	6,847.00	6.60	7.12	3380	436	196	213	8.3	276	2201	29	0.88	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	4/15/1993	6,847.50	6.60	7.68	3534	455	186	255	6.3	270	2292	30.4	0.67	0.2	< 1	< 0.1	< 0.001
EPA 02	N	7/21/1993	6,848.20	6.60	7.43	3321	458	207	256	8	315	2247	24.3	0.4	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	10/12/1993	6,845.50	6.70	6.50	3692	498	222	231	7.2	300	2274	29.6	0.57	< 0.1	< 1	0.1	< 0.001
EPA 02	N	1/11/1994	6,847.80	6.70	7.10	2674	353	160	194	5.6	300	1765	26.3	0.55	< 0.1	< 1	0.13	< 0.001
EPA 02	N	4/19/1994	6,847.90	6.60	8.05	2781	357	159	223	6.9	284	1771	24.3	0.78	< 0.1	< 1	< 0.1	0.001
EPA 02	N	7/26/1994	6,848.10	6.70	6.93	3353	469	216	223	6.8	273	2026	26.6	0.59	< 0.1	< 1	0.16	< 0.001
EPA 02	N	10/11/1994	6,848.00	6.70	7.70	3036	462	182	222	6.4	304	2057	25.2	0.71	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	1/10/1995	6,848.10	6.60	7.16	3316	486	144	208	7.6	294	2057	27.5	0.98	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	4/6/1995	6,848.50	6.70	6.91	3267	423	183	216	6.72	295	2070	26.5	1.06	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	7/11/1995	6,848.40	6.80	7.14	2674	390	177	203	6.2	325	1705	25.4	0.81	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	10/10/1995	6,842.60	6.70	7.43	2782	393	156	216	6.4	321	1741	24.2	0.6	< 0.1	< 1	< 0.1	0.001
EPA 02	N	1/9/1996	6,848.50	6.80	7.73	2801	382	155	213	6.7	334	1791	24.7	0.46	< 0.1	< 1	< 0.1	0.003
EPA 02	N	4/10/1996	6,842.70	6.90	7.70	3018	408	168	191	6	321	1831	22.7	0.52	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	7/17/1996	6,848.50	6.70	6.88	3042	390	164	208	16	312	1746	29	0.45	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	10/8/1996	6,848.70	6.70	7.17	3150	453	198	211	6.7	315	1866	24.5	0.56	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	1/28/1997	6,848.70	6.90	7.75	3000	400	185	190	6.23	318	1883	29.9	0.48	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	4/15/1997	6,848.70	6.70	7.77	2970	410	184	202	6.6	325	1775	26.4	0.46	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	7/15/1997	6,848.50	6.50	7.46	3090	411	186	192	6.6	321	1780	27.7	0.51	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	10/15/1997	6,848.50	6.60	7.64	2920	400	185	195	6.1	322	1740	31.6	0.5	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	1/20/1998	6,849.20	6.50	7.76	3060	407	182	208	6.9	318	2000	26.8	0.73	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	4/14/1998	6,848.90	6.40	7.47	3130	438	199	194	6.3	316	1830	26.2	0.54	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	7/14/1998	6,848.70	7.00	7.66	3120	385	190	207	6.9	313	1700	22.3	0.49	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	10/6/1998	6,849.50	6.60	7.82	3390	454	227	221	7.9	292	2150	28.6	0.75	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	1/12/1999	6,849.30	6.80	7.65	3060	364	180	181	6.7	311	1740	27.8	0.55	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	4/13/1999	6,849.50	6.70	7.69	3110	420	182	198	6.8	304	1800	31.3	0.64	< 0.1	< 1	< 0.1	< 0.001

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA Standard			0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA 02	N	7/17/1990	< 0.05	< 0.01	< 0.01	< 0.05	2.29	< 0.1	< 0.05	< 0.001	< 0.1	0.0019	0.4	1.9	2.3	< 0.2	< 1	< 1
EPA 02	N	10/16/1990	< 0.05	< 0.01	0.01	< 0.05	2.57	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.9	< 1	0.9	< 0.2	< 1	< 1
EPA 02	N	1/8/1991	< 0.01	< 0.01	< 0.01	< 0.05	2.62	< 0.1	< 0.05	< 0.001	< 0.1	0.0196	< 0.2	2	2	< 0.2	< 1	< 1
EPA 02	N	4/17/1991	< 0.01	< 0.01	< 0.01	< 0.05	2.12	< 0.1	< 0.05	< 0.001	< 0.1	0.001	1	1.8	2.8	< 0.2	< 1	1
EPA 02	N	7/3/1991	< 0.01	< 0.01	< 0.01	< 0.05	3.02	0.03	< 0.05	< 0.001	< 0.1	< 0.0003	0.2	3.7	3.9	< 0.2	< 1	< 1
EPA 02	N	10/22/1991	< 0.01	< 0.01	0.02	< 0.05	2.09	< 0.1	< 0.05	< 0.001	< 0.1	0.001	0.2	3.7	3.9	< 0.2	< 1	< 1
EPA 02	N	1/23/1992	< 0.01	< 0.01	< 0.01	< 0.05	2.77	< 0.1	< 0.05	< 0.001	< 0.1	0.003	0.3	< 1	0.3	< 0.2	1.3	< 1
EPA 02	N	4/2/1992	< 0.01	< 0.01	< 0.01	< 0.05	2.46	< 0.1	< 0.05	< 0.001	< 0.1	0.009	0.2	4.4	4.6	< 0.2	3	< 1
EPA 02	N	7/16/1992	< 0.01	< 0.01	< 0.01	< 0.05	2.3	< 0.1	< 0.05	< 0.001	< 0.1	0.001	1.8	6.3	8.1	< 0.2	2.5	1.9
EPA 02	N	10/15/1992	< 0.01	< 0.01	< 0.01	< 0.05	3.23	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	1.2	6.3	7.5	< 0.2	2.1	1.3
EPA 02	N	1/14/1993	< 0.01	< 0.01	< 0.01	< 0.05	2.27	< 0.1	< 0.05	< 0.001	< 0.1	0.001	0.2	< 1	0.2	< 0.2	< 1	< 1
EPA 02	N	4/15/1993	< 0.01	< 0.01	< 0.01	< 0.05	2.15	< 0.1	< 0.05	< 0.001	< 0.1	0.001	0.5	< 1	0.5	< 0.2	1.6	< 1
EPA 02	N	7/21/1993	< 0.01	< 0.01	< 0.01	< 0.05	1.59	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.7	2.7	3.4	< 0.2	< 1	< 1
EPA 02	N	10/12/1993	< 0.01	< 0.01	0.01	< 0.05	2.11	< 0.1	< 0.05	< 0.001	< 0.1	0.002	1.4	2.1	3.5	< 0.2	2.8	4.5
EPA 02	N	1/11/1994	< 0.01	< 0.01	< 0.01	< 0.05	1.78	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.7	4.3	5	< 0.2	< 1	8.1
EPA 02	N	4/19/1994	< 0.01	< 0.01	0.02	< 0.05	2	< 0.1	< 0.05	< 0.001	< 0.1	0.001	0.8	2.1	2.9	< 0.2	< 1	4.1
EPA 02	N	7/26/1994	< 0.01	< 0.01	< 0.01	< 0.05	1.81	< 0.1	< 0.05	< 0.001	< 0.1	0.002	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 02	N	10/11/1994	< 0.01	< 0.01	< 0.01	< 0.05	1.52	< 0.1	< 0.05	< 0.001	< 0.1	0.002	1	< 1	1	< 0.2	< 1	1.2
EPA 02	N	1/10/1995	< 0.01	< 0.01	< 0.01	< 0.05	1.82	< 0.1	< 0.05	< 0.001	< 0.1	0.002	1.1	< 1	1.1	< 0.2	< 1	2.8
EPA 02	N	4/6/1995	< 0.01	< 0.01	< 0.01	< 0.05	1.59	< 0.1	< 0.05	< 0.001	< 0.1	0.002	0.6	2.4	3	< 0.2	< 1	3.8
EPA 02	N	7/11/1995	< 0.01	< 0.01	< 0.01	< 0.05	1.47	< 0.1	< 0.05	< 0.001	< 0.1	0.0012	1	< 1	1	< 0.2	< 1	3.4
EPA 02	N	10/10/1995	< 0.01	< 0.01	< 0.01	< 0.05	1.48	< 0.1	< 0.05	< 0.001	< 0.1	0.0011	1.2	< 1	1.2	< 0.2	< 1	1.1
EPA 02	N	1/9/1996	< 0.01	< 0.01	< 0.01	< 0.05	1.48	< 0.1	< 0.05	< 0.001	< 0.1	0.0026	1	< 1	1	< 0.2	< 1	< 1
EPA 02	N	4/10/1996	< 0.01	< 0.01	< 0.01	< 0.05	1.52	< 0.1	< 0.05	< 0.001	< 0.1	0.0008	0.7	< 1	0.7	0.7	< 1	< 1
EPA 02	N	7/17/1996	< 0.01	< 0.01	< 0.01	< 0.05	1.58	< 0.1	< 0.05	< 0.001	< 0.1	0.0011	0.9	< 1	0.9	0.9	< 1	< 1
EPA 02	N	10/8/1996	< 0.01	< 0.01	< 0.01	< 0.05	1.53	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.8	< 1	0.8	< 0.2	< 1	1.7
EPA 02	N	1/28/1997	< 0.01	< 0.01	< 0.01	< 0.05	1.46	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	1.8	< 1	1.8	< 0.2	< 1	< 1
EPA 02	N	4/15/1997	< 0.01	< 0.01	< 0.01	< 0.05	1.49	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 02	N	7/15/1997	< 0.01	< 0.01	< 0.01	< 0.05	1.42	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.9	2.5	3.4	< 0.2	< 1	< 1
EPA 02	N	10/15/1997	< 0.01	< 0.01	< 0.01	< 0.05	1.49	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.5	< 1	0.5	< 0.2	< 1	< 1
EPA 02	N	1/20/1998	< 0.01	< 0.005	< 0.01	< 0.05	1.75	< 0.1	< 0.05	< 0.001	< 0.1	0.0009	1	< 1	1	< 0.2	< 1	< 1
EPA 02	N	4/14/1998	< 0.01	< 0.005	< 0.01	< 0.05	1.6	< 0.1	< 0.05	< 0.001	< 0.1	0.0008	1.1	< 1	1.1	< 0.2	< 1	< 1
EPA 02	N	7/14/1998	< 0.01	< 0.005	< 0.01	< 0.05	1.5	< 0.1	< 0.05	< 0.001	< 0.1	0.0009	0.9	< 1	0.9	< 0.2	7.5	< 1
EPA 02	N	10/6/1998	< 0.01	< 0.005	< 0.01	< 0.05	1.94	< 0.1	< 0.05	< 0.001	< 0.1	0.0007	1	2.5	3.5	< 0.2	< 1	< 1
EPA 02	N	1/12/1999	< 0.01	< 0.005	< 0.01	< 0.05	1.44	< 0.1	< 0.05	< 0.001	< 0.1	0.0028	0.9	2.5	3.4	< 0.2	< 1	< 1
EPA 02	N	4/13/1999	< 0.01	< 0.005	< 0.01	< 0.05	1.64	< 0.1	< 0.05	< 0.001	< 0.1	0.0009	1.1	< 1	1.1	< 0.2	1.8	1.8

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
		EPA Standard	NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01
EPA 02	N	7/20/1999	6,849.19	6.70	7.67	3080	385	186	187	8.8	307	1650	29	0.59	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	10/12/1999	6,849.30	6.64	7.65	3640	478	244	186	7.6	268	1970	45.7	0.7	< 1	< 1	< 0.1	< 0.001
EPA 02	N	1/11/2000	6,849.50	6.70	7.63	3090	384	187	179	7.4	310	1700	28.9	0.57	< 0.1	< 1	0.12	< 0.001
EPA 02	N	5/2/2000	6,850.10	6.60	7.72	2800	349	162	183	5.9	296	1490	20.2	0.48	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	7/10/2000	6,849.90	6.67	7.42	2740	369	166	192	5.89	334	1540	20.4	0.47	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	10/2/2000	6,849.95	6.70	7.49	2670	359	172	195	7.8	330	1740	21.2	0.42	< 0.1	< 1	< 0.1	0.004
EPA 02	Dup	10/9/2000	no data	6.69	7.62	2700	327	153	187	6.54	331	1380	18.1	0.43	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	1/15/2001	6,850.00	6.80	7.34	2680	360	157	185	6.5	350	1690	25.8	0.5	< 0.1	< 1	< 0.1	< 0.001
EPA 02	Dup	1/15/2001	no data	6.90	7.47	2560	358	156	185	6.5	330	1680	26.3	0.5	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	4/2/2001	6,850.10	6.87	7.39	2730	408	182	173	6	425	1600	23.7	0.53	< 0.1	< 1	< 0.1	0.001
EPA 02	Dup	4/2/2001	no data	6.88	7.26	2780	407	181	170	5.9	333	1610	24	0.46	< 0.1	< 1	< 0.1	0.001
EPA 02	N	7/16/2001	6,849.60	7.03	7.57	2770	341	159	182	6.9	430	1630	28.3	0.53	< 0.1	< 1	< 0.1	< 0.001
EPA 02	Dup	7/16/2001	no data	7.08	7.49	2720	343	159	185	6.8	331	1610	28.2	0.53	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	10/9/2001	6,849.75	6.67	7.70	2760	330	150	182	6.2	371	1420	25.1	0.36	< 0.1	< 1	< 0.1	0.002
EPA 02	Dup	10/9/2001	no data	6.72	7.10	2730	330	150	177	6.2	338	1440	27.1	0.45	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	1/14/2002	6,849.80	6.96	7.20	2730	406	177	168	8	355	1550	24.8	0.43	< 0.1	< 1	< 0.1	< 0.001
EPA 02	Dup	1/14/2002	no data	6.85	7.10	2770	409	179	174	8.13	334	1600	24.7	0.47	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	4/9/2002	6,849.36	6.83	7.29	2760	356	159	186	6.2	379	1570	25.4	0.45	< 0.1	< 1	< 0.1	< 0.001
EPA 02	Dup	4/9/2002	no data	6.72	7.21	2780	351	158	184	6.3	336	1570	24.8	0.5	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	7/16/2002	6,849.45	6.14	7.54	2760	352	161	188	6	448	1510	24.6	0.6	< 0.1	< 1	< 0.1	< 0.001
EPA 02	Dup	7/16/2002	no data	6.56	7.37	2770	352	160	190	7.6	332	1540	25.9	1.3	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	10/15/2002	6,849.16	6.14	7.72	2630	398	178	189	5.9	432	1700	21	0.5	< 0.1	< 1	< 0.1	0.002
EPA 02	Dup	10/15/2002	no data	6.43	7.48	2650	400	180	187	6.1	337	1750	15.2	0.62	< 0.1	< 1	< 0.1	0.001
EPA 02	N	1/14/2003	6,849.13	6.65	7.62	2700	345	154	172	6.4	409	1410	19.6	0.59	< 0.1	< 1	< 0.1	0.002
EPA 02	Dup	1/14/2003	no data	no data	7.38	2710	380	175	162	6.6	341	1590	23.5	0.69	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	4/15/2003	6,849.54	6.76	7.51	2740	328	141	194	9	448	1550	23.7	0.6	< 0.1	< 1	< 0.1	< 0.001
EPA 02	Dup	4/15/2003	no data	no data	7.37	2730	346	163	192	8.8	333	1520	23.3	0.6	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	7/14/2003	6,849.09	6.50	7.62	2750	352	156	183	7.1	436	1460	25.2	0.5	< 0.1	< 1	< 0.1	< 0.001
EPA 02	Dup	7/14/2003	no data	no data	7.48	2790	365	164	185	7.3	338	1550	19.2	0.57	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	10/14/2003	6,848.80	6.67	7.44	2710	390	172	194	6	438	1620	19.4	0.48	< 0.1	< 1	< 0.1	< 0.001
EPA 02	Dup	10/14/2003	no data	no data	7.52	2700	394	174	194	6.1	329	1600	21.7	0.55	< 0.1	< 1	0.2	< 0.001
EPA 02	N	1/13/2004	6,848.87	6.69	7.74	2700	380	176	196	7.1	323	1640	20.9	0.48	< 0.10	< 1.0	< 0.1	< 0.001
EPA 02	Dup	1/13/2004	no data	no data	7.63	2710	391	180	196	7.6	336	1680	20.5	0.58	< 0.10	< 1.0	< 0.1	< 0.001
EPA 02	N	4/13/2004	6,848.76	6.55	6.97	2680	353	164	182	6.9	405	1580	23.1	0.92	< 0.1	< 1	< 0.1	< 0.001
EPA 02	Dup	4/13/2004	no data	no data	6.82	2710	356	166	191	7.1	342	1620	24.8	0.78	< 0.1	< 1	< 0.1	< 0.001
EPA 02	N	7/20/2004	6,848.67	6.80	6.89	2740	374 D	164 D	202	5.9	358	1530 D	22	0.49	< 0.10	< 1.0	< 0.1	< 0.001

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA Standard			0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA 02	N	7/20/1999	< 0.01	< 0.005	< 0.01	< 0.05	1.35	< 0.1	< 0.05	< 0.001	< 0.1	0.0012	1.2	2.1	3.3	< 0.2	2.1	2.1
EPA 02	N	10/12/1999	< 0.01	< 0.005	< 0.01	< 0.05	2.21	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.6	2.2	2.8	< 0.2	< 1	1.8
EPA 02	N	1/11/2000	< 0.01	< 0.005	< 0.01	< 0.05	1.58	< 0.1	< 0.05	0.001	< 0.1	0.0015	0.8	< 1	0.8	< 0.2	< 1	< 1
EPA 02	N	5/2/2000	< 0.01	< 0.005	< 0.01	< 0.05	1.29	< 0.1	< 0.05	< 0.001	< 0.1	0.0016	1.7	< 1	1.7	< 0.2	< 1	2.2
EPA 02	N	7/10/2000	< 0.01	< 0.005	< 0.01	< 0.05	1.27	< 0.1	< 0.05	< 0.001	< 0.1	0.0011	1.5	3.9	5.4	< 0.2	< 1	1.4
EPA 02	N	10/2/2000	< 0.01	< 0.005	< 0.01	< 0.05	1.07	< 0.1	< 0.05	< 0.001	< 0.1	0.0011	1.8	< 1	1.8	< 0.2	< 1	2.6
EPA 02	Dup	10/9/2000	< 0.01	< 0.005	< 0.01	< 0.05	1.07	< 0.1	< 0.05	< 0.001	< 0.1	0.012	1.4	3.3	4.7	< 0.2	< 1	1.5
EPA 02	N	1/15/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.21	< 0.1	< 0.05	< 0.001	< 0.1	0.0015	1.2	2.8	4	< 0.2	< 1	1.2
EPA 02	Dup	1/15/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.15	< 0.1	< 0.05	< 0.001	< 0.1	0.0013	1.4	4.6	6	< 0.2	< 1	1.1
EPA 02	N	4/2/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.14	< 0.1	< 0.05	< 0.001	< 0.1	0.0005	1.4	< 1	1.4	< 0.2	< 1	2.1
EPA 02	Dup	4/2/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.24	< 0.1	< 0.05	< 0.001	< 0.1	0.0006	1.4	< 1	1.4	< 0.2	< 1	1.4
EPA 02	N	7/16/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.2	< 0.1	< 0.05	< 0.001	< 0.1	0.0004	1.4	4.3	5.7	< 0.2	< 1	1.6
EPA 02	Dup	7/16/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.18	< 0.1	< 0.05	< 0.001	< 0.1	0.0006	0.8	6.4	7.2	< 0.2	< 1	< 1
EPA 02	N	10/9/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.08	< 0.1	< 0.05	< 0.001	< 0.1	0.0005	1.3	2.6	3.9	< 0.2	< 1	< 1
EPA 02	Dup	10/9/2001	< 0.01	< 0.005	< 0.01	< 0.05	1.08	< 0.1	< 0.05	< 0.001	< 0.1	0.0004	1.2	< 1	1.2	< 0.2	< 1	< 1
EPA 02	N	1/14/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.34	< 0.1	< 0.05	< 0.001	< 0.1	0.001	1.3	3.3	4.6	< 0.2	< 1	1.3
EPA 02	Dup	1/14/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.35	< 0.1	< 0.05	< 0.001	< 0.1	0.0008	1.8	12	13.8	< 0.2	< 1	1.9
EPA 02	N	4/9/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.28	< 0.1	< 0.05	< 0.001	< 0.1	0.0008	1.1	1.7	2.8	< 0.2	< 1	1.8
EPA 02	Dup	4/9/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.28	< 0.1	< 0.05	< 0.001	< 0.1	0.001	1.5	< 1	1.5	< 0.2	< 1	1.4
EPA 02	N	7/16/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.28	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	1.7	< 1	1.7	< 0.2	< 1	1.7
EPA 02	Dup	7/16/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.26	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.9	< 1	0.9	< 0.2	< 1	1.8
EPA 02	N	10/15/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.12	< 0.1	< 0.05	< 0.001	< 0.1	0.0009	1.7	3	4.7	< 0.2	< 1	< 1
EPA 02	Dup	10/15/2002	< 0.01	< 0.005	< 0.01	< 0.05	1.29	< 0.1	< 0.05	< 0.001	< 0.1	0.0009	1.5	< 1	1.5	< 0.2	< 1	< 1
EPA 02	N	1/14/2003	< 0.01	< 0.005	< 0.01	< 0.05	1.23	< 0.1	< 0.05	< 0.001	< 0.1	0.0014	3	< 1	3	< 0.2	< 1	2.2
EPA 02	Dup	1/14/2003	< 0.01	< 0.005	< 0.01	< 0.05	1.23	< 0.1	< 0.05	< 0.001	< 0.1	0.0013	1.9	< 1	1.9	< 0.2	< 1	3
EPA 02	N	4/15/2003	< 0.01	< 0.005	< 0.01	< 0.05	1.28	< 0.1	< 0.05	< 0.001	< 0.1	0.001	1.8	10.1	11.9	< 0.2	< 1	2.1
EPA 02	Dup	4/15/2003	< 0.01	< 0.005	< 0.01	< 0.05	1.25	< 0.1	< 0.05	< 0.001	< 0.1	0.001	1.3	10.4	11.7	< 0.2	< 1	2.3
EPA 02	N	7/14/2003	< 0.01	< 0.005	< 0.01	< 0.05	1.26	< 0.1	< 0.05	< 0.001	< 0.1	0.0004	1.6	8.7	10.3	< 0.2	< 1	< 1.0
EPA 02	Dup	7/14/2003	< 0.01	< 0.005	< 0.01	< 0.05	1.32	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	1.3	9.9	11.2	< 0.2	< 1	< 1.0
EPA 02	N	10/14/2003	< 0.01	< 0.005	< 0.01	< 0.05	1.3	< 0.1	< 0.05	< 0.001	< 0.1	0.0013	0.8	8.7	9.5	< 0.2	< 1	1.4
EPA 02	Dup	10/14/2003	< 0.01	< 0.005	< 0.01	< 0.05	1.32	< 0.1	< 0.05	< 0.001	< 0.1	0.0015	1	9.7	10.7	< 0.2	< 1	1.5
EPA 02	N	1/13/2004	< 0.01	< 0.005	< 0.01	< 0.05	1.32	< 0.1	< 0.05	< 0.001	< 0.1	0.0012 D	1.5	< 1.0	1.5	< 0.2	< 1.0	1.4
EPA 02	Dup	1/13/2004	< 0.01	< 0.005	< 0.01	< 0.05	1.3	< 0.1	< 0.05	< 0.001	< 0.1	0.0015 D	1.2	2.1	3.3	< 0.2	< 1.0	1.4
EPA 02	N	4/13/2004	< 0.01	< 0.005	< 0.01	< 0.05	1.29	< 0.1	< 0.05	< 0.001	< 0.1	0.0014	1.1	< 1	1.1	< 0.2	< 1	2
EPA 02	Dup	4/13/2004	< 0.01	< 0.005	< 0.01	< 0.05	1.31	< 0.1	< 0.05	< 0.001	< 0.1	0.0013	1.3	3.7	5	< 0.2	< 1	2.4
EPA 02	N	7/20/2004	< 0.01	< 0.005	< 0.01	< 0.05	1.28	< 0.1	< 0.05	< 0.001	< 0.1	0.001	1.5	3.1	4.6	< 0.2	< 1.0	2.3

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01
EPA 02	Dup	7/20/2004	no data	no data	6.62	2700	373 D	164 D	201	5.8	331	1550 D	21	0.55	< 0.10	< 1.0	< 0.1	< 0.001
EPA 02	N	10/13/2004	6,848.79	6.93	7.10	2810	367 D	176 D	180	6.5	378	1600 D	23	0.55	< 0.10	< 1.0	< 0.1	< 0.001
EPA 02	Dup	10/13/2004	no data	no data	7.07	2870	386 D	187 D	196	6.6	328	1700 D	24	0.58	< 0.10	< 1.0	< 0.1	< 0.001
EPA 02	N	1/11/2005	6,848.91	7.42	7.11	2850	390 D	180 D	201 D	6.6	356	1630	23	0.51	< 0.1	< 1.0	< 0.1	< 0.001
EPA 02	Dup	1/11/2005	no data	no data	7.05	2910	397 D	187 D	202	6.8	325	1670	23	0.57	< 0.1	< 1.0	< 0.1	< 0.001
EPA 02	N	4/12/2005	6,848.66	6.78	7.08	2750	403	185	206	6.8	348	1740	22	0.49	< 0.1	< 1.0	< 0.1	< 0.001
EPA 02	Dup	4/12/2005	no data	no data	7.11	2750	406	185	203	6.9	322	1760	23	0.5	< 0.1	< 1.0	< 0.1	< 0.001
EPA 02	N	7/19/2005	6,847.89	6.49	7.28	2590	350 D	160 D	195	5.9	389	1420	20	0.4	< 0.1	< 1.0	< 0.1	< 0.001
EPA 02	Dup	7/19/2005	no data	no data	7.15	2630	346 D	159 D	196	5.8	335	1450 D	17	0.46	< 0.1	< 1.0	< 0.1	< 0.001
EPA 02	N	10/11/2005	6,848.28	6.79	7.26	2640	352 D	163 D	199	6.4	284	1560 D	23	0.47	< 0.1	< 1.0	< 0.1	< 0.001
EPA 02	Dup	10/11/2005	no data	no data	7.19	2690	351 D	163 D	197	6.5	357	1570 D	24	0.52	< 0.1	< 1.0	< 0.1	< 0.001
EPA 02	N	1/17/2006	6,848.01	6.93	7.56	2540	345 D	161 D	185	6.2	336	1480 D	21	0.49	< 0.1	< 1.0	< 0.1	< 0.001
EPA 02	Dup	1/17/2006	no data	no data	7.72	2560	339 D	158 D	182	6.2	531	1390	20	0.61	< 0.1	< 1.0	< 0.1	< 0.001
EPA 02	N	4/11/2006	6,848.22	6.86	7.32	2560	364 D	168 D	191	5.9	383	1470	21	0.47	< 0.1	< 1.0	< 0.1	< 0.001
EPA 02	Dup	4/11/2006	no data	no data	7.44	2600	369 D	172 D	193	6	354	1520	21	0.61	< 0.1	< 1.0	< 0.1	< 0.001
EPA 02	N	7/25/2006	6,848.04	6.70	7.24	2540	346 D	154 D	204	6.2	321	1550	21	0.68	< 0.1	< 1.0	< 0.1	< 0.001
EPA 02	Dup	7/25/2006	no data	no data	7.08	2480	356 D	159 D	206	6.5	319	1580	21	0.51	< 0.1	< 1.0	< 0.1	< 0.001
EPA 02	N	10/10/2006	6,847.90	6.69	7.26	2490	352 D	158 D	195	6.3	335	1490	20	0.49	< 0.1	< 0.5	< 0.1	< 0.001
EPA 02	Dup	10/10/2006	no data	no data	7.03	2440	355 D	160 D	195	6.2	337	1500	20	0.54	< 0.1	< 0.5	< 0.1	< 0.001
EPA 02	N	1/16/2007	6,847.64	6.74	7.32	2580	352 D	161 D	186	6.5	310	1520	22	0.29	< 0.1	< 0.5	< 0.1	< 0.001
EPA 02	Dup	1/16/2007	6,847.17	6.74	7.24	2570	359 D	164 D	184	6.3	307	1480	21	0.39	< 0.1	< 0.5	< 0.1	< 0.001
EPA 02	N	4/16/2007	6,847.81	6.96	7.25	2590	343 D	157 D	182	6.4	342	1420	22	0.41	< 0.1	< 0.5	< 0.1	0.002
EPA 02	Dup	4/16/2007	6,847.13	6.82	7.04	2600	349 D	160 D	177	6.2	351	1380	22	0.45	< 0.1	< 0.5	< 0.1	< 0.001
EPA 02	N	7/16/2007	6,847.44	6.61	7.10	2540	352	159	186	5.9	340	1440	20	0.35	< 0.1	< 0.5	< 0.1	0.001
EPA 02	Dup	7/16/2007	6,847.04	6.67	6.83	2510	355 D	164 D	192	6	334	1510	20	0.42	< 0.1	< 0.5	< 0.1	0.002
EPA 02	N	10/8/2007	6,847.26	6.85	7.39	2600	344 D	159 D	185	6.1	287	1490 D	20	0.33	< 0.1	0.91	< 0.1	< 0.001
EPA 02	Dup	10/8/2007	6,846.84	6.78	7.15	2670	350 D	162 D	188	6.2	348	1470	20	0.32	< 0.1	< 0.5	< 0.1	< 0.001
EPA 02	N	1/21/2008	6,847.49	6.78	6.99	2580	333 D	145	192	6.9	291	1480 D	31 D	0.37	< 0.1	< 0.5	< 0.1	< 0.001
EPA 02	Dup	1/21/2008	6,846.94	6.76	6.88	2520	327 D	146	187	6.9	346	1490 D	26 D	0.35	< 0.1	< 0.5	< 0.1	< 0.001
EPA 02	N	4/14/2008	6,847.09	6.53	7.16	2520	369	153	198 D	6.1	335	1550 D	18	0.36	< 0.1	< 0.5	< 0.1	0.002
EPA 02	Dup	4/14/2008	6,846.34	6.48	6.94	2550	358	157	199 D	6.1	329	1590 D	18	0.34	< 0.1	< 0.5	< 0.1	0.001
EPA 02	N	7/14/2008	6,846.99	6.89	6.92	2550	352	157	192 D	6	305	1750 D	18	0.29	< 0.1	< 0.5	< 0.1	< 0.003
EPA 02	Dup	7/14/2008	6,846.39	6.84	6.89	2610	356	160	196 D	6	333	1730 D	19	0.33	< 0.1	< 0.5	< 0.1	< 0.003
EPA 02	N	10/13/2008	6,846.89	6.83	6.84	2780 H	364	165	195 D	6	279	1790 D	18	0.3	< 0.1	< 0.5	< 0.1	0.001
EPA 02	Dup	10/13/2008	6,846.19	6.69	6.87	2710 H	354	161	194 D	6	320	1720 D	18	0.3	< 0.1	< 0.5	< 0.1	< 0.001
EPA 02	N	1/13/2009	6,846.79	6.75	6.98	2750	378	173	212	6	286	1750 D	17	0.28	< 0.1	< 0.5	< 0.1	< 0.001



**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA Standard			0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA 02	Dup	7/20/2004	< 0.01	< 0.005	< 0.01	< 0.05	1.27	< 0.1	< 0.05	< 0.001	< 0.1	0.0009	1.3	5.1	6.4	< 0.2	< 1.0	2.2
EPA 02	N	10/13/2004	< 0.01	< 0.005	< 0.01	< 0.05	1.25	< 0.1	< 0.05	< 0.001	< 0.1	0.001	1	2.3	3.3	< 0.2	< 1.0	2.6
EPA 02	Dup	10/13/2004	< 0.01	< 0.005	< 0.01	< 0.05	1.36	< 0.1	< 0.5 D	< 0.001	< 0.1	0.001	1.5	1.1	2.6	< 0.2	< 1.0	2.6
EPA 02	N	1/11/2005	< 0.01	< 0.005	< 0.01	< 0.05	1.45	< 0.1	< 0.05	< 0.001	< 0.1	0.0018	0.8	2.2	3	< 0.2	< 1.0	2.7
EPA 02	Dup	1/11/2005	< 0.01	< 0.005	< 0.01	< 0.05	1.53	< 0.1	< 0.05	< 0.001	< 0.1	0.0019	0.5	4.1	4.6	< 0.2	< 1.0	3.4
EPA 02	N	4/12/2005	< 0.01	< 0.005	< 0.01	< 0.05	1.52	< 0.1	< 0.05	< 0.001	< 0.1	0.0012	0.7	1.4	2.1	< 0.2	< 1.0	1.5
EPA 02	Dup	4/12/2005	< 0.01	< 0.005	< 0.01	< 0.05	1.53	< 0.1	< 0.05	< 0.001	< 0.1	0.0012	0.7	3.2	3.9	< 0.2	< 1.0	2.5
EPA 02	N	7/19/2005	< 0.01	< 0.005	< 0.01	< 0.05	1.25	< 0.1	< 0.05	< 0.001	< 0.1	0.0011	1.1	1.8	2.9	< 0.2	< 1.0	< 1.0
EPA 02	Dup	7/19/2005	< 0.01	< 0.005	< 0.01	< 0.05	1.24	< 0.1	< 0.05	< 0.001	< 0.1	0.001	0.9	2	2.9	< 0.2	< 1.0	1.2
EPA 02	N	10/11/2005	< 0.01	< 0.005	< 0.01	< 0.05	1.28	< 0.1	< 0.05	< 0.001	< 0.1	0.0011	1.6	3.7	5.3	< 0.2	< 1.0	1.1
EPA 02	Dup	10/11/2005	< 0.01	< 0.005	< 0.01	< 0.05	1.31	< 0.1	< 0.05	< 0.001	< 0.1	0.001	1.6	2.9	4.5	< 0.2	< 1.0	2.2
EPA 02	N	1/17/2006	< 0.01	< 0.005	< 0.01	< 0.05	1.29	< 0.1	< 0.05	< 0.001	< 0.1	0.0013	1.4	2	3.4	< 0.2	< 1.0	1.9
EPA 02	Dup	1/17/2006	< 0.01	< 0.005	< 0.01	< 0.05	1.3	< 0.1	< 0.05	< 0.001	< 0.1	0.0014	1.2	1.8	3	< 0.2	< 1.0	3.1
EPA 02	N	4/11/2006	< 0.01	< 0.005	< 0.01	< 0.05	1.1	< 0.1	< 0.05	< 0.001	< 0.1	0.0017	1	4.3	5.3	< 0.2	< 1.0	1.4
EPA 02	Dup	4/11/2006	< 0.01	< 0.005	< 0.01	< 0.05	1.19	< 0.1	< 0.05	< 0.001	< 0.1	0.0013	1.1	6.2	7.3	< 0.2	< 1.0	< 1.0
EPA 02	N	7/25/2006	< 0.01	< 0.005	< 0.01	< 0.05	1.24	< 0.1	< 0.05	< 0.001	< 0.1	0.0011	1.3	6.6	7.9	< 0.2	< 1.0	1.2
EPA 02	Dup	7/25/2006	< 0.01	< 0.005	< 0.01	< 0.05	1.46	< 0.1	< 0.05	< 0.001	< 0.1	0.001	0.8	4.8	5.6	< 0.2	< 1.0	1.2
EPA 02	N	10/10/2006	< 0.01	< 0.005	< 0.01	< 0.05	1.23	< 0.1	< 0.05	< 0.001	< 0.1	0.0011	1.4	1.2	2.6	< 0.2	< 1	1.7
EPA 02	Dup	10/10/2006	< 0.01	< 0.005	< 0.01	< 0.05	1.24	< 0.1	< 0.05	< 0.001	< 0.1	0.0011	1.7	1.5	3.2	< 0.2	< 1	2.5
EPA 02	N	1/16/2007	< 0.01	< 0.005	< 0.01	< 0.05	1.18	< 0.1	< 0.05	< 0.001	< 0.1	0.0012	1.4	2.9	4.3	< 0.2	< 1	1.8
EPA 02	Dup	1/16/2007	< 0.01	< 0.005	< 0.01	< 0.05	1.14	< 0.1	< 0.05	< 0.001	< 0.1	0.0012	1.9	< 1	1.9	< 0.2	< 1	2
EPA 02	N	4/16/2007	< 0.01	< 0.005	< 0.01	< 0.05	1.28	< 0.1	< 0.05	< 0.001	< 0.1	0.0013 D	1.2	2.2	3.4	< 0.2	< 1	1.8
EPA 02	Dup	4/16/2007	< 0.01	< 0.005	< 0.01	< 0.05	1.29	< 0.1	< 0.05	< 0.001	< 0.1	0.0013 D	1.1	2.4	3.5	< 0.2	< 1	1.1
EPA 02	N	7/16/2007	< 0.01	< 0.005	< 0.01	< 0.05	1.14	< 0.1	< 0.05	< 0.001	< 0.1	0.0016	< 0.2	1.4	1.4	< 0.2	< 1	< 1
EPA 02	Dup	7/16/2007	< 0.01	< 0.005	< 0.01	< 0.05	1.28	< 0.1	< 0.05	< 0.001	< 0.1	0.0015	0.7	< 1	0.7	< 0.2	< 1	1.6
EPA 02	N	10/8/2007	< 0.01	< 0.005	< 0.01	< 0.05	1.42	< 0.1	< 0.05	< 0.001	< 0.1	0.0012	1.1	< 1	1.1	< 0.2	< 1	1.7
EPA 02	Dup	10/8/2007	< 0.01	< 0.005	< 0.01	< 0.05	1.39	< 0.1	< 0.05	< 0.001	< 0.1	0.0012	1.4	< 1	1.4	< 0.2	< 1	2.5
EPA 02	N	1/21/2008	< 0.01	< 0.005	< 0.01	< 0.05	1.21	< 0.1	< 0.05	< 0.001	< 0.1	0.0017	1.6	< 1	1.6	< 0.2	< 1	1.6
EPA 02	Dup	1/21/2008	< 0.01	< 0.005	< 0.01	< 0.05	1.23	< 0.1	< 0.05	0.001	< 0.1	0.0018	0.5	< 1	0.5	< 0.2	< 1	2
EPA 02	N	4/14/2008	< 0.01	< 0.005	< 0.01	< 0.05	1.28	< 0.1	< 0.05	< 0.001	< 0.1	0.0013	1.1	2.7	3.8	0.7	-3.1 U	2.4
EPA 02	Dup	4/14/2008	< 0.01	< 0.005	< 0.01	< 0.05	1.26	< 0.1	< 0.05	< 0.001	< 0.1	0.0013	1.3	3	4.3	0.7	-0.1 U	2.6
EPA 02	N	7/14/2008	< 0.01	< 0.005	< 0.01	< 0.05	1.37	< 0.1	< 0.05	< 0.001	< 0.1	0.0016 D	1.5	3.1	4.6	-0.1 U	1.9 U	1.2
EPA 02	Dup	7/14/2008	< 0.01	< 0.005	< 0.01	< 0.05	1.49	< 0.1	< 0.05	< 0.001	< 0.1	0.0017 D	1.4	3.2	4.6	0 U	3.4 U	1.6
EPA 02	N	10/13/2008	< 0.01	< 0.005	< 0.01	< 0.05	1.55	< 0.1	< 0.05	< 0.001	< 0.1	0.0023	0.86	1.7	2.56	0.2	-0.7 U	2.5
EPA 02	Dup	10/13/2008	< 0.01	< 0.005	< 0.01	< 0.05	1.44	< 0.1	< 0.05	< 0.001	< 0.1	0.0019	0.96	2.2	3.16	0.5	0.5 U	2.7
EPA 02	N	1/13/2009	< 0.01	< 0.005	< 0.01	< 0.05	1.4	< 0.1	< 0.05	0.002	< 0.1	0.0017	1.1	2.3	3.4	0.3	-3 U	3.7

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01
EPA 02	Dup	1/13/2009	no data	no data	6.96	2800	377	174	211	6	337	1560 D	14	0.28	<0.1	<0.5	<0.1	<0.001
EPA 02	N	4/13/2009	6,846.84	6.65	6.91	2610	336	153	198	6	309	1700 D	17	0.29	<0.1	<0.50	<0.1	<0.001
EPA 02	Dup	4/13/2009	no data	no data	6.84	2640	321	146	190	6	347	1610 D	16	0.31	<0.1	<0.50	<0.1	<0.001
EPA 02	N	7/13/2009	6,846.64	6.6	7.22 H	2690 H	343	149	197	6	326	1720 D	22	0.39	<0.1	<0.50	<0.1	<0.001
EPA 02	Dup	7/13/2009	no data	no data	7.09 H	2770 H	353	156	199	6	332	1720 D	17	0.46	<0.1	<0.50	<0.1	<0.001
EPA 02	N	10/12/2009	6,846.74	6.77	7.31	2830 H	360	158	192	6	318	1670 D	21	0.42	<0.1	<0.50	<0.1	<0.001
EPA 02	Dup	10/12/2009	no data	no data	7.2	2790	351	164	198	6	331	1620 D	24	0.45	<0.1	<0.50	<0.1	<0.001
EPA 02	N	1/11/2010	6,846.34	6.86	6.96	2600	346	154	204	7	346	1670 D	18	0.42	0.12	<0.50	<0.1	<0.001
EPA 02	Dup	1/11/2010	6,845.64	6.84	6.99	2780	384	173	204	7	345	1860 D	18	0.47	<0.10	<0.50	<0.1	<0.001
EPA 02	N	4/12/2010	6,846.59	6.76	6.95	2870	369	167	205	7	350	1840 D	29	0.42	<0.1	<0.50	<0.1	<0.001
EPA 02	Dup	4/12/2010	6,845.74	6.75	7.1	2850	368	167	209	7	350	1850 D	16	0.5	<0.1	<0.50	<0.1	0.002
EPA 02	N	7/19/2010	6,846.29	6.61	6.91	2830	353	162	204	6	332	1820 D	21 D	0.5	<0.1	<0.50	<0.1	<0.001
EPA 02	Dup	7/19/2010	6,845.39	6.6	7.26	3000	380	181	201	6	332	1880 D	22 D	0.57	<0.1	<0.50	<0.1	<0.001
EPA 02	N	10/11/2010	6,846.49	6.75	7.81	2800	358	155	203	6	320	1790 DH	18 D	0.46	<0.1	<0.50	<0.1	<0.001
EPA 02	Dup	10/11/2010	6,844.54	6.74	7.69	2750	364	162	215	7	348	1780 D	16 D	0.47	<0.1	<0.50	<0.1	<0.001
EPA 02	N	1/10/2011	6,846.14	6.86	7.71	2740	351	156	199	7	326	1740 D	21 D	0.44	<0.1	<0.50	<0.1	<0.001
EPA 02	N	4/11/2011	6,846.17	6.87	7.21	2830	376	166	214	7	322	1770 D	21 D	0.47	<0.1	<0.50	<0.1	0.002
EPA 02	N	7/18/2011	6,845.99	6.88	7.74	2830	370	162	212	7	312	1650 D	20 D	0.5 D	<0.1	<0.50	0.2	<0.001
EPA 02	Dup	7/18/2011	6,845.19	6.79	7.78	2800	366	163	211	6	321	1680 D	20 D	0.5 D	<0.1	<0.50	0.1	<0.001
EPA 02	Dup	10/10/2011	6,846.11	6.8	7.51	2840	384	169	206	7	285	1790 D	21 D	0.4 D	<0.1	<0.50	<0.1	<0.001
EPA 02	N	10/10/2011	6,845.29	6.77	7.75	2820	386	171	210	7	295	1780 D	21 D	0.4 D	<0.1	<0.50	<0.1	<0.001
EPA 02	N	1/9/2012	6,845.89	6.89	6.77 H	2850	345	143	184	6	286	1720 D	21 D	0.35	<0.1	<0.50	<0.1	<0.001
EPA 02	Dup	1/9/2012	6,845.14	6.91	6.32 H	2710	351	147	187	6	310	1610 D	19 D	0.36	<0.1	<0.50	<0.1	<0.001
EPA 02	N	4/9/2012	6,845.79	6.8	6.88 H	2960	349	162	201	6	305	1790 D	22 D	0.43	<0.1	<0.50	<0.1	<0.01
EPA 02	Dup	4/9/2012	6,844.99	6.79	6.76 H	2820	340	156	195	6	328	1720 D	20 D	0.46	<0.1	<0.50	<0.1	<0.01
EPA 02	N	7/16/2012	6,845.69	6.68	7.10 H	2920	337	155	207	6	299	1790 D	21 D	0.42	<0.1	<0.50	<0.1	<0.001
EPA 02	Dup	7/16/2012	6,844.89	6.73	6.76 H	2890	388	178	175	5	323	1730 D	21 D	0.46	<0.1	<0.50	<0.1	<0.001
EPA 02	N	10/15/2012	6,845.59	6.93	7.04 H	2990	382	161	215	7	306	1800 D	22 D	0.44	<0.1	<0.50	<0.1	<0.001
EPA 02	Dup	10/15/2012	6,844.81	6.93	6.75 H	2820	391	169	216	7	338	1700 D	21 D	0.42	<0.1	<0.50	<0.1	<0.001
EPA 02	N	1/15/2013	no data	6.81	6.78 H	2910	401	176	216	7	337	1710 D	19 D	0.48	<0.1	<0.50	<0.1	<0.001
EPA 02	Dup	1/15/2013	no data	no data	6.75 H	2880	411	183	221	7	331	1750 D	20 D	0.47	<0.1	<0.50	<0.1	<0.001
EPA 02	N	4/8/2013	6,846.09	6.87	6.87 H	2930	367	166	193	7	316	1850 D	20 D	0.43	<0.1	<0.50	<0.1	<0.001
EPA 02	Dup	4/8/2013	no data	no data	6.78 H	2910	386	178	208	7	343	1810 D	20 D	0.48	<0.1	<0.50	<0.1	<0.001
EPA 02	N	7/15/2013	6,845.38	6.75	7.11 H	3000	386	176	204	6	302	1780 D	25 D	0.36	<0.1	<0.50	<0.1	<0.001
EPA 02	Dup	7/15/2013	no data	no data	6.84 H	2990	388	179	205	7	317	1830 D	26 D	0.42	<0.1	<0.50	<0.1	<0.001
EPA 02	N	10/7/2013	6,845.26	6.91	6.91 H	2970	377	171	208	7	312	1860 D	23 D	0.38	<0.1	<0.50	<0.1	<0.001

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	
NRC Standard			0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA Standard			0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA 02	Dup	1/13/2009	<0.01	<0.005	<0.01	<0.05	1.51	<0.1	<0.05	<0.001	<0.1	0.0015	1.2	3.3	4.5	-0.1 U	-2 U	3.4
EPA 02	N	4/13/2009	<0.01	<0.005	<0.01	<0.05	1.21	<0.1	<0.05	<0.001	<0.1	0.0019	1.1	2.2	3.3	-0.1 U	0.2 U	1
EPA 02	Dup	4/13/2009	<0.04	<0.005	<0.01	<0.05	1.26	<0.1	<0.05	<0.001	<0.1	0.0018	1.4	3	4.4	-0.03 U	1.2 U	1
EPA 02	N	7/13/2009	<0.01	<0.005	<0.01	<0.05	1.34	<0.1	<0.05	<0.001	<0.1	0.0013	1.3	3	4.3	-0.01 U	1.1 U	2.8
EPA 02	Dup	7/13/2009	<0.01	<0.005	<0.01	<0.05	1.34	<0.1	<0.05	<0.001	<0.1	0.0012	1.4	2.8	4.2	0.02 U	-0.4 U	3
EPA 02	N	10/12/2009	<0.01	<0.005	<0.01	<0.05	1.44	<0.1	<0.05	<0.001	<0.1	0.0019	1.1	3.1	4.2	-0.02 U	1.1 U	2
EPA 02	Dup	10/12/2009	<0.01	<0.005	<0.01	<0.05	1.49	<0.1	<0.05	<0.001	<0.1	0.0016	1.1	3	4.1	0.06 U	1.1 U	2
EPA 02	N	1/11/2010	<0.01	<0.005	<0.01	<0.05	1.3	<0.1	<0.05	<0.001	<0.1	0.0012	0.87	3.1	3.97	0.02 U	1.9 U	1.7
EPA 02	Dup	1/11/2010	<0.01	<0.005	<0.01	<0.05	1.47	<0.1	<0.05	<0.001	<0.1	0.0012	1.2	3.4	4.6	-0.01 U	0.8 U	1.6
EPA 02	N	4/12/2010	<0.01	<0.005	<0.01	<0.05	1.89	<0.1	<0.05	<0.001	<0.1	0.0012	1.4	2.9	4.3	0.04 U	0.4 U	1.6
EPA 02	Dup	4/12/2010	<0.01	<0.005	<0.01	<0.05	1.5	<0.1	<0.05	<0.001	<0.1	0.0014	1.3	4.7	6	0.03 U	-1 U	1.7
EPA 02	N	7/19/2010	<0.01	<0.005	<0.01	<0.05	1.34	<0.1	<0.05	<0.001	<0.1	0.0011	1.5	2.3	3.8	0.07 U	-0.5 U	3.4
EPA 02	Dup	7/19/2010	<0.01	<0.005	<0.01	<0.05	1.58	<0.1	<0.05	<0.001	<0.1	<0.0003	1.2	3	4.2	0.1 U	0.8 U	2.5
EPA 02	N	10/11/2010	<0.01	<0.005	<0.01	<0.05	0.9	<0.1	<0.05	<0.001	<0.1	0.0013	1.4	2.3	3.7	-0.02 U	0.7 U	1.3
EPA 02	Dup	10/11/2010	<0.01	<0.005	<0.01	<0.05	1.3	<0.1	<0.05	<0.001	<0.1	0.0015	1.6	3.2	4.8	0.03 U	-0.2 U	1.3
EPA 02	N	1/10/2011	<0.01	<0.005	<0.01	<0.05	1.56	<0.1	<0.05	<0.001	<0.1	0.0017	1.2	2.8	4	0.004 U	1.0 U	3.7
EPA 02	N	4/11/2011	<0.01	<0.005	<0.01	<0.05	1.67	<0.1	<0.05	0.002	<0.1	0.0016	1.2	2.3	3.5	0.02 U	0.7 U	1.3
EPA 02	N	7/18/2011	<0.01	<0.005	<0.01	<0.05	1.4	<0.1	<0.05	<0.001	<0.1	0.0018	1.1	3	4.1	0.04 U	-0.5 U	1.5
EPA 02	Dup	7/18/2011	<0.01	<0.005	<0.01	<0.05	1.54	<0.1	<0.05	<0.001	<0.1	0.0012	0.84	3.7	4.54	0.009 U	-0.4 U	1.7
EPA 02	Dup	10/10/2011	<0.01	<0.005	<0.01	<0.05	0.9	<0.1	<0.05	<0.001	<0.1	0.0014	1.2	2.4	3.6	0.0007 U	0.9 U	2.4
EPA 02	N	10/10/2011	<0.01	<0.005	<0.01	<0.05	1.53	<0.1	<0.05	<0.001	<0.1	0.0023	1.5	2.6	4.1	0.06 U	0.7 U	4.7
EPA 02	N	1/9/2012	<0.01	<0.005	<0.01	<0.05	1.18	<0.1	<0.05	<0.001	<0.1	0.002	1.4	1.3 U	4	0.04 U	0.4 U	1.1
EPA 02	Dup	1/9/2012	<0.01	<0.005	<0.01	<0.05	1.2	<0.1	<0.05	<0.001	<0.1	0.0023	1.1	0.82 U	2.74	0.005 U	0.4 U	0.9
EPA 02	N	4/9/2012	<0.01	<0.005	<0.01	<0.05	1.9	<0.1	<0.05	<0.001	<0.1	0.0025	1.1	2.7	6.5	0.008 U	0.3 U	1.3
EPA 02	Dup	4/9/2012	<0.01	<0.005	<0.01	<0.05	1.45	<0.1	<0.05	<0.001	<0.1	0.002	1.1	3.9	8.9	0.01 U	0.4 U	1.5
EPA 02	N	7/16/2012	<0.001	<0.005	<0.01	<0.001	1.39	<0.1	<0.05	<0.001	<0.1	0.0017	1.3	2.2	5.7	0.04 U	0.8 U	1.6
EPA 02	Dup	7/16/2012	<0.001	<0.005	<0.01	<0.001	1.43	<0.1	<0.05	<0.001	<0.1	0.0014	1.6	2.4	6.4	0.02 U	0.5 U	1.4
EPA 02	N	10/15/2012	<0.001	<0.005	<0.01	<0.001	1.24	<0.1	<0.05	<0.001	<0.1	0.002	0.91	2.4	3.31	0.05 U	0.2 U	1.8
EPA 02	Dup	10/15/2012	<0.001	<0.005	<0.01	<0.001	1.39	<0.1	<0.05	<0.001	<0.1	0.0022	1.1	3	4.1	0.4	0.6 U	2.8
EPA 02	N	1/15/2013	<0.001	<0.005	<0.01	0.002	1.62	<0.1	<0.05	<0.001	<0.1	0.0019	1.6	3.8	5.4	0.008 U	0.4 U	1.1
EPA 02	Dup	1/15/2013	<0.001	<0.005	<0.01	0.002	1.54	<0.1	<0.05	<0.001	<0.1	0.0019	1.7	3.5	5.2	0.03 U	0.6 U	1
EPA 02	N	4/8/2013	<0.001	<0.005	<0.01	<0.001	1.51	<0.1	<0.05	<0.001	<0.1	0.0017	0.99	1.8	2.79	0.02 U	-0.4 U	2.9
EPA 02	Dup	4/8/2013	<0.001	<0.005	<0.01	<0.001	1.55	<0.1	<0.05	<0.001	<0.1	0.0015	1.5	2.8	4.3	0.06	0.5 U	3.2
EPA 02	N	7/15/2013	<0.001	<0.005	<0.01	<0.001	1.59	<0.1	<0.05	<0.001	<0.1	0.0015	1.4	4	5.4	0.09 U	1.0 U	1.5
EPA 02	Dup	7/15/2013	<0.001	<0.005	<0.01	0.003	1.55	<0.1	<0.05	<0.001	<0.1	0.0015	1.4	3.8	5.2	0.08 U	1.1 U	1.5
EPA 02	N	10/7/2013	<0.001	<0.005	<0.01	0.002	1.51	<0.1	<0.05	<0.001	<0.1	0.0016	1.6	2.5	4.1	0.03 U	0.4 U	1.6

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Cl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
		EPA Standard	NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01
EPA 02	Dup	10/7/2013	no data	6.86	6.79 H	2950	381	176	210	7	343	1800 D	22 D	0.41	<0.1	<0.50	<0.1	<0.001
EPA 02	N	1/13/2014	6,845.15	7.03	6.92	2980	386	172	206	7	319	1860	22	0.42	<0.1	<0.50	<0.1	<0.001
EPA 02	Dup	1/13/2014	no data	no data	6.78	2950	396	182	211	7	319	1780	23	0.42	<0.1	<0.50	<0.1	<0.001
EPA 02	N	4/2/2014	6,845.53	7.08	6.77 H	2990	392	175	219 D	7	323	1790 D	23	0.18	<0.1	<0.50	<0.1	<0.001
EPA 02	Dup	4/2/2014	no data	7.02	6.73 H	3010	396	179	216 D	7	329	1820 D	23	0.42	<0.1	<0.50	<0.1	<0.001
EPA 02	N	7/9/2014	6,844.95	6.86	6.88 H	2990	370	176	214 D	7	304	1860 D	22	<0.05	<0.1	<0.50	<0.1	<0.001
EPA 02	Dup	7/9/2014	no data	6.83	6.71 H	2930	389	183	224 D	7	319	1820 D	21	0.42	<0.1	<0.50	<0.1	<0.001
EPA 02	N	10/8/2014	6,845.01	6.98	7.02 H	3070	394	180	221	7	298	1820 D	21	<0.05	<0.1	<0.50	<0.1	<0.001
EPA 02	Dup	10/8/2014	no data	6.92	6.75 H	3040	397	183	210	7	314	1830 D	21	0.46	<0.1	<0.50	<0.1	<0.001
EPA 02	N	1/7/2015	6844.80	7.05	6.87 H	3080	399	188	206	7	293	1950 D	27	<0.05	<0.1	<0.50	<0.1	<0.001
EPA 02	DUP	1/7/2015	no data	7.01	6.74 H	3060	397	184	202	7	318	1920 D	27	0.42	<0.1	<0.50	<0.1	<0.001
EPA 02	N	4/8/2015	6845.08	6.84	7.06 H	3100	395	180	207	7	292	1860 D	23	0.34	<0.1	<0.5	<0.1	<0.001
EPA 02	DUP	4/8/2015	no data	6.87	6.74 H	3100	403	185	212	7	317	1850 D	23	0.44	<0.1	<0.5	<0.1	<0.001
EPA 02	N	7/8/2015	6844.75	6.85	7.03 H	3040	374	175	194	7	320	1860 D	23	<0.05	<0.1	<0.50	<0.1	<0.001
EPA 02	DUP	7/8/2015	no data	6.71	6.76 H	3110	387	175	192	8	311	1930 D	24	0.47	<0.1	<0.50	<0.1	<0.001
EPA 02	N	10/7/2015	6844.63	6.98	7.01 H	3090	397	188	204	7	276	2020 D	25	0.34	<0.1	<0.50	<0.1	<0.001
EPA 02	DUP	10/7/2015	no data	6.89	6.69 H	3130	407	193	208	7	289	1970 D	24	0.44	<0.1	<0.50	<0.1	<0.001
EPA 02	N	1/6/2016	6845.02	7.02	6.89 H	3110	417	203	214	7	324	2010 D	24	0.39	<0.1	<0.50	<0.1	<0.001
EPA 02	DUP	1/6/2016	no data	7.00	6.77 H	3010	393	188	204	7	317	1940 D	24	0.44	<0.1	<0.50	<0.1	<0.001
EPA 02	N	4/6/2016	6844.30	6.89	6.92 H	3030	409	191	204	7	298	1880 D	22	0.18	<0.1	<0.50	<0.1	<0.001
EPA 02	DUP	4/6/2016	no data	6.83	6.82 H	2990	396	183	209	7	305	1860 D	22	0.38	<0.1	<0.50	<0.1	<0.001
EPA 02	N	7/13/2016	6844.31	6.86	7.00 H	3070	386	176	202	7	292	2010 D	25	0.13	<0.1	<0.50	<0.1	<0.001
EPA 02	Dup	7/13/2016	no data	6.85	6.72 H	2970	387	176	201	7	313	1890 D	24	0.26	<0.1	<0.50	<0.1	<0.001
EPA 02	N	10/5/2016	6844.46	6.93	7.13 H	3050	407	193	207	7	285	1910 D	21 H	0.13	0.2	<0.50	<0.1	<0.001
EPA 02	DUP	10/5/2016	no data	6.94	6.78 H	3020	399	186	201	7	303	1830 D	22	0.31	<0.1	<0.50	<0.1	<0.001
EPA 04	N	7/26/1989	6,868.80	6.90	5.97	4433	559	373	242	9.1	183	3039	37.1	0.91	0.03	< 1	< 0.1	< 0.001
EPA 04	N	10/5/1989	6,869.10	6.50	6.90	4760	560	371	244	12.3	182	3043	38.9	0.98	0.1	< 1	< 0.1	< 0.001
EPA 04	N	1/16/1990	6,869.40	6.50	6.76	4554	491	343	229	8.95	217	2919	37.5	0.99	0.1	< 1	< 0.1	< 0.001
EPA 04	N	4/17/1990	6,869.30	6.50	6.90	4604	500	347	223	7.7	194	2851	38.4	1.02	0.15	< 1	< 0.1	< 0.001
EPA 04	N	7/17/1990	6,869.10	6.40	6.70	4642	526	367	226	9.2	201	2855	36.4	0.7	0.06	< 1	< 0.1	< 0.001
EPA 04	N	10/16/1990	6,869.10	6.40	7.15	4645	515	368	232	9.2	193	2987	42.7	0.82	0.11	< 1	< 0.1	< 0.001
EPA 04	N	1/8/1991	6,869.00	6.50	6.65	4644	494	337	225	17	185	3039	40.1	0.99	0.04	< 1	< 0.1	< 0.001
EPA 04	N	4/17/1991	6,869.50	6.50	7.22	4759	525	392	238	8.9	161	3260	40.2	0.97	< 0.01	< 1	0.11	< 0.001
EPA 04	N	7/3/1991	6,869.60	6.60	6.80	4686	504	352	210	7.7	184	3345	37.8	1.04	0.05	< 1	0.3	< 0.001
EPA 04	N	10/22/1991	6,870.20	6.50	6.56	4651	502	350	221	8.2	188	2948	44.2	1.16	0.04	< 1	< 0.1	< 0.001
EPA 04	N	1/23/1992	6,870.50	6.40	6.52	4263	490	344	211	8	184	2997	42.4	1.14	< 0.01	< 1	0.14	< 0.001

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	
NRC Standard			0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA Standard			0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA 02	Dup	10/7/2013	<0.001	<0.005	<0.01	<0.001	1.55	<0.1	<0.05	<0.001	<0.1	0.0022	1.9	3.6	5.5	0.07 U	-0.02 U	1.4
EPA 02	N	1/13/2014	<0.001	<0.005	<0.01	<0.001	1.53	<0.1	<0.05	<0.001	<0.1	0.0021	1	1.9	2.9	0.07 U	0.3 U	1.2
EPA 02	Dup	1/13/2014	<0.001	<0.005	<0.01	<0.001	1.6	<0.1	<0.05	<0.001	<0.1	0.002	1.2	2.2	3.4	0.1 U	0.3 U	1
EPA 02	N	4/2/2014	<0.001	<0.005	<0.01	<0.001	1.62	<0.1	<0.05	<0.001	<0.1	0.0016	1.3	3.2	4.5	0.04 U	0.2 U	2.7
EPA 02	Dup	4/2/2014	<0.001	<0.005	<0.01	<0.001	1.54	<0.1	<0.05	<0.001	<0.1	0.0016	1.1	3.7	4.8	0.04 U	0.4 U	2.4
EPA 02	N	7/9/2014	<0.001	<0.005	<0.01	<0.001	1.37	<0.1	<0.05	<0.001	<0.1	0.0014	1.1	2.5	3.6	0.02 U	0.1 U	1.8
EPA 02	Dup	7/9/2014	<0.001	<0.005	<0.01	<0.001	1.53	<0.1	<0.05	<0.001	<0.1	0.0011	0.98	2.4	3.38	0.02 U	0.4 U	1.8
EPA 02	N	10/8/2014	<0.001	<0.005	<0.01	<0.001	1.55	<0.1	<0.05	<0.001	<0.1	0.0022	1.4	3.5	4.9	0.008 U	0.1 U	1.7
EPA 02	Dup	10/8/2014	<0.001	<0.005	<0.01	0.002	1.68	<0.1	<0.05	<0.001	<0.1	0.0015	1.8	2.8	4.6	-0.02 U	0.07 U	1.9
EPA 02	N	1/7/2015	<0.001	<0.005	<0.01	<0.001	1.54	<0.1	<0.05	<0.001	<0.1	0.0014	1.4	3.2	4.6	0.3	0.4 U	1.7
EPA 02	DUP	1/7/2015	<0.001	<0.005	<0.01	<0.001	1.65	<0.1	<0.05	<0.001	<0.1	0.002	1.4	3.8	5.2	0.07 U	-0.6 U	1.5
EPA 02	N	4/8/2015	<0.001	<0.005	<0.01	<0.001	1.5	<0.1	<0.05	<0.001	<0.1	0.0016	1.4	3.6	5	-0.02 U	0.3 U	1.9
EPA 02	DUP	4/8/2015	<0.001	<0.005	<0.01	<0.001	1.63	<0.1	<0.05	<0.001	<0.1	0.0017	1.5	4.8	6.3	0.005 U	0.07 U	2.1
EPA 02	N	7/8/2015	<0.001	<0.005	<0.01	<0.001	1.57	<0.1	<0.05	<0.001	<0.1	0.0014	1.1	2.3	3.4	0.2 U	0.3 U	1.6
EPA 02	DUP	7/8/2015	<0.001	<0.005	<0.01	0.001	1.68	<0.1	<0.05	<0.001	<0.1	0.0011	1.1	2.8	3.9	0.02 U	-0.07 U	2.4
EPA 02	N	10/7/2015	<0.001	<0.005	<0.01	<0.001	1.66	<0.1	<0.05	<0.001	<0.1	0.0016	1.6	3	4.6	0.3	0.04 U	4.4
EPA 02	DUP	10/7/2015	<0.001	<0.005	<0.01	<0.001	1.73	<0.1	<0.05	<0.001	<0.1	0.0015	1.7	3.3	5	0.7	0.3 U	4.2
EPA 02	N	1/6/2016	<0.001	<0.005	<0.01	<0.001	1.68	<0.1	<0.05	<0.001	<0.1	0.0013	1.1	3	4.1	0.08 U	-0.5 U	4.4
EPA 02	DUP	1/6/2016	<0.001	<0.005	<0.01	<0.001	1.59	<0.1	<0.05	<0.001	<0.1	0.0015	1.1	1.8	2.9	0.08 U	-0.5 U	3.5
EPA 02	N	4/6/2016	<0.001	<0.005	<0.01	<0.001	1.61	<0.1	<0.05	<0.001	<0.1	0.0012	1.2	3.7	4.9	0.02 U	0.4 U	2.4
EPA 02	DUP	4/6/2016	<0.001	<0.005	<0.01	<0.001	1.64	<0.1	<0.05	<0.001	<0.1	0.0014	1.4	4	5.4	0.03 U	0.4 U	3.1
EPA 02	N	7/13/2016	<0.001	<0.005	<0.01	0.001	1.33	<0.1	<0.05	<0.001	<0.1	0.0018	1.5	3.8	5.3	0.05 U	0.4 U	1.6 U
EPA 02	Dup	7/13/2016	<0.001	<0.005	<0.01	0.002	1.5	<0.1	<0.05	<0.001	<0.1	0.0017	1.8	2.4	4.2	0.04 U	0.3 U	2.8
EPA 02	N	10/5/2016	<0.001	<0.005	<0.01	<0.001	1.68	<0.1	<0.05	<0.001	<0.1	0.0018	1.5	6	7.5	0.04 U	0.3 U	5
EPA 02	DUP	10/5/2016	<0.001	<0.005	<0.01	<0.001	1.73	<0.1	<0.05	<0.001	<0.1	0.0017	1.8	4.4	6.2	0.01 U	0.2 U	4.3
EPA 04	N	7/26/1989	< 0.05	< 0.01	< 0.01	< 0.05	3.4	< 0.1	< 0.05	< 0.001	< 0.1	0.004	1.9	1.4	3.3	0.9	< 1	3
EPA 04	N	10/5/1989	< 0.05	< 0.01	< 0.01	< 0.05	3.1	< 0.01	< 0.05	< 0.001	< 0.1	0.003	2	1.9	3.9	0.3	2.2	3
EPA 04	N	1/16/1990	< 0.05	< 0.01	< 0.01	< 0.05	3.4	< 0.1	< 0.05	< 0.001	< 0.1	0.0007	1.3	3.4	4.7	2.8	< 1	3.5
EPA 04	N	4/17/1990	< 0.05	< 0.01	< 0.01	< 0.05	2.5	< 0.1	< 0.05	< 0.001	< 0.1	0.002	0.8	1.6	2.4	< 0.2	2.4	1.5
EPA 04	N	7/17/1990	< 0.05	< 0.01	< 0.01	< 0.05	3.31	< 0.1	< 0.05	< 0.001	< 0.1	0.001	0.8	4.4	5.2	< 0.2	1.5	< 1
EPA 04	N	10/16/1990	< 0.05	< 0.01	0.01	< 0.05	3.31	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	1.5	< 1	1.5	< 0.2	1.1	2
EPA 04	N	1/8/1991	< 0.01	< 0.01	0.01	< 0.05	3.27	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	1.5	2.7	4.2	< 0.2	< 1	2
EPA 04	N	4/17/1991	< 0.01	< 0.01	< 0.01	< 0.05	3.87	< 0.1	< 0.05	< 0.001	< 0.1	0.001	0.7	4.9	5.6	< 0.2	< 1	< 1
EPA 04	N	7/3/1991	< 0.01	< 0.01	0.01	< 0.05	3.21	0.03	< 0.05	< 0.001	< 0.1	0.0029	1.5	5.1	6.6	< 0.2	< 1	1
EPA 04	N	10/22/1991	< 0.01	< 0.01	0.02	< 0.05	3.28	< 0.1	< 0.05	< 0.001	< 0.1	0.0684	0.7	3.9	4.6	< 0.2	1.8	< 1
EPA 04	N	1/23/1992	< 0.01	< 0.01	< 0.01	< 0.05	2.95	< 0.1	< 0.05	< 0.001	< 0.1	0.007	1.2	< 1	1.2	< 0.2	1.9	1



**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Cl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
		EPA Standard	NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01
EPA 04	N	4/2/1992	6,870.50	6.40	7.82	4554	495	348	258	9.3	210	2963	37.3	1.19	< 0.01	< 1	< 0.1	< 0.001
EPA 04	N	7/15/1992	6,869.70	6.60	7.55	4808	482	336	238	9	173	3072	41.2	0.73	0.2	< 1	< 0.1	< 0.001
EPA 04	N	10/14/1992	6,869.80	6.80	6.87	4904	526	357	230	8.6	174	3164	40.2	0.79	< 0.1	< 1	0.1	< 0.001
EPA 04	N	1/13/1993	6,870.00	6.60	6.98	4631	506	343	228	9.7	177	3107	38.8	0.21	< 0.1	< 1	0.1	< 0.001
EPA 04	N	4/15/1993	6,870.50	6.60	7.05	4684	452	337	242	7.4	175	3006	39.4	0.98	0.1	< 1	< 0.1	< 0.001
EPA 04	N	7/20/1993	6,871.10	6.70	7.11	4351	519	369	211	7.8	203	3081	37.4	0.84	< 0.1	< 1	< 0.1	< 0.001
EPA 04	N	10/12/1993	6,868.80	7.10	6.47	4585	533	332	217	7.8	189	2962	34.3	0.79	< 0.1	< 1	< 0.1	< 0.001
EPA 04	N	1/11/1994	6,869.50	6.80	6.88	4530	543	336	219	7.2	178	3119	35.8	0.89	< 0.1	< 1	< 0.1	< 0.001
EPA 04	N	4/20/1994	6,870.50	6.70	6.44	4612	544	346	233	7.3	167	3065	37.9	1.42	< 0.1	< 1	0.15	0.002
EPA 04	N	7/26/1994	6,870.40	6.70	6.45	4420	578	359	225	8.2	172	2863	35.7	0.93	< 0.1	< 1	< 0.1	< 0.001
EPA 04	N	10/11/1994	6,870.30	6.60	7.42	4528	539	380	229	8.3	195	3133	37.9	1.11	< 0.1	< 1	< 0.1	< 0.001
EPA 04	N	1/10/1995	6,870.40	6.50	6.98	4598	640	286	210	9.5	190	3090	38.3	1.48	< 0.1	< 1	< 0.1	< 0.001
EPA 04	N	4/6/1995	6,870.60	6.60	6.99	4715	640	328	212	8.3	189	3268	39.3	1.7	< 0.1	< 1	< 0.1	0.001
EPA 04	N	7/11/1995	6,870.30	6.80	7.44	3894	485	325	194	7.4	253	2490	35.1	1.29	< 0.1	< 1	< 0.1	< 0.001
EPA 04	N	10/10/1995	6,870.40	6.70	7.04	4004	515	335	220	8	217	2641	33.1	1.04	< 0.1	< 1	< 0.1	0.002
EPA 04	N	1/9/1996	6,870.30	6.80	7.89	4093	505	335	213	8.3	257	2637	34.4	0.75	< 0.1	< 1	< 0.1	0.003
EPA 04	N	4/10/1996	6,870.20	6.90	7.63	4412	544	338	199	7.6	223	3002	36.6	0.85	< 0.1	< 1	< 0.1	< 0.001
EPA 04	N	7/17/1996	6,870.20	6.80	6.76	4161	485	300	221	8.3	216	2580	38	0.69	< 0.1	< 1	< 0.1	< 0.001
EPA 04	N	10/8/1996	6,870.10	6.60	7.12	4390	555	358	211	8.3	196	2721	35.3	0.79	< 0.1	< 1	< 0.1	< 0.001
EPA 04	N	1/28/1997	6,870.10	6.80	7.51	4290	510	335	192	7.84	222	2895	44	0.77	< 0.1	< 1	< 0.1	< 0.001
EPA 04	N	4/15/1997	6,869.90	6.40	7.38	4390	544	354	212	8.5	222	2829	39.4	0.83	< 0.1	< 1	< 0.1	< 0.001
EPA 04	N	7/15/1997	6,869.50	6.50	7.22	4320	556	338	200	8	227	2800	38.9	0.79	< 0.1	< 1	< 0.1	< 0.001
EPA 04	N	10/15/1997	6,869.40	6.40	7.60	4480	591	372	202	7.8	209	2900	49.1	0.82	< 0.1	< 1	< 0.1	< 0.001
EPA 04	N	1/20/1998	6,870.30	6.60	7.85	4480	588	366	216	8.7	212	3100	41.9	1.08	< 0.1	< 1	< 0.1	< 0.001
EPA 04	N	4/14/1998	6,869.50	6.70	7.08	4480	586	340	226	8.2	209	3010	35.1	0.85	< 0.1	< 1	< 0.1	< 0.001
EPA 04	N	7/14/1998	6,869.20	6.60	7.25	4620	576	366	223	8.8	200	3000	36.7	0.86	< 0.1	< 1	< 0.1	< 0.001
EPA 04	N	10/13/1998	no data	6.41	7.84	4520	579	348	228	8.6	218	3000	36.1	0.98	< 0.1	< 1	< 0.1	< 0.001
EPA 04	N	1/12/1999	6,869.50	6.60	7.53	4590	615	347	199	8	214	3000	37.2	0.92	< 0.1	< 1	< 0.1	< 0.001
EPA 04	N	4/13/1999	6,869.80	6.50	7.46	4590	582	343	206	8.2	208	2860	43.8	0.97	0.11	< 1	< 0.1	< 0.001
EPA 04	N	7/20/1999	6,869.50	6.50	7.11	4790	555	323	193	10.4	207	2550	40	0.85	< 0.1	< 1	< 0.1	< 0.001
EPA 04	N	10/12/1999	6,869.20	6.60	7.94	4830	556	332	193	8.4	641	2780	39	0.87	< 0.1	< 1	< 0.1	0.001
EPA 04	N	1/11/2000	6,869.50	6.50	7.51	4680	557	332	187	8.8	204	2730	36.2	0.82	< 0.1	< 1	0.1	< 0.001
EPA 04	N	5/15/2000	6,869.10	6.70	7.42	4810	542	366	194	9.1	173	3000	37.5	1.03	< 0.1	< 1	< 0.1	0.001
EPA 04	N	7/11/2000	6,868.90	6.54	7.07	4790	574	386	199	8.4	171	2910	38.8	0.97	< 0.1	< 1	< 0.1	< 0.001
EPA 04	N	10/3/2000	6,868.90	6.61	7.21	4740	541	372	193	9.2	175	2770	36.5	0.74	< 0.1	< 1	< 0.1	< 0.001
EPA 04	N	1/9/2001	6,868.95	6.73	7.30	4680	555	373	164	8.7	174	2890	43.4	0.88	< 0.1	< 1	< 0.1	< 0.001

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA Standard			0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA 04	N	4/2/1992	< 0.01	< 0.01	< 0.01	< 0.05	3.34	< 0.1	< 0.05	< 0.001	< 0.1	0.001	0.5	5.4	5.9	< 0.2	9.1	< 1
EPA 04	N	7/15/1992	< 0.01	< 0.01	< 0.01	< 0.05	3.19	< 0.1	< 0.05	< 0.001	< 0.1	0.004	1.9	5	6.9	< 0.2	< 1	2
EPA 04	N	10/14/1992	< 0.01	< 0.01	< 0.01	< 0.05	3.41	< 0.1	< 0.05	< 0.001	< 0.1	0.029	1.9	7.1	9	< 0.2	< 1	2.1
EPA 04	N	1/13/1993	< 0.01	< 0.01	0.02	< 0.05	3.47	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	1	13.8	14.8	< 0.2	< 1	1.1
EPA 04	N	4/15/1993	< 0.01	< 0.01	< 0.01	< 0.05	3.55	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	1	1.1	2.1	< 0.2	< 1	1.2
EPA 04	N	7/20/1993	< 0.01	< 0.01	< 0.01	< 0.05	2.81	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	1.1	3.5	4.6	< 0.2	< 1	1.5
EPA 04	N	10/12/1993	< 0.01	< 0.01	0.01	< 0.05	3.08	< 0.1	< 0.05	< 0.001	< 0.1	0.003	1.2	2.7	3.9	< 0.2	1.3	5.2
EPA 04	N	1/11/1994	< 0.01	< 0.01	< 0.01	< 0.05	3.59	< 0.1	< 0.05	< 0.001	< 0.1	0.001	1.1	3	4.1	< 0.2	< 1	6.6
EPA 04	N	4/20/1994	< 0.01	< 0.01	< 0.01	< 0.05	2.77	< 0.1	< 0.05	< 0.001	< 0.1	0.001	2	3	5	< 0.2	1.8	6.7
EPA 04	N	7/26/1994	< 0.01	< 0.01	< 0.01	< 0.05	3.4	< 0.1	< 0.05	< 0.001	< 0.1	0.002	1.9	5.1	7	< 0.2	< 1	9.7
EPA 04	N	10/11/1994	< 0.01	< 0.01	< 0.01	< 0.05	2.95	< 0.1	< 0.05	< 0.001	< 0.1	0.001	1.6	2.3	3.9	< 0.2	< 1	5.2
EPA 04	N	1/10/1995	< 0.01	< 0.01	< 0.01	< 0.05	3.42	< 0.1	< 0.05	< 0.001	< 0.1	0.001	1.7	2.5	4.2	0.2	3	5.6
EPA 04	N	4/6/1995	< 0.01	< 0.01	< 0.01	< 0.05	3.25	< 0.1	< 0.05	< 0.001	< 0.1	0.001	1.4	3	4.4	< 0.2	< 1	6.1
EPA 04	N	7/11/1995	< 0.01	< 0.01	< 0.01	< 0.05	2.76	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.7	3.1	3.8	0.4	< 1	5
EPA 04	N	10/10/1995	< 0.01	< 0.01	< 0.01	< 0.05	2.89	< 0.1	< 0.05	< 0.001	< 0.1	0.0008	1.5	4.2	5.7	0.4	< 1	2.2
EPA 04	N	1/9/1996	< 0.01	< 0.01	< 0.01	< 0.05	2.83	< 0.1	< 0.05	< 0.001	< 0.1	0.001	1.1	2.4	3.5	< 0.2	2.6	< 1
EPA 04	N	4/10/1996	< 0.01	< 0.01	< 0.01	< 0.05	3.2	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	1.2	3.3	4.5	< 0.2	< 1	< 1
EPA 04	N	7/17/1996	< 0.01	< 0.01	< 0.01	< 0.05	2.85	< 0.1	< 0.05	< 0.001	< 0.1	0.0009	0.5	< 1	0.5	< 0.2	< 1	< 1
EPA 04	N	10/8/1996	< 0.01	< 0.01	< 0.01	< 0.05	2.89	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	1.2	< 1	1.2	< 0.2	< 1	< 1
EPA 04	N	1/28/1997	< 0.01	< 0.01	< 0.01	< 0.05	2.82	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	1.5	< 1	1.5	< 0.2	< 1	2.1
EPA 04	N	4/15/1997	< 0.01	< 0.01	< 0.01	< 0.05	2.97	< 0.1	< 0.05	< 0.001	< 0.1	0.001	0.9	1.2	2.1	< 0.2	< 1	2.3
EPA 04	N	7/15/1997	< 0.01	< 0.01	< 0.01	< 0.05	2.58	< 0.1	< 0.05	< 0.001	< 0.1	0.0009	1	4.1	5.1	< 0.2	< 1	< 1
EPA 04	N	10/15/1997	< 0.01	< 0.01	< 0.01	< 0.05	3.06	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.6	< 1	0.6	< 0.2	< 1	< 1
EPA 04	N	1/20/1998	< 0.01	< 0.005	< 0.01	< 0.05	3.25	< 0.1	< 0.05	< 0.001	< 0.1	0.0011	1	< 1	1	< 0.2	< 1	< 1
EPA 04	N	4/14/1998	< 0.01	< 0.005	< 0.01	< 0.05	2.88	< 0.1	< 0.05	< 0.001	< 0.1	0.0011	1.5	< 1	1.5	< 0.2	< 1	< 1
EPA 04	N	7/14/1998	< 0.01	< 0.005	< 0.01	< 0.05	2.98	< 0.1	< 0.05	< 0.001	< 0.1	0.0009	0.6	3.7	4.3	< 0.2	< 1	< 1
EPA 04	N	10/13/1998	< 0.01	< 0.005	< 0.01	< 0.05	2.87	< 0.1	< 0.05	< 0.001	< 0.1	0.001	1.2	3.9	5.1	< 0.2	< 1	< 1
EPA 04	N	1/12/1999	< 0.01	< 0.005	< 0.01	< 0.05	2.78	< 0.1	< 0.05	< 0.001	< 0.1	0.0033	1.5	4.2	5.7	< 0.2	< 1	< 1
EPA 04	N	4/13/1999	< 0.01	< 0.005	< 0.01	< 0.05	3	< 0.1	< 0.05	< 0.001	< 0.1	0.0017	2.2	3.5	5.7	< 0.2	2.2	2.2
EPA 04	N	7/20/1999	< 0.01	< 0.005	< 0.01	< 0.05	2.33	< 0.1	< 0.05	< 0.001	< 0.1	0.0013	0.9	1.5	2.4	< 0.2	1.5	1.5
EPA 04	N	10/12/1999	< 0.01	< 0.005	< 0.01	< 0.05	2.93	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	1.2	3.3	4.5	< 0.2	< 1	1.4
EPA 04	N	1/11/2000	< 0.01	< 0.005	< 0.01	< 0.05	3.1	< 0.1	0.06	< 0.001	< 0.1	0.0021	1	< 1	1	< 0.2	< 1	< 1
EPA 04	N	5/15/2000	< 0.01	< 0.005	< 0.01	< 0.05	4.15	< 0.1	< 0.05	< 0.001	< 0.1	0.0006	1.9	3.8	5.7	< 0.2	< 1	1.3
EPA 04	N	7/11/2000	< 0.01	0.007	< 0.01	< 0.05	3.37	< 0.1	< 0.05	< 0.001	< 0.1	0.0006	< 2	2.4	2.4	< 0.2	< 1	1.8
EPA 04	N	10/3/2000	< 0.01	< 0.005	< 0.01	< 0.05	2.66	< 0.1	< 0.05	< 0.001	< 0.1	0.0005	1.3	3.5	4.8	< 0.2	< 1	1.4
EPA 04	N	1/9/2001	< 0.01	< 0.005	< 0.01	< 0.05	3.28	< 0.1	< 0.05	< 0.001	< 0.1	0.0004	1.5	5	6.5	< 0.2	< 1	2.2

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01
EPA 04	N	4/3/2001	6,868.80	6.70	7.06	4620	651	427	170	8.1	177	3230	42.1	1.01	< 0.1	< 1	< 0.1	< 0.001
EPA 04	N	7/17/2001	6,868.25	6.94	7.02	4780	533	372	173	9.1	172	2690	48.3	1.01	< 0.1	< 1	< 0.1	< 0.001
EPA 04	N	10/9/2001	6,868.30	6.55	6.80	4770	520	360	165	8.7	174	2700	46.3	0.86	< 0.1	< 1	< 0.1	< 0.001
EPA 04	N	1/14/2002	6,868.25	6.75	6.90	4730	624	413	165	10.5	178	2980	46.2	0.85	0.16	< 1	< 0.1	< 0.001
EPA 04	N	4/9/2002	6,867.90	6.54	7.27	4790	545	369	186	9	167	2880	39.5	0.82	0.31	< 1	< 0.1	< 0.001
EPA 04	N	7/16/2002	6,867.85	6.52	7.53	4740	533	369	172	10.4	163	2870	43.1	1.07	< 0.1	< 1	< 0.1	< 0.001
EPA 04	N	10/15/2002	6,867.70	6.32	7.06	4240	613	414	196	9.1	179	3260	40	1.15	< 0.1	< 1	< 0.1	< 0.001
EPA 04	N	1/14/2003	6,867.38	6.61	7.13	4720	461	319	154	9.6	164	2420	30.5	1.21	< 0.1	< 1	< 0.1	< 0.001
EPA 04	N	4/14/2003	6,867.44	6.67	7.07	4770	538	386	201	12.5	162	2940	37.9	1.17	< 0.1	< 1	< 0.1	< 0.001
EPA 04	N	7/15/2003	6,867.14	6.44	7.30	4820	552	374	186	9.3	168	2880	35	1.15	< 0.1	< 1	< 0.1	< 0.001
EPA 04	N	10/14/2003	6,866.96	6.49	7.42	4760	626	416	189	8.6	158	3140	38.9	0.91	< 0.1	< 1	0.2	< 0.001
EPA 04	N	1/13/2004	6,866.80	6.53	7.30	4780	603	417	188	10.2	166	3160	39.2	1.1	< 0.10	< 1.0	< 0.1	< 0.001
EPA 04	N	4/13/2004	6,866.82	6.35	6.55	4730	550	385	188	9.6	167	3040	43.4	1.21	< 0.1	< 1	< 0.1	< 0.001
EPA 04	N	7/20/2004	6,866.61	6.64	6.40	4690	597 D	391 D	200	8.2	183	3020 D	38	1.08	< 0.10	< 1.0	< 0.1	< 0.001
EPA 04	N	10/12/2004	6,866.64	6.67	6.80	4850	586 D	408 D	188	8.4	201	3060 D	37	1.02	< 0.10	< 1.0	< 0.1	< 0.001
EPA 04	N	1/11/2005	6,866.93	6.70	6.81	4750	557 D	382 D	192	8.6	165	2890 D	39	0.78	< 0.1	< 1.0	< 0.1	< 0.001
EPA 04	N	4/12/2005	no data	no data	6.79	4550	592	410	201	8.8	165	3190	40	0.85	< 0.1	< 1.0	< 0.1	< 0.001
EPA 04	N	7/19/2005	6,866.15	6.28	6.82	4720	549 D	386 D	193	8.3	180	2820 D	33	0.95	< 0.1	< 1.0	< 0.1	< 0.001
EPA 04	N	10/11/2005	6,866.02	6.65	7.02	4580	544 D	382 D	190	8.9	174	2880 D	39	0.77	< 0.1	< 1.0	< 0.1	< 0.001
EPA 04	N	1/17/2006	6,865.81	6.79	7.20	4480	525 D	372 D	179	8.7	177	2720 D	38	1.07	< 0.1	< 1.0	< 0.1	< 0.001
EPA 04	N	4/11/2006	6,865.71	6.64	7.22	4530	578 D	407 D	186	8.5	217	2980 D	41	1.09	< 0.1	< 1.0	< 0.1	< 0.001
EPA 04	N	7/25/2006	6,865.55	6.58	7.37	4420	570 D	388 D	196	9.2	254	3000 D	38	0.81	0.2	< 1.0	< 0.1	< 0.001
EPA 04	N	10/10/2006	6,865.45	6.60	6.89	4330	542 D	374 D	186	8.5	173	2830 D	34	0.78	< 0.1	< 0.5	< 0.1	< 0.001
EPA 04	N	1/23/2007	6,865.28	6.69	6.93	4620	534 D	376 D	187	9.3	165	2840 D	40	0.77	< 0.1	< 0.5	< 0.1	< 0.001
EPA 04	N	4/16/2007	6,865.20	6.60	6.82	4560	542 D	392 D	167	8.7	185	3060 D	40	0.82	< 0.1	< 0.5	< 0.1	< 0.001
EPA 04	N	7/16/2007	6,864.75	6.62	7.08	4390	555 D	388 D	176	8	181	2980 D	34	0.68	0.1	< 0.5	< 0.1	0.002
EPA 04	N	10/8/2007	6,864.52	6.67	6.91	4520	543 D	374 D	170	8.1	128	2840 D	36	0.64	< 0.1	< 0.5	< 0.1	< 0.001
EPA 04	N	1/21/2008	6,864.80	6.73	7.07 H	4250	533 D	359 D	140	8.5	174	2820 D	44 D	0.56	0.1	< 0.5	< 0.1	< 0.001
EPA 04	N	4/14/2008	6,864.50	6.33	6.83	4380	578	396	183 D	8.4	167	2980 D	35	0.61	< 0.1	< 0.5	< 0.1	0.002
EPA 04	N	7/14/2008	6,864.30	6.77	6.71	4420	516	384	184 D	8	167	3240 D	31	0.54	< 0.1	< 0.5	< 0.1	< 0.003
EPA 04	N	10/13/2008	6,864.08	6.69	6.65	4540 H	561	371	177 D	8	153	3120 D	34	0.9	< 0.1	< 0.5	< 0.1	< 0.001
EPA 04	N	1/19/2009	6,863.70	6.69	7.31	3910 H	499	353	172	8	160	2850 D	33	0.35	< 0.1	< 0.5	< 0.1	< 0.001
EPA 04	N	4/13/2009	6,863.90	6.52	6.55	4630	558 D	368	182 D	9	167	2950 D	36	0.6	< 0.1	< 0.50	< 0.1	< 0.001
EPA 04	N	7/13/2009	6,863.60	6.47	7.14 H	4590 H	562	372	181	9	155	3030 DH	38	0.8	< 0.1	< 0.50	< 0.1	< 0.001
EPA 04	N	10/12/2009	6,863.70	6.73	7.07	4640	540	364	183	9	161	3010 D	42	0.76	< 0.1	< 0.50	< 0.1	< 0.001
EPA 04	N	1/11/2010	6,863.30	6.8	6.81	4540 D	578 D	389	184 D	9	167	3030 D	30	0.58	3.7	< 0.50	< 0.1	< 0.001

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	
NRC Standard			0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA Standard			0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA 04	N	4/3/2001	< 0.01	< 0.005	< 0.01	< 0.05	3.37	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	1.2	3.8	5	< 0.2	< 1	1.8
EPA 04	N	7/17/2001	< 0.01	< 0.005	< 0.01	< 0.05	3.22	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	1.1	5.8	6.9	< 0.2	< 1	2.2
EPA 04	N	10/9/2001	< 0.01	< 0.005	< 0.01	< 0.05	2.65	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	1.5	3.7	5.2	< 0.2	< 1	< 1
EPA 04	N	1/14/2002	< 0.01	< 0.005	< 0.01	< 0.05	3.59	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	1.5	5.4	6.9	< 0.2	< 1	< 1
EPA 04	N	4/9/2002	< 0.01	< 0.005	< 0.01	< 0.05	3.53	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	1.3	2	3.3	< 0.2	< 1	1.3
EPA 04	N	7/16/2002	< 0.01	< 0.005	< 0.01	< 0.05	3.37	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	1.4	< 1	1.4	< 0.2	< 1	< 1
EPA 04	N	10/15/2002	< 0.01	< 0.005	< 0.01	< 0.05	3.4	< 0.1	< 0.05	< 0.001	< 0.1	0.0005	1.7	< 1	1.7	< 0.2	< 1	< 1
EPA 04	N	1/14/2003	< 0.01	< 0.005	< 0.01	< 0.05	3.29	< 0.1	< 0.05	< 0.001	< 0.1	0.0005	1.9	< 1	1.9	< 0.2	< 1	2
EPA 04	N	4/14/2003	< 0.01	< 0.005	< 0.01	< 0.05	3.33	< 0.1	< 0.05	< 0.001	< 0.1	0.0004	1.7	7.9	9.6	< 0.2	< 1	3
EPA 04	N	7/15/2003	< 0.01	< 0.005	< 0.01	< 0.05	3.35	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	1.5	3.1	4.6	< 0.2	< 1	< 1.0
EPA 04	N	10/14/2003	< 0.01	< 0.005	< 0.01	< 0.05	3.32	< 0.1	< 0.05	< 0.001	< 0.1	0.0004	0.5	5.6	6.1	< 0.2	< 1	1.5
EPA 04	N	1/13/2004	< 0.01	< 0.005	< 0.01	< 0.05	3.74	< 0.1	< 0.05	< 0.001	< 0.1	0.0004 D	1.1	< 1.0	1.1	< 0.2	< 1.0	2.1
EPA 04	N	4/13/2004	< 0.01	< 0.005	< 0.01	< 0.05	3.41	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0004 D	0.7	< 1	0.7	< 0.2	< 1	1.7
EPA 04	N	7/20/2004	< 0.01	< 0.005	< 0.01	< 0.05	3.27	< 0.1	< 0.05	< 0.001	< 0.1	0.0004 D	1.6	2.4	4	< 0.2	< 1.0	2.1
EPA 04	N	10/12/2004	< 0.01	< 0.005	< 0.01	< 0.05	3.1	< 0.1	< 0.05	< 0.001	< 0.1	0.0004	1.5	3.3	4.8	< 0.2	< 1.0	1.9
EPA 04	N	1/11/2005	< 0.01	< 0.005	< 0.01	< 0.05	3.16	< 0.1	< 0.05	< 0.001	< 0.1	0.0004	0.7	2.5	3.2	< 0.2	< 1.0	3.6
EPA 04	N	4/12/2005	< 0.01	< 0.005	< 0.01	< 0.05	3.39	< 0.1	< 0.05	< 0.001	< 0.1	0.0007	0.9	2	2.9	< 0.2	< 1.0	1.7
EPA 04	N	7/19/2005	< 0.01	< 0.005	< 0.01	< 0.05	3.23	< 0.1	< 0.05	< 0.001	< 0.1	0.0004	1.2	2	3.2	< 0.2	< 1.0	2.6
EPA 04	N	10/11/2005	< 0.01	< 0.005	< 0.01	< 0.05	3.24	< 0.1	< 0.05	< 0.001	< 0.1	0.0005	1.4	3.3	4.7	< 0.2	< 1.0	1.6
EPA 04	N	1/17/2006	< 0.01	< 0.005	< 0.01	< 0.05	3.42	< 0.1	< 0.05	< 0.001	< 0.1	0.0004	1.4	< 1.0	1.4	< 0.2	< 1.0	2.8
EPA 04	N	4/11/2006	< 0.01	< 0.005	< 0.01	< 0.05	3.12	< 0.1	< 0.05	< 0.001	< 0.1	0.0006	0.9	4.9	5.8	< 0.2	< 1.0	1.3
EPA 04	N	7/25/2006	< 0.01	< 0.005	< 0.01	< 0.05	2.94	< 0.1	< 0.05	< 0.001	< 0.1	0.0005	0.8	3.3	4.1	< 0.2	< 1.0	< 1.0
EPA 04	N	10/10/2006	< 0.01	< 0.005	< 0.01	< 0.05	3.53	< 0.1	< 0.05	< 0.001	< 0.1	0.0004	1.1	1.8	2.9	< 0.2	< 1	1.4
EPA 04	N	1/23/2007	< 0.01	< 0.005	< 0.01	< 0.05	3.54	< 0.1	< 0.05	< 0.001	< 0.1	0.0004	1	< 1	1	< 0.2	< 1	3.1
EPA 04	N	4/16/2007	< 0.01	< 0.005	< 0.01	< 0.05	3.3	< 0.1	< 0.05	< 0.001	< 0.1	0.0004 D	1	< 1	1	< 0.2	< 1	1.1
EPA 04	N	7/16/2007	< 0.01	< 0.005	< 0.01	< 0.05	3.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0004	1.5	< 1	1.5	< 0.2	< 1	1.7
EPA 04	N	10/8/2007	< 0.01	< 0.005	< 0.01	< 0.05	3.43	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.9	< 1	0.9	< 0.2	< 1	2.3
EPA 04	N	1/21/2008	< 0.01	< 0.005	< 0.01	< 0.05	3.46	< 0.1	< 0.05	0.002	< 0.1	0.0005	1.7	< 1	1.7	< 0.2	4.4	1.5
EPA 04	N	4/14/2008	< 0.01	< 0.005	< 0.01	< 0.05	3.48	< 0.1	< 0.05	< 0.001	< 0.1	0.0004	1.2	3	4.2	0.2	0.7 U	2.5
EPA 04	N	7/14/2008	< 0.01	< 0.005	< 0.01	< 0.05	3.65	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0005	1.4	3	4.4	-0.3 U	0.1 U	1
EPA 04	N	10/13/2008	< 0.01	< 0.005	< 0.01	< 0.05	3.4	< 0.1	< 0.05	< 0.001	< 0.1	0.0004	1.1	2.6	3.7	-0.3 U	-0.1 U	2.2
EPA 04	N	1/19/2009	< 0.01	< 0.005	< 0.01	< 0.05	3.38	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	1	2.5	3.5	0.4	0.3 U	2
EPA 04	N	4/13/2009	< 0.01	< 0.005	< 0.01	< 0.05	3.31	< 0.1	< 0.05	< 0.001	< 0.1	0.0006	1.2	2.8	4	-0.1 U	0.7 U	1.6
EPA 04	N	7/13/2009	< 0.01	< 0.005	< 0.01	< 0.05	3.08	< 0.1	< 0.05	0.001	< 0.1	0.0003	1	2.5	3.5	-0.1 U	-0.6 U	3.3
EPA 04	N	10/12/2009	< 0.01	< 0.005	< 0.01	< 0.05	3.48	< 0.1	< 0.05	< 0.001	< 0.1	0.0004	1.2	3.4	4.6	-0.0009 U	-0.2 U	1.6
EPA 04	N	1/11/2010	< 0.01	< 0.005	< 0.01	< 0.05	3.35	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.73	3	3.73	0.02 U	0.1 U	1.6

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01
EPA 04	N	4/12/2010	6,863.50	6.67	7.06	4480 D	554	376	185	9	179	3280 D	38	0.8	<0.1	<0.50	<0.1	<0.001
EPA 04	N	7/19/2010	6,863.20	6.51	6.94	4540 D	568	396	180	8	157	3010 D	34 D	1.21	<0.1	<0.50	<0.1	<0.001
EPA 04	N	10/11/2010	6,863.35	6.64	7.51	3560 D	560	373	194	9	153	3210 D	31 D	0.89	0.9	<0.50	<0.1	<0.001
EPA 04	Dup	1/10/2011	no data	no data	7.52	4300 D	550	370	176	8	168	2860 D	35 D	0.76	<0.1	2.21	<0.1	<0.001
EPA 04	N	1/10/2011	6,863.35	6.8	7.41	4550 D	580	384	186	9	185	3060 D	35 D	0.77	<0.1	0.71	<0.1	0.002
EPA 04	Dup	4/11/2011	6,862.46	6.84	6.92	4440 D	564	374	193	9	165	3030 D	37 D	0.79	<0.1	2.52	<0.1	0.002
EPA 04	N	4/11/2011	6,862.90	6.71	7.02	4580 D	578	382	192	9	184	3040 D	35 D	0.79	<0.1	0.62	<0.1	0.001
EPA 04	N	7/18/2011	6,862.80	6.5	7.51	4330 D	560	368	188	9	160	2870 D	35 D	0.8 D	<0.1	<0.50	0.5	<0.001
EPA 04	N	10/10/2011	6,862.90	6.65	7.38	4390 D	578	375	187	9	145	3070 D	37 D	0.9 D	<0.1	<0.50	<0.1	<0.001
EPA 04	N	1/9/2012	6,862.66	6.84	6.59 H	4430 D	586	353	174	8	148	2930 D	36 D	0.68	<0.1	<0.50	<0.1	<0.001
EPA 04	N	4/9/2012	6,862.50	6.7	6.79 H	4450 D	523	374	179	8	167	2740 D	34 D	0.75	<0.1	<0.50	<0.1	<0.01
EPA 04	N	7/16/2012	6,862.45	6.55	7.07 H	4640	483	383	185	9	143	3040 D	38 D	0.77	<0.1	<0.50	<0.1	<0.001
EPA 04	N	10/15/2012	6,862.29	6.85	7.04 H	4500	592	380	191 D	9	153	3010 D	39 D	1.4 D	<0.1	<0.50	<0.1	<0.001
EPA 04	N	1/15/2013	no data	6.61	6.81 H	4480	599	394	193 D	9	169	2950 D	34 D	0.78	<0.1	<0.50	<0.1	<0.001
EPA 04	N	4/8/2013	6,862.62	6.71	6.80 H	4590	554	385	181	9	162	3080 D	35 D	0.72	<0.1	<0.50	<0.1	<0.001
EPA 04	N	7/15/2013	6,862.08	6.61	7.28 H	4480	540	373	175	8	145	2990 D	45 D	0.68	<0.1	<0.50	<0.1	<0.001
EPA 04	N	10/7/2013	6,861.86	6.76	7.06 H	4440	549	380	185	9	158	2930 D	37 D	0.68	<0.1	<0.50	<0.1	<0.001
EPA 04	N	1/13/2014	6,861.75	6.90	6.82	4700	565	384	185	9	180	3130	38	0.7	1.9	<0.50	<0.1	<0.001
EPA 04	Dup	4/2/2014	no data	6.91	6.77 H	4450	558	386	189 D	9	174	2970 D	40 D	<0.05	0.7	<0.50	<0.1	<0.001
EPA 04	N	7/9/2014	6,861.61	6.75	7.43 H	4330	527	402	191 D	9	135	2950 D	34 D	<0.05	0.5	<0.50	<0.1	<0.001
EPA 04	N	10/8/2014	6,861.60	6.92	7.02 H	4520	477	374	175	8	149	2910 D	34 D	<0.05	0.6	<0.50	<0.1	<0.001
EPA 04	N	1/7/2015	6861.32	6.93	6.87 H	4410	490	381	180	9	159	3060 D	43 D	<0.05	0.6	<0.50	<0.1	<0.001
EPA 04	N	4/8/2015	6861.67	6.79	6.94 H	4590	487	384	184	8	157	2940 D	37 D	<0.05	0.5	<0.5	<0.1	<0.001
EPA 04	N	7/8/2015	6861.36	6.77	7.17 H	4460	503	340	159	13	150	3000 D	37 D	0.06	0.4	<0.50	<0.1	<0.001
EPA 04	N	10/7/2015	6861.23	6.87	6.88 H	4540	499	387	183	9	153	2970 D	37 D	<0.05	0.6 D	<0.50	<0.1	<0.001
EPA 04	N	1/6/2016	6861.42	6.93	6.74 H	4560	482	395	180	8	176	3080 D	37 D	0.28	0.3	<0.50	<0.1	<0.001
EPA 04	N	4/6/2016	6860.79	6.89	6.88 H	4520	494	383	179	8	155	3060 D	35 D	0.34	0.2	<0.50	<0.1	<0.001
EPA 04	N	7/13/2016	6860.86	6.71	6.91 H	4550	492	389	180	8	151	2940 DH	41 D	0.1	0.4	<0.50	<0.1	<0.001
EPA 04	N	10/5/2016	6861.05	6.84	7.16 H	4450	490	392	179	8	138	3130 D	37 D	0.27	0.3	<0.50	<0.1	<0.001
EPA 05	N	7/26/1989	6,895.20	6.50	6.15	5192	625	508	151	8.5	295	3279	93.1	0.3	15.8	< 1	< 0.1	< 0.001
EPA 05	N	10/5/1989	6,895.40	6.10	6.90	5726	639	531	171	12.3	512	3255	141	0.12	29	< 1	< 0.1	< 0.001
EPA 05	N	1/16/1990	6,895.60	6.10	6.40	5698	628	539	186	9.49	567	3175	169	0.18	53.2	< 1	< 0.1	< 0.001
EPA 05	N	4/17/1990	6,895.50	6.00	6.80	5882	662	555	199	9.5	671	3159	172	0.31	53	< 1	< 0.1	< 0.001
EPA 05	N	7/17/1990	6,895.10	6.00	6.46	5886	723	548	204	10.3	672	3146	152	0.15	41	< 1	< 0.1	< 0.001
EPA 05	N	10/16/1990	6,895.00	6.00	7.11	6192	647	540	215	9	742	3391	199	0.18	53	< 1	< 0.1	< 0.001
EPA 05	N	1/8/1991	6,894.80	6.10	7.22	5554	641	485	171	7.3	586	3088	137	0.27	36	< 1	< 0.1	< 0.001



**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA Standard			0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA 04	N	4/12/2010	<0.01	<0.005	<0.01	<0.05	3.5	<0.1	<0.05	<0.001	<0.1	<0.0003	1.4	3.4	4.8	0.07 U	-0.6 U	1.6
EPA 04	N	7/19/2010	<0.01	<0.005	<0.01	<0.05	3	<0.1	<0.05	<0.001	<0.1	0.0004	1.5	3	4.5	0.08 U	-0.1 U	3.3
EPA 04	N	10/11/2010	<0.01	<0.005	<0.01	<0.05	3.19	<0.1	<0.05	<0.001	<0.1	0.0004	1.3	3.3	4.6	0.06 U	2.4	1.9
EPA 04	Dup	1/10/2011	<0.01	<0.005	<0.01	<0.05	3.4	<0.1	<0.05	<0.001	<0.1	<0.0003	1.5	3.3	4.8	0.07 U	0.2 U	4
EPA 04	N	1/10/2011	<0.01	<0.005	<0.01	<0.05	3.34	<0.1	<0.05	<0.001	<0.1	0.0003	1.7	3.5	5.2	0.06 U	0.4 U	3.7
EPA 04	Dup	4/11/2011	<0.01	<0.005	<0.01	<0.05	3.18	<0.1	<0.05	<0.001	<0.1	<0.0003	1	3.1	4.1	0.1 U	1 U	1.3
EPA 04	N	4/11/2011	<0.01	<0.005	<0.01	<0.05	3.44	<0.1	<0.05	<0.001	<0.1	0.0003	1.1	2.2	3.3	0.07 U	1.4	1.7
EPA 04	N	7/18/2011	<0.01	<0.005	<0.01	<0.05	2.94	<0.1	<0.05	<0.001	<0.1	0.0004	0.99	2.9	3.89	0.04 U	-0.3 U	1.1
EPA 04	N	10/10/2011	<0.01	<0.005	<0.01	<0.05	2.56	<0.1	<0.05	<0.001	<0.1	0.0004	1.5	2.5	4	0.04 U	0.9 U	2.1
EPA 04	N	1/9/2012	<0.01	<0.005	<0.01	<0.05	2.73	<0.1	<0.05	<0.001	<0.1	0.0004	1.3	1.2	3.7	0.1 U	0.6 U	1.2
EPA 04	N	4/9/2012	<0.01	<0.005	<0.01	<0.05	3.62	<0.1	<0.05	<0.001	<0.1	0.0005	1.4	3.7	8.8	0.1 U	0.2 U	1.3
EPA 04	N	7/16/2012	<0.001	<0.005	<0.01	<0.001	2.87	<0.1	<0.05	<0.001	<0.1	0.0004	0.96	2.4	5.76	0.08 U	0.6 U	1.3
EPA 04	N	10/15/2012	<0.001	<0.005	<0.01	<0.001	2.76	<0.1	<0.05	<0.001	<0.1	0.0003	1.1	3.6	4.7	0.3 U	0.5 U	1.7
EPA 04	N	1/15/2013	<0.001	<0.005	<0.01	<0.001	3.44	<0.1	<0.05	<0.001	<0.1	<0.0003	1.2	2.5	3.7	0.07 U	0.3 U	1.3
EPA 04	N	4/8/2013	<0.001	<0.005	<0.01	<0.001	3.14	<0.1	<0.05	<0.001	<0.1	<0.0003	1.2	1.6	2.8	0.08 U	-0.4 U	2
EPA 04	N	7/15/2013	<0.001	<0.005	<0.01	<0.001	2.74	<0.1	<0.05	<0.001	<0.1	0.0004	1.1	4.9	6	0.02 U	-0.4 U	1.1
EPA 04	N	10/7/2013	<0.001	<0.005	<0.01	<0.001	2.84	<0.1	<0.05	<0.001	<0.1	0.0005	0.9	2.4	3.3	0.1	0.1 U	1.2
EPA 04	N	1/13/2014	<0.001	<0.005	<0.01	<0.001	3.26	<0.1	<0.05	<0.001	<0.1	0.0005	1.1	3.2	4.3	0.07 U	0.3 U	1.3
EPA 04	Dup	4/2/2014	<0.001	<0.005	<0.01	<0.001	3.33	<0.1	<0.05	<0.001	<0.1	0.0003	1	3	4	0.02 U	0.2 U	3.1
EPA 04	N	7/9/2014	<0.001	<0.005	<0.01	<0.001	2.76	<0.1	<0.05	<0.001	<0.1	<0.0003	1	2.1	3.1	0.05 U	0.7 U	1.6
EPA 04	N	10/8/2014	<0.001	<0.005	<0.01	<0.001	2.41	<0.1	<0.05	<0.001	<0.1	0.0005	1.8	3.4	5.2	-0.02 U	0.3 U	2.3
EPA 04	N	1/7/2015	<0.001	<0.005	<0.01	<0.001	3.28	<0.1	<0.05	<0.001	<0.1	<0.0003	1.2	3.9	5.1	0.03 U	-0.1 U	1.5
EPA 04	N	4/8/2015	<0.001	<0.005	<0.01	<0.001	2.82	<0.1	<0.05	<0.001	<0.1	<0.0003	1.7	3	4.7	-0.01 U	-0.1 U	6
EPA 04	N	7/8/2015	<0.001	<0.005	<0.01	<0.001	2.8	<0.1	<0.05	<0.001	<0.1	0.0003	0.85	1.0 U	0.85	0.06 U	0.01 U	2.9
EPA 04	N	10/7/2015	<0.001	<0.005	<0.01	<0.001	2.73	<0.1	<0.05	<0.001	<0.1	<0.0003	1.6	3.7	5.3	0.3	-0.3 U	4.2
EPA 04	N	1/6/2016	<0.001	<0.005	<0.01	<0.001	3.39	<0.1	<0.05	<0.001	<0.1	<0.0003	1.3	3.1	4.4	0.06 U	0.2 U	5.2
EPA 04	N	4/6/2016	<0.001	<0.005	<0.01	<0.001	3.26	<0.1	<0.05	<0.001	<0.1	<0.0003	1.3	3.6	4.9	0.03 U	0.8 U	3.7
EPA 04	N	7/13/2016	<0.001	<0.005	<0.01	<0.001	2.52	<0.1	<0.05	<0.001	<0.1	<0.0003	1.4	4.3	5.7	0.1 U	0.3 U	2.5
EPA 04	N	10/5/2016	<0.001	<0.005	<0.01	<0.001	2.5	<0.1	<0.05	<0.001	<0.1	<0.0003	1.2	3.1	4.3	0.03 U	0.2 U	2.7
EPA 05	N	7/26/1989	< 0.05	< 0.01	0.02	< 0.05	1.7	< 0.1	< 0.05	0.001	< 0.1	0.0069	1.7	1.3	3	3.2	1.2	2.2
EPA 05	N	10/5/1989	< 0.05	< 0.01	0.04	< 0.05	1.3	< 0.01	< 0.05	< 0.001	< 0.1	0.022	1.1	1.8	2.9	0.3	< 1	1.5
EPA 05	N	1/16/1990	< 0.05	< 0.01	< 0.01	< 0.05	1.8	< 0.1	< 0.05	0.002	< 0.1	0.032	0.7	2.8	3.5	0.2	< 1	1.1
EPA 05	N	4/17/1990	< 0.05	< 0.01	0.03	< 0.05	2.2	< 0.1	0.1	< 0.001	< 0.1	0.041	1.1	2.2	3.3	< 0.2	< 1	1.8
EPA 05	N	7/17/1990	< 0.05	< 0.01	0.03	< 0.05	2.36	< 0.1	< 0.05	0.001	< 0.1	0.0475	2.1	2.3	4.4	< 0.2	3.6	2
EPA 05	N	10/16/1990	< 0.05	< 0.01	0.03	< 0.05	2.79	< 0.1	< 0.05	< 0.001	< 0.1	0.0371	0.9	1.6	2.5	< 0.2	< 1	< 1
EPA 05	N	1/8/1991	< 0.01	< 0.01	0.03	< 0.05	3.17	< 0.1	< 0.05	0.001	< 0.1	0.0003	0.8	< 1	0.8	< 0.2	< 1	< 1

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Cl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
		EPA Standard	NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01
EPA 05	N	4/17/1991	6,894.90	5.90	7.43	6608	678	591	241	10.6	380	3536	219	0.23	68	< 1	0.27	< 0.001
EPA 05	N	7/3/1991	6,894.60	6.10	6.69	5926	634	512	187	8.7	326	3440	146	0.38	39.4	< 1	0.15	< 0.001
EPA 05	N	10/22/1991	6,894.70	6.00	6.95	7076	676	712	263	10.2	653	3873	226	0.32	43.1	< 1	0.17	< 0.001
EPA 05	N	1/23/1992	no data	6.10	6.81	6207	607	679	246	9.7	312	3679	183	0.25	26.3	< 1	< 0.1	< 0.001
EPA 05	N	4/2/1992	6,894.60	5.90	7.21	7719	703	695	336	13.3	1091	4080	289	0.32	28.9	< 1	< 0.1	< 0.001
EPA 05	N	7/15/1992	6,894.20	6.20	7.18	7158	570	659	328	11.4	878	3934	192	0.23	29.6	< 1	< 0.1	< 0.001
EPA 05	N	10/15/1992	6,894.10	6.20	6.85	7824	612	774	365	12.9	857	4186	215	0.19	67.4	< 1	< 0.1	0.001
EPA 05	N	1/12/1993	6,894.50	6.10	6.78	8011	599	791	344	12.7	880	4407	214	0.19	93.5	< 1	< 0.1	< 0.001
EPA 05	N	4/15/1993	6,894.50	6.10	7.01	7246	621	751	303	8.8	926	4024	179	0.34	118	< 1	< 0.1	< 0.001
EPA 05	N	7/20/1993	6,894.30	6.20	7.14	6893	598	748	371	9.7	1000	3990	224	0.22	91.6	< 1	< 0.1	< 0.001
EPA 05	N	10/12/1993	6,892.00	6.50	6.76	7441	599	923	345	9.4	1177	4387	197	< 0.05	72	< 1	< 0.1	< 0.001
EPA 05	N	1/11/1994	6,894.00	6.50	7.19	8037	549	857	318	8.4	1109	4491	208	0.15	95.2	< 1	< 0.1	< 0.001
EPA 05	N	4/19/1994	6,893.80	6.30	7.72	8035	625	930	408	10.2	693	4651	121	0.25	91	< 1	< 0.1	0.001
EPA 05	N	7/26/1994	6,893.70	6.30	7.32	7684	601	926	399	9.5	1116	4492	209	0.12	91.9	< 1	0.16	< 0.001
EPA 05	N	10/11/1994	6,893.50	6.30	7.41	7630	572	998	371	9.4	1077	4448	204	0.13	99.8	< 1	< 0.1	< 0.001
EPA 05	N	1/11/1995	6,893.50	6.30	7.02	8106	581	960	325	10.8	1032	4533	192	0.17	87.3	< 1	< 0.1	< 0.001
EPA 05	N	4/11/1995	6,894.10	6.50	6.85	8693	595	1070	388	10.4	1168	4895	245	0.36	96	< 1	< 0.1	< 0.001
EPA 05	N	7/11/1995	6,893.30	6.50	7.41	8075	547	1043	388	9.8	1150	4604	205	0.47	82.9	< 1	< 0.1	< 0.001
EPA 05	N	10/10/1995	6,893.40	6.50	7.56	8070	550	1018	385	10.2	1258	4529	201	0.67	86.6	< 1	< 0.1	< 0.001
EPA 05	N	1/9/1996	6,893.20	6.60	7.52	7693	508	966	376	10.9	1182	4420	198	1.44	94	< 1	< 0.1	< 0.001
EPA 05	N	4/10/1996	6,893.10	6.70	7.54	8569	590	1110	362	10.7	1221	5200	211	2.74	89.2	< 1	< 0.1	< 0.001
EPA 05	N	7/17/1996	6,893.00	6.40	6.87	8522	510	957	372	11.9	1275	4404	221	1.05	100	1.42	< 0.1	< 0.001
EPA 05	N	10/8/1996	6,892.90	6.40	7.29	8870	581	1091	389	12	1294	4869	211	5.8	93.1	1.42	< 0.1	< 0.001
EPA 05	N	1/28/1997	6,892.70	6.50	7.81	8450	538	1050	343	11.3	1208	4620	246	6.24	86.7	< 1	< 0.1	< 0.001
EPA 05	N	4/15/1997	6,892.60	6.40	7.65	8670	544	1040	376	12.1	1220	4740	221	6.61	77.1	< 1	< 0.1	< 0.001
EPA 05	N	7/15/1997	6,892.20	6.30	7.43	8720	555	1010	351	12.4	1180	4570	216	7.6	78.1	< 1	< 0.1	< 0.001
EPA 05	N	10/21/1997	no data	6.70	7.70	8610	587	1100	368	12.7	1240	4840	254	9.31	90.3	< 1	0.11	< 0.001
EPA 05	N	1/20/1998	6,892.60	6.40	7.75	8290	532	1050	372	13.8	1100	5000	223	8.79	81.2	1.1	< 0.1	< 0.001
EPA 05	N	4/14/1998	6,892.40	6.60	7.16	8500	575	1010	374	13.2	1220	4720	195	1.72	83.7	1.3	< 0.1	< 0.001
EPA 05	N	7/14/1998	6,891.90	6.60	7.69	8620	541	963	364	14	1210	4200	201	11.4	67.7	1.1	< 0.1	< 0.001
EPA 05	N	10/13/1998	no data	6.45	7.75	8240	540	979	370	15	1190	4680	198	12.9	80	1	< 0.1	< 0.001
EPA 05	N	1/12/1999	6,892.00	6.50	7.75	8160	462	909	308	14.4	1140	4600	192	15.5	71.2	< 1	< 0.1	< 0.001
EPA 05	N	4/13/1999	6,892.20	6.50	7.71	8100	522	934	322	12.7	1100	4160	191	12.9	76.4	< 1	< 0.1	< 0.001
EPA 05	N	7/20/1999	6,891.94	6.50	7.55	8130	567	949	82	16.6	1090	4580	198	15	73.9	< 1	< 0.1	< 0.001
EPA 05	N	10/12/1999	6,891.80	6.45	7.75	7960	523	899	306	15	1086	4180	191	19.4	64.2	< 1	< 0.1	< 0.001
EPA 05	N	1/11/2000	6,891.90	6.50	7.78	7920	493	860	286	13.7	1050	3980	166	14.4	53.2	< 1	< 0.1	< 0.001

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA Standard			0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA 05	N	4/17/1991	< 0.01	< 0.0045	0.06	< 0.05	3.81	< 0.1	0.09	0.001	< 0.1	0.04	0.6	< 1	0.6	< 0.2	2.3	< 1
EPA 05	N	7/3/1991	< 0.01	< 0.01	0.03	< 0.05	2.8	0.1	< 0.05	0.001	< 0.1	0.0422	0.7	3.1	3.8	< 0.2	< 1	< 1
EPA 05	N	10/22/1991	< 0.01	< 0.01	0.05	< 0.05	3.31	< 0.1	0.1	0.003	< 0.1	0.0021	0.7	1.8	2.5	< 0.2	1.8	< 1
EPA 05	N	1/23/1992	< 0.01	< 0.01	0.06	< 0.05	3	< 0.1	0.08	< 0.001	< 0.1	0.064	0.7	1	1.7	< 0.2	1.4	< 1
EPA 05	N	4/2/1992	< 0.01	< 0.01	0.05	< 0.05	2.56	< 0.1	< 0.05	0.013	< 0.1	0.002	0.2	2.8	3	< 0.2	6	< 1
EPA 05	N	7/15/1992	< 0.01	< 0.01	0.06	< 0.05	2.31	< 0.1	0.07	0.003	< 0.1	0.005	0.9	4.5	5.4	< 0.2	1.5	< 1
EPA 05	N	10/15/1992	< 0.01	< 0.01	0.1	< 0.05	1.96	< 0.1	0.12	0.005	< 0.1	0.105	1.3	< 1	1.3	< 0.2	< 1	1.9
EPA 05	N	1/12/1993	< 0.01	< 0.01	0.12	< 0.05	1.65	< 0.1	0.06	0.03	< 0.1	0.077	1	2.2	3.2	< 0.2	< 1	1.5
EPA 05	N	4/15/1993	< 0.001	< 0.01	0.05	< 0.05	1.95	< 0.1	0.08	0.003	< 0.1	0.036	0.3	< 1	0.3	< 0.2	1.6	< 1
EPA 05	N	7/20/1993	< 0.01	< 0.01	0.07	< 0.05	1.36	< 0.1	0.09	0.005	< 0.1	0.073	1.5	2.7	4.2	< 0.2	< 1	1.8
EPA 05	N	10/12/1993	< 0.01	< 0.01	0.08	< 0.05	1.39	< 0.1	0.08	0.004	< 0.1	0.084	1.9	2.3	4.2	< 0.2	2.9	5.3
EPA 05	N	1/11/1994	< 0.01	< 0.01	0.07	< 0.05	1.45	< 0.1	0.09	0.002	< 0.1	0.1	0.8	1.2	2	< 0.2	< 1	3.6
EPA 05	N	4/19/1994	< 0.01	< 0.01	0.12	< 0.05	1.19	< 0.1	< 0.05	0.003	< 0.1	0.101	1.9	5.7	7.6	< 0.2	1	10.6
EPA 05	N	7/26/1994	< 0.01	< 0.01	0.07	< 0.05	1.27	< 0.1	0.05	0.002	< 0.1	0.102	1.1	7.7	8.8	< 0.2	1.4	12.8
EPA 05	N	10/11/1994	< 0.01	< 0.01	0.09	< 0.05	1.02	< 0.1	0.14	0.002	< 0.1	0.095	2.1	< 1	2.1	< 0.2	< 1	2.3
EPA 05	N	1/11/1995	< 0.01	< 0.01	0.06	< 0.05	1.11	< 0.1	0.09	0.003	< 0.1	0.109	1.1	3.4	4.5	< 0.2	< 1	6.4
EPA 05	N	4/11/1995	< 0.01	< 0.01	< 0.01	< 0.05	0.85	< 0.1	< 0.05	0.004	< 0.1	0.102	0.7	1.9	2.6	< 0.2	< 1	3.6
EPA 05	N	7/11/1995	< 0.01	< 0.01	0.065	< 0.05	0.6	< 0.1	0.06	0.004	< 0.1	0.09	1.1	< 1	1.1	< 0.2	< 1	5.6
EPA 05	N	10/10/1995	< 0.01	< 0.01	0.05	< 0.05	0.53	< 0.1	0.05	0.012	< 0.1	0.1132	1.4	4.8	6.2	0.7	< 1	2.1
EPA 05	N	1/9/1996	< 0.01	< 0.01	0.06	< 0.05	0.49	< 0.1	< 0.05	0.018	< 0.1	0.124	1.3	1.2	2.5	< 0.2	< 1	1.5
EPA 05	N	4/10/1996	< 0.01	< 0.01	0.05	< 0.05	0.47	< 0.1	0.05	0.001	< 0.1	0.126	0.8	2.7	3.5	0.7	< 1	< 1
EPA 05	N	7/17/1996	< 0.01	< 0.01	0.06	< 0.05	0.49	< 0.1	0.06	0.004	< 0.1	0.125	0.9	< 1	0.9	< 0.2	< 1	< 1
EPA 05	N	10/8/1996	< 0.01	< 0.01	0.06	< 0.05	0.51	< 0.1	0.06	0.002	< 0.1	0.117	0.6	< 1	0.6	< 0.2	< 1	< 1
EPA 05	N	1/28/1997	< 0.01	< 0.01	0.06	< 0.05	0.48	< 0.1	0.05	0.003	< 0.1	0.086	1.7	< 1	1.7	2	< 1	1.6
EPA 05	N	4/15/1997	< 0.01	< 0.01	0.05	< 0.05	0.47	< 0.1	0.06	0.024	< 0.1	0.107	1.8	< 1	1.8	< 0.2	< 1	< 1
EPA 05	N	7/15/1997	< 0.01	< 0.01	< 0.01	< 0.05	0.41	< 0.1	0.05	0.006	< 0.1	0.097	0.9	< 1	0.9	< 0.2	< 1	< 1
EPA 05	N	10/21/1997	< 0.01	< 0.01	0.07	< 0.05	0.53	0.5	0.06	0.018	< 0.1	0.121	0.9	3.3	4.2	< 0.2	< 1	< 1
EPA 05	N	1/20/1998	< 0.01	< 0.005	0.07	< 0.05	0.63	3.1	< 0.05	< 0.001	< 0.1	0.239	2.4	1.5	3.9	< 0.2	< 1	5
EPA 05	N	4/14/1998	< 0.01	< 0.005	0.06	< 0.05	0.57	0.53	0.05	0.005	< 0.1	0.147	1.4	< 1	1.4	< 0.2	< 1	< 1
EPA 05	N	7/14/1998	< 0.01	< 0.005	0.06	< 0.05	0.54	0.5	< 0.05	0.005	< 0.1	0.173	1.3	< 1	1.3	< 0.2	< 1	< 1
EPA 05	N	10/13/1998	< 0.01	< 0.005	0.05	< 0.05	0.53	0.55	< 0.05	0.005	< 0.1	0.139	1.4	3.1	4.5	< 0.2	< 1	2.2
EPA 05	N	1/12/1999	< 0.01	< 0.005	0.04	< 0.05	0.53	0.43	< 0.05	< 0.001	< 0.1	0.149	1.1	3.8	4.9	< 0.2	< 1	< 1
EPA 05	N	4/13/1999	< 0.01	< 0.005	0.06	< 0.05	0.53	0.44	< 0.05	0.004	< 0.1	0.13	1	2.1	3.1	< 0.2	3.5	3.5
EPA 05	N	7/20/1999	< 0.01	< 0.005	0.05	< 0.05	0.49	0.36	< 0.05	0.004	< 0.1	0.127	1.6	< 1	1.6	< 0.2	2.2	2.2
EPA 05	N	10/12/1999	< 0.01	< 0.005	0.04	< 0.05	0.59	0.35	< 0.05	0.001	< 0.1	0.124	1.2	< 1	1.2	< 0.2	< 1	< 1
EPA 05	N	1/11/2000	< 0.01	< 0.005	0.06	< 0.05	0.51	0.37	0.07	0.005	< 0.1	0.111	0.9	< 1	0.9	< 0.2	< 1	< 1

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Cl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l
		NRC Standard	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
		EPA Standard	NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01
EPA 05	N	5/3/2000	6,891.80	6.20	7.56	5780	461	595	181	14.7	458	3160	94	22.3	42.3	< 1	< 0.1	< 0.001
EPA 05	N	7/11/2000	6,891.50	6.06	7.09	5720	496	630	188	13.5	415	3310	92.7	23	42.5	< 1	< 0.1	< 0.001
EPA 05	N	10/3/2000	6,891.60	6.14	6.99	5500	466	594	171	14.4	354	3060	85.4	20	37.5	< 1	< 0.1	< 0.001
EPA 05	N	1/9/2001	6,891.60	6.32	6.81	5560	475	591	148	12.7	362	3220	102	20.2	35.2	< 1	< 0.1	< 0.001
EPA 05	N	4/3/2001	6,891.40	6.30	7.22	5510	563	669	155	12	353	3460	96.3	17.5	36.3	< 1	< 0.1	< 0.001
EPA 05	N	7/17/2001	6,891.00	6.65	6.71	5520	448	563	150	13.7	267	2950	108	16.6	37.8	< 1	< 0.1	< 0.001
EPA 05	N	10/9/2001	6,891.10	5.99	6.50	5520	440	550	143	13	240	3000	95.2	16.2	35.8	< 1	< 0.1	< 0.001
EPA 05	N	1/14/2002	6,891.10	6.73	6.60	5430	531	621	139	14.1	230	3290	97.8	16.7	31	< 1	< 0.1	< 0.001
EPA 05	N	4/9/2002	6,890.74	6.05	6.80	5450	457	551	150	12.6	199	3150	88.8	15.7	29.8	< 1	< 0.1	< 0.001
EPA 05	N	7/16/2002	6,890.78	6.58	7.16	5410	452	550	139	13.6	179	3170	77.3	15.7	30.7	< 1	< 0.1	< 0.001
EPA 05	N	10/15/2002	6,890.63	6.30	6.77	4610	513	608	151	12.5	168	3580	75.1	15.1	12.3	< 1	< 0.1	< 0.001
EPA 05	N	1/14/2003	6,890.29	6.59	6.75	5320	429	524	145	15.1	160	2930	67.9	13.9	28.9	< 1	< 0.1	< 0.001
EPA 05	N	4/14/2003	6,890.24	6.00	6.75	5350	455	569	160	15.8	146	3210	80.2	12.6	29.8	< 1	< 0.1	< 0.001
EPA 05	N	7/9/2003	6,890.01	5.69	6.99	5340	486	580	139	12.6	138	3420	72.4	13.2	25.9	< 1	< 0.1	< 0.001
EPA 05	N	10/14/2003	6,890.07	5.72	7.02	5310	523	528	144	11.3	132	3390	75.8	11.6	25.9	< 1	0.4	< 0.001
EPA 05	N	1/12/2004	6,891.44	5.91	6.37	5310	508	600	156	12.6	120	3450	47.2	11.9 D	26.8 D	< 1.0	< 0.1	< 0.001
EPA 05	N	4/13/2004	6,889.95	5.63	5.87	5240	459	546	141	11.6	101	3410	82.4	10.8 D	22.6 D	< 1	< 0.1	< 0.001
EPA 05	N	7/20/2004	6,889.70	5.87	6.03	5360	505 D	562 D	147	10.4	124	3310 D	66	9.2 D	24.2 D	< 1.0	< 0.1	< 0.001
EPA 05	N	10/12/2004	6,889.67	5.89	6.32	5300	483 D	586 D	146	10.8	93	3300 D	71	10.1 D	25.1 D	< 1.0	< 0.1	< 0.001
EPA 05	N	1/11/2005	6,889.91	5.93	6.41	5220	494 D	563 D	138	10.7	86	3250 D	68	7.8 D	23.0 D	< 1.0	< 0.1	< 0.001
EPA 05	N	4/12/2005	no data	no data	6.29	4950	496	566	146	10.7	85	3410	72	8.3	23.6	< 1.0	0.1	< 0.001
EPA 05	N	7/19/2005	6,889.05	5.52	6.51	5200	466 D	541 D	136	10	100	3050 D	58	7.7 D	23.1 D	< 1.0	0.1	< 0.001
EPA 05	N	10/11/2005	6,889.14	5.87	6.51	5120	466 D	538 D	138	10.6	92	3120 D	66	7.8 D	22.4 D	< 1.0	< 0.1	< 0.001
EPA 05	N	1/17/2006	6,888.87	6.02	7.09	4960	474 D	551 D	127	9.8	85	3140 D	65	11.4 D	20.9 D	< 1.0	< 0.1	< 0.001
EPA 05	N	4/11/2006	6,888.84	5.83	6.70	4950	494 D	567 D	130	9.8	85	3190 D	65	8.5 D	21.2 D	< 1.0	< 0.1	< 0.001
EPA 05	N	7/25/2006	6,889.04	5.84	6.40	4710	490 D	541 D	134	10.1	72	3290 D	62	8.1 D	20.5 D	< 1.0	< 0.1	< 0.001
EPA 05	N	10/10/2006	6,888.64	5.95	6.43	4960	471 D	525 D	129	9.8	70	3080 D	55	8.4 D	20.4 D	< 0.5	< 0.1	< 0.001
EPA 05	N	1/23/2007	6,888.32	6.00	6.33	4910	468 D	533 D	127	10	71	3100 D	60	8.6 D	18.4 D	<0.5	<0.1	<0.001
EPA 05	N	4/16/2007	6,888.47	5.90	6.30	4940	465 D	537 D	115	9.7	73	3280 D	63	7.9 D	16.2 D	<0.5	<0.1	<0.001
EPA 05	N	7/16/2007	6,888.04	5.99	6.30	4780	600 D	663 D	116	8.4	110	3820 D	51	9.7 D	20.4 D	<0.5	<0.1	0.002
EPA 05	N	10/2/2007	6,888.03	5.93	6.34	4880	431 D	478 D	119 D	10.2	65	2960 D	69 D	8.2 D	18.4 D	<0.5	<0.1	<0.001
EPA 05	N	1/21/2008	6,887.99	5.95	6.65 H	4710	462 D	497 D	97.1	9.9	72	3050 D	59 D	5.2 D	18.9 D	< 0.5	< 0.1	< 0.001
EPA 05	N	4/14/2008	6,887.59	5.72	6.16	4620	498	536	118 D	8.9	101	3240 D	48	10.4 D	19.8	< 0.5	< 0.1	0.001
EPA 05	N	7/14/2008	6,887.49	6.02	6.28	4530	486	514	115 D	8	95	3480 D	48	10.3 D	17.9	< 0.5	< 0.1	< 0.003
EPA 05	N	10/13/2008	6,887.34	5.92	6.36	4960 H	470	506	118 D	8	66	3360 D	46	10.2	16.1	< 0.5	< 0.1	< 0.001
EPA 05	N	1/19/2009	6,886.99	6	6.46	4990 H	451	485	116	8	84	3170 D	45	8.1 D	12.4	<0.5	<0.1	<0.001

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA Standard			0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA 05	N	5/3/2000	< 0.01	< 0.005	0.08	< 0.05	1.23	< 0.1	0.1	0.003	< 0.1	0.0365	0.7	2	2.7	< 0.2	< 1	< 1
EPA 05	N	7/11/2000	< 0.01	< 0.005	0.08	0.05	1.16	< 0.1	< 0.05	< 0.001	< 0.1	0.0219	0.7	2.3	3	< 0.2	< 1	< 1
EPA 05	N	10/3/2000	< 0.01	< 0.005	0.08	< 0.05	1.09	< 0.1	0.08	0.001	< 0.1	0.015	0.8	2.7	3.5	< 0.2	< 1	1.4
EPA 05	N	1/9/2001	< 0.01	< 0.005	0.09	< 0.05	1.24	< 0.1	0.11	0.003	< 0.1	0.016	1.3	< 1	1.3	< 0.2	< 1	1.5
EPA 05	N	4/3/2001	< 0.01	< 0.005	0.1	< 0.05	1.39	< 0.1	0.12	0.003	< 0.1	0.015	1.2	< 1	1.2	< 0.2	< 1	< 1
EPA 05	N	7/17/2001	< 0.01	< 0.005	0.1	< 0.05	1.26	< 0.1	0.09	0.002	< 0.1	0.007	1.4	4.1	5.5	< 0.2	< 1	< 1
EPA 05	N	10/9/2001	< 0.01	< 0.005	0.08	< 0.05	0.98	< 0.1	0.07	0.002	< 0.1	0.007	1.7	2.3	4	< 0.2	< 1	< 1
EPA 05	N	1/14/2002	< 0.01	< 0.005	0.11	< 0.05	1.28	< 0.1	0.13	0.002	< 0.1	0.0061	1.7	4.8	6.5	< 0.2	< 1	1.2
EPA 05	N	4/9/2002	< 0.01	< 0.005	0.1	< 0.05	1.23	< 0.1	0.11	0.001	< 0.1	0.0046	0.8	1.5	2.3	< 0.2	< 1	1.5
EPA 05	N	7/16/2002	< 0.01	< 0.005	0.1	< 0.05	1.25	< 0.1	0.09	0.001	< 0.1	< 0.0003	1.5	< 1	1.5	< 0.2	< 1	2.7
EPA 05	N	10/15/2002	< 0.01	< 0.005	0.09	< 0.05	1.17	< 0.1	0.1	< 0.001	< 0.1	0.0026	1.8	< 1	1.8	< 0.2	< 1	2.7
EPA 05	N	1/14/2003	< 0.01	< 0.005	0.1	< 0.05	1.22	< 0.1	0.09	< 0.001	< 0.1	0.003	1.1	< 1	1.1	< 0.2	< 1	2.3
EPA 05	N	4/14/2003	< 0.01	< 0.005	0.11	< 0.05	1.41	< 0.1	0.09	< 0.001	< 0.1	0.002	1.5	3.5	5	< 0.2	< 1	3.2
EPA 05	N	7/9/2003	< 0.01	< 0.005	0.1	< 0.05	1.29	< 0.1	0.07	< 0.001	< 0.1	0.0006	1.6	< 1	1.6	< 0.2	< 1	< 1.0
EPA 05	N	10/14/2003	< 0.01	< 0.005	0.1	< 0.05	1.28	< 0.1	0.08	< 0.001	< 0.1	0.0019	0.8	3.5	4.3	< 0.2	< 1	2.1
EPA 05	N	1/12/2004	< 0.01	< 0.005	< 0.01	< 0.05	0.04	< 0.1	< 0.05	< 0.001	< 0.1	0.0005 D	1.1	< 1.0	1.1	< 0.2	< 1.0	2.4
EPA 05	N	4/13/2004	< 0.01	< 0.005	0.09	< 0.05	1.31	< 0.1	0.09	0.001	< 0.1	0.0016 D	1.5	2.5	4	< 0.2	< 1	1.9
EPA 05	N	7/20/2004	< 0.01	< 0.005	0.09	< 0.05	1.2	< 0.1	0.08	0.002	< 0.1	0.0015 D	2	< 1.0	2	< 0.2	< 1.0	1.9
EPA 05	N	10/12/2004	< 0.01	< 0.005	0.08	< 0.05	1.23	< 0.1	< 0.05	0.002	< 0.1	0.0015	1.7	1.5	3.2	< 0.2	< 1.0	1.9
EPA 05	N	1/11/2005	< 0.01	< 0.005	0.09	< 0.05	1.26	< 0.1	0.09	0.001	< 0.1	0.0016	1.1	1.5	2.6	< 0.2	< 1.0	4.2
EPA 05	N	4/12/2005	< 0.01	< 0.005	0.08	< 0.05	1.31	< 0.1	0.07	< 0.001	< 0.1	0.0013	1.3	1.6	2.9	< 0.2	< 1.0	3.3
EPA 05	N	7/19/2005	< 0.01	< 0.005	0.07	< 0.05	1.14	< 0.1	0.07	< 0.001	< 0.1	0.0015	1	< 1.0	1	< 0.2	< 1.0	1.9
EPA 05	N	10/11/2005	< 0.01	< 0.005	0.08	< 0.05	1.23	< 0.1	0.06	< 0.001	< 0.1	0.0014	1.7	1.6	3.3	< 0.2	< 1.0	4
EPA 05	N	1/17/2006	< 0.01	< 0.005	0.07	< 0.05	1.26	< 0.1	0.07	< 0.001	< 0.1	0.0015	1.7	1.3	3	< 0.2	< 1.0	< 1.0
EPA 05	N	4/11/2006	< 0.01	< 0.005	0.06	< 0.05	1.09	< 0.1	0.06	< 0.001	< 0.1	0.0022	1.5	4.2	5.7	< 0.2	< 1.0	1.1
EPA 05	N	7/25/2006	< 0.01	< 0.005	0.06	< 0.05	1.03	< 0.1	< 0.05	< 0.001	< 0.1	0.0016	1.2	4	5.2	< 0.2	< 1.0	2
EPA 05	N	10/10/2006	< 0.01	< 0.005	0.06	< 0.05	1.16	< 0.1	0.06	0.001	< 0.1	0.0012	1.2	2.2	3.4	< 0.2	< 1	2.2
EPA 05	N	1/23/2007	< 0.01	< 0.005	0.06	< 0.05	1.19	< 0.1	0.05	< 0.001	< 0.1	0.0013 D	1.2	< 1	1.2	< 0.2	< 1	4.1
EPA 05	N	4/16/2007	< 0.01	< 0.005	0.06	< 0.05	1.2	< 0.1	0.05	< 0.001	< 0.1	0.0014	0.8	< 1	0.8	< 0.2	< 1	1.7
EPA 05	N	7/16/2007	< 0.01	< 0.005	0.05	< 0.05	0.95	< 0.1	< 0.05	< 0.001	< 0.1	0.0014	1.5	1.5	3	< 0.2	< 1	1.2
EPA 05	N	10/2/2007	< 0.01	< 0.005	0.05	< 0.05	1.15	< 0.1	< 0.05	< 0.001	< 0.1	0.0015	1.3	< 1	1.3	< 0.2	< 1	2.6
EPA 05	N	1/21/2008	< 0.01	< 0.005	0.04	< 0.05	0.98	< 0.1	< 0.05	< 0.001	< 0.1	0.0014	1.8	< 1	1.8	< 0.2	< 1	2.3
EPA 05	N	4/14/2008	< 0.01	< 0.005	0.04	< 0.05	1.08	< 0.1	< 0.05	< 0.001	< 0.1	0.0015	1.3	2.5	3.8	0.7	-6.3 U	2.9
EPA 05	N	7/14/2008	< 0.01	< 0.005	0.04	< 0.05	1.15	< 0.1	< 0.05	< 0.001	< 0.1	0.0013 D	1.8	3.4	5.2	0 U	3.3 U	1.3
EPA 05	N	10/13/2008	< 0.01	< 0.005	0.04	< 0.05	1.09	< 0.1	< 0.05	< 0.001	< 0.1	0.0014	1.5	2.6	4.1	0.2	-2 U	1.9
EPA 05	N	1/19/2009	< 0.01	< 0.005	0.04	< 0.05	1.12	< 0.1	< 0.05	0.001	< 0.1	0.0011	0.5	3	3.5	-0.1 U	0.2 U	2.8



**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01
EPA 05	N	4/13/2009	6,887.14	5.78	5.64	4940	463 D	499	118 D	11	49	3250 D	42	7.9 D	16.1 D	<0.50	<0.1	<0.001
EPA 05	N	7/13/2009	6,886.94	5.84	6.31 H	4740 H	474	495	111	8	67	3520 D	50	6.1 D	15.3	<0.50	<0.1	<0.001
EPA 05	N	10/12/2009	6,886.94	5.94	6.54	4850	469	488	115	8	65	3170 D	48	11.0 D	12.4	<0.50	<0.1	<0.001
EPA 05	N	1/11/2010	6,886.54	6.01	6.31	4810 D	468 D	492	115 D	9	67	3300 D	42	11.1 D	13 D	<0.50	<0.1	<0.001
EPA 05	N	4/12/2010	6,886.69	6.03	6.09	4840 D	467	496	119	8	92	3470 D	46	12.3 D	10.7 D	<0.50	<0.1	<0.001
EPA 05	N	7/19/2010	6,886.44	5.85	6.14	4890 D	472	514	112	7	59	3240 D	40 D	10.8 D	10 D	<0.50	<0.1	<0.001
EPA 05	N	10/11/2010	6,886.59	5.94	7.09	3720 D	465	480	119	8	74	3460 D	37 D	10.5 D	10 D	<0.50	<0.1	<0.001
EPA 05	N	1/10/2011	6,886.54	5.94	6.26	4770 D	452	480	106	7	52	3200 D	42 D	8.0 D	9 D	0.62	<0.1	<0.001
EPA 05	N	4/11/2011	6,886.12	5.94	6.12	4780 D	476	498	122	7	69	3190 D	41 D	6.9 D	9 D	0.53	<0.1	0.003
EPA 05	N	7/18/2011	6,885.99	5.94	7.25	4680 D	469	486	112	7	62	3160 D	40 D	6.7 D	7.2 D	<0.50	0.3	<0.001
EPA 05	N	10/10/2011	6,886.12	5.95	6.43	4670 D	476	493	115	7	65	3280 D	40 D	3.8 D	6.9 D	<0.50	<0.1	0.012
EPA 05	N	1/9/2012	6,885.84	6.14	5.89 H	4760 D	442	426	98	6	61	3150 D	39 D	4.2 D	1	<0.50	<0.1	<0.001
EPA 05	N	4/9/2012	6,885.69	5.92	5.91 H	4770 D	451	490	107	6	64	3130 D	38 D	3.9 D	4.0 D	<0.50	<0.1	<0.01
EPA 05	N	7/16/2012	6,885.64	5.96	6.28 H	4920	514	522	117 D	6	69	3230 D	41 D	4.4 D	3.1	<0.50	<0.1	<0.001
EPA 05	N	10/15/2012	6,885.49	6.11	6.16 H	4790	488	486	112 D	6	66	3130 D	40 D	1.4	2.1 D	<0.50	<0.1	<0.001
EPA 05	N	1/15/2013	no data	5.85	5.99 H	4710	471	496	112 D	6	67	3200 D	37 D	1.6 D	1.9 D	<0.50	<0.1	<0.001
EPA 05	N	4/8/2013	6,885.78	5.94	6.07 H	4810	470	489	108	7	70	3210 D	36 D	2.63	2.1 D	<0.50	<0.1	<0.001
EPA 05	N	7/15/2013	6,885.18	5.96	6.33 H	4800	467	483	106	6	65	3260 D	no data	2.24	2.5 D	<0.50	<0.1	<0.001
EPA 05	N	10/7/2013	6,884.96	6.02	6.05 H	4710	462	484	107	6	66	3180 D	40 D	1.79	1.7 D	<0.50	<0.1	<0.001
EPA 05	N	1/13/2014	6,884.87	6.11	6.05	4560	464	481	107	6	57	3190	37	1.55	1.9	<0.50	<0.1	<0.001
EPA 05	N	4/1/2014	6,885.19	6.23	5.92 H	4540	465	490	106 D	6	66	3090 D	42 D	0.1	3.5 D	0.54	<0.1	<0.001
EPA 05	N	7/9/2014	6,884.66	6.03	6.21 H	4640	450	497	110 D	7	50	3130 D	35 D	0.27	2.7 D	<0.50	<0.1	<0.001
EPA 05	N	10/8/2014	6,884.68	6.11	6.15 H	4660	451	464	99	6	48	3180 D	37 D	<0.05	3.7 D	<0.50	<0.1	<0.001
EPA 05	N	1/7/2015	6884.32	6.09	5.86 H	4600	461	475	106	7	53	3240 D	44 D	<0.05	3.6 D	<0.50	<0.1	<0.001
EPA 05	N	4/8/2015	6884.70	6.05	6.12 H	4680	466	475	105	6	51	3170 D	39 D	1.12	2.6 D	<0.5	<0.1	<0.001
EPA 05	N	7/8/2015	6884.35	5.95	6.18 H	4650	439	447	98	7	54	3230 D	39 D	<0.05	4.1 D	<0.50	<0.1	<0.001
EPA 05	N	10/6/2015	6884.23	6.29	6.13 H	4660	458	479	106	7	59	3180 D	38 D	1.55	3.2 D	<0.50	<0.1	0.001
EPA 05	N	1/5/2016	6884.29	6.30	6.08 H	4670	459	492	108	7	65	3170 D	37 D	<0.05	5.7 D	<0.50	<0.1	<0.001
EPA 05	N	4/5/2016	6883.96	6.18	6.15 H	4680	470	476	104	6	76	3270 D	37 D	3.0 DH	3.7 D	<0.50	<0.1	<0.001
EPA 05	N	7/12/2016	6883.92	6.37	6.38 H	4730	468	485	105	6	71	3410 D	41 D	1.99	6.0 D	<0.50	<0.1	<0.001
EPA 05	N	10/4/2016	6884.06	6.56	6.58 H	4690	473	494	104	7	64	3330 D	38 D	2.0 D	7.1 D	<0.50	<0.1	<0.001
EPA 07	N	7/26/1989	6,907.80	4.40	4.01	7774	526	871	212	9.1	0	5092	134	3.45	94	< 1	94	< 0.001
EPA 07	N	10/5/1989	6,908.00	4.20	4.26	8076	497	877	221	12	0	5272	192	3.41	69	< 1	99	< 0.001
EPA 07	N	1/16/1990	6,908.00	4.20	4.22	8190	449	915	226	9.09	< 1	5108	174	3.46	88	< 1	96	< 0.001
EPA 07	N	4/17/1990	6,907.70	4.20	4.30	9172	453	1100	226	8.7	< 1	5392	182	3.95	96	< 1	100	< 0.001
EPA 07	N	7/17/1990	6,907.10	4.40	4.35	9566	496	1009	230	10	0.1	5739	176	1.9	84	< 1	80.1	< 0.001

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA Standard			0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA 05	N	4/13/2009	<0.01	<0.005	0.04	<0.05	1.14	<0.1	<0.05	<0.001	<0.1	0.0013	1.6	2.3	3.9	-0.04 U	1.0 U	1.9
EPA 05	N	7/13/2009	<0.01	<0.005	0.04	<0.05	1.24	<0.1	<0.05	0.001	<0.1	0.0015	1.6	2.6	4.2	0.1 U	0.4 U	3.2
EPA 05	N	10/12/2009	<0.01	<0.005	0.04	<0.05	1.21	<0.1	<0.05	<0.001	<0.1	0.0015	1.7	3.3	5	0.04 U	0.4 U	2.3
EPA 05	N	1/11/2010	<0.01	<0.005	0.04	<0.05	1.11	<0.1	<0.05	<0.001	<0.1	0.0014	1.7	2.7	4.4	0.04 U	0.2 U	1.6
EPA 05	N	4/12/2010	<0.01	<0.005	0.04	<0.05	1.18	<0.1	<0.05	<0.001	<0.1	0.0012	1.8	3.5	5.3	0.01 U	-1 U	2.9
EPA 05	N	7/19/2010	<0.01	<0.005	0.04	<0.05	1.17	<0.1	<0.05	<0.001	<0.1	0.0014	1.9	2.4	4.3	0.006 U	-0.3 U	3.6
EPA 05	N	10/11/2010	<0.01	<0.005	0.04	<0.05	1.15	<0.1	<0.05	<0.001	<0.1	0.0014	2	3.6	5.6	0.08 U	-1 U	2.7
EPA 05	N	1/10/2011	<0.01	<0.005	0.04	<0.05	1.24	<0.1	<0.05	<0.001	<0.1	0.0009	1.9	2.9	4.8	0.009 U	1.2 U	4.6
EPA 05	N	4/11/2011	<0.01	<0.005	0.04	<0.05	1.27	<0.1	<0.05	<0.001	<0.1	0.0009	1.6	3	4.6	0.08 U	1.6	2.3
EPA 05	N	7/18/2011	<0.01	<0.005	0.03	<0.05	1.2	<0.1	<0.05	<0.001	<0.1	0.0019	1.8	3.6	5.4	0.05 U	-0.3 U	2.2
EPA 05	N	10/10/2011	<0.01	<0.005	0.03	<0.05	1.19	<0.1	<0.05	<0.001	<0.1	0.0007	2	2.6	4.6	0.07 U	0.4 U	2.1
EPA 05	N	1/9/2012	<0.01	<0.005	0.03	<0.05	1.14	<0.1	0.05	<0.001	<0.1	0.001	1.6	0.97 U	3.54	0.02 U	0.3 U	1.6
EPA 05	N	4/9/2012	<0.01	<0.005	0.04	<0.05	1.15	<0.1	0.05	<0.001	<0.1	0.0007	1.5	2.5	6.5	0.001 U	0.1 U	2.1
EPA 05	N	7/16/2012	<0.001	<0.005	0.03	0.002	0.98	<0.1	<0.05	<0.001	<0.1	0.001	1.4	1.8	5	0.01 U	1 U	1.7
EPA 05	N	10/15/2012	<0.001	<0.005	0.04	0.001	0.9	<0.1	0.06	<0.001	<0.1	0.0006	1.1	2.3	3.4	0.04 U	0.7 U	2.2
EPA 05	N	1/15/2013	<0.001	<0.005	0.05	<0.001	1.13	<0.1	0.06	<0.001	<0.1	0.0005	1.5	2.5	4	0.05 U	0.1 U	1
EPA 05	N	4/8/2013	<0.001	<0.005	0.04	<0.001	0.95	<0.1	0.06	<0.001	<0.1	0.0007	1.4	1.9	3.3	0.1	-0.1 U	1.9
EPA 05	N	7/15/2013	<0.001	<0.005	0.05	<0.001	0.87	<0.1	0.06	0.001	<0.1	0.0008	1.1	2.8	3.9	0.03 U	0.01 U	1.2
EPA 05	N	10/7/2013	<0.001	<0.005	0.04	<0.001	0.88	<0.1	0.06	<0.001	<0.1	0.0005	1.7	1.6	3.3	0.08 U	0.4 U	1.1
EPA 05	N	1/13/2014	<0.001	<0.005	0.05	<0.001	0.96	<0.1	0.1	<0.001	<0.1	0.0004	1.3	2.1	3.4	0.1 U	0.4 U	1.3
EPA 05	N	4/1/2014	<0.001	<0.005	0.08	<0.001	0.91	<0.1	0.1	<0.001	<0.1	0.0003	1.2	2.7	3.9	0.06 U	0.1 U	2.4
EPA 05	N	7/9/2014	<0.001	<0.005	0.07 D	<0.001	0.88	<0.1	0.09	<0.001	<0.1	0.0007	1.2	1.8	3	0.04 U	-0.05 U	1.3
EPA 05	N	10/8/2014	<0.001	<0.005	0.1	0.002	0.8	<0.1	0.1	<0.001	<0.1	0.0004	1.4	1.6 U	1.4	0.05 U	0.1 U	1.4
EPA 05	N	1/7/2015	<0.001	<0.005	0.1	<0.001	0.74	<0.1	0.09	<0.001	<0.1	0.0003	1.2	1.7	2.9	0.07 U	0.2 U	1.8
EPA 05	N	4/8/2015	<0.001	<0.005	0.09	<0.001	0.62	<0.1	0.09	<0.001	<0.1	0.0003	1.7	3	4.7	0.03 U	0.3 U	6.6
EPA 05	N	7/8/2015	<0.001	<0.005	0.06	<0.001	0.52	<0.1	0.06	<0.001	<0.1	0.0005	1.1	1.2	2.3	0.06 U	0.7 U	2.8
EPA 05	N	10/6/2015	<0.001	<0.005	0.05	<0.001	0.45	<0.1	0.06	<0.001	<0.1	0.0005	1.6	3.4	5	0.08 U	0.5 U	4.1
EPA 05	N	1/5/2016	<0.001	<0.005	0.05	0.01	0.46	<0.1	0.06	<0.001	<0.1	0.0006	1.1	2.8	3.9	0.05 U	-0.4 U	4.5
EPA 05	N	4/5/2016	<0.001	<0.005	0.04	<0.001	0.38	<0.1	0.05	<0.001	<0.1	0.0005	1.3	2.7	4	-0.03 U	0.0 U	3.6
EPA 05	N	7/12/2016	<0.001	<0.005	0.03	<0.001	0.26	<0.1	<0.05	<0.001	<0.1	0.0009	1.5	4.2	5.7	0.04 U	0.3 U	4.1
EPA 05	N	10/4/2016	<0.001	<0.005	0.02	<0.001	0.24	<0.1	<0.05	<0.001	<0.1	0.0007	1.3	2.7	4	0.05 U	-0.03 U	2.9
EPA 07	N	7/26/1989	< 0.05	< 0.01	0.25	< 0.05	24	< 0.1	0.27	< 0.001	< 0.1	0.008	4.8	1.3	6.1	6	< 1	9
EPA 07	N	10/5/1989	< 0.05	< 0.01	0.26	0.09	25	< 0.01	0.29	0.002	< 0.1	0.012	2	3.3	5.3	0.8	< 1	2.5
EPA 07	N	1/16/1990	< 0.05	< 0.01	0.34	< 0.05	27	< 0.1	0.35	0.002	< 0.1	0.008	1.5	5.4	6.9	< 0.2	< 1	1.5
EPA 07	N	4/17/1990	< 0.05	< 0.01	0.36	< 0.05	42	< 0.1	0.44	< 0.001	< 0.1	0.006	2.7	5.8	8.5	< 0.2	< 1	2.8
EPA 07	N	7/17/1990	< 0.05	< 0.01	0.3	< 0.05	42.3	< 0.1	0.45	< 0.001	< 0.1	0.0155	0.6	5.2	5.8	< 0.2	< 1	< 1

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation ft amsl	Field pH SU	Lab pH SU	Lab TDS mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	HCO3 mg/l	SO4 mg/l	Cl mg/l	NH4 as N mg/l	NO3 as N mg/l	TTHMs (Chloroform) ug/l	Al mg/l	As mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01
EPA 07	N	10/9/1990	no data	4.40	4.63	8003	449	928	241	10.5	10	5204	169	1.17	36.2	< 1	39.1	< 0.001
EPA 07	N	1/3/1991	no data	4.60	4.68	7145	475	829	262	24.4	6.1	4572	117	1.67	29.3	< 1	18	< 0.001
EPA 07	N	4/17/1991	no data	5.00	5.37	6918	454	757	252	12.4	15	4676	117	1.3	40.5	< 1	6.15	< 0.001
EPA 07	N	7/11/1991	no data	5.00	5.80	6957	386	759	230	10.1	39	4506	99.7	1.01	28.1	< 1	0.18	< 0.001
EPA 07	N	9/4/1991	no data	no data	5.58	7322	439	672	245	22.5	37	4415	107	1.2	17	< 1	1.21	< 0.001
EPA 07	N	10/17/1991	no data	5.20	5.69	6827	473	712	257	12.6	39.3	4296	111	1.25	25	< 1	1.15	0.001
EPA 07	N	11/4/1991	no data	no data	5.65	6986	445	610	238	10	38.8	4271	116	1.2	23.6	< 1	1.93	< 0.001
EPA 07	N	12/2/1991	no data	no data	5.84	6860	439	608	246	10.4	55.6	3834	114	1.31	54.7	< 1	2.29	< 0.001
EPA 07	N	1/16/1992	no data	5.10	6.31	6893	397	769	235	10	43.8	4409	113	1.5	29.8	< 1	1.91	< 0.001
EPA 07	N	4/13/1992	no data	5.20	6.25	6768	409	568	263	11.6	68.6	4167	116	1.1	25.1	< 1	0.6	< 0.001
EPA 07	N	7/15/1992	no data	5.50	6.37	6446	390	628	287	11.4	95	4088	94.4	0.6	30.6	< 1	0.72	< 0.001
EPA 07	N	10/7/1992	no data	5.60	6.14	6406	449	654	333	15.2	112	4150	90.8	0.85	15.3	< 1	0.8	< 0.001
EPA 07	N	1/7/1993	no data	5.60	6.79	5654	469	640	281	11.8	134	3675	98.4	0.92	45.6	< 1	0.6	< 0.001
EPA 07	N	4/7/1993	no data	5.60	6.32	5787	409	639	293	9.2	108	4101	115	0.78	35.9	< 1	1.4	0.001
EPA 07	N	7/14/1993	no data	5.70	6.08	6729	495	696	270	9.7	144	4208	65.9	0.84	27.8	< 1	0.53	< 0.001
EPA 07	N	10/7/1993	no data	5.60	6.07	5989	460	678	250	9.6	142	4049	106	0.75	41.4	< 1	0.62	< 0.001
EPA 07	N	1/6/1994	no data	5.70	6.27	6870	454	646	277	9.2	135	4312	126	0.87	39.6	< 1	0.84	< 0.001
EPA 07	N	4/12/1994	no data	5.80	6.33	6573	443	669	257	9.5	140	4378	121	1.88	35.7	< 1	0.63	< 0.001
EPA 07	N	7/26/1994	no data	5.90	6.87	6463	511	689	289	10.1	139	4144	120	0.88	37.4	< 1	0.59	< 0.001
EPA 07	N	10/4/1994	no data	5.80	7.16	7011	559	822	299	10.3	160	4647	141	2.94	46.2	< 1	0.74	< 0.001
EPA 07	N	1/11/1995	6,903.70	5.80	6.45	8136	540	900	353	9.4	326	4737	215	1.37	131	1.04	0.5	< 0.001
EPA 07	N	4/11/1995	6,904.40	5.90	6.35	7549	510	798	370	7.2	397	4566	244	1.27	139	1.08	0.41	< 0.001
EPA 07	N	7/11/1995	6,903.90	6.00	6.96	7971	475	931	346	6.9	426	4475	235	1.25	145	< 1	< 0.1	< 0.001
EPA 07	N	10/10/1995	6,904.10	6.00	7.50	7558	507	916	371	7.7	403	4368	200	1.12	137	< 1	0.22	0.002
EPA 07	N	1/9/1996	6,903.90	6.10	7.36	7349	474	894	352	7.6	438	4400	200	1.03	141	1.05	0.17	0.003
EPA 07	N	4/10/1996	6,903.80	6.30	7.26	8204	552	1040	349	7.4	428	5070	214	1.07	147	< 1	0.22	< 0.001
EPA 07	N	7/17/1996	6,903.60	6.20	6.36	8403	483	923	344	7.9	392	4529	222	0.72	156	1.56	0.25	< 0.001
EPA 07	N	10/8/1996	6,903.40	6.10	6.97	8440	534	1018	346	7.9	400	4920	206	1.2	142	5.02	0.27	< 0.001
EPA 07	N	1/28/1997	6,903.30	6.20	7.61	8280	485	1041	308	7.6	389	4555	239	1.21	137	1.23	0.27	< 0.001
EPA 07	N	4/15/1997	6,903.10	6.10	7.26	8440	504	999	338	8.3	386	4820	215	1.27	132	< 1	0.38	< 0.001
EPA 07	N	7/15/1997	6,902.80	5.90	7.15	8390	437	984	318	8.2	372	4780	209	1.28	137	1.2	0.19	< 0.001
EPA 07	N	10/15/1997	6,902.50	5.90	7.64	8410	528	1000	314	7.5	349	5010	238	1.49	130	< 1	0.25	< 0.001
EPA 07	N	1/20/1998	6,903.90	5.90	7.48	8340	534	947	335	9.6	340	5100	217	1.89	139	1.1	0.8	< 0.001
EPA 07	N	4/14/1998	6,902.60	6.00	6.75	8310	514	969	337	8	333	4870	184	1.32	138	1.2	0.48	< 0.001
EPA 07	N	7/14/1998	6,902.20	6.10	7.30	8460	486	942	322	8.3	342	4300	186	1.37	133	1.2	0.18	< 0.001
EPA 07	N	10/13/1998	no data	6.10	8.09	8150	481	951	327	8.4	325	4730	183	1.58	139	1.3	0.24	< 0.001

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA Standard			0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA 07	N	10/9/1990	< 0.05	0.01	0.46	< 0.05	26.9	< 0.1	0.48	< 0.001	< 0.1	0.0052	3.3	4	7.3	< 0.2	< 1	4
EPA 07	N	1/3/1991	< 0.01	< 0.01	0.25	< 0.05	17.6	< 0.1	0.3	0.001	< 0.1	0.0081	7.7	8.6	16.3	< 0.2	< 1	8
EPA 07	N	4/17/1991	< 0.01	< 0.01	0.12	< 0.05	13.28	< 0.1	0.18	< 0.001	< 0.1	0.002	2.6	10.4	13	< 0.2	1.7	2
EPA 07	N	7/11/1991	< 0.01	< 0.01	0.12	< 0.05	12.51	< 0.1	0.16	0.017	< 0.1	0.0038	3.2	8.9	12.1	< 0.2	< 1	3
EPA 07	N	9/4/1991	< 0.01	< 0.01	0.15	< 0.05	12.1	< 0.1	0.17	< 0.001	< 0.1	0.0015	2	3.7	5.7	< 0.2	< 1	2
EPA 07	N	10/17/1991	< 0.01	< 0.01	0.15	< 0.05	13.51	< 0.1	0.16	0.001	< 0.1	0.0009	2.1	7.2	9.3	< 0.2	< 1	2
EPA 07	N	11/4/1991	< 0.01	< 0.01	0.15	< 0.05	15.6	< 0.1	0.21	< 0.001	< 0.1	0.0059	2.1	8.8	10.9	< 0.2	< 1	2
EPA 07	N	12/2/1991	< 0.01	< 0.01	0.12	< 0.05	13.2	< 0.1	0.19	< 0.001	< 0.1	0.002	3.5	13.1	16.6	< 0.2	< 1	4
EPA 07	N	1/16/1992	< 0.01	< 0.01	0.13	< 0.05	13.6	< 0.1	0.19	0.018	< 0.1	0.005	2.6	6.6	9.2	< 0.2	< 1	3
EPA 07	N	4/13/1992	< 0.01	< 0.01	0.13	< 0.05	13.3	< 0.1	0.16	0.014	< 0.1	0.001	2.4	7.4	9.8	< 0.2	< 1	2.4
EPA 07	N	7/15/1992	< 0.01	< 0.01	0.1	< 0.05	10.5	< 0.1	0.13	< 0.001	< 0.1	0.003	2.6	12.2	14.8	< 0.2	< 1	3
EPA 07	N	10/7/1992	< 0.01	< 0.01	0.1	< 0.05	11	< 0.1	0.15	< 0.001	< 0.1	< 0.0003	2.2	7.9	10.1	< 0.2	< 1	2.6
EPA 07	N	1/7/1993	< 0.01	< 0.01	0.12	< 0.05	11.3	< 0.1	0.21	< 0.01	< 0.1	0.007	2	7.2	9.2	< 0.2	< 1	2.1
EPA 07	N	4/7/1993	< 0.01	< 0.01	0.17	< 0.05	11.6	< 0.1	0.17	< 0.001	< 0.1	< 0.0003	1.3	9	10.3	< 0.2	1.3	1.5
EPA 07	N	7/14/1993	< 0.01	< 0.01	0.13	< 0.05	10.2	< 0.1	0.19	0.002	< 0.1	< 0.0003	2.1	5.9	8	< 0.2	< 1	2.8
EPA 07	N	10/7/1993	< 0.01	< 0.01	0.12	< 0.05	7.99	< 0.1	0.21	< 0.001	< 0.1	0.006	1.5	7.7	9.2	< 0.2	1.8	13
EPA 07	N	1/6/1994	< 0.01	< 0.01	0.13	< 0.05	9.79	< 0.1	0.22	< 0.001	< 0.1	< 0.0003	3.1	< 1	3.1	< 0.2	1.7	4.1
EPA 07	N	4/12/1994	< 0.01	< 0.01	0.12	< 0.05	9.59	< 0.1	0.21	< 0.001	< 0.1	0.001	2.8	3.5	6.3	< 0.2	< 1	8.2
EPA 07	N	7/26/1994	< 0.01	< 0.01	0.16	< 0.05	9.72	< 0.1	0.21	0.003	< 0.1	0.002	2.2	1.5	3.7	< 0.2	< 1	4.6
EPA 07	N	10/4/1994	< 0.01	< 0.01	0.1	< 0.05	8.52	< 0.1	0.15	< 0.001	< 0.1	0.003	3.1	4.5	7.6	< 0.2	< 1	9.8
EPA 07	N	1/11/1995	< 0.01	< 0.01	0.06	< 0.05	4.44	< 0.1	0.1	< 0.001	< 0.1	0.001	1.6	6.2	7.8	< 0.2	4.8	11.1
EPA 07	N	4/11/1995	< 0.01	< 0.01	< 0.01	< 0.05	3.81	< 0.1	< 0.05	< 0.001	< 0.1	0.001	1.9	4.7	6.6	< 0.2	< 1	9
EPA 07	N	7/11/1995	< 0.01	< 0.01	< 0.01	< 0.05	4.02	< 0.1	< 0.05	< 0.001	< 0.1	0.002	3	< 1	3	0.5	14.9	16.3
EPA 07	N	10/10/1995	< 0.01	< 0.01	0.04	< 0.05	4.84	< 0.1	< 0.05	0.04	< 0.1	0.0023	2.3	6.7	9	< 0.2	< 1	5.4
EPA 07	N	1/9/1996	< 0.01	< 0.01	0.04	< 0.05	5.35	< 0.1	< 0.05	0.067	< 0.1	0.0038	3.4	1.3	4.7	< 0.2	< 1	2.4
EPA 07	N	4/10/1996	< 0.01	< 0.01	0.06	< 0.05	6.6	< 0.1	< 0.05	< 0.001	< 0.1	0.0024	0.9	2.4	3.3	0.8	< 1	3.1
EPA 07	N	7/17/1996	< 0.01	< 0.01	0.08	< 0.05	9.71	< 0.1	0.08	< 0.001	< 0.1	0.0032	1.2	< 1	1.2	< 0.2	< 1	4.3
EPA 07	N	10/8/1996	< 0.01	< 0.01	0.08	< 0.05	10.5	< 0.1	0.09	< 0.001	< 0.1	0.0003	1.3	< 1	1.3	< 0.2	< 1	< 1
EPA 07	N	1/28/1997	< 0.01	< 0.01	0.07	< 0.05	11.2	< 0.1	0.09	< 0.001	< 0.1	0.0003	2.3	< 1	2.3	< 0.2	7.9	2
EPA 07	N	4/15/1997	< 0.01	< 0.01	0.09	< 0.05	12.4	< 0.1	0.12	0.06	< 0.1	0.001	1	1.8	2.8	< 0.2	< 1	< 1
EPA 07	N	7/15/1997	< 0.01	< 0.01	< 0.01	< 0.05	12.5	< 0.1	0.11	< 0.001	< 0.1	0.001	1.1	3.4	4.5	< 0.2	< 1	< 1
EPA 07	N	10/15/1997	< 0.01	< 0.01	0.13	< 0.05	15.2	< 0.1	0.13	< 0.001	< 0.1	0.002	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 07	N	1/20/1998	< 0.01	< 0.005	0.14	< 0.05	17.6	< 0.1	0.16	< 0.001	< 0.1	0.0021	1	< 1	1	< 0.2	< 1	< 1
EPA 07	N	4/14/1998	< 0.01	< 0.005	0.1	< 0.05	12.5	< 0.1	0.1	< 0.001	< 0.1	0.002	1.5	< 1	1.5	< 0.2	< 1	< 1
EPA 07	N	7/14/1998	< 0.01	< 0.005	0.1	< 0.05	15.1	< 0.1	0.12	< 0.001	< 0.1	0.0023	1.1	2.1	3.2	< 0.2	< 1	< 1
EPA 07	N	10/13/1998	< 0.01	< 0.005	0.1	< 0.05	13.4	< 0.1	0.14	< 0.001	< 0.1	0.0019	1.7	1.8	3.5	< 0.2	4.9	4.9

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Cl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l
		<b>NRC Standard</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>80</b>	<b>NA</b>	<b>0.05</b>
		<b>EPA Standard</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>8020</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>5539</b>	<b>250</b>	<b>NA</b>	<b>190</b>	<b>80</b>	<b>5</b>	<b>0.01</b>
EPA 07	N	1/12/1999	6,903.00	6.00	7.70	8180	424	900	294	8.6	345	4750	189	1.31	137	< 1	0.13	< 0.001
EPA 07	N	4/13/1999	6,903.00	6.00	7.26	8020	468	926	308	7.9	355	4320	186	1.31	140	< 1	0.29	< 0.001
EPA 07	N	7/20/1999	6,903.06	6.06	7.20	8120	491	880	307	9.5	361	4500	166	1.11	130	< 1	< 0.1	< 0.001
EPA 07	N	10/12/1999	6,903.20	6.01	7.50	7940	476	903	300	8.4	366	4370	187	1.15	134	1.4	0.18	< 0.001
EPA 07	N	1/11/2000	6,902.80	6.10	7.73	7890	439	846	284	8.9	367	4000	171	0.9	122	1.3	0.29	< 0.001
EPA 07	N	5/3/2000	6,902.50	5.90	7.28	7750	430	827	306	10.6	362	3870	168	0.99	138	1.2	2.9	< 0.001
EPA 07	N	7/11/2000	6,902.20	5.80	7.28	7630	488	897	321	7.54	399	4160	167	0.75	150	1.9	3.57	< 0.001
EPA 07	N	10/3/2000	6,902.30	5.88	6.66	7540	474	889	309	8.7	444	3970	169	0.55	135	1.1	4.37	< 0.001
EPA 07	N	1/9/2001	6,902.40	6.06	6.83	7580	468	845	277	7.7	453	4040	180	0.72	124	< 1	4.61	< 0.001
EPA 07	N	4/3/2001	6,902.05	6.10	7.14	7590	551	964	294	7.1	456	4410	177	0.71	133	2.3	2.81	< 0.001
EPA 07	N	7/17/2001	6,901.70	6.33	6.68	7670	451	838	284	8.3	498	3660	233	0.64	130	1.8	2.6	< 0.001
EPA 07	N	10/9/2001	6,901.75	5.90	6.60	7670	450	820	285	8.7	515	3800	216	0.56	132	< 1	1.77	< 0.001
EPA 07	N	1/14/2002	6,901.75	6.09	6.60	7670	541	923	275	9.3	526	4050	217	0.49	121	1.7	2.3	< 0.001
EPA 07	N	4/9/2002	6,901.36	6.01	6.85	7720	465	821	304	7.8	537	3950	192	0.6	124	< 1	1.5	< 0.001
EPA 07	N	7/16/2002	6,901.25	6.22	7.17	7720	465	841	303	9.6	542	3950	208	0.7	131	< 1	1.3	< 0.001
EPA 07	N	10/15/2002	6,901.17	6.67	7.13	6430	531	932	316	7.9	544	4420	180	0.64	141	< 1	1.7	< 0.001
EPA 07	N	1/14/2003	6,901.09	7.23	7.03	7630	435	792	404	12.3	545	3620	170	0.99	128	< 1	1.6	< 0.001
EPA 07	N	4/14/2003	6,900.86	6.19	6.76	7520	476	892	325	12.5	542	4110	196	0.68	132	< 1	1.7	< 0.001
EPA 07	N	7/9/2003	6,900.68	6.61	7.09	6030	491	863	294	9.2	547	4150	178	0.74	125	1.3	0.9	< 0.001
EPA 07	N	10/14/2003	6,900.61	5.87	6.90	7660	548	933	314	7.8	551	4270	196	0.52	131	1.3	0.8	< 0.001
EPA 07	N	1/12/2004	6,900.43	6.01	7.37	7710	535	952	325	8.8	532	4370	202	0.57	129 D	< 1.0	0.9	< 0.001
EPA 07	N	4/13/2004	6,900.39	5.76	6.21	7670	486	862	312	8.6	550	4270	223	0.64	126 D	< 1	0.8	< 0.001
EPA 07	N	7/20/2004	6,900.08	6.01	6.18	7880	526 D	880 D	338	7.5	539	4140 D	190	0.57	122 D	< 1.0	0.6	< 0.001
EPA 07	N	10/12/2004	6,900.09	6.03	6.56	8030	486 D	890 D	301	7.6	529	4020 D	195	0.48	139 D	< 1.0	0.6	< 0.001
EPA 07	N	1/11/2005	6,900.32	5.99	6.57	7800	527 D	920 D	324	8	545	4260 D	197	0.32	110 D	< 1.0	0.5	< 0.001
EPA 07	N	4/12/2005	6,899.87	6.02	6.46	7650	520	906	344	7.8	530	4320	206	0.36	119	< 1.0	0.4	< 0.001
EPA 07	N	7/19/2005	6,899.62	5.68	6.76	7920	497 D	884 D	332	7.4	542	3960 D	184	0.41	122 D	< 1.0	0.3	< 0.001
EPA 07	N	10/11/2005	6,899.66	6.03	6.78	7790	494 D	896 D	333	8	564	4100 D	203	0.54	125 D	< 1.0	0.3	< 0.001
EPA 07	N	1/17/2006	6,899.29	6.15	6.98	7580	497 D	916 D	311	7.9	561	4080 D	196	0.44	141 D	< 1.0	0.3	< 0.001
EPA 07	N	4/11/2006	6,899.29	6.03	6.75	7730	508 D	881 D	332	7.7	580	4150 D	212	0.3	138 D	< 1.0	0.2	< 0.001
EPA 07	N	7/25/2006	6,899.12	5.96	6.62	7480	513 D	914 D	361	8.5	564	4340 D	213	0.37	138 D	< 1.0	0.3	< 0.001
EPA 07	N	10/10/2006	6,899.06	6.05	6.44	7550	505 D	917 D	345	8.4	588	4090 D	188	0.39	134 D	< 0.5	0.2	< 0.001
EPA 07	N	1/23/2007	6,898.84	6.13	6.46	7460	490 D	916 D	344	9.2	561	4180 D	200	0.25	138 D	< 0.5	0.3	< 0.001
EPA 07	N	4/16/2007	6,898.96	6.03	6.60	7860	502 D	961 D	317	9.2	583	4580 D	212	0.22	125 D	< 0.5	< 0.1	< 0.001
EPA 07	N	7/16/2007	6,898.16	5.94	6.42	7680	511 D	938 D	336	7.8	590	4360 D	195	0.37	146 D	< 0.5	0.2	0.003
EPA 07	N	10/8/2007	6,898.26	6.19	6.70	7820	489 D	898 D	334	7.8	598	4130 D	200	0.15	127 D	< 0.5	0.5	< 0.001



**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA Standard			0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA 07	N	1/12/1999	< 0.01	0.007	0.09	< 0.05	12.6	< 0.1	0.08	< 0.001	< 0.1	0.011	3.2	3.7	6.9	< 0.2	< 1	< 1
EPA 07	N	4/13/1999	< 0.01	< 0.005	0.09	< 0.05	12.5	< 0.1	0.11	< 0.001	< 0.1	0.0017	1.2	2.1	3.3	< 0.2	3.8	3.8
EPA 07	N	7/20/1999	< 0.01	< 0.005	0.1	< 0.05	9.3	< 0.1	< 0.05	< 0.001	< 0.1	0.0019	3	< 1	3	< 0.2	5.2	5.2
EPA 07	N	10/12/1999	< 0.01	< 0.005	0.07	< 0.05	11.8	< 0.1	0.08	< 0.001	< 0.1	0.0009	< 0.2	3.3	3.3	< 0.2	< 1	1.1
EPA 07	N	1/11/2000	< 0.01	< 0.005	0.08	< 0.05	9.94	< 0.1	0.13	< 0.001	< 0.1	0.0021	1.2	< 1	1.2	< 0.2	< 1	2.3
EPA 07	N	5/3/2000	< 0.01	< 0.005	0.08	< 0.05	11.4	< 0.1	0.1	< 0.001	< 0.1	0.0032	1.5	1.6	3.1	< 0.2	< 1	2.6
EPA 07	N	7/11/2000	< 0.01	< 0.005	0.07	< 0.05	9.69	< 0.1	< 0.05	< 0.001	< 0.1	0.0026	1.4	3.4	4.8	< 0.2	< 1	2.8
EPA 07	N	10/3/2000	< 0.01	< 0.005	0.06	< 0.05	8.27	< 0.1	< 0.05	< 0.001	< 0.1	0.0024	0.8	1.8	2.6	< 0.2	< 1	1.9
EPA 07	N	1/9/2001	< 0.01	< 0.005	0.06	< 0.05	7.44	< 0.1	0.09	< 0.001	< 0.1	0.0021	0.9	2.9	3.8	< 0.2	< 1	< 1
EPA 07	N	4/3/2001	< 0.01	< 0.005	0.06	< 0.05	6.63	< 0.1	0.09	< 0.001	< 0.1	0.002	1.1	< 1	1.1	< 0.2	< 1	1.7
EPA 07	N	7/17/2001	< 0.01	< 0.005	0.05	< 0.05	6.92	< 0.1	0.07	< 0.001	< 0.1	0.002	1.4	< 1	1.4	< 0.2	< 1	< 1
EPA 07	N	10/9/2001	< 0.01	< 0.005	0.03	< 0.05	5.43	< 0.1	< 0.05	< 0.001	< 0.1	0.0015	1	< 1	1	< 0.2	< 1	< 1
EPA 07	N	1/14/2002	< 0.01	< 0.005	0.05	< 0.05	6.51	< 0.1	0.08	< 0.001	< 0.1	0.0022	1.1	4.4	5.5	< 0.2	< 1	1.3
EPA 07	N	4/9/2002	< 0.01	< 0.005	0.05	< 0.05	6.09	< 0.1	0.08	< 0.001	< 0.1	0.002	0.5	< 1	0.5	< 0.2	< 1	1.7
EPA 07	N	7/16/2002	< 0.01	< 0.005	0.04	< 0.05	5.32	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	1	< 1	1	< 0.2	< 1	2.7
EPA 07	N	10/15/2002	< 0.01	< 0.005	0.04	< 0.05	5.66	< 0.1	0.07	< 0.001	< 0.1	0.0024	0.9	< 1	0.9	< 0.2	< 1	1.3
EPA 07	N	1/14/2003	< 0.01	< 0.005	0.04	< 0.05	4.94	< 0.1	0.06	< 0.001	< 0.1	0.0025	0.8	< 1	0.8	< 0.2	< 1	2.5
EPA 07	N	4/14/2003	< 0.01	< 0.005	0.04	< 0.05	4.94	< 0.1	< 0.05	< 0.001	< 0.1	0.0022	1.3	< 1	1.3	< 0.2	< 1	2.8
EPA 07	N	7/9/2003	< 0.01	< 0.005	0.04	< 0.05	4.64	< 0.1	< 0.05	< 0.001	< 0.1	0.0013	0.9	< 1	0.9	< 0.2	< 1	< 1.0
EPA 07	N	10/14/2003	< 0.01	< 0.005	0.03	< 0.05	4.62	< 0.1	< 0.05	< 0.001	< 0.1	0.0023	< 0.2	< 1	0	< 0.2	< 1	< 1.0
EPA 07	N	1/12/2004	< 0.01	< 0.005	0.03	< 0.05	4.57	< 0.1	< 0.05	< 0.001	< 0.1	0.0022 D	0.4	< 1.0	0.4	< 0.2	< 1.0	< 1.0
EPA 07	N	4/13/2004	< 0.01	< 0.005	0.03	< 0.05	3.94	< 0.1	< 0.05	< 0.001	< 0.1	0.0021 D	0.4	4.8	5.2	< 0.2	< 1	1.8
EPA 07	N	7/20/2004	< 0.01	< 0.005	0.03	< 0.05	3.74	< 0.1	< 0.05	0.004	< 0.1	0.0018 D	0.9	3.5	4.4	< 0.2	< 1.0	1.5
EPA 07	N	10/12/2004	< 0.01	< 0.005	0.03	< 0.05	3.43	< 0.1	< 0.05	0.002	< 0.1	0.0022 D	0.8	1.7	2.5	< 0.2	< 1.0	1.5
EPA 07	N	1/11/2005	< 0.01	< 0.005	0.03	< 0.05	3.44	< 0.1	0.05	0.001	< 0.1	0.0021 D	0.7	< 1.0	0.7	< 0.2	< 1.0	1.7
EPA 07	N	4/12/2005	< 0.01	< 0.005	0.03	< 0.05	3.17	< 0.1	< 0.05	< 0.001	< 0.1	0.0023	0.5	< 1.0	0.5	< 0.2	< 1.0	1.8
EPA 07	N	7/19/2005	< 0.01	< 0.005	0.02	< 0.05	2.71	< 0.1	< 0.05	< 0.001	< 0.1	0.0022	0.7	1.8	2.5	< 0.2	< 1.0	2.5
EPA 07	N	10/11/2005	< 0.01	< 0.005	0.02	< 0.05	2.8	< 0.1	< 0.05	< 0.001	< 0.1	0.0018 D	1.1	1.4	2.5	< 0.2	< 1.0	2.8
EPA 07	N	1/17/2006	< 0.01	< 0.005	0.02	< 0.05	2.59	< 0.1	< 0.05	< 0.001	< 0.1	0.0023	0.8	< 1.0	0.8	< 0.2	< 1.0	< 1.0
EPA 07	N	4/11/2006	< 0.01	< 0.005	0.02	< 0.05	2.21	< 0.1	< 0.05	0.009	< 0.1	0.0029	0.5	3.7	4.2	< 0.2	< 1.0	< 1.0
EPA 07	N	7/25/2006	< 0.01	< 0.005	0.02	< 0.05	2.96	< 0.1	< 0.05	< 0.001	< 0.1	0.0014	1	3.7	4.7	< 0.2	< 1.0	< 1.0
EPA 07	N	10/10/2006	< 0.01	< 0.005	0.02	< 0.05	2.4	< 0.1	< 0.05	< 0.001	< 0.1	0.0016 D	1.2	1.4	2.6	< 0.2	< 1	1.7
EPA 07	N	1/23/2007	< 0.01	< 0.005	0.02	< 0.05	2.53	< 0.1	< 0.05	< 0.001	< 0.1	0.0015 D	0.6	< 1	0.6	< 0.2	< 1	2.1
EPA 07	N	4/16/2007	< 0.01	< 0.005	0.02	< 0.05	2.53	< 0.1	< 0.05	< 0.001	< 0.1	0.0022 D	< 0.2	< 1	0	< 0.2	< 1	< 1
EPA 07	N	7/16/2007	< 0.01	< 0.005	0.02	< 0.05	1.84	< 0.1	< 0.05	< 0.001	< 0.1	0.0019	< 0.2	1.9	1.9	< 0.2	< 1	< 1
EPA 07	N	10/8/2007	< 0.01	< 0.005	0.02	< 0.05	1.96	< 0.1	< 0.05	< 0.001	< 0.1	0.0019	< 0.2	< 1	0	< 0.2	< 1	1.6

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l	
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01
EPA 07	N	1/21/2008	6,898.51	6.15	6.53	7690	500 D	915 D	368	9.2	608	4190 D	221 D	0.19	127 D	0.6	1.3	< 0.001
EPA 07	N	4/14/2008	6,898.01	5.81	6.43	7280	520 D	987 D	364 D	7.8	596	4760 D	208	0.08	200 D	0.76	0.4	0.001
EPA 07	N	7/14/2008	6,897.96	6.13	6.37	7830	466	885	343 D	8	619	4700 D	222	< 0.05	193 D	0.57	0.5	< 0.003
EPA 07	N	10/13/2008	6,897.84	6.08	6.24	8010 H	543	1050	393 D	8	611	4800 D	201	0.2	174 D	0.6	0.3	< 0.001
EPA 07	N	1/19/2009	6,897.56	5.95	6.75	8360 H	479	952	360	8	607	4710 D	202	<0.05	164 D	0.82	0.2	<0.001
EPA 07	N	4/13/2009	6,897.56	5.96	6.22	8060	487 D	971	384 D	10	632	4740 D	208	0.15	123 D	0.64	0.2	<0.001
EPA 07	N	7/13/2009	6,897.46	5.83	6.68 H	8380 H	506 D	1020	368 D	8	621	4980 D	124	0.18	122 D	<0.50	0.2	<0.001
EPA 07	N	10/12/2009	6,897.51	6	6.77	8750 H	486 D	1050	366 D	8	647	4300 D	208	0.14	127 D	0.65	0.4	<0.001
EPA 07	N	1/11/2010	6,897.11	5.95	6.43	8230 D	517 D	1100	396 D	9	651	4980 D	210	<0.05	130 D	<0.50	0.4	<0.001
EPA 07	N	4/12/2010	6,897.11	6.07	6.35	8520 D	496 D	1070	372 D	9	680	5260 D	213	0.15	123 D	<0.50	0.3	<0.001
EPA 07	N	7/19/2010	6,897.01	5.88	6.55	8780 D	499 D	1110	365 D	8	663	5050 D	208 D	0.45	118 D	0.62	0.6	<0.001
EPA 07	N	10/11/2010	6,897.16	6	7.53	7610 D	509 D	1040	396 D	9	665	5220 D	197 D	0.19	115 D	0.76	0.4	<0.001
EPA 07	N	1/10/2011	6,897.12	6.09	7.6	8260 D	489 D	1020	370 D	9	624	4860 D	214 D	0.25	107 D	0.65	0.3	<0.001
EPA 07	N	4/11/2011	6,896.71	6.07	6.51	8340 D	499	1030	399 D	9	623	4900 D	215 D	0.2	129 D	0.61	0.2	<0.001
EPA 07	N	7/18/2011	6,896.51	6.07	7.52	8290 D	494	981	390 D	8	631	4690 D	213 D	0.3 D	128 D	<0.50	0.1	<0.001
EPA 07	N	10/10/2011	6,896.66	6.01	7.49	7990 D	513	1000	382 D	9	589	4710 D	218 D	<0.2	129 D	<0.50	0.2	<0.001
EPA 07	N	1/9/2012	6,896.41	6.16	6.27 H	8010 D	490	874	343	7	584	4610 D	218 D	0.14	126 D	<0.50	0.2	<0.001
EPA 07	N	4/9/2012	6,896.26	6.07	6.22 H	8210 D	453	939	361	8	630	4440 D	218 D	0.15	133 D	0.64	0.2	<0.01
EPA 07	N	7/16/2012	6,896.16	5.99	6.42 H	8270	528	1040	431	9	645	4520 D	231 D	0.2	139 D	<0.50	0.1	<0.001
EPA 07	N	10/15/2012	6,896.06	6.11	6.33 H	7740	522	967	415 D	9	658	4490 D	241 D	0.18	131 D	0.63	0.2	<0.001
EPA 07	N	1/15/2013	no data	5.97	6.24 H	7660	509	976	415 D	9	660	4510 D	228 D	0.19	126 D	0.91	0.2	<0.001
EPA 07	N	4/8/2013	6,896.66	6.04	6.22 H	7610	490	919	369 D	9	654	4380 D	227 D	0.09	131 D	0.54	0.2	<0.001
EPA 07	N	7/15/2013	6,895.71	5.99	6.41 H	7920	500	930	385 D	8	664	4350 D	317 D	0.06	135 D	<0.50	0.2	<0.001
EPA 07	N	10/7/2013	6,895.54	6.19	6.22 H	7800	501	933	403 D	9	678	4330 D	240 D	0.08	128 D	0.53	0.3	<0.001
EPA 07	N	1/13/2014	6,895.43	6.29	6.31	7650	486	912	381	8	669	4360	240	0.13	135	0.7	0.3	<0.001
EPA 07	N	4/1/2014	6,895.71	7.30	6.18 H	7520	513	911	408 D	9	668	4180 D	241 D	<0.05	143 D	1.47	0.2	<0.001
EPA 07	N	7/9/2014	6,895.16	6.17	6.46 H	7610	490	929	410 D	9	678	4310 D	229 D	0.05	126 D	0.71	0.2 D	<0.001
EPA 07	N	10/8/2014	6,895.22	6.25	6.38 H	7720	486	882	372 D	8	685	4310 D	234 D	<0.05	122 D	<0.50	0.2	<0.001
EPA 07	N	1/7/2015	6894.90	6.31	6.25 H	7680	486	886	381	9	665	4450 D	277 D	<0.05	125 D	0.71	0.3	<0.001
EPA 07	N	4/8/2015	6895.23	6.20	6.36 H	7790	507	904	395 D	9	669	4280 D	246 D	<0.05	129 D	0.57	0.3	<0.001
EPA 07	N	7/8/2015	6894.87	6.23	6.63 H	7870	520	861	345	13	689	4450 D	262 D	0.09	123 D	4.12	0.1	<0.001
EPA 07	N	10/6/2015	6894.79	6.26	6.31 H	7770	486	897	384	9	632	4430 D	253 D	0.08	118 D	1	0.2	<0.001
EPA 07	N	1/5/2016	6894.87	6.31	6.31 H	7600	485	916	386	9	670	4300 D	244 DH	<0.05	128 D	1.56	0.3	<0.001
EPA 07	N	4/5/2016	6894.51	6.18	6.40 H	7570	492	873	376	8	653	4380 D	245 D	<0.05	124 D	1.19	0.2	<0.001
EPA 07	N	7/12/2016	6894.44	6.13	6.34 H	7900	495	905	389	9	667	4490 D	259 D	<0.05	132 D	1.48	0.3	<0.001
EPA 07	N	10/4/2016	6894.58	6.26	6.37 H	7710	507	906	388 D	9	659	4420 D	245 D	<0.05	135 D	1.1	0.2	<0.001

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA Standard			0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA 07	N	1/21/2008	< 0.01	< 0.005	0.02	< 0.05	1.74	< 0.1	< 0.05	< 0.001	< 0.1	0.0022	1.3	< 1	1.3	< 0.2	< 1	1.6
EPA 07	N	4/14/2008	< 0.01	< 0.005	0.02	< 0.05	1.8	< 0.1	< 0.05	< 0.001	0.2	0.0017	0.4	1 U	1.4	0.6	-6.7 U	1.9
EPA 07	N	7/14/2008	< 0.01	< 0.005	0.02	< 0.05	1.78	< 0.1	< 0.05	< 0.001	< 0.1	0.0017 D	0.57	1.7	2.27	0.3	5 U	0.7 U
EPA 07	N	10/13/2008	< 0.01	< 0.005	0.02	< 0.05	1.53	< 0.1	< 0.05	< 0.001	< 0.1	0.0019	0.22	0.66 U	0.88	-0.2 U	-2 U	1.5
EPA 07	N	1/19/2009	< 0.01	< 0.005	0.03	< 0.05	1.85	< 0.1	< 0.05	< 0.001	< 0.1	0.0018 D	1.3	1.1 U	2.4	0.5	-2 U	1.1
EPA 07	N	4/13/2009	< 0.01	< 0.005	0.03	< 0.05	1.77	< 0.1	< 0.05	< 0.001	< 0.1	0.0019	0.63	0.11 U	0.74	0.03 U	-0.3 U	1.2
EPA 07	N	7/13/2009	< 0.01	< 0.005	0.03	< 0.05	2.16	< 0.1	< 0.05	0.001	< 0.1	0.002	0.7	2	2.7	-0.01 U	0.5 U	1.2
EPA 07	N	10/12/2009	< 0.01	< 0.005	0.03	< 0.05	2.22	< 0.1	< 0.05	< 0.001	< 0.1	0.002	0.44	5	5.44	0.05 U	-0.9 U	1.1
EPA 07	N	1/11/2010	< 0.01	< 0.005	0.03	< 0.05	2.37	< 0.1	< 0.05	< 0.001	< 0.1	0.0019	0.39	1.7	2.09	-0.02 U	0.9 U	2.4
EPA 07	N	4/12/2010	< 0.01	< 0.005	0.03	< 0.05	2.58	< 0.1	< 0.05	< 0.001	< 0.1	0.0022	0.59	1.5	2.09	0.02 U	0.8 U	1.1
EPA 07	N	7/19/2010	< 0.01	< 0.005	0.03	< 0.05	3.02	< 0.1	< 0.05	< 0.001	< 0.1	0.0018	0.49	0.89 U	1.38	-0.03 U	-0.4 U	1.8
EPA 07	N	10/11/2010	< 0.01	< 0.005	0.03	< 0.05	2.82	< 0.1	< 0.05	< 0.001	< 0.1	0.0023	0.78	1.2	1.98	0.03 U	0.2 U	0.9
EPA 07	N	1/10/2011	< 0.01	< 0.005	0.03	< 0.05	2.83	< 0.1	< 0.05	< 0.001	< 0.1	0.0017	0.63	1.8	2.43	0.07 U	0.6 U	2.2
EPA 07	N	4/11/2011	< 0.01	< 0.005	0.03	< 0.05	2.77	< 0.1	< 0.05	< 0.001	< 0.1	0.0018	0.36	1.7	2.06	0.02 U	0.7 U	0.7
EPA 07	N	7/18/2011	< 0.01	< 0.005	0.03	< 0.05	2.78	< 0.1	< 0.05	< 0.001	< 0.1	0.0016	0.31	1.1 U	1.41	0.06 U	-0.3 U	0.6
EPA 07	N	10/10/2011	< 0.01	< 0.005	0.03	< 0.05	2.66	< 0.1	< 0.05	< 0.001	< 0.1	0.0019	0.42	1.3	1.72	0.04 U	0.9 U	0.7 U
EPA 07	N	1/9/2012	< 0.01	< 0.005	0.03	< 0.05	2.38	< 0.1	< 0.05	< 0.001	< 0.1	0.0018	0.53	1.4	3.33	0.009 U	0.3 U	0.3 U
EPA 07	N	4/9/2012	< 0.01	< 0.005	0.03	< 0.05	2.56	< 0.1	< 0.05	< 0.001	< 0.1	0.0021	0.55	0.52 U	1.59	< 0.01 U	0.08 U	0.4 U
EPA 07	N	7/16/2012	< 0.001	< 0.005	0.03	< 0.001	2.24	< 0.1	< 0.05	< 0.001	< 0.1	0.0018	0.67	0.67 U	2.01	0.04 U	0.2 U	0.7
EPA 07	N	10/15/2012	< 0.001	< 0.005	0.03	< 0.001	1.89	< 0.1	< 0.05	< 0.001	< 0.1	0.0018	0.36	1.8	2.16	0.009 U	0.5 U	1.7
EPA 07	N	1/15/2013	< 0.001	< 0.005	0.03	< 0.001	1.96	< 0.1	< 0.05	< 0.001	< 0.1	0.0018	0.57	0.75 U	0.57	0.04 U	0.03 U	0.5
EPA 07	N	4/8/2013	< 0.001	< 0.005	0.03	< 0.001	1.77	< 0.1	< 0.05	< 0.001	< 0.1	0.0017	0.66	0.37 U	0.66	0.05	-1 U	1.5
EPA 07	N	7/15/2013	< 0.001	< 0.005	0.04	0.001	1.59	< 0.1	< 0.05	< 0.001	< 0.1	0.0019	0.74	2.5	3.24	0.09 U	-0.03 U	0.7
EPA 07	N	10/7/2013	< 0.001	< 0.005	0.04	< 0.001	1.64	< 0.1	< 0.05	< 0.001	< 0.1	0.002	0.8	1.2 U	0.8	0.02 U	-0.3 U	0.2 U
EPA 07	N	1/13/2014	< 0.001	< 0.005	0.02	< 0.001	1.43	< 0.1	< 0.05	< 0.001	< 0.1	0.0018	0.57	0.62 U	0.57	0.06 U	0.06 U	0.2 U
EPA 07	N	4/1/2014	< 0.001	< 0.005	0.04	< 0.001	1.38	< 0.1	0.05	< 0.001	< 0.1	0.0019	0.64	2	2.64	0.0 U	0.2 U	1.6
EPA 07	N	7/9/2014	< 0.001	< 0.005	0.03	< 0.001	1.4	< 0.1	< 0.05	< 0.001	< 0.1	0.0017	0.42	3.8	4.22	0.02 U	-0.09 U	0.5 U
EPA 07	N	10/8/2014	< 0.001	< 0.005	0.04	< 0.001	1.3	< 0.1	< 0.05	< 0.001	< 0.1	0.0023	1.2	1.6 U	1.2	0.05 U	-0.6 U	0.6
EPA 07	N	1/7/2015	< 0.001	< 0.005	0.04	< 0.001	1.22	< 0.1	< 0.05	< 0.001	< 0.1	0.0018	1	1.6	2.6	0.09 U	0.01 U	0.8
EPA 07	N	4/8/2015	< 0.001	< 0.005	0.05	< 0.001	1.29	< 0.1	0.08	< 0.001	< 0.1	0.0015	1.2	1.3	2.5	0.06 U	-0.5 U	5.5
EPA 07	N	7/8/2015	< 0.001	< 0.005	0.04	< 0.001	1.33	< 0.1	0.05	< 0.001	< 0.1	0.0016	0.39	0.68 U	0.39	0.06 U	-0.2 U	2.1
EPA 07	N	10/6/2015	< 0.001	< 0.005	0.04	< 0.001	1.34	< 0.1	0.06	< 0.001	< 0.1	0.0014	0.65	3.2	3.85	0.1 U	-0.1 U	4.6
EPA 07	N	1/5/2016	< 0.001	< 0.005	0.04	< 0.001	1.3	< 0.1	< 0.05	< 0.001	< 0.1	0.0018	0.46	1.4	1.86	0.1 U	-0.4 U	3.2
EPA 07	N	4/5/2016	< 0.001	< 0.005	0.05	< 0.001	1.45	< 0.1	0.07	< 0.001	< 0.1	0.0017	0.82	2.4	3.22	0.08 U	0.03 U	2.8
EPA 07	N	7/12/2016	< 0.001	< 0.005	0.05	< 0.001	1.34	< 0.1	0.06	< 0.001	< 0.1	0.0015	0.66	3.4	4.06	-0.03 U	-0.4 U	2.2
EPA 07	N	10/4/2016	< 0.001	< 0.005	0.05	< 0.001	1.33	< 0.1	0.06	< 0.001	< 0.1	0.0014	0.62	2	2.62	-0.03 U	0.2 U	3.1

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Chl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
		EPA Standard	NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01
EPA 08	N	7/26/1989	6,857.40	6.80	5.89	4304	521	366	222	8.1	163	3007	35.9	0.88	0.06	< 1	< 0.1	< 0.001
EPA 08	N	10/5/1989	6,858.00	6.50	6.96	4454	513	379	206	9.9	169	2863	35.4	0.84	0.09	< 1	0.13	< 0.00
EPA 08	N	1/16/1990	6,858.50	6.50	6.40	4478	486	348	209	8.15	165	2860	33.2	0.91	0.11	< 1	< 0.1	0.001
EPA 08	N	4/17/1990	6,858.70	6.40	6.61	4577	496	344	210	7.9	165	2738	36.3	0.93	0.16	< 1	< 0.1	0.001
EPA 08	N	7/17/1990	6,858.70	6.50	6.46	4699	613	431	183	8.5	159	2893	35.7	0.54	0.06	< 1	0.14	0.002
EPA 08	N	10/16/1990	6,859.20	6.50	6.73	4681	509	383	189	8	148	3053	43.4	0.71	0.03	< 1	< 0.1	0.002
EPA 08	N	1/8/1991	6,859.40	6.50	6.50	4648	530	387	194	19	159	2959	39.4	0.86	0.04	< 1	< 0.1	< 0.001
EPA 08	N	4/17/1991	6,860.00	6.40	7.18	4833	543	379	198	8.1	140	3164	45.4	0.82	3.3	< 1	0.16	< 0.001
EPA 08	N	7/3/1991	6,859.90	6.30	6.40	4711	514	373	161	7.1	141	3242	22.1	0.86	0.06	< 1	0.6	0.002
EPA 08	N	10/22/1991	6,860.50	6.30	6.29	4612	497	366	182	7.6	166	2998	39.6	1.01	0.23	< 1	0.24	< 0.001
EPA 08	N	1/22/1992	6,860.80	6.40	6.51	4311	525	376	155	7.3	128	3014	73.4	0.88	< 0.01	< 1	< 0.1	< 0.001
EPA 08	N	4/2/1992	6,860.80	6.30	7.65	4704	559	394	203	8.8	165	3034	36.4	0.98	< 0.01	< 1	< 0.1	0.001
EPA 08	N	7/15/1992	6,860.10	6.40	6.64	4809	521	388	176	7.7	126	3120	39.6	0.58	< 0.1	< 1	< 0.1	0.002
EPA 08	N	10/14/1992	6,860.30	6.60	6.47	4762	536	384	159	9.4	132	3158	39.3	0.66	< 0.1	< 1	0.21	0.001
EPA 08	N	1/13/1993	6,860.10	6.60	6.63	4739	528	637	157	7.8	147	3159	37.7	1.08	< 0.1	< 1	0.2	< 0.001
EPA 08	N	4/15/1993	6,861.00	6.60	6.53	4910	479	359	183	6.6	125	3019	40.8	0.8	< 0.1	< 1	< 0.1	0.001
EPA 08	N	7/20/1993	6,862.80	6.60	7.10	4144	562	352	159	7.9	134	2956	39.6	0.69	< 0.1	< 1	< 0.1	0.002
EPA 08	N	10/12/1993	6,859.40	6.70	6.19	4366	561	370	169	7.1	117	3110	36.9	0.71	< 0.1	< 1	0.16	< 0.001
EPA 08	N	1/11/1994	6,861.30	6.70	6.46	4765	528	366	177	6.7	111	3197	39.4	0.74	< 0.1	< 1	< 0.1	< 0.001
EPA 08	N	4/20/1994	6,861.40	6.50	6.22	4532	530	368	162	6.4	116	3154	39.6	1.33	< 0.1	< 1	0.1	0.001
EPA 08	N	7/26/1994	6,862.60	6.50	7.13	4389	592	379	142	7.5	109	3049	38.7	0.72	< 0.1	< 1	0.12	< 0.001
EPA 08	N	10/11/1994	6,861.50	6.50	6.90	4809	572	425	157	7.5	119	3367	41.5	1.08	< 0.1	< 1	< 0.1	< 0.001
EPA 08	N	1/10/1995	6,861.70	6.40	6.62	4848	644	388	142	8.5	139	3277	42	1.31	< 0.1	< 1	< 0.1	< 0.001
EPA 08	N	4/6/1995	6,861.60	6.50	6.48	4867	651	345	154	7.5	108	3364	40.2	1.52	< 0.1	< 1	< 0.1	< 0.001
EPA 08	N	7/11/1995	6,861.80	6.90	7.05	4212	550	408	144	7.3	127	2906	42	1.29	< 0.1	< 1	< 0.1	< 0.001
EPA 08	N	10/10/1995	6,861.90	6.60	7.13	4348	575	411	160	7.3	127	2965	38.4	0.93	< 0.1	< 1	< 0.1	0.002
EPA 08	N	1/9/1996	6,862.00	6.70	7.29	4185	545	401	156	7.9	162	2863	37.6	0.68	< 0.1	< 1	< 0.1	< 0.001
EPA 08	N	4/10/1996	6,862.20	6.90	7.24	4857	620	444	148	7.6	149	3460	41.8	0.75	< 0.1	< 1	< 0.1	0.001
EPA 08	N	7/17/1996	6,862.30	6.80	6.63	4876	560	395	159	8	165	3085	37.6	0.13	< 0.1	< 1	< 0.1	< 0.001
EPA 08	N	10/8/1996	6,862.30	6.60	6.98	4880	603	441	157	8	148	3061	39	0.73	< 0.1	< 1	< 0.1	< 0.001
EPA 08	N	1/28/1997	6,862.30	6.90	7.31	4870	565	415	141	7.6	143	3130	51	0.69	< 0.1	< 1	< 0.1	< 0.001
EPA 08	N	4/15/1997	6,862.40	6.60	7.10	4890	604	440	160	8.2	156	3330	42	0.73	< 0.1	< 1	< 0.1	< 0.001
EPA 08	N	7/15/1997	6,862.20	6.60	7.11	4860	603	432	145	7.8	138	3200	45.2	0.73	< 0.1	< 1	< 0.1	< 0.001
EPA 08	N	10/15/1997	6,862.40	6.50	7.49	4850	617	444	147	7.6	133	3190	53.7	0.75	< 0.1	< 1	< 0.1	< 0.001
EPA 08	N	1/20/1998	6,863.00	6.60	7.53	4840	598	439	156	8.4	133	3400	45.3	1.12	< 0.1	< 1	< 0.1	< 0.001
EPA 08	N	4/14/1998	6,862.70	6.70	6.93	4850	592	431	151	7.8	159	3300	39.6	0.74	< 0.1	< 1	< 0.1	< 0.001

**TABLE C.1**  
**Zone 1 Data Summary, 1989-2016**  
**United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico**

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA Standard			0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA 08	N	7/26/1989	< 0.05	< 0.01	< 0.01	< 0.05	3	< 0.1	< 0.05	< 0.001	< 0.1	0.0012	1.5	1.6	3.1	0.9	1.7	< 1
EPA 08	N	10/5/1989	< 0.05	< 0.01	< 0.01	< 0.05	2.9	< 0.01	< 0.05	< 0.001	< 0.1	0.004	1	< 1	1	< 0.2	2.1	1.5
EPA 08	N	1/16/1990	< 0.05	< 0.01	< 0.01	< 0.05	3.3	< 0.1	< 0.05	< 0.001	< 0.1	0.003	0.8	2.5	3.3	< 0.2	< 1	0.9
EPA 08	N	4/17/1990	< 0.05	< 0.01	< 0.01	< 0.05	3	< 0.1	< 0.05	< 0.001	< 0.1	0.003	1.4	1	2.4	< 0.2	1.7	1.9
EPA 08	N	7/17/1990	< 0.05	< 0.01	< 0.01	< 0.05	3.41	< 0.1	< 0.05	< 0.001	< 0.1	0.0019	0.6	< 1	0.6	< 0.2	< 1	< 1
EPA 08	N	10/16/1990	< 0.05	< 0.01	< 0.01	< 0.05	3.4	< 0.1	< 0.05	< 0.001	< 0.1	0.0007	0.7	2.5	3.2	< 0.2	< 1	< 1
EPA 08	N	1/8/1991	< 0.01	< 0.01	< 0.01	< 0.05	3.32	< 0.1	< 0.05	< 0.001	< 0.1	0.0027	2.3	1.2	3.5	< 0.2	< 1	2
EPA 08	N	4/17/1991	< 0.01	< 0.01	< 0.01	< 0.05	3.82	< 0.1	< 0.05	< 0.001	< 0.1	0.002	2.1	4.5	6.6	< 0.2	< 1	2
EPA 08	N	7/3/1991	< 0.01	< 0.01	< 0.01	< 0.05	2.93	< 0.1	< 0.05	< 0.001	< 0.1	0.0015	0.9	2	2.9	< 0.2	< 1	< 1
EPA 08	N	10/22/1991	< 0.01	< 0.01	0.02	< 0.05	3.22	< 0.1	< 0.05	< 0.001	< 0.1	0.0436	0.8	2	2.8	< 0.2	< 1	< 1
EPA 08	N	1/22/1992	< 0.01	< 0.01	< 0.01	0.05	2.88	< 0.1	< 0.05	< 0.001	< 0.1	0.001	5.4	< 1	5.4	< 0.2	1.3	5
EPA 08	N	4/2/1992	< 0.01	< 0.01	< 0.01	< 0.05	3.43	< 0.1	< 0.05	< 0.001	< 0.1	0.001	0.5	3.8	4.3	< 0.2	< 1	< 1
EPA 08	N	7/15/1992	< 0.01	< 0.01	< 0.01	< 0.05	3.17	< 0.1	< 0.05	< 0.001	< 0.1	0.003	1.2	5.6	6.8	< 0.2	< 1	1.5
EPA 08	N	10/14/1992	< 0.01	< 0.01	< 0.01	< 0.05	3.09	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	1.7	1.7	3.4	< 0.2	< 1	1.9
EPA 08	N	1/13/1993	< 0.01	< 0.01	< 0.01	< 0.05	3.46	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.4	10.7	11.1	< 0.2	< 1	< 1
EPA 08	N	4/15/1993	< 0.01	< 0.01	< 0.01	< 0.05	3.05	< 0.1	< 0.05	< 0.001	< 0.1	0.006	0.5	3.8	4.3	< 0.2	< 1	< 1
EPA 08	N	7/20/1993	< 0.01	< 0.01	< 0.01	< 0.05	2.78	< 0.1	< 0.05	< 0.001	< 0.1	< 0.003	1	3.4	4.4	< 0.2	< 1	1.4
EPA 08	N	10/12/1993	< 0.01	< 0.01	0.02	< 0.05	2.8	< 0.1	< 0.05	< 0.001	< 0.1	0.002	1.5	5.5	7	< 0.2	< 1	2
EPA 08	N	1/11/1994	< 0.01	< 0.01	< 0.01	< 0.05	3.07	< 0.1	< 0.05	< 0.001	< 0.1	0.006	1.1	5	6.1	< 0.2	< 1	9.6
EPA 08	N	4/20/1994	< 0.01	< 0.01	< 0.01	< 0.05	2.49	< 0.1	< 0.05	< 0.001	< 0.1	0.001	1.3	3.5	4.8	< 0.2	1.3	6.7
EPA 08	N	7/26/1994	< 0.01	< 0.01	< 0.01	< 0.05	3.12	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	1.9	3.4	5.3	< 0.2	< 1	7.2
EPA 08	N	10/11/1994	< 0.01	< 0.01	< 0.01	< 0.05	2.46	< 0.1	< 0.05	< 0.001	< 0.1	0.001	1.2	1.8	3	< 0.2	< 1	4.1
EPA 08	N	1/10/1995	< 0.01	< 0.01	< 0.01	< 0.05	2.95	< 0.1	< 0.05	< 0.001	< 0.1	0.001	2.3	2.6	4.9	< 0.2	< 1	6.4
EPA 08	N	4/6/1995	< 0.01	< 0.01	< 0.01	< 0.05	3.15	< 0.1	< 0.05	< 0.001	< 0.1	0.001	1.1	2.7	3.8	< 0.2	< 1	5.3
EPA 08	N	7/11/1995	< 0.01	< 0.01	< 0.01	< 0.05	2.92	0.27	< 0.05	< 0.001	< 0.1	0.0016	0.7	2.2	2.9	0.5	4.9	6.6
EPA 08	N	10/10/1995	< 0.01	< 0.01	< 0.01	< 0.05	2.99	< 0.1	< 0.05	< 0.001	< 0.1	0.0017	1.7	2.2	3.9	< 0.2	< 1	1.8
EPA 08	N	1/9/1996	< 0.01	< 0.01	< 0.01	< 0.05	2.8	0.13	< 0.05	< 0.001	< 0.1	0.001	1	1.5	2.5	< 0.2	3.8	< 1
EPA 08	N	4/10/1996	< 0.01	< 0.01	< 0.01	< 0.05	2.96	0.14	< 0.05	< 0.001	< 0.1	0.0006	1.2	1.3	2.5	0.7	< 1	1.2
EPA 08	N	7/17/1996	< 0.01	< 0.01	< 0.01	< 0.05	3.21	< 0.1	< 0.05	0.002	< 0.1	0.0016	0.7	< 1	0.7	0.8	< 1	< 1
EPA 08	N	10/8/1996	< 0.01	< 0.01	< 0.01	< 0.05	3	< 0.1	< 0.05	< 0.001	< 0.1	0.0005	0.9	< 1	0.9	< 0.2	< 1	< 1
EPA 08	N	1/28/1997	< 0.01	< 0.01	< 0.01	< 0.05	3.07	< 0.1	< 0.05	< 0.001	< 0.1	0.001	1.1	< 1	1.1	< 0.2	< 1	1.1
EPA 08	N	4/15/1997	< 0.01	< 0.01	< 0.01	< 0.05	3.01	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	1.1	< 1	1.1	< 0.2	< 1	< 1
EPA 08	N	7/15/1997	< 0.01	< 0.01	< 0.01	< 0.05	2.82	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.7	< 1	0.7	< 0.2	< 1	< 1
EPA 08	N	10/15/1997	< 0.01	< 0.01	< 0.01	< 0.05	3.24	< 0.1	< 0.05	< 0.001	< 0.1	0.001	0.7	< 1	0.7	< 0.2	< 1	< 1
EPA 08	N	1/20/1998	< 0.01	< 0.005	< 0.01	< 0.05	3.42	< 0.1	< 0.05	< 0.001	< 0.1	0.001	1.1	< 1	1.1	< 0.2	< 1	< 1
EPA 08	N	4/14/1998	< 0.01	< 0.005	< 0.01	< 0.05	2.99	< 0.1	< 0.05	< 0.001	< 0.1	0.0009	1	< 1	1	< 0.2	< 1	< 1



**TABLE C.1**

Zone 1 Data Summary, 1989-2016  
 United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Water Elevation	Field pH	Lab pH	Lab TDS	Ca	Mg	Na	K	HCO3	SO4	Cl	NH4 as N	NO3 as N	TTHMs (Chloroform)	Al	As
			ft amsl	SU	SU	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ug/l	mg/l	mg/l
NRC Standard			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	NA	0.05
EPA Standard			NA	NA	NA	8020	NA	NA	NA	NA	NA	5539	250	NA	190	80	5	0.01
EPA 08	N	7/14/1998	6,862.40	6.60	7.17	4820	594	430	154	8.3	132	3000	39.7	0.85	< 0.1	< 1	< 0.1	< 0.001
EPA 08	N	10/13/1998	no data	6.47	7.58	4780	566	428	156	8.3	134	3150	38.5	1.07	< 0.1	< 1	< 0.1	< 0.001
EPA 08	N	1/12/1999	6,865.50	6.60	7.20	4840	594	432	139	8	130	3200	41	0.81	< 0.1	< 1	< 0.1	0.003
EPA 08	N	4/13/1999	6,863.30	6.60	7.35	4630	558	420	136	7.7	131	3000	45.7	0.91	< 0.1	< 1	< 0.1	< 0.001
EPA 08	N	7/20/1999	6,863.00	6.36	7.18	4780	514	379	169	10.3	119	2710	47	0.76	< 0.1	< 1	< 0.1	< 0.001
EPA 08	N	10/12/1999	6,862.90	6.45	7.44	4790	552	414	133	7.7	121	3000	42.9	0.71	< 0.1	< 1	< 0.1	< 0.001
EPA 08	N	1/11/2000	6,863.20	6.60	7.29	4720	510	387	127	8.1	125	2750	39.3	0.79	< 0.1	< 1	< 0.1	< 0.001

**TABLE C.1**  
Zone 1 Data Summary, 1989-2016  
United Nuclear Corporation, Church Rock Site, Church Rock, New Mexico

Location ID	Desc	Sample Date	Be	Cd	Co	Pb	Mn	Mo	Ni	Se	V	U	Rad-226	Rad-228	Rad Total	Th-230	Pb-210	Gross Alpha
			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	pci/l	pci/l	pci/l	pci/l	pci/l
NRC Standard			0.05	0.01	NA	0.05	NA	NA	0.07	0.01	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA Standard			0.004	0.01	0.05	0.05	5.4	1	0.2	0.05	0.1	0.238	NA	NA	12.1	1.6	4.7	15
EPA 08	N	7/14/1998	< 0.01	< 0.005	< 0.01	< 0.05	2.84	< 0.1	< 0.05	< 0.001	< 0.1	0.0009	0.9	< 1	0.9	< 0.2	< 1	< 1
EPA 08	N	10/13/1998	< 0.01	< 0.005	< 0.01	< 0.05	3.05	< 0.1	< 0.05	< 0.001	< 0.1	0.001	1.4	3.8	5.2	< 0.2	2.3	2.3
EPA 08	N	1/12/1999	< 0.01	< 0.005	< 0.01	< 0.05	2.98	< 0.1	< 0.05	< 0.001	< 0.1	0.0038	1	2.3	3.3	< 0.2	< 1	< 1
EPA 08	N	4/13/1999	< 0.01	< 0.005	< 0.01	< 0.05	2.98	< 0.1	< 0.05	< 0.001	< 0.1	0.0011	2	3.4	5.4	< 0.2	3	3
EPA 08	N	7/20/1999	< 0.01	< 0.005	< 0.01	< 0.05	2.4	< 0.1	< 0.05	< 0.001	< 0.1	0.0016	1.4	1.5	2.9	< 0.2	1.8	1.8
EPA 08	N	10/12/1999	< 0.01	< 0.005	< 0.01	< 0.05	3.08	< 0.1	< 0.05	< 0.001	< 0.1	< 0.0003	0.9	4.2	5.1	< 0.2	< 1	1.6
EPA 08	N	1/11/2000	< 0.01	< 0.005	< 0.01	< 0.05	2.99	< 0.1	< 0.05	< 0.001	< 0.1	0.0016	0.9	2.6	3.5	< 0.2	< 1	< 1

**Laboratory Analytical Data  
2016**

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 1 Monitor Wells					
Well ID:		614	614	614	614
Collection Date:		10/4/2016	7/12/2016	4/5/2016	1/5/2016
Receive Date:		10/7/2016	7/15/2016	4/8/2016	1/8/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUUnits	C16100237-001	C16070512-001	C16040269-001	C16010177-001
Bicarbonate as HCO <sub>3</sub>	mg/L	879	979	815	1220
Calcium	mg/L	552	549	545	543
Chloride	mg/L	291	305	285	279
Magnesium	mg/L	703	711	693	726
Nitrogen, Ammonia as N	mg/L	60	70	103	125
Nitrogen, Nitrate+Nitrite as N	mg/L	200	200	168	156
Potassium	mg/L	14	15	14	15
Sodium	mg/L	463	476	456	472
Sulfate	mg/L	3760	3900	3750	3680
pH	s.u.	6.61	6.50	6.66	6.41
Solids, Total Dissolved TDS @ 180 C	mg/L	7070	7350	7210	7130
Aluminum	mg/L	ND(0.1)	0.1	0.5	0.3
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	0.003	0.006	0.006	0.004
Manganese	mg/L	0.94	1.02	0.95	0.83
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0374	0.0389	0.0417	0.0397
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	0.001
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	0.002	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	3.5	2.3	4.4	5.7
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.3	1.0	1.6	1.8
Gross Alpha minus Rn & U MDC	pCi/L	1.0	0.9	1.4	1.3
Lead 210	pCi/L	0.8	0.3	0.2	0.03
Lead 210 precision (±)	pCi/L	0.6	0.8	0.8	0.6
Lead 210 MDC	pCi/L	1.0	1.4	1.4	1.0
Radium 226	pCi/L	0.80	0.73	0.96	0.89
Radium 226 precision (±)	pCi/L	0.20	0.20	0.21	0.21
Radium 226 MDC	pCi/L	0.20	0.20	0.17	0.17
Radium 228	pCi/L	3.8	6.0	4.2	3.7
Radium 228 precision (±)	pCi/L	1.1	1.3	0.95	0.95
Radium 228 MDC	pCi/L	1.2	1.1	0.80	1.0
Thorium 230	pCi/L	0.04	0.1	0.01	0.09
Thorium 230 precision (±)	pCi/L	0.1	0.09	0.09	0.1
Thorium 230 MDC	pCi/L	0.2	0.1	0.2	0.2
A/C Balance	%	-2.09	-2.88	-1.08	1.08
Anions	meq/L	115	119	114	114
Cations	meq/L	110	113	112	117
Solids, Total Dissolved - Calculated	mg/L	7200	7300	7000	6700
TDS Ratio	unitless	0.98	1.01	1.02	1.06
Trihalomethanes, Total	ug/L	32	97.2	12.4	41.2

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 1 Monitor Wells					
Well ID:		515-A	515-A	515-A	515-A
Collection Date:		10/4/2016	7/12/2016	4/5/2016	1/5/2016
Receive Date:		10/7/2016	7/15/2016	4/8/2016	1/8/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100237-002	C16070512-002	C16040269-002	C16010177-002
Bicarbonate as HCO <sub>3</sub>	mg/L	835	880	827	893
Calcium	mg/L	458	435	449	458
Chloride	mg/L	381	406	390	383
Magnesium	mg/L	1370	1340	1330	1390
Nitrogen, Ammonia as N	mg/L	23	24	23	23
Nitrogen, Nitrate+Nitrite as N	mg/L	40	40	37	40
Potassium	mg/L	17	17	17	17
Sodium	mg/L	599	588	582	605
Sulfate	mg/L	6590	6750	6610	6360
pH	s.u.	6.13	6.16	6.41	6.09
Solids, Total Dissolved TDS @ 180 C	mg/L	10200	11000	10500	10500
Aluminum	mg/L	0.3	0.4	0.3	0.3
Beryllium	mg/L	0.002	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.02	0.02	0.02	0.02
Lead	mg/L	0.002	0.002	0.002	ND(0.001)
Manganese	mg/L	7.55	7.86	7.58	7.34
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.10	0.11	0.11	0.07
Uranium	mg/L	0.0079	0.0085	0.0097	0.0104
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	0.001	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	0.002	0.003	0.002
Gross Alpha minus Rn & U	pCi/L	6.4	6.4	8.2	9.2
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.9	2.2	2.3	2.4
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.8	1.4	1.3
Lead 210	pCi/L	0.3	-0.2	0.0	-0.1
Lead 210 precision (±)	pCi/L	0.6	0.8	0.8	0.6
Lead 210 MDC	pCi/L	1.0	1.4	1.4	1.0
Radium 226	pCi/L	2.2	2.1	1.9	1.8
Radium 226 precision (±)	pCi/L	0.53	0.53	0.47	0.44
Radium 226 MDC	pCi/L	0.22	0.27	0.23	0.18
Radium 228	pCi/L	2.6	5.9	4.2	4.6
Radium 228 precision (±)	pCi/L	0.85	1.3	0.99	1.1
Radium 228 MDC	pCi/L	1.3	1.5	1.1	1.1
Thorium 230	pCi/L	0.08	0.1	-0.01	0.2
Thorium 230 precision (±)	pCi/L	0.1	0.2	0.09	0.1
Thorium 230 MDC	pCi/L	0.2	0.3	0.2	0.2
A/C Balance	%	-0.26	-2.89	-1.83	1.69
Anions	meq/L	164	169	165	160
Cations	meq/L	163	160	159	166
Solids, Total Dissolved - Calculated	mg/L	10000	10000	10000	9800
TDS Ratio	unitless	1.01	1.08	1.05	1.07
Trihalomethanes, Total	ug/L	329	236	23.5	155

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.



UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 1 Monitor Wells					
Well ID:		604	604	604	604
Collection Date:		10/4/2016	7/12/2016	4/5/2016	1/5/2016
Receive Date:		10/7/2016	7/15/2016	4/8/2016	1/8/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100237-003	C16070512-003	C16040269-003	C16010177-003
Bicarbonate as HCO <sub>3</sub>	mg/L	30	31	29	29
Calcium	mg/L	461	444	453	447
Chloride	mg/L	87	94	83	82
Magnesium	mg/L	836	822	810	850
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	63	65	60	64
Potassium	mg/L	11	12	11	12
Sodium	mg/L	310	307	300	307
Sulfate	mg/L	4800	4510	4710	4630
pH	s.u.	5.57	5.49	5.57	5.50
Solids, Total Dissolved TDS @ 180 C	mg/L	7120	7290	7050	7070
Aluminum	mg/L	0.6	0.5	1.0	1.1
Beryllium	mg/L	0.005	ND(0.001)	0.001	0.001
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.09	0.10	0.10	0.09
Lead	mg/L	ND(0.001)	0.001	ND(0.001)	ND(0.001)
Manganese	mg/L	3.85	3.63	3.86	3.68
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.20	0.18	0.21	0.17
Uranium	mg/L	0.0006	ND(0.0003)	0.0006	ND(0.0003)
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	4.5	3.9	4.0	7.8
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.6	1.6	1.5	2.2
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.8	1.4	1.3
Lead 210	pCi/L	0.4	0.2	0.0	-0.04
Lead 210 precision (±)	pCi/L	0.6	0.8	0.8	0.6
Lead 210 MDC	pCi/L	1.0	1.4	1.4	1.0
Radium 226	pCi/L	1.4	1.1	1.7	1.3
Radium 226 precision (±)	pCi/L	0.36	0.31	0.44	0.34
Radium 226 MDC	pCi/L	0.21	0.22	0.22	0.16
Radium 228	pCi/L	4.2	6.5	3.4	4.4
Radium 228 precision (±)	pCi/L	1.1	1.4	0.88	1.1
Radium 228 MDC	pCi/L	1.2	1.2	1.1	0.99
Thorium 230	pCi/L	0.03	0.09	0.06	0.1
Thorium 230 precision (±)	pCi/L	0.06	0.1	0.1	0.1
Thorium 230 MDC	pCi/L	0.1	0.2	0.2	0.1
A/C Balance	%	-0.77	-3.79	-0.01	1.14
Anions	meq/L	107	112	103	104
Cations	meq/L	106	103	103	106
Solids, Total Dissolved - Calculated	mg/L	6900	7000	6500	6600
TDS Ratio	unitless	1.03	1.04	1.08	1.06
Trihalomethanes, Total	ug/L	ND(50)	11.8	7.84	12.8

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 1 Monitor Wells					
Well ID:		EPA-7	EPA-7	EPA-7	EPA-7
Collection Date:		10/4/2016	7/12/2016	4/5/2016	1/5/2016
Receive Date:		10/7/2016	7/15/2016	4/8/2016	1/8/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100237-004	C16070512-004	C16040269-004	C16010177-004
Bicarbonate as HCO <sub>3</sub>	mg/L	659	667	653	670
Calcium	mg/L	507	495	492	485
Chloride	mg/L	245	259	245	244
Magnesium	mg/L	906	905	873	916
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	135	132	124	128
Potassium	mg/L	9	9	8	9
Sodium	mg/L	388	389	376	386
Sulfate	mg/L	4420	4490	4380	4300
pH	s.u.	6.37	6.34	6.40	6.31
Solids, Total Dissolved TDS @ 180 C	mg/L	7710	7900	7570	7600
Aluminum	mg/L	0.2	0.3	0.2	0.3
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.05	0.05	0.05	0.04
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	1.33	1.34	1.45	1.30
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	0.06	0.06	0.07	ND(0.05)
Uranium	mg/L	0.0014	0.0015	0.0017	0.0018
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	3.1	2.2	2.8	3.2
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.2	1.4	1.4	1.4
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.8	1.4	1.3
Lead 210	pCi/L	0.2	-0.4	0.03	-0.4
Lead 210 precision (±)	pCi/L	0.6	0.8	0.8	0.6
Lead 210 MDC	pCi/L	1.0	1.4	1.4	1.0
Radium 226	pCi/L	0.62	0.66	0.82	0.46
Radium 226 precision (±)	pCi/L	0.21	0.21	0.20	0.17
Radium 226 MDC	pCi/L	0.22	0.22	0.20	0.18
Radium 228	pCi/L	2.0	3.4	2.4	1.4
Radium 228 precision (±)	pCi/L	0.85	0.96	0.70	0.72
Radium 228 MDC	pCi/L	1.3	1.1	0.96	1.1
Thorium 230	pCi/L	-0.03	-0.03	0.08	0.1
Thorium 230 precision (±)	pCi/L	0.09	0.06	0.07	0.1
Thorium 230 MDC	pCi/L	0.3	0.2	0.1	0.2
A/C Balance	%	-0.76	-1.94	-2.08	0.23
Anions	meq/L	119	121	118	116
Cations	meq/L	117	116	113	117
Solids, Total Dissolved - Calculated	mg/L	7400	7400	7300	7200
TDS Ratio	unitless	1.05	1.06	1.04	1.05
Trihalomethanes, Total	ug/L	1.1	1.48	1.19	1.56

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 1 Monitor Wells					
Well ID:		EPA-5	EPA-5	EPA-5	EPA-5
Collection Date:		10/4/2016	7/12/2016	4/5/2016	1/5/2016
Receive Date:		10/7/2016	7/15/2016	4/8/2016	1/8/2016
Report Date:		10/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100237-005	C16070512-005	C16040269-005	C16010177-005
Bicarbonate as HCO <sub>3</sub>	mg/L	64	71	76	65
Calcium	mg/L	473	468	470	459
Chloride	mg/L	38	41	37	37
Magnesium	mg/L	494	485	476	492
Nitrogen, Ammonia as N	mg/L	2.0	1.99	3.0	ND(0.05)
Nitrogen, Nitrate+Nitrite as N	mg/L	7.1	6.0	3.7	5.7
Potassium	mg/L	7	6	6	7
Sodium	mg/L	104	105	104	108
Sulfate	mg/L	3330	3410	3270	3170
pH	s.u.	6.58	6.38	6.15	6.08
Solids, Total Dissolved TDS @ 180 C	mg/L	4690	4730	4680	4670
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	0.02	0.03	0.04	0.05
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	0.010
Manganese	mg/L	0.24	0.26	0.38	0.46
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	0.05	0.06
Uranium	mg/L	0.0007	0.0009	0.0005	0.0006
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	2.9	4.1	3.6	4.5
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.2	1.7	1.5	1.6
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.8	1.4	1.3
Lead 210	pCi/L	-0.03	0.3	0.0	-0.4
Lead 210 precision (±)	pCi/L	0.6	0.8	0.8	0.6
Lead 210 MDC	pCi/L	1.0	1.4	1.4	1.0
Radium 226	pCi/L	1.3	1.5	1.3	1.1
Radium 226 precision (±)	pCi/L	0.34	0.38	0.33	0.28
Radium 226 MDC	pCi/L	0.20	0.20	0.16	0.15
Radium 228	pCi/L	2.7	4.2	2.7	2.8
Radium 228 precision (±)	pCi/L	1.0	1.1	0.77	0.85
Radium 228 MDC	pCi/L	1.2	1.0	0.77	0.91
Thorium 230	pCi/L	0.05	0.04	-0.03	0.05
Thorium 230 precision (±)	pCi/L	0.06	0.07	0.05	0.09
Thorium 230 MDC	pCi/L	0.09	0.1	0.1	0.2
A/C Balance	%	-2.18	-4.02	-2.30	-0.06
Anions	meq/L	72.2	73.8	70.7	68.4
Cations	meq/L	69.1	68.1	67.6	68.3
Solids, Total Dissolved - Calculated	mg/L	4500	4600	4400	4300
TDS Ratio	unitless	1.04	1.03	1.05	1.08
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

**\*\*Note:** The data presented on this form is intended for summary purposes only. Laboratory approved data is contained within the attached database reports.

UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 1 Monitor Wells					
Well ID:		EPA-4	EPA-4	EPA-4	EPA-4
Collection Date:		10/5/2016	7/13/2016	4/6/2016	1/6/2016
Receive Date:		10/7/2016	7/15/2016	4/5/2016	1/8/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100237-006	C16070512-006	C16040269-006	C16010177-006
Bicarbonate as HCO <sub>3</sub>	mg/L	138	151	155	176
Calcium	mg/L	490	492	494	482
Chloride	mg/L	37	41	35	37
Magnesium	mg/L	392	389	383	395
Nitrogen, Ammonia as N	mg/L	0.27	0.10	0.34	0.28
Nitrogen, Nitrate+Nitrite as N	mg/L	0.3	0.4	0.2	0.3
Potassium	mg/L	8	8	8	8
Sodium	mg/L	179	180	179	180
Sulfate	mg/L	3130	2940	3060	3080
pH	s.u.	7.16	6.91	6.88	6.74
Solids, Total Dissolved TDS @ 180 C	mg/L	4450	4550	4520	4560
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	2.50	2.52	3.26	3.39
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	ND(0.0003)	ND(0.0003)	ND(0.0003)	ND(0.0003)
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	2.7	2.5	3.7	5.2
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.2	1.1	1.6	1.6
Gross Alpha minus Rn & U MDC	pCi/L	1.0	0.9	1.4	1.3
Lead 210	pCi/L	0.2	0.3	0.8	0.2
Lead 210 precision (±)	pCi/L	0.6	0.8	0.9	0.6
Lead 210 MDC	pCi/L	1.0	1.4	1.4	1.0
Radium 226	pCi/L	1.2	1.4	1.3	1.3
Radium 226 precision (±)	pCi/L	0.33	0.37	0.33	0.32
Radium 226 MDC	pCi/L	0.19	0.18	0.18	0.15
Radium 228	pCi/L	3.1	4.3	3.6	3.1
Radium 228 precision (±)	pCi/L	1.0	1.0	0.91	1.0
Radium 228 MDC	pCi/L	1.1	0.97	0.86	0.89
Thorium 230	pCi/L	0.03	0.1	0.03	0.06
Thorium 230 precision (±)	pCi/L	0.07	0.1	0.1	0.08
Thorium 230 MDC	pCi/L	0.1	0.2	0.2	0.1
A/C Balance	%	-2.72	-4.82	-2.35	-2.91
Anions	meq/L	68.4	73.0	67.3	68.5
Cations	meq/L	64.8	66.3	64.2	64.6
Solids, Total Dissolved - Calculated	mg/L	4300	4600	4300	4300
TDS Ratio	unitless	1.03	1.00	1.06	1.06
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

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UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 1 Monitor Wells					
Well ID:		EPA-2	EPA-2	EPA-2	EPA-2
Collection Date:		10/5/2016	7/13/2016	4/6/2016	1/6/2016
Receive Date:		10/7/2016	7/15/2016	4/5/2016	1/8/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100237-007	C16070512-007	C16040269-007	C16010177-007
Bicarbonate as HCO <sub>3</sub>	mg/L	285	292	298	324
Calcium	mg/L	407	386	409	417
Chloride	mg/L	21	25	22	24
Magnesium	mg/L	193	176	191	203
Nitrogen, Ammonia as N	mg/L	0.13	0.13	0.18	0.39
Nitrogen, Nitrate+Nitrite as N	mg/L	0.2	ND(0.1)	ND(0.1)	ND(0.1)
Potassium	mg/L	7	7	7	7
Sodium	mg/L	207	202	204	214
Sulfate	mg/L	1910	2010	1880	2010
pH	s.u.	7.13	7.00	6.92	6.89
Solids, Total Dissolved TDS @ 180 C	mg/L	3050	3070	3030	3110
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	0.001	ND(0.001)	ND(0.001)
Manganese	mg/L	1.68	1.33	1.61	1.68
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0018	0.0018	0.0012	0.0013
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	5.0	1.6	2.4	4.4
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.7	1.5	1.2	1.6
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.8	1.4	1.3
Lead 210	pCi/L	0.3	0.4	0.4	-0.5
Lead 210 precision (±)	pCi/L	0.6	0.8	0.8	0.6
Lead 210 MDC	pCi/L	1.0	1.4	1.4	1.0
Radium 226	pCi/L	1.5	1.5	1.2	1.1
Radium 226 precision (±)	pCi/L	0.38	0.36	0.30	0.29
Radium 226 MDC	pCi/L	0.20	0.19	0.16	0.15
Radium 228	pCi/L	6.0	3.8	3.7	3.0
Radium 228 precision (±)	pCi/L	1.4	1.1	0.96	0.97
Radium 228 MDC	pCi/L	1.2	1.2	0.74	1.1
Thorium 230	pCi/L	0.04	0.05	0.02	0.08
Thorium 230 precision (±)	pCi/L	0.09	0.1	0.08	0.1
Thorium 230 MDC	pCi/L	0.2	0.2	0.2	0.2
A/C Balance	%	-0.58	-4.89	0.59	-0.84
Anions	meq/L	45.9	47.4	44.7	47.8
Cations	meq/L	45.4	43.0	45.2	47.0
Solids, Total Dissolved - Calculated	mg/L	2900	3000	2900	3100
TDS Ratio	unitless	1.04	1.03	1.05	1.02
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

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UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 1 Monitor Wells					
Well ID:		EPA-2 Duplicate	EPA-2 Duplicate	EPA-2 Duplicate	EPA-2 Duplicate
Collection Date:		10/5/2016	7/13/2016	4/6/2016	1/6/2016
Receive Date:		10/7/2016	7/15/2016	4/5/2016	1/8/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100237-008	C16070512-008	C16040269-008	C16010177-008
Bicarbonate as HCO <sub>3</sub>	mg/L	303	313	305	317
Calcium	mg/L	399	387	396	393
Chloride	mg/L	22	24	22	24
Magnesium	mg/L	186	176	183	188
Nitrogen, Ammonia as N	mg/L	0.31	0.26	0.38	0.44
Nitrogen, Nitrate+Nitrite as N	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Potassium	mg/L	7	7	7	7
Sodium	mg/L	201	201	209	204
Sulfate	mg/L	1830	1890	1860	1940
pH	s.u.	6.78	6.72	6.82	6.77
Solids, Total Dissolved TDS @ 180 C	mg/L	3020	2970	2990	3010
Aluminum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	0.002	ND(0.001)	ND(0.001)
Manganese	mg/L	1.73	1.50	1.64	1.59
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	0.0017	0.0017	0.0014	0.0015
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	4.3	2.8	3.1	3.5
Gross Alpha minus Rn & U Precision (±)	pCi/L	1.5	1.5	1.3	1.4
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.8	1.4	1.3
Lead 210	pCi/L	0.2	0.3	0.4	-0.5
Lead 210 precision (±)	pCi/L	0.6	0.8	0.8	0.6
Lead 210 MDC	pCi/L	1.0	1.4	1.4	1.0
Radium 226	pCi/L	1.8	1.8	1.4	1.1
Radium 226 precision (±)	pCi/L	0.44	0.44	0.35	0.28
Radium 226 MDC	pCi/L	0.19	0.19	0.16	0.15
Radium 228	pCi/L	4.4	2.4	4.0	1.8
Radium 228 precision (±)	pCi/L	1.3	0.88	0.98	0.76
Radium 228 MDC	pCi/L	1.1	1.1	0.76	1.1
Thorium 230	pCi/L	0.01	0.04	0.03	0.08
Thorium 230 precision (±)	pCi/L	0.06	0.07	0.05	0.1
Thorium 230 MDC	pCi/L	0.1	0.1	0.08	0.2
A/C Balance	%	0.48	-2.83	-0.30	-2.24
Anions	meq/L	43.7	45.3	44.3	46.2
Cations	meq/L	44.1	42.8	44.1	44.2
Solids, Total Dissolved - Calculated	mg/L	2800	2900	2900	2900
TDS Ratio	unitless	1.07	1.03	1.05	1.02
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

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UNC Mining and Milling ChurchRock Operations					
GroundWater Monitoring Summary: Zone 1 Monitor Wells					
Well ID:		TWQ-142	TWQ-142	TWQ-142	TWQ-142
Collection Date:		10/5/2016	7/13/2016	4/6/2016	1/6/2016
Receive Date:		10/7/2016	7/15/2016	4/5/2016	1/8/2016
Report Date:		12/2/2016	9/26/2016	6/9/2016	2/12/2016
Analyte	RUnits	C16100237-009	C16070512-009	C16040269-009	C16010177-009
Bicarbonate as HCO <sub>3</sub>	mg/L	310	320	306	313
Calcium	mg/L	69	69	69	67
Chloride	mg/L	17	18	17	17
Magnesium	mg/L	36	35	36	35
Nitrogen, Ammonia as N	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	0.13
Nitrogen, Nitrate+Nitrite as N	mg/L	0.5	0.5	0.5	0.4
Potassium	mg/L	4	4	4	4
Sodium	mg/L	321	328	338	334
Sulfate	mg/L	768	762	713	729
pH	s.u.	7.49	7.35	7.47	7.42
Solids, Total Dissolved TDS @ 180 C	mg/L	1340	1360	1330	1330
Aluminum	mg/L	ND(0.1)	ND(0.1)	0.2	0.2
Beryllium	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Cadmium	mg/L	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
Cobalt	mg/L	ND(0.01)	ND(0.01)	ND(0.01)	ND(0.01)
Lead	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Manganese	mg/L	0.03	0.01	0.07	0.04
Molybdenum	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Nickel	mg/L	ND(0.05)	ND(0.05)	ND(0.05)	ND(0.05)
Uranium	mg/L	ND(0.0003)	0.0003	0.0005	0.0004
Vanadium	mg/L	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Arsenic-III	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Selenium-IV	mg/L	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.001)
Gross Alpha minus Rn & U	pCi/L	1.5	2.5	3.8	1.5
Gross Alpha minus Rn & U Precision (±)	pCi/L	0.7	1.7	1.5	1
Gross Alpha minus Rn & U MDC	pCi/L	1.0	1.8	1.4	1.3
Lead 210	pCi/L	0.1	-0.3	0.7	-0.04
Lead 210 precision (±)	pCi/L	0.6	0.8	0.9	0.6
Lead 210 MDC	pCi/L	1.0	1.4	1.4	1.0
Radium 226	pCi/L	0.79	0.83	1.0	0.45
Radium 226 precision (±)	pCi/L	0.21	0.21	0.27	0.16
Radium 226 MDC	pCi/L	0.19	0.19	0.16	0.16
Radium 228	pCi/L	0.95	9.5	3.0	1.5
Radium 228 precision (±)	pCi/L	0.85	2.0	0.80	0.76
Radium 228 MDC	pCi/L	1.3	0.99	0.77	1.2
Thorium 230	pCi/L	0.08	0.05	0.1	0.04
Thorium 230 precision (±)	pCi/L	0.08	0.1	0.09	0.1
Thorium 230 MDC	pCi/L	0.1	0.2	0.1	0.2
A/C Balance	%	-2.63	-2.22	1.92	0.10
Anions	meq/L	21.6	21.7	20.4	20.9
Cations	meq/L	20.5	20.7	21.2	20.9
Solids, Total Dissolved - Calculated	mg/L	1400	1400	1300	1400
TDS Ratio	unitless	0.97	0.98	0.99	0.98
Trihalomethanes, Total	ug/L	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)

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