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April 26, 2000

Mr. Greg Lyssy
Remedial Project Manager
US EPA Region 6
1445 Ross Avenue (6SF-LT)
Dallas, TX 75202-2733

Re: Response to Agency Comments on the January 13, 2000.letter titled "*Source Materials License SUA-1475, Technical Support for Proposed License Amendments*" for United Nuclear Corporation Church Rock Site
Project No. 32114, 40.300

Dear Mr. Lyssy:

On behalf of United Nuclear Corporation (United Nuclear), Earth Tech, Inc. (Earth Tech) has prepared the following responses to the EPA, NRC and NMED comments to our January 13, 2000, letter titled "*Source Materials License SUA-1475, Technical Support for Proposed License Amendments.*" The comments were provided in the letter from Greg Lyssy dated February 2, 2000, and are copied herein. Included with these responses are revised versions of Table 2 and Figure 2 from the January 13 letter as well as a revised copy of the sampling standard operating procedure (SOP) that was included with the letter.

General Comments:

The Standard Operating Procedure: Ground Water Sampling (SOP) does not contain any information on Quality Assurance and Quality Control (QA/QC) samples that will be collected during field sampling events. What QA/QC samples will United Nuclear collect during ground water sampling events? For example, will rinsate blanks, replicates, temperature blanks, matrix spike, and/or matrix spike duplicates be utilized to ensure that an acceptable level of QA/QC is performed? Please specify the QA/QC protocols that will be utilized.

Response to General Comments:

The SOP has been revised to include a discussion of the QA/QC samples that will be collected. Tables 2 and 3 in the enclosed SOP list the types of samples to be collected and the analyses to be performed. This program is similar to what United Nuclear has been using over the past ten years with the exception that duplicate samples have been added. As shown in Table 2 of the enclosed SOP, these samples will include 26 field samples, three duplicates, two field blanks and two equipment or rinseate

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blanks. One duplicate will be collected for each formation from a well that has sufficient yield to provide water for two consecutive sample volumes. Three duplicates are ten percent of the total number of field samples.

Two field blanks and two equipment or rinseate blanks will also be prepared. The field blank will be will be prepared in the field by filling clean sample bottles with deionized water. Equipment blanks will be prepared in the field by running deionized water through the previously decontaminated flow-through cell and collecting this water in clean sample bottles.

Specific Comments:

Comment 1.
Page 2, first paragraph:
The letter states that "*...wells can no longer be sampled because of saturation loss or poor performance (lack of water level and/or water quality stabilization) during low flow purge testing.*" Please explain in more detail what is meant by the term "*poor performance*". What was the rationale used to determine if a well fell into this category?

Response to Comment 1:
As discussed in the March 3, 2000, meeting, "poor performance" was based on field observations of water level and field parameter stabilization during the low flow pre-test conducted in June 1999. These observations are summarized in Table 1 of the January 13 letter. An example of a well with poor performance is Well 518 (Zone 3), which exhibited a large drawdown (2.63 feet), continued water level decline throughout the test, and conductivity that did not stabilize within ten percent. The water level in nearby Well 517 also did not stabilize, but the water quality parameters stabilized very quickly, so, it was considered a more viable candidate than Well 518 for continued monitoring.

Comment 2.
Page 2, second paragraph:
There is a discussion about well 141 becoming plugged with over 70 feet of silt. Will well 141 be added to the list of wells which will be properly abandoned? Please provide the information.

Response to Comment 2:
Well 141 will be abandoned following the procedures used for the other wells. It will be included in the final abandonment documentation to be submitted to the agencies.

Comment 3.
Table 2 and Figure 2:
The three northernmost wells in Zone 3 have been deleted from the monitoring program. What is the rationale for deleting these wells. The information provided in Table 2 and the

information provided in Figure 2 does not agree. The information should be reconciled. An additional northern point of compliance well should be added to the monitoring program.

Response to Comment 3:
The three northernmost Zone 3 monitoring wells, EPA 1, EPA 11 and 411, were deleted from the program for the following reasons:

- Well EPA 1 was dry as of January 1998. This was documented in the 1998 Annual Review report and Well EPA 1 is designated as such in Table 2 and on Figure 2 of the January 13 letter.

- Well EPA 11 was no longer useable as of April 1990. At that time, the water level had dropped below the pump. United Nuclear attempted to lower the pump in the well but was unsuccessful because the pump was cemented in the well. This condition has been documented in the annual review reports since 1990. Because a water level probe cannot pass the pump, the level of saturation is not known in this well. However, based on water levels for wells in the vicinity, the water level at this well is expected to be 5 feet or less.

  To reconcile the information in Table 2 and on Figure 2, the following revisions have been made:

  - Table 2 – "Reason for Elimination" has been revised to state that Well EPA 11 has been unuseable since 1990 because the water level dropped below the pump, which was cemented in the well. Also, the shading indicating that the well is dry has been removed.

  - Figure 2 – a note has been added stating that the well is not useable because the water level dropped below the pump, which was cemented in the well.

  Copies of the revised Table 2 and Figure 2 from the January 13 letter are enclosed.

- Well 411 was no longer useable as of April 1998 because it has filled totally with oil. This condition was documented in the 1998 Annual Review and is stated in Table 2 of the January 13 letter. Figure 2 of the January 13 letter also shows the well with the symbol indicating that it is dry or "contains insufficient water for sample collection," which is the appropriate description for this well.

The need for and location of an additional Zone 3 monitoring well will be evaluated, but this determination is considered to be outside of EPA's request to revise monitoring procedures. If a well is added, the Source Materials License and the SOP will be amended to reflect such a change.

Comment 4.
SOP, Step 2g:

A stabilization target range was not presented for temperature. A range must be given so the field samplers will know when the temperature parameter has stabilized. In addition, dissolved oxygen should be added to the parameter list. If United Nuclear will be pursuing utilizing monitored natural attenuation in the future, additional field parameters may also be warranted.

Response to Comment 4:
As agreed to in the meeting on March 3, 2000, and in a subsequent telephone conversation between Larry Bush (United Nuclear) and Greg Lyssy (EPA), the changes to parameter monitoring described in Comment 4 will not be made. Specifically:

- Temperature stabilization will not be required as part of the sampling procedures because it has generally been affected by field conditions external to the well. Specific conductivity and pH have been and will continue to be the most appropriate field parameters used to indicate stabilization. Temperature will be measured and recorded, but stabilization of temperature will not be required before purging is considered complete.

- Dissolved oxygen (DO) will not be added to the parameter list. Like temperature, DO is considered to be an unreliable indicator for water quality stabilization. Also calibration of the meter is very difficult in the field. Because it is difficult to get reliable data, any DO data retrieved will not enhance our understanding of the chemical conditions in the water at the site. A detailed review of the geochemistry, including both empirical and modeled data, indicates that the water is under oxidizing conditions. These conditions are not expected to change as the water in the formations continues to drain out. Additionally, the processes that control the concentrations of constituents of concern in Zone 1 are not particularly sensitive to redox, but are sensitive to pH.

- Additional field parameters for assessing monitored natural attenuation will not be necessary. The current set of field and laboratory parameters is appropriate for assessing attenuation of the remaining inorganic constituents of concern.

Comment 5.
SOP, Step 3b:

The SOP states that "*...for the first two sampling events, both filtered and non-filtered samples will be prepared. After the analytical results of these samples are compared, Table 2 will be updated to indicate whether filtered or non-filtered samples will be collected.*" Please be

aware that it is EPA Region 6 policy to collect unfiltered samples for ground water quality parameter analysis. However, filtered samples may be collected for comparison purposes.

Response to Comment 5:
Non-filtered samples will be collected. The SOP has been revised to reflect this procedure. United Nuclear may elect to collect filtered samples for comparison purposes.

Comment 6.
SOP, Step 3d:

The SOP states that samples will be shipped to a "*qualified laboratory*" for analysis. What laboratories are being proposed for performing the analysis? What is the definition of a "*qualified laboratory*?" Please provide the rationale for laboratory selection, and what steps will be taken if the laboratory does not meet required QA/QC requirements.

Response to Comment 6:
As discussed in the March 3, 2000, meeting, Energy Laboratories, Inc. in Casper, Wyoming, will analyze the samples. This laboratory has been performing the analyses for the approved performance monitoring program since 1989. The SOP has been revised to incorporate this change.

I trust the information provided in this letter and the enclosures meets your needs. Please call Larry Bush at (505) 722-6651 or me at (303) 804-2367 if you have further questions or need additional information.

Respectfully,
Earth Tech, Inc.

Suzie du Pont

Enclosures

cc: Roy Blickwedel (General Electric Corporation)
Larry Bush (United Nuclear)
Ken Hooks (NRC Project Manager)
Beiling Liu (NMED)
George Padilla (Navajo Superfund)
NRC Region VI

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ENCLOSURES

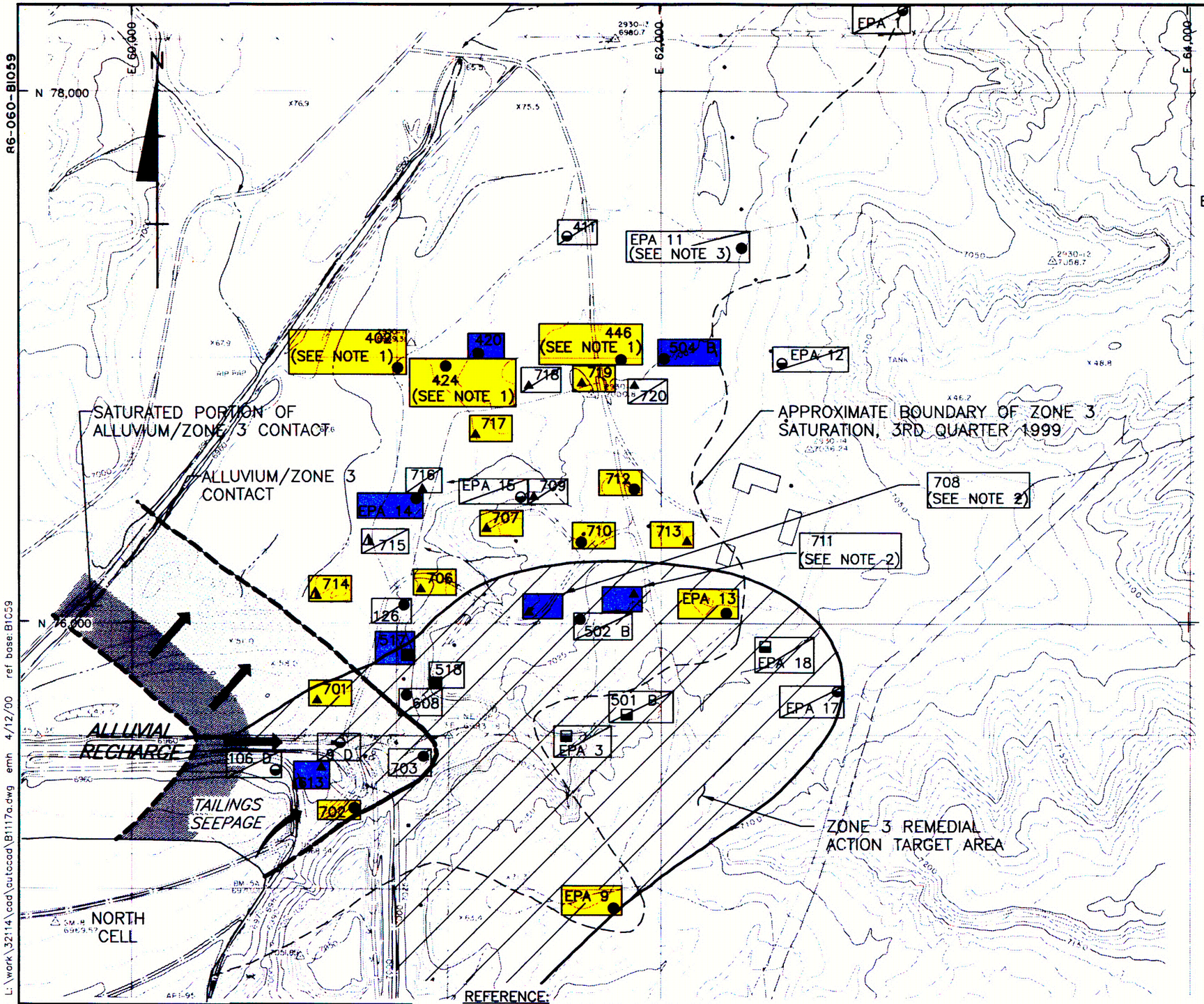
TABLE 2

PROPOSED REVISED MONITORING WELLS
CHURCH ROCK SITE

ZONE 3

Well	Water Level	Water Quality	NRC POC	Purpose
Continue Monitoring				
420	X	X		Postmining-pretailings background, track plume
708 or 711	X	X		Track saturation and plume, replace 502B pending results of low flow purge testing to be 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			Extent of saturation, water quality not necessary
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		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)
717	X			Water level only (pumper)
719	X			Water level only (decommissioned pumper)
Additional Wells, Not Included In Performance Monitoring				
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
Proposed Total	21	6		
Eliminate From Monitoring				**Reason For Elimination**
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 708 or 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)
708 or 711				Depends on results of low flow purge testing to be performed in January 2000 - Not needed (decommissioned pumper)
709				Not needed (decommissioned pumper)
716				Not needed (pumper)
718				Not needed (pumper)
720				Not needed (decommissioned pumper)

Note:
Shading indicates dry wells.



LEGEND:

- 708 ▲ — EXTRACTION WELL LOCATION AND DESIGNATION
- 714 ▲ — IDLE EXTRACTION WELL LOCATION AND DESIGNATION
- 420 ● — ZONE 3 MONITORING WELL LOCATION AND DESIGNATION (CONTAINS WATER)
- EPA 17 ◒ — ZONE 3 MONITORING WELL LOCATION AND DESIGNATION (DRY OR CONTAINS INSUFFICIENT WATER FOR SAMPLE COLLECTION)
- 518 ■ — ZONE 3 POINT OF COMPLIANCE MONITORING WELL LOCATION AND DESIGNATION (CONTAINS WATER)
- EPA 3 ◒ — ZONE 3 POINT OF COMPLIANCE MONITORING WELL LOCATION AND DESIGNATION (DRY OR CONTAINS INSUFFICIENT WATER FOR SAMPLE COLLECTION)
- WATER LEVEL MONITORING ONLY
- WATER LEVEL AND WATER QUALITY MONITORING
- ZONE 3 WELL DELETED FROM MONITORING PROGRAM

NOTES:

1. ZONE 3 WELL ADDED TO MONITORING PROGRAM.
2. WELLS 708 AND 711 WILL BE TESTED IN JANUARY 2000 TO DETERMINE WHICH WELL CAN BE USED TO REPLACE 502B.
3. WELL EPA 11 WAS NOT USABLE AS OF THIRD QUARTER 1990. THE WATER LEVEL DROPPED BELOW THE PUMP INTAKE. THE PUMP COULD NOT BE LOWERED BECAUSE IT IS CEMENTED IN THE WELL.

SCALE
400 0 400 FEET

REFERENCE:

TOPOGRAPHIC MAP OF SEC. 2, T16N, R16W N.M.P.M. & VICINITY PROVIDED BY UNITED NUCLEAR CORPORATION, GALLUP, N.M. DATED: 8-1-96. SCALE: 1" = 400'.

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
2	04/12/00	ISSUED FOR 2ND REVISED MONITORING WELL LETTER/REVISION 2 - PER EPA COMMENTS	EMH		

FILE NAME L:\work\32114\cad\autocad\B1117a.dwg emh 4/12/00 ref base:B1059

R6-060-B1059

FIGURE 2

ZONE 3 PROPOSED REVISED MONITORING WELL LOCATIONS

PREPARED FOR:

UNC MINING AND MILLING
GALLUP, NEW MEXICO

EARTH TECH

STANDARD OPERATING PROCEDURE: GROUNDWATER SAMPLING

I. Purpose: Obtain representative groundwater samples from the Church Rock site monitoring wells by using dedicated pumps and low flow purge and sampling techniques. The monitoring data are used to determine if groundwater has or is being impacted by seepage from the reclaimed tailings impoundment and to evaluate the performance of the groundwater corrective action program. This Standard Operating Procedure is based on site conditions, a U.S. Environmental Protection Agency (EPA) procedure for low flow purge and sample (EPA 1994), and recommendations of Puls and Barcelona (1995).

Note that the existing extraction system wells (wells 802 and 803) are pumped continuously. These wells will continue to be sampled from existing ports using their dedicated pumps. Therefore, the following requirements and procedure items related to low flow purging and sampling are not applicable to these wells.

II. Requirements:

1. A dedicated, adjustable rate, positive displacement pump, such as a bladder pump, has been installed in each well to be sampled.

2. The pump has been placed in the middle part of the screened interval. The pump intake is a minimum of two feet above the bottom of the well to prevent mobilization of any sediment present in the bottom of the well.

3. The well has been allowed to equilibrate since pump placement for a minimum of one week prior to sampling.

III. Procedure

Step 1: Measure Water Level - Take water level measurements before purging the well using the precautions that follow.

1a. Minimize disturbance of any particulates attached to the sides of the well.

1b. Do not allow the measurement probe to drop to the bottom of the well where it could disturb accumulated sediment. Minimize disturbances of the stagnant water column above the screened interval.

1c. Measure and record the depth to water on the attached Field Data Sheet.

1d. Decontaminate the probe and tape before proceeding to the next well.

Step 2: Purge the Well - Purge the well at a rate of 100 to 300 milliliters per minute where obtainable, removing as little groundwater as possible. Use the dedicated positive displacement pump in the well and a flow-through cell for measurement of field parameters. Use the following procedure to purge the well.

2a. Calibrate the flow-through cell according to the manufacturer's instructions.

2b. After calibrating the flow-through cell, place the cell on the tubing from the positive displacement pump.

2c. Operate the positive displacement pump according to the manufacturer's directions.

2d. Pump each well at the pre-tested rate that supports a minimum drawdown. Table 1 contains the results of the positive displacement pump pre-tests. Make adjustments to stabilize the flow rate as soon as possible.

2e. Monitor the water level using the dedicated hydrostatic back pressure device installed with each dedicated pump. Monitor at intervals sufficient to verify that water levels are stable. The goal is that the water level drop in the well be minimized. Care should be taken not to cause pump suction to be broken or entrain air in the sample.

2f. Record the pumping rate adjustments and depth to water on the attached Field Data Sheet.

2g. During purging of the well, monitor the field indicator parameters (temperature, pH, and specific conductivity) on a regular basis. Parameters are to be monitored using a flow-through cell. Purge until three consecutive readings of the indicator parameters have stabilized as follows:

- pH $\pm$ 0.2 standard unit.
- Specific conductivity $\pm$ 5 percent.

Record final indicator parameter readings on the attached Field Data Sheet. It is not necessary to purge three well casing volumes.

2h. Purge water will be handled in accordance with existing procedures.

2i. Disconnect the flow-through cell and decontaminate it prior to purging the next well according to existing procedures and the manufacturer's instructions.

Step 3: Collect Water Samples

3a. Maintain the purge flow rate while collecting water samples, or adjust slightly if necessary to minimize aeration, bubble formation, or turbulent filling of sample bottles.

3b. Tables 2 and 3 list the wells that will be sampled, the types of samples that will be collected, and the analyses that will be performed. As shown in Table 2, a total of 26 field samples will be collected for each quarterly sampling event. In addition, seven quality assurance (QA) and quality control (QC) samples will be collected for each event. These include:

- Duplicates – three samples, frequency = 12%. Collect one sample from each formation (Zone 1, Zone 3, and Southwest Alluvium). Prepare by collecting a second volume of sample at a selected well immediately after the field sample is collected. If possible, collect from a well that has sufficient yield to supply two consecutive sample volumes. Sample handling procedures should be the same as those used for the field sample.

- Field blanks – two samples, frequency = 8%. Collect two samples per event. Prepare in the field by filling clean sample bottles with deionized water.

3c. The required sample bottles are listed in Table 4. Place samples in prepared bottles and add preservative, if appropriate. When used, check that the 40-milliliter vials have been filled to capacity to prevent air pockets. All sample bottles must be labeled with well I.D., date, and preparation and preservation method.

3d. Ice down samples in an ice chest and ship to Energy Laboratories, Inc., Casper, Wyoming, for analysis.

IV. References:

EPA, 1994. *Ground Water Sampling Procedure: Low Flow Purge and Sampling* Draft Final. Region I Low Flow SOP # GW 0001.

Puls, R.W., and M. J. Barcelona, 1995. *Ground Water Issue: Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures*. USEPA Office of Research and Development, Office of Solid Waste and Emergency Response. EPA/540/S-95/504.

TABLE 1
RESULTS OF POSITIVE DISPLACEMENT PUMP PRE-TEST [1]
CHURCH ROCK SITE

Well	Pump Rate (Lpm)	Water Level Change [2] (ft)	Comments	Use [3]
SWA				
509 D	0.11	0.03		yes
632	0.12	0.37		yes
GW-1	0.10	0.13		yes
GW-2	0.10	0.29		yes
GW-3	0.11	0.59		yes
GW-4	na	na	Not enough water to pump	no
624	0.11	0.08		yes
627	0.10	0.11		yes
Zone 1				
515 A	0.10	1.04	Only 1.5 liters removed	yes
516 A	0.10	2.66	Only 1 liter removed, water level did not stabilize	no
604	0.10	0.74	Only 1.5 liters removed	yes
614	0.10	0.25	Only 1.5 liters removed	yes
142	0.08	0.07		yes
Zone 3				
420	0.09	0.20		yes
502 B	0.10	2.68	Water quality did not stabilize	no
504 B	0.09	0.1		yes
517	0.10	2.63	Only 1.5 liters removed	yes
518	0.10	1.67	Water level and conductivity did not	no

Notes:

[1] Pre-test conducted in June 1999 to determine whether wells could be sampled using low flow purge and sample techniques. EPA wells were not tested because they have typically produced adequate water.

[2] Drop in water level during pump test to remove 2 liters unless otherwise indicated in "Comments."

[3] "No" indicates the well did not produce sufficient water to allow low flow purge and sample techniques to be used.

ft = feet

Lpm = liters per minute

SWA = Southwest Alluvium

na = not applicable

TABLE 2
GROUNDWATER SAMPLES AND ANALYSES
CHURCH ROCK SITE

Formation	Well ID	No. of Samples	Duplicate	Field Blank	Field Analysis[1]	Laboratory Analysis[1]
Southwest Alluvium	509 D	1			pH	Total metals
	624	1			Specific conductivity	Major ions
	627	1			Temperature	Radionuclides
	632	1				Chloroform
	802	1				TDS
	803	1				
	EPA 23	1				
	EPA 25	1				
	EPA 28	1				
	GW 1	1				
	GW 2	1				
	GW 3	1				
Subtotal		12	1			
Zone 3	420	1			Same as above	
	517	1				
	613	1				
	711	1				
	504 B	1				
	EPA 14	1				
Subtotal		6	1			
Zone 1	515 A	1			Same as above	
	142	1				
	604	1				
	614	1				
	EPA 2	1				
	EPA 4	1				
	EPA 5	1				
	EPA 7	1				
Subtotal		8	1			
Total per event		26	3	2	31	31

Notes:

[1] Analyses to be performed on all samples including duplicates, field and equipment blanks.

Metals = Al, As, Be, Cd, Co, Mn, Mo, Ni, Pb, Se, V

Major Ions = Ca, Mg, Na, K, HCO_3, SO_4, Cl, NO_3 as N

Radionuclides = Pb-210, combined Ra-226 and Ra-228, Th-230, U, gross alpha

Al = aluminum
As= Arsenic
Be = Beryllium
Ca = calcium
Cd = Cadmium
Cl = chloride
Co = cobalt
HCO_3 = bicarbonate
K = potassium
Mg = magnesium
Mn = manganese
Mo = molybdenum
Na = sodium
Ni = nickel
NO_3 = nitrate as nitrogen
Pb = lead
Ra = radium
Se = selenium
SO_4 = sulfate
TDS = total dissolved solids
Th = thorium
U = uranium
V = vanadium

TABLE 3
SUMMARY OF ANALYSES AND ANALYTICAL METHODS
CHURCH ROCK SITE

Constituent	Symbol	Analytical Method	Reporting Limit	Units
Major Ions				
Calcium	Ca	EPA 200.7	0.05	mg/L
Magnesium	Mg	EPA 200.7	0.01	mg/L
Sodium	Na	EPA 200.7	0.05	mg/L
Potassium	K	EPA 200.7	0.1	mg/L
Bicarbonate	HCO_3	SM 2320 B.	0.1	mg/L
Sulfate	SO_4	EPA 200.7	1	mg/L
Chloride	Cl	EPA 200.7	1	mg/L
Nitrate + Nitrite as N	NO_3+NO_2	EPA353.2	0.1	mg/L
Non-Metals				
Total Dissolved Solids @ 180°C	TDS	SM 2540 C. Mod.	1	mg/L
pH		SM 4500-H B.	0.1	std. units
Trace Metals				
Aluminum	Al	EPA 200.7	0.1	mg/L
Arsenic III	As	EPA 206.3	0.001	mg/L
Beryllium	Be	EPA 200.7	0.01	mg/L
Cadmium	Cd	EPA 200.8	0.005	mg/L
Cobalt	Co	EPA 200.7	0.01	mg/L
Lead	Pb	EPA 200.7	0.05	mg/L
Manganese	Mn	EPA 200.7	0.01	mg/L
Molybdenum	Mo	EPA 200.7	0.1	mg/L
Nickel	Ni	EPA 200.7	0.05	mg/L
Selenium IV	Se	EPA 270.3	0.001	mg/L
Vanadium	V	EPA 200.7	0.1	mg/L
Radiometric				
Uranium	NatU	EPA 200.8	0.0003	mg/L
Radium-226	^{226}Ra	EPA 903.0	0.2	pCi/L
Radium-228	^{228}Ra	EPA 904.0	1	pCi/L
Thorium-230	^{230}Th	EPA 907.0	0.2	pCi/L
Lead-210	^{210}Pb	NERHL-65-4	1	pCi/L
Gross Alpha		EPA 900.1	1	pCi/L
Trace Organics				
Chloroform		EPA 601	1	µg/L
Quality Assurance Data			**Target Range**	
Anion				meq
Cation				meq
WYDEQ A/C Balance			-5 - +5	%
Calc TDS				mg/L
TDS A/C Balance			0.80 - 1.20	dec. %

Notes:
mg/L = milligram per liter
std. = standard
pCi/L = picoCuries per liter
µg/L = microgram per liter
meq = milliequivalent
WYDEQ = Wyoming Department of Environmental Quality
A/C = anion/cation
% = percent
calc = calculated
dec. % = decimal percent

TABLE 4
ANALYTICAL SAMPLE VOLUME AND HANDLING REQUIREMENTS
CHURCH ROCK SITE

Analyte	Required Sample Volume	Sample Handling
Bicarbonate pH TSS	500 ml (pint)	Unfiltered and cool 4°C
Chloride Sulfate TDS	500 ml (pint)	Unfiltered and cool 4°C
Metals (see note 1)	1,890 ml (half gallon)	Unfiltered and cool 4°C 7.5 ml nitric acid (HNO_3) to pH 2.0
Chloroform	2 - 40 ml vials completely full - no air pockets	Unfiltered and cool 4°C Vials with sodium thiosulfate ($Na_2S_20_3$)
Nitrate	120 ml	1 ml sulfuric acid (H_2SO_4) to pH 2.0

Notes:

1. Metals include: calcium, magnesium, potassium, sodium, aluminum, arsenic III, beryllium, cadmium, cobalt, lead, manganese, molybdenum, nickel, selenium IV, uranium, vanadium, radium-226, radium-228, thorium-230, lead-210, gross alpha.

ml = milliliter
°C = degrees centigrade
TDS = total dissolved solids
TSS = total suspended solids

GROUNDWATER MONITORING FIELD DATA SHEET 1
WATER DEPTH AND PURGING
_____QUARTER 20____

Well No.	Month/Day	Time	Starting Water Depth	Pumping Rate and Adjustments	Intermediate Water Depths	Ending Water Depth
Southwest Alluvium						
624						
627						
632						
802						
803						
509 D						
EPA 23						
EPA 25						
EPA 28						
GW1						
GW2						
GW3						
Zone 1						
142						
604						
614						
515 A						
EPA 2						
EPA 4						
EPA 5						
EPA 7						
Zone 3						
420						
517						
613						
504 B						
EPA 14						

GROUNDWATER MONITORING FIELD DATA SHEET 2
FIELD PARAMETERS
_____QUARTER 20____

Well No.	Month/Day	Time	pH	Specific Conductivity	Temperature
Southwest Alluvium					
624					
627					
632					
802					
803					
509 D					
EPA 23					
EPA 25					
EPA 28					
GW1					
GW2					
GW3					
Zone 1					
142					
604					
614					
515 A					
EPA 2					
EPA 4					
EPA 5					
EPA 7					
Zone 3					
420					
517					
613					
504 B					
EPA 14					