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**Environmental Management**  
 Los Alamos Field Office  
 1200 Trinity Drive, Suite 400  
 Los Alamos, New Mexico 87544  
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*Date:* January 6, 2023  
*Refer To:* N3B-2022-0496

Rick Carpenter, Water Division Director  
 Sangre de Cristo Water Division  
 City of Santa Fe  
 801 West San Mateo  
 Santa Fe, New Mexico 87505

**Subject: Los Alamos National Laboratory Site-Wide Monitoring Program, City of Santa Fe Buckman Water Supply Wells, 2023 Sampling and Analysis Plan**

Dear Mr. Carpenter:

The City of Santa Fe Buckman water supply wells have been sampled since 2001 for both general characterization and specific constituents of interest under Los Alamos National Laboratory's (LANL's) Site-Wide Monitoring Program. These wells include Buckman 1, Buckman 6, and Buckman 8.

The U.S. Department of Energy (DOE) Environmental Management Los Alamos Field Office (EM-LA) and Newport News Nuclear BWXT-Los Alamos, LLC (N3B) continue to coordinate with the City of Santa Fe to conduct an annual review of the sampling and analysis plan (SAP).

The enclosed 2023 SAP is for the period from January 1 to December 31, 2023. The sampling suites, methods, and locations in this SAP focus on water supply wells and analytes that potentially could be affected by LANL contaminants.

N3B will continue to implement the following practices associated with groundwater data collected from Buckman water supply wells.

1. N3B will provide an automated report of the data upon receipt from the analytical laboratory. Sixty days after the automated report is provided to the City of Santa Fe, the data will be posted to the publicly accessible website Intellus (<http://www.intellusnm.com>).
2. If a potential contaminant is detected, N3B will (1) work with the City of Santa Fe Sangre de Cristo Water Division to evaluate the data, and (2) modify the SAP and/or collect additional samples to address questions raised by the potential contaminant.

If you have any questions, please contact Amanda White at (505) 309-1366 (amanda.white@em-la.doe.gov) or Cheryl Rodriguez at (505) 414-0450 (cheryl.rodriguez@em.doe.gov)

Sincerely,



Robert Macfarlane  
Program Manager  
Environment, Safety, Health & Quality  
N3B-Los Alamos

Sincerely,

**M Lee Bishop**

Digitally signed by M Lee Bishop  
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M. Lee Bishop, Director  
Office of Quality and Regulatory Compliance  
U.S. Department of Energy  
Environmental Management  
Los Alamos Field Office

Enclosure(s):

1. Los Alamos National Laboratory Site-Wide Monitoring Program, City of Santa Fe Buckman Water Supply Wells, 2023 Sampling and Analysis Plan (EM2022-0866)

cc (letter and enclosure[s] emailed):

Laurie King, EPA Region 6, Dallas, TX  
Aaron Rand, City of Santa Fe, Santa Fe, NM  
Bill Schneider, City of Santa Fe, Santa Fe, NM  
Steve Yanicak, NMED-DOE-OB  
Joe Martinez, NMED-DWB  
Justin Ball, NMED-GWQB  
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**Los Alamos National Laboratory Site-Wide Monitoring Program,  
City of Santa Fe Buckman Water Supply Wells, 2023 Sampling and Analysis Plan**

**Table 1  
Sampling and Analysis Plan for the City of Santa Fe  
Buckman Water Supply Wells for the Period of January 1, 2023, to December 31, 2023**

Location	Analytical Suites <sup>a</sup>				
	Metals	Organics	Radionuclides		Inorganics
	Metals	HEXP <sup>b</sup>	Radionuclides	Low-Level Tritium	General Inorganics
Buckman No. 1	Q1, Q3	Q3	Q1, Q3	Q1, Q3	Q1, Q3
Buckman No. 6	Q1, Q3	Q3	Q1, Q3	Q1, Q3	Q1, Q3
Buckman No. 8	Q1, Q3	Q3	Q1, Q3	Q1, Q3	Q1, Q3

Notes: Sampling schedule: Quarter 1 (Q1) = Jan–Mar 2023. Q2 = Apr–Jun 2023; Q3 = Jul–Sep 2023; Q4 = Oct–Dec 2023. Quality control samples will be collected in accordance with Appendix D of the Interim Facility-Wide Groundwater Monitoring Plan for the associated monitoring year.

<sup>a</sup> Table 2 of this sampling and analysis plan presents the sample field preparation, analytical methods, and analytes for each of the analytical suites specified in Table 1.

<sup>b</sup> HEXP = High explosives.

**Table 2  
Analytes, Field Preparation, and Analytical Methods Used by  
U.S. Environmental Protection Agency Contract Laboratory  
Program Laboratories for Samples Collected Under the Sampling  
and Analysis Plan for the City of Santa Fe Buckman Water Supply Wells**

Analytical Suite	Field Preparation	Analytical Method	Analytes
Metals	Unfiltered	SW-846:7470 series	Mercury
		SW-846:6020 series	Aluminum, selenium
	Filtered	SM:A2340	Hardness
		SW-846:6010 series	Barium, beryllium, boron, calcium, iron, magnesium, manganese, potassium, silicon dioxide, sodium, strontium, tin, vanadium, zinc
		SW-846:6020 series	Aluminum, antimony, arsenic, cadmium, chromium, cobalt, copper, lead, molybdenum, nickel, selenium, silver, thallium, uranium
		SW-846:7470 series	Mercury
HEXP*	Unfiltered	SW-846:8330 series	See Table 3

**Table 2 (continued)**

Analytical Suite	Field Preparation	Analytical Method	Analytes
Radionuclides	Unfiltered	EPA:900	Gross alpha, gross beta
		EPA:901.1	Cesium-137, cobalt-60, neptunium-237, potassium-40, sodium-22
		EPA:905.0	Strontium-90
		HASL-300:AM-241	Americium-241
		HASL-300:ISOPU	Plutonium-238, plutonium-239/240
		HASL-300:ISOU	Uranium-234, uranium-235/236, uranium-238
		EPA:903.1	Radium-226
		EPA:904	Radium-228
		Generic: radium by calculation	Radium-226+228
Low-level tritium	Unfiltered	Generic: low-level tritium	Tritium
General inorganics	Filtered	EPA:120.1	Specific conductance
		EPA:150.1	Acidity or alkalinity of a solution
		EPA:160.1	Total dissolved solids
		EPA:300.0	Bromide, chloride, fluoride, sulfate
		EPA:310.1	Alkalinity-CO <sub>3</sub> , alkalinity-CO <sub>3</sub> +HCO <sub>3</sub>
		SW-846:6850 series	Perchlorate
		EPA:350.1	Ammonia as nitrogen
		EPA:353.2	Nitrate-nitrite as nitrogen
		EPA:365.4	Total phosphate as phosphorus
	Unfiltered	EPA:351.2	Total Kjeldahl nitrogen
		SW-846:9060	Total organic carbon
		SW-846:9012 series	Cyanide (Total)

\* HEXP = High explosives.

**Table 3**  
**Analytical Methods Used by Contract Laboratories for**  
**Samples Collected Under the Sampling and Analysis Plan**  
**for the City of Santa Fe Buckman Water Supply Wells**

Analytical Suite: HEXP <sup>a</sup> Analytical Method: SW-846:8330B	
Symbol or CAS <sup>b</sup> No.	Analyte
6629-29-4	2,4-Diamino-6-nitrotoluene
59229-75-3	2,6-Diamino-4-nitrotoluene
618-87-1	3,5-Dinitroaniline
19406-51-0	Amino-2,6-dinitrotoluene[4-]
35572-78-2	Amino-4,6-dinitrotoluene[2-]
99-65-0	Dinitrobenzene[1,3-]
121-14-2	Dinitrotoluene[2,4-]
606-20-2	Dinitrotoluene[2,6-]
2691-41-0	HMX <sup>c</sup>
98-95-3	Nitrobenzene
88-72-2	Nitrotoluene[2-]
99-08-1	Nitrotoluene[3-]
99-99-0	Nitrotoluene[4-]
78-11-5	PETN <sup>d</sup>
121-82-4	RDX <sup>e</sup>
3058-38-6	TATB <sup>f</sup>
479-45-8	Tetryl
99-35-4	Trinitrobenzene[1,3,5-]
118-96-7	Trinitrotoluene[2,4,6-]
78-30-8	Tris (o-cresyl) phosphate

Note: Table 3 is referenced in Table 2 and serves to complete the analyte lists in Table 2.

<sup>a</sup> HEXP = High explosives.

<sup>b</sup> CAS = Chemical Abstracts Service.

<sup>c</sup> HMX = Her Majesty's Explosive.

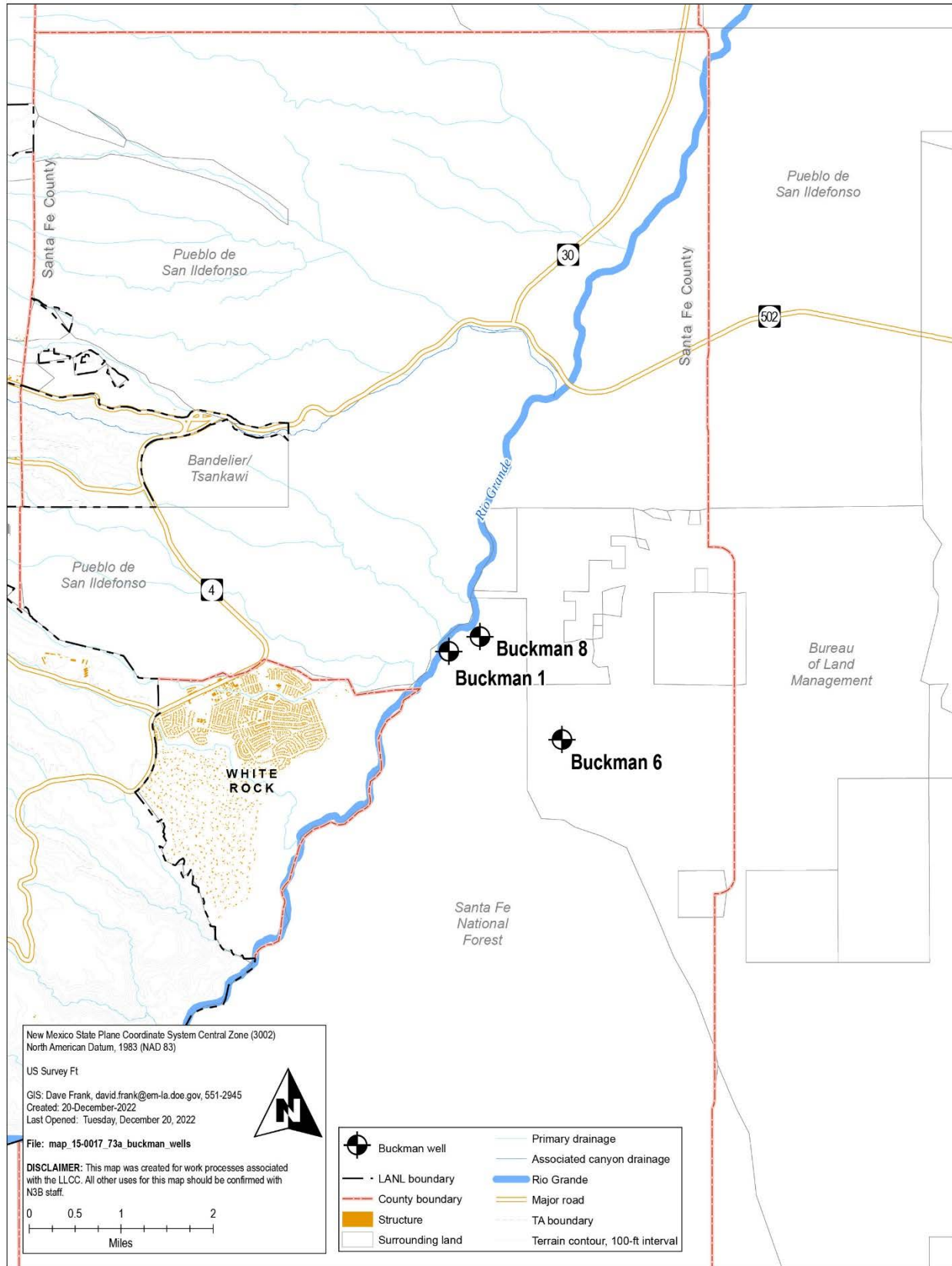
<sup>d</sup> PETN = Pentaerythritol tetranitrate.

<sup>e</sup> RDX = Royal Demolition Explosive.

<sup>f</sup> TATB = Triaminotrinitrobenzene.







**Figure 1 City of Santa Fe Buckman Water Supply Wells**



