ERID-213479

Los Alamos
NATIONAL LABORATORY
EST. 1943
Environmental Programs
P.O. Box 1663, MS M991
Los Alamos, New Mexico 87545
(505) 606-2337/FAX (505) 665-1812

National Nuclear Security Administration
Los Alamos Site Office, MS A316
Environmental Restoration Program
Los Alamos, New Mexico 87544
(505) 667-4255/FAX (505) 606-2132

Date: MAR 2 1 2012
Refer To: EP2011-0050

Mr. Brian Snyder, Water Division Director
Acting Public Utilities Division Director
Sangre de Cristo Water Division
City of Santa Fe
801 West San Mateo
P.O. Box 909
Santa Fe, New Mexico 87504

Subject: Los Alamos National Laboratory Sitewide Monitoring Program Drinking Water Results for the City of Santa Fe Buckman Water Supply Wells

Dear Mr. Snyder:

Routine monitoring of select Buckman water supply wells is conducted in accordance with the April 22, 2010, sampling and analysis plan cooperatively developed between Los Alamos National Laboratory (the Laboratory) and City of Santa Fe staff. Under this plan, the Laboratory will sample Buckman Wells Nos. 1, 6, and 8 quarterly: twice per year for radionuclides, general inorganics, metals, and organics; and twice per year for tritium.

This report, prepared by the Laboratory, provides the analytical results from the December 7, 2011, sampling of the City of Santa Fe Buckman Water Supply Wells Nos. 1, 6, and 8. All results were below the U.S. Environmental Protection Agency (EPA) maximum contaminant levels (MCLs), except for the following:

- Gross-alpha activity was measured in unfiltered samples from Buckman Wells No. 1 and 8 at 22.7 pCi/L and 21.6 pCi/L, respectively; the EPA MCL for gross-alpha activity is 15 pCi/L (excluding uranium and radon but including radium-226). These reported gross-alpha values are not corrected for uranium, which is present in these two wells at concentrations of 31.4 µg/L and 23.4 µg/L, respectively; the MCL for uranium is 30 µg/L. The high gross-alpha activity is the result of the high naturally occurring uranium concentration. Previous gross-alpha results in Buckman Wells No. 1 and No. 8 since 2002 ranged from 4.7 pCi/L to 26.9 pCi/L and 8.8 pCi/L to 16.2 pCi/L, respectively. The new result is the highest gross-alpha activity measured in Buckman Well No. 8.

- Uranium was measured in an unfiltered sample from Buckman Well No. 1 at a concentration of 31.4 µg/L; the EPA MCL for uranium in drinking water is 30 µg/L. Uranium occurs naturally in this water. This result is the highest measured in Buckman Well No. 1. Previous

concentrations since 2001 ranged from 6.4 µg/L to 20.8 µg/L. For reference, the uranium concentration in another well, Buckman Well No. 2, was 200 µg/L in December 2007.

The attached CD contains the following items: (1) analytical laboratory data packages; and (2) an Excel file of the analytical results with a glossary of laboratory qualifier codes, secondary validation codes, and secondary validation reason codes. The analytical results are as follows.

Radiochemistry:

- **Americium-241, Cesium-137, Neptunium-237, Plutonium-238, Plutonium-239/240, and Strontium-90**: All results were nondetect.

- **Gross Alpha:** The gross-alpha activity was 22.7 pCi/L at Buckman Well No. 1, 8.59 pCi/L and 6.78 pCi/L (in primary and field duplicate samples) at Well No. 6, and 21.6 pCi/L at Well No. 8. The EPA MCL for gross alpha in drinking water is 15 pCi/L (excluding uranium and radon but including radium-226). These reported gross-alpha values are not corrected for uranium.

- **Gross Beta:** Gross-beta activity was 6.83 pCi/L at Buckman Well No. 1, 5.84 pCi/L and 3.79 pCi/L (in primary and field duplicate samples) at Well No. 6, and 7.84 pCi/L at Well No. 8. All results were below the EPA screening level of 50 pCi/L for gross beta in drinking water.

- **Combined Radium-226 and Radium-228:** The combined radium-226 and radium-228 activities at Buckman Wells Nos. 1, 6, and 8 ranged from nondetect to a maximum value of 0.739 pCi/L. The results at all locations were below the EPA MCL of 5 pCi/L for the combined radium-226 and radium-228 in drinking water.

- **Tritium:** All tritium results were nondetect. The average minimum detectable activity for the measurements was 2.1 pCi/L. The results at all locations were below the EPA MCL of 20,000 pCi/L for tritium in drinking water.

- **Uranium:** Uranium concentration was 31.4 µg/L at Buckman Well No. 1, 5.67 µg/L and 5.57 µg/L (in primary and field duplicate samples) at Well No. 6, and 23.4 µg/L at Well No. 8. The EPA MCL for uranium in drinking water is 30 µg/L.

General Inorganics:

- **Perchlorate:** The unfiltered perchlorate concentration was 0.272 µg/L at Buckman Well No. 1, 0.434 µg/L and 0.452 µg/L (in primary and field duplicate samples) at Well No. 6, and 0.309 µg/L at Well No. 8. Neither the federal government nor the State of New Mexico has established a drinking water standard for perchlorate. On January 8, 2009, EPA issued an interim health advisory of 15 µg/L for perchlorate in drinking water.

- **Cyanide, Fluoride, and Nitrate+Nitrite:** Cyanide, fluoride, and nitrate+nitrite (as nitrogen) at all locations were below the EPA primary drinking water standards.

Metals:

- **Arsenic:** The unfiltered arsenic concentration was 9.03 µg/L at Buckman Wells No. 1, 3.35 µg/L and 3.57 µg/L (in primary and field duplicate samples) at Well No. 6, and 4.88 µg/L at Well No. 8. The EPA MCL for arsenic in drinking water is 10 µg/L. Arsenic concentrations at Buckman Well No. 1 ranged from approximately 9 µg/L to approximately 15 µg/L between 2002 and 2010.

- **Chromium:** The filtered and unfiltered chromium concentrations at Buckman Wells Nos. 1, 6, and 8 ranged between 2.45 µg/L and 8.6 µg/L, below the EPA MCL of 100 µg/L and the New Mexico groundwater standard of 50 µg/L. All results were estimated because they are between the method detection limit (MDL) of 2 µg/L and practical quantitation limit of 10 µg/L.

Organics:

- **High Explosives (HE):** No HE compounds were detected.

- **Polychlorinated Biphenyls (PCBs):** No PCBs were detected.

- **Volatile Organic Compounds (VOCs):** Chloromethane was detected at each well but not in the trip blanks or the field duplicate at Buckman Well No. 6; concentrations were between 0.31 µg/L and 0.36 µg/L, below the EPA tap water screening level of 190 µg/L. All the results were near the 0.3 µg/L MDL and were estimated. No other VOCs were detected in samples or in field trip blanks.

In summary, all results presented in this report are below EPA MCLs and New Mexico groundwater standards, with the exception of gross-alpha activity at Buckman Wells No. 1 and No. 8 and uranium at Buckman Well No. 1. The gross-alpha results, however, are not corrected for naturally occurring uranium.

If you have questions, please contact Steve Paris at (505) 606-0915 (smparis@lanl.gov) or Woody Woodworth at (505) 665-5820 (lance.woodworth@nnsa.doe.gov).

Sincerely,

B. G. Schwell for MJG

Michael J. Graham, Associate Director
Environmental Programs
Los Alamos National Laboratory

Sincerely,

for

Peter Maggiore, Assistant Manager
Environmental Projects Office
Los Alamos Site Office

MG/PM/CD/SP/DR:sm

Attachments: CD with the following items:
(1) analytical laboratory data packages
(2) Excel file of the analytical results and glossary of laboratory qualification codes, secondary validation codes, and secondary validation reason codes (LA-UR-12-0925)

Cy: (w/att.)
Laurie King, EPA Region 6, Dallas, TX
Neil Weber, San Ildefonso Pueblo
Joe Chavarria, Santa Clara Pueblo
Alex Puglisi, City of Santa Fe, 801 West San Mateo, Santa Fe, NM 87505
Claudia Borchert, City of Santa Fe, 801 West San Mateo, Santa Fe, NM 87505
Michael Gonzales, City of Santa Fe, 801 West San Mateo, Santa Fe, NM 87505
John Kieling, NMED-HWB, 2905 Rodeo Park Drive East, Building 1, Santa Fe, NM 87505
Margaret Ryan, NMED-DWB, P.O. Box 5469, Santa Fe, NM 87502
Steve Yanicak, NMED-DOE-OB, MS M894
Hai Shen, DOE-LASO, MS A316
Woody Woodworth, DOE-LASO, MS A316
Cheryl Rodriguez, DOE-LASO, MS A316
Tom Carver, DOE-LASO, MS A316
Suzanne Coyne, IRM-DCS, MS M992
William Alexander, EP-BPS, MS M992
RPF, MS M707 (electronic copy)

Cy: (w/o att.)
Tom Skibitski, NMED-OB, Santa Fe, NM (date-stamped letter emailed)
Annette Russell, DOE-LASO, MS A316 (date-stamped letter emailed)
David Rhodes, DOE-LASO, MS A316 (date-stamped letter emailed)
Michael B. Mallory, PADOPS, A102 (date-stamped letter emailed)
Mike Brandt, ADESHQ, MS K491 (date-stamped letter emailed)
Mike Saladen, ENV-RCRA, MS K490 (date-stamped letter emailed)
David Rogers, EP-ET, MS M992 (date-stamped letter emailed)
Danny Katzman, EP-ET, MS M992 (date-stamped letter emailed)
Steve Paris, EP-CAP, MS M992 (date-stamped letter emailed)
Craig Douglass, EP-CAP, MS M996 (date-stamped letter emailed)
Dave McInroy, EP-CAP, MS M996 (date-stamped letter emailed)
Michael J. Graham, ADEP, MS M991 (date-stamped letter emailed)