

**Environmental Programs**

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Date: **JUN 20 2013**

Refer To: EP2013-0114

Nicholas Schiavo, Public Utilities and Water Division Director
 Sangre de Cristo Water Division
 City of Santa Fe
 P. O. Box 909
 801 West San Mateo
 Santa Fe, New Mexico 87504-0909

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

Dear Mr. Schiavo:

Routine monitoring of select Buckman water supply wells is conducted in accordance with the June 12, 2012, 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 11, 2012, and February 27, 2013, sampling of the City of Santa Fe Buckman Water Supply Wells Nos. 1, 6, and 8. On both dates, samples were analyzed for radionuclides, general inorganics, metals, and organics.

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 Nos. 1 and 8 on December 11, 2012, at 15.1 pCi/L and 17.1 pCi/L, respectively; the EPA MCL for gross-alpha activity is 15 pCi/L (excluding uranium and radon but including radium-226). These gross-alpha values are not corrected for uranium. The high gross-alpha activity is the result of high naturally occurring uranium concentrations. Uranium is present in samples from these two wells on this date at concentrations of 16.8 µg/L and 22.8 µg/L, respectively; the MCL for uranium is 30 µg/L. Previous gross-alpha results in Buckman Wells Nos. 1 and 8 since 2002 range from 4.7 pCi/L to 26.9 pCi/L and 8.8 pCi/L to 21.6 pCi/L, respectively.
- Arsenic was measured in an unfiltered sample from Buckman Well No. 1 on February 27, 2013, at a concentration of 10.9 µg/L; the EPA MCL for arsenic in drinking water is 10 µg/L. Arsenic occurs naturally in this water. The arsenic concentrations found in this well since 2002 range from 9.03 µg/L to 17.6 µg/L.

The attached CD contains 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, cobalt-60, neptunium-237, plutonium-238, plutonium-239/240, potassium-40, sodium-22, strontium-90, thorium-228, thorium-230, and thorium-232:** All results were nondetect.
- **Gross alpha:** The gross-alpha activity in samples ranged from 7.56 pCi/L to 17.1 pCi/L. Two results were above the 15 pCi/L EPA MCL for gross alpha in drinking water (excluding uranium and radon but including radium-226). These reported gross-alpha values are not corrected for uranium.
- **Gross beta:** The gross-beta activity in samples ranged from 4.92 pCi/L to 9.16 pCi/L. All results were below the EPA screening level of 50 pCi/L for gross beta in drinking water.
- **Gross gamma:** The gross-gamma activity in samples was nondetect except for one result of 7.08 pCi/L in Buckman Well No. 8. Gross-gamma is a screening measurement with no regulatory screening level.
- **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 2.18 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 1.86 pCi/L. The results at all locations were below the EPA MCL of 20,000 pCi/L for tritium in drinking water.
- **Uranium:** The uranium concentration in samples ranged from 5.29 µg/L to 22.8 µg/L. The results at all locations were below the EPA MCL of 30 µg/L for uranium in drinking water.
- **Uranium-234, Uranium-235/236, Uranium-238:** These isotopes were detected in all samples and reflect presence of natural uranium.

General Inorganics:

- **Perchlorate:** The perchlorate concentration in samples ranged from 0.268 µg/L to 0.393 µg/L. 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:** The cyanide, fluoride, and nitrate+nitrite (as nitrogen) concentrations at all locations were below EPA primary drinking water standards.

Metals:

- **Arsenic:** The arsenic concentration in samples ranged from 2.72 µg/L to 10.9 µg/L. One result was above the 10 µg/L EPA MCL for arsenic in drinking water.
- **Chromium:** The filtered and unfiltered chromium concentration in samples ranged from nondetect to 8.47 µg/L, below the EPA MCL of 100 µg/L and the New Mexico groundwater standard of 50 µg/L. Four results were nondetect, and the remaining eight results were estimated because they are between the 2 µg/L method detection limit and 10 µg/L practical quantitation limit.

Organics:

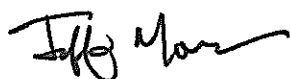
- **High explosives (HE):** No HE compounds were detected.
- **Polychlorinated biphenyls (PCBs):** No PCBs were detected.
- **Volatile organic compounds (VOCs):** No VOC compounds were detected.

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 Nos. 1 and 8 and arsenic 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,

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Jeff Mousseau, Associate Director
Environmental Programs
Los Alamos National Laboratory



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

JM/PM/CD/SP/DR:sm

Attachment: CD with the following items – Excel file of the analytical results and glossary of laboratory qualification codes, secondary validation codes, and secondary validation reason codes (LA-UR-13-24420)

Cy: (w/att.)

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