
Subject: LANL Sitewide Monitoring Program LAC Water-Supply Wells 2018-2019 SAP

From: Richardson, Jack <jack.richardson@lacnm.us>

Sent: Tuesday, April 24, 2018 4:52 PM

To: Ellers, Kate <kellers@lanl.gov>

Cc: Patel, Nita <npatel@lanl.gov>; Cygnarowicz, Robert Michael <ciggy@lanl.gov>; Witten, Wayne <wayne.witten@lacnm.us>; Alarid, James <james.alarid@lacnm.us>; Baca, Jennifer <jennifer.baca@lacnm.us>

Subject: RE: LANL Sitewide Monitoring Program LAC Water-Supply Wells 2018-2019 SAP

Kate – received and distributed to applicable employees.

Jack Richardson

LA County – Public Utilities

jack.richardson@lacnm.us

v 662-8215 & c 709 - 8591

From: Ellers, Kate [<mailto:kellers@lanl.gov>]

Sent: Tuesday, April 24, 2018 10:51 AM

To: Richardson, Jack <jack.richardson@lacnm.us>

Cc: Patel, Nita <npatel@lanl.gov>; Cygnarowicz, Robert Michael <ciggy@lanl.gov>

Subject: LANL Sitewide Monitoring Program LAC Water-Supply Wells 2018-2019 SAP

Importance: High

Mr. Richardson,

Attached is the Los Alamos National Laboratory Sitewide Monitoring Program, Los Alamos County Water-Supply Wells, 2018-2019 Sampling and Analysis Plan.

Please acknowledge receipt of this email by replying to all.

Thank you,

Kate

Kate Ellers

Environmental Remediation-DO

Adelante Consulting, Inc.

Office: 505.667.0217

Cell: 505.699.7705



Associate Directorate for Environmental Management

P.O. Box 1663, MS M992
Los Alamos, New Mexico 87545
(505) 606-2337

Environmental Management

P. O. Box 1663, MS M984
Los Alamos, New Mexico 87545
(505) 665-5658/FAX (505) 606-2132

Date: APR 24 2018

Refer To: ADEM-18-0043

L A U R: 18-23374

Jack Richardson, Deputy Utility Manager
Gas, Water, and Sewer Services
Los Alamos County
1000 Central Avenue, Suite 130
Los Alamos, NM 87544

Subject: Los Alamos National Laboratory Sitewide Monitoring Program, Los Alamos County Water-Supply Wells, 2018–2019 Sampling and Analysis Plan

Dear Mr. Richardson:

Los Alamos County (the County) water-supply wells are routinely sampled for both general characterization and for specific constituents of interest under the Los Alamos National Laboratory's (the Laboratory's) Sitewide Monitoring Program. The Laboratory and the County have historically conducted an annual review of the sampling and analysis plan (SAP) to ensure it is dynamic, strategic, and mutually beneficial. The attached 2018–2019 SAP represents the Laboratory's sampling and analysis commitment for the next four quarters (April 1, 2018, to March 31, 2019). The sampling suites and methods in this SAP are the same as those used for sampling monitoring wells under the New Mexico Environment Department–approved Interim Facility-Wide Groundwater Monitoring Plan (IFGMP).

The attached 2018–2019 SAP is the same as last year's SAP except for the following four updates to Tables 1 and 2:

1. Collection of samples from PM-4 and PM-5 in Q1 for nitrate+nitrite suite analysis (i.e., WSP-NO3NO2) has been eliminated from Table 1 because the samples collected in Q1 will be submitted for general inorganics suite analysis, which includes nitrate+nitrite analysis.
2. Collection of samples from O-4, PM-1, PM-3, PM-4, and PM-5 in Q1 for perchlorate suite analysis (i.e., WSP-CLO4) has been eliminated from Table 1 because the samples collected in Q1 will be submitted for general inorganics suite analysis, which includes perchlorate analysis.

3. Boron can be determined from both SW-846:6010 and SW-846:6020 analytical methods. In recent years, however, the contract laboratory has been reporting boron under SW-846:6010. Table 2 has been updated to reflect this change.
4. Gross gamma does not provide value to the Laboratory's Groundwater Monitoring Program and has been removed from the 2019 IFGMP. Table 2 has been updated to reflect this change (i.e., gross gamma has been removed from the EPA:901.1 analyte list).

The Laboratory will continue to follow the historical practice of providing the County with a 60-day review period before water-supply well data are released to the public or are posted to a publicly accessible website, Intellus (<http://www.intellusnm.com>).

If you have questions or would like to be briefed on the plan, please contact Nita Patel at (505) 665-9273 (npatel@lanl.gov) or Hai Shen at (505) 665-5046 (hai.shen@em.doe.gov).

Sincerely,



Enrique Torres, Program Director
Environmental Remediation Program
Los Alamos National Laboratory

Sincerely,



David S. Rhodes, Director
Office of Quality and Regulatory Compliance
Environmental Management
Los Alamos Field Office

ET/DR/NP

Attachment: Los Alamos National Laboratory Sitewide Monitoring Program, Los Alamos County Water-Supply Wells, 2018–2019 Sampling and Analysis Plan (EP2018-0058)

Cy: (w/att.)
Laurie King, EPA Region 6, Dallas, TX
Katelyn Mahoney, Utilities Dept., 1000 Central Avenue, Suite 130, Los Alamos, NM 87544
Steve Yanicak, NMED-DOE-OB, MS M894
emla.docs@em.doe.gov
Hai Shen, DOE-EM-LA, MS A316
Cheryl Rodriguez, DOE-EM-LA, MS A316
Public Reading Room (EPRR)
PRS Database
ADESH Records

Cy: (w/o enc./date-stamped letter emailed)
lasomailbox@nnsa.doe.gov
Peter Maggiore, DOE-NA-LA
David Rhodes, DOE-EM-LA
Robert Cygnarowicz, ADEM ER Program
Nita Patel, ADEM ER Program

Enrique Torres, ADEM ER Program
Randy Erickson, ADEM
Jocelyn Buckley, ADESH-EPC-CP
Mike Saladen, ADESH-EPC-CP
Benjamine Roberts, ADESH-EPC-DO
William Mairson, ADESH/PADOPS
Craig Leasure, PADOPS

**LOS ALAMOS NATIONAL LABORATORY SITEWIDE MONITORING PROGRAM, LOS ALAMOS
COUNTY WATER-SUPPLY WELLS, 2018–2019 SAMPLING AND ANALYSIS PLAN**

**Table 1
Sampling and Analysis Plan for Los Alamos County
Water-Supply Wells for the Period April 1, 2018, to March 31, 2019**

Location	Analytical Suites ^a												
	Metals			Organics					Radionuclides		Inorganics		
	Metals	Molybdenum	Chromium	VOCs	SVOCs	PCBs	HEXP	TPH-DRO	Radionuclides	Low-Level Tritium	General Inorganics	Nitrate+nitrite	Perchlorate
G-2A	Q3	— ^b	—	Q3	Q3	Q3	Q3	—	Q3	Q3	Q3	—	—
G-3A	Q3	—	—	Q3	Q3	Q3	Q3	—	Q3	Q3	Q3	—	—
G-4A	Q3	—	—	Q3	Q3	Q3	Q3	—	Q3	Q3	Q3	—	—
G-5A	Q3	—	—	Q3	Q3	Q3	Q3	—	Q3	Q3	Q3	—	—
O-1	Q3	—	—	Q3	Q3	Q3	Q3	—	Q3	Q3, Q1	Q3	—	Q1
O-4	Q3	Q4, Q1, Q2	—	Q3	Q3	Q3	Q3	Q3, Q1	Q3	Q3, Q4, Q1, Q2	Q3, Q1	—	—
PM-1	Q3	—	Q4, Q1, Q2	Q3	Q3	Q3	Q3	—	Q3	Q3, Q1	Q3, Q1	—	—
PM-2	Q3	—	—	Q3, Q4, Q1, Q2	Q3	Q3	Q3, Q1	—	Q3	Q3, Q1	Q3	—	—
PM-3	Q3	—	Q4, Q1, Q2	Q3	Q3	Q3	Q3	—	Q3	Q3, Q1	Q3, Q1	—	—
PM-4	Q3	—	Q4, Q1, Q2	Q3	Q3	Q3	Q3, Q1	—	Q3	Q3, Q4, Q1, Q2	Q3, Q1	Q4, Q2	—
PM-5	Q3	—	Q4, Q1, Q2	Q3	Q3	Q3	Q3, Q1	—	Q3	Q3, Q4, Q1, Q2	Q3, Q1	Q4, Q2	—

Notes: Sampling schedule: Q3 = Apr–Jun 2018; Q4 = Jul–Sep 2018; Q1 = Oct–Dec 2018; Q2 = Jan–Mar 2019. Quality control samples will be collected in accordance with Appendix D of the IFGMP for the associated monitoring year.

^a Table 2 of this SAP presents the analytical groups, sample field preparation, analytical methods, and analytes for the analytical suites specified in Table 1.

^b — = This analytical suite is not scheduled to be collected for this location.

Table 2
Analytes, Field Preparation, and Analytical Methods
Used by EPA Contract Laboratory Program Laboratories for
Samples Collected under the SAP for Los Alamos County Water-Supply Wells

Analytical Suite	Analytical Group	Field Preparation	Analytical Method	Analytes
Metals	WSP-All Metals	Filtered	SM:A2340	Hardness
			SW-846:6010	Aluminum, barium, beryllium, boron, calcium, cobalt, copper, iron, magnesium, manganese, potassium, silicon dioxide, sodium, strontium, tin, vanadium, zinc
			SW-846:6020	Antimony, arsenic, cadmium, chromium, lead, molybdenum, nickel, selenium, silver, thallium, uranium
			EPA:245.2	Mercury
	MSGP-Hg	Unfiltered	EPA:245.2	Mercury
VOCs ^a	WSP-8260B-VOA	Unfiltered	SW-846:8260	See Table 3
SVOCs ^b	WSP-8270C-SVOA	Unfiltered	SW-846:8270	See Table 3
PCBs ^c	WSP-8082-PCB	Unfiltered	SW-846:8082	See Table 3
HEXP ^d	WSP-8330B-NMED HEXP	Unfiltered	SW-846:8330B	See Table 3
TPH-DRO ^e	WSP-DRO	Unfiltered	SW-846:8015M- Extractable	Total petroleum hydrocarbons
Radionuclides	WSP-GrossA/B	Unfiltered	EPA:900	Gross alpha, gross beta
	WSP-RAD	Unfiltered	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		
	Ra226+228	Unfiltered	EPA:903.1	Radium-226
EPA:904			Radium-228	
Low-Level Tritium	WSP-LL-H-3	Unfiltered	Generic:Low Level_Tritium	Tritium
General Inorganics	WSP-GENINORG+ Perchlorate	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
	WSP-GENINORG+ Perchlorate	Filtered	EPA:310.1	Alkalinity-CO ₃ , alkalinity-CO ₃ +HCO ₃
			SW-846:6010	Silicon dioxide
SW-846:6850			Perchlorate	

Table 2 (continued)

Analytical Suite	Analytical Group	Field Preparation	Analytical Method	Analytes
General Inorganics (continued)	WSP-NH ₃ +NO ₃ /NO ₂ +PO ₄	Filtered	EPA:350.1	Ammonia as nitrogen
			EPA:353.2	Nitrate-nitrite as nitrogen
			EPA:365.4	Total phosphate as phosphorus
	WSP-TKN+TOC	Unfiltered	EPA:351.2	Total Kjeldahl nitrogen
	WSP-TKN+TOC	Unfiltered	SW-846:9060	Total organic carbon
WSP-CN(T)	Unfiltered	EPA:335.4	Cyanide (Total)	
Nitrate+Nitrite	NO ₃ NO ₂	Filtered	EPA:353.2	Nitrate-nitrite as nitrogen
Perchlorate	WSP-CLO ₄	Filtered	SW-846:6850	Perchlorate

^a VOCs = Volatile organic compounds.

^b SVOCs = Semivolatile organic compounds.

^c PCBs = Polychlorinated biphenyls.

^d HEXP = High explosives.

^e TPH-DRO = Total petroleum hydrocarbons–diesel range organics.

Table 3
Analytical Methods Used by Contract Laboratories for
Samples Collected under the SAP for Los Alamos County Water-Supply Wells

Symbol or CAS No.	Analyte
Analytical Suite: VOCs	
Analytical Group: WSP-8260B-VOA	
Analytical Method: SW-846:8260	
67-64-1	Acetone
75-05-8	Acetonitrile
107-02-8	Acrolein
107-13-1	Acrylonitrile
71-43-2	Benzene
108-86-1	Bromobenzene
74-97-5	Bromochloromethane
75-27-4	Bromodichloromethane
75-25-2	Bromoform
74-83-9	Bromomethane
71-36-3	Butanol[1-]
78-93-3	Butanone[2-]
104-51-8	Butylbenzene[n-]
135-98-8	Butylbenzene[sec-]
98-06-6	Butylbenzene[tert-]
75-15-0	Carbon Disulfide
56-23-5	Carbon Tetrachloride
126-99-8	Chloro-1,3-butadiene[2-]
107-05-1	Chloro-1-propene[3-]
108-90-7	Chlorobenzene
124-48-1	Chlorodibromomethane
75-00-3	Chloroethane
67-66-3	Chloroform
74-87-3	Chloromethane
95-49-8	Chlorotoluene[2-]
106-43-4	Chlorotoluene[4-]
96-12-8	Dibromo-3-Chloropropane[1,2-]
106-93-4	Dibromoethane[1,2-]
74-95-3	Dibromomethane
95-50-1	Dichlorobenzene[1,2-]
541-73-1	Dichlorobenzene[1,3-]
106-46-7	Dichlorobenzene[1,4-]
75-71-8	Dichlorodifluoromethane
75-34-3	Dichloroethane[1,1-]

Table 3 (continued)

Symbol or CAS No.	Analyte
107-06-2	Dichloroethane[1,2-]
75-35-4	Dichloroethene[1,1-]
540-59-0	Dichloroethene[cis/trans-1,2-]
156-59-2	Dichloroethene[cis-1,2-]
156-60-5	Dichloroethene[trans-1,2-]
78-87-5	Dichloropropane[1,2-]
142-28-9	Dichloropropane[1,3-]
594-20-7	Dichloropropane[2,2-]
563-58-6	Dichloropropene[1,1-]
10061-01-5	Dichloropropene[cis-1,3-]
10061-02-6	Dichloropropene[trans-1,3-]
60-29-7	Diethyl Ether
123-91-1	Dioxane[1,4-]
97-63-2	Ethyl Methacrylate
100-41-4	Ethylbenzene
87-68-3	Hexachlorobutadiene
591-78-6	Hexanone[2-]
74-88-4	Iodomethane
78-83-1	Isobutyl alcohol
98-82-8	Isopropylbenzene
99-87-6	Isopropyltoluene[4-]
126-98-7	Methacrylonitrile
80-62-6	Methyl Methacrylate
1634-04-4	Methyl tert-Butyl Ether
108-10-1	Methyl-2-pentanone[4-]
75-09-2	Methylene Chloride
91-20-3	Naphthalene
107-12-0	Propionitrile
103-65-1	Propylbenzene[1-]
100-42-5	Styrene
630-20-6	Tetrachloroethane[1,1,1,2-]
79-34-5	Tetrachloroethane[1,1,2,2-]
127-18-4	Tetrachloroethene
108-88-3	Toluene
76-13-1	Trichloro-1,2,2-trifluoroethane[1,1,2-]
87-61-6	Trichlorobenzene[1,2,3-]
120-82-1	Trichlorobenzene[1,2,4-]
71-55-6	Trichloroethane[1,1,1-]
79-00-5	Trichloroethane[1,1,2-]

Table 3 (continued)

Symbol or CAS No.	Analyte
79-01-6	Trichloroethene
75-69-4	Trichlorofluoromethane
96-18-4	Trichloropropane[1,2,3-]
95-63-6	Trimethylbenzene[1,2,4-]
108-67-8	Trimethylbenzene[1,3,5-]
108-05-4	Vinyl acetate
75-01-4	Vinyl Chloride
95-47-6	Xylene[1,2-]
Xylene[m+p]	Xylene[1,3-]+Xylene[1,4-]
Analytical Suite: SVOCs	
Analytical Group: WSP-8270C-SVOA	
Analytical Method: SW-846:8270	
83-32-9	Acenaphthene
208-96-8	Acenaphthylene
62-53-3	Aniline
120-12-7	Anthracene
1912-24-9	Atrazine
103-33-3	Azobenzene
92-87-5	Benzidine
56-55-3	Benzo(a)anthracene
50-32-8	Benzo(a)pyrene
205-99-2	Benzo(b)fluoranthene
191-24-2	Benzo(g,h,i)perylene
207-08-9	Benzo(k)fluoranthene
65-85-0	Benzoic Acid
100-51-6	Benzyl Alcohol
111-91-1	Bis(2-chloroethoxy)methane
111-44-4	Bis(2-chloroethyl)ether
117-81-7	Bis(2-ethylhexyl)phthalate
101-55-3	Bromophenyl-phenylether[4-]
85-68-7	Butylbenzylphthalate
59-50-7	Chloro-3-methylphenol[4-]
106-47-8	Chloroaniline[4-]
91-58-7	Chloronaphthalene[2-]
95-57-8	Chlorophenol[2-]
7005-72-3	Chlorophenyl-phenyl[4-] Ether
218-01-9	Chrysene
53-70-3	Dibenz(a,h)anthracene
132-64-9	Dibenzofuran
95-50-1	Dichlorobenzene[1,2-]

Table 3 (continued)

Symbol or CAS No.	Analyte
541-73-1	Dichlorobenzene[1,3-]
106-46-7	Dichlorobenzene[1,4-]
91-94-1	Dichlorobenzidine[3,3'-]
120-83-2	Dichlorophenol[2,4-]
84-66-2	Diethylphthalate
131-11-3	Dimethyl Phthalate
105-67-9	Dimethylphenol[2,4-]
84-74-2	Di-n-butylphthalate
534-52-1	Dinitro-2-methylphenol[4,6-]
51-28-5	Dinitrophenol[2,4-]
121-14-2	Dinitrotoluene[2,4-]
606-20-2	Dinitrotoluene[2,6-]
117-84-0	Di-n-octylphthalate
88-85-7	Dinoseb
123-91-1	Dioxane[1,4-]
122-39-4	Diphenylamine
206-44-0	Fluoranthene
86-73-7	Fluorene
118-74-1	Hexachlorobenzene
87-68-3	Hexachlorobutadiene
77-47-4	Hexachlorocyclopentadiene
67-72-1	Hexachloroethane
193-39-5	Indeno(1,2,3-cd)pyrene
78-59-1	Isophorone
90-12-0	Methylnaphthalene[1-]
91-57-6	Methylnaphthalene[2-]
95-48-7	Methylphenol[2-]
106-44-5	Methylphenol[4-]
91-20-3	Naphthalene
88-74-4	Nitroaniline[2-]
99-09-2	Nitroaniline[3-]
100-01-6	Nitroaniline[4-]
98-95-3	Nitrobenzene
88-75-5	Nitrophenol[2-]
100-02-7	Nitrophenol[4-]
55-18-5	Nitrosodiethylamine[N-]
62-75-9	Nitrosodimethylamine[N-]
924-16-3	Nitroso-di-n-butylamine[N-]
621-64-7	Nitroso-di-n-propylamine[N-]

Table 3 (continued)

Symbol or CAS No.	Analyte
86-30-6	Nitrosodiphenylamine[N-]
930-55-2	Nitrosopyrrolidine[N-]
108-60-1	Oxybis(1-chloropropane)[2,2'-]
608-93-5	Pentachlorobenzene
87-86-5	Pentachlorophenol
85-01-8	Phenanthrene
108-95-2	Phenol
129-00-0	Pyrene
110-86-1	Pyridine
95-94-3	Tetrachlorobenzene[1,2,4,5]
58-90-2	Tetrachlorophenol[2,3,4,6-]
120-82-1	Trichlorobenzene[1,2,4-]
95-95-4	Trichlorophenol[2,4,5-]
88-06-2	Trichlorophenol[2,4,6-]
Analytical Suite: Polychlorinated Biphenyls (PCBs)	
Analytical Group: WSP-8082-PCB	
Analytical Method: SW-846:8082	
12674-11-2	Aroclor-1016
11104-28-2	Aroclor-1221
11141-16-5	Aroclor-1232
53469-21-9	Aroclor-1242
12672-29-6	Aroclor-1248
11097-69-1	Aroclor-1254
11096-82-5	Aroclor-1260
37324-23-5	Aroclor-1262
Analytical Suite: HEXP (High Explosives)	
Analytical Group: WSP-8330B-NMED HEXP	
Analytical Method: SW-846:8330B	
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
98-95-3	Nitrobenzene
88-72-2	Nitrotoluene[2-]
99-08-1	Nitrotoluene[3-]

Table 3 (continued)

Symbol or CAS No.	Analyte
99-99-0	Nitrotoluene[4-]
78-11-5	PETN
121-82-4	RDX
3058-38-6	TATB
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.