TA 06

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

ENTERED

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 10 2011
Refer To: EP2011-0069

James Bearzi, Bureau Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6303

MAR 2011

Subject: Submittal of the Results of 2010 Sediment Monitoring in the Pajarito Canyon Watershed

Dear Mr. Bearzi:

Enclosed please find two hard copies with electronic files of the Results of 2010 Sediment Monitoring in the Pajarito Canyon Watershed. As specified in theNovember 13, 2009, Approval with Modifications of the Sampling and Analysis Plan for Sediment Monitoring in the Pajarito Canyon Watershed, the New Mexico Environment Department requested submittal of these data by March 31, 2011. This report fulfills that request.

If you have any questions, please contact Steve Veenis at (505) 667-0013 (veenis@lanl.gov) or Suzy Schulman at (505) 606-1962 (sschulman@doeal.gov).

Sincerely,

B G Schulman for MJG

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

Sincerely,

David Rhodes, Project Director
Environmental Operations
Los Alamos Site Office

34387

MG/GR/CD/SV/SR:sm

Enclosures: Two hard copies with electronic files – Results of 2010 Sediment Monitoring in the Pajarito Canyon Watershed

Cy: (w/enc.)
Neil Weber, San Ildefonso Pueblo
Suzy Schulman, DOE-LASO, MS A316
Steve Veenis, EP-CAP, MS M992
Steve Reneau, EES-16, MS D452
RPF, MS M707 (w/ two CDs)
Public Reading Room, MS M992

Cy: (Letter and CD and/or DVD only)
Laurie King, EPA Region 6, Dallas, TX
Steve Yanicak, NMED-DOE-OB, MS M894
Danny Katzman, EP-ET, MS 992
William Alexander, EP-BPS, MS M992

Cy: (w/o enc.)
Tom Skibitski, NMED-OB, Santa Fe, NM (date-stamped letter emailed)
Annette Russell, DOE-LASO (date-stamped letter emailed)
Craig Douglass, EP-CAP, MS M992 (date-stamped letter emailed)
Michael J. Graham, ADEP, MS M991 (date-stamped letter emailed)

Results of 2010 Sediment Monitoring in the Pajarito Canyon Watershed

Introduction

This report presents analytical data obtained from sediment samples in the Pajarito Canyon watershed in 2010 as part of the Los Alamos National Laboratory (LANL or the Laboratory) Environmental Surveillance Program, following a September 2009 sampling and analysis plan (SAP) (LANL 2009, 107340). The New Mexico Environment Department (NMED) issued an approval with modifications for the SAP (NMED 2009, 108123) that included the requirement to provide results of the annual sampling in a report to NMED by March 31 of each calendar year beginning in 2010. This report satisfies that requirement for the 2010 sampling. Information on radioactive materials and radionuclides, including the results of sampling and analysis of radioactive constituents, is voluntarily provided to NMED in accordance with U.S. Department of Energy policy.

Samples Collected

The SAP indicated that seven active stream channel samples would be collected each year in the Pajarito Canyon watershed, and up to an additional eight fine-grained sediment samples were identified as "contingency" samples to be collected in the event large floods occurred (LANL 2009, 107340). No large floods occurred in 2010 in this watershed; therefore, the fine-grained contingency samples were not collected. In addition, because no flow was recorded at the E250 stream gage in Pajarito Canyon above NM 4 during this monitoring period, no samples were collected from the two active stream channel locations specified below E250. Also, there was insufficient sediment to sample at one additional location, the lower retention pond in the material disposal area (MDA) G-6 drainage. Therefore, a total of four active channel sediment samples were collected in the Pajarito Canyon watershed in 2010.

Results

Analytical results for the four sediment samples from the Pajarito Canyon watershed are included electronically as Attachment 1 (on CD). Tables in Attachment 2 (on CD) summarize the frequencies of detected results and identify sampling results above the sediment background values (BVs) for inorganic chemicals and radionuclides or detected results for organic chemicals. These results will also be presented in the 2010 Environmental Surveillance Report, scheduled to be published in September 2011.

One inorganic chemical, antimony, was detected above the sediment BV in a sample collected from the MDA G-7 drainage. This result is similar to previous years (e.g., LANL 2010, 108907). Dioxin and furan congeners and semivolatile organic compounds (SVOCs) were added to the analytical suite for these stations in 2010 at the request of NMED (2009, 108123). Dioxin and furan congeners were detected in each sample. The maximum result, 0.000219 mg/kg for octachlorodibenzodioxin [1,2,3,4,6,7,8,9-] from the MDA G-7 drainage, is less than dioxin and furan congener results in sediment previously measured from other locations farther west in the Pajarito Canyon watershed (LANL 2009, 106939) and from Pueblo Canyon in areas receiving runoff from the Los Alamos townsite (LANL 2005, 091818). No other organic chemicals, including SVOCs, were detected in these samples. Three radionuclides (americium-241, plutonium-238, and plutonium-239/240) were detected above BVs in the sample from the MDA G-7 drainage. These results are similar to previous years (e.g., LANL 2010, 108907).

REFERENCES

The following list includes all documents cited in this report. Parenthetical information following each reference provides the author(s), publication date, and ER ID. This information is also included in text citations. ER IDs are assigned by the Environmental Programs Directorate's Records Processing Facility (RPF) and are used to locate the document at the RPF and, where applicable, in the master reference set.

Copies of the master reference set are maintained at the NMED Hazardous Waste Bureau and the Directorate. The set was developed to ensure that the administrative authority has all material needed to review this document, and it is updated with every document submitted to the administrative authority. Documents previously submitted to the administrative authority are not included.

LANL (Los Alamos National Laboratory), December 2005. "Los Alamos and Pueblo Canyons Supplemental Investigation Report," Los Alamos National Laboratory document LA-UR-05-9230, Los Alamos, New Mexico. (LANL 2005, 091818)

LANL (Los Alamos National Laboratory), August 2009. "Pajarito Canyon Investigation Report, Revision 1," Los Alamos National Laboratory document LA-UR-09-4670, Los Alamos, New Mexico. (LANL 2009, 106939)

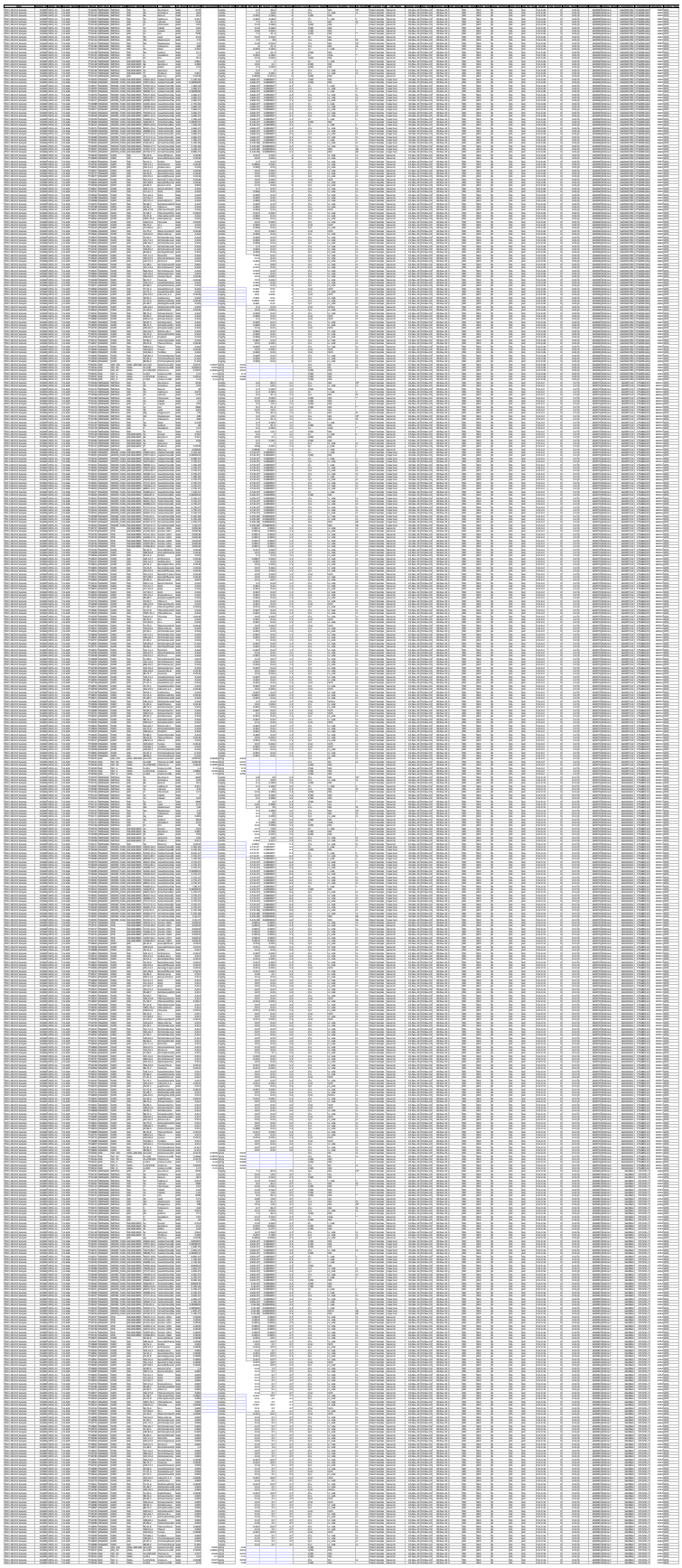
LANL (Los Alamos National Laboratory), September 2009. "Sampling and Analysis Plan for Sediment Monitoring in the Pajarito Canyon Watershed," Los Alamos National Laboratory document LA-UR-09-5858, Los Alamos, New Mexico. (LANL 2009, 107340)

LANL (Los Alamos National Laboratory), March 2010. "Results of 2009 Sediment Monitoring in the Pajarito Canyon Watershed," Los Alamos National Laboratory document LA-UR-10-1362, Los Alamos, New Mexico. (LANL 2010, 108907)

NMED (New Mexico Environment Department), November 13, 2009. "Notice of Approval with Modifications; Sampling and Analysis Plan for Sediment Monitoring in the Pajarito Canyon Watershed," New Mexico Environment Department letter to D. Gregory (DOE-LASO) and D. McInroy (LANL) from J.P. Bearzi (NMED-HWB), Santa Fe, New Mexico. (NMED 2009, 108123)

Attachments 1 and 2

Analytical Results
(on CD included with this document)



Site	Analyte	Media	Number of Analyses	Number of Detects	Concentration Range	Std Result UOM	Background Value (mg/kg)	Frequency of Detects Above Background Value	Frequency of Non-Detects Above Background Value	Min Detected Result	Max Detected Result
PRS C-00-011 Sample association	Aluminum	SED	4	4	2930 to 4020	mg/kg	15400	0/4	0/4	2930	4020
PRS C-00-011 Sample association	Antimony	SED	4	1	3.63 to [5.05]	mg/kg	0.83	1/4	3/4	3.63	3.63
PRS C-00-011 Sample association	Arsenic	SED	4	4	0.63 to 0.805	mg/kg	3.98	0/4	0/4	0.63	0.805
PRS C-00-011 Sample association	Barium	SED	4	4	38.9 to 43.9	mg/kg	127	0/4	0/4	38.9	43.9
PRS C-00-011 Sample association	Beryllium	SED	4	4	0.31 to 0.521	mg/kg	1.31	0/4	0/4	0.31	0.521
PRS C-00-011 Sample association	Cadmium	SED	4	4	0.237 to 0.276	mg/kg	0.4	0/4	0/4	0.237	0.276
PRS C-00-011 Sample association	Calcium	SED	4	4	976 to 1890	mg/kg	4420	0/4	0/4	976	1890
PRS C-00-011 Sample association	Chromium	SED	4	4	3.15 to 3.93	mg/kg	10.5	0/4	0/4	3.15	3.93
PRS C-00-011 Sample association	Cobalt	SED	4	4	1.9 to 2.32	mg/kg	4.73	0/4	0/4	1.9	2.32
PRS C-00-011 Sample association	Copper	SED	4	4	3.62 to 5.36	mg/kg	11.2	0/4	0/4	3.62	5.36
PRS C-00-011 Sample association	Iron	SED	4	4	6280 to 7860	mg/kg	13800	0/4	0/4	6280	7860
PRS C-00-011 Sample association	Lead	SED	4	4	5.71 to 8.76	mg/kg	19.7	0/4	0/4	5.71	8.76
PRS C-00-011 Sample association	Magnesium	SED	4	4	735 to 835	mg/kg	2370	0/4	0/4	735	835
PRS C-00-011 Sample association	Manganese	SED	4	4	188 to 312	mg/kg	543	0/4	0/4	188	312
PRS C-00-011 Sample association	Mercury	SED	4	2	0.00645 to 0.0139	mg/kg	0.1	0/4	0/4	0.00645	0.0139
PRS C-00-011 Sample association	Nickel	SED	4	4	2.68 to 3.33	mg/kg	9.38	0/4	0/4	2.68	3.33
PRS C-00-011 Sample association	Potassium	SED	4	4	632 to 762	mg/kg	2690	0/4	0/4	632	762
PRS C-00-011 Sample association	Selenium	SED	4	0	[0.944 to 1.06]	mg/kg	0.3	0/4	4/4	0	0
PRS C-00-011 Sample association	Silver	SED	4	2	0.138 to [0.524]	mg/kg	1	0/4	0/4	0.138	0.195
PRS C-00-011 Sample association	Sodium	SED	4	4	57.2 to 77.5	mg/kg	1470	0/4	0/4	57.2	77.5
PRS C-00-011 Sample association	Thallium	SED	4	1	0.0704 to [0.211]	mg/kg	0.73	0/4	0/4	0.0704	0.0704
PRS C-00-011 Sample association	Vanadium	SED	4	4	6.59 to 7.95	mg/kg	19.7	0/4	0/4	6.59	7.95
PRS C-00-011 Sample association	Zinc	SED	4	4	40.4 to 55	mg/kg	60.2	0/4	0/4	40.4	55

Site	Sample ID	Location ID	Depth (ft)	Media	Antimony	Selenium
Inorganic Chemicals Above Background per Sample, Standard UOM = mg/kg						
Sediment Background Value					0.83	0.3
PRS C-00-011 Sample association	CAPA-11-2294	MDA G-4	0-0.26	SED	4.66 (U)	1 (U)
	CAPA-11-2295	MDA G-5	0-0.2	SED	5.05 (U)	1 (U)
	CAPA-11-2296	MDA G-6	0-0.13	SED	4.99 (U)	1.06 (U)
	CAPA-11-2297	MDA G-7	0-0.16	SED	3.63 (J)	0.944 (U)

Site	Analyte	Media	Number of Analyses	Number of Detects	Concentration Range	Std Result UOM	Frequency of Detects	Min Detected Result	Max Detected Result
PRS C-00-011 Sample association	Heptachlorodibenzodioxin[1,2,3,4,6,7,8-]	SED	4	4	0.00000294 to 0.000027	mg/kg	4/4	0.00000294	0.000027
PRS C-00-011 Sample association	Heptachlorodibenzodioxins (Total)	SED	4	4	0.00000613 to 0.0000507	mg/kg	4/4	0.00000613	0.0000507
PRS C-00-011 Sample association	Heptachlorodibenzofuran[1,2,3,4,6,7,8-]	SED	4	4	0.000000828 to 0.00000668	mg/kg	4/4	0.000000828	0.00000668
PRS C-00-011 Sample association	Heptachlorodibenzofurans (Total)	SED	4	4	0.00000143 to 0.0000117	mg/kg	4/4	0.00000143	0.0000117
PRS C-00-011 Sample association	Hexachlorodibenzodioxin[1,2,3,4,7,8-]	SED	4	1	[0.000000466] to 0.000000885	mg/kg	1/4	0.000000885	0.000000885
PRS C-00-011 Sample association	Hexachlorodibenzodioxin[1,2,3,6,7,8-]	SED	4	1	[0.000000466] to 0.00000154	mg/kg	1/4	0.00000154	0.00000154
PRS C-00-011 Sample association	Hexachlorodibenzodioxin[1,2,3,7,8,9-]	SED	4	1	[0.000000466] to 0.00000215	mg/kg	1/4	0.00000215	0.00000215
PRS C-00-011 Sample association	Hexachlorodibenzodioxins (Total)	SED	4	4	0.0000013 to 0.000012	mg/kg	4/4	0.0000013	0.000012
PRS C-00-011 Sample association	Hexachlorodibenzofuran[2,3,4,6,7,8-]	SED	4	1	[0.000000466] to 0.000000615	mg/kg	1/4	0.000000615	0.000000615
PRS C-00-011 Sample association	Hexachlorodibenzofurans (Total)	SED	4	4	0.000000754 to 0.00000806	mg/kg	4/4	0.000000754	0.00000806
PRS C-00-011 Sample association	Octachlorodibenzodioxin[1,2,3,4,6,7,8,9-]	SED	4	4	0.0000201 to 0.000219	mg/kg	4/4	0.0000201	0.000219
PRS C-00-011 Sample association	Octachlorodibenzofuran[1,2,3,4,6,7,8,9-]	SED	4	2	[0.000000941] to 0.00000942	mg/kg	2/4	0.00000194	0.00000942
PRS C-00-011 Sample association	Pentachlorodibenzodioxin[1,2,3,7,8-]	SED	4	1	[0.000000466] to 0.000000619	mg/kg	1/4	0.000000619	0.000000619
PRS C-00-011 Sample association	Pentachlorodibenzodioxins (Total)	SED	4	1	[0.000000466] to 0.000000619	mg/kg	1/4	0.000000619	0.000000619
PRS C-00-011 Sample association	Pentachlorodibenzofurans (Totals)	SED	4	2	[0.000000471] to 0.00000204	mg/kg	2/4	0.000000759	0.00000204
PRS C-00-011 Sample association	Tetrachlorodibenzodioxin[2,3,7,8-]	SED	4	1	[0.0000000932] to 0.0000001	mg/kg	1/4	0.0000001	0.0000001
PRS C-00-011 Sample association	Tetrachlorodibenzodioxins (Total)	SED	4	1	[0.0000000932] to 0.0000001	mg/kg	1/4	0.0000001	0.0000001

Site	Analyte	Media	Number of Analyses	Number of Detects	Concentration Range	Std Result UOM	Background Value (pCi/g)	Frequency of Detects Above Background Value	Min Detected Result	Max Detected Result
PRS C-00-011 Sample association	Americium-241	SED	4	1	[0.00765] to 0.316	pCi/g	0.04	1/4	0.316	0.316
PRS C-00-011 Sample association	Plutonium-238	SED	4	1	[-0.00342] to 0.0281	pCi/g	0.006	1/4	0.0281	0.0281
PRS C-00-011 Sample association	Plutonium-239/240	SED	4	4	0.0307 to 0.727	pCi/g	0.068	1/4	0.0307	0.727
PRS C-00-011 Sample association	Uranium-234	SED	4	4	1.01 to 1.3	pCi/g	2.59	0/4	1.01	1.3
PRS C-00-011 Sample association	Uranium-235/236	SED	4	2	[0.0302] to 0.0952	pCi/g	0.2	0/4	0.0865	0.0952
PRS C-00-011 Sample association	Uranium-238	SED	4	4	0.79 to 1.21	pCi/g	2.29	0/4	0.79	1.21

Site	Sample ID	Location ID	Depth (ft)	Media	Americium-241	Plutonium-238	Plutonium-239/240
Radionuclides Detected Above Background/Fallout, Standard UOM = pCi/g							
Sediment Background Value					0.04	0.006	0.068
PRS C-00-011 Sample association	CAPA-11-2297	MDA G-7	0-0.16	SED	0.316	0.0281	0.727