

HSWA LANL G/M/S/98

MEMORANDUM

TO: Steve Yanicak, NMED, DOE OB, LANL POC
FROM: Dennis Romero, NMED, DOE OB
THROUGH: Michael Dale, NMED, DOE OB
DATE: March 25, 1998
SUBJECT: **Sampling and Analysis Plan (SAP) for storm-water sampling during the 1998 calendar year**

PURPOSE

NMED DOE Oversight Bureau (DOE OB) personnel plan to collect storm-water and snow-melt runoff samples at several onsite and offsite locations during the 1998 calendar year.

The primary purpose of this effort is to assess water quality and contaminant transport within several watersheds at LANL. This type of sampling is vital, as it provides an early warning of any current environmental releases and identification of legacy plumes from the laboratory to ground-water pathways and watersheds of the Rio Grande. In addition, the sampling will also aid in evaluating the effectiveness of best management practices (BMPs) employed by LANL at its PRSs.

Data derived from this sampling will be released to DOE, NMED, LANL, EPA, Native Americans, etc., as prescribed by the Agreement-in-Principle Umbrella Protocol. Following the data release, a formal report will be submitted.

PROCEDURES

OB personnel will collect both grab and ISCO-type samples in accordance with Section IV of DOE OB Standard Operating Procedures for Sampling and Analytical Activities, Revision 2.

Filtered and unfiltered water samples will be collected for laboratory analyses of inorganics, radionuclides and organics (Tables 1 and 2). Samples to be analyzed for inorganics will be collected in open-mouth, plastic, 1-L bottles. Samples to be analyzed for organic compounds will be collected in 1-L, amber, glass bottles. Samples for analysis of total metals and non-metal inorganics will be acidified in the field or as soon as possible with nitric and sulfuric acid respectively. Those for analysis of dissolved metals and radionuclides will be filtered through a 0.45 μ m filter and acidified with nitric acid in the field or as soon as possible. Anions and organic-compound samples will not be acidified or filtered. Random, in-house duplicate samples (approximately 15 separate constituents)

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will be submitted during the sampling season for QA/QC. All samples will be shipped via overnight carrier to a contract laboratory at an approximate temperature of 4 °C. Samples will be analyzed in accordance with the latest edition of U.S. Environmental Protection Agency (EPA) SW-846 methods and within EPA's method-detection limits.

Field water-quality meters, such as pH, specific conductance, nitrate as nitrogen, etc. will be calibrated by OB personnel at beginning of each day and checked with a known standard at the end of each day. All data, observations, etc., will be documented.

DOE OB staff have reviewed, and will adhere to LANL's Health and Safety Plan; all associated forms have been signed, and are on file with LANL's ESH Division in addition to being maintained in the White Rock office project file. The DOE OB sampling staff all have 40 hour Hazardous Waste Operations training specific to the collection of environmental samples for the LANL ER Project. Additionally, all staff have completed Radiation Worker 2 Training and are Q-Cleared.

ESTIMATED COST

The analytical cost for the referenced sampling will be approximately \$20,000 (Table 1). The selection of sampling stations and associated analytical suite is based on past and present contaminant-release sources/areas and the interpretation of historical LANL and OB hydrochemical data. The specific sampling locations are listed in Table 1.

If you have any comments or suggestions regarding our planned activities, please do not hesitate to contact either Michael Dale or myself.

DR:dr

ATTACHMENTS

cc: J. Parker, NMED, Chief, DOE Oversight Bureau
S. Ortiz, NMED, DOE Oversight Bureau
File, White Rock DOE OB Office
c:\...198storm.sap

TABLE 1 - Storm water sampling stations and analytical parameters

Locations of ISCO Automated Samplers

CDBST-0.1 (ISCO to be located in TA-46 southern tributary to Canada del Buey, just downstream of the SWCS facility)

Analytical Suite to include: Water - dissolved metals (8), total metals (Hg & Se), dissolved α/β and PCBs;
Suspended Sediments - metals (8) and α/β .

PTC- 1.82 (ISCO to be located in Potrillo Canyon at State Road 4)

Analytical Suite to include: Water - dissolved metals (8), total metals (Hg & Se), dissolved α/β , and dissolved isotopic U;
Suspended Sediments - metals (8), α/β , isotopic U

ANNT-0.1 (ISCO to be located at TA-39, northern tributary to Ancho Canyon)

Analytical Suite to include: Water - dissolved metals (8), total metals (Hg & Se), dissolved α/β , dissolved isotopic U, dissolved ^{90}Sr , and HE;
Suspended Sediments - metals (8), α/β , ^{90}Sr , alpha spec (Pu, U, Am), gamma spec

VA-0.01 (ISCO to be located just east of confluence with Water Canyon)

Analytical Suite to include: Water - dissolved metals (8), total metals (Hg & Se), dissolved α/β , and HE;
Suspended Sediments - metals (8) and α/β

PRT-0.01 (ISCO to be located at the mouth of Pratt Canyon)

Analytical Suite to include: Water - dissolved metals (8), total metals (Hg & Se), dissolved α/β , dissolved isotopic U and dissolved ^{90}Sr , Pu, Am, and gamma;
Suspended Sediments - metals (8), α/β , ^{90}Sr , alpha spec (Pu, U, Am), gamma spec

Grab Samples

1. **ACST-0.01** (southern tributary downstream from TA-45 outfall at the confluence with Acid Canyon)

Analytical Suite to include: Water - dissolved metals (8), total metals (Hg & Se), dissolved α/β , and dissolved ^{90}Sr ;
Suspended Sediments - metals (8), α/β , ^{90}Sr , alpha spec (Pu, U, Am), gamma spec

2. **BC- 3.6** (Bayo Canyon, downstream from TA-10 fence line)

Analytical Suite to include: Water - dissolved metals (8), total metals (Hg & Se), dissolved α/β , dissolved ^{90}Sr , and dissolved U;
Suspended Sediments - metals (8), α/β , ^{90}Sr , alpha spec (Pu, U, Am), gamma spec

3. **BC-0.05 (Bayo Canyon at State Road 4, if the flow is continuous from BC-3.6)**

Analytical Suite to include: Water - dissolved metals (8), total metals (Hg & Se), dissolved α/β , dissolved ^{90}Sr , and dissolved U;
Suspended Sediments - metals (8), α/β , ^{90}Sr , alpha spec (Pu, U, Am), gamma spec

4. **PU-2.1 (Pueblo Canyon just west of treatment plant outfall)**

Analytical Suite to include: Water - dissolved metals (8), total metals (Hg & Se), dissolved α/β , dissolved ^{90}Sr , and dissolved U;
Suspended Sediments - metals (8), α/β , ^{90}Sr , alpha spec (Pu, U, Am), gamma spec

5. **DP-0.01 (ES station DPS-4, mouth of DP Canyon)**

Analytical Suite to include: Water - dissolved metals (8), total metals (Hg & Se), dissolved α/β , dissolved ^{90}Sr , dissolved alpha spec (U, Pu, Am), and gamma spec;
Suspended Sediments - metals (8), α/β , ^{90}Sr , alpha spec (Pu, U, Am), gamma spec

6. **LANT-0.01 (TA-21 tributary to Los Alamos Canyon just south of TA-21)**

Analytical Suite to include: Water - dissolved metals (8), total metals (Hg & Se), dissolved α/β , dissolved ^{90}Sr , and dissolved U;
Suspended Sediments - metals (8), α/β , ^{90}Sr , alpha spec (Pu, U, Am), gamma spec

7. **Hillside 137 Drainage at LA**

Analytical Suite to include: Water - dissolved metals (8), total metals (Hg & Se), dissolved α/β , dissolved ^{90}Sr , and dissolved U;
Suspended Sediments - metals (8), α/β , ^{90}Sr , alpha spec (Pu, U, Am), gamma spec

8. **Hillside 138 Drainage at LA**

Analytical Suite to include: Water - dissolved metals (8), total metals (Hg & Se), dissolved α/β , dissolved ^{90}Sr , and dissolved U;
Suspended Sediments - metals (8), α/β , ^{90}Sr , alpha spec (Pu, U, Am), gamma spec

9. **Hillside 140 Drainage at LA**

Analytical Suite to include: Water - dissolved metals (8), total metals (Hg & Se), dissolved α/β , dissolved ^{90}Sr , and dissolved U;
Suspended Sediments - metals (8), α/β , ^{90}Sr , alpha spec (Pu, U, Am), gamma spec

10. **SA-3.48 (Sandia Canyon at State Road 4, if the flow is continuous up to TA-53)**

Analytical Suite to include: Water - dissolved metals (8), total metals (Hg & Se), dissolved α/β , dissolved isotopic U and PCBs;
Suspended Sediments - metals (8) and α/β .

11. **SA-7.0 at culvert**

Analytical Suite to include: Water - dissolved metals (8), total metals (Hg & Se), dissolved α/β , dissolved isotopic U and PCBs;
Suspended Sediments - metals (8) and α/β .

12. **MC-2.6 (Mortandad Canyon at State Road 4)**

Analytical Suite to include: Water - dissolved metals (8), total metals (Hg & Se), dissolved α/β , dissolved ^{90}Sr , and dissolved U;
Suspended Sediments - metals (8), α/β , ^{90}Sr , alpha spec (Pu, U, Am), gamma spec

13. **CDB-2.01 (Cañada del Buey at State Road 4, gage E230)**

Analytical Suite to include: Water - dissolved metals (8), total metals (Hg & Se), dissolved α/β and PCBs;
Suspended Sediments - metals (8) and α/β

14. **CDB-4.0 (Cañada del Buey at USGS gaging station E225)**

Analytical Suite to include: Water - dissolved metals (8), total metals (Hg & Se), dissolved α/β and PCBs;
Suspended Sediments - metals (8) and α/β

15. **PA-2.08 (Pajarito Canyon at State Road 4)**

Analytical Suite to include: Water - dissolved metals (8), total metals (Hg & Se), dissolved α/β , dissolved ^{90}Sr , and dissolved U;
Suspended Sediments - metals (8), α/β , ^{90}Sr , alpha spec (Pu, U, Am), gamma spec

16. **FN-0.64 (Fence Canyon at State Road 4)**

Analytical Suite to include: Water - dissolved metals (8), total metals (Hg & Se), dissolved α/β , and dissolved isotopic U;
Suspended Sediments - metals (8), α/β , isotopic U

17. **WC-3.23 (Water Canyon at State Road 4)**

Analytical Suite to include: Water - dissolved metals (8), total metals (Hg & Se), dissolved α/β , dissolved isotopic U, and HE;
Suspended Sediments - metals (8), α/β , isotopic U

18. **AN-2.9 (Ancho Canyon 20' west of confluence with Ancho North Tributary)**

Analytical Suite to include: Water - dissolved metals (8), total metals (Hg & Se), dissolved α/β , and dissolved isotopic U;
Suspended Sediments - metals (8), α/β , ^{90}Sr , alpha spec (Pu, U, Am), gamma spec

19. **GC-5.0 (Guaje Canyon above Guaje Well Fields or 100' upstream of road switchback across channel)**

Analytical Suite to include: Water - dissolved metals (8), total metals (Hg & Se), dissolved α/β , dissolved isotopic U, dissolved ^{90}Sr , dissolved alpha spec (Pu, U, Am), and dissolved gamma spec;
Suspended Sediments - metals (8), α/β , ^{90}Sr , alpha spec (Pu, U, Am), gamma spec

Estimated cost: \$25,752.00