



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
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Mr. James Bearzi, Chief  
Hazardous and Radioactive  
Materials Bureau  
New Mexico Environment Department  
2044A Galisteo Street  
Santa Fe, NM 87505

Re: Comments on the Environmental Restoration (ER) Standard Operating Procedures (SOP) Document, Los Alamos National Laboratory (LANL), EPA I.D. NM0890010515

Dear Mr. Bearzi:

The Environmental Protection Agency (EPA) has reviewed LANL's ER SOPs and has comments regarding the document. EPA reviewed both the hard copy (1995 version) and internet copy (current) and also reviewed the comments produced by PRC for EPA dated December of 1996.

Should you have any questions, please feel free to contact Mr. Rich Mayer at (214) 665-7442.

Sincerely,

*Rich Mayer*  
for David W. Neleigh, Chief  
New Mexico and Federal  
Facilities Section

Enclosure



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ER SOP  
Internet Web Site  
[erproject.lanl.gov/documents/procedures/sops.html](http://erproject.lanl.gov/documents/procedures/sops.html)

### **Comments on the ER SOPs**

EPA reviewed the comments produced by PRC in December 1996 and compared those comments to the hard copy SOP document (received by EPA March 1995) and to the current internet SOP document. EPA's comments are grouped into three categories: 1) Comments where the SOP is nothing but a blank page on the internet; 2) Comments produced by PRC in 1996 which EPA re-reviewed to see if the comments are still applicable. Please note that some of the comments are applicable to the current internet SOP while others apply to the March 1995 hardcopy version SOP because some of the SOPs which were in the 1995 version do not "show up" on the current internet version; 3) Comments on the current internet SOP which EPA recommends be revised. Also, please note that EPA did not review the SOPs pertaining to radiological sampling/analysis.

#### **Category 1 Comments**

1. **General Comment:** There are several SOPs, mostly those revised from 1998 to the present which do not contain anything but a blank page. They are the following:
  - A. Drilling Methods and Drill Site Management;
  - B. General Borehole Logging;
  - C. Monitor Well and RFI Borehole Construction;
  - D. Well Development;
  - E. Monitor Well and RFI Borehole Abandonment;
  - F. Purging of Wells for Representative Sampling of Ground Water;
  - G. Field Analytical Measurements of Groundwater Samples;
  - H. Sampling for Volatile Organics;
  - I. Sampling Commercial Municipal/Domestic Wells;
  - J. Soil Water Samples;

- K. Tensiometer Installation and Measurement;
- L. Hand Auger and Thin-Wall Tube Sampler;
- M. Aquifer Pumping Tests;
- N. Field Logging, Handling, and Documentation of Borehole Materials;
- O. Transportation, Receipt, and Admittance of Borehole Samples for the Sample Management Facility;
- P. Spade and Scoop Method for Collection of Soil Samples; and,
- Q. Sediment Material Collection; and,
- R. General Instructions for Field Investigations.

LANL needs to ensure that the internet SOPs are useable. NMED or EPA cannot review corrective action documents without the LANL SOP document being complete.

### Category 2 Comments

1. **Sample Container and Preservation, LANL-ER-SOP-01.02, Rev. 0, page 3 of 27, Section 6.0.B.:** The SOP indicates that sample containers will be selected in accordance with protocols presented in EPA SW-846. The SOP should specify these protocols.
2. **Sample Container and Preservation, LANL-ER-SOP-01.02, Rev. 0, page 4 of 27, Section 6.0, D.1.a.:** The SOP states that, “based on information in the sampling and analysis plan (SAP), choose a sample container that is nonreactive with the sample and the particular analytical parameter to be tested.” Sample containers must be specified in the SAP; this decision should not be left to the discretion of the sampling personnel.
3. **Handling, Packaging, and Shipping of Samples, LANL-ER-01.03, Rev. 1, page 4 of 15, Section 6.0. C.:** The SOP indicates that sample containers may require decontamination. It should also specify the procedures to be used for the decontamination of these containers and explain why precleaned containers will not be used.
4. **Handling, Packaging, and Shipping of Samples, LANL-ER-01.03, Rev. 1, page 5 of 15, Section 6.2.1. :** The SOP indicates that additional training is required for personnel that pack and ship hazardous samples. The SOP should specify the required training.
5. **Sample Control and Field Documentation, LANL-ER-SOP-01.04, Rev. 3, page 3 of**

- 20, Section 6.0, A.:** This SOP indicates that the sample management office will determine the required sample volumes for analytical samples. However, SOP-01.02 presented required sample volumes. This SOP should be revised to resolve this discrepancy.
6. **Land Surveying Procedures, LANL-ER-SOP-03.01 (1995 version), Rev. 1, page 3 of 8, Section 6.0.:** The SOP indicates that procedures from the *Laboratory Survey Manual* are included in this section. However, these procedures are either referenced or briefly discussed. If these procedures are important, they should be included in this SOP.
  7. **Petrography, LANL-ER-SOP-03.04, Rev. 0, page 2 of 4, Section 6.0.:** This SOP was identified as presenting procedures for describing the petrographic characteristics of rock specimens. However, this section only references other text. This SOP should be revised to include step-by-step procedures for describing rock specimens.
  8. **Well Development, LANL-ER-SOP-05.02 (1995 version), Rev. 0, page 3 of 8, Section 4.0.:** The SOP indicates that well development settles the filter pack. The filter pack should be settled during well installation, before the bentonite plug and grout are installed. One method that might be used is surging during installation of the filter pack, which will settle the filter pack material and prevent the formation of voids. The SOP should discuss methods of settling the filter pack material and preventing the formation of voids.
  9. **Sampling for Volatile Organics, LANL-ER-SOP-06.03 (1995 version), Rev. 0, page 2 of 7, Section 4.0.:** This SOP indicates that “the sensitivity of the analysis and the fragility of the samples require that all volatile samples are collected in duplicate.” The wording of the sentence is ambiguous and appears to indicate that a duplicate sample is required of each volatile organic compound (VOC) sample. The SOP should be revised to indicate that a minimum of two containers are required for each VOC sample.
  10. **Hand Auger and Thin-Wall Tube Sampler, LANL-ER-SOP-06.10 (1995 version), Rev. 0, page 2 of 8, Section 6.0.D.:** The SOP presents a procedure for collecting composite samples with a bucket auger. However, if the bucket auger is used for the collection of grab samples, the procedure should be included in this SOP.
  11. **Surface Water Sampling, LANL-ER-SOP-06.13 (1995 version), Rev. 0, pages 2 and 3 of 9, Section 6.0.E.:** This section of the SOP discusses collecting ground water samples with a peristaltic pump. The SOP should be revised to include the proper procedures for collecting surface water samples with a peristaltic pump.
  12. **Coliwsa Sampler for Liquids and Slurries, LANL-ER-SOP-06.15 (1995 version), Rev. 0, page 2 of 8, Section 6.0. D.:** The SOP indicates that bulging containers require special handling but fails to discuss the specific handling procedures. The SOP should discuss these procedures, or health and safety concerns with handling bulging containers.

13. **Fluid Level Measurements, LANL-ER-SOP-07.02 (1995 version), Rev. 0, page 2 of 8, Section 4.0.:** The SOP indicates that a steel tape can be used to obtain depth measurements that are accurate to 0.01 foot. The SOP should explain how this accuracy can be achieved.
14. **Aquifer Pumping Tests, LANL-ER-SOP-07.04 (1995 version), Rev. 0, page 2 of 10, Section 4.0.:** This SOP discusses conducting a constant rate pumping test. However, if a constant head pumping test were used, certain changes would be required. The SOP should include the procedures necessary for conducting a constant head pumping test.
15. **Thin Section Preparation, LANL-ER-SOP-09.01 (1995 version), Rev. 0, page 2 of 7, Section 6.0.:** This SOP was identified as presenting the procedures necessary for preparing thin sections. However, the SOP actually refers the reader to other texts for these procedures. The SOP should be revised to include these procedures.
16. **Screening of PCBs in Soil, LANL-ER-SOP-10.01 (1995 version), Rev. 0, page 2 of 5, Section 3.0.:** The detection limit of the polychlorinated biphenyls (PCB) screening procedure—50 milligrams per kilogram—is very high. In addition, the detection technique used in the screening is prone to false positive identifications. Therefore, a PCB investigation should also include laboratory analyses conducted by using an approved PCB analysis procedure. Generally, 10 to 20 percent of the screened samples are sent for laboratory verification analysis.
17. **Screening of PCBs in Soil, LANL-ER-SOP-10.01 (1995 version), Rev. 0, page 4 of 5, Section 6.0.:** The indicator discussion states that, "if there is no organic chlorine present then the mercury turns vivid purple with the indicator; if there are no chlorinates present then the mercury is tied up and no color results." Based on this information, it is difficult to determine what constitutes a positive identification. Should the procedure read "if there is organic chlorine present, then the mercury turns vivid purple"?
18. **Field Analysis of Total Hydrocarbons Using the Hanby Method, LANL-ER-SOP-10.05 (1995 version), Rev. 0, page 4 of 7, Section 6.3:** The extraction procedure recommends that aluminum foil be used to control solvent vapor. EPA recommends that, before the aluminum foil is used, it be rinsed with solvent to remove the residual oils from the manufacturing process. If extracted by solvent contact or vapors, these oils could lead to false positive results.
19. **Field Analysis of Total Hydrocarbons Using the Hanby Method, LANL-ER-SOP-10.05 (1995 version), Rev. 0, page 4 of 7, Section 6.4.:** The extraction procedure recommends vigorous shaking and periodic venting of the funnel to release pressure in the separatory funnel. Many petroleum products, including automobile fuels, are composed of

volatile hydrocarbons that may be lost by following this procedure. EPA recommends that the separatory funnel be agitated gently for a longer time period and occasionally vented.

20. **High Explosives Spot Test, LANL-ER-SOP-10.06 (1995 version), Rev. 0, page 2 of 6, Section 4.0:** The last paragraph of this section describes how the spot test works; however, the discussion is vague and difficult to understand.
21. **High Explosives Spot Test, LANL-ER-SOP-10.06 (1995 version), Rev. 0, page 2 of 6, Section 4.0:** The SOP should specify a period of time during which this reagent can be used or specify that fresh reagent will be used for each testing event.
22. **Operation of the Spectrace 9000 Field-Portable X-Ray Fluorescence Instrument, LANL-ER-SOP-10.08 (1995 version), Rev. 0, page 5 of 10, Section 6.2:** This section states that the precision of each element should be determined for one sample in every batch of 20 samples. The precision is determined by repeatedly measuring the element at its action level. The precision objective is 20 percent relative standard deviation. However, if the action level is near the instrument detection limit, instrument precision will probably not be good, and the precision objective may not be attainable. A more useful indication of precision would be multiple analyses of either an SRM (National Institute of Standards and Technology SRM 2710 or 2711) or a thoroughly characterized sample and an evaluation of the precision of the elements of interest. These precision measurements should be recorded and tracked, because a loss of precision may indicate deterioration of the source.

### Category 3 Comments

1. **General Comment; Trenching and Logging, ER-SOP-3.10, Rev. 0:** Any trenching used for environmental sampling should identify any visual or olafactory contamination on the boring log at the appropriate interval/location. OVA or PID readings should also be included on the log at the appropriate interval. The current SOP mentions trenching used only for the purpose of geologic identification.