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July 6, 2001

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RECEIVED

Mr. Carl Will
State of New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East
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Santa Fe, New Mexico 87505-6303

Reference: Work Assignment No. Y513, 06082.600; State of New Mexico Environment Department, Santa Fe, New Mexico; General Permit Support Contracts; NMED-HSW Corrective Action Chapter of the RCRA Permit Renewal for the Los Alamos National Laboratory; Review of Selected LANL Standard Operating Procedures (SOPs); Task 10 Deliverable

Dear Mr. Will:

Enclosed please find the deliverable for the above-referenced work assignment. This deliverable consists of review comments on selected Los Alamos National Laboratory (LANL) Standard Operating Procedures (SOPs). Mr. John Young of NMED identified a total of 14 LANL SOPs for TechLaw to review. This list was conveyed to TechLaw via a fax sent on May 25, 2001. Four of these SOPs overlap with Task 7 of this work assignment, which covers the drilling methods and well construction at LANL. The four SOPs related to Task 7 (ER-SOP-4.01, ER-SOP-4.04, ER-SOP-5.01 and ER-SOP-5.02) will be reviewed along with the other assignments associated with Task 7. Thus, this deliverable consists of the review of the remaining 14 SOPs. The deliverable consists of an individual review, including a general summary as well as any comments, for each SOP. The draft of the deliverable was e-mailed to you on Friday, July 6, 2001, at carl_will@nmenv.state.nm.us. The deliverable is formatted in Microsoft Word 2000.

In general, the more recent SOPs (i.e., those with a more current effective data) tend to reflect the most current and acceptable practices and therefore have fewer comments that SOPs that have not been revised for several years. If you have any questions, please feel free to contact Ms. Paige Walton at (801) 582-9329.

Sincerely,
June K Dreith
June K. Dreith
Project Manager

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Enclosure

cc: Mr. John Young, NMED
Mr. John Keiling, NMED
Mr. James Bearzi, NMED
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TASK 10 DELIVERABLE

TECHNICAL REVIEW OF SELECTED LOS ALAMOS NATIONAL LABORAOTRY (LANL) STANDARD OPERATING PROCEDURES (SOPs)

NMED-HSW Corrective Action Chapter of the RCRA Permit Renewal for the Los Alamos National Laboratory

Submitted by:

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Submitted to:

Mr. Carl Will
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In response to:

Work Assignment No. Y513, 06082.600

July 2001

TECHNICAL REVIEW OF SELECTED
LOS ALAMOS NATIONAL LABORAOTRY (LANL)
STANDARD OPERATING PROCEDURES (SOPs)

TABLE OF CONTENTS

SOP/Procedure Identification	SOP Title	Effective Date	Page
ER-SOP-1.02-Rev.0	Sample Container and Preservation	03/16/92	1
ER-SOP-1.03-Rev.2	Handling, Packaging and Shipping of Samples	12/04/00	2
ER-SOP-1.04-Rev.3	Sample Control and Field Documentation	11/15/95	3
ER-SOP-1.05-Rev.0	Field Quality Control Samples	03/16/92	4
ER-SOP-1.08-Rev.1	Field Documentation of Drilling and Sampling Equipment	04/27/01	5
ER-SOP-5.03-Rev.2	Monitor Well and RFI Borehole Abandonment	04/27/01	6
ER-SOP-6.01-Rev.1	Purging of Wells for Representative Sampling of Groundwater	04/27/01	7
ER-SOP-6.03-Rev.2	Sampling for Volatile Organics	04/27/01	8
ER-SOP-6.13-Rev.0	Surface Water Sampling	03/16/92	9
ER-SOP-6.24-Rev.1	Sample Collection from Split-spoon Samplers and Shelby Tube Samplers	03/28/01	10
ER-SOP-6.26-Rev.1	Core Barrel Sampling for Subsurface Earth Materials	04/27/01	11
ER-SOP-12.01-Rev.4	Field Logging, Handling, and Documentations of Borehole Materials	04/24/01	12
ER-SOP-12.02-Rev.3	Transportation, receipt, and Admittance of Borehole Samples for the Sample Management Facility	08/26/98	13
ER-SOP-12.04-Rev.1	Physical Processing and Storage of Borehole Samples a the SMF	03/10/95	14

Standard Operating Procedure ER-SOP-1.02, Rev. 0
Sample Containers and Preservation

Description:

Standard Operating Procedure (SOP) ER-SOP-1.02, Rev. 0, describes specific requirements for sample containers, preservation techniques, and holding times. The procedure consists of a narrative of the requirements and Attachments A through G that contain specific requirements by media and analyte. The narrative provides a general description of procedures used to acquire sample containers and preservatives, procedures for selecting the sample container, and procedures for identifying and using the required preservative. Also provided in the narrative is a description of procedures for meeting holding times. Specific sample container requirements, preservation requirements, and holding times for various analytical methods are detailed in Attachments A through G.

Comments:

This SOP was last revised on March 16, 1992. Because the procedure does not appear to have been updated since March 16, 1992, it may not reflect the most current requirements for sample containers, preservation techniques, holding times and/or analytical methods used by Los Alamos National Laboratory's Environmental Restoration Program (LANL-ERP). For example, if the laboratory has adopted the use of SW-846 Method 5035 for the collection of solids for volatile organic compound analysis, the required containers, preservation techniques, and holding times are not reflected in this procedure.

Los Alamos National Laboratory (LANL) should revise this procedure to accurately reflect the most current requirements for sample containers, preservation techniques, and holding times for analytical methods currently in use by the LANL-ERP.

Standard Operating Procedure ER-SOP-1.03, Rev. 2
Handling, Packaging, and Transporting Field Samples

Description:

SOP ER-SOP-1.03, Rev. 2, describes the preparation of environmental and waste characterization samples for transportation to LANL's Sample Management Office (SMO) or a SMO-approved radiation-screening laboratory. The procedure consists of a narrative and Attachments A through E. If samples are known to be regulated by the Department of Transportation (DOT), including radioactive samples, the sampling team/field team must contact the Business Operations Division Materials Management team (BUS-4). BUS-4 will be responsible for the packaging and shipment of samples regulated under DOT.

Comments:

Section 6.3 of this SOP refers to the handling, packaging, and shipping of DOT-regulated material, which may be shipped under the DOT limited- or small-quantity exceptions. The section references the Code of Federal Regulations (CFR) that defines the materials and conditions in which they may be shipped under the DOT limited- or small-quantity exceptions. This section is may be confusing to individuals not trained/familiar with the DOT regulations (i.e., 49 CFR).

LANL should revise Section 6.3 of this procedure to refer the preparation of any/all DOT-regulated material to BUS-4. BUS-4 should be responsible for determining whether the material may be shipped under the DOT limited- or small-quantity exceptions. Alternatively, initial or supplemental training on the specific DOT requirements should be provided to appropriate personnel.

Standard Operating Procedure ER-SOP-1.04, Rev. 3
Sample Control and Field Documentation

Description:

SOP ER-SOP-1.04, Rev. 3, describes the steps necessary to document the traceability of samples collected for the Environmental Restoration (ER) Project. The procedure consists of a narrative and Attachments A through E. This includes procedures used to complete sample labels, sample collection forms, chain of custody forms, custody seals, and field log books/daily activity forms. Included as attachments (A through E) to this procedure, are examples of various forms used for sample control and field documentation.

Comments:

This SOP was last revised on November 15, 1995. Because the procedure has not been updated since November 15, 1995, it may not reflect the most current requirements/procedures used by laboratory/contractor personnel during sample collection activities. For example, most groundwater wells (i.e., monitoring wells, observation wells, test wells, regional aquifer wells, etc.) are currently assigned and labeled with a bar code. This bar code is read using bar code scanning equipment and contains important information about the corresponding well. This information is documented and may therefore be used in determining the sample identification number.

LANL should revise this procedure to accurately reflect the most current requirements/procedures used by laboratory/contractor personnel during sample collection activities.

Standard Operating Procedure ER-SOP-1.05, Rev. 0
Field Quality Control Samples

Description:

SOP ER-SOP-1.05, Rev. 0, describes the various field quality control samples collected by LANL's ER Project. The procedure includes a narrative describing the types of quality control samples and the procedures used in their collection, as well as two Attachments listing specific quality control sample requirements. These attachments each include a table that differentiates the quality control samples collected for radiological analysis (Attachment A) and for non-radiological analysis (Attachment B).

Comments:

The procedures described in this SOP appear adequate and consistent with United States Environmental Protection Agency (EPA) sample collection guidance and general procedures practiced in collection of environmental samples. There are no additional comments at this time.

Standard Operating Procedure ER-SOP-1.08, Rev. 1
Field Decontamination of Drilling and Sampling Equipment

Description:

SOP ER-SOP-1.08, Rev. 1, describes the process for field decontamination of drilling and sampling equipment practiced by the LANL ER Project. The procedure consists of a narrative and one attachment. The procedure is intended to help ensure the integrity of soil, sediment, rock, water, and other samples collected from potentially contaminated sites and to minimize the potential for cross contamination between sampling locations. This procedure describes the construction of decontamination areas and various types of decontamination including "dry" and "wet" decontamination.

Comments:

The procedures described in this SOP appear adequate and consistent with EPA guidance and general procedures practiced in the decontamination of drilling and sampling. There are no additional comments at this time.

Standard Operating Procedure ER-SOP-5.03, Rev. 2
Monitoring Well and RFI Borehole Abandonment

Description:

SOP ER-SOP-5.03, Rev. 2, describes the process for monitoring well and RCRA Facility Investigation (RFI) Borehole abandonment practiced by the LANL ER Project. The procedure includes a narrative and one attachment. The narrative includes discussion on monitoring well abandonment when the casing is left in the ground and when the well casing is removed prior to plugging/sealing, and as presented, only applies to monitoring wells or boreholes initially installed under the RCRA program. The attachment (Attachment A) consists of an example of the Monitoring Well and Borehole Abandonment Information Form.

Comments:

The procedures described in this SOP appear adequate and consistent with EPA guidance and general procedures practiced during the abandonment of monitoring wells and boreholes. There are no additional comments at this time.

Standard Operating Procedure ER-SOP-6.01, Rev. 1
Purging and Sampling Methods for Single Completion Wells

Description:

SOP ER-SOP-6.01, Rev. 1, describes methods used by LANL's ER Project for evacuating stagnant water from a well bore in sufficient quantities so that the water samples collected are representative of the formation interval open to the well bore. The procedure consists of a narrative and two attachments. The procedure provides a discussion of the various types of equipment that may be used during purging and sampling of single completion wells. A step-by-step procedure is included for determining the purge volume of a well, purging the well, and collecting representative groundwater samples from a well. Attached to this procedure are an equipment and supplies checklist (Attachment A) and an example Water Quality Sampling Record form (Attachment B), which includes detailed instructions on how to complete the form.

Comments:

While this procedure has recently been updated, it does not include a discussion of the methods for conducting low-flow purging and sampling. Current EPA guidance encourages the use of low-flow purging and sampling of groundwater whenever possible. Although the LANL ER Project may not currently be required to use low-flow purging and sampling techniques, certain advantages for its use have been documented. Advantages of the use of low-flow purging and sampling techniques include, but are not limited to, a reduction in the volume of purge water generated which must be disposed, the potential reduction in time needed to purge and sample wells, and the collection of a groundwater sample which may be more representative of formation water within the screened interval. LANL may wish to consider revising the SOP to include low-flow purging and sampling as an option.

Standard Operating Procedure ER-SOP-6.03, Rev. 2
Sampling for Volatile Organic Compounds in Groundwater

Description:

SOP ER-SOP-6.03, Rev. 2, describes the collection of groundwater samples from monitoring or characterization wells for analysis of volatile organic compounds (VOCs), and the selection of equipment and materials to be used in this process, as performed by the LANL ER Project. The procedure consists of a narrative and one attachment. The narrative describes the equipment and procedures used to collect groundwater VOC samples, while the attachment (Attachment A) includes an equipment and supplies checklist.

Comments:

The procedures described in this SOP appear adequate and consistent with EPA sample collection guidance and general procedures practiced in collection of environmental samples. However, additional equipment used in the collection of groundwater samples for VOC analysis should be added and discussed in this procedure to reflect current practices used by LANL ER Project staff and their contractors. For example, it has been documented that submersible electric pumps and peristaltic pumps have also been used in the collection of groundwater samples to be analyzed for VOCs. LANL may wish to revise the SOP to include these additional procedures that might be used for collection of groundwater samples.

Standard Operating Procedure ER-SOP-6.13, Rev. 0
Surface Water Sampling

Description:

SOP ER-SOP-6.13, Rev. 0, describes equipment used in the collection of surface water samples as well as methods of sampling surface water bodies employed by the LANL ER Project. The procedure includes a narrative and two attachments. The narrative provides a discussion on methods of documenting surface water sample collection. Attached to this procedure are a checklist of equipment and supplies used in the collection of surface water samples (Attachment A) and a water chemistry checklist (Attachment B).

Comments:

The procedures described in this SOP appear adequate and consistent with EPA sample collection guidance and general procedures practiced in collection of certain types of environmental (i.e., surface water) samples. It should be noted that the SOP is somewhat limited in scope and the recommended procedure for the collection of surface water samples uses a peristaltic pump, which is convenient when filtered metal samples are required. However, while the SOP does briefly present other methods (i.e., direct fill and use of a dipper), the recommendation that a peristaltic pump be used runs counter to good practice when collecting samples for VOCs and/or some semi-volatile organic compound (SVOC) analyses. LANL may wish to revise this SOP to include additional language regarding when a peristaltic pump is/is not appropriate, and of course to propose additional options, as appropriate.

Standard Operating Procedure ER-SOP-6.24, Rev. 1
Sample Collection from Split-Spoon Samplers and Shelby Tube Samplers

Description:

SOP ER-SOP-6.24, Rev. 1, describes the process for collecting soil and sediment samples using either split-spoon samplers or Shelby tube samplers at the LANL ER Project. The procedure consists of a narrative and one attachment. The narrative provides a discussion on the equipment and procedures that should be employed when using these types of samplers, and the attachment (Attachment A) presents an equipment and supplies checklist.

Comments:

Section 5.1.1.2 states that in some designs of the split spoon, the split spoon sampler is threaded onto a drill stem and placed inside a hollow-stem auger. The auger is then turned and advanced and the split spoon is advanced along with the drill bit using the drill rig's drive weight. This description is not of a split spoon sampler, but of a "core barrel" sampler (which is detailed in ER SOP-6.26). The core barrel sampler may appear to have a similar construction to the split spoon, but the method in which the samplers are used is very different. The split spoon is almost always driven into the substrate using a hammer of specified weight, and is sometimes hydraulically pushed into the substrate. The core barrel sampler is designed to fit the length of a hollow-stem auger flight (five feet) and to be used to collect a core simultaneously while drilling. The core barrel sampler would be changed every time a new auger was added to the drill string.

Section 5.1.1.4 states that a split spoon sampler may be used with a hand auger. A split spoon sampling device is typically used on a drill rig, while a hand auger is rotated by hand into the ground to collect a sample instead of being driven/pushed. We are not aware of equipment which would allow the use of a split spoon sampler in a similar manner as a hand auger, nor do we feel that the resulting sample would be similar to that collected using procedures specific to a split spoon sampler. Also, this type of sampling can actually be accomplished using a device known as a "slide-hammer", which works similar to that of the weighted hammer on a drill rig, but is a hand held and hand operated device.

LANL should revise the SOP to better represent the equipment and procedures that are, or should be, used when conducting this type of sampling.

Standard Operating Procedure ER-SOP-6.26, Rev. 1
Core Barrel Sampling for Subsurface Earth Materials

Description:

SOP ER-SOP-6.26, Rev. 1, describes the process for collecting core-barrel samples of subsurface earth materials for the LANL ER Project. This procedure consists solely of a narrative that includes a discussion of the sampling equipment, pre-operation activities, drilling/core sampling activities, and core sampling activities using the core-barrel sampler.

Comments:

The procedures described in this SOP appear adequate and consistent with EPA sample collection guidance and general procedures practiced in collection of environmental samples. There are no additional comments at this time.

Standard Operating Procedure ER-SOP-12.01, Rev. 4
Field Logging, Handling, and Documentation of Borehole Materials

Description:

SOP ER-SOP-12.01, Rev. 4, describes the process for field logging, handling, and documentation of borehole materials at the LANL ER Project. This procedure consists of a narrative and Attachments A through H. The narrative provides a general description of procedures used to log, handle, and document those materials recovered from the borehole during drilling operations. These materials may include soil, core, cuttings, rubble, rock chips, groundwater, and drilling fluids. Examples of checklists and forms that might be used during this procedure are provided in Attachments A through H.

Comments:

The procedures described in this SOP appear adequate and consistent with EPA sample collection guidance and general procedures practiced in collection of environmental samples. There are no additional comments at this time.

Standard Operating Procedure ER-SOP-12.02, Rev. 3
Transportation, Receipt, and Admittance of Borehole Samples
to the Sample Management Facility

Description:

SOP ER-SOP-12.02, Rev. 3, describes the procedures for the transportation, receipt, and admittance of borehole samples at the LANL ER Project to the Sample Management Facility (SMF). This procedure consists of a narrative and two attachments. The narrative provides a description of procedures used for the transport, handling, tracking, documentation and admittance of borehole samples after their shipment from the drill site and their subsequent arrival at the SMF. Examples of checklists and forms used during this procedure are provided in Attachments A and B.

Comments:

The procedures described in this SOP appear adequate and consistent with EPA sample collection guidance and general procedures practiced in collection of environmental samples. There are no additional comments at this time.

Standard Operating Procedure ER-SOP-12.04, Rev. 1
Physical Processing and Storage of Borehole Samples at the Sample Management Facility

Description:

SOP ER-SOP-12.04, Rev. 1, describes the procedures for physical processing and storage of borehole samples at the LANL ER Project SMF. This procedure consists of a narrative and Attachments A through G. The narrative provides a description of procedures used for the completion of core processing documentation, container preparation and core marking, core slabbing and bagging of rubble, and core photography. Examples of checklists and forms used during this procedure are provided in Attachments A through G.

Comments:

The procedures described in this SOP appear adequate and consistent with EPA sample collection guidance and general procedures practiced in collection of environmental samples. There are no additional comments at this time.