STANDARD OPERATING PROCEDURE

Title:	Identifier:	Revision:	Effective Date:
Hand Auger and Thin-Wall Tube Sampler	**ER-SOP-06.10**	**1**	**8/26/98**

ER PROJECT

APPROVALS FOR USE

Author's Name (Print):	Author's Signature:	Date:
Deba Daymon	**Signature on file**	**08/06/98**
Quality Program Project Leader's Name (Print)	Quality Program Project Leader's Signature	Date:
Larry Maassen	**Signature on file**	**08/06/98**

LOS ALAMOS NATIONAL LABORATORY

HAND AUGER AND THIN-WALL TUBE SAMPLER

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HAND AUGER AND THIN-WALL TUBE SAMPLER

NOTE: ER Project personnel may produce copies of this procedure from the controlled document electronic file. However, it is the user's responsibility to assure that they are trained to and utilizing the current version of this procedure. The procedure author may be contacted if changes are unclear.

1.0 PURPOSE

This procedure states the responsibilities and defines a method of collecting subsurface solid samples with a hand auger and thin-wall tube sampler for use in the Los Alamos National Laboratory Environmental Restoration (ER) Project.

2.0 TRAINING

2.1 All users of this SOP are trained by self-study, and the training is documented in accordance with QP-2.2, Personnel Orientation and Training.

2.2 The **Field Team Leader** (FTL) will monitor the proper implementation of this procedure and ensure that relevant team members have completed all training assignments (see Section 7.0) in accordance with QP-2.2, Personnel Orientation and Training.

3.0 DEFINITIONS

3.1 ***Thin-Wall Tube Sampler -*** A tool used to collect minimally undisturbed soil samples. The sample is loaded into a stainless steel tube by the tube sampler as it is being collected. The tube is the sample container and cannot be reused. They are generally used in conjunction with a bucket auger. They cannot be used in extremely hard soil.

3.2 ***Bucket Auger*** - A hand auger that can be used for digging or sample collection. Most bucket augers consist of the auger bucket, various length shafts, and a "T" grip handle. All the parts are threaded and screwed together.

3.3 ***Site-Specific Health and Safety Plan (SSHASP)*** - A health and safety plan that is specific to a site or ER-related field activity that has been approved by the ER/HS representatives. This document contains information specific to the project including: scope of work, relevant history, descriptions of the project site(s), associated hazards by activity, and techniques for hazard mitigation.

4.0 BACKGROUND AND PRECAUTIONS

4.1 This procedure describes the selection and use of sampling methods and equipment for sites that may be contaminated with hazardous or radioactive materials. Health and safety hazards associated with the use of this equipment and methods must be addressed in a SSHASP. This procedure is to be used in conjunction with an approved SSHASP that addresses worker safety and the hazards associated with the use of the methods detailed in this procedure. All waste generated from any sampling operations must be handled in accordance with LANL-ER-SOP-1.06, Management of Environmental Restoration Project Waste.

4.2 Undisturbed soil samples cannot be collected with a bucket auger, and a thin-wall tube sampler cannot be used to dig. A subsurface undisturbed soil sample is collected by digging to six inches above the required sample depth with a bucket auger, then collecting the sample with the tube sampler. A composite or disturbed sample can be collected with the bucket auger.

4.3 To save time, a manual or powered post hole digger may be used to dig all but the last foot down to the sample depth. The post hole digger must be decontaminated per LANL-ER-SOP-01.08, Field Decontamination of Drilling and Sampling Equipment. If gasoline is to be used at the site, care must be taken to avoid contaminating samples that are to be analyzed for volatile organic compounds.

4.4 Proper back care must be exercised when pulling a stuck auger out of a hole and turning an auger for long periods of time. Work gloves should be worn to prevent blisters.

5.0 EQUIPMENT

Refer to Attachment A for suggested equipment lists.

6.0 PROCEDURE

Note: Deviations to SOPs are made in accordance with section 4.9 of ER-QP-4.2, Standard Operating Procedures Development.

6.1 Coordinate the sampling effort with the Sample Coordination Facility (SCF) and the Focus Area data technician. The data technician will give guidance regarding sample containers, preservation, and shipment to the SMF.

6.2 Gather and decontaminate needed supplies and equipment (SOP-01.08, Field Decontamination of Drilling and Sampling Equipment).

6.3 Be prepared to manage borehole soil or rock in accordance with the site-specific sampling plan and SOP-01.06, Management of Environmental Restoration Project Wastes, if necessary.

6.4 To dig with the bucket auger:

6.4.1 Assemble the auger with a 2-, 3-, or 4-foot-long shaft. Put 1/2-inch Teflon™ tape on all threads to facilitate disassembly.

6.4.2 Press down and turn on the auger, dig down 6 to 12 inches then lift the auger out of the hole and remove the soil from the auger bucket. Experience will show how far one can dig with each auger bucket load and still get the auger out of the hole easily. Repeat until the required depth is reached adding additional shaft sections.

6.5 To collect a sample with the bucket auger:

6.5.1 Dig to 6 inches above the required depth. With a clean auger bucket, dig out enough soil for the sample. Discard any soil you suspect fell down the hole and is not from the required sample depth. When collecting a grab sample for volatile organic compound analysis, immediately extract enough solid sample directly from the auger bucket to fill a 125-ml wide-mouth amber glass jar. This sample will be collected separately before any homogenization is performed on the remaining medium. When possible fill the jar to the maximum extent, leaving no headspace. The jar cap should have a Teflon™ liner. Keep the jar in a cooled ice chest until it is ready to receive the sample. After filling the sample jar, immediately replace it in the ice chest. For the remaining samples, put an adequate amount of sample material into the pan. Homogenize the sample and fill the sample containers (SOP-1.02, Samples, Containers, and Preservation).

6.5.2 When collecting a composite sample, keep the pan of soil out of the sun and covered with aluminum foil; collect all the aliquots as quickly as possible; do not decontaminate the auger between aliquots.

6.5.3 Whenever a sample is collected for chemical analyses, a custody record must be initiated on the Chain-of-Custody/Request for Analysis form and a sample label affixed to the sample container according to SOP-1.04, Sample Control and Field Documentation.

6.5.4 Whenever a sample is collected, complete a description of the sample using the Borehole Log (Soil) Form. An example of this

form and instructions for completing this form are supplied in SOP-06.12, Soil and Rock Borehole Logging and Sampling Methods.

6.6 To collect samples with a thin tube sampler:

6.6.1 Dig to the required depth. Assemble the tube holder with the appropriate tube inside and attach the tube holder to the auger shaft. Use Teflon™ tape on the threads. Shove or pound the tube holder into the ground until it is full. When pounding, use a plastic hammer and use caution so as not to damage the equipment. If the sample is to be from the surface, remove any rocks, sticks or leaves, then drive the sampler into the ground.

6.6.2 Disassemble the tube holder being careful not to let any soil fall out of the tube. Cover the ends of the sample tube with 2-inch-wide Teflon™ tape then put plastic caps over the tape. Label the bottom end of the tube with "open this end."

6.7 Label sample containers and complete documentation (SOP-01.04, Sample Control and Field Documentation).

6.8 Decontaminate equipment (SOP-01.08. Field Decontamination of Drilling and Sampling Equipment). Pack samples and ship them to the SCF (SOP-1.03, Handling, Packaging, and Shipping of Samples). Return all supplies and equipment to their proper storage location.

6.9 Post Sampling Activities

6.9.1 Refill the hole and restore the sampling area according to instructions provided in the site-specific work plan.

6.9.2 Make sure all sampling locations are properly staked and the location ID is readily visible on the location stake.

7.0 REFERENCES

The following procedures and documents are directly associated with this procedure and should be reviewed before field operations:

LANL-ER-QP-2.1, Personnel Orientation and Training.
LANL-ER-QP-2.2, Documenting Personnel Qualifications.
LANL-ER-SOPs in Section 1.0 of the SOP Manual, General Instructions.
LANL-ER-SOP-6.12, Soil and Rock Borehole Logging and Sampling Methods.

ASTM, 1990. "The 1990 Annual Book of ASTM Standards, Volume 04.08 Soil and rock; Dimension Stone; Geosynthetics, "American Society for Testing and Materials.

DeVera, E. R., B. P. Simmons, R. D. Stephens, and D. L. Storm. 1980. "Samplers and Sampling Procedures for Hazardous Waste Streams." U.S. Environmental Protection Agency report EPA 600/2-80-018, January 1980. U.S. Government Printing Office, Washington, D.C.

8.0 RECORDS:

The **Field Team Leader** submits the following records to the Records Processing Facility in accordance with QP-4.3, Records Management.

8.1 Completed Chain-of-Custody/Request for Analysis Form

8.2 Completed Sample Collection Log

8.3 Completed Borehole Log (Soil) Form

8.4 Record all other pertinent information on the Daily Activity Log or in the field notebook.

9.0 ATTACHMENTS

Attachment A - Equipment and Supplies Checklist for Sampling Soil with Hand Augers and Soil Sampling with Thin-Wall Tube Samplers (1 page).
Attachment B – Augers and Sampling Assembly (1 page).

EQUIPMENT AND SUPPLIES CHECKLIST FOR SAMPLING SOIL WITH HAND AUGERS

SAMPLING SOIL WITH HAND AUGERS		SOIL SAMPLING WITH THIN-WALL TUBE SAMPLERS	
Enter √	**Equipment and Supplies**	**Enter √**	**Equipment and Supplies**
	T-Handle and Rod Attachments		Paraffin Wax
	Auger		Duct Tape
	Auger Bucket		Stove and Pan **(to heat wax)**
	Posthole Digger		Drill Rods
	Sample Container(s)		T-Handle
	Decontamination Equipment		Auger
	Sprayer		Disposable Laboratory Gloves
	Distilled Water		Combustible Gas Indicator **(if required by SSHASP)**
	Scrub Brush		Thin-Wall Tube Sampler
	Methanol		Personal Protective Equipment **(if required by SSHASP)**
	Disposable Laboratory/Work Gloves		Daily Activity Logs (field notebooks)
	Combustible Gas Indicator **(if required by SSHASP)**		Chain-of-Custody Forms
	Portable Photoionization Detector (PID **(if required by SSHASP)**		Request for Analysis Forms
	Flame Ionization Detector (FID) **(if required by SSHASP)**		Sample Collection Log(s)
	Blue Ice or equivalent		Variance Log(s)
	Plastic Sheet		Custody Seals(s)
	Daily Activity Logs (field notebooks)		Unique Sample Stickers
	Chain-of-Custody Forms		Sample Labels
	Request for Analysis Forms		
	Sample Collection Log(s)		
	Variance Log(s)		
	Custody Seals		
	Unique Sample Stickers		
	Sample Labels		

Other: (Any additional supplies listed in associated procedures or SSHASP, as needed).

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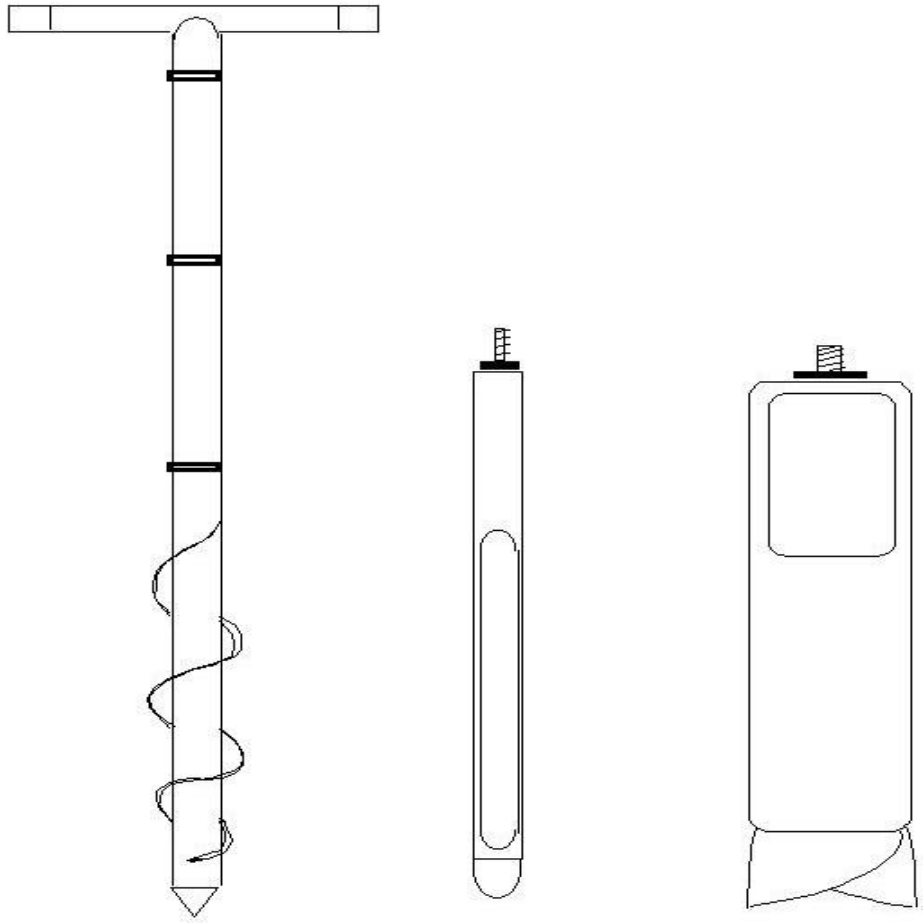
THREE TYPES OF AUGERS



Sampling Assembly | **Thin-walled Sampler** | **Auger Bucket**

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