

Soil Sampling & Disposal

	Description of Change	Reason for Change
1.	Section 2.3, added procedure RA-432, Procedures Guiding the Unanticipated Discovery of Cultural Resources and Human Remains.	Procedure RA-432 is referenced later in the Soil Sampling and Disposal Procedure.
2.	Section 3.2 added the definition for cultural resource and renumbered subsequent items in the section.	To explain what a cultural resource is.
3.	Section 5.1 Item 1, added a CAUTION Box.	Soil Sampling and other ground disturbances can identify and/or uncover subsurface anomalies that may not be utilities. For example, the unanticipated discovery of cultural resources and/or human remains could occur during soil sampling. The language added to the procedure instructs personnel how to respond if there is an anomaly or unanticipated discovery.

Department Acknowledgments:

EHS
EHS ENGINEERING
EHS ENGINEERING ENV
EHS ENGINEERING MCA
EHS ENGINEERING RAD
EHS ENGINEERING SAFETY
EHS ENV ENGINEERING TECH
EHS LICENSING
EHS OPERATIONS
ELR-DIKE
ELSD CONTRACTOR
MAINT MANAGERS
NF PMO
T/S MODIFICATIONS ENGINEER
T/S R/E
URRS ENGINEERING TECHNICIAN
URRS MANAGERS

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1.0 PURPOSE AND SCOPE	
1.1	The purpose of this procedure is to protect against inadvertent release of contaminated soil to the public or the environment and to ensure that regulatory requirements are met with regards to the handling and disposition of potentially contaminated soil generated within the property line of the Columbia site.
1.2	This procedure provides general guidelines for the sampling and disposition of potentially contaminated soil at the Columbia Fuel Fabrication Facility.
1.3	This soil disposal policy is applicable to all Contaminants of Potential Concern (COPC).
1.4	Disposition of waste asphalt and concrete will follow practices described by ROP-02-004, Abandonment or Disposition of Material or Equipment, and ROP-05-014, Performing Contamination Surveys of the Westinghouse Facility.
1.5	This procedure is applicable to all areas defined in RAS-136-1, Columbia Site Map of Operable Units. Soil disturbances conducted within an operable unit must be sampled in accordance with this procedure.

2.0 SUPPORTING DOCUMENTS	
2.1	Controlled Forms
	<ol style="list-style-type: none"> 1. RAF-136-1, Soil Sampling Results for Determination of Disposal 2. SYF-233-1, Excavation Permit 3. SYF-233-2, Excavation Daily Inspection
2.2	Controlled Sketches
	<ol style="list-style-type: none"> 1. RAS-136-1, Columbia Site Map of Operable Units
2.3	Reference Procedures
	<ol style="list-style-type: none"> 1. RA-432, Procedures Guiding the Unanticipated Discovery of Cultural Resources and Human Remains 2. RA-433, Environmental Remediation 3. RA-434, Environmental Data Management 4. RA-435, Conceptual Site Model Development 5. ROP-02-004, Abandonment or Disposition of Material or Equipment 6. ROP-05-014, Performing Contamination Surveys of the Westinghouse Facility 7. SYP-233, Excavation
	<ol style="list-style-type: none"> 8. TRN-170, Cultural Resource Training
2.4	Procedure Basis
	<ol style="list-style-type: none"> 1. Regulatory Requirements/MAQP <ol style="list-style-type: none"> A. This entire procedure is of regulatory significance.
	 <ol style="list-style-type: none"> B. This procedure is Safeguards Significant.
	<ol style="list-style-type: none"> 2. W-MS Documents <ol style="list-style-type: none"> A. NA 3. Miscellaneous <ol style="list-style-type: none"> A. SNM-1107, NRC Materials License

Denotes Change

2.4 Continued	B. SESDPROC-300, U.S. Environmental Protection Agency (EPA), Region 4, Science and Ecosystem Support Division, Operating Procedure for Soil Sampling C. CN-MC-19-005, CFFF Soil Baseline Activity Statistical Analysis
2.5	Commitment Summary
	1. CAPR Commitments <ul style="list-style-type: none"> • NA

3.0 TERMS AND DEFINITIONS

3.1	Refer to CA-042, Procedure Terms & Definitions for the following: <ol style="list-style-type: none"> 1. NA
3.2	The following Additional Terms/Definitions are used in this Procedure: <ol style="list-style-type: none"> 1. Contaminant of Potential Concern (COPC): Chemicals or pollutant substances used in past or present CFFF manufacturing operations that could contaminate or could have contaminated the soil or groundwater on CFFF property during a release. For CFFF, these include but are not limited to: uranium, Technetium (Tc-99), fluoride, nitrate, ammonia, Volatile Organic Compounds (VOC), and nickel. 2. Cultural Resource: Any prehistoric or historic remains or indicators of past human activities, including artifacts, sites, structures, landscapes, and objects of importance to a culture or community for scientific, traditional, religious, or other reasons 3. Operable Unit: A defined physical area, bounding CFFF operations. For CFFF, these include Northern Storage, Mechanical, Chemical, Wastewater Treatment, West Lagoons, Sanitary Lagoon, Southern Storage, Western Storage, and Western Groundwater Area of Concern areas. Reference RAS-136-1, Columbia Site Map of Operable Units.

4.0 ROLES AND RESPONSIBILITIES

4.1	Project Manager
	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center;">NOTE</p> <p>Request soil sampling as soon as possible. Laboratory result receipt for normal turnaround time (TAT) is 20 business days, or one month. Results can be received more quickly but are subjected to multiplier fees:</p> <ul style="list-style-type: none"> • 15 business days (3 weeks): 1.25x • 10 business days (2 weeks): 1.50x • 5 business days (1 week): 2.00x </div> <ol style="list-style-type: none"> 1. Ensure funding is allotted in soil removal project for analyses and potential disposal costs. 2. Contact EH&S Environmental Engineering to schedule sampling. <ul style="list-style-type: none"> • EHS will determine whether sampling should be conducted prior to, during, or following project ground disturbance • Soil disturbance under asphalt or concrete may require a contractor or Maintenance work order to remove the surface by mechanical means prior to sampling • Concrete may require Health Physics (HP) survey prior to removal • Sampling is preferably conducted on Tuesdays for transportation by regularly scheduled courier on Wednesdays • Sampling projects that disturb a large area or require deep excavations may require contracted services 3. Attach soil sampling result lab reports and completed RAF-136-1, Soil Sampling Results for Determination of Disposal, to applicable CCFs.

4.2	EH&S Environmental Engineering
	<ol style="list-style-type: none">1. Support project managers and samplers to develop and execute a soil sampling plan with disposal process.2. Obtain necessary samples and send to designated laboratory with chain of custody for analysis.3. Review laboratory results and determine course of action with EH&S Radiation Safety Engineering.4. Determine if any additional samples are required to determine extent of soil contamination condition.5. Complete RAF-136-1, send to Project Manager, and submit to EH&S Licensing for Decommissioning file.
4.3	EH&S Radiation Safety Engineering
	<ol style="list-style-type: none">1. Review radiological laboratory results.2. Determine course of action with EH&S Environmental Engineering.
4.4	EH&S Safeguards
	<ol style="list-style-type: none">1. Review laboratory results with consideration to CN-MC-19-005, CFFF Soil Baseline Activity Statistical Analysis.2. Determine need for uranium accountability and associated requirements.
4.5	EH&S Licensing
	<ol style="list-style-type: none">1. Make sure completed forms, RAF-136-1, Soil Sampling Results for Determination of Disposal, with necessary attachments, are retained according to EH&S record keeping and Decommissioning requirements.
4.6	EH&S Operations
	<ol style="list-style-type: none">1. Survey concrete prior to soil excavation, upon request.<ul style="list-style-type: none">• Submit results of survey to Project Manager and EH&S Environmental Engineering for determination of disposal path

5.0 INSTRUCTIONS

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5.1 Representative Sampling

1. A sampling plan must be drawn and approved by EHS Environmental Engineering prior to sampling.
 - This plan will be documented on RAF-136-1, Soil Sampling Results for Determination of Disposal
 - This plan will consider analyses of COPCs in the impacted operational unit (OU), referenced in RAS-136-1, Columbia Site Map of Operable Units

NOTE

Review SYP-233, Excavation, prior to sampling. An excavation permit and daily inspection may be required.

CAUTION

If soil sampling activities identify an unknown anomaly in an area of the site, **STOP WORK** and contact EHS Environmental Engineering for evaluation per procedure RA-432, Procedures Guiding the Unanticipated Discovery of Cultural Resources and Human Remains. Typical cultural resources that may be found at the CFFF site are included in TRN-170, Cultural Resource Training. An unusual object or soil deposit should be assumed to be a cultural resource until determined otherwise by qualified personnel as described in RA-432. Failure to comply could result in the improper handling of a cultural resource or human remains.

2. Sampling should meet requirements of U.S. Environmental Protection Agency (EPA), Region 4, Science and Ecosystem Support Division, Operating Procedure for Soil Sampling (SESDPROC-300).
 - Gloves must be changed between each sample
 - Reusable equipment must be rinsed clean between each sample
 - Additional requirements will depend upon needed analyses
3. Determine number of samples required for the sampling campaign to be representative of the soil to be excavated.
 - In the event of soil sampling by borings or auger:
 - For borings deeper than 4 feet, take samples in 2 foot increments
 - For borings less than 4 feet deep, a composite sample can be taken in lieu of incremental sampling
 - In the event of soil sampling by container:
 - Representative samples would be best obtained before **OR** while filling the container

5.2 Analyses

1. COPC will be analyzed according to the following methods and minimum detection levels (MDL):

Parameter	Method	MDL
Moisture Content	ASTM D 2216	n/a
Isotopic Uranium	DOE EML HASL-300	1.0 pCi/g
Tc-99	DOE EML HASL-300	5.0 pCi/g
Nitrate	SW846 9056A	0.5 mg/kg
Fluoride	SW846 9056A	0.5 mg/kg
Ammonia	EPA 350.1	1.0 mg/kg
VOC	SW846 8260D	(varies)
Nickel	SW846 3050B/6010D	200 mg/kg

- Additional methods or analyses may be required
2. Results will be submitted to EH&S Radiation Safety Engineering, Environmental Engineering, and EH&S Safeguards for review.

5.3 Determination of Disposition

1. EHS Engineering will compare soil sample results to decision making tables in RA-433, Environmental Remediation, to determine disposition.
- A. Sampled soil, before excavation (in ground).
- Soil above industrial screening levels (ISL) must be excavated for Low Level Radioactive Waste (LLRW) disposal
 - Soil above residential screening levels (RSL) outside the Controlled Access Area (CAA) can be excavated for LLRW disposal **OR** left in place with restricted access
 - Soil with restricted access must be set up on PM for routine inspection
 - Soil less than ISL inside the CAA may be left in place
 - Follow required actions in RA-433
- B. Excavated soil (containerized).
- Excavated soil contaminated at 30 pCi/g total uranium or greater will be disposed as LLRW
 - Contact the URRS Engineering Technician for guidance on disposal accommodations, whether by drums or intermodal container(s)
 - Excavated soil with < 30 pCi/g total uranium content **AND** > RSL can be released to a C&D landfill for burial
 - Excavated soil with < 30 pCi/g total uranium content **AND** < RSL can be free-released

5.3 Continued	Sample Results	Location on Property	Excavation Required? Y or N	Destination of Excavated Soil
	> ISL	Outside OR Inside CAA	Y	LLRW
	> RSL; > 30 pCi/g; < ISL	Inside CAA	N	Left in place OR LLRW
	> RSL; > 30 pCi/g	Outside CAA	Y	LLRW
	> RSL; < 30 pCi/g	Inside CAA	N	Left in place OR C&D Landfill
	> RSL; < 30 pCi/g	Outside CAA	N	Left in place with Restricted Access OR C&D Landfill
	< RSL; < 30 pCi/g	Outside OR Inside CAA	N	Left in place OR Free-Release

2. Sampling plan, location, results and disposal decisions will be documented on RAF-136-1 and retained for life of plant.

- A copy of the completed form, with required attachments, will be documented in applicable CCFs **AND** will also be submitted to EH&S Licensing for Decommissioning files