

# COLLECTION OF FLOOR/EQUIPMENT RINSATE SAMPLES

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TITLE Approved By  
COLLECTION OF FLOOR/EQUIPMENT  
HOT WATER RINSATE SAMPLES \_\_\_\_\_ / /  
(Name of Approver) (Date)

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**ADMIN RECORD**

REVIEWED FOR CLASSIFICATION/UCM  
By George H. Kibick  
Date 5/29/93 UNW

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## 2.0 PURPOSE AND SCOPE

This Standard Operating Procedure (SOP) describes procedures that will be used for the collection of hot water rinsate samples from the Floor/Equipment Hot Water Rinsate Sample Collection System developed for the Operable Unit 15 (OU 15) Phase I RCRA Facility Investigation/Remedial Investigation (RFI/RI), as described in the Final Phase I RFI/RI Work Plan for Operable Unit 15 Inside Building Closure. This SOP also describes personnel responsibilities and qualifications, sample collection and preservation procedures, quality assurance/quality control (QA/QC), and documentation requirements that will be used for field data collection activities in order to attain acceptable standards of accuracy, comparability, representativeness, and completeness.

## 3.0 RESPONSIBILITIES AND QUALIFICATIONS

All personnel performing these procedures are required to have appropriate health and safety training as specified in the Site-Specific Health and Safety Plan, Implementation of Phase I RFI/RI Work Plan for Rocky Flats Plant Operable Unit 15, the EG&G Health and Safety Practices manual and the Rocky Flats Plant Environmental Restoration Health and Safety Program Plan. In addition, all personnel will have a complete understanding of the procedures described within this SOP and receive specific training regarding these procedures.

Personnel performing hot water rinsate sample collection activities will be engineers, scientists, or field technicians who have completed the required training. Project training requirements are listed in the OU 15 Site-Specific Health and Safety Plan. All field personnel will also complete training on the procedures described in this SOP and those incorporated by reference.

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### 4.0 REFERENCES

#### 4.1 SOURCE REFERENCES

The following is a list of references reviewed prior to the writing of this procedure

DOE 1987 The Environmental Survey Manual DOE/EH-0053, Volumes 1-4  
U S Department of Energy August 1987

Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA EPA/540/g-89/004, U S Environmental Protection Agency Interim Final October 1988

RCRA Investigation Guidance U S Environmental Protection Agency Interim Final May 1989

Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846  
U S Environmental Protection Agency November 1986

#### 4.2 EG&G ROCKY FLATS INTERNAL REFERENCES

Related EG&G SOPs cross-referenced by this SOP are as follows

- SOP FO 3, General Equipment Decontamination
- SOP FO 7, Handling of Decontamination Water and Wash Water
- SOP FO 13, Containerization, Preserving, Handling, and Shipping of Soil and Water Samples
- SOP FO 14, Field Data Management
- SOP SW 2, Field Measurement of Surface Water Field Parameters

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The following documents are also referenced by this SOP

Final Phase I RFI/RI Work Plan for Operable Unit 15 Inside Building Closure,

Site-Specific Health and Safety Plan, Implementation of Phase I RFI/RI Work Plan for Rocky Flats Plant Operable Unit 15,

EG&G Health and Safety Practices, and

Rocky Flats Plant Environmental Restoration Health and Safety Program Plan

### 5.0 METHODS

#### 5.1 SAMPLING OBJECTIVES

The overall objective of this sampling SOP is to meet the performance requirements pursuant to the OU 15 Work Plan. The OU 15 Work Plan includes the environmental investigation and assessment of six rooms within Buildings 447, 865, 881, and 883. The assessment portion of the OU 15 Work Plan includes 1) qualitative and quantitative analysis of floor and equipment surface contamination, 2) analysis of potential migration pathways, and 3) evaluation of health and safety risks within the rooms.

#### 5.2 HOT WATER RINSATE SAMPLE COLLECTION SYSTEM

The hot water rinsate sample collection system designed for use during the OU 15 field investigations consists of a series of modular components, which are divided into two major groups. The first equipment group is comprised of a spray applicator and vacuum head, an interceptor can/receiver, and associated connecting hoses and fittings. A set of this equipment will be dedicated to each of the Individual Hazardous Substance Sites (IHSSs) to be sampled using this system. The second equipment group consists of a hot water reservoir and heater, a High Efficiency Particulate Air (HEPA) vacuum unit, an activated



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can/receiver is conveyed by 1-1/2 inch flexible vacuum hose (45 feet in length) to the HEPA vacuum component

- The HEPA vacuum unit is outfitted with a HEPA filter cartridge and provides the vacuum capacity for the entire system. The HEPA vacuum component is located on top of a open-top 55-gallon drum, which provides vapor condensate surge capacity and is situated on the four-wheel two-drum cart. A new HEPA filter cartridge will be used for each IHSS sampled with the system.
- The second position on the four-wheel drum cart will be occupied by the activated carbon adsorption component. Exhausted air from the HEPA component will be vented to the activated carbon adsorption component.
- The activated carbon adsorption unit consists of a 55-gallon canister filled with activated carbon. The carbon canister, which weighs approximately 325 pounds, is an air scrubbing, vapor phase carbon adsorption unit, which has low pressure drop characteristics (0.5 inches of water) and is of a radial diffusion design.

### 5.3 SAMPLING PROCEDURE

This SOP specifically addresses the following OU 15 sampling activities

- sampling source water,
- sampling floor surfaces,
- sampling laboratory equipment surfaces, and
- sampling areas surrounding specific equipment outlined in the OU 15 Work Plan

#### 5.3.1 Sample Location

Floor or equipment surface rinsate samples will be collected from each of the six areas to be evaluated, as per the OU 15 Work Plan. Floor areas, as well as areas

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around specific equipment components, will be systematically sampled by the collection of a hot water rinsate samples. Field duplicate samples, equipment blanks, and field blank samples will be collected from each of the areas to be sampled, as described in section 7.0

The location from which rinsate samples will be taken are defined and specified in the OU 15 Work Plan. The sample location will be entered into the field log and on the sample custody sheet at the time of rinsate collection.

### 5.3.2 Constituents to be Analyzed

Floor and equipment surface rinsate samples will be analyzed for the constituents listed in the OU 15 Work Plan for the respective IHSSs.

### 5.3.3 Sample Designation

Surface samples collected from floor areas and designated equipment will be assigned a sequential number based on the order in which they are collected. Each location will be marked on a facility diagram, measured relative to site structures, and described in a designated field book. A block of sample numbers will be assigned by Environmental Restoration Sample Management in order to maintain consistency with the Rocky Flats Environmental Data System (RFEDS) sample numbering system. Typically RFEDS sample numbers consist of a two digit sample prefix which indicates the sample type, a five digit serial number which identifies the sample, and a suffix which identifies the contractor collecting the sample.

### 5.3.4 Personal Protective Equipment

Personnel performing the rinsate sample collection will be properly attired with the personnel protective equipment (modified Level D, Anti-C, etc.) systems specified in the OU 15 Site-Specific Health and Safety Plan. When rinsate

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sample collection is performed in radiologically controlled areas, an EG&G Radiation Protection Technologist will assess each entry and exit from the OU 15 Work Plan sample collection areas

### 5.3.5 Sample Collection

Collection of representative rinsate samples after pressurized application requires that a reliable SOP be written and implemented. The procedures described in this section will be utilized to collect samples from the rinsate collection interceptor container. For the protection of sample integrity, latex gloves must be worn by the samplers at all times during the sample collection process. To avoid contaminating the sample, the inside of the cap and sample bottle must not be touched nor allowed to touch interceptor container, floor or equipment surfaces, and other materials.

Sample containers will be precleaned or purchased precleaned before use. All containers, preservatives, preparation requirements and holding times will conform to EPA requirements as listed in Table 2. Additional information on these requirements may be found in EG&G SOP FO 13.

Sampling at each location will be specific to the needs and requirements for that area as determined by the OU 15 Work Plan. The full set of parameters listed in Table 1 may be modified according to changes in the OU 15 Work Plan and as authorized by Project Management. A step by step description of the sampling procedure is provided in the following subsections.

5 3 5 1 Prior to each sampling event, weigh the empty rinsate collection system liner bag and twist-tie. This weight determination will be used to calculate the mass of rinsate collected during each sample collection activity. Log the empty liner bag weight shall be logged on the sample collection form (included as Appendix A) and in the field log book.

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5 3 5 2 Shut-off power to the vacuum system by flipping the on/off switch to the off position and wait five seconds to allow the pressure within the rinsate collection system to return to atmospheric. Then remove the top of the interceptor container. With the top of the interceptor removed, the sample collection bag (liner) will be exposed. Remove the liner bag with the rinsate contents. Twist the top of the bag liner until it is sufficiently closed to seal the rinsate contents from the ambient room atmosphere and secure it with a twist-tie.

5 3 5 3 Weigh the rinsate sample bag liner with the collected liquid and enter weight on sample log sheet. Subtract the empty weight of the bag liner from the combined weight to determine the weight of the collected liquid rinsate sample and log in sample log sheet. The weight of the rinsate sample can then be used to determine an approximate volume of liquid collected.

5 3 5 4 Sample collection will require two people to perform the task. The volatile organic compound (VOC) and semi-VOC samples will be collected first. The rinsate sample bag liner is equipped with a valve assembly that will allow for liquid sample transfer to the appropriate sample collection container, as specified in EG&G SOP FO 13.

One person will hold the rinsate sample collection bag liner and operate the valve assembly. The second person will manipulate the sample containers for the purpose of sample collection by removing the cap of the specified container and placing the container under the valve assembly.

Open the valve assembly and allow the liquid to fill the sample container. Hold the bottle in one hand and the cap in the other, right side up (threads down), while collecting the sample. Close the valve when the sample container is full. If the cap liner or



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used rinsate collection liner bags and potentially contaminated sampling equipment. The solid form wastes will be managed in accordance with direction from EG&G Waste Technical Support. The storage and/or disposal options for these wastes are based on whether the wastes are radioactively contaminated and whether they are saturated with rinse water. In accordance with direction from EG&G Waste Technical Support, the liquid form wastes will initially be stored in 55-gallon bung drums labelled "characterization pending upon results of analysis". These liquid wastes will be managed based on the analytical results from the rinsate samples, once they are received.

Excess rinsate liquid will be transferred from the collection liner bags to a 55-gallon bung drum in a manner similar to the sample collection procedure described in Section 5.3.5.4. One person will hold the rinsate sample collection bag liner and operate the valve assembly. The second person will manipulate the position of the bag and align it with the bung opening on the drum. A funnel will be used to direct the liquid flow into the drum. Once the valve assembly and bung opening are properly aligned, the valve assembly should be opened to allow the liquid to flow into the drum.

### 6.0 DECONTAMINATION

Equipment, including field instrumentation and non-dedicated hoses, will be decontaminated after each area/room sampling effort. Decontamination procedures are presented in Sections 5.5 and 5.6 of EG&G SOP FO 3.

### 7.0 QUALITY ASSURANCE/QUALITY CONTROL

QC samples for the floor/equipment hot water rinsate sampling fall into four categories:

- Hot Water Source (prior to being used for rinsate generation)
- Sample Duplicate

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- Equipment Blank
- Trip Blank

EG&G SOP FO 13 describes the general handling of samples. The OU 15 Work Plan specifies sample frequencies. Sample collection procedures will be the same as those described in Section 5.0 of this SOP for source water, equipment blank and duplicate samples.

Hot water source samples will be collected by field personnel to measure the quality of the water used to generate the hot water rinsate. Field personnel will collect these samples directly from the fresh water source each time the hot water rinsate system is filled with fresh water, using the same preservatives and types of containers required for the floor/equipment surface samples.

Duplicate samples will be used as a relative measure of the precision of the sample collection process. Field personnel will collect these samples at the same time, using the same procedures, equipment, preservatives and types of containers required for the floor/equipment surface samples.

Field personnel will collect equipment blanks from final decontamination rinsate to evaluate the success of their decontamination efforts on non-dedicated sampling equipment. Field personnel will obtain these samples by rinsing cleaned equipment with distilled water prior to sample collection, and placing the rinsate in the appropriate sample containers using the same preservatives required for the floor/equipment surface samples.

Trip blanks consisting of deionized water will be prepared by a laboratory technician and will accompany each shipment of water samples sent for volatile organic analysis. Field personnel will package and store these samples with the group of samples with which they are associated. Analysis of the trip blanks will serve to identify the migration of volatile organics or other problems associated with shipment, handling or storage of samples.

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### 8.0 DOCUMENTATION

A permanent record of the implementation of this SOP will be kept by documenting field (room/area) observations and data on the source of hot water, volume of hot water used, volume of rinsate sample collected, and parameters for which the sample was collected. All information will be entered on the hot water rinsate sampling log sheet. Observations and data will be recorded with black waterproof ink. Field logbooks and daily log sheets for sampling will be utilized to summarize the daily field (room/area) activities and to document project information not required by field forms. Initials of the individual entering the information onto the form(s) shall be written next to each entry as it is made. All field documentation will be transferred to EG&G on a weekly basis during the conduct of the field investigations. Documentation of field personnel training will be maintained as described in the OU 15 Site-Specific Health and Safety Plan.

**TABLE 1**  
**SAMPLE PARAMETERS AND ORDER OF FIELD COLLECTION**

- 1 VOC's
- 2 Semi VOC's
- 3 Metals (dissolved)
- 4 Cyanide
- 5 Radionuclides (dissolved)

**TABLE 2**  
**CONTAINERS, PRESERVATIVES, AND HOLDING TIMES**

<u>Parameter</u>	<u>Container</u>	<u>Preservative</u>	<u>Holding Time (Days)</u>
TCL VOCs	2 glass 40-ml vials w/Teflon-lined silicon rubber septum	Cool, 4°C <sup>(a)</sup> , HCL to pH < 2	7 days 14 days
TCL BNA (Semi-VOCs)	Glass-Amber <sup>(b)</sup> /1 x 4 L	Cool 4°C	7 days until extraction, 40 days after extraction
TAL Metals (dissolved)	Polyethylene/1 x 1 L	Filter <sup>(c)</sup> , HNO <sub>3</sub> to pH < 2, Cool, 4°C	180 days <sup>(d)</sup>
Cyanide	Polyethylene/1 x 1 L	NaOH to pH > 12 <sup>(e)</sup> , Cool, 4°C	14 days
Radionuclides (dissolved)	Polyethylene/6 x 1 L	Filter <sup>(c)</sup> HNO <sub>3</sub> to pH < 2	180 days

<sup>(a)</sup> Add 0.008% sodium thiosulfate (Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>) in the presence of residual chlorine

<sup>(b)</sup> Container requirement is for any or all of the parameters given

<sup>(c)</sup> A 0.45-micron filtering apparatus will be used

<sup>(d)</sup> Holding time for mercury is 28 days

<sup>(e)</sup> Use ascorbic acid only if the sample contains residual chlorine. Test a drop of sample with potassium iodine-starch test paper. Blue color indicates need for treatment. Add ascorbic acid, a few crystals at a time until a drop of sample produces no color on the indicator paper, then add an additional 0.6 g of ascorbic acid for each liter of sample volume.

**TABLE 3  
HOT WATER RINSATE FIELD QC SAMPLE FREQUENCY**

Sample Type	Type of Analysis	Frequency
Duplicates <sup>1</sup>	Organics	1/10
	Radionuclides	1/10
	Inorganics	1/10
Field Preservation Blanks	Organics	NA
	Radionuclides	NR
	Inorganics	NR
Equipment Rinsate Blanks <sup>2</sup>	Organics	1/20
	Radionuclides	1/20
	Inorganics	1/20
Trip Blanks	Organics	1/20
	Radionuclides	NR
	Inorganics	NR

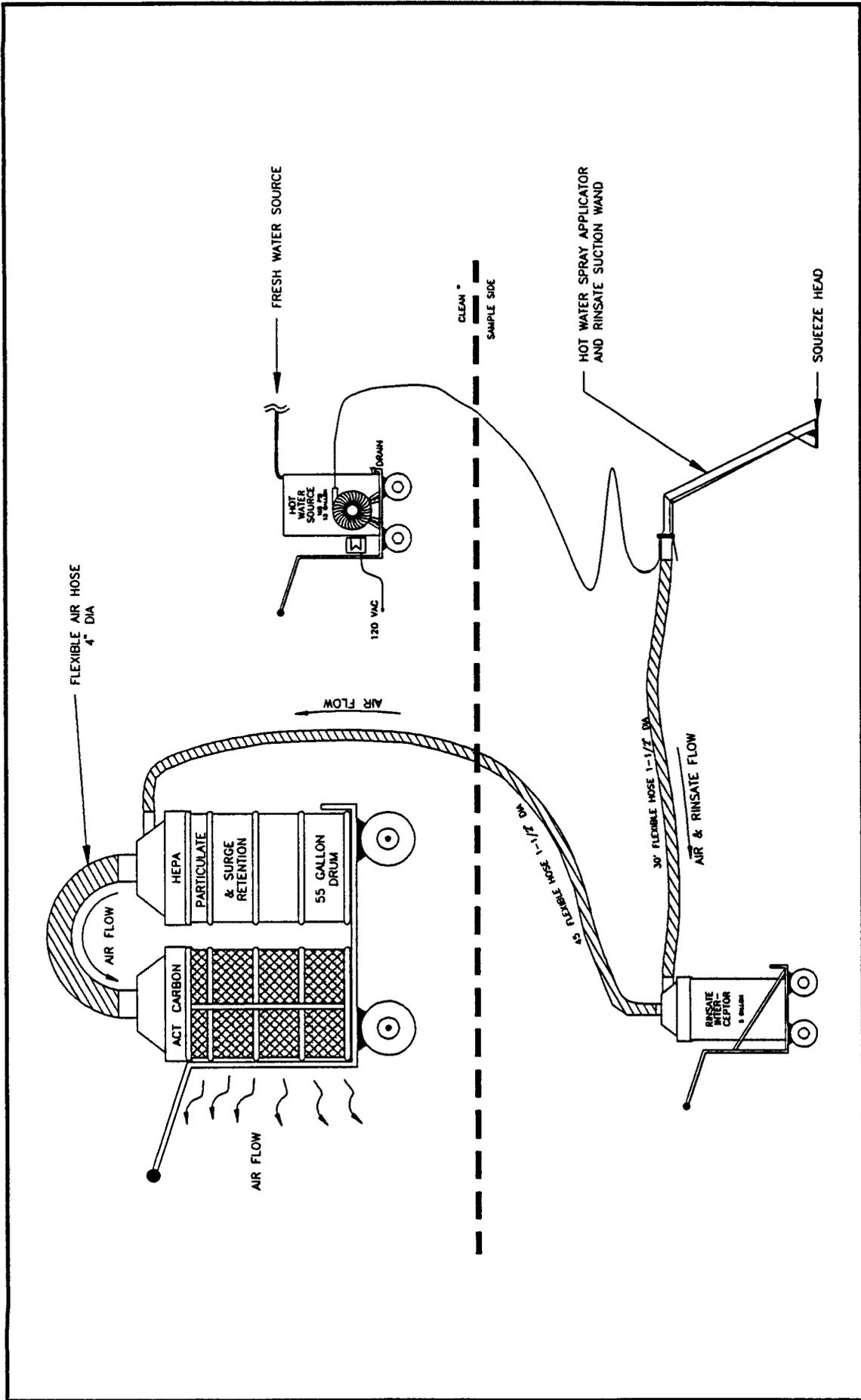
NA = Not Applicable

NR = Not Required

1/10 = one QC sample per ten samples collected

<sup>1</sup> Duplicate samples will be collected at a minimum of 1/10 or once per day of sampling, whichever is more frequent

<sup>2</sup> Equipment rinsate blanks will be collected at a minimum of 1/20 or once per day of sampling, whichever is more frequent



<b>FIGURE</b> <h1 style="text-align: center;">1</h1>	<b>DESIGNED</b> DRAWN CHECKED DATE JOB NO FILENAME	DAH SRL 04/01/93 R30502 0 STM-CLNR	 <b>EB&amp;B ROCKY FLATS</b> ROCKY FLATS PLANT GOLDEN, CO  OPERABLE UNIT 15 - HOT WATER RINSATE COLLECTION & SAMPLING SYSTEM	 <b>ERM</b> ERM - EnviroClean Rocky Mountain, Inc 5950 South Willow Drive Suite 206 Greenwood Village, Colorado 80111 (303) 694-7390
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