



# PROCEDURE

**SURFACE WATER DATA  
COLLECTION ACTIVITIES**

RMRS/OPS-PRO.126

Revision 0

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## 1.0 PURPOSE

The purpose of this procedure is to describe the techniques and methods used in the performance of field activities at surface water collection sites at the Rocky Flats Environmental Technology Site (RFETS). Included are initial site evaluation procedures and an outline of the order of data collection activities to be performed at each site by a two or three member field crew. This procedure also includes personnel responsibilities and qualifications, quality assurance/quality control (QA/QC), and documentation requirements that will be used for collection activities in order to attain acceptable standards of accuracy, comparability representativeness, and completeness.

## 2.0 SCOPE

This procedure is applicable to all field sampling activities at surface water collection sites at RFETS.

## 3.0 RESPONSIBILITIES AND QUALIFICATIONS

The project manager or task leader is responsible for assigning project staff to complete surface water data collection activities. The task leader is also responsible for ensuring that this and other appropriate procedures are followed by project personnel.

Personnel performing surface water sampling activities will be geologists, hydrologists, engineers, or field technicians with an appropriate amount of applicable field experience or on-the-job training under supervision of another qualified person.

## 4.0 REFERENCES

### 4.1 Source References

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

DOE Order 5400.1, *General Environmental Protection Program*. November 1988.

*Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA*. Interim Final. EPA/540/G-89/004, October 1988.

*RCRA Facility Investigation Guidance*. U.S. Environmental Protection Agency, Interim Final. May 1989.

*Test Methods for Evaluating Solid Waste*. Physical/Chemical Methods, SW-846. EPA. September 1986.

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*NPDES Compliance Sampling Inspection Manual*. U.S. Environmental Protection Agency, MCD51. 1979.

*Final Rocky Flats Cleanup Agreement*. Federal Facility Agreement and Consent Order, CERCLA-VIII-96-21 and RCRA (3008(h)-VIII-96-01). July 19, 1996.

## 4.2 Internal References

Related procedures cross-referenced by this procedure are as follows:

- SOP FO.6, *Handling of Personal Protective Equipment*
- SOP FO.10, *Receiving, Labeling, and Handling Environmental Materials Containers*
- SOP FO.13, *Containerizing, Preserving, Handling, and Shipping of Soil and Water Samples*
- SOP FO.14, *Field Data Management*
- SOP FO.19, *Basic Laboratory Work*
- RMRS/OPS-PRO.081, *Surface Water Sampling*
- RMRS/OPS-PRO.093, *Discharge Measurements*
- RMRS/OPS-PRO.094, *Field Measurement of Surface Water Field Parameters*
- RMRS/OPS-PRO.112, *Handling of Decontamination Water and Wash Water*
- RMRS/OPS-PRO.127, *General Equipment Decontamination*

## 5.0 PROCEDURE

### 5.1 Preparations For Field Activities

To prepare for the daily field data collection activities, SOP FO.19, *Basic Laboratory Work*, will be followed. In addition, the field teams will verify that items required in the field equipment checklist (Form SW.1A) are in the field vehicle and are in proper working order before leaving for the field each day.

### 5.2 Site Evaluation

Upon arrival at the field data collection site, the field crew will park the field vehicle on the most level ground available, and as close to the surface water site as is practical. The

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crew will review the sample site field folder to locate the sampling point and to become familiar with historical conditions at the site.

The crew will select an area to perform decontamination procedures. The decontamination facility must be located between the sampling site and the field vehicle. Decontamination equipment will be placed on plastic sheeting a reasonable distance away from both the sampling site and the field vehicle, and will be arranged for efficient use.

The crew will carry the following to the data collection site: (1) instruments for measuring in-stream water quality parameters and temperature, (2) equipment for measuring discharge appropriate to the flow regime, and (3) water sampling equipment and containers. However, typically, the crew will be able to work directly from the field vehicle. In this case, the crew will proceed to the stream or data collection point.

The sampling team will perform field parameter measurements as described in RMRS/OPS-PRO.094, *Field Measurement of Surface Water Field Parameters*. The team will collect representative water quality samples as outlined in RMRS/OPS-PRO.081, *Surface Water Sampling*, and will perform discharge measurements as described in RMRS/OPS-PRO.093, *Discharge Measurements*. Water quality samples will always be obtained before discharge measurement. The proper sequence for these procedures is addressed in Section 5.3.

### 5.3 Data Collection

A suggested sequence for data collection and site activities is as follows:

- Dress in appropriate personal protective equipment (PPE).
- Set up decontamination line.
- In accordance with the field folder, RMRS/OPS-PRO.081, *Surface Water Sampling*, and RMRS/OPS-PRO.093, *Discharge Measurements*, a technician will select and assemble water sampling and discharge measuring equipment. The equipment will be arranged conveniently on plastic sheeting.
- A technician will record site I.D., date, names of party members, weather conditions, and air temperature.
- A technician will observe and record site-specific conditions which impact selection of flow measurement or water sampling techniques.
- A technician will evaluate the site and determine the point at which sampling and discharge measurements will be accomplished, as per guidelines in

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RMRS/OPS-PRO.081, *Surface Water Sampling* and RMRS/OPS-PRO.093, *Discharge Measurements*.

- A technician will measure and record the water temperature in the field logbook, and will set up the dissolved oxygen (D.O.) meter for in-situ measurement, if required. The D.O. probe will be calibrated, as described in RMRS/OPS-PRO.094, *Field Measurement of Surface Water Field Parameters*. The D.O. will then be measured and recorded in accordance with RMRS/OPS-PRO.094.
- A technician will assemble, check and/or calibrate the pH meter and conductivity meter as described in RMRS/OPS-PRO.094, *Field Measurement of Surface Water Field Parameters*. A technician will then measure pH, specific conductance, alkalinity, and other field parameters, as required, and filter samples as required in RMRS/OPS-PRO.094 and RMRS/OPS-PRO.081, *Discharge Measurements*. Field parameter measurements and sampling times will be recorded on the field form.
- If the water is to be sampled for VOCs, Cyanide, or BNA analysis, a technician will collect a representative sample from the stream to be analyzed for Total Residual Chlorine. This is needed to determine preservation requirements for those samples. Total Residual Chlorine measurements will be made in accordance with RMRS/OPS-PRO.094, *Field Measurements of Surface Water Field Parameters*.
- A technician will then employ the appropriate method to collect representative water quality samples from the stream in accordance with RMRS/OPS-PRO.081, *Surface Water Sampling*, and will perform the remaining field parameter measurements. A technician will record the sample time, to the nearest five minutes, and carry the water samples to the decontamination area.
- A technician will decontaminate and package the samples, according to SOP FO.13, *Containerizing, Preserving, Handling, and Shipping of Soil and Water Samples*.
- A technician will perform a pre-measurement spin test of the current meter, if it is to be used for discharge measurement, and will record the result of the spin test. This test will be performed in a place sheltered from the wind.

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- A technician will measure discharge by using the method appropriate to the flow regime, as described in RMRS/OPS-PRO.093, *Discharge Measurements*.
- A technician will perform a post-measurement spin test of the current meter, if it has been used for discharge measurement, and will record the result on the Surface Water Data Collection Field Notes.
- A technician will disassemble, decontaminate, and store the data collection instruments. Decontamination methods are detailed in RMRS/OPS-PRO.127, *General Equipment Decontamination*.
- Environmental liquids, including decontamination water, residual samples, and wash water will be handled as described in RMRS/OPS-PRO.112, *Handling of Decontamination Water and Wash Water*.
- Environmental materials will be handled in accordance with SOP FO.10, *Receiving, Labeling, and Handling Environmental Materials Containers*.
- Both technicians will survey the area to verify that all equipment has been returned to the vehicle.
- The technicians will perform personal decontamination in accordance with SOP FO. 6, *Handling of Personal Protective Equipment*, before entering the field vehicle or proceeding to the next data collection site or the base laboratory operation facility.

The foregoing sequence of data collection and site activities may vary with site conditions. For example, discharge may not be measured if there is no flow. However, field activities will be generally guided by the list, and a technician initiating a specific task will carry the task to completion.

## 6.0 QUALITY ASSURANCE/QUALITY CONTROL

Quality assurance (QA) and quality control (QC) activities will be accomplished according to applicable project plans as well as quality requirements presented in this procedure. Additional QA/QC requirements from the procedures cited above can be added if it is determined they are needed to ensure the quality of the data.

## 7.0 DOCUMENTATION

All field activities will be recorded in field logbooks or on field forms. The Surface Water Data Collection Form (Form SW.1A) is used to record surface water sample

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collection data. This form is generated by the field data capture program. Descriptions of problems encountered and deviations from the procedure will also be recorded.

The Surface Water Data Collection Form is used to record data collected at each site. The information on the form should be initialed. All data obtained in surface water data collection activities will be recorded in the surface water field note. The surface water data collection form also includes sections for sampling conditions, methods, and weather conditions. Field note entries will include, at a minimum the following information:

- Date and time of each entry or activity
- Names of field personnel
- Names of all visitors to the site during field activities
- Location of field activities
- Description of sampling conditions, location, method, sampler types, materials, and weather
- Field parameter measurements
- Discharge measurements and calculations
- List of analytes and preservatives
- Comments and observations

## 8.0 RECORDS

<u>Document</u>	<u>Record Type</u>	<u>Disposition</u>
Field Collection Form	Uncontrolled	• With SME
COC's (original)	QA/QC document	• With original analytical file held by ASD



Report Date:

Sample Contractor: AS

Collection Date/Time: \_\_\_\_\_

Sampler1: \_\_\_\_\_

Sampler2: \_\_\_\_\_

Sampler3: \_\_\_\_\_

Sample Event #:

Sample Type: NP

Project:

Disposition: \_\_\_\_\_

Location:

Sample QC:

Result Expected:

Sample QC Partner:

Event Comment: Baseline for sample

Field Measurement	Result	Unit	Derivation Code	Derivation Comment
TOTALIZER	_____	NO UNITS	LCD	_____

Line Item	Bottle Disposition	Collection Date/Time	Bottle Type	Volume	Preservative	Field Filtered	Matrix
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QC Signature/Date: \_\_\_\_\_

Last Date Updated: \_\_\_\_\_

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6.4.2 Use a forklift or other means to move the Type A IDM drums into the roll off container.

6.4.3 Arrange the Type A IDM drums, pallets, and metal bands in a planar array or as instructed by the CTR (or appointed responsible person) for the landfill site.

*NOTE: The landfill roll off container content weight limitation is 21,000 pounds. The overall gross weight may not exceed 54,000 pounds. Exceeding the weight limit is not an issue based on the weights of the individual drums.*

6.4.4 The Type A IDM drums are considered Non-Routine/Special landfill waste and require the following paperwork:

- Material Transfer and Disposal form (for entire IDM Type A population)
- Waste Acceptance Criteria form contained in 1-PRO-573-SWODP, "Sanitary Waste Offsite Disposal Procedures" (for entire IDM Type A population)
- Radiological Waste Release Evaluation (for entire IDM Type A population)
- Non-hazardous waste manifest for each roll off container

*Note: Each drum must be certified/authorized for disposal by the Waste Disposal Organization by physically verifying each drum and signing the manifest.*

6.4.5 Attach a copy of the Type A drum inventory to each manifest for each roll off container. Retain list of drums in each roll off container in the project files.

6.4.6 Daily, secure the gate on the roll off container.

6.4.7 Tarp the roll off container according to instructions as prescribed by the Contract Technical Representative for the landfill site.

6.4.8 Remove the tarp prior to shipment.

6.4.9 Schedule all landfill shipments through Contract Technical Representative or the Supervisor.

6.5 Dumping Type B Waste into Boxes Without Segregation of IDM (refer to 3.0 Definition) and No Drum Crushing Module

*NOTE: Only subject Type B IDM waste drums to this module after processing by Subsection/Module 6.2 or 6.3.*

6.5.1 Transport the IDM Type B drum with secured lid to the 904 Pad south end or Trench 1 for indoor processing.

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6.5.2-6.5.4

- 6.5.2 Have an approved inspected metal or wooden box (crate) staged per the WGI. Remove the "Radioactive Contamination Inside" label if present. Place a piece of PVC pipe in the corner of the crate to be used by Waste Inspection to verify no liquids.
- 6.5.3 Record the receiving box (crate) number and number of the drum to be consolidated on the Traveler in addition to Waste Inspection verification of crate.
- 6.5.4 Place absorbent in the box with the waste alternately layered or physically mixed with the IDM.

*Note: As a guideline, use Table 1 to determine the amount of absorbent to be added to IDM drums:*

Table 1

Condition of IDM	Results After Decanting	Bags of Abzorbit Per Drum
Saturated	Free Liquid Present	30 gal. - 5 bags 55 gal. - 10 bags
Moist	Possible Free Liquid Present	30 gal. - 2 bags 55 gal. - 5 bags
Dry	<u>No Free Liquid Present Upon Inspection</u> (Decanting <u>Not</u> Required)	1 bag per drum

- 6.5.5 For the half-size crates or full crates, open the drum and use a forklift with hydraulic grabber or a drum tipper to empty the contents into the box. If contents has already been placed onto the ground surface use a shovel or other means to containerize the material. If necessary for waste compacting, sawsall cut the rigid drum liners. Drums may also fit into the crate without size reduction.

*NOTE: The box weight limitation is 4,550 pounds. To ensure weight limitations are not exceeded, the final container shall be weighed prior to sealing container.*

- 6.5.7 Prior to sealing, boxes will undergo a "tilt process" overnight. Waste Inspection will observe daily no free liquids are present in the boxes. If free liquids are observed, the container will be identified with a Non-Conformance Report (NCR) as required by the Non-Conformance Report procedure (2-U76-WC-4030, "Control of Waste Nonconformances"). The process and container will be re-evaluated to identify the problem. To correct the specific condition, the container will be emptied and the material reprocessed (decanting, addition of absorbent, etc.) prior to repackaging. Determination will be made by Waste Certification if IDM waste meets criteria required for shipment to NTS.

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6.5.8 Seal the waste crate according to approved WGI and the on-site waste procedure, 4-D99-WO-1100, "Solid Radioactive Waste Packaging."

6.6 Dumping Type B Waste into Boxes With Segregation of IDM (refer to 3.0 Definition) and Drum Crushing Module

*NOTE: Only subject Type B IDM waste drum to this module after it has undergone processing by Subsection/Module 6.2 or 6.3.*

6.6.1 Transport the IDM Type B drum with secured lid to the 904 Pad south end for indoor processing.

6.6.2 Have an approved metal or wooden box (crate) staged on a scale with packaging materials per the WGI staged. Remove the "Radioactive Contamination Inside" label if present. Place a piece of PVC pipe in the corner of the crate to be used by Waste Inspection to verify no liquids.

6.6.3 Record the receiving box (crate) number and number of the drum to be consolidated on the Traveler in addition to Waste Inspection verification of crate.

6.6.4 Place absorbent as needed in the box with the waste alternately or physically mixed with the IDM.

*Note: As a guideline, follow Table 1 (refer to 6.5.4) guidance for adding absorbent.*

6.6.5 For a half-size or full size box, open the drum and use a forklift with hydraulic grabber or a drum tipper to empty the contents into the box. If necessary for waste compacting, sawsall cut the rigid drum liners. The IDM dirt and drum liner will be bulked into the box.

*NOTE: The box weight limitation is 4,550 pounds and will be monitored as 55-gallon and 30-gallon drums are bulked into each box. The box being filled will be positioned on a scale during operations.*

6.6.6 Per OPS-INSTR.009, "Building 991 Drum Cutting/Crushing Operations", crush the empty drum and place in the metal accumulation box, with drum lid and ring. Crushed drums can also be added to boxes containing IDM B.

*NOTE: Operator judgment shall determine whether or not absorbent needs to be added to boxes accumulating segregated metal (metal only). If residual moisture warrants the addition of absorbent, Operator judgment shall also determine the amount added.*

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- 6.6.7 Prior to sealing, boxes will undergo a "tilt process" overnight. Waste Inspection will observe daily no free liquids are present in the boxes. If free liquids are observed, the container will be identified with a Non-Conformance Report (NCR) as required by the Non-Conformance Report procedure (2-U76-WC-4030, "Control of Waste Nonconformances"). The process and container will be re-evaluated to identify the problem. To correct the specific condition, the container will be emptied and the material reprocessed (decanting, addition of absorbent, etc.) prior to repackaging. Determination will be made by Waste Certification if IDM waste meets criteria required for shipment to NTS.
  - 6.6.8 Seal the waste crate according to approved WGI and the on-site waste procedure, 4-D99-WO-1100, "Solid Radioactive Waste Packaging."
  - 6.6.9 Stage boxes with IDM bulk waste on the 904 Pad until a truck load is accumulated and/or until an off-site transport truck is available.
  - 6.7 Loading Type B Waste Boxes onto Trucks Module
    - 6.7.1 Transport the boxes with IDM bulk waste to the shipping location.
    - 6.7.2 Load the boxes into a truck for off-site transport. Only DOT trained personnel may load trucks for off-site transfers.
    - 6.7.3 If a truck is not available for off site transport, stage the boxes of IDM bulk waste on the 904 Pad until a truck is available.

## 7.0 RECORDS

All records generated while employing this WI will be retained as required by the referenced procedures or instructions; however, no records are generated as a result of this instruction.

8.0 REFERENCES

- 1-PRO-573-SWODP, Sanitary Waste Off-Site Disposal Procedure.
- 00-SWO-004, Handling Drums and Pallets in Poor Condition and Response to Spills of Investigative Derived Material.
- 3-PRO-140-RSP-09.03, Unrestricted Release of Bulk or Volume.
- 4-D99-WO-1100, Solid Radioactive Waste Packaging.
- 1-PRO-Q11-1221, Controls for Updating Waste Package Information in WEMS.
- WGI Number GI98OUOPS0519A, Disposing Type B IDM in Half Crates.
- WGI Number GI98OUOPS0521A, Disposing Type A IDM in Roll Off Containers.
- WGI Number GI98OUOPS0526A, Disposing Type B IDM in V-Crates.
- WGI Number GI98OUOPS0519D, Disposing Type B IDM in Half or Full Crates.
- WGI Number GI98OUOPS0519E, Disposing Type B IDM in Half or Full Crates.

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