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CORRES. CONTROL
OUTGOING LTR NO.

DE ORDER# 4700.1
94 RF 09541

DIST.	LTR	ENC
AMARAL, M.E.		
BURLINGAME, A.H.		
BUSBY, W.S.		
BRANCH, D.B.		
CARNIVAL, G.J.		
DAVIS, J.G.		
FERRERA, D.W.		
FRAY, R.E.		
GEIS, J.A.		
GLOVER, W.S.		
GOLAN, P.M.		
HANNI, B.J.		
HARMAN, L.K.		
HEALY, T.J.		
HEDAHL, T.		
HILBIG, J.G.		
HUTCHINS, N.M.		
JACKSON, D.T.		
KELL, R.E.		
KUESTER, A.W.		
MARX, G.E.		
McDONALD, M.M.		
McKENNA, F.G.		
MONTROSE, J.K.		
MORGAN, R.V.		
POTTER, G.L.		
PIZZUTO, V.M.		
RISING, T.L.		
SANDLIN, N.B.		
SCHWARTZ, J.K.		
SETLOCK, G.H.		
STEWART, D.L.		
STIGER, S.G.	X	
TOBIN, P.M.		
VOORHEIS, G.M.		
WILSON, J.M.		
Peterman, B.A	X	X
Tome, A.E.	X	X
CORRES. CONTROL	X	X
2 ADMN RECORD/080	X	X
TRAFFIC		
PATS/T130G		

CLASSIFICATION:

UCNI		
UNCLASSIFIED		
CONFIDENTIAL		
SECRET		

AUTHORIZED CLASSIFIER SIGNATURE

DOCUMENT CLASSIFICATION REVIEW WAIVER PER CLASSIFICATION OFFICE

IN REPLY TO RFP CC NO: N/A

ACTION ITEM STATUS
☐ PARTIAL/OPEN
☐ CLOSED

LTR APPROVALS:

ORIG & TYPIST INITIALS
AET:crw

1 of 88

EG&G ROCKY FLATS

EG&G ROCKY FLATS, INC.
ROCKY FLATS PLANT, P.O. BOX 464, GOLDEN, COLORADO 80402-0464 • (303) 966-7000

September 14, 1994

94-RF-09541

Vern F. Witherill
Acting Director for Decontamination
and Decommissioning Planning Division
DOE, RFFO

Attn: W. N. Fitch

COMPLETION OF MILESTONE 130030102 - TRD-058-94

Action: None Required

Enclosed is the draft Sampling and Analysis Plan for Pilot Project Number Five, Building 889. Submission of this plan completes milestone 130030102. This plan was originally due on August 15, 1994. It has been delayed due to the lack of contracted resources to develop the plan as had originally been anticipated and the need to closely coordinate development with the Waste Identification and Characterization, Sample Management Office, Field Sampling Team, and Statistical Analysis Organizations. Additional delay was caused by the search for a Sampling and Analysis Plan template that would expedite approval by all participating review organizations.

Although the draft report is being submitted behind the original schedule, the quality of the product has been enhanced by the close coordination with the above mentioned organizations. The Lessons Learned by the Decontamination and Decommissioning (D&D) Program in the development of this plan will make execution of this and future projects more efficient. As a result of coordination with the Waste Identification and Characterization organization, correspondence between the Department of Energy (DOE) and the Colorado Department of Health (CDH) was revealed which will greatly reduce the amount of sampling for hazardous substances that is required resulting in significant cost savings.

Should you have any questions, please contact Anthony Tome at extension 4072.

A. E. Tome

T. R. De Mass, P.E.
Senior Program Manager
Decontamination and Decommissioning

AET:crw

Orig. and 1 cc - V. F. Witherill

Enclosure:
As Stated

ADMIN RECORD

IA-A-000308

DRAFT
BUILDING 889 SAMPLING AND ANALYSIS PLAN

Rocky Flats Plant

U.S. DEPARTMENT OF ENERGY

Rocky Flats Plant
Golden, Colorado

SEPTEMBER, 1994

2/88

Effective Date: ____________________

APPROVED BY:

______________________________ ____________
D&D Project Manager Date

______________________________ ____________
Field Sampling Team Date

______________________________ ____________
Sample Management Office Date

______________________________ ____________
Quality Assurance Program Manager Date

______________________________ ____________
Waste Identification & Characterization Date

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LIST OF ACRONYMS

BNA	Base/Neutral/Acid
COC	Chain-of-Custody
DMP	Data Management Plan
EPA	Environmental Protection Agency
GRRASP	General Radiochemistry and Routine Analytical Services Protocol
LDR	Land Disposal Restrictions
PCB	Polychlorinated Biphenyl
QAA	Quality Assurance Addendum
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
SAP	Sampling and Analysis Plan
SVOA	Semi-volatile Organic Analysis
SVOC	Semi-volatile Organic Compound
TCLP	Toxicity Characteristic Leaching Procedure
VOA	Volatile Organic Analysis
VOC	Volatile Organic Compound

1.0 INTRODUCTION

EG&G Rocky Flats is preparing to decontaminate and remove excess equipment in Building 889 as a D&D pilot project. This document provides a means to identify hazardous materials to ensure compliance to applicable State and Federal environmental laws and statutes. Depending on the levels of hazardous waste contamination found, further sampling and changes to this plan may be required. Sampling in this plan is only for characterization purposes.

A separate plan developed by Radiological Engineering which addresses radiological sampling for building 889.

1.2 Background Building Information

Located on Central Avenue in the 800 area, building 889 has served primarily as a decontamination facility for uranium and beryllium contaminated equipment originating outside the PA. Size reduction and baling operations for contaminated materials were carried out on a regular basis in the building. HEPA filters were also crushed in the building as part of the size reduction operation. Operations were ceased in 1987 for building expansion. Due to problems with the exhaust air system and new filter plenum fire suppression problems, the building never became operational again.

A review of document CO-4022-D, Decontamination and Waste Processing (Building 889), indicates that steam and compressed air cleaning were the primary methods of decontamination. On an infrequent basis, caustic steam cleaning appears to have been used from the procedure. Decontamination was also accomplished using other unspecified hazardous chemicals including acids, caustics, and solvents. Specific chemicals listed in the procedure include Clayton Steam Cleaning Compound (Caustic) and Ospho Acid.

Process waste consisted of solids, liquids, and gases. Solid process wastes typically included crushed HEPA filters and size reduced materials. The solids were packaged in 4-foot by 4-foot by 7-foot crates and 55 gallon drums. Depending on the material, the packaged materials were sent to building 776 for final packaging, or building 664 for storage. Collected through floor drains, liquid process wastes gravity flowed to a two compartment 2000 gallon total capacity tank in building 886. Presently the tank is blanked off and operationally empty. Vapors from the decontamination process entered two floor exhaust pits and filtered in a plenum. From the plenum, the vapors were ducted through a 30 foot tall stack on the west side of the building.

Building records, waste stream and process knowledge, and WISRC books provide the basis for determining which hazardous constituents to sample for. However, because essentially all process buildings outside of the Protected Area used building 889 for decontamination, the probability of hazardous materials not normally associated with building 889 is quite high. This sampling plan addresses this problem ensures these hazardous materials are identified.

2.0 OBJECTIVE AND SCOPE

The objective of this Sampling and Analysis Plan (SAP) is to identify the specific analytical needs, sampling requirements, data handling requirements and associated quality assurance/control (QA/QC) requirements for building 889. The entire sampling and analysis process will ensure competent decision making for Hazardous materials decontamination requirements and final disposition of building 889, as well as surplus and scrap materials from the building.

Specifically, the scope and contents of this SAP will include:

- Defining appropriate field methods and screening criteria
- Identifying the locations and number of samples to be taken
- Describing the analytical requirements and appropriate methods
- Developing QA/QC requirements including data quality objectives
- Generating adequate information for characterization, storage and/or disposal purposes

3.0 HAZARDOUS MATERIAL IDENTIFICATION

Potential hazardous waste constituents for building 889 were identified through building documentation, WISRC Books, and process knowledge. Each source of information and the information obtained is detailed below in sections 3.1 to 3.3. Detailed documents containing records of equipment containing hazardous materials decontaminated in building 889 were not evident in a review of building records.

3.1 Building Documentation

Several building log books and records were found in room 101 in building 889. Detailed documents containing records of equipment containing hazardous materials decontaminated in building 889 were not evident in a review of the building records. D&D has determined that due to the lack of details in the building log books about the types of materials decontaminated and unknown hazardous waste constituents on the materials, building records are of limited use in establishing the sample program. Document CO-4022-D, Decontamination and Waste Processing (Building 889), has provided the most information on waste streams created by the building of all documents found in the building.

3.2 WISRC Books

Five versions of WISRC books were identified and obtained from Waste Identification and Control (WIC) for building 889. Versions 2.0, 3.0, 3.2, and 5.0 were reviewed for hazardous waste streams. A WISRC Book dated April 6, 1987 was also reviewed for the building but was not assigned a version number. None of the WISRC books contain a complete history of waste steams for the building. Thus, all prior versions of the books were reviewed to determine hazardous waste streams. From these WISRCs it has been found that in WISRC version 5.0, the current version, no hazardous waste streams currently exist in the building.

Versions 2.0, 3.0, and 3.2 identify the following EPA waste codes:

EPA Waste Code	Description
D006	Cadmium
D007	Chromium
D008	Lead
F001	Halogenated Solvents
F002	Halogenated Solvents
F003	Non Halogenated Solvents

What appears to be the first WISRC, which does not have a version number, dated April 6, 1987, indicates the following EPA waste codes through waste tank sample analysis:

D003	Reactivity
D004	Arsenic
D005	Barium
D006	Cadmium
D007	Chromium
D009	Mercury

D008	Lead
D011	Silver
F001	Methylene Cloride, 1,1,1-Tricloroethane
F002	Methylene Cloride
F003	Non Halogenated Solvents (Xylenes)
F005	Toluene
F006	Cadmium, Chromium, Nickel
F019	Chromium
P015	Beryllium
F024	Toluene
U002	Acetone
U028	bis(2-Ethylhexyl)Phthalate
U080	Methylene Cloride
U151	Mercury
U220	Toluene
U228	Tricloroethene

Specific values for these hazardous constituents are attached in Appendix C in the April 6, 1987 WISRIC.

3.3 Process Knowledge

Building operations were discussed with Mickey Martinez, the building Operations Manager during the late 1980s. The discussions reconfirmed the WISRC information with the addition of possible beryllium contamination. Some employees stated that the building was used for decontamination of materials that were in the 1969 fire. This information appears to be confirmed by the April 6, 1987 chemical anaylsis which indicates a Pu-239 level of 18 +/-4 pCi/ml. Other specific values are attached in Appendix C in the April 6, 1987 WISRIC.

4.0 SAMPLING APPROACH, LOCATIONS, AND REQUIREMENTS

Using process knowledge, WISRC and building history information, a non statistical methodology has been developed to identify hazardous material contamination in the building if it exists. If hazardous material contamination is found, this sampling plan will be revised to provide further information on the hazardous material contamination areal extent. A non statistical approach for selecting sample locations was decided upon due to the complexity of the sampling problem.

The number of characterization rinsates needed was determined by using process knowledge and WISRC information to qualitatively access the potential extent of contamination in the building. A total of six duplicates will be taken and their locations are identified below.

Figure 1-1 contains a layout of the rooms in building 889 that will be sampled and the sample locations.

4.1 Sample Locations

Sections 4.1.1 and 4.1.3 identify the locations for hazardous material sampling for room surfaces and equipment. Interior and non-accessible surfaces such as filter plenum ducts are not covered in this plan. Figure 4-1 contains the locations of the sampling points in the building.

4.1.1 Room Surfaces

Rooms 104, 105,106, 107, 108, and 112 require sampling to identify hazardous materials. Each room's sampling locations are explained below.

4.1.1.1 Room 104, Material Storage

Room 104's primary use was as a storage room. Some contamination may have been introduced if hazardous materials were stored in the room.

A total of three samples and one duplicate will be taken in the following locations:

1) On the bottom surface of the drain in the pit (Sample #1).

2) On the floor surface in the in the geometric center of the room excluding the pit offset (Sample #2), (Duplicate #1).

3) On the floor surface extending two feet into room 104 from room 106 centered mid way on the door opening (Sample #3).

4.1.1.2 Room 105, Plenum Room

Room 105's primary use was access to the filter plenum. Some contamination may have been introduced if hazardous materials entered the room through the door between room 104 and 105.

One sample will be taken in the following location:

1) On the surface of the floor one half the distance between the plenum

door and the entry door to room 105 into room 104 (Sample #3).

4.1.1.3 Room 106, Pressure Wash Room

Room 106's primary use was as a high pressure wash decontamination room. Hazardous material contamination should be well dispersed due to the dispersive nature of the pressure wash system.

A total of 9 samples and one duplicate will be taken in the following locations:

1) On the bottom surface of the drain in the south pit (Sample #5).

2) On the bottom surface of the drain in the north west pit (Sample #6).

3) On the floor surface mid way between the northeast corner of the south pit to the east wall or door (Sample #7).

4) On the floor surface mid way from the south side of the door opening into room 104 to the east wall or door of room 106 (Sample #8).

5) On the floor surface mid way between the northeast corner of the west pit to the east wall or door (Sample #9).

6) On the south wall surface two feet from the floor mid way from the east and west walls (Sample #10)

7) On the west wall surface two feet from the floor mid way from the door to room 107 and the northwest pit (Sample #11)

8) On the east wall surface two feet from the floor mid way from the two large doors (Sample #12), (Duplicate #2).

9) On the north wall surface two feet from the floor mid way from the east and west walls (Sample #13)

4.1.1.4 Room 107, Pressure Lock/Access Room

Room 107's primary use was as a pressure lock/Access between rooms 106 and 108.

One sample will be taken in the following location:

1) On the floor surface in the geometric center (Sample #14).

4.1.1.5 Room 108, Crusher/Baler Room

Room 108's primary use was to house the crusher and compactor.

One sample and one duplicate will be taken in the following location:

1) On the floor surface in the geometric center ignoring the wall housing the pit in room 106 (Sample #15), (Duplicate #3).

2) On the floor surface directly in front of the compactor (Sample #16).

3) On the floor surface directly in front of the bailer (Sample #17).

Two samples are to be taken on each piece of equipment.

Samples are to be taken at a point where material would have been in contact with the crushing or bailing operation.

Sample #18, #19 - baler
Sample #20, #21 - compactor

4.1.3 Potenially Contaminated Surfaces

Due to movement of hazardous materials and personnel, the potential for spreading hazardous material contamination is possible.

4.1.3.1 Room 106 North East Bay Doors

On the northeast side of room 106, there are folding doors at the border of room 112 which were able to be closed during the wash operation. Although room 112 was built in 1987, recent foot traffic may have spread hazardous material contamination to the room.

One sample and duplicate will be taken from the center of a measured rectangle that extends four feet out to the east of room 106 as long as the folding door opening in room 112 (Sample #22), (Duplicate #4).

4.1.3.2 Room 106 South East Opening

On the southeast side of room 106, there is an opening to room 112. As with the northeast door opening, recent foot traffic may have spread hazardous material contamination to the room.

One sample will be taken from the center of a measured rectangle that extends four feet out to the east of room 106 as long as the opening in room 112 (Sample #23).

4.1.3.3 Room 106 South Door Leading To Room 101

On the south side of room 106, there is a door leading to room 101. Foot traffic may have spread hazardous material contamination to the room.

One sample and one duplicate will be taken from the center of a measured rectangle that extends three feet out to the south of room 106 as long as the door opening in room 101 (Sample #27), (Duplicate #5).

<u>4.1.3.4 Room 112</u>

Foot traffic may have spread hazardous material contamination from the room 106 to 112.

1) One sample will be taken one third the distance from the north wall to the south wall centered between the west wall and the vertical plane created by the mezzanine (Sample #24).

2) One sample will be taken two thirds the distance from the north wall to the south wall centered between the west wall and the vertical plane created by the mezzanine (Sample #25).

3) One sample and one duplicate will be taken one half the distance from the vertical plane created by the mezzanine and the south wall centered on door opening #5 (Sample #26), (Duplicate #6).

4.2 Collecting Hazardous Material Samples

A trained sampling team using adequate protection from all hazards will collect rinsates of the surfaces and equipment for characterization purposes. One rinsate will be collected from each potentially contaminated surface to characterize the surface location as detailed above in sections 4.1.1 to 4.1.3.

4.3 Sample Collection and Handling

The collection of all rinsates will be in accordance with the appropriate procedures as described above. The collection of rinsates will also follow procedure FO.13 "Containerization, Preserving, Handling and Shipping of Soil and Water Samples", for the containerization, preserving, handling and shipping of environmental samples. The screening of samples for shipment will follow procedure FO.18 "Environmental Sample Radioactivity Screening" prior to shipment. In the event the samples are "hot" procedure FO.25 "Shipment of Radioactive Materials Samples" will be used for sample shipment. Table 3-1 defines the number of specific samples to be collected for each activity including QC samples.

5.0 ANALYTICAL REQUIREMENTS

The analytical specifications for this project will follow the protocol described in the General Radiochemistry and Routine Analytical Services Protocol (GRRASP) (EG&G, 1993b). The GRRASP describes the protocol for analytical methods that will be used, detection limits, holding times, laboratory COC, extraction/preparation criteria and reporting requirements.

5.1 Data Needs

The data needs for this project include the collection of sufficient information of adequate quality to meet the specific objectives of the project. As described above, this includes characterization of the surfaces for RCRA constituents and beryllium. The quality requirements for the removal action are described in the data quality objectives section of the QAA.

5.2 Analytical Methods

The analytical methods that will be used for this project can be found in Table 5-1. Note this table also includes the total number of samples that will be analyzed by each method. The actual analytes for each method are included as a part of the QAA. Gross alpha/beta characterization provides information on the total Am, Pu, and U content. As such, these isotopes will not be identified individually.

Table 5-1 Rinsates and Analytical Methods

Number of Samples	Analyltical Method / Instruments	Analytes	Type of Sample
35	RCRA Characteristics SW-846 Table 45	RCRA Characteristics	Hazardous Material Characterization (27) Duplicate for Hazardous Material Characterization (6) Trip Blanks for Hazardous Material Characterization (2)
35	Metal By EPA-CLP SOW Table 44	Metals	Hazardous Material Characterization (27) Duplicate for Hazardous Material Characterization (6) Trip Blanks for Hazardous Material Characterization (2)
35	BNA By SW-846 8270A Table 44	SVOCs	Hazardous Material Characterization (27) Duplicate for Hazardous Material Characterization (6) Trip Blanks for Hazardous Material Characterization (2)
35	VOA By SW-846 8240A Table 44	VOAs	Hazardous Material Characterization (27) Duplicate for Hazardous Material Characterization (6) Trip Blanks for Hazardous Material Characterization (2)
35	PCB Only By EPA-CLP SOW Table 26	PCB	Hazardous Material Characterization (27) Duplicate for Hazardous Material Characterization (6) Trip Blanks for Hazardous Material Characterization (2)
27	GRRASP Specific	Radiological Screening	Radiological Screening for Shipping (27)
35	GRRASP Specific	Gross Alpha/Beta	Radiological Conformation (27) Duplicate for Confirmation (6) Rinsate (2)

6.0 DATA MANAGEMENT REQUIREMENTS

The specific data management requirements for this SAP are defined and described in Appendix A, "Data Management Plan" (DMP). This DMP will be followed for all data collection, compilation and dissemination activities for this project.

7.0 QUALITY ASSURANCE/QUALITY CONTROL

The specific Quality Assurance/Quality Control requirements for this SAP are defined and described in Appendix B, "Quality Assurance Addendum" (QAA). This QAA will be followed for all QA/QC activities for this project.

8.0 REFERENCES

EPA 1986, Test Methods for evaluating Solid Waste: Physical/Chemical Methods; Third Edition (SW-846)

EG&G 1993b, General Radiochemistry and Routine Analytical Services Protocol (GRRASP)

DRAFT
BUILDING 889 SAMPLING AND ANALYSIS PLAN
APPENDIX A - DATA MANAGEMENT PLAN

Rocky Flats Plant

U.S. DEPARTMENT OF ENERGY

Rocky Flats Plant
Golden, Colorado

September, 1994

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LIST OF FIGURES

1.0 INTRODUCTION

The purpose of this Data Management Plan (DMP) is to support the Building 889 Sampling and Analysis Plan and to identify the mechanisms and procedures for the efficient and accurate transfer of data from collection/generation of the data through its end-use. This is achieved by identifying the sources of data, establishing systematic procedures for quality control/quality assurance, and creating a suitable database to allow end users the appropriate access to meet project requirements and to establish appropriate security and back-up measures to ensure data integrity. The DMP identifies and defines sample documentation, sample tracking, data entry, data proofing, data reporting, and data management personnel responsibilities.

The Building 889 project will involve the collection and analysis of data from several sources:

- Screening parameters collected manually including organic vapor concentrations
- Initial screening samples analyzed off-site for shipping purposes.
- Tangible analytical data generated from off-site laboratory testing of hazardous material confirmation

This DMP has been developed to promote the proper and complete management of scientific and technical data that will be generated from theBuilding 889 sampling activity. The primary purpose of a DMP is to communicate to personnel collecting, using, and managing information how it will be recorded, stored, accessed, and reviewed. Procedures are defined and implemented to ensure that data are collected, entered, and stored in a secure, controlled, and retrievable manner to accurately and efficiently transfer data into useful information. This plan addresses the planning, implementation, and responsibilities to optimize data management and use of the RFEDS.

This DMP focuses principally on the data management and data handling. Detailed discussion of peripheral activities (i.e., field data collection methods etc.) are described in the main portion of the Sampling and Analysis Plan (SAP). RFEDS will be the repository for all data generated during this project.

Tracking and verification of data at each stage of the project is important. The data tracking procedures identified in this DMP vary according to the data collection method employed. Figure 1-1 provides a summary of the data sources and the flow of the data.

2.0 RESPONSIBILITIES AND QUALIFICATIONS

Support staff for the data management tasks includes all personnel involved in data acquisition, quality control (QC), and data processing. The designated staff are responsible for implementing and carrying out data management activities according to this plan. All personnel shall be qualified to perform the tasks assigned to them.

The primary personnel responsible for data management are the Project Manager, Project Data Manager, RFEDS Coordinator, Field Data Coordinator, Data Verifier and Quality Assurance/Quality Control (QA/QC) Officer. The responsibilities for these positions are summarized in the following sections.

2.1 Project Manager

The Project Manager will be responsible for ensuring that all data are collected, processed, and stored in a manner consistent with this DMP and in compliance with FO.14 "Field Data Management". Data management support personnel will report to the Project Manager with any problems that may impact the integrity of the data and/or the removal action. The Project Manager will also coordinate sample shipping with the Lockheed Analytical Labs, or other Analytical Lab, and attain RFEDS assigned sample numbers and location codes to use on the Chain of Custody (COC) forms.

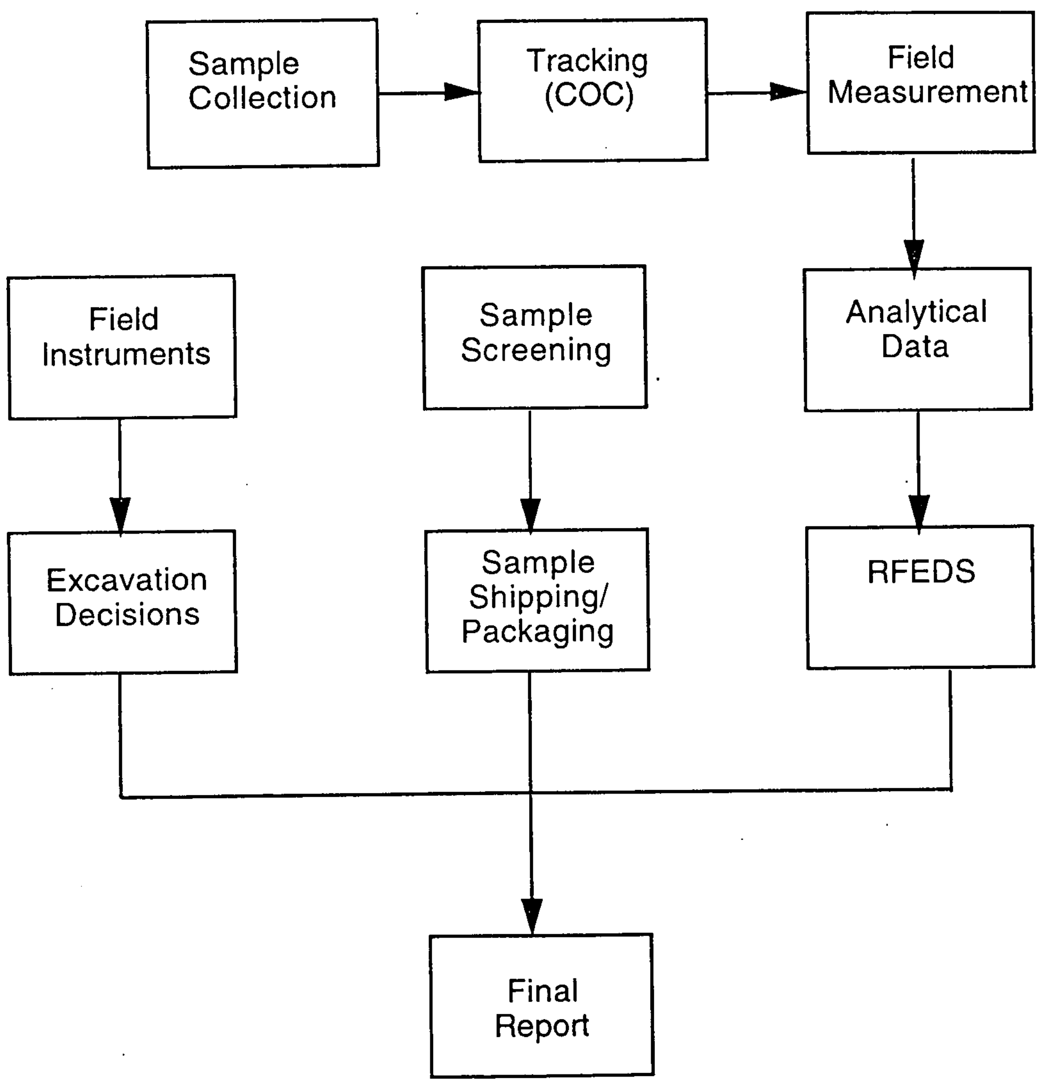
2.2 Project Data Manager

The Project Data Manager has overall responsibility for the data management program including systematic updating of data. This person will:

- Establish the appropriate data management protocols as summarized in this DMP;
- Instruct the Field Data Coordinator in the proper procedures (Figure 1-1, *Summary of Data Sources and Data Flow)*; and
- Oversee the flow of the data from the field through DATACAP and RFEDS.

Figure 1-1

SUMMARY OF DATA SOURCES AND DATA FLOW



The Project Data Manager will report directly to the Project Manager. In addition, the Project Data Manager will:

- Implement the appropriate QA/QC procedures and document control;
- Directly communicate with data management personnel concerning procedures for data transmittal and problem resolution;
- Accept data from the field, the screening laboratory and RFEDS;
- Perform completeness check of field and RFEDS data;
- Perform technical verification of field and RFEDS data;
- Oversee manual data entry into DATACAP; and
- Document data distributions and users of final data.

2.3 RFEDS Coordinator

The RFEDS Coordinator will be responsible for:

- Ensuring the RFEDS data requested by data users is complete and in the appropriate format;
- Ensuring that data are preserved, retrievable, traceable, and available for response to regulatory agency requirements;
- Executing the proper procedures for the handling of the computer-based data

2.4 Data Verifier

The Data Verifier ensures that the data recorded, are the same as the data recorded on the field data forms to RFEDS.

2.5 Field Data Coordinator

The Field Data Coordinator is responsible for:

- Ensuring that all data management procedures are correctly implemented in the field;

- Ensuring that all data and samples are assigned appropriate identification numbers;

- Overseeing the completion fo the field data forms in the field.

- Communicating with the Project Data Manager to discuss the status of data collection activities and to verify that transmitted data are complete, correct, and accompanied by a transfer form.

The Field Data Coordinator or designee will be responsible for completeness of the data package and will report to the Project Data Manager.

2.6 QA/QC Officer

The QA/QC officer will ensure that procedures are carried out in accordance with this DMP. The QA/QC Officer will report to the Project Manager or designee.

3.0 DATA HANDLING SYSTEMS EQUIPMENT, DATA BACKUP, AND SECURITY PROCEDURES

3.1 Data Handling System

All data will be transfered from the laboratory reports directly into RFEDS. DATACAP will not be used with this sampling program.

3.2 Database Backup

3.2.1 Field Data Acquisition, Backup, and Security Procedures

Because the laboratory reports will be directly entered into RFEDS, data backup and security procedures are not required for the data.

4.0 DOCUMENTATION

4.1 Data Acquisition Documentation

It is necessary to record detailed information so that data acquisition can be reconstructed. The Scientific Notebook System (SNS) is one of the primary mechanisms for data acquisition. Any data that are collected using non-standard procedures will be collected in accordance with the SNS and documented in the scientific notebook. Data for Building 889 will be compiled from a number of different sources. At a minimum, the scientific notebook, electronically collected data records, field instrument data, and sample collection forms should include the following information for each data or sample point:

1. Field sample identification (ID)
2. Date and time of sampling/measurement
3. Sample measurement location
4. Sample measurement description
5. Sample depth (if appropriate)
6. Parameters or analyses being reported
7. Associated quality control (QC) samples (e.g., duplicates, matrix spikes, etc.)
8. Approximate levels (in counts/minute, ppm etc...) of contaminates as reported by field instrumentation

4.2 Transmittal of Field Data to Project Data Manager

All data generated in the field will be copied and transferred to the Project Data Manager or designee. This data will include chain-of-custody (COC) forms, field notes, data generated by field instruments (i.e., FIDLER, HPGe, HNu, etc.), and any other data generated in the field. Following shipment of data from the field to the Project Data Manager or designee, the Field Data Coordinator will verbally confirm the data have been received. The field data will be transferred to RFEDS database by the Project Data Manager/Project Manager or designee.

4.3 Data Receipt Confirmation

Upon receipt of the data, the Project Data Manager is responsible for checking, at a minimum that:

1. All data were received and the receipt was noted on the Field Data Transmittal Form.
2. The data received matches the data acquisition plans.
3. The appropriate field QC checks were performed (calibration of instruments etc.)

The Project Data Manager will have the responsibility of ensuring that discrepancies identified during the checking process are corrected and documented.

5.0 DATA MANAGEMENT-DATA TRACKING, DATA ENTRY, AND DATA PROOFING

5.1 Manually Collected Field Data

Data collected manually may consist of field measurements from field sampling kits. Figure 5-1 summarizes the data flow for the manually recorded data from collection through data reporting.

The results and other pertinent information will be recorded on the appropriate data collection forms (Figures 5-2, 5-3, and 5-4), including FO14.C "Soil Sample Collection Form." The results from the forms will be entered into PC data system. The data entry will be QC reviewed by the Project Data Manager prior to entry of the data.

Figure 5-1

MANUAL DATA COLECTION SYSTEM FLOWCHART

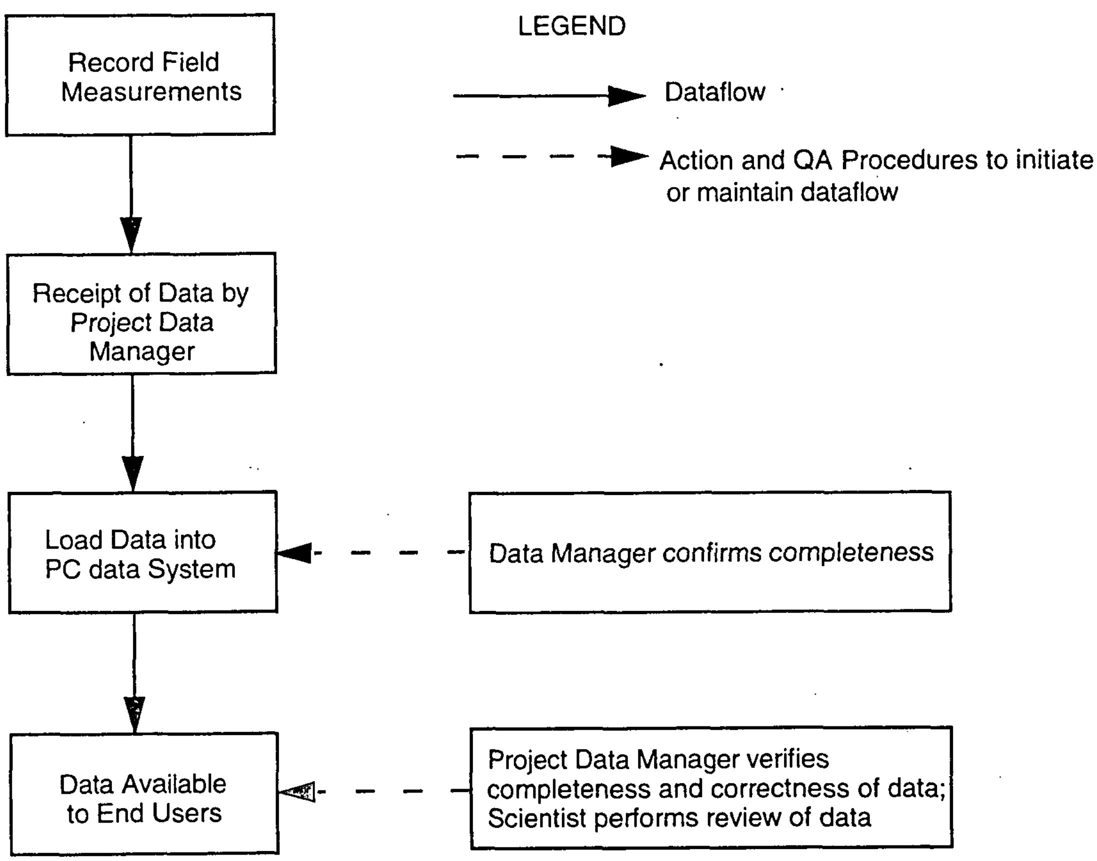


Figure 5-2
FIDLER MEASUREMENT FORM

1. Monitoring Location: ____________ Date: ____________

2. Equipment Information and Background Measurements

Manufacturer and Model No.	Serial Number	Calibration Date	Background Reading	Units (CPM)

3. FIDLER Measurements

Sampler Initials	Time (military)	FIDLER Reading (CPM)	Depth (inches)

Figure 5-3
HNu MEASUREMENT FORM

1. Monitoring Location: ____________ Date: ____________

2. Equipment Information and Background Measurements

Manufacturer and Model No.	Serial Number	Calibration Date	Background Reading	Units (ppm)

3. FIDLER Measurements

Sampler Initials	Time (military)	HNu Reading (ppm)	Depth (inches)

Figure 5-4
SAMPLE COLLECTION FORM

Sample Collection Form

Project Number :
Sample Number : Type: SS
Contractor :
Station Code :

Collection Date : Quarter: Disposition:
Collection Time : Purpose:
Sample Location :
Composite (Y/N) :
Composite Desc :
QC Type : Partner:
Collection Method :

Sample Team Leader :
Member :
Member :
Volume Collected : Units:
Prepared By :

Surface Soil Sample Form

Depth of Take : Start (in.) End (in.)

Headspace Reading :
Comments

Sample Crew Member: ______________________
Print Name

____
Signature Date

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5.2 RFEDS Analytical Data

No data will be obtained from the RFEDS database for this sampling plan.

5.3 Data Entry

Data will be entered manually from data collection forms and electronically uploaded to RFEDS.

5.3.1 Manual Data Entry

Manual data entry will be followed by a 100 percent data review by a person different than the person who originally entered the data. Errors will be researched and corrected. A hardcopy of the manually entered data will be initialed and dated by the person performing the review.

5.3.2 Corrections and Changes to Sample Data

Changes or corrections may be required in the data stored in RFEDS. All changes must be accompanied by a Data Correction/Change form (Figure 5-6). The form will detail the changes to be made and document that the changes were completed. Corrections to the database will be proofed by the Project Data Manager or designee for potential entry errors.

Figure 5-5

DATA FLOW FOR ANALYTICAL DATA

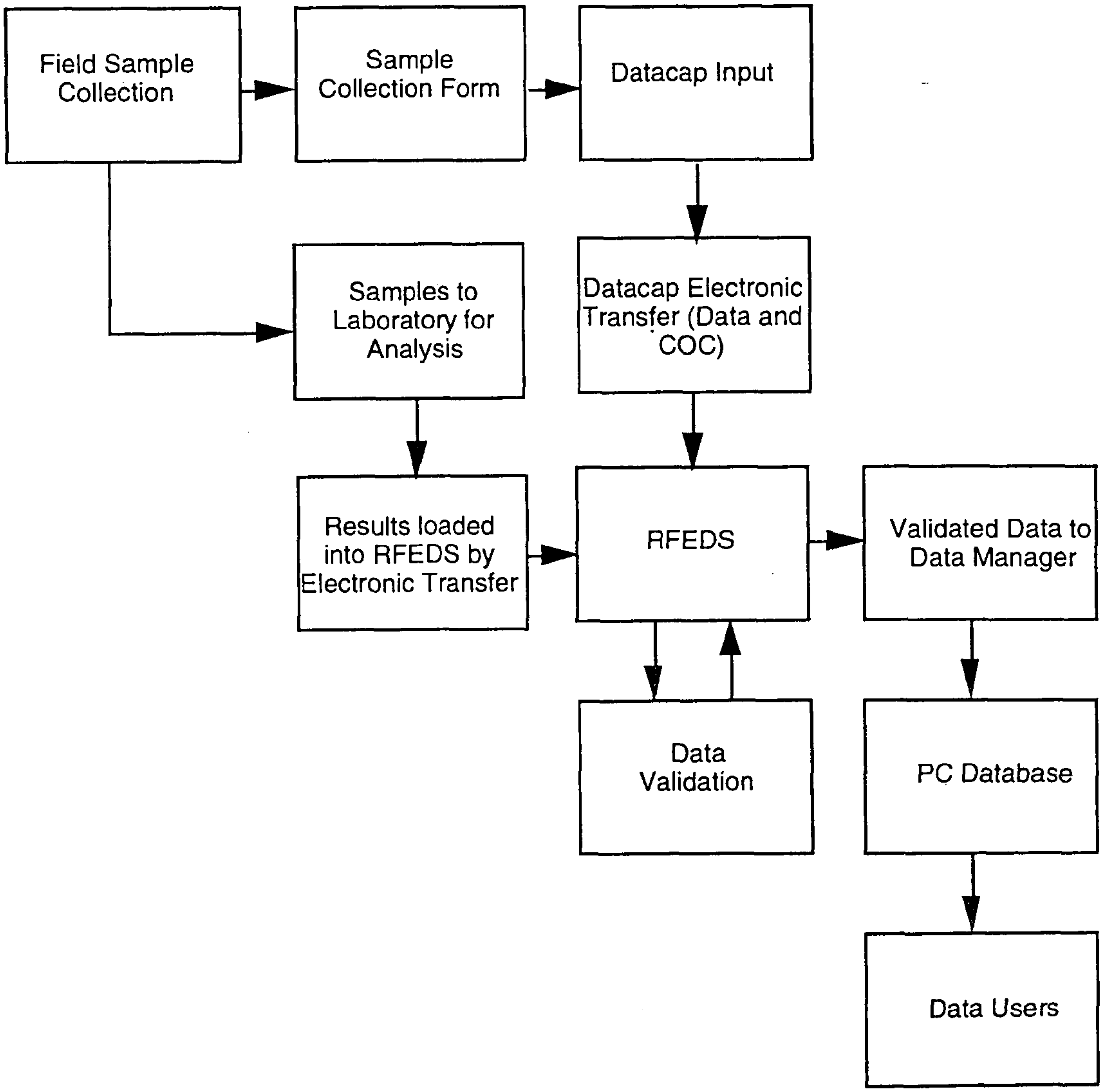

Figure 5-6
DATA CORRECTION/CHANGE FORM

The following changes and/or corrections to the database are required (check all that apply):

_______ Data qualifiers have been assigned to the attached sample data

_______ The following sample analyses have been changed:

_______ Other changes or corrections (describe below):

Changes Requested By: ____
(Print Name) (Signature) (Date)

Changes Made By: ____
(Print Name) (Signature) (Date)

Changes Checked By: ____
(Print Name) (Signature) (Date)

5.4 Data Verification

Problems encountered in data management are typically due to inconsistencies or errors in the data reporting. Ten percent of the field data in the database will be verified by comparing a printed hard copy from the database to field forms using the procedures in RFP Procedure 5-21000-OPS-FO.14, *Field Data Management,* Section 5.6. Typical errors that are found include, but are not limited to, the following:

1. Incorrect field sample numbers
2. Duplicate data and samples
3. Improper parameter names
4. Samples with missing data
5. Missing samples
6. Incorrect sample collection data
7. Incorrect units
8. Incorrect qualifiers
9. Missing detection limits, as applicable
10. Incorrect number of significant figures reported
11. Incorrect recording of times
12. Inconsistencies in the sequences of data collection

It is important that data inconsistencies and errors be identified as soon as possible to allow for correction prior to data use. To track the number of data points, samples, and analyses requested, it is important that all data (whether they are physical, chemical, or other parameters) be recorded and checked to verify that the data collected meet the project requirements.

5.5 Final QC Review

The following data final QC review procedures are applicable to all data acquisition for the project. These procedures are designed to ensure the final database is complete and correct.

1. Complete database QC review. A hard copy of the database, organized by location, will be verified by the Project Data Manager or designee.

2. Clearly mark corrections to the hard copy database report in red ink.

3. Using the data entry sheets and sample collection sheets, check that data identifications are correctly listed on the database hard copy, and the number of data points or number of samples for the removal are reported on the database hardcopy.

4. Check that all the parameters requested for each analysis are reported on the database hard copy and that units reported on the database hard copy are correct.

5. Check that data time sequences are correct.

6. Check values for all manually collected parameters reported from the database against the field collection forms, at a frequency of approximately 10 percent of the data for each test. If errors are found, an additional 10 percent of results will be checked for similar errors. If errors are found in the second 10 percent, all results will be checked.

7. Check the corrected copy of the database to determine that corrections have been completed (i.e., verify the final hard copy of the database).

8. The data will then be reviewed by a scientist familiar with the project objectives and data collection activity for data that do not make scientific sense (i.e., a concentration value of 2,000,000 mg/kg).

9. Following completion of the QC procedure, the Project Manager, in consultation with the Project QA/QC Officer and Project Data Manager, will change the database reporting status to "FINAL."

DRAFT
BUILDING 889 SAMPLING AND ANALYSIS PLAN
APPENDIX B - QUALITY ASSURANCE ADDENDUM

Rocky Flats Plant

U.S. DEPARTMENT OF ENERGY

Rocky Flats Plant
Golden, Colorado

September, 1994

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LIST OF ATTACHMENTS

1.0 PURPOSE

This Appendix consists of the Quality Assurance Addendum (QAA) for the Building 889 Sampling and Analysis Plan. The purpose of the QAA is to identify quality assurance (QA) requirements and specific measures for implementing these requirements, that are applicable to the sampling of potential hazardous material locations.

This QAA is intended to supplement the *Rocky Flats Plant Site-Wide Quality Assurance Project Plan for CERCLA Remedial Investigation/ Feasibility Studies and RCRA Facility Investigations/Corrective Measures Studies Activities* (referred to as the RFP Site-Wide QAPjP, or simply QAPjP). As a supplement to the QAPjP, this QAA establishes the site-specific measures and QA controls applicable to the actions described in this Sampling and Analysis Plan (SAP).

2.0 SCOPE

This QAA addresses all quality-affecting activities described in the SAP to be performed by EG&G Rocky Flats (EG&G); other organizations (subcontractors) shall implement similar QA programs under the auspices of the Department of Energy Rocky Flats Field Office's direction (DOE, RFFO).

The major actions within this SAP, to which this QAA applies, include:

- Defining data quality objectives
- Gathering of field data
- Sample collection
- Sample handling and shipping
- Excavation
- Data Analysis

3.0 BASIS FOR TECHNICAL ACTIVITY

The work outlined in the Building 889 Sampling and Analysis Plan is to identify the specific analytical needs, sampling requirements, data handling requirements and associated QA/QC requirements for the completion of the hazardous material sampling. This includes the completion of generating adequate and defensible information to characterize hazardous material contamination in Building 889. The work specifically supports the verification, confirmation, and characterization of hazaedous material contamination in the building.

4.0 BASIS OF QUALITY ASSURANCE REQUIREMENTS

The QAPjP was prepared to identify the QA requirements and methods applicable to the RFP Environmental Restoration (ER) Program activities, as identified in the Attachment 2 of the IAG Statement of Work. Section IV.A of the IAG specifies the minimum quality elements that the QAPjP must include, and references EPA QAMS/005/80, *Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans,* for guidance in preparing the QAPjP.

5.0 QUALITY REQUIREMENTS

The following outlines the quality requirements for the Building 889 Sampling and Analysis Plan.

5.1 Organization and Responsibilities

The EG&G Environmental Restoration Management (ERM), D&D department is responsible for the overall coordination of the Building 889 Sampling and Analysis Plan project. Other organizations such as the internal sampling management group and the subcontracted external laboratory will be involved with this work. Responsibilities of other organizations will be assigned by the D&D department.

The organization has been structured such that quality is the responsibility of those who have been assigned the responsibility of performing the work. Conformance to established requirements shall be verified by individuals and groups not directly responsible for performing the work. The EG&G ERM organization, specifically the D&D department, is responsible for management and coordination of the EG&G resources dedicated to the project.

5.2 Quality Assurance Program

The EG&G ERM Environmental Quality Support (EQS) department is responsible for preparing this QAA and providing internal quality implementation support (including inspections and surveillance of system acceptance and performance) to assure that the quality requirements of this QAA and the QAPjP are being implemented. The QAPjP was written to address QA controls and requirements for implementing environmental restoration activities, as required by the RFP Interagency Agreement (IAG).

The content of the QAPjP was driven by the DOE Order 5400.1, the RFP QA Manual (RFP QAM), and the IAG. Both, the DOE Order 5400.1 and the RFP QAM, require a QA program to be implemented based on the American Society of Mechanical Engineers (ASME) NQA-1, *Quality Assurance Requirements for Nuclear Facilities.* The IAG specifies development of a QAPjP in accordance with the Environmental Protection

Agency (EPA) QAMS-005/80, *Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans.* The 18-element format of NQA-1 was selected as the basis for both the QAPjP and subsequent QAAs with the applicable elements of QAMS-005/80 incorporated where appropriate. Figure 2-1 of Section 2.0 of the QAPjP illustrates where the 16 QA elements of QAMS-005/80 are integrated into the QAPjP and also into this QAA. Section 2.0 of the QAPjP also identifies other DOE Orders and QA requirement documents to which the QAPjP and this QAA are responsive. The controls and requirements addressed in the QAPjP are applicable to SAP activities, unless specified otherwise in this QAA. Where site-wide actions are applicable to SAP activities, the applicable section of the QAPjP is referenced in this QAA. This QAA addresses additional and site/project specific QA controls and requirements that are applicable to SAP activities to be conducted for building 889 that may not have been addressed on a site-wide basis in the QAPjP. Many of the QA requirements specific to the SAP are addressed in the Building 889 Sampling and Analysis Plan and are referenced in this QAA.

5.2.1 Training

The minimum personnel qualification and training requirements that are applicable to EG&G and subcontractor staff for RFP ERM Program activities are addressed in Section 2.0 of the QAPjP.

All EG&G and subcontractor personnel that perform quality-affecting activities on this project shall have qualification records that document they are qualified to perform their assigned tasks. The EG&G Project Manager shall identify any Rocky Flats Plant (RFP) area-specific and/or specialized training requirements that are applicable to project personnel.

Job-specific training for field personnel will include:

- OSHA 40-hour Hazardous Waste Operations training
- OSHA 24-hour Field Experience OU-1 training
- RCRA Computer-Based training
- EG&G Environmental Management Operating Procedures
- Field Operating Procedures
- Laboratory Analytical Procedures that are applicable to their assigned tasks
- Radiation Worker Level II
- Designated Waste Generator will be RCRA Waste Generator Qualified

In addition to procedures training, EG&G and subcontractor personnel shall receive training on (1) the requirements of the QAPjP and (2) the Building 889 Hazardous Material Sampling Plan (including this QAA). This training must be recorded, with verifiable documentation of training submitted to the EG&G Project Manager prior to implementing the sampling and analysis activities described in the SAP.

EG&G and subcontractor personnel shall also be qualified to perform the tasks they have been assigned. Personnel qualifications must be documented, with documentation of qualifications verified by the EG&G Project Manager in accordance with ERM Administrative Procedure 3-21000-ADM-02.02, *Personnel Qualifications.*

5.2.2 Quality Assurance Reports

A QA summary report will be prepared at the conclusion of the Project activities by the EG&G QA Program Manager. This report will include a summary of field operation and sampling oversight inspections, laboratory assessments, surveillances, and a report on data verification/validation results.

5.3 Design Control and Control of Scientific Investigations

5.3.1 Design Control

The Building 889 Sampling and Analysis Plan describes the general design considerations for implementing work activities, outlining sampling and analysis techniques, describing analytical requirements, and summarizing data management processes. As such, this SAP is considered the environmental investigation control plan for the building 889 sampling.

The QAPjP considers activities that generate analytical data, which requires collection and analysis of environmental samples, to be scientific investigations. Controls for scientific investigations include:

- Developing data quality objectives;
- Collecting and analyzing samples according to approved procedures;
- Establishing and implementing quality controls; and
- Reducing and reporting data in a controlled manner.

5.3.2 Data Quality Objectives

Data quality objectives (DQOs) quantitatively and qualitatively describe the uncertainty that decision makers are willing to accept in results derived from environmental data.

Because this is a characterization sampling investigation and does not pertain to regulatory closure criteria, DQOs are not required for this sampling plan.

Accuracy can be defined as the agreement of the measured value with the true value of a parameter. For analytical and radiochemistry purposes, accuracy is indicated by the comparison of laboratory control samples to their true values.

Representativeness is based on sampling locations and matrices specified in the SAP. The SAP will ensure that samples represent the three-dimensional volume of interest.

Comparability is established by use of DOE and EPA approved standard operating procedures (SOPs) and analytical/radiochemistry laboratory methods. Field and administrative SOPs are listed Table 5-2. Laboratory methods are listed in Table 5-3 and a specific listing of all methods and analytes is attached (See Attachment 1, Title 40 of the Codes of Federal Regulation Part 264, Appendix IX). Detection limits for all methods are also given in the GRRASP (EG&G, 1992). When deviations from the standard operating procedures (SOPs) occur, or when new or nonstandard procedures are implemented, a Scientific Notebook System (SNS) will be used as the primary means of documenting quality-affecting information (analytical method changes are requested from the program chemists and documented in the case narratives).

Completeness is defined as usable data from ≥ 90% of all planned field samples. This will include ≥ 50% of the usable data as validated with respect to analytical and radiochemical laboratory analyses.

Table 5-2

FIELD AND ADMINISTRATIVE STANDARD OPERATING PROCEDURES

EG&G IDENTIFICATION NUMBER: .... PROCEDURE TITLE:

- 5-21000-OPS-FO.3 General Equipment Decontamination
- 5-21000-OPS-FO.3 General Equipment Decontamination
- 5-21000-OPS-FO.6 Handling of Personal Protective Equipment
- 5-21000-OPS-FO.7 Handling of Decontaminated Water and Waste Water
- 5-21000-OPS-FO.10 Receiving, Labeling, and Handling Environmental Materials Containers
- 5-21000-OPS-FO.11 Field Communications
- 5-21000-OPS-FO.12 Decontamination Facility Operations
- 5-21000-OPS-FO.13 Containerization, Preserving, Handling, and Shipping of Soil and Water Samples
- 5-21000-OPS-FO.18 Environmental Sample Radioactivity Content Screening
- 2-G06-ER-ADM-05.10 Use of Controlled Scientific Notebooks.
- 2-G32-ER-ADM-08.02 Evaluation of ERM Data for Usability in Final Reports
- 5-21000-OPS-FO.16 Field Radiological Measurements
- 4-B11-ER-OPS-FO.25 Shipping Limited Quantities of Radioactive Materials in Samples

EG&G IDENTIFICATION NUMBER:	PROCEDURE TITLE:
• 5-21000-OPS-FO.14	Field Data Management
• 3-21000-ADM-5.01	Document Control
• 3-21000-ADM-15.01	Control of Nonconforming Items and Activities
• 1-50000-ADM-12.01	Control of Measuring and Test Equipment
• 1-50000-16.16	Corrective Action Program
• 5-21000-OPS-FO.02	Field Document Control
• 3-21000-ADM-17.01	Records Management
• 3-21000-ADM-18.03	Readiness Reviews

Table 5-3

LABORATORY STANDARD OPERATING PROCEDURES

ANALYTICAL SUITE:	CONTROLLING DOCUMENTS:
◦ VOCs ◦ SVOCs • Metals	Title 40 of the Codes of Federal Regulation Part 264, Appendix IX. All laboratory analyses will also adhere to protocols specified in Parts A and B of the EG&G General Radiochemistry and Routine Analytical Services Protocol (GRRASP).
• Radionuclides	Part B of the GRRASP.

5.3.3 Equipment Decontamination

Sampling equipment that is used at more than one location shall be decontaminated between sampling locations in accordance with Field Operations (FO) Procedure OPS-FO.03, General Equipment Decontamination.

5.3.4 Quality Control

Field sampling quality control will consist of:

- Collection of field duplicate samples will be at a minimum of 1 per 20 samples;
- Preparation and analysis of an equipment rinsate blank for ever 20 soil samples collected (at a minimum or at least one rinsate blank if 20 soil samples are not collected); and
- Trip blanks for VOC analysis

Notwithstanding the QA sample schedule just presented, the number of field duplicates and replicates that will be collected will be limited to one each per day. Analytical laboratory QC for sample analyses shall be as specified in the GRRASP.

5.3.5 Quality Assurance Monitoring

To assure the overall quality of the sampling and analysis activities associated with the SAP for the Building 889 Hazardous Material Sampling project, field oversite inspections will be conducted during sampling and analysis activities. Field oversite inspections to be conducted by the ERM Environmental Quality Support department will include:

- Field inspections;

- Various intervals of audits and surveillances; and
- A minimum of one surveillance per each field activity.

5.3.6 Data Reduction, Validation, and Reporting

Data evaluation and reporting requirements for field and laboratory data are discussed in Appendix A, the Data Management Plan for the Building 889 Hazardous Material Sampling Plan.

5.4 Document Control

Documents produced by EG&G that control the work described in this SAP shall be '"controlled" to ensure that key project personnel receive accurate and up-to-date information. Such documents shall be controlled in accordance with Section 6.0 of the QAPjP and with ERM Procedure 3-21000-ADM-5.01, *Document Control.*

5.5 Control of Purchased Items and Services

Procurement documents for items and services procured under this project, including services for conducting field sampling and analysis, shall be prepare, handled, and controlled in accordance with the requirements and methods specified in Section 4.0 of the QAPjP and in ERM Procedure ADM-4.01, *Procurement Document Control,* including retention of purchase order receipts, contracts, or any other documentation related to the integrity/traceability of the purchased product or service.

Subcontractors that provide services in support of the SAP activities will be selected and evaluated as outlined in Section 7.0 of the QAPjP. This includes pre-award evaluation/audit of proposed subcontractors as well as periodic assessment of the acceptability of contractor performance during the project. Any items or materials that are purchased for use during the sampling, analysis, and other SAP activities that have the ability to affect the quality of the data should be inspected upon receipt.

5.6 Identification and Control of Equipment/Items

Soil samples shall be identified, handled, containerized, shipped, and stored in accordance with EM Operating Procedure 5-21000-OPS-FO.13, *Containerization, Preserving, Handling, and Shipping of Soil and Water Samples.* Sampling identification and chain-of custody (COC) will be maintained through the application of Section 8.0 of the QAPjP and of Procedure 5-21000-OPS-FO.13 which provides instructions for preparing COC forms.

A sample chain-of-custody (COC) will be initiated at the time the samples are collected and maintained through all transfers of custody until the sample is received at the testing laboratory. Samples shall be logged in upon receipt at the analytical laboratory and sample tracking throughout the analytical process shall be maintained in accordance with laboratory procedures.

5.7 Control of Sampling and Analysis Processes

The overall process of collecting and analyzing samples require control. The processes are controlled by adhering to the SAP and the sampling and analytical procedures referenced. The requirements for:

Sample Collection will be addressed in Section 3.0 of the SAP;
Sample Analyses will be addressed in Section 4.0 of the SAP; and
Data Input will be addressed in Appendix A, Data Management Plan, of the SAP.

5.8 Inspection and Assessment

Quality-affecting activities are subject to inspection and assessments. These assessments will be performed formally in accordance with EG&G procedures (e.g., Procedures 3-21000-ADM-10.01 and/or -ADM-18.02), or informally as requested by line management. The work place and working records shall be accessible during normal working hours for verification or audit by EG&G or their representatives during the performance of this project.

Any nonconformances identified during formal assessments shall be documented with Nonconformance Reports in accordance with Section 15 of the QAPjP and EM Administrative Procedure 3-21000-ADM-15.01, Control of Nonconforming Items and Activities. Independent audits of the project may be conducted by the ERM EQS organization in accordance with QA procedures.

5.9 Control of Measuring and Testing Equipment

Measuring and test equipment (M&TE) used in the screening of samples shall be selected, identified, calibrated, and maintained in accordance with the methods established in RFP Administrative Procedure 1-50000-ADM-12.01, *Control of Measuring and Test Equipment.* The M&TE requirements of Section 12 of the QAPjP are implemented through operating procedures specific to the sampling/analysis event, manufacturers instructions, and specific laboratory procedures. In addition, field equipment utilized during SAP activities will be the field instrument for the detection of low energy radiation (FIDLER), the high purity germination detector (HPGe), and the HNu instrument. Field equipment documentation will be made on forms identified in Appendix A, Data Management Plan, of the SAP. Laboratory equipment usage shall be conducted in accordance to the GRRASP requirements.

5.10 Handling, Storage, and Shipping

Samples shall be packaged, transported, and stored in accordance with RFP Procedure 5-21000-OPS-FO.13, *Containerization, Preserving, Handling, and Shipping of Soil and Water Samples.*

5.11 Status of Inspections, Tests, and Operations

The status of the sampling and analysis inspections, startup SAP activities, and sustained operations shall be documented according to the requirements of Section 14.0 of the QAPjP.

5.12 Control of Nonconformances

The requirements for the identification, control, evaluation, and disposition of nonconforming items, samples, and data will be implemented as specified in Section 15.0 of the QAPjP. Items, samples, and data that do not conform to specifications and/or requirements shall be identified, segregated (where necessary to prevent inadvertent use), dispositioned, and evaluated in accordance with approved procedures. Nonconformances related to the design, construction, installation, or testing of the testing system, and any waste related nonconformance, shall be controlled in accordance with ERM Procedure 1-50000-ADM-15.01, *Control of Nonconforming Items, Samples, and Data.*

5.13 Corrective Action

The identification, reporting, closeout, and documentation of significant conditions adverse to quality shall be accomplished in accordance with Section 16.0 of the QAPjP and with ERM Procedure 1-50000-16.16, *Corrective Action Program.* Conditions adverse to quality identified by the implementing contractor shall be documented and submitted to EG&G for processing as outlined in the QAPjP.

5.14 Quality Assurance Records

Field QA records will be controlled in accordance with RFP Procedure 5-21000-OPS-FO.02, *Field Document Control.* Project records that are considered ERM QA records include, but are not necessarily limited to:

The final report, (including all appendices);
Design documents;
Procurement documents;
Construction/installation records;
Supplier/subcontractor evaluations;
Inspection records;
Test records;
Logbooks;
Sampling records;
Sample chain-of-custody records;
Analytical data packages;
Interim and annual operating reports;
Action plans;
Operation manuals;
Noncompliance Reports (NCRs);
Corrective Action Reports (CARs);
Audit reports;
Surveillance reports;
Self-assessment reports;
Personnel training and qualification records;
The QAPjP;

Any administrative and operating procedures referenced herein; and
Any other project records that are used to support observations and conclusions in the final report.

All ERM QA records generated shall be submitted to the ERM Project File for processing according to ERM Procedure 3-21000-ADM-17.01, *Records Management.*

5.15 Quality Verification

QA surveillances and audits will be periodically conducted by the EG&G EQS department throughout the duration of project to verify the quality of project data. Readiness reviews will be conducted according to ERM Procedure 3-21000-ADM, 18.03, *Readiness Reviews.*

5.16 Software Control

The requirements for the control of software are not applicable to the SAP activities to be performed for the building 889 sampling plan.

ATTACHMENT 1

TITLE 40 OF THE CODES OF FEDERAL REGULATION PART 264

APPENDIX IX

ing

idizers

GROUP 6-B

other organic acids
ineral acids
es
es
le and combustible wastes
nsequences: Fire, explosion, or
n.

v, Regulations, and Guidelines
 Hazardous Waste." California
 Health, February 1975.
n. 12, 1981]

I TO PART 264—POLITICAL
TIONS[1] IN WHICH COMPLI-
TH §264.18(a) MUST BE DEM-
ED

ALASKA

ds Kodiak
Lynn Canal-Icy Straits
Palmer-Wasilla-Talkeena
ez Seward
rt Sitka
Wade Hampton
nlet Wrangell Petersburg
ince of Yukon-Kuskokwim

ARIZONA

Greenlee
Yuma

CALIFORNIA

COLORADO

Mineral
Rio Grande
Saguache

lude counties, city-county con-
and independent cities. In the
ca, the political jurisdictions are
ricts, and, in the case of Hawaii,
jurisdiction listed is the island

HAWAII

Hawaii

IDAHO

Bannock
Bear Lake
Bingham
Bonneville
Caribou
Cassia
Clark
Franklin
Fremont
Jefferson
Madison
Oneida
Power
Teton

MONTANA

Beaverhead
Broadwater
Cascade
Deer Lodge
Flathead
Gallatin
Granite
Jefferson
Lake
Lewis and Clark
Madison
Meagher
Missoula
Park
Powell
Sanders
Silver Bow
Stillwater
Sweet Grass
Teton
Wheatland

NEVADA

All

NEW MEXICO

Bernalillo
Catron
Grant
Hidalgo
Los Alamos
Rio Arriba
Sandoval
Sante Fe
Sierra
Socorro
Taos
Torrance
Valencia

UTAH

Beaver
Box Elder
Cache
Carbon
Davis
Duchesne
Emery
Garfield
Iron
Juab
Millard
Morgan
Piute
Rich
Salt Lake
Sanpete
Sevier
Summit
Tooele
Utah
Wasatch
Washington
Wayne
Weber

WASHINGTON

Chelan
Clallam
Clark
Cowlitz
Douglas
Ferry
Grant
Grays Harbor
Jefferson
King
Kitsap
Kittitas
Lewis
Mason
Okanogan
Pacific
Pierce
San Juan Islands
Skagit
Skamania
Snohomish
Thurston
Wahkiakum
Whatcom
Yakima

WYOMING

Fremont
Lincoln
Park
Sublette
Teton
Uinta
Yellowstone National Park

[46 FR 57285, Nov. 23, 1981; 47 FR 953, Jan. 8, 1982]

APPENDICES VII—VIII TO PART 264—[RESERVED]

APPENDIX IX TO PART 264—GROUND-WATER MONITORING LIST[1]

GROUND-WATER MONITORING LIST[1]

Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	PQL (μg/L)[6]
Acenaphthene	83–32–9	Acenaphthylene, 1,2-dihydro-	8100 8270	200 10
Acenaphthylene	208–96–8	Acenaphthylene	8100 8270	200 10
Acetone	67–64–1	2-Propanone	8240	100
Acetophenone	98–86–2	Ethanone, 1-phenyl-	8270	10
Acetonitrile; Methyl cyanide	75–05–8	Acetonitrile	8015	100
2-Acetylaminofluorene; 2-AAF	53–96–3	Acetamide, N-9H-fluoren-2-yl-	8270	10
Acrolein	107–02–8	2-Propenal	8030 8240	5 5
Acrylonitrile	107–13–1	2-Propenenitrile	8030 8240	5 5
Aldrin	309–00–2	1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro- 1,4,4a,5,8,8a-hexahydro- (1α,4α,4aβ, 5α,8α,8aβ)-	8080 8270	0.05 10.
Allyl chloride	107–05–1	1-Propene, 3-chloro-	8010 8240	5 100
4-Aminobiphenyl	92–67–1	[1,1'-Biphenyl]- 4-amine	8270	10

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GROUND-WATER MONITORING LIST [1]—Continued

Common name [2]	CAS RN [3]	Chemical abstracts service index name [4]	Suggested methods [5]	PQL (µg/L) [6]
Aniline	62–53–3	Benzenamine	8270	10
Anthracene	120–12–7	Anthracene	8100	200
			8270	10
Antimony	(Total)	Antimony	6010	300
			7040	2,000
			7041	30
Aramite	140–57–8	Sulfurous acid, 2-chloroethyl 2-[4-(1,1-dimethylethyl)phenoxy]-1-methylethyl ester.	8270	10
Arsenic	(Total)	Arsenic	6010	500
			7060	10
			7061	20
Barium	(Total)	Barium	6010	20
			7080	1,000
Benzene	71–43–2	Benzene	8020	2
			8240	5
Benzo[a]anthracene; Benzanthracene.	56–55–3	Benz[a]anthracene	8100	200
			8270	10
Benzo[b]fluoranthene	205–99–2	Benz[e]acephenanthrylene	8100	200
			8270	10
Benzo[k]fluoranthene	207–08–9	Benzo[k]fluoranthene	8100	200
			8270	10
Benzo[ghi]perylene	191–24–2	Benzo[ghi]perylene	8100	200
			8270	10
Benzo[a]pyrene	50–32–8	Benzo[a]pyrene	8100	200
			8270	10
Benzyl alcohol	100–51–6	Benzenemethanol	8270	20
Beryllium	(Total)	Beryllium	6010	3
			7090	50
			7091	2
alpha-BHC	319–84–6	Cyclohexane, 1,2,3,4,5,6-hexachloro-,(1α, 2α,3β, 4α,5β,6β)-	8080	0.05
			8250	10
beta-BHC	319–85–7	Cyclohexane, 1,2,3,4,5,6-hexachloro-,(1α,2β, 3α,4β, 5α,6β)-	8080	0.05
			8250	40
delta-BHC	319–86–8	Cyclohexane, 1,2,3,4,5,6-hexachloro-,(1α,2α, 3α, 4β,5α,6β)-	8080	0.1
			8250	30
gamma-BHC; Lindane	58–89–9	Cyclohexane, 1,2,3,4,5,6-hexachloro-,(1α, 2α, 3β, 4α,5α,6β)-	8080	0.05
			8250	10
Bis(2-chloroethoxy)methane	111–91–1	Ethane, 1,1′-[methylenebis (oxy)]bis [2-chloro-	8270	10
Bis(2-chloroethyl)ether	111–44–4	Ethane, 1,1′-oxybis[2-chloro-	8270	10
Bis(2-chloro-1-methylethyl) ether; 2,2′-Dichlorodiisopropyl ether.	108–60–1	Propane, 2,2′-oxybis[1-chloro-	8010	100
			8270	10
Bis(2-ethylhexyl) phthalate	117–81–7	1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl)ester	8060	20
			8270	10
Bromodichloromethane	75–27–4	Methane, bromodichloro-	8010	1
			8240	5
Bromoform; Tribromomethane	75–25–2	Methane, tribromo-	8010	2
			8240	5
4-Bromophenyl phenyl ether	101–55–3	Benzene, 1-bromo-4-phenoxy-	8270	10
Butyl benzyl phthalate; Benzyl butyl phthalate	85–68–7	1,2-Benzenedicarboxylic acid, butyl phenylmethyl ester.	8060	5
			8270	10
Cadmium	(Total)	Cadmium	6010	40
			7130	50
			7131	1
Carbon disulfide	75–15–0	Carbon disulfide	8240	5
Carbon tetrachloride	56–23–5	Methane, tetrachloro-	8010	1
			8240	5
Chlordane	57–74–9	4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a- hexahydro-.	8080	0.1
			8250	10
p-Chloroaniline	106–47–8	Benzenamine, 4-chloro-	8270	20
Chlorobenzene	108–90–7	Benzene, chloro-	8010	2
			8020	2
			8240	5
Chlorobenzilate	510–15–6	Benzeneacetic acid, 4-chloro-α-(4-chlorophenyl)-α-hydroxy-, ethyl ester.	8270	10
p-Chloro-m-cresol	59–50–7	Phenol, 4-chloro-3-methyl-	8040	5

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Common name [2]	CAS RN [3]
Chloroethane; Ethyl chloride	75–00–3
Chloroform	67–66–3
2-Chloronaphthalene	91–58–7
2-Chlorophenol	95–57–8
4-Chlorophenyl phenyl ether	7005–72–3
Chloroprene	126–99–8
Chromium	(Total)
Chrysene	218–01–9
Cobalt	(Total)
Copper	(Total)
m-Cresol	108–39–4
o-Cresol	95–48–7
p-Cresol	106–44–5
Cyanide	57–12–5
2,4-D; 2,4-Dichlorophenoxyacetic acid.	94–75–7
4,4′-DDD	72–54–8
4,4′-DDE	72–55–9
4,4′-DDT	50–29–3
Diallate	2303–16–4
Dibenz[a,h]anthracene	53–70–3
Dibenzofuran	132–64–9
Dibromochloromethane; Chlorodibromomethane	124–48–1
1,2-Dibromo-3-chloropropane; DBCP.	96–12–8
1,2-Dibromoethane; Ethylene dibromide.	106–93–4
Di-n-butyl phthalate	84–74–2
o-Dichlorobenzene	95–50–1
m-Dichlorobenzene	541–73–1
p-Dichlorobenzene	106–46–7
3,3′-Dichlorobenzidine	91–94–1
trans-1,4-Dichloro-2-butene	110–57–6
Dichlorodifluoromethane	75–71–8
1,1-Dichloroethane	75–34–3
1,2-Dichloroethane; Ethylene dichloride.	107–06–2
1,1-Dichloroethylene; Vinylidene chloride.	75–35–4

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GROUND-WATER MONITORING LIST[1]—Continued

Common name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	PQL (µg/L)[6]
			8270	20
Chloroethane; Ethyl chloride	75–00–3	Ethane, chloro-	8010 8240	5 10
Chloroform	67–66–3	Methane, trichloro-	8010 8240	0.5 5
2-Chloronaphthalene	91–58–7	Naphthalene, 2-chloro-	8120 8270	10 10
2-Chlorophenol	95–57–8	Phenol, 2-chloro-	8040 8270	5 10
4-Chlorophenyl phenyl ether	7005–72–3	Benzene, 1-chloro-4-phenoxy-	8270	10
Chloroprene	126–99–8	1,3-Butadiene, 2-chloro-	8010 8240	50 5
Chromium	(Total)	Chromium	6010 7190 7191	70 500 10
Chrysene	218–01–9	Chrysene	8100 8270	200 10
Cobalt	(Total)	Cobalt	6010 7200 7201	70 500 10
Copper	(Total)	Copper	6010 7210	60 200
m-Cresol	108–39–4	Phenol, 3-methyl-	8270	10
o-Cresol	95–48–7	Phenol, 2-methyl-	8270	10
p-Cresol	106–44–5	Phenol, 4-methyl-	8270	10
Cyanide	57–12–5	Cyanide	9010	40
2,4-D; 2,4-Dichlorophenoxyacetic acid.	94–75–7	Acetic acid, (2,4-dichlorophenoxy)-	8150	10
4,4'-DDD	72–54–8	Benzene 1,1'-(2,2-dichloroethylidene) bis[4-chloro-	8080 8270	0.1 10
4,4'-DDE	72–55–9	Benzene, 1,1'-(dichloroethenylidene) bis[4-chloro-	8080 8270	0.05 10
4,4'-DDT	50–29–3	Benzene, 1,1'-(2,2,2-trichloroethylidene) bis[4-chloro-.	8080 8270	0.1 10
Diallate	2303–16–4	Carbamothioic acid, bis(1-methylethyl)- , S- (2,3-dichloro-2-propenyl) ester.	8270	10
Dibenz[a,h]anthracene	53–70–3	Dibenz[a,h]anthracene	8100 8270	200 10
Dibenzofuran	132–64–9	Dibenzofuran	8270	10
Dibromochloromethane; Chlorodibromomethane	124–48–1	Methane, dibromochloro-	8010 8240	1 5
1,2-Dibromo-3-chloropropane; DBCP.	96–12–8	Propane, 1,2-dibromo-3-chloro-	8010 8240 8270	100 5 10
1,2-Dibromoethane; Ethylene dibromide.	106–93–4	Ethane, 1,2-dibromo-	8010 8240	10 5
Di-n-butyl phthalate	84–74–2	1,2-Benzenedicarboxylic acid, dibutyl ester	8060 8270	5 10
o-Dichlorobenzene	95–50–1	Benzene, 1,2-dichloro-	8010 8020 8120 8270	2 5 10 10
m-Dichlorobenzene	541–73–1	Benzene, 1,3-dichloro-	8010 8020 8120 8270	5 5 10 10
p-Dichlorobenzene	106–46–7	Benzene, 1,4-dichloro-	8010 8020 8120 8270	2 5 15 10
3,3'-Dichlorobenzidine	91–94–1	[1,1'-Biphenyl]- 4,4'- diamine, 3,3'-dichloro-	8270	20
trans-1,4-Dichloro-2-butene	110–57–6	2-Butene, 1,4-dichloro-, (E)-	8240	5
Dichlorodifluoromethane	75–71–8	Methane, dichlorodifluoro-	8010 8240	10 5
1,1-Dichloroethane	75–34–3	Ethane, 1,1-dichloro-	8010 8240	1 5
1,2-Dichloroethane; Ethylene dichloride.	107–06–2	Ethane, 1,2-dichloro-	8010 8240	0.5 5
1,1-Dichloroethylene; Vinylidene chloride.	75–35–4	Ethene, 1,1-dichloro-	8010 8240	1 5

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GROUND-WATER MONITORING LIST [1]—Continued

Common name [2]	CAS RN [3]	Chemical abstracts service index name [4]	Suggested methods [5]	PQL (µg/L) [6]
trans-1,2-Dichloroethylene	156–60–5	Ethene, 1,2-dichloro-, (E)-	8010 8240	1 5
2,4-Dichlorophenol	120–83–2	Phenol, 2,4-dichloro-	8040 8270	5 10
2,6-Dichlorophenol	87–65–0	Phenol, 2,6-dichloro-	8270	10
1,2-Dichloropropane	78–87–5	Propane, 1,2-dichloro-	8010 8240	0.5 5
cis-1,3-Dichloropropene	10061–01–5	1-Propene, 1,3-dichloro-, (Z)-	8010 8240	20 5
trans-1,3-Dichloropropene	10061–02–6	1-Propene, 1,3-dichloro-, (E)-	8010 8240	5 5
Dieldrin	60–57–1	2,7:3,6-Dimethanonaphth [2,3-b]oxirene, 3,4,5,6,9,9-hexachloro- 1a,2,2a,3,6,6a,7,7a- octahydro-, (1aα,2β, 2aα, 3β,6β,6aα,7β,7aα)-	8080 8270	0.05 10
Diethyl phthalate	84–66–2	1,2-Benzenedicarboxylic acid, diethyl ester	8060 8270	5 10
O,O-Diethyl O-2-pyrazinyl phosphorothioate; Thionazin	297–97–2	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester	8270	10
Dimethoate	60–51–5	Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester.	8270	10
p-(Dimethylamino)azobenzene	60–11–7	Benzenamine, N,N-dimethyl-4-(phenylazo)-	8270	10
7,12-Dimethylbenz[a]anthracene	57–97–6	Benz[a]anthracene, 7,12-dimethyl-	8270	10
3,3'-Dimethylbenzidine	119–93–7	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethyl-	8270	10
alpha, alpha-Dimethylphenethylamine.	122–09–8	Benzeneethanamine, α,α-dimethyl-	8270	10
2,4-Dimethylphenol	105–67–9	Phenol, 2,4-dimethyl-	8040 8270	5 10
Dimethyl phthalate	131–11–3	1,2-Benzenedicarboxylic acid, dimethyl ester	8060 8270	5 10
m-Dinitrobenzene	99–65–0	Benzene, 1,3-dinitro-	8270	10
4,6-Dinitro-o-cresol	534–52–1	Phenol, 2-methyl-4,6-dinitro-	8040 8270	150 50
2,4-Dinitrophenol	51–28–5	Phenol, 2,4-dinitro-	8040 8270	150 50
2,4-Dinitrotoluene	121–14–2	Benzene, 1-methyl-2,4-dinitro-	8090 8270	0.2 10
2,6-Dinitrotoluene	606–20–2	Benzene, 2-methyl-1,3-dinitro-	8090 8270	0.1 10
Dinoseb; DNBP; 2-sec-Butyl-4,6-dinitrophenol	88–85–7	Phenol, 2-(1-methylpropyl)-4,6-dinitro-	8150 8270	1 10
Di-n-octyl phthalate	117–84–0	1,2-Benzenedicarboxylic acid, dioctyl ester	8060 8270	30 10
1,4-Dioxane	123–91–1	1,4-Dioxane	8015	150
Diphenylamine	122–39–4	Benzenamine, N-phenyl-	8270	10
Disulfoton	298–04–4	Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl]ester	8140 8270	2 10
Endosulfan I	959–98–8	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-, 3-oxide, (3α,5aβ,6α,9α,9aβ)-.	8080 8250	0.1 10
Endosulfan II	33213–65–9	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro- 1,5,5a,6,9,9a-hexahydro-, 3-oxide, (3α,5aα, 6β,9β, 9aα)-	8080	0.05
Endosulfan sulfate	1031–07–8	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro- 1,5,5a,6,9,9a-hexahydro-, 3,3-dioxide.	8080 8270	0.5 10
Endrin	72–20–8	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro- 1a,2,2a,3,6,6a,7,7a- octahydro-, (1aα, 2β,2aβ, 3α,6α, 6aβ,7β, 7aα)-	8080 8250	0.1 10
Endrin aldehyde	7421–93–4	1,2,4-Methenocyclopenta[cd]pentalene-5-carboxaldehyde, 2,2a,3,3,4,7-hexachlorodecahydro-, (1α,2β, 2aβ,4β, 4aβ,5β,6aβ,6bβ,7R*)-	8080 8270	0.2 10
Ethylbenzene	100–41–4	Benzene, ethyl-	8020 8240	2 5
Ethyl methacrylate	97–63–2	2-Propenoic acid, 2-methyl-, ethyl ester	8015 8240 8270	10 5 10
Ethyl methanesulfonate	62–50–0	Methanesulfonic acid, ethyl ester	8270	10
Famphur	52–85–7	Phosphorothioic acid, O-[4-[(dimethylamino)sulfonyl]phenyl]-O,O-dimethyl ester.	8270	10

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Common name [2]	CAS RN [3]
Fluoranthene	206–44–0
Fluorene	86–73–7
Heptachlor	76–44–8
Heptachlor epoxide	1024–57–3
Hexachlorobenzene	118–74–1
Hexachlorobutadiene	87–68–3
Hexachlorocyclopentadiene	77–47–4
Hexachloroethane	67–72–1
Hexachlorophene	70–30–4
Hexachloropropene	1888–71–7
2-Hexanone	591–78–6
Indeno(1,2,3-cd)pyrene	193–39–5
Isobutyl alcohol	78–83–1
Isodrin	465–73–6
Isophorone	78–59–1
Isosafrole	120–58–1
Kepone	143–50–0
Lead	(Total)
Mercury	(Total)
Methacrylonitrile	126–98–7
Methapyrilene	91–80–5
Methoxychlor	72–43–5
Methyl bromide; Bromomethane	74–83–9
Methyl chloride; Chloromethane	74–87–3
3-Methylcholanthrene	56–49–5
Methylene bromide; Dibromomethane.	74–95–3
Methylene chloride; Dichloromethane.	75–09–2
Methyl ethyl ketone; MEK	78–93–3
Methyl iodide; Iodomethane	74–88–4
Methyl methacrylate	80–62–6
Methyl methanesulfonate	66–27–3
2-Methylnaphthalene	91–57–6
Methyl parathion; Parathion methyl.	298–00–0
4-Methyl-2-pentanone; Methyl isobutyl ketone.	108–10–1
Naphthalene	91–20–3
1,4-Naphthoquinone	130–15–4
1-Naphthylamine	134–32–7
2-Naphthylamine	91–59–8
Nickel	(Total)
o-Nitroaniline	88–74–4

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GROUND-WATER MONITORING LIST [1]—Continued

Common name [2]	CAS RN [3]	Chemical abstracts service index name [4]	Suggested methods [5]	PQL (µg/L) [6]
Fluoranthene	206–44–0	Fluoranthene	8100 8270	200 10
Fluorene	86–73–7	9H-Fluorene	8100 8270	200 10
Heptachlor	76–44–8	4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-	8080 8270	0.05 10
Heptachlor epoxide	1024–57–3	2,5-Methano-2H-indeno[1,2-b]oxirene, 2,3,4,5,6,7,7-heptachloro-1a,1b,5,5a,6,6a,-hexahydro-, (1aα,1bβ,2α,5α,5aβ,6β,6aα)	8080 8270	1 10
Hexachlorobenzene	118–74–1	Benzene, hexachloro-	8120 8270	0.5 10
Hexachlorobutadiene	87–68–3	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-	8120 8270	5 10
Hexachlorocyclopentadiene	77–47–4	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-	8120 8270	5 10
Hexachloroethane	67–72–1	Ethane, hexachloro-	8120 8270	0.5 10
Hexachlorophene	70–30–4	Phenol, 2,2'-methylenebis[3,4,6-trichloro-	8270	10
Hexachloropropene	1888–71–7	1-Propene, 1,1,2,3,3,3-hexachloro-	8270	10
2-Hexanone	591–78–6	2-Hexanone	8240	50
Indeno(1,2,3-cd)pyrene	193–39–5	Indeno[1,2,3-cd]pyrene	8100 8270	200 10
Isobutyl alcohol	78–83–1	1-Propanol, 2-methyl-	8015	50
Isodrin	465–73–6	1,4,5,8-Dimethanonaphthalene,1,2,3,4,10,10-hexachloro- 1,4,4a,5,8,8a hexahydro-(1α, 4α, 4aβ, 5β, 8β,8aβ)-.	8270	10
Isophorone	78–59–1	2-Cyclohexen-1-one, 3,5,5-trimethyl-	8090 8270	60 10
Isosafrole	120–58–1	1,3-Benzodioxole, 5-(1-propenyl)-	8270	10
Kepone	143–50–0	1,3,4-Metheno-2H-cyclobuta- [cd]pentalen-2-one, 1,1a,3,3a,4,5,5,5a,5b,6- decachlorooctahydro-	8270	10
Lead	(Total)	Lead	6010 7420 7421	40 1,000 10
Mercury	(Total)	Mercury	7470	2
Methacrylonitrile	126–98–7	2-Propenenitrile, 2-methyl-	8015 8240	5 5
Methapyrilene	91–80–5	1,2,Ethanediamine, N,N-dimethyl-N'-2- pyridinyl- N'-(2-thienylmethyl)-.	8270	10
Methoxychlor	72–43–5	Benzene, 1,1'-(2,2,2,trichloroethylidene)bis[4-methoxy-.	8080 8270	2 10
Methyl bromide; Bromomethane	74–83–9	Methane, bromo-	8010 8240	20 10
Methyl chloride; Chloromethane	74–87–3	Methane, chloro-	8010 8240	1 10
3-Methylcholanthrene	56–49–5	Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-	8270	10
Methylene bromide; Dibromomethane.	74–95–3	Methane, dibromo-	8010 8240	15 5
Methylene chloride; Dichloromethane.	75–09–2	Methane, dichloro-	8010 8240	5 5
Methyl ethyl ketone; MEK	78–93–3	2-Butanone	8015 8240	10 100
Methyl iodide; Iodomethane	74–88–4	Methane, iodo-	8010 8240	40 5
Methyl methacrylate	80–62–6	2-Propenoic acid, 2-methyl-, methyl ester	8015 8240	2 5
Methyl methanesulfonate	66–27–3	Methanesulfonic acid, methyl ester	8270	10
2-Methylnaphthalene	91–57–6	Naphthalene, 2-methyl-	8270	10
Methyl parathion; Parathion methyl.	298–00–0	Phosphorothioic acid, O,O-dimethyl O-(4-nitrophenyl) ester.	8140 8270	0.5 10
4-Methyl-2-pentanone; Methyl isobutyl ketone.	108–10–1	2-Pentanone, 4-methyl-	8015 8240	5 50
Naphthalene	91–20–3	Naphthalene	8100 8270	200 10
1,4-Naphthoquinone	130–15–4	1,4-Naphthalenedione	8270	10
1-Naphthylamine	134–32–7	1-Naphthalenamine	8270	10
2-Naphthylamine	91–59–8	2-Naphthalenamine	8270	10
Nickel	(Total)	Nickel	6010 7520	50 400
o-Nitroaniline	88–74–4	Benzenamine, 2-nitro-	8270	50

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GROUND-WATER MONITORING LIST [1]—Continued

Common name [2]	CAS RN [3]	Chemical abstracts service index name [4]	Suggested methods [5]	PQL (µg/L) [6]
m-Nitroaniline	99–09–2	Benzenamine, 3-nitro-	8270	50
p-Nitroaniline	100–01–6	Benzenamine, 4-nitro-	8270	50
Nitrobenzene	98–95–3	Benzene, nitro-	8090 8270	40 10
o-Nitrophenol	88–75–5	Phenol, 2-nitro-	8040 8270	5 10
p-Nitrophenol	100–02–7	Phenol, 4-nitro-	8040 8270	10 50
4-Nitroquinoline 1-oxide	56–57–5	Quinoline, 4-nitro-, 1-oxide	8270	10
N-Nitrosodi-n-butylamine	924–16–3	1-Butanamine, N-butyl-N-nitroso-	8270	10
N-Nitrosodiethylamine	55–18–5	Ethanamine, N-ethyl-N-nitroso-	8270	10
N-Nitrosodimethylamine	62–75–9	Methanamine, N-methyl-N-nitroso-	8270	10
N-Nitrosodiphenylamine	86–30–6	Benzenamine, N-nitroso-N-phenyl-	8270	10
N-Nitrosodipropylamine; Di-n-propylnitrosamine.	621–64–7	1-Propanamine, N-nitroso-N-propyl-	8270	10
N-Nitrosomethylethylamine	10595–95–6	Ethanamine, N-methyl-N-nitroso-	8270	10
N-Nitrosomorpholine	59–89–2	Morpholine, 4-nitroso-	8270	10
N-Nitrosopiperidine	100–75–4	Piperidine, 1-nitroso-	8270	10
N-Nitrosopyrrolidine	930–55–2	Pyrrolidine, 1-nitroso-	8270	10
5-Nitro-o-toluidine	99–55–8	Benzenamine, 2-methyl-5-nitro-	8270	10
Parathion	56–38–2	Phosphorothioic acid, O,O-diethyl-O-(4-nitrophenyl) ester	8270	10
Polychlorinated biphenyls; PCBs	See Note 7	1,1′-Biphenyl, chloro derivatives	8080 8250	50 100
Polychlorinated dibenzo-p-dioxins; PCDDs.	See Note 8	Dibenzo[b,e][1,4]dioxin, chloro derivatives	8280	0.01
Polychlorinated dibenzofurans; PCDFs.	See Note 9	Dibenzofuran, chloro derivatives	8280	0.01
Pentachlorobenzene	608–93–5	Benzene, pentachloro-	8270	10
Pentachloroethane	76–01–7	Ethane, pentachloro-	8240 8270	5 10
Pentachloronitrobenzene	82–68–8	Benzene, pentachloronitro-	8270	10
Pentachlorophenol	87–86–5	Phenol, pentachloro-	8040 8270	5 50
Phenacetin	62–44–2	Acetamide, N-(4-ethoxyphenyl)	8270	10
Phenanthrene	85–01–8	Phenanthrene	8100 8270	200 10
Phenol	108–95–2	Phenol	8040 8270	1 10
p-Phenylenediamine	106–50–3	1,4-Benzenediamine	8270	10
Phorate	298–02–2	Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester	8140 8270	2 10
2-Picoline	109–06–8	Pyridine, 2-methyl-	8240 8270	5 10
Pronamide	23950–58–5	Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-.	8270	10
Propionitrile; Ethyl cyanide	107–12–0	Propanenitrile	8015 8240	60 5
Pyrene	129–00–0	Pyrene	8100 8270	200 10
Pyridine	110–86–1	Pyridine	8240 8270	5 10
Safrole	94–59–7	1,3-Benzodioxole, 5-(2-propenyl)-	8270	10
Selenium	(Total)	Selenium	6010 7740 7741	750 20 20
Silver	(Total)	Silver	6010 7760	70 100
Silvex; 2,4,5-TP	93–72–1	Propanoic acid, 2-(2,4,5-trichlorophenoxy)-	8150	2
Styrene	100–42–5	Benzene, ethenyl-	8020 8240	1 5
Sulfide	18496–25–8	Sulfide	9030	10,000
2,4,5-T; 2,4,5-Trichlorophenoxyacetic acid.	93–76–5	Acetic acid, (2,4,5- trichlorophenoxy)-	8150	2
2,3,7,8-TCDD; 2,3,7,8-Tetrachlorodibenzo-p- dioxin	1746–01–6	Dibenzo[b,e][1,4]dioxin, 2,3,7,8-tetrachloro-	8280	0.005
1,2,4,5-Tetrachlorobenzene	95–94–3	Benzene, 1,2,4,5-tetrachloro-	8270	10
1,1,1,2-Tetrachloroethane	630–20–6	Ethane, 1,1,1,2-tetrachloro-	8010 8240	5 5

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GROUND-WATER MO

Common name [2]	CAS RN [3]	Ch
1,1,2,2-Tetrachloroethane	79–34–5	Ethane,
Tetrachloroethylene; Perchloroethylene; Tetrachloroethene.	127–18–4	Ethene, 1
2,3,4,6-Tetrachlorophenol	58–90–2	Phenol,
Tetraethyl dithiopyrophosphate; Sulfotepp.	3689–24–5	Thiodiph ester
Thallium	(Total)	Thallium
Tin	(Total)	Tin
Toluene	108–88–3	Benzen
o-Toluidine	95–53–4	Benzen
Toxaphene	8001–35–2	Toxaph
1,2,4-Trichlorobenzene	120–82–1	Benzen
1,1,1-Trichloroethane; Methylchloroform.	71–55–6	Ethane,
1,1,2-Trichloroethane	79–00–5	Ethane,
Trichloroethylene; Trichloroethene.	79–01–6	Ethene,
Trichlorofluoromethane	75–69–4	Methan
2,4,5-Trichlorophenol	95–95–4	Phenol,
2,4,6-Trichlorophenol	88–06–2	Phenol,
1,2,3-Trichloropropane	96–18–4	Propan
O,O,O-Triethyl phosphorothioate	126–68–1	Phospt
sym-Trinitrobenzene	99–35–4	Benzer
Vanadium	(Total)	Vanadi
Vinyl acetate	108–05–4	Acetic
Vinyl chloride	75–01–4	Ethene
Xylene (total)	1330–20–7	Benze
Zinc	(Total)	Zinc

[1] The regulatory requirements pertain only to the list informational purposes only. See also footnotes 5 and 6

[2] Common names are those widely used in governme many chemicals.

[3] Chemical Abstracts Service registry number. Where ... are included.

[4] CAS index names are those used in the 9th Cumula

[5] Suggested Methods refer to analytical procedure ... Waste", third edition, November 1986. Analytical detai CAUTION: The methods listed are representative SW- monitoring an analyte under the regulations.

GROUND-WATER MONITORING LIST [1]—Continued

Common name [2]	CAS RN [3]	Chemical abstracts service index name [4]	Suggested methods [5]	PQL (µg/L) [6]
1,1,2,2-Tetrachloroethane	79–34–5	Ethane, 1,1,2,2-tetrachloro-	8010	0.5
			8240	5
Tetrachloroethylene; Perchloroethylene; Tetrachloroethene.	127–18–4	Ethene, tetrachloro-	8010	0.5
			8240	5
2,3,4,6-Tetrachlorophenol	58–90–2	Phenol, 2,3,4,6-tetrachloro-	8270	10
Tetraethyl dithiopyrophosphate; Sulfotepp.	3689–24–5	Thiodiphosphoric acid ([(HO)$_2$P(S)]$_2$O), tetraethyl ester	8270	10
Thallium	(Total)	Thallium	6010	400
			7840	1,000
			7841	10
Tin	(Total)	Tin	7870	8,000
Toluene	108–88–3	Benzene, methyl-	8020	2
			8240	5
o-Toluidine	95–53–4	Benzenamine, 2-methyl-	8270	10
Toxaphene	8001–35–2	Toxaphene	8080	2
			8250	10
1,2,4-Trichlorobenzene	120–82–1	Benzene, 1,2,4-trichloro-	8270	10
1,1,1-Trichloroethane; Methylchloroform.	71–55–6	Ethane, 1,1,1-trichloro-	8240	5
1,1,2-Trichloroethane	79–00–5	Ethane, 1,1,2-trichloro-	8010	0.2
			8240	5
Trichloroethylene; Trichloroethene.	79–01–6	Ethene, trichloro-	8010	1
			8240	5
Trichlorofluoromethane	75–69–4	Methane, trichlorofluoro-	8010	10
			8240	5
2,4,5-Trichlorophenol	95–95–4	Phenol, 2,4,5-trichloro-	8270	10
2,4,6-Trichlorophenol	88–06–2	Phenol, 2,4,6-trichloro-	8040	5
			8270	10
1,2,3-Trichloropropane	96–18–4	Propane, 1,2,3-trichloro-	8010	10
			8240	5
O,O,O-Triethyl phosphorothioate	126–68–1	Phosphorothioic acid, O,O,O-triethyl ester	8270	10
sym-Trinitrobenzene	99–35–4	Benzene, 1,3,5-trinitro-	8270	10
Vanadium	(Total)	Vanadium	6010	80
			7910	2,000
			7911	40
Vinyl acetate	108–05–4	Acetic acid, ethenyl ester	8240	5
Vinyl chloride	75–01–4	Ethene, chloro-	8010	2
			8240	10
Xylene (total)	1330–20–7	Benzene, dimethyl-	8020	5
			8240	5
Zinc	(Total)	Zinc	6010	20
			7950	50

[1] The regulatory requirements pertain only to the list of substances; the right hand columns (Methods and PQL) are given for informational purposes only. See also footnotes 5 and 6.

[2] Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.

[3] Chemical Abstracts Service registry number. Where "Total" is entered, all species in the ground water that contain this element are included.

[4] CAS index names are those used in the 9th *Cumulative Index*.

[5] Suggested Methods refer to analytical procedure numbers used in EPA Report SW–846 "Test Methods for Evaluating Solid Waste", third edition, November 1986. Analytical details can be found in SW–846 and in documentation on file at the agency. CAUTION: The methods listed are representative SW–846 procedures and may not always be the most suitable method(s) for monitoring an analyte under the regulations.

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[6] Practical Quantitation Limits (PQLs) are the lowest concentrations of analytes in ground waters that can be reliably determined within specified limits of precision and accuracy by the indicated methods under routine laboratory operating conditions. The PQLs listed are generally stated to one significant figure. CAUTION: The PQL values in many cases are based only on a general estimate for the method and not on a determination for individual compounds; PQLs are not a part of the regulation.

[7] Polychlorinated biphenyls (CAS RN 1336-36-3); this category contains congener chemicals, including constituents of Aroclor-1016 (CAS RN 12674-11-2), Aroclor-1221 (CAS RN 11104-28-2), Aroclor-1232 (CAS RN 11141-16-5), Aroclor-1242 (CAS RN 53469-21-9), Aroclor-1248 (CAS RN 12672-29-6), Aroclor-1254 (CAS RN 11097-69-1), and Aroclor-1260 (CAS RN 11096-82-5). The PQL shown is an average value for PCB congeners.

[8] This category contains congener chemicals, including tetrachlorodibenzo-p-dioxins (see also 2,3,7,8-TCDD), pentachlorodibenzo-p-dioxins, and hexachlorodibenzo-p-dioxins. The PQL shown is an average value for PCDD congeners.

[9] This category contains congener chemicals, including tetrachlorodibenzofurans, pentachlorodibenzofurans, and hexachlorodibenzofurans. The PQL shown is an average value for PCDF congeners.

[52 FR 25947, July 9, 1987]

PART 265—INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

Subpart A—General

Sec.

Subpart B—General Facility Standards

Subpart C—Preparedness and Prevention

Subpart D—Contingency Plan and Emergency Procedures

Subpart E—Manifest System, Recordkeeping, and Reporting

Sec.

Subpart F—Ground-Water Monitoring

Subpart G—Closure and Post-Closure

Subpart H—Financial Requirements

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Subpart I—Use and Manag Containers

Subpart J—Tank Syst

Subpart K—Surface Impo

Subpart L—Waste Pi

DRAFT
BUILDING 889 SAMPLING AND ANALYSIS PLAN
APPENDIX C - APRIL 6, 1987 WISRC

Rocky Flats Plant

U.S. DEPARTMENT OF ENERGY

Rocky Flats Plant
Golden, Colorado

September, 1994

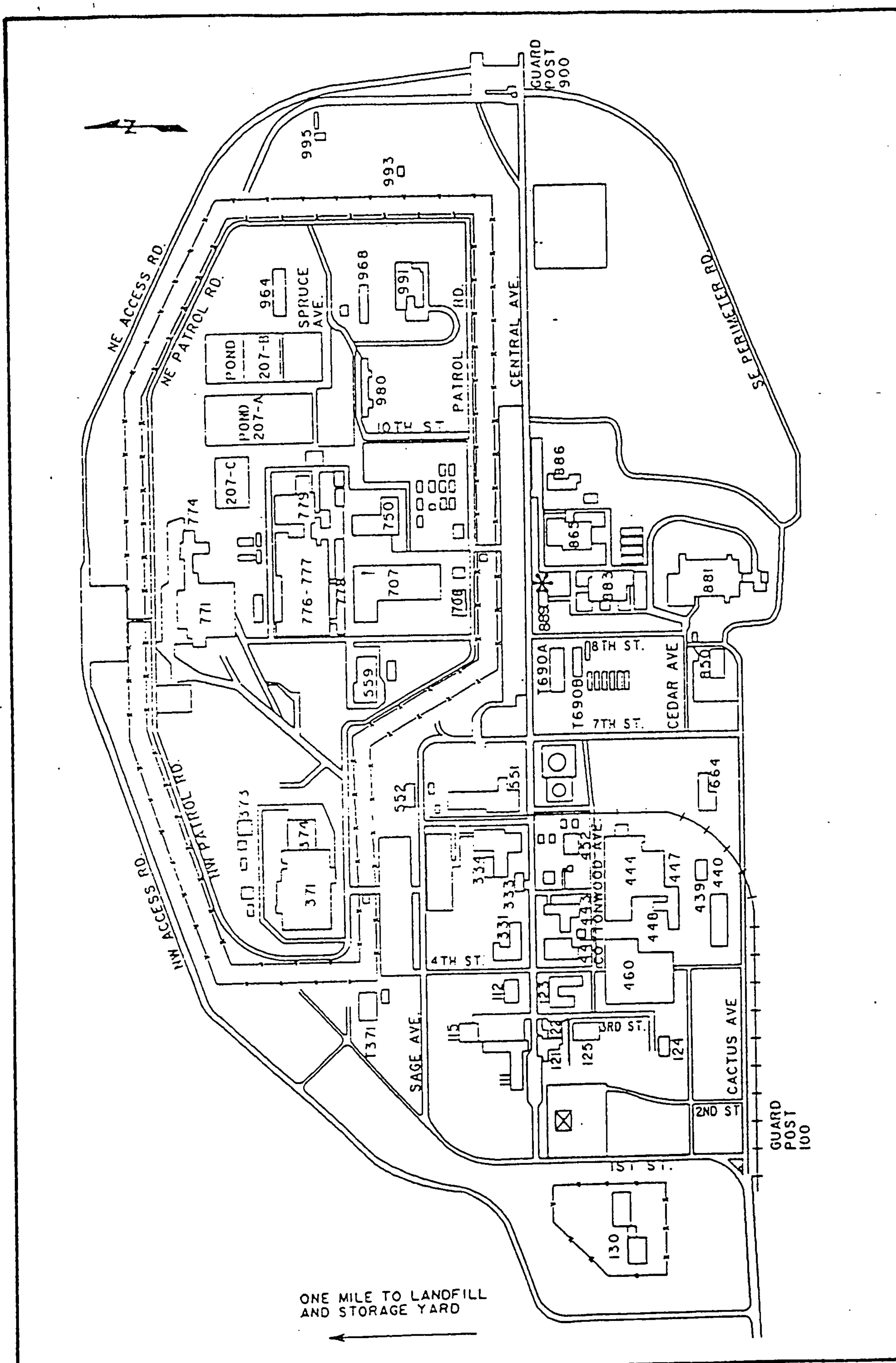
BUILDING 889

EQUIPMENT DECONTAMINATION

Equipment and waste materials are decontaminated here. Decontaminated equipment is returned to PU & D. Waste materials are crated for off-site disposal. One process has been identified in this building.

Processes identified for this building are:

1. Decontamination
99. Composite Waste



Rocky Flats Area Plot Plan
Building 889

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Rocky Flats Plant

Waste Stream Identification
April 6, 1987

BUILDING 889 WASTE STREAM SUMMARY

PROC NO.	WASTE NUMBER	SWMU REFNO	DESCRIPTION	WASTE TYPE	WASTE CLASS	STORAGE	GENERATION FREQUENCY	QUANTITY GENERATED	PRETREATMENT	METHOD OF TRANSPORT	NEXT DESTINATION	FINAL ON SITE DISPOSAL
1	05120	989	process waste	aqueous	H	tanks	per day	1800 gal/yr	none	process drain	composite waste 05320	building 374
99	05140	970	Waste Box	solid	H	4'x4'x7' crate	continuous	20000 lbs/yr	compacting	trucking	mixed waste storage	mixed waste storage
99	05320	40.32	889 process waste tanks	aqueous	H	400 gal. stnls. stl.	2-5 /month	22400 gal/yr	none	process drain	building 374	building 374

WASTE CLASS CODES: H - Hazardous, R - Radioactive, T - Transuranic, M - Mixed, N - Non Hazardous, Non Radioactive

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Rocky Flats Plant

Waste Sampling Report
April 6, 1987

BUILDING 889 WASTE STREAM SAMPLING

PROC NO	SAMPLE NO	WASTE NO	WASTE NAME	SAMPLE DATE	SAMPLE METHOD JUSTIFICATION	ANALYSIS COMPLETE	RCRA CORR	RCRA IGNIT	RCRA REACT	EPTOX METAL	HSL METAL	VOLIT ORGAN	SEMI VOLIT	PEST PCB	RADIO CHEM	NOTES	SAMPLING LOCATION
1	NS	05120	process waste	/ /	alt sample		Y	N	Y	Y	N	Y	Y	Y	Y	see waste 05320 sampled 9/3/86	
99	NS	05140	waste box	/ /	comp solid		N	N	N	Y	N	Y	Y	N	Y		
99	05320	05320	PROCESS WASTE TANKS	09/05/86	pour	Y	C	N	C	N	C	C	C	N	C	tanks are located in 866	VALVE ON RECIRCULATING PUMP FOR 889 TANKS
99	05321	05320	DUP OF 05320	09/05/86	coliwasa	Y	C	N	C	N	C	C	C	N	C		

889-4

SAMPLE NO CODES: NS - Not Sampled
NNS - No Need to Sample

ANALYTE CODES: Y - Analyte requested C - Analysis Complete
N - Not Requested N - Analysis Not Completed

Waste Stream Identification
Rocky Flats Plant
April 6, 1987

BUILDING 889 SOLID WASTE MANAGEMENT UNITS

REFER. NO.	ROOM NO.	WASTE OR PROC. NO.	UNIT NAME	OPERATIONAL STATUS	REGULATORY STATUS	WASTE TYPE	TYPE OF UNIT
33		1	Drum Steam Cleaning	Currently in operation	Permitted Unit		
989		05120	Solid Waste Crusher	Currently in Operation	Non-Hazardous Waste Unit	Empty drums, office furniture and HEPA filters	Waste compactor
990	106	05130	White 55 Gallon Drums of Paints and Solvents	Currently in Operation	Hazardous Waste 90-Day Accumulation Area	Waste paints and solvents	Drum
991		05140	Waste Crate	Currently in Operation	Non-Hazardous Waste Unit	Material that comes out of the solid waste crusher such as crushed empty drums, crushed office furniture and crushed cold HEPA filters.	Crate
40.32		05320	Process Waste Tank (In 866 Pump Station) T-4	Currently in operation	Permitted Unit	process waste pH 7-10	400 gal SST tank
40.33		05320	Process Waste Tank (In 866 Pump Station) T-5	Currently in operation	Permitted Unit	process waste pH 7-10	400 gal SST tank

Waste Stream Identification
Rocky Flats Plant
April 6, 1987

Process : 1 DECONTAMINATION

Description :

Contaminated equipment is steam cleaned when necessary. Hot waste can also be compacted by crushing before final disposal.

SWMU Refno	SWMU Name	Regulatory Status	Type of Unit
33	Drum Steam Cleaning	Permitted Unit	

Waste Streams:

05120 process waste

Waste Stream Identification
Rocky Flats Plant
April 6, 1987

Waste : 05120 PROCESS WASTE

Building : 889 EQUIPMENT DECONTAMINATION
Process : 1 DECONTAMINATION

Reg. Class : HAZARDOUS*

Type	: AQUEOUS	Transport	: PROCESS DRAIN
Quantity	: 1800 gal/yr	Storage	: TANKS
Gen. Freq.	: PER DAY	Next Dest.	: COMPOSITE WASTE 05320
Pretreatment	: NONE	Final Disp.	: BUILDING 374

* indicates classification is based primarily upon process knowledge.

Description:

Steam washdown from steam cleaning. Washdown may contain any contaminants that were present on the equipment that was cleaned. Also contains detergent used in steam cleaning. Drums (inside and outside) are also washed.

SWMU Association:

SWMU Refno	SWMU Name	Regulatory Status	Type of Unit
989	Solid Waste Crusher	Non-Hazardous Waste Unit	Waste compactor

Sampling Report: Waste stream not sampled - practical consideration: alt sample see waste 05320 sampled 9/3/86

Process : 99 COMPOSITE WASTE

Description :

Solid and aqueous waste streams generated in Building 889 are composited and sent to Buildings 664 and 374, respectfully, for disposal.

Waste Streams:

05140 Waste Box
05320 889 process waste tanks

Waste Stream Identification
Rocky Flats Plant
April 6, 1987

Waste : 05140 WASTE BOX

Building : 889 EQUIPMENT DECONTAMINATION
Process : 99 COMPOSITE WASTE

Reg. Class : MIXED RADIOACTIVE*

Type : SOLID
Quantity : 20000 lbs/yr
Gen. Freq. : CONTINUOUS
Pretreatment: COMPACTING

Transport : TRUCKING
Storage : 4'X4'X7' CRATE
Next Dest. : MIXED WASTE STORAGE
Final Disp. : MIXED WASTE STORAGE

* indicates classification is based primarily upon process knowledge.

Description:

Several solid waste streams from Building 881 are composited in 4 ft. x 4 ft. x 7 ft. waste crates. These waste streams include 03300, 03320, 04410, 04460, 04420, 03770, 03410, 03450, 03480, 04510, 04540, 04550, 04720, 05450, 05570, 05490, 05500, 05530, and 04750.

SWMU Association:

SWMU Refno	SWMU Name	Regulatory Status	Type of Unit
970	White 55 Gallon Drum	Non-Hazardous Waste Unit	Container
991	Waste Crate	Non-Hazardous Waste Unit	Crate

Sampling Report: Waste stream not sampled - practical consideration: comp solid

Waste Stream Identification
Rocky Flats Plant
April 6, 1987

Waste : 05320 889 PROCESS WASTE TANKS

Building : 889 EQUIPMENT DECONTAMINATION
Process : 99 COMPOSITE WASTE

Reg. Class : HAZARDOUS

Type : AQUEOUS
Quantity : 22400 gal/yr
Gen. Freq. : 2-5 /MONTH
Pretreatment: NONE

Transport : PROCESS DRAIN
Storage : 400 GAL. STNLS. STL.
Next Dest. : BUILDING 374
Final Disp. : BUILDING 374

Description:

889 waste drains to a small floor sump, then is pumped automatically to two above grade 400 gallon stainless steel tanks in building 866. From there the waste is pumped below grade to valve vault 6 and then to 374 via the valve vault system. Waste includes stream 05120.

SWMU Association:

SWMU Refno	SWMU Name	Regulatory Status	Type of Unit
40.32	Process Waste Tank (In 866 Pump Station) T-4	Permitted Unit	400 gal SST tank
40.33	Process Waste Tank (In 866 Pump Station) T-5	Permitted Unit	400 gal SST tank

Sampling Report:

SAMPLE NO	SAMPLE DATE	SAMPLE METHOD	ANALYSIS REQUESTED	SAMPLING LOCATION
05320	09/05/86	pour	Spec. Cond, Corrosivity, Reactivity, HSL Metals, Vol. Organics, Semi-Vol. Organics, Radio Chemistry	VALVE ON RECIRCULATING PUMP FOR 889 TANKS
05321	09/05/86	coliwasa	Spec. Cond, Corrosivity, Reactivity, HSL Metals, Vol. Organics, Semi-Vol. Organics, Radio Chemistry	

Waste Stream Identification
Rocky Flats Plant
April 6, 1987

Sample No. 05320
Building: 889 Waste No. 05320
Date Sampled: 09/05/86 Description: PROCESS WASTE TANKS

Inorganic: Batch No. Not Assigned

Ignitability: Not requested.

Corrosivity: Pass [pH=7.10]

Reactivity: (D003).. Cyanide: <5.0 ug/g
Sulfide: 52.0 ug/g

EP Tox Metals: Not requested.

Volatile: Batch No. 8609-791-(0210)

A7	Methylene Chloride (F001,F002,U080).........	12000	ug/l	* B *
HSL	Acetone (U002)...........................	61000	ug/l	* B *
HSL	Trichloroethene (U228)...................	33000	ug/l	
A7	Total Xylenes (F003).....................	3600	ug/l	

Semi-volatile: Batch No. 8609-808-(0270)

HSL	bis(2-Ethylhexyl)Phthalate (U028)...........	2200	ug/l

Pesticides/PCB's: Not requested.

HSL Metals: Batch No. 8

HSL	Aluminum................................	29700	ug/l
HSL	Barium (D005)...........................	3190	ug/l
HSL	Beryllium (P015)........................	3300	ug/l
HSL	Cadmium (D006,F006).....................	193	ug/l
HSL	Calcium.................................	54000	ug/l
HSL	Chromium (D007,F006,F019)...............	3650	ug/l
HSL	Cobalt..................................	324	ug/l
HSL	Copper..................................	3750	ug/l
HSL	Iron....................................	66150	ug/l
HSL	Lead (D008).............................	6840	ug/l
HSL	Magnesium...............................	13800	ug/l
HSL	Manganese...............................	1350	ug/l
HSL	Mercury (D009,U151).....................	13.0	ug/l
HSL	Nickel (F006)...........................	2590	ug/l
HSL	Potassium...............................	38200	ug/l
HSL	Sodium..................................	668000	ug/l
HSL	Vanadium................................	148	ug/l
HSL	Zinc....................................	14400	ug/l

Radio-chemistry: Batch No. 22651-6-2

Waste Stream Identification
Rocky Flats Plant
April 6, 1987

Sample No. 05320
Building: 889 Waste No. 05320
Date Sampled: 09/05/86 Description: PROCESS WASTE TANKS

Gross Alpha...	36000	+/-	2000	pCi/ml
Gross Beta....	46000	+/-	1000	pCi/ml
Pu-239........	14	+/-	4	pCi/ml
Am-241........	11	+/-	6	pCi/ml
U-233,234.....	1400	+/-	200	pCi/ml
U-238.........	5800	+/-	400	pCi/ml
Tritium.......	-0.07	+/-	0.22	pCi/ml

Waste Stream Identification
Rocky Flats Plant
April 6, 1987

Sample No. 05321
Building: 889 Waste No. 05320
Date Sampled: 09/05/86 Description: DUP OF 05320

Inorganic: Batch No. Not Assigned

Ignitability: Not requested.

Corrosivity: Pass [pH=7.08]

Reactivity: (D003).. Cyanide: <5.0 ug/g
Sulfide: 46.0 ug/g

EP Tox Metals: Not requested.

Volatile: Batch No. 8609-791-(0220)

A7	Methylene Chloride (F001,F002,U080).........	7500	ug/l * B *
HSL	Acetone (U002)............................	2600	ug/l * B *
A7	1,1,1-Trichloroethane (F001,F002)...........	40000	ug/l
HSL	Tetrachloroethene..........................	1600	ug/l
A7	Toluene (F005,F024,U220)....................	1700	ug/l
A7	Total Xylenes (F003)........................	3500	ug/l

Semi-volatile: Batch No. 8609-808-(0260)

HSL	4-Chloro-3-methylphenol....................	1200	ug/l
HSL	di-n-Butyl Phthalate.......................	6200	ug/l
HSL	bis(2-Ethylhexyl)Phthalate (U028)...........	3500	ug/l

Pesticides/PCB's: Not requested.

HSL Metals: Batch No. 8

Waste Stream Identification
Rocky Flats Plant
April 6, 1987

Sample No. 05321
Building: 889 Waste No. 05320
Date Sampled: 09/05/86 Description: DUP OF 05320

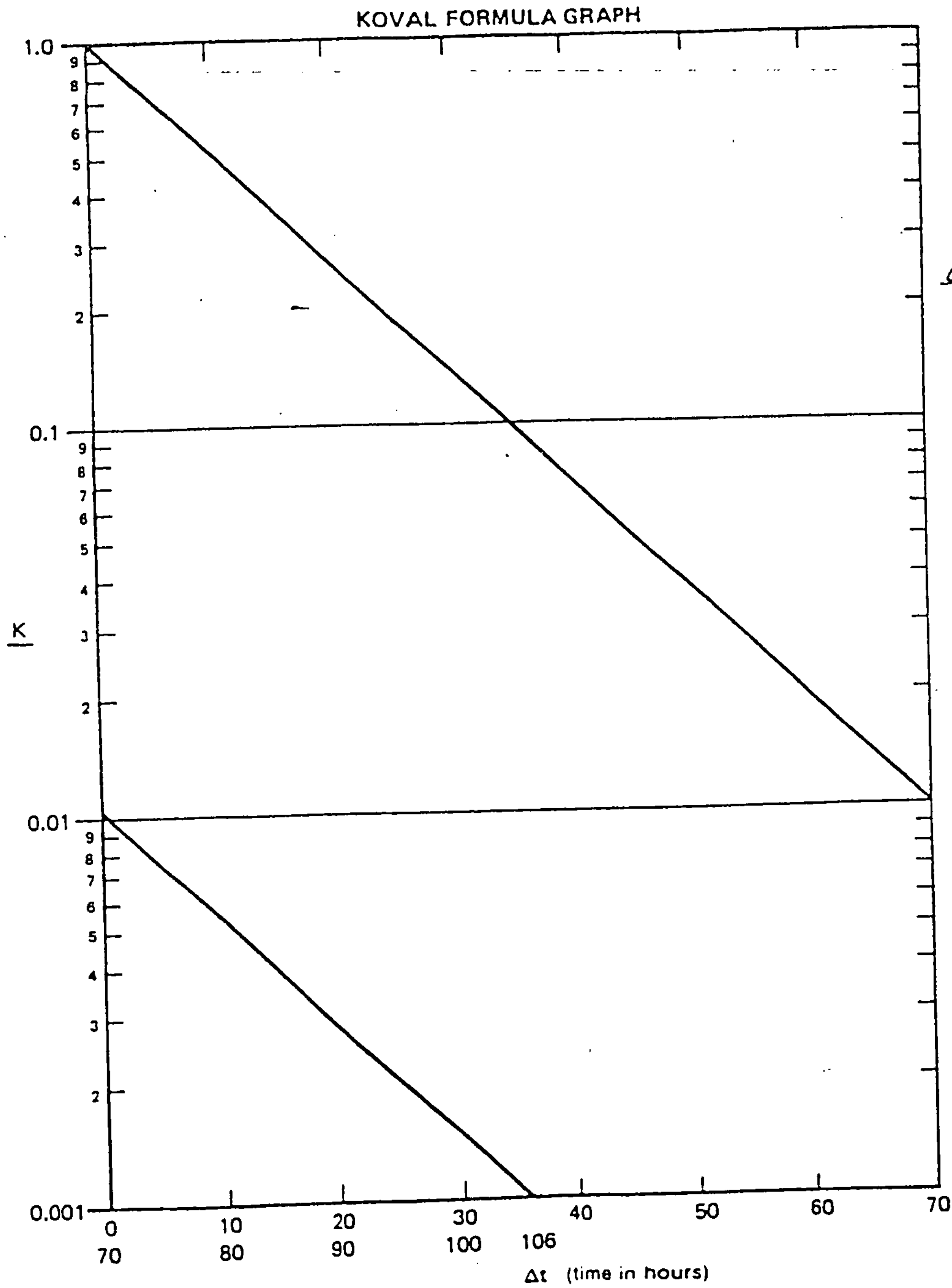
HSL	Aluminum	27200	ug/l
HSL	Arsenic (D004)	14.4	ug/l
HSL	Barium (D005)	3190	ug/l
HSL	Beryllium (P015)	3000	ug/l
HSL	Cadmium (D006,F006)	192	ug/l
HSL	Calcium	50700	ug/l
HSL	Chromium (D007,F006,F019)	3490	ug/l
HSL	Cobalt	327	ug/l
HSL	Copper	3740	ug/l
HSL	Iron	61400	ug/l
HSL	Lead (D008)	6330	ug/l
HSL	Magnesium	12600	ug/l
HSL	Manganese	1120	ug/l
HSL	Mercury (D009,U151)	10.0	ug/l
HSL	Nickel (F006)	2500	ug/l
HSL	Potassium	36200	ug/l
HSL	Silver (D011)	16.0	ug/l
HSL	Sodium	475000	ug/l
HSL	Vanadium	164	ug/l
HSL	Zinc	14700	ug/l

Radio-chemistry: Batch No. 22651-6-3

Gross Alpha	27000	+/-	1000	pCi/ml
Gross Beta	31000	+/-	1000	pCi/ml
Pu-239	18	+/-	4	pCi/ml
Am-241	11	+/-	6	pCi/ml
U-233,234	1100	+/-	200	pCi/ml
U-238	5900	+/-	400	pCi/ml
Tritium	0.12	+/-	0.23	pCi/ml

ATTACHMENT 9.3

KOVAL FORMULA GRAPH



Δt	K
4	.78
5	.73
6	.68
7	.64
8	.59
9	.56
10	.52
11	.49
12	.46
13	.43
14	.40
15	.38
16	.35
17	.33
18	.31
19	.29
20	.27
21	.255
22	.24
23	.225
24	.21
28	.16
32	.13
36	.096
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48	.043
52	.032
56	.026
60	.019
64	.016
68	.012

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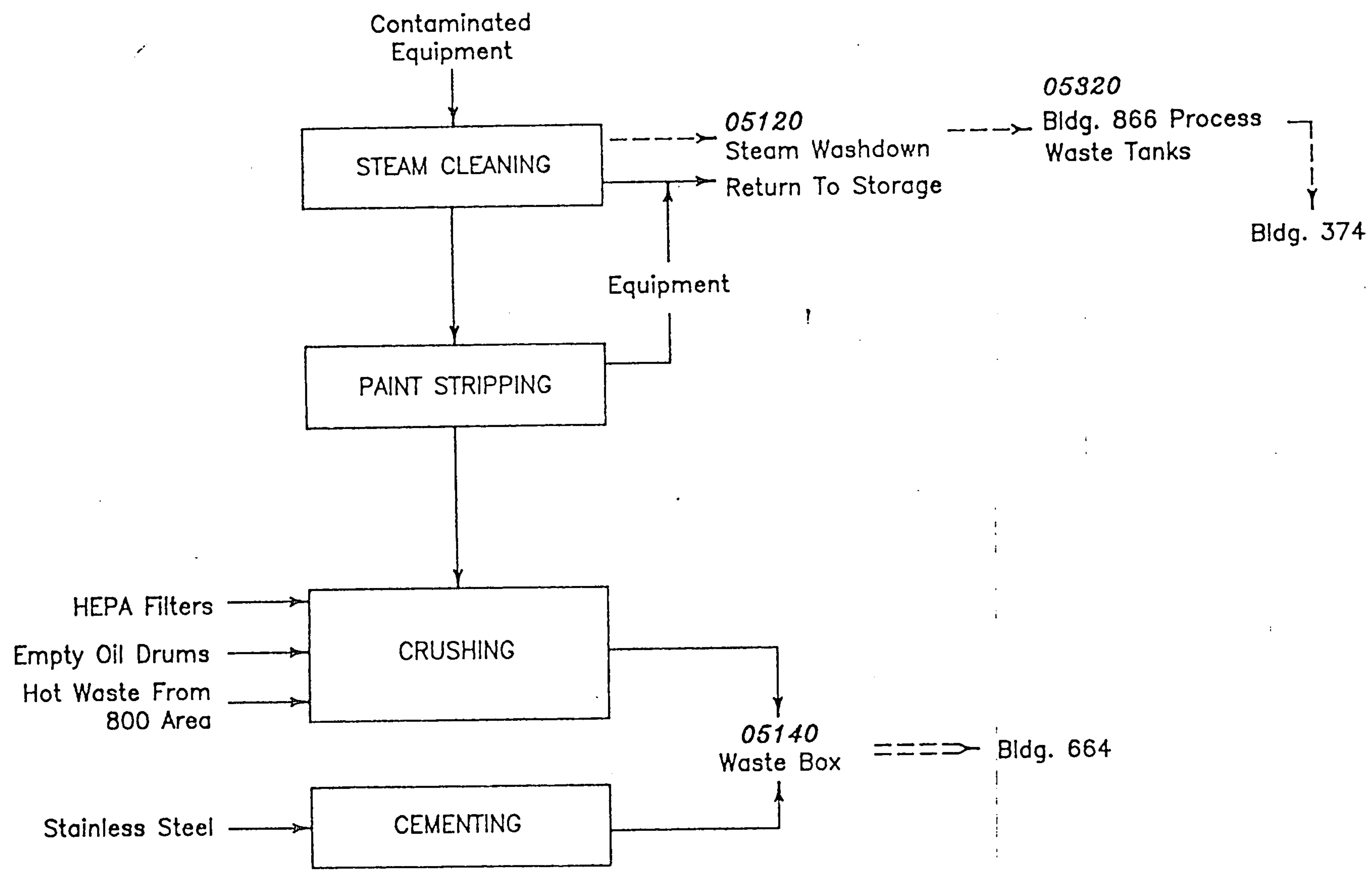

U. S. DEPARTMENT OF ENERGY
ROCKY FLATS PLANT
GOLDEN, COLORADO

BUILDING 889 EQUIPMENT DECONTAMINATION
PROCESS 1 DECONTAMINATION

WESTON
SUITE 600
215 UNION BOULEVARD
LAKEWOOD, COLORADO 80228

DATE: NOVEMBER, 1986
REV. NO. 1 APRIL, 1987

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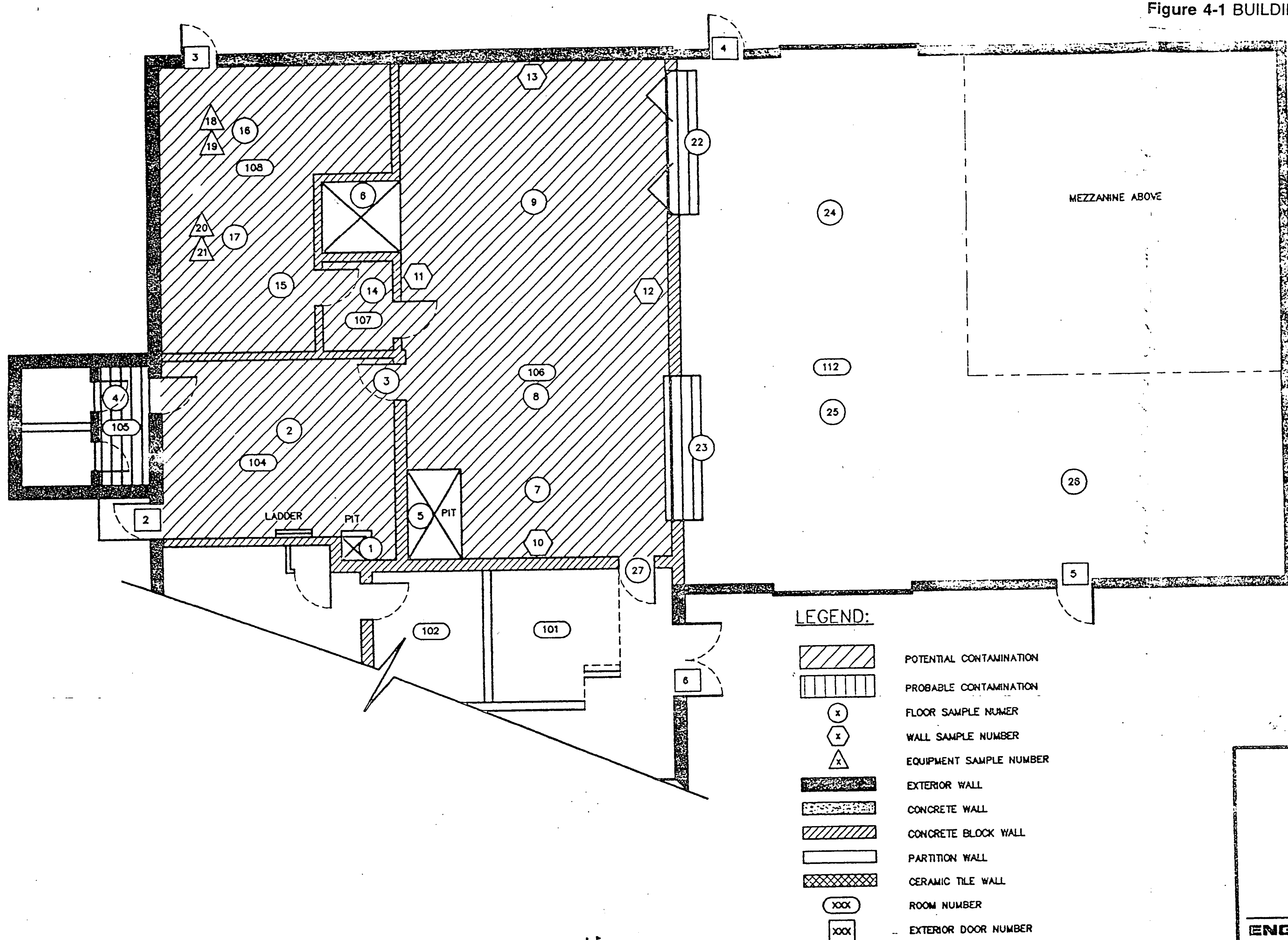

BUILDING 889
HAZARDOUS MATERIAL
SAMPLING LOCATIONS
ROOMS 104, 105, 106,
107, 108, 112

EG&G Rocky Flats Plant
Golden, Colorado

ENGINEERING-SCIENCE, INC.
Denver, Colorado