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# **Environmental Investigations and Site Characterization Manual**

R. L. Kuntz

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\_\_\_\_\_  
(Signature)

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\_\_\_\_\_  
(Date)

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ICA = INSTRUCTION CHANGE AUTHORIZATION, (P) = PERMANENT (BLUE SHEET), (T) = ONE TIME (GOLDENROD SHEET)

List of Canceled and Superseded EII's

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EII 1.3	Preparation and Control of Desk Instructions (No technical impact)	0	CANCELED 08/15/89
EII 1.8	Controlled Notebooks (EII 1.5)		NEVER ISSUED
EII 1.11	Technical Data Management (Being revised for reissue)	0	CANCELED 02/14/92
EII 2.3	Administration of Radiation Surveys to Support Environmental Characterization Work on the Hanford Site (Refer to EII 1.15 and WHC-CM-4-10)	0	CANCELED 12/31/92
EII 3.1	User Calibration of Health and Safety M&TE (Combined with EII 3.2)	1	CANCELED 06/29/90
EII 3.3	Calibration Coordination (No technical impact)		NEVER ISSUED
EII 3.4	Field Screening	0	CANCELED 01/31/94
EII 4.1	Nonradioactive Hazardous Waste Disposal (Controlled by WHC-CM-5-16)	1	CANCELED 05/25/90
EII 5.6	Control of Geophysical Logging (Revised and moved to EII 11.1)	1	CANCELED 07/06/90
EII 5.12	Air Quality Sampling of Ambient and Downwind Air at Waste Sites (Controlled by HEHF)	0	CANCELED 04/08/91
EII 5.13	Drum Sampling (WHC-CM-4-3, Vol 4, HWO-1 App. J/EII 4.2/EII 4.3)	0	CANCELED 01/25/93
EII 5.14	Drum Handling (WHC-CM-4-3, Vol 4, HWO-1 App. J/EII 4.2/EII 4.3)	0	CANCELED 01/25/93
EII 6.1	Activity Reports of Field Operations (Fars moved to EII's 6.4/6.7/8.3)	2	CANCELED 04/19/93

List of Canceled and Superseded EIIs

<u>Number</u>	<u>Title</u>	<u>Rev</u>	<u>Effective Date</u>
EII 6.2	Groundwater Monitoring Wells Technical Oversight (Combined with EII 6.7/6.8)	2	CANCELED 06/05/90
EII 6.3	Preparation of Groundwater Monitoring Well Construction Specifications (Controlled by WHC-CM-6-1)	0	CANCELED 02/26/90
EII 6.5	Plugging and Abandoning of Characterization Boreholes (Combined with EII 6.7)	0	CANCELED 03/29/91
EII 6.8	Well Completion (Combined with EII 6.7)	1	CANCELED 04/19/93
EII 7.1	Pest Control Administration and Operation (Not related to field operations)	1	CANCELED 07/22/92
EII 8.1	Borehole/Site Reclamation and Verification (Controlled by WHC-CM-5-38)	1	CANCELED 08/15/89
EII 8.2	Borehole/Site Reclamation Activity Reports (Controlled by WHC-CM-5-38)	1	CANCELED 08/15/89
EII 14.1	<i>Analytical Laboratory Data Management</i> (Work transferred to ERC)	0	CANCELED 04/24/95

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**WESTINGHOUSE HANFORD COMPANY**  
**ENVIRONMENTAL INVESTIGATIONS AND**  
**SITE CHARACTERIZATION MANUAL**  
**INTRODUCTION**

**Manual** WHC-CM-7-7  
**Section** Introduction, REV 2  
**Page** 1 of 2  
**Effective Date** July 01, 1994  
**Organization** RR/Environmental  
Division

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This manual provides Bechtel Hanford, Inc.(BHI) and Westinghouse Hanford Company (WHC) with instructions for conducting environmental investigations and site characterization activities.

This manual addresses the following site characterization work activities:

- Hazardous Waste Site Entry
- Hazardous Waste Site Health and Safety
- Investigation Derived Waste Management
- Chain of Custody
- Field Sampling
- Drilling/Maintenance/Remediation
- Geology
- Hydrology
- Biology
- Geophysics.

Key instructions within Sections 6.0 and 8.0 of this manual contain work control mechanisms (checklists or planning documents) that, through implementation and approval, provide work control for drilling, maintenance, and remediation activities.

In addition, this manual includes instructions that provide controls for administrative activities such as:

- Preparation and revision of instructions for the manual
- Approval and processing of field changes (Instruction Change Authorizations [ICAs]) to approved instructions
- Preparation of field logbooks
- Review and approval of primary and secondary documents
- Protection and submittal of records to permanent retention
- Notification of the Administrative Record organization of records generated.

The manual also provides technical instructions intended for general application to a broad scope of field activities and controls for performing and documenting activities in support of the BHI and WHC missions.

The manual was written for the trained, experienced professional who performs every site characterization activity at hazardous waste sites as a discrete and different work assignment. Every hazardous waste site requires a different level of personal protection, a different monitoring

system to detect hazards, and approved changes in work procedures to account for conditions at each site.

Not all procedures in this manual are suitable for use at every job site, and some cannot be accomplished without personal protection. The amount of time spent executing a procedure and the number of trained, experienced people needed to accomplish the work increases as the need for personal protection increases.

The manual is intended to be used primarily in conjunction with and to support the activities for hazardous waste sites at Hanford as directed by the specific requirements of various work plans authored by BHI and WHC. The manual is also intended to be used in support of other environmental activities managed by BHI and WHC.

Selected instructions within the manual are used as implementing documents for regulator-approved Resource Conservation and Recovery Act (RCRA)/Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Work Plan activities under the Hanford Federal Facility Agreement and Consent Order by reference for the conduct, quality control/assurance, and standardization of environmental investigation operations within BHI and WHC. Contracted services and support personnel are also subject to compliance with WHC-CM-7-7 when required by contract documents or if governing documents have not been identified in the contract documents or work plans.

As RCRA/CERCLA and other environmental activities progress, changes will be made to issued environmental investigations instructions (EIIs), and additional EIIs will be written. The revised and newly developed EIIs will be reviewed, approved, processed for clearance, and distributed. This course of action allows lessons learned to be incorporated into existing and future instructions and compilation of a manual that directs those activities that the functions are responsible for, following the guidance provided in "A Compendium of Superfund Field Operations Methods," OSWER Directive 9355.014, December 1987.

When planning work, authors need to incorporate the requirements of WHC-CM-1-6, Chapter 3, Part 1, EII 2.1, "Preparation of Site-Specific Health and Safety Plans", and WHC-CM-7-8, Volume 2, Section 3.1, into the work documents.

The degree of rigor required in the application of the controls described in this manual is indicated by word usage in the requirements. "Shall" and "must" signify that compliance is mandatory to ensure a sound environmental investigation program. "Should" and "may" indicate prudent practices to which reasonable exceptions can be made through the application of sound judgement.

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**WESTINGHOUSE HANFORD COMPANY**  
**ENVIRONMENTAL INVESTIGATIONS AND**  
**SITE CHARACTERIZATION MANUAL**  
**QUALITY ASSURANCE RECORDS**

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**Manual** WHC-CM-7-7  
**Section** QA Records, REV 0  
**Page** 1 of 6  
**Effective Date** March 15, 1993  
**Organization** RR/Environmental  
Division

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## 1.0 PURPOSE/SCOPE

This is a living document and is not all-inclusive. Classification for records not listed is on a case-by-case basis according to criteria of Section 2.0. The records listed in Table 1 have been designated as quality assurance records when generated during environmental site characterization and investigation activities conducted for CERCLA (RI/FS), RCRA (RFI/CMS), Interim Response Actions (CERCLA) or Interim Measures (RCRA). The determination that these are quality assurance records was reached by review of record descriptions in WHC-CM-4-2, Quality Assurance Manual, QR 17.0, "Quality Assurance Records," and WHC-CM-3-5, Document Control and Records Management, Section 9.0, "Quality Assurance Records."

This section of the manual provides:

1. Figure 1. The flow for quality assurance records generated during environmental site characterization and investigation activities conducted for CERCLA (RI/FS), RCRA (RFI/CMS), Interim Response Actions (CERCLA) or Interim Measures (RCRA).
2. Table 1. The list of quality assurance records generated by using the Environmental Investigations Instructions (EII) in this manual.
3. Table 2. A list of other record material that may be generated when using the EIIs or by implementing the identified company document(s). Copies of these are usually retained as part of the project file.

## 2.0 OTHER QUALITY ASSURANCE RECORD MATERIAL

Documentation not generated by the EIIs may also be quality assurance record material. Documentation shall be evaluated for classification in the quality assurance record category using the following criteria:

1. Documentation contains data that is nonretrievable or difficult to recover. To recover the data would require a significant expenditure of time, funds and/or personnel exposure.
2. Documentation supports an agreement with a regulatory authority/agency or a change in an agreement with a regulatory authority/agency.
3. Documentation contains one-of-a-kind information that will be directly used to make decisions regarding the remediation of a waste disposal site.

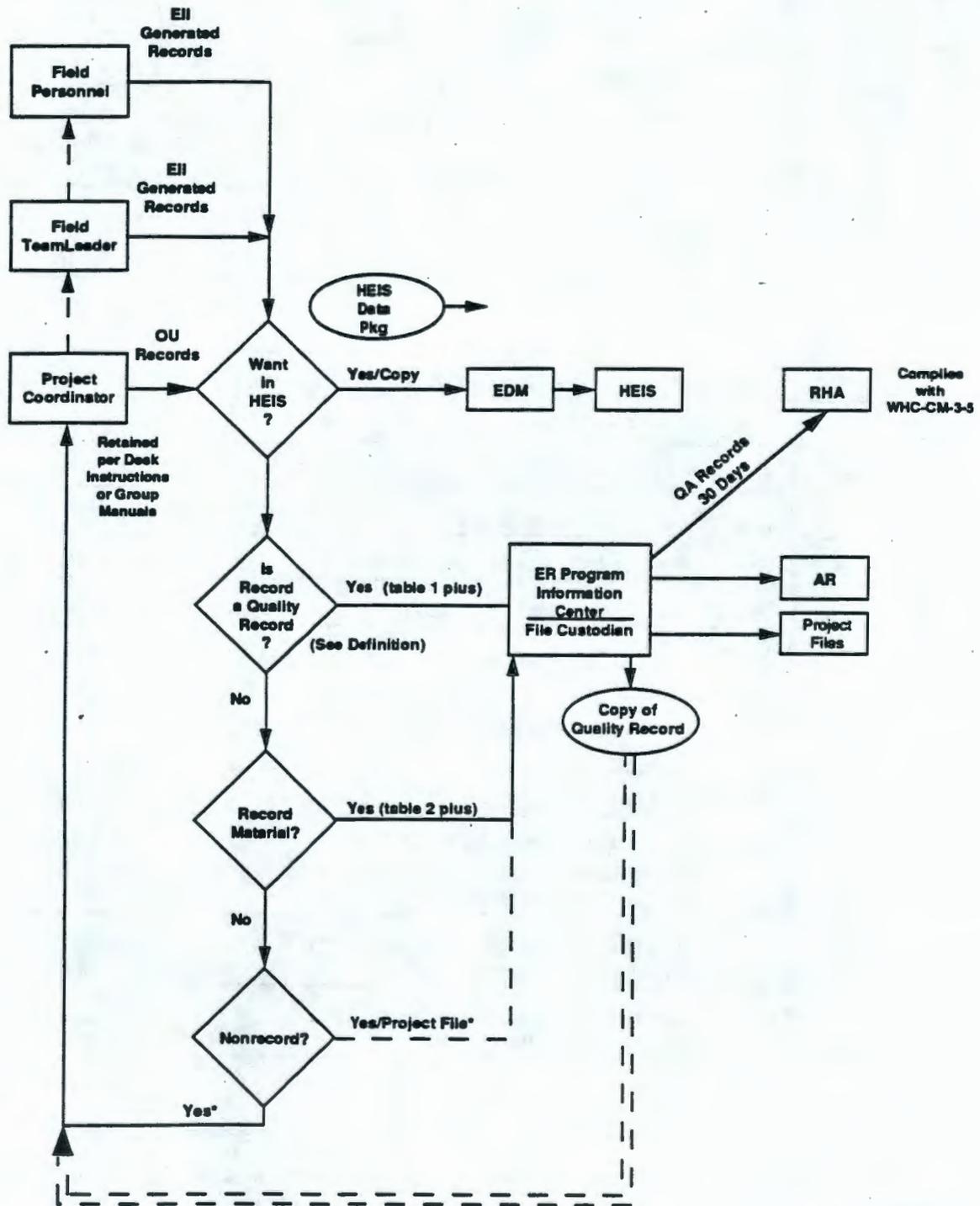
Examples of documentation that meet the above criteria and would be classified as quality assurance records are:

- a. Unit Managers Meeting Minutes.
- b. Letters from regulatory authorities/agencies and subcontractors.
- c. Information gathered during the course of interviews with current or former employees that provide historical information.

### **3.0 QUALITY ASSURANCE RECORD PROCESSING**

Quality assurance records listed in Table 1 are maintained and processed for permanent retention in accordance with WHC-CM-3-5, Sections 5 and 9, the EII specifying generation of the record and approved organizational RIDS.

Figure 1. Flow for Quality Assurance Records.



\* Nonrecord material may be in PC/FTL/field personnel reference files or in the Project file as support information.

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## QUALITY ASSURANCE RECORDS

Effective Date September 7, 1993

Table 1. Quality Assurance Records. (sheet 1 of 2)

## QUALITY ASSURANCE RECORDS

EII No.	Title of Form	Form Number
EII 1.5	Field Logbooks	N/A
EII 1.9	EEG Comment Record (primary/secondary document reviews)	A-6000-460, A-6000-461 and external comments
EII 1.13	Readiness Review Documentation	N/A
EII 3.5	<i>Cone Penetrometer</i>	A-6001-188
EII 5.1	Chain of Custody	A-6000-407 *
EII 5.1	<i>Chain of Custody/Sample Analysis Request</i>	BD-6000-828
EII 5.2	Sample Analysis Request	A-6000-406 *
EII 5.4	Field Cleaning and/or Decontamination	BC-6000-292
EII 5.8	Groundwater Sample Report	A-6000-480
EII 5.9	Soil Gas Field Sampling Report	A-6000-524
EII 5.14	Drum Handling/Sampling Report	A-6000-549
EII 6.4	Field Activity Report - Borehole Television Survey	BC-6000-419
EII 6.4	Well Services Request (Resource Protection Well Services)	BC-6000-316
EII 6.4	Field Activity Report - Well Services	BC-6000-278
EII 6.4	Well Services Planning Report ...Drawing Continuation Page ...Text Continuation Page	BC-6000-317.1, BC-6000-317.2, BC-6000-317.3
EII 6.7	Field Activity Report - Air Rotary Rig and Continuation Page	BC-6000-779 BC-6000-780
EII 6.7	Field Activity Report - Auger Rig and Continuation Page	BC-6000-277 BC-6000-396
EII 6.7	Field Activity Report - Cable Tool Rig and Continuation Sheet	BC-6000-290 BC-6000-397

\* The completed form is submitted to IRM with the Analytical Laboratory Data Package or the Physical Properties Data Package.

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## QUALITY ASSURANCE RECORDS

Table 1. Quality Assurance Records (continued).  
(sheet 2 of 2)

## QUALITY ASSURANCE RECORDS (CONT.)

EII No.	Title of Form	Form Number
EII 6.7	Field Activity Report - Core Rig	BC-6000-288
EII 6.7	Field Activity Report - Sonic Rig and Continuation Page	BC-6000-788 BC-6000-787
EII 6.7	FAR- Cement Calculation - <i>Continuation Page</i>	BC-6000-279
EII 6.7	FAR - Drawing Continuation Page	BC-6000-281
EII 6.7	FAR - Tubular Goods Tally - <i>Continuation Page</i>	BC-6000-280
EII 6.7	Well Completion Log	A-6000-437
EII 6.7	Well Construction <i>Summary Report</i>	A-6000-436
EII 6.7	<i>Well Construction Verification Report</i>	A-6000-868
EII 8.3	Groundwater Well Remediation/Decommissioning Checklist	A-6000-472
EII 8.3	Field Activity Report - Well Remediation and Abandonment	BC-6000-287
EII 9.1	Borehole Log	A-6000-382
EII 10.1	Borehole Test Information	BD-6000-295
EII 10.1	Instantaneous Slug Test Data Sheet	BD-6000-293
EII 10.2	Groundwater Measurement	A-6000-458
EII 10.4	Drawdown/Recovery	A-6000-402
EII 10.4	Equipment Configuration and Well Head Diagram	A-6000-417
EII 10.4	Well Development Form	A-6000-393
EII 11.1	Log Header (2 pages w/geotechnical log attached)	A-6000-520
EII 11.1	Logging Data Sheet (geophysical log)	A-6000-664
EII 11.1	Logging Specification Sheet (geophysical log)	A-6000-663
EII 11.2	Magnetic Data Readings	A-6000-684
EII 11.2	Seismic Observers Log Sheet	A-6000-680
EII 14.1	Analytical Laboratory Data Package	N/A **

\*\* The ALDP is received and processed for retention in accordance with EII 14.1.

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## QUALITY ASSURANCE RECORDS

Table 2. Other Record Material.

Title of Form	Manual/Section	Form Number
1706KE Sample Prep Facility Material In		BC-6000-603
1706KE Sample Prep Facility Material Out		BC-6000-604
ALARA Checklist	WHC-CM-4-11, 7.0	A-6000-291
ALARA Management Worksheet (AMW)	WHC-CM-4-11, 7.0	BC-6000-217
Cultural Resources Review (letter)	WHC-CM-7-5, 12.3	N/A
Davis Bacon Plant Forces Review	WHC-CM-8-8, JCS-6	A-6400-018
Drilling Planning	WHC-CM-7-7, EII 6.7	A-6000-422
Excavation Permit	WHC-CM-4-3, CM-8/ WHC-CM-8-7, 503.1	A-7400-373
Hazard Classification	WHC-CM-4-46, 4.0	N/A
Hazardous Material Shipment Record	WHC-CM-2-14, III	54-3000-596
Hazardous Waste Operation <i>Plan/</i> <i>Site-Specific Health and Safety Plan</i>	WHC-CM-4-3, Vol. 4/ WHC-CM-7-7, EII 2.1	N/A
<i>Confined Space Entry Permit</i>	WHC-CM-4-40, 3.1	A-6000-895
LOI (Letter of Instruction)	WHC-CM-6-2, PM-10/ WHC-CM-7-7, EII 1.15	N/A
NEPA (National Environmental Policy Act)	WHC-CM-7-5, 4.0	N/A
Offsite Property Control	WHC-CM-2-3, 6.4	54-3000-479
Onsite Radioactive Shipment Record and Offsite Radioactive Shipment Record	WHC-CM-2-14/ Part IV, 1.3 & 3.3	54-3000-609 54-6000-088
Radiation Work Permit	WHC-CM-1-6	A-6000-272
<i>Resource Protection Well Structure Field Inspection Report</i>	WHC-CM-7-7, EII 6.4	A-6000-499
Request for Special Analysis (RSA)		BC-6700-181
Site Evaluation Letter	WHC-CM-7-8, 905	N/A
Well Completion	WHC-CM-7-7, EII 6.7	A-6000-435
Well Summary Sheet	WHC-CM-7-7, EII 9.1	A-6000-384

**Hazardous Waste Site Entry Requirements****1.0 PURPOSE**

This Environmental Investigations Instruction (EII) provides the minimum requirements for obtaining entry into a hazardous waste site. These requirements are in accordance with WHC-CM-4-3, Volume 4.

**2.0 SCOPE**

This EII applies to all personnel (e.g., Westinghouse Hanford Company [WHC], Kaiser Engineers Hanford Company [KEH], Pacific Northwest Laboratory [PNL], contractors, visitors) who enter hazardous waste sites. This EII relates specifically to RCRA and CERCLA field activities but may be used for other investigations and programs if applicable.

**3.0 RESPONSIBILITIES****4.1 Cognizant Manager**

The cognizant manager is responsible for:

1. Assigning only qualified/trained personnel to work on hazardous waste sites.
2. Implementing this EII for all personnel.
3. Verifying that all training and medical requirements, as specified by the applicable site-specific health and safety plan and Radiation Work Permit (RWP), are current by completing a Hazardous Waste Worker Status Report *or equivalent form*, (form A-6000-984, available on Siteforms *may be used*), in accordance with the following instructions:
  - a. Each field shall be filled in with an expiration date, unless the training is an initial-training-only requirement (example - 24-hour on-the-job training. The date of completion will be entered for these initial-training-only courses.)
  - b. Determinations of expiration dates shall be made following the course outline (e.g., yearly retrain, bi-yearly retrain).
  - c. Fields for which training is not complete or not applicable shall be left blank or filled in as "N/A" (not applicable).
  - d. The "First Expiration Date" field will be used as a single date designating the nearest expiration date of a basic training or medical requirement.
  - e. The "First Expiration Date" field shall be left blank if any of the basic training has not been completed or is delinquent.
  - f. Bioassay requirements and additional training requirements are not included in the "First Expiration Date" field. Additional training and bioassay requirements will be reviewed on an as-required basis.

**Hazardous Waste Site Entry Requirements**

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4. Updating Hazardous Waste Worker Status Reports for personnel who have reported work restrictions or changes in their medical status.

**3.2 Field Team Leader**

The Field Team Leader (FTL) is responsible for:

1. Field team operations and safety.
2. Ensuring that all personnel who enter the hazardous waste site have evidence of training and medical clearance by reviewing the Hazardous Waste Worker Status Reports or have documentation obtained through the Facility Compliance group for visiting regulatory personnel.

**3.3 Health And Safety Officer**

The Health and Safety Officer is responsible for assigning site control responsibilities during preparation of site safety plans.

**3.4 Site Safety Officer**

The Site Safety Officer (SSO) has primary responsibility for safety at the hazardous waste site and is also responsible for ensuring that all personnel who enter the hazardous waste site have evidence of training and medical clearance by reviewing the Hazardous Waste Worker Status Reports or have documentation obtained through the Facility Compliance group for visiting regulatory personnel.

**3.5 Environmental Training**

Environmental Training is responsible for providing the required training to hazardous waste worker personnel in all aspects of hazardous waste site operations, as required in 29 CFR 1910.120(e)(1 through 4). Other contractors are responsible for providing equivalent training for their employees, as required in 29 CFR 1910.120(e)(1 through 4).

**3.6 Training Records Group**

The Training Records group is responsible for maintaining a soft reporting system for employees to indicate training that has been completed; this system will be the auditable record of training completed. All contractors will maintain a similar auditable record system for their employees.

**3.7 Hazardous Waste Site Worker**

Personnel assigned or scheduled by the cognizant manager or designee to work in a hazardous waste site are responsible for the following:

1. Reporting for the necessary company-scheduled physical and participating in the company medical surveillance program.

**Hazardous Waste Site Entry Requirements**

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2. Notifying their manager of any work restrictions and/or current medications.
3. Obtaining a documented mask fit.
4. Completing the mandatory formal training required by this EII.
5. Before entering a waste site, being properly dressed for the particular hazard (e.g., radiological, chemical) commensurate with the site-specific health and safety plan and RWP.

**4.0 REQUIREMENTS**

**4.1 Medical Clearance And Surveillance**

**4.1.1 WHC and other onsite contractors**

Before entering a hazardous waste site, all personnel shall participate in a hazardous waste worker medical surveillance program. Evidence of medical clearance will be included on the Hazardous Waste Worker Status Report. Each contractor will maintain an auditable record of required medical clearance and bioassays.

**4.1.2 Offsite contractors and subcontractors**

All offsite contracting personnel shall be medically cleared and on a medical surveillance program with their employer. Offsite contractors shall provide evidence of medical clearance by completing the Hazardous Waste Worker Status Report for personnel requiring access to a hazardous waste site and shall maintain an auditable record of this clearance.

**4.2 Training**

1. The level of training provided shall be consistent with the employee's job function and responsibilities, as determined by the cognizant manager, and must meet the minimum level of training required by the site-specific health and safety plan.
2. Personnel may be designated for additional training such as 8-hour supervisor training, first aid training, or asbestos training, as outlined in the site-specific health and safety plan.
3. Onsite emergency response personnel, as designated by the site-specific health and safety plan, shall be trained in SCBA (self-contained breathing apparatus) and CPR/first aid.

**4.3 Visiting Personnel At Hazardous Waste Sites**

Visiting personnel at hazardous waste sites will vary in their involvement in field activities. The following requirements apply to all visiting personnel, regardless of what contractor or subcontractor they represent.

**Hazardous Waste Site Entry Requirements**

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**4.3.1 Visiting personnel outside a hazardous waste site**

No formalized training is required for personnel outside a hazardous waste site. If the person must enter a radiation zone in order to reach the perimeter of the hazardous waste site, the Radiation Worker Training requirement applies, and the person shall be escorted by a field team member. The site-specific health and safety plan and RWP will dictate the clothing and respiratory protection requirements (if any) and any supplemental dosimetry that might be required.

**4.3.2 Visiting personnel within a hazardous waste site**

All visiting personnel entering a hazardous waste site shall provide the completed Hazardous Waste Worker Status Report to the FTL and/or SSO. In addition, the visitor must read the site-specific health and safety plan and attend all mandatory safety meetings. A bioassay may be required on a case-by-case basis as required by the RWP. A visitor who has not completed the field experience training must be escorted by a Hazardous Waste Worker Supervisor.

If an equipment malfunction occurs inside a hazardous waste site where maintenance personnel require emergency access to avoid costly downtime, the following requirements apply:

1. Hazardous waste worker entry requirements will be waived if the zone can be secured to ensure that the maintenance personnel will not be exposed or potentially exposed to chemical, radiological, or industrial safety hazards (e.g., shutting down all equipment, sealing the borehole).
2. Personnel requesting emergency access SHALL NOT be exempt from Radiation Worker Training and related medical clearance requirements if the zone is in a designated radiological area.
3. Personnel requesting emergency access shall be accompanied by the FTL or SSO at all times while in the hazardous waste site.
4. This emergency access must be authorized by the cognizant Health and Safety Officer.

**4.4 Site Control**

Access to a hazardous waste site is controlled by the FTL and/or SSO, as specified in the site-specific health and safety plan. All personnel who enter the confines of the hazardous waste site must show evidence of training and medical clearance on a completed Hazardous Waste Worker Status Report and coordinate the visit through one of these representatives. All personnel must be briefed on the site-specific health and safety plan, and the briefing must be documented on a course completion roster for course #000057 (Facility Orientation). In addition, all personnel must sign in the SSO's logbook and be logged in daily by the SSO when entering the control zone.

**Hazardous Waste Site Entry Requirements**

**5.0 RECORDS**

Record processing and disposition is in accordance with the following table:

NAME, Filing Unit Title or Description	Record Type*	Retention Period	Disposal Authority	Cut-off and Retirement Instructions
Facility Orientation course completion roster	R	Review annually	GRS 1.18	Transmit record copy to Training Records; copy maintained by FTL and/or SSO.
Employee medical status reports	NR	Until no longer needed	Nonrecord	Maintained by cognizant WHC manager until information is outdated or no longer needed.
WHC Hazardous Waste Worker Status Report(s)	NR	Until no longer needed	Nonrecord	Maintained by cognizant WHC manager and made available for site entry when needed. Discard when no longer needed.

\* R = Other Record Material; NR = Nonrecord

**6.0 DESIGNATED REVIEWING ORGANIZATION**

*The organization listed below reviews all but minor changes to this document. Comments from other reviewers are welcome, but are resolved at the process owner's option.*

Designated Reviewing Organization CMPOC

*Hanford Technical Services, process owner* *STS/HTS*

**7.0 FORM**

*Hazardous Waste Worker Status Report (A-6000-984, Siteform)*

**8.0 REFERENCES**

29 CFR 1910.120, "Hazardous Waste Operations and Emergency Response."

WHC-CM-4-3, *Industrial Safety Manual, Volume 4, Health and Safety Programs for Hazardous Waste Operations.*

**9.0 BIBLIOGRAPHY**

DOE 5480.10, "Contractor Industrial Hygiene Program."

Letter, C. J. Geier, WHC, to E. A. Bracken, RL, "Hanford Site Entry Protocol for Regulatory Agency Personnel," 91568630, September 17, 1991.

**Preparing and Revising Procedures**

**1.0 PURPOSE**

This procedure establishes the methods for preparing, reviewing, revising, canceling and approving procedures used for environmental activities.

**2.0 SCOPE**

This Environmental Investigations Instruction (EII) applies to all procedures prepared for issue and use in this manual and in the WHC-CM-7-8 manual.

**3.0 DEFINITIONS**

Definitions of terms and acronyms used in the EIIs are located in the Glossary/Acronyms section of this manual. Special terms used in the WHC-CM-7-8 manual are defined where needed in the procedures.

**4.0 PROCEDURE**

**4.1 Preparing Procedures**

- Author
1. Develop and format or revise the procedure in accordance with WHC-CM-3-6, Section 2.6.
  2. Determine the intended users for the document.
  3. Designate the organizations that must review the draft:
    - a. Designate those organizations specifically called out by name for responsibilities or tasks (outside of the Hanford Technical Services (HTS) organization). They will be the "designated reviewing organizations."
    - b. Designate other appropriate organizations both internal to the organization and courtesy reviewers.
  4. Inform groups or functions before making them responsible for using or reviewing the document.
  5. Prepare a draft of the procedure and include the designated reviewing organization list, other reviewers, and implementation notice.
  6. Forward the procedure package containing the following to the procedure processing point of contact (POC):
    - a. Wordperfect file and/or hard copy
    - b. Forms and attachments
    - c. Draft implementation notice
    - d. List of required designated reviewing organizations and other reviewers.

**Preparing and Revising Procedures**

- POC
7. Assign a procedure number and, when needed, notify each of the organizations identified by the author that a procedure intended for their use and/or review is being prepared.
  8. If the procedure references other controlled manuals, check the correctness of citations (such as MRP 2.16 of WHC-CM-1-3), to ensure that the cited section is still a part of the referenced manual.
  9. Ensure the format meets the requirements, including the forms and records sections. Prepare the Controlled Manual Action Transmittal (CMAT), WEF013, adding and modifying the implementation notice as needed.
- NOTE: If there are no designated reviewing organizations outside of the originating organization, indicate "none" in the block on the CMAT form.
10. Identify any special circumstances (e.g. procedure revision required in response to work stoppage, safety hazard, audit, surveillance) requiring a shorter review period on the CMAT.
  11. Forward the review package (CMAT and procedure) electronically to the reviewers. Send hard copies as requested.

**4.2 Reviewing Procedures**

- Reviewers
1. Review the draft to ensure that any requirements and procedures relating to your organization are clear, correct and usable.
    - a. If you are reviewing for a designated reviewing organization, (outside HTS), submit a CMAT with comments or "no comments" to the POC by the specified date.
    - b. If you are an originating organization internal reviewer, submit a CMAT by the specified date.
    - c. If you are a courtesy reviewer and have comments, submit them on a CMAT by the due date.

NOTE: Courtesy comments are resolved at the option of the originating organization.

2. If extensions are required, contact the POC.

- POC
3. If a designated reviewing organization fails to submit a response by the final cutoff date, send a memo documenting the missed review to the organization CMPOC and retain a copy of the memo in the file.

Preparing and Revising Procedures

4. After the comment review period closes, collect all of the comments received and forward the CMAT forms to the author for disposition.

**4.3 Resolving Comments**

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|----------------------|---|
| Author               | <ol style="list-style-type: none"><li>1. Consider all of the comments received from the reviewers.</li><li>2. If there are proposed changes and suggestions from designated reviewing organizations that you think should not be used, contact the reviewer and/or reviewing organization CMPOC to resolve the issues. Try to reach a resolution that addresses the reviewer's concerns while ensuring that the document meets its intent.</li><li>3. Resolve internal and designated reviewing organization comments to your satisfaction.</li><li>4. Enter agreed upon resolution(s) on the CMAT form.</li><li>5. Incorporate comment resolutions by marking up the draft revision.</li></ol> |
| Designated Reviewers | <ol style="list-style-type: none"><li>6. Help the author resolve your organization's comments promptly. Try to develop alternatives that satisfy the needs of both organizations.</li></ol>   |
| Author               | <ol style="list-style-type: none"><li>7. Provide the POC with a marked up copy of the procedure and completed CMATs.</li></ol>  |
| POC                  | <ol style="list-style-type: none"><li>8. Prepare the final procedure for approval.</li><li>9. If the document includes designated reviewing organizations outside your own organization, complete a Controlled Manual Review and Approval Summary (CMRAS), WEF012 to document that the designated reviewing organizations have accepted the resolution of their comments.</li></ol>   |

**4.4 Approving Procedures**

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|-----|--|
| POC | <ol style="list-style-type: none"><li>1. Assemble the approval package, ensuring that the implementation notice is correct and reflects the final version of the document.</li><li>2. Obtain the signature of the responsible manager <i>for procedures within WHC-CM-7-8. Obtain the signature of the responsible manager and the HTS organizational manager on the CMRAS for procedures within WHC-CM-7-7.</i></li><li>3. Prepare a procedure release package and transmit to Unclassified Document Control for reproduction and distribution.</li></ol> |
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## Preparing and Revising Procedures

**4.5 Requesting Changes to Procedures**

Any Employee 1. *If you are not the procedure author, complete a CMDCR to request changes to procedures in the WHC-CM-7-7 or WHC-CM-7-8 manuals. Send CMDCR to the POC.*

2. *If you are the procedure author, mark-up a copy of the procedure, provide justification for the changes and forward to the POC. A CMDCR may be prepared, but is not required.*

*NOTE: The POC will prepare the revised procedure for review (beginning with Section 4.1, step 10 of this procedure) or approval, based on the nature of the changes.*

POC 3. Forward the CMDCR and notification of previous commitments to the assigned author.

Procedure Author 4. Promptly review each CMDCR received.

5. Notify the CMDCR originator how your organization has decided to respond to their request.

a. If a decision cannot be made within 30 days, contact the CMDCR initiator and the POC to tell them when to expect a decision.

6. Return approved CMDCR to the POC.

**4.6 Obtaining a Controlled Copy of a CM**

Any Employee 1. Send the requestor's name, payroll number, MSIN, organization code, TPCN, the manual numbers and titles of the manuals requested to cc:Mail mailbox ^WHC Unclassified Document Control (or MSIN A4-18).

**4.7 Incorporating an Instruction Change Authorization (ICA)**

POC 1. Issue a procedure change or revision to incorporate changes required by a permanent ICA issued per EII 1.4.

**4.8 Making Minor Nontechnical Changes**

POC 1. When a minor nontechnical change to a procedure is required, generate a CMDCR *or CMRAS* for justification and description, then make the required change(s).

**Preparing and Revising Procedures**

2. *Forward the revised procedure and the CMRAS or CMDCR to the appropriate managers for approval.*

**4.9 Canceling Procedures**

- Any employee 1. Submit a CMDCR for approval of cancellation to the POC.
- POC 2. Transmit the CMDCR and a CMRAS to the manager or author assigned the responsibility for the procedure.

*NOTE: If a CMDCR was not used, provide justification on the CMRAS form.*

- Cog Manager/  
Approval  
Authority 3. Sign the CMRAS for final approval of the cancellation.

- POC 4. *Prepare a procedure release package for removal of the procedure and transmit to Unclassified Document Control for reproduction and distribution.*

**4.10 Biennial Procedure Review**

- POC 1. *Send a notice to authors when procedures have not been reviewed or revised within a 2 year period. Retain a copy of the notice in the history file.*

**5.0 RECORDS**

Record processing and disposition is in accordance with the following table.

Name Filing Unit Title or Description	Record Type*	Retention Period	Disposal Authority	Cut-off and Retirement Instructions
<i>Release packages, including MRIs ICAs, page changes, procedures)</i>	<i>QA</i>	<i>Lifetime</i>	<i>DRS 14.6a</i>	<i>Record copies are transmitted to Document Processing &amp; Distribution for archival storage by Unclassified Document Control.</i>
Procedure packages, revisions, page changes, ICAs, review documentation, CMRAS, CMDCRs.	R	2 years or when no longer needed	GRS 23.1	History files are maintained by the POC until no longer needed.

\* R = Other Record Material, QA = Quality Assurance Records.

Preparing and Revising Procedures

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## 6.0 DESIGNATED REVIEWING ORGANIZATIONS

The Hanford Technical Services (HTS) organization is the process owner and reviews all but minor changes to this document. Comments from other reviewers are welcome, but are resolved at the process owner's option.

## 7.0 FORMS

Controlled Manual Document Change Request (A-6000-269, WEF017)

Controlled Manual Review and Approval Summary (A-6000-359, WEF012)

Controlled Manual Action Transmittal (A-6000-252, WEF013)

Instruction Change Authorization (A-6000-370, WEF158)

## 8.0 REFERENCES

WHC-CM-1-3, *Management Requirements and Procedures*, MRP 2.16, *"Processing CM System Procedures."*

WHC-CM-3-6, *Uniform Publications System*, Section 2.6, "Formatting CMs."

WHC-CM-7-8, *Environmental Activities*.

## Instruction Change Authorizations

**1.0 PURPOSE**

This Environmental Investigations Instruction (EII) establishes the methods for documenting, approving, and implementing modifications to approved procedures.

**2.0 SCOPE**

This EII applies to procedures in the WHC-CM-7-7 and WHC-CM-7-8 manuals. Instruction Change Authorizations (ICA) are used after work has begun and unanticipated critical field conditions arise that necessitate modifying a procedure. *ICAs are also used to modify a procedure for specific project or activity needs.*

**3.0 PROCEDURE****3.1 Processing ICAs**

- Initiator
1. Prepare ICA form (A-6000-370/Macro WEF158) as follows:
    - a. Enter the procedure number and current revision.
    - b. Reference the specific step (or section) of the procedure to be modified.
    - c. Describe the modification to the level of detail required for implementation.
    - d. Determine whether the ICA should be categorized as a one-time or permanent ICA to the procedure.
      - 1) A one-time ICA facilitates as improvement to the activity for the particular situation *or project* and is approved for the duration of that activity or as specified by the approved ICA, e.g., for a project.
      - 2) A permanent ICA is required if the procedure is deficient or in error and consistently will result in questionable data, operational ineffectiveness, or unsafe working conditions.
    - e. Provide justification for the modification.
  2. Submit ICA to (initiator's) manager and procedure author's manager for review and approval.
- Cog Managers of Procedure Author and ICA Author
3. Review the ICA. Determine whether the requested of modification is required to conduct the applicable work more efficiently, cost-effectively, safely, or in a manner technically superior to that existing in the current approved version of the procedure.
  4. Determine whether decisions regarding Quality Assurance (QA), DOE,

**Instruction Change Authorizations**

Environmental and/or Safety involvement are appropriate and justified based on the assigned approval designator.

- Initiator
5. Obtain approval signatures from the procedure author's manager and the ICA author's manager or their designees on all ICAs.
  6. Additional approval is based on the approval designator in accordance with the requirements of WHC-CM-3-5, Section 12.7.

NOTE: Verbal/telecon approval is acceptable and shall be noted, including date, in the appropriate approval blocks on the ICA form.

- POC
7. Obtain signatures for verbal approval(s) (except ICAs discussed in Section 3.2).

**3.2 Approving ICAs In Critical Field Situations**

- Field Team  
Leader/Cog  
Engineer
1. Only during critical field situations (e.g., when a field crew is working on supplied air) may the change be implemented before the ICA form is approved. In such a circumstance, immediately implement the modification with concurrence from the Site Safety Officer (SSO) and the Environmental Quality Assurance (QA) representative.
  2. Once implemented, document the modification and the SSO and QA concurrences on the daily activity report or field logbook (or other documentation that provides traceability).
  3. Within two working days, document on the ICA form and obtain required approvals.

NOTE: If the approval authorities reject the ICA, Issue a nonconformance report in accordance with WHC-CM-4-2, QI 15.1.

**3.3 Implementing ICAs**

- Field Team  
Leader/Cog  
Engineer
1. Ensure that field personnel are aware of and use approved ICAs applicable to procedures related to the scope of work.
  2. Record pertinent information regarding ICA implementation on daily activity reports or other documentation providing traceability (e.g., Well Completion form) to record work-related use of ICA modification(s).

**3.4 Processing and Distributing ICAs**

- Initiator
1. After all signature approvals have been obtained, forward the approved ICA to the Procedure Point of Contact (POC).
- POC
2. Assign the unique tracking number.

Instruction Change Authorizations

- 3. Process a revision package including the ICA and an updated table of contents.
- Document Control 4. Distribute revision package to manual holders.
- POC 5. For permanent ICAs, initiate a Controlled Manual Document Change Request (CMDCR) in accordance with EII 1.2 of this manual.
- 6. Incorporate permanent ICAs into the applicable procedure and submit the revised procedure for approval within 30 working days of issuance of the ICA.
- 7. File the ICAs (one-time and permanent) with the appropriate procedure history package.

**4.0 RECORDS**

Records processing and disposition is in accordance with the following table.

Name - Filing Unit Title or Description	Record type*	Retention Period	Disposal Authority	Cut-off and Retirement Instructions
Approved Instruction Change Authorization (ICA), A-6000-370, WEF158	R	2 years or when no longer needed	GRS 23.1	Record copy transmitted to Document Processing & Distribution for archival storage by Document Control. A copy of each ICA is maintained with the applicable procedure history file.

\* R = Other Record Material

**5.0 DESIGNATED REVIEWING ORGANIZATION**

The organization listed below must review all but minor changes to this document. Comments from other reviewers are welcome, but are resolved at the process owner's option.

*Hanford Technical Services, process owner*

*STS/HTS*

**6.0 FORM**

Instruction Change Authorization (A-6000-370, WEF158)

**7.0 REFERENCES**

WHC-CM-3-5, *Document Control and Records Management Manual*, Section 12.7, "Approval of Environmental, Safety, and Quality Affecting Documents."

WHC-CM-4-2, *Quality Assurance Manual*, QI 15.1, "Nonconforming Item Reporting."

WHC-CM-7-8, *Environmental Engineering and Geotechnology Procedures*.

**Field Logbooks**

**1.0 PURPOSE**

This Environmental Investigations Instruction (EII) establishes the methods for acquisition, control, entry and disposition of field logbooks.

**2.0 SCOPE**

This EII applies to field logbooks maintained to provide a narrative sequence of events, observations and measurements (not required to be recorded elsewhere) during field sampling, environmental site characterization, investigations, or related events.

**3.0 REQUIREMENTS**

**Field Logbook(s):**

1. Must be bound and uniquely numbered with sequentially numbered pages.
2. Custody requirements must be maintained by anyone who has possession of the field logbook(s), (i.e., user, File Custodian (FC), auditor.)
3. Entries and corrections shall be legibly written using permanent, reproducible black ink and be complete, factual, detailed and objective.
4. Entries should be recorded as the event progresses. All entries shall be recorded within five (5) working days from the end of each sampling event.

**NOTE: Field logbook entries should not take precedence over performing and controlling the activities.**

5. Changes and/or corrections shall be made by user or cognizant scientist/field team leader by lining through the entry (e.g., errors) and when required adding corrected information. The change and/or correction and any added information shall include the date and identification of the person making the change/correction.

**NOTE: Erroneous information is not to be obliterated. The controlled field logbook (or any portion thereof) is not to be destroyed or thrown away, even if it is illegible or contains inaccuracies that require annotation.**

6. Changes and/or corrections required after a completed logbook has been transmitted to IRM for permanent storage require transmittal of a changed/corrected copy of the originally transmitted page(s) as a "supplemental" record in accordance with WHC-CM-3-5, *Document Control and Records Management*, Section 9.

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\* Various changes were made throughout the procedure, therefore, revision bars were not used.

Field Logbooks

7. Must provide sufficient data and observations to enable participants to reconstruct events and to refresh the memory of field personnel if called upon to give testimony during legal proceedings.
8. Attachments (photos, forms) must be securely attached, initialed and dated to show if tampering has taken place, the number of attachments on a page must be indicated, be maintainable a minimum of 25 years, and provide acceptable copies.
9. Unused portions of pages and the page following the last page used (when applicable) at the end of the project must be lined through, initialed and dated to provide objective evidence that further entries were not required.
10. Identify by number (on page 1 or on the last page or back inside spine) previous and subsequent field logbooks used for a continuing project (when applicable and known).
11. Must be returned to the File Custodian when no further entries are needed at project completion to meet record retention requirements.
12. Retention requirements are specified in Section 6.0.

**5.0 PROCEDURE**

**Obtaining Field Logbooks**

**NOTE:** Purchases other than store stock logbook(s) or controlled logbooks from Document Control will be submitted to the File Custodian for assignment.

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|----------------|--|
| Assignee       | 1. Contact the File Custodian to request a field logbook when needed and furnish the following information: <ol style="list-style-type: none"><li>a. Full name of the assignee who will be responsible for maintenance and control of the field logbook.</li><li>b. The field logbook number and project the logbook will be used for.</li></ol> |
| File Custodian | 2. Assign the field logbook by ensuring the information requested in a & b from item 1 above is entered on the field logbook and on the sign-in/out sheet.   |

**Maintenance and Control of Field Logbooks**

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| Assignee | 3. Upon receipt of the field logbook, affix signature and initials adjacent to the printed name (for traceability) before beginning entries. |
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**NOTE:** If the organization maintains a signature/initial log, step 3 above may be skipped.

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|---------------------|---|
| Field Team/Assignee | 4. All members of the field team may use the field logbook at the discretion of the assignee. |
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**Field Logbooks**

Assignee/Cog Manager 5. Return the field logbook to the File Custodian at the end of the project or if the assignee leaves the project.

Assignee/FC/Auditor/User 6. Maintain custody by having the field logbook:

- a. In their physical possession.
- b. Under direct observation
- c. Secured so that no tampering can occur.
- d. Secured in an area where access is restricted to authorized personnel only.

**NOTE: The term secured refers to such things as locked in a file cabinet, locked in the individual's desk, locked in the field vehicle during working hours, out of sight in the individual's office, when in a limited access building.**

Assignee/User 7. Ensure that sufficient information for the field activity is provided in the field logbook to refresh the memory of field personnel if called upon to give testimony during legal proceedings.

8. Refer to Appendix A for additional entry considerations.

9. Field logbooks require signature or initial and date

- a. At the beginning and end of each entry by each user.

- b. At the bottom of each page written on by the user.

**NOTE: The printed name, signature, and initials of the assignee and users must appear in a signature logbook and/or in the logbook for verification purposes.**

**NOTE: If the field logbook is designated as a Quality Assurance record, items 10 and 11 apply, if it is not, skip to item 12.**

10. Each week the logbook is in use, provide copies of sheets used to the file custodian. Or, upon project or activity completion, copy the used sheets and file in the project file (i.e., SAF file).

11. When the project is completed or the logbook is no longer needed, return it to the File Custodian.

**NOTE: Making frequent copies of used pages in field logbooks is considered a prudent task commensurate to the value of the logbook data. If the logbook were lost, destroyed, received water damage, the data would be retrievable on the copied pages.**

**Field Logbooks**

- File Custodian 12. The File Custodian acknowledges receipt of the returned logbook by signing and dating the sign-in/out sheet.
- Assignee 13. When all pages have been used or no further entries will be made, the assignee transmits completed field logbook(s) to the File Custodian for transmittal to the IRM in accordance with approved RIDS.
- File Custodian 14. Provide receipt acknowledgement to the assignee.
- 15. Transmit field logbook(s) to IRM in accordance with WHC-CM-3-5, Section 5, for storage.
- 16. A copy of the logbook pages pertaining to the specific project shall be kept in the appropriate field file.
- Assignee/Cog Scientist/Engineer 17. Review logbooks and identify or notify the user of changes and/or corrections required to complete field logbook(s).
- 18. Make necessary changes/corrections in accordance with Section 4.0, item 6 of this EII.

**6.0 RECORDS**

Record processing and disposition is in accordance with the following table.

Name, Filing Unit Title or Description	Record Type*	Retention Period	Disposal Authority	Cut-off and Retirement Instructions
Field Logbooks	R	TBD (depending on assignees RIDS)	TBD	Retain copy in project/activity file. File custodian will transmit logbook to Document Control for retention per the RIDS.
Field Logbooks	QA	TPA + 10 years	DRS 1.8.c (Force Fit) TBD	Submit copies of used pages to FC on a weekly basis or at project completion. When no further entries are required or when no longer needed, submit logbook to FC for transmittal to permanent storage. A copy should be placed copy in project file.

\* QA = Quality Assurance R = Record Material

## 7.0 DESIGNATED REVIEWING ORGANIZATION

The organization designated to review changes to this document is Hanford Technical Services, process owner. Comments from other organizations are welcome; however, are dispositioned at the option of HTS.

## 8.0 REFERENCES

WHC-CM-3-5, *Document Control and Records Management.*

Section 5, "Records Storage, Retrieval, and Destruction."

Section 9, "Quality Assurance Records."

Section 12.8, "Controlling Field, Laboratory, and Facility Notebooks/Logbooks."

**APPENDIX A  
FIELD LOGBOOK ENTRY CONSIDERATIONS**

This list is intended to provide the field logbook user with a means of identifying information that may be necessary to include in the logbook without relying strictly on the field logbook user's memory. It is the responsibility of the user to provide sufficient information in the field logbook to reconstruct events that are applicable to the activities performed. Therefore the information needed in the field logbook should be factual, detailed and objective to allow this reconstruction of events. Any one logbook might not contain all these items.

Many of the general topics are discussed further in EIs that specify the required information to be recorded in the field logbook. These EIs also identify controlled forms to be used for recording specific items. The controlled forms completed during the field activities (e.g., field activity report numbers) may be referenced.

1. Names, titles, and responsibilities of individuals involved in the field activity.
2. Type and purpose of field activity.
3. Title and identification number (including revision number) of the controlling document(s) to which the work is being performed.
4. Site map, sketch, or other definitive site description.
5. Documentation of safety meetings and field meetings.
6. Field decontamination of equipment and personnel.
7. Decontamination of equipment prior to arrival onsite.
8. Field observations such as weather conditions.
9. Equipment identification numbers.
10. Condition of equipment (if notably poor).
11. Instrument calibration information.
12. Field problems, solutions, corrective actions and reference to Instruction Change Authorizations (ICAs) approved, if any.
13. Attachments such as photographs.
14. Visitors to the site and/or tours of the site.
15. Documentation of safety surveys (i.e., radiological, metal detector, underground utilities, etc.).

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WESTINGHOUSE HANFORD COMPANY

Manual  
Section  
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Organization

WHC-CM-7-7  
EII 1.6, REV 4\*  
1 of 10  
November 12, 1993  
RR/Environmental  
Division

ENVIRONMENTAL INVESTIGATIONS AND  
SITE CHARACTERIZATION MANUAL

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TITLE:

RECORD PROCESSING

Approved by

  
W. H. Price, Manager  
Environmental Field Services

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## 1.0 PURPOSE

This environmental investigations instruction (EII) establishes guidance for in-process document storage, record validation, quality assurance (QA) record storage during processing, and QA record transmittal to Westinghouse Hanford Company (WHC) Information Resource Management (IRM) for permanent retention.

## 2.0 SCOPE

This EII applies to records identified in the QA Records Section of this manual and to record and nonrecord material discussed in WHC-CM-3-5, section 2.

## 3.0 DEFINITIONS

See the Glossary/Acronyms section of this manual. Terms used in this EII are also defined in WHC-CM-3-5 and WHC-CM-4-2.

## 4.0 REQUIREMENTS

### 4.1 Quality Assurance Records

#### 4.1.1 Validation

1. A document is an authentic record only if it is dated and stamped, initialed, or signed by authorized personnel or in some other manner made clearly traceable to the person or organization who created it.
2. Handwritten signatures are not required if the document can clearly be traced to the responsible individual or organization.
3. If initials or stamps are used, a control log must be maintained that clearly relates the initials or stamp to the person and organization.

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\*This is a total rewrite; therefore, no revision bars are used to indicate changes.

#### 4.1.2 QA Records Criteria

Records must be:

1. Legible and microfilmable, or identified as the "best available copy." Records may be originals or legible copies.
2. Uniquely numbered or identified, and paginated to aid easy reassembly of the record in the correct order.
3. Generated using permanent, reproducible black ink. Ball point pens with medium point should be used.
4. Complete and include sufficient information to permit correlation between the record and the item(s) or activity(ies) to which it applies.
5. Valid as discussed in section 4.2 of this EII.

#### 4.1.3 Corrections

1. Under no circumstances shall incorrect data be obliterated by the use of whiteout, correction tape, scribbling, or any other method.
2. Correction of in-process documents shall be accomplished by striking a single line through the incorrect information and inserting the correction, when required, as close as possible to the original data. The person making the correction shall initial and date the correction.

NOTE: If pages (destined for inclusion in a quality affecting document) in an original in-process document contain whiteout or other methods, the affected page(s) shall be photocopied and the photocopy submitted as the record for retention.

3. Correction of technical or quality-related errors shall be reviewed and approved by an authorized person from the organization that validated the original record, unless other organizations are specifically designated.

NOTE: The correction of nontechnical errors does not require this review and approval.

4. Correction of completed records that have been submitted to IRM permanent storage shall be accomplished by supplementing the record with the correct information.

RECORD PROCESSING

4.1.4 Temporary Storage

1. For QA records, temporary storage (beyond the period specified in WHC-CM-3-5) is authorized on a case-by-case basis by IRM.
2. The requirements for temporary storage procedures are detailed in WHC-CM-4-2, QR 17.0.

4.2 Storage

1. During processing of QA records (prior to transmittal to IRM permanent storage) the file custodian (FC) maintains records in one-hour, fire-rated cabinets in access controlled areas.
  - a. Cabinets must be locked when unattended.
2. Other record material is retained in office or centralized storage areas for the period(s) specified by the approved RIDS.
3. Geotechnical samples are maintained and controlled in accordance with EII 5.7A.
4. Field logbooks are processed, controlled and transmitted to IRM for permanent storage in accordance with EII 1.5.

4.3 Transmittal to Permanent Storage

1. QA Records shall be transferred to IRM permanent storage in accordance with the organization's IRM approved RIDS as specified by WHC-CM-3-5.
2. Transmittal or storage and disposition of other records occurs according to the RIDS.

4.4 Information Release

1. Results of environmental investigations and site characterization activities could potentially be included in documents to be viewed by the public.
2. Appropriate official reviews and management approvals are required, in accordance with WHC-CM-3-4, prior to public release of scientific, technical, engineering or related information.

5.0 PROCEDURE

Cognizant Management

1. Generate, obtain IRM approval of, and maintain RIDS in accordance with WHC-CM-3-5, section 5.
2. Assign an FC.

RECORD PROCESSING

Cognizant Management

3. Ensure that the appropriate requirements of WHC-CM-3-5 and WHC-CM-4-2 are included in procurement documents.

### 5.1 Determining Classification

Several categories of documents/records exist. Use Figure 1 to identify document or record type. Use Figure 2 to understand typical flow.

### 5.2 In-Process Documents

Generating Organization

1. Control in-process documents designated quality assurance records from generation through validation and submittal to the FC; prevent loss of potential quality-affecting information.
  - a. Preclude entry of unauthorized personnel to storage locations.
  - b. Minimize the risk of document damage or destruction.
  - c. Minimize the infestation of insects, mold or rodents and accidental damage, such as spilled beverages or food.
2. Maintain other record and nonrecord material during completion based on the RIDS disposition.

### 5.3 Record Validation

1. A document becomes a completed quality assurance record when the requirements of section 4.2.1 are met.
2. Other record material is validated, i.e., completed in accordance with applicable procedural requirements.

### 5.4 Record Processing

Generator

1. Process ER Program information (data, documents, and records) through the appropriate Environmental Restoration (ER) Program Information Center (EPIC) location.

NOTE: EPIC uses existing WHC records management and document control systems.

- a. Environmental Restoration Engineering records are processed through Room 1310 at the 740 Stevens Center.

RECORD PROCESSING

Generator

b. Environmental Field Services, WNP-1, Trl. 57, room 107A, 600 Area, is an EPIC satellite center.

c. The Geosciences Function generates, controls, and processes RCRA information internally.

2. Transmit records to the FC for review and processing when required by approved RIDs.

NOTE: Records received as "deliverables" in accordance with approved procurement documents do not require FC review.

FC

3. Review records for legibility, identification to the activity, and, if appropriate, compliance with the records requirements specified by the Quality Assurance Transmittal (form A-6000-354).

- a. Retain unacceptable records in a suspense file and notify the submitter/generator to correct the discrepancies.

4. Enter record in a record receipt log (file index or database) and store in accordance with section 5.5 of this EII in a one-hour, fire-rated cabinet in an access controlled area.

5.5 Records Storage

FC

1. As required by record classification, store records in compliance with section 5.2 a, b, and c and the following additional requirements to control deterioration.

- a. Prevent damage from moisture, temperature and pressure.

- b. Provide standard binders, folders or envelopes for storage in cabinets or on shelves in appropriate containers (loose storage on shelves is not acceptable).

- c. Protect special record media (e.g., radiographs, photographs, negatives, diskettes, microfilm and other

RECORD PROCESSING

magnetic media) from excessive light, stacking, electromagnetic fields, temperature or humidity.

Generating Organization

2. Transmit special record media to IRM for permanent storage without unnecessary delay. IRM has the facilities necessary to store these special media.

5.6 Storage Area Control

Storage Area Custodian

1. Post a sign stating that cabinets containing records must be locked when unattended.
2. Maintain list(s), approved by cognizant management, of personnel having authorized access; post in the storage area on cabinets.

5.7 Record Transmittal

FC

1. Transmit original records or best available copy to IRM permanent storage in accordance with approved RIDS and WHC-CM-3-5.
2. If needed, make project file copies from the records prior to transmittal.

NOTE: The FC(s) may maintain filing systems based on designations such as Operable Unit, Groundwater Monitoring Well Construction, or Well Maintenance Activity.

3. Process supplemental records and transmit to IRM permanent storage according to the RIDS for that record.
4. Satellite centers transmit a copy of the IRM QA transmittal to the central EPIC to ensure compliance with the Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) requirements for the Administrative Record (maintained by WHC for the U.S. Department of Energy, Richland Operations Office).
5. Satellite center provide copies of field generated records to the central EPIC for the Administrative Record upon request.

RECORD PROCESSING

5.8 Record Retrieval

Prior to transmittal to IRM permanent storage, the FC maintains control and accountability using one of the following methods.

FC

1. When practical, copy the requested record and refile.
2. For review in a controlled area, provide the record and file a completed "out" card (in place of the record). Upon completion of review, refile record and remove "out" card.
3. When copying is not practical and the requester has a justifiable need to remove the record:
  - a. Receive and approve the completed Request to Withdraw Records form A-6000-392.
  - b. Assign return date, provide record(s) and file an "out" card (in place of the record) that identifies the record and the individual withdrawing it.

Record Requester

- 1) Maintain withdrawn record in accordance with section 5.5.
- 2) Make corrections, if any, in accordance with the requirements of section 4.4.

FC

- c. Track withdrawn records and contact the requester if the records have not been returned; may grant an extension.
  - d. Notify the requester's manager two days past the return date.
  - e. Refile returned records.
2. When requested, retrieve records that have been transmitted to IRM for permanent storage in accordance with WHC-CM-3-5, section 9.

RECORD PROCESSING

6.0 RECORDS

Records are processed and dispositioned in accordance with the following table.

NAME Filing Unit Title or Description	RECORD TYPE*	RETENTION PERIOD	DISPOSAL AUTHORITY	CUT-OFF AND RETIREMENT INSTRUCTIONS
Request to Withdraw Records A-6000-392	R	Upon return of withdrawn record or when no longer needed. Review file annually.	GRS 23.1	The file custodian tracks withdrawn records, upon return the request may be discarded or maintained until no longer needed.

\* R = Other Record Material

7.0 DESIGNATED REVIEWING ORGANIZATIONS

Organizations designated to review changes to this document are listed below. The controlled manual point-of-contact (CMPOC) listed for the designated reviewing organization(s) is responsible for coordinating the review and consolidating and submitting comments to the originating organization.

Designated Reviewers

CMPOC

Records Management Services

IRM

Comments from other organizations are welcome; however, such courtesy comments are resolved at the option of the originating organization.

8.0 REFERENCES

89-10, Hanford Federal Facility Agreement and Consent Order,  
(Tri-Party Agreement).

WHC-CM-3-4, Document Clearance and Information Release Manual.

WHC-CM-3-5, Document Control and Records Management Manual.

Section 2, "Record or Nonrecord Material."

Section 5, "Records Storage, Retrieval, and Destruction."

Section 9, "Quality Assurance Records."

WHC-CM-4-2, Quality Assurance Manual, QR 17.0, "Quality Assurance Records."

Figure 1. Document/Record Types.

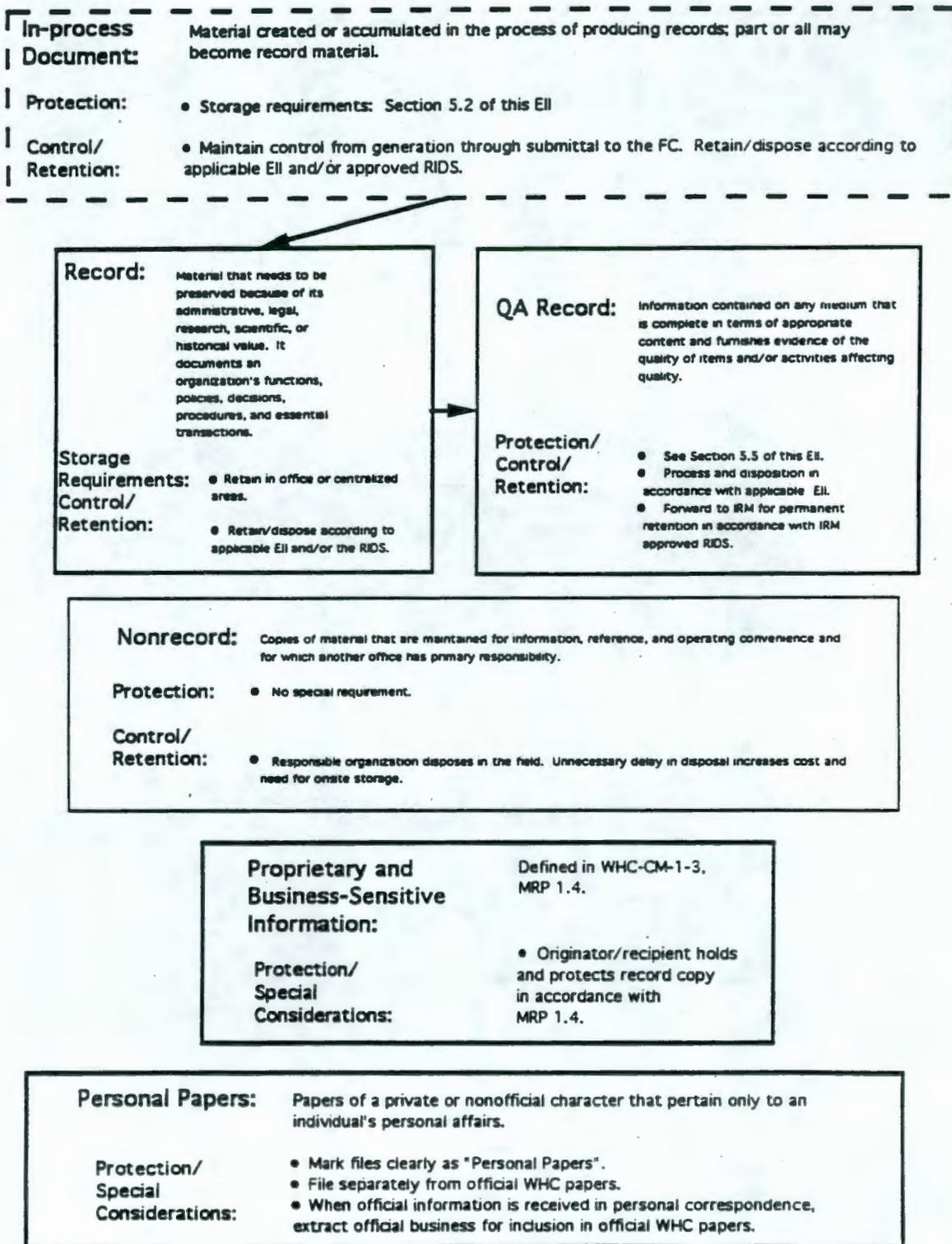
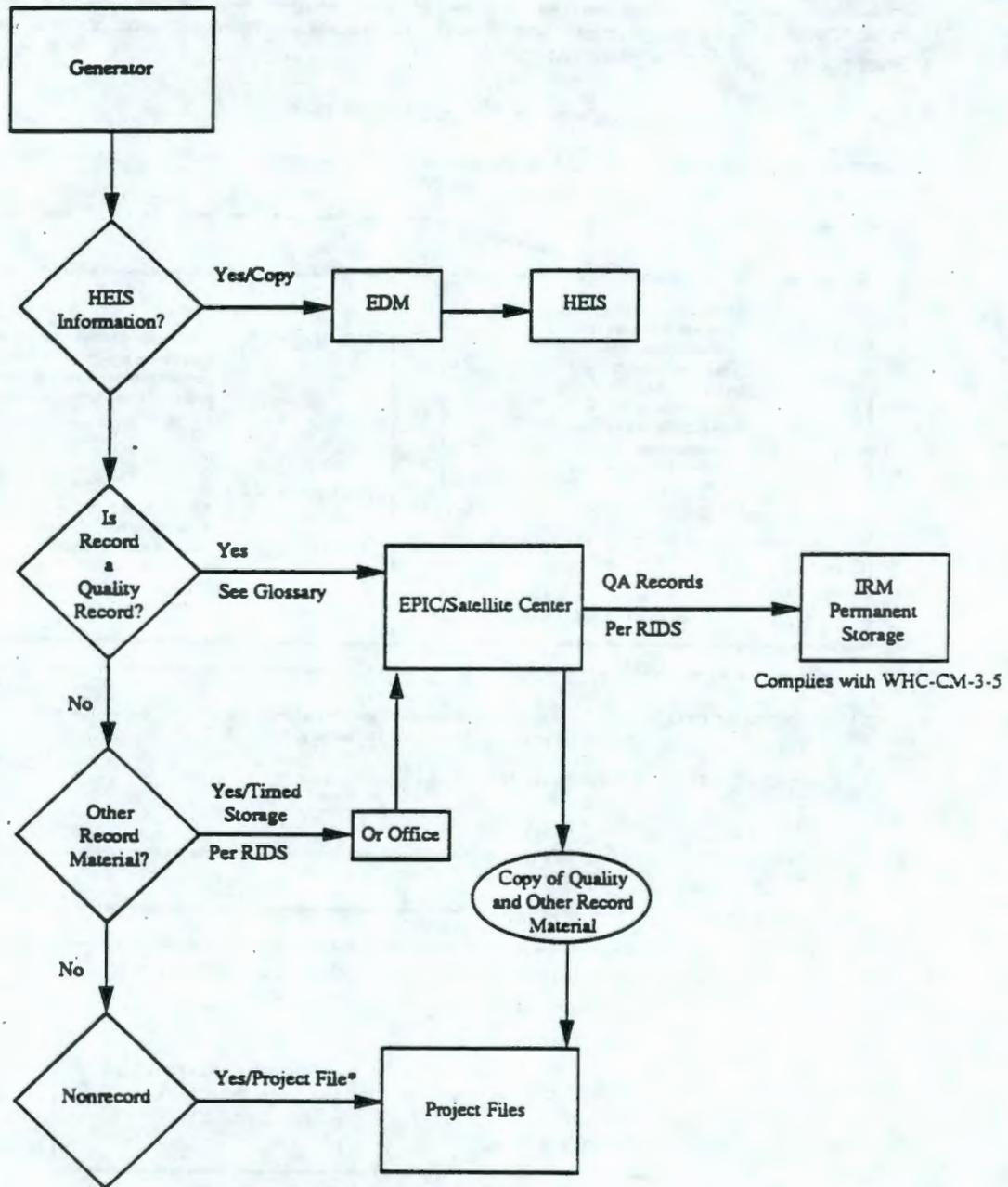


Figure 2. Typical Record Flow Chart.



\* Nonrecord material may be in personnel reference files, in the project file as support information, or disposed of per approved RIDS.

EDM=Environmental Data Management.

HEIS=Hanford Environmental Information System.

RIDS=Records Inventory and Disposition Schedule.

EPIC=Environmental Restoration Program Information Center.

**Qualification and Training****1.0 PURPOSE**

This procedure implements the applicable training requirements established in WHC-CM-2-15, *Training Administration Manual* and WHC-CM-4-2, *Quality Assurance Manual*, Section QR 2.0, "Quality Assurance Program", Para. 3.4, "Indoctrination and Training" and WHC-SP-0708, *Westinghouse Conduct of Operations Manual*, Chapter 5, "Control of On-Shift Training", and Chapter 14, "Required Reading."

**2.0 SCOPE**

This procedure is applicable to all Hanford Technical Services (HTS) personnel.

**3.0 DEFINITIONS**

**Nonreactor Nuclear Facility** means those activities or operations that involve radioactive and/or fissionable materials in such form and quantity that a nuclear hazard potentially exists to the employees or the general public. Included are activities or operations that involve the performance of remediation or waste management tasks involving radioactive materials. (DOE Order 5480.23, Glossary) For example, analytical laboratories are considered to be a nonreactor nuclear facility, and "operations personnel" includes chemical technicians. (WHC-CM-2-15, Section 1.2, Para. 5.0)

Also see WHC-CM-4-29, *Nuclear Criticality Safety Manual*, Section 1.0, "General Requirements", and "Glossary" for further interpretation.

For other definitions see the Glossary/Acronyms section of this manual.

**4.0 REQUIREMENTS**

1. Apply the appropriate requirements and responsibilities noted in WHC-CM-2-15, Section 1.2, "Employee Training".
2. Academic requisites shall be identified in generic position descriptions. (WHC-CM-4-2, QR 2.0)
3. Obtain access to the WHC training matrix (TMX) and assign training coordinators to acquire training in its use per WHC-CM-2-15, Section 7.2, "Accessing and Using the Training Matrix".
4. Obtain access to the WHC Training Records Information System (TRI) located in Soft Reporting as described in WHC-CM-2-15, Section 10.1, "Training Records Information System".
5. Access the Course Catalog located on the Hanford Local Area Network (HLAN) through Hanford Information.
6. All employees shall complete Hanford General Employee Training (HGET) on an annual basis per WHC-CM-2-15, Section 11.1, "Hanford General Employee Training".

**Qualification and Training**

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7. Appropriate mandatory and enhancement training for all employees shall be identified by the line manager per WHC-CM-2-15, Section 11.2, "Health and Safety Training", Section 11.3, "Environmental Training", Section 11.4, "Job Control System Training" (employees who perform functions related to the Maintenance Management Program), Section 11.5, "Total Quality Training", Section 12.0, "Area Specific Program Descriptions" and Section 13.4, "Radiological Safety Training".
8. Training shall be provided, as needed, to:
  - achieve initial proficiency
  - maintain proficiency
  - adapt to changes in technology, methods, or job responsibilities (WHC-CM-4-2, QR 2.0).
9. Personnel shall be indoctrinated in the following subjects as they relate to a particular function:
  - general criteria, including applicable codes, standards, and company procedures
  - applicable quality assurance program elements
  - job responsibilities and authority (WHC-CM-4-2, QR 2.0).
10. Proficiency shall be documented and shall include educational background, experience, and appropriate training. Personnel shall be required to periodically demonstrate proficiency in the assigned work. (WHC-CM-4-2, QR 2.0)
11. Required reading shall be documented when it is critical to avert problems with safety, health, the environment, or quality. Typical documents placed in this system, appropriate to the tasks affected, are: (WHC-SP-0708, Chapter 14, "Required Reading")
  - procedure changes
  - equipment design changes
  - technical specifications
  - operation safety requirement changes
  - industry and in-house operating experience information
  - other information necessary to keep personnel aware of current activities
  - occurrence reports or other deficiency documents.
12. Required reading shall be tracked in a Required Reading File Index and shall include the following: (WHC-SP-0708, Chapter 14, "Required Reading")
  - Requesting Manager
  - Required Reading ID# (sequential number)
  - Document Title
  - Issue Date or Revision Number
  - Required Completion Date
  - Actual Date Completed
  - List of the individuals or organizations required to read the document.

**Qualification and Training**

13. Assigned reading shall not be subverted by including information which can be disseminated by less formal means.

14. On-the-job (OJT) training (WHC-SP-0708, Chapter 5)

OJT shall adhere to established training programs so that instructional uniformity will be maintained.

- a. The objectives of OJT (what the trainee is expected to know/perform when training is completed) must be known to the trainer/evaluator and the trainee.
- b. The standards for successful completion of OJT (skill and knowledge performance criteria) must also be known by the trainer/evaluator and the trainee.
- c. The trainer/evaluator must have the knowledge and ability to teach/evaluate the trainee in accordance with the training objectives and standards.
- d. The training and competency of the trainees must be documented as factors in the qualification process, to provide feedback to the training system and to meet training record requirements.

- Management and staff providing OJT shall be qualified to provide training.
  - Trainees shall be supervised at all times when health, safety, or the environment could be compromised.
  - Personnel assigned to hazardous waste sites shall have OJT documented on the "3 Day (24-Hour) Supervised Field Experience" training completion record (form BC-6000-809), when required.
- OR
- Other OJT shall be documented on the "Indoctrination and Attendance" form A-6000-366 or equivalent.

**5.0 PROCEDURE**

**5.1 Administration of Training**

Managers shall perform the following:

1. Identify WHC training requirements for each permanent staff member in your organization by providing input to the TMX. Applicable codes, standards, WHC manuals, quality assurance program and project plans, specifications, and the WHC Course Catalog located on HLAN in Hanford Information under Training, are sources to be considered when establishing training.
2. Identify training requirements for visitors, contracted personnel, and temporary personnel to the extent necessary to safely execute their duties and document those requirements in the TMX.

Qualification and Training

3. Appoint training coordinator(s) to:
  - acquire training in the maintenance of the TMX
  - obtain a password to TMX
  - obtain a password to access training history files in the TRI
  - access the WHC Course Catalog on HLAN
  - schedule management and staff for WHC mandatory (M), directed (D), and professional development (P) courses
  - schedule and/or coordinate physicals, whole body counts, and bioassays
  - complete the Hazardous Waste Worker Status Reports (A-6000-984) as part of the implementation of WHC-CM-7-7, EII 1.1, "Hazardous Waste Site Entry Requirements"
  - administer training and associated medical scheduling documentation in accordance with WHC-CM-2-15, Section 10.0, "Documentation"
  - prepare a "Review of Qualifications Log."
    - a. Staff names
    - b. Initial qualifications verified (Initial & Date)
    - c. Continuing qualifications verified (Initial & Date)
  - coordinate/facilitate required reading and OJT.
4. Provide, or direct supervisors of staff members to provide, staff members with all necessary information on personal and public safety and environmental hazards before beginning work and document same [e.g., tailgate meetings, Hazardous Waste Operations Permits (HWOP), Job Safety Analysis (JSA)].
5. Assign trained and qualified management and staff to provide informal classroom or on-the-job-training to other members of the organization, when needed. The following topics should be considered when planning for training:
  - topics, subjects, or activities to be covered
  - identification and revision of documents used as a basis for the presentation
  - objectives or key points that identify what the attendee is expected to know and be able to do following the presentation
  - audience (e.g., sampling personnel, personnel responsible for operating geophysical logging equipment)
  - approximate length of presentation
  - visual aids and handouts to be used
6. Direct supervision and staff providing any briefing, information exchange, instruction, orientation or presentation meeting DOE requirements or Federal or state laws to develop formal training plans in accordance with WHC-CM-2-15, Section 5.1, "Designing and Developing Training".
7. Provide timely, constructive feedback to training management and instructors, as appropriate.

Qualification and Training

8. *Assess the initial qualifications of a new hire HTS candidate/employee by performing the following:*

*NOTE 1: Personnel hired prior to April 30, 1995, are considered to be "initially qualified". However, a resume or Westinghouse Corporate "Work History" form (24903J) shall be included in the HTS training record file.*

*NOTE 2: Managers who have reassigned personnel to a different WHC Generic Job Description must reevaluate the employee per the initial qualification criteria. Managers who have reassigned personnel to a different functional job title (e.g., pump-rig operator to field team leader) must review the requirements for the new position and assign OJT, required reading, formal training, etc., appropriate to the level of training necessary to achieve the desired results.*

- *Verify that the employee's resume or Westinghouse corporate, Work History form (24903J) matches the appropriate TMX title description (WHC Generic Job Description located on HLAN, Hanford Information) for the assignee's position. If an appropriate title does not exist, a documented definition of the education and experience requirements for the position must be created and issued to the Training Coordinator for input to TMX or otherwise retained on file.*
- *When verified, forward to the training coordinator with instructions to schedule training per the TMX.*
- *Review documented evidence of on-the-job training and evaluation. (See para 5.2.3, item 4)*
- *Review documented evidence of required reading, if assigned. (See para. 5.2.2)*
- *Initial and date the Review of Qualifications Log acknowledging that the staff member is qualified to perform the tasks assigned.*

9. *Assess the HTS employee's continued qualifications by considering one or more of the following appropriate to the position being appraised:*

- *Compare the TMX requirements with the dates of attendance to assure no delinquencies exist*
- *Review performance evaluations (retain in personnel file)*
- *Review management walk-throughs*
- *Review self-assessments*
- *Assure that certifications from WHC training or regulatory agencies are current*

**Qualification and Training**

- *Document the review by initialing and dating the Review of Qualifications Log. An initial and date on the log signifies that the individual has maintained proficiency/competence since the last evaluation.*

NOTE 1: The necessity for evaluation of the employee's continued qualification may vary with each individual due to the scope, complexity, nature of the activity, education, experience, and historical proficiency of the person. As a minimum, all personnel performing quality-affecting activities shall be evaluated every three years.

NOTE 2: *Manager's whose training files contain evidence of relevant qualification from previous revisions of this procedure (i.e., Certificate of Qualification) or other WHC qualification procedure need not complete the "continued qualifications" block on the "Review of Qualifications Log" until the previous certification expires or there is a change in the generic job description.*

10. Assess visitor, contract personnel, or temporary personnel qualifications by performing the following:
  - verify that the education and experience described in the resume is appropriate for performance of the proposed task and/or that the education and experience in the resume is as described in the requirements of the procurement document.
  - *forward the resume to the training coordinator for filing with instructions to schedule training per the TMX designation categories.*

**Training Coordinators shall perform the following:**

11. Provide support, as needed, to management and TMX facilitators in the identification of training requirements.
12. Perform the actions described in paragraph 5.1, item 3.
13. Develop non-record training files as requested by management. (This file should not be considered an auditable file.)
14. Retain "Record" qualification files of the employee's resume or Westinghouse corporate Work History form (form 24903J) (see item 8 above). (These forms should be considered auditable.)
15. Maintain the "Review of Qualifications Log". (This log will be auditable.)
16. Retain attendance sheet (Indoctrination Attendance Form, A-6000-366) files for classes initiated by the user of this procedure. (Auditable file)
17. Coordinate the required reading system by distributing information and collecting the "Assigned Reading" sheets or "*Indoctrination and Attendance*" rosters. (Auditable file)
18. Maintain the "Required Reading File Index". (Auditable file)

**Qualification and Training****5.2 Informal Training****5.2.1 Presentations**

On-the-job trainers (when so designated by management) and classroom presenters of informal training *should* prepare presentation plans with the elements identified in para. 5.1, item 5. Obtain the signatures of the attendees by using the Indoctrination Attendance Form (A-6000-366), *or equivalent*, and forward to the training coordinator.

**5.2.2 Required Reading**

**General:** Management may determine that personnel on controlled distribution for a document (e.g., WHC manual, specification, QAPP) are exempt from documenting reading of new or revised editions of those documents if management has determined that there are minimal risks to safety, health, the environment, or quality. Management must clearly describe the document holder's responsibilities as follows:

- Document holders must keep the document current by incorporating changes and returning the Manual Revision Instructions (MRI) to Document Control within the designated time period.
- Document holders must assure that they are using current revisions of the document prior to implementation.

**Managers or supervisors shall perform the following when required reading is assigned:**

1. Determine, from Table 1, the method to be used for distribution of "Required Reading".

**Training Coordinators or designee shall comply with the following:**

2. Develop a Required Reading File Index that includes the information listed in paragraph 4.0, item 12.
3. Maintain assigned reading lists as designated by management.
4. Complete designated tasks in Table 1 for the method assigned by management (item 1, above).

**5.2.3 On-the-job Training**

**General:** Typical methods for providing OJT are self-study, observation, discussion, simulation, and/or performance under the supervision of a qualified job incumbent or trainer. The evaluation is typically a "checkout" in which the trainee discusses the task, if necessary. Target dates/milestones for completion should be established.

**Qualification and Training*****Managers shall perform the following:***

1. *Assign newly hired or inexperienced hazardous waste site workers to experienced hazardous waste site supervisors through the duration of OJT. (See "Requirements", item 14.)*
2. *Assign newly hired or inexperienced personnel, for positions other than hazardous waste site workers, to supervision or peers knowledgeable of the activity. (See "Requirements", item 14.)*

***Hazardous Waste Site Supervisors or designated trainer shall, as a minimum, indoctrinate the trainee as follows:***

3. *Provide the latest revisions of the appropriate procedures.*
4. *Walk through the procedures at the site identifying the key activities.*
5. *Instruct the trainee in the completion of the required forms.*
6. *Explain the trainee's role and responsibilities and the interfaces with other site team members.*
7. *Explain the use of the HWOP and/or JSA.*
8. *Observe the trainee in the performance of the activity.*
9. *Document the completion of the above OJT on the "3 Day (24 Hour) Supervised Field Experience" training records completion form (BC-6000-809).*

***Non-Hazardous Waste Site Supervisors or designated trainers shall indoctrinate the trainee as follows:***

10. *Indoctrinate the trainee in 3 through 8 above, as applicable.*
11. *When tasks are not controlled by procedures, (i.e., research, writing reports, or otherwise producing intellectual property) and items 3 through 8 do not adequately cover the activity, the trainer may need to develop a lesson plan (para. 5.1, item 5) relating key points to be emphasized.*
12. *Document evidence of completion of OJT by completing the "Indoctrination and Attendance" form, (A-6000-366) or equivalent, attach supplemental documentation, if used, and send to the Training Coordinator for placement in the trainee's qualification file.*

Qualification and Training

6.0 RECORDS

Name <small>Filing Unit Title or Description</small>	Record Type*	Retention Period	Disposal Authority	Cutoff & Retirement Instructions
Westinghouse Corporate Work History (form 23904J) or resume	R	Review annually	GRS 1.18a	*Destroy when superseded or obsolete or within 1 yr after employee leaves org or company.
Review of Qualifications Log	R	TBD	TBD	TBD
Required Reading File Index	R	TBD	TBD	TBD
3-Day (24-hour) Supervised Field Experience (form BC-6000-809)	R	TBD	TBD	TBD
Required Reading Form (A-6000-369/Macro WEF111)	R	Review annually	GRS 1.18a	*Destroy when no longer needed.
Indoctrination and Attendance (A-6000-366)	R	Review annually	GRS 1.18a	*Destroy when no longer needed.
Lesson Plan	R	2 years	GRS 23.1	*Destroy when 2 yrs old or when superseded or obsolete.

R = Other Record Material \* = Currently there is a moratorium on records destruction.

7.0 DESIGNATED REVIEWING ORGANIZATION

The organization designated to review changes to this document is listed below. Comments from other reviewers are welcome, but are resolved at the originating organization's option.

Designated Reviewing Organization

CMPOC

Hanford Technical Services, process owner

STS/HTS

8.0 FORMS

Required Reading (form A-6000-369/Macro WEF111)

Indoctrination and Attendance (form A-6000-366)

Work History (form 24903J)

3-Day (24-hour) Supervised Field Experience (form BC-6000-809)

Qualification and Training

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9.0 REFERENCES

WHC-CM-2-15, *Training Administration Manual.*

WHC-CM-4-2, *Quality Assurance Manual.*

WHC-CM-4-29, *Nuclear Criticality Safety Manual.*

WHC-CM-7-7, *Environmental Investigations and Site Characterization Manual.*

WHC-SP-0708, *Westinghouse Conduct of Operations Manual.*

**Qualification and Training**

Table 1. Required Reading Methods.

<b>METHOD 1 – ELECTRONIC MAIL</b>
Management/designee develops an individualized list of required reading for each staff member, project team, working group, job title, or other appropriate grouping.
Designee assigned to be alert for changes in the required reading list (i.e., additions or revisions), if applicable.
Designee notifies the Training Coordinator to add the required reading to the Required Reading Index.
Designee notifies staff members of the document to be read by filling out the "Assigned Reading" form (A-6000-369/Macro WEF111), and delivering it via cc:Mail.
Designee directs assignee to return signed form to the Training Coordinator.
Staff members read the assignment, sign the Assigned Reading form, and return to the Training Coordinator within the time allotted.
Training Coordinator completes the Index entry.
<b>METHOD 2 – TEAM MEETING</b>
Management/designee develops an individualized list of required reading for each staff member, project team, working group, job title, or other appropriate grouping.
Designee assigned to be alert for changes in the required reading list (i.e., additions or revisions), if applicable.
Designee notifies Training Coordinator to add to the Required Reading Index.
Designee notifies management.
Management or designee presents/interprets the material in a staff meeting, tailgate meeting, etc.
Management or designee gathers signatures on form A-6000-366, "Indoctrination and Attendance" roster or equivalent.
Management or designee returns training roster to Training Coordinator.
Training Coordinator completes the Index entry.
<b>METHOD 3 – REQUIRED READING BINDER</b>
Management/designee develops an individualized list of required reading for each staff member, project team, working group, job title, or other appropriate grouping.
Designee assigned to be alert for changes in the required reading list (i.e., additions or revisions), if applicable.
Designee notifies Training Coordinator to add document to the Required Reading Index.
Designee places the document in a centrally located Required Reading binder.
Designee notifies the affected staff members of the document to be read by filling out the "Assigned Reading" form (A-6000-369/Macro WEF111), and delivers it via cc:Mail.
Designee directs the assignee to return the signed form to the Training Coordinator.
Staff members read the assignment, sign the Assigned Reading form, and return to the Training Coordinator within the time allotted.
Training Coordinator completes the Index entry.

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WESTINGHOUSE HANFORD COMPANY

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WHC-CM-7-7  
EII 1.9, REV 2\*  
1 of 12  
October 19, 1992  
RR/Environmental  
Division

ENVIRONMENTAL INVESTIGATIONS AND  
SITE CHARACTERIZATION MANUAL

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TITLE:

PRIMARY AND SECONDARY DOCUMENT  
REVIEW AND CONTROL

Approved by

  
M. R. Adams, Manager  
Environmental Restoration Engineering

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## 1.0 PURPOSE

This Environmental Investigations Instruction (EII) describes the review, approval, change control and retention process for Westinghouse Hanford Company (WHC) CERCLA remedial investigations/feasibility study (RI/FS) and RCRA field investigation/corrective measures study (RFI/CMS) primary and secondary documents (e.g., operable unit work plans, remedial investigation reports, aggregate area management studies, feasibility studies) prepared for the U.S. Department of Energy, Richland Field Office (RL) to comply with the Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement).

## 2.0 SCOPE

This EII applies to processing activities within WHC for RI/FS and RFI/CMS primary and secondary documents. This EII does not include the external regulatory agencies' review and approval processes which are described in detail in the Action Plan of the Tri-Party Agreement.

## 3.0 DEFINITIONS

Minor Field Change. A change in an RI/FS or RFI/CMS primary document having no adverse effect on the work schedule, the overall cost (+/-10%), or the technical adequacy of the job. (Tri-Party Agreement)

Primary Document. Documents which contain information, documentation, data, and proposals upon which key decisions will be made with respect to the remedial action or permitting process. Primary documents are subject to dispute resolution and are part of the administrative record. (Tri-Party Agreement)

Secondary Document. As distinguished from Primary Document, it is considered to be a supporting document providing information or data and does not, in itself, reflect key decisions. A secondary document is subject to review by the regulatory agencies and is part of the administrative record. It is not subject to dispute resolution. (Tri-Party Agreement)

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\*This is a total rewrite; therefore, no revision bars are used to indicate changes.

#### 4.0 RESPONSIBILITIES

The document cognizant engineer (lead author):

1. Prepare primary/secondary documents in accordance with format and content requirements.
2. Determine primary or secondary status by reference to Tri-Party Agreement, Sections 9.1 and 9.2.
3. Distribute documents for review and comment.
4. Disposition comments received during review cycles.
5. Prepare and transmit review comment packages (lifetime quality assurance record) to the Environmental Restoration Engineering (ERE) field file custodian, in accordance with Section 6.0.
6. Implement document release and change control activities in accordance with the applicable Engineering Practices (EPs) of WHC-CM-6-1.
7. Establish distribution lists for published documents using form A-6000-135; macro WEF067.

#### 5.0 REQUIREMENTS

1. Primary and secondary document format and content comply with appropriate U.S. Environmental Protection Agency (EPA) guidance when available (e.g., work plan format and content are in accordance with OSWER Directive 9355.3-01).
2. The documents are numbered in accordance with WHC-CM-3-6, PS-3-02, or WHC-CM-6-1, EP-1.12, dependent on document type.
3. Documents are routed for internal WHC review and approval based on the impact level (MRP 5.43) and Appendix A. The applicable EPs of WHC-CM-6-1 are implemented dependent upon the document flow through the system described in Section 6.0.
4. Documents are revised in accordance with WHC-CM-6-1, EP-2.2.
5. Controlled distribution and receipt acknowledgement are required to ensure that documents that describe and control work activities within the scope of this EII are available to personnel performing the prescribed activity.

## **6.0 PROCEDURE**

Minimum distribution for review of RI/FS and RFI/CMS work plans (primary documents) must include all organizations listed in Appendix A. For other primary and secondary documents, e.g., Aggregate Area Management Studies, Remedial Investigation Phase I Reports, Feasibility Study Phase I and II Reports, within the scope of this EII the reviewing organizations are designated by the cognizant engineer (and reviewed by cognizant manager) based on the impact level and document content.

The review cycles discussed in the following procedure sections and displayed in Figure 1 may be performed concurrently.

### **6.1 DOCUMENT PREPARATION**

Primary and secondary documents may be prepared by a contractor working under the direction of the cognizant engineer. The contractor-prepared draft document is considered a contract deliverable and is transmitted to the cognizant engineer as requested by the contract document (statement of work, BOA, etc.).

#### **6.1.1 Internal WHC Review Preparation--Cognizant Engineer**

1. Prepare the review request on an Engineering Data Transmittal (EDT) (form BD-7400-172, macro GEF097) in accordance with WHC-CM-6-1, EP-1.6, using instructions on the reverse side of the EDT.
2. The following items apply to the internal review process and a notice should be added to Block 8:
  - Comments must be submitted completed in black ink on EE&G Comment Record forms, Figure 1 (hard copy form A-6000-461 and continuation sheet A-6000-460 may be used, macro GEF157 is preferred).
  - Each comment must be traceable to section, page and paragraph or to page and line number, if line numbering is used. The EE&G Comment Record forms shall be completed in black ink or by using the macro form. Items 1 through 15 are completed as appropriate by the reviewer and forwarded to the cognizant engineer as directed on the EDT. Reviewers with "no comments" on the document should return their EE&G Comment Record form with block 10 completed.
  - If no comments are received by the response due date, it will be considered "no comment." Future submission of comments past the due date may or may not be resolved by the cognizant engineer. Late comments may not be part of the record unless dispositioned.

3. A blank EE&G Comment Record form may be included with the package, use of the HLAN macro is preferred.

### **6.1.2 Internal Review**

The organizations on review distribution shall review the document for their area of involvement or expertise (Appendix A). Comments shall be substantive, constructive, and justified; a proposal to correct or resolve the comment or concern must be provided by the reviewer.

### **6.1.3 Internal WHC Comment Disposition--Cognizant Engineer**

1. Make decisions regarding primary and secondary document content (with assistance from the document preparer).
2. Consider and disposition all comments received from reviewing WHC organizations.
3. Disposition comments and provide brief justifications for rejection or modification of proposed changes.

**NOTE:** The completed EE&G Comment Record provides a traceable record of all comments/dispositions.

4. Decide if comment resolution meeting is needed. Reviewing organizations are notified and copies of the dispositioned EE&G Comment Record forms may be provided prior to the meeting. Unresolved comments are discussed at the meeting.
5. If disposition cannot be reached through this process, the concern may be raised to the next level managers.
6. Following disposition of all comments, the reviewing organization representative signs and dates block 12 of the EE&G Comment Record forms and returns the completed forms to the cognizant engineer.

**NOTE:** The EE&G Comment Record forms must have all appropriate blocks completed and reviewers names printed/signed before submittal for record retention.

7. Retain the draft document in working file until comments are incorporated and the RL review draft is produced; the WHC internal review draft may then be discarded.

#### **6.1.4 Record Submittal of Review Comments--Cognizant Engineer**

1. Upon completion of the internal review cycle, prepares a review comment package (lifetime quality assurance record) including:
  - a. Review comments/dispositions (completed EE&G Comment Record forms) and EDT.
  - b. Meeting minutes (if applicable) from comment disposition meeting(s).
  - c. Pertinent supporting documentation (e.g., historical information, correspondence) generated from document preparation and internal review activities.
2. Transmit to the ERE field file custodian for processing and transmittal to Information Resource Management (IRM) for permanent storage in accordance with WHC-CM-3-5, Section 5.

#### **6.2 DECISIONAL DRAFT TRANSMITTAL FOR RL REVIEW**

The cognizant engineer processes the decisional draft as follows:

1. Submits the decisional draft to the Clearance Processing group for sponsor-limited clearance on an Information Release Request (IRR) form in accordance with WHC-CM-3-4.
2. For documents requiring RL review and approval, prepares an external letter addressed to RL for signature by the responsible level 3 manager in the WHC Environmental Restoration Program Office requesting review of the decisional draft.
3. Have the letter approved by the cognizant engineer's manager.

##### **6.2.1 Disposition of RL Review Comments--Cognizant Engineer**

1. Route comments resulting from RL review through Correspondence Control. Documented comments are preferred; verbal comments received should be documented to the file by the cognizant engineer.
2. Following preliminary disposition of the comments, arrange a meeting, when necessary, with the reviewers to resolve comments.
3. Document minutes of the meeting.
4. Retain the draft document in working file until RL comments are incorporated and Draft A is produced; the RL review draft may then be discarded.

### **6.2.2 Record Submittal of RL Review Comment Package--Cognizant Engineer**

1. Upon completion of the RL review cycle, ensure that all documentation is identified to the document/revision reviewed, reviewing organization and date.
2. Prepare a review comment package (lifetime quality assurance record) including:
  - a. Review comments/incoming correspondence.
  - b. Documentation (e.g., meeting minutes, telephone conference) resulting in comment disposition.
  - c. Pertinent supporting documentation generated from review activities.
3. Transmit review comment package to the ERE field file custodian for processing, copying to the Environmental Data Management Center (EDMC), and transmittal to IRM for permanent storage in accordance with WHC-CM-3-5, Section 5.

### **6.3 DEVELOPMENT OF DRAFT A--COGNIZANT ENGINEER**

1. Following completion of RL review and comment disposition, generate draft A.
2. Complete the following items and transmit the document to Engineering Configuration Management for engineering release:
  - a. Complete EDT in accordance with EP-1.6.
  - b. Complete and process IRR in accordance with WHC-CM-3-4.
3. Submit the EDT, IRR, and draft A to the Configuration Documentation Work Station for release and transmittal to IRM for permanent storage.

#### **6.3.1 Draft A Transmittal for Regulatory Review**

Transmit Draft A to RL for transmittal to the lead regulatory agency, EPA and/or the Washington State Department of Ecology (Ecology) for review.

#### **6.3.2 Disposition of Regulatory Comments**

1. Disposition comments generated by regulatory review of documents; comments may be dispositioned/resolved at Unit Managers meetings.
2. The documentation will be retained as described in Section 6.2.2.

3. If multiple drafts are required for regulatory acceptance number each draft alphabetically.

**NOTE:** Process each draft in accordance with Section 6.3 with one exception; transmit for engineering release with an Engineering Change Notice (ECN) (EP-2.2) and Record of Revision (ROR) in place of the EDT.

#### **6.4 DEVELOPMENT OF PUBLIC REVIEW DRAFT--COGNIZANT ENGINEER**

**NOTE:** Public review and therefore adherence to Section 6.4 is required only for those documents specified in Section 10.6 of the Tri-Party Agreement Action Plan.

1. Following completion of Regulatory review and comment disposition, generate the Public Review Draft.
2. Complete the following items and transmit the document to Engineering Configuration Management for engineering release:
  - a. Complete an ECN in accordance with WHC-CM-6-1, EP-2.2.
  - b. Complete and process IRR in accordance with WHC-CM-3-4.
  - c. Submit the ECN, IRR, ROR, and Public Review Draft to the Configuration Documentation Work Station for release and transmittal to IRM for permanent storage.

##### **6.4.1 Public Review Draft Transmittal to Regulatory Agency**

1. Transmit the Public Review Draft to RL for transmittal to the lead regulatory agency for approval.
2. The lead regulatory agency transmits (through the WHC Administrative Record organization) the approved draft to the repositories for the public review period (as required by Tri-Party Agreement).
3. The cognizant engineer participates in comment resolution activities (as specified by the Tri-Party Agreement) and incorporates accepted comments.

##### **6.4.2 Record Submittal of Public Review Comment Package--Cognizant Engineer**

1. Upon completion of the public review period, ensure that all documentation is identified to the document/revision reviewed, reviewing organization and date.

2. Prepare a review comment package (lifetime quality assurance record) including:
  - a. Incoming correspondence, review comments and dispositions.
  - b. Meeting minutes (if applicable) from the comment disposition meetings and any other appropriate documentation generated from review activities.
3. Transmit the review comment package to the ERE field file custodian for processing, copying to EDMC, and transmittal to IRM for permanent storage in accordance with WHC-CM-3-5, Section 5.

#### **6.5 DISTRIBUTION OF APPROVED REVISION 0--COGNIZANT ENGINEER**

1. Following approval, finalize the document as revision 0.
2. Submit the ECN, IRR, ROR, and revision 0 to the Configuration Documentation Work Station for release and transmittal to IRM for controlled distribution and permanent storage.

#### **6.6 CHANGES TO APPROVED DOCUMENTS**

Changes are discussed and decisions made at Unit Managers meetings held monthly with RL and lead regulatory agencies. Changes to approved documents are made by ECN (as specified in EP-2.2) in the following formats:

1. Page change.
2. Direct revision.
3. Supplemental changes.
4. Each change requires preparation and transmittal of an IRR, ROR, ECN, and revised document (if applicable) to Configuration Documentation Work Station for processing and engineering release and transmittal to IRM for controlled distribution.
5. Additionally, procedures in the Tri-Party Agreement Action Plan must be followed if changes to approved RI/FS or RFI/CMS documents are made.

#### **6.7 MINOR FIELD CHANGES**

1. Minor field changes that are deemed necessary by the field team leader are recorded in the appropriate field logbook or daily activity report and approved by the appropriate cognizant engineer or section manager (correspondence or meeting minutes may also be used for documentation).

NOTE: For changes resulting in a cost impact [ +/-10% ], the cognizant engineer or cognizant manager will notify the cost account manager.

2. Changes to the Quality Assurance Project Plan and/or the Sampling and Analysis Plan shall be concurred with by the EQA organization (concurrence may be verbal or via telecon; verbal concurrence shall be documented in the field logbook or daily activity report by the field team leader and shall include the EQA representative's name and date of concurrence).
3. The cognizant engineer shall process an ECN for minor field changes and changes to the QAPP and/or SAP in accordance with Section 6.6 of this EII, to ensure that such changes are incorporated to the approved document.

#### 6.8 RECORDS

The identification and disposition of quality assurance records generated by implementation of this EII are defined in Section 6.0.

#### 7.0 REFERENCES

89-10, "Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement)."

OSWER Directive 9355.3-01, "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA."

QAMS-005/80, "Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans."

WHC-CM-1-3, Management Requirements and Procedures, MRP 5.43, "Impact Levels."

WHC-CM-3-4, Information Release Administration.

WHC-CM-3-5, Document Control and Records Management, Section 5, "Records Storage, Retrieval, and Destruction."

WHC-CM-3-6, Uniform Publications System. PS-3-02, "Federal Agency Administrative Publication."

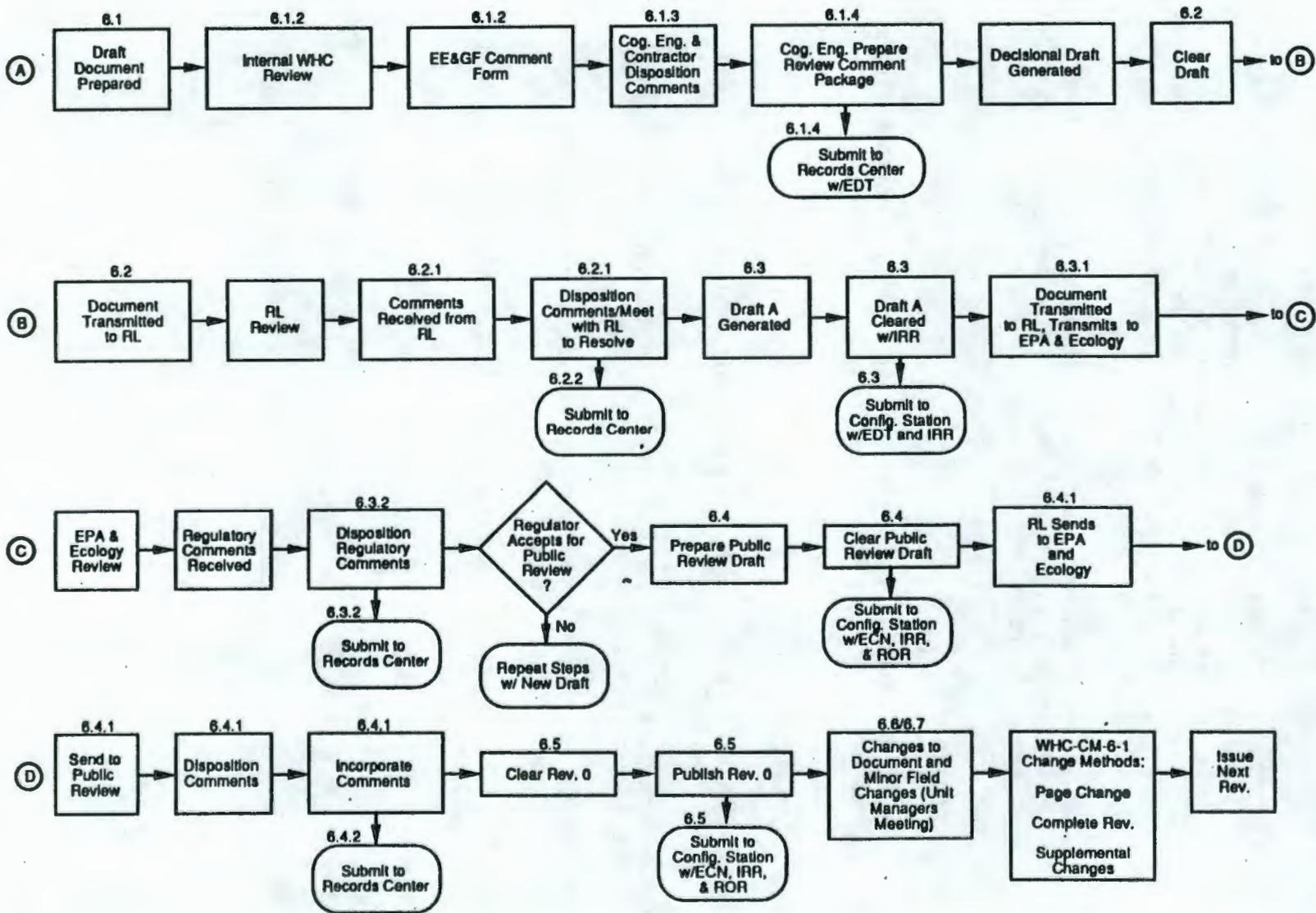
WHC-CM-6-1, Standard Engineering Practices.

EP-1.6, "Engineering Data Transmittal."

EP-1.12, "Supporting Documents."

EP-2.2, "Engineering Document Change Control."

Figure 1. Flow of RI/FS (RFI/CMS) Documents.



GENM031262-B

**APPENDIX A**

**FOR INTERNAL DOCUMENT REVIEW**

**GUIDANCE:** RI/FS and RFI/CMS work plans (primary documents) must be reviewed by the following organizations in the areas of identified involvement. For other documents (e.g., Aggregate Area Management Studies, RI Phase I Reports, FS Phase I and II Reports) the reviewing organizations are designated by the cognizant engineer (and reviewed by the cognizant manager) based on the impact level and document content.

**Organization**

**Area of Involvement**

Communications

Community relations.

Decontamination and  
Decommissioning Engineering (D&D)

Impact and integration with D&D  
engineering activities.

Environmental Assurance

Environmental oversight.

Environmental Field Services

Drilling, sampling, health and  
safety plans, waste management.

Environmental Restoration Programs

Scope, budget, schedule.

Environmental Technology

Performance assessment,  
technology development.

Fleet Management  
(if applicable)

Specifications, maintenance of  
facilities and equipment with  
wheels.

Geosciences

Geology, hydrology, well  
installation, geophysical  
logging.

Industrial Health & Safety  
Assurance

Industrial safety and hygiene  
concerns.

Landlord

Site-specific concerns.

Legal

Regulatory and legal  
ramifications.

Office of Sample Management

Sample analysis coordination and  
data validation (except  
statisticians).

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**ENVIRONMENTAL INVESTIGATIONS AND  
SITE CHARACTERIZATION MANUAL**

**PRIMARY AND SECONDARY DOCUMENT  
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**Organization**

Occupational Health & Safety

Projects  
(if applicable)

Publication Services

Quality Assurance

Regulatory Analysis

Regulatory Permitting/NEPA

Tri-Party Agreement

Restoration & Remediation  
Safety Assurance

Site Operations (Site-Specific)

Site Planning

Surplus Facilities Programs

**Area of Involvement**

Radiation exposure concerns.

Information to implement required  
construction activities such as  
groundwater wells.

Formatting, clearance.

Entire document with emphasis on  
sample and analysis and quality  
assurance plans.

NOTE: QAMS-005 requires Quality  
Assurance Officer (cognizant QA  
manager) approval of QAPjPs  
(shown by signature on the title  
page of the plan).

Regulations.

CERCLA, RCRA, NEPA interfaces.

Hanford Federal Facility  
Agreement and Consent Order (Tri-  
Party Agreement).

Adequacy of safety and hazard  
assessment.

Impact and integration with  
operating facilities and waste  
management units.

Land use.

Impact and integration with  
Surplus Facility Program.

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WHC-CM-7-7  
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1 of 3  
December 22, 1993  
RR/Environmental  
Division

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TITLE:

IDENTIFYING, EVALUATING AND  
DOCUMENTING SUSPECT WASTE SITES

Approved by

  
M. R. Adams, Manager  
Environmental Restoration Engineering

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## 1.0 PURPOSE

This environmental investigations instruction (EII) establishes the procedure for identifying, evaluating, and documenting waste sites or suspect waste sites and the process for including the waste/suspect site into the Waste Information Data System (WIDS).

## 2.0 SCOPE

This EII applies to any inactive site suspected of containing waste that is not identified by the WIDS.

## 3.0 DEFINITIONS

See the Glossary/Acronyms section of this manual.

## 4.0 RESPONSIBILITIES

### 4.1 Individual

Report suspect waste site(s) to Westinghouse Hanford Company (WHC) Regulatory Field Support.

## 5.0 REQUIREMENTS

1. Any site not documented in the WIDS that may have been used for waste disposal or contain dangerous waste, hazardous substances, and/or radioactive waste shall be considered a suspect waste site.
2. Sites identified that contain any type of waste from past practices, but for which there are currently open files or no disposition resolution, are brought to the attention of the appropriate Operable Unit (OU) manager by Environmental Restoration Engineering (ERE).

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\*This is a total rewrite; therefore, no revision bars are used to indicate changes.

3. The OU manager shall approve the waste site addition to the appropriate corrective action program.
4. Regulatory Field Support and ERE shall make joint approval when adding a site to the WIDS, or reach joint agreement that a site not be added to WIDS.

## 6.0 PROCEDURE

### 6.1 Suspect Waste Site Identification

An individual having reason to believe that a site contains any type of waste reports this information to Regulatory Field Support by initiating and forwarding the WIDS Information Acquisition Form.

### 6.2 Waste Site Evaluation

#### Regulatory Field Support

1. Determine if a waste/suspect site requires addition to the WIDS (determine if a site has been previously identified or is reportable under another program).
2. Report all sites identified as waste sites to ERE for the following:
  - a. Site evaluation, if warranted.
  - b. Information purposes, if an engineering evaluation is not required.

#### Environmental Restoration Engineering

3. Direct and/or perform a site evaluation if necessary on the waste/suspect site. Add site evaluation finding to the appropriate field of the WIDS Information Acquisition Form.
4. Notify and obtain approval signature from the appropriate OU manager.

#### Regulatory Field Support/ Environmental Restoration Engineering

5. Jointly approve adding a site to the WIDS or jointly agree that the site will not be added to the WIDS.
6. Once approval/agreement is reached, forward all information to the WIDS custodian.

IDENTIFYING, EVALUATING AND  
DOCUMENTING SUSPECT WASTE SITES

6.3 Waste Site Documentation

WIDS Custodian

1. Enter information on approved waste/suspect sites into the WIDS.
2. Maintain a catalog file of sites that are not approved for entry into the WIDS.

6.4 Records

The WIDS Information Acquisition Form and other supplemental information (e.g., engineering evaluation of a site) that is sent to the WIDS custodian is processed in accordance with WHC-CM-7-8, Volume 3, Section 3.1.

7.0 DESIGNATED REVIEWING ORGANIZATIONS

None.

8.0 FORMS

Waste Information Data System Information Acquisition Form, A-6000-501, WEF191

9.0 REFERENCES

WHC-CM-7-8, Environmental Engineering and Geotechnology Function Procedures, Volume 3, Environmental Data Management Group Procedures, Section 3.1, "Data Acquisition."

10.0 BIBLIOGRAPHY

40 CFR 261, "Identification and Listing of Hazardous Waste."

Atomic Energy Act of 1954

DOE Order 5820.2A, "Radioactive Waste Management."

WAC 173-303, "Dangerous Waste Regulation."

WHC-CM-7-5, Environmental Compliance.

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December 29, 1993  
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Division

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TITLE:  
  
ENVIRONMENTAL READINESS REVIEW

Approved by  
  
M. R. Adams, Manager  
Environmental Restoration Engineering

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## 1.0 PURPOSE

This environmental investigations instruction (EII) describes the process used to evaluate the readiness of environmental investigation or restoration activities to progress to the operational phases. This procedure must be followed and completed prior to operation (implementation) of activities in the scope. The goal is to promote greater ownership and accountability by each individual.

## 2.0 SCOPE

This EII applies to pre-operational review of environmental activities including investigations of groundwater or soils; ecological field investigations; surface water or sediment investigations; all drilling operations, expedited response actions; interim remedial measures; and operation of equipment to treat soil or groundwater. It applies to those activities below the nuclear facility threshold criteria of U. S. Department of Energy (DOE) Order 5480.23 as prescribed in DOE-STD-10-27. This EII applies only to those field activities classified as low hazard radioactive/nonradioactive materials activities in accordance with the criteria found in DOE-STD-10-27.

This procedure combines requirements for Conduct of Operations with the requirements for environmental and safety reviews prior to conducting field activities.

This EII does not apply to readiness reviews of nuclear facilities (restart or startup). (See WHC-CM-1-5, Section 1.2, "Operational Readiness Reviews," for procedure to follow for nuclear facilities.)

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\*This is a total rewrite; therefore, no revision bars are used to indicate changes.

### 3.0 DEFINITIONS

#### activity/facility manager

The manager assigned responsibility for the safe, economical, and timely completion of an activity within the scope of this EII. This person has the authority and responsibility (approval authority) to authorize startup/restart of activities within the scope of this EII.

### 4.0 RESPONSIBILITIES

#### 4.1 Activity/Facility Manager

The activity/facility manager is responsible for:

- Assembling the team to conduct the activity/operate the equipment/facility.

NOTE: The diversity of the team will depend on the complexity of the activity.

- Prepare and approve the organization chart for the activity.
- Gain concurrence from managers of support groups as to the individuals to be matrixed to the activity/facility.
- Appoint the field supervisor/team leader.
- Approving the readiness checklist and conduct of operations matrix prepared by the field supervisor/team leader.
- Approving startup/restart of the activity or equipment/facility operation.
- Ensuring the requirements of WHC-CM-1-6, WHC Radiological Control Manual, Chapter 3 are met for radiological work.
- Ensuring the ALARA reviews of infrequent or first time work are complete in accordance with WHC-CM-4-11, ALARA Program Manual (ALARA program).
- Ensuring that requirements of WHC-CM-4-3, Industrial Safety Manual are met (Safety program).

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**ENVIRONMENTAL READINESS REVIEW**

#### 4.2 Safety

Environmental Field Services (EFS) is responsible for ensuring the preparation of the Hazardous Waste Operations Permit (HWOP) or the Job Safety Analysis (JSA).

Independent safety is responsible for approving the HWOP or JSA. Independent Safety approval indicates review of the HWOP; inspection of the activity, site, and/or equipment/facility; and acceptance of the operation from an industrial safety point-of-view.

Environmental Restoration Safety Support (ERSS) is responsible for preparing and maintaining the safety analysis compliant to DOE Order 5481.1B for operations below nuclear facility thresholds. Maintenance of the safety analysis includes managing discovery, change, and the periodic updates required to maintain the safety basis. The safety analysis provides the appropriate controls for the unique hazards of the activities. ERSS personnel should participate in the walkdown of the system before operation to ensure that configuration, plans, and institutional controls are consistent with the safety basis.

#### 4.3 Quality Assurance

Environmental Quality Assurance is responsible for conducting surveillances to determine compliance with WHC-CM-7-7 procedures and with other activity/facility specific procedures. The results of the surveillances will be provided to the activity/facility manager for response as required.

#### 4.4 Health Physics

The health physics organization is responsible to prepare/approve the radiation work plan (RWP) (sometimes called radiation work permit) and to provide health physics support during the activity/operation. Health Physics will also review and approve the HWOP or JSA.

#### 5.0 REQUIREMENTS

Conduct of Operations Matrix and Readiness Checklist. The field supervisor/team leader is required to prepare and present for approval a matrix showing how each of the 18 points of conduct of operations are addressed at the activity/facility. (For an example, see Attachment 2.)

The field supervisor/team leader also prepares and completes the readiness checklist. The checklist can be designed to meet the needs of the individual activity/facility. (An example checklist is provided as Attachment 1.) At a minimum, the checklist must address the 21 items on the attached checklist. This checklist is not required for drilling operations, but the Drilling Planning form in EII 6.7 or the Groundwater Well Remediation/Decommissioning Checklist in 8.3 must be completed.

## 6.0 PROCEDURE

1. ERSS prepares a safety assessment for the activity/facility using DOE-STD-10-27 criteria. If the assessment indicates a nuclear facility, follow procedural guidance in WHC-CM-1-5. If not a nuclear facility, use this procedure.
2. The activity/facility manager establishes the activity/facility organization chart and appoints the field supervisor/team leader.
3. The field supervisor/team leader prepares the readiness checklist, completes the items on the checklist, and obtains approval of the checklist from the activity/facility manager. The field supervisor/team leader also prepares, completes, and obtains approval on the conduct of operation matrix.
4. Independent Safety and Health Physics complete the HWOP/JSA review and the activity/facility walkdown and signs the documents.
5. Health physics prepares and routes for approval the RWP.
6. The activity/facility manager authorizes the activity or facility operation by issuing an internal memo authorizing operations.
7. The matrix and readiness checklists are quality assurance records materials and must be managed in accordance with EII 1.6.

## 7.0 FORMS

Example Checklist.

## 8.0 DESIGNATED REVIEWING ORGANIZATION

None.

## 9.0 REFERENCES

DOE Order 5480.23

WHC-CM-1-5, Standard Operating Practices, Section 1.2.

WHC-CM-1-6, WHC Radiological Control Manual.

WHC-CM-4-3, Industrial Safety Manual.

WHC-CM-4-11, ALARA Program Manual.

Attachment 1. Example Checklist.

- 1.0 Develop or revise procedures for activity/facility operation.
- 2.0 Prepare statement of work/task order/work order.
- 3.0 Prepare/verify NEPA documentation.
- 4.0 Prepare/Approve HWOP of JSA.
- 5.0 Prepare/Approve Radiation Work Permit.
- 6.0 Prepare/Approve Cultural Resources Review.
- 7.0 Prepare/Excavation Permit.
- 8.0 Obtain Air Quality Notification or Permit or obtain air pollution notification or permit.
- 9.0 Verify required training of workers (general).
- 10.0 Verify equipment/materials readiness.
- 11.0 Obtain regulatory documentation as required (e.g., ROD, approved EE/CA, etc.).
- 12.0 Prepare/Approve Design Documents.
- 13.0 Prepare/Approve Safety Assessment.
- 14.0 Obtain Criticality Prevention Specifications.
- 15.0 Obtain/Approve ALARA checklist.
- 16.0 Complete Site Preparation.
- 17.0 Prepare/Approve Organization Chart.
- 18.0 Verify HWOP/Safety Assessment Condition Met.
- 19.0 Complete Activity/Facility Specific Training.
- 20.0 Complete Walkdowns.
- 21.0 Complete/Approve Waste Management Plans and Provisions.

**APPROVALS:**

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Activity/Facility Manager

Attachment 2. Assessment of 18 Conduct of Operations Elements  
for the Soil Washing Water Treatment System

ELEMENT	LINES OF INQUIRY	OBJECTIVE EVIDENCE	TEAM MEMBER	REFERENCE
Organization and Administration	Organizational roles and responsibilities for installation, startup, and operation of the system are identified and understood.	Soil Washing Team Organization  Trained on roles and responsibilities	Mel Adams  Mel Adams	Figure 1  Training Mtg. 10/12/93 Conduct of Ops Training (10/6/93)
	Oversight roles and responsibilities are identified and understood. Management oversight established.			
	Procedures are in place to control this project.	Work is to be performed per: • Environmental procedures • Soil Washing Test Plan • Field Procedures specified in the test plan	JG Field	WHC-CM-7-5 Sec. 6 DOE/RL 92-21
Operator Conduct	Operating practices, record keeping and monitoring requirements are identified.  Proper industrial safety, radiological protection, and quality assurance practices are in place.  Job and site hazards are identified.	Test plan requires the use of log book procedure (EII 1.5) and identifies safety, rad, QA, and monitoring requirements.  HWOP, RWP, Safety Assessment	JG Field	DOE/RL 92-21  HWOP #001 RWP WHC-SD-EN-5
Control Area Activities	Personnel identified to control work area activities.  Access control areas identified  How is access of unauthorized and nonessential personnel controlled?  Qualified operators identified to operate and monitor control panels	Soil Washing Team Organization - Field Supervisor  Fenced exclusion zone with rad postings  Test site in SCA, fences and guards around equipment and hazards, signs restricting access  Training required to access site identified in HWOP	EW Papin	Figure 1  HWOP #001
Communications	Communication methods are established for the project.	Weekly activity reports, Unit Managers Meetings, other meetings with DOE and regulators.  On-the-job communication established in tailgate safety meetings. Hand-held radios, hand signals used where hearing is a problem.	JG Field  EW Papin	TPA  WHC-CM-7-7, EII 1.1
	Communication provisions are available for emergencies	Cellular phones, emergency number posted		
Control of On-Shift Training	Personnel are to be properly trained	Training certificates, computer records	EW Papin	EII 1.7, HWOP #001
	Proper Training is ensured	Site Safety Officer and Field Supervisor	J Vaughn	EII 1.1
Investigation of Abnormal Events	Hazards associated with abnormal events have been assessed.	Abnormal events are assessed in the Safety Assessment. All events were considered a low hazard.  Modifications for abnormal events are addressed in the test plan and HWOP.	FW Gustafson	WHC-SD-EN-SAD-005  DOE/RL 92-2 HWOP #001

**ENVIRONMENTAL INVESTIGATIONS AND  
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**ENVIRONMENTAL READINESS REVIEW**

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December 29, 1993**

ELEMENT	LINES OF INQUIRY	OBJECTIVE EVIDENCE	TEAM MEMBER	REFERENCE
Notifications	Program in place to notify RL and other appropriate agencies as needed.  Emergency notification procedures established.	HWOP identifies notifications, Required by WHC-CM-7-5  Dial 811, notify Facility Engineer (if not present) and Project Engineer (HWOP)	EW Papin	HWOP #001, WHC-CM-7-5 Sec. 5
Control of Equipment and System Status	Equipment conforms to OSHA standards.  Prestart checklist established  System operability established	Equipment inspection by SSO and industrial safety noted in logbook  Readiness review checklist  Shake down tests at pit #6	FW Gustafson  EW Papin  FW Gustafson	Logbook  Figure 2  Documented in Logbook
Lockouts & Tagouts	Lock and tag program in place	Operating procedures discuss lock and tag requirements.	EW Papin	Op. Proc. SPP-003
Independent Verif.	System checks are made to verify the system is operating within the safe operating parameters.	Operating procedures specify activities and parameters that shall be checked	FW Gustafson	Op. Proc. SPP-003
Logkeeping	Daily logs are kept.	Log keeping is required in WHC-CM-7-7.	EW Papin	EII 1.5
Operations Turnover	N/A	N/A	N/A	N/A
Operations Control of Process Chemistry	Operators are trained in basic system chemistry.	Training given by operators designers in prejob safety meeting and noted in the logbook.	FW Gustafson	Logbook
..required Reading	Are personnel familiar with the job?	HWOP and RWP must be read prior to signing log and entering zone.	FW Gustafson	HWOP #001, Logbook
Timely Orders to Operators	Mechanisms are in place to provide timely information to system operators.	Field phone and radios used to communicate orders to the field	EW Papin	HWOP #001
Operations Procedures	Approved start-up and operating procedures are in place.	Procedures are in place and are controlled by using the ECN system	FW Gustafson	Op. Proc. SPP-003
Operator Aid Postings	Required safety signs are posted. Emergency shutoff controls are labeled. A system flow chart is posted.	Postings and labels are in accordance with HWOP and Safety Assessment.	FW Gustafson	HWOP #001 WHC-SD-EN-SAD-005
Equip/Piping Labels	Key system components are labeled as noted in operating procedures.	Operating Procedures	FW Gustafson	Op. Proc. SPP-003

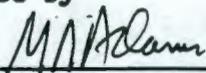
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WESTINGHOUSE HANFORD COMPANY  
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Manual Section Page Effective Date Organization  
WHC-CM-7-7  
EII 1.14, REV 0  
1 of 6  
August 10, 1992  
RR/Environmental  
Division

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TITLE:  
PREPARATION OF DESCRIPTIONS OF WORK

Approved by  
  
M. A. Adams, Manager  
Environmental Restoration  
Engineering

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## 1.0 PURPOSE

This Environmental Investigations Instruction (EII) describes the preparation, review, approval, and revision (change control) for Descriptions of Work (DOW).

## 2.0 SCOPE

This EII applies to all DOWs prepared by Westinghouse Hanford Company (WHC) for CERCLA (RI/FS or IRA) and RCRA (RFI/CMS or IM) activities.

## 3.0 DEFINITIONS

Description of Work. A document that provides performance details and controls for sampling and field activities in support of the activities identified in Section 2.0.

## 4.0 RESPONSIBILITIES

### 4.1 OPERABLE UNIT COORDINATOR

1. Prepare DOWs in accordance with format and content requirements specified in Section 5.1 of this EII and WHC-CM-6-1, EP-1.12.
2. Ensure consistency with the upper tier governing document (e.g., work plan).
3. Assign impact level and distribute DOWs for review in accordance with MRP 5.43.
4. Resolve review comments and obtain approvals required by the assigned impact level.
5. Establish distribution lists (use form A-6000-135; macro WEF067) for DOWs.
6. Ensure any changes (revision) to DOWs are accomplished in accordance with EP-2.2.

7. Ensure DOWs are officially released through Configuration Management (CM) in accordance with EP-1.7.

#### 4.2 REVIEWERS

Document substantive and pertinent comments.

#### 5.0 REQUIREMENTS

1. The following individuals shall be included in DOW review distribution, in addition to the review distribution determined by MRP 5.43:
  - Operable Unit Coordinator
  - Field Team Leader
  - *Environmental Field Services Health and Safety*
2. DOWs are prepared and numbered as Supporting Documents in accordance with WHC-CM-6-1, EP-1.12.
3. DOWs are routed for internal WHC review and approval, based on the impact level, in accordance with EP-1.6 and EP-1.12.
4. DOWs are revised in accordance with EP-2.2.
5. DOWs are provided to users by controlled distribution with receipt acknowledgement to ensure distribution and use where the prescribed activities are performed.
6. DOWs require clearance in accordance with WHC-CM-3-4 prior to release external to WHC.

#### 5.1 CONTENT AND FORMAT REQUIREMENTS

Descriptions of Work must include the following sections as a minimum:

1. Scope of Work/Introduction
  - a. Reference the data quality objectives specified in the work plan for each type of activity.
  - b. Identify the proposed location(s) for the activity(ies), criteria for selecting those locations will be referenced to the work plan.
  - c. A map, with an appropriate scale so the sites in the field can be located, should be included.

PREPARATION OF DESCRIPTIONS OF WORK

2. General Requirements

- a. Identify the EIIs needed to conduct the work. If an EII discusses different methods for accomplishing the activity, specify the method of choice or reference the specific EII sections to be used.
- b. Include calibration standards and frequency, when required and not specified by the EIIs.

3. Sampling and Field Activities

- a. Describe field screening activities or equipment not specified in the work plan or in the referenced EIIs.
- b. Reference data collection procedures and reporting requirements by EII or describe.
- c. Provide measurements frequencies (e.g., 5 foot intervals and lithology breaks).

4. Quality Assurance/Quality Control

- a. Include chain of custody procedures or reference the EII.
- b. Specify sample container size and preparation requirements.
- c. Define holding times by sample media.
- d. Identify types of analyses required.
- e. Specify types and frequency of QA/QC samples to be taken.

5. Schedule

Provide an estimate of the proposed field activity schedule.

6. References

- a. Work Plan.
- b. EIIs referenced in the DOW.
- c. Other documents referenced.

References must be readily available for users.

## **6.0 PROCEDURE**

### **6.1 DEVELOPMENT**

#### **6.1.1 Content and Format**

The DOW is developed in accordance with the content and format requirements specified in Section 5.1 of this EII.

### **6.2 REVIEW AND APPROVAL**

#### **6.2.1 WHC INTERNAL REVIEW AND APPROVAL**

1. The cognizant engineer prepares the internal WHC review request on an Engineering Data Transmittal (EDT) (form BD-7400-172, macro GEF097) in accordance with EP-1.6, using instructions on the reverse side of the EDT, noting in block 8 that comments may be returned, completed in black ink on the EE&G Comment Record forms (form A-6000-461/A-6000-460, macro GEF157 is preferred).
2. After internal review and comment, the cognizant engineer prepares and routes an EDT form and the final DOW (with comments incorporated) for approval signatures based on the impact level.

Other signatures may be required depending upon the scope of work. It is the responsibility of the cognizant engineer and the cognizant engineer's manager to identify all required approvals.

#### **6.2.2 Clearance and Release**

The cognizant engineer:

1. Processes approved DOW for clearance on an Information Release Request (IRR) in accordance with WHC-CM-4-3.
2. Transmits cleared DOW (including copy of completed IRR) with EDT and distribution list to Configuration Management (Configuration Documentation Work Station).

Configuration Management will apply the release stamp and forward the DOW to Information Resource Management for reproduction and distribution.

#### **6.2.3 U.S. Department of Energy, Richland Field Office Review and Concurrence**

1. The WHC approved/cleared DOW is formally transmitted to the U.S. Department of Energy, Richland Field Office (RL) unit manager in accordance with EP-1.6 for a one week review.

**NOTE:** Lack of response by the due date implies there are no comments.

2. The lead unit manager for RL must concur with the DOW prior to submittal to the regulators.

#### **6.2.4 Regulatory Review**

Following RL concurrence, a minimum of 10 working days must be given for regulatory review. The DOW is considered accepted, if no extension is requested and no comments are received.

**NOTE:** Regulatory comments that are submitted must be resolved before field work can begin.

#### **6.2.5 Final Approval**

1. RL and regulatory approval of the DOW are obtained after comments are resolved and incorporated in accordance with Section 6.3 of this EII.
2. Until the work plan is approved, each DOW must include a provision for the lead regulatory agency signature.
  - a. After a work plan for which the U.S. Environmental Protection Agency (EPA) is the lead agency is approved, the DOWs will no longer require signatures, but will be submitted for review.
  - b. DOWs for sites where the Washington State Department of Ecology (Ecology) is the lead regulatory agency will require Ecology approval even after the work plan has been approved.

#### **6.3 REVISION/CHANGE**

Revision/change to an approved DOW requires processing of an Engineering Change Notice (ECN) in accordance with EP-2.2

1. Minimum ECN signature approvals are determined by the impact level assigned to the ECN in accordance with MRP 5.43.
2. Additional approval signatures may be required when specified by the cognizant engineer.
3. Engineering Change Notices may be approved by telecon at the discretion of the cognizant engineer and cognizant manager. When obtaining approval via telecon, the person responsible for obtaining the telecon approvals:
  - a. Enters the authorizing name(s) and date of the telecon in the appropriate ECN blocks, annotate as telecon approvals
  - b. Enter printed name providing the identity of the person obtaining the telecon approval.

Telecon approvals will not be replaced at a later date with the approver's signature.

#### **6.4 RECORDS**

The engineering organization responsible for release of the EDT/ECN forwards the EDTs and ECNs and attached documents to Information Resource Management for permanent storage as a lifetime record.

#### **7.0 REFERENCES**

WHC-CM-1-3, Management Requirements and Procedures, MRP 5.43, "Impact Levels."

WHC-CM-3-4, Information Release Administration.

WHC-CM-6-1, Standard Engineering Practices.

EP-1.6, "Engineering Data Transmittal."

EP-1.7, "Engineering Document Approval and Release Requirements."

EP-1.12, "Supporting Documents."

EP-2.2, "Engineering Document Change Control."

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WESTINGHOUSE HANFORD COMPANY  
ENVIRONMENTAL INVESTIGATIONS AND  
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January 31, 1994  
RR/Environmental  
Division

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TITLE:

Approved by

PREPARATION OF SOW/LOI

  
W. H. Price, Manager  
Environmental Field Services

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## 1.0 PURPOSE

This environmental investigations instruction (EII) provides the minimum requirements for the preparation of Statements of Work and Letters of Instruction (SOW/LOI).

## 2.0 SCOPE

This EII applies to the preparation of SOWs/LOIs from Environmental Restoration Engineering (ERE) or Environmental Field Services (EFS) to WHC internal organizations, Hanford Site contractors, or offsite contractors. It applies to organizations other than ERE and EFS only as guidance.

## 3.0 DEFINITIONS

See the Glossary/Acronyms section of this manual.

## 4.0 REQUIREMENTS

The SOW or LOI is prepared to provide the performing organization with a description of the work, to specify deliverables, to schedule the work, and to provide clarification and interpretation of upper tier requirements applicable to the work. The format of the SOW/LOI may vary, but the content must include, at a minimum, those items listed in 5.1, item 3, below. Record retention requirements are specified in Table 1.

## 5.0 PROCEDURE

### 5.1 Preparation of SOW/LOI

- Cognizant Manager
1. Identify the need for SOW/LOI to a contractor to perform a project, and assign an author for the SOW/LOI.

PREPARATION OF SOW/LOI

Author

2. Prepare SOW/LOI in accordance with this procedure and the format in Appendix A, which can be modified according to the requirements of the project.
3. Include the information indicated in the table below in the SOW/LOI. REQ in a column appropriate to the document being prepared means that the information is required; if not, the information may be included as a good practice.

SUBJECT	SOW	LOI
Objective for which contractor's services solicited and their role in the project.		
Scope of work to be performed.	REQ	REQ
Detailed task description giving: technical requirements controlling parameters controlling procedures	REQ	REQ
Details of deliverables expected.		
Project schedule.		
Types and contents of all records to be generated.	REQ	REQ
Identity of QAPP and QA manual/job-specific QA requirements	REQ	REQ
Access to files and premises for inspections and audits	REQ	REQ
Preconstruction safety meeting with organizations to be involved in the project.	REQ	REQ
Job-specific safety hazards.	REQ	REQ
Impact level of the work and safety class of systems, components or structures to be fabricated.		REQ
Reference to the Work Order, Purchase Requisition, or TPCN.	REQ	REQ
Dollar value of funding.		
WHC point-of-contact		
Approvals	RL (REQ for SOW to offsite engineer/ architect)	per MRP 5.43

PREPARATION OF SOW/LOI

Author

4. Obtain (for LOIs only) a correspondence number from Correspondence Control.
5. Obtain approvals for the document as required by MRP 5.43.
6. Prepare and attach a transmittal letter to contractors or an internal memo for WHC organizations, and obtain the appropriate signature. Prepare the transmittal letter/internal memo as an executive overview of the SOW/LOI; it must contain:
  - a. References to prior related correspondence.
  - b. Reference to the contractual document.
  - c. A succinct description of the scope of services solicited and the location where they are to be performed, if relevant.
  - d. The signature of the cognizant manager.
7. Prepare the distribution coversheet and attach to the transmittal letter/internal memo. The minimum distribution for an SOW or LOI is indicated by the Xs below:

DISTRIBUTION	SOW	LOI
Contractor or WHC organization		X
Project coordinator	X	X
SOW/LOI author		X
Cognizant manager		X
Quality Assurance engineer		X
File Custodian	X	X
Any organization approving or concurring with the SOW/LOI.	X	X

The impact level designation shall be included on the LOI distribution coversheet with words such as "This LOI is designated impact level \_\_."

File Custodian

8. Distribute SOW/LOI.
9. Store and retire SOW or LOI in accordance with the instructions in Table 1.

## 5.2 Revisions

- |                      |  |
|----------------------|--|
| Cognizant<br>Manager | 1. Identify changes in requested services that require revision of the SOW or LOI and assign an author.                                      |
| Author               | 2. Designate revisions as complete revisions or partial revisions with side-bars indicating the revised portions.                            |
|                      | 3. Number all LOI revisions sequentially.  |
|                      | 4. Attach a transmittal letter that summarizes the changes and references related changes in a revised LOI.                                  |
|                      | 5. Route the revised SOW/LOI for approval in accordance with MRP 5.43.   |
|                      | 6. Distribute the revision to the recipients of the original SOW/LOI. Remove recipients no longer assigned to the project from distribution. |
| File Custodian       | 7. Store and retire SOW or LOI in accordance with the instructions in Table 1.   |

## 5.3 Field Memorandum

A Field Memorandum (FM) is used to provide clarification to an SOW/LOI, to temporarily suspend work, to redistribute dollar expenditures within the project budget, or to make minor changes in the work requirements or schedule that do not increase work scope or affect milestones. Major changes in the work scope or milestones require revision of the SOW/LOI.

- |  |  |
|--|--|
| Cognizant Engineer/<br>Field Team Leader | 1. Observe field condition requiring immediate correction.   |
|  | 2. Prepare FM clarifying SOW/LOI, temporarily suspending work, authorizing change in charge code or costs, or changing the immediate schedule. |
|  | 3. Obtain the contractor's field representative's concurrence and signature on the FM.   |
|  | 4. Provide copies of the FM to the contractor's field representative, to the cognizant engineer/manager, and to the File Custodian.            |
| File Custodian                           | 5. Maintain FM in project files.   |

6.0 RECORDS

Record requirements are given in Table 1 below.

Table 1. Record Requirements

NAME Filing Unit Title or Description	RECORD TYPE*	RETENTION PERIOD	DISPOSAL AUTHORITY	CUT-OFF AND RETIREMENT INSTRUCTIONS
SOW/LOI and revisions	R	6 years and 3 months after final payment	GRS 3.3.a	Transmit to FC for storage. Destroy in office after specified retention period.
Field Memorandum A-6001-215, macro WEF236	R	Maintain with associated SOW/LOI.	N/A	Transmit to FC for storage. Destroy with associated SOW/LOI.

\* R = Record Material

7.0 DESIGNATED REVIEWING ORGANIZATIONS

None.

8.0 FORMS

Field Memorandum (A-6001-215, macro WEF236).

9.0 REFERENCES

WHC-CM-1-3, Management Requirements and Procedures, MRP 5.43, "Impact Levels."

APPENDIX A

STATEMENT OF WORK/LETTER OF INSTRUCTION FORMAT

The following subjects should be addressed in a Statement of Work (SOW) or Letter of Instruction (LOI) to a contractor or other WHC organization. The format of the SOW/LOI may vary, but the content must include, at a minimum, those items listed in 5.1, item 3 of this EII.

**TITLE:** Include in the SOW/LOI title the subject of the document, the operable unit (if appropriate), the LOI number, the Revision number, and the related work order number. Use the form "Letter of Instruction for (task), \_\_\_\_\_ Operable Unit, LOI-#, REV #, Work Order #." Include the title in the page header.

**APPROVALS:** Name, title, and signature of those approving the LOI in accordance with MRP 5.43, and the date approved. An SOW is approved by the task requestor and by the quality assurance engineer on the accompanying contract document.

1.0 SUBJECT

State:

- Purpose of the SOW/LOI
- Requested work start date
- Impact level.

2.0 SAFETY

1. Describe:

- Who will do the safety planning, safety review, and safety approval.
- What information will be provided to support safety planning.
- Any special safety hazards or requirements.
- Previously issued documents or reports pertinent to safety issues.

2. Require the construction contractor or WHC organization to hold a preconstruction safety meeting with safety representatives from the organizations involved with the project.

### 3.0 RESPONSIBILITIES

Identify:

- Responsibilities of the contractor.
- Minimum qualifications for contractor personnel providing services.
- Responsibilities of the organization requesting the services.

### 4.0 REGULATORY REQUIREMENTS, CODES, PROCEDURES AND GUIDANCE DOCUMENTS

List the applicable:

- Federal Regulations and Guidance
- DOE Orders
- Washington Administrative Codes
- Company documents including procedures, work plan, Quality Assurance Program Plan, specific quality assurance/quality control requirements, and approved construction specifications.

### 5.0 SCOPE OF WORK TO BE PERFORMED

1. Describe:

- Phases of work for which services are required.
- Unusual requirements.
- Contractor interfaces.

2. Specify:

- Special design parameters (e.g., specifications).
- Procedures to be used and reviews required.

3. Explain the expectations for deliverable items such as:

- Reports or data
- Scale and size of maps
- Specific procedures
- Computer software
- Equipment
- Required draft documents.

4. Include as much detail as necessary. If extensive detailed instructions are necessary, divide Section 5.0 into subsections dealing with task descriptions and deliverables.

## 6.0 COST

1. Reference the Work Order, Purchase Requisition, or TPCN.
2. State the dollar value of funding available.
3. Request the contractor to prepare a formal cost estimate if required.

## 7.0 QUALITY ASSURANCE

1. Reference the applicable Quality Assurance Program Plan and identify job-specific QA requirements appropriate to the SOW/LOI impact level.
2. Specify that access to premises is to be granted for audits and surveillances of the files, procedures and records associated with the SOW/LOI.

## 8.0 PERMITS/RECORDS/REPORTS

1. State that the following will be provided as required by the work:
  - Radiation Work Permits
  - Excavation Permits
  - Cultural Resource Review
  - Safety Assessment
  - Retired Area Entry Permits
  - Radiation Area Entry Permits
  - ALARA Checklist
  - NEPA documentation.
2. Identify the documentation required to be submitted for information, review, or approval prior to acceptance by WHC.
3. Specify interim storage requirements.
4. Indicate the schedule and means for transmittal to WHC during the project or delivery at the completion of the project.
5. Specify that the contractor keep some or all of the following files and make them available for review during the project:
  - All meeting minutes dealing with assigned work
  - Monitoring data
  - Logbooks
  - Draft reports
  - Telephone conference records.

6. Require the contractor to provide, as required by the work:
  - Site-specific health and safety plan (e.g., job hazard analysis or job safety analysis)
  - Start Cards.

## 9.0 MANAGEMENT

1. State that the construction management is to:
  - Supervise construction employees
  - Ensure compliance with the SOW/LOI.
2. Indicate who will monitor the work of the construction management contractor.
3. Identify responsibility for:
  - Authority to initiate work
  - Authority for daily release to work
  - Authority to stop work.

## 10.0 SCHEDULE

1. Require the contractor or contracting WHC organization to develop a schedule for the work based on the availability of equipment, crews, etc.
2. Identify:
  - Required start date
  - Any fixed milestones
  - Due dates for deliverables
  - Required completion date.

## 11.0 POINT-OF-CONTACT

1. Supply the name and telephone number of an individual or individuals within the WHC contracting organization cognizant of the work plan as detailed in the SOW/LOI.

NOTE: Append necessary supporting documents or data.

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WESTINGHOUSE HANFORD COMPANY

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ENVIRONMENTAL INVESTIGATIONS AND  
SITE CHARACTERIZATION MANUAL

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TITLE:

GUIDANCE FOR EVALUATING UNREVIEWED  
SAFETY QUESTIONS FOR ENVIRONMENTAL  
RESTORATION AND DECONTAMINATION  
AND DECOMMISSIONING ACTIVITIES

Approved by

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## 1.0 PURPOSE

This procedure provides (1) guidance for determining whether a nuclear unreviewed safety question (USQ) exists and (2) the process for resolving it. The same process may be used to investigate nonnuclear USQs even though the reporting requirements differ.

## 2.0 SCOPE

Identifying and resolving potential USQs may affect the safety bases for baseline safety assessments (SA), the interim safety basis (ISB) documents, safety analysis reports (SAR), and any other safety basis documents required for environmental restoration (ER) and decontamination and decommissioning (D&D) activities. Resolution is required to ensure that proposed changes and discoveries that are outside the identified safety envelope (ISE) are identified, corrected, and documented in accordance with DOE Order 5480.21.

Several safety basis documents have been prepared and will be required in the future for defining the safety envelope for investigation, characterization, and remedial activities. In many cases, the ER and D&D activities are short duration, and the existing and future safety basis documents would be too numerous to be listed in this procedure. This procedure meets the intent of DOE Order 5480.21 in that it identifies the process for maintaining the safety bases for ER and D&D activities.

Process or reactor facilities have been thoroughly analyzed, while ER and D&D activities are essentially under continuous USQ review. For ER and D&D activities, the USQ review is an investigative process to determine the relative safety significance of a change or discovery. The USQ process assists in uncertainty management and provides management with a mechanism to control the systems and operations they and their workers have responsibility for.

The USQ process (and therefore this procedure) is a tool to familiarize personnel with the safe and unsafe conditions (boundaries) of an operation. It helps ensure that activities or operations present minimal risk to the public and to onsite personnel.

The USQ process is an investigative process after authorization is granted for the purpose of determining the relative safety significance of a change or discovery. The USQ process developed in this procedure applies to ER and D&D remedial activities that have an identified safety basis developed in the form of a baseline SA, ISB, SAR, or specific safety basis document.

### **3.0 DEFINITIONS**

#### **analysis**

The qualitative or quantitative descriptions of the expected behavior of processes, materials, structures, systems, or components often following postulated initiating events.

#### **discovery**

The identification of any as-found state, either resulting from an event where the operation may be outside the ISE or causing to go outside the safety envelope (i.e., occurrence). Discoveries may result from analyses/reanalyses, reviews, surveillances, technological advances, and other similar activities.

#### **encroachment**

A condition that occurs when a temporary or permanent activity (or facility) is to be conducted (or located) in closer proximity to an existing nuclear facility than has been analyzed in the existing accident analysis of the facility.

#### **identified safety envelope**

Either SAs, ISBs, SARs, or specific safety basis documents and technical specifications, operational safety limits, or a less formal definition of safe boundaries for operation that have been formally provided and/or approved by the U.S. Department of Energy (DOE).

#### **important to safety equipment**

- Safety related equipment
- Nonsafety related structures, systems, and components that provide support for safety systems or may have potential negative effects on safety systems.

### **interim safety basis**

A documented safety basis established for a facility or activity that has no formal SAR or safety authorization basis. The ISB is active until an approved safety basis is established.

### **justification for continued operation (JCO)**

A basis for continuing facility operation or other work before the ultimate resolution of a discovery, or to permit resumption of activities suspended when the discovery was declared. A JCO may include requirements for partial curtailment of activities, compensating administrative steps, or other provisions that ensure the safety of the public and Hanford Site personnel.

### **modification**

Changes made to a physical structure, systems, components, or the operating process, including documentation. Replacement of a component with a like component (one whose installation does not require an engineering change notice is not a modification).

### **occupational worker**

An individual who is either a DOE or DOE contractor employee; an employee of a subcontractor to a DOE contractor; an individual who visits to perform work for or in conjunction with DOE; or an employee who uses DOE facilities.

### **occurrences**

Events or conditions that could have adverse implications for safety, health, environment, quality assurance, security, or operations.

### **operational safety limit (OSL)**

An OSL is an auditable limit established within Westinghouse Hanford Company to specify the safety authorization limits for ER and D&D activities. The OSLs specified for remediation activities are limited to activities that are of general use or low-hazard classification compliant with the review and authorization requirements, and guidance provided in DOE Order 5481.1B. The OSLs define the conditions, safe boundaries, recovery actions, and the bases and controls (engineered or administrative) necessary to ensure that an activity is operated within the safety envelope as defined by the remediation SA, ISB, SAR, or the specific safety basis document.

**operational safety requirement (OSR)**

Those requirements that define the bounding conditions for safe operation and bases thereof, and the management or administrative controls required to ensure the safe operation of a nonnuclear facility.

**originator**

An employee preparing a proposed change, test, or experiment; reporting an incident; or performing an activity that results in a discovery.

**potential USQ**

A proposed change or discovery that, on the basis of preliminary evaluation, has not been determined to be within the ISE.

**review committee (RC)**

A group of individuals established for ER and D&D activities to identify or establish and manage the safety envelope for an activity and determine if discoveries or USQs exist.

**safety basis**

Information related to the control of hazards (including design, engineering analysis, and administrative controls) from which DOE bases its conclusion that activities can be conducted safely (DOE Order 5480.23).

**system and/or component**

An individual item of equipment or the assemblage of related items that are used to carry out all or part of a process or form an integral part of the safety envelope for the facility or activity.

**technical safety requirement (TSR)**

The requirements that define the conditions, safe boundaries, and management of administrative controls necessary to ensure the safe operation of a nuclear facility. The TSRs shall also reduce the potential risk to the public and facility workers from uncontrolled releases of radioactive materials or from radiation exposures caused by inadvertent criticality. A TSR consists of safety limits, operating limits, surveillance requirements, administrative controls, use and application instructions, and the basis thereof. TSRs were formerly known as OSRs for nonreactor nuclear facilities and technical specifications for reactor facilities (DOE Order 5480.22).

## **USQ evaluator (USQE)**

An individual designated by line or overview management that has satisfactorily completed prescribed training, has the appropriate educational requirements as defined by management having responsibility for ER and D&D activities, and has the appropriate level of work experience (i.e., familiarization with the ER or D&D work procedures, safety bases documents, remedial systems design, retired facilities, etc.) necessary to manage the safety basis.

## **4.0 REQUIREMENTS**

### **4.1 Originator**

1. The originator shall complete overview training and job-specific USQ training before preparing a proposed change, test, or experiment; reporting an incident; or performing an activity that results in a discovery.

### **4.2 Review Committee**

1. Following are the prerequisites for RC members:
  - Complete prescribed training.
  - Meet appropriate educational requirements (determined by management responsible for the activity being reviewed).
  - Be familiar with work activity being reviewed and appropriate related procedures, safety basis documents, and system design.
2. Nuclear Safety and Quality Assurance must be represented on the RC.

### **4.3 Unreviewed Safety Question**

A proposed change or discovery shall involve a USQ when one or a combination of the following situations occur:

- If the probability of occurrence or the consequence of an accident or malfunction of equipment important to safety previously evaluated by safety analysis may be increased; or
- If a possibility for an accident or malfunction of a different type than any evaluated previously by safety analyses may be created; or
- If the margin of safety, as defined in the basis for any technical specification or OSL, is reduced.

## **5.0 PROCEDURE**

### **5.1 Screening Process**

1. The originator provides documents that authorize a proposed change, siting of an activity, test, or experiment to the USQE.
2. The USQE (1) reviews these documents to determine the necessity of a USQ and (2) completes and signs the USQ Screening Form (Figure 1) in accordance with Section 5.1.1.

**NOTE:** Screening shall not be used for physical modifications.

#### **5.1.1 Completing the screening process form**

##### **Document Number**

1. Enter the document number of the affected SA, ISB, SAR, occurrence report, or other reference.

##### **Title**

1. Name the affected SA, ISB, SAR, occurrence report, or other reference document title.

**NOTE:** Screening must be completed within 48 hours of receiving an occurrence report.

If either USQE answers yes/maybe to question 2, the RC must complete the review of the occurrence within 48 hours of receiving the screening evaluation to determine if a discovery exists.

##### **Responses to Questions**

1. Answer appropriately, either "no" or "yes/maybe." Do not leave a response blank.
2. If the appropriate response is "no," provide the basis; if all answers are "no," mark the box indicating "no further action required" at the bottom of the page.
3. If the appropriate answer to one or more questions is "yes/maybe," provide the basis and complete the screening.
  - a. To determine the appropriate response to question 4, answer the questions in section 2.0 of Figure 2.

### **Basis**

1. Provide a concise statement indicating the appropriate sections of the safety analysis that were reviewed.

### **USQE Approval**

1. The first reviewer (USQE) submits the form to the second reviewer for concurrence.
2. If the reviewers concur, all answers are "no," and the basis for all responses is included, mark the box indicating "no further action required."
3. Both USQEs sign and date the form and provide a file copy to the originator.
4. If the reviewers do not reach concurrence, they submit the screening form to the RC for review; each maintains a file copy; provide one copy to the originator.
5. If the RC (1) concludes that an occurrence is a discovery or (2) cannot reach consensus, perform the following.
  - a. Ensure that the facility or activity is in a safe or safest mode.
  - b. Notify the appropriate U.S. Department of Energy, Richland Operations Office (RL) line management.
  - c. If the facility cannot be placed in a safe mode or if operation outside the safety basis is planned, prepare a JCO in accordance with Section 5.3 of this procedure.
  - d. Maintain all operational restrictions imposed to compensate for the discovery until DOE approves lifting the restrictions.
  - e. Perform a USQ evaluation.

### **5.2 Evaluation Process**

1. The USQE (1) evaluates all proposed changes, occurrences resulting in discoveries, and site locations not eliminated during the screening process (Section 5.1) and (2) completes the USQ Evaluation Form (Figure 2).

### **5.2.1 Evaluating a change or discovery**

#### **Document Number**

1. Enter the document number of the affected SA, ISB, SAR, occurrence report, or other reference.

#### **Title**

1. Name the affected SA, ISB, SAR, occurrence report, or other reference document.

#### **Responses to Questions**

1. Answer appropriately, either "no" or "yes/maybe." Do not leave a response blank.
2. If the appropriate response is "no," provide the basis; the originator and the USQEs maintain a completed copy.
3. If the appropriate response is "yes/maybe," provide the basis and submit the completed form to the RC for review.
4. The USQEs meet with the RC to resolve USQ issues.

#### **Basis**

1. Provide a statement detailed enough to fully explain the decision process. Cite references reviewed to reach the decision.

#### **USQE/RC Approval**

1. The originator or the first reviewer (USQE) submits the form to the second reviewer (USQE) for concurrence.
2. If the reviewers concur, and all seven answers are "no," the reviewers sign and date the form, and each maintains a copy.
3. If the reviewers concur and all seven answers are "yes/maybe," or if the reviewers do not concur, they submit the form to the RC for final disposition in accordance with WHC-CM-1-3, MRP 5.12.

### 5.2.2 Evaluating encroachment

1. Encroachment occurs when a temporary or permanent activity (or facility) is performed or located closer to an existing nuclear facility than the distance considered in the accident analysis for that nuclear facility.

NOTE: The concern is for the safety of nonfacility workers, who may be at a level of risk greater than that previously considered, resulting in a USQ.

2. Following are several factors to consider when determining whether or not a USQ resulting from encroachment exists:
  - Personnel involved
  - Level and type of training
  - Length of stay
  - Distance used in the nuclear facility analysis.
3. If the activity will continue for one month or more and individuals will work inside the facility accident boundaries for more than 8 hours a week, complete a USQ evaluation (Figure 2).
4. If the activity will continue for less than a month or if individuals will work inside the boundaries fewer than 8 hours a week, the activity is not considered a USQ.
5. Always evaluate special conditions such as transitory work that will affect nuclear facility operation (e.g., cutting power lines, interrupting communications).
6. In safety analyses and USQ evaluations, the term "public" indicates an individual whose maximum allowable annual dose limit from a DOE operation is 100 millirems per year (500 millirem per year under special circumstances).
7. Contractor and subcontractor personnel who have qualified are considered radiation workers and have annual exposure limits of 5 rem (5,000 millirem). In safety analyses, these workers are termed "onsite" personnel.
8. Safety analyses take into account (1) members of the public visiting or touring the facility and (2) onsite personnel performing transitory duties at the facility.

### 5.2.2.1 Documenting encroachment

#### Question 1

1. If the answer is "no" or "unknown," consider the individuals to be "public" and proceed to question 2.
2. If the answer is "yes," consider the individual "onsite," and proceed to question 2.

#### Question 2

1. Identify nuclear facilities in the immediate vicinity.
2. For each facility, record the "onsite" and "public" receptor distances (found in each facility's accident analysis).
3. Do not leave a response blank. If not applicable, use "N/A."

#### Question 3

1. If the answer is "yes" or "partially," proceed to question 4.
2. If the answer is "no," the activity is not considered encroachment; indicate this fact in step 5 (conclusion).

#### Question 4

1. Indicate the anticipated longevity of the activity and the average time per week personnel will work at the location.
2. If the activity lasts more than one month and personnel will work at the location more than 8 hours per week, the activity constitutes encroachment. Indicate this fact in step 5 (conclusion).
3. If the activity will take less than one month or if personnel will work at the location less than 8 hours a week, the activity does not constitute encroachment. Indicate this fact in step 5 (conclusion).

#### Step 5 (Conclusion)

1. Indicate which safety basis is affected.

### **USQE/RC Approval**

1. The concurrence and approval of two USQEs is required.
  - a. If concurrence is reached and the conclusion is that the activity does not encroach, both evaluators sign and date the form.
  - b. Append the form to the document as the basis for the response to question 4 of the USQ Screening Form (Figure 1).
  - c. If the activity is considered encroachment, use this evaluation as the basis for the response to question 4 of the USQ Screening Form (Figure 1).
  - d. If concurrence cannot be reached, submit the evaluation to the RC for final disposition.

### **5.3 Preparing a Justification for Continued Operation**

1. The purpose of the JCO is to document the bases (1) for continuing remedial activities pending the ultimate resolution of a discovery or (2) for resuming activities initially suspended when a discovery was detected. Unaffected segments of an activity or operation may not require a JCO.
2. Use the JCO form to document the following.
  - a. Continuing or resuming the activity or operation will neither increase accident likelihood nor worsen accident consequences.
  - b. The incremental risk of continuing or resuming the activity is small compared to the margin between acceptable risk and the risk accepted in the ISE.

#### **5.3.1 Completing and dispositioning the form**

1. **Discovery** - Describe what led to the determination that the facility or activity is outside the safety basis.
2. **Impact** - Briefly identify all sections of the safety analysis affected by the discovery. List title and document number.
3. **Justification** - Provide detailed justification demonstrating that continuing or resuming the activity or operation will neither increase accident likelihood nor worsen accident consequences.

4. Approval - With concurrence from the RC, the manager having responsibility for the activity or operation approves the JCO and submits it to RL.
  - a. The RC should include representatives from Health and Safety Assurance, Quality Assurance, and Environmental Protection in accordance with WHC-CM-1-3, MRP 5.12.
5. Do not operate outside the safety basis until DOE approves the JCO.
6. Obtain DOE approval.
7. Append the JCO to the safety basis document until incorporated into the safety basis document or until no longer needed.

#### **6.0 DESIGNATED REVIEWING ORGANIZATIONS**

Organizations designated to review changes to this document are listed below. The controlled manual point-of-contact (CMPOC) listed for the designated reviewing organization(s) is responsible for coordinating the review and consolidating and submitting comments to the originating organizations.

Designated Reviewers

CMPOC

200/300 Areas Health Physics

Environmental Safety Quality/Health Physics

200/300 Areas Nuclear Safety

Environmental Safety Quality/Nuclear Safety

ER Safety Support

ER Safety Support

Comments from other organizations are welcome; however, such courtesy comments are resolved at the option of the originating organization.

**7.0 RECORDS**

Record processing and disposition is in accordance with the following table. The following documents are to be put on a transmittal prior to submitting to the FC.

<b>NAME</b> Filing Unit Title or Description	<b>RECORD TYPE*</b>	<b>RETENTION PERIOD</b>	<b>DISPOSAL AUTHORITY</b>	<b>CUT-OFF AND RETIREMENT INSTRUCTIONS</b>
USQ Evaluation for ER and D&D Activities - Change/discovery - Encroachment	QA	Until no longer needed or until changes are incorporated in safety basis document	DRS 14.6.a	Originator transmits to FC upon completion for submittal to IRM permanent storage per approved RIDS. FC places copy in project file.
JCO of ER and D&D Activities	QA	Until no longer needed or until changes are incorporated in safety basis document	DRS 14.6.a	Originator transmits to FC upon completion for submittal to IRM permanent storage per approved RIDS. FC places copy in project file.
USQ Screening Form for ER and D&D Activities	QA	Until no longer needed or until changes are incorporated in safety basis document	DRS 14.6.a	Originator transmits to FC upon completion for submittal to IRM permanent storage per approved RIDS. FC places copy in project file.

FC - File Custodian; IRM - Information Resource Management;  
QA - Quality Assurance; RIDS - Records Inventory Disposition Schedule

**8.0 REFERENCES**

DOE Order 5480.21, Unreviewed Safety Questions.

DOE Order 5480.23, Nuclear Safety Analysis Reports.

DOE Order 5480.22, Technical Safety Requirements.

DOE Order 5481.1B, Safety Analysis and Review System.

WHC-CM-1-3, Management Requirements and Procedures, MRP 5.12, "Identifying and Resolving Unreviewed Safety Questions."

Figure 1. Unreviewed Safety Question Screening Form

**UNREVIEWED SAFETY QUESTION SCREENING FORM**

Document Number: \_\_\_\_\_

Title: \_\_\_\_\_

Questions:

1. Does the referenced item make proposed changes to the facility or procedures that differ from conditions as described in approved safety analysis?

N/A \_\_\_\_\_ No \_\_\_\_\_ Yes/Maybe \_\_\_\_\_

Basis: \_\_\_\_\_

2. Does the item describe an event, condition, or occurrence that results in a potential discovery and differ from those described in the safety analysis?

N/A \_\_\_\_\_ No \_\_\_\_\_ Yes/Maybe \_\_\_\_\_

Basis: \_\_\_\_\_

3. Does the item describe tests or experiments that differ from those described in the safety analysis?

N/A \_\_\_\_\_ No \_\_\_\_\_ Yes/Maybe \_\_\_\_\_

Basis: \_\_\_\_\_

4. Using Section 2.0 of the USQ Evaluation Form, evaluate whether the siting for a remedial activity will encroach on the safety basis of an existing facility or activity.

No \_\_\_\_\_ Yes/Maybe \_\_\_\_\_

Basis: \_\_\_\_\_

5. Is a change or impact to the TSR, OSR, OSL or those procedures specifically addressed in the safety analysis (those procedures that affect the safety basis) involved?

No \_\_\_\_\_ Yes/Maybe \_\_\_\_\_

Basis: \_\_\_\_\_

No further action required.

USQE 1 \_\_\_\_\_ (Approval) \_\_\_\_\_ (Date)      USQE 2 \_\_\_\_\_ (Approval) \_\_\_\_\_ (Date)

RC \_\_\_\_\_ (Approval) \_\_\_\_\_ (Date)

Figure 2. Unreviewed Safety Question Evaluation Form (sheet 1 of 3)

**UNREVIEWED SAFETY QUESTION EVALUATION FORM (sheet 1 of 3)**

**1.0 CHANGE OR DISCOVERY**

Document Number: \_\_\_\_\_

Title: \_\_\_\_\_

Questions:

1. Does the proposed change or discovery increase the probability of an accident previously evaluated in the approved safety analysis?

No \_\_\_\_\_ Yes/Maybe \_\_\_\_\_

Basis: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2. Does the proposed change or discovery increase the consequences of an accident previously evaluated in the safety analysis?

No \_\_\_\_\_ Yes/Maybe \_\_\_\_\_

Basis: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3. Does the proposed change or discovery increase the probability of a malfunction of equipment important to safety previously evaluated in the safety analysis?

No \_\_\_\_\_ Yes/Maybe \_\_\_\_\_

Basis: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

4. Does the proposed change or discovery increase the consequences of a malfunction of equipment important to safety previously evaluated in the safety analysis?

No \_\_\_\_\_ Yes/Maybe \_\_\_\_\_

Basis: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Figure 2. Unreviewed Safety Question Evaluation Form (sheet 2 of 3)

**UNREVIEWED SAFETY QUESTION EVALUATION FORM (sheet 2 of 3)**

**1.0 CHANGE OR DISCOVERY**

5. Does the proposed change or discovery create the possibility of an accident of a different type than any previously evaluated in the safety analysis?

No \_\_\_\_\_ Yes/Maybe \_\_\_\_\_

Basis: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

6. Does the proposed change or discovery create the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the safety analysis?

No \_\_\_\_\_ Yes/Maybe \_\_\_\_\_

Basis: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

7. Does the proposed change or discovery reduce the margin of safety as defined in the basis for any TSR, OSR, OSL or require a new TSR, OSR, or OSL?

No \_\_\_\_\_ Yes/Maybe \_\_\_\_\_

Basis: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

USQE 1 \_\_\_\_\_ USQE 2 \_\_\_\_\_  
(Approval) (Date) (Approval) (Date)

RC \_\_\_\_\_  
(Approval) (Date)

Figure 2. Unreviewed Safety Question Evaluation Form (sheet 3 of 3)

**UNREVIEWED SAFETY QUESTION EVALUATION FORM (sheet 3 of 3)**

**2.0 ENCROACHMENT**

1. Are all individuals involved in the field portions of the activity qualified radiation/occupational workers under the requirements provided in DOE Order 5480.11, "Radiation for Occupational Workers?"

No  Yes  Unknown

(If "no" or "unknown," individuals will need to be considered "public"; use the appropriate distance in the next question.)

2. What nuclear facilities are in the immediate area of the activity, and what distances are used in their accident analysis?

Facility 1 \_\_\_\_\_, onsite distance \_\_\_\_\_ meters  
public distance \_\_\_\_\_ meters

Facility 2 \_\_\_\_\_, onsite distance \_\_\_\_\_ meters  
public distance \_\_\_\_\_ meters

Facility 3 \_\_\_\_\_, onsite distance \_\_\_\_\_ meters  
public distance \_\_\_\_\_ meters

**NOTE:** Do not leave a response blank. If not applicable, use "N/A".

3. Is the activity location closer to any of the nuclear facilities than the accident distances listed above?

No  Yes  Partially

(If either "yes" or "partially," answer question 4.)

4. What is the duration of the activity and what is the average time per week individuals will be at the activity location?

Days \_\_\_\_\_ Weeks \_\_\_\_\_ Months \_\_\_\_\_ Years \_\_\_\_\_

Individuals will be present \_\_\_\_\_ hours/week.

5. (Conclusion) BASED ON THE EVALUATION INFORMATION PROVIDED ABOVE, THE ACTIVITY  
( DOES) ( DOES NOT) CONSTITUTE AN ENCROACHMENT ON THE SAFETY BASIS OF  
\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_.

Activity or Facility USQ Evaluators

_____	Signature _____	Date _____
_____	Signature _____	Date _____
_____	Signature _____	Date _____
_____	Signature _____	Date _____

Figure 3. Justification for Continued Operation

JUSTIFICATION FOR CONTINUED OPERATION	
<b>DISCOVERY</b>	
Briefly describe what led to the determination that the facility or activity is outside the safety basis.	
<b>IMPACT</b>	
Briefly identify all sections of the safety analysis affected by the discovery.	
<b>JUSTIFICATION</b>	
Provide detailed justification demonstrating that continuing or resuming the activity will neither increase accident likelihood nor worsen accident consequences.	
<b>APPROVED BY:</b> _____	
(RC and other appropriate approval authority)	(Date)

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WESTINGHOUSE HANFORD COMPANY  
ENVIRONMENTAL INVESTIGATIONS AND  
SITE CHARACTERIZATION MANUAL

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**TITLE:**

Approved by

PREPARATION OF SITE-SPECIFIC  
HEALTH AND SAFETY PLANS

  
W. H. Price, Manager  
Environmental Field Services

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**1.0 PURPOSE**

The purpose of this instruction is to provide responsibilities and requirements for content and approvals necessary for site-specific health and safety plans (e.g., Hazardous Waste Operations Plans [HWOPs] or Site Safety Plans).

**2.0 SCOPE**

All field work falling under the scope of 29 CFR 1910.120, "Hazardous Waste operations and Emergency Response", must be performed under a project/task specific site health and safety plan. This applies to sites covered under the Comprehensive Environmental Response, Compensation, and liability Act (CERCLA) and Resource Conservation and Recovery Act (RCRA) as required by 29 CFR 1910.120.

**3.0 DEFINITIONS**

See the Glossary/Acronyms section of this manual.

**4.0 RESPONSIBILITIES**

**4.1 PROJECT COORDINATOR**

Provide a written request to the Health and Safety Officer (HSO) or designee to initiate preparation of a site-specific health and safety document for a planned activity.

**4.2 HEALTH AND SAFETY OFFICER (or DESIGNEE)**

Prepare a site-specific health and safety plan in accordance with WHC-CM-4-3, Volume 4, Industrial Safety Manual, Health and Safety Programs for Hazardous Waste Operations, and meeting the requirements of 29 CFR 1910.120.

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\*This is a total rewrite; therefore, no revision bars are used to indicate changes.

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**5.0 REQUIREMENTS**

1. WHC-CM-4-3, Volume 4 and 29 CFR 1910.120 specifically require that a site-specific health and safety plan be prepared and approved prior to hazardous waste site work activities..
2. The requirements of the plan will be imposed on all individuals entering the controlled zone, regardless of company or agency affiliation or reason for entry.
3. As a minimum the site-specific health and safety plan must address the following items:
  1. Safety and health hazard risk analysis
  2. Employee assignments/training requirements
  3. Personal protective equipment
  4. Medical surveillance requirements
  5. Monitoring equipment, calibration, and strategies
  6. Site control measures
  7. Decontamination procedures
  8. Emergency response plans
  9. Confined space entry procedures
  10. Spill containment program

NOTE: The content requirements as set forth in 29 CFR 1910.120 are addressed and guidance on format for hazardous waste site operations is provided in WHC-CM-4-3, Volume 4.

4. To initiate field changes to the site-specific health and safety plan a Field Procedure Change Authorization (FPCA) is used. The FPCA format is provided as the last page of any site-specific health and safety plan.

**5.1 SITE-SPECIFIC HEALTH AND SAFETY PLAN APPROVALS**

Site-specific safety document approvals will be as specified by the contractor having responsibility for job site health and safety at a specific site or group of sites. The following approvals are required as a minimum:

1. HSO, responsible contractor.
2. Manager of responsible contractor's Industrial Hygiene and Safety organization.
3. Manager, appropriate WHC Health Physics organization -- for safety documents of site areas where radiological contamination may be a concern.

NOTE: Construction or operations supervision approval may be added at the responsible contractor's option.

4. *Manager, appropriate WHC Industrial Hygiene and safety organization.*

## 5.2 SITE-SPECIFIC HEALTH AND SAFETY PLAN REVIEW

1. Site-specific safety documents should be distributed by the responsible contractor to ensure that the safety documents are reviewed for adequacy by authorized personnel of affected organizations.
2. Written comments resulting from a distribution shall be consolidated by a single point-of-contact (POC) *from each organization* reviewing *the procedure*. This POC screens, consolidates and resolves conflicting comments prior to transmittal to the responsible contractor.

## 5.3 FIELD PROCEDURE CHANGE AUTHORIZATION

1. The FPCA can be verbally approved by the HSO. The HSO's written authorization must follow within 48 hours of the verbal authorization.
2. Written approval must come from the project health physicist when changes involve radiological concerns.
3. Approved FPCAs must be distributed to all official plan holders.
4. Onsite field team personnel must be briefed immediately; other team members or personnel who enter the exclusion zone must be briefed as they come on-site.

## 5.4 DOCUMENT CONTROL

Site-specific safety documents and FPCAs shall be controlled by the responsible contractor in accordance with documented, approved procedures or practices to ensure that correct, current, approved documents are distributed to personnel managing and performing hazardous waste site work activities and to the 5.1 approval organizations.

## 6.0 PROCEDURE

1. The preparer of the site-specific health and safety document (HWOP or equivalent) will ensure that the content requirements as specified in 29 CFR 1910.120 and Section 5.0 of this EII are met.
2. The preparer will distribute to the approval organizations with a designated review/approval period.
3. Written comments submitted by the POC will be considered and dispositioned by the responsible contractor. Rejected comments will include justification.

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**PREPARATION OF SITE-SPECIFIC  
HEALTH AND SAFETY PLANS**

4. The responsible contractor will ensure that the requirements of section 5.4 are met.
5. The FPCA can be initiated by the Field Team Leader/Coordinator, the Site Safety Officer, or the Health Physics Technician. They are authorized to make reasonable and appropriate changes in procedure designated in the site-specific health and safety document contingent upon verbal authorization from the HSO.
  - a. Adequate justification for all FPCAs must be provided.
  - b. Job site personnel must be briefed immediately on verbally authorized field changes, and the incidence of the briefing and content documented by the Site Safety Officer.

**7.0 RECORDS**

Approved site-specific health and safety plans and approved FPCAs are processed in accordance with *the following* table.

NAME Filing Unit Title or Description	RECORD TYPE*	RETENTION PERIOD	DISPOSAL AUTHORITY	CUT-OFF AND RETIREMENT INSTRUCTIONS
Site-specific health and safety plan(s) and FPCA(s) (approved)	R	1 year	DRS 2.2.c (force fit) TBD	Transmit to FC upon approval. Retain in project file for reference for 1 year. Further disposition to be determined.

\* R = Other Record Material

**8.0 REFERENCES**

29 CFR 1910.120, "Hazardous Waste Operations and Emergency Response".

WHC-CM-4-3, Volume 4, Industrial Safety Manual, Health and Safety Programs for Hazardous Waste Operations.

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SITE CHARACTERIZATION MANUAL

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TITLE:

Approved by

OCCUPATIONAL HEALTH MONITORING

  
W. H. Price, Manager  
Environmental Field Services

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## 1.0 PURPOSE

This Environmental Investigations Instruction (EII) ensures that a system is in place for gathering employee personal exposure data to hazardous chemicals or physical agents from activities associated with Hanford hazardous waste site operations.

## 2.0 SCOPE

The Health and Safety Officer (HSO) or designee will design and implement a monitoring strategy and monitor toxic substance/physical agent exposure levels for hazardous waste site personnel at designated hazardous waste sites.

## 3.0 DEFINITIONS

See the Glossary/Acronyms section of this manual.

## 4.0 RESPONSIBILITIES

### 4.1 HEALTH AND SAFETY OFFICER(S)

The HSO or designee will ensure that:

1. Each hazardous waste worker has evidence of participation in a hazardous waste worker medical surveillance program prior to commencement of duties at a hazardous waste site.
2. Where there is a potential for employee exposure, job-site monitoring data are submitted to the occupational medical services contractor.
3. Site-specific health and safety plan (e.g., Hazardous Waste Operations Plan [HWOP] or equivalent) development includes a monitoring strategy to measure and record potential employee exposures.

4. Requests for the services of the occupational medical services contractor are submitted through the requesting contractor's industrial hygiene group.

#### 4.2 COGNIZANT MANAGERS

Cognizant managers will supply the HSO or designee with information attesting to the employee's fitness for work as specified in EII 1.1 of this manual.

#### 5.0 REQUIREMENTS

1. Job-site monitoring information where there is a potential for employee exposure will be forwarded to the occupational medical services contractor as required by RLIP 5480.10.
2. The employer will provide employee access to personal exposure and medical records upon request and whenever established exposure limits are exceeded as required by 29 CFR 1910.120.
3. Information regarding exposure and personal protective equipment usage shall be provided to the occupational medical services contractor so that periodic occupational health evaluations can be performed to accurately determine diagnostic requirements.
4. Health and safety field monitoring equipment use shall be in accordance with EII 3.2 of this manual.

#### 6.0 PROCEDURE

The HSO or designee will:

1. Implement monitoring strategies contained in the site-specific health and safety plan (HWOP or equivalent) in accordance with EII 2.1 of this manual and WHC-CM-4-3, Volume 4.
2. Collect job site data based on implementation of monitoring strategies as specified in Section 4.1, step 3.
3. Include the following types of information in job site monitoring data:
  - a. Job site identification, date, time, and weather information.
  - b. Monitoring equipment type, calibration method/frequency, and results of monitoring.
  - c. Personal protective equipment and respiratory protection equipment types.

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May 24, 1993  
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Division

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TITLE:

CALIBRATION AND CONTROL OF  
MONITORING INSTRUMENTS

Approved by

  
W. H. Price, Manager  
Environmental Field Services

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### 1.0 PURPOSE

This Environmental Investigations Instruction (EII) establishes controls for the use, handling, maintenance and calibration of monitoring instruments and miscellaneous equipment (e.g., data loggers, transducers, and measurement tapes) used in RCRA and CERCLA investigations.

### 2.0 SCOPE

This EII applies to monitoring instrument and equipment used in support of environmental site characterization at the Hanford Site.

The instruments described in this EII may be used for activities as defined in site-specific safety documents(s), Descriptions of Work, Sampling and Analysis Plans, or Test Plans.

### 3.0 DEFINITIONS

Not applicable.

### 4.0 RESPONSIBILITIES

#### 4.1 Cognizant Manager

1. Determine the appropriate training required for the various instrument types.
2. Assign Instrument Custodian(s).

#### 4.2 Instrument Users

Operate, care for, and return instruments to the Instrument Custodian in accordance with this EII.

#### 4.3 Instrument Custodian

1. Maintain a current instrument inventory and appropriate spare parts list.

2. Supply instruments in field ready condition in accordance with manufacturer's operating manuals and this EII.
3. Maintain maintenance records for routine and scheduled manufacturer inspections and/or repair.
4. Provide and/or arrange for appropriate classroom instruction and/or on-the-job training (OJT) and transmit documentation to the File Custodian.
5. *Transmit instrument calibration records and down-loaded data from instrumentation to the File Custodian in accordance with Table 1.*
6. Maintain manufacturers' operating manuals.

## 5.0 REQUIREMENTS

Any instrument used in a radiation zone shall receive an unconditional release from Health Physics prior to return.

NOTE: Ensure that the release sticker is placed on the instrument in such a way that it can easily be removed upon return.

Instruments that cannot be granted an unconditional release shall be controlled as required in WHC-CM-7-7, EII 4.4.

### 5.1 Training

Users will attend appropriate classroom instruction and/or OJT and read the appropriate manufacturer's operating manual for the assigned instruments.

## 6.0 PROCEDURE

### 6.1 Instrument Checkout and Return

1. Instruments are checked-out from the Instrument custodian by completing appropriate portions of the check-out log. Ensure that a copy of the operating manual is with the instrument.
2. If instruments are checked-out for a period longer than one day, Sections 6.3 and 6.4 apply to the temporary storage location of the instruments.
3. When returning the instrument to the check-out location, complete the entry in the check-out log.

4. When malfunctioning instruments are returned from the field, check-in and describe the malfunction in the comment section of the check-out log.
5. Place a "Do Not Use" tag on the instrument describing problems with operation and segregate for inspection and/or repair.

## 6.2 Instrument Manuals

1. A copy of the instrument operating manual must accompany the instrument and user to the field.
2. Copies of operating manuals for each type of instrument are maintained by the Instrument Custodian

## 6.3 Storage and Handling

1. Protect instruments from damage due to adverse environmental conditions, misuse, or loss by theft.
2. Place instruments on chargers as required to ensure that equipment will be ready for the next use.

## 6.4 Calibration

1. Follow specific calibration instructions described in manufacturer's operating manuals.
2. Ensure that each instrument has an Operator to Calibrate label with an identifying number.
3. Use calibration standards (gases, buffer solutions, etc.) with contents certified by the supplier and traceable to a national standard or recognized industry standard.
4. Keep a copy of the certification in the equipment field file.
5. Segregate and label malfunctioning instruments or instruments that you are unable to calibrate. Identify the problem and keep segregated until repairs are made. Out of calibration instruments shall not be used prior to recalibration.
6. If the instrument challenge is  $\pm 20$  percent (or as specified in the operating manual) of the calibration standard, do not use; tag and segregate for maintenance.
7. Enter calibration results on the calibration form unique to that instrument.

## 6.5 Maintenance

1. Do not attempt field repairs other than cleaning, minor adjustments, and decontamination.
2. The Instrument Custodian schedules major repairs which are performed by a qualified instrument technician or a factory representative.
3. The Instrument Custodian maintains documentation of major repair work done by the factory representative or instrument technician in the equipment field files.

## 6.6 Records

Record retention is in accordance with Table 1.

## 7.0 BIBLIOGRAPHY

WHC-CM-4-10, Radiation Protection Manual, Section 11.0, "Control and Storage of Radioactive Materials and Equipment."

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January 31, 1994CALIBRATION AND CONTROL OF  
MONITORING INSTRUMENTS

Table 1. Record Requirements.

NAME Filing Unit Title or Description	RECORD TYPE*	RETENTION PERIOD	DISPOSAL AUTHORITY	CUT-OFF AND RETIREMENT INSTRUCTIONS
Site Monitoring Data	R	5 years	DRS 2.4.d(1) (force fit) TBD	Transmit to File Custodian (FC) when no longer needed by field personnel, and <i>place in project file.</i>
Calibration Records for Monitoring Equipment	R	5 years	DRS 2.11.i (force fit) TBD	Maintain to support site monitoring data. Transmit to FC when no longer needed by field personnel and destroy after 5 years.

\* R = Record Material

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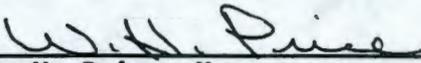
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SITE CHARACTERIZATION MANUAL

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TITLE:

Approved by

CONE PENETROMETER

  
W. H. Price, Manager  
Environmental Field Services

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## 1.0 PURPOSE

This environmental investigations instruction (EII) establishes the instructions for usage of the cone penetrometer (CPT).

## 2.0 SCOPE

This EII applies to the CPT used in support of all work at the Hanford Site deemed applicable by governing documents.

Personnel will operate the CPT in accordance with the CPT supplier's established operating procedure; therefore, this EII does not provide step-by-step work instructions.

## 3.0 DEFINITIONS

See Glossary/Acronyms section of this manual.

## 4.0 RESPONSIBILITIES

### 4.1 All Personnel

1. Work according to established safety procedures and applicable work controlling documents.
2. Maintain a safe, neat, and orderly site of operations.

### 4.2 Field Team Leader

1. Verify that the CPT daily logs are complete and accurate.
2. Provide technical direction to CPT operator regarding location of holes, monitoring point location, sample recovery, and other pertinent contractual or technical detail.
3. Manage the work site and control access in accordance with the applicable safety document.
4. Will manage CPT work in accordance with WHC-CM-7-7.

#### 4.3 CPT Operator

1. Operate the CPT vehicle, including mobilization/demobilization and daily maintenance.
2. Perform safety inspections, as required, and report any problems.
3. Give directions to the CPT technician assigned to the vehicle.
4. Maintain logs of the vehicle usage, e.g., daily footage, sampling activity. The logs should be submitted daily or at the direction of the field team leader (FTL).
5. Report all problems, safety hazards, concerns, unusual occurrences, and ability to meet data requirements during CPT operation to the FTL.

#### 4.4 CPT Technician

1. Assist the operator of the CPT truck in the mobilization/demobilization of the truck, operation, abandonment, and cleanup.
2. Assist the operator in installation and sampling operations.
3. Control contamination from any generated wastes.

### 5.0 REQUIREMENTS

#### 5.1 All Personnel

Before performing any work on the Hanford Site, all personnel shall meet the following minimum requirements:

1. Be physically able to perform the duties of normal CPT operations.
2. Receive radiation work training.
3. Receive a whole body count and chest counts.
4. Receive training in procedures related to job tasks.
5. Receive 40 hour Hazardous Worker Training.

Requalification must occur as required and is the responsibility of the CPT contractor.

#### 5.2 CPT Operator

1. Have at least 2 years of documented CPT field experience as an operator.
2. Have experience conducting CPT investigation work in Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) hazardous waste sites.

**CONE PENETROMETER**

3. Have a complete understanding of the operation, manufacture and function of the CPT truck, tools, and support equipment.
4. Have experience operating a CPT truck including support equipment in cobbly-gravelly formations similar to the Hanford Site.

**5.3 CPT Technician**

1. Have six months of documented experience in CPT operations.
2. Have experience in CPT grouting techniques and mixing grouts.
3. Have experience conducting investigation work in hazardous waste sites.
4. Have knowledge of CPT operations and safety risks.

**6.0 PROCEDURE**

1. Operation of the CPT system will be in accordance with the contractor's operational manuals and procedures.
2. Cleaning and decontamination of tools, rods, and other equipment will be performed and documented in accordance with EII 5.4.
3. Installing and abandoning CPT holes shall comply with WAC 173-160 or the appropriate variance.
4. Fill out the FAR Cone Penetrometer form when performing this activity.
5. Calibration verification will be maintained in a field logbook.

**7.0 RECORDS**

Record processing and disposition is in accordance with Table 1.

**8.0 DESIGNATED REVIEWING ORGANIZATIONS**

None.

**9.0 FORMS**

Field Activity Report - Cone Penetrometer (A-6001-188, macro WEF232)

CONE PENETROMETER

10.0 BIBLIOGRAPHY

American Society for Testing and Materials, "Standard Method for Deep Quasi-Static, Cone and Friction-Cone Penetration Tests of Soil," ASTM Designation: D3441, 1986.

Applied Research Associates, Inc., 1991, Electronic Cone Penetrometer Testing at the Hanford Site 200 West Area, ARA contract number 5642-6.

Cassem, B. R., 1992, Test Plan for the Cone Penetrometer on the Hanford Site FY 1992, WHC-SD-EN-TP-011, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

Robertson, P. K. and R. G. Campanella, 1988, Guidelines for Using the CPT, CPTU, and Marchetti DMT for Geotechnical Design, Volume II, University of British Columbia, Vancouver, B.C., Canada.

Robertson, P. K., "Soil Classification Using the Cone Penetration Test," Canadian Geotechnical Journal, Volume 27, No. 1, February 1990.

Rohay, V. J., 1991, 200 West Area Carbon Tetrachloride Expedited Response Action Phase II Site Evaluation Work Plan, WHC-SD-EN-AP-059, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

Rohay, V. J., 1991, Electric Cone Penetrometer Test at the 200 West Area, WHC-SD-EN-TP-004, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

WAC 173-160, "Minimum Standards for Construction and Maintenance of Wells," Washington Administrative Code, as amended.

**CONE PENETROMETER**

Table 1. Record Requirements

<b>NAME</b> Filing Unit Title or Description	<b>RECORD TYPE*</b>	<b>RETENTION PERIOD</b>	<b>DISPOSAL AUTHORITY</b>	<b>CUT-OFF AND RETIREMENT INSTRUCTIONS</b>
FAR - Cone Penetrometer (A-6001-188; WEF232)	QA	TBD	TBD	Transmit to FC upon completion for submittal to IRM permanent storage per approved RIDS. FC places copy in project file.
Field Logbook	QA	TPA + 10 years	DRS 1.8c TBD	Submit weekly copies to FC. When no further entries are required at project completion or when no longer needed, submit logbook to FC for transmittal to IRM for permanent storage. FC places copy in project file.

\* QA = Quality Assurance; TBD = To be determined

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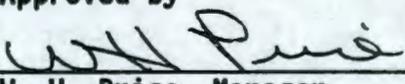
ENVIRONMENTAL INVESTIGATIONS AND  
SITE CHARACTERIZATION MANUAL

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TITLE:

Approved by

INTERIM CONTROL OF UNKNOWN, SUSPECTED  
HAZARDOUS AND MIXED, AND RADIOACTIVE  
WASTE

  
W. H. Price, Manager  
Environmental Field Services

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## 1.0 PURPOSE

This Environmental Investigations Instruction (EII) establishes a system to control the containment, marking, labeling, storage and tracking of waste generated from drilling activities during RCRA environmental investigation, site characterization and monitoring well installation and maintenance.

## 2.0 SCOPE

This EII governs the designation, handling, and storage of wastes unless otherwise specified in working/planning documents approved by the U.S. Department of Energy (DOE) and regulatory agencies. Purgewater shall be managed in accordance with EII 10.3 of this manual. This EII does not address characterization and investigation activities involving trenching, backhoe operation or surface sampling. Waste generated from these activities will be addressed on a case-by-case basis. This EII does not address CERCLA or RCRA Past Practice (RPP) environmental investigation, site characterization or monitoring well installation, nor does it address activities at previously existing wells outside of the RCRA, RPP, or CERCLA programs.

## 3.0 DEFINITIONS

See WHC-CM-7-7 Glossary/Acronyms.

## 4.0 RESPONSIBILITIES

### 4.1 COGNIZANT MANAGER

1. Assign Facility Generators and Project Coordinators.
2. Ensure that staff who generate waste to procedural requirements outlined in WHC-CM-5-16 and this EII receive appropriate training.
3. Ensure that activity-specific waste minimization is implemented in field operations.

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\*This is a total rewrite; therefore, no revision bars are used to indicate changes.

#### 4.2 PROJECT COORDINATOR

The Project Coordinator is responsible for ensuring that validated analytical results of characterization samples that are representative of the waste generated during field activities is submitted to the Facility Generator within 5 working days of receipt of data for use in waste designation.

#### 4.3 PROJECT ENGINEER/FIELD TEAM COORDINATOR

1. Ensure adequate quantity of supplies (e.g., containers, liners, markers, forms, labels) to accommodate anticipated needs.
2. Obtain unique container tracking numbers from the Facility Generator.
3. Ensure that drill cuttings and well maintenance wastes are monitored in accordance with the Hazardous Waste Operations Permit (HWOP) or the governing safety documents.
4. Minimize waste by segregating drill cuttings and well maintenance wastes based on field instrument readings.
5. Immediately notify the Facility Generator upon generation of any radioactive, suspected hazardous or suspected mixed waste containers.
6. Collect and contain unknown, suspected hazardous, suspected mixed and radioactive waste.
7. Coordinate sampling and analysis activities.
8. Complete the Interim Control of Unknown, Suspected Hazardous, and Suspected Mixed and Radioactive Waste form (IC form), Figure 1, secure the plastic weatherproof form to the container, and submit a paper copy of the IC form to the Facility Generator. Ensure that the IC form and markings remain legible during active field operations.
9. Set up Collection Area (CA) (unknown waste only), Satellite Accumulation Area (SAA) (suspected hazardous and mixed waste only) and Radioactive Materials Area (RMA) (radioactive and suspected mixed waste), with container pallets, ropes, tape, signs, etc., in accordance with Health Physics Technician (HPT) and Facility Generator direction and support.
10. Move containers from point of generation to a CA, SAA, RMA or Temporary Storage Facility (TSF) during active field operations.

11. Coordinate HPT support for movement of radioactive or suspected mixed waste containers to a properly marked RMA as identified by the HPT in accordance with WHC-CM-4-10, Section 7. Suspected mixed waste shall also be moved in accordance with Section 6.5, step 5 of this EII.
12. Notify the Facility Generator once active field operations have concluded.

#### **4.4 FACILITY GENERATOR/INVESTIGATION DERIVED WASTE (IDW) COORDINATOR**

1. Provide unique container tracking numbers to the Field Team Coordinator. Unique container tracking numbers will also be used to track laboratory samples that may be returned to the original site where generated.
2. Upon notification from the Field Team Coordinator, to the Facility Generator that generation of suspected hazardous, radioactive or suspected mixed waste is going to be generated. The Facility Generator will inform the Field Team Coordinator of interim packaging and marking requirement specified in WHC-EP-0063. The Facility Generator will verify, by follow-up inspection with one week, that requirements for packaging and marking have been properly implemented.
3. Review the IC forms submitted by the Field Team Coordinator and inspect the waste to confirm that the storage area and containers have been managed in compliance with this EII. The Facility Generator will notify the Field Team Coordinator/Cognizant Engineer of any necessary corrective actions required to negate noncompliant conditions identified during the waste inspection.
4. Sign and date the IC form, and assume full responsibility for the waste when any noncompliant conditions have been corrected.
5. Enter, update, and compile information using the Generator Waste Tracking database for all containerized waste generated during environmental investigation, site characterization, and monitoring well installation.
6. Maintain a field logbook (in accordance with EII 1.5) to document container handling activities performed by or directed by the Facility Generator.
7. Secure the modified Environmental Protection Agency (EPA) Hazardous Waste Sticker, figure 2, to any containers of suspected hazardous or suspected mixed waste within 1 working day of notification from the Field Team Coordinator.

8. Perform Weekly inspections of:
  - a. Hazardous, mixed, suspected hazardous and mixed, solid and liquid waste containers at SAA and TSF.
  - b. Radioactive liquid waste containers at RMA.
9. Perform monthly inspections of:
  - a. Unknown, solid and liquid waste containers at CA.
  - b. Radioactive solid waste containers at RMA.
10. Complete Waste Inspection Log(s) (Figure 3) for CA, SAA, TSF and RMA.
11. Submit laboratory analysis data with a WSDR to Solid Waste Acceptance Services (SWAS).
12. Coordinate movement of all containers between SAA, CA, RMA and TSF through final destination.
13. Coordinate the disposal of nonregulated and regulated waste in accordance with instructions from SWAS.
14. Coordinate the disposal of hazardous, radioactive and mixed waste in accordance with WHC-CM-5-16 and WHC-EP-0063.
15. Transmit and maintain records as specified in Table 1 of this EII.
16. Report any deviations from normal operations to the cognizant manager.

#### **4.5 POINT-OF-CONTACT**

1. Issue unique container tracking numbers to Facility Generator(s).
2. Develop and send monthly container status reports to the cognizant management, project coordinator(s), field team coordinator(s)/cognizant engineer(s), and others upon request.

#### **5.0 REQUIREMENTS**

##### **5.1 CONTAINERS/LINERS (DRUMS/PLASTIC LINERS)**

1. DOT specification 17-H, 17-C, or 17-E steel drums shall be used to contain unknown, radioactive, hazardous or mixed waste. The 55-gallon drum size is generally used; however, 8-gallon, 30-gallon, 85-gallon, 95-gallon, and 110-gallon size drums of steel or other

construction, meeting DOT specifications, may also be used for initial containment, overpacking and salvage. Mixed waste shall be contained in galvanized DOT 17-C drums (30 or 55-gallon). Type 17-H or 17-C steel drums must have a gasket for the lid before containing wastes. Type 17-E drums must have bungs in good condition before containing fluids.

2. Containers that will contain nonradioactive drill cuttings will be lined with a plastic liner of at least 10 mil thickness. Non-saturated radioactive or mixed waste shall be packaged in a container with a nylon reinforced plastic (polyethylene) liner at least 10 mil thick. All saturated radioactive and mixed waste shall be packaged in a container lined with a plastic liner at least 90 mil thick.
3. When beta emitters are stored in metal containers, the criteria for storage are outlined in WHC-EP-0063, in the sections entitled "Surface Dose Rates." These criteria limit surface dose rates of radioactive containers to <200 mrem/hr and <100 mrem/hr for mixed waste containers, including all energy emitting isotopes (beta, gamma, neutrons). Quantities of energy emitting isotopic Investigation Derived Waste placed in containment will be limited to comply with this criteria.

## 5.2 UNIQUE CONTAINER TRACKING NUMBER

The Facility Generator/Investigation Derived Waste (IDW) Coordinator shall track containers of waste using the following numbering system. Unique container tracking numbers may also be used to track laboratory samples that are returned to the site of generation.

A B C  
XXXX-XX-XXXXXX

### Generating Facility:

- EREF: Designates Environmental Restoration Engineering  
A GEOS: Designates Geosciences  
EFSG: Designates Environmental Field Services
- B Year container filled.
- C Sequential container number assigned by facility generator.

## 5.3 ENTRIES AND CORRECTIONS

All entries on the IC form shall be made using permanent, reproducible black ink, whenever possible. Corrections shall be made by striking one line through the incorrect information, entering corrected data, initialing and dating.

## 6.0 PROCEDURE

Material that is dry (absent of moisture, dusty, dry to the touch) or moist (damp, but no visible water), that originates above the water table and is outside a waste site, will not be containerized if field instrumentation detects no radioactive or hazardous waste and if there is no process knowledge of hazardous or radioactive waste. Such conditions shall be identified and included in sample and analysis plans or other appropriate documentation.

When suspected hazardous, radioactive or suspected mixed waste is placed in a waste container, the container shall be managed in accordance with WHC-CM-5-16 and WHC-EP-0063. Unknown waste management shall be in accordance with this EII.

See Figure 4, Generalized Diagram for Interim Control of Unknown, Suspected Hazardous, Suspected Mixed and Radioactive Waste.

### 6.1 CONTAINER PREPARATION AND SEALING

1. The entire container shall be checked for damage. Damaged containers shall not be used. They will be sent to Central Landfill as nonregulated trash or reconditioned as appropriate.
2. The waste specific containers and liners will be utilized as detailed in Section 5.1, steps 1 and 2.
3. Container markings shall be durable and displayed on a background of sharply contrasting color.
4. The following information shall be legibly written on the container lid with indelible contrasting ink and maintained until the weatherproof IC form is completed with the same information and affixed to the container:
  - a. Project name
  - b. Borehole or well number
  - c. Footage (enter footage intervals)
  - d. Contents (enter contents of container)
  - e. Beginning date (enter date material first placed in container)
  - f. Date sealed (enter date material last placed in container)
  - g. Unique container number (enter when sealed).
5. Twist close and secure with tape the applicable 10 mil container, liner or secure the 90 mil liner cover. Check to confirm that a gasket is on the container lid, and attach and secure the lid with a locking ring by tightening the locking ring bolt and nut.

NOTE: Containers must be closed and secured except when material is being added or removed.

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Effective Date October 18, 1993

6. Obtain a unique container tracking number from the Facility Generator. The unique container number shall be entered on the IC form and on the container lid.
7. Apply the completed and signed weatherproof IC form to the container and verify that the unique container number is legible.

NOTE: The Field Team Coordinator/Cognizant Engineer shall document any indications of contamination (organic, inorganic, radioactive) and list any representative sample numbers in the Comments/Suspected Hazards section of both the plastic and paper IC form.

8. A paper copy of the IC form shall be submitted to the Facility Generator for review and processing.

**6.2 UNKNOWN WASTE DESIGNATION AND COLLECTION**

1. All unknown waste containers shall have an IC form completed and affixed in accordance with Section 4.3, step 8 and 6.1, steps 7, 8, and 9 of this EII.
2. Drill cuttings, soils, hard-tool slurries, decontamination fluids and groundwater slurries shall be field designated and containerized as unknown waste when the material meets the following criteria:
  - a. When the drilling occurs in a waste site but does not meet the criteria outlined in Section 6.4, step 2 of this EII.
  - b. When encountering naturally occurring saturated soil or perched water which may mask accurate readings from field screening instruments.
3. Dry drill cuttings generated at waste sites shall be containerized upon generation. However, the material may be subsequently disposed of at the drill sites (exclusive of ponds, cribs and ditches) when the material meets the following criteria:
  - a. The on-location HPT survey does not indicate the presence of radioactive materials.
  - b. Further health physics laboratory screening confirms the activity of the material to be less than 200 pCi/gm beta/gamma and 60 Pci/gm alpha. Decontamination fluids associated with materials described herein, Section 6.2, step 3, items a through c, (nonhazardous), may be disposed to the ground outside the zone of investigation.

- c. The on-location survey of expected contaminants does not indicate the presence of hazardous (chemical) materials above field instrument detection levels.
4. Potentially contaminated materials such as gloves, wipes, foil, disposable clothing, etc., and all associated "disposable" materials generated during the course of borehole drilling activities shall be placed in a plastic bag, taped closed, marked as to the associated footage interval(s), and placed in a container(s) specific to each area of potential contamination (borehole, crib, etc.).
5. Containers of unknown waste shall only be accumulated within a CA assigned for unknown waste while awaiting laboratory analysis and final designation from SWAS.
6. A Sample Analysis Request form (A-6000-406) shall be prepared and accompany sample(s) to the analytical facility to ensure that the correct analysis is performed. The Westinghouse Hanford Company (WHC) Sample Analysis Request form is presented in EII 5.2.

### **6.3 DECONTAMINATION FLUID DESIGNATION**

Unknown decontamination fluid shall be designated based on the results of any one of the following sample analysis:

1. Representative drill cuttings from the same borehole.
2. Decontamination fluid (one container or composited container samples) from the same borehole.
3. Decontamination fluid from different boreholes collected in the same container.

### **6.4 SUSPECTED HAZARDOUS WASTE FIELD DESIGNATION AND COLLECTION**

1. All suspected hazardous waste containers shall have an IC Form completed and affixed in accordance with Section 4.3, step 8 and Section 6.1, steps 7, 8, and 9 of this EII.
2. Drill cuttings, soils, hard-tool slurries, decontamination fluids and ground water slurries shall be field designated and containerized as suspected hazardous waste when the material meets the following criteria.

Field designation as suspected hazardous waste shall be based upon process knowledge of material that is known to have been discharged to the area under investigation and any of the following in support of this process knowledge.

- a. Direct instrumentation reading of organic vapor in excess of 10 ppm above background levels 1 foot above freshly excavated soil.
- b. pH less than 3 or greater than 12. This shall be determined by mixing soil and deionized water and then testing the solution with pH paper.

**NOTE:** The above criteria is solely for the purpose of waste segregation and designation. Health and safety monitoring criteria for organic and inorganic hazards will be detailed in the site-specific safety documents.

3. During the collection process, if the waste material no longer meets the suspected hazardous waste criteria outlined in Section 6.4, step 2, it shall be redesignated, segregated and managed as unknown waste for the remainder of the borehole drilling, unless the criteria for suspected hazardous waste is again met.
4. A modified EPA Hazardous Waste Sticker as shown in Figure 2 shall be applied by the Facility Generator. The word "SUSPECT" shall appear above the word "HAZARDOUS" on the modified EPA Hazardous Waste Sticker. Each container shall also be marked or labeled to identify the major hazards associated with the waste in the container.
5. Suspected hazardous waste shall be accumulated in a SAA until the 55-gallon maximum limit is reached. During active drilling operations, suspected hazardous waste shall be moved to a TSF within 72 hours of exceeding the 55-gallon limit. At completion of drilling operations, all suspected hazardous waste, regardless of quantity, shall be moved to a TSF within 72 hours. To prevent mixing of uncontaminated and contaminated waste, and in accordance with waste minimization directives, soils and slurries from different boreholes shall not be placed in the same container.
6. Potentially contaminated materials such as gloves, wipes, foil, disposable clothing, etc. and all associated "disposable" materials generated during the course of borehole drilling activities shall be placed in a plastic bag, taped closed, marked as to the associated footage interval(s), and placed in a container(s) specific to each area of potential contamination (borehole, crib, etc.). The accumulation start date shall be marked on the EPA Suspected Hazardous Waste Sticker when the container is full.

#### **6.5 RADIOACTIVE WASTE/MIXED WASTE FIELD DESIGNATION AND COLLECTION**

1. All radioactive and mixed waste containers shall have an IC form completed and affixed in accordance with Section 4.3, step 8 and Section 6.1, steps 7, 8, and 9 of this EII.

2. Drill cuttings, soils, hard-tool slurries, decontamination fluids, and ground water slurries shall be field designated and containerized as radioactive waste when the material meets the criteria in WHC-CM-4-10.
3. Radioactive waste that is also suspected of containing hazardous waste shall be field designated as suspected mixed waste and segregated into specified containers for mixed waste.
4. Suspected mixed waste shall be accumulated in a SAA until the 55-gallon maximum limit is reached. During active drilling operations, suspected mixed waste shall be moved to a TSF within 72 hours of exceeding the 55-gallon limit. At completion of drilling operations, all suspected mixed waste regardless of quantity, shall be moved to a TSF within 72 hours.
5. Potentially contaminated materials such as gloves, wipes, foil, disposable clothing, etc., and all associated "disposable" materials generated during the course of borehole drilling activities shall be placed in a plastic bag, taped closed, marked as to the associated footage interval(s), and placed in a container(s) specific to each area of potential contamination (borehole, crib, etc.).
6. Each container shall be labeled with a DOT Radioactive Hazard Class label and managed in accordance with WHC-EP-0063. For mixed waste, a modified EPA Hazardous Waste Sticker shall also be applied. Each container shall also be marked or labeled to identify the major hazards associated with the waste in the container.

#### **6.6 MANAGEMENT OF UNKNOWN, SUSPECTED HAZARDOUS AND SUSPECTED MIXED WASTE CONTAINERS**

1. Within 24 hours before moving a container outside a RMA, a Health Physics Technician shall survey the container and affix a Radiation Release Sticker near, but not covering, the IC form or modified EPA Hazardous Waste Sticker.
2. Unknown waste containers shall be moved to the CA assigned for unknown waste located at or near the investigation site. All unknown waste containers shall remain in the CA pending sample analysis and waste designation. Any movement of containers from the CA shall be coordinated with the Facility Generator.
3. Suspected hazardous and suspected mixed waste containers which exceed waste accumulation limitations (see Section 6.4, step 5) of this EII), shall be moved from the satellite area where generated to a TSF within 72 hours after exceeding accumulation limits. SAA and TSF used for suspected mixed waste storage, shall be located within a RMA.

4. Upon receipt of laboratory analyses by the Facility Generator, these data and a WSDR shall be submitted to SWAS for final designation.
5. Waste will be managed as instructed in the HWDAR or SDAR letter received from SWAS.

NOTE: To prevent breach of containment of liquid-containing containers during the winter months, containers shall be overpacked in a DOT specification container (in accordance with Section 5.1 of this EII), moved to a heated building or other means provided to prevent liquid release to the environment.

#### **6.7 MANAGEMENT OF RADIOACTIVE WASTE CONTAINERS**

1. Radioactive waste containers shall be moved to a properly marked field location within a RMA in accordance with WHC-CM-4-10.
2. Radioactive waste containers will be managed in accordance with WHC-CM-5-16 and WHC-EP-0063.

NOTE: To prevent breach of containment of liquid-containing containers during the winter months, containers shall be overpacked in a DOT-specified container (in accordance with Section 5.1 of this EII), moved to a heated building or other means provided to prevent liquid release to the environment.

#### **6.8 FINAL DISPOSAL**

1. As instructed in the HWDAR or SDAR letter received from SWAS, the Facility Generator shall:
  - a. Manage containers designated as hazardous, mixed and radioactive waste in accordance with WHC-CM-5-16 and WHC-EP-0063.
  - b. Remove the modified EPA Hazardous Waste Sticker from any nonregulated containers that were field designated as suspected hazardous or suspected mixed waste and dispose in accordance with Section 6.8, step 1, items d, e, and f of this EII.
  - c. Replace the modified EPA Hazardous Waste Sticker with an EPA Hazardous Waste Sticker for any regulated containers that were field designated as suspected hazardous or suspected mixed waste. Ensure that the same accumulation start date is transferred to the new sticker. Manage the waste in accordance with WHC-CM-5-16 and WHC-EP-00-63.
  - d. Dispose dry soils that are not regulated and not contaminated with radiological constituents on the soil surface outside the zone of investigation.

- e. Dispose wet soils/slurries that are not regulated and not contaminated with radiological constituents on the soil surface outside of the zone of investigation.
  - f. Dispose decontamination fluids that are not regulated and not contaminated with radiological constituents on the soil surface outside the zone of investigation.
  - g. Dispose decontamination fluid that is contaminated with radiological constituents, but not regulated as hazardous, in accordance with WHC-CM-7-5, Part F.
  - h. Dispose as trash all disposable nonregulated materials (foil, paper, gloves, etc.).
2. Any containers field designated as unknown waste found to be regulated as hazardous by SWAS shall be managed in accordance with WHC-CM-5-16 and WHC-EP-0063.

## **7.0 REPORTING**

The point-of-contact will send monthly container status reports to cognizant management, project coordinator(s), field team coordinator(s)/cognizant engineer(s), and others by request.

## **8.0 RECORDS**

Records are managed in accordance with Table 1 of this EII (which reflects approved RIDS) by the Facility Generator/IDW Coordinator.

## **9.0 REFERENCES**

40 CFR 261, Identification and Listing of Hazardous Waste.

WAC 173-303, Dangerous Waste Regulations.

WHC-CM-3-5, Document Control and Records Management, Section 5, "Records Storage, Retrieval and Destruction."

WHC-CM-4-10, Radiation Protection.

WHC-CM-5-16, Solid Waste Management.

WHC-CM-7-5, Environmental Compliance.

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**INTERIM CONTROL OF UNKNOWN, SUSPECTED  
HAZARDOUS AND MIXED, AND RADIOACTIVE WASTE**

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**WHC-CM-7-7, Environmental Investigations and Site Characterization Manual.**

- EII 1.5, "Field Logbooks."
- EII 3.2, "Calibration and Control of Monitoring Instruments."
- EII 5.2, "Soil and Sediment Sampling."
- EII 9.1, "Geologic Logging."
- EII 10.3, "Purgewater Management."

**WHC-EP-0063, Hanford Site Radioactive Solid Waste Acceptance Criteria.**

**WHC-SD-WM-EV-037, Waste Minimization Plan -Environmental Engineering and  
Technology Function.**

**10.0 BIBLIOGRAPHY**

DOE Order 5820.2A, "Radioactive Waste Management."

WHC-CM-2-14, Hazardous Material Packaging and Shipping.

WHC-CM-4-11, ALARA Program Manual.

**WHC-CM-7-7, Environmental Investigations and Site Characterization Manual.**

- EII 4.3, "Control of CERCLA and Other Past-Practice Investigation  
Derived Waste."

**ENVIRONMENTAL INVESTIGATIONS AND  
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**INTERIM CONTROL OF UNKNOWN, SUSPECTED  
HAZARDOUS AND MIXED, AND RADIOACTIVE WASTE**

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Table 1. Record Requirements.

NAME Filing Unit Title or Description	RECORD TYPE*	RETENTION PERIOD	DISPOSAL AUTHORITY	CUT-OFF AND RETIREMENT INSTRUCTIONS
Field Logbooks	QA	TPA + 10 years	DRS 1.8.c (force fit)	Submit weekly copies to Field File Custodian (FFC); completed logbook transmitted to FFC for retirement to IRM permanent storage.
Hazardous Waste Manifest and Waste Inspection Logs	R	5 years (WAC-173-303-210)	DRS 2.11.j (force fit)	Retain in Facility Generator/IDW Coordinator office file for 5 years after waste shipment and inspection. Further disposition to be determined (TBD).
Waste Tracking Files; information relevant to tracking, maintenance and dispositioning waste (Low-Level Waste Storage Disposal Records (LLWSDRs), chemical and radiological analytical copies and Waste Inventory Sheets (WISs)) are included in this description.	NR	Until no longer needed/5 year minimum.	nonrecord	Maintained by Facility Generator/IDW Coordinator in support of above identified record material. Disposition to be determined (5 year minimum retention).

\* QA = Quality Assurance; R = Record Material; NR = Nonrecord

Figure 1. Interim Control of Unknown, Suspected Hazardous, Suspected Mixed and Radioactive Waste. (BC-6000-329)

**INTERIM CONTROL OF UNKNOWN, SUSPECTED HAZARDOUS,  
SUSPECTED MIXED AND RADIOACTIVE WASTE**

<input type="checkbox"/> UNKNOWN		<input type="checkbox"/> SUSPECTED MIXED		UNIQUE DRUM NUMBER	DRUM TYPE/SIZE	LINER TYPE/THICKNESS
<input type="checkbox"/> SUSPECTED HAZARDOUS		<input type="checkbox"/> RADIOACTIVE				
PROJECT NAME/PROJECT LOCATION				<input type="checkbox"/> CERCLA <input type="checkbox"/> RCRA <input type="checkbox"/> OTHER	WELL/BOREHOLE/EXCAVATION NUMBER	
FOOTAGE	<input type="checkbox"/> PERCHED WATER <input type="checkbox"/> VADOSE ZONE <input type="checkbox"/> WATER TABLE	BEGINNING DATE	DATE SEALED	DRUM STORAGE LOCATION		
CONTENTS:					ABSORBENT ADDED <input type="checkbox"/> YES <input type="checkbox"/> NO	
<input type="checkbox"/> SOIL	<input type="checkbox"/> HARD TOOL <input type="checkbox"/> SLURRIES	<input type="checkbox"/> GROUNDWATER <input type="checkbox"/> SLURRIES	<input type="checkbox"/> PPE	<input type="checkbox"/> DECON FLUID	<input type="checkbox"/> OTHER (SPECIFY) _____	

**COMMENTS/SUSPECTED HAZARDS:** (Any indications of contamination (organic, inorganic, radioactive) shall be documented in this space.)

FIELD TEAM LEADER:

FACILITY GENERATOR:

PRINTED NAME/SIGNATURE

DATE

PRINTED NAME/SIGNATURE

DATE

Figure 2. EPA Hazardous Waste Sticker For Suspected Hazardous  
and Suspected Mixed Waste.

*SUSPECTED*

**HAZARDOUS WASTE**

STATE AND FEDERAL LAW PROHIBITS IMPROPER DISPOSAL  
IF FOUND, CONTACT THE NEAREST POLICE, OR PUBLIC SAFETY AUTHORITY, AND THE  
WASHINGTON STATE DEPARTMENT OF ECOLOGY, OR THE U.S. ENVIRONMENTAL PROTECTION AGENCY.

GENERATOR INFORMATION:  
NAME: U.S. DEPARTMENT OF ENERGY EPA ID NO.: WA7890008967  
ADDRESS: P.O. BOX 550, 2355 STEVENS DRIVE CITY: RICHLAND STATE: WA ZIP: 99352  
MANIFEST DOCUMENT NO.: \_\_\_\_\_ (PAGE: \_\_\_\_\_ ITEM: \_\_\_\_\_) ACCUMULATION START DATE: \_\_\_\_\_ E.P.A. WASTE NO.: \_\_\_\_\_

UN OR NA #: \_\_\_\_\_

DOT. PROPER SHIPPING NAME AND UN OR NA NO. WITH PREFIX

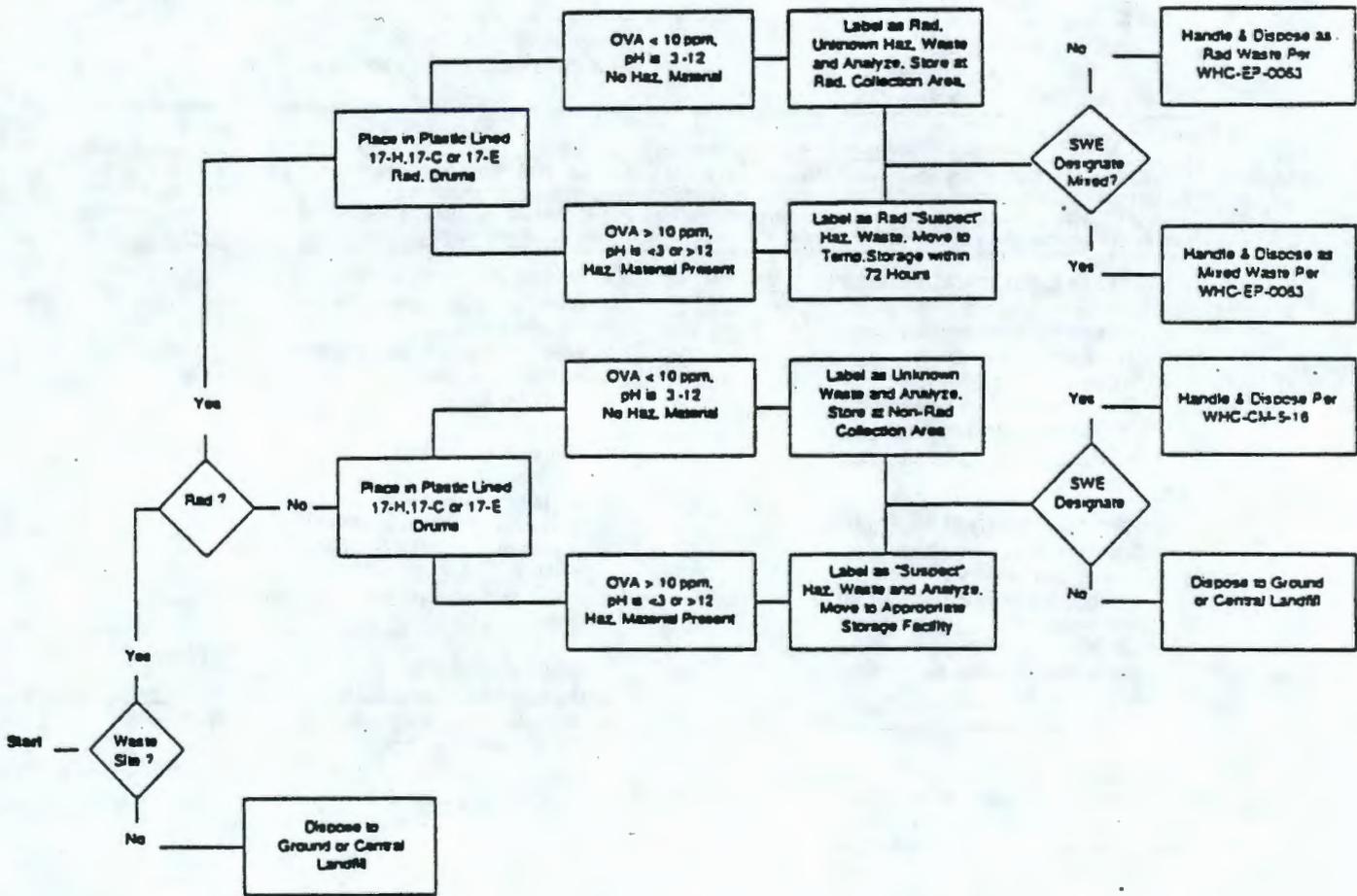
**HANDLE WITH CARE!**  
CONTAINS HAZARDOUS OR TOXIC WASTES

**Figure 3. Waste Inspection Log. (BC-6000-584)**

<b>Environmental Field Services WASTE INSPECTION LOG</b>	
<input type="checkbox"/> RCRA <input type="checkbox"/> RPP <input type="checkbox"/> CERCLA	<input type="checkbox"/> Weekly <input type="checkbox"/> Monthly
<input type="checkbox"/> Collection Area <input type="checkbox"/> Satellite Accumulation Area <input type="checkbox"/> Radioactive Materials Area	<input type="checkbox"/> Temporary Storage Facility <input type="checkbox"/> Centralized Waste Container Storage Area
Project Location: _____ Inspection Date _____ Time _____	
<b>PROCEDURE:</b> If an entire inspection category does not apply, an "N/A" (not applicable) shall be placed next to the category heading. If one or more items apply, all items within that category shall be marked "Y" for yes, "N" for no, or "N/A" listing any discrepancy by number and letter, and providing a short narrative of the problem and the corrective action taken in the section below, including affected container numbers.	
<b>1. SAFETY/EMERGENCY EQUIPMENT</b> _____ a. Communication equipment (non functional) _____ b. Portable eyewash and shower (damaged/unserviceable) _____ c. Fire extinguisher (damaged, broken seal, missing pin, tag information unreadable/missing) _____ d. First Aid Kit (items missing) _____ e. Other _____  <b>2. PERSONAL PROTECTIVE EQUIPMENT</b> _____ a. Coveralls (torn/unserviceable) _____ b. Gloves (torn/unserviceable) _____ c. Safety goggles (cracked/warped/unserviceable) _____ d. Hardhat (damaged/unserviceable) _____ e. Respirator (unsealed bag, missing/unreadable expiration date) _____ f. Other _____  <b>3. SPILL CONTROL EQUIPMENT</b> _____ a. Shovels (damaged/unserviceable) _____ b. Absorbent (wet/low inventory) _____ c. Spare container (damaged/unserviceable) _____ d. Salvage container (damaged/unserviceable) _____ e. Container liners (unserviceable/low inventory) _____ f. Adhesive tape (wet/low inventory) _____ g. Bung, crescent wrench (damaged/unserviceable) _____ h. Other _____	<b>4. WASTE COLLECTION/STORAGE</b> _____ a. Warning signs, ropes (unreadable, worn, not erected) _____ b. Aisle space (inadequate/blocked) _____ c. Incompatible waste (inadequate separation) _____ d. Container body (dented/corroded/leaking/unserviceable) _____ e. Container lid, closure ring, bolt, nut or bung (damaged/unserviceable/missing) _____ f. Container markings, labels, IC forms (unreadable/incorrect/missing) _____ g. Accumulation start date (unreadable/missing) _____ h. Pallets (broken slats/nails protruding) _____ i. Other _____  <b>5. INDOOR STORAGE</b> _____ a. Warning signs (unreadable, worn, missing) _____ b. Doors (damaged/unclosable) _____ c. Sump (inadequate volume, damaged floor/wall, liquid accumulation) _____ d. Other _____
Corrective Action Taken and Date: _____ _____ _____ _____ _____ _____	
Inspected by: (print/sign) _____	Date _____

INTERIM CONTROL OF UNKNOWN, SUSPECTED  
HAZARDOUS AND MIXED, AND RADIOACTIVE WASTE

Figure 4. Generalized Diagram for Interim Control of Unknown, Suspected Hazardous, Suspected Mixed and Radioactive Waste.



**INSTRUCTION CHANGE AUTHORIZATION**

ICA No.  
067

Instruction (EII) No.

EII 4.3, Control of CERCLA and Other Past Practice Investigation Derived Waste

Rev. No.

1

Page 1 of 1

Description of Change

Impact Level 4

Page 12 and 22, Section 6.7, Figure 5, Section 4.d and 4.e will not be applicable for containers stored within concrete caissons at the 200-BP-1 Radioactive Materials Area (RMA).

Containers within concrete caissons at the 200-BP-1 RMA will not receive an inspection of container body, lid, closure ring, bolt and nut or bung.

One Time

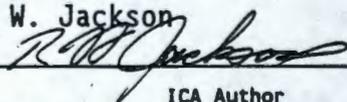
Permanent

Justification

In order to maintain ALARA for high radiation drums of dry soil located in concrete caissons, visual inspections for drum integrity will not be made.

Approvals: (Type/Sign Name and Date)

R. W. Jackson

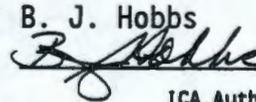


ICA Author

4/27/93

Date

B. J. Hobbs

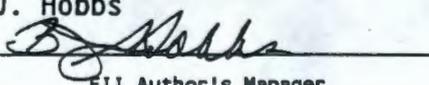


ICA Author's Manager

4-27-93

Date

B. J. Hobbs



EII Author's Manager

4/27/93

Date

N/A

Quality Assurance (If Required)

Date

N/A

Safety (If Required)

Date

**INSTRUCTION CHANGE AUTHORIZATION**

ICA No.  
061

Instruction (EII) No.

EII 4.3, Control of CERCLA and Other Past-Practice Investigation Derived Waste

Rev. No.

0

Page 1 of 1

Description of Change

Impact Level 4

This change modifies the directives given in the following sections of this procedure:

- Section 6.3, (a) and (b), below item 1
- Section 6.4, item 4
- Section 6.5, item 3
- Section 6.7, last paragraph

Contained liquid IDW requiring absorption or solidification upon generation, in accordance with the current procedural directive, will instead be overpacked to prevent a release to the environment via breach of primary containment. Overpacking will only continue until such time as an absorbent or solidification agent, appropriate for use with all types of waste, can be identified and approved for use on the Hanford Site.

One Time

Permanent

Justification

An absorbent/solidification agent that meets all of the acceptance criteria for the variety of waste that may be encountered during waste site investigations (low level radioactive, hazardous, radioactive mixed, or benign) has yet to be identified and approved for use on the Hanford Site. Since the majority of liquid waste generated will remain unknown until receipt of chemical and radiological sample analyses (frequently many months after initial containment), stabilization with an absorbent/solidification agent inappropriate for the diagnostic characteristics of the waste is not desirable. The use of overpacks will provide adequate protection of human health and/or the environment until an acceptable absorbent or solidification agent is identified.

Approvals: (Type/Sign Name and Date)

GG Hopkins

  
ICA Author

9/18/92

Date

BJ Hobbs



ICA Author's Manager

9/15/92

Date

BJ Hobbs



EII Author's Manager

9/18/92

Date

N/A

Quality Assurance (If Required)

Date

N/A

Safety (If Required)

Date

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WESTINGHOUSE HANFORD COMPANY

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WHC-CM-7-7  
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1 of 26  
June 24, 1993  
RR/Environmental  
Division

ENVIRONMENTAL INVESTIGATIONS AND  
SITE CHARACTERIZATION MANUAL

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TITLE:

Approved by

CONTROL OF CERCLA AND OTHER  
PAST PRACTICE INVESTIGATION  
DERIVED WASTE

  
W. H. Price, Manager  
Environmental Field Services

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## 1.0 PURPOSE

This Environmental Investigations Instruction (EII) establishes a system to control the containment, labeling, and tracking of waste generated during Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and other past practice waste site environmental investigation, site characterization, and well maintenance activities.

## 2.0 SCOPE

This EII applies to waste generated during CERCLA and other past practice waste site environmental investigation, site characterization, and well maintenance activities (e.g., drilling operations). This EII governs the handling and storage of wastes unless otherwise specified in working/planning documents approved by the U.S. Department of Energy, Richland Field Office (RL) and regulatory agencies. This EII does not address characterization and investigation activities involving trenching, backhoe excavations, or surface sampling. Material handling from trenching, backhoe operations, or surface sampling will be determined on a case-by-case basis.

*Purgewater shall be managed in accordance with WHC-CM-7-7, EII 10.3, "Purgewater Management".*

## 3.0 DEFINITIONS

See the Glossary/Acronyms section of this manual.

## 4.0 RESPONSIBILITIES

See Waste Management Responsibilities Diagram (Figure 1).

### 4.1 Project/Remedial Investigation Coordinator

The Project/RI Coordinator for characterization activities shall coordinate all activities for characterization and proper disposition of waste associated with projects on CERCLA and other past practice waste sites. The Project/RI Coordinator shall determine, in concurrence with the lead agency, RL, Health and Safety Officer, and participating construction organizations, the boundaries of waste sites and locations for waste storage within each operable unit. The Project/RI Coordinator

is responsible for initiating development of the Waste Control Plan (Figure 2/Jetform A-6000-903). The Project/RI Coordinator shall ensure that groundwater wells scheduled for installation have been pre-categorized as detailed in WHC-CM-7-8, Volume 4, Section 6.1 to facilitate appropriate dispositioning of waste generated from within the water table (groundwater slurries). The Project/RI Coordinator shall make available to the lead agency all validated laboratory analytical data collected pursuant to the Tri-Party Agreement, with copies to the Investigation Derived Waste (IDW) Coordinator, within fifteen days of receipt of the data.

#### 4.2 Field Team Leader/Cognizant Engineer

1. Ensure drill cuttings and well maintenance soils/slurries are monitored in accordance with the work-controlling document.
2. *Provide for the siting and construction of shallow pits (<4 feet deep and in compliance with WAC-296-155, Part N) to receive groundwater slurries.*
3. Minimize waste by segregating drill cuttings and well maintenance soils/slurries based on field determination criteria outlined in Sections 6.0, 6.3, 6.4, and 6.5 of this EII.
4. Collect and containerize unknown, suspected hazardous, hazardous, radioactive, suspected mixed, and mixed waste.
5. Have adequate supplies (e.g., drums/containers, liners, markers, forms, labels) to handle anticipated needs (unknown, suspected hazardous, hazardous, radioactive, suspected mixed, or mixed waste).
6. Obtain unique container tracking numbers from the IDW Coordinator.
7. Initiate the Interim Control of Unknown, Suspected Hazardous, Suspected Mixed, and Radioactive Waste form (IC form) (Figure 3/BC-6000-329) securing the plastic, weatherproof form to container, and submitting the paper copy of the IC form to the IDW Coordinator in accordance with Section 6.6(4) of this EII.

NOTE: The IC form is used as both a plastic, weatherproof label and as a paper form. The plastic form is to be attached to the container; the paper form is to be submitted to the IDW Coordinator for tracking purposes.

8. Facilitate all waste container movement during the period of active field operations.
9. Set up container storage areas in accordance with Section 3.0 of this EII.

10. Notify the IDW Coordinator once active field operations have concluded.
11. Coordinate with Health Physics (HP) on movement of radioactive and mixed waste containers to a properly marked location as identified by the HPT in accordance with WHC-CM-1-6. Mixed waste shall be moved in accordance with Section 6.5 of this EII.

#### 4.3 Investigation-Derived Waste Coordinator

1. Provide unique container tracking numbers to the Field Team Leader/Cognizant Engineer (FTL/CE).
2. Review the IC forms provided by the FTL/CE and inspect the waste to confirm that the storage area and containers have been managed in compliance with this EII. The IDW Coordinator will notify the FTL/CE of any necessary corrective actions required to negate noncompliant conditions identified during the waste inspection. When noncompliant conditions have been corrected, the IDW Coordinator will sign and date the IC form, and assume full responsibility for the waste.
3. Enter, update, and retrieve information using the generator waste tracking database for all containerized waste generated during environmental investigation, site characterization, and well maintenance activities.
4. Maintain a field logbook for use in the field to document container activity.
5. Submit a Request for Hazard Identification form (Figure 4) and sample lab analysis to Solid Waste Engineering for interpretation and hazard identification of waste managed by this EII.
6. Inspect waste containers as identified in Section 6.8 and complete the Waste Inspection Log (Figure 5/BC-6000-584).
7. Coordinate the storage and segregation of radioactive, hazardous, and mixed waste containers based on the laboratory sample analysis and in accordance with this EII.
8. Maintain records as specified in Section 6.10.
9. Report any deviations from normal operations to cognizant manager(s).
10. The IDW Coordinator is the emergency contact and must be notified immediately in the event of a spill or unplanned release. The IDW Coordinator would then follow proper notification steps in accordance with WHC-CM-7-5.

#### 4.4 Site Safety Officer

The Site Safety Officer (SSO) ensures that all onsite investigative drilling and waste handling activities are conducted in a manner that is protective of human health and the environment. All personnel directly involved with onsite drilling or waste handling activities will defer any safety concerns (other than radiological) to the SSO.

#### 4.5 Health Physics

HP shall provide onsite radiation monitoring for all investigative drilling activities and waste handling operations in areas potentially contaminated with radionuclides. All personnel directly involved with onsite investigative drilling or waste handling activities will defer any radiological concerns to HP.

#### 4.6 Point-of-Contact

*Person assigned by the manager of the Environmental Health & Pesticide Services Group to function as the cognizant individual relative to all IDW container tracking and reporting including:*

1. Issue unique container tracking numbers to IDW Coordinator(s).
2. Develop and send monthly container status reports to the cognizant manager, project coordinators, FTLs/CEs, and others upon request.

#### 4.7 Solid Waste Acceptance Services

*Solid Waste Acceptance Services (SWAS)* shall review the Request for Hazard Identification form and relevant laboratory sample analyses provided by the IDW Coordinator and provide the IDW Coordinator with documented hazard identification of the subject waste. Hazard identification will include, when applicable, waste characteristics (corrosivity, ignitability, etc.), identification of constituent concentrations above regulated levels, and any additional packaging recommendations. *SWAS* shall maintain a file of the Request for Hazard Identification forms and accompanying sample lab analyses.

### 5.0 REQUIREMENTS

#### 5.1 Containers/Liners (Drums/Plastic Liners)

Until an alternate storage container (approved by regulators) can be identified and approved, the following U.S. Department of Transportation (DOT) containers shall be used.

1. DOT specification 17-H, 17-C, or 1-7-E steel drums shall be used to contain unknown, radioactive, or hazardous waste. The 55-gallon drum size is generally used; however, 8-gallon, 30-gallon,

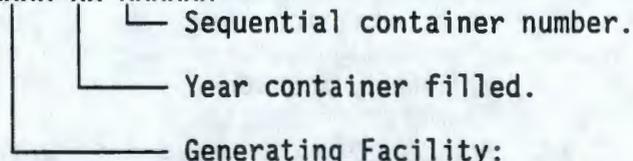
85-gallon, 95-gallon, and 110-gallon size drums of steel or other construction, meeting DOT specifications, may also be used for overpacking and salvage. Radioactive mixed waste shall be contained in galvanized DOT 17-C drums (30 or 55-gallon). Type 17-H or 17-C steel drums must have a gasket for the lid before containing wastes. Type 17-E drums must have bungs in good condition before containing fluids. When appropriate, approved burial boxes may be used to contain radioactive solid waste.

2. Containers that will contain nonradioactive drill cuttings will be lined with a plastic liner of at least 10 mil thickness. Non-saturated radioactive or radioactive mixed waste shall be packaged in a container with a nylon reinforced plastic (polyethylene) liner at least 10 mil thick. All saturated radioactive and radioactive mixed waste drill cuttings shall be packaged in a container lined with a plastic liner at least 90 mil thick.
3. When beta emitters are stored in metal containers, the criteria for storage are outlined in WHC-EP-0063, in the sections entitled "Surface Dose Rates." These criteria limit surface dose rates of radioactive containers to <200 mrem/hr and <100 mrem/hr for mixed waste containers, including all energy emitting isotopes (beta, gamma, neutrons). Quantities of energy emitting isotopic IDW placed in containment will be limited to comply with this criteria.

## 5.2 Unique Container Tracking Number

The IDW Coordinator shall track containers of waste using the following numbering system. Unique container tracking numbers shall also be used to track laboratory samples that might be returned to the original site where generated.

XXXX-XX-XXXXXX



ERE: Designates Environmental Restoration Engineering

GEOS: Designates Geosciences Group

EFSG: Designates Environmental Field Services Group

## 5.3 Entries and Corrections

All entries on the IC forms shall be entered in permanent, reproducible black ink. Corrections shall be made by striking one line through the incorrect information, entering corrected data (when appropriate), initialing, and dating.

## 6.0 PROCEDURE

See Figure 6, Waste Determination Logic Diagram.

When unknown, suspected hazardous, hazardous, radioactive, suspected mixed, or mixed waste is placed in a waste container, the container shall be managed in accordance with this EII.

### Outside a Waste Site Boundary

Soils/drilling cuttings that 1) originated outside the boundaries of a waste site (as approved by the cognizant unit managers and documented in the Waste Control Plan, Figure 2/*Jetform A-6000-903*), and 2) are dry (absent of moisture, dusty, dry to the touch) or moist (damp, but no visible water), and 3) originated above the water table shall not be drummed if field analytical screening protocol (as identified in Sections 6.4 and 6.5 of this EII) does not detect radioactive or hazardous waste and if there is no process knowledge of hazardous or suspect hazardous waste. Such material will be collected in soil piles near the point of generation and surveyed intermittently (a minimum of once each day) to verify the absence of radiological components as indicated by process knowledge. Soil piles will not normally require chemical sampling unless visual evidence or field screening indicate potential contaminants, or the unit managers identify a justified need for soil pile sampling. Soil piles requiring sampling will have staked boundaries. These piles will be analyzed for the constituents of concern as identified in the Waste Control Plan. Should the analyses indicate soil pile contamination not apparent via field screening, the soil pile and the soil surface to a depth of 2 inches below the soil pile will be drummed and transported to the Centralized Waste Container Storage Area (CWCSA) for appropriate storage.

*Nonwaste site groundwater slurries (GWS) consisting of groundwater and soils, generated from within the water table (excluding perched water) shall prior to generation, be predesignated for subsequent management in accordance with WHC-CM-7-8, Volume 4, Section 6.1, "Purgewater Collection Determination," and the requirements of Section 6.6 of this EII. However, management of GWS per this predesignation scenario may not supersede the management directives detailed in sections 6.4 or 6.5 of this procedure for GWS identified per field screening as suspect hazardous or radioactive or suspect mixed waste.*

### Inside a Waste Site Boundary

All material generated inside a waste site boundary will be drummed upon generation and further dispositioned as identified in Section 6.3.

### Decontamination Fluids

Decontamination fluids will consist of nonphosphate soap/water or potable water. Utilization of any decontamination agent other than nonphosphate

soap will be assessed to ensure that additional regulated constituents will not be added to the decontamination waste matrix. Utilization of the decontamination agent will be documented on the Equipment Decontamination Form (BC-6000-292) found in EII 5.4.

All decontamination fluids shall be managed as either nonhazardous or unknown waste. Decontamination fluids shall be collected as unknown waste when associated with IDW generated from within the boundaries of a waste site or when soil/slurries/drill cuttings are collected as suspected hazardous waste, suspected mixed waste, or radioactive waste. Otherwise, decontamination fluids will be nonhazardous and disposed of to the ground outside the exclusion zone.

Decontamination fluid from similar waste sites may be collected in the same container. A composite sample of decontamination fluid generated from similar waste sites shall be taken, analyzed, and used for determination. Sampling of the decontaminated fluids will be limited to the constituents of concern as identified in the Waste Control Plan.

All containerized decontamination fluid is to be *stabilized (absorbed, solidified or overpacked)* and remain contained pending receipt of sample analyses.

*Decontamination fluids found to be hazardous or mixed (as determined by analyses results), or radioactive will be either stored at the CWCSA for eventual incorporation into the operable unit specific remedial action or will be subject to near future disposal at the appropriate facility.*

#### Miscellaneous Solid Waste

Only materials (disposable personal protective equipment, rags, etc.) *identified* as having contacted potentially hazardous, radioactive, or mixed waste will be considered potentially contaminated. These potentially contaminated materials shall be placed in a plastic bag, taped closed, marked as to the associated footage intervals(s), and placed in containers specific to each area of potential contamination (borehole, crib, etc.). Final waste status *and disposition* (hazardous, nonhazardous, etc.) will be identified utilizing the sample analyses data of the soil/slurries contacted. Materials from different boreholes shall not be placed in the same container. All other materials will be considered nonregulated and disposed as such.

#### 6.1 Container Preparation

1. The entire container shall be checked for damage. Damaged containers will not be used. They will be sent to Central Landfill as nonregulated trash or reconditioned as appropriate.
2. The waste specific containers and liners will be utilized as detailed in Sections 5.1(1) and 5.1(2).

3. Container markings shall be durable and displayed on a background of sharply contrasting color.
4. The following information should be written on the lid with indelible contrasting ink and maintained in legible condition until the weatherproof IC form is attached to the container:
  - a. Project name
  - b. Borehole number
  - c. Footage (enter footage intervals)
  - d. Contents (enter contents of container)
  - e. Beginning date (enter date material first placed in container)
  - f. Date sealed (enter date material last placed in container)
  - g. Unique container number (enter when sealed).
5. Secure the plastic, weatherproof IC form to side of container in accordance with Section 6.7(4) of this EII.

NOTE: Containers must be closed and secured except when material is being added or removed.

## 6.2 Field Screening Drill Cutting and Well Maintenance Soils/Slurries

1. Drill cuttings/soils/slurries shall be monitored in accordance with the work-controlling document. Field determination shall be based upon criteria identified in Sections 6.0, 6.3, 6.4, and 6.5 of this EII. The control, use, handling, maintenance, and calibration of monitoring equipment shall be in accordance with EII 3.2.
2. Chemical/radiological sampling of IDW originating from within the boundaries of a waste site will be conducted as identified in the work plan. Chemical sampling of the vadose zone IDW originating from outside the boundaries of a waste site will not normally be required unless visual evidence or field screening indicates potential contaminants, or the unit managers identify a justified need for sampling. Soil piles requiring sampling will be analyzed for the constituents of concern as identified in the Waste Control Plan. *Vadose zone* IDW originating from outside the boundaries of a waste site will be sampled at five foot intervals and analyzed for radiological constituents.
3. A sample analysis request shall be prepared to accompany the sample(s) to the analytical facility, to ensure that the correct analysis is performed. Some stationary analytical work can be eliminated by using an on-site mobile field screening facility. The Westinghouse Hanford Company (WHC) sample analysis request form (A-6000-406) is presented in EII 5.2.

### 6.3 Unknown Waste Determination and Collection

#### Saturated IDW

1. *Saturated soil, perched water, or groundwater slurries that are generated inside a waste site boundary, and do not meet the criteria outlined in Section 6.4(1) of this EII, shall be drummed and managed as unknown waste.*
2. *When generated inside a waste site boundary where process knowledge indicates a likelihood of vadose zone contamination and subject to chemical sampling, the waste will remain contained pending receipt of sample analyses.*
3. *Saturated IDW, other than GWS, that are generated outside a waste site boundary and do not meet the criteria outlined in Section 6.4(1) of this EII, shall be drummed and managed as unknown waste. GWS generated outside waste site boundaries will be managed per Section 6.0 and 6.6 of this EII.*
4. *Excluding GWS, saturated IDW generated outside a waste site boundary that only requires radiological analysis for release, will remain contained pending receipt of analytical results. If analysis indicates radioactive contamination, the waste will be stabilized (absorbed, solidified, or overpacked) and transported to the CWCSA. If the analysis does not indicate radioactive contamination, the waste will be returned to the ground at a location identified in the Waste Control Plan.*

#### Dry IDW

1. *Drill cuttings (dry soils) generated inside a waste site boundary shall be drummed upon generation. When generated inside a waste site boundary where process knowledge indicates a likelihood of vadose zone contamination and subject to chemical sampling, the waste will remain contained pending receipt of sample analyses. In other cases, the material may be disposed of at the drill sites (exclusive of ponds, cribs, and ditches) when the material meets the following criteria:*
  - a. *The field survey does not indicate the presence of radioactive materials in excess of the minimum detectable activity levels (reference WHC-CM-1-6).*
  - b. *The field survey of expected contaminants does not indicate the presence of hazardous (chemical) materials above criteria defined in Section 6.4(1).*
  - c. *Further health physics screening confirms the activity of the material to be less than 200 pCi/gm beta/gamma and 60 pCi/gm alpha. Decontamination fluids generated in the intervals*

associated with materials described above may be disposed of outside the exclusion zone.

2. During the collection process, if the material meets the suspected hazardous waste criteria in Section 6.4(1), it shall be segregated, handled, and managed as suspected hazardous waste for the remainder of the borehole unless the criteria for unknown waste is again met.

#### 6.4 Suspected Hazardous Waste Field Determination and Collection

1. Drill cuttings/soils/slurries shall be segregated, handled, and managed as suspected hazardous waste based on process knowledge of material known to have been discharged to the area under investigation and any of the following in support of this process knowledge:
  - a. Direct instrumentation reading of organic vapor in excess of 5 ppm above background levels 1 inch above freshly excavated soil.
  - b. pH less than 3 or greater than 12 or a *deviation of 2 or more units from background soil pH.*
  - c. Results from field screening instruments and/or tests that indicate the presence of contaminants above *Washington State* dangerous waste limits.
  - d. Mobile laboratory analyses exceeding established limits as identified in the Waste Control Plan for regulated waste determination.

NOTE: The above criteria are solely for the purpose of waste segregation and determination. Health and safety monitoring criteria will be detailed in the site-specific HWOP.

2. During the collection process, if the material no longer meets the suspected hazardous waste criteria in Section 6.4(1), it shall be segregated, handled, and managed as unknown waste for the remainder of the borehole unless the criteria for suspected hazardous waste is again met. Waste shall be segregated to meet the intent of WHC-SD-WM-EV-037.
3. The words "SUSPECT HAZARDOUS" shall be written on the top and sides of containers containing suspected hazardous waste. Each container must be marked to identify the major risks associated with the waste in the container (e.g., corrosive, reactive, etc.). To prevent mixing contaminated waste, only material from the same borehole should be placed in a container.

4. All saturated soil, perched water, or groundwater field determined as suspect hazardous waste shall be *stabilized (absorbed, solidified or overpacked)* upon generation.

#### 6.5 Radioactive Waste/Mixed Waste Field Determination and Collection

1. Drill cuttings/soils/slurries/decontamination fluid/miscellaneous solid waste identified as radioactive shall be segregated into DOT specified containers or an approved alternate container for radioactive material.
2. Radioactive waste also suspected of containing hazardous constituents shall be handled as suspected mixed waste and segregated into DOT specified containers or an approved alternate container for mixed waste. The words "SUSPECT MIXED" shall be written on the top and sides of the container, along with the major risks associated with the containers waste (e.g., corrosive, reactive, etc.).
3. All containers of saturated soil, perched water, or groundwater field determined was radioactive/mixed waste shall be stabilized (absorbed, solidified or overpacked) upon generation.
4. Each container of radioactive and/or suspected mixed waste shall be labeled with a DOT radioactive hazard class label and managed in accordance with this EII.
5. Containers of radiological material shall be segregated from containers of nonradiological material.
6. Radioactive/mixed waste containers shall be moved to a properly marked field location within a radiologically controlled area in accordance with WHC-CM-1-6.
7. *The custodian for a radioactive material storage area shall be notified when radioactive/mixed waste material is added to the radiological controlled area.*

#### 6.6 Management Of Groundwater Slurries

1. *GWS which is containerized prior to slurry pit or other final disposal shall be managed in accordance with applicable sections of this EII.*
2. *GWS pre-categorized as "Dispose to ground", in accordance with Section 6.1 of WHC-CM-7-8, volume 4, may, upon generation, be directly discharged to a pre-excavated pit, lined with biodegradable porous membrane.*

3. *GWS pre-categorized as "Collect/dispose elsewhere" may, upon generation, be collected and transported outside the boundary of the restricted disposal area for disposition in a pre-excavated pit lined with a biodegradable porous membrane.*
4. *GWS pre-categorized as "Collect/Contain, Category I, II or III ", in accordance with Section 6.1 of WHC-CM-7-8, volume 4, shall be containerized upon generation. After the solid phase has settled, the water phase can be decanted and transported to the Purgewater Storage Facility (PSF), with the remaining solids sampled and managed in accordance with step 6.6.1 pending receipt of analysis.*
  - a. *GWS pre-categorized as 200 West Area carbon tetrachloride "Collect/Contain, Category 1", may, be discharged directly to a slurry pit if representative slurry sampling demonstrates that the level of carbon tetrachloride and it's breakdown product (chloroform) are below the Purgewater Collection Criteria in WHC-CM-7-5, Section 8, Table 8.3.*
5. *To ensure the integrity and identification of GWS for future sampling and/or recovery, each pit shall be covered at the end of the operating day and/or at the conclusion of operations with an impermeable, "weighted" cover or otherwise protected to prevent inadvertent release of slurry material This cover shall be maintained until receipt of soil analytical results demonstrating the absence of RCRA or Washington Administrative Code (WAC) dangerous waste constituents.*
6. *Upon construction of a slurry pit, it shall be roped and posted with warning signs describing the open pit hazard. Warnings shall be maintained until the pit has been filled in and graded to level after receipt of data as described in step 6 above.*

#### 6.7 Sealing Container

1. When the container is ready to be sealed, the opening of each plastic liner shall be twisted closed and secured with tape (when applicable). For containers, check to confirm a gasket is on the lid; then attach and secure with a locking ring and locking ring nut.
2. Upon sealing, the container lid shall be marked as identified in Section 6.1(4).

NOTE: For purposes of waste minimization, soils from different boreholes should not be placed in the same container.

3. When the container is sealed, a unique container tracking number shall be obtained from the IDW Coordinator. The unique container number shall be entered on the IC forms and on the container lid.

4. All unknown, suspected hazardous, suspected mixed, and radioactive waste containers awaiting laboratory analysis shall have IC forms completed and signed by the FTL/CE. The FTL/CE shall print the name of the IDW Coordinator on the IC forms. The plastic, weatherproof IC form shall be attached to the side of the container (for drums, place between the ribs on the upper third of drum). Verification shall be made that the container number is legible on the form.

The FTL/CE shall document any indications of contamination (organic, inorganic, radioactive), and list representative sample numbers in the Comments/Suspected Hazards section of the IC form. A paper copy of the IC form shall be submitted to the IDW Coordinator for review and processing. The IDW Coordinator shall sign the paper IC form upon completion of the review.

#### 6.8 Management of Waste Containers

All containerized waste being stored at the well site while awaiting analyses results shall be placed on pallets in an appropriately established field storage area (i.e., signs, ropes, pallets, etc.).

All containers of suspected hazardous *liquid waste*, radioactive *liquid waste*, or mixed liquid waste will be inspected weekly *unless overpacked, in which case monthly inspections will be conducted*. All other waste containers will be inspected *quarterly* by the IDW Coordinator or delegate. *Containers of IDW in which radioactivity levels are sufficient to subject inspection personnel to significant dose rates, will be observed for accountability only and from a sufficient distance to minimize personnel exposure*. The Waste Inspection Log (Figure 5/BC-6000-584) will be completed to document the inspection. Containers showing signs of deterioration will be identified on the container inspection log and immediately overpacked. A review and evaluation of deteriorating containers will be performed by RL, the lead agency, and WHC resulting in a decision, based on best management practices, regarding future storage.

Spills or releases will be reported in accordance with WHC-CM-7-5, *Section 5.3*. Appropriate immediate action will be taken to protect human health and the environment.

Waste containers will be segregated into the following categories: solid, liquid, radioactive, mixed, hazardous, and unknown waste. Additionally, waste suspected of or containing known hazardous constituents will be segregated based on characteristics (e.g., reactivity, corrosivity, etc.). *A minimum of 30" aisle space will be maintained between waste container rows in all waste storage locales. A container row may be a maximum of two containers wide.*

### Centralized Waste Container Storage Area

Contained waste that has not been chemically/radiologically released will be transported to operable unit-specific CWCSAs as soon as possible, within 3 months of the Office of Sample Management's (OSM) receipt of the waste sample analysis results.

The exact locations of the CWCSAs will be determined and approved by RL and the lead agency and documented in the Waste Control Plan. All CWCSAs will be located within the boundaries of the operable unit from which the stored waste was generated.

The CWCSA will have signs posted on two sides and a barrier surrounding the active portion of the facility. Containers will be elevated on pallets and otherwise protected from contact with accumulated liquids. Tape, pallets, and salvage containers will be available at the CWCSA.

Extremely Hazardous Waste (EHW) (as determined by characterization data) will be stored at the CWCSA and protected from the elements by means of building or other protective covering. Interim storage/final disposal of EHW will be determined by RL and the lead agency utilizing best management practices.

Only solid or stabilized (*absorbed, solidified or overpacked*) liquid waste will be stored in the CWCSA.

#### 6.9 Final Disposal/Storage

The final container waste status (non-regulated, hazardous, mixed, etc.) will be assigned by SWAS with the concurrence of the cognizant IDW Coordinator.

Any material determined to be nonhazardous and appropriate for return to the ground shall be disposed at a locale that is mutually agreed upon by the unit managers. The disposal locale shall be identified in the Waste Control Plan.

Waste with a final container waste status of hazardous, radioactive, or mixed shall be transferred to the CWCSA for eventual incorporation into the remedial action as identified in the operable unit-specific ROD, or based on the considerations of costs, safety (ALARA), incompatibilities with remediation options. RL in concurrence with the lead agency, may select appropriate near future waste disposal options (low level burial for radioactive, 616 building for hazardous, 200 West Area Central Waste Complex for radioactive mixed waste).

Based on the laboratory sample analyses, waste containers shall be handled as follows:

1. Dry soil that is not regulated as a hazardous, dangerous, or radioactive waste may be disposed of at the point of generation or

outside the exclusion zone. Disposal locales will be recorded in the IDW Coordinator's field logbook and Waste Control Plan.

2. Wet soils/slurries that are not regulated as a hazardous, dangerous, or radioactive waste may be disposed of on the soil surface outside the exclusion zone. Disposal locales will be recorded in the IDW Coordinator's field logbook and Waste Control Plan.
3. Decontamination fluid that is not regulated as a hazardous, dangerous, or radioactive waste shall be disposed of on the soil surface outside the exclusion zone.
4. The words "SUSPECTED HAZARDOUS" shall be removed (e.g., line out, painted over, etc.) from any waste containers that are initially field determined as suspected hazardous or suspected mixed waste when sample analyses indicate the waste is nonregulated with regard to hazardous constituents.
5. The word "HAZARDOUS" shall be written on any containers identified as hazardous or dangerous waste and the associated major risk(s) identified on the container. (Refer to Sections 6.4, 6.5, and 6.6 for hazardous determination criteria.)
6. Decontamination fluid regulated as a hazardous, dangerous, or radioactive mixed waste, will either remove it from the site for appropriate RCRA disposal or *store it at the CWCSA for eventual incorporation into the operable unit-specific remedial action*; with the decision made on a case-by-case basis.
7. Decontamination fluid found to be radioactive will either be *stored at the CWCSA for eventual incorporation into the operable unit specific remedial action* or disposed at the low level burial grounds, with the decision made on a case-by-case basis.
8. Plastic bags of disposable personal protective equipment, foil, paper, gloves, etc., in containers identified as nonregulated material shall be collected and disposed of as trash (dumpster or central landfill). *Regulated material (trash) will be disposed of at the appropriate facility (low level burial for radioactive, 616 building for hazardous, and 200 West Area Central Waste Complex for radioactive mixed waste). When feasible compaction of radioactive trash will be conducted to reduce waste volume.*

#### 6.10 Reporting

The IDW Coordinator(s) shall report the status of containers to the cognizant manager on a monthly basis.

## 6.11 Records

Records are managed in accordance with Table 1 of this EII (which reflects approved RIDs) by the Facility Generator/IDW Coordinator.

## 7.0 REFERENCES

40 CFR 261, "Identification and Listing of Hazardous Waste."

40 CFR 262, "Standards Applicable to Generators of Hazardous Waste."

55 FR 26986, "Hazardous Waste Management System: Identification and Listing of Hazardous Waste; Toxicity Characteristic Revisions; Final Rule."

DOE 90-ERB-073, "Strategy for Handling and Disposing of Purgewater on the Hanford Site."

WAC 173-303, "Dangerous Waste Regulations."

WHC-CM-1-6, Radiological Control Manual.

WHC-CM-4-3, Volume 4, Industrial Safety Manual, Health and Safety Programs for Hazardous Waste Operations.

WHC-CM-5-16, Solid Waste Management.

WHC-CM-7-5, Environmental Compliance.

WHC-CM-7-8, Environmental Engineering and Technology Procedures.  
Volume IV, Section 6.1, "Purgewater Collection and Determination."

WHC-EP-0063, Hanford Site Radioactive Solid Waste Acceptance Criteria.

WHC-SD-WM-EV-037, Waste Minimization Plan - Environmental Engineering and Technology Function, 1989.

## 8.0 BIBLIOGRAPHY

DOE Order 5820.2A, "Radioactive Waste Management."

HSRCM-1, Hanford Site Radiological Control Manual.

WHC-CM-2-14, Hazardous Material Packaging and Shipping.

WHC-CM-4-11, ALARA Program Manual.

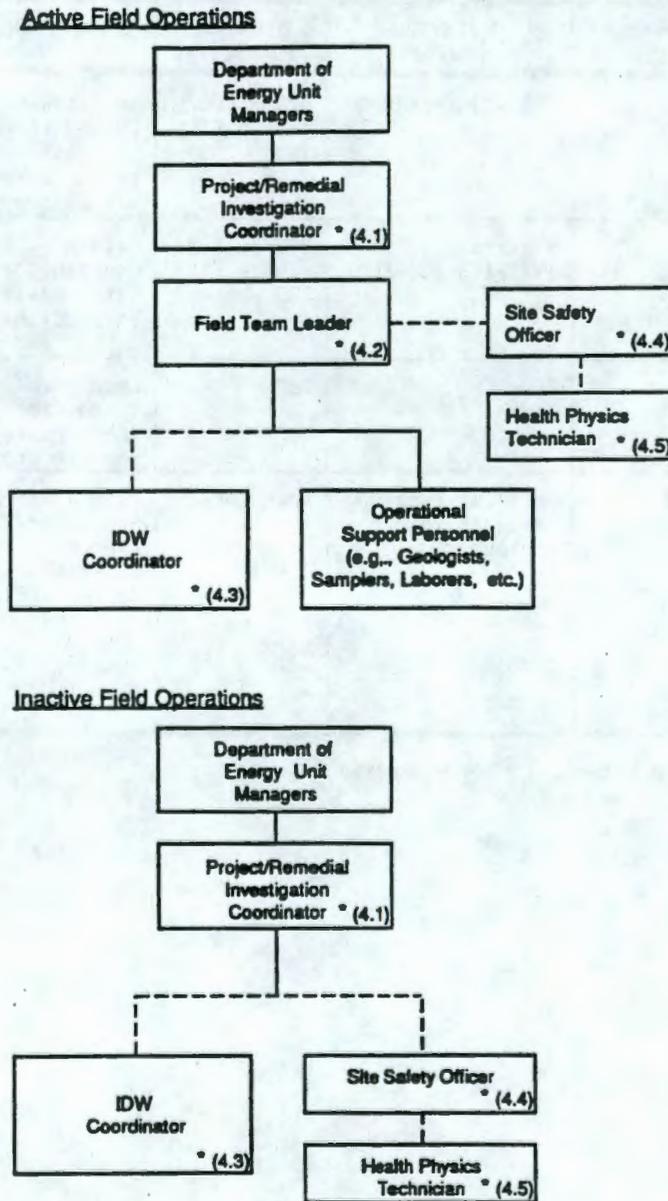
ENVIRONMENTAL INVESTIGATIONS AND  
SITE CHARACTERIZATION MANUALManual  
Section  
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PAST PRACTICE INVESTIGATION  
DERIVED WASTE

Table 1. Record Requirements.

NAME Filing Unit Title or Description	RECORD TYPE*	RETENTION PERIOD	DISPOSAL AUTHORITY	CUT-OFF AND RETIREMENT INSTRUCTIONS
Field Logbooks	QA	TPA + 10 years	DRS 1.8.c (force fit) TBD	Submit weekly copies to Field File Custodian (FFC); completed logbook transmitted to FFC for retirement to IRM permanent storage. FFC places copy in project file.
Hazardous Waste Manifest and Waste Inspection Logs	R	5 years (WAC-173-303-210)	DRS 2.11.j (force fit) TBD	Retain in Facility Generator/IDW Coordinator office file for 5 years after waste shipment and inspection. After 5 years transmit to FFC and place in project file.
Waste Control Plan	R	TBD	TBD	Completed waste control plan transmitted to FFC for retirement to IRM permanent storage. FFC places copy in project file.
Waste Tracking Files; information relevant to tracking, maintenance and dispositioning waste [Low-Level Waste Storage Disposal Records (LLWSDRs), chemical and radiological analytical copies and Waste Inventory Sheets (WISs)] are included in this description.	NR	Until no longer needed/5 year minimum.	nonrecord	Maintained by Facility Generator/IDW Coordinator in support of above identified record material. After 5 years transmit to FFC and place in project file.

\* QA = Quality Assurance; R = Record Material; NR = Nonrecord

Figure 1. Waste Management Responsibilities Diagram.



\* Denotes Section in Procedure that Details Specific IDW Management Responsibilities for Various Personnel.

Figure 2. Waste Control Plan. (sheet 1 of 2) (Jetform A-6000-903)

WASTE CONTROL PLAN				Page <u>1</u> of <u>    </u>
Work Scope Description _____ _____				
List Constituents of Concern _____ _____				
Site Description _____ _____				
Reference _____		Rev _____		Date Approved _____
Preparer/ Project/RI Coordinator _____ Print/Sign Name		Date _____	Safety Class _____	Impact Level _____
Field Team Leader/ Cognizant Engineer _____			IDW Coordinator _____	
Planned Drilling Start and Finish Dates: From _____ To: _____				
Waste Storage Facility ID Number(s) _____				
Field Screening Methods				
Method	Frequency	Reference	Detection Range	Analyst
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
Laboratory Methods (constituents of concern)				
Method	Frequency	Reference	Detection Limits	Contract Lab
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
APPROVALS (Print/Sign Name and Date)				
_____		_____ IDW Coordinator		
_____ Project/RI Coordinator		_____ Safety Function (if required)		
_____ Field Team Leader/Cognizant Engineer		_____ Quality Assurance (if required)		

CONTROL OF CERCLA AND OTHER  
PAST PRACTICE INVESTIGATION  
DERIVED WASTE

Figure 2. Waste Control Plan. (sheet 2 of 2) (Jetform A-6000-903)

WASTE CONTROL PLAN		Page <u>2</u> of <u>    </u>
Drill Site Coordinate Location	_____	
Waste Container Storage Area(s) Coordinate Location(s)	_____	
Requirements for Soil Pile Sampling (if any)	_____	
Nonregulated Material Disposal Location(s)	_____	
SKETCH OF WORK SITE		
<div style="border: 1px solid black; height: 300px; width: 100%;"></div>		
APPROVALS (Print/Sign Name and Date)		
_____		
Lead Regulatory Agency Representative		
_____		
DOE-RL		
_____		
Project/RI Coordinator		

Figure 3. Interim Control of Unknown, Suspected Hazardous,  
Suspected Mixed and Radioactive Waste. (BC-6000-329)

INTERIM CONTROL OF UNKNOWN, SUSPECTED HAZARDOUS,  
SUSPECTED MIXED AND RADIOACTIVE WASTE

<input type="checkbox"/> UNKNOWN <input type="checkbox"/> SUSPECTED MIXED <input type="checkbox"/> SUSPECTED HAZARDOUS <input type="checkbox"/> RADIOACTIVE		UNIQUE DRUM NUMBER	DRUM TYPE/SIZE	LINER TYPE/THICKNESS	
PROJECT NAME/PROJECT LOCATION		<input type="checkbox"/> CERCLA <input type="checkbox"/> RCRA <input type="checkbox"/> OTHER	WELL/BOREHOLE/EXCAVATION NUMBER		
FOOTAGE	<input type="checkbox"/> PERCHED WATER <input type="checkbox"/> VADOSE ZONE <input type="checkbox"/> WATER TABLE	BEGINNING DATE	DATE SEALED	DRUM STORAGE LOCATION	
CONTENTS:			ABSORBENT ADDED <input type="checkbox"/> YES <input type="checkbox"/> NO		
<input type="checkbox"/> SOIL	<input type="checkbox"/> HARD TOOL SLURRIES	<input type="checkbox"/> GROUNDWATER SLURRIES	<input type="checkbox"/> PPE	<input type="checkbox"/> DECON FLUID	<input type="checkbox"/> OTHER (SPECIFY) _____

COMMENTS/SUSPECTED HAZARDS: (Any indications of contamination [organic, inorganic, radioactive] shall be documented in this space.)

FIELD TEAM LEADER:

FACILITY GENERATOR:

PRINTED NAME/SIGNATURE

DATE

PRINTED NAME/SIGNATURE

DATE



**Figure 5. Waste Inspection Log. (BC-6000-584)**

<b>Environmental Field Services WASTE INSPECTION LOG</b>	
<input type="checkbox"/> RCRA <input type="checkbox"/> RPP <input type="checkbox"/> CERCLA	<input type="checkbox"/> Weekly <input type="checkbox"/> Monthly
<input type="checkbox"/> Collection Area <input type="checkbox"/> Satellite Accumulation Area <input type="checkbox"/> Radioactive Materials Area	<input type="checkbox"/> Temporary Storage Facility <input type="checkbox"/> Centralized Waste Container Storage Area
Project Location: _____ Inspection Date _____ Time _____	
<b>PROCEDURE:</b> If an entire inspection category does not apply, an "N/A" (not applicable) shall be placed next to the category heading. If one or more items apply, all items within that category shall be marked "Y" for yes, "N" for no, or "N/A" listing any discrepancy by number and letter, and providing a short narrative of the problem and the corrective action taken in the section below, including affected container numbers.	
<b>1. SAFETY/EMERGENCY EQUIPMENT</b> _____ a. Communication equipment (non functional) _____ b. Portable eyewash and shower (damaged/unserviceable) _____ c. Fire extinguisher (damaged, broken seal, missing pin, tag information unreadable/missing) _____ d. First Aid Kit (items missing) _____ e. Other _____  <b>2. PERSONAL PROTECTIVE EQUIPMENT</b> _____ a. Coveralls (torn/unserviceable) _____ b. Gloves (torn/unserviceable) _____ c. Safety goggles (cracked/warped/unserviceable) _____ d. Hardhat (damaged/unserviceable) _____ e. Respirator (unsealed bag, missing/unreadable expiration date) _____ f. Other _____  <b>3. SPILL CONTROL EQUIPMENT</b> _____ a. Shovels (damaged/unserviceable) _____ b. Absorbent (wet/low inventory) _____ c. Spare container (damaged/unserviceable) _____ d. Salvage container (damaged/unserviceable) _____ e. Container liners (unserviceable/low inventory) _____ f. Adhesive tape (wet/low inventory) _____ g. Bung, crescent wrench (damaged/unserviceable) _____ h. Other _____	<b>4. WASTE COLLECTION/STORAGE</b> _____ a. Warning signs, ropes (unreadable, worn, not erected) _____ b. Aisle space (inadequate/blocked) _____ c. Incompatible waste (inadequate separation) _____ d. Container body (dented/corroded/leaking/unserviceable) _____ e. Container lid, closure ring, bolt, nut or bung (damaged/unserviceable/missing) _____ f. Container markings, labels, IC forms (unreadable/incorrect/missing) _____ g. Accumulation start date (unreadable/missing) _____ h. Pallets (broken slats/nails protruding) _____ i. Other _____  <b>5. INDOOR STORAGE</b> _____ a. Warning signs (unreadable, worn, missing) _____ b. Doors (damaged/unclosable) _____ c. Sump (inadequate volume, damaged floor/wall, liquid accumulation) _____ d. Other _____
Corrective Action Taken and Date: _____ _____ _____ _____ _____ _____	
Inspected by: (print/sign) _____	Date _____

Figure 6. Waste Determination Logic Diagram. (sheet 1 of 3)

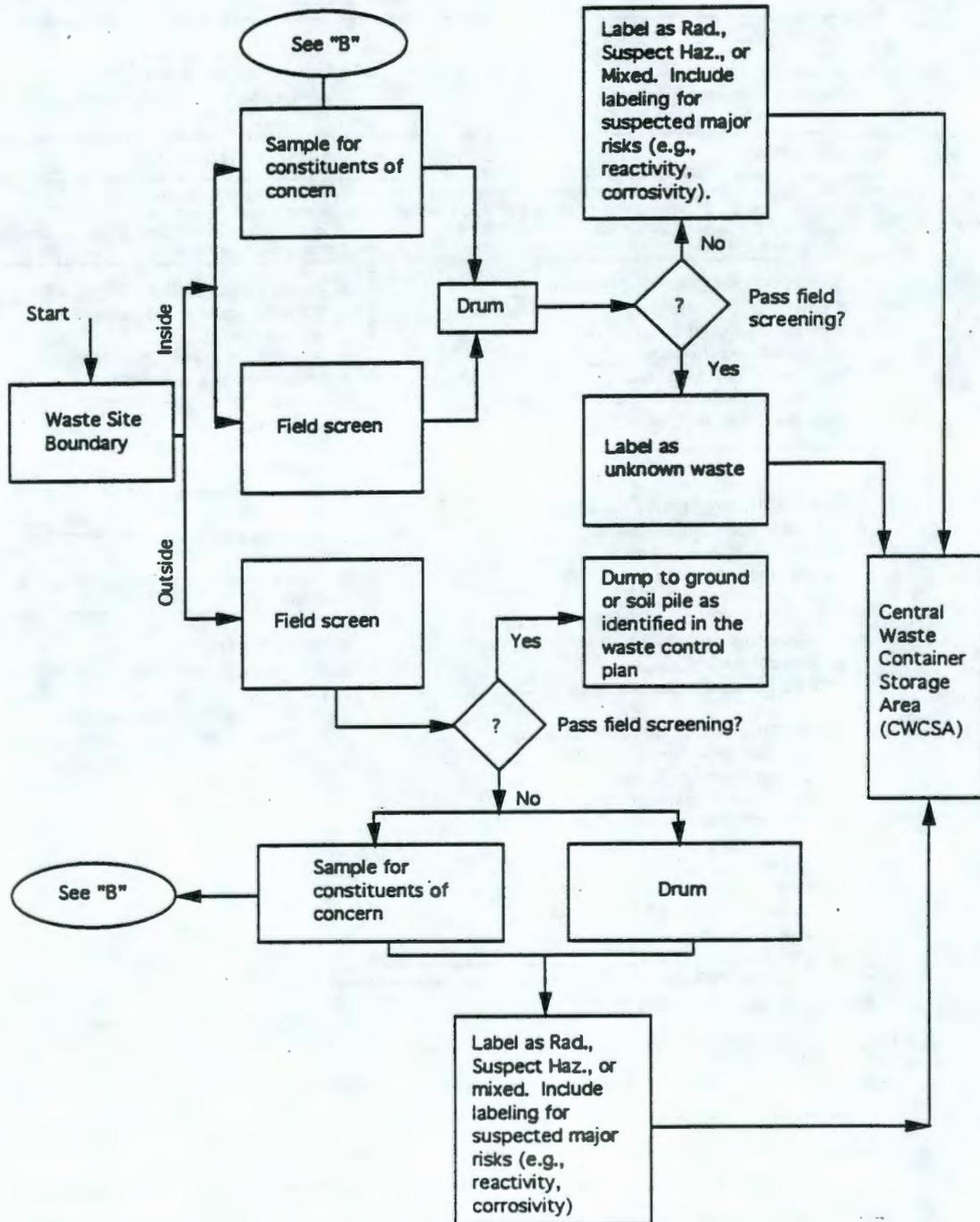


Figure 6. Waste Determination Logic Diagram. (sheet 2 of 3)

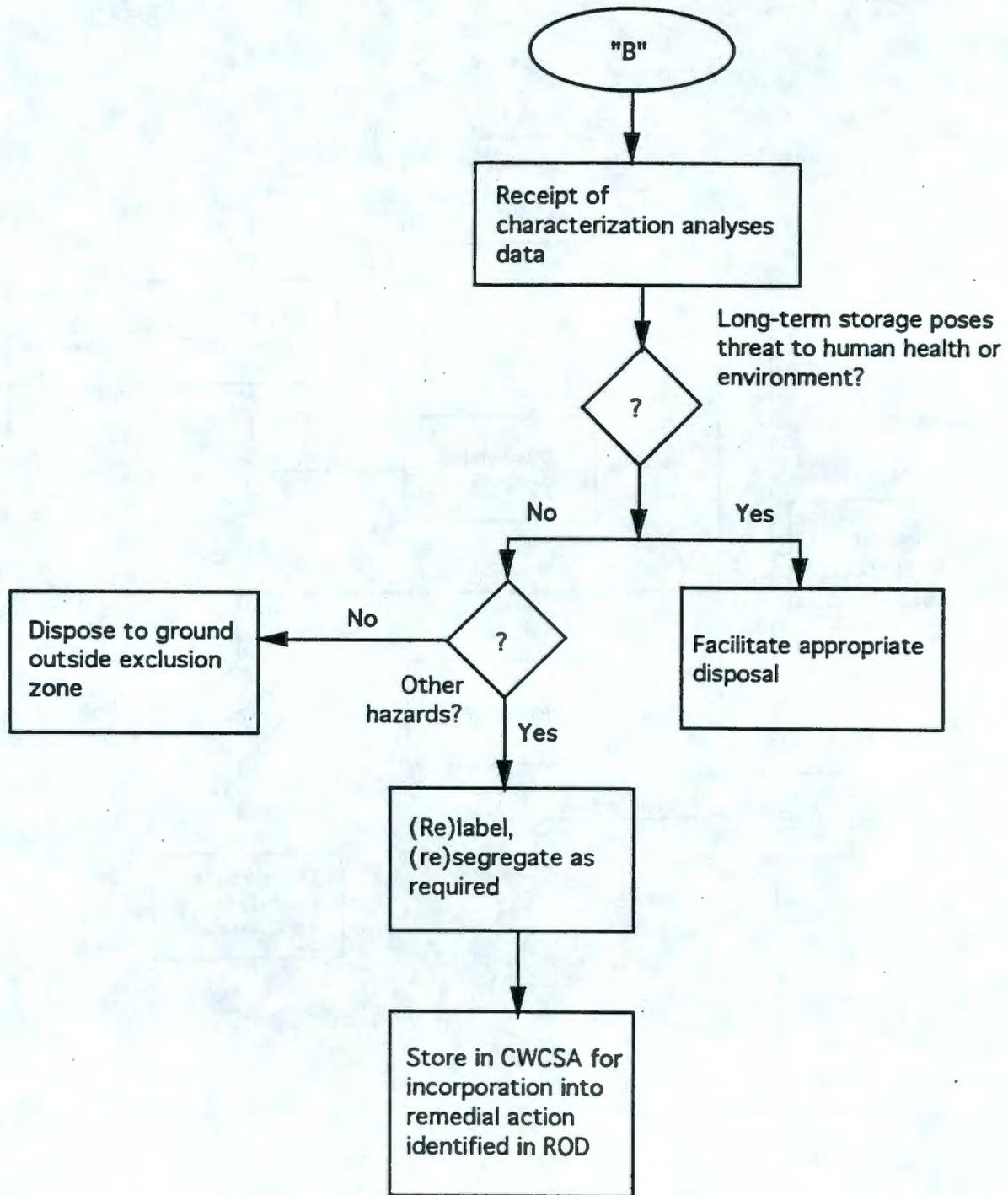
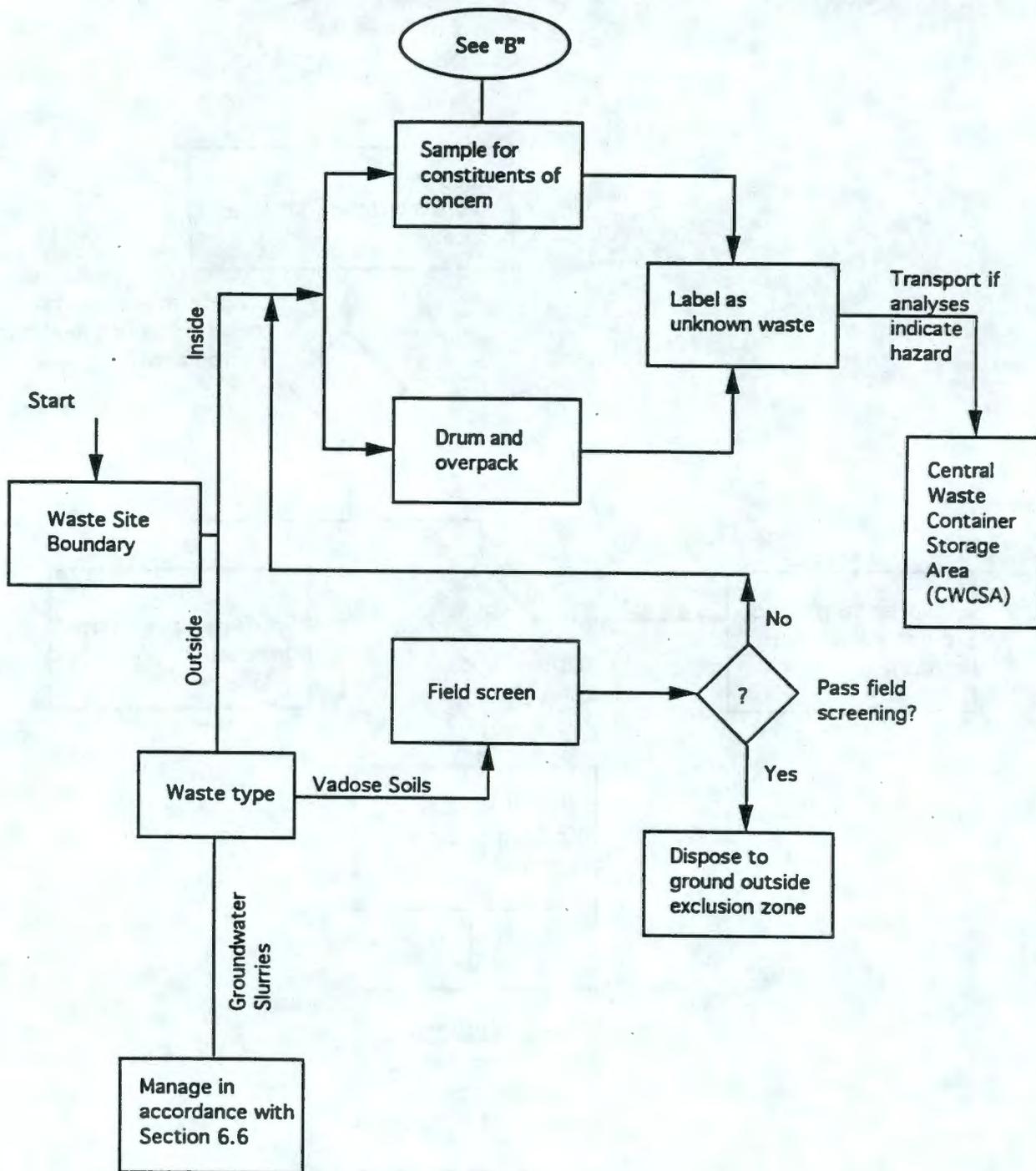


Figure 6. Waste Determination Logic Diagram. (sheet 3 of 3)



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EII 4.4, REV 1\*  
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ENVIRONMENTAL INVESTIGATIONS AND  
SITE CHARACTERIZATION MANUAL

Effective Date February 28, 1994  
Organization 200/300 Area Projects

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CONTROL AND STORAGE OF RADIOACTIVE  
MATERIALS AND EQUIPMENT

Approved by

  
B. J. Hobbs, Manager  
Project Support

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## 1.0 PURPOSE

This environmental investigations instruction (EII) provides the methods to meet the requirements applicable to the control and storage of radioactive material and equipment in radiological and uncontrolled areas and provides for:

1. Receipt, use, storage, and transfer of radioactive materials and equipment.
2. Unrestricted release of materials and equipment from radiological controls.
3. Radioactive material inventories.

## 2.0 SCOPE

This EII applies to all activities requiring storage of radioactive materials and equipment generated during operations managed by the Environmental Division.

## 3.0 DEFINITIONS

Not applicable.

## 4.0 RESPONSIBILITIES

### 4.1 Group Managers With Custody of Radioactive Materials or Equipment

Managers with custody of and/or responsibility for radioactive materials or equipment (including radioactive materials or equipment assigned to personnel under their direction) are responsible for the control and proper use, storage, and accountability of that material and equipment until it is properly transferred to another custodian in accordance with this EII.

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\*This is a total rewrite; therefore, no revision bars are used to indicate changes.

This responsibility includes ensuring that materials and equipment used in radiological areas are surveyed, handled, and marked to preclude loss of control and spread of contamination.

#### **4.2 Occupational Health and Safety**

Environmental Remediation Health Physics (ERHP) managers are responsible for:

1. Providing Health Physics Technician (HPT) support for performing surveys to determine the radiological status of items, materials, and equipment.
2. Ensuring that equipment and material to be released to the public or to a sanitary landfill receives adequate surveillance to support unconditional radiological release.
3. Ensuring that surveys required to document compliance with this EII are performed, documented, and reviewed.
4. Providing approval in writing for each Radioactive Material Area.

### **5.0 REQUIREMENTS**

#### **5.1 General**

1. Equipment, parts, material, and wastes that result from work activities or maintenance and that have been exposed to radioactive contamination shall be controlled as radioactive material until released from radiological controls or disposed of as radioactive waste.
2. Specific requirements for the transport of radioactive material are found in WHC-CM-2-14.

#### **5.2 Yellow Plastic Bags and Sheets**

Throughout this EII, wherever reference is made to use of plastic bags or sheets for radioactivity control, yellow materials shall be used. The use of yellow colored bags and sheets for other purposes is prohibited.

## **6.0 PROCEDURE**

### **6.1 Identification of Radioactive Material**

#### **6.1.1 Labeling radioactive material**

1. Radioactive material outside Contamination, High Contamination, or Airborne Radioactivity Areas shall be labeled in accordance with WHC-CM-1-6, WHC Radiological Control Manual, Article 412, Table 4-1 and Article 412 WHC Addendum.
2. Labels on packaged radioactive material should be visible through the package or affixed to the outside.
3. Refer to WHC-CM-1-6, Article 412.2 for a list of items not subject to labeling requirements.

#### **6.1.2 Requirements for using yellow plastic bags and sheets**

1. Use yellow plastic wrapping material or bags to package radioactive material.
2. Radioactive material with sharp edges or projections should be taped or additionally protected to ensure package integrity.

#### **6.1.3 Packaging radioactive material**

1. Radioactive material outside a Contamination, High Contamination, or Airborne Radioactivity Area shall be packaged in accordance with WHC-CM-1-6, Article 413 and Article 413 WHC Addendum.

### **6.2 Receipt and Possession of Radioactive Materials**

Organizations generating, receiving, or possessing radioactive materials and/or equipment should maintain:

1. A list of designated storage areas and designated custodians.
2. Identification of the radioactive constituents in the process and waste streams, when known.
3. Designated radioactive material transfer routes.
4. A current inventory of radioactive material.

### **6.3 Use of Radioactive Materials and Equipment**

#### **6.3.1 Regulated vehicles and equipment**

1. The use and movement of regulated vehicles shall be limited to areas permitted by the radiological work permit (RWP) or work controlling documents as determined by Health Physics.
2. Contamination throughout the cab, tires, wheels, and all accessible areas shall not exceed the values of Table 2-3 in WHC-CM-1-6.
3. The cargo area shall not be used when dose rates from fixed contamination exceed 0.5 mrem/hr.

#### **6.3.2 Anti-contamination clothing and equipment**

1. Protective clothing designated for radiological control use shall be specifically identified by color, symbol, or appropriate labeling.
2. Protective clothing designated for radiological control use shall not be used for nonradiological work.
3. Personal Protective Equipment and Clothing (Anti-Cs) shall not be stored with personnel street clothing.

### **6.4 Storage of Radioactive Materials**

#### **6.4.1 General requirements for radioactive material storage**

The general, temporary, and outdoor storage requirements for radioactive material outside Contamination, High Contamination, or Airborne Radioactivity Areas will be in accordance with WHC-CM-1-6, Article 414 and Article 414 WHC Addendum.

### **6.5 Records**

Records are managed in accordance with Table 1.

## **7.0 REFERENCES**

WHC-CM-1-6, WHC Radiological Control Manual.

Chapter 2, Part 2, Table 2-3

Chapter 4, Part 1, Articles 411 through 414

WHC-CM-2-14, Hazardous Material Packing and Shipping.

Table 1. Record Requirements

NAME Filing Unit Title or Description	RECORD TYPE*	RETENTION PERIOD	DISPOSAL AUTHORITY	CUT-OFF AND RETIREMENT INSTRUCTIONS
Radiation Survey Reports	R	TBD	TBD	Copies obtained by field staff during operations should be transmitted to the File Custodian for inclusion in the appropriate project file. Record copy controlled by Health Physics organization.
Waste Disposition records	R/NR	Refer to EII 4.2 or 4.3	DRS 2.11.j (force fit) TBD/ nonrecord	EII 4.2 or 4.3 record requirements are followed as appropriate.
Radiation Material Storage Area (RMSA) Inventory; listing(s) of RMSA(s); designated radioactive materials transfer routes; listing(s) of authorized shippers/receivers of radiation materials; annual plan for reducing outside storage inventory	R	Until superseded	GRS 23.1	Information relevant to unique OU/project should be transmitted to the FC for maintenance in the project file(s). General information may be maintained in correspondence or other files as appropriate.

\* QA = Quality Assurance; R = Other Record Material; TBD = To be determined

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June 27, 1994  
RR/Environmental  
Division

ENVIRONMENTAL INVESTIGATIONS AND  
SITE CHARACTERIZATION MANUAL

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TITLE:

Approved by

CHAIN OF CUSTODY/SAMPLE  
ANALYSIS REQUEST

  
W. H. Price, Manager  
Field and Analytical Sampling Support

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## 1.0 PURPOSE

This Environmental Investigations Instruction (EII) establishes methods for documenting and maintaining chain of custody and specifying the necessary sample analysis for environmental samples to ensure compliance with WHC-CM-4-2, QI 13.4.

## 2.0 SCOPE

This EII applies to samples collected during environmental investigations, from sample acquisition to receipt at the analytical laboratory.

## 3.0 DEFINITIONS

See the Glossary/Acronyms section of this manual.

## 4.0 REQUIREMENTS

### 4.1 Sample Identification Number

Samples obtained for chemical and physical properties testing shall receive a unique identification number, such as a HEIS number, in accordance with EII 5.10.

### 4.2 Documentation

1. Chain of custody shall be documented on the Chain of Custody/Sample Analysis Request form, (BD-6000-828, Jetform) or Chain of Custody (A-6000-407, Macro WEF061).
2. Sample authorization and priority requirements for HEIS numbered samples are established by WHC-CM-5-3, Section 1.7.

CHAIN OF CUSTODY/SAMPLE  
ANALYSIS REQUEST

5.0 PROCEDURE

5.1 Sample Custody

- Sample Collector
1. Take custody of sample(s) as soon as samples are collected. Maintain custody until proper transfer of custody.

5.2 Document Chain of Custody

- Sample Collector
1. Initiate Chain of Custody/Sample Analysis Request form (BD-6000-828, Jetform) or Chain of Custody (A-6000-407, Macro WEF061) and complete appropriate blocks.

5.3 Document Transfer of Custody

- Relinquishing Party and Receiving Party
1. Sign and print name and date and record time of transfer on Chain of Custody/Sample Analysis Request form (BD-6000-828, Jetform) or Chain of Custody (A-6000-407, Macro WEF061). The collector is the first person to sign the "Relinquished by" block on the form.
    - a. Original form accompanies samples.
    - b. Provide a copy to the Field Team Leader (FTL) for information.
    - c. For HEIS numbered samples, forward a copy of Chain of Custody/Sample Analysis Request form (BD-6000-828, Jetform) or Chain of Custody (A-6000-407, Macro WEF061), shipping documentation, and radiation documentation to Hanford Analytical Services Management (HASM) (plant mail H4-23 or telefax 372-2106) for sample tracking purposes by the close of business the working day following sample shipment.
  2. Notify HASM (verbal/telecon is acceptable) of samples shipped to OFFSITE laboratories on the day before a weekend or holiday. If required documentation has been sent to HASM via telefax (step 1c above), a second notification (verbal/telecon) is not required but highly recommended.

CHAIN OF CUSTODY/SAMPLE  
ANALYSIS REQUEST

5.4 Receipt at Destination

5.4.1 Receipt at Onsite Laboratory

Onsite  
Laboratory  
Sample  
Custodian

1. Inspect transferred samples to ensure that:
  - a. Seals are intact.
  - b. Labels are affixed and legible.
  - c. Sample analysis is specified for each sample or discrete set of samples.
  - d. The physical condition of samples is acceptable.
  - e. Samples being transferred are those identified on the form.
2. Notify HASM of any problems resulting from the inspection (step 1) in accordance with WHC-CM-5-3 and the Statement of Work (SOW) with the laboratory.
3. Sign, date, and record time of sample custody transfer.
4. Retain the original until project documentation is dispositioned.
5. Implement laboratory custody procedures upon transfer of custody.

5.4.2 Receipt at Offsite Laboratory

Offsite  
Laboratory  
Sample  
Custodian

1. Inspect samples specified in WHC Sample contractual documents.
2. Sign, date and record time of sample custody transfer.
3. Implement laboratory custody procedures upon transfer of custody.

CHAIN OF CUSTODY/SAMPLE  
ANALYSIS REQUEST

## 5.5 Sample Disposal

### 5.5.1 Samples sent to off-site laboratories

- HASM
1. Arrange for disposal of samples per contractual requirements.
  2. Complete "Final Sample Disposition" block at the bottom of Chain of Custody/Sample Analysis Request form (BD-6000-828, Jetform) or Chain of Custody (A-6000-407, Macro WEF061).

### 5.5.2 Sample disposal prior to shipment

If a sample has been collected and subsequently a portion needs to be disposed prior to shipping to the laboratory, the following information must be entered on the Chain of Custody/Sample Analysis Request form (BD-6000-828, Jetform) or Chain of Custody (A-6000-407, Macro WEF061).

- Sampling  
Personnel
1. Note in the "Remarks" block which sample bottles are being removed from the sample set.

NOTE: The samples scheduled for disposal should be segregated while awaiting disposal. Do not retain the samples for an extended period; dispose as soon as practical.

2. Dispose of the samples per the waste control plan or purgewater strategy. Document disposal in the Project Field Logbook.

## 6.0 RECORDS

Record processing and disposition is in accordance with the following table 1. The following documents are to be put on a transmittal prior to submitting to the FC.

## 7.0 DESIGNATED REVIEWING ORGANIZATIONS

Organizations designated to review changes to this document are listed below. The controlled manual point-of-contact (CMPOC) listed for the designated reviewing organization(s) is responsible for coordinating the review and consolidating and submitting comments to the originating organizations.

### Designated Reviewers

Documentation and Records Service  
Geotechnology

### CMPOC

IRM/DRM  
RR/LWD

Comments from other organizations are welcome; however, such courtesy comments are dispositioned at the option of the originating organization.

## 8.0 FORMS

Chain of Custody/Sample Analysis Request form (BD-6000-828, Jetform)  
Chain of Custody (A-6000-407, Macro WEF061)

## 9.0 REFERENCES

WHC-CM-4-2, Quality Assurance Manual.

QI 13.4, "Chain-of-Custody for Samples of Environmental Media and Wastes."

WHC-CM-5-3, Sample Management and Administration.

## 10.0 BIBLIOGRAPHY

SW-846, "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods."

OSWER Directive 9355.0-14, "A Compendium of Superfund Field Operations Methods."

CLP Users Guide

ASTM D4840, "Standard Practice for Sampling Chain of Custody Procedures."

**CHAIN OF CUSTODY/SAMPLE  
ANALYSIS REQUEST**

Table 1. Record Requirements

<b>NAME</b> <small>Filing Unit Title or Description</small>	<b>RECORD TYPE*</b>	<b>RETENTION PERIOD</b>	<b>DISPOSAL AUTHORITY</b>	<b>CUT-OFF AND RETIREMENT INSTRUCTIONS</b>
Chain of Custody/Sample Analysis Request form (BD-6000-828, Jetform) or Chain of Custody (A-6000-407, Macro WEF061)	QA	TPA + 10 years	TBD	For HEIS numbered samples, HASM ensures that a copy of the completed form(s) accompany the sample analytical data package(s) received from the laboratory. Analytical data packages are processed per EII 14.1 for transmittal to IRM permanent storage.

\* QA = Quality Assurance; TBD = To be determined

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ENVIRONMENTAL INVESTIGATIONS AND  
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EII 5.2, REV 5\*  
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November 12, 1993  
RR/Environmental  
Division

TITLE:

SOIL AND SEDIMENT SAMPLING

Approved by

  
M. R. Adams, Manager  
Environmental Restoration Engineering

## 1.0 PURPOSE

This environmental investigations instruction (EII) provides descriptive methods for performing various soil and sediment sampling techniques.

## 2.0 SCOPE

This EII applies to soil and sediment sampling operations that support environmental site characterization at the Hanford Site. The scope of this EII is limited to samples submitted for physical, chemical, and/or radiological analysis.

## 3.0 DEFINITIONS

See the Glossary/Acronyms section of this manual.

## 4.0 REQUIREMENTS

### 4.1 Safety

Sampling activities shall comply with the site-specific safety documents.

### 4.2 Prerequisites

Site-specific sampling requirements will be provided by individual Work Plans, Sampling and Analysis Plans (SAP), and/or Descriptions of Work.

#### 4.2.1 Supplies

Decontamination of field sampling equipment (Appendices A through I) that comes into direct contact with chemical/radiological samples shall be performed in accordance with EII 5.4 and/or EII 5.5 (unless another method specific to the needs of the project is identified in the SAP).

\*This is a total rewrite; therefore, no revision bars are used to indicate changes.

## SOIL AND SEDIMENT SAMPLING

The following supplies shall be available prior to sampling/shipping activities as applicable.

1. Sample containers (extra containers shall be available to accommodate additional sampling, breakage, or loss)
2. Sample seals or evidence tape (if required)
3. Labels
4. Water ice/frozen cold packs (blue ice), or dry ice (if needed)
5. Coolers (for chemical sample preservation, not required for physical samples)
7. Shielded boxes (as required)
8. Absorbent packing material used for shipping (e.g., "absorbent" vermiculite)
9. Other items (as required)
10. Packaging/labeling equipment (e.g., scissors, tape, plastic bags, *bubble wrap*).

#### 4.2.2 Sample containers

1. Sample containers used shall be appropriate for the analytes/physical properties being investigated as specified in the Statement of Work (SOW) with the performing laboratory.
2. Containers with missing preparation codes, damaged seals, or that are otherwise suspect shall not be used and shall be discarded or returned to the decontamination facility.
3. Sample containers used for chemical analysis shall be decontaminated.

NOTE: EII 5.5 is not required for samples taken for physical properties analysis.

4. Containers purchased commercially shall be accompanied by certification of the decontaminated condition. (Not required for physical properties sample containers).
5. When decontamination of containers must be conducted onsite, the activities shall comply with EII 5.5 for chemical analysis samples, or EII 5.4 for physical properties samples.
6. Chemical/Radiological sample containers shall be kept in a secure location until date of use. It is recommended that physical sample containers also be secured until used.

## 5.0 PROCEDURE

### 5.1 Sample Preservation, Identification, and Handling

#### Sampler

1. Preserve on ice or refrigerate soil and sediment samples taken for chemical analysis. Use proper sample containers.
2. Document preservation methods in the sampling field logbook or on the Chain of Custody/Sample Analysis Request (BC-6000-828) or Chain of Custody (A-6000-407, Macro WEF061). Chemical preservation is not recommended for soil and sediment samples.
3. No preservation steps are required for samples taken for physical properties analysis (except for moisture analysis; see Section 5.1, step 4 below) or radiological testing, unless otherwise specified in project-specific documents.
4. As soon as possible after removal from the sampler, seal samples for moisture analysis in a manner that will prevent moisture loss.
5. When samples are taken for volatile organic analysis, always:
  - a. Minimize disturbance to soil/sediment sample.
  - b. Pack the soil/sediment sample container as full as possible to minimize head space in container. See Appendix B, Section 3.0, for further details on volatile organic sampling methods.
6. Fill sample containers in the following order unless otherwise specified:
  - a. Volatile organics (if not using split spoon liner for a sample container).
  - b. Total organic halogens (TOX).
  - c. Total organic carbon (TOC).
  - d. Semivolatile organics.
  - e. Remaining non-organic analytes (e.g., radionuclides, anions).

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## SOIL AND SEDIMENT SAMPLING

Sampler

NOTE: If the SAP does not include all analytes listed above, skip to the next analyte included in the SAP and proceed down the list. If the sampling order is different from the list above, record the sampling order and justification for the order in the sampling field logbook.

7. After a sample is obtained, containerize, label, seal (e.g., evidence tape) if required, and bag the sample container (if the sample will be stored on ice), and then store the sample appropriately (e.g., cooler, shipping container or shielded container).

NOTE: It is recommended that chemical sample(s) initially be preserved using water ice, rather than frozen cold packs (blue ice). Water ice is more effective at lowering sample temperature to the appropriate level after acquisition of the sample, while frozen cold packs are good for maintaining the desired temperature (e.g., during shipping). Both water ice and frozen cold packs are effective at maintaining an appropriate sample temperature.

8. Until they are shipped, secure samples in an area that allows entry of only authorized personnel. If samples are secured as stated above, evidence tape/custody seals are not required on individual samples (however they are recommended) until the samples are shipped (see EII 5.1).

9. Package and transport soil and sediment samples in accordance with EII 5.11. Soil and sediment samples to be transported/shipped are subject to specific packaging, labeling and shipping requirements dependent on content and volume.

10. Assist in nonradiological chemical field decontamination of sampling equipment.

11. *If samples contain water and are subject to breakage due to freezing, they shall not be stored overnight or between shifts in a motor vehicle.*

## 5.2 Chain of Custody/Sample Analysis Request

Sampler

1. As samples are generated, enter information for each sample on a Chain of Custody/Sample Analysis Request (BC-6000-828) or Chain of Custody (A-6000-407, Macro WEF061) in accordance with EII 5.1.

SOIL AND SEDIMENT SAMPLING

- Sampler
2. Prepare the Chain of Custody/Sample Analysis Request (BC-6000-828) or Sample Analysis Request (A-6000-406, Macro WEF060) to accompany the sample(s) to the analytical facility.
  3. If field screening instruments indicate the samples contain hazardous materials in concentrations greater than 5 parts per million (ppm), or if they may pose other hazards, complete the section of the Chain of Custody/Sample Analysis Request form (BC-6000-828) or Sample Analysis Request (A-6000-406, Macro WEF060) titled "Possible Sample Hazards."

### 5.3 Field Sampling Documentation

- Sampler
1. Use the sampling field logbook to document site activities during sampling operations and include the information required in the SAP, as well as the applicable information recommended in EII 1.5, Appendix A, "Field Logbook Entry Considerations."
  2. When drilling based sampling techniques are selected for acquiring samples, prepare a detailed borehole log in accordance with EII 9.1 and update it at least at each sample interval.

### 5.4 Sampling Operations

Individual sampling methods or techniques are described in Appendices A through I of this EII.

- Appendix A, "Surface Sampling Methods."
- Appendix B, "Split-Spoon Sampling."
- Appendix C, "Cable Tool Drilling/Slurry Sampling."
- Appendix D, "Core-Barrel Sampling."
- Appendix E, "Dual-Wall Core-Barrel Sampling Method."
- Appendix F, "Thin-Walled ("Shelby") Tube Sampling."
- Appendix G, "Drive Tube Sampling."
- Appendix H, "Gravity Corer and Ponar Grab Sampling."
- Appendix I, "Test Pit/Trench Sampling."

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## SOIL AND SEDIMENT SAMPLING

## 5.5 Records

Record processing and disposition is in accordance with the following table:

NAME Filing Unit Title or Description	RECORD TYPE*	RETENTION PERIOD	DISPOSAL AUTHORITY	CUT-OFF AND RETIREMENT INSTRUCTIONS
Chain of Custody/ Sample Analysis Request (BC-6000-828), Chain of Custody (A-6000-407), Sample Analysis Request (A-6000-406)	QA	TBD	TBD (force fit)	Transmit to FC upon completion for submittal to IRM permanent storage per approved RIDS. FC places copy in project file.
Field Logbooks, Field Activity Reports, Borehole logs	QA	TBD	TBD (force fit)	Transmit to FC upon completion for submittal to IRM permanent storage per approved RIDS. FC places copy in project file.

\* QA = Quality Assurance; TBD = To be determined

## 6.0 DESIGNATED REVIEWING ORGANIZATIONS

Organizations designated to review changes to this document are listed below. The controlled manual point-of-contact (CMPOC) listed for the designated reviewing organization(s) is responsible for coordinating the review and consolidating and submitting comments to the originating organizations.

Designated ReviewersCMPOC

None

None

## 7.0 FORMS

Chain of Custody/Sample Analysis Request (BC-6000-828, Jetform),

Chain of Custody (A-6000-407, Macro WEF 061)

Sample Analysis Request (A-6000-406, Macro WEF 060)

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7.0 REFERENCES

American Geological Institute, "Glossary of Geology."

ASTM D 1586-84, "Methods for Penetration Test and Split-Barrel Sampling of Soils."

ASTM D 1587-83, "Standard Practice for Thin-Walled Tube Sampling of Soils."

WHC-CM-3-5, Document Control and Records Management, Section 5,  
"Records Storage, Retrieval, and Destruction."

WHC-CM-4-3, Industrial Safety Manual, Safety Standards, Standard CM-8,  
"Excavation, Trenching, and Shoring."

## APPENDIX A

### SURFACE SAMPLING METHODS

#### 1.0 APPLICABILITY

The following devices are used to obtain surface soil/sediment samples. Each method is best suited to particular conditions and should be chosen based on field conditions and projects needs.

#### 2.0 SAMPLING EQUIPMENT

1. Sampling Thief (Figure A-1)
2. Sampling Trier (Figure A-2)
3. Hand Augers
4. Veihmeyer Sampler
5. Scoop/Spade/Shovel
6. Hand Corer
7. Soil/Sediment Punch
8. Other sampling equipment, as required.

#### 3.0 PROCEDURE

The soil/sediments to be sampled must be exposed prior to sample acquisition. If the upper 6 inches of soil/sediment is to be sampled, then the surface vegetation should be removed with a trowel or hand scoop. If the sample is to represent a discrete interval of 6 inches or greater depth, the overlying soil/sediments may be removed with a shovel or hand auger. Samples may then be removed with the most suitable hand method described below.

##### 3.1 Sampling Thief

The sampling thief consists of two slotted, concentric stainless steel tubes with pointed tips; the inner tube may be rotated to close off the sample interior. It should be used to sample dry, granular, or powdery soil/sediments with a particle diameter less than 1/3 the width of the tubes' slots.

1. Close the sampler and insert into the soil/sediment at the desired sampling interval.
2. Rotate the inner tube to open the sampler, and tap to encourage material to flow into the interior.
3. Close the sampler, withdraw it from the soil/sediment, and lay it horizontally with the slots facing upward.
4. Remove the inner tube; transfer the sample to an appropriate container and cap.

### 3.2 Sampling Trier

This method can be used to collect soil/sediment samples at a depth greater than 3 inches. The sampling trier should be used in sticky, solid soil/sediments; particle diameter should be less than 1/2 of the trier diameter.

1. Insert the trier into the waste material at a 0° to 45° angle from horizontal. This orientation minimizes the spillage of material from the sampler. Extraction of samples may require tilting the containers.
2. Rotate the trier once or twice to cut a core of material.
3. Slowly withdraw the trier, making sure that the slot is facing upward.
4. Transfer the sample into a suitable container with the aid of a spatula, and cap container.

### 3.3 Hand Auger

In general, hand-operated augers are useful for sampling all types of soil/sediments except cohesionless materials below the water table and hard or cemented soil/sediment. The ship auger, with a helical flight on a solid stem, is best suited for use in cohesive materials. Spiral augers were developed for use when helical and screw augers do not work well. The closed-spiral auger is used in dry clay and gravelly soil/sediments. The open-spiral auger is most useful in loosely consolidated deposits. Consecutive samples are taken from the same hole; thus cross-contamination may occur.

1. Attach the auger bit to a drill rod extension, and further attach the "T" handle to the drill rod.
2. Begin drilling, periodically removing accumulated soil/sediment. This prevents accidentally brushing loose material back down the borehole when removing the auger for adding drill rods.
3. After reaching the desired depth, slowly and carefully remove auger from boring.
4. Remove auger tip from drill rods and replace with a precleaned, thin-walled tube sampler. Install proper cutting tip.
5. Carefully lower corer down borehole. Gradually force corer into soil/sediment. Care should be taken to avoid scraping the borehole sides. A fence post driver may be used to push the core. If the wall above the corer collapses, then another hole can be dug for the next deeper sampling interval.
6. Remove corer, and unscrew drill rods.

SOIL AND SEDIMENT SAMPLING

7. Remove cutting tip, and remove core from device to precleaned bowl or surface.
8. Discard top of core (approximately 1 inch if possible), which represents any material collected by the corer before penetration of the layer in question.
9. Place the sample in the appropriate containers and cap.

3.4 Veihmeyer Sampler

The veihmeyer sampler is recommended for core sampling of most types of soil/sediment. The tube comes in various standard lengths from 3 to 16 feet and is graduated every 12 inches. The hammer doubles as a drive weight and handle when pulling the sampler from the ground.

1. Assemble the sampler by screwing in the tip and the drive head on the sampling tube and insert the tapered handle (drive guide) of the drive hammer through the drive head.
2. Place the sampler in a perpendicular position on the soil/sediment to be sampled.
3. Drive the sampler into the ground to the desired sampling depth by pounding the drive head with the hammer. Do not drive the tube further than the tip of the hammer's drive guide.
4. Record the length of the tube that penetrated the ground.
5. Remove the drive hammer and fit the keyhole-like opening on the flat side of the hammer onto the drive head. In this position the hammer serves as a handle for the sampler.
6. Rotate the sampler at least 2 revolutions to shear off the sample at the bottom.
7. Lower the sampler handle (hammer) until it just clears the two ear-like protrusions on the drive head, and rotate about 90°.
8. Withdraw the sampler from the ground by pulling the handle (hammer) upwards. When the sampler cannot be withdrawn by hand, as in deep soil/sediment sampling, use the puller jack and grip.
9. Dislodge the hammer from the sampler, turn the sampler tube upside down, tap the head gently against the hammer, and carefully recover the sample from the tube. The sample should slip out easily.

10. Store the sample in a rigid, transparent or translucent (preferably plastic) tube when observation of soil layers is to be made. The use of the tube will keep the sample relatively undisturbed. In other cases, use an appropriately sized sample container to store the sample.
11. Place the sample in the appropriate containers and cap.

### 3.5 Scoop/Spade/Shovel

This is the simplest, most direct method of collecting soil/sediment samples. This method can be used in most soil/sediment types but is limited somewhat to sampling near the surface.

1. Carefully remove the top layer of soil/sediment to the desired sample depth with a precleaned spade.
2. Using a precleaned stainless steel scoop or trowel, remove and discard a thin layer of soil/sediment from the area that comes in contact with the shovel.
3. Transfer the sample into an appropriate sample bottle with a stainless steel spatula, spoon, or equivalent and a cap container.

### 3.6 Hand Corer

Hand corers apply in many situations and materials. Most corers can be adapted to hold liners generally available in brass, polycarbonate plastic, and teflon.

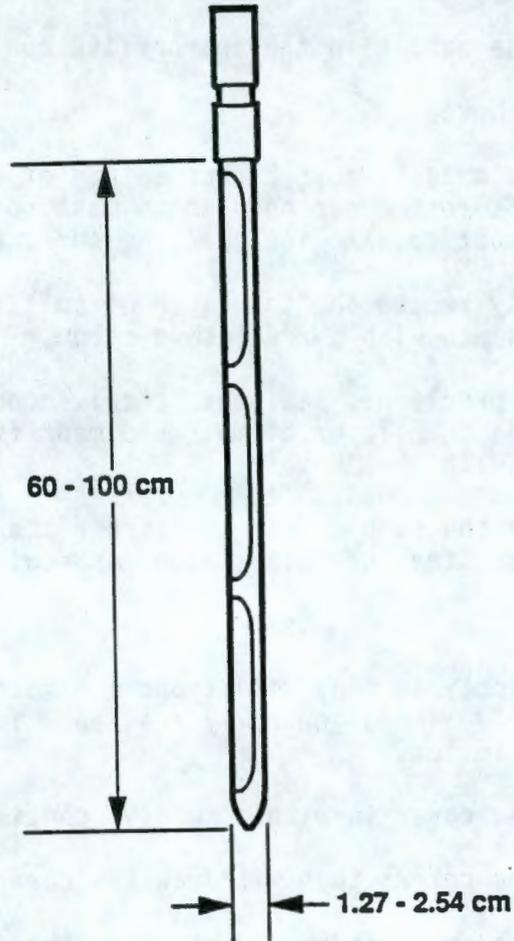
1. Force the corer in with a smooth, continuous motion.
2. Twist the corer; then withdraw the corer in a single smooth motion.
3. Remove the nosepiece, and withdraw the sample into a stainless steel or teflon tray.
4. Transfer the sample into an appropriate sample bottle with a stainless steel lab spoon or equivalent and a cap container.

### 3.7 Soil/Sediment Punch

The soil/sediment punch applies to many situations but may not be useful in rocky or very wet soil/sediment.

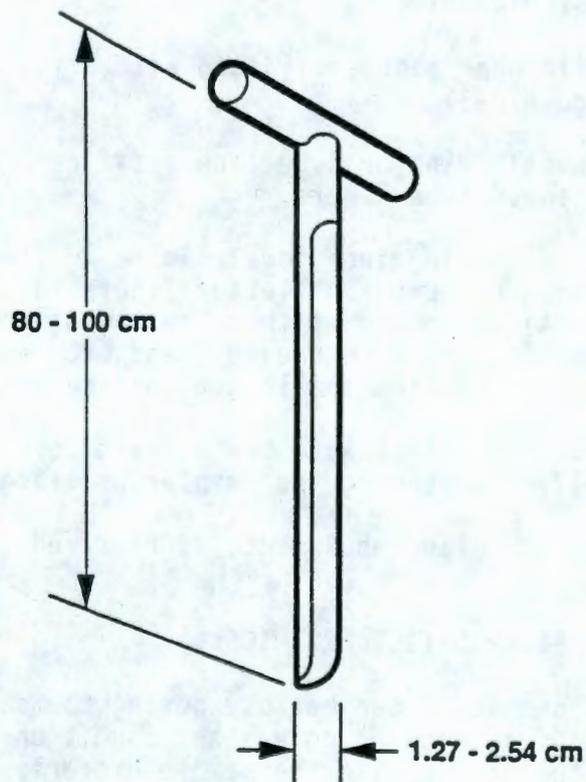
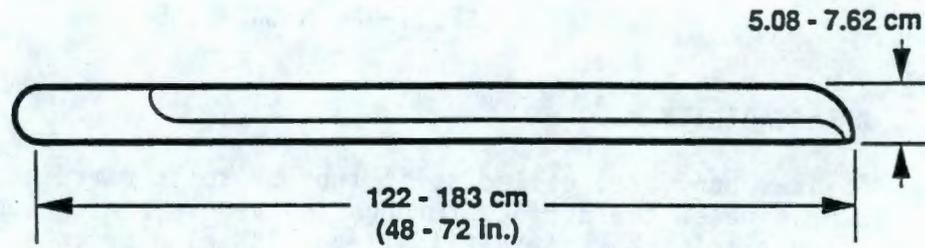
1. Drive the tube into the soil/sediment to the desired depth.
2. Extract the tube and the core.
3. Push soil/sediment out of the tube into a stainless steel mixing bowl.
4. Transfer the sample into an appropriate sample bottle with a stainless steel lab spoon or equivalent and a cap container.

Figure A-1. Sampling Thief.



H9110018.5

Figure A-2. Sampling Trier.



H9110018.6

## APPENDIX B

### SPLIT-SPOON SAMPLING

#### 1.0 APPLICABILITY

Split-spoon (also called split tube or split barrel) is often used to sample below the surface through the vadose zone. Samples are obtained using a split barrel that is lined with ring or tube liners. The technique is generally more useful over the drive tube method when more discrete (i.e., distinct) samples are desired. The object of the sampling is to take a series of relatively "undisturbed" cores with the sampler. This method is preferred over drive tube and Shelby tube sampling when volatile organic compounds are among the analytes of concern.

#### 2.0 SAMPLING EQUIPMENT

1. Split-spoon samplers fitted with drive shoe and basket retainers (Figure B-1).
2. Removable ring or tube liners (if required). Ring liners are sectioned tube liners.

NOTE: If referencing individual liners in field documentation is necessary, number or letter liners sequentially (starting with 1 or A) beginning at the shoe end of the split spoon (the deepest sample material retrieved), and progressing to the head end of the split spoon (the shallowest portion of sample material).

3. Drive the weight assembly affixed to a length of drill rod or cable tool for advancing the sampler or sledge hammer (surface samples).
4. Other sampling equipment, as required.

#### 3.0 SAMPLING FOR VOLATILE ORGANICS

Volatile chemicals can be lost during the sampling process, and the amount of loss depends on weather conditions and the ability of the sampler to containerize the sample properly and quickly. For this reason, when volatile organics are a primary contaminant of concern, the preferred method of sampling is to use a split spoon liner (capped and sealed) to containerize the soil sent for analysis. However, this method is not practical for use in all sampling situations depending on radiological risks at the investigation site. The sampling technique used for volatile organic analysis (VOA) samples on a project should be determined in consultation with Environmental Health and Safety (to determine radiological risks in boreholes), Office of Sample Management

(to determine the lab requirements), Field Team Leader/Sampling Scientist, and the Project Coordinator (to determine data quality objectives).

#### 4.0 PROCEDURE

##### 4.1 Collection of Samples in Bottles

1. Assemble the sampler by aligning both sides of barrel with liner(s) (rings or tube) inserted, and screwing the shoe on the bottom and the heavier head piece on the top.
2. Place the sampler in a perpendicular position on the material to be sampled, either on the surface or down the borehole.
3. Drive the tube using a sledge hammer or drill rig. Do not drive past the bottom of the head piece, because this will result in compression of the sample.
4. Record the length of the tube that penetrated the material being sampled and the number of blows needed (if required) to obtain this depth. If blow counts are recorded, record hammer weight and drop height also.
5. Withdraw the sampler and open by unscrewing the shoe and head piece from the split barrel. Inspect the liners to determine the amount of sample recovered during drilling.
6. Transfer soil/sediment sample to a stainless steel bowl.
7. Containerize soil/sediment sample(s) for volatile organic analysis as soon as possible, while minimizing disturbance to the sample. Collect VOA sample in appropriate containers (allowing minimal head space) and cap tightly. All chemical samples shall be cooled on ice immediately after capping, sealing, labeling and bagging is completed.
8. Soil/sediment sample remaining in mixing bowl shall be stirred and collected in appropriate containers for analyses (following the sampling order outlined in Section 5.1, step 5, of this EII).

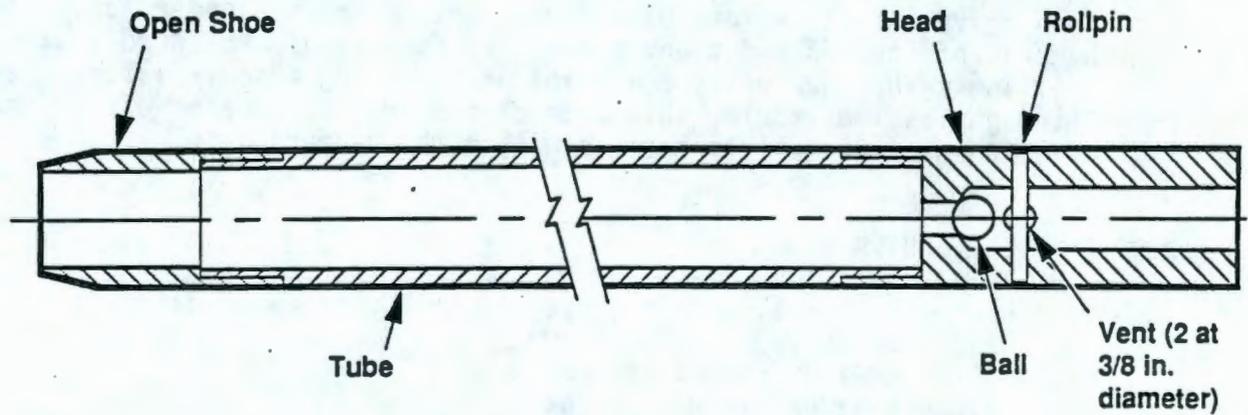
##### 4.2 Collection of Samples in Liners

1. Follow steps 1 through 5 above.
2. Select a liner that is completely full of soil, minimizing head space for VOA sample. Physical parameter analysis liners do not require zero headspace; however, headspace should not be excessive or some parameters may be affected (e.g., bulk density, moisture content).

SOIL AND SEDIMENT SAMPLING

- NOTE: If excessive head space exists in all liner(s), use the collection method described in Section 4.1. Otherwise, go to step 3.
3. Cover each liner end with teflon or aluminum foil (shiny side out), and cap with an appropriate, tight-fitting cap.
  4. Seal the ends of capped liner with tape. Chemical samples shall be cooled on ice immediately after capping, labeling, sealing and bagging.
  5. Soil/sediment sample remaining should be mixed in a stainless steel bowl and collected in appropriate containers for other analyses (following sampling order outlined in Section 5.1, step 5 of this EII).

Figure B-1. Split-Spoon Sampler.



H9110018.3

## APPENDIX C

### CABLE TOOL DRILLING/SLURRY SAMPLING

#### 1.0 APPLICABILITY

When drive barrel and/or split tube sampling are no longer achievable because of cobbles and tightly cemented formations, the hard tool drilling method can provide a means of obtaining a semi-disturbed sample. Although less desirable, this method does provide a means of drilling/sampling all formations within the Hanford Site.

#### 2.0 SAMPLING EQUIPMENT

1. Cable tool drill string (rope, socket, stem, bit, bailer).
2. Drill casing.
3. Columbia River raw water source.
4. Columbia River raw water tank.
5. Other sampling equipment as required.

#### 3.0 PROCEDURE

The step-by-step sequence identified below may vary because of drilling conditions and contamination control requirements. These are minimum general steps; additional steps may be required depending on the scope of work activity.

1. Assemble the decontaminated hard tool drill string.
2. Add Columbia River raw water to borehole and document volumes as directed by the Field Team Leader/Geologist/Sampler.
3. Drill/spud interval to be sampled; document start time, interval drilled, penetration rate, additional volumes of water, and other observations made (as required) in the sampling field logbook.
4. When desired drilling/sampling interval has been achieved, remove drill string from the borehole.
5. Obtain slurry sample from the borehole using a dart bailer.
6. Deposit the slurry sample into an applicable container (bowl/bucket).
7. Containerize the sample in an appropriate container; cap container.
8. Drive the casing, as applicable.

9. Bail the remaining slurry to within 2 feet of the standing slurry, contain/drum, as required.
10. Repeat steps 1 through 9 to drill/sample the next interval.

## APPENDIX D

### CORE-BARREL SAMPLING

#### 1.0 APPLICABILITY

The core-barrel sampling (CBS) method is generally used to collect representative samples from hard formations or other hard media. The objective of this sampling is to take near in-situ samples at the required depth, as necessary, or penetrate a formation/material for access.

#### 2.0 SAMPLING EQUIPMENT

1. Core-barrel with bit, normally fitted with inner barrel assembly, head (normally with check valve and capable of swiveling), lifter case and retainer, and reamer.
2. Inner tube end caps or seals, as required.
3. Drill rod for advancing the core-barrel.
4. Casing, as required.
5. Circulation media diverter, as required.
6. Other sampling equipment, as required.

#### 3.0 PROCEDURE

The CBS method uses a rotary, auger, or core-drilling unit to advance the boring and, if required, recover sample(s). The CBS method uses an outer barrel, bit and reamer, and inner barrel (takes the sample) assembly. A head assembly, attached to the inner barrel, allows the inner barrel to remain stationary while the outer barrel is rotated. Casing and a circulation media diverter are frequently used to control cutting removal. Samples are usually collected continuously.

##### 3.1 Conventional Core-Barrel Sampling

The conventional core-barrel sampling (CCBS) can be used to drill at depths equal to the rating of the drilling unit. The CCBS is available in various diameters and lengths with options for different designs of inner barrels (i.e., split tube, triple tube, lexan liner).

1. Set the starter casing from the surface to the depth, as required.

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2. Set up the diverter, if required by applicable safety plans or if it is prudent to discharge cuttings or exhaust away from the boring.
3. Assemble the CCBS system (consisting of one outer barrel, one complete inner barrel, and a bit and reamer).
4. Attach the quill/drill rod(s) to the CCBS.
5. Advance the CCBS through the circulation diverter, if applicable, and lower the CCBS and drill string to the bottom of the borehole.
6. Secure the circulation diverter around drill string, if applicable.
7. Establish the circulation media in the boring, if applicable.
8. Initiate the drilling/sampling operation by establishing the desired rotation and penetration rates.
9. When the drilling/sampling run is completed, stop penetration and rotation.

**NOTE:** If circulation media is used, flushing may be required to adequately clean the boring.

10. Remove the drill rod(s), if applicable.
11. Secure the CCBS in a footclamp, holding dog, or other appropriate device.
12. Remove the inner barrel by unscrewing the head assembly that is attached to the outer barrel.
13. Containerize the sample and cap. This step may be conducted after step 14, in some instances.
14. Install a subsequent inner barrel assembly and secure in outer barrel.
15. *Repeat steps 7 through 9 above.*

**3.2 Wireline Core-Barrel Sampling**

Wireline core-barrel sampling (WCBS) can be used to drill/sample at depths equal to the rating of the drilling unit and is available in various diameters and lengths with options for different designs of inner barrels (i.e., split tube, triple tube, lexan liner). Unlike CCBS, the WCBS drill string does not have to be pulled from the boring each time a sample is retrieved.

SOIL AND SEDIMENT SAMPLING

1. Assemble the WCBS system (consisting of one outer barrel, one complete inner barrel of the correct length fitted with a wireline head assembly, and a bit and reamer).
2. Follow steps 2 through 9 outlined in Section 3.1 above, substituting WCBS for CCBS.
3. Disconnect the quill rod/adaptor attached to the outer barrel.
4. Initiate the wireline equipment (overshot) through the rods, attach to the head assembly, and pull the inner barrel from the boring. Remove the inner barrel from the head assembly.
5. Containerize the sample in appropriate containers; cap.
6. Attach a decontaminated inner barrel assembly to the head assembly and lower into the borehole until firmly seated in the outer barrel above the bit. Disconnect and remove the wireline equipment (overshot).
7. Repeat steps 7 through 9 of Section 3.1 above.

### 3.3 Masonry Core-Barrel Sampling

The masonry core-barrel sampling (MCBS) is normally used to drill or sample concrete. The MCBS is available in various sizes and lengths, but normally is relatively short (12 to 18 inches in length).

1. Assemble the MCBS system, which usually consists of one outer barrel and head.
2. Follow steps 2 through 11 outlined in Section 3.1 above.
3. Remove the MCBS by unscrewing it from the quill rod/adaptor.
4. Package and/or store the collected sample in accordance with the applicable test plan or documentation. This step may be conducted after step 5, in some instances.
5. Secure the subsequent MCBS on the quill rod/adaptor.

## APPENDIX E

### DUAL-WALL CORE-BARREL SAMPLING METHOD

#### 1.0 APPLICABILITY

The dual-wall core-barrel sampling method is primarily used for obtaining samples of radioactive soil/sediments to prevent releasing contamination to the environment.

#### 2.0 SAMPLING EQUIPMENT

1. Dual-wall core-barrel system with drive head (Figure E-1).
2. Other sampling equipment, as required.

#### 3.0 PROCEDURE

##### 3.1 Phase One

The following procedures are performed in cooperation with the sampler(s) and the driller/operator:

1. Set the starter casing from the surface to the appropriate depth for the sample interval, or until contamination is encountered that would require containment using the dual-wall system.
2. Assemble the dual-wall sampling system (consisting of an outer tube, an inner tube of equal length and one dual-wall drive shoe). Attach a 1-foot threaded "handling section" to the top of both the inner and outer tubing sections.
3. Lower the dual-wall system into the starter casing. If additional sections of inner and outer tubing are needed, use the safety clamps to secure the dual-wall system to the starter casing, remove the "handling sections" of the inner and outer tubing and use them to add sections of tubing until the drive shoe reaches the bottom of the starter casing. Add an additional section of outer and inner tubing that is of equal length to the predetermined sample interval.

NOTE: This additional section should never exceed 15 feet or the cable tool drill rig will not function properly when attempting to drive the dual-wall system).

4. Raise the driving tools with the dual-wall driving head attached, then set into place on the dual-wall system.
5. Line up the holes in the driving head and the dual-wall system, then insert the drive head pin.

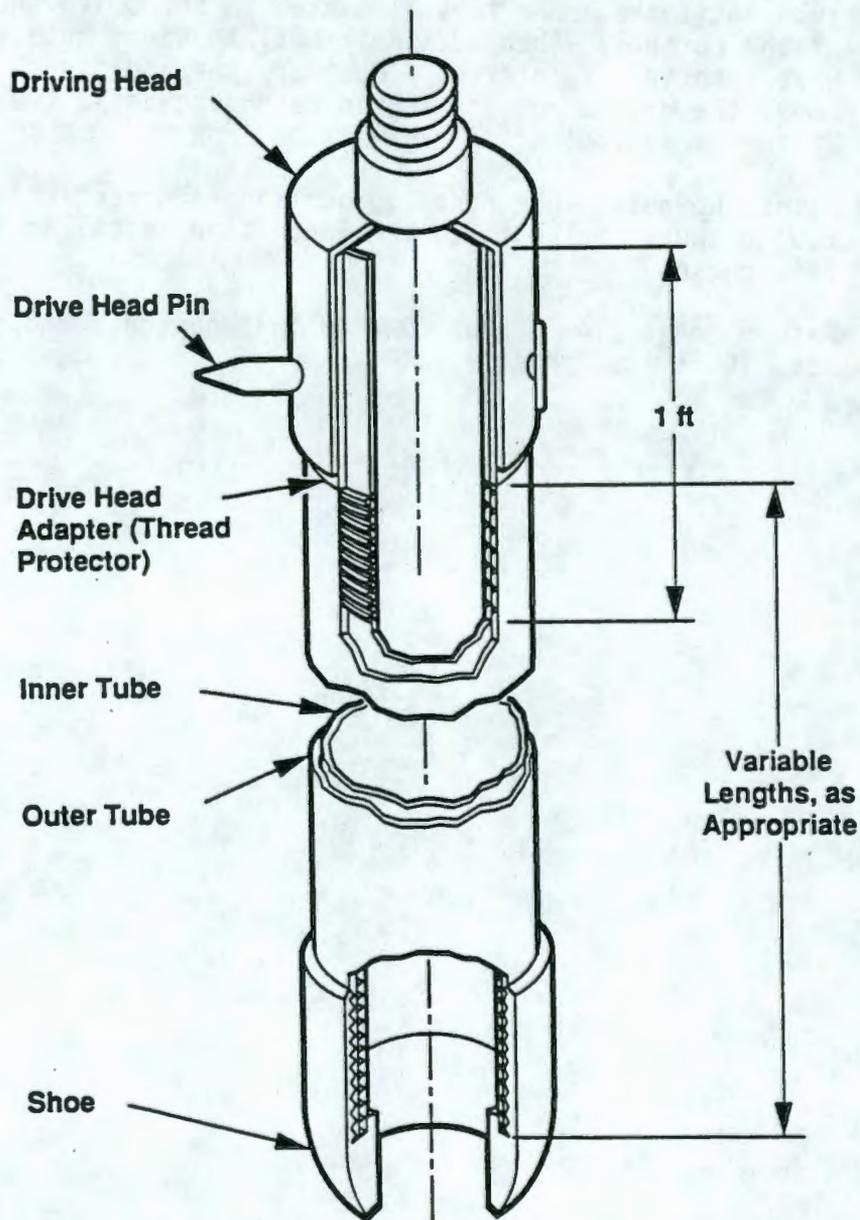
6. Drive the dual-wall to the predetermined depth.
7. After driving, remove the drive head pin, lower the driving tools and set aside.
8. Slip two layers of plastic sleeving (long enough to contain the longest inner tube section) over the outer dual-wall tube.
9. Slowly lift the inner tube out of the dual-wall system. As the inner tube is withdrawn use the safety clamps to secure the inner tubing when sections must be separated. The sleeving placed around the outer tubing shall be used to contain the last section of inner tube (containing the sample) as it is withdrawn from the outer tube.

NOTE: If contamination is detected on sections of the inner tube that do not contain sample material, the sleeving placed over the outer tubing should be used to contain the inner tube as it is removed from the borehole. If the sleeving is used to contain tubing removed prior to the removal of the final (sample) section of inner tubing, it should be replaced before proceeding further.

10. Horsetail the sleeving as soon as the bottom of the inner tube clears the outer tube.
11. Slowly lower the inner tube and lay it on pipe racks or plastic sheeting, then remove choker and handling section.
12. If necessary, complete containment of the inner tube section with sample, by horsetailing the two layers of sleeving at the top of the inner tube.
13. Use a tube cutter to expose the sample in measured locations; the soil/sediment exposed may be transferred to appropriate sample containers for transport to the lab.
14. If radioactive contamination levels exceed the Radiation Work Permit (RWP) limits for onsite sampling, the withdrawn inner tube shall be packaged for transportation to a sample extraction facility designed with a controlled atmosphere to prevent contamination release to the environment.
15. The location of the sample extraction shall be recorded in the sampling field logbook; this information may also be entered on the Chain of Custody/Sample Analysis Request (BC-6000-828) or Chain of Custody (A-6000-407, Macro WEF061) to inform the laboratory where the sample was generated.
16. If deeper sampling is required, proceed to Section 3.2.

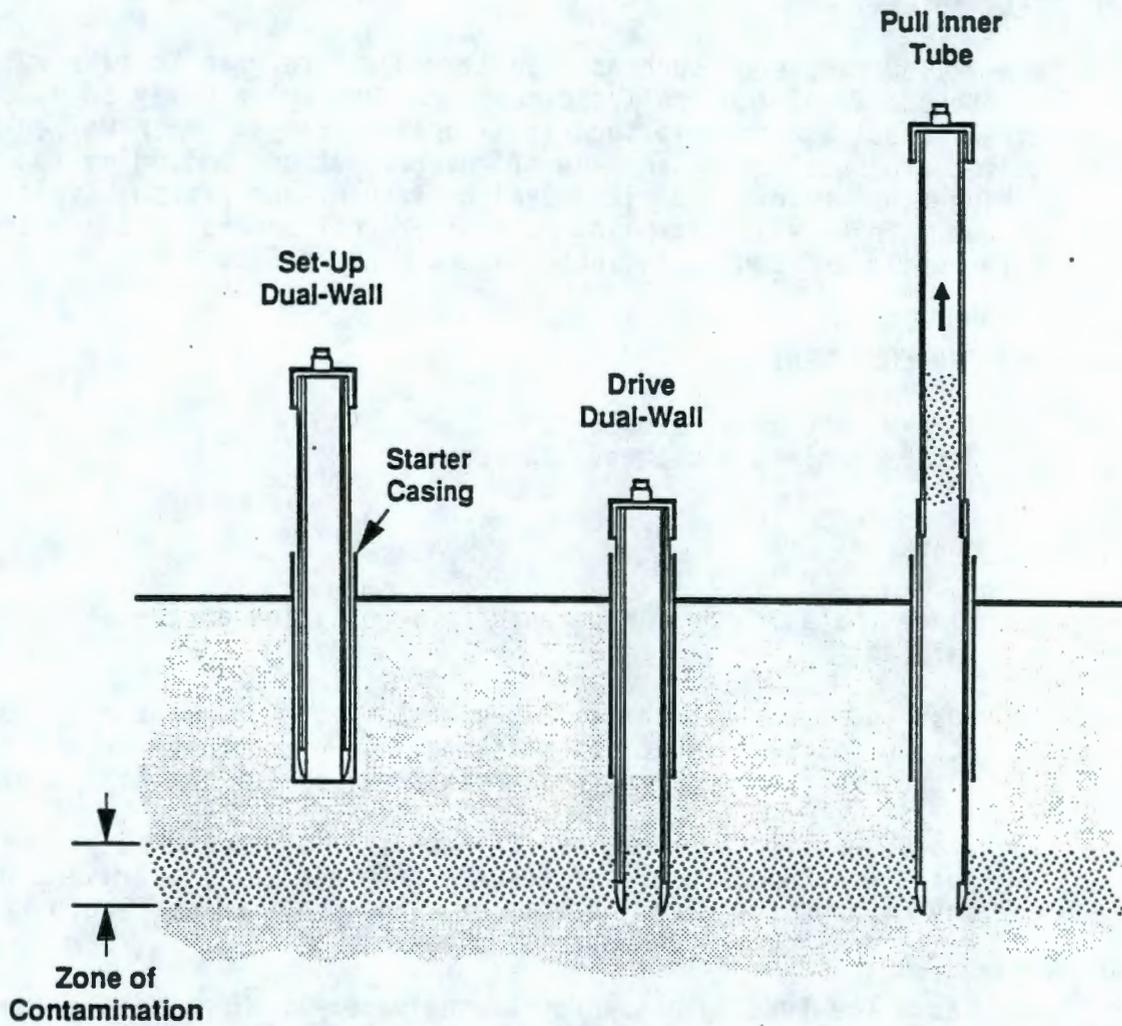


Figure E-1. Dual-Wall Core-Barrel Sampler.



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Figure E-2. Operating Sequence Dual-Wall Core-Barrel Sampler.



H9110018.2

## APPENDIX F

### THIN-WALLED ("SHELBY") TUBE SAMPLING

#### 1.0 APPLICABILITY

Thin-walled samplers, such as a Shelby tube, are used to take relatively undisturbed samples of soil/sediment from borings and may be used to sample cohesive materials such as sludges or clays. Thin-walled tube samples are obtained by any one of several methods including pushing-tube, Pitcher sampler, Denison sampler and piston sampler methods. Thin-walled sampling methods are not generally conducive to use in the soils and sediments found on the Hanford Site.

#### 2.0 SAMPLING EQUIPMENT

1. Thin-walled metal sample tubes.
2. Other sampling equipment, as required.

#### 3.0 PROCEDURE

1. Place the sampler in a perpendicular position on the material to be sampled.
2. Push the tube into the soil/sediment by a continuous and rapid motion, without impact of twisting. In no instance should the tube be pushed farther than the length provided for the soil/sediment.
3. When the soil/sediments are so hard that a pushing motion will not penetrate the sampler sufficiently for recovery, a driving hammer may be used to drive the sampler. In such a case, record the height, weight, and number of blows.
4. Leave the tube in place for approximately 5 minutes to allow the swelling properties of the cohesive material to "fix" the sample within the tube.
5. Rotate the tube at least 1/4 turn to break the face free from the formation, and carefully withdraw.
6. Measure the length of the sample, (exclude slough or cuttings) and record in the sampling field logbook.
7. Remove cuttings or slough and at least 1/2 inch of soil/sediment from each end of the tube.
8. Fill each end of the tube with melted sealing material such as approved wax or expandable packers, teflon, or stainless steel plugs.

9. Close the ends of the tube with tight-fitting metal or plastic caps, and wrap with tape.
10. Dip the ends in hot wax, completely covering the tape to ensure sealing.

## APPENDIX G

### DRIVE TUBE SAMPLING

#### 1.0 APPLICABILITY

The drive tube method is similar in application to the split spoon method. Samples are obtained using a one-piece sampling barrel. The drive tube may be lined on the inside with removable tube or ring liners. The object of the sampling is to take a series of "undisturbed" cores with the sampler.

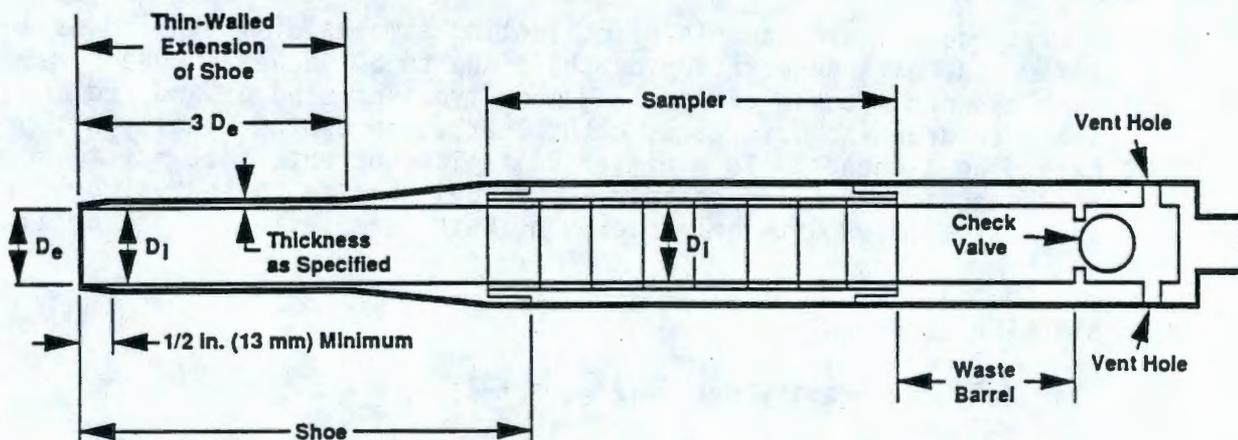
#### 2.0 SAMPLING EQUIPMENT

1. Drive tube (Figure G-1).
2. Removable tube or ring liners (when applicable). Ring liners are sectioned tube liners.
3. Surface or downhole drive weight assembly.
4. Other sampling equipment, as required.

#### 3.0 PROCEDURE

1. Assemble the sampler and insert liner(s) if used.
2. Place the sampler in a perpendicular position on the material to be sampled, either on the surface or down the borehole.
3. Drive the tube using a sledge hammer or drill rig. Do not drive past the bottom of the head piece, because this will result in compression of the sample.
4. Record in the sampling field logbook the length of the tube that penetrated the material being sampled.
5. Withdraw the sampler, and open by unscrewing bit and head piece.
6. Free the sample from the drive tube or liner(s) by holding an open end over the precleaned stainless steel bowl and tapping, if necessary.
7. Place the sample in the appropriate containers, and cap the sample containers.
8. If obtaining undisturbed core samples, place teflon end caps over the ends of the liners, and seal with teflon tape.

Figure G-1. Drive Tube Sampler.



Note 1 - Inside clearance ratio =  $(D_i - D_e) / D_e$   
Note 2 - Dimensional tolerance of  $D_i = \pm 0.003$  in. ( $\pm 0.08$  mm)

H9110018.4

## APPENDIX H

### GRAVITY CORER AND PONAR GRAB SAMPLING

#### 1.0 APPLICABILITY

Gravity corers are capable of collecting samples of most sludges and sediments, with penetration depths of up to 30 inches. Ponar grab samplers are capable of sampling most types of sludges and sediments from silts to granular materials, with penetration depths usually not exceeding 2 inches. To minimize agitation currents that may temporarily resuspend some settled solids, it is advisable to collect sludge or sediment samples after all overlying water samples have been obtained.

#### 2.0 SAMPLING EQUIPMENT

1. Weighted gravity corer (Figure H-1).
2. Ponar grab sampler.
3. Braided nylon or polypropylene line of a sufficient length to permit the corer to contact the sediments to be sampled.
4. Depth sonar as required.
5. Other sampling equipment as required.

#### 3.0 PROCEDURE

##### 3.1 Gravity Corer

A gravity corer is a metal tube with a replacement tapered nosepiece on the bottom and a ball or other type of check valve on the top. Most corers are constructed of brass or steel, and many can accept plastic liners and additional weights.

1. Attach a precleaned corer to the required length of sample line. Solid braided 5 mm (3/16 inch) nylon line is sufficient; 20 mm (3/4 inch) nylon line is easier to grasp during hand hoisting.
2. Secure the free end of the line to a fixed support in order to prevent accidental loss of the corer.
3. Allow the corer to free fall through the liquid.
4. Retrieve the corer with a smooth, continuous lifting motion. Do not bump corer, as this may result in some sample loss.

SOIL AND SEDIMENT SAMPLING

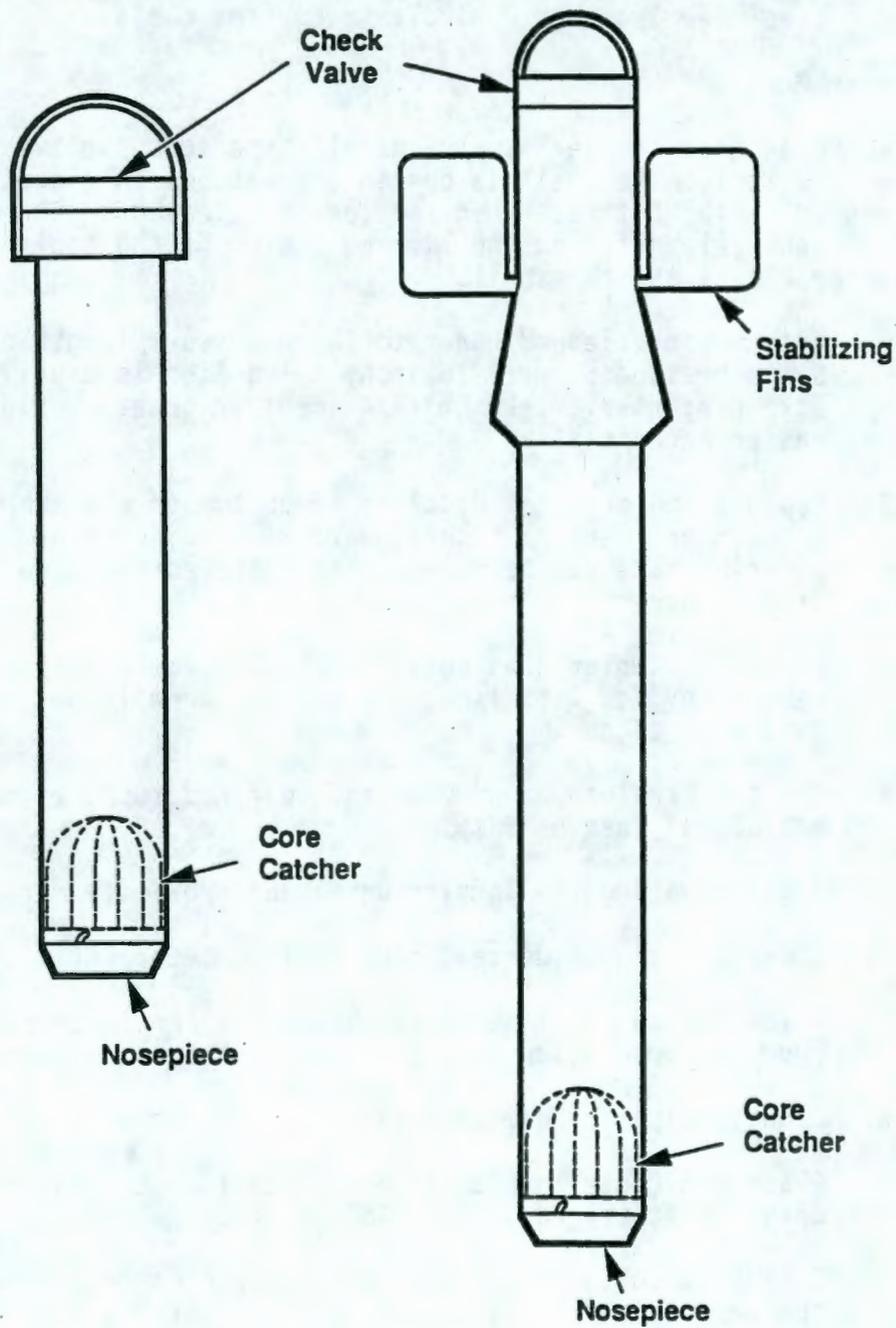
5. Remove the nosepiece from corer, and slide the sample out of the corer into stainless steel or teflon pan or bowl.
6. Transfer the sample into appropriate sample bottle with a stainless steel lab spoon or equivalent; cap the containers.

3.2 Ponar Grab

The Ponar grab sampler is a clamshell-type scoop activated by a counter lever system. The shell is opened and latched in place and slowly lowered to the bottom. When tension is released on the lowering cable, the latch releases, and the lifting action of the cable on the lever system closes the clamshell.

1. Attach a precleaned Ponar to the necessary length of sample line. Solid braided 5 mm (3/16 inch) nylon line is usually of sufficient strength; however, 20 mm (3/4 inch) or greater nylon line allows for easier hand hoisting.
2. Measure and mark the distance to bottom on the sample line. A secondary mark, 1 m shallower, will indicate proximity so that lowering rate can be reduced, thus preventing unnecessary bottom disturbance.
3. Open the sampler jaws until latched. From this point on, support sampler by its lift line, or the sampler will be tripped and the jaws will close.
4. Tie the free end of sample line to fixed support in order to prevent accidental loss of sampler.
5. Begin lowering the sampler until the proximity mark is reached.
6. Slow the rate of descent through last meter until contact is felt.
7. Allow the sample line to slack several centimeters. In strong currents more slack may be necessary to release mechanism.
8. Slowly raise the dredge clear of water surface.
9. Place the Ponar into a stainless steel or teflon tray or bowl, and open. Lift the Ponar clear of the tray.
10. Collect a suitable aliquot with a stainless steel lab spoon or equivalent, and place sample into appropriate sample container; cap the container.

Figure H-1. Gravity Corer.



H9110018.7

APPENDIX I

TEST PIT/TRENCH SAMPLING

1.0 APPLICABILITY

This method of soil/sediment sampling is used to carefully remove sections of soil/sediment during studies where a detailed examination of pollutant migration patterns and detailed soil/sediment structure is required. Test pit excavation is useful to identify waste material buried onsite and to determine the soil/sediment horizons or apparent band of soil/sediment contamination. Test pit excavation should only be used as a biased sampling approach when attempting to locate specific hot spots of contamination or to locate specific buried waste.

2.0 SAMPLING EQUIPMENT

1. Excavation equipment.
2. Appropriate surface sampling device described in Appendix A.
3. Other sampling equipment, as required.

3.0 PROCEDURE

3.1 Test Pit and Trench Construction

Stabilization of the sides of test pits and trenches, when required, shall be in compliance with WHC-CM-4-3, Standard CM-8.

Test pits normally have a cross section that is 4- to 10-feet square; test trenches are usually 3- to 6-feet wide and may be extended for any length required to reveal conditions along a specific line. The following table, which is based on equipment efficiencies, gives a rough guide for design consideration.

<u>Equipment</u>	<u>Typical Widths in Feet</u>
Trenching Machine	2
Backhoe	2-6
Track dozer	10
Track loader	10
Excavator	10
Scraper	20

SOIL AND SEDIMENT SAMPLING

3.2 Sampling

3.2.1 Disturbed samples

Disturbed samples are those that have been collected in a manner in which the in situ physical structure and fabric of the soil/sediment have been disrupted.

Sampling from the walls or floors of the test pit is done by means of scraping or digging with a trowel, rockpick, or shovel. Large disturbed samples can be taken directly from the backhoe bucket during excavation.

3.2.2 Undisturbed samples

"Relatively undisturbed" samples can be obtained from test pits.

1. Along the base or side of the test pit a large block of soil/sediment can be isolated by hand. This sample can be cut using knives, shovels or comparable instruments. Care is taken to keep disturbances to a minimum.
2. A surface sample can be taken by using the soil/sediment punch or by carefully excavating a slice of soil/sediment that is approximately square on the surface.
3. A series of samples composing a vertical profile can be taken by using the punch to remove soil/sediment cores from the side of the trench at predetermined depths.