

ERC CONTROLLED MANUAL TRANSMITTAL

Date Prepared: 11/06/95

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Transmittal Number: BHI-EE-01-V2-TR14

Document Number: BHI-EE-01, VOLUME 2

Title: ENVIRONMENTAL INVESTIGATIONS PROCEDURES

Instructions: (1) Remove and/or insert indicated procedure/section into manual as shown.
(2) Sign this form and return it to Procedures Coordination within 10 working days of receipt.

Procedure/Section Numbers and Titles	Remove		Insert	
	Rev.	Date	Rev.	Date
TABLE OF CONTENTS	4	09/29/95	5	11/06/95
EIP 3.0, "CHAIN OF CUSTODY"	0	02/01/95	1	11/06/95
EIP 4.2, "SAMPLE STORAGE AND SHIPPING FACILITY"	0	02/01/95	1	11/06/95
EIP 7.1, "AQUIFER TESTING"	0	02/01/95	1	11/06/95
FORMS LIST	0	02/01/95	1	11/06/95
NOTE: ATTACHED IS A FULL REPLACEMENT OF THE FULL-PAGE FORMS NOW CONTAINED IN YOUR MANUAL. PLEASE REMOVE EXISTING FORMS AND DISCARD!! INSERT THE NEW FORMS BEHIND THE FORMS LIST, DATED 11/06/95!!	--	--	--	--



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BHI-EE-01, Vol. 2, Environmental Investigations Procedures

Table of Contents

Rev. 5*
Effective Date 11/06/95
Page 1 of 2

Table of Contents

<u>NUMBER</u>	<u>TITLE</u>	<u>REV.</u>	<u>EFFECTIVE DATE</u>
<u>Section 3. General Sampling</u>			
3.0	Chain of Custody	1	11/06/95
3.1	Sample Packaging and Shipping	0	02/01/95
<u>Section 4. Soil, Groundwater, and Biotic Sampling</u>			
4.0	Soil and Sediment Sampling	0	02/01/95
4.1	Groundwater Sampling	0	02/01/95
4.2	Sample Storage and Shipping Facility	1	11/06/95
4.3	Biotic Surveying and Sampling	0	02/01/95
<u>Section 5. Sampling Techniques</u>			
5.0	Cone Penetrometer	0	02/01/95
5.1	Soil-Gas Sampling	0	02/01/95
5.2	Test Pit Excavation in Contaminated Areas	0	02/01/95
<u>Section 6. Drilling</u>			
6.0	Documentation of Well Drilling and Completion Operations	0	02/01/95
6.1	Drilling and Sampling in Radiological Contaminated Areas	0	02/01/95
	REVISION ORDER	A	06/29/95

*Changes are indicated by revision bars shown in the margins.

**BHI-EE-01, Vol. 2, Environmental
Investigations Procedures**

Table of Contents

Table of Contents

Rev. 5*
Effective Date 11/06/95
Page 2 of 2

<u>NUMBER</u>	<u>TITLE</u>	<u>REV.</u>	<u>EFFECTIVE DATE</u>
6.2	Field Cleaning and /or Decontamination of Drilling Equipment	0	02/01/95
6.3	Well Development Procedure	0	02/01/95
6.4	Control and Storage of Radioactive Materials and Equipment	0	02/01/95
 <u>Section 7. Geologic and Hydrologic Data Collection</u>			
7.0	Geologic Logging	0	02/01/95
	PROCEDURE CHANGE AUTHORIZATION 001	0	05/31/95
7.1	Aquifer Testing	1	11/06/95
7.2	Geophysical Survey Work	0	02/01/95
7.3	User Calibration of Groundwater Measuring and Testing Equipment	0	02/01/95
	<u>Glossary/ Acronyms</u>	0	02/01/95
	<u>Cross Reference</u>	0	02/01/95
	<u>Forms</u>	1	02/01/95

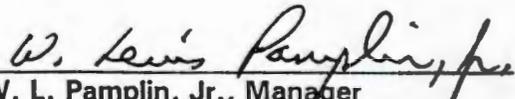
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**BHI-EE-01, Vol. 2, Environmental
Investigations Procedures**

Procedure No.	EIP 3.0
Rev.	1*
Effective Date	11/06/95
Page	1 of 6

Chain of Custody

Approved By:


W. L. Pamplin, Jr., Manager
Environmental Technologies

1.0 PURPOSE AND SCOPE

This Environmental Investigations Procedure (EIP) establishes methods for documenting and maintaining chain of custody and specifying the necessary sample analysis for environmental samples. This EIP applies to employees collecting and transferring samples during environmental investigations; it covers activities from sample acquisition to receipt at the analytical laboratory.

2.0 REQUIREMENT

Each sample obtained for testing of chemical and/or physical properties shall receive a Hanford Environmental Information System (HEIS) identification number in accordance with EIP 2.0, "Sample Event Coordination." This procedure is to be used only by trained and qualified sampling personnel.

3.0 EQUIPMENT

None.

4.0 PROCEDURE**4.1 Sample Custody**

- | | |
|-------------------------|---|
| Sample Collector | 1. Take custody of sample(s) <u>as soon as samples are collected</u> . Maintain custody until the proper transfer of custody. |
|-------------------------|---|

* Changes are marked by revision bars in the margins.

4.2 Document Chain of Custody

- Sample Collector** 1. Initiate Form BHI-EE-011, "Chain of Custody/Sample Analysis Request," and complete the appropriate blocks.

4.3 Document Transfer of Custody

- Relinquishing Party** 1. Present the samples and chain-of-custody documentation to the sample recipient for transfer of custody.

- Receiving Party** 2. Examine the sample containers and the accompanying chain-of-custody documentation. Compare the sample containers and the label information with the chain-of-custody documentation, including the following:

- Container type and size
 - Sample number
 - Sample collector
 - Date and time collected
 - Analytes of interest
 - Selected laboratory
 - Preservation method.
- a. IF discrepancies exist between the samples and the chain-of-custody documentation, refuse to accept custody of the samples until the discrepancies can be resolved.
- b. IF no discrepancies exist, proceed to Step 4, below.

NOTE: The sample containers and accompanying paperwork should be examined to a degree that provides the sample recipient with a reasonable assurance that there are no errors on the sample container labels and chain-

**BHI-EE-01, Vol. 2, Environmental
Investigations Procedures**

Procedure No. EIP 3.0
Rev. 1*
Effective Date 11/06/95
Page 3 of 6

Chain of Custody

of-custody documentation. However, a transfer of custody that takes place in the field should be performed in a manner that will not compromise the integrity of the samples. And, at the recipient's discretion, it may be acceptable to not examine every container if there is the potential that such examination will compromise the samples to be transferred.

**Relinquishing
Party**

- 3. As necessary, resolve discrepancies by making appropriate corrections to either the sample labels or the chain of custody using information recorded in the field logbook, on sample reports, or other available information.

**Relinquishing
Party and
Receiving Party**

- 4. After discrepancies (if any) are resolved, the relinquishing party signs the chain-of-custody form to relinquish the samples, and the receiving party signs to accept the samples. The following should be included in the signature blocks: name (printed), signature, company name (or initials of company name), and the date and time of the custody transfer. The sample collector is the first person to sign the "Relinquished by" block on the form.

The form and copies of it are distributed as follows.

- a. The original form accompanies samples.
- b. A copy of the form should be provided to the field coordinator for information.
- c. A copy of the chain-of-custody form, shipping documentation, and radiation

documentation should be provided to Sample Management for sample tracking purposes by the close of business the working day following sample shipment, if the recipient is the analytical laboratory.

4.4 Receipt at Destination

4.4.1 Receipt at Onsite Laboratory

**Onsite Laboratory
Sample Custodian**

1. Inspect transferred samples to ensure the following:
 - 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 the samples is acceptable
 - e. The samples being transferred are those identified on the form.
2. Notify Sample Management of any problems resulting from the inspection (Step 1) in accordance with the Statement of Work (SOW) with the laboratory.
3. Sign, date, and record the time of sample custody transfer.
4. Retain the original until project documentation is dispositioned.
5. Implement laboratory custody procedures upon the transfer of custody.

**BHI-EE-01, Vol. 2, Environmental
Investigations Procedures**

Procedure No.	EIP 3.0
Rev.	1*
Effective Date	11/06/95
Page	5 of 6

Chain of Custody**4.4.2 Receipt at Offsite Laboratory**

- | | | |
|--|----|---|
| Offsite Laboratory
Sample Custodian | 1. | Inspect samples specified in contractual documents. |
| | 2. | Sign, date, and record the time of sample custody transfer. |
| | 3. | Implement laboratory custody procedures upon the transfer of custody. |

4.5 Sample Disposal**4.5.1 Samples Sent to Offsite Laboratories**

- | | | |
|--------------------------|----|---|
| Sample Management | 1. | Arrange for the disposal of samples per contractual requirements. |
| | 2. | Complete the "Final Sample Disposition" block at the bottom of the "Chain of Custody/Sample Analysis Request" form. |

4.5.2 Sample Disposal Prior to Shipment

If a sample has been collected and, subsequently, a portion needs to be disposed of before the sample is shipped to the laboratory, the following information must be entered on the "Chain of Custody/Sample Analysis Request" form.

- | | | |
|---------------------------|----|--|
| Sampling Personnel | 1. | In the "Remarks" block of the form, note 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. | Document disposal in the Project Field Logbook. |
|--|----|---|

**BHI-EE-01, Vol. 2, Environmental
Investigations Procedures**

Procedure No. EIP 3.0

Rev. 1*

Effective Date 11/06/95

Chain of Custody

Page 6 of 6

4.6 Records Closeout

- Sampling Personnel** 1. Submit documentation of chain of custody to Sample Management.

5.0 REFERENCES

BHI, 1994, BHI-EE-01, Vol. 1, *Environmental Investigations Procedures*, EIP 2.0, "Sample Event Coordination," Bechtel Hanford, Inc., Richland, Washington, September 1994.

6.0 FORMS (See the "Forms" section of this manual.)

BHI-EE-011, "Chain of Custody/Sample Analysis Request"

9613307-0110

BHI-EE-01, Vol. 2, Environmental Investigations Procedures

Procedure No. EIP 4.2

Rev. 1*

Effective Date 11/06/95

Sample Storage and Shipping Facility

Page 1 of 9

Approved By:

W. Lewis Pamplin, Jr.
W. L. Pamplin, Jr., Manager
Environmental Technologies

1.0 PURPOSE AND SCOPE

This procedure establishes the methods for maintaining custody of environmental samples before and during shipment to the analytical laboratory, including methods for maintaining sample integrity during temporary storage at the 4701-C Sample Storage and Shipping Facility.

2.0 REQUIREMENTS

1. A facility custodian designated by the Environmental Restoration Contractor (ERC) cognizant manager shall maintain the 4701-C Sample Storage and Shipping Facility. An alternate person designated by the cognizant manager or Sampling Coordinator may maintain the storage facility in the absence of the facility custodian.
2. Environmental samples shall be stored in a manner that maintains sample chain of custody in accordance with BHI-EE-01, Vol. 2, EIP 3.0, "Chain of Custody."
3. The refrigerators used to store environmental samples will remain locked, except when accessed by the 4701-C custodian or designee. Only the 4701-C custodian or designee may access the refrigerators used to store environmental samples.
4. Temperatures in refrigerators used to store environmental samples shall be monitored twice per day during the normal work week by the facility custodian or designee, and records of the refrigerator temperatures shall be maintained.
5. When required, the refrigerators used for the purpose of storing environmental samples shall be posted in accordance with the requirements of HSRCM-1, Chapter 2, "Radiological Standards."

* Changes are marked by revision bars in the margins.

6. A record shall be maintained of all environmental samples brought into the 4701-C facility for storage and shipping purposes.
7. A representative of the ERC Sample Management group and the ERC cognizant manager or Sampling Coordinator shall be notified immediately of any conditions or events that may affect the integrity of environmental samples stored at or shipped from the 4701-C facility.
8. Samples shall be shipped to the analytical laboratory in a manner that ensures that the holding time requirements are met. Under normal circumstances, samples will be shipped to the analytical laboratory the day after they are received by the 4701-C facility.
9. Empty sample containers stored at the 4701-C facility prior to their use shall be stored in a manner that ensures that their integrity is maintained. Sample containers that appear to have been compromised or are suspected of having been compromised shall be discarded.
10. The refrigerators used to store environmental samples shall maintain a temperature of $4\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$

3.0 EQUIPMENT

The following equipment is needed for this procedure:

1. A mercury thermometer (calibrated to NIST standards)
2. Lockable refrigerators.

4.0 PROCEDURE

4.1 Prerequisites for Transferring Samples from Samplers to the 4701-C Custodian

- | | |
|----------------|--|
| Sampler | 1. Transport samples to the 4701-C Sample Storage and Shipping Facility in a manner that conforms to project requirements and the sample authorization form (SAF) for which the samples were collected, and in accordance with BHI-EE-01, Vol. 2, EIP 3.0. |
|----------------|--|

**BHI-EE-01, Vol. 2, Environmental
Investigations Procedures**

Procedure No.

EIP 4.2

Rev.

1*

Effective Date

11/06/95

Sample Storage and Shipping Facility

Page

3 of 9

2. Complete chain-of-custody documentation and properly label and custody seal the sample containers.

4.2 Transferring Samples**Sampler**

1. Present samples and the accompanying documentation to the facility custodian for transfer of custody.

**4701-C
Custodian**

2. Examine each sample container and the accompanying chain-of-custody documentation. Compare sample containers' and labels' information with the accompanying chain-of-custody documentation, including:

- Container type and size
- Sample number
- Sample collector
- Date and time collected
- Analytes of interest
- Selected laboratory
- Preservation method.

- a. **IF** discrepancies exist between the samples and the chain of custody, refuse to accept custody of the samples. The samples and the corresponding paperwork remains in the custody of the sampler until these discrepancies are resolved.
- b. **IF** no discrepancies exist, proceed to step 4, below.

Sampler

3. As necessary, resolve discrepancies by making any appropriate corrections to either the sample labels or the chain-of-custody documentation using information recorded in the field logbook or on field sampling reports, or other available information.

**BHI-EE-01, Vol. 2, Environmental
Investigations Procedures**

Procedure No. EIP 4.2

Rev. 1*

Effective Date 11/06/95

Sample Storage and Shipping Facility

Page 4 of 9

**Sampler and
4701-C
Custodian**

4. After discrepancies are resolved (if any), the sampler signs the chain-of-custody documentation to relinquish the samples, and the facility custodian signs to accept the samples. The following should be included in the signature blocks:

- Name (printed)
- Signature
- Company name (or initials of company name)
- Date and time of the custody transfer.

**4701-C
Custodian**

5. Immediately upon accepting custody, place the samples in a lockable refrigerator for storage until the samples are shipped to the laboratory.
6. Record sample tracking information on a sample log-in form. Include the following:
- a. Sample numbers
 - b. The date and time the samples were brought to the facility
 - c. The name of the person who brought the samples to the facility
 - d. Which refrigerator the samples are stored in, or how the samples will be stored at 4701-C if not in a refrigerator.
7. Also record the information from 6(d), above, on the chain-of-custody documentation in the "Comments" or "Special Instructions" section.
8. Place the chain-of-custody documentation (and any other paperwork that accompanies the samples) in the refrigerator with its respective samples.

**BHI-EE-01, Vol. 2, Environmental
Investigations Procedures**

Procedure No.

EIP 4.2

Rev.

1*

Effective Date

11/06/95

Sample Storage and Shipping Facility

Page

5 of 9

4.3 Sample Storage**4.3.1 Monitoring Refrigerator Temperature****4701-C
Custodian**

1. Routinely monitor the temperature of the refrigerators used to store environmental samples as follows.
 - a. Use the two calibrated mercury thermometers placed in separate glass bottles containing ethylene glycol in each refrigerator.
 - b. Take temperature readings twice a day during the normal work week (Monday through Friday)—once in the morning and once in the afternoon.
 - c. For each temperature reading, record the following on a 4701-C Temperature Log Sheet:
 - Temperature
 - Date and time readings are taken
 - Thermometer serial numbers
 - Custodian (or designee) initials.

Temperature Log Sheets are to be submitted to Document Control monthly.

2. If the temperature is found to be outside the acceptable range, which is between 2 °C and 6 °C, the facility custodian shall immediately begin to monitor the refrigerator temperature on a frequent basis. The custodian will attempt to determine if the refrigerator temperature is moving toward the acceptable range, or if it is out of range because of an equipment malfunction. If it appears that the refrigerator is not cooling properly, the samples in that refrigerator will be moved to a refrigerator that is operating properly.

Out of range occurrences will be recorded on the 4701-C Temperature Logsheet.

- a. Record the out-of-range temperature condition in the "Comments" or "Special Conditions" section of the chain-of-custody documentation of any affected samples.
- b. IF the temperature in all refrigerators is out of range, store the samples on ice in custody sealed ice chests until the refrigerators can be repaired.
- c. Notify a representative of the ERC Sample Management group and the cognizant manager or Sampling Coordinator to request direction regarding the disposition of the samples.
- d. If necessary, these occurrences will be documented in accordance with BHI-EE-01, Vol. 1, *Environmental Investigations Procedures*, EIP 2.7, "Sample Disposition Record."

**Sample Management
Representative,
Cognizant Manager, or
Sampling Coordinator**

4.3.2 Response to Other Conditions That May Affect Samples

**4701-C
Custodian**

- 3. Take appropriate action to minimize the impact of any other condition that may affect the integrity of environmental samples stored at 4701-C.
 - a. Record the condition on the chain-of-custody documentation in the "Comments" or "Special Instructions" section.
- 4. Contact a representative of the ERC Sample Management group and the cognizant manager or Sampling Coordinator to determine the final disposition of the samples, and to determine if a ROD should be prepared.

**BHI-EE-01, Vol. 2, Environmental
Investigations Procedures**

Procedure No.

EIP 4.2

Rev.

1*

Effective Date

11/06/95

Sample Storage and Shipping Facility

Page

7 of 9

- Sample** 5. If necessary, document the condition in accordance with BHI-EE-01, Vol. 1, EIP 2.7.
- Management Representative,
BHI Sampling Group Manager,
or Sampling Coordinator**

4.4 Sample Shipping

- 4701-C Custodian** 1. On the day of shipment, identify samples (1) that were collected the previous day and (2) for which a total activity analytical report or release-to-ship documentation will be received that day.
- a. If samples stored lack total activity reports or release-to-ship documentation, contact the individual(s) responsible for providing this information. Release documentation must be obtained before shipping samples (in accordance with BHI-EE-01, Vol. 2, *Environmental Investigations Procedures*, EIP 3.1, "Sample Packaging and Shipping").

NOTE

Sample hold times **MUST NOT BE EXCEEDED.**

2. Prepare the samples for shipment in accordance with BHI-EE-01, Vol. 2, EIP 3.1.
3. As each sample is removed from the refrigerator for shipment, record the date and time of removal on the chain-of-custody documentation. On the sample log-in forms for those samples, record the date of the shipment.
4. After samples are packaged for shipment, shipping documentation has been prepared, and necessary

surveys or inspections have been performed, load samples in the transport vehicle.

5. IF the analytical laboratory is located in the Tri-City area, transport the samples directly to the laboratory; if laboratory is out of town, proceed to step 6, below.
 - a. Remain at laboratory while the laboratory representative compares sample bottles and labels with the chain-of-custody documentation.
 - b. Relinquish custody to the laboratory representative.
 - c. Retain a copy of the chain-of-custody documentation.

6. IF the analytical laboratory is located out of town, take the samples to the Hanford transportation facility for overnight delivery to the laboratory.
 - a. Sign the chain-of-custody documentation to relinquish the samples.
 - b. Record the overnight carrier company name in the corresponding acceptance signature box.
 - c. Present the sample package to Hanford transportation personnel.
 - d. Obtain a copy of the signed chain-of-custody documentation and shipping documentation before leaving the transportation facility.

7. After completing a sample shipment, and within 24 hours of that shipment, send a facsimile of the chain-of-custody and shipping papers to the designated representative in the ERC Sample

**BHI-EE-01, Vol. 2, Environmental
Investigations Procedures**

Procedure No.	EIP 4.2
Rev.	1*
Effective Date	11/06/95
Page	9 of 9

Sample Storage and Shipping Facility

Management group.

8. For any groundwater samples shipped, and within 24 hours of that shipment, send a copy of the Groundwater Sample Reports and chain-of-custody forms to a designated representative of the ERC Hanford Environmental Information System (HEIS) group.

5.0 REFERENCES

BHI, 1995, BHI-EE-01, Vol. 1, *Environmental Investigation Procedures*, EIP 2.7, "Sample and Disposition Record," Bechtel Hanford, Inc., Richland, Washington.

BHI, 1995, BHI-EE-01, Vol. 2, *Environmental Investigation Procedures*, EIP 3.0, "Chain of Custody/Sample Analysis Request," Bechtel Hanford, Inc., Richland, Washington.

BHI, 1995, BHI-EE-01, Vol. 2, *Environmental Investigation Procedures*, EIP 3.1, "Sample Packaging and Shipping," Bechtel Hanford, Inc., Richland, Washington.

HSRCM-1, Rev. 2, 1995, *Hanford Site Radiological Control Manual*, Chapter 2, "Radiological Standards," Richland, Washington.

6.0 FORMS (See the "Forms" section of this manual.)

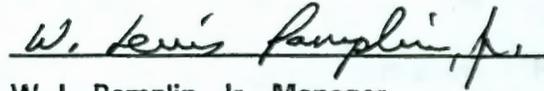
A-6000-480, "Groundwater Sample Report"
BHI-EE-005, "4701-C Temperature Log Sheet"
BHI-EE-006, "4701-C Sample Log Sheet"
BHI-EE-011, "Chain of Custody/Sample Analysis Request"

**BHI-EE-01, Vol. 2, Environmental
Investigations Procedures**

Procedure No.	EIP 7.1
Rev.	1*
Effective Date	11/06/95
Page	1 of 16

Aquifer Testing

Approved By



W. L. Pamplin, Jr., Manager
Environmental Technologies

1.0 PURPOSE AND SCOPE

The purpose of this field procedure is to provide guidelines and requirements for aquifer testing conducted in support of environmental investigations.

This procedure describes a variety of testing methods commonly used to determine aquifer hydraulic characteristics. These include slug tests and single- and multiple-well constant-rate discharge tests (pumping tests). Aquifer tests are generally divided into single-well tests in which measurements of hydraulic response are taken only at the stressed well, and multiple-well tests in which measurements of hydraulic response are taken not only in the stressed wells but also in other observation wells some distance away from the stressed well.

2.0 REQUIREMENTS**2.1 Documentation**

Site-specific requirements such as test location, discharge disposition, test type, instrument calibration, and test data analysis and interpretation will be provided as needed by individual site Sampling and Analysis Plans (SAPs), Groundwater Monitoring Plans, Aquifer Test Plans, or other documentation.

2.2 Safety Requirements

Aquifer testing activities shall comply with the site-specific health and safety documents.

2.3 Disposal of Discharged Water

Groundwater discharged from the well during aquifer testing shall be disposed in accordance with applicable procedures or regulatory requirements.

* Changes are indicated by revision bars in the margins.

2.4 Decontamination

Decontamination of downhole test equipment and components shall be conducted in accordance with applicable procedures.

3.0 EQUIPMENT

Specific types of equipment for each of the test methods are described as applicable in the four attachments. Equipment that needs to be calibrated or standardized is discussed as follows.

- Steel tapes shall be ordered to National Institute of Standards & Testing (NIST) specifications and are assumed to retain calibration throughout the useful life of the tape.
- Electric tapes shall be standardized against a steel tape at least annually and must be accurate to within 1% of the total length.
- Pressure transducers shall be calibrated to within $\pm 0.5\%$ of full scale.
- Flow meters shall be calibrated to within $\pm 10\%$ of flow.

4.0 PROCEDURE

Detailed test procedures for individual test types are included as attachments, along with specific requirements for recording test data. The methods described in these procedures include the slug test (Attachment 1), the constant-rate discharge test (Attachment 2), water-level measurements (Attachment 3), and the injection test (Attachment 4). For all tests in this procedure, a wellhead/test configuration drawing should be completed as part of the field activity reporting. This drawing should include, as a minimum, the following: the size and depth of the borehole and well; the screen/perforation interval(s); the static water level; the reference measurement point; and the test and monitoring equipment configuration, including pump size and depth to intake, transducer(s) configuration, and data logger settings. This information should be recorded on the "Field Activity Report Drawing - Continuation Page," Form BC-6000-281 (03/93), or in the Field Notebook.

**BHI-EE-01, Vol. 2, Environmental
Investigations Procedures**

Procedure No.	EIP 7.1
Rev.	1*
Effective Date	11/06/95
Page	3 of 16

Aquifer Testing**5.0 REFERENCE**

Bouwer, H., and R. C. Rice, 1976, *Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers with Completely or Partially Penetrating Wells*, Volume 12, No. 3.

6.0 FORMS (See the "Forms" section of this manual.)

BHI-EE-112, "Well Development, Testing, and Pump Installation"

BC-6000-278 (04/94), "Field Activity Report - Well Services"

BC-6000-281 (03/93), "Field Activity Report Drawing Continuation Page"

Additional information (e.g., water level measurements) can be recorded on Field Activity Report forms or in logbooks. Completed records, forms, and data generated from the tests will be entered into the appropriate project file and forwarded to Document Control in accordance with applicable administrative procedures.

7.0 ATTACHMENTS

1. Slug Test Method
2. Single- and Multiple-Well Drawdown and Recovery Pumping Test Method
3. Water-Level Measurements
4. Injection Testing

**ATTACHMENT 1
SLUG TEST METHOD
(Page 1 of 3)**

1.0 DISCUSSION OF METHOD

During a slug test, the water level in a well is instantaneously changed by inserting, removing, or displacing a known volume of water. The subsequent water-level response is then monitored. Slug tests will be conducted according to the equipment requirements and the procedure set forth in this attachment.

2.0 EQUIPMENT REQUIREMENTS

Aquifer testing equipment may include, but is not limited to, the following.

1. Pressure transducer. Record the pressure range, identification number, and calibration date.
2. Weighted water-level measuring tape. Record the identification number and calibration/standardization date.
3. Data logger. Record the make, model, and identification number.
4. Slugging rod. Record the diameter and length of the slugging rod to the nearest 0.01 foot.
5. Electric tape. Record the identification number and standardization date.

3.0 PROCEDURE

This section describes the procedure for conducting the slug injection or slug withdrawal tests.

NOTE: Record the time of each activity to the nearest minute and the measurement reference point for each step below (as applicable).

**BHI-EE-01, Vol. 2, Environmental
Investigations Procedures****Aquifer Testing**

Procedure No.	EIP 7.1
Rev.	1*
Effective Date	11/06/95
Page	5 of 16

**ATTACHMENT 1
SLUG TEST METHOD
(Page 2 of 3)**

1. Record pretest equipment status and all proceeding data on Field Activity Reports or Log Notebooks: function test, identification information, and calibration due dates. (See Section 2.0 of this attachment.)
2. Record the well and downhole equipment dimensions from field measurements and relevant as-built information.
3. Measure and record the depth to water in the well per Attachment 3. This measurement becomes the reference water level.
4. Tag and record the depth of the bottom of the well.
5. Install the pressure transducer at a depth below the water level that will not interfere with the lowering or withdrawal of the slugging rod. Record the transducer depth below the reference water level from the data logger.
6. If only a slug withdrawal test will be conducted, place the top of the slugging rod about 1 ft below the expected static water level and go to step 12. If both slug injection and slug withdrawal tests will be conducted, go to step 7.
7. Place the bottom of the slugging rod to within 1 ft of the water level and begin collecting baseline water-level data. Collect baseline data for at least 10 minutes or longer to allow the water level to stabilize (± 0.01 psi).
8. Set the data logger sample rate to log-cycle, simultaneously initiating the slug injection test by quickly lowering the slugging rod below the water level. Record the time.
9. Monitor the water level until at least 90% of the pressure difference imposed by the slug has decayed (Bouwer and Rice 1976). This requirement may be disregarded in very low permeability aquifers at the direction of the task leader.

**ATTACHMENT 1
SLUG TEST METHOD
(Page 3 of 3)**

10. Terminate the slug injection test on the data logger and begin collecting baseline water-level data for the slug withdrawal test. Collect data until the water level has stabilized (± 0.01 psi) from the slug injection test.
11. Set the data logger sample rate to the log-cycle, simultaneously initiating the slug withdrawal test by quickly removing the slugging rod from the water.
12. Monitor the water level until at least 90% of the pressure difference imposed by the slug has decayed (Bouwer and Rice 1976). This requirement may be disregarded in very low-permeability aquifers.
13. Terminate the slug withdrawal test on the data logger.

**ATTACHMENT 2
SINGLE- AND MULTIPLE-WELL DRAWDOWN AND
RECOVERY PUMPING TEST METHOD
(Page 1 of 4)**

1.0 DISCUSSION OF METHOD

The single-well drawdown and recovery test is an aquifer test in which the hydraulic response to pumping or injection is monitored only in the pumped well. The discharge rate during these tests is maintained as close as possible ($\pm 10\%$ of total flow rate) to a constant flow. Multiple-well drawdown and recovery tests are aquifer tests in which the hydraulic response to pumping or injection is monitored in at least one observation well located some distance from the pumping well.

For either a single- or multiple-well pumping test, a step drawdown test is sometimes conducted prior to the actual aquifer test to obtain information that will help design the aquifer test, determine well efficiencies, and estimate well production. Aquifer testing may be discontinued at a well after the step drawdown pumping test for the following reasons.

1. The step drawdown test itself may constitute a single-well pumping test and provide all the necessary data of a single-well pumping test.
2. For a multiple-well test, the information collected by the step drawdown may indicate that the available equipment is not adequate to conduct the test, or the hydrogeology is such that collecting meaningful results is unlikely. This decision will be made by the task lead.

2.0 EQUIPMENT REQUIREMENTS

The following is a general list of required test equipment used in the constant discharge test, mechanical pumping method. The specific description (size, type, model, range, equipment dimensions, and other specifications) of this equipment may vary depending on well and site conditions.

**ATTACHMENT 2
SINGLE- AND MULTIPLE-WELL DRAWDOWN AND
RECOVERY PUMPING TEST METHOD
(Page 2 of 4)**

1. Mechanical pump. Record the type, make, model, identification number, and horsepower rating. The pump should have a characteristic efficiency curve available.
2. Flow meter. Record the make, model, identification number, and calibration date.
3. Flow regulator. Record the type and size.
4. Pressure transducers. Record the pressure range, identification number, and calibration date.
5. Weighted water-level measuring tape. Record the identification number and calibration/standardization date.
6. Data logger. Record the make, model, and identification number.
7. Appropriate reservoir. An appropriate reservoir of adequate size to contain all pumped water if required by applicable documentation.
8. Electric tape. Record the identification number and calibration/standardization date.
9. Check valve. Record the type of check valve (if one is used).

3.0 PROCEDURE

This section describes the procedure to conduct single- or multiple-well step-drawdown tests and pumping tests.

NOTE: Record the time of each activity to the nearest minute and the measurement reference point for each step below (as applicable).

**BHI-EE-01, Vol. 2, Environmental
Investigations Procedures**

Procedure No.

EIP 7.1

Rev.

1*

Effective Date

11/06/95

Aquifer Testing

Page

9 of 16

**ATTACHMENT 2
SINGLE- AND MULTIPLE-WELL DRAWDOWN AND
RECOVERY PUMPING TEST METHOD
(Page 3 of 4)**

1. Record pretest equipment status and all proceeding data on Field Activity Reports or Field Logbooks: function test, identification information, and calibration due dates.
2. Record the pumping and downhole equipment well dimensions from field measurements and relevant as-built information.
3. Measure and record the depth-to-water in the pumping well and any observation wells per Attachment 3. These measurements are the reference water levels.
4. Tag and record the depth of the bottom of the well.
5. Install the mechanical pump in the well at a depth to maximize the amount of available drawdown, or as specified in the supporting documentation. Record the pump intake depth to the nearest tenth of a foot.
6. Install the pressure transducers in the pumping well and any observation wells. Record the transducer(s) depth below water as indicated by the transducer and data logger.
7. Collect baseline data for a time period two to three times the expected test length or longer (Baselining may occur several weeks before these activities and be complete at this time).

NOTE: If no step drawdown test is required, omit steps 8 through 12.

8. Make certain that water levels have stabilized from the above activities. Set the data logger sample rate to log-cycle.
9. Start the pump, simultaneously initiating the data logger, and adjust the flow regulator to the initial lowest flow rate. Record the discharge rate every 15 minutes and maintain this flow for 60-90 minutes, or as specified in supporting documentation.

**ATTACHMENT 2
SINGLE- AND MULTIPLE-WELL DRAWDOWN AND
RECOVERY PUMPING TEST METHOD
(Page 4 of 4)**

10. At the end of this period, reset the data loggers to a log-cycle sample rate, and step up to the next highest rate of discharge. Record the discharge rate and maintain this flow for a period of time equal to the previous step.
11. Repeat procedure step 10 from 1 to 5 times.
12. To conclude the step drawdown test, reset the data loggers to a log-cycle recording rate and simultaneously shut down the pump. Monitor recovery until the pretest water levels are re-established (usually 2 to 3 times the total length of the test).
13. Before beginning the constant discharge test, the discharge rate needs to be set. Start the pump and adjust the flow rate to the desired discharge rate per the step test results or as the task lead specifies. Stop the pump and allow the water level to stabilize to static levels, or as designated by the task lead.
14. Set the data logger sample rate to the log-cycle, simultaneously starting the constant discharge test. Record the flow rate about every 10 minutes for the first hour after startup, then increase the frequency to one reading every one-half hour.
15. To conclude the pumping test, obtain approval from the task lead, then reset the data loggers to log-cycle recording rate, simultaneously shutting down the pump. Continue monitoring the recovery until the water level returns to pre-test levels (usually within 2 to 3 times the test length).

**BHI-EE-01, Vol. 2, Environmental
Investigations Procedures****Aquifer Testing**

Procedure No.	EIP 7.1
Rev.	1*
Effective Date	11/06/95
Page	11 of 16

**ATTACHMENT 3
WATER-LEVEL MEASUREMENTS
(Page 1 of 2)**

1.0 DISCUSSION OF METHOD

This procedure is used for collecting water-level measurements that may support well development activities, aquifer tests, pump installations, routine water-level measurements, and other groundwater monitoring activities.

2.0 EQUIPMENT REQUIREMENTS

Required equipment consists of either a steel or electric tape. Record the measurement tape identification number and the calibration or standardization date. The tapes must be calibrated or standardized per the project-specific data quality objectives, or Section 3.0, "Equipment."

3.0 PROCEDURE

1. Record measurement tape information and all proceeding data on Field Activity Reports or Field Logbooks.
2. Record well identification number and reference measurement location.
3. Chalk the end of the steel tape or test the operation of the buzzer and light on the electric tape.
4. Lower the tape to the top of the water and note the depth to water on the tape to the nearest hundredth of a foot.
5. If a steel tape is used, retrieve the tape, note where the water mark is on the chalked portion of the tape, subtract this length from the depth-to-water reading, and record the water-level reading. Repeat the measurement until agreement of at least ± 0.04 ft between measurements is achieved.

**BHI-EE-01, Vol. 2, Environmental
Investigations Procedures**

Procedure No.

EIP 7.1

Rev.

1*

Effective Date

11/06/95

Aquifer Testing

Page

12 of 16

**ATTACHMENT 3
WATER-LEVEL MEASUREMENTS
(Page 2 of 2)**

6. If an electric tape is used, make multiple contacts with the groundwater until a reproducible measurement is achieved. Record the depth to water and retrieve the tape (the tape may also be retrieved before the water level is recorded).

**ATTACHMENT 4
INJECTION TESTING
(Page 1 of 4)**

1.0 DISCUSSION OF METHOD

Injection tests are a hydraulic testing method generally used to assess aquifer parameters and characteristics and to determine a well's ability to accept water.

The injection test procedure itself can be viewed as the reverse of a drawdown pump test, where the flow rate and the hydraulic head change are monitored in a manner similar to that of a drawdown test. Otherwise, the theory and analysis approach are the same. For this procedure, the test can be run at a constant or variable flow rate and may or may not make use of observation wells.

Variable rate (step) injection tests will consist of a minimum of three steps of equal duration (normally 1 hour). Step injection tests are performed to determine well efficiencies and to estimate well inflow capabilities. The length of a constant-rate injection test may be specified in either a test/work plan or description of work. Typical test lengths are 4 and 8 hours. An injection test may be terminated for one of the following reasons:

1. The step test itself provides all of the data of a constant rate test necessary to satisfy established data needs
2. The information collected to that point of the test indicates that the present equipment configuration is not adequate to conduct the test
3. It is determined that information collected during the step test is such that collection of meaningful results is unlikely
4. The depletion of injection water or loss of ability to continue injecting water
5. Head increase exceeds the ability to monitor, or there is otherwise a loss of monitoring capability.

The task lead is charged with making the decision to terminate the test.

**ATTACHMENT 4
INJECTION TESTING
(Page 2 of 4)**

2.0 EQUIPMENT REQUIREMENTS

The following is a general list of required test equipment used in the injection test for both constant and variable inflow methods.

1. Injection pipe. The pipe should be sized to meet anticipated inflow rates and be of sufficient length to be installed below the static water level.
2. Intake manifold. The manifold consists of flow control valves, flowmeter(s), and a post-injection venting valve sized to meet the anticipated inflow rates.
3. Water supply. Typically raw Columbia River water or potable. Provided via tanker trucks or a fire hydrant with the appropriate plumbing for connection to the injection manifold. This includes the hoses and/or tubings and fittings, plus a pump to deliver a constant flow rate.
4. Data logging system. This includes a self-powered data logger and transducer(s) appropriate to the expected head increase. Record the serial number, calibration date, size, and type of equipment used.
5. Electronic tape (E-tape). Used for recording water level(s). Record the unit number and the standardization date.
6. Steel tape. Used for measuring the depth to the bottom of the well.

3.0 PROCEDURE

This section describes the procedure for conducting both a constant-rate and a variable-rate injection test.

NOTE: Record the time of each activity to the nearest minute and the reference point for each measurement (i.e., the top of the casing, or the ground surface).

**ATTACHMENT 4
INJECTION TESTING
(Page 3 of 4)**

3.1 Test Setup

1. Set up the test by doing the following. Install the appropriate amount of injection pipe to a minimum depth of one foot (1 ft.) below the initial static water level. Attach the intake manifold to the injection pipe. Attach inflow tubing, or hoses, from the water source to the manifold.
2. Install transducer(s) of sufficient size to accommodate the projected hydrostatic head.
3. Record pretest equipment and well status data and all proceeding data on Field Activity Reports or Field Logbooks (e.g., the depth to the bottom of the well, the static water level, data logger and transducer configuration information, etc.).
4. Initiate a water-level baseline test that will gather data for a minimum of twice the expected duration of the injection test. Use a barometer in the array, if available.

3.2 Conduction Test

5. For a constant inflow rate injection test, adjust the inflow rate rapidly to the pre-test specified rate or, if a rate is not directly specified, to a rate that will maintain a hydraulic head increase of five (5) to ten (10) feet above the baseline static water level.

For a step injection test, adjust the injection rate rapidly to the first pre-test specified rate.

6. For a step injection test, after the initial inflow rate has been maintained for the specified time (a minimum of 1 hour), "step" the injection rate to the next specified rate and simultaneously "step" the data logger to record the change. This step is to be repeated as many times as specified in the test/work plan, or until the termination condition is met. **This step does not apply to a constant-rate test.**

**ATTACHMENT 4
INJECTION TESTING
(Page 4 of 4)**

7. After the specified test duration or when the termination condition, as specified above, is met, the injection of water to the well will be shut off.
8. The recovery test will be initiated by "stepping" the data logger concurrently with the stopping of inflow to the well.
9. Recording of recovery data will continue for a minimum of three times the duration of the injecting testing. Approval to stop the recovery test before this time must come from the task lead.

**BHI-EE-01, Vol. 2, Environmental
Investigations Procedures**

Forms

 Rev. 1*
 Effective Date 11/06/95
 Page 1 of 6

Forms List

The forms within this section are referenced within this manual. You may copy the forms for use. Changes to these forms are not allowed unless approved by the appropriate responsible manager.

FORMS LIST

Form Number	Name	Date	Procedure Reference
54-3000-479	Off-Site Property Control	01/94	EIP 3.1
54-3000-596	Hazardous Material Shipment Record (HMSR)	10/87	EIP 3.1
54-6000-088	Offsite Radioactive Shipment Record	10/88	EIP 3.1
54-3000-609	Onsite Radioactive Shipment Record	06/87	EIP 3.1
A-6000-354	Quality Assurance Record Transmittal	02/92	EIP 2.6
A-6000-369 (WEF111)	Assigned Reading	03/90	EIP 1.12
A-6000-382	Borehole Log	01/93	EIP 7.0
A-6000-384	Well Summary Sheet	01/93	EIP 7.0
A-6000-436	Well Construction Summary Report	01/93	EIP 6.0
A-6000-451	Resource Protection Ground Water Well Structure Fitness for Use Checklist	11/89	EIP 1.8
A-6000-480 (GEF075)	Groundwater Sample Report	06/93	EIP 4.2
A-6000-528	Onsite Routine Radioactive Shipment Record (For information only)	09/93	EIP 3.1

*Changes are indicated by revision bars shown in the margins.

BHI-EE-01, Vol. 2, Environmental Investigations Procedures

Forms

Rev. 1*
Effective Date 11/06/95
Page 2 of 6

Forms List

Form Number	Name	Date	Procedure Reference
A-6001-188 (WEF232)	Field Activity Report Cone Penetrometer	01/94	EIP 5.0
BC-6000-278	Field Activity Report - Well Services	04/94	EIP 7.1
BC-6000-279	Field Activity Report - Cement Calculations	03/93	EIP 6.0
BC-6000-280	Field Activity Report - Tubular Goods Tally	03/93	EIP 6.0
BC-6000-281	Field Activity Report - Drawing Continuation Page	03/93	EIP 6.0
BC-6000-453	Well Purge Water Transport Log	09/92	EIP 1.11
BD-7800-009	Radioactive Shipment Checklist	04/88	EIP 3.1
BHI-EE-001	Field Sampling Requirements Laboratory Analysis	12/94	EIP 2.0
BHI-EE-002	Sampling Authorization Form	12/94	EIP 2.0
BHI-EE-003	Request for Analytical Services	12/94	EIP 2.0
BHI-EE-004	Field Sampling Requirements/Field Screening Requirements	12/94	EIP 2.1
BHI-EE-005	4701-C Temperature Log Sheet	10/94	EIP 4.2
BHI-EE-006	4701-C Sample Log Sheet	10/94	EIP 4.2
BHI-EE-011	Chain of Custody/Sample Analysis Request	01/95	EIP 3.1 EIP 4.1
BHI-EE-015	Drilling Planning Form	12/94	EIP 6.0

*Changes are indicated by revision bars shown in the margins.

BHI-EE-01, Vol. 2, Environmental Investigations Procedures

Forms

Rev. 1*
Effective Date 11/06/95
Page 3 of 6

Forms List

Form Number	Name	Date	Procedure Reference
BHI-EE-017	Filed Activity Report - Drilling	12/94	EIP 6.0
BHI-EE-018	Field Activity Report - Drilling Continuation Page	12/94	EIP 6.0
BHI-EE-035	Field Cleaning And/Or Decontamination	11/94	EIP 6.2
BHI-EE-043	Procedure Change Authorization	12/94	EIP 1.1
BHI-EE-083	Sample and Data Management Administrative Verification Form	11/94	EIP 2.3
BHI-EE-084	Validation Services Request	11/94	EIP 2.5
BHI-EE-085	Volatile Organic Data Verification Checklist	11/94	EIP 2.4
BHI-EE-086	Semi-Volatile Organic Data Verification Checklist	11/94	EIP 2.4
BHI-EE-087	Pesticide/PCB Data Verification Checklist	11/94	EIP 2.4
BHI-EE-088	Gas Chromatography Data Verification Checklist	11/94	EIP 2.4
BHI-EE-089	Dioxin/Furan Data Verification Checklist	11/94	EIP 2.4
BHI-EE-090	Inorganic Analysis Data Verification Checklist	11/94	EIP 2.4
BHI-EE-091	General Chemistry Data Verification Checklist	11/94	EIP 2.4
BHI-EE-092	Verification Checklist for Beta and Gas Proportional Counting	12/94	EIP 2.4

*Changes are indicated by revision bars shown in the margins.

BHI-EE-01, Vol. 2, Environmental Investigations Procedures

Forms

Rev. 1*
Effective Date 11/06/95
Page 4 of 6

Forms List

Form Number	Name	Date	Procedure Reference
BHI-EE-093	Verification Checklist for Alpha Spectroscopy	12/94	EIP 2.4
BHI-EE-094	Verification Checklist for Gamma Spectroscopy	12/94	EIP 2.4
BHI-EE-095	Verification Checklist for Alpha-Emitting Radium Isotopes Using Scintillation Counting	12/94	EIP 2.4
BHI-EE-096	Verification Checklist for Radium-226 Analysis Using Scintillation (Lucas Cell) Counting	12/94	EIP 2.4
BHI-EE-097	Verification Checklist for Liquid Scintillation Counting	12/94	EIP 2.4
BHI-EE-098	Verification Checklist for Uranium Analysis by Fluorometry	12/94	EIP 2.4
BHI-EE-099	Verification Checklist for Total Uranium Analysis by Kinetic Phosphorimetry	12/94	EIP 2.4
BHI-EE-100	Verification Checklist for Selected Radioisotope Analysis Using Inductively-Coupled Plasma/Mass Spectrometry	12/94	EIP 2.4
BHI-EE-101	Verification Checklist Comments Sheet	12/94	EIP 2.4
BHI-EE-102	Daily Verification Summary and Missing Information Report: Chemistry (DVS-MIR-C)	12/94	EIP 2.4
BHI-EE-103	Daily Verification Summary and Missing Information Report: Radchem (DVS-MIR-R)	12/94	EIP 2.4
BHI-EE-104	Transmittal Form to Validator	12/94	EIP 2.4

*Changes are indicated by revision bars shown in the margins.

BHI-EE-01, Vol. 2, Environmental Investigations Procedures

Forms

Rev. 1*

Effective Date 11/06/95

Forms List

Page 5 of 6

Form Number	Name	Date	Procedure Reference
BHI-EE-105	Data Folder Traveler Sheet	07/93	EIP 2.2 EIP 2.5
BHI-EE-108	NPL Agreement/Change Control Form	11/94	EIP 1.3 EIP 1.4
BHI-EE-109	Sample Disposition Record	11/94	EIP 2.7
BHI-EE-110	Request for Map or Data Product	12/94	EIP 1.7
BHI-EE-111	Course Critique	12/94	EIP 1.12
BHI-EE-112	Well Development, Testing, and Pump Installation	12/94	EIP 7.1 EIP 6.3
BHI-EE-113	Survey Project Log	12/94	EIP 1.6
BHI-EE-114	Coordinate Data Form	12/94	EIP 1.6
BHI-EE-115	Radioactive Storage Area Inventory List	12/94	EIP 6.4
BHI-EE-117	Certificate of Qualification	12/94	EIP 1.12
BHI-EE-118	Indoctrination Attendance Form	12/94	EIP 1.12
BHI-EE-119	Chemical Data Package Verification Cover Sheet	12/94	EIP 2.4
BHI-EE-120	Radiochemical Data Package Verification Cover Sheet	12/94	EIP 2.4
BHI-DC-002	Procedure Request	07/94	EIP 1.1
BHI-DC-003	Review/Approval Sheet	07/94	EIP 1.3

*Changes are indicated by revision bars shown in the margins.

**BHI-EE-01, Vol. 2, Environmental
Investigations Procedures**

Forms

Rev. 1*
Effective Date 11/06/95
Page 6 of 6

Forms List

Form Number	Name	Date	Procedure Reference
BHI-DC-009	Document Review and Approval Form	10/94	EIP 1.1
BHI-DC-010	Approval Page	10/94	EIP 1.4
BHI-TM-R006	Radiological Survey Record	No Date	EIP 6.1
BHI-TM-R007	Radiological Survey Record Continuation Sheet	No Date	EIP 6.1

*Changes are indicated by revision bars shown in the margins.

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NO. <i>(To be obtained from PROPERTY MANAGEMENT)</i>
------------	--------------------------------------	---

PART I - TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
The following items are to be shipped from		
<input type="checkbox"/> Contractor <input type="checkbox"/> Vendor		
Routing		
<input type="checkbox"/> Prepaid <input type="checkbox"/> Collect		

Shipped to Company Address City Country	State	Zip Code	Off-site Custodian	Payroll No.
---	-------	----------	--------------------	-------------

Qty.	Property No.	Description (Include Manufacture Name, Model, Serial No.)	Acquisition Cost
INFORMATION ONLY			

<input type="checkbox"/> Classified	<input type="checkbox"/> Unclassified	<input type="checkbox"/> Shipped Under DOE Contract	<input type="checkbox"/> Shipped Under Contractor's Use Permit Contract
-------------------------------------	---------------------------------------	---	---

Necessity for the off-site use of this property

Required for Project Work. List Project No. _____

Business Trip

Off-site Assignment

Shipment to Subcontractor. List Subcontract No. _____

Other (Please specify) _____

USE NCR FORM

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIALS DELIVERED TO SHIPPING.

RM Clearance for Public Release	RM Survey No.	Date
---------------------------------	---------------	------

Location of and Contact for Property (Name/Phone No./Bldg./Area)

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
Originated By	Date	Authorized By
Property Representative Signature	Date	Property Management Approval
		Date

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature	Date
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DISTRIBUTION (AFTER FINAL SIGNATURES)

White - Property Management	Yellow - Shipping	Green - Accounts Payable	Pink - Originator	Goldenrod - Property Management
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SHIPPING INST.	SHIP TO:		HAZARDOUS MATERIAL SHIPMENT RECORD (HMSR)			
	Company _____		Originating Facility _____	Originator Signature _____	Date _____	
	Address _____		Building _____	Area _____		
	City, State, Zip _____		FROM: <input type="checkbox"/> WHC <input type="checkbox"/> KEH <input type="checkbox"/> PNL <input type="checkbox"/> OTHER _____			
SHIPMENT DESCRIPTION	ATTENTION: _____					
	CONTAINERS/PACKAGING			CONTENT DESCRIPTION		
	Number of Containers	Type	DOT Spec	Package Dimensions	Quantity Pks	Gross Wt Each Pkg
				See 49 CFR 172.101(c) Hazardous Material Table		
				Proper Ship Name: _____		
				Hazard Class: _____		
				UN/NA No.: _____		
				List Secondary Hazards: _____		
				List Labels Req'd/Applied _____		
				Proper Ship Name: _____		
			Hazard Class: _____			
			UN/NA No.: _____			
			List Secondary Hazards: _____			
			List Labels Req'd/Applied _____			
Total No. Containers		Gross Wt of Shipment		Identify Priority Required:		
				1. _____ 2. _____		
				Identify Priority Control or Return Order No.: (if applicable) _____		
				Describe Intermediate Packaging: _____		
Material in manufacturer's original container:		<input type="checkbox"/> Yes <input type="checkbox"/> No				
Container free of deterioration or damage:		<input type="checkbox"/> Yes <input type="checkbox"/> No				
Container acceptability documented:		<input type="checkbox"/> Yes <input type="checkbox"/> No				
Material is packaged, sealed, marked and labelled to meet DOT requirements:		<input type="checkbox"/> Yes <input type="checkbox"/> No				
RADIATION RELEASE		Survey No. _____	Date _____	RM Signature _____	Print Name _____	
CERTIFICATION						
CONTRACTORS CERTIFICATION		This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transport according to the applicable regulations of the Department of Transportation:			This shipment is within the Limitations prescribed for:	
		Authorizing Signature: _____			<input type="checkbox"/> Passenger Aircraft <input type="checkbox"/> Cargo Aircraft <input type="checkbox"/> NA Aircraft	
		Print Name _____			Date: _____	
FOR OFFSITE SHIPMENTS – ADDITIONAL APPROVAL REQUIRED						
WHC TRAFFIC	B.L. No. _____	Date Shipped _____	ETA _____	Routing _____	Special Considerations _____	
	WHC Traffic: _____			WHC Shipping: _____		

<input type="checkbox"/> Classified Material	Yes	No	ONSITE RADIOACTIVE SHIPMENT RECORD (Instructions For Completion On Back)	52736
<input type="checkbox"/> Special Nuclear Material				
<input type="checkbox"/> Security Escort Required				
			DOE CONTRACTOR: <input type="checkbox"/> PNL <input type="checkbox"/> WHC <input type="checkbox"/> KEH	

NAME	CONTRACTOR AND COMPONENT	BUILDING AND AREA	PHONE
To:			
From:			
Carrier:		Vehicle No.	

COMPLETE DESCRIPTION OF RADIOACTIVE CONTENTS:	DETAILED PACKAGING DESCRIPTION:
Radionuclide(s):	Net Container(s):
Maximum Activity (Curies/Container):	Type Container(s):
Grams Fissile/Container:	Description:
Total Grams Fissile/Shipment	Secondary Hazards? (List):
Total Curies/Shipment	Container Agency (Document):
	Shipment Number (when applicable):

Normal Form <input type="checkbox"/> Special Form <input type="checkbox"/>	Material Is: DOE <input type="checkbox"/> License <input type="checkbox"/>	Physical Form: <input type="checkbox"/> Solid <input type="checkbox"/> Gas <input type="checkbox"/> Liquid <input type="checkbox"/> Chemical Form	Container(s) <input type="checkbox"/> Single Trip <input type="checkbox"/> Reusable Absorbent Material Required <input type="checkbox"/> Yes <input type="checkbox"/> NA Container(s) Free of Deterioration and/or Damage <input type="checkbox"/> Yes <input type="checkbox"/> No Labels Required <input type="checkbox"/> Yes <input type="checkbox"/> No Placards Required <input type="checkbox"/> Yes <input type="checkbox"/> No Tie-down Verified <input type="checkbox"/> Yes <input type="checkbox"/> NA Accountable Nuclear Material Transfer Documents <input type="checkbox"/> Yes <input type="checkbox"/> NA Prepared
QUANTITY CATEGORY <input type="checkbox"/> Limited Quantity <input type="checkbox"/> Low Specific Activity Material <input type="checkbox"/> Type A Quantity <input type="checkbox"/> Type B Quantity <input type="checkbox"/> Highway Route Controlled Quantity		<input type="checkbox"/> Oxide <input type="checkbox"/> Mixture <input type="checkbox"/> Nitrate <input type="checkbox"/> Organic <input type="checkbox"/> Elements <input type="checkbox"/> Other Specify	

EXTERNAL RADIATION (mrem/hr)	REMOVABLE CONTAMINATION
Package: At Contact _____ At 1 Meter _____ Vehicle: At Sides _____ At 2 Meter _____ Sub: _____	Smears of Outer Container <input type="checkbox"/> ≤ 22 or _____ d/m by / sq. cm <input type="checkbox"/> ≤ 2.2 or _____ d/m q / sq. cm
List Other Pertinent Information: _____	
RM Escort Required <input type="checkbox"/> Yes <input type="checkbox"/> No RM Supervisor Review Required <input type="checkbox"/> Yes <input type="checkbox"/> No Reviewed by: _____ RM Supervisor _____ Date _____ Surveyed by: _____ Radiations Monitor _____ Date _____	

INSTRUCTIONS:

- Speed Limit Restricted To: _____ MPH. Never exceed posted limits.
- Do not leave shipment unattended between pick up and drop off points.
- In case of an accident or spill notify RM immediately. Phone _____
- Shipments during hazardous road conditions and/or congested traffic should be avoided.
- Tie down or restrain packages to prevent shifting or loss of packages during transport.
- Declare material and present shipment record at each patrol check point.
- Obtain RM release of transport vehicle after delivery of radioactive materials.
- Other: _____

9. Obtain Receiver's Signature: Received by _____ Date _____

NOTE: Person authorizing shipment must not transport it.

CERTIFICATION

This/These package(s) has/have been prepared for onsite shipment in accordance with applicable federal regulations as prescribed in DOE Order 5480.1A chapter III and its RL supplement.

Shipping Organization Rep. _____ Print Name _____ Date _____

TRANSMITTAL COMPLETION INSTRUCTIONS

Individual forwarding quality assurance records for retention will complete items 1 through 9.

1. Indicate where the records are being sent by checking the appropriate box.
2. Type in the Retiring Company/Department, Organization Code, Manager/Custodian, Area, Bldg., Room, MSIN, Phone No. and Date of the transmittal.
3. Enter box number when retiring an entire box to the RHA. Leave blank for individual packages.
4. Enter a comprehensive description of the records. Description should enable receiver to determine if the record is complete. For example, enter document type (PO, WA, QCRN, Readiness Review, etc.) and the appropriate number identifiers.
5. Enter the total number of pages for each record if you are forwarding individual records (not a box).
6. Enter classification (U, C, S). The "U" (Unclassified) classification will apply in the majority of records transferred.
7. Cubic Feet - Enter the cubic feet appropriate for the size of the box being retired. N/A if individual packages.
8. Inclusive Dates - Enter the earliest (from) and the latest (to) date (month and year only) for each series of records.
9. Disposal Authority - This information is obtained from your RIDS.
10. To be completed by IRM Records Management Specialist. QA Classifications are L = Lifetime, N = Nonpermanent, or PC = Postclosure.
11. The cognizant individual completes the "Transmittal & Records Acceptance Criteria" checklist below and certifies by signing block 11.
12. Submit the original and one copy of this transmittal to your IRM Records Management Specialist for approval.

TRANSMITTAL AND RECORDS ACCEPTANCE CRITERIA

1. All blocks on transmittal are filled in or marked "N/A" for not applicable.
2. All records described on the transmittal are included in transmittal package.
3. All records submitted, and any attachments, are legible and reproducible in any media to the fourth generation or have been notated as "Best Available Copy."
4. No correction fluid or correction tape is used.
5. Corrections are made with single line strike and initialed and dated.
6. Records are paginated in a manner that allows for easy determination of the total number of pages and the sequential order of the record.
7. Transmittal identifies the item or activity to which the record applies.
8. Records transmitted have been designated as Quality Assurance Records on the organization's Records Inventory and Disposition Schedule (RIDS).
9. Signature of the cognizant individual has been obtained.

ASSIGNED READING

Employee:

Date:

Location:

Payroll No.:

Org. No.:

You are required to read the following document(s) and enter the appropriate completion information. Return completed form to the cognizant manager at completion of assigned reading.

Document No.	Rev. No.	Title	Date Reading Completed

The information I have entered above is legible, accurate, and complete.

Employee Name:

Employee Signature

Date

RESOURCE PROTECTION GROUND WATER WELL STRUCTURE FITNESS FOR USE CHECKLIST		1. Well No.
		Page 1 of 3
2. Has a need for use of the well been identified and documented: ___ Ground Water Monitoring ___ Piezometer ___ Observation ___ Geotechnical Test Reference _____	2	_____
3. Is well presently in use? _____	3	_____
4. Is casing sealed in accordance with (IAW) WAC 173-160-075? 4a. Natural barriers preserved: _____ 4b. Aquifers/strata penetrated permanently sealed: _____ 4c. Annulus sealed against surface water: _____ 4d. Casing overlap more than 8 ft; packed and grouted: _____	4	_____
5. If not in use, is well capped IAW WAC 173-160-085? _____	5	_____
6. Design/construction IAW WAC 173-160-500 6a. Saturated formations/aquifers not connected: _____ 6b. Cuttings/development water handled IAW WAC 173-303: _____ 6c. Well properly identified: _____	6	_____
7. Surface protection IAW WAC 173-160-510? 7a. Well capped and protected: _____ 7b. Posts, pad or cover installed: _____ 7c. Protection waived or variance obtained: _____ 7d. Existing protection damaged: _____	7	_____
8. Casing materials IAW WAC 173-160-520? _____ _____	8	_____
9. Drill rig, drilling equipment cleaned IAW WAC 173-160-530? 9a. Drill rig/equipment casings/screen cleaned before drilling or installation: _____ 9b. Filter pack cleaned before installation, material compatible: _____ _____	9	_____
RCRA/CERCLA MONITORING WELL		
10. Does water sample from vertical screened interval represent horizontal stratigraphy: 10a. Screened interval documented: _____ 10b. Lithology documented: _____	10	_____
11. Design and construction IAW WAC 173-160-540? 11a. Screen commercially fabricated of material nonreactive to subsurface conditions: _____ 11b. If filter pack installed, extends from bottom of screen to at least 3 ft above screen: _____ 11c. Well has been developed: _____	11	_____

GROUNDWATER SAMPLE REPORT

Project: _____	Sampling CY Quarter: _____	Date _____	Page _____ of _____
Well Number _____		Calculations	
Total Purge Volume (gal) _____			
Purge Flow Rate (gal/min) _____			
Hydroster (Time On) _____			
Submersible (Time On) _____			

SAMPLES COLLECTED

Total No. of Bottles _____

FIELD MEASUREMENTS

E-Tape =	pH Serial No.:	Cond./Therm. Serial No.:
Time		
pH		
Temp (°C)		
Cond (µs/cm)		

FIELD OBSERVATIONS

Weather _____

General Problems/Unusual Events _____

Equipment Irregularities _____

Container Irregularities _____

Comments _____

Well capped and locked Yes No

Samples preserved with ice Yes No

Samples Surveyed for Gemma Radiation by HPTs _____

Date Recorded by _____ Date _____

Sign and print name _____ Date _____

Date Checked by _____ Date _____

Sign and print name _____ Date _____

9513387.0146

Only BLUE copy valid for shipment

ON-SITE ROUTINE RADIOACTIVE SHIPMENT RECORD		NO. SITE-04-SAMPLE	
DOE CONTRACTOR WESTINGHOUSE HANFORD COMPANY		COPY NO. 23	
FOR THE SHIPMENT OF RADIOACTIVE MATERIAL, EXCEPTED PACKAGE-LIMITED QUANTITY OF MATERIAL, 7, UN2910. (ENVIRONMENTAL SAMPLES AND AIR SAMPLES)		VOID DATE 10-31-95	
BETWEEN ALL AREAS HANFORD SITE		NO INSPECTION UNCLASSIFIED	
DESCRIPTION OF RADIOACTIVE CONTENTS: RADIONUCLIDES Listed in 49 CFR 173.435 ACTIVITY (MAX) Solid A_2 (10^{-9}) Liquid A_2 (10^{-4}) FORM - NORMAL <input checked="" type="checkbox"/> SPECIAL <input type="checkbox"/> SECONDARY HAZARD None		PACKAGE REQUIREMENTS Samples to be sealed inside containers. Health Physics to mark dose rate, date & initials to each sample. Samples to be sealed in plastic and transported inside strong, tight packages that will not leak any of the radioactive materials during conditions normally incident to transportation. APPROVAL DOCUMENT(S): 49 CFR 173.421, 421-1 QA INSPECTION: Not required	
RADIOLOGICAL PROTECTION REQUIREMENTS Dose rate: Not to exceed 0.5 mrem/hr at outer package contact. Smearable contamination: <2200 dpm/100cm ² beta-gamma. <220 dpm/100cm ² alpha. LABEL(S) REQUIRED None PHONES - Site Health Physics Office RWPS - To be set by Health Physics		QUALIFIED PERSONNEL - to package and ship Personnel shall be trained and qualified to meet all requirements of this ORRSR. QUALIFIED PERSONNEL MUST MEET AND MAINTAIN CURRENT DOT TRAINING REQUIRED PER 49 CFR 172.704 TO PACKAGE, SHIP AND/OR TRANSPORT ON THIS ORRSR. Site Operations Office PHONES Site Health Physics Office	
SPECIAL REQUIREMENTS 1) This ORRSR is valid for only the above described shipment. 2) The shipment log on back must be completed for each shipment. 3) The Blue copy of this ORRSR must accompany each shipment. 4) The outside of the inner packaging or if there is no inner packaging, the outside of the packaging itself bears the marking "RADIOACTIVE." 5) This package conforms to the conditions and limitations specified in 49 CFR 173.421 for radioactive material, excepted package limited quantity of material, UN 2910.			
CARRIER INSTRUCTIONS 1. <input checked="" type="checkbox"/> SPEED LIMIT RESTRICTED TO: posted MPH. NEVER EXCEED POSTED LIMITS. 2. <input checked="" type="checkbox"/> DO NOT LEAVE SHIPMENT UNATTENDED BETWEEN PICK UP AND DROP OFF POINTS. 3. <input checked="" type="checkbox"/> IN CASE OF ACCIDENT OR SPILL NOTIFY HPT IMMEDIATELY. CALL 911. or (509) 373-3800 4. <input checked="" type="checkbox"/> SHIPMENTS DURING HAZARDOUS ROAD CONDITIONS AND/OR CONGESTED TRAFFIC SHOULD BE AVOIDED. 5. <input checked="" type="checkbox"/> TIE DOWN OR RESTRAIN PACKAGES TO PREVENT SHIFTING OR LOSS OF PACKAGES DURING TRANSPORT. 6. <input checked="" type="checkbox"/> DECLARE MATERIAL AND PRESENT SHIPMENT RECORD AT EACH PATROL CHECK POINT. 7. <input checked="" type="checkbox"/> OBTAIN HPT RELEASE OF TRANSPORT VEHICLE AFTER DELIVERY OF RADIOACTIVE MATERIALS. 8. <input type="checkbox"/> PLACARD(S) REQUIRED.			
THE ABOVE LISTED QUALIFIED PERSONNEL ARE AUTHORIZED TO CERTIFY THIS SHIPMENT ROUTINE AUTHORIZATION <u><i>Ronald L. Clawson</i></u> AUTHORIZED SIGNATURE <u>Ronald L. Clawson</u> <u>10-14-94</u> PRINT NAME DATE			
APPROVALS			
ORIGINATOR	DATE	HAZARDOUS MATERIALS OPERATIONS	DATE
<u><i>R. X. Griffin</i></u>	<u>10-21-94</u>	<u><i>E. V. Law</i></u>	<u>10/27/94</u>
OPERATIONS MANAGER	DATE	PACKAGING & SHIPPING SAFETY	DATE
<u>N/A</u>		<u><i>George W. Mettler</i></u>	<u>10/24/94</u>
OPERATIONS MANAGER	DATE	HEALTH PHYSICS	DATE
<u><i>John Stief</i></u>	<u>10-21-94</u>	<u><i>D. Arnold</i></u>	<u>10/21/94</u>

**FIELD ACTIVITY REPORT -
TUBULAR GOODS TALLY**

Page _____ of _____

Date	Well Number	Continuation of Report No.	
------	-------------	----------------------------	--

Jt. No.	Length (in feet)								
1		21		41		61		81	
2		22		42		62		82	
3		23		43		63		83	
4		24		44		64		84	
5		25		45		65		85	
6		26		46		66		86	
7		27		47		67		87	
8		28		48		68		88	
9		29		49		69		89	
10		30		50		70		90	
11		31		51		71		91	
12		32		52		72		92	
13		33		53		73		93	
14		34		54		74		94	
15		35		55		75		95	
16		36		56		76		96	
17		37		57		77		97	
18		38		58		78		98	
19		39		59		79		99	
20		40		60		80		100	
TOTAL		TOTAL		TOTAL		TOTAL		TOTAL	

REMARKS

Total for Page:	FT
Total (All)	FT

TALLY PAGE NO. _____

Report By _____
 Title _____
 Signature _____

Reviewed By _____
 Title _____ Date _____
 Signature _____

**FIELD ACTIVITY REPORT -
DRAWING CONTINUATION PAGE**

Page ____ of ____

Date	Well Number	Continuation of Report No.	
------	-------------	----------------------------	--

(This area is intentionally left blank for drawing content.)

Report By _____
Title _____
Signature _____

Reviewed By _____
Title _____ Date _____
Signature _____

WELL PURGE WATER TRANSPORT LOG						Page ____ of ____
Drivers Name (print)				Date		Payroll No.
Log Record			Vehicle ID No.			
Date:			Time:			
Receiver Name (sign and print)					Date	
Well Identification	Gallons Pumped	Purpose Codes	Responsible Organization	Date	Comments	
INFORMATION						
ONLY						
USE NCR FORM						
Total Gallons						
Driver Signature: _____ Purpose Codes: A - Aquifer Testing R - Remediation M - Maintenance S - Sampling						

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Westinghouse Hanford Company		RADIOACTIVE SHIPMENT CHECK LIST			_____ NM Representative _____ Oper. Org. Representative _____ OHP Representative Initials _____		
		Inspection Date _____ Departure Date _____					
Shipment For Onsite <input type="checkbox"/> Offsite <input type="checkbox"/>	RSR ID No. DOE 741 No.	Packaging Procedure Used Procedure No.	Number of Containers in Shipment Total	Type of Container DOT Spec. or Describe	Certificate of Compliance Date Cert. Expires SARP ID No.		
	Other						
Seals Affixed Each Cont. Yes <input type="checkbox"/> N/A <input type="checkbox"/>	Weight Identified Each Cont. Yes <input type="checkbox"/> N/A <input type="checkbox"/>	Address Label Each Cont. Yes <input type="checkbox"/> N/A <input type="checkbox"/>	RAM Label Affixed Each Cont. Yes <input type="checkbox"/> N/A <input type="checkbox"/>	Secondary Hazard Label Each Cont. Yes <input type="checkbox"/> N/A <input type="checkbox"/>	If Type A or B Cont. - Marked Each Cont. Yes <input type="checkbox"/> N/A <input type="checkbox"/>		
EXTERIOR CONTAINER CONDITION			Yes No N/A	INTERIOR CONTAINER AND CONTENTS CONDITION			Yes No N/A
Rust or excessive chipped paint evident			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Rust or Excessive chipped paint evident			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Penetrations or leakage evident			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Penetrations or leakage evident			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Gaskets satisfactory and in place			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Packing, shielding other safety devices in place			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Safety devices satisfactory and in place			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Closure lid or cap positioned and secured			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Closure lid or cap positioned and secured			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Overall interior construction satisfactory			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Lock bolts or rings positioned and secured			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Containers used are approved and not bulged			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Container identification label affixed			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Matl. form and qty. auth. by SARP or cert. of Comp.			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Overall construction satisfactory			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Container and contents surveyed			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Q.A. Inspection current or completed			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Container(s) properly identified			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Shoring if required in place and secure			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Other hazardous constituents identified			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Container and components surveyed			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>				
DOCUMENTATION REQUIREMENTS			Yes No N/A				Yes No N/A
Loading / Unloading diagram prepared / included.			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	DOT-7A Type A - Evaluation of contents vs. MLM-3245 for retention and dose rate			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Shipping / Receiving report prepared / Included			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Container tied down by procedure			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Material transfer request prepared / Included			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Patrol Vehicle Search for Cat. I & II SNM shipments			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
DESCRIPTION							
						Yes No N/A	
Physical/Chemical form of radioactive material identified on RSR						<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Radionuclides and activities for each container and total shipment identified on RSR and containers as appropriate						<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Total grams fissile in shipment identified on RSR						<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Transport index identified on RSR and each container label						<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Shipper/Receiver correctly identified (see note) on RSR and address label of each container						<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Irradiated or nonirradiated radioactive material identified on RSR						<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Other hazardous constituents identified on RSR						<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Fissile class III limitations identified on RSR and each container if required						<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Truck properly placarded (4 min.)						<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Placards used _____							
Shipment Authorized <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> If Rejected Explain _____ _____ _____ _____							
Date Shipped _____ Authorized Shipper _____							
NOTE: Notify receiver of shipment departure and expected time or date of arrival.							

Field Sampling Requirements
Laboratory Analysis

Laboratory _____

Matrix _____

Parameter/Analysis	Reference Method	Container ¹ / Volume	Preservation	Holding Times

Field Instrument Readings Required? (Yes/No) ____



Key

¹ Container Types:

- P = Plastic (Polyethylene)
- G = Glass
- Gs = Glass w/septum cap
- Gs* = Glass w/septum cap –
No head space in container

- aG = Amber Glass
- aGs = Amber Glass w/septum cap
- aGs* = Amber Glass w/septum cap –
No head space in container

SAF Number B9x-xxx

Revision ____

Date ____ / ____ / ____

SAMPLING AUTHORIZATION FORM

SAF Number B9x-xxx

Revision

PROGRAM TYPE	_____	PROJECT ID	_____
PROJECT TYPE	_____	OPERABLE UNIT	_____
TASK ID	_____	ROUND NUMBER	_____
SAMPLING EVENT TITLE	_____		

TASK MANAGER	ORG. CODE	MSIN	TELEPHONE
FAX			
_____	_____	-	<u>37-</u>
<u>37-</u>			

CHARGE CODES — ANALYTICAL SERVICES	_____	SAMPLE
MANAGEMENT	_____	TECHNICAL
OVERSIGHT	_____	

SAMPLE MANAGEMENT FUNCTION PROJECT COORDINATOR _____
 TELEPHONE 37- _____

ESTIMATED START DATE	<u> / / </u>	ESTIMATED COMPLETION	
DATE			<u> / / </u>
SAMPLING LOCATION	_____	ESTIMATED NUMBER OF	
SAMPLES			_____
DATA TURNAROUND REQUIREMENTS	_____	PRIORITY	_____ REGULAR
DATA DELIVERABLE REQUIREMENTS	_____	STANDALONE	_____ SUMMARY
SAMPLE MATRIX	_____ SOIL	_____ WATER	_____ OTHER (See Comments)
ANALYTICAL PROTOCOL(S)	_____		
LABORATORY	_____	_____	_____

COMMENTS:

▶▶

Date / /

REQUEST FOR ANALYTICAL SERVICES

Do you require a cost estimate? (Yes/No) ___ Will data require validation? (Yes/No) ___

PROGRAM TYPE: (✓)

- CERCLA
 - RCRA CLOSURE
 - RCRA WASTE DESIGNATION
 - OTHER (Specify) _____
- OPERABLE UNIT _____
 - SOURCE
 - GROUNDWATER ROUND

PROJECT TYPE

- REMEDIAL INVESTIGATION/FEASIBILITY STUDY
- LIMITED FIELD INVESTIGATION
- EXPEDITED RESPONSE ACTION
- TREATABILITY TEST
- OTHER (Specify) _____

SAMPLING EVENT TITLE _____

GOVERNING DOCUMENT _____

DOCUMENT NUMBER _____

General description of sampling event. _____

TASK MANAGER	ORG. CODE	MSIN	TELEPHONE NUMBER	FAX NUMBER
_____	_____	-	37 - _____	37 - _____

CHARGE CODES —	ANALYTICAL SERVICES	_____	SAMPLE MANAGEMENT	_____
	SAMPLING SERVICES	_____	TECHNICAL OVERSIGHT	_____
	RAD. SCREENING (222-S)	_____		

ANALYTICAL PROTOCOLS: (✓)

- CLP
- SW-846
- RADCHEM
- OTHER (Specify) _____

DATA TURNAROUND REQUIREMENTS: ___ PRIORITY ___ REGULAR

Assigned SAF B9x-xxx

Field Sampling Requirements
Field Screening Requirements

Matrix _____

X	Field Analysis	✓	Field Analysis
	pH		Total Dissolved Oxygen
	Conductivity		Eh (Redox Potential)
	Temperature		Other (List)

Laboratory analysis required? (Yes/No) ____

SAF Number B9x-xxx
Revision ____

Date / /

4701-C SAMPLE LOG SHEET

ER-94-_____

Date:		Time:		Project:	
Well Number:			Delivered By:		
Received By:			Date Collected:		
Date Shipped:		To:		RAD:	
Refrigerator Number:			Total Number of Bottles:		
SAMPLE NUMBER					
B0	N	B0	N	B0	N
B0	N	B0	N	B0	N
B0	N	B0	N	B0	N
B0	N	B0	N	B0	N
B0	N	B0	N	B0	N
B0	N	B0	N	B0	N
B0	N	B0	N	B0	N
B0	N	B0	N	B0	N
B0	N	B0	N	B0	N
B0	N	B0	N	B0	N
Comments:			RECEIVED ON ICE: YES _____ NO _____		
			CUSTODY SEALS IN TACK: YES _____ NO _____		
			SOIL _____ WATER _____		

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CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page ____ of ____

 Data Turnaround
 Priority
 Normal

Collector			Company Contact				Telephone No.														
Project Designation			Sampling Location				SAF No.														
Ice Chest No.			Field Logbook No.				Method of Shipment														
Shipped To			Offsite Property No.				Bill of Lading/Air Bill No.														
Possible Sample Hazards/Remarks			Preservative																		
			Type of Container																		
			No. of Container(s)																		
Special Handling and/or Storage			Volume																		
SAMPLE ANALYSIS																					
Sample No.	Matrix	Date Sampled	Time Sampled																		
Chain of Possession		Sign/Print Names				Special Instructions								Matrix							
Relinquished By	Date/Time	Received By	Date/Time																		
Relinquished By	Date/Time	Received By	Date/Time																		
Relinquished By	Date/Time	Received By	Date/Time																		
Relinquished By	Date/Time	Received By	Date/Time																		
Laboratory Section	Received By				Title				Date/Time												
Final Sample Disposition	Disposal Method				Disposed By				Date/Time												

- Matrix
- S = Soil
 - SE = Sediment
 - SO = Solid
 - SL = Sludge
 - W = Water
 - O = Oil
 - A = Air
 - DS = Drum Solids
 - DL = Drum Liquids
 - T = Tissue
 - WI = Wipe
 - L = Liquid
 - V = Vegetation
 - X = Other

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DRILLING PLANNING FORM		Page ____ of ____
Work Description:		
List Well/Borehole Designation(s):		
Reference: _____ Rev: _____ Date Approved _____		
	Print/Sign Name and Date	
Cultural Resource Review/Clearance		
Environmental Assessment/NEPA Documentation		
Excavation Permit		
Start Card(s) (WAC 173-160)		
Hazardous Waste Operations Permit/Site Safety Plan		
Radiation Work Permit/ALARA Management Worksheet		
Davis-Bacon Act Determination		
Safety Assessment		
ERC Team Safety Inspection Checklist		
Personnel Training		
Site Evaluation Letter		
ALARA Checklist		
Waste Disposal Planning		
Well Specification		
Mechanical Equipment Selected and Ready to Support Operations		
Develop/Revise Procedures and Protocol		
Approval: (Print/Sign Name and Date)		

Field Coordinator		

FIELD CLEANING AND/OR DECONTAMINATION

Project:

Location of Cleaning/Decontamination:

Borehole:

Destination:

The following equipment has been field cleaned and/or decontaminated following EIP 6.2 Rev. ____

List types of detergent: Non-phosphate Other _____

Rigs	Equipment	ID No.	Cleaning	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<input type="checkbox"/>	_____	_____			
<input type="checkbox"/>	_____	_____			
<input type="checkbox"/>	_____	_____			
<input type="checkbox"/>	_____	_____			

Downhole Equipment	Size	Date
<input type="checkbox"/>	_____ Ea.	_____
<input type="checkbox"/>	_____ Ea.	_____
<input type="checkbox"/>	_____ Ea.	_____
<input type="checkbox"/>	_____ Ea.	_____
<input type="checkbox"/>	_____ Ea.	_____
<input type="checkbox"/>	_____ Ea.	_____
<input type="checkbox"/>	_____ Ea.	_____
<input type="checkbox"/>	_____ Ea.	_____
<input type="checkbox"/>	_____ Ea.	_____
<input type="checkbox"/>	_____ Ea.	_____
<input type="checkbox"/>	_____ Ea.	_____
<input type="checkbox"/>	_____ Ea.	_____
<input type="checkbox"/>	_____ Ea.	_____
<input type="checkbox"/>	_____ Ea.	_____
<input type="checkbox"/>	_____ Ea.	_____

Remarks:

Person Conducting Decontamination Print/Sign Name	Date	Reviewed By FTL/Designee	Date
--	------	--------------------------	------

SAMPLE AND DATA MANAGEMENT ADMINISTRATIVE VERIFICATION FORM		Verification Number
VERIFICATION DATE:	VERIFIER:	
PROJECT:	SAF NUMBER:	
PACKAGE ID NUMBER:	ROD NUMBER:	
SAMPLE NUMBERS:		
DATA PACKAGE DEFICIENCIES:		
DATE DEFICIENCIES TRANSMITTED TO LAB:		
DATE LAB RESPONSE DUE:	DATE LAB RESPONSE RECEIVED:	
DATA ADMINISTRATIVE VERIFICATION CLOSED:		

No. _____

VALIDATION SERVICES REQUEST

Validator:

Client:

Project Coordinator:

Project (OU/TSD/Other):

SAF Number(s):

Validation Task Title:

(i.e., round number)

SAP Number:

(if applicable)

QAPP Number:

(if applicable)

Percent Validation:

Level of Validation (A, B, C, D, E):

Requested Validation Start Date:

Requested Validation Completion Date:

Validation Procedure/Revision Number to be utilized in validation:

Bechtel Document Control Number:

(to be affixed to each page of the report in the upper right hand corner)

Chem: WHC-SD-EN-SPP-002/Revision 2

Rad: WHC-SD-EN-SPP-001/Revision 1

TPCN Number:

Cost Account Manager:

Summary Report Required?

Validation Diskette Deliverable Required?

Comments:

* Please Note: All requests for validation must include the following:

- Matrix which includes the following:
 - Sample Number(s)
 - Sample Location(s) which include split/duplicate information (identify split and duplicate sample sets)
 - Date Sampled
- Applicable SAP and QAPP

Package ID: _____

VOLATILE ORGANIC DATA VERIFICATION CHECKLIST

Review the data package for completeness and check off the items below. If any data review elements are missing, contact the laboratory for re-submittal.

<u>Data Package Item</u>	<u>Present?</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Quality Control (QC) Summary				
*Surrogate Summary report	—	—		
*MS/MSD Summary report	—	—		
*Blank summary report	—	—		
GC/MS tuning report	—	—		
Sample Data				
*Sample reports	—	—		
*TIC reports for each sample				
Chromatograms for all samples			—	
Raw and corrected spectra for all detected results			—	
Raw and corrected library search data for all reported TIC			—	
Quantitation and calculation data for all TIC	—	—	—	
Standards Data				
Initial calibration report	—	—		
RIC and quantitation reports for initial calibration				
Continuing calibration reports			—	
RIC and quantitation reports for cont. calibrations			—	
Internal standards summary report	—	—		
Raw QC Data				
Tuning, spectra and mass lists			—	
Blank Data				
Blank analysis report	—	—		
TIC reports for all blanks	—	—		
RIC and quantitative reports for blanks			—	
Raw and corrected spectra for all detected results in blanks	—	—	—	
Raw and corrected library search data for all reported TIC	—	—	—	
Quantitation and calculation data for all TIC	—	—	—	
Matrix Spike/Matrix Spike Duplicate (MS/MSD) Data				
MS/MSD Analysis Reports	—	—		
RIC and quantitative reports for MS/MSD			—	
Additional Data				
Moisture/% solids data sheets				—
Sample preparation sheets	—	—	—	

Comments _____

NOTE: Checklist items required by "summary" data packages are identified by an asterisk (*) in front of the item.

Package ID: _____

SEMI-VOLATILE ORGANIC DATA VERIFICATION CHECKLIST

Review the data package for completeness and check off the items below. If any data review elements are missing, contact the laboratory for re-submittal.

<u>Data Package Item</u>	<u>Present?</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Quality Control (QC) Summary				
*Surrogate Summary report	---	---		
*MS/MSD Summary report	---	---		
*Blank summary report	---	---		
GC/MS tuning report	---	---		
Sample Data				
*Sample reports	---	---		
*TIC reports for each sample	---	---	---	
RIC reports for all samples	---	---	---	
Raw and corrected spectra for all detected results	---	---	---	
Raw and corrected library search data for all reported TIC	---	---	---	
Quantitation and calculation data for all TIC	---	---	---	
Standards Data				
Initial calibration report	---	---		
RIC and quantitation reports for initial calibration	---	---	---	
Continuing calibration reports	---	---	---	
RIC and quantitation reports for cont. calibrations	---	---	---	
Internal standards summary report	---	---		
Raw QC Data				
Tuning, spectra and mass lists	---	---	---	
Blank Data				
Blank analysis report	---	---		
TIC reports for all blanks	---	---		
RIC and quantitative reports for blanks	---	---	---	
Raw and corrected spectra for all detected results in blanks	---	---	---	
Raw and corrected library search data for all reported TIC	---	---	---	
Quantitation and calculation data for all TIC	---	---	---	
Matrix Spike/Matrix Spike Duplicate (MS/MSD) Data				
MS/MSD Analysis Reports	---	---		
RIC and quantitative reports for MS/MSD	---	---	---	
Additional Data				
Moisture/% solids data sheets	---	---	---	---
Sample preparation sheets	---	---	---	

Comments _____

NOTE: Checklist items required by "summary" data packages are identified by an asterisk (*) in front of the item.

Package ID: _____

PESTICIDE/PCB DATA VERIFICATION CHECKLIST

Review the data package for completeness and check off the items below. If any data review elements are missing, contact the laboratory for re-submittal.

Data Package Item	Present?	Yes	No	N/A
Quality Control (QC) Summary				
*Surrogate Summary report	—	—		
*MS/MSD Summary report	—	—		
*Blank summary report	—	—		
Sample Data				
*Sample reports	—	—		
Chromatograms	—	—		
GC integration reports	—	—		
UV traces from GPC	—	—		
Standards Data (2/88) Δ N/A				
Pesticides Evaluation Standards Summary	—	—		
Pesticides/PCB Standards Summary	—	—		
Pesticides/PCB identification	—	—		
Pesticides standard chromatograms	—	—		
Standards Data (3/90) Δ N/A				
Pesticide Initial Calibration of single component analytes (Retention Time Window)	—	—		
Pesticide Initial Calibration of single component analytes (Calibration Factors)		—	—	
Pesticide Initial Calibration of multicomponent analytes (PCB)	—	—		
Pesticide analyte resolution summary	—	—		
PEM pesticide calibration verification summary	—	—		
IND A and IND B pesticide calibration verification summary		—	—	
Pesticide analytical sequence		—	—	
Pesticide florisil cartridge check	—	—		
Pesticide GPC calibration	—	—		
Pesticide identification summary for single component analytes	—	—		
Pesticide identification summary for multicomponent analytes	—	—		
Pesticide standard chromatograms	—	—		
Raw QC Data				
Blank analysis reports, chromatograms, and GC integration reports	—	—		
MS/MSD report forms and chromatograms	—	—		
Additional Data				
Moisture/% solids data sheets		—	—	—
Sample preparation sheets	—	—		
GC/MS confirmation spectra		—	—	—

Comments _____

NOTE: Checklist items required by "summary" data packages are identified by an asterisk (*) in front of the item.

Package ID: _____

GAS CHROMATOGRAPHY DATA VERIFICATION CHECKLIST
 [SW-846 METHODS, EX. 8015-M, 8080, ETC.]

Review the data package for completeness and check off the items below. If any data review elements are missing, contact the laboratory for re-submittal.

<u>Data Package Item</u>	<u>Present?</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Quality Control (QC) Summary				
*Surrogate recovery		---	---	---
*MS/MSD recovery		---	---	---
*Method blank summary		---	---	---
Sample Data	---	---		
*Sample results	---	---		
Chromatograms for all samples/extracts		---	---	
Quantitation sheets for all samples/extracts		---	---	
Standards Data				
Initial calibration standard concentrations		---	---	
Initial calibration summary		---	---	
Chromatograms for all initial cal. standards	---	---	---	
Quantitation sheets for all initial cal. standards	---	---	---	
Continuing calibration standard concentrations	---	---	---	
Continuing calibration summary	---	---	---	
Chromatograms for all continuing cal. standards	---	---	---	
Quantitation sheets for all continuing cal. standards	---	---	---	
Raw QC Data				
Blanks				
Laboratory blank results	---	---		
Chromatograms for all laboratory blanks		---	---	
Quantitation reports for all laboratory blanks	---	---	---	
Matrix Spike/Matrix Spike Duplicates				
MS/MSD results	---	---	---	
Chromatograms for all MS/MSDs	---	---	---	
Quantitation reports for all MS/MSDs	---	---	---	
Additional Data				
Moisture/% solids data sheets		---	---	---
Sample preparation sheets	---	---	---	---

Examples of GC other methods: 8010, 8020, 8015-M, 601, 602, TPH-G, TPH-D

Comments _____

NOTE: Checklist items required by "summary" data packages are identified by an asterisk(*) in front of the item.

Package ID: _____

DIOXIN/FURAN DATA VERIFICATION CHECKLIST

Review the data package for completeness and check off the items below. If any data review elements are missing, contact the laboratory for re-submittal.

Data Package Item	Present?	Yes	No	N/A
Quality Control (QC) Summary				
MS resolution check		—	—	
Window mixture summaries	—	—	—	
Internal standards recovery	—	—	—	
*MS/MSD recovery	—	—	—	
*Method blank summary	—	—	—	
Sample Data				
* Sample results	—	—	—	
Chromatograms (SICP's ¹) for all samples/extracts	—	—	—	
Quantitation sheets for all samples/extracts	—	—	—	
Extraction data sheets for all samples/extracts	—	—	—	
Instrument time/run logs all samples/extracts	—	—	—	
Standards Data				
Calibration standard concentrations	—	—	—	
Initial calibration summary of RRF/RSD data	—	—	—	
Initial calibration summary of isotope ratios	—	—	—	
Chromatograms (SICP's ¹) for all initial cal. standards	—	—	—	
Quantitation sheets for all initial cal. standards	—	—	—	
Continuing calibration summary of RRF/%D data	—	—	—	
Continuing calibration summary of isotope ratios	—	—	—	
Chromatograms (SICP's ¹) for all continuing cal. standards	—	—	—	
Quantitation sheets for all continuing cal. standards	—	—	—	
Instrument time/run logs for all standards	—	—	—	—
Calibration standard concentrations	—	—	—	
Raw QC Data				
Blanks				
Laboratory blank results	—	—	—	
Chromatograms for all laboratory blanks	—	—	—	
Quantitation reports for all laboratory blanks	—	—	—	
Matrix Spike/Matrix Spike Duplicates				
MS/MSD results	—	—	—	
Chromatograms (SICP's ¹)	—	—	—	
Quantitation sheets	—	—	—	
Additional Data				
Sample preparation sheets	—	—	—	

SICP's¹ = Selected Ion Current Profile

Comments: _____

NOTE: Checklist items required by "summary" data packages are identified by an asterisk(*) in front of the item.

Package ID: _____

INORGANIC ANALYSIS DATA VERIFICATION CHECKLIST

Review the data package for completeness and check off the items below. If any data review elements are missing, contact the laboratory for re-submittal.

<u>Data Package Item</u>	<u>Present?</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Cover page (CLP only)	---	---	---	
Sample Data				
*Inorganic analysis data sheets		---	---	
Standards Data				
Initial and continuing calibration verification		---	---	
CRDL standard for AA and ICP (Detection limit verification)	---	---		
QC Summary				
*Blanks	---	---		
ICP interference check summary	---	---		
* Spike sample recovery	---	---	---	
* Post-digestion spike sample recovery	---	---	---	
*Duplicates	---	---	---	---
*Laboratory control sample	---	---		
Standard addition results	---	---		
ICP serial dilutions	---	---	---	
Instrument detection limits	---	---		
ICP interelement correction factors	---	---	---	
ICP linear ranges	---	---	---	
Preparation log	---	---		
Instrument run log	---	---	---	
Raw Data				
ICP raw data	---	---	---	
Furnace AA raw data	---	---	---	
Flame AA raw data	---	---	---	
Mercury raw data	---	---	---	---
Cyanide raw data	---	---	---	
Additional Data				
Moisture/% solids data sheets	---	---	---	---
Sample preparation sheets	---	---		

Comments _____

NOTE: Checklist items required by "summary" data packages are identified by an asterisk(*) in front of the item.

Package ID: _____

GENERAL CHEMISTRY DATA VERIFICATION CHECKLIST

Review the data package for completeness and check off the items below. If any data review elements are missing, contact the laboratory for re-submittal.

Data Package Item	Present?	Yes	No	N/A
<input type="checkbox"/> Anions by Ion Chromatography (Method 300.0)				
*Sample results	---	---		
Initial calibration data	---	---		
Continuing calibration verification	---	---		
Calibration standard concentrations	---	---		
*Blank analysis data or summary report format		---	---	
*Duplicate sample analysis report forms		---	---	
*Spike sample recovery data		---	---	
*Laboratory control sample data	---	---	---	
Raw data		---	---	
Analytical sequence		---	---	
Ion Chromatograms		---	---	
Quantitation report		---	---	
Additional data				
Moisture/% solids data sheets		---	---	---
Sample preparation sheets (Soils, other only)	---	---	---	
<input type="checkbox"/> Colorimetric (NOTE: Identify by Name, Analyte and EPA Method) _____				

*Sample results	---	---		
Initial calibration data	---	---		
Continuing calibration verification	---	---		
Calibration standard concentrations	---	---		
*Blank analysis data or summary report forms	---	---		
*Duplicate sample analysis report forms		---	---	
*Spike sample recovery data		---	---	
*Laboratory control sample data	---	---	---	
Raw data		---	---	
Analytical sequence		---	---	
Ion Chromatograms		---	---	
Quantitation report		---	---	
Additional data				
Moisture/% solids data sheets		---	---	---
Sample preparation sheets (Soils, other only)	---	---	---	

NOTE: Checklist items required by "summary" data packages are identified by an asterisk(*) in front of the item.

Package ID: _____

Gravimetric (NOTE: Identify by Name, Analyte and EPA Method) _____

* Sample results	—	—		
Balance check	—	—		
* Blank analysis data or summary report forms	—	—		
* Duplicate sample analysis report forms		—	—	
* Laboratory control sample report forms		—	—	—
Raw data		—	—	
Additional data				
Moisture/% solids data sheets		—	—	—
Sample preparation sheets (Soils, other only)	—	—	—	

Ion Selective Electrode (NOTE: Identify by Name, Analyte and EPA Method) _____

* Sample results	—	—		
Initial calibration data	—	—		
Continuing calibration verification	—	—		
* Blank analysis data or summary report format		—	—	—
* Duplicate sample analysis report forms		—	—	
* Spike sample recovery data		—	—	—
* Laboratory control sample data	—	—	—	
Raw data		—	—	
mV check		—	—	
Additional data				
Moisture/% solids data sheets		—	—	—
Sample preparation sheets (Soils, other only)	—	—	—	

Titrimetric (NOTE: Identify by Name, Analyte and EPA Method) _____

* Sample results	—	—		
Initial calibration data (Auto)		—	—	—
Continuing calibration verification (Auto)		—	—	—
Titrant normality checks	—	—	—	
* Blank analysis data or summary report format		—	—	
* Duplicate sample analysis report forms		—	—	
* Laboratory control sample data	—	—	—	
Raw data		—	—	
Additional data				
Moisture/% solids data sheets		—	—	—
Sample preparation sheets (Soils, other only)	—	—	—	

NOTE: Checklist items required by "summary" data packages are identified by an asterisk(*) in front of the item.

Package ID: _____

Total Petroleum Hydrocarbons (EPA Method 418.1)

* Sample results	---	---		
Initial calibration data	---	---		
Continuing calibration verification	---	---		
Calibration standard concentrations (Dilution Log)	---	---		
* Blank analysis data or summary report forms	---	---	---	
* Duplicate sample RPD and results	---	---		
* Blank spike sample recovery and results	---	---	---	
* Laboratory control sample data	---	---	---	
Raw data				
IR spectra	---	---		
Laboratory bench sheets	---	---		
Additional data				
Moisture/% solids data sheets				---
Sample preparation sheets (Soils, other only)	---	---	---	

Other Analytes/Methods (NOTE: Identify by Name, Analyte and EPA Method)

* Sample results	---	---		
Initial calibration data	---	---		
Continuing calibration verification	---	---		
Calibration standard concentrations (Dilution Log)	---	---		
* Blank analysis data or summary report forms	---	---	---	
* Duplicate sample RPD and results	---	---		
* Spike sample recovery data	---	---	---	---
* Laboratory control sample data	---	---	---	
Raw data				
Analytical sequence				
Instrument printouts	---	---	---	
Laboratory bench sheets	---	---	---	
Additional data				
Moisture/% solids data sheets				---
Sample preparation sheets (Soils, other only)	---	---	---	

Examples of methods of analysis for general chemistry parameters may be as follows:

- Anions: chloride, fluoride, nitrate, sulfate, phosphate, bromide
- Colorimetric: COD, cyanide, sulfate, chloride, phosphate, nitrate + nitrite, ammonia, phenols
- Gravimetric: TDS, TSS, % solids, TOC, sulfate, oil and grease
- Ion Selective Electrode: pH, ammonia, nitrate, fluoride, cyanide, sulfate
- Titrimetric: alkalinity, acidity, COD, cyanide, chloride, hardness
- TPH: Methods 418.1 or 413.2
- Other: TOC/TOX, Hydrazine

NOTE: Checklist items required by "summary" data packages are identified by an asterisk (*) in front of the item.

Package ID: _____

VERIFICATION CHECKLIST FOR BETA AND GAS PROPORTIONAL COUNTING

Analysis: _____

	Yes	No	NA
Analysis Results			
*Results and minimum detectable activity (MDA) report			
*for sample analyses, recounts and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	
*for blank analyses, recounts and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	
*for duplicate analyses, recounts and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	
Raw data (counting logs or printouts or notebook pages)	<input type="checkbox"/>	<input type="checkbox"/>	
Sample preparation data	<input type="checkbox"/>	<input type="checkbox"/>	
Calculation sheets	<input type="checkbox"/>	<input type="checkbox"/>	
Sample identification	<input type="checkbox"/>	<input type="checkbox"/>	
Detector identifications	<input type="checkbox"/>	<input type="checkbox"/>	
Detector efficiencies	<input type="checkbox"/>	<input type="checkbox"/>	
Dates of analysis	<input type="checkbox"/>	<input type="checkbox"/>	
Gravimetric/Chemical Yields			
Results report for chemical yields			<input type="checkbox"/>
Raw data (printouts or notebook pages)	<input type="checkbox"/>	<input type="checkbox"/>	
Sample preparation data	<input type="checkbox"/>	<input type="checkbox"/>	
Calculation sheets	<input type="checkbox"/>	<input type="checkbox"/>	
Sample identifications	<input type="checkbox"/>	<input type="checkbox"/>	
Chemical yield source identification, traceability and dilution log	<input type="checkbox"/>	<input type="checkbox"/>	
Calculated recoveries	<input type="checkbox"/>	<input type="checkbox"/>	
Matrix Spike Recovery			
*Results and MDA reports for matrix spike analyses, recounts and reanalyses			<input type="checkbox"/>
Raw data (counting logs or printouts or notebook pages)	<input type="checkbox"/>	<input type="checkbox"/>	
Sample preparation data	<input type="checkbox"/>	<input type="checkbox"/>	
Calculation sheets	<input type="checkbox"/>	<input type="checkbox"/>	
Matrix spike sample identifications	<input type="checkbox"/>	<input type="checkbox"/>	
Matrix spike source traceability and dilution log	<input type="checkbox"/>	<input type="checkbox"/>	
Detector identifications	<input type="checkbox"/>	<input type="checkbox"/>	
Detector efficiencies	<input type="checkbox"/>	<input type="checkbox"/>	
Dates of analysis	<input type="checkbox"/>	<input type="checkbox"/>	
Calculated recoveries	<input type="checkbox"/>	<input type="checkbox"/>	
Laboratory Control Samples (LCS)			
*Results and MDA reports for LCS analyses, recounts and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	
Raw data (counting logs or printouts or notebook pages)	<input type="checkbox"/>	<input type="checkbox"/>	
Sample preparation data	<input type="checkbox"/>	<input type="checkbox"/>	
Calculation sheets	<input type="checkbox"/>	<input type="checkbox"/>	
LCS identification, activity and traceability	<input type="checkbox"/>	<input type="checkbox"/>	
Detector identifications	<input type="checkbox"/>	<input type="checkbox"/>	
Detector efficiencies	<input type="checkbox"/>	<input type="checkbox"/>	
Dates of analysis	<input type="checkbox"/>	<input type="checkbox"/>	
Calculated recoveries	<input type="checkbox"/>	<input type="checkbox"/>	

NOTE: Checklist items required by "summary" data packages are identified by an asterisk(*) in front of the item.

Package ID: _____

VERIFICATION CHECKLIST FOR ALPHA SPECTROSCOPY

Analysis: _____

	Yes	No	NA
<u>Analysis Results</u>			
*Results and minimum detectable activity (MDA) report			
*for sample analyses, recounts and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	
*for blank analyses, recounts and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	
*for duplicate analyses, recounts and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	
Raw data (spectra or printouts or notebook pages)	<input type="checkbox"/>	<input type="checkbox"/>	
Sample preparation data	<input type="checkbox"/>	<input type="checkbox"/>	
Calculation sheets	<input type="checkbox"/>	<input type="checkbox"/>	
Sample identification	<input type="checkbox"/>	<input type="checkbox"/>	
Detector identifications	<input type="checkbox"/>	<input type="checkbox"/>	
Detector efficiencies	<input type="checkbox"/>	<input type="checkbox"/>	
Dates of analysis	<input type="checkbox"/>	<input type="checkbox"/>	
<u>Matrix Spike Recovery</u>			
			<input type="checkbox"/>
*Results and MDA reports for matrix spike analyses, recounts and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	
Raw data (spectra or printouts or notebook pages)	<input type="checkbox"/>	<input type="checkbox"/>	
Sample preparation data	<input type="checkbox"/>	<input type="checkbox"/>	
Calculation sheets	<input type="checkbox"/>	<input type="checkbox"/>	
Matrix spike sample identifications	<input type="checkbox"/>	<input type="checkbox"/>	
Matrix spike source traceability and dilution log	<input type="checkbox"/>	<input type="checkbox"/>	
Detector identifications	<input type="checkbox"/>	<input type="checkbox"/>	
Detector efficiencies	<input type="checkbox"/>	<input type="checkbox"/>	
Dates of analysis	<input type="checkbox"/>	<input type="checkbox"/>	
Calculated recoveries	<input type="checkbox"/>	<input type="checkbox"/>	
<u>Tracer Recovery</u>			
			<input type="checkbox"/>
*Results report for tracer analyses	<input type="checkbox"/>	<input type="checkbox"/>	
Raw data (spectra or printouts or notebook pages)	<input type="checkbox"/>	<input type="checkbox"/>	
Sample preparation data	<input type="checkbox"/>	<input type="checkbox"/>	
Calculation sheets	<input type="checkbox"/>	<input type="checkbox"/>	
Tracer identification, traceability and dilution log	<input type="checkbox"/>	<input type="checkbox"/>	
Detector identifications	<input type="checkbox"/>	<input type="checkbox"/>	
Detector efficiencies	<input type="checkbox"/>	<input type="checkbox"/>	
Dates of analysis	<input type="checkbox"/>	<input type="checkbox"/>	
Calculated recoveries	<input type="checkbox"/>	<input type="checkbox"/>	
<u>Laboratory Control Samples (LCS)</u>			
*Results and MDA reports for LCS analyses, recounts and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	
Raw data (counting logs or printouts or notebook pages)	<input type="checkbox"/>	<input type="checkbox"/>	
Sample preparation data	<input type="checkbox"/>	<input type="checkbox"/>	
Calculation sheets	<input type="checkbox"/>	<input type="checkbox"/>	
LCS identification, activity and traceability	<input type="checkbox"/>	<input type="checkbox"/>	
Detector identifications	<input type="checkbox"/>	<input type="checkbox"/>	
Detector efficiencies	<input type="checkbox"/>	<input type="checkbox"/>	
Dates of analysis	<input type="checkbox"/>	<input type="checkbox"/>	
Calculated recoveries	<input type="checkbox"/>	<input type="checkbox"/>	

NOTE: Checklist items required by "summary" data packages are identified by an asterisk(*) in front of the item.

Package ID: _____

VERIFICATION CHECKLIST FOR GAMMA SPECTROSCOPY

	Yes	No	NA
<u>Analysis Results</u>			
*Results and minimum detectable activity (MDA) report			
*for sample analyses, recounts and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	
*for blank analyses, recounts and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	
*for duplicate analyses, recounts and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	
Raw data (spectra or printouts or notebook pages)	<input type="checkbox"/>	<input type="checkbox"/>	
Sample preparation data	<input type="checkbox"/>	<input type="checkbox"/>	
Calculation sheets	<input type="checkbox"/>	<input type="checkbox"/>	
Sample identification	<input type="checkbox"/>	<input type="checkbox"/>	
Detector identifications	<input type="checkbox"/>	<input type="checkbox"/>	
Detector efficiencies	<input type="checkbox"/>	<input type="checkbox"/>	
Dates of analysis	<input type="checkbox"/>	<input type="checkbox"/>	
<u>Laboratory Control Samples (LCS)</u>			
*Results and MDA reports for LCS analyses, recounts and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	
Raw data (counting logs or printouts or notebook pages)	<input type="checkbox"/>	<input type="checkbox"/>	
Sample preparation data	<input type="checkbox"/>	<input type="checkbox"/>	
Calculation sheets	<input type="checkbox"/>	<input type="checkbox"/>	
LCS identification, activity and traceability	<input type="checkbox"/>	<input type="checkbox"/>	
Detector identifications	<input type="checkbox"/>	<input type="checkbox"/>	
Detector efficiencies	<input type="checkbox"/>	<input type="checkbox"/>	
Dates of analysis	<input type="checkbox"/>	<input type="checkbox"/>	
Calculated recoveries	<input type="checkbox"/>	<input type="checkbox"/>	

Comments: _____

NOTE: Checklist items required by "summary" data packages are identified by an asterisk(*) in front of the item.

Package ID: _____

VERIFICATION CHECKLIST FOR ALPHA-EMITTING RADIUM ISOTOPES USING SCINTILLATION COUNTING

<u>Analysis Results</u>	Yes	No	NA
*Results and minimum detectable activity (MDA) report			
*for sample analyses, recounts and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	
*for blank analyses, recounts and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	
*for duplicate analyses, recounts and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	
Raw data (counting logs or printouts or notebook pages)	<input type="checkbox"/>	<input type="checkbox"/>	
Sample preparation data	<input type="checkbox"/>	<input type="checkbox"/>	
Calculation sheets	<input type="checkbox"/>	<input type="checkbox"/>	
Sample identification	<input type="checkbox"/>	<input type="checkbox"/>	
Detector identifications	<input type="checkbox"/>	<input type="checkbox"/>	
Detector efficiencies	<input type="checkbox"/>	<input type="checkbox"/>	
Dates of analysis	<input type="checkbox"/>	<input type="checkbox"/>	
<u>Gravimetric/Chemical Yields</u>			<input type="checkbox"/>
Results report for chemical yields	<input type="checkbox"/>	<input type="checkbox"/>	
Raw data (printouts or notebook pages)	<input type="checkbox"/>	<input type="checkbox"/>	
Sample preparation data	<input type="checkbox"/>	<input type="checkbox"/>	
Calculation sheets	<input type="checkbox"/>	<input type="checkbox"/>	
Sample identifications	<input type="checkbox"/>	<input type="checkbox"/>	
Chemical yield source identification, traceability and dilution log	<input type="checkbox"/>	<input type="checkbox"/>	
Dates of analysis	<input type="checkbox"/>	<input type="checkbox"/>	
<u>Matrix Spike Recovery</u>			<input type="checkbox"/>
*Results and MDA reports for matrix spike analyses, recounts and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	
Raw data (counting logs or printouts or notebook pages)	<input type="checkbox"/>	<input type="checkbox"/>	
Sample preparation data	<input type="checkbox"/>	<input type="checkbox"/>	
Calculation sheets	<input type="checkbox"/>	<input type="checkbox"/>	
Matrix spike sample identifications	<input type="checkbox"/>	<input type="checkbox"/>	
Matrix spike source traceability and dilution log	<input type="checkbox"/>	<input type="checkbox"/>	
Detector identifications	<input type="checkbox"/>	<input type="checkbox"/>	
Detector efficiencies	<input type="checkbox"/>	<input type="checkbox"/>	
Dates of analysis	<input type="checkbox"/>	<input type="checkbox"/>	
Calculated recoveries and internal laboratory control limits	<input type="checkbox"/>	<input type="checkbox"/>	
<u>Laboratory Control Samples (LCS)</u>			
*Results and MDA reports for LCS analyses, recounts and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	
Raw data (counting logs or printouts or notebook pages)	<input type="checkbox"/>	<input type="checkbox"/>	
Sample preparation data	<input type="checkbox"/>	<input type="checkbox"/>	
Calculation sheets	<input type="checkbox"/>	<input type="checkbox"/>	
LCS identification, activity and traceability	<input type="checkbox"/>	<input type="checkbox"/>	
Detector identifications	<input type="checkbox"/>	<input type="checkbox"/>	
Detector efficiencies	<input type="checkbox"/>	<input type="checkbox"/>	
Dates of analysis	<input type="checkbox"/>	<input type="checkbox"/>	
Calculated recoveries	<input type="checkbox"/>	<input type="checkbox"/>	

NOTE: Checklist items required by "summary" data packages are identified by an asterisk(*) in front of the item.

Package ID: _____

VERIFICATION CHECKLIST FOR RADIUM-226 ANALYSIS USING SCINTILLATION (LUCAS CELL) COUNTING

	Yes	No	NA
Analysis Results			
*Results and minimum detectable activity (MDA) report			
*for sample analyses, recounts and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	
*for blank analyses, recounts and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	
*for duplicate analyses, recounts and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	
Raw data (counting logs or printouts or notebook pages)	<input type="checkbox"/>	<input type="checkbox"/>	
Sample preparation data	<input type="checkbox"/>	<input type="checkbox"/>	
Calculation sheets	<input type="checkbox"/>	<input type="checkbox"/>	
Sample identification	<input type="checkbox"/>	<input type="checkbox"/>	
Detector identifications	<input type="checkbox"/>	<input type="checkbox"/>	
Cell efficiencies	<input type="checkbox"/>	<input type="checkbox"/>	
Dates of analysis	<input type="checkbox"/>	<input type="checkbox"/>	
Gravimetric/Chemical Yields			
Results report for chemical yields			<input type="checkbox"/>
Raw data (printouts or notebook pages)	<input type="checkbox"/>	<input type="checkbox"/>	
Sample preparation data	<input type="checkbox"/>	<input type="checkbox"/>	
Calculation sheets	<input type="checkbox"/>	<input type="checkbox"/>	
Sample identifications	<input type="checkbox"/>	<input type="checkbox"/>	
Chemical yield source identification, traceability and dilution log	<input type="checkbox"/>	<input type="checkbox"/>	
Dates of analysis	<input type="checkbox"/>	<input type="checkbox"/>	
Calculated recoveries	<input type="checkbox"/>	<input type="checkbox"/>	
Matrix Spike Recovery			
Results and MDA reports for matrix spike analyses, recounts and reanalyses			<input type="checkbox"/>
Raw data (counting logs or printouts or notebook pages)	<input type="checkbox"/>	<input type="checkbox"/>	
Sample preparation data	<input type="checkbox"/>	<input type="checkbox"/>	
Calculation sheets	<input type="checkbox"/>	<input type="checkbox"/>	
Matrix spike sample identifications	<input type="checkbox"/>	<input type="checkbox"/>	
Matrix spike source traceability and dilution log	<input type="checkbox"/>	<input type="checkbox"/>	
Detector identifications and cell efficiencies	<input type="checkbox"/>	<input type="checkbox"/>	
Dates of analysis	<input type="checkbox"/>	<input type="checkbox"/>	
Calculated recoveries and internal laboratory control limits	<input type="checkbox"/>	<input type="checkbox"/>	
Laboratory Control Samples (LCS)			
*Results and MDA reports for LCS analyses, recounts and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	
Raw data (counting logs or printouts or notebook pages)	<input type="checkbox"/>	<input type="checkbox"/>	
Sample preparation data	<input type="checkbox"/>	<input type="checkbox"/>	
Calculation sheets	<input type="checkbox"/>	<input type="checkbox"/>	
LCS identification, activity and traceability	<input type="checkbox"/>	<input type="checkbox"/>	
Detector identifications	<input type="checkbox"/>	<input type="checkbox"/>	
Cell efficiencies	<input type="checkbox"/>	<input type="checkbox"/>	
Dates of analysis	<input type="checkbox"/>	<input type="checkbox"/>	
Calculated recoveries	<input type="checkbox"/>	<input type="checkbox"/>	

NOTE: Checklist items required by "summary" data packages are identified by an asterisk(*) in front of the item.

Package ID: _____

VERIFICATION CHECKLIST FOR LIQUID SCINTILLATION COUNTING

	Yes	No	NA
<u>Analysis Results</u>			
*Results and minimum detectable activity (MDA) report			
*for sample analyses, recounts and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	
*for blank analyses, recounts and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	
*for duplicate analyses, recounts and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	
Internal standard or quench monitoring results, activity or traceability	<input type="checkbox"/>	<input type="checkbox"/>	
Raw data (counting logs or printouts or notebook pages)	<input type="checkbox"/>	<input type="checkbox"/>	
Sample preparation data	<input type="checkbox"/>	<input type="checkbox"/>	
Calculation sheets	<input type="checkbox"/>	<input type="checkbox"/>	
Sample identification	<input type="checkbox"/>	<input type="checkbox"/>	
Instrument identifications	<input type="checkbox"/>	<input type="checkbox"/>	
Dates of analysis	<input type="checkbox"/>	<input type="checkbox"/>	
<u>Continuing Calibration</u>			
Instrument identification	<input type="checkbox"/>	<input type="checkbox"/>	
Continuing calibration results report, control charts and control limits	<input type="checkbox"/>	<input type="checkbox"/>	
Calibration standard identification, traceability, activity, dilution log and expiration date	<input type="checkbox"/>	<input type="checkbox"/>	
Raw data (counting logs or printouts or notebook pages)	<input type="checkbox"/>	<input type="checkbox"/>	
Counting efficiency determination method and results	<input type="checkbox"/>	<input type="checkbox"/>	
Internal standard or quench monitoring values	<input type="checkbox"/>	<input type="checkbox"/>	
<u>Matrix Spike Recovery</u>			
*Results and MDA reports for matrix spike analyses, recounts and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Raw data (counting logs or printouts or notebook pages)	<input type="checkbox"/>	<input type="checkbox"/>	
Sample preparation data	<input type="checkbox"/>	<input type="checkbox"/>	
Calculation sheets	<input type="checkbox"/>	<input type="checkbox"/>	
Matrix spike sample identifications	<input type="checkbox"/>	<input type="checkbox"/>	
Matrix spike source traceability and dilution log	<input type="checkbox"/>	<input type="checkbox"/>	
Instrument identifications	<input type="checkbox"/>	<input type="checkbox"/>	
Dates of analysis	<input type="checkbox"/>	<input type="checkbox"/>	
Calculated recoveries	<input type="checkbox"/>	<input type="checkbox"/>	
<u>Laboratory Control Samples (LCS)</u>			
*Results and MDA reports for LCS analyses, recounts and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	
Raw data (counting logs or printouts or notebook pages)	<input type="checkbox"/>	<input type="checkbox"/>	
Sample preparation data	<input type="checkbox"/>	<input type="checkbox"/>	
Calculation sheets	<input type="checkbox"/>	<input type="checkbox"/>	
LCS identification, activity and traceability	<input type="checkbox"/>	<input type="checkbox"/>	
Instrument identifications	<input type="checkbox"/>	<input type="checkbox"/>	
Dates of analysis	<input type="checkbox"/>	<input type="checkbox"/>	
Calculated recoveries	<input type="checkbox"/>	<input type="checkbox"/>	

NOTE: Checklist items required by "summary" data packages are identified by an asterisk(*) in front of the item.

Package ID: _____

VERIFICATION CHECKLIST FOR URANIUM ANALYSIS BY FLUOROMETRY

	Yes	No	NA
Analysis Results			
*Results and minimum detectable activity (MDA) report			
*for sample analyses, reruns and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	
*for blank analyses, reruns and reanalyses		<input type="checkbox"/>	
*for duplicate analyses, reruns and reanalyses		<input type="checkbox"/>	
Internal standard results, activity or traceability		<input type="checkbox"/>	
Raw data (fluorometer readings and printouts or notebook pages)	<input type="checkbox"/>	<input type="checkbox"/>	
Sample preparation data		<input type="checkbox"/>	
Calculation sheets		<input type="checkbox"/>	
Sample identification		<input type="checkbox"/>	
Fluorometer identifications		<input type="checkbox"/>	
Dates of analysis		<input type="checkbox"/>	
Initial Calibration			
Instrument identification		<input type="checkbox"/>	
Calibration results		<input type="checkbox"/>	
Calibration standard identification, traceability, activity, dilution log and expiration data		<input type="checkbox"/>	
Raw data (fluorometer readings and printouts or notebook pages)	<input type="checkbox"/>	<input type="checkbox"/>	
Fusion efficiency determination method and results		<input type="checkbox"/>	
Matrix Spike Recovery			
			<input type="checkbox"/>
*Results and MDA reports for matrix spike analyses, recounts and reanalyses		<input type="checkbox"/>	
Raw data (fluorometer readings and printouts or notebook pages)	<input type="checkbox"/>	<input type="checkbox"/>	
Sample preparation data		<input type="checkbox"/>	
Calculation sheets		<input type="checkbox"/>	
Matrix spike sample identifications		<input type="checkbox"/>	
Matrix spike source traceability and dilution log		<input type="checkbox"/>	
Fluorometer identifications		<input type="checkbox"/>	
Dates of analysis		<input type="checkbox"/>	
Calculated recoveries		<input type="checkbox"/>	
Laboratory Control Samples (LCS)			
*Results and MDA reports for LCS analyses, recounts and reanalyses		<input type="checkbox"/>	
Raw data (fluorometer readings and printouts or notebook pages)	<input type="checkbox"/>	<input type="checkbox"/>	
Sample preparation data		<input type="checkbox"/>	
Calculation sheets		<input type="checkbox"/>	
LCS identification, activity and traceability	<input type="checkbox"/>	<input type="checkbox"/>	
Fluorometer identifications		<input type="checkbox"/>	
Dates of analysis		<input type="checkbox"/>	
Calculated recoveries		<input type="checkbox"/>	

NOTE: Checklist items required by "summary" data packages are identified by an asterisk(*) in front of the item.

Package ID: _____

VERIFICATION CHECKLIST FOR TOTAL URANIUM ANALYSIS BY KINETIC PHOSPHORIMETRY

	Yes	No	NA
<u>Analysis Results</u>			
*Results and minimum detectable activity (MDA) report			
*for sample analyses, reruns and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	
*for blank analyses, reruns and reanalyses		<input type="checkbox"/>	
*for duplicate analyses, reruns and reanalyses		<input type="checkbox"/>	
Raw data (phosphorimeter readings and printouts or notebook pages)	<input type="checkbox"/>	<input type="checkbox"/>	
Sample preparation data	<input type="checkbox"/>	<input type="checkbox"/>	
Calculation sheets	<input type="checkbox"/>	<input type="checkbox"/>	
Sample identification	<input type="checkbox"/>	<input type="checkbox"/>	
Instrument identifications	<input type="checkbox"/>	<input type="checkbox"/>	
Dates of analysis	<input type="checkbox"/>	<input type="checkbox"/>	
<u>Initial and Continuing Calibration</u>			
Instrument identifications	<input type="checkbox"/>	<input type="checkbox"/>	
Initial calibration results and linearity	<input type="checkbox"/>	<input type="checkbox"/>	
Initial and continuing calibration verification	<input type="checkbox"/>	<input type="checkbox"/>	
Calibration standard concentration, traceability and dilution log	<input type="checkbox"/>	<input type="checkbox"/>	
Raw data (phosphorimeter readings and printouts or notebook pages)	<input type="checkbox"/>	<input type="checkbox"/>	
Sample preparation data	<input type="checkbox"/>	<input type="checkbox"/>	
Detection limit verification	<input type="checkbox"/>	<input type="checkbox"/>	
<u>Matrix Spike Recovery</u>			
*Results reports for matrix spike analyses, reruns and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Raw data (phosphorimeter readings and printouts or notebook pages)		<input type="checkbox"/>	
Sample preparation data		<input type="checkbox"/>	
Calculation sheets		<input type="checkbox"/>	
Matrix spike sample identifications		<input type="checkbox"/>	
Matrix spike source traceability and dilution log		<input type="checkbox"/>	
Instrument identifications		<input type="checkbox"/>	
Dates of analysis		<input type="checkbox"/>	
Calculated recoveries		<input type="checkbox"/>	
<u>Laboratory Control Samples (LCS)</u>			
*Results reports for LCS analyses, reruns and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	
Raw data (phosphorimeter readings or printouts or notebook pages)	<input type="checkbox"/>	<input type="checkbox"/>	
Sample preparation data	<input type="checkbox"/>	<input type="checkbox"/>	
Calculation sheets	<input type="checkbox"/>	<input type="checkbox"/>	
LCS identification, concentration and traceability	<input type="checkbox"/>	<input type="checkbox"/>	
Instrument identifications	<input type="checkbox"/>	<input type="checkbox"/>	
Dates of analysis	<input type="checkbox"/>	<input type="checkbox"/>	
Calculated recoveries	<input type="checkbox"/>	<input type="checkbox"/>	

NOTE: Checklist items required by "summary" data packages are identified by an asterisk(*) in front of the item.

Package ID: _____

**VERIFICATION CHECKLIST FOR SELECTED RADIOISOTOPE ANALYSIS USING
INDUCTIVELY-COUPLED PLASMA/MASS SPECTROMETRY**

	Yes	No	NA
<u>Analysis Results</u>			
*Results report			
*for sample analyses, reruns and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	
*for blank analyses, reruns and reanalyses		<input type="checkbox"/>	
*for duplicate analyses, reruns and reanalyses		<input type="checkbox"/>	
Raw data (printouts or notebook pages)		<input type="checkbox"/>	
Sample preparation data		<input type="checkbox"/>	
Calculation sheets		<input type="checkbox"/>	
Sample identification		<input type="checkbox"/>	
Instrument identifications		<input type="checkbox"/>	
Dates of analysis		<input type="checkbox"/>	
<u>Initial and Continuing Calibration</u>			
Instrument identifications		<input type="checkbox"/>	
Initial calibration results and linearity		<input type="checkbox"/>	
Initial and continuing calibration verification		<input type="checkbox"/>	
Calibration standard concentration, traceability and dilution log		<input type="checkbox"/>	
Mass spectrometer tuning/mass monitoring values		<input type="checkbox"/>	
Raw data (printouts or notebook pages)		<input type="checkbox"/>	
Detection limit verification		<input type="checkbox"/>	
<u>Matrix Spike Recovery</u>			
*Results reports for matrix spike analyses, reruns and reanalyses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Raw data (printouts or notebook pages)		<input type="checkbox"/>	
Sample preparation data		<input type="checkbox"/>	
Calculation sheets		<input type="checkbox"/>	
Matrix spike sample identifications		<input type="checkbox"/>	
Matrix spike source traceability and dilution log		<input type="checkbox"/>	
Instrument identifications		<input type="checkbox"/>	
Dates of analysis		<input type="checkbox"/>	
Calculated recoveries		<input type="checkbox"/>	
<u>Laboratory Control Samples (LCS)</u>			
*Results reports for LCS analyses, reruns and reanalyses		<input type="checkbox"/>	
Raw data (printouts or notebook pages)		<input type="checkbox"/>	
Sample preparation data		<input type="checkbox"/>	
Calculation sheets		<input type="checkbox"/>	
LCS identification, concentration and traceability		<input type="checkbox"/>	
Instrument identifications		<input type="checkbox"/>	
Dates of analysis		<input type="checkbox"/>	
Calculated recoveries		<input type="checkbox"/>	

NOTE: Checklist items required by "summary" data packages are identified by an asterisk(*) in front of the item.

Daily¹ Verification Summary and
Missing Information Report: Chemistry
(DVS-MIR-C)

1 Verification BOA _____
 Verifier _____
 Date _____

2 Project(s) _____ Or (OU) _____
 Cognizant Engineer _____

3 Data packages verified
this date (list by number)

Analytical types contained in data
package (indicate in box)

	Metals	Semi- VOA	Wet Chem	VOA	Pest/ PCB	Dioxin/ Furan	Herb
1. _____	<input type="checkbox"/>						
2. _____	<input type="checkbox"/>						
3. _____	<input type="checkbox"/>						
4. _____	<input type="checkbox"/>						
5. _____	<input type="checkbox"/>						
6. _____	<input type="checkbox"/>						
Total _____	—	—	—	—	—	—	—

4 Data packages and analytical groups with missing information. (circle above)
 Total _____

5 % Data packages and analytical groups with missing information $(\frac{\text{Total 4} \times 100}{\text{Total 3}})$
 % _____

6 Confirmation: Every sample delivery group shaded in item 3 has checklist attached.
 Verifiers initials _____

7 Confirmation: Every checklist for data package items circled above has been faxed to lab for
 48 hour return of missing information to verifier.
 Verifiers initials _____

8 _____
 Verifier Signature

9 WHC Distribution
 Per Current Distribution List

NOTES: ¹ Do not file daily report on days you do not complete any verification.

Daily¹ Verification Summary and
Missing Information Report: Radchem
(DVS-MIR-R)

1 Verification BOA _____
Verifier _____
Date _____

2 Project(s) _____ Or (OU) _____
Cognizant Engineer _____

3 Data packages verified
this date (list by number)

Analytical types contained in data
package (indicate in box)

	Gas	Alpha-s ICP/MS	Gamma-s	Alpha- scint	Ra-226 LSC	Fluor. U	Laser U
1. _____	<input type="checkbox"/> Count	<input type="checkbox"/>					
2. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Total _____	—	—	—	—	—	—	—

4 Data packages and analytical groups with missing information. (circle above)
Total _____

5 % Data packages and analytical groups with missing information (Total 4 x 100)
Total 3
% _____

6 Confirmation: Every sample delivery group shaded in item 3 has checklist attached.
Verifiers initials _____

7 Confirmation: Every checklist for data package items circled above has been faxed to Lab for
48 hour return of missing information to verifier.
Verifiers initials _____

8 _____
Verifier Signature

9 WMC Distribution
Per Current Distribution List

NOTES: ¹ Do not file daily report on days you do not complete any verification.

Transmittal Number _____

Transmittal Form to Validator

1

To Validator (BOA) _____

Project/OU _____

2

Data Packages Attached (list and attach) _____

3

The attached data packages have been verified and (check one)

All required checklist items are included

Checklist items circled on attached verification checklist forms cannot be provided and the decision has been made to proceed with validation anyway.

4

Certified by Verifier

Signature

Date

5

Received by Validator

Signature

Date

DATA FOLDER TRAVELER SHEET

F
Form Number

F O L D E R	Folder		D	V	S	P	W	M	R	Multi Folder
	Delivery Group	Laboratory	Sequence No	Data Type	Login Complete	Admin Ver Closed	Tech Ver Closed	Validation Closed		
	Tech Ver Rqd?	Val Rqd?	Copies Rqd?	Remarks						

Project(s)

L O G I N	1	Data Type	Data Set ID	Date Received	Date Logged In	Subcontract Lab	V	S	P	W	M	R	Remarks
		Corrections	Date Requested	Date Received									
	2	Data Type	Data Set ID	Date Received	Date Logged In	Subcontract Lab	V	S	P	W	M	R	Remarks
		Corrections	Date Requested	Date Received									
3	Data Type	Data Set ID	Date Received	Date Logged In	Subcontract Lab	V	S	P	W	M	R	Remarks	
	Corrections	Date Requested	Date Received										
4	Data Type	Data Set ID	Date Received	Date Logged In	Subcontract Lab	V	S	P	W	M	R	Remarks	
	Corrections	Date Requested	Date Received										

C H E C K L I S T	Item	Confirmed	Date	Item	Confirmed	Date
	All Data Received			RODs & NCRs Checked		
	All Corrections Received & Incorporated			FORM I(s) Pulled		
	Folder Prepared					
	Data Entry Complete					

9513387.0191

9513387.0192

DATA FOLDER TRAVELER SHEET							F			
TECH NICAL C O R R E C T I O N	Data Type	Laboratory	Project	Date Available	Date Started	Date Completed	Date Returned	V P M	S W R	
	1 Corrections				Remarks					
		Date Placed On-Hold	Reason	Date Lab Responded						
	Data Type	Laboratory	Project	Date Available	Date Started	Date Completed	Date Returned	V P M	S W R	
	2 Corrections				Remarks					
		Date Placed On-Hold	Reason	Date Lab Responded						
	Data Type	Laboratory	Project	Date Available	Date Started	Date Completed	Date Returned	V P M	S W R	
	3 Corrections				Remarks					
		Date Placed On-Hold	Reason	Date Lab Responded						
	Data Type	Laboratory	Project	Date Available	Date Started	Date Completed	Date Returned	V P M	S W R	
	4 Corrections				Remarks					
		Date Placed On-Hold	Reason	Date Lab Responded						
C H E C K L I S T	Item	Confirmed	Date	Item	Confirmed	Date				
	Package Complete									
	All Corrections Received & Incorporated									
	RODs & NCRs Checked									
	Data Entry Complete									

9513387.0193

DATA FOLDER TRAVELER SHEET

F

ADMINISTRATIVE VERIFICATION

1	Date Type	Admin Ver ID	Date Ver Start	Date Ver End	Remarks	V	S
	Corrections	Date Correct'ns Req	Date Correct'ns Rcv			P	W
2	Date Type	Admin Ver ID	Date Ver Start	Date Ver End	Remarks	V	S
	Corrections	Date Correct'ns Req	Date Correct'ns Rcv			P	W
3	Date Type	Admin Ver ID	Date Ver Start	Date Ver End	Remarks	V	S
	Corrections	Date Correct'ns Req	Date Correct'ns Rcv			P	W
4	Date Type	Admin Ver ID	Date Ver Start	Date Ver End	Remarks	V	S
	Corrections	Date Correct'ns Req	Date Correct'ns Rcv			P	W
5	Date Type	Admin Ver ID	Date Ver Start	Date Ver End	Remarks	V	S
	Corrections	Date Correct'ns Req	Date Correct'ns Rcv			P	W
C	Item	Confirmed	Date	Item	Confirmed	Date	
H	Package Complete						
E	All Corrections Received & Incorporated						
C	RODs & NCRs Complete						
K	Data Entry Complete						
L							
I							
S							
T							

V	S
P	W
M	R

V	S
P	W
M	R

V	S
P	W
M	R

V	S
P	W
M	R

V	S
P	W
M	R

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DATA FOLDER TRAVELER SHEET								F		
1	Data Type	Data Set ID	Reval No	Project	Validator	Date to Repro	Date from Repro	Avail for Val	V P M	S W R
	Remarks									
	Validator Notified	Validator PickUp	Validator Return	Val Report Rcvd						
2	Data Type	Data Set ID	Reval No	Project	Validator	Date to Repro	Date from Repro	Avail for Val	V P M	S W R
	Remarks									
	Validator Notified	Validator PickUp	Validator Return	Val Report Rcvd						
3	Data Type	Data Set ID	Reval No	Project	Validator	Date to Repro	Date from Repro	Avail for Val	V P M	S W R
	Remarks									
	Validator Notified	Validator PickUp	Validator Return	Val Report Rcvd						
4	Data Type	Data Set ID	Reval No	Project	Validator	Date to Repro	Date from Repro	Avail for Val	V P M	S W R
	Remarks									
	Validator Notified	Validator PickUp	Validator Return	Val Report Rcvd						
CHECKLIST	Item	Confirmed	Date	Item	Checked By	Date				
	Package Complete			Risk Assessment Complete						
	Data Entry Complete			All Corrections Incorporated						
	ROD(s) & NCR(S) Closed									
	Final Validation Reports Received									

9513387.0195

DATA FOLDER TRAVELER SHEET

F

DATA
PACK
AGE
TRAN
SMIT
TAL

1	<input type="checkbox"/>	Remarks				
	<input type="checkbox"/>					
	<input type="checkbox"/>					
	<input type="checkbox"/>					
	<input type="checkbox"/>					
2	<input type="checkbox"/>	Remarks				
	<input type="checkbox"/>					
	<input type="checkbox"/>					
	<input type="checkbox"/>					
	<input type="checkbox"/>					
3	<input type="checkbox"/>	Remarks				
	<input type="checkbox"/>					
	<input type="checkbox"/>					
	<input type="checkbox"/>					
	<input type="checkbox"/>					
4	<input type="checkbox"/>	Remarks				
	<input type="checkbox"/>					
	<input type="checkbox"/>					
	<input type="checkbox"/>					
	<input type="checkbox"/>					
5	<input type="checkbox"/>	Remarks				
	<input type="checkbox"/>					
	<input type="checkbox"/>					
	<input type="checkbox"/>					
	<input type="checkbox"/>					

V	S
P	W
M	R

Notes

9513387.0196

DATA FOLDER TRAVELER SHEET					F			
C R O S S R E F E R E N C E	1	Data Set ID	Data Type	Delivery Group Referenced	Project	Remarks	V	S
							P	W
							M	R
	2	Data Set ID	Data Type	Delivery Group Referenced	Project	Remarks	V	S
							P	W
							M	R
3	Data Set ID	Data Type	Delivery Group Referenced	Project	Remarks	V	S	
						P	W	
						M	R	
4	Data Set ID	Data Type	Delivery Group Referenced	Project	Remarks	V	S	
						P	W	
						M	R	
5	Data Set ID	Data Type	Delivery Group Referenced	Project	Remarks	V	S	
						P	W	
						M	R	
6	Data Set ID	Data Type	Delivery Group Referenced	Project	Remarks	V	S	
						P	W	
						M	R	
Notes								

DATA FOLDER TRAVELER SHEET

F

CHECKOUT FOLDER

	<input type="text"/>					
1	Date Type	Date Checked Out	Company	Name	Signature	Remarks
	<input type="text"/>					
	Date Checked In	Name	Signature			
	<input type="text"/>	<input type="text"/>	<input type="text"/>			

<input type="checkbox"/> V	<input type="checkbox"/> S
<input type="checkbox"/> P	<input type="checkbox"/> W
<input type="checkbox"/> M	<input type="checkbox"/> R

	<input type="text"/>					
2	Date Type	Date Checked Out	Company	Name	Signature	Remarks
	<input type="text"/>					
	Date Checked In	Name	Signature			
	<input type="text"/>	<input type="text"/>	<input type="text"/>			

<input type="checkbox"/> V	<input type="checkbox"/> S
<input type="checkbox"/> P	<input type="checkbox"/> W
<input type="checkbox"/> M	<input type="checkbox"/> R

	<input type="text"/>					
3	Date Type	Date Checked Out	Company	Name	Signature	Remarks
	<input type="text"/>					
	Date Checked In	Name	Signature			
	<input type="text"/>	<input type="text"/>	<input type="text"/>			

<input type="checkbox"/> V	<input type="checkbox"/> S
<input type="checkbox"/> P	<input type="checkbox"/> W
<input type="checkbox"/> M	<input type="checkbox"/> R

	<input type="text"/>					
4	Date Type	Date Checked Out	Company	Name	Signature	Remarks
	<input type="text"/>					
	Date Checked In	Name	Signature			
	<input type="text"/>	<input type="text"/>	<input type="text"/>			

<input type="checkbox"/> V	<input type="checkbox"/> S
<input type="checkbox"/> P	<input type="checkbox"/> W
<input type="checkbox"/> M	<input type="checkbox"/> R

Notes

9513387.0197

Control Number:	NPL Agreement/Change Control Form <input type="checkbox"/> Change <input type="checkbox"/> Agreement <input type="checkbox"/> Information	Date Submitted: Date Approved:
Document Number/Title:		Date Document Last Issued:
Originator:		Phone:
Summary Description:		
Justification and Impact of Change:		
Project Manager	Date	
DOE Unit Manager	Date	
Ecology Unit Manager	Date	
Env. Protection Agency Unit Manager	Date	

SAMPLE DISPOSITION RECORD	Control #: Revision #: Date Initiated:
SAF #: OU: Project ID: Task ID: Sampling Event:	
Laboratory:	
Sampling Support Contact:	
Task Manager:	
Sampling Information: Number of Samples: ID Numbers: Matrix: Collection Date:	
Issue Background: Class: Type: Description:	
Disposition: Type: Description:	
Approval Signatures:	
_____	_____
Project Coordinator (Print/Sign Name)	Date
_____	_____
Task Manager (Print/Sign Name)	Date
_____	_____
Quality Assurance (Print/Sign Name)	Date

Request for Map or Data Product

This section is to be completed by the requestor

Requestor: _____ **Phone #:** _____

Organization: _____ **Company:** _____

Map Product:

Map _____ **Size** _____ **Color** _____ **B/W** _____ **View Foil** _____
(8.5 x 11) only

Data Analysis:

(e.g., intersections of multiple data sets, visibility analysis, elevation model, contouring, image integration, buffering, 3d model, etc.)

Data Extract Product:

Format _____ **Media** _____

Describe Data to be Displayed, Analyzed or Extracted: _____

Describe Any Special Needs: _____

Cost Estimate Requested:

Before Work Performed _____ **After Work Performed** _____ **Charge Code** _____

Date Requested:

Date _____

This section is to be completed by the cartographer

Cost Estimate _____ **Cost (Actual)** _____

Project Lead Approval: _____ **Date:** _____

COURSE CRITIQUE

Please rate the following items as an evaluation of this training class by marking the number that most closely expresses your opinion. Return the form to the class instructor upon completion. We would like to be able to use the evaluation to improve the course, so please be frank and constructive.

Date of Class: _____

Course Title or Number: _____

Instructor: _____

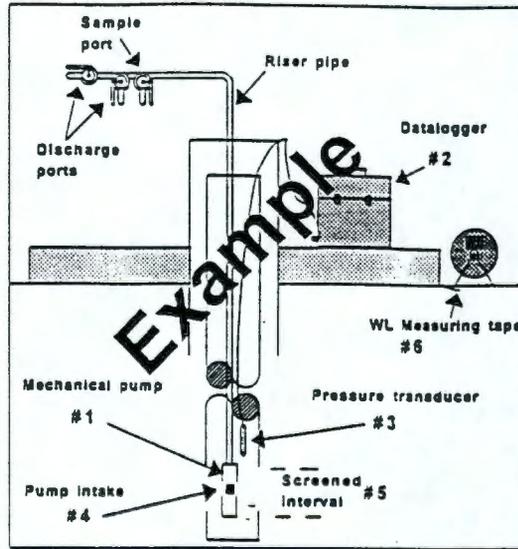
	POOR			SATISFACTORY				EXCELLENT		
	1	2	3	4	5	6	7	8	9	10
COURSE OBJECTIVES										
Defined										
Achieved										
COURSE CONTENT										
Level of Difficulty										
Technically Appropriate										
Relevant to Job Skills										
PRESENTATION										
Organized/Easy to Follow										
Emphasized Important Points										
Responded to My Questions										
INSTRUCTOR										
Appearance										
At Ease, Comfortable with Speaking										
Knowledge of Subject										
DELIVERY										
Voice (tone)										
Non-verbal Communication										
Audible - Level										
VISUAL AIDS										
Content										
Design										
Effectiveness										
Appropriate										

WELL DEVELOPMENT, TESTING AND PUMP INSTALLATION

WELL DESIGNATION _____ WELL DEPTH _____ SWL _____ DATE _____

Item	Description
#1	_____
#2	_____
#3	_____
#4	_____
#5	_____
#6	_____
#7	_____

Equipment configuration



DEVELOPMENT PUMP DATA

Pump model _____

Intake depth _____

Pump start _____

Pump stop _____

Flow rate _____

Total pumped _____

Final turbidity _____

INSTANTANEOUS SLUG TEST

SWL (TOC) _____

Transducer depth _____

Baseline start _____

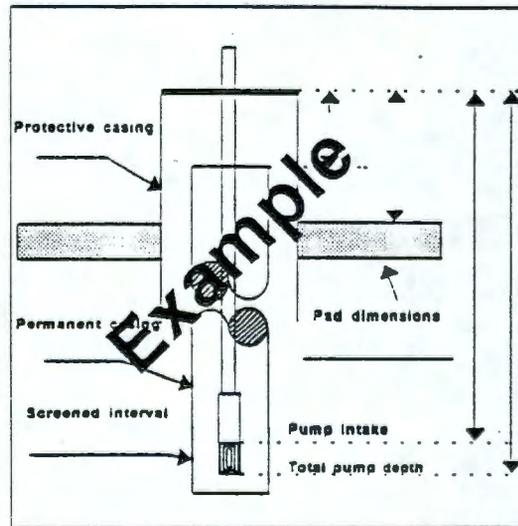
Injection start _____

Baseline start _____

Withdrawal start _____

Slug volume _____

Well head diagram



DEDICATED PUMP INSTALLATION

Installation date _____

Pump brand _____

Pump model _____

Riser pipe _____

Intake depth _____

Pump tested _____

Installed by _____

Comments _____

Print/Sign _____ Title _____ Date _____

9513387.0204

SURVEY PROJECT LOG		
Survey Project Name:		JOB-#
Survey Purpose:		
Requested By:		Company:
Contact Person:		
General Site Location:		
Contract#/Work-Order#:		
Number of Points Surveyed:		
Estimated Accuracy:	horizontal:	vertical:
Start Date:		
Completion Date:		
Final Data Format (output):		
Delivered to:		
Project Lead:		
Field Lead:		
Electronic Data Processor:		
Survey Method:		
Equipment Used:		
Computer Hardware Used:		
Computer Software Used:		
Projection Name:	Lambert Conformal Conic	
Horizontal Datum:	North American Datum of 1983/91 (NAD83/91)	
Vertical Datum:	North American Vertical Datum of 1988 (NAVD88)	
Units:	Meters	
Coordinate System:	Washington State Plane South Zone	
Control Monuments Used:		
Quality Data Filename:		
Coordinate Data Filename:		

9513387.0205

Coordinate Data Form				
Name	Coordinates (E) (N)		Elev (m)	Describe Point

INDOCTRINATION ATTENDANCE FORM					Page ____ of ____			
Presentation					Date			
<i>Document Reference(s) - Include Revision Numbers</i>								
Instructor or Presenter Name		Instructor or Presenter Signature		Payroll No.	Telephone	Building	Room	Area
Last Name	Initials	Signature		Payroll No.	Org. Code			
1								
2								
3								
4								
5								
6								
7								
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9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
					Total Attendees			
Comments								

PROCEDURE REQUEST

REQUEST

Initiate this Request (any individual) and forward it to your manager or Procedures Coordination, H4-79.

- Develop new procedure
- Revise procedure _____
- Delete procedure _____

Reason _____

Signature _____ Date _____

REVIEW

Review this Request (applicable signature authority) and approve or disapprove.

- Assign author and forward Request to author (enter name) _____
(If this Request will result in a procedure or procedure revision, send a copy of this Request to Procedures Coordination also.)
- Disapproved - State reason and return Request to initiator

Signature _____ Date _____

Date Issued	REVIEW/APPROVAL SHEET	Date Due -
Document No./Rev. No.	Contact for Discussion on Document	Phone

Title:

To:	From/Return To: BHI Document Control Center 376-9472 H4-79
-----	--

The attached document is forwarded to those indicated below for review and approval. Comments, if any, may be provided on the reverse side. Comments to procedures will be resolved prior to signoff and issuance.

Approval Required	Signature	Date	No Comment	Comment Noted
[]	_____ Document Control	_____	[]	[]
[]	_____ Environmental Compliance	_____	[]	[]
[]	_____ Environmental Engineering	_____	[]	[]
[]	_____ Field Support	_____	[]	[]
[]	_____ Health Safety	_____	[]	[]
[]	_____ Human Resources	_____	[]	[]
[]	_____ Management	_____	[]	[]
[]	_____ Planning & Controls	_____	[]	[]
[]	_____ Quality Assurance	_____	[]	[]
[]	_____ Services	_____	[]	[]
[]	_____	_____	[]	[]
[]	_____	_____	[]	[]
[]	_____	_____	[]	[]
[]	_____	_____	[]	[]

DOCUMENT REVIEW AND APPROVAL FORM

Page 1 of _____

Document No.: _____ Administrative Record Document: Yes [] No []

Document Title: _____

Previous Rev. No.: _____ Draft Rev. No. _____ COMMENTS DUE DATE: _____

Listing of Codes, Standards, Regulations, and internal procedures against which document must be reviewed: _____

Originator's Signature: _____ Date: _____
& Manager's Initials

Reviewer's Name	Functional Area/Discipline	Site Location & MSIN	Purpose of Review Approval Comment Info
--------------------	-------------------------------	-------------------------	--

RETURN COMMENTS TO: _____

Date Distributed for Review: _____

Comments Requiring Resolution: Yes [] No []

Admin. Services Notified of Return of Review Pkg.: Yes [] No []

Reviewer's Signature: _____ Date: _____

Comments Resolved: Yes [] No []

Review of Revised Draft Req'd: Yes [] No []

Final Document May be Prepared: Yes [] No []

Reviewer's/Manager's Signature: _____ Date: _____

BHI-
REV:
OU: N/A
TSD: N/A
ERA: N/A

APPROVAL PAGE

Title of Document:

Author(s):

Approval:

Signature

Date

The approval signature on this page indicates that this document has been authorized for information release to the public through appropriate channels. No other forms or signatures are required to document this information release.

In some cases, for documents in process or previously issued with a WHC document number before July 1, 1994, this page will appear in documents identified with WHC document numbers. No other forms are required for these documents.

TOTAL PAGES: _____

Radiological Survey Record

Survey & Counting Instruments		Location & purpose of survey:	Survey No.		Page ___ of ___
Model	Serial Number		Date	Time	
			OU #	ERA #	TSD #

Contamination Survey Information

#	Description of item or location surveyed.	Smearable		Fixed		#	Description of item or location surveyed.	Smearable		Fixed	
		Alpha	Beta Gamma	Alpha	Beta Gamma			Alpha	Beta Gamma		

Fixed readings dpm/probe. Circled values in smearable B-G column denote mrad/hr beta Unless listed above, smearable contamination is < 1000 dpm B-G, fixed contamination < 4000 dpm B-G, < 20 dpm Alpha (per 100cm²) Readings taken at 3/4 max. dimension of object: CF (CP) = 3, CF (RO-2) = 4. Readings beyond that distance, CF = 1.

○ = Contamination survey location ◻ = Gamma, mR/hr ◻ = Beta, mrad/hr △ = Micro-R/hr ☆ = Contact Rdg. ▽ = Neutrons, mrem/hr [AS] = air sample

— C — Contaminated area — H — High Contamination Area — RB — Radiological Buffer Area — RC — Radiologically Controlled Area — RM — Radioactive Materials Storage area — R — Radiation Area — HR — High Radiation Area

RCT Signature/Date _____ (Print & Sign) Insp. Signature/Date _____	Remarks:
--	----------

