

START

0023045

CEX

ENGINEERING CHANGE NOTICE

Page 1 of 2

1. ECN **169796**

Proj. ECN

2. ECN Category (mark one)		Supplemental <input type="checkbox"/>	Change ECN <input type="checkbox"/>	Supersedure <input type="checkbox"/>
Cancel/Void <input type="checkbox"/>	Direct Revision <input checked="" type="checkbox"/>	Temporary <input type="checkbox"/>	Discovery <input type="checkbox"/>	
3. Originator's Name, Organization, MSIN, and Telephone No. <i>W 81 2 2 5</i>			4. Date	
F. W. Gustafson, Env. Rest. Eng, H4-55, 376-1736			7/20/92	
5. Project Title/No./Work Order No. <i>PH 31</i>		6. Bldg./Sys./Fac. No.		7. Impact Level
Description of Work for 100 Area Columbia River Sediment Sampling		n/a		3Q
8. Document Number Affected (include rev. and sheet no.)		9. Related ECN No(s).		10. Related PO No.
WHC-SD-EN-AP-097 <i>Rev. 0</i>		n/a		n/a
11a. Modification Work	11b. Work Package Doc. No.	11c. Complete Installation Work	11d. Complete Restoration (Temp. ECN only)	
<input type="checkbox"/> Yes (fill out Blk. 11b)	n/a	n/a	n/a	
<input checked="" type="checkbox"/> No (NA Blks. 11b, 11c, 11d)		_____ Cog. Engineer Signature & Date	_____ Cog. Engineer Signature & Date	
12. Description of Change				
<u>Section 1</u> , Added text to better define scope of work				
<u>Section 3.1</u> , Added text ^{text FWB 7/23/92} to clarify sampling horizons at each location and to include a sampling location reconnaissance prior to collection effort,				
<u>Section 3.2</u> , Made clarification that Pb and Hg are not analyzed by ICP metal analysis A total-activity analysis was also included on samples after the sieve analysis to determine location of contaminants within a sample,				
<u>Section 3.3</u> , Changes in ^{in FWB 7/23/92} text made to ensure consistency with changes indicated above,				
13a. Justification (mark one)		Criteria Change <input type="checkbox"/>	Environmental <input checked="" type="checkbox"/>	Facilitate Const. <input type="checkbox"/>
Design Error/Omission <input type="checkbox"/>	Design Improvement <input type="checkbox"/>	As-Found <input type="checkbox"/>	Const. Error/Omission <input type="checkbox"/>	
13b. Justification Details				
Changes are a result of comment received during DOE and supplemental WHC reviews.				
14. Distribution (include name, MSIN, and no. of copies)			RELEASE STAMP	
See attached			OFFICIAL RELEASE // BY WHC DATE AUG 26 1992 <i>Station # 21</i>	

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ENGINEERING CHANGE NOTICE

Page 2 of 2

1. ECN (use no. from pg. 1)

169796

15. Design Verification Required

Yes
 No

16. Cost Impact

ENGINEERING	CONSTRUCTION
Additional <input type="checkbox"/> \$	Additional <input type="checkbox"/> \$
Savings <input type="checkbox"/> \$	Savings <input type="checkbox"/> \$

17. Schedule Impact (days)

Improvement
Delay

18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD <input type="checkbox"/>	Seismic/Stress Analysis <input type="checkbox"/>	Tank Calibration Manual <input type="checkbox"/>
Functional Design Criteria <input type="checkbox"/>	Stress/Design Report <input type="checkbox"/>	Health Physics Procedure <input type="checkbox"/>
Operating Specification <input type="checkbox"/>	Interface Control Drawing <input type="checkbox"/>	Spares Multiple Unit Listing <input type="checkbox"/>
Criticality Specification <input type="checkbox"/>	Calibration Procedure <input type="checkbox"/>	Test Procedures/Specification <input type="checkbox"/>
Conceptual Design Report <input type="checkbox"/>	Installation Procedure <input type="checkbox"/>	Component Index <input type="checkbox"/>
Equipment Spec. <input type="checkbox"/>	Maintenance Procedure <input type="checkbox"/>	ASME Coded Item <input type="checkbox"/>
Const. Spec. <input type="checkbox"/>	Engineering Procedure <input type="checkbox"/>	Human Factor Consideration <input type="checkbox"/>
Procurement Spec. <input type="checkbox"/>	Operating Instruction <input type="checkbox"/>	Computer Software <input type="checkbox"/>
Vendor Information <input type="checkbox"/>	Operating Procedure <input type="checkbox"/>	Electric Circuit Schedule <input type="checkbox"/>
OM Manual <input type="checkbox"/>	Operational Safety Requirement <input type="checkbox"/>	ICRS Procedure <input type="checkbox"/>
FSAR/SAR <input type="checkbox"/>	IEFD Drawing <input type="checkbox"/>	Process Control Manual/Plan <input type="checkbox"/>
Safety Equipment List <input type="checkbox"/>	Cell Arrangement Drawing <input type="checkbox"/>	Process Flow Chart <input type="checkbox"/>
Radiation Work Permit <input type="checkbox"/>	Essential Material Specification <input type="checkbox"/>	Purchase Requisition <input type="checkbox"/>
Environmental Impact Statement <input type="checkbox"/>	Fac. Proc. Samp. Schedule <input type="checkbox"/>	
Environmental Report <input type="checkbox"/>	Inspection Plan <input type="checkbox"/>	
Environmental Permit <input type="checkbox"/>	Inventory Adjustment Request <input type="checkbox"/>	

19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number Revision
--------------------------	--------------------------	--------------------------

20. Approvals

Signature	Date	Signature	Date
OPERATIONS AND ENGINEERING		ARCHITECT-ENGINEER	
Cog./Project Engineer F.W. Gustafson <i>[Signature]</i>	<u>7/23/92</u>	PE	_____
Cog./Project Engr. Mgr. R. P. Menckel <i>[Signature]</i>	<u>7/23/92</u>	QA	_____
QA G. Corrigan <i>[Signature]</i>	<u>7-23-92</u>	Safety	_____
Safety	_____	Design	_____
Security	_____	Other	_____
Proj. Prog./Dept. Mgr.	_____		_____
Def. React. Div.	_____		_____
Chem. Proc. Div.	_____		_____
Def. Wst. Mgmt. Div.	_____		_____
Adv. React. Dev. Div.	_____	DEPARTMENT OF ENERGY	_____
Proj. Dept.	_____		_____
Environ. Div.	_____	ADDITIONAL	_____
IRM Dept.	_____		_____
Facility Rep. (Ops.)	_____		_____
Other S. G. Weiss <i>[Signature]</i>	<u>7/20/92</u>		_____

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SUPPORTING DOCUMENT

1. Total Pages **911**

<p>2. Title DESCRIPTION OF WORK FOR 100 AREA COLUMBIA RIVER SEDIMENT SAMPLING</p>	<p>3. Number WHC-SD-EN-AP-097</p>	<p>4. Rev No. 1</p>
<p>5. Key Words Columbia River, Sediment, Sampling, Description of Work</p> <p style="text-align: center;">APPROVED FOR PUBLIC RELEASE <i>V. Burkland 8/5/92</i></p>	<p>6. Author Name: F. W. Gustafson <i>F. W. Gustafson</i> 7/22/92 Signature Organization/Charge Code 81225/PH131</p>	
<p>7. Abstract This description of work was developed to investigate the impact to the Columbia River from the Operation of the production reactors in the 100 Areas. Approximately 76 samples will be taken downstream of the effluent pipelines and in areas of substantial sediment deposition.</p>		
<p>8. PURPOSE AND USE OF DOCUMENT - This document was prepared for use within the U.S. Department of Energy and its contractors. It is to be used only to perform, direct, or integrate work under U.S. Department of Energy contracts. This document is not approved for public release until reviewed.</p> <p>PATENT STATUS - This document copy, since it is transmitted in advance of patent clearance, is made available in confidence solely for use in performance of work under contracts with the U.S. Department of Energy. This document is not to be published nor its contents otherwise disseminated or used for purposes other than specified above before patent approval for such release or use has been secured, upon request, from the Patent Counsel, U.S. Department of Energy Field Office, Richland, WA.</p> <p>DISCLAIMER - This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, nor any of their contractors, subcontractors or their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or any third party's use or the results of such use of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.</p>	<p>10. RELEASE STAMP</p> <div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>OFFICIAL RELEASE //</p> <p>BY WHC</p> <p>DATE AUG 26 1992</p> <p><i>Station # 21</i></p> </div>	
<p>9. Impact Level 3Q</p>		

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9 2 1 2 6 6 0 1 9 3 5

1.0 SCOPE OF WORK

This document details Columbia River sediment investigation field activities associated with 100 Area Operable Units remedial investigations. The scope of this effort is to determine if radiological contaminants are present in Columbia River sediments as a result of reactor operations. It is not within the scope of this investigation to determine the extent of the contamination. Sampling locations will be chosen based on areas of obvious sediment deposition downriver from outfall pipes and spillways.

This description of work will serve as a field guide for those performing the work. It should be used in conjunction with the remedial investigation/feasibility study work plan for 100 Area Operable Units for general investigation strategy and with *Environmental Investigations and Site Characterization Manual* (WHC 1988a) for specific procedures.

2.0 GENERAL REQUIREMENTS

2.1 APPLICABLE PROCEDURES

All personnel working to this description will perform work in accordance with the following:

- WHC-EP-0383, *Environmental Engineering, Technology, and Permitting Function Quality Assurance Program Plan* (WHC 1990)
- WHC-CM-4-10, *Radiation Protection* (WHC 1988b)
- WHC-CM-4-11, *ALARA Program Manual* (WHC 1988c)
- WHC-CM-4-3, *Industrial Safety Manual*, Vols. 1 through 3, (WHC 1987)
- WHC-CM-7-5, *Environmental Compliance Manual* (WHC 1988d)
- Site-specific job safety analysis.

The associated field activities will also conform to the requirements of a site-specific safety assessment to be completed prior to initiation of the field activities. The requirements of this assessment may potentially impact specific sampling protocol. All changes resulting from this assessment will be documented utilizing a Columbia River Sediment Sampling Project Change Form (Attachment 1).

2.2 PREREQUISITES

A readiness review will be completed by the cognizant engineer before sampling is attempted. The readiness review will be completed per EII 1.13, Environmental Engineering and Geotechnology Readiness Review (WHC 1988a). The

Sampling Status Checklist (Attachment 2) will be initialed by the cognizant engineer or field team leader and dated as each step of the task is completed.

3.0 SAMPLING AND FIELD ACTIVITIES

3.1 LOCATION

This description of work addresses the sampling of Columbia River sediments located around outfall structures, within backwater sloughs, and on the downriver side of islands. The extent of the sampling efforts will be limited to river sediments located between B Reactor and the Hanford Town Site.

Exact sampling locations will be chosen during a reconnaissance effort to be conducted prior to initiating the sampling activities. This reconnaissance effort will survey areas where contaminants were likely to settle out (i.e., areas of low velocity and just downstream of the outfall structures). Sample material will consist of silts and sands. Cobble material will be avoided.

Figure 1 identifies 32 potential sampling locations. Locating sediments in the vicinity of the outfall structures is doubtful, as the outfall structures are midstream where river velocity is highest. Potential sampling locations will be at the nearest downstream location from the outfall structures.

Additional samples may be taken at the discretion of the field team leader. Sample numbers may be reduced if the field reconnaissance efforts indicate a lack of adequate sediments. A sediment sample will be taken from surface material (0 to 6 in.) and from a composite of sediments below the 1-ft level if an adequate sediment bed exists. It is assumed (for planning purposes) that two samples, one surface and one subsurface, will be collected from each location.

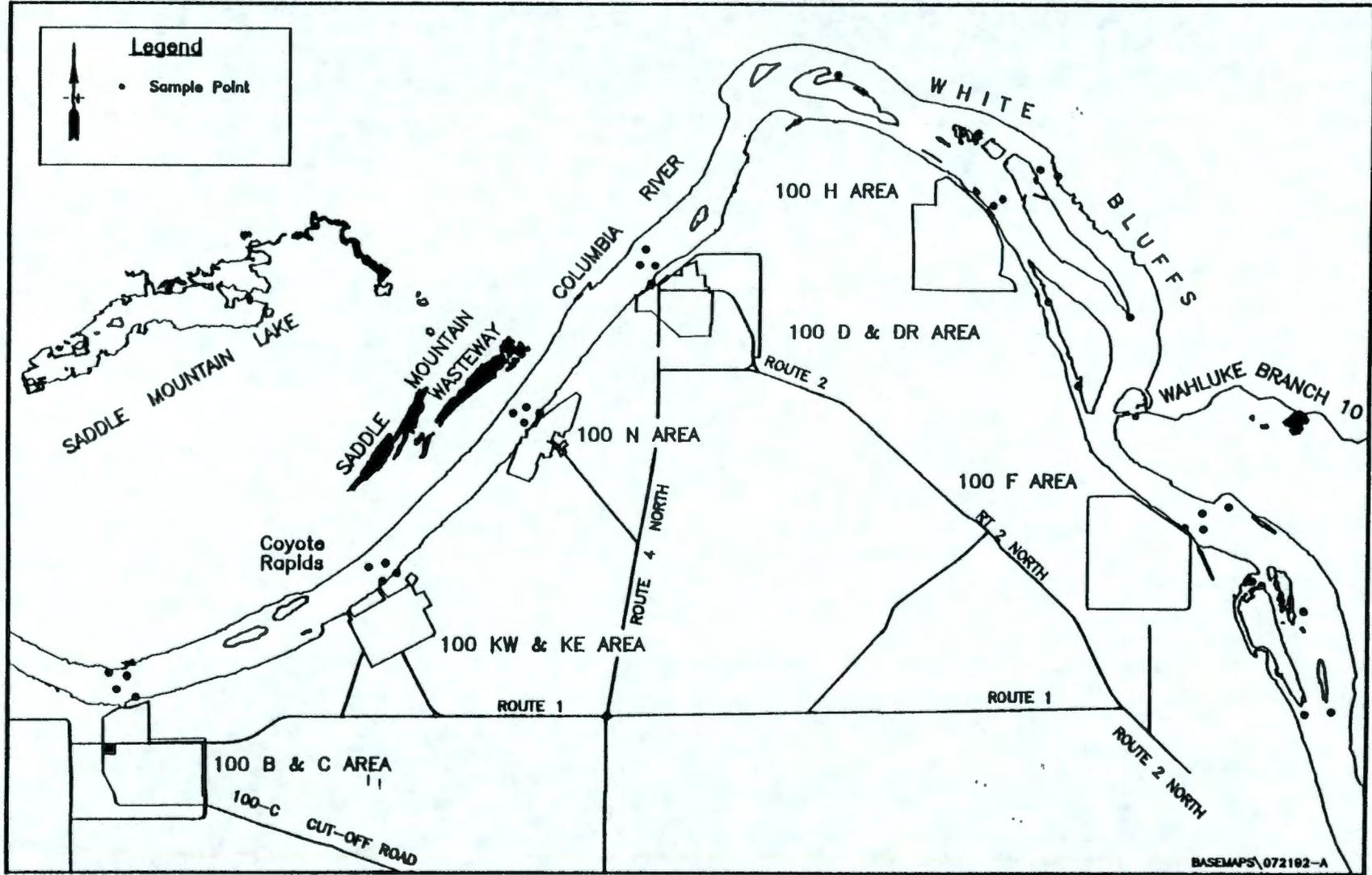
The brief description of each sampling point will be recorded in the field logbook. A global positioning system survey instrument will be used to obtain the approximate latitude/longitude for each location.

3.2 SAMPLE ANALYSIS

The contaminants of concern for the Columbia River sediments are based upon those identified for the spring sampling effort conducted in the fall of 1991. They include ICP metals, lead, mercury, standard gamma scan radionuclides, gross alpha, gross beta, and ⁹⁰Sr. These contaminants are known to exist in groundwater plumes located near the river as well as contaminants present in the effluent from the reactor river discharge lines.

Short-lived radiological isotopes are not considered by this study due to the time lapse since released into the environment.

Figure 1. Columbia River Sediment Sampling Locations.



A total activity analysis (required for offsite sample shipment and analysis) will also be performed. A sieve analysis will be performed to separate the fine-grained (> 62 microns) and course-grained fractions. A total activity analysis will be performed on both fractions to determine which portion of the sediments the contamination resides (if notable contamination is located).

3.3 SAMPLE COLLECTION

The river sediment samples will be collected in accordance with the requirements of EII 5.2, Soil and Sediment Sampling (WHC 1988a). Samples will be collected using hand-held coring devices (from either the water surface or with the use of divers). Care will be taken to ensure the fine fraction of the sediments is retained in the sampler. Sampling should be conducted during periods of low flow.

A field logbook will be used to document activities associated with the sample collection. The logbook will be used and maintained per EII 1.5 Field Logbooks (WHC 1988a).

A total of 76 samples will be collected, including quality assurance/quality control (QA/QC) samples. The trip blank and field blank have been deleted per OSWER Directive 9355.0-7B Appendix C, Section C.6 (p.13). The equipment blank media shall be silica sand. The following is a summary of the samples to be collected (Note: the sample numbers below assume two samples will be taken from each location).

- 8 samples below the 100-BC discharge lines and spillways (three discharge lines)
- 8 samples below the 100-K discharge line
- 8 samples below the 100-N discharge line and spillway
- 8 samples below the 100-D/DR discharge line and spillway
- 8 samples below the 100-H discharge line and spillway
- 8 samples below the 100-F discharge line and spillway
- 20 samples from backwater, sediment depositional areas
- 4 equipment blank samples
- 4 duplicate samples
- 4 split samples.

9 2 1 2 6 6 0 1 9 3 9

4.0 SAMPLE LABELING

The Hanford Environmental Information System (HEIS) is used to track the sample and laboratory data obtained during environmental investigations conducted under this description of work. Each sample will be identified and labeled with a unique HEIS sample number. HEIS numbers will be assigned in the field per the *Hanford Environmental Information System (HEIS) Operator's Manual* (WHC 1991). The sample location and corresponding HEIS numbers will be documented in the field logbook. Analytical results obtained from this investigation will be loaded into the HEIS.

5.0 ANALYSES

Samples will be analyzed for ICP metals, lead, mercury, standard gamma scan radionuclides, gross alpha, gross beta, ⁹⁰Sr, and total activity. Estimated quantity of material needed for analyses are shown in Table 1. The laboratory will use existing Level IV methods for the chemical/metal constituents and Level V methods for radionuclides. Sample custody will follow EII 5.1, Chain of Custody (WHC 1988a).

Table 1. Sediment Sample Analysis Requirements.

Analyte	Method	Holding time
ICP/AA metals, mercury, and lead	CLP	6 mo, 28 d, & 14 d
Strontium-90 Gross alpha Gross beta Gamma spec	Lab SOP	6 mo
Total Activity (222-S Lab)	Lab SOP	6 mo
Particle Size Distribution		N/A

6.0 QUALITY ASSURANCE/QUALITY CONTROL REQUIREMENTS

Internal QA/QC samples shall be collected as specified in Appendix A, Quality Assurance Project Plan (DOE-RL 1992) and documented in the sampling logbook per EII 1.5, Field Logbooks (WHC 1988a). Quality assurance samples will include three equipment blank samples, three duplicate samples, and three split samples. The trip blank and field blank have been deleted per OSWER Directive 9355.0-7B Appendix C, Section C.6 (p.13). The equipment blank media shall be silica sand.

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7.0 SCHEDULE

A field implementation date has not yet been established for the Columbia River sediment sampling activities. The months of September and October are recommended dates as river flow is typically at a seasonal low. Approximately 3 weeks will be needed to collect all of the samples identified. The exact schedule will be developed once the necessary resources are obtained. An Agreement Activity Notification form will be issued at least 5 days prior to the start of field work.

8.0 CHANGES TO DESCRIPTION OF WORK

Major changes to this description of work, such as analyzing different parameters or using different analytical methods, will be submitted on the Project Change Form (Attachment 2). As a minimum, the change will require the verbal approval of the field team leader and the operable unit coordinator. The change will be filed as an Engineering Change Notice and a copy will be inserted into the project file. Copies will be submitted to the regulatory agencies and the appropriate field personnel within 10 working days of the change.

9.0 REFERENCES

- DOE-RL, 1992, *Remedial Investigation/Feasibility Study Work Plan for the 100-BC-1 Operable Unit, Hanford Site, Richland, Washington*, DOE/RL-92-07, U.S. Department of Energy, Richland Field Office, Richland, Washington.
- WHC, 1987, *Industrial Safety Manual*, WHC-CM-4-3, Vol. 1 through 3, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1988a, *Environmental Investigations and Site Characterization Manual*, WHC-CM-7-7, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1988b, *Radiation Protection*, WHC-CM-4-10, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1988c, *ALARA Program Manual*, WHC-CM-4-11, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1988d, *Environmental Compliance Manual*, WHC-CM-7-5, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1990, *Environmental Engineering, Technology, and Permitting Function Quality Assurance Program Plan*, WHC-EP-0383, Westinghouse Hanford Company, Richland, Washington.
- WHC, 1991, *Hanford Environmental Information System (HEIS) Operator's Manual*, WHC-SP-0660, Westinghouse Hanford Company, Richland, Washington.

ATTACHMENT 1

COLUMBIA RIVER SEDIMENT
SAMPLING CHECKLIST

Activity Performed

Signature/Date

PREJOB SAFETY MEETING COMPLETED

SAMPLES COLLECTED AND LABELED

SAMPLES SURVEYED BY HPT

SAMPLE PACKAGED IN SHIPPING CONTAINER

TOTAL ACTIVITY SCAN OF SAMPLES COMPLETED

CHAIN OF CUSTODY FORM COMPLETED

SAMPLES SHIPPED TO LABORATORY

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**ATTACHMENT 2
COLUMBIA RIVER SEDIMENT SAMPLING PROJECT CHANGE FORM**

Date: _____

Person Initiating Change: _____

Change: _____

Reason for Change: _____

APPROVAL:

Field Team Leader: _____

Operable Unit Coordinator: _____

Environmental QA Representative: _____

9
2
1
2
6
6
0
1
9
4
3

Date Received: <i>7/23/92</i>	INFORMATION RELEASE REQUEST	Reference: WHC-CM-3-4	
Complete for all Types of Release			
Purpose <input type="checkbox"/> Speech or Presentation <input type="checkbox"/> Full Paper (Check only one suffix) <input type="checkbox"/> Summary <input type="checkbox"/> Abstract <input type="checkbox"/> Visual Aid <input type="checkbox"/> Speakers Bureau <input type="checkbox"/> Poster Session <input type="checkbox"/> Videotape		<input type="checkbox"/> Reference <input type="checkbox"/> Technical Report <input type="checkbox"/> Thesis or Dissertation <input type="checkbox"/> Manual <input type="checkbox"/> Brochure/Flier <input type="checkbox"/> Software/Database <input type="checkbox"/> Controlled Document <input checked="" type="checkbox"/> Other	
		ID Number (include revision, volume, etc.) WHC-SD-EN-AP-097, REV. 1	
		List attachments.	
		Date Release Required 07/24/92	
Title DESCRIPTION OF WORK FOR 100 AREA COLUMBIA RIVER SEDIMENT SAMPLING		Unclassified Category UC-	
		Impact Level 3Q	
New or novel (patentable) subject matter? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If "Yes", has disclosure been submitted by WHC or other company? <input type="checkbox"/> No <input type="checkbox"/> Yes Disclosure No(s).		Information received from others in confidence, such as proprietary data, trade secrets, and/or inventions? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (Identify)	
Copyrights? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If "Yes", has written permission been granted? <input type="checkbox"/> No <input type="checkbox"/> Yes (Attach Permission)		Trademarks? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (Identify)	
Complete for Speech or Presentation			
Title of Conference or Meeting		Group or Society Sponsoring	
Date(s) of Conference or Meeting	City/State	Will proceedings be published? <input type="checkbox"/> Yes <input type="checkbox"/> No Will material be handed out? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Title of Journal			
CHECKLIST FOR SIGNATORIES			
<u>Review Required per WHC-CM-3-4</u>	<u>Yes</u>	<u>No</u>	<u>Reviewer - Signature Indicates Approval</u>
			<u>Name (printed)</u> <u>Signature</u> <u>Date</u>
Classification/Unclassified Controlled Nuclear Information	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<i>SW BERGLIN</i> <i>Suberglin</i> <i>7/27/92</i>
Patent - General Counsel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Legal - General Counsel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Applied Technology/Export Controlled Information or International Program	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
WHC Program/Project	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Communications	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
RL Program/Project	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Publication Services	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>Steven M. Neale</i> <i>Stu M. Neale</i> <i>8/4/92</i>
Other Program/Project	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Information conforms to all applicable requirements.			The above information is certified to be correct.
References Available to Intended Audience <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Transmit to DOE-HQ/Office of Scientific and Technical Information <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Author/Requestor (Printed/Signature) F. W. Gustafson <i>F. W. Gustafson</i> Date 060892			INFORMATION RELEASE ADMINISTRATION APPROVAL STAMP Stamp is required before release. Release is contingent upon resolution of mandatory comments. 
Intended Audience Internal <input type="checkbox"/> Sponsor <input type="checkbox"/> External <input checked="" type="checkbox"/> External Responsible Manager (Printed/Signature) W. L. Johnson <i>W. L. Johnson</i> Date 7/23/92			
Date Cancelled _____ Date Disapproved _____			

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DISTRIBUTION SHEET

To:
Distribution

From:
Environmental Restoration

Date:
8/20/92

Project Title/Work Order:

Description of Work for 100 Area Columbia River Sediment Sampling

EDT No.:

ECN No.: 169796

Name	MSIN	With Attachment	EDT/ECN & Comment	EDT/ECN Only
F.W. Gustafson (5)	H4-55	X		
W.L. Johnson	H4-55	X		
S.G. Weiss	H4-55	X		
R.W. Peterson	H4-56	X		
V.G. Johnson	H5-29	X		
R.E. Day	H4-55	X		
R.P. Henckel	H4-55	X		
A.D. Krug	H4-55	X		
Central files	L8-04	X		
EDMC (2)	H4-22	X		
J. A. Bircher	N2-12			

+ SD Cover
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