MAY 0 5 1993
Station # 12

ENGINEERING DATA TRANSMITTAL

1. EDT 140158

2. To: (Receiving Organization) DISTRIBUTION	3. From: (Originating Organization) 100 AREA RI (81310)	4. Related EDT No.: N/A
5. Proj./Prog./Dept./Div.: 100-HR-3/100 AREA RI/ERE	6. Cog. Engr.: J.M. AYRES	7. Purchase Order No.: N/A
8. Originator Remarks: TRANSMITTED FOR RELEASE		9. Equip./Component No.: N/A
		10. System/Bldg./Facility: N/A
11. Receiver Remarks:		12. Major Assm. Dwg. No.: N/A
		13. Permit/Permit Application No.: N/A
		14. Required Response Date: N/A

MAY 1993 RECEIVED EDMC

15. DATA TRANSMITTED

(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	(F) Impact Level	(G) Reason for Transmittal	(H) Originator Disposition	(I) Receiver Disposition
1	WHC-SD-EN-TI-131		0	100-HR-3 COLUMBIA RIVER SHORELINE RADIOLOGICAL SURVEY	3Q	1/2	1	1

16. KEY

Impact Level (F)	Reason for Transmittal (G)	Disposition (H) & (I)
1, 2, 3, or 4 (see MRP 5.43)	1. Approval 2. Release 3. Information 4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION (See Impact Level for required signatures)

(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.
1	1	Cog.Eng. J.M. AYRES		5/4/93	H6-02	C.D. WADE			N1-06	3	
1	1	Cog. Mgr. R.P. HENCKEL		5/5/93	H6-02	M.A. WENDLING			X2-10	3	
1	1	QA G.S. CORRIGAN		5-5-93	H4-K	EDMC (2)			H6-08	3	
		Safety				CENTRAL FILES (2)			L8-04	3	
		Env.				ERC			H6-07	3	

18.	19.	20.	21. DOE APPROVAL (if required)
J.M. AYRES 5/4/93 Signature of EDT Originator Date	Authorized Representative for Receiving Organization Date	R.P. HENCKEL 5-5-93 Cognizant/Project Engineer's Manager Date	Ltr. No. [] Approved [] Approved w/comments [] Disapproved w/comments

BD-7400-172-2 (07/91) GEF097

9313020.0571

BD-7400-172-1 (07/91)

SUPPORTING DOCUMENT

1. Total Pages 28

2. Title

100-HR-3 Columbia River Shoreline Radiological Surveys

3. Number

WHC-SD-EN-TI-131

4. Rev No.

0

5. Key Words

Survey instrumentation, Survey methodology

6. Author

Name: J. M. Ayres

Signature 2/23/93

Organization/Charge Code 81310/P711A

APPROVED FOR PUBLIC RELEASE 3/9/93 D. Solis

7. Abstract

Wade, C. D., M. A. Wendling, and C. Lemons, 1993, *100-HR-3 Columbia River Shoreline Radiological Surveys*, WHC-SD-EN-TI-131, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

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.

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.

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, expressed 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.

9. Impact Level 3Q

10. RELEASE STAMP

OFFICIAL RELEASE BY WHC (11)
DATE MAY 05 1993
Station # 12

9313020.0575

A-6400-073 (11/91) (EF) WEF124

CONTENTS

SCOPE 1

INTRODUCTION 1

METHODOLOGY 1

RESULTS 10

APPENDIXES:
- A. Low Background Site Survey 11
- B. Survey Statistics 15

FIGURES:
1. 100-HR-3 Survey Section Map 2
2. 100-HR-3 Survey Section A 3
3. 100-HR-3 Survey Section B 4
4. 100-HR-3 Survey Section C 5
5. 100-HR-3 Survey Section D 6
6. 100-HR-3 Survey Section E 7
7. 100-HR-3 Survey Section F 8
8. 100-HR-3 Survey Section G 9

TABLE:

1. Summary of Elevated Areas 10

9313020.0576

SCOPE

This report summarizes the results of the radiological surveys conducted over the shoreline portion of the 100 Area, 100-HR-3 Operable Unit, Hanford Site, Richland, Washington (Figure 1). In addition, this report explains the methodology that was used to perform the survey. The radiological surveys were conducted by Site Investigative Surveys, Occupational Health and Safety Organization, of Westinghouse Hanford Company.

INSTRUMENTATION

The surveys were conducted in October, November, and December 1991 and January 1992 utilizing a Ludlum (a tradename of Ludlum Measurements, Inc.) model 2221 count rate meter with a NaI Ludlum model 44-2 detector, a Ludlum model 19 micro-R dose rate meter, and an Eberline E-140B meter with an HP-210 probe. The Na-I equipped count rate meter was set for gross counting, i.e., window "out". This window setting allows for detection of gamma photons with energies from 60 keV to 2 MeV.

All radiation survey instruments were pre-calibrated by Pacific Northwest Laboratory (PNL) and were function checked on a daily basis utilizing a U-238 check source.

METHODOLOGY

The starting point of the survey was at Hanford Coordinate W40290 located at the northwest corner of 100-HR-1. Prior to shoreline survey work, a grid was established by placing stakes at 200- to 300-ft intervals (Figures 2 through 8). Some stakes were placed at shorter intervals to compensate for the shoreline configuration. Each stake interval was assigned a letter(s) designating the areas upstream of this start point and an alphanumeric designator for the areas downstream of the start point. Each subarea was surveyed with all three types of instrumentation to a distance of 12 ft inland from the low water mark. The Na-I and GM probes were held suspended approximately 6 in. above the surface. Micro-R readings were taken at waist level. Data logging was performed manually. Readings were recorded, at a minimum, every 20 ft or any time anomalies were observed. Survey speed was approximately 1 ft/second.

Average background activity related to this instrumentation was previously determined at a low background site located in the 600 Area between the 100-D/DR and 100-H Areas approximately 2,000 ft from the Columbia River (Appendix A). This background survey established a threshold value of 3,900 counts per minute (cpm) for the NaI detector. Background for beta detection was set at 100 cpm with the lower limit of detection set at 100 cpm over background or 200 cpm.

9313020.0577

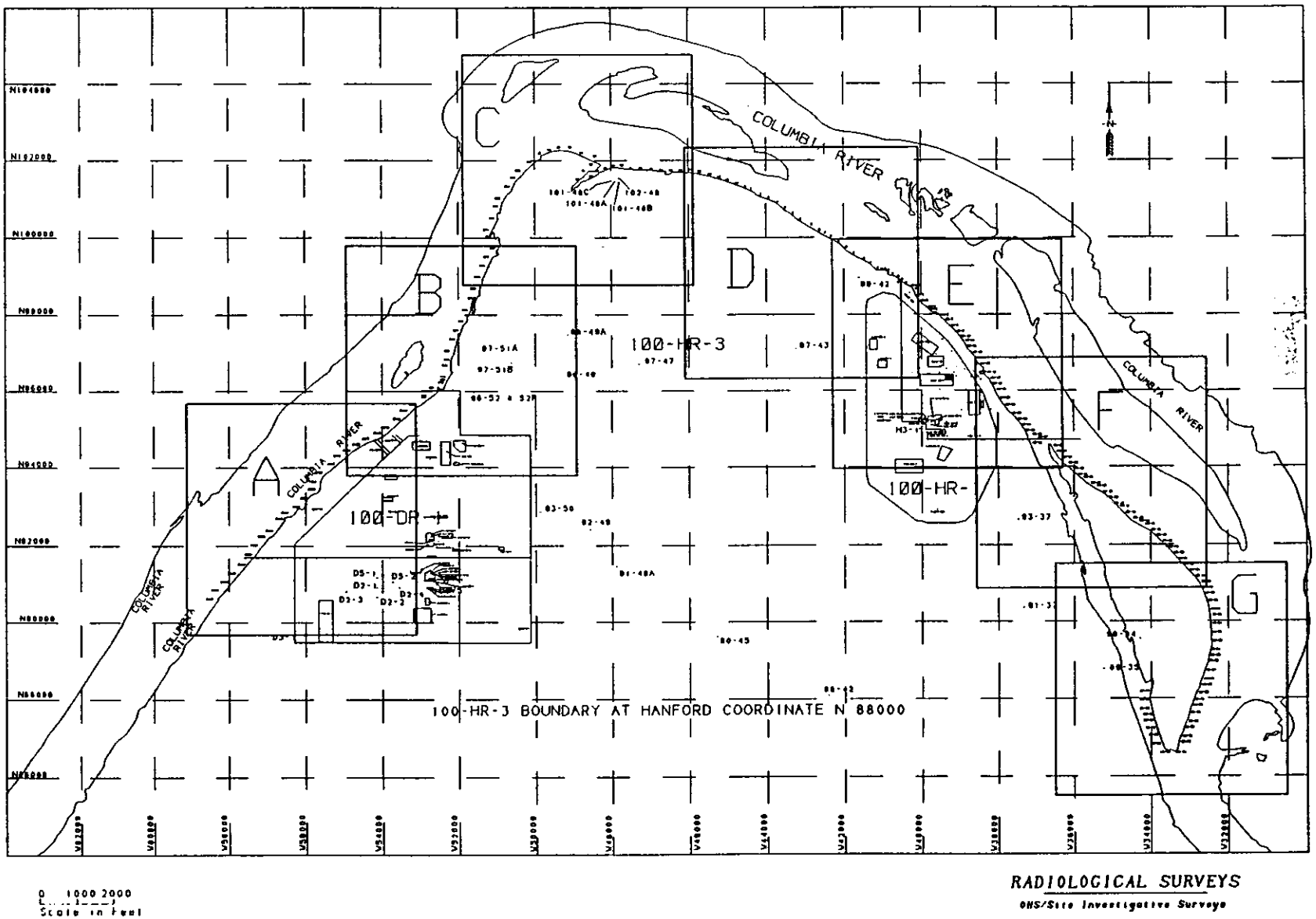
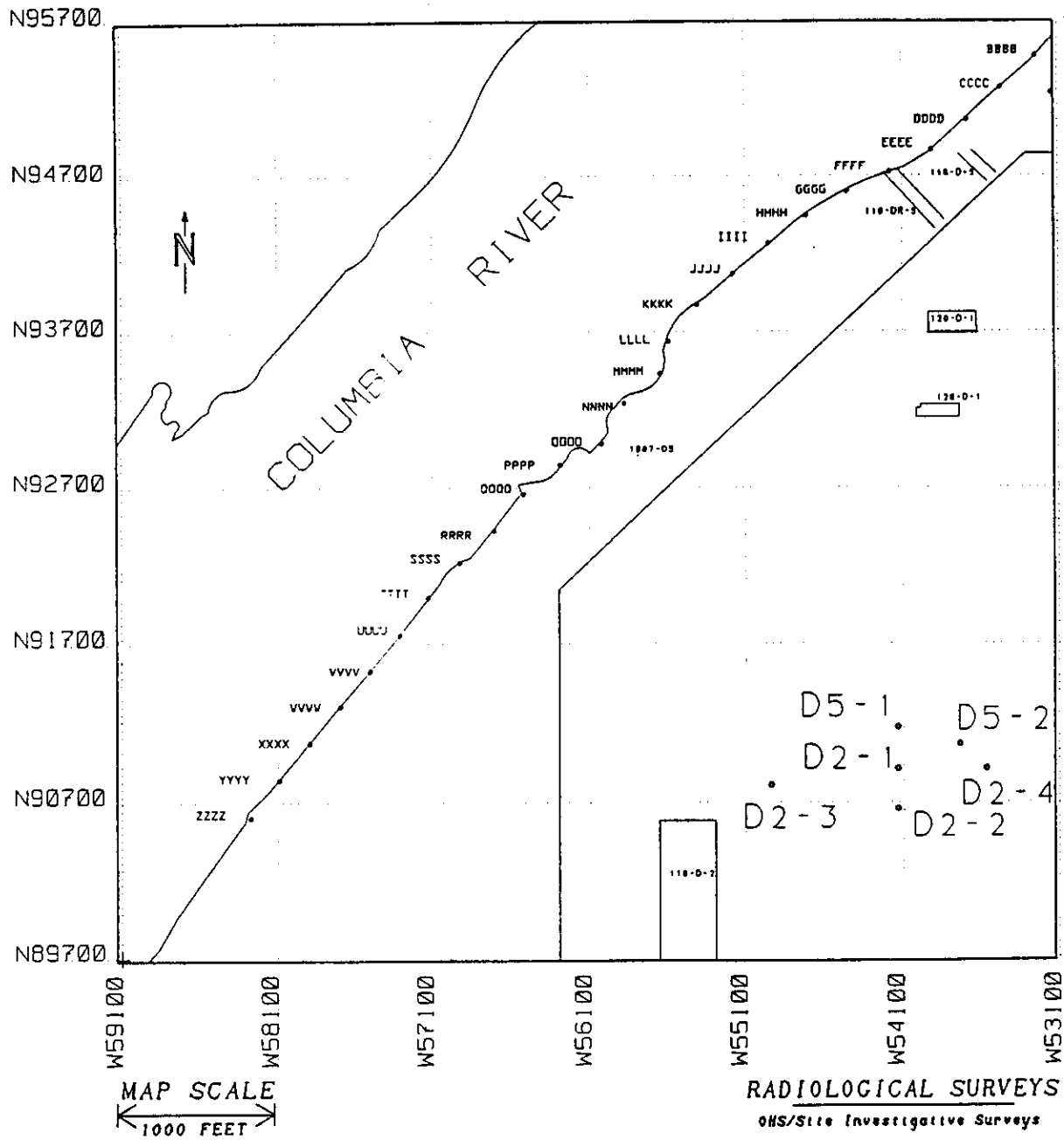


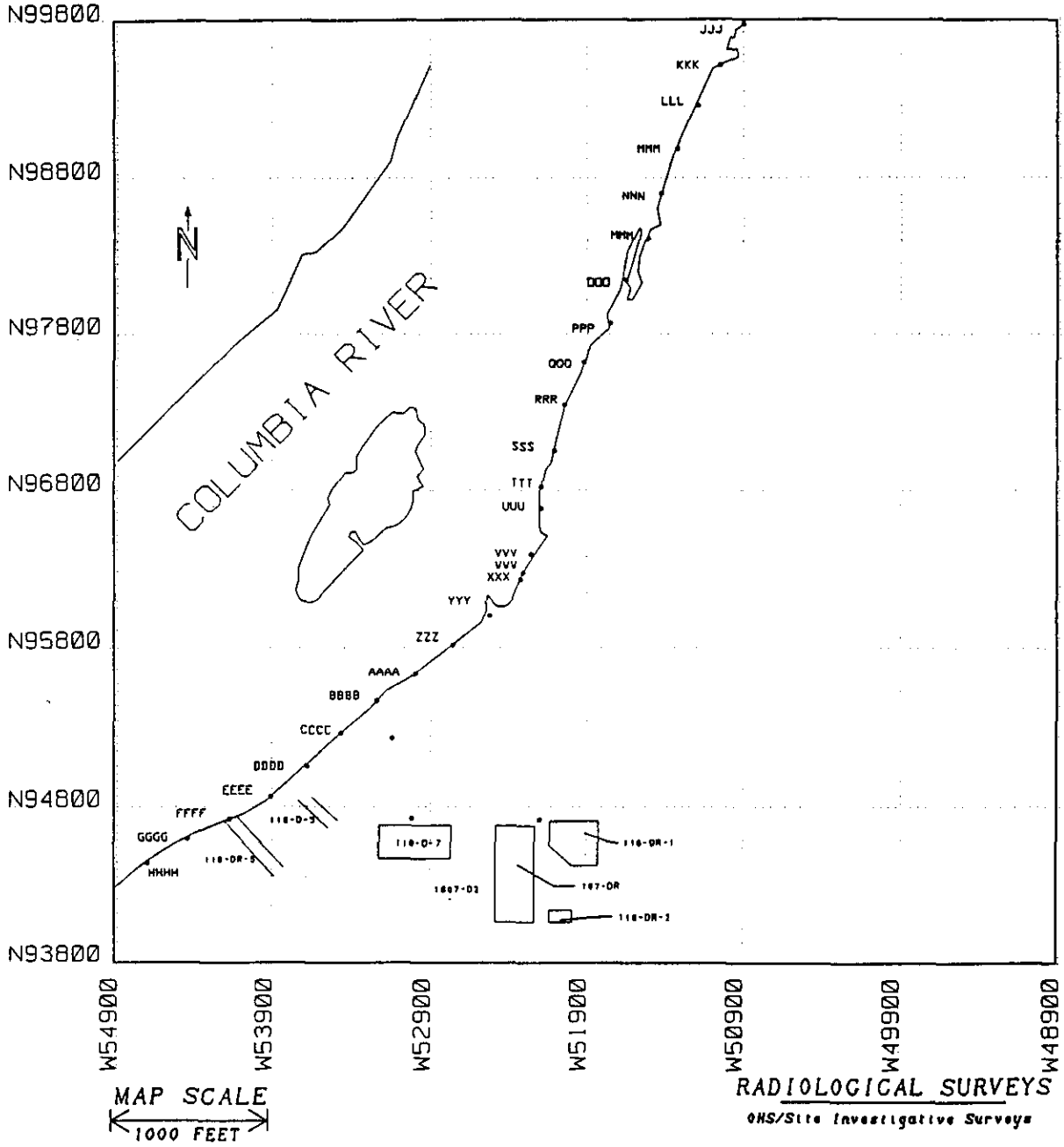
Figure 1. 100-HR-3 Survey Section Map.

Figure 2. 100-HR-3 Survey Section A.



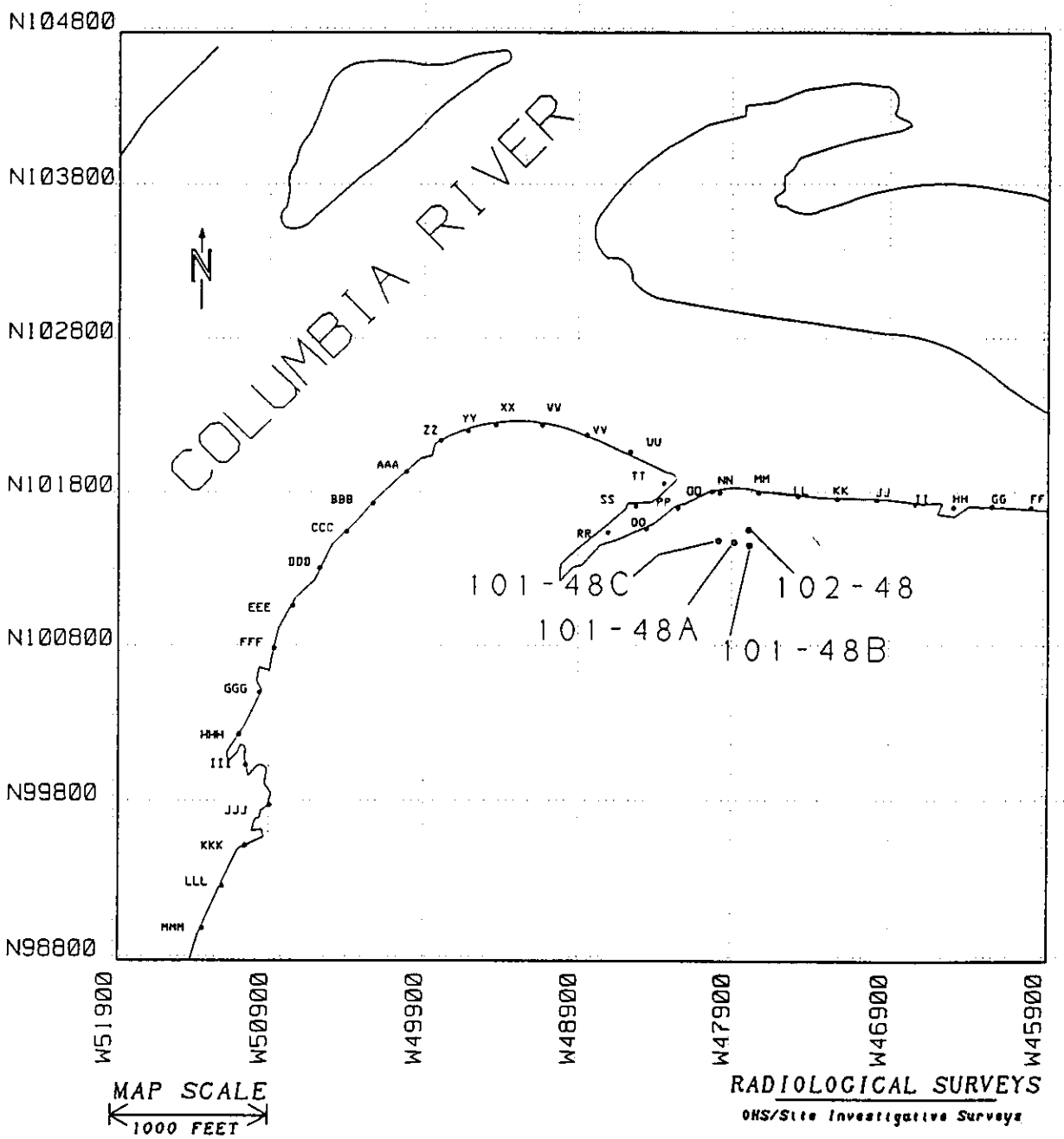
9313020.0579

Figure 3. 100-HR-3 Survey Section B.



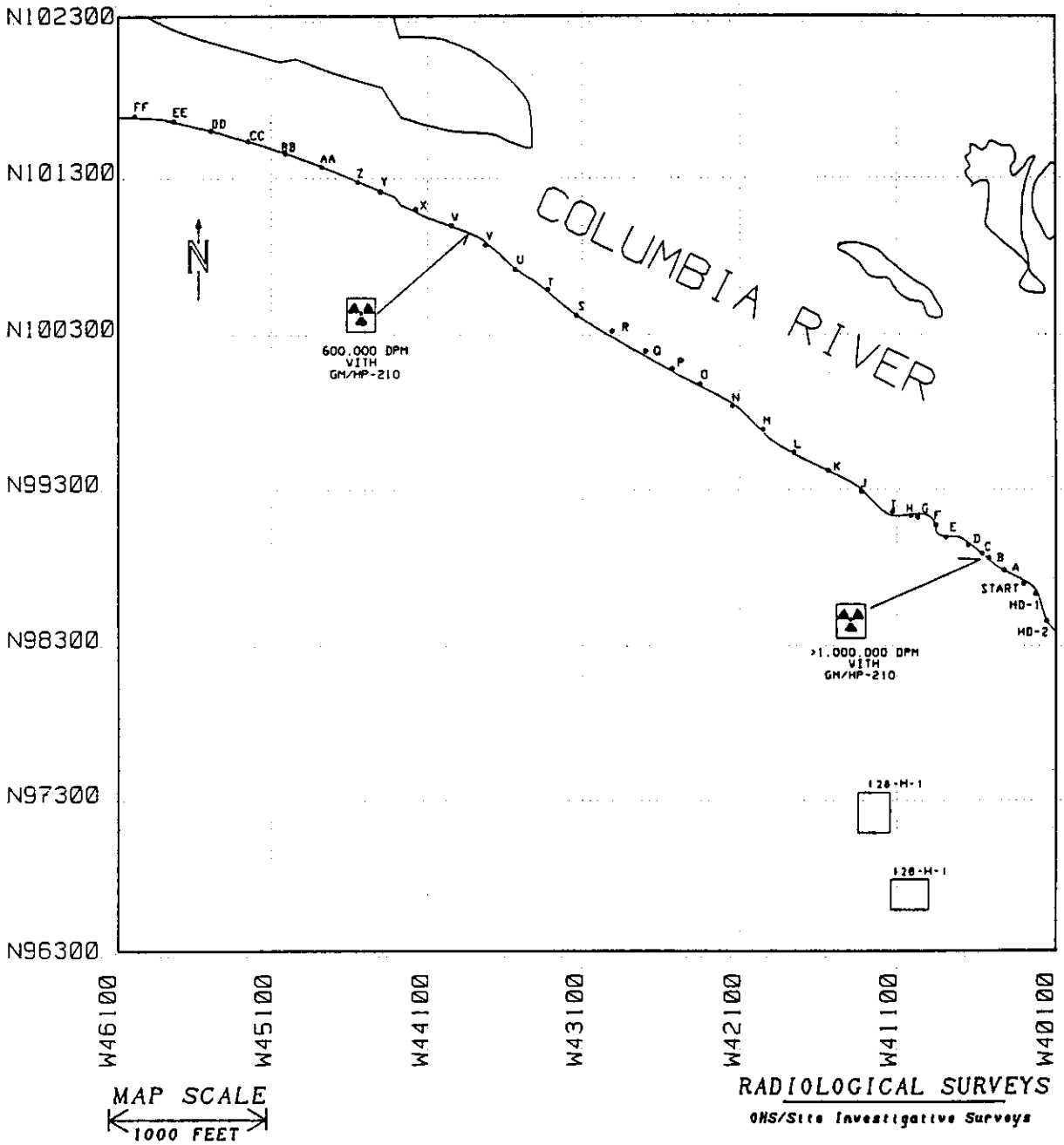
9313020.0580

Figure 4. 100-HR-3 Survey Section C.



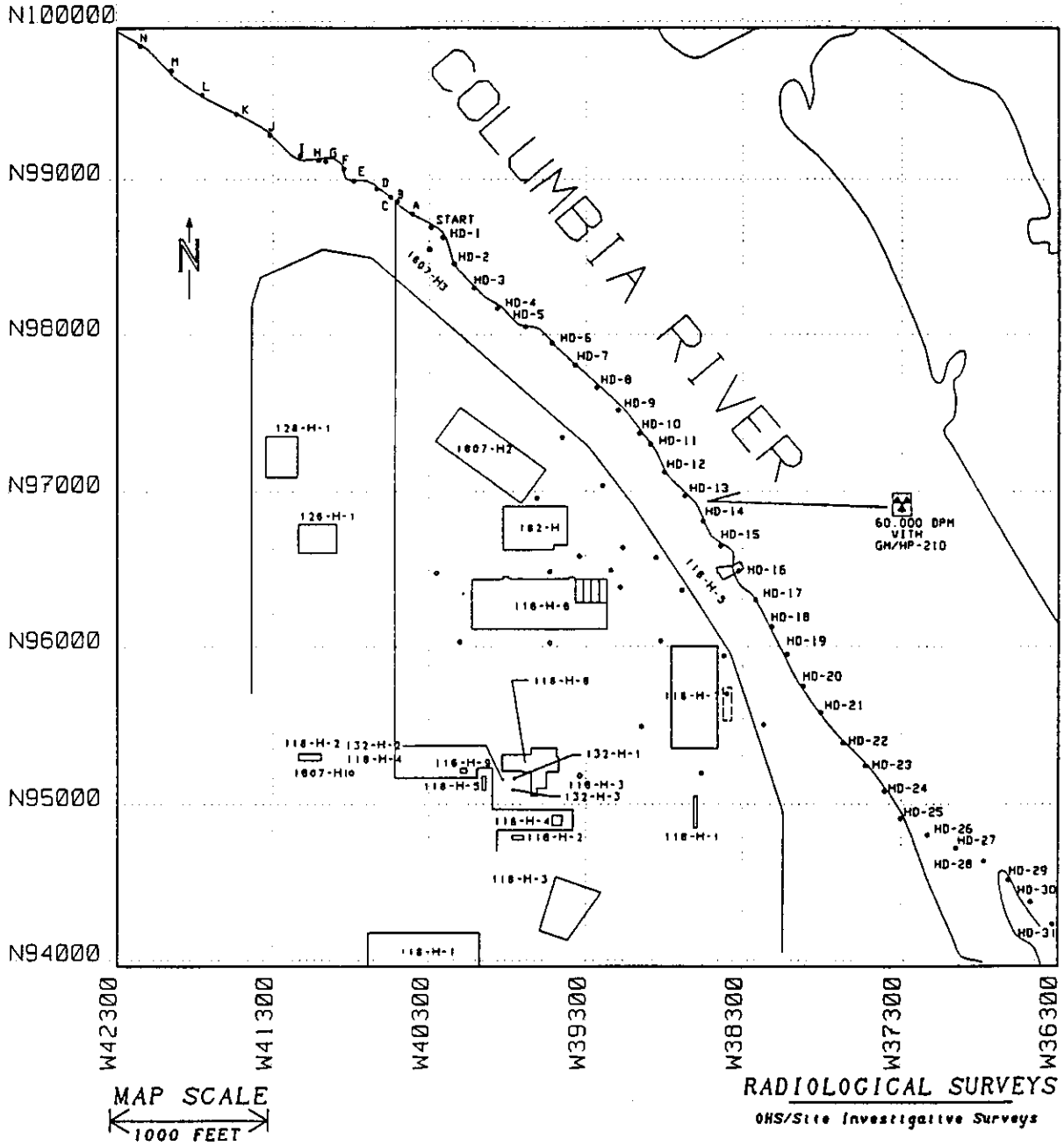
9313020.0581

Figure 5. 100-HR-3 Survey Section D.



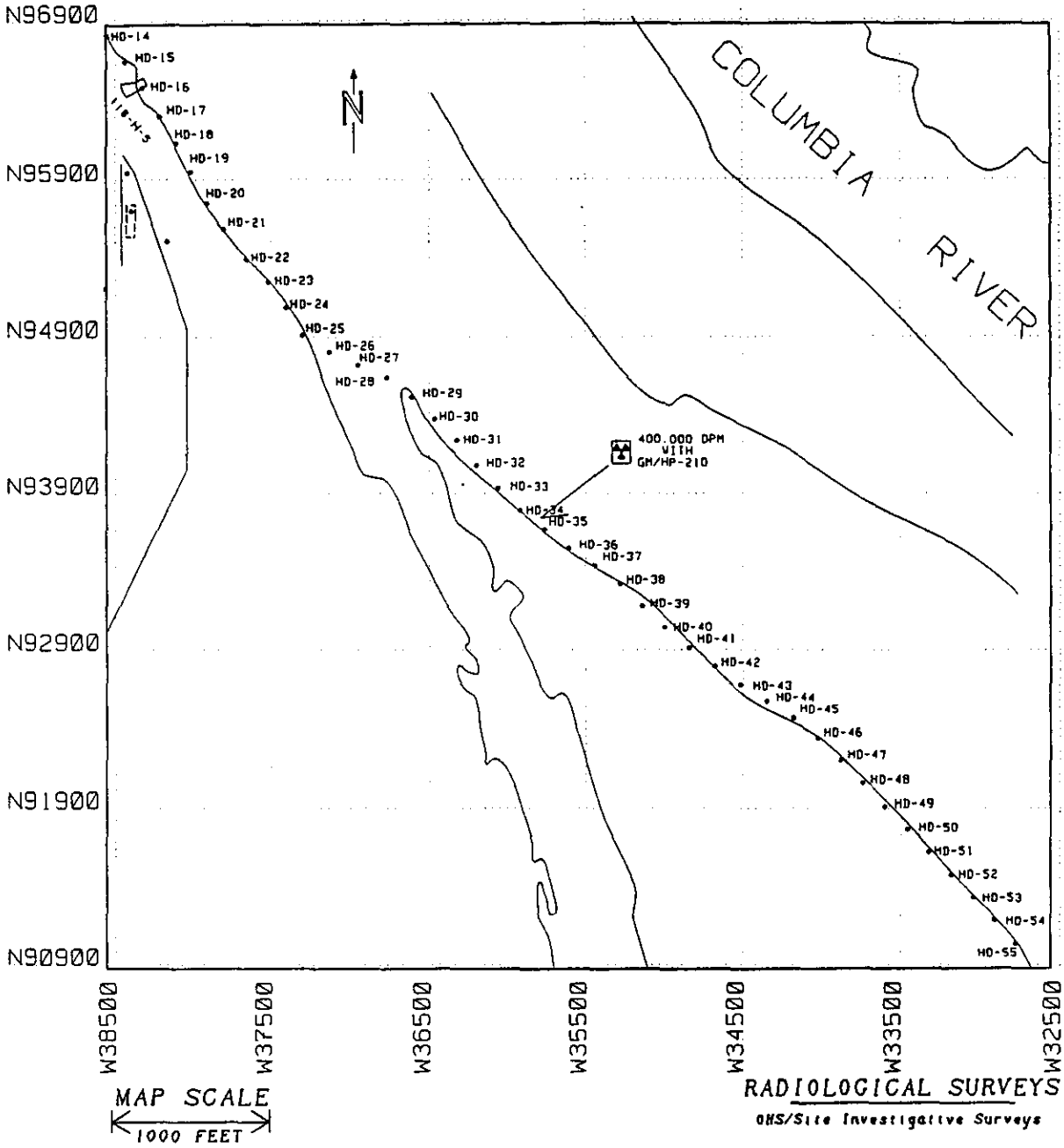
9313020.0582

Figure 6. 100-HR-3 Survey Section E.



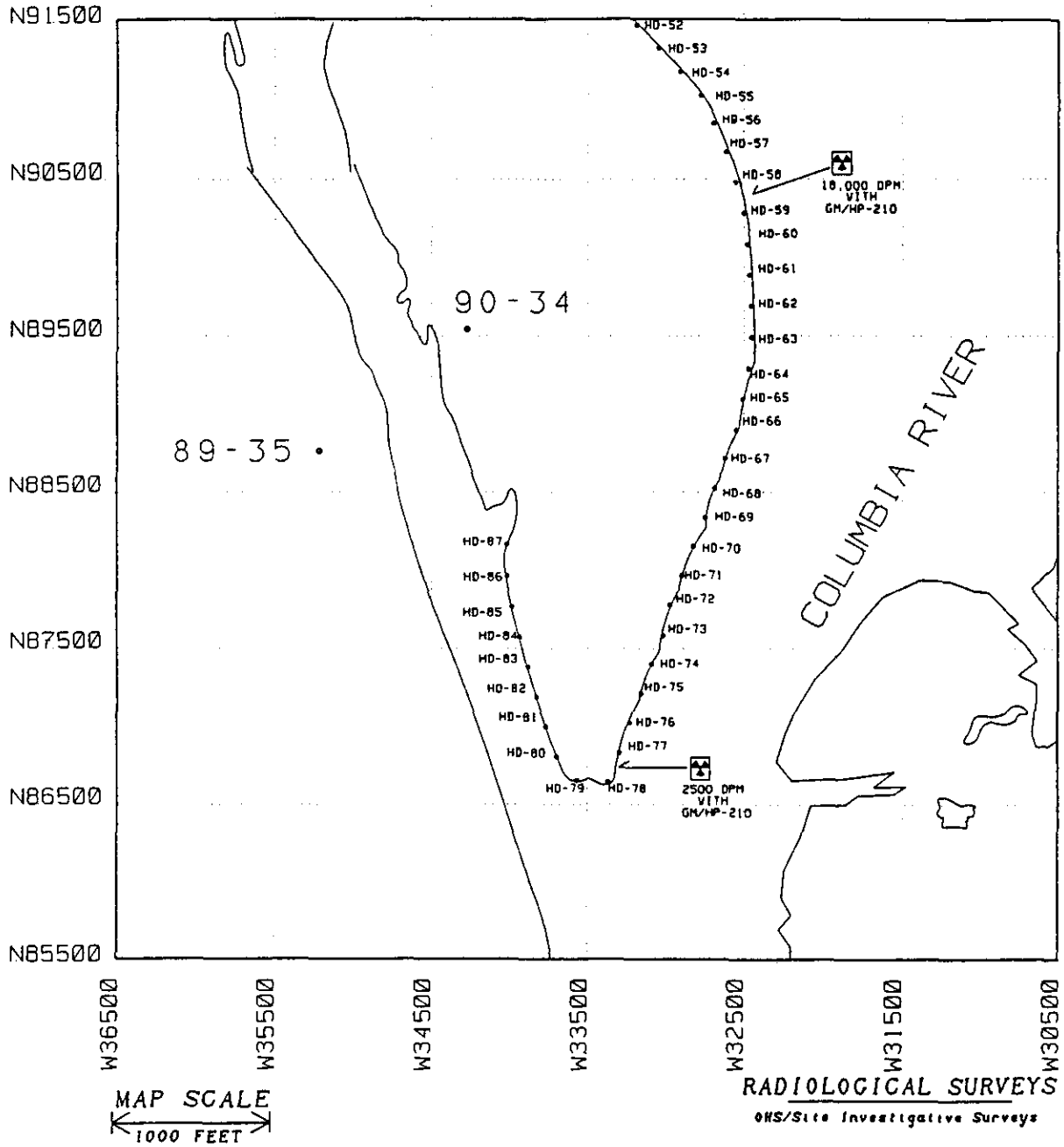
9313020.0583

Figure 7. 100-HR-3 Survey Section F.



9313020.0584

Figure 8. 100-HR-3 Survey Section G.



9313020.0585

Daily background checks were performed by taking three 1-minute counts on each count rate instrument and calculating the mean of the three counts. The value obtained from these background checks was recorded on the manual survey data logging sheets.

RESULTS

With the exception of posted Surface Contamination Areas, the entire approximately 8.2-mile 100-HR-3 Operable Unit Shoreline was surveyed at a width of 12 ft for a total of 521,820 ft^2 or 12 acres. A total of 6,850 data points (readings) were logged.

In six small areas (shown in Figures 5, 6, 7, and 8) elevated readings were recorded. Contamination was found fixed on a single small rock in four of these areas with no surrounding contamination detected. The other two contaminated areas consisted of approximately .25 ft^3 of soil each. These contaminations were removed by the sampling process and a 100% coverage, 2 in./second probe speed, surface contamination survey was performed in the immediate vicinity of these six locations. No readings greater than background levels were found. The readings found in these six areas with Hanford standard GM/HP-210 instrumentation prior to sampling/remediation are summarized in Table 1.

Table 1. Summary of Elevated Areas.

Location (approximate), 100-H Area, Hanford Site Coordinates	Surface activity (Hanford Standard GM)	Type of source
N 100953, W 43838	600,000 dpm	1 rock with fixed contamination
N 98866, W 40533	1,000,000 dpm	1 rock with fixed contamination
N 96925, W 38590	60,000 dpm	1 rock with fixed contamination
N 93716, W 35846	400,000 dpm	.25 ft^3 soil
N 90395, W 32506	18,000 dpm	1 rock with fixed contamination
N 86740, W 33316	2,500 dpm	.25 ft^3 soil

Samples taken from areas with elevated reading were submitted for analysis using gamma spectroscopy. The spectral analysis showed ^{60}Co and ^{137}Cs peaks. Gross alpha activity was not found to be present.

A summary of data acquired during this survey with the highest reading recorded by each instrument in each individual grid is provided in Appendix B.

9313020.0586

APPENDIX A

LOW BACKGROUND SITE SURVEY

9313020.0587

APPENDIX A

LOW BACKGROUND SITE SURVEY

INTRODUCTION

The Low Background survey was conducted to establish baseline radiological background conditions in a designated test plot adjacent to the 100-HR-3 Shoreline Area. The radiological data collected during this survey are considered representative of the undisturbed soil surfaces in the 100 Areas of the Hanford Site. The survey was conducted on July 17, 18, and 19, 1991.

Location

The Low Background test plot is located in the 600 Area, between the 100-D/DR and 100-H Areas, approximately 2,000 ft from the Columbia River. The site had been previously staked on 100-ft intersects oriented along a north-south axis. The total size of the background plot is 500 by 500 ft.

Discussion

The survey was conducted using a Ludlum Model 2221 digital rate meter with a Ludlum Model 44-2, 1- by 1-in. sodium iodide detector and a Ludlum Model 19 uR meter. The meters were coupled to the Ultra Sonic Ranging and Data System (USRADS) for the purpose of recording the data from the output of the individual detectors versus the location of that data within the survey area.

Seven individual surveys were performed to completely cover the 250,000-ft^2 site. A total of 5,796 data points were collected within this site. A summary of the survey results can be found in Table A-1. The survey grid layout and a composite track map of survey area are shown in Figure A-1. Each grid block was traversed on approximately 25-ft transects.

The background count rate was established by averaging the mean count rate for each survey. Using the formula $BKGD=\Sigma\overline{X}/7$, the average background count rate for the Low Background Site was calculated to be 2,394 counts per minute (cpm) and the average dose rate to be 9.51 uR/h.

The minimum detectable count rate (MDCR) was then calculated by employing the formula:

$$2m\sqrt{\left(\frac{Rb}{Ts}\right)+\left(\frac{Rb}{Tb}\right)}$$

where:

Ts = gross sample count time (minutes)
Tb = background counting time (minutes)
Rb = background count rate in counts per minute
M = 1.645 (constant for 90% confidence level).

9313020.0588

Based on the formula above, the minimum detectable count rate was 1,763 + 2,394 cpm = 4,157 cpm.

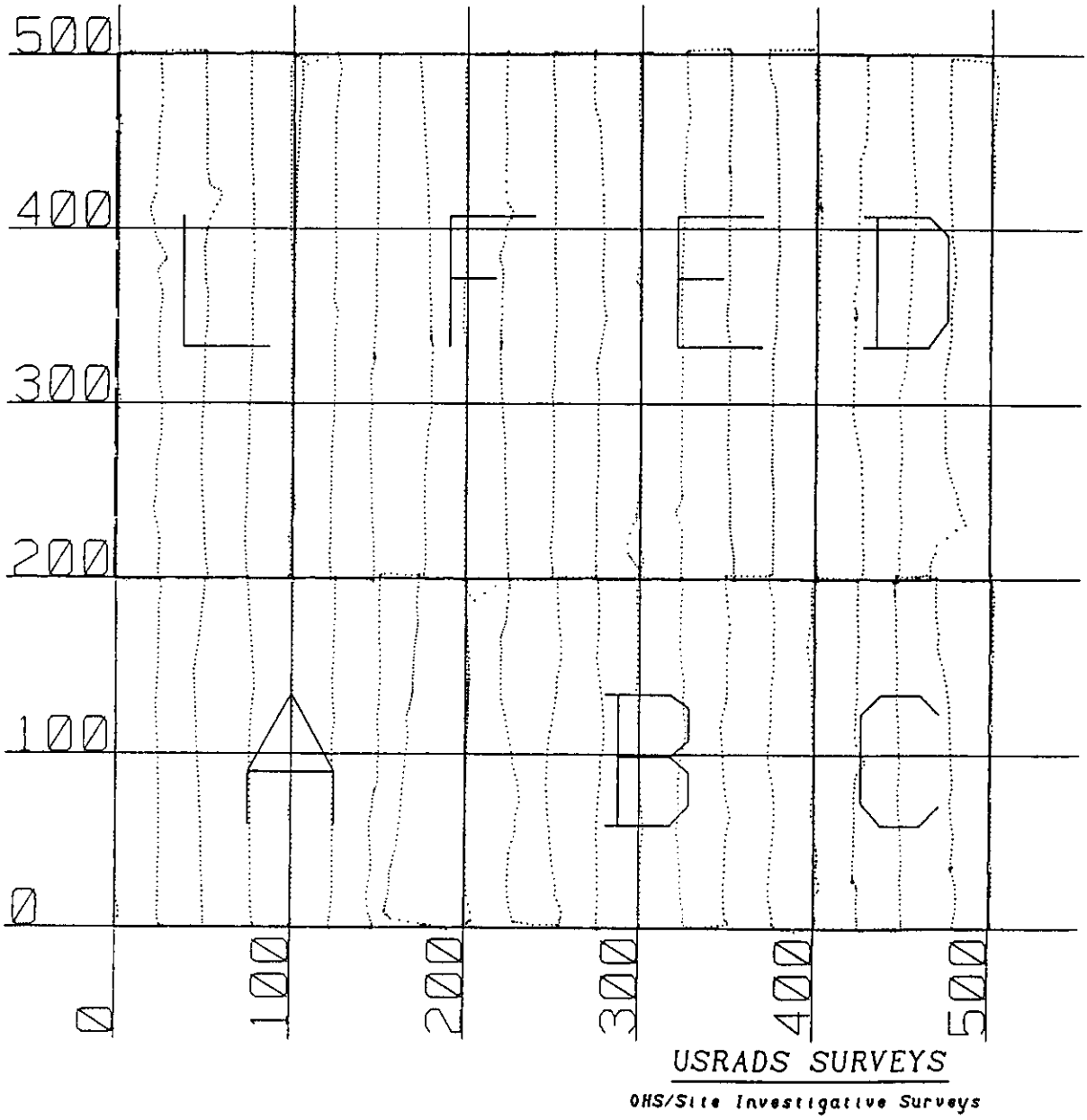
For the purpose of conducting the 100-HR-3 RI/FS surface radiation survey, it was desirable to establish a value for the NaI cpm threshold where readings above that value could be considered for further investigations. The threshold value established for the entire 100-HR-3 Shoreline Survey was 3,900 cpm. This value is practical based on the premise that too low a number would highlight normal fluctuations above the calculated mean, and too high a setting would cut off the low end of surface radiation that might be present.

Table A-1. Low Background Site Survey Statistics.

SURVEY	DATE	GRID	DATA PTS	MAX CPM	MEAN CPM	SIGMA	MAX uR	MEAN uR	SIGMA
lbs2a	07/16/91	a	861	3960	2437.63	404.04	14.42	9.67	1.72
lbs2b	07/17/91	b	1320	3480	2417.45	367.39	15.62	9.58	1.81
lbs2c	07/17/91	c	792	3540	2335.23	381.49	13.82	9.4	1.57
lbs2d	07/17/91	d	755	3840	2409.93	402.36	16.52	9.88	1.77
lbs2e	07/18/91	e	804	3660	2371.79	391.61	14.42	9.35	1.88
lbs2f	07/18/91	f	668	3540	2331.65	416.68	13.82	9.18	1.62
lbs2l	07/19/91	l	596	3540	2454.77	370.66	13.82	9.53	1.73
		TOTAL	5796	MEAN	2394.06		MEAN	9.51	

9313020.0589

Figure A-1. Low Background Site USRADS Survey Composite Track Map.



9313020.0590

APPENDIX B

SURVEY STATISTICS

9313020.0591

100-HR-3 SHORELINE SURVEY DOWNSTREAM OF W40290

Date	Sub Area	Max CPM (GM)	Background (GM)	Max CPM (NA-I)	Background (NA-I)	Micro-R Max	Area (ft^2)
1-16-92 1-22-92	HD-1	150	50-80	1330	1957	10	1200
1-16-92 1-22-92	HD-2	150	50-80	1600	1957	10	2400
1-16-92 1-22-92	HD-3	150	50-80	1770	1957	10	2400
1-18-92 1-22-92	HD-4	150	75-100	1483	1957	10	2400
1-18-92 1-23-92	HD-5	150	75-100	1823	1957	10	2400
1-18-92 1-23-92	HD-6	150	75-100	1806	1957	10	2400
1-18-92 1-23-92	HD-7	150	75-100	2254	1957	10	2400
1-18-92 1-23-92	HD-8	150	75-100	2051	1957	10	2400
1-18-92 1-23-92	HD-9	150	75-100	2153	1957	10	2400
1-18-92 1-23-92	HD-10	150	75-100	2069	1957	10	2400
1-18-92 1-23-92	HD-11	150	75-100	1502	1957	10	1200
1-18-92 1-23-92	HD-12	150	75-100	1538	1957	10	2400
1-18-92 1-23-92	HD-13	150	75-100	1590	1957	10	2400
1-18-92 1-23-92	HD-14* HD-14**	6K 150	75-100 "	40K 1629	1957 "	1.5MR 10	2400
1-18-92 1-24-92	HD-15	150	75-100	1526	1957	10	2400
1-19-92 1-24-92	HD-16	150	75-100	2044	1957	10	2400
1-19-92 1-24-92	HD-17	100	75-100	1524	1957	10	2400
1-19-92 1-24-92	HD-18	100	75-100	1613	1957	10	2400

*Small area of contamination/Area remediated to background levels.
**Rest of survey grid.

9313020.0592

100-HR-3 SHORELINE SURVEY DOWNSTREAM OF W40290

Date	Sub Area	Max CPM (GM)	Background (GM)	Max CPM (NA-I)	Background (NA-I)	Micro-R Max	Area (ft^2)
1-19-92 1-24-92	HD-19	100	75-100	1735	1957	10	2400
1-19-92 1-24-92	HD-20	100	75-100	1768	1957	10	2400
1-19-92 1-24-92	HD-21	100	75-100	1709	1957	10	2400
1-19-92 1-25-92	HD-22	100	75-100	1857	1957	10	2400
1-19-92 1-25-92	HD-23	100	75-100	1726	1957	10	2400
1-19-92 1-25-92	HD-24	100	75-100	1719	1957	10	2400
1-19-92 1-25-92	HD-25	100	75-100	1735	1957	10	2400
1-19-92 1-25-92	HD-26	100	75-100	1674	1957	10	2400
1-19-92 1-25-92	HD-27	100	75-100	1606	1957	10	2400
1-19-92 1-25-92	HD-28	150	75-125	1579	1957	10	2400
1-19-92 1-25-92	HD-29	150	75-125	1564	1957	10	2400
1-19-92 1-25-92	HD-30	150	75-125	1925	1957	10	2400
1-19-92 1-25-92	HD-31	150	75-125	1606	1957	11	2400
1-19-92 1-25-92	HD-32	150	75-125	1642	1957	11	2400
1-19-92 1-25-92	HD-33	150	75-125	1753	1957	11	2400
1-19-92 1-25-92	HD-34	150	75-125	1682	1957	11	2400
1-21-92 1-26-92	HD-35* HD-35**	40K 150	75-125 "	2133 "	1957 "	1.5MR 12	2400
1-21-92 1-26-92	HD-36	150	75-125	2063	1957	11	2400

*Small area of contamination/Area remediated to background levels.
**Rest of survey grid.

9313020.0593

100-HR-3 SHORELINE SURVEY DOWNSTREAM OF W40290

Date	Sub Area	Max CPM (GM)	Background (GM)	Max CPM (NA-I)	Background (NA-I)	Micro-R Max	Area (ft^2)
1-21-92 1-26-92	HD-37	150	75-125	2274	1957	11	2400
1-21-92 1-26-92	HD-38	150	75-125	2283	1957	11	2400
2-2-92 1-26-92	HD-39	150	75-125	2312	1957	111	2400
2-2-92 1-26-92	HD-40	150	75-125	2429	1957	11	2400
2-2-92 1-26-92	HD-41	150	75-125	2269	1957	11	2400
2-2-92 1-26-92	HD-42	150	75-125	2236	1957	11	2400
2-2-92 1-26-92	HD-43	150	75-125	2304	1957	11	2400
2-2-92 1-26-92	HD-44	150	75-125	2064	1957	11	2400
2-2-92 1-27-92	HD-45	150	75-125	1994	1957	11	2400
2-2-92 1-27-92	HD-46	150	75-125	1905	1957	11	2400
2-2-92 1-27-92	HD-47	150	75-125	1944	1957	11	2400
2-2-92 1-27-92	HD-48	150	75-125	1936	1957	11	2400
2-2-92 1-27-92	HD-49	150	75-125	1943	1957	11	2400
2-2-92 1-27-92	HD-50	150	75-125	1962	1957	11	2400
2-2-92 1-27-92	HD-51	150	75-125	2052	1957	11	2400
2-2-92 1-27-92	HD-52	150	75-125	2085	1957	11	2400
2-2-92 1-27-92	HD-53	150	75-125	1843	1957	11	2400
2-2-92 1-27-92	HD-54	150	75-125	1690	1957	11	2400

9313020.0594

100-HR-3 SHORELINE SURVEY DOWNSTREAM OF W40290

Date	Sub Area	Max CPM (GM)	Background (GM)	Max CPM (NA-I)	Background (NA-I)	Micro-R Max	Area (ft^2)
2-2-92 1-27-92	HD-55	150	75-125	1724	1957	11	2400
2-2-92 1-27-92	HD-56	150	75-125	1740	1957	11	2400
2-2-92 1-27-92	HD-57	150	75-125	1790	1957	11	2400
2-2-92 1-27-92	HD-58	150	75-125	1770	1957	11	2400
2-3-92 1-27-92	HD-59* HD-59**	1800 150	75-125	1763	1957	11	2400
2-3-92 1-27-92	HD-60	150	75-125	1784	1957	11	2400
2-3-92 1-27-92	HD-61	150	75-125	1745	1957	11	2400
2-3-92 1-27-92	HD-62	150	75-125	1903	1957	11	2400
2-3-92 1-27-92	HD-63	150	75-125	2043	1957	11	2400
2-3-92 1-27-92	HD-64	150	75-125	1969	1957	11	2400
2-3-92 1-27-92	HD-65	150	75-125	1872	1957	11	2400
2-3-92 1-27-92	HD-66	150	75-125	1829	1957	11	2400
2-3-92 1-27-92	HD-67	150	75-125	1994	1957	12	2400
2-4-92 1-27-92	HD-68	150	75-125	2054	1957	12	2400
2-4-92 1-27-92	HD-69	150	75-125	2010	1957	12	2400
2-4-92 1-28-92	HD-70	150	75-125	1889	1957	12	2400
2-4-92 1-28-92	HD-71	150	75-125	1899	1957	12	2400
2-4-92 1-28-92	HD-72	150	75-125	2012	1957	12	2400

*Small area of contamination/Area remediated to background levels.
**Rest of survey grid.

9313020.0595

100-HR-3 SHORELINE SURVEY DOWNSTREAM OF W40290

Date	Sub Area	Max CPM (GM)	Background (GM)	Max CPM (NA-I)	Background (NA-I)	Micro-R Max	Area (ft^2)
2-4-92 1-28-92	HD-73	150	75-125	1925	1957	12	2400
2-4-92 1-28-92	HD-74	150	75-125	2037	1957	12	2400
2-4-92 1-28-92	HD-75	150	75-125	2083	1957	12	2400
2-4-92 1-28-92	HD-76	150	75-125	2453	1957	12	2400
2-4-92 1-28-92	HD-77	150	75-125	3243	1957	12	2400
2-4-92 1-28-92	HD-78* HD-78**	250 150	75-125	2957	1957	12	2400
2-4-92 1-28-92	HD-79	150	75-125	1855	1957	12	2400
2-4-92 1-28-92	HD-80	150	75-125	1892	1957	12	2400
2-4-92 1-28-92	HD-81	150	75-125	2032	1957	12	2400
2-4-92 1-28-92	HD-82	150	75-125	2015	1957	12	2400
2-4-92 1-28-92	HD-83	150	75-125	2091	1957	12	2400
2-4-92 1-28-92	HD-84	150	75-125	2102	1957	12	2400
2-4-92 1-28-92	HD-85	150	75-125	2043	1957	12	2400
2-4-92 1-28-92	HD-86	150	75-125	1916	1957	12	2400
2-4-92 1-28-92	HD-87	150	75-125	1928	1957	12	2400

*Small area of contamination/Area remediated to background levels.
**Rest of survey grid.

9313020.0596

100-HR-3 SHORELINE SURVEY UPSTREAM OF W40290

Date	Sub Area	Max CPM (GM)	Background (GM)	Max CPM (NA-I)	Background (NA-I)	Micro-R Max	Area (ft^2)
91 12- 14-91	A	75	50-75	1595	1957	10	1800
0-2-91 12-14-91	B	75	50-75	1608	1957	10	1500
10-2-91 12-14-91	C* C**	>100K 75	50-75	NA 1602	1957	NA 10	648
10-2-91 12-14-91	D	75	50-75	1671	1957	10	1224
10-3-91 1-28-92	E	75	50-75	1666	1957	10	1860
10-3-91 1-28-92	F	75	50-75	1447	1957	10	1200
10-3-91 1-28-92	G	75	50-75	1442	1957	10	1512
10-3-91 1-28-92	H	75	50-75	1932	1957	10	540
10-3-91 1-28-92	I	75	50-75	1750	1957	10	1440
10-7-91 1-28-92	J	75	50-75	1708	1957	10	2820
10-7-91 1-28-92	K	75	50-75	1850	1957	10	3000
10-7-91 1-28-92	L	75	50-75	1777	1957	10	3000
10-7-91 1-28-92	M	75	50-75	1833	1957	10	3000
10-8-91 1-28-92	N	75	50-75	1755	1957	10	3000
10-8-91 1-28-92	O	75	50-75	1631	1957	10	3000
10-4-91 1-28-92	P	75	50-75	1696	1957	10	2400
10-4-91 1-28-92	Q	75	50-75	1646	1957	10	2400
10-4-91 1-28-92	R	75	50-75	1624	1957	10	3000

*Small area of contamination/Area remediated to background levels.
**Rest of survey grid.

9313020.0597

100-HR-3 SHORELINE SURVEY UPSTREAM OF W40290

Date	Sub Area	Max CPM (GM)	Background (GM)	Max CPM (NA-I)	Background (NA-I)	Micro-R Max	Area (ft^2)
10-9-91 1-29-92	S	75	50-75	1610	1957	10	3000
10-9-91 1-29-92	T	75	50-75	1600	1957	10	3000
10-9-91 1-29-92	U	75	50-75	1593	1957	10	3000
10-10-91 1-29-92	V	75	50-75	1614	1957	10	3000
10-10-91 1-29-92	W* W**	60K 75	50-75	1616	1957	NA 10	3000
10-8-91 1-29-92	X	75	50-75	1621	1957	10	3000
10-11-91 1-29-92	Y	75	50-75	1568	1957	10	3000
10-11-91 1-29-92	Z	75	50-75	1530	1957	10	1860
10-14-91 1-29-92	AA	75	50-75	1545	1957	10	3000
10-14-91 1-29-92	BB	75	50-75	1489	1957	10	3000
10-14-91 1-29-92	CC	75	50-75	1433	1957	10	3000
10-14-91 1-29-92	DD	75	50-75	1446	1957	10	3000
10-15-91 1-29-92	EE	75	50-75	1430	1957	10	3000
10-16-91 1-29-92	FF	75	50-75	1739	1957	10	3000
10-16-91 1-29-92	GG	75	50-75	1479	1957	10	3000
10-17-91 1-29-92	HH	75	50-75	1484	1957	10	3000
10-17-91 1-29-92	II	75	50-75	1428	1957	10	3000
10-17-91 1-29-92	JJ	75	50-75	1456	1957	10	3000

*Small area of contamination/Area remediated to background levels.
**Rest of survey grid.

9313020.0598

100-HR-3 SHORELINE SURVEY UPSTREAM OF W40290

Date	Sub Area	Max CPM (GM)	Background (GM)	Max CPM (NA-I)	Background (NA-I)	Micro-R Max	Area (ft^2)
10-17-91 1-29-92	KK	75	50-75	1323	1957	10	3000
10-17-91 1-29-92	LL	75	50-75	1362	1957	10	3000
10-18-91 1-29-92	MM	75	50-75	1514	1957	10	3000
10-18-91 1-29-92	NN	75	50-75	1727	1957	10	3000
10-18-91 1-29-92	OO	75	50-75	1427	1957	10	600
10-21-91 1-29-92	PP	75	50-75	1331	1957	10	3000
10-21-91 1-29-92	QQ	75	50-75	1450	1957	10	3000
10-21-91 1-29-92	RR	75	50-75	1527	1957	10	3000
10-22-91 1-29-92	SS	75	50-75	1525	1957	10	3000
10-22-91 1-29-92	TT	75	50-75	1571	1957	10	2820
10-22-91 1-29-92	UU	75	50-75	1505	1957	10	3600
10-22-91 1-29-92	VV	75	50-75	1599	1957	10	3600
10-23-91 1-29-92	WW	75	50-75	1764	1957	10	3600
10-23-91 1-30-92	XX	75	50-75	1817	1957	10	3600
10-23-91 1-30-92	YY	75	50-75	169.	1957	10	2220
10-23-91 1-30-92	ZZ	75	50-75	1684	1957	10	2220
10-24-91 1-30-92	AAA	75	50-75	1651	1957	10	3600
10-24-91 1-30-92	BBB	75	50-75	1739	1957	10	3600

9313020.0599

100-HR-3 SHORELINE SURVEY UPSTREAM OF W40290

Date	Sub Area	Max CPM (GM)	Background (GM)	Max CPM (NA-I)	Background (NA-I)	Micro-R Max	Area (ft^2)
10-25-91 1-30-91	CCC	75	50-75	1748	1957	10	3000
10-30-91 1-30-92	DDD	75	50-75	1828	1957	10	3600
10-31-91 1-30-92	EEE	75	50-75	1885	1957	10	3600
10-31-91 1-30-92	FFF	75	50-75	1884	1957	10	3600
10-31-91 1-30-92	GGG	75	50-75	1940	1957	10	3600
10-31-91 1-30-92	HHH	75	50-75	1897	1957	10	3600
10-31-91 11-11-92	III	75	50-75	2386	1957	10	2400
11-5-91 11-11-91	JJJ	75	50-75	2662	1957	12	3600
11-5-91 11-8-91	KKK	75	50-75	2560	1957	12	3600
11-5-91 11-8-91	LLL	75	50-75	3160	1957	12	3600
11-5-91 11-8-91	MMM	75	50-75	2413	1957	12	3600
11-5-91 11-7-91	NNN	75	50-75	2093	1957	12	3600
11-6-91 11-7-91	OOO	75	50-75	2150	1957	12	3600
11-6-91 11-7-91	PPP	75	50-75	2292	1957	12	3600
11-6-91 11-8-91	QQQ	75	50-75	1873	1957	12	3600
11-6-91 11-8-91	RRR	75	50-75	1863	1957	12	3600
11-7-91 11-8-91	SSS	75	50-75	3339	1957	12	3600
11-7-91 11-8-91	TTT	75	50-75	4178	1957	12	2880

9313020.0600

100-HR-3 SHORELINE SURVEY UPSTREAM OF W40290

Date	Sub Area	Max CPM (GM)	Background (GM)	Max CPM (NA-I)	Background (NA-I)	Micro-R Max	Area (ft^2)
11-7-91 11-8-91	UUU	75	50-75	2485	1957	12	1680
11-8-91 11-8-91	VVV	75	50-75	2107	1957	12	3600
11-8-91 11-8-91	WWW	75	50-75	2273	1957	12	1560
11-8-91 11-8-91	XXX	75	50-75	2581	1957	12	540
11-8-91 11-8-91	YYY	75	50-75	2072	1957	12	3600
11-8-91 11-8-91	ZZZ	75	50+75	1945	1957	12	3600
11-8-91 11-8-91	AAAA	75	50*75	1987	1957	7	3600
11-8-91 11-8-91	BBBB	75	50-75	1901	1957	7	3600
11-8-91 11-13-91	CCCC	75	50-75	2154	1957	8	3600
11-8-91 11-13-91	DDDD	75	50-75	1933	1957	7	3600
11-8-91 11-13-91	EEEE	75	50-75	1916	1957	7	3600
11-8-91 11-13-91	FFFF	75	50-75	1902	1957	7	3600
11-8-91 11-12-91	GGGG	75	50-75	1848	1957	6	3600
11-8-91 11-12-91	HHHH	75	50-75	1815	1957	6	3600
11-8-91 11-12-91	IIII	75	50-75	1808	1957	6	3600
11-8-91 11-12-91	JJJJ	75	50-75	1699	1957	6	3600
11-8-91 11-12-91	KKKK	75	50-75	1902	1957	6	3600
11-8-91 11-12-91	LLLL	75	50-75	1855	1957	6	3600

9313020.0601

100-HR-3 SHORELINE SURVEY UPSTREAM OF W40290

Date	Sub Area	Max CPM (GM)	Background (GM)	Max CPM (NA-I)	Background (NA-I)	Micro-R Max	Area (ft^2)
11-8-91 11-12-91	MMMM	75	50-75	1851	1957	5	2556
11-8-91 11-12-91	NNNN	75	50-75	1760	1957	6	3600
12-3-91 12-12-91	OOOO	75	50-75	1605	1957	6	3600
12-3-91 12-14-91	PPPP	75	50-75	1490	1957	7	3600
12-3-91 12-14-91	QQQQ	75	50-75	1641	1957	6	3600
12-14-91 12-14-91	RRRR	75	50-75	1851	1957	6	3600
12-14-91 12-14-91	SSSS	75	50-75	1590	1957	5	3600
12-15-91 12-15-91	TTTT	75	50-75	1891	1957	6	3600
12-15-91 12-15-91	UUUU	75	50-75	1910	1957	6	3600
12-15-91 12-15-91	VVVV	75	50-75	1911	1957	6	3600
12-15-91 12-15-91	WWWW	75	50-75	1987	1957	6	3600
12-15-91 12-15-91	XXXX	75	50-75	1954	1957	6	3600
12-15-91	YYYY	75	50-75	1834	1957	6	3600
12-15-91	ZZZZ	75	50-75	1980	1957	6	3600

9313020.0502

Date Received: 3/3/93	INFORMATION RELEASE REQUEST	Reference: WHC-CM-3-4

Complete for all Types of Release

Purpose

- [] Speech or Presentation
  - [] Full Paper
  - [] Summary
  - [] Abstract
  - [] Visual Aid
  - (Check only one suffix)
- [] Speakers Bureau
- [] Poster Session
- [] Videotape
- [] Reference
- [X] Technical Report
- [] Thesis or Dissertation
- [] Manual
- [] Brochure/Flier
- [] Software/Database
- [] Controlled Document
- [] Other

ID Number (include revision, volume, etc.): WHC-SD-EN-TI-131, Rev. 0

List attachments.

Date Release Required: March 3, 1993

Title: 100-HR-3 Columbia River Shoreline Radiological Surveys

Unclassified Category: UC- N/A

Impact Level: 3Q

New or novel (patentable) subject matter? [X] No [] Yes
If "Yes", has disclosure been submitted by WHC or other company?
[] No [] Yes Disclosure No(s).

Information received from others in confidence, such as proprietary data, trade secrets, and/or inventions?
[X] No [] Yes (Identify)

Copyrights? [X] No [] Yes
If "Yes", has written permission been granted?
[] No [] Yes (Attach Permission)

Trademarks?
[X] No [] Yes (Identify)

Complete for Speech or Presentation

Title of Conference or Meeting: N/A

Group or Society Sponsoring:

Date(s) of Conference or Meeting: N/A

City/State: N/A

Will proceedings be published? [] Yes [] No
Will material be handed out? [] Yes [] No

Title of Journal: N/A

CHECKLIST FOR SIGNATORIES

Review Required per WHC-CM-3-4	Yes	No	Reviewer - Signature Indicates Approval: Name (printed)	Signature	Date
Classification/Unclassified Controlled Nuclear Information	[]	[X]			
Patent - General Counsel	[X]	[]	SW BERGLIN	SW Berglin	3/5/93
Legal - General Counsel	[X]	[]			
Applied Technology/Export Controlled Information or International Program	[]	[X]			
WHC Program/Project	[]	[X]			
Communications	[]	[X]			
RL Program/Project	[]	[X]			
Publication Services	[X]	[]	L. Hermann	L. Hermann	3/8/93
Other Program/Project	[]	[X]			

Information conforms to all applicable requirements. The above information is certified to be correct.

	Yes	No
References Available to Intended Audience	[X]	[]
Transmit to DOE-HQ/Office of Scientific and Technical Information	[]	[X]

Author/Requestor (Printed/Signature): J. M. Ayres — Date: 2/24/93

Intended Audience: [] Internal [] Sponsor [X] External

Responsible Manager (Printed/Signature): R. P. Henckel — Date: 2/26/93

INFORMATION RELEASE ADMINISTRATION APPROVAL STAMP

Stamp is required before release. Release is contingent upon resolution of mandatory comments.

APPROVED FOR RELEASE — OFFICIAL DOCUMENT — NS — 3/9/93

Date Cancelled

Date Disapproved

9313020.0603

BC-7600-062 (08/91) WEF074

Part 1