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Master Schedule for CY-1977 Hanford Environmental Surveillance Routine Program

by
**P. J. Blumer
D. A. Myers
J. J. Fix**

December 1976

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MASTER SCHEDULE FOR CY-1977
HANFORD ENVIRONMENTAL SURVEILLANCE
ROUTINE PROGRAM

by
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BATTELLE
Pacific Northwest Laboratories
Richland, Washington 99352

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MASTER SCHEDULE FOR CY-1977
HANFORD ENVIRONMENTAL SURVEILLANCE ROUTINE PROGRAM

INTRODUCTION

This report provides the current schedule of data collection for the routine environmental surveillance program at the Hanford Site, as conducted by the Environmental Evaluation Section of Battelle, Pacific Northwest Laboratory for the Energy Research and Development Administration (ERDA). Questions about specific entries should be referred to the authors since modifications to the schedule are made during the year and special areas of study, usually of short duration, are not scheduled.

The environmental surveillance program objectives are to evaluate the levels of radioactive and nonradioactive pollutants in the Hanford environs, as required in ERDAM-0513, and to monitor Hanford operations for compliance with applicable environmental criteria given in ERDAM-0524 and Washington State Water Quality Standards. Air quality data are obtained in a separate program administered by the Hanford Environmental Health Foundation.

The data collected are available in routine reports issued by the Environmental Evaluations staff. Groundwater data and evaluation are reported in the series, "Radiological Status of the Groundwater Beneath the Hanford Project for ...," the latest issue being BNWL-2034 for CY-1975. Data from locations within the plant boundaries are presented in the annual "Environmental Status of the Hanford Reservation for ..." report series, the most recent report being BNWL-B-477 for 1975. Data from offsite locations are presented in the annual "Environmental Surveillance at Hanford for ..." series of reports, the latest being BNWL-1979 for 1975.

Frequency Symbols Used

D - Daily	M Comp. - Monthly Composite
W - Weekly	Q - Quarterly
BW - Biweekly	A - Annually
M - Monthly	SA - Semi-annually
BM - Bimonthly	NRA - Not Routinely Analyzed

SCHEDULE

I. AIR

<u>Location</u>	<u>Filter</u>				^(a)
<u>Onsite</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u>	<u>Composite Group</u>	
100-K	0058	BW	Beta	100 Areas	
100-N (WPPSS)	1529	BW	Beta	100 Areas	
100-D	1074	BW	Beta	100 Areas	
100-F	1075	BW	Beta	100 Areas	
100-A Fire Station	6154	BW	Beta	100 Areas	
200 WEC	0046	BW	Beta, Lo Alpha	200 West	
200 WWC	0045	BW	Beta	200 West	
Redox	0028	BW	Beta, Lo Alpha	200 West	
200 ESE	0043	BW	Beta, Lo Alpha	200 East	
200 ENC	1401	BW	Beta, Lo Alpha	200 East	
200 WNE	1370	BW	Beta	200 West	
200 EEC	0042	BW	Beta, Lo Alpha	200 East	
200 EWC	0041	BW	Beta	200 East	
Hanford	0057	BW	Beta	IE	
Wye Barricade	0924	BW	Beta, Lo Alpha	IE	
FFTF	6308	BW	Beta, Lo Alpha	IE	
3705 Bldg.	1531	BW	Beta	300 Area	
ACRMS	1793	BW	Beta	300 Area	
300 SW Gate	6148	BW	Beta	300 Area	
300 South Gate	6150	BW	Beta, Lo Alpha	300 Area	
300 Pond	1543	BW	Beta	300 Area	
RRC CP#63	6180	BW	Beta, Lo Alpha	ISE	
RRC CP#64	6182	BW	Beta	ISE	
Prosser Barr.	0055	BW	Beta, Lo Alpha	ISW	
ERC	0929	BW	Beta	ISW	
Rattlesnake Spr.	0972	BW	Beta	ISW	
Yakima Barr.	1650	BW	Beta	INW	
Vernita Bridge	1651	BW	Beta	INW	
Wahluke Slope #2	1551	BW	Beta	INW	
<u>Offsite</u>					
Berg Rance	1405	BW	Beta, Lo Alpha	INE	
Othello	1652	BW	Beta	INE	
Connell	1653	BW	Beta	INE	
Cooke Bros.	1118	BW	Beta	INE	
Wahluke Wm.	1119	BW	Beta	INE	
Baxter Substation	6235	BW	Beta	ISE	
Byers Landing	0247	BW	Beta, Lo Alpha	ISE	
Pasco	1654	BW	Beta	ISE	
Richland	0054	BW	Beta, Lo Alpha	ISE	
Benton City	0029	BW	Beta, Lo Alpha	ISW	
Moses Lake	0960	BW	Beta	ONE	
Washtucna	0959	BW	Beta	ONE	
Walla Walla	0262	BW	Beta	OSE	
McNary Dam	0958	BW	Beta	OSE	
Sunnyside	0964	BW	Beta	OW	

(a) Composite group for filter. Analyses shown on Page 4.

I. AIR (continued)

<u>Location</u>	<u>Charcoal Cartridge</u>			<u>Tritium Cartridge</u>		
<u>Onsite</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u>
100-K	1581	M	NRA			
100-N (WPPSS)	1661	M	NRA			
100-D	1582	BW	I-131	6335	BW	HTO
100-F	1583	M	NRA			
100-A Fire Station	6155	M	NRA			
200 WEC	1662	M	NRA			
200 WWC	6152	M	NRA			
Redox	1663	M	NRA			
200 ESE	1664	BW	I-131	6201	BW	HTO
200 ENC	1665	M	NRA			
200 WNE	6272	M	NRA			
200 EEC	1361	M	NRA			
200 EWC	6273	M	NRA			
Hanford	1666	M	NRA			
Wye Barricade	1584	M	NRA			
FFTF	6309	M	NRA			
3705 Bldg.	1669	M	NRA			
ACRMS	1795	M	NRA			
300 SW Gate	6149	BW	I-131			
300 South Gate	6151	M	NRA			
300 Pond	6239	M	NRA			
RRC CP#63	6181	M	NRA			
RRC CP#64	6183	M	NRA			
Prosser Barr.	6248	M	NRA			
ERC	1585	M	NRA			
Rattlesnake Spr.	1586	M	NRA			
Yakima Barr.	1667	M	NRA			
Vernita Bridge	1668	M	NRA			
Wahluke Slope #2	1671	M	NRA			
<u>Offsite</u>						
Berg Ranch	1672	M	NRA			
Othello	1673	M	NRA			
Connell	1674	M	NRA			
Cooke Bros.	1675	M	NRA			
Wahluke Wm.	1676	M	NRA			
Baxter Substation	6236	BW	I-131	6237	BW	HTO
Byers Landing	0246	BW	I-131			
Pasco	1678	M	NRA			
Richland	0231	BW	I-131	6207	BW	HTO
Benton City	1670	BW	I-131			
Moses Lake	1682	M	NRA			
Washtucna	1683	M	NRA			
Walla Walla	0261	M	NRA			
McNary Dam	1684	M	NRA			
Sunnyside	1680	M	NRA			

I. AIR (continued)

<u>Composite Group</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u>
200 East	1749	M	Gamma scan
200 ENC		Q	Sr-90, Pu-total
200 EWC			
200 ESE			
200 EEC			
200 West	1751	M	Gamma scan
200 WEC		Q	Sr-90, Pu-total
200 WWC			
Redox			
200 WNE			
300 Area	1752	M	Gamma scan
300 Area, 3705 Bldg.		Q	Sr-90, Pu-total
ACRMS			
300 South Gate			
300 Southwest Gate			
300 Pond			
100 Areas	1753	M	Gamma scan
100 Area Fire Sta.		Q	Sr-90, Pu-total
100 K			
100 N			
100 D			
100 F			
Inner Eastern Quadrant	1754	M	Gamma scan
FFTF		Q	Sr-90, Pu-total
Hanford			
Wye Barricade			
Inner Southeast Quadrant	1745	M	Gamma scan
RRC C.P. #63		Q	Sr-90, Pu-total
RRC C.P. #64			
Richland			
Pasco			
Byers Landing			
Baxter Substation			
Inner Southwest Quadrant	1746	M	Gamma scan
Rattlesnake Springs		Q	Sr-90, Pu-total
ERC			
Benton City			
Prosser Barricade			

I. AIR (continued)

<u>Composite Group</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u>
Inner Northwest Quadrant Yakima Barricade Vernita Wahluke #2	1747	M Q	Gamma scan Sr-90, Pu-total
Inner Northeast Quadrant Othello Connell Berg Ranch Wahluke Watermaster Cooke Bros.	1743	M Q	Gamma scan Sr-90, Pu-total
Outer Northeast Quadrant Moses Lake Washtucna	1742	M Q	Gamma scan Sr-90, Pu-total
Outer Southeast Quadrant Walla Walla McNary	1744	M Q	Gamma scan Sr-90, Pu-total
Outer Western Quadrant Sunnyside	1748	M Q	Gamma Scan Sr-90, Pu-total

II. COLUMBIA RIVER

<u>Sample Type</u>	<u>Locations</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u>
<u>"Filter-Resin"</u>	Priest Rapids Dam		BW M Q	Gamma Scan (^{131}I) ^{129}I ^{90}Sr , Pu
	300 Area Forebay		BW M Q	Gamma Scan (^{131}I) ^{129}I ^{90}Sr , Pu
<u>Cumulative</u>	100-B	6156	M comp Q	Alpha, Beta, ^3H , Gamma Scan, U ^{89}Sr , ^{90}Sr , ^{226}Ra ^{228}Ra
	Richland	1000	M comp Q	Alpha, Beta ^3H , Gamma Scan, U ^{89}Sr , ^{90}Sr , ^{226}Ra , ^{228}Ra
	Vernita	1204	W	pH, Diss O_2 , Turbidity
		1616	W	NO_3
<u>Grab</u>		1373 *	M*	Coliform, Fecal Coliforms, BOD,
		1615	M comp	^3H
	Hanford Powerline	6208	M	Alpha, Beta
	300 Area Forebay	6134	W	pH, Diss O_2 , Turbidity
			M*	Coliform, BOD, Fecal Coliforms
	Richland Forebay	1041	M Comp	^3H
		1617	W	NO_3
		1365	M*	Coliform, BOD, Fecal Coliforms

* Performed by HEHF

III. SANITARY WATER

<u>Sample Type</u>	<u>Locations</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u>
Cumulative	181-N	1367	W M Comp	Beta Gamma Scan
	300 Area (River)	1686 1724	W W*	Alpha, Beta NO ₃ ⁻
	309 Well(a) (399-4-5)	6300 6315	W M Comp W*	Alpha, Beta Gamma Scan, ³ H, U NO ₃ ⁻
	Richland	1002	W M Comp	Alpha, Beta Gamma Scan
		1366	W*	NO ₃ ⁻
<u>Grab</u>	FFTF	6301	M Q	Beta, Alpha ³ H, Gamma Scan ⁸⁹ Sr, ⁹⁰ Sr, ²²⁶ Ra, ²²⁸ Ra
	WPPSS	6297	M Q	Beta, Alpha, ³ H, Gamma Scan ⁸⁹ Sr, ⁹⁰ Sr, ²²⁶ Ra, ²²⁸ Ra
	ALE Hdqtrs	6299	M	Alpha, Beta, ³ H Gamma Scan
			Q	⁸⁹ Sr, ⁹⁰ Sr, ²²⁶ Ra, ²²⁸ Ra

(a) Collected only upon notification by HEDL that the well is being used.

* Performed by HEHF

IV. SURFACE WATER

<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u>
Gable Mountain Pond	1054	Q	Alpha, Beta, Gamma Scan, ⁹⁰ Sr
West Lake	6133	Q	Alpha, Beta, Gamma Scan, ⁹⁰ Sr
B Pond	0015	Q	Alpha, Beta, Gamma Scan, ⁹⁰ Sr
T Pond	1290	Q	Alpha, Beta, Gamma Scan, ⁹⁰ Sr
U Pond	0024	Q	Alpha, Beta, Gamma Scan, ⁹⁰ Sr
Ditch #216-B-63	1725	Q	Alpha, Beta, Gamma Scan

V. GROUNDWATER

<u>EMA #</u>	<u>Well #</u>	<u>Analyses</u>		
		<u>B.M.</u>	<u>Q</u>	<u>S.A.</u>
2359	(299-) E19-1		β , ^3H , NO_3	
2553	E23-1		β , ^3H , NO_3	
2542	E24-7		β , ^3H , NO_3	
2545	E26-1		β , ^3H , NO_3	
2365	E26-3		β , ^3H , NO_3	
2287	E27-1		β , ^3H , NO_3	
2555	E28-1		β , ^3H , NO_3	
2285	E28-5		β , ^3H , NO_3	
2297	E33-14		β , ^3H , NO_3	
2549	E34-1		β , ^3H , NO_3	
2554	E25-2		β , ^3H , NO_3	
2990	W 6-1		β , ^3H , NO_3	
2890	W10-5		β , ^3H , NO_3	
2881	W11-9		β , ^3H , NO_3	
2883	W12-1		β , ^3H , NO_3	
2891	W15-2		β , ^3H , NO_3	
3011	W18-3		β , ^3H , NO_3	
2938	W19-4		β , ^3H , NO_3	
2930	W21-1		β , ^3H , NO_3	
3014	W22-7		β , ^3H , NO_3	
3013	W22-9		β , ^3H , NO_3	
4818	(699-) S0-8		^3H , NO_3	
4787	S3-25		^3H , NO_3	
4553	S3-E12		^3H , NO_3	
4502	S6-E4B		^3H , NO_3 , U	
4504	S6-E4D		^3H , NO_3 , U	
4421	S8-19		^3H , NO_3	
4552	S11-E12A-0		^3H , NO_3	
4747	S11-E12A-P		^3H , NO_3	
4424	S12-3		^3H , NO_3	
4780	S19-11			NO_3^-
4802	S19-E13		NO_3 , F^-	U
4413	S27-E14		NO_3 , U, F^- , Cr^{+6}	
4803	S29-E12		NO_3 , F^- , U	
4804	S30-E15A		NO_3 , F^- , U, Cr^{+6}	
4745	S31-1P		^3H , NO_3^-	
4513	1-18		^3H , NO_3	
4423	2-3	^3H , NO_3^-		
4526	2-33-0		^3H , NO_3	
4426	8-17		β , ^3H , NO_3	
4788	8-25		β , ^3H	NO_3^-

GROUNDWATER (continued)

<u>EMA #</u>	<u>Well #</u>	<u>Analyses</u>		
		<u>B.M.</u>	<u>Q</u>	<u>S.A.</u>
4420	(699-) 8-32		^3H , NO_3	
4519	9-E2		^3H , NO_3	
4830	13-1A		^3H , NO_3	
4831	13-1B		^3H , NO_3	
4700	14-E6-P		^3H , NO_3	
4701	14-E6-Q		^3H , NO_3	
4702	14-E6-R		^3H , NO_3	
4703	14-E6-S		^3H , NO_3	
4810	15-15B		β , ^3H , NO_3	
4464	15-26		β , ^3H , NO_3	
4422	17-5		β , ^3H , NO_3	
4417	19-43		NO_3	
4705	20-E5-P		^3H , NO_3	
4706	20-E5-Q		^3H , NO_3	
4707	20-E5-R		^3H , NO_3	
4708	20-E5-S		^3H , NO_3	
4765	20-E5-T		^3H , NO_3	
4567	20-E12-0		^3H , NO_3	
4611	20-E12-P		^3H , NO_3	
4418	20-20		β , ^3H , NO_3	Gamma
4710	24-1 P		^3H , NO_3	
4711	24-1 Q		^3H , NO_3	
4712	24-1 R		^3H , NO_3	
4713	24-1 S		^3H , NO_3	
4764	24-1 T		^3H , NO_3	
4416	24-33		β , ^3H , NO_3	
4452	25-70			^3H , NO_3
4518	26-15		β , ^3H , NO_3	Gamma
4598	26-89			NO_3
4557	27-8		β , ^3H , NO_3	Gamma
4594	29-78		^3H , NO_3	
4520	31-53 B			^3H , NO_3
4495	31-65-0		^3H , NO_3	
4794	32-22		β , ^3H , NO_3	Gamma
4550	32-62		^3H , NO_3	
4492	32-70		β , ^3H , NO_3	
4446	32-77		β , ^3H , NO_3	
4779	33-42		β , ^3H , NO_3	Gamma
4523	33-56		β , ^3H , NO_3	
4448	34-39A		β , ^3H , NO_3	
4790	34-42		β , ^3H , NO_3	Gamma

GROUNDWATER (continued)

EMA #	Well #	Analyses		
		B.M.	Q	S.A.
4414	(699-) 34-51		β , ^3H , NO_3	
4419	35-9		β , ^3H , NO_3	
4494	35-66		β , ^3H , NO_3	
4441	35-70		β , ^3H , NO_3	Gamma
4445	35-78		β , ^3H , NO_3	
4751	36-46 P		β , ^3H , NO_3	Gamma
4752	36-46 Q		β , ^3H , NO_3	Gamma
4447	36-61 A		NO_3	
4480	37-43		β , ^3H , NO_3	Gamma
4554	37-82 A		^3H , NO_3	
4493	38-70		β , ^3H , NO_3	Gamma
4791	39-39			β , ^3H , NO_3
4444	39-79		β , ^3H , NO_3	
4566	40-1		^3H , NO_3	
4431	40-33		^3H , NO_3	
4458	40-62		^3H , NO_3	
4430	41-23		β , ^3H , NO_3	
4517	42-12		β , ^3H , NO_3	
4486	42-42		^3H , NO_3 , Sr	β
4438	43-89		^3H , NO_3	
4836	43-88		^3H , NO_3	
4450	45-42		β , ^3H , NO_3	
4449	45-69		^3H , NO_3	β
4479	46-21		^3H , NO_3	
4478	47-35		^3H , NO_3	
4564	47-46		^3H , NO_3	β
4434	47-60		β , ^3H , NO_3	
4487	48-71		^3H , NO_3	
4562	49-55		β , ^3H , NO_3	
4485	49-57		β , ^3H , NO_3	
4443	49-79		^3H , NO_3	
4160	50-28 A		^3H , NO_3	
4844	50-28 B		NO_3	
4460	50-42		^3H , NO_3	
4473	50-53		β , ^3H , NO_3	Gamma
4497	50-85		^3H , NO_3	
4488	51-63		^3H , NO_3	
4496	51-75		^3H , NO_3	
4774	53-47		^3H , NO_3	
4563	53-55-0		^3H , NO_3	
4772	53-103		^3H , NO_3	

GROUNDWATER (continued)

EMA #	Well #	Analyses		
		B.M.	Q	S.A.
4432	(699-) 54-42		NO ₃	³ H
4811	54-45		³ H, NO ₃	
4469	54-57		³ H, NO ₃	
4483	55-50 C		³ H, NO ₃	
4533	55-76		NO ₃	
4558	57-83		NO ₃	
4827	59-58		³ H, NO ₃	
4437	59-80 B		NO ₃	
4826	60-57		³ H, NO ₃	
4435	60-60		³ H, NO ₃	
4825	61-62		³ H, NO ₃	
4474	61-66		³ H, NO ₃	
4845	63-51			³ H, NO ₃
4823	63-55		³ H, NO ₃	
4822	63-58		³ H, NO ₃	
4436	63-90		³ H, NO ₃	
4824	64-62		³ H, NO ₃	
4477	65-50			³ H, NO ₃
4532	65-59		³ H, NO ₃	
4468	65-72		³ H, NO ₃	
4775	65-83		³ H, NO ₃	
4547	66-23		NO ₃	
4586	66-38		NO ₃	
4821	66-58		³ H, NO ₃	
4820	66-64		³ H, NO ₃	
4561	67-51		³ H, NO ₃	
4585	67-86		³ H, NO ₃	
4588	68-105			³ H, NO ₃
4461	69-38		³ H, NO ₃	
4455	70-68			³ H, NO ₃
4490	71-30			³ H, NO ₃
4454	71-52		³ H, NO ₃	
4584	71-77			³ H, NO ₃
4465	72-88		³ H, NO ₃	
4565	72-92-0			³ H, NO ₃
4463	72-98			³ H, NO ₃
4589	74-48		³ H, NO ₃	
4583	74-60			NO ₃
4500	77-36		³ H, NO ₃	
4512	77-54		NO ₃	
4511	78-62			NO ₃
4763	80-43-S			NO ₃

GROUNDWATER (continued)

EMA #	Well #	B.M.	Analyses	
			Q	S.A.
4597	(699-) 81-58		^3H , NO_3	
4515	83-47			^3H
4596	84-35A-0			^3H , NO_3
4792	87-55		^3H , NO_3	
4571	89-35		NO_3	
4770	90-45		^3H	NO_3
4591	96-49		^3H , NO_3	
4590	97-43		^3H , NO_3	
4846	101-48B			^3H , NO_3
4756	HAN 6		^3H , NO_3	
4776	HAN 9			NO_3
4771	HAN 19		^3H , NO_3	
4850	HAN 24		^3H , NO_3	
1851	(199-) B3-1			^3H
1856	B3-2P			^3H , NO_3
1857	B3-2Q			^3H , NO_3
1853	B4-1		^3H , NO_3	
1891	B4-4			β , ^3H , NO_3
1893	B9-1			^3H , NO_3
1894	D2-5		^3H , NO_3	
1892	D5-12		β , ^3H , NO_3	
1862	D8-3		^3H , NO_3	
1865	F5-1		^3H , NO_3	
1868	F5-4		^3H , NO_3	
1871	F7-1		^3H , NO_3	
1888	F8-1		^3H , NO_3	
1890	H3-1		^3H , NO_3	
1877	H4-3		β , α , ^3H , NO_3 Cr^{+6} , F^-	Gamma
1882	K-11		^3H , NO_3	
1884	K-19		^3H , NO_3	
1885	K-20		^3H , NO_3	
1887	K-22		^3H , NO_3	
1896	N-3-0		β , ^3H	Sr, Gamma
1899	N-4		β , ^3H , NO_3	Sr, Gamma
1901	N-6		β , ^3H	Sr, Gamma
1900	N-10-P		β , ^3H , NO_3	Sr, Gamma
1902	N-14		β , ^3H , NO_3	Sr, Gamma
1903	N-15		β , ^3H , NO_3	Sr, Gamma

GROUNDWATER (continued)

EMA #	Well #	Analyses		
		W	Q	S.A.
4403	(399-) 1-1	U, NO ₃ ⁻	β, Cr ⁺⁶ , F	
4404	1-2		β, NO ₃ , U Cr ⁺⁶ , F	
4406	1-3	U, NO ₃ ⁻	β, Cr ⁺⁶ , F	
4407	1-4		β, NO ₃ , U Cr ⁺⁶ , F	
4806	1-5		β, NO ₃ ⁻ , U, Cr ⁺⁶ , F ⁻	
4837	1-6		β, NO ₃ ⁻ , U, Cr ⁺⁶ , F ⁻	
4402	2-1	U, NO ₃ ⁻	β, F, Cr ⁺⁶	
4401	3-1		β, NO ₃ ⁻ , U, Cr ⁺⁶ F	
3033	3-2		β, NO ₃ ⁻ , U, Cr ⁺⁶ , F	
3034	3-3		β, NO ₃ ⁻ , U, Cr ⁺⁶ , F	
4786	3-8	U, NO ₃ ⁻	β, Cr ⁺⁶ F	
4626	3-9		β, NO ₃ ⁻ , U, Cr ⁺⁶ , F	
4627	3-10		β, NO ₃ ⁻ , U, Cr ⁺⁶ , F	
4628	3-11		β, NO ₃ ⁻ , U, Cr ⁺⁶ , F	
4410	4-1		β, NO ₃ ⁻ , U, Cr ⁺⁶ F	
4568	4-7		β, NO ₃ ⁻ , U, Cr ⁺⁶ , F	
4629	4-9		β, NO ₃ ⁻ , U, Cr ⁺⁶ , F	
4630	4-10		β, NO ₃ ⁻ , U, Cr ⁺⁶ , F	
4411	5-1		NO ₃ , U, Cr ⁺⁶ , F	
4409	6-1		NO ₃ , U, Cr ⁺⁶ , F	
4408	8-2		β, NO ₃ , U, Cr ⁺⁶ , F	Gamma
4412	8-3		NO ₃ , U, Cr ⁺⁶ , F	

Quality of Water Analyses Annually

(199-) H4-3	(699-) 26-15	(699-) 50-53
(699-) S31-1P	26-89	55-50C
S19-E13	31-53B	59-58
S3-E12	34-42	63-90
S3-25	35-70	66-64
2-3	36-93	71-77
10-54	40-1	72-88
15-26	40-33	74-48
19-43	45-42	78-62
20-E5T	45-69	87-55
25-70	49-79	89-35
	50-28B	HAN19

VI. FOODSTUFFS

<u>Location</u>	<u>Description</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u>
<u>MILK</u> ^(a)				
Commercial	Lucerne Western Watershed	0309	M Q	¹³¹ I, gamma scan ⁸⁹ Sr, ⁹⁰ Sr, Ca
Commercial	Darigold-Arden Eastern Watershed	1647	M Q	¹³¹ I, gamma scan ⁹⁰ Sr, Ca
Lazy Dee	Wahluke Slope	6165	BW Q	¹³¹ I, gamma scan ⁹⁰ Sr, Ca
Harris	Riverview	0975	BW Q	¹³¹ I, gamma scan ⁸⁹ Sr, ⁹⁰ Sr, Ca
Truhlicka	Benton City	6296	BW Q	¹³¹ I, gamma scan ⁹⁰ Sr, Ca
Pettett	Byers Landing	6340	BW Q	¹³¹ I, gamma scan ⁹⁰ Sr, Ca
Columbia Basin Composite #3	Taylor Cooke Bros. Price Bleazard	1648	BW Q	¹³¹ I, gamma scan ⁹⁰ Sr, Ca
<u>MEAT</u>				
Harris	Riverview	1292	SA	Gamma scan, ⁹⁰ Sr
Pasco Meat Packers	Commercial	1375	Q	Gamma scan, ⁹⁰ Sr
<u>CHICKEN</u>				
Harris ^(b)	Riverview	1193	Q	Gamma scan, ⁹⁰ Sr
Olsen ^(b)	Riverview	6198	Q	Gamma scan, ⁹⁰ Sr
Safeway	Commercial	1157	SA	Gamma scan, ⁹⁰ Sr

(a) Sample of forage also collected but not analyzed unless a positive result for ¹³¹I is observed.

(b) Sample collected from one source only each quarter.

VI. FOODSTUFFS (continued)

<u>Location</u>	<u>Description</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u>
<u>PRODUCE (leafy vegetables)</u> ^(a)				
Harris	Riverview	1609	M	Gamma scan, ⁹⁰ Sr
Local Farm	Benton City	1612	BM	Gamma scan, ⁹⁰ Sr
Commercial	Tri-City	1601	M	Gamma scan, ⁹⁰ Sr
<u>EGGS</u>				
Harris ^(b)	Riverview	1191	M Q	Gamma scan ⁹⁰ Sr
Olsen ^(b)	Riverview	1756	M Q	Gamma scan ⁹⁰ Sr
Safeway	Commercial	1189	SA	Gamma scan ⁹⁰ Sr
<u>OYSTERS</u>				
Commercial	Willipa Bay	0323	Q	Gamma scan (Zn ⁶⁵)

- (a) Sample collected only during growing season, May to October.
 (b) Sample only from one source each month.

VII. WILDLIFE

<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u>
<u>FISH</u>			
Columbia River	According to species	M	Gamma scan, ⁹⁰ Sr
<u>DUCKS</u>			
100-K to Richland	Depends on species and location	20/Oct-Dec	Gamma scan, ⁹⁰ Sr
U Pond	According to species	Q (4/year)	Gamma scan, ⁹⁰ Sr Liver - Total Pu
Gable Pond	According to species	Q (4/year)	Gamma scan, ⁹⁰ Sr
B Pond	According to species	Q (4/year)	Gamma scan, ⁹⁰ Sr
T Pond	According to species	Q (4/year)	Gamma scan, ⁹⁰ Sr
West Lake	According to species	Q (4/year)	Gamma scan, ⁹⁰ Sr Liver - U
300 Area Pond	According to species	Q (4/year)	Gamma scan, ⁹⁰ Sr Liver - Total Pu, U
<u>GEESE</u>			
100-K to Hanford	According to species	10/Oct-Dec	Gamma scan
<u>PHEASANTS</u>			
100-K to 100-D & 300 Area Vicinity	According to species	10/Oct-Dec	Gamma scan, ⁹⁰ Sr
<u>DEER</u>			
Varies	According to location	3/Hunting Season	Muscle - Gamma scan, ⁹⁰ Sr Femur - ⁹⁰ Sr Liver - Total Pu

VII. WILDLIFE (continued)

<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Analyses</u>
<u>RABBITS</u>			
BC Crib Area	6084	2 in May 2 in Nov.	Muscle - Gamma scan Bone - ⁹⁰ Sr Liver - Total Pu
<u>MICE</u> ^(a)			
100-N Trench	1775	BM (Mar.-Sept.)	Gamma scan, ⁹⁰ Sr
Surface Ponds	According to species and location	BM (Mar.-Sept.)	Muscle - Gamma scan, ⁹⁰ Sr Bone - ⁹⁰ Sr Liver - Total Pu, ^(b) U(b)
<u>OTHER SMALL MAMMALS</u>			
Selected Waste disposal sites	According to species and location	As requested	Muscle - Gamma scan Bone - ⁹⁰ Sr Liver - Total Pu, ^(b) U(b)

- (a) Up to three mice may be composited in a sample and analyzed as a whole.
 (b) Total Pu for mammals from U Pond and BC Crib Area;
 U for mammals from U Pond, West Lake, and 300 Area Pond.

VIII. SOIL AND VEGETATION

<u>Location</u>	<u>EMA #</u>		<u>Frequency</u>	<u>Analyses</u>
	<u>Soil</u>	<u>Vegetation</u>		
Waluke #2 Air Sampling Station	6007	6053	A	Gamma Scan, ⁹⁰ Sr, U, Pu*
Berg Ranch Air Sampling Station	6008	6054	A	Gamma Scan, ⁹⁰ Sr, U, Pu
NE Corner of 100-N Area	6275	6290	A	Gamma Scan, ⁹⁰ Sr, U, Pu
100-F (control plot 58)	6018	6064	A	Gamma Scan, ⁹⁰ Sr, U, Pu
Yakima Barricade	6004	6050	A	Gamma Scan, ⁹⁰ Sr, U, Pu
Intersection Rts. 4 and 11 A (CP #59)	6019	6065	A	Gamma Scan, ⁹⁰ Sr, U, Pu
Hanford townsite (CP #57)	6017	6063	A	Gamma Scan, ⁹⁰ Sr, U, Pu
SW of 200-W Area (CP #60)	6020	6066	A	Gamma Scan, ⁹⁰ Sr, U, Pu
E of 200-W Area (CP #60)	6276	6283	A	Gamma Scan, ⁹⁰ Sr, U, Pu
200-E Hill (CP #61)	6022	6068	A	Gamma Scan, ⁹⁰ Sr, U, Pu
E of Nuclear Eng. Burial Grounds	6281	6284	A	Gamma Scan, ⁹⁰ Sr, U, Pu
Inter. of Rt. 4 and Army Loop Rd.	6223	6232	A	Gamma Scan, ⁹⁰ Sr, U, Pu
Ringold	6009	6055	A	Gamma Scan, ⁹⁰ Sr, U, Pu
0.5 mile NE of FFTF	6282	6285	A	Gamma Scan, ⁹⁰ Sr, U, Pu
SW of FFFF	6277	6286	A	Gamma Scan, ⁹⁰ Sr, U, Pu
E of ALE Field Laboratory	6278	6287	A	Gamma Scan, ⁹⁰ Sr, U, Pu
Prosser Barricade	6225	6227	A	Gamma Scan, ⁹⁰ Sr, U, Pu
N of 300 Area Perimeter	6279	6288	A	Gamma Scan, ⁹⁰ Sr, U, Pu
SE of 300 Area Perimeter (CP #50)	6014	6060	A	Gamma Scan, ⁹⁰ Sr, U, Pu
NE Corner of Exxon Site	6280	6289	A	Gamma Scan, ⁹⁰ Sr, U, Pu

* Isotopic Pu.

IX. EXTERNAL RADIATION MEASUREMENT

Thermoluminescent Dosimeters

<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurement</u>
Coyote Rapids	6135	M	Immersion Dose
Below 100-N	6104	M	Immersion Dose
Hanford Powerline	6137	M	Immersion Dose
Richland Pumphouse	1715	M	Immersion Dose
*200 ENC	1467	M	Ambient Dose
*200 ESE	1468	M	Ambient Dose
*200 EWC	1470	M	Ambient Dose
*200 EEC	1469	M	Ambient Dose
*200 WEC	1473	M	Ambient Dose
*Redox	1474	M	Ambient Dose
*200 WWC	1471	M	Ambient Dose
*200 WNE	1472	M	Ambient Dose
*3705 Bldg.	1486	M	Ambient Dose
*ACRMS	1698	M	Ambient Dose
*300 Pond	1699	M	Ambient Dose
*300 SW Gate	6163	M	Ambient Dose
*300 South Gate	6162	M	Ambient Dose
331 Bldg.	1765	M	Ambient Dose
*C.P. #63	6170	M	Ambient Dose
*C.P. #64	6171	M	Ambient Dose
C.P. #65	1708	M	Ambient Dose
C.P. #66	6172	M	Ambient Dose
C.P. #67	6173	M	Ambient Dose
Wahluke C.P. #17	1700	M	Ambient Dose
Wahluke C.P. #18	1701	M	Ambient Dose
Wahluke C.P. #19	1702	M	Ambient Dose
Wahluke C.P. #20	1703	M	Ambient Dose
Wahluke C.P. #21	1704	M	Ambient Dose
Wahluke C.P. #22	1705	M	Ambient Dose
Wahluke C.P. #23	1706	M	Ambient Dose
Wahluke C.P. #24	1707	M	Ambient Dose
Wahluke C.P. #46	1728	M	Ambient Dose
*100-K	1475	M	Ambient Dose
*WPPSS to 100-N	1476	M	Ambient Dose
*100-D	1477	M	Ambient Dose
*100 Area Fire Station	6164	M	Ambient Dose
Rt 10 Mi. 1.6	1710	M	Ambient Dose
FFTF Site	1729	M	Ambient Dose
FFTF North	6177	M	Ambient Dose
FFTF Southeast	6178	M	Ambient Dose
*Prosser Barricade	6176	M	Ambient Dose
*100 F	1478	M	Ambient Dose
*Hanford	1480	M	Ambient Dose

*Located at Air Sampling Station

IX. EXTERNAL RADIATION MEASUREMENT (continued)

Thermoluminescent Dosimeters

<u>Location</u>	<u>EMA #</u>	<u>Frequency</u>	<u>Measurement</u>
*Wye Barricade	1483	M	Ambient Dose
*Rattlesnake Springs	1485	M	Ambient Dose
*ERC	1484	M	Ambient Dose
*Yakima Barricade	1482	M	Ambient Dose
*Wahluke #2	1490	M	Ambient Dose
*Pasco	1488	M	Ambient Dose
*Richland	1487	M	Ambient Dose
*Vernita	1481	M	Ambient Dose
*Benton City	1499	M	Ambient Dose
*Othello	1493	M	Ambient Dose
*Connell	1494	M	Ambient Dose
*Berg Ranch	1491	M	Ambient Dose
*Wahluke Wm.	1495	M	Ambient Dose
*Cooke Bros.	1492	M	Ambient Dose
Ringold	6267	M	Ambient Dose
*Baxter Substation	6179	M	Ambient Dose
*Byers Landing	1498	M	Ambient Dose
*Walla Walla	1695	M	Ambient Dose
*Sunnyside	1500	M	Ambient Dose
*McNary	1696	M	Ambient Dose
*Moses Lake	1693	M	Ambient Dose
*Washtucna	1694	M	Ambient Dose
Above 100-K Boat Ramp	6260	M	Ambient Dose
Down River Opp 100-D	6261	M	Ambient Dose
Lower End Locke Isl.	6262	M	Ambient Dose
White Bluffs Fy. Land.	6263	M	Ambient Dose
Below 100-F	6264	M	Ambient Dose
Hanford Ferry Landing	6265	M	Ambient Dose
Hanford RR Track	6266	M	Ambient Dose
Powerline Crossing	6268	M	Ambient Dose
South End Wooded Isl.	6269	M	Ambient Dose

*Located at Air Sampling Station

X. PORTABLE INSTRUMENT SURVEYS

Air Sampling Filters

<u>Location</u>	<u>Record</u>	<u>Frequency</u>	<u>Instrument</u>
3705 Bldg	Trip Sheet	D	GM, PAM
ACRMS	Trip Sheet	D	GM, PAM
300 South Gate	Trip Sheet	D	GM, PAM
300 Southwest Gate	Trip Sheet	D	GM, PAM

Columbia River Shoreline

<u>Location</u>	<u>River Mile</u>	<u>EMA #</u>	<u>Instrument</u>
Coyote Rapids	382.7 P	6240	LLM, GM
Upstream of 100-K	382.5 P	6132	LLM, GM (TLD)
N KE Basin	381.5 P	6131	LLM, GM
Opposite KE Basin	381.0 F	6130	LLM, GM
N Trench Springs	379.4 P	6129	LLM, GM
Downstream of 100-N	379.1 P	6209	LLM, GM (TLD)
Downstream of 100-N	378.6 P	6128	LLM, GM
Above 100-D	378.1 P	6238	LLM, GM
D Island	377.0 IF	6126	LLM, GM
Opposite 100-D	376.8 F	6241	LLM, GM (TLD)
Isl adjacent Upper End Locke Isl.	373.3 P	6124	LLM, GM
Locke Island-lower end	371.0 IP	6123	LLM, GM (TLD)
White Bluffs Ferry Landing	369.7 P	6121	LLM, GM (TLD)
100-F	368.3 P	6120	LLM, GM (TLD)
Hanford Powerline	362.6 P	6118	LLM, GM
Hanford Ferry Landing	362.0 F	6117	LLM, GM (TLD)
Hanford Railroad Track	361.4 P	6242	LLM, GM (TLD)
Ringold	354.7 F	6114	LLM, GM (TLD)
Powerline Crossing	350.4 P	6113	LLM, GM (TLD)
Powerline Crossing	350.4 F	6112	LLM, GM
Byers Landing	345.2 F	6111	LLM, GM
Port of Benton	343.3 P	6136	LLM, GM
Richland Pumphouse	340.5 P	6109	LLM, GM

Roadways

<u>Description</u>	<u>Identification Number</u>	<u>Frequency</u>	<u>Instrument</u>
300 Area to 200-W Rt. 4-S & Rt. 3	1	M	Bioplastic Crystal
200-W to 300 Area Rt. 3 & Rt. 4-S	2	M	Bioplastic Crystal

Roadways (continued)

<u>Description</u>	<u>Identification Number</u>	<u>Frequency</u>	<u>Instrument</u>
Hanford Highway Horn Rapids to Yakima Barricade & Rt. 6	3	Q	Bioplastic Crystal
Wye Barricade on Rt. 2-S to Rt. 11-A, Rt. 11-A to Yakima Barricade	4	Q	Bioplastic Crystal
Jct. Rt. 11-A and 2N, on 2N, past 100F,H,D to Rt. 4N, Rt. 4N to Rt. 1, on Rt. 1 past 100 K, C to Rt. 6, Rt. 6 to Jct. with Rt. 11-A	5	Q	Bioplastic Crystal
Jct. Rt. 11-A and 6, on Rt. 6 to Rt. 1, Rt. 1 to Rt. 4N, on Rt. 4N to Rt. 2N, on Rt. 2N to Jct. with Rt. 11-A	5A	Q	Bioplastic Crystal
Jct. Rt. 2 & Rt. 1, White Bluffs cutoff, Rt. 4N to 200-E from Rt. 4N to C	6	Q	Bioplastic Crystal
200-E Perimeter	7	M	Bioplastic Crystal
200-W Perimeter	8	M	Bioplastic Crystal
300 Area on Rt. 10 to Prosser Barricade & Wye Barricade	10	Q	Bioplastic Crystal

Roadways (continued)

<u>Description</u>	<u>Identification Number</u>	<u>Frequency</u>	<u>Instrument</u>
North Richland	11	Q	Bioplastic Crystal
Jct. 4N and 100-N Access Rd to N-Area, N-Area to RR Crossing, left on Cutoff to Rt. 4N and back, Access Rd to 4N, Rt. 4N to Rt. 1, Rt. 1 to K-Area Access Rd, Access Rd to K-Area, K-Area to Rt. 1, Rt. 1 to Rt. 4N, Rt. 4N to Jct. with 100-N	12	BW	Bioplastic Crystal
Jct. Rt. 11-A & Area 213 Access Rd, on Rt. 11-A to Jct. Rt 3, Return	13	M	Bioplastic Crystal
Army Loop Rd.	14	M	Bioplastic Crystal
300 Area	15	M	Bioplastic Crystal

Railroad Survey

<u>Description</u>	<u>Frequency</u>	<u>Instrument</u>
All plant tracks outside area fences	SA	Bioplastic Crystal

Aerial Survey

<u>Description</u>	<u>Identification Number</u>	<u>Frequency</u>	<u>Instrument</u>
Project Perimeter	3	A	NaI Crystal
Richland - Ellensburg - Ritzville Triangle	4	A	NaI Crystal
Columbia River - Vernita to McNary	5	A	NaI Crystal

XI. SURVEILLANCE OF WASTE DISPOSAL SITES

Active, inactive, and retired waste disposal sites require periodic monitoring to assure appropriate maintenance. The following sites require surveillance:

<u>Description</u>	<u>Frequency</u>
100-N Crib	SA
100-N Trench	Q
100-N Burning Ground	SA
100-K Trench	SA
100-K Solid Waste B.G.	Q
100-K Burning Pit	SA
100-BC SE B.G. (105-C Solid Waste)	SA
100-BC SW B.G. (105-B Solid Waste, N. Solid Waste)	Q
100-BC Construction B.G.	SA
100-BC B.G. East of 108-B	SA
100-BC Irradiated Metal Storage Basin Waste	SA
108-B Ball 3x Burial Ground	SA
108-B Crib	SA
105-C Trench	SA
105-B Trench	SA
107 Basin Sludge Burial	SA
105-C Metal Examination Waste Tank	SA
100-BC Overflow Pluto Crib	SA
107-C Retention Basin	SA
107-B Retention Basin	SA
100-BC Effluent Diversion Box	SA
100-BC Minor B.G.'s East of 105-B	SA
100-BC Outfall Structures	SA
100-DR Outfall Structures	SA
100-DDR Trench	SA
107-D Retention Basin	SA
107-DR Retention Basin	SA
100-DDR Effluent Lines	SA
100-D Dummy Decontamination Waste	SA
100-DDR Solid Waste B.G. (VSR Thimbles)	SA
100-DDR Construction B.G.	SA
100-DDR #3 B.G. NE of DR	SA
100-DDR Pluto Crib	SA
100-DDR 105 Basin Sludge B.G.	SA
100-DDR #1 B.G.	SA
100-DDR #2 B.G.	SA
100-H Trench	SA
107-H Basin	SA
100-H Effluent Lines (Junction Boxes)	SA
100-H Liquid Waste Burial	SA
100-H #1 B.G.	SA
100-H #2 B.G.	SA

XI. SURVEILLANCE OF WASTE DISPOSAL SITES (continued)

<u>Description</u>	<u>Frequency</u>
100-F Area	A
P-11 Area	A
100-F Lewis Canal	SA
100-F Swampy Area	SA
107-F Trench	SA
100-F Retention Basin	SA
100-F Trench Drain and Adjacent Wood Covered Pit	SA
100-F Ball Washer Crib	SA
100-F #3 B.G.	SA
100-F #2 B.G.	SA
100-F #1 B.G.	Q
100-F Sawdust Burial	Q
100-F Leaching Trench	Q
100-F 60" Overground Pipe	SA
100-F Happy Valley Farm Plots	SA
200-W Redox Labs Pond (216-S-19)	Q
200-W New Redox Pond (216-S-16)	Q
200-W Old Redox Pond (216-S-17)	SA
200-W Part of Perimeter of U Pond (216-U-10)	Q
200-W U Pond Overflow (216-U-11)	SA
200-E Gable Mt. Ponds (216-A-25)	Q
200-E West Lake	SA
200-E B Pond (216-B-3)	Q
200-E B Pond Ditch #1	SA
200-E B Pond Ditch #2	Q
200-E B Pond Ditch #3	Q
200-E Snow's Canyon; Purex Chemical Sewer (216-A-29)	Q
200-E Purex Crib #1 (216-A-6)	SA
200-E Purex Crib #2 (216-A-30-1)	Q
200-E North of Purex Crib #3 (216-A-37-1)	SA
200-E NE Perimeter Fence	SA
200-E 216-BC Crib Area	SA
200-E California Nuclear B.G. Perimeter	Q
200-E - 200-W Transfer Lines	SA
300 Area 300 N B.G.	SA
300 Area 300 Wye B.G.	SA
300 Area #1 B.G.	SA
300 Area #2 B.G.	SA
300 Area #3 B.G.	SA
300 Area #4 B.G.	SA
300 Area #5 B.G.	Q
300 Area #7 B.G.	SA
300 Area #8 B.G.	SA
300 West B.G.	SA
300 Area Equipment Storage	SA
300 Area N. Process Pond at Perimeter Fence	Q
300 Area S. Process Pond at Perimeter Fence	Q
200-N, P, and R Areas	SA

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5	<u>Atlantic Richfield Hanford Co.</u> G. L. Hanson R. E. Isaacson H. L. Maxfield V. Panesko ARHCO Files		
1	<u>Hanford Environmental Health Foundation</u> R. G. Anderson		
3	<u>United Nuclear Industries, Inc.</u> T. E. Dabrowski A. E. Engler UNI Files		