

HANFORD SITE ENVIRONMENTAL SURVEILLANCE
MASTER SAMPLING SCHEDULE

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MASTER

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SUMMARY

Environmental surveillance of the Hanford Site and surrounding areas is conducted by the Pacific Northwest National Laboratory (PNNL)^(a) for the U.S. Department of Energy (DOE). Sampling is conducted to evaluate levels of radioactive and nonradioactive pollutants in the Hanford environs, as required in DOE Order 5400.1, "General Environmental Protection Program," and DOE Order 5400.5, "Radiation Protection of the Public and the Environment." The sampling methods are described in the Environmental Monitoring Plan, United States Department of Energy, Richland Operations Office, DOE/RL91-50, Rev. 2, U.S. Department of Energy, Richland, Washington.

This document contains the 1998 schedules for routine collection of samples for the Surface Environmental Surveillance Project (SESP) and Drinking Water Monitoring Project. Each section of this document describes the planned sampling schedule for a specific media (air, surface water, biota, soil and vegetation, sediment, and external radiation). Each section includes the sample location, sample type, and analyses to be performed on the sample. In some cases, samples are scheduled on a rotating basis and may not be planned for 1998 in which case the anticipated year for collection is provided. In addition, a map is included for each media showing sample locations.

SESP SAMPLING

The SESP is a multimedia environmental monitoring effort to measure the concentration of radionuclides and chemicals in environmental media and assess the integrated effects of these materials on the environment and the public. The project collects samples of air, surface water, agricultural products, fish, wildlife, sediments, soil and natural vegetation (approximately every 5 years). Analytical capabilities include the measurement of radionuclides at very low environmental concentrations and nonradiological chemicals, including metals, anions, thioureas, volatile organic compounds, semivolatile organic compounds, pesticides, polychlorinated biphenyls. In addition, the project includes the capability to measure ambient external radiation.

DRINKING WATER MONITORING PROJECT SAMPLING

The responsibility for monitoring onsite drinking water falls outside the scope of the SESP. The operator of the onsite drinking water systems (DynCorp)

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is responsible for monitoring the drinking water quality as defined in the National Drinking Water Standards. PNNL conducts radiological monitoring of onsite drinking water for DynCorp. PNNL conducts the drinking water monitoring project concurrent with the SESP to promote efficiency and consistency, utilize expertise developed over the years, and reduce costs associated with management, procedure development, data management, quality control, and reporting.

DATA MANAGEMENT

The Hanford Environmental Information System (HEIS) database is used to manage the SESP data gathered during environmental surveillance activities at the Hanford Site. For ease in retrieving data via HEIS, the location names in this document reflect the exact location name as found in HEIS.

SCHEDULE CHANGES

This schedule is subject to modification during the year in response to changes in site operations, program requirements, and the nature of the observed results. Operational limitations such as weather, mechanical failures, sample availability, etc., may also impact scheduled sampling. Therefore, this document may not be an accurate record of samples collected during the year.

SPLIT SAMPLES

Environmental samples that are split and analyzed by both PNNL and the Washington State Department of Health (DOH) are indicated in the schedule as are environmental samples that are split and analyzed by both PNNL and the U.S. Food and Drug Administration (FDA).

ADDITIONAL INFORMATION

Questions relating to the content of this document can be directed to Roger Dirkes, Manager, Surface Environmental Surveillance Project, (509) 376-8177 or R. W. (Bill) Hanf, Manager, Drinking Water Monitoring Project (509) 376-8264.

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ABBREVIATIONS

FREQUENCY SYMBOLS USED

A	annually
BE	biennial (every 2 years)
BW	biweekly (every 2 weeks)
M	monthly
M Comp.	monthly composite
Q	quarterly
Q Comp.	quarterly composite
SA	semiannually
TE	triennial (occurring every 3rd year)
W	weekly

ANALYTICAL SYMBOLS USED

Generally, standard element, chemical, and isotope designations are used to indicate the analyses performed. Other analytical designations used are:

Alpha	total alpha activity of sample
Anions	major anions-generally Cl, F, NO ₂ , NO ₃ , SO ₄
Beta	total beta activity of sample
Comp. Only	sample analyzed as part of composite only
Gamma Scan	analysis of photon energy spectrum for individual photon-emitting radionuclides, including ⁶⁰ Co, ⁶⁵ Zn, ¹⁰⁶ Ru, and ¹³⁷ Cs
HTO	tritiated water (³ H ¹ H ¹⁶ O)
ICP-u, ICP-3	major metals by inductively coupled plasma spectrometry - samples unfiltered
LEP	samples analyzed by Low Energy Photon Spectrometry
Lo ³ H	analytical procedure includes electrolytic enrichment
NRA	not routinely analyzed
Pu	Isotopic plutonium (²³⁸ Pu, ^{239,240} Pu)
U	Isotopic uranium (²³⁴ U, ²³⁵ U, ²³⁸ U)

PORTABLE INSTRUMENT SYMBOLS USED

BICRON	Microrem meter
GM	Geiger-Müller counter
PIC	Pressurized Ionization Chamber

1.0 AIR SURVEILLANCE

1.1 AIR - PARTICULATE FILTER

Location	Individual Samples			Composited Sample		
	Location Number ^(a)	Frequency	Analyses	Composite Group	Frequency	Analyses
<u>Onsite</u>						
100 K Area	1	BW	Beta, Alpha	100 Areas	Q	Gamma Scan, 90Sr, Pu(b)
100 N-1325 Crib	2	BW	Beta, Alpha		A	
100 D Area	3	BW	Beta, Alpha			
N of 200 E	4	BW	Beta	N of 200 E	A	Gamma Scan
E of 200 E	5	BW	Beta, Alpha	200 E Area	Q	Gamma Scan, 90Sr, Pu(b), U(c)
200 ESE	6	BW	Beta, Alpha		A	
S of 200 E	7	BW	Beta, Alpha			
B Pond	8	BW	Beta, Alpha	B Pond	Q	Gamma Scan, 90Sr, Pu(b), U(c)
					A	
B Pond(d)	8	BW (2nd Q)	Beta, Alpha	B Pond	2nd Q	Gamma Scan
Army Loop Camp	9	BW	Beta, Alpha	200 W South and East	Q	Gamma Scan, 90Sr, Pu(b), U(c)
200 Tel. Exchange	10	BW	Beta, Alpha		A	
200 W SE	11	BW	Beta, Alpha	200 West	Q	Gamma Scan, 90Sr, Pu(b), U(c)
					A	
300 Water Intake	12	BW	Beta	300 Area	Q	Gamma Scan, 90Sr, Pu(b), U(c)
300 South Gate	13	BW	Beta, Alpha		A	
300 Trench	14	BW	Beta, Alpha	300 Trench	Q Gamma } A	U(c) } A 90Sr, Pu(b)
300 NE	15	BW	Beta, Alpha	300 NE	Q Gamma } A	
300 NE(d)	15	BW (3rd Q)	Beta, Alpha	300 NE	3rd Q	
400 E	16	BW	Beta, Alpha	400 Area	Q	Gamma Scan, 90Sr, Pu(b)
400 W	17	BW	Beta, Alpha		A	
400 S	18	BW	Beta, Alpha			
400 N	19	BW	Beta, Alpha			
Wye Barricade	20	BW	Beta, Alpha	Wye Barricade	Q	Gamma Scan, 90Sr, Pu(b), U(c)
					A	
<u>Perimeter</u>						
Ringold Met Tower	21	BW	Beta, Alpha	Ringold Met Tower	Q	Gamma Scan, 90Sr, Pu(b)
					A	
W End of Fir Rd	22	BW	Beta, Alpha	W End of Fir Road	Q	Gamma Scan, 90Sr, Pu(b), U(c)
					A	
Dogwood Met Tower	23	BW	Beta, Alpha	Dogwood Met Tower	Q	Gamma Scan, 90Sr, Pu(b), U(c)
					A	
Byers Landing	24	BW	Beta, Alpha	Byers Landing	Q	Gamma Scan, 90Sr, Pu(b), U(c)
					A	

1.1 AIR - PARTICULATE FILTER (contd)

Location	Individual Samples			Composited Sample		
	Location Number (a)	Frequency	Analyses	Composite Group	Frequency	Analyses
<u>Perimeter</u>						
Battelle Complex	25	BW	Beta	Battelle Complex	A	Gamma Scan
Horn Rapids Substa	26	BW	Beta, Alpha	Prosser Barricade	Q	Gamma Scan, ⁹⁰ Sr, Pu ^(b) , U ^(c)
Prosser Barricade	27	BW	Comp. Only		A	
Yakima Barricade	28	BW	Beta, Alpha	Yakima Barricade	Q	Gamma Scan, ⁹⁰ Sr, Pu ^(b)
Wahluke Slope	29	BW	Beta, Alpha	Wahluke Slope	Q	Gamma Scan, ⁹⁰ Sr, Pu ^(b)
<u>Community(e)</u>						
Basin City School	30	BW	Beta, Alpha	Basin City School	Q	Gamma Scan, ⁹⁰ Sr, Pu ^(b) , U ^(c)
Leslie Groves-Rchld	31	BW	Beta, Alpha	Leslie Groves-Richland	Q	Gamma Scan, ⁹⁰ Sr, Pu ^(b) , U ^(c)
Pasco	32	BW	Beta	Tri Cities	Q	Gamma Scan, ⁹⁰ Sr, Pu ^(b)
Kennewick-Ely Street	33	BW	Beta, Alpha		A	
Benton City	34	BW	Beta	Benton City	A	Gamma Scan
Edwin Markham School	35	BW	Beta, Alpha	Edwin Markham School	Q	Gamma Scan, ⁹⁰ Sr, Pu ^(b) , U ^(c)
Edwin Markham School ^(d)	35	BW (4th Q)	Beta, Alpha	Edwin Markham School	4th Q	Gamma Scan
Mattawa	36	BW	Beta	Mattawa	A	Gamma Scan
Othello	37	BW	Beta	Othello	A	Gamma Scan
<u>Distant</u>						
Yakima	38	BW	Beta, Alpha	Yakima	Q	Gamma Scan, ⁹⁰ Sr, Pu ^(b) , U ^(c)
Yakima ^(d)	38	BW (1st Q)	Beta, Alpha	Yakima	1st Q	Gamma Scan
Toppenish ^(e)	39	BW	Beta, Alpha	Toppenish	Q	Gamma Scan, ⁹⁰ Sr, Pu ^(b) , U ^(c)

(a) Refer to Figure 1.1, 1998 Air Sampling locations.

(b) Isotopic plutonium.

(c) Isotopic uranium.

(d) Sample is collected biweekly for one quarter and composited for the quarter indicated.

(e) Community-Operated Environmental Surveillance Stations.

1.2 AIR - GASES AND VAPOR

<u>Location</u>	<u>Location Number (a)</u>	<u>Fre-quency (b)</u>	<u>Analyses</u>	<u>Fre-quency</u>	<u>Analyses (c)</u>
<u>Onsite</u>					
100 K Area	1			M	3 _H
100 N-1325 Crib	2			M	3 _H
200 ESE	6	Q Comp	129 _I	M	3 _H
200 Tel. Exchange	10			M	3 _H
300 South Gate ^(d)	13			M	3 _H
300 Trench	14			M	3 _H
300 NE	15			M	3 _H
400 E	16			M	3 _H
<u>Perimeter</u>					
Ringold Met Tower	21	Q Comp	129 _I	M	3 _H
Dogwood Met Tower	23			M	3 _H
Byers Landing	24	Q Comp	129 _I	M	3 _H
Prosser Barricade	27			M	3 _H
Wahluke Slope	29			M	3 _H
<u>Community^(e)</u>					
Basin City School	30			M	3 _H
Leslie Groves-Rchlnd	31			M	3 _H
Edwin Markham School	35			M	3 _H
<u>Distant</u>					
Yakima	38	Q Comp	129 _I	M	3 _H
Toppenish ^(e)	39			M	3 _H

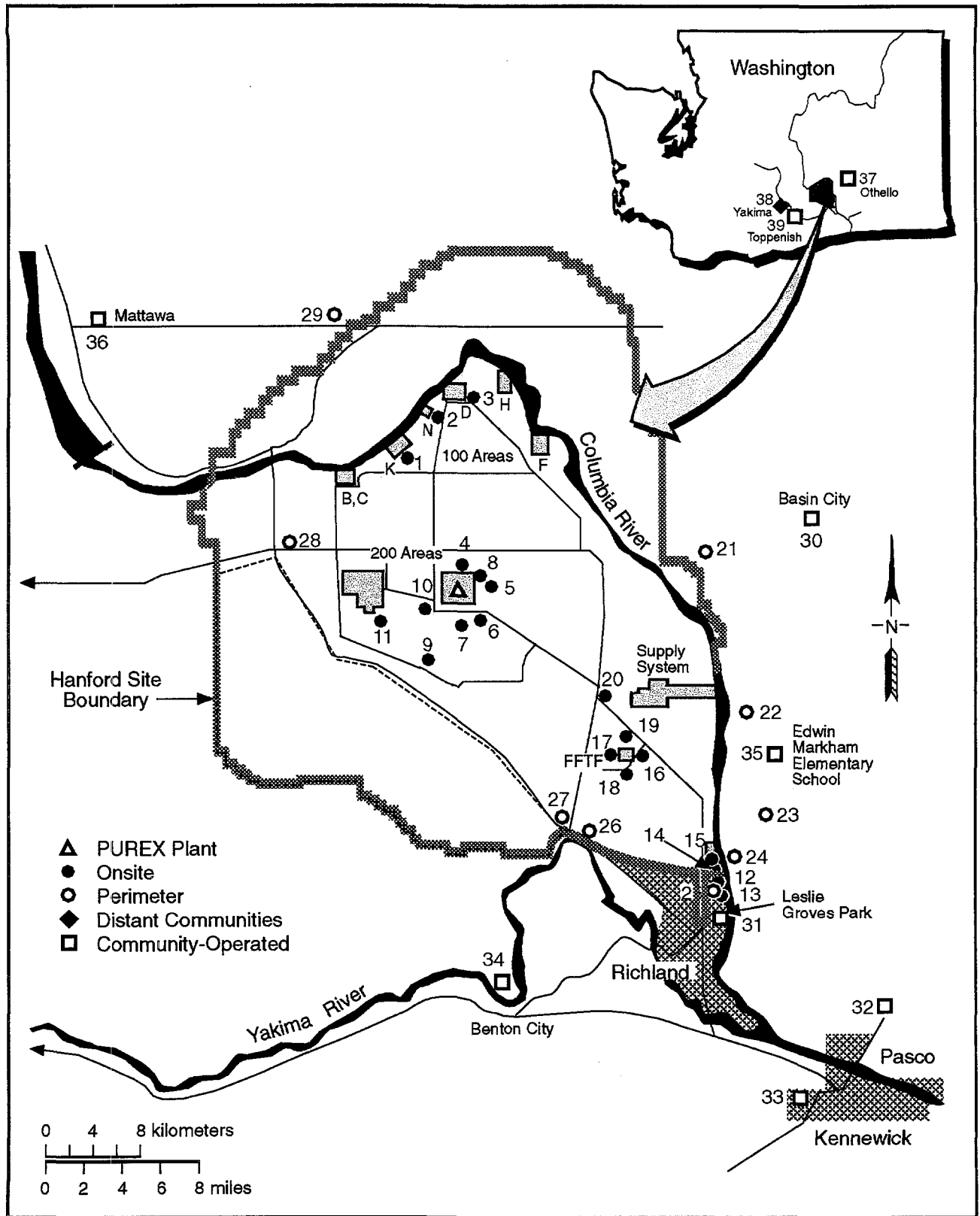
(a) Refer to Figure 1.1, 1998 Air Sampling locations.

(b) Samples are collected monthly and composited for quarterly analyses.

(c) As HTO

(d) Two silica gel samples are collected from this location. One is submitted to the analytical lab on the date it is collected and the second is archived for one month and then submitted to the analytical lab.

(e) Community-Operated Environmental Surveillance Stations.



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Figure 1.1. 1998 Air Sampling Locations

2.0 SURFACE-WATER SURVEILLANCE

2.1 WATER - COLUMBIA RIVER

Location (a)	Sample Type	Frequency	Analyses
Priest Rapids-River	Cumulative	M Comp. (b)	Alpha, Beta, Lo ³ H, Gamma Scan, ⁹⁰ Sr, ⁹⁹ Tc, U(c), DOH(d)
		Q Comp. (b)	¹²⁹ I
	Particulate (filter)	Q Comp. (e)	Pu(f), Gamma Scan
	Soluble (resin)	Q Comp. (e)	Pu(f), Gamma Scan
Vernita	Grab	Q	USGS-NASQAN(g)
	Grab (Transect)(h)	Q A	Lo ³ H, ⁹⁰ Sr, U(c), ICP-3, Anions Cyanide
100 N	Grab (Transect)(i)	A	Lo ³ H, ⁹⁰ Sr, U(c), ICP-3, Anions, DOH(j)
100 F	Grab (Transect)(i)	A	Lo ³ H, ⁹⁰ Sr, U(c), ICP-3, Anions, DOH(j)
Hanford Townsite	Grab (Transect)(i)	A	Lo ³ H, ⁹⁰ Sr, U(c), ICP-3, Anions
300 Area	Grab (Transect)(i)	A	Lo ³ H, ⁹⁰ Sr, U(c), ICP-3, Anions
Richland Pump house	Cumulative	M Comp. (b)	Alpha, Beta, Lo ³ H, Gamma Scan, ⁹⁰ Sr, ⁹⁹ Tc, U(c)
		Q Comp. (b)	¹²⁹ I
	Particulate (filter)	Q Comp. (e)	Pu(f), Gamma Scan
	Soluble (resin)	Q Comp. (e)	Pu(f), Gamma Scan
	Grab (Transect)(i)	Q A	Lo ³ H, ⁹⁰ Sr, U(c), ICP-3, Anions Cyanide
	Grab	Q	USGS-NASQAN(g)

- (a) Refer to Figure 2.1, 1998 Surface Water and Drinking Water Sampling Locations.
- (b) Cumulative sample is collected weekly and composited for monthly or quarterly analysis.
- (c) Isotopic uranium.
- (d) Split co-samples with the Washington State Department of Health (January and June only).
- (e) Sample is collected biweekly and composited for quarterly analysis.
- (f) Isotopic plutonium.
- (g) Analyses are performed by the United States Geological Survey (USGS) in conjunction with the National Stream Quality Accounting Network (NASQAN) Program, and includes: Conductance, pH, Temperature, Turbidity, Dissolved Oxygen, Hardness, Ca, Mg, Alkalinity, Carbonates, Sulfate, Cl, F, Solids, NH₄-N, NO₃+NO₂, N-Kjeldahl, P, Cr, Fe, Dissolved Organic Carbon.
- (h) 4 samples collected along cross-section.
- (i) 10 samples collected along cross-section.
- (j) Split co-samples with the Washington State Department of Health for samples collected at transect stations 1-5.

2.2 RIVERBANK SPRINGS

<u>Location</u> ^(a)	<u>Sample Type</u>	<u>Frequency</u>	<u>Analyses</u>
100-B Spring	Grab	A	Alpha, Beta, ³ H, ⁹⁰ Sr, ⁹⁹ Tc, Gamma Scan, ICP-3, Anions
100-K Spring	Grab	A	Alpha, Beta, ³ H, ⁹⁰ Sr, Gamma Scan, ICP-3, Anions, DOH ^(b)
100-N Spring 8-13	Grab	A	Alpha, Beta, ³ H, ⁹⁰ Sr, Gamma Scan, ICP-3, Anions, DOH ^(b)
100-D Spring	Grab	A	Alpha, Beta, ³ H, ⁹⁰ Sr, Gamma Scan, ICP-3, Anions
100-H Spring	Grab	A	Alpha, Beta, ³ H, ⁹⁰ Sr, ⁹⁹ Tc, U ^(c) , Gamma Scan, ICP-3, Anions
100-F Spring	Grab	A	Alpha, Beta, ³ H, ⁹⁰ Sr, U ^(c) , Gamma Scan, ICP-3, Anions, DOH ^(b)
Hanford Spring 28-2	Grab	A	Alpha, Beta, ³ H, ⁹⁹ Tc, U ^(c) , ¹²⁹ I, Gamma Scan, ICP-3, Anions, DOH ^(b)
300 Area Spring 42-2	Grab	A	Alpha, Beta, ³ H, ⁹⁹ Tc, U ^(c) , ¹²⁹ I, Gamma Scan, ICP-3, Anions

- (a) Refer to Figure 2.1, 1998 Surface Water and Drinking Water Sampling Locations.
 (b) Split co-samples with the Washington State Department of Health.
 (c) Isotopic uranium.

2.3 ONSITE PONDS

<u>Location</u> ^(a)	<u>Sample Type</u>	<u>Frequency</u>	<u>Analyses</u>
West Lake	Grab	Q	Alpha, Beta, ³ H, ⁹⁰ Sr, ⁹⁹ Tc, U ^(b) , Gamma Scan
FFTF Pond	Grab	Q	Alpha, Beta, ³ H, Gamma Scan

- (a) Refer to Figure 2.1, 1998 Surface Water and Drinking Water Sampling Locations.
 (b) Isotopic uranium.

2.4 OFFSITE WATER SYSTEMS

<u>Location</u> ^(a)	<u>Sample Type</u>	<u>Frequency</u>	<u>Analyses</u>
Riverview Canal	Grab	3 (May-Sept)	Alpha, Beta, Lo ³ H, ⁹⁰ Sr, U ^(b) , Gamma Scan

- (a) Refer to Figure 2.1, 1998 Surface Water and Drinking Water Sampling Locations.
 (b) Isotopic uranium.

2.5 ONSITE DRINKING WATER

<u>Location (a)</u>	<u>Sample Type</u>	<u>Frequency</u>	<u>Analyses</u>
100 B Area-River	Grab	Q	Alpha, Beta, Lo ^3H , ^{90}Sr , DOH(b)
100 D Area	Grab	Q	Alpha, Beta, ^3H , ^{90}Sr
Yakima Barricade	Grab	A(c)	Alpha, Beta, ^3H , ^{90}Sr
FFTF	Grab	Q	Alpha, Beta, ^3H , ^{90}Sr , DOH(b)
300 Area	Cumulative	Q Comp.(d)	Alpha, Beta, Lo ^3H , ^{90}Sr , ^{99}Tc , U(e), Gamma Scan
Firing Range	Grab	A(c)	Alpha, Beta, ^3H , ^{90}Sr

- (a) Refer to Figure 2.1, 1998 Surface Water and Drinking Water Sampling Locations.
 (b) Split co-samples during 2nd quarter with Washington State Department of Health.
 (c) Grab sample is collected quarterly and composited for annual analysis.
 (d) Cumulative sample is collected monthly and composited for quarterly analysis.
 (e) Isotopic uranium.

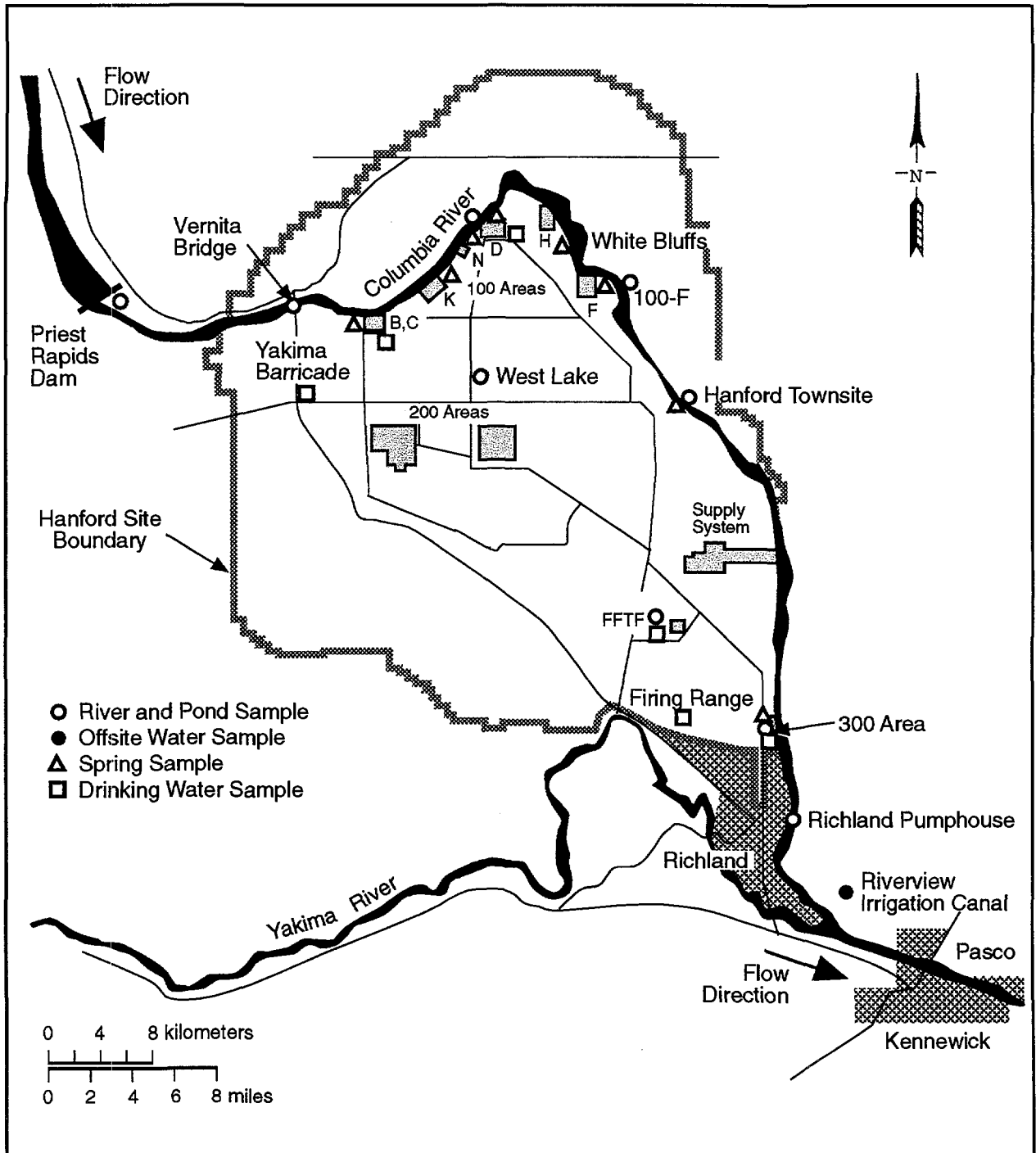


Figure 2.1. 1998 Surface Water and Drinking Water Sampling Locations

3.0 BIOTA

3.1 FOODSTUFFS AND FARM PRODUCTS

3.1.1 WHOLE MILK

<u>Location (a)</u>	<u>Frequency</u>	<u>Analyses</u>
East Wahluke Area ^(b)	Q SA	⁹⁰ Sr, Gamma Scan ¹²⁹ I
Sagemoor Composite ^(b)	Q SA	⁹⁰ Sr, Gamma Scan ¹²⁹ I
Sunnyside Area	Q SA	⁹⁰ Sr, Gamma Scan ¹²⁹ I

(a) Refer to Figure 3.1, 1998 Food and Farm Product Sampling Locations.
 (b) Sample composited from three dairies in each area.

3.1.2 LEAFY VEGETABLES

<u>Location (a)(b)</u>	<u>Frequency (c)</u>	<u>Analyses</u>
Riverview Area	A	⁹⁰ Sr, Gamma Scan, FDA ^(d) , DOH ^(e)
Sunnyside Area	A	⁹⁰ Sr, Gamma Scan, FDA ^(d)
East Wahluke Area	BE (1998)	⁹⁰ Sr, Gamma Scan, DOH ^(e)
Sagemoor Area	BE (1999)	⁹⁰ Sr, Gamma Scan, DOH ^(e)

(a) Refer to Figure 3.1, 1998 Food and Farm Product Sampling Locations.
 (b) Two samples collected within each area.
 (c) Samples are collected in 1998 according to their specified frequency unless otherwise noted.
 (d) Split samples sent to U.S. Food and Drug Administration.
 (e) Split co-samples with the Washington State Department of Health.

3.1.3 VEGETABLES

<u>Location (a)(b)</u>	<u>Sample Type</u>	<u>Frequency (c)</u>	<u>Analyses</u>
Riverview Area	Potatoes	A	⁹⁰ Sr, Gamma Scan, DOH ^(d)
Sunnyside Area	Potatoes	A	⁹⁰ Sr, Gamma Scan, FDA ^(e)
East Wahluke Area	Potatoes	A	⁹⁰ Sr, Gamma Scan, DOH ^(d)
Horn Rapids Area	Potatoes	TE (1999)	⁹⁰ Sr, Gamma Scan, FDA ^(e)
Sagemoor Area	Potatoes	TE (2000)	⁹⁰ Sr, Gamma Scan, FDA ^(e)

(a) Refer to Figure 3.1, 1998 Food and Farm Product Sampling Locations.
 (b) Two samples of each type collected within each area.
 (c) Samples are collected in 1998 according to their specified frequency unless otherwise noted.
 (d) Split co-samples with the Washington State Department of Health.
 (e) Split samples sent to U.S. Food and Drug Administration.

3.1.4 FRUIT

<u>Location</u> (a)(b)	<u>Sample Type</u>	<u>Fre-</u> <u>quency</u> (c)	<u>Collection</u> <u>Period</u>	<u>Analyses</u>
Sagemoor Area	Concord Grapes ^(d)	TE (1998)	September	⁹⁰ Sr, Gamma Scan, DOH ^(e)
	Cherries	TE (1999)	June	⁹⁰ Sr, Gamma Scan, FDA ^(f)
	Apples	TE (2000)	September	⁹⁰ Sr, Gamma Scan, FDA ^(f) , DOH ^(e)
Sunnyside Area	Concord Grapes ^(d)	TE (1998)	September	⁹⁰ Sr, Gamma Scan
	Cherries	TE (1999)	June	⁹⁰ Sr, Gamma Scan, FDA ^(f)
	Apples	TE (2000)	September	⁹⁰ Sr, Gamma Scan
Riverview Area	Concord Grapes ^(d)	TE (1998)	September	⁹⁰ Sr, Gamma Scan, DOH ^(e)
	Cherries	TE (1999)	June	⁹⁰ Sr, Gamma Scan
	Apples	TE (2000)	September	⁹⁰ Sr, Gamma Scan, FDA ^(f)
Cold Creek Area	Concord Grapes ^(d)	TE (1998)	September	⁹⁰ Sr, Gamma Scan
East Wahluke Area	Cherries	TE (1999)	June	⁹⁰ Sr, Gamma Scan
Mattawa Area	Apples	TE (2000)	September	⁹⁰ Sr, Gamma Scan, DOH ^(e)

- (a) Refer to Figure 3.1, 1998 Food and Farm Product Sampling Locations.
 (b) Two samples of each type collected within each area.
 (c) Samples are collected in 1998 according to their specified frequency unless otherwise noted.
 (d) Concord grapes preferred; table grapes acceptable if concord grapes are unavailable.
 (e) Split co-samples with the Washington State Department of Health.
 (f) Split samples sent to the U.S. Food and Drug Administration.

3.1.5 WINE

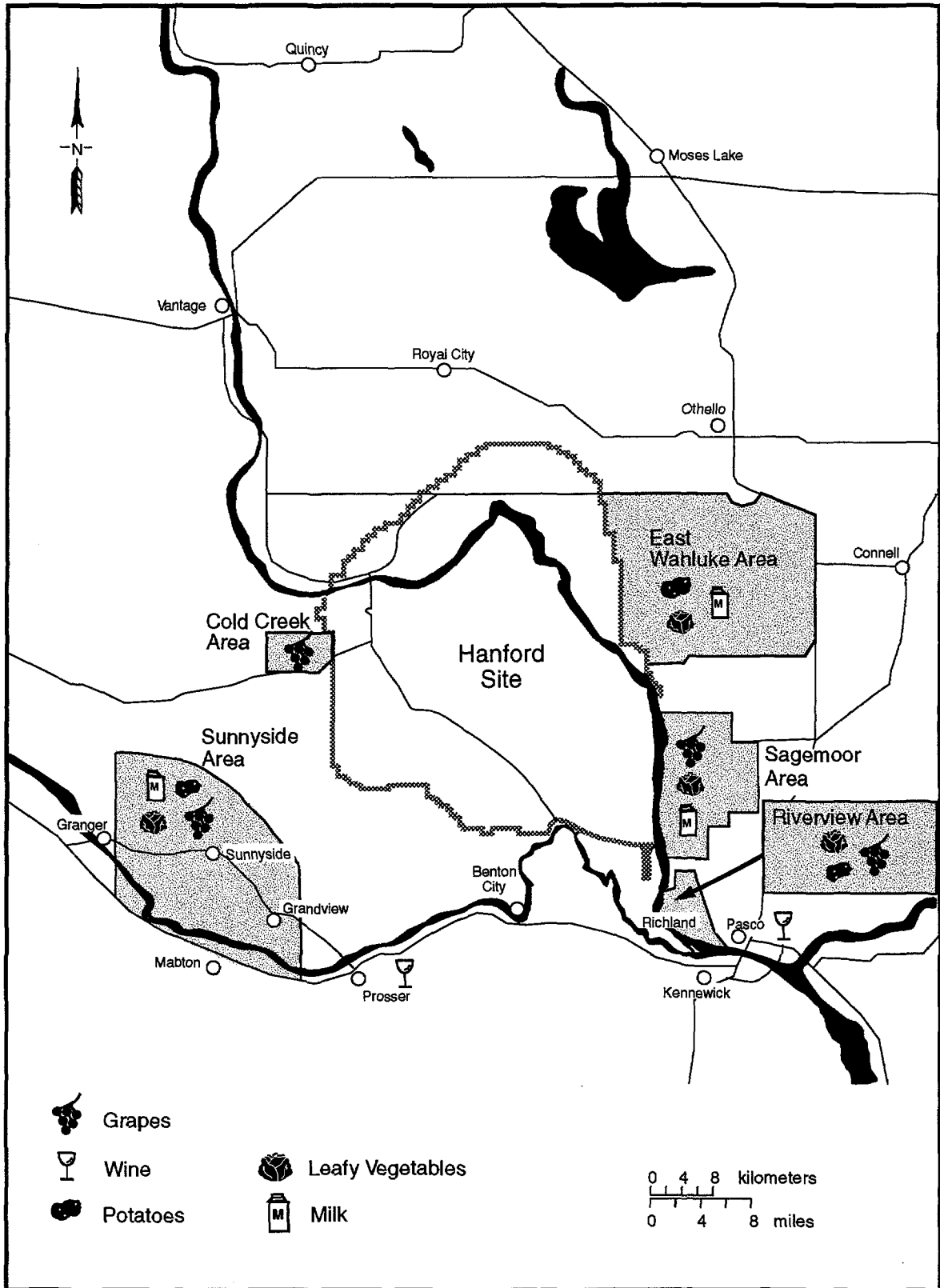
<u>Location</u> (a)(b)	<u>Sample Type</u>	<u>Fre-</u> <u>quency</u>	<u>Collection</u> <u>Period</u>	<u>Analyses</u>
Columbia Basin	White	A	December	³ H, Gamma Scan, DOH ^(c)
	Red	A	December	³ H, Gamma Scan, DOH ^(c)
Yakima Valley	White	A	December	³ H, Gamma Scan, DOH ^(c)
	Red	A	December	³ H, Gamma Scan, DOH ^(c)

- (a) Refer to Figure 3.1, 1998 Food and Farm Product Sampling Locations.
 (b) Two samples of each type collected within each area.
 (c) Split co-samples with the Washington State Department of Health.

3.1.6 ALFALFA

<u>Location</u> (a)	<u>Sample Type</u>	<u>Fre-</u> <u>quency</u> (b)	<u>Collection</u> <u>Period</u>	<u>Analyses</u>
Sagemoor Area	Alfalfa	BE (1999)	May	⁹⁰ Sr, Gamma Scan
Riverview Area	Alfalfa	BE (1999)	May	⁹⁰ Sr, Gamma Scan, DOH ^(c)
Sunnyside Area	Alfalfa	BE (1999)	May	⁹⁰ Sr, Gamma Scan
Horn Rapids Area	Alfalfa	BE (1999)	May	⁹⁰ Sr, Gamma Scan, DOH ^(c)

- (a) Two samples collected within each area.
 (b) Samples are collected in 1998 according to their specified frequency unless otherwise noted.
 (c) Split co-samples with the Washington State Department of Health.



SP97120016.3

Figure 3.1. 1998 Food and Farm Product Sampling Locations

3.2 WILDLIFE

3.2.1 AQUATIC BIOTA

<u>Location (a)</u>	<u>Species/ Sample</u>	<u>Number of Samples</u>	<u>Fre- quency (b)</u>	<u>Collection Period</u>	<u>Analyses</u>
100 N Area to 100 D Area	Carp				
	Fillet	5	BE (1998)	June	Gamma Scan, DOH ^(c)
	Carcass	5	BE (1998)	June	⁹⁰ Sr, U ^(d) , DOH ^(c)
	Squawfish ^(e)	1	A	June	Gamma Scan, ⁹⁰ Sr, DOH
	Whitefish				
	Fillet	5	BE (1999)	January	Gamma Scan, DOH ^(c)
	Carcass	5	BE (1999)	January	⁹⁰ Sr, DOH ^(c)
100 F Slough	Bass				
	Fillet	5	TE (1999)	May-June	Gamma Scan
	Carcass	5	TE (1999)	May-June	⁹⁰ Sr, U ^(d)
Hanford Slough	Bass				
	Fillet	5	TE (1999)	May-June	Gamma Scan
	Carcass	5	TE (1999)	May-June	⁹⁰ Sr, U ^(d)
300 Area	Carp				
	Fillet	5	BE (1998)	June	Gamma Scan, DOH ^(c)
	Carcass	5	BE (1998)	June	⁹⁰ Sr, U ^(d) , DOH ^(c)
	Squawfish ^(e)	1	A	June	Gamma Scan, ⁹⁰ Sr
	Whitefish				
	Fillet	5	BE (1999)	January	Gamma Scan, DOH ^(c)
	Carcass	5	BE (1999)	January	⁹⁰ Sr, DOH ^(c)
Vantage	Carp				
	Fillet	5	BE (1998)	June	Gamma Scan
	Carcass	5	BE (1998)	June	⁹⁰ Sr, U ^(d)
	Bass				
	Fillet	5	TE (1999)	June	Gamma Scan
	Carcass	5	TE (1999)	June	⁹⁰ Sr, U ^(d)

(a) Refer to Figure 3.2, 1998 Wildlife Sampling Areas.

(b) Samples are collected in 1998 according to their specified frequency unless otherwise noted.

(c) Split five co-samples with the Washington State Department of Health.

(d) Isotopic uranium.

(e) Sample collected by PNNL if available and provided to Washington State Department of Health.

3.2.2 GEESE

<u>Location</u>	<u>Species/ Sample</u>	<u>Number of Samples</u>	<u>Fre-(a) quency</u>	<u>Collection Period</u>	<u>Analyses</u>
100 N Area to 100 D Area	Western Canadian Goose				
	Muscle	5	BE (1999)	August	⁹⁰ Sr, Gamma Scan ⁹⁰ Sr
Bone	5	BE (1999)	August		
Hanford Townsite	Western Canadian Goose				
	Muscle	5	BE (1999)	August	⁹⁰ Sr, Gamma Scan ⁹⁰ Sr
Bone	5	BE (1999)	August		

(a) Samples are collected in 1998 according to their specified frequency unless otherwise noted.

3.2.3 GAME BIRDS

<u>Location</u>	<u>Species/(a) Sample</u>	<u>Number of Samples</u>	<u>Fre-(b) quency</u>	<u>Collection Period</u>	<u>Analyses</u>
100 D Area to 100 H Area	Pheasant				
	Muscle	4	BE (1998)	October	Gamma Scan, DOH ^(c) NRA ^(d) ⁹⁰ Sr, DOH ^(c)
	Liver	4	BE (1998)	October	
Bone	4	BE (1998)	October		
100 H Area to 100 F Area	Pheasant				
	Muscle	6	BE (1998)	October	Gamma Scan, DOH ^(c) NRA ^(d) ⁹⁰ Sr, DOH ^(c)
	Liver	6	BE (1998)	October	
Bone	6	BE (1998)	October		

(a) Pheasant preferred; chukar or quail acceptable if pheasant is unavailable.

(b) Samples are collected in 1998 according to their specified frequency unless otherwise noted.

(c) Split co-samples with the Washington State Department of Health.

(d) Not Routinely Analyzed (NRA) - Retain liver to be analyzed for isotopic plutonium and ⁹⁰Sr, respectively, if ¹³⁷Cs exceeds 100 pCi/g (wet weight) in muscle.

3.2.4 RABBITS

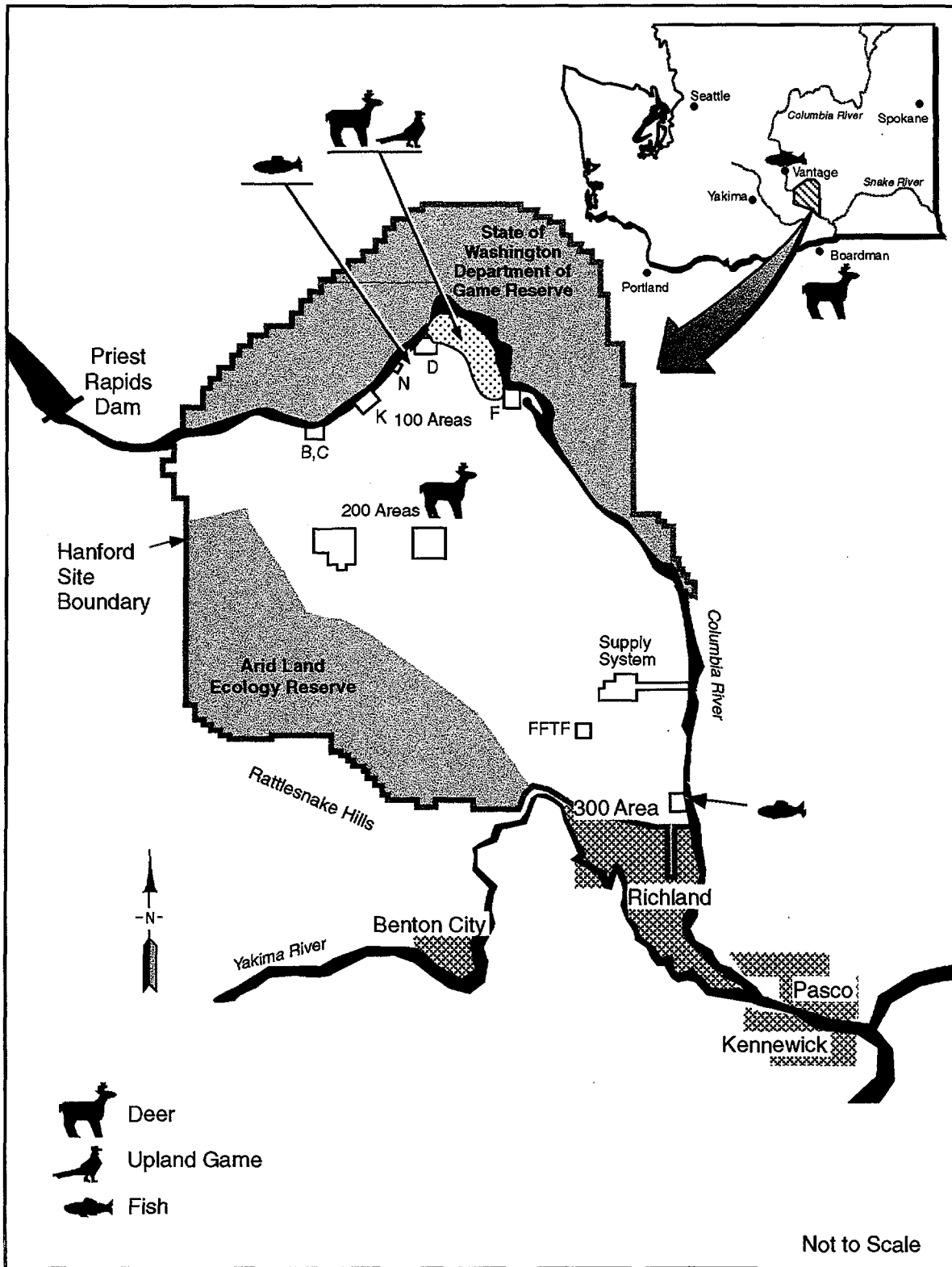
<u>Location</u>	<u>Species/ Sample</u>	<u>Number of Samples</u>	<u>Fre- quency (a)</u>	<u>Collection Period</u>	<u>Analyses</u>
100 N Area	Cottontail or Jack Rabbit				
	Muscle	4	BE (1999)	April	Gamma Scan, DOH ^(b) 90Sr, DOH ^(c)
Bone	4	BE (1999)	April		
200 E Area	Jack Rabbit				
	Muscle	4	BE (1999)	April	Gamma Scan 90Sr
Bone	4	BE (1999)	April		
200 West	Jack Rabbit				
	Muscle	4	BE (1999)	April	Gamma Scan 90Sr
Bone	4	BE (1999)	April		

- (a) Samples are collected in 1998 according to their specified frequency unless otherwise noted.
 (b) Split one co-sample with the Washington State Department of Health.

3.2.5 DEER

<u>Location</u>	<u>Species/ Sample</u>	<u>Number of Samples</u>	<u>Fre- quency (a)</u>	<u>Collection Period</u>	<u>Analyses</u>
100 N Area	Mule				
	Muscle	2	BE (1998)	December	Gamma Scan 90Sr
	Bone	2	BE (1998)	December	
200 Ponds	Mule				
	Muscle	2	BE (1998)	December	Gamma Scan, DOH ^(b) 90Sr, DOH ^(b)
	Bone	2	BE (1998)	December	
Road Kill at Onsite Locations ^(c)	Mule				
	Muscle	6	BE (1998)	As Available	Gamma Scan 90Sr
	Bone	6	BE (1998)	As Available	
Background ^(c)	Mule				
	Muscle	2	(1999) ^(d)	October	Gamma Scan 90Sr
	Bone	2	(1999) ^(d)	October	

- (a) Samples are collected in 1998 according to their specified frequency unless otherwise noted.
 (b) Split co-samples with the Washington State Department of Health.
 (c) As available, according to location.
 (d) One deer from the west side of the state will be provided to PNNL by Washington State Department of Health.



SP97120016.4

Figure 3.2. 1998 Wildlife Sampling Areas

4.0 SOIL AND VEGETATION

4.1 SOIL

Location ^(a)	Location Number	Frequency ^(b)	Collection Period	Analyses		
100 K Area ^(c)	1	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	
NE of 100 N Area	2	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	
E of 100 N Area	3	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	DOH ^(f)
100N Shore Above HGP ^(c)	4	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	
100N Spring Shoreline ^(c)	5	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	
Above 100D Pumphouse	6	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	
100 Area Fire Stat ^(c)	7	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	
200 ENC ^(c)	8	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	
E of 200 E	9	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	
200 ESE	10	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	²⁴¹ Am
S of 200 E	11	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	
SW of B/C Cribs	12	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	
E of 200 W Gate	13	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	²⁴¹ Am, DOH ^(f)
S of 200 W	14	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	
Rattlesnake Springs ^(c)	15	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	
Yakima Barricade ^(c)	16	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	
400 E	17	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	
SE Side of FFTF	18	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	
North 300 Area	19	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	
South 300 Area	20	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	
Hanford Townsite ^(c)	21	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	
Wye Barricade ^(c)	22	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	
Prosser Barricade ^(c)	23	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	
ALE Field Lab ^(c)	24	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	
N End Vernita Bridge ^(c)	25	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	
Wahluke Slope ^(c)	26	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	
Berg Ranch ^(c)	27	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	
Ringold Area	28	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	
W End of Fir Road ^(c)	29	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	
Taylor Flats No. 2 ^(c)	30	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	
Sagemoor Farm	31	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	²⁴¹ Am
Byers Landing	32	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	DOH ^(f)
Riverview-Harris	33	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	DOH ^(f)
Benton City ^(c)	34	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	
Sunnyside	35	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	²⁴¹ Am
Mc Nary Dam ^(c)	36	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	
Walla Walla ^(c)	37	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	
Washtucna ^(c)	38	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	
Toppenish ^(c)	39	3 to 5 yrs	June-Sept	Gamma Scan,	⁹⁰ Sr, U ^(d) , Pu ^(e)	

(a) Refer to Figure 4.1, 1998 Soil and Vegetation Sampling Locations.

(b) Samples are collected once every 3 to 5 years and will be collected in 1998.

(c) Samples will be collected and archived but may be submitted for analyses at a later date.

(d) ²³⁵U-LEP, ²³⁸U-LEP.

(e) Isotopic plutonium.

(f) Split co-samples with the Washington State Department of Health.

4.2 VEGETATION

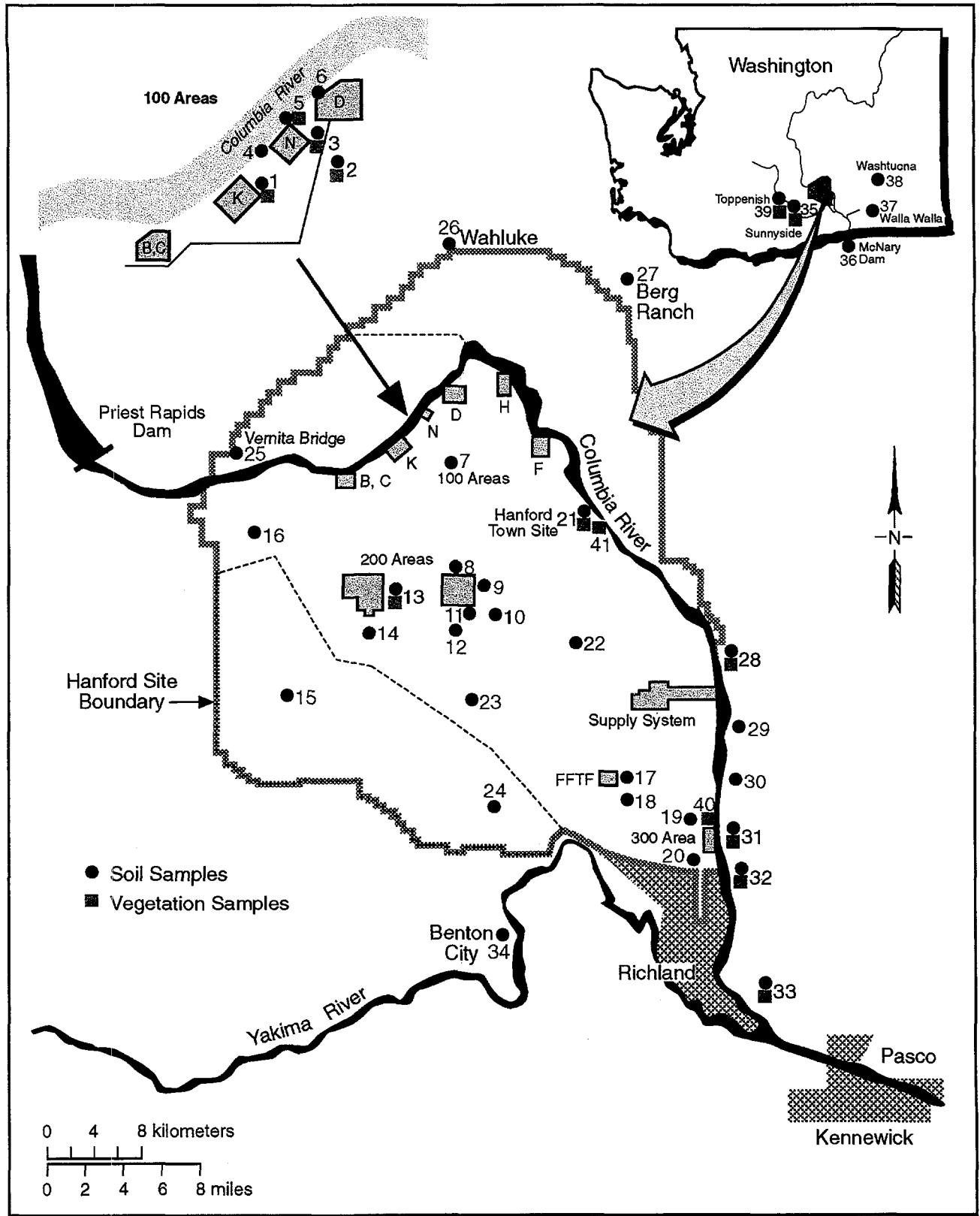
Location (a)	Location Number	Freq- quency (b)	Collection Period	Analyses
100 K Area	1	3 to 5 yrs	June-Sept	Gamma Scan, ⁹⁰ Sr, U, Pu ^(c)
NE of 100 N Area	2	3 to 5 yrs	June-Sept	Gamma Scan, ⁹⁰ Sr, U, Pu ^(c)
E of 100 N Area	3	3 to 5 yrs	June-Sept	Gamma Scan, ⁹⁰ Sr, U, Pu ^(c) , DOH ^(d)
100N Spring Shoreline	5	3 to 5 yrs	June-Sept	Gamma Scan, ⁹⁰ Sr, U, Pu ^(c) , DOH ^(d)
E of 200 W Gate	13	3 to 5 yrs	June-Sept	Gamma Scan, ⁹⁰ Sr, U, Pu ^(c) , DOH ^(d)
300 Area Shoreline	40	3 to 5 yrs	June-Sept	Gamma Scan, ⁹⁰ Sr, U, Pu ^(c) , DOH ^(d)
Hanford Townsite	21	3 to 5 yrs	June-Sept	Gamma Scan, ⁹⁰ Sr, U, Pu ^(c)
Hanfrd Twnsite HRM28	41	3 to 5 yrs	June-Sept	Gamma Scan, ⁹⁰ Sr, U, Pu ^(c) , ⁹⁹ Tc, DOH ^(d)
Ringold Area	28	3 to 5 yrs	June-Sept	Gamma Scan, ⁹⁰ Sr, U, Pu ^(c)
Sagemoor Farm	31	3 to 5 yrs	June-Sept	Gamma Scan, ⁹⁰ Sr, U, Pu ^(c)
Byers Landing	32	3 to 5 yrs	June-Sept	Gamma Scan, ⁹⁰ Sr, U, Pu ^(c) , DOH ^(d)
Riverview-Harris	33	3 to 5 yrs	June-Sept	Gamma Scan, ⁹⁰ Sr, U, Pu ^(c) , DOH ^(d)
Sunnyside	35	3 to 5 yrs	June-Sept	Gamma Scan, ⁹⁰ Sr, U, Pu ^(c)
Toppenish	39	3 to 5 yrs	June-Sept	Gamma Scan, ⁹⁰ Sr, U, Pu ^(c)

(a) Refer to Figure 4.1, Soil and Vegetation Sampling Locations.

(b) Samples are collected once every 3 to 5 years and will be collected in 1998.

(c) Isotopic plutonium.

(d) Split co-samples with the Washington State Department of Health.



SP97120016.9

Figure 4.1. 1998 Soil and Vegetation Sampling Locations

5.0 SEDIMENT

<u>Location</u> ^(a)	<u>Frequency</u>	<u>Analyses</u>
<u>River</u>		
McNary Dam		
McNary Oregon Shore	A	Gamma Scan, ⁹⁰ Sr, U(b), Pu(c), ICP-u, DOH(d)
McNary-1/3 OR. Shore	A	Gamma Scan, ⁹⁰ Sr, U(b), Pu(c), ICP-u, DOH(d)
McNary-2/3 OR. Shore	A	Gamma Scan, ⁹⁰ Sr, U(b), Pu(c), ICP-u, DOH(d)
McNary-Wash. Shore	A	Gamma Scan, ⁹⁰ Sr, U(b), Pu(c), ICP-u, DOH(d)
Priest Rapids Dam		
PRD-Grant County	A	Gamma Scan, ⁹⁰ Sr, U(b), Pu(c), ICP-u, DOH(d)
PRD-1/3 Grant Shore	A	Gamma Scan, ⁹⁰ Sr, U(b), Pu(c), ICP-u, DOH(d)
PRD-2/3 Grant Shore	A	Gamma Scan, ⁹⁰ Sr, U(b), Pu(c), ICP-u, DOH(d)
PRD-Yakima Cnty Shor	A	Gamma Scan, ⁹⁰ Sr, U(b), Pu(c), ICP-u, DOH(d)
White Bluffs Slough	A	Gamma Scan, ⁹⁰ Sr, U(b), Pu(c), ICP-u
100 F Slough	A	Gamma Scan, ⁹⁰ Sr, U(b), Pu(c), ICP-u, DOH(d)
Hanford Slough	A	Gamma Scan, ⁹⁰ Sr, U(b), Pu(c), ICP-u
Richland	A	Gamma Scan, ⁹⁰ Sr, U(b), Pu(c), ICP-u
<u>Springs</u>		
100-B Spring	A	Gamma Scan, ⁹⁰ Sr, U(b), ICP-u
Hanford Spring 28-2	A	Gamma Scan, ⁹⁰ Sr, U(b), ICP-u, DOH(d)
300 Area Spring 42-2	A	Gamma Scan, ⁹⁰ Sr, U(b), ICP-u
100-K Spring	A	Gamma Scan, ⁹⁰ Sr, U(b), ICP-u, DOH(d)
100-F Spring	A	Gamma Scan, ⁹⁰ Sr, U(b), ICP-u

(a) Refer to Figure 5.1, 1998 Sediment Sampling Locations.

(b) ²³⁵U-LEP, ²³⁸U-LEP.

(c) Isotopic plutonium.

(d) Split co-samples with the Washington State Department of Health.

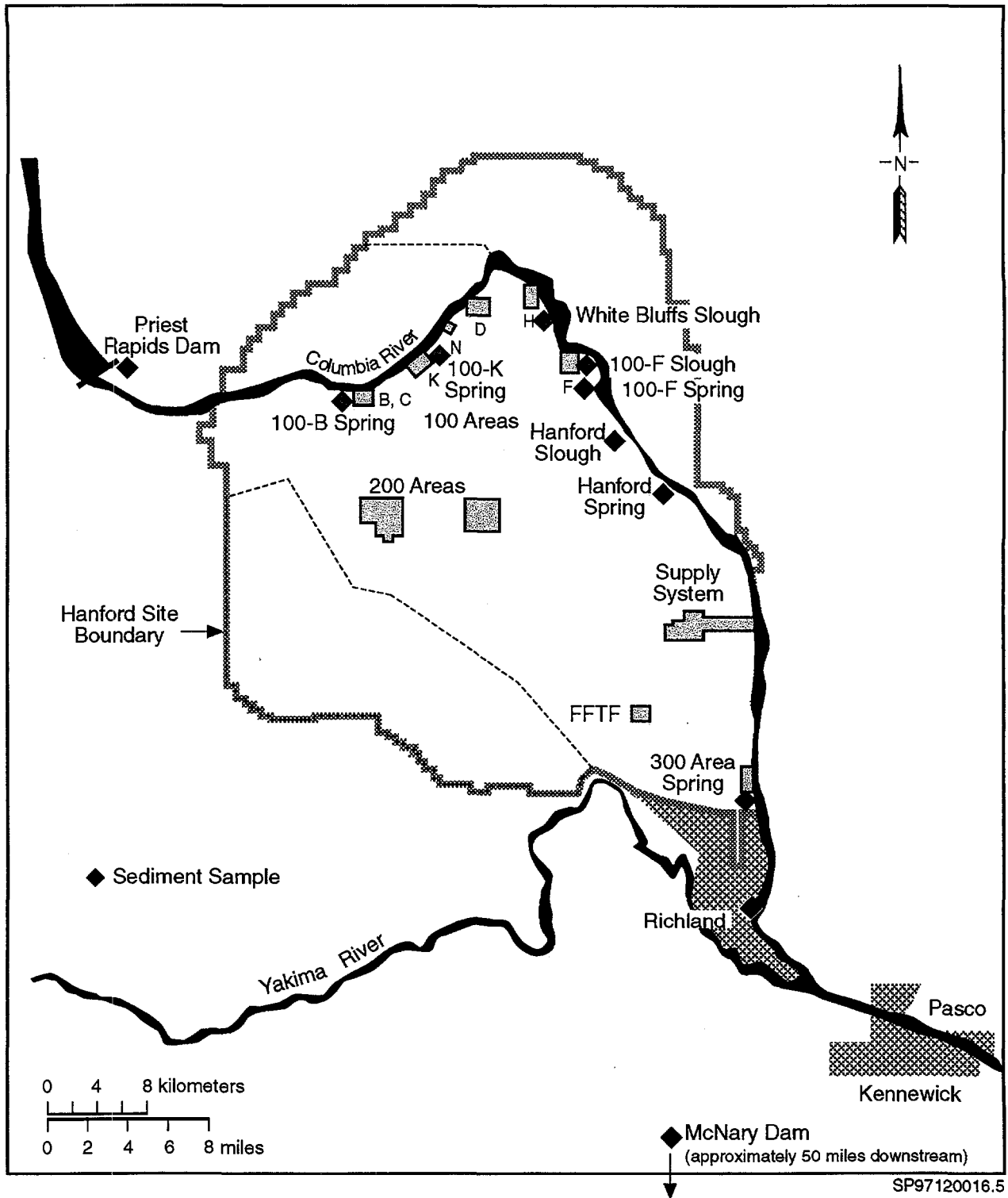


Figure 5.1. 1998 Sediment Sampling Locations

6.0 EXTERNAL RADIATION

6.1 THERMOLUMINESCENT DOSIMETERS (TLDs)

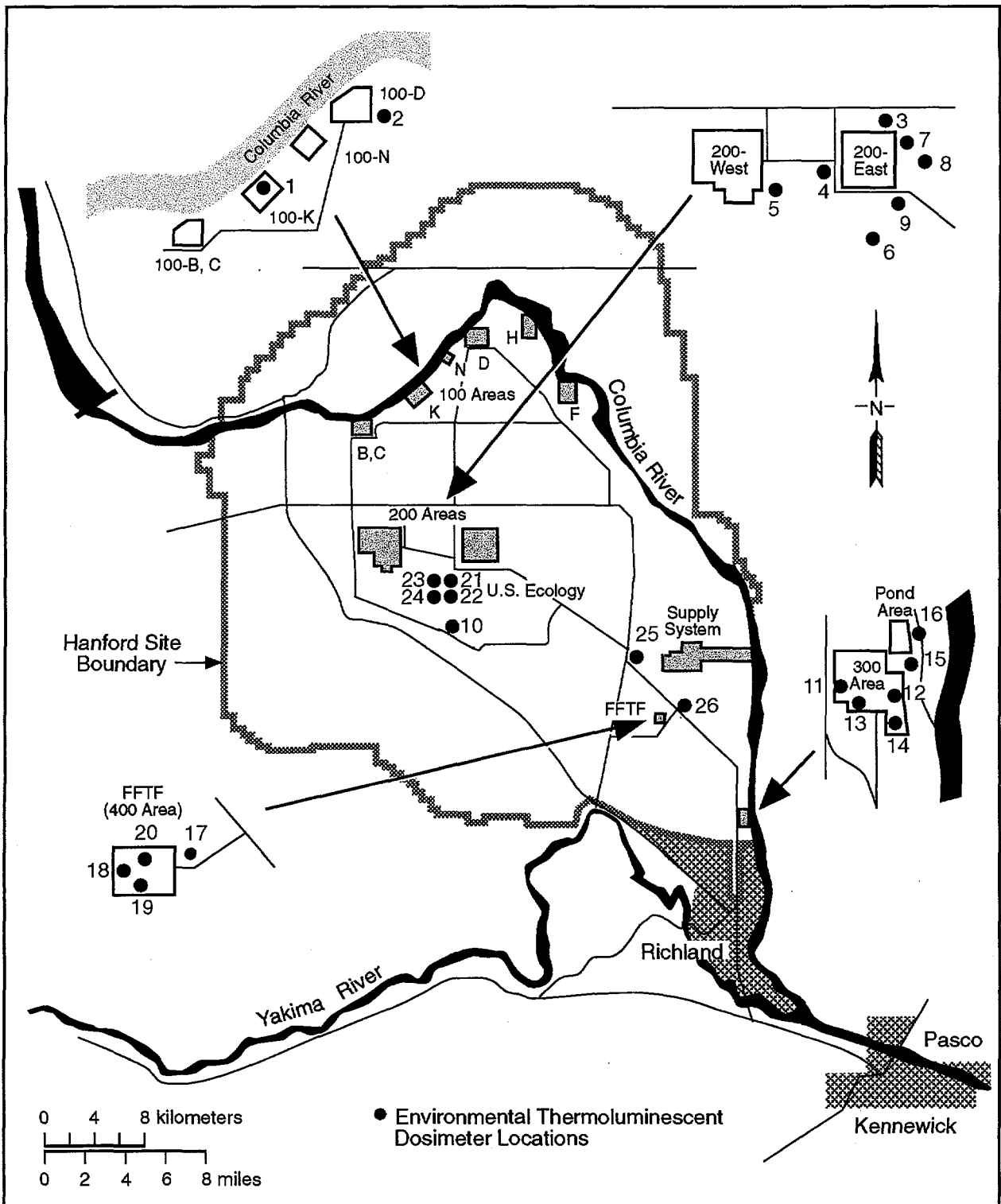
6.1.1 Terrestrial Locations

<u>Location</u>	<u>Location Number</u>	<u>Frequency</u>	<u>Measurement</u>	<u>Instrument</u>
<u>Onsite^(a)</u>				
100 K Area ^(b)	1	Q	Ambient Dose	
100 D Area ^(b)	2	Q	Ambient Dose	
N of 200 E ^(b)	3	Q	Ambient Dose, DOH ^(c)	
200 Tel. Exchange ^(b)	4	Q	Ambient Dose	
200 W SE ^(b)	5	Q	Ambient Dose	
S of 200 E ^(b)	6	Q	Ambient Dose, DOH ^(c)	
B Pond ^(b)	7	Q	Ambient Dose	
E of 200 E ^(b)	8	Q	Ambient Dose, DOH ^(c)	
200 ESE ^(b)	9	Q	Ambient Dose, DOH ^(c)	
Army Loop Camp ^(b)	10	Q	Ambient Dose	
3705 Bldg. 300 Area	11	Q	Ambient Dose	
300 Water Intake ^(b)	12	Q	Ambient Dose	
300 Southwest Gate	13	Q	Ambient Dose	
300 South Gate ^(b)	14	Q	Ambient Dose	
300 Trench ^(b)	15	Q	Ambient Dose	
300 NE ^(b)	16	Q	Ambient Dose	
400 E ^(b)	17	Q	Ambient Dose	
400 W ^(b)	18	Q	Ambient Dose	
400 S ^(b)	19	Q	Ambient Dose	
400 N ^(b)	20	Q	Ambient Dose	
US Ecology NE Corner	21	Q	Ambient Dose, DOH ^(c)	
US Ecology SE Corner	22	Q	Ambient Dose, DOH ^(c)	
US Ecology NW Corner	23	Q	Ambient Dose, DOH ^(c)	
US Ecology SW Corner	24	Q	Ambient Dose, DOH ^(c)	
Wye Barricade ^(b)	25	Q	Ambient Dose, DOH ^(c)	
WPPSS 1; S of WNP 2	26	Q	Ambient Dose, DOH ^(c)	
<u>Perimeter^(d)</u>				
Ringold Met Tower ^(b)	1	Q	Ambient Dose	
W End of Fir Road ^(b)	2	Q	Ambient Dose, DOH ^(c)	
Dogwood Met Tower ^(b)	3	Q	Ambient Dose	
Byers Landing ^(b)	4	Q	Ambient Dose	
WPPSS 4; WPS Warehse	5	Q	Ambient Dose, DOH ^(c)	
Horn Rapids Substa ^(b)	6	Q	Ambient Dose	
Prosser Barricade ^(b)	7	Q	Ambient Dose	
Yakima Barricade ^(b)	8	Q	Ambient Dose, DOH ^(c)	
Wahluke Slope ^(b)	9	Q	Ambient Dose	
<u>Community^{(d)(e)}</u>				
Mattawa ^(b)	10	Q	Ambient Dose	
Othello ^(b)	11	Q	Ambient Dose, DOH ^(c)	
Basin City School ^(b)	12	Q	Ambient Dose	PIC
Edwin Markham School ^(b)	13	Q	Ambient Dose	PIC
Leslie Groves Rchld ^(b)	14	Q	Ambient Dose	PIC
Pasco ^(b)	15	Q	Ambient Dose	
Kennewick-Ely Street ^(b)	16	Q	Ambient Dose	
Benton City ^(b)	17	Q	Ambient Dose	

Distant(d)

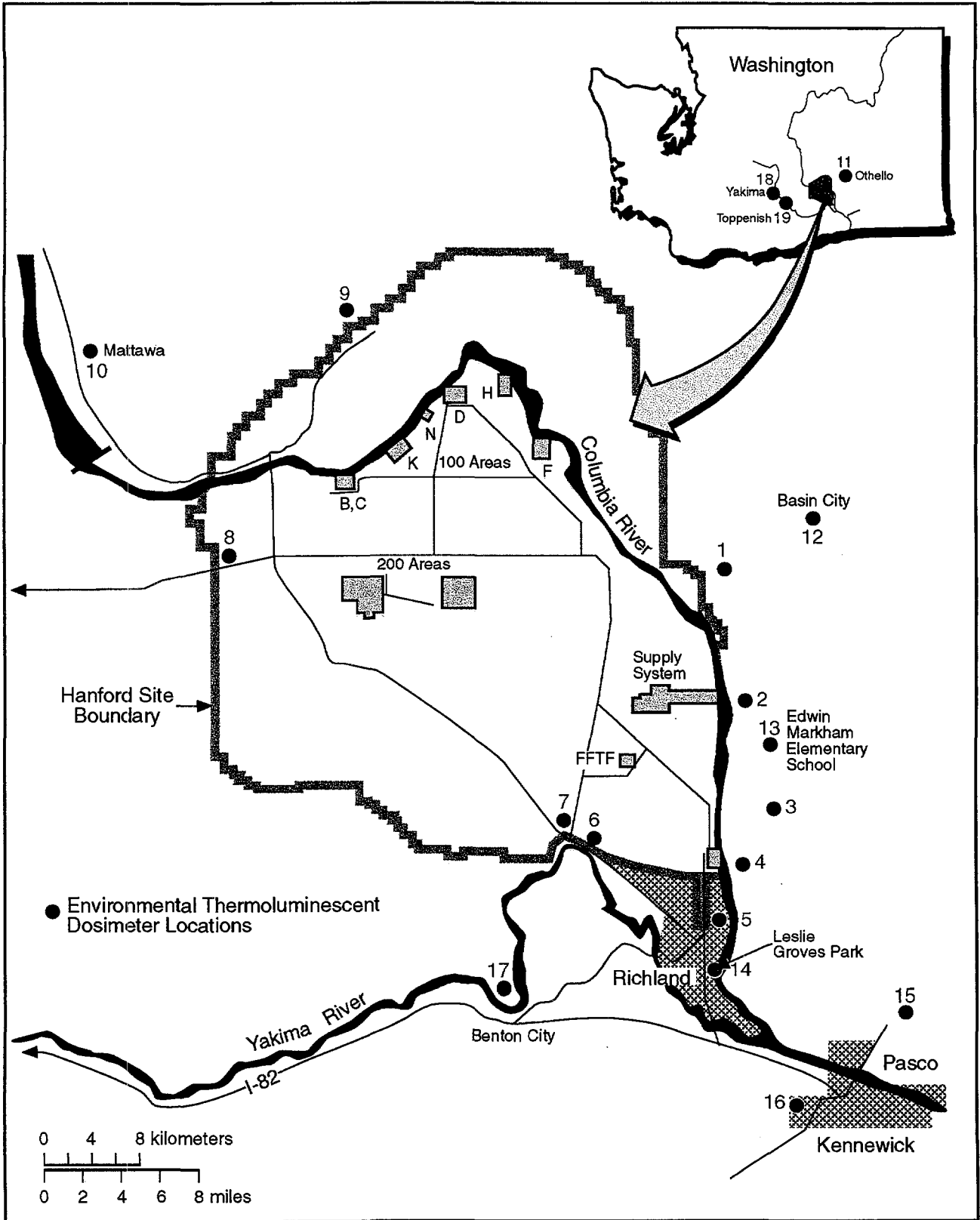
Yakima(b)	18	Q	Ambient Dose, DOH(c)	
Toppenish(b)(e)	19	Q	Ambient Dose, DOH(c)	PIC

-
- (a) Refer to Figure 6.1, 1998 Thermoluminescent Dosimeter (TLD) Locations on the Hanford Site.
 - (b) Collocated with air sampling station.
 - (c) Washington State Department of Health TLD also at this location.
 - (d) Refer to Figure 6.2, Thermoluminescent Dosimeter (TLD) Locations for Perimeter, Community, and Distant Sites.
 - (e) Community-Operated Environmental Surveillance Stations.



SP97120016.6

Figure 6.1. 1998 Thermoluminescent Dosimeter (TLD) Locations on the Hanford Site



SP97120016.7

Figure 6.2. 1998 Thermoluminescent Dosimeter (TLD) Locations for Perimeter, Community, and Distant Sites

6.1.2 Columbia River Shoreline Locations

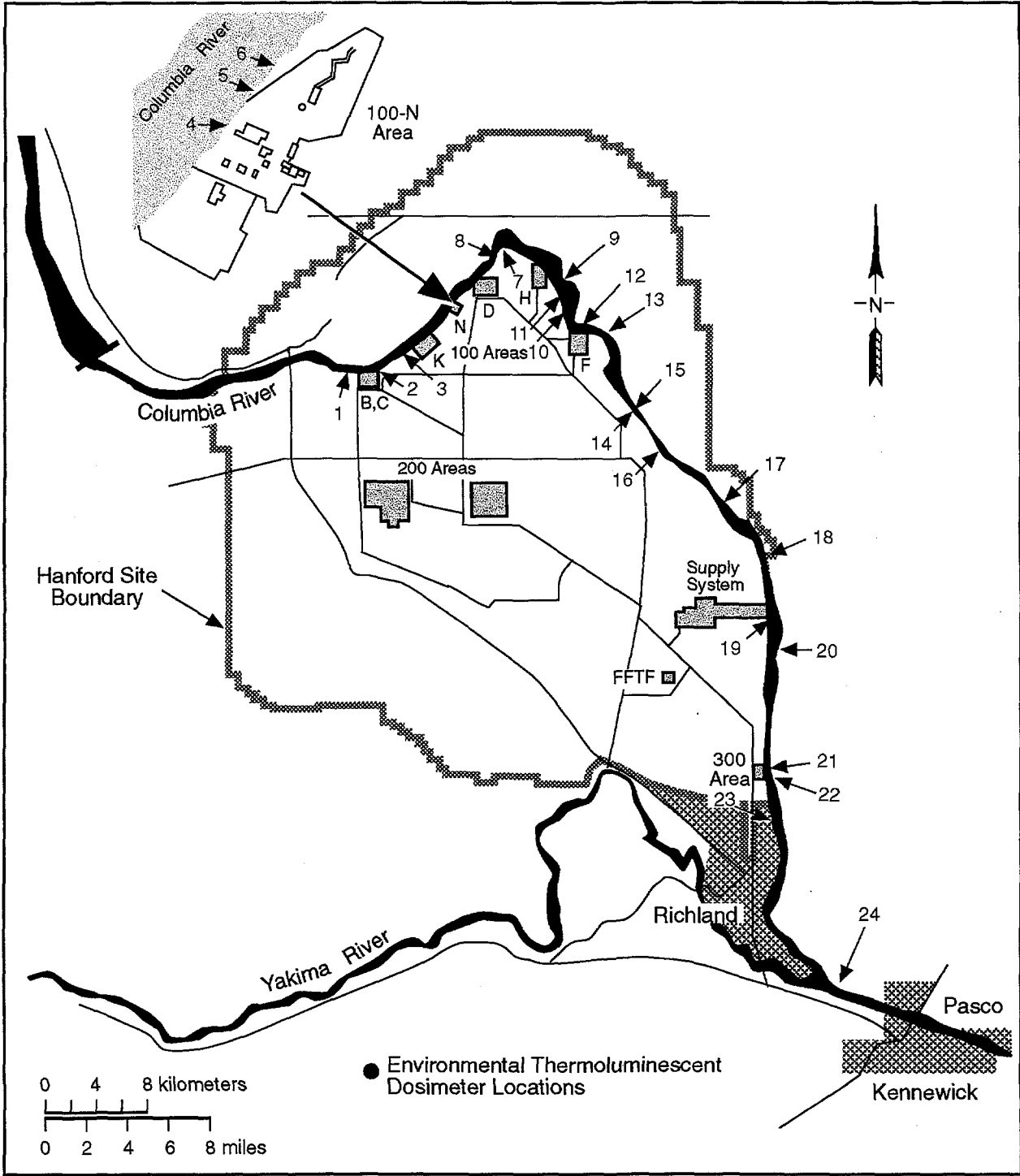
<u>Location (a)</u>	<u>Location Number</u>	<u>Frequency</u>	<u>Measurement</u>
Above 100 B Area	1	Q	Ambient Dose
Below 100 B Ret Basin	2	Q	Ambient Dose
Above 1K Boat Ramp	3	Q	Ambient Dose
Below 100N Outfall	4	Q	Ambient Dose
Above Tip 100N Berm	5	Q	Ambient Dose
100 N Trench Spring	6	Q	Ambient Dose
Below 100 D Area	7	Q	Ambient Dose
100-D Island	8	Q	Ambient Dose
Lo End Locke Isl	9	Q	Ambient Dose
White Bluffs Fy Lnd.	10	Q	Ambient Dose
White Bluffs Slough	11	Q	Ambient Dose
Below 100 F	12	Q	Ambient Dose
100 F Floodplain	13	Q	Ambient Dose
Hanford Slough	14	Q	Ambient Dose
Hanf Powerline Xing	15	Q	Ambient Dose
Hanford RR Track	16	Q	Ambient Dose
Savage Isl Slough	17	Q	Ambient Dose
Ringold Island	18	Q	Ambient Dose
Powerline Crossing	19	Q	Ambient Dose
S End Wooded Island	20	Q	Ambient Dose
Islnd Above 300 Area	21	Q	Ambient Dose
Island Near 300 Area	22	Q	Ambient Dose
Port of Benton-River	23	Q	Ambient Dose
Isl DS Bateman Isl	24	Q	Ambient Dose

(a) Refer to Figure 6.3, 1998 Thermoluminescent Dosimeter (TLD) Locations on the Hanford Reach of the Columbia River.

6.2 COLUMBIA RIVER SHORELINE RADIATION SURVEYS

<u>Location (a)</u>	<u>Location Number</u>	<u>Frequency</u>	<u>Measurement</u>	<u>Instrument</u>
Above 1K Boat Ramp	3	Q	Exposure, Surface contamination	BICRON, GM
Below 100N Outfall	4	Q	Exposure, Surface contamination	BICRON, GM
Above Tip 100N Berm	5	Q	Exposure, Surface contamination	BICRON, GM
100 N Trench Springs	6	Q	Exposure, Surface contamination	BICRON, GM
100-D Island	8	Q	Exposure, Surface contamination	BICRON, GM
Lo End Locke Isl	9	Q	Exposure, Surface contamination	BICRON, GM
White Bluffs Fy Lnd.	10	Q	Exposure, Surface contamination	BICRON, GM
Below 100 F	12	Q	Exposure, Surface contamination	BICRON, GM
Hanf Powerline Xing	15	Q	Exposure, Surface contamination	BICRON, GM
Hanford RR Track	16	Q	Exposure, Surface contamination	BICRON, GM
Ringold Island	18	Q	Exposure, Surface contamination	BICRON, GM
Powerline Crossing	19	Q	Exposure, Surface contamination	BICRON, GM
Isl Above 300 Area	21	Q	Exposure, Surface contamination	BICRON, GM

(a) Refer to Figure 6.3, 1998 Thermoluminescent Dosimeter (TLD) Locations on the Hanford Reach of the Columbia River.



SP97120016.8

Figure 6.3. 1998 Thermoluminescent Dosimeter (TLD) Locations on the Hanford Reach of the Columbia River

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