

APPENDIX A
EFFLUENT, ON-SITE, AND OFF-SITE MONITORING PROGRAM

1988 EFFLUENT, ON-SITE, AND OFF-SITE MONITORING PROGRAM

The following schedule represents the WWD routine Environmental Monitoring Program which was in place in 1988. This schedule meets or exceeds the minimum program needed to satisfy the requirements of DOE Order 5484.1, Chapter III. Specific methods and recommended monitoring program elements are referenced in DOE/EP-0096 (Effluent Monitoring) and DOE/EP-0023 (Environmental Surveillance), and are the bases for selecting most of the schedule specifics. Additional monitoring is mandated by Operational Safety Requirements (OSRs) and air and water discharge permits (40 CFR 61 and SPDES), which also require formal report generation. These specific cases are identified in the schedule under Monitoring/Reporting Requirements.

SUMMARY OF MONITORING PROGRAM CHANGES IMPLEMENTED IN 1988

Most of the sampling points added in 1987 had provided insufficient data to include in the 1987 annual environmental report. Significant 1988 program changes were limited to collection of 1988 data from the sample points (TLDs, air samplers, and water sample points) added in late 1987. A program review of the 1988 Environmental Surveillance activities will be reflected in the 1989 program. No new points were initiated in 1988.

SCHEDULE OF ENVIRONMENTAL SAMPLING

The following table presents a schedule of environmental sampling. Locations of the sampling points are shown on Figures A-1 through A-9. The headings for the table are explained in the following paragraphs. An index is provided to locate sample information and to provide an overview of sample types and names.

Sample Location and I.D. Code - The physical location where the sample is collected is described. The I.D. is a seven-character code which identifies the sample media as Air, Water, Soil/Sediment, Biological, or Direct Measurement, On- or Off-site, and describes the specific location (e.g., AFGRVAL is Air Off-site at Great Valley).

Monitoring/Reporting Requirements - The basis for monitoring that location and any additional references to permits or OSRs are noted.

Sampling Type/Medium - Describes collection method, and the physical characteristics of the media.

Collection Frequency - Sample collection frequency.

Total Annual Samples - Discrete physical samples collected annually, not including composites of collected samples.

Analysis Performed/Composite Frequency - Describes the individual analyses on the samples or composites of samples, and the frequency of analysis.

INDEX OF ENVIRONMENTAL MONITORING PROGRAM SAMPLE POINTS

On-Site Effluent - Air (Figure A-1)

ANSTACK - Main Plant	A-6
ANSTSTK - Supernatant Treatment	A-6
ANSUPCV - Supercompactor	A-7
ANCSSTK - Cement Solidification	A-8
ANCSRFK - Size Reduction Facility	A-8

On-Site Effluent - Water (Figure A-2)

WNSP001 - Lagoon 3 Weir Point	A-9
WNSP003 - SDA Lagoon (NYSERDA)*	A-16
WNSP007 - Sanitary/Utility Discharge	A-10
WNSWAMP - Swamp Drainage Point	A-11
WNSW74A - Swamp Drainage Point	A-11
WNSP008 - French Drain LLWT Area	A-11

On-Site Groundwater (Figure A-4)

HLW Tank Unit Wells	A-12
Lagoon Unit Wells	A-12
NDA Unit Wells	A-12
Facility Area Wells	A-13
NDA Area Wells	A-13
Gas Storage Tank Well	A-13

On-Site Surface Water (Figure A-2)

WNFRC67 - Frank's Creek East	A-14
WNERB53 - Erdman Brook	A-14
WNNDADR - Disposal Area Drainage	A-14
WNDCELD - Drum Cell Drainage	A-14
WNSP005 - South Facility Drainage	A-14
WNSP006 - Facility Main Drainage	A-10
WNCOOLW - Cooling Tower*	A-16
WNDRNKW - Potable Water*	A-16
WNSTAW Series - Standing Water*	A-15

Off-Site Groundwater (Figure A-8)

WFWEL Series - Private Local Wells	A-18
--	------

Off-Site Surface Water (Figure A-7)

WFFELBR - Cattaraugus at Felton Br.	A-17
WFBCTCB - Buttermilk at Thomas Corners	A-17
WFBCKBG - Buttermilk Background	A-17

*Not detailed on map.

Off-Site Ambient Air (Figures A-5 & A-9)

AFFXVRD - Fox Valley Sampler	A-19
AFTCORD - Thomas Corners Sampler	A-19
AFRT240 - Route 240 Sampler	A-19
AFRSPRD - Rock Springs Road Sampler	A-19
AFBOEHN - Dutch Hill Road Sampler	A-19
AFSPRVL - Springville Sampler	A-19
AFWEVAL - West Valley Sampler	A-19
AFGRVAL - Great Valley (background)	A-19
AFDNKRK - Dunkirk (background)	A-19
AFDHFOP - Dutch Hill Fallout*	A-20
AFFXFOP - Fox Valley Fallout*	A-20
AFTCFOP - Thomas Corners Fallout*	A-20
AF24FOP - Route 240 Fallout*	A-20

Off-Site Soil/Sediment *

SFSOL Series - Air Sampler Area Soil	A-20
SFTCSED - Thomas Corners Sediment	A-20
SFBCSED - Buttermilk Background Sed.	A-20
SFSDSED - Cattaraugus at Springville Dam	A-20
SFCCSED - Cattaraugus at Felton Br.	A-20
SFBISED - Cattaraugus Background Sed.	A-20

Off-Site Biological (Figures A-8 & A-9)

BFFCATC - Cattaraugus Creek Fish Downstream	A-21
BFFCATD - Cattaraugus Creek Fish Downstream	A-21
BFFCTRL - Cattaraugus Creek Fish Background	A-21
BFMREED - NNW Milk	A-21
BFMCOBO - WNW Milk	A-21
BFMWIDR - SE Milk	A-21
BFMHAUR - SSW Milk	A-21
BFMCTLS - Milk Background South	A-21
BFMCTLN - Milk Background North	A-21
BFVNEAR - Produce Nearsite	A-22
BFVCTRL - Produce Background	A-22
BFHNEAR - Forage Nearsite	A-22
BFHCTLS - Forage Background South	A-22
BFHCTLN - Forage Background North	A-22
BFBNEAR - Beef Nearsite	A-22
BFBCTRL - Beef Background	A-22
BFDNEAR - Venison Nearsite	A-22
BFDCTRL - Venison Background	A-22

Direct Measurement Dosimetry (Figures A-3, A-6, & A-9)

DFTLD Series - Thermoluminescent LIF Dosimeters	A-23
---	------

*Not detailed on map

1988 EFFLUENT AND ON-SITE MONITORING PROGRAM

<u>SAMPLE LOCATION AND I.D. CODE</u>	<u>MONITORING/REPORTING REQUIREMENTS</u>	<u>SAMPLING TYPE/MEDIUM</u>	<u>COLLECTION FREQUENCY</u>	<u>TOTAL ANNUAL SAMPLES</u>	<u>ANALYSES PERFORMED/ COMPOSITE FREQUENCY</u>
Main Plant Ventilation Exhaust Stack ANSTACK	Airborne radioactive effluent point including LWTS and Vitrification Off-Gas	Continuous off-line air particulate monitor	Continuous measurement of fixed filter, replaced weekly	104	Real time alpha and beta monitoring
		Continuous off-line air particulate and iodine sampler	Weekly collection of filter paper, charcoal absorber, and desiccant	156	Filters for gross alpha/beta, gamma isotopic* and H-3 weekly
	<u>Required by:</u> OSR/TR-GP-1 40 CFR 61	Continuous off-line tritium (as water vapor) sampler			Quarterly composites: filters for Sr-90, Pu/U isotopic, Am-241, gamma isotopic; charcoal for I-129
	<u>Reported:</u> Monthly Environmental Monitoring Trend Analysis				
	Annual Effluent and Onsite Discharge Report				
	Annual Environmental Monitoring Report				
	Air Emissions Annual Report				
Supernatant Treatment System (STS) Ventilation Exhaust ANSTSTK	Same as for ANSTACK				

* Weekly gamma isotopic only if gross activity rises significantly.

1988 EFFLUENT AND ON-SITE MONITORING PROGRAM

<u>SAMPLE LOCATION AND I.D. CODE</u>	<u>MONITORING/REPORTING REQUIREMENTS</u>	<u>SAMPLING TYPE/MEDIUM</u>	<u>COLLECTION FREQUENCY</u>	<u>TOTAL ANNUAL SAMPLES</u>	<u>ANALYSES PERFORMED/ COMPOSITE FREQUENCY</u>
Supercompactor Exhaust ANSUPCV	Airborne radioactive effluent point <u>Required by:</u> OSR/TR-GP-1 40 CFR 61 <u>Reported:</u> Annual Effluent and Onsite Discharge Report Air Emissions Annual Report	Continuous off- line air particulate monitor during operation (maximum of 26 operating weeks expected)	Continuous measurement of fixed filter, collected and replaced every seven operating days, or at least monthly when unit is operated	26	Real time beta monitoring Filters for gross alpha/ beta, gamma isotopic* upon collection Quarterly composites: filters for Sr-90, Pu/U isotopic, Am-241, gamma isotopic

* Weekly gamma isotopic only if gross activity rises significantly.

1988 EFFLUENT AND ON-SITE MONITORING PROGRAM

<u>AMPLE LOCATION AND I.D. CODE</u>	<u>MONITORING/REPORTING REQUIREMENTS</u>	<u>SAMPLING TYPE/MEDIUM</u>	<u>COLLECTION FREQUENCY</u>	<u>TOTAL ANNUAL SAMPLES</u>	<u>ANALYSES PERFORMED/ COMPOSITE FREQUENCY</u>
Cement Solidification System (CSS) Ventilation Exhaust ANCSSTK	Airborne radioactive effluent point <u>Required by:</u> OSR/TR-GP-1 40 CFR 61 <u>Reported:</u> Monthly Environmental Monitoring Trend Analysis Annual Effluent and Onsite Discharge Report Annual Environmental Monitoring Report Air Emissions Annual Report	Continuous off-line air particulate monitor Continuous off-line air particulate and iodine sampler	Continuous measurement of fixed filter, replaced weekly Weekly collection of filter paper and charcoal absorber	104 104	Real time alpha and beta monitoring Filters for gross alpha/beta, gamma isotopic* weekly Quarterly composites: filters for Sr-90, Pu/U isotopic, Am-241, gamma isotopic; charcoal for I-129

Contact Size Reduction Facility Exhaust
ANCSRFK

Same as for ANCSSTK

* Weekly gamma isotopic only if gross activity rises significantly.

1988 EFFLUENT AND ON-SITE MONITORING PROGRAM

<u>SAMPLE LOCATION AND I.D. CODE</u>	<u>MONITORING/REPORTING REQUIREMENTS</u>	<u>SAMPLING TYPE/MEDIUM</u>	<u>COLLECTION FREQUENCY</u>	<u>TOTAL ANNUAL SAMPLES</u>	<u>ANALYSES PERFORMED/ COMPOSITE FREQUENCY</u>
Lagoon 3 Discharge Weir WNSP001	Primary point of liquid effluent batch release	Grab Liquid	Daily, during Lagoon 3 discharge	40-80	Daily: gross beta, conductivity, pH. Every sixth daily sample: gross alpha/beta, H-3, Sr-90, gamma isotopic. Weighted monthly composite of daily samples: gross alpha/beta, H-3, C-14, Sr-90, I-129, gamma isotopic, Pu/U isotopic, Am-241
	<u>Required by:</u> OSR/TR-GP-2 SPDES Permit				
	<u>Reported:</u> Monthly SPDES DMR				
	Annual Effluent and Onsite Discharge Report				
	Annual Environmental Monitoring Report	Composite Liquid	Twice during discharge, near start, and near end	8-10	Two 24 hour composites for Al, NH ₃ , As, BOD-5, Fe, Zn, pH, suspended solids; SO ₄ , NO ₃ , NO ₂ , Cr ⁺⁶ , Cd, Cu, Pb
	Grab Liquid	Twice during discharge, same as composite	8-10	Settleable solids, pH, cyanide, oil and grease	
	Composite Liquid	Annually	1	Annually, a 24 hour composite for: Cr, Ni, Se, Ba, Sb	
	Grab Liquid	Annually	1	Chloroform	

1988 EFFLUENT AND ON-SITE MONITORING PROGRAM

<u>AMPLE LOCATION AND I.D. CODE</u>	<u>MONITORING/REPORTING REQUIREMENTS</u>	<u>SAMPLING TYPE/MEDIUM</u>	<u>COLLECTION FREQUENCY</u>	<u>TOTAL ANNUAL SAMPLES</u>	<u>ANALYSES PERFORMED/ COMPOSITE FREQUENCY</u>
Erdman Brook at Security Fence WNSP006	Combined facility liquid discharge	Continuous proportional sample liquid	*Weekly	52	Gross alpha/beta, H-3, pH, conductivity. Monthly composite: gamma isotopic and Sr-90. Quarterly composite: C-14, I-129, Pu/U isotopic, Am-241
	<u>Required by:</u> OSR/TR-GP-2				
	<u>Reported:</u> Monthly Environmental Monitoring Trend Analysis				
	Annual Environmental Monitoring Report				
Sanitary Waste Discharge WNSP007	Liquid effluent point for sanitary and utility plant combined discharge	24 hr composite liquid	3/month	36	Gross alpha/beta, H-3, suspended solids, NH ₃ , BOD-5, Fe
	<u>Required by:</u> SPDES Permit	Grab	Weekly	52	pH, settleable solids
	<u>Reported:</u> Monthly SPDES DMR	Grab	Annually	1	Chloroform
	Monthly Environmental Monitoring Trend Analysis				
	Annual Effluent and Onsite Discharge Report				
	Annual Environmental Monitoring Report				

*Samples to be split with NYSDOH

1988 EFFLUENT AND ON-SITE MONITORING PROGRAM

<u>SAMPLE LOCATION AND I.D. CODE</u>	<u>MONITORING/REPORTING REQUIREMENTS</u>	<u>SAMPLING TYPE/MEDIUM</u>	<u>COLLECTION FREQUENCY</u>	<u>TOTAL ANNUAL SAMPLES</u>	<u>ANALYSES PERFORMED/ COMPOSITE FREQUENCY</u>
N.E. Swamp Drainage WNSWAMP	Site surface drainage	Grab liquid	Monthly *WNSWAMP only	24	Gross alpha/beta, H-3, pH
North Swamp Drainage WNSW74A	<u>Reported:</u> Annual Effluent and Onsite Discharge Report				
French Drain WNSP008	Drains subsurface water from LLWT lagoon area	Grab liquid	3/month	36	pH, conductivity, BOD-5, Fe
	<u>Reported:</u> Monthly SPDES DMR		Monthly	12	Gross alpha/beta, H-3
	Annual Effluent and Onsite Discharge Report		Annually	1	Ag, Zn

*Replicate sample to NYSDOH

1988 EFFLUENT AND ON-SITE MONITORING PROGRAM

<u>SAMPLE LOCATION AND I.D. CODE</u>	<u>MONITORING/REPORTING REQUIREMENTS</u>	<u>SAMPLING TYPE/MEDIUM</u>	<u>COLLECTION FREQUENCY</u>	<u>TOTAL ANNUAL SAMPLES</u>	<u>ANALYSES PERFORMED/ COMPOSITE FREQUENCY</u>
On-site ground- water	Groundwater monitoring wells around site waste management units	Grab liquid	Semiannual	144	Gross alpha/beta, H-3, gamma isotopic, pH, conductivity, chloride, sulfate, phenols, nitrate, TOC, TOH, As, Ba, Cd, Cr, Fe, Pb, Mn, Hg, Se, Ag, Na
HLW Tank GW Monitoring Unit - Wells: WNW 80-2 86-7 86-8 86-9 86-12* Surface: WNDMPNE*	<u>Reported:</u> Annual Environmental Monitoring Report				
Lagoon GW Monitoring Unit - Wells: WNW 86-6 86-3 86-4 86-5 80-5 80-6 Surface: WNGSEEP WNSP008					
NDA GW Monitoring Unit - Wells: WNW 83-1D 86-10 86-11 82-1D					

*Serves former Cold Dump

1988 EFFLUENT AND ON-SITE MONITORING PROGRAM

<u>AMPLE LOCATION AND I.D. CODE</u>	<u>MONITORING/REPORTING REQUIREMENTS</u>	<u>SAMPLING TYPE/MEDIUM</u>	<u>COLLECTION FREQUENCY</u>	<u>TOTAL ANNUAL SAMPLES</u>	<u>ANALYSES PERFORMED/ COMPOSITE FREQUENCY</u>
In-site ground- water Facility/Plant Area Wells: WNW 80-3 80-4	Groundwater monitoring wells around site facilities <u>Reported:</u> Annual Environmental Monitoring Report	Grab liquid	Semiannual	88	Gross alpha/beta, H-3, gamma isotopic, pH conductivity
NDA Area Wells: WNW 82-1A 82-1B 82-1C 82-2B 82-2C 82-3A 82-4A1 82-4A2 82-4A3					
Fuel Storage Tank Subsurface Monitoring Well: WNW 86-13				2	Gross alpha/beta, H-3, gamma isotopic, pH, conductivity, phenols, TOC, benzene, toluene, xylene

1988 EFFLUENT AND ON-SITE MONITORING PROGRAM

<u>SAMPLE LOCATION AND I.D. CODE</u>	<u>MONITORING/REPORTING REQUIREMENTS</u>	<u>SAMPLING TYPE/MEDIUM</u>	<u>COLLECTION FREQUENCY</u>	<u>TOTAL ANNUAL SAMPLES</u>	<u>ANALYSES PERFORMED/ COMPOSITE FREQUENCY</u>
Franks Creek E of SDA WNFRC67	Drains NYS Low-Level Waste Disposal Area	Grab liquid	*Monthly	12	Gross alpha/beta, H-3, pH
	<u>Reported:</u> Internal review NYSERDA				
Erdman Brook N of Disposal Areas WNERB53	Drains NYS and WVDP disposal areas	Grab liquid	Weekly *Monthly to NYSDOH	52	Gross alpha/beta, H-3, pH
	<u>Reported:</u> Internal Review NYSERDA				
Ditch N of WVDP NDA & SDA WNNDADR	Drains WVDP disposal and storage area	Composite continuous liquid	Weekly	104	Monthly/Composite: gross alpha/beta, gamma isotopic, H-3, pH, Quarterly composite: Sr-90, I-129
	<u>Reported:</u> Internal Review				
Drainage S of Drum Cell WNDCELD	----- Same as WNNDADR, except sample collection is weekly grab -----				

*Replicate sample to NYSDOH

1988 EFFLUENT AND ON-SITE MONITORING PROGRAM

<u>SAMPLE LOCATION AND I.D. CODE</u>	<u>MONITORING/REPORTING REQUIREMENTS</u>	<u>SAMPLING TYPE/MEDIUM</u>	<u>COLLECTION FREQUENCY</u>	<u>TOTAL ANNUAL SAMPLES</u>	<u>ANALYSES PERFORMED/ COMPOSITE FREQUENCY</u>
On-site Standing Water (ponds not receiving effluent)*	Water within vicinity of plant airborne or ground water effluent	Grab liquid	Annually	7-10	Gross alpha/beta, H-3, pH, conductivity, chloride, Fe, Mn, Na, phenols, sulfate
Test Pit N of HLW Area WNSTAW1 Slough SW of RTS Drum Cell WNSTAW2 Pond SE of Heinz Road WNSTAW3 Border Pond S of AFRT240 WNSTAW4 Border Pond SW of DFTLD13 WNSTAW5 Borrow Pit NE of Project Facilities WNSTAW6 Pond SW of Project Facilities W of Rock Springs Road WNSTAW7 Slough N of Quarry Creek WNSTAW8 North Reservoir Near Intake WNSTAW9 Background Pond at Sprague Brook Maintenance Building WNSTAWB	<u>Reported:</u> Internal Review				

*Number of points sampled will depend upon on-site ponding conditions during the year.

1988 EFFLUENT AND ON-SITE MONITORING PROGRAM

<u>SAMPLE LOCATION AND I.D. CODE</u>	<u>MONITORING/REPORTING REQUIREMENTS</u>	<u>SAMPLING TYPE/MEDIUM</u>	<u>COLLECTION FREQUENCY</u>	<u>TOTAL ANNUAL SAMPLES</u>	<u>ANALYSES PERFORMED/ COMPOSITE FREQUENCY</u>
Condensate and Cooling Water Trench WNSP005	Combined drainage from facility yard area <u>Reported:</u> Internal Review	Grab liquid	Monthly	12	Gross alpha/beta, H-3, pH
Cooling Tower Basin WNC00LW	Cools plant utility steam system water <u>Reported:</u> Internal Review	Grab liquid	Monthly	12	Gross alpha/beta, H-3, pH
Site potable water WDRNKW	Source of water within site perimeter <u>Reported</u> Internal Review	Grab liquid	Monthly Annually	12 2	Gross alpha/beta, H-3, pH, conductivity Toxic metals, pesticides chemical pollutants
SDA Holding Lagoon WNSP003	State disposal area holding lagoon <u>Reported:</u> Annual Environmental Monitoring Report NYSERDA	Grab liquid	Annually (as required)	1	Gross alpha/beta, H-3, C-14, pH, gamma isotopic, Sr-90, I-129, Pu/U isotopic

1988 OFF-SITE MONITORING PROGRAM

<u>SAMPLE LOCATION AND I.D. CODE</u>	<u>MONITORING/REPORTING REQUIREMENTS</u>	<u>SAMPLING TYPE/MEDIUM</u>	<u>COLLECTION FREQUENCY</u>	<u>TOTAL ANNUAL SAMPLES</u>	<u>ANALYSES PERFORMED/ COMPOSITE FREQUENCY</u>
Cattaraugus Creek at Felton Bridge WFFELBR	Unrestricted surface waters receiving plant effluents <u>Reported:</u> Monthly Environmental Monitoring Trend Analysis Annual Environmental Monitoring Report	Flow weighted continuous liquid	Weekly *Monthly Composite	52	Weekly for gross alpha/beta, H-3, pH; Monthly composite for gamma isotopic and Sr-90
Buttermilk Creek, Upstream of Cattaraugus Creek Confluence at Thomas Corners Road WFBCTCB	Restricted surface waters receiving plant effluents <u>Reported:</u> Annual Environmental Monitoring Report	Composite continuous liquid	*Biweekly	26	Monthly for gross alpha/beta, H-3, pH; Quarterly composite for gamma isotopic and Sr-90
Buttermilk Creek near Fox Valley WFBCBKG	Restricted surface water background <u>Reported:</u> Monthly Environmental Monitoring Trend Analysis Annual Environmental Monitoring Report	Composite continuous liquid	*Biweekly	26	Monthly for gross alpha/beta, H-3; Quarterly composite for gamma isotopic and Sr-90

*Samples to be split with NYSDOH

1988 OFF-SITE MONITORING PROGRAM

<u>SAMPLE LOCATION AND I.D. CODE</u>	<u>MONITORING/REPORTING REQUIREMENTS</u>	<u>SAMPLING TYPE/MEDIUM</u>	<u>COLLECTION FREQUENCY</u>	<u>TOTAL ANNUAL SAMPLES</u>	<u>ANALYSES PERFORMED/ COMPOSITE FREQUENCY</u>
Wells near WVDP outside WYNSC Perimeter	Drinking supply ground water near facility	Grab liquid	Biennially	6	Gross alpha/beta, H-3, gamma isotopic, pH, conductivity
3.0 km WNW WFWEL01	<u>Reported:</u> Annual Environmental Monitoring Report			(5 + Back- ground well each year of collection)	
1.5 km NW WFWEL02					
4.0 km NW WFWEL03					
3.0 km NW WFWEL04					
2.5 km SW WFWEL05					
29 km S WFWEL06 (background)					
4.0 km NNE WFWEL07					
2.5 km ENE WFWEL08					
3.0 km SE WFWEL09					
7.0 km N WFWEL10					

1988 OFF-SITE MONITORING PROGRAM

<u>SAMPLE LOCATION AND I.D. CODE</u>	<u>MONITORING/REPORTING REQUIREMENTS</u>	<u>SAMPLING TYPE/MEDIUM</u>	<u>COLLECTION FREQUENCY</u>	<u>TOTAL ANNUAL SAMPLES</u>	<u>ANALYSES PERFORMED/ COMPOSITE FREQUENCY</u>
3.0 km SSE at Fox Valley AFFXVRD	Particulate air samples around WNYNSC perimeter	Continuous air particulate	Weekly	660	Weekly (each filter) gross alpha/beta, H-3 (on 3 stations)
3.7 km NNW at Thomas Corners Road AFTCORD	<u>Required by:</u> DOE 5484.1	Continuous H-3, charcoal**			Quarterly: (Each station) composite filters for Sr-90, gamma isotopic; I-129 (on 3 stations)
2.0 km NE on Route 240 AFRT240+	<u>Reported:</u> Annual Environmental Report				
1.5 km NW on Rock Springs Road AFRSPRD**+	Monthly Environmental Monitoring Trend Analysis+				
29 km S at Great Valley (back- ground) AFGRVAL***+					
7 km at Springville AFSPRVL					
6 km SSE at West Valley AFWEVAL					
50 km W at Dunkirk (background) AFDNKRK					
2.3 km SW on Dutch Hill Road AFBOEHN+					

1988 OFF-SITE MONITORING PROGRAM

<u>SAMPLE LOCATION AND I.D. CODE</u>	<u>MONITORING/REPORTING REQUIREMENTS</u>	<u>SAMPLING TYPE/MEDIUM</u>	<u>COLLECTION FREQUENCY</u>	<u>TOTAL ANNUAL SAMPLES</u>	<u>ANALYSES PERFORMED/ COMPOSITE FREQUENCY</u>
2.5 km SW AFDHFOP	Collection of fallout particulate and precipitation around WNYNSC perimeter	Integrating liquid	Monthly	48	Gross alpha/beta, H-3, pH
3.0 km SSE AFFXFOP					
3.7 km NNW AFTCFOP	<u>Reported:</u> Annual Environmental Report				
2.0 km NE AF24FOP					
Surface soil (at each of nine air samplers plus 26 km SSW at Little Valley)	Long-term fallout accumulation <u>Reported:</u> Annual Environmental Monitoring Report	Surface plug composite soil	Triennially	10 (year of collection)	Gamma isotopic, Sr-90, Pu-239, Am-241
SFSOL-Series					
Buttermilk Creek at Thomas Corners Road SFTCSED**	Deposition in sediment downstream of facility effluents	Grab stream sediment	Semiannually *1st sample of SFBCSED and SFSDSED each spring	10	Gross alpha/beta, isotopic gamma and Sr-90
Buttermilk Creek at Fox Valley Road (back- ground) SFBCSED**	<u>Reported:</u> Annual Environmental Monitoring Report		**Annually	2	U/Pu isotopic, Am-241
Cattaraugus Creek at Springville Dam SFSDSED					
Cattaraugus Creek at Bigelow Bridge (back- ground) SFBISED					
Cattaraugus Creek at Felton Bridge SFCCSED					

*Sample to be split with NYSDOH

**Analysis on one of two semiannual collections.

1988 OFF-SITE MONITORING PROGRAM

<u>SAMPLE LOCATION AND I.D. CODE</u>	<u>MONITORING/REPORTING REQUIREMENTS</u>	<u>SAMPLING TYPE/MEDIUM</u>	<u>COLLECTION FREQUENCY</u>	<u>TOTAL ANNUAL SAMPLES</u>	<u>ANALYSES PERFORMED/ COMPOSITE FREQUENCY</u>
Cattaraugus Creek downstream of the Buttermilk Creek confluence BFFCATC	Fish in waters downstream of facility effluents <u>Reported:</u> Annual Environmental Monitoring Report	Individual collection, biological	Semiannually *BFFCATC and BFFCTRL shared with NYSDOH, BFFCATD as sample is available	6 (each sample is 10 fish)	Isotopic gamma and Sr-90 in edible portions of each individual fish.
Cattaraugus Creek downstream of Springville Dam BFFCATD					
Control Sample from nearby stream not affected by WVDP (7 km or more upstream of site effluent point) BFFCTRL					
Dairy Farm, 3.8 km NNW BFMREED	Milk from animals foraging around facility perimeter	Grab biological	Monthly (*BFMREED, BFMCOBO, BFMCTLS, BFMCTLN)	48	Gamma isotopic, Sr-90, I-129 on annual samples and quarterly composites of monthly samples
Dairy Farm, 1.9 km WNW BFMCOBO	<u>Reported:</u> Annual Environmental Monitoring Report		Annual (BFMWIDR, BFMHAUR)	2	
Dairy Farm SE of site BFMWIDR					
Dairy Farm 2.5 km SSW BFMHAUR					
Control location 25 km S BFMCTLS					
Control location, 30 km BFMCTLN					

*Samples shared with NYSDOH

1988 OFF-SITE MONITORING PROGRAM

<u>SAMPLE LOCATION AND I.D. CODE</u>	<u>MONITORING/REPORTING REQUIREMENTS</u>	<u>SAMPLING TYPE/MEDIUM</u>	<u>COLLECTION FREQUENCY</u>	<u>TOTAL ANNUAL SAMPLES</u>	<u>ANALYSES PERFORMED/ COMPOSITE FREQUENCY</u>
(3) Nearby locations BFVNEAR	Fruit and vegetables grown near facility perimeter downwind if possible	Grab biological	*Annually, at harvest	6	Gamma isotopic and Sr-90 analysis of edible portions, H-3 in free moisture
(3) Remote locations (16 km or more from facility) BFVCTRL	<u>Reported:</u> Annual Environmental Monitoring Report				
Beef cattle forage from near site location N BFHNEAR		Grab biological	Annually	2	Gamma isotopic, Sr-90
Milk cow forage from control south location or north location BFHCTLS or BFHCTLN					
Beef animal from nearby farm in downwind direction BFBNEAR	Meat-Beef foraging near facility perimeter, downwind if possible	Grab biological	Semiannually *2nd sample (each fall) to NYSDOH	4	Gamma isotopic and Sr-90 analysis of meat
Beef animal from control location (16 km or more from facility) BFBCTRL	<u>Reported:</u> Annual Environmental Monitoring Report				
In vicinity of the site (3) BFDNEAR	Meat-Deer foraging near facility perimeter	Individual collection biological	*Annually, during hunting season	3	Gamma isotopic and Sr-90 analysis of meat
Control animals (3) (16 km or more from facility) BFDCCTRL	<u>Reported:</u> Annual Environmental Monitoring Report		*During year as available	3	

*Sample to be split with NYSDOH

1988 OFF-SITE MONITORING PROGRAM

<u>SAMPLE LOCATION AND I.D. CODE</u>	<u>MONITORING/REPORTING REQUIREMENTS</u>	<u>SAMPLING TYPE/MEDIUM</u>	<u>COLLECTION FREQUENCY</u>	<u>TOTAL ANNUAL SAMPLES</u>	<u>ANALYSES PERFORMED/ COMPOSITE FREQUENCY</u>
DFTLD Series Thermoluminescent Dosimetry (TLD) (16) at each of 16 compass sectors, at nearest accessible perimeter point #1-16 1500 m NW (downwind receptor) #20 "5 Points" land-fill, 19 km SW (background) #17 Great Valley, 29 km S (background) #23 Springville 7 km N #21 West Valley 5 km SSE #22 Dunkirk, 50 km (background) #37 (3) at corners of SDA #18,19,33 (9) at security fence around site #24,26-34 (5) On-site near operational areas #35,36,38-40 Rock Springs Road 500 m NNW of plant #25 DNTLD (on-site)	Direct radiation around facility <u>Reported:</u> Annual Environmental Monitoring Report	Integrating LiF TLD	Quarterly	160	Quarterly gamma radiation exposure

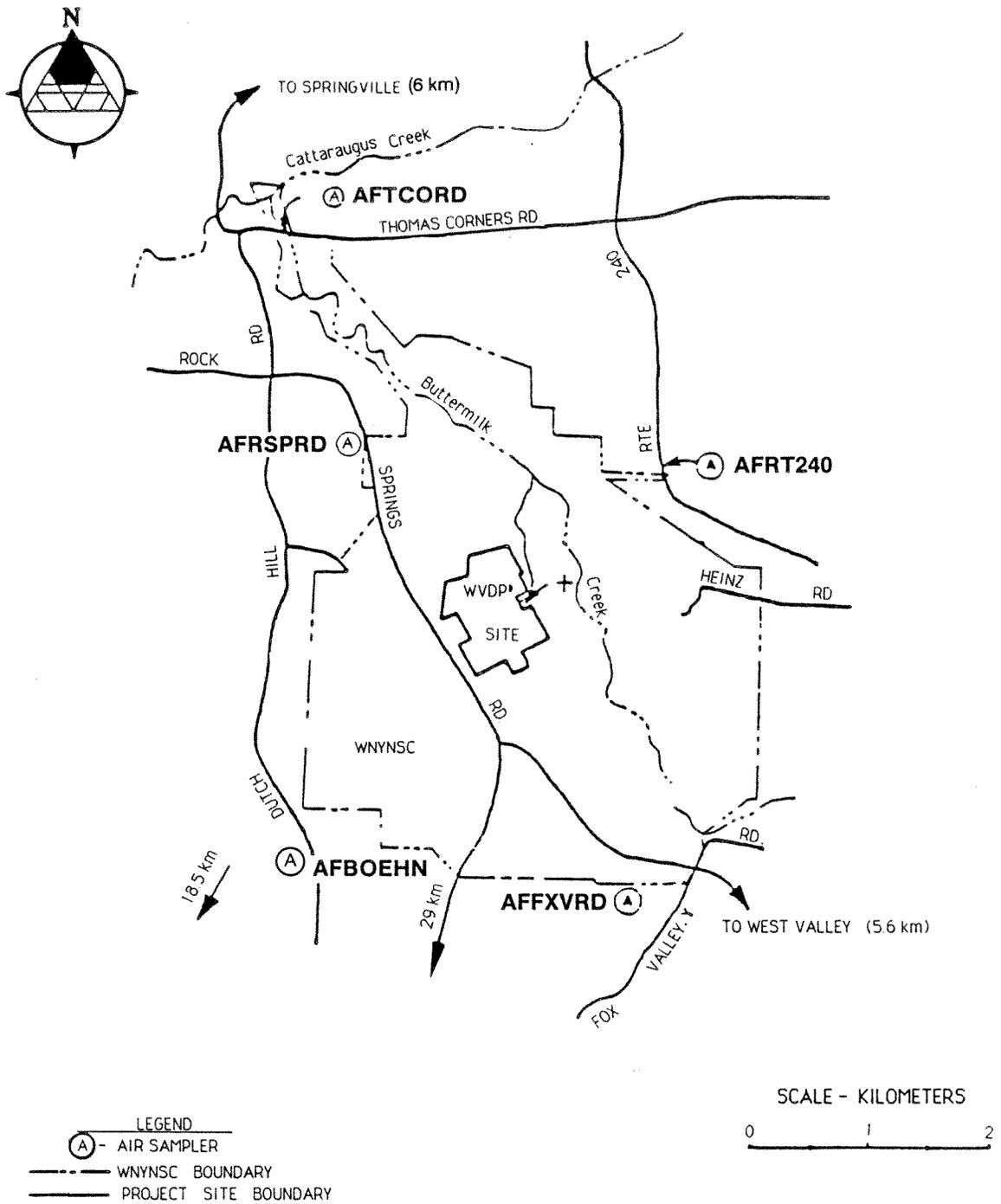


Figure A-5. Location of Perimeter Air Samplers.

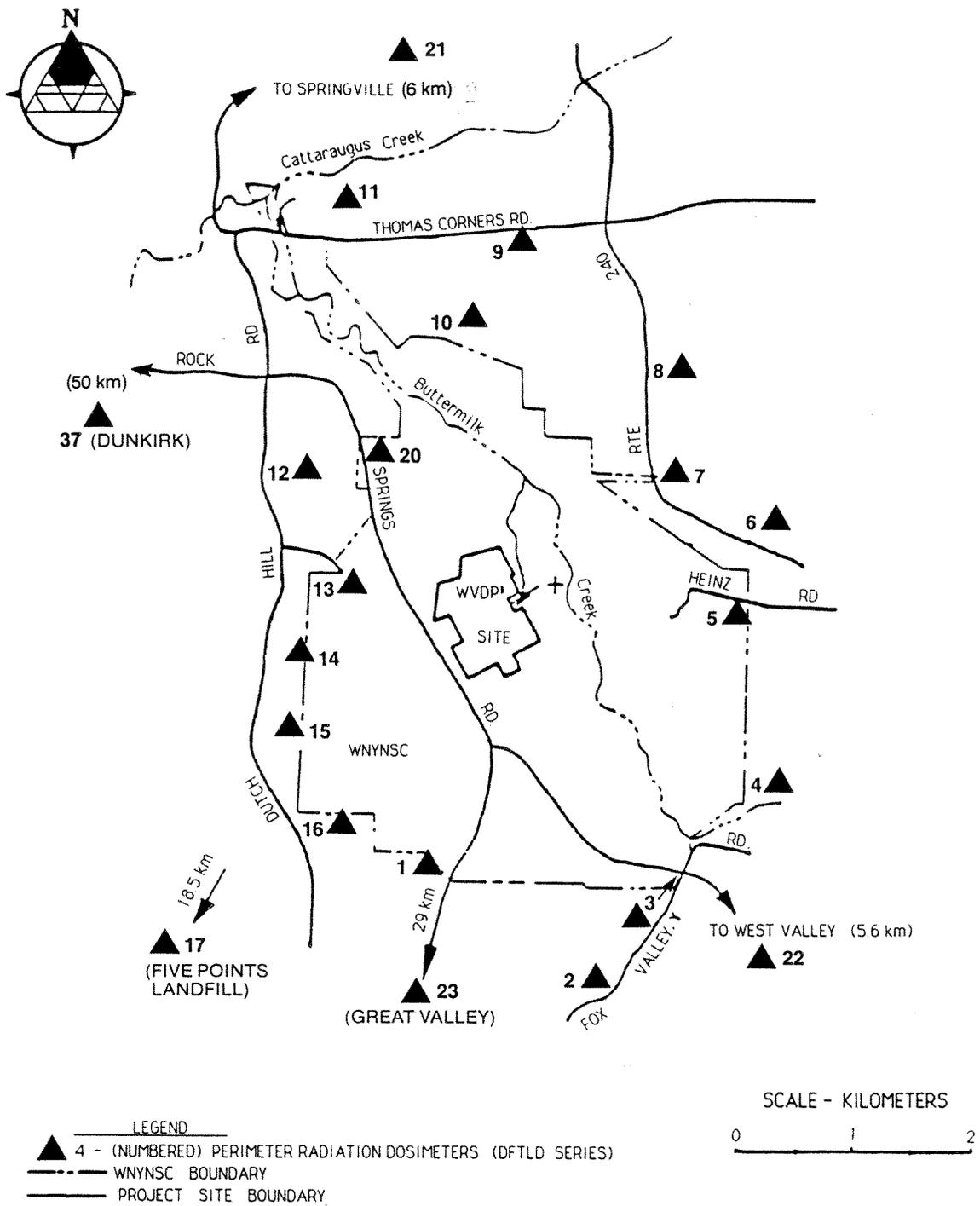


Figure A-6. Location of Off-Site Thermoluminescent Dosimetry (TLD).

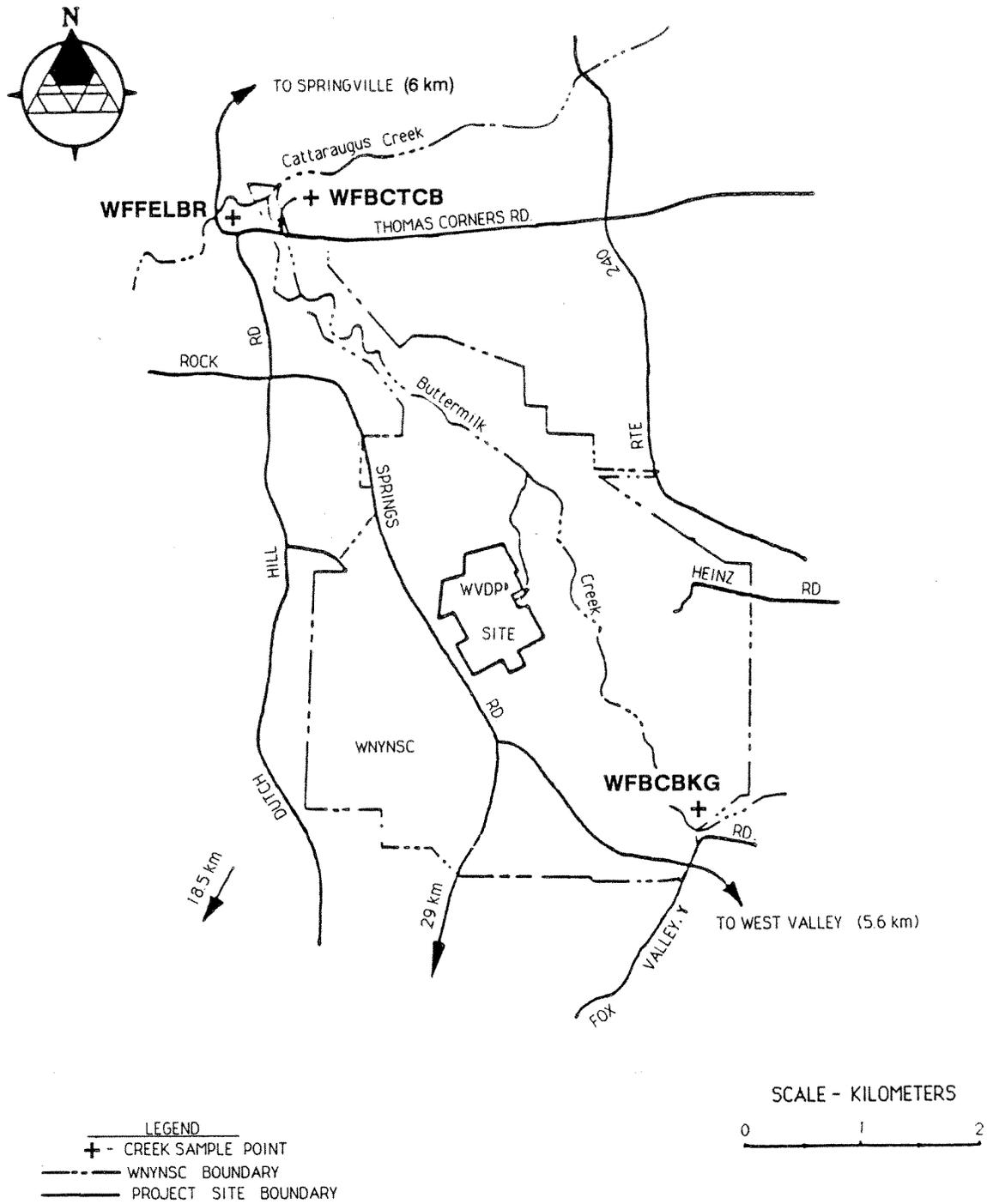


Figure A-7. Location of Off-Site Surface Water Samplers.

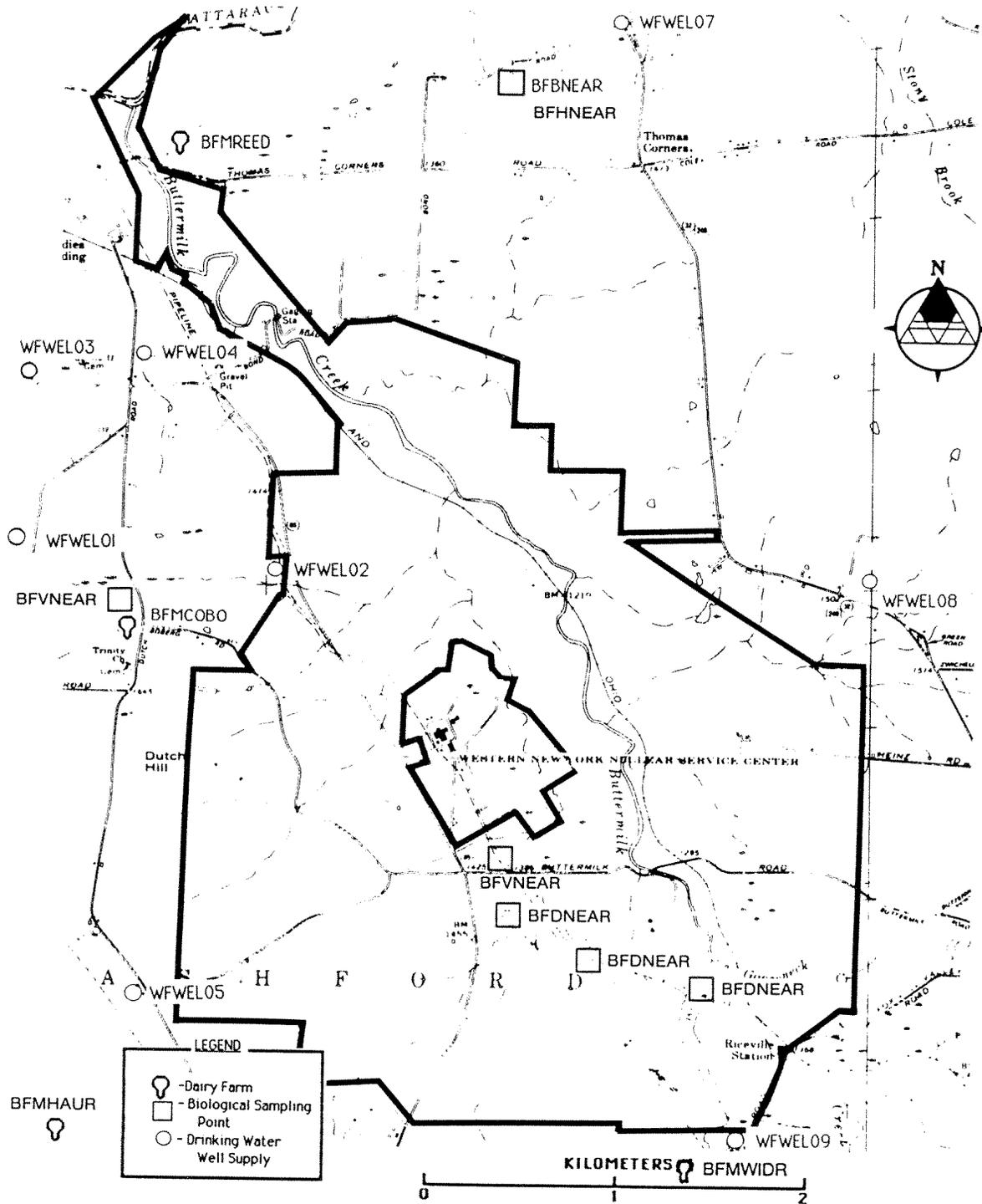


Figure A-8. Near-Site Drinking Water and Biological Sample Points - 1988.

