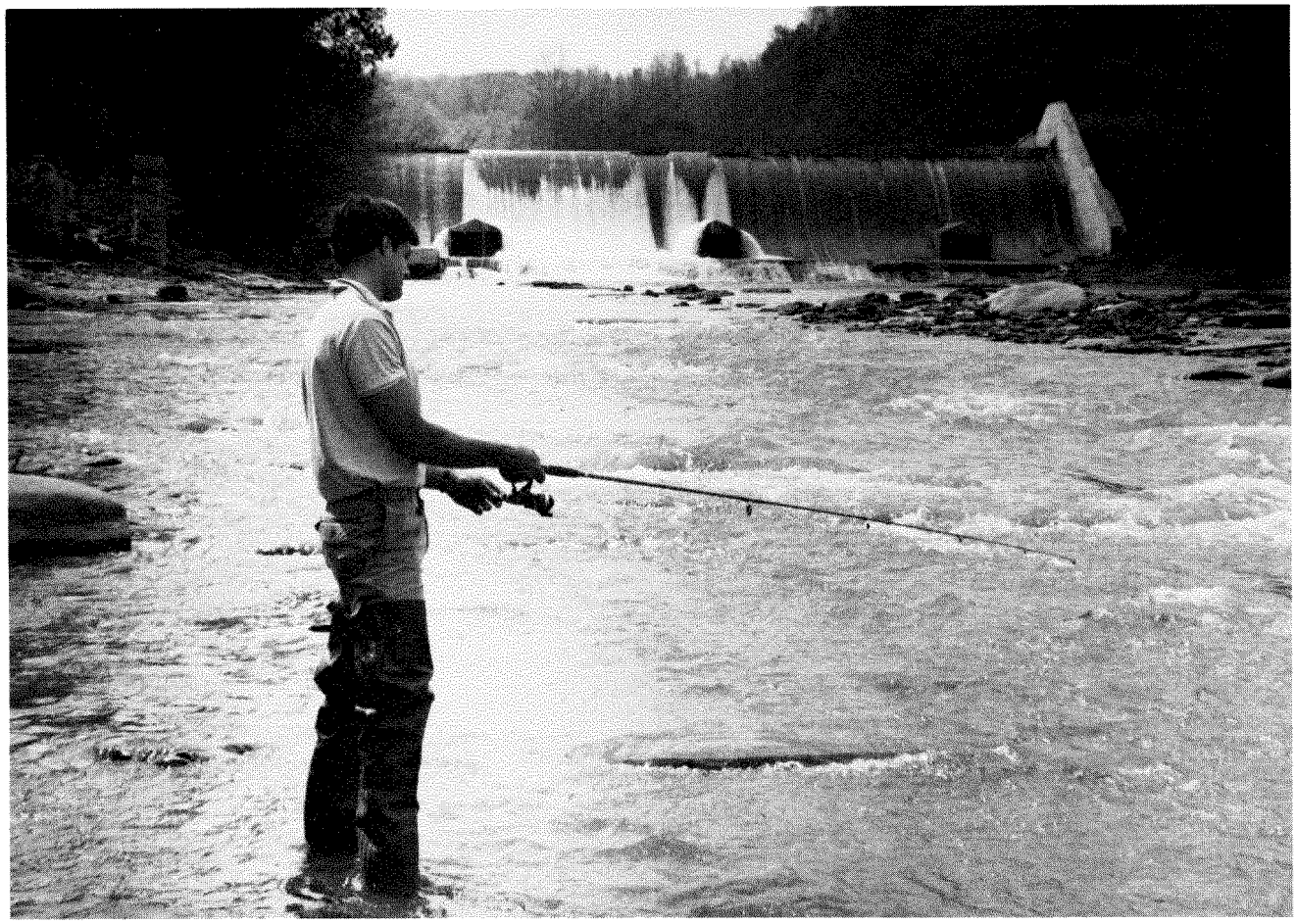

Environmental Sampling —An Art As Well As A Science

APPENDIX A
Effluent On-Site and Off-Site Monitoring Program

1990 Effluent On-Site and Off-Site Monitoring Program

The following schedule represents the West Valley Demonstration Project's routine environmental monitoring program for 1990. This schedule meets or exceeds the minimum program needed to satisfy the requirements of DOE Order 5400.1, which superseded DOE 5484.1A, Chapter III, in late 1988. It also meets requirements of DOE Order 5400.5 and draft DOE Order 5400.6. Specific methods and recommended monitoring program elements are found in DOE/EP-0096, EFFLUENT MONITORING, and DOE/EP-0023, ENVIRONMENTAL SURVEILLANCE, which 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 a formal report. These specific cases are identified in the schedule under MONITORING/REPORTING REQUIREMENTS. The overall environmental program schedule is based on OSR-GP-4.

Schedule Of Environmental Sampling

The following table is a schedule of environmental sampling at the West Valley Demonstration Project. Locations of the sampling points are shown in Figures A-1 through A-9. The index below is a list of the codes for various sample locations. Table headings in the schedule are as follows:

- **Sample Location Code.** The physical location where the sample is collected is described. The code consists of seven characters: The first character identifies the sample medium as **A**ir, **W**ater, **S**oil/Sediment, **B**iological, or **D**irect Measurement. The second character specifies o**N**-site or o**F**f-site. The remaining characters describe the specific location (e.g., **AFGRVAL** is **A**ir O**F**f-site at **GR**eat **VAL**ley).

- **Monitoring/Reporting Requirements.** The reports generated from sample data and the basis for monitoring that location and any additional references to permits or OSRs are noted.

- **Sampling Type/Medium.** This describes the collection method and the physical characteristics of the medium.

- **Collection Frequency.** Indicates how often the samples are collected or retrieved.

- **Total Annual Samples.** The number of discrete physical samples collected annually, not including composites of collected samples.

- **Analyses Performed/Composite Frequency.** The individual analyses of the samples or composites of samples and the frequency of analyses is described.

SUMMARY OF MONITORING PROGRAM CHANGES IMPLEMENTED IN 1990

WNSP001. Analytes added to routine site sampling: To routine discharge grab samples added dichlorodifluoromethane, trichlorofluoromethane, 3,3-dichlorobenzidine, tributyl phosphate, and vanadium. To semianual grab sample added bis(2-ethylhexyl) phthalate and 4-dodecene.

WNSTPBS. New sample location/type added: Sampling of sanitary waste sludge for alpha/beta, H-3.

WNSW74A. Existing site upgraded: Automated sampling put on line in 1990. In 1989 site was grab-sampled monthly and analyzed for gross alpha/beta, H-3, and pH. In 1990 a composite was sampled weekly for gross alpha/beta, H-3, pH and conductivity, a monthly composite was analyzed for gamma isotopic and Sr-90, and a quarterly composite was analyzed for C-14, I-129, Pu/U isotopic and Am-241.

WN8D1DR. New sampling location added: Added weekly sampling of the high-level waste tank farm underdrain for gross alpha/beta, H-3, pH, and a monthly composite for gamma isotopic and Sr-90.

WNDRNKW. 1989 point WNDRNKW (site drinking water) was replaced by four new points monitoring drinking water in the Environmental Laboratory (WNDNKEL), maintenance shop (WNDNKMS), storage tank (WNDNKUR), and main plant (WNDNKMP).

ANRGFOP. New fallout pot added at rain gage by meteorological tower on-site.

SFRSPRD.
SFBOEHN. U- isotopic analysis added at these three soil collection sites.
SFGRVAL.

BFB –
Tritium analysis added to all beef and deer samples.
BFD –

INDEX OF ENVIRONMENTAL MONITORING PROGRAM SAMPLE POINTS

*** Not detailed on map**

(continued on next page)

INDEX OF ENVIRONMENTAL MONITORING PROGRAM SAMPLE POINTS

*** Not detailed on map**

(continued on next page)

INDEX OF ENVIRONMENTAL MONITORING PROGRAM SAMPLE POINTS

1990 EFFLUENT AND ON-SITE MONITORING PROGRAM

SAMPLE LOCATION CODE	MONITORING/REPORTING REQUIREMENTS	SAMPLING TYPE/MEDIUM	COLLECTION FREQUENCY	TOTAL ANNUAL SAMPLES	ANALYSES PERFORMED/ COMPOSITE FREQUENCY
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	N/A	Real time alpha and beta monitoring
Supernatant Treatment System (STS) Ventilation Exhaust **ANSTSTK**	Required by: OSR-GP-1 40 CFR 61	Continuous off-line air particulate filter	Weekly	104 (52 per location)	Gross alpha/beta, gamma isotopic.* Quarterly composite for Sr-90, Pu/U isotopic, Am-241, gamma isotopic
	Reported: Monthly Environmental Monitoring Trend Analysis	Continuous off-line desiccant column for water vapor collection	Weekly	104 (52 per location)	H-3
	Annual Effluent and On-Site Discharge Report	Continuous off-line charcoal cartridge	Weekly	104 (52 composited to 4 per location)	Quarterly composite for I-129
	Annual Environmental Monitoring Report				
	Air Emission Annual Report (NESHAP)				

*Weekly gamma isotopic only if gross activity rises significantly.

ANSTACK	Draft DOE 5400.6, III.1; OSR-GP-1, 1.A, 2.B; and DOE/EP-0096, 3.3. Monitors and samples HEPA-filtered ventilation from most process areas, including cell ventilation, vessel off gas, FRS and head end ventilation, analytical area.
ANSTSTK	Draft DOE 5400.6, III.1; OSR-GP-1, 1.B, 2.B; and DOE/EP-0096, 3.3. Monitors and samples HEPA-filtered ventilation from building areas involved in treatment of high-level waste supernatant.

1990 EFFLUENT AND ON-SITE MONITORING PROGRAM

SAMPLE LOCATION CODE	MONITORING/REPORTING REQUIREMENTS	SAMPLING TYPE/MEDIUM	COLLECTION FREQUENCY	TOTAL ANNUAL SAMPLES	ANALYSES PERFORMED/ COMPOSITE FREQUENCY
Cement Solidification System (CSS) Ventilation Exhaust **ANCSSTK**	Airborne radioactive effluent point Required by: OSR-GP-1 40 CFR 61	Continuous off-line air particulate monitor	Continuous measurement of fixed filter, replaced weekly	N/A	Real-time alpha and beta monitoring
Contact Size Reduction Facility Exhaust **ANCSRFK**	Reported: Monthly Environmental Monitoring Trend Analysis	Continuous off-line air particulate filter	Weekly	104 (52 per location)	Gross alpha/beta, gamma isotopic.* Quarterly composite for Sr-90, Pu/U isotopic, Am-241, gamma isotopic.
	Annual Effluent and On-site Discharge Report	Continuous off-line charcoal cartridge.	Weekly	104 (52 composited to 4 per location)	Quarterly composite for I-129
	Annual Environmental Monitoring Report				
	Air Emissions Annual Report (NESHAP)				

*Weekly gamma isotopic only if gross activity rises significantly.

ANCSSTK	Draft DOE 5400.6, III.1; OSR-GP-1, 1.B, 2.B; AND DOE/EP-0096, 3.3. Monitors and samples HEPA-filtered ventilation from process areas and cell used for decontaminated high-level radioactive supernatant solidification with cement.
ANCSRFK	Draft DOE 5400.6, III.1; OSR-GP-1, 1.B, 2.B; and DOE/EP-0096, 3.3. Monitors and samples HEPA-filtered ventilation from process area where radioactive tanks, pipes, and other equipment are reduced in volume by cutting with a plasma torch.

1990 EFFLUENT AND ON-SITE MONITORING PROGRAM

SAMPLE LOCATION CODE	MONITORING/REPORTING REQUIREMENTS	SAMPLING TYPE/MEDIUM	COLLECTION FREQUENCY	TOTAL ANNUAL SAMPLES	ANALYSES PERFORMED/ COMPOSITE FREQUENCY
Supercompactor Exhaust **ANSUPCV**	Airborne radioactive effluent point Required by: OSR-GP-1 40 CFR 61 Reported: Monthly Environmental Monitoring Trend Analysis Annual Effluent and On-site Discharge Report Annual Environmental Monitoring Report Air Emissions Annual Report (NESHAP)	Continuous off-line air particulate monitor during operation Continuous off-line air particulate filter. (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	N/A 26 26 composited to 4	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.

ANSUPCV	Draft DOE 5400.6, III.1; OSR-GP-1, 1.B, 2.B; and DOE/EP-0096, 3.3. Monitors and samples HEPA-filtered ventilation from area where low-level radioactive waste volume is reduced by compaction.

1990 EFFLUENT AND ON-SITE MONITORING PROGRAM

SAMPLE LOCATION CODE	MONITORING/REPORTING REQUIREMENTS	SAMPLING TYPE/MEDIUM	COLLECTION FREQUENCY	TOTAL ANNUAL SAMPLES	ANALYSES PERFORMED/ COMPOSITE FREQUENCY
Lagoon 3 Discharge Weir **WNSP001**	Primary point of liquid effluent batch release Required by: OSR-GP-2 SPDES Permit Reported: Monthly SPDES DMR	Grab liquid	Daily, during Lagoon 3 discharge	40-80	Daily: gross beta, conductivity, pH, flow. 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
	Annual Effluent and On-site Discharge 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, Ni
	Annual Environmental Monitoring Report	Grab liquid	Twice during discharge, same as composite	8-10	Settleable solids, pH, cyanide amenable to chlorination, oil and grease, Dichlorodifluoromethane, Trichlorofluoromethane, 3,3-Dichlorobenzidine, Tributylphosphate, Vanadium
		Composite liquid	Annually	1	Annually, a 24-hour composite for: Cr, Se, Ba, Sb
		Grab liquid	Annually	1	Chloroform
		Grab liquid	Semiannually	2	Bis(2-Ethylhexyl) Phthalate, 4-Dodecene

WNSP001

DOE 5400.5 and Draft DOE 5400.6, II.4.c.(1).

By regulation, all liquid effluent streams from DOE facilities shall be evaluated and their potential for release of radionuclides addressed.

New York State SPDES permit No. NY0000973.

These regulations are met for radiological parameters by daily grab sampling during periods of Lagoon 3 discharge. Sampling for chemical constituents is performed near the beginning and end of discharge periods to meet the site SPDES permit. Both grab samples and 24-hour composite samples are collected.

1990 EFFLUENT AND ON-SITE MONITORING PROGRAM

SAMPLE LOCATION CODE	MONITORING/REPORTING REQUIREMENTS	SAMPLING TYPE/MEDIUM	COLLECTION FREQUENCY	TOTAL ANNUAL SAMPLES	ANALYSES PERFORMED/ COMPOSITE FREQUENCY
Frank's Creek at Security Fence **WNSP006**	Combined facility liquid discharge Required by: OSR-GP-2 Reported: Monthly Environmental Monitoring Trend Analysis Annual Environmental Monitoring Report	Timed continuous composite 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.
Sanitary Waste Discharge **WNSP007**	Liquid effluent point for sanitary and utility plant combined discharge	24 hour composite liquid	3/month	36	Gross alpha/beta, H-3, suspended solids, NH_3, BOD-5, Fe
	Required by: SPDES Permit	Grab liquid	Weekly	52	pH, settleable solids
	Reported: Monthly SPDES DMR Monthly Environmental Monitoring Trend Analysis Annual Effluent and On-site Discharge Report Annual Environmental Monitoring Report	Grab liquid	Annually	1	Chloroform
Sanitary Waste Sludge **WNSTPBS**	Operational STP Monitoring	Grab sludge	On demand (at least monthly)	12	Alpha/beta, H-3

*Samples collected simultaneously for NYSDOH.

WNSP006	Draft DOE 5400.6, V.11.a.(1).(d). See WNSP001 for radiological rationale.
WNSP007	Draft DOE 5400.6, II.4.c.(1). Sampling rationale is based on New York State SPDES permit No. NY0000973 and DOE 5400.5 criteria for discharge of radioactivity to and from the sewage treatment plant.
WNSTPBS	DOE 5400.5. Composite of STP surge tank, sludge holding tank, and clarifier sludge analyzed for operational screening.

1990 EFFLUENT AND ON-SITE MONITORING PROGRAM

SAMPLE LOCATION CODE	MONITORING/REPORTING REQUIREMENTS	SAMPLING TYPE/MEDIUM	COLLECTION FREQUENCY	TOTAL ANNUAL SAMPLES	ANALYSES PERFORMED/ COMPOSITE FREQUENCY
N.E. Swamp Drainage **WNSWAMP***	Site surface drainage	Grab liquid	Monthly	12	Gross alpha/beta, H-3, pH
North Swamp Drainage **WNSW74A**	Reported: Annual Effluent and On-site Discharge Report	Timed continuous composite liquid	Weekly	52	Gross alpha/beta, H-3, pH, conductivity Monthly composite: gamma isotopic, Sr-90. Quarterly composite: C-14, I-129, Pu/U isotopic, Am-241
High-level waste farm underdrain **WN8D1DR**	Drains subsurface water from HLW storage tank area. Reported: Monthly Environmental Monitoring Trend Analysis	Grab liquid	Weekly	52	Gross alpha/beta, H-3, pH. Monthly composite: gamma isotopic, Sr-90.
French Drain **WNSP008**	Drains subsurface water from LLWT Lagoon area	Grab liquid	3/month	36	pH, conductivity, BOD-5, Fe
	Required by: SPDES Permit		Monthly	12	Gross alpha/beta, H-3
	Reported: Monthly SPDES DMR		Annually	1	Ag,Zn
	Annual Effluent and On-Site Discharge Report				
	Annual Environmental Monitoring Report				

*Samples collected simultaneously for NYSDOH.

WNSWAMP	Draft DOE 5400.6, V.11.a.(1).(b). NE site surface water drainage; provides for the sampling of this discrete drainage path for uncontrolled surface waters just before they leave the site's controlled boundary. Waters collected represent surface and subsurface drainages from the construction and demolition debris landfill (CDDL), old hardstand areas and other possible north plateau sources of radiological or nonradiological contamination.
WNSW74A	Draft DOE 5400.6, V.11.a.(1).(b). N site surface water drainage; provides for the sampling of this discrete drainage path for uncontrolled surface waters just before they leave the site's controlled boundary. Waters collected represent surface and subsurface drainages from Lag Storage areas and other possible north plateau sources of radiological or nonradiological contamination.
WN8D1DR	Draft DOE 5400.6, V.11.a.(3).(a). Monitors the potential influence on subsurface drainage surrounding the high-level waste tank farm.
WNSP008	Draft DOE 5400.6, II.4.c.(1). French drain of subsurface water from lagoon (LLWTF) area. NYSDEC SPDES permit also provides for the sampling of this discrete drainage path for uncontrolled subsurface waters before they flow into Erdman Brook. Waters collected represent subsurface drainages from downward infiltration around the LLWTF and lagoon systems. This point would also monitor any subsurface spillover from the overfilling of Lagoons 2 and 3. Sampling of significance for both radiological and nonradiological contamination.

1990 EFFLUENT AND ON-SITE MONITORING PROGRAM

SAMPLE LOCATION CODE	MONITORING/REPORTING REQUIREMENTS	SAMPLING TYPE/MEDIUM	COLLECTION FREQUENCY	TOTAL ANNUAL SAMPLES	ANALYSES PERFORMED/ COMPOSITE FREQUENCY
Facility Yard Drainage **WNSP005**	Combined drainage from facility yard area Reported: Internal Review	Grab liquid	Monthly	12	Gross alpha/beta, H-3, pH
Cooling Tower Basin **WNCOOLW**	Cools plant utility steam system water Reported: Internal Review	Grab liquid	Monthly	12	Gross alpha/beta, H-3, pH
WNDNK Series Site Potable Water	Source of water within site perimeter	Grab Liquid	Monthly	48 (12 per location)	Gross alpha/beta, H-3, pH
Environmental Lab Drinking Water **WNDNKEL** Maintenance Shop Drinking Water **WNDNKMS** Potable Water Storage Tank (UR) **WNDNKUR** Main Plant Drinking Water **WNDNKMP**	Reported: Internal Review		Annually*	2	Toxic metals, pesticides, chemical pollutants
SDA Holding Lagoon **WNSP003**	State Disposal Area Holding Lagoon Reported: 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

*WNDNKEL nd WNDKUR only.

WNSP005 Facility yard surface water drainage; generally in accordance with draft DOE 5400.6, V.11.a.(1).(b). Formerly, in accordance with NYSDEC SPDES permit No. NY0000973.

Provides for the sampling of this discrete drainage path for uncontrolled surface waters just after outfall 007 discharge into the drainage and before they flow to Erdman Brook. Waters collected represent surface and subsurface drainages primarily from the main plant yard area. Historically this point was used to monitor sludge pond(s) and utility room discharges to the drainage. These two sources have been rerouted. Migration of residual site contamination around the main plant dictates surveillance of this point for radiological parameters primarily.

WNCOOLW Facility cooling tower circulation water; generally in accordance with draft DOE 5400.6, V.11.a.(1).(b).

Operational sampling carried out to confirm no migration of radiological contamination into the primary coolant loop of the HLWTF and/or plant utility steam systems. Migration from either source might indicate radiological control failure. Process knowledge indicates that radiological monitoring is of primary significance.

WNDNKEL Site drinking water; generally according to draft DOE 5400.6, V.11.a.(2).

Potable water sampling carried out to confirm no migration of radiological and/or nonradiological contamination into the site's drinking water supply. Sampled at the Environmental Laboratory in order to monitor the point farthest away from the point of potable water generation.

WNDNKMS Site drinking water; generally in accordance with draft DOE 5400.6, V.11.a.(2).

Same rationale as WNDNKEL but sampled at the maintenance shop in order to monitor a point that is at an intermediate distance from the point of potable water generation and that is used heavily by site personnel.

WNDNKUR Site drinking water; generally in accordance with draft DOE 5400.6, V.11.a.(2).

Same rationale as WNDNKEL but sampled at the Utility Room so as to monitor the point closest to the point of potable water generation.

WNDNKMP Site drinking water; generally in accordance with draft DOE 5400.6, V.11.a.(2).

Same rationale as WNDNKMS but sampled at the main plant water fountain. (Site was previously coded as WNDNKLR).

WNSP003 SDA effluent and area surface water holding lagoon; generally in accordance with draft DOE 5400.6, II.4.c.(1). Formerly, in accordance with NYSDEC SPDES permit No. NY0000973.

Operational sampling carried out to characterize waters contained within SDA holding lagoon. Characterization for radiological constituents only as per agreement with NYSERDA.

1990 EFFLUENT AND ON-SITE MONITORING PROGRAM

SAMPLE LOCATION CODE	MONITORING/REPORTING REQUIREMENTS	SAMPLING TYPE/MEDIUM	COLLECTION FREQUENCY	TOTAL ANNUAL SAMPLES	ANALYSES PERFORMED/ COMPOSITE FREQUENCY
Frank's Creek E of SDA **WNFRC67**	Drains NYS Low-Level Waste Disposal Area Reported: Internal review NYSERDA	Grab liquid	*Monthly	12	Gross alpha/beta, H-3, pH
Erdman Brook N of Disposal Areas **WNERB53**	Drains NYS and WVDP disposal areas Reported: Internal review NYSERDA	Grab liquid	Weekly *Monthly	52	Gross alpha/beta, H-3, pH
Ditch N of WVDP NDA & SDA **WNNDADR**	Drains WVDP disposal and storage area Reported: Internal review Environmental Monitoring Trend Analysis	Timed continuous composite liquid	Weekly	52	pH Monthly composite: gross alpha/beta, gamma isotopic, H-3. Quarterly composite: Sr-90, I-129
Drainage S of Drum Cell **WNDCELD**	Reported: Internal review	Grab liquid	Weekly	52	pH Monthly composite: gross alpha/beta, gamma isotopic, H-3. Quarterly composite: Sr-90, I-129

*Samples collected simultaneously for NYSDOH.

WNFRC67	Draft DOE 5400.6, V.11.a.(1).(a). Monitoring the potential influence of both the New York State low-level waste disposal area (SDA) and drum cell drainage into Frank's Creek east of the SDA and upstream of the confluence with Erdman Brook.
WNERB53	Draft DOE 5400.6, V.11.a.(1).(a). Monitors the potential influence of the drainages from the SDA and the WVDP disposal area into Erdman Brook upstream of the confluence with Frank's Creek.
WNNDADR	Draft DOE 5400.6, V.11.a.(1).(a). Monitors the potential influence of the WVDP storage and disposal area drainage into Lagoon Road Creek upstream from confluence with Erdman Brook.
WNDCELD	Draft DOE 5400.6, V.11.a.(1).(a). Monitors potential influence of drum cell drainage into Frank's Creek south of the SDA and upstream of WNFRC67.

1990 EFFLUENT AND ON-SITE MONITORING PROGRAM

SAMPLE LOCATION CODE	MONITORING/REPORTING REQUIREMENTS	SAMPLING TYPE/MEDIUM	COLLECTION FREQUENCY	TOTAL ANNUAL SAMPLES	ANALYSES PERFORMED/ COMPOSITE FREQUENCY
On-site Standing Water (ponds not receiving effluent) **WNSTAW Series**	Water within vicinity of plant airborne or ground-water effluent Reported: Internal Review	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 SW 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**					

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

WNSTAW Series	Draft DOE 5400.6, V.11.a.(1).(b). Monitoring of on- and off-site standing waters at locations listed below. Although none receive effluent directly, the potential for contamination is present except at the background location.
WNSTAW1	Test pit area located north of the main plant and high-level waste storage. Location is within the inner security fence in an area of high vehicular traffic and construction. Does not appear to be drained off-site via known pathways. Periodically goes dry.
WNSTAW2	Slough southwest of RTS drum cell. Standing water close to drum cell storage area.
WNSTAW3	Pond southeast of Heinz Road.
WNSTAW4	Border pond located south of AFRT240. Chosen to be a location for obtaining high potential concentration based on meteorological data. Perimeter location adjacent to a working farm. Drainage extends through private property and is accessible to public.
WNSTAW5	Border pond located west of Project facilities near the perimeter fence and DFTLD13. Chosen to be a location for obtaining high potential concentration based on meteorological data. Location is adjacent to private residence and potentially accessible by the general public.
WNSTAW6	Borrow pit northeast of Project facilities just outside of inner security fence. Considered to be the closest standing water to the main plant and high-level waste facilities (in lieu of the availability of WNSTAW1).
WNSTAW7	Pond southwest of Project facilities west of Rock Springs Road.
WNSTAW8	Slough north of Quarry Creek.
WNSTAW9	North reservoir near intake. Chosen to provide data in the event of potentially contaminated site potable water supply. Location is south of main plant facilities.
WNSTAWB	Pond located near the Sprague Brook maintenance building. Considered a background location approximately 14 km north of the WVDP.

1990 EFFLUENT AND ON-SITE MONITORING PROGRAM

SAMPLE LOCATION CODE	MONITORING/REPORTING REQUIREMENTS	SAMPLING TYPE/MEDIUM	COLLECTION FREQUENCY	TOTAL ANNUAL SAMPLES	ANALYSES PERFORMED/ COMPOSITE FREQUENCY
On-site Groundwater	Groundwater monitoring wells around site is solid waste management units (SWMUs)	Grab liquid	4 times semiannually (8 samples yearly per well)**	136	Gross alpha/beta, H-3, gamma isotopic, chloride, sulfate, phenols, F, nitrate, TOC, TOX, As, Ba, Cs, Cr, Fe, Pb, Mn, Hg, Se, Ag, Na (Metals = total and soluble)
HLW Tank GW Monitoring Unit Wells: **WNW 80-2 86-7 86-8 86-9 86-12*** Surface: **WNDMPNE***	Reported: Annual Environmental Monitoring Report	Direct measurement of sample discharge water	Before and after grab sample collection	272 (2 measurements per sample collection event)	Temperature, pH, conductivity
Lagoon GW Monitoring Unit Wells: **WNW 86-6 86-3 86-4 86-5 80-6** Surface: **WNGSEEP WNSP008**					
NDA GW Monitoring Unit Wells: **WNW 83-1D 86-10 86-11 82-1D**					

* Serves former construction and demolition debris landfill (CDDL)

** Sampling and analysis conducted as outlined in the RCRA Groundwater Technical Enforcement Guidance Document (EPA OSWER 9950.1) and the Statistical Analysis of Monitoring Data at RCRA Facilities (EPA/530-SW-89-026).

On-site Groundwater	DOE Orders 5400.1, IV.9; Draft DOE 5400.6, V.11.a.(3); 40 CFR Part 264, Subpart F; and 40 CFR 265, Subpart F.

The on-site WVDP groundwater monitoring program focuses on radiological and chemical surveillance of both active and inactive solid waste management units (SWMUs). The program allows for the determination of water quality. In addition, using wells situated hydraulically upgradient (background) and downgradient of SWMUs allows for both detection of groundwater contamination and evaluation of the effects associated with the individual SWMUs.

The groundwater monitoring program is currently being expanded from three SWMUs to include eleven combined super SWMUs. This program expansion is covered in the "Sampling and Analysis Plan (SAP) Groundwater Monitoring Network," Draft W, October 1990, and in the Annual Site Groundwater Protection Management Program Plan, WVDP-091.

1990 EFFLUENT AND ON-SITE MONITORING PROGRAM

SAMPLE LOCATION CODE	MONITORING/REPORTING REQUIREMENTS	SAMPLING TYPE/MEDIUM	COLLECTION FREQUENCY	TOTAL ANNUAL SAMPLES	ANALYSES PERFORMED/ COMPOSITE FREQUENCY
On-site Groundwater	Groundwater monitoring wells around site facilities	Grab liquid	Semiannually	22* (2 per location)	Gross alpha/beta, H-3, gamma isotopic
Facility/Plant Area Wells: **WNW** **80-3** **80-4**	Reported: Annual Environmental Monitoring Report	Direct measurement of sample discharge water	Before and after grab sample collection	44* (two measurements per sample collection event)	Temperature, 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**	Reported: Annual Environmental Monitoring Report	Grab liquid	Semiannually	2	Gross alpha/beta, H-3, gamma isotopic, phenols, TOC, benzene, toluene, xylene
		Direct measurement of discharge water	Before and after grab sample collection	4	Temperature, pH, conductivity

*Number of samples variable; occasionally wells are dry.