

**1996 Monitoring Program  
Environmental Surveillance:**

**On-site Groundwater**

<b>Sample Location Code</b>	<b>Monitoring/Reporting Requirements</b>	<b>Sampling Type/Medium</b>	<b>Collection Frequency</b>	<b>Total Annual Sample Collections</b>	<b>Analyses Performed/ Composite Frequency</b>
North Plateau background well (not in a SSWMU) NB1S	Groundwater monitoring points around site super solid waste management units (SSWMUs)  <u>Reported in:</u> • SER • Quarterly Groundwater Reports	Grab liquid	→ Four times per year (generally)*	→ 4 each well (generally)*	→ Gross alpha, gross beta, tritium*
Low-level Waste Treatment Facilities (SSWMU #1)					
103					
104 C					
105 C					
106					
107					
108		Direct field	→ Each sampling event*	→ Twice each sampling event	→ Conductivity, pH
110		measurement of			
111		sample discharge			
116 C		water			
8604 C					
8605					
SP008					
Miscellaneous Small Units (SSWMU #2)					
201 U					
205					
206 C					
208					
8605					
Liquid Waste Treatment System (SSWMU #3)					
103					
204					
301 U					
302 U					
401 U					
408					
8609					

NOTE: "U" designates upgradient, "B" designates background, and "C" designates crossgradient wells; the remainder are downgradient.

\* Sampling frequency and analytes vary from point to point. See Table 3-1 for a summary sampling schedule and a listing of analytes and Table 3-2 for a listing of analytes monitored at each location. See Appendix E for a listing of results from each location.

---

## Sampling Rationale

---

On-site            DOE Order 5400.1, IV.9; DOE/EH-0173T, 5.10.1.3; 40 CFR Parts 264 and 265, Subpart F.

Groundwater

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

Groundwater protection is addressed in the Groundwater Protection Management Program, WVDP-091.

Groundwater monitoring is detailed in the Groundwater Monitoring Plan, WVDP 239.

SSWMU #1        Low-level waste treatment facilities, including four active lagoons, lagoons 2, 3, 4 and 5, and an inactive, filled-in lagoon, lagoon 1.

SSWMU #2        Miscellaneous small units, including the sludge pond, the solvent dike, the paper incinerator, the equalization basin, and the kerosene tank.

SSWMU #3        Liquid waste treatment system containing effluent from the supernatant treatment system.

---

- Sampling locations are shown on Figure A-3 (p. A-47).

**1996 Monitoring Program  
Environmental Surveillance:**

**On-site Groundwater**

<u>Sample Location Code</u>	<u>Monitoring/Reporting Requirements</u>	<u>Sampling Type/Medium</u>	<u>Collection Frequency</u>	<u>Total Annual Sample Collections</u>	<u>Analyses Performed/Composite Frequency</u>
HLW Storage and Processing Tank (SSWMU #4)  401 U 402 U 403 U 405 C 406 408 409 8607 8609	Groundwater monitoring points around site super solid waste management units (SSWMUs)  <u>Reported in:</u> • SER • Quarterly Groundwater Reports	Grab liquid	→ Four times per year (generally)*	→ 4 each well (generally)*	→ Gross alpha, gross beta, tritium*
Maintenance Shop Leach Field (SSWMU #5)  501 U 502		Direct field measurement of sample discharge water	→ Each sampling event*	→ Twice each sampling event	→ Conductivity, pH
Low-level Waste Storage Area (SSWMU #6)  406 U 602 604 605 801 8607 U 8609 U					
Chemical Process Cell Waste Storage Area (SSWMU #7)  704 706 U 707 C					

NOTE: "U" designates upgradient, "B" designates background, and "C" designates crossgradient wells; the remainder are downgradient.  
 \* Sampling frequency and analytes vary from point to point. See Table 3-1 for a summary sampling schedule and a listing of analytes and Table 3-2 for a listing of analytes monitored at each location. See Appendix E for a listing of results from each location.

---

## Sampling Rationale

---

On-site Groundwater DOE Order 5400.1, IV.9; DOE/EH-0173T, 5.10.1.3; 40 CFR Parts 264 and 265, Subpart F.

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

Groundwater protection is addressed in the Groundwater Protection Management Program, WVDP-091. Groundwater monitoring is covered in the Groundwater Monitoring Plan, WVDP-239.

SSWMU #4 High-level waste storage and processing area, including the high-level radioactive waste tanks, the supernatant treatment system, and the vitrification facility.

SSWMU #5 Maintenance shop sanitary leach field, formerly used by NFS and WVNS to process domestic sewage generated by the maintenance shop.

SSWMU #6 Low-level waste storage area includes metal and fabric structures housing low-level radioactive wastes being stored for future disposal.

SSWMU #7 Chemical process cell (CPC) waste storage area contains packages of pipes, vessels, and debris from decontamination and cleanup of chemical process cell in the former reprocessing plant.

---

■ Sampling locations are shown on Figure A-3 (p. A-47).

**1996 Monitoring Program  
Environmental Surveillance:**

**On-site Groundwater**

<b>Sample Location Code</b>	<b>Monitoring/Reporting Requirements</b>	<b>Sampling Type/Medium</b>	<b>Collection Frequency</b>	<b>Total Annual Sample Collections</b>	<b>Analyses Performed/ Composite Frequency</b>
Construction and Demolition Debris Landfill (CDDL) (SSWMU #8)  116 U 801 U 802 803 804 8603 U 8612 GSEEP SP12	Groundwater monitoring points around site super solid waste management units (SSWMUs)  <u>Reported in:</u> • SER • Quarterly Groundwater Reports	Grab liquid	→ Four times per year (generally)*	→ 4 each well (generally)*	→ Gross alpha, gross beta, tritium*
NRC-licensed Disposal Area (NDA) (SSWMU #9)  901 U 902 U 903 906 908 U 909 910 1005 C 1006 C 1008c U 1109a** 8610 8611 NDATR		Direct field measurement of sample discharge water	→ Each sampling event*	→ Twice each sampling event	→ Conductivity, pH
IRTS Drum Cell (SSWMU #10)  1005 U 1006 1007 1008b B 1008c B					

NOTE: "U" designates upgradient, "B" designates background, and "C" designates crossgradient wells; the remainder are downgradient.

\* Sampling frequency and analytes vary from point to point. See Table 3-1 for a summary sampling schedule and a listing of analytes and Table 3-2 for a listing of analytes monitored at each location. See Appendix E for a listing of results from each location.

\*\* Sampled by NYSERDA.

---

## Sampling Rationale

---

On-site Groundwater DOE Order 5400.1, IV.9; DOE/EH-0173T, 5.10.1.3; 40 CFR Parts 264 and 265, Subpart F.

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

Groundwater protection is addressed in WVDP-091, the Groundwater Protection Management Program. Groundwater monitoring is covered in WVDP-239, the Groundwater Monitoring Plan.

SSWMU #8 The construction and demolition debris landfill (CDDL), used by NFS and the WVDP to dispose of nonhazardous and nonradioactive materials.

SSWMU #9 The NRC-licensed disposal area (NDA) contains radioactive wastes generated by NFS and the WVDP.

SSWMU #10 The integrated radioactive waste system (IRTS) treatment drum cell stores cement-stabilized low-level radioactive waste.

---

■ Sampling locations are shown on Figure A-3 (p. A-47).

**1996 Monitoring Program  
Environmental Surveillance:**

<b>On-site Groundwater</b>					
<b>Sample Location Code</b>	<b>Monitoring/Reporting Requirements</b>	<b>Sampling Type/Medium</b>	<b>Collection Frequency</b>	<b>Total Annual Sample Collections</b>	<b>Analyses Performed/ Composite Frequency</b>
State-licensed Disposal Area (SSWMU #11)*  1101a U 1101b U 1101c U 1102a 1102b 1103a 1103b 1103c 1104a 1104b 1104c 1105a 1105b 1106a U 1106b U 1107a 1108a U 1109a U 1109b U 1110a 1111a	Groundwater monitoring points around site super solid waste management units (SSWMUs)  <u>Reported in:</u> • SER	Grab liquid	Per NYSERDA	Per NYSERDA	Per NYSERDA
Well Points (Not in a SSWMU)  WP-A WP-C WP-D WP-E WP-F WP-G WP-H  North Plateau Seeps  SP02 SP04 SP05 SP06 SP11 SP12 SP18 SP23	Well points downgradient of Main Plant  <u>Reported in:</u> • SER  <u>Reported in:</u> • SER	Grab liquid	→ Annual	→ 1 each well	→ Gross alpha/beta, H-3, gamma isotopic
		Grab liquid	→ Quarterly	→ 4 each seep	→ Gross alpha/beta, H-3

NOTE: "U" designates upgradient, "B" designates background and "C" designates crossgradient wells; the remainder are downgradient.  
 \* SSWMU #11 is sampled by NYSERDA under a separate program.

---

## Sampling Rationale

---

On-site Groundwater DOE Order 5400.1, IV.9; DOE/EH-0173T, 5.10.1.3; 40 CFR Parts 264 and 265, Subpart F.

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

Groundwater protection is addressed in the Groundwater Protection Management Program, WVDP-091. Groundwater monitoring is covered in the Groundwater Monitoring Plan, WVDP-239.

SSWMU #11 The state-licensed disposal area (SDA) was operated by NFS as a commercial low-level disposal facility and also received wastes from NFS reprocessing operations.

Well Points Monitor groundwater of known subsurface contamination in the north plateau area. All well points are downgradient of the main plant.

North Plateau Seeps Monitor groundwater emanating at the ground surface along the edge of the site's north plateau.

- 
- Sampling locations are shown on Figure A-3 (p. A-47).

**1996 Monitoring Program  
Environmental Surveillance:**

**Off-site Surface Water**

<u>Sample Location Code</u>	<u>Monitoring/Reporting Requirements</u>	<u>Sampling Type/Medium</u>	<u>Collection Frequency</u>	<u>Total Annual Sample Collections</u>	<u>Analyses Performed/ Composite Frequency</u>
<b>WFBCTCB</b> Buttermilk Creek, upstream of Cattaraugus Creek confluence at Thomas Corners Road	Restricted surface waters receiving plant effluents  <u>Reported in:</u> • MTAR • QEMDR • SER	Timed continuous composite liquid	→ Weekly	→ 52	→ pH, conductivity
					Weekly samples composited to 12
<b>WFFELBR</b> Cattaraugus Creek at Felton Bridge	<u>Reported in:</u> • MTAR • QEMDR • SER	Timed continuous composite liquid	→ Weekly	→ 52	→ Gross alpha/beta, H-3, pH
					Weekly samples composited to 12
<b>WFBCBKG</b> Buttermilk Creek near Fox Valley (background)	<u>Reported in:</u> • MTAR • QEMDR • SER	Timed continuous composite liquid	→ Weekly	→ 52	→ pH, conductivity
					Weekly samples composited to 12
		Grab liquid	→ Semiannual	→ 2	→ Quarterly composite for gamma isotopic, Sr-90, C-14, I-129, Pu/U isotopic, total U, Am-241, Tc-99
<b>WFBIGBR</b> Cattaraugus Creek at Bigelow Bridge (background)	Unrestricted surface water background  <u>Reported in:</u> • MTAR • QEMDR • SER	Grab liquid	→ Monthly	→ 12	→ Gross alpha/beta, H-3, Sr-90, and gamma isotopic

Monthly composites at **WFBCTCB**, **WFBCBKG**, and **WFFELBR** are also sent to NYSDOH.

---

## Sampling Rationale

---

**WFBCTCB** DOE/EH-0173T, 5.10.1.1.

Buttermilk Creek is the surface water receiving all WVDP effluents. **WFBCTCB** monitors the potential influence of WVDP drainage into Buttermilk Creek upstream of confluence with Cattaraugus Creek.

**WFFELBR** DOE/EH-0173T, 5.10.1.1.

Because Buttermilk Creek is the surface water that receives all WVDP effluents and empties into Cattaraugus Creek, **WFFELBR** monitors the potential influence of WVDP drainage into Cattaraugus Creek directly downstream of the Cattaraugus Creek confluence with Buttermilk Creek.

**WFBCBKG** DOE/EH-0173T, 5.10.1.1.

Monitors background conditions of Buttermilk Creek upstream of the WVDP. Allows for comparison to downstream conditions.

**WFBIGBR** DOE/EH-0173T, 5.10.1.1.

Monitors background conditions of Cattaraugus Creek at Bigelow Bridge, upstream of the WVDP. Allows for comparison to downstream conditions.

---

- Sampling locations are shown on Figure A-4 (p. A-48).

**1996 Monitoring Program  
Environmental Surveillance:**

**Off-site Drinking Water**

<b>Sample Location Code</b>	<b>Monitoring/Reporting Requirements</b>	<b>Sampling Type/Medium</b>	<b>Collection Frequency</b>	<b>Total Annual Sample Collections</b>	<b>Analyses Performed/ Composite Frequency</b>
<b>WFWEL series wells near WVDP outside WNYNSC perimeter</b>  <b>WFWEL01</b> 3.0 km WNW  <b>WFWEL02</b> 1.5 km NW  <b>WFWEL03</b> 3.5 km NW  <b>WFWEL04</b> 3.0 km NW  <b>WFWEL05</b> 2.5 km SW  <b>WFWEL06</b> (background) 29 km S  <b>WFWEL07</b> 4.4 km NNE  <b>WFWEL08</b> 2.5 km ENE  <b>WFWEL09</b> 3.0 km SE  <b>WFWEL10</b> 7.0 km N	Drinking water supply; groundwater near facility*  <u>Reported in:</u> • MTAR • QEMDR • SER	→ Grab liquid	→ Annual	→ 1 each location	→ Gross alpha/beta, H-3, gamma isotopic, pH, conductivity

\* No drinking water wells are located in hydrogeological units affected by site activity.

---

### Sampling Rationale

---

Off-site Drinking Water Series DOE 5400.1, IV.9; DOE/EH-0173T, 5.10.1.2.

Eight of the ten listed off-site private residential drinking water wells represent the nearest unrestricted uses of groundwater close to the WVDP. The ninth sample (**WFWEL10**) is from a public water supply from deep wells. The tenth drinking water well, **WFWEL06**, is located 29 kilometers south of the Project and is considered a background drinking water source.

---

- Sampling locations are shown on Figures A-5 and A-9 (pp. A-49 and A-53).

**1996 Monitoring Program  
Environmental Surveillance:**

**Off-site Air**

<b>Sample Location Code</b>	<b>Monitoring/Reporting Requirements</b>	<b>Sampling Type/Medium</b>	<b>Collection Frequency</b>	<b>Total Annual Sample Collections</b>	<b>Analyses Performed/Composite Frequency</b>
<b>AFFXVRD</b> 3.0 km SSE at Fox Valley	Particulate air samples around WNYNSC perimeter  <u>Reported in:</u> • MTAR • QEMDR • SER	Continuous air particulate filter	→ Weekly	→ 52 each location  Weekly filters composited to 4 each location	→ Gross alpha/beta  → Quarterly composite for Sr-90, gamma isotopic  Total U, U/Pu isotopic, and Am-241 for <b>AFRSPRD</b> and <b>AFGRVAL</b> only
<b>AFTCORD</b> 3.7 km NNW at Thomas Corners Road					
<b>AFRT240*</b> 2.0 km NE on Route 240					
<b>AFSPRVL</b> 7 km N at Springville					
<b>AFWEVAL</b> 6 km SSE at West Valley					
<b>AFNASHV</b> 37 km W at Village of Nashville, town of Hanover (background)					
<b>AFBOEHN</b> 2.3 km SW on Dutch Hill Road					
<b>AFRSPRD</b> 1.5 km NW on Rock Springs Road					
<b>AFGRVAL</b> 29 km S at Great Valley (background)	Continuous charcoal cartridge	→ Monthly	→ 12 composited to 4 each location ( <b>AFRSPRD</b> and <b>AFGRVAL</b> only)	→ Quarterly composite for I-129	
<b>AFBLKST</b> Bulk Storage Warehouse 2.2 km ESE at Buttermilk Road					

\* Filter from duplicate sampler sent to NYSDOH.

---

## Sampling Rationale

---

**AFFXVRD** DOE/EH-0173T, 5.7.4.

**AFTCORD**

**AFRT240** Air samplers put into service by NFS as part of the site's original monitoring program. Perimeter locations chosen to obtain data from places most likely to provide highest concentrations, based on meteorological data.

**AFSPRVL** DOE/EH-0173T, 5.7.4; DOE/EP-0023, 4.2.3.

Off-site (remote) sampler located on private property in nearby community within 15 kilometers of the site (north).

**AFWEVAL** DOE/EH-0173T, 5.7.4; DOE/EP-0023, 4.2.3.

Off-site (remote) sampler located on private property in nearby community within 15 kilometers of the site (southeast).

**AFNASHV** DOE/EH-0173T, 5.7.4; DOE/EP-0023, 4.2.3.

Off-site (remote) sampler considered to be representative of natural background radiation. Located 37 kilometers west of the site (upwind) on privately owned property.

**AFBOEHN** DOE/EH-0173T, 5.7.4; DOE/EP-0023, 4.2.3.

Perimeter location chosen to obtain data from the place most likely to provide highest elevated release concentrations based on meteorological data. AFBOEHN is located on NYSERDA property at the perimeter.

**AFRSPRD** DOE/EH-0173T, 5.7.4.

Perimeter location chosen to obtain data from the place most likely to provide highest ground-level release concentrations, based on meteorological data. AFRSPRD is on WVDP property but outside the main plant operations fence line. I-129 and H-3 are sampled here because the sampling trains were easy to incorporate and the location was most likely to receive effluent releases.

**AFGRVAL** DOE/EH-0173T, 5.7.4; DOE/EP-0023, 4.2.3.

Off-site (remote) sampler considered to be representative of natural background radiation. Located on privately owned property 29 kilometers south of the site (typically upwind). I-129 and H-3 sampled here also.

**AFBLKST** DOE/EH-0173T, 5.7.4.

Off-site monitoring of bulk storage warehouse, near site perimeter.

---

■ Sampling locations are shown on Figures A-6 and A-9 (pp. A-50 and A-53).

**1996 Monitoring Program  
Environmental Surveillance:**

**Fallout, Sediment, and Soil**

<b>Sample Location Code</b>	<b>Monitoring/Reporting Requirements</b>	<b>Sampling Type/Medium</b>	<b>Collection Frequency</b>	<b>Total Annual Sample Collections</b>	<b>Analyses Performed/ Composite Frequency</b>
<b>AFDHFOP</b> 2.3 km SW  <b>AFFXFOP</b> 3.0 km SSE  <b>AFTCFOP</b> 3.7 km NNW  <b>AF24FOP</b> 2.0 km NE  <b>ANRGFOP</b> Met tower on-site	Collection of fallout particulate and precipitation around WNYNSC perimeter  <u>Reported in:</u> • MTAR • QEMDR • SER	Integrated precipitation	→ Monthly	→ 12 each location	→ Gross alpha/beta, H-3, pH, gamma isotopic
<b>SF Soil Series</b> Surface soil (at each of ten air samplers)	Long-term fallout accumulation  <u>Reported in:</u> • MTAR • QEMDR • SER	Surface plug composite soil	→ Annual	→ 1 each location	→ Gross alpha/beta, gamma isotopic, Sr-90, Pu-239, Am-241, plus U-isotopic and total U at <b>SFRSPRD</b> , <b>SFBOEHN</b> , and <b>SFGRVAL</b>
<b>SFCCSED</b> Cattaraugus Creek at Felton Bridge  <b>SFSDSED</b> Cattaraugus Creek at Springville Dam  <b>SFBISED</b> Cattaraugus Creek at Bigelow Bridge (background)  <b>SFTCSED</b> Buttermilk Creek at Thomas Corners Road  <b>SFBCSED</b> Buttermilk Creek at Fox Valley Road (background)	Deposition in sediment downstream of facility effluents  <u>Reported in:</u> • MTAR • QEMDR • SER	Grab stream sediment	→ Annual (Split of <b>SFSDSED</b> and <b>SFBCSED</b> with <b>NYSDOH</b> )	→ 1 each location	→ Gross alpha/beta, gamma isotopic, Sr-90, U/Pu isotopic, total U, Am-241
<b>SN On-site Soil Series:</b>  <b>SNSW74A</b> (Near WNSW74A)  <b>SNSWAMP</b> (Near WNSWAMP)  <b>SNSP006</b> (Near WNSP006)	<u>Reported in:</u> • MTAR • QEMDR • SER	Surface plug or grab	→ Annual	→ 1 each location	→ Gross alpha/beta, gamma isotopic, Sr-90, Pu-239, Am-241, U-isotopic, total U, Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn

---

## Sampling Rationale

---

<b>AFDHFOP</b>	DOE/EP-0023, 4.7.
<b>AFFXFOP</b>	
<b>AFTCFOP</b>	
<b>AF24FOP</b>	Collection of fallout particles and precipitation around the site perimeter at established air sampling locations: <b>AFDHFOP</b> (Dutch Hill at Boehn road), <b>AFFXFOP</b> (Fox Valley Road), <b>AFTCFOP</b> (Thomas Corners), <b>AF24FOP</b> (Route 240). Indicates short-term effects.
<b>ANRGFOP</b>	Collection of fallout particles and precipitation on-site at the meteorological tower. Indicates short-term effects.
<b>SF Soil Series</b>	DOE/EH-0173T, 5.9.1. Off-site soils collected at air sampling locations.
	<b>SFWEVAL</b> (West Valley), <b>SFFXVRD</b> (Fox Valley Road), <b>SFSPRVL</b> (Springville), <b>SFTCORD</b> (Thomas Corners), <b>SFRT240</b> (Route 240), <b>SFNASHV</b> (Nashville), <b>SFBOEHN</b> (Boehn Road-Dutch Hill), <b>SFGRVAL</b> (Great Valley), <b>SFRSPRD</b> (Rock Springs Road), <b>SFBLKST</b> (bulk storage warehouse): Collection of long-term fallout data at established air sampler locations via soil sampling.
<b>SFTCSED</b>	DOE/EH-0173T, 5.12.1.  Sediment deposition at Thomas Corners in Buttermilk Creek immediately downstream of all facility liquid effluents.
<b>SFBCSED</b>	DOE/EH-0173T, 5.12.1.  Sediment deposition in Buttermilk Creek upstream of facility effluents (background).
<b>SFCCSED</b>	DOE/EH-0173T, 5.12.1.  Sediment deposition in Cattaraugus Creek at Felton Bridge. Location is first access point to Cattaraugus Creek downstream of the confluence with Buttermilk Creek.
<b>SFSDSED</b>	DOE/EH-0173T, 5.12.1.  Sediment deposition in Cattaraugus Creek at Springville Dam. Reservoir provides ideal settling and collection location for sediments downstream of Buttermilk Creek confluence. Located downstream of <b>SFCCSED</b> .
<b>SFBISED</b>	DOE/EH-0173T, 5.12.1.  Sediment deposition in Cattaraugus Creek at Bigelow Bridge. Location is upstream of the Buttermilk Creek confluence and serves as a Cattaraugus Creek background location.
<b>SN Soil Series</b>	DOE/EH-0173T, 5.9.1. On-site soil. (Samples may be partially composed of sediments.)
<b>SNSW74A</b>	Surface soil near <b>WNSW74A</b> . Location to be specifically defined by geographic coordinates. Corresponds to site drainage pattern flow (i.e., most likely area of radiological deposition/accumulation).
<b>SNSWAMP</b>	Surface soil near <b>WNSWAMP</b> . Location to be specifically defined by geographic coordinates. Corresponds to site drainage pattern flow (i.e., most likely area of radiological deposition/accumulation).
<b>SNSP006</b>	Surface soil near <b>WNSP006</b> . Location to be specifically defined by geographic coordinates. Corresponds to site drainage pattern flow (i.e., most likely area of radiological deposition/accumulation).

---

■ Sampling locations are shown on Figures A-2, A-4, A-6, and A-9 ( pp. A-46, A-48, A-50, and A-53).

**1996 Monitoring Program  
Environmental Surveillance:**

**Off-site Biological**

<b>Sample Location Code</b>	<b>Monitoring/Reporting Requirements</b>	<b>Sampling Type/Medium</b>	<b>Collection Frequency</b>	<b>Total Annual Sample Collections</b>	<b>Analyses Performed/ Composite Frequency</b>
<p><b>BFFCATC</b> Cattaraugus Creek downstream of its confluence with Buttermilk Creek</p> <p><b>BFFCTRL</b> Control sample from nearby stream not affected by the WVDP (7 km or more upstream of site effluent point; background)</p> <p><b>BFFCATD</b> Cattaraugus Creek downstream of Springville Dam</p>	<p>Fish in waters up- and downstream of facility effluents</p> <p><u>Reported in:</u></p> <ul style="list-style-type: none"> <li>• MTAR</li> <li>• QEMDR</li> <li>• SER</li> </ul>	Individual collection, biological	<p>Semiannual (samples at <b>BFFCATC</b> and <b>BFFCTRL</b> shared with NYSDOH)</p> <p>Annual (<b>BFFCATD</b> only)</p>	<p>→ 20 fish each location</p> <p>→ 10 fish</p>	<p>→ Gamma isotopic and Sr-90 in edible portions of each individual fish</p> <p>→ Gamma isotopic and Sr-90 in edible portions of each individual fish</p>
<p><b>BFMREED</b> Dairy farm, 3.8 km NNW</p> <p><b>BFMCOBO</b> Dairy farm, 1.9 km WNW</p> <p><b>BFMCTLS</b> Control location 25 km S (background)</p> <p><b>BFMCTLN</b> Control location 30 km N (background)</p> <p><b>BFMWIDR</b> Dairy farm, 3.0 km SE of site</p> <p><b>BFMSCHT</b> Dairy farm 4.8 km S</p>	<p>Milk from animals foraging around facility perimeter and at background sites</p> <p><u>Reported in:</u></p> <ul style="list-style-type: none"> <li>• MTAR</li> <li>• QEMDR</li> <li>• SER</li> </ul>	Grab biological	<p>→ Monthly (<b>BFMREED</b>, <b>BFMCOBO</b>, <b>BFMCTLS</b>, <b>BFMCTLN</b>. Samples at <b>BFMREED</b> and <b>BFMCOBO</b> shared with NYSDOH)</p> <p>Annual (<b>BFMWIDR</b>, <b>BFMSCHT</b>)</p>	<p>→ 12 monthly samples composited to 4 each location</p> <p>→ 1 each location</p>	<p>→ Quarterly composite for gamma isotopic, Sr-90, H-3, and I-129</p> <p>→ Gamma isotopic, Sr-90, H-3, and I-129</p>

---

## Sampling Rationale

---

**BFFCATC** DOE/EH-0173T, 5.11.1.1.

**BFFCATD**

Radioactivity may enter a food chain in which fish are a major component and are consumed by the local population.

**BFFCTRL** Control fish sample to provide background data for comparison with data from fish caught downstream of facility effluents.

**BFMREED** DOE/EH-0173T, 5.8.2.1.

**BFMCOBO**

**BFMWIDR** Milk from animals foraging around facility perimeter. Milk is consumed by all age groups and is frequently the most important food that could contribute to the radiation dose. Dairy animals pastured near the site and at two background locations allow adequate monitoring.

**BFMSCHT**

**BFMCTLS** Control milk samples collected far from site to provide background data for comparison with data from near-site milk.

**BFMCTLN**

---

- Sampling locations are shown on Figures A-5 and A-9 ( pp. A-49 and A-53).

**1996 Monitoring Program  
Environmental Surveillance:**

**Off-site Biological**

<b>Sample Location Code</b>	<b>Monitoring/Reporting Requirements</b>	<b>Sampling Type/Medium</b>	<b>Collection Frequency</b>	<b>Total Annual Sample Collections</b>	<b>Analyses Performed/ Composite Frequency</b>
<b>BFVNEAR*</b> Nearby locations  <b>BFVCTRL*</b> Remote locations (16 km or more from facility; background)  <b>BFHNEAR</b> Beef cattle/milk cow forage from near-site location  <b>BFHCTLS or BFHCTLN</b> Beef cattle/milk cow forage from control location south or north (background)	Fruit and vegetables grown near facility perimeter, downwind if possible  <u>Reported in:</u> • MTAR • QEMDR • SER	Grab biological (fruits and vegetables)          Grab biological	→ Annual, at harvest (BFVNEAR and BFVCTRL)          → Annual (BFHNEAR, BFHCTLS, or BFHCTLN)	→ 3 each (split with NYSDOH)          → 1 each location	→ Gamma isotopic and Sr-90 analysis of edible portions, H-3 in free moisture          → Gamma isotopic, Sr-90
<b>BFBNEAR</b> Beef animal from nearby farm in downwind direction  <b>BFBCTRL</b> Beef animal from control location 16 km or more from facility (background)	Meat (beef foraging near facility perimeter, downwind if possible)  <u>Reported in:</u> • MTAR • QEMDR • SER	Grab biological	→ Semiannual	→ 2 each location	→ Gamma isotopic and Sr-90 analysis of meat, H-3 in free moisture
<b>bfdnear</b> Deer in vicinity of the site  <b>bfdctrl</b> Control deer 16 km or more from facility (background)	Meat (deer foraging near facility perimeter)  <u>Reported in:</u> • MTAR • QEMDR • SER	Individual collection biological	→ Annual, during hunting season (bfdnear sample split with NYSDOH)  During year as available (bfdctrl sample split with NYSDOH)	→ 3  → 3	→ Gamma isotopic and Sr-90 analysis of meat, H-3 in free moisture  → Gamma isotopic and Sr-90 analysis of meat, H-3 in free moisture

\* Corn, apple, and bean samples are identified specifically as follows: corn = BFVNEAC and BFVCTRC; apples = BFVNEAA and BFCTRA; beans = BFVNEAB and BFVCTRB.

---

## Sampling Rationale

---

**BFVNEAR** DOE/EH-0173T, 5.8.2.2.

Fruits and vegetables (corn, apples, and beans) collected from areas near the site. These samples are collected, if possible, from areas near the site predicted to have worst case downwind concentrations of radionuclides in air and soil. Sample analysis reflects steady state/chronic uptake or contamination of foodstuffs as a result of site activities. Possible pathway to humans or indirectly through animals.

**BFVCTRL** DOE/EH-0173T, 5.8.2.2.

Fruits and vegetables collected from area remote from the site. Background fruits and vegetables collected for comparison with near-site samples. Collected in area(s) of no possible site impact.

**BFHNEAR** DOE/EH-0173T, 5.8.2.2.

Hay collected from areas near the site. Same as for near-site fruits and vegetables (**BFVNEAR**). Indirect pathway to humans through animals. Collected with either beef or milk sample location.

**BFHCTLS** DOE/EH-0173T, 5.8.2.2.

**BFHCTLN**

Hay collected from areas remote from the site. Background hay collected for comparison with near-site samples. Collected in area(s) of no possible site impact.

**BFBNEAR** DOE/EH-0173T, 5.8.2.3.

Beef collected from animals raised near the site. Following the rationale for vegetable matter collected near site (**BFVNEAR** and **BFHNEAR**), edible flesh portion of beef animals is analyzed to determine possible radionuclide content passable directly to humans. For animals foraging downwind in areas of maximum probable site impact.

**BFBCTRL** DOE/EH-0173T, 5.8.2.3.

Beef collected from animals raised far from the site. Background beef collected for comparison with near-site samples. Collected in area(s) of no possible site impact.

**BFDNEAR** DOE/EH-0173T, 5.8.3.

Venison from deer herd found living near the site. Same as for beef (**BFBNEAR**).

**BFDCCTRL** DOE/EH-0173T, 5.8.3.

Venison from deer herd living far from the site. Background deer meat collected for comparison with near-site samples. Collected in area(s) of no possible site impact.

---

■ Sampling locations are shown on Figures A-5 and A-9 ( pp. A-49 and A-53).