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21G-11-0118
GOV-01-55-04
ACF-11-0187

June 24, 2011

Director, Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Reference:
1) Docket No. 70-143; SNM License 124
2) Letter from B. Marie Moore to the NRC, dated June 30, 2009, (21G-09-0104), Renewal of Special Nuclear Material (SNM) License 124
3) Letter from NRC to David C. Ward, dated March 15, 2010 (TAC #L32830), Request for Additional Information Regarding the Environmental Assessment for Nuclear Fuel Services, Inc. Materials License SNM-124 Renewal
4) Letter from Mark P. Elliott to NRC, date May 27, 2010 (21G-10-0110), Response to the Request for Additional Information Regarding the Environmental Assessment for Nuclear Fuel Services, Inc. Materials License SNM-124 Renewal
5) Letter from NRC to Mark P. Elliott, dated June 15, 2010, (TAC No. L32830), Request for Additional Information Concerning License Renewal
6) Letter from Mark P. Elliott to NRC, dated August 16, 2010, (21G-10-0163), Response to the Request for Additional Information Concerning License Renewal for SNM-124

Subject: Supplemental Information to Support Chapter 9 and the Environmental Assessment for Renewal of SNM License 124

Nuclear Fuel Services, Inc. (NFS) hereby submits supplemental information for Reference 4, Response to the Request for Additional Information Regarding the Environmental Assessment, and Reference 6, Response to the Request for Additional Information Concerning License Renewal, as discussed with your staff during a conference call held April 26, 2011. Information in Attachment 1 supports the Environmental Assessment, and information in Attachment 2 supports the License Renewal, specifically Chapter 9, Environmental Protection.

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If you or your staff have any questions, require additional information, or wish to discuss this, please contact me, or Ms. Jennifer Wheeler, Licensing and ISA Manager, at (423) 735-5429. Please reference our unique document identification number (21G-11-0118) in any correspondence concerning this letter.

Sincerely,

NUCLEAR FUEL SERVICES, INC.

BM Moore for

Mark P. Elliott, Director
Quality, Safety, and Safeguards

DML/pj

Attachment 1: Environmental Assessment Supplemental Information
Attachment 2: License Renewal Supplemental Information

COPY:

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Attachment 1

Environmental Assessment Supplemental Information

(12 pages to follow)

Environmental Assessment Supplemental Information

Item #1

NRC noted that last year the NFS website contained a figure showing the total effective dose equivalent (TEDE) to the maximally exposed individual (MEI) from liquid effluents. However, the semi-annual effluent reports submitted to NRC do not always contain a dose estimate for liquid effluents. NRC asked if NFS has this information for the last 10 years. NFS stated that it had the information in a separate, internal report. Although a dose estimate for airborne effluents is usually provided in the semi-annual effluent reports submitted to NRC, a dose estimate for liquid effluents is included only when the sum of fractions is greater than 1. NFS stated that it could provide the dose estimates for liquid effluents since 2001. A calculation wasn't conducted in 2000, and NFS agreed to provide an explanation why that calculation wasn't done.

NFS Response:

Prior to 2001, compliance with the NRC license was based solely on the sum of fractions. The documentation examined for the year 2000 does not provide the dose to the public from this effluent stream. The dose estimates for liquid effluents since 2001 are listed below.

Total Effective Dose Equivalent (TEDE) to the Maximally Exposed Individual (MEI) From Liquid Effluents*	
Year	TEDE (mrem/yr)
2001	0.003
2002	0.028
2003	0.008
2004	0.005
2005	0.011
2006	0.004
2007	0.004
2008	0.005
2009	0.004
2010	0.003

* NFS. Erwin Tennessee: NFS. 2001 - 2010 Quarterly Assessment of Radioactive Liquid Effluents, 4th Quarter.

Item #2
NRC asked if NFS could provide environmental dosimeter data since 2000. In addition, NRC asked whether background radiation was subtracted from the data already provided, and whether this data was used to calculate dose to the MEI. NFS stated that the data could be provided, background is subtracted, and NFS considers the dosimeter data when the dose to the MEI is calculated. NFS also stated that occupancy factors are not included and this provides additional conservatism. NFS noted that the contribution to the dose estimate depends on whether the dosimeters are near the location of the MEI.

NFS Response:
Environmental dosimeter data since 2000 is provided below.

Highest Net Dosimeter Results of Direct Radiation Monitoring at the Fence Line Using an Occupancy Factor of One (1).*	
Year	Net Dose (mrem)
2000	35
2001	46
2002	36
2003	81
2004	52
2005	35
2006	25
2007	22
2008	13
2009	16
2010	23
* NFS. Erwin Tennessee: NFS. 2000, 2001, 2002, Safety Dept. Semi-Annual Report for the 2nd Half; NFS. 2003 - 2010 Quarterly Assessment of Offsite Ambient Radiation, 4th Quarter.	

Item #3
NRC asked for the status of excavating contaminated soil in the tent where the former plutonium building (Building 234) was located. NFS stated that work started in December 2010. The cap has been removed and soil is being excavated. NFS can provide a "ball park" schedule for completing the work.

NFS Response:
This soil excavation inside the 234 Excavation Facility is projected to continue through the end of 2012 calendar year.

Item #4 – No additional information needed
NRC asked why the main stack needs to be replaced in the next five years. NFS stated that work on ventilation fans is necessary and it was decided to replace the stack at the same time for efficiency as a proactive measure. The stack isn't failing. It was installed in the early 1980s.

Item #5
NRC asked for information concerning the volume of mixed waste stored onsite. NFS stated that it could provide the current inventory, including the number of containers, and the maximum amount authorized for the site.

NFS Response:
Nuclear Fuel Services, Inc. (NFS) Hazardous Waste Management Facility Permit (TNHW-108), allows on-site storage for 140 cubic yards (28,276 gallons) of D008, D009, F002, D038, D030, D032, D033, D034, D036, D039, D042, and D043 mixed waste. Table 1 identifies the permitted waste codes. Presently, fifty one containers of mixed waste are being stored in the permitted RCRA storage unit as identified in Table 2.

Table 1 -NFS Permitted Mixed Waste

Waste Generated	EPA Waste Code
Mixed Low Level Radioactive (LLR) and Lead Waste	D008
Mixed LLR and Mercury Waste	D009
Mixed LLR and Pyridine Waste	D038
[1] Mixed LLR and Trichloroethane/Trichloroethylene (TCA/TCE) Spent Solvent	F002
[1] Mixed LLR and (TCA/TCE) Still Bottoms	F002
[1]Mixed LLR and 1,1,2 - Trichloro - 1,2,2, -Trifluoroethane (Freon 113)	F002
[1]Mixed LLR and 2,4 - Dinitrotoluene, Hexachlorobenzene, Hexachlorobutadiene, Hexachloroethane, Nitrobenzene, Tetrachloroethylene, 2,4,6 - Trichlorophenol, Vinyl Chloride and PCB Waste	D030, D032, D033, D034, D036, D039, D042, D043

[1] None in storage at this time

Table 2 – Mixed Waste Inventory

Mixed Waste	Container Type	# of Container	Gallons	Total Cubic Yards
Lead	55-gallon drum (7.5 ft3)	6	330	1.67
Lead	5-gallon bucket (0.67 ft3)	4	20	0.10
Lead	Supersack (27 CF)	1	202	1.00
Mercury	55-gallon drum (7.5 ft3)	36	1980	10.00
Mercury	5-gallon bucket (0.67 ft3)	3	15	0.07
Pyridine	55 - gallon drum (7.5 ft3)	1	55	0.28
Total:		**51**	**2602**	**13.12**

NOTE: Conversion Factor of 0.03703704 used to convert cubic foot to cubic yard.

Item #6 – No additional information needed
NRC had asked for information concerning occupational exposures to assess the impact of continued operations on workers. After checking the Radiation Exposure Information and Reporting System (REIRS) database here at NRC, sufficient information was obtained so no further data is needed from NFS.

Item #7
NRC asked if NFS could clarify the major sources of drinking water used in the area as identified in its previous RAI responses. NFS stated that it would look for the information.

NFS Response:
The town of Erwin obtains its drinking water from ground water. The city of Jonesborough obtains its drinking water from the Nolichucky River.

Item #8 – No additional information needed
NRC asked whether storm water is still draining to the Banner Spring Branch which was rerouted and enclosed. NFS said yes. That is one of two storm water drainage pathways. The other is a drainage ditch. NFS explained that the Banner Spring Branch was rerouted to allow decommissioning work in the North Site area.

Item #9
NRC noted that it only had storm water data up to 2008 and asked if more recent data was available. NFS stated that it could provide more recent data.

NFS Response:
Storm Water data for 2007-2010 for both NFS and the BLEU Complex is provided in the tables below. (These tables correspond to Table 27 and Table 28 in the NFS Environmental Report, and present the additional data requested.)

Table 1
NFS 2007-2010 Storm Water Data

Parameter	2007 NFS Outfall A (mg/l)	2008 NFS Outfall A (mg/l)	2009 NFS Outfall A (mg/l)	2010 NFS Outfall A (mg/l)	2007 NFS Outfall B (mg/l)	2008 NFS Outfall B (mg/l)	2009 NFS Outfall B (mg/l)	2010 NFS Outfall B (mg/l)
COD	70.3	57.4	68.6	113	17.2	91.3	117	84.8
pH	8.2	7.6	9.0	7.3	8.7	8.0	8.4	6.7
TSS	114	127	19.8	53.2	39.0	60.2	108	26.4
Nitrate + Nitrite Nitrogen	0.110	2.56	129	1.03	0.405	1.51	0.940	0.715
Ammonia	1.19	<0.030	0.182	0.289	0.264	0.780	0.327	0.209
Magnesium, Total Recoverable	4.94	18.9	4.310	0.00445	2.40	2.70	3.400	0.00233
Aluminum, Total Recoverable	1.62	2.4	1.280	<0.068	0.284	1.15	1.260	0.469
Iron, Total Recoverable	2.30	2.15	0.784	0.574	0.210	1.19	1.620	0.542
Cadmium, Total Recoverable	0.00127	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01
Cyanide, Total	<0.00150	0.00461	<0.00166	<0.0017	<0.00150	<0.0015	0.00287	<0.0017
Lead, Total Recoverable	0.00507	0.00264	0.00301	<0.0033	<0.0025	0.0073	0.0072	<0.0033
Mercury, Total Recoverable	0.000112	<0.0003	<0.000067	<0.000066	<0.00006	<0.00003	<0.000067	<0.000066
Selenium, Total Recoverable	<0.006	<0.005	<0.005	<0.005	0.00771	0.0123	<0.005	<0.005
Silver, Total Recoverable	0.0014	<0.001	<0.001	<0.001	0.00141	<0.001	<0.001	<0.001
Copper, Total Recoverable	0.025	0.00948	0.0131	0.021	0.00843	0.0684	0.0415	0.052
Isotopic U-234	64.4	30.2	21.6	18.8	7.22	10.5	40.3	3.72
Isotopic U-235	1.84	1.43	0.659	1.11	0.312	0.544	1.65	0.161
Isotopic U-238	7.74	1.06	2.72	2.22	<0.189	1.55	0.379	0.173

Table 2
BLEU Complex Storm Water Data

Parameter	2007 (mg/l)	2008 (mg/l)	2009 (mg/l)	2010 (mg/l)
Nitrate/Nitrite Nitrogen	0.69	4.09	0.82	0.825
Total Recoverable Magnesium	4.07	0.47	1.21	1.34
Total Recoverable Aluminum	2.29	0.109	0.281	0.352
Total Recoverable Iron	1.71	0.103	0.22	0.276
Total Recoverable Copper	0.0037	0.00368	0.00804	0.0096
Isotopic U234	<0.33	<0.408	<0.638	0.308
Isotopic U235	<0.451	<0.315	<0.656	0.301
Isotopic U238	<0.33	<0.408	<0.638	0.132

Item #10
NRC asked why different parameters are used to monitor storm water effluents from the NFS site versus the Blended Low Enriched Uranium (BLEU) Complex. NFS stated that processes are different and it monitors for the isotopes expected from the different processes.

NFS Response:
1. NFS is classified as a co-located industrial facility per State of Tennessee Storm Water Regulation (see references below). NFS is primarily a chemical and allied products manufacturing facility. However, wastewater treatment, inactive burial ground, hazardous waste treatment and storage, and vehicle maintenance activities are also conducted onsite. These additional activities make NFS a co-located facility, which requires additional monitoring in accordance with the reference below:

   State of Tennessee Water Multi-Sector General Permit for Industrial Activities, Permit No. TNR050000, 6/1/09 – 5/14/14, Part 3.4:

   "In the case where facility has industrial activities occurring onsite which are described by any of the activities in other sections of part 11 of this permit, those industrial activities are considered to be co-located industrial activities. Storm water discharges from co-located industrial activities are authorized by this permit, provided that the permittee complies with any and all additional pollution prevention plan and monitoring requirements from other sections of part 11 applicable to the co-located industrial activity. The operator of the facility shall determine which additional pollution prevention plan and monitoring requirements are applicable to the co-located industrial activity by examining the narrative descriptions of each coverage section (Discharges Covered Under This Section) in part 11 of this permit. Provisions under this part are applicable on an outfall-specific basis."

   State of Tennessee Water Multi-Sector General Permit for Industrial Activities, Permit No. TNR050000, 6/1/09 – 5/14/14, Part 11 (Specific Requirement for Industrial Activities), Section C.1, states the following:

   "Co-located Industrial Activities. When an industrial facility, described by the above coverage provisions of this section, has industrial activities being conducted onsite that meet the description(s) of industrial activities in another section(s), that industrial facility shall comply with any and all applicable monitoring and pollution prevention plan requirements of the other sections(s) in addition to all applicable requirements in this section. The monitoring and pollution prevention plan terms and conditions of this multi-sector permit are additive for industrial activities being conducted at

the same industrial facility (co-located industrial activities). The operator of the facility shall determine which other monitoring and pollution prevention plan section(s) of this permit (if any) are applicable to the facility."

2. The BLEU Complex is classified as a chemical and allied products manufacturing facility only. It does not meet the definition of a co-located facility and requires monitoring for fewer chemical attributes than NFS.

Item #11 – No additional information needed

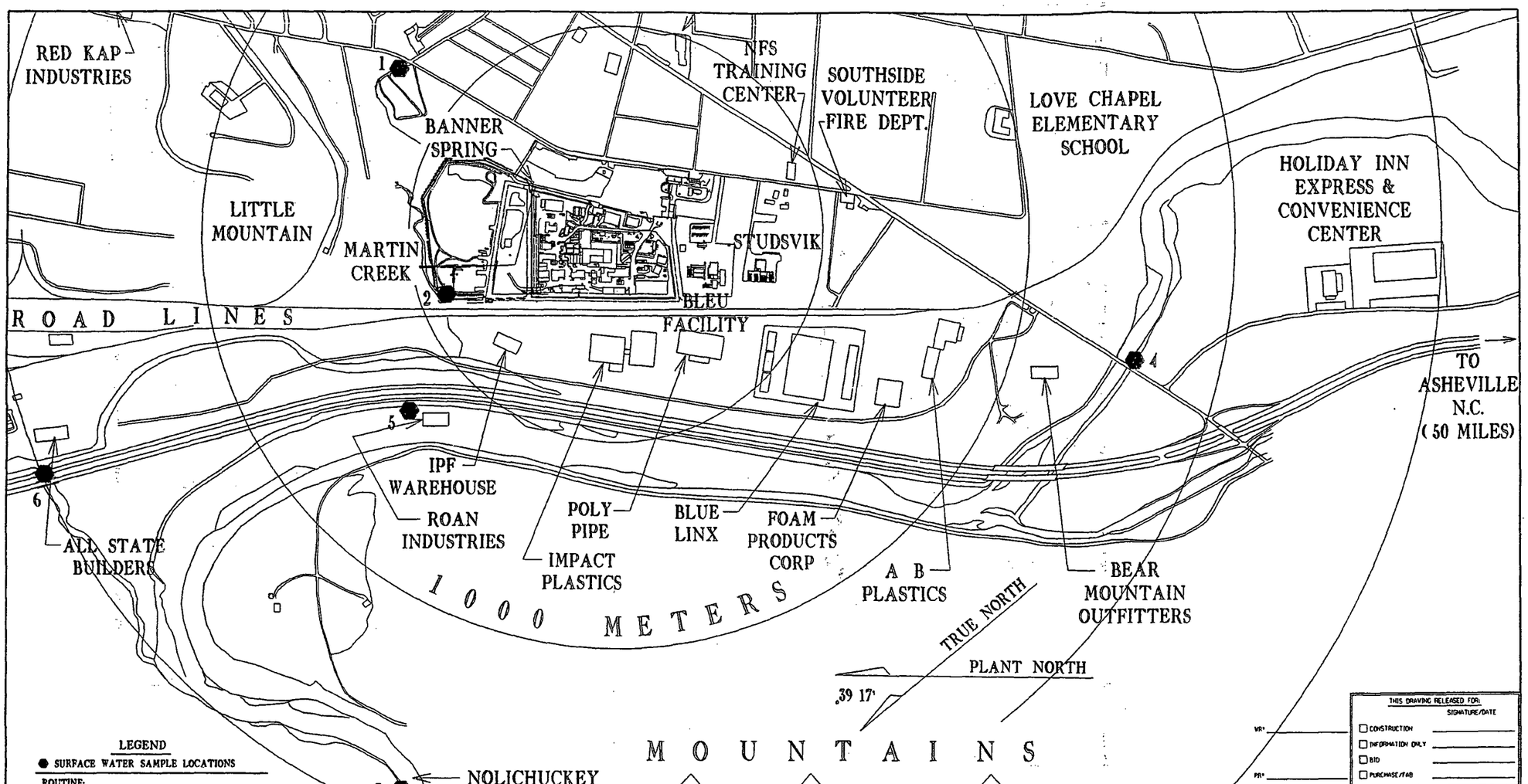
NRC asked whether NFS would be willing to state where it ships waste. NFS stated that it would prefer not to specify waste recipients because they tend to change. NFS only ships waste to recipients authorized to receive it.

Item #12

NRC asked whether NFS could provide more specific locations where upstream and downstream samples are taken. NFS stated the locations can be described in more detail.

NFS Response:

Surface Water Sample Locations are shown on the following map.



LEGEND

● SURFACE WATER SAMPLE LOCATIONS

ROUTINE:

1 MARTINS CREEK UPSTREAM AT CAROLINA AVE.
2 MARTINS CREEK DOWNSTREAM
3 NOLICHUCKEY RIVER DOWNSTREAM NEAR UNICOI COUNTY & WASHINGTON COUNTY LINE
4 NOLICHUCKEY RIVER UPSTREAM

NON-ROUTINE:

5 WWTF OUTFALL
6 INTERSECTION OF MARTINS CREEK AND NORTH INDIAN CREEK

BY	DATE	REVISION	LET
WGH/SEB		UPDATED NFS FACILITY TO SITEPLAN DATED 01-21-10	0
WGH/SEB	03-26-08	UPDATED AREA MAP	N
WGH/SEB	02-20-07	UPDATED NFS & AREA MAP	M
WGH/JAL	9-19-89	ORIGINAL ISSUE RMG-1285B SH.3 OF 3	—

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NUCLEAR FUEL SERVICES, INC.
ERWIN, TENNESSEE

REVIEWED BY
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PROPOSED APPROVALS
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SURFACE WATER SAMPLE LOCATIONS

DRAFTER W.G.HENSLEY
AS-BUILT APPROVALS
REQ.
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Item #13
NRC noted that the Ketterer report addressed samples taken at "Whaley Springs." Does NFS know where that is located? NFS stated that it didn't know the location.

NFS Response:
No, NFS has not identified "Whaley Springs," and does not know its location.

Item # 14 – No additional information needed
NRC asked about the lawsuit filed by Impact Plastics. Was the primary concern radioactive contamination or chemical contamination? NFS stated that the primary concern was chemical contamination.

Item #15
NRC asked about procedural requirements for soil erosion control. NFS stated that storm water permits address run-off. Requirements are often specific to a project, with the permits issued by TDEC as based on the acreage disturbed. Decommissioning plans may address it also. NFS can send requirements and an example of a permit.

NFS Response:
Soil erosion control requirements for industrial storm water runoff is addressed in Tennessee Storm Water Multi-Sector General Permit for Industrial Activities, Permit No. TNR50000, dated 5/15/09 – 5/14/14. NFS holds 3 site specific permits which were provided in Enclosure Q of the Response to the Request for Additional Information Regarding the Environmental Assessment for Nuclear Fuel Services, Inc. Materials License SNM-124 Renewal letter from Mark P. Elliott to NRC, dated May 27, 2010, (21G-10-0110).

Soil erosion control requirements for Construction storm water runoff are addressed in the General NPDES Permit for Discharge of Storm Water Associated with Construction Activities, Permit No. TNR100000, dated 5/23/11-5/23/16.

Item #16
NRC questioned the flow of Martin Creek, North Indian Creek, and the Nolichucky. NFS thought Martin Creek and North Indian Creek came together, and then both fed into the Nolichucky River. NRC noted that USGS maps show Martin Creek flowing directly into the Nolichucky River. NFS will review the newest map available and provide feedback to NRC.

NFS Response:
A 2011 revision to the Erwin Quadrangle USGS map shows Martin Creek and the North Indian Creek entering the Nolichucky separately. However, on the previous revision of the map, 2003, Martin Creek fed into the North Indian Creek prior to the Nolichucky. The 2009 Environmental Report is based on the 2003 version which was the most current version available.

Item #17 – No additional information needed
NRC asked if the Ground Water Treatment Facility (GWTF) was portable and what the difference was between GWTF and WWTF. NFS stated GWTF is not portable and that it is used to treat surface water from the Northsite to enable excavation and/or Final Status Survey activities to be conducted.

Attachment 2

License Renewal Supplemental Information

(4 pages to follow)

License Renewal Supplemental Information

RAI 9.4
Additional information is needed in order to make a finding that target minimal detectable concentrations (MDCs) are sufficiently low enough in order to quantify the activity in the effluents. A listing of typical MDCs, or MDCs on a particular date, would provide us with a basis for finding that your program can detect levels approaching regulatory limits.

NFS Response:
As of 6/1/2011, Table 1 lists the typical MDCs used.

Table 1
Environmental Radiological Monitoring Program Guidelines

Sampling Point	Sample Type/ Collection Frequency	Parameter Analyzed	Typical MDC (uCi/ml, unless otherwise stated)
Airborne Effluents[1]			
Operating Radiological Stacks[2]			
Main Processing Stack	Continuous/Daily[3]	Gross Alpha	8.0E-14
		Gross Beta	1.0E-13
Combined Releases from Other Uranium Stacks	Continuous/Daily[3]	Gross Alpha	8.0E-14
		Gross Beta	1.0E-13
Combined Releases from Plutonium Stacks (Bldg. 234)	Continuous/Weekly	Gross Alpha	8.0E-15
		Gross Beta	1.0E-14
Ambient Air	Continuous/Weekly	Gross Alpha	3.0E-15
		Gross Beta	1.0E-14
	Composite/Quarterly	Isotopic U	4.0E-16
	Composite/Annually	Isotopic Th	1.0E-16
		Isotopic Pu	1.0E-16
Liquid Effluents			
Surface Water			
Martin Creek Upstream	Grab/Quarterly	Gross Alpha	1.0E-08
		Gross Beta	2.0E-08
Nolichucky River Upstream	Grab/Quarterly	Gross Alpha	1.0E-08
		Gross Beta	2.0E-08
Martin Creek Downstream	Grab/Weekly	Gross Alpha	1.5E-08
		Gross Beta	3.0E-08
Nolichucky River Downstream	Grab/Quarterly	Gross Alpha	1.5E-08

Table 1 Environmental Radiological Monitoring Program Guidelines			
Sampling Point	**Sample Type/ Collection Frequency**	**Parameter Analyzed**	**Typical MDC (uCi/ml, unless otherwise stated)**
Process Waste Water			
Waste Water Treatment Facility	Grab/each batch	Gross Alpha	1.5E-07
		Gross Beta	6.0E-07
	Composite/Monthly	Isotopic U	1.00E-09
NFS Sanitary Sewer (see Note 4)	Continuous/Daily[3]	Gross Alpha	1.5E-08
		Gross Beta	3.0E-08
	Composite/Monthly	Isotopic U	1.0E-09
	Composite/Monthly[5]	Insoluble	3.0E-08
		Radioactivity	5.0E-08
BLEU Complex Sanitary Sewer	Continuous/Daily[3]	Gross Alpha	1.5E-08
		Gross Beta	3.0E-08
	Composite/Monthly	Isotopic U	1.0E-09
	Composite/Monthly[6]	Insoluble	3.0E-08
		Radioactivity	5.0E-08
Other Environmental Media			
Sludge (Erwin POTW)	Grab/Quarterly	Isotopic U	1 pCi/g
Soil	Grab/Quarterly	Gross Alpha	5 pCi/g
Silt/Sediment	Grab/Quarterly	Gross Alpha	5 pCi/g
Vegetation	Grab/Quarterly	Gross Alpha	5 pCi/g
Ground Water Wells	Grab/Quarterly	Gross Alpha	10 pCi/L
		Gross Beta	15 pCi/L

Notes:

1. **To minimize interference of radon progeny, air samples may be counted after a holding period (e.g., 7 days) or decay-corrected prior to comparing to action levels and reporting final results.**
2. **Radiological stacks and vents are considered to be those with a potential for releasing airborne activity at concentrations greater than or equal to 10% of the values in 10 CFR 20, Appendix B Table 2, Column 1.**
3. **Daily means normal operating days, Monday - Friday, excluding holidays and weekends. On holidays and weekends samplers will continue to accumulate a sample; however, the sample will not be collected until the next normal operating day.**
4. **Sampling is only required for disposal of process water containing licensed materials into the sanitary sewerage in accordance with 10 CFR 20.2003.**
5. **The compliance sampling location for insoluble radioactivity on this discharge point is the Ground Water Treatment Facility (GWTF), because this is the only stream that discharges radioactive material into the NFS Sanitary sewer. Insoluble radioactivity sampling is not required on this discharge point when the GWTF is not operational.**
6. **The compliance sampling location for insoluble radioactivity on this discharge point is the Effluent Processing Building (EPB), because this is the only stream that discharges radioactive material into the BLEU Complex Sanitary Sewer. Insoluble radioactivity sampling is not required on this discharge point when the EPB is not operational.**

RAI 9.3 & 9.7- No additional information needed

Samples taken from Martins Creek are being compared to values in 10 CFR 20 Appendix B; however no dilution factor has been factored in. NFS has classified Martins Creek as an effluent, but the primary effluents are coming from the storm water drainage ditches. Martins Creek (surface water) samples are taken weekly, and storm water data is taken once a year. In addition to the annual sampling, NFS takes quarterly samples from the two on-site stormwater pathways. The page changes for Chapter 9 of the application will address the issue.

RAI 9.10

Section 9.2.6 in the license application states that at a minimum one up gradient well and ten down gradient wells are sampled quarterly. In response to RAI 9.10, NFS states that 2 monitoring wells are sampled monthly and 19 wells are sampled quarterly as part of their routine ground water program. Clarification is needed concerning the wells used to demonstrate compliance with NRC requirements, and additional wells used for other purposes. NFS believes it can clarify the various ground water monitoring requirements it must address and how the wells are used to demonstrate compliance with requirements imposed by NRC and other agencies.

NFS Response:

The monitoring wells described in Section 9.2.6 in the license application (1 upgradient and 10 downgradient monitoring wells) are utilized to demonstrate compliance with NRC requirements. The monitoring wells were selected because of their location. The ten downgradient monitoring wells are located along the plant boundary and will help detect potential radiological releases dissolved in ground water emanating from the NFS plant site. The one upgradient monitoring well is for background purposes.

Additionally, 15 monitoring wells and 8 injection wells are sampled as part of NFS ground water remediation program to satisfy an agreement with the EPA and Tennessee Department of Environment and Conservation (TDEC). Further, 8 off-site monitoring wells are sampled under the Facility Action Plan (FAP) agreement with TDEC.

Additional Information

NRC asked about the action levels for gross alpha measurements and whether they were adequate to demonstrate compliance with effluent limits for plutonium. NFS stated that it does isotopic analysis in addition to the gross alpha measurements so it can confirm how much plutonium contributes to the gross alpha level. NRC noted that the license only commits to gross alpha and gross beta measurements, not isotopic analysis. NFS agreed to review the issue.

NFS Response:
Detection limits for gross alpha/beta measurements are based upon a review of the isotopic characterization for the effluent stream being monitored. For effluent air emissions, a representative grouping of stack samples are periodically analyzed for isotopes known to be present in the feed or previous processes. Based upon this analysis, an isotopic distribution is established for all isotopes that potentially contribute greater than one percent of the exposure to a member of the public. Detection limits for gross alpha/beta measurements, at a minimum, provide the ability to meet the ALARA dose constraint cited in 10 CFR 20.1101(d). In areas where Pu decommissioning is being performed, two individual samples are collected from the gaseous effluent stream. One sample is collected on a daily basis to provide timely notification of upset conditions. An additional sample is collected on a weekly frequency to provide a lower limit of detection due to the greater volume sampled. In addition, ambient air samples are operated continuously at the plant boundary. Select samples are composited on a quarterly or semi-annual frequency and isotopically analyzed. A detection limit of <1pCi/sample is typical for each of the isotopes of uranium, thorium, and plutonium.

For liquid effluents, gross alpha/beta analysis is used as a control mechanism for release of WWTF batches and daily sewer discharges. Samples from each waste stream are composited on a monthly frequency and analyzed isotopically. A detection limit of <1pCi/L is typical for each of the isotopes of uranium, thorium, and plutonium.

Additional samples collected as part of the Environmental Surveillance Program are generally analyzed for gross alpha/beta and isotopes of concern. For liquid samples, a detection limit of <1pCi/L is typical for each of the isotopes of uranium, thorium, and plutonium. For soil, silt, and vegetation samples, a detection limit of <2pCi/g is typical for each of the isotopes of uranium and <0.5 pCi/g is typical for each of the isotopes of thorium and plutonium.