



Nuclear Fuel Services, Inc.  
P.O. Box 337, MS 123  
Erwin, TN 37650

(423) 743-9141

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

21G-99-0047  
GOV-05-01-04  
ACF-99-0076

April 6, 1999

Ms. Debra Shults  
Environmental Manager  
Tennessee Department of Environment and Conservation  
Third Floor, L&C Annex  
Nashville, TN 37243-1532

**SUBJECT:** 1998 Analytical Data for Samples Collected  
With Division of Radiological Health

Dear Ms. Shults:

Attached is the 1998 analytical data for Nuclear Fuel Services, Inc. (NFS) environmental samples collected with the Division of Radiological Health. For comparison, the State of Tennessee's analytical data has also been included.

If you have any questions, please feel free to contact me or Ms. Janice Greene, Environmental Safety Manager, at (423) 743-1730. Please reference our unique document identification number (21G-99-0047) in any correspondence concerning this letter.

Sincerely,

NUCLEAR FUEL SERVICES, INC.

Thomas S. Baer, PhD  
Vice President  
Safety and Regulatory

CAH/rcy

Attachment

DISTRIBUTION - 04/06/99 - rcy

Originator - CAH	<u>w/o attachments</u>
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Attachment 1

Nuclear Fuel Services, Inc. and State of Tennessee Data Comparison - 1998

Asheville Highway # 324 Air Sample (Units uCi/cc E-15)

Date Collected	Analysis Type	NFS		State	
		Results	+/- Error	Results	+/- Error
1/21/98	Alpha	1.80	1.50	0.90	1.80
	Beta	19.00	3.30	10.80	4.30
2/18/98	Alpha	2.70	1.90	1.10	2.00
	Beta	13.00	3.10	13.10	5.10
3/18/98	Alpha	3.10	1.50	2.80	1.70
	Beta	21.00	3.50	23.00	4.40
4/22/98	Alpha	1.70	1.70	2.30	2.00
	Beta	15.00	3.30	9.50	3.90
5/20/98	Alpha	3.90	2.20	2.90	1.80
	Beta	36.00	4.30	42.70	5.20
6/24/98	Alpha	3.40	2.00	35.40	4.60
	Beta	17.00	3.30	72.10	6.60
7/22/98	Alpha	4.80	2.20	5.40	2.10
	Beta	24.00	3.70	25.20	4.30
8/19/98	Alpha	7.40	2.70	1.50	2.10
	Beta	30.00	4.00	27.70	4.80
9/23/98	Alpha	8.20	2.60	6.00	2.60
	Beta	43.00	4.40	94.80	8.30
10/21/98	Alpha	8.70	2.90	0.80	1.40
	Beta	42.00	4.60	9.80	3.70
11/18/98	Alpha	5.50	2.40	0.40	2.10
	Beta	43.00	4.60	24.60	5.60
12/16/98	Alpha	3.00	2.10	-0.80	4.20
	Beta	31.00	4.20	18.00	10.90

Attachment I

Nuclear Fuel Services, Inc. and State of Tennessee Data Comparison - 1998

Little Mountain #322 Air Sample (Units uCi/cc E-15)

Date Collected	Analysis Type	NFS		State	
		Results +/-	Error	Results +/-	Error
1/21/98	Alpha	2.70	1.70	1.60	1.80
	Beta	19.00	3.30	13.10	4.30
2/18/98	Alpha	4.10	0.00	0.90	1.50
	Beta	19.00	5.80	13.80	4.10
3/18/98	Alpha	4.10	1.70	2.00	1.70
	Beta	24.00	3.80	20.30	4.40
4/22/98	Alpha	1.60	1.80	2.00	2.00
	Beta	13.00	3.40	12.80	4.10
5/20/98	Alpha	6.40	2.50	3.30	1.90
	Beta	40.00	4.40	31.50	4.80
6/24/98	Alpha	3.10	2.00	3.30	2.10
	Beta	17.00	3.30	17.30	4.40
7/22/98	Alpha	3.90	2.10	11.30	2.80
	Beta	29.00	3.90	40.40	5.20
8/19/98	Alpha	6.70	2.60	1.60	1.90
	Beta	31.00	4.10	25.20	4.40
9/23/98	Alpha	7.00	2.40	6.00	2.00
	Beta	46.00	4.50	84.70	6.20
10/21/98	Alpha	4.80	2.40	1.70	1.50
	Beta	38.00	4.40	26.50	4.70
11/18/98	Alpha	8.10	2.80	3.40	2.20
	Beta	40.00	4.40	44.80	5.80
12/16/98	Alpha	3.20	2.10	1.00	1.50
	Beta	26.00	3.90	23.60	4.30

Attachment I

Nuclear Fuel Services, Inc. and State of Tennessee Data Comparison - 1998

Nolichucky River Downstream Water (Units pCi/l)

Date Collected	Analysis Type	NFS		State	
		Results +/-	Error	Results +/-	Error
1/21/98	Alpha	0.41	0.39	1.26	0.93
	Beta	1.25	0.64	1.60	2.00
2/18/98	Alpha	0.86	0.19	0.00	1.40
	Beta	1.43	0.26	0.20	2.30
3/18/98	Alpha	0.54	0.17	6.30	2.30
	Beta	0.97	0.24	10.20	2.70
4/22/98	Alpha	0.33	0.34	-0.50	1.40
	Beta	1.45	0.57	2.20	2.10
5/20/98	Alpha	0.21	0.24	0.00	1.30
	Beta	1.19	0.55	2.70	2.20
6/24/98	Alpha	1.33	0.40	-1.10	1.30
	Beta	3.14	0.73	1.40	2.20
7/22/98	Alpha	0.34	0.36	1.30	1.30
	Beta	1.45	0.72	1.20	2.10
8/19/98	Alpha	0.06	0.26	0.00	1.30
	Beta	1.84	0.64	-0.30	2.10
9/23/98	Alpha	0.22	0.30	1.60	1.70
	Beta	1.80	0.63	4.70	2.30
10/21/98	Alpha	0.08	0.27	0.30	1.10
	Beta	1.28	0.61	1.80	2.20
11/18/98	Alpha	0.17	0.21	1.40	1.40
	Beta	1.73	0.45	3.90	2.20
12/16/98	Alpha	0.18	0.22	1.30	1.30
	Beta	1.53	0.46	0.60	2.10

Attachment 1

Nuclear Fuel Services, Inc. and State of Tennessee Data Comparison - 1998

Nolichucky River Upstream Water (Units pCi/l)

Date Collected	Analysis Type	NFS		State	
		Results	+/- Error	Results	+/- Error
1/21/98	Alpha	0.56	0.42	3.10	1.30
	Beta	0.78	0.55	4.20	2.20
2/18/98	Alpha	0.65	0.19	-0.80	1.30
	Beta	1.51	0.28	-1.80	2.10
3/18/98	Alpha	1.74	0.28	0.20	1.50
	Beta	5.07	0.35	2.30	2.20
4/22/98	Alpha	0.79	0.47	-0.80	1.40
	Beta	1.44	0.56	1.80	2.10
5/20/98	Alpha	0.14	0.24	0.30	1.40
	Beta	1.40	0.57	0.50	2.10
6/24/98	Alpha	0.72	0.60	-0.30	1.40
	Beta	3.16	1.15	1.80	2.20
7/22/98	Alpha	-0.03	0.28	-0.30	1.00
	Beta	1.92	0.90	1.80	2.10
8/19/98	Alpha	0.30	0.35	-0.20	1.20
	Beta	2.30	0.72	-0.30	2.10
9/23/98	Alpha	0.66	0.37	1.60	1.70
	Beta	2.09	0.53	2.70	2.20
10/21/98	Alpha	0.17	0.25	1.30	1.30
	Beta	1.76	0.67	0.30	2.10
11/18/98	Alpha	0.13	0.27	1.20	1.40
	Beta	1.13	0.43	5.20	2.30
12/16/98	Alpha	0.34	0.31	1.00	1.20
	Beta	1.39	0.48	1.30	2.20

Attachment I

Nuclear Fuel Services, Inc. and State of Tennessee Data Comparison - 1998

WWTF Discharge Composite (Units pCi/l)

Date Collected	Analysis Type	NFS		State	
		Results	+/- Error	Results	+/- Error
1/31/98	Alpha	150.44	15.08	144.00	33.00
	Beta	13.38	7.31	-5.00	29.00
2/28/98	Alpha	233.17	29.53	840.00	75.00
	Beta	9918.12	81.83	8795.00	161.00
3/31/98	Alpha	418.22	35.09	197.00	41.00
	Beta	60.17	13.51	75.00	31.00
4/30/98	Alpha	482.41	26.39	256.00	46.00
	Beta	-3.07	6.54	11.00	30.00
5/31/98	Alpha	288.00	41.30	1346.00	144.00
	Beta	12000.00	141.00	15757.00	315.00
6/30/98	Alpha	392.00	71.40	1784.00	162.00
	Beta	7190.00	162.00	19315.00	345.00
7/31/98	Alpha	14.90	3.57	365.00	73.00
	Beta	202.00	7.53	2833.00	136.00
8/31/98	Alpha	63.80	14.90	172.00	62.00
	Beta	492.00	23.30	983.00	98.00
9/30/98	Alpha	42.00	22.30	213.00	65.00
	Beta	518.00	36.80	1439.00	109.00
10/31/98	Alpha	170.00	21.70	430.00	81.00
	Beta	1700.00	35.30	3424.00	155.00
11/30/98	Alpha	105.00	17.40	210.00	66.00
	Beta	1320.00	30.90	2545.00	135.00
12/31/98	Alpha	13.80	5.87	*	*
	Beta	525.00	14.60	*	*

\* No comparison data.

Attachment 1

Nuclear Fuel Services, Inc. and State of Tennessee Data Comparison - 1998

Sewer Water (Units pCi/l)

Date Collected	Analysis Type	NFS		State	
		Results	+/- Error	Results	+/- Error
1/31/98	Alpha	72.61	6.65	58.30	9.10
	Beta	21.33	4.69	27.60	5.70
2/28/98	Alpha	108.91	6.03	84.40	10.60
	Beta	19.96	2.67	30.90	5.60
3/31/98	Alpha	115.37	7.12	82.00	11.00
	Beta	26.56	2.86	32.80	5.70
4/30/98	Alpha	161.43	7.12	64.70	7.80
	Beta	21.08	2.43	24.50	3.80
5/31/98	Alpha	127.00	6.15	48.90	8.40
	Beta	32.60	2.40	19.40	5.00
6/30/98	Alpha	138.00	9.74	94.00	11.00
	Beta	368.00	10.30	302.00	13.00
7/31/98	Alpha	182.00	6.50	195.00	14.00
	Beta	913.00	8.55	967.00	22.00
8/31/98	Alpha	88.50	4.95	76.00	9.70
	Beta	156.00	3.83	243.00	12.00
9/30/98	Alpha	15.70	2.60	13.30	3.30
	Beta	59.60	2.71	30.70	3.70
10/31/98	Alpha	13.80	3.31	8.90	4.00
	Beta	22.20	2.83	21.30	4.60
11/30/98	Alpha	24.60	2.74	21.60	5.70
	Beta	10.70	1.28	18.30	4.80
12/31/98	Alpha	221.00	15.00	*	*
	Beta	40.20	4.04	*	*

\* No comparison data.

Attachment 1

Nuclear Fuel Services, Inc. and State of Tennessee Data Comparison - 1998

Well at Burial Ground (Units pCi/l)

Date Collected	Analysis Type	NFS		State	
		Results	+/- Error	Results	+/- Error
1/31/98	Alpha	0.01	0.60	0.00	1.80
	Beta	3.74	0.83	1.60	2.40
2/28/98	Alpha	1.17	0.61	2.50	2.20
	Beta	5.43	1.04	6.10	2.50
3/31/98	Alpha	2.37	0.60	6.70	2.90
	Beta	4.47	0.91	7.20	2.50
4/30/98	Alpha	2.39	1.63	1.00	1.90
	Beta	4.69	1.28	4.20	2.40
5/31/98	Alpha	1.02	0.58	-0.30	1.70
	Beta	4.74	0.82	3.00	2.30
6/30/98	Alpha	0.60	0.62	2.00	1.70
	Beta	2.50	1.41	5.10	2.40
7/31/98	Alpha	0.64	0.44	0.90	1.70
	Beta	3.86	1.09	1.70	2.20
8/31/98	Alpha	0.53	0.57	1.30	1.90
	Beta	4.78	1.02	3.40	2.20
9/30/98	Alpha	1.96	0.78	4.90	2.20
	Beta	4.52	1.02	1.50	2.20
10/31/98	Alpha	-0.65	1.38	2.60	1.80
	Beta	3.43	2.82	6.30	2.40

Well abandoned in October 1998.



Attachment 1

Nuclear Fuel Services, Inc. and State of Tennessee Data Comparison - 1998

Well 95A (Units pCi/l)

Date Collected	Analysis Type	NFS		State	
		Results	+/- Error	Results	+/- Error
11/11/98	Alpha	235.14	11.12	*	*
	Beta	260.67	16.89	*	*
12/8/98	Alpha	273.46	12.69	211.00	12.00
	Beta	310.15	22.03	32.30	4.60

Well 95A replaced the Well at Burial Ground which was abandoned in October 1998.

\* No comparison data.

Attachment 1

Nuclear Fuel Services, Inc. and State of Tennessee Data Comparison - 1998

EPOTW Sludge (Units pCi/g)

Date Collected	Analysis Type	NFS		State	
		Results	+/- Error	Results	+/- Error
1/20/98	U234	*	*	No Comparison Data	
	U235	*	*		
	U238	*	*		
2/26/98	U234	13.15	1.22	No Comparison Data	
	U235	0.33	0.12		
	U238	2.33	0.33		
3/11/98	U234	13.48	1.26	No Comparison Data	
	U235	0.53	0.17		
	U238	2.26	0.33		
4/8/98	U234	12.89	1.16	No Comparison Data	
	U235	0.42	0.13		
	U238	2.36	0.32		
5/15/98	U234	19.20	2.15	No Comparison Data	
	U235	0.84	0.22		
	U238	3.22	0.51		
6/9/98	U234	23.10	3.46	No Comparison Data	
	U235	1.27	0.34		
	U238	3.86	0.73		
7/7/98	U234	14.10	1.84	No Comparison Data	
	U235	1.46	0.30		
	U238	2.55	0.45		
8/19/98	U234	15.90	2.07	No Comparison Data	
	U235	0.65	0.30		
	U238	2.39	0.58		
9/22/98	U234	14.50	2.37	No Comparison Data	
	U235	0.45	0.15		
	U238	2.14	0.44		
10/21/98	U234	14.10	1.62	No Comparison Data	
	U235	0.49	0.18		
	U238	2.17	0.41		
11/18/98	U234	7.45	1.03	No Comparison Data	
	U235	0.35	0.12		
	U238	1.15	0.24		
12/16/98	U234	*	*	No Comparison Data	
	U235	*	*		
	U238	*	*		

\* No sample - sludge beds too wet to remove sample.

Attachment 1

Nuclear Fuel Services, Inc. and State of Tennessee Data Comparison - 1998

Groundwater Monitoring Well # 100A (Units pCi/l)

Date Collected	Analysis Type	NFS		State	
		Results	+/- Error	Results	+/- Error
3/9/98	Alpha	6.05	1.78	9.30	3.20
	Beta	10.17	0.00	13.60	2.90
6/2/98	Alpha	4.00	1.79	6.10	2.70
	Beta	15.59	6.72	7.00	2.60
9/14/98	Alpha	3.06	1.73	1.90	2.00
	Beta	19.43	21.77	8.70	2.60
12/16/98	Alpha	5.16	2.15	8.50	2.60
	Beta	10.86	0.00	7.50	2.60

Attachment 1

Nuclear Fuel Services, Inc. and State of Tennessee Data Comparison - 1998

Love Farm #1 Soil Samples (Units pCi/g)

Date Collected	Sample ID	Analysis Type	NFS		State	
			Results +/-	Error	Results +/-	Error
09/23/98	S16A	Total Thorium	2.80	0.97	1.91	0.44
09/23/98	S16B	Total Thorium	4.74	1.34	2.65	0.48
09/23/98	S16C	Total Thorium	4.44	1.17	2.81	0.50
09/23/98	S16A	Total Uranium	1.09	0.66	1.44	0.53
09/23/98	S16B	Total Uranium	3.14	1.02	1.91	0.55
09/23/98	S16C	Total Uranium	2.31	0.75	1.49	0.51

**Attachment 1**

**Nuclear Fuel Services, Inc. and State of Tennessee Data Comparison - 1998**

**Asheville Highway Vegetation (Units pCi/g)**

Date Collected	Analysis Type	NFS		State		
		Results	+/- Error	Results	+/-	Error
1/21/98	Total Uranium	0.31	0.08	No Comparison Data		
4/22/98	Total Uranium	0.04	0.04	No Comparison Data		
7/22/98	Total Uranium	0.07	0.15	No Comparison Data		
10/21/98	Total Uranium	0.05	0.09	No Comparison Data		

**Little Mountain Vegetation (Units pCi/g)**

Date Collected	Analysis Type	NFS		State		
		Results	+/- Error	Results	+/-	Error
1/21/98	Total Uranium	0.12	0.05	No Comparison Data		
4/22/98	Total Uranium	0.02	0.03	No Comparison Data		
7/22/98	Total Uranium	0.03	0.07	No Comparison Data		
10/21/98	Total Uranium	0.09	0.08	No Comparison Data		

\* NFS and the State of TN do not collect vegetation during the same month.