Technical Memorandum
Niagara Falls Storage Site (NFSS)
Niagara-Mohawk Soil Sampling
Elevated Thorium-230 and Radium-226 at Sample Location SS 913

Contract DACW-49-97-D-0001

Prepared For:

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1.0 Introduction. This Technical Memorandum addresses findings associated with the detection of elevated levels of Thorium-230 and Radium-226 in a surface soil sample collected at location 913 on the Niagara-Mohawk Property, immediately adjacent to the western boundary of the NFSS Property, in November, 2001.

2.0 Description of Sampling Location 913. The rationale for selection of the planned location of 913 was included in the Niagara-Mohawk Field Sampling Plan. The actual location of 913 was moved slightly from its planned location, in order to correspond to a localized gamma "hot spot" encountered during the gamma walkover survey of the Niagara Mohawk property. The surface gamma reading at location 913 was 22,400 cpm during the soil sample collection activities on 11/15/01.

Sample location 913 is located a few feet east of the West Ditch, as shown in Figure 1. The sample was collected on the northern bank from a small east-west drainage ditch, which originates on NFSS property between the Interim Waste Containment Structure (IWCS) and the perimeter fence. The small drainage ditch (denoted as the South IWCS Ditch) flows westward from NFSS property onto Niagara Mohawk property, and discharges to the West Ditch. The surface soil at SS-913 was described as a gray silty sand, with clay, gravel and roots. Surface water runoff in this small drainage to the West Ditch is rapid, and water does not accumulate or remain at this location for an extended period of time following rain events. Surface water was not present at the time of sample collection.

During the collection of the soil sample at location 913, three unique samples of the soil profile, including 0-6", 6-12", and 12-18" intervals were collected. Additional gamma measurements were also collected as the soil sampling was performed. These readings were 33,200 cpm at 6" in depth; 23,854 cpm at 12" in depth; and 20,928 cpm at 18" in depth. A copy of the soil sample collection log is present as Attachment 1. Based on these measurements, Maxim submitted samples from the 0-6" and the 12-18" for analysis. A sample of the 6-12" interval was also collected and is currently being held and is available for analysis if additional information concerning radiological parameters for this interval is desired.

3.0 Sample SS913-205 Analytical Results. The concentrations of Thorium-230 and Radium-226 in sample SS 913-205 (the 0-6" interval) were 30.5 pCi/g and 17.8 pCi/g, respectively. The concentrations of Thorium-230 and Radium-226 in sample SB913-2105-1.5 (the 12-18" interval) were 1.38 pCi/g and 0.966 pCi/g, respectively. A copy of the results of the analysis of these samples is presented in Attachment 2.

4.0 Upgradient Sediment Analytical Results. Two sediment samples, SD 741 and SD 703, were collected upgradient (east) of the location of 913 in the same east-west drainage ditch, on NFSS property, during Phases I and II of the Remedial Investigation. SD 703, which was collected during Phase I, was approximately 35 feet upstream of location 913. Sample SD 703 resulted in detection of Thorium–230 at a concentration of 10.1 pCi/g, and Radium-226 was detected at a concentration of 8.52 pCi/g. Sediment sample SD 741, which is located upstream (east) of location 703, was collected and analyzed during Phase II and found to contain Thorium-230 at a concentration of 1.01 pCi/g. Radium-226 was present at location 741 in a concentration of 1.64 pCi/g.

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5.0 Upgradient Surface Water Analytical Results. Analyses of surface water samples collected at locations 703 and 741 were also performed. Radium-226 and Thorium-230 were not detected above the Method Detection Limit (MDL) in sample SW 703. Surface water collected at location 741 exhibited a concentration of Thorium-230 at 0.225 pCi/g. Radium was not detected above the MDL at location 741. These sample locations are shown in Figure 1. Analytical results of these analyses are also presented in Attachment 2.

6.0 Results of Groundwater Analyses in the Vicinity of SS-913. A groundwater sample was collected from well OW17A during Phase I site activities. This well is located approximately 186 feet north of the small drainage ditch at which sample locations 913, 703 and 741 are located. This well is approximately 54.5 feet east of the West Ditch. Radium-226 was detected at a concentration of 0.394 pCi/L and Thorium-230 was detected at 0.0734 pCi/L in the groundwater sample collected from this well and analyzed during Phase I. These concentrations are typical of Thorium-230 and Radium-226 concentrations at NFSS.

A groundwater sample was collected from a temporary well point at location 101 on NFSS property, about 75 northeast of location 913, during Phase II in September, 2000. The groundwater sample was designated as GW 101-744. Concentrations of Radium-226 and Thorium-230 in this groundwater sample were 0.725 pCi/L and 0.0904 pCi/L, respectively.

7.0 Results of Sediment and Soil Analyses in the Vicinity of SS-913. Sediment samples were collected at locations 912, 914 and 915 during the Niagara-Mohawk sampling activities. Sample SD 912 was upstream, and SD 914 and SD 915 were downstream of the discharge location of the small drainage ditch in which sample SS-913-2105 was collected. Results are presented in Attachment 2. These sediment samples did not exhibit concentrations of radiological parameters in excess of risked-based screening levels.

Surface soil samples SS 903, SS 904, SS 905, and SS 906 were also collected from locations on either side of the West Ditch, as depicted on Figure 1. Results are presented in Attachment 2. These samples did not exhibit concentrations of radiological parameters above the risked-based screening levels.

Surface and subsurface soil samples were collected from the soil boring at location 101, where a temporary well point was installed. Samples were collected from the 0-6" interval and the 10.0 to 10.5 foot interval. Results of analysis of surface soil samples for Radium-226 and Thorium-230 were 1.64 and 1.94 pCi/g. Results of analysis of subsurface soil samples for Radium-226 and Thorium-230 were 0.639 and 0.528 pCi/g. The surface soil analytical results are below Risk-Based Screening Levels.

8.0 Comparison of SS-913 Analytical Results with Risk-Based Screening Levels. United States Department of Energy-Oak Ridge risk-based residential screening levels for Thorium-230 and Radium-226 in surface soil, as described in the Phase I Summary Report and used for project planning, are 5.0 pCi/g and 2.7 pCi/g, respectively. Site-specific risk-based screening levels for surface water are currently being developed using RESRAD and will be available in early February.

9.0 Comparison of SS-913 Analytical Results with Analyses of Other Samples at NFSS. The Thorium-230 and Radium-226 levels at these sample locations were also compared to maximum levels detected during the analysis of 178 soil and sediment samples collected from the NFSS during Phase I of the investigation. The maximum concentration of Thorium-230 found during analysis of these soil and sediment samples (on NFSS property) was 15.6 pCi/g, with a mean concentration of 1.76 pCi/g. The second highest detection of Thorium-230 was 14.2 pCi/g. The maximum concentration of Radium-226 found in analysis of these same soil and sediment samples on NFSS property was 1140 pCi/g. The second highest detection of Radium-226 was a sediment samples at 9.49 pCi/g, collected during Phase I.

10.0 Conclusions. The assessment of the potential extent of elevated levels of Thorium-230 (primarily an alpha emitter) is problematic, in that gamma survey data is not a good indicator of the presence or absence of this radionuclide. The detection of Radium-226 and Thorium-230 above initial screening levels at location 703, along with the presence of Thorium-230 and Radium-226 at SS 913, suggest that elevated levels may be present at other locations within and along the east-west drainage ditch. It is not known whether the elevated levels found at SS 913 and SD 703 are area-wide, or only isolated findings. The concentration of Thorium-230 in the 6-12" interval collected at location 913 is also unknown; therefore the vertical extent of potential contamination has not been fully assessed.

11.0 Recommendations. Maxim initially recommends that the sample from the 6-12" interval of SS-913 should be analyzed for Radium-226 and Thorium-230 to further define the vertical extent of contamination at that location. Additional sampling should be performed to further define the horizontal extent of potentially elevated levels of Thorium-230 and Radium-226 in the vicinity of location 913. Sampling should also be performed to determine the extent of impacted sediments in unsampled areas of the drainage ditch in which SD 741, SD 703 and SS 913 are located.

ATTACHMENT 1
Soil and Sediment Sample Collection Log
Location 913

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NFSS Soil & Sediment Sample Collection Log

Date: 11-15-01 **Sampling Team:** JB/RS **Surface Gamma Reading (KCPS):** 22,400 cpm

Interval	Gamma reading ~~(KCPS)~~ cpm	Sample prefix (SD, SS, or SB)	Map ID	4 Digit Sample Number	Bowl # and reading (KCPS)	Time	Remarks and description
0-6"	6" reading 33,200	SS	913	2105	BKG 7860 8244 (4 jars)	1500	grey, silty sand w/ clay, gravel roots
6-12"	12" reading 23,854	SS					not analyzed
12-18"	18" reading 20,928	SB	913	~~2105~~-1.5 2474		1540	by
18-24"	24" reading						

Additional notes: _____

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ATTACHMENT 2
Analytical Results

Sample_No	Coll_date	Parameter	Lab_Result	Uncertainty	Units	Lab_Qual	MDL	CRDL_CRQL
SOIL and SEDIMENT SAMPLES								
SB 101-714-10.5								
SB 101-714-10.5	9/8/2000	Actinium-227	0.034	0.138	pCi/g	U	0.243	0.5
SB 101-714-10.5	9/8/2000	Americium-241	-0.0115	0.0649	pCi/g	U	0.102	0.1
SB 101-714-10.5	9/8/2000	Cesium-137	-0.0048	0.0129	pCi/g	U	0.0224	0.1
SB 101-714-10.5	9/8/2000	Cobalt-60	-0.00704	0.013	pCi/g	U	0.0223	0.1
SB 101-714-10.5	9/8/2000	Protactinium-231	0.369	0.538	pCi/g	U	0.953	1
SB 101-714-10.5	9/8/2000	Radium-226	0.639	0.104	pCi/g		0.0421	0.1
SB 101-714-10.5	9/8/2000	Radium-228	0.724	0.151	pCi/g		0.077	0.2
SB 101-714-10.5	9/8/2000	Thorium-228	0.689	0.308	pCi/g		0.294	5
SB 101-714-10.5	9/8/2000	Thorium-228	0.848	0.129	pCi/g		0.0327	0.1
SB 101-714-10.5	9/8/2000	Thorium-230	0.528	0.3	pCi/g		0.408	5
SB 101-714-10.5	9/8/2000	Thorium-232	0.659	0.279	pCi/g		0.163	5
SB 101-714-10.5	9/8/2000	Total Uranium	1.67	0.0341	ug/g		0.124	1
SB 101-714-10.5	9/8/2000	Uranium-233/234	0.555	0.387	pCi/g		0.415	1
SB 101-714-10.5	9/8/2000	Uranium-235	0.0173	0.0948	pCi/g	U	0.127	0.5
SB 101-714-10.5	9/8/2000	Uranium-235/236	0.0456	0.123	pCi/g	U	0.316	1
SB 101-714-10.5	9/8/2000	Uranium-238	0.524	0.365	pCi/g		0.315	1
SB 101-714-10.5	9/8/2000	Uranium-238	0.521	0.794	pCi/g	U	0.834	1
SS 101-684								
SS 101-684	9/8/2000	Actinium-227	0.125	0.211	pCi/g	U	0.354	0.5
SS 101-684	9/8/2000	Americium-241	0.00439	0.0797	pCi/g	U	0.127	0.1
SS 101-684	9/8/2000	Cesium-137	0.329	0.0507	pCi/g		0.03	0.1
SS 101-684	9/8/2000	Cobalt-60	0.00396	0.0245	pCi/g	U	0.0375	0.1
SS 101-684	9/8/2000	Protactinium-231	0.182	0.792	pCi/g	U	1.31	1
SS 101-684	9/8/2000	Radium-226	1.64	0.221	pCi/g		0.0559	0.1
SS 101-684	9/8/2000	Radium-228	0.89	0.18	pCi/g		0.117	0.2
SS 101-684	9/8/2000	Thorium-228	1.23	0.524	pCi/g		0.702	5
SS 101-684	9/8/2000	Thorium-228	0.999	0.11	pCi/g		0.0471	0.1
SS 101-684	9/8/2000	Thorium-230	1.94	0.551	pCi/g		0.342	5
SS 101-684	9/8/2000	Thorium-232	1.04	0.371	pCi/g		0.175	5
SS 101-684	9/8/2000	Total Uranium	3.64	0.067	ug/g		0.129	1
SS 101-684	9/8/2000	Uranium-233/234	1.34	0.534	pCi/g		0.255	1
SS 101-684	9/8/2000	Uranium-235	0.0817	0.174	pCi/g	U	0.184	0.5
SS 101-684	9/8/2000	Uranium-235/236	0.0485	0.0972	pCi/g	U	0.146	1
SS 101-684	9/8/2000	Uranium-238	1.02	0.458	pCi/g		0.145	1
SS 101-684	9/8/2000	Uranium-238	0.76	1.01	pCi/g	U	1.02	1

Sample_No	Coll_date	Parameter	Lab_Result	Uncertainty	Units	Lab_Qual	MDL	CRDL_CRQL
SOIL and SEDIMENT SAMPLES								
SD 703-297								
SD 703-297	11/22/99	Alpha	68.2	8.85	PCI/G		3.97	3.97
SD 703-297	11/22/99	Thorium-228	1.37	0.358	PCI/G		0.291	0.291
SD 703-297	11/22/99	Thorium-230	10.1	1.64	PCI/G		0.0792	0.0792
SD 703-297	11/22/99	Thorium-232	0.885	0.252	PCI/G	J	0.13	0.13
SD 703-297	11/22/99	Uranium-233/234	1.94	0.366	PCI/G		0.0937	0.0937
SD 703-297	11/22/99	Uranium-235	0.124	0.0796	PCI/G	J	0.0373	0.0373
SD 703-297	11/22/99	Uranium-238	1.72	0.339	PCI/G		0.0772	0.0772
SD 703-297	11/22/99	Beta	39.9	4.37	PCI/G		4.65	4.65
SD 703-297	11/22/99	Radium-226	8.52	0.989	PCI/G		0.0615	0.0615
SD 703-297	11/22/99	Total Uranium	5.6	0.0622	UG/G		2.17	2.17
SS 903-2083								
SS 903-2083	11/18/01	Actinium-227	0.0769	0.208	pCi/g	U	0.313	0.5
SS 903-2083	11/18/01	Alpha	13.8	3.46	pCi/g		1.72	4
SS 903-2083	11/18/01	Americium-241	0.031	0.028	pCi/g	U	0.0459	0.1
SS 903-2083	11/18/01	Beta	28	3.81	pCi/g		4.46	10
SS 903-2083	11/18/01	Cesium-137	-0.00824	0.0188	pCi/g	U	0.0313	0.1
SS 903-2083	11/18/01	Cobalt-60	0.0109	0.0129	pCi/g	U	0.0319	0.1
SS 903-2083	11/18/01	Potassium-40	21.9	2.44	pCi/g		0.276	
SS 903-2083	11/18/01	Protactinium-231	-0.248	0.728	pCi/g	U	1.21	1
SS 903-2083	11/18/01	Radium-226	0.919	0.148	pCi/g		0.0569	0.1
SS 903-2083	11/18/01	Radium-228	1.33	0.246	pCi/g		0.11	0.2
SS 903-2083	11/18/01	Thorium-228	1.4	0.195	pCi/g		0.0434	0.1
SS 903-2083	11/18/01	Thorium-228	0.971	0.372	pCi/g		0.338	1
SS 903-2083	11/18/01	Thorium-230	1.26	0.409	pCi/g		0.128	1
SS 903-2083	11/18/01	Thorium-232	1.03	0.36	pCi/g		0.153	1
SS 903-2083	11/18/01	Total Uranium	4.01	0.0975	ug/g		0.104	1
SS 903-2083	11/18/01	Uranium-233/234	1.63	0.467	pCi/g		0.235	1
SS 903-2083	11/18/01	Uranium-235	0.141	0.134	pCi/g	U	0.168	0.5
SS 903-2083	11/18/01	Uranium-235/236	0.0769	0.114	pCi/g	U	0.222	1
SS 903-2083	11/18/01	Uranium-238	0.861	0.504	pCi/g		0.446	1.5
SS 903-2083	11/18/01	Uranium-238	0.816	0.32	pCi/g		0.222	1
SB903-2085-2.0								
SB903-2085-2.0	11/18/01	Actinium-227	-0.0716	0.148	pCi/g	U	0.262	0.5
SB903-2085-2.0	11/18/01	Alpha	14.3	4.04	pCi/g		3.38	4
SB903-2085-2.0	11/18/01	Americium-241	0.0271	0.0889	pCi/g	U	0.144	0.1
SB903-2085-2.0	11/18/01	Beta	30.7	4.66	pCi/g		6.5	10
SB903-2085-2.0	11/18/01	Cesium-137	-0.00491	0.0239	pCi/g	U	0.025	0.1
SB903-2085-2.0	11/18/01	Cobalt-60	-0.00424	0.015	pCi/g	U	0.0256	0.1
SB903-2085-2.0	11/18/01	Potassium-40	23.1	2.84	pCi/g		0.227	
SB903-2085-2.0	11/18/01	Protactinium-231	-0.0313	0.572	pCi/g	U	1.02	1
SB903-2085-2.0	11/18/01	Radium-226	0.889	0.122	pCi/g		0.0432	0.1
SB903-2085-2.0	11/18/01	Radium-228	1.07	0.202	pCi/g		0.0844	0.2
SB903-2085-2.0	11/18/01	Thorium-228	1.14	0.136	pCi/g		0.0387	0.1
SB903-2085-2.0	11/18/01	Thorium-228	1.31	0.526	pCi/g		0.418	1
SB903-2085-2.0	11/18/01	Thorium-230	1.01	0.456	pCi/g		0.445	1
SB903-2085-2.0	11/18/01	Thorium-232	1.17	0.483	pCi/g		0.368	1
SB903-2085-2.0	11/18/01	Total Uranium	3.09	0.0769	ug/g		0.105	1
SB903-2085-2.0	11/18/01	Uranium-233/234	1.11	0.254	pCi/g		0.0715	1
SB903-2085-2.0	11/18/01	Uranium-235	0.154	0.138	pCi/g		0.152	0.5
SB903-2085-2.0	11/18/01	Uranium-235/236	0.0987	0.0761	pCi/g	U	0.0989	1
SB903-2085-2.0	11/18/01	Uranium-238	1.38	1.39	pCi/g		1.11	1.5
SB903-2085-2.0	11/18/01	Uranium-238	1.04	0.245	pCi/g		0.0715	1

Sample_No	Coll_date	Parameter	Lab_Result	Uncertainty	Units	Lab_Qual	MDL	CRDL_CR QL
SS 904-2087								
SS 904-2087	11/18/01	Actinium-227	-0.00973	0.166	pCi/g	U	0.261	0.5
SS 904-2087	11/18/01	Alpha	13.3	3.54	pCi/g		3.46	4
SS 904-2087	11/18/01	Americium-241	-0.00261	0.103	pCi/g	U	0.166	0.1
SS 904-2087	11/18/01	Beta	23.8	3.81	pCi/g		5.26	10
SS 904-2087	11/18/01	Cesium-137	0.167	0.0325	pCi/g		0.0248	0.1
SS 904-2087	11/18/01	Cobalt-60	0.00547	0.0154	pCi/g	U	0.028	0.1
SS 904-2087	11/18/01	Potassium-40	18.7	2.25	pCi/g		0.237	
SS 904-2087	11/18/01	Protactinium-231	-0.448	0.588	pCi/g	U	0.991	1
SS 904-2087	11/18/01	Radium-226	0.981	0.132	pCi/g		0.0443	0.1
SS 904-2087	11/18/01	Radium-228	0.919	0.184	pCi/g		0.0901	0.2
SS 904-2087	11/18/01	Thorium-228	0.885	0.112	pCi/g		0.041	0.1
SS 904-2087	11/18/01	Thorium-228	1.39	0.482	pCi/g		0.0849	1
SS 904-2087	11/18/01	Thorium-230	1.61	0.528	pCi/g		0.0831	1
SS 904-2087	11/18/01	Thorium-232	0.738	0.323	pCi/g		0.156	1
SS 904-2087	11/18/01	Total Uranium	2.36	0.0617	ug/g		0.102	1
SS 904-2087	11/18/01	Uranium-233/234	0.712	0.299	pCi/g		0.152	1
SS 904-2087	11/18/01	Uranium-235	0.0782	0.138	pCi/g	U	0.148	0.5
SS 904-2087	11/18/01	Uranium-235/236	0	2	pCi/g	U	0.0866	1
SS 904-2087	11/18/01	Uranium-238	2	1.25	pCi/g		1.22	1.5
SS 904-2087	11/18/01	Uranium-238	1	0.36	pCi/g		0.152	1
SB 904-2088								
SB904-2088-3.0	11/18/01	Actinium-227	-0.0101	0.123	pCi/g	U	0.183	0.5
SB904-2088-3.0	11/18/01	Alpha	8	2.46	pCi/g		1.85	4
SB904-2088-3.0	11/18/01	Americium-241	0.0254	0.0345	pCi/g	U	0.0528	0.1
SB904-2088-3.0	11/18/01	Beta	22.1	3.22	pCi/g		4	10
SB904-2088-3.0	11/18/01	Cesium-137	0.0124	0.0103	pCi/g	U	0.018	0.1
SB904-2088-3.0	11/18/01	Cobalt-60	7.34E-05	0.011	pCi/g	U	0.0186	0.1
SB904-2088-3.0	11/18/01	Potassium-40	18.8	2.08	pCi/g		0.157	
SB904-2088-3.0	11/18/01	Protactinium-231	-0.17	0.416	pCi/g	U	0.69	1
SB904-2088-3.0	11/18/01	Radium-226	0.689	0.103	pCi/g		0.0315	0.1
SB904-2088-3.0	11/18/01	Radium-228	0.842	0.16	pCi/g		0.0587	0.2
SB904-2088-3.0	11/18/01	Thorium-228	0.844	0.0973	pCi/g		0.0263	0.1
SB904-2088-3.0	11/18/01	Thorium-228	0.81	0.33	pCi/g		0.339	1
SB904-2088-3.0	11/18/01	Thorium-230	0.938	0.33	pCi/g		0.155	1
SB904-2088-3.0	11/18/01	Thorium-232	0.443	0.219	pCi/g		0.204	1
SB904-2088-3.0	11/18/01	Total Uranium	2.24	0.0579	ug/g		0.0791	1
SB904-2088-3.0	11/18/01	Uranium-233/234	0.512	0.249	pCi/g		0.241	1
SB904-2088-3.0	11/18/01	Uranium-235	0.0535	0.107	pCi/g	U	0.107	0.5
SB904-2088-3.0	11/18/01	Uranium-235/236	0.046	0.0929	pCi/g	U	0.207	1
SB904-2088-3.0	11/18/01	Uranium-238	0.799	0.706	pCi/g		0.451	1.5
SB904-2088-3.0	11/18/01	Uranium-238	0.715	0.288	pCi/g		0.193	1

Sample_No	Coll_date	Parameter	Lab_Result	Uncertainty	Units	Lab_Qual	MDL	CRDL_CR QL
SS 905-2089								
SS 905-2089	11/18/01	Actinium-227	0.127	0.264	pCi/g	U	0.388	0.5
SS 905-2089	11/18/01	Alpha	17	3.88	pCi/g		3.71	4
SS 905-2089	11/18/01	Americium-241	0.0346	0.0822	pCi/g	U	0.142	0.1
SS 905-2089	11/18/01	Beta	31.4	4.39	pCi/g		5.98	10
SS 905-2089	11/18/01	Cesium-137	0.0369	0.0253	pCi/g		0.0366	0.1
SS 905-2089	11/18/01	Cobalt-60	0.0202	0.0239	pCi/g	U	0.0434	0.1
SS 905-2089	11/18/01	Potassium-40	18.7	2.3	pCi/g		0.365	
SS 905-2089	11/18/01	Protactinium-231	-0.375	0.888	pCi/g	U	1.41	1
SS 905-2089	11/18/01	Radium-226	2.07	0.266	pCi/g		0.0601	0.1
SS 905-2089	11/18/01	Radium-228	0.869	0.209	pCi/g		0.129	0.2
SS 905-2089	11/18/01	Thorium-228	0.922	0.116	pCi/g		0.0526	0.1
SS 905-2089	11/18/01	Thorium-228	1.14	0.427	pCi/g		0.274	1
SS 905-2089	11/18/01	Thorium-230	2.14	0.631	pCi/g		0.0802	1
SS 905-2089	11/18/01	Thorium-232	1.52	0.499	pCi/g		0.0802	1
SS 905-2089	11/18/01	Total Uranium	13.5	0.587	ug/g		0.0973	1
SS 905-2089	11/18/01	Uranium-233/234	2.95	0.679	pCi/g		0.154	1
SS 905-2089	11/18/01	Uranium-235	0.0357	0.185	pCi/g	U	0.208	0.5
SS 905-2089	11/18/01	Uranium-235/236	0.214	0.169	pCi/g		0.204	1
SS 905-2089	11/18/01	Uranium-238	2.89	1.32	pCi/g		1.11	1.5
SS 905-2089	11/18/01	Uranium-238	2.95	0.682	pCi/g		0.221	1
SB 905-2090-2.0								
SB905-2090-2.0	11/18/01	Actinium-227	0	0.336	pCi/g	U	0.323	0.5
SB905-2090-2.0	11/18/01	Alpha	17.3	3.12	pCi/g		2.99	4
SB905-2090-2.0	11/18/01	Americium-241	0.0463	0.0395	pCi/g	U	0.127	0.1
SB905-2090-2.0	11/18/01	Beta	25.8	2.88	pCi/g		3.72	10
SB905-2090-2.0	11/18/01	Cesium-137	0.331	0.048	pCi/g		0.0289	0.1
SB905-2090-2.0	11/18/01	Cobalt-60	-0.00597	0.0195	pCi/g	U	0.0335	0.1
SB905-2090-2.0	11/18/01	Potassium-40	17.5	2.06	pCi/g		0.297	
SB905-2090-2.0	11/18/01	Protactinium-231	-0.186	0.785	pCi/g	U	1.3	1
SB905-2090-2.0	11/18/01	Radium-226	1.68	0.22	pCi/g		0.0544	0.1
SB905-2090-2.0	11/18/01	Radium-228	0.83	0.195	pCi/g		0.116	0.2
SB905-2090-2.0	11/18/01	Thorium-228	0.953	0.119	pCi/g		0.0516	0.1
SB905-2090-2.0	11/18/01	Thorium-228	0.856	0.397	pCi/g		0.483	1
SB905-2090-2.0	11/18/01	Thorium-230	2.1	0.617	pCi/g		0.0778	1
SB905-2090-2.0	11/18/01	Thorium-232	0.752	0.314	pCi/g		0.0778	1
SB905-2090-2.0	11/18/01	Total Uranium	12.2	0.513	ug/g		0.0948	1
SB905-2090-2.0	11/18/01	Uranium-233/234	1.09	0.374	pCi/g		0.236	1
SB905-2090-2.0	11/18/01	Uranium-235	0.231	0.135	pCi/g		0.179	0.5
SB905-2090-2.0	11/18/01	Uranium-235/236	0.0562	0.0993	pCi/g	U	0.208	1
SB905-2090-2.0	11/18/01	Uranium-238	1.89	0.985	pCi/g		1.05	1.5
SB905-2090-2.0	11/18/01	Uranium-238	1.32	0.414	pCi/g		0.208	1

Sample_No	Coll_date	Parameter	Lab_Result	Uncertainty	Units	Lab_Qual	MDL	CRDL_CR QL
SD 911-2101								
SD 911-2101	11/15/01	Actinium-227	-0.295	0.244	pCi/g	U	0.371	0.5
SD 911-2101	11/15/01	Alpha	18.5	3.48	pCi/g		2.16	4
SD 911-2101	11/15/01	Americium-241	-0.0121	0.0514	pCi/g	U	0.0554	0.1
SD 911-2101	11/15/01	Beta	32.8	3.43	pCi/g		3.79	10
SD 911-2101	11/15/01	Cesium-137	0.041	0.0321	pCi/g	U	0.0449	0.1
SD 911-2101	11/15/01	Cobalt-60	0.0257	0.0286	pCi/g	U	0.0511	0.1
SD 911-2101	11/15/01	Potassium-40	28.4	3.18	pCi/g		0.37	
SD 911-2101	11/15/01	Protactinium-231	-0.282	0.979	pCi/g	U	1.57	1
SD 911-2101	11/15/01	Radium-226	0.968	0.165	pCi/g		0.0802	0.1
SD 911-2101	11/15/01	Radium-228	1.5	0.313	pCi/g		0.145	0.2
SD 911-2101	11/15/01	Thorium-228	1.35	0.192	pCi/g		0.0566	0.1
SD 911-2101	11/15/01	Thorium-228	1.26	0.445	pCi/g		0.293	1
SD 911-2101	11/15/01	Thorium-230	1.17	0.415	pCi/g		0.209	1
SD 911-2101	11/15/01	Thorium-232	0.974	0.369	pCi/g		0.191	1
SD 911-2101	11/15/01	Total Uranium	4.45	0.113	ug/g		0.0886	1
SD 911-2101	11/15/01	Uranium-233/234	1.05	0.344	pCi/g		0.073	1
SD 911-2101	11/15/01	Uranium-235	0.105	0.178	pCi/g	U	0.214	0.5
SD 911-2101	11/15/01	Uranium-235/236	0.0732	0.085	pCi/g		0.0732	1
SD 911-2101	11/15/01	Uranium-238	1.15	0.604	pCi/g		0.533	1.5
SD 911-2101	11/15/01	Uranium-238	1.08	0.352	pCi/g		0.151	1
SD 912-2103								
SD 912-2103	11/15/01	Actinium-227	0.254	0.266	pCi/g	U	0.475	0.5
SD 912-2103	11/15/01	Alpha	18.7	3.89	pCi/g		4.06	4
SD 912-2103	11/15/01	Americium-241	0.0403	0.0651	pCi/g	U	0.1	0.1
SD 912-2103	11/15/01	Beta	28.9	3.8	pCi/g		5.15	10
SD 912-2103	11/15/01	Cesium-137	0.13	0.0386	pCi/g		0.0702	0.1
SD 912-2103	11/15/01	Cobalt-60	0.00853	0.0299	pCi/g	U	0.0536	0.1
SD 912-2103	11/15/01	Potassium-40	17.7	2.08	pCi/g		0.396	
SD 912-2103	11/15/01	Protactinium-231	-1.09	1.07	pCi/g	U	1.79	1
SD 912-2103	11/15/01	Radium-226	0.606	0.132	pCi/g		0.092	0.1
SD 912-2103	11/15/01	Radium-228	0.656	0.255	pCi/g		0.169	0.2
SD 912-2103	11/15/01	Thorium-228	1.06	0.162	pCi/g		0.0647	0.1
SD 912-2103	11/15/01	Thorium-228	1.5	0.496	pCi/g		0.329	1
SD 912-2103	11/15/01	Thorium-230	1.1	0.39	pCi/g		0.138	1
SD 912-2103	11/15/01	Thorium-232	1.2	0.416	pCi/g		0.201	1
SD 912-2103	11/15/01	Total Uranium	4.36	0.105	ug/g		0.0973	1
SD 912-2103	11/15/01	Uranium-233/234	0.777	0.305	pCi/g		0.0804	1
SD 912-2103	11/15/01	Uranium-235	0.0602	0.145	pCi/g	U	0.247	0.5
SD 912-2103	11/15/01	Uranium-235/236	0.128	0.122	pCi/g	U	0.142	1
SD 912-2103	11/15/01	Uranium-238	0.492	0.973	pCi/g	U	0.918	1.5
SD 912-2103	11/15/01	Uranium-238	1.39	0.424	pCi/g		0.141	1

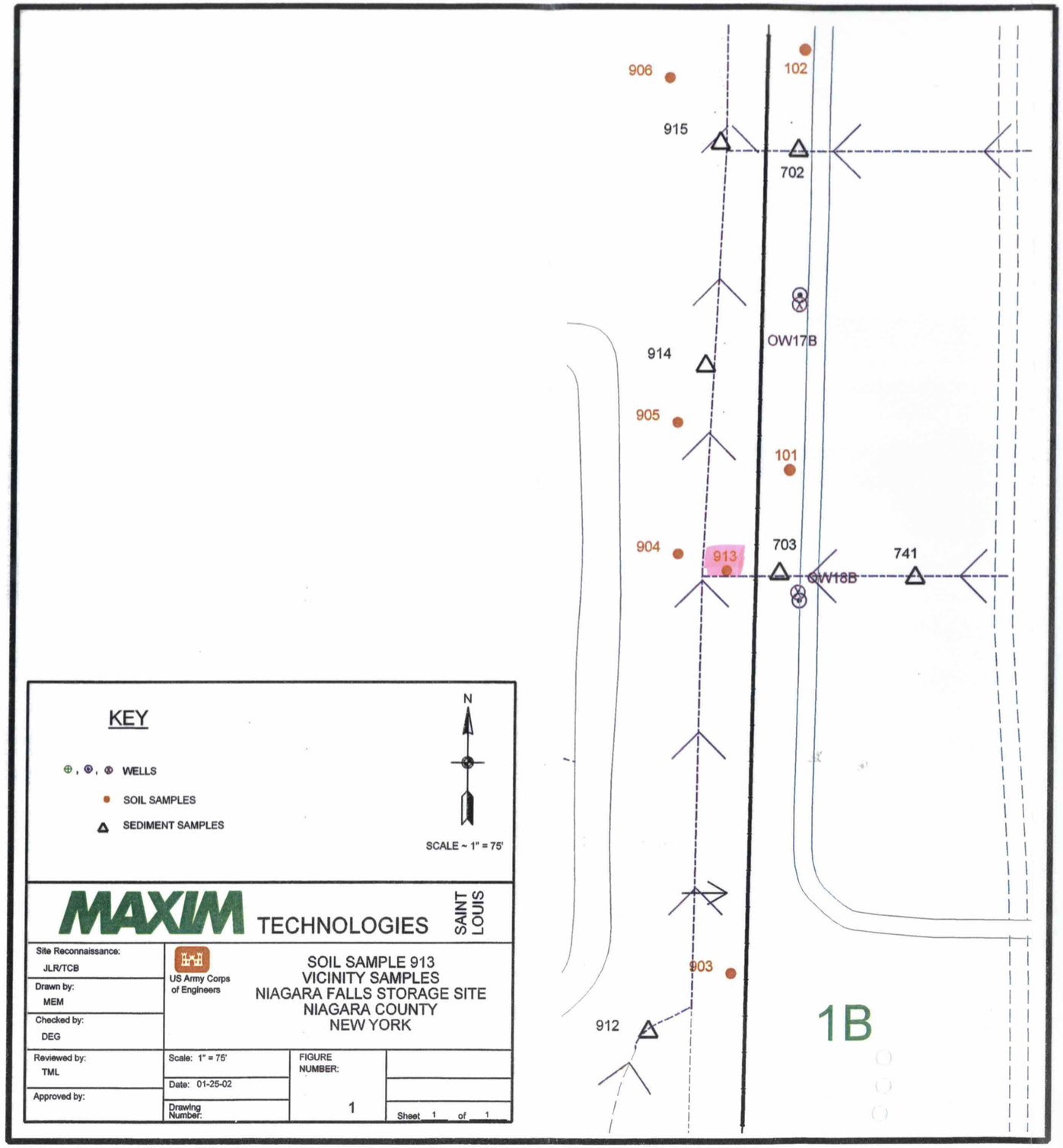
Sample_No	Coll_date	Parameter	Lab_Result	Uncertainty	Units	Lab_Qual	MDL	CRDL_CRQL
SS 913-2105								
SS 913-2105	11/15/01	Actinium-227	1.08	0.648	pCi/g		0.608	0.5
SS 913-2105	11/15/01	Alpha	83.3	6.42	pCi/g		3.2	4
SS 913-2105	11/15/01	Americium-241	0.0473	0.0775	pCi/g	U	0.098	0.1
SS 913-2105	11/15/01	Beta	49.7	3.85	pCi/g		3.91	10
SS 913-2105	11/15/01	Cesium-137	0.199	0.0534	pCi/g		0.0564	0.1
SS 913-2105	11/15/01	Cobalt-60	-0.0112	0.038	pCi/g	U	0.0627	0.1
SS 913-2105	11/15/01	Potassium-40	19.4	2.26	pCi/g		0.612	
SS 913-2105	11/15/01	Protactinium-231	-0.359	1.53	pCi/g	U	2.53	1
SS 913-2105	11/15/01	Radium-226	17.8	2.38	pCi/g		0.0997	0.1
SS 913-2105	11/15/01	Radium-228	0.952	0.264	pCi/g		0.222	0.2
SS 913-2105	11/15/01	Thorium-228	1.18	0.183	pCi/g		0.0878	0.1
SS 913-2105	11/15/01	Thorium-228	0.886	0.387	pCi/g		0.24	1
SS 913-2105	11/15/01	Thorium-230	30.5	6.5	pCi/g		0.234	1
SS 913-2105	11/15/01	Thorium-232	1.12	0.439	pCi/g		0.208	1
SS 913-2105	11/15/01	Total Uranium	4.07	0.0784	ug/g		0.099	1
SS 913-2105	11/15/01	Uranium-233/234	1.4	0.426	pCi/g		0.146	1
SS 913-2105	11/15/01	Uranium-235	0.31	0.278	pCi/g	U	0.339	0.5
SS 913-2105	11/15/01	Uranium-235/236	0.0977	0.113	pCi/g	U	0.173	1
SS 913-2105	11/15/01	Uranium-238	2.56	0.997	pCi/g		0.934	1.5
SS 913-2105	11/15/01	Uranium-238	1.66	0.468	pCi/g		0.083	1
SB913-2474-1.5								
SB913-2474-1.5	11/15/01	Actinium-227	-0.0808	0.182	pCi/g	U	0.305	0.5
SB913-2474-1.5	11/15/01	Alpha	14.6	2.93	pCi/g		1.82	4
SB913-2474-1.5	11/15/01	Americium-241	0.0135	0.0262	pCi/g	U	0.045	0.1
SB913-2474-1.5	11/15/01	Beta	29.5	3.22	pCi/g		3.77	10
SB913-2474-1.5	11/15/01	Cesium-137	-0.0028	0.0205	pCi/g	U	0.0345	0.1
SB913-2474-1.5	11/15/01	Cobalt-60	-0.00175	0.0205	pCi/g	U	0.0346	0.1
SB913-2474-1.5	11/15/01	Potassium-40	23.3	2.48	pCi/g		0.284	
SB913-2474-1.5	11/15/01	Protactinium-231	-0.302	0.692	pCi/g	U	1.15	1
SB913-2474-1.5	11/15/01	Radium-226	0.966	0.152	pCi/g		0.0606	0.1
SB913-2474-1.5	11/15/01	Radium-228	1.01	0.214	pCi/g		0.122	0.2
SB913-2474-1.5	11/15/01	Thorium-228	1.06	0.143	pCi/g		0.0428	0.1
SB913-2474-1.5	11/15/01	Thorium-228	1.15	0.45	pCi/g		0.427	1
SB913-2474-1.5	11/15/01	Thorium-230	1.38	0.467	pCi/g		0.201	1
SB913-2474-1.5	11/15/01	Thorium-232	1.39	0.484	pCi/g		0.342	1
SB913-2474-1.5	11/15/01	Total Uranium	3.67	0.0722	ug/g		0.0981	1
SB913-2474-1.5	11/15/01	Uranium-233/234	1.72	0.538	pCi/g		0.221	1
SB913-2474-1.5	11/15/01	Uranium-235	0.196	0.17	pCi/g		0.167	0.5
SB913-2474-1.5	11/15/01	Uranium-235/236	0.0897	0.126	pCi/g	U	0.221	1
SB913-2474-1.5	11/15/01	Uranium-238	2.1	0.7	pCi/g		0.429	1.5
SB913-2474-1.5	11/15/01	Uranium-238	1.77	0.55	pCi/g		0.287	1

Sample_No	Coll_date	Parameter	Lab_Result	Uncertainty	Units	Lab_Qual	MDL	CRDL_CRQL
SD 914-2108								
SD 914-2108	11/14/01	Actinium-227	-0.0191	0.142	pCi/g	U	0.247	0.5
SD 914-2108	11/14/01	Alpha	24.5	2.32	pCi/g		1.02	4
SD 914-2108	11/14/01	Americium-241	-0.00244	0.0439	pCi/g	U	0.077	0.1
SD 914-2108	11/14/01	Beta	43.4	2.38	pCi/g		2.28	10
SD 914-2108	11/14/01	Cesium-137	0.0826	0.0219	pCi/g		0.0225	0.1
SD 914-2108	11/14/01	Cobalt-60	0.00683	0.0147	pCi/g	U	0.0259	0.1
SD 914-2108	11/14/01	Potassium-40	27.8	3.08	pCi/g		0.226	
SD 914-2108	11/14/01	Protactinium-231	-0.208	0.554	pCi/g	U	0.947	1
SD 914-2108	11/14/01	Radium-226	0.985	0.143	pCi/g		0.0414	0.1
SD 914-2108	11/14/01	Radium-228	1.18	0.224	pCi/g		0.0804	0.2
SD 914-2108	11/14/01	Thorium-228	1.27	0.143	pCi/g		0.0396	0.1
SD 914-2108	11/14/01	Thorium-228	1.31	0.312	pCi/g		0.115	1
SD 914-2108	11/14/01	Thorium-230	1.25	0.314	pCi/g		0.213	1
SD 914-2108	11/14/01	Thorium-232	1.46	0.336	pCi/g		0.144	1
SD 914-2108	11/14/01	Total Uranium	2.47	0.0832	ug/g		0.0495	1
SD 914-2108	11/14/01	Uranium-233/234	1.21	0.389	pCi/g		0.227	1
SD 914-2108	11/14/01	Uranium-235	0	0.0878	pCi/g	U	0.145	0.5
SD 914-2108	11/14/01	Uranium-235/236	0.114	0.122	pCi/g	U	0.185	1
SD 914-2108	11/14/01	Uranium-238	1.58	0.734	pCi/g		0.649	1.5
SD 914-2108	11/14/01	Uranium-238	1.5	0.434	pCi/g		0.14	1
SD 915-2109								
SD 915-2109	11/15/01	Actinium-227	-0.0534	0.199	pCi/g	U	0.337	0.5
SD 915-2109	11/15/01	Alpha	14.4	3.04	pCi/g		3.03	4
SD 915-2109	11/15/01	Americium-241	0.0438	0.0354	pCi/g	U	0.057	0.1
SD 915-2109	11/15/01	Beta	28.9	3.36	pCi/g		4.32	10
SD 915-2109	11/15/01	Cesium-137	0.0156	0.0245	pCi/g	U	0.0434	0.1
SD 915-2109	11/15/01	Cobalt-60	-0.00955	0.0228	pCi/g	U	0.0394	0.1
SD 915-2109	11/15/01	Potassium-40	22.1	2.44	pCi/g		0.343	
SD 915-2109	11/15/01	Protactinium-231	0.109	0.832	pCi/g	U	1.42	1
SD 915-2109	11/15/01	Radium-226	0.944	0.169	pCi/g		0.0679	0.1
SD 915-2109	11/15/01	Radium-228	0.969	0.242	pCi/g		0.13	0.2
SD 915-2109	11/15/01	Thorium-228	1.16	0.16	pCi/g		0.0476	0.1
SD 915-2109	11/15/01	Thorium-228	1.76	0.57	pCi/g		0.164	1
SD 915-2109	11/15/01	Thorium-230	1.65	0.546	pCi/g		0.252	1
SD 915-2109	11/15/01	Thorium-232	1.14	0.426	pCi/g		0.191	1
SD 915-2109	11/15/01	Total Uranium	2.34	0.0501	ug/g		0.103	1
SD 915-2109	11/15/01	Uranium-233/234	1.01	0.347	pCi/g		0.141	1
SD 915-2109	11/15/01	Uranium-235	0.0163	0.109	pCi/g	U	0.19	0.5
SD 915-2109	11/15/01	Uranium-235/236	0.1	0.108	pCi/g	U	0.141	1
SD 915-2109	11/15/01	Uranium-238	0.845	0.67	pCi/g		0.555	1.5
SD 915-2109	11/15/01	Uranium-238	1.03	0.352	pCi/g		0.141	1
SD 741-672								
SD 741-672	10/3/00	Actinium-227	0.138	0.278	pCi/g	U	0.337	0.5
SD 741-672	10/3/00	Alpha	16.6	4.18	pCi/g		2.97	4
SD 741-672	10/3/00	Americium-241	-0.00566	0.0296	pCi/g	U	0.0487	0.1
SD 741-672	10/3/00	Beta	23.5	3.71	pCi/g		4.66	10
SD 741-672	10/3/00	Cesium-137	0.035	0.034	pCi/g	U	0.0428	0.1
SD 741-672	10/3/00	Cobalt-60	0.0233	0.0349	pCi/g	U	0.0393	0.1
SD 741-672	10/3/00	Protactinium-231	0.566	0.788	pCi/g	U	1.34	1
SD 741-672	10/3/00	Radium-226	1.64	0.106	pCi/g		0.0639	0.1
SD 741-672	10/3/00	Radium-228	0.932	0.174	pCi/g		0.131	0.2
SD 741-672	10/3/00	Thorium-228	0.926	0.0575	pCi/g		0.0481	0.1
SD 741-672	10/3/00	Thorium-228	1.17	0.427	pCi/g		0.385	5
SD 741-672	10/3/00	Thorium-230	1.01	0.396	pCi/g		0.401	5
SD 741-672	10/3/00	Thorium-232	0.606	0.286	pCi/g		0.259	5
SD 741-672	10/3/00	Total Uranium	4.89	0.0752	ug/g		0.134	1
SD 741-672	10/3/00	Uranium-233/234	2.05	0.782	pCi/g		0.455	1
SD 741-672	10/3/00	Uranium-235	0.205	0.2	pCi/g		0.191	0.5
SD 741-672	10/3/00	Uranium-235/236	0.0184	0.142	pCi/g	U	0.457	1
SD 741-672	10/3/00	Uranium-238	2.23	0.57	pCi/g		0.477	1
SD 741-672	10/3/00	Uranium-238	1.31	0.606	pCi/g		0.197	1

Sample_No	Col_date	Parameter	Lab_Result	Uncertainty	Units	Lab_Qual	MDL	CRDL_CRQL
SURFACE WATER DATA								
SW 703-296								
SW 703-296	11/4/99	Alpha	8.12	1.09	PCI/L		0.82	0.82
SW 703-296	11/4/99	Alpha	8.12	1.09	pCi/L		0.82	0.82
SW 703-296	11/4/99	Beta	7.77	0.835	PCI/L		1.1	1.1
SW 703-296	11/4/99	Beta	7.77	0.835	pCi/L		1.1	1.1
SW 703-296	11/4/99	Radium-226	0.259	0.379	PCI/L	U	0.638	0.638
SW 703-296	11/4/99	Radium-226	0.259	0.379	pCi/L	U	0.638	0.638
SW 703-296	11/4/99	Thorium-228	0.202	0.135	PCI/L	J	0.187	0.187
SW 703-296	11/4/99	Thorium-228	0.202	0.135	pCi/L	J	0.187	0.187
SW 703-296	11/4/99	Thorium-230	0.0753	0.0803	PCI/L	U	0.127	0.127
SW 703-296	11/4/99	Thorium-230	0.0753	0.0803	pCi/L	U	0.127	0.127
SW 703-296	11/4/99	Thorium-232	0.00722	0.0449	PCI/L	U	0.111	0.111
SW 703-296	11/4/99	Thorium-232	0.00722	0.0449	pCi/L	U	0.111	0.111
SW 703-296	11/4/99	Total Uranium	8.65	0.0883	UG/L	J	0.128	0.128
SW 703-296	11/4/99	Total Uranium	8.65	0.0883	ug/L	J	0.128	0.128
SW 703-296	11/4/99	Uranium-233/234	3.62	1.1	PCI/L		0.455	0.455
SW 703-296	11/4/99	Uranium-233/234	3.62	1.1	pCi/L		0.455	0.455
SW 703-296	11/4/99	Uranium-235	-0.0158	0.0316	PCI/L	U	0.347	0.347
SW 703-296	11/4/99	Uranium-235	-0.0158	0.0316	pCi/L	U	0.347	0.347
SW 703-296	11/4/99	Uranium-238	2.8	0.944	PCI/L		0.346	0.346
SW 741-678								
SW 741-678	5/21/01	Actinium-227	-12.6	20.5	pCi/L	U	33.6	75
SW 741-678	5/21/01	Americium-241	-1.51	8.47	pCi/L	U	15.1	30
SW 741-678	5/21/01	Cesium-137	0.686	1.56	pCi/L	U	2.95	5
SW 741-678	5/21/01	Cobalt-60	1.03	1.65	pCi/L	U	3.38	5
SW 741-678	5/21/01	Protactinium-231	13.1	77.1	pCi/L	U	133	250
SW 741-678	5/21/01	Radium-228	7.07	5.37	pCi/L	U	11.2	25
SW 741-678	5/21/01	Thorium-228	1.47	5.33	pCi/L	U	4.84	10
SW 741-678	5/21/01	Uranium-235	4.77	16	pCi/L	U	20.8	30
SW 741-678	5/21/01	Uranium-238	22.2	131	pCi/L	U	120	225
SW 741-678	5/21/01	Total Uranium	10.4	0.343	ug/L		0.11	1
SW 741-678	5/21/01	Alpha	10.3	1.43	pCi/L		1.47	2
SW 741-678	5/21/01	Beta	12.4	1.09	pCi/L		1.59	2
SW 741-678	5/21/01	Radium-226	0.423	0.332	pCi/L	U	0.456	1
SW 741-678	5/21/01	Uranium-233/234	5.29	0.652	pCi/L		0.0536	0.5
SW 741-678	5/21/01	Uranium-235/236	0.246	0.0837	pCi/L		0.0436	0.5
SW 741-678	5/21/01	Uranium-238	4.43	0.562	pCi/L		0.0188	0.5
SW 741-678	5/21/01	Thorium-228	0.17	0.0899	pCi/L		0.126	0.5
SW 741-678	5/21/01	Thorium-230	0.255	0.0746	pCi/L		0.0447	0.5
SW 741-678	5/21/01	Thorium-232	0.0769	0.0597	pCi/L	U	0.0897	0.5
SW 741-682								
SW 741-682	5/21/01	Actinium-227	4.78	21.1	pCi/L	U	36	75
SW 741-682	5/21/01	Americium-241	9.89	9.16	pCi/L	U	17.1	30
SW 741-682	5/21/01	Cesium-137	-0.116	1.57	pCi/L	U	2.77	5
SW 741-682	5/21/01	Cobalt-60	1.68	1.72	pCi/L	U	3.58	5
SW 741-682	5/21/01	Protactinium-231	45	82.1	pCi/L	U	143	250
SW 741-682	5/21/01	Radium-228	5.93	6.07	pCi/L	U	12.1	25
SW 741-682	5/21/01	Thorium-228	0.853	5.97	pCi/L	U	5.07	10
SW 741-682	5/21/01	Uranium-235	16.3	12	pCi/L	U	21.9	30
SW 741-682	5/21/01	Uranium-238	3.03	129	pCi/L	U	131	225
SW 741-682	5/21/01	Total Uranium	10.2	0.354	ug/L		0.11	1
SW 741-682	5/21/01	Alpha	7.37	1.45	pCi/L		1.53	2
SW 741-682	5/21/01	Beta	11.5	1.45	pCi/L		2.44	2
SW 741-682	5/21/01	Radium-226	0.502	0.299	pCi/L		0.394	1
SW 741-682	5/21/01	Uranium-233/234	4.18	0.557	pCi/L		0.0611	0.5
SW 741-682	5/21/01	Uranium-235/236	0.163	0.0756	pCi/L		0.0702	0.5
SW 741-682	5/21/01	Uranium-238	3.58	0.493	pCi/L		0.07	0.5
SW 741-682	5/21/01	Thorium-228	0.0605	0.0674	pCi/L	U	0.11	0.5
SW 741-682	5/21/01	Thorium-230	0.209	0.0651	pCi/L		0.0377	0.5
SW 741-682	5/21/01	Thorium-232	0.0985	0.0413	pCi/L		0.0118	0.5

Sample_No	Coll_date	Parameter	Lab_Result	Uncertainty	Units	Lab_Qual	MDL	CRDL_CRQL
GROUNDWATER SAMPLES								
OW17A-289								
OW17A-289	1/10/2000	Alpha	2.8	11.8	pCi/L	U	20.6	
OW17A-289	1/10/2000	Beta	29.8	13.9	pCi/L		22.4	
OW17A-289	1/10/2000	Alpha	2340	304	pCi/L		138	
OW17A-289	1/10/2000	Beta	1750	166	pCi/L		138	
OW17A-289	1/10/2000	Alpha	1750	229	pCi/L		54.1	
OW17A-289	1/10/2000	Beta	1620	157	pCi/L		110	
OW17A-289	1/10/2000	Total Uranium	0.794	0.0102	ug/L	J	0.128	
OW17A-289	1/10/2000	Radium-226	0.394	0.446	pCi/L	U	0.708	
OW17A-289	1/10/2000	Uranium-233/234	0.382	0.107	pCi/L	J	0.0618	
OW17A-289	1/10/2000	Uranium-235/236	0.0116	0.0297	pCi/L	U	0.062	
OW17A-289	1/10/2000	Uranium-238	0.335	0.0982	pCi/L	J	0.0436	
OW17A-289	1/10/2000	Thorium-228	0.0721	0.0685	pCi/L	U	0.109	
OW17A-289	1/10/2000	Thorium-230	0.0734	0.0381	pCi/L	J	0.037	
OW17A-289	1/10/2000	Thorium-232	0.00773	0.0155	pCi/L	U	0.0296	
OW17A-289	1/10/2000	Alpha	1.85	9.81	pCi/L	U	17.8	
OW17A-289	1/10/2000	Beta	41.9	13.2	pCi/L		20.6	
GW 101-744								
GW 101-744	9/9/2000	Alpha	15.5	2.99	pCi/L		3.04	2
GW 101-744	9/9/2000	Beta	10.4	2.81	pCi/L		4.26	2
GW 101-744	9/9/2000	Actinium-227	-3.41	25.4	pCi/L	U	42.6	75
GW 101-744	9/9/2000	Americium-241	-2.15	12.2	pCi/L	U	21.5	30
GW 101-744	9/9/2000	Cesium-137	0.0893	2.78	pCi/L	U	4.31	5
GW 101-744	9/9/2000	Cobalt-60	0.0275	2.56	pCi/L	U	4.7	5
GW 101-744	9/9/2000	Protactinium-231	33.9	101	pCi/L	U	173	250
GW 101-744	9/9/2000	Radium-226	2.78	0.875	pCi/L		0.588	1
GW 101-744	9/9/2000	Radium-228	1.7	17.6	pCi/L	U	18.6	25
GW 101-744	9/9/2000	Thorium-228	0.966	0.246	pCi/L		0.186	0.5
GW 101-744	9/9/2000	Thorium-228	6.3	6.99	pCi/L	U	6.63	10
GW 101-744	9/9/2000	Thorium-230	0.56	0.163	pCi/L	B	0.0276	0.5
GW 101-744	9/9/2000	Thorium-232	0.4	0.134	pCi/L		0.0552	0.5
GW 101-744	9/9/2000	Total Uranium	14.2	0.291	ug/L		0.31	1
GW 101-744	9/9/2000	Uranium-233/234	5.27	0.892	pCi/L		0.14	0.5
GW 101-744	9/9/2000	Uranium-235	5.36	14.7	pCi/L	U	23	30
GW 101-744	9/9/2000	Uranium-235/236	0.269	0.148	pCi/L		0.115	0.5
GW 101-744	9/9/2000	Uranium-238	4.54	0.798	pCi/L		0.115	0.5
GW 101-744	9/9/2000	Uranium-238	4.72	99	pCi/L	U	175	225

FIGURE 1



KEY

⊕, ⊛, ⊗ WELLS

● SOIL SAMPLES

△ SEDIMENT SAMPLES

N

SCALE ~ 1" = 75'

MAXIM TECHNOLOGIES SAINT LOUIS

Site Reconnaissance: JLR/TCB	US Army Corps of Engineers	SOIL SAMPLE 913 VICINITY SAMPLES NIAGARA FALLS STORAGE SITE NIAGARA COUNTY NEW YORK	
Drawn by: MEM			
Checked by: DEG			
Reviewed by: TML	Scale: 1" = 75'	FIGURE NUMBER:	
Approved by:	Date: 01-25-02		
	Drawing Number:	1	Sheet 1 of 1